



VIKING
SupplyNet®

11121/1012/en

**PicoFix - Installation instructions
and groove specifications**

Installation instructions for PicoFix Pipe Couplings Type 900



Before assembling PicoFix piping products, always read, understand and observe the installation instructions. Failure to observe the instructions can lead to serious injury, incorrect installation and / or property damage!

EXPLANATION OF SYMBOLS AND NOTES

The safety guidelines and important explanations contained in this document are indicated by the following pictograms:



This safety alert symbol indicates important safety messages. When you see this symbol, be alert to the possibility of personal injury. Carefully read and fully understand the message that follows.



Warns against immediate hazards which WILL result in severe personal injury or death and severe property damage.



Warns against hazards or unsafe practices which COULD result in severe personal injury or death and severe property damage.



Warns against hazards or unsafe practices which COULD result in minor personal injury and minor property damage or product damage.



Indicates special instructions or explanations that are important but not related to hazards.

These hazard warnings are to be fully observed in addition to the generally applicable national and international safety and accident prevention guidelines!

BASIC INFORMATION



- Before installing, extending or adjusting piping products the piping system should always be depressurized first and emptied.
- Protection goggles, helmet and safety shoes should be worn.
- Do not attach supports directly to couplings. Only attach supports to adjacent pipes and components.

Failure to observe these guidelines can result in a sudden loosening of the connection under pressure, which can lead to serious personal injury, damage to property and damage to the product.

It is the responsibility of the manufacturer of the piping system and the planning engineer to select and ensure that products are suited to the intended use, and to ensure that the operating pressure and maximum admissible pressure (e.g. in the case of pressure checks) and other performance data are not exceeded.

BASICS OF ASSEMBLY OF GROOVED PRODUCTS

The following basic instructions must be observed to ensure correct assembly of the pipe connection.

- Check the suitability of the associated gasket for the intended use.
- Check the compatibility of the materials used in couplings, gaskets and fittings with the environmental conditions and with the anticipated media/ extinguishing solutions.
Consult the latest version of the technical specification sheets or contact us for further information.
- Only use approved lubricants for the corresponding sealing material for assembly of the gasket / coupling.
- Observe the operating and maintenance instructions for the tools to be used.
- Check that the outer diameter and groove dimensions of the pipes or fittings are within the applicable groove specifications.
- Check that the gasket is correctly placed on the gasket seat of pipe or fitting.
- Check that the coupling keys engage correctly in the pipe or fitting grooves.
- Tighten the coupling nuts evenly and by alternating sides, until the angle-design bolt pads meet metal to metal; ensure equal offsets at bolt pads on both sides of the coupling.



- If a tightening torque is specified for assembly of the coupling, the nuts must be tightened using this torque, to ensure correct assembly.

Using a torque which exceeds the specified value does not improve the sealing performance.

On the contrary, this can cause damage to the coupling which can result in failure or breaking of the pipe connection even long after assembly.

A secure pipe connection and sealing cannot be guaranteed either if the tightening torque used is too low.

SUPPORTING PIPING FOR RIGID SYSTEMS

Piping that is joined with grooved pipe couplings, like all other piping systems, also require support to bear the weight of the pipes, accessories and materials.

With the support or hanging methods applied, the load on the connections, piping and other components must be kept as low as possible.

In addition, where required, the support must allow for movement of the piping and meet other requirements such as drainage or venting.

The specific national or international law, standards, directives and technical regulations must be observed and fulfilled in relation to support spacing (e.g. VdS-CEA 4001, NFPA, FM, etc).



- **Do NOT attach supports directly to couplings.**
- **Only attach supports to adjacent pipes and components.**

Viking SupplyNet is not responsible for the design of piping systems and accepts no liability for systems that are not properly designed.

PIPE PREPARATION

Pipes must be prepared in accordance with the current groove specifications.

- The ends of the pipes should be cut square.
The admissible deviations from squareness can be obtained from the groove specifications.
- The pipe ends must be burr-free to avoid damage to the gasket during assembly.
- Use of pipes with beveled ends is not recommended.
Beveled end pipe is acceptable only if pipe ends are in conformance with EN 10217-2.
- The gasket seats must be free from any indentations, roll marks, scores, seams or other harmful surface defects, such as loose paint, scale, dirt, chips, grease and rust, that may interfere with proper sealing of the gasket.
- The grooves must be free from loose dirt, chips, rust and scale that may interfere with proper coupling assembly.

GASKET

⚠ CAUTION

- To ensure the best possible functioning of the gasket, the right gasket must always be selected for the corresponding medium.
- Selecting the wrong gasket can lead to leaks and to property damage.
- Do not expose gaskets to temperatures outside the recommended temperature range, as excessive temperatures can affect the life and performance of the gasket.

The following listed services are general recommendations only and apply only to our gaskets. This recommendation does not necessarily imply that the coupling housing, related fittings or other parts are suited to the same service.

Consult the latest version of the technical specification sheets or contact us for further information.

STANDARD MATERIAL

Grade	Compound	Temperature range	Color code	General service recommendations
E	EPDM	-40 °C to 110 °C	Green stripe	For use within the stipulated temperature ranges in water extinguishing systems. DO NOT BRING INTO CONTACT WITH OIL OR LUBRICANTS BASED ON MINERAL OIL (HYDROCARBONS)!

⚠ CAUTION

- EPDM gaskets must never be brought into contact with lubricants or oils containing mineral oils, as well as other materials containing mineral oils (e.g. fuels or cleaning agents).

NOTICE

- Where gaskets or couplings with pre-mounted gaskets are stored for extended periods of time, the physical properties of the elastomers can change during the storage period. They can be rendered unusable due to hardening, softening, breaking, crack formations or other surface decomposition. These changes are the result of special individual or combined influence factors like e.g. deformations, oxygen, ozone, light, heat, moisture or oils and solvents.
- With some simple precautions the life and storage time can be extended considerably. Basic instructions on storage, cleaning and preservations of elastomer sealing elements are described in national and international standards such as e.g.: ISO 2230 or DIN 7716.
- The recommendations of these standards on storage conditions and storage time must be observed.

