

# GP Series™ Foam Pumps

## Technical Manual

**GP120 | GP160 | GP200 | GP300 Models**



**Model U**  
Universal Mount



**Model H**  
Hydraulic Mount



**Model M**  
Bell Housing Mount



GP120, GP160 and GP200 Models are available with UL® Listing.

**World Class Fire Industry Products**



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## GP Series™ - Features and Benefits

### Design Features

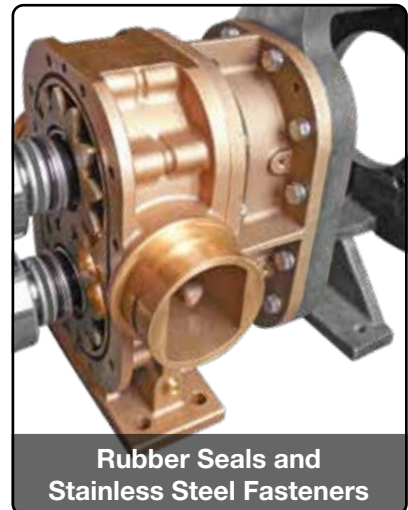
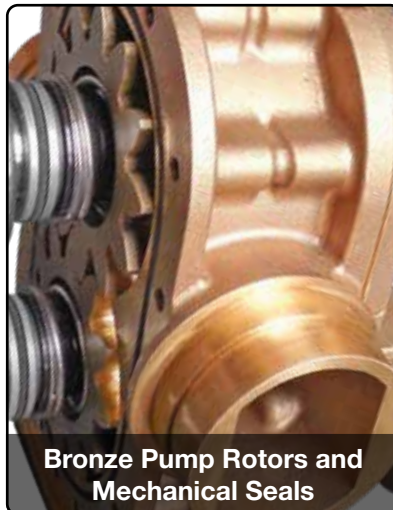
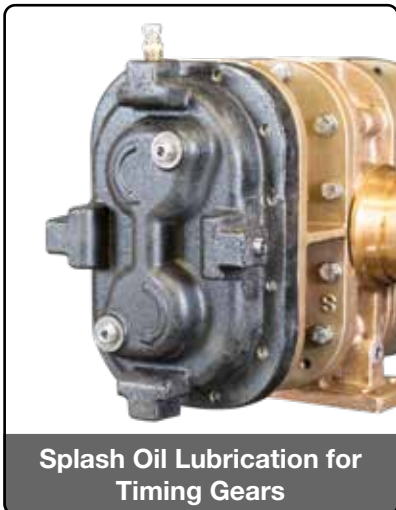
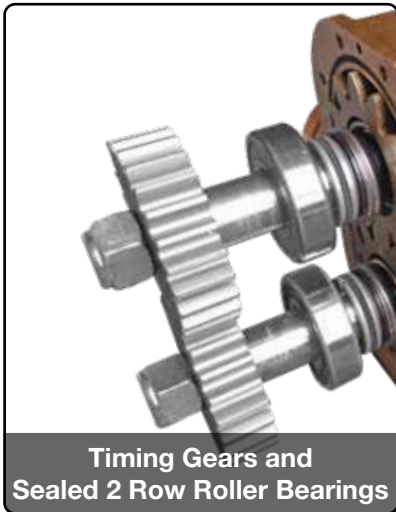
GP Series High Performance Rotary Gear Foam Pumps are loaded with a Wide Range of New Design Features. They are Self Priming and can pump Multiple Viscosities of Foam or Water. This versatile design is suitable for Electric, PTO, Diesel/Gasoline Engine, Water Driven or Hydraulic drive motors. Specific features are listed below.

### Why GP Series™ Foam Pumps Include Timing Gears...

- ▶ Timing Gears Synchronize the Two Pumping Rotors
- ▶ Timing Gears Allow for DRY Running Without Damage
- ▶ No Rotor Contact Allows for Pumping Foam or Water
- ▶ Water Can Be Used for: Calibration, Testing and Training

### GP120/160/200/300 Models

- ▶ Brass Housing with Bronze Alloy Rotors
- ▶ 17-4PH (Precipitation Hardening) Stainless Steel Shafts
- ▶ Double Row Spherical Roller Bearings - Sealed for Life
- ▶ Splash Oil Lubrication for Timing Gears
- ▶ Pump Mounts in any Orientation
- ▶ Victaulic™ Connections
- ▶ Splined Pump Drive Shaft
- ▶ Silicon Carbide Mechanical Seals
- ▶ Shaft Sealed 100% from Pumping Medium
- ▶ Rubber Seals - No Gaskets
- ▶ Stainless Steel Fasteners
- ▶ Designed for Easy Serviceability
- ▶ Optional SAE Hydraulic Motor Mounting Bracket
- ▶ Optional SAE 4/5 Flywheel Housing
- ▶ Optional Speed Sensor



## Foam Pump Rating Chart

Foam Pump Rating Chart

Foam Pump		1000-RPM							1200-RPM							1500-RPM							1800-RPM									
MODEL	PRESSURE	FLOW		POWER		TORQUE			FLOW		POWER		TORQUE			FLOW		POWER		TORQUE			FLOW		POWER		TORQUE					
	PSIG	BAR	GPM	LPM	HP	Kw	LB-FT	Nm	GPM	LPM	HP	Kw	LB-FT	Nm	GPM	LPM	HP	Kw	LB-FT	Nm	GPM	LPM	HP	Kw	LB-FT	Nm	GPM	LPM	HP	Kw	LB-FT	Nm
GP120	50	3.4	70	265	6	4	32	43	90	341	10	7	44	59	115	435	14	10	49	66	140	530	18	13	53	71	135	511	22	16	64	87
	100	6.9	65	246	8	6	42	57	80	303	13	10	57	77	110	416	17	13	60	81	135	511	22	16	64	87	135	511	22	16	64	87
	150	10.3	55	208	11	8	58	78	75	284	15	11	66	89	100	379	20	15	70	95	130	492	26	19	76	103	130	492	26	19	76	103
	200	13.8	50	189	14	10	74	100	70	265	18	13	79	107	95	360	24	18	84	114	125	473	31	23	90	123	125	473	31	23	90	123
	250	17.2	45	170	16	12	84	114	65	246	20	15	88	119	90	341	28	21	98	133	120	454	35	26	102	138	120	454	35	26	102	138
	300	20.7	40	151	19	14	100	135	60	227	23	17	101	136	85	322	32	24	112	152	110	416	40	30	117	158	110	416	40	30	117	158
GP 160	50	3.4	95	360	7	5	37	50	115	435	10	7	44	59	155	587	15	11	53	71	180	681	21	16	61	83	175	662	27	20	79	107
	100	6.9	85	322	10	7	53	71	110	416	14	10	61	83	145	549	19	14	67	90	175	662	27	20	79	107	175	662	27	20	79	107
	150	10.3	80	303	14	10	74	100	105	397	18	13	79	107	140	530	25	19	88	119	170	644	33	25	96	131	170	644	33	25	96	131
	200	13.8	75	284	17	13	89	121	100	379	22	16	96	131	135	511	30	22	105	142	165	625	39	29	114	154	165	625	39	29	114	154
	250	17.2	70	265	22	16	116	157	95	360	27	20	118	160	125	473	36	27	126	171	160	606	46	34	134	182	160	606	46	34	134	182
	300	20.7	65	246	28	21	147	199	90	341	34	25	149	202	120	454	44	33	154	209	155	587	53	40	155	210	155	587	53	40	155	210
GP200	50	3.4	135	511	8	6	42	57	160	606	12	9	53	71	195	738	20	15	70	95	230	871	28	21	82	111	230	871	28	21	82	111
	100	6.9	130	492	12	9	63	85	155	587	17	13	74	101	190	719	25	19	88	119	225	852	34	25	99	135	225	852	34	25	99	135
	150	10.3	125	473	16	12	84	114	150	568	22	16	96	131	185	700	30	22	105	142	220	833	42	31	123	166	220	833	42	31	123	166
	200	13.8	120	454	20	15	105	142	140	530	27	20	118	160	180	681	36	27	126	171	217	821	48	36	140	190	217	821	48	36	140	190
	250	17.2	115	435	25	19	131	178	135	511	32	24	140	190	175	662	42	31	147	199	215	814	56	42	163	222	215	814	56	42	163	222
	300	20.7	110	416	30	22	158	214	130	492	38	28	166	225	170	644	48	36	168	228	210	795	65	48	190	257	210	795	65	48	190	257
GP 300	50	3.4	180	681	12	9	63	85	225	852	18	13	79	107	280	1060	28	21	98	133	335	1268	40	30	117	158	335	1268	40	30	117	158
	100	6.9	170	644	18	13	95	128	215	814	24	18	105	142	270	1022	35	26	123	166	330	1249	48	36	140	190	330	1249	48	36	140	190
	150	10.3	165	625	24	18	126	171	205	776	32	24	140	190	270	1022	44	33	154	209	325	1230	58	43	169	229	325	1230	58	43	169	229
	200	13.8	160	606	30	22	158	214	195	738	40	30	175	237	255	965	54	40	189	256	315	1192	72	54	210	285	315	1192	72	54	210	285
	250	17.2	150	568	40	30	210	285	185	700	50	37	219	297	245	927	66	49	231	313	310	1173	84	63	245	332	310	1173	84	63	245	332
	300	20.7	145	549	50	37	263	356	180	681	60	45	263	356	240	908	80	60	280	380	305	1155	100	75	292	396	305	1155	100	75	292	396

**NOTE:** Power numbers (HP/Kw) listed above are the net power required. Pump installer must evaluate the drive system for power losses and compensate to meet the pump power requirements.

Refer to Pages 24-29 for additional pump dimension details.

## GP Series™ - Drive Configurations

### Typical Power Sources

The following diagrams depict some of the normal methods of powering the Foam Pumps.

The Drive methods are as follows:

**Model M:** Engine Bell Housing Adapter

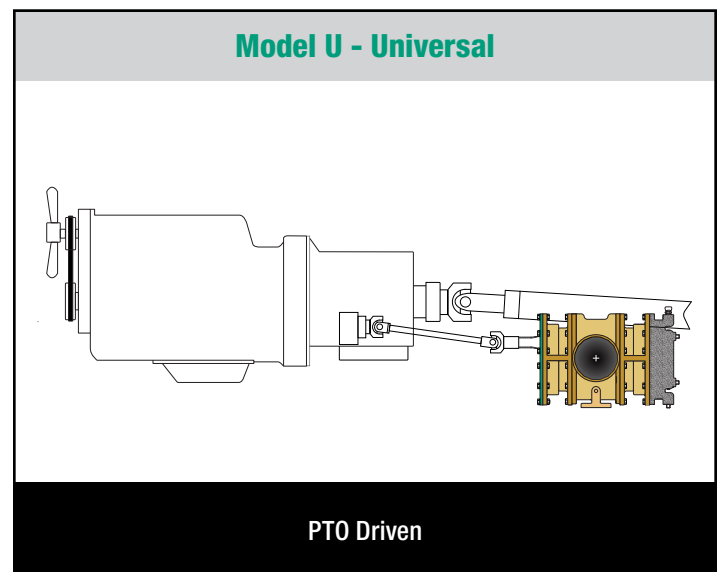
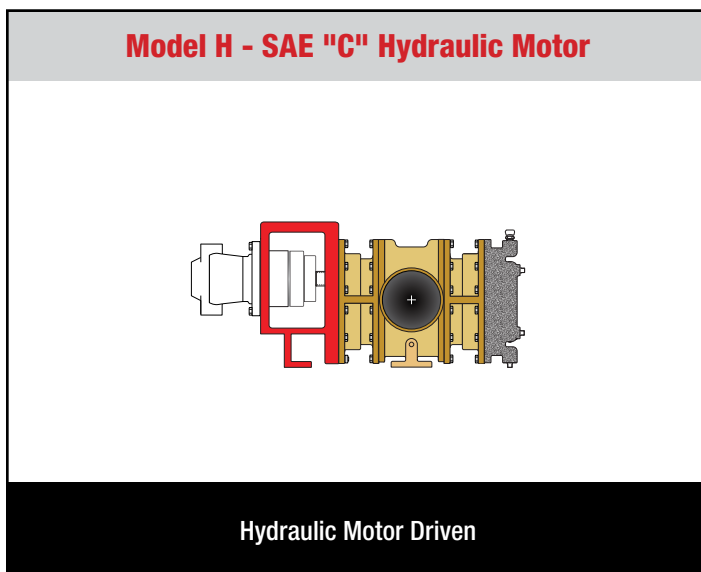
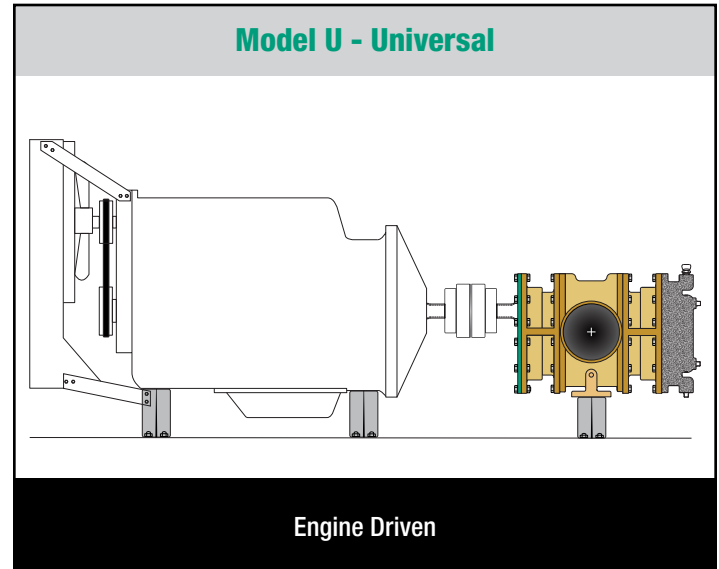
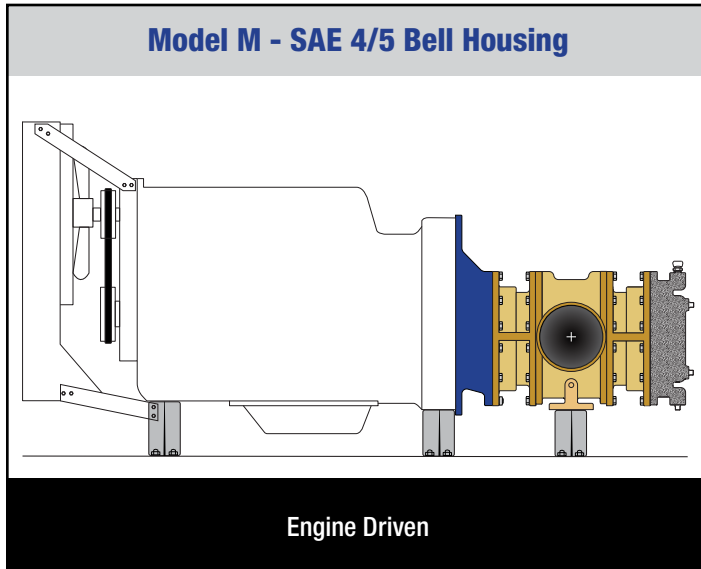
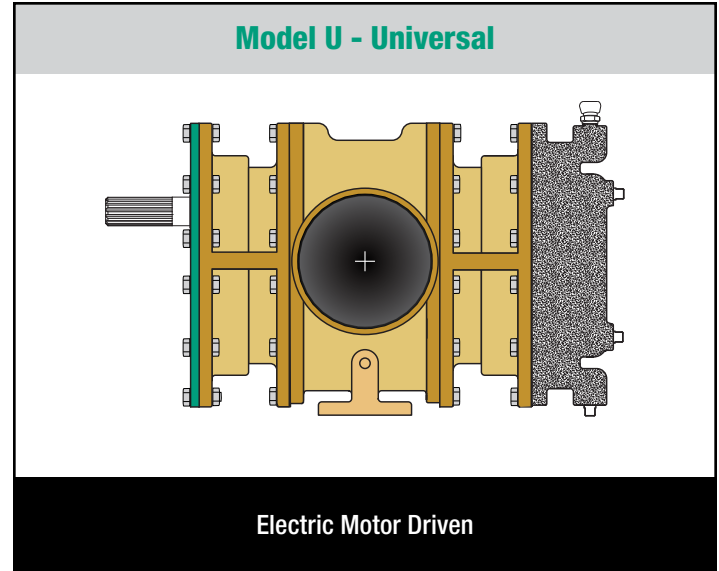
**Model H:** Hydraulic Motor Adapter

**Model U:** Universal; PTO/Electric/Engine Mount/Water Motor

In most cases the power supply shaft is connected to the pump drive shaft with a flexible drive coupling or equivalent. **NOTE:** Pump installer is responsible for providing the proper drive coupling. See Installer Responsibilities on Page 14-16.

Contact Trident for coupling recommendations.

The exception would be a PTO driven installation which utilizes standard universal joints.



## Model Part Number Configuration and Rating

### Pump Configurations

Standard Flow Direction											
MODEL	Driving Shaft	Nominal Flow		Max Pressure		Pump In/Out	Drive/Connection	Pump Weight		Trident Part #	UL Listed
		GPM	LPM	PSIG	BAR			Pounds	Kg.		
GP120U-T	Top RH	120	455	300	20.7	2" VIC	Universal Drive	135	62	31.017.2	Yes
GP120U-B	Bottom LH	120	455	300	20.7	2" VIC	Universal Drive	135	62	31.017.4	Yes
GP120H-T	Top RH	120	455	300	20.7	2" VIC	Hydraulic Motor SAE B, 2/4-Bolt	175	80	31.017.0	Yes
GP120H4-T	Top RH	120	455	300	20.7	2" VIC	Hydraulic Motor SAE C, 2/4-Bolt	175	80	31.017.15	Yes
GP120M-T	Top RH	120	455	300	20.7	2" VIC	Engine Bell Housing	185	84	31.017.3	Yes
GP160U-T	Top RH	160	606	300	20.7	3" VIC	Universal Drive	150	69	31.007.2	Yes
GP160U-B	Bottom LH	160	606	300	20.7	3" VIC	Universal Drive	150	69	31.007.4	Yes
GP160H-T	Top RH	160	606	300	20.7	3" VIC	Hydraulic Motor SAE C, 2/4-Bolt	190	87	31.007.0	Yes
GP160M-T	Top RH	160	606	300	20.7	3" VIC	Engine Bell Housing	200	91	31.007.3	Yes
GP200U-T	Top RH	200	760	300	20.7	3" VIC	Universal Drive	160	72	31.016.2	Yes
GP200U-B	Bottom LH	200	760	300	20.7	3" VIC	Universal Drive	160	72	31.016.4	Yes
GP200H-T	Top RH	200	760	300	20.7	3" VIC	Hydraulic Motor SAE C, 2/4-Bolt	200	90	31.016.0	Yes
GP200M-T	Top RH	200	760	300	20.7	3" VIC	Engine Bell Housing	210	95	31.016.3	Yes
GP300U-T	Top RH	300	1135	300	20.7	4" VIC	Universal Drive	180	82	31.006.2	No
GP300U-B	Bottom LH	300	1135	300	20.7	4" VIC	Universal Drive	180	82	31.006.4	No
GP300H-T	Top RH	300	1135	300	20.7	4" VIC	Hydraulic Motor SAE C, 2/4-Bolt	220	100	31.006.0	No
GP300M-T	Top RH	300	1135	300	20.7	4" VIC	Engine Bell Housing	230	105	31.006.3	No

If specifying a UL® Listed model, a suffix referring to that will be added to both the Model and Part Numbers. Contact Trident for further details on UL® Listed Foam Pumps.

