



TECHNICAL DATA

VIKING FOAMPAK (DUAL)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

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1. GENERAL DESCRIPTION

The Viking FoamPak foam pump system incorporates a UL Listed and FM Approved positive displacement bronze/stainless steel rotary gear foam pump capable of dry operation. The balance valve, pressure relief valve, and piping products are all bronze or 316 Stainless Steel as standard materials. A UL Listed/FM Approved NEMA 2 foam pump controller, mounted and wired on the FoamPak, is included.

The Viking FoamPak, is a complete foam pumping system, equipped with supply and discharge piping (excluding the foam supply piping and foam return piping to the foam tank), auxiliary flushing connections, concentrate discharge check valve, pressure sustaining valve, pressure relief valve, concentrate supply strainer, foam pump and pump controller.

The rotary gear pump is of all bronze construction to withstand the corrosive atmosphere that exists with AFFF and AR-AFFF concentrates. The unique lip seal construction of the pump allows it to run dry without damage to the pump.

The Viking FoamPak is to be used anywhere a foam system that utilizes positive pressure proportioning (Viking ILBP) is desired or necessary. The Viking FoamPak can supply single or multiple foam systems with balanced pressure proportioning.

A. Application

The Viking FoamPak foam pumping systems are foam concentrate delivery devices. Viking FoamPak foam systems are a critical part of a low or high expansion foam system which includes the following applications: aircraft hangars, petro-chemical facilities, flammable and combustible liquid warehouses, tank farms, facilities for bulk storage of flammable or combustible liquids, offshore FPSO and shipboard applications and many military installations. The FoamPak systems can supply foam concentrate to concentrate injection piping run above or below ground.

B. Selection

The Viking FoamPak system is available in five basic sizes, available with four standard foam discharge pressure ratings, 100, 150, 200, 261 psi, (6.9, 10.3, 13.8, 18 bar). The FoamPak assembly flow rate capacity is selected based on the required flow rate per minute of foam concentrate and percentage of foam injection required for all special flammable liquid hazards.

The standard method of sizing the FoamPak capacity is by multiplying the area of the hazard by the required density, multiply that sum by the concentration of foam concentrate (1%, 2%, 3%), multiply that sum by a 1.15% safety factor for hydraulic over discharge and hydraulic balancing of the system piping. If the hazard required flow rate is known, meaning the hydraulic calculations for the hazard have been performed, multiply the total water flow by the percent of foam to be used.

The FoamPak assembly's pressure rating is selected after considering the pressure differential requirements of the ILBP, (Viking ILBP requires a minimum pressure differential of 15 psi (1 Bar)), added to the static water pressure available at the riser. The pressure rating of the FoamPak should be determined by adding in the pressure drop of the concentrate discharge piping attributed to the length of the concentrate piping from the FoamPak discharge connection to the most remote ILBP. The typical pressure rating of the system must exceed the residual water pressure to the most remote riser by 15 to 30 psi (1 to 2 Bar). You should select the next highest pressure rating pump.

C. Foam Pump Controller

The foam controllers are designed specifically for foam service and have the following alarms and functions as standard:

- Phase failure / phase reversal alarm
- Running period timer, factory set for 10 minutes
- Manual shut down only, emergency start push button
- Remote start terminal connection
- Deluge system starting contact
- Remote pump operating contact
- Remote power failure contact
- Start delay timer for a 2 pump operation system, primary/standby foam pumps
- Spare contacts for field wiring of additional pumps alarms
- Configured with an optional pressure proof switch
- Visible alarm – low concentrate level
- Standard NEMA 2 enclosure – options for NEMA 3R, NEMA 4 and NEMA 4X
- Foam pressure switch for loss of pressure automatic starting



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov



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Typical options that may be added to the above at an additional cost are:

- Anti-condensation space heaters for 120 volt or 240 volt, both single phase
- Automatic transfer switches to transfer to another power source
- Audible and visible pump on remote alarm contact / local light

D. FoamPak electrical details:

- All of the foam pump controllers are UL Listed and FM Approved.
- All controllers are manufactured specifically for foam pump service.
- All controllers are initially figured for a start signal or deluge signal starting method. If a pressure loss start method is desired, a foam pressure proofing switch is provided to initiate a "start signal" from loss of pressure or pressure drop using the foam pressure proofing switch that is standard.
- All controllers are either 50 Hz or 60 Hz service. Voltages of 200-208, 220/230, or 440-480 volt at 50 or 60 Hz are available at no additional cost but must be specified when ordering.
- All electric motor enclosures are either IP-45/ODP type or IP-55/TEFC rated. Many other motor enclosures are available such as IP65 ATEX- EEXD. Please contact Viking with the specific motor enclosure required if other than ODP IP-45 or TEFC/IP55.
- All foam pump controllers offered are NEMA 2 enclosure as standard and are included in the FoamPak for protected area installations. Other enclosure ratings are available such as NEMA 3R / 4x. UL Listed and FM Approved controllers are not available in explosion proof enclosures, however; ATEX certified enclosures are available. Contact Viking for more information.
- Standard controller starting method is cross the line or full voltage. Other reduced voltage options such as Y-delta or solid-state are available. Please contact Viking for a specific quote.
- All connecting wiring from the controller to the electric motor is complete and to NEMA standards.
- Motor service factors are sometimes used on certain FoamPak pressures and flow rates. Typically the electric motors have a 15% service factor. 10% or less of the motor service factor is used on some flow/pressure combinations.

E. FoamPaks with Diesel Engines

Sometimes electrical service is not available or unreliable. If the hazard site has questionable electrical conditions, a UL Listed and FM Approved low horsepower, radiator cooled diesel engine pump driver is available. UL Listed and FM Approved diesel engine manufacturers are Clarke, Cummins or Deutz. The standard pricing options for diesel engine drive are based on Clarke only.

Diesel powered FoamPak's are complete assemblies similar to the electrical operated units. Diesel engine packages are completely self-contained except for the battery charger power requirement of single phase, 110/220 volt, 50/60 Hz.

2. LISTINGS AND APPROVALS

The FoamPak is a pre-assembled collection of components and carries no approvals as a completed assembly. The major components are UL Listed and/or FM Approved. The FoamPak is UL Listed and/or FM Approved as part of a fire extinguishing system. The skid itself holds no listings or approvals.



UL Listed: Category EX27020



FM Approved: Category Pump, Foam Concentrate and Water or High Pressure Water Spray

ISO Approved to 9001:2015

3. TECHNICAL DATA

Foam Pump Piping and Controller by: Fire Lion Global, Vancouver WA, USA.

3.1 Construction Features

Maximum Pump Speed: 1800 RPM 60 Hz/1500 RPM 50 HZ

Connections (ANSI flange connections available upon request):

- FoamPak 5D – 1-1/2" (38 mm) Suction and 1" (25 mm) Discharge Grooved Connections
- FoamPak 13D - 2" (50 mm) Suction and 1-1/2" (38 mm) Discharge Grooved Connections
- FoamPak 26D – 3" (75 mm) Suction and 2" (50 mm) Discharge Grooved Connections
- FoamPak 50D - 4" (100 mm) Suction and 3" (76 mm) Discharge Grooved Connections
- FoamPak 59D - 5" (125 mm) Suction and 4" (100 mm) Discharge Grooved Connections
- Controller standard NEMA rating: NEMA 2, (other NEMA enclosures for motor and controller are available at additional cost.)
- Controller and pump motor voltage: 3 phase/60 Hz/460/480 volt, voltages of 200-208, 220/230, 380/415 at 50 or 60 Hz are available at no additional cost but must be specified when ordering.

3.2 Standard Materials:

See Section Spare Parts for material standards. All Piping is 316 Stainless Steel.



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3.3 Ordering Information

TABLE 3.3.1 ORDERING INFORMATION - FOAMPAK2 - 60 HZ					
FOAMPAK MODEL	PUMP MODEL	FOAM GPM ¹	FOAM PSI ¹	HP	PART NUMBER
5D	FP1-15	45	100	10 ²	F21950AA
		40	150	10	F21951AA
		35	200	15	F21952AA
		30	261	15	F21953AA
	FP1-30	55	100	10	F21954AA
		50	150	15	F21955AA
		45	200	15	F21956AA
		40	261	20	F21957AA
13D	FP1.5-50	75	100	15	F21958AA
		65	150	20	F21959AA
		60	200	20	F21960AA
		55	261	25	F21961AA
	FP1.5-75	110	100	20	F21962AA
		105	150	25	F21963AA
		100	200	30	F21964AA
		90	261	40	F21965AA
26D	FP2-100	150	100	25	F21966AA
		140	150	30	F21967AA
		130	200	40	F21968AA
		120	261	40	F21969AA
	FP2-150	180	100	25	F21970AA
		170	150	30	F21971AA
		160	200	40	F21972AA
		145	261	50	F21973AA
50D	FP2-175	235	100	40	F21974AA
		215	150	50	F21975AA
		200	200	60	F21976AA
		185	261	75	F21977AA
	FP3-200	250	100	40	F21978AA
		235	150	50	F21979AA
		220	200	60	F21980AA
		200	261	75	F21981AA
	FP3-225	300	100	40	F21982AA
		280	150	50	F21983AA
		260	200	60	F21984AA
		240	261	75	F21985AA
59D-A	FP4-250	315	100	40	F21986AA
		290	150	60	F21987AA
		270	200	75	F21988AA
		250	261	100	F21989AA
	FP4-350	420	100	60	F21990AA
		400	150	75	F21991AA
		385	200	100	F21992AA
59D-B	FP4-350	375	232	100	F21993AA

¹ Flow rates are based on the standard service factor of 1.15 while flowing water. Use caution to reduce the expected flow rate when using highly viscous fluids.