LUBRICATION

CAUTION

- To avoid gasket pinching, the outside of the gasket and the inside of the coupling half-shells as well as the inside of the sealing lips and the outside of the pipe ends must be lightly lubricated.
- Lubricating also eases installation of the gasket onto the pipe end.
- **DO NOT use too much lubricant!**

Generally use our lubricant for pipe couplings as lubricant for the EPDM gaskets (grade "E").

Under certain conditions other lubricants may also be necessary, such as e.g. mineral oil-free silicone lubricant or EPDM-compatible lubricant for use in drinking water areas.
Consult the latest version of the technical specification sheets or contact us for further information.

CAUTION

- Under no circumstances may mineral-oil containing lubricants, oils or other mineral-oil containing materials (e.g. fuels) be brought into contact with the EPDM gaskets.
- However, should this occur, the affected gasket must be changed immediately and may not be reused.

NOTES FOR SPRINKLER SYSTEMS WITH DRY PIPING

CAUTION

- When using in cooling or freezing rooms or areas in which temperatures go below freezing, preparation of surfaces on the pipe ends is particularly important.
- At temperatures below zero to lower temperature limits for the gasket materials (EPDM: -40°C), the gasket always will be harder.
Thus all indentations, projections, loose paint, scale, dirt, chips, grease and rust on the pipe ends must be removed to ensure a leak-free seal.

NOTICE

- We recommend generally that dry piping under pressure has to be filled with an inert gas (e.g. nitrogen).
Consult the latest version of the technical specification sheets or contact us for further information.

STEP-BY-STEP INSTALLATION OF PICOFIX PIPE COUPLING TYPE 900

1. Checking the pipe ends:



The pipe ends must be burr-free to avoid damage to the gasket during assembly.

The outer surfaces of the pipes from the pipe end to the groove must be smooth and free from any indentations, roll marks, scores, seams or other harmful surface defects, such as loose paint, scale, dirt, chips, oil, grease and rust.

Grooves must be free from loose dirt, chips, rust and scale.

In addition, the groove specifications must be observed and complied with.

2. Checking the gasket:



Check the color code of the gasket and ensure that the gasket is suited to the planned use.

The standard gaskets provided ex-works with couplings are grade "E" (EPDM) and are marked with a green stripe. In addition, one side of these gaskets bears the mark "EPDM" and "VdS".

Check that the gasket is clean and undamaged.

EPDM gaskets must never be brought into contact with lubricants containing mineral oils, oils or other materials containing mineral oils (e.g. fuels or cleaning agents).

3. Lubricating the gasket and coupling:



To avoid gasket pinching, the outside of the gasket and the inside of the coupling half-shells as well as the inside of the sealing lips and the outside of the pipe ends must be lightly lubricated.

Generally use our lubricant for pipe couplings as lubricant for the EPDM gaskets (grade "E").

Cover the sealing lips and the outside of the gasket with a thin layer of lubricant.



Cover the inside of both half-shells of the coupling with a thin layer of lubricant.

DO NOT use too much lubricant!



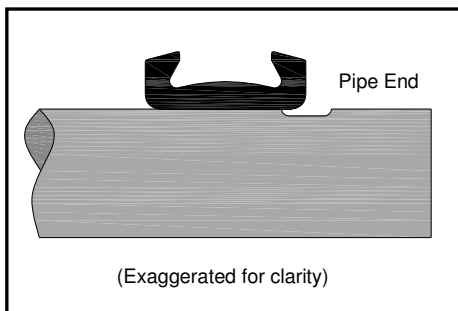
Failure to observe these guidelines can lead to damage to the gasket and to leakage.

4. Gasket installation:



Push or pull the gasket carefully over the pipe end until the cut edge of the pipe end is visible again.

Ensure that the gasket does not protrude (even in part) over the end of the pipe.

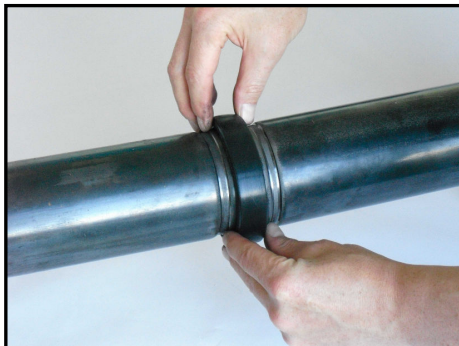


NOTICE

In the case of large couplings e.g. from DN80 up, it may be easier to turn the gasket inside out and then slide it over the pipe end.

Ensure that the gasket does not protrude over the end of the pipe.

5. Bringing together the pipe ends:



Bring the two pipe ends together edge to edge.
Ensure alignment is straight and concentric.

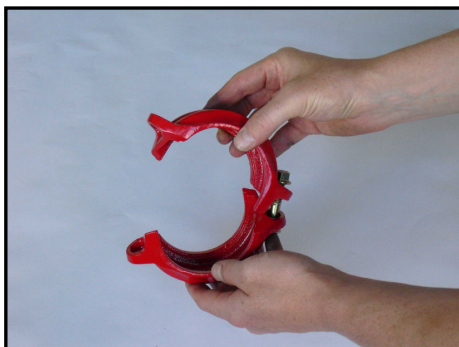
If the gasket was turned inside out for larger couplings, roll the gasket into the correct position.

Slide the gasket over both pipe ends, so that it is centered between both grooves.

CAUTION

Under no circumstances may the gasket project into the groove area of either of the two pipe ends. The sealing lips of the gasket must not be pinched between the pipes at the cut edges.

6. Mounting the pipe coupling half-shells:



Bolts and nuts should now be removed from one side of the coupling, if not already done, and the bolts and nuts on the other side should be loosened, until the thread of the bolt no longer protrudes over the nut.

The coupling prepared as indicated can now be opened and swiveled to the side, so that it can be placed over the pipe and the gasket.

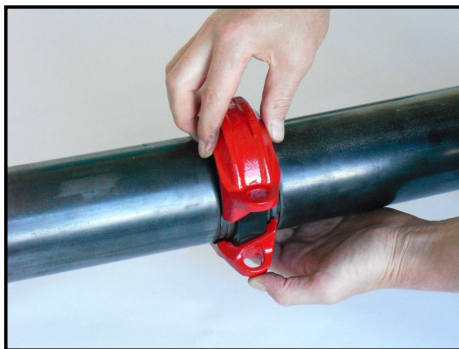
7. Mounting the pipe coupling half-shells:



Slide the opened coupling over the pipe and over the gasket.