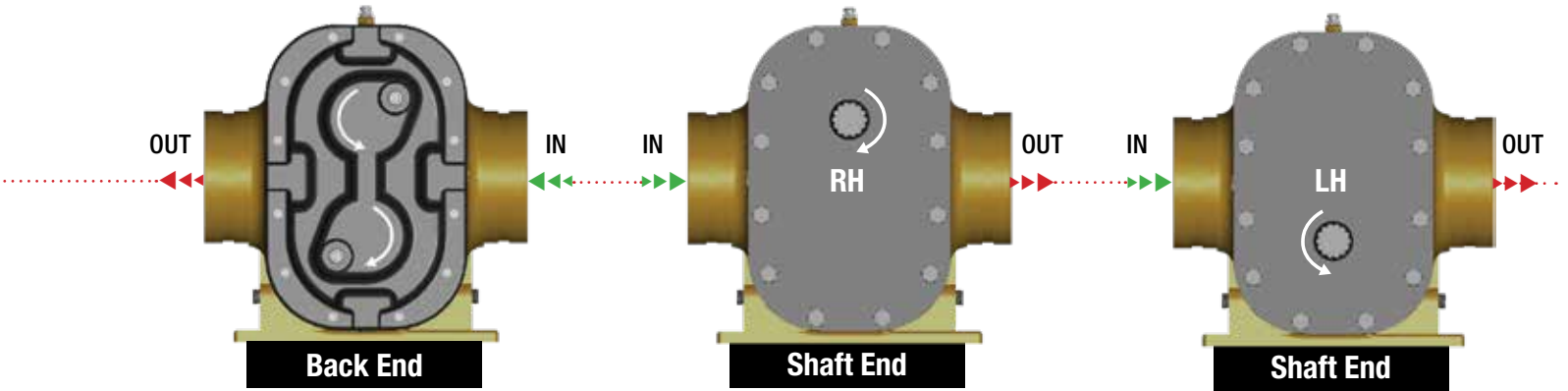
### Reverse Flow Direction

Reverse Flow Direction											
MODEL	Driving Shaft	Nominal Flow		Max Pressure		Pump In/Out	Drive/Connection	Pump Weight		Trident Part #	UL Listed
		GPM	LPM	PSIG	BAR			Pounds	Kg.		
GP120U-RT	Top LH	120	455	300	20.7	2" VIC	Universal Drive	135	62	31.017.12	Yes
GP120U-RB	Bottom RH	120	455	300	20.7	2" VIC	Universal Drive	135	62	31.017.14	Yes
GP120H-RT	Top LH	120	455	300	20.7	2" VIC	Hydraulic Motor SAE B, 2/4-Bolt	175	80	31.017.10	Yes
GP120H4-RT	Top LH	120	455	300	20.7	2" VIC	Hydraulic Motor SAE C, 2/4-Bolt	175	80	31.017.16	Yes
GP120M-RT	Top LH	120	455	300	20.7	2" VIC	Engine Bell Housing	185	84	31.017.13	Yes
GP160U-RT	Top LH	160	606	300	20.7	3" VIC	Universal Drive	150	69	31.007.12	Yes
GP160U-RB	Bottom RH	160	606	300	20.7	3" VIC	Universal Drive	150	69	31.007.14	Yes
GP160H-RT	Top LH	160	606	300	20.7	3" VIC	Hydraulic Motor SAE C, 2/4-Bolt	190	87	31.007.10	Yes
GP160M-RT	Top LH	160	606	300	20.7	3" VIC	Engine Bell Housing	200	91	31.007.13	Yes
GP200U-RT	Top LH	200	760	300	20.7	3" VIC	Universal Drive	160	72	31.016.12	Yes
GP200U-RB	Bottom RH	200	760	300	20.7	3" VIC	Universal Drive	160	72	31.016.14	Yes
GP200H-RT	Top LH	200	760	300	20.7	3" VIC	Hydraulic Motor SAE C, 2/4-Bolt	200	90	31.016.10	Yes
GP200M-RT	Top LH	200	760	300	20.7	3" VIC	Engine Bell Housing	210	95	31.016.13	Yes
GP300U-RT	Top LH	300	1135	300	20.7	4" VIC	Universal Drive	180	82	31.006.12	No
GP300U-RB	Bottom RH	300	1135	300	20.7	4" VIC	Universal Drive	180	82	31.006.14	No
GP300H-RT	Top LH	300	1135	300	20.7	4" VIC	Hydraulic Motor SAE C, 2/4-Bolt	220	100	31.006.10	No
GP300M-RT	Top LH	300	1135	300	20.7	4" VIC	Engine Bell Housing	230	105	31.006.13	No

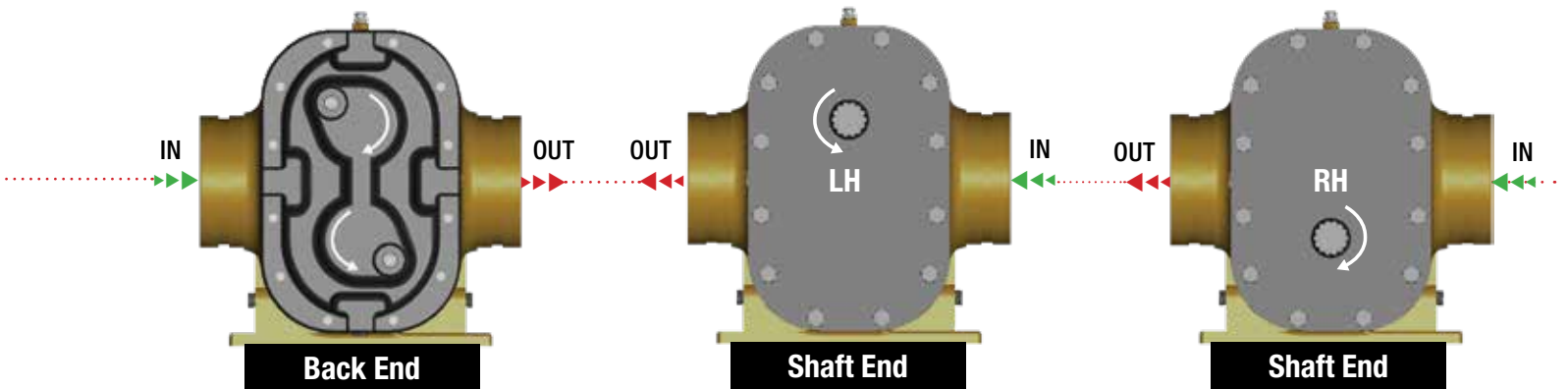
## Specifying a GP Series™ Foam Pump Based on Power Source

### How Will the Pump be Powered

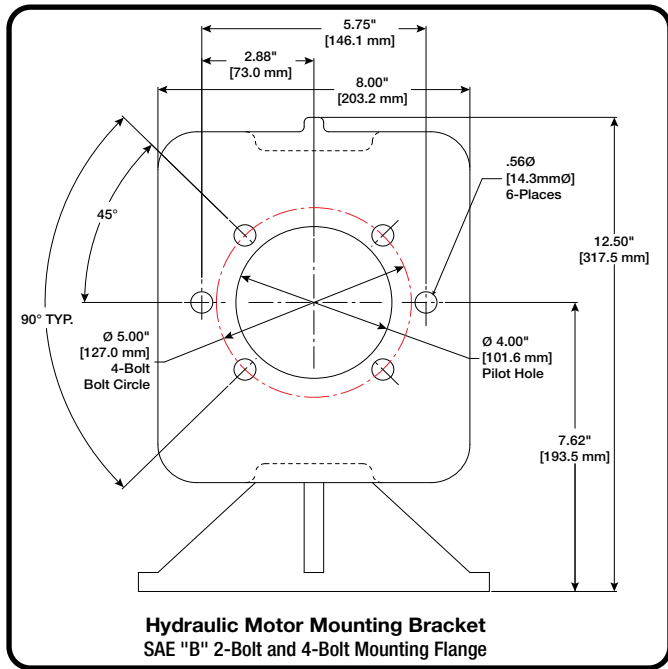
#### Standard Flow Direction



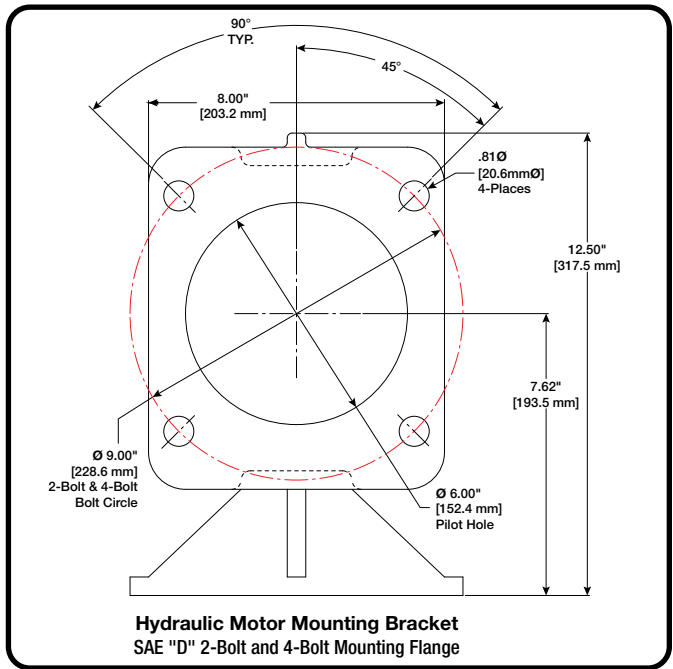
#### Reverse Flow Direction



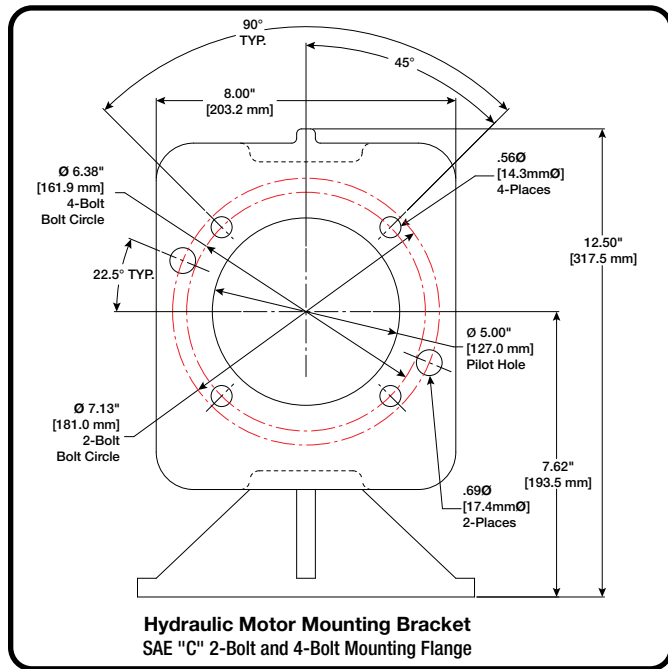
**GP Series™ - Foam Pump Drive Options**



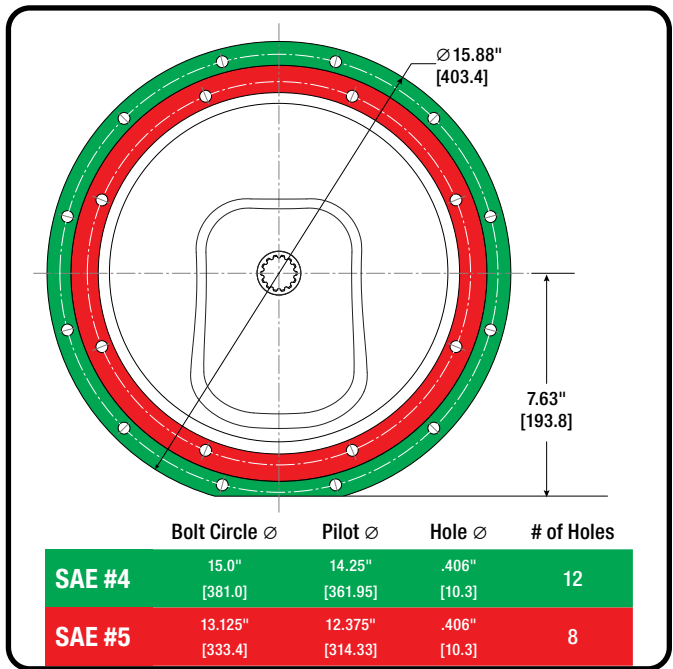
**Figure 1**



**Figure 1b**



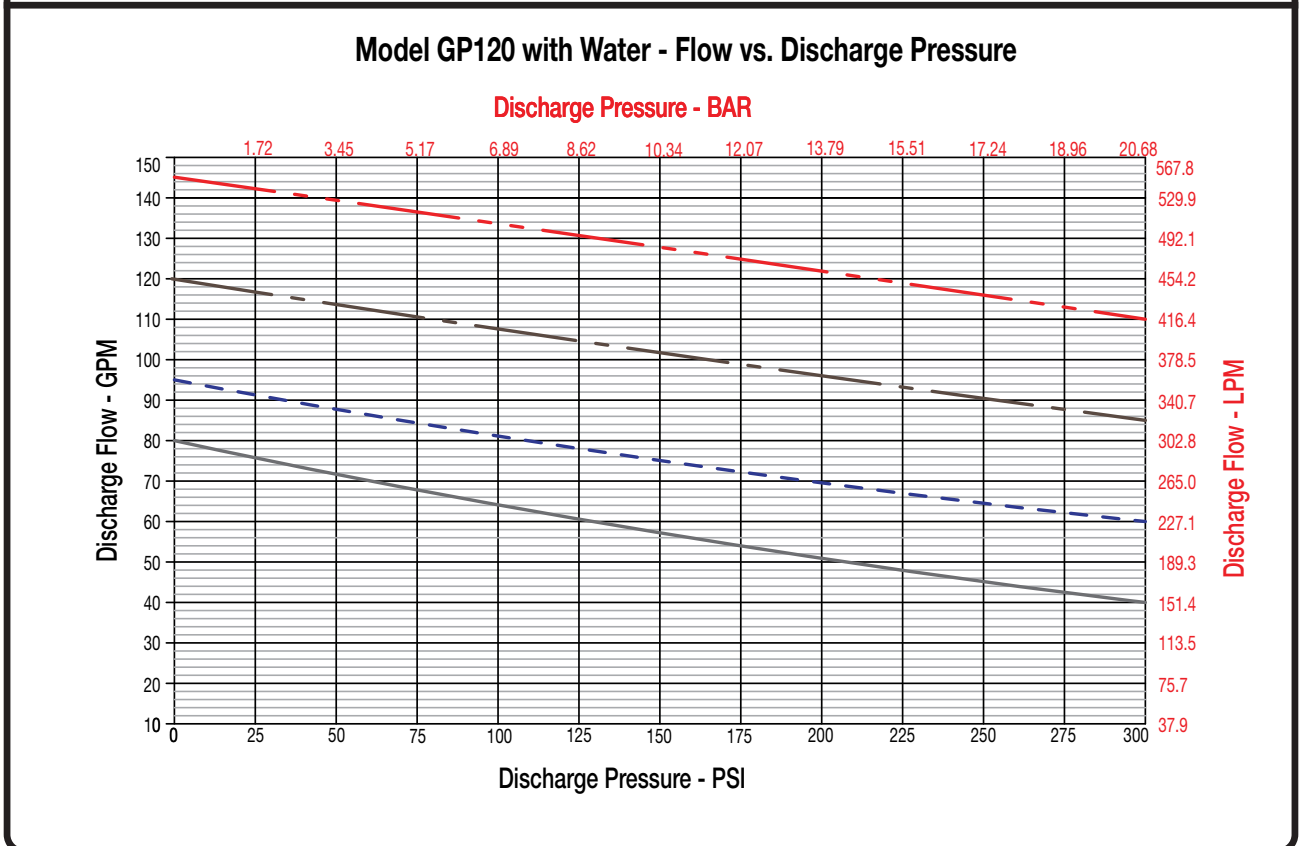
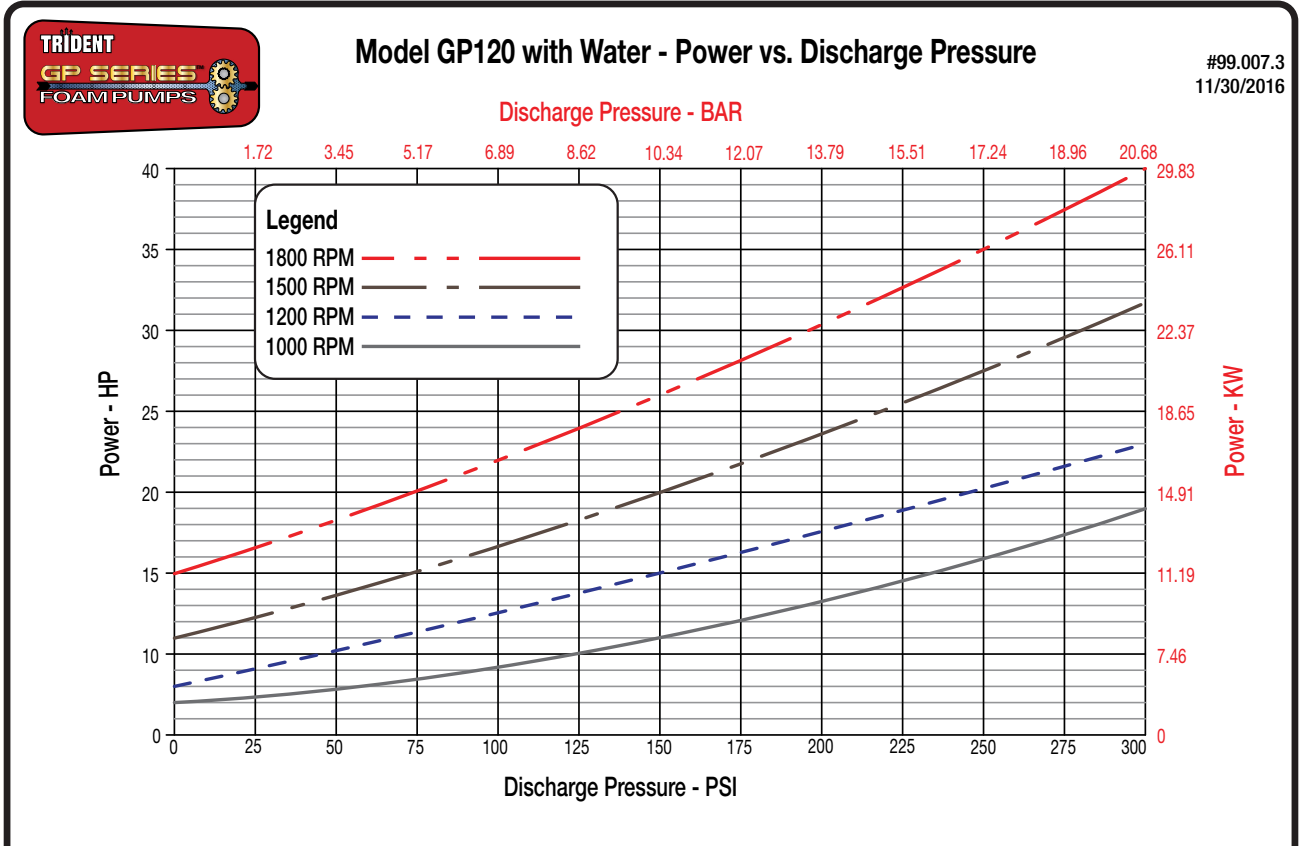
**Figure 1a**



