GRUVLOK®

ANVIL INTERNATIONAL, INC.

Building Connections That Last

www.anvilintl.com

G-2005

Today Anvil® International is the largest and most complete fitting and hanger manufacturer in the world.

2004 Anvil® International acquires Star Pipe Products, Building and Construction Divisions (SPF) and forms AnvilStar™ Fire Products Division.

2001 Anvil® International acquires Merit® Manufacturing and Beck Manufacturing.

2000 The industry's trusted manufacturer of pipe fittings, hangers and grooved fittings is renamed Anvil® International, Inc.

1999 Tyco sells the distribution and manufacturing operations known up to this point as "Grinnell Supply Sales", but keeps the Grinnell® trademark.

1994 J.B. Smith™ and Catawissa™ join the Grinnell Supply Sales and Manufacturing division.

1969 Grinnell Co. acquired by International Telephone and Telegraph. Two years later, ITT divests the Fire Protection Division, but keeps the manufacturing and sales divisions that will become known as Anvil® International.

1960 Gruvlok® line of grooved fittings is introduced.

1919 General Fire Extinguisher Co. becomes Grinnell Co.

1909 Frederick Grinnell opens a foundry in Cranston, RI. Companies express interest in buying its piping products, laying the groundwork for what would become the Grinnell Supply Sales Division. It would be these manufacturing and sales operations that eventually become Anvil® International.

1850 Providence Steam & Gas Pipe Co. is formed, and Frederick Grinnell purchases a controlling interest.

TRUSTED FOR 150 YEARS

We built our reputation from the ground up.

Anvil's history stretches back to the mid 1800s, when a company named Grinnell® began providing its customers with the finest quality pipe products. Since 2000, those quality products and services—and the people who provide them—have been known as Anvil® International. Anvil® customers receive the quality and integrity that have been building strong connections in both products and business relationships for over 150 years.

Focused Product Line:

Anvil® Malleable and Cast Iron Fittings

Anvil® Hangers, Supports and Struts

Beck Welded Pipe Nipples

Anvil® Seamless Pipe Nipples

Anvil® Steel Pipe Couplings and Small Steel Fittings

Merit® Tee-Lets and Drop Nipples

Gruvlok® Couplings, Fittings and Valves

SPF™ Malleable and Cast and Ductile Iron Fittings

SPF™ Grooved Fittings and O'Lets

J.B. Smith Swage Nipples and Bull Plugs

Catawissa® Wing Unions and Check Valves

BUILDING CONNECTIONS THAT LAST

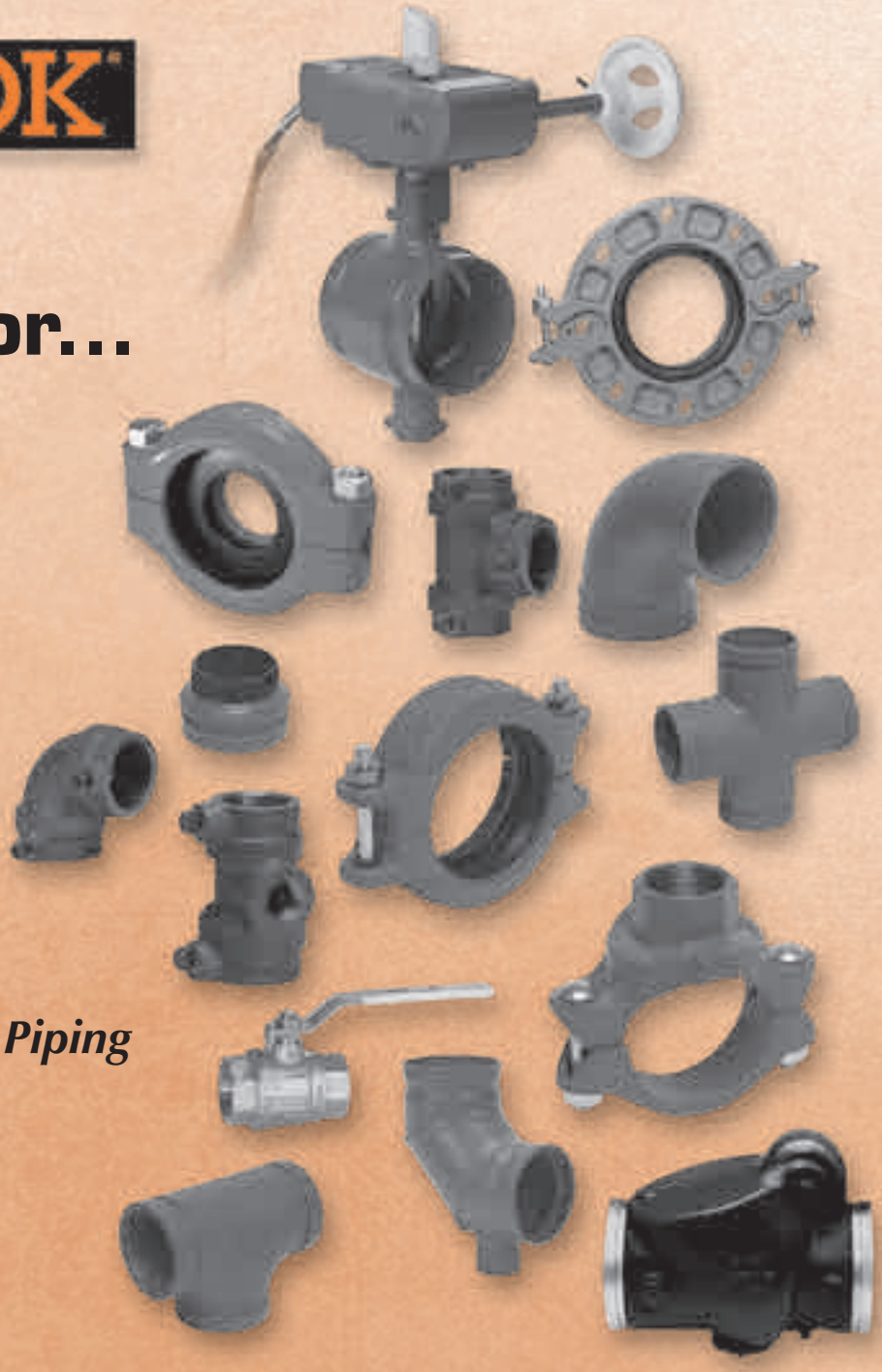
ANVIL® INTERNATIONAL INC

ANVIL BRANDS: GRUVLOK SPF/ANVIL Catawissa AnvilStar JBS CANVIL MERIT BECK ANVIL-STRUT

GRUVLOK®

Solutions for...

- *Military*
- *Power Plant*
- *Original Equipment*
- *Water Treatment*
- *HVAC*
- *Plumbing*
- *Fire Protection*
- *Mining*
- *Oil Field*
- *Process & Industrial Piping*
- *Marine*
- *Offshore*



Anvil International is building the most advanced Grooved Piping Resource in the industry. We seek to set a new standard in Product Performance, Customer Service, and Technical Support.

Our Value Proposition is clear.

The Gruvlok team will meet and surpass Industry Requirements in Manufacturing, Distribution and Service in Support of Every Customer – Every Time.

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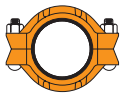
GRUVLOK® PICTORIAL PARTS INDEX

COUPLINGS

FIG. 7001 *Page 16-17*
STANDARD COUPLING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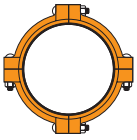

Size Range: 16" - 24"

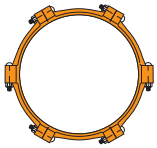

Size Range: 28" - 30"

FIG. 7011 *Page 18-19*
STANDARD COUPLING
Size: 30"

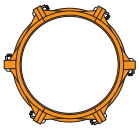


FIG. 7400 *Page 24-25*
300 PSI RIGIDLITE® COUPLING
Size Range: 1" - 8"

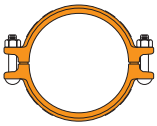


FIG. 7000 *Page 22-23*
LIGHTWEIGHT COUPLING
Size Range: 1" - 8"

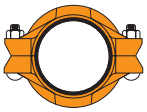
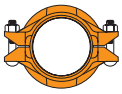
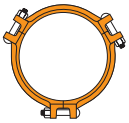


FIG. 7401 *Page 20-21*
RIGIDLOK® COUPLING


Size Range: 1½" - 14"


Size Range: 16"

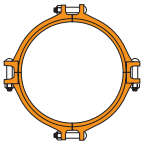

Size Range: 18" - 24"

FIG. 7003 *Page 26-27*
HINGELOK® COUPLING
Size Range: 1½" - 4" & 5" - 8"

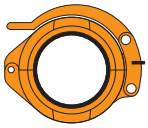


FIG. 7010 *Page 28-29*
REDUCING COUPLING
Size Range: 2" x 1½" thru 8" x 6"

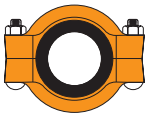


FIG. 7013 *Page 33-35*
GRUVLOK FLANGES
(#300 Flange)
Size Range: 2"-12"

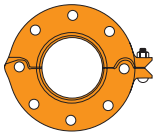
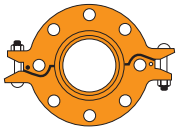


FIG. 7012 *Page 30-32*
GRUVLOK FLANGES


Size Range: 2"-12"

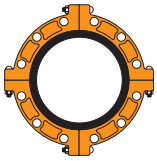
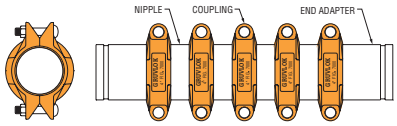

Size Range: 14"-24"

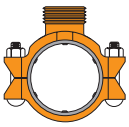
FIG. 7240 *Page 36-37*
EXPANSION JOINTS
Size Range: 2"-12"



BRANCH OUTLETS

FIG. 7042 *Page 38-39*
OUTLET COUPLING
Size Range: 1½" - 6"


7042F
FEMALE IPS OUTLET


7042M
MALE IPS OUTLET

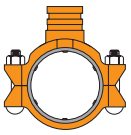

7042G
GROOVED OUTLET

FIG. 7044 *Page 46*
BRANCH OUTLET
Size Range: 1¼" x ½" thru 2½" x 1"

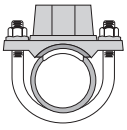
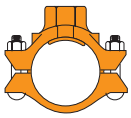


FIG. 7045 *Page 40-42*


CLAMP-T, FPT BRANCH
Size Range: 3" x 1¼" thru 8" x 4"


(U-BOLT)
Size Range: 2½" x ½" thru 4" x 1"

FIG. 7046 *Page 43-44*


CLAMP-T, GROOVED BRANCH
Size Range: 3" x 1¼" thru 8" x 4"

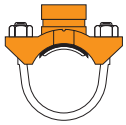

U-BOLT
Size Range: 2½" x 1¼" and 2½" x 1½"

FIG. 7047, FIG. 7048 & FIG. 7049 *Page 45*
CLAMP-T, CROSS
Size Range: 2" x ½" thru 8" x 4"

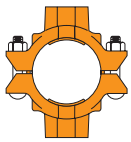


FIG. 7047
THREAD X THREAD

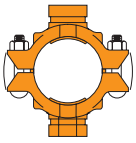


FIG. 7048
GROOVE X GROOVE

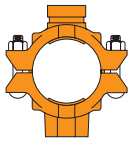


FIG. 7049
GROOVE X THREAD

GROOVED FITTINGS

FIG. 7050 *Page 48*
90° ELBOW
Size Range: 1" thru 24"

FIG. 7051 *Page 48*
45° ELBOW
Size Range: 1" thru 24"

FIG. 7052 *Page 48*
22½° ELBOW
Size Range: 1" thru 24"

FIG. 7053 *Page 48*
11¼° ELBOW
Size Range: 1" thru 24"

FIG. 7050LR *Page 49*
90° LONG RADIUS ELBOW
Size Range: 1" thru 24"

FIG. 7051LR *Page 49*
45° LONG RADIUS ELBOW
Size Range: 1" thru 24"

FIG. 7063 *Page 50*
TEE WITH THREADED BRANCH
Size Range: 1" thru 12"

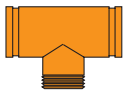


FIG. 7061 *Page 50*
REDUCING TEE STANDARD
Size Range: 1¼" x 1¼" x 1" thru 24" x 24" x 20"

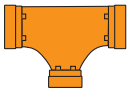


FIG. 7064 *Page 51*
REDUCING TEE WITH THREADED BRANCH
Size Range: 2" x 2" x ¾" thru 24" x 24" x 12"

FIG. 7060 *Page 51*
TEE
Size Range: 1" thru 24"

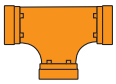


FIG. 7076 *Page 52*
GR x THD CONCENTRIC REDUCERS
Size Range: 1½" x 1" thru 6" x 5"

FIG. 7072 *Page 53*
Gr x Gr CONCENTRIC REDUCERS
Size Range: 1¼" x 1" thru 24" x 20"

FIG. 7073 & FIG. 7097 *Page 52*
ECCENTRIC REDUCERS
Size Range: 1¼" x 1" thru 24" x 20"

FIG. 7073
GR. X GR.

FIG. 7097
GR. X THD.

FIGS. 7077, 7078 & 7079 *Page 53*
SWAGED NIPPLES
Size Range: 2" x 1" thru 6" x 5"

FIG. 7077
GR. X GR.

FIG. 7078
GR. X THD.

FIG. 7079
GR. X BEV.

FIG. 7069 *Page 54*
45° LATERAL
Size Range: 1" thru 24"

FIG. 7070 *Page 54*
45° REDUCING LATERAL
Size Range: 3" x 3" x 2" thru 24" x 24" x 20"

FIG. 7071 *Page 55*
TRUE WYE
Size Range: 1" thru 24"

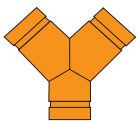


FIG. 7066 *Page 55*
TEE WYE
Size Range: 2" x 2" x 2" thru 12" x 12" x 12"

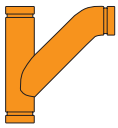


FIG. 7067 *Page 55*
REDUCING TEE WYE
Size Range: 4 x 3 x 3" thru 8 x 6 x 8"

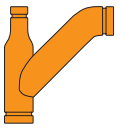


FIG. 7087 *Page 56*
FEMALE THREAD ADAPTER
Size Range: 1" thru 4"

FIG. 7055 *Page 56*
90° ADAPTER ELBOW
Size Range: 1" thru 6"

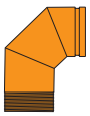


FIG. 7056 *Page 56*
45° ADAPTER ELBOW
Size Range: 1" thru 6"

FIG. 7050RF *Page 57*
REDUCING BASE SUPPORT ELBOWS
Groove x 150# Flanged (GxF)
Size Range: 6" x 4" thru 12" x 10"

FIG 7084 *Page 57*
GROOVE x CLASS 150 FLANGE NIPPLES
Size Range: 1" thru 24"

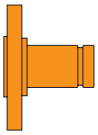


FIG. 7085 *Page 57*
GROOVE x CLASS 300 FLANGE NIPPLES
Size Range: 3" thru 8"

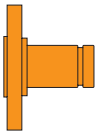


FIG. 7074 *Page 58*
CAP
Size Range: 1¼" thru 24"

FIG. 7075 *Page 58*
BULL PLUG
Size Range: 2" thru 6"

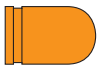


FIG. 7068 *Page 58*
CROSS
Size Range: 1" thru 24"

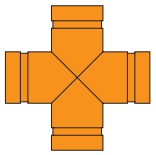


FIG. 7086 *Page 59*
GR x HOSE NIPPLES
Size Range: 1" thru 12"

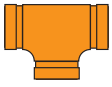
FIG. 7065 *Page 60*
STANDPIPE TEE
(GR x GR x FPT)
Size Range: 4 x 4 x 2½" thru 6 x 6 x 2½"

FIG. 7062 *Page 60*
BULLHEAD TEE SPECIALTY TEES
(GR x GR x FPT)
Size Range: 5 x 5 x 8" thru 6 x 6 x 8"

FIG. 7050DR *Page 60*
90° Drain Elbow
Size Range: 1¼" thru 12"

FIG. 7450 *Page 61*
90° SHORT PATTERN ELBOW
Size Range: 2" thru 8"

FIG. 7460 *Page 61*
SHORT PATTERN TEE
Size Range: 2" thru 8"



GROOVED FITTINGS

Fig. 7050-3D *Page 63*
Long Radius Elbows

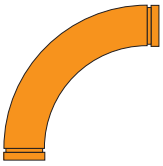


Fig. 7050-3D
90° Elbow
Size Range: 2" thru 24"

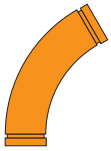


Fig. 7057-3D
60° Elbow
Size Range: 2" thru 24"

Fig. 7051-3D
45° Elbow
Size Range: 2" thru 24"

Fig. 7058-3D
30° Elbow
Size Range: 2" thru 24"

Fig. 7052-3D
22½°Elbow
Size Range: 2" thru 24"

Fig. 7053-3D
11¼°Elbow
Size Range: 2" thru 24"

Fig. 7050-5D *Page 64*
Long Radius Elbows

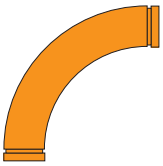


Fig. 7050-5D
90° Elbow
Size Range: 2" thru 24"

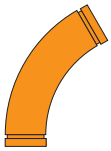


Fig. 7057-5D
60° Elbow
Size Range: 2" thru 24"

Fig. 7051-5D
45° Elbow
Size Range: 2" thru 24"

Fig. 7058-5D
30° Elbow
Size Range: 2" thru 24"

Fig. 7052-5D
22½° Elbow
Size Range: 2" thru 24"

Fig. 7053-5D
11¼° Elbow
Size Range: 2" thru 24"

Fig. 7050-6D *Page 65*
Long Radius Elbows

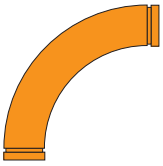


Fig. 7050-6D
90° Elbow
Size Range: 2" thru 24"

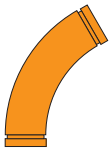


Fig. 7057-6D
60° Elbow
Size Range: 2" thru 24"

Fig. 7051-6D
45° Elbow
Size Range: 2" thru 24"

Fig. 7058-6D
30° Elbow
Size Range: 2" thru 24"

Fig. 7052-6D
22½° Elbow
Size Range: 2" thru 24"

Fig. 7053-6D
11¼° Elbow
Size Range: 2" thru 24"

Fig. 7080, Fig. 7081 & Fig. 7082 *Page 59*
Nipples
Size Range: 1" thru 12"

Fig. 7080
GR x GR

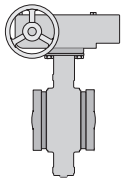
Fig. 7081
GR x Mpt

Fig. 7082
GR x Bev

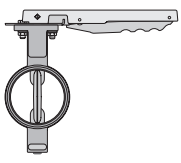
Fig. 7091 *Page 62*
End of the Line
Size Range: 1½" x ½" thru 2½" x 1"

VALVES & ACCESSORIES

Series 7700 *Page 67-71*
Butterfly Valve
Size Range: 2" thru 12"

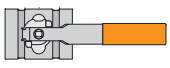


AN-7722-3
Series 7700
butterfly valve
with gear operator

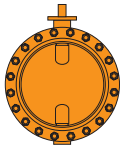


AN-7721-3
Series 7700
butterfly valve
with 10 position lever lock

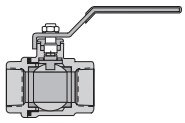
Series 7600 *Page 72*
Butterfly Valve
Size Range: 2" thru 6"



Series 8000GR *Page 73-75*
Butterfly Valve
Size Range: 14" thru 24"



Series 171 *Page 76-77*
Brass Ball Valve
141S — Size Range: ½" thru 2"
171N — Size Range: ¼" thru 4"
171S — Size Range: ½" thru 4"



Series 7500 *Page 78-79*
Ball Valves
Size Range: 2" thru 6"

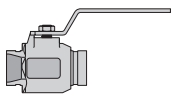
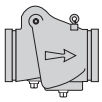
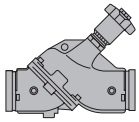


Fig. 400G *Page 80*
Grooved-End
Silent Check Valve
Size Range: 2" thru 10"

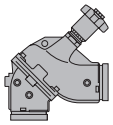
Series 7800 *Page 81-83*
Check Valves
For use in Grooved-End
Piping Systems
Size Range: 2" thru 12"



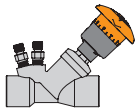
GBV-G *Page 84*
Balancing Valve
Ductile Iron, Grooved-End
Straight
Size Range: 2½" to 12"



GBV-A *Page 85*
Balancing Valve
Ductile Iron, Grooved-End
Angle
Size Range: 2½" to 12"

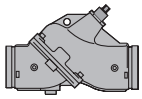


GBV-S & GBV-T *Page 86*
Globe Valves
Cast Bronze, Solder (GBV-S)
Cast Bronze, Threaded (GBV-T)
Size Range: ½" to 2"



VALVES & ACCESSORIES

FTV-S *Page 87-88*
Tri-Service Valve (Straight)
Size Range: 2½" thru 12"



FTV-A *Page 87-88*
Tri-Service Valve (Angle Body)
Size Range: 2½" to 12"

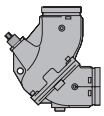
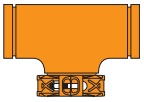
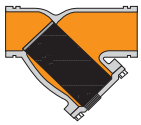


Fig. 7260 *Page 89-90*
Gruvlok Tee Strainer
Size Range: 2" to 18"



Model 758G *Page 91*
Grooved-End "Wye" Strainer
Size Range: 2" thru 12"



Model 768G *Page 92*
Grooved-End "Wye" Strainer
Size Range: 2" thru 12"

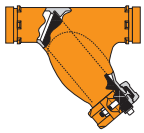
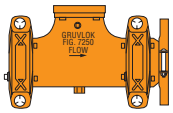
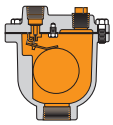


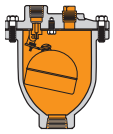
Fig. 7250 *Page 93-94*
Suction Diffuser
Size Range:
2½" x 2½" thru 16" x 14"



Model GAV-15 *Page 95*
Automatic Air Vent
For Ultimate Performance
Size Range: ½" thru 1"



Model GAV-30 *Page 96*
Automatic Air Vent
For Ultimate Performance
Size Range: ½" thru ¾"



AnvilFlex™ AF21 Series *Page 97-100*
Flex Connectors
Size Range: 2" thru 12"

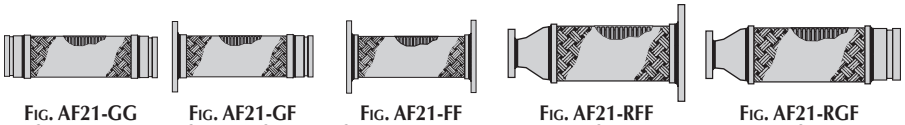


Fig. AF21-GG
Grooved Ends

Fig. AF21-GF
Grooved x Class 150 Flanged

Fig. AF21-FF
Class 150 Flanged x Class 150 Flanged

Fig. AF21-RFF
Reducing Class 150 Flanged x Class 150 Flanged

Fig. AF21-RGF
Reducing Grooved x Class 150 Flanged

HIGH PRESSURE SYSTEMS

Fig. 7004 HPR® *Page 101-102*
Coupling
Size Range: 2" thru 12"

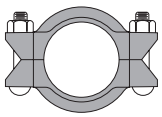


Fig. 7004 EG® *Page 103-104*
End Guard® Coupling
Size Range: 2" thru 12"

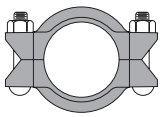


Fig. 7050 EG *Page 105*
High Pressure 90° LR Elbow
Size Range: 2" thru 12"

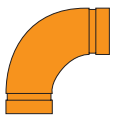


Fig. 7051 EG *Page 105*
High Pressure 45° LR Elbow
Size Range: 2" thru 6"

Fig. 7022 EG *Page 106*
High-pressure Header Tee
Size: 2"

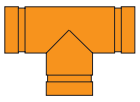


Fig. 7060 EG *Page 106*
High Pressure Tee
Size Range: 2" thru 6"

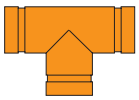
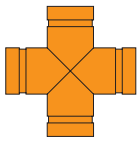


Fig. 7068 EG *Page 106*
High Pressure Cross
Size Range: 2" thru 6"



ADVANCED COPPER METHOD

Fig. 7400 *Page 108*
Rigidlite® Coupling
Size Range: 2" thru 8"

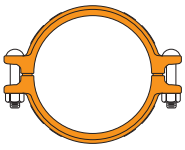


Fig. 7012 *Page 109-110*
Gruvlok Flanges for Gruvlok Advanced Copper Method
Size Range: 2" thru 8"

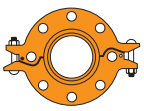


Fig. 7550 *Page 111*
90° Elbow
Size Range: 2" thru 8"

Fig. 7551 *Page 111*
45° Elbow
Size Range: 2" thru 8"

Fig. 7560 *Page 111*
Tees
Size Range: 2" thru 8"

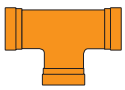


Fig. 7572 *Page 112*
Concentric Reducer (Gr x Gr)
Size Range: 2½" x 2" thru 6" x 5"

Fig. 7574 *Page 112*
End Caps
Size Range: 2" thru 8"

Fig. 7561A *Page 112*
Reducing Tee (Gr x Gr x Gr)
Size Range: 2½" x 2½" x 2" thru 8" x 8" x 6"

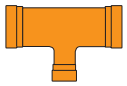


Fig. 7564A *Page 113*
Reducing Tee (Gr x Gr x Cup)
Size Range: 2" x 2" x ¾" thru 4" x 4" x 2"

Fig. 7575 *Page 113*
Reducing Adapter (Gr x Cup)
Size Range: 2" x 1" thru 4" x 2"

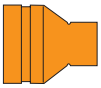
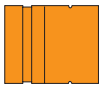
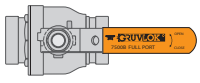


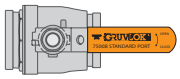
Fig. 7582 *Page 113*
Transition Fitting
Size Range: 2" thru 6"



Series 7500B *Page 114-116*
Grooved-End Bronze Ball Valve



Full Port
Size Range: 1½" thru 3"



Standard Port
Size: 4"

DI-LOK® NIPPLE

Fig. 7088, Fig. 7089 & Fig. 7090 *Page 117*
Gruvlok DI-LOK® Nipple Di-Electric Pipe Connection
Size Range: ¾" thru 6"

Fig. 7088
Groove by Thread

Fig. 7089
Groove by Groove

Fig. 7090
Thread by Thread

Fig. 7068P *Page 120*
Cross
Size Range: 2" thru 8"

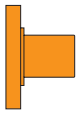
Fig. 7069P *Page 120*
45° Lateral
Size Range: 2" thru 8"

Fig. 7071P *Page 120*
90° True Wye
Size Range: 2" thru 8"

Fig. 7075P *Page 121*
Bull Plug
Size Range: 2" thru 8"

Fig. 7084P & Fig. 7085P *Page 121*
Flange Nipples

Plain-End x Class 150
Size Range: 2" thru 8"
Plain-End x Class 300
Size Range: 2" thru 8"



PLAIN-END FITTINGS

Fig. 7005 *Page 118*
Roughneck® Coupling
Size Range: 2" thru 16"

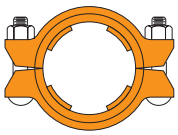


Fig. 7050P, Fig. 7051P & Fig. 7060P *Page 119*
Gruvlok Plain-End Fittings
Size Range: 2" thru 8"

Fig. 7050P
90° Elbow

Fig. 7051P
45° Elbow

Fig. 7060P
Tee

Fig. 7061P *Page 120*
Reducing Tee
Size Range: 3" x 3" x 2" thru 12" x 12" x 10"

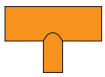


Fig. 7050LRP *Page 120*
90° LR Elbow
Size Range: 2" thru 8"

Fig. 7051LRP *Page 121*
45° LR Elbow
Size Range: 2" thru 8"

Fig. 7080P, Fig. 7081P & Fig. 7082P *Page 122*
Adapter Nipples
Size Range: 2" thru 8"

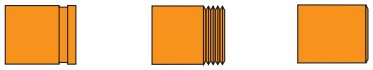


Fig. 7080P
Plain x Grooved

Fig. 7081P
Plain x Thread

Fig. 7082P
Plain x Bevel

Fig. 7077P *Page 122*
Swaged Nipples
Size Range: 2½" x 2" thru 8" x 6"

HDPE COUPLINGS

Fig. 7305 *Page 123-124*
HDPE Coupling
Size Range: 2" thru 12"

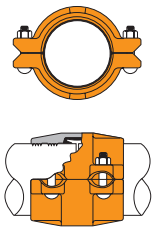


Fig. 7307 *Page 125-126*
HDPE Transition Coupling
Size Range: 2" thru 12"

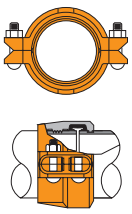
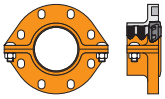


Fig. 7312 *Page 127-128*
HDPE Flange Adapter
Size Range: 4" thru 8"



SOCK-IT® METHOD

Fig. 7100 *Page 129*
90° Elbow
(Sock-It® x Sock-It®)
Size Range: 1" thru 2"

Fig. 7101 *Page 130*
90° Reducing Elbow
(Sock-It® x NPT)
Size Range: 1" x ½" thru 1½" x 1"

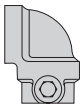


Fig. 7103 *Page 130*
Straight Tee
(Sock-It® x Sock-It® x Sock-It®)
Size Range: 1" thru 2"

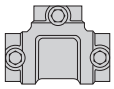


Fig. 7105 *Page 131*
Reducing Outlet Tee
(Sock-It® x Sock-It® x NPT)
Size Range: 1" x 1" x ½" thru 2½" x 2½" x 1"

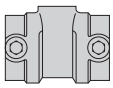


Fig. 7106 *Page 131*
Reducing Tee
(Sock-It® x Sock-It® x NPT)
Size Range: 1¼" x 1" x ½" thru 2" x 1½" x 1"

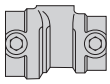
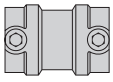
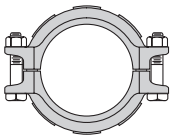


Fig. 7107 *Page 132*
Coupling
(Sock-It® x Sock-It®)
Size Range: 1" thru 2"

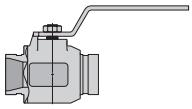


STAINLESS STEEL METHOD

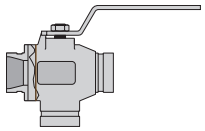
FIG. 7400SS *Page 133*
RIGIDLITE® COUPLING
Size Range: 1¼" thru 8"



SERIES 7500 SS *Page 134-135*
GROOVED-END BALL VALVE
Size Range: 2" thru 6"



TWO-WAY VALVE



THREE-WAY DIVERTER VALVE

FIG. 7050SS *Page 136*
90° STAINLESS STEEL ELBOW
Size Range: 1¼" thru 8"

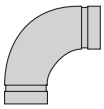


FIG. 7051SS *Page 136*
45° STAINLESS STEEL ELBOW
Size Range: 1¼" thru 8"

FIG. 7060SS *Page 136*
STAINLESS STEEL TEES
Size Range: 1¼" thru 8"

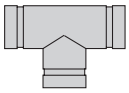


FIG. 7074SS *Page 136*
STAINLESS STEEL CAPS
Size Range: 1¼" thru 8"

FIG. 7061SS *Page 137*
STAINLESS STEEL REDUCING TEES
Size Range: 1½" x 1½" x ¾" thru 8" x 8" x 6"

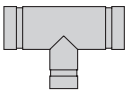


FIG. 7073SS *Page 137*
STAINLESS STEEL ECCENTRIC REDUCERS
Size Range: 1½" x 1" thru 8" x 6"

FIG. 7072SS *Page 137*
STAINLESS STEEL CONCENTRIC REDUCERS
Size Range: 1½" x 1" thru 8" x 6"

ROLL GROOVERS

Gruvlok roll grooving technology is protected by
U.S. Patents 5450738, 5570603, 5778715 & others pending.

MODEL 1007 *Page 138-139*
ROLL GROOVER
Groover Capability: 2" thru 16"

MODEL 3007 *Page 138-139*
ROLL GROOVER
Groover Capability: 2" thru 16"

MODEL 3006 & 3006C *Page 140-141*
ROLL GROOVER
Groover Capability: 2" thru 12"

PRODUCTS FOR GROOVED PIPING SYSTEM

The Gruvlok® System has been manufactured since the late 1960's. The Gruvlok product line has grown from standard couplings and fittings to today's extensive range of grooved product, plain-end product, butterfly valves, check valves, pump protection components, pipe preparation tools and various accessories.

Gruvlok is part of our overall commitment to provide today's piping industry with tomorrow's products.

Quality System Certificate No. 020
BS EN ISO 9001:1994

Certified to ANSI/NSF 61

APPROVED
For listing/approval details contact your Gruvlok Representative.

Industry & Government Standards & Approvals

ABS	American Bureau of Shipping
ANSI	American National Standards Institute
API	American Petroleum Institute: API Std. 5L, Sect. 7.5
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers: Power Piping, B-31.1; Chemical Plant and Petroleum Refinery Piping, B-31.3; Refrigeration Piping, B-31.5; Building Services Piping, B-31.9; Slurry Pipelines, B-31.11
ASTM	American Society of Testing and Materials: F-1476, F-1387
AWWA	American Water Works Association: C-606
BV	Bureau Veritas
CDF	California State Fire Marshal
COE	Corps of Engineers: CEGS 15000
CSA	Canadian Standards Association: B-242
DNV	Det Norske Veritas
	Hong Kong Fire Services Board
	New Zealand Insurance Council
	New Zealand Building Act. (1991)
FAA	Federal Aviation Administration: HVAC, Plumbing, Fire Protection
FHA	Federal Housing Administration
FM	Factory Mutual Engineering Corp.
GSA	General Services Administration:15000 Series
IAPMO	International Association of Plumbing & Mechanical Officials
LLOYD'S	Lloyd's Register of Shipping
LPC	Loss Prevention Council
MEA	Materials & Equipment Acceptance
MIL	Military Specifications: MILP-10388 Fittings; MIL-C-10387 Couplings; MIL-P-11087A(CE) Steel Pipe, Grooved MIL-I-45208 Inspection Procedure
NASA	National Aeronautics and Space Administration: 15000 Series
NAVFAC	Naval Facilities Engineering Command: NFGS 15000 Series
NFPA	National Fire Protection Association
NIH	National Institute of Health (Dept. of Health): 15000 Series
NSF	NSF International
NY-BSA	New York Board of Standards and Appeals
NYC	New York City
SBCCI	Southern Building Code Congress International: Standard Plumbing and Mechanical Code
TVA	Tennessee Valley Authority: Fire protection, storm drains
UL	Underwriter's Laboratories, Inc.
ULC	Underwriter's Laboratories of Canada
	Bureau of Marine Inspection: Salt and fresh water, oil transfer
	Bureau of Public Roads; Div. of Bridges: Drain lines and bridge crossings
	Canadian Coast Guard
	U.S. Coast Guard –Approves each vessel individually
USGBC	Member - United States Green Building Council
VA	Veterans Affairs : 15000 Series
VdS	Verband der Sachversicherer e.V.

GRUVLOK – THE ENGINEERED COUPLING

HOUSING (A) FLEXIBLE OR RIGID

The Gruvlok Coupling housing is designed to self-center around the pipe. The housing encircles and retains the gasket against the application of internal system pressure or vacuum.

The housing key sections fit into and engage the pipe-end grooves around the entire pipe circumference, thus restraining the pipe ends from separation due to the application of internal pressure.

Flexible Couplings provide designed-in clearances between the housing key sections and the pipe grooves to permit both angular and longitudinal movement of the pipe. Rigid couplings grip the pipe and lock the joint into position.

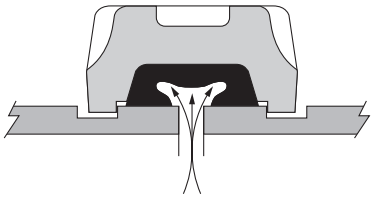
All housings are coated with lead free paint for general service applications. The paint serves to provide protection against normal atmospheric corrosion. However, for couplings used in corrosive environments, hot-dip galvanizing, and stainless steel are available.

GASKET (B)

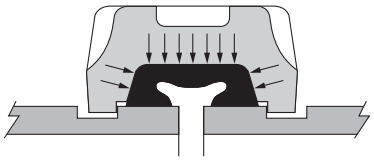
The unique single piece "C" style design of the gasket has been engineered to provide a pressure responsive, leak-tight seal in both pressure and vacuum applications without the aid of external forces. The "lips" of the gasket are molded so that upon installation onto the pipe ends they provide compression against the pipe surface to establish the leak-tight seal.

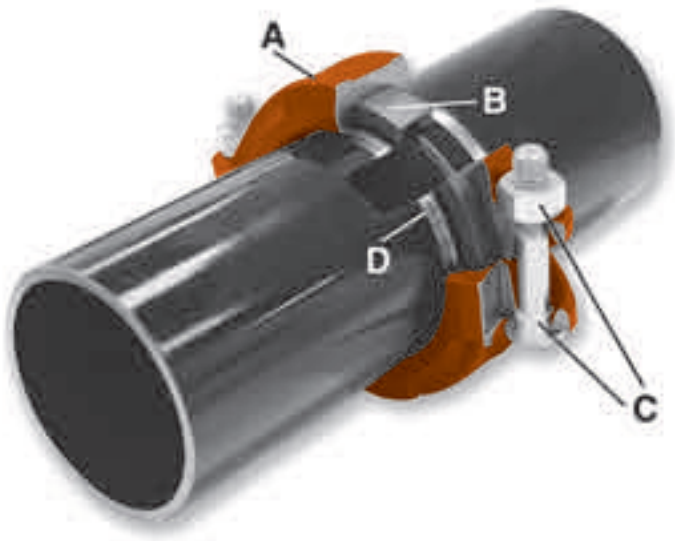
The gasket cavity functions as a "pressure reservoir". Pressure within the pipe system is applied to the internal surfaces of the gasket which increases the sealing force and enhances the leak-tight seal. In vacuum systems, non-pressure-responsive seals tend to "lift off" the pipe, producing leak paths. However, the Gruvlok gasket reacts to the negative pressure (higher outside atmospheric pressure) as to improve the sealing capability of the gasket.

Gasket Reaction To Pressure



Gasket Reaction To Vacuum





BOLTS AND NUTS (C)

Heat treated oval neck track head bolts serve to connect and secure the housing segments together. The oval neck design prevents turning of the bolt while tightening the hex nut with a single wrench. The bolt size and corresponding wrench (or socket) size for the hex nuts are shown in the chart below.

ANSI

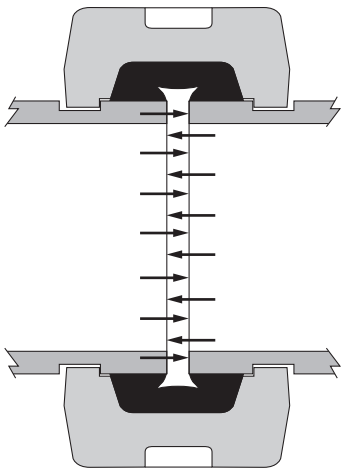
Bolt Size	3/8	1/2	5/8	3/4	7/8	1	1 1/4
Wrench Size	11/16	7/8	1 1/16	1 1/4	1 7/16	1 5/8	2

METRIC

Bolt Size	M10	M12	M16	M20	M22
Wrench Size	16	22	24	30	34

GROOVED PIPE ENDS (D)

The ends of the pipe must have a groove in them which may be either cut grooved or roll grooved. The grooved pipe ends engage the coupling keys, thus, providing a self-restraining, mechanical joint capable of resisting the separation of the pipe ends due to the application of system pressure. The groove diameters must be dimensionally accurate to obtain the maximum benefit of the Gruvlok Coupling.



THE GRUVLOK PIPING METHOD

Gruvlok couplings and grooved-end fittings are widely used for joining pipe in a wide variety of piping systems. Gruvlok couplings for grooved-end pipe are designed to provide a self-centering joint which accommodates the application of pressure, vacuum and other external forces, while limiting the burdensome need for special supports, expansion joints, etc.

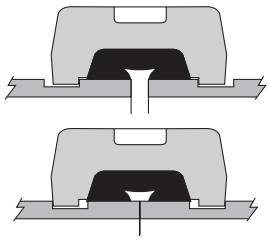
The Gruvlok piping method offers many mechanical design features which benefit the design engineer, the contractor, and the end user. Utilization of the functional characteristics of the Gruvlok coupling will aid in pipe system design and must be considered for proper installation, assembly and performance.

The design factors presented in the Gruvlok technical data section should always be referenced to when designing any grooved piping system to obtain the maximum benefit of the Gruvlok piping method.

Gruvlok Features

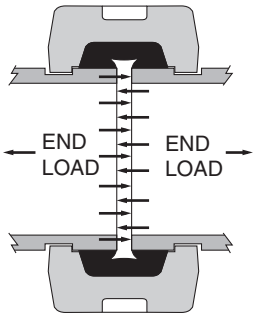
RIGIDITY OR FLEXIBILITY

Couplings are available where rigid connections are required. Couplings with flexible design allow for pipe expansion and contractions with temperature changes. The need for an expansion joint is minimized or eliminated.



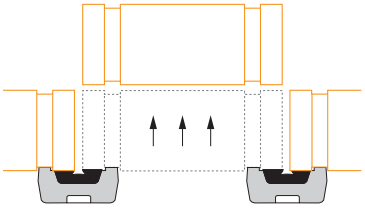
SELF RESTRAINED JOINT

The couplings engage the pipe around the entire circumference and restrain the pipe ends from separation due to pressure and other forces, up to the maximum coupling rated working pressure.



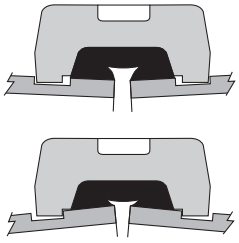
UNION AT EVERY JOINT

Gruvlok couplings can be disassembled easily permitting maintenance and servicing of the piping system. It will facilitate periodic rotation of pipe to distribute internal wear from slurries or other abrasive media.



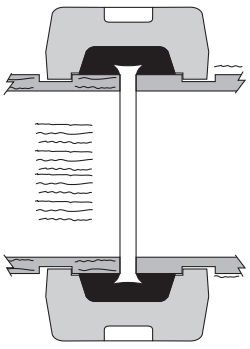
STRESS-FREE SYSTEM

Flexibility designed in the Gruvlok coupling absorbs and eliminates stress from settlement of buried pipe or those induced by seismic tremors.



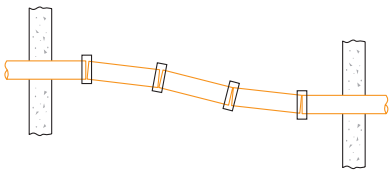
MINIMIZES NOISE & VIBRATION

The resilient elastomeric gasket and pre-designed gap of the Gruvlok coupling help isolate and absorb noise and vibration, this minimizes vibration transmission.



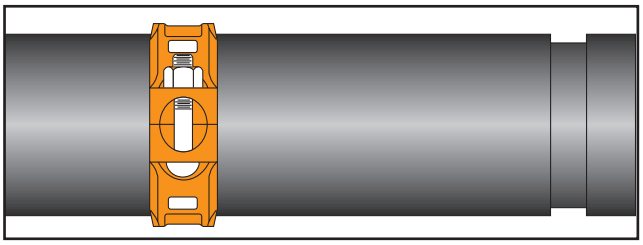
ACCOMMODATES MISALIGNMENT AND JOINT DEFLECTION

The flexibility designed into the Gruvlok coupling will accommodate misalignments caused by imprecise location of pipe opening through walls and floors, will provide pitch for drainage piping systems and facilitate laying pipe on uneven terrain, thus permitting deflection in any direction.



GRUVLOK COUPLINGS FOR GROOVED-END PIPE

Gruvlok couplings for grooved-end pipe are available in nominal pipe sizes 1" thru 30" and metric sizes. The variety of coupling designs provides a universal means for the connection for pipe, fittings, and pipe system components. The wide assortment of Gruvlok couplings and gaskets permit selection of the most suitable combination for a specific application, thus providing the most versatile and economical pipe system installation.



MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS— Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS— Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS—Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING—Ductile Iron conforming to ASTM A536, Grade 65-45-12 or Malleable Iron conforming to ASTM A47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

GRADE "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap (1" - 14") (25mm - 350mm)
(1¼" (32mm) size not available)

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

COUPLING DATA CHART NOTES

Coupling Data Chart Notes

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque		Approx. Wt. Ea.
					Per Coupling	Per in./ft.	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees*	*mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs/N-M*		*Lbs./Kg*

1 2 3 4 5 6 7 8 9 10

1 Gruvlok Couplings are identified by either the nominal ANSI pipe size in inches or pipe O.D. in millimeters (see column 2).

2 Nominal Outside Diameter of Pipe.

3 Maximum line pressure, including surge, to which a joint can be subjected. Working pressure ratings are based on standard wall steel pipe with standard cut or roll grooves in accordance with Gruvlok specifications. For Performance Data on other than standard wall pipe, refer to Technical data section.
NOTE: **For one time field test only the maximum joint working pressure may be increased to 1.5 times the figure shown.**

4 Maximum end load from all interior and/or exterior forces to which the joint can be subjected are based on standard wall steel pipe with standard cut or roll grooves in accordance with Gruvlok specifications.

Range of pipe end separation is the gap between the pipe ends due to assembly.

5 Maximum allowable angular deflection of pipe from centerline when using standard cut grooved steel pipe. For details see design factors in Gruvlok Technical data section.

6 "X", "Y", and "Z" are external dimensions for reference purposes only.

7 The quantity of bolts equals the number of housing segments per coupling.

8 Nuts must be tightened alternating and evenly to the specified bolt torque. See individual product installation instructions for additional important information.

9 Approximate weight for a fully assembled coupling with gasket, bolts, and nuts.

10

FIG. 7001

Standard Coupling

APPROVED
For listing/approval details contact your Gruvlok Representative.

The Gruvlok® Fig. 7001 Standard Coupling forms a flexible grooved end pipe joint connection with the versatility for a wide range of applications. Services include mechanical and plumbing, process piping, mining and oil field piping, and many others. The coupling design supplies optimum strength for working pressures to 1000 PSI (69 bar) without excessive casting weight.

The flexible design eases pipe and equipment installation while providing the designed-in benefit of reducing pipeline noise and vibration transmission without the addition of special components. To ease coupling handling and assembly and to assure consistent quality, sizes 1" through 14" couplings have two 180° segment housings, 16" through 24" sizes have four 90° - segment housings while the 28" O.D. and 30" O.D. couplings have six 60° segment housings. The 28" O.D. and 30" O.D. are weld-ring couplings.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12 or Malleable Iron conforming to ASTM A47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

GRADE "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap (1" - 14")
"EG" Style

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

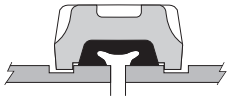


Fig. 7001 with Standard Gasket

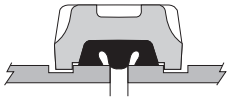
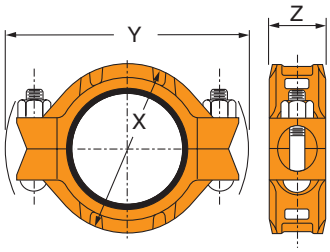


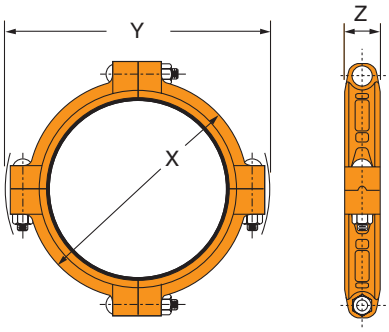
Fig. 7001 with "Flush Gap" Gasket (1" - 14")

FIG. 7001

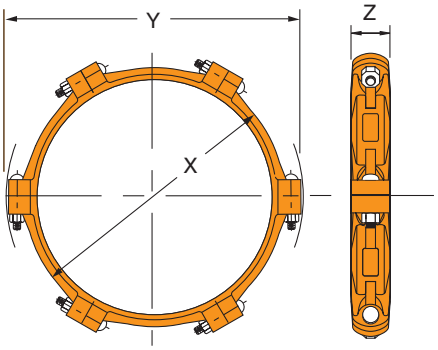
Standard Coupling



SIZES 1" - 14"



SIZES 16" - 24"



SIZES 28" - 30"

FIGURE 7001 STANDARD COUPLING DIMENSIONS

Nominal Size	O.D.	Max. Work. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from		Coupling Dimensions			Bolt Dimensions*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	of Pipe.	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees*	*In./ft.-mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-M*		*Lbs./kN*
1 *25*	1.315 *33.4*	1000 *68.9*	1,358 *6.04*	0-⅛ *0-.32*	5° 26'	1.14 *94.7*	2½ *64*	4½ *114*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.3 *0.6*
1¼ *32*	1.660 *42.2*	1000 *68.9*	2,164 *9.63*	0-⅛ *0-.32*	4° 19'	0.90 *75.3*	2¾ *70*	4½ *114*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.4 *0.6*
1½ *40*	1.900 *48.3*	1000 *68.9*	2,835 *12.61*	0-⅛ *0-.32*	3° 46'	0.79 *65.7*	3 *76*	4⅝ *117*	1⅞ *48*	2	⅜ x 2¼ *M10 x 57*	30 *40*	45 *60*	1.5 *0.7*
2 *50*	2.375 *60.3*	1000 *68.9*	4,430 *19.71*	0-⅛ *0-.32*	3° 1'	0.63 *52.6*	3⅝ *92*	6⅛ *156*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	3.1 *1.4*
2½ *65*	2.875 *73.0*	1000 *68.9*	6,492 *28.88*	0-⅛ *0-.32*	2° 29'	0.52 *43.3*	4¼ *108*	6½ *165*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	3.7 *1.7*
3 O.D. 76.1	*2.996* 76.1	*1000* 68.9	*7,050* 31.36	*0-⅛* 0-.32	*2° 23'*	*0.50* 41.6	*4¼* 108	*6¾* 171	*1⅞* 48	*2*	*½ x 3* M12 x 76	*80* 110	*100* 150	*4.3* 2.0
3 *80*	3.500 *88.9*	1000 *68.9*	9,621 *42.80*	0-⅛ *0-.32*	2° 3'	0.43 *35.8*	4⅞ *124*	7⅛ *181*	1⅞ *48*	2	½ x 3 *M12 x 76*	80 *110*	100 *150*	4.3 *2.0*
3½ *90*	4.000 *101.6*	1000 *68.9*	12,566 *55.90*	0-⅛ *0-.32*	1° 48'	0.38 *31.4*	5¼ *133*	8¼ *210*	1⅞ *48*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	5.1 *2.3*
4 *100*	4.500 *114.3*	1000 *68.9*	15,904 *70.75*	0-¼ *0-6.4*	3° 11'	0.67 *55.5*	6¼ *159*	8¾ *222*	2 *51*	2	⅝ x 3½ *M16 x 89*	100 *135*	130 *175*	6.8 *3.1*
5 *125*	5.563 *141.3*	1000 *68.9*	24,306 *108.12*	0-¼ *0-6.4*	2° 35'	0.54 *45.1*	7¼ *184*	11¼ *286*	2 *51*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	9.6 *4.4*
6½ O.D. 165.1	*6.500* 165.1	*1000* 68.9	*33,183* 147.61	*0-¼* 0-6.4	*2° 12'*	*0.46* 38.4	*8¼* 210	*11¾* 298	*2* 51	*2*	*¾ x 4½* M20 x 110	*130* 175	*180* 245	*11.8* 5.4
6 *150*	6.625 *168.3*	1000 *68.9*	34,472 *153.34*	0-¼ *0-6.4*	2° 10'	0.45 *37.8*	8⅝ *219*	11¾ *298*	2 *51*	2	¾ x 4½ *M20 x 110*	130 *175*	180 *245*	11.8 *5.4*
8 *200*	8.625 *219.1*	800 *55.2*	46,741 *207.91*	0-¼ *0-6.4*	1° 40'	0.35 *29.1*	11 *279*	14⅜ *365*	2⅜ *60*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	21.7 *9.8*
10 *250*	10.750 *273.0*	800 *55.2*	72,610 *322.99*	0-¼ *0-6.4*	1° 20'	0.28 *23.3*	13⅛ *333*	16⅝ *422*	2⅝ *67*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	27.0 *12.2*
12 *300*	12.750 *323.9*	800 *55.2*	102,141 *454.35*	0-¼ *0-6.4*	1° 7'	0.23 *19.5*	15½ *394*	18⅝ *473*	2⅝ *67*	2	⅞ x 6 *M22 x 150*	180 *245*	220 *300*	35.0 *15.9*
14 *350*	14.000 *355.6*	300 *20.7*	46,181 *205.43*	0-¼ *0-6.4*	1° 2'	0.22 *18.0*	16⅛ *410*	20½ *521*	3 *76*	2	⅞ x 5½ *M22 x 140*	180 *245*	220 *300*	37.0 *16.8*
16 *400*	16.000 *406.4*	300 *20.7*	60,319 *268.31*	0-¼ *0-6.4*	0° 54'	0.19 *15.7*	18⅛ *460*	22⅞ *581*	3 *76*	4	1 x 4 *	200 -	250 -	50.0 *22.7*
18 *450*	18.000 *457.2*	300 *20.7*	76,341 *339.58*	0-¼ *0-6.4*	0° 48'	0.17 *14.0*	21⅛ *537*	25⅜ *645*	3⅛ *79*	4	1 x 4 *	200 -	250 -	72.0 *32.7*
20 *500*	20.000 *508.0*	300 *20.7*	94,248 *419.23*	0-¼ *0-6.4*	0° 43'	0.15 *12.5*	23 *584*	28¼ *718*	3⅛ *79*	4	1⅛ x 4½ *	225 -	275 -	82.0 *37.2*
24 *600*	24.000 *609.6*	300 *20.7*	135,717 *603.70*	0-¼ *0-6.4*	0° 36'	0.13 *10.5*	27 *686*	32⅜ *822*	3⅛ *79*	4	1⅛ x 4½ *	225 -	275 -	90.0 *40.8*
28" O.D. 733.4	*28.875* 733.4	*150* 10.3	*98,226* 436.93	*0-¼* 0-6.4	*0° 33'*	*0.12* 9.6	*33½* 851	*35½* 902	*3⅛* 79	*6*	*1 x 5½* *	*200* -	*250* -	*105.0* 47.6
30" O.D. 787.4	*31.00* 787.4	*150* 10.3	*113,215* 503.61	*0-¼* 0-6.4	*0° 28'*	*0.10* 8.1	*33¾* 857	*38¼* 972	*3⅝* 92	*6*	*1 x 5½* *	*200* -	*250* -	*137.0* 62.1

* Available in ANSI or metric bolt sizes only as indicated.
For additional details see "Coupling Data Chart Notes" on page 15.

§ – For additional Bolt Torque information on page 171.
See Installation & Assembly directions on page 144.
Not for use in copper systems.

FIG. 7011

Standard Coupling

The Gruvlok® Figure 7011 Standard Coupling is a flexible coupling designed to join roll grooved or cut grooved 30" O.D. pipe for a wide range of applications, including Commercial/Industrial Construction, Mining, Process Piping and many others. This coupling's operating temperature ranges from –40˚F to 230˚F (-40˚C to 110˚C) with the Grade E EPDM gasket and –20˚F to 180˚F (-29˚C to 82˚C) with the Grade T Nitrile gasket. The operating pressure ranges 15" of Hg. vacuum to 300 psig on standard wall steel pipe.

MATERIAL SPECIFICATIONS

HOUSING DESIGN:
This six-segment coupling's housing is cast in ductile iron per ASTM A536 Grade 65-45-12. Each housing segment is machined to assure a close dimensional fit with pipe ends that are prepared in accordance with Gruvlok "Large Diameter Roll and Cut Groove Specifications."

GASKET DESIGN:
The gasket design is a "C" Style cross section and features a larger cross section to provide optimal sealing throughout the range of pipe dimensional variations and operating conditions. The gasket is available in EPDM and Nitrile, to facilitate use in a wide range of applications. For Gruvlok gasket material recommendations see the Gruvlok catalog.

BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track bolts of carbon steel conforming to ASTM A183 Grade 2, with a minimum tensil strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are zinc plated per ASTM B633 as standard.

PIPE END PREPARATION:
Pipe grooving is simple, easy and quick. It is critical that the pipe ends be prepared in accordance with the Gruvlok "Large Diameter Roll and Cut Groove Specifications." **For roll grooved pipe, grinding the weld seam on the interior and exterior of the pipe may be required. Not performing this operation may result in improper assembly of the coupling, gasket leakage and damage to the roll grooving machine.**

FIG. 7011
Standard Coupling

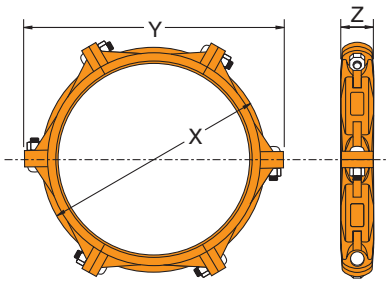


FIGURE 7011 STANDARD COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	Per in./ft.	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees*	*mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./M-M*		*Lbs./Kg*
30 O.D.	30.000	300	212,058	0 -3/16	0° 40'	0.14	34	39½	5	6	1¼ x 4⅜	600	800	200
750	*762.0*	*20.7*	*943.2*	*0 - 4.8*		*11.5*	*864*	*1003*	*127*		–	-	-	*90.9*

Working pressure and end load values are for standard wall pipe.

For additional information see “Coupling Data Chart Notes” from page 15.

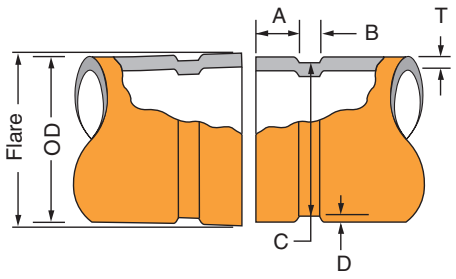
Roll and Cut Grooving Specifications can be found in the technical data section.

See technical data section for design factors.

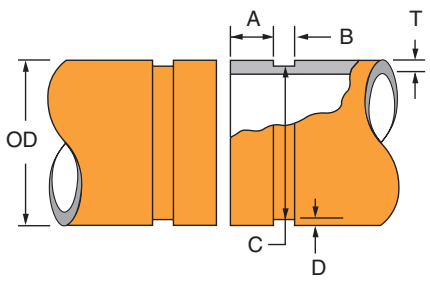
§ – For additional Bolt Torque information see page 171.

* Available in ANSI bolt sizes only as indicated.

See Installation & Assembly directions on page 145.



ROLL GROOVE



CUT GROOVE

LARGE DIAMETER PIPE ROLL & CUT GROOVE SPECIFICATIONS

Nominal IPS Pipe Size	O.D.			Gasket Seat "A" +.030/-.060 +.77/-1.54	Groove Width "B" ±.030 ±.77	Groove Diameter "C"		Groove Depth "D" (Ref. Only	Min. Wall Thickness "T"		Max. Flare Dia.
	Actual	Tolerance				Actual	Tol +0.000		Roll Groove	Cut Groove	
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
30 O.D.	30.000	0.093	0.031	1.750	0.625	29.500	0.063	0.250	0.250	0.625	30.200
750	*762.0*	*2.36*	*0.79*	*44.45*	*15.88*	*749.30*	*1.60*	*6.35*	*6.35*	*15.88*	*767.1*

- Pipe O.D. must be within specified dimensions.
- Gasket Seat must be free from scores, seams, chips, rust or other scale, which may interfere with proper sealing of the gasket. Gasket Seat width, dimension A, is to be measured from the pipe end to the vertical flank in the groove.
- Groove width, dimension B, is to be measured between the vertical flank of the groove side walls.
- Groove depth must be uniform depth around the entire pipe circumference. (Reference column 6.)
- Maximum Flare Diameter is to be measured at the most extreme pipe end.
- **Out of Roundness:** Difference between the maximum and minimum pipe O.D. measured at 90° must not exceed the total pipe O.D. tolerance listed (Reference column 2).
- The maximum allowable tolerance from square cut ends is .125” measured from a true square line.
- Beveled end pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred.

SPECIAL ROLL GROOVING INSTRUCTION:

- Weld seams must be ground flush with the pipe O.D. and I.D. prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

FIG. 7401

Rigidlok® Coupling

The Fig. 7401 Rigidlok Coupling from Gruvlok provides a rigid, locked in pipe connection. Rigidity is attained simply; it is designed in.

The Fig. 7401 Rigidlok coupling is based on a technologically advanced housing design that conforms to and grips the pipe. With the Fig. 7401 there emerges a new generation of rigid couplings.

Coupling installation is fast and easy, remove only one nut and swing the housing over the gasket and into the grooves. The exclusive Guidelok® feature automatically separates the grooved pipe ends and guides the coupling into position as the bolts are tightened. Precisely sized and oriented tines in the housing key section firmly grip the pipe. The combination of these designed in features produce a secure, rigid pipe joint connection.

This coupling is an ideal connector for service and applications that require a rigid connection.

The Fig. 7401 Rigidlok Coupling is designed for use with roll grooved or cut grooved standard weight and roll grooved lightweight pipe, as well as with grooved-end fittings and valves. The Rigidlok Coupling maintains a rigid connection with support and hanging in conformance with applicable ANSI B31.1 Power Piping Code, ANSI B31.9 Building Service Pipe Code as well as NFPA 13 sprinkler systems.

APPROVED
For listing/approval details contact your Gruvlok Representative.

The Fig. 7401 Rigidlok Coupling allows for working pressure ratings to 750 psi (51.7 bar) when used on standard wall roll or cut grooved pipe.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

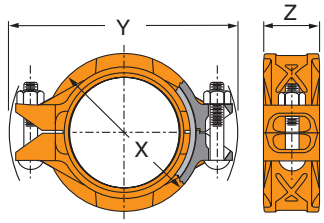
Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap (1½" - 14")

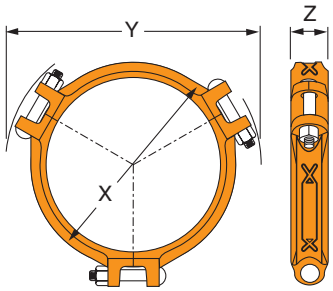
LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7401

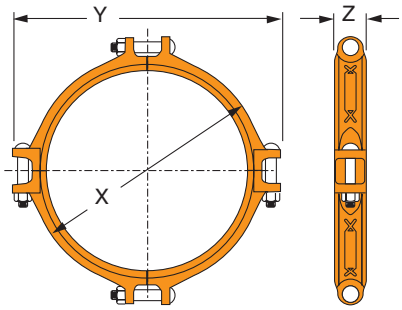
Rigidlok® Coupling



1½" - 14"



16"



18" - 24"

FIGURE 7401 RIGIDLOK COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts*		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-M*		*Lbs./Kg*
1½	1.900	750	2,126	0 -⅛	3	5⅛	1⅞	2	⅜ x 2¼	30	45	1.8
40	*48.3*	*51.7*	*9.46*	*0 - 3.2*	*76*	*130*	*48*		*M10 x 57*	*40*	*60*	*0.8*
2	2.375	750	3,323	0 -⅛	3½	5⅝	1⅞	2	⅜ x 2½	30	45	2.4
50	*60.3*	*51.7*	*14.78*	*0 - 3.2*	*89*	*143*	*48*		*M10 x 63*	*40*	*60*	*1.1*
2½	2.875	750	4,869	0 -⅛	4	6⅛	1⅞	2	⅜ x 2½	30	45	2.9
65	*73.0*	*51.7*	*21.66*	*0 - 3.2*	*102*	*156*	*48*		*M10 x 63*	*40*	*60*	*1.3*
3 O.D.	*2.996*	*750*	*5,207*	*0 -⅛*	*4⅛*	*6⅛*	*1⅞*	*2*	*½ x 3*	*80*	*100*	*3.4*
76.1	76.1	51.7	23.52	0 - 3.2	105	156	48		M12 x 76	110	150	1.5
3	3.500	750	7,216	0 -⅛	4¾	7¼	1⅞	2	½ x 3	80	100	3.6
80	*88.9*	*51.7*	*32.10*	*0 - 3.2*	*121*	*184*	*48*		*M12 x 76*	*110*	*150*	*1.6*
4	4.500	750	11,928	0 -¼	5⅞	8⅜	2⅛	2	½ x 3	80	100	5.0
100	*114.3*	*51.7*	*53.06*	*0 - 6.4*	*149*	*213*	*54*		*M12 x 76*	*110*	*150*	*2.3*
5½ O.D.	*5.500*	*750*	*17,819*	*0 -¼*	*7*	*9¾*	*2⅛*	*2*	*⅝ x 3½*	*100*	*130*	*6.9*
139.7	139.7	51.7	79.26	0 - 6.4	178	248	54		M16 x 85	135	175	3.1
5	5.563	750	18,229	0 -¼	7	10	2⅛	2	⅝ x 3½	100	130	6.9
125	*141.3*	*51.7*	*81.09*	*0 - 6.4*	*178*	*254*	*54*		*M16 x 85*	*135*	*175*	*3.1*
6½ O.D.	*6.500*	*750*	*24,887*	*0 -¼*	*8*	*11*	*2⅛*	*2*	*⅝ x 3½*	*100*	*130*	*7.6*
165.1	165.1	51.7	110.70	0 - 6.4	203	279	54		M16 x 85	135	175	3.4
6	6.625	750	25,854	0 -¼	8⅛	11⅛	2⅛	2	⅝ x 3½	100	130	7.9
150	*168.3*	*51.7*	*115.00*	*0 - 6.4*	*206*	*283*	*54*		*M16 x 85*	*135*	*175*	*3.6*
8	8.625	600	35,056	0 -¼	10½	14⅛	2⅝	2	¾ x 4½	130	180	15.9
200	*219.1*	*51.7*	*155.94*	*0 - 6.4*	*267*	*359*	*67*		*M20 x 110*	*175*	*245*	*7.2*
10	10.750	500	45,381	0 -¼	12⅞	17½	2⅝	2	1 x 6	200	250	25.6
250	*273.1*	*51.7*	*201.87*	*0 - 6.4*	*327*	*445*	*67*		*M24 x 150*	*270*	*340*	*11.6*
12	12.750	400	51,070	0 -¼	15	19½	2⅝	2	⅞ x 6	180	220	30.5
300	*323.9*	*51.7*	*227.17*	*0 - 6.4*	*381*	*495*	*67*		*M22 x 150*	*245*	*300*	*13.8*
14	14.000	300	46,181	0 -¼	16¼	19¾	3	2	⅞ x 5½	180	220	36.1
350	*355.6*	*20.7*	*205.43*	*0 - 6.4*	*413*	*502*	*76*			*245*	*300*	*16.4*
16	16.000	300	60,319	0 -¼	18⅛	22¼	3	3	⅞ x 5½	180	220	42.0
400	*406.4*	*20.7*	*268.31*	*0 - 6.4*	*460*	*565*	*76*			*245*	*300*	*19.1*
18	18.000	300	76,341	0 -¼	20½	24⅜	3⅛	4	1 x 4	200	250	51.6
450	*457.2*	*20.7*	*339.58*	*0 - 6.4*	*521*	*619*	*79*			*270*	*340*	*23.4*
20	20.000	300	94,248	0 -¼	23	26⅞	3⅛	4	1 x 4	200	250	68.3
500	*508.0*	*20.7*	*419.23*	*0 - 6.4*	*581*	*683*	*79*			*270*	*340*	*31.0*
24	24.000	250	113,097	0 -¼	27⅛	30⅞	3⅛	4	1 x 4	200	250	89.3
600	*609.6*	*17.2*	*503.08*	*0 - 6.4*	*689*	*784*	*79*			*270*	*340*	*40.5*

* Available in ANSI or metric bolt sizes only as indicated.

For additional details see "Coupling Data Chart Notes" from page 15.

Not for use in copper systems.

§ – For additional Bolt Torque information, see page 171.

See Installation & Assembly directions on page 146.

FIG. 7000

Lightweight Flexible Coupling

APPROVED
For listing/approval details contact your Gruvlok Representative.

The Fig. 7000 Lightweight Flexible Coupling is designed for applications where system flexibility is desired.

The Fig. 7000 Coupling is approximately 30% lighter in weight than the Fig. 7001 Coupling, and allows for working pressure ratings up to 600 psi (41.4 bar).

The Figure 7000 Lightweight Flexible Coupling is intended for use in several applications. See gasket Grade Index for gasket recommendations.

See technical data section for design factors.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap (1" - 8") (1¼" size not available)

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7000

Lightweight Flexible Coupling

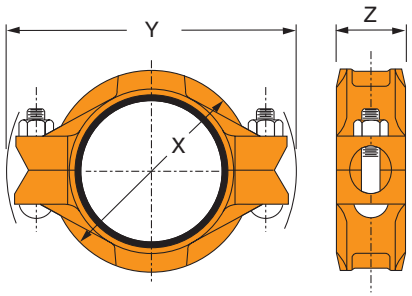


FIGURE 7000 COUPLING

Nominal Size	O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					Per Coupling	Per in./ft.	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees*	*mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-M*		*Lbs./Kg*
1	1.315	600	815	0 -⅛	5° 26'	1.14	2⅜	4¼	1¾	2	⅜ x 2¼	30	45	1.3
25	*33.4*	*41.4*	*3.62*	*0 - 3.2*		*94.7*	*60*	*108*	*44*		*M10 x 57*	*40*	*60*	*0.6*
1¼	1.660	600	1,299	0 -⅛	4° 19'	0.90	2¾	4⅜	1¾	2	⅜ x 2¼	30	45	1.4
32	*42.2*	*41.4*	*5.78*	*0 - 3.2*		*75.3*	*70*	*111*	*44*		*M10 x 57*	*40*	*60*	*0.6*
1½	1.900	600	1,701	0 -⅛	3° 46'	0.79	3	4⅝	1¾	2	⅜ x 2¼	30	45	1.5
40	*48.3*	*41.4*	*7.57*	*0 - 3.2*		*65.7*	*76*	*117*	*44*		*M10 x 57*	*40*	*60*	*0.7*
2	2.375	600	2,658	0 -⅛	3° 1'	0.63	3½	5½	1¾	2	⅜ x 2¼	30	45	1.7
50	*60.3*	*41.4*	*11.82*	*0 - 3.2*		*52.6*	*89*	*140*	*44*		*M10 x 57*	*40*	*60*	*0.8*
2½	2.875	600	3,895	0 -⅛	2° 29'	0.52	4	5¾	1¾	2	⅜ x 2¼	30	45	1.9
65	*73.0*	*41.4*	*17.33*	*0 - 3.2*		*43.3*	*102*	*146*	*44*		*M10 x 57*	*40*	*60*	*0.9*
3 O.D.	*2.996*	*600*	*4,230*	*0 -⅛*	*2° 23'*	*0.50*	*4*	*6⅛*	*1¾*	*2*	*⅜ x 2¼*	*80*	*100*	*2.3*
76.1	76.1	41.4	18.82	0 - 3.2		41.6	102	156	44		M10 x 57	110	150	1.0
3	3.500	600	5,773	0 -⅛	2° 3'	0.43	4⅝	6¾	1¾	2	½ x 2¾	80	100	2.9
80	*88.9*	*41.4*	*25.68*	*0 - 3.2*		*35.8*	*117*	*171*	*44*		*M12 x 70*	*110*	*150*	*1.3*
3½	4.000	600	7,540	0 -⅛	1° 48'	0.38	5⅛	7⅝	1¾	2	½ x 3	80	100	3.1
90	*101.6*	*41.4*	*33.54*	*0 - 3.2*		*31.4*	*130*	*194*	*44*		*M12 x 76*	*110*	*150*	*1.4*
4¼ O.D.	*4.250*	*600*	*8,512*	*0 -¼*	*3° 22'*	*0.70*	*5½*	*7¾*	*2*	*2*	*½ x 3*	*80*	*100*	*4.0*
108.0	108.0	41.4	37.86	0 - 6.4		58.7	140	197	51		M12 x 76	110	150	1.8
4	4.500	600	9,543	0 -¼	3° 11'	0.67	5⅞	8⅛	2	2	½ x 3	80	100	4.6
100	*114.3*	*41.4*	*42.45*	*0 - 6.4*		*55.5*	*149*	*206*	*51*		*M12 x 76*	*110*	*150*	*2.1*
5¼ O.D.	*5.236*	*500*	*10,766*	*0 -¼*	*2° 44'*	*0.57*	*6½*	*9⅛*	*2*	*2*	*⅝ x 3½*	*100*	*130*	*5.7*
133.0	133.0	34.5	47.89	0 - 6.4		47.7	165	232	51		M16 x 85	135	175	2.6
5½ O.D.	*5.500*	*500*	*11,879*	*0 -¼*	*2° 36'*	*0.54*	*6¾*	*9⅜*	*2*	*2*	*⅝ x 3½*	*100*	*130*	*6*
139.7	139.7	34.5	52.84	0 - 6.4		45.4	171	238	51		M16 x 85	135	175	2.7
5	5.563	500	12,153	0 -¼	2° 35'	0.54	7	9⅝	2	2	⅝ x 3½	100	130	6.1
125	*141.3*	*34.5*	*54.06*	*0 - 6.4*		*45.1*	*178*	*244*	*51*		*M16 x 85*	*135*	*175*	*2.8*
6¼ O.D.	*6.259*	*500*	*15,384*	*0 -¼*	*2° 17'*	*0.48*	*7½*	*10⅜*	*2*	*2*	*⅝ x 3½*	*100*	*130*	*6.7*
159.0	159.0	34.5	68.43	0 - 6.4		39.8	191	264	51		M16 x 85	135	175	3.0
6½ O.D.	*6.500*	*500*	*16,592*	*0 -¼*	*2° 12'*	*0.46*	*7¾*	*10¾*	*2*	*2*	*⅝ x 3½*	*100*	*130*	*7.0*
165.1	165.1	34.5	73.80	0 - 6.4		34.8	197	273	51		M16 x 85	135	175	3.2
6	6.625	500	17,236	0 -¼	2° 10'	0.45	8	11	2	2	⅝ x 3½	100	130	8.1
150	*168.3*	*34.5*	*76.67*	*0 - 6.4*		*37.8*	*203*	*279*	*51*		*M16 x 85*	*135*	*175*	*3.7*
8	8.625	500	29,213	0 -¼	1° 40'	0.35	10	13¼	2⅜	2	¾ x 4½	130	180	14.2
200	*219.1*	*34.5*	*129.95*	*0 - 6.4*		*29.1*	*264*	*337*	*60*		*M20 x 110*	*175*	*245*	*6.4*

For additional details see "Coupling Data Chart Notes" from page 15.

§ – For additional Bolt Torque information, see page 171.

Not for use in copper systems.

See Installation & Assembly directions on page 147.

FIG. 7400

Rigidlite® Coupling

APPROVED
For listing/approval details contact your Gruvlok Representative.

The Fig. 7400 Rigidlite Coupling from Gruvlok is specially designed to provide a rigid, locked-in pipe connection to meet the specific demands of rigid design steel pipe and copper tube systems. Fast and easy swing-over installation of the rugged lightweight housing produces a secure, rigid pipe joint.

The Fig. 7400 Rigidlite Coupling is UL/ULC Listed and FM Approved for 300 psi (20.7 bar) with roll grooved or cut grooved steel pipe prepared in accordance with Gruvlok grooving specifications. Figure 7400 Rigidlite Coupling is available with the Grade "E" EPDM, "C" Style Gasket intended for use with the Gruvlok Advanced Copper Method.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap (1" - 8") (1¼" size not available)
"EG" Style

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7400

Rigidlite® Coupling

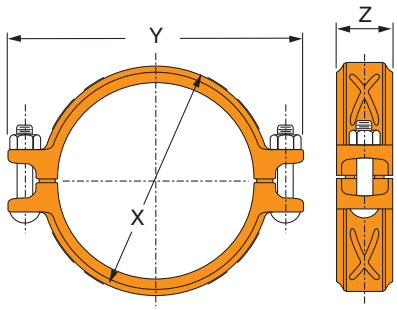


FIGURE 7400 RIGIDLITE COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-M*		*Lbs./Kg*
1	1.315	300	407	0 -⅛	2¼	4½	1¾	2	⅜ x 2¼	30	45	1.2
25	*33.4*	*20.7*	*1.81*	*0 - 3.2*	*57*	*114*	*44*		*M10 x 57*	*40*	*60*	*0.5*
1¼	1.660	300	649	0 -⅛	2⅝	4¾	1¾	2	⅜ x 2¼	30	45	1.3
32	*42.2*	*20.7*	*2.89*	*0 - 3.2*	*67*	*121*	*44*		*M10 x 57*	*40*	*60*	*0.6*
1½	1.900	300	851	0 -⅛	2⅞	4⅞	1¾	2	⅜ x 2¼	30	45	1.4
40	*48.3*	*20.7*	*3.78*	*0 - 3.2*	*73*	*124*	*44*		*M10 x 57*	*40*	*60*	*0.6*
2	2.375	300	1,329	0 -⅛	3¼	5½	1¾	2	⅜ x 2¼	30	45	1.6
50	*60.3*	*20.7*	*5.91*	*0 - 3.2*	*83*	*140*	*44*		*M10 x 57*	*40*	*60*	*0.7*
2½	2.875	300	1,948	0 -⅛	3⅞	6	1¾	2	⅜ x 2¼	30	45	1.9
65	*73.0*	*20.7*	*8.66*	*0 - 3.2*	*98*	*152*	*44*		*M10 x 57*	*40*	*60*	*0.9*
3 O.D.	*2.996*	*300*	*2,115*	*0 -⅛*	*4*	*5⅞*	*1¾*	*2*	*⅜ x 2¼*	*30*	*45*	*1.9*
76.1	76.1	20.7	9.41	0 - 3.2	102	149	44		M10 x 57	40	60	0.9
3	3.500	300	2,886	0 -⅛	4½	6¾	1¾	2	⅜ x 2¾	30	45	2.1
80	*88.9*	*20.7*	*12.84*	*0 - 3.2*	*114*	*171*	*44*		*M10 x 70*	*40*	*60*	*1.0*
4	4.500	300	4,771	0 -¼	5⅝	7¾	1⅞	2	⅜ x 2¾	30	45	3.1
100	*114.3*	*20.7*	*21.22*	*0 - 6.4*	*143*	*197*	*48*		*M10 x 70*	*40*	*60*	*1.4*
5½ O.D.	*5.500*	*300*	*7,127*	*0 -¼*	*6¾*	*9¼*	*2*	*2*	*½ x 3*	*80*	*100*	*4.5*
139.7	139.7	20.7	31.70	0 - 6.4	171	235	51		M12 x 76	110	150	2.0
5	5.563	300	7,292	0 -¼	6⅞	9¼	2	2	½ x 3	80	100	4.6
125	*141.3*	*20.7*	*32.44*	*0 - 6.4*	*175*	*235*	*51*		*M12 x 76*	*110*	*150*	*2.1*
6½ O.D.	*6.500*	*300*	*9,955*	*0 -¼*	*7¾*	*10⅜*	*2*	*2*	*½ x 3*	*80*	*100*	*5.5*
165.1	165.1	20.7	44.28	0 - 6.4	200	264	51		M12 x 76	110	150	2.5
6	6.625	300	10,341	0 -¼	7⅞	10⅜	2	2	½ x 3	80	100	5.5
150	*168.3*	*20.7*	*46.00*	*0 - 6.4*	*200*	*264*	*51*		*M12 x 76*	*110*	*150*	*2.5*
8	8.625	300	17,528	0 -⅛	10¼	12¾	2⅜	2	½ x 3	80	100	8.4
200	*219.1*	*20.7*	*77.97*	*0 - 3.2*	*260*	*324*	*60*		*M12 x 76*	*110*	*150*	*3.8*

For additional details see "Coupling Data Chart Notes" from page 15.

§ – For additional Bolt Torque information, see page 171.

See Installation & Assembly directions on page 148.

Other sizes available, contact a Gruvlok Representative for more information.

FIG. 7003

Hingelok® Coupling

1½" - 4"

5" - 8"

The Fig. 7003 Hingelok Coupling is specially designed for applications requiring a quick connection and/or disconnection of a pipe joint. The Fig. 7003 Hingelok Coupling is ideal for those applications where frequent pipe removal is required for maintenance or any other reason. Fig. 7003 Hingelok Coupling provides for system working pressure ratings up to 300 psi (20.7 bar).

The Fig. 7003 Hingelok Coupling halves are permanently hinged to provide an assembly that eases handling and installation. The two coupling halves are hinged for ease of handling and are secured by a cam-action handle. Sizes 1½" to 4" use toggle link plates and sizes 5" to 8" use a toggle bolt to attach the cam-action handle to the housings. The cam-action locking handle permits rapid installation without the need for additional tools and maintains secure closure of the coupling into the pipe grooves. Final assembly of the locking pin to the Hingelok Coupling adds an extra measure of security required in critical pipe joint applications.

MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

HANDLE:
Sizes 1½" - 4": Cold Rolled Carbon Steel Handles
Sizes 5" - 8": Cast Ductile Iron Handles

LINKS:
Sizes 1½" - 4": Cold Rolled Carbon Steel Links
Sizes 5" - 8": Heat Treated Steel Links

LOCKING PIN:
Locking Pin: Spring Steel

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services
DO NOT USE GRUVLOK XTREME LUBRICANT WITH GRADE "L" SILICONE GASKET

GASKET TYPE:
Standard C Style
Flush Gap (1½" - 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7003

Hingelok® Coupling

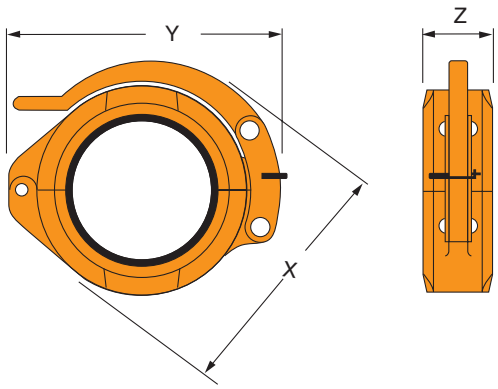


FIGURE 7003 HINGELOK COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Approx. Wt. Ea.
					Per Coupling	Per in./ft.	X	Y	Z	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees*	*mm/m*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1½	1.900	300	851	0 -⅛	3° 46'	0.79	3⅝	4¼	1⅞	1.7
40	*48.3*	*20.7*	*3.78*	*0 - 3.2*		*65.7*	*92*	*108*	*48*	*0.8*
2	2.375	300	1,329	0 -⅛	3° 1'	0.63	4¼	4⅞	1⅞	2.2
50	*60.3*	*20.7*	*5.91*	*0 - 3.2*		*52.6*	*108*	*124*	*48*	*1.0*
2½	2.875	300	1,948	0 -⅛	2° 29'	0.52	5¼	5⅞	1⅞	3.2
65	*73.0*	*20.7*	*8.66*	*0 - 3.2*		*43.3*	*133*	*149*	*48*	*1.5*
3	3.500	300	2,886	0 -⅛	2° 3'	0.43	5⅝	6½	1⅞	3.6
80	*88.9*	*20.7*	*12.84*	*0 - 3.2*		*35.8*	*143*	*165*	*48*	*1.6*
4	4.500	300	4,771	0 -¼	3° 11'	0.67	7	7¾	2	5.1
100	*114.3*	*20.7*	*21.22*	*0 - 6.4*		*55.5*	*178*	*197*	*51*	*2.3*
5	5.563	300	7,292	0 -¼	2° 35'	0.54	8⅝	9½	2⅛	9.5
125	*141.3*	*20.7*	*32.44*	*0 - 6.4*		*45.1*	*219*	*241*	*54*	*4.3*
6	6.625	300	10,341	0 -¼	2° 10'	0.45	9⅞	10⅞	2⅛	11.2
150	*168.3*	*20.7*	*46.00*	*0 - 6.4*		*37.8*	*251*	*276*	*54*	*5.1*
8	8.625	300	17,528	0 -¼	1° 40'	0.35	12	13⅛	2½	18.1
200	*219.1*	*20.7*	*77.97*	*0 - 6.4*		*29.1*	*305*	*333*	*64*	*8.2*

SPECIAL NOTE:

Fig. 7003 Hingelok Couplings are not designed for eccentric loading and therefore are not recommended for use at the end of concrete pumping booms or vertical risers above 30 feet (9.1 meters). Shockload must be considered and is to be included in the maximum working pressure listed above. Coupling keys, gasket cavity, and pipe grooves must be kept free of all foreign matter. Proper anchoring practice must always be exercised.

For additional details see “Coupling Data Chart Notes” from page 15.

Not for use in copper systems.

See Installation & Assembly directions on page 149.

CAUTION:

Hammering or banging on the handle or coupling housing could cause serious damage to the locking device and coupling assembly.

The result may be an unsuitable pipe joint and unusable coupling assembly.

When re-using, always check for gasket damage, housing hinge and handle for looseness, distortion bent or any other damage.

FIG. 7010

Reducing Coupling

The Fig. 7010 Reducing Coupling makes it possible to directly connect two different pipe sizes, eliminating the need for two couplings and a reducing fitting. The specially designed reducing coupling gasket with a center rib assures proper positioning of the gasket and prevents the smaller pipe from telescoping into the larger during assembly. Fig. 7010 Reducing Coupling allows for working pressure ratings up to 500 PSI (34.5 bar).

UL FM ULC
APPROVED
For listing/approval details contact your Gruvlok Representative.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12, or
Malleable Iron conforming to ASTM A47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code)

-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.

NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)

-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.

NOT FOR USE IN HOT WATER OR HOT AIR

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7010

Reducing Coupling

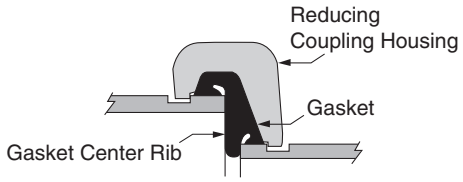


Fig. 7010
Coupling with Gasket

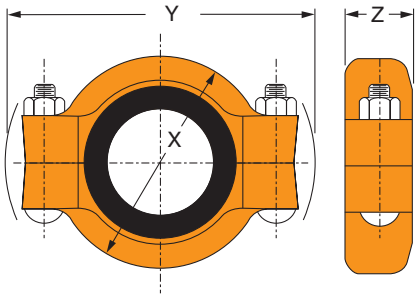


FIGURE 7010 REDUCING COUPLING

Nominal Size	Larger O.D.	Smaller O.D.	Max. Working Pressure	Max. End Load	Range of Pipe End Separation	Deflection from ℄		Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
						Per Coupling	Per in./ft.	X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Degrees*	*mm/m*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft.-Lbs./N-M*		*Lbs./Kg*
2 x 1½	2.375	1.900	500	2,215	0 -⅛	1° 53'	0.39	3⅝	5⅞	1⅞	2	½ x 2¾	80	100	2.0
50 x 40	*60.3*	*48.3*	*34.5*	*9.85*	*0 - 3.2*		*32.9*	*92*	*149*	*48*		*M12 x 70*	*110*	*150*	*0.9*
2½ x 2	2.875	2.375	500	3,246	0 -⅛	1° 33'	0.32	4¼	6⅜	1⅞	2	½ x 2¾	80	100	3.5
65 x 50	*73.0*	*60.3*	*34.5*	*14.44*	*0 - 3.2*		*27.0*	*108*	*162*	*48*		*M12 x 70*	*110*	*150*	*1.6*
3 x 2	3.500	2.375	500	4,811	0 -⅛	1° 17'	0.27	4⅞	7⅛	1⅞	2	½ x 2¾	80	100	4.4
80 x 50	*88.9*	*60.3*	*34.5*	*21.40*	*0 - 3.2*		*22.4*	*124*	*181*	*48*		*M12 x 70*	*110*	*150*	*2.0*
3 x 2½	3.500	2.875	500	4,811	0 -⅛	1° 17'	0.27	4⅞	7⅛	1⅞	2	½ x 2¾	80	100	4.1
80 x 65	*88.9*	*73.0*	*34.5*	*21.40*	*0 - 3.2*		*22.4*	*124*	*181*	*48*		*M12 x 70*	*110*	*150*	*1.9*
4 x 2	4.500	2.375	500	7,952	0 -3⁄16	2° 38'	0.55	6¼	8⅞	2	2	⅝ x 3½	100	130	8.9
100 x 50	*114.3*	*60.3*	*34.5*	*35.37*	*0 - 4.8*		*45.9*	*159*	*225*	*51*		*M16 x 85*	*135*	*175*	*4.0*
4 x 2½	4.500	2.875	500	7,952	0 -3⁄16	2° 38'	0.55	6¼	8⅞	2	2	⅝ x 3½	100	130	7.9
100 x 65	*114.3*	*73.0*	*34.5*	*35.37*	*0 - 4.8*		*45.9*	*159*	*225*	*51*		*M16 x 85*	*135*	*175*	*3.6*
4 x 3	4.500	3.500	500	7,952	0 -3⁄16	2° 38'	0.55	6¼	8⅞	2	2	⅝ x 3½	100	130	6.7
100 x 80	*114.3*	*88.9*	*34.5*	*35.37*	*0 - 4.8*		*45.9*	*159*	*225*	*51*		*M16 x 85*	*135*	*175*	*3.0*
5 x 4	5.563	4.500	500	12,153	0 -¼	2° 5'	0.44	7¼	10⅝	2⅛	2	¾ x 4½	130	180	11.4
125 x 100	*141.3*	*114.3*	*34.5*	*54.06*	*0 - 6.4*		*36.4*	*184*	*270*	*54*		*M20 x 110*	*175*	*245*	*5.2*
6 x 4	6.625	4.500	500	17,236	0 -¼	1° 44'	0.36	8¼	11⅝	2⅛	2	¾ x 4½	130	180	13.4
150 x 100	*168.3*	*114.3*	*34.5*	*76.67*	*0 - 6.4*		*30.2*	*210*	*295*	*54*		*M20 x 110*	*175*	*245*	*6.1*
6 x 5	6.625	5.562	500	17,236	0 -¼	1° 44'	0.36	8½	11⅝	2⅛	2	¾ x 4½	130	180	13.5
150 x 125	*168.3*	*141.3*	*34.5*	*76.67*	*0 - 6.4*		*30.2*	*216*	*295*	*54*		*M20 x 110*	*175*	*245*	*6.1*
8 x 6	8.625	6.625	500	29,213	0 -¼	1° 15'	0.26	10½	14	2¼	2	¾ x 4½	130	180	17.7
200 x 150	*219.1*	*168.3*	*34.5*	*129.95*	*0 - 6.4*		*21.8*	*267*	*356*	*57*		*M20 x 110*	*175*	*245*	*8.0*

For additional details see "Coupling Data Chart Notes" from page 15.

§ – For additional Bolt Torque information, see page 171.

Not for use in copper systems.

See Installation & Assembly directions on page 150.

Fig 7010 reducing coupling should not be used with the end caps in systems where a vacuum may be developed. Contact your Anvil Rep for details.

FIG. 7012

Gruvlok Flanges

Sizes 2" - 12"

Sizes 14" - 24"

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The Gruvlok® Fig. 7012 Flange allows direct connection of Class 125 or Class 150 flanged components to a grooved piping system.The two interlocking halves of the 2" thru 12" sizes of the Gruvlok Flange are hinged for ease of handling, and are drawn together by a latch bolt which eases assembly on the pipe. Precision machined bolt holes, key and mating surfaces assure concentricity and flatness to provide exact fit-up with flanged, lug, and wafer styles of pipe system equipment. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

The 14" thru 24" sizes of the Gruvlok Fig. 7012 Flange are cast in four segments. A sleek profile gasket design allows quick and easy assembly of the Gruvlok Flange onto the pipe.

All Gruvlok Fig. 7012 Flanges have designed-in anti-rotation tangs which bite into and grip the sides of the pipe grooves to provide a secure, rigid connection.

The Gruvlok Fig. 7012 Flange requires the use of a steel adapter insert when used against rubber faced surfaces, wafer/lug design valves and serrated or irregular sealing surfaces. In copper systems a phenolic adapter insert is required, in place of the steel adapter insert. (See Installation and Assembly Instructions Section or contact your Anvil Rep. for details.)

MATERIAL SPECIFICATIONS

LATCH BOLT/NUT (2" - 12")
SEGMENT BOLT/NUT (14" - 24"):
Heat treated, zinc electroplated, carbon steel oval neck track bolts conforming to ASTM A-183 and zinc electroplated carbon steel heavy hex nuts conforming to ASTM A-563.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A-536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard), Red (optional)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D-2000

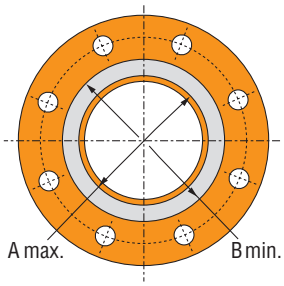
Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

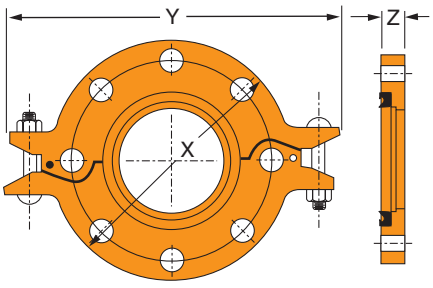
Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

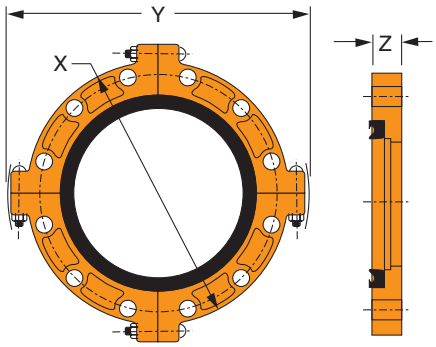
FIG. 7012

Gruvlok Flanges





2"-12" sizes



14"-24" sizes

Gruvlok Figure 7012 Flange: ANSI Class 150 or ISO PN10 or PN16 Bolt Patterns

Nominal Size	O.D.	Max. Working Pressure▼	Max. End Load▼	Latch Bolt			Dimensions			Sealing Surface		Mating Flange Bolts				Approx. Wt. Ea.
				Latch* Bolt Size	Specified Torque §							Mating Flange Bolts		Specified Torque §		
					Min.	Max.	X	Y	Z	A Max.	B Min.	Qty. ANSI	Size (ANSI)	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Ft.-Lbs/N-M*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*PN10 (16)*	in. *(ISO) mm*	*Ft.-Lbs/N-M*		*Lbs./Kg*
2	2.375	300	1,329	3/8 x 2 3/4	30	45	6 1/4	8 3/8	3/4	2 3/8	3 7/16	4	5/8 x 2 3/4	110	140	4.2
50	*60.3*	*20.7*	*5.91*	*M10 x 70*	*40*	*60*	*159*	*213*	*19*	*60*	*87*	*4*	*M16 x 70*	*149*	*190*	*1.9*
2 1/2	2.875	300	1,948	3/8 x 2 3/4	30	45	7	9 1/2	3/4	2 7/8	4	4	5/8 x 2 3/4	110	140	4.6
65	*73.0*	*20.7*	*8.66*	*M10 x 70*	*40*	*60*	*178*	*241*	*19*	*73*	*102*	*-*	*M16 x 70*	*149*	*190*	*2.1*
3 O.D.	*2.996*	*300*	*2,115*	*-*	*30*	*45*	*7 1/4*	*9 3/4*	*3/4*	*3*	*4 1/8*	*-*	*-*	*110*	*140*	*4.8*
76.1	76.1	20.7	9.41	M10 x 70	40	60	184	248	19	76	105	4	M16 x 70	149	190	2.2
3	3.500	300	2,886	3/8 x 2 3/4	30	45	7 7/8	10 1/2	3/4	3 1/2	4 9/16	4	5/8 x 2 3/4	110	140	6.0
88.9	*88.9*	*20.7*	*12.84*	*M10 x 70*	*40*	*60*	*200*	*267*	*19*	*89*	*116*	*8*	*M16 x 70*	*149*	*190*	*2.7*
4	4.500	300	4,771	3/8 x 2 3/4	30	45	9	11 1/2	3/4	4 1/2	5 9/16	8	5/8 x 2 3/4	110	140	6.3
100	*114.3*	*20.7*	*21.22*	*M10 x 70*	*40*	*60*	*229*	*292*	*19*	*114*	*141*	*8*	*M16 x 70*	*149*	*190*	*2.9*
5 1/2 O.D.	*5.500*	*300*	*7,127*	*-*	*30*	*45*	*9 7/8*	*12 7/8*	*7/8*	*5 9/16*	*6 3/4*	*-*	*-*	*220*	*250*	*15.6*
139.7	139.7	20.7	31.70	M10 x 70	40	60	251	327	22	141	171	8	M16 x 75	298	339	7.1
5	5.563	300	7,292	3/8 x 2 3/4	30	45	10	12 1/2	7/8	5 9/16	6 3/4	8	3/4 x 2 7/8	220	250	8.8
125	*141.3*	*20.7*	*32.44*	*M10 x 70*	*40*	*60*	*254*	*318*	*22*	*141*	*171*	*-*	*-*	*298*	*339*	*4.0*
6 1/2 O.D.	*6.500*	*300*	*9,955*	*-*	*30*	*45*	*11 1/4*	*14*	*7/8*	*6 5/8*	*7 13/16*	*-*	*-*	*220*	*250*	*9.7*
165.1	165.1	20.7	44.28	M10 x 70	40	60	286	356	22	168	198	8	M20 x 80	298	339	4.4
6	6.625	300	10,341	3/8 x 2 3/4	30	45	11	14	7/8	6 5/8	7 13/16	8	3/4 x 3 1/8	220	250	9.6
150	*168.3*	*20.7*	*46.00*	*M10 x 70*	*40*	*60*	*279*	*356*	*22*	*168*	*198*	*8*	*M20 x 80*	*298*	*339*	*4.4*
8	8.625	300	17,528	3/8 x 2 3/4	30	45	13 1/2	16 1/2	1	8 5/8	10	8	3/4 x 3 1/4	220	250	15.6
200	*219.1*	*20.7*	*77.97*	*M10 x 70*	*40*	*60*	*343*	*419*	*25*	*219*	*254*	*8 (12)*	*M20 x 80*	*298*	*339*	*7.1*
10	10.750	300	27,229	3/8 x 2 3/4	30	45	16	19	1	10 3/4	12 1/8	12	7/8 x 3 1/2	320	400	18.2
250	*273.1*	*20.7*	*121.12*	*M10 x 70*	*40*	*60*	*406*	*483*	*25*	*273*	*308*	*12*	*M20 x 90*	*439*	*542*	*8.3*
12	12.750	300	38,303	3/8 x 2 3/4	30	45	19	21 3/4	1 1/4	12 3/4	14 1/8	12	7/8 x 3 3/4	320	400	29.9
300	*323.9*	*20.7*	*170.38*	*M10 x 70*	*40*	*60*	*483*	*552*	*32*	*324*	*359*	*12*	*-*	*439*	*542*	*13.6*
12 (PN)	*12.750*	*300*	*38,303*	*-*	*30*	*45*	*18 1/8*	*21 1/4*	*1*	*12 3/4*	*14 1/8*	*12*	*-*	*320*	*400*	*20.9*
300	323.9	20.7	170.38	M10 x 70	40	60	460	540	25	324	359	12	M20 x 90 ✣	439	542	9.5
14	14.000	300	46,181	5/8 x 4 1/4	100	130	21	24	1 1/2	14	16	12	1 x 4 1/4	360	520	52.5
350	*355.6*	*20.7*	*205.43*	*-*	*136*	*176*	*533*	*610*	*38*	*356*	*406*	*-*	*-*	*488*	*705*	*23.8*
16	16.000	300	60,319	5/8 x 4 1/4	100	130	23 1/2	26 1/2	1 1/2	16	18	16	1 x 4 1/4	360	520	67.0
400	*406.4*	*20.7*	*268.31*	*-*	*136*	*176*	*597*	*673*	*38*	*406*	*457*	*-*	*-*	*488*	*705*	*30.4*
18	18.000	300	76,341	3/4 x 5	130	180	25	29	1 5/8	18	20	16	1 1/8 x 4 3/4	450	725	82.5
450	*457.2*	*20.7*	*339.58*	*-*	*176*	*244*	*635*	*737*	*41*	*457*	*508*	*-*	*–*	*610*	*983*	*37.4*
20	20.000	300	94,248	3/4 x 5	130	180	27 1/2	31 1/2	1 3/4	20	22	20	1 1/8 x 4 3/4	450	725	106.5
500	*508.0*	*20.7*	*419.23*	*-*	*176*	*244*	*699*	*800*	*44*	*508*	*559*	*-*	*–*	*610*	*983*	*48.3*
24	24.000	250	113,097	7/8 x 5 1/2	180	220	32	36 1/2	1 7/8	24	26	20	1 1/4 x 5 1/2	620	1,000	138.5
600	*609.6*	*17.2*	*503.08*	*-*	*244*	*298*	*813*	*927*	*48*	*610*	*660*	*-*	*-*	*841*	*1,356*	*62.8*

✣ PN 16 uses M24 x 90 (PN) Dimensions for bolt circle PN 10 & 16 Flange.

* Available in ANSI or metric bolt sizes only as indicated.

▼ Based on use with standard wall pipe.

§ – For additional Bolt Torque information, see page 171.

The Gruvlok Flange bolt hole pattern conforms to ANSI Class 150 and Class 125 flanges.

To avoid interference issues, flanges cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve only.

Mating flange bolts must be at least Intermediate Strength Bolting per ASME B16.5. Bolts with material properties equal or greater than SAE J429 Grade 5 are acceptable.

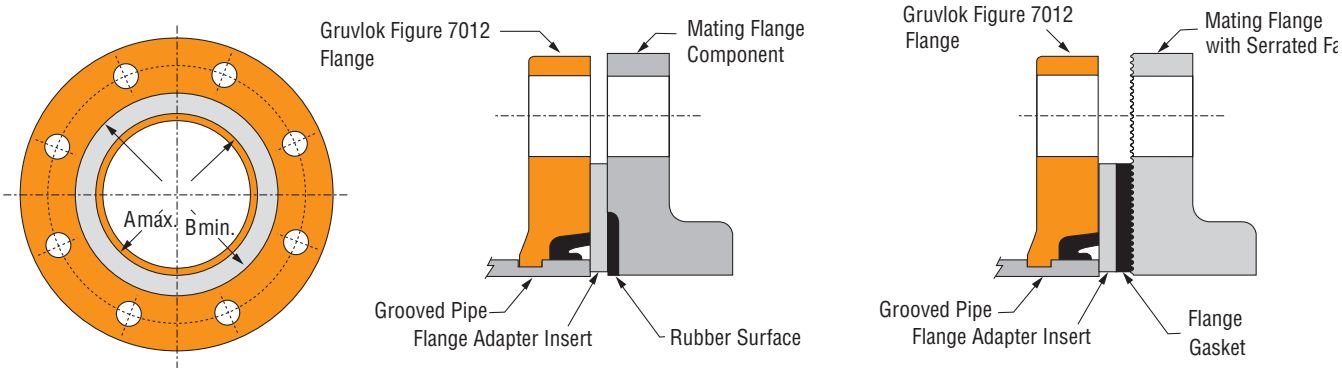
Refer to Gruvlok Products Catalog or Anvil's web site for more information on installing this flange.

See Installation & Assembly directions on page 151-153.

For additional details see "Coupling Data Chart Notes" from page 15.

FIG. 7012

Gruvlok Flanges



A. The sealing surfaces A Max. to B. Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tie-rods across non-restrained joints.

E. Fig. 7012 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

G. Contact Gruvlok for Di-Electric Flange connections.

Applications which require a Gruvlok Flange Adapter Insert:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

FIG. 7013

Gruvlok Flanges (#300 Flange)

The Gruvlok Fig. 7013 300# Flange allows direct connection of Class 250 or Class 300 flanged components to a Gruvlok piping system. The two halves of the 2" thru 12" sizes of both Gruvlok Flanges are drawn together by a latch bolt which eases assembly on the pipe. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

Gruvlok Flanges have designed-in anti-rotation tangs which bite into and grip the side of the pipe groove to provide a secure, rigid connection.

Gruvlok flange adapter insert required when mating to rubber surfaces or serrated faced mating flanges.

APPROVED
For listing/approval details contact your Gruvlok Representative.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

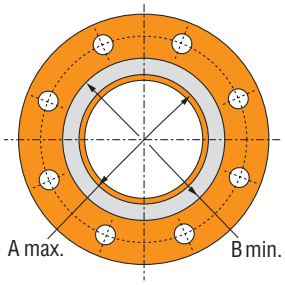
Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

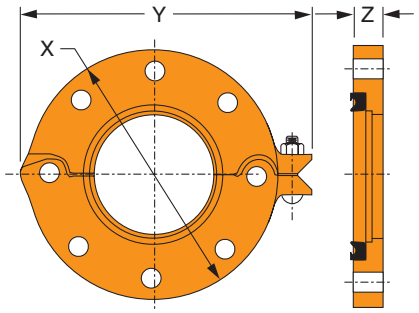
Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use for Grade "L")

FIG. 7013

Gruvlok Flanges (#300 Flange)





GRUVLOK FIGURE 7013 FLANGE: ANSI CLASS 250 AND 300 BOLT PATTERN															
Nominal Size	O.D.	Max. Wk. Pressure ▼	Max. End Load ▼	Latch* Bolt Size	Specified Torque §		Dimensions			Sealing Surface		Mating Flange Bolts		Approx. Wt. Ea.
					Min.	Max.	X	Y	Z	A Max.	B Min.	Qty. ANSI	Size (ANSI) in.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In.*	*Ft.-Lbs/N-M*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*(ISO) mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	750 *51.7*	3,323 *14.78*	⅜ x 2½ -	30 -	45 -	6½ *165*	8 *203*	1 *25*	2⅜ *60*	3 7/16 *87*	8 -	⅝ x 3 -	5.0 *2.3*
2½ *65*	2.875 *73.0*	750 *51.7*	4,869 *21.66*	⅜ x 2½ -	30 -	45 -	7½ *191*	9⅛ *232*	1 *25*	2⅞ *73*	4 *102*	8 -	¾ x 3¼ -	6.9 *3.1*
3 *80*	3.500 *88.9*	750 *51.7*	7,216 *32.10*	⅜ x 2½ -	30 -	45 -	8¼ *210*	9⅞ *251*	1⅛ *29*	3½ *89*	4 9/16 *116*	8 -	¾ x 3½ -	9.4 *4.3*
4 *100*	4.500 *114.3*	750 *51.7*	11,928 *53.06*	⅜ x 2½ -	30 -	45 -	10 *254*	11⅜ *289*	1¼ *32*	4½ *114*	5⅝ *143*	8 -	¾ x 3¾ -	14.4 *6.5*
5 *125*	5.563 *141.3*	750 *51.7*	18,229 *81.09*	⅜ x 2½ -	30 -	45 -	11 *279*	12⅝ *321*	1⅜ *35*	5 9/16 *141*	6¾ *171*	8 -	¾ x 4½ -	18.3 *8.3*
6 *150*	6.625 *168.3*	750 *51.7*	25,854 *115.00*	⅜ x 2½ -	30 -	45 -	12½ *318*	14⅛ *359*	1½ *38*	6⅝ *168*	7 13/16 *198*	12 -	¾ x 4½ -	24.9 *11.3*
8 *200*	8.625 *219.1*	750 *51.7*	43,820 *194.92*	½ x 3½ -	80 -	100 -	15 *381*	16⅞ *429*	1⅝ *41*	8⅝ *219*	10 *254*	12 -	⅞ x 4¾ -	35.4 *16.1*
10 *250*	10.750 *273.1*	750 *51.7*	68,072 *302.80*	½ x 3½ -	80 -	100 -	17½ *445*	19⅜ *492*	1⅞ *48*	10¾ *273*	12⅛ *308*	16 -	1 x 5 -	54.0 *24.5*
12 *300*	12.750 *323.9*	750 *51.7*	95,757 *425.95*	½ x 3½ -	80 -	100 -	20½ *521*	22½ *572*	2 *51*	12¾ *324*	14 3/16 *360*	16 -	1⅛ x 5¾ -	74.8 *33.9*

* Available in ANSI or metric bolt sizes only as indicated.

Effective sealing area of mating flange must be free from gouges, undulations or deformities of any type to ensure proper sealing of the gasket.

Flange cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve.

▼ Based on use with standard wall pipe.

Not for use with copper systems.

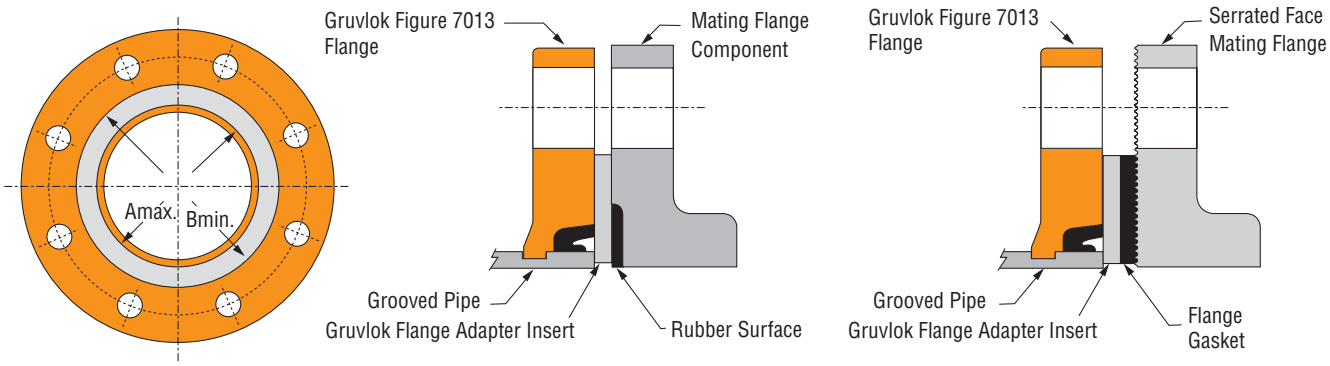
For additional details see “Coupling Data Chart Notes” from page 15.

§ – For additional Bolt Torque information, see page 171.

See Installation & Assembly directions contact your Gruvlok Rep.