² A 7.5 hp motor can be used if the service factor is 1.25 or higher.



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TABLE 3.3.2
ORDERING INFORMATION - FOAMPAK2 - 50 HZ

FOAMPAK MODEL	PUMP MODEL	FOAM LPM	FOAM PSI	KW	PART NUMBER
5D	FP1-15*	130	100	7.5	F21950BB
		110	150	7.5	F21951BB
		90	200	7.5	F21952BB
		75	261	10.5	F21953BB
	FP1-30	135	100	5	F21954BB
		115	150	7.5	F21955BB
		100	200	10	F21956BB
		90	261	12	F21957BB
13D	FP1.5-50	215	100	7.5	F21958BB
		195	150	10	F21959BB
		175	200	15	F21960BB
		150	261	20	F21961BB
	FP1.5-75	340	100	15	F21962BB
		310	150	15	F21963BB
		280	200	20	F21964BB
		240	261	25	F21965BB
26D	FP2-100	445	100	15	F21966BB
		410	150	20	F21967BB
		370	200	23	F21968BB
		330	261	28	F21969BB
	FP2-150	530	100	15	F21970BB
		490	150	20	F21971BB
		450	200	27	F21972BB
		400	261	34	F21973BB
50D	FP2-175	680	100	22.5	F21974BB
		625	150	30	F21975BB
		565	200	37.5	F21976BB
		500	261	45	F21977BB
	FP3-200	750	100	22.5	F21978BB
		700	150	33.5	F21979BB
		640	200	41	F21980BB
		565	261	45	F21981BB
	FP3-225	900	100	22.5	F21982BB
		830	150	33.5	F21983BB
		760	200	40	F21984BB
		680	261	50	F21985BB
59D-A	FP4-250	925	100	30	F21986BB
		850	150	37.5	F21987BB
		780	200	45	F21988BB
		690	261	56	F21989BB
	FP4-350	1260	100	37.5	F21990BB
		1180	150	45	F21991BB
		1100	200	56	F21992BB
59D-B	FP4-350	1050	232	75	F21993BB

* The FP1-15 Pump is not UL Listed or FM approved at 50Hz (1500 rpm).



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4. SCOPE OF DELIVERY

Ensure that all components are complete and in good condition. The Foampak is supplied as an assembled unit including the items below:

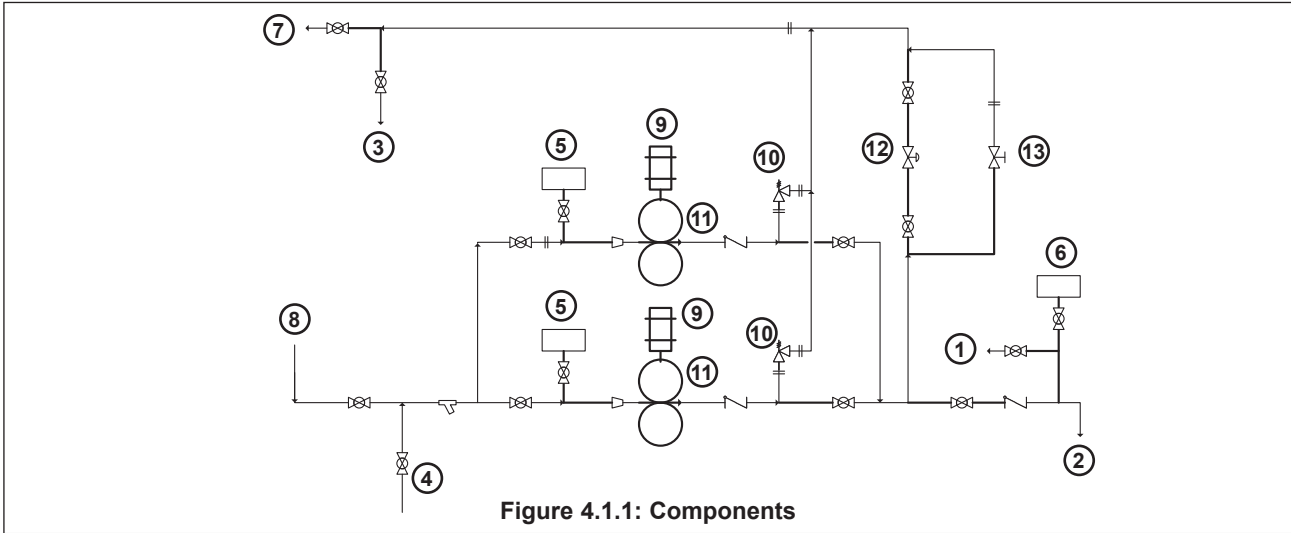


Figure 4.1.1: Components

TABLE 4.1.2: COMPONENTS
(See Figure 4.1.1)

Item	Description	Item	Description
1	Vent/Foam sample outlet	8	Foam inlet
2	Foam outlet	9	Pump controller
3	Flush outlet	10	Pressure relief valve
4	Flush inlet	11	Foam pump and motor
5	Suction pressure gauge	12	Pressure sustaining valve
6	Discharge pressure gauge	13	Manual bypass (for pressure sustaining valve)
7	Foam return	--	--

5. AVAILABILITY

Please contact your local Viking sales office for further information.

The product is available directly from Viking and official distributors only.

EMEA: Viking SA, ZI Haneboesch, L-4562 Differdange / Niederkorn, Tel.: +352 58 37 37 - 1, Fax: +352 38 37 36, vikinglux@viking-emea.com

Americas: The Viking Corporation, 210 N. Industrial Park Drive, Hastings, Michigan 49058, Toll free phone: (800) 968-9501

APAC: The Viking Corporation (Far East) Pte. Ltd., 69 Tuas View Square, Westlink Techpark, Singapore 637621
Tel: (+65) 6 278 4061, Fax: (+65) 6 278 4609, Email: vikingsingapore@vikingcorp.com

6. PRODUCT VARIANTS

6.1 Options

- Controllers available: 220/230 V (limited to lower power Foampaks), 380/415 V, 460/480 V, 50 Hz, or 60 Hz
- Motors: ODP/IP45 with optional IP55 (TEFC), IP65 and EEXD ratings
- Jockey pump

6.2 Customized Options

- Flanged connections available upon request.
- Configurations available for electric duty: electric standby, diesel standby, and water powered standby.
- Factory Start up



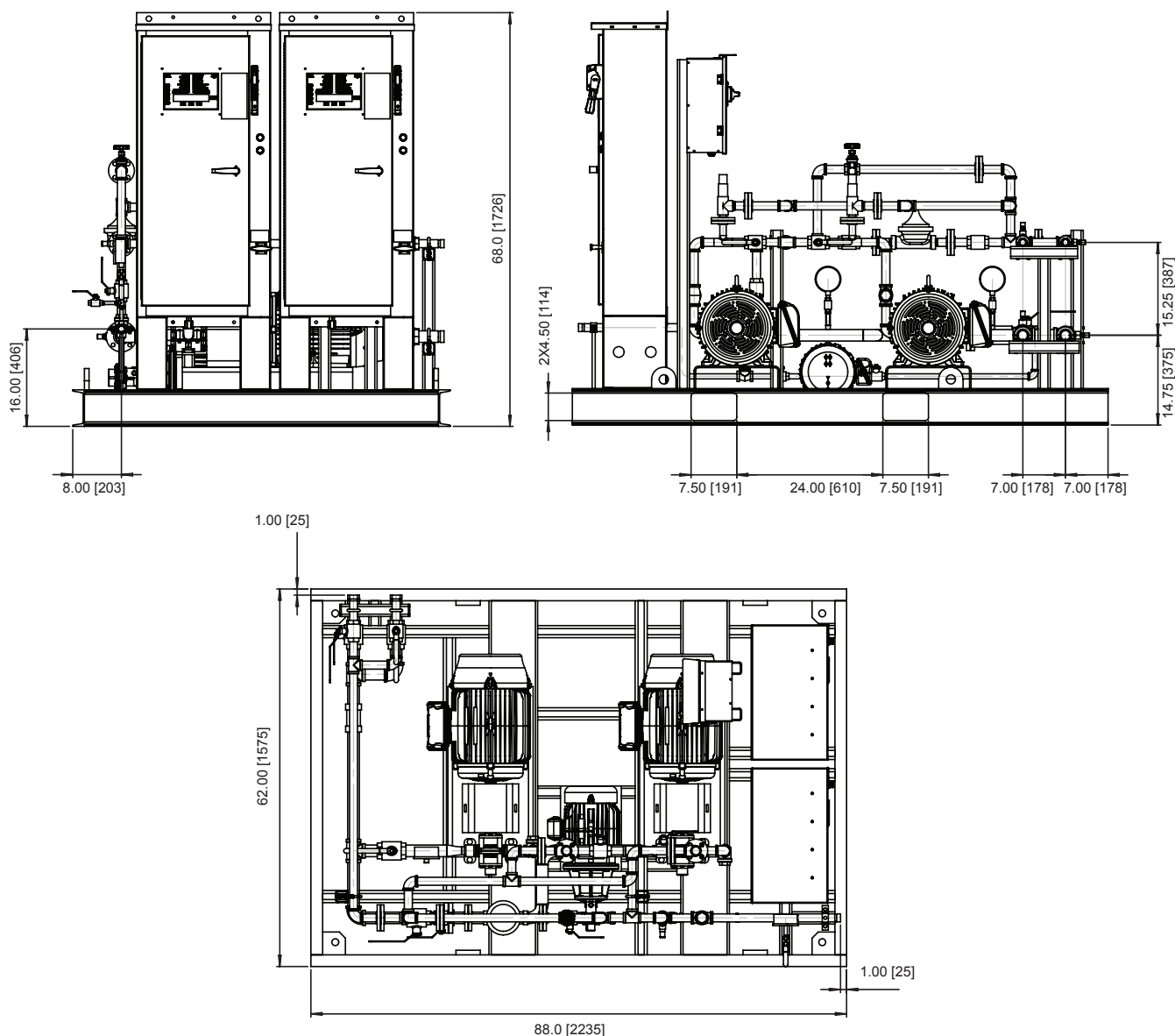
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6.3 Dimensions