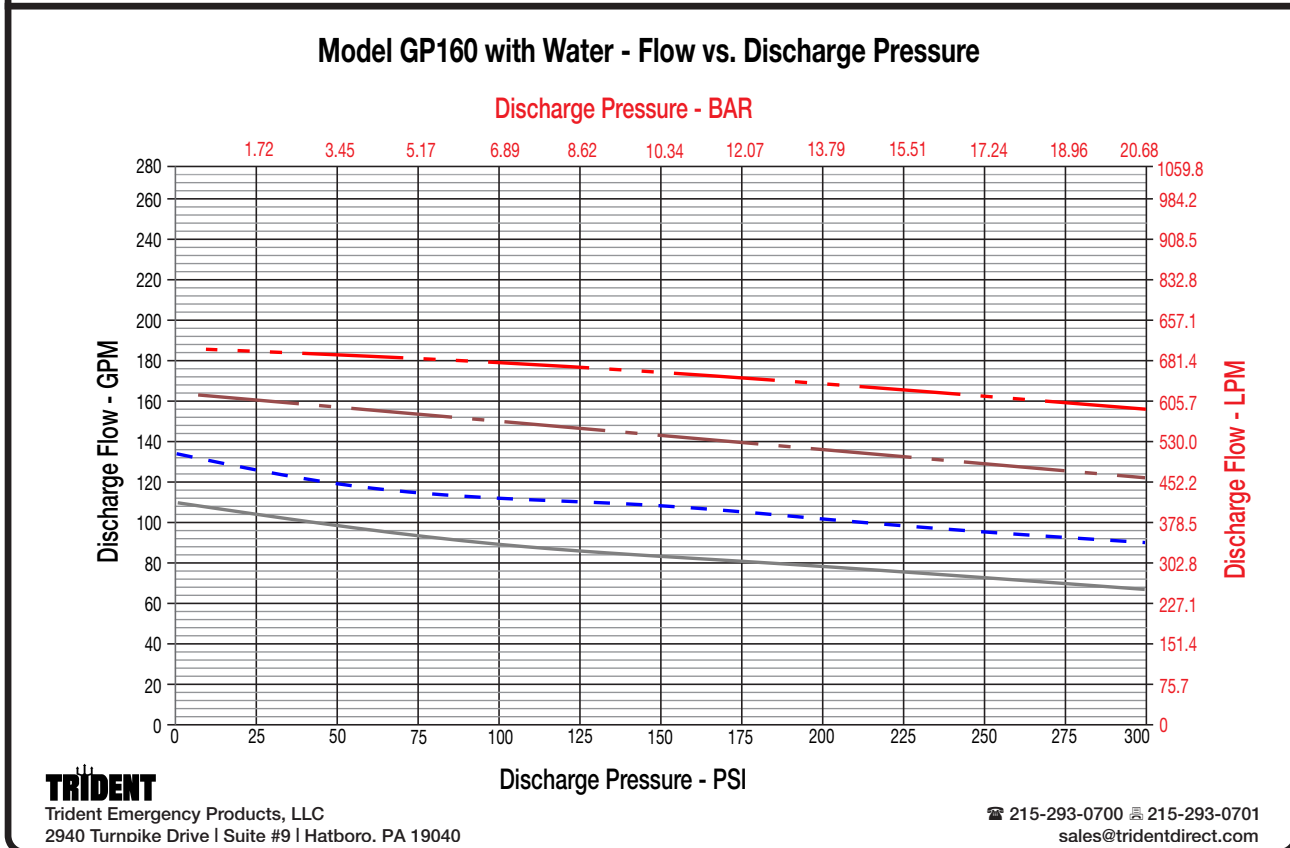
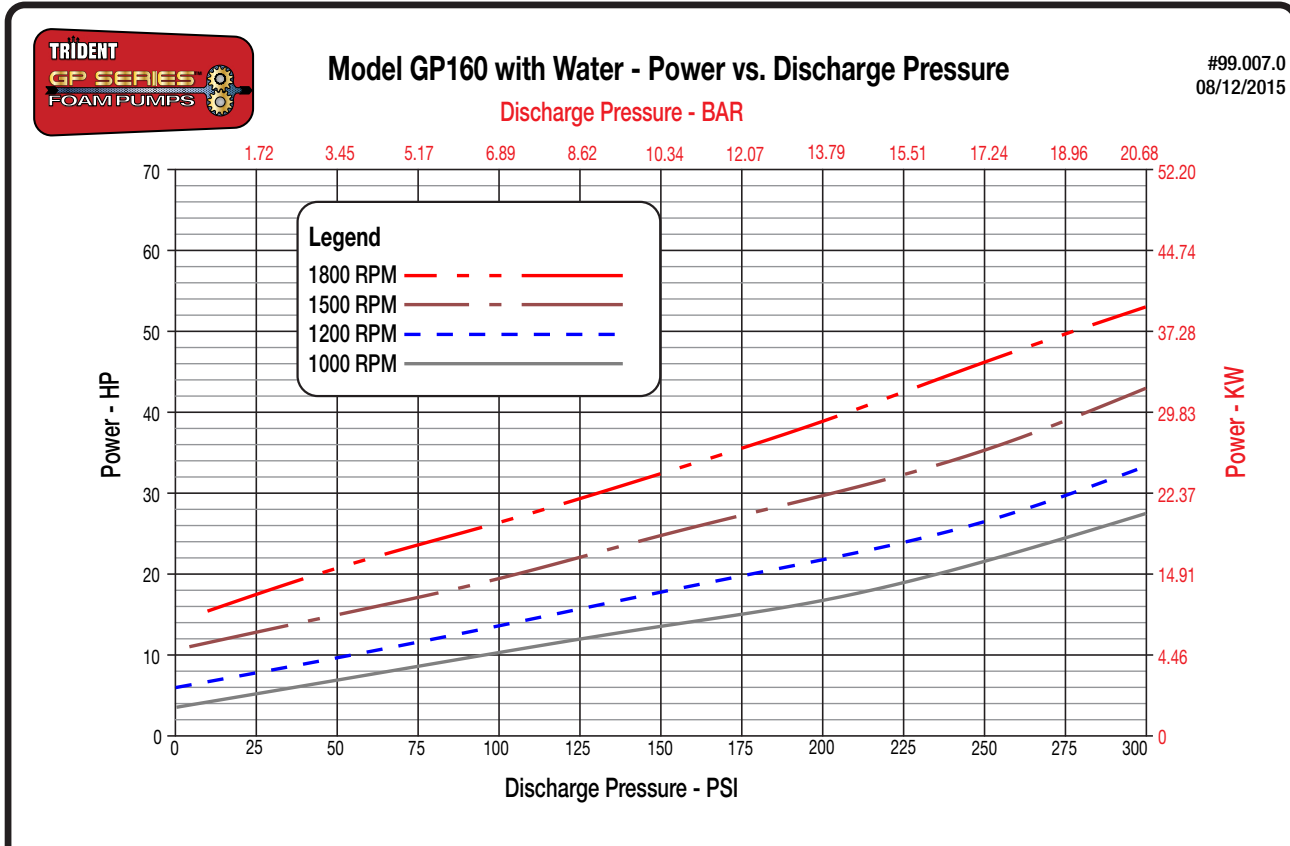
**Figure 2**



## GP120 Performance Curves



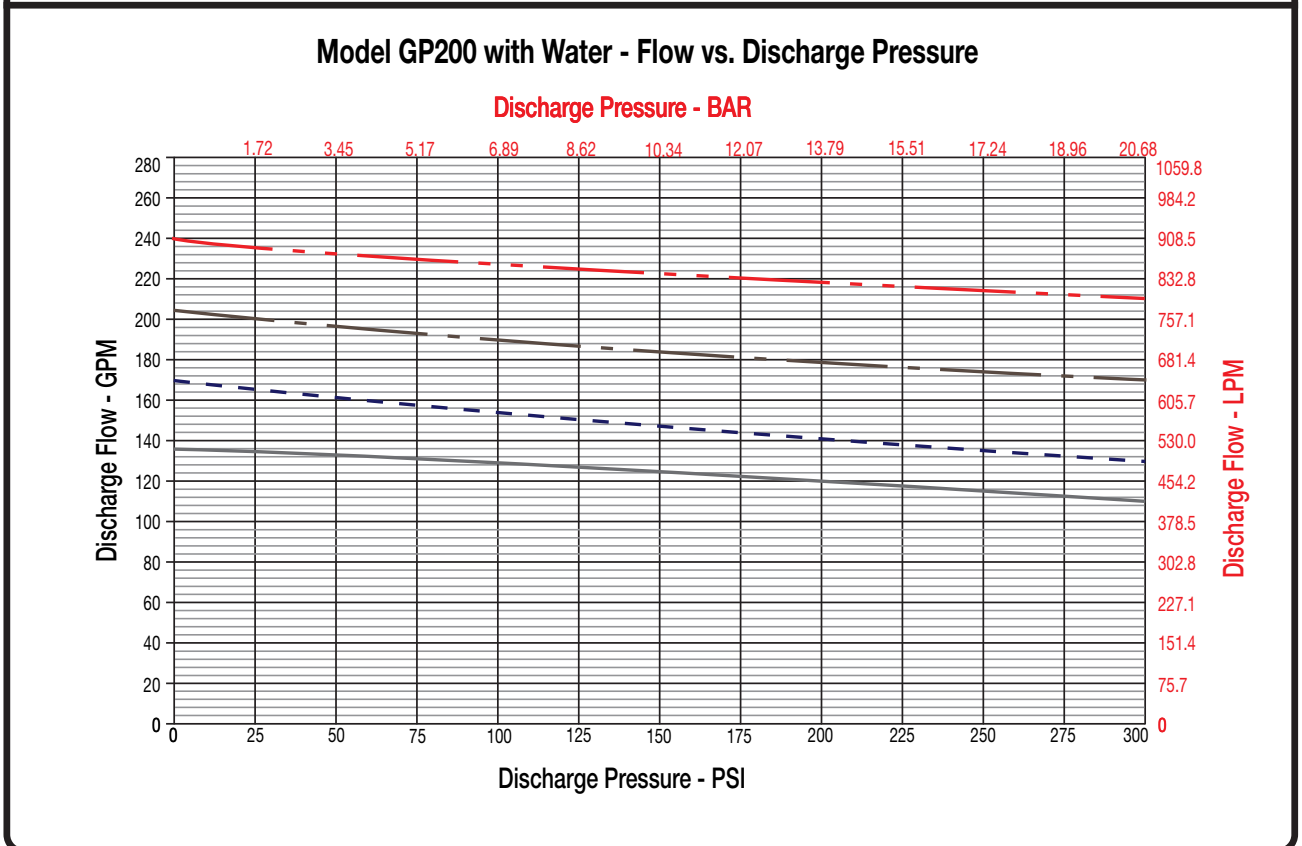
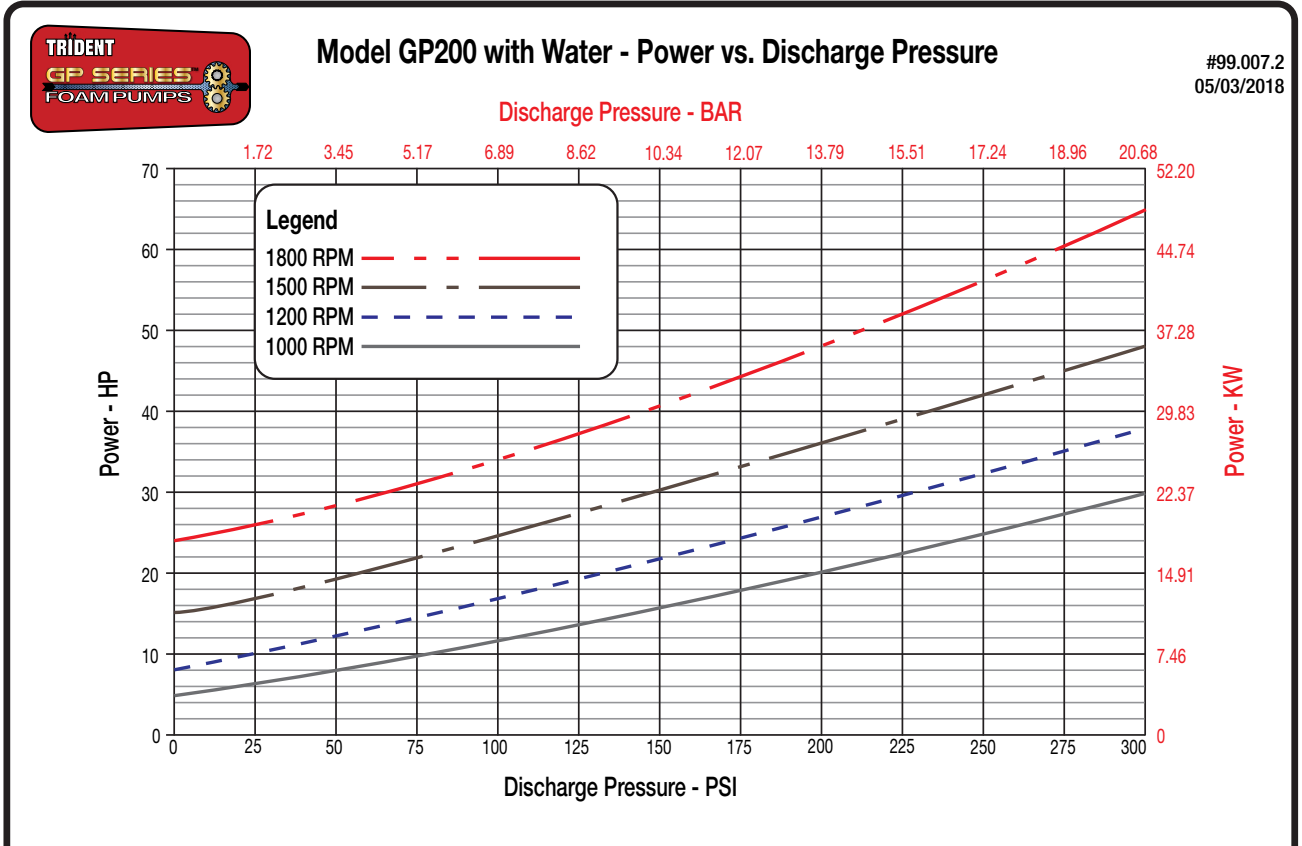
## GP160 Performance Curves



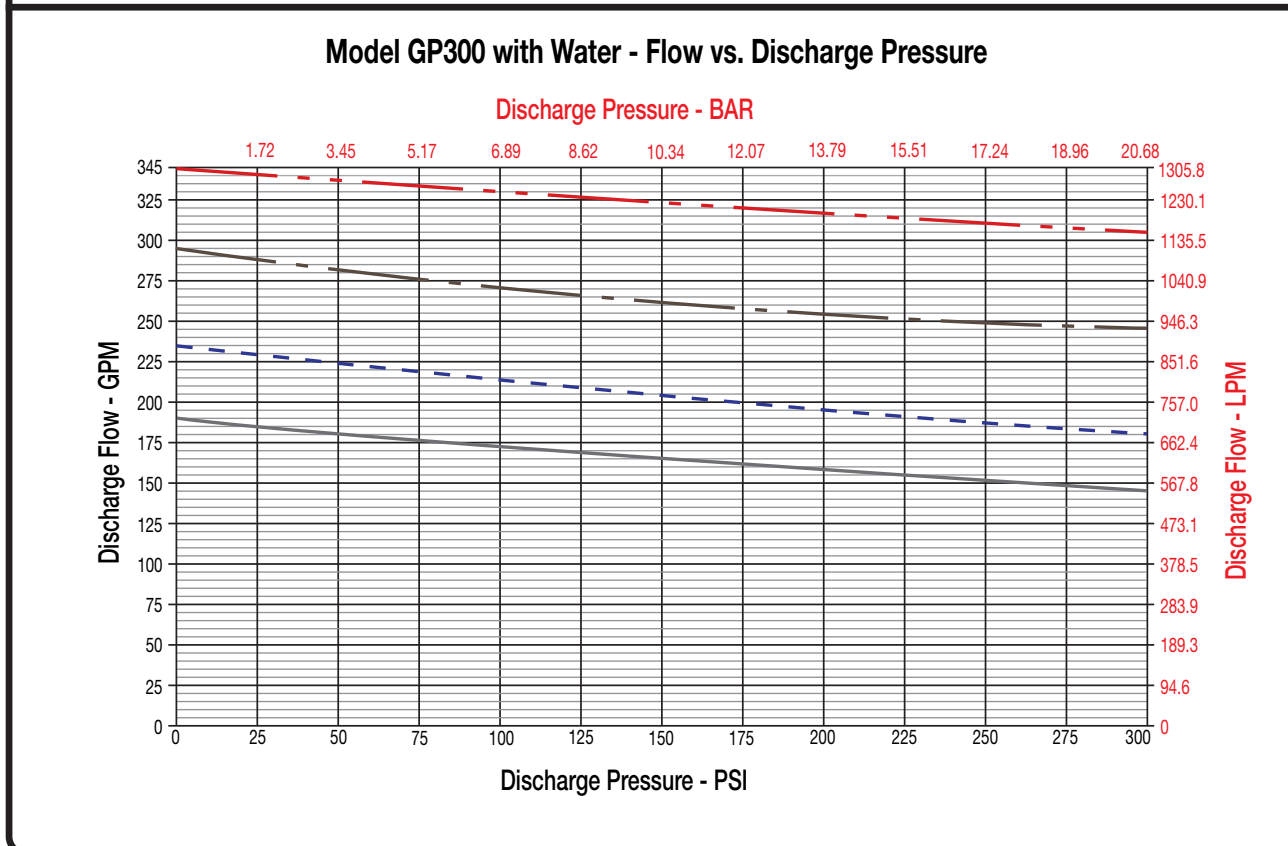
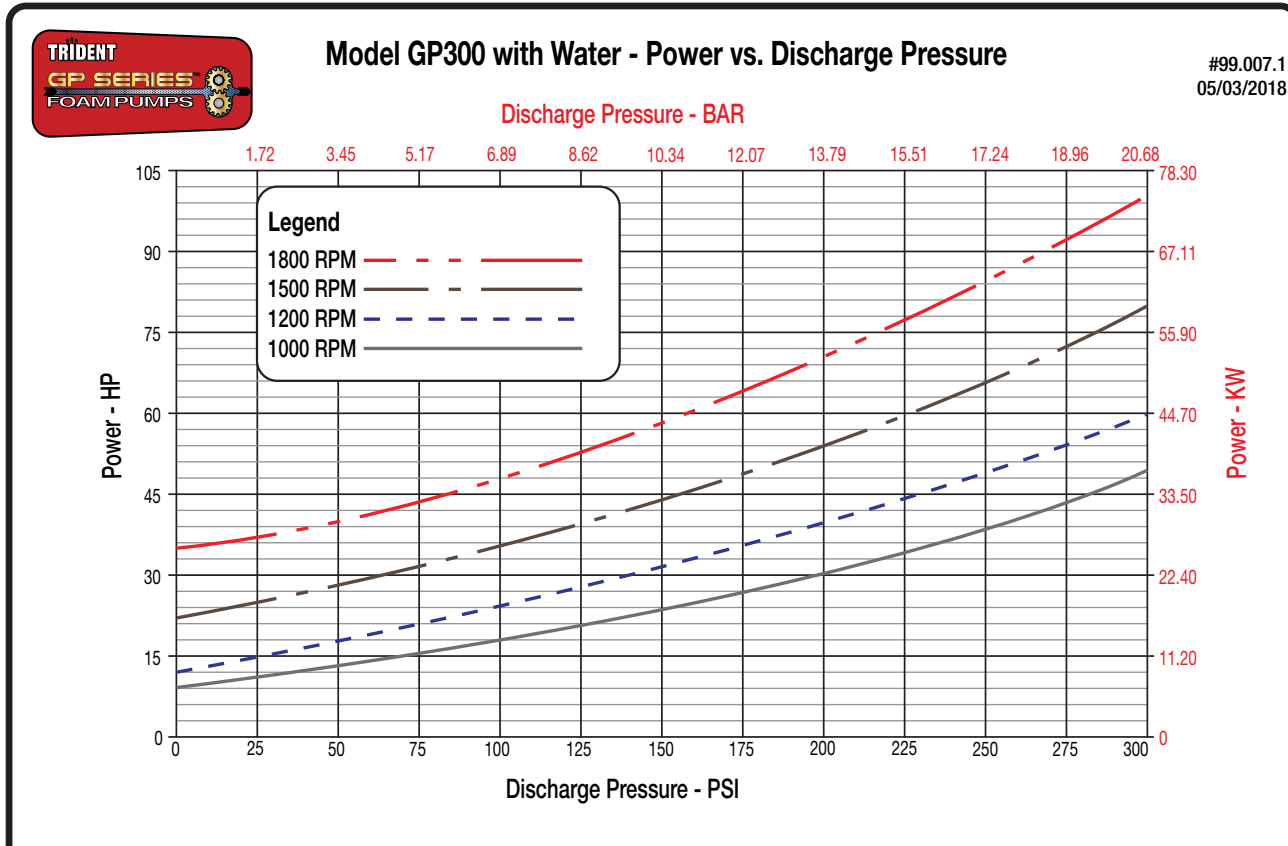
Trident Emergency Products, LLC  
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sales@tridentdirect.com