Place one of the casing halves (e.g. the lower one) onto the gasket, so that the keys engage in the grooves of the pipe ends.

Swivel the other half of the casing over the gasket.



Now place the second half of the casing onto the gasket, so that the keys engage in the grooves of the pipe ends.

Make sure that the keys of the casing halves engage correctly in the grooves of both pipes.

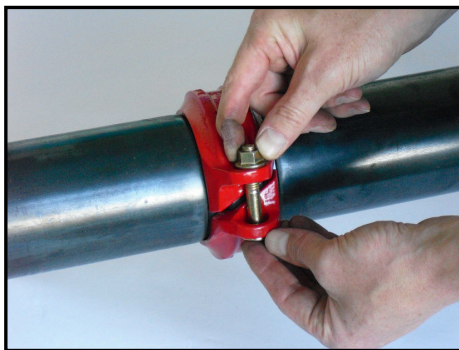
Ensure that on both sides of the coupling there is an equal gap between the angle-design bolt pads of the casing halves.



Make sure that the gasket does not become rolled or pinched.

Failure to observe these guidelines can lead to damage to the gasket and to leakage.

8. Assembly of bolts and nuts:

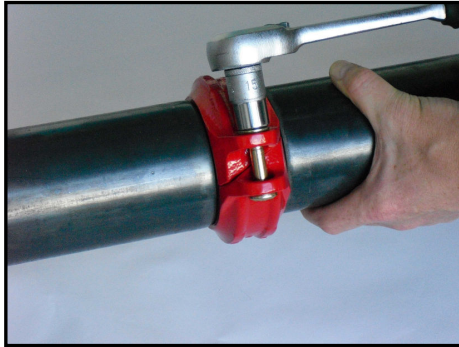


Insert the remaining bolt into the bolt holes and tighten the nut by hand.

Likewise tighten up the other nut by hand again, so that both bolt threads protrude equal lengths out of the nuts.

Make sure the oval necks of the bolts seat properly in the oval bolt holes.

9. Tightening the bolts:



Tighten the coupling nuts **evenly and by alternating sides**, until the angle-design bolt pads meet metal to metal.

To achieve optimum sealing performance and stability, the nuts must be tightened with the specified torque corresponding to each of the coupling sizes (see table below).

Always use the correct box spanner inserts when assembling each coupling.

Ensure that the keys of the casing halves are fully engaged in the grooves.

Nominal Pipe Size DN	Pipe Outside Diameter OD	Thread Size metric	Wrench Size Across Flats AF	Recommended Tightening Torque	
				Average Value	min. ... max.
32	42.4	M10	15	50 Nm	40 ... 60 Nm
40	48.3				
50	60.3				
65	76.1				
80	88.9				
100	114.3	M12	18	100 Nm	80 ... 120 Nm
125	139.7				
150	168.3				
200	219.1	M20	30	320 Nm	280 ... 360 Nm

To achieve optimum sealing performance and stability, always aim for the mid-value of the recommended torque.

A proficient assembler can generally sense when a screw reaches a certain torque, which helps to ensure these specified torques having a relatively large tolerance, even in the absence of a torque wrench.

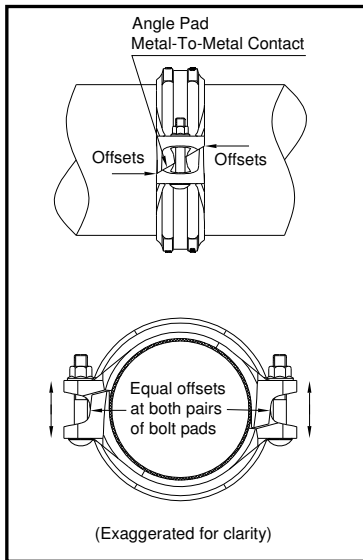
NOTICE

- In case of doubt or if you are inexperienced or if you have no feeling for the torque tightness yet, first complete some experimental assemblies with a torque wrench, where appropriate in direct comparison with a box spanner.
- During assembly of the system regularly check other couplings with the same methods, to ensure that assembly is as uniform as possible.

WARNING

- **Using a torque, which exceeds the specified value does not improve the sealing performance. On the contrary, this can cause damage to the coupling which can result in failure or breaking of the pipe connection even long after assembly.**
- **A secure pipe connection and sealing cannot be guaranteed either if the tightening torque used is too low.**

9. Tightening the bolts (continued):

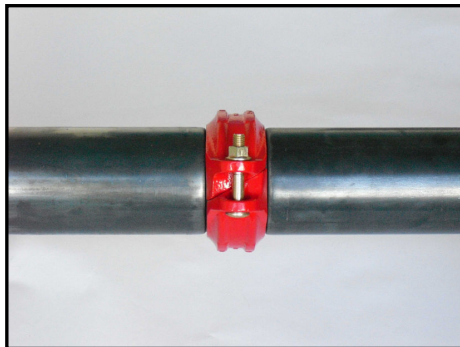


When tightening the bolts the angle-design bolt pads slide against each other over both sides of the coupling. This ensures that the pipes are optimally secured.

Make sure that there are equal offsets at both angle-design bolt pads on both sides of the coupling and that the keys of the casing halves engage fully in the grooves.

⚠ WARNING

Failure to observe these guidelines can lead to a loose connection which can in turn result in injury and/ or serious damage to property.



⚠ CAUTION

The nuts must be tightened evenly and by alternating sides, otherwise the gasket can become pinched and damaged, which can lead to immediate or subsequent leaks.

INFORMATION ON USING IMPACT WRENCHES

If an impact wrench is used to assemble the couplings, the torque tightness shown on the impact wrench must **NEVER** exceed the recommended torque indicated as maximum for the corresponding coupling.

The nuts must also be tightened evenly and by alternating sides with an impact wrench, until the bolt pads meet metal to metal.

In the case of couplings with angle-design bolt pads, equal offsets must occur at the bolt pads to ensure the rigidity of the pipe connection.

UNDER NO CIRCUMSTANCES should you further tighten with the impact wrench if you can see that the coupling is assembled correctly.