FIG. 7013

Gruvlok Flanges (#300 Flange)



A. The sealing surfaces A Max. to B. Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tie-rods across non-restrained joints.

E. Fig. 7013 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

G. Contact Gruvlok for Di-Electric Flange connections.

Applications which require a Gruvlok Flange Adapter Insert:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

FIG. 7240

Expansion Joints

The Gruvlok® Figure 7240 Expansion Joints take advantage of the axial expansion capabilities of the Gruvlok flexible couplings to produce a reliable grooved end expansion joint. The expansion joints are comprised of the Gruvlok Figure 7000 or 7001 flexible couplings and precision machined grooved end pipe nipples. Ties are used to custom preset the expansion joints in the expanded, compressed or intermediate position to provide for the desired expansion and/or contraction compensation.

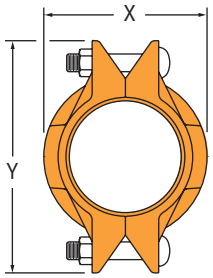
NOTE: Expansion joint shown with shipping support. Contact a Gruvlok® representative for proper installation support requirements.

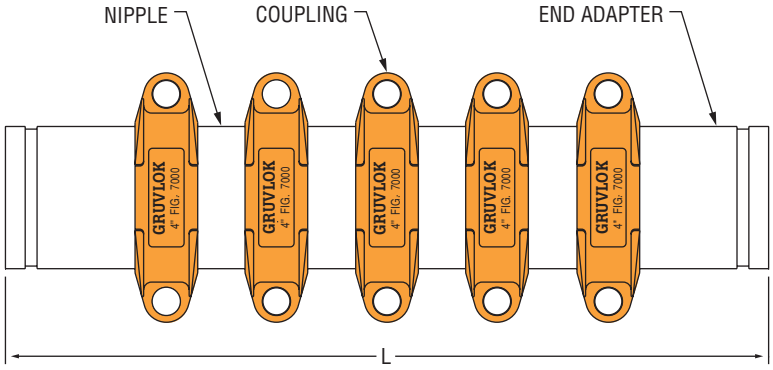
Installation is easy, simply follow the Gruvlok coupling installation and assembly instructions to install the expansion joint in the system and after installation is complete, remove the ties.

The expansion joints can be used as flexible connectors, however, they will not simultaneously provide for full axial expansion and angular deflection. Expansion joints require pipe anchoring capable of restraining the maximum system pressure end load.

The service conditions are the same as the service conditions for coupling and gasket used in the expansions joint. Unless otherwise requested, this product will contain a silicone based lubricant. Refer to the Gruvlok catalog for coupling performance capabilities and material specifications. To order please provide the order form on the page 194.

NOTE: The Gruvlok Figure 7240 Expansion Joint is also available in stainless steel for use in grooved copper systems.





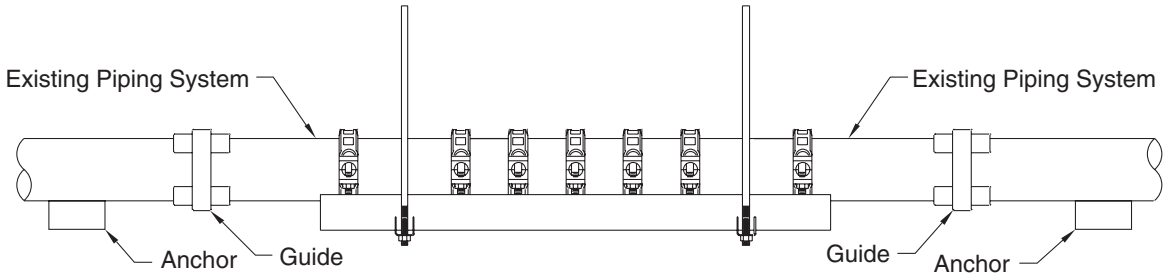
PERFORMANCE DATA (INCHES)

Nominal Size	O.D.	Coupling Figure	X	Y	Compressed Length L	Expanded Length L	Coupling Movement Capability	Number of Couplings	Total Movement Capability
In./DN(mm)	*In./mm*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*
2 *50*	2.375 *60.3*	7000	3½ *89*	5½ *125*	30 *450*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
2½ *65*	2.875 *73.0*	7000	4 *100*	5¾ *146*	30 *450*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
3 *80*	3.500 *88.9*	7000	4⅝ *117*	6¾ *171*	30 *450*	31¼ *794*	⅛ *3.2*	10	1¼ *31.8*
4 *100*	4.500 *114.3*	7000	5⅞ *149*	8⅛ *206*	17½ *445*	18¾ *476*	¼ *6.4*	5	1¼ *31.8*
5 *125*	5.562 *141.3*	7000	7 *178*	9⅝ *244*	19 *483*	20¼ *514*	¼ *6.4*	5	1¼ *31.8*
6 *150*	6.625 *168.3*	7000	8 *200*	11 *279*	19 *483*	20¼ *514*	¼ *6.4*	5	1¼ *31.8*
8 *200*	8.625 *219.0*	7000	10⅜ *264*	13¼ *337*	22½ *572*	23¾ *603*	¼ *6.4*	5	1¼ *31.8*
10 *250*	10.750 *273.1*	7001	12⅞ *327*	17½ *445*	23½ *597*	24¾ *629*	¼ *6.4*	5	1¼ *31.8*
12 *300*	12.750 *323.9*	7001	15 *381*	19½ *495*	23½ *597*	24¾ *629*	¼ *6.4*	5	1¼ *31.8*

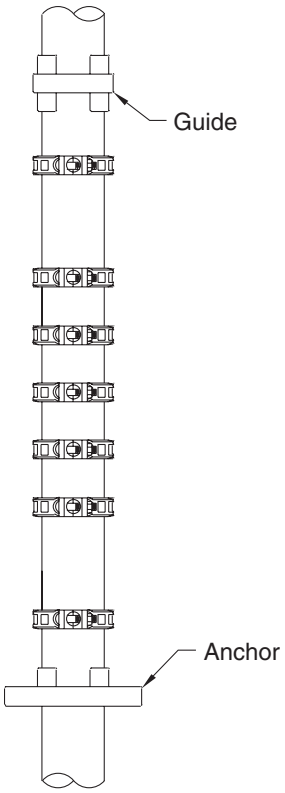
FIG. 7240

Expansion Joints

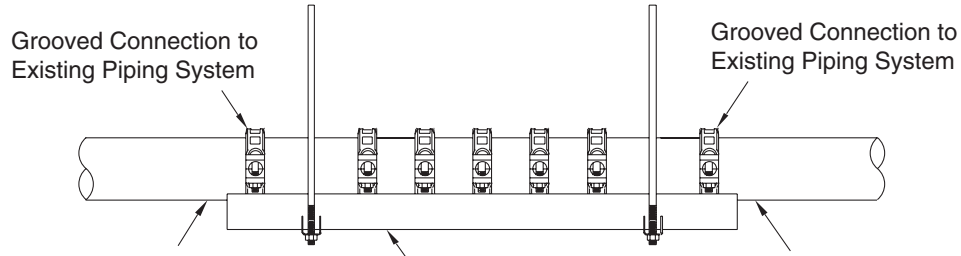
HANGER DETAILS



Vertical Support



Horizontal Support



Gruvlok Fig. 7240 Expansion Joint and Trough Hanger

Trough and Hanger

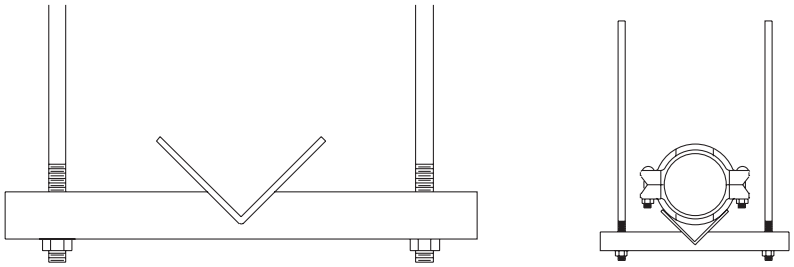


FIG. 7042

Outlet Coupling

The Gruvlok Fig. 7042 Outlet Coupling is designed to join two sections of grooved end pipe and form a reducing outlet connection. The outlet couplings are available for the 1½" through 6" IPS or ISO run pipe sizes with the outlet pipe sizes ranging from ½" through 2".

Assembly of the coupling will create a gap between the pipe ends allowing the space required for the introduction of an outlet connection. The outlet connections are available grooved (Fig. 7042G), FPT (Fig. 7042F) and MPT (Fig. 7042M).

The gaskets are available in EPDM and Nitrile to suit a wide range of applications. The gasket design is a unique pressure responsive design that provides a higher sealing force as pressure is increased. The outlet gasket seal is reinforced by a steel ring and is mated to a machined housing surface to assure a leak-tight outlet seal. Center ribs inside the gasket ease positioning of the pipe during installation and provide additional support to the gasket. The outlet couplings are **NOT** recommended for vacuum applications or for use with the Gruvlok Advanced Copper Method.

The Figure 7074 Cast Caps are **NOT** recommended for use on run connections. Figure 7075 Bull Plugs must be used on end of line run connections. Figure 7074 Cast Caps may be used on Figure 7042G outlet connections. Flow into the outlet connection of the Figure 7042 Outlet Couplings must not exceed 7 ft./sec.

APPROVED
For listing/approval details contact your Gruvlok Representative.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

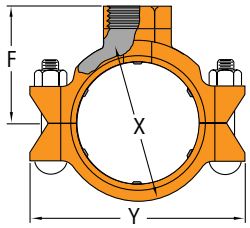
Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 150°F (Service Temperature Range)(-40°C to 66°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 150°F (Service Temperature Range)(-29°C to 66°C)
Recommended for petroleum applications. air with oil vapor and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

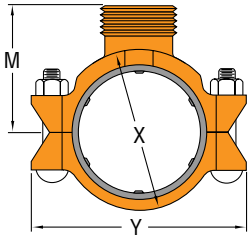
LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7042

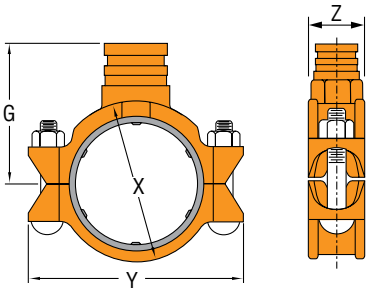
Outlet Coupling



Female IPS Outlet- 7042F



Male IPS Outlet - 7042M



Grooved Outlet - 7042G

Figure 7042 - Outlet Coupling

Nominal Pipe Size			Working Pressure	Max. Run End Load	Range of Pipe End Separation	Coupling Dimensions						Bolt Size	Approx. Wt. Each
Run	Outlet FPT F	Outlet MPT/Grv. M/G				X	Y	Z	FPT F	MPT M	Grv. G		
In./DN(mm)	*In./mm*	*In./mm*	*psi/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1½ 40	½ 15	— —	500 34.5	1418 6.31	¾-1 1/16 19-27	2 15/16 75	4¾ 121	2¾ 70	2 1/16 52	— —	— —	⅜ x 2⅛ -	2.6 1.2
	¾ 20	— —	500 34.5	1418 6.31	¾-1 1/16 19-27	2 15/16 75	4¾ 121	2¾ 70	2 1/16 52	— —	— —	⅜ x 2⅛ -	2.6 1.2
	1 25	— —	5 00 34.5	1418 6.31	¾-1 1/16 19-27	2 15/16 75	4¾ 121	2¾ 70	1 15/16 49	— —	— —	⅜ x 2⅛ -	2.9 1.3
2 50	½ 15	— —	500 34.5	2215 9.85	1 1/16-1 17-25	3 7/16 87	5¼ 133	2¾ 70	2 5/16 59	— —	— —	⅜ x 2⅛ -	3.1 1.4
	¾ 20	— —	500 34.5	2215 9.85	1 1/16-1 17-25	3 7/16 87	5¼ 133	2¾ 70	2 5/16 59	— —	— —	⅜ x 2⅛ -	3.1 1.4
	1 25	1 25	500 34.5	2215 9.85	1 1/16-1 17-25	3 7/16 87	5¼ 133	2¾ 70	2 3/16 56	2⅞ 73	3½ 89	⅜ x 2⅛ -	3.3 1.5
2½ 65	½ 15	— —	500 34.5	3246 14.44	1 3/16-1½ 30-38	4 3/16 106	6½ 165	3¼ 83	2 9/16 65	— —	— —	½ x 2⅜ -	4.8 2.2
	¾ 20	— —	500 34.5	3246 14.44	1 3/16-1½ 30-38	4 3/16 106	6½ 165	3¼ 83	2 9/16 65	— —	— —	½ x 2⅜ -	4.6 2.1
	1 25	— —	500 34.5	3246 14.44	1 3/16-1½ 30-38	4 3/16 106	6½ 165	3¼ 83	2 7/16 62	— —	— —	½ x 2⅜ -	4.4 2.2
	— —	1¼ 32	500 34.5	3246 14.44	1 3/16-1½ 30-38	4 3/16 106	6½ 165	3¼ 83	— —	3⅝ 92	3⅝ 92	½ x 2⅜ -	5.1 2.3
	— —	1½ 40	500 34.5	3246 14.44	1 3/16-1½ 30-38	4 3/16 106	6½ 165	3¼ 83	— —	3⅝ 92	3⅝ 92	½ x 2⅜ -	5.9 2.4
3 80	¾ 20	— —	500 34.5	4811 21.40	1 3/16-1½ 30-38	4¾ 121	7¼ 184	3¼ 83	2 13/16 72	— —	— —	½ x 3 -	5.9 2.7
	1 25	1 25	500 34.5	4811 21.40	1 3/16-1½ 30-38	4¾ 121	7¼ 184	3¼ 83	2¾ 70	3⅜ 86	4 102	½ x 3 -	6.2 2.8
	— —	1½ 40	500 34.5	4811 21.40	1 3/16-1½ 30-38	4¾ 121	7¼ 184	3¼ 83	— —	4 102	4 102	½ x 3 -	6.4 2.9
4 100	¾ 20	— —	500 34.5	7952 35.37	1 9/16-1⅞ 40-48	6 3/16 157	8⅞ 225	3⅝ 92	3 11/16 94	— —	— —	⅝ x 3½ -	9.2 4.2
	1 25	— —	500 34.5	7952 35.37	1 9/16-1⅞ 40-48	6 3/16 157	8⅞ 225	3⅝ 92	3 9/16 91	— —	— —	⅝ x 3½ -	9.5 4.3
	— —	1½ 25	500 34.5	7952 35.37	1 9/16-1⅞ 40-48	6 3/16 157	8⅞ 225	3⅝ 92	— —	4⅞ 124	4⅞ 124	⅝ x 3½ -	9.5 4.3
	— —	2 50	500 34.5	7952 35.37	1 9/16-1⅞ 40-48	6 3/16 157	8⅞ 225	3⅝ 92	— —	4⅞ 124	4⅞ 124	⅝ x 3½ -	9.9 4.5
6 150	1 25	— —	500 34.5	17236 76.66	1⅝-1 15/16 41-51	8⅛ 206	11¼ 286	3¾ 95	4¾ 121	— —	— —	⅝ x 3½ -	13.2 6.0
	1½ 40	1½ 40	500 34.5	17236 76.66	1⅝-1 15/16 41-51	8⅛ 206	11¼ 286	3¾ 95	4¾ 121	6 152	6 152	⅝ x 3½ -	13.6 6.2
	— —	2 50	500 34.5	17236 76.66	1⅝-1 15/16 41-51	8⅛ 206	11¼ 286	3¾ 95	— —	6 152	6 152	⅝ x 3½ -	14.3 6.5

Pipe ends must be prepared in accordance with Gruvlok "Roll or Cut Groove Specifications for Steel and Other IPS or ISO size Pipe".
Pressure and end load ratings are for use with standard wall steel pipe.
For a one-time field test only, the maximum working pressure may be increased 1½ times the figure shown.
Not for use in copper systems.
For additional details see "Coupling Data Chart Notes" from page 15.
See Installation & Assembly directions on page 154..

FIG. 7045

Clamp-T, FPT Branch

The Gruvlok Clamp-T provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045 Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046 Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available in various sizes allowing greater versatility in piping design.

NOTE: Variable End Configurations are Possible --
Thd x Thd and Gr. x Thd.
Sizes -- 2" x 1/2" through 8" x 4"

UL UL C FM
APPROVED
For listing/approval details contact your Gruvlok Representative.

CLAMP-T FLOW DATA (FRICTIONAL RESISTANCE)

Branch Size Inches	Fig. 7045 Threaded Branch	
	C.V. Value	Equiv. Pipe Length Feet
DN/mm		*Meters*
1/2	22	1.0
15	-	*0.3*
3/4	25	2.0
20	-	*0.6*
1	44	2.0
25	-	*0.6*
1 1/4	76	2.5
32	-	*0.8*
1 1/2	89	4.0
40	-	*1.2*
2	164	3.5
50	-	*1.1*
2 1/2	152	12.5
65	-	*3.8*
3	318	8.5
80	-	*2.6*
4	536	8.0
100	-	*2.4*

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

U-BOLT:
Cold drawn steel and zinc plated.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12 or Malleable Iron conforming to ASTM A47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements Contact a Gruvlok Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7045

Clamp-T, FPT Branch

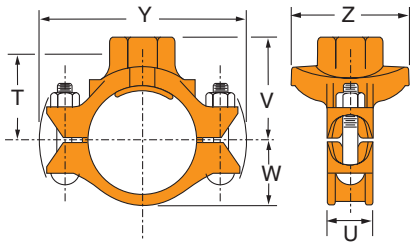


Fig. 7045

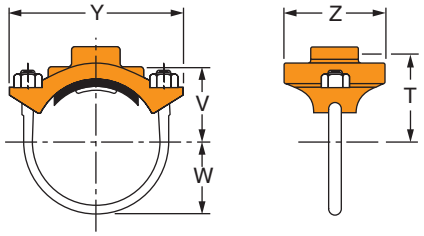


Fig. 7045 (U-Bolt)

FIGURE 7045-FPT BRANCH (TABLE CONTINUES TO NEXT PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-M*		*Lbs./Kg*
2 x ½ *50 x 15*	2.375 x 0.840 *60.3 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 3/16 *56*	9/16 *14*	2⅝ *67*	½ *12*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.3 *1.0*
2 x ¾ *50 x 20*	2.375 x 1.050 *60.3 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 1/16 *52*	9/16 *14*	2⅝ *67*	1½ *38*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.3 *1.0*
2 x 1 *50 x 25*	2.375 x 1.315 *60.3 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	1 15/16 *51*	9/16 *14*	2⅝ *67*	1½ *38*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.6 *1.2*
2 x 1¼ *50 x 32*	2.375 x 1.660 *60.3 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1½ *38*	5½ *140*	3½ *89*	½ U-Bolt -	30	40	2.7 *1.2*
2 x 1½ *50 x 40*	2.375 x 1.900 *60.3 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1½ *38*	7 *178*	3½ *89*	½ U-Bolt -	30	40	2.5 *1.1*
2½ x ½ *65 x 15*	2.875 x 0.840 *73.0 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 7/16 *62*	9/16 *14*	2⅞ *73*	1¾ *44*	5½ *140*	3 *76*	½ U-Bolt -	30	40	3.0 *1.4*
2½ x ¾ *65 x 20*	2.875 x 1.050 *73.0 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 5/16 *59*	9/16 *14*	2⅞ *73*	1¾ *44*	5½ *140*	3 *76*	½ U-Bolt -	30	40	2.9 *1.3*
2½ x 1 *65 x 25*	2.875 x 1.315 *73.0 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 3/16 *55*	9/16 *14*	2⅞ *73*	1¾ *44*	6⅛ *156*	3 *76*	½ U-Bolt -	30	40	2.9 *1.3*
2½ x 1¼ *65 x 32*	2.875 x 1.660 *73.0 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 7/16 *62*	9/16 *14*	3⅛ *79*	1¾ *44*	6⅛ *156*	3⅜ *86*	½ U-Bolt -	30	40	3.4 *1.5*
2½ x 1½ *65 x 40*	2.875 x 1.900 *73.0 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 7/16 *62*	9/16 *14*	3⅛ *79*	1¾ *44*	6⅛ *156*	3⅜ *86*	½ U-Bolt -	30	40	3.4 *1.5*
3 x ½ *80 x 15*	3.500 x 0.840 *88.9 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	2 9/16 *65*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.8 *1.2*
3 x ¾ *80 x 20*	3.500 x 1.050 *88.9 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 7/16 *62*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
3 x 1 *80 x 25*	3.500 x 1.315 *88.9 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 5/16 *59*	9/16 *14*	3 *76*	2⅛ *54*	7 *178*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
3 x 1¼ *80 x 32*	3.500 x 1.660 *88.9 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	3¾ *95*	½ x 2¾ -	80	100	3.4 *1.5*
3 x 1½ *80 x 40*	3.500 x 1.900 *88.9 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	3¾ *95*	½ x 2¾ -	80	100	4.4 *2.0*
3 x 2 *80 x 50*	3.500 x 2.375 *88.9 x 60.3*	2½ *64*	2⅝ *67*	500 *34.5*	2 11/16 *68*	1½ *38*	3⅜ *86*	2⅛ *54*	6⅞ *175*	4⅛ *105*	½ x 2¾ -	80	100	4.6 *2.1*
4 x ½ *100 x 15*	4.500 x 0.840 *114.3 x 21.3*	1½ *38*	1⅝ *41*	500 *34.5*	3 1/16 *76*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.9 *1.3*
4 x ¾ *100 x 20*	4.500 x 1.050 *114.3 x 26.7*	1½ *38*	1⅝ *41*	500 *34.5*	3 1/16 *78*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.8 *1.3*
4 x 1 *100 x 25*	4.500 x 1.315 *114.3 x 33.7*	1½ *38*	1⅝ *41*	500 *34.5*	2 13/16 *73*	9/16 *14*	3½ *89*	2⅝ *67*	7¾ *197*	3¾ *95*	½ U-Bolt -	30	40	2.7 *1.2*
4 x 1¼ *100 x 32*	4.500 x 1.660 *114.3 x 42.4*	2 *51*	2⅛ *54*	500 *34.5*	3 3/16 *81*	1⅞ *48*	3⅞ *98*	2⅝ *67*	7½ *191*	3¾ *95*	½ x 2¾ -	80	100	4.5 *2.0*
4 x 1½ *100 x 40*	4.500 x 1.900 *114.3 x 48.3*	2 *51*	2⅛ *54*	500 *34.5*	3 3/16 *81*	1⅞ *48*	3⅞ *98*	2⅝ *67*	7½ *191*	3¾ *95*	½ x 2¾ -	80	100	4.6 *2.1*
4 x 2 *100 x 50*	4.500 x 2.375 *114.3 x 60.3*	2½ *64*	2⅝ *67*	500 *34.5*	3 5/16 *84*	1⅞ *48*	4 *102*	2⅝ *67*	7½ *191*	4⅛ *105*	½ x 2¾ -	80	100	7.7 *3.5*
4 x 2½ *100 x 65*	4.500 x 2.875 *114.3 x 73.0*	2¾ *70*	2⅞ *73*	500 *34.5*	3 1/16 *78*	1⅞ *48*	4 *102*	2⅝ *67*	7½ *191*	4⅜ *111*	½ x 2¾ -	80	100	5.2 *2.4*
4 x 3 O.D. 100 x 80	*4.500 x 2.996* 114.3 x 76.1	*2¾* 70	*2⅞* 73	*500* 34.5	*3* 76	*1⅞* 48	*4* 102	*2⅝* 67	*7½* 191	*4⅜* 111	*½ x 2¾* -	*80*	*100*	*5.2* 2.4
4 x 3 *100 x 80*	4.500 x 3.500 *114.3 x 88.9*	3½ *89*	3⅝ *92*	500 *34.5*	3¼ *83*	1⅞ *48*	4¼ *108*	2⅝ *67*	7½ *191*	5¼ *133*	½ x 3½ -	80	100	6.5 *2.9*

NOTE: 2½", 5" and 6" Nom. size run pipe may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe

▼ Based on use with standard wall pipe.

Not for use in copper systems.

§ – For additional Bolt Torque information, see page 171.

(Additional larger sizes on next page.)

See Installation & Assembly directions on page 155.

FIG. 7045

Clamp-T, FPT Branch

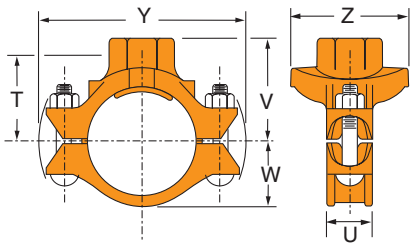


Fig. 7045

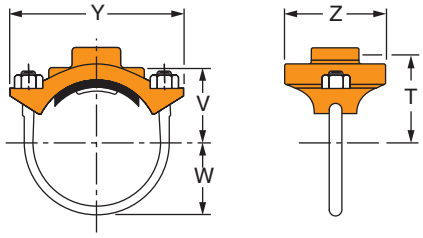


Fig. 7045
(U-Bolt)

FIGURE 7045-FPT BRANCH (CONTINUED FROM PREVIOUS PAGE)

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions						Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		T	U	V Threaded	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-M*		*Lbs./Kg*
5 x 1¼	5.563 x 1.660	2	2⅛	500	3 11/16	1⅞	4⅜	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.4
125 x 32	*141.3 x 42.4*	*51*	*54*	*34.5*	*94*	*48*	*111*	*83*	*232*	*95*	-			*2.4*
5 x 1½	5.563 x 1.900	2	2⅛	500	3 11/16	1⅞	4⅜	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.5
125 x 40	*141.3 x 48.3*	*51*	*54*	*34.5*	*94*	*48*	*111*	*83*	*232*	*95*	-			*2.5*
5 x 2	5.563 x 2.375	2½	2⅝	500	3 13/16	1⅞	4½	3¼	9⅛	4⅛	⅝ x 3¼	100	130	5.7
125 x 50	*141.3 x 60.3*	*64*	*67*	*34.5*	*97*	*48*	*114*	*83*	*232*	*105*	-			*2.6*
5 x 2½	5.563 x 2.875	2¾	2⅞	500	3 13/16	1⅞	4¾	3¼	9⅛	4⅜	⅝ x 3¼	100	130	7.0
125 x 65	*141.3 x 73.0*	*70*	*73*	*34.5*	*97*	*48*	*121*	*83*	*232*	*111*	-			*3.2*
5 x 3 O.D.	*5.563 x 2.996*	*2¾*	*2⅞*	*500*	*3¾*	*1⅞*	*4¾*	*3¼*	*9⅛*	*4⅜*	*¾ x 4½*	*130*	*180*	*7.0*
141.3 x 76.1	141.3 x 76.1	70	73	34.5	95	48	121	83	232	111	-			3.2
5 x 3	5.563 x 3.500	3½	3⅝	500	4	1⅞	5	3¼	9⅛	5¼	⅝ x 3¼	100	130	8.7
125 x 80	*141.3 x 88.9*	*89*	*92*	*34.5*	*102*	*48*	*127*	*83*	*232*	*133*	-			*3.9*
6 x 1¼	6.625 x 1.660	2	2⅛	500	4 3/16	2	4⅞	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.8
150 x 32	*168.3 x 42.4*	*51*	*54*	*34.5*	*106*	*51*	*124*	*98*	*257*	*95*	-			*3.5*
6 x 1½	6.625 x 1.900	2	2⅛	500	4 3/16	2	4⅞	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.8
150 x 40	*168.3 x 48.3*	*51*	*54*	*34.5*	*106*	*51*	*124*	*98*	*257*	*95*	-			*3.5*
6 x 2	6.625 x 2.375	2½	2⅝	500	4 3/16	2	4⅞	3⅞	10⅛	4⅛	⅝ x 4¼	100	130	7.8
150 x 50	*168.3 x 60.3*	*64*	*67*	*34.5*	*106*	*51*	*124*	*98*	*257*	*105*	-			*3.5*
6 x 2½	6.625 x 2.875	2¾	2⅞	500	4 3/16	2	5⅛	3⅞	10⅛	4⅜	⅝ x 4¼	100	130	8.4
150 x 65	*168.3 x 73.0*	*70*	*73*	*34.5*	*106*	*51*	*130*	*98*	*257*	*111*	-			*3.8*
6 x 3 O.D.	*6.625 x 2.996*	*2¾*	*2⅞*	*500*	*4⅛*	*2*	*5⅛*	*3⅞*	*10⅛*	*4⅜*	*⅝ x 4¼*	*100*	*130*	*8.4*
168.3 x 76.1	168.3 x 76.1	70	73	34.5	105	51	130	98	257	111	-			3.8
6 x 3	6.625 x 3.500	3½	3⅝	500	4⅜	2	5⅜	3⅞	10⅛	5¼	⅝ x 4¼	100	130	9.6
150 x 80	*168.3 x 88.9*	*89*	*92*	*34.5*	*111*	*51*	*137*	*98*	*257*	*133*	-			*4.4*
6 x 4	6.625 x 4.500	4½	4⅝	500	4⅜	2	5½	3⅞	10⅛	6½	⅝ x 4¼	100	130	10.5
150 x 100	*168.3 x 114.3*	*114*	*117*	*34.5*	*111*	*51*	*140*	*98*	*257*	*165*	-			*4.8*
8 x 2	8.625 x 2.750	2½	2⅝	500	5 5/16	2¼	5⅞	5	12¾	4⅛	⅝ x 4¼	100	130	11.2
200 x 50	*219.1 x 70.0*	*64*	*67*	*34.5*	*132*	*57*	*149*	*127*	*324*	*105*	-			*5.1*
8 x 2½	8.625 x 2.875	2¾	2⅞	500	5 5/16	2¼	6¼	5	12¾	4⅜	⅝ x 4¼	100	130	11.1
200 x 65	*219.1 x 73.0*	*70*	*73*	*34.5*	*134*	*57*	*159*	*127*	*324*	*111*	-			*5.0*
8 x 3 O.D.	*8.625 x 2.996*	*2¾*	*2⅞*	*500*	*5¼*	*2¼*	*6¼*	*5*	*12¾*	*4⅜*	*⅝ x 4¼*	*100*	*130*	*11.1*
219.1 x 76.1	219.1 x 76.1	70	73	34.5	133	57	159	127	324	111	-			5.0
8 x 3	8.625 x 3.500	3½	3⅝	500	5⅜	2¼	6⅜	5	12¾	5¼	⅝ x 4¼	100	130	13.0
200 x 80	*219.1 x 88.9*	*89*	*92*	*34.5*	*137*	*57*	*162*	*127*	*324*	*133*	-			*5.9*
8 x 4	8.625 x 4.500	4½	4⅝	500	5⅜	2¼	6½	5	12¾	6½	⅝ x 4¼	100	130	16.2
200 x 100	*219.1 x 114.3*	*114*	*117*	*34.5*	*137*	*57*	*165*	*127*	*324*	*165*	-			*7.3*

NOTE: 2½", 5" and 6" Nom. size run pipe may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe

(Additional smaller sizes on previous page.)

▼ Based on use with standard wall pipe.

Not for use in copper systems.

§ – For additional Bolt Torque information, see page 171.

See Installation & Assembly directions on page 155.

FIG. 7046

Clamp-T, Grooved Branch

The Gruvlok Clamp-T provides a quick and easy outlet at any location along the pipe. A hole drilled or cut in the pipe to receive the locating collar of the Clamp-T is all that is required. The full, smooth outlet area provides for optimum flow characteristics.

The Clamp-T housing is specially engineered to conform to the pipe O.D. and the Clamp-T gasket providing a leak tight reliable seal in both positive pressure and vacuum conditions. The maximum working pressure for all sizes is 500 PSI (34.5 bar) when assembled on standard wall steel pipe.

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

Clamp-T cross connections are available in most sizes allowing greater versatility in piping design.

Clamp-T Flow Data (Frictional Resistance)

Branch Size	Fig. 7046 Grooved Branch	
	C.V. Value	Equiv. Pipe Length
In./DN/mm		*Ft./Meters*
1 1/4	5.4	5.0
32		*1.5*
1 1/2	95	3.5
40		*1.1*
2	148	4.5
50		*1.4*
2 1/2	205	7.0
65		*2.1*
3	294	9.5
80		*2.9*
4	571	7.0
100		*2.1*

UL UL FM APPROVED
For listing/approval details contact your Gruvlok Representative.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

U-BOLT:
Cold drawn steel and zinc plated.

STAINLESS STEEL BOLTS & NUTS:
Stainless Steel Bolts and Nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12 or
Malleable Iron conforming to ASTM A47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7046

Clamp-T, Grooved Branch

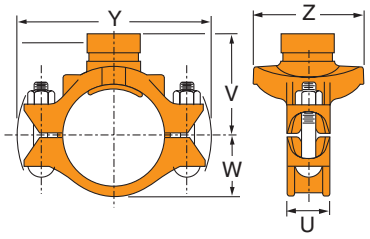


Fig. 7046

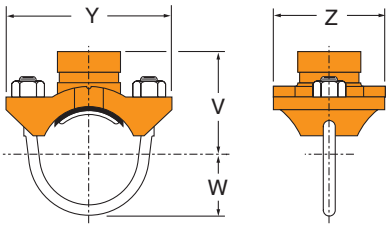


Fig. 7046
(U-BOLT)

FIGURE 7046-GR BRANCH

Nominal Size	O.D.	Hole Dimensions		▼ Max. Working Pressure	Clamp-T Dimensions					Bolt Size	Specified Torque §		Approx. Wt. Each
		Min. Diameter	Max. Diameter		U	V Grooved	W	Y	Z		Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs/N-M*		*Lbs./Kg*
2½ x 1¼•	2.875 x 1.660	2	2⅛	500	9/16	3⅛	1¾	6⅛	3½	½ U-Bolt	30	40	3.4
65 x 32	*73.0 x 42.4*	*51*	*54*	*34.5*	*14*	*79*	*44*	*156*	*89*	-			*1.5*
2½ x 1½	2.875 x 1.900	2	2⅛	500	9/16	3⅛	1¾	6⅛	3½	½ U-Bolt	30	40	3.4
65 x 40	*73.0 x 48.3*	*51*	*54*	*34.5*	*14*	*79*	*44*	*156*	*89*	-			*1.5*
3 x 1¼	3.500 x 1.660	2	2⅛	500	1½	3½	2⅛	6⅞	3¾	½ x 2¾	80	100	3.4
80 x 32	*88.9 x 42.4*	*51*	*54*	*34.5*	*38*	*89*	*54*	*175*	*95*	-			*1.5*
3 x 1½	3.500 x 1.900	2	2⅛	500	1½	3½	2⅛	6⅞	3¾	½ x 2¾	80	100	4.4
80 x 40	*88.9 x 48.3*	*51*	*54*	*34.5*	*38*	*89*	*54*	*175*	*95*	-			*2.0*
3 x 2	3.500 x 2.375	2½	2⅝	500	1½	3½	2⅛	6⅞	4⅛	½ x 2¾	80	100	4.6
80 x 50	*88.9 x 60.3*	*64*	*67*	*34.5*	*38*	*89*	*54*	*175*	*105*	-			*2.1*
4 x 1¼	4.500 x 1.660	2	2⅛	500	1⅞	4	2⅝	7½	3¾	½ x 2¾	80	100	4.2
100 x 32	*114.3 x 42.4*	*51*	*54*	*34.5*	*48*	*102*	*67*	*191*	*95*	-			*1.9*
4 x 1½	4.500 x 1.900	2	2⅛	500	1⅞	4	2⅝	7½	3¾	½ x 2¾	80	100	4.3
100 x 40	*114.3 x 48.3*	*51*	*54*	*34.5*	*48*	*102*	*67*	*191*	*95*	-			*2.0*
4 x 2	4.500 x 2.375	2½	2⅝	500	1⅞	4	2⅝	7½	4⅛	½ x 2¾	80	100	4.6
100 x 50	*114.3 x 60.3*	*64*	*67*	*34.5*	*48*	*102*	*67*	*191*	*105*	-			*2.1*
4 x 2½	4.500 x 2.875	2¾	2⅞	500	1⅞	4	2⅝	7½	4⅜	½ x 2¾	80	100	5.0
100 x 65	*114.3 x 73.0*	*70*	*73*	*34.5*	*48*	*102*	*67*	*191*	*111*	-			*2.3*
4 x 3 O.D.	*4.500 x 2.996*	*2¾*	*2⅞*	*500*	*1⅞*	*4*	*2⅝*	*7½*	*4⅜*	*½ x 2¾*	*80*	*100*	*5.0*
114.3 x 76.1	114.3 x 76.1	70	73	34.5	48	102	67	191	111	-			2.3
4 x 3	4.500 x 3.500	3½	3⅝	500	1⅞	4	2⅝	7½	5¼	½ x 3½	80	100	5.6
100 x 80	*114.3 x 88.9*	*89*	*92*	*34.5*	*48*	*102*	*67*	*191*	*133*	-			*2.5*
5 x 1¼	5.563 x 1.660	2	2⅛	500	1⅞	4¼	3¼	9⅛	3¾	½ x 2¾	80	100	5.6
125 x 32	*141.3 x 42.4*	*51*	*54*	*34.5*	*48*	*108*	*83*	*232*	*95*	-			*2.5*
5 x 1½	5.563 x 1.900	2	2⅛	500	1⅞	4¼	3¼	9⅛	3¾	⅝ x 3¼	100	130	5.6
125 x 40	*141.3 x 48.3*	*51*	*54*	*34.5*	*48*	*108*	*83*	*232*	*95*	-			*2.5*
5 x 2	5.563 x 2.375	2½	2⅝	500	1⅞	4¼	3¼	9⅛	4⅛	⅝ x 3¼	100	130	5.5
125 x 50	*141.3 x 60.3*	*64*	*67*	*34.5*	*48*	*108*	*83*	*232*	*105*	-			*2.5*
5 x 2½	5.563 x 2.875	2¾	2⅞	500	1⅞	4¼	3¼	9⅛	4⅜	⅝ x 3¼	100	130	5.8
125 x 65	*141.3 x 73.0*	*70*	*73*	*34.5*	*48*	*108*	*83*	*232*	*111*	-			*2.6*
5 x 3	5.563 x 3.500	3½	3⅝	500	1⅞	4⅝	3¼	9⅛	5¼	⅝ x 3¼	100	130	7.1
125 x 80	*141.3 x 88.9*	*89*	*92*	*34.5*	*48*	*117*	*83*	*232*	*133*	-			*3.2*
6 x 1½	6.625 x 1.900	2	2⅛	500	2	5	3⅞	10⅛	3¾	⅝ x 4¼	100	130	7.2
150 x 40	*168.3 x 48.3*	*51*	*54*	*34.5*	*51*	*127*	*98*	*257*	*95*	*			*3.3*
6 x 2	6.625 x 2.375	2½	2⅝	500	2	5	3⅞	10⅛	4⅛	⅝ x 4¼	100	130	7.8
150 x 50	*168.3 x 60.3*	*64*	*67*	*34.5*	*51*	*127*	*98*	*257*	*105*	*			*3.5*
6 x 2½	6.625 x 2.875	2¾	2⅞	500	2	5⅛	3⅞	10⅛	4⅜	⅝ x 4¼	100	130	7.6
150 x 65	*168.3 x 73.0*	*70*	*73*	*34.5*	*51*	*130*	*98*	*257*	*111*	*			*3.4*
6 x 3 O.D.	*6.625 x 2.996*	*2¾*	*2⅞*	*500*	*2*	*5⅛*	*3⅞*	*10⅛*	*4⅜*	*⅝ x 4¼*	*100*	*130*	*7.6*
168.3 x 76.1	168.3 x 76.1	70	73	34.5	51	130	98	257	111	*			3.4
6 x 3	6.625 x 3.500	3½	3⅝	500	2	5⅛	3⅞	10⅛	5¼	⅝ x 4¼	100	130	8.0
150 x 80	*168.3 x 88.9*	*89*	*92*	*34.5*	*51*	*130*	*98*	*257*	*133*	*			*3.6*
6 x 4	6.625 x 4.500	4½	4⅝	500	2	5¼	3⅞	10⅛	6½	⅝ x 4¼	100	130	10.4
150 x 100	*168.3 x 114.3*	*114*	*117*	*34.5*	*51*	*133*	*98*	*257*	*165*	*			*4.7*
8 x 2	8.625 x 2.375	2½	2⅝	500	2¼	6⅛	5	12¾	4¼	¾ x 4½	130	180	10.4
200 x 50	*219.1 x 60.3*	*64*	*67*	*34.5*	*57*	*156*	*127*	*324*	*108*	-			*4.7*
8 x 2½	8.625 x 2.875	2¾	2⅞	500	2¼	6⅛	5	12¾	4⅜	¾ x 4½	130	180	10.6
200 x 65	*219.1 x 73.0*	*70*	*73*	*34.5*	*57*	*156*	*127*	*324*	*111*	*M20 x 110*	*175*	*245*	*4.8*
8 x 3	8.625 x 3.500	3½	3⅝	500	2¼	6⅛	5	12¾	5¼	¾ x 4½	130	180	11.5
200 x 80	*219.1 x 88.9*	*89*	*92*	*34.5*	*57*	*156*	*127*	*324*	*133*	*M20 x 110*	*175*	*245*	*5.2*
8 x 4	8.625 x 4.500	4½	4⅝	500	2¼	6¼	5	12¾	6½	¾ x 4½	130	180	16.2
200 x 100	*219.1 x 114.3*	*114*	*117*	*34.5*	*57*	*159*	*127*	*324*	*165*	*M20 x 110*	*175*	*245*	*7.3*

NOTE: 2½", 5" and 6" Nom. size run pipe may be used on 3" O.D., 5½" O.D. and 6½" O.D. pipe

▼ Based on use with standard wall pipe.

Not for use in copper systems.

• Cannot be used in cross configuration.

§ – For additional Bolt Torque information, see page 171.

See Installation & Assembly directions on page 155.

FIG. 7047, FIG. 7048 & FIG. 7049

Clamp-T, Cross

Fig. 7047 Fig. 7048 Fig. 7049

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For listing/approval details contact your Gruvlok Representative.

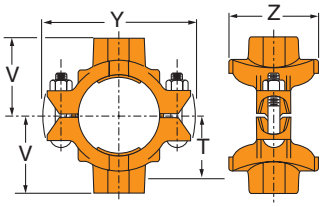


Fig. 7047 – Thread x Thread

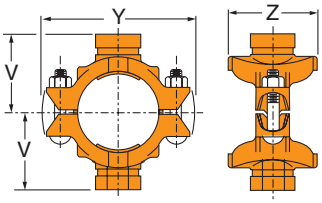


Fig. 7048 – Groove x Groove

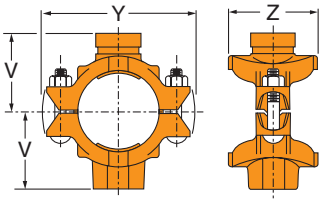


Fig. 7049 – Groove x Thread

The Gruvlok Clamp-T provides for a branch or cross connection in light wall or standard wall steel pipe.

The Fig. 7045 Clamp-T female pipe thread branch is available with NPT or ISO 7/1 connection and the Fig. 7046 Clamp-T has grooved-end branch connection.

Clamp-T cross connections are available allowing greater versatility in piping design.

NOTE: 2½" x 1¼" Figure 7046 cannot be used in cross configuration.

NOTE: In addition, 2 x ½" through 2 x 1½" can now be made into crosses from the new design.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12 or Malleable Iron conforming to ASTM A47, Grade 32510.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative for more information.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

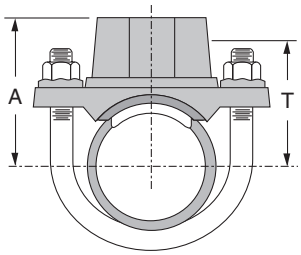
Not for use in copper systems.

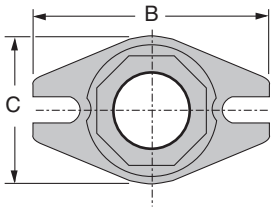
FIG. 7044

Branch Outlet

The Gruvlok Fig. 7044 Branch Outlet is for direct connection of sprinkler heads and drop nipples. Just cut a hole, saddle up and fasten it with the U-bolt. The branch outlet provides an economical, quick, and easy outlet at any location along a pipe. Specially engineered to conform to the pipe O.D., the Fig. 7044 provides a leak tight reliable seal in both positive pressure and vacuum conditions. Ductile iron housings with Grade E gasket and carbon steel U-bolt (⅜" dia.) with flanged nuts. Ductile iron housings is available black.

The maximum working pressure for all sizes is 175 PSI (12.1 bar).





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For listing/approval details contact your Gruvlok Representative.

MATERIAL SPECIFICATIONS

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code)
-40°F to 150°F (Service Temperature Range) (-40°C to 66°C) Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

U-BOLT:
Plated U-bolt conforming to ASTM A-307 with plated hex nuts conforming to ASTM A-563.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™

FIGURE 7044 BRANCH OUTLET

Nominal Size	O.D.	Hole Diameter		Dimensions				Specified Torque §		Approx. Wt. Each
		Min. Dia.	Max. Dia.	A	B	C	Take-out T	Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Ft.-Lbs./N-M*		*Lbs./Kg*
1¼ x ½	1.660 x 0.840	1 3/16	1¼	2 1/16	3½	2 7/32	1⅜	27	33	0.8
32 x 15	*42.4 x 21.3*	*30*	*32*	*53*	*89*	*56*	*35*	-	-	*0.4*
1¼ x ¾	1.660 x 1.050	1 3/16	1¼	2 1/16	3½	2 7/32	1⅜	27	33	0.8
32 x 20	*42.4 x 26.7*	*30*	*32*	*53*	*89*	*56*	*35*	-	-	*0.4*
1¼ x 1	1.660 x 1.315	1 3/16	1¼	2 3/16	3½	2 7/32	1½	27	33	0.9
32 x 25	*42.4 x 33.7*	*30*	*32*	*56*	*89*	*56*	*38*	-	-	*0.4*
1½ x ½	1.900 x 0.840	1 3/16	1¼	2 5/32	3½	2 7/32	1⅜	27	33	0.8
40 x 15	*48.3 x 21.3*	*30*	*32*	*55*	*89*	*56*	*35*	-	-	*0.4*
1½ x ¾	1.900 x 1.050	1 3/16	1¼	2 5/32	3½	2 7/32	1⅜	27	33	0.8
40 x 20	*48.3 x 26.7*	*30*	*32*	*55*	*89*	*56*	*35*	-	-	*0.4*
1½ x 1	1.900 x 1.315	1 3/16	1¼	2 9/32	3½	2 7/32	1½	27	33	0.9
40 x 25	*48.3 x 33.7*	*30*	*32*	*58*	*89*	*56*	*38*	-	-	*0.4*
2 x ½	2.375 x 0.840	1 3/16	1¼	2½	3⅞	2 7/32	1⅝	27	33	0.8
50 x 15	*60.3 x 21.3*	*30*	*32*	*64*	*98*	*56*	*42*	-	-	*0.4*
2 x ¾	2.375 x 1.050	1 3/16	1¼	2½	3⅞	2 7/32	1⅝	27	33	0.8
50 x 20	*60.3 x 26.7*	*30*	*32*	*64*	*98*	*56*	*42*	-	-	*0.4*
2 x 1	2.375 x 1.315	1 3/16	1¼	2⅝	3⅞	2 7/32	1¾	27	33	0.9
50 x 25	*60.3 x 33.7*	*30*	*32*	*67*	*98*	*56*	*45*	-	-	*0.4*
2½ x ½	2.875 x 0.840	1 3/16	1¼	2 11/16	4⅜	2 7/32	2	27	33	0.8
65 x 15	*73.0 x 21.3*	*30*	*32*	*69*	*111*	*56*	*51*	-	-	*0.4*
2½ x ¾	2.875 x 1.050	1 3/16	1¼	2 11/16	4⅜	2 7/32	2	27	33	0.9
65 x 20	*73.0 x 26.7*	*30*	*32*	*69*	*111*	*56*	*51*	-	-	*0.4*
2½ x 1	2.875 x 1.315	1 3/16	1¼	2 13/16	4⅜	2 7/32	2⅛	27	33	1.0
65 x 25	*73.0 x 33.7*	*30*	*32*	*72*	*111*	*56*	*54*	-	-	*0.5*

Not for use in copper systems.

§ – For additional Bolt Torque information, see page 171.

See Installation & Assembly directions on page 156.

GRUVLOK FITTINGS FOR GROOVED-END PIPE

Gruvlok fittings are available through 24" nominal pipe size in a variety of styles. Use the Fitting Size Table to convert nominal pipe size to corresponding pipe O.D.

These fittings are designed to provide minimum pressure drop and uniform strength.

Depending on styles and size, Gruvlok fittings are provided in various materials including malleable iron, ductile iron, forged steel or fabricated steel.

Pressure ratings of Gruvlok standard fittings conform to those of Fig. 7001 Gruvlok coupling.

Not for use in copper systems.

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For listing/approval details contact your Gruvlok Representative.

MATERIAL SPECIFICATIONS

CAST FITTINGS:
Ductile iron conforming to ASTM A 536
Malleable iron conforming to ASTM A 47

FABRICATED FITTINGS:
1-6" Carbon steel, Schedule 40, conforming to ASTM A53, Grade B
8-12" Carbon steel, Schedule 30, conforming to ASTM A53, Grade B
14-24" Carbon steel, 0.375 wall, conforming to ASTM A53, Grade B

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized conforming to ASTM A-153 (optional)
Other Colors Available
(IE: RAL3000 and RAL9000)

Fitting Size

Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
1 *25*	1.315 *33.4*	5 *140*	5.563 *141.3*
1¼ *32*	1.660 *42.4*	*6¼ O.D.* 159.0	*6.259* 159.0
1½ *40*	1.900 *48.3*	*6½ O.D.* 165.1	*6.500* 165.1
2 *50*	2.375 *60.3*	6 *150*	6.625 *168.3*
2½ *65*	2.875 *73.0*	8 *200*	8.625 *219.1*
3 O.D. 76.1	*2.996* 76.1	10 *250*	10.750 *273.0*
3 *80*	3.500 *88.9*	12 *300*	12.750 *323.9*
3½ *65*	4.000 *101.6*	14 *350*	14.000 *355.6*
4¼ O.D. 108.0	*4.250* 108.0	16 *400*	16.000 *406.4*
4 *100*	4.500 *114.3*	18 *450*	18.000 *457.2*
5¼ O.D. 133.0	*5.236* 133.0	20 *500*	20.000 *508.0*
5½ O.D. 139.7	*5.500* 139.7	24 *600*	24.000 *609.6*

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok Fittings are identified by either the Nominal size in inches or the Pipe O.D. in/mm.

Flow Data – Frictional Resistance (Expressed as Equivalent Straight Pipe)

Nom. Size	O.D.	Pipe Wall Thickness	Elbow		Tee	
			90°	45°	Branch	Run
In./DN(mm)	*In./mm*	*In./mm*	*Ft./m*	*Ft./m*	*Ft./m*	*Ft./m*
1 *25*	1.315 *33.4*	0.133 *3.4*	1.7 *0.5*	0.9 *0.3*	4.4 *1.3*	1.7 *0.5*
1¼ *32*	1.660 *42.2*	0.14 *3.6*	2.3 *0.7*	1.2 *0.4*	5.8 *1.8*	2.3 *0.7*
1½ *40*	1.900 *48.3*	0.145 *3.7*	2.7 *0.8*	1.3 *0.4*	6.7 *2.0*	2.7 *0.8*
2 *50*	2.375 *60.3*	0.154 *3.9*	3.4 *1.0*	1.7 *0.5*	8.6 *2.6*	3.4 *1.0*
2½ *65*	2.875 *73.0*	0.203 *5.2*	4.1 *1.2*	2.1 *0.6*	10.3 *3.1*	4.1 *1.2*
3 O.D. 76.1	*2.996* 76.1	*0.197* 5.0	*4.3* 1.3	*2.2* 0.7	*10.8* 3.3	*4.3* 1.3
3 *80*	3.500 *88.9*	0.216 *5.5*	5.1 *1.6*	2.6 *0.8*	12.8 *3.9*	5.1 *1.6*
4¼ O.D. 108.0	*4.250* 108.0	*0.220* 5.6	*6.4* 2.0	*3.2* 1.0	*16.1* 4.9	*6.4* 2.0
4 *100*	4.500 *114.3*	0.237 *6.0*	6.7 *2.0*	3.4 *1.0*	16.8 *5.1*	6.7 *2.0*
5¼ O.D. 133.0	*5.236* 133.0	*0.248* 6.3	*8.0* 2.4	*4.0* 1.2	*20.1* 6.1	*8.0* 2.4
5½ O.D. 139.7	*5.500* 139.7	*0.248* 6.3	*8.3* 2.5	*4.2* 1.3	*20.9* 6.4	*8.3* 2.5
5 *125*	5.563 *141.3*	0.258 *6.6*	8.4 *2.6*	4.2 *1.3*	21.0 *6.4*	8.4 *2.6*
6¼ O.D. 159.0	*6.259* 159.0	*0.280* 7.1	*9.7* 3.0	*4.9* 1.5	*24.3* 7.4	*9.7* 3.0
6½ O.D. 165.1	*6.500* 165.1	*0.280* 7.1	*10.0* 3.0	*5.0* 1.5	*24.9* 7.6	*10.0* 3.0
6 *150*	6.625 *168.3*	0.280 *7.1*	10.1 *3.1*	5.1 *1.6*	25.3 *7.7*	10.1 *3.1*
8 *200*	8.625 *219.1*	0.322 *8.2*	13.3 *4.1*	6.7 *2.0*	33.3 *10.1*	13.3 *4.1*
10 *250*	10.750 *273.1*	0.365 *9.3*	16.7 *5.1*	8.4 *2.6*	41.8 *12.7*	16.7 *5.1*
12 *300*	12.750 *323.9*	0.375 *9.5*	20.0 *6.1*	10.0 *3.0*	50.0 *15.2*	20.0 *6.1*
14 *350*	14.000 *355.6*	0.375 *9.5*	22.2 *6.8*	17.7 *5.4*	64.2 *19.6*	22.9 *7.0*
16 *400*	16.000 *406.4*	0.375 *9.5*	25.5 *7.8*	20.4 *6.2*	73.9 *22.5*	26.4 *8.0*
18 *450*	18.000 *457.2*	0.375 *9.5*	28.9 *8.8*	23.1 *7.0*	87.2 *26.6*	31.1 *9.5*
20 *500*	20.000 *508.0*	0.375 *9.5*	32.2 *9.8*	25.7 *7.8*	97.3 *29.7*	34.8 *10.6*
24 *600*	24.000 *609.6*	0.375 *9.5*	38.9 *11.9*	31.1 *9.5*	113.0 *34.4*	40.4 *12.3*

For the reducing tee and branches, use the value that is corresponding to the branch size. For example: for 6" x 6" x 3" tee, the branch value of 3" is 12.8 ft (3.9).

FIG. 7050

90° Elbow*

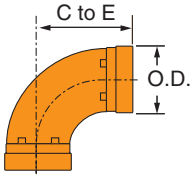

FIGURE 7050 90° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1	1.315	2¼ C	0.6
25	*33.4*	*57*	*0.3*
1¼	1.660	2¾ C	1.0
32	*42.2*	*70*	*0.5*
1½	1.900	2¾ C	1.2
40	*48.3*	*70*	*0.5*
2	2.375	3¼ C	1.7
50	*60.3*	*83*	*0.8*
2½	2.875	3¾ C	2.6
65	*73.0*	*95*	*1.2*
3 O.D.	*2.996*	*4 C*	*3.6*
76.1	76.1	102	1.6
3	3.500	4¼ C	4.0
80	*88.9*	*108*	*1.8*
3½	4.000	4½ C	5.5
90	*101.6*	*114*	*2.5*
4¼ O.D.	*4.250*	*4¾ C*	*7.7*
108.0	108.0	121	3.5
4	4.500	5 C	7.7
100	*114.3*	*127*	*3.5*
5¼ O.D.	*5.236*	*5¼ C*	*10.4*
133.0	133.0	133	4.7
5½ O.D.	*5.500*	*5¼ C*	*10.9*
139.7	139.7	133	4.9
5	5.563	5½ C	11.1
125	*141.3*	*140*	*5.0*
6¼ O.D.	*6.259*	*6 C*	*15.2*
159.0	159.0	152	6.9
6½ O.D.	*6.500*	*6½ C*	*17.4*
165.1	165.1	165	7.9
6	6.625	6½ C	16.5
150	*168.3*	*165*	*7.5*
8	8.625	7¾ C	30.6
200	*219.1*	*197*	*13.9*
10	10.750	9 C	53.5
250	*273.1*	*229*	*24.3*
12	12.750	10 C	82
300	*323.9*	*254*	*37.2*
14	14.000	21	169.0
350	*355.6*	*533*	*76.7*
16	16.000	24	222.0
400	*406.4*	*610*	*100.7*
18	18.000	27	280.0
450	*457.2*	*686*	*127.0*
20	20.000	30	344.0
500	*508.0*	*762*	*156.0*
24	24.000	36	490.0
600	*609.6*	*914*	*222.3*

FIG. 7051

45° Elbow*

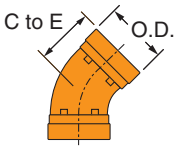

FIGURE 7051 45° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1	1.315	1¾ C	0.5
25	*33.4*	*44*	*0.2*
1¼	1.660	1¾ C	0.7
32	*42.2*	*44*	*0.3*
1½	1.900	1¾ C	0.9
40	*48.3*	*44*	*0.4*
2	2.375	2 C	1.5
50	*60.3*	*51*	*0.7*
2½	2.875	2¼ C	1.9
65	*73.0*	*57*	*0.9*
3 O.D.	*2.996*	*2½ C*	*2.2*
76.1	76.1	64	1.0
3	3.500	2½ C	3.3
80	*88.9*	*64*	*1.5*
3½	4.000	2¾ C	4.3
90	*101.6*	*70*	*2.0*
4¼ O.D.	*4.250*	*2⅞ C*	*4.4*
108.0	108.0	83	2.0
4	4.500	3 C	5.4
100	*114.3*	*76*	*2.4*
5¼ O.D.	*5.236*	*3¼ C*	*7.3*
133.0	133.0	83	3.3
5½ O.D.	*5.500*	*3¼ C*	*7.8*
139.7	139.7	83	3.5
5	5.563	3¼ C	9.0
125	*141.3*	*83*	*4.1*
6¼ O.D.	*6.259*	*3½ C*	*10.1*
159.0	159.0	89	4.6
6½ O.D.	*6.500*	*3½ C*	*11.1*
165.1	165.1	89	5.0
6	6.625	3½ C	11.2
150	*168.3*	*89*	*5.1*
8	8.625	4¼ C	19.8
200	*219.1*	*108*	*9.0*
10	10.750	4¾ C	34.3
250	*273.1*	*121*	*15.6*
12	12.750	5¼ C	50.0
300	*323.9*	*133*	*22.7*
14	14.000	8¾	92.0
350	*355.6*	*222*	*41.7*
16	16.000	10	117.0
400	*406.4*	*254*	*53.1*
18	18.000	11¼	146.0
450	*457.2*	*286*	*66.2*
20	20.000	12½	179.0
500	*508.0*	*317*	*81.2*
24	24.000	15	255.0
600	*609.6*	*381*	*115.7*

FIG. 7052

22½° Elbow

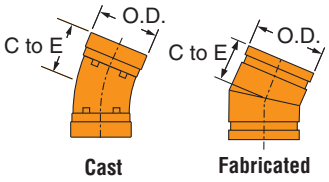

FIGURE 7052 22½° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1	1.315	3¼	0.5
25	*33.4*	*83*	*0.2*
1¼	1.660	1¾	0.7
32	*42.2*	*44*	*0.3*
1½	1.900	1¾	0.8
40	*48.3*	*44*	*0.4*
2	2.375	1⅞ C	1.5
50	*60.3*	*48*	*0.7*
2½	2.875	2	1.9
65	*73.0*	*51*	*0.9*
3	3.500	2¼ C	3.2
80	*88.9*	*57*	*1.5*
3½	4.000	2½	4.0
90	*101.6*	*64*	*1.8*
4	4.500	2⅝ C	5.3
100	*114.3*	*67*	*2.4*
5	5.563	2⅞	7.2
125	*141.3*	*73*	*3.3*
6	6.625	3⅛ C	8.2
150	*168.3*	*79*	*3.7*
8	8.625	3⅞ C	17.8
200	*219.1*	*98*	*8.1*
10	10.750	4⅜	30.0
250	*273.1*	*111*	*13.6*
12	12.750	4⅞	40.4
300	*323.9*	*124*	*18.3*
14	14.000	5	46.0
350	*355.6*	*127*	*20.9*
16	16.000	5	52.2
400	*406.4*	*127*	*23.7*
18	18.000	5½	65.0
450	*457.2*	*140*	*29.5*
20	20.000	6	80.0
500	*508.0*	*152*	*36.3*
24	24.000	7	112.0
600	*609.6*	*178*	*50.8*

FIG. 7053

11¼° Elbow

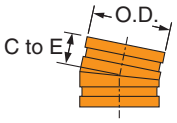

FIGURE 7053 11¼° ELBOW*			
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1	1.315	1⅜	0.3
25	*33.4*	*35*	*0.1*
1¼	1.660	1⅜	0.5
32	*42.2*	*35*	*0.2*
1½	1.900	1⅜	0.7
40	*48.3*	*35*	*0.3*
2	2.375	1⅜	0.9
50	*60.3*	*35*	*0.4*
2½	2.875	1½	1.5
65	*73.0*	*38*	*0.7*
3	3.500	1½	2.0
80	*88.9*	*38*	*0.9*
3½	4.000	1¾	2.8
90	*101.6*	*44*	*1.3*
4	4.500	1¾	3.3
100	*114.3*	*44*	*1.5*
5	5.563	2	5.0
125	*141.3*	*51*	*2.3*
6	6.625	2	6.5
150	*168.3*	*51*	*2.9*
8	8.625	2	10.0
200	*219.1*	*51*	*4.5*
10	10.750	2⅛	14.5
250	*273.1*	*54*	*6.6*
12	12.750	2¼	18.7
300	*323.9*	*57*	*8.5*
14	14.000	3½	32.1
350	*355.6*	*89*	*14.6*
16	16.000	4	42.0
400	*406.4*	*102*	*19.1*
18	18.000	4½	53.2
450	*457.2*	*114*	*24.1*
20	20.000	5	65.7
500	*508.0*	*127*	*29.8*
24	24.000	6	96.0
600	*609.6*	*152*	*43.5*

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For listing/approval details contact your Gruvlok Representative.

C - Cast malleable or ductile iron, all others are fabricated steel.

* 14"-24" Standard Radius 90° & 45° Elbows are 1½.

Center to end dimensions and weights may differ from those shown in chart, contact a Gruvlok Representative for more information.

FIG. 7050LR

90° Long Radius Elbow*

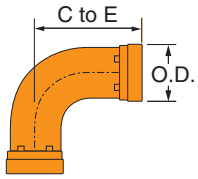

FIGURE 7050 LR
LONG RADIUS 90° ELBOW*

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3½ *89*	0.9 *0.4*
1¼ *32*	1.660 *42.2*	3⅞ *98*	1.3 *0.6*
1½ *40*	1.900 *48.3*	4¼ *108*	1.7 *0.8*
2 *50*	2.375 *60.3*	4⅜ C *136*	2.5 *1.1*
2½ *65*	2.875 *73.0*	5¾ *146*	4.9 *2.2*
3 *80*	3.500 *88.9*	5⅞ C *181*	6.5 *2.9*
3½ *90*	4.000 *101.6*	7¼ *184*	9.7 *4.4*
4 *100*	4.500 *114.3*	7½ C *191*	11.5 *5.2*
5 *125*	5.563 *141.3*	9½ *241*	20.9 *9.5*
6 *150*	6.625 *168.3*	10¾ *273*	29.1 *13.2*
8 *200*	8.625 *219.1*	15 *381*	59.2 *26.9*
10 *250*	10.750 *273.1*	18 *457*	104.0 *47.2*
12 *300*	12.750 *323.9*	21 *533*	147.0 *66.7*
14 *350*	14.000 *355.6*	21 *533*	169.0 *76.7*
16 *400*	16.000 *406.4*	24 *610*	222.0 *100.7*
18 *450*	18.000 *457.2*	27 *686*	280.0 *127.0*
20 *500*	20.000 *508.0*	30 *762*	344.0 *156.0*
24 *600*	24.000 *609.6*	36 *914*	490.0 *222.3*

FIG. 7051LR

45° Long Radius Elbow*

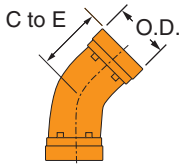

FIGURE 7051 LR
LONG RADIUS 45° ELBOW*

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2½ *64*	0.7 *0.3*
1¼ *32*	1.660 *42.2*	2½ *64*	1.0 *0.5*
1½ *40*	1.900 *48.3*	2½ *64*	1.2 *0.5*
2 *50*	2.375 *60.3*	2¾ *70*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3 *76*	2.9 *1.3*
3 *80*	3.500 *88.9*	3⅜ *86*	4.3 *2.0*
3½ *90*	4.000 *101.6*	3½ *89*	5.3 *2.4*
4 *100*	4.500 *114.3*	4 *102*	7.2 *3.3*
5 *125*	5.563 *141.3*	5 *127*	12.2 *5.5*
6 *150*	6.625 *168.3*	5½ *140*	17.4 *7.9*
8 *200*	8.625 *219.1*	7¼ *184*	34.0 *15.4*
10 *250*	10.750 *273.1*	8½ *216*	57.4 *26.0*
12 *300*	12.750 *323.9*	10 *254*	82.6 *37.5*
14 *350*	14.000 *355.6*	8¾ *222*	92.0 *41.7*
16 *400*	16.000 *406.4*	10 *254*	117.0 *53.1*
18 *450*	18.000 *457.2*	11¼ *286*	146.0 *66.2*
20 *500*	20.000 *508.0*	12½ *317*	179.0 *81.2*
24 *600*	24.000 *609.6*	15 *381*	255.0 *115.7*

C - Cast malleable or ductile iron, all others are fabricated steel.

* 14"-24" Standard Radius 90° & 45° Elbows are 1½.

Center to end dimensions and weights may differ from those shown in chart, Contact a Gruvlok Representative for more information.

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FIG. 7063

Tee w/ Threaded Branch

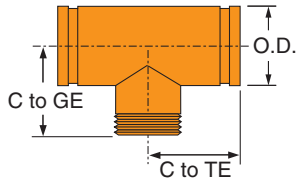

Figure 7063 Tee With Threaded Branch

Nominal Size	O.D.	C to GE	C to TE	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1	1.315	2¼	2¼	0.9
25	*33.4*	*57*	*57*	*0.4*
1¼	1.660	2¾	2¾	1.4
32	*42.2*	*70*	*70*	*0.6*
1½	1.900	2¾	2¾	1.7
40	*48.3*	*70*	*70*	*0.8*
2	2.375	3¼	4¼	2.9
50	*60.3*	*83*	*108*	*1.3*
2½	2.875	3¾	3¾	4.7
65	*73.0*	*95*	*95*	*2.1*
3	3.500	4¼	6	8.1
80	*88.9*	*108*	*152*	*3.7*
3½	4.000	4½	4½	8.8
90	*101.6*	*114*	*114*	*4.0*
4	4.500	5	7¼	13.5
100	*114.3*	*127*	*184*	*6.1*
5	5.563	5½	5½	16.7
125	*140*	*140*	*7.6*	*7.6*
6	6.625	6½	6½	25.6
150	*168.3*	*165*	*165*	*11.6*
8	8.625	7¾	7¾	45.0
200	*219.1*	*197*	*197*	*20.4*
10	10.750	9	9	73.0
250	*273.1*	*229*	*229*	*33.1*
12	12.750	10	10	98.0
300	*323.9*	*254*	*254*	*44.5*

UL FM ULC
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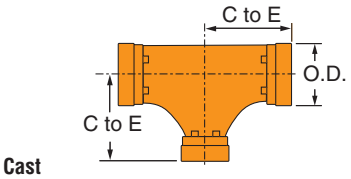
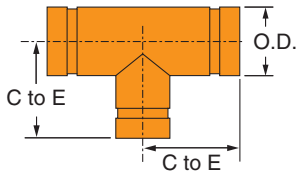
C - Cast malleable or ductile iron, all others are fabricated steel.

FIG. 7061

Reducing Tee Standard



Cast



Fabricated

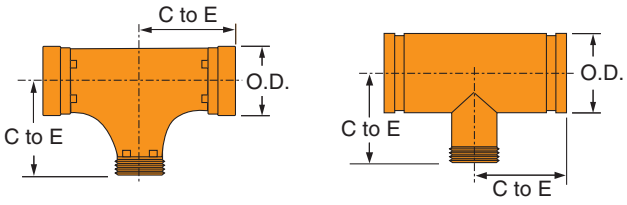
Figure 7061 Standard Reducing Tee

Nominal Size	Center to End	Approx. Wt. Ea.	Nominal Size	Center to End	Approx. Wt. Ea.	Nominal Size	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*
1¼ x 1¼ x 1	2¾	1.5	6 x 6 x 2½	6½ C	26.5	14 x 14 x 8	11	103
32 x 32 x 25	*70*	*0.7*	*150 x 150 x 65*	*165*	*12.0*	*350 x 350 x 200*	*279*	*46.7*
1½ x 1½ x 1	2¾	1.8	6 x 6 x 3	6½ C	26.5	14 x 14 x 10	11	104
40 x 40 x 25	*70*	*0.8*	*150 x 150 x 80*	*165*	*12.0*	*350 x 350 x 250*	*279*	*47.2*
1½ x 1½ x 1¼	2¾	1.8	6 x 6 x 4	6½ C	26.5	14 x 14 x 12	11	105
40 x 40 x 32	*70*	*0.8*	*150 x 150 x 100*	*165*	*12.0*	*350 x 350 x 300*	*279*	*47.6*
2 x 2 x 1	3¼ C	2.6	6 x 6 x 5	6½ C	28.0	16 x 16 x 4	12	126
50 x 50 x 25	*83*	*1.2*	*150 x 150 x 125*	*165*	*12.7*	*400 x 400 x 100*	*305*	*57.2*
2 x 2 x 1¼	3¼	1.7	8 x 8 x 1½	7¾	33.0	16 x 16 x 6	12	127
50 x 50 x 32	*83*	*0.8*	*200 x 200 x 40*	*197*	*15.0*	*400 x 400 x 150*	*305*	*57.6*
2 x 2 x 1½	3¼ C	2.7	8 x 8 x 2	7¾	32.7	16 x 16 x 8	12	128
50 x 50 x 40	*83*	*1.2*	*200 x 200 x 50*	*197*	*14.8*	*400 x 400 x 200*	*305*	*58.1*
2½ x 2½ x 1	3¾	4.1	8 x 8 x 2½	7¾	33.0	16 x 16 x 10	12	129
65 x 65 x 25	*95*	*1.9*	*200 x 200 x 65*	*197*	*15.0*	*400 x 400 x 250*	*305*	*58.5*
2½ x 2½ x 1¼	3¾	4.2	8 x 8 x 3	7¾	33.5	16 x 16 x 12	12	130
65 x 65 x 32	*95*	*1.9*	*200 x 200 x 80*	*197*	*15.2*	*400 x 400 x 300*	*305*	*59.0*
2½ x 2½ x 1½	3¾	4.3	8 x 8 x 4	7¾ C	50.0	16 x 16 x 14	12	132
65 x 65 x 40	*95*	*2.0*	*200 x 200 x 100*	*197*	*22.7*	*400 x 400 x 350*	*305*	*59.9*
2½ x 2½ x 2	3¾	4.4	8 x 8 x 5	7¾	34.7	18 x 18 x 4	15½	188
65 x 65 x 50	*95*	*2.0*	*200 x 200 x 125*	*197*	*15.7*	*450 x 450 x 100*	*394*	*85.3*
3 x 3 x 1	4¼ C	7.0	8 x 8 x 6	7¾C	54.0	18 x 18 x 6	15½	190
80 x 80 x 25	*108*	*3.2*	*200 x 200 x 150*	*197*	*24.5*	*450 x 450 x 150*	*394*	*86.2*
3 x 3 x 1¼	4¼	5.8	10 x 10 x 1½	9	52.0	18 x 18 x 8	15½	192
80 x 80 x 32	*108*	*2.6*	*250 x 250 x 40*	*229*	*23.6*	*450 x 450 x 200*	*394*	*87.1*
3 x 3 x 1½	4¼	5.9	10 x 10 x 2	9	52.2	18 x 18 x 10	15½	194
80 x 80 x 40	*108*	*2.7*	*250 x 250 x 50*	*229*	*23.7*	*450 x 450 x 250*	*394*	*88.0*
3 x 3 x 2	4¼ C	5.5	10 x 10 x 2½	9	52.6	18 x 18 x 12	15½	196
80 x 80 x 50	*108*	*2.5*	*250 x 250 x 65*	*229*	*23.9*	*450 x 450 x 300*	*394*	*88.9*
3 x 3 x 2½	4¼	6.3	10 x 10 x 3	9	53.0	18 x 18 x 14	15½	201
80 x 80 x 65	*108*	*2.9*	*250 x 250 x 80*	*229*	*24.0*	*450 x 450 x 350*	*394*	*91.2*
4 x 4 x 1	3¾	7.0	10 x 10 x 4	9	53.6	18 x 18 x 16	15½	203
100 x 100 x 25	*95*	*3.2*	*250 x 250 x 100*	*229*	*24.3*	*450 x 450 x 400*	*394*	*92.1*
4 x 4 x 1¼	5	9.6	10 x 10 x 5	9	54.2	20 x 20 x 6	17¼	240
100 x 100 x 32	*127*	*4.4*	*250 x 250 x 125*	*229*	*24.6*	*500 x 500 x 150*	*438*	*108.9*
4 x 4 x 1½	5	10.2	10 x 10 x 6	9 C	55.0	20 x 20 x 8	17¼	242
100 x 100 x 40	*127*	*4.6*	*250 x 250 x 150*	*229*	*24.9*	*500 x 500 x 200*	*438*	*109.8*
4 x 4 x 2	5 C	10.2	10 x 10 x 8	9 C	64.7	20 x 20 x 10	17¼	244
100 x 100 x 50	*127*	*4.6*	*250 x 250 x 200*	*229*	*29.3*	*500 x 500 x 250*	*438*	*110.7*
4 x 4 x 2½	5 C	11.2	12 x 12 x 1	10	77.0	20 x 20 x 12	17¼	246
100 x 100 x 65	*127*	*5.1*	*300 x 300 x 25*	*254*	*34.9*	*500 x 500 x 300*	*438*	*111.6*
4 x 4 x 3	5 C	11.4	12 x 12 x 2	10	80.0	20 x 20 x 14	17¼	248
100 x 100 x 80	*127*	*5.2*	*300 x 300 x 50*	*254*	*36.3*	*500 x 500 x 350*	*438*	*112.5*
5 x 5 x 1	5½	13.6	12 x 12 x 2½	10	78.0	20 x 20 x 16	17¼	250
125 x 125 x 25	*140*	*6.2*	*300 x 300 x 65*	*254*	*35.4*	*500 x 500 x 400*	*438*	*113.4*
5 x 5 x 1½	5½	13.8	12 x 12 x 3	10	74.6	20 x 20 x 18	17¾	252
125 x 125 x 40	*140*	*6.3*	*300 x 300 x 80*	*254*	*33.8*	*500 x 500 x 450*	*451*	*114.3*
5 x 5 x 2	5½	14	12 x 12 x 4	10	75.1	24 x 24 x 8	20	327
125 x 125 x 50	*140*	*6.4*	*300 x 300 x 100*	*254*	*34.1*	*600 x 600 x 200*	*508*	*148.3*
5 x 5 x 2½	5½	14.3	12 x 12 x 5	10	75.6	24 x 24 x 10	20	330
125 x 125 x 65	*140*	*6.5*	*300 x 300 x 125*	*254*	*34.3*	*600 x 600 x 250*	*508*	*149.7*
5 x 5 x 3	5½	14.6	12 x 12 x 6	10	76.2	24 x 24 x 12	20	334
125 x 125 x 80	*140*	*6.6*	*300 x 300 x 150*	*254*	*34.6*	*600 x 600 x 300*	*508*	*151.5*
5 x 5 x 4	5½ C	17.9	12 x 12 x 8	10	76.3	24 x 24 x 14	20	340
125 x 125 x 100	*140*	*8.1*	*300 x 300 x 200*	*254*	*34.6*	*600 x 600 x 350*	*508*	*154.2*
6 x 6 x 1	6½	20.5	12 x 12 x 10	10	77.6	24 x 24 x 16	20	342
150 x 150 x 25	*165*	*9.3*	*300 x 300 x 250*	*254*	*35.2*	*600 x 600 x 400*	*508*	*155.1*
6 x 6 x 1½	6½	21.0	14 x 14 x 4	11	100.0	24 x 24 x 18	20	345
150 x 150 x 40	*165*	*9.5*	*350 x 350 x 100*	*279*	*45.4*	*600 x 600 x 450*	*508*	*156.5*
6 x 6 x 2	6½ C	26.4	14 x 14 x 6	11	101	24 x 24 x 20	20	347
150 x 150 x 50	*165*	*12.0*	*350 x 350 x 150*	*279*	*45.8*	*600 x 600 x 500*	*508*	*157.4*

See Fitting Size chart on page 47 for O.D.

FIG. 7064

Reducing Tee w/ Threaded Branch



Cast **Fabricated**

FIGURE 7064 REDUCING TEE WITH THREADED BRANCH

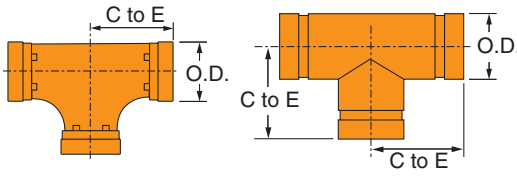
Nominal Size	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs/Kg*
2 x 2 x ¾ *50 x 50 x 20*	3¼ *83*	1.6 *0.7*
2 x 2 x 1 *50 x 50 x 25*	3¼ C *83*	2.6 *1.2*
2 x 2 x 1¼ *50 x 50 x 32*	3¼ *83*	1.7 *0.8*
2 x 2 x 1½ *50 x 50 x 40*	3¼ C *83*	2.7 *1.2*
2½ x 2½ x 1 *65 x 65 x 25*	3¾ *95*	4.1 *1.9*
2½ x 2½ x 1½ *65 x 65 x 40*	3¾ *95*	4.3 *2*
2½ x 2½ x 2 *65 x 65 x 50*	3¾ *95*	4.4 *2*
3 x 3 x ¾ *80 x 80 x 20*	4¼ *108*	5.7 *2.6*
3 x 3 x 1 *80 x 80 x 25*	4¼ C *108*	7.0 *3.2*
3 x 3 x 1½ *80 x 80 x 40*	4¼ *108*	5.3 *2.4*
3 x 3 x 2 *80 x 80 x 50*	4¼ *108*	5.5 *2.5*
3 x 3 x 2½ *80 x 80 x 65*	4¼ *108*	5.8 *2.6*
4 x 4 x ¾ *100 x 100 x 20*	3¾ *95*	7.2 *3.3*
4 x 4 x 1 *100 x 100 x 25*	3¾ *95*	7.0 *3.2*
4 x 4 x 1½ *100 x 100 x 40*	5 *127*	9.2 *4.2*
4 x 4 x 2 *100 x 100 x 50*	5 *127*	10.2 *4.6*
4 x 4 x 2½ *100 x 100 x 65*	5 *127*	11.2 *5.1*
4 x 4 x 3 *100 x 100 x 80*	5 *127*	11.4 *5.2*
5 x 5 x 2 *125 x 125 x 50*	5½ *140*	14.5 *6.6*
5 x 5 x 3 *125 x 125 x 80*	5½ *140*	16.1 *7.3*
5 x 5 x 4 *125 x 125 x 100*	5½ C *140*	17.9 *8.1*
6 x 6 x 2 *150 x 150 x 50*	6½ *165*	26.4 *12*
6 x 6 x 2½ *150 x 150 x 65*	6½ *165*	26.5 *12*
6 x 6 x 3 *150 x 150 x 80*	6½ *165*	26.5 *12*
6 x 6 x 4 *150 x 150 x 100*	6½ *165*	26.5 *12*
6 x 6 x 5 *150 x 150 x 125*	6½ C *165*	28.0 *12.7*
8 x 8 x 2 *200 x 200 x 50*	7¾ *197*	37.5 *17*
8 x 8 x 3 *200 x 200 x 80*	7¾ *197*	38.7 *17.6*
8 x 8 x 4 *200 x 200 x 100*	7¾ *197*	50.0 *22.7*
8 x 8 x 5 *200 x 200 x 125*	7¾ *197*	41.0 *18.6*
8 x 8 x 6 *200 x 200 x 150*	7¾ *197*	54.0 *24.5*
10 x 10 x 2 *250 x 250 x 50*	9 *229*	61.8 *28.0*
10 x 10 x 3 *250 x 250 x 80*	9 *229*	63.0 *28.6*
10 x 10 x 4 *250 x 250 x 100*	9 *229*	64.0 *29.0*
10 x 10 x 5 *250 x 250 x 125*	9 *229*	65.1 *29.5*
10 x 10 x 6 *250 x 250 x 150*	9 *229*	55.0 *24.9*
10 x 10 x 8 *250 x 250 x 200*	9 *229*	64.7 *29.3*
12 x 12 x 3 *300 x 300 x 80*	10 *254*	84.9 *38.5*
12 x 12 x 4 *300 x 300 x 100*	10 *254*	85.8 *38.9*
12 x 12 x 5 *300 x 300 x 125*	10 *254*	87.0 *39.5*
12 x 12 x 6 *300 x 300 x 150*	10 *254*	88.3 *40.1*
12 x 12 x 8 *300 x 300 x 200*	10 *254*	91.2 *41.4*
12 x 12 x 10 *300 x 300 x 250*	10 *254*	94.8 *43.0*
14 x 14 x 8 *350 x 350 x 200*	11 *279*	110.0 *49.7*
14 x 14 x 10 *350 x 350 x 250*	11 *279*	114.0 *51.5*
14 x 14 x 12 *350 x 350 x 300*	11 *279*	117.0 *52.8*
16 x 16 x 8 *400 x 400 x 200*	12 *305*	135.0 *61.2*
16 x 16 x 10 *400 x 400 x 250*	12 *305*	139.0 *63.0*
16 x 16 x 12 *400 x 400 x 300*	12 *305*	142.0 *64.4*
18 x 18 x 10 *450 x 450 x 250*	15½ *394*	204.0 *92.5*
18 x 18 x 12 *450 x 450 x 300*	15½ *394*	209.0 *94.8*
18 x 18 x 14 *450 x 450 x 350*	15½ *0*	211.0 *95.7*
18 x 18 x 16 *450 x 450 x 400*	15½ *0*	216.0 *98.0*
24 x 24 x 8 *600 x 600 x 200*	20 *508*	334.0 *152*
24 x 24 x 10 *600 x 600 x 250*	20 *508*	342.0 *155*
24 x 24 x 12 *600 x 600 x 300*	20 *508*	349.0 *158*

C - Cast malleable or ductile iron, all others are fabricated steel.

See Fitting Size chart on page 47 for O.D.

FIG. 7060

Tee



Cast **Fabricated**

FIGURE 7060 - TEE

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ C *57*	0.9 *0.4*
1¼ *32*	1.660 *42.2*	2¾ C *70*	1.5 *0.7*
1½ *40*	1.900 *48.3*	2¾ C *70*	1.8 *0.8*
2 *50*	2.375 *60.3*	3¼ C *83*	2.4 *1.1*
2½ *65*	2.875 *73.0*	3¾ C *95*	4.0 *1.8*
3 O.D. 76.1	*2.996* 76.1	*4 C* 101	*4.6* 2.1
3 *80*	3.500 *88.9*	4¼ C *108*	5.8 *2.6*
3½ *90*	4.000 *101.6*	4½ C *114*	9.8 *4.4*
4¼ O.D. 108.0	*4.250* 108.0	*4¾ C* 121	*9.3* 4.2
4 *100*	4.500 *114.3*	5 C *127*	10.3 *4.7*
5¼ O.D. 133.0	*5.236* 133.0	*5¼ C* 133	*14.1* 6.4
5½ O.D. 139.7	*5.500* 139.7	*5½ C* 140	*16.1* 7.3
5 *125*	5.563 *141.3*	5½ C *140*	16.2 *7.3*
6¼ O.D. 159.0	*6.259* 159.0	*6 C* 152	*20.8* 9.4
6½ O.D. 165.1	*6.500* 165.1	*6½ C* 165	*24.4* 11.1
6 *150*	6.625 *168.3*	6½ C *165*	25.7 *11.7*
8 *200*	8.625 *219.1*	7¾ C *197*	41.1 *18.6*
10 *250*	10.750 *273.1*	9 C *229*	74.5 *33.8*
12 *300*	12.750 *323.9*	10 C *254*	94.7 *43.0*
14 *350*	14.000 *355.6*	11 *279*	118.0 *53.5*
16 *400*	16.000 *406.4*	12 *305*	146.0 *66.2*
18 *450*	18.000 *457.2*	15½ *394*	218.0 *98.9*
20 *500*	20.000 *508.0*	17¼ *438*	275.0 *125*
24 *600*	24.000 *609.6*	20 *508*	379.0 *172*

APPROVED
For listing/approval details contact your Gruvlok Representative.

FIG. 7076

Gr x Thd
Concentric Reducers

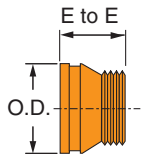


Figure 7076 – Concentric Reducer Groove by Thread

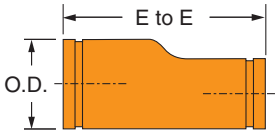
Nominal. Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1 *40 x 25*	2½ *64*	0.6 *0.3*
2 x ¾ *50 x 80*	2½ *64*	1.0 *0.5*
2 x 1 *50 x 25*	2½ *64*	0.8 *0.4*
2 x 1¼ *50 x 32*	2½ *64*	1.3 *0.6*
2 x 1½ *50 x 40*	2½ *64*	1.3 *0.6*
2½ x 1 *65 x 25*	2½ *64*	1.0 *0.5*
2½ x 1¼ *65 x 32*	2½ *64*	1.0 *0.5*
2½ x 1½ *65 x 40*	2½ *64*	1.3 *0.6*
2½ x 2 *65 x 50*	2½ *64*	1.2 *0.5*
3 x ¾ *80 x 80*	2½ *64*	1.2 *0.5*
3 x 1 *80 x 25*	2½ *64*	1.2 *0.5*
3 x 1½ *80 x 40*	2½ *64*	1.3 *0.6*
3 x 2 *80 x 50*	2½ *64*	1.3 *0.6*
3 x 2½ *80 x 65*	2½ *64*	1.5 *0.7*
3½ x 3 *90 x 80*	3 *76*	1.8 *0.8*
4 x 1 *100 x 25*	3 *76*	2.2 *1.0*
4 x 1½ *100 x 40*	3 *76*	2.3 *1.0*
4 x 2 *100 x 50*	3 *76*	2.3 *1.0*
4 x 2½ *100 x 65*	3 *76*	2.3 *1.0*
4 x 3 *100 x 80*	3 *76*	2.6 *1.2*
4 x 3½ *100 x 90*	3 *76*	2.5 *1.1*
5 x 4 *125 x 100*	3½ *89*	4.5 *2.0*
6 x 1 *150 x 25*	4 *102*	6.0 *2.7*
6 x 2 *150 x 50*	4 *102*	6.0 *2.7*
6 x 3 *150 x 80*	4 *102*	6.0 *2.7*
6 x 4 *150 x 100*	4 *102*	5.9 *2.7*
6 x 5 *150 x 125*	4 *102*	5.8 *2.6*

All are Fabricated Steel.

See Fitting Size chart on page 47 for O.D.

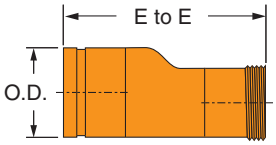
FIG. 7073 & FIG. 7097

Eccentric Reducers



Fabricated

Fig. 7073– Gr. x Gr.



Fabricated

Fig. 7097 – Gr. x Thd.

Figure 7073 & 7097 Eccentric Reducer

Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ x 1 *32 x 25*	8½ *216*	1.5 *0.7*
1½ x ¾ *40 x 20*	8½ *216*	1.6 *0.7*
1½ x 1 *40 x 25*	8½ *216*	1.7 *0.8*
1½ x 1¼ *40 x 32*	8½ *216*	4.5 *2.0*
2 x ¾ *50 x 80*	9 *229*	2.1 *1.0*
2 x 1 *50 x 25*	9 *229*	2.2 *1.0*
2 x 1¼ *50 x 32*	9 *229*	2.4 *1.1*
2 x 1½ *50 x 40*	9 *229*	2.5 *1.1*
2½ x 1 *65 x 25*	9½ *241*	3.2 *1.5*
2½ x 1¼ *65 x 32*	9½ *241*	3.4 *1.5*
2½ x 1½ *65 x 40*	9½ *241*	3.6 *1.6*
2½ x 2 *65 x 50*	9½ *241*	4.0 *1.8*
3 x 1 *80 x 25*	9½ *241*	4.0 *1.8*
3 x 1¼ *80 x 32*	9½ *241*	4.3 *2.0*
3 x 1½ *80 x 40*	9½ *241*	4.5 *2.0*
3 x 2 *80 x 50*	9½ *241*	4.8 *2.2*
3 x 2½ *80 x 65*	9½ *241*	5.6 *2.5*
3½ x 3 *90 x 80*	9½ *241*	6.6 *3.0*
4 x 1 *100 x 25*	10 *254*	5.9 *2.7*
4 x 1¼ *100 x 32*	10 *254*	6.3 *2.9*
4 x 1½ *100 x 40*	10 *254*	6.4 *2.9*
4 x 2 *100 x 50*	10 *254*	6.7 *3.0*
4 x 2½ *100 x 65*	10 *254*	7.3 *3.3*
4 x 3 *100 x 80*	10 *254*	7.9 *3.6*
4 x 3½ *100 x 90*	10 *254*	8.5 *3.9*
5 x 2 *125 x 50*	11 *279*	9.3 *4.2*
5 x 2½ *125 x 65*	11 *279*	9.9 *4.5*
5 x 3 *125 x 80*	11 *279*	10.7 *4.9*
5 x 4 *125 x 100*	11 *279*	11.9 *5.4*
6 x 1 *150 x 25*	11½ *292*	12.0 *5.4*
6 x 1½ *150 x 40*	11½ *292*	12.1 *5.5*
6 x 2 *150 x 50*	11½ *292*	12.2 *5.5*
6 x 2½ *150 x 65*	11½ *292*	12.8 *5.8*
6 x 3 *150 x 80*	11½ *292*	13.6 *6.2*
6 x 4 *150 x 100*	11½ *292*	14.9 *6.8*
6 x 5 *150 x 125*	11½ *292*	16.2 *7.3*
8 x 3 *200 x 80*	12 *305*	17.9 *8.1*
8 x 4 *200 x 100*	12 *305*	19.7 *8.9*
8 x 5 *200 x 125*	12 *305*	21.4 *9.7*
8 x 6 *200 x 150*	12 *305*	23.2 *10.5*
10 x 4 *250 x 100*	13 *330*	29.7 *13.5*
10 x 5 *250 x 125*	13 *330*	31.7 *14.4*
10 x 6 *250 x 150*	13 *330*	34.0 *15.4*
10 x 8 *250 x 200*	13 *330*	34.4 *15.6*
12 x 4 *300 x 100*	14 *356*	44.8 *20.3*
12 x 6 *300 x 150*	14 *356*	45.2 *20.5*
12 x 8 *300 x 200*	14 *356*	47.7 *21.6*
12 x 10 *300 x 250*	14 *356*	52.0 *23.6*
14 x 6 *350 x 150*	13 *330*	78 *35.4*
14 x 8 *350 x 200*	13 *330*	80 *36.3*
14 x 10 *350 x 250*	13 *330*	84 *38.1*
14 x 12 *350 x 300*	13 *330*	88 *39.9*
16 x 8 *400 x 200*	14 *356*	91 *41.3*
16 x 10 *400 x 250*	14 *356*	96 *43.5*
16 x 12 *400 x 300*	14 *356*	99 *44.9*
16 x 14 *400 x 350*	14 *356*	104 *47.2*
18 x 10 *450 x 250*	15 *381*	110 *49.9*
18 x 12 *450 x 300*	15 *381*	113 *51.3*
18 x 14 *450 x 350*	15 *381*	117 *53.1*
18 x 16 *450 x 400*	15 *381*	121 *54.9*
20 x 10 *500 x 250*	20 *508*	145 *65.8*
20 x 12 *500 x 300*	20 *508*	149 *67.6*
20 x 14 *500 x 350*	20 *508*	152 *68.9*
20 x 16 *500 x 400*	20 *508*	156 *70.8*
20 x 18 *500 x 450*	20 *508*	160 *72.6*
24 x 10 *600 x 250*	20 *508*	174 *78.9*
24 x 12 *600 x 300*	20 *508*	179 *81.2*
24 x 14 *600 x 350*	20 *508*	184 *83.5*
24 x 16 *600 x 400*	20 *508*	189 *85.7*
24 x 18 *600 x 450*	20 *508*	194 *88*
24 x 20 *600 x 500*	20 *508*	199 *90.3*

Fabricated Steel *Figure 7097 is available in sizes 1¼ x 1 through 12 x 10.

Center to end dimensions may differ from those shown above. Contact a Gruvlok Representative for more information.

See Fitting Size chart on page 47 for O.D.

See Fitting Size chart on page 47 for O.D.

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FIG. 7077, FIG. 7078 & FIG. 7079

Swaged Nipples

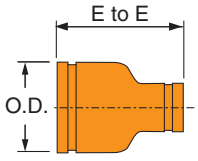

Fig. 7077
Gr x Gr

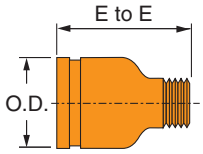

Fig. 7078
Gr x Thd

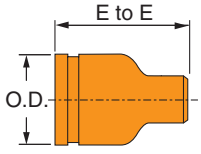

Fig. 7079
Gr x Bev

FIGURE 7077, 7078 & 7079 SWAGED NIPPLES

Nominal Size	End to End	Approx. Wt. Ea.	Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*	*In./DN(mm)*	*In./mm*	*Lbs./Kg*
2 x 1 *50 x 25*	6½ *165*	2.0 *0.9*	4 x 2½ *100 x 65*	9 *229*	8.0 *3.6*
2 x 1¼ *50 x 32*	6½ *165*	2.0 *0.9*	4 x 3 *100 x 80*	9 *229*	8.0 *3.6*
2 x 1½ *50 x 40*	6½ *165*	2.0 *0.9*	4 x 3½ *100 x 90*	9 *229*	8.0 *3.6*
2½ x 1 *65 x 25*	7 *178*	3.5 *1.6*	5 x 2 *125 x 50*	11 *279*	12.0 *5.4*
2½ x 1¼ *65 x 32*	7 *178*	3.5 *1.6*	5 x 2½ *125 x 65*	11 *279*	12.0 *5.4*
2½ x 1½ *65 x 40*	7 *178*	3.5 *1.6*	5 x 3 *125 x 80*	11 *279*	12.0 *5.4*
2½ x 2 *65 x 50*	7 *178*	3.5 *1.6*	5 x 4 *125 x 100*	11 *279*	12.0 *5.4*
3 x 1 *80 x 25*	8 *203*	5.0 *2.3*	6 x 1 *150 x 25*	12 *305*	19.0 *8.6*
3 x 1¼ *80 x 32*	8 *203*	5.0 *2.3*	6 x 1¼ *150 x 32*	12 *305*	19.0 *8.6*
3 x 1½ *80 x 40*	8 *203*	5.0 *2.3*	6 x 1½ *150 x 40*	12 *305*	19.0 *8.6*
3 x 2 *80 x 50*	8 *203*	5.0 *2.3*	6 x 2 *150 x 50*	12 *305*	19.0 *8.6*
3 x 2½ *80 x 65*	8 *203*	5.0 *2.3*	6 x 2½ *150 x 65*	12 *305*	19.0 *8.6*
3½ x 3 *90 x 80*	8 *203*	7.0 *3.2*	6 x 3 *150 x 80*	12 *305*	19.0 *8.6*
4 x 1 *100 x 25*	9 *229*	8.0 *3.6*	6 x 3½ *150 x 90*	12 *305*	17.0 *7.7*
4 x 1¼ *100 x 32*	9 *229*	8.0 *3.6*	6 x 4 *150 x 100*	12 *305*	19.0 *8.6*
4 x 1½ *100 x 40*	9 *229*	8.0 *3.6*	6 x 5 *150 x 125*	12 *305*	19.0 *8.6*
4 x 2 *100 x 50*	9 *229*	8.0 *3.6*			

See Fitting Size chart on page 47 for O.D.

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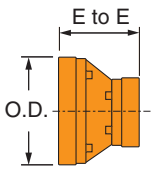
FIG. 7072 – Gr x Gr Concentric Reducers

Cast



Fabricated

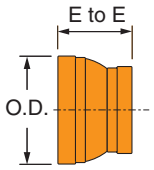


FIGURE 7072 CONCENTRIC REDUCER

Nominal Size	End to End	Approx. Wt. Ea.	Nominal Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs/Kg*	*In./DN(mm)*	*In./mm*	*Lbs/Kg*
1¼ x 1 *32 x 25*	2½ *64*	0.6 *0.3*	8 x 4 *200 x 100*	5 C *127*	9.0 *4.1*
1½ x 1 *40 x 25*	2½ *64*	0.6 *0.3*	8 x 5 *200 x 125*	5 *127*	11.5 *5.2*
1½ x 1¼ *40 x 32*	2½ *64*	0.6 *0.3*	8 x 6 *200 x 150*	5 C *127*	10.6 *4.8*
2 x 1 *50 x 25*	2½ *64*	0.8 *0.4*	10 x 4 *250 x 100*	6 *152*	20 *9.1*
2 x 1¼ *50 x 32*	2½ C *64*	1.3 *0.6*	10 x 5 *250 x 125*	6 *152*	20 *9.1*
2 x 1½ *50 x 40*	2½ C *64*	1.3 *0.6*	10 x 6 *250 x 150*	6 C *152*	20 *9.1*
2½ x 1 *65 x 25*	2½ *64*	1.0 *0.5*	10 x 8 *250 x 200*	6 *152*	23.9 *10.8*
2½ x 1¼ *65 x 32*	2½ *64*	1.0 *0.5*	12 x 4 *300 x 100*	7 *178*	25 *11.3*
2½ x 1½ *65 x 40*	2½ *64*	1.3 *0.6*	12 x 6 *300 x 150*	7 *178*	29 *13.2*
2½ x 2 *65 x 50*	2½ C *64*	1.6 *0.7*	12 x 8 *300 x 200*	7 *178*	29 *13.2*
3 x 1 *80 x 25*	2½ *64*	1.2 *0.5*	12 x 10 *300 x 250*	7 *178*	32.4 *14.7*
3 x 1¼ *80 x 32*	2½ *64*	1.3 *0.6*	14 x 6 *350 x 150*	13 *330*	54.3 *24.6*
3 x 1½ *80 x 40*	2½ *64*	1.3 *0.6*	14 x 8 *350 x 200*	13 *330*	54.5 *24.7*
3 x 2 *80 x 50*	2½ C *64*	1.4 *0.6*	14 x 10 *350 x 250*	13 *330*	55.7 *25.3*
3 x 2½ *80 x 65*	2½ C *64*	1.5 *0.7*	14 x 12 *350 x 300*	13 *330*	57.3 *26.0*
3½ x 3 *90 x 80*	3 *76*	1.8 *0.8*	16 x 8 *400 x 200*	14 *356*	65.4 *29.7*
4 x 1 *100 x 25*	3 C *76*	2.2 *1.0*	16 x 10 *400 x 250*	14 *356*	66.7 *30.3*
4 x 1¼ *100 x 32*	3 *76*	2.2 *1.0*	16 x 12 *400 x 300*	14 *356*	68.1 *30.9*
4 x 1½ *100 x 40*	3 *76*	2.3 *1.0*	16 x 14 *400 x 350*	14 *356*	71.0 *32.2*
4 x 2 *100 x 50*	3 C *76*	2.4 *1.1*	18 x 10 *450 x 250*	15 *381*	82.3 *37.3*
4 x 2½ *100 x 65*	3 C *76*	2.6 *1.2*	18 x 12 *450 x 300*	15 *381*	83.6 *37.9*
4 x 3 *100 x 80*	3 C *76*	3.2 *1.5*	18 x 14 *450 x 350*	15 *381*	86.2 *39.1*
4 x 3½ *100 x 90*	3 C *76*	3.6 *1.6*	18 x 16 *450 x 400*	15 *381*	87.2 *39.6*
5 x 2 *125 x 50*	3½ *89*	4.6 *2.1*	20 x 10 *500 x 250*	20 *508*	123.0 *55.8*
5 x 2½ *125 x 65*	3½ *89*	4.5 *2.0*	20 x 12 *500 x 300*	20 *508*	125.0 *56.7*
5 x 3 *125 x 80*	3½ *89*	4.4 *2.0*	20 x 14 *500 x 350*	20 *508*	129.0 *58.5*
5 x 4 *125 x 100*	3½ C *89*	4.5 *2.0*	20 x 16 *500 x 400*	20 *508*	131.0 *59.4*
6 x 1 *150 x 25*	4 *102*	6.8 *3.1*	20 x 18 *500 x 450*	20 *508*	133.0 *60.3*
6 x 1½ *150 x 40*	4 *102*	6.9 *3.1*	24 x 10 *600 x 250*	20 *508*	147.0 *66.7*
6 x 2 *150 x 50*	4 C *102*	6.0 *2.7*	24 x 12 *600 x 300*	20 *508*	149.0 *67.6*
6 x 2½ *150 x 65*	4 *102*	6.0 *2.7*	24 x 14 *600 x 350*	20 *508*	152.0 *68.9*
6 x 3 *150 x 80*	4 C *102*	5.4 *2.4*	24 x 16 *600 x 400*	20 *508*	153.0 *69.4*
6 x 4 *150 x 100*	4 C *102*	5.6 *2.5*	24 x 18 *600 x 450*	20 *508*	154.0 *69.9*
6 x 5 *150 x 125*	4 C *102*	6.0 *2.7*	24 x 20 *600 x 500*	20 *508*	155.0 *70.3*
8 x 3 *200 x 80*	5 *127*	12.0 *5.5*			

C - Cast malleable or ductile iron, all others are fabricated steel.

FIG. 7069

45° Lateral

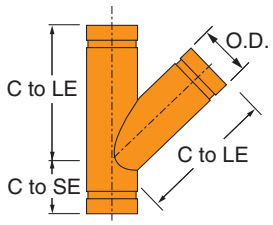


Figure 7069 Laterals

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	5 *127*	2¼ *57*	1.5 *0.7*
1¼ *32*	1.660 *42.2*	5¾ *146*	2½ *64*	2.5 *1.1*
1½ *40*	1.900 *48.3*	6¼ *159*	2¾ *70*	3.5 *1.6*
2 *50*	2.375 *60.3*	7 *178*	2¾ *70*	4.5 *2.0*
2½ *65*	2.875 *73.0*	7¾ *197*	3 *76*	10.0 *4.5*
3 *80*	3.500 *88.9*	8½ *216*	3¼ *83*	11.0 *5.0*
3½ *90*	4.000 *101.6*	10 *254*	3½ *89*	14.0 *6.4*
4 *100*	4.500 *114.3*	10½ *267*	3¾ *95*	18.3 *8.3*
5 *125*	5.563 *141.3*	12½ *318*	4 *102*	30.0 *13.6*
6 *150*	6.625 *168.3*	14 *356*	4½ *114*	46.6 *21.1*
8 *200*	8.625 *219.1*	18 *457*	6 *152*	82.8 *37.6*
10 *250*	10.750 *273.1*	20½ *521*	6½ *165*	127 *57.4*
12 *300*	12.750 *323.9*	23 *584*	7 *178*	165 *74.8*
14 *350*	14.000 *355.6*	26½ *673*	7½ *191*	215 *97.5*
16 *400*	16.000 *406.4*	29 *737*	8 *203*	345 *157*
18 *450*	18.000 *457.2*	32 *813*	8½ *216*	425 *193*
20 *500*	20.000 *508.0*	35 *889*	9 *229*	517 *235*
24 *600*	24.000 *609.6*	40 *1016*	10 *254*	940 *426*

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FIG. 7070

45° Reducing Lateral

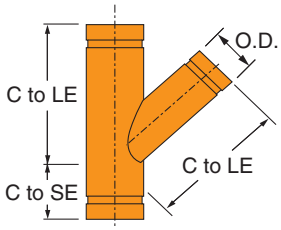

Figure 7070 Reducing Lateral

Nominal Size	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
3 x 3 x 2 *80 x 80 x 50*	8½ *216*	3¼ *83*	9.8 *4.4*
3 x 3 x 2½ *80 x 80 x 65*	8½ *216*	3¼ *83*	11.5 *5.2*
4 x 4 x 2 *100 x 100 x 50*	10½ *267*	3¾ *95*	15.5 *7.0*
4 x 4 x 2½ *100 x 100 x 65*	10½ *267*	3¾ *95*	17.0 *7.7*
4 x 4 x 3 *100 x 100 x 80*	10½ *267*	3¾ *95*	18.5 *8.4*
5 x 5 x 2 *125 x 125 x 50*	12½ *318*	4 *102*	22.5 *10.2*
5 x 5 x 3 *125 x 125 x 80*	12½ *318*	4 *102*	26.5 *12.0*
5 x 5 x 4 *125 x 125 x 100*	12½ *318*	4 *102*	30.5 *13.8*
6 x 6 x 2 *150 x 150 x 50*	14 *356*	4½ *114*	33.0 *15.0*
6 x 6 x 3 *150 x 150 x 80*	14 *356*	4½ *114*	37.0 *16.8*
6 x 6 x 4 *150 x 150 x 100*	14 *356*	4½ *114*	40.0 *18.1*
6 x 6 x 5 *150 x 150 x 125*	14 *356*	4½ *114*	45.0 *20.4*
8 x 8 x 4 *200 x 200 x 100*	18 *457*	6 *152*	59.6 *27.0*
8 x 8 x 5 *200 x 200 x 125*	18 *457*	6 *152*	68.0 *30.8*
8 x 8 x 6 *200 x 200 x 150*	18 *457*	6 *152*	75.0 *34.0*
10 x 10 x 4 *250 x 250 x 100*	20½ *521*	6½ *165*	83.0 *37.6*
10 x 10 x 5 *250 x 250 x 125*	20½ *521*	6½ *165*	100.0 *45.4*
10 x 10 x 6 *250 x 250 x 150*	20½ *521*	6½ *165*	105.0 *47.6*
10 x 10 x 8 *250 x 250 x 200*	20½ *521*	6½ *165*	116.0 *52.6*
12 x 12 x 4 *300 x 300 x 100*	23 *584*	7 *178*	137.0 *62.1*
12 x 12 x 6 *300 x 300 x 150*	23 *584*	7 *178*	140.0 *63.5*
12 x 12 x 8 *300 x 300 x 200*	23 *584*	7 *178*	147.0 *66.7*

Nominal Size	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
12 x 12 x 10 *300 x 300 x 250*	23 *584*	7 *178*	168 *76.2*
14 x 14 x 4 *350 x 350 x 100*	26½ *673*	7½ *191*	173 *78.5*
14 x 14 x 6 *350 x 350 x 150*	26½ *673*	7½ *191*	185 *83.9*
14 x 14 x 8 *350 x 350 x 200*	26½ *673*	7½ *191*	195 *88.5*
14 x 14 x 10 *350 x 350 x 250*	26½ *673*	7½ *191*	223 *101*
14 x 14 x 12 *350 x 350 x 300*	26½ *673*	7½ *191*	240 *109*
16 x 16 x 6 *400 x 400 x 150*	29 *737*	8 *203*	235 *107*
16 x 16 x 8 *400 x 400 x 200*	29 *737*	8 *203*	250 *113*
16 x 16 x 10 *400 x 400 x 250*	29 *737*	8 *203*	263 *119*
16 x 16 x 12 *400 x 400 x 300*	29 *737*	8 *203*	283 *128*
16 x 16 x 14 *400 x 400 x 350*	29 *737*	8 *203*	307 *139*
18 x 18 x 6 *450 x 450 x 150*	32 *813*	8½ *216*	275 *125*
18 x 18 x 8 *450 x 450 x 200*	32 *813*	8½ *216*	306 *139*
18 x 18 x 10 *450 x 450 x 250*	32 *813*	8½ *216*	321 *146*
18 x 18 x 12 *450 x 450 x 300*	32 *4813*	8½ *216*	333 *151*
18 x 18 x 14 *450 x 450 x 350*	32 *813*	8½ *216*	358 *162*
18 x 18 x 16 *450 x 450 x 400*	32 *813*	8½ *216*	382 *173*
20 x 20 x 12 *500 x 500 x 300*	35 *889*	9 *229*	390 *177*
20 x 20 x 14 *500 x 500 x 350*	35 *889*	9 *229*	410 *186*
20 x 20 x 16 *500 x 500 x 400*	235 *889*	9 *229*	440 *200*
24 x 24 x 16 *600 x 600 x 400*	40 *1016*	10 *254*	725 *329*
24 x 24 x 20 *600 x 600 x 500*	40 *1016*	10 *254*	785 *356*

See Fitting Size chart on page 47 for O.D.