Inches [mm]





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Inches [mm]

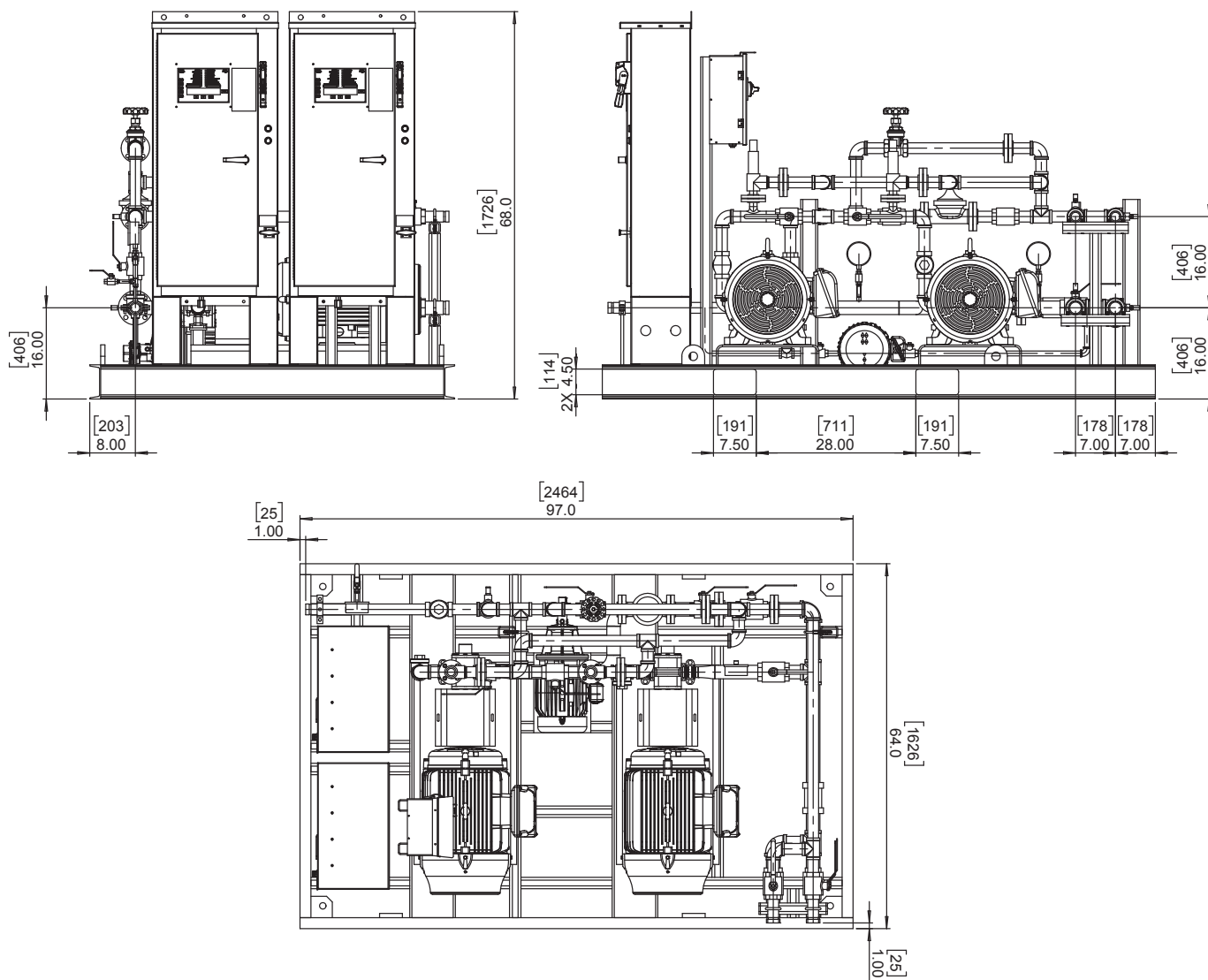


Figure 6.2.2: FoamPak 13D Dimensions



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Inches [mm]

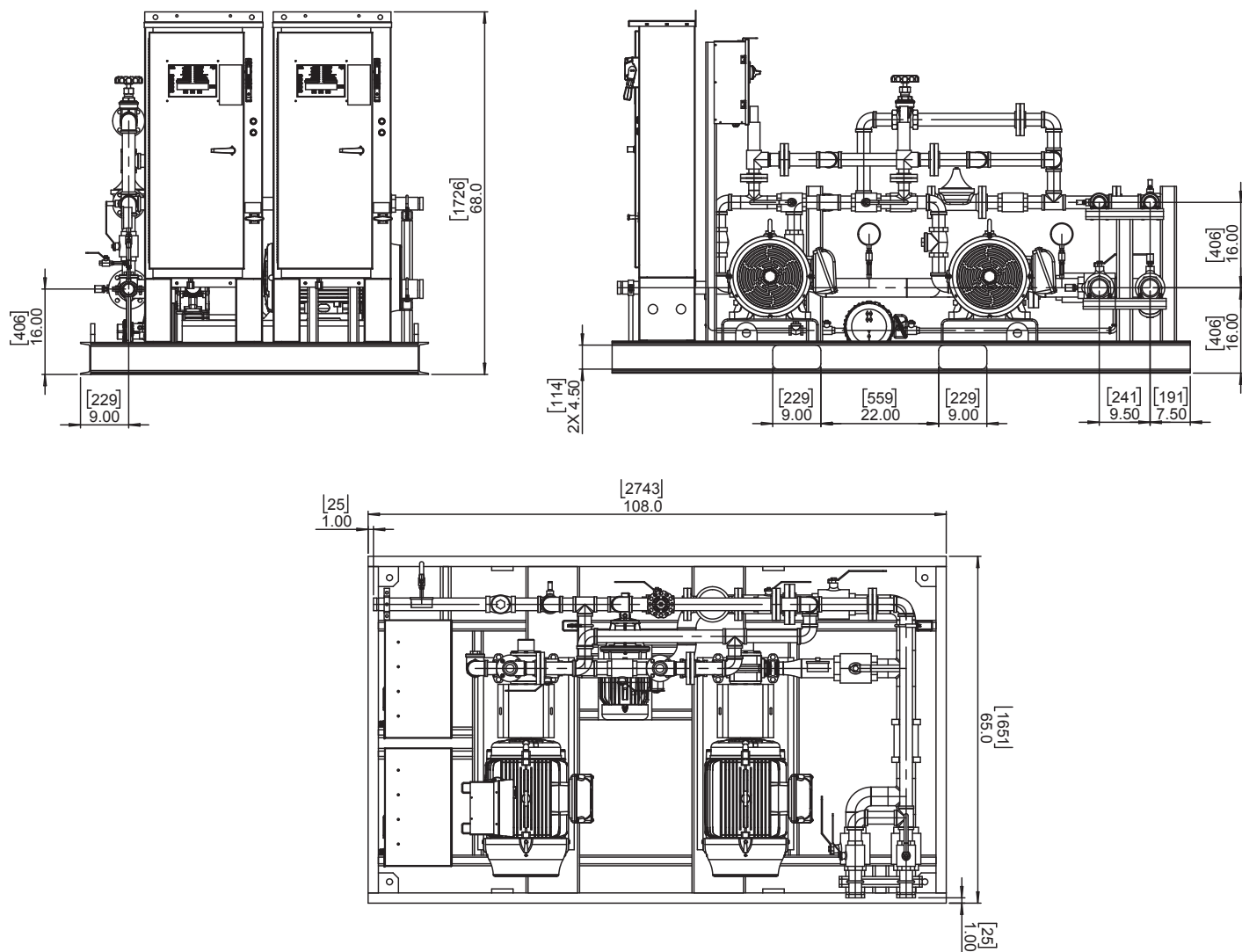


Figure 6.2.3: FoamPak 26D Dimensions



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Inches [mm]