## GP200 Performance Curves



### GP300 Performance Curves



## Cautions—Warnings—Dangers

The following special information is safety related and intended to advise operators and service technicians of potential hazardous situations involving the operation, maintenance and repair of rotary gear pumps. All personnel involved with operation or repairs of rotary gear pumps must be properly qualified and must read and understand all of the enclosed safety, installation and repair instructions contained within this manual prior to operation and/or repairs.



### CAUTION

**CAUTIONS** are used to indicate a hazardous situation that, if not avoided, could result in minor or moderate injury. Property damage could also be a result, if the hazardous situation is not avoided.



### WARNING

**WARNINGS** are used to indicate a hazardous situation that, if not avoided, could result in death or serious injury. Property damage could also be a result, if the hazardous situation is not avoided.



### DANGER

**DANGERS** are used to indicate a hazardous situation that, if not avoided, will result in death or serious injury. Property damage will also be a result, if the hazardous situation is not avoided.



### CAUTION

1. Do not operate a rotary gear pump dry for more than ten (10) minutes.
2. Operating rotary gear pumps can create heat and pumps should never be allowed to operate in a “dead headed” condition – ensure all suction and discharge valves in the system are open prior to starting the pump.
3. Close all pump isolation valves and drain pump prior to removal from the system.
4. Routine inspection and maintenance must be performed as outlined in this manual.
5. Only use lubricants and cleaning solvents listed in this manual for maintenance and repairs. Observe correct material handling procedures when working with lubricants and solvents.



### WARNING

1. Proper Ear Protection must be worn while operating rotary gear pumps.
2. Proper Eye Protection is required while operating and maintaining a pump.
3. Rotary gear pump installations must be carried out by properly trained personnel.
4. Rotary gear pump repairs must be carried out by properly trained personnel.
5. De-pressurize the pump and plumbing prior to removal of any piping connections.
6. Pump maintenance and repair service should be carried out in a clean environment and only utilize tools designed for the procedures.
7. Use only parts approved by Trident Emergency Products when making repairs to this pump. See **Pages 22 and 32** for a list of parts and repair kits available.



### DANGER

1. Do not operate the pump at pressures exceeding the maximum listed operating pressure of 300 PSI [20.7 BAR].
2. Only utilize components with the proper pressure rating and properly sized drive components when installing the pump.
3. Always disconnect the power source to the pump prior to doing any maintenance or performing any pump repairs. Rotating drive components can cause serious bodily injury and damage to surrounding equipment. Observe and perform **Lock-Out / Tag-Out Procedures**.
4. Use a safety relief valve or other type of pressure limiting device/system to prevent over-pressurization of the pump and piping. If a safety relief valve is installed in the pumping system, do not adjust to a “set pressure” exceeding 110% of the maximum pump listed working pressure.

## Installer Responsibilities

### Unpacking and Inspection



*Rotary gear pumps are heavy and installation personnel should use equipment with proper weight rating for lifting pumps, and utilize personal protective equipment when handling heavy loads.*

1. All GP Series rotary gear pumps are suitably packaged to prevent damage during transit with normal handling. Thoroughly inspect shipment immediately upon arrival:
  - a. Inspect crate and packaging for signs of damage caused during shipping and note this on the bill of lading. Trident Emergency Products is not liable for damages incurred during shipping. Photos of damage are suggested.
  - b. Check for shipment shortages against the bill of lading, and note any discrepancies on the bill of lading. Trident Emergency Products is not liable for shortages incurred during shipping.
  - c. Notify Trident of damages to contents or shortages that are not a fault of the carrier.
  - d. Protect pump from any foreign material entering the pump body. Do not remove the protective port caps until piping connections are ready to be made.
  - e. If pump is not to be immediately installed, leave the pump secured in original packing crate and store in a clean, dry location.
2. All GP Series rotary gear pumps are assembled at the factory to a specific shaft rotation for correct porting. Upon receipt, check pump tag for correct pump rotation markings. The pump rotation is not interchangeable and is not field changeable. **Pages 6 and 7** illustrate pump shaft rotation.

### Pump Installation

1. All GP Series rotary gear pumps are shipped **WITHOUT** oil for the timing gears. Installer is required to fill timing gear case reservoir with the correct amount of oil based on the pump mounting position before any pump operation. See **Page 15** of this manual for various acceptable mounting positions and associated oil level check plug location. Fill with a high quality SAE 30W (ISO Grade 100) conventional or synthetic oil. Failure to fill with appropriate amount of oil will damage the pump and void the warranty.



*Do not operate pump without checking for proper oil level and do not over fill timing gear case with oil.*

2. All GP Series rotary gear pumps are shipped with the same standard configuration of plugs, oil fill and magnetic drain plug placement, as shown on **Page 15** of this manual. The pump can be mounted in any of the positions shown. If pump is mounted in any position other than standard, the plugs, oil fill and magnetic drain plug must be re-orientated to match illustrations shown on **Page 15**.
3. Fasteners used to secure the pump to its mounting base must be  $\frac{7}{16}$ " [12mm] diameter, Grade 8 of proper length with lock washers and nuts or Nylock nuts torqued to 70-75 foot-pounds. Use of a thread locking compound (Loctite®) is recommended.

### Piping Connections

1. Suction piping should be of the same size, or one pipe size larger than the pump suction port, particularly for viscous liquids. Optimize suction conditions by mounting pump below liquid tank level (flooded head condition), keeping pipe runs as straight and short as possible, limiting the number of pipe elbows and going around obstacles rather than over – do not create air pockets. Where possible, 45° or 90° fittings should not be used at the pump suction and discharge ports. It is critical that all piping connections are air tight.
2. Discharge piping should be suitably sized to create required downstream system pressure.
3. A strainer on the suction side of the pump is required to prevent foreign matter from entering the pump causing pump seizure or damage to pump rotors that will impede performance. Strainer must be of sufficient size to prevent excessive vacuum conditions and impede liquid flow into the pump causing cavitation. The strainer must have a simple means for cleaning and should be checked regularly for blockage – a clogged strainer will cause pump cavitation.
4. All piping connections to the pump must be properly supported - the pump is not designed to carry piping loads. Piping support brackets cannot be attached to the pump. Teflon tape or pipe sealant from threaded connections must not be allowed to enter piping system. All piping connections must be rated for a minimum of 400 PSI [27.5 BAR] working pressure.
5. To protect foreign material from entering the pump body, clean all suction and discharge piping of scale, weld splatter and metal filings prior to connecting pipes to the foam pump.



*Pump installer is required to install a safety relief valve or other type of pressure limiting device/ system to prevent over-pressurization of the pump and piping. If a safety relief valve is installed in the pumping system, do not adjust to a "set pressure" exceeding 110% of the maximum pump listed working pressure. Trident highly recommends that the discharge side of the relief valve be piped back to the foam storage tank, and not around the pump back to the suction port (unless permitted by the foam system manufacturer).*

## Installer Responsibilities – Pump Orientation

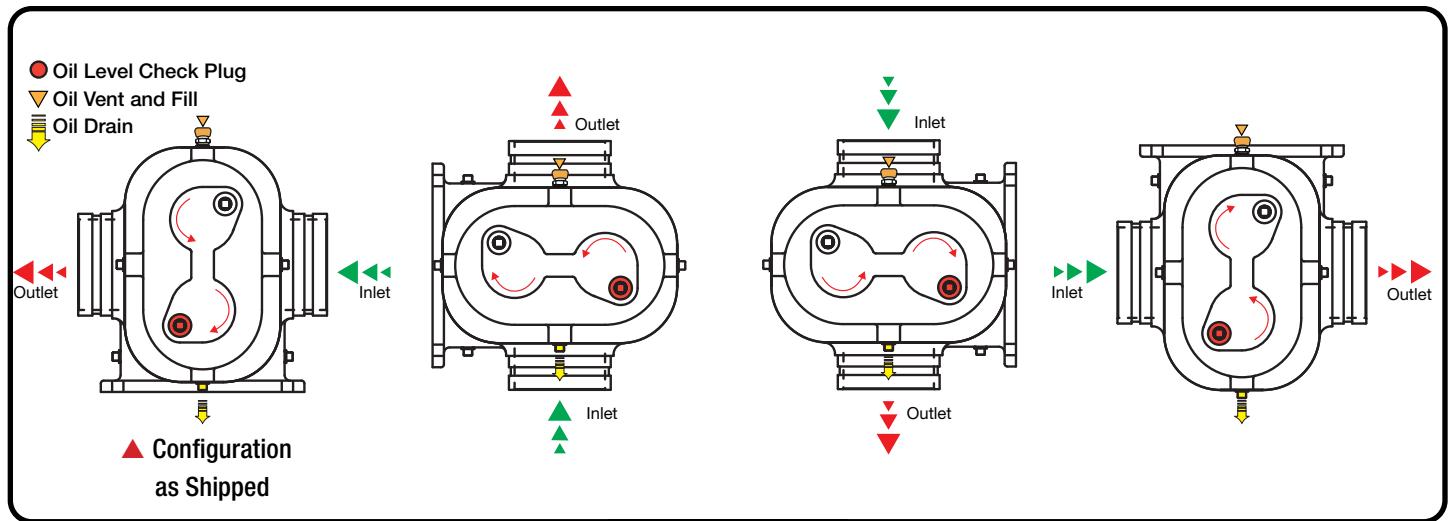
### Pump Rotation for Ease of Piping Installation

The pump can be installed in various orientations to suit your piping needs as shown in **Figure 3** below. **NOTE:** This diagram shows the standard rotation of the pump. Reverse Flow Direction is shown in **Figure 4** below. For other configurations please contact the factory. The installed orientation affects the location of the following; Oil Level Check, Oil Fill, Oil Vent and Oil Drain. These ports utilize 1/4" NPT Pipe Plugs. Refer to **Figures 3 and 4** to alert all operators and maintenance personnel of your specific installation so that proper inspection and maintenance can be performed. **NOTE:** Utilize Teflon tape or pipe sealant on all timing gear cover pipe fittings.

### **WARNING**

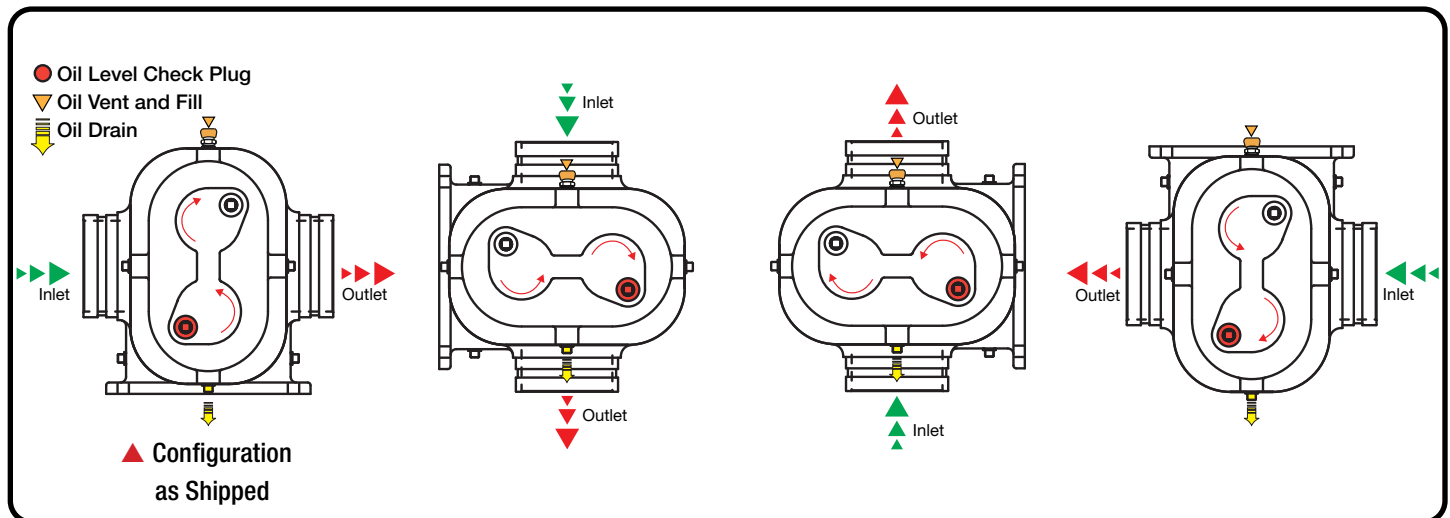
**Pumps are shipped dry, without any oil.** A multi language warning label is attached to the fill/vent port of each pump when shipped. Installer is required to fill timing gear case reservoir with the correct amount of oil based on the pump mounting position before any pump operation. Use images below to determine the oil level check plug based on pump mounting position. An initial fill should be checked after pump installation and prior to start-up. Fill with a high quality SAE 30W (ISO Grade 100) conventional or synthetic oil. Failure to fill with appropriate amount of oil will damage the pump and void the warranty.

### Standard Flow Direction Diagram:



**Figure 3**

### Reverse Flow Direction Diagram:



**Figure 4**

**NOTE:** The left hand image in **Figures 3 and 4** illustrate the standard factory assembly configuration for the oil level plug, oil fill/vent and magnetic oil drain plug. Pump installer must re-orient these fittings to match final mounting position. Failure to do so will void warranty.

## Installer Responsibilities (Continued)

### Pump Shaft Coupling

1. Pump installer is required to provide all drive and coupling components to the pump. All drive components and connections must be properly rated for the horsepower and torque required to drive the pump. Coupling and shaft guards should be provided and properly secured and utilized whenever the pump is running.
2. Proper pump shaft coupling alignment is critical to protect pump seal and bearing life and the life of the coupling. The shaft coupling is not designed to compensate for angular and parallel misalignment and proper alignment must be checked prior to start-up. Closely refer to the coupling manufacturer's installation and alignment instructions during installation.
3. Misalignment of pump and driver shafts can be angular and/or parallel as shown in figures below. Maximum angular offset in the two coupling halves cannot exceed 1 degree; parallel offset cannot exceed 0.015" [0.4mm]. Loosen mounting bolts of pump and driver, make alignment, and re-tighten bolts to proper torque rating provided by coupling manufacturer. See Figure 5 below.
4. Routine inspection of coupling alignment should be performed. Failure of pump seals, bearings, and abnormal pump wear will not be covered by warranty due to improperly installed and aligned shaft coupling.