FIG. 7066 – Tee Wye

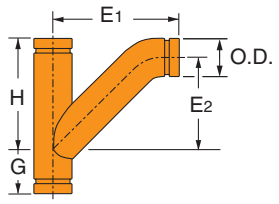

Figure 7066 Tee Wyes

Nominal Size	G	H	E1	E2	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 x 2 x 2 *50 x 50 x 50*	2¾ *70*	7 *178*	9 *229*	4⅝ *117*	6.4 *2.9*
2½ x 2½ x 2½ *65 x 65 x 65*	3 *76*	7¾ *197*	10½ *267*	5¾ *146*	11.5 *5.2*
3 x 3 x 3 *80 x 80 x 80*	3¼ *83*	8½ *216*	11½ *292*	6½ *165*	16.5 *7.5*
3½ x 3½ x 3½ *90 x 90 x 90*	3½ *89*	10 *254*	13 *330*	7¾ *197*	22 *10.0*
4 x 4 x 3 *100 x 100 x 80*	3¾ *95*	10½ *267*	12⅞ *327*	7⅞ *200*	23 *10.4*
4 x 4 x 4 *100 x 100 x 100*	3¾ *95*	10½ *267*	13⅝ *346*	8⅛ *206*	26 *11.8*
5 x 5 x 3 *125 x 125 x 80*	4 *102*	12½ *318*	14¼ *362*	9¼ *235*	32 *14.5*
5 x 5 x 4 *125 x 125 x 100*	4 *102*	12½ *318*	15⅛ *384*	9⅝ *244*	35 *15.9*
5 x 5 x 5 *125 x 125 x 125*	4 *102*	12½ *318*	16⅛ *410*	10 *254*	40 *18.1*
6 x 6 x 3 *150 x 150 x 80*	4½ *114*	14 *356*	15⁵⁄₁₆ *3937*	10⁵⁄₁₆ *2667*	50 *22.7*
6 x 6 x 4 *150 x 150 x 100*	4½ *114*	14 *356*	16¼ *413*	10¾ *273*	55 *24.9*
6 x 6 x 5 *150 x 150 x 125*	4½ *114*	14 *356*	17¼ *438*	11⅛ *283*	58 *26.3*
6 x 6 x 6 *150 x 150 x 150*	4½ *114*	14 *356*	18¼ *464*	11½ *292*	60.5 *27.4*
8 x 8 x 3 *200 x 200 x 80*	6 *152*	18 *457*	18³⁄₁₆ *4648*	13³⁄₁₆ *3378*	100 *45.4*
8 x 8 x 4 *200 x 200 x 100*	6 *152*	18 *457*	19 *483*	13½ *343*	110 *49.9*
8 x 8 x 5 *200 x 200 x 125*	6 *152*	18 *457*	20 *508*	13⅞ *352*	111 *50.3*
8 x 8 x 6 *200 x 200 x 150*	6 *152*	18 *457*	21⅛ *537*	14⅜ *365*	112 *50.8*
8 x 8 x 8 *200 x 200 x 200*	6 *152*	18 *457*	23¼ *591*	15¼ *387*	120 *54.4*
10 x 10 x 3 *250 x 250 x 80*	6½ *165*	20½ *521*	19⅞ *505*	14⅞ *378*	130 *59.0*
10 x 10 x 4 *250 x 250 x 100*	6½ *165*	20½ *521*	20¾ *527*	15¼ *387*	135 *61.2*
10 x 10 x 5 *250 x 250 x 125*	6½ *165*	20½ *521*	21⅞ *556*	15¾ *400*	140 *63.5*
10 x 10 x 6 *250 x 250 x 150*	6½ *165*	20½ *521*	22⅞ *581*	16⅛ *410*	145 *65.8*
10 x 10 x 8 *250 x 250 x 200*	6½ *165*	20½ *521*	27¼ *692*	19¼ *489*	150 *68.0*
10 x 10 x 10 *250 x 250 x 250*	6½ *165*	20½ *521*	27¼ *692*	18 *457*	190 *86.2*
12 x 12 x 3 *300 x 300 x 80*	7 *178*	23 *584*	20¾ *527*	15¾ *400*	140 *63.5*
12 x 12 x 4 *300 x 300 x 100*	7 *178*	23 *584*	21½ *546*	16 *406*	145 *65.8*
12 x 12 x 6 *300 x 300 x 150*	7 *178*	23 *584*	23¾ *603*	17 *432*	165 *74.8*
12 x 12 x 8 *300 x 300 x 200*	7 *178*	23 *584*	26 *660*	18 *457*	175 *79.4*
12 x 12 x 10 *300 x 300 x 250*	7 *178*	23 *584*	28 *711*	18¾ *476*	200 *90.7*
12 x 12 x 12 *300 x 300 x 300*	7 *178*	23 *584*	31 *787*	20½ *521*	240 *109*

FIG. 7067 – Reducing Tee Wye

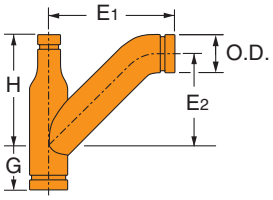

Figure 7067 Reducing Tee Wyes

Nominal Size	G	H	E1	E2	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
4 x 3 x 3 *100 x 80 x 80*	1⅝ *41*	7⅜ *187*	10¾ *273*	5⅝ *143*	16.0 *7.3*
4 x 3 x 4 *100x 80 x 100*	3¾ *267*	10½ *267*	13⅝ *346*	8⅛ *206.4*	27.0 *12.2*
5 x 3 x 3 *125 x 80 x 80*	1¼ *32*	9¾ *248*	11½ *292*	6½ *165*	25.0 *11.3*
5 x 3 x 5 *125 x 80 x 125*	4 *102*	12½ *318*	16⅛ *410*	10 *254*	44.0 *20.0*
5 x 4 x 3 *125 x 100 x 80*	1⅞ *48*	9⅛ *232*	11⅞ *302*	6⅞ *175*	21.0 *9.5*
5 x 4 x 4 *125 x 100 x 100*	1⅞ *48*	9⅛ *232*	12¾ *324*	7¼ *184*	25.0 *11.3*
6 x 4 x 6 *150 x 100 x 150*	4½ *114*	14 *356*	18¼ *464*	11½ *292*	61.0 *27.7*
6 x 5 x 3 *150 x 125 x 80*	1¼ *32*	10¾ *273*	13 *330*	8 *203*	27.0 *12.2*
6 x 5 x 4 *150 x 125 x 100*	1¼ *32*	10¾ *273*	13⅞ *352*	8⅜ *213*	31.0 *14.1*
8 x 6 x 4 *200 x 150 x 100*	1 *25*	12 *305*	14¾ *375*	9¼ *235*	45.0 *20.4*
8 x 6 x 8 *200 x 150 x 200*	6 *152*	18 *457*	23¼ *591*	15¼ *387*	95.0 *43.1*

FIG. 7071 – True Wye

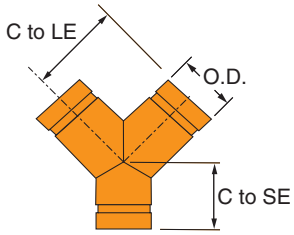

Figure 7071 True Wye

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2¼ *57*	2¼ *57*	1.1 *0.5*
1¼ *32*	1.660 *42.2*	2¾ *70*	2½ *64*	1.5 *0.7*
1½ *40*	1.900 *48.3*	2¾ *70*	2¾ *70*	1.8 *0.8*
2 *50*	2.375 *60.3*	3¼ *83*	2¾ *70*	2.3 *1.0*
2½ *65*	2.875 *73.0*	3¾ *95*	3 *76*	5.0 *2.3*
3 *80*	3.500 *88.9*	4¼ *108*	3¼ *83*	6.1 *2.8*
3½ *90*	4.000 *101.6*	4½ *114*	3½ *89*	8.3 *3.8*
4 *100*	4.500 *114.3*	5 *127*	3¾ *95*	10.5 *4.8*
5 *125*	5.563 *141.3*	5½ *140*	4 *102*	15 *6.8*
6 *150*	6.625 *168.3*	6½ *165*	4½ *114*	21.6 *9.8*
8 *200*	8.625 *219.1*	7¾ *197*	6 *152*	36.0 *16.3*
10 *250*	10.750 *273.1*	9 *229*	6½ *165*	51.0 *23.1*
12 *300*	12.750 *323.9*	10 *254*	7 *178*	160.0 *72.6*
14 *350*	14.000 *355.6*	11 *279*	7½ *191*	136.0 *61.7*
16 *400*	16.000 *406.4*	12 *305*	8 *203*	166.0 *75.3*
18 *450*	18.000 *457.2*	15½ *394*	8½ *216*	234 *106*
20 *500*	20.000 *508.0*	17¼ *438*	9 *229*	281 *128*
24 *600*	24.000 *609.6*	20 *508*	10 *254*	523 *237*

See Fitting Size chart on page 47 for O.D.

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FIG. 7087 GR X FPT

Female Thread Adapter

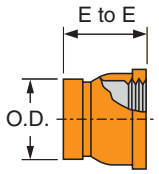

FIGURE 7087 FEMALE THREAD ADAPTER

Nominal Size	Grooved End O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2 1/16 *533*	0.7 *0.3*
1 1/4 *32*	1.660 *42.2*	2 5/16 *635*	1.4 *0.6*
1 1/2 *40*	1.900 *48.3*	2 5/16 *635*	1.5 *0.7*
2 *50*	2.375 *60.3*	2 1/2 *64*	1.6 *0.7*
3 *80*	3.500 *88.9*	2 3/4 *70*	2.5 *1.1*
4 *100*	4.500 *114.3*	3 1/4 *83*	4.5 *2.0*

FIG. 7055 GR X MPT

90° Adapter Elbow

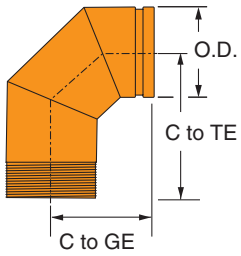

FIGURE 7055 90° ADAPTER ELBOWS

Nominal Size	Fitting O.D.	Center to Grooved End	Center to Threaded End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	2 1/4 *57*	2 1/4 *57*	0.6 *0.3*
1 1/4 *32*	1.660 *42.2*	2 3/4 *70*	2 3/4 *70*	1.0 *0.5*
1 1/2 *40*	1.900 *48.3*	2 3/4 *70*	2 3/4 *70*	1.2 *0.5*
2 *50*	2.375 *60.3*	3 1/4 *83*	4 1/4 *108*	2.3 *1.0*
2 1/2 *65*	2.875 *73.0*	3 3/4 *95*	3 3/4 *95*	3.7 *1.7*
3 *80*	3.500 *88.9*	4 1/4 *108*	6 *152*	6.5 *2.9*
3 1/2 *90*	4.000 *101.6*	4 1/2 *114*	6 1/4 *159*	8.2 *3.7*
4 *100*	4.500 *114.3*	5 *127*	7 1/4 *184*	11 *5.0*
6 *150*	6.625 *168.3*	6 1/2 *165*	6 1/2 *165*	19.8 *9.0*

FIG. 7056 GR X MPT

45° Adapter Elbow

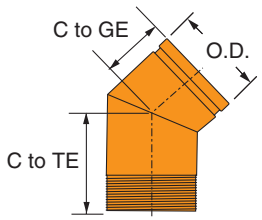

FIGURE 7056 45° ADAPTER ELBOWS

Nominal Size	Fitting O.D.	Center to Grooved End	Center to Threaded End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	1 3/4 *44*	1 3/4 *44*	0.6 *0.3*
1 1/4 *32*	1.660 *42.2*	1 3/4 *44*	1 3/4 *44*	0.7 *0.3*
1 1/2 *40*	1.900 *48.3*	1 3/4 *44*	1 3/4 *44*	0.8 *0.4*
2 *50*	2.375 *60.3*	2 *51*	3 *76*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	2 1/4 *57*	2 1/4 *57*	2.2 *1.0*
3 *80*	3.500 *88.9*	2 1/2 *64*	4 1/4 *108*	4.3 *2.0*
3 1/2 *90*	4.000 *101.6*	2 3/4 *70*	2 3/4 *70*	4.2 *1.9*
4 *100*	4.500 *114.3*	3 *76*	5 1/4 *133*	7.5 *3.4*
6 *150*	6.625 *168.3*	3 1/2 *89*	3 1/2 *89*	11.1 *5.0*

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REDUCING BASE SUPPORT ELBOWS

FIG. 7050RF—Grooved x 150# Flanged (GxF)

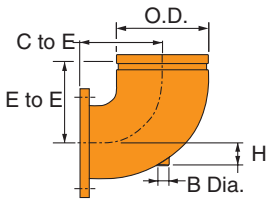

FIGURE 7050 RF REDUCING BASE SUPPORT ELBOWS					
Nominal Size	Grooved End O.D.	Center to End	H	B Dia. Threaded	Approx. Wt. Ea. GxF
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*NPSC*	*Lbs./Kg*
6 x 4 *150 x 100*	6.625 *168.3*	12 *305*	2½ *64*	1½ *38*	38.5 *17.5*
6 x 5 *150 x 125*	6.625 *168.3*	12½ *318*	2½ *64*	1½ *38*	45.4 *20.6*
8 x 5 *200 x 125*	8.625 *219.1*	16 *406*	3 *76*	1½ *38*	65.5 *29.7*
8 x 6 *200 x 150*	8.625 *219.1*	16 *406*	3 *76*	1½ *38*	73 *33.1*
10 x 6 *250 x 150*	10.750 *273.1*	19 *483*	3½ *89*	1½ *38*	100 *45.4*
10 x 8 *250 x 200*	10.750 *273.1*	19 *483*	3½ *89*	1½ *38*	127 *57.6*
12 x 8 *300 x 200*	12.750 *323.9*	22 *559*	4 *102*	1½ *38*	155 *70.3*
12 x 10 *300 x 250*	12.750 *323.9*	22 *559*	4 *102*	1½ *38*	186 *84.4*

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FIG. 7084—Groove x Class 150 Flange Nipples

FIG. 7085—Groove x Class 300 Flange Nipples

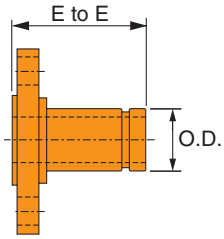

FIGURE 7084 GROOVE X CLASS 150 FLANGE NIPPLES				FIGURE 7085 GROOVE X CLASS 300 FLANGE NIPPLES	
Nominal Size	O.D.	End to End	Approx. Wt. Ea.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3 *76*	2.5 *1.1*	3 *76*	3.6 *1.6*
1¼ *32*	1.660 *42.2*	4 *102*	3.8 *1.7*	4 *102*	4.6 *2.1*
1½ *40*	1.900 *48.3*	4 *102*	4.1 *1.9*	4 *102*	7.1 *3.2*
2 *50*	2.375 *60.3*	4 *102*	6.0 *2.7*	4 *102*	8.2 *3.7*
2½ *65*	2.875 *73.0*	4 *102*	9.2 *4.2*	4 *102*	11.9 *5.4*
3 *80*	3.500 *88.9*	4 *102*	10.4 *4.7*	4 *102*	15.5 *7.0*
3½ *90*	4.000 *101.6*	4 *102*	14.0 *6.4*	4 *102*	21.0 *9.5*
4 *100*	4.500 *114.3*	6 *152*	19.1 *8.7*	6 *152*	28.0 *12.7*
5 *125*	5.563 *141.3*	6 *152*	23.0 *10.4*	6 *152*	35.0 *15.9*
6 *150*	6.625 *168.3*	6 *152*	29.5 *13.4*	6 *152*	50.0 *22.7*
8 *200*	8.625 *219.1*	6 *152*	43.5 *19.7*	6 *152*	72.0 *32.7*
10 *250*	10.750 *273.1*	8 *203*	68.2 *30.9*	8 *203*	* *
12 *300*	12.750 *323.9*	8 *203*	96.1 *43.6*	8 *203*	* *
14 *350*	14.000 *355.6*	* *	* *	* *	* *
16 *400*	16.000 *406.4*	* *	* *	* *	* *
18 *450*	18.000 *457.2*	* *	* *	* *	* *
20 *500*	20.000 *508.0*	* *	* *	* *	* *
24 *600*	24.000 *609.6*	* *	* *	* *	* *

* Contact a Gruvlok Representative for dimensions & weights.

FIG. 7074

Cap

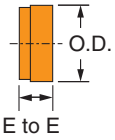

Figure 7074 Cap

Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 C	1.315	1¼	0.3
25	*33.4*	*32*	*0.1*
1¼ C	1.660	1¼	0.4
32	*42.2*	*32*	*0.2*
1½ C	1.900	1¼	0.5
40	*48.3*	*32*	*0.2*
2 C	2.375	1	0.5
50	*60.3*	*25*	*0.2*
2½ C	2.875	1	0.7
65	*73.0*	*25*	*0.3*
3 O.D. C	*2.996*	*1*	*0.8*
76.1	76.1	25	0.4
3 C	3.500	1	1.1
80	*88.9*	*25*	*0.5*
3½ C	4.000	1	1.4
90	*101.6*	*25*	*0.6*
4¼ O.D. C	*4.250*	*1⅛*	*2.0*
108.0	108.0	29	0.9
4 C	4.500	1⅛	2.8
100	*114.3*	*29*	*1.3*
5¼ O.D. C	*5.236*	*1⅛*	*3.2*
133.0	133.0	29	1.5
5½ O.D. C	*5.500*	*1⅛*	*4.0*
139.7	139.7	29	1.8
5 C	5.563	1⅛	4.0
125	*141.3*	*29*	*1.8*
6¼ O.D. C	*6.259*	*1⅛*	*5.1*
159.0	159.0	29	2.3
6½ O.D. C	*6.500*	*1⅛*	*6.0*
165.1	165.1	29	2.7
6 C	6.625	1 5/16	6.0
150	*168.3*	*33*	*2.7*
8 C	8.625	1½	12.5
200	*219.1*	*38*	*5.7*
10 C	10.750	1½	21.9
250	*273.1*	*38*	*9.9*
12 C	12.750	1½	33.8
300	*323.9*	*38*	*15.3*
14*	14.000	8½	40
350	*355.6*	*216*	*18.1*
16*	16.000	9	45
400	*406.4*	*229*	*20.4*
18*	18.000	10	58
450	*457.2*	*254*	*26.3*
20*	20.000	11	79
500	*508.0*	*279*	*35.8*
24*	24.000	12½	100
600	*609.6*	*318*	*45.4*

* Machined Cap

C - Cast Malleable or Ductile Iron

FIG. 7075

Bull Plug

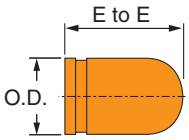

Figure 7075 Bull Plug

Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2	2.375	4	2.5
50	*60.3*	*102*	*1.1*
2½	2.875	5	3.1
65	*73.0*	*127*	*1.4*
3	3.500	6	4.4
80	*88.9*	*152*	*2.0*
4	4.500	7	7.4
100	*114.3*	*178*	*3.4*
5	5.563	*	*
125	*141.3*	*	*
6	6.625	10	18.5
150	*168.3*	*254*	*8.4*

* Contact a Gruvlok Representative for dimensions & weight.

FIG. 7068

Cross

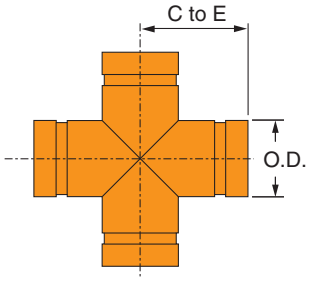

Figure 7068 Cross

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1	1.315	2¼	1.3
25	*33.4*	*57*	*0.6*
1¼	1.660	2¾	2.1
32	*42.2*	*70*	*1.0*
1½	1.900	2¾	2.5
40	*48.3*	*70*	*1.1*
2	2.375	3¼	2.9
50	*60.3*	*83*	*1.3*
2½	2.875	3¾	5.2
65	*73.0*	*95*	*2.4*
3	3.500	4¼	7.5
80	*88.9*	*108*	*3.4*
3½	4.000	4½	9.8
90	*101.6*	*114*	*4.4*
4	4.500	5	12.2
100	*114.3*	*127*	*5.5*
5	5.563	5½	17.6
125	*141.3*	*140*	*8.0*
6	6.625	6½	28.3
150	*168.3*	*165*	*12.8*
8	8.625	7¾	48.0
200	*219.1*	*197*	*21.8*
10	10.750	9	70.0
250	*273.1*	*229*	*31.8*
12	12.750	10	110
300	*323.9*	*254*	*49.9*
14	14.000	11	140
350	*355.6*	*279*	*63.5*
16	16.000	12	170
400	*406.4*	*305*	*77.1*
18	18.000	15½	260
450	*457.2*	*394*	*118*
20	20.000	17¼	320
500	*508.0*	*438*	*145*
24	24.000	20	585
600	*609.6*	*508*	*265*

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NIPPLES

FIG. 7086
GR x HOSE Nipples

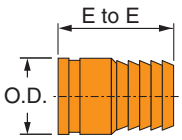
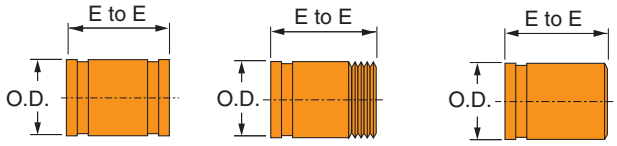


FIGURE 7086 HOSE NIPPLES			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3¼ *83*	0.4 *0.2*
1¼ *32*	1.660 *42.2*	3⅝ *92*	0.7 *0.3*
1½ *40*	1.900 *48.3*	4 *102*	0.8 *0.4*
2 *50*	2.375 *60.3*	4⅝ *117*	1.3 *0.6*
2½ *65*	2.875 *73.0*	5½ *140*	2.1 *1.0*
3 *80*	3.500 *88.9*	6 *152*	3.3 *1.5*
4 *100*	4.500 *114.3*	7¼ *184*	5.5 *2.5*
5 *125*	5.563 *141.3*	9¾ *248*	8.1 *3.7*
6 *150*	6.625 *168.3*	11 *279*	13.2 *6.0*
8 *200*	8.625 *219.1*	12½ *318*	24.0 *10.9*
10 *250*	10.750 *273.1*	14 *356*	29.0 *13.2*
12 *300*	12.750 *323.9*	16 *406*	46.0 *20.9*

FIG. 7080
GR x GR

FIG. 7081
GR x MPT

FIG. 7082
GR x BEV



FIGURES 7080, 7081 & 7082 ADAPTER NIPPLES			
Nominal Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.4*	3 *76*	0.4 *0.2*
1¼ *32*	1.660 *42.2*	4 *102*	0.8 *0.4*
1½ *40*	1.900 *48.3*	4 *102*	0.9 *0.4*
2 *50*	2.375 *60.3*	4 *102*	1.2 *0.5*
2½ *65*	2.875 *73.0*	4 *102*	1.9 *0.9*
3 *80*	3.500 *88.9*	4 *102*	2.5 *1.1*
3½ *90*	4.000 *101.6*	4 *102*	3.1 *1.4*
4 *100*	4.500 *114.3*	6 *152*	5.5 *2.5*
5 *125*	5.563 *141.3*	6 *152*	7.4 *3.4*
6 *150*	6.625 *168.3*	6 *152*	9.5 *4.3*
8 *200*	8.625 *219.1*	6 *152*	14.2 *6.4*
10 *250*	10.750 *273.1*	8 *203*	27.0 *12.2*
12 *300*	12.750 *323.9*	8 *203*	33.0 *15.0*

This product is not UL/ULC Listed or FM Approved.

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FIG. 7062

Bullhead Tee Specialty Tees (GR x GR x FPT)

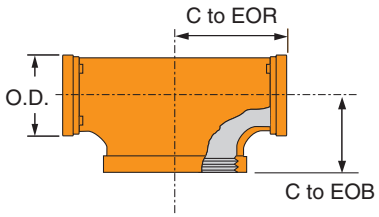

FIGURE 7062 BULLHEAD TEE (GR x GR x FPT)			
Nominal Size	Center to End of Run	Center to End of Branch	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
5 x 5 x 8	7¾	5½	31.0
125 x 125 x 200	*197*	*140*	*14.1*
6 x 6 x 8	7¾	6½	37.6
150 x 150 x 200	*197*	*165*	*17.1*

See Fitting Size chart on page 47 for O.D.

These fittings are designed to provide minimal pressure drop and uniform strength. Pressure ratings of Gruvlok Fittings conforms to those of Fig. 7001 Gruvlok Standard Coupling.

FIG. 7065

Standpipe Tee (GR x GR x FPT)

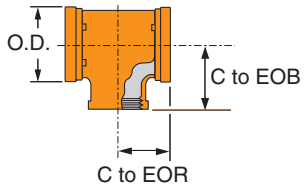

FIGURE 7065 STANDPIPE TEE (GR x GR x FPT)				
Nominal Size	O.D.	Center to End of Run	Center to End of Branch	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
4 x 4 x 2½	4.500	3¼	4	7.6
100 x 100 x 65	*114.3*	*83*	*102*	*3.4*
6 x 6 x 2½	6.625	3¼	5⅛	11.2
150 x 150 x 65	*168.3*	*83*	*130*	*5.1*

See Fitting Size chart on page 47 for O.D.

These fittings are designed to provide minimal pressure drop and uniform strength. Pressure ratings of Gruvlok Fittings conforms to those of Fig. 7001 Gruvlok Standard Coupling.

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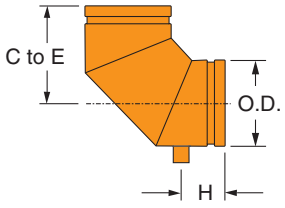
FIG. 7050DR

90° Drain elbow



Available fabricated Schedule 10 only.

Drain elbow has a standard 1" female NPT outlet

FIGURE 7050DR 90° DRAIN ELBOW					
Nominal Size	O.D.	Max Working Pressure	Dimensions		Approx. Wt. Ea.
			C to E	H	
In./DN(mm)	*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*Lbs./Kg*
1¼	1.660	300	2¾	1¾	0.70
32	*42.2*	*20.7*	*69*	*44*	*0.30*
1½	1.900	300	2¾	1¾	1.70
40	*48.3*	*20.7*	*69*	*44*	*0.8*
2	2.375	300	3¼	1¾	2.00
50	*60.3*	*20.7*	*83*	*44*	*0.90*
2½	2.875	300	3¾	1⅞	2.50
65	*73.0*	*20.7*	*95*	*48*	*1.10*
3	3.500	300	4¼	2	3.20
80	*88.9*	*20.7*	*108*	*51*	*1.50*
4	4.500	300	5	2¼	4.60
100	*114.3*	*20.7*	*127*	*57*	*2.10*
5	5.583	300	5½	2⅜	11.5
125	*141.3*	*20.7*	*140*	*60*	*5.2*
6	6.625	300	6½	2⅜	9.60
150	*168.3*	*20.7*	*165*	*60*	*4.40*
8	8.625	300	7¾	2½	15.8
200	*219.1*	*20.7*	*197*	*64*	*7.20*
10	10.750	300	9	2¾	48.5
250	*273.1*	*20.7*	*229*	*69*	*22.0*
12	12.750	300	10	2¾	66.0
300	*323.9*	*20.7*	*254*	*69*	*29.0*

GRUVLOK® FIRE-RITE™ SHORT PATTERN FITTINGS

FIG. 7450

90° Short Pattern Elbow

The Gruvlok® Fire-Rite™ short pattern 90° elbows in 2" to 8" size range with a 300 psi pressure rating.

Fire-Rite™ fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD designed increased internal diameters provides superior flow capability.

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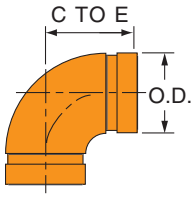
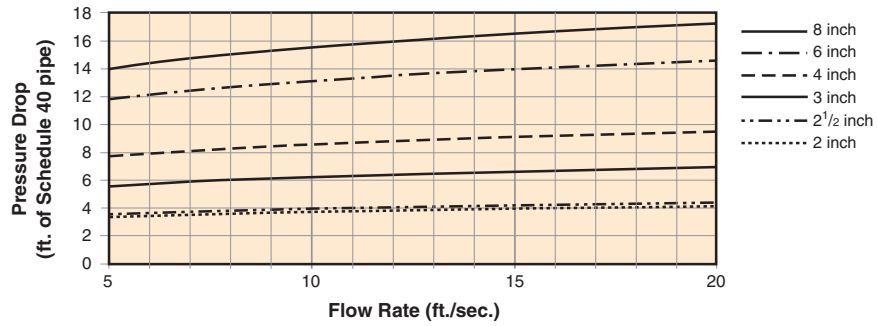


FIGURE 7450 90° ELBOW SHORT PATTERN FITTINGS - PRESSURE DROP



Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. 7450 90° grooved end elbows use the value shown.

NOTE: *Above values are shown for Schedule 40 pipe to be consistent with industry practices.*

FIGURE 7450 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2¾ *70*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3 *76*	2.6 *1.2*
3 *80*	3.500 *88.9*	3⅜ *86*	3.5 *1.6*
4 *100*	4.500 *114.3*	4 *102*	6.5 *3.0*
6 *150*	6.625 *168.3*	5½ *140*	14.8 *6.7*
8 *200*	8.625 *219.1*	6⅞ *175*	25.6 *11.6*

FIG. 7460

Short Pattern Tee

The Gruvlok® Fire-Rite™ short pattern fitting tees in 2" to 8" size range with a 300 psi pressure rating.

Fire-Rite™ fittings are painted to industry specification and are available galvanized for more corrosive environments.

CAD designed increased internal diameters provides superior flow capability

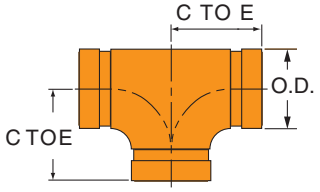
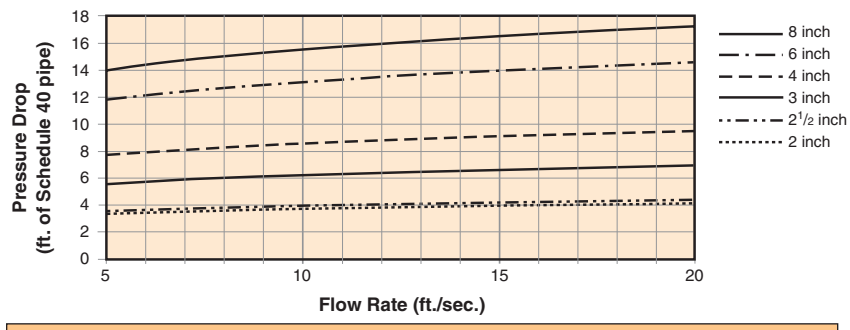


FIGURE 7460 TEE SHORT PATTERN FITTINGS - PRESSURE DROP



Gruvlok short pattern fittings exceed the headloss requirements of NFPA 13.

For Fig. 7460 Tee branch use 2½ times the value shown.
For Fig. 7460 Tee run use the value shown.

NOTE: *Above values are shown for Schedule 40 pipe to be consistent with industry practices.*

FIGURE 7460 TEE

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2¾ *70*	2.5 *1.1*
2½ *65*	2.875 *73.0*	3 *76*	3.5 *1.6*
3 *80*	3.500 *88.9*	3⅜ *86*	4.8 *2.2*
4 *100*	4.500 *114.3*	4 *102*	8.1 *3.7*
6 *150*	6.625 *168.3*	5½ *140*	19.1 *8.7*
8 *200*	8.625 *219.1*	6⅞ *175*	35.2 *16.0*

FIG. 7091

End of the Line Fitting (EOL)

Gruvlok® End of the Line (EOL) fittings can be used as a fast transition from grooved fire protection piping to a NPT threaded outlet at the end of your system lines. The EOL fitting can be mounted upright and used as the last sprinkler head receptacle, or mounted flowing downward and capped or valved as a drain point in the system.

EOL Fittings are rated at 300 psi and available in 1½", 2", and 2½" Gruvlok pipe sizes with female NPT threads ranging from ½" to ¾" and 1". The EOL fitting is constructed from ductile iron for superior longevity.

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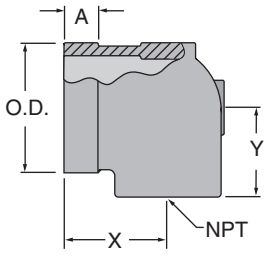

FIGURE 7091 END-OF-LINE FITTING

Nominal Size Run x Branch	O.D.	Max. Wk. Pressure	Coupling Dimensions			Approx. Wt. Ea.
			A	X	Y	
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*Lbs./kg*
1½ x ½	1.900	300	⅝	1¾	1 5/16	0.8
40 x 15	*48*	*20.7*	*16*	*44*	*33*	*0.3*
1½ x ¾	1.900	300	⅝	1¾	1 5/16	0.8
40 x 20	*48*	*20.7*	*16*	*44*	*33*	*0.3*
1½ x 1	1.900	300	⅝	1⅞	1⅜	0.8
40 x 25	*48*	*20.7*	*16*	*48*	*35*	*0.3*
2 x ½	2.375	300	⅝	1¾	1 9/16	1.0
50 x 15	*60*	*20.7*	*16*	*44*	*40*	*0.4*
2 x ¾	2.375	300	⅝	1¾	1 9/16	1.0
50 x 20	*60*	*20.7*	*16*	*44*	*40*	*0.4*
2 x 1	2.375	300	⅝	1⅞	1⅝	1.0
50 x 25	*60*	*20.7*	*16*	*48*	*41*	*0.4*
2½ x ½	2.875	300	⅝	1¾	1¾	1.4
65 x 15	*73*	*20.7*	*16*	*44*	*44*	*0.6*
2½ x ¾	2.875	300	⅝	1¾	1¾	1.4
65 x 20	*73*	*20.7*	*16*	*44*	*44*	*0.6*
2½ x 1	2.875	300	⅝	1⅞	1 13/16	1.4
65 x 25	*73*	*20.7*	*16*	*48*	*46*	*0.6*

FIG. 7050 3D

Long Radius Elbows

1. Long radius elbows 3D in sizes up to and including 4" are provided with 4" (101.6mm) long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.
2. Grooved or plain - end available - specify choice on order.
3. Material: standard wall steel pipe to ASTM A53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± 1/8" (3.2 mm); 8" through 16" ± 1/4" (6.4 mm); 18" through 24" + 3/8" (9.5mm).
6. All weights are approximate, based on calculated weight of pipe.

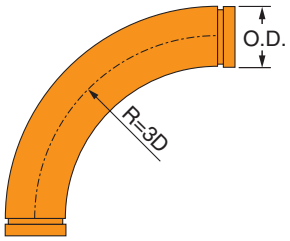

FIG. 7050-3D
90° Elbow

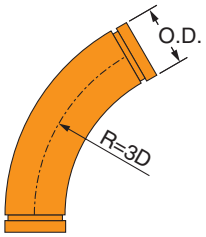

FIG. 7057-3D
60° Elbow

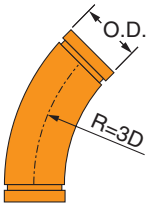

FIG. 7051-3D
45° Elbow

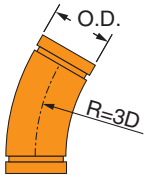

FIG. 7058-3D
30° Elbow

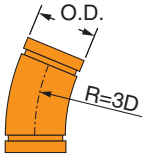

FIG. 7052-3D
22½° Elbow

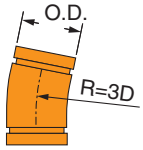

FIG. 7053-3D
11¼° Elbow

FIGURE 7050-3D 90° ELBOW				FIG. 7057-3D 60° ELBOW		FIG. 7051-3D 45° ELBOW		FIG. 7058-3D 30° ELBOW		FIG. 7052-3D 22½° ELBOW		FIG. 7053-3D 11¼° ELBOW	
Nominal Size	O.D.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	10 *254*	5.3 *2.4*	7½ *191*	4.3 *2.0*	6½ *165*	3.9 *1.8*	5¾ *146*	3.4 *1.5*	5¼ *133*	3.2 *1.5*	4½ *114*	2.8 *1.3*
2½ *65*	2.875 *73*	11½ *292*	9.5 *4.3*	8¼ *210*	7.7 *3.5*	7¼ *184*	6.7 *3.0*	6 *152*	5.8 *2.6*	5½ *140*	5.3 *2.4*	4¾ *121*	4.6 *2.1*
3 *80*	3.500 *88.9*	13 *330*	14.0 *6.4*	9¼ *235*	11.0 *5.0*	7¾ *197*	9.5 *4.3*	6½ *165*	8.0 *3.6*	5¾ *146*	7.3 *3.3*	5 *127*	6.2 *2.8*
3½ *90*	4.000 *101.6*	14½ *368*	18.6 *8.4*	10 *254*	14.4 *6.5*	8½ *216*	12.3 *5.6*	6¾ *171*	10.2 *4.6*	6 *152*	9.2 *4.2*	5 *127*	7.6 *3.4*
4 *100*	4.500 *114.3*	16 *406*	24.1 *10.9*	11 *279*	18.5 *8.4*	9 *229*	15.7 *7.1*	7¼ *184*	12.8 *5.8*	6½ *165*	11.4 *5.2*	5¼ *133*	9.3 *4.2*
5 *125*	5.563 *141.3*	20 *508*	40.9 *18.6*	13¾ *349*	31.3 *14.2*	11¼ *286*	26.5 *12.0*	9 *229*	21.8 *9.9*	8 *203*	19.4 *8.8*	6½ *165*	15.8 *7.2*
6 *150*	6.625 *168.3*	24 *610*	63.7 *28.9*	16½ *419*	48.8 *22.1*	13½ *343*	41.3 *18.7*	10¾ *273*	33.9 *15.4*	9½ *241*	30.1 *13.7*	7¾ *197*	24.6 *11.2*
8 *200*	8.625 *219.1*	32 *813*	127.8 *58.0*	22 *559*	97.9 *44.4*	18 *457*	82.9 *37.6*	14½ *368*	68.0 *30.8*	12¾ *324*	60.5 *27.4*	10½ *267*	49.3 *22.4*
10 *250*	10.750 *273.1*	40 *1016*	226.4 *102.7*	27¼ *692*	173.4 *78.7*	22½ *572*	146.9 *66.6*	18 *457*	120.5 *54.7*	16 *406*	107.2 *48.6*	13 *330*	87.3 *39.6*
12 *300*	12.750 *323.9*	48 *1219*	332.7 *150.9*	32¾ *832*	254.8 *115.6*	27 *686*	215.9 *97.9*	21¾ *552*	177.0 *80.3*	19¼ *489*	157.5 *71.4*	15½ *394*	128.3 *58.2*
14 *350*	14.000 *355.6*	56 *1422*	427.3 *193.8*	38¼ *972*	327.3 *148.5*	31½ *800*	227.3 *103.1*	25¼ *641*	227.3 *103.1*	22½ *572*	202.3 *91.8*	18¼ *464*	164.8 *74.8*
16 *400*	16.000 *406.4*	64 *1626*	560.1 *254.1*	43¾ *1111*	429.0 *194.6*	36 *914*	363.5 *164.9*	29 *737*	297.9 *135.1*	25½ *648*	265.2 *120.3*	20¾ *527*	216.0 *98.0*
18 *450*	18.000 *457.2*	72 *1829*	710.7 *322.4*	49¼ *1251*	544.4 *246.9*	40½ *1029*	461.3 *209.2*	32½ *826*	378.1 *171.5*	28¾ *730*	336.5 *152.6*	23.35 *593*	274.1 *124.3*
20 *500*	20.000 *508*	80 *2032*	879.3 *398.8*	54¾ *1391*	673.5 *305.5*	45 *1143*	540.7 *245.3*	36 *914*	467.8 *212.2*	32 *813*	416.3 *188.8*	26 *660*	339.2 *153.9*
24 *600*	24.000 *609.6*	96 *2438*	1270.3 *576.2*	65½ *1664*	973.0 *441.3*	53¾ *1365*	824.4 *373.9*	43¼ *1099*	675.7 *304.1*	38¼ *972*	601.4 *272.8*	31 *787*	490.0 *222.3*

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FIG. 7050 5D

Long Radius Elbows

1. Long radius elbows 5D in sizes up to and including 4" are provided with 4" (101.6mm) long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.
2. Grooved or plain - end available.
3. Material: standard wall steel pipe to ASTM A53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± 1/8" (3.2 mm); 8" through 16 ± 1/4" (6.4 mm); 18" through 24" + 3/8" (9.5mm).
6. All weights are approximate, based on calculated weight of pipe.

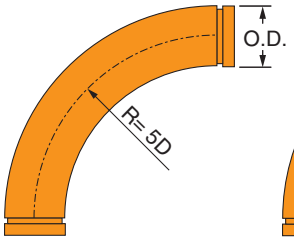

FIG. 7050-5D
90° Elbow

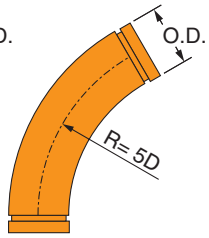

FIG. 7057-5D
60° Elbow

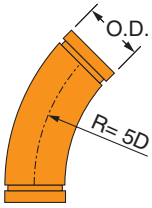

FIG. 7051-5D
45° Elbow

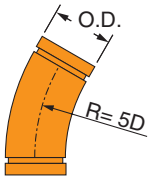

FIG. 7058-5D
30° Elbow

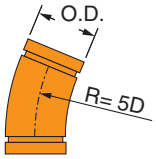

FIG. 7052-5D
22½° Elbow

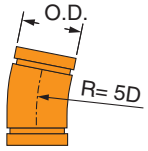

FIG. 7053-5D
11¼° Elbow

FIGURE 7050-5D 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	14 *356*	7.2 *3.3*
2½ *65*	2.875 *73*	16½ *419*	13.3 *6.0*
3 *80*	3.500 *88.9*	19 *483*	19.9 *9.0*
3½ *90*	4.000 *101.6*	21½ *546*	26.9 *12.2*
4 *100*	4.500 *114.3*	24 *610*	35.4 *16.1*
5 *125*	5.563 *141.3*	30 *762*	60.0 *27.2*
6 *150*	6.625 *168.3*	36 *914*	93.5 *42.4*
8 *200*	8.625 *219.1*	48 *1219*	187.6 *85.1*
10 *250*	10.750 *273.1*	60 *1524*	332.4 *150.8*
12 *300*	12.750 *323.9*	72 *1829*	488.4 *221.5*
14 *350*	14.000 *355.6*	84 *2134*	627.4 *284.6*
16 *400*	16.000 *406.4*	96 *2438*	822.2 *372.9*
18 *450*	18.000 *457.2*	108 *2743*	1,043.4 *473.3*
20 *500*	20.000 *508*	120 *3048*	1,290.9 *585.5*
24 *600*	24.000 *609.6*	144 *3658*	1,864.8 *845.9*

FIG. 7057-5D 60° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
9¾ *248*	5.6 *2.5*
11¼ *286*	10.2 *4.6*
12¾ *324*	15.0 *6.8*
12¼ *311*	20.0 *9.1*
15½ *394*	26.0 *11.8*
19½ *495*	44.1 *20.0*
23¼ *591*	68.6 *31.1*
31 *787*	137.7 *62.5*
39 *991*	244.1 *110.7*
46¾ *1187*	358.6 *162.7*
54½ *1384*	460.7 *209.0*
62¼ *1581*	603.8 *273.9*
70 *1778*	766.2 *347.5*
77¾ *1975*	947.9 *430.0*
93¼ *2369*	1,369.3 *621.1*

FIG. 7051-5D 45° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
8¼ *210*	4.8 *2.2*
9¼ *235*	8.6 *3.9*
10¼ *260*	12.5 *5.7*
11¼ *286*	16.5 *7.5*
12½ *318*	21.3 *9.7*
15½ *394*	36.1 *16.4*
18½ *470*	56.2 *25.5*
24½ *622*	112.8 *51.2*
30¾ *781*	199.9 *90.7*
37 *940*	293.7 *133.2*
43 *1092*	377.3 *171.1*
49¼ *1251*	494.5 *224.3*
55¼ *1403*	627.6 *284.7*
61½ *1562*	776.4 *352.2*
73¾ *1873*	1,121.6 *508.7*

FIG. 7058-5D 30° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
6¾ *171*	4.0 *1.8*
7½ *191*	7.0 *3.2*
8 *203*	10.0 *4.5*
8¾ *222*	13.0 *5.9*
9½ *241*	16.6 *7.5*
11¾ *298*	28.1 *12.7*
14 *356*	43.8 *19.9*
18¾ *476*	87.9 *39.9*
23½ *597*	155.8 *70.7*
28 *711*	228.9 *103.8*
32¾ *832*	294.0 *133.4*
37½ *953*	385.3 *174.8*
42¼ *1073*	489.0 *221.8*
46¾ *1187*	605.0 *274.4*
56¼ *1429*	873.9 *396.4*

FIG. 7052-5D 22½° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
6 *152*	3.6 *1.6*
6½ *165*	6.2 *2.8*
7 *178*	8.8 *4.0*
7½ *191*	11.3 *5.1*
8 *203*	14.3 *6.5*
10 *254*	24.1 *10.9*
12 *305*	37.6 *17.1*
16 *406*	75.4 *34.2*
20 *508*	133.7 *60.6*
24 *610*	196.4 *89.1*
28 *711*	252.3 *114.4*
32 *813*	330.7 *150.0*
36 *914*	419.7 *190.4*
40 *1016*	519.2 *235.5*
48 *1219*	750.1 *340.2*

FIG. 7053-5D 11¼° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
5 *127*	3.0 *1.4*
5¼ *133*	5.0 *2.3*
5½ *140*	6.9 *3.1*
5¾ *146*	8.7 *3.9*
6 *152*	10.7 *4.9*
7½ *191*	18.2 *8.3*
9 *229*	28.3 *12.8*
12 *305*	56.8 *25.8*
15 *381*	100.6 *45.6*
18 *457*	147.8 *67.0*
21 *533*	189.8 *86.1*
24 *610*	248.8 *112.9*
27 *686*	315.7 *143.2*
30 *762*	390.6 *177.2*
35¾ *908*	564.3 *256.0*

APPROVED
For listing/approval details contact your Gruvlok Representative.

FIG. 7050 6D

Long Radius Elbows

1. Long radius elbows 6D in sizes up to and including 4" are provided with 4" (101.6mm) long integral tangent. Remaining sizes provided with integral tangents with lengths equal to nominal pipe size.
2. Grooved or plain - end available .
3. Material: standard wall steel pipe to ASTM A53, Grade B. (Other materials available on request).
4. Bends to conform to above radii.
5. C to E tolerances: 2" through 6" ± 1/8" (3.2 mm); 8" through 16 ± 1/4" (6.4 mm); 18" through 24" + 3/8" (9.5mm).
6. All weights are approximate, based on calculated weight of pipe.

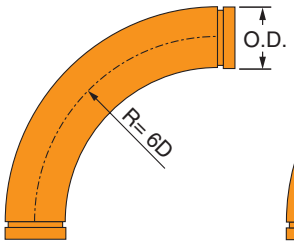

FIG. 7050-6D
90° Elbow

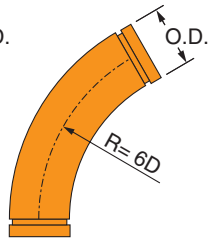

FIG. 7057-6D
60° Elbow

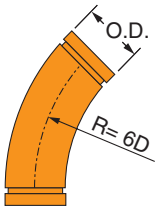

FIG. 7051-6D
45° Elbow

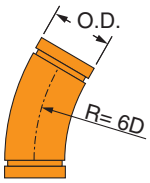

FIG. 7058-6D
30° Elbow

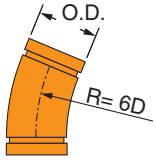

FIG. 7052-6D
22½° Elbow

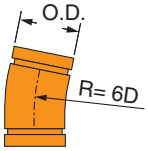

FIG. 7053-6D
11¼° Elbow

FIGURE 7050-6D 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	In./mm	In./mm	Lbs./Kg
2 50	2.375 60.3	16 406	8.2 3.7
2½ 65	2.875 73	19 483	15.2 6.9
3 80	3.500 88.9	22 559	22.9 10.4
3½ 90	4.000 101.6	25 635	31.1 14.1
4 100	4.500 114.3	28 711	41.1 18.6
5 125	5.563 141.3	35 889	69.6 31.6
6 150	6.625 168.3	42 1067	108.4 49.2
8 200	8.625 219.1	56 1422	217.5 98.7
10 250	10.750 273.1	70 1778	385.4 174.8
12 300	12.750 323.9	84 2134	566.2 256.8
14 350	14.000 355.6	98 2489	727.4 329.9
16 400	16.000 406.4	112 2845	953.3 432.4
18 450	18.000 457.2	126 3200	1,209.7 548.7
20 500	20 508	140 3556	1,496.6 678.8
24 600	24 609.6	168 4267	2,162.0 980.7

FIG. 7057-6D 60° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
11 279	6.3 2.9
12¾ 324	11.4 5.2
14½ 368	17.0 7.7
16¼ 413	22.8 10.3
18 457	29.8 13.5
22¼ 565	50.5 22.9
26¾ 679	78.6 35.7
35¾ 908	157.7 71.5
44¾ 1137	279.4 126.7
53½ 1359	410.5 186.2
62½ 1588	527.3 239.2
71½ 1816	691.1 313.5
80½ 2045	877.1 397.8
89¼ 2267	1,085.1 492.2
107¼ 2724	1,567.5 711.0

FIG. 7051-6D 45° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
9 229	5.3 2.4
10¼ 260	9.5 4.3
11½ 292	14.0 6.4
12¾ 324	18.6 8.4
14 356	24.1 10.9
17½ 445	40.9 18.6
21 533	63.7 28.9
28 711	127.8 58.0
35 889	226.4 102.7
41¾ 1060	332.7 150.9
48¾ 1238	427.3 193.8
55¾ 1416	560.1 254.1
62¾ 1594	710.7 322.4
69¾ 1772	879.3 398.8
83¾ 2127	1,270.3 576.2

FIG. 7058-6D 30° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
7¼ 184	4.3 2.0
8 203	7.7 3.5
8¾ 222	11.0 5.0
9¾ 248	14.4 6.5
10½ 267	18.5 8.4
13 330	31.3 14.2
15¾ 400	48.8 22.1
21 533	97.9 44.4
26 660	173.4 78.7
31¼ 794	254.8 115.6
36½ 927	327.3 148.5
41¾ 1060	429.0 194.6
47 1194	544.4 246.9
52¼ 1327	673.5 305.5
62½ 1588	973.0 441.3

FIG. 7052-6D 22½° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
6½ 165	3.9 1.8
7 178	6.7 3.0
7½ 191	9.5 4.3
8¼ 210	12.3 5.6
8¾ 222	15.7 7.1
11 279	26.5 12.0
13¼ 337	41.3 18.7
17½ 445	82.9 37.6
22 559	146.9 66.6
26¼ 667	215.9 97.9
30¾ 781	277.3 125.8
35¼ 895	363.5 164.9
39½ 1003	461.3 209.2
44 1118	570.7 258.9
52.34 1329	824.4 373.9

FIG. 7053-6D 11¼° ELBOW

Center to End	Approx. Wt. Ea.
In./mm	Lbs./Kg
5¼ 133	3.2 1.5
5½ 140	5.3 2.4
5¾ 146	7.3 3.3
6 152	9.2 4.2
6½ 165	11.4 5.2
8 203	19.4 8.8
9½ 241	30.1 13.7
12¾ 324	60.5 27.4
16 406	107.2 48.6
19 483	157.5 71.4
22¼ 565	202.3 91.8
25½ 648	265.2 120.3
28¾ 730	336.5 152.6
31¾ 806	416.3 188.8
38¼ 972	601.4 272.8

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For listing/approval details contact your Gruvlok Representative.

SERIES 7700

Butterfly Valve

AN-7721-3

Series 7700 butterfly valve
with 10 position lever lock

AN-7722-3

Series 7700 butterfly valve
with gear operator

Series 7700 Butterfly Valves
used in commercial grooved-end piping systems 2" through 12"

The uniqueness of the **Series 7700 Gruvlok Butterfly Valve** begins with the spherical bore of the disc seat area. This facilitates a constant DISC-TO-SEAT loading that maintains a leak tight stem seal regardless of disc position. The stem sealing force is constant through the full disc cycle and operating torques are kept low which increases valve life. The design provides a bubble tight seal from full vacuum to 300 psi when the valve is closed. The valve is rated for dead-end service to a full pressure rating of 300 psi.

The stem-to-disc connection provides zero backlash. The high strength, corrosion resistant, stainless steel stems are blow-out proof. Each stem is fitted with a secondary seal that also provides a lifetime lubrication chamber.

The Series 7700 valve is designed with the contractor in mind. The valve body is a rugged one-piece casting with an integral mounting base for gear operator or handle actuation, while providing room for a minimum of 2" of pipe insulation. The valve is designed and manufactured to meet or exceed the requirements of MSS SP-67.

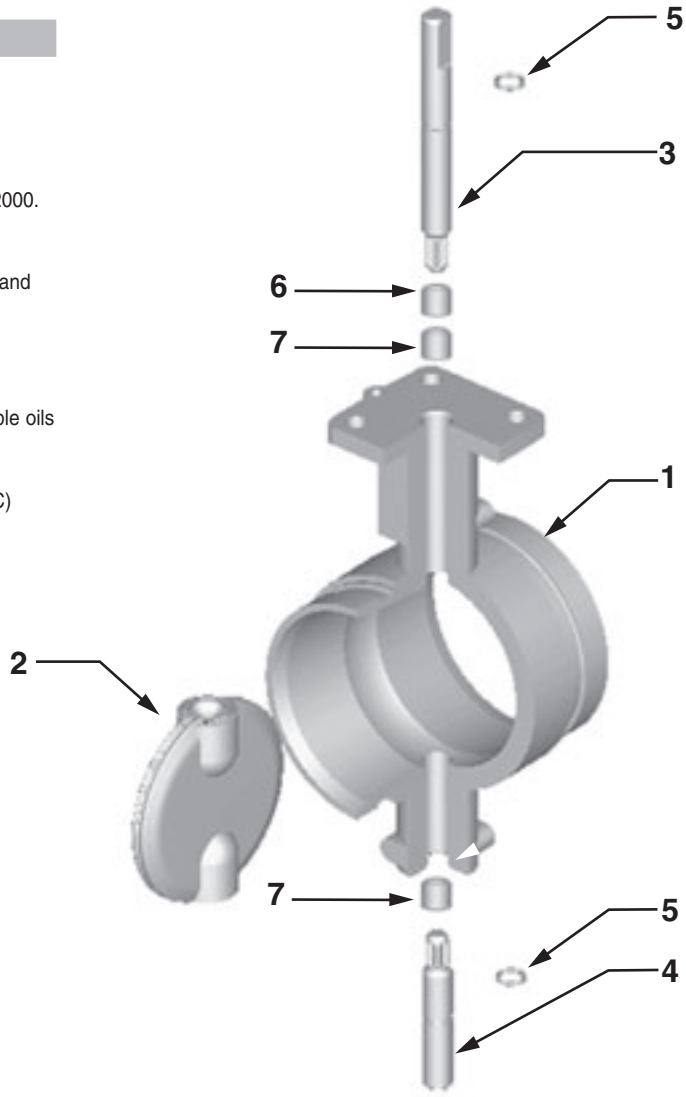
For data on fire protection listings/approvals, contact your Anvil representative.

SERIES 7700

Butterfly Valve

MATERIAL SPECIFICATIONS

1. **BODY:** Ductile Iron conforming to ASTM A-536, Grade 65-45-12
   Body Coating: Nylon: +230˚F (+110˚C) maximum service temperature
   Epoxy: +180˚F (+82˚C) maximum service temperature
2. **DISC:** Ductile Iron conforming to ASTM A-536 Grades 65-45-12
   Disc Encapsulation: Properties as specified in accordance with ASTM D-2000.
   - ❑ **Grade E (EPDM):** -40˚F to +230˚F Service Temperature Range (-40˚C to +110˚C)
     Recommended for water service, dilute acids, alkalies, oil-free air and many chemical services.
     NOT FOR USE IN PETROLEUM SERVICES.
   - ❑ **Grade T (Nitrile):** -20˚F to +180˚F Service Temperature Range (-29˚C to +82˚C)
     Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
     NOT FOR USE IN HOT WATER SERVICES.
   - ❑ **Grade O:** +20˚F to +230˚F Service Temperature Range (-6˚C to +110˚C)
     Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants.
     Recommended for use in copper systems
3, 4. **UPPER AND LOWER SHAFT:** Type 416 Stainless Steel
5. **O-RINGS:** Compatible with disc coating
6, 7. **TOP AND BOTTOM BRONZE SLEEVE BUSHINGS:** 8", 10", & 12" Valve only



* Special Options -
Call an Anvil Representative for pricing and availability.
E- Silicone Free

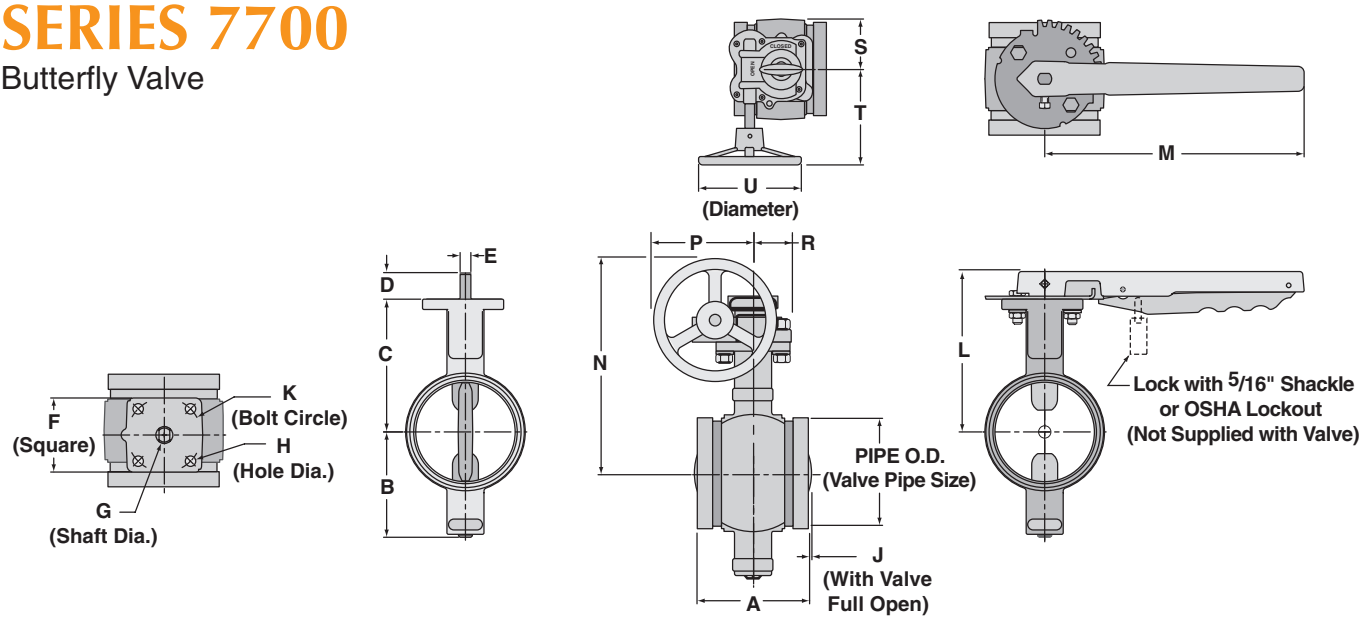
GRUVLOK BUTTERFLY VALVES SERIES 7700 (ORDERING INFORMATION)

Sample Part Number 8" AN7721-3*—>	8"	A	N	77	2	1 -	3*
	Size	**Body Style**	**Body Coating**	**Series**	**Disc Coating**	**Operator**	**Stem**
	2" - 12"	A	N - Nylon E - Epoxy	77-77XX	1 - Nitrile (Grade T) 2 - EPDM (Grade E) 3 - Fluoro Elastomer - (Grade O)	0 - None 1 - 10 Pos. L/Lock 2 - Gear Operator D - Infinite Pos. w/Memory Stop 4 - Short 10 Pos. L/lock Operator	3 - 416 S.S.

NOTE: For operator safety, hand levers on 8" valves are limited to applications with a 25 PSI (1.7 bar) maximum pressure.

SERIES 7700

Butterfly Valve



Series 7700 Butterfly Valve Dimensions

Dimensions	Valve Size (ANSI/DN)								
	2	2½	3	4	5	6	8	10	12
In./mm	*50*	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*
O.D.	2 3/8	2 7/8	3 1/2	4 1/2	5 9/16	6 5/8	8 5/8	10 3/4	12 3/4
In./mm	*60.3*	*73.0*	*88.9*	*114.3*	*141.3*	*168.3*	*219.1*	*273.1*	*323.9*
A	3 3/16	3 13/16	3 13/16	4 5/8	5 13/16	5 13/16	5 1/4	6 1/4	6 1/2
	81.0	*96.8*	*96.8*	*117.3*	*147.6*	*147.6*	*133.4*	*158.8*	*165.1*
B	3	3 3/16	3 13/16	4 1/4	5	5 1/2	6 15/16	8	9
	75.4	*80.8*	*96.5*	*108.5*	*126.5*	*138.9*	*175.8*	*202.9*	*229.4*
C	4 3/16	4 3/8	5 1/16	5 3/8	5 7/8	6 3/8	7 3/4	9 1/2	10 1/2
	105.9	*111.3*	*129.0*	*136.7*	*149.4*	*161.8*	*196.9*	*240.3*	*266.7*
D	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	1 1/16	1 5/8	1 5/8	1 5/8
	26.9	*26.9*	*26.9*	*26.9*	*26.9*	*26.9*	*41.1*	*41.1*	*41.1*
E	7/16	7/16	7/16	7/16	7/16	7/16	3/4	3/4	3/4
	11.1	*11.1*	*11.1*	*11.1*	*11.1*	*11.1*	*19.1*	*19.1*	*19.1*
F	3	3	3	3	3	3	5	5	5
	76.2	*76.2*	*76.2*	*76.2*	*76.2*	*76.2*	*127.0*	*127.0*	*127.0*
G	9/16	9/16	9/16	9/16	7/8	7/8	1	1 1/4	1 1/4
	14.3	*14.3*	*14.3*	*14.3*	*22.2*	*22.2*	*25.4*	*31.8*	*31.8*
H	7/16	7/16	7/16	7/16	7/16	7/16	1/2	1/2	1/2
	11.1	*11.1*	*11.1*	*11.1*	*11.1*	*11.1*	*13.5*	*13.5*	*13.5*
J	-	-	-	-	-	1/8	1 3/8	1 7/8	2 3/4
	-	-	-	-	-	*3.3*	*34.8*	*47.0*	*70.1*
K	3	3	3	3	3	3	5	5	5
	76.2	*76.2*	*76.2*	*76.2*	*76.2*	*76.2*	*127.0*	*127.0*	*127.0*
L	5 5/16	5 1/2	6 1/4	6 1/2	7	7 1/2	9 7/16	-	-
	135.1	*140.5*	*158.2*	*165.9*	*178.6*	*191.0*	*240.3*	-	-
M	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	10 1/2	15	-	-
	266.7	*266.7*	*266.7*	*266.7*	*266.7*	*266.7*	*381.0*	-	-
N	7 13/16	8	8 11/16	9	9 1/2	10	14 15/16	16 5/8	20 11/16
	198.0	*203.3*	*221.1*	*228.7*	*241.4*	*253.9*	*379.2*	*422.7*	*525.3*
P	4	4	4	4	4	4	8 1/16	8 1/16	11 5/8
	102.1	*102.1*	*102.1*	*102.1*	*102.1*	*102.1*	*204.5*	*204.5*	*295.4*
R	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2 5/16	2 5/16	2 9/16
	38.2	*38.2*	*38.2*	*38.2*	*38.2*	*38.2*	*58.5*	*58.5*	*65.5*
S	2	2	2	2	2	2	2 5/8	2 5/8	3 1/4
	51.0	*51.0*	*51.0*	*51.0*	*51.0*	*51.0*	*66.0*	*66.0*	*83.0*
T	6 5/16	6 5/16	6 5/16	6 5/16	6 5/16	6 5/16	10 13/16	10 13/16	13 13/16
	160.3	*160.3*	*160.3*	*160.3*	*160.3*	*160.3*	*275.3*	*275.3*	*350.3*
U	5	5	5	5	5	5	12	12	18
	127.0	*127.0*	*127.0*	*127.0*	*127.0*	*127.0*	*304.8*	*304.8*	*457.2*

Note: 3" or 5" handwheels may be included on valves sizes 2" - 4". Contact your Anvil Rep. for additional information.

SERIES 7700

Butterfly Valve Performance Data

Maximum Working Pressure Rating: 300 PSI
(Commercial Applications - Sizes 2" thru 12")

Cv Values

Valve Size	O.D.	Disc Position (degrees open)							
		25°	30°	40°	50°	60°	70°	80°	90°
In./mm	*In./mm*								
2 *50*	2.375 *60.3*	4 *0.3*	7 *0.5*	19 *1.3*	44 *3.0*	48 *3.3*	80 *5.5*	111 *7.7*	158 *10.9*
2½ *65*	2.875 *73.0*	9 *0.6*	14 *1.0*	34 *2.3*	78 *5.4*	84 *5.8*	142 *9.8*	196 *13.5*	280 *19.3*
3 *80*	3.500 *88.9*	14 *1.0*	20 *1.4*	50 *3.4*	112 *7.7*	128 *8.8*	215 *14.8*	285 *19.7*	400 *27.6*
4 *100*	4.500 *114.3*	29 *2.0*	41 *2.8*	100 *6.9*	239 *16.5*	250 *17.2*	420 *29.0*	582 *40.1*	826 *57.0*
5 *125*	5.563 *141.3*	62 *4.3*	76 *5.2*	182 *12.5*	415 *28.6*	445 *30.7*	780 *53.8*	1,100 *75.8*	1,480 *102.0*
6 *150*	6.625 *168.3*	96 *6.6*	141 *9.7*	325 *22.4*	755 *52.1*	809 *55.8*	1,370 *94.5*	1,920 *132.4*	2,678 *184.6*
8 *200*	8.625 *219.1*	172 *11.9*	252 *17.4*	592 *40.8*	1,365 *94.1*	1,460 *100.7*	2,430 *167.5*	3,410 *235.1*	4,819 *332.3*
10 *250*	10.750 *273.1*	230 *15.9*	328 *22.6*	792 *54.6*	1,825 *125.8*	1,962 *135.3*	3,260 *224.8*	4,590 *316.5*	6,431 *443.4*
12 *300*	12.750 *323.9*	418 *28.8*	604 *41.6*	1,440 *99.3*	3,350 *231.0*	3,590 *247.5*	5,980 *412.3*	8,750 *603.3*	11,947 *823.7*

Headloss Equivalent Length of Pipe

Valve Size	O.D.	Equivalent Feet of Pipe* C=120			Max. Insulating Thickness
		Sch. 10	Sch. 30	Sch. 40	
In./mm	*In./mm*	*Ft./m*			*In./mm*
2 *50*	2.375 *60.3*	5.8 *1.8*	- -	4.7 *1.4*	2 *50*
2½ *65*	2.875 *73.0*	5.1 *1.6*	- -	3.7 *1.1*	2½ *65*
3 *80*	3.500 *88.9*	9.6 *2.9*	- -	7.2 *2.2*	2 *50*
4 *100*	4.500 *114.3*	7.5 *2.3*	- -	5.7 *1.7*	2½ *65*
5 *125*	5.563 *141.3*	7.0 *2.1*	- -	5.6 *1.7*	2½ *65*
6 *150*	6.625 *168.3*	6.1 *1.9*	- -	4.8 *1.5*	2½ *65*
8 *200*	8.625 *219.1*	6.3 *1.9*	5.7 *1.7*	- -	2½ *65*
10 *250*	10.750 *273.1*	11.3 *3.4*	10.2 *3.1*	- -	3 *80*
12 *300*	12.750 *323.9*	8.4 *2.6*	7.4 *2.3*	- -	3½ *90*

*The equivalent feet of pipe is based on the Hazen and Williams formula and the flow rates typically used with each size valve.

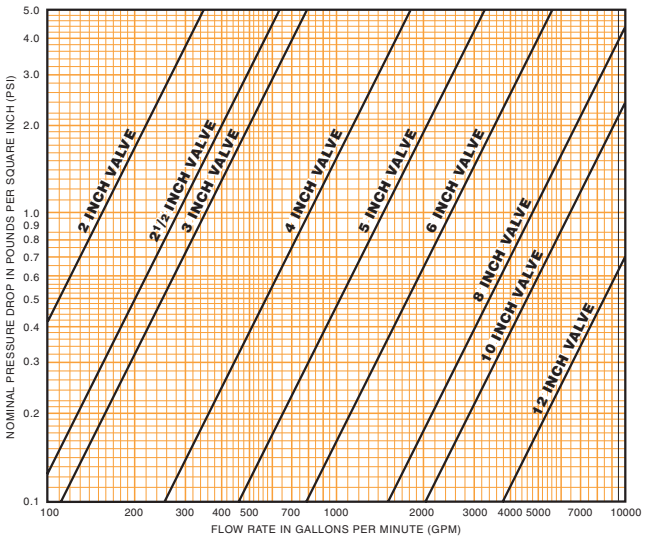
Valve Weight and Torque Values

Valve Size	O.D.	* Approx. Wt. Ea.	Operating Pressure				
			50 PSIG	100 PSIG	150 PSIG	200 PSIG	300 PSIG
In./mm	*In./mm*	*Lbs./Kg*	†*Breakaway Torque (In. - Lbs) / n-m*				
2 *50*	2.375 *60.3*	5 *2.3*	65 *7.3*	72 *8.1*	75 *8.5*	80 *9.0*	85 *9.6*
2½ *65*	2.875 *73.0*	10 *4.5*	75 *8.5*	82 *9.3*	82 *9.3*	90 *10.2*	94 *10.6*
3 *80*	3.500 *88.9*	11 *5.0*	75 *8.5*	85 *9.6*	95 *10.7*	115 *13.0*	120 *13.6*
4 *100*	4.500 *114.3*	15 *6.8*	180 *20.3*	195 *22.0*	200 *22.6*	205 *23.2*	220 *24.9*
5 *125*	5.563 *141.3*	20 *9.0*	224 *25.3*	307 *34.7*	320 *36.2*	347 *39.2*	452 *51.1*
6 *150*	6.625 *168.3*	46 *20.9*	276 *31.2*	376 *42.5*	404 *45.6*	428 *48.4*	599 *67.7*
8 *200*	8.625 *219.1*	68 *30.8*	613 *69.3*	694 *78.4*	794 *89.7*	880 *99.4*	1,067 *120.6*
10 *250*	10.750 *273.1*	78 *35.4*	742 *83.8*	864 *97.6*	1,160 *131.1*	1,452 *164.1*	1,680 *189.8*
12 *300*	12.750 *323.9*	91 *41.3*	2,220 *250.8*	2,633 *297.5*	2,917 *329.6*	3,210 *362.7*	4,200 *474.5*

†These values are valid for water and lubricating fluid service only.
Contact Anvil for information on torques for dry and non-lubricating fluid service.

* Weights may vary based on valve options selected.

Pressure Drop (PSI) vs. (GPM)



SERIES 7700

Butterfly Valve

Resistance to various chemicals, as a function of temperature (C°)

NYLON COATING

Coating Condition after 18 months immersion

Resistance	20°	40°	60°	80°
Alcohols				
benzyl alcohol	L	P	P	P
butanol	G***	L	P	
ethanol (pure)	G***	G	L	
glycerine (pure)	G	G	L	P
glycol	G	G	G	P
methanol (pure)	G***	L	P	
Chlorinated solvents				
carbon tetrachloride	P			
methyl bromide	G	P		
methyl chloride	G	P		
perchloroethylene	G	G	L	
trichloroethane	L	P		
trichloreothylene	G	L		
Phenols				
	P	P	P	P
Various Organic Compounds				
anethole	G			
carbon disulphide	G***	L**	P	
diacetone alcohol	G	G***	L	P
dimethyl formamide	G	G	L	
ethylene chlorhydrin	P	P		
ethylene oxide	G	G	L	P
furfurol	G	G***	L	P
glucose	G	G	G	G
tetraethyl lead	G			
tetrahydrofurare	G	G	L	
Salts, esters, ethers				
amyl acetate	G	G	G	L
butyl acetate	G	G	G	L
diethyl ether		G		
dioctylphosphate	G	G	G	L
dioctylphthalate	G	G	G	L
ethyl acetate	G	G	G	
fatty acid esters	G	G	G	G
methyl acetate	G	G	G	
methyl sulfate	G	L		
tributylphosphaate	G	G	G	L
tricresylphosphate	GG	G	G	L
Various Products				
beer	G			
cider	G			
crude petroleum	G	G	G***	
diesel fuel	G	G	G***	
fruit juices	G	G		
fuel-oil	G	G	G	
greases	G	G	G	G
ground nut oil	G	G		
high octane gasoline	G	G	G***	
kerosene (paraffin)	G	G	G***	
linseed cake	G	G	G	G
milk	G	G	G	G
mustard	G			
normal gasoline	G	G	G***	
oils	G	G	G	G

Resistance	20°	40°	60°	80°
Various Products (cont'd.)				
solutions or emulsions of D.D.T. or lindane hudroxy-quinoline (agricultural sprays)	G			
soap solution	G			
stearin	G	G	G	
solvent naptha	G	G	G***	
natural gas	G	G		
turpentine	G	G	G***	
vinegar	G			
wine	G			
Inorganic Acids				
chromic acid (10%)	P	P	P	P
hydrochlorhic acid (1%)	G	L	P	P
hydrochlorhic acid (10%)	G	L	P	P
nitric acid (all concentrations)	P	P	P	P
phosphoric acid (50%)	G	L	P	P
sulphuric acid (1%)	G	L	L	P
sulphuric acid (10%)	G	L	P	P
sulphur trioxide	L	P	P	P
Other Inorganic products				
agriculture sprays	G	G		
bleach solutions	L	P	P	P
bromine	P	P		
chlorine	P	P	P	P
fluorine	P	P	P	P
hydrogen	G	G	G	G
hydrogen peroxide (20 volumes)	G	L		
mercury	G	G	G	G
oxygen	G	G	L	P
ozone	L	P	P	P
potassium permanganate (5%)	P	P		
sea water	G	G	G	
soda water	G	G	G	G
sulphur	G	G		
water	G	G	G	G
Aldehydes & Ketones				
acetaldehyde	G	L	P	
acetone	G	G***	L	P
benzaldehyde	G	L	P	
cyclohexanone	G	L	P	
formaldehyde (technical grade)	G	L	P	
methylethylketone (MEK)	G	G	L	P
methylethylketone (MIBK)	G	G	L	P
Hydrocarbons				
acetylene	G	G	G	G
benzene	G	G***	L	
butane	G	G	G	
cyclohexane	G	G	G	L
decaline	G	G	G	L
HFA (Forane®)	G			
hexane	G	G	G	
methane	G	G	G	
naphthalene	G	G	G	L
propane	G	G	G	
styrene	G	G***		

Resistance	20°	40°	60°	80°
Hydrocarbons (cont'd.)				
tulene	G	G***	L	L
xylene	G	G***	L	L
Inorganic Bases				
ammonium hydroxide (concentrated)	G	G	G	G
ammonia (liquid or gas)	G	G		
lime-wash	G	G	G	
potassium hydroxide (50%)	G	L	P	P
sodium hydroxide (5%)	G	G	L	
sodium hydroxide (10%)	G	L	L	
sodium hydroxide (50%)	G	L	P	P
Organic acids & anhydrides				
acetic acid	L	P	P	P
acetic anhydrie	L	P	P	P
citric acid	G	G	L	P
formic acid	P	P	P	P
lactic acid	G	G	G	L
oleic acid	G	G	G	L
oxalic acid	G	G	L	P
picric acid	L	P	P	P
tartaric acid (saturated solution)	G	G	G	L
uric acid	G	G	G	L
Inorganic Salts				
alum	G	G	G	
aluminium sulphate	G	G	G	G
ammonium nitrate	G	G	G	
barium chloride	G	G	G	G
calcium arsenate (concentrated solutions or slurries)	G	G	G	
calcium chloride	G	G	G	G
calcium sulphate	G	G	L	
copper sulphate	G	G	G	G
diammonium phosphate	G	G	L	
magnesium chloride (50%)	G	G	G	G
potassium ferrocyanide	G	G	G	
potassium nitrate	G*	L*	P	P
potassium sulphate	G	G	G	G
sodium carbonate	G	G	L	P
sodium chloride (saturated)	G	G	G	G
sodium silicate	G	G	G	
sodium sulphide	G	L	L	
trisodium phosphate	G	G	G	G
Organic bases				
aniline (pure)	L	P	P	P
diethanolamine (20%)	G	G***	G***	L
pyridine (pure)	L	P	P	P
urea	G	G	L	L

Legend	
*	= Slight yellowing
**	= Yellowing
***	= Swelling observed
G	= Good
L	= Limited
P	= Poor

SERIES 7600

Butterfly Valve

The versatile Series 7600 Grooved-End Butterfly Valve has features that can satisfy a wide range of service requirements and allow it to be used with diverse fluids. Its ductile iron body is epoxy coated to resist atmospheric attack, and the elastomer encapsulated disc can be ordered with EPDM or nitrile materials. Rugged enough to take the punishment, yet the Series 7600 Valve is light in weight for easy handling and installation.

The Series 7600 Valve is rated 200 PSI (13.8 bar) to full vacuum, at temperatures from 0° to 150° F (-17.8° to 65.6° C). Every valve is seat tested to 110% of rated pressure.

GENERAL SPECIFICATIONS

BODY: One-piece ductile iron, fully epoxy coated – light weight for easy handling.

DISC: Streamlined profile for maximum flow and minimal seat wear. The ductile iron disc is available with a choice of EPDM or Nitrile coverings.

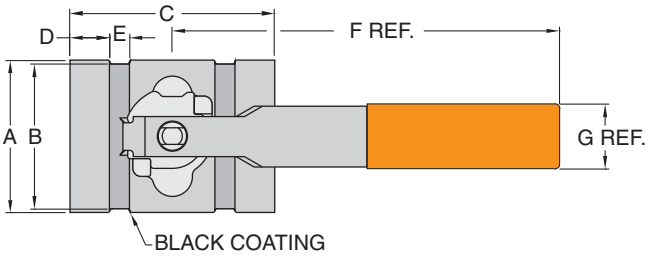
STEM/DISC ATTACHMENT: A splined interference fit creates a permanent rigid connection between the disc and stem, and eliminates the need for pins or bolts in the flow way.

STEM: Two-piece design for maximum flow. Top stem is Double D, giving positive indication of disc position at all times.

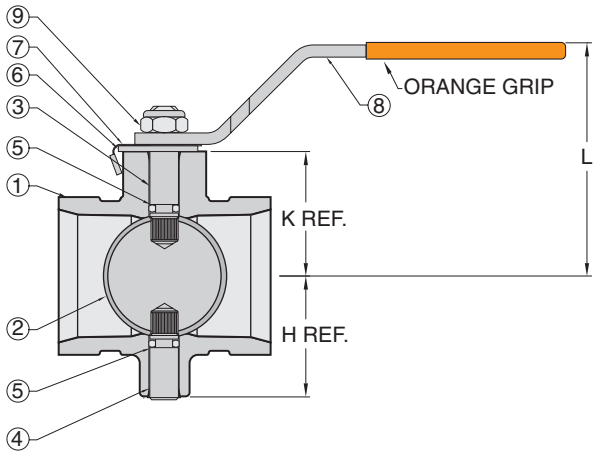
STEM SEAL: The interference between the rubber covered disc hub and the smooth, epoxy coated body provides the primary stem seal. O-rings on both upper and lower stems provide a secondary seal.

HANDLE: Two position on/off handle is standard.

TESTING AND CONFORMANCE: Testing to MSS SP-67. Grooved ends conform to the requirements of AWWA C606 for steel pipe.



MATERIAL SPECIFICATIONS



1. **BODY:** Epoxy Coated, ASTM A-536
2. **DISC:** EPDM or NBR, ASTM A-536
3. **LOWER STEM:** AISI 410
4. **UPPER STEM:** AISI 410
5. **STEM O-RING:** NBR
6. **LATCH PLATE:** Zinc Plated, ASTM A-228
7. **LATCH SPRING:** Electrolytic Coloring, ASTM A-228
8. **NUT, SELF LOCKING:** ASTM A-563
9. **HANDLE:** Zinc Plated, ASTM A-619

SERIES 7600 BUTTERFLY VALVE DIMENSIONS

Size	DIMENSIONS									
	A	B	C	D	E	F	G	H	K	L
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2	2 3/8	2 1/4	3 7/16	5/8	5/16	6	1	1 13/16	2	3 3/16
50	*60.3*	*57.2*	*87.4*	*15.9*	*8.7*	*152.4*	*25.4*	*46.0*	*50.8*	*81.0*
2 1/2	2 15/16	2 3/4	3 13/16	5/8	3/8	6	1	2 1/16	2 7/16	3 5/8
65	*74.2*	*70.2*	*96.8*	*15.9*	*8.9*	*152.4*	*25.4*	*52.3*	*62.0*	*91.9*
3	3 9/16	3 3/8	3 13/16	5/8	3/8	8 7/16	1	2 5/8	2 11/16	4 1/4
80	*90.3*	*86.4*	*96.8*	*15.9*	*8.9*	*214.4*	*25.4*	*66.5*	*68.1*	*108.0*
4	4 9/16	4 3/8	4 5/8	5/8	3/8	8 7/16	1	3 5/16	3 5/16	4 15/16
100	*116.1*	*111.8*	*117.3*	*15.9*	*8.9*	*214.4*	*25.4*	*84.1*	*84.1*	*125.5*
6	6 3/4	6 9/16	5 1/4	5/8	3/8	12 1/4	1 1/4	4 3/8	4 3/8	7
150	*171.0*	*166.6*	*133.4*	*15.9*	*8.9*	*311.2*	*31.8*	*111.3*	*111.3*	*177.8*

SERIES 8000GR

Butterfly Valve

For use in Grooved-End Piping Systems 14" to 24"

FEATURES

* Up to 200 psig (13.8 bar) WOG (non-shock)
* Outstanding flow characteristics
* Low torque operation
* Superior flow control
* Streamline profile disc
* Suitable for HVAC applications
* Vacuum service to 29.5" (750 mm) Hg
* End-of-line service capabilities

BUTTERFLY VALVE PERFORMANCE DATA

PRESSURE RATINGS:

150 PSIG (10.3 bar) WOG (non-shock)
200 PSIG (13.8 bar) WOG (non-shock)

Special order - available upon request.
29.5" (750 mm) Hg Vacuum Service

TEMPERATURE RATINGS:

Grade E (EPDM):

-40°F to 230°F (-40°C to 110°C) (Service Temperature Range)
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.

NOT FOR USE IN PETROLEUM SERVICES.

Grade T (Nitrile)

-20°F to 180°F (Service Temperature Range) (-29°C to 82°C)
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.

NOT FOR USE IN HOT WATER SERVICES.

FIGURE 8000GR - WEIGHT

Valve Size ANSI	O.D.	Weight	
		Valve Only	Valve with Gear Operator
In./DN(mm)	*In./mm*	*Lbs./Kg.*	*Lbs./Kg.*
14 *350*	14 *355.6*	354 *160.6*	378 *171.5*
16 *400*	16 *406.4*	428 *194.1*	452 *205.0*
18 *450*	18 *457.2*	524 *237.7*	548 *248.6*
20 *500*	20 *508.0*	704 *319.3*	728 *330.2*
24 *600*	24 *609.6*	1,027 *465.8*	1,097 *497.6*

SERIES 8000GR

Butterfly Valve

MATERIAL SPECIFICATIONS

BODY: Cast Iron - ASTM A 126 CL.B

EXTENSION BODY:
Pipe - ASTM A 53 Steel
Flange - ANSI B 16.5 Forged Steel

LINER: Grade E (EPDM), GRADE T (Nitrile)

DISC:
Stainless Steel - ASTM A 351
Aluminum Bronze - ASTM B 148 C95400
Ductile Iron - ASTM A 536 Grade 65-45-12

DRIVE SHAFT:
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

BOTTOM SHAFT:
Stainless Steel - ASTM A 582 Type 416
Stainless Steel - ASTM A 276 Type 316

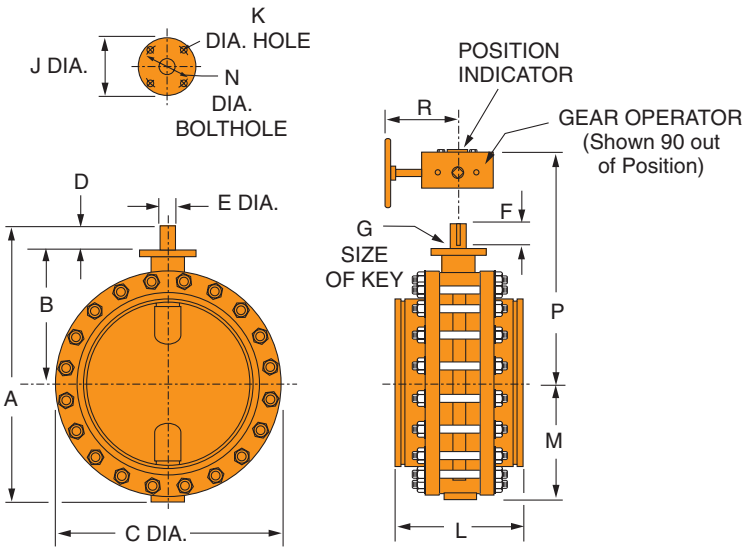
RETAINING SCREW: Steel

THRUST WASHER: Acetal

PLUG: Cast Iron - ASTM A 126 CL.B

UPPER BEARING: Teflon (Reinforced)

LOWER BEARING: Teflon (Reinforced)



SERIES 8000GR BUTTERFLY VALVES - DIMENSIONS

Valve Size ANSI	O.D.	A	B	C	D	E	F	G	J	K	L	M	N	P	R
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
14	14.000	26 1/4	13 1/4	21	2 1/4	1 1/2	2	3/8 x 3/8	6	1/2	13 1/16	10 3/4	5	17 15/16	1
350	*356*	*667*	*337*	*533*	*57*	*38*	*51*	*87*	*152*	*13*	*332*	*273*	*127*	*456*	*254*
16	16.000	29 1/2	14 3/4	23 1/2	2 1/4	1 1/2	2	3/8 x 3/8	6	1/2	14 5/16	12 1/2	5	19 7/16	1
400	*406*	*749*	*375*	*597*	*57*	*38*	*51*	*87*	*152*	*13*	*364*	*318*	*127*	*494*	*254*
18	18.000	32 3/4	15 3/4	25	3	1 3/4	2 3/8	3/8 x 3/8	6 3/4	1/2	15 3/8	1	5	20 7/16	1
450	*457*	*832*	*400*	*635*	*76*	*44*	*60*	*87*	*171*	*13*	*391*	*356*	*127*	*519*	*254*
20	20.000	34	16 1/4	27 1/2	3	1 3/4	2 5/8	3/8 x 3/8	6 3/4	1/2	16 3/8	1	5	20 15/16	1
500	*508*	*864*	*413*	*699*	*76*	*44*	*66*	*87*	*171*	*13*	*416*	*381*	*127*	*532*	*254*
24	24.000	39 3/8	19 1/8	32	3	2 1/4	3 1/4	1/2 x 1/2	9 1/2	13/16	18 1/4	16 3/4	6 1/2	24 3/8	10 1/4
600	*610*	*1,000*	*486*	*813*	*76*	*57*	*83*	*116*	*241*	*21*	*464*	*425*	*165*	*619*	*260*

SERIES 8000GR BUTTERFLY VALVES (ORDERING INFORMATION)

Sample Part Number 18" GC-8282-6 —>	18"	G	C -	8	2	8	2	6
	Valve Size	**Body Style**	**Body Material**	**Series**	**Seat Material**	**Disc Material**	**Operator**	**Stem**
	14" - 24"	G - Grooved End	C - Cast Iron	8 - 8000	1- Nitrile	0 - Nickel Plated Ductile Iron	0- None	6 - 416 S.S. w/ RTFE Bearing
					2- EPDM	7 - 316 S.S.	2- Gear Operator	7 - 316 S.S. w/ RTFE Bearing
						8 - Bronze (Al-Brz.)	3- Pneumatic	
							4- Electric	
							5- Spring Return Pneumatic	
							6- Square Nut (with Gear Operator)	
							7- Chain Wheel (with Gear)	

SERIES 8000GR

Butterfly Valve

Torque is the rotary effort required to operate a value. This turning force in a butterfly valve is determined by three factors; the friction of the disc and seat due to interference for sealing, bearing friction, and fluid dynamic torque.

Breakaway torque is the total of the torques resulting from bearing friction and disc/seat interference friction at a given pressure differential. This value is normally the highest required torque to operate a valve, and is used to size the actuator. Listed below are recommended sizing torques.

NOTE: These values are based on testing performed in the Gruvlok Research & Development Center. These values include a safety factor and are valid for water and lubricating fluids only at 70° F (21° C).

Since torques are greatly increased for dry and non-lubricating fluids and temperature variations, contact your Gruvlok Sales Office for accurate values in these applications.

Actuator Sizing For General Service Application
Series 8000GR Breakaway Torque

Line Pressure	Valve Size (In.)				
	14	16	18	20	24
(PSI)/Bar	*Breakaway Torque† (In. - Lbs.) / n-m*				
50 *3.4*	4,000 *452*	4,800 *542*	5,400 *610*	10,000 *1,130*	13,000 *1,469*
100 *6.9*	4,800 *542*	5,200 *588*	6,200 *701*	12,500 *1,412*	18,000 *2,034*
150 *10.3*	5,500 *621*	6,500 *734*	8,500 *960*	13,500 *1,525*	21,500 *2,429*

NOTE: For Teflon seated valves, contact your Gruvlok Sales Office

These values are valid for water and lubricating fluid service only. Contact factory for information on torques for dry and non-lubricating fluid service.

Cv Values (Water @ 70°F Sp. Gr. = 1.00)

Valve Size	Disc Position (Degrees Open)							
	25°	*30°*	*40°*	*50°*	*60°*	*70°*	*80°*	*90°*
In./mm								
14 *350*	650 *44.8*	825 *56.9*	1,500 *103.4*	2,300 *158.6*	3,500 *241.3*	6,200 *427.5*	9,700 *668.8*	10,500 *723.9*
16 *400*	850 *58.6*	1,000 *68.9*	1,850 *127.6*	2,900 *199.9*	4,600 *317.2*	7,500 *517.1*	10,600 *730.8*	13,500 *930.8*
18 *450*	1,100 *75.8*	1,400 *96.5*	2,450 *168.9*	3,800 *262.0*	5,000 *344.7*	9,700 *668.8*	13,850 *954.9*	18,000 *1,241.1*
20 *500*	1,400 *96.5*	1,650 *113.8*	3,050 *210.3*	4,800 *330.9*	7,400 *510.2*	12,500 *861.8*	17,750 *1,223.8*	23,000 *1,585.8*
24 *600*	2,000 *137.9*	2,400 *165.5*	4,200 *289.6*	6,600 *455.1*	10,500 *723.9*	17,000 *1,172.1*	23,000 *1,585.8*	31,000 *2,137.4*

Fluid Dynamic Torque is the force exerted when a fluid passes over the surface of the butterfly valve disc. The magnitude of this force is dependent on valve size, disc opening and flow through the valve. Typically, fluid dynamic torque is a maximum at an approximate 75° disc opening. Generally, the effects of dynamic torque can be ignored when the velocity is less than 15 feet/second for liquids and 15,000 feet/minute for gases to minimize the effects of turbulence on the valve. For applications above these limits, consult engineering.

The formula for determining the velocity for liquids is:

$$V = 0.0022 \frac{Q}{A}$$

V = Velocity of liquid (feet/second)
Q = Flow (gallons/minute)
A = Area of upstream pipe (sq. ft.)
See "Area of Pipe" chart

The formula for determining the velocity of gases:

$$Vg = \frac{Qf}{A}$$

Vg = Velocity of gas (feet/minute)
Qf = Flow of gas @ flowing condition* (cubic feet/minute)
A = Area of upstream pipe (sq. ft.)
See "Area of Pipe" Chart

* Flowing condition means at temperature and pressure of gas stream in the valve

Area of Pipe

Pipe Size (Sch 40)	Area
in./mm	*Sq. ft/Sq. cm*
14 *350*	0.940 *873.29*
16 *400*	1.227 *1,140*
18 *450*	1.553 *1,443*
20 *500*	1.931 *1,794*
24 *600*	2.792 *2,594*

FIG. 141S, FIG. 171N & FIG. 171S

International Brass Ball Valves

The Anvil Figure 141S, 171N and 171S Brass Ball Valves have a rugged, dependable design, meeting rigid specification for world wide use. Every valve is individually tested in an open and closed position at 80 psi (5.5 bar). The two piece 171S and 171N full port design are available in sizes ¼" - 4". A "T" handled version of the 171N is also available as Figure 171N-T in sizes ⅜" - 1". The two piece 141S standard port is available in sizes ½" - 2". All valves conform to MSS-SP-110, MSS-SP-25 and Federal Specification WW-V-35B Type II, Class A Style 3.

Features of these valves include triple stem seal, hard chrome plated ball, blowout proof stem, adjustable packing gland, a bubble tight shut off and a floating ball for an economical solution for residential, commercial and industrial applications.

Anvil's Brass Ball Valves are available in the soldered end standard port (Figure 141S), full port threaded end (Figure 171N), and full port soldered end (Figure 171S).

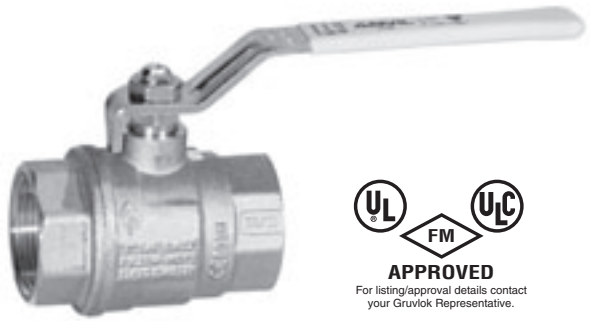


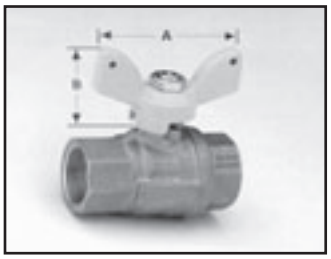
Figure 171N

UL FM ULC
APPROVED
For listing/approval details contact your Gruvlok Representative.

Size Range: ½" - 2" (141S)
¼" - 4" (171N/171S)

Pressure Rating: from full vacuum to 600 psi (41.4 bar)
WOG 150 psi (10.3 bar) steam

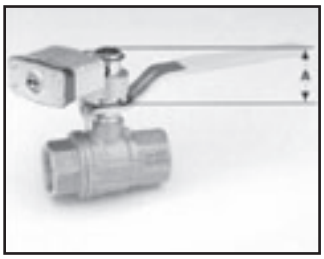
"T" HANDLE



171N "T" Handle

Size	A	B
NPS/DN(mm)	*In./mm*	*In./mm*
¼ - ⅜ - ½ *8 - 10 - 15*	2.0 *50*	1.08 *27.5*
¾ - 1 *20 - 25*	2.5 *64*	1.30 *33.0*

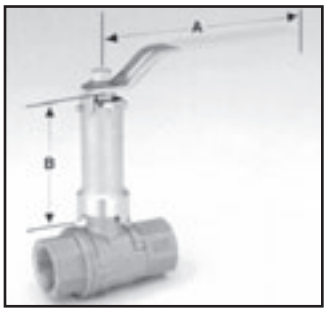
LOCK DEVICE



171N Lock Device

Size	A
NPS/DN(mm)	*In./mm*
¼ - ⅜ - ½ *8 - 10 - 15*	1.7 *44.0*
¾ - 1 *20 - 25*	1.9 *47.0*
1¼ - 1½ *32- 40*	3.5 *88.5*
2 *50*	3.7 *94.5*

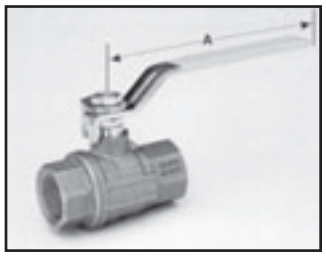
STEM EXTENSION (Brass)



171N Stem Extension (Brass)

Size	A	B
NPS/DN(mm)	*In./mm*	*In./mm*
¼ - ⅜ - ½ *8 - 10 - 15*	3.8 *97.0*	2.4 *60.5*
¾ - 1 *20 - 25*	4.8 *121.5*	2.6 *67.0*
1¼ - 1½ *32- 40*	5.9 *151.0*	2.6 *67.0*
2 *50*	6.4 *162.0*	2.6 *67.0*

MEMORY STOP



Memory Stop

Size	A
NPS/DN(mm)	*inch/mm*
¼ - ⅜ - ½ *8 - 10 - 15*	3.8 *97.0*
¾ - 1 *20 - 25*	4.8 *121.5*
1¼ - 1½ *32- 40*	5.9 *151.0*
2 *50*	6.4 *162.0*

MATERIAL SPECIFICATIONS

BODY: Brass, ASTM B124, Alloy C37700
RETAINER: Brass, ASTM B124, Alloy C37700
BALL: Brass, ASTM B124, Alloy C37700 Chrome Plated
STEM: Brass, ASTM B124, Alloy C37700 Nickel Plated
SEAT RING: PTFE
PACKING: PTFE
PACKING NUT: Steel, Zinc
PACKING GLAND: Brass, ASTM B124, Alloy C37700 Nickel Plated
FRICTION WASHER: PTFE
STEM O-RING: NBR 75 Shore A
HANDLE: Steel, Zinc Plated to 2", Aluminum to 4"
HANDLE COVER: Yellow PVC Coated to 2", Yellow Enamel to 4"
HANDLE NUT: Steel, Zinc Plated

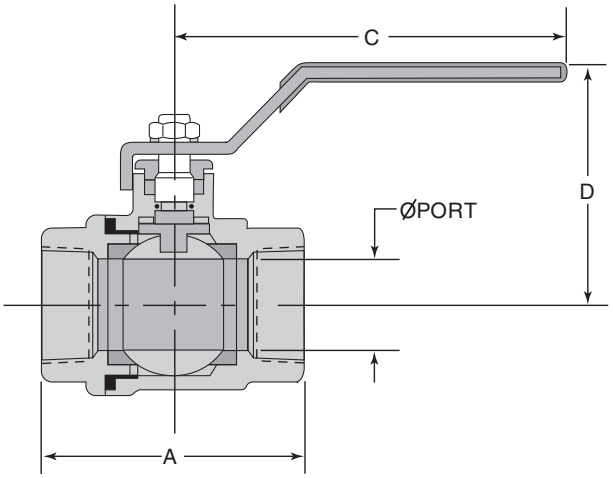
AVAILABLE OPTIONS*

LEVER HANDLE: ¼" - 4"
LOCK DEVICE: ¼" - 2" (171N)
MEMORY STOP: ¼" - 2" (171N/171S)
STEM EXETENSION: ¼" - 4" (171N)
"T" HANDLE: ¼" - 1" (171N)

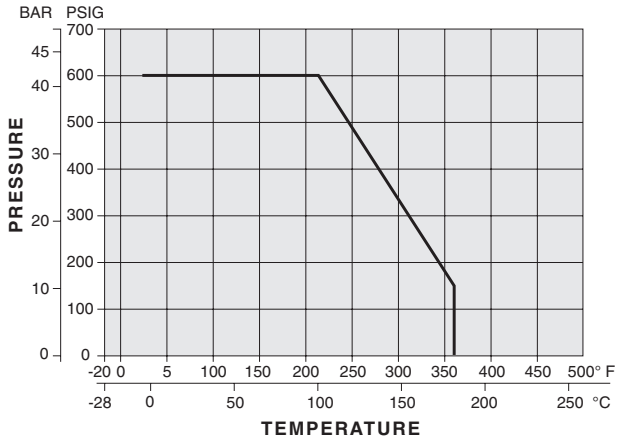
* Not all options available for all sizes. Please contact your Anvil Representative for assistance.

FIG. 141S, FIG. 171N & FIG. 171S

International Brass Ball Valves



PRESSURE VS. TEMPERATURE



NOTES

1. Dimensions of solder joint ends conform to ANSI B16.22. Solder end valves are designed to be used with solders not exceeding a melting point of 470°F/250°C. Higher temperatures may damage the seal material.

2. For solder joint valves, the pressure/temperature rating is dependent on the solder material used. Please refer to the limitations listed in ANSI B16.18.

3. Rate of Flow Calculations for liquids:

   To determine the flow rate of a liquid passing through a valve, use the following formula:

$$Q_L = C_V \left(\sqrt{\frac{\Delta P}{S_L}} \right)$$

Where: Q_L = flow of liquid in gallons per minute (GPM)

C_V = flow coefficient

ΔP = pressure drop (PSI)

S_L = specific gravity of liquid

DIMENSIONS

Valve Code	Size	Port Dia.	A	C	D	Cv	Approx. Wt. Ea.
	In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
141S STANDARD PORT SOLDERED END	½ 15	½ 12	2 1/16 52	3 7/8 98	1 13/16 46	6.3	0.7 0.3
	¾ 20	9/16 14	2 11/16 68	3 7/8 98	1 15/16 49	9.5	0.8 0.4
	1 25	¾ 19	3 3/16 81	4 13/16 122	2 5/16 59	22.2	1.1 0.5
	1¼ 32	1 25	3 9/16 90	4 13/16 122	2½ 63	30.8	1.5 0.7
	1½ 40	1¼ 32	4 102	6 152	3 1/16 78	60.9	2.2 1.0
	2 50	1 9/16 40	5 1/16 128	6 152	3 5/16 84	92.9	3.1 1.4
171N FULL PORT THREADED END	¼ 8	⅜ 10	2 51	3 7/8 98	1¾ 45	6	0.3 0.1
	⅜ 10	⅜ 10	2 51	3 7/8 98	1¾ 45	7	0.3 0.1
	½ 15	9/16 14	2 7/16 62	3 7/8 98	1 7/8 48	19	00.4 0.2
	¾" 20	¾ 19	2 11/16 68	4 13/16 122	2¼ 57	35	.7 0.3
	1 25	15/16 24	3 1/16 78	4 13/16 122	2 7/16 62	50	1.0 0.5
	1¼ 32	1¼ 32	3 7/16 87	6 152	3 1/16 78	104	2.0 0.9
	1½ 40	1 9/16 40	3 7/8 98	6 152	3 5/16 84	268	3.1 1.4
	2 50	1 15/16 49	4 5/16 110	6 3/8 162	3 13/16 97	309	4.2 1.9
	2½ 65	2 9/16 65	5 9/16 141	8 1/16 205	5 127	629	8.0 3.7
	3 75	3⅛ 79	6 7/16 164	8 5/16 205	5 7/16 138	1018	12.0 5.9
	4 100	3 15/16 100	7 5/8 194	10¼ 260	6 5/16 160	1622	22.0 10.0
171S FULL PORT SOLDERED END	½ 15	9/16 14	2½ 64	3 7/8 98	1 7/8 48	19	0.5 0.2
	¾ 20	¾ 19	3 76	4 13/16 122	2 5/16 59	35	0.7 0.3
	1" 25	1 25	3 9/16 91	4 13/16 122	2½ 64	50	1.1 0.5
	1¼ 32	1¼ 32	4 9/16 103	6 152	3⅛ 79	104	2.0 0.9
	1½ 40	1 9/16 40	4 9/16 116	6 152	3⅜ 86	268	2.7 1.2
	2 50	1 15/16 49	5 7/16 138	6 7/16 164	3 11/16 94	309	3.9 1.8
	2½ 65	2 9/16 65	6 7/8 175	8 7/16 205	5 127	629	9.4 4.3
	3 75	3⅛ 79	8 3/16 208	8 1/16 205	5 7/16 138	1018	14.5 6.6
	4 100	3 15/16 100	10 5/16 262	10¼ 260	6 5/16 160	1622	24.7 11.2

SERIES 7500

Ball-valves

The Series 7500 grooved-end ball valve line consists of a 2" to 6" standard port, two piece design, and is available in configurations to address a broad spectrum of application requirements.

The Series 7500 has generous factors of safety for pressure retention and stem torsional strength. In addition, it has a blow-out proof stem design, low operating torque, and high Cv.

The Series 7500 is compliant with NACE MR01-75 when stainless steel trim is specified.

Grooved ends conform to the requirements of AWWA C606 for steel pipe.

For special configurations, contact your Gruvlok representative.

For stainless steel, see the stainless steel section.

PRESSURE-RATING:

740 psig CWP (51 bar) in ASTM A395 Ductile Iron

FIGURE 7500 MATERIAL SPECIFICATIONS

DUCTILE IRON/CARBON STEEL

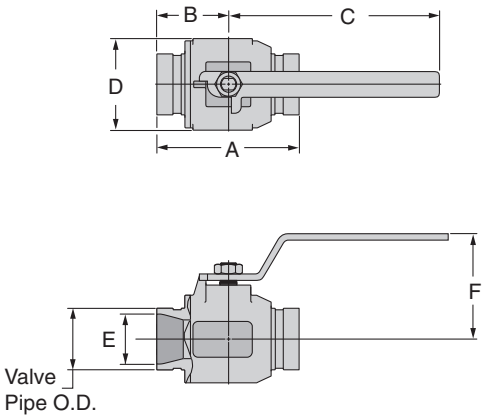
BODY: Ductile Iron ASTM A395
ENDPLATE: Ductile Iron ASTM A395
BALL: Carbon Steel Chrome Plated
STEM: Carbon Steel Chrome Plated
THRUST WASHER: RTFE
STEM SEAL: Flouroelastomer
RETAINING RING: Carbon Steel
HANDLE: Carbon Steel Zinc Plated
HANDLE NUT: Carbon Steel Zinc Plated
SEAT: RTFE
BODY SEAL: Flouroelastomer
LOCK PLATE*: 300 Series Stainless Steel
* Optional

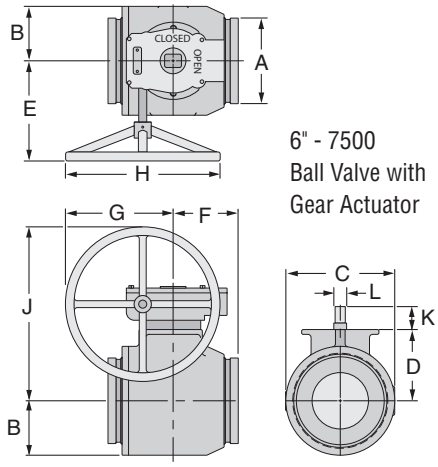
DUCTILE IRON/STAINLESS STEEL

BODY: Ductile Iron ASTM A395
ENDPLATE: Ductile Iron ASTM A395
BALL: Stainless Steel ASTM A351 Grade CF8M
STEM: 316 Stainless Steel
THRUST WASHER: RTFE
STEM SEAL: Flouroelastomer
RETAINING RING: Carbon Steel
HANDLE: Carbon Steel Zinc Plated
HANDLE NUT: 300 Series Stainless Steel
SEAT: RTFE
BODY SEAL: Flouroelastomer
LOCK PLATE*: 300 Series Stainless Steel
* Optional

SERIES 7500

Ball-valves





6" - 7500
Ball Valve with
Gear Actuator

7500 Ball Valve

Size ANSI	O.D.	Dimensions							Approx. Wt. Ea.
		A	B	C	D	E	F	Cv	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	5 1/2 *140*	2 3/4 *70*	8 1/4 *209*	3 13/16 *81*	1 15/16 *49*	4 1/8 *105*	165	8 *3.6*
3 *80*	3.500 *88.9*	6 3/4 *171*	3 3/8 *85*	10 *254*	4 13/16 *122*	2 7/8 *74*	4 13/16 *121*	310	18 *8.2*
4 *100*	4.500 *114.3*	8 1/4 *210*	4 1/8 *105*	16 *406*	6 5/16 *176*	3 13/16 *97*	6 *152*	815	38 *17.2*
6 * *150*	6.625 *168.3*	10 1/8 *257*	5 1/16 *128*	28 *711*	8 7/16 *215*	5 11/16 *144*	7 5/8 *194*	1500	106 *48.1*

* Bare Stem

7500 Ball Valve With Gear Actuator

Size ANSI	O.D.	Dimensions											Approx. Wt. Ea.
		A	B	C	D	E	F	G	H	J	K	L	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
6 *150*	6.625 *168.3*	6 5/8 *168.7*	4 1/4 *107.4*	8 7/16 *214.6*	5 1/2 *140.5*	10 1/4 *260.4*	5 1/16 *128.0*	8 1/8 *206.4*	12 *304.8*	13 1/2 *342.9*	1 13/16 *45.2*	1 *25.4*	9.6 *4.4*

Series 7500 Ball Valves (Ordering Information)

Sample Part Number 4" GI-7512-1 —>	4"	G	I -	75	1	2 -	1
	Size 2" - 6"	Configuration G - 2 Way Grooved End	Body/End Material I - Ductile Iron ASTM A395	Series 75 - 7500	Ball and Stem Material 1 - Chrome Plated Carbon Steel 2 - 316 Stainless Steel	Seat Material 2 - RTFE / Flouroelastomer Special Requirements X - Write on Order	Operator 1 - 2 Position Handle 2 - 2 Position Locking Handle 3. Bare Stem 4. Gear Actuator (6" Only)

6" is available bare stem or with gear actuator

FIG. 400G

Grooved-End Silent Check Valve

Available in Sizes 2" through 10"

The 400G is a center guided, spring loaded, silent check valve. Designed and engineered for silent operation with low head loss, the valve disc will close prior to the reversal of flow, thereby preventing or minimizing water hammer and damaging shock.

- The 400G can be used in any HVAC, industrial or commercial grooved piping systems.
- The valve is designed for liquid service with any pipe orientation, flow up or down.
- Bronze metal seats are standard, with Stainless Steel or resilient seats available as an option.
- Flow coefficients for this valve are some of the lowest in the industry and are listed for each size on the drawing.

NOTE: Valve is designed for liquid service only. Install 3 to 4 pipe diameters downstream from pump discharge or elbows to avoid flow turbulence.

Max. Non-Shock Working PSI 125# ANSI B16.1 Flange Rating

Size	Temperature	
2" - 10"	150˚F *65°C*	200˚F *90°C*
	200 PSI *13.8 bar*	190 PSI *13.1 bar*

Figure 400G Grooved-End Silent Check Valve

Valve Size	O.D.	Model	A	B	Cv Flow *	Approx. Wt. Each
In./mm	*In./mm*	*Number*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	402G	6 *152*	6 *152*	66 *1,676*	12 *5.4*
2½ *65*	2.875 *73.0*	4025G	6¼ *159*	7 *178*	88 *2,235*	15 *6.8*
3 *80*	3.500 *88.9*	403G	6 7/16 *164*	7½ *191*	130 *3,302*	20 *9.1*
4 *100*	4.500 *114.3*	404G	8⅛ *206*	9 *229*	228 *5,791*	36 *16.3*
5 *125*	5.563 *141.3*	405G	11¼ *286*	10 *254*	350 *8,890*	50 *22.7*
6 *150*	6.625 *168.3*	406G	12¼ *311*	11 *279*	520 *13,208*	68 *30.8*
8 *200*	8.625 *219.1*	408G	13¾ *349*	13½ *343*	900 *22,860*	140 *63.5*
10 *250*	10.750 *273.1*	410G	16 *406*	16 *406*	1,450 *36,830*	198 *89.8*

* Flow coefficient is the number of U.S. gallons/minute of 60° F (16° C) water that will flow through a valve with 1 psi (0.069 bar) of pressure drop across the valve.