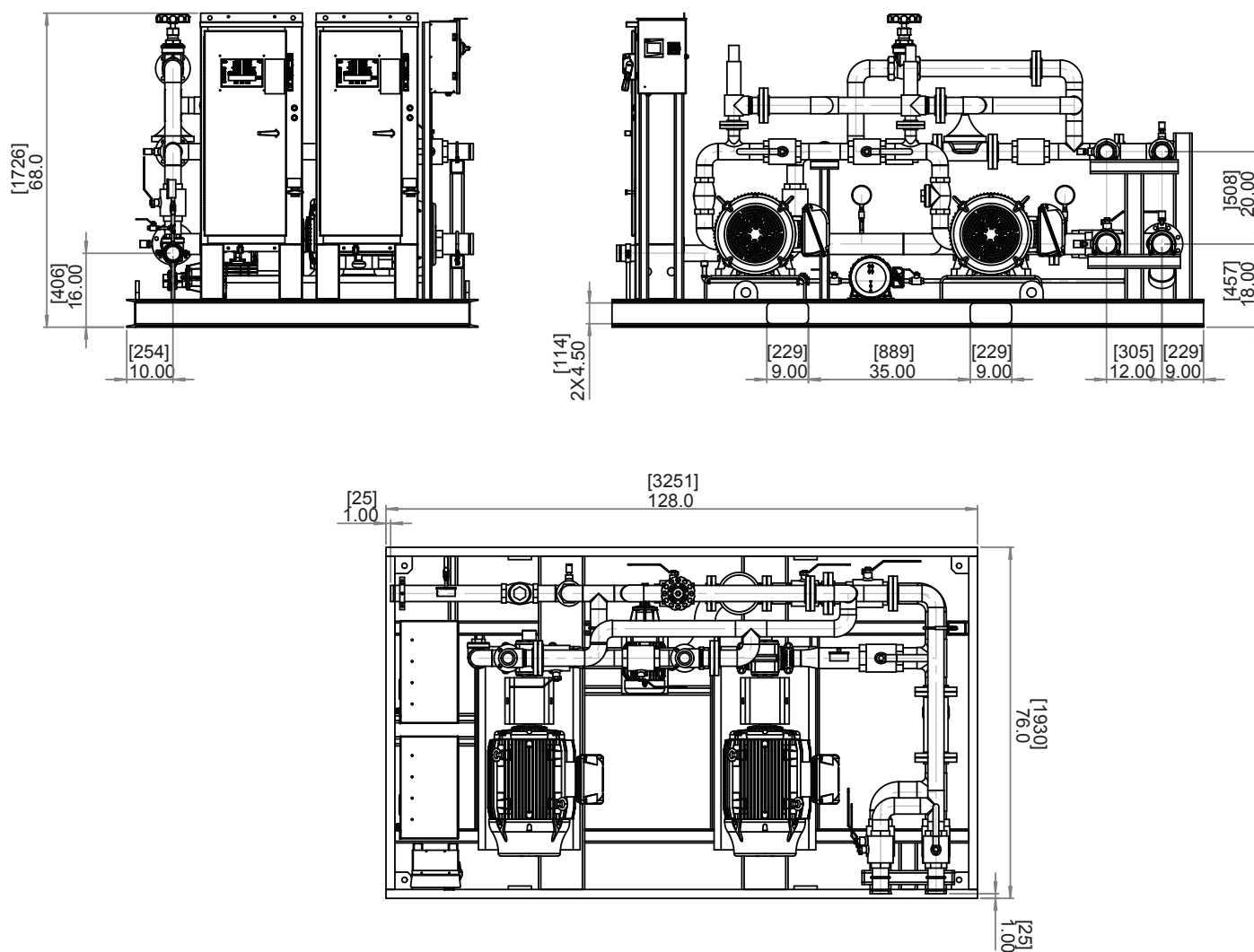


Figure 6.2.4: FoamPak 50D Dimensions



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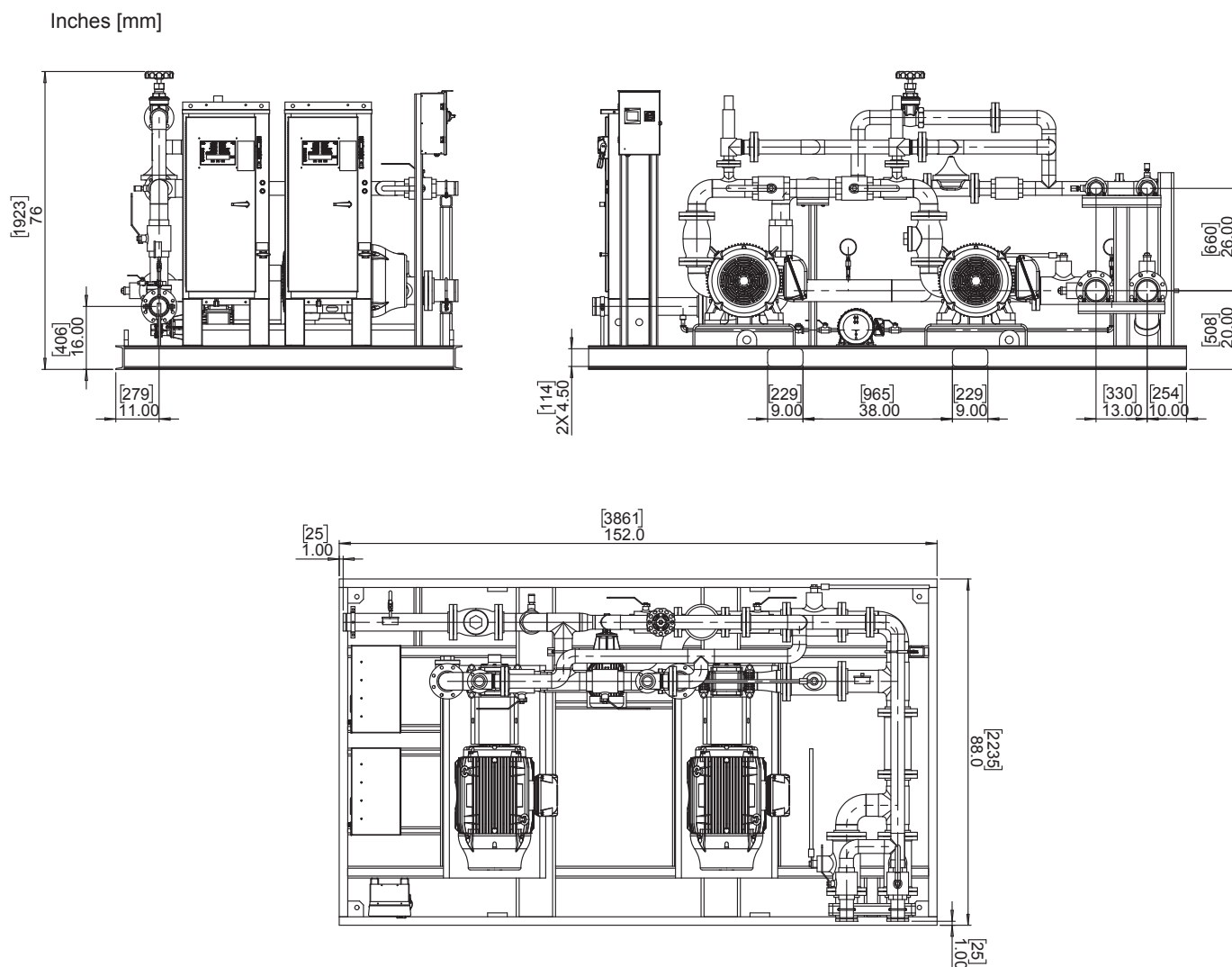


Figure 6.2.5: FoamPak 59D Dimensions



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7. INSTALLATION

The Viking FoamPak should be installed in accordance with NFPA standards and local requirements governing the installation of foam systems.

NOTICE

Positive pressure must be maintained at foam inlet in order to protect the system integrity and avoid cavitation of the pump(s). The following are recommended methods to maintain positive pressure:

- Ensure the level of the foam concentrate is higher than the pump inlet at all times.
- Minimize inlet piping lengths and restrictions (i.e. excess reducers/elbows, long runs of inlet piping, partially closed valves).
- Regularly inspect and clean the Y-Strainer to prevent blockage.

The Viking FoamPak assembly is supplied by an atmospheric storage tank (supplied by contractor) connected to the supply inlet of the skid assembly. The discharge outlet is connected to the concentrate piping supplying the proportioning devices (ILBP's), (concentrate piping and ILBP's installed by contractor).