WARNING

Failure to observe these regulations can result in the gasket becoming pinched and/or damaged or in the bolts being fractured and thus damage to the coupling. This can lead to the connection becoming loose and to injury and serious damage to property.

When using an impact wrench it may be necessary that the assembly be carried out more slowly to ensure that the nuts are tightened evenly and by alternating sides, until the assembly is completed correctly.

WARNING

- When using impact wrenches the assembler generally does not have a direct “wrench feel” or “torque feel” to judge nut tightness.
- **Since some impact wrenches are capable of high output, one should become familiar with the impact wrench first, to avoid damaging or fracturing the bolts or the coupling bolt pads during assembly.**

NOTICE

- First complete some experimental assemblies with the impact wrench and a box spanner or better again with a torque wrench to determine the power of the impact wrench.
- During assembly of the system regularly check other couplings with the same methods, to ensure that assembly is as uniform as possible.
- Always observe the manufacturer operating instructions to guarantee safe and proper use of the impact wrench.
- Make sure that the correct box spanner inserts are always used for assembling the coupling.

CHECKING THE INSTALLATION

It is imperative that the pipes are prepared correctly and the coupling be assembled correctly to ensure optimum performance of the connection.

Use of pipes/ fittings that are undersized or oversized is not admissible, as well as shallow grooves or eccentric grooves or gaps between bolt pads.

To ensure correct installation all connections must be checked.

Any defects must be removed before starting-up the system and applying pressure.

WARNING

- **Failure to observe these guidelines can lead to the connection becoming loose and to injury and serious damage to property.**

Generally the piping system is subjected to a pressure test after assembly, to check the leak-tightness of the connections and the pipe system.

The national and international laws, guidelines, standards and relevant technical regulations applicable in each country of use must be observed and fulfilled.

NOTICE

- Check connections before and after the pressure test to determine any possible weak points.
- Check if there are gaps between the bolt pads and/ or check if the keys slide up to the shoulders.
- **Should any problems arise here, the system must be depressurized immediately and all connections that are not sound must be renewed.**

A SUCCESSFUL PRESSURE TEST BEFORE STARTING-UP THE SYSTEM DOES NOT AUTOMATICALLY VALIDATE THAT ALL CONNECTIONS HAVE BEEN ASSEMBLED CORRECTLY AND DOES NOT GUARANTEE LONG-TERM, SECURE STABILITY AND LEAK-TIGHTNESS.

Viking SupplyNet does not accept any liability for leakages or for loose pipe connections that are attributable to non-observance of these installation instructions.

As in the case of all pipe connection methods a successful assembly depends on all details being fully observed. For optimum operating safety of the system all the guidelines in this installation instructions must be carefully observed.

INADMISSIBLE INSTALLATIONS

Installations with pipes/ fittings that are undersized

- Where the outer diameter of the pipe or fitting is below the admissible tolerance, the casing keys engage considerably less.
This leads to reduced pressure resistance and bending strength of the connection.
- In addition, the gasket is pressed together/ pre-stressed only slightly or not at all.
The greater distance between the pipe and the casing can also lead to the gasket to be pushed out of the coupling.



- These factors can lead to reduced life of the gasket, to leakages and to a loose connection, which can in turn lead to injury and serious property damage.

Installations with pipes/ fittings that are oversized

- Where the outer diameter of the pipe or the fitting exceeds the admissible tolerance, the casing keys can be so strongly engaged that the casing shoulders rest on the pipe.



- This can result in the angle-design bolt pads not meeting metal to metal, so that the gasket can be pushed through, whereby pressure resistance and bending strength of the connection and the life of the gasket can be reduced. This can result in leakages and damage.

Installations on pipes with shallow grooves

- In a groove, that is not deep enough, the casing keys engage considerably less.
This leads to reduced pressure resistance and bending strength of the connection.
- In addition, the gasket is pressed together/ pre-stressed only slightly or not at all.
The greater distance between the pipe and the casing can also lead to the gasket to be pushed out of the coupling.
- This can result in the angle-design bolt pads not meeting metal to metal, so that the gasket can also be pushed through here.



- These factors can lead to reduced life of the gasket, to leakages and to a loose connection, which can in turn lead to injury and serious property damage.

Installations on pipes with grooves that are too deep

- Where grooves are too deep the coupling can slide so that the key on one casing half fully engages but the key on the other casing half engages considerably less.
This leads to reduced pressure resistance and bending strength of the connection.
- In addition, the gasket is pressed together/ pre-stressed only slightly or not at all.
The greater distance between the pipe and the casing can also lead to the gasket to be pushed out of the coupling.



- These factors can lead to reduced life of the gasket, to leakages and to a loose connection, which can in turn lead to injury and serious property damage.
- Additionally, roll grooving pipe to an undersized dimension may overstress and weaken the pipe wall.
Cut grooving pipe to an undersized dimension will result in insufficient wall thickness under the groove.

Installations on pipes with eccentric grooves

- Eccentric grooves generally occur where an out-of-round pipe is grooved with a stationary tool (like a lathe for example).
It can also occur when roll grooving pipes with large wall thickness variations.
An eccentric groove means that the groove is too shallow on one side and too deep on the other.



- An eccentric groove can lead to a combination of problems, which are described in the sections on “Installations with pipes/ fittings that are undersized” and “Installations on pipes with shallow grooves”.

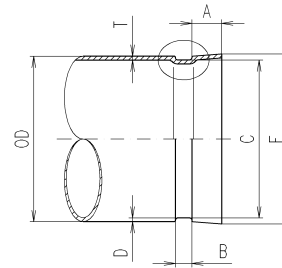
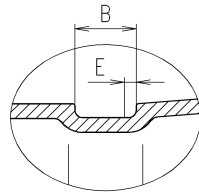
If angle-design bolt pads do not meet metal to metal

- Ensure that the keys of the casing are fully engaged in the grooves. The coupling keys must not rest on the outside surface of the pipe.
- Make sure that the nuts are tightened correctly and to the specified torque rate.
- Make sure that the gasket is not pinched. If the gasket is pinched, change immediately.
- Make sure that the pipe and/ or fitting are not oversized.
- Make sure that the groove meets the groove specifications.
If the groove is too shallow, under certain circumstances, the pipe may be grooved again in accordance with groove specifications.
If the groove is too deep, do not reuse this pipe section but roll groove a new pipe section in accordance with groove specifications.