MATERIAL SPECIFICATIONS

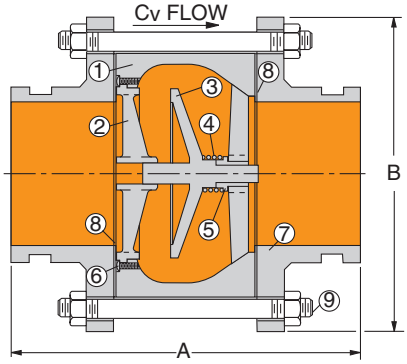
STANDARD MATERIALS:
Cast Iron body ASTM A48, Class 35
Bronze Disc and Seat ASTM B584 Alloy 838
Ductile Iron Grooved-Ends ASTM A395

OPTIONAL TRIM MATERIALS:
Bronze with Nitrile seats
Stainless Steel seats
Stainless with Nitrile seats

1. **BODY:** Cast Iron ASTM A48, Class 35
2. **SEAT:** Bronze ASTM B584, Copper Alloy 838
3. **PLUG:** Bronze ASTM B584, Copper Alloy 838
4. **SPRING:** Stainless Steel T304, ASTM A313
5. **BUSHING:** Bronze ASTM B584, Copper Alloy 836
6. **SCREWS:** Stainless Steel T304, ASTM A276
7. **GROOVED-END:** Ductile Iron ASTM A395
8. **GASKET:** Non Asbestos

   For gasket grade recommendations see the Technical Data section
9. **BOLTS:** Carbon Steel

Other materials and resilient seats are available… contact your Sales representative.



SERIES 7800

Check Valves

For use in Grooved-End Piping Systems

The Gruvlok Series 7800 Check Valve is a compact, cost effective valve offering low pressure-drop, non-slam performance. The Series 7800 Check Valve assembly is lighter and faster to install, and costs less than flanged and wafer valve assemblies.

In the full-open position the Series 7800 swing clapper is held tightly against the valve body, out of the flow stream, to provide maximum flow area and prevention of clapper flutter. The clapper design produces quick, non-slam closure before flow reversal can occur, while meeting FM requirements for an anti-water hammer valve rating.

Each valve is hydrostatically tested for leak tightness to 500 PSI. The clapper-seat design permits leak free sealing of back pressures in service conditions ranging from 300 PSI (20.7 bar) to as low as 1 PSI (0.07 bar) (28" water head).

PERFORMANCE:

Pressure Rating:

Commercial Applications - Sizes 2" thru 12" inclusive, 300 psi (20.7 bar) maximum working pressure.

MATERIAL SPECIFICATIONS

BODY: Ductile iron conforming to ASTM A 536, Grade 65-45-12

COATING: Rust inhibiting paint on exterior and interior - color, black enamel
Nickel Electroplated, Zn Electroplated (optional)

CLAPPER: 2"- 5" Type 304 or 302 stainless steel to ASTM A 167
6"-12" Ductile iron conforming to ASTM A 536, Grade 65-45-12

CLAPPER FACING:

Grade E EPDM: -40° to 230°F (-40° to 110°C) Service Temperature Range
Recommended for water service, dilute acids, alkaline, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM SERVICES.

Grade T Nitrile: -20° to 180°F (-29° to 80°C) Service Temperature Range
Recommended for petroleum products, air with oil vapors, vegetable oils and mineral oils.
NOT FOR USE IN HOT WATER SERVICES

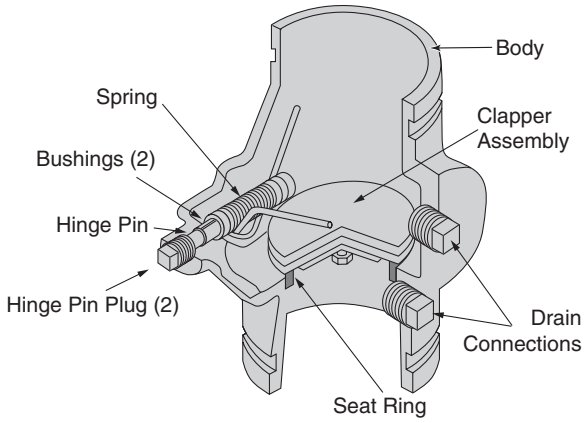
SEAT RING: Type 304 stainless steel to ASTM A 123, ASTM A 213, ASTM A 312 or ASTM A 269

SPRING: Type 302 stainless steel to ASTM A 313

HINGE PIN: Type 304 or 302 stainless steel to ASTM A 580

HINGE PIN BUSHINGS: Sintered bronze to ASTM B 438

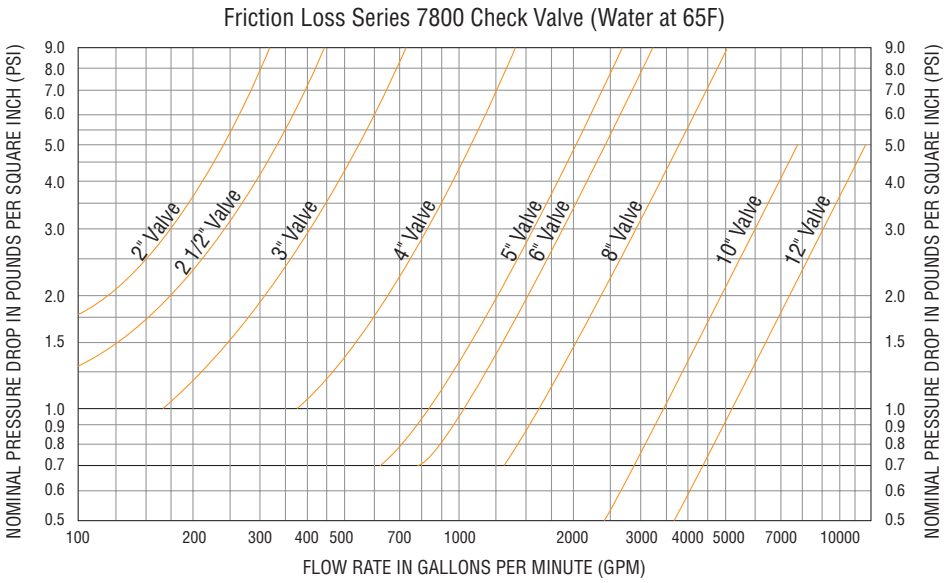
HINGE PIN PLUGS & DRAIN PLUGS: Cast iron to ASTM A 126 Class A



SERIES 7800

Check Valves

For use in Grooved-End Piping Systems



FLOW DATA:

The approximate friction losses, based on the Hazen and Williams formula, expressed in equivalent length of pipe is given below. The friction losses have been calculated on the basis of flow rates typically used with each size valve.

Flow Data - Friction Loss (Ft. of Pipe)

Valve Size	O.D.	C=100			C=120		
		Sch. 10	Sch. 30	Sch. 40	Sch. 10	Sch. 30	Sch. 40
In./mm	*In./mm*	*Ft./M*	*Ft./M*	*Ft./M*	*Ft./M*	*Ft./M*	*Ft./M*
2 *50*	2.375 *60.3*	10 *3.0*	— —	8 *2.4*	14 *4.3*	— —	11 *3.4*
2½ *65*	2.875 *73.0*	14 *4.3*	— —	10 *3.0*	20 *6.1*	— —	15 *4.6*
3 *80*	3.500 *88.9*	17 *5.2*	— —	12 *3.7*	23 *7.0*	— —	17 *5.2*
4 *100*	4.500 *114.3*	17 *5.2*	— —	13 *4.0*	23 *7.0*	— —	18 *5.5*
5 *125*	5.563 *141.3*	14 *4.3*	— —	11 *3.4*	20 *6.1*	— —	15 *4.6*
6 *150*	6.625 *168.3*	23 *7.0*	— —	19 *5.8*	33 *10.1*	— —	26 *7.9*
8 *200*	8.625 *219.1*	35 *10.7*	32 *9.8*	30 *9.1*	50 *15.2*	45 *13.7*	43 *13.1*
10 *250*	10.750 *273.1*	28 *8.5*	25 *7.6*	24 *7.3*	40 *12.2*	36 *11.0*	34 *10.4*
12 *300*	12.750 *323.9*	31 *9.4*	28 *8.5*	26 *7.9*	44 *13.4*	39 *11.9*	37 *11.3*

IMPORTANT NOTE:

Check valve life may be shortened and system damage may occur if check valves are installed too close to a source of unstable flow. Check valves must be installed at a reasonable distance away from pumps, elbows, expanders, reducers or other similar devices. Sound piping practices dictate a minimum of five (5) times the pipe diameter for general use. Distances between three (3) and five (5) diameters are allowable provided the flow velocity is less than 8 feet per second. Distances less than 3 diameters are not recommended.

Not for use in copper systems.

SERIES 7800

Check Valves

For use in Grooved-End Piping Systems

Series 7800 Check Valves (Ordering Information)					
Sample Part Number 4" 7811—>	**4"**	**78**	**1**	**1**	**X**
	Size	**Series**	**Clapper Facing Material**	**Body Finish**	**Special Configuration**
	2" - 12"	78 - 7800	1 - EPDM (Std) 2 - Nitrile (Std) 3 - Special	1 - Painted (Std) 2 - Ni Electroplated (Optional) 3 - Zn Electroplated (Optional) 4 - Special	1 - Stainless Steel Clapper sizes (6" - 12") 2 - Other*

* Contact a Gruvlok representative for more information.

DIMENSIONS & WEIGHTS

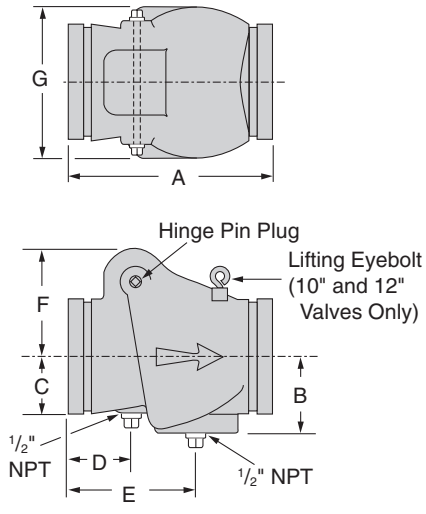


Figure 7800 Check Valve

Nominal Size	O.D.	Nominal Dimensions							Approx. Wt. Ea.
		A	B	C	D	E	F	G	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg.*
2 *50*	2.375 *60.3*	6 3/4 *171*	2 3/8 *60*	1 7/16 *36*	1 3/4 *44*	4 1/2 *114*	3 3/16 *81*	4 3/8 *111*	7.5 *3.4*
2 1/2 *65*	2.875 *73.0*	7 1/4 *184*	2 7/16 *61*	1 9/16 *39*	1 3/4 *44*	3 13/16 *96*	3 5/8 *92*	4 1/2 *114*	10.5 *4.8*
3 *80*	3.500 *88.9*	7 3/4 *197*	2 5/8 *67*	2 *51*	1 13/16 *46*	4 1/16 *103*	3 11/16 *93*	4 15/16 *125*	11.5 *5.2*
4 *100*	4.500 *114.3*	8 1/8 *206*	3 1/8 *79*	2 1/4 *57*	2 1/2 *64*	5 1/16 *128*	4 1/4 *108*	6 *152*	13.5 *6.1*
5 *125*	5.563 *141.3*	9 3/4 *248*	3 1/2 *89*	2 3/4 *70*	2 7/16 *61*	5 13/16 *147*	4 5/8 *117*	6 3/4 *171*	19.0 *8.6*
6 *150*	6.625 *168.3*	12 3/4 *324*	4 1/4 *108*	3 5/16 *84*	3 1/8 *79*	6 1/4 *159*	6 3/4 *171*	8 1/2 *216*	33.5 *15.2*
8 *200*	8.625 *219.1*	14 3/8 *365*	5 1/16 *128*	3 15/16 *100*	4 *102*	5 15/16 *150*	8 *203*	10 1/4 *260*	59.0 *26.8*
10 *250*	10.750 *273.1*	18 *457*	6 5/16 *160*	4 15/16 *125*	4 9/16 *115*	6 7/8 *175*	9 3/16 *233*	12 11/16 *322*	130.0 *59.0*
12 *300*	12.750 *323.9*	21 *533*	7 5/16 *185*	6 *152*	5 1/16 *128*	7 1/4 *184*	10 3/8 *264*	14 3/4 *375*	183.0 *83.0*

GBV-G & GBV-A

Balancing Valves

Ductile Iron, Grooved-End and Cast Bronze, Solder & Threaded GBV

The Series GBV is a multi-turn, Y-style globe valve designed for accurate determination and control of fluid flow to circuits requiring precise balancing.

Max. Working Pressure
300 PSI / 20.7 bar (PN20)

Max. Working Temperature
300˚F (150˚C)

Straight Shown

FEATURES & BENEFITS

- Pressure differential ports on both sides of the valve
- Convertible design, straight to 90˚ angle by removing and replacing four set screws
- Positive shutoff for equipment servicing
- Multi-turn adjustment
- Ergodynamically designed handwheel
- Micrometer type adjustment scale
- Tamper-proof hidden memory stop

MATERIALS SPECIFICATIONS

BODY, BONNET: Brass Alloy CW617

STEM & DISC: Brass Alloy B16

ELASTOMERS: EPDM

HANDWHEEL: Reinforced Nylon; ABS

GBV-G – Balancing Valve

2½" to 12" Ductile Iron, Grooved-End Straight

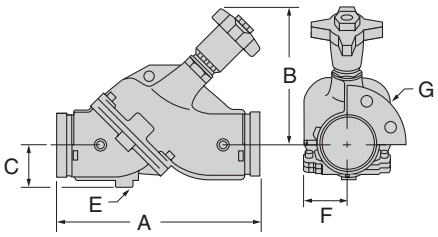


FIGURE GBV-G GROOVED-END STRAIGHT BALANCING VALVES

Nominal Size	O.D.	A	B Open	C	E	F	Flange Diameter		Approx. Wt. Each
							G Flange 125#	G Flange 250#	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2½	2.875	12	9⅝	2¾	1	2⁹⁄₁₆	7	7½	25
65	*73.0*	*305*	*244*	*70*	*25*	*65*	*178*	*191*	*11.3*
3	3.500	12	10½	2⁷⁄₁₆	1	3	7½	8¼	28
80	*88.9*	*305*	*267*	*61*	*25*	*76*	*191*	*210*	*12.7*
4	4.500	14	10⁹⁄₁₆	3	1¼	3⁷⁄₁₆	9¼	10	41
100	*114.3*	*356*	*268*	*76*	*32*	*87*	*235*	*254*	*18.6*
5	5.563	17½	13¹⁄₁₆	3⅝	1¼	4¹⁵⁄₁₆	10	11	90
125	*141.3*	*445*	*331*	*92*	*32*	*125*	*254*	*279*	*40.8*
6	6.625	20¹¹⁄₁₆	13 ¾	4⁷⁄₁₆	2	5⅞	11	12½	130
150	*168.3*	*525*	*349*	*112*	*51*	*149*	*279*	*318*	*59.0*
8	8.625	28³⁄₁₆	24⅝	5¹¹⁄₁₆	2¼	7⅞	13½	15	310
200	*219.1*	*716*	*625*	*144*	*57*	*200*	*343*	*381*	*140.6*
10	10.750	30	26½	6⁹⁄₁₆	2¼	9¹⁵⁄₃₂	16	17½	460
250	*273.1*	*762*	*673*	*166*	*57*	*240*	*406*	*445*	*208.7*
12	12.750	38¹⁄₁₆	28⁷⁄₁₆	7⅝	2¼	12⅝	19	20½	870
300	*323.9*	*966*	*722*	*194*	*57*	*321*	*483*	*521*	*394.6*

NOTE: Grooved-Ends are for connection of components with dimensions conforming to Gruvlok® standard grooved specifications for IPS pipe.

GBV-G & GBV-A

Balancing Valves

Ductile Iron, Grooved-End and Cast Bronze, Solder & Threaded GBV

GBV-A – Balancing Valve

2½" to 12" Ductile Iron, Grooved-End Angle

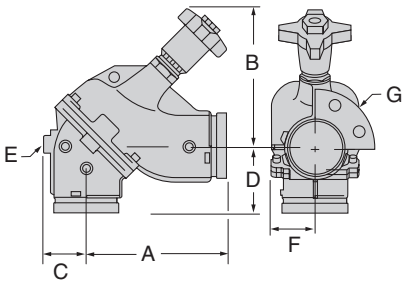


Figure GBV-A Grooved-End Angle Balancing Valves

Nominal Size	O.D.	A	B Open	C	D	E	F	Flange Diameter		Approx. Wt. Each
								G Flange 125#	G Flange 250#	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2½	2.875	7⅜	9⅝	2¾	4⅝	1	2⁹⁄₁₆	7	7½	25
65	*73.0*	*187*	*244*	*70*	*117*	*25*	*65*	*178*	*191*	*11.3*
3	3.500	8⅜	10½	2⁷⁄₁₆	3⅞	1	3	7½	8¼	28
80	*88.9*	*213*	*267*	*61*	*98*	*25*	*76*	*191*	*210*	*12.7*
4	4.500	9⅝	10⁹⁄₁₆	3	4⅜	1¼	3⁷⁄₁₆	9¼	10	41
100	*114.3*	*244*	*268*	*76*	*111*	*32*	*87*	*235*	*254*	*18.6*
5	5.563	12	13¹⁄₁₆	3⅝	5½	1¼	4¹⁵⁄₁₆	10	11	90
125	*141.3*	*305*	*331*	*92*	*140*	*32*	*125*	*254*	*279*	*40.8*
6	6.625	14⅛	13 ¾	4⁷⁄₁₆	6⅝	2	5⅞	11	12½	130
150	*168.3*	*359*	*349*	*112*	*168*	*51*	*149*	*279*	*318*	*59.0*
8	8.625	18¹⁵⁄₁₆	24 ⅝	5¹¹⁄₁₆	9³⁄₁₆	2¼	7⅞	13½	15	310
200	*219.1*	*481*	*625*	*144*	*233*	*57*	*200*	*343*	*381*	*140.6*
10	10.750	20⁵⁄₁₆	26½	6⁹⁄₁₆	9¾	2¼	9¹⁵⁄₃₂	16	17½	460
250	*273.1*	*515*	*673*	*166*	*248*	*57*	*240*	*406*	*445*	*208.7*
12	12.750	24¹⁄₁₆	28⁷⁄₁₆	7⅝	14	2¼	12⅝	19	20½	870
300	*323.9*	*611*	*722*	*194*	*356*	*57*	*321*	*483*	*521*	*394.6*

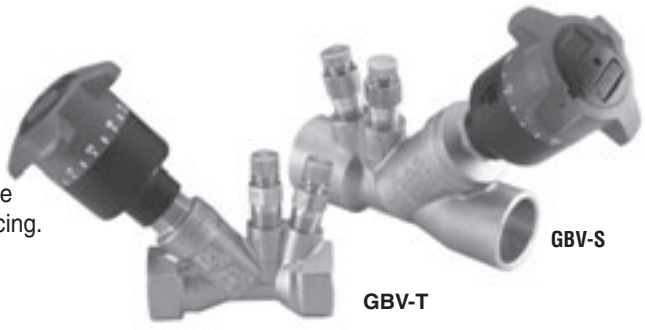
NOTE: Grooved-Ends are for connection of components with dimensions conforming to Gruvlok® standard grooved specifications for IPS pipe.

GBV-S & GBV-T

Five Turn Circuit Balancing Valves

Solder (GBV-S) & NPT Threaded (GBV-T)

The Series GBV is a multi-turn, Y-style globe valve designed for accurate determination and control of fluid flow to circuits requiring precise balancing.



FEATURES & BENEFITS

- Multi-turn adjustment
- Pressure differential ports on both sides of the valve
- Positive shutoff for equipment servicing
- Micrometer type handwheel adjustment
- Tamper-proof memory stop
- Precision instrument function and performance
- Easiest and fastest field balancing

THROTTLING PERFORMANCE

- Ball valves adapted for balancing have only a 90˚ range from open to closed. A small adjustment in the ball opening can mean a huge change in flow. GBV sweat and threaded balancing valves in Cast Bronze from ½" to 2" have four full turns, providing 16 times finer adjustment than a ball valve.

See page 162 for installation instructions

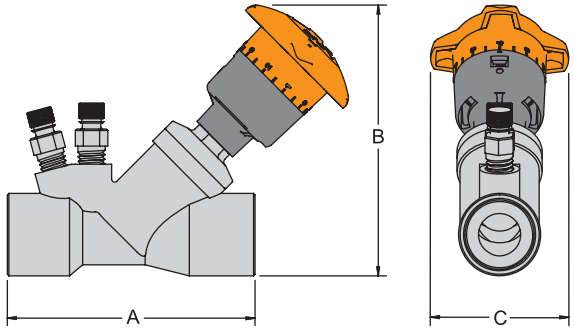
BALANCED CIRCUITS

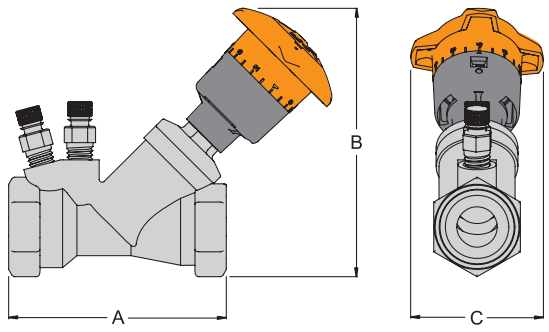
Many systems tend to be overdesigned, causing some circuits to have too much flow, or insufficient flow, depending on their proximity to the source of the flow. The benefits of a balanced circuit:

- Save energy
- Make occupied spaces more comfortable
- Ensure that pumps operate against the lowest possible pressure
- Reduce capital and maintenance costs
- Ensure that the system operates according to the intent of the design

½" - 2" CAST BRONZE, SOLDER & THREADED GBV'S

- Sweat and Threaded ½" to 2"
- Unique flow control plug
  - Precision contoured channels
  - High strength accurately molded resin
- Ergodynamically designed handwheel
- Micrometer type adjustment scale
- Tamper-proof hidden memory stop





MODEL: GBV-S ½" - 2"

Model	Nominal Size	A	B	C	Approx. Wt. Ea.
	In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
GBV050VS	½" *15*	3 3/16 *81*	4 9/16 *116*	2 3/4 *70*	1.1 *0.5*
GBV075VS	¾" *20*	3 9/16 *93*	4 9/16 *118*	2 3/4 *70*	1.1 *0.5*
GBV100VS	1" *25*	4 1/4 *108*	4 15/16 *126*	2 3/4 *70*	1.7 *0.8*
GBV125VS	1¼" *32*	4 15/16 *125*	5 3/8 *137*	2 3/4 *70*	2.3 *1.0*
GBV150VS	1½" *40*	5 11/16 *144*	5 5/8 *142*	2 3/4 *70*	3.2 *1.5*
GBV200VS	2" *50*	7 *179*	6 3/8 *162*	2 3/4 *70*	5.4 *2.5*

MODEL: GBV-T ½" - 2"

Model	Nominal Size	A	B	C	Approx. Wt. Ea.
	In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
GBV050VT	½" *15*	3 *76*	4 5/8 *117*	2 3/4 *70*	1.1 *0.5*
GBV075VT	¾" *20*	3 1/4 *83*	4 7/8 *125*	2 3/4 *70*	1.2 *0.6*
GBV100VT	1" *25*	3 13/16 *97*	5 1/4 *135*	2 3/4 *70*	1.9 *0.8*
GBV125VT	1¼" *32*	4 5/16 *110*	5 5/8 *143*	2 3/4 *70*	2.3 *1.1*
GBV150VT	1½" *40*	5 1/16 *129*	5 7/8 *150*	2 3/4 *70*	3.5 *1.6*
GBV200VT	2" *50*	6 *153*	6 11/16 *170*	2 3/4 *70*	6.0 *2.5*

FTV-S (Straight) & FTV-A (Angle Body)

Tri-Service Valve

SERVICE RECOMMENDATIONS:

The Model FTV-S & FTV-A Tri-Service Valve is primarily designed for installation in pump discharge piping where it functions as a spring loaded silent check valve, flow control valve and shut off valve.

OPERATION:

The Model FTV Tri-Service Valve operates automatically and silently. Line pressure of approximately ¼ PSI will open the disc. The spring closes the disc as the line flow approaches zero in order to prevent flow reversal & water hammer. The flow through the valve can be adjusted from bubble tight shut off to full flow by the threaded rising stem.

FEATURES:

The unique convertible body design permits the valve to be changed on site from the straight to the angle configuration.

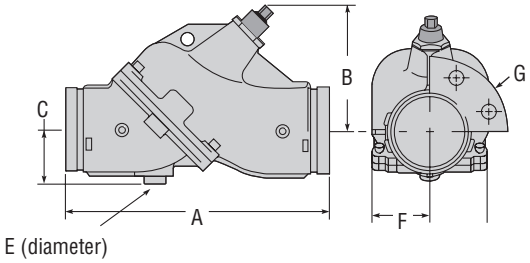
Flow measurement (where an approximate indication is acceptable) is obtained by flow measuring ports on each side of the valve seat. Pressure differential is easily recorded using differential pressure measurement devices. If precision accuracy is required, we recommend that a Gruvlok® Circuit Balancing Valve be installed downstream from the FTV valve.

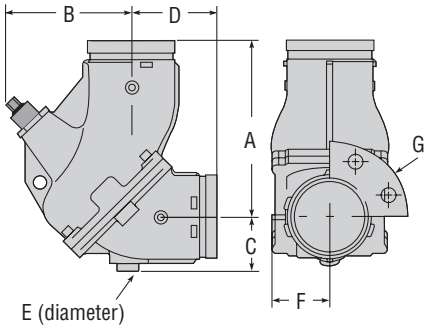
BENEFITS

- Three functions, one valve —
  1. Spring-closure design,
  2. Non-slam check valve,
  3. Flow throttling valve
- Reduced field installation and material cost
- Stainless steel spring
- High-strength resin seat EPDM for 8" and larger
- Anti-rotation lugs on the inlet and outlet. These lugs, combined with the Gruvlok® flange adapter provides for a ridged rotation free installation
- Flow measurement and pump throttling capabilities
- Temperature measurement capability
- Spring-closure design check valve prevents gravity or reverse circulation when pump is not operating
- Bonnet “O” Ring can be replaced under full system pressure by back seating of valve stem
- Suitable for maximum working pressure to 375 psi (26 bar) and temperatures to 230˚F. (110˚C).
- Valve seat can be changed in the field without use of special tools
- Low pressure drop due to “Y” pattern valve design
- Valve Cv designed to ASHRAE flow recommendations for quiet system operation
- Drip-tight shut off valve smoke development rating of 50 or less

FTV-S (Straight) & FTV-A (Angle Body)

Tri-Service Valve





Model FTV-S (Straight)

Connection Size	A	B (fully open)	C	E	F	Flange 125/150 PSI G	Flange 250/300 PSI G	Approx. Wt. Each
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*lbs/kg*
2 1/2	12	7	2 3/4	1	2 9/16	7	7 1/2	19
65	*305*	*178*	*70*	*25*	*65*	*178*	*191*	*9*
3	12	7 13/16	2 7/16	1	3	7 1/2	8 1/4	24
880	*305*	*198*	*62*	*25*	*76*	*191*	*210*	*11*
4	14	8	3	1 1/4	3 7/16	9 1/4	10	42
100	*356*	*203*	*76*	*32*	*87*	*235*	*254*	*19*
5	17 1/2	10 1/8	3 5/8	1 1/4	4 15/16	10	11	81
125	*445*	*257*	*92*	*32*	*125*	*254*	*279*	*37*
6	20 11/16	10 3/8	4 7/16	2	5 7/8	11	12 1/2	120
150	*525*	*264*	*113*	*51*	*149*	*279*	*318*	*54*
8	28 3/16	22 13/16	5 11/16	2 1/4	7 7/8	13 1/2	15	300
200	*716*	*579*	*144*	*57*	*200*	*343*	*381*	*136*
10	30	28 5/8	6 9/16	2 1/4	9 15/32	16	17 1/2	450
250	*762*	*727*	*167*	*57*	*241*	*409*	*445*	*204*
12	38 1/16	32 5/8	7 5/8	2 1/4	12 5/8	19	20 1/2	850
300	*967*	*829*	*194*	*57*	*321*	*483*	*521*	*390*

See Page 47 for O.D. Size

Model FTV-A (Angle)

Connection Size	A	B (fully open)	C	D	E	F	Flange 125/150 PSI G	Flange 250/300 PSI G	Approx. Wt. Each
In./mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*lbs/kg*
2 1/2	7 3/8	7	2 3/4	4 5/8	1	2 9/16	7	7 1/2	19
65	*187*	*178*	*70*	*117*	*25*	*65*	*178*	*191*	*9*
3	8 3/16	7 13/16	2 7/16	3 7/8	1	3	7 1/2	8 1/4	24
880	*208*	*198*	*62*	*98*	*25*	*76*	*191*	*210*	*11*
4	9 5/8	8	3	4 3/8	1 1/4	3 7/16	9 1/4	10	42
100	*244*	*203*	*76*	*111*	*32*	*87*	*235*	*254*	*19*
5	12	10 1/8	3 5/8	5 1/2	1 1/4	4 15/16	10	11	81
125	*305*	*257*	*92*	*140*	*32*	*125*	*254*	*279*	*37*
6	14 1/8	10 3/8	4 7/16	6 5/8	2	5 7/8	11	12 1/2	120
150	*359*	*264*	*113*	*168*	*51*	*149*	*279*	*318*	*54*
8	18 15/16	18 3/4	5 11/16	9 3/16	2 1/4	7 7/8	13 1/2	15	300
200	*481*	*476*	*144*	*233*	*57*	*200*	*343*	*381*	*136*
10	20 5/16	24	6 9/16	9 3/4	2 1/4	9 15/32	16	17 1/2	450
250	*516*	*610*	*167*	*248*	*57*	*241*	*409*	*445*	*204*
12	24 1/16	26 1/4	7 5/8	14	2 1/4	12 5/8	19	20 1/2	860
300	*611*	*667*	*194*	*356*	*57*	*321*	*483*	*521*	*390*

See Page 47 for O.D. Size

MATERIAL SPECIFICATIONS

BODY: Ductile Iron ASTM A536 Grade 65-45-12

DISC: Bronze ASTM B584 C-84400

STEM: Stainless Steel ASTM A582 Type 416

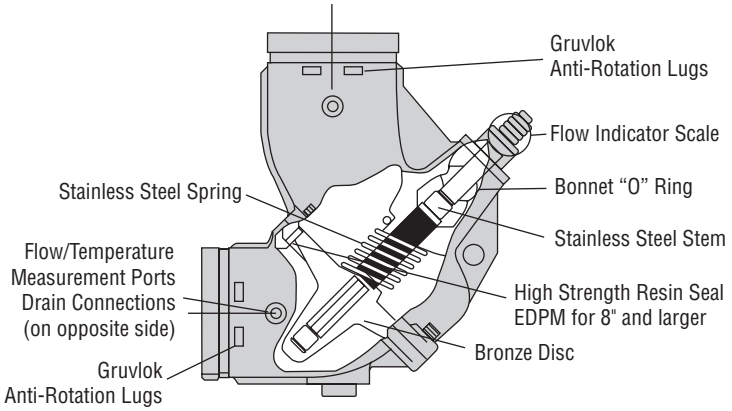
SEAT: High Strength Engineered Resin

SPRING: Stainless Steel ASTM A302

"O" RINGS: BUNA

FLANGES: Ductile Iron ASTM A536 Grade 65-45-12 with EPDM[2] Gaskets (Optional)

INSULATION: Optional[1]



NOTE 1: Optional pre-formed insulation is available to meet ASTM D1784 Class 14253-C, MEA #7-87, ASTM E136 with a flame spread rating of 25 or less and a smoke development rating of 50 or less.

NOTE 2: EPDM is not suitable for oil service.

NOTE: For temperatures between 230°F and 300°F (110°C and 149°C) specify Viton Elastomers

FIG. 7260

Tee Strainer

The Fig. 7260 Tee Strainer provides an economical, compact and hydraulically efficient means of protecting valuable piping system components. The in-line, twin-fold strainer basket provides more than 100% of the projected pipe area for open flow through the strainer screen which results in excellent flow performance across the strainer.

Gruvlok Strainers are designed and tested to ensure long term, reliable service in working pressures up to 750 psi (51.7 bar), depending on size and the pressure rating of the connecting coupling.

MATERIAL SPECIFICATIONS

BODY:

2" - 12" malleable iron conforming to ASTM A-47 or Ductile iron conforming to ASTM A-536

14" - 18" Carbon steel pipe conforming to ASTM A-53.

STRAINER BASKET:

Stainless steel type 304 bar and woven wire screen. 12 mesh in sizes 2" - 3" and 6 mesh in sizes 4" - 18". Other mesh sizes available on request.

ACCESS COUPLING & END CAP:

2" - 12" Malleable iron conforming to ASTM A-47 or Ductile iron conforming to ASTM A-536.

14" - 18" Low carbon steel conforming to ASTM A-53

BOLTS & NUTS:

Heat treated, oval-neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel con-forming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

COUPLING GASKETS:

Elastomer properties as designated by ASTM D-2000
Grade "E" EPDM -40°F to +230°F (services temp. range)
Other options available upon request.

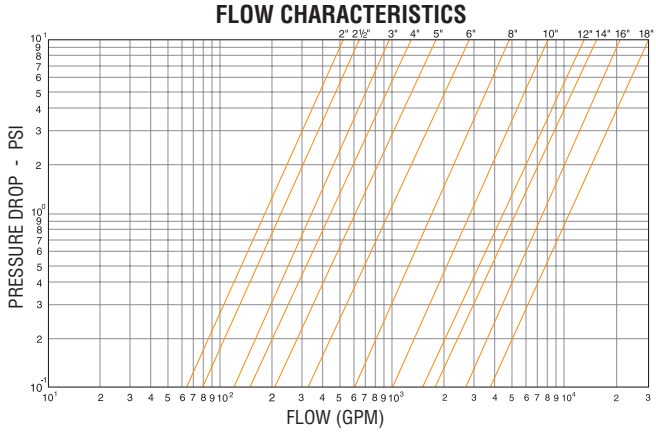
DRAIN PLUG: Carbon steel square head plug conforming to ANSI B-16.11

TAP SIZES: 2"-4" – ½ NPT, 5"-8" – ¾ NPT, 10"-18" – 1 NPT,

COATING:

2" - 12" - Rust-inhibiting paint — color: orange (standard)
Hot Dip Galvanized conforming to ASTM A-153 (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

FLOW CHARACTERISTICS

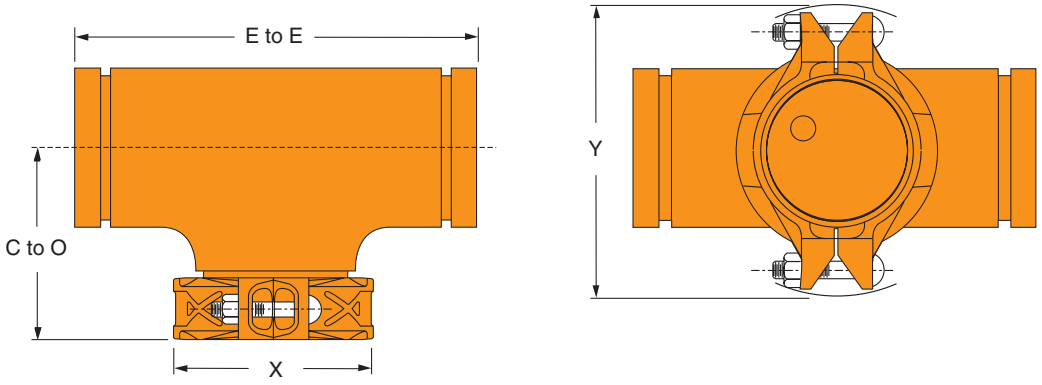


NOTE:

Most U.S. piping engineers specify system startup instructions for new systems which include removing and cleaning the strainer screen after system flushing of main piping before the system is put into normal operation. After flushing, replace the strainer screen. Flow data values are based on flow of clean water at ambient temperatures. The pressure drop across a strainer, 50% clogged, is approximately twice as great as that of a clean strainer. Strainer baskets need a routine maintenance program to maintain efficiency and to prevent excess pressure drop caused by a clogged screen.

FIG. 7260

Tee Strainer



NOTE: The above illustration shows the required orientation of the Rigid-lok access coupling for assembly with a grooved-end flange.

FIGURE 7260 TEE STRAINER

Nominal Size	O.D.	Maximum* Working Pressure	E to E	C to O	X	Y	Basket Removal	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Clearance*	*Lbs./Kg*
2 *50*	2.375 *60.3*	750 *51.7*	6½ *165*	4¼ *108*	3½ *89*	5⅞ *149*	4⅜ *111*	6.0 *2.7*
2½ *65*	2.875 *73.0*	750 *51.7*	7½ *191*	4¾ *121*	4 *102*	6½ *165*	5⅛ *130*	8.0 *3.6*
3 *80*	3.500 *88.9*	750 *51.7*	8½ *216*	5¼ *133*	4¾ *121*	7 *178*	6 *152*	13.0 *5.9*
4 *100*	4.500 *114.3*	750 *51.7*	10 *254*	6⅛ *156*	5⅞ *149*	8⅜ *213*	7¼ *184*	19.0 *8.6*
5 *125*	5.563 *141.3*	750 *51.7*	11 *279*	6⅝ *168*	7 *178*	10⅛ *257*	8¼ *210*	30.0 *13.6*
6 *150*	6.625 *168.3*	750 *51.7*	13 *330*	7⅝ *194*	8⅛ *206*	11⅛ *283*	9¾ *248*	45.0 *20.4*
8 *200*	8.625 *219.1*	600 *41.4*	15½ *394*	9⅛ *232*	10½ *267*	14⅛ *359*	12 *305*	79.0 *35.8*
10 *250*	10.750 *273.1*	500 *34.5*	18 *457*	10⅜ *264*	12⅞ *327*	17⅛ *435*	14¼ *362*	133 *60.3*
12 *300*	12.750 *323.9*	400 *27.6*	20 *508*	11⅜ *289*	15 *381*	19⅛ *486*	16¼ *413*	187 *84.8*
14 *350*	14.000 *355.6*	300 *20.7*	22 *559*	12¾ *324*	16⅛ *410*	20½ *521*	17¼ *438*	272 *123.4*
16 *400*	16.000 *406.4*	300 *20.7*	24 *610*	12 *305*	18⅛ *460*	22¼ *565*	20 *508*	350 *158.8*
18 *450*	18.000 *457.2*	300 *20.7*	31 *787*	15½ *394*	20½ *521*	24⅜ *619*	24½ *622*	400 *181.4*

*Maximum working pressure is based upon the performance capability of the Gruvlok Strainer. Maximum system working pressure is dependent upon the couplings used for installation and the pressure capability of other system components.

14" - 18" Fabricated

Not for use with copper systems.

MODEL 758G

Grooved-End "Wye" Strainer

SERVICE RECOMMENDATIONS

For use in water, oil & gas piping to provide economical protection for pumps, meters, valves, compressors, traps & similar equipment.

SCREENS

Standard screens for Y-Strainer are perforated 304 Stainless Steel with spot welded seam. Mesh lining is available in all alloys for extra fine straining. Recommended standard perforations are listed below in the material specifications.

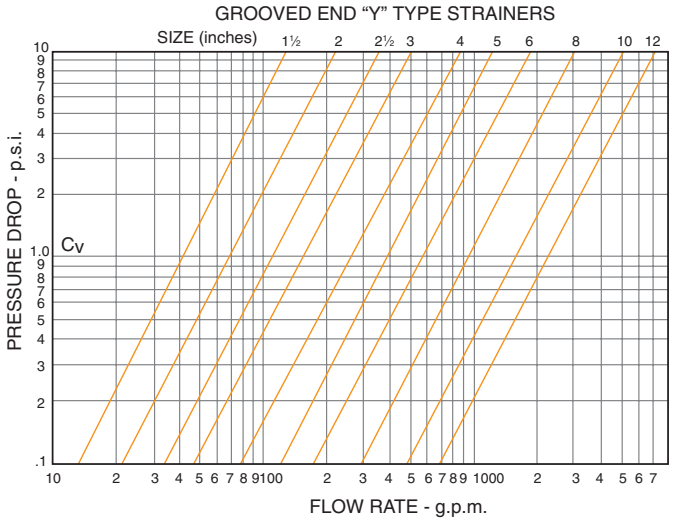
GRUVLOK STRAINER BASKET

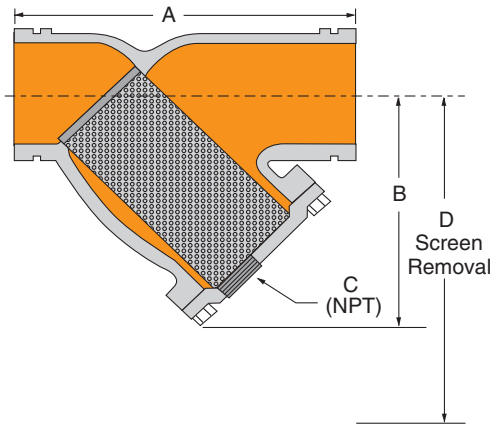
Furnished as standard in sizes 8" (43 mm) and larger. A one-quarter turn securely locks the screen in its seat and frees the serviceman for securing the cover flange to the body of the strainer.

FLOW DATA:

NOTE 1. Most U.S. piping engineers specify system startup instructions for new systems which include removing the pre-filter screen after system flushing of the main piping before the system is put into normal operation. Flow data values are based on flow of clean water at ambient temperatures. The pressure drop across the diffuser basket strainer, 50% clogged, is approximately twice as great as that of a clean strainer.

NOTE 2. Suction Diffuser baskets need a routine maintanence program to maintain system efficiency.





Contact a Gruvlok Rep. for other applications.

CONSTRUCTION

All covers have an NPT blowoff outlet at location "C". Recessed seat in the cover ensures accurate screen alignment. Bosses at the inlet and outlet flanges are provided for gauge taps.

Self-cleaning is done by opening the valve or plug connected to the blowoff outlet. (Advise when strainers are to be mounted in vertical piping, so we can rotate the cover to position the blowoff at the lowest point.)

BLOWOFF OUTLETS

Tapped NPT size specified in the dimension table. Blowoff outlets are not normally furnished with plugs.

INDIVIDUALLY HYDROSTATICALLY TESTED

Working Pressures Non-Shock

640 PSI @ 150˚F (45 Bar @ 65˚C)

MATERIAL SPECIFICATIONS

BODY & COVER: Ductile Iron ASTM A 395 Grade 60-40-18

FLAT GASKETS: Non-asbestos

SCREEN:

2" - 4" Type 304 Stainless Steel 1/16" (1.6mm) dia. holes
5" - 12" Type 304 Stainless Steel 1/8" (3.2mm) dia. holes.

COUPLING: Ductile iron ASTM A536 Grade 65-45-12

FIGURE 758 G GROOVED-END "WYE" STRAINER

Nominal Size	O.D.	Dimensions A	B	C Plug Size	D	Approx. Wt. Each
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	7⅞ *200*	5¼ *133*	½ *25*	7 *178*	12.0 *5.4*
2½ *65*	2.875 *73.0*	10 *254*	6½ *165*	1 *25*	9¾ *248*	18.0 *8.2*
3 *80*	3.500 *88.9*	10⅛ *257*	7 *178*	1 *25*	10 *254*	23.0 *10.4*
4 *100*	4.500 *114.3*	12⅛ *308*	8¼ *210*	1½ *38*	12 *305*	42.0 *19.1*
5 *125*	5.563 *141.3*	15⅝ *396*	11¼ *286*	2 *51*	17 *432*	80.0 *36.3*
6 *150*	6.625 *168.3*	18½ *470*	13½ *343*	2 *51*	20 *508*	112.0 *50.8*
8 *200*	8.625 *219.1*	21⅝ *549*	15½ *394*	2 *51*	22¾ *577*	205.0 *93.0*
10 *250*	10.750 *273.1*	25¾ *654*	18½ *470*	2 *51*	28 *711*	277.0 *125.6*
12 *300*	12.750 *323.9*	30 *762*	21¾ *552*	2 *51*	30 *762*	470.0 *213.2*

*Maximum working pressure is based upon the performance capability of the Gruvlok® Strainer. Maximum system working pressure is dependant upon the couplings used for installation and the pressure capacity of other system components.

Not for use with copper systems.

MODEL 768G

Globally Sourced Grooved-end “Wye” Strainer

The Grooved-end Wye-Strainers are designed to strain debris and foreign matter from piping systems and thus provide inexpensive protection for costly pumps, meters and other components. The Strainer can be installed quickly and easily with two mechanical couplings and the straight flow through design provides for lower pressure drop. This strainer features a stainless steel screen that is secured with an end cap and mechanical coupling. Cleaning and maintenance off the screen can be accomplished easily by removing the coupling The Strainer is suitable for vertical and horizontal installations.

MATERIAL SPECIFICATIONS

BODY: Ductile iron ASTM A 536 Grade 65-45-12

END CAP: Ductile iron ASTM A 536 Grade 65-45-12

SCREEN:*

2" - 3" Type 304 Stainless Steel to ASTM A240 - 1/16" (1.6 mm) perforations
4" - 12" Type 304 Stainless Steel to ASTM A240 - 1/8" (3.2 mm) perforations
Other perforations arre available upon request

COUPLING: Ductile iron ASTM A536 Grade 65-45-12

GASKET:*

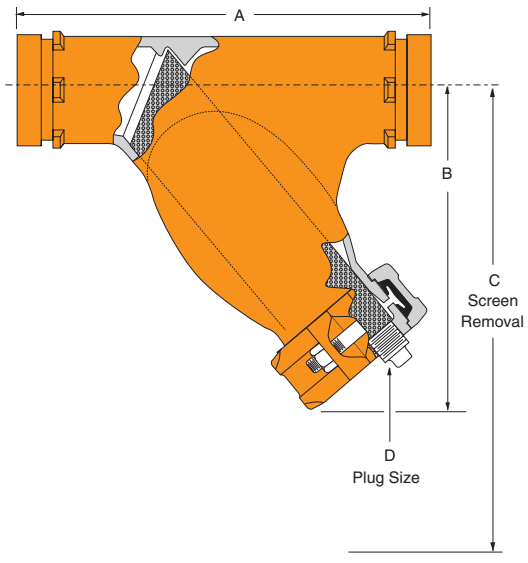
EPDM Temp range -40°F - +230°F (-40° to 110°C)
Nitrile Temperature range -20°F to 180°F (-29° to 82°C)

BLOW DOWN PORT:

2" & 2½": ½" tapped with plug,
3" & 4": 1" tapped with plug,
6" - 12": 1½" tapped with plug

* Custom screens and/or gaskets are available upon request.

Strainer baskets need a routine maintenance program to maintain efficiency and to prevent excess pressure drop caused by a clogged screen.



Values for flow of water at +60°F (+16°C)

$$C_V = \frac{Q}{\sqrt{\Delta P}}$$

Where:

Q = Flow (GPM)
CV = flow coefficient
ΔP = Pressure drop (PSI)

FIGURE 768 G GROOVED-END “WYE” STRAINER

Nominal Size	O.D.	Working Pressure	Dimensions				Cv Values	Approx. Wt. Each
			A	B	C	D Plug Size		
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	300 *20.7*	9¾ *248*	7⅛ *192*	4⁹⁄₁₆ *116*	½ *12*	59	9.3 *4.2*
2½ *65*	2.875 *73.0*	300 *20.7*	10¾ *273*	7¹³⁄₁₆ *211*	4¹³⁄₁₆ *122*	½ *12*	92	13.2 *6.0*
3 *80*	3.500 *88.9*	300 *20.7*	11¾ *298*	8¹¹⁄₁₆ *231*	5¹⁄₁₆ *129*	1 *25*	162	18.0 *8.2*
4 *100*	4.500 *114.3*	300 *20.7*	14¼ *362*	10⅝ *281*	6⅝ *168*	1 *25*	284	26.4 *12.0*
5 *125*	5.563 *141.3*	300 *20.7*	16½ *419*	13 *330*	10³⁄₁₆ *258*	1 *25*	410	46.4 *22.0*
6 *150*	6.625 *168.3*	300 *20.7*	18½ *470*	14¹⁄₁₆ *357*	8⅝ *219*	1½ *38*	770	70.4 *32.0*
8 *200*	8.625 *219.1*	300 *20.7*	24 *610*	17⅞ *454*	11³⁄₁₆ *284*	1½ *38*	1010	121.0 *55.0*
10 *250*	10.750 *273.1*	300 *20.7*	27 *686*	20⁹⁄₁₆ *522*	12⅝ *320*	1½ *38*	1800	182.6 *83.0*
12 *300*	12.750 *323.9*	300 *20.7*	30 *762*	24 *609*	14⅜ *366*	1½ *38*	2800	277.2 *126.0*
14 *350*	14.000 *355.6*	300 *20.7*	40 *1016*	29¹⁵⁄₁₆ *760*	18⅞ *480*	1½ *38*	4600	418.0 *190.0*
16 *400*	16.000 *406.4*	300 *20.7*	42 *1067*	30⁹⁄₁₆ *777*	19 *483*	1½ *38*	5800	495.0 *225.0*

Not for use in copper systems.

- Pressure ratings listed are CWP (cold water pressure) or maximum working pressure within the service temperature range of the gasket used in the coupling. This rating may occasionally differ from maximum working pressures listed and/or approved by UL, ULC, and/or FM as testing conditions and test pipes differ.
- Maximum working pressure and end loads listed are total of internal and external pressures and loads based on Sch. 40 steel pipe with roll grooves to ANSI C606-97 specifications.
- For one time field test only the maximum joint working pressure may be increased 1½ times the figures shown.
- Warning: Piping systems must always be depressurized and drained before attempting disassembly and or removal of any components.

FIG. 7250

Suction Diffuser

The Fig. 7250 Gruvlok Suction Diffuser protects your pump and saves you money on your overall installed cost while offering you these advantages:

SAVES SPACE:

Mounts directly to the pump inlet.

SAVES LABOR AND MATERIAL:

The lightweight compact design is easily installed with no need for welding.

IMPROVES PUMP PERFORMANCE:

The one-piece diffuser vane and strainer design reduces flow turbulence, streamlines the flow, and traps any hazardous foreign material to better protect your pump.

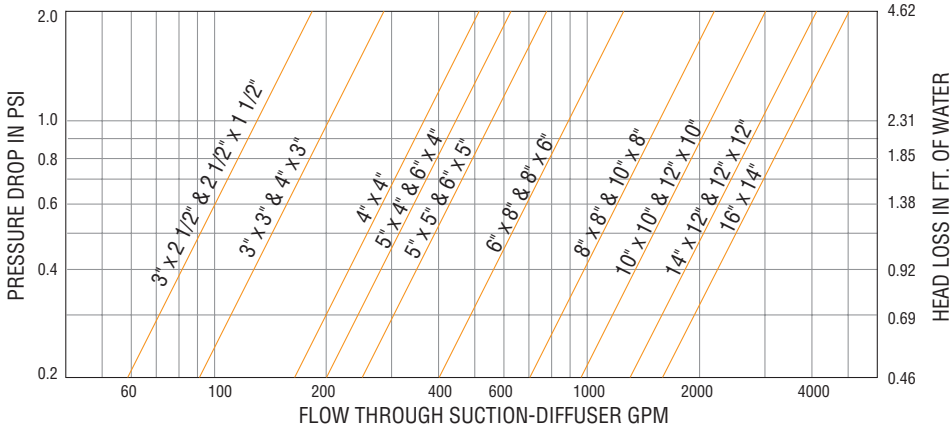
PIPE SUPPORT LUG STANDARD

FLOW DATA:

NOTE 1. Most U.S. piping engineers specify system startup instructions for new systems which include removing the pre-filter screen after system flushing of the main piping before the system is put into normal operation. Flow data values are based on flow of clean water at ambient temperatures. The pressure drop across the diffuser basket strainer, 50% clogged, is approximately twice as great as that of a clean strainer.

NOTE 2. Suction Diffuser baskets need a routine maintanence program to maintain system efficiency.

FLOW CHARACTERISTICS



MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information

HOUSING:
Sizes 2½" x 2½" through 10" x 8":
Ductile iron conforming to ASTM A-536, Grade 65-45-12 or malleable iron conforming ro ASTM A47, Grade 32510

Sizes 8" x 5" and 10" x 10" through 16" x 14":
Carbon steel Schedule 30 conforming to ASTM A-53, Grade B.

DIFFUSER BASKET:
Stainless steel type 304, #16 perforated plate with 3/16" diameter holes. (51% open area). Pre-Filter: Stainless steel type 304 screen - 16 mesh. (removable).

COUPLINGS & FLANGES:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

DRAIN & GAGE PLUGS:
Carbon steel square head plugs conforming to ASTM B16.11.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

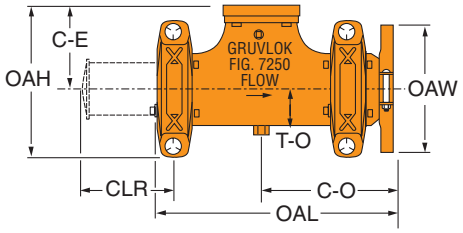
GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified -40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS

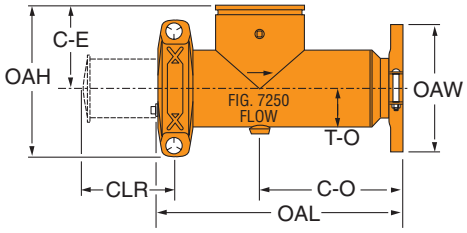
o**Grade "T" Nitrile** (Orange color code) -20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petrolium applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

FIG. 7250

Suction Diffuser



$2^1/_2$" x $2^1/_2$" thru 10" x 8"



10" x 10" thru 16" x 14"

Figure 7250 Suction Diffuser

Nominal Size	O.D.	System Side (Grooved)	Pump Side (Flanged)	C-E	C-O	OAL	OAH	OAW	CLR	T-O	Orifice Cylinder Open Area	Max. Working Pressure	Approx. Wt. Each
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./DN(mm)*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In. Sq./cm. Sq.*	*PSI/bar*	*Lbs./Kg*
$2^1/_2$ x $2^1/_2$	2.875 x 2.875	$2^1/_2$	$2^1/_2$	5	$8^1/_4$	$13^1/_2$	9	$9^1/_2$	$12^1/_2$	$2^3/_{16}$	47.0	300	36
65 x 65	*73.0 x 73.0*	*65*	*65*	*127*	*210*	*343*	*229*	*241*	*318*	*56*	*303*	*20.7*	*16.3*
3 x 2	3.500 x 2.375	3	2	5	8	14	9	$8^3/_8$	$13^1/_2$	$2^3/_{16}$	47.0	300	36
80 x 65	*88.9 x 60.3*	*80*	*50*	*127*	*203*	*356*	*229*	*213*	*343*	*56*	*303*	*20.7*	*16.3*
3 x $2^1/_2$	3.500 x 2.875	3	$2^1/_2$	5	$8^1/_4$	$13^1/_2$	9	$9^1/_2$	$12^1/_2$	$2^3/_{16}$	47.0	300	36
80 x 65	*88.9 x 73.0*	*80*	*65*	*127*	*210*	*343*	*229*	*241*	*318*	*56*	*303*	*20.7*	*16.3*
3 x 3	3.500 x 3.500	3	3	5	$8^1/_4$	$13^1/_2$	9	$9^1/_2$	$12^1/_2$	$2^3/_{16}$	51.0	300	37
80 x 80	*88.9 x 88.9*	*80*	*80*	*127*	*210*	*343*	*229*	*241*	*318*	*56*	*329*	*20.7*	*16.8*
4 x $2^1/_2$	4.500 x 2.875	4	$2^1/_2$	5	$8^1/_4$	$13^1/_2$	9	$9^1/_2$	$12^1/_2$	$2^3/_{16}$	51.0	300	38
100 x 65	*114.3 x 2.875*	*100*	*65*	*127*	*210*	*343*	*229*	*241*	*318*	*56*	*329*	*20.7*	*17.2*
4 x 3	4.500 x 3.500	4	3	5	$8^1/_4$	$13^1/_2$	9	10	$12^1/_2$	$2^3/_{16}$	51.0	300	38
100 x 80	*114.3 x 88.9*	*100*	*80*	*127*	*210*	*343*	*229*	*254*	*318*	*56*	*329*	*20.7*	*17.2*
4 x 4	4.500 x 4.500	4	4	$6^1/_2$	$10^1/_2$	$17^1/_2$	$11^3/_4$	$11^1/_2$	$16^1/_2$	$3^1/_4$	95.0	300	72
100 x 100	*114.3 x 114.3*	*100*	*100*	*165*	*267*	*445*	*298*	*292*	*419*	*83*	*613*	*20.7*	*32.7*
5 x 4	5.563 x 4.500	5	4	$6^1/_2$	$10^1/_2$	$17^1/_2$	$11^3/_4$	$11^1/_2$	$16^1/_2$	$3^1/_4$	95.0	300	74
125 x 100	*141.3 x 114.3*	*125*	*100*	*165*	*267*	*445*	*298*	*292*	*419*	*83*	*613*	*20.7*	*33.6*
5 x 5	5.563 x 5.563	5	5	$6^1/_2$	$10^1/_2$	$17^1/_2$	$11^3/_4$	$12^1/_2$	$16^1/_2$	$3^1/_4$	124.0	300	75
125 x 125	*141.3 x 141.3*	*125*	*125*	*165*	*267*	*445*	*298*	*318*	*419*	*83*	*800*	*20.7*	*34.0*
6 x 3	6.625 x 3.500	6	3	$6^1/_2$	$10^1/_2$	18	$11^3/_4$	$10^1/_2$	$17^1/_2$	$3^1/_4$	94.0	300	72
150 x 80	*168.3 x 88.9*	*150*	*80*	*165*	*267*	*457*	*298*	*268*	*445*	*83*	*607*	*20.7*	*34.0*
6 x 4	6.625 x 4.500	6	4	$6^1/_2$	$10^1/_2$	$17^1/_2$	$11^3/_4$	$11^1/_2$	$16^1/_2$	$3^1/_4$	95.0	300	72
150 x 100	*168.3 x 114.3*	*150*	*100*	*165*	*267*	*445*	*298*	*292*	*419*	*83*	*613*	*20.7*	*32.7*
6 x 5	6.625 x 5.563	6	5	$6^1/_2$	$10^1/_2$	$17^1/_2$	$11^3/_4$	$12^1/_2$	$16^1/_2$	$3^1/_4$	124.0	300	74
150 x 125	*168.3 x 141.3*	*150*	*125*	*165*	*267*	*445*	*298*	*318*	*419*	*83*	*800*	*20.7*	*33.6*
6 x 6	6.625 x 6.625	6	6	$7^3/_4$	$13^1/_4$	$21^1/_2$	$14^3/_4$	$13^1/_2$	$20^1/_2$	$4^7/_8$	182.0	300	133
150 x 150	*168.3 x 168.3*	*150*	*150*	*197*	*337*	*546*	*375*	*343*	*521*	*124*	*1,174*	*20.7*	*60.3*
8 x 5*	8.625 x 5.563	8	5	$7^3/_4$	$13^1/_4$	$21^1/_2$	$10^{15}/_{16}$	10	$19^1/_2$	$4^7/_8$	182.0	300	118
200 x 125	*219.1x 141.3*	*200*	*125*	*197*	*337*	*546*	*278*	*254*	*495*	*124*	*1,174*	*20.7*	*53.5*
8 x 6	8.625 x 6.625	8	6	$7^3/_4$	$13^1/_4$	$21^1/_2$	$14^3/_4$	$13^1/_2$	$20^1/_2$	$4^7/_8$	182.0	300	118
200 x 150	*219.1 x 168.3*	*200*	*150*	*197*	*337*	*546*	*375*	*343*	*521*	*124*	*1,174*	*20.7*	*53.5*
8 x 8	8.625 x 8.625	8	8	9	$15^1/_4$	$24^1/_2$	$17^1/_2$	19	$23^1/_2$	$5^7/_8$	283.5	300	190
200 x 200	*219.1 x 219.1*	*200*	*200*	*229*	*387*	*622*	*445*	*483*	*597*	*149*	*1,829*	*20.7*	*86.2*
10 x 8	10.750 x 8.625	10	8	9	$15^1/_4$	$24^1/_2$	$17^1/_2$	19	$23^1/_2$	$5^7/_8$	283.5	300	203
250 x 200	*273.1 x 219.1*	*250*	*200*	*229*	*387*	*622*	*445*	*483*	*597*	*149*	*1,829*	*20.7*	*92.1*
10 x 10*	10.750 x 10.750	10	10	10	$17^1/_4$	28	$19^5/_8$	22	26	$7^3/_8$	397.0	300	192
250 x 250	*273.1 x 273.1*	*250*	*250*	*254*	*438*	*711*	*498*	*559*	*660*	*187*	*2,561*	*20.7*	*87.1*
12 x 10*	12.750 x 10.750	12	10	10	$17^1/_4$	28	$19^5/_8$	22	26	$7^3/_8$	397.0	300	196
300 x 250	*323.9 x 273.1*	*300*	*250*	*254*	*438*	*711*	*498*	*559*	*660*	*187*	*2,561*	*20.7*	*88.9*
12 x 12*	12.750 x 12.750	12	12	11	$24^1/_4$	36	$20^1/_2$	24	34	8	571.0	300	382
300 x 300	*323.9 x 323.9*	*300*	*300*	*279*	*616*	*914*	*521*	*610*	*864*	*203*	*3,684*	*20.7*	*173.3*
14 x 10*	14.000 x 10.750	14	10	11	$24^1/_4$	36	$20^1/_2$	24	34	8	571	300	382
350 x 250	*355.6 x 273.1*	*350*	*250*	*279*	*616*	*914*	*521*	*610*	*864*	*203*	*3,684*	*20.7*	*173.3*
14 x 12*	14.000 x 12.750	14	12	11	$24^1/_4$	36	$20^1/_2$	24	34	8	571.0	300	382
350 x 300	*355.6 x 323.9*	*350*	*300*	*279*	*616*	*914*	*521*	*610*	*864*	*203*	*3,684*	*20.7*	*173.3*
14 x 14*	14.000 x 14.000	14	14	12	$26^1/_4$	39	23	$26^1/_4$	37	9	993.0	300	467
350 x 350	*355.6 x 355.6*	*350*	*350*	*305*	*667*	*991*	*584*	*667*	*940*	*229*	*6,406*	*20.7*	*211.8*
16 x 14*	16.000 x 14.000	16	14	12	$26^1/_4$	39	23	$26^1/_4$	37	9	993.0	300	467
400 x 350	*406.4 x 355.6*	*400*	*350*	*305*	*667*	*991*	*584*	*667*	*940*	*229*	*6,406*	*20.7*	*211.8*

* Fabricated

Other sizes available on special request. Contact Gruvlok Rep. for ordering information.

Dimensions may vary Contact Gruvlok Rep. for certified values.

Not for use in copper systems.

Product must be supported by pipe supports (supports not included).

1. "CLR" Dimension indicates clearance needed for diffuser basket removal.
2. Drain Holes: (End Cap)
   -$^3/_4$" NPT for sizes $2^1/_2$ x $2^1/_2$ thru 6 x 5, -1" NPT for sizes 6 x 6 thru 16 x 14.
3. Pipe Support - Use $1^1/_4$" SCH. 40 Pipe for $2^1/_2$" thru 10" pipe and 2" SCH. 40 Pipe for 12" and larger diffusers.
4. "Orifice Cylinder Open Area" is the total area of the opening in the diffuser basket after the pre-filter screen has been removed.

MODELS GAV-15

Automatic Air Vents For Ultimate Performance

- Two Sizes Equip All Riser Systems
- Spherical Float for Strength
- Stainless Steel Float and Trim
- Special Design Eliminates Blow-by

The Air Vent (GAV) features a Stainless Steel spherical float design. Air in the piping system is vented through the discharge valve that is normally open. Rising water activates the float to close the valve. The valve outlet is tapped to take a safety drain line.

Simplicity of design in the GAV ensures long-lasting efficiency. The Stainless Steel float and valve mechanism involve no wearing parts, and no intricate function. The precision formed cast iron body custom-fits the float and valve, and protectively houses their operation under the most demanding conditions.

Max. Working Pressure

175 PSI (12 bar) @ 150° F (66° C)
150 PSI (10 bar) @ 250° F (121° C)

Test Pressure

300 PSI (21 bar) @ 70° F (21° C)

Model GAV-15 Automatic Air Vent

Valve Size	Maximum Temp.	Inlet Size NPT	Outlet Size NPT	Orifice Size	Approx. Wt. Ea
In./mm	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*Lbs/Kg*
½	250	½	½	1/16	5½
15	*120*	*15*	*15*	*2*	*3*
¾	250	¾	½	1/16	5½
20	*120*	*20*	*15*	*2*	*3*
1	250	1	½	1/16	5½
25	*120*	*25*	*15*	*2*	*3*

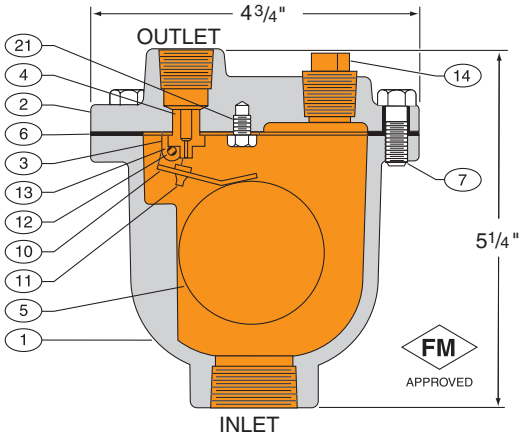
Model GAV-15 Automatic Air Vent

Type	Max. Water Pressure	Max. Temp.	Inlet Size	Outlet Size NPT	Valve Orifice	Overall			Approx. Wt. Ea
						Height	Width	Length	
	psi/bar	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs/Kg*
GAV-15	150	250	½, ¾ & 1	⅜	1/16	5¼	4¾	4¾	5½
	10	*120*	*15, 20 & 25*	*10*	*2*	*130*	*100*	*100*	*2.5*

MATERIAL SPECIFICATIONS

1. **BODY:** Cast Iron-A126, Class B
2. **COVER:** Cast Iron-A126, Class B
3. **LEVER FRAME:** Stainless Steel-T304, A240
4. **SEAT:** Stainless Steel-T303, 582
5. **FLOAT:** Stainless Steel-T304, A240
6. **GASKET:** Non Asbestos
7. **COVER BOLT:** Carbon Steel-Sae Grade 5
10. **FLOAT ARM:** Stainless Steel-T304, A240
11. **ORIFICE BUTTON:** Viton
12. **PIVOT PIN:** Stainless Steel-T303, 582
13. **PIN RETAINER*:** Stainless Steel-Ph 15-7 MO
14. **PIPE PLUG ½":** Steel
21. **LOCATOR:** Stainless Steel-T304, F593

* Not Shown



MODELS GAV-30

Automatic Air Vents for Ultimate Performance

- Two Sizes Equip All Riser Systems
- Spherical Float for Strength
- Stainless Steel Float and Trim
- Special Design Eliminates Blow-by

The Air Vent (GAV) features a Stainless Steel spherical float design. Air in the piping system is vented through the discharge valve that is normally open. Rising water activates the float to close the valve. The valve outlet is tapped to take a safety drain line.

Simplicity of design in the GAV ensures long-lasting efficiency. The Stainless Steel float and valve mechanism involve no wearing parts, and no intricate function. The precision formed cast iron body custom-fits the float and valve, and protectively houses their operation under the most demanding conditions.

Max. Working Pressure
300 PSI

Test Pressure
450 PSI

Model GAV-30 Automatic Air Vent

Valve Size	Maximum Temp.	Inlet Size NPT	Outlet Size NPT	Orifice Size	Approx. Wt. Each.
In./mm	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*Lbs/Kg*
½	250	½	½	1/16	8
15	*120*	*15*	*15*	*2*	*3*
¾	250	¾	½	1/16	8
20	*120*	*20*	*15*	*2*	*3*

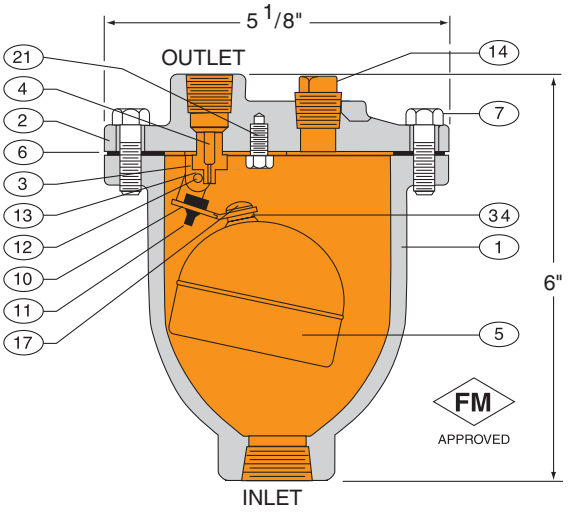
Model GAV-30 Automatic Air Vent

Type	Max. Water Pressure	Max. Temp.	Inlet Size	Outlet Size NPT	Valve Orifice	Overall			Approx. Wt. Each.
						Height	Width	Length	
	psi/bar	*°F/°C*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs/Kg*
GAV-30	300	250	½, ¾ & 1	½	1/16	6	5⅛	5⅛	7½
	20.7	*120*	*15, 20 & 25*	*15*	*2*	*150*	*125*	*125*	*3.4*

MATERIAL SPECIFICATIONS

1. **BODY:** Cast Iron-A126, Class B
2. **COVER:** Cast Iron-A126, Class B
3. **LEVER FRAME:** Stainless Steel ASTM A240
4. **SEAT:** Stainless Steel-T303, 582
5. **FLOAT:** Stainless Steel-T304, A240
6. **GASKET:** Non Asbestos
7. **COVER BOLT:** Alloy Steel ASTM A 449 Grade 5
10. **FLOAT ARM:** Stainless Steel-T304, A240
11. **ORIFICE BUTTON:** Viton
12. **PIVOT PIN:** Stainless Steel-T303, 582
13. **PIN RETAINER:** Stainless Steel-Ph 15-7 MO
14. **PIPE PLUG:** Steel
17. **FLOAT RETAINER:** Stainless Steel T304, F879
21. **LOCATOR:** Stainless Steel-T304, F593
34. **LOCK WASHER:** Stainless Steel T304, A240

NOTE: All specification as last revised



ANVILFLEX™ FLEX CONNECTORS

AnvilFlex™ Flexible connectors are used to prevent damage to pumps caused by piping stress. AnvilFlex™ connectors also absorb vibration and noise found in pump installations. AnvilFlex™ connectors are easily installed and reduce the possiblilty of pump failure.

They are designed to be pressure tested 1.5 times their maximum rated working pressure and manufactured with a 4:1 safety factor. Their compact design saves valuable space.

See page 165 for installation instructions

Working pressure of standard hose and braid up to 1,325 psi (91 bar) or full vacuum and operating temperatures of -400°F (-240° C) to + 1,500°F (816° C).

AnvilFlex™ connectors are manufactured with 321 stainless steel annular corrugated close pitch metal flexible hose. Other stainless steel and corrosion resistant alloys are available. Contact your Gruvlok representave for additional information.

MATERIAL SPECIFICATIONS

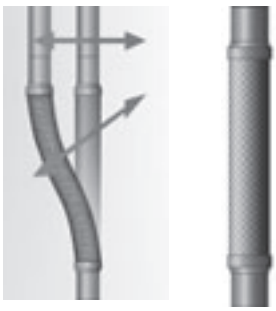
HOSE: 300 Series Stainless Steel

BRAID: Stainless Steel Type 304

ENDS: Schedule 40 Carbon Steel Grooved-Ends

MOTION CLASSIFICATIONS

AnvilFlex™ flex connectors are braided pump connectorsare capable of handling the following movements:



PARALLEL VIBRATION

PARALLEL OFFSET MOTION:

Motion that occurs when one end of the hose assembly is deflected in a plane perpendicular to the longitudinal axis with the ends remaining parallel. Offset is measured as displacement of the free end centerline from the fixed end centerline.

MOTION FREQUENCY:

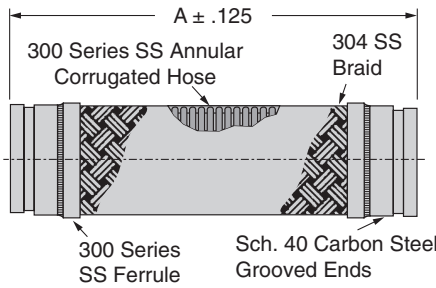
Permanent Offset - The maximum fixed parallel offset to which the corrugated metal hose assembly may be bent without damage to the convolutions. No further motion is to be imposed other than normal vibration.

Intermittent Offset is motion that occurs on a regular or irregular cyclic basis. It is normally the result of thermal expansion and contraction or other non-continuous actions.

NOTE: AnvilFlex™ flex connectors are manufactured with a 4:1 safety factor

FIG. AF21-GG

Grooved Ends
Flex Connector



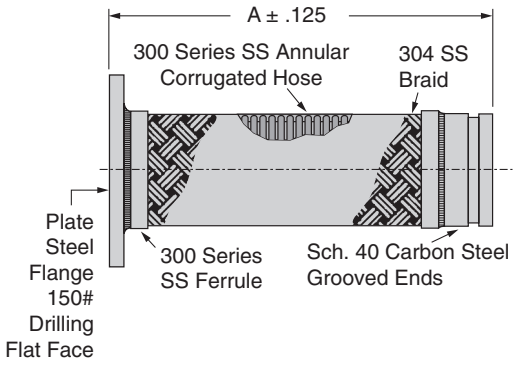
AF21-GG GRxGR FLEX CONNECTORS

Nominal Size	O.D.	Model or 10 dig. #	A	Pressure 70°F	Parallel Offset *		Approx. Wt. Ea.
					Permanent	Intermittent	
In./DN(mm)	*In./mm*		*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*Lbs./kN*
2 *50*	2.375 *60.3*	AF0390232007	12 *304.8*	450 *31.0*	1¼ *31.8*	⅜ *9.5*	2.5 *1.1*
2½ *65*	2.875 *73.0*	AF0390232106	12 *304.8*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	3.5 *1.6*
3 *80*	3.500 *88.9*	AF0390232031	12 *304.8*	275 *19.0*	¾ *19.1*	¼ *6.4*	4.5 *2.0*
4 *100*	4.500 *114.3*	AF0390232114	14 *355.6*	270 *18.6*	½ *12.7*	¼ *6.4*	8.0 *3.6*
5 *125*	5.563 *141.3*	AF0390232122	16 *406.4*	225 *15.5*	⅞ *22.2*	⅜ *9.5*	12.0 *5.4*
6 *150*	6.625 *168.3*	AF0390232130	16 *406.4*	165 *11.4*	⅝ *15.9*	¼ *6.4*	14.0 *6.4*
8 *200*	8.625 *219.1*	AF0390232148	16 *406.4*	155 *10.7*	½ *12.7*	¼ *6.4*	20.0 *9.1*
10 *250*	10.750 *273.1*	AF0390232155	20 *508.0*	150 *10.3*	⅝ *15.9*	¼ *6.4*	38.0 *17.2*
12 *300*	12.750 *323.9*	AF0390232163	20 *508.0*	145 *10.0*	½ *12.7*	¼ *6.4*	46.0 *20.9*

* See Motion Classification to the left for additional information.

FIG. AF21-GF

Grooved x Class 150 Flanged Flex Connectors



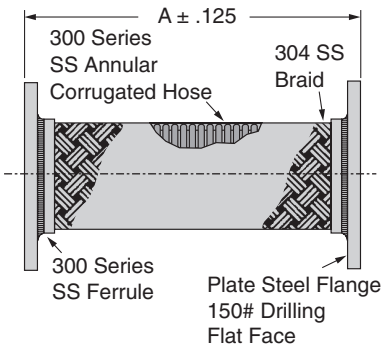
AF21-GF GRxFL Flex Connectors

Nominal Size	O.D.	Model or 10 dig. #	A	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
					Permanent	Intermittent	
In./DN(mm)	*In./mm*		*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*Lbs./kN*
2 *50*	2.375 *60.3*	AF0390232197	12 *304.8*	450 *31.0*	1 7/8 *47.6*	5/8 *15.9*	7.2 *3.3*
2 1/2 *65*	2.875 *73.0*	AF0390232213	12 *304.8*	300 *20.7*	1 5/8 *41.3*	5/8 *15.9*	8.5 *3.9*
3 *80*	3.500 *88.9*	AF0390232171	12 *304.8*	275 *19.0*	1 1/8 *28.6*	1/2 *12.7*	10.4 *4.7*
4 *100*	4.500 *114.3*	AF0390232189	12 *304.8*	270 *18.6*	5/8 *15.9*	1/4 *6.4*	14.0 *6.4*
5 *125*	5.563 *141.3*	AF0390232247	14 *355.6*	225 *15.5*	7/8 *22.2*	3/8 *9.5*	18.4 *8.3*
6 *150*	6.625 *168.3*	AF0390232254	14 *355.6*	165 *11.4*	3/4 *19.1*	3/8 *9.5*	23.7 *10.8*
8 *200*	8.625 *219.1*	AF0390232262	15 *381.0*	155 *10.7*	5/8 *15.9*	1/4 *6.4*	39.6 *18.0*
10 *250*	10.750 *273.1*	AF0390232270	16 *406.4*	150 *10.3*	5/8 *15.9*	1/4 *6.4*	40 *18.1*
12 *300*	12.750 *323.9*	AF0390232288	17 *431.8*	145 *10.0*	1/2 *12.7*	1/4 *6.4*	50 *22.7*

* See Motion Classification on previous page for additional information.

FIG. AF21-FF

Class 150 Flanged x Class 150 Flanged Flex Connectors



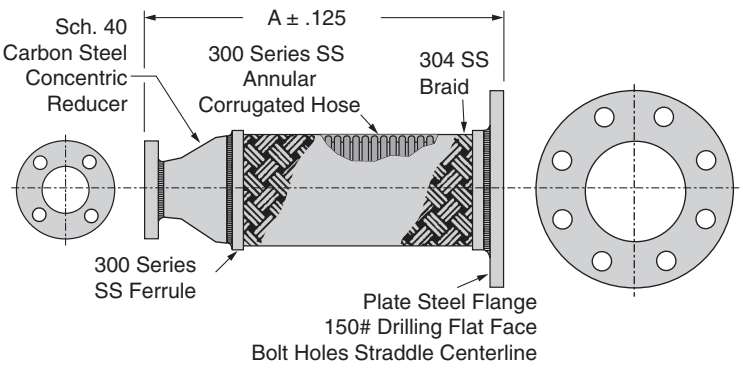
AF21-FF FLxFL Flex Connectors

Nominal Size	O.D.	Model or 10 dig. #	A	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
					Permanent	Intermittent	
In./ DN(mm)	*In./mm*		*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*Lbs./kN*
2 *50*	2.375 *60.3*	AF0390232387	9 *228.6*	450 *31.0*	1 1/8 *28.6*	3/8 *9.5*	10.0 *4.5*
2 1/2 *65*	2.875 *73.0*	AF0390232395	9 *228.6*	300 *20.7*	1 *25.4*	3/8 *9.5*	12.0 *5.4*
3 *80*	3.500 *88.9*	AF0390232403	9 *228.6*	275 *19.0*	5/8 *15.9*	1/4 *6.4*	14.0 *6.4*
4 *100*	4.500 *114.3*	AF0390232429	9 *228.6*	270 *18.6*	1/2 *12.7*	1/4 *6.4*	19.0 *8.6*
5 *125*	5.563 *141.3*	AF0390232437	11 *279.4*	225 *15.5*	3/4 *19.1*	3/8 *9.5*	25.0 *11.3*
6 *150*	6.625 *168.3*	AF0390232445	11 *279.4*	165 *11.4*	5/8 *15.9*	1/4 *6.4*	30.0 *13.6*
8 *200*	8.625 *219.1*	AF0390232452	12 *304.8*	155 *10.7*	1/2 *12.7*	1/4 *6.4*	54.0 *24.5*
10 *250*	10.750 *273.1*	AF0390232460	13 *330.2*	150 *10.3*	1/2 *12.7*	1/4 *6.4*	75.0 *34.0*
12 *300*	12.750 *323.9*	AF0390232478	14 *355.6*	145 *10.0*	1/2 *12.7*	1/4 *6.4*	105.0 *47.6*

* See Motion Classification on previous page for additional information.

FIG. AF21-RFF

Class 150 Flanged x Class 150
Flanged Reducing Flex Connectors



AF21-RFF FLxFL Reducing Flex Connectors

Nominal Size		Small O.D.	Large O.D.	Length	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
Small Flange	Large Flange					Permanent	Intermittent	
In./DN(mm)	*In./DN(mm)*	*In./mm*	*In./mm*	*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*Lbs./kN*
1½ *40*	2 *50*	1.660 *42.2*	2.375 *60.3*	14 *355.6*	450 *31.0*	1½ *38.1*	⅝ *15.9*	6.7 *3.0*
	2½ *65*	1.660 *42.2*	2.875 *73.0*	14 *355.6*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	6.9 *3.1*
2 *50*	2½ *65*	2.375 *60.3*	2.875 *73.0*	14 *355.6*	300 *20.7*	1¼ *31.8*	⅜ *9.5*	8.1 *3.7*
	3 *80*	2.375 *60.3*	3.500 *88.9*	14 *355.6*	275 *19.0*	¾ *19.1*	⅜ *9.5*	10.1 *4.6*
	4 *100*	2.375 *60.3*	4.500 *114.3*	15 *381.0*	270 *18.6*	½ *12.7*	¼ *6.4*	12.0 *5.4*
2½ *65*	3 *80*	2.875 *73.0*	3.500 *88.9*	14 *355.6*	275 *19.0*	¾ *19.1*	⅜ *9.5*	11.2 *5.1*
	4 *100*	2.875 *73.0*	4.500 *114.3*	15 *381.0*	270 *18.6*	½ *12.7*	¼ *6.4*	14.7 *6.7*
	5 *125*	2.875 *73.0*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	18.9 *8.6*
	6 *150*	2.875 *73.0*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	25.3 *11.5*
3 *80*	4 *100*	3.500 *88.9*	4.500 *114.3*	15 *381.0*	270 *18.6*	½ *12.7*	¼ *6.4*	15.5 *7.0*
	5 *125*	3.500 *88.9*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	19.7 *8.9*
	6 *150*	3.500 *88.9*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	26.1 *11.8*
4 *100*	5 *125*	4.500 *114.3*	5.563 *141.3*	18 *457.2*	225 *15.5*	¾ *19.1*	⅜ *9.5*	21.6 *9.8*
	6 *150*	4.500 *114.3*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	28.0 *12.7*
	8 *200*	4.500 *114.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	⅝ *15.9*	¼ *6.4*	38.4 *17.4*
5 *125*	6 *150*	5.563 *141.3*	6.625 *168.3*	19 *482.6*	165 *11.4*	¾ *19.1*	⅜ *9.5*	31.0 *14.1*
	8 *200*	5.563 *141.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	⅝ *15.9*	¼ *6.4*	40.7 *18.5*
6 *150*	8 *200*	6.625 *168.3*	8.625 *219.1*	20 *508.0*	155 *10.7*	½ *12.7*	¼ *6.4*	41.7 *18.9*
	10 *250*	6.625 *168.3*	10.750 *273.1*	20 *508.0*	150 *10.3*	½ *12.7*	¼ *6.4*	83.1 *37.7*
8 *200*	10 *250*	8.625 *219.1*	10.750 *273.1*	20 *508.0*	150 *10.3*	½ *12.7*	¼ *6.4*	95.0 *43.1*
10 *250*	12 *300*	10.750 *273.1*	12.750 *323.9*	22 *558.8*	145 *10.0*	½ *12.7*	¼ *6.4*	125.9 *571*

For Temp Above 70°F (21.6° C)

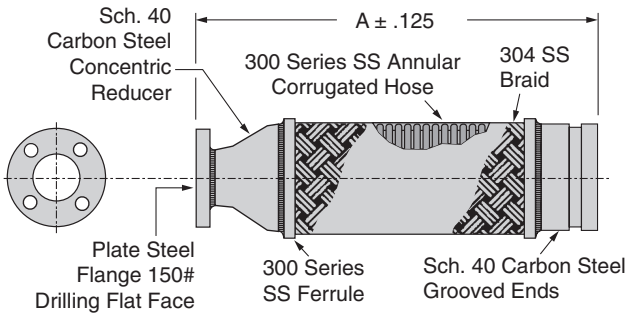
Temperature	Factor S.S.
°F / °C	
70 *21.1*	1.00
200 *93.3*	0.94
300 *148.8*	0.88
400 *204.4*	0.83
500 *260.0*	0.78
600 *315.6*	0.74

For safe working pressure above 70°F (21.1° C), Multiply pressure shown at 70°F. times correction factor of require temperature.

* See Motion Classification on page 97 for additional information.
Working pressures shown for the hose and braid are based on an operating temperature of 70° F (21° C) with a 4:1 safety factor.

FIG. AF21-RGF

Grooved x Class 150 Flanged
Reducing Flex Connectors



AF21-RGF GRxFL Reducing Flex Connectors

Nominal Size		Small O.D.	Large O.D.	Length	Pressure 70°F	Parallel Offset		Approx. Wt. Ea.
Small Flange	Large Groove & Hose					Permanent	Intermittent	
In./DN(mm)	*In./DN(mm)*	*In./mm*	*In./mm*	*In./mm*	*psi/bar*	*In./mm*	*In./mm*	*Lbs./kN*
1½ 40	2 50	1.660 42.2	2.375 60.3	14 355.6	450 31.0	1½ 38.1	⅝ 15.9	6.7 3.0
	2½ 65	1.660 42.2	2.875 73.0	14 355.6	300 20.7	1¼ 31.8	⅜ 9.5	6.9 3.1
2 50	2½ 65	2.375 60.3	2.875 73.0	14 355.6	300 20.7	1¼ 31.8	⅜ 9.5	8.1 3.7
	3 80	2.375 60.3	3.500 88.9	14 355.6	275 19.0	¾ 19.1	⅜ 9.5	10.1 4.6
	4 100	2.375 60.3	4.500 114.3	14 355.6	270 18.6	½ 12.7	¼ 6.4	12.0 5.4
2½ 65	3 80	2.875 73.0	3.500 88.9	14 355.6	275 19.0	¾ 19.1	⅜ 9.5	11.2 5.1
	4 100	2.875 73.0	4.500 114.3	14 355.6	270 18.6	½ 12.7	¼ 6.4	14.7 6.7
	5 125	2.875 73.0	5.563 141.3	18 457.2	225 15.5	¾ 19.1	⅜ 9.5	18.9 8.6
	6 150	2.875 73.0	6.625 168.3	19 482.6	165 11.4	¾ 19.1	⅜ 9.5	25.3 11.5
3 80	4 100	3.500 88.9	4.500 114.3	15 381.0	270 18.6	½ 12.7	¼ 6.4	15.5 7.0
	5 125	3.500 88.9	5.563 141.3	18 457.2	225 15.5	¾ 19.1	⅜ 9.5	19.7 8.9
	6 150	3.500 88.9	6.625 168.3	19 482.6	165 11.4	¾ 19.1	⅜ 9.5	26.1 11.8
4 100	5 125	4.500 114.3	5.563 141.3	18 457.2	225 15.5	¾ 19.1	⅜ 9.5	21.6 9.8
	6 150	4.500 114.3	6.625 168.3	19 482.6	165 11.4	¾ 19.1	⅜ 9.5	28.0 12.7
	8 200	4.500 114.3	8.625 219.1	20 508.0	155 10.7	⅝ 15.9	¼ 6.4	38.4 17.4
5 125	6 150	5.563 141.3	6.625 168.3	19 482.6	165 11.4	¾ 19.1	⅜ 9.5	31.0 14.1
	8 200	5.563 141.3	8.625 219.1	20 508.0	155 10.7	⅝ 15.9	¼ 6.4	40.7 18.5
6 150	8 200	6.625 168.3	8.625 219.1	20 508.0	155 10.7	½ 12.7	¼ 6.4	41.7 18.9
8 200	10 250	8.625 219.1	10.750 273.1	23 584.2	150 10.3	½ 12.7	¼ 6.4	84.0 38.1
10 250	12 300	10.750 273.1	12.750 323.9	25 635.0	145 10.0	½ 12.7	¼ 6.4	102.0 46.3

For Temp Above 70°F (21.6° C)

Temperature	Factor S.S.
°F / °C	
70 21.1	1.00
200 93.3	0.94
300 148.8	0.88
400 204.4	0.83
500 260.0	0.78
600 315.6	0.74

For safe working pressure above 70°F (21.1° C), Multiply pressure shown at 70°F. times correction factor of require temperature.

* See Motion Classification on page 97 for additional information.

Working pressures shown for the hose and braid are based on an operating temperature of 70° F (21° C) with a 4:1 safety factor.

HIGH PRESSURE COUPLINGS

FIG. 7004 HPR®

Coupling

The Gruvlok Fig. 7004 HPR is designed to provide the versatility of a grooved joint while providing a connection for rigid pipe joint applications.

The Fig. 7004 HPR coupling permits working pressure ratings up to 1200 psi (82.8 bar).

This coupling is also suited for lower pressure systems which experience pressure pulses. Systems used for high pressure auto and truck washes will benefit from the increased pressure capability.

Working Pressure & End Load values are based on grooved standard wall pipe.

UL FM ULC
APPROVED
For listing/approval details contact your Gruvlok Representative.

Fig. 7004 HPR provides a basically rigid joint and does not allow for expansion or contraction. Painted couplings are green.

NOTE: Sizes 2" - 6" when used with a cast fig. 7050 fitting the UL/FM pressure is limited to 500 psi.

NOTE: Fig. 7004 HPR can be used with EG fittings as a commercial joint only

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE:
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: Green (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

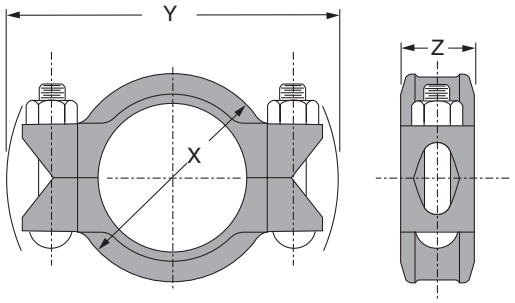
Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap (2" - 12")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7004 HPR®

Coupling



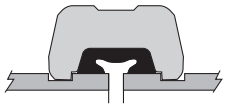


Fig. 7004 HPR®
with standard gasket.

FIGURE 7004 HPR COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Lbs./Kg*
2	2.375	1200	5,316	0 -1/8	3 5/8	6 1/4	1 7/8	2	5/8 x 2 3/4	3.9
50	*60.3*	*82.8*	*23.65*	*0 - 3.2*	*92*	*159*	*48*		*–*	*1.8*
2 1/2	2.875	1200	7,790	0 -1/8	4 1/4	6 7/8	1 7/8	2	5/8 x 3 1/2	4.6
65	*73.0*	*82.8*	*34.65*	*0 - 3.2*	*108*	*175*	*48*		*M16 x 85*	*2.1*
3	3.500	1200	11,545	0 -1/8	4 7/8	7 1/2	1 7/8	2	5/8 x 3 1/2	5.2
80	*88.9*	*82.8*	*51.36*	*0 - 3.2*	*124*	*191*	*48*		*M16 x 85*	*2.4*
4	4.500	1200	19,085	0 -1/4	6 1/4	9 1/2	2 1/4	2	3/4 x 4 1/2	8.6
100	*114.3*	*82.8*	*84.90*	*0 - 6.4*	*159*	*241*	*57*		*M20 x 110*	*3.9*
5	5.563	1200	29,167	0 -1/4	7 1/2	11	2 1/4	2	7/8 x 5 1/2	14.0
125	*141.3*	*82.8*	*129.74*	*0 - 6.4*	*191*	*279*	*57*		*M22 x 150*	*6.4*
6	6.625	1200	41,366	0 -1/4	8 3/4	12 1/8	2 1/4	2	7/8 x 5 1/2	15.5
150	*168.3*	*82.8*	*184.00*	*0 - 6.4*	*222*	*308*	*57*		*M22 x 150*	*7.0*
8	8.625	1000	58,426	0 -1/4	11 1/8	14 7/8	2 5/8	2	1 x 5 1/2	25.6
200	*219.1*	*68.9*	*259.89*	*0 - 6.4*	*283*	*378*	*67*		*–*	*11.6*
10	10.750	800	72,610	0 -1/4	13 1/2	17	2 5/8	2	1 x 6 1/2	32.3
250	*273.1*	*55.2*	*322.99*	*0 - 6.4*	*343*	*432*	*67*		*–*	*14.7*
12	12.750	800	102,141	0 -1/4	15 7/8	19 1/4	2 5/8	2	1 x 6 1/2	43.9
300	*323.9*	*55.2*	*454.35*	*0 - 6.4*	*403*	*489*	*67*		*–*	*19.9*

For additional details, see coupling data chart notes from page 15.

Not for use in copper systems.

FIG. 7004 EG®

End Guard® Coupling

The Gruvlok Fig. 7004EG Coupling uses the specially designed “End Guard” gasket with “EG” grooved pipe. The “EG” gasket has a center rib which extends between the pipes to provide for pipe end protection which makes it ideally suited for internally lined or coated pipe applications.

The Fig. 7004EG Coupling permits working pressure ratings up to 2500 psi (172.4 bar).

Working Pressure and End Load values are based on “EG” cut grooved extra heavy steel pipe. Fig. 7004EG provides a basically rigid joint and does not allow for expansion or contraction. Beveled end pipe should not be used with “EG” gaskets. Painted couplings are black.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

WORKING PRESSURE, END LOAD, PIPE END SEPARATION & DEFLECTION FROM CENTER LINE
Based on standard wall steel pipe with cut or roll grooves in accordance with Gruvlok specifications. See technical data section for design factors.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: Black (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade “E” EPDM (Green color code)
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

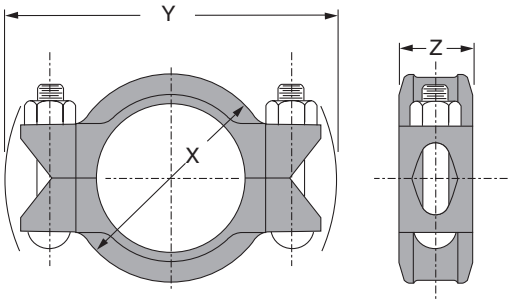
Grade “T” Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petroleum applications. Air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

GASKET TYPE:
“EG” Style

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade “L”)

FIG. 7004 EG®

End Guard® Coupling



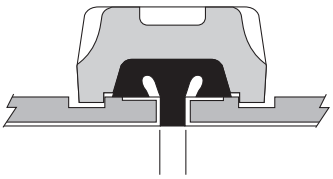


Fig. 7004 EG
with "EG" gasket.

FIGURE 7004 END GUARD (EG) COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Lbs./Kg*
2	2.375	2500	11,075	0 -1/8	3 5/8	6 1/4	1 7/8	2	5/8 x 2 3/4	4.1
50	*60.3*	*172.4*	*49.27*	*0 - 3.2*	*92*	*159*	*48*		–	*1.9*
2 1/2	2.875	2500	16,230	0 -1/8	4 1/4	6 7/8	1 7/8	2	5/8 x 3 1/2	5.1
65	*73.0*	*172.4*	*72.19*	*0 - 3.2*	*108*	*175*	*48*		*M16 x 85*	*2.3*
3	3.500	2500	24,053	0 -1/8	4 7/8	7 1/2	1 7/8	2	5/8 x 3 1/2	5.5
80	*88.9*	*172.4*	*106.99*	*0 - 3.2*	*124*	*191*	*48*		*M16 x 85*	*2.5*
4	4.500	2500	39,761	0 -1/4	6 1/4	9 1/2	2 1/4	2	3/4 x 4 1/2	9.0
100	*114.3*	*172.4*	*176.86*	*0 - 6.4*	*159*	*241*	*57*		*M16 x 85*	*4.1*
6	6.625	2000	68,943	0 -1/4	8 3/4	12 1/8	2 1/4	2	7/8 x 5 1/2	15.5
150	*168.3*	*137.9*	*306.67*	*0 - 6.4*	*222*	*308*	*57*		*M22 x 150*	*7.0*
8	8.625	1500	87,639	0 -1/4	11 1/8	14 7/8	2 5/8	2	1 x 5 1/2	25.6
200	*219.1*	*103.4*	*389.84*	*0 - 6.4*	*283*	*378*	*67*		–	*11.6*
10	10.750	1250	113,453	0 -1/4	13 1/2	17	2 5/8	2	1 x 6 1/2	32.3
250	*273.1*	*86.2*	*504.66*	*0 - 6.4*	*343*	*432*	*67*		–	*14.7*
12	12.750	1250	159,595	0 -1/4	15 7/8	19 1/4	2 5/8	2	1 x 6 1/2	43.9
300	*323.9*	*86.2*	*709.92*	*0 - 6.4*	*403*	*489*	*67*		–	*19.9*

For additional details, see coupling data chart notes from page 15.

Not for use in copper systems.

HIGH PRESSURE FITTINGS

Gruvlok End Guard fittings are fabricated from extra heavy (XS) materials. The groove conforms to Gruvlok End Guard cut grooving specification. These fittings may be used for high pressure systems and where lined or coated fittings are required. Gruvlok EG fittings conform to NACE STD-RP-04-72 (Contact a Gruvlok Representative with specific service details). End Guard fittings should only be used with Series 7004 EG Couplings.

MATERIAL SPECIFICATIONS

ELBOWS: Extra strong forged steel fittings conforming to ASTM A234 with welded tangents of schedule 80 steel pipe conforming to ASTM A53, type "S", Grade "B".

TEES & CROSSES: Segment welded schedule 80 steel pipe conforming to ASTM A53, type "S", Grade "B".

COATINGS: Rust inhibiting paint, Color: Green Standard or Hot-Dipped Galvanized (Optional). Other Colors Available (IE: RAL3000 and RAL9000) For other Coating requirements contact a Gruvlok Representative.

FITTING SIZE

Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
1 *25*	1.315 *33.7*	3 *80*	3.500 *88.9*
1¼ *32*	1.660 *42.4*	4 *100*	4.500 *114.3*
1½ *40*	1.900 *48.3*	5 *140*	5.563 *141.3*
2 *50*	2.375 *60.3*	6 *150*	6.625 *168.3*
2½ *65*	2.875 *73.0*	8 *200*	8.625 *219.1*

FIG. 7050 EG - High Pressure 90° LR Elbow

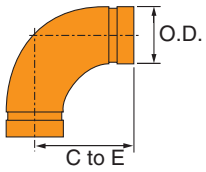


FIGURE 7050 EG, HIGH PRESSURE 90° LR ELBOW

Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	2.5 *1.1*
2½ *65*	2.875 *73.0*	3¾ *95*	4.2 *1.9*
3 *80*	3.500 *88.9*	4¼ *108*	6.0 *2.7*
4 *100*	4.500 *114.3*	5 *127*	11.0 *5.0*
6 *150*	6.625 *168.3*	6½ *165*	27.2 *12.4*
8 *200*	8.625 *219.1*	* *	* *
10 *250*	10.750 *273.0*	* *	* *
12 *300*	12.750 *323.9*	* *	* *

*Contact a Gruvlok Representative for more information.

FIG. 7051 EG - High Pressure 45° LR Elbow

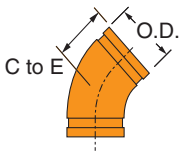


FIGURE 7051 EG, HIGH PRESSURE 45° LR ELBOW

Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2 *51*	1.8 *0.8*
2½ *65*	2.875 *73.0*	2¼ *57*	2.9 *1.3*
3 *80*	3.500 *88.9*	2½ *64*	4.3 *2.0*
4 *100*	4.500 *114.3*	3 *76*	7.5 *3.4*
6 *150*	6.625 *168.3*	3½ *89*	16.5 *7.5*

HIGH PRESSURE FITTINGS

FIG. 7060 EG - High Pressure Tee

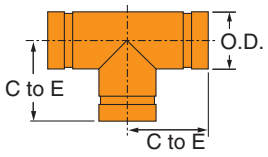


FIGURE 7060 EG - HIGH PRESSURE TEE			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	3.3 *1.5*
2½ *65*	2.875 *73.0*	3¾ *95*	5.1 *2.3*
3 *80*	3.500 *88.9*	4¼ *108*	9.3 *4.2*
4 *100*	4.500 *114.3*	5 *127*	15.9 *7.2*
6 *150*	6.625 *168.3*	6½ *165*	38.5 *17.5*

FIG. 7022 EG - High Pressure Header Tee

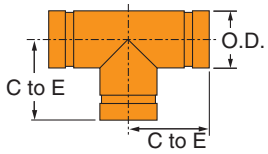


FIG. 7022 EG HIGH PRESSURE HEADER TEE			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	6½ *165*	4.9 *2.2*
2 *50*	2.375 *60.3*	5 *127*	3.6 *1.6*

FIG. 7068 EG - High Pressure Cross

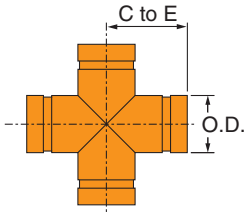


FIG. 7068 EG - HIGH PRESSURE CROSS			
Nominal Size	O.D.	Center To-End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	3.9 *1.8*
2½ *65*	2.875 *73.0*	3¾ *95*	6.8 *3.1*
3 *80*	3.500 *88.9*	4¼ *108*	11.5 *5.2*
4 *100*	4.500 *114.3*	5 *127*	19.3 *8.8*
6 *150*	6.625 *168.3*	6½ *165*	46.0 *20.9*

GRUVLOK® ADVANCED COPPER METHOD TECHNICAL DATA

COPPER FITTINGS:

Copper per ASTM B75 and ANSI B16.22, alloy 2" - 6" C12200
8" copper fittings are 316 Stainless Steel

PERFORMANCE DATA:

The Gruvlok Advanced Copper Method may be used with types K, L, M and DWV copper tubing. The pressure ratings shown below are for Gruvlok Fig. 7400 Rigidlite Coupling, Fig. 7012 Gruvlok Flange, and Gruvlok Advanced Copper Method Fittings when used with the specific type of tubing indicated.

MATERIAL SPECIFICATIONS

HOUSING: Ductile iron conforming to ASTM A536, Grade 65-45-12

COATING: Rust inhibiting paint — Color: orange (standard).
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

BOLTS & NUTS: Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard. Stainless Steel bolts and nuts are also available.

HINGE PIN: (Gruvlok 7012 Flange) Carbon steel

GASKETS: Properties as designated in accordance with ASTM D2000
Grade E EPDM (Green color code) NSF-61 Certified
Service Temperature Range: -40˚F to +190˚F (-40˚C to +88˚C)
Recommended for water service, dilute acids, alkalies, alkaline solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM SERVICES.

LUBRICATION:
Gruvlok Xtreme™ lubricant only

NOTE: Lubricant is to be applied to the entire surface, both internal and external. of the gasket. For additional important information concerning Gruvlok Xtreme™ Lubricant see Gruvlok Data Sheet 3 "Gruvlok Lubricants".

Contact a Gruvlok Representative for additional details.

Performance Data Coupling Advanced Copper Method

Type "K" ASTM B-88				Type "L" ASTM B-88			Type "M" ASTM B-88			DWV ASTM B-306		
1 Nominal Tube Size	2 Wall Thickness	3 Max. Joint Work. Pressure	4 Max. Permis. End Load	2 Wall Thickness	3 Max. Joint Work. Pressure	4 Max. Permis. End Load	2 Wall Thickness	3 Max. Joint Work. Pressure	4 Max. Permis. End Load	2 Wall Thickness	3 Max. Joint Work. Pressure	4 Max. Permis. End Load
Inches	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*PSI/bar*	*Lbs./kN*
2 *50*	0.083 *2.11*	300 *20.7*	1,329 *5.91*	0.070 *1.78*	300 *20.7*	1,329 *5.91*	0.058 *1.47*	250 *17.2*	1,108 *4.93*	– –	– –	–
2½ *65*	0.095 *2.41*	300 *20.7*	1,948 *8.66*	0.080 *2.03*	300 *20.7*	1,948 *8.66*	0.065 *1.65*	250 *17.2*	1,623 *7.22*	– –	– –	– –
3 *80*	0.109 *2.77*	300 *20.7*	2,886 *12.84*	0.090 *2.29*	300 *20.7*	2,886 *12.84*	0.072 *1.83*	250 *17.2*	2,405 *10.75*	0.045 *1.14*	100 *6.9*	962 *4.28*
4 *100*	0.134 *3.4*	300 *20.7*	4,771 *21.22*	0.110 *2.79*	300 *20.7*	4,771 *21.22*	0.095 *2.41*	250 *17.2*	3,976 *17.69*	0.058 *1.47*	100 *6.9*	1,590 *7.07*
5 *125*	0.160 *4.06*	300 *20.7*	7,289 *32.42*	0.125 *3.18*	300 *20.7*	7,289 *21.42*	0.109 *2.77*	200 *13.8*	4,859 *21.61*	0.072 *1.83*	100 *6.9*	2,430 *10.81*
6 *150*	0.192 *4.88*	300 *20.7*	10,341 *46.00*	0.140 *3.56*	300 *20.7*	10,341 *46*	0.122 *3.10*	200 *13.8*	6,894 *30.67*	0.083 *2.11*	100 *6.9*	3,447 *15.33*
8 *200*	0.271 *6.88*	300 *20.7*	15,555 *69.19*	0.200 *5.08*	300 *20.7*	15,555 *69.19*	0.170 *4.32*	200 *13.8*	10,370 *46.12*	0.109 *2.77*	100 *6.9*	5,185 *23.06*

NOTES:

(1) Gruvlok Coupling and Gruvlok Flange size are identified by nominal tubing size.

(2) Nominal tube wall thickness.

(3) Maximum line pressure, including surge, to which joint shall be subjected. Working pressure ratings are based on the specified copper tubing roll grooved per Gruvlok Copper Method Copper-Prep Specifications.
NOTE: For one time field test only. The maximum joint working pressure may be increased to 1½ times the figure shown.

(4) Maximum end load from all internal and/or external forces, to which the joint shall be subjected.

FIG. 7400

Rigidlite® Coupling

The Fig. 7400 Rigidlite Coupling provides a rigid, locked-in connection to meet the specific demands of copper tubing installation. Available with the Grade "E", EPDM "C" style gasket as the standard gasket. The Rigidlite Coupling maintains a rigid connection, on copper piping systems.

Go to technical data section for installation instructions.

For listing/approval details contact your Gruvlok Representative.

MATERIAL SPECIFICATIONS

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, oval neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts and bolts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 190°F (Service Temperature Range)(-40°C to 88°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

LUBRICATION:
Gruvlok Xtreme™ lubricant only. **NOTE:** Lubricant is to be applied to the entire surface, both internal and external. of the gasket. For additional important information concerning Gruvlok Xtreme™ Lubricant see Gruvlok Data Sheet 3 "Gruvlok Lubricants".

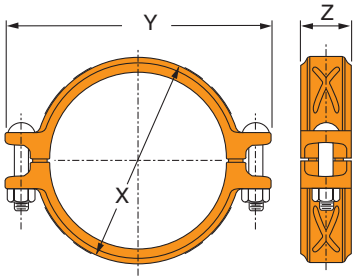


FIGURE 7400 RIGIDLITE COUPLING

Nominal Size	O.D.	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
			X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Ft. -Lbs./N-M*		*Lbs./Kg*
2 *50*	2.375 *60.3*	0 -1/8 *0 - 3.2*	3 1/4 *83*	5 1/2 *140*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.6 *0.7*
2 1/2 *65*	2.875 *73.0*	0 -1/8 *0 - 3.2*	3 7/8 *98*	5 *127*	1 3/4 *44*	2	3/8 x 2 1/4 *M10 x 57*	30 *40*	45 *60*	1.9 *0.9*
3 *80*	3.500 *88.9*	0 -1/8 *0 - 3.2*	4 1/2 *114*	6 3/4 *171*	1 3/4 *44*	2	3/8 x 2 3/4 *M10 x 70*	30 *40*	45 *60*	2.1 *1.0*
4 *100*	4.500 *114.3*	0 -1/4 *0 - 6.4*	5 5/8 *143*	7 3/4 *197*	1 7/8 *48*	2	3/8 x 2 3/4 *M10 x 70*	30 *40*	45 *60*	3.1 *1.4*
5 *125*	5.563 *141.3*	0 -1/4 *0 - 6.4*	6 7/8 *175*	9 1/4 *235*	2 *51*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	4.6 *2.1*
6 *150*	6.625 *168.3*	0 -1/4 *0 - 6.4*	7 7/8 *200*	10 3/8 *264*	2 *51*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	5.5 *2.5*
8 *200*	8.625 *219.1*	0 -1/8 *0 - 3.2*	10 1/4 *260*	12 3/4 *324*	2 3/8 *60*	2	1/2 x 3 *M12 x 76*	80 *110*	100 *150*	8.4 *3.8*

For additional details see "Coupling Data Chart Notes" from page 15.

§ – For additional Bolt Torque information, see page 171.

See Installation & Assembly directions on page 148.

FIG. 7012

Gruvlok Flanges for Gruvlok Advanced Copper Method

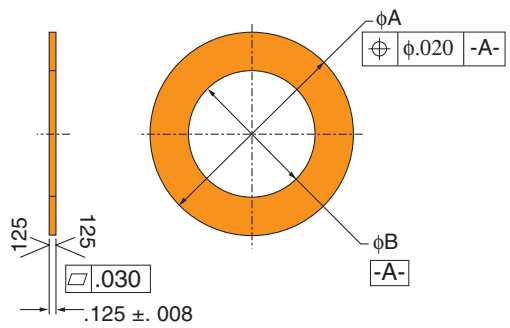
The Gruvlok® Fig. 7012 Flange allows direct connection of Class 125 or Class 150 flanged components to a Gruvlok Advanced Copper Method piping system.The two interlocking halves of the 2" thru 8" sizes of the Gruvlok Flange are hinged for ease of handling, and are drawn together by a latch bolt which eases assembly on the pipe. Precision machined bolt holes, key and mating surfaces assure concentricity and flatness to provide exact fit-up with flanged, lug, and wafer styles of pipe system equipment. A specially designed gasket provides a leak-tight seal on both the pipe and the mating flange face.