The foam pump controller and foam pump motor are pre-wired on the skid. A power supply to the controller is required. The proper voltage, hertz, and phase are critical factors that must be available as they were specified upon ordering. Refer to Controller information on this data page.

To minimize FoamPak operating noise, it is recommended that the steel substructure is:

- securely anchored to a stable, flat surface using the mounting tabs welded on the skid
- leveled using shims under each mounting tab before mounting bolt nuts (not furnished) are tightened. It is essential the steel substructure not be twisted or bent in any way.

8. OPERATION

The Viking FoamPak pump assembly is supplied with a pump controller that starts the pump via a remote start signal when foam concentrate is required to be pumped to the hazard area(s). There are many methods of starting the foam pump. The most common is through a water pressure switch at the system riser. When the water pressure switch is activated, the foam pump controller will receive a signal to start operation.

Other methods include pressure drop, which requires a maintenance (jockey) foam concentrate pump that maintains a desired pressure in the foam concentrate piping. When the pressure drops in the concentrate piping to a point that the maintenance (jockey) foam concentrate pump cannot maintain the desired pressure, the main pump foam pressure switch sends a signal and starts the main foam pump. Maintenance (jockey) foam concentrate pumps are not standard with the Viking FoamPak, but can be ordered as a separate option.

The foam concentrate is supplied to the Viking FoamPak assembly through piping supplied by others connected to an atmospheric storage tank. The atmospheric storage tank can be a horizontal or vertical vessel. Most atmospheric foam storage tanks are of a cross-linked polyethylene construction. The foam concentrate storage tank is not pressurized. The foam concentrate is only under atmospheric pressure to the supply side of the Viking FoamPak.

When the Viking FoamPak is not equipped with a maintenance (jockey) foam concentrate pump, the discharge piping from the pump skid assembly to the In-Line Balanced Pressure Proportioner (ILBP), is full of foam concentrate, but not under pressure. When the pump controller receives a signal to start, the electric motor is energized, driving the rotary gear pump. The pump draws foam concentrate from the atmospheric tank and discharges the concentrate through the foam concentrate discharge piping network (installed by contractor) to the ILBP(s). The Viking FoamPak assembly is equipped with a pressure sustaining valve that is connected to a concentrate return line that is piped to a return connection located on the atmospheric storage tank. The return line connection should be located below the liquid level of the storage tank to minimize any foaming action caused by the agitation of the foam concentrate. The pressure sustaining valve is utilized to ensure the foam discharge pressure is maintained at a higher pressure than the water pressure, regardless of the foam usage requirement. Often the pump output exceeds the demand, thus using the pressure sustaining valve to return excess foam concentrate to the foam tank.

The FoamPak is equipped with a pump pressure relief valve that is piped to the concentrate return line past the pressure sustaining valve. The pump pressure relief valve is in place to ensure that if for any reason foam concentrate pressure increases to relief valve set point, the piping and components are protected from excessive pressure. The pump pressure relief valve will open at a pre-set pressure and direct foam concentrate back to the atmospheric storage tank.

NOTICE

Prior to or during start-up or pumping skid operation, the return to tank valves must all be open and locked open.

The pump pressure relief valve eliminates overheating and over-pressurization of the foam pump and piping in a dead head (no flow) or churn pressure condition.

The Viking FoamPak is equipped with primary and secondary supply and return connections. The primary supply connection is



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utilized to take a supply from the atmospheric storage tank, the secondary supply connection is utilized to supply the pump with an auxiliary source of foam concentrate if needed or to supply the foam pump, valves and piping with clean water if flushing is required. The primary discharge connection is utilized to supply the concentrate piping to the ILBP piping network. The supply connection is equipped with a "Y" strainer to ensure that the foam concentrate or flushing supply entering the foam pump is free of debris.

9. GUARANTEES

For details of warranty, refer to Viking's current list price schedule or contact Viking directly. The Fire Lion UL/FM foam pump has a Life Time warranty from date of shipment.

10. INSPECTIONS, TESTS AND MAINTENANCE

WARNING

Any system maintenance or testing that involves placing a control valve or detection system out of service may eliminate the fire protection of that system. Prior to proceeding, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.

It is imperative that the Viking FoamPak is inspected and tested per the requirements of NFPA 20 and NFPA 25. Inspections, testing and maintenance of the Viking FoamPak is the owner's responsibility. The concentrate piping on the FoamPak is hydrostatically tested prior to delivery. The pump skid assembly is to be flushed in accordance with manufacturer's recommendations. The supply "Y" strainer screen should be examined and cleaned in accordance with NFPA 25, before each test.

11. DISPOSAL



At end of use the product described here should be disposed of via the national recycling system.



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12. SPARE PARTS

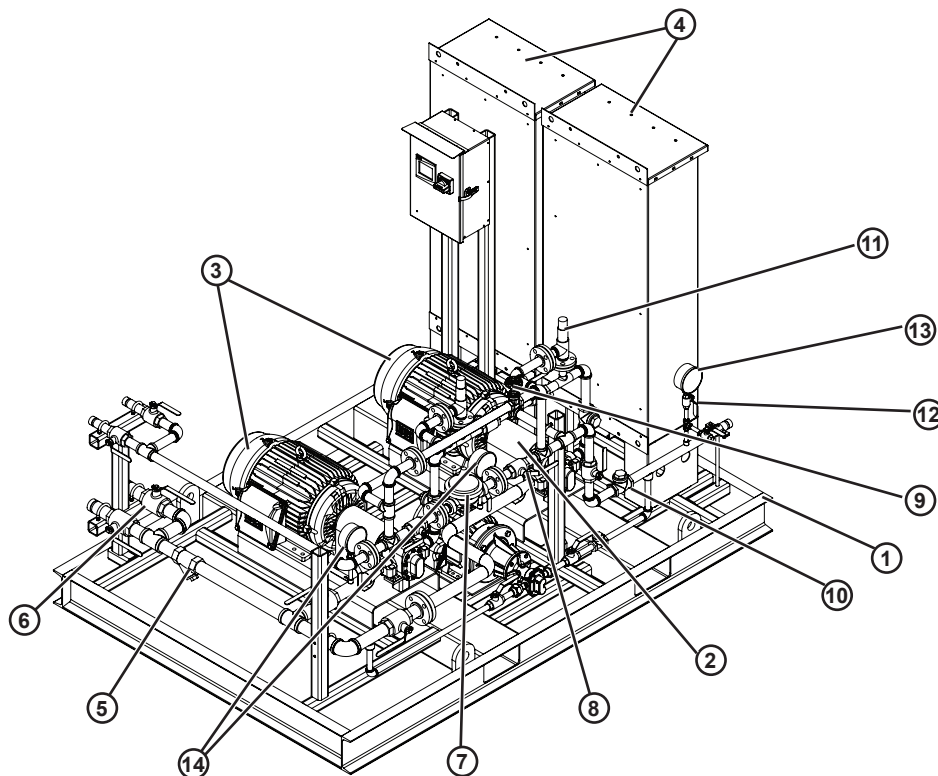


Figure 13.1.1: FoamPak 5D Components

TABLE 13.1.2: FOAMPAK 5D COMPONENTS
(See Figure 13.1.1)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.	Part No.	Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
1	FP1-15 FP1-30	--	--	--	--	--	--	--	Base assembly	2	Carbon steel
2	FP1-15	45	130	100	7.5	5	F22122A	F22122B	Foam pump, FP1 Series, 1" grooved connections	2	Bronze
		40	110	150	10	7					
		35	90	200	15	8					
		30	75	261	20	10.5					
	FP1-30	55	135	100	10	5	F22123A	F22123B			
		50	110	150	15	7.5					
		45	95	200	15	10					
		40	90	261	20	12					



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TABLE 13.1.2: FOAMPAK 5D COMPONENTS
(See Figure 13.1.1)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.		Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
3	FP1-15	45	208	100	7.5	5	F22131A	F22131B	3PH, NEMA, electric motor, ODP/IP45 enclosure	2	
		40	189	150	10	7	F22132A	F22132B			
		35	170	200	15	8	F22133A	F22133B			
		30	150	261	20	10.5	F22134A	F22134B			
	FP1-30	55	340	100	10	5	F22135A	F22135B			
		50	310	150	15	7.5	F22136A	F22136B			
		45	280	200	15	10	F22137A	F22137B			
		40	225	261	20	12	F22138A	F22138B			
4	FP1-15	45	435	100	7.5	5	F22176A	F22176B	Eaton-Electric LMR Plus Pump Controller, FDF30 Across the Line, NEMA 2	2	
		40	395	150	10	7	F22177A	F22177B			
		35	355	200	15	8	F22178A	F22178B			
		30	320	261	20	10.5	F22179A	F22179B			
	FP1-30	55	510	100	10	5	F22180A	F22180B			
		50	470	150	15	7.5	F22181A	F22181B			
		45	435	200	15	10	F22182A	F22182B			
		40	395	261	20	12	F22183A	F22183B			
5	FP1-15 FP1-30						--	--	1.5" "Y" strainer	1	316 Stainless Steel, Socket Weld
6	FP1-15 FP1-30						--	--	1.5" ball valve		316 Stainless Steel, Socket Weld
7	FP1-15 FP1-30						F22225	F22225	1" FNPT, pressure sustaining valve, Cla-Val Model 50-01	1	Bronze
8	FP1-15 FP1-30						--	--	1" ball valve		316 Stainless Steel, Socket Weld
9	FP1-15 FP1-30						--	--	1" gate valve	1	316 Stainless Steel, Socket Weld
10	FP1-15 FP1-30						--	--	1" check valve		316 Stainless Steel, Socket Weld
11	FP1-15 FP1-30						F22221	F22221	3/4" MNPT inlet x 1" FNPT connection, pressure relief valve, FL 511 Series		Bronze
12	FP1-15 FP1-30						--	--	1/4" ball valve		316 Stainless Steel
13	FP1-15 FP1-30						F22229	F22229	1/4" suction pressure gauge, 4" dial		316 Stainless Steel, Liquid Filled
14	FP1-15 FP1-30						F22228	F22228	1/4" discharge pressure gauge, 4" dial	1	316 Stainless Steel, Liquid Filled

-- Indicates replacement part not available from Viking.