Groove Specifications

Roll Groove Specifications

For Steel Pipe



1 Nom. Pipe Size	2 Pipe Outside Diameter OD				3 Pipe Outside Circumf. (Alternative)	4 Gasket Seat A	5 Groove Width B	6 Groove Bottom Diameter C		7 Groove Bottom Circumference (Alternative)	8 Groove Depth D	9 Groove Corner E	10 Wall Thickness T	11 Flare Dia. F	12 Flare Circumf. (Altern.)			
	Basic		Tolerance					Min. ... Max.	Basic ± Tol.							Basic ± Tol.	Basic	Tol.
	mm inch	mm inch	+ mm + inch	- mm - inch														
25	33.7	0.33	0.33	104.8 ... 106.9	15.88	7.14	30.23	- 0.38	93.8 ... 95.0	1.73	2.0	1.65	36.3	114.0				
1"	1.315	0.013	0.013	4.09 ... 4.17	0.625	0.281	1.190	- 0.015	3.69 ... 3.74	0.063	0.079	0.065	1.43	4.49				
32	42.4	0.41	0.41	131.9 ... 134.5	15.88	7.14	38.99	- 0.38	121.3 ... 122.5	1.70	2.0	1.65	45.0	141.4				
1¼"	1.660	0.016	0.016	5.16 ... 5.27	0.625	0.281	1.535	- 0.015	4.78 ... 4.82	0.063	0.079	0.065	1.77	5.56				
40	48.3	0.48	0.48	150.2 ... 153.2	15.88	7.14	45.09	- 0.38	140.5 ... 141.7	1.60	2.0	1.65	51.1	160.5				
1½"	1.900	0.019	0.019	5.91 ... 6.03	0.625	0.281	1.775	- 0.015	5.53 ... 5.58	0.063	0.079	0.065	2.01	6.31				
50	60.3	0.61	0.61	187.5 ... 191.4	15.88	8.74	57.15	- 0.38	178.3 ... 179.5	1.57	2.0	1.65	63.0	197.9				
2"	2.375	0.024	0.024	7.39 ... 7.54	0.625	0.344	2.250	- 0.015	7.02 ... 7.07	0.063	0.079	0.065	2.48	7.79				
65	73.0	0.74	0.74	227.0 ... 231.7	15.88	8.74	69.09	- 0.46	215.6 ... 217.1	1.95	2.0	2.11	75.7	237.8				
2½"	2.875	0.029	0.029	8.94 ... 9.12	0.625	0.344	2.720	- 0.018	8.49 ... 8.55	0.078	0.079	0.083	2.98	9.36				
65	76.1	0.76	0.76	236.7 ... 241.5	15.88	8.74	72.26	- 0.46	225.6 ... 227.0	1.92	2.0	2.11	78.7	247.2				
3 OD	3.000	0.030	0.030	9.33 ... 9.52	0.625	0.344	2.845	- 0.018	8.88 ... 8.94	0.078	0.079	0.083	3.10	9.74				
80	88.9	0.89	0.79	276.8 ... 282.1	15.88	8.74	84.94	- 0.46	265.4 ... 266.8	1.98	2.0	2.11	91.4	287.1				
3"	3.500	0.035	0.031	10.90 ... 11.11	0.625	0.344	3.344	- 0.018	10.45 ... 10.51	0.078	0.079	0.083	3.60	11.31				
100	108.0	1.09	0.79	336.8 ... 342.7	15.88	8.74	103.73	- 0.51	324.3 ... 325.9	2.13	2.0	2.11	110.5	347.1				
4¼ OD	4.250	0.043	0.031	13.25 ... 13.49	0.625	0.344	4.084	- 0.020	12.77 ... 12.83	0.083	0.079	0.083	4.35	13.67				
100	114.3	1.14	0.79	356.6 ... 362.7	15.88	8.74	110.08	- 0.51	344.2 ... 345.8	2.11	2.0	2.11	116.8	366.9				
4"	4.500	0.045	0.031	14.04 ... 14.28	0.625	0.344	4.334	- 0.020	13.55 ... 13.62	0.083	0.079	0.083	4.60	14.45				
125	133.0	1.35	0.79	415.3 ... 422.1	15.88	8.74	129.13	- 0.51	404.1 ... 405.7	1.93	2.0	2.77	135.9	426.9				
5¼ OD	5.250	0.053	0.031	16.40 ... 16.66	0.625	0.344	5.084	- 0.020	15.91 ... 15.97	0.083	0.079	0.109	5.35	16.81				
125	139.7	1.42	0.79	436.4 ... 443.3	15.88	8.74	135.48	- 0.51	424.0 ... 425.6	2.11	2.0	2.77	142.2	446.7				
5½ OD	5.500	0.056	0.031	17.18 ... 17.45	0.625	0.344	5.334	- 0.020	16.69 ... 16.76	0.083	0.079	0.109	5.60	17.59				
150	159.0	1.60	0.79	497.0 ... 504.5	15.88	8.74	154.50	- 0.56	483.6 ... 485.4	2.25	2.0	2.77	161.3	506.7				
6¼ OD	6.250	0.063	0.031	19.54 ... 19.83	0.625	0.344	6.083	- 0.022	19.04 ... 19.11	0.085	0.079	0.109	6.35	19.95				
150	165.1	1.60	0.79	516.2 ... 523.7	15.88	8.74	160.78	- 0.56	503.3 ... 505.1	2.16	2.0	2.77	167.6	526.5				
6½ OD	6.500	0.063	0.031	20.32 ... 20.62	0.625	0.344	6.330	- 0.022	19.82 ... 19.89	0.085	0.079	0.109	6.60	20.73				
150	168.3	1.60	0.79	526.2 ... 533.8	15.88	8.74	163.96	- 0.56	513.3 ... 515.1	2.17	2.0	2.77	170.9	536.9				
6"	6.625	0.063	0.031	20.72 ... 21.01	0.625	0.344	6.455	- 0.022	20.21 ... 20.28	0.085	0.079	0.109	6.73	21.14				
200	219.1	1.60	0.79	685.8 ... 693.3	19.05	11.91	214.40	- 0.64	671.5 ... 673.6	2.35	1.5	2.77	223.5	702.1				
8"	8.625	0.063	0.031	27.00 ... 27.29	0.750	0.469	8.441	- 0.025	26.44 ... 26.52	0.092	0.059	0.109	8.80	27.65				
250	273.0	1.60	0.79	855.2 ... 862.7	19.05	11.91	268.28	- 0.69	840.7 ... 842.8	2.36	1.5	3.40	277.4	871.5				
10"	10.750	0.063	0.031	33.67 ... 33.97	0.750	0.469	10.562	- 0.027	33.10 ... 33.18	0.094	0.059	0.134	10.92	34.31				
300	323.9	1.60	0.79	1015.1 ... 1022.6	19.05	11.91	318.29	- 0.76	997.5 ... 999.9	2.80	1.5	3.96	328.2	1031.1				
12"	12.750	0.063	0.031	39.96 ... 40.25	0.750	0.469	12.531	- 0.030	39.27 ... 39.37	0.109	0.059	0.156	12.92	40.59				
350	355.6	1.60	0.79	1114.7 ... 1122.2	23.83	11.91	350.04	- 0.76	1097.3 ... 1099.7	2.78	1.5	3.96	359.7	1130.0				
14"	14.000	0.063	0.031	43.88 ... 44.18	0.938	0.469	13.781	- 0.030	43.20 ... 43.29	0.109	0.059	0.156	14.16	44.48				
400	406.4	1.60	0.79	1274.3 ... 1281.8	23.83	11.91	400.84	- 0.76	1256.9 ... 1259.3	2.78	1.5	4.19	410.5	1289.6				
16"	16.000	0.063	0.031	50.17 ... 50.46	0.938	0.469	15.781	- 0.030	49.48 ... 49.58	0.109	0.059	0.165	16.16	50.77				