All Gruvlok Fig. 7012 Flanges have designed-in anti-rotation tangs which bite into and grip the sides of the pipe grooves to provide a secure, rigid connection.

The Gruvlok Fig. 7012 Flange requires the use of a steel adapter insert when used against rubber faced surfaces, wafer/lug design valves and serrated or irregular sealing surfaces. In copper systems a phenolic adapter insert is required, in place of the steel adapter insert. (See Installation and Assembly Instructions Section or contact your Anvil Rep. for details.)

For listing/approval details contact your Gruvlok Representative.

OPTIONAL PHENOLIC FLANGE ADAPTER INSERT



7012 Dimensional Data

Nominal Size	Markings	A	B
In./DN(mm)		*In./mm*	*In./mm*
2 *50*	2-7012 ANSI	4 *101.6*	2¼ *57.2*
2½ *65*	2½-7012 ANSI	4¾ *120.7*	2¾ *69.9*
3 *80*	3-7012 ANSI	5¼ *133.4*	3⅜ *85.9*
4 *100*	4-7012 ANSI	6¾ *171.5*	4⅜ *111.3*
5 *125*	5-7012 ANSI	7⅝ *193.5*	5 7/16 *138.2*
6 *150*	6-7012 ANSI	8⅝ *218.9*	6½ *165.1*
8 *200*	8-7012 ANSI	10⅞ *276.1*	8½ *215.9*

NOTES:

1. **Material Specification:** Natural canvas phenolic

MATERIAL SPECIFICATIONS

LATCH BOLT/NUT (2" - 8"):
Heat treated, zinc electroplated, carbon steel oval neck track bolts conforming to ASTM A-183 and zinc electroplated carbon steel heavy hex nuts conforming to ASTM A-563.

METRIC BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated oval-neck track head bolts made of carbon steel with mechanical properties per ISO 898-1 Class 8.8. Hex nuts are zinc electroplated followed by a yellow chromate dip.

STAINLESS STEEL BOLTS & NUTS:
Stainless steel bolts and nuts are also available. Contact a Gruvlok Representative for more information.

HOUSING:
Ductile Iron conforming to ASTM A-536, Grade 65-45-12.

COATINGS:
Rust inhibiting paint Color: ORANGE (standard), Red (optional)
Hot Dipped Zinc Galvanized (optional)
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

GASKETS: Materials
Properties as designated in accordance with ASTM D-2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 190°F (Service Temperature Range)(-40°C to 88°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

FIG. 7012

Gruvlok Flanges for Gruvlok Advanced Copper Method

GRUVLOK FIGURE 7012 FLANGE: ANSI CLASS 150 OR ISO PN10 OR PN16 BOLT PATTERNS

Nominal Size	O.D.	Max. Working Pressure▼	Max. End Load▼	Latch Bolt		Range Dimensions			Sealing Surface		Mating Flange Bolts				Approx. Wt. Ea.
				Latch* Bolt Size	Specified Torque §						Mating Flange Bolts		Specified Torque §		
					Min.	X	Y	Z	A Max.	B Min.	Qty. ANSI	Size (ANSI)	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*Ft.-Lbs/N-M*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*PN10 (16)*	*In. (ISO) mm*	*Ft.-Lbs/N-M*		*Lbs./Kg*
2	2.375	300	1,329	⅜ x 2¾	30	45	6¼	8⅜	¾	2⅜	3 7/16	4	⅝ x 2¾	110	140	4.2
50	*60.3*	*20.7*	*5.91*	*M10 x 70*	*40*	*60*	*159*	*213*	*19*	*60*	*87*	*4*	*M16 x 70*	*149*	*190*	*1.9*
2½	2.875	300	1,948	⅜ x 2¾	30	45	7	9½	¾	2⅞	4	4	⅝ x 2¾	110	140	4.6
65	*73.0*	*20.7*	*8.66*	*M10 x 70*	*40*	*60*	*178*	*241*	*19*	*73*	*102*	*-*	*M16 x 70-*	*149*	*190*	*2.1*
3	3.500	300	2,886	⅜ x 2¾	30	45	7⅞	10½	¾	3½	4 9/16	4	⅝ x 2¾	110	140	6.0
80	*88.9*	*20.7*	*12.84*	*M10 x 70*	*40*	*60*	*200*	*267*	*19*	*89*	*116*	*8*	*M16 x 70*	*149*	*190*	*2.7*
4	4.500	300	4,771	⅜ x 2¾	30	45	9	11½	¾	4½	5 9/16	8	⅝ x 2¾	110	140	6.3
100	*114.3*	*20.7*	*21.22*	*M10 x 70*	*40*	*60*	*229*	*292*	*19*	*114*	*141*	*8*	*M16 x 70*	*149*	*190*	*2.9*
5	5.563	300	7,292	⅜ x 2¾	30	45	10	12½	⅞	5 9/16	6¾	8	¾ x 2⅞	220	250	8.8
125	*141.3*	*20.7*	*32.44*	*M10 x 70*	*40*	*60*	*254*	*318*	*22*	*141*	*171*	*-*	*-*	*298*	*339*	*4.0*
6	6.625	300	10,341	⅜ x 2¾	30	45	11	14	⅞	6⅝	7 13/16	8	¾ x 3⅛	220	250	9.6
150	*168.3*	*20.7*	*46.00*	*M10 x 70*	*40*	*60*	*279*	*356*	*22*	*168*	*198*	*8*	*M20 x 80*	*298*	*339*	*4.4*
8	8.625	300	17,528	⅜ x 2¾	30	45	13½	16½	1	8⅝	10	8	¾ x 3¼	220	250	15.6
200	*219.1*	*20.7*	*77.97*	*M10 x 70*	*40*	*60*	*343*	*419*	*25*	*219*	*254*	*8 (12)*	*M20 x 80*	*298*	*339*	*7.1*

✢ PN 16 uses M24 x 90 (PN) Dimensions for bolt circle PN 10 & 16 Flange.

* Available in ANSI or metric bolt sizes only as indicated.

▼ Based on use with standard wall pipe.

§ – For additional Bolt Torque information, see page 171.

The Gruvlok Flange bolt hole pattern conforms to ANSI Class 150 and Class 125 flanges.

Effective sealing area of mating flange must be free from gouges, undulations or deformities of any type to ensure proper sealing of the gasket.

To avoid interference issues, flanges cannot be assembled directly to Series 7700 butterfly valve. Flange can be assembled to one side of series 7500 and 7600 valve only.

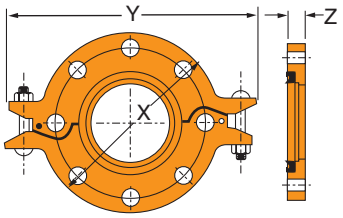
Gruvlok Flange adapter insert required when mating to rubber surfaces or serrated faced mating flanges.

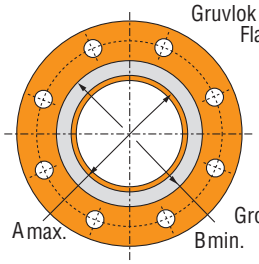
Mating flange bolts must be at least Intermediate Strength Bolting per ASME B16.5. Bolts with material properties equal or greater than SAE J429 Grade 5 are acceptable.

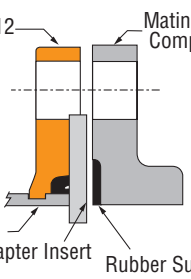
Refer to Gruvlok Products Catalog or Anvil's web site for more information on installing this flange.

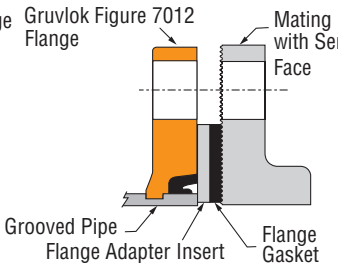
For additional details, see coupling data chart notes from page 15.

See Installation & Assembly directions on page 151-153.









A. The sealing surfaces A Max. to B. Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of the gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tie-rods across non-restrained joints.

E. Fig. 7012 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Phenolic Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

G. An additional bolt is recommended for the hinge side of the 2" - 8" Figure 7012 when connecting to lug valves.

H. Contact Gruvlok for Di-Electric Flange connections.

APPLICATIONS WHICH REQUIRE A GRUVLOK FLANGE ADAPTER INSERT:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard Flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

ADVANCED COPPER METHOD FITTINGS

Gruvlok Advanced Copper Method Fittings are wrot fittings, per ASTM B75 and ANSI B16.22 alloy C12200 copper, full flow design with ends grooved to Gruvlok Copper-Prep Specifications. Installation is quick and easy with Gruvlok. Fig. 7400 Rigidlite Coupling or Fig. 7012 Gruvlok Flange.

GRUVLOK ADVANCED COPPER METHOD NOTES:

1) The Gruvlok Advanced Copper Method has been designed and tested for use only with the Fig. 7400 Rigidlite Coupling and Fig. 7012 Gruvlok Flange. Use of couplings or flanges from other manufacturers is not recommended.
2) To provide dielectric protection, a dielectric component is recommended for connection into the pipeline at the transition point between the steel pipe and copper tube.

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok Fittings are identified by either the Nominal size in inches or the Pipe O.D. in mm.

Temperature Range: -40°F to 190°C (-40°C to 88°C)

FITTING SIZE

Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
1 *25*	1.315 *33.7*	3 *80*	3.500 *88.9*
1¼ *32*	1.660 *42.4*	4 *100*	4.500 *114.3*
1½ *40*	1.900 *48.3*	5 *140*	5.563 *141.3*
2 *50*	2.375 *60.3*	6 *150*	6.625 *168.3*
2½ *65*	2.875 *73.0*	8 *200*	8.625 *219.1*

For listing/approval details contact your Gruvlok Representative.

FIG. 7550

90° Elbow

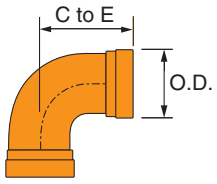


FIGURE 7550 90° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	0.9 *0.4*
2½ *65*	2.875 *73.0*	3¾ *95*	1.5 *0.7*
3 *80*	3.500 *88.9*	4¼ *108*	2.4 *1.1*
4 *100*	4.500 *114.3*	5 *127*	5.5 *2.5*
5 *125*	5.563 *141.3*	5½ *140*	9.3 *4.2*
6 *150*	6.625 *168.3*	6½ *165*	17.6 *8.0*
8 *200*	8.625 *219.1*	12 *305*	29.4 *13.3*

8" fittings are copper coated stainless steel.
See chart above for O.D.

FIG. 7551

45° Elbow

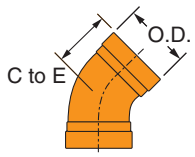


FIGURE 7551 45° ELBOW

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2⅛ *54*	0.6 *0.3*
2½ *65*	2.875 *73.0*	2⅜ *60*	1.1 *0.5*
3 *80*	3.500 *88.9*	2⅝ *67*	1.6 *0.7*
4 *100*	4.500 *114.3*	3⅜ *86*	3.5 *1.6*
5 *125*	5.563 *141.3*	3¼ *83*	6.1 *2.8*
6 *150*	6.625 *168.3*	3½ *89*	11.7 *5.3*
8 *200*	8.625 *219.1*	7½ *191*	19.4 *8.8*

8" fittings are copper coated stainless steel.
See chart above for O.D.

FIG. 7560

Tees

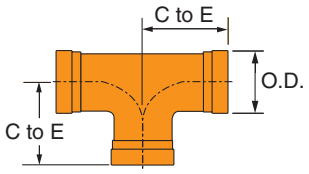


FIGURE 7560 TEES

Nominal Size	O.D.	Center to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3¼ *83*	1.7 *0.8*
2½ *65*	2.875 *73.0*	3¾ *95*	2.5 *1.1*
3 *80*	3.500 *88.9*	4¼ *108*	3.5 *1.6*
4 *100*	4.500 *114.3*	5 *127*	7.3 *3.3*
5 *125*	5.563 *141.3*	5½ *140*	7.9 *3.6*
6 *150*	6.625 *168.3*	6½ *165*	13.4 *6.1*
8 *200*	8.625 *219.1*	7¾ *197*	41.7 *18.9*

8" fittings are copper coated stainless steel.
See chart above for O.D.

ADVANCED COPPER METHOD FITTINGS

For listing/approval details contact your Gruvlok Representative.

FIG. 7572 - (Gr x Gr) Concentric Reducer

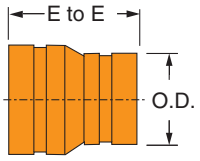


Figure 7572 (Gr x Gr) Concentric Reducer

Nom. Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
2½ x 2 *65 x 50*	3¼ *83*	0.6 *0.3*
3 x 2 *80 x 50*	3⅞ *98*	1.0 *0.5*
3 x 2½ *80 x 65*	3⅝ *92*	0.9 *0.4*
4 x 2 *100 x 50*	5 *127*	2.2 *1.0*
4 x 2½ *100 x 65*	4¾ *121*	2.0 *0.9*
4 x 3 *100 x 80*	4¾ *121*	2.0 *0.9*

Nom. Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
5 x 3 *125 x 80*	5½ *140*	2.8 *1.3*
5 x 4 *125 x 100*	5⅝ *143*	3.3 *1.5*
6 x 3 *150 x 80*	6½ *165*	4.9 *2.2*
6 x 4 *150 x 100*	6½ *165*	4.8 *2.2*
6 x 5 *150 x 125*	6½ *165*	5.2 *2.4*

8" fittings fabricated upon request.
See chart on previous page for O.D.
Contact your Gruvlok Representative for more information.

FIG. 7574 - End Caps

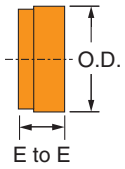


Figure 7574 End Caps

Nom. Size	O.D.	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	1¼ *32*	0.3 *0.1*
2½ *65*	2.875 *73.0*	1¼ *32*	0.4 *0.2*
3 *80*	3.500 *88.9*	1¼ *32*	0.6 *0.3*
4 *100*	4.500 *114.3*	1¼ *32*	1.0 *0.5*
5 *125*	5.563 *141.3*	1¼ *32*	2.2 *1.0*
6 *150*	6.625 *168.3*	1¼ *32*	2.8 *1.3*
8 *200*	8.625 *219.1*	4 *203*	11.0 *5.0*

8" fittings are copper coated stainless steel.
See chart on previous page for O.D.

FIG. 7561A

(Gr x Gr x Gr) Reducing Tee

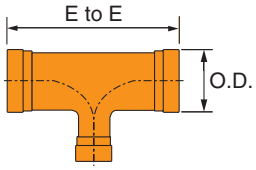


Figure 7561A (Gr x Gr x Gr) Reducing Tee

Nom. Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
2½ x 2½ x 2 *65 x 65 x 50*	7½ *191*	1.8 *0.8*
3 x 3 x 2 *80 x 80 x 50*	8½ *216*	2.7 *1.2*
3 x 3 x 2½ *80 x 80 x 65*	8½ *216*	2.1 *1.0*
4 x 4 x 2 *100 x 100 x 50*	10 *254*	4.8 *2.2*
4 x 4 x 2½ *100 x 100 x 65*	10 *254*	4.9 *2.2*
4 x 4 x 3 *100 x 100 x 80*	10 *254*	5.1 *2.3*
5 x 5 x 3 *125 x 125 x 80*	11 *279*	7.5 *3.4*
5 x 5 x 4 *125 x 125 x 100*	11 *279*	7.8 *3.5*
6 x 6 x 2½ *150 x 150 x 65*	13 *330*	11.5 *5.2*

Nom. Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
6 x 6 x 3 *150 x 150 x 80*	13 *330*	11.7 *5.3*
6 x 6 x 4 *150 x 150 x 100*	13 *330*	12.1 *5.5*
6 x 6 x 5 *150 x 150 x 125*	13 *330*	12.4 *5.6*
8 x 8 x 2½ *200 x 200 x 65*	15 *381*	18 *8.2*
8 x 8 x 3 *200 x 200 x 80*	15 *381*	18.2 *8.3*
8 x 8 x 4 *200 x 200 x 100*	15 *381*	18.4 *8.3*
8 x 8 x 5 *200 x 200 x 125*	15 *381*	18.8 *8.5*
8 x 8 x 6 *200 x 200 x 150*	15 *381*	19 *8.6*

8" fittings are copper coated stainless steel.
See chart on previous page for O.D.

ADVANCED COPPER METHOD FITTINGS

For listing/approval details contact your Gruvlok Representative.

FIG. 7564A

(Gr x Gr x Cup) Reducing Tee

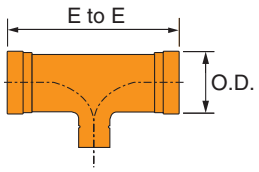


FIGURE 7564A (GR X GR X CUP) REDUCING TEE

Nom. Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
2 x 2 x ¾ *50 x 50 x 20*	6½ *165*	1.0 *0.5*
2 x 2 x 1 *50 x 50 x 25*	6½ *165*	1.0 *0.5*
2 x 2 x 1¼ *50 x 50 x 32*	6½ *165*	1.1 *0.5*
2 x 2 x 1½ *50 x 50 x 40*	6½ *165*	1.1 *0.5*
2½ x 2½ x ¾ *65 x 65 x 80*	7½ *191*	1.6 *0.7*
2½ x 2½ x 1 *65 x 65 x 25*	7½ *191*	1.7 *0.8*
2½ x 2½ x 1¼ *65 x 65 x 32*	7½ *191*	1.7 *0.8*
2½ x 2½ x 1½ *65 x 65 x 40*	7½ *191*	1.7 *0.8*
2½ x 2½ x 2 *65 x 65 x 50*	7½ *191*	1.8 *0.8*

Nom. Size	End to End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
3 x 3 x ¾ *80 x 80 x 20*	8½ *216*	2.5 *1.1*
3 x 3 x 1 *80 x 80 x 25*	8½ *216*	2.5 *1.1*
3 x 3 x 1¼ *80 x 80 x 32*	8½ *216*	2.5 *1.1*
3 x 3 x 1½ *80 x 80 x 40*	8½ *216*	2.6 *1.2*
3 x 3 x 2 *80 x 80 x 50*	8½ *216*	2.7 *1.2*
4 x 4 x ¾ *100 x 100 x 20*	10 *254*	4.5 *2.0*
4 x 4 x 1 *100 x 100 x 25*	10 *254*	4.6 *2.1*
4 x 4 x 1¼ *100 x 100 x 32*	10 *254*	4.7 *2.1*
4 x 4 x 1½ *100 x 100 x 40*	10 *254*	4.7 *2.1*
4 x 4 x 2 *100 x 100 x 50*	10 *254*	4.8 *2.2*

See chart on page 111 for O.D.

FIG. 7575

(Gr x Cup) Reducing Adapter

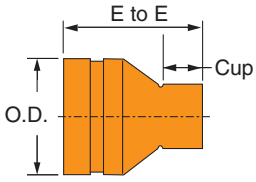


FIGURE 7575 (GR X CUP) REDUCING ADAPTER

Nom. Size	End to End	Cup	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 x 1 *50 x 25*	3 *76*	0.91 *23*	0.4 *0.2*
2 x 1¼ *50 x 32*	3 *76*	0.97 *25*	0.4 *0.2*
2 x 1½ *50 x 40*	2⅞ *73*	1.09 *28*	0.4 *0.2*
2½ x 1 *65 x 25*	3½ *89*	0.91 *23*	0.6 *0.3*
2½ x 1¼ *65 x 32*	3½ *89*	0.97 *25*	0.6 *0.3*
2½ x 1½ *65 x 40*	3½ *89*	1.09 *28*	0.7 *0.3*
2½ x 2 *65 x 50*	3¼ *83*	1.34 *34*	0.7 *0.3*
3 x 1½ *80 x 40*	3⅞ *98*	1.09 *28*	1.1 *0.5*
3 x 2 *80 x 50*	3⅞ *98*	1.34 *34*	1.0 *0.5*
4 x 2 *100 x 50*	5 *127*	1.34 *34*	2.2 *1.0*

See chart on page 111 for O.D.

FIG. 7582

Transition Fitting

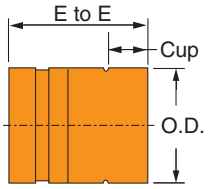


FIGURE 7582 TRANSITION FITTING

Nominal Size	O.D.	End to End	Cup	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	2¾ *70*	1⅜ *35*	0.4 *0.2*
2½ *65*	2.875 *73.0*	3 *76*	1½ *38*	0.6 *0.3*
3 *80*	3.500 *88.9*	3⁷⁄₁₆ *87*	1¹¹⁄₁₆ *42*	1.0 *0.5*
4 *100*	4.500 *114.3*	4⁷⁄₁₆ *112*	2³⁄₁₆ *55*	2.0 *0.9*
5 *125*	5.563 *141.3*	5⁷⁄₁₆ *138*	2⅝ *67*	3.3 *1.5*
6 *150*	6.625 *168.3*	6⅜ *162*	3⅛ *79*	5.3 *2.4*

See chart on page 111 for O.D.

SERIES 7500B

Grooved-End Bronze Ball Valve

SERIES 7500B
with Stem Extension Kit

SERIES 7500B

The Gruvlok® 7500B Cast Bronze Ball Valve is the ONLY grooved-end ball valve on the market for copper systems. Available in Full Port Configurations in sizes 1½" through 3" and with a streamlined port in the 4" version, the 7500B fits a wide range of applications from commercial plumbing and industrial applications, to oilfield and mining.

Durable temperature resistant virgin PTFE seats and a solid 316 stainless steel ball and stem in combination with Gruvlok End configurations, make the 7500B among the most specifiable valves in the industry.

HOW TO ORDER: Specify size and figure number (example: 2" GC-7500B)

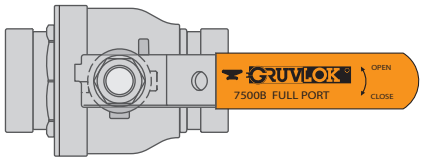
FEATURES

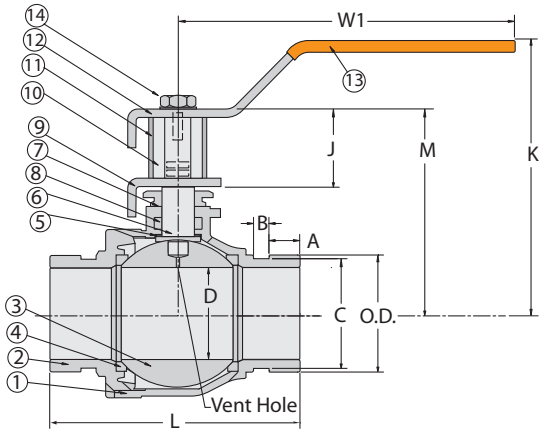
- For use in grooved-end pipe systems 1½" to 4"
- 300 psi bubble tight shutoff
- 190° F (88° C) operating temperature
- Low torque operation
- Superior flow – Full port 1½" to 3", Standard port 4"
- Solid 316 stainless steel ball and stem
- Vented ball
- Virgin PTFE seats
- Adjustable packing gland

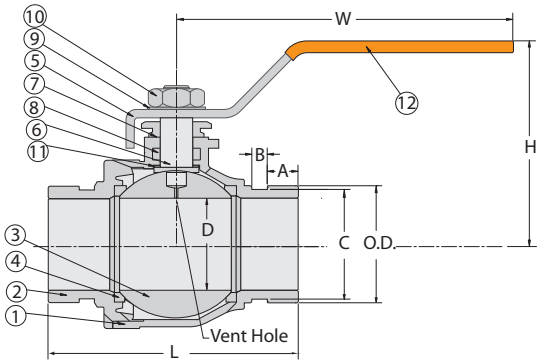
- **Additional options available –** locking device, memory stop, oval handle style and stem extension
- Suitable for HVAC applications
- End-of-line service capabilities
- MSS-SP-110

SERIES 7500B

Grooved-End Bronze Ball Valve - **Full Port**







MATERIAL SPECIFICATIONS

1. **BODY:** Bronze B584 C92200 Lead Washed
2. **END PLUG:** Specially Treated Bronze B584 C92200
3. **BALL:** Stainless Steel - Type 316
4. **BALL SEAT (2):** PTFE
5. **THRUST WASHER:** PTFE
6. **STEM:** Stainless Steel - Type 316
7. **PACKING NUT:** Brass B16 C36000
8. **STEM PACKING:** PTFE
9. **PLATE:** Steel-Zinc Plated
10. **HEXAGONAL SLOT:** Brass B16 C36000
11. **BUSHING:** Brass B16 C36000
12. **HANDLE:** Steel-Zinc Plated
13. **HANDLE SLEEVE:** Vinyl
14. **SCREW:** Steel-Zinc Plated

MATERIAL SPECIFICATIONS

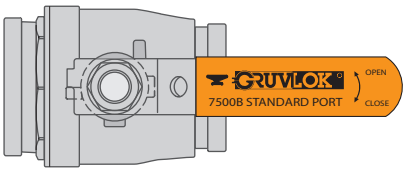
1. **BODY:** Bronze C92200 Lead Washed
2. **END PLUG:** Specially Treated Bronze B584 C92200
3. **BALL:** Stainless Steel - Type 316
4. **BALL SEAT (2):** Virgin PTFE
5. **HANDLE:** Steel-Zinc Plated, ASTM A-228
6. **STEM:** Stainless Steel - Type 316
7. **PACKING NUT:** Brass B16 C36000
8. **STEM PACKING:** PTFE
9. **SPRING WASHER:** Stainless Steel - Type 304
10. **HANDLE NUT:** Stainless Steel - Type 304
11. **THRUST WASHER:** Carbon RPTFE
12. **HANDLE SLEEVE:** Vinyl

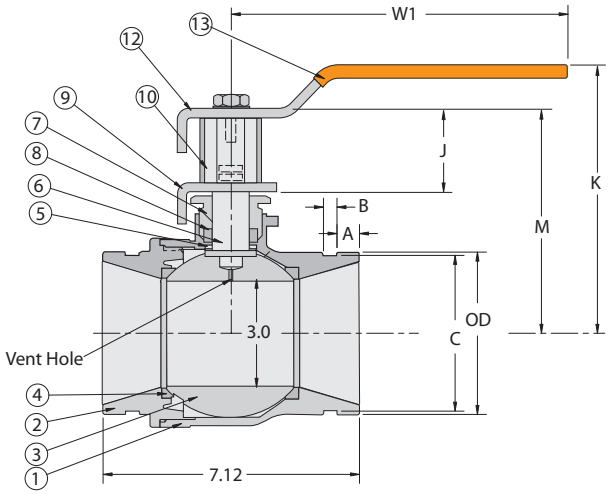
SERIES 7500B FULL PORT - DIMENSIONS

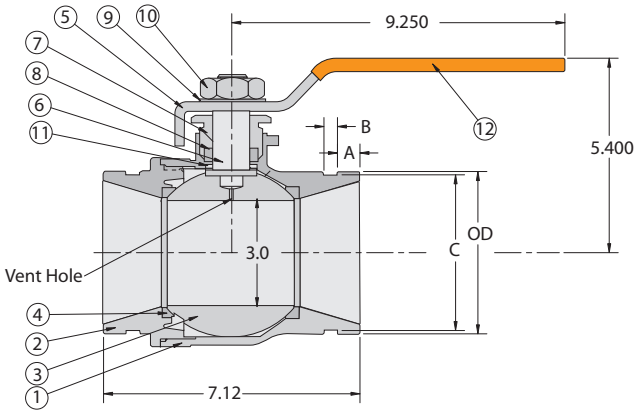
Nominal Size	O.D.	A	B	C	D	H	J	K	L	M	W	W1
In./DN(mm)	*In./mm*	*In./mm*										
1½ 40	1.910 48.5 / 1.888 48.0	⅝ 16.0	5/16 7.9	1¾ 45.1	1½ 38.1	2 11/16 67.8	2¼ 57.1	4¾ 120.9	4¼ 108.0	3⅝ 91.4	5⅛ 129.8	6 5/16 159.8
2 50	2.375 60.3 / 2.365 60.1	⅝ 16.0	5/16 7.9	2¼ 57.2	2 50.8	3 9/16 90.9	2¼ 57.1	5 11/16 144.0	5 1/16 128.5	4½ 114.6	6.29 159.8	6 5/16 159.8
2½ 65	2.876 73.1 / 2.870 72.9	⅝ 16.0	5/16 7.9	2 11/16 69.1	2½ 63.5	4 15/16 126.0	2¼ 57.1	7 1/16 179.1	6⅛ 155.4	5¾ 146.6	9¼ 235.0	9¼ 235.0
3 80	3.500 88.9 / 3.490 88.6	⅝ 16.0	5/16 7.9	3 5/16 84.9	3 76.2	5 7/16 137.2	2¼ 57.1	7½ 190.5	7 177.8	6¼ 159.5	9¼ 235.0	9¼ 235.0

SERIES 7500B

Grooved-End Bronze Ball Valve - **Standard Port 4"**







MATERIAL SPECIFICATIONS

1. **BODY:** Bronze B584 C92200 Lead Washed
2. **END PLUG:** Specially Treated Bronze B584 C92200
3. **BALL:** Stainless Steel - Type 316
4. **BALL SEAT (2):** PTFE
5. **THRUST WASHER:** PTFE
6. **STEM:** Stainless Steel - Type 316
7. **PACKING NUT:** Brass B16 C36000
8. **STEM PACKING:** PTFE
9. **PLATE:** Steel-Zinc Plated
10. **HEXAGONAL SLOT:** Brass B16 C36000
11. **BUSHING:** Brass B16 C36000
12. **HANDLE:** Steel-Zinc Plated
13. **HANDLE SLEEVE:** Vinyl
14. **SCREW:** Steel-Zinc Plated

MATERIAL SPECIFICATIONS

1. **BODY:** Specially Treated Bronze B584 C92200
2. **END PLUG:** Specially Treated Bronze B584 C92200
3. **BALL:** Stainless Steel - Type 316
4. **BALL SEAT (2):** Virgin PTFE
5. **HANDLE:** Steel-Zinc Plated, ASTM A-228
6. **STEM:** Stainless Steel - Type 316
7. **PACKING NUT:** Brass B16 C36000
8. **STEM PACKING:** PTFE
9. **SPRING WASHER:** Stainless Steel - Type 304
10. **HANDLE NUT:** Stainless Steel - Type 304
11. **THRUST WASHER:** Carbon RPTFE
12. **HANDLE SLEEVE:** Vinyl

SERIES 7500B STANDARD PORT 4" - DIMENSIONS

Nominal Size	O.D.	A	B	C	J	K	L	M	W1
In./DN(mm)	*In./mm*	*In./mm*							
4 *100*	4.545 *115.4* 4.469 *113.5*	5/8 *16.0*	3/8 *9.5*	4 5/16 *109.5*	2 1/4 *57.1*	7 1/2 *190.5*	7 1/8 *180.8*	6 1/4 *159.5*	9 1/4 *235.0*

FIG. 7088, 7089 & 7090

Gruvlok DI-LOK® Nipple • Di-Electric Pipe Connection

The Gruvlok Fig. 7088, 7089 and 7090 DI-LOK Nipple inhibits the formation of a galvanic cell between steel pipe and copper tube at the transition from threaded or grooved-end steel pipe to a Gruvlok Advanced Copper Method pipe system. Patented Gruvlok Advanced Copper Method tube end preparation makes it possible to connect copper tube to steel pipe using a standard Gruvlok Figure 7400 Rigidlite Coupling or a Figure 7012 Gruvlok Flange; costly special adapter couplings are not needed. Gruvlok DI-LOK Nipples are easily installed between the copper tube and steel pipe in groove to groove or groove to thread configurations, producing a dielectric connection.

The separation of copper from steel by the DI-LOK Nipple virtually eliminates the galvanic cell created by the dissimilar metals. The Gruvlok Figure 7400 Rigidlite Coupling and Figure 7012 Gruvlok Flange provide tines which produce an electrical connection on the outside of the DI-LOK Nipple providing a means for transmission of stray current outside of the fluid media effectively eliminating acceleration of corrosion to the wetted metals.

The Gruvlok DI-LOK Nipple is manufactured from ASTM A513 steel tube which provides tighter dimensional controls to that of steel pipe. The tube is zinc electroplated per ASTM B633 which provides added corrosion resistance and produces an attractive, easily identified appearance. Polypropylene molded into the steel tube creates a liner which meets the polypropylene tube lining requirements of ASTM F492. The polypropylene serves as a dielectric insulator between the copper tube and the steel pipe.

The grooved-ends are cut grooved to standard Gruvlok groove dimensions, meeting the dimensional requirements of AWWA C606. The NPT threaded end of the DI-LOK Nipple is in conformance with ANSI B1.20.1.

The DI-LOK Nipple is designed for use at temperatures from -40°F to 230°F (-40°C to 110°C) and pressures to 300 PSIG (20.7 bar) in a wide range of applications.

MATERIAL SPECIFICATIONS

HOUSING: Steel Tube to ASTM A513

LINER: Polypropylene to ASTM D4140

INSTALLATION & ASSEMBLY: For installation and assembly of grooved-end connections, see "Fig. 7400 Gruvlok Rigidlite Coupling" and "Fig. 7012 Gruvlok Flange".

FIG. 7088 - Groove by Thread

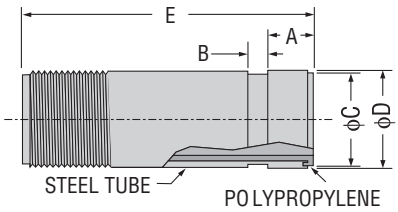


FIG. 7089 - Groove by Groove

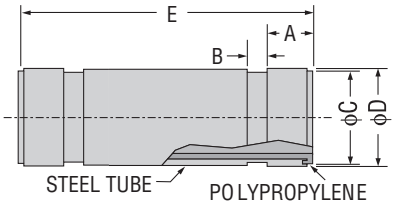


FIG. 7090 - Thread by Thread

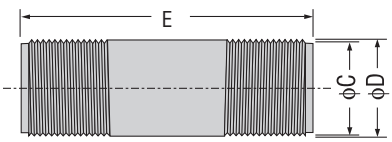


FIGURE 7088, 7089 & 7090 DI-LOK NIPPLES

Nom. IPS Pipe Size	O.D.	A +/-.030 +/-.76	B +/-.030 +/-.76	C Actual	Tolerance +0.000	D Actual	Tolerance	E +/-.090 +/-2.29	Approx. Wt. Ea.
NIPS/DN	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
¾	1.050	n/a	n/a	⅞	n/a	1 1/16	+.005/-.000	3.000	0.2
19	26.7			22		26.7	+.13/-.00	76	0.1
1	1.315	n/a	n/a	1⅛	n/a	1 5/16	+.005/-.000	4.000	0.4
25	33.7			28		33.7	+.13/-.00	102	0.2
1¼	1.660	n/a	n/a	1½	n/a	1 11/16	+.006/-.000	4.000	0.6
32	42.4			37		42.4	+.15/-.00	102	0.3
1½	1.900	n/a	n/a	1 11/16	n/a	2	+.006/-.000	4.00	0.8
40	48.3			43		48.3	+.15/-.00	102	0.4
2	2.375	⅝	5/16	2¼	-0.015	2⅜	+.007/-.000	4.000	1.0
50	60.3	15.88	7.92	57	-0.37	60.3	+.18/-.00	102	0.5
2½	2.875	⅝	5/16	2¾	-0.018	2⅞	+.008/-.000	6.000	1.6
65	73.0	15.88	7.92	69	-0.45	73.0	+.20/-.00	152	0.7
3	3.500	⅝	5/16	3⅜	-0.018	3½	+.010/-.000	6.000	2.0
80	88.9	15.88	7.92	85	-0.45	88.9	+.25/-.00	152	0.9
4	4.500	⅝	⅜	4 5/16	-0.020	4½	+013/-.000	6.000	4.5
100	114.3	15.88	9.53	110	-0.50	114.3	+.33/-.00	152	2.0
5	5.563	⅝	⅜	5⅜	-0.022	5 9/16	±.010	6.000	7.3
125	141.3	15.88	9.53	137	-0.55	141.3	±.25	152	3.3
6	6.625	⅝	⅜	6½	-0.022	6⅝	±.015	6.000	9.5
150	168.3	15.88	9.53	164	-0.55	168.3	±.38	152	4.3`

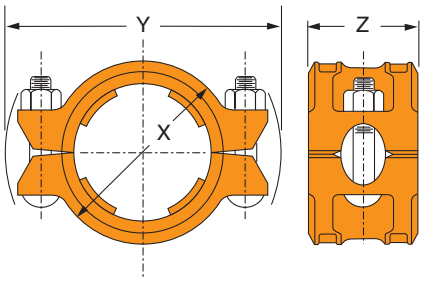
Figure 7088 available in Nominal Pipe Sizes 2" through 4" only.
Figure 7089 available in Nominal Pipe Sizes 2" through 6" only.
Figure 7090 available in Nominal Pipe Sizes ¾" through 2" only.

FIG. 7005

Roughneck® Coupling

The Fig. 7005 Roughneck Coupling is an effective and reliable way of joining plain-end or beveled end pipe.The Roughneck Coupling is ideal for use in a variety of applications including mining, process piping, manifold piping and oilfield services. The unique gripper action provides a positive pipe joint and allows for working pressure ratings up to 750 PSI (52 bar).

For listing/approval details contact your Gruvlok Representative.



MATERIAL SPECIFICATIONS

HOUSING: Ductile Iron conforming to ASTM A536, or Malleable Iron conforming to ASTM A47, Grade 32510.

BOLT& NUTS: Heat treated, oval-neck track head bolts conforming to ASTM A183 Grade 2 with a minimum tensile strength of 110,000 psi and heavy hex nuts of carbon steel conforming to ASTM A563. Bolts and nuts are provided zinc electroplated as standard.

GRIPPERS: 2"-8" heat treated, electroplated carbon steel. 10"-16" heat treated stainless steel.

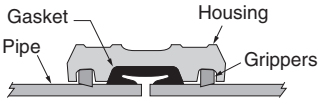
COATINGS: Rust inhibiting paint - Color: Orange Standard Hot dipped Zinc Galvanized (Optional) Other Colors Available (IE: RAL3000 and RAL9000) For other Coating requirements contact a Gruvlok Representative.

GASKET: Grade E (EPDM) or Grade T(Nitrile) Elastomers with properties as designated by ASTM D2000 for each gasket grade.

FIGURE 7005 ROUGHNECK® COUPLING

Nominal Size	O.D.	Max. Wk. Pressure	Max. End Load	No. of Grippers	Coupling Dimensions			Coupling Bolts		Specified Torque §		Approx. Wt. Ea.
					X	Y	Z	Qty.	Size	Min.	Max.	
In./DN(mm)	*In./mm*	*PSI/bar*	*Lbs./kN*		*In./mm*	*In./mm*	*In./mm*		*In./mm*	*LbFt/N-m*	*LbFt/N-m*	*Lbs./Kg*
2 *50*	2.375 *60.3*	750 *51.7*	3,323 *1,507*	8	3¾ *95*	6⅜ *162*	3½ *89*	2	⅝ x 3¼ -	150 *203*	190 *257*	6.6 *3.0*
2½ *65*	2.875 *73.0*	600 *41.4*	3,895 *1,766*	8	4¼ *108*	7⅛ *181*	3½ *89*	2	⅝ x 3¼ -	150 *203*	190 *257*	7.4 *3.4*
3 *80*	3.500 *88.9*	600 *41.4*	5,773 *2,618*	8	4⅞ *124*	8⅛ *206*	3½ *89*	2	¾ x 4½ -	200 *271*	250 *339*	10.5 *4.8*
4 *100*	4.500 *114.3*	450 *31.0*	7,157 *3,246*	8	6⅜ *162*	9⅜ *238*	4⅛ *105*	2	¾ x 4½ -	200 *271*	250 *339*	16.4 *7.4*
5 *125*	5.563 *141.3*	350 *24.1*	8,507 *3,858*	8	7½ *191*	11⅛ *283*	4⅜ *111*	2	⅞ x 5 -	250 *339*	300 *406*	23.8 *10.8*
6 *150*	6.625 *168.3*	300 *20.7*	10,341 *4,690*	12	8¾ *222*	12⅞ *327*	4⅜ *111*	2	1 x 6 -	250 *339*	300 *406*	31.7 *14.4*
8 *200*	8.625 *219.1*	300 *20.7*	17,528 *7,950*	12	10⅞ *276*	14½ *368*	4½ *114*	4	⅞ x 5 -	250 *339*	300 *406*	38.6 *17.5*
10 *250*	10.750 *273.1*	300 *20.7*	27,229 *12,377*	8	12⅝ *321*	18 *457*	5⅜ *137*	4	1 x 6½ -	500 *678*	600 *814*	40 *18.1*
12 *300*	12.750 *323.9*	300 *20.7*	31,919 *14,509*	12	14⅞ *378*	20¼ *514*	5⅜ *137*	4	1 x 6½ -	550 *746*	700 *949*	56 *25.4*
14 *350*	14.000 *355.6*	300 *20.7*	30,788 *13,995*	12	16¾ *425*	22⅛ *562*	6¼ *159*	4	1 x 6½ -	550 *746*	700 *949*	88 *39.9*
16 *400*	16.000 *406.4*	300 *20.7*	30,159 *13,709*	12	18¾ *476*	24 *610*	6¼ *159*	4	1 x 6½ -	550 *746*	700 *949*	95 *43.1*

See Coupling data chart notes on page 15.
§ – For additional Bolt Torque information, see page 171
Not for use in copper or PVC systems.
See Installation & Assembly directions on page 157.



Working pressure and end load are based on a properly assembled Roughneck coupling with bolts fully torqued to the above specifications, on plain-end or beveled standard wall steel pipe and Gruvlok Plain-End Fittings.

Roughneck Couplings are designed to be used on plain-end pipe and Gruvlok Plain-End Fittings only. For externally coated pipe applications, Contact a Gruvlok Representative.

Not recommended for use on steel pipe with a hardness greater than 150 Brinell, plastic, HDPE, cast iron or other brittle pipe.

*Bolt torque ratings shown must be applied at installation.

GRUVLOK PLAIN-END FITTINGS

Gruvlok plain-end fittings are manufactured to provide minimum pressure drop and uniform flow. Fittings are designed for use with the Fig. 7005 Roughneck Couplings only.

Gruvlok plain-end fittings are available in sizes through 8" nominal pipe size in a variety of styles. Depending on size and configuration, fittings are either segment-welded steel or forged steel.

Fittings are normally coated with a rust inhibiting paint.
Other coatings including Hot Dipped Zinc Galvanizing, are available.

MATERIAL SPECIFICATIONS

SEGMENT WELDED STEEL FITTINGS:
Sizes 2" - 4" Carbon Steel pipe conforming to ASTM A53, Type "F";
Sizes 5" - 8"; Carbon Steel pipe conforming to ASTM A53, Type "E" or "S", Grade "B".

STEEL FITTINGS: Forged Steel conforming to ASTM A106.

ADAPTER FLANGES:
Class 150 - Carbon Steel conforming to ANSI B16.5
Class 300 - Carbon Steel conforming to ANSI B16.5

FITTING SIZE

Nominal Size	O.D.	Nominal Size	O.D.
In./DN(mm)	*In./mm*	*In./DN(mm)*	*In./mm*
2 *50*	2.375 *60.3*	4 *100*	4.500 *114.3*
2½ *65*	2.875 *73.0*	5 *140*	5.563 *141.3*
3 *80*	3.500 *88.9*	6 *150*	6.625 *168.3*
3½ *90*	4.000 *101.6*	8 *200*	8.625 *219.1*

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok® Fittings are identified by either the Nominal size in inches or the Pipe O.D. In./mm.

FIG. 7050P - 90° Elbow

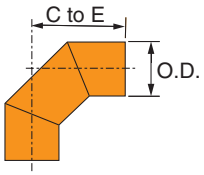


FIGURE 7050P 90° ELBOW

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4¾ *121*	2.7 *1.2*
2½ *65*	2.875 *73.0*	5½ *140*	4.8 *2.2*
3 *80*	3.500 *88.9*	6¼ *159*	7.2 *3.3*
3½ *90*	4.000 *101.6*	7 *178*	9.4 *4.3*
4 *100*	4.500 *114.3*	7¾ *197*	12.3 *5.6*
5 *125*	5.563 *141.3*	9½ *241*	13.4 *6.1*
6 *150*	6.625 *168.3*	11 *279*	31 *14.1*
8 *200*	8.625 *219.1*	11 *279*	38.7 *17.6*

FIG. 7051P - 45° Elbow

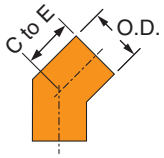


FIGURE 7051P 45° ELBOW

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3⅛ *79*	2.0 *0.9*
2½ *65*	2.875 *73.0*	3½ *89*	3.5 *1.6*
3 *80*	3.500 *88.9*	3¾ *95*	4.8 *2.2*
3½ *90*	4.000 *101.6*	4 *102*	6.2 *2.8*
4 *100*	4.500 *114.3*	4¼ *108*	8.0 *3.6*
5 *125*	5.563 *141.3*	5⅛ *130*	9.2 *4.2*
6 *150*	6.625 *168.3*	5¾ *146*	18.5 *8.4*
8 *200*	8.625 *219.1*	6 *152*	24.9 *11.3*

FIG. 7060P - Tee

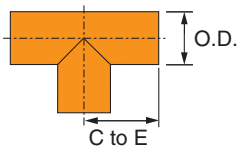


FIGURE 7060P TEE

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4¼ *108*	3.5 *1.6*
2½ *65*	2.875 *73.0*	4¾ *121*	6.2 *2.8*
3 *80*	3.500 *88.9*	5⅛ *130*	8.6 *3.9*
3½ *90*	4.000 *101.6*	5½ *140*	11 *5.0*
4 *100*	4.500 *114.3*	5⅞ *149*	13.8 *6.3*
5 *125*	5.563 *141.3*	6⅞ *175*	21.7 *9.8*
6 *150*	6.625 *168.3*	7⅝ *194*	30.9 *14.0*
8 *200*	8.625 *219.1*	10 *254*	61.1 *27.7*

GRUVLOK PLAIN-END FITTINGS

FIG. 7068P - Cross

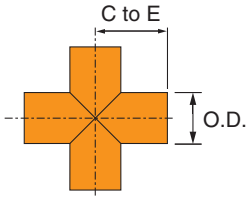


FIGURE 7068P - CROSS

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 1/4 *108*	4.4 *2.0*
2 1/2 *65*	2.875 *73.0*	4 3/4 *121*	7.8 *3.5*
3 *80*	3.500 *88.9*	5 1/8 *130*	10.7 *4.9*
3 1/2 *90*	4.000 *101.6*	5 1/2 *140*	13.7 *6.2*
4 *100*	4.500 *114.3*	5 7/8 *149*	17 *7.7*
5 *125*	5.563 *141.3*	6 7/8 *175*	26.7 *12.1*
6 *150*	6.625 *168.3*	7 5/8 *194*	37.7 *17.1*
8 *200*	8.625 *219.1*	10 *254*	74.6 *33.8*

FIG. 7069P - 45° Lateral

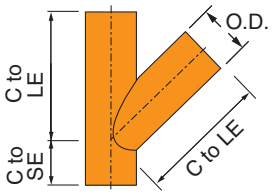


FIGURE 7069P - 45° LATERAL

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	7 1/4 *184*	2 3/4 *70*	5.1 *2.3*
2 1/2 *65*	2.875 *73.0*	7 3/4 *197*	3 *76*	9.5 *4.3*
3 *80*	3.500 *88.9*	8 3/4 *222*	3 1/4 *83*	12.8 *5.8*
3 1/2 *90*	4.000 *101.6*	10 *254*	3 1/2 *89*	20.0 *9.1*
4 *100*	4.500 *114.3*	10 3/4 *273*	3 3/4 *95*	22.2 *10.1*
5 *125*	5.563 *141.3*	12 3/4 *324*	4 *102*	38.0 *17.2*
6 *150*	6.625 *168.3*	14 *356*	4 1/2 *114*	54.0 *24.5*
8 *200*	8.625 *219.1*	18 *457*	6 *152*	92.0 *41.7*

FIG. 7071P - 90° True Wye

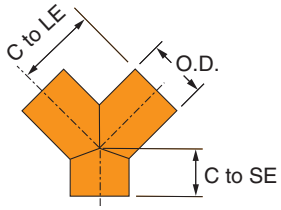


FIGURE 7071P 90° TRUE WYE

Nominal Size	O.D.	Center to Long End	Center to Short End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 1/4 *108*	2 3/4 *70*	3.5 *1.6*
2 1/2 *65*	2.875 *73.0*	4 3/4 *121*	3 *76*	6.2 *2.8*
3 *80*	3.500 *88.9*	5 1/8 *130*	3 1/4 *83*	8.5 *3.9*
3 1/2 *90*	4.000 *101.6*	5 1/2 *140*	3 1/2 *89*	10.0 *4.5*
4 *100*	4.500 *114.3*	5 7/8 *149*	3 3/4 *95*	14.0 *6.4*
5 *125*	5.563 *141.3*	6 7/8 *175*	4 *102*	21.6 *9.8*
6 *150*	6.625 *168.3*	7 5/8 *194*	4 1/2 *114*	31.2 *14.2*
8 *200*	8.625 *219.1*	10 *254*	6 *152*	53.6 *24.3*

FIG. 7061P - Reducing Tee

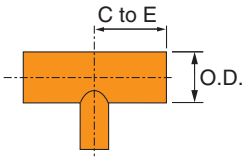


FIGURE 7061P REDUCING TEE

Nominal Size	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
3 x 3 x 2 *80 x 80 x 50*	5 1/2 *140*	7.1 *3.2*
4 x 4 x 2 *100 x 100 x 50*	5 7/8 *149*	11.3 *5.1*
4 x 4 x 2 1/2 *100 x 100 x 65*	5 7/8 *149*	11.6 *5.3*
4 x 4 x 3 *100 x 100 x 80*	5 7/8 *149*	11.9 *5.4*
6 x 6 x 2 *150 x 150 x 50*	7 5/8 *194*	24.6 *11.2*
6 x 6 x 3 *150 x 150 x 80*	7 5/8 *194*	25.4 *11.5*
6 x 6 x 4 *150 x 150 x 100*	7 5/8 *194*	26.2 *11.9*
8 x 8 x 2 *200 x 200 x 50*	10 *254*	42.0 *19.1*
8 x 8 x 3 *200 x 200 x 80*	10 *254*	44.0 *20.0*
8 x 8 x 4 *200 x 200 x 100*	10 *254*	46.0 *20.9*
8 x 8 x 5 *200 x 200 x 125*	10 *2254*	48.0 *21.8*
8 x 8 x 6 *200 x 200 x 150*	10 *254*	50.0 *22.7*
10 x 10 x 4 *250 x 250 x 100*	11 1/2 *292*	74.0 *33.6*
10 x 10 x 6 *250 x 250 x 150*	11 1/2 *292*	78.0 *35.4*
10 x 10 x 8 *250 x 250 x 200*	11 1/2 *292*	86.0 *39.0*
12 x 12 x 6 *300 x 300 x 150*	13 1/2 *343*	112.0 *50.8*
12 x 12 x 8 *300 x 300 x 200*	13 1/2 *343*	118.0 *53.5*
12 x 12 x 10 *300 x 300 x 250*	13 1/2 *343*	130.0 *59.0*

FIG. 7050LRP - 90° LR Elbow

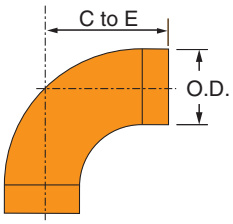


FIGURE 7050 LRP - 90° LR ELBOW

Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	5 *127*	2.5 *1.1*
2 1/2 *65*	2.875 *73.0*	5 3/4 *146*	4.9 *2.2*
3 *80*	3.500 *88.9*	6 1/2 *165*	6.5 *2.9*
3 1/2 *90*	4.000 *101.6*	7 1/4 *184*	9.8 *4.4*
4 *100*	4.500 *114.3*	8 *203*	11.5 *5.2*
5 *125*	5.563 *141.3*	9 3/4 *248*	21.5 *9.8*
6 *150*	6.625 *168.3*	11 1/4 *286*	28.5 *12.9*
8 *200*	8.625 *219.1*	15 *381*	56.7 *25.7*

GRUVLOK PLAIN-END FITTINGS

FIG. 7051LRP - 45° LR Elbow

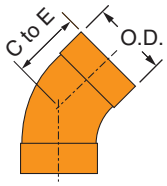


Figure 7051 LRP - 45° LR Elbow			
Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3⅜ *86*	1.8 *0.8*
2½ *65*	2.875 *73.0*	3¾ *95*	3.6 *1.6*
3 *80*	3.500 *88.9*	4 *102*	4.5 *2.0*
3½ *90*	4.000 *101.6*	4¼ *108*	6.7 *3.0*
4 *100*	4.500 *114.3*	4½ *114*	7.5 *3.4*
5 *125*	5.563 *141.3*	5⅜ *137*	13.8 *6.3*
6 *150*	6.625 *168.3*	6 *152*	17.3 *7.8*
8 *200*	8.625 *219.1*	8 *203*	34.0 *15.4*

FIG. 7075P - Bull Plug

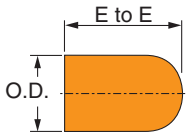


Figure 7075P - Bull Plug			
Nominal Size	O.D.	Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 *102*	2.3 *1.0*
2½ *65*	2.875 *73.0*	5 *127*	3.0 *1.4*
3 *80*	3.500 *88.9*	6 *152*	4.5 *2.0*
3½ *90*	4.000 *101.6*	6½ *165*	5.5 *2.5*
4 *100*	4.500 *114.3*	7 *178*	7.5 *3.4*
5 *125*	5.563 *141.3*	8½ *216*	12.5 *5.7*
6 *150*	6.625 *168.3*	10 *254*	17.0 *7.7*
8 *200*	8.625 *219.1*	11 *279*	29.0 *13.2*

FIG. 7084P & FIG. 7085P

(Plain-End x Class 150 or 300) Flange Nipples

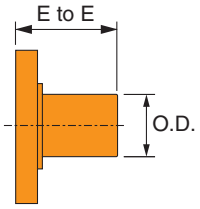


Figure 7084P Plain-End x Class 150 Flange Nipples			
Nominal Size	O.D.	End To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 *102*	6.0 *2.7*
2½ *65*	2.875 *73.0*	4 *102*	9.2 *4.2*
3 *80*	3.500 *88.9*	4 *102*	10.4 *4.7*
3½ *90*	4.000 *101.6*	4 *102*	14.0 *6.4*
4 *100*	4.500 *114.3*	6 *152*	19.1 *8.7*
5 *125*	5.563 *141.3*	6 *152*	23.0 *10.4*
6 *150*	6.625 *168.3*	6 *152*	29.5 *13.4*
8 *200*	8.625 *219.1*	6 *152*	43.5 *19.7*

Figure 7085P Plain-End x Class 300 Flange Nipples	
End To End	Approx. Wt. Ea.
In./mm	*Lbs./Kg*
4 *102*	8.2 *3.7*
4 *102*	11.9 *5.4*
4 *102*	15.5 *7.0*
4 *102*	21.0 *9.5*
6 *152*	28.0 *12.7*
6 *152*	35.0 *15.9*
6 *152*	50.0 *22.7*
6 *152*	72.0 *32.7*

GRUVLOK PLAIN-END FITTINGS

ADAPTER NIPPLES

FIG. 7080P
Plain x Grooved

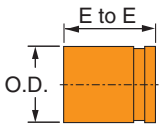


FIG. 7081P
Plain x Thread

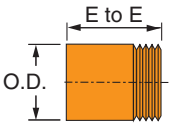


FIG. 7082P
Plain x Bevel

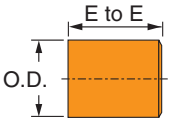


FIGURE 7080P, 7081P, 7082P ADAPTER NIPPLES

Nominal Size	O.D.	End To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	4 *102*	1.2 *0.5*
2½ *65*	2.875 *73.0*	4 *102*	1.9 *0.9*
3 *80*	3.500 *88.9*	4 *102*	2.5 *1.1*
3½ *90*	4.000 *101.6*	4 *102*	3.1 *1.4*
4 *100*	4.500 *114.3*	6 *152*	5.5 *2.5*
5 *125*	5.563 *141.3*	6 *152*	7.4 *3.4*
6 *150*	6.625 *168.3*	6 *152*	9.5 *4.3*
8 *200*	8.625 *219.1*	6 *152*	14.2 *6.4*

FIG. 7077P
Swaged Nipples

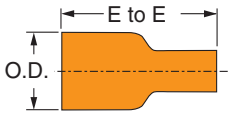


FIGURE 7077P SWAGED NIPPLES

Nominal Size	End Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
2½ x 2 *65 x 50*	7 *178*	3.0 *1.4*
3 x 2 *80 x 50*	8 *203*	4.5 *2.0*
3 x 2½ *80 x 65*	8 *203*	4.5 *2.0*
4 x 2 *100 x 50*	9 *229*	7.5 *3.4*
4 x 2½ *100 x 65*	9 *229*	7.5 *3.4*
4 x 3 *100 x 80*	9 *229*	7.5 *3.4*
5 x 2 *125 x 50*	11 *279*	11.5 *5.2*
5 x 3 *125 x 80*	11 *279*	11.5 *5.2*
5 x 4 *125 x 100*	11 *279*	11.5 *5.2*

Nominal Size	End Center To End	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
6 x 2 *150 x 50*	12 *305*	17.0 *7.7*
6 x 2½ *150 x 65*	12 *305*	17.0 *7.7*
6 x 3 *150 x 80*	12 *305*	17.0 *7.7*
6 x 4 *150 x 100*	12 *305*	17.0 *7.7*
6 x 5 *150 x 125*	12 *305*	17.0 *7.7*
8 x 3 *200 x 80*	13 *330*	29.0 *13.2*
8 x 4 *200 x 100*	13 *330*	29.0 *13.2*
8 x 5 *200 x 125*	13 *330*	29.0 *13.2*
8 x 6 *200 x 150*	13 *330*	29.0 *13.2*

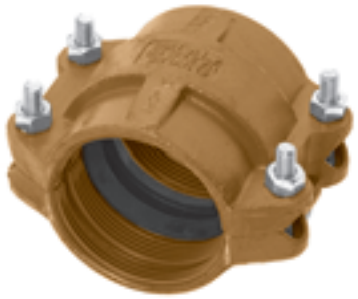
See chart on page 119 for O.D.

FIG. 7305

HDPE Coupling

The Gruvlok Figure 7305 couplings are designed for mechanically joining HDPE (high density polyethylene) pipe and fittings. Each coupling uses four bolts to drive the sharply machined housing teeth into the outside of the pipe. The teeth are arranged in two banks, each bank consisting of at least three rows of spiral teeth which effectively grip the pipe, providing a secure mechanical joint with pressure capabilities exceeding that of the HDPE pipe itself. The banks of teeth are positioned away from the gasket enhancing the sealing ability of the gasket throughout its operating temperature range.

The Figure 7305 features a low profile contoured housing with a ramp along the outside diameter allowing the coupling to glide over most obstacles, while long lengths of the pipeline are being relocated. This cost effective easy to assemble mechanical joint is used to join SDR 32.5 to 7.3 wall thickness HDPE pipe conforming to ASTM D-2447, D-3000, D-3035, or F-714 and eliminates the need for costly fusion equipment.



MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A-536, Grade 65-45-12

COATING:
Rust inhibiting paint – color: orange
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated, carbon steel oval-neck track bolts conforming to ASTM A-183

Zinc electroplated carbon steel heavy hex nuts conforming to ASTM A-563.

GASKETS: Properties in accordance with ASTM D-2000

Grade E EPDM (Green color code) –
Service Temperature Range: -30°F to 230°F (-34°C to 110°C).

Recommended for water service, dilute acids, alkaline solutions, oil free air and many chemical services.

NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade T Nitrile (Orange color code) –
Service Temperature Range: -20°F to 180°F (-29°C to 82°C).

Recommended for petroleum applications, air with oil vapor, vegetable and mineral oils.

NOT FOR USE WITH HOT WATER OR HOT AIR.

For specific chemical applications, reference the Gruvlok Gasket Recommendations section of the Gruvlok catalog.

WARNING:
1. Gruvlok products for HDPE pipe must be installed using Gruvlok Xtreme™ Temperature Lubricant.
2. The gasket temperature rating may exceed the manufacturer temperature rating for the HDPE pipe. Consult the HDPE pipe manufacturer for the temperature and pressure ratings.

FIG. 7305

HDPE Coupling

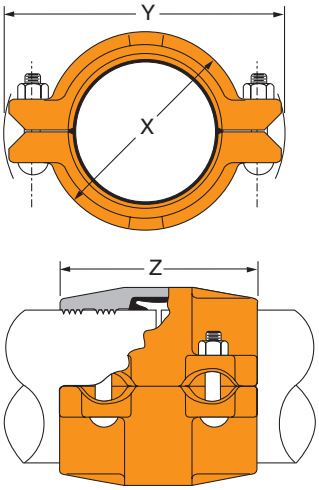


FIGURE 7305 HDPE COUPLING

Nominal Size	O.D.	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
		X	Y	Z	Qty.	Size	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In.*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3⅜ *86*	5½ *140*	4⅝ *117*	4	½ x 2⅜ -	4.5 *2.0*
3 *80*	3.500 *88.9*	4⅝ *117*	6¾ *171*	4⅝ *117*	4	½ x 3 -	8.5 *3.9*
4 *100*	4.500 *114.3*	5¼ *133*	8 *203*	5¾ *146*	4	½ x 3 -	12 *5.4*
6 *150*	6.625 *168.3*	7½ *191*	11 *279*	5⅞ *149*	4	⅝ x 3½ -	18 *8.2*
8 *200*	8.625 *219.1*	10 *254*	13¼ *337*	6 *152*	4	⅝ x 3½ -	30 *13.6*
10 *250*	10.750 *273.1*	12 *305*	15¾ *400*	6½ *165*	4	¾ x 4¾ -	43 *19.5*
12 *300*	12.750 *323.9*	14⅜ *365*	17⅞ *454*	7¼ *184*	4	¾ x 4¾ -	58 *26.3*

HDPE PIPE DIMENSIONAL SPECIFICATIONS

Nominal Size	O.D. Actual	Tolerance +/-	Out Of Roundness Tolerance +/-	Pipe Wall Thickness						
				SDR 7.3	SDR 9	SDR 11	15.5	SDR 17	SDR 21	SDR 32.5
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	0.006 *0.15*	0.035 *0.89*	0.325 *8.3*	0.264 *6.7*	0.216 *5.5*	0.153 *3.9*	0.140 *3.6*	0.113 *2.9*	-
3 *80*	3.500 *88.9*	0.016 *0.41*	0.040 *1.02*	0.479 *12.2*	0.389 *9.9*	0.318 *8.1*	0.226 *5.7*	0.206 *5.2*	0.167 *4.2*	0.108 *2.7*
4 *100*	4.500 *114.3*	0.020 *0.51*	0.040 *1.02*	0.616 *15.6*	0.500 *12.7*	0.409 *10.4*	0.290 *7.4*	0.265 *6.7*	0.214 *5.4*	0.138 *3.5*
6 *150*	6.625 *168.3*	0.030 *0.76*	0.050 *1.27*	0.908 *23.1*	0.736 *18.7*	0.602 *15.3*	0.427 *10.8*	0.327 *8.3*	0.265 *6.7*	0.204 *5.2*
8 *200*	8.625 *219.1*	0.039 *0.99*	0.075 *1.91*	1.182 *30.0*	0.958 *24.3*	0.784 *19.9*	0.556 *14.1*	0.507 *12.9*	0.340 *8.6*	0.265 *6.7*
10 *250*	10.750 *273.1*	0.048 *1.22*	0.075 *1.91*	1.473 *37.4*	1.194 *30.3*	0.977 *24.8*	0.694 *17.6*	0.632 *16.1*	0.512 *13.0*	0.331 *8.4*
12 *300*	12.750 *323.9*	0.057 *1.45*	0.075 *1.91*	1.747 *44.4*	1.417 *36.0*	1.159 *29.4*	0.823 *20.9*	0.750 *19.1*	0.607 *15.4*	0.392 *10.0*

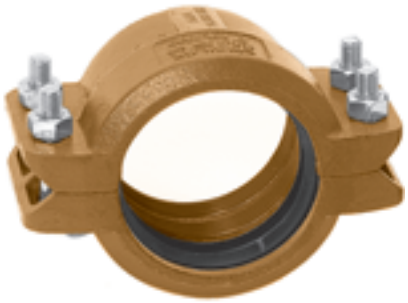
1. Per ASTM F-714

2. Per ASTM D-2447 and D-3035

See Installation & Assembly directions on page 158.

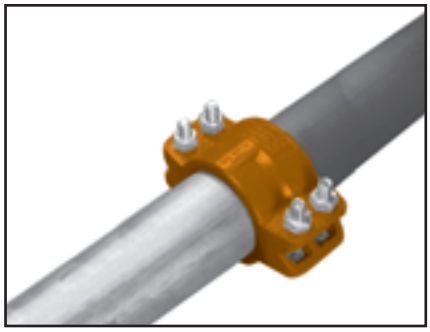
FIG. 7307

HDPE Transition Coupling



The Gruvlok Figure 7307 HDPE transition coupling allows for transition from HDPE pipe or fittings to grooved-end pipe prepared per Gruvlok standard cut or roll groove specifications for steel pipe or Gruvlok fittings. The Figure 7307 incorporates two banks of machined teeth on one side of the housing, and a key section on the other, that engages specifically grooved steel pipe or fittings. The banks of teeth are positioned away from the gasket enhancing the sealing ability of the gasket. The temperature and pressure capabilities of the Figure 7307 exceed the highest temperature and pressure ratings of the HDPE pipe.

The Figure 7307 features a low profile contoured housing with a ramp along the outside diameter on the half of the HDPE coupling. This easy to assemble mechanical joint is used to join HDPE pipe (conforming to ASTM D-2447, D-3000, D-3035, or F-714) to roll grooved or cut grooved standard weight and, roll grooved lightweight pipe, as well as with grooved-end fittings and valves. The coupling can be used with HDPE pipe having SDR values of 7.3 to 32.5.



MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A-536, Grade 65-45-12

COATING:
Rust inhibiting paint – color: orange
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated, carbon steel oval-neck track bolts conforming to ASTM A-183

Zinc electroplated carbon steel heavy hex nuts conforming to ASTM A-563.

GASKETS: Properties in accordance with ASTM D-2000

Grade E EPDM (Green color code) –
Service Temperature Range: -30°F to 230°F (-34°C to 110°C).
Recommended for water service, dilute acids, alkaline solutions, oil free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade T Nitrile (Orange color code) –
Service Temperature Range: -20°F to 180°F (-29°C to 82°C).
Recommended for petroleum applications, air with oil vapor, vegetable and mineral oils.
NOT FOR USE WITH HOT WATER OR HOT AIR.

For specific chemical applications, reference the Gruvlok Gasket Recommendations section of the Gruvlok catalog.

WARNING:

1. Gruvlok products for HDPE pipe must be installed using Gruvlok Xtreme™ Temperature Lubricant.
2. The gasket temperature rating may exceed the manufacturer temperature rating for the HDPE pipe. Consult the HDPE pipe manufacturer for the temperature and pressure ratings.

FIG. 7307

HDPE Transition Coupling

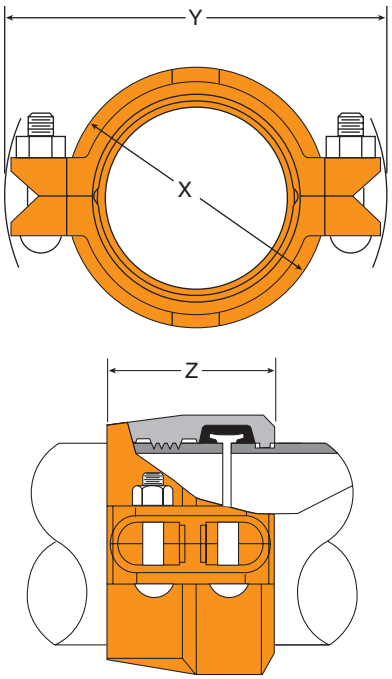


FIGURE 7307 HDPE TRANSITION COUPLING

Nominal Size	O.D. Actual	Coupling Dimensions			Coupling Bolts		Approx. Wt. Ea.
		X	Y	Z	Qty.	Size	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*	*Lbs./Kg*
2 *50*	2.375 *60.3*	3⅜ *86*	6 *152*	3⅛ *79*	4	½ x 2⅜ -	4.5 *2.0*
3 *80*	3.500 *88.9*	4½ *114*	7⅛ *181*	3⅛ *79*	4	½ x 3 -	6 *2.7*
4 *100*	4.500 *114.3*	5¾ *146*	8½ *216*	3¾ *95*	4	½ x 3 -	8.5 *3.9*
6 *150*	6.625 *168.3*	8 *203*	11¼ *286*	3¾ *95*	4	⅝ x 3½ -	12.5 *5.7*
8 *200*	8.625 *219.1*	10½ *267*	13⅝ *346*	4¼ *108*	4	⅝ x 3½ -	20.5 *9.3*
10 *250*	10.750 *273.1*	12⅝ *321*	17 *432*	5 *127*	4	⅞ x 5½ -	34.5 *15.6*
12 *300*	12.750 *323.9*	14¾ *375*	19½ *495*	5 *127*	4	⅞ x 5½ -	42.5 *19.3*

HDPE PIPE DIMENSIONAL SPECIFICATIONS

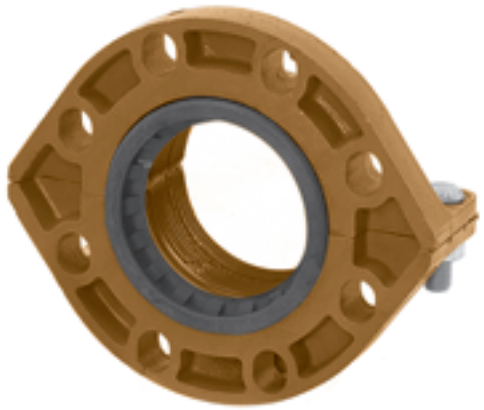
Nominal Size	O.D. Actual	Tolerance +/-	Out of Roundness Tolerance +/-	Pipe Wall Thickness						
				SDR 7.3	SDR 9	SDR 11	15.5	SDR 17	SDR 21	SDR 32.5
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	0.006 *0.15*	0.035 *0.89*	0.325 *8.3*	0.264 *6.7*	0.216 *5.5*	0.153 *3.9*	0.140 *3.6*	0.113 *2.9*	-
3 *80*	3.500 *88.9*	0.016 *0.41*	0.040 *1.02*	0.479 *12.2*	0.389 *9.9*	0.318 *8.1*	0.226 *5.7*	0.206 *5.2*	0.167 *4.2*	0.108 *2.7*
4 *100*	4.500 *114.3*	0.020 *0.51*	0.040 *1.02*	0.616 *15.6*	0.500 *12.7*	0.409 *10.4*	0.290 *7.4*	0.265 *6.7*	0.214 *5.4*	0.138 *3.5*
6 *150*	6.625 *168.3*	0.030 *0.76*	0.050 *1.27*	0.908 *23.1*	0.736 *18.7*	0.602 *15.3*	0.427 *10.8*	0.327 *8.3*	0.265 *6.7*	0.204 *5.2*
8 *200*	8.625 *219.1*	0.039 *0.99*	0.075 *1.91*	1.182 *30.0*	0.958 *24.3*	0.784 *19.9*	0.556 *14.1*	0.507 *12.9*	0.340 *8.6*	0.265 *6.7*
10 *250*	10.750 *273.1*	0.048 *1.22*	0.075 *1.91*	1.473 *37.4*	1.194 *30.3*	0.977 *24.8*	0.694 *17.6*	0.632 *16.1*	0.512 *13.0*	0.331 *8.4*
12 *300*	12.750 *323.9*	0.057 *1.45*	0.075 *1.91*	1.747 *44.4*	1.417 *36.0*	1.159 *29.4*	0.823 *20.9*	0.750 *19.1*	0.607 *15.4*	0.392 *10.0*

1. Per ASTM F-714
2. Per ASTM D-2447 and D-3035
3. For steel pipe requirements refer to Gruvlok Groove Specifications for steel pipe.

See Installation & Assembly directions on page 159.

FIG. 7312

HDPE Flange Adapter



The Gruvlok® Figure 7312 forms a cost-effective, easy-to-assemble mechanical joint between HDPE (high density polyethylene) pipe and fittings and ANSI Class 125 or Class 150 piping components without the need for costly fusion equipment. The flanged couplings are designed for wall thickness' SDR 32.5 to 7.3 HDPE pipe and fittings conforming to ASTM D-2447, D-3000, D-3035, or F-174. Each coupling uses two bolts to drive the sharply machined housing teeth into the outside of the pipe. The teeth are arranged in two banks, each bank consisting of at least three rows of spiral teeth that effectively grip the pipe, providing a secure mechanical joint with pressure capabilities exceeding that of the HDPE pipe itself. The banks of teeth are positioned away from the gasket, enhancing the sealing ability of the gaskets throughout the entire operating temperature range.

MATERIAL SPECIFICATIONS

HOUSING:
Ductile Iron conforming to ASTM A-536, Grade 65-45-12

COATING:
Rust inhibiting paint – color: orange
Other Colors Available (IE: RAL3000 and RAL9000)
For other Coating requirements contact a Gruvlok Representative.

ANSI BOLTS & HEAVY HEX NUTS:
Heat treated, zinc electroplated, carbon steel oval-neck track bolts conforming to ASTM A-183

Zinc electroplated carbon steel heavy hex nuts conforming to ASTM A-563.

GASKETS: Properties in accordance with ASTM D-2000

Grade E EPDM (Green color code) –
Service Temperature Range: -30°F to 230°F (-34°C to 110°C).
Recommended for water service, dilute acids, alkaline solutions, oil free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade T Nitrile (Orange color code) –
Service Temperature Range: -20°F to 180°F (-29°C to 82°C).
Recommended for petroleum applications, air with oil vapor, vegetable and mineral oils.
NOT FOR USE WITH HOT WATER OR HOT AIR.

For specific chemical applications, reference the Gruvlok Gasket Recommendations section of the Gruvlok catalog.

WARNING:

1. Gruvlok products for HDPE pipe must be installed using Gruvlok Xtreme™ Temperature Lubricant.
2. The gasket temperature rating may exceed the manufacturer temperature rating for the HDPE pipe. Consult the HDPE pipe manufacturer for the temperature and pressure ratings.

FIG. 7312

HDPE Flange Adapter

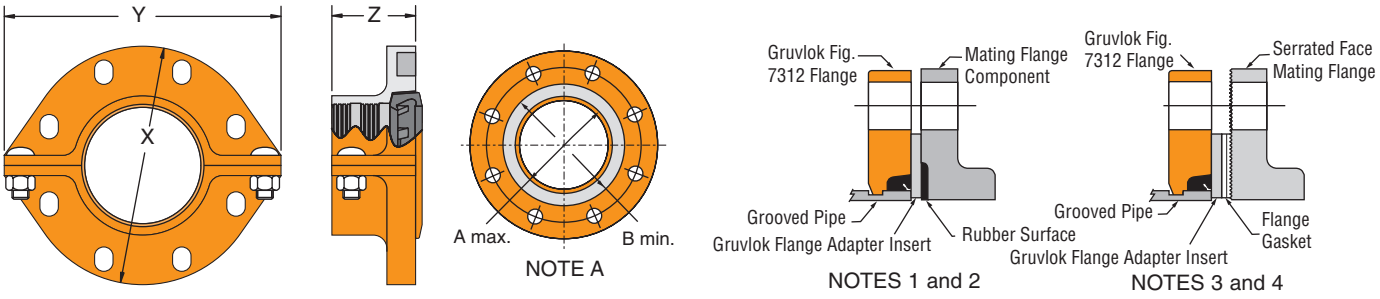


Figure 7312 HDPE Flange Adapter

Nominal Size	O.D.	Flange Dimensions			Sealing Surface		Latch Bolt		Mating Flange Bolts		Approx. Wt. Ea.
		X	Y	Z	A Max	B Min.	Qty.	Size	Qty.	Size	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*		*In./mm*	*Lbs./Kg*
4	4.500	9	10 3/8	3 1/8	4 1/2	5 3/4	2	5/8 x 1 5/8	8	5/8 x 3	15
100	*114.3*	*229*	*264*	*79*	*114*	*146*					*6.8*
6	6.625	11 1/4	12 3/8	3 7/8	6 5/8	7 3/4	2	5/8 x 1 5/8	8	3/4 x 3 1/2	22
150	*168.3*	*286*	*314*	*98*	*168*	*197*					*10.0*
8	8.625	13 1/2	14 7/8	3 1/2	8 5/8	10 1/4	2	3/4 x 2	8	3/4 x 3 1/2	26
200	*219.1*	*343*	*378*	*89*	*219*	*260*					*12.7*

A. The sealing surfaces A Max. to B Min. of the mating flange must be free from gouges, undulations and deformities of any type to ensure proper sealing of gasket.

B. Gruvlok Flanges are to be assembled on butterfly valves so as not to interfere with actuator or handle operation.

C. Do not use Gruvlok Flanges within 90 degrees of one another on standard fittings because the outside dimensions may cause interference.

D. Gruvlok Flanges should not be used as anchor points for tierods across non-restrained joints.

E. Fig. 7312 Gruvlok Flange sealing gaskets require a hard flat surface for adequate sealing. The use of a Gruvlok Flange Adapter Insert is required for applications against rubber faced valves or other equipment. The Gruvlok Flange Adapter Insert is installed between the Gruvlok Flange sealing gasket and the mating flange or surface to provide a good sealing surface area.

F. Gruvlok Flanges are not recommended for use against formed rubber flanges.

HDPE Pipe Dimensional Specifications

Nominal Size	O.D. Actual	Tolerance +/-	Out of Roundness Tolerance +/-	Pipe Wall Thickness						
				SDR 7.3	SDR 9	SDR 11	15.5	SDR 17	SDR 21	SDR 32.5
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
4	4.500	0.020	0.040	0.616	0.500	0.409	0.290	0.265	0.214	0.138
100	*114.3*	*0.51*	*1.02*	*15.6*	*12.7*	*10.4*	*7.4*	*6.7*	*5.4*	*3.5*
6	6.625	0.030	0.050	0.908	0.736	0.602	0.427	0.327	0.265	0.204
150	*168.3*	*0.76*	*1.27*	*23.1*	*18.7*	*15.3*	*10.8*	*8.3*	*6.7*	*5.2*
8	8.625	0.039	0.075	1.182	0.958	0.784	0.556	0.507	0.340	0.265
200	*219.1*	*0.99*	*1.91*	*30.0*	*24.3*	*19.9*	*14.1*	*12.9*	*8.6*	*6.7*

1. Per ASTM F-714

2. Per ASTM D-2447 and D-3035

See Installation & Assembly directions on page 160.

APPLICATIONS WHICH REQUIRE A GRUVLOK® FLANGE ADAPTER INSERT:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok Flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard fullfaced flange gasket is installed against the serrated flange face, and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

SOCK-IT® PIPING METHOD FITTINGS

The Gruvlok® Sock-It® Piping Method provides a quick, secure and reliable method of joining plain-end steel pipe. Several Sock-It configurations are available: tees with NPT outlets, reducing run tees with NPT outlets, straight couplings, 90 elbows, straight tees and reducing elbows. Pressure energized elastromeric gaskets provide the Sock-It with a leak-tight seal. Specially designed lock bolts secure the pipe in the Sock-It Fitting, providing a fast, dependable way of joining small diameter plain-end pipe.

Working pressure ratings shown are for reference only and are based on schedule 40 pipe. For the latest UL/ULC Listed and FM approved pressure ratings versus pipe schedule see www.anvilintl.com or contact your local Gruvlok Sales Representative.

See Installation & Assembly directions on page 161.

FITTING SIZE

Nominal Size	O.D.
In./DN(mm)	*In./mm*
½ *15*	0.840 *21.3*
¾ *20*	1.050 *26.7*
1 *25*	1.315 *33.7*
1¼ *32*	1.660 *42.4*

Nominal Size	O.D.
In./DN(mm)	*In./mm*
1½ *40*	1.900 *48.3*
2 *50*	2.375 *60.3*
2½ *65*	2.875 *73.0*

The Fitting Size Chart is used to determine the O.D. of the pipe that the fittings is to be used with. Gruvlok Fittings are identified by either the Nominal size in inches or the Pipe O.D. in mm.

UL FM ULC
APPROVED
For listing/approval details contact your Gruvlok Representative.

NOTE: All Sock-It® fittings are UL/ULC Listed and FM Approved for 175 psi working pressure when used to join XL Pipe and Dyna-Flow Pipe.

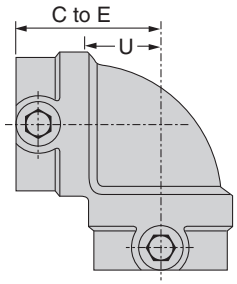
MATERIAL SPECIFICATIONS

HOUSING: Cast iron ASTM A126 CLASS A

BOLTS: Case hardened carbon steel, dichromate finish.

GASKETS: EPDM, as specified in accordance with ASTM D2000

FIG. 7100 - 90° Elbow (Sock-It® x Sock-It®)



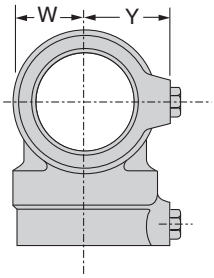


FIGURE 7100 SOCK-IT® ELBOW (S x S)

Nominal Size	O.D.	Max. Working Pressure	Dimensions				Approx. Wt. Ea.
			Center To End	U*	W	Y	
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.7*	300 *20.7*	2 5/16 *59*	7/8 *22*	1 1/16 *27*	1 3/4 *44*	1.9 *0.9*
1¼ *32*	1.660 *42.4*	300 *20.7*	2 7/16 *62*	1 *25*	1¼ *32*	1 13/16 *46*	2.3 *1.0*
1½ *40*	1.900 *48.3*	300 *20.7*	2 5/8 *67*	1 1/8 *29*	1 3/8 *35*	1 15/16 *49*	2.7 *1.2*
2 *50*	2.375 *60.3*	250 *17.2*	3¼ *83*	1 9/16 *40*	1 5/8 *41*	2 3/16 *56*	4.0 *1.8*

* "U" - Run take-out dimension.

SOCK-IT® PIPING METHOD FITTINGS

FIG. 7101 - 90° Reducing Elbow (Sock-It® x NPT)

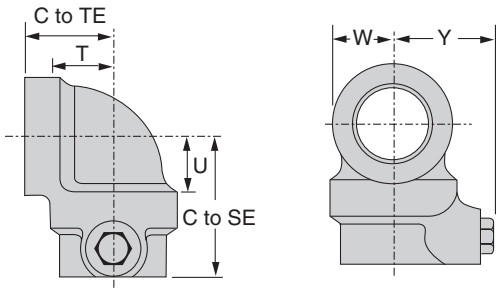


FIGURE 7101 SOCK-IT® REDUCING ELBOW (S x NPT)

Nominal Size	Max. Working Pressure	Dimensions						Approx. Wt. Ea.
		Center to TE	Center To SE	U*	T**	W	Y	
In./DN(mm)	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 x ½	300	1 7/16	2 5/16	7/8	1	1 1/16	1 11/16	1.7
25 x 15	*20.7*	*37*	*59*	*22*	*25*	*27*	*43*	*0.8*
1 x ¾	300	1 7/16	2 5/16	7/8	7/8	1 1/16	1 11/16	1.6
25 x 20	*20.7*	*37*	*59*	*22*	*22*	*27*	*43*	*0.7*
1 x 1	300	1 7/16	2 5/16	7/8	7/8	1 1/16	1 11/16	1.5
25 x 25	*20.7*	*37*	*59*	*22*	*22*	*27*	*43*	*0.7*
1 1/4 x ½	300	1 9/16	2 1/2	11/16	1 1/8	1 1/4	1 13/16	2.2
32 x 15	*20.7*	*40*	*64*	*17*	*29*	*32*	*46*	*1.0*
1 1/4 x ¾	300	1 9/16	2 1/2	11/16	1	1 1/4	1 13/16	2.1
32 x 20	*20.7*	*40*	*64*	*17*	*25*	*32*	*46*	*1.0*
1 1/4 x 1	300	1 9/16	2 1/2	11/16	1	1 1/4	1 13/16	2
32 x 25	*20.7*	*40*	*64*	*17*	*25*	*32*	*46*	*0.9*
1 1/2 x ½	300	1 11/16	2 1/2	1	1 1/4	1 3/8	1 15/16	2.5
40 x 15	*20.7*	*43*	*64*	*25*	*32*	*35*	*49*	*1.1*
1 1/2 x ¾	300	1 11/16	2 1/2	1	1 1/8	1 3/8	1 15/16	2.4
40 x 20	*20.7*	*43*	*64*	*25*	*29*	*35*	*49*	*1.1*
1 1/2 x 1	300	1 11/16	2 1/2	1	1 1/8	1 3/8	1 15/16	2.3
40 x 25	*20.7*	*43*	*64*	*25*	*29*	*35*	*49*	*1.0*

C to SE - Center to Sock-It® End * "U" - Take-out dimension, Sock-It® End.
C to TE - Center to Thread End ** "T" - Take-out dimension, Thread End.

FIG. 7103 - Straight Tee (Sock-It® x Sock-It® x Sock-It®)

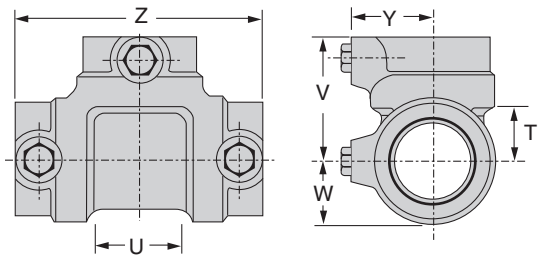


FIGURE 7103 SOCK-IT® STRAIGHT TEE (S x S x S)

Nominal Size	O.D.	Max. Working Pressure	Dimensions						Approx. Wt. Ea.
			**T	U*	V	W	Y	Z	
In./DN(mm)	*In./mm*	*PSI/bar*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1	1.315	300	13/16	1 5/8	2 1/4	1 1/16	1 11/16	4 1/2	2.3
25	*33.7*	*20.7*	*21*	*41*	*57*	*27*	*43*	*114*	*1.0*
1 1/4	1.660	300	1	2	2 7/16	1 1/4	1 13/16	4 7/8	2.9
32	*42.4*	*20.7*	*25*	*51*	*62*	*32*	*46*	*124*	*1.3*
1 1/2	1.900	300	11/16	2 1/8	2 9/16	1 3/8	1 15/16	5 1/8	3.4
40	*48.3*	*20.7*	*17*	*54*	*65*	*35*	*49*	*130*	*1.5*
2	2.375	250	15/16	2 5/8	3	1 11/16	2 3/16	6	5.6
50	*60.3*	*17.2*	*23*	*67*	*76*	*43*	*56*	*152*	*2.5*

* "U" - Run take-out dimension.
** "T" - Outlet take-out dimension.

SOCK-IT® PIPING METHOD FITTINGS

FIG. 7105 - Reducing Outlet Tee (Sock-It® x Sock-It® x NPT)

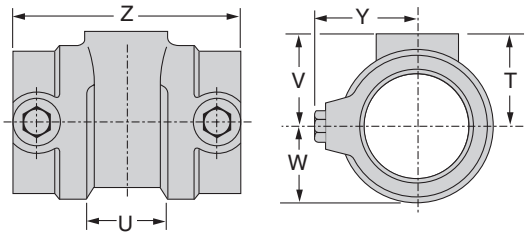


FIGURE 7105 SOCK-IT® REDUCING OUTLET TEE (S x S x NPT)

Nominal Size	Max. Working Pressure	Dimensions						Approx. Wt. Ea.
		**T	U*	V	W	Y	Z	
In./DN(mm)	PSI/bar	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
1 x 1 x ½ 25 x 25 x 15	300 20.7	1 25	1⅜ 35	1 7/16 37	1 1/16 27	1 11/16 43	4¼ 108	2.0 0.9
1 x 1 x ¾ 25 x 25 x 20	300 20.7	⅞ 22	1⅜ 35	1 7/16 37	1 1/16 27	1 11/16 43	4¼ 108	1.9 0.9
1 x 1 x 1 25 x 25 x 25	300 20.7	⅞ 22	1⅜ 35	1 7/16 37	1 1/16 27	1 11/16 43	4¼ 108	1.9 0.9
1¼ x 1¼ x ½ 32 x 32 x 15	300 20.7	1⅛ 29	1⅜ 35	1⅝ 41	1¼ 32	1 13/16 46	4¼ 108	2.2 1.0
1¼ x 1¼ x ¾ 32 x 32 x 20	300 20.7	1 25	1⅜ 35	1⅝ 41	1¼ 32	1 13/16 46	4¼ 108	2.2 1.0
1¼ x 1¼ x 1 32 x 32 x 25	300 20.7	1 25	1⅜ 35	1⅝ 41	1¼ 32	1 13/16 46	4¼ 108	2.0 0.9
1½ x 1½ x ½ 40 x 40 x 15	300 20.7	1¼ 32	1⅜ 35	1¾ 44	1⅜ 35	1 15/16 49	4⅜ 111	2.7 1.2
1½ x 1½ x ¾ 40 x 40 x 20	300 20.7	1⅛ 29	1⅜ 35	1¾ 44	1⅜ 35	1 15/16 49	4⅜ 111	2.6 1.2
1½ x 1½ x 1 40 x 40 x 25	300 20.7	1⅛ 29	1⅜ 35	1¾ 44	1⅜ 35	1 15/16 49	4⅜ 111	2.5 1.1
2 x 2 x ½ 50 x 50 x 15	250 17.2	1½ 38	1⅜ 35	1 15/16 49	1⅝ 41	2 3/16 56	4¾ 121	3.5 1.6
2 x 2 x ¾ 50 x 50 x 20	250 17.2	1⅜ 35	1⅜ 35	1 15/16 49	1⅝ 41	2 3/16 56	4¾ 121	3.4 1.5
2 x 2 x 1 50 x 50 x 25	250 17.2	1⅜ 35	1⅜ 35	1 15/16 49	1⅝ 41	2 3/16 56	4¾ 121	3.3 1.5
2½ x 2½ x ¾ 65 x 65 x 20	175 12.1	1½ 38	1⅜ 35	2⅛ 54	1 15/16 49	2 7/16 62	4¾ 121	5.2 2.4
2½ x 2½ x 1 65 x 65 x 25	175 12.1	1½ 38	1⅜ 35	2⅛ 54	1 15/16 49	2 7/16 62	4¾ 121	5.2 2.4

* "U" - Run take-out dimension. ** "T" - Outlet take-out dimension.

FIG. 7106 - Reducing Tee (Sock-It® x Sock-It® x NPT)

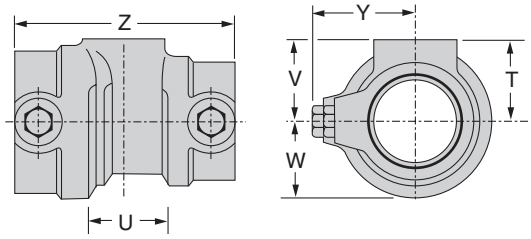


FIGURE 7106 SOCK-IT® REDUCING TEE (S x S x NPT)

Nominal Size	Max. Working Pressure	Dimensions						Approx. Wt. Ea.
		**T	U*	V	W	Y	Z	
In./DN(mm)	PSI/bar	In./mm	In./mm	In./mm	In./mm	In./mm	In./mm	Lbs./Kg
1¼ x 1 x ½ 32 x 25 x 15	300 2.1	1 25	1⅜ 35	1 7/16 37	1¼ 32	1 13/16 46	4¼ 108	2.1 1.0
1¼ x 1 x ¾ 32 x 25 x 20	300 20.7	⅞ 22	1⅜ 35	1 7/16 37	1¼ 32	1 13/16 46	4¼ 108	2.1 1.0
1¼ x 1 x 1 32 x 25 x 25	300 20.7	⅞ 22	1⅜ 35	1 7/16 37	1¼ 32	1 13/16 46	4¼ 108	2.0 0.9
1½ x 1¼ x ½ 40 x 32 x 15	300 20.7	1⅛ 29	1⅜ 35	1 9/16 40	1⅜ 35	1 15/16 49	4⅜ 111	2.5 1.1
1½ x 1¼ x ¾ 40 x 32 x 20	300 20.7	1 25	1⅜ 35	1 9/16 40	1⅜ 35	1 15/16 49	4⅜ 111	2.4 1.1
1½ x 1¼ x 1 40 x 32 x 25	300 20.7	1 25	1⅜ 35	1 9/16 40	1⅜ 35	1 15/16 49	4⅜ 111	2.2 1.0
2 x 1½ x ½ 50 x 40 x 15	250 17.2	1¼ 32	1⅜ 35	1¾ 44	1⅝ 41	2 3/16 56	4 9/16 116	3.2 1.5
2 x 1½ x ¾ 50 x 40 x 20	250 17.2	1⅛ 29	1⅜ 35	1¾ 44	1⅝ 41	2 3/16 56	4 9/16 116	3.1 1.4
2 x 1½ x 1 50 x 40 x 25	250 17.2	1⅛ 29	1⅜ 35	1¾ 44	1⅝ 41	2 3/16 56	4 9/16 116	3.0 1.4

* "U" - Run take-out dimension. ** "T" - Outlet take-out dimension.

SOCK-IT® PIPING METHOD FITTINGS

FIG. 7107 - Coupling (Sock-It® x Sock-It®)

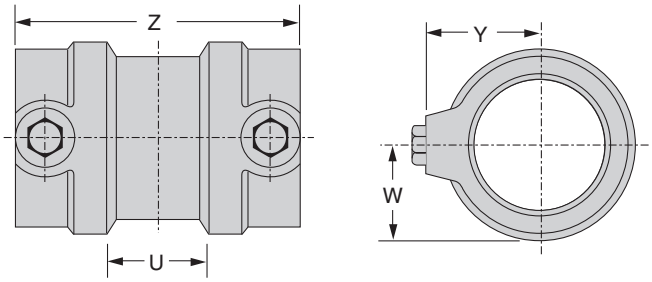


FIGURE 7107 SOCK-IT® COUPLING (S x S)							
Nominal Size	O.D.	Max. Working Pressure	Dimensions				Approx. Wt. Ea.
			U*	W	Y	Z	
In./DN(mm)	*In./mm*	*PSI/bar*	*n./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1 *25*	1.315 *33.7*	300 *20.7*	1/4 *6*	11/16 *17*	1 11/16 *43*	3 1/8 *79*	1.7 *0.8*
1 1/4 *32*	1.660 *42.4*	300 *20.7*	1/4 *6*	1 1/4 *32*	1 13/16 *46*	3 1/8 *79*	1.9 *0.9*
1 1/2 *40*	1.900 *48.3*	300 *20.7*	1/4 *6*	1 3/8 *35*	1 15/16 *49*	3 1/4 *83*	2.1 *1.0*
2 *50*	2.375 *60.3*	250 *17.2*	1/4 *6*	1 5/8 *41*	2 3/16 *56*	3 5/8 *92*	2.9 *1.3*

* "U" - Run take-out dimension.

FIG. 7400SS

Rigidlite® Coupling

The Gruvlok Figure 7400SS coupling is available in 1¼" – 8" sizes. The standard material is ASTM A743 CF8M (Type 316) cast stainless steel which is ideal for corrosive environments.

Any Gruvlok gasket material may be utilized in the 7400SS coupling for a broad array of applications. Gasket properties are as designated in accordance with ASTM D2000. The 7400SS is provided with ASTM A193 B8M bolts and ASTM A194 Grade 8M nuts.

MATERIAL SPECIFICATIONS

STAINLESS STEEL BOLTS & NUTS:
Hex head stainless steel bolts, Type 316 per ASTM a 193 Grade B8M class 1 and heavy hex stainless steel nuts, Type 316 per ASTM A 194 Grade 8M class 1. Contact a Gruvlok Representative for more information.

HOUSING:
Cast Stainless Steel (Type 316) - ASTM A743 CF8M

GASKETS: Materials
Properties as designated in accordance with ASTM D2000

Grade "E" EPDM (Green color code) NSF-61 Certified
-40°F to 230°F (Service Temperature Range)(-40°C to 110°C)
Recommended for water service, diluted acids, alkalies solutions, oil-free air and many chemical services.
NOT FOR USE IN PETROLEUM APPLICATIONS.

Grade "T" Nitrile (Orange color code)
-20°F to 180°F (Service Temperature Range)(-29°C to 82°C)
Recommended for petrolium applications. air with oil vapors and vegetable and mineral oils.
NOT FOR USE IN HOT WATER OR HOT AIR

Grade "O" Fluoro-Elastomer (Blue color code)
-20°F to 300°F (Service Temperature Range)(-29°C to 149°C)
Recommended for high temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated hydrocarbons and lubricants

Grade "L" Silicone (Red color code)
-40°F to 350°F (Service Temperature Range)(-40°C to 177°C)
Recommended for dry, hot air and some high temperature chemical services

GASKET TYPE:
Standard C Style
Flush Gap (1¼" – 8")

LUBRICATION:
Standard Gruvlok
Gruvlok Xtreme™ (Do Not use with Grade "L")

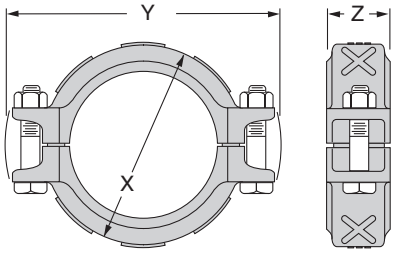


FIGURE 7400SS - RIGIDLITE STAINLESS STEEL COUPLING

Nominal Size	O.D.	Max. Wk. Pressure†	Max. End Load†	Range of Pipe End Separation	Coupling Dimensions			Coupling Bolts* Size	Approx. Wt. Ea.
					X	Y	Z		
In./mm	*In./mm*	*PSI/bar*	*Lbs./kN*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
1¼ *32*	1.66 *42.4*	275 *19.0*	595 *2.65*	0-⅛ *0-3.2*	2⅞ *73*	4⅛ *105*	1¾ *44*	⅜ x 2¼ *M10 x 57*	1.6 *0.7*
1½ *40*	1.900 *48.3*	275 *19.0*	780 *3.47*	0-⅛ *0-3.2*	3⅛ *79*	4⅝ *117*	1¾ *44*	⅜ x 2¼ *M10 x 57*	1.7 *0.8*
2 *50*	2.375 *60.3*	275 *19.0*	1,218 *5.42*	0-⅛ *0-3.2*	3⅝ *92*	5⅜ *137*	1¾ *45*	⅜ x 2¼ *M10 x 57*	2.1 *1.0*
2½ *65*	2.875 *73.0*	275 *19.0*	1,785 *7.44*	0-⅛ *0-3.2*	4⅛ *105*	5⅞ *149*	1¾ *44*	⅜ x 2¼ *M10 x 57*	2.3 *1.0*
3 *80*	3.500 *88.9*	275 *19.0*	2,646 *11.77*	0-⅛ *0-3.2*	4⅝ *117*	6⅝ *168*	1¾ *44*	½ x 2¾ *M12 x 76*	3.1 *1.4*
4 *100*	4.500 *114.3*	275 *19.0*	4,374 *19.46*	0-¼ *0-6.4*	6 *152*	7¾ *197*	1⅞ *48*	½ x 2¾ *M12 x 76*	4.4 *2.0*
6 *150*	6.625 *168.3*	275 *19.0*	9,480 *42.17*	0-¼ *0-6.4*	8⅛ *206*	11⅛ *283*	2 *51*	½ x 3 *M12 x 76*	7.8 *3.5*
8 *200*	8.625 *219.1*	275 *19.0*	16,067 *71.47*	0-¼ *0-6.4*	10⅜ *264*	13⅝ *346*	2⅜ *60*	½ x 3 *M12 x 76*	13.2 *6.0*

* All bolts are hex head design Type 316 Grade B8M Class 2 stainless steel to ASTM A193, with Type 316 Grade 8M stainless steel heavy hex nuts conforming to ASTM A194.

† Ratings apply when used with Schedule 40 ASTM A312 Type 304 stainless steel pipe for all sizes. Refer to ratings chart for additional data.

CAUTION: Contact your local Gruvlok representative for corrosive application environments.

No Coatings or zinc options.

SERIES 7500 SS

Grooved-End Ball Valve

The Anvil Series 7500 Stainless Steel Grooved-End Ball Valve line consists of 2" to 6" standard port two piece design. Diverter valves feature full port configurations.

The all stainless steel valve incorporates additional features for more demanding applications. These features include standard reinforced PTFE seats, live loaded PTFE chevron stem seals, and lock-out provisions for 2" - 4". Gear operator standard for 6" valves

The 7500 stainless steel grooved-end ball valve is rated to 720 psig (50 bar) CWP.

MATERIALS SPECIFICATIONS

BODY: Stainless Steel ASTM A351 Grade CF8M

ENDPLATE: Stainless Steel ASTM A351 Grade CF8M

BALL: Stainless Steel ASTM A351 Grade CF8M

STEM: 316 Stainless Steel

THRUST WASHER: RTFE

STEM SEAL: PTFE Chevron

HANDLE: Carbon Steel, Zinc Plated

HANDLE NUT: 300 Series Stainless Steel

SEAT: RTFE

BODY SEAL: Flouroelastomer

LOCK PLATE: 300 Series Stainless Steel

LOCK STOP: 300 Series Stainless Steel

FOLLOWER: 300 Series Stainless Steel

PACKING NUT: 300 Series Stainless Steel

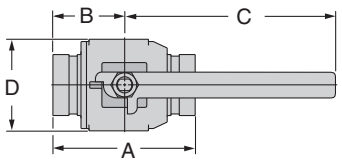
BELLEVILLE WASHER: 17-7 Stainless Steel

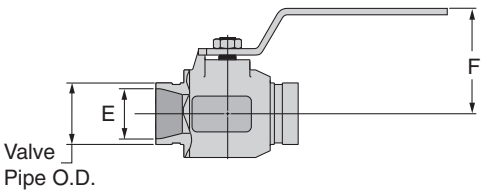
SERIES 7500 SS GROOVED END BALL VALVES (ORDERING INFORMATION)

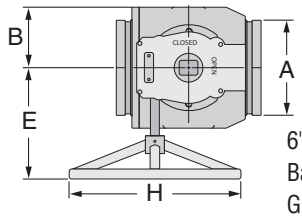
Sample Part Number 4" GS-7522-2 —>	4"	G	S -	75	2	2 -	2
	Size	**Configuration**	**Body/End Material**	**Series**	**Ball and Stem Material**	**Seat/Seals**	**Operator**
	2" - 6"	G - 2-Way Grooved End	S - Stainless Steel ASTM A351 Grade CF8M	75 - 7500	2 -Stainless Steel - 316	2 - RTFE/ Flouroelastomer	2- 2 Position Locking Handle
		F - 3-Way Diverter Grooved End Full Port (2")				Special Requirements	3- Bare Stem
						X - Write on Order	4- Gear Operator (6" Valve Only)

SERIES 7500 SS

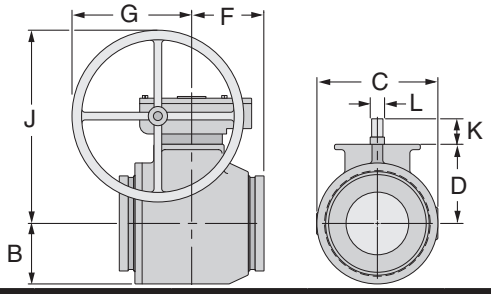
Grooved-End Ball Valve







6" - 7500
Ball Valve with
Gear Actuator



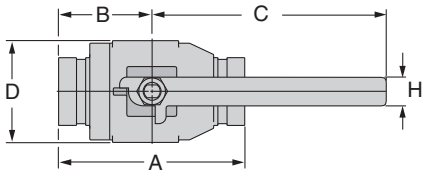
7500 SS Ball Valve

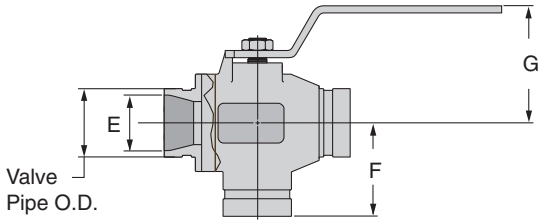
Size ANSI	O.D.	Dimensions							Approx. Wt. Ea.
		A	B	C	D	E	F	Cv	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*Lbs./Kg*
2 *50*	2.375 *60.3*	5 1/2 *140*	2 3/4 *70*	8 1/4 *209*	3 13/16 *81*	1 15/16 *49*	4 1/8 *105*	165	8 *3.6*
3 *80*	3.500 *88.9*	6 3/4 *171*	3 3/8 *85*	10 *254*	4 13/16 *122*	2 7/8 *74*	4 13/16 *121*	310	18 *8.2*
4 *100*	4.500 *114.3*	8 1/4 *210*	4 1/8 *105*	16 *406*	6 5/16 *176*	3 13/16 *97*	6 *152*	815	38 *17.2*
6 * *150*	6.625 *168.3*	10 1/8 *257*	5 1/16 *128*	28 *711*	8 7/16 *215*	5 11/16 *144*	7 5/8 *194*	1500	106 *48.1*

* Bare Stem

7500 SS Ball Valve With Gear Actuator

Size ANSI	O.D.	Dimensions											Approx. Wt. Ea.
		A	B	C	D	E	F	G	H	J	K	L	
In./DN(mm)	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*	*Lbs./Kg*
6 *150*	6.625 *168.3*	6 5/8 *168.7*	4 1/4 *107.4*	8 7/16 *214.6*	5 1/2 *140.5*	10 1/4 *260.4*	5 1/16 *128.0*	8 1/8 *206.4*	12 *304.8*	13 1/2 *342.9*	1 13/16 *45.2*	1 *25.4*	9.6 *4.4*





7500 SS Three-Way Diverter Valves

Size ANSI	O.D.	Dimensions								Approx. Wt. Ea.
		A	B	C	D	E	F	G	Cv	
In./DN	*In/mm*	*In/mm*	*In/mm*	*In/mm*	*In/mm*	*In/mm*	*In/mm*	*In/mm*		*LB/KG*
2 FP *50*	2.375 FP *60.3*	6 1/2 *165*	3 1/4 *83*	10 3/16 *258*	4 3/16 *106*	2 *51*	3 1/4 *83*	5 3/8 *137*	135	14.2 *31.2*

Note: Contact your Gruvlok representative for actuator mounting details.
Full port only.

GRUVLOK STAINLESS STEEL FITTINGS

Gruvlok® Stainless Steel Fittings are full flow design with ends grooved to Gruvlok specifications. Installation is quick and easy with Gruvlok Figure 7400SS couplings, or other Gruvlok products.

Size								
	1¼"	1½"	2"	2½"	3"	4"	6"	8"
Schedule 10S								
Pressure	275	275	275	275	275	275	250	200
End Load	595	780	1,218	1,785	2,646	4,374	8,618	11,685

PRESSURE RATINGS FOR STAINLESS STEEL PIPE & FITTINGS

Schedule 10S pipe are based upon the use of roll-groover roll sets that have been specifically designed for use on Schedule 10S stainless steel pipe. Using roll sets that were designed for roll grooving carbon steel pipe may significantly reduce the pressure ratings that can be obtained. Consult Gruvlok for applications that involve roll grooving 10" or larger stainless steel pipe or that involves Schedule 5S stainless steel pipe.

FIG. A7050SS

90° Stainless Steel Elbow

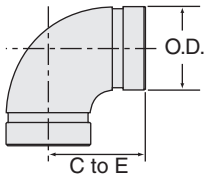


Figure 7050SS 90° Stainless Steel Elbow		
Nominal Size	Center to End *	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	2 13/16 *71.44*	0.8 *0.4*
1½ *40*	3 *76.20*	1.0 *0.5*
2 *50*	3 11/16 *93.66*	1.3 *0.6*
2½ *65*	4 5/16 *109.54*	1.8 *0.8*
3 *80*	5 1/16 *128.59*	2.9 *1.3*
4 *100*	6 5/16 *160.34*	4.6 *2.1*
5 *125*	7½ *190.50*	8.3 *3.7*
6 *150*	9 *228.60*	11.2 *5.1*
8 *200*	12 *304.80*	22.7 *10.3*
10 *250*	15 *381.00*	35.3 *16.0*
12 *300*	18 *457.20*	56.9 *25.8*

NOTE: Fabricated fittings weights are based on Schedule 10 pipe.

FIG. A7051SS

45° Stainless Steel Elbow

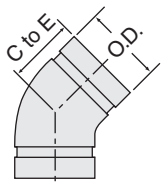


Figure 7051SS 45° Stainless Steel Elbow		
Nominal Size	Center to End *	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	1¾ *44.45*	0.4 *0.2*
1½ *40*	1 7/8 *47.63*	0.5 *0.2*
2 *50*	2⅛ *53.98*	0.7 *0.3*
2½ *65*	2⅜ *60.33*	0.9 *0.4*
3 *80*	2 13/16 *71.44*	1.5 *0.7*
4 *100*	3 5/16 *84.14*	2.4 *1.1*
5 *125*	3⅞ *98.43*	4.4 *2.0*
6 *150*	4½ *114.30*	6.0 *2.7*
8 *200*	5⅞ *149.23*	11.7 *5.3*
10 *250*	7⅛ *180.98*	17.6 *8.0*
12 *300*	8⅝ *219.08*	27.6 *12.5*

NOTE: Fabricated fittings weights are based on Schedule 10 pipe.

FIG. A7060SS

Stainless Steel Tees

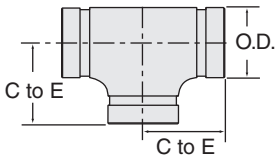


Figure 7060SS Stainless Steel Tee		
Nominal Size	Center to End *	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	2¾ *69.85*	1.1 *0.5*
1½ *40*	2 15/16 *74.61*	1.3 *0.6*
2 *50*	3 3/16 *80.96*	3.2 *1.5*
2½ *65*	3 11/16 *93.66*	4.4 *2.0*
3 *80*	4 *101.60*	5.8 *2.6*
4 *100*	4 15/16 *125.41*	8.6 *3.9*
5 *125*	5¾ *146.05*	14.5 *6.6*
6 *150*	6½ *165.10*	18.5 *8.4*
8 *200*	8 1/16 *204.79*	33.4 *15.1*
10 *250*	9½ *241.30*	35.3 *16.0*
12 *300*	11 *279.40*	52.7 *23.9*

NOTE: Fabricated fittings weights are based on Schedule 10 pipe.