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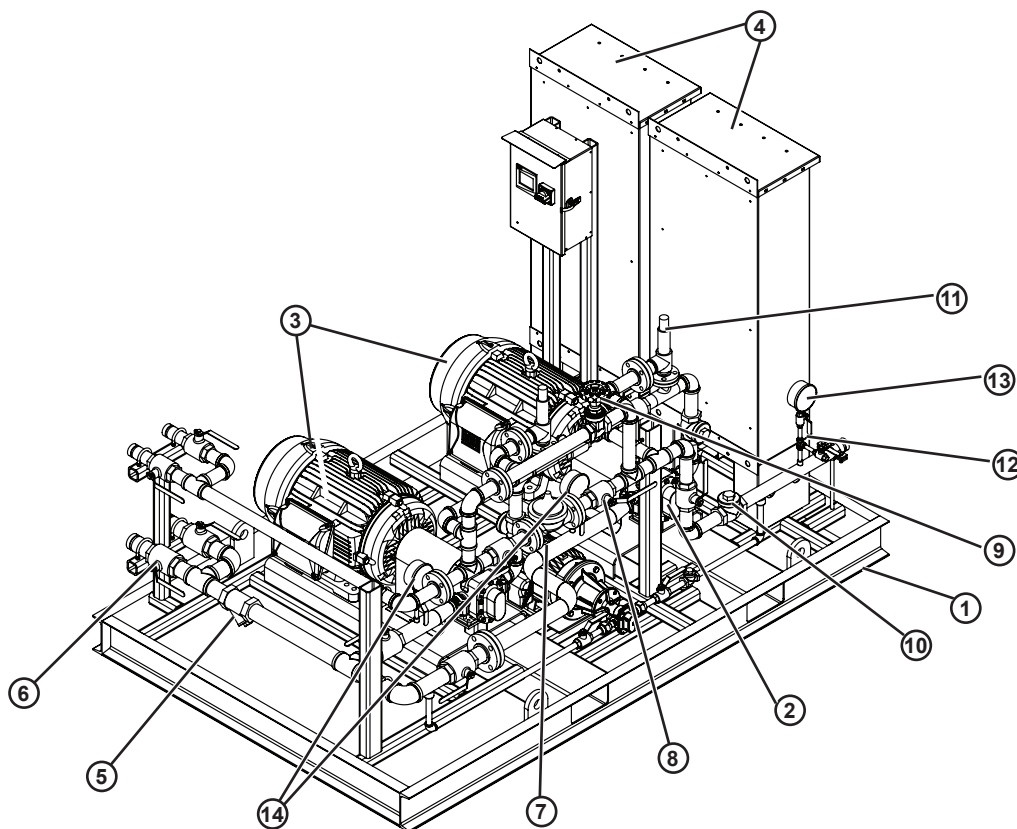


Figure 13.1.3: FoamPak 13D Components

TABLE 13.1.4: FOAMPAK MODEL 13D COMPONENTS
 (See Figure 13.1.3)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.	Part No.	Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
1	FP1.5-50 FP1.5-75	--	--	--	--	--	--	--	Base assembly	2	Carbon Steel
2	FP1.5-50	70	208	100	15	7.5	F22120	F22120	Foam pump, FP1 Series, 1.5" grooved connections	2	Bronze
		65	189	150	20	10					
		60	170	200	20	15					
		55	150	261	25	20					
	FP1.5-75	110	340	100	20	15	F22121	F22121			
		105	310	150	25	15					
		100	280	200	40	20					
		90	225	261	40	25					



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TABLE 13.1.4: FOAMPAK MODEL 13D COMPONENTS
 (See Figure 13.1.3)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.		Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
3	FP1.5-50	70	208	100	15	7.5	F22139A	F22139B	3PH, NEMA, electric motor, ODP/IP45 enclosure	2	
		65	189	150	20	10	F22140A	F22140B			
		60	170	200	20	15	F22414A	F22414B			
		55	150	261	25	20	F22142A	F22142B			
	FP1.5-75	110	340	100	20	15	F22143A	F22143B			
		105	310	150	25	15	F22144A	F22144B			
		100	280	200	40	20	F22145A	F22145B			
		90	225	261	40	25	F22146A	F22146B			
4	FP1.5-50	70	208	100	15	7.5	F22184A	F22184B	Eaton-Electric LMR Plus pump controller, FDF30 across the line, NEMA 2	2	
		65	189	150	20	10	F22185A	F22185B			
		60	170	200	20	15	F22186A	F22186B			
		55	150	261	25	20	F22187A	F22187B			
	FP1.5-75	110	340	100	20	15	F22188A	F22188B			
		105	310	150	25	15	F22189A	F22189B			
		100	280	200	40	20	F22190A	F22190B			
		90	225	261	40	25	F22191A	F22191B			
5	FP1.5-50 FP1.5-75						--	--	2" "Y" strainer	1	316 Stainless Steel, Socket Weld
6	FP1.5-50 FP1.5-75						--	--	2" ball valve		316 Stainless Steel, Socket Weld
7	FP1.5-50 FP1.5-75						F22224	F22224	1-1/2" FNPT connection, pressure sustaining valve, ClaVal Model 50-01	1	Bronze
8	FP1.5-50 FP1.5-75						--	--	1-1/2" ball valve		316 Stainless Steel, Socket Weld
9	FP1.5-50 FP1.5-75						--	--	1-1/2" gate valve	1	316 Stainless Steel, Socket Weld
10	FP1.5-50 FP1.5-75						--	--	1-1/2" check valve		316 Stainless Steel, Socket Weld
11	FP1.5-50 FP1.5-75						F22222	F22222	1-1/2" MNPT inlet x 2" FNPT, pressure relief valve, FL 511 Series	1	Bronze
12	FP1.5-50 FP1.5-75						--	--	1/4" ball valve		316 Stainless Steel
13	FP1.5-50 FP1.5-75						F22229	F22229	1/4" suction pressure gauge, 4" dial		316 Stainless Steel, Liquid Filled
14	FP1.5-50 FP1.5-75						F22228	F22228	1/4" discharge pressure gauge, 4" dial	1	316 Stainless Steel, Liquid Filled

-- Indicates replacement part not available from Viking.



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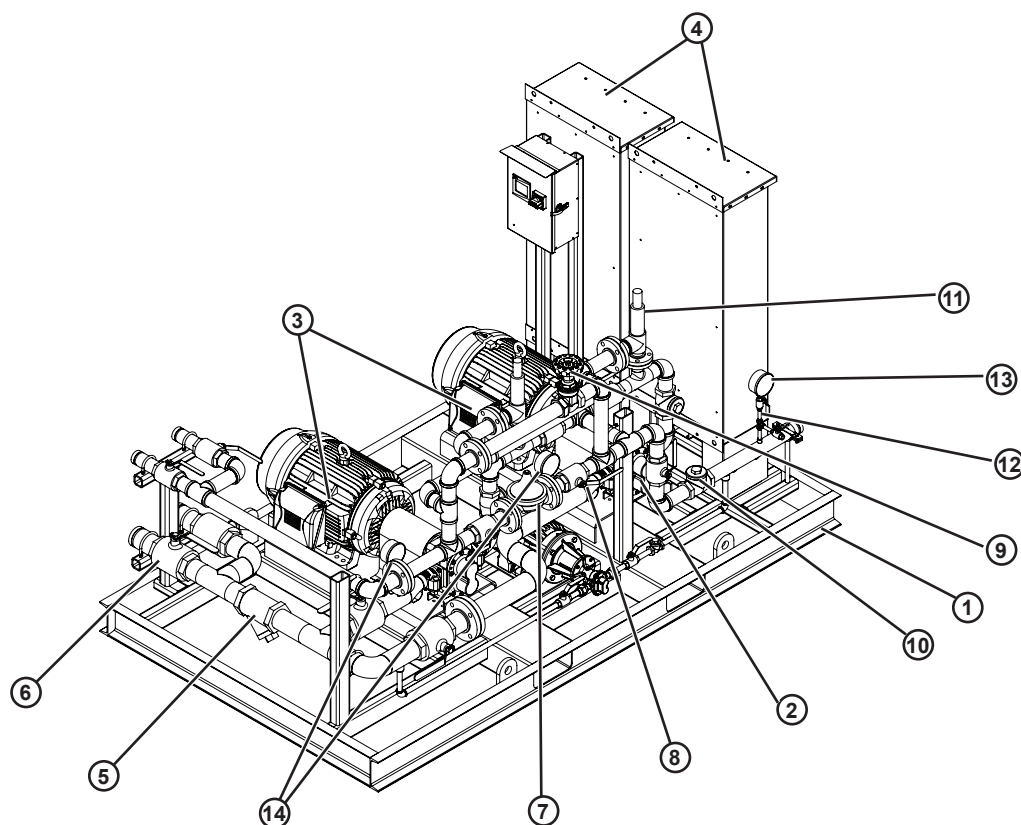