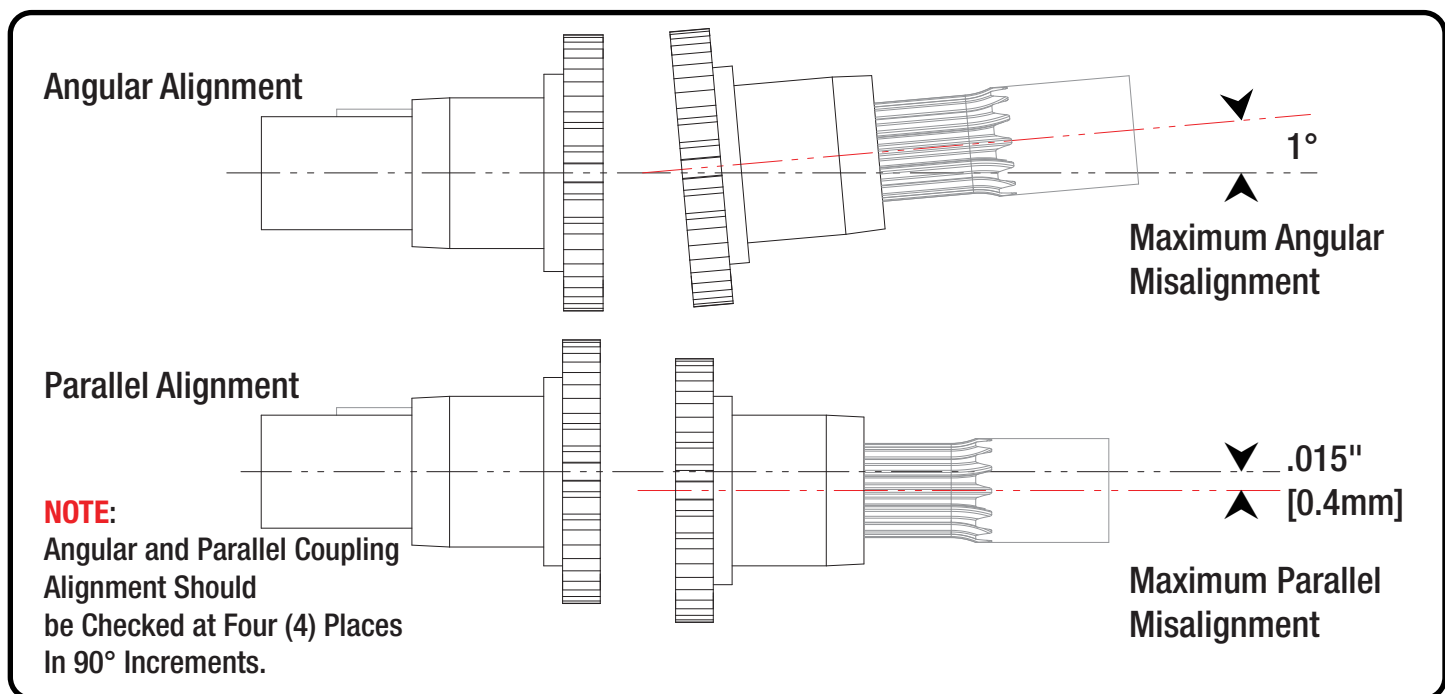


Figure 5

### Pre Startup Inspection



*Lock-Out/Tag-Out the pump power source until installation is complete and pre-start-up inspections are complete.*

1. Check for proper oil level and placement of oil level check, oil fill, oil vent and oil drain. Refer to Figures 3 and 4 on Page 15.
2. Check pump mounting fasteners for proper torque. Refer to Page 14 Pump Installation Item #3.
3. Inspect all drive components and connections for tightness and proper alignment. Verify that all guards are securely in place.
4. Inspect all piping supports. Ensure that the foam pump is not supporting any of the suction/discharge pipes.
5. Flush and leak test all suction and discharge piping.
6. All suction and discharge valves must be fully open. Do not start a pump in a "dead head" condition. Close all drain valves.
7. Verify pump shaft turns freely – not bound or seized.
8. Verify correct rotation of pump power source.
9. During initial system start-up, bump start the foam pump driver to ensure correct pump shaft rotation. Pages 6 and 7 illustrate pump shaft rotation.



## Repairing The Foam Pump

Pump repairs should only be carried out by experienced personnel with the proper tools, equipment and facility to perform the work required as outlined in this manual. Failure to perform repairs correctly can result in a pump that operates improperly.

### Pump Disassembly

#### Repairing the Foam Pump

The disassembly procedures listed below will allow for the replacement of the timing gears if they have failed from lack of lubrication, oil or foam seals should a leak occur, roller bearings if they have failed, and complete shaft/rotor assemblies if they have been damaged. Individual replacement parts and repair kits are listed on the **Page 22** of this manual. It is highly recommended that all seals and bearings be replaced when any disassembly beyond the replacement of the timing gears has taken place. Follow the steps listed below and refer to the various photos/diagrams included to disassemble the foam pump. Refer to **Page 30** for required repair tools.

Prior to disassembly, the hydraulic adapter/or bell housing/or cover plate and coupling should be removed from the drive shaft end. Place matching marks on the timing gear cover, pump heads and pump body to assist with the reassembly process.



DANGER

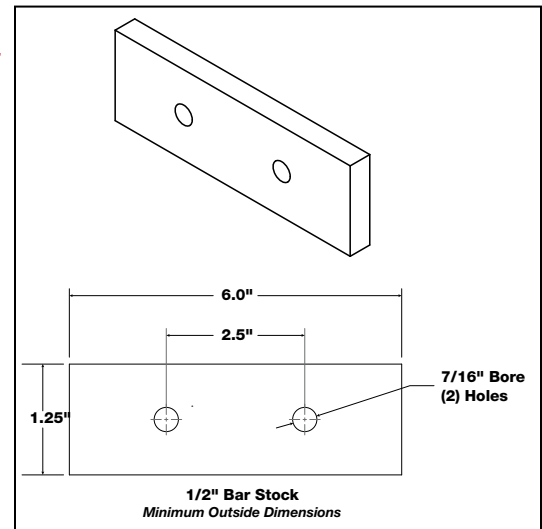
*Only 304 series stainless steel fasteners are used for this foam pump. If fasteners are replaced they must be the same grade, size (including length) and material. Do not reuse previously torqued bolts. A hardware kit is available and listed on Page 22.*

#### Pump Disassembly

1. Remove the 1/4" NPT magnetic drain plug with a 1/4" Allen wrench and drain the oil from timing gear case. See **Photo 111**.
2. Loosen and remove the (12) 3/8" bolts and lock washers that attach the cast iron timing gear cover to the pump head. Separate the cover from the pump head using 3/8" bolts in each of the two (2) tapped holes located on opposite corners of the pump head. Refer to **Photo 113** on **Page 17** for the tapped hole location and **Page 22** for details. Remove the O-Ring gasket from the groove in the brass pump head. **NOTE:** Do not reuse any seals or gaskets.
3. Wedge a plastic block **Tool T17** (approximately 3/4" x 2" x 10") into the intake or discharge port to keep the rotors/shafts from turning. Then loosen the timing gear locknuts using a 1 1/16" socket **Tool T02**, but leave them on for now to protect the threads at the end of the upper and lower shaft. See **Photo 112**.
4. Fabricate a gear pulling tool **T06** from a steel bar as shown in **Figure 6**. Use (2) 3/8"-16 x 2 1/2" long hex head bolts See **Photo 113** to insert thru the holes in the bar and into the threaded holes provided in the timing gear. Tighten bolts **EVENLY** on the puller until they make contact with locknut – *making sure locknut is positioned to protect the shaft threads* See **Photo 114**. Tap with plastic/hard rubber dead blow hammer **Tool T16** to unseat gear from shaft taper. Retightening of the bolts and more tapping with the hammer may be necessary to unseat the gears from the shaft. Repeat this process for both timing gears.
5. Remove both sets of timing gear locknuts and timing gears. If the repair was only to replace the timing gears, stop the disassembly here and refer to the assembly instructions starting on **Page 20**. If the timing gears are to be reused, place a mark indicating the Top Gear and the Bottom Gear to reinstall them in the same manner as they were originally installed. *Otherwise continue to next step.*



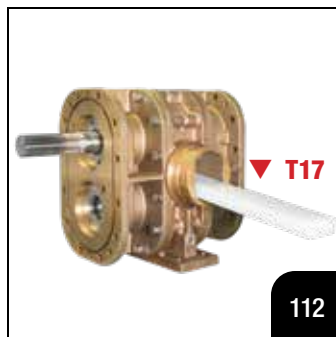
**Tool T02**



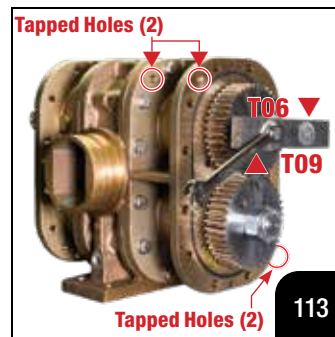
**Figure 6**



**111**



**112**



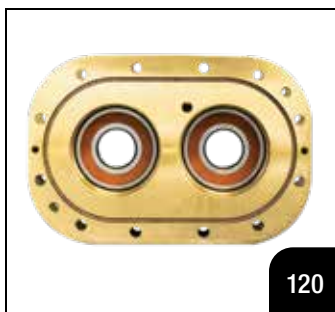
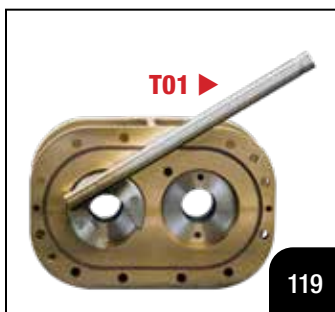
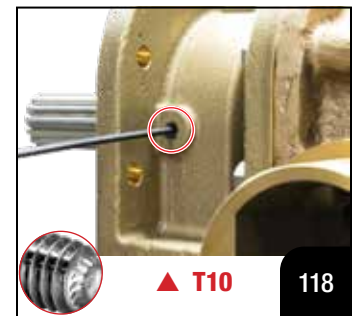
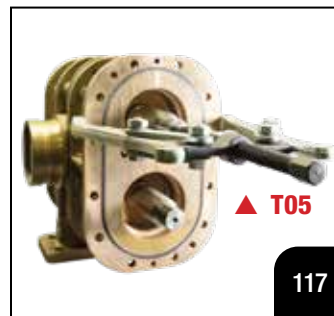
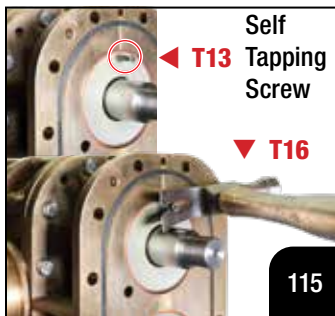
**113**



**114**

## Pump Disassembly (Continued)

6. Remove oil seals from pump head. A self-tapping screw **Tool T13** can be used to remove oil seal. Insert screw into seal being sure not to go all the way through and use a hammer or pry bar on the head of the screw to pry out seals. A screwdriver **Tool T15** can also be driven into the seal and used to pry out seals. Use a block of wood or plastic to pry against as to not damage the surface of the pump head. Discard the oil seals. Refer to **Photo 115**. If the repair was only to replace the oil seals, stop the disassembly here and refer to the assembly instructions starting on **Page 20**. *Otherwise continue to next step.*
7. Before disassembly apply match marks, **(A-A) (B-B)** to the pump body and heads making note of the "S" location on the heads in relation to the body. Remove the (12) bolts and lock washers attaching the head to the pump body. Use two (2) jaw pullers, **Tool T05** simultaneously to pull off first head as shown in **Photo 116**. Remove the square-ring rubber gasket between the head and pump body section. **CAUTION:** When using the two jaw pullers (**Tool T05, Photo 116**) to remove the first head from the pump assembly, it is important to apply equal pressure to each of the pullers. Only tighten the puller handle by one (1) revolution at a time, alternating from puller to puller. The pump head must be pulled away from the pump body evenly to avoid damage to the shaft and rotor assemblies. **NOTE:** The four (4) bolts that are closest to the inlet / outlet ports are 1" in length on the GP120 and GP160 pump models only. All other bolts are 1¼" long. **NOTE:** Do not reuse any seals or gaskets.
8. Place pump on bench as shown and use jaw puller **Tool T05** to push the shaft/rotor assemblies out of head. (**Photo 117**).
9. Remove the twelve (12) bolts and lock washers from the other pump head, and separate it from the pump body using 3/8"-16 x 1¼" full thread bolts in each of the two (2) tapped holes located on opposite corners of the pump head. Refer to **Photo 113** on **Page 17** for the tapped hole location and **Page 22** for details. **NOTE:** Remove the pump head by using equal turns on each of the two (2) bolts. Remove the square-ring gasket. **NOTE:** Do not reuse any seals or gaskets.
10. The four (4) roller bearings can now be removed from the pump heads. First loosen the socket head set screws that lock the bearing retainer nut as shown in **Photo 118**.
11. Now loosen and remove the four (4) bearing retainer nuts using a pin spanner wrench **Tool T01** as shown in **Photo 119**. If a suitable pin spanner is not available it may be purchased from Trident as **Part # 29.004.0**.
12. The (4) roller bearings can now be tapped out from their bore from the back side of the head using a small brass or plastic rod and light hammer. See **Photo 120**. If the repair was to replace the roller bearings, stop the disassembly here and refer to the assembly instructions starting on **Page 19**. *Otherwise continue to next step.*
13. The stationary portion of the four (4) mechanical seals can now be removed from the pump heads. Again use a small brass or plastic rod and light hammer to gently tap the seal half out from the back side. See **Photo 121**. **NOTE:** Do not reuse the mechanical seals. Only replace with parts that are approved by Trident Emergency Products.
14. The rotating portion of the four (4) mechanical seals can be removed from the shaft/rotor assemblies by prying on the spring until the rubber boot can be pulled off the shaft. See **Photo 122**. **NOTE:** Do not reuse the mechanical seals. Only replace with parts that are approved by Trident Emergency Products.



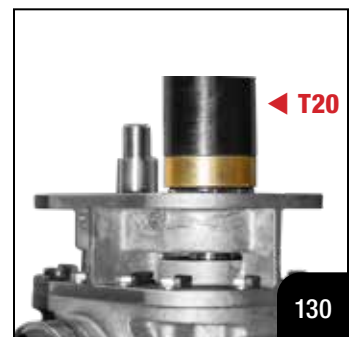
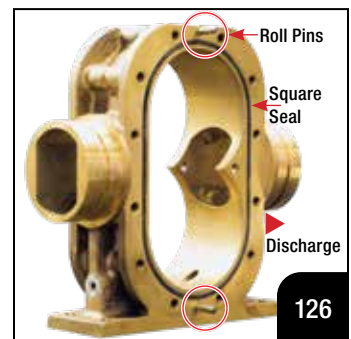
## Pump Assembly - Rebuilding the Foam Pump

**NOTE:** Prior to installing bearings, it is recommended to hydrostatically test the pump at 500 PSI [34 Bar] for 5 minutes to ensure seal integrity.

- Place half of the mechanical seal into pump head. Apply a thin film of U.S. Sealube Rubber Lubricant Emulsion IFC Tool T25, or equivalent, to all rubber surfaces of the mechanical seal, then press into bore using the cardboard that was protecting the seal while it was in the box. **IMPORTANT:** Do not touch the sealing face of the seal. (See Photo #123 of seal in head).
- Install the other mechanical seal into pump head as shown in Photo #124.
- Apply a thin film of U.S. Sealube Rubber Lubricant Emulsion IFC Tool T25, or equivalent, to all rubber surfaces of the mechanical seal and adjoining pump shaft, and then slide the seal onto the shaft and press into place using an appropriate seal pusher, use caution not to touch the sealing faces. See Photo #125 of mechanical seal on shaft, Tool T18 is used to press seal. **NOTE: All Sealing Faces of the Mechanical Seals Must Be Cleaned** using the supplied alcohol wipes.
- Place square seal rings into pump body. Install roll pins as circled. (See Photo #126)
- Mate one pump head with the body being sure there are no contaminants on the sealing faces. Use 3/8" stainless steel bolts and lock washers, hand tighten only. Note the position of the "S" in the pump head casting, which marks the suction side of the pump. (See Photo #127 of one head installed onto pump body). **NOTE:** Verify that the Match Marks applied during disassembly (A-A) (B-B) align.
- Place the body and head assembly on bench with the head side down. (See Photo #128).
- Place the shaft/rotor assemblies into the body being careful not to damage the mechanical seals. Be sure the pump head face and rotor faces are clean of debris. (See Photo #128 of shaft assemblies in body/head assembly).
- Slide head onto pump assembly again being careful not to damage the seals. Be sure that the "S" marking the suction side of the pump is the same on both sides. Be sure that the face of the head is clean. Attach with bolts and lock washers. (See Photo #129 of other head going on). Torque the pump head bolts to a value of 20-22 lb-ft.
- Next install bearings. Position pump in arbor press as shown in Photo #130. Place the bearing onto the shaft and press bearing into place with bearing insertion tool, Tool T20. The opposite end of the shaft must be supported axially using Tool T05 to avoid damaging the heads and rotors. The bearing must be pressed completely onto the shaft, up against the shoulder on the shaft. Repeat this process for the remaining bearings making sure to support the opposite end of the shaft. After the bearings are installed, check that the pump shafts rotate freely. Refer to Photo #130 and Page 22 for Bearing Press and Shaft Support Details. **NOTE: For proper bearing installation, Trident recommends the use of a bearing heater to assist in the expansion of the inner bearing race. To prevent possible bearing seal damage, do not exceed a temperature value of 250° F [120° C].**

### **WARNING**

Only use parts approved by Trident Emergency Products when making pump repairs. Failure to do so will void pump warranty. When replacing mechanical seals follow seal manufacturer's installation instructions supplied with the new seals. **Never Reuse Old Seals.** Handle new seals carefully.



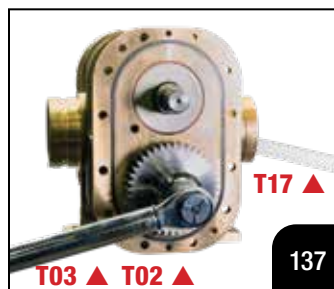
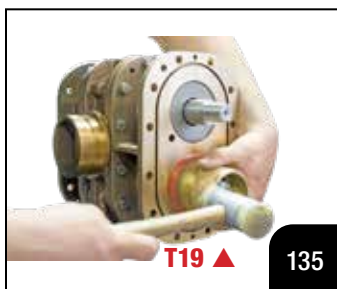
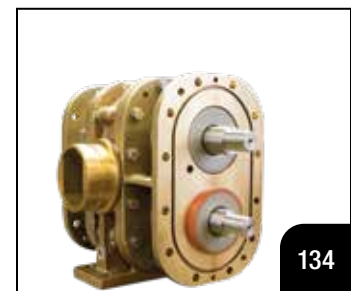
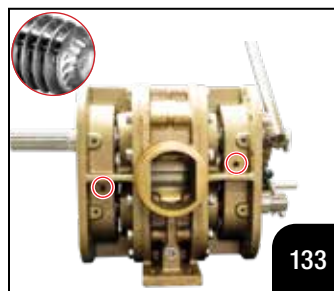
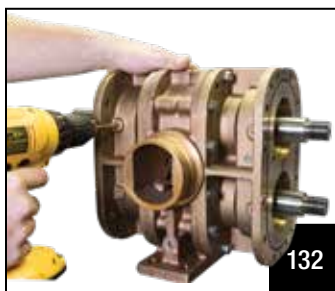
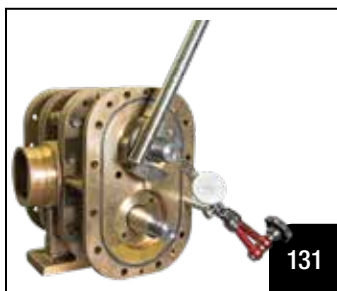
## Pump Assembly (Continued)

### Adjusting Rotor Clearance

1. Install bearing nuts loosely into heads. Place dial indicator **Tool T14** on one end of shaft. Apply a small amount of anti-seize compound **Tool T22** in two (2) spots of each bearing nut before screwing into the head.
2. Tighten bearing nut on one side all the way and zero the indicator. Then loosen the nut.
3. Tighten other adjusting nut and note total rotor clearance. Clearance should be 0.005" – 0.007" [.127 – .178mm]. Loosen adjusting nut.
4. Retighten adjusting nut from **Step 2** until indicator reads half of the total clearance. (See **Photo #131** showing dial indicator on shaft).
5. Slowly tighten opposing nut from **Step 3** until indicator begins to move. Do not overtighten. Using a #7 .201" [5.1mm] size drill bit, spot face the bearing nuts for the set screws. **NOTE:** Use caution as to not damage threads for the set screw. Place the drill bit into the set screw hole and spot face the bearing nut to remove the threads allowing the set screw to seat properly. (See **Photo #132** of drill bit in set screw hole). **NOTE:** Vacuum out all metal filings remaining from the spotting operation.
6. Install set screws using blue thread locker **Tool T21** and tighten enough to secure bearing adjusting nuts. Do not overtighten. (See **Photo #133**).
7. Repeat process for the other shaft.