FIG. A7074SS

Stainless Steel Caps

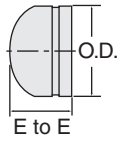


Figure 7074SS Stainless Steel Caps		
Nominal Size	End to End *	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1¼ *32*	1¾ *44.45*	0.4 *0.2*
1½ *40*	1¾ *44.45*	0.4 *0.2*
2 *50*	2 *50.80*	0.4 *0.2*
2½ *65*	2 3/16 *55.56*	0.9 *0.4*
3 *80*	2 9/16 *65.09*	1.1 *0.5*
4 *100*	2 15/16 *74.61*	1.5 *0.7*
5 *125*	3⅛ *79.38*	2.5 *1.1*
6 *150*	3 9/16 *90.49*	3.1 *1.4*
8 *200*	4 *101.60*	6.6 *3.0*
10 *250*	5 *127.00*	9.9 *4.5*
12 *300*	6 *152.40*	15.2 *6.9*

NOTE: Pressure and load ratings equal to or greater than Schedule 10S as listed above. Caps are all cast fittings.

* **NOTE:** Dimensions may differ from those shown above. Contact a Gruvlok Representative for more information.

GRUVLOK STAINLESS STEEL FITTINGS

FIG. A7061SS

Stainless Steel Reducing Tees

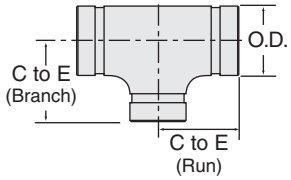


FIGURE 7061SS
STAINLESS STEEL REDUCING TEE

Nominal Size	Center to End (Run)	Center to End (Branch)	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*In./mm*	*Lbs./Kg*
1½ x 1¼ *40 x 32*	2 15/16 *74.61*	2¾ *69.85*	1.3 *0.6*
2 x 1¼ *50 x 32*	3 3/16 *80.96*	2 15/16 *74.61*	1.8 *0.8*
2 x 1½ *50 x 40*	3 3/16 *80.96*	3 1/16 *77.79*	1.8 *0.8*
2½ x 1½ *65 x 40*	3 11/16 *93.66*	3 5/16 *84.14*	2.7 *1.2*
2½ x 2 *65 x 50*	3 11/16 *93.66*	3 9/16 *90.49*	2.7 *1.2*
3 x 1½ *80 x 40*	4 *101.60*	3 9/16 *90.49*	3.1 *1.4*
3 x 2 *80 x 50*	4 *101.60*	3 11/16 *93.66*	5.1 *2.3*
3 x 2½ *80 x 65*	4 *101.60*	3 7/8 *98.43*	5.4 *2.4*
4 x 2 *100 x 50*	4 15/16 *125.41*	4 5/16 *109.54*	8.0 *3.6*
4 x 2½ *100 x 65*	4 15/16 *125.41*	4 5/8 *117.48*	5.3 *2.4*
4 x 3 *100 x 80*	4 15/16 *125.41*	4¾ *120.65*	8.6 *3.9*
6 x 3 *150 x 80*	6½ *165.10*	5 13/16 *147.64*	16.8 *7.6*
6 x 4 *150 x 100*	6⅛ *155.58*	6 *152.40*	16.8 *7.6*
8 x 4 *200 x 100*	8 1/16 *204.79*	7 3/16 *182.56*	29.7 *13.4*
8 x 6 *200 x 150*	8 1/16 *204.79*	7 11/16 *195.26*	33.4 *15.1*
10 x 6 *250 x 150*	9½ *241.30*	8 7/8 *225.43*	21.6 *9.8*
10 x 8 *250 x 200*	9½ *241.30*	9 1/16 *230.19*	32.2 *14.6*
12 x 8 *300 x 200*	11 *279.40*	10 1/16 *255.59*	47.2 *21.4*
12 x 10 *300 x 250*	11 *279.40*	10 9/16 *268.29*	49.2 *22.3*

NOTE: Fabricated fittings weights are based on Schedule 10 pipe. Additional sizes available. Contact a Gruvlok Representative for more information.

FIG. A7072SS

Stainless Steel Concentric Reducers

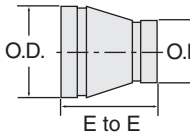


FIGURE 7072SS
STAINLESS STEEL CONCENTRIC REDUCERS

Nominal Size	End to End *	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
1½ x 1¼ *40 x 32*	3¾ *95.25*	0.4 *0.2*
2 x 1¼ *50 x 32*	4⅛ *104.78*	0.7 *0.3*
2 x 1½ *50 x 40*	4⅛ *104.78*	0.7 *0.3*
2½ x 1½ *65 x 40*	4 7/16 *112.71*	1.1 *0.5*
2½ x 2 *65 x 50*	4 7/16 *112.71*	1.1 *0.5*
3 x 1½ *80 x 40*	4¾ *120.65*	1.3 *0.6*
3 x 2 *80 x 50*	4¾ *120.65*	1.3 *0.6*
3 x 2½ *80 x 65*	4¾ *120.65*	1.3 *0.6*
4 x 2 *100 x 50*	5 5/16 *134.94*	1.8 *0.8*
4 x 2½ *100 x 65*	5 5/16 *134.94*	1.8 *0.8*
4 x 3 *100 x 80*	5 5/16 *134.94*	2.0 *0.9*
6 x 3 *150 x 80*	6¾ *171.45*	3.8 *1.7*
6 x 4 *150 x 100*	6¾ *171.45*	4.0 *1.8*
8 x 4 *200 x 100*	7 9/16 *192.09*	6.6 *3.0*
8 x 6 *200 x 150*	7 9/16 *192.09*	7.3 *3.3*
10 x 6 *250 x 150*	8 11/16 *220.66*	9.7 *4.4*
10 x 8 *250 x 200*	8 11/16 *220.66*	10.6 *4.8*
12 x 8 *300 x 200*	9 7/16 *239.71*	15.0 *6.8*
12 x 10 *300 x 250*	9 7/16 *239.71*	15.9 *7.2*

NOTE: Fabricated fittings weights are based on Schedule 10 pipe. Additional sizes available. Contact a Gruvlok Representative for more information.

FIG. A7084SS

Stainless Steel Flange Adapter

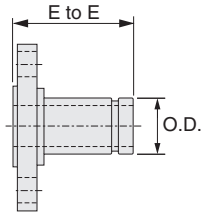


FIGURE 7084SS
STAINLESS STEEL FLANGE ADAPTER

Nominal Size	End to End *	Approx. Wt. Ea.
In./DN(mm)	*In./mm*	*Lbs./Kg*
2 *50*	3⅛ *79.38*	5.7 *2.6*
2½ *65*	3⅜ *85.73*	8.6 *3.9*
3 *80*	3⅜ *85.73*	9.7 *4.4*
4 *100*	3 9/16 *90.49*	14.6 *6.6*
5 *125*	3¾ *95.25*	17.5 *7.9*
6 *150*	3 15/16 *100.01*	19.4 *8.8*
8 *200*	4½ *114.30*	32.9 *14.9*
10 *250*	4¾ *120.65*	45.0 *20.4*
12 *300*	4¾ *120.65*	70.8 *32.1*

NOTE: Pressure and load ratings equal to or greater than Schedule 10S as listed above. Caps are all cast fittings.

*** NOTE:** Dimensions may differ from those shown above. Contact a Gruvlok Representative for more information.

MODEL 1007 & 3007

Roll Groovers

A. 1007 STANDARD EQUIPMENT - Roll Groover complete with groove and drive rolls for 2" - 12" steel pipe, one and one-half horsepower electric motor drive with foot switch. Two stage hydraulic hand pump, mounting base with footed support legs. Complete set-up and operating instructions; 2" - 6" rolls on tool, 8" - 12" rolls stored in box, and three depth gauges covering the range of 2" through 12" pipe are mounted on the tool.

Shipped in closed wood crate that can be used for storage or rental tool return.

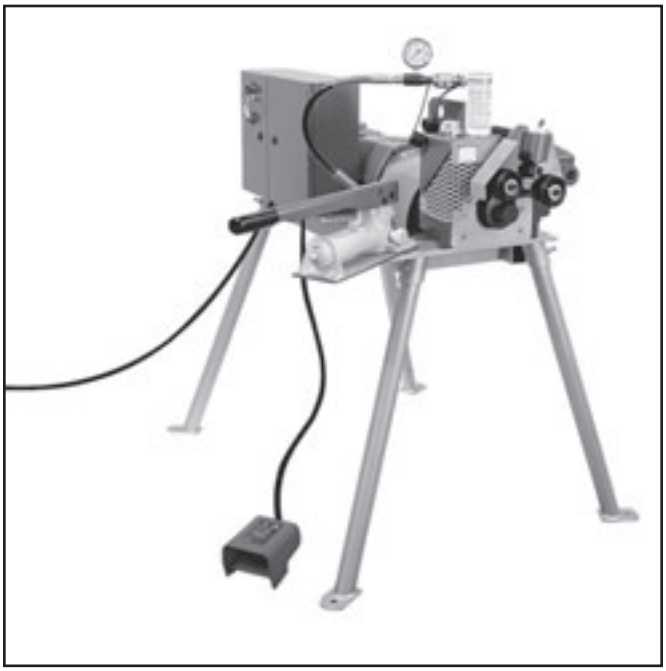
Shipping Weight: 620 lbs. (281 kg)

A. 3007 STANDARD EQUIPMENT – Roll Groover complete with groove and drive rolls for 2" - 12" steel pipe. Two stage hydraulic hand pump, mounting base with footed support legs for direct attachment to your Ridgid®* 300 Power Drive. Complete set-up and operating instructions; 2" - 6" rolls on tool; 8" - 12" rolls stored in box, and three depth gauges covering the range of 2" - 12" pipe are mounted on the tool. Required Ridgid® 300 Power Drive not included.

Shipped in closed wood crate that can be used for storage or rental tool return.

Shipping Weight: 330 lbs. (147 kg)

Model 1007 Roll Groovers



Model 3007 Roll Groovers

B. OPTIONAL EQUIPMENT

- 2"– 6" Gruvlok Advanced Copper Method Grooving Assembly with groove and drive rolls, M&L copper guide roll assembly, and a 2"–6" Universal Groove Diameter Gauge.
- 2"– 6" Type K Copper Guide Roll Assembly
- 3"– 6" Type DWV Copper Guide Roll Assembly
- 2"– 12" Schedule 10 Rolls: Consisting of 2"– 6" and 8" – 12" roll sets.
- 8" Gruvlok Advanced Copper Method Assembly with groove and drive roll, hydraulic copper guide roll unit suitable for K, L, M, and DWV tubing, and an 8" Universal Diameter Gauge.
- 14"– 16" Grooving Rolls (Model 1007 only)
- Optional 230 volt, 60Hz, 15 amp, single phase electrical panel with motor is available for the 1007 Roll Groover.

MODEL 1007 & 3007

Roll Groovers

C - GROOVER CAPABILITY

Groover Capability											
Pipe Material	**Pipe Size/Wall Thickness (Schedule)**										
In.	***2***	***2½***	***3***	***4***	***5***	***6***	***8***	***10***	***12***	***14***	***16***
DN(mm)	*50*	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*	*350*	*400*
Steel	Schedule 40									Std.	Std.
Stainless Steel	Schedule 40S									n/a	n/a
Copper								n/a	n/a	n/a	n/a

NOTES:

(1) All wall thickness shown are the maximum wall thickness for the indicated pipe material.

(2) Minimum wall thickness for each pipe materials and size is:

Steel: 2" - 12" – Sch. 10, 14" & 16" Standard Wall
Stainless Steel: 2" - 12" – Sch. 10S requires optional roller sets
Copper: 2" - 2½" – Type M
3" - 8" – Type DWV

(3) Contact a Gruvlok Representative for information on grooving alternate materials

NOTE: Some sizes may require optional equipment.

D - GROOVER TIMES

Model 1007 & Model 3007 Steel Pipe Grooving Times (min: sec.)										
Pipe Size (In./DN(mm)) – Sch. 40 (Std. Wall) Steel Pipe										
2	***2½***	***3***	***4***	***5***	***6***	***8***	***10***	***12***	***14***	***16***
50	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*	*350*	*400*
0:20	0:20	0:25	0:30	1:00	1:20	1:35	1:50	2:20	2:40	3:00

This chart shows approximate grooving times with the groover setup for the proper size and groove diameter and the pipe properly positioned on the groover. The times shown are average times from the start of rotation of the pipe in the grooving rolls to completed groove.

- **WIDE GROOVING RANGE—** 2" thru 16" standard wall & schedule 10 steel pipe, 2" thru 12" Schedule 10S and 40S Stainless Steel and 2" thru 8" copper tube type K, L, M, and DWV.
- **PIPE LENGTHS—**20' random schedule 40 (standard wall) to 5" groove by groove nipples. The shortest roll groove nipple capability in the industry; hands-clear operation.
- **HANDS CLEAR GROOVING OF PIPE AND NIPPLES—** Enhanced operator safety provided by outboard guide roll assembly.
- **ACCURATE, REPEATABLE-GROOVE DIAMETER CONTROL—** Simplified direct action design provides positive, repeatable, control for grooving carbon and stainless piping. For grooving copper, universal diameter gauge must be utilized.
- **FAST GROOVING TIMES—** Large capacity two-stage pump. Two-stage design saves time engaging pipe while providing smooth application of optimum grooving force with reduced operator effort.
- **BETTER CONTROL OF PIPE FLARE—** Outboard guide roll assembly registers pipe for proper orientation.
- **QUICK, EASY SETUP AND ROLL CHANGE**
- **RUGGED DESIGN REQUIRES ZERO MAINTENANCE—** Sealed bearings eliminate need for periodic maintenance.
- **USER FRIENDLY DESIGN—** Pump location is adjustable for operator comfort and safety.
- **EASE OF OPERATION—** High grooving forces obtained through use of larger capability ram requires less pump effort.
- **FOOT SWITCH POWER APPLICATION**
- **OPERATOR SAFE DESIGN**

MODEL 3006 & 3006C

Roll Groovers

The Gruvlok Model 3006 roll groover features a low maintenance quick roll change out design. Able to groove 2" - 12" steel pipe as well as 2" - 6" stainless steel. This machine is also compatible with the Gruvlok Advanced Copper Method and able to groove tube as small as 2" in diameter. Standard with each machine is the patented Gruvlok hands free nipple guide system. This one of a kind nipple guide system allows for the shortest nipple grooving in the business and is hands free for increased operator safety. A special hydraulic pump with a reduced height handle and pivoting location allow each operator to customize the machine for maximum comfort while grooving. Low cost, lightweight, user friendly, and reliable, the Model 3006 Roll Groover follows the quality Gruvlok tradition started with 1007/3007 models and takes the future of roll grooving one step further.

Gruvlok roll grooving technology is protected by U.S. Patents 5450738, 5570603, 5778715 and others pending.

- **MODEL 3006C—** Dedicated 2" - 6" copper roll groover sharing the same low maintenance quick roll change features of the 3006. A steel option extends the 3006C. A capability to include 2"- 12" steel pipe as well as 2" - 6" stainless steel.
- **WIDE GROOVING RANGE—**
  2" thru 8" schedule 40 (standard wall) steel pipe,
  10" (.188" Wall), 12" (.219" wall), and 2" thru 12" Sch. 10
  2" thru 6" Schedule 40S Stainless Steel Pipe, and
  2" thru 6" copper type K, L, M, and DWV.
- **PIPE LENGTHS—** 20' random schedule 40 (standard wall) to 5" groove by groove nipples. The shortest roll groove nipple capability in the industry: hands clear
- **HANDS-CLEAR GROOVING OF PIPE AND NIPPLES—** Enhanced operator safety provided by outboard guide roll assembly
- **ACCURATE, REPEATABLE GROOVE DIAMETER CONTROL—** Simplified direct action provided positive, repeatable control for grooving carbon and stainless piping. For grooving copper, universal diameter gauge must be utilized.
- **BETTER CONTROL OF PIPE FLARE—** Outboard guide roll assembly registers pipe for proper orientation.
- **QUICK, EASY SETUP AND ROLL CHANGE**
- **RUGGED DESIGN REQUIRES MINIMAL MAINTENANCE—** Only periodic application of grease via grease fittings required.
- **USER FRIENDLY DESIGN—** Pump has a special reduced height handle and adjustable location for operator comfort and safety.
- **EASE OF OPERATION—** High grooving forces obtained though use of large capacity ram requires less pump effort.

MODEL 3006 & 3006C

Roll Groovers

Technical Data – Model 3006

STANDARD EQUIPMENT:

Roll Groover complete with Adjustable Support Leg Assembly and roller sets for grooving 2"-6" and 8"-12" steel pipe, Steel Guide Roll Assembly, hydraulic pump with pressure gauge, and two depth adjustment gauges. This unit is designed for direct attachment to your Ridgid® 300 Power Drive. Complete with comprehensive setup, operating and troubleshooting instructions. Shipped in a reusable wooden storage crate. Approximate shipping weight: 225 Lbs. (102 kg)

Required Ridgid® 300 Power Drive not included.

OPTIONAL EQUIPMENT:

Copper Option Consisting of:

2" - 6" Copper Method Top and Bottom Rollers

Copper Guide Roll Assembly and 2" - 6" **Universal Diameter Gauge**

Note: The universal diameter gauge is part of the copper option or is available as a stand alone option

Technical Data – Model 3006C

STANDARD EQUIPMENT:

Roll Groover complete with Adjustable Support Leg Assembly and Copper Method roller set for grooving 2"-6" copper tube, Copper Guide Roll Assembly, hydraulic pump with pressure gauge, and 2"-6" Universal Diameter Gauge. This unit is designed for direct attachment to your Ridgid® 300 Power Drive. Complete with comprehensive setup, operating and troubleshooting instructions. Shipped in reusable wooden storage crate. Shipping weight: 215 lbs. (97 kg)

Required Ridgid® 300 Power Drive (not included).

OPTIONAL EQUIPMENT:

Steel Option -

2"–6" & 8"–12" Roller Sets

Steel Guide Roll Assembly and Two Depth Adjustment Gauges

GROOVER CAPABILITY

Groover Capability

Pipe Material	Pipe Size/Wall Thickness (Schedule)								
In.	*2*	*2½*	*3*	*4*	*5*	*6*	*8*	*10*	*12*
DN(mm)	*50*	*65*	*80*	*100*	*125*	*150*	*200*	*250*	*300*
Steel	Schedule 40							.188"	.219"
Stainless Steel	Schedule 40S						n/a	n/a	n/a
Copper	K, L, M & DWV						n/a	n/a	n/a

NOTES:

(1) All wall thickness shown are the maximum wall thickness for the indicated pipe material.

(2) Minimum wall thickness for each pipe materials and size is:

Steel: All sizes – Sch. 10
Stainless Steel: All sizes – Sch. 40S
Copper: 2", 2½" – Type M
3" - 6" – Type DWV

(3) Please contact a Gruvlok Representative for more information on grooving alternate materials & wall thickness.

GROOVER TIMES

Model 3006 & Model 3006C Steel Pipe Grooving Times (min: sec.)

Pipe Size (In./DN(mm))/Max Steel Pipe Wall Thickness							
2	*2½*	*3*	*4*	*6*	*8*	*10*	*12*
50	***65***	***80***	***100***	***150***	***200***	***250***	***300***
0:20	0:20	0:25	0:30	1:20	1:55	0:40	1:20

GROOVING TIMES: This chart shows approximate grooving times with the groover set-up for the proper size and groove diameter and the pipe properly positioned on the groover. The times shown are average times from the start of rotation of the pipe in the grooving rolls to completed groove.

COUPLING INSTALLATION & ASSEMBLY

Installation & Assembly

TABLE OF CONTENTS

The instructions are based on pipe grooved in accordance with Gruvlok® grooving specifications. Check pipe ends for proper groove dimensions and to assure that the pipe ends are free of indentations and projections which would prevent proper sealing.

ALWAYS USE A GRUVLOK® LUBRICANT FOR PROPER COUPLING ASSEMBLY. Thorough lubrication of the external surface of the gasket is essential to prevent pinching and possible damage to the gasket. For temperatures above 150° F (65.6° C) use Gruvlok Xtreme™ Lubricant and lubricate all gasket surfaces, internal and external. See Gruvlok Lubricants in the Technical Data section of the Gruvlok catalog for additional important information.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened. Caution: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

ANSI Specified Bolt Torque

Bolt Size	Wrench Size	Specified Bolt Torque *
In.	*In.*	*Ft.-Lbs*
3/8	11/16	30-45
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180
7/8	1 7/16	180-220
1	1 5/8	200-250
1 1/8	1 13/16	225-275
1 1/4	2	250-300

* Non-lubricated bolt torques

Metric Specified Bolt Torque

Bolt Size	Wrench Size	Specified Bolt Torque *
mm	*mm*	*N-M*
M10	16	40-60
M12	22	110-150
M16	24	135-175
M20	30	175-245
M22	34	245-300
M24	36	270-340

* Non-lubricated bolt torques

NOTE: Specified torques are to be used unless otherwise noted on Product Installation Instructions.

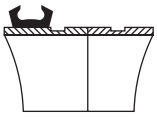
FIG. 7001

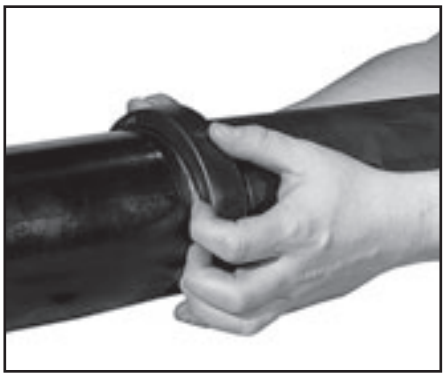
Standard Coupling

1 Check & lubricate gasket— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to outside and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 Gasket Installation— Slip the gasket over the pipe end making sure the gasket lip does not overhang the pipe end.

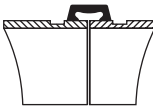
On couplings 10" and larger it may be easier to turn the gasket inside out- then lubricate and slide the gasket over the pipe end as shown.

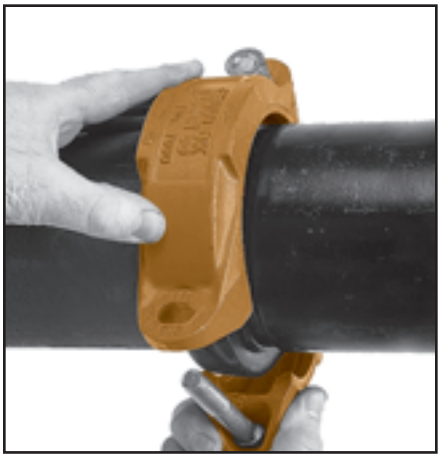




3 Alignment— After aligning the two pipe ends, pull the gasket into position centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

On couplings 10" and larger, flip or roll the gasket into centered position.





4 Housings— Place the coupling housing halves over the gasket making sure the housing keys engage the grooves. Insert bolts and turn nuts finger tight.

5 Tighten Nuts— Tighten the nuts alternately and equally to the specified bolt torque. The housing bolt pads must make metal-to-metal contact.

Uneven tightening may cause the gasket to pinch.

6 Assembly is completed— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

NOTE: The housings for sizes 16" and larger are cast in four or more segments.

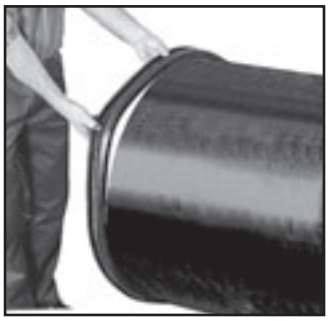
TO INSTALL: loosely pre-assemble the segments into two "Housing Halves" making sure that the alignment tang(s) and slot(s) on the bolt pad(s) are properly mated. Install the "Housing Halves" as shown in steps 4 & 5. The coupling is properly installed when all bolt pads are firmly together - Metal-to-Metal.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

FIG. 7011
Standard Coupling

1 Inspect the pipe ends making sure the criteria, in the Gruvlok Large Diameter Pipe Roll and Cut Groove Specifications, are met.



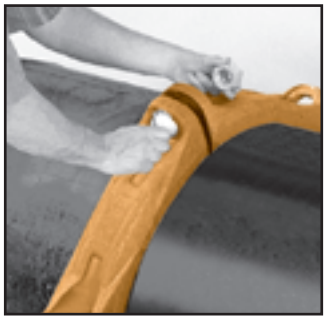
2 Turn the gasket inside out and slide the gasket completely over one of the pipe ends. Turning the gasket inside out will reduce the stretching necessary to put the gasket into position. Ideally, approximately 75% of the pipe's gasket-sealing surface, (Dimension A) should be visible when the gasket is in proper position. This will aid in step 4.

3 Lubricate the gasket sealing lips. The use of Gruvlok lubricants ensures compatibility between the lubricant and the gasket.

4 Pull the two pipes into contact aligning the pipe ends.

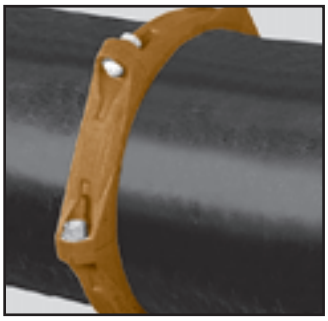
CAUTION: Be careful not to pinch fingers during this step. Working your way around the circumference of the pipe, flip the gasket toward the pipe end so that the proper side is facing out. The end of this procedure will result in the gasket snapping into place. Position the gasket centrally between the grooves of the two pipe ends.

5 Lubricate the exterior surface of the gasket. This helps prevent pinching of the gasket during assembly.



6 Secure the housings about the pipes making sure the coupling keys are engaged in the pipe end grooves. Hint: For horizontal assembly, place housing segment on top of the pipe to support the weight of the housing segment. Secure the adjacent housing with an oval neck track bolt and heavy hex nut and then rotate the secured housings, again balancing the weight of the housings on the top of the pipe. Continue this procedure for all segments.

7 Firmly torque each bolt. The specified minimum torque for each nut is 600 ft.-lbs. The specified maximum torque for each nut is 800 ft.-lbs.



8 Installation of the Figure 7011 Standard Coupling is completed.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

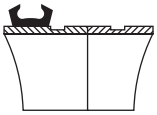
FIG. 7401

Rigidlok® Coupling

1 Check & lubricate gasket— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to outside and sealing lips of the gasket. Some applications require lubrication of the entire gasket surface. Be careful that foreign particles do not adhere to lubricated surfaces.

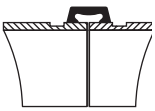
2 Gasket Installation— Slip the gasket over the pipe end making sure the gasket lip does not overhang the pipe end.

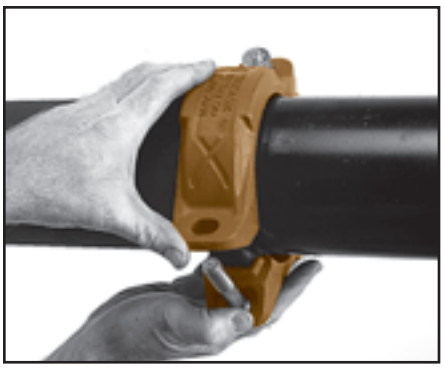
On couplings 10" and larger it may be easier to turn the gasket inside out-then lubricate and slide the gasket over the pipe end as shown.



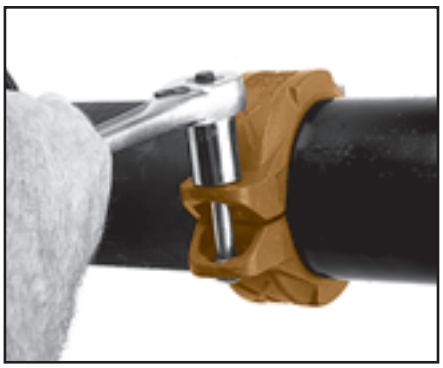
3 Alignment— After aligning the two pipe ends, pull the gasket into position centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

On couplings 10" and larger, flip or roll the gasket into centered position.



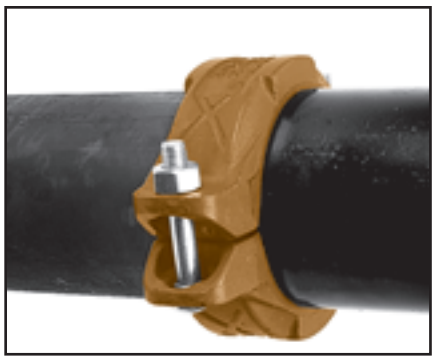


4 Housings— Remove one nut and bolt and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the tube grooves. Swing the other housing over the gasket and into the grooves on both tubes, making sure the tongue and recess of each housing is properly mated. Re-insert the bolt and run-up both nuts finger tight.



5 Tighten Nuts— Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced.

CAUTION: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.



6 Assembly is completed— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.

NOTE: Sizes 14" and larger are cast in multiple segments. To install the larger sizes align the tongue and pocket of the couplings appropriately and tighten the nuts alternately to the specified bolt torque. When properly assembled there will be a small equal gap between the adjacent bolt pads.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

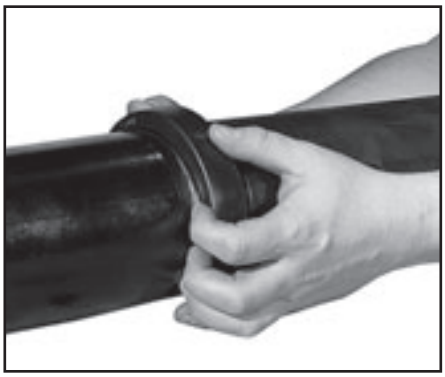
CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

FIG. 7000
Standard Coupling

1 Check & lubricate gasket— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to outside and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 Gasket Installation— Slip the gasket over the pipe end, making sure the gasket lip does not overhang the pipe end.



3 Alignment— After aligning the two pipe ends together, pull the gasket into position, centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.

4 Housings— With one nut unthreaded to the end of the bolt, unthread the other nut completely and swing the coupling housing halves over the gasket, making sure the housing keys engage the grooves. Insert the bolt and turn the nuts finger tight.

5 Tighten Nuts— Tighten the nuts alternately and equally to the specified bolt torque. The housing bolt pads must make metal-to-metal contact.

CAUTION: Uneven tightening may cause the gasket to pinch.

6 Assembly is completed— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

FIG. 7400

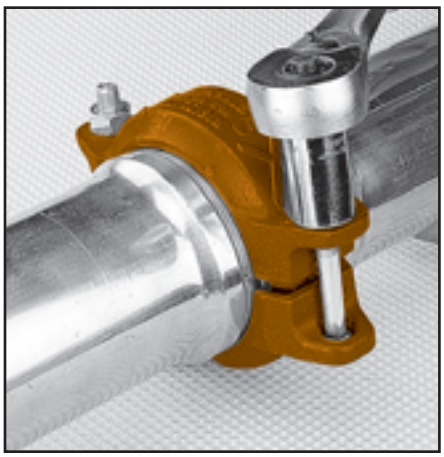
Rigidlite® Coupling

1 Check & lubricate gasket— Check the gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok Xtreme Lubricant to the entire surface, both internal and external, of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 Gasket Installation— Slip the gasket over the one tube, making sure the gasket lip does not overhang the tube end.

3 Alignment— After aligning the two tube ends together, pull the gasket into position, centering it between the grooves on each tube. The gasket should not extend into the groove on either tube.

4 Housings— Remove one nut and bolt and loosen the other nut. Place one housing over the gasket, making sure the housing keys fit into the tube grooves. Swing the other housing over the gasket and into the grooves on both tubes, making sure the tongue and recess of each housing is properly mated. Re-insert the bolt and run-up both nuts finger tight.



5 Tighten Nuts— Securely tighten nuts alternately and equally to the specified bolt torque, keeping the gaps at the bolt pads evenly spaced.

CAUTION: Uneven tightening may cause the gasket to pinch. Gasket should not be visible between segments after bolts are tightened.

6 Assembly is completed— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves. The bolt pads are to have equal gaps on each side of the coupling.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

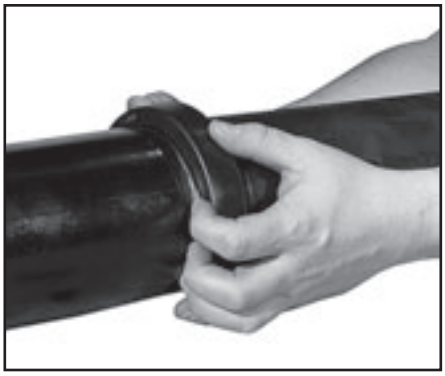
FIG. 7003

Hingelok™ Coupling

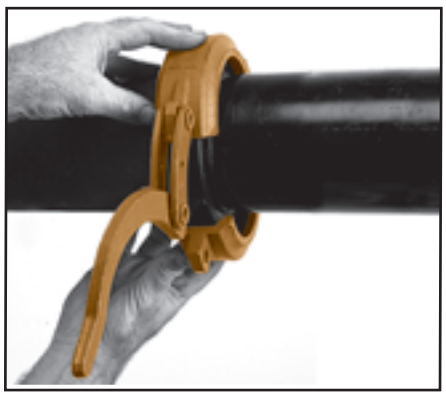
NOTE: Remove locking pin from handle before opening coupling.

1 Check & lubricate gasket— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to outside and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

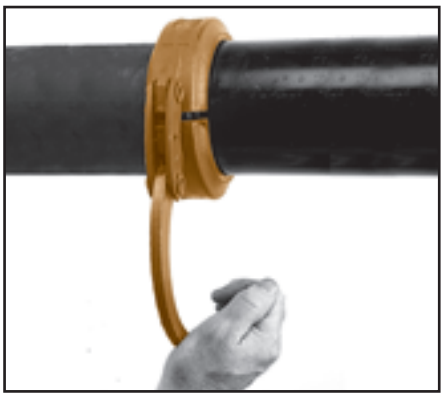
2 Gasket Installation— Slip the gasket over the pipe end making sure the gasket lip does not overhang the pipe end.



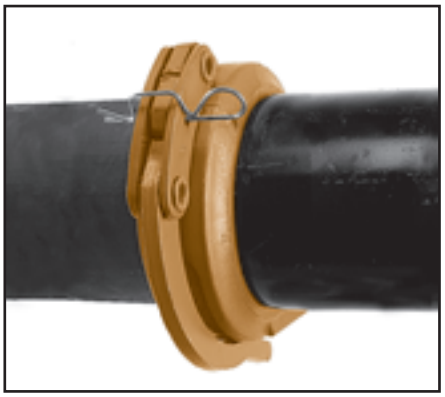
3 Alignment— After aligning the two pipe ends, pull the gasket into position centering it between the grooves on each pipe. Gasket should not extend into the groove on either pipe.



4 Housings— Put one half of the open coupling over the gasket as the coupling keys fit firmly into the grooves on each pipe end. Swing the other half of the coupling into position around the gasket and into the grooves.



5 Lock coupling— Fit the nose of the locking handle in the notch of the opposite housing. Press firmly down on the handle until it makes contact with the coupling housing. Insert locking pin into handle linkage to secure handle in closed position. (See Caution.)



6 Assembly is completed— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

CAUTION:

1) Hammering or banging on the handle or coupling housing could cause serious damage to the locking device and coupling assembly. The result may be an unsuitable pipe joint and unusable coupling assembly.
2) Care needs to be taken so that fingers do not get caught or pinched when handle is placed in locked position as a result of cam action of handle assembly.
3) When re-using coupling and gasket, always inspect gasket for damage and hinge/handle assembly for loosenenss, distortion or any other damage.

FIG. 7010

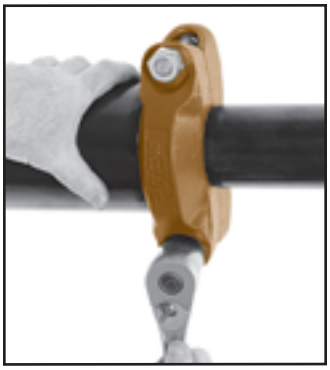
Reducing Coupling

1 Check & lubricate gasket— Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to outside and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 Gasket Installation— Place the smaller opening of the gasket over the smaller pipe. Angle the gasket over the pipe end and pull the gasket lip open around the circumference of the pipe. The center leg of the gasket should make flush contact with the pipe end and will prevent telescoping of the smaller pipe inside the larger.

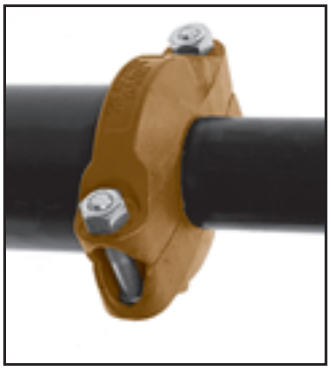
3 Alignment— Align the adjoining pipe center lines, and insert the larger pipe end into the gasket. Angle the pipe end slightly to the face of the gasket and tilt the pipe into the gasket and tilt the pipe into the gasket to ease assembly.

4 Housings— Place the coupling housing halves over the gasket making sure the housing keys engage the grooves. Insert bolts and turn nuts finger tight.



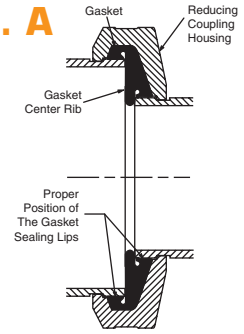
5 Tighten Nuts— Tighten the nuts alternately and equally to the specified bolt torque. The housing bolt pads must make metal-to-metal contact.

CAUTION: Uneven tightening may cause the gasket to pinch.



6 Assembly Complete— Visually inspect the pipe joint to assure the coupling keys are fully engaged in the pipe grooves and the bolt pads are in firm even metal-to-metal contact on both sides of the coupling.

Fig. A



NOTE: Fig. A illustrates the correct position of the Fig. 7010 Reducing Coupling gasket and housing properly assembled onto adjacent pipe ends.

CAUTION: In vertical installations the pipes must be supported to prevent telescoping during installation.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

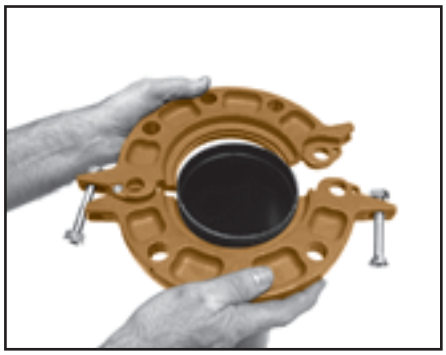
FIG. 7012

Gruvlok Flange (2"–12")

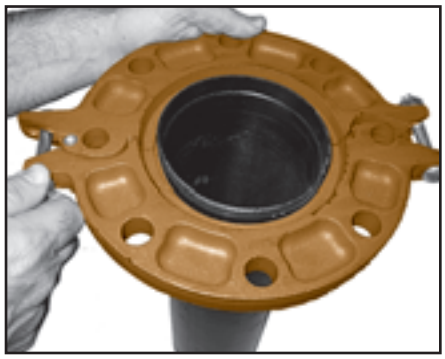
APPLICATIONS WHICH REQUIRE A GRUVLOK® FLANGE ADAPTER INSERT:

1. When mating to a wafer valve (lug valve), if the valve is rubber faced in the area designated by the sealing surface dimensions (A Max. to B Min.), place the Gruvlok Flange Adapter Insert between the valve and the Gruvlok Flange.
2. When mating to a rubber-faced metal flange, the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the rubber-faced flange.
3. When mating to a serrated flange surface, a standard full-faced flange gasket is installed against the serrated flange face, and the Gruvlok Flange Adapter Insert is placed between the Gruvlok Flange and the standard flange gasket.
4. When mating to valves or other component equipment where the flange face has an insert, use procedure described in note 3.

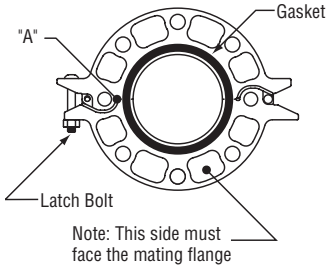
Check pipe end for proper grooved dimensions and to assure that the pipe end is free of indentations and projections that would prevent proper sealing of the Gruvlok flange gasket.



1 On the side without the hinge pin, loosen the latch bolt nut to the end of the bolt thread. (It is not necessary to remove the nut from the latch bolt.) Swing the latch bolt out of the slot. Open the Gruvlok Flange and place around the grooved pipe end with the key section fitting into the groove. The flange gasket cavity must face the pipe end.



2 Place the latch bolt back into the slotted hole. Tighten the nut until there is a 1/16" gap between the flange halves at location "A". (See Figure below)



3 Check the gasket to assure that it is properly suited for the intended service. Lubricate the entire exterior surface of the gasket, including the sealing lips, using the proper Gruvlok lubricant.

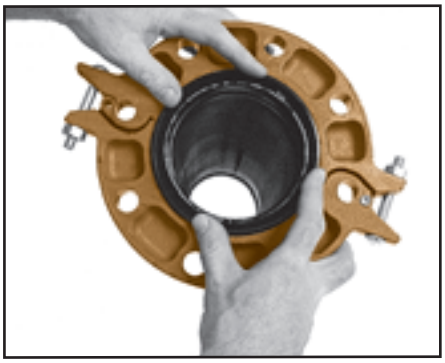
NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

⚠ WARNING

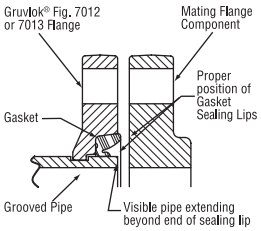
The Gruvlok Flange gasket must be inserted so that the sealing lips face toward the pipe end and the mating flange. The lip of the gasket, sealing on the pipe, should not extend beyond the pipe end. The pipe should extend out beyond the end of the sealing lip by approximately 1/8" on the 2"-6" sizes and 3/16" on the 8"-12" sizes.

FIG. 7012

Gruvlok Flange (2"–12")

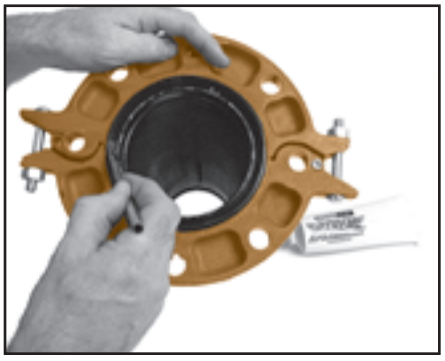


4 Stretch the Gruvlok gasket around the pipe end and then press the gasket into the cavity between the pipe O.D. and the flange. The gasket must be properly positioned as shown in the figure below.

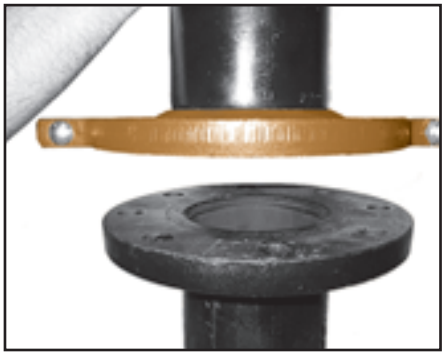


7 Insert a flange bolt or stud with material properties of SAE J429 Grade 5 or higher through the bolt holes and thread a nut on hand tight. Continue this procedure until all bolt holes have been fitted. Tighten the nuts alternately and evenly so the flange faces remain parallel. All the bolts or studs must be torqued to the mating flange bolts specified torque. The flange faces should have metal-to-metal contact.

⚠ WARNING It is important to line up the bolt holes before bringing the two flanges together. Sliding the flanges into place will dislodge the gasket and cause leakage to occur. When using a flange insert, it is important that the insert is properly aligned with the gasket prior to tightening the bolts.



5 With the gasket in place apply lubricant to the exposed gasket tip, which will seal on the mating flange. **Tighten the nuts on the latch bolts alternately to the specified latch bolt torque. The flange housings must be in firm metal-to-metal contact.**



6 Verify that the mating flange face is hard, flat and smooth, free of indentations, which would prevent proper sealing of the Gruvlok Flange gasket. Assure the gasket is still in the proper position and align Gruvlok Flange bolt holes with the mating flange, pump, tank, etc., bolt holes.

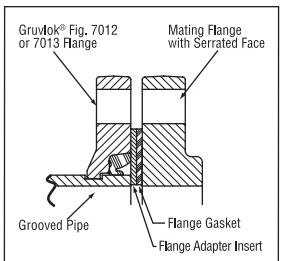


Figure C1

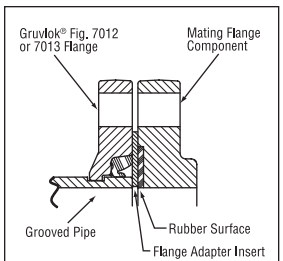


Figure C2

NOTE: The Gruvlok Fig. 7012 Flange requires the use of an Flange Adapter Insert when used against rubber surfaces (Figure C1), serrated flange surfaces or mating flanges with inserts (Figure C2). The Flange Adapter Insert will be exposed to the fluids in the system. Ensure that the Insert is compatible with the fluids in the systems and with adjacent piping components.

⚠ WARNING Do not use a steel Flange Adapter Insert in copper systems or in systems where galvanic corrosion is possible.

CAUTION: Proper torquing of flange bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

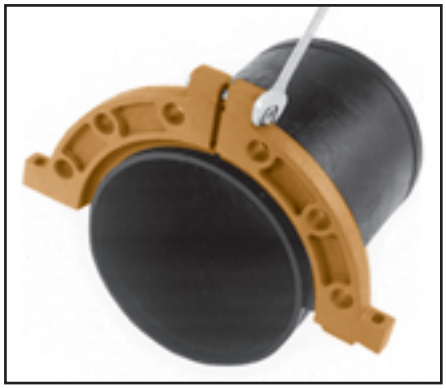
CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

FIG. 7012

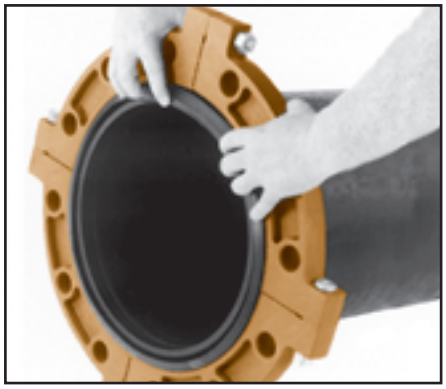
Gruvlok Flange (14"–24")

Gruvlok® Flanges of 14" size and larger are cast in four segments to ease handling during assembly.

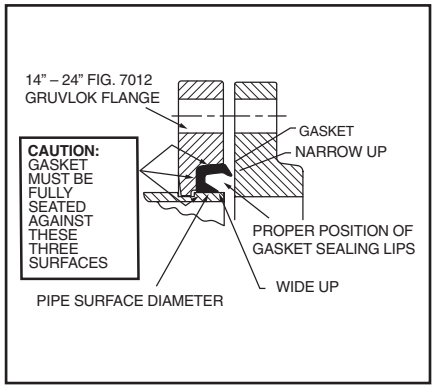


1 Place each Gruvlok Flange segment around the grooved pipe with the key section fitting into the groove and the flange gasket cavity facing the pipe end. Loosely assemble the segments using the four segment-bolts-and-nuts. Alternately and equally tighten the latch bolts and nuts to the specified latch bolt torque bring the four flange segments into full, firm metal-to-metal contact.

NOTE: An alternative method of assembly is to loosely preassemble two segments into two equal halves of the flange leaving a small gap (approximately 1/8") between the two segments of each flange-half. Place the flange halves around the pipe and complete the assembly as described in Step 1, above.



2 Check the gasket grade to verify that it is properly suited for the intended service. Lubricate the entire surface of the gasket and the flange cavity using the appropriate Gruvlok Lubricant. The gasket may be shipped with the sealing lips facing outward. If so, it will be necessary to rotate the gasket so the narrow gasket lip (marked, "This face towards mating flange" on the 16"-24" sizes) is facing out as shown in figure Step 3. Place the Gruvlok Flange Gasket around the pipe end by pressing the gasket into the cavity between the pipe O.D. and flange recess. Move around the gasket in both directions until the gasket is fully seated in the flange gasket cavity.



3 The correct position and relationship of the components of the Gruvlok Flange assembly is shown in the Figure above. The wide gasket lip must seal on the pipe surface diameter and the narrow gasket lip must face the mating flange. Be careful that foreign particles do not adhere to lubricated surfaces.

NOTE: Design of the Gruvlok Flange provides sealing only with the special Gruvlok Flange gasket. Only Gruvlok Flange gaskets may be used with Fig. 7012 flanges.

4 Align the Gruvlok Flange bolt holes with mating flange bolt holes. Insert a flange bolt or stud with material properties of SAE J429 Grade 5 or higher through the bolt holes and thread a nut on hand tight. Insert the next bolt or stud opposite the first and again thread the nut on hand tight. Continue this procedure until all bolt holes have been fitted. Insertion of the flange bolts prior to contact of the flanges will help in the alignment of the flanges. Pull the two flanges into contact using care to assure that the gasket remains fully seated within the gasket cavity during assembly.

NOTE: Take care to assure that the gasket lip is not bent backwards and pinched between the two flanges.

5 Tighten the nuts evenly to the specified mating face bolt torque so that the flange faces remain parallel and make firm even contact around the entire flange.

CAUTION: Proper torquing of flange bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

CAUTION: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

FIG. 7042

Outlet Coupling

These instructions are based on pipe grooved in accordance with Gruvlok® grooving specifications. Check pipe ends for proper groove dimensions and to assure that the pipe ends are free of indentations and projections which would prevent proper sealing.

ALWAYS USE A GRUVLOK LUBRICANT FOR PROPER COUPLING ASSEMBLY. Thorough lubrication of the gasket is essential to prevent pinching and possible damage to the gasket.

1 Check & lubricate gasket—Check gasket to be sure it is compatible for the intended service. Apply a thin coating of Gruvlok lubricant to outside and sealing lips of the gasket. Be careful that foreign particles do not adhere to lubricated surfaces.

2 Gasket Installation—Slip the gasket over one pipe end making sure the pipe abuts the gasket's center ribs.

3 Alignment—Align the pipe ends and pull the pipe into the gasket until the center ribs are in contact with the pipe ends. The gasket should not extend into the groove on either pipe. Rotate the gasket to align the outlet of the gasket to the same direction as the branch outlet.

4 Housing Assembly—With one nut and bolt removed and the other loosened, place one side of the housing over the gasket. Make sure the ribs on the outside of the gasket align with the recesses in the housing and the keys in the housing are in the grooves on both pipes. Swing the other housing over the gasket and into the grooves on both sides of the pipe. Make sure the recess in the outlet of the housing is properly aligned with gasket outlet.

5 Tighten Nuts—Re-insert the bolt and run-up both nuts finger tight. Securely tighten the nuts alternately and equally until they are completely tightened and there is no gap between the bolt pads. Continue tightening the nuts alternately and equally until the specified bolt torque is reached.

CAUTION: Make sure the ribs on the exterior of the gasket are enclosed in the housing recesses.

6 Assembly is complete

FIG. 7042 – SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened. Caution: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation. Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury

ANSI Specified Bolt Torque

Coupling Size	Bolt Size	Wrench Size	Specified Bolt Torque*
In.	*In.*	*In.*	*Ft.-Lbs.*
1½	⅜ x 2⅛	11/16	30 - 45
2	⅜ x 2½	11/16	30 - 45
2½	½ x 2⅜	⅞	80 - 100
3	½ x 3	⅞	80 - 100
4	⅝ x 3½	11/16	100 - 130
6	⅝ x 3½	11/16	100 - 130

*Non-lubricated bolt torques

FIG. 7045 & FIG. 7046

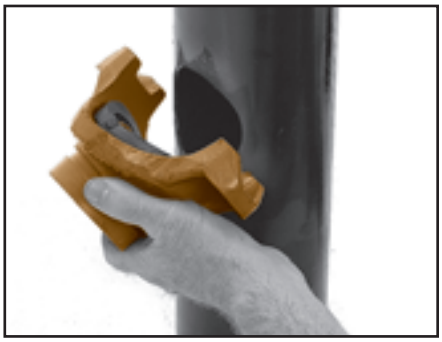
Clamp-T® Branch Outlets

ALWAYS USE A GRUVLOK LUBRICANT FOR PROPER COUPLING ASSEMBLY.
Thorough lubrication of the gasket is essential to assist the gasket into the proper sealing position.

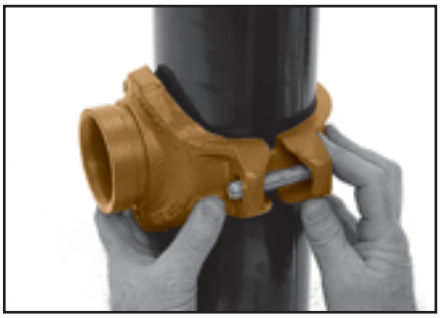
1 Pipe preparation—Cut the appropriate size hole in the pipe and remove any burrs. Be sure to remove the slug from inside the pipe. Clean the gasket sealing surface within 5/8" of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket.

Branch Size (Inches)	Hole Saw Size (Inches) (+1/8, -0)
½, ¾, 1	1½
1¼, 1½	2
2	2½
2½	2¾
3	3½
4	4½

2 Check & lubricate gasket—Check the gasket to be sure it is compatible for the intended service. Apply a thin layer of Gruvlok lubricant to the back surface of the gasket. Be careful that foreign particles do not adhere to the lubricated surfaces. Insert the gasket back into the outlet housing making sure the tabs in the gasket line up with the tab recesses in the housing.

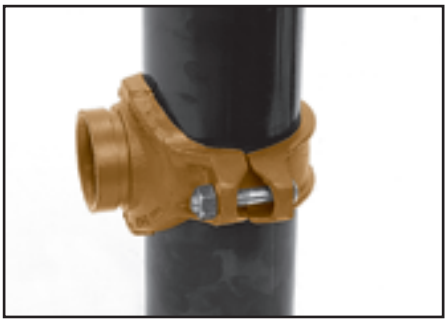


3 Gasket Installation—Lubricate the exposed surface of the gasket. Align the outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



4 Alignment—Align the strap around the pipe, insert the bolts and tighten the nuts finger tight. Some sizes use a U-bolt design.

5 Tighten nuts—Alternately and evenly tighten the nuts to the specified bolt torque.



6 Assembly is complete

FIGS. 7045 & 7046—SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts and U-bolts used on the Gruvlok® Clamp-T's. The nuts must be tightened alternately and evenly until fully tightened. Caution: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure, battery strength and operational variations.

CAUTION: Proper torquing of the bolts or U-bolts is required to obtain the specified performance. Over-torquing the bolts or U-bolts may result in damage to the bolt, U-bolt and/or casting which could result in lower pressure retention capabilities, lower bend load capabilities, pipe joint leakage and pipe joint separation. Pipe joint

ANSI Specified Bolt Torque		
Bolt Size	Wrench Size	Specified Bolt Torque *
In.	*In.*	*Ft.-Lbs*
U-Bolt	⅞	30 - 40
½	⅞	60 - 80
⅝	1 1/16	100 - 130
¾	1¼	130 - 180

* Non-lubricated bolt torques

FIG. 7044

Branch Outlet

ALWAYS USE A GRUVLOK LUBRICANT FOR PROPER BRANCH OUTLET ASSEMBLY. Thorough lubrication of the gasket is essential to to assist the gasket into the proper sealing position.

SPECIFIED BOLT TORQUE

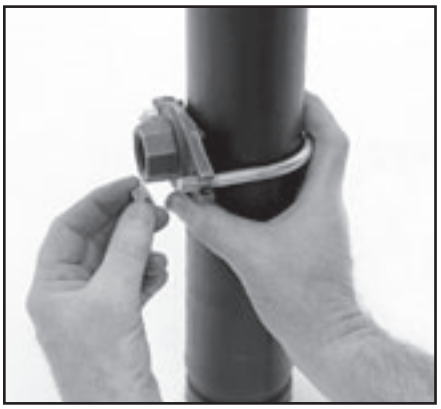
The nuts must be tightened alternately and evenly until fully tightened. **CAUTION:** Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure, battery strength and operational variations.

CAUTION: Proper torquing of the U-bolts is required to obtain the specified performance. Over-torquing the U-bolts may result in damage to the U-bolt and/or casting which could result in lower pressure retention capabilities, lower bend load capabilities, pipe joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

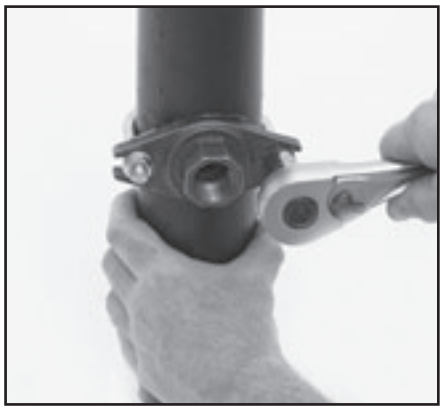
1 Pipe Preparation and Gasket Lubrication— Cut a 13⁄16" hole in the pipe and remove any burrs. Be sure to remove the slug from inside the pipe. Clean the gasket sealing surface within 5⁄8" of the hole and visually inspect the sealing surface for defects that may prevent proper sealing of the gasket. Remove the gasket from the housing and apply a thin layer of Gruvlok® lubricant to the back surface of the gasket. Be careful that foreign particles do not adhere to the lubricated surfaces. Insert the gasket back into the outlet housing making sure the tabs in the gasket line up with the tab recesses in the housing.

2 Gasket Installation— Lubricate the exposed surface of the gasket with Gruvlok® lubricant.

3 Alignment— Align the outlet housing over the pipe hole making sure that the locating collar is in the pipe hole.



4 Housing Assembly— Attach the U-bolt from the other side and fasten the nuts finger tight.



5 Tighten Nuts— Making sure the fitting is properly located over the pipe hole, tighten the nuts alternately and evenly to the specifed torque of 27 to 33 Lbs.-Ft. (37 to 45 N-M).

6 Assembly is Complete— Visually inspect the assembly, the gasket will extrude out from under the housing.

FIG. 7005

Roughneck® Coupling

1 Make certain the pipe ends are free of indentations, projections, weld splatter, or other imperfections which could prevent proper sealing of the gasket.

2 Mark each pipe at a distance from the pipe end according to the pipe run size. See Image 1 and the chart.

3 Check the gasket color code to verify that the gasket grade is properly suited for the intended service. Apply a thin coating of Gruvlok Lubricant to the gasket lips and outside of the gasket and slip the gasket over one pipe. See Image 2. Make sure the gasket does not overhang the pipe end.

Pipe Size	Distance from pipe end for mark	Bolt Torque	
		Min.	Max.
In./ DN(mm)	*In./mm*	*LbFt/N-m*	
2-2½	1	150	190
50-65	*25.4*	*203*	*257*
3-4	1	200	250
80-100	*25.4*	*271*	*339*
5-8	1¼	250	300
125-200	*31.8*	*339*	*406*
10	1¾	500	600
250	*44.5*	*678*	*814*
12	1¾	550	700
300	*44.5*	*746*	*949*
14-16	1¾	550	700
350-400	*44.5*	*746*	*949*

4 Align the second pipe and while holding the pipe in the butted position slide the gasket back over the second pipe end. The gasket should be equally spaced between the lines scribed on each pipe.

5 Place each half of the Roughneck coupling over the gasket, making sure that the tongue on one housing half is aligned with the recess on the other housing half. See Image 3.

6 Tighten the nuts alternately and uniformly until the required bolt torque is reached. See Image 4 and chart for bolt torque.

7 Reinstallation after a disassembly will require that the threads on the bolt and in the nut are clean and lubricated with a light oil.

NOTE: Torque requirements must be met and housing halves must be assembled with equal gaps between bolt pads.

Image 1

Image 2

Image 3

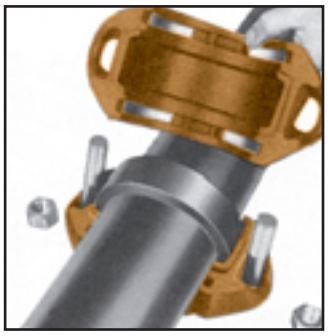
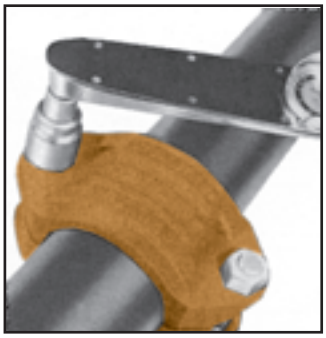


Image 4



Working pressure and end load are based on a properly assembled Roughneck coupling with bolts fully torqued to the above specifications, on plain-end or beveled standard wall steel pipe and Gruvlok Plain-End Fittings.

Roughneck Couplings are designed to be used on plain-end pipe and Gruvlok Plain-End Fittings only. For externally coated pipe applications, contact Gruvlok.

Not recommended for use on steel pipe with a hardness greater than 150 Brinell, plastic, HDPE, cast iron or other brittle pipe.

*Bolt torque ratings shown must be applied at installation.

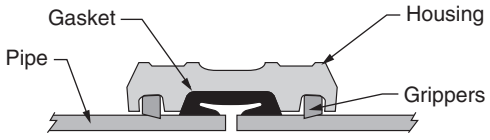
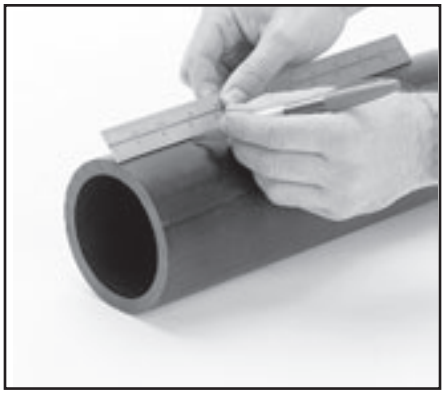


FIG. 7305

HDPE Coupling



1 Make certain the pipe ends are free of indentations, projections or other imperfections, which could prevent proper sealing of the gasket. Mark each pipe at a distance from the end of the pipe according to the pipe size:

Size Inches	Distance to Mark
2-4" (51 - 102 mm)	1" (25.4 mm)
5-8" (127 - 203 mm)	1¼" (31.8 mm)
10 & 12" (254 - 305 mm)	1¾" (44.5 mm)

NOTE: Make certain the HDPE pipe end is square cut to ⅛" maximum for the 2" to 4" and 5⁄32" maximum for the 6" and larger sizes.

2 Check to assure the gasket material is acceptable for the intended service. The Gasket color code is green for EPDM and orange for Nitrile (Buna-N). **CAUTION:** Use only Gruvlok Xtreme™ Lubricant. Gruvlok Xtreme™ Lubricant contains silicone. If silicone is unacceptable for the application contact Gruvlok for the lubrication recommendation. Apply a thin coating of Gruvlok Xtreme™ Lubricant to the gasket lip and outside surface of the gasket.

3 Slip the gasket over one of the pipe ends. Make sure the gasket does not overhang the pipe end. Align the second pipe and while keeping the pipes in the butted position slide the gasket back over the second pipe end. The gasket must be positioned centrally between the lines on the pipe ends.

4 Place the Figure 7305 housing casting over the gasket, making sure the tongue on one casting is aligned with the recess of the other casting.

5 Insert the bolts and secure the nuts alternately and uniformly until the bolt pads are in contact. Torque all bolts to the required bolt torque levels. Refer to the Specified Bolt Torque Table. There is no gap between the bolt pads and the bolt torque should be within the range given when the coupling is properly assembled. Alternate and even tightening of the bolts will significantly reduce the torque needed to close the gap at the pipe joint.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings. The nuts must be tightened alternately and evenly until fully tightened. Caution: Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

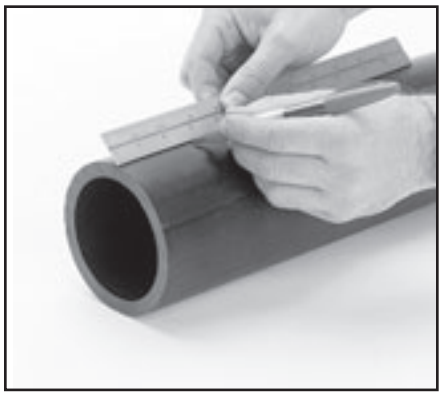
CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG.7305 SPECIFIED BOLT TORQUE

Coupling Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-M*	*Ft.-Lbs./N-M*
½ x 2⅜	80 *110*	100 *150*
½ x 3	80 *110*	100 *150*
⅝ x 3½	100 *135*	130 *175*
¾ x 4¾	130 *175*	180 *245*

FIG. 7307

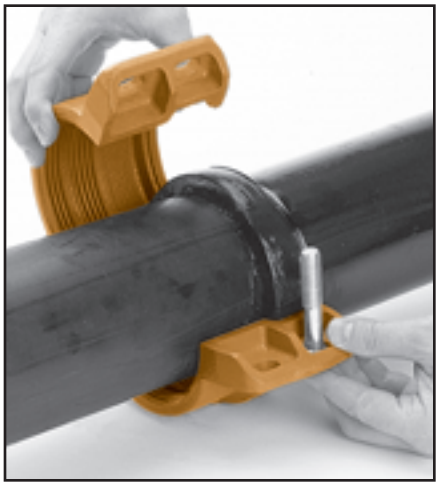
HDPE Transition Coupling



1 Make certain the HDPE pipe end is square cut to 1/8" maximum for the 2" to 4" and 5/32" maximum for the 6" and larger sizes. The steel pipe must be grooved in accordance with Gruvlok® Grooving Specifications for Steel Pipe. The pipe ends must be free of scratches, indentations, projections or other imperfections, which could prevent proper sealing of the gasket.

2 Check to assure the gasket material is acceptable for the intended service. The Gasket color code is green for EPDM and orange for Nitrile (Buna-N). **CAUTION:** Use only Gruvlok Xtreme™ Lubricant. Gruvlok Xtreme™ Lubricant contains silicone. If silicone is unacceptable for the application contact Gruvlok for the lubrication recommendation. Apply a thin coating of Gruvlok Xtreme™ Lubricant to the gasket lips and outside surface of the gasket.

3 Slip the gasket over one of the pipe ends. Make sure the gasket does not overhang the pipe end. Align the second pipe and while holding it in the butted position, slide the gasket back over the second pipe end. The gasket must be positioned on the gasket seat surface of the grooved steel pipe. Make sure the gasket does not overhang into the pipe groove.



4 Place each half of the coupling housing over the gasket, making sure the housing grooved end is directed into the pipe groove.

5 Insert the bolts and secure the nuts alternately and uniformly until the bolt pads are in contact. Torque all bolts to the required bolt torque levels. Refer to the Specified Bolt Torque Table. There is no gap between the bolt pads and the bolt torque should be within the range given when the coupling is properly assembled. Alternate and even tightening of the bolts will significantly reduce the torque needed to close the gap at the pipe joint.

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok® couplings. The nuts must be tightened alternately and evenly until fully tightened. **CAUTION:** Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

FIG.7307 SPECIFIED BOLT TORQUE

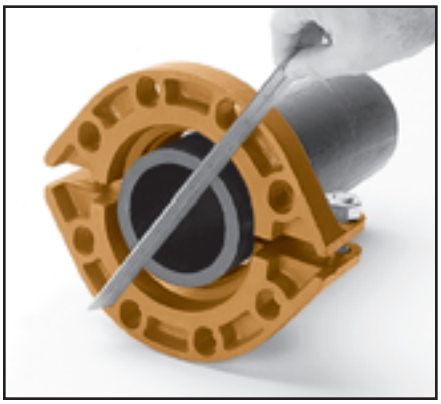
Coupling Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-M*	*Ft.-Lbs./N-M*
1/2 x 2 3/8	80 *110*	100 *150*
1/2 x 3	80 *110*	100 *150*
5/8 x 3 1/2	100 *135*	130 *175*
7/8 x 5 1/2	130 *175*	180 *245*

FIG. 7312

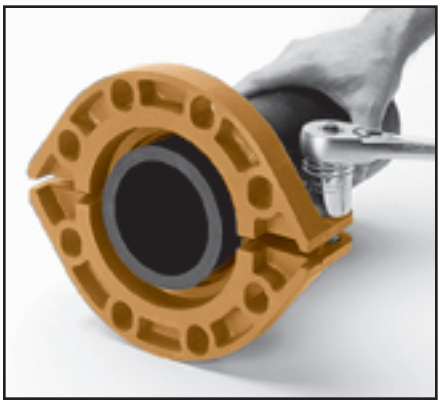
HDPE Flange Adapter

1 Make certain the pipe end is square cut to 1/8" maximum for the 4" and 5/32" maximum for the 6" and 8" sizes. Inspect the surface of the mating flange to be assured the surface is free of dimensions of the mating flange to be assured that the scratches, indentations, projections, or other imperfections, which could prevent proper sealing of the gasket.

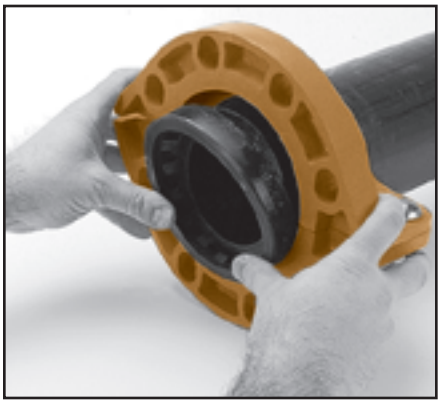
2 Check to assure the gasket material is acceptable for the intended service. The gasket color code is green for EPDM and orange for Nitrile (Buna-N). **CAUTION:** Use only Gruvlok Xtreme™ Lubricant. Gruvlok Xtreme™ Lubricant contains silicone. If Silicone is unacceptable for the application contact Gruvlok for the lubrication recommendation. Apply a thin coating of Gruvlok Xtreme™ Lubricant to the gasket lips and outside surface of the gasket.



3 Place the housing over the end of the pipe and using a straight edge, align the face and the flange face with the end of the pipe. Do not let the pipe extend beyond the flange face.

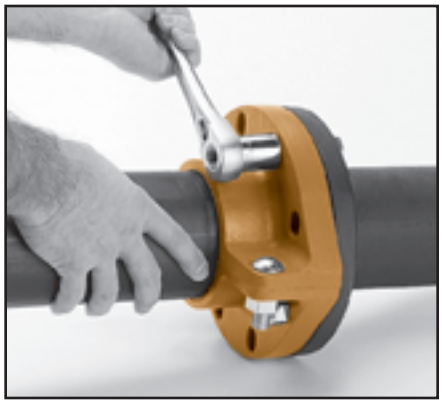


4 Tighten the housing nut until the housing bolt pads make firm metal to metal contact. Torque all bolts to the required latch bolt torque levels. Refer to the Specified Latch Bolt Torque Table.



5 Position the Gruvlok Flange gasket around the pipe end and press the gasket into the flange gasket pocket. Be sure the flange sealing lips are facing out.

6 Align the Gruvlok Flange bolt holes with the mating flange bolt holes. Insert a standard bolt or stud through one bolt hole and thread the nut on hand tight. Insert the next bolt or stud opposite the first and thread the nut on hand tight. Continue this procedure until all holes have been fitted. Note: Take care to assure the gasket lip is not bent backwards and pinched between the two flanges.



7 Tighten the flange face nuts alternately and evenly so that the flange faces remain parallel and make firm contact around the entire flange. Torque all bolts to the required mating flange joint torque levels. Refer to the Specified Mating Flange Bolt Torque Table.

SPECIFIED BOLT TORQUE FOR LATCH & MATING FLANGE BOLTS

Specified bolt torque is for the latch and mating flange bolts used on Gruvlok® flanges. The nuts must be tightened alternately and evenly until fully tightened. **CAUTION:** Use of an impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of latch and mating flange bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

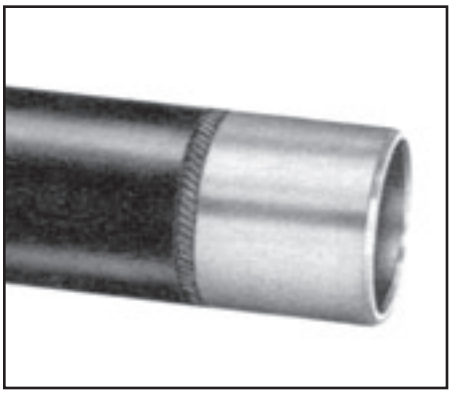
FIG.7312 Latch Bolt torque

Latch Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-M*	*Ft.-Lbs./N-M*
5/8 x 1 5/8	100 *135*	130 *175*
3/4 x 2	130 *175*	180 *245*

FIG.7312 Mating Flange Bolt torque

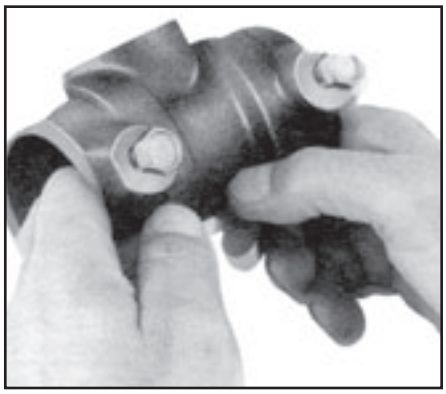
Mating Flange Bolts	Minimum	Maximum
In.	*Ft.-Lbs./N-M*	*Ft.-Lbs./N-M*
5/8 x 1 5/8	100 *135*	130 *175*
3/4 x 2	130 *175*	180 *245*

Gruvlok Sock-It® Fitting

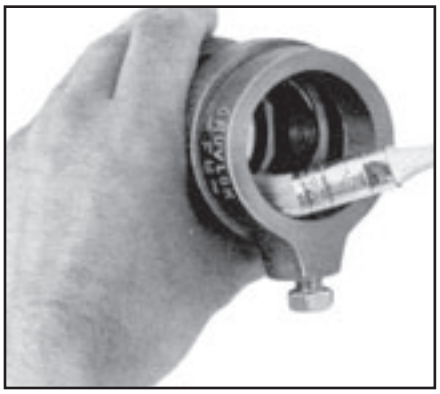


1 Pipe surface shall be cleaned at least 1" from the end of the pipe to remove any coating, indentations, projections, and sharp edges which could affect proper gasket sealing. As a guide for installation, mark the pipe at a distance of 1½" from the end for 1", 1¼", and 1½" size fittings and 1¾" for the 2" & 2½" size fittings.

NOTE: When Allied XL pipe is used it is necessary only to remove sharp edges and burrs at the end of the pipe. No additional cleaning is required.



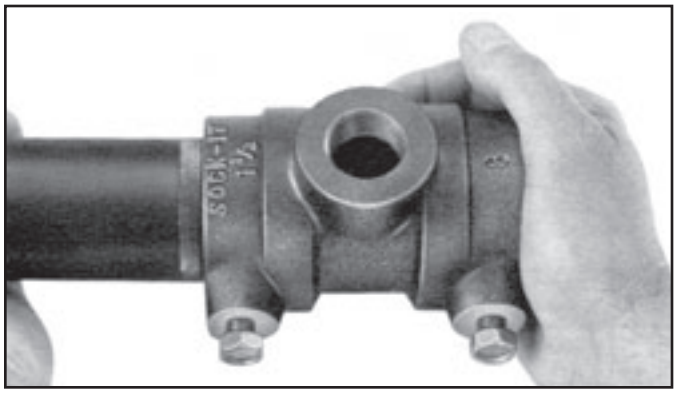
2 Check all lock bolts to be sure they do not extend into the I.D. of the Sock-It Fittings as this would prevent proper insertion of the pipe.



3 Apply a light coating of GRUVLOK Lubricant to the gaskets located in each end of the Sock-It Fitting. Also apply a light coating of lubricant to the pipe ends to further ease insertion of the pipe into the Sock-It Fitting.

NOTE: Use only Gruvlok Lubricants. Other lubricants may affect gasket performance.

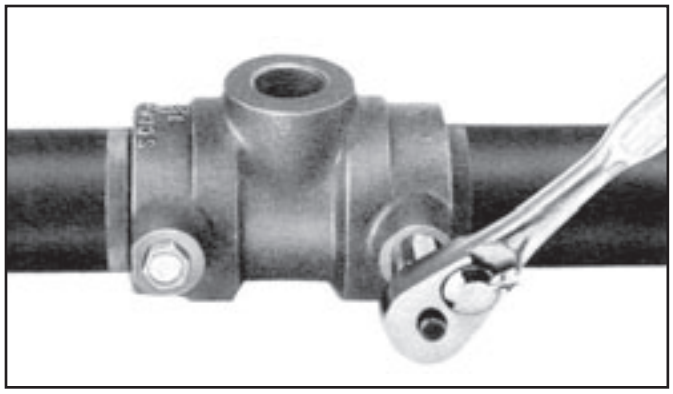
CAUTION: Please see page 188, Pipe Preparation, for additional informations on preparing pipe for use with Sock-It® Fittings.



4 Insert the prepped and lubricated pipe end into the Sock-It Fitting until the pipe end makes contact with the internal pipe stop. A slight twist while pushing fitting and pipe together will ease the required insertion force. The end of the Sock-It Fitting should be within 1/16" from the edge of the marking on the pipe. (See Step 1). Rotate the fitting until the desired position is obtained. Tighten the lock bolt until the bolt head bottoms against the threaded boss. (NOTE: The 2½" Sock-It fitting has 2 locking bolts for each pipe end.)

Install the other prepped and lubricated pipe end into the Sock-It fitting in the same manner.

CAUTION: Do NOT hammer fitting on.



5 Sock-It Fittings may be removed by loosening the lock bolts. Reinstallation may be accomplished as described in Steps 1-4.

WARNING: System pressure must be relieved and vented, and the system drained of fluid prior to loosening the lock bolts to remove or reposition the Sock-It Fitting.

Bolt end must be inspected to assure bolts ability to cut into pipe. Replace bolts in cases where bolt end sharpness has been comprised.

FIG. GBV-S & GBV-T

Five Turn Circuit Balancing Valves

INSTALLATION:

1 Clean the system piping of debris (pipe scale, rust, welding slag) and other contaminants. As with any water system it is important to make provisions to keep the system clean. For optimum operation, air entrapment in the fluid must be removed.

2 The operation of the valve is dependent on the fluid characteristics such as specific gravity and viscosity, which vary with the fluid temperature. For installations using fluids other than 100% water, flow rates must be corrected for the changes created by the fluid medium. See www.anvilintl.com for appropriate correction factors, or call your local Anvil representative.

3 To ensure accuracy of measurement Circuit Balancing Valves (GBV's) should be located at least five pipe diameters downstream from any fitting and at least ten pipe diameters downstream from a pump (as illustrated in Fig. 1).

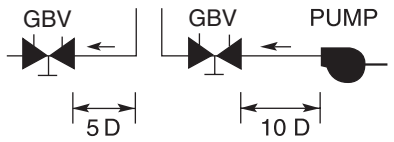


Fig. 1

4 All GBV's are marked with an arrow on the valve body to indicate direction of flow. The arrow must point in the direction of flow for proper operation.

5 GBV's may be installed in horizontal or vertical piping (as illustrated in Fig. 2). Provisions must be made for easy access to the probe metering ports (PMP's), reading scale, and memory stop.

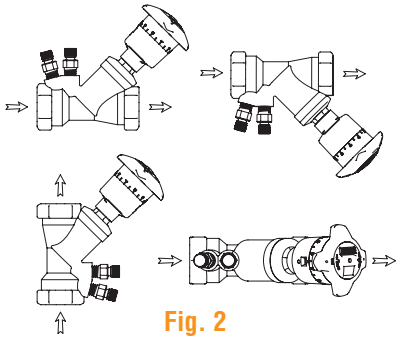


Fig. 2

GBV-S - SWEAT (SOLDER) CONNECTIONS:

6 GBV-S models are supplied with sweat style connections. Caution should be used when sweat style connection valves are installed to prevent overheating the valve.

7 Solder the valve body in line using 95/5 (95% tin, 5% antimony) type solder or equal. Always follow local plumbing codes for installation best practices.

CAUTION:
Before soldering, ensure the valve is opened at least one full turn to avoid damage to the sealing O-ring due to overheating. Anvil recommends that the GBV be protected during installation by wrapping a damp rag around the handle / bonnet assembly prior to soldering the valve into the line.

GBV-T - NPT THREADED CONNECTIONS

6 GBV-T models are tapped with NPT threaded connections. All threaded connections should be sealed using an approved pipe sealant per industry standards. Once the GBV installation has been completed and the system has been filled and purged, each valve loop must be adjusted to the correct flow setting. Employ piping best practice when engaging pipe to threaded valves. Overtightening when installing valves may result in fracturing of the valve body at the threads. (Go to Step 8)

WARNING:
Anvil does NOT recommend leak testing an HVAC system with air due to safety concerns. Testing HVAC systems with pressurized air can be dangerous due to the high compressibility of air, as compared to water.

OPERATION:

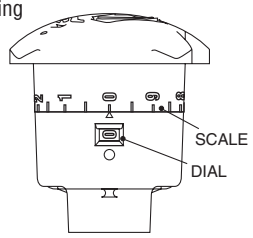
8 Valves are circuit balancing valves that are selected to deliver the correct flow in a piping circuit based on line size and design flow rate.

9 To set the system flow, adjust the handwheel position until the differential pressure reading across the venturi corresponds to the required GPM.

10 The valve operates from fully open to closed by a clockwise rotation of the orange handwheel using five 360° turns. Two indicators describe the position of the valve: the handwheel turns dial and the micrometer scale.

- **"Handwheel Turns" Dial:** This dial is printed on the outer surface of a gearing mechanism located inside the lower half of the handle assembly (Fig. 6). Each complete 360° revolution of the handwheel is visible through a display window and is scaled 0 - 5 to indicate the valve position in terms of the number of full turns. (Fig. 3)
- **Micrometer Scale:** This scale is marked 0 - 9 and is located on the upper half of the handle assembly. Each mark represents $\frac{1}{10}^{th}$ of a full, 360° turn of opening when lined up with an arrowhead symbol, located above the handwheel turns display window. (Fig. 3)

Fig. 3: GBV setting of 0.0 indicates that the valve is closed. Both the handwheel turns dial and the micrometer scale indicate a valve position reading of 0.



11 The valve is considered "zeroed" when fully closed hand tight. The "0" on the micrometer scale should be within one half of $\frac{1}{10}^{th}$ of a turn of the arrowhead symbol when the valve is closed hand tight. **DO NOT USE A WRENCH ON THESE VALVES – THEY SHOULD BE OPENED AND CLOSED HAND-TIGHT ONLY!**

Fig. 4: GBV setting of 2.3 indicates that the valve is partially open (2.3 turns open).

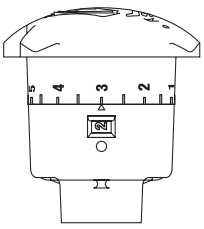
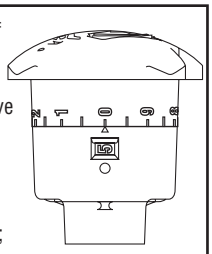


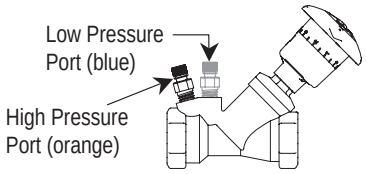
FIG. GBV-S & GBV-T

Five Turn Circuit Balancing Valves

Fig. 5: GBV setting of 5.0 indicates that the valve is fully opened. In some cases, the valve may open as much as 5.3 turns, due to the depth of the stem threads. This is not a problem with the valve; however, the performance curves for these GBVs are calibrated only to 5.0 turns.



CAUTION: Hot water leakage can occur from metering ports (P.M.P.'s) during probe insertion and hookup of metering device. Wear protective eyewear and clothing to prevent personal injury when measuring pressure.



12 Connect pressure measuring device to the GBV metering ports as follows:

- Remove protective cap from metering ports (¼" NPT connection).
- Insert the meter probe into the metering ports. The hose with orange fitting, up stream; the hose with blue fitting downstream.

CAUTION:

When inserting probe, do not bend, as this will cause permanent damage to the probe, adversely affecting the pressure measurement. Do not use any lubrication on the probes when inserting them. If necessary, simply wet the probes with clean water.

The probe should not be left inserted into the fitting for prolonged periods of time, overnight, etc., as leakage of the P.M.P. may occur when the probe is removed.

The locking nut on the probe is designed to hold it in the P.M.P. when taking readings. As sealing is accomplished internally on the probe stem, it is only necessary to tighten the locking nut FINGER-TIGHT. Over-tightening may cause damage to the P.M.P. or locking nut threads.

13 Before taking a measurement reading, set the valve to its fully open position (5.0) or at a preset position. Read the pressure drop across the venturi with a digital meter. Determine flow rate by use of venturi Cv performance curves on page 4 or the Anvil Balancing Slide Rule.

14 The handle of the GBV is not designed to be removable. Do not try to take it off the valve, or it may become damaged. If for any reason, the handle is damaged, replace the entire handle / stem assembly with the appropriate replacement part indicated in the table below.

Table 1

Part Number	Size
871158-010	½"
871158-011	¾"
871158-012	1"
871158-013	1¼"
871158-014	1½"
871158-015	2"

MEMORY SETTING:

15 After valve has been properly adjusted and without moving the handwheel, the locking memory stop should be set. The memory stop will allow the valve to be fully closed for isolation and then reopened to the preset flow position.

16 Insert a 2.5 mm (or 3⁄32") Allen key through the hole provided in the valve's handle cap. (Fig. 6)

17 Turn the setscrew in a clockwise direction until it stops. It is not necessary to tighten. The memory has now been set. This establishes the maximum opening position for this particular valve.

18 The valve may now be closed tightly, as needed, for isolating the piping during system maintenance. To return the valve to its preset "balanced" position, simply open the valve by turning the handwheel counter-clockwise until the handle stops turning (the valve stem inside the handle has hit the memory setscrew). **DO NOT APPLY EXCESSIVE FORCE WHEN REOPENING THE VALVE – OPEN ONLY UNTIL THE VALVE STOPS TURNING UNDER "HAND TIGHT" CONDITIONS. DO NOT USE A WRENCH TO OPEN, CLOSE, OR TIGHTEN VALVES.**

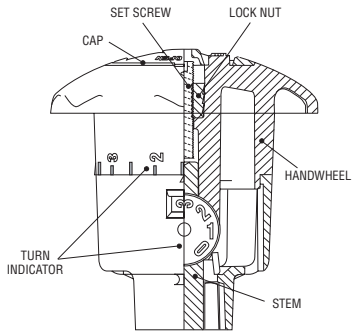


Fig. 6

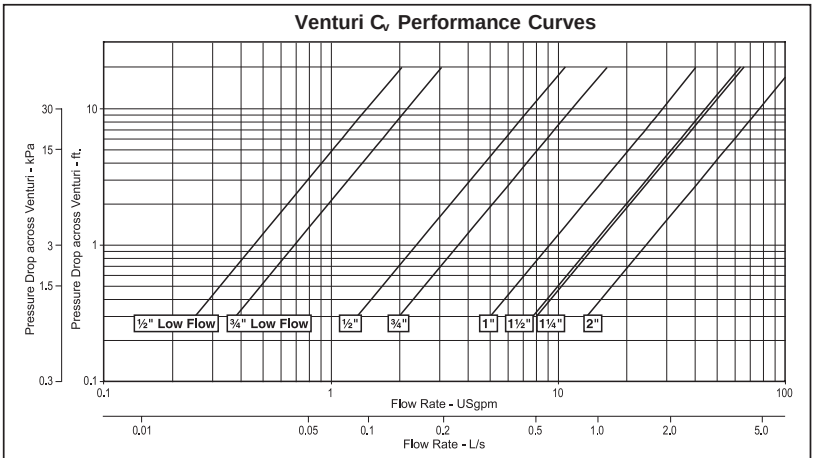


Fig. 7: These curves are for balancing contractors' use when balancing an HVAC system. For pressure drop vs. flow across the entire valve, please refer to Fig. 8.

See next page for Fig. 8 for both the GBV-S & GBV-T and a troubleshooting chart

FIG. GBV-S & GBV-T

Five Turn Circuit Balancing Valves

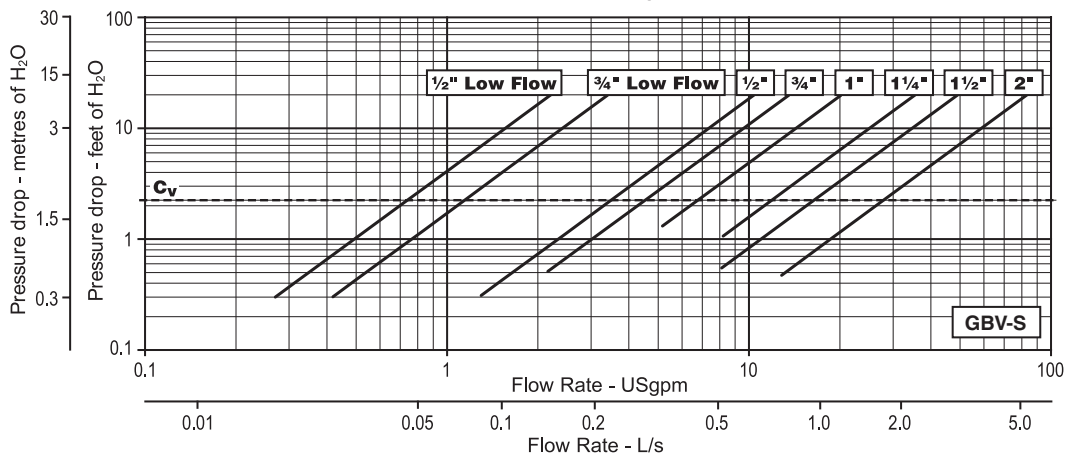


Fig. 8: These curves show the pressure drop across the balancing valves and are for use in valve sizing. For "pressure drop / flow" curves – required for system balancing, please refer to Fig. 7.

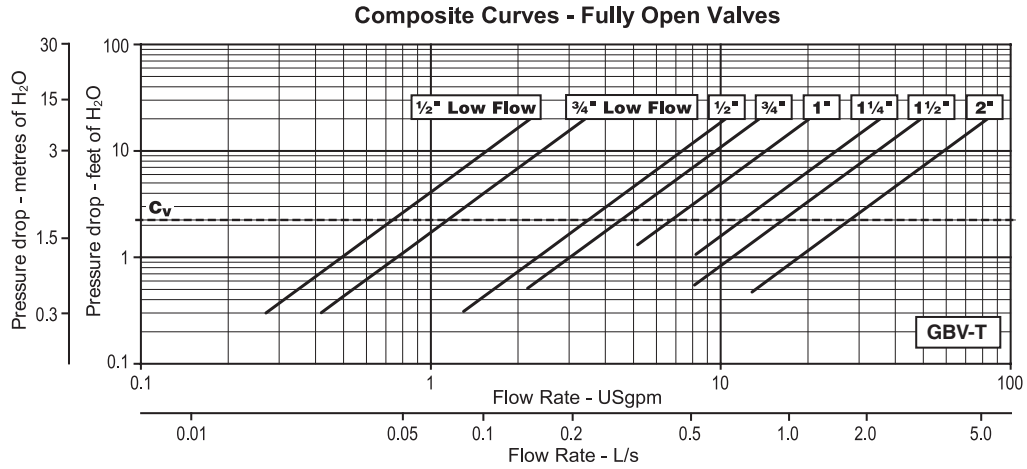


Fig. 8: These curves show the pressure drop across the balancing valves and are for use in valve sizing. For "pressure drop / flow" curves – required for system balancing, please refer to Fig. 7.

TROUBLESHOOTING:

Symptom	Likely Cause	Solution
1. Valve is leaking:		
• At the bonnet / body joint	Bonnet O Ring has been damaged.	Remove the handle / stem assembly and replace with the appropriate replacement part indicated in Table 1.
• At the pipe connection	If solder joint - the joint has failed, or was not soldered properly.	Re-solder the connection and recheck for leakage.
	If threaded - the connection is not sufficiently tight, or	Tighten and recheck for leakage.
	the valve was over-tightened during installation and the valve body has cracked (fractured).	Remove and reinstall a new valve, being careful not to over-tighten.
2. Valve does not shut off completely when closed (hand tight).	The seat O ring has been deformed due to overheating during soldering.	Remove the handle / stem assembly and replace with the appropriate replacement part indicated in Table 1.

ANVILFLEX™ FIG. AF21-GG, -GF & -FF

Flex Connectors

Installation

1 Avoid torque. Do not twist the hose assembly during installation when aligning the bolt holes in a flange or in making up pipe threads. The utilization of lap joint flanges or pipe unions will minimize this condition.

2 To install a thread end braided metal hose assembly unions must be used. Do not place wrenches on the braided portion or the collar of the braided metal hose assembly. Use care not to torque the braided metal hose assembly while tightening the union. It is recommended that two wrenches be used in making the union connection; one to prevent the hose from twisting and the other to tighten the coupling.

3 Install the braided metal hose assembly with neutral face-to-face dimension as shown on the submittal drawing. Do not install a braided metal hose assembly compressed (bagged braid). The corrugated inner hose contains the fluid, the braid is designed to lake the stress of system pressurization and contain the core.

4 If the braided metal hose assembly must be installed with an initial offset then the maximum allowable movement is reduced by the amount of the initial deflection.

5 Avoid over bending. The repetitive bending of a hose assembly to a radius smaller than the radius specified will result in early hose failure. Always provide sufficient length to prevent over bending and to eliminate strain on the hose assembly. Utilize sound geometric configurations that avoid sharp bends, especially near the end fittings of the assembly.

6 Verify that the movements of the system are within the design parameters of the braided metal hose assembly being installed.

7 Prevent out-of-plane flexing in an installation. Always install the hose assembly so that the flexing takes place in only one plane - - this being the plane in which the bending occurs

8 The maximum system test pressure must not exceed 150% of the maximum rated working pressure as shown

9 Check system pressure and temperature and do not exceed recommended performance limits. Operation beyond design limits will result in premature failure.

10 The corrugated metal hose alloy must be chemically compatible with the media in the piping system. If in doubt as to suitability, refer to a Chemical Resistance Data table or contact your Gruvlok rep. for guidance.

11 The flanges on a concentric increasing braided metal hose assembly have the bolt holes straddling the hose centerline. The mating flanges should also straddle the centerline to avoid torque on the braided metal hose assembly.

12 When installing weld end, or sweat end, braided metal hose assemblies, or when welding in the area of a braided metal hose assembly, extreme care is necessary in ensure no weld spatter comes in contact with the braided hose sections.

13 A piping system, which utilizes braided metal hose to absorb movement, must be properly anchored and/or guided. Always support the piping to prevent excessive weight from compressing the hose and relaxing the braid tension.

14 Use care when handling the braided metal hose assembly during transportation, storage, and installation. The braided hose sections must not be allowed to bend, deflect, sag, or otherwise extend beyond their rated capabilities.

15 The shipping sticks, on flanged units, are to keep the braided metal hose assembly in its neutral end-to-end dimension during shipping and installation. After installation, the shipping sticks should be removed.

Maintenance

1 The braided metal hose assembly should he inspected during routine maintenance to ensure there are no signs of external damage. Inspect for frayed or broken braid wires. Also inspect to ensure there is no damage to the hose. In the event that such damage is found, the braided metal hose assembly should be replaced.

2 During system shutdown braided metal hose assembly should be examined to verify no thermal axial motion has occurred causing compression of the assembly.

Groove x Groove
Proper Installation

Groove x Groove
Improper Installation
Parallel

Groove x Groove
Improper Installation
Compressed

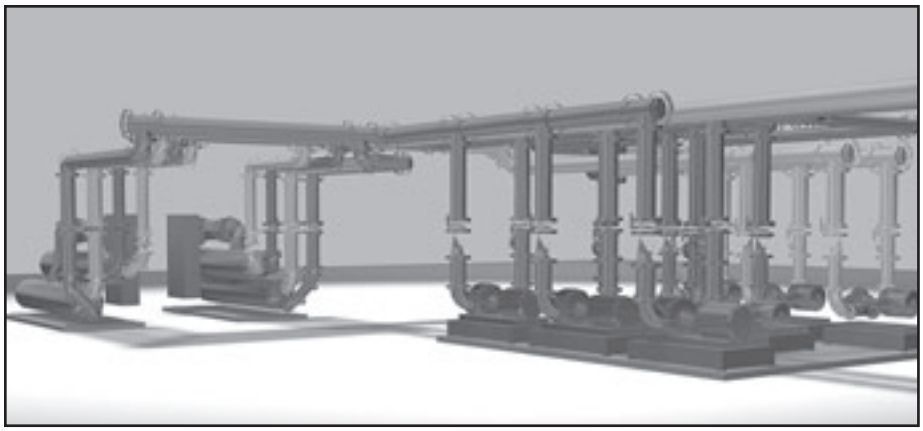
ANVIL DESIGN SERVICES

offers both Basic and Extended Services…

Contact your Anvil representative for more information.

BASIC SERVICES

Anvil Design Services produces fabrication drawings of mechanical room piping 21⁄2" and larger including chillers, heat exchangers, boilers, and pumps from contractor supplied flow diagrams, mechanical drawings, and approved submittals and specifications.



The drawings include a Bill of Materials with tags referencing the components in the mechanical room. The piping is color coded by service and is represented in 3-D with plan, isometric, and elevation views.

Initially, Anvil personnel meet with you to determine your piping preferences. The project scope and fee is agreed upon in a Design Services contract.

The plans and specifications are then interpreted in terms of economy, accuracy, and compliance. We may suggest modifications in arrangement, construction, equipment location, or product to attain the desired results. Piping layouts are carefully analyzed to determine whether further economies can be attained in the piping system.

Piping drawings are then prepared to determine the most efficient pipe routing, taking equipment location and any interferences into consideration. Preliminary prints are sent to you for revision or approval.

Upon approval, (4) sets of drawings with tags and Bills of Materials of the included system components are sent to you. Copies of the electronic data file of the project drawings are available at no extra charge. This brochure is an example of the finished product.

With Basic Services, you can plan the mechanical room. The preliminary drawings can be taken to coordination meetings with other trades to "reserve" space by "getting in" first. Also, your field supervisor can spend more time supervising and not calculating pipe lengths and pipe routing. The components can be grouped from the finished drawings for better workflow planning.

We usually reduce fitting counts by 10%-15% by moving equipment whenever possible, usually less than a foot. The more movement that is allowed, the more savings can be realized.

EXTENDED SERVICES:

Extended Services include any scope beyond Basic Services. There are many different types of services offered as extended:

- BOM by component (pump, chiller) or by system
- Unique Tagging – adding unique tags to individual components
- Air Handling Units – with associated ductwork
- Single Line Routing – non-dimensional
- Distribution Piping
- Dimensioned Floor Penetrations
- AWWA Piping - Total Scope
- Commercial Piping
- Oil Field Piping
- Retrofit Projects - Field Survey
- Hybrid Systems
- Anything Else

Contact your Anvil representative for more information.

PIPE

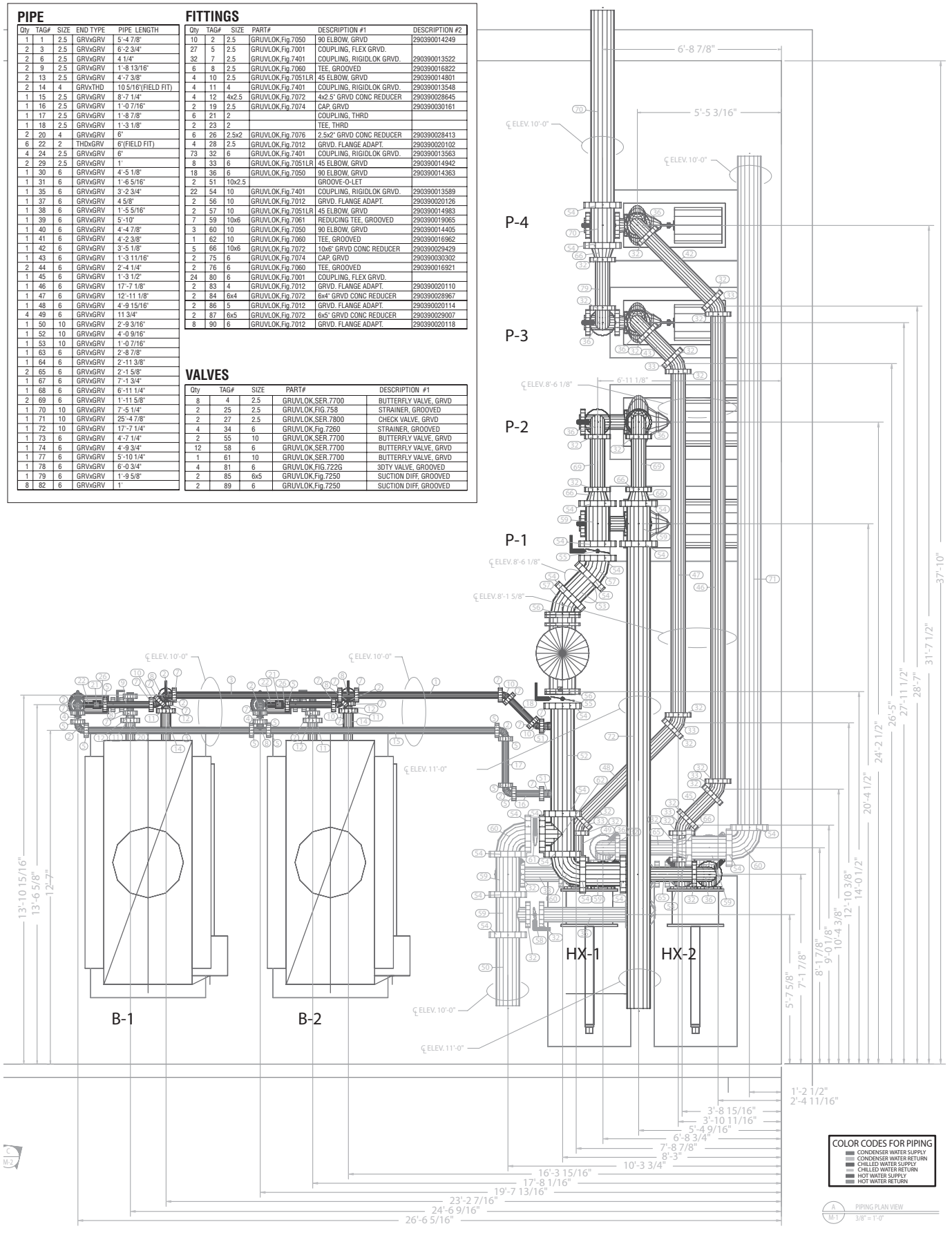
Qty	TAG#	SIZE	END TYPE	PIPE LENGTH
1	1	2.5	GRVxGRV	5'-4 7/8"
2	3	2.5	GRVxGRV	6'-2 3/4"
2	6	2.5	GRVxGRV	4 1/4"
2	9	2.5	GRVxGRV	1'-8 13/16"
2	13	2.5	GRVxGRV	4'-7 3/8"
2	14	4	GRVxTHD	10 5/16"(FIELD FIT)
1	15	2.5	GRVxGRV	8'-7 1/4"
1	16	2.5	GRVxGRV	1'-0 7/16"
1	17	2.5	GRVxGRV	1'-8 7/8"
1	18	2.5	GRVxGRV	1'-3 1/8"
2	20	4	GRVxGRV	6"
6	22	2	THDxGRV	6"(FIELD FIT)
4	24	2.5	GRVxGRV	6"
2	29	2.5	GRVxGRV	1'
1	30	6	GRVxGRV	4'-5 1/8"
1	31	6	GRVxGRV	1'-6 5/16"
1	35	6	GRVxGRV	3'-2 3/4"
1	37	6	GRVxGRV	4 5/8"
1	38	6	GRVxGRV	1'-5 5/16"
1	39	6	GRVxGRV	5'-10"
1	40	6	GRVxGRV	4'-4 7/8"
1	41	6	GRVxGRV	4'-2 3/8"
1	42	6	GRVxGRV	3'-5 1/8"
1	43	6	GRVxGRV	1'-3 11/16"
2	44	6	GRVxGRV	2'-4 1/4"
1	45	6	GRVxGRV	1'-3 1/2"
1	46	6	GRVxGRV	17'-7 1/8"
1	47	6	GRVxGRV	12'-11 1/8"
1	48	6	GRVxGRV	4'-9 15/16"
4	49	6	GRVxGRV	11 3/4"
1	50	10	GRVxGRV	2'-9 3/16"
1	52	10	GRVxGRV	4'-0 9/16"
1	53	10	GRVxGRV	1'-0 7/16"
1	63	6	GRVxGRV	2'-8 7/8"
1	64	6	GRVxGRV	2'-11 3/8"
2	65	6	GRVxGRV	2'-1 5/8"
1	67	6	GRVxGRV	7'-1 3/4"
1	68	6	GRVxGRV	6'-11 1/4"
2	69	6	GRVxGRV	1'-11 5/8"
1	70	10	GRVxGRV	7'-5 1/4"
1	71	10	GRVxGRV	25'-4 7/8"
1	72	10	GRVxGRV	17'-7 1/4"
1	73	6	GRVxGRV	4'-7 1/4"
1	74	6	GRVxGRV	4'-9 3/4"
1	77	6	GRVxGRV	5'-10 1/4"
1	78	6	GRVxGRV	6'-0 3/4"
1	79	6	GRVxGRV	1'-9 5/8"
8	82	6	GRVxGRV	1'

FITTINGS

Qty	TAG#	SIZE	PART#	DESCRIPTION #1	DESCRIPTION #2
10	2	2.5	GRUVLOK,Fig.7050	90 ELBOW, GRVD	290390014249
27	5	2.5	GRUVLOK,Fig.7001	COUPLING, FLEX GRVD.	
32	7	2.5	GRUVLOK,Fig.7401	COUPLING, RIGIDLOK GRVD.	290390013522
6	8	2.5	GRUVLOK,Fig.7060	TEE, GROOVED	290390016822
4	10	2.5	GRUVLOK,Fig.7051LR	45 ELBOW, GRVD	290390014801
4	11	4	GRUVLOK,Fig.7401	COUPLING, RIGIDLOK GRVD.	290390013548
4	12	4x2.5	GRUVLOK,Fig.7072	4x2.5" GRVD CONC REDUCER	290390028645
2	19	2.5	GRUVLOK,Fig.7074	CAP, GRVD	290390030161
6	21	2		COUPLING, THRD	
2	23	2		TEE, THRD	
6	26	2.5x2	GRUVLOK,Fig.7076	2.5x2" GRVD CONC REDUCER	290390028413
4	28	2.5	GRUVLOK,Fig.7012	GRVD. FLANGE ADAPT.	290390020102
73	32	6	GRUVLOK,Fig.7401	COUPLING, RIGIDLOK GRVD.	290390013563
8	33	6	GRUVLOK,Fig.7051LR	45 ELBOW, GRVD	290390014942
18	36	6	GRUVLOK,Fig.7050	90 ELBOW, GRVD	290390014363
2	51	10x2.5		GROOVE-O-LET	
22	54	10	GRUVLOK,Fig.7401	COUPLING, RIGIDLOK GRVD.	290390013589
2	56	10	GRUVLOK,Fig.7012	GRVD. FLANGE ADAPT.	290390020126
2	57	10	GRUVLOK,Fig.7051LR	45 ELBOW, GRVD	290390014983
7	59	10x6	GRUVLOK,Fig.7061	REDUCING TEE, GROOVED	290390019065
3	60	10	GRUVLOK,Fig.7050	90 ELBOW, GRVD	290390014405
1	62	10	GRUVLOK,Fig.7060	TEE, GROOVED	290390016962
5	66	10x6	GRUVLOK,Fig.7072	10x6" GRVD CONC REDUCER	290390029429
2	75	6	GRUVLOK,Fig.7074	CAP, GRVD	290390030302
2	76	6	GRUVLOK,Fig.7060	TEE, GROOVED	290390016921
24	80	6	GRUVLOK,Fig.7001	COUPLING, FLEX GRVD.	
2	83	4	GRUVLOK,Fig.7012	GRVD. FLANGE ADAPT.	290390020110
2	84	6x4	GRUVLOK,Fig.7072	6x4" GRVD CONC REDUCER	290390028967
2	86	5	GRUVLOK,Fig.7012	GRVD. FLANGE ADAPT.	290390020114
2	87	6x5	GRUVLOK,Fig.7072	6x5" GRVD CONC REDUCER	290390029007
8	90	6	GRUVLOK,Fig.7012	GRVD. FLANGE ADAPT.	290390020118

VALVES

Qty	TAG#	SIZE	PART#	DESCRIPTION #1
8	4	2.5	GRUVLOK,SER.7700	BUTTERFLY VALVE, GRVD
2	25	2.5	GRUVLOK,FIG.758	STRAINER, GROOVED
2	27	2.5	GRUVLOK,SER.7800	CHECK VALVE, GRVD
4	34	6	GRUVLOK,Fig.7260	STRAINER, GROOVED
2	55	10	GRUVLOK,SER.7700	BUTTERFLY VALVE, GRVD
12	58	6	GRUVLOK,SER.7700	BUTTERFLY VALVE, GRVD
1	61	10	GRUVLOK,SER.7700	BUTTERFLY VALVE, GRVD
4	81	6	GRUVLOK,FIG.722G	3DTY VALVE, GROOVED
2	85	6x5	GRUVLOK,Fig.7250	SUCTION DIFF, GROOVED
2	89	6	GRUVLOK,Fig.7250	SUCTION DIFF, GROOVED



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- **Scotchcote 134** — A fusion bonded epoxy coating designed to resist wastewater, corrosive soils, hydrocarbons, harsh chemicals, brine and saltwater.
- **Corvel 1660** — Specially designed to protect the inside diameter of tubular goods from corrosive conditions such as H2S, CO2, harsh chemicals, brine and saltwater.
- **Additional Coatings** — We offer other coatings as well, including: *Nickel, Chrome, Teflon, Nap-Guard, Powder* and many more.