Figure 13.1.5: FoamPak 26D Components

TABLE 13.1.6: FOAMPAK MODEL 26D COMPONENTS AND SPARE PARTS
 (See Figure 13.1.5)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.	Part No.	Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
1	FP2-100 FP2-150	--	--	--	--	--			Base assembly	2	Carbon Steel
2	FP2-100	150	435	100	25	15	F22124	F22124	Foam Pump, FP2 Series, 2" grooved connections	2	Bronze
		140	395	150	30	20					
		130	355	200	40	23					
		120	320	261	40	28					
	FP2-150	150	435	100	25	15	F22125	F22125			
		140	395	150	30	20					
		130	355	200	40	23					
		120	320	261	40	28					



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TABLE 13.1.6: FOAMPAK MODEL 26D COMPONENTS AND SPARE PARTS
 (See Figure 13.1.5)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.		Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
3	FP2-100	150	435	100	25	15	F22147A	F22147B	3PH, NEMA, electric motor, ODP/IP45 enclosure	2	
		140	395	150	30	20	F22148A	F22148B			
		130	355	200	40	23	F22149A	F22149B			
		120	320	261	40	28	F22150A	F22150B			
	FP2-150	150	435	100	25	15	F22151A	F22151B			
		140	395	150	30	20	F22152A	F22152B			
		130	355	200	40	23	F22153A	F22153B			
		120	320	261	40	28	F22154A	F22154B			
4	FP2-100	150	435	100	25	15	F22192A	F22192B	Eaton-Electric LMR Plus Pump Controller, FDF30 Across the Line, NEMA 2	2	
		140	395	150	30	20	F22193A	F22193B			
		130	355	200	40	23	F22194A	F22194B			
		120	320	261	40	28	F22195A	F22195B			
	FP2-150	150	435	100	25	15	F22196A	F22196B			
		140	395	150	30	20	F22197A	F22197B			
		130	355	200	40	23	F22198A	F22198B			
		120	320	261	40	28	F22199A	F22199B			
5	FP2-100 FP2-150						--	--	2.5" "Y" strainer	1	316 Stainless Steel, Socket Weld
6	FP2-100 FP2-150						--	--	2.5" ball valve		316 Stainless Steel, Socket Weld
7	FP2-100 FP2-150						F22226	F22226	2" grooved connection, pressure sustaining valve, Cla-Val Model 50-01	1	Bronze
8	FP2-100 FP2-150						--	--	2" ball valve		316 Stainless Steel, Socket Weld
9	FP2-100 FP2-150						--	--	2" gate valve	1	316 Stainless Steel, Socket Weld
10	FP2-100 FP2-150						--	--	2" check valve		316 Stainless Steel, Socket Weld
11	FP2-100 FP2-150						F22222	F22222	1-1/2" MNPT Inlet x 2" FNPT connections, pressure relief valve, FL 511 Series		Bronze
12	FP2-100 FP2-150						--	--	1/4" ball valve		316 Stainless Steel
13	FP2-100 FP2-150						F22229	F22229	1/4" suction pressure gauge, 4" dial		316 Stainless Steel, Liquid Filled
14	FP2-100 FP2-150						F22228	F22228	1/4" discharge pressure gauge, 4" dial	1	316 Stainless Steel, Liquid Filled

-- Indicates replacement part not available from Viking.



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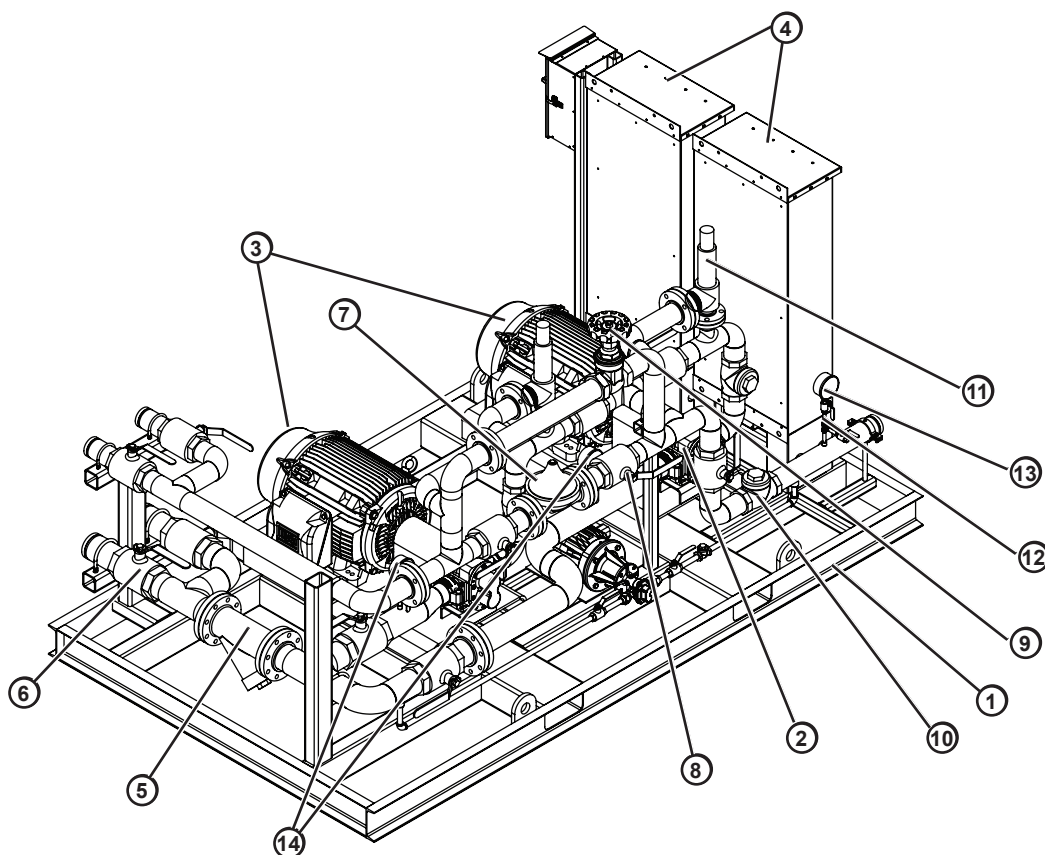


Figure 13.1.7: FoamPak 50D Components

TABLE 13.1.8: FOAMPAK MODEL 50D COMPONENTS

(See Figure 13.1.7)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.	Part No.	Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
1	FP2-175 FP3-200 FP3-225	--	--	--	--	--			Base assembly	2	Carbon Steel
2	FP2-175	235	680	100	40	22.5	F22126	F22126	Foam pump, FP2 Series, 3" groove Connections	2	Bronze
		220	625	150	50	30					
		200	565	200	60	37.5					
		185	510	261	75	45					
	FP3-200	250	750	100	40	22.5	F22127	F22127	Foam pump, FP3 Series, 3" groove Connections		
		240	715	150	60	33.5					
		220	640	200	75	41					
		200	565	261	75	45					
	FP3-225	300	900	100	40	22.5	F22128	F22128			
		280	830	150	60	33.5					
		260	755	200	75	40					
		240	680	261	75	50					



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TABLE 13.1.8: FOAMPAK MODEL 50D COMPONENTS