### Oil Seal and Timing Gear Installation

1. Install oil seals into bores using a square edge hollow sleeve. (See **Photos #134 and #135**)
2. The order of timing gear installation is based on rotation of the input or drive shaft:
  - Pumps with Right-Hand (clockwise) driveshaft rotation: Install timing gear on lower shaft first.
  - Pumps with Left-Hand (counter-clockwise) driveshaft rotation: Install timing gear on upper shaft first.
  - Pump shaft rotation is viewed from the driveshaft end of the pump.
3. Use anti-seize compound **Tool T22** on threads and tighten locknut to 175 lb-ft. Use **Tool T17** to stop shafts from spinning while tightening. (See **Photo #137** with plastic block).
4. While installing timing gears, insert a plastic block, **Tool T17**, between the pumping rotors to prevent the shafts from spinning during tightening. See **Photo #137** with plastic block. Remove plastic block and be sure shafts spin freely.
5. Apply anti-seize compound, **Tool T22**, to locknut and tighten onto the shaft using a torque wrench and a 1-1/8" socket to 125 lb-ft. Install and tighten one gear at a time.
6. Place round O-Ring into pump head and install timing gear cover using bolts and lock washers. Torque bolts to 20-22 lb-ft.
7. Fill oil to appropriate level according to pump mounting position. See images in **Figures 3 and 4 on Page 15** to select correct oil level check plug. Fill with a high quality SAE 30W (ISO Grade 100) conventional or synthetic oil. Failure to fill with appropriate amount of oil will damage the pump and void the warranty.
8. Reinstall breather vent into fill hole based on the orientation being used. See **Page 15** for proper placement of oil level check, oil fill, oil vent and oil drain.
9. Reinstall the hydraulic adapter/or bell housing/or cover plate and coupling previously removed with the original hardware.



## Troubleshooting Guide

Problem	Likely Cause	Corrective Action
<b>Pump Does Not Turn</b>	Pump Seized.	Inspect pump rotors for foreign bodies, bearing failure, shaft damage – repair or replace as required.
	Faulty or Misaligned Coupling.	Inspect and replace or realign coupling as required.
	Pump Driver Inoperative.	Inspect and repair as required.
	Damaged/Missing Shaft/Rotor Key.	Replace shaft/rotor key.
<b>Excessive Noise</b>	Faulty or Misaligned Drive Coupling.	Inspect and repair/replace as required.
	Pump Cavitation.	Inspect pump suction piping for blockage and proper valve operation. Check piping with vacuum gauge – reading should be less than 10" hg.
	Worn or Damaged Bearings.	Repair or Replace Pump.
	Timing Gear Noise.	Timing gear noise can increase significantly over 900 RPM. Hearing protection is required.
	Pump Driver is Malfunctioning.	Inspect and repair as required.
<b>Excessive Vibration</b>	Faulty or Misaligned Drive Coupling.	Inspect and repair/replace as required.
	Pump Cavitation.	Inspect pump suction piping for blockage and proper valve operation. Check piping with vacuum gauge – reading should be less than 10" hg.
	Worn or Damaged Bearings.	Repair or Replace Pump.
<b>Reduced or No Flow</b>	Clogged Suction Strainer.	Clean or replace strainer screen.
	Pump Cavitation.	Inspect pump suction piping for blockage and proper valve operation. Check piping with vacuum gauge – reading should be less than 10" hg.
	Pump Body and/or Rotors Worn.	Inspect, repair or replace, as required.
	Low/Insufficient Pump Speed.	Inspect pump driver for proper speed range(s).
	Incorrect Pump Shaft Rotation.	Verify pump is running in correct rotation, and pump rotation was ordered and shipped correctly.
<b>Lubrication</b>	Oil Temperature.	Excessive oil temperatures will breakdown the lubrication properties and lead to excessive timing gear wear. Temperature should be monitored.
	Oil Level.	Oil level and quality must be maintained as outlined under the Periodic Pump Inspection and Maintenance.
	Oil Type.	Use a high quality SAE 30W [ISO Grade 100] oil when adding or changing lubricant. Conventional or Synthetic oils are acceptable.
	Oil Change Interval.	Oil must be changed as outlined under the Periodic Pump Inspection and Maintenance.

## Relief Valve Information



Trident Emergency Products can provide a relief valve suitable for any model and size of foam pump. Relief valves are constructed of all bronze/brass and stainless steel with EPDM seating and are suitable for any type of foam concentrate. Valves are available with set pressures from 50 PSI to 330 PSI.

Contact Trident for a Relief Valve Data Sheet to assist in selecting the proper valve size based on required pump flow and operating pressure.

## Repair Kits and Special Tools

**MINOR** and **MAJOR** Repair Kits are available as follows:

**MINOR:** Timing Gears

*Kit #27.020.0 Timing Gear Replacement Kit consisting of:*

- 40-Tooth Timing Gear, 2-pieces · 15.002.1
- Timing Gear Locknut, 2-pieces · 04.074.0
- Timing Gear Cover O-Ring, 1-piece · 26.264.0

**MINOR:** Bearings and Seals

*Kit #27.020.1 Bearing and Seal Replacement Kit consisting of:*

- Mechanical Seals, 4-pieces · 03.018.0
- Oil Seals – 2-pieces · 03.019.0
- Sealed Roller Bearings, 4-pieces · 16.010.0
- Pump Head to Body Square Seals, 2-pieces · 03.020.0
- Timing Gear Cover O-Ring, 1-piece · 26.264.0
- Brass Bearing Adjusting Nut, 4-pieces · 04.073.0

**MAJOR KIT for GP120:** Minor Kits, Plus Major Components

*Kit #27.020.5 Major Component Replacement Kit consisting of:*

- Bearing and Seal Replacement Kit · 27.020.1
- Drive Shaft Assembly with Shaft, Rotor and Key · 05.052.0
- Driven Shaft Assembly with Shaft, Rotor and Key · 05.052.1
- Timing Gear Replacement Kit · 27.020.0

**MAJOR KIT for GP160:** Minor Kits, Plus Major Components

*Kit #27.020.2 Major Component Replacement Kit consisting of:*

- Bearing and Seal Replacement Kit · 27.020.1
- Drive Shaft Assembly with Shaft, Rotor and Key · 05.038.1
- Driven Shaft Assembly with Shaft, Rotor and Key · 05.039.1
- Timing Gear Replacement Kit · 27.020.0

**TOOLS:** Trident Tools for Bearing and Seal Replacement:

- Bearing Retainer Spanner Wrench (T01) · 29.004.0
- Gear Puller, Bolt on Style (T06) · 29.002.0
- Driver, Mechanical Seal (T18) · 29.003.0
- Bearing Insertion Tool (T20) · 29.005.0

**MAJOR KIT for GP200:** Minor Kits, Plus Major Components

*Kit #27.020.6 Major Component Replacement Kit consisting of:*

- Bearing and Seal Replacement Kit · 27.020.1
- Drive Shaft Assembly with Shaft, Rotor and Key · 05.055.0
- Driven Shaft Assembly with Shaft, Rotor and Key · 05.055.1
- Timing Gear Replacement Kit · 27.020.0

**MAJOR KIT for GP300:** Minor Kits, Plus Major Components

*Kit #27.020.3 Major Component Replacement Kit consisting of:*

- Bearing and Seal Replacement Kit · 27.020.1
- Drive Shaft Assembly with Shaft, Rotor and Key · 05.038.0
- Driven Shaft Assembly with Shaft, Rotor and Key · 05.039.0
- Timing Gear Replacement Kit · 27.020.0

**HARDWARE KIT for GP120/160/200/300**

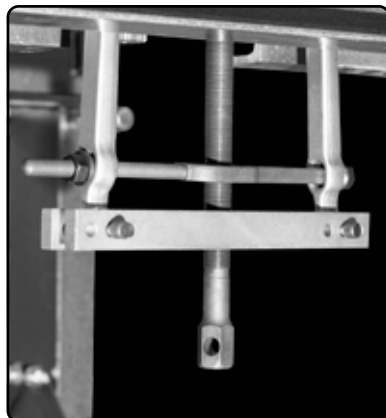
**NOTE:** This kit is required when ordering a MAJOR repair kit

*Kit # 27.020.4 Fasteners for Pump Reassembly consisting of:*

- Knurled cup SS set screw ¼"-20 - 4-pieces · 04.114.0
- Hex nuts ⅜"-16, 12-pieces · 04.091.0
- Alignment roll pins, SS, 6-pieces · 17.010.0
- Timing gear locknut, 2-pieces · 04.074.0
- Lockwasher ⅜", SS, 48-pieces · 04.076.0
- Hex head cap screw ⅜"-16 x 1", SS, 8-pieces · 04.090.0
- Hex head cap screw ⅜"-16 x 1¼", SS, 48-pieces · 04.075.0

**NOTE:** There will be eight (8) extra ⅜"-16 x 1¼" bolts when this kit is used for repairing the GP120/GP160 pumps.

**NOTE:** Refer to Page 30 for required repair tools.



**Pump Head**  
**3/8" Tapped Holes**  
**for Head Removal** ►

◀ **Example of**  
**Bearing Press**



## Periodic Pump Inspection and Maintenance

### WARNING

Pump inspection, maintenance and/or removal require close proximity to pump driver or drivelines. Observe proper **Lock-Out/Tag-Out Procedures** to prevent accidental start-up and potential bodily injury or equipment damage.

Failure to perform routine pump maintenance and installation inspection can lead to pump or system failure.

### **Pump and Installation Inspection**

1. Check timing gear oil level by removing appropriate level check plug (based on pump mounting orientation) as shown on **Page 15**. Add a high quality SAE 30W [ISO Grade 100] conventional or synthetic oil as required. This check should be done monthly.
2. Inspect pump for leaks at seals, pump heads to pump body and timing gear cover to pump head and repair as required. Contact Trident Emergency Products for correct pump repair parts.
3. During pump inspection, or after any repairs, perform the following checks:
  - a. Inspect drive coupling and drive components for misalignment, loose fasteners, signs of excess wear or damage and repair/replace as required.
  - b. Inspect pump mounting fasteners for proper torque, signs of excess wear or damage and repair/replace as required. Do not reuse previously torqued bolts.
  - c. Inspect all piping connections. Check Victaulic connections for leaks, loose, worn or damaged coupling sections and fasteners, and repair/replace as required. Piping system must be air tight.
  - d. Inspect system valves for proper operating condition and stand-by positions.
  - e. Inspect, clean and flush suction side strainer located between the foam tank and foam pump (not supplied) of foreign matter.
  - f. Operate the system at enough pressure to open the relief valve and verify flow and system pressure drop. Once re-seated, the relief valve should not leak.

### **Pump Maintenance**

1. Oil should be drained and replaced every six (6) months with high quality SAE 30W [ISO Grade 100] conventional or synthetic oil.
2. See **Page 22** of this manual for Minor and Major repair kits. When ordering pump parts, always provide pump model and serial number. Only use parts by Trident Emergency Products when performing repairs to the pump.

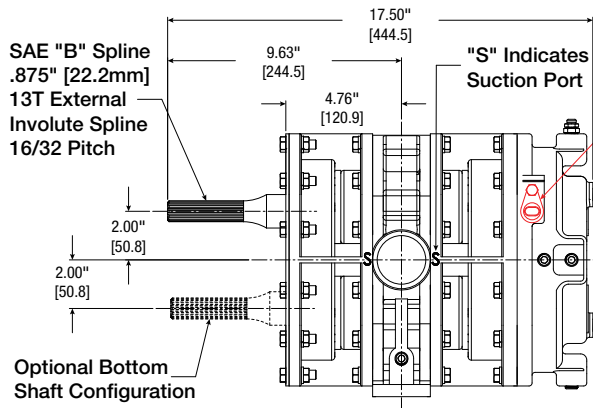
### **Pump Removal for Repair**

### CAUTION

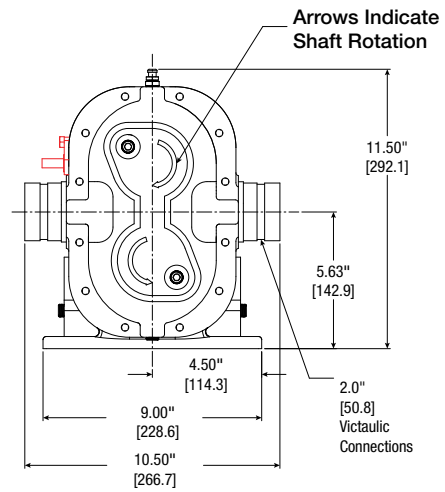
Rotary gear pumps are heavy and service personnel should use equipment with the proper weight rating for lifting pumps, and utilize correct personal protection equipment when performing repairs and handling heavy loads.

1. Disconnect pump drive device and observe established **Lock-Out/Tag-Out Procedures**.
2. Close the tank supply and return valves.
3. Drain suction and discharge piping. Drain pump.
4. Disconnect suction and discharge piping connections allowing room for pump removal.
5. Properly support and secure pump prior to loosening mounting hardware.
6. Remove pump from installation and perform repairs in a clean environment. Follow disassembly and assembly instructions listed in this manual.
7. Drain oil prior to pump disassembly and dispose of properly.
8. See **Page 32** of this manual for repair/replacement parts. When ordering pump parts always provide the pump model and serial number. **NOTE:** Only use parts approved by Trident Emergency Products when performing repairs to the pump.
9. Minor and Major repair kits are listed on **Page 22**.
10. Repair tools are listed on **Page 30**.

## GP120/160 Universal Mount Dimension Information



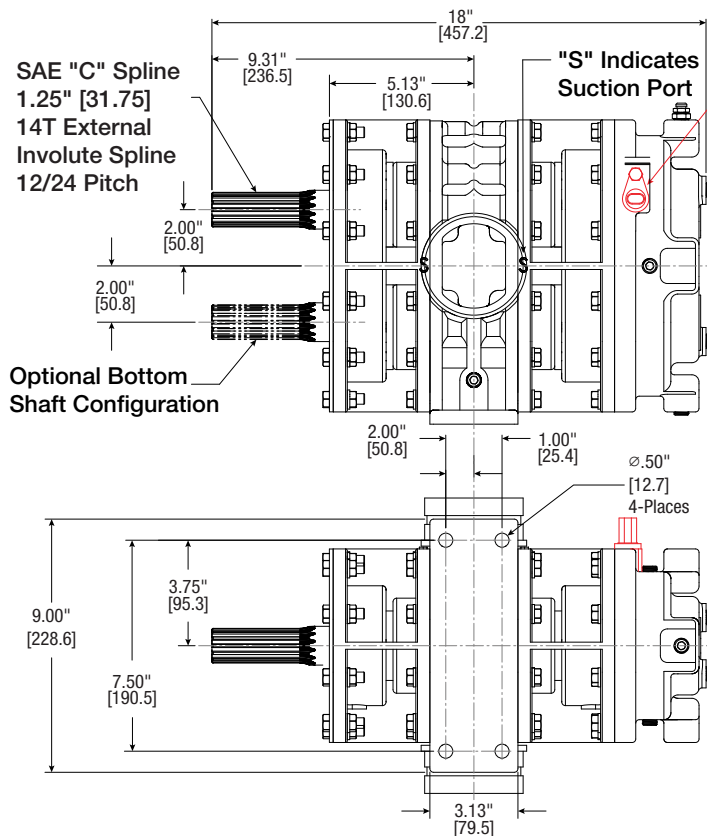
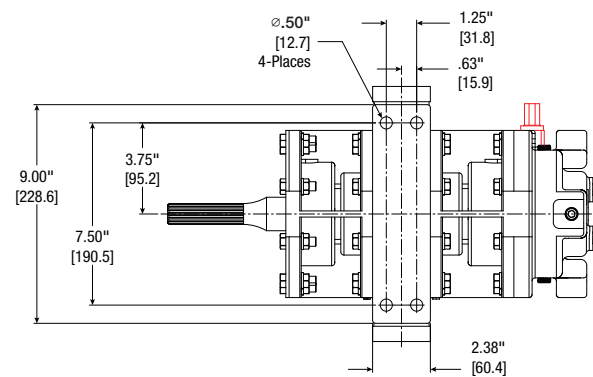
Optional Speed  
Sensor #49.001.1



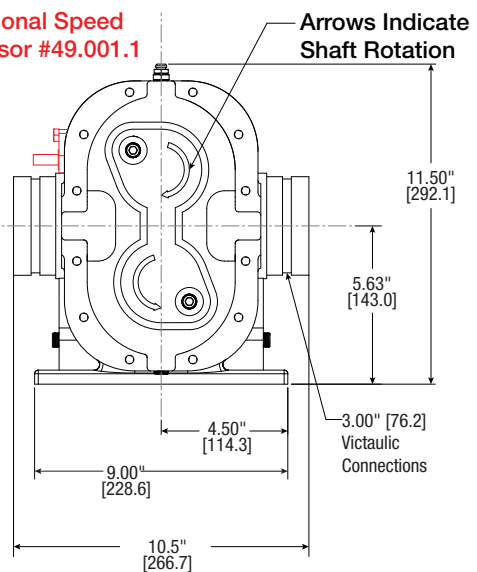
**GP120U Rotary Gear Pump, Universal Design for  
PTO/Electric Motor, Engine or Water Motor Drivers:**

GP120U-T Top Drive Shaft Configuration  
GP120U-B Bottom Drive Shaft Configuration

Assembled Pump Weight: 135 Pounds [62 kg.]