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Fax: (432) 366-0890
E-Mail: bgilliam@anvilintl.com

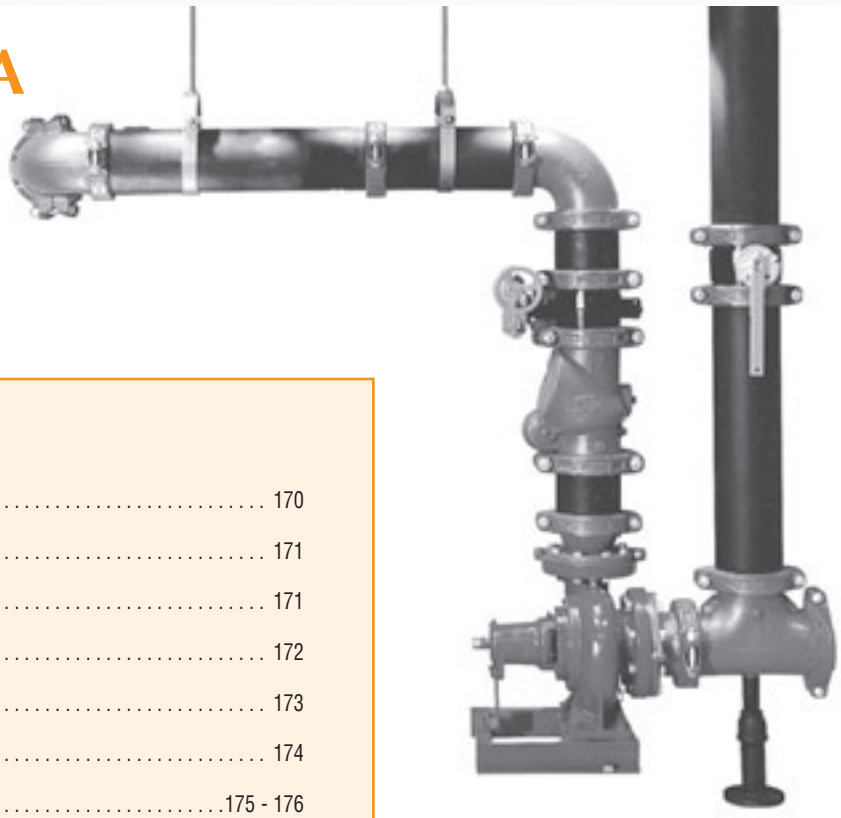
Did you know...

Anvil International is the only manufacturer to stock, offer and warranty coated piping product solutions.

Anvil's protective coatings are ideal for both internal and external applications, including:

- Natural Gas
- Petroleum
- Water and Sewage
- Refineries
- Petrochemical Plants
- Power Plants
- Paper Mills

TECHNICAL DATA



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GRUVLOK® LUBRICANTS

GRUVLOK® XTREME™ LUBRICANT

Gruvlok® Xtreme™ Lubricant has been developed for use with Gruvlok couplings in services where improved lubrication is beneficial. This lubricant has an operating temperature range from -65°F to 400°F (-53.8°C to 204°C), well exceeding the temperature range of Gruvlok gaskets. This lubricant is waterproof, thereby eliminating water wash-out and it will not dry out in the absence of water. There are five primary applications where the Xtreme Lubricant will provide increased benefits: low temperature applications (below -20˚F(-28.0°C)), high temperature applications (above 150˚F (65.6°C)), applications where increased pipe joint flexibility is needed, lubrication of gaskets in copper systems, and for the lubrication of gaskets on HDPE couplings. Since it is formulated from a non-hydro carbon base, it can be used with EPDM, Nitrile and Fluoroelastomer gasket materials. **It is not to be used with Silicone gaskets.**

- In low temperature applications the gasket will shrink, thereby lowering the sealing force on the gasket sealing lips. The temperature change will also force the gasket to slightly re-position itself. This will cause pipe end sealing surfaces, with small cuts or damage, to become more susceptible to leakage. Gruvlok Xtreme Lubricant will maintain it's lubricating properties at lower temperatures allowing a properly lubricated pipe end and gasket (assembly) to re-position itself during temperature cycles.
- For high temperature service and copper systems, it is required that the gasket be lubricated not only on the outside, as with the normal installation of a Gruvlok gasket, but also on the inside. Lubrication on the inside of the gasket is easily accomplished by turning the gasket inside out and applying the lubricant. Gruvlok Xtreme Lubricant will maintain it's lubricating properties at higher temperatures, allowing a properly lubricated pipe end and gasket assembly to re-position itself during temperature cycles. Lubrication of the pipe end and gasket will help the gasket to adjust into the proper sealing position during temperature cycles. The lubricant on the interior of the gasket will act to improve the chemical resistance of the gasket material by providing a thin lubricant barrier between the piping system fluid and the gasket surface. This is particularly important at higher temperatures where oxidizing agents in the piping system become more aggressive. **However, gasket chemical compatibility must still be considered.**
- The Gruvlok Xtreme Lubricant has been formulated from low viscosity, non-petroleum based oils to ease spreading of the lubricant. In applications where pipe movement is expected, proper lubrication of the gasket's exterior assists the gasket into the proper sealing position as pipe system movement occurs. This lubricating film enhances our flexible coupling gasket's ability to compensate for axial, transverse and rotational pipe movements.
- Gruvlok Xtreme Lubricant is the only Gruvlok lubricant that is to be used with Gruvlok couplings and gaskets in HDPE and copper piping systems. It's low temperature capability and lubricity ensure a highly reliable connection.

NSF Certified to ANSI/NSF 61

Gruvlok® Xtreme™ Lubricant is a Teflon® fortified white, tasteless and odorless grease made from Silicone Oil and other ingredients that are safe to ingest. It is sanctioned by the FDA under C.F.R. 21.172.878 & 21.177.1550 (Incidental Food Contact). It is NSF approved for use with potable water.

CAUTION: Silicone based lubricants are not allowed in some facilities.

®Teflon is a registered trademark of Dupont.

GRUVLOK® QUICK DRY LUBRICANT

Gruvlok® Quick Dry Lubricant is a fast drying lubricant that has been developed for applications where the piping system is exposed. The service temperature range for this lubricant is from 0° F to 150° F (-17.8°C to 65.6°C) and may be used with all Gruvlok gasket material grades. The lubricant is made from a water emulsion that is non-toxic, it will not impart taste or odor, and does not support bacterial growth. Gruvlok Quick Dry Lubricant is non-corrosive, non-flammable, and is NSF approved for use with potable water.

This lubricant is easy to apply by brush or hand, and it quickly dries to a thin film when in contact with air. It is water-soluble. The quick drying quality of the lubricant eliminates lubricant drips caused by over lubrication. If necessary, reapply lubricant prior to assembly. Do not thin or mix with solvents.

GRUVLOK® LUBRICANT

Gruvlok® Lubricant is the standard lubricant that has been provided for use with Gruvlok products for years. Gruvlok Lubricant is water soluble, non-toxic, non-corrosive, non-flammable, and will not impart taste or odor. It is NSF approved for use with potable water. This lubricant is acceptable for most applications, however, the Gruvlok Xtreme Lubricant and Gruvlok Quick Dry Lubricant are now available to improve the performance of the couplings and flanges in certain applications.

CAUTION: HDPE pipe requires the use of Gruvlok Xtreme Lubricant and should not be used with Gruvlok Lubricant

SPECIFIED BOLT TORQUE

Specified bolt torque is for the oval neck track bolts used on Gruvlok couplings and flanges. The nuts must be tightened alternately and evenly until fully tightened. **CAUTION:** Use of an Impact wrench is not recommended because the torque output can vary significantly due to many variables including air pressure supply, battery strength and operational variations.

CAUTION: Proper torquing of coupling bolts is required to obtain specified performance. **Over torquing the bolts may result in damage to the bolt and/or casting which could result in pipe joint separation.** Under torquing the bolts may result in lower pressure retention capabilities, lower bend load capabilities, joint leakage and pipe joint separation. Pipe joint separation may result in significant property damage and serious injury.

NOTE: Use specified bolt torque unless otherwise indicated on product installation pages.

ANSI Specified Bolt Torque

Bolt Size	Wrench Size	Specified Bolt Torque *
In.	*In.*	*Ft.-Lbs*
3/8	11/16	30-45
1/2	7/8	80-100
5/8	1 1/16	100-130
3/4	1 1/4	130-180
7/8	1 7/16	180-220
1	1 5/8	200-250
1 1/8	1 13/16	225-275
1 1/4	2	250-300

* Non-lubricated bolt torques

Metric Specified Bolt Torque

Bolt Size	Wrench Size	Specified Bolt Torque *
mm	*mm*	*N-M*
M10	16	40-60
M12	22	110-150
M16	24	135-175
M20	30	175-245
M22	34	245-300
M24	36	270-340

* Non-lubricated bolt torques

DESIGN FACTORS

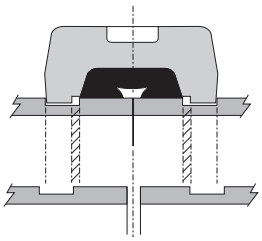
MOVEMENT:

Each flexible design Gruvlok coupling can provide for pipe system movement up to the design maximum for the specific size and type coupling being utilized. Movement is possible in the Gruvlok coupling due to two factors: (1) designed-in clearance between the key of the coupling and the groove diameter and groove width, and (2) the gap between pipe ends joined by the coupling.

LINEAR MOVEMENT:

FLEXIBLE COUPLING LINEAR MOVEMENT

Linear movement is accommodated within the coupling by allowing the pipe ends to move together or apart in response to pressure thrusts and temperature changes. The available linear movement provided by Standard Gruvlok couplings is shown below:



Represents Linear Movement Capabilities

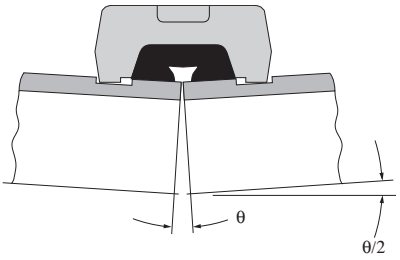
Linear Movement

Sizes	Roll Groove Pipe	Cut Groove Pipe
1" through 3 1/2 "	1/16"	1/16"
4" though 24"	3/32"	3/16"

ANGULAR MOVEMENT:

FLEXIBLE COUPLING ANGULAR MOVEMENT

Designed-in clearances allow limited deflection of the pipe joint within the coupling, without introducing eccentric loads into the coupling joint.



The maximum available angular movement of Gruvlok coupling joints is shown in the performance data for each coupling type. The amount of angular flexibility varies for each coupling size and type. For design purposes the published figures should be reduced by the below listed factors to account for pipe, groove and coupling tolerances.

Angular Movement

Sizes	Design Factor	
	Roll Groove	Cut Groove
1" through 3 1/2 "	Reduce 50%	Reduce 50%
4" though 24"	Reduce 50%	Reduce 25%

RIGID COUPLINGS

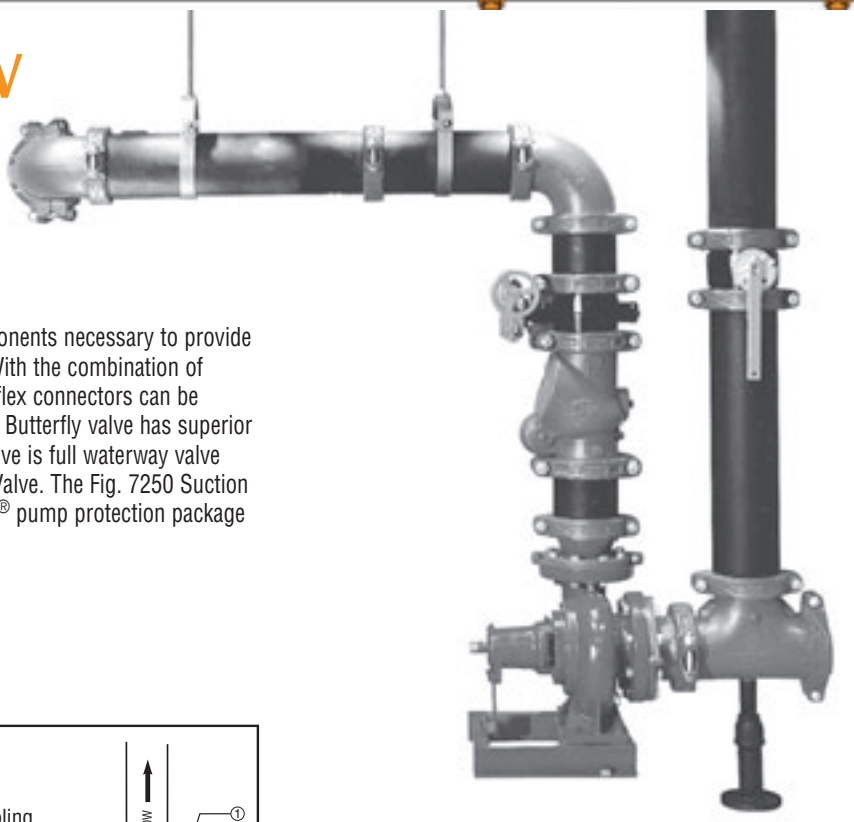
Gruvlok rigid couplings Fig. 7400, Fig. 7401 and Fig. 7004 HPR are designed to provide a joint with the attributes of a welded or flanged connection. Therefore, these joints would remain in strict alignment and would resist deflection and linear movement during service.

FLEXIBLE COUPLINGS

Figs. 7000, 7001, 7003, 7010 are the flexible couplings provided in the Gruvlok product line. The following information on movement applies to these flexible couplings.

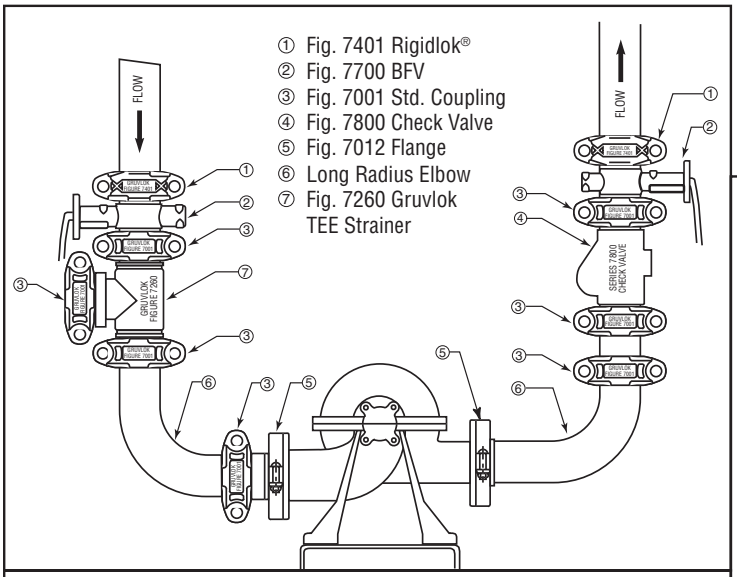
GRUVLOK® FLOW CONTROL

Components



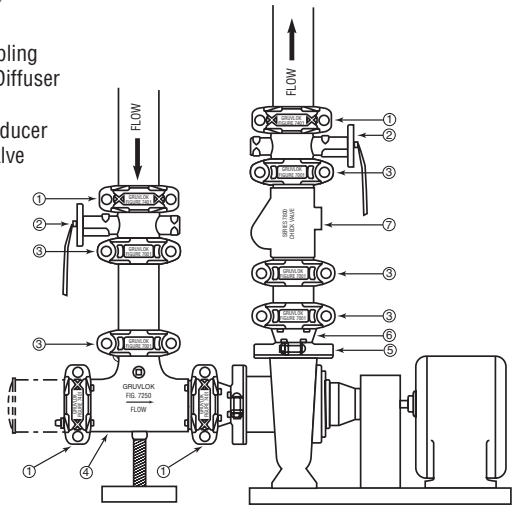
Anvil has put together a complete array of Gruvlok components necessary to provide pump protection for HVAC and industrial piping needs. With the combination of the Fig. 7401 Rigidlok and Fig. 7001 Standard coupling, flex connectors can be eliminated thus reducing cost. The Series 7700 Gruvlok® Butterfly valve has superior flow characteristics. The Gruvlok® Series 7800 Check Valve is full waterway valve and can be stacked directly to the Series 7700 Butterfly Valve. The Fig. 7250 Suction Diffuser and Fig. 7260 Tee Strainer complete the Gruvlok® pump protection package

HORIZONTAL SPLIT CASE PUMP



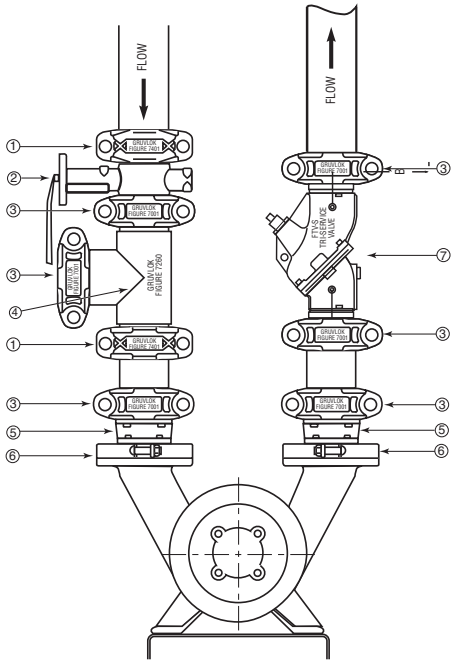
① Fig. 7401 Rigidlok®
② Fig. 7700 BFV
③ Fig. 7001 Std. Coupling
④ Fig. 7800 Check Valve
⑤ Fig. 7012 Flange
⑥ Long Radius Elbow
⑦ Fig. 7260 Gruvlok TEE Strainer

END SUCTION PUMP



① Fig. 7401 Rigidlok®
② Fig. 7700 BFV
③ Fig. 7001 Std. Coupling
④ Fig. 7250 Suction Diffuser
⑤ Fig. 7012 Flange
⑥ Fig. 7072 Conc. Reducer
⑦ Fig. 7800 Check Valve

VERTICAL SPLIT CASE PUMP

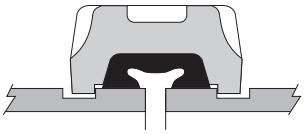


① Fig. 7401 Rigidlok®
② Fig. 7700 BFV
③ Fig. 7001 Std. Coupling
④ Fig. 7260 TEE Strainer
⑤ Fig. 7072 Conc. Reducer
⑥ Fig. 7012 Flange
⑦ FTV-S Tri Service Valve

GRUVLOK GASKET-STYLES

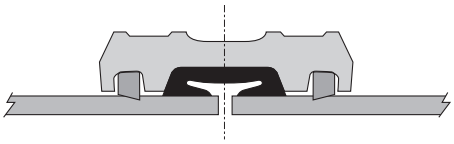
Gruvlok offers a variety of pressure responsive gasket styles. Each serves a specific function while utilizing the same basic sealing concept. Proper installation of the gasket compresses the inclined gasket lips on the pipe O.D., forming a leak-tight seal. This sealing action is reinforced when the gasket is encompassed and compressed by the coupling housings. The application of internal line pressure energizes the elastometric gasket and further enhances the gasket sealing action.

"C" STYLE



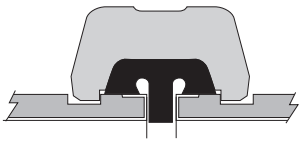
The "C" Style cross section configuration is the most widely used gasket. It is the gasket style provided as standard in many Gruvlok Couplings (Fig. 7000, 7001, 7003, 7004HPR, 7307, 7400 and 7401). Grade "E" and "T" are standard grades while other grades are available for special applications.

ROUGHNECK®



This "C" style gasket is similar in appearance and design to the Standard gasket but is only used with Fig. 7005 Roughneck Couplings and Fig. 7305 HDPE Couplings. The Roughneck gasket is wider, which allows for minor pipe end separation as line pressure sets the grippers into the plain end pipe.

END GUARD®

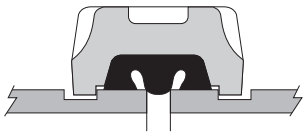


The projecting rib fits between the ends of lined pipe to prevent damage to unprotected pipe ends during coupling joint assembly.

The E.G. gasket is provided as standard with the Fig. 7004 E.G. Coupling.

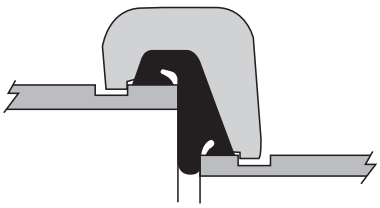
Grade "E" and "T" gaskets are available.

FLUSH GAP®



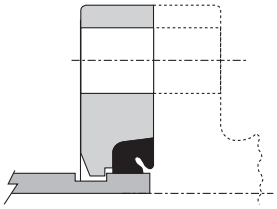
Designed to prohibit contaminates from building up in the gasket cavity. The centering rib fits flush over the gap between the two pipe ends thus closing off the gasket cavity. It can be used with Fig. 7000, 7001, 7003, 7004, 7400 and 7401 Couplings for many applications. Recommended for use in dry fire protection systems. Not recommended for use at temperatures above 160°F.

REDUCING COUPLING



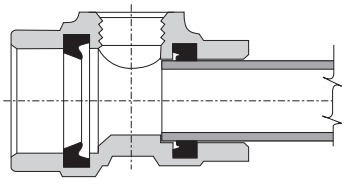
The centering rib allows for pipe positioning and serves to keep the smaller pipe from telescoping during installation. Used only with the Fig. 7010 Reducing Coupling.

FLANGE



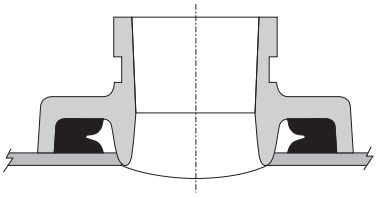
A specially designed gasket for the Fig. 7012, 7013 and 7312 Flange provides for a reliable seal on both the pipe and the mating flange.

SOCK-IT®



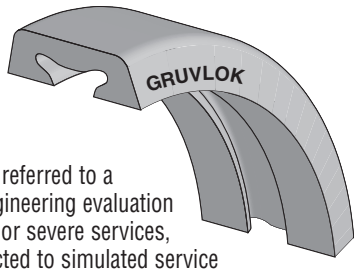
Used in Sock-It fittings only, this pressure energized gasket provides a leak-tight seal on plain end seal pipe. Available in Grade "E" material only.

CLAMP-T®



These gaskets conform to the curved exterior of the pipe to provide a pressure responsive seal. This unique design is only used with Fig. 7045, 7046 Clamp-T and Fig. 7047, 7048, and 7049 Clamp-T Crosses.

GASKET GRADE INDEX & GASKET RECOMMENDATION



The lists are provided as an aid in selecting the optimum gasket grade for a specific application to assure the maximum service life.

The recommendations have been developed from current information supplied by manufacturers of the elastomers, technical publications, and industry applications. The information supplied should be considered as a basis for evaluation but not as a guarantee.

Selection of the optimum gasket grade for a specific service requires the consideration of many factors; primarily temperature, fluid concentration, and continuity of service. Unless otherwise noted, all gasket recommendations are based on 100°F (38°C) maximum temperature service condition. Where more than one gasket grade is shown, the preferred grade is listed first.

Combinations of fluids should be referred to a Gruvlok Representative for an engineering evaluation and recommendation. In unusual or severe services, gasket materials should be subjected to simulated service conditions to determine the most suitable gasket grade.

Gasket recommendations apply only to Gruvlok gaskets. Contact a Gruvlok Representative for recommendations for services not listed. These listings do not apply to Gruvlok Butterfly Valves.

All Gruvlok products marked with UL/ULC Listed, FM approved VdS and/or LPC symbols are Listed/Approved with EPDM material. For other Listed/Approved materials, please contact a Gruvlok Representative for more information.

GASKET GRADE INDEX

Standard Gaskets

Grade	Temp. Range	Compound	Color Code	General Service Applications
E	-40°F to +230°F (-40°C to110°C)	EPDM	Green	Water, dilute acids, alkalies, salts, and many chemical services not involving hydrocarbons, oils, or gases. Excellent oxidation resistance. **NOT FOR USE WITH HYDROCARBONS**
T	-20°F to +180°F (-29°C to 82°C)	Nitrile (Buna-N)	Orange	Petroleum products, vegetable oils, mineral oils, and air contaminated with petroleum oils. **NOT FOR USE IN HOT WATER SERVICES**

Special Gaskets

Grade	Temp. Range	Compound	Color Code	General Service Applications
O	+20°F to +300°F (-20°C to 149°C)	Fluoro Elastomer	Blue	High temperature resistance to oxidizing acids, petroleum oils, hydraulic fluids, halogenated.hydrocarbons and lubricants
L	-40°F to +350°F (-40°C to 177°C)	Silicone	Red Gasket	Dry, hot air and some high temperature chemical services.
E Type A	-40°F to +150°F (-40°C to 66°C)	PROVIDED WITH DRI-SEAL® GASKET	Violet	Wet & Dry (oil free air) Pipe in Fire Protection Systems. For dry pipe systems, Gruvlok Xtreme™ Temperature Lubricant is required

GASKET RECOMMENDATION LISTING

Water & Air

Service	Gasket Grade
Air, (no oil vapors) Temp. -40°F to 230°F (-40°C to 110°C)	E
Air, (no oil vapors) Temp. -40°F to 350°F (-40°C to 177°C)	L
Air, Oil vapor Temp. -20°F to 150°F (-29°C to 66°C)	T
Air, Oil vapor Temp. 20°F to 300°F (-7°C to 149°C)	O
Water, Temp to 150°F (66°C)	E/T
Water, Temp to 230°F (110°C)	E
Water, Acid Mine	E/T
Water, Chlorine	(E/O)
Water, Deionized	E/T
Water, Seawater	E/T
Water, Waste	E/T
Water, Lime	E/T

Where more than one gasket grade is shown the preferred gasket grade is listed first. Where the gasket grade is shown in parentheses, Contact a Gruvlok Representative for an engineering evaluation and recommendation. Specify gasket grade when ordering. Use Gruvlok lubricant on gasket. Check gasket color code to be certain it is recommended for the service intended.

Petroleum Products

Service	Gasket Grade
Crude Oil - Sour	T
Diesel Oil	T
Fuel Oil	T
Gasoline, Leaded	T
Gasoline, Unleaded*	(O)
Hydraulic Oil	T
JP-3, JP-4 and JP-5	T/O
JP-6, 100°F (38°C) Maximum Temp.	O
Kerosene	T
Lube Oil, to 150°F (66°C)	T
Motor Oil	T
Tar and Tar Oil	T
Transmission Fluid --Type A	O
Turbo Oil #15 Diester Lubricant	O

Unless otherwise noted, all gasket listings are based upon 100°F (38°C) maximum temperature service conditions.
For services not listed Contact a Gruvlok Representative for recommendation.
*Contact Contact a Gruvlok Representative for service evaluation.

VACUUM SERVICE

Vacuum Service

Size	Vacuum Level	Gasket Recommendation
1" - 6" (25 - 150mm)	0" - 29.92" Hg	Standard or Flush Gap
8" - 12" (200 - 300mm)	0" - 15 Hg	Standard or Flush Gap
1½" - 12" (40 - 200mm)	0" - 29.92 Hg	Flush Gap

LARGER SIZES: Contact a Gruvlok Representative for more information.

GRUVLOK GASKET-RECOMMENDATIONS

Chemical Services	
Chemical Composition	Gasket Grade
Acetic Acid 50%	E
Acetic Acid Glacial	L/E
Acetone	E
Acethlene	E/T
Alkalis	T/E
Alums	E/T/O
Aluminum Chloride	E/T
Aluminum Fluoride	E/T/O
Aluminum Hydroxide	E/O
Aluminum Nitrate	E/T
Aluminum Salts	E
Ammonia Gas, Cold	E
Ammonia Liquid	E
Ammonium Chloride	T/E
Ammonium Fluoride	E
Ammonium Hydroxide	E
Ammonium Nitrate	T/E
Amyl Acetate	E
Amyl Alcohol	E
Aniline	E
Animal Fats	T
Argon-Gas	L
Arsenic Acid, to 75%	T/E/O
Barium Carbonate	E/T
Barium Chloride	E/T
Barium Hydroxide	E/T
Barium Nitrate	E/O
Barium Sulphide	E/T
Beet Sugar Liquors	T
Benzene	O
Benzene Sulfonic (Aromatic Acid)	(E)
Benzoic Acid	O
Benzyl Alcohol	E
Benzyl Chloride	E
Black Sulphate Liquor	T
Bleach, 5% Active Cl2	E/O
Borax	E/O
Boric Acid	E/T
Bromine	O
Butyl Alcohol	E/T
Butyl Stearate	E
Butylene	T/O
Calcium Bisulfate	T/O
Calcium Bisulphide	T/O
Calcium Bisulphite	T/O
Calcium Carbonate	E/T
Calcium Chloride	E/T
Calcium Hydroxide (Lime)	E/T

Chemical Services	
Chemical Composition	Gasket Grade
Calcium Sulfate	E/T
Calcium Sulfide	E/T
Caliche Liquors	E/T
Cane Sugar Liquors	T
Carbitol	E/T
Carbon Dioxide, Dry	E/T
Carbon Dioxide, Wet	E/T
Carbon Monoxide	E
Carbon Tetrachloride	O
Castor Oil	T
Caustic Potash	T
Caustic Soda	E
Cellosolve	E
Chlorine Dry	(O)
Chlorinate Solvents	(O)
Chlorobenzene	O
Chlorobenzene Chloride	O
Chlorobromomethane	O
Chloroform	O
Chrome Alum	E/T
Chrome Plating Solutions	O
Chromic Acid, to 50%	O
Citric Acid	E/T
Coconut Oil	T
Cod Liver Oil	T
Coke Oven Gas	T/O
Copper Carbonate	E/T
Copper Chloride	E/T
Copper Cyanide	E/T
Copper Sulphate	E/T
Corn Oil	T
Cotton Seed Oil	T
Cresole, Cresylic Acid	T/O
Creosote, Coal Tar	(T/O)
Creosote, Wood	T/O
Cupric Chloride	E/T
Cupric Fluoride	E/T
Cupric Sulphate	E/T
Cychohexanol	O
Diacetone Alcohol	E
Dichlorobenzene	O
Dichloroethylene	O
Dioctyl Phthalate	(E)
Epson-Salt	E/T
Ethane	E
Ethanolamine	E
Ethyl Acetate	(E)
Ethyl Alcohol	E/T

Chemical Services	
Chemical Composition	Gasket Grade
Ethyl-Chloride	E/T
Ethyl Ether	(T)
Ethylene Chloride	E
Ethylene Chlorohydrin	E
Ethylene Diamine	E/T
Ethylene Dichloride (Dichloroethane)	O
Ethylene Glycol	E/T
Ethylene Oxide	(E)
Ferric Chloride, to 35%	E/T
Ferric Nitrate	E/T
Ferric Sulphate	E/T
Ferrous Chloride	E/T
Fish Oils	T
Fluroboric Acid	E
Fluorosilicic Acid	E
Fly-Ash	E
Formaldehyde	E/T
Formamide	E/T
Formic Acid	E/O
Freon 11, 130°F (54°C) Max.	T
Freon 12, 113, 114, 115, 130°F (54°C) Max.	T
Fructose	T
Furfuryl Alcohol	(E)
Glucose	E/T
Glue	T
Glycerin	E/T
Glycerol	E/T
Glycol	E/T
Heptane	T
Hexaldehyde	E
Hexane	T
Hexylene Glycol	T
Hydrochloric Acid, to 36%, 75°F (24°C)-Max.	E
Hydrochloric Acid, to 36%, 158°F (70°C)-Max.	(O)
Hydrofluoric Acid, to 75%, 158°F (70°C)-Max.	(O)
Hydrofluosilicic Acid	T/E
Hydrogen Peroxide, to 50%	E/T/O
Hydrogen Peroxide, to 90%	(L/O)
Hydroquinone	T/O
Iodine,-Wet	E
Isoamyl Alcohol	E
Isooctane	T
Isobutyl Alcohol	E
Isopropyl Alcohol	E
Lacquer	(O)
Lacquer Solvent	(O)
Lactic Acid	T
Lard Oil	T

Where more than one gasket grade is shown the preferred gasket grade is listed first.
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Check gasket grade when ordering. Use Gruvlok lubricant on gasket.

Unless otherwise noted, all gasket listings are based upon 100°F (38°C) maximum temperature service conditions. For services not listed, Contact a Gruvlok Representative for recommendation. Check gasket color code to be certain it is recommended for the service intended.

GRUVLOK GASKET-RECOMMENDATIONS (CONT.)

Chemical Services	
Chemical Composition	**Gasket Grade**
Latex (1% Styrene &-Butadiene)	O
Lead Acetate	E/T
Linseed Oil	T
Lithium Bromide	T/O
Magnesium Chloride	E/T
Magnesium Hydroxide	E/T
Magnesium Nitrate	E
Magnesium Sulphate	E/T
Malonyl Nitrile	E/T
Mercuric Chloride	E/T
Mercuric Cyanide	E/T
Mercury	E/T
Methyl Acetate	(E)
Methyl Alcohol, Methanol	E/T
Methyl Cellosolve (Ether)	E
Methyl Chloride	(O)
Methyl Ethyl Ketone	(E)
Methyl Formate	E
Methyl Isobutyl Carbinol	E/T
Methyl Isobutyl Ketone	(E)
Mineral Oils	T
Naphtha, 160°F (71°C)-Max.	O
Naphthalene 176°F	O
Nickel Chloride	E/T
Nickel Nitrate	E
Nickel Plating Solution 125°F (52°C)-Max.	E
Nitric Acid, to 10%, 75°F-(24°C)-Max.	E
Nitric Acid, 10-50%, 75°F-(24°C)-Max.	O
Nitric Acid, 50-86%, 75°F (24°C)-Max.	(O)
Nitric Acid, Red Fuming	(O)
Nitro Benzene	(O)
Nitrous Oxide	E
Octyl Alcohol	T
Olive Oil	T
Oxalic Acid	E
Ozone	E
Phenol (Carbolic acid) 300°F (149°C)-Max.	O
Phenylhydrazine	(O)
Phosphate Ester	E
Phosphoric Acid, to 75% & 70°F (21°C)-Max.	E/T

Chemical Services	
Chemical Composition	**Gasket Grade**
Phosphoric Acid, to 85% & 150°F (66°C) Max.	O
Photographic Solutions	T
Potassium Bromide	E/T
Potassium Carbonate	E/T
Potassium Chloride	E/T
Plating Solutions (gold, brass cadmium, copper, lead, silver, tin, zinc)	E
Potassium Chromate	T
Potassium Cyanide	E/T
Potassium Ferricyanide	E/T
Potassium Ferrocyanide	E/T
Potassium Hydroxide	T
Potassium Iodide	E/T
Potassium Nitrate	E/T
Potassium Permanganate, saturated, to 25%	E
Potassium Sulphate	E/T
Propanol	E
Propyl Alcohol	E/T
Propylene Glycol	E/T
Pydraul 312C	O
Pyroguard “C” &-“D”	T
Pyroguard 55	E
Pyrrole	E
Salicylic Acid	E/T
Silver Cyanide	E
Silver Nitrate	E
Skydrol, 200°F (93°C)-Max.	L
Skydrol 500 Phosphate Ester	(L/E)
Soda Ash,-Sodium Carbonate	E/T
Sodium Bicarbonate	E/T
Sodium Bisulphate	E/T
Sodium Bisulphite (black liquor)	E/T
Sodium Bromide	E/T
Sodium Chlorate	E/T
Sodium Chloride	E/T
Sodium Cyanide	E/T
Sodium Hydroxide, to 50%	E
Sodium Hypochlorite, to 20%	E
Sodium Metaphosphate	E/T
Sodium Nitrate	E/T

Chemical Services	
Chemical Composition	**Gasket Grade**
Sodium Peroxide	E
Sodium Phosphate	E/T
Sodium Silicate	E/T
Sodium Sulphide	E/T
Sodium Sulphite Solution, to 20%	E/T
Sodium Thiosulphate, “Hypo”	E/T
Soybean Oil	T
Stannous Chloride, to 15%	E/T/O
Starch	E/T
Stearic Acid	T
Styrene	O
Sucrose Solutions	T
Sulphur	E
Sulphuric Acid, to 25%, 150°F (66°C)-Max.	E
Sulphuric Acid, 25-50%, 200°F (93°C) Max.	O
Sulphuric Acid, 50-95%, 150°F-(66°C)-Max.	O
Sulphuric Acid, Fuming	(O)
Sulphuric Acid, Oleum	(O)
Sulphurous Acid	(O)
Tetrachloroethylene	O
Toluene	O
Tributyl Phosphate	(E)
Trichloroethylene, 200°F-(93°C)-Max	O
Triethanolamine	E/T
Trisodium Phosphate	(E/T)
Turpentine 158°F-(70°C)-Max.	T/O
Urea	E/T
Vegetable Oils	T
Vinegar	T
Vinyl Acetate	(E)
White Liquor	E
Xylene (Xylol)-158°F (70°C)-Max.	O
Zinc Sulphate	E/T

Where more than one gasket grade is shown the preferred gasket grade is listed first.
Where the gasket grade is shown in parentheses, Contact a Gruvlok Representative for an engineering evaluation and recommendation.
Check gasket grade when ordering. Use Gruvlok lubricant on gasket.

Unless otherwise noted, all gasket listings are based upon 100°F (38°C) maximum temperature service conditions. For services not listed, Contact a Gruvlok Representative for recommendation. Check gasket color code to be certain it is recommended for the service intended.

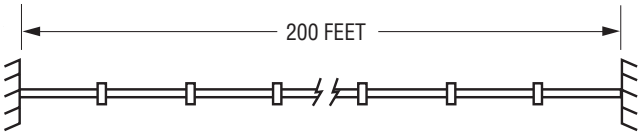
MOVEMENT-APPLICATIONS

THERMAL MOVEMENT:

A sufficient amount of coupling joints must be provided to accommodate the calculated movement (expansion or contraction) in a pipe run or segment thereof.

EXAMPLE:

A 200 foot long straight run of 4" steel cut grooved pipe between anchor points. Minimum Temperature: 40° F (4.4° C). (at time of installation). Maximum Oper. Temperature: 160° F (71.1° C).



Thermal expansion tables show this system will expand a total of 1.80" due to the temperature change.

DESIGN QUESTION:

How many couplings are required to account for the thermal growth?

AVAILABLE LINEAR MOVEMENT PER FLEXIBLE COUPLING:

Using the table on page 171, we see that there is 0.188" linear movement per coupling (4" Flexible Coupling)

COUPLINGS REQUIRED

As indicated above, the total movement is 1.80". Thus, the number of couplings is determined as follows:

No. of Couplings = Tot. Movement / Avail. Movement per Coupling

FOR OUR EXAMPLE:

No. of Couplings = (1.80") / (0.187") = 9.6,
Therefore 10 couplings are needed

POSITION OF COUPLINGS

In order for the couplings to provide for the movement indicated by the above example, it would be necessary to install all couplings with the maximum gap between pipe ends. Conversely, if the thermal movement was contraction due to a reduction of system temperature, the coupling joints would have be installed with the pipe ends butted, thus accommodating the "shrink" of the pipe system.

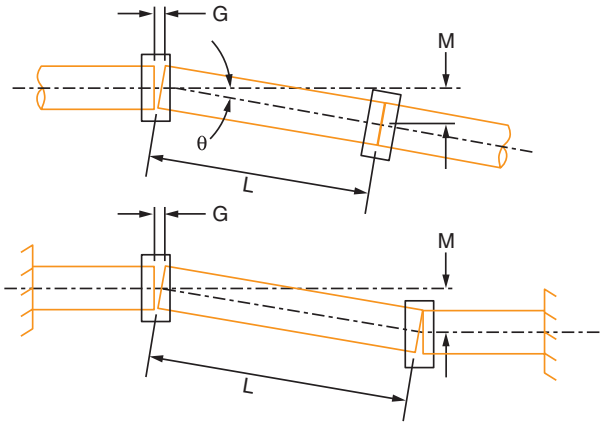
In either case the pipe run in question would have to be anchored at the proper locations to direct pipe system expansion or contraction into the coupling joints.

As can be seen from the above example, the pipe end gap within the coupling joint must be considered when designing a grooved-end pipe system to accommodate thermal movement. The couplings do not automatically provide for expansion and contraction of piping.

MISALIGNMENT & DEFLECTIONS:

The angular movement capability of the Gruvlok coupling permits the assembly of pipe joints where the piping is not properly aligned. At least two couplings are required to provide for lateral pipe misalignment. Deflection (longitudinal misalignment) may be accommodated within a single coupling as long as the angle of deflection does not exceed the value shown in the coupling performance data for the particular size and coupling type.

A pipe joint that utilizes the angular deflection capability of the Gruvlok coupling will react to pressure and thermal forces dependent upon the manner in which it is restrained. An unrestrained joint will react to these forces by straightening, thus reducing, if not eliminating, the deflection at the joint. If joint deflection has been designed into the pipe layout and must be maintained, then sufficient anchors must be provided to resist the lateral forces and hold the joint in the deflected condition.



The amount of deflection from pipe run centerline can be calculated utilizing the following equations:

$M = L (\sin \theta)$
$\theta = \text{ArcSin } (G/D)$
$M = (G \times L)/D$

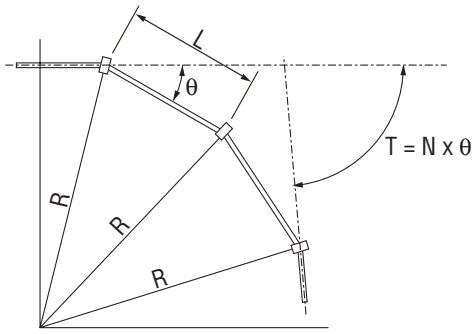
WHERE:

- M = Misalignment (inches)
- G = Maximum Allowable Pipe End Movement (Inches) as shown under "Performance Data" (Value to be reduced by Design Factor)
- θ = Maximum Deflection (Degrees) from centerline as shown under "Performance Data" (Value to be reduced by Design Factor)
- D = Pipe Outside Diameter (Inches)
- L = Pipe Length (Inches)

MOVEMENT-APPLICATIONS (CONT.)

CURVE LAYOUT:

Utilizing the angular deflection at each coupling joint curves may be laid out using straight pipe lengths and Gruvlok Couplings.



This example shows how to calculate the curve radius, required pipe lengths, and number of required couplings.

$R = L / (2 \times \sin(\theta/2))$
$L = 2 \times R \times \sin(\theta/2)$
$N = T / \theta$

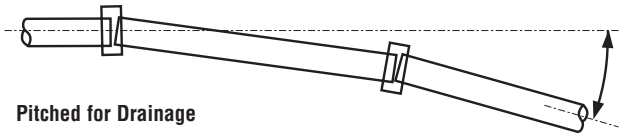
WHERE:

- N = Number of Couplings
- R = Radius of Curve (feet)
- L = Pipe Length (feet)
- θ = Deflection from centerline (Degrees) of each Coupling (See coupling performance data, value to be reduced by Design Factor)
- T = Total Angular Deflection of all Couplings.

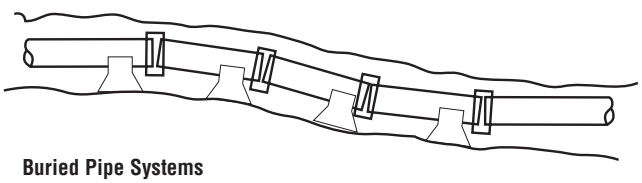
DRAINAGE, BURIED SYSTEMS, ETC.:

The flexible design of the Gruvlok coupling makes it ideal for use in a wide variety of systems in which random changes of the pipe direction can be accommodated by the Gruvlok coupling's angular deflection capability rather than requiring the use of special fittings.

Pitched drainage systems, buried pipe systems where pipe laying conditions are subject to settlement, and exposed pipe systems laid on rough ground are but a few of the many types of pipe installations that present conditions where the functional capability of the Gruvlok coupling are useful.



Pitched for Drainage



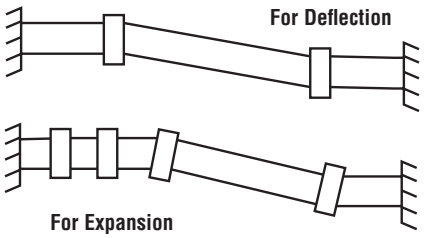
Buried Pipe Systems

COMBINED LINEAR & ANGULAR MOVEMENT:

The clearance in the grooved coupling joint, will allow a limited capability for combined linear and angular movement. A partially deflected joint will not provide full linear movement capability. A fully detected coupling joint provides no linear movement capability. The Gruvlok coupling will not allow for both maximum linear and maximum angular movement simultaneously.

In systems where both are expected, additional joints may be required.

NOTE: Fully Deflected Joint Will Not Allow For Linear Expansion.



In the example above, two couplings were added to account for thermal expansion and the other couplings accommodate only the misalignment.

The additional stress from the combined movement is therefore relieved.

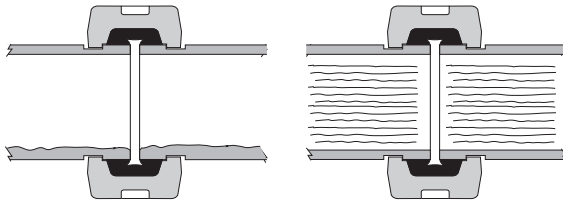
ROTATIONAL MOVEMENT:

Piping systems designed with Gruvlok Couplings can accommodate minor rotational movement from thermal expansion, settlement, vibration, or other similar movements. However, Gruvlok Couplings ***should never be used as a continuous swivel joint.***

EXAMPLE:

Utilizing the rotational capability of the Gruvlok Coupling, the pipe life of a slurry or similar coarse material piping system can be extended.

For pipe rotation, the system must be shut down and internal pressure



Before Pipe Rotation **After Pipe Rotation**

relieved.

The pipe may then be rotated one-quarter turn, the couplings retightened, and service resumed. If performed on a regular basis, pipe rotation will evenly distribute wear over the entire inner surface of the pipe.

COUPLING WORKING PRESSURE RATING

on Light Wall Roll Grooved Steel Pipe

GRUVLOK COUPLING WORKING PRESSURE RATING (PSI) ON LIGHT WALL ROLL GROOVED STEEL PIPE

Nominal Size	O.D.	Nom. Wall Thickness	Pipe Schedule	Maximum Working Pressure (PSI*)								
				Fig. 7000	Fig. 7001	Fig. 7003	Fig. 7004	Fig. 7010*	Fig. 7012	Fig. 7013	Fig. 7400	Fig. 7401
In./DN(mm)	*In./mm*	*In.*	*Number*	*Lightweight*	*Standard*	*Hingelok*	*HPR*	*Reducing*	*Flange*	*Flange*	*Rigidlite*	*Rigidlok*
1 *25*	1.315 *33.4*	0.065	5	300	500	–	–	–	–	–	175	–
		0.085	XL	300	300	–	–	–	–	–	300	–
		0.109	10	600	750	–	–	–	–	–	300	–
1¼ *32*	1.660 *42.2*	0.065	5	300	500	–	–	–	–	–	175	–
		0.085	XL	300	300	–	–	–	–	–	300	–
		0.109	10	600	750	–	–	–	–	–	300	–
1½ *40*	1.900 *48.3*	0.065	5	300	500	200	–	–	–	–	175	500
		0.090	XL	300	300	250	–	–	–	–	300	300
		0.109	10	600	750	300	–	–	–	–	300	750
2 *50*	2.375 *60.3*	0.065	5	300	500	200	500	250	200	500	175	500
		0.090	XL	300	300	250	300	300	300	300	300	300
		0.109	10	600	750	300	800	350	300	720	300	750
2½ *65*	2.875 *73.0*	0.083	5	300	500	200	500	250	200	500	175	500
		0.130	XL	300	300	250	300	300	300	300	300	300
		0.120	10	600	750	300	800	350	300	720	300	750
3 *80*	3.500 *88.9*	0.083	5	300	500	200	500	250	200	500	175	500
		0.130	XL	300	300	250	300	300	300	300	300	300
		0.120	10	600	750	300	800	350	300	720	300	750
3½ *90*	4.000 *101.6*	0.083	5	300	500	–	–	–	–	–	–	–
		0.120	10	600	750	–	–	–	–	–	–	–
4 *100*	4.500 *114.3*	0.083	5	300	500	200	400	200	200	500	175	500
		0.120	10	600	750	300	600	300	300	720	300	750
5 *125*	5.563 *141.3*	0.109	5	250	400	200	400	200	200	400	175	400
		0.134	10	500	500	250	600	300	300	500	300	500
6 *150*	6.625 *168.3*	0.109	5	250	350	150	400	200	200	350	175	350
		0.134	10	400	500	200	500	300	300	500	300	500
		0.188	–	400	500	200	700	350	300	500	300	500
8 *200*	8.625 *219.1*	0.109	5	250	300	150	300	150	200	300	175	300
		0.148	10	350	400	200	400	250	300	400	175	400
		0.188	–	350	400	200	500	300	300	400	300	400
		0.250	20	350	500	250	600	300	300	500	300	500
10 *250*	10.750 *273.1*	0.134	5	–	250	–	300	–	200	250	–	250
		0.165	10	–	350	–	400	–	200	350	–	350
		0.188	–	–	350	–	400	–	300	350	–	350
		0.250	20	–	400	–	500	–	300	400	–	400
12 *300*	12.750 *323.9*	0.156	5	–	200	–	200	–	200	200	–	200
		0.180	10	–	350	–	300	–	200	350	–	350
		0.188	–	–	350	–	300	–	300	350	–	350
		0.250	20	–	400	–	400	–	300	400	–	400
14 *350*	14.000 *355.6*	0.156	5	–	125	–	–	–	125	–	–	125
		0.250	10	–	250	–	–	–	250	–	–	250
		0.312	20	–	275	–	–	–	250	–	–	275
16 *400*	16.000 *406.4*	0.165	5	–	125	–	–	–	100	–	–	100
		0.250	10	–	175	–	–	–	175	–	–	175
		0.312	20	–	275	–	–	–	250	–	–	275
18 *450*	18.000 *457.2*	0.250	10	–	100	–	–	–	100	–	–	100
		0.312	20	–	175	–	–	–	175	–	–	175
20 *500*	20.000 *508.0*	0.250	10	–	100	–	–	–	100	–	–	100
		0.375	20	–	300	–	–	–	250	–	–	250
24 *600*	24.000 *609.6*	0.250	10	–	75	–	–	–	75	–	–	75
		0.375	20	–	300	–	–	–	250	–	–	250

Maximum line pressure, including surge, to which a joint should be subjected on pipe roll grooved to standard roll grooving specification with coupling properly assembled. For coupling performance on standard wall steel pipe, refer to individual Gruvlok Coupling performance listing.

* Rating based on larger pipe size.

COUPLING WORKING PRESSURE RATING

on Light Wall Roll Grooved Steel Pipe

GRUVLOK COUPLING WORKING PRESSURE RATING (BAR) ON ROLL GROOVED ISO SIZE STEEL PIPE											
Nominal Size	O.D.	Nom. Wall Thickness	Maximum Working Pressure (bar)								
			Fig. 7000	Fig. 7001	Fig. 7003	Fig. 7004	Fig. 7010*	Fig. 7012	Fig. 7013	Fig. 7400	Fig. 7401
In./DN(mm)	*In./mm*	*In./mm*	*Lightweight*	*Standard*	*Hingelok*	*HPR*	*Reducing*	*Flange*	*Flange*	*Rigidlite*	*Rigidlok*
1	1.315	1.8	20.7	34.5	–	–	–	–	–	12.1	–
25	*33.4*	*2.9*	*41.4*	*51.7*	–	–	–	–	–	*20.7*	–
		3.2	41.4	69.0	–	–	–	–	–	20.7	–
1¼	1.660	1.8	20.7	34.5	–	–	–	–	–	12.1	–
32	*42.2*	*2.9*	*41.4*	*51.7*	–	–	–	–	–	*20.7*	–
		3.6	41.4	69.0	–	–	–	–	–	20.7	–
1½	1.900	1.8	20.7	34.5	13.8	–	–	–	–	12.1	34.5
40	*48.3*	*2.9*	*41.4*	*51.7*	*17.2*	–	–	–	–	*20.7*	*51.7*
		3.6	41.4	69.0	20.7	–	–	–	20.7	51.7	
2	2.375	1.8	20.7	34.5	13.8	34.5	17.2	13.8	34.5	12.1	34.5
50	*60.3*	*2.9*	*41.4*	*51.7*	*17.2*	*55.2*	*24.1*	*20.7*	*51.7*	*20.7*	*51.7*
		3.6	41.4	69.0	20.7	82.3	24.1	20.7	69.0	20.7	51.7
2½	2.875	2.0	20.7	34.5	13.8	34.5	17.2	13.8	34.5	12.1	34.5
65	*73.0*	*3.2*	*41.4*	*51.7*	*17.2*	*55.2*	*24.1*	*20.7*	*51.7*	*20.7*	*51.7*
		5.0	41.4	69.0	20.7	82.3	24.1	20.7	69.0	20.7	51.7
3 O.D.	*2.996*	*2.0*	*20.7*	*34.5*	–	–	–	*13.8*	–	*12.1*	*34.5*
76.1	76.1	3.2	41.4	51.7	–	–	–	20.7	–	20.7	51.7
		5.0	41.4	69.0	–	–	–	20.7	–	20.7	51.7
3	3.500	2.0	20.7	34.5	13.8	34.5	17.2	13.8	34.5	12.1	34.5
80	*88.9*	*3.2*	*41.4*	*51.7*	*17.2*	*55.2*	*24.1*	*20.7*	*51.7*	*20.7*	*51.7*
		5.6	41.4	69.0	20.7	82.3	24.1	20.7	69.0	20.7	51.7
3½	4.000	2.0	20.7	34.5	–	–	–	–	–	–	–
90	*101.6*	*3.2*	*41.4*	*51.7*	–	–	–	–	–	–	–
		5.6	41.4	69.0	–	–	–	–	–	–	–
4	4.500	2.0	20.7	34.5	13.8	27.6	13.8	13.8	34.5	12.1	34.5
100	*114.3*	*3.2*	*41.4*	*51.7*	*17.2*	*41.4*	*20.7*	*20.7*	*51.7*	*20.7*	*51.7*
		5.6	41.4	69.0	20.7	82.3	24.1	20.7	69.0	20.7	51.7
4¼ O.D.	*4.250*	*2.0*	*20.7*	–	–	–	–	–	–	–	–
108.0	108.0	3.2	41.4	–	–	–	–	–	–	–	–
		5.6	41.4	–	–	–	–	–	–	–	–
5	5.563	2.9	17.2	27.6	10.3	27.6	13.8	13.8	27.6	12.1	27.6
125	*141.3*	*3.6*	*34.5*	*34.5*	*13.8*	*41.4*	*20.7*	*20.7*	*34.5*	*20.7*	*34.5*
		6.3	34.5	69.0	20.7	82.3	24.1	20.7	69.0	20.7	51.7
5¼ O.D.	*5.236*	*2.9*	*17.2*	–	–	–	–	–	–	–	–
133.0	133.0	3.6	34.5	–	–	–	–	–	–	–	–
		6.3	34.5	–	–	–	–	13.8	–	–	–
5½ O.D.	*5.500*	*2.9*	*17.2*	–	–	–	–	*20.7*	–	*12.1*	–
139.7	139.7	3.6	34.5	–	–	–	–	20.7	–	20.7	–
		6.3	34.5	–	–	–	–	–	–	20.7	–
6	6.625	2.9	17.2	24.1	10.3	27.6	13.8	13.8	24.1	12.1	24.1
150	*168.3*	*3.6*	*27.6*	*34.5*	*13.8*	*34.5*	*20.7*	*20.7*	*34.5*	*20.7*	*34.5*
		7.1	27.6	69.0	20.7	82.3	24.1	20.7	69	20.7	51.7
6¼ O.D.	*6.259*	*2.9*	*17.2*	–	–	–	–	–	–	–	–
159.0	159.0	3.6	27.6	–	–	–	–	–	–	–	–
		7.1	27.6	–	–	–	–	–	–	–	–
6½ O.D.	*6.500*	*2.9*	*17.2*	*24.1*	–	–	–	*13.8*	–	*12.1*	*24.1*
165.1	165.1	3.6	27.6	34.5	–	–	–	20.7	–	20.7	34.5
		7.1	27.6	69.0	–	–	–	20.7	–	20.7	51.7
8	8.625	2.9	17.2	20.7	10.3	20.7	10.3	13.8	20.7	12.1	20.7
200	*219.1*	*5*	*24.1*	*34.5*	*13.8*	*35.4*	*24.1*	*20.7*	*34.5*	*20.7*	*34.5*
		8	24.1	55.2	20.7	69	24.1	20.7	55.2	20.7	51.7
10	10.750	3.6	–	17.2	–	20.7	–	13.8	17.2	–	17.2
250	*273.1*	*5*	–	*24.1*	–	*27.6*	–	*20.7*	*24.1*	–	*24.1*
		8	–	55.2	–	55.2	–	20.7	55.2	–	51.7
12	12.750	4	–	17.2	–	13.8	–	13.8	17.2	–	17.2
300	*323.9*	*5*	–	*24.1*	–	*20.7*	–	*20.7*	*24.1*	–	*24.1*
		8	–	55.2	–	55.2	–	20.7	55.2	–	51.7
14	14.000	4	–	8.6	–	–	–	8.6	–	–	8.6
350	*355.6*	*6.3*	–	*17.2*	–	–	–	*17.2*	–	–	*17.2*
		8.8	–	20.7	–	–	–	20.7	–	–	20.7
16	16.000	4	–	6.9	–	–	–	6.9	–	–	6.9
400	*406.4*	*6.3*	–	*12.1*	–	–	–	*12.1*	–	–	*12.1*
		8.8	–	20.7	–	–	–	20.7	–	–	20.7
18	18.000	5	–	5.2	–	–	–	5.2	–	–	5.2
450	*457.2*	*6.3*	–	*6.9*	–	–	–	*6.9*	–	–	*6.9*
		8.8	–	17.2	–	–	–	17.2	–	–	17.2
20	20.000	5	–	3.4	–	–	–	3.4	–	–	3.4
500	*508.0*	*6.3*	–	*6.9*	–	–	–	*6.9*	–	–	*6.9*
		8.8	–	17.2	–	–	–	17.2	–	–	17.2
24	24.000	5	–	1.7	–	–	–	1.7	–	–	1.7
600	*609.6*	*6.3*	–	*5.2*	–	–	–	*5.2*	–	–	*5.2*
		8.8	–	17.2	–	–	–	17.2	–	–	17.2

Maximum line pressure, including surge, to which a joint should be subjected on pipe roll grooved to standard roll grooving specification with coupling properly assembled. For coupling performance on standard wall steel pipe, refer to individual Gruvlok Coupling performance listing.

* Rating based on larger pipe size.

PIPE SUPPORT

When designing the hangers, supports and anchors for a grooved-end pipe system, the piping designer must consider certain unique characteristics of the grooved type coupling in addition to many universal pipe hanger and support design factors. As with any pipe system, the hanger or support system must provide for

1) the weight of the pipe, couplings, fluid and pipe system components;

2) reduce stresses at pipe joints; and

3) permit required pipe system movement to relieve stress.

The following factors should be considered when designing hangers and supports for a grooved-end pipe system.

PIPE HANGER SPACING:

The following charts show the maximum span between pipe hangers for straight runs of standard weight steel pipe filled with water or other similar fluids.

Do not use these values where critical span calculations are made or where there are concentrated loads between supports.

Hanger Spacing
Linear Movement Not Req'd

Nominal Pipe Size Range	Maximum Span Between Supports
In./DNmm	*Feet/meters*
1 *25*	7 *2.1*
1¼-2 *32-50*	10 *3.0*
2½-4 *65-100*	12 *3.7*
5-8 *125-200*	14 *4.3*
10-12 *250-300*	16 *4.9*
14-16 *350-400*	18 *5.5*
18-24 *450-600*	20 *6.1*

For straight runs without concentrated loads and where full linear movement is ***NOT*** required use the table on right.

For straight runs without concentrated loads and where full linear movement ***IS*** required use the following tables.

Hanger Spacing - Flexible System, Steel Pipe
Full Linear Movement Is Req'd
Average Hangers Per Pipe Length Evenly Spaced

Nominal Pipe Size Range	Pipe Length in Feet/Meters									
In.	*7*	*10*	*12*	*15*	*20*	*22*	*25*	*30*	*35*	*40*
DNmm	*2.1*	*3.3*	*3.7*	*4.6*	*6.1*	*6.7*	*7.6*	*9.1*	*10.7*	*12.2*
1-2 *25-50*	1	2	2	2	3	3	4	4	5	6
2½-4 *65-100*	1	1	2	2	2	2	2	3	4	4
5-24 *125-600*	1	1	1	2	2	2	2	3	3	3

Hanger Spacing - Rigid Systems
Suggested Maximum Span Between Supports

Nominal Size	Steel Pipe Suggested Maximum Span Between Supports-Feet/Meters						Copper Tube	
	Water Service			Air Service			Water Service	Gas & Air Service
In./DNmm	*	**	***	*	**	***	**	**
1 *25*	7 *2.1*	9 *2.7*	12 *3.7*	9 *2.7*	10 *3.0*	12 *3.7*	–	–
1¼ *32*	7 *2.1*	11 *3.4*	12 *3.7*	9 *2.7*	12 *3.6*	12 *3.7*	–	–
1½ *40*	7 *2.1*	12 *3.7*	15 *4.6*	9 *2.7*	13 *4*	15 *4.6*	–	–
2 *50*	10 *3*	13 *4*	15 *4.6*	13 *4*	15 *4.6*	15 *4.6*	9 *2.7*	12 *3.6*
2½ *65*	11 *3.4*	15 *4.6*	15 *4.6*	14 *4.3*	17 *5.1*	15 *4.6*	9 *2.7*	12 *3.6*
3 O.D. 76.1	*11* 3.4	*15* 4.6	*15* 4.6	*14* 4.3	*17* 5.1	*15* 4.6	–	–
3 *80*	12 *3.7*	16 *4.8*	15 *4.6*	15 *4.6*	19 *5.7*	15 *4.6*	10 *3*	14 *4.2*
3½ *90*	13 *4*	18 *5.4*	15 *4.6*	15 *4.6*	21 *6.3*	15 *4.6*	–	–
4 *100*	14 *4.3*	18 *5.4*	15 *4.6*	17 *5.2*	21 *6.4*	15 *4.6*	12 *3.7*	17 *5.1*
4¼ O.D. 108.0	*14* 4.3	*18* 5.4	*15* 4.6	*17* 5.2	*19* 5.7	*15* 4.6	–	–
5 *125*	16 *4.9*	20 *6.0*	15 *4.6*	20 *6.1*	24 *7.3*	15 *4.6*	13 *4*	18 *5.7*
5¼ O.D. 133.0	*15* 4.6	*18* 5.5	*15* 4.6	*19* 5.2	*22* 6.6	*15* 4.6	–	–
5½ O.D. 139.7	*16* 4.9	*19* 5.8	*15* 4.6	*20* 6.1	*24* 7.3	*15* 4.6	–	–
6 *150*	17 *5.2*	21 *6.3*	15 *4.6*	21 *6.4*	26 *7.8*	15 *4.6*	14 *4.2*	21 *6.3*
6¼ O.D. 159.0	*16* 4.9	*20* 6.0	*15* 4.6	*20* 6.1	*24* 7.3	*15* 4.6	–	–
6½ O.D. 165.1	*17* 5.2	*21* 6.3	*15* 4.6	*21* 6.4	*25* 7.6	*15* 4.6	–	–
8 *200*	19 *5.8*	23 *6.9*	15 *4.6*	24 *7.3*	29 *8.7*	15 *4.6*	–	–
10 *250*	19 *5.8*	25 *7.5*	15 *4.6*	24 *7.3*	33 *9.9*	15 *4.6*	–	–
12 *300*	23 *7*	26 *7.8*	15 *4.6*	30 *9.1*	36 *10.8*	15 *4.6*	–	–
14 *350*	23 *7*	26 *7.8*	15 *4.6*	30 *9.1*	37 *11.1*	15 *4.6*	–	–
16 *400*	27 *8.2*	26 *7.8*	15 *4.6*	35 *10.7*	40 *12.0*	15 *4.6*	–	–
18 *450*	27 *8.2*	27 *8.1*	15 *4.6*	35 *10.7*	42 *12.6*	15 *4.6*	–	–
20 *500*	30 *9.1*	27 *8.1*	15 *4.6*	39 *11.9*	45 *13.5*	15 *4.6*	–	–
24 *600*	32 *9.8*	26 *7.8*	15 *4.6*	42 *12.8*	48 *14.7*	15 *4.6*	–	–

* Spacing by ANSI-B31.1 Power Piping Code.

** Spacing by ANSI-B31.9 Building Service Piping Code, (1996 Edition), Fig. 921.1.3c, Table a, 250 psi and Fig. 921.1.3D, table a

*** Spacing by NFPA-13 Installation of Sprinkler Systems, (1999 Edition), Table 6-2.2.

PIPE SUPPORT

Considerations for the Hanging or Supporting of Grooved Piping Systems

Grooved piping products have a very good maintenance track record out in the field. Whenever there is a "perceived" problem with installed grooved product, a high percentage are often related to the hanging or supporting method or application chosen. Although supported very similarly to welded piping systems, a few considerations should be given to assure the proper selection and application of hangers and supports used on a grooved piping system such as Anvil's Gruvlok® brand.

REVIEW REQUIREMENTS AND LOGISTICS

A variety of hangers and supports are typically used on grooved piping systems, ranging from a simple band hanger, clevis hanger, and trapeze supports to more intricate rack designs using structural steel or a mechanical framing/strut system. All of these are acceptable hanging or supporting methods but they are dependent on the project's type, design and specification requirements. With this in mind, a vital first step is to refer to the project and code requirements when choosing the proper hanging or supporting method.

Project logistics is another consideration regardless of system type. Quite often hangers and supports are an after thought on a project simply because the big-ticket items, such as labor, major equipment and schedule, are the focus of the project team. However, hangers and supports are one of the first components needed on a project since you cannot hang pipe without them.

In nearly every hanger or support assembly there are three components that make up the assembly. These components are an upper attachment (beam or structural attachment), intermediate attachment (rod, couplings, eye nuts, etc.) and the lower attachment (pipe clamps, U-bolts, trapezes). See accompanying illustrations for examples of typical assemblies. All three components should arrive on the project site together and early. To save costly field labor hours, consideration might be given to having the hangers or supports pre-assembled by the manufacturer or fabricated in the contractor's shop. Components can also be bundled and tagged by system or area of the project so they can be easily assembled and located on-site.

MAKE A MATCH

The type of grooved coupling used on a project is the next consideration to choosing the correct hanger or support method. The proper maximum spacing allowables governed by project specifications, the applicable code and/or the hanger manufacturer's recommendations all must also be reviewed. Flexible couplings used on horizontal runs of pipe need to be supported at every coupling and usually require intermediate supports to satisfy the maximum spacing allowable requirements. Rigid couplings, on the other hand, can be hung or supported based on the maximum spacing requirements only. In addition, wherever there is a change in direction of the piping system a hanger or support is usually required immediately following that change in direction and then the system is hung or supported accordingly.

PRESSURE POINT

System pressurization should also be reviewed when choosing the proper hanging or support method. As the couplings are installed, the pipe ends can either be butted up tight to one another or a gap can exist. Once the system is pressurized, those areas or joints where the pipe ends are butted up tight and held by a grooved coupling can "pop" or grow to the maximum gap depending on the coupling chosen. The joint at a flexible grooved coupling can expand about ¼" at each coupling whereas the joint at a rigid grooved coupling can grow about 3⁄32". If there is a long run of horizontal or vertical pipe with multiple joints the overall length of the system will grow depending upon which grooved coupling you have chosen.

For example, if you have a grooved piping system that is 400 ft. long there will be roughly 19 grooved joints (assuming 21 ft. lengths of pipe are used). If you multiply the number of joints by the growth of each joint you can determine the overall growth of the system due to pressurization. If it is a flexible system, 19 joints x .25" = 4.75" of overall growth. A rigid system would be 19 joints x .0938" = 1.78" of overall growth.

As one can see, this growth due to pressurization can have a significant impact on the hangers or supports used on a project. One way to avoid this growth is to install the grooved joints at full gap so that pressurization has no impact at testing or start up. If this is not possible, then periodic air pressurization as the system is installed will expand the grooved joints to full gap and the hangers or supports can be adjusted accordingly.

HOT AND COLD

Thermal expansion is another important consideration when choosing hangers or supports for a grooved system. This is especially important on hot systems versus chilled systems since the amount of thermal expansion will be greater on hot systems as opposed to the thermal contraction that will occur on chilled systems. This is all due to the temperature variation from ambient conditions when the pipe is installed to operating conditions.

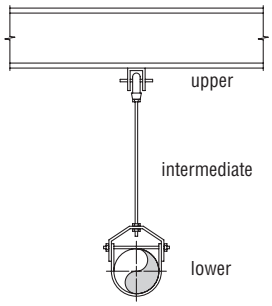
For example, if you again take 400 ft. of grooved piping, let us assume the system is heating hot water that will operate at 170*F. The pipe is installed under ambient conditions assumed to be at 70°F so you have a 100°F variation in temperature. At 70°F the pipe has a coefficient of thermal expansion of 0.0 in/ft but at 170°F the pipe has a coefficient of thermal expansion of 0.0076 in/ft. To determine the total thermal expansion of the pipe from ambient temperature to operating temperature you multiply the length of pipe by the coefficient of thermal expansion. In this case 400 ft. x 0.0076 in/ft. = 3.04 in. In other words the pipe has grown in length over 3 inches because of the thermal expansion.

This is significant growth especially if there is a change of direction at the end of the 400 ft. pipe run or there are branch lines coming off the main run. If this thermal growth exceeds the allowable deflection of a grooved joint, especially where a change of direction or a branch line connects, then problems could occur. Thermal growth cannot be stopped. It can only be controlled by the use of anchors and expansion joints or expansion loops.

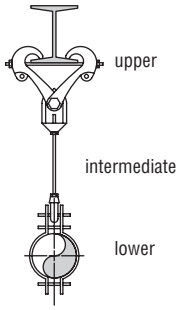
It is also important to hang or support the pipe with rolls or slides and use guides to control the thermal expansion of the pipe into an expansion joint or expansion loop. The use of static hangers, such as clevis

PIPE SUPPORT

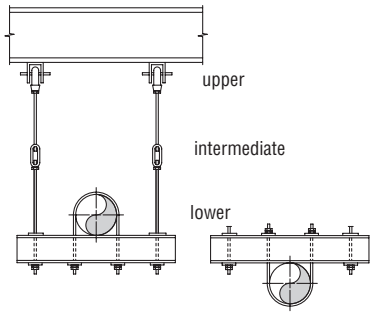
Considerations for the Hanging or Supporting of Grooved Piping Systems



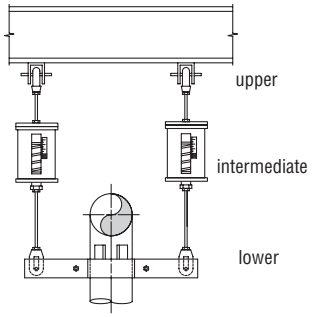
Clevis Hanger Assembly



Double Bolt Pipe Clamp Assembly



Trapeze Assembly



Spring Riser Hanger Assembly

hangers, should not be considered on pipe that is thermally expanding. When using trapeze hangers for multiple systems it is important to have "like" systems on the trapeze, that is, systems that are operating near the same temperature. If you combine hot systems with cold systems on a trapeze, the thermal expansion of the hot system can cause the trapeze to possibly twist and fail or excessive stress could be induced on the grooved joints on all of the systems on the trapeze. Hot systems should be hung or supported independently of cold or ambient systems or a means should be provided, such as pipe rolls or pipe slides, to allow the hot systems to thermally expand on the trapeze.

If the pipe is a vertical riser then consideration must be given to the use of spring hangers to allow the pipe to grow vertically up or down depending upon how the pipe is anchored while still supporting the pipe. Vertical pipe thermally expands the same amount as horizontal pipe and this has to be taken into consideration relating to supports, expansion joints or expansion loops. If the vertical pipe is supported by friction/riser clamps only and the pipe expands vertically upward, the clamps will grow with the pipe off the penetration or supporting structure and no longer provide support. If the growth is downward, the friction clamps resting on the penetration or supporting structure can either fail or the pipe may overcome the friction force and push it's way through the clamp as the pipe thermally expands downward. In either case the clamps are no longer supporting the pipe as intended and this may induce excessive stress on the grooved joints.

Whether it is horizontal or vertical grooved pipe, growth of the piping system due to pressurization and thermal expansion must be considered. On hot systems, both must be taken into account and added together to determine the overall growth of the system and the effect on the hangers or supports that are used. In the previous examples, pressurization expansion on the 400 ft. run of pipe was 4.75" for a flexible joint system and 1.78" for a rigid joint system and the thermal expansion was 3.04". Adding these combinations together would result in a total pipe growth of 7.79" for a flexible system or 4.82" for a rigid system, regardless of the horizontal or vertical orientation of the pipe. Again, this is a significant amount of growth relating to hangers and supports and the resulting stresses induced on grooved joints.

CONSIDER SOME RESTRAINT

Although grooved systems in seismic zones perform extremely well, consideration should be given to how a grooved system is seismically restrained. If you have growth due to pressurization and/or thermal expansion consideration should be given on how to restrain the system while still allowing growth to occur. Seismic restraints in the longitudinal direction of a long pipe run may restrict the growth of the pipe inducing stresses into the grooved couplings. Seismic restraints in the lateral direction should have little impact on expansion except where the system has a change in direction. If the seismic restraints are placed laterally after a change in direction at the end of a long run of pipe, the expansion of the long pipe run may be restricted and this could induce excessive stress into the grooved joints.

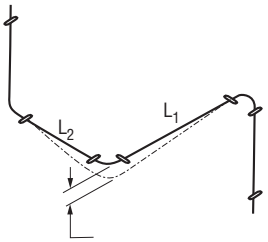
By reviewing the couplings to be used on a project, pressurization, thermal expansion and seismic restraints, one can best determine the proper selection and application of hangers and supports for a grooved piping system. This will, in turn, help ensure that grooved piping systems will continue to enjoy a solid reputation in the areas of maintenance and downtime.

COUPLING FLEXIBILITY:

The grooved coupling's capability to allow angular and rotational movement within the coupling joint must be considered when deciding hanger and support locations. Spring hangers and supports providing for movement in more than one plane are often used to allow the pipe system to move without introducing additional stress into the pipe system.

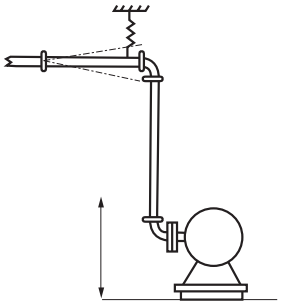
EXAMPLE 1

This example demonstrates the need for each pipe length in a grooved system to be supported. The sag due to the flexibility of the Gruvlok joint could be eliminated with the proper positioning of hangers on both pipe segments "L1" and "L2".



EXAMPLE 2

This illustrates the effect of pump oscillation on a piping system. A spring hanger should be used to support the pipe section and also respond to the induced vibrations. The couplings in the horizontal run above the riser, should accommodate the deflection without transmitting bending stresses through the pipe system.



PRESSURE THRUSTS:

Gruvlok couplings react to the application of system pressure and restrain the pipe ends from separation due to the pressure force. However, the coupling joint may not be in the self-restraining configuration prior to the application of system pressure. The Gruvlok coupling does not restrain adjacent pipe sections from separation due to pressure forces until the coupling key sections engage the groove walls.

Random flexible coupling joint installation will produce installed coupling conditions ranging from pipe ends full butted to fully separated to the maximum available gap. Thus, only after system pressurization will the self-restraining function of the coupling be in effect.

The designer must account for the movement to be encountered when the system is pressurized and the joints are fully separated. Anchor and guide positions must be defined to direct the pipe joint movement that it is not detrimental to the pipe system.

Examples of the effect of pressure thrust are shown in the following illustrations.

EXAMPLE 1

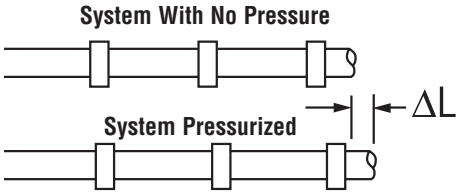
The coupling joints have been installed butted or partially open. When pressurized the pipe ends in the coupling joints will separate to the maximum amount permitted by the coupling design.

The coupling key sections will make contact with the groove walls and restrain the pipe from further separation.

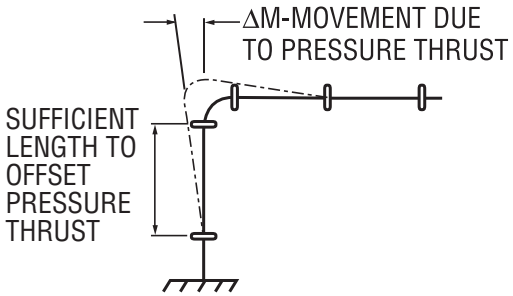
The movement at each coupling joint will add with all other joints and produce ΔL.

EXAMPLE 2

In the system shown here, the pipe will move and deflect at the elbow joint due to pressure thrust.

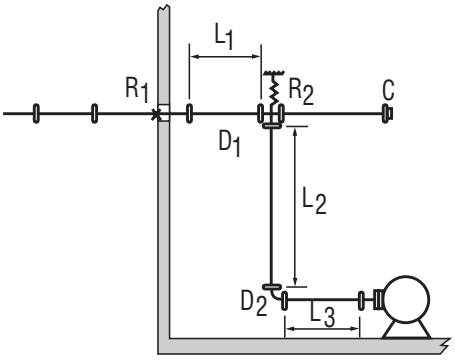


The pipe designer must assure himself that the system has the capability of deflecting sufficiently to absorb this movement without introducing additional stresses into the pipe system. In the deflected condition shown, temperature increases would produce further expansion of the pipe system thus increasing the deflection.



EXAMPLE 3

To restrain this system provide a pressure thrust anchor at "R_1" to resist the pressure thrust acting through the tee "D_1" at the cap "C". Provide a hanger at Point "R_2", or a base support at Point "D_2" to support the vertical column. If the offsets L_1, L_2, and L_3 are of adequate length to handle expected pipe movements, no additional anchoring is required. Thermal movement of the pipe system should also be considered, and intermediate anchors located as required, to direct the pipe movement so as to prevent introducing bending stresses into the system.

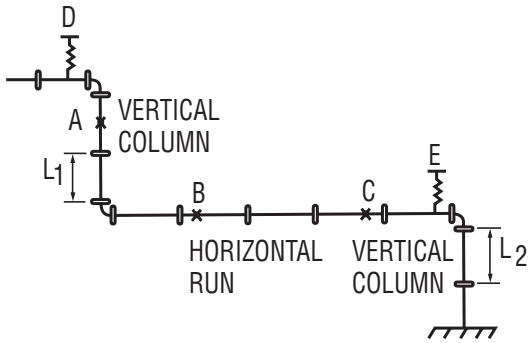


COUPLING FLEXIBILITY (CONT.)

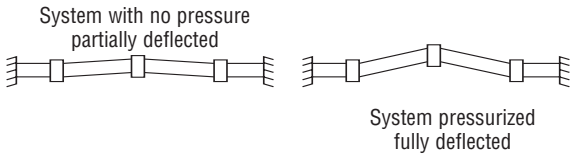
EXAMPLE 4

Anchor at "A" to support weight of vertical water column. Use spring hanger at "D" and "E" to allow movement of vertical piping.

Anchors at "B" and "C" if offsets at L1 and L2 are insufficiently long to handle expected pipe movements.



LATERAL RESTRAINT



EXAMPLE 5

A grooved coupling joint installed in a partially deflected condition between anchor locations will deflect to its fully deflected condition when pressurized. Hangers and supports must be selected with consideration of the hanger's capability to provide lateral restraint.

Light duty hangers, while acceptable in many installations, may deflect against the application of lateral forces and result in "snaking" conditions of the pipe system.

RISER DESIGN:

Risers assembled with Gruvlok Flexible couplings are generally installed in either of two ways. In the most common method, the pipe ends are butted together within the coupling joint. Note that when installing risers, the gasket is first placed onto the lower pipe and rolled back away from the pipe end prior to positioning the upper pipe. Anchoring of the riser may be done prior to pressurization with the pipe ends butted or while pressurized, when, due to pressure thrust, the pipe ends will be fully separated.

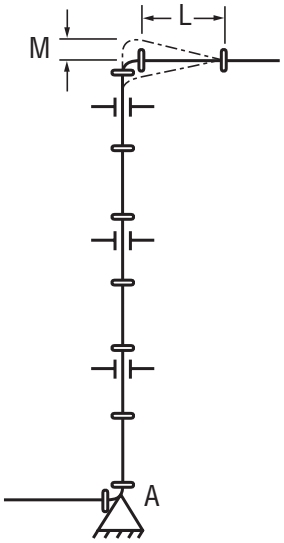
An alternative method or riser installation is to place a metal spacer of a predetermined thickness, between the pipe ends when an additional length of pipe is added to the riser stack. The upper pipe length is anchored, the spacer removed and the coupling is then installed. This method creates a predetermined gap at each pipe joint which can be utilized in pipe systems where thermal movement is anticipated and in systems with rigid (threaded, welded, flanged) branch connections where shear forces due to pressure thrust could damage the rigid connections.

The following examples illustrate methods of installing commonly encountered riser designs.

RISERS WITHOUT BRANCH CONNECTIONS

Install the riser with the pipe ends butted.

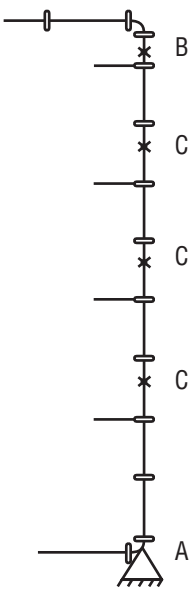
Locate an anchor at the base of the riser (A) to support the total weight of the pipe, couplings and fluid. Provide pipe guides on every other pipe length, as a minimum, to prevent possible deflection of the pipe line at the coupling joints as the riser expands due to pressure thrust or thermal growth. Note that no intermediate anchors are required.



When the system is pressurized the pipe stack will "grow" due to pressure thrust which causes maximum separation of pipe ends within the couplings. The maximum amount of stack growth can be predetermined (see Linear Movement). In this example the pipe length "L" at the top of the riser must be long enough to permit sufficient deflection (see Angular Movement) to accommodate the total movement "M" from both pressure thrust and thermal gradients.

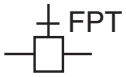
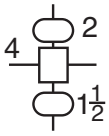
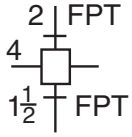
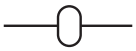
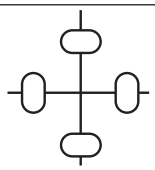
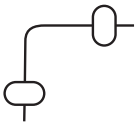
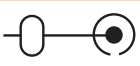
RISERS WITH BRANCH CONNECTIONS

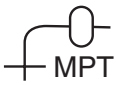
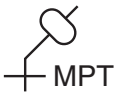
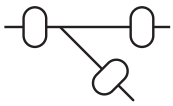
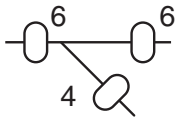
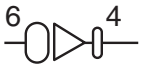
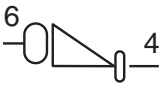
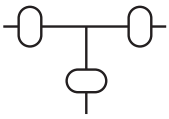
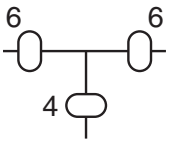
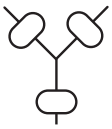
Install the riser with the predetermined gap method. Anchor the pipe at or near the base with a pressure thrust anchor "A" capable of supporting the full pressure thrust, weight of pipe and the fluid column. Anchor at "B" with an anchor capable of withstanding full pressure thrust at the top of the riser plus weight of pipe column. Place intermediate anchors "C" as shown, between anchors "A" and "B". Also place intermediate clamps at every other pipe length as a minimum.



When this system is pressurized, the pipe movement due to pressure thrust will be strained and there will be no shear forces acting at the branch connections.

DRAFTING SYMBOLS FOR GRUVLOK® PIPING SYSTEMS

COMPONENT	FIG. NO.	SYMBOL
BULL-PLUG	7075	
CAP	7074	
CLAMP-T		
GROOVED OUTLET	7046	
FEMALE THREADED OUTLET	7044 7045	
CLAMP-T-CROSS		
GROOVED OUTLETS	7048	
FEMALE THREADED OUTLETS	7047	
COUPLINGS	7000	
STRAIGHT	7000S 7001 7003 7004 7011 7400	
REDUCING	7401 7010	
CROSS	7068	
ELBOW		
90°	7050	
45°	7051	
TURNED-DOWN	–	
TURNED-UP	–	

COMPONENT	FIG. NO.	SYMBOL
ELBOW		
90° ADAPTER	7055	
45° ADAPTER	7056	
EXPANSION JOINT	7092	
GRUVLOK FLANGE	7012 7013	
LATERAL 45°		
STRAIGHT	7069	
REDUCING	7070	
REDUCER		
CONCENTRIC	7072	
ECCENTRIC	7073	
TEE		
STRAIGHT	7060	
REDUCING	7061	
TURNED-DOWN	–	
TURNED-UP	–	
TRUE-WYE	7071	
GRUVLOK	SERIES	
BUTTERFLY	7700	
BALL VALVE	7500	
CHECK VALVE	7800	

All fittings are shown with couplings attached at the grooved-ends.

PIPE-PREPARATION:

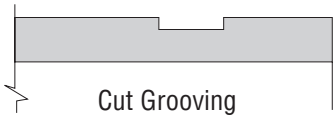
To create a Gruvlok pipe joint, all pipe must be prepared to receive Gruvlok coupling or other Gruvlok pipe system components. The required pipe preparation may be grooving or cleaning the pipe ends, or cutting a hole in the pipe wall.

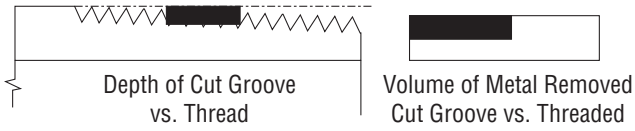
For grooved-end joints, pipe may be grooved by either of two methods; cut or roll grooving. Branch outlet connections require a properly sized and correctly located hole to be cut into the pipe. Sock-it connections require cleaning of the pipe end. Gruvlok plain-end pipe couplings require that the pipe be free of burrs and other sharp projections which could damage the gasket; grooving is not required.

Gruvlok pipe grooving and hole cutting machines are available in a wide variety of designs to meet specific or general requirements. Gruvlok roll grooving machines produce a groove to proper dimensional tolerances, concentric with the pipe O.D., even on out-of-round pipe. Gruvlok hole cutting tools properly center holes for correct assembly of Gruvlok branch outlet components.

CUT GROOVING:

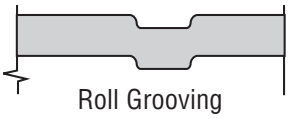
Cut grooving is intended for use with standard and heavier wall pipe. Cut grooving produces a groove in the pipe wall by removing metal from the pipe O.D. The groove removes less than one half of the pipe wall and does not cut as deeply into the pipe wall as do standard pipe threads. The square cut edge of the groove allows for the full expansion, contraction, and deflection capabilities of the Gruvlok coupling.

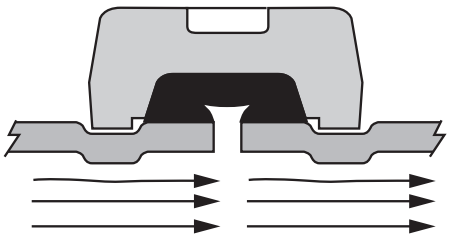




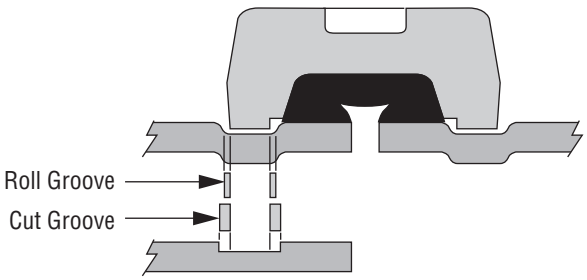
ROLL GROOVING:

Roll grooving does not remove metal. Instead, metal is displaced while a groove is formed into the outer surface of the pipe wall. The groove configuration has slightly rounded edges resulting in a less flexible joint than a cut groove joint. This reduces available pipe joint movement by 50% over cut grooved coupling joints. Roll grooving is commonly used on a wide range of pipe thicknesses up to 0.375" wall steel pipe and sizes to 24" O.D.





The I.D. “dimple" formed from roll grooving reduces the I.D. (on an average) less than 2%.

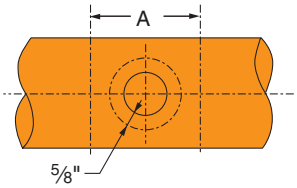


Available Movement
Roll Groove vs. Cut Groove

PIPE-PREPARATION:

BRANCH OUTLET PIPE: CLAMP-T®

Clamp-T installations require the cutting of a hole through the pipe wall. The hole must be properly sized and located on the centerline of the pipe to assure reliable performance of the Clamp-T gaskets.



After the hole has been cut into the pipe wall, any burrs and sharp or rough edges must be removed from the hole. The outside pipe surfaces within 5/8" of the hole must be clean and smooth. Any scale, projections or indentation which might effect the gasket sealing on the pipe must be removed. The surface around the entire circumference of the pipe within the "A" dimension in the charts must be free from dirt, scale, or projections which might effect the proper assembly of the Clamp-T.

CLAMP-T INSTALLATION

Branch Size	Hole Dimensions		Surface Prep. "A"
	Hole Saw Size	Max. Perm. Diameter	
DN/mm	*In./mm*	*In./mm*	*In./mm*
½, ¾, 1 *15, 20, 25*	1½ *38.1*	1⅝ *41.3*	3½ *88.9*
1¼, 1½ *32, 40*	2 *50.8*	2⅛ *54.0*	4 *101.6*
2 *50*	2½ *63.5*	2⅝ *66.7*	4½ *114.3*
2½ *65*	2¾ *69.9*	2⅞ *73.0*	4¾ *120.7*
3 *80*	3½ *88.9*	3⅝ *92.1*	5½ *139.7*
4 *100*	4½ *114.3*	4⅝ *117.5*	6½ *165.1*

SOCK-IT®

For Sock-It Fittings, the pipe ends must be square cut as measured from a true square line.

The maximum allowable tolerance is 0.030" (0.76mm) for all sizes. Any sharp edges, burrs, etc. left on the pipe from cutting must be removed. If these are not removed, they may damage the gasket as the pipe is inserted into the Sock-It Fitting.

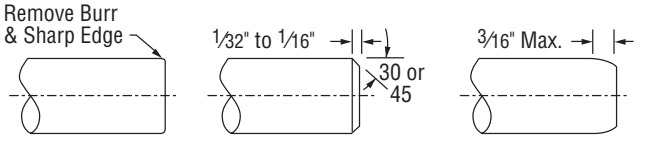
After cutting, pipe ends must be completely cleaned a minimum of 1" (25.4mm) back from the pipe end to remove all pipe coating, weld beads, indentations caused by the pipe weld, rust, sharp projections, etc., which might effect gasket sealing integrity.

NOTE: When Allied XL pipe is used it is necessary only to remove sharp edges and burrs at the end of the pipe. No additional *cleaning* is required.

PIPE TOLERANCES

Size	Schedule 10 & 40		Min. O.D.	XL Min. O.D.
	Nom O.D.	Max. O.D.		
DN/mm	*In./mm*	*In./mm*	*In./mm*	*In./mm*
1 *25*	1.315 *33.4*	1.325 *33.6*	1.295 *32.9*	1.285 *32.6*
1¼ *32*	1.660 *42.2*	1.670 *42.4*	1.642 *41.7*	1.630 *41.4*
1½ *40*	1.900 *48.3*	1.910 *48.5*	1.882 *47.8*	1.875 *47.6*
2 *50*	2.375 *60.3*	2.385 *60.6*	2.357 *59.9*	2.352 *59.7*
2½ *65*	2.875 *73.0*	2.904 *73.8*	2.846 *72.3*	2.837 *72.1*

ACCEPTABLE PIPE END CONFIGURATION



Square cut pipe with O.D. burr & sharp edge removed is preferred configuration.

Beveled pipe. Bevel not to exceed 1/16".

Soft pipe when roll cut may be swaged inward. Swaged portion not to exceed 3/16"

UNACCEPTABLE

Excessive chamfer on I.D. will tend to cut gasket during assembly.

Abrasive wheels & saws leave edge burrs especially pronounced on one side.

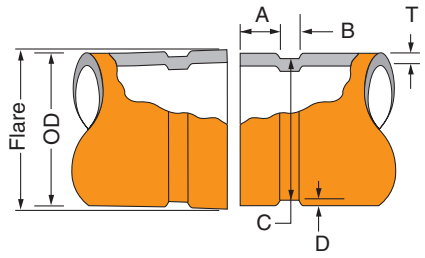
Dull wheel cutter produces a raised ridge at the pipe O.D. giving an oversize diameter.

The sharp O.D. edge left by different methods of cutting pipe ***must be removed.*** If this sharp edge is not removed, it may damage the gasket as the pipe is inserted into the Sock-It Fitting.

ROUGHNECK®

Plain-End pipe for use with Fig. 7005 Roughneck Couplings must be free of any notches, bumps, weld bead, score marks, etc. for at least 1½" (38mm) back from the pipe end to provide a smooth sealing surface for the gasket. Pipe ends (plain or beveled end) must be square cut as measured from a true square line with the maximum allowable tolerance as follows: 0.030" (0.7mm) for 2" through 3"; 0.045 (1.1mm) for 4" through 6"; and 0.060" (1.5mm) for 8" sizes. The nominal outside diameter of pipe should not vary more than ±1% for sizes up to 2½", +1%-1/32" for sizes 3"-5"; +1/16"-1/32" for sizes 6" and larger. Pipe ends must be marked a distance of 1" from the pipe end for Sizes 2"-4" and 1¼" from the pipe end for Sizes 5"-8" as a guide for centering of the gasket on the pipe ends.

ROLL GROOVE SPECIFICATIONS



COLUMN 1 - Nominal IPS Pipe size.Nominal ISO Pipe size.

COLUMN 2 - IPS outside diameter.ISO outside diameter.

COLUMN 3 - Gasket seat must be free from scores, seams, chips, rust or scale which may interfere with proper sealing of the gasket. Gasket seat width (Dimension A) is to be measured from the pipe end to the vertical flank in the groove wall.

COLUMN 4 - Groove width (Dimension B) is to be measured between vertical flank of the groove size walls.

COLUMN 5 - The groove must be of uniform depth around the entire pipe circumference. (See column 6).

COLUMN 6 - Groove depth: for reference only. Groove must conform to the groove diameter "C" listed in column 5.

COLUMN 7 - Minimum allowable wall thickness which may be roll grooved.

COLUMN 8 - Maximum allowable pipe end flare diameter. Measured at the most extreme pipe end diameter of the gasket seat area.

Out of roundness: Difference between maximum O.D. and minimum O.D. measured at 90° must not exceed total O.D. tolerance listed (reference column 2).

For IPS pipe, the maximum allowable tolerance from square cut ends is 0.03" for 1" thru 3½"; 0.045" for 4" thru 6"; and 0.060" for sizes 8" and above measured from a true square line.

For ISO size pipe, the maximum allowable tolerance from square cut ends is 0.75mm for sizes 25mm-80mm; 1.15mm for sizes 100mm-150mm; and 1.50mm for sizes 200mm and above, measured from a true square line.

Beveled-End Pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred. Seams must be ground flush with the pipe O.D. and ID prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

Weld seams must be ground flush with the pipe O.D. and ID prior to roll grooving. Failure to do so may result in damage to the roll grooving machine and unacceptable roll grooves may be produced.

▼ "A" tolerance +0.030" / -0.060" (+0.77 / -1.54 mm)

GRUVLOK STANDARD ROLL GROOVE SPECIFICATION FOR STEEL & OTHER IPS OR ISO SIZE PIPE

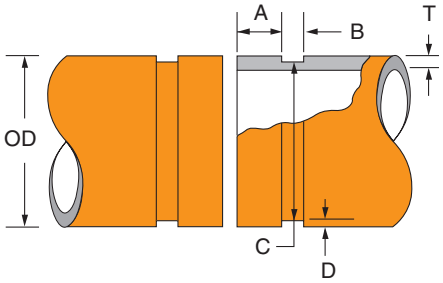
-1-	-2-			-3-	-4-	-5-		-6-	-7-	-8-
Nominal Pipe Size	O.D.			"A" ±0.030/ ±0.76	"B" ±0.030/ ±0.76	"C" Actual	"C" Tol. +0.000	"D" (Ref. Only)	"T" Min. Allow. Wall Thick	Max. Flare Dia.
	Actual	Tolerance								
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*
1 25	1.315 33.4	+0.028 +0.71	-0.015 -0.38	0.625 15.88	0.281 7.14	1.190 30.23	-0.015 -0.38	0.063 1.60	0.065 1.7	1.430 36.3
1¼ 32	1.660 42.2	+0.029 +0.74	-0.016 -0.41	0.625 15.88	0.281 7.14	1.535 38.99	-0.015 -0.38	0.063 1.60	0.065 1.7	1.770 45.0
1½ 40	1.900 48.3	+0.019 +0.48	-0.019 -0.48	0.625 15.88	0.281 7.14	1.775 45.09	-0.015 -0.38	0.063 1.60	0.065 1.7	2.010 51.1
2 50	2.375 60.3	+0.024 +0.61	-0.024 -0.61	0.625 15.88	0.344 8.74	2.250 57.15	-0.015 -0.38	0.063 1.60	0.065 1.7	2.480 63.0
2½ 65	2.875 73.0	+0.029 +0.74	-0.029 -0.74	0.625 15.88	0.344 8.74	2.720 69.09	-0.018 -0.46	0.078 1.98	0.083 2.1	2.980 75.7
3 O.D. 76.1	*2.996* 76.1	*+0.030* +0.76	*-0.030* -0.76	*0.625* 15.88	*0.344* 8.74	*2.845* 72.26	*-0.018* -0.46	*0.076* 1.93	*0.083* 2.1	*3.100* 78.7
3 80	3.500 88.9	+0.035 +0.89	-0.031 -0.79	0.625 15.88	0.344 8.74	3.344 84.94	-0.018 -0.46	0.078 1.98	0.083 2.1	3.600 91.4
3½ 90	4.000 101.6	+0.040 +1.02	-0.031 -0.79	0.625 15.88	0.344 8.74	3.834 97.38	-0.020 -0.51	0.083 2.11	0.083 2.1	4.100 104.1
4¼ O.D. 108.0	*4.250* 108.0	*+0.042* +1.07	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*4.084* 103.73	*-0.020* -0.51	*0.083* 2.11	*0.083* 2.1	*4.350* 110.5
4 100	4.500 114.3	+0.045 +1.14	-0.031 -0.79	0.625 15.88	0.344 8.74	4.334 110.08	-0.020 -0.51	0.083 2.11	0.083 2.1	4.600 116.8
5¼ O.D. 133.0	*5.236* 133.0	*+0.052* +1.32	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*5.084* 129.13	*-0.020* -0.51	*0.076* 1.93	*0.109* 2.8	*5.350* 135.9
5½ O.D. 139.7	*5.500* 139.7	*+0.055* +1.40	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*5.334* 135.48	*-0.020* -0.51	*0.083* 2.11	*0.109* 2.8	*5.600* 142.2
5 125	5.563 141.3	+0.056 +1.42	-0.031 -0.79	0.625 15.88	0.344 8.74	5.395 137.03	-0.022 -0.56	0.084 2.13	0.109 2.8	5.660 143.8
6¼ O.D. 159.0	*6.259* 159.0	*+0.063* +1.60	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*6.084* 154.53	*-0.022* -0.56	*0.088* 2.24	*0.109* 2.8	*6.350* 161.3
6½ O.D. 165.1	*6.500* 165.1	*+0.063* +1.60	*-0.031* -0.79	*0.625* 15.88	*0.344* 8.74	*6.334* 160.88	*-0.022* -0.56	*0.085* 2.16	*0.109* 2.8	*6.600* 167.6
6 150	6.625 168.3	+0.063 +1.60	-0.031 -0.79	0.625 15.88	0.344 8.74	6.455 163.96	-0.022 -0.56	0.085 2.16	0.109 2.8	6.730 170.9
8 200	8.625 219.1	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	8.441 214.40	-0.025 -0.64	0.092 2.34	0.109 2.8	8.800 223.5
10 250	10.750 273.1	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	10.562 268.27	-0.027 -0.69	0.094 2.39	0.134 3.4	10.920 277.4
12 300	12.750 323.9	+0.063 +1.60	-0.031 -0.79	0.750 19.05	0.469 11.91	12.531 318.29	-0.030 -0.76	0.109 2.77	0.156 4.0	12.920 328.2
14 O.D. 355.6	*14.000* 355.6	*+0.063* +1.60	*-0.031* -0.79	*0.938* 23.83	*0.469* 11.91	*13.781* 350.04	*-0.030* -0.76	*0.109* 2.77	*0.156* 4.0	*14.100* 358.1
16 O.D. 406.4	*16.000* 406.4	*+0.063* +1.60	*-0.031* -0.79	*0.938* 23.83	*0.469* 11.91	*15.781* 400.84	*-0.030* -0.76	*0.109* 2.77	*0.165* 4.2	*16.100* 408.9
18 O.D. 457.2	*18.000* 457.2	*+0.063* +1.60	*-0.031* -0.79	*1.000* 25.40	*0.469* 11.91	*17.781* 451.64	*-0.030* -0.76	*0.109* 2.77	*0.165* 4.2	*18.160* 461.3
20 O.D. 508.0	*20.000* 508.0	*+0.063* +1.60	*-0.031* -0.79	*1.000* 25.40	*0.469* 11.91	*19.781* 502.44	*-0.030* -0.76	*0.109* 2.77	*0.188* 4.8	*20.160* 512.1
24 O.D. 609.6	*24.000* 609.6	*+0.063* +1.60	*-0.031* -0.79	*1.000* 25.40	*0.500* 12.70	*23.656* 600.86	*-0.030* -0.76	*0.172* 4.37	*0.218* 5.5	*24.200* 614.7
30 O.D. 762.0	*30.000* 762.0	*+0.093* 2.36	*-0.031* 0.79	*1.750▼* 44.45	*0.625* 15.88	*29.500* 749.30	*-0.063* 1.60	*0.250* 6.35	*0.250* 6.35	*30.200* 761.1

NOTE: VdS - Roll Grooving Approval Specifications, see the Technical Data/Install Instructions section on Anvil's web site - www.anvilintl.com

CUT GROOVE SPECIFICATIONS

GRUVLOK STANDARD CUT GROOVE SPECIFICATION FOR STEEL & OTHER IPS OR ISO SIZE PIPE

-1-	-2-			-3-	-4-	-5-		-6-	-7-
Nominal IPS Pipe Size	O.D.			Gasket Seat "A" ±0.030 ±0.76	Groove Width "B" ±0.030 ±0.76	Groove Diameter "C"		Actual Groove Depth "D" (Ref. Only)	Min. Allow. Wall Thick. "T"
	Actual	Tolerance				Actual	Tol. +0.000		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*
1	1.315	+0.028	-0.015	0.625	0.312	1.190	-0.015	0.062	0.133
25	*33.4*	*+0.71*	*-0.38*	*15.88*	*7.92*	*30.23*	*-0.38*	*1.6*	*3.4*
1¼	1.660	+0.029	-0.016	0.625	0.312	1.535	-0.015	0.062	0.140
32	*42.2*	*+0.74*	*-0.41*	*15.88*	*7.92*	*38.99*	*-0.38*	*1.6*	*3.6*
1½	1.900	+0.019	-0.019	0.625	0.312	1.775	-0.015	0.062	0.145
40	*48.3*	*+0.48*	*-0.48*	*15.88*	*7.92*	*45.09*	*-0.38*	*1.6*	*3.7*
2	2.375	+0.024	-0.024	0.625	0.312	2.250	-0.015	0.062	0.154
50	*60.3*	*+0.61*	*-0.61*	*15.88*	*7.92*	*57.15*	*-0.38*	*1.6*	*3.9*
2½	2.875	+0.029	-0.029	0.625	0.312	2.720	-0.018	0.078	0.187
65	*73.0*	*+0.74*	*-0.74*	*15.88*	*7.92*	*69.09*	*-0.46*	*2.0*	*4.8*
3 O.D.	*2.996*	*+0.030*	*-0.030*	*0.625*	*0.312*	*2.845*	*-0.018*	*0.076*	*0.188*
76.1	76.1	+0.76	-0.76	15.88	7.92	72.26	-0.46	1.9	4.8
3	3.500	+0.035	-0.031	0.625	0.312	3.344	-0.018	0.078	0.188
80	*88.9*	*+0.89*	*-0.79*	*15.88*	*7.92*	*84.94*	*-0.46*	*2.0*	*4.8*
3½	4.000	+0.040	-0.031	0.625	0.312	3.834	-0.020	0.083	0.188
90	*101.6*	*+1.02*	*-0.79*	*15.88*	*7.92*	*97.38*	*-0.51*	*2.1*	*4.8*
4¼ O.D.	*4.250*	*+0.042*	*-0.031*	*0.625*	*0.375*	*4.084*	*-0.020*	*0.083*	*0.203*
108.0	108.0	+1.07	-0.79	15.88	9.53	103.73	-0.51	2.1	5.2
4	4.500	+0.045	-0.031	0.625	0.375	4.334	-0.020	0.083	0.203
100	*114.3*	*+1.14*	*-0.79*	*15.88*	*9.53*	*110.08*	*-0.51*	*2.1*	*5.2*
5¼ O.D.	*5.236*	*+0.052*	*-0.031*	*0.625*	*0.375*	*5.084*	*-0.020*	*0.076*	*0.203*
133.0	133.0	+1.32	-0.79	15.88	9.53	129.13	-0.51	1.9	5.2
5½ O.D.	*5.500*	*+0.055*	*-0.031*	*0.625*	*0.375*	*5.334*	*-0.020*	*0.083*	*0.203*
139.7	139.7	+1.40	-0.79	15.88	9.53	135.48	-0.51	2.1	5.2
5	5.563	+0.056	-0.031	0.625	0.375	5.395	-0.022	0.084	0.203
125	*141.3*	*+1.42*	*-0.79*	*15.88*	*9.53*	*137.03*	*-0.56*	*2.1*	*5.2*
6¼ O.D.	*6.259*	*+0.063*	*-0.031*	*0.625*	*0.375*	*6.084*	*-0.022*	*0.088*	*0.249*
159.0	159.0	+1.60	-0.79	15.88	9.53	154.53	-0.56	2.2	6.3
6½ O.D.	*6.500*	*+0.063*	*-0.031*	*0.625*	*0.375*	*6.334*	*-0.022*	*0.085*	*0.219*
165.1	165.1	+1.60	-0.79	15.88	9.53	160.88	-0.56	2.2	5.6
6	6.625	+0.063	-0.031	0.625	0.375	6.455	-0.022	0.085	0.219
150	*168.3*	*+1.60*	*-0.79*	*15.88*	*9.53*	*163.96*	*-0.56*	*2.2*	*5.6*
8	8.625	+0.063	-0.031	0.750	0.437	8.441	-0.025	0.092	0.238
200	*219.1*	*+1.60*	*-0.79*	*19.05*	*11.10*	*214.40*	*-0.64*	*2.3*	*6.1*
10	10.750	+0.063	-0.031	0.750	0.500	10.562	-0.027	0.094	0.250
250	*273.1*	*+1.60*	*-0.79*	*19.05*	*12.70*	*268.27*	*-0.69*	*2.4*	*6.4*
12	12.750	+0.063	-0.031	0.750	0.500	12.531	-0.030	0.109	0.279
300	*323.9*	*+1.60*	*-0.79*	*19.05*	*12.70*	*318.29*	*-0.76*	*2.8*	*7.1*
14 O.D.	*14.000*	*+0.063*	*-0.031*	*0.938*	*0.500*	*13.781*	*-0.030*	*0.109*	*0.281*
355.6	355.6	+1.60	-0.79	23.83	12.70	350.04	-0.76	2.8	7.1
16 O.D.	*16.000*	*+0.063*	*-0.031*	*0.938*	*0.500*	*15.781*	*-0.030*	*0.109*	*0.312*
406.4	406.4	+1.60	-0.79	23.83	12.70	400.84	-0.76	2.8	7.9
18 O.D.	*18.000*	*+0.063*	*-0.031*	*1.000*	*0.500*	*17.781*	*-0.030*	*0.109*	*0.312*
457.2	457.2	+1.60	-0.79	25.40	12.70	451.64	-0.76	2.8	7.9
20 O.D.	*20.000*	*+0.063*	*-0.031*	*1.000*	*0.500*	*19.781*	*-0.030*	*0.109*	*0.312*
508.0	508.0	+1.60	-0.79	25.40	12.70	502.44	-0.76	2.8	7.9
24 O.D.	*24.000*	*+0.063*	*-0.031*	*1.000*	*0.563*	*23.656*	*-0.030*	*0.172*	*0.375*
609.6	609.6	+1.60	-0.79	25.40	14.30	600.86	-0.76	4.4	9.5
28 I.D.	*28.875*	*+0.063*	*-0.031*	*1.000*	*0.563*	*28.531*	*-0.030*	*0.172*	*0.437*
733.4	733.4	+1.60	-0.79	25.40	14.30	724.69	-0.76	4.4	11.1
30 ID	*31.000*	*+0.063*	*-0.031*	*1.250*	*0.625*	*30.594*	*-0.030*	*0.203*	*0.500*
787.4	787.4	+1.60	-0.79	31.75	15.88	777.09	-0.76	5.2	12.7
30 O.D.	*30.000*	*0.093*	*0.031*	*1.750▼*	*0.625*	*29.500*	*0.063*	*0.250*	*0.625*
762.0	762.0	2.36	0.79	44.45	15.88	749.30	1.60	6.35	15.88



COLUMN 1 -
Nominal IPS Pipe size.
Nominal ISO Pipe size.

COLUMN 2 -
IPS outside diameter.
ISO outside diameter.

COLUMN 3 & 4 -
Gasket seat must be free from scores, seams, chips, rust or scale which may interfere with proper coupling assembly.

COLUMN 5 -
The groove must be of uniform depth around the entire pipe circumference. (See column 6).

COLUMN 6 -
Groove depth: for reference only. Groove must conform to the groove diameter "C" listed in column 5.

COLUMN 7 -
Minimum allowable wall thickness which may be cut grooved.

Out of roundness: Difference between maximum O.D. and minimum O.D. measured at 90° must not exceed total O.D. tolerance listed.