Table 1: Roll Groove Specifications (observe notes below)

Roll Groove Specifications

For Steel Pipe

Notes:

Column 1 – Nominal Pipe Size:

Nominal pipe size.

Column 2 – Pipe Outside Diameter OD and Tolerance and Pipe Outside Circumference respectively:

Weld seams must be ground flush with the pipe outside diameter OD and inner diameter ID prior to roll grooving. Failure to do so may result in unacceptable roll grooves and may cause damage to the roll grooving machine.

Difference between maximum OD and minimum OD measured at 0° and at 90° on the circumference (roundness) must not exceed total OD tolerance listed.

Maximum allowable tolerance from square cut ends is:

0.76 mm (0.03") for sizes up to DN80 / 88.9 mm (3"),

1.14 mm (0.045") for DN100 / 108.0 mm (4¼ OD) through DN150 / 168.3 mm (6") and

1.52 mm (0.06") for DN200 / 219.1 mm (8") and above, measured from a true square line.

Roll grooving of beveled end pipe is not recommended as it may cause unacceptable reduction of the gasket seat A and unacceptable pipe end flare.

Beveled end pipe is acceptable only if pipe ends are in conformance with EN 10217-2.

Pipe outside circumference is for alternative measurement with a measuring tape (observe general notes below).

Column 3 – Gasket Seat A:

The gasket seat must be free from any indentations, roll marks, scores, seams or other harmful surface defects such as loose paint, scale, dirt, chips, grease and rust, that may interfere with proper sealing of the gasket.

The gasket seat A is to be measured from the pipe end to the endmost vertical flank of the groove side wall.

Column 4 – Groove Width B:

The groove width B is to be measured between vertical flanks of the groove side walls.

The bottom of groove must be free of loose dirt, chips, rust and scale that may interfere with proper coupling assembly.

Column 5 – Groove Bottom Diameter C and Groove Bottom Circumference respectively:

The basic value of groove bottom diameter is the maximum allowable value. The groove must be maintained within the tolerance listed and must be uniform depth around the entire pipe circumference.

The Groove bottom circumference is for alternative measurement with a measuring tape (observe general notes below).

Column 6 – Groove Depth D:

The groove depth is for reference only.

The groove bottom diameter C, alternatively the groove bottom circumference must be maintained (see column 5).

Column 7 – Groove Corner E:

The dimension E starts at the reduction of pipe outside diameter and ends at the bottom of the groove (see illustration on page 1).

Column 8 – Minimum Wall Thickness T:

This is the minimum wall thickness which may be roll grooved.

Column 9 – Maximum Allowable Flare Diameter F and Flare Circumference respectively:

The pipe end that may flare when the groove is rolled must be within this limit when measured at the extreme end of the pipe.

The Flare circumference is for alternative measurement with a measuring tape (observe general notes below).

General:

If any mentioned circumference is measured with a pipe tape with linear scale, the deviation between measured circumference and actual circumference caused by the thickness of the measuring tape must be considered:

Actual Circumference = Reading – 2 x π x Thickness of Tape.

The coating thickness applied to the gasket seating surface and within the groove on the pipe exterior must not exceed 0.25 mm (0.010").

Coatings applied to the interior surfaces, including bolt pad mating surfaces, of our grooved couplings and grooved fittings must not exceed 0.25 mm (0.010").

Groove Specifications

Roll Groove Specifications

For Steel Pipe

Instructions to verify a proper roll groove

Step 1:

Before roll grooving:

Check the pipe outside diameter OD using a diameter tape, a circumference tape or a vernier caliper measuring at 0° and at 90° on the circumference.

Check the wall thickness T using a vernier caliper measuring at 0° and at 90° on the circumference.

Pipe outside diameter and wall thickness must be within the tolerances specified in column 2 and column 8 of table 1.

Step 2:

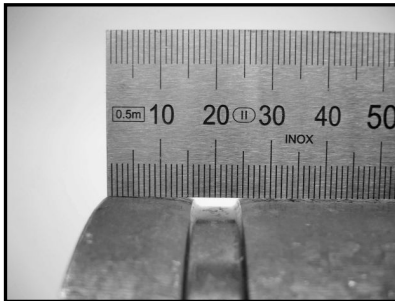
Roll groove the pipe end with suitable tool. Follow machine instructions and ensure safety precautions.