(See Figure 13.1.7)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.		Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
3	FP2-175	235	680	100	40	22.5	F22155A	F22155B	3PH, NEMA, electric motor, ODP/IP45 enclosure	2	
		220	625	150	50	30	F22156A	F22156B			
		200	565	200	60	37.5	F22157A	F22157B			
		185	510	261	75	45	F22158A	F22158B			
	FP3-200	250	750	100	40	22.5	F22160A	F22160B			
		240	715	150	60	33.5	F22161A	F22161B			
		220	640	200	75	41	F22162A	F22162B			
		200	565	261	75	45	F22163A	F22163B			
	FP3-225	300	900	100	40	22.5	F22164A	F22164B			
		280	830	150	60	33.5	F22165A	F22165B			
		260	755	200	75	40	F22166A	F22166B			
		240	680	261	75	50	F22167A	F22167B			
4	FP2-175	235	680	100	40	22.5	F22200A	F22200B	Eaton-Electric LMR Plus Pump Controller, FDF30 Across the Line, NEMA 2	2	
		220	625	150	50	30	F22201A	F22201B			
		200	565	200	60	37.5	F22202A	F22202B			
		185	510	261	75	45	F22203A	F22203B			
	FP3-200	250	750	100	40	22.5	F22204A	F22204B			
		240	715	150	60	33.5	F22205A	F22205B			
		220	640	200	75	41	F22206A	F22206B			
		200	565	261	75	45	F22207A	F22207B			
	FP3-225	300	900	100	40	22.5	F22208A	F22208B			
		280	830	150	60	33.5	F22210A	F22210B			
		260	755	200	75	40	F22211A	F22211B			
		240	680	261	75	50	F22212A	F22212B			
5	FP2-175 FP3-200						--	--	4" "Y" strainer	1	316 Stainless Steel, Socket Weld
6	FP2-175 FP3-200						--	--	4" ball valve		316 Stainless Steel, Socket Weld
7	FP2-175 FP3-200						F22227	F22227	3" grooved onnection, pressure sustaining valve, ClaVal Model 50-01	1	Bronze
8	FP2-175 FP3-200						--	--	3" ball valve		316 Stainless Steel, Socket Weld
9	FP2-175 FP3-200						--	--	3" gate valve	1	316 Stainless Steel, Socket Weld
10	FP2-175 FP3-200						--	--	3" check valve		316 Stainless Steel, Socket Weld
11	FP2-175 FP3-200						F22223	F22223	2" MNPT Inlet x 3" FNPT outlet, pressure relief valve, FL 511 Series		Bronze
12	FP2-175 FP3-200						--	--	1/4" ball valve		316 Stainless Steel
13	FP2-175 FP3-200						F22229	F22229	1/4" suction pressure gauge, 4" dial		316 Stainless Steel, Liquid Filled
14	FP2-175 FP3-200						F22228	F22228	1/4" discharge pressure gauge, 4" dial	1	316 Stainless Steel, Liquid Filled

-- Indicates replacement part not available from Viking.



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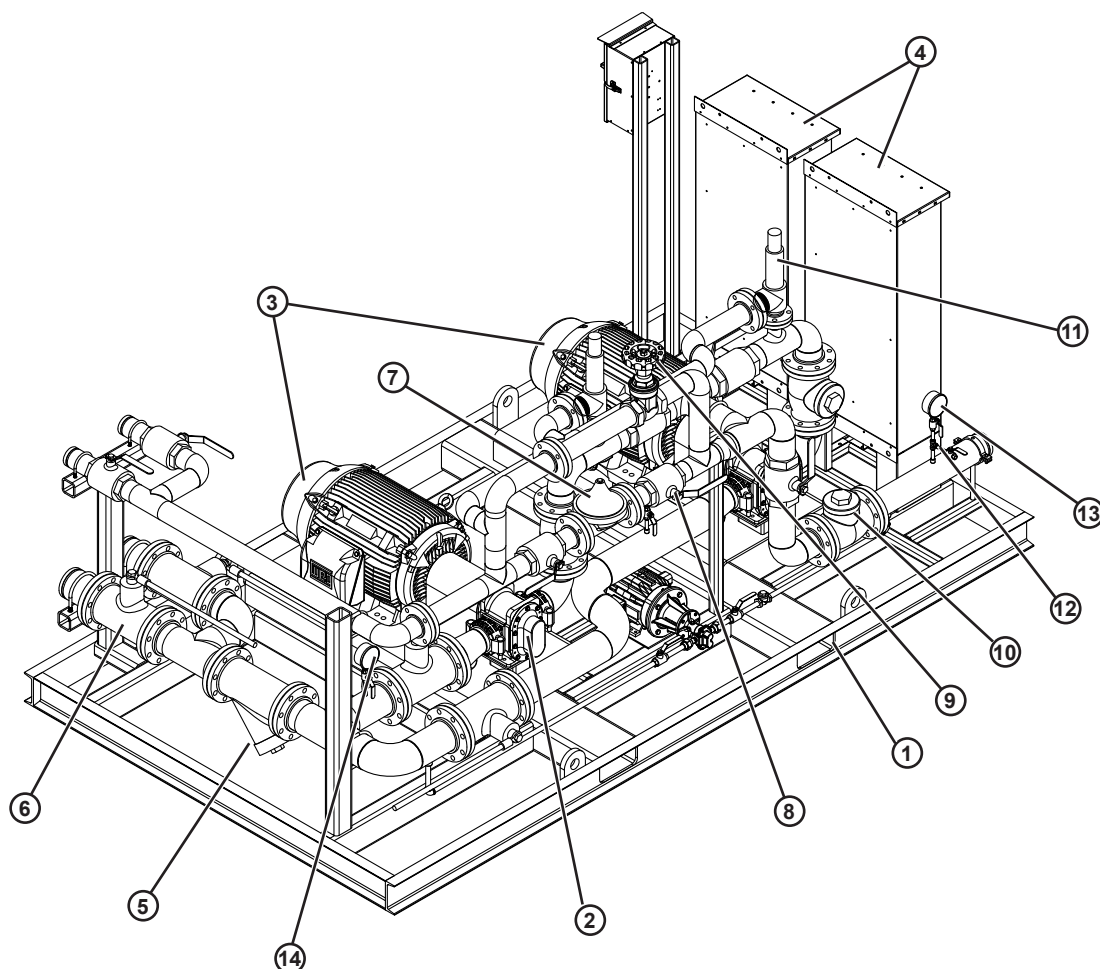


Figure 13.1.9: FoamPak 59D Components

TABLE 13.1.10: FOAMPAK MODEL 59D COMPONENTS
 (See Figure 13.1.9)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.	Part No.	Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
1	FP4-250 FP4-350	--	--	--	--	--			Base assembly	2	Carbon Steel
2	FP4-250	315	925	100	50	30	F22129	F22129	Foam Pump, FP2 Series, 4" grooved connections	2	Bronze
		290	850	150	60	37.5					
		270	755	200	75	45					
		250	680	261	100	56					
	FP4-350	420	1230	100	25	37.5	F22130	F22130			
		400	1130	150	30	45					
		390	1095	200	40	56					
		380	1055	261	40	75					



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TABLE 13.1.10: FOAMPAK MODEL 59D COMPONENTS
(See Figure 13.1.9)

Item	Pump Model	Foam GPM		Foam PSI	HP	KW	Part No.		Description	Qty	Material
		GPM	LPM				60 Hz	50 Hz			
3	FP4-250	315	925	100	50	30	F22168A	F22168B	3PH, NEMA, electric motor, ODP/IP45 enclosure	2	
		290	850	150	60	37.5	F22169A	F22169B			
		270	755	200	75	45	F22170A	F22170B			
		250	680	261	100	56	F22171A	F22171B			
	FP4-350	420	1230	100	25	37.5	F22172A	F22172B			
		400	1130	150	30	45	F22173A	F22173B			
		390	1095	200	40	56	F22174A	F22174B			
		380	1055	261	40	75	F22175A	F22175B			
4	FP4-250	315	925	100	40	30	F22213A	F22213B	Eaton-Electric LMR Plus Pump Controller, FD30 Across the Line Electric Fire Pump Controller, NEMA 2	2	
		290	850	150	60	37.5	F22214A	F22214B			
		270	755	200	75	45	F22215A	F22215B			
		250	680	261	100	56	F22216A	F22216B			
	FP4-350	420	1230	100	60	37.5	F22217A	F22217B			
		400	1130	150	75	45	F22218A	F22218B			
		390	1095	200	100	56	F22219A	F22219B			
		380	1050	232	125	75	F22220A	F22220B			
5	FP4-250 FP4-350						--	--	5" "Y" strainer	1	316 Stainless Steel, Socket Weld
6	FP4-250 FP4-350						--	--	5" ball valve		316 Stainless Steel, Socket Weld
7	FP4-250 FP4-350						F22227	F22227	3" grooved connection, pressure sustaining valve, Cla-Val Model 50-01	1	Bronze
8	FP4-250 FP4-350						--	--	3" ball valve		316 Stainless Steel, Socket Weld
9	FP4-250 FP4-350						--	--	3" gate valve	1	316 Stainless Steel, Socket Weld
10	FP4-250 FP4-350						--	--	4" check valve		316 Stainless Steel, 150lb Flange
11	FP4-250 FP4-350						F22223	F22223	2" Inlet x 3" NPT pressure relief valve, FL 511 Series		Bronze
12	FP4-250 FP4-350						--	--	1/4" ball valve		316 Stainless Steel
13	FP4-250 FP4-350						F22229	F22229	1/4" suction pressure gauge, 4" dial		316 Stainless Steel, Liquid Filled
14	FP4-250 FP4-350						F22228	F22228	1/4" discharge pressure gauge, 4" dial		316 Stainless Steel, Liquid Filled

-- Indicates replacement part not available from Viking.