Optional Speed  
Sensor #49.001.1



**GP160U Rotary Gear Pump, Universal Design For  
PTO/Electric Motor, Engine or Water Motor Drivers**

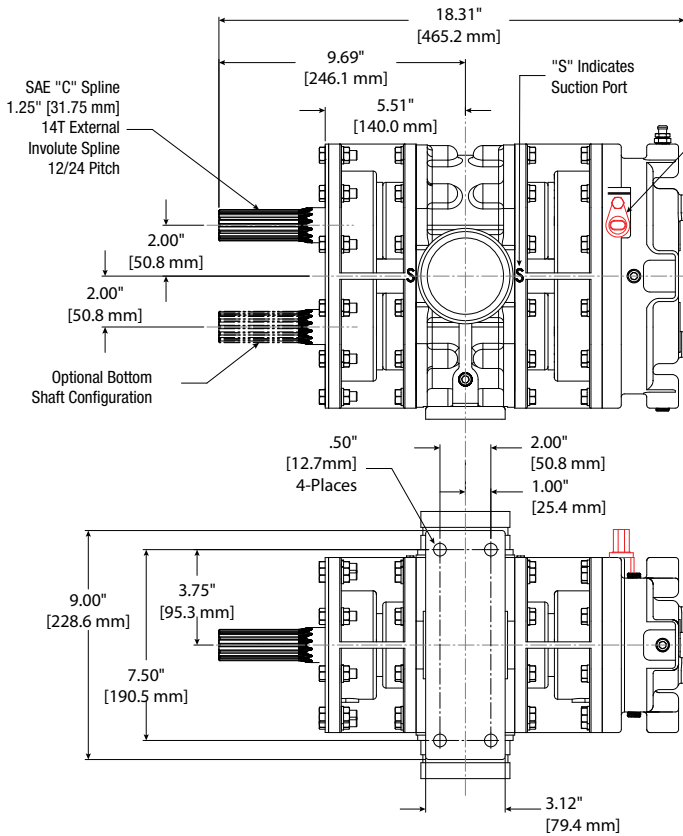
GP160U-T Top Drive Shaft Configuration  
GP160U-B Bottom Drive Shaft Configuration

Assembled Pump Weight: 150 Pounds [69 kg.]

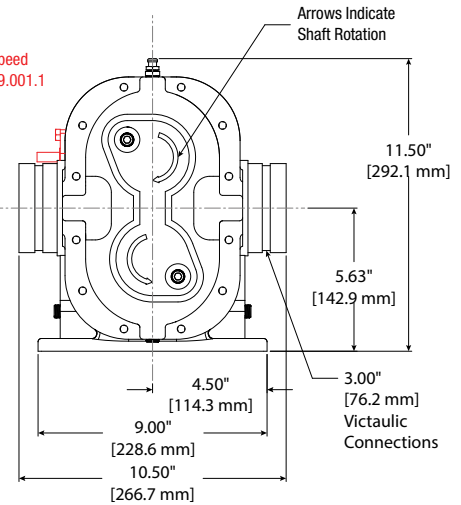
Dimensions Shown:  
Inches  
[mm]



## GP200/300 Universal Mount Dimension Information



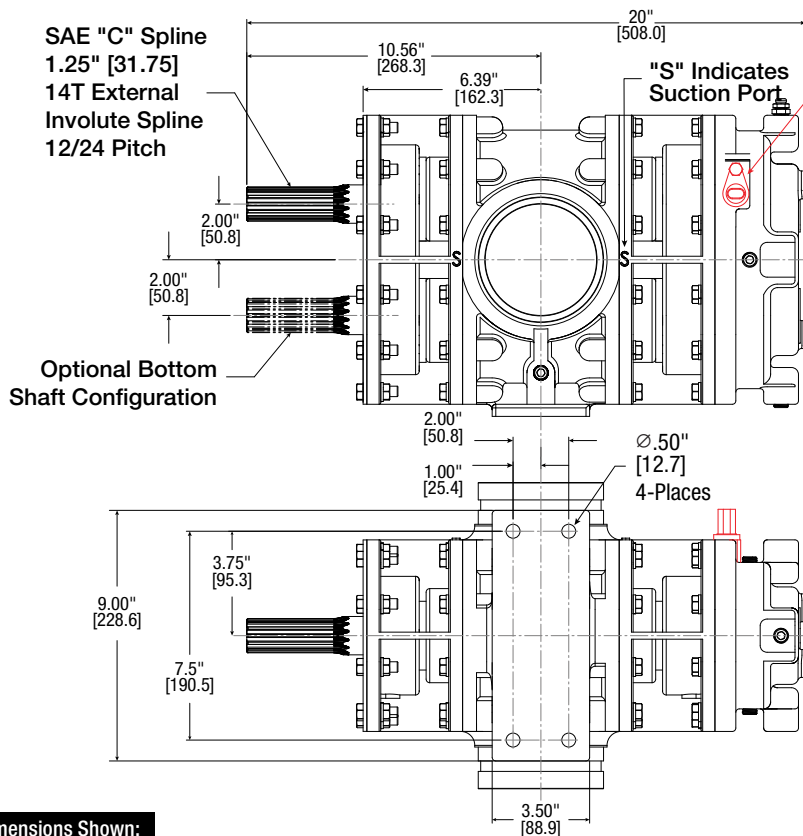
Optional Speed  
Sensor #49.001.1



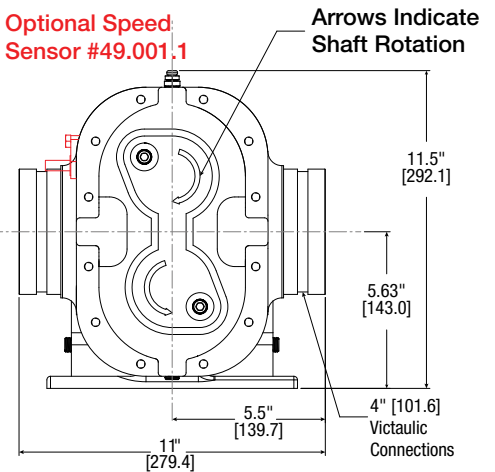
**GP200U Rotary Gear Pump, Universal Design for  
PTO/Electric Motor, Engine or Water Motor Drivers:**

GP200U-T Top Drive Shaft Configuration  
GP200U-B Bottom Drive Shaft Configuration

Assembled Pump Weight: 160 Pounds [72 kg.]



Optional Speed  
Sensor #49.001.1



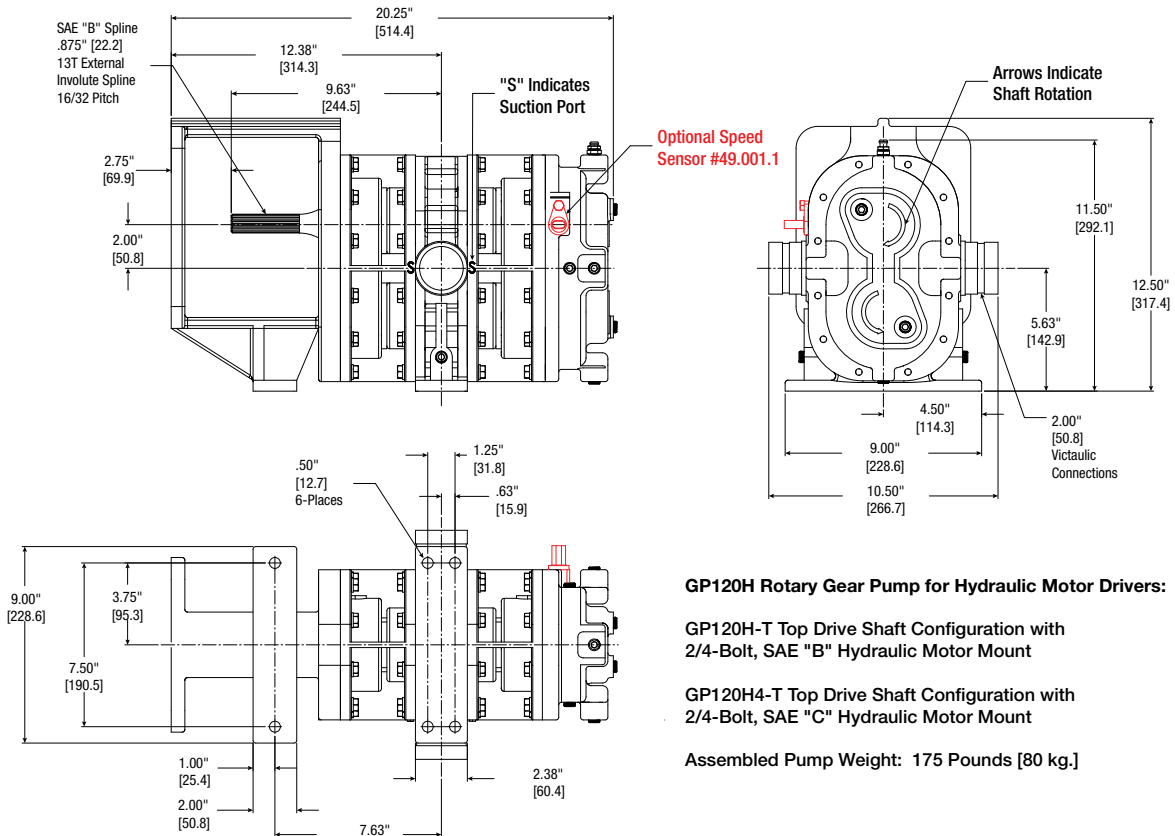
**GP300U Rotary Gear Pump, Universal Design  
For PTO/Electric Motor,  
Engine or Water Motor Drivers**

GP300U-T Top Drive Shaft Configuration  
GP300U-B Bottom Drive Shaft Configuration

Assembled Pump Weight: 180 Pounds [82kg.]

Dimensions Shown:  
Inches  
[mm]

## GP120/160 Hydraulic Mount Dimension Information

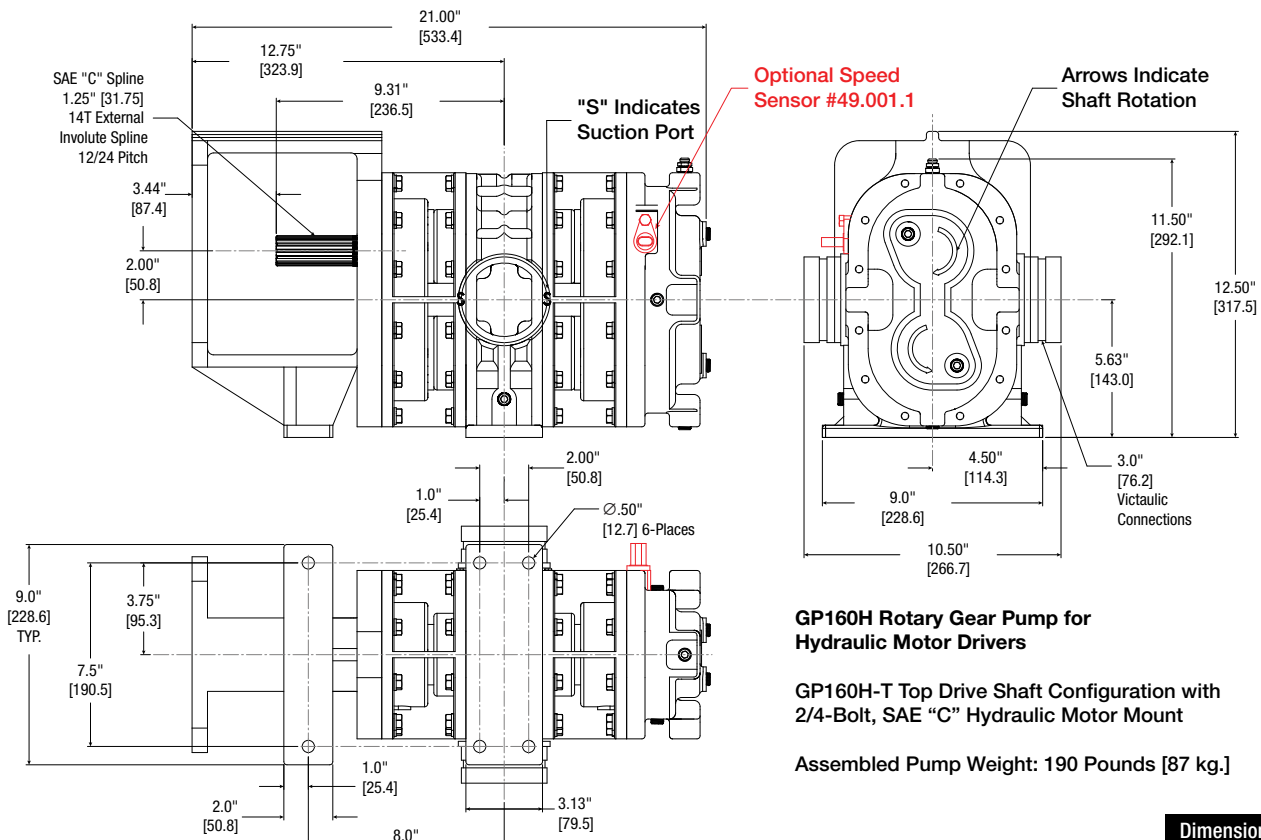


### GP120H Rotary Gear Pump for Hydraulic Motor Drivers:

GP120H-T Top Drive Shaft Configuration with  
 2/4-Bolt, SAE "B" Hydraulic Motor Mount

GP120H4-T Top Drive Shaft Configuration with  
 2/4-Bolt, SAE "C" Hydraulic Motor Mount

Assembled Pump Weight: 175 Pounds [80 kg.]



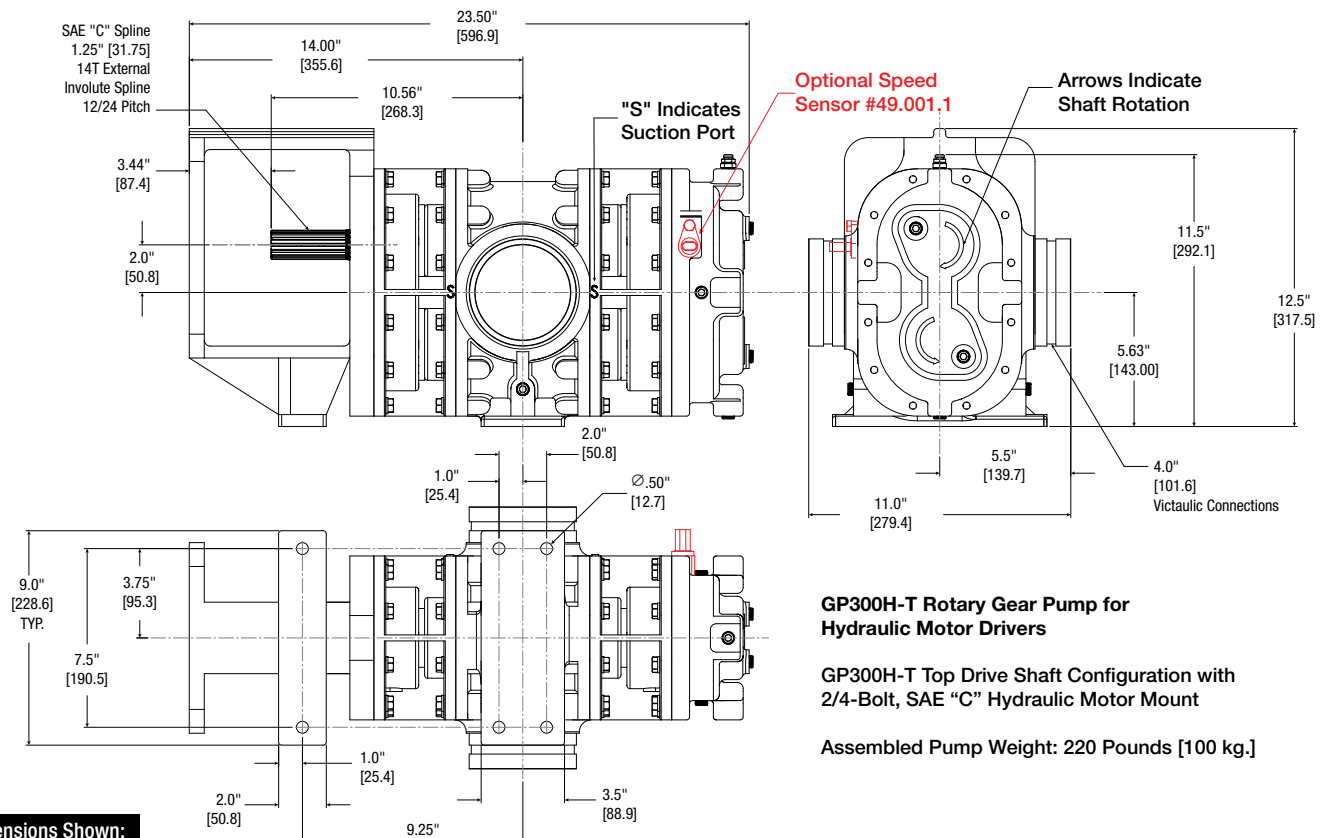
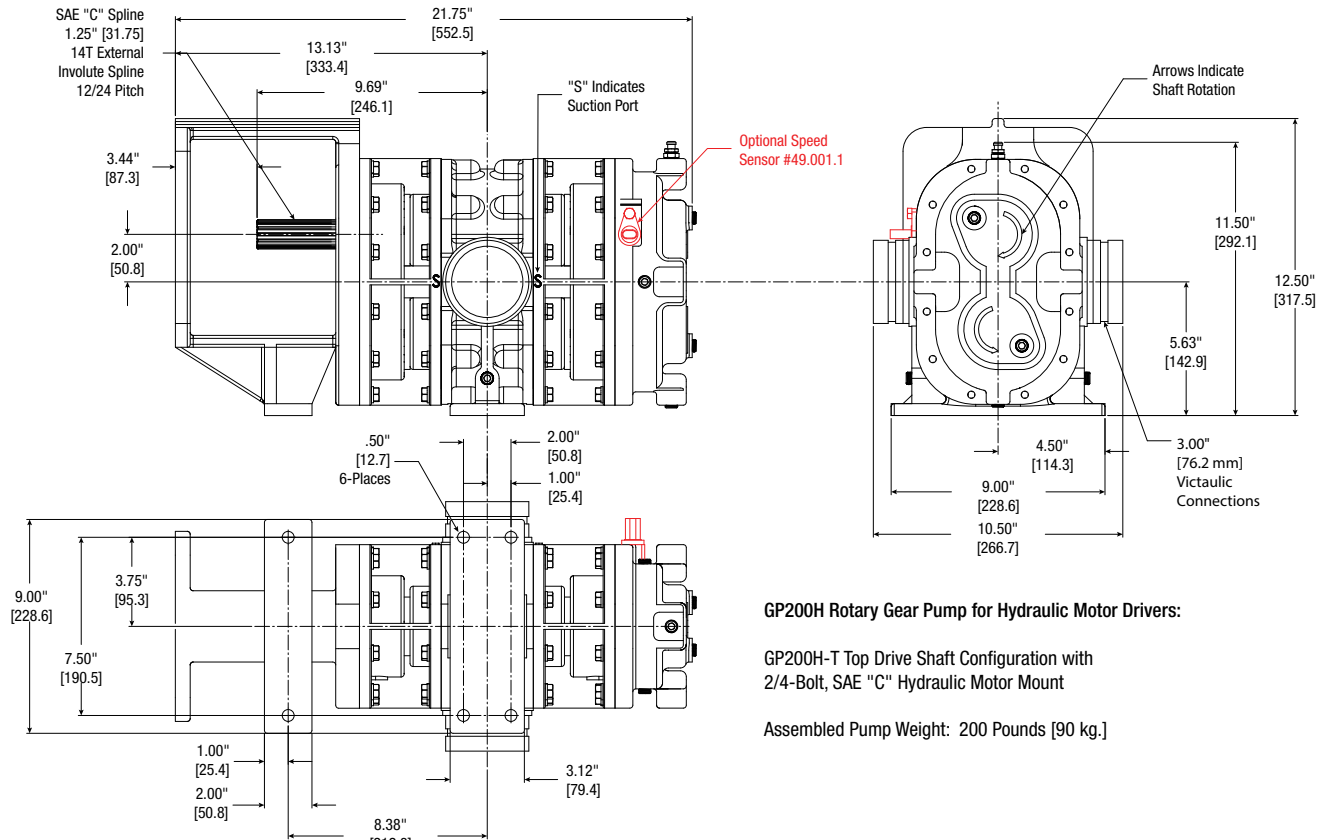
### GP160H Rotary Gear Pump for Hydraulic Motor Drivers

GP160H-T Top Drive Shaft Configuration with  
 2/4-Bolt, SAE "C" Hydraulic Motor Mount

Assembled Pump Weight: 190 Pounds [87 kg.]