Step 3:



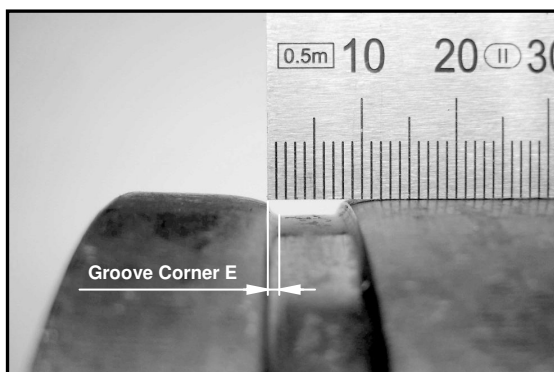
Measure the groove bottom using a diameter tape, a circumference tape or a vernier caliper measuring at 0° and at 90° on the circumference to ensure that the groove bottom diameter C or the groove bottom circumference is within the tolerances specified in column 5 of table 1.

Step 4



Measure the gasket seat length A and the groove width B using a ruler, a scale or a tape with linear scale to ensure the dimensions are within the tolerances specified in column 3 and column 4 of table 1.

Step 5



Check the groove corner E using a ruler, a scale or a tape with linear scale placed against the leading edge of the groove closest to the gasket seat A dimension. The groove corner E must not exceed the dimension given in column 7 of table 1.

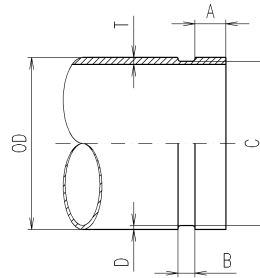
Step 6:

Check the flare diameter F using a diameter tape, a circumference tape or a vernier caliper measuring at 0° and at 90° on the circumference. The flare diameter F must not exceed the dimension given in column 9 of table 1.

Groove Specifications

Cut Groove Specifications

For Steel Pipe



1 Nom. Pipe Size	2 Pipe Outside Diameter OD			3 Pipe Outside Circumf. (Alternative)	4 Gasket Seat A	5 Groove Width B	6 Groove Bottom Diameter C		7 Groove Bottom Circumference (Alternative)	8 Groove Depth D	9 Wall Thickness T			
	Basic	Tolerance					Basic ± Tol.	Basic ± Tol.				Basic	Tol.	Min. ... Max.
		+ mm + inch	- mm - inch											
25	33.7	0.33	0.33	104.8 ... 106.9	15.88	7.95	30.23	- 0.38	93.8 ... 95.0	1.73	3.38			
1"	1.315	0.013	0.013	4.09 ... 4.17	0.625	0.313	1.190	- 0.015	3.69 ... 3.74	0.063	0.133			
32	42.4	0.41	0.41	131.9 ... 134.5	15.88	7.95	38.99	- 0.38	121.3 ... 122.5	1.70	3.56			
1¼"	1.660	0.016	0.016	5.16 ... 5.27	0.625	0.313	1.535	- 0.015	4.78 ... 4.82	0.063	0.140			
40	48.3	0.48	0.48	150.2 ... 153.2	15.88	7.95	45.09	- 0.38	140.5 ... 141.7	1.60	3.68			
1½"	1.900	0.019	0.019	5.91 ... 6.03	0.625	0.313	1.775	- 0.015	5.53 ... 5.58	0.063	0.145			
50	60.3	0.61	0.61	187.5 ... 191.4	15.88	7.95	57.15	- 0.38	178.3 ... 179.5	1.57	3.91			
2"	2.375	0.024	0.024	7.39 ... 7.54	0.625	0.313	2.250	- 0.015	7.02 ... 7.07	0.063	0.154			
65	73.0	0.74	0.74	227.0 ... 231.7	15.88	7.95	69.09	- 0.46	215.6 ... 217,1	1.95	4.78			
2½"	2.875	0.029	0.029	8.94 ... 9.12	0.625	0.313	2.720	- 0.018	8.49 ... 8.55	0.078	0.188			
65	76.1	0.76	0.76	236.7 ... 241.5	15.88	7.95	72.26	- 0.46	225.6 ... 227.0	1.92	4.78			
3 OD	3.000	0.030	0.030	9.33 ... 9.52	0.625	0.313	2.845	- 0.018	8.88 ... 8.94	0.078	0.188			
80	88.9	0.89	0.79	276.8 ... 282.1	15.88	7.95	84.94	- 0.46	265.4 ... 266.8	1.98	4.78			
3"	3.500	0.035	0.031	10.90 ... 11.11	0.625	0.313	3.344	- 0.018	10.45 ... 10.51	0.078	0.188			
100	108.0	1.09	0.79	336.8 ... 342.7	15.88	9.53	103.73	- 0.51	324.3 ... 325.9	2.13	5.16			
4¼ OD	4.250	0.043	0.031	13.25 ... 13.49	0.625	0.375	4.084	- 0.020	12.77 ... 12.83	0.083	0.203			
100	114.3	1.14	0.79	356.6 ... 362.7	15.88	9.53	110.08	- 0.51	344.2 ... 345.8	2.11	5.16			
4"	4.500	0.045	0.031	14.04 ... 14.28	0.625	0.375	4.334	- 0.020	13.55 ... 13.62	0.083	0.203			
125	133.0	1.35	0.79	415.3 ... 422.1	15.88	9.53	129.13	- 0.51	404.1 ... 405.7	1.93	5.16			
5¼ OD	5.250	0.053	0.031	16.40 ... 16.66	0.625	0.375	5.084	- 0.020	15.91 ... 15.97	0.083	0.203			
125	139.7	1.42	0.79	436.4 ... 443.3	15.88	9.53	135.48	- 0.51	424.0 ... 425.6	2.11	5.16			
5½ OD	5.500	0.056	0.031	17.18 ... 17.45	0.625	0.375	5.334	- 0.020	16.69 ... 16.76	0.083	0.203			
150	159.0	1.60	0.79	497.0 ... 504.5	15.88	9.53	154.50	- 0.56	483.6 ... 485.4	2.25	5.56			
6¼ OD	6.250	0.063	0.031	19.54 ... 19.83	0.625	0.375	6.083	- 0.022	19.04 ... 19.11	0.085	0.219			
150	165.1	1.60	0.79	516.2 ... 523.7	15.88	9.53	160.78	- 0.56	503.3 ... 505.1	2.16	5.56			
6½ OD	6.500	0.063	0.031	20.32 ... 20.62	0.625	0.375	6.330	- 0.022	19.82 ... 19.89	0.085	0.219			
150	168.3	1.60	0.79	526.2 ... 533.8	15.88	9.53	163.96	- 0.56	513.3 ... 515.1	2.17	5.56			
6"	6.625	0.063	0.031	20.72 ... 21.01	0.625	0.375	6.455	- 0.022	20.21 ... 20.28	0.085	0.219			
200	219.1	1.60	0.79	685.8 ... 693.3	19.05	11.13	214.40	- 0.64	671.5 ... 673.6	2.35	6.05			
8"	8.625	0.063	0.031	27.00 ... 27.29	0.750	0.438	8.441	- 0.025	26.44 ... 26.52	0.092	0.238			
250	273.0	1.60	0.79	855.2 ... 862.7	19.05	12.70	268.28	- 0.69	840.7 ... 842.8	2.36	6.35			
10"	10.750	0.063	0.031	33.67 ... 33.97	0.750	0.500	10.562	- 0.027	33.10 ... 33.18	0.094	0.250			
300	323.9	1.60	0.79	1015.1 ... 1022.6	19.05	12.70	318.29	- 0.76	997.5 ... 999.9	2.80	7.09			
12"	12.750	0.063	0.031	39.96 ... 40.25	0.750	0.500	12.531	- 0.030	39.27 ... 39.37	0.109	0.279			
350	355.6	1.60	0.79	1114.7 ... 1122.2	23.83	12.70	350.04	- 0.76	1097.3 ... 1099.7	2.78	7.14			
14"	14.000	0.063	0.031	43.88 ... 44.18	0.938	0.500	13.781	- 0.030	43.20 ... 43.29	0.109	0.281			
400	406.4	1.60	0.79	1274.3 ... 1281.8	23.83	12.70	400.84	- 0.76	1256.9 ... 1259.3	2.78	7.92			
16"	16.000	0.063	0.031	50.17 ... 50.46	0.938	0.500	15.781	- 0.030	49.48 ... 49.58	0.109	0.312			