For IPS pipe, the maximum allowable tolerance from square cut ends is 0.03" for 1" thru 3½"; 0.045" for 4" thru 6"; and 0.060" for sizes 8" and above measured from a true square line.

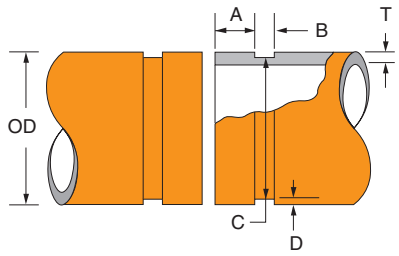
For ISO size pipe, the maximum allowable tolerance from square cut ends is 0.75mm for sizes 25mm-80mm; 1.15mm for sizes 100mm-150mm; and 1.50mm for sizes 200mm and above, measured from a true square line.

Beveled-End Pipe in conformance with ANSI B16.25 (37½°) is acceptable, however square cut is preferred.
Not to be used with End Guard gaskets.

▼ "A" tolerance +0.030" / -0.060" (+0.77 / -1.54 mm)

CUT GROOVE END GUARD® SPECIFICATION

End Guard (EG) cut groove is designed for standard or heavier wall thickness pipe to be joined by HPR 7004 EG couplings. Gruvlok EG fittings are grooved in accordance with these dimensions



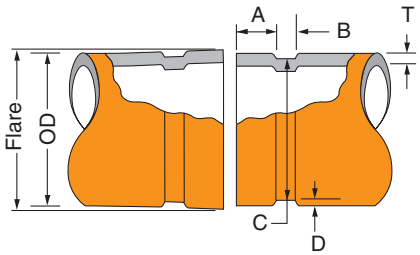
End Guard (EG) Cut Groove Specifications*

Nominal IPS Pipe Size	Pipe Outside Diameter			Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth (Ref. Only) "D"	Min. Allow. Wall Thick. "T"
	Actual	Tolerance		Actual	Tol.+/-	Actual	Tol.(+0.010)	Actual	Tol.		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	+0.024 *+0.61*	-0.024 *-0.61*	0.562 *14.27*	+0.010 *0.25*	0.255 *6.48*	-0.005 *-0.13*	2.250 *57.15*	-0.015 *-0.38*	0.062 *1.6*	0.154 *4.0*
2½ *65*	2.875 *73.0*	+0.029 *+0.74*	-0.029 *-0.74*	0.562 *14.27*	+0.010 *0.25*	0.255 *6.48*	-0.005 *-0.13*	2.720 *69.09*	-0.018 *-0.46*	0.078 *2.0*	0.188 *4.8*
3 *80*	3.500 *88.9*	+0.035 *+0.89*	-0.031 *-0.79*	0.562 *14.27*	+0.010 *0.25*	0.255 *6.48*	-0.005 *-0.13*	3.344 *84.94*	-0.018 *-0.46*	0.078 *2.0*	0.188 *4.8*
4 *100*	4.500 *114.3*	+0.045 *+1.14*	-0.031 *-0.79*	0.605 *15.37*	+0.015 *0.38*	0.305 *7.75*	-0.005 *-0.13*	4.334 *110.08*	-0.020 *-0.51*	0.083 *2.1*	0.203 *5.2*
5 *125*	5.563 *141.3*	+0.056 *+1.42*	-0.031 *-0.79*	0.605 *15.37*	+0.015 *0.38*	0.305 *7.75*	-0.005 *-0.13*	5.395 *137.03*	-0.022 *-0.56*	0.084 *2.1*	0.203 *5.2*
6 *150*	6.625 *168.3*	+0.063 *+1.60*	-0.031 *-0.79*	0.605 *15.37*	+0.015 *0.38*	0.305 *7.75*	-0.005 *-0.13*	6.455 *163.96*	-0.022 *-0.56*	0.085 *2.2*	0.219 *5.6*
8 *200*	8.625 *219.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.14*	+0.015 *0.38*	0.400 *10.16*	-0.010 *-0.254*	8.441 *214.40*	-0.025 *-0.64*	0.092 *2.3*	0.238 *6.1*
10 *250*	10.750 *273.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.14*	+0.015 *0.38*	0.400 *10.16*	-0.010 *-0.25*	10.562 *268.27*	-0.027 *-0.69*	0.094 *2.4*	0.250 *6.4*
12 *300*	12.750 *323.9*	+0.063 *+1.60*	-0.031 *-0.79*	0.714 *18.14*	+0.015 *0.38*	0.400 *10.16*	-0.010 *-0.25*	12.531 *318.29*	-0.030 *-0.76*	0.109 *2.8*	0.279 *7.1*

*Refer to additional notes on previous page.

ROLL GROOVE END GUARD® SPECIFICATION

End Guard (EG) roll groove is designed for lightwall pipe to be joined by HPR 7004 EG couplings.



End Guard (EG) Roll Groove Specifications*

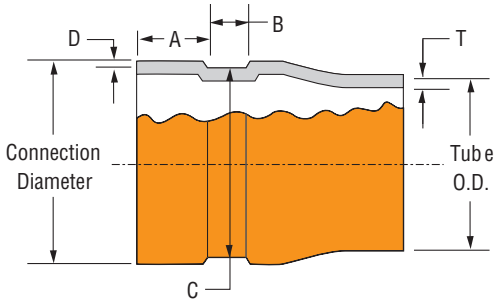
Nominal IPS Pipe Size	Pipe Outside Diameter			Gasket Seat "A"		Groove Width "B"		Groove Diameter "C"		Groove Depth (Ref. Only) "D"	Min. Allow Wall Thick. "T"
	Actual	Tolerance		Actual	Tol.+/-	Actual	Tol.(+0.010)	Actual	Tol.		
In./DN(mm)	*In./mm*	*+In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*-In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.375 *60.3*	+0.024 *+0.61*	-0.024 *-0.61*	0.572 *+14.53*	-0.020 *-0.51*	0.250 *6.35*	+0.015 *0.38*	2.250 *57.15*	-0.015 *-0.38*	0.062 *1.6*	0.065 *1.7*
2½ *65*	2.875 *73.0*	+0.029 *+0.74*	-0.029 *-0.74*	0.572 *+14.53*	-0.020 *-0.51*	0.250 *6.35*	+0.015 *0.38*	2.720 *69.09*	-0.018 *-0.46*	0.078 *2.0*	0.083 *2.1*
3 *80*	3.500 *88.9*	+0.035 *+0.89*	-0.031 *-0.79*	0.572 *+14.53*	-0.020 *-0.51*	0.250 *6.35*	+0.015 *0.38*	3.344 *84.94*	-0.018 *-0.46*	0.078 *2.0*	0.083 *2.1*
4 *100*	4.500 *114.3*	+0.045 *+1.14*	-0.031 *-0.79*	0.610 *+15.49*	-0.020 *-0.51*	0.300 *7.62*	+0.020 *0.51*	4.334 *110.08*	-0.020 *-0.51*	0.083 *2.1*	0.083 *2.1*
5 *125*	5.563 *141.3*	+0.056 *+1.42*	-0.031 *-0.79*	0.610 *+15.49*	-0.020 *-0.51*	0.300 *7.62*	+0.020 *0.51*	5.395 *137.03*	-0.022 *-0.56*	0.084 *2.1*	0.109 *2.8*
6 *150*	6.625 *168.3*	+0.063 *+1.60*	-0.031 *-0.79*	0.610 *+15.49*	-0.020 *-0.51*	0.300 *7.62*	+0.020 *0.51*	6.455 *163.96*	-0.022 *-0.56*	0.085 *2.2*	0.109 *2.8*
8 *200*	8.625 *219.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.719 *+18.26*	-0.020 *-0.51*	0.390 *9.91*	+0.020 *0.51*	8.441 *214.40*	-0.025 *-0.64*	0.092 *2.3*	0.109 *2.8*
10 *250*	10.750 *273.1*	+0.063 *+1.60*	-0.031 *-0.79*	0.719 *+18.26*	-0.020 *-0.51*	0.390 *9.91*	+0.020 *0.51*	10.562 *268.27*	-0.027 *-0.69*	0.094 *2.4*	0.134 *3.4*
12 *300*	12.750 *323.9*	+0.063 *+1.60*	-0.031 *-0.79*	0.719 *+18.26*	-0.020 *-0.51*	0.390 *9.91*	+0.020 *0.51*	12.531 *318.29*	-0.030 *-0.76*	0.109 *2.8*	0.156 *4.0*

*Refer to additional notes on previous page.

GRUVLOK ADVANCED COPPER-METHOD

Copper Prep Specifications

Gruvlok copper prep roll groove specifications for Types K, L, M and DWV copper tubing



GRUVLOK COPPER PREP SPECIFICATIONS

-1-	-2-			-3-			-4-	-5-	-6-		-7-	-8-	-9-
Nominal Tubing Size	Tubing Outside Diameter			Tube End Connection Diameter			Gasket Seat A ± .030 ± .77	Groove Width B ± .030 ± .77	Groove Diameter "C"		Groove Depth D (Ref. Only)	Allow Wall Thick T	Max. Flare Dia.
	Actual	Tolerance		Actual	Tolerance				Actual	Tol. +0.000			
In./DN(mm)	*In./mm*	*+In./mm*	*–In./mm*	*In./mm*	*+In./mm*	*–In./mm*	*In./mm*	*In./mm*	*In./mm*	*–In./mm*	*In./mm*	*In./mm*	*In./mm*
2 *50*	2.125 *54.0*	0.002 *0.05*	0.002 *0.05*	2.375 *60.33*	0.045 *1.14*	0.024 *0.61*	0.625 *15.88*	0.344 *8.74*	2.250 *57.15*	-0.015 *-0.381*	0.063 *1.60*	0.059 *1.50*	2.447 *62.15*
2½ *65*	2.625 *66.7*	0.002 *0.05*	0.002 *0.05*	2.875 *73.03*	0.029 *0.74*	0.029 *0.74*	0.625 *15.88*	0.344 *8.74*	2.720 *69.09*	-0.018 *-0.46*	0.077 *1.96*	0.065 *1.65*	2.962 *75.23*
3 *80*	3.125 *79.4*	0.002 *0.05*	0.002 *0.05*	3.500 *88.90*	0.035 *0.89*	0.031 *0.79*	0.625 *15.88*	0.344 *8.74*	3.344 *84.94*	-0.018 *-0.46*	0.078 *1.98*	DWV	3.566 *90.58*
4 *100*	4.125 *104.8*	0.002 *0.05*	0.002 *0.05*	4.500 *114.30*	0.045 *1.14*	0.031 *0.79*	0.625 *15.88*	0.344 *8.74*	4.334 *110.08*	-0.020 *-0.51*	0.083 *2.11*	DWV	4.576 *116.23*
5 *125*	5.125 *130.2*	0.002 *0.05*	0.002 *0.05*	5.562 *141.27*	0.056 *1.42*	0.031 *0.79*	0.625 *15.88*	0.344 *8.74*	5.395 *137.03*	-0.022 *-0.56*	0.084 *2.13*	DWV	5.650 *143.51*
6 *150*	6.125 *155.6*	0.002 *0.05*	0.002 *0.05*	6.625 *168.28*	0.063 *1.60*	0.031 *0.79*	0.625 *15.88*	0.344 *8.74*	6.455 *163.96*	-0.022 *-0.56*	0.085 *2.16*	DWV	6.719 *170.66*
8 *200*	8.125 *206.4*	0.002 *0.05*	0.004 *0.10*	8.625 *219.08*	0.063 *1.60*	0.031 *0.79*	0.750 *19.05*	0.469 *11.91*	8.441 *214.40*	-0.025 *-0.64*	0.092 *2.34*	DWV	8.719 *221.46*

NOTES:

Out of roundness: Difference between maximum O.D. and minimum O.D. measured at 90° must not exceed tolerance listed.

The maximum allowable tolerance from square cut ends is 0.030" for 2" thru 3"; 0.045" for 4" thru 6"; and 0.060" for 8" measured from a true square line.

COLUMN 1
Nominal ASTM B88 copper tubing size.

COLUMN 2
Outside diameter of copper tubing in accordance with ASTM B88.

COLUMN 3
Outside diameter of Copper Prep roll grooved copper tubing.

COLUMN 4
Gasket seat and groove must be free from scores, seams, chips, rust or scale which may interfere with proper coupling assembly.

COLUMN 5
Groove width is to be measured between vertical flank of the groove size walls.

COLUMN 6
The groove must be of uniform depth around the entire tubing circumference. (See column 7).

COLUMN 7
Groove depth: for reference only. Groove must conform to the groove diameter "C" listed in column 6.

COLUMN 8
Minimum allowable copper tube wall thickness which may be prepared to Gruvlok Copper-Prep specifications.

COLUMN 9
Maximum allowable end flare diameter. Measured at the most extreme tubing end diameter of the gasket seat area.

GRUVLOK LISTINGS & APPROVALS

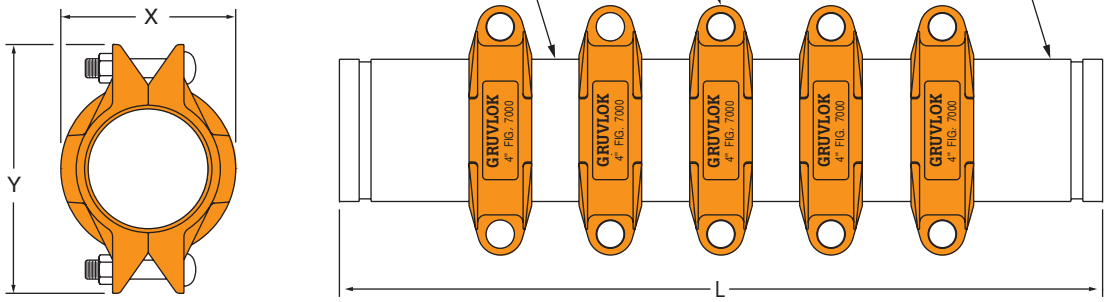
Part Number	UL	ULC	FM
COUPLINGS			
7001	X	X	X
7011			
7401	X	X	X
7000	X	X	X
7400	X	X	X
7003			
7012	X	X	X
7013	X	X	X
7010	X	X	X
BRANCH OUTLETS			
7042	X	X	X
7045	X	X	X
7046	X	X	X
7047	X	X	X
7048	X	X	X
7049	X	X	X
7044	X	X	X
FITTINGS			
7050	X	X	X
7051	X	X	X
7052	X	X	X
7053	X	X	X
7050LR	X	X	X
7051LR	X	X	X
7063	X	X	X
7061	X	X	X
7064	X	X	X
7060	X	X	X
7076	X	X	X
7073	X	X	X
7097	X	X	X
7077	X	X	X
7078	X	X	X
7079	X	X	X
7072	X	X	X
7069	X	X	X
7070	X	X	X
7066	X	X	X
7067	X	X	X
7071	X	X	X
7087	X	X	X
7055	X	X	X
7056	X	X	X
7050RF	X	X	X
7084	X	X	X
7085	X	X	X
7074	X	X	X
7075	X	X	X
7068	X	X	X
7086	X	X	X
7080			

Part Number	UL	ULC	FM
7081			
7082			
7062	X	X	X
7065	X	X	X
7050 3D	X	X	X
7050 5D	X	X	X
7050 6D	X	X	X
VALVES & ACCESSORIES			
7700			
171	X		X
7600			
8000GR			
400G			
7800	X	X	X
7500			
GBV-G			
GBV-A			
GBV-S			
GBV-T			
FTV-S			
FTV-A			
7260			
758-G			
768-G			
7250			
GAV-15			X
GAV-30			X
SF21-GG			
SF21-GF			
SF21-FF			
HIGH PRESSURE			
7004 HPR	X	X	X
7004 EG			
7050 EG			
7051 EG			
7022 EG			
7060 EG			
7068 EG			
ADVANCED COPPER METHOD			
7400	X	X	
7012	X	X	
7550	X	X	
7551	X	X	
7560	X	X	
7572	X	X	
7574	X	X	
7561A	X	X	
7564A	X	X	
7575	X	X	
7582	X	X	
7500B			

Part Number	UL	ULC	FM
FITTINGS			
7088			
7089			
7090			
PLAIN-END FITTINGS			
7005	X	X	
7050P			
7051P			
7060P			
7068P			
7069P			
7071P			
7061P			
7050LRP			
7051LRP			
7075P			
7084P			
7085P			
7080P			
7081P			
7082P			
7077P			
HDPE			
7305			
7307			
7312			
SOCK-IT®			
7100	X	X	X
7101	X	X	X
7103	X	X	X
7105	X	X	X
7106	X	X	X
7107	X	X	X
STAINLESS STEEL			
7400SS			
7500SS			
7050SS			
7051SS			
7060SS			
7074SS			
7061SS			
7073SS			
7072SS			
ROLL GROOVERS			
1007			
3007			
3006			
3006C			

FIG. 7240 ORDER FORM

Expansion Joints



Performance Data									
Nominal Size	O.D.	Coupling Figure	Dimensions		Compressed Length L	Expanded Length L	Coupling Movement Capability	Number of Couplings	Total Movement Capability
			X	Y					
In./mm	*In./mm*		*In./mm*	*In./mm*	*In./mm*	*In./mm*	*In./mm*		*In./mm*
2 *50*	2.375 *60.3*	7000	3½ *88.9*	5½ *125*	30 *762*	31¼ *793.8*	⅛ *3.2*	10	1¼ *31.8*
2½ *65*	2.875 *73.0*	7000	4 *101.6*	5¾ *146.1*	30 *762*	31¼ *793.8*	⅛ *3.2*	10	1¼ *31.8*
3 *80*	3.500 *88.9*	7000	4⅝ *117.5*	6¾ *171.5*	30 *762*	31¼ *793.8*	⅛ *3.2*	10	1¼ *31.8*
4 *100*	4.500 *114.3*	7000	5⅞ *149.2*	8⅛ *206.4*	17½ *444.5*	18¾ *476.3*	¼ *6.4*	5	1¼ *31.8*
5 *125*	5.562 *141.3*	7000	7 *177.8*	9⅝ *244.5*	19 *482.6*	20¼ *514.4*	¼ *6.4*	5	1¼ *31.8*
6 *150*	6.625 *168.3*	7000	8 *203.2*	11 *279.4*	19 *482.6*	20¼ *514.4*	¼ *6.4*	5	1¼ *31.8*
8 *200*	8.625 *219.1*	7000	10⅜ *263.5*	13¼ *336.6*	22½ *571.5*	23¾ *603.3*	¼ *6.4*	5	1¼ *31.8*
10 *250*	10.750 *273.1*	7001	12⅞ *327.0*	17½ *444.5*	23½ *596.9*	24¾ *628.7*	¼ *6.4*	5	1¼ *31.8*
12 *300*	12.750 *323.9*	7001	15 *381.0*	19½ *495.3*	23½ *596.9*	24¾ *628.7*	¼ *6.4*	5	1¼ *31.8*

FIG. 7240 – ORDER FORM

When requesting a quotation or placing an order, please complete the following form and fax a copy to 717-684-2131 to the attention of Customer Service:

1) Size and material of pipe to which the Expansion Joint will be connected _____

2) Factory to preset the Expansion Joint to: _____ Full Expansion _____ Full Contraction _____ Intermediate

3) Total overall movement while in service:_____ inches

4) Pipe material for Expansion Joint (standard is sch. 40 steel): _____

5) Finish on pipe (standard is black): _____

6) Finish on couplings (standard is painted): _____

7) Gasket material (standard is Grade E EPDM):_____

8) Connecting pipe ends if different than standard roll or cut groove: _____

9) Are there any silicone restrictions for the application? _____ Yes _____ No

TERMS & CONDITIONS

1. **CONTROLLING PROVISIONS:** These terms and conditions shall control with respect to any purchase order or sale of Seller's products.

   No waiver, alteration or modification of these terms and conditions whether on Buyer's purchase order or otherwise shall be valid unless the waiver, alteration or modification is specifically accepted in writing and signed by an authorized representative of Seller.

2. **DELIVERY**: Seller will make every effort to complete delivery of products as indicated on Seller's acceptance of an order, but Seller assumes no responsibility or liability, and will accept no back charge, for loss or damage due to delay or inability to deliver caused by acts of God, war, labor difficulties, accident, delays of carriers, by contractors or suppliers, inability to obtain materials, shortages of fuel and energy, or any other causes of any kind whatsoever beyond the control of Seller. Seller may terminate any contract of sale of its products without liability of any nature, by written notice to Buyer, in the event that the delay in delivery or performance resulting from any of the aforesaid causes shall continue for a period of sixty (60) days. Under no circumstances shall Seller be liable for any special or consequential damages or for loss, damage, or expense (whether or not based on negligence) directly or indirectly arising from delays or failure to give notice of delay.

3. **WARRANTY:** Seller warrants for one year from the date of shipment Seller's manufactured products to the extent that Seller will replace those having defects in materials or workmanship when used for the purpose and in the manner which Seller recommends. If Seller's examination shall disclose to its satisfaction that the products are defective, and an adjustment is required, the amount of such adjustment shall not exceed the net sales price of the defective products only and no allowance will be made for labor or expense of repairing or replacing defective products or workmanship or damage resulting from the same. Seller warrants the products which it sells of other manufacturers to the extent of the warranties of their respective makers. Where engineering design or fabrication work is supplied, Buyer's acceptance of Seller's design or of delivery of work shall relieve Seller of all further obligation, other than as expressed in Seller's product warranty.

   THIS IS SELLER'S SOLE WARRANTY. SELLER MAKES NO OTHER WARRANTY OF ANY KIND, EXPRESSED OR IMPLIED AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEED SELLER'S AFORESTATED OBLIGATION ARE HEREBY DISCLAIMED BY SELLER AND EXCLUDED FROM THIS WARRANTY. Seller neither assumes, nor authorizes any person to assume for it, any other obligation in connection with the sale of its engineering designs or products. This warranty shall not apply to any products or parts of products which (a) have been repaired or altered outside of Seller's factory, in any manner; or (b) have been subjected to misuse, negligence or accidents; (c) have been used in a manner contrary to Seller's instructions or recommendations. Seller shall not be responsible for design errors due to inaccurate or incomplete information supplied by Buyer or its representatives.

4. **SELLER'S LIABILITY:** Seller will not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether based upon warranty (except for the obligation accepted by Seller under "Warranty" above), contract or negligence arising in connection with the design, manufacture, sale, use or repair of the products or of the engineering designs supplied to Buyer.

5. **RETURNS:** Seller cannot accept return of any products unless its written permission has been first obtained, in which case same will be credited subject to the following: (a) All material returned must, on its arrival at Seller's plant, be found to be in first-class condition; if not, cost of putting in saleable condition will be deducted from credit memoranda;

   (b) A handling charge deduction of twenty percent (20%) will be made from all credit memoranda issued for material returned; (c) Transportation charges, if not prepaid, will be deducted from credit memoranda.

6. **SHIPMENTS:** All products sent out will be carefully examined, counted and packed. The cost of any special packing or special handling caused by Buyer's requirements or requests shall be added to the amount of the order. No claim for shortages will be allowed unless made in writing within ten (10) days of receipt of a shipment. Claims for products damaged or lost in transit should be made on the carrier, as Seller's responsibility ceases, and title passes, on delivery to the carrier.

7. **SPECIAL PRODUCTS:** Orders covering special or non-standard products are not subject to cancellation except on such terms as Seller may specify on application.

8. **PRICES AND DESIGNS:** Prices and designs are subject to change without notice. All prices are F.O.B. Point of Shipment, unless otherwise stated.

9. **TAXES:** The amount of any sales, excise or other taxes, if any, applicable to the products covered by this order, shall be added to the purchase price and shall be paid by Buyer unless Buyer provides Seller with an exemption certificate acceptable to the taxing authorities.

10. **NUCLEAR PLANTS:** Where the products, engineering design or fabrication is for nuclear plant applications, Buyer agrees: (a) to take all necessary steps to add Seller as an insured under the American Nuclear Insurers' (ANI)-pool and under the Mutual Atomic Energy Reinsurance Pool (MAERP) for property damage and liability insurance and if necessary steps could have been taken, but are not taken, Buyer shall hold Seller harmless against all such losses which could have been thus covered, (b) to hold Seller harmless with respect to any personal injury (or death), property damage or other loss in a nuclear incident which is caused directly or indirectly by defective design, material, or workmanship furnished by Seller and which is covered by insurance maintained by Buyer (or which could be so covered but with respect to which Buyer has elected to self-insure), and further agrees to waive subrogation by its carriers of such insurance against Seller, and (c) as to nuclear hazards for which Buyer cannot obtain insurance coverage, the liability of Seller for any personal injury (or death), property damage or other loss directly caused by defective design, material, or workmanship furnished by Seller shall not exceed the value of the material furnished by Seller at the time of the loss occurrence.

11. **MINIMUM INVOICE:** $50.00 plus transportation.

12. **TERMS:** Cash, net 30 days unless otherwise specified.

PIPE FITTINGS PICTORIAL INDEX

MALLEABLE IRON

Malleable Iron Class 150 (standard)

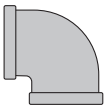


Fig. 1101–90° Elbow
Size Range: 1/8" thru 6" NPS

Fig. 1102–45° Elbow
Size Range: 1/8" thru 6" NPS

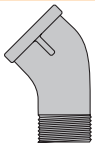


Fig. 1104–45° Street Elbow
Size Range: 1/8" thru 2" NPS

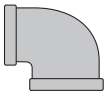


Fig. 1101R–Reducing Elbow
Size Range: 1/4" x 1/8" thru 4" x 3" NPS

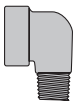


Fig. 1103–Straight
Fig. 1103R–Reducing 90° Street Elbow
Size Range: 1/8" thru 2" x 1 1/2" NPS

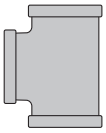


Fig. 1105–Straight
Fig. 1105R–Reducing
Size Range: 1/8" thru 6" NPS

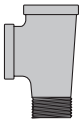


Fig. 1106–Straight
Fig. 1106R–Reducing Street or Service Tee
Size Range: 1/4" thru 2" NPS

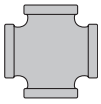


Fig. 1107–Cross
Size Range: 1/8" thru 4" NPS

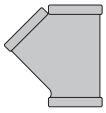


Fig. 1108-45° Y-Branch or Lateral
Size Range: 38" thru 4" NPS

Fig. 1121
Coupling–Right Hand
Size Range: 1/8" thru 4" NPS

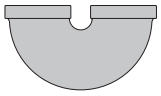


Fig. 1119 – Return Bends
Open Pattern–Right Hand
Size Range: 1/2" x 2" NPS

Fig. 1190–Floor Flange
Size Range: 1/4" thru 2" NPS

Fig. 1125–Couplings
Size Range: 1/4" x 1/8" thru 6" x 4" NPS

Fig. 1124–Cap
Size Range: 1/8" thru 6" NPS

Fig. 1134–Hex Locknut
Size Range: 1/8" x 2" NPS

Malleable Iron Plain Fittings

NOTE: *Not to be used for pressure service*

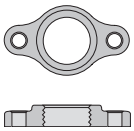


Fig. 1133–Waste Nut
Size Range: 1/2" x 3/4"

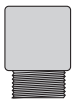


Fig. 1138–Pressure Service Extension Pieces
Size Range: 1/2" x 1"

Malleable Iron Class 300 (XS/XH)

Fig. 1116–Straight
Fig. 1116R–Reducing 90° Elbow
Size Range–Straight: 1/4" thru 4" NPS
Size Range–Reducing: 3/8" x 1/4" thru 2" x 1 1/2" NPS

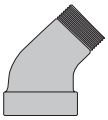


Fig. 1160–
45° Street Elbow
Size Range: 1/8" thru 6" NPS

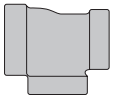


Fig. 1164R–Reducing Tee
Size Range: 1/8" thru 6" NPS

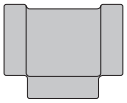


Fig. 1164–Straight Tee
Size Range:
1/4" x 1/8" thru 4" x 3" NPS

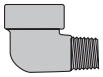


Fig. 1170–
90° Street Elbow
Size Range: 1/8" thru 2" NPS

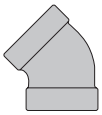


Fig. 1162–45° Elbow
Size Range:
1/4" x 1/8" thru 4" x 3" NPS

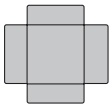


Fig. 1165–Cross
Size Range:
1/8" thru 2" x 1 1/2" NPS

Fig. 1167–Reducer
Size Range:
1/8" thru 2" x 1 1/2" NPS

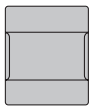


Fig. 1166–Coupling
Size Range: 1/8" thru 6" NPS

Fig. 1163–Cap
Size Range:
1/4" x 1/8" thru 4" x 3" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

MALLEABLE IRON UNIONS — Class 150; 250; 300

COPPER OR COPPER ALLOY TO IRON

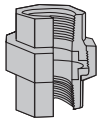


FIG. 463–
CLASS 150 UNION
150 lb. wsp; 300 lb. wog
non-shock
Size Range: 1/8" thru 3" NPS

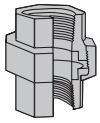


FIG. 554–
CLASS 250 UNION
250 lb. wsp; 500 lb. wog
non-shock
Size Range: 1/8" thru 4" NPS

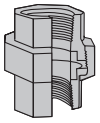


FIG. 459–
CLASS 300 UNION
300 lb. wsp; 600 lb. wog
non-shock
Size Range: 1/8" thru 4" NPS

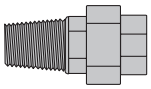


FIG. 551–
CLASS 300 UNION–
male & female
300 lb. wsp; 600 lb. wog
non-shock
Size Range: 1/2" thru 2" NPS

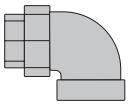


FIG. 552–
CLASS 300 90° ELBOW–
female union 300 lb. wsp
Size Range: 3/8" thru 1" NPS

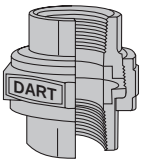


FIG. 0832–DART UNION–
bronze to bronze seat union
Return Bends Open Pattern–
Right Hand
Size Range: 3/8" thru 2" NPS

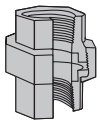


FIG. J-3–
CLASS 300–all iron union
Size Range: 1/8" thru 3" NPS

CAST IRON FITTINGS

CAST IRON THREADED FITTINGS–Class 125 (Standard)

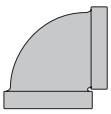


FIG. 351–
90° ELBOW–Straight
Size Range: 1/4" thru 8" NPS

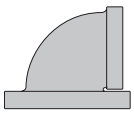


FIG. 371–90° ELBOW–
Flanged & Threaded
Size Range: 2 1/2" thru 8" NPS

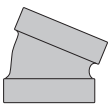


FIG. 356A–22 1/2° ELBOW
Size Range: 3/4" thru 2 1/2" NPS

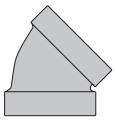


FIG. 356–45° ELBOW
Size Range: 1/4" thru 8" NPS

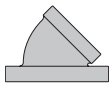


FIG. 372–45° ELBOW–Flanged & Threaded
Size Range: 4" thru 8" NPS

FIG. 352–
90° REDUCING ELBOW
Size Range: 1/2" x 1/4" thru 8" x 6" NPS

FIG. 358–STRAIGHT TEE
Size Range: 1/4" thru 8" NPS

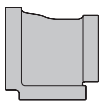


FIG. 359–REDUCING TEE
Size Range: 1/2" x 1/2" x 1/4" thru 4" x 4" x 6" NPS

FIG. 360–STRAIGHT CROSS
Size Range: 1/2" thru 6" NPS

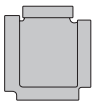


FIG. 361–REDUCING CROSS
Size Range: 1" x 1" X 3/4" x3/4" thru 8" x8" X 6" x 6" NPS

FIG. 366–HEX COUPLING
Size: 1" NPS

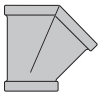


FIG. 373–LATERAL
Size Range: 3/4" thru 4" NPS

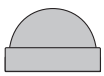


FIG. 375
RETURN BEND–
Close Pattern, R.H.
Size Range: 1/2" thru 1 1/2" NPS

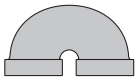


FIG. 376
RETURN BEND–Open
Size Range: 1/2" thru 1 1/2" NPS

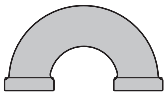


FIG. 377–
SPECIAL WIDE PATTERN
Size Range: 1" thru 1 1/4" NPS

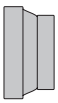


FIG. 367–
CONCENTRIC REDUCER
Size Range: 3/4" x 1/2" thru 8x6" NPS

FIG. 368–
ECCENTRIC REDUCER
Size Range: 3/4" x 1/2" thru 8x6" NPS

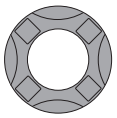


FIG. 487–FLANGE UNION-
Gasket Type
(assembled with gaskets)
Size Range: 1/2" thru 8"

FIG. 383–HEX BUSHING
Size Range: 1/4" x 1/8" thru 12" x 10" NPS

FIG. 385-FACE BUSHING
Size Range: 1/4" x 1/8" thru 3 1/2" x 2 1/2" NPS

FIG. 387-SQUARE HEAD PLUGS (Cored)
Size Range: 1/2" thru 4" NPS

FIG. 388–SQUARE HEAD PLUGS (Solid)
Size Range: 1/2" thru 3 1/2"

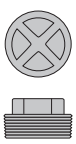


FIG. 389–BAR PLUGS (Cored)
FIG. 380–BAR PLUGS (Solid)
Size Range(s): 4" thru 8" NPS

FIG. 390–
COUNTERSUNK PLUGS
Size Range: 1/2" thru 4" NPS

FIG. 381–CAP
Size Range: 2 1/2" thru 8" NPS

FIG. 370–LOCKNUT
Size Range: 2 1/2" thru 4" NPS

FIG. 1006–FLOOR FLANGE
(Bolt Holes Cored)
Size Range: 1/4" thru 2" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

CAST IRON FITTINGS (cont'd.)

CAST IRON THREADED FITTINGS–CLASS 250 (Extra Heavy)

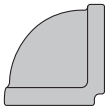


FIG. 421–90° ELBOW
Size Range: ¼" thru 8" NPS

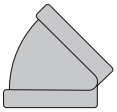


FIG. 424–45° ELBOW
Size Range: ½" thru 6" NPS

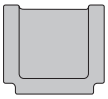


FIG. 425–STRAIGHT TEE
Size Range: ¼" thru 4" NPS

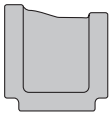


FIG. 426–REDUCING TEE
Size Range: ¾" x ¾" x ½" thru 2" x 2" x 1¼" NPS

CAST IRON THREADED–SAFETY VALVE DISCHARGE

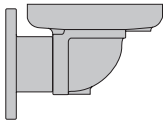


FIG. 1538–THREADED INLET
FIG. 1538F–FLANGED INLET
Safety valve discharge Elbow–Cast Iron
Elbow Pipe Size Range: 2½" thru 8" NPS
Riser Pipe Size Range: 3½" thru 10" in

CAST IRON DRAINAGE FITTINGS

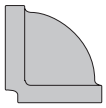


FIG. 701–
90° SHORT TURN ELBOW
Size Range: 1½" thru 6" NPS

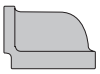


FIG. 701R–90° REDUCING SHORT TURN ELBOW
Size Range: 1½" thru 2" NPS

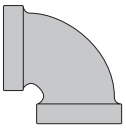


FIG. 702–
90° LONG TURN ELBOW
Size Range: 1½" thru 4" NPS

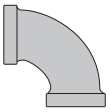


FIG. 702A-90° EXTRA LONG TURN ELBOW
Size: 1¼" NPS

FIG. 703–
60° SHORT TURN ELBOW
Size Range: 1½" thru 2" NPS

FIG. 705–
45° SHORT TURN ELBOW
Size Range: 1¼" thru 6" NPS

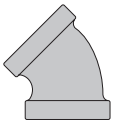


FIG. 706–
45° LONG TURN ELBOW
Size Range: 1½" thru 3" NPS

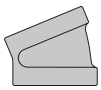


FIG. 707–22½° ELBOW
Size Range: 1½" thru 2" NPS

FIG. 708–11¼° ELBOW
Size Range: 1½" thru 2" NPS

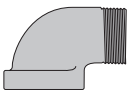


FIG. 718–
90° STREET ELBOW
Size Range: 1½" thru 2" NPS

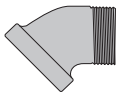


FIG. 719–
45° STREET ELBOW
Size Range: 1½" thru 2" NPS

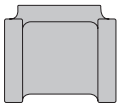


FIG. 722–TEE
Size Range: 1½" thru 2" NPS

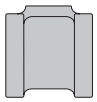


FIG. 723–REDUCING TEE
Size: 2" NPS

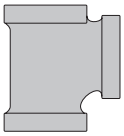


FIG. 726–SANITARY TEE–
90° Short Turn
Size Range: 1½" thru 4" NPS

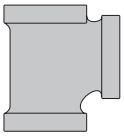


FIG. 727–SANITARY TEE–
90° Reducing, Short Turn
Size Range: 2" x2" x1½" thru 2" x1½" x1½" NPS

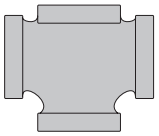


FIG. 728–SANITARY TEE–
90° Double Short Turn
Size Range: 1½" thru 2" NPS

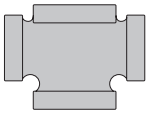


FIG. 729–SANITARY TEE–
90° Reducing
Double Short Turn
Size: 2" x 1½" NPS

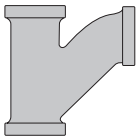


FIG. 730–Y-BRANCH–
90° Long Turn
Size Range: 1½" thru 4" NPS

FIG. 731- Y-BRANCH–
90° Reducing Long Turn
Size: 2" x2" x1½

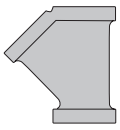


FIG. 734–Y-BRANCH–45°
Size Range: 1½" thru 4" NPS

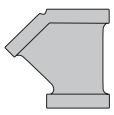


FIG. 735-Y-BRANCH–
45° Reducing
Size Range: 2" x2" x1½" thru 4" x4" x3" NPS

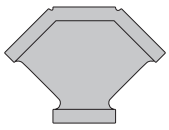


FIG. 736–Y-BRANCH–
45° Double
Size: 1½" NPS

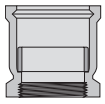


FIG. 744–
TUCKER CONNECTION
Size Range: 1½" thru 4" NPS

FIG. 753–COUPLING
Size: 1½" NPS

FIG. 752-P-TRAP
Size Range: 1½" thru 4" NPS

FIG. 754-BATH P-TRAP
Size Range: 1½" thru 2" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

CAST IRON FITTINGS (cont'd.)

CAST IRON FLANGED FITTINGS–CLASS 125 (STANDARD)

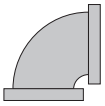


FIG. 801–
90° STRAIGHT ELBOW
Size Range: 1½" thru 12" NPS

FIG. 802-
45° STRAIGHT ELBOW
Size Range: 1½" thru 12" NPS

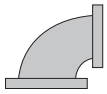


FIG. 803–
TAPER REDUCING ELBOW
Size Range: 2½" x 2" thru 12" x10" NPS

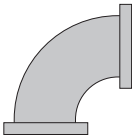


FIG. 804–STRAIGHT
FIG 804R–REDUCING
Long Radius Elbow
Size Range:
Straight: 2" thru 12" NPS
Size Range: 3" x 2" thru 10" x 8" NPS

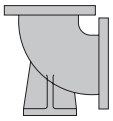


FIG. 805-BASE ELBOW
Size Range: 3" thru 12" NPS

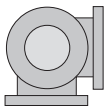


FIG. 808–
SIDE OUTLET ELBOW
Size Range: 4" thru 8" NPS

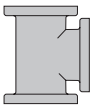


FIG. 811–STRAIGHT TEE
Size Range: 1½" thru 12" NPS

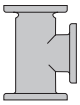


FIG. 812–REDUCING TEE
Size Range: 2½" x 2½" x 2" thru 12" x 12" x10" NPS

FIG. 821–CROSS
Size Range: 2" thru 12" NPS

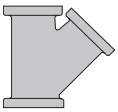


FIG. 823–LATERAL
Size Range: 2" thru 8" NPS

FIG. 810–TRUE Y
Size Range: 4" thru 8" NPS

FIG. 825–
CONCENTRIC REDUCER
Size Range: 2" thru 12" NPS

CAST IRON FLANGED FITTINGS–CLASS 250 (EXTRA HEAVY)

FIG. 826–
ECCENTRIC REDUCER
Size Range: 3" thru 12" NPS

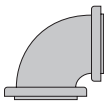


FIG. 831–90° ELBOW
Size Range: 2" thru 12" NPS

FIG. 832–ELBOW
Size Range: 2" thru 12" NPS

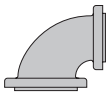


FIG. 833–
TAPER REDUCING ELBOW
Size Range: 4" x 2½" thru 10" x 6" NPS

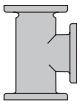


FIG. 842-TEE–Reducing on Run or Outlet
Size Range: 3" x 3" x 2" thru 10" x 10" x 8" NPS

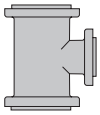


FIG. 841-STRAIGHT TEE
Size Range: 2" thru 12" NPS

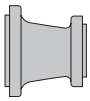


FIG. 855-
CONCENTRIC REDUCER
Size Range: 4" thru 8" NPS

FIG. 1011–CAST IRON
FIG. 1035–MALLEABLE COMPANION FLANGE
Size Range: 3¼" thru 24" O.D. NPS

FIG. 1025–CAST IRON COMPANION FLANGE
Size Range: 1¼" thru 12" NPS

FIG. 1030–CAST IRON
Reducing Companion Flange
Size Range: 2" thru 6" NPS

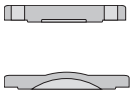


FIG. 1021–CAST IRON
Blind Flange
Size Range: 1" thru 12" NPS

IRON FLANGES–CLASS 125 (STANDARD)

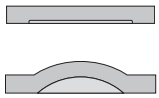


FIG. 1018–
CAST IRON BLIND FLANGE
Size Range: 1" thru 24" O.D. NPS

FIG. 1010T–CLASS 125 CAST IRON FLANGES THREADED for cast iron pipe figs.
Size Range: 3" thru 24" NPS

FIG. 1016–REDUCING COMPANION FLANGE–cast iron
Size Range: 1" thru 10" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

SEAMLESS/WELDED PIPE NIPPLES

FIG. 339 - Standard, Black
FIG. 343 - Standard, Galvanized
FIG. 338 - Extra Strong, Black or Galvanized

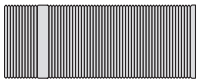


FIG. 341-A - Tank Nipple, Standard

Tank nipples are available in standard weight sizes ¼ - 3 NPS (8 - 80 DN) in 6" *(152mm)* length only, black or galvanized. They have NPT thread on one end, and NPT thread running into NPSL thread on the other . (Total length: 4" *(102mm)*).

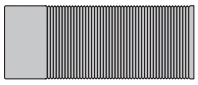


FIG. 341 - Locknut Nipple, Standard

Locknut nipples are available in standard weight sizes 1½ - 4 NPS (40 - 100 DN) diameter, in 8" *(203mm)* lengths, black or galvanized, and threaded on one end only in NPSL straight pipe thread. Total thread length is 6" *(152mm)* (plain end reamed).

STEEL FITTINGS

STANDARD STEEL MERCHANT COUPLINGS

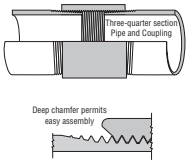


FIG. 336
Size Range: ⅛" thru 6" NPS

STANDARD STEEL MERCHANT COUPLINGS–
Right & Left Steel Couplings

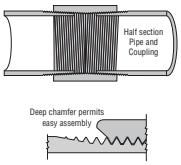


FIG. 346
Size Range: ⅛" thru 3" NPS

API LINE PIPE COUPLINGS

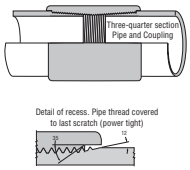


FIG. 348
Size Range: ⅛" thru 12" NPS

STANDARD STEEL MERCHANT COUPLINGS–
Extra Strong (XS) Steel Couplings

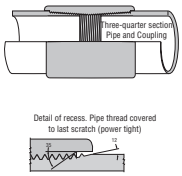


FIG. 337
Size Range: ⅛" thru 12" NPS

STANDARD STEEL MERCHANT COUPLINGS–
Extra Strong (XS) Right & Left Steel Couplings

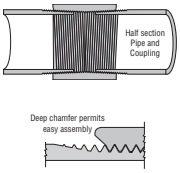


FIG. 347
Size Range: ⅛" thru 3" NPS

AAR CLASS 300 STEEL COUPLINGS

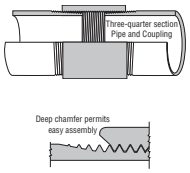
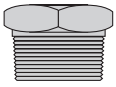


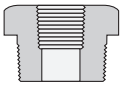
FIG. 349
Size Range: ¼" thru 3" NPS

MERCHANT STEEL PLUGS & BUSHINGS

SOLID SQUARE HEAD PLUGS
Size Range: ⅛" thru 1" NPS



SOLID HEXAGON HEAD PLUGS
Size Range: ⅛" thru ¾" NPS

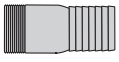


HEXAGON BUSHINGS
Size Range: ¼" x ⅛" thru 1" x ¾" NPS

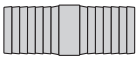
COUNTERSUNK PLUGS
(Hex & Square Socket)
Size Range: ⅛" thru 2" NPS

STEEL HOSE FITTINGS

For Fast, Economical Hose Connections & Repairs
Combination Nipples



COMBINATION NIPPLES
Nominal Pipe Sizes:
½" thru 6"
Size Range: ½" thru 2"



HOSE MENDERS
Nominal Pipe Sizes:
½" thru 6"
Size Range: ½" thru 2"

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

FORGED STEEL FITTINGS

CLASS 2000 THREADED

FIG. 2101–90° ELBOWS
Size Range: 1/8" thru 4" NPS

FIG. 2102–45° ELBOWS
Size Range: 1/8" thru 4" NPS

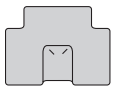


FIG. 2103–TEES
Size Range: 1/8" thru 4" NPS

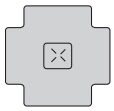


FIG. 2104–CROSSES
Size Range: 1/8" thru 4" NPS

CLASS 3000 THREADED

FIG. 2111–90° ELBOWS
Size Range: 1/8" thru 4" NPS

FIG. 2112–45° ELBOWS
Size Range: 1/8" thru 4" NPS

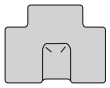


FIG. 2114–TEES
Size Range: 1/8" thru 4" NPS

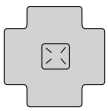


FIG. 2115–CROSSES
Size Range: 1/8" thru 4" NPS

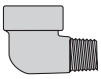


FIG. 2113–STREET ELBOWS
Size Range: 1/8" thru 4" NPS

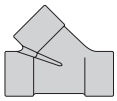


FIG. 2116–LATERALS
Size Range: 1/4" thru 1 1/2" NPS

FIG. 2117–COUPLINGS
Size Range: 1/8" thru 4" NPS

FIG. 2119–HALF COUPLINGS
Size Range: 1/8" thru 4" NPS

FIG. 2118–REDUCED COUPLINGS
Size Range: 1/8" thru 4" NPS

FIG. 2120–PIPE CAPS
Size Range: 1/8" thru 4" NPS

CLASS 6000 THREADED

FIG. 2131–90° ELBOWS
Size Range: 1/4" thru 1 1/2" NPS

FIG. 2132–45° ELBOWS
Size Range: 1/8" thru 4" NPS

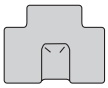


FIG. 2134–TEES
Size Range: 1/8" thru 4" NPS

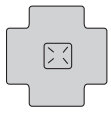


FIG. 2135–CROSSES
Size Range: 1/8" thru 4" NPS

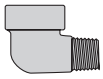


FIG. 2133–STREET ELBOWS
Size Range: 1/8" thru 1 1/2" NPS

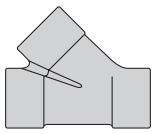


FIG. 2136–LATERALS
Size Range: 3/8" thru 1 1/4" NPS

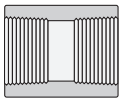


FIG. 2137–COUPLINGS
Size Range: 1/8" thru 4" NPS

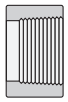


FIG. 2141–HALF COUPLINGS
Size Range: 1/8" thru 4" NPS

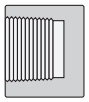


FIG. 2143–PIPE CAPS
Size Range: 1/8" thru 4" NPS

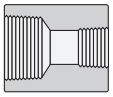


FIG. 2138–REDUCED COUPLINGS
Size Range: 1/8" thru 4" NPS

CLASS 3000 SOCKET-WELD

FIG. 2150–90° ELBOWS
Size Range: 1/8" thru 4" NPS

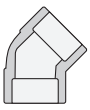


FIG. 2151–45° ELBOWS
Size Range: 1/8" thru 4" NPS

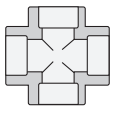


FIG. 2153–CROSSES
Size Range: 1/8" thru 4" NPS

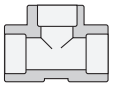


FIG. 2152–TEES
Size Range: 1/8" thru 4" NPS

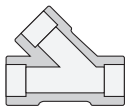


FIG. 2158–LATERALS
Size Range: 1/2" thru 2" NPS

FIG. 2154–COUPLINGS
Size Range: 1/8" thru 4" NPS

FIG. 2155–HALF COUPLINGS
Size Range: 1/8" thru 4" NPS

FIG. 2156–REDUCED COUPLINGS
Size Range: 1/4" thru 4" NPS

FIG. 2157–PIPE CAPS
Size Range: 1/8" thru 4" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

FORGED STEEL FITTINGS

CLASS 6000 SOCKET-WELD

FIG. 2170–90° ELBOWS
Size Range: 1/8" thru 4" NPS

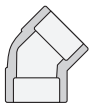


FIG. 2171–45° ELBOWS
Size Range: 1/8" thru 4" NPS

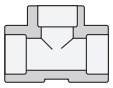


FIG. 2172–TEES
Size Range: 1/2" thru 4" NPS

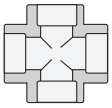


FIG. 2173–CROSSES
Size Range: 1/2" thru 4" NPS

CLASS 6000 SOCKET-WELD

Anvil High Pressure Plugs and Bushings satisfy the requirement of ASME B16.11 Class 2000, 3000 and 6000

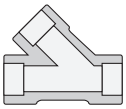


FIG. 2178–LATERALS
Size Range: 1/2" thru 2" NPS

FIG. 2174–COUPLINGS
Size Range: 1/8" thru 4" NPS

FIG. 2175–
HALF COUPLINGS
Size Range: 1/8" thru 4" NPS

FIG. 2176–
REDUCING COUPLINGS
Size Range: 1/4" thru 4" NPS

FIG. 2177–PIPE CAPS
Size Range: 1/8" thru 4" NPS

HIGH PRESSURE PLUGS & BUSHINGS

FIG. 2122-PLUGS–SQUARE HEAD
Size Range: 1/8" thru 4" NPS

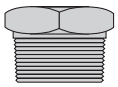


FIG. 2142-PLUGS–HEX HEAD
Size Range: 1/8" thru 4" NPS

FIG. 2121-PLUGS–ROUND HEAD
Size Range: 1/8" thru 4" NPS

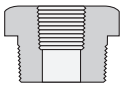


FIG. 2139-BUSHINGS–HEX HEAD
Size Range: 1/4" thru 4" NPS

FIG. 2140-BUSHINGS–FLUSH
Size Range: 1/4" thru 4" NPS

SOCKET-WELD REDUCER INSERTS

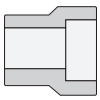


FIG. 2159 (TYPE 1)

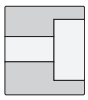


FIG. 2179 (TYPE 1)

Reducer inserts comply with MSS standard SP-79. They enable standard socket-weld fittings to be used for making any combination of pipe line reductions quickly & economically. Socket-weld reducer inserts serve the same purpose as threaded reducing bushings with threaded fittings.

TYPE 1–REDUCER INSERT
Size Range: 3/8" x 1/4" thru 3" x 2 1/2" NPS

TYPE 2–REDUCER INSERT
Size Range: 3/8" x 1/4" thru 3" x 2 1/2" NPS

CLASS 3000
For use with Schedule 40 & 80 Pipe

Reducer inserts comply with MSS standard SP-79. They enable standard socket-weld fittings to be used for making any combination of pipe line reductions quickly & economically. Socket-weld reducer inserts serve the same purpose as threaded reducing bushings with threaded fittings.

TYPE 1–REDUCER INSERT
Size Range: 3/8" x 1/4" thru 3" x 1" NPS

TYPE 2–REDUCER INSERT
Size Range: 3/8" x 1/4" thru 3" x 1" NPS

CLASS 6000
For use with Schedule 160 Pipe

Reducer inserts comply with MSS standard SP-79. They enable standard socket-weld fittings to be used for making any combination of pipe line reductions quickly & economically. Socket-weld reducer inserts serve the same purpose as threaded reducing bushings with threaded fittings.

TYPE 1–REDUCER INSERT
Size Range: 3/8" x 1/4" thru 3" x 2 1/2" NPS

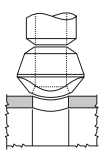
TYPE 2–REDUCER INSERT
Size Range: 3/8" x 1/4" thru 3" x 2 1/2" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

ANVIL UNIVERSAL ANVILETS

UNIVERSAL SOCKET-WELD ANVILETS

Full & Reducing Sizes Class 3000 & 6000



SCHEDULE 160 & XXS
Size Range: ½" thru 4" NPS

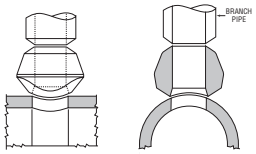


FIG. 2801 - STANDARD WEIGHT
FIG. 2851 - XS/XH
For outlet sizes ½" to 24" NPS
Size Range: ½" thru 24" NPS

UNIVERSAL FLAT ANVILETS

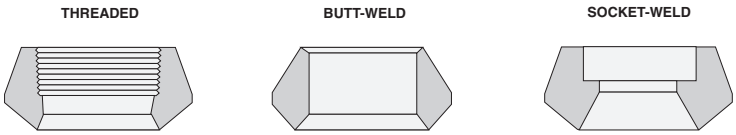
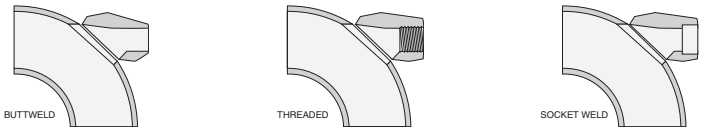


FIG. 2804 - THREADED
FIG. 2805 - WELDED
Class 3000 Threaded, Buttweld & Socket-Weld
Size Range: ¼" thru 3" NPS

UNIVERSAL ELBOW ANVILETS

Class 3000 & 6000 Butt-Weld, Threaded & Socket-Weld



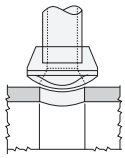
CLASS 3000
FIG. 2806 - Threaded
FIG. 2807 - Socket-Weld
For outlet sizes ¼" thru 2" NPS

CLASS 6000
FIG. 2856 - Threaded
FIG. 2857 - Socket-Weld
For outlet sizes ¼" thru 1½" NP

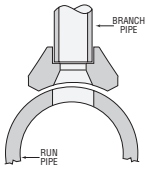
Schedule 160 & XXXH Butt-Weld
For outlet sizes ¼" thru 1½" NP

FIG. 2811 - Standard Butt-Weld
FIG. 2862 - Socket-Weld XS/XH
For outlet sizes ¼" thru 6" NPS

UNIVERSAL BUTT-WELDING ANVILETS



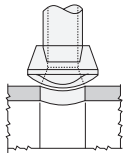
CLASS 3000
FIG. 2802
For outlet sizes ⅛" thru 4" NPS



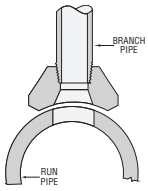
CLASS 6000
FIG. 2852
For outlet sizes ½" thru 2" NPS

UNIVERSAL THREADED ANVILETS

Full & Reducing Sizes Class 3000 & 6000



CLASS 3000
FIG. 2803
For outlet sizes ⅛" thru 4" NPS

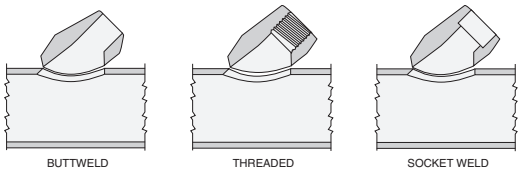


CLASS 6000
FIG. 2853
For outlet sizes ½" thru 2" NPS

UNIVERSAL LATERAL ANVILETS

Class 3000 & 6000 Buttweld, Threaded & Socket-Weld

Lateral Anvilets provide a strong, readily attached 45° lateral outlet connection.



CLASS 3000
FIG. 2809 - Threaded
FIG. 2808 - Butt-Weld Standard
FIG. 2858 - Socket-Weld XS/XH
For outlet sizes ¼" to 2" NPS

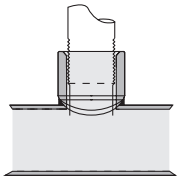
CLASS 6000
Threaded & Socket-Weld/Sch. 160 & XXS/XXH Butt-Weld
For outlet sizes ¼" to 1½" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

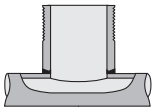
MERIT® OUTLET FITTINGS

WELD-MISER™ TEE-LET®

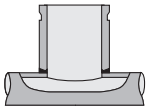
WELDING OUTLET FITTINGS



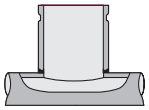
TYPE A
FEMALE THREAD
Size Range: ½" thru 4"



TYPE B
MALE THREAD
Standard Weight
Size Range: 1" thru 8"



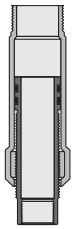
TYPE C
CUT GROOVE
Standard Weight
Size Range: 1¼" thru 8"



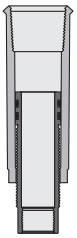
TYPE C/R
ROLL GROOVE
Schedule 10
Size Range: 1¼" - 6"

ELIMINATOR

ADJUSTABLE DROP NIPPLES
Size Range: 1" x ½" thru 1" x ¾"



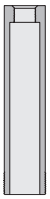
TYPE M



TYPE F

LONGNECK™

MANUFACTURED DROP NIPPLES
Size Range:
1" x ½" x 6"
thru 1" x ¾" x 36"



FLANGES

STEEL WELDING FLANGES

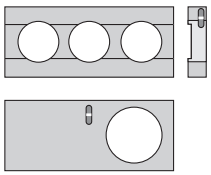
BLIND FLANGE
Sizes: 2, 2½, 3, 4, 5, 6, 8, 10 & 12

SLIP-ON FLANGE
(Ring Type)
Sizes: 2, 2½, 3, 4, 5, 6, 8, 10 & 12

REDUCING FLANGE
Sizes: 4 x 2, 4 x 2½, 4 x 3, 6 x 3, 6 x 4, 8 x 4, 8 x 6

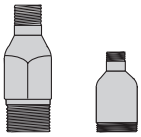
HOLE TEMPLATES

HAND HELD HOLE TEMPLATES
Size Range: 1½" thru 2½"



JB SMITH OIL COUNTRY

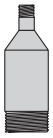
CARBON STEEL–SWAGE NIPPLES



CONCENTRIC SWAGE NIPPLES
Size Range: ⅛" thru 8" NPS

ECCENTRIC SWAGE NIPPLES
Size Range: ¼" thru 4" NPS

STAINLESS STEEL–STAINLESS SWAGES



STAINLESS & ALLOY STEEL SWAGE NIPPLES
Size Range:
¼" x ⅛" thru 4" x 3½"

CARBON STEEL–BULL PLUGS

CARBON STEEL BULL PLUGS
Size Range: ⅛" thru 8" NPS

SOLID REFINERY PLUGS
Black (non-plated)
Carbon Steel
Size Range: ⅛" thru 2" NPS

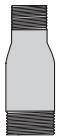
OIL COUNTRY FITTINGS–CASING NIPPLES

OIL COUNTRY CASING NIPPLES
Size Range: 4½" thru 16" NPS

OIL COUNTRY FITTINGS–TUBING SWAGES & CASING SWAGES

LARGE END UPSET
Reduced to Regular or Upset
Size Range: 1" thru 4" NPS

LARGE END NON-UPSET
Reduced to Upset
Size Range: 1" thru 4" NPS



SWAGE NIPPLES OIL COUNTRY
Tubing & Casing non EUE ends
Size Range: 1" thru 4" NPS

OIL COUNTRY FITTINGS–BULL PLUGS

TUBING BULL PLUGS
Size Range:
¾" thru 3" EUE NPS

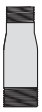
CASING BULL PLUGS
Size Range:
4½" thru 10¾" API

OIL COUNTRY FITTINGS–ADAPTER NIPPLES

BELL NIPPLE
Size Range:
4½" thru 8⅝" NPS

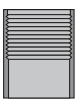
ADAPTER NIPPLES
Seamless Schedule 40
Size Range: ¾" thru 12" NPS

TUBING NIPPLES
Standard Weight
Size Range: 1" thru 4" NPS



TUBING NIPPLES
Extra Heavy Weight
Size Range: 1" thru 4" NPS

OIL COUNTRY COUPLINGS– CASING COUPLINGS



API CASING COUPLINGS
Short Thread
Size Range: 4½" thru 20" NPS

API CASING COUPLINGS
Long Thread
Size Range: 4½" thru 13⅜" NPS

PIPE FITTINGS PICTORIAL INDEX (CONT'D.)

CATAWISSA UNIONS

WING UNIONS

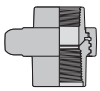


FIG. 100
Size Range: 2" thru 8"

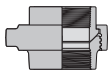


FIG. 200
Threaded Ends
Size Range: 1" thru 10"

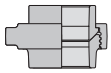


FIG. 200
Buttweld Ends
Size Range: 1" thru 10"

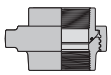


FIG. 206
Buttweld Ends
Size Range: 1" thru 8"

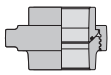


FIG. 206
Threaded Ends
Size Range: 1" thru 10"

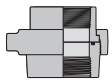


FIG. 300
Flat-Face Union
Size Range: 1" thru 4"

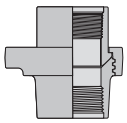


FIG. 400
Threaded Ends
Size Range: 2" thru 4"

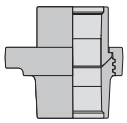


FIG. 400
Buttweld Ends
Size Range: 2"

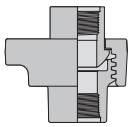


FIG. 600
Threaded Ends
Size Range: 1" thru 4"

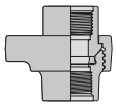


FIG. 602
Threaded Ends
Size Range: 1" thru 4"

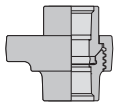


FIG. 602
Buttweld Ends
Size Range: 2" thru 4"

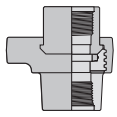


FIG. 607
Wing Service Union,
Threaded Ends
Size Range: 1½" and 2"

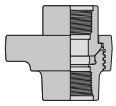


FIG. 1002
Threaded Ends
Size Range: 1" thru 4"

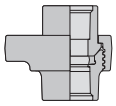


FIG. 1002
Buttweld Ends, Schedule 160
Size Range: 2" thru 4

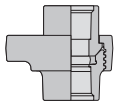
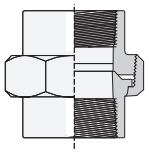


FIG. 1002
Buttweld Ends, Schedule XXH
Size Range: 2" thru 4"

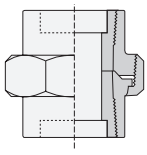
FIG. 1502
Threaded Ends
Size Range: 1½" thru 3"

FORGED STEEL UNIONS

Manufactured to MSS standard practice SP83
(Class 6000 by method of MSS SP83)



THREADED



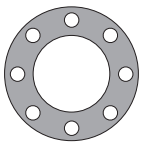
SOCKET WELD

CLASS 3000
FIG.2125–Threaded
FIG. 2126–Socket-Weld
Size Range: ⅛" thru 3" NPS

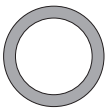
CLASS 6000
FIG. 2127–Threaded
FIG. 2128–Socket-Weld
Size Range: ⅛" thru 3" NPS

MISCELLANEOUS

ALL PURPOSE ASBESTOS GASKETS



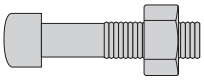
Full Face



Ring

Compressed Sheet Packing is a single-formula material suitable for a wide range of temperature-pressure combinations. It is used for sealing water, steam, all oils, gases, alkalies, acids, refrigerants & hydrocarbons.

Available in eight gauges: 1/100", 1/64", 1/32", 1/16", 3/32", 1/8", 3/16", & 1/4"
(.2, .4, .8, 1.6, 3.1, 4.7 & 6.3mm).



When ordering, specify bolt size & length required.

Bolts are furnished in sizes 1/4", 5/16", 3/8", 7/16", 1", 1 1/8", 1 1/4", (6.3, 7.9, 9.5, 11.2, 25, 29 and 32 mm) in varying lengths.

Lengths of bolts are measured from under head to extreme point.

FLOOR & CEILING PLATES

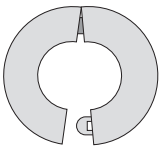


FIG. 1–WITH SPRINGS
FIG. 2–WITH SET SCREW
Stamped Steel for Copper Tube
Size Range: ¼" thru 6" NPS

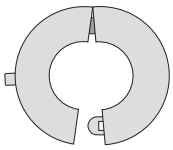


FIG. 10–WITH SPRINGS
FIG. 13–WITH SET SCREW
Stamped Steel for Pipe
Size Range: ¼" thru 6" NPS

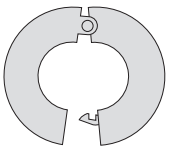


FIG. 20–WITH SPRINGS & EXPOSED RIVET HINGE
Stamped Steel for Pipe
Size Range: ¼" thru 6" NPS

PIPE HANGERS PICTORIAL INDEX

Copper Tubing Hangers

Fig. CT-69
Adjustable Swivel Ring
Size Range: ½" thru 4"

Fig. CT-65
Light Weight Adjustable Clevis
Size Range: ½" thru 4"

Fig. CT-99 & CT-99C
Adjustable Tubing Ring
Size Range: ½" thru 4"

Fig. CT-109
Split Tubing Ring
Size Range:: ½" thru 3"

Fig. CT-138R
Extensions Split Tubing Clamp
Size Range: ½" thru 2"

Fig. CT-121 & CT-121C
Copper Tubing Riser Clamp
Size Range: ½" thru 4"

Fig. CT-128R
Rod Threaded Ceiling Flange
Size Range: ⅜" and ½"

Fig. CT-255
Copper Tubing Alignment Guide
Size Range: 1" thru 4"

Pipe Rings

Fig. 108
Split Pipe Ring
Size Range: ⅜" thru 8"

Fig. 138R
Extension Split Pipe Clamp
Size Range: ⅜" thru 3"

Fig. CT-104
Adjustable Swivel Ring, Split Ring Type
Size Range: ¾" thru 8"

Fig. 97 & Fig. 97C
Adjustable Pipe Ring
Size Range: ½" thru 4"

Fig. 69
Adjustable Swivel Ring
Size Range: ½" thru 8"

Clevis

Fig. 67
Pipe or Conduit Hanger
Size Range: ½" thru 6"

Fig. 65
Light Duty Adjustable Clevis
Size Range: ⅜" thru 4"

Fig. 260
Adjustable Clevis Hanger
Size Range: ½" thru 30"

Fig. 300
Adjustable Clevis for Insulated Lines
Size Range: ¾" thru 12"

Fig. 590
Adjustable Clevis for Ductile or Cast Iron
Size Range: 4" thru 24"
ductile or cast iron pipe

Steel Pipe Clamps

Fig. 261
Extension Pipe or Riser Clamp
Size Range: ¾" thru 24"

Fig. 40
Riser Clamp Standard
Size Range: 2" thru 24"

Fig. 103
Offset Pipe Clamp
Size Range: ¾" thru 8"

Fig. 100
Extended Pipe Clamp
Size Range: ½" thru 8"

Fig. 212
Medium Pipe Clamp
Size Range: ½" thru 30"

Fig. 212FP
Earthquake Bracing Clamp
Size Range: 2½" thru 12"

Fig. 216
Heavy Pipe Clamp
Size Range: 3" thru 42"

Fig. 295
Double Bolt Pipe Clamp
Size Range: ¾" thru 36"

Fig. 295A
Alloy Double Bolt Pipe Clamp
Size Range: 1½" thru 24"

Fig. 295H
Heavy Duty Double Bolt Pipe Clamp
Size Range: 6" thru 36"

Fig. 224
Alloy Steel Pipe Clamp
Size Range: 4" thru 16"

Fig. 246
Heavy Duty Alloy Steel Pipe Clamp
Size Range: 10" thru 24"

PIPE HANGERS PICTORIAL INDEX (CONT'D.)

Beam clamps

Figs. 86, 87, 88 & 89
C-Clamp w/ Set Screw & Lock Nut
Size Range: 3/8" thru 3/4"

Fig. 95
C-Clamp w/ Lock Nut
Size Range: 3/8" and 1/2"

Fig. 89
Retaining Clip
Size Range: 3/8" thru 1/2"

Fig. 89X
Retaining Clip
Size Range: 3/8" thru 3/4"

Fig. 92
Universal C-Type Clamp
Standard Throat
Size Range: 3/8 & 1/2"

Fig. 93
Universal C-Type Clamp
Wide Throat
Size Range: 3/8 & 1/2"

Fig. 94
Wide Throat Top Beam C-Clamp
Size Range: 5/8" & 3/4"

Fig. 227
Top Beam Clamp

Fig. 217
Adjustable Side Beam Clamp
Size Range: 3" thru 7 5/8"

Fig. 14
Adjustable Side Beam Clamp
Size Range: 3/8" thru 5/8"

Fig. 133
Standard Duty Beam Clamp
Size Range: 4" thru 12"

Fig. 134
Heavy Duty Beam Clamp
Size Range: 4" thru 12"

Fig. 218
Malleable Beam Clamp Without Extension Piece

Fig. 228
Universal Forged Steel Beam Clamp

Fig. 292 & Fig. 292L
Beam Clamp w/ Weldless Eye Nut

Socket Clamps

Fig. 595 & Fig. 594
Socket Clamp
for Ductile Iron or Cast Iron Pipe & Socket Clamp Washer
Size Range: 4" thru 24"

Fig. 600 & Fig. 599
Socket Clamp
For Ductile Iron or Cast Iron Pipe & Socket Clamp Washer
Size Range: 3" thru 24"

Ceiling Plates & Flanges

Fig. 395
Cast Iron Ceiling Plate
Size Range: 1/2" thru 8"

Fig. 127
Plastic Ceiling Plate
Size Range: 3/8" & 1/2"

Fig. 128 & Fig. 128R
Pipe/Rod Threaded, Ceiling Flange
Size Range (128): 1/4"
Size Range (128R): 3/8" & 1/2"

Fig. 153
Pipe Hanger Flange
Size Range: 3/8" thru 3/4"

Structural Attachments

Fig. 55 & Fig. 55L
Structural Welding Lug
Size Range: Fig. 55: 1/2" thru 3 3/4"
Fig. 55L 1/2" thru 2"

Fig. 54
Two Hole Welding Beam Lug
Size Range: 1/2" thru 2 1/4"

Fig. 60
Steel Washer Plate
Size Range: 3/8" to 3 3/4"

Fig. 66
Welded Beam Attachment
Size Range: 3/8" thru 3 1/2"

Fig. 112 & Fig. 113
Brace Fitting Complete
Size Range: 1" & 1 1/4"

Brackets

Fig. 202
Iron Side Beam Bracket
Size Range: 3/8" thru 5/8"

Fig. 206
Steel Side Beam Bracket
Size Range: 3/8" thru 5/8"

Fig. 207
Threaded Steel Side Beam Bracket
Size Range: 3/8" and 1/2"

Fig. 194
Light Welded Steel Bracket

Fig. 195
Medium Welded Steel Bracket

Fig. 199
Heavy Welded Steel Bracket

U-Bolts

Fig. 137 & 137S
Standard U-Bolt
Size Range: 1/2" thru 36"

Fig. 137C
Plastic Coated U-Bolt
Size Range: 1/2" thru 8"

Fig. 120
Light Weight U-Bolt
Size Range: 1/2" thru 10"

Trapeze

Fig. 46
Universal Trapeze Assembly

Fig. 45
Channel Assembly

Fig. 50
Equal Leg Angle for Trapeze Assembly

PIPE HANGERS PICTORIAL INDEX (CONT'D.)

CONCRETE INSERTS & ATTACHMENTS

FIG. 152
SCREW CONCRETE INSERT
Size Range: 3/8" thru 7/8"

FIG. 282
UNIVERSAL CONCRETE INSERT
Size Range: 3/8" thru 7/8"

FIG. 281
WEDGE TYPE
CONCRETE INSERT
Size Range: 1/4" thru 7/8"

FIG. 285
LIGHT WEIGHT
CONCRETE INSERT
Size Range: 1/4" thru 5/8"

FIG. 286
IRON CROSS DESIGN
Size Range: 3/4" thru 1 1/2"

FIG. 284
METAL DECK HANGER
Size Range: 3/8" thru 3/4"

FIG. 52
CONCRETE ROD
ATTACHMENT PLATE
Size Range: 3/8" thru 1 1/4"

FIG. 47
CONCRETE SINGLE LUG PLATE
Size Range: 1/2" thru 2"

FIG. 49
CONCRETE CLEVIS PLATE
Size Range: 3/8" thru 1 3/4"

PIPE SHIELDS & SADDLES

FIG. 167
INSULATION PROTECTION SHIELD
Size Range: 1/2" thru 24" pipe w/
up to 2" thick insulation

FIG. 168
RIB-LOK SHIELD
Size Range: 1/2" thru 8" pipe
or copper tube w/ up to 2"
insulation

FIG. 160 TO FIG. 166A
PIPE COVERING
PROTECTION SADDLE
Size Range: 3/4" thru 36"

PIPE SUPPORTS

FIG. 62
TYPE A, B & C
PIPE STANCHION
Size Range: 2" thru 18"

FIG. 63
TYPE A, B & C
PIPE STANCHION
Size Range: 2 1/2" thru 42"

FIG. 192
ADJUSTABLE PIPE
SADDLE SUPPORT
Size Range: 2" thru 12"

FIG. 191
ADJUSTABLE PIPE
SADDLE W/ U-BOLT
Size Range: 2" thru 12"

FIG. 264
ADJUSTABLE PIPE
SADDLE SUPPORT
Size Range: 2 1/2" thru 36"

FIG. 265
ADJUSTABLE PIPE
SADDLE SUPPORT
Size Range: 4" thru 36"

FIG. 258
STANCHION PIPE
SADDLE SUPPORT
Size Range: 4" thru 36"

FIG. 259
PIPE STANCHION SADDLE
Size Range: 4" thru 36"

HANGER RODS & ACCESSORIES

FIG. 142
COACH SCREW RODS
Machine Threaded on
Opposite End
Size Range: 3/8" & 1/2"

FIG. 146
CONTINUOUS THREAD
Size Range: 1/4" thru 1 1/2"
Stocked in six, ten, & twelve foot lengths. Other even foot lengths can be furnished to order.

FIG. 140 & FIG. 253
MACHINE THREADED RODS
Threaded Both Ends
Size Range: 3/8" thru 5"

FIG. 248
EYE ROD NOT WELDED
Size Range: 3/8" thru 2 1/2"

FIG. 278
EYE ROD WELDED
Size Range: 3/8" thru 2 1/2"

FIG. 248X
LINKED EYE RODS
Size Range: 3/8" thru 2 1/2"

FIG. 278X
LINKED EYE RODS WELDED

FIG. 148
ROD W/ EYE END
Size Range: 2 3/4" thru 5"

FIG. 135 & FIG. 135E
STRAIGHT ROD COUPLING
Size Range: 1/4" thru 1"

FIG. 136 & FIG. 136R
STRAIGHT ROD COUPLING
Size Range: 1/4" thru 1"

FIG. 114
TURNBUCKLE ADJUSTER
Size Range: 1/4" thru 3/4"

FIG. 110R
SOCKET, ROD THREADED
Size Range: 1/4" thru 7/8"

FIG. 157
EXTENSION PIECE
Size Range: 3/8" thru 7/8"

FIG. 299
FORGED STEEL CLEVIS
Size Range: 3/8" thru 4"

FIG. 233
TURNBUCKLE
Size Range: 1 1/4" thru 5"

FIG. 230
TURNBUCKLE
Size Range: 3/8" thru 2 1/2"

FIG. 290
WELDLESS EYE NUT
Size Range: 3/8" thru 2 1/2"

FIG. 291
CLEVIS PIN WITH COTTERS
Size Range: 1/2" thru 4"

STRAPS

FIG. 126
ONE-HOLE CLAMP
Size Range: 3/8" thru 4"

FIG. 262
STRAP SHORT
Size Range: 1/2" thru 4"

FIG. 243
PIPE STRAP
Size Range: 1/2" thru 6"

FIG. 244
PIPE STRAP
Size Range: 1/2" thru 6"

PIPE HANGERS PICTORIAL INDEX (CONT'D.)

Pipe Rolls

Fig. 177
Adjustable Pipe Roll Support
Size Range: 1" thru 30"

Fig. 171
Single Pipe Roll
Size Range: 1" thru 30"

Fig. 178
Spring Cushion Hanger

Fig. 181
Adjustable Steel Yoke Pipe Roll
Size Range: 2½" thru 24"

Fig. 175
Roller Chair
Size Range: 2" thru 30"

Fig. 277 & Fig. 277S
Pipe Roll & Base Plate
Size Range: 2" thru 24"

Fig. 271
Pipe Roll Stand
Size Range: 2" thru 42"

Fig. 274, Fig. 274P & Fig. 275
Adjustable Pipe Roll Stand
Size Range: 2" thru 42"

Pipe Guides & Slides

Fig. 255
Pipe Alignment Guide
Size Range: 1" thru 24" & insulation thickness of 1" thru 4" (Also available in copper tube sizes)

Fig. 256
Pipe Alignment Guide
Size Range: 1" thru 24" pipe & insulation thickness of 1" thru 4"

Fig. 257 & Fig. 257A
Structural Tee Slide Assembly
Size Range: All sizes within maximum load rating.

Fig. 436 & Fig. 436A
Fabricated Tee Slide Assembly
Size Range: All sizes within maximum load rating.

Fig. 439
Structural "H" Slide Assembly
Size Range: 6" thru 36"

Fig. 432
Special Clamp
Size Range: 2" thru 24"

Fig. 212
Medium Pipe Clamp
Size Range: 2" thru 30"

Sway Strut Assembly

Fig. 211, C-211, 640, C-640
Sway Strut Assembly

Fig. 222, C-222
Mini-Sway Strut Assembly

Fig. 210
Replacement Strut

Snubbers & Limit Stops

Fig. 1306 & Fig. 1307
Limit Stop
Size Range: Rated loads from 650 (lbs) to 670,000 (lbs).

Fig. 3306, 3307
Hydraulic Shock & Sway Suppressor (Snubber)
Size Range: Six standard sizes w/ load ratings from 350 to 50,000 pounds.

Fig. 312
Tapered Pin
Size Range: ⅜" thru 2½"

Fig. 200 & Fig. C-200, Fig. 201 & Fig. C-201
Hydraulic Shock & Sway Suppressor (Snubber)
Size Range: Seven standard sizes w/ cylinder bores of 1½" to 8" & w/ normal load ratings from 3,000 pounds to 128,000 pounds. All are available w/ 5", 10", 15" or 20" strokes except the 1½" size which is offered w/ 5" & 10" strokes only. Snubbers are available w/ integral or remote reservoirs.

Spring Hangers

Fig. 247
Light Duty Spring Hanger

Fig. 82, C-82
Short Spring

Fig. B-268, C-268
Standard Spring

Fig. 98, C-98
Double Spring

Constant Supports

Fig. R 80-V
Vertical Constant Support

Fig. 81-H
Horizontal Constant Support

Size Range: Anvil Model R constant support hangers are made in two basic designs, 80- V (vertical design) & 81-H (horizontal design). Combined, the 80-V & 81-H constant supports are made in nine different frame sizes & 110 spring sizes to accommodate travels from 1½" to 20" & loads from 27 lbs to 87,500 lbs.

Horizontal Traveler & Sway Brace

Fig. 170
Horizontal Traveler
Size Range: Available in four sizes to take loads to 20,700 (lbs). All sizes provide for 12" of horizontal travel.

Fig. 296, 297, 299, 301, 302 & 303
Sway Brace
Size Range: Preloads from 50 to 1,800 pounds & maximum forces from 200 to 7,200 pounds.

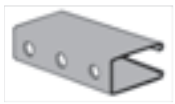
ANVIL-STRUT™ PICTORIAL INDEX

Channel

AS 100
Channel
Size: 1⅝" x 3¼" x 12 Ga.

AS 100EH
Channel w/Elongated Holes
Size: 1⅝" x 3¼" x 12 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers

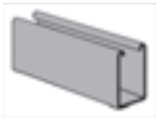
AS 100KO
Channel w/ Knock Outs
Size: 1⅝" x 3¼" x 12 Ga.
⅞" Knock Outs on 6" centers



AS 100H
Channel w/ Holes
Size: 1⅝" x 3¼" x 12 Ga.
9⁄16" Holes on 1⅞" centers

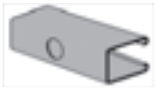
AS 100S
Channel w/ Long Slots
Size: 1⅝" x 3¼" x 12 Ga.
13⁄32" x 3" Slots on 4" centers

AS 100BTB
Welded Channel
Size: 1⅝" x 3¼" x 12 Ga.
Two Pcs. AS 100 Welded Back-to-Back



AS 150
Channel
Size: 1⅝" x 2⁷⁄16" x 12 Ga.

AS 150EH
Channel w/Elongated Holes
Size: 1⅝" x 2⁷⁄16" x 12 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers



AS 150KO
Channel w/ Knock Outs
Size: 1⅝" x 2⁷⁄16" x 12 Ga.
⅞" Knock Outs on 6" centers

AS 150H
Channel w/ Holes
Size: 1⅝" x 2⁷⁄16" x 12 Ga.
9⁄16" Holes on 1⅞" centers

AS 150S
Channel w/ Long Slots
Size: 1⅝" x 2⁷⁄16" x 12 Ga.
13⁄32" x 3" Slots on 4" centers

AS 150BTB
Welded Channel
Size: 1⅝" x 2⁷⁄16" x 12 Ga.
Two Pcs. AS 150 Welded Back-to-Back

AS 200
Channel
Size: 1⅝" x 1⅝" x 12 Ga.

AS 200EH
Channel w/Elongated Holes
Size: 1⅝" x 1⅝" x 12 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers

AS 200KO
Channel w/ Knock Outs
Size: 1⅝" x 1⅝" x 12 Ga.
⅞" Knock Outs on 6" centers

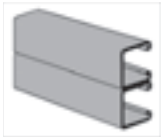
AS 200H
Channel w/ Holes
Size: 1⅝" x 1⅝" x 12 Ga.
9⁄16" Holes on 1⅞" centers

AS 200S
Channel w/ Long Slots
Size: 1⅝" x 1⅝" x 12 Ga.
13⁄32" x 3" Slots on 4" centers

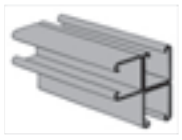
AS 200STSR
Welded Channel
Size: 1⅝" x 1⅝" x 12 Ga.
Two Pcs. AS 200 Welded Side-To-Opposite Side

AS 200BTB
Welded Channel
Size: 1⅝" x 3¼" x 12 Ga.
Two Pcs. AS 200 Welded Back-to-Back

AS 200BTS
Welded Channel
Size: 1⅝" x 3¼" x 12 Ga.
Two Pcs. AS 200 Welded Side-to-Back



AS 200STS
Welded Channel
Size: 1⅝" x 3¼" x 12 Ga.
Two Pcs. AS 200 Welded Side-to-Side



AS 200BTBS
Welded Channel
Size: 1⅝" x 3¼" x 12 Ga.
Three Pcs. AS 200 Welded Side-to-Side

AS 200BTBF3
Welded Channel
Size: 1⅝" x 3¼" x 12 Ga.

AS 210
Channel
Size: 1⅝" x 1⅝" x 14 Ga.

AS 210EH
Channel w/Elongated Holes
Size: 1⅝" x 1⅝" x 14 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers

AS 210KO
Channel w/ Knock Outs
Size: 1⅝" x 1⅝" x 14 Ga.
⅞" Knock Outs on 6" centers

AS 210H
Steel Channel w/ Holes
Size: 1⅝" x 1⅝" x 14 Ga.
9⁄16" Holes on 1⅞" centers

AS 210S
Channel w/ Long Slots
Size: 1⅝" x 1⅝" x 14 Ga.
13⁄32" x 3" Slots on 4" centers

AS 210BTB
Welded Channel
Size: 1⅝" x 1⅝" x 14 Ga.
Two Pcs. AS 210 Welded Back-To-Back

AS 300
Channel
Size: 1⅝" x 2¾" x 12 Ga.

AS 300EH
Channel w/Elongated Holes
Size: 1⅝" x 2¾" x 12 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers

AS 300KO
Channel w/ Knock Outs
Size: 1⅝" x 2¾" x 12 Ga.
⅞" Knock Outs on 6" centers

AS 300H
Steel Channel w/ Holes
Size: 1⅝" x 2¾" x 12 Ga.
9⁄16" Holes on 1⅞" centers

AS 300S
Channel w/ Long Slots
Size: 1⅝" x 2¾" x 12 Ga.
13⁄32" x 3" Slots on 4" centers

AS 300BTB
Welded Channel
Size: 1⅝" x 2¾" x 12 Ga.
Two Pcs. AS 300 Welded Back-To-Back

ANVIL-STRUT™ PICTORIAL INDEX (CONT'D.)

CHANNEL (CONT'D.)

AS 400
CHANNEL
Size: 1⅝" x 1" x 12 Ga.

AS 400EH
CHANNEL W/ELONGATED HOLES
Size: 1⅝" x 1" x 12 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers

AS 400KO
CHANNEL W/ KNOCK OUTS
Size: 1⅝" x 1" x 12 Ga.
⅞" Knock Outs on 6" centers

AS 400H
CHANNEL W/ HOLES
Size: 1⅝" x 1" x 12 Ga.
9⁄16" Holes on 1⅞" centers

AS 400S
CHANNEL W/ LONG SLOTS
Size: 1⅝" x 1" x 12 Ga.
13⁄32" x 3" Slots on 4" centers

AS 400BTB
WELDED CHANNEL
Size: 1⅝" x 2" x 12 Ga.
Two Pcs. AS 400 Welded Back-to-Back

AS 500
CHANNEL
Size: 1⅝" x 13⁄16" x 14 Ga.

AS 500EH
CHANNEL W/ELONGATED HOLES
Size: 1⅝" x 13⁄16" x 14 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers

AS 500H
CHANNEL W/ HOLES
Size: 1⅝" x 13⁄16" x 14 Ga.
9⁄16" Holes on 1⅞" centers

AS 500S
CHANNEL W/ LONG SLOTS
Size: 1⅝" x 13⁄16" x 14 Ga.
13⁄32" x 3" Slots on 4" centers

AS 500BTB
WELDED CHANNEL
Size: 1⅝" x 1⅝" x 14 Ga.
Two Pcs. AS 500 Welded Back-to-Back

AS 707
RACEWAY CLOSURE STRIP
For all 1⅝" Width Channels (10' Length)

AS 520
CHANNEL
Size: 1⅝" x 13⁄16" x 12 Ga.

AS 520EH
CHANNEL W/ELONGATED HOLES
Size: 1⅝" x 13⁄16" x 12 Ga.
1⅛" x 9⁄16" Elongated holes on 2" centers

AS 520H
CHANNEL W/ HOLES
Size: 1⅝" x 13⁄16" x 12 Ga.
9⁄16" Holes on 1⅞" centers

AS 520S
CHANNEL W/ LONG SLOTS
Size: 1⅝" x 13⁄16" x 12 Ga.
13⁄32" x 3" Slots on 4" centers

AS 520BTB
WELDED CHANNEL
Size: 1⅝" x 1⅝" x 12 Ga.
Two Pcs. AS 520 Welded Back-to-Back

AS 707P
PAINTED CLOSURE STRIP
For all 1⅝" Width Channels (10' Length)

CHANNEL NUTS & HARDWARE

AS LS
CLAMPING NUT W/LONG SPRING
Size Range: ¼" x 20 thru ¾" x 10
Use with AS 100 & AS 150.

AS NS
CLAMPING NUT WITHOUT SPRING
Size Range: #10 x 24 thru ¾" x 10
Use with all 1⅝" wide channel.

AS RS
CLAMPING NUT W/REGULAR SPRING
Size Range: #8 x 32 thru ⅞" x 9
Use with AS 200, AS 210 & AS 300.

AS SS
CLAMPING NUT W/SHORT SPRING
Size Range: #8 x 32 thru ⅝" x 11
Use with AS 400 & AS 500.

AS TG
TOP GRIP NUT W/TOP SPRING
Size Range: ¼" x 20 thru ½" x 13
Use with all 1⅝" channel.

AS 517
STUD NUT W/RS SPRING
Size Range: ¼" x 1" thru ½" x 2"

AS 3281
DOUBLE CONVEYOR ADJUSTING NUT
Size: ⅜"
Use with all 1⅝" wide Anvil-Strut™ channels..

AS 83
HEXAGON NUT
Size Range: ¼" thru ¾"

FIG. 135
ROD COUPLING

FIG. 146
CONTINUOUS THREADED ROD

AS 203
LINKED EYELET W/STUD
Sizes: ⅜" & ½"

AS 209
FLAT WASHER
Size Range: ¼" thru ¾"

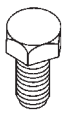
AS 211
LOCK WASHER
Size Range: ¼" thru ½"

AS 230
FENDER WASHER
Size Range: ¼" thru ½"

AS 6075
SLOTTED HEX HEAD MACHINE SCREW
Size Range: ¼" x ¾" thru ⅜" x 1¼"

AS 6108
SQUARE NUT
Size Range: ¼" thru ½"

AS 3500
SEISMIC ROD STIFFENER
Size Range: ⅜" thru ⅝"



AS 6024
HEX HEAD CAP SCREW
Size Range: ¼" x ¾" thru ½" x 2"

ANVIL-STRUT™ PICTORIAL INDEX (CONT'D.)

Fittings & Accessories

AS 85
Rod or Insulator Support
Sizes: 1/4", 3/8" & 1/2"

Fig. 86
Clamp w/Lock Nut
Size Range: 3/8" thru 3/4"

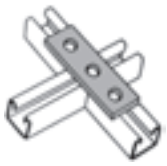
Fig. 93
Top Beam "C" Clamp
Size Range: 3/8" thru 1/2"

Fig. 94
Top Beam "C" Clamp
SizeRange: 5/8" thru 3/4"

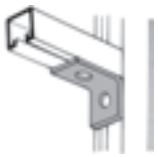
Fig. 95
Clamp w/Lock Nut
Size Range: 3/8" thru 3/4"

AS 135X
Light Duty Beam Clamp
Size: 1/4"

AS 601
Two Hole Splice Plate

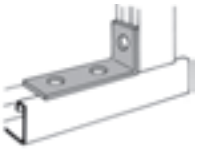


AS 602
Three Hole Splice Plate

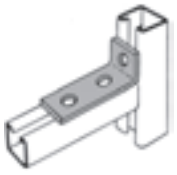


AS 603
Two Hole End Angle

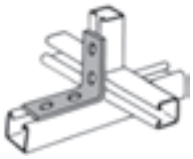
AS 604
Two Hole Corner Angle



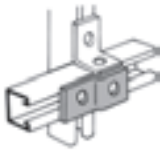
AS 605
Three Hole Corner Angle



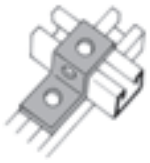
AS 606
Three Hole Corner Angle



AS 607
Four Hole Corner Angle

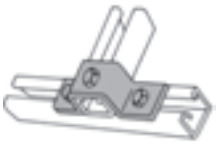


AS 609
Two Hole Offset "Z" Support

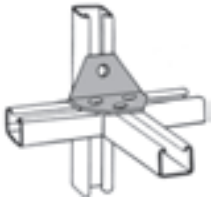


AS 611
"Z" Support
Use with AS 200, AS 210, & AS 500BTB.

AS 612
"Z" Support
Use with AS 400.



AS 613
"U" Support
Use with AS 200, AS 210, & AS 500BTB.



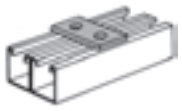
AS 614
Four Hole Joint Angle Connector

AS 615
Five Hole Shelf Joint Angle Connector

AS 616
Four Hole Splice Clevis
Use with AS 200 & AS 210.

AS 617
Three Hole Swivel Plate

AS 619
Square Washer



AS 620
Two Hole Connecting Plate

AS 624
Two Hole Closed Angle Connector

AS 629
Three Hole Splice Clevis
Use with AS 200 & AS 210.

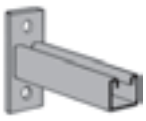
AS 631
Two Hole Splice Clevis
Use with AS 200 & AS 210.

AS 633
Two Hole Open Angle Connector

AS 644
Two Hole Splice Clevis
Use with AS 500 & AS 520.

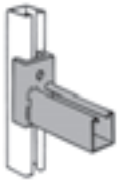
AS 645
Three Hole Splice Clevis
Use with AS 500 & AS 520.

AS 646
Four Hole Splice Clevis
Use with AS 500.

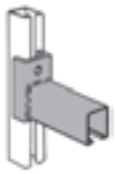


AS 651
Reversible Strut Bracket

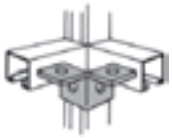
AS 655, AS 656
Type "A" End Cap
AS 655 – Use with AS 200.
AS 656 – Use with AS 300 & AS 349 insert..



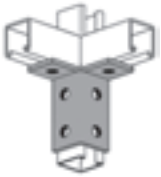
AS 661 T1
Strut Bracket (Slot Up)



AS 661 T2
Strut Bracket (Slot Down)



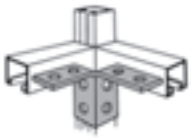
AS 665
Four Hole Double Corner Connector



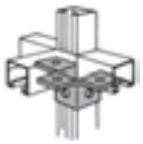
AS 666
Six Hole Double Corner Connector

ANVIL-STRUT™ PICTORIAL INDEX (CONT'D.)

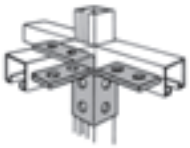
FITTINGS & ACCESSORIES (CONT'D.)



AS 667
EIGHT HOLE DOUBLE CORNER CONNECTOR



AS 668
SIX HOLE THREE ANGLE CONNECTOR



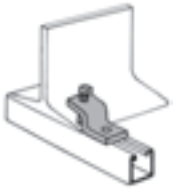
AS 669
TWELVE HOLE THREE ANGLE CLEVIS CONNECTOR

AS 677
CUP SUPPORT FOR STANDARD SINGLE STRUT
Use with AS 200 & AS 210.

AS 678
THREE HOLE "U" SUPPORT
Use with AS 150 BTB.

AS 679
"U" SUPPORT
Use with AS 100, AS 200BTB, & AS 210BTB.

AS 684
BEAM CLAMP
Includes Cup Point Set Screw.



AS 685
BEAM CLAMP
Includes Cup Point Set Screw.

AS 686
BEAM CLAMP
Order AS 6024 ½" x 1½" Separately.

AS 687
SLOTTED "U" SUPPORT
Use with AS 200 & AS 210.

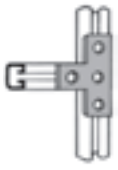
AS 689
ADJUSTABLE DOUBLE SLOTTED CORNER CONNECTOR

AS 708
SINGLE CHANNEL BRACKET SUPPORT
Use with AS 200, AS 210 & As 500BTB.

AS 710
"U" SUPPORT
Use with AS 300.

AS 711
"Z" SUPPORT
Use with AS 300.

AS 712
CROSS PLATE

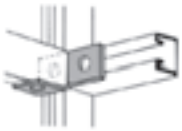


AS 714
"T" PLATE

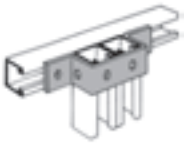
AS 715
"T" PLATE—90° ANGLE

AS 718
FLAT ANGLE PLATE

AS 719
FOUR HOLE CORNER PLATE

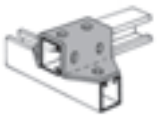


AS 720
RH & LH ANGLE PLATE CONNECTOR

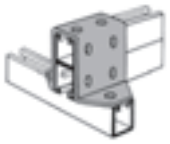


AS 721
"U" SUPPORT
Use with AS 100, AS 200BTB & AS 210BTB.

AS 732
SHELF BRACKET

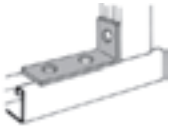


AS 733
SIX HOLE "U" SUPPORT
Use with AS 200 & AS 210.



AS 735
EIGHT HOLE "U" SUPPORT
Use with AS 200BTB.

AS 744
FLAT CORNER CONNECTOR



AS 745
THREE HOLE CORNER ANGLE

AS 747
SYMMETRICAL FOUR HOLE CONNECTOR

AS 748
FOUR HOLE CORNER JOINT CONNECTOR

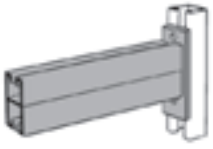
AS 750
FOUR HOLE CORNER CONNECTOR

AS 763, AS 764
SLOTTED ADJUSTMENT CORNER ANGLE

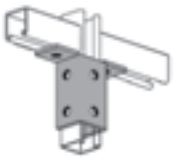
AS 781
FOUR HOLE OPEN ANGLE CONNECTOR

AS 793
FOUR HOLE CLOSED ANGLE CONNECTOR

AS 806
TWO HOLE ANGLE WITH IMPRESSIONS ON BOTH LEGS



AS 809
DOUBLE CHANNEL BRACKET



AS 821
EIGHT HOLE DOUBLE ANGLE CONNECTOR

AS 825 RH/LH
PIPE AXLE SUPPORT
Specify RH or LH (1½" Max. Pipe)

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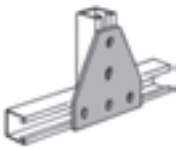
FITTINGS & ACCESSORIES (CONT'D.)

AS 838
RH/LH PIPE AXLE SUPPORT
Specify RH or LH (1½" Max. Pipe)



AS 854
FLAT CONNECTOR

AS 855
ANGULAR "C" BEAM CLAMP
AS 855 1 – Use with AS 200 & AS 210.
AS 855 2– Use with AS 500.

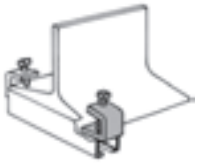
AS 858
HEAVY DUTY SUSPENSION ROD BEAM CLAMPS
Includes Set screw. (Safety anchor strap AS 871 to be ordered separately according to length required.)

AS 865
WIDE THROAT HEAVY DUTY BEAM CLAMP
Includes Set screw. (Safety anchor strap AS 871 to be ordered separately according to length required.)

AS 871
SAFETY ANCHOR STRAP
(for Heavy Duty Beam Clamps.)
Use with AS 858, AS 865 (Cannot be used with ⅝" rod size beam clamps & larger.)

AS 888
FOUR HOLE SPLICE PLATE

AS 901, AS 902
TYPE "A"
Use with AS 100. & AS 400.

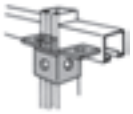


AS 907
"I" BEAM CLAMP
Includes Cup Point Set Screw.

AS 913
TEN HOLE TWO ANGLE CLEVIS CONNECTOR

AS 921
ONE HOLE ANGLE

AS 922 RH & LH
TWO HOLE SINGLE CORNER ANGLE CONNECTOR



AS 923
FIVE HOLE TWO ANGLE CONNECTOR

AS 925
SYMMETRICAL THREE HOLE JOINT CONNECTOR

AS 926
STRUT BRACE

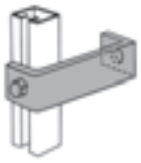
AS 927
FIVE HOLE CORNER CONNECTOR

AS 928
"Z" SUPPORT
Use with AS 500. & AS 520.

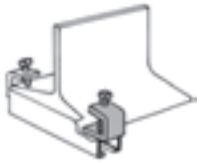
AS 929
"U" SUPPORT
Use with AS 500 & AS 520.

AS 930
TYPE "A" END CAP
Use with AS 500.

AS 978
"U" SUPPORT
Use with AS 400.



AS 993
INSIDE CLEVIS

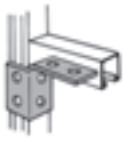


AS 998
"I" BEAM CLAMP
Includes Set Screw.

AS 2064
DOUBLE COLUMN POST BASE
Use with AS 100. AS 200BTB, AS 200STS, AS200BTS, & AS 200STSR

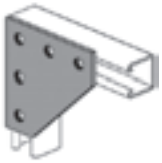
AS 2112
CROSS CONNECTOR

AS 2119
"U" CONNECTOR
Use with AS 200 & AS 210 .

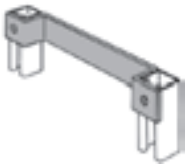


AS 2128
RH & LH SIX HOLE CORNER CONNECTOR

AS 2144
CORNER ANGLE



AS 2190
FLAT CORNER CONNECTOR



AS 2401 THRU AS 2403
LADDER RUNG

AS 2404 THRU AS 2408
LADDER BRACKET

AS 2421
45° STAIR TREAD SUPPORT

AS 2422
37½° STAIR TREAD SUPPORT

AS 2504
SQUARE WASHER W/ CHANNEL GUIDE

AS 2511
END CAP W/ KNOCK OUT
AS 2511 1 – Use with AS 100.
AS 2511 2 – Use with AS 200 & AS 210.
AS 2511 3 – Use with AS 300.

AS 2520
TWO HOLE ADJUSTMENT ANGLE

AS 2521
TWO WHEEL TROLLEY
Use with AS 200.

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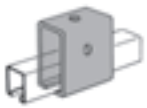
FITTINGS & ACCESSORIES (CONT'D.)

AS 2522
FOUR WHEEL TROLLEY
Use with AS 200.

AS 2524
TWO WHEEL LIGHT DUTY TROLLEY

AS 2525
FOUR WHEEL LIGHT DUTY TROLLEY

AS 2528
TROLLEY BEAM STANDARD SUPPORT
Use with AS 200 & AS 210 Channel.



AS 2528-1
TROLLEY BEAM JOINT SUPPORT
Use with AS 200 & AS 210 Channel.

AS 2545
SLOTTED 90° ANGLE

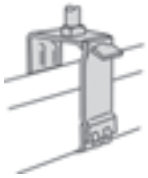
AS 2560, AS 2561
CONDUIT CONNECTOR FITTING ASSEMBLY

AS 2580
TYPE "A" END CAP
Use with AS 150.

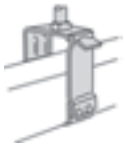
AS 2601
"Z" SUPPORT
Use with AS 150.

AS 2623
SWIVEL ADAPTER
Use with AS 2622 Beam Clamp.

AS 2627
SPACER CLEVIS



AS 2631
SWING GATE FIXTURE HANGER
Use with AS 200, AS 210, AS 300, AS 400, & AS 500.



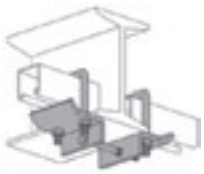
AS 2631D
SWING GATE FIXTURE HANGER
Use with AS 100, AS 150, AS 200BTB & AS 210BTB.

AS 2648
"U" SUPPORT
Use with AS 150.

AS 2651
BEAM CLAMP
T1 – Use with AS 200, AS 210, AS 300, AS 400, AS 500 & AS 520.
T2– Use with AS 100, AS 150 & AS 200BTB.

AS 2654, AS 2654 A
COLUMN ATTACHMENT
AS 2654 – Use with AS 200.
AS 2654 A– Use with AS 500.

AS 2656
"U" BOLT BEAM CLAMP W/ HOOK
T1 – Use with AS 200, AS 210, AS 300, AS 400, AS 500 & AS 520.
T2– Use with AS 100, AS 150 & AS 200BTB.



AS 2657
DOUBLE "U" BOLT BEAM CLAMP
T1 – Use with AS 200, AS 210, AS 300, AS 400, AS 500 & AS 520.
T2– Use with AS 100, AS 150 & AS 200BTB.

AS 3013
SINGLE COLUMN BASE ONE HOLE ATTACHMENT
Use with AS 200 & AS 210.

AS 3025
POST BASE
Use with AS 200 & AS 210.

AS 3029
DOUBLE COLUMN POST BASE
Use with all 3¼" channels.

AS 3033
POST BASE
Use with AS 200 & AS 210.

AS 3040
POST BASE
Use with AS 200 & AS 210.

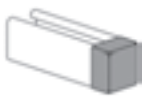
AS 3049
TWO HOLE SLOTTED 90° CORNER CONNECTOR

AS 3060
OFFSET CONNECTOR

AS 3064
DOUBLE COLUMN POST BASE
Use with all 3¼" channels.

AS 3164
DOUBLE CHANNEL BRACKET SUPPORT
Use with all 3¼" channels.

AS 3373
UNIVERSAL ANGLE BRACKET



AS 6153
SAFETY END CAP
1– Use with AS 100.
2– Use with AS 200 & AS 210.
3– Use with AS 300.
5– Use with AS 500.

AS 9400
ADJUSTABLE BASE

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FITTINGS & ACCESSORIES (CONT'D.)

AS 9402
TWO HOLE HINGE CONNECTOR

AS 9403
THREE HOLE HINGE CONNECTOR

AS 9404
FOUR HOLE HINGE CONNECTOR

FIG. 137
"U" BOLT W/NUTS–
LONG TANGENT
Size Range: ½" thru 4"

AS 270
CONDUIT CLAMP

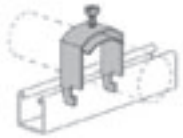
AS 815
(6" TO 18" PIPE) DOUBLE PIPE
ROLLER SUPPORT
Order nuts & bolts separately.

AS 1100
PRE-ASSEMBLED RIGID STEEL
CONDUIT & PIPE CLAMPS
Size Range: ⅜" thru 6"
Also for IMC & GRC.

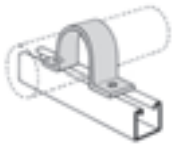
AS 1200
O.D. TUBING CLAMP
Size Range: ¼" thru 8⅝"

AS 1300
UNIVERSAL PIPE CLAMP
Size Range: ½" thru 2"

AS 1911
PIPE ROLLER
Size Range: 2" - 3½" thru
12" - 14"



AS 3101 THRU AS 3115
ONE PIECE CABLE & CONDUIT
CLAMP
Size Range: ⅜" thru 4¾"



AS 3126
HOLD DOWN CLAMP
Size Range: ½" thru 6"

PIPE & CONDUIT SUPPORTS

AS 51
RIGHT ANGLE PIPE OR CONDUIT
CLAMP

FIG. 67
PIPE OR CONDUIT HANGER
Size Range: ½" thru 6"

FIG. 69
SWIVEL RING HANGER
Size Range: ½" thru 4"

AS 1000
EMT CONDUIT CLAMPS
Size Range: ½" thru 2"

AS 1000
PRE-ASSEMBLED EMT
CONDUIT CLAMPS
Size Range: ½" thru 2"

AS 1100
RIGID STEEL CONDUIT CLAMPS
Size Range: ⅜" thru 12"
Also for IMC & GRC.

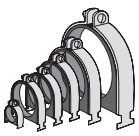
AS 1450
ONE HOLE CLAMP FOR O.D.
TUBING
Size Range: ¼" thru 1"
Use with 1⅝" Wide Channel.

AS 1901
(1" TO 8" PIPE) PIPE ROLLER
SUPPORT

AS 1902
PIPE ROLLER SUPPORT
Size Range: 1" - 2" thru 8"

AS 3138
PARALLEL PIPE CLAMP
Size Range: ⅜" thru 4"

AS 3792
CUSHION STRIP



AS 0040D THRU AS 106P
CUSHION CLAMP ASSEMBLY
Size Range: 1" - 2" thru 8"

KLO-SHURE®

KLO-SHURE®
INSULATION COUPLING CLEVIS HANGER/
RING HANGER
Size Range: 1⅛" thru 5¾"

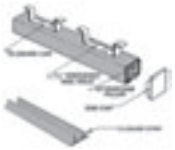
KLO-SHURE®
STRUT-MOUNTED INSULATION COUPLINGS W/
STRUT CLAMP
Size Range: 1⅛" thru 5¾"

ANVIL-STRUT™ PICTORIAL INDEX (CONT'D.)

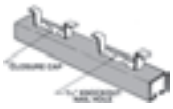
Concrete Inserts

Fig. 152
Screw Concrete Insert
Size Range: 3/8" thru 7/8"

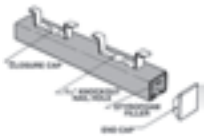
Fig. 285
Light Weight Concrete Insert



AS 349
Continuous Concrete Insert
With Closure Strip & End Cap Installed (CS/EC) or w/ foam & end cap installed (F/EC).
1 5/8" x 1 3/8" x 12 Ga. channel



AS 349
Continuous Concrete Insert
Without Closure Strip & End Cap
1 5/8" x 1 3/8" x 12 Ga. channel



AS 449
Continuous Concrete Insert
With Closure Strip & End Cap Installed (CS/EC) or w/ foam & end cap installed (F/EC).
1 5/8" x 1 3/8" x 12 Ga. channel

AS 449
Continuous Concrete Insert
Without Closure Strip & End Cap
1 5/8" x 1 3/8" x 12 Ga. channel

AS 653
Type "B" End Cap
Use with AS 349 Insert.

AS 654
Type "B" End Cap
Use with AS 449 Insert.

Fig. 284
Concrete Deck Insert
Size Range: 3/8" thru 5/8"

AS 6151
Plastic Closure Strip
Use with all Continuous Inserts
10 ft. length.

FIGURE NUMBER INDEX

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ANVIL® INTERNATIONAL, INC.

Corporate Offices
110 Corporate Drive, Suite 10 • P.O. Box 3180
Portsmouth, NH 03802-3180
Tel: 603-422-8000 • Fax: 603-422-8033
E-mail address — Webmaster@anvilintl.com
www.anvilintl.com

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