Table 2: Cut Groove Specifications (observe notes below)

Cut Groove Specifications

For Steel Pipe

Notes:

Column 1 – Nominal Pipe Size:

Nominal pipe size.

Column 2 – Pipe Outside Diameter OD and Tolerance and Pipe Outside Circumference respectively:

Difference between maximum OD and minimum OD measured at 0° and at 90° on the circumference (roundness) must not exceed total OD tolerance listed.

Maximum allowable tolerance from square cut ends is:

0.76 mm (0.03") for sizes up to DN80 / 88.9 mm (3"),

1.14 mm (0.045") for DN100 / 108.0 mm (4¼ OD) through DN150 / 168.3 mm (6") and

1.52 mm (0.06") for DN200 / 219.1 mm (8") and above, measured from a true square line.

Cut grooving of beveled end pipe is not recommended as it may cause unacceptable reduction of the gasket seat A.

Beveled end pipe is acceptable only if pipe ends are in conformance with EN 10217-2.

Pipe outside circumference is for alternative measurement with a measuring tape (observe general notes below).

Column 3 – Gasket Seat A:

The gasket seat must be free from any indentations, roll marks, scores, seams or other harmful surface defects such as loose paint, scale, dirt, chips, grease and rust, that may interfere with proper sealing of the gasket.

The gasket seat A is to be measured from the pipe end to the endmost vertical flank of the groove side wall.

Column 4 – Groove Width B:

The groove width B is to be measured between vertical flanks of the groove side walls.

The bottom of groove must be free of loose dirt, chips, rust and scale that may interfere with proper coupling assembly.

Column 5 – Groove Bottom Diameter C and Groove Bottom Circumference respectively:

The basic value is the maximum allowable value. The groove must be maintained within the tolerance listed and must be uniform depth around the entire pipe circumference.

The radii of the corners at bottom of groove shall be maximum 0.8 mm (0.032") each.

The Groove bottom circumference is for alternative measurement with a measuring tape (observe general notes below).

Column 6 – Groove Depth D:

The groove depth is for reference only.

The groove bottom diameter C, alternatively the groove bottom circumference must be maintained (see column 5).

Column 7 – Minimum Wall Thickness T:

This is the minimum wall thickness which may be cut grooved.

General:

If any mentioned circumference is measured with a pipe tape with linear scale, the deviation between measured circumference and actual circumference caused by the thickness of the measuring tape must be considered:

Actual Circumference = Reading – 2 x π x Thickness of Tape.

The coating thickness applied to the gasket seating surface and within the groove on the pipe exterior must not exceed 0.25 mm (0.010").

Coatings applied to the interior surfaces, including bolt pad mating surfaces, of our grooved couplings and grooved fittings must not exceed 0.25 mm (0.010").

Groove Specifications

Cut Groove Specifications

For Steel Pipe

Instructions to verify a proper cut groove

Step 1:

Before cut grooving:

Check the pipe outside diameter OD using a diameter tape, a circumference tape or a vernier caliper measuring at 0° and at 90° on the circumference.

Check the wall thickness T using a vernier caliper measuring at 0° and at 90° on the circumference.

Pipe outside diameter and wall thickness must be within the tolerances specified in column 2 and column 7 of table 2.

Step 2:

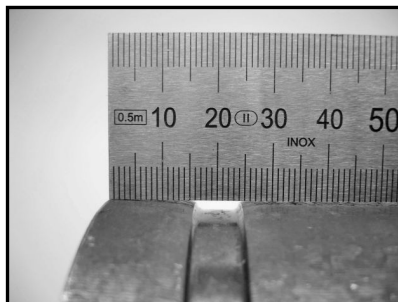
Cut groove the pipe end with suitable tool. Follow machine instructions and ensure safety precautions.

Step 3:



Measure the groove bottom using a diameter tape, a circumference tape or a vernier caliper measuring at 0° and at 90° on the circumference to ensure that the groove bottom diameter C or the groove bottom circumference is within the tolerances specified in column 5 of table 2.

Step 4



Measure the gasket seat length A and the groove width B using a ruler, a scale or a tape with linear scale to ensure the dimensions are within the tolerances specified in column 3 and column 4 of table 2.