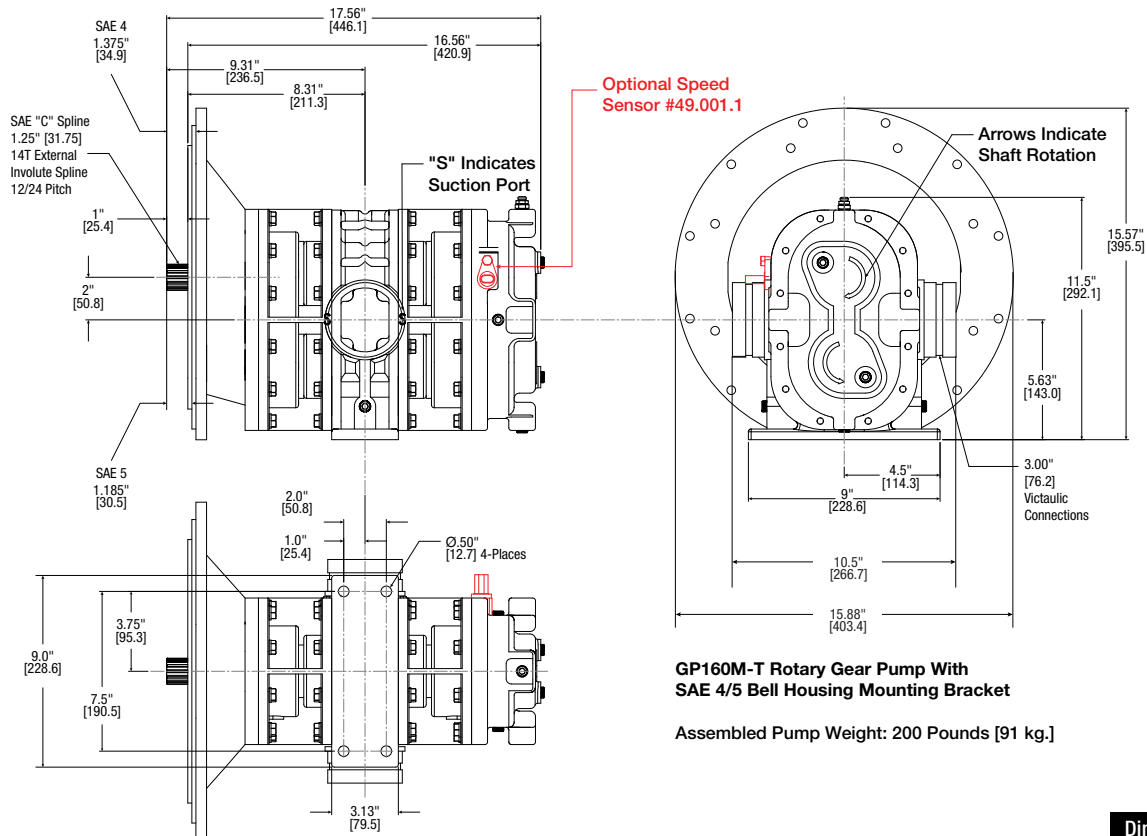
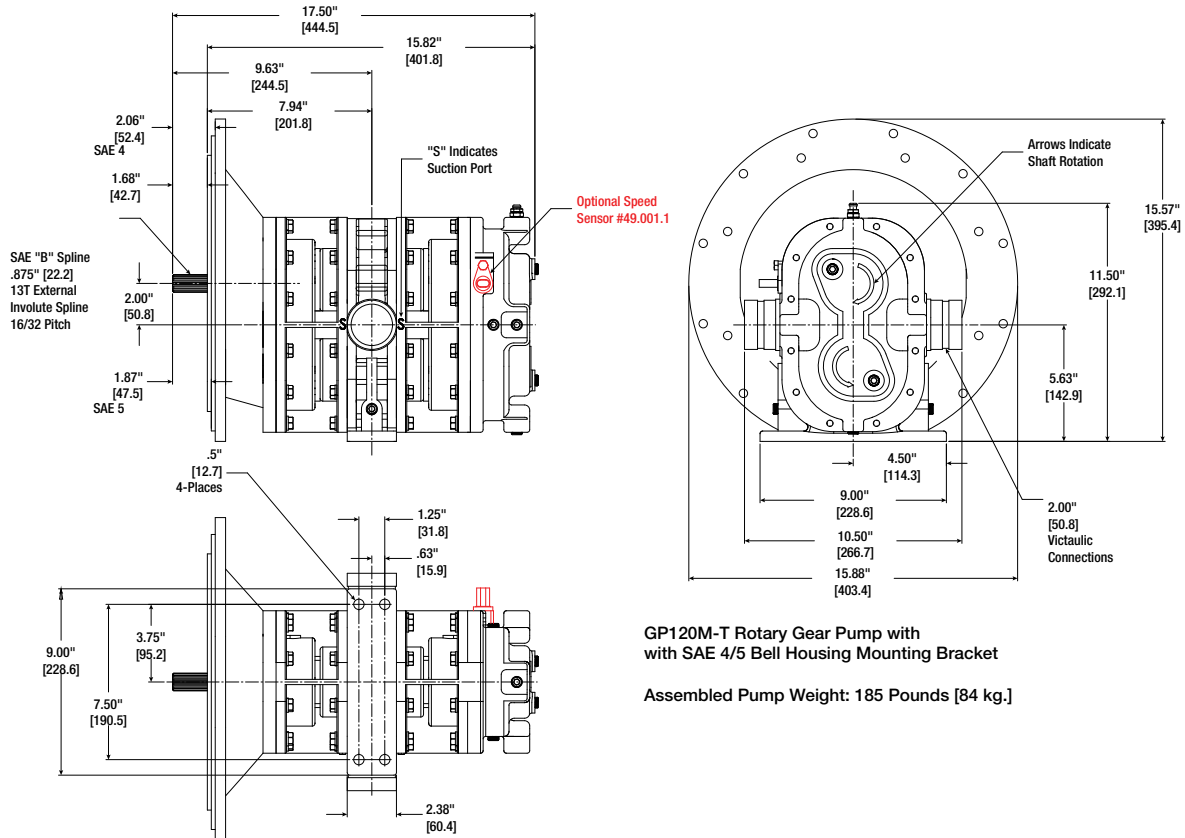
Dimensions Shown:  
 Inches  
 [mm]

## GP200/300 Hydraulic Mount Dimension Information

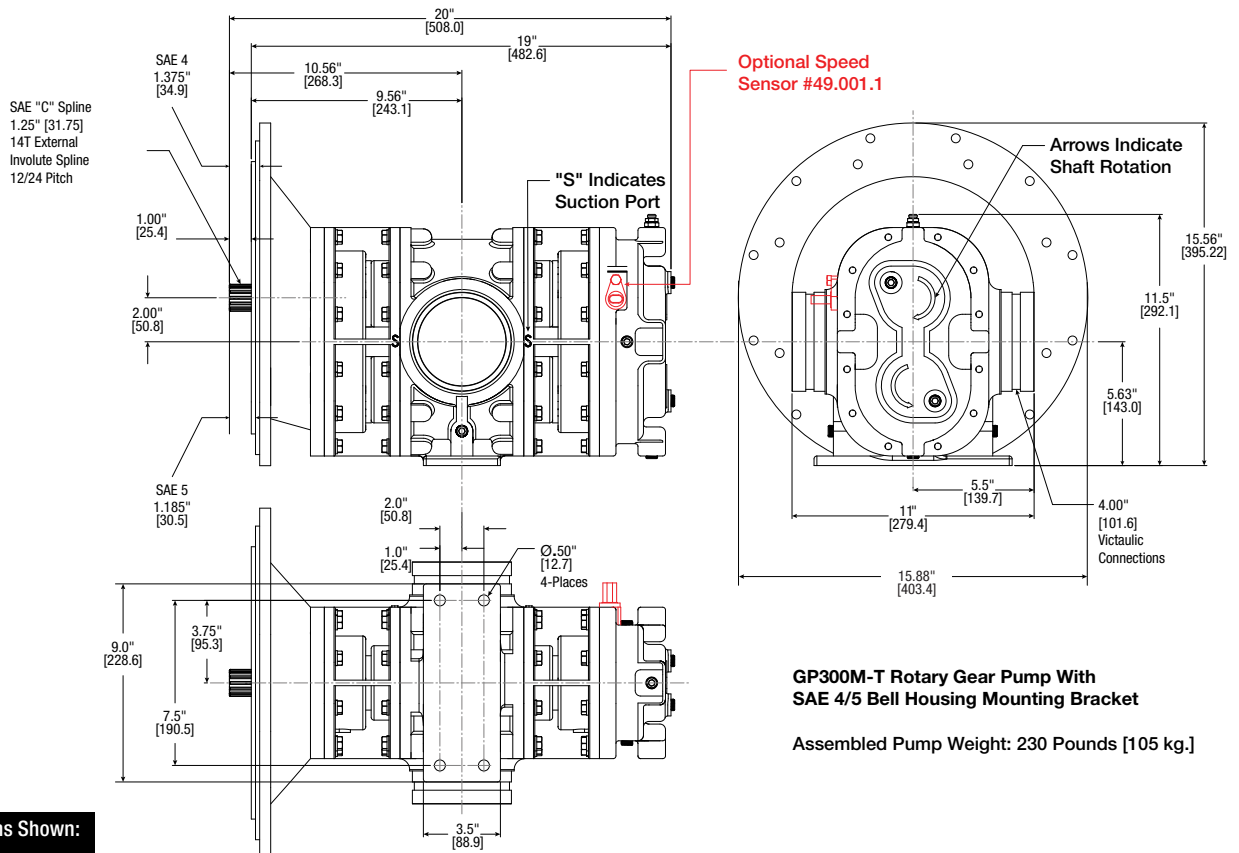
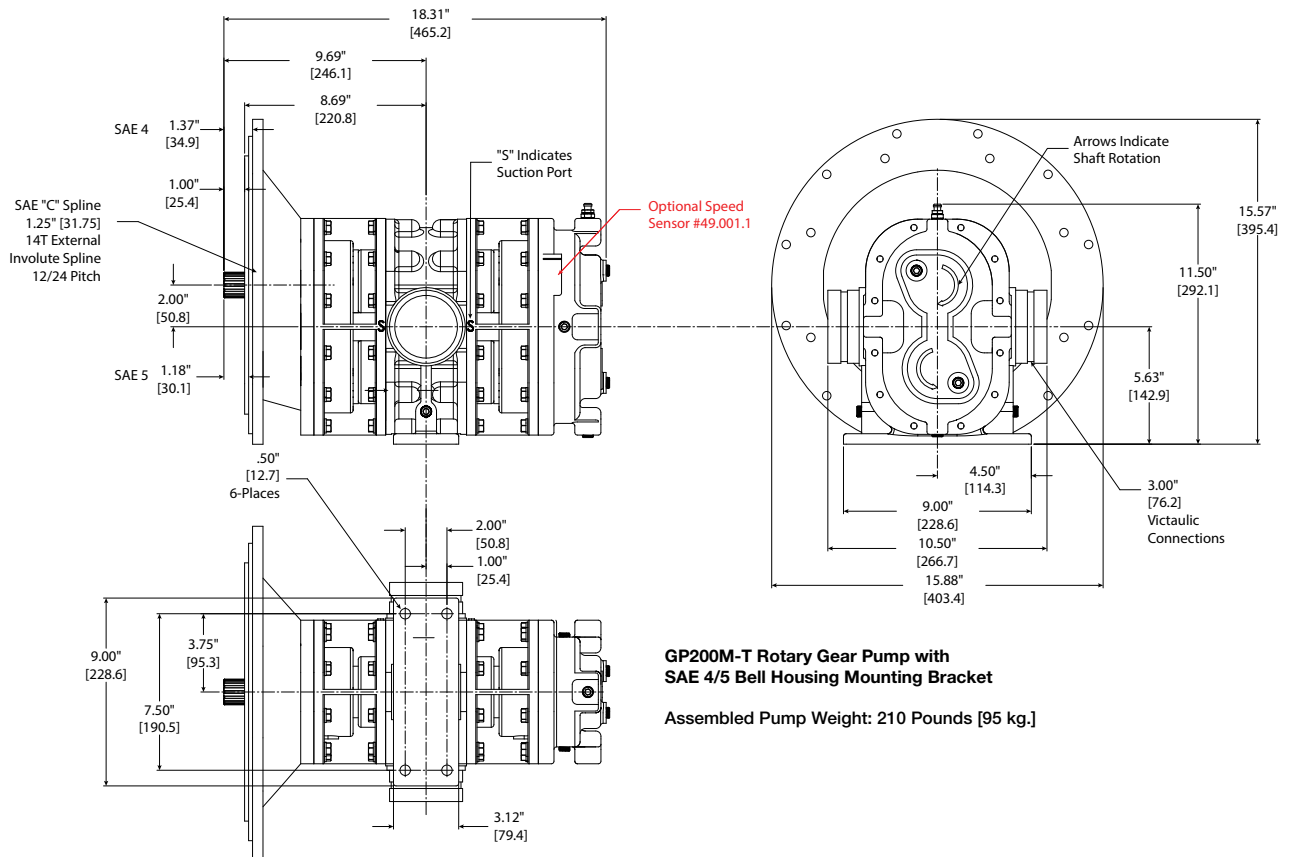


Dimensions Shown:  
Inches  
[mm]

## GP120/160 Bell Housing Mount Dimension Information



## GP200/300 Bell Housing Mount Dimension Information



Dimensions Shown:  
 Inches  
 [mm]

## Required Repair Tools

The following standard and specialized tools are required when performing pump repair and maintenance:

Item	Description	Quantity	Trident Part Number
T01	Bearing Retainer Spanner Wrench	1	29.004.0
T02	Socket for Timing Gear Nuts 1 1/16" x 1/2" Drive	1	
T03	Breaker Bar 1/2" Drive	1	
T04	Torque Wrench, 1/2" Drive, Foot Pound Calibration	1	
T05	Puller, Claw Style, 8" Adjustable Dual Jaw	2	
T06	Gear Puller, Bolt On Style	1	29.002.0
T07	Ratchet Wrench 3/8" Drive	1	
T08	Socket 5/16" x 3/8" Drive	1	
T09	Combination Wrench 5/16"	1	
T10	Allen Wrench for Bearing Retainer Nut Set Screws 1/8"	1	
T11	Allen Wrench for Magnetic Drain Plug 1/4"	1	
T12	Wrench for Oil Fill/Breather 7/16"	1	
T13	Screws, Self Tapping	4	
T14	Dial Indicator, Must Have .015 Minimum Travel in .0005 Increments	1	
T15	Screwdriver to fit T13 Screw	1	
T16	Hammers, Claw and Dead Blow	1	
T17	Poly Block, 3/4" Thick x 2" Wide x 10" Long	1	
T18	Driver, Mechanical Seal, PVC Conduit	1	29.003.0
T19	Driver, Oil Seal, 2 1/2" Pipe, Inside Diameter Deburred Square Cut Ends, 4" length	1	29.006.0
T20	Driver, Bearing Insertion Tool	1	29.005.0
T21	Thread Locker, Blue, Loctite 243	1	
T22	Anti Seize Compound, Copper Grade	1	
T23	Oil, SAE 30W [ISO Grade 100], Conventional or Synthetic	See Notes on Page 15	
T24	Funnel, Oil Fill, Maximum Bottom Outside Diameter .375"	1	
T25	Lubricant for Mechanical Seals, US Sealube Rubber Lubricant Emulsion IFC or equivalent	1	



## Warranty and Product Information

### Warranty

Trident Emergency Products (Seller) warrants its GP Series rotary gear foam pumps to be free of defects in materials and workmanship under normal use and service for which the products were designed to the Buyer. This warranty is for a period of 60-months after shipment from factory. Seller must be notified in writing within the warranty period of any defects and shall have the option of requiring the return of parts or entire pump to its factory for verification of any claim. Seller will have the sole discretion in determining whether a pump is defective, and to make determination to repair or replace said pump during the warranty period. Attempt by Buyer or End User to make alterations or repairs to a pump during the warranty period without written consent by Seller will void the warranty.

The use of non-Trident specific parts to make repairs without written consent by the Seller will void the warranty.

**THIS WARRANTY IS THE SOLE WARRANTY OF SELLER AND SELLER HEREBY EXPRESSLY DISCLAIMS AND BUYER WAIVES ALL OTHER WARRANTIES EXPRESSED, IMPLIED IN LAW OR IMPLIED IN FACT, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

Seller's sole obligation under this warranty shall be, at its option, to repair or replace any equipment (or its component parts) which has a defect covered by this warranty, or to refund the purchase price of such equipment or part. Under the terms of this warranty, Seller shall not be liable for (a) consequential, collateral, special or liquidated losses or damages; (b) equipment conditions caused by normal wear and tear, abnormal conditions of use, accident, neglect, or misuse of said equipment; (c) the expense of, and loss or damage caused by, repairs or alterations made by anyone other than the Seller; (d) damage caused by abrasive materials, chemicals, scale deposits, corrosion, mishandling, or other similar conditions; (e) any loss, damage, or expense relating to or resulting from installation, removal or reinstallation of equipment; (f) any labor costs or charges incurred in repairing or replacing defective equipment or parts, including the cost of reinstalling parts that are repaired or replaced by Seller; (g) any expense of shipment of equipment or repaired or replacement parts; or (h) any other loss, damage or expense of any nature.

The warranty shall not apply to any additional Trident supplied equipment, or Buyer/End User supplied equipment, associated with pump operation that is covered by another manufacturer's separate or special warranty, such as motors, engines, couplings, relief valves, pump control panels, etc. Pump defects caused by improper installation and plumbing connections, failure to follow installer responsibilities and periodic pump inspection and maintenance outlined in the O&M Manual, and operating the pump outside of the intended parameters established by the Seller will void the warranty. The failure to provide proper discharge over-pressure protection in the form of a relief valve or other device or system will void the warranty.

**PERFORMANCE:** Equipment performance outlined on submitted curves is based on water as a medium. Performance may vary based on actual medium pumped and power applied.

**LIABILITY LIMITATIONS:** Under no circumstances shall the Seller have any liability under the Order or otherwise for liquidated damages or for collateral, consequential or special damages or for loss of profits, or for actual losses or for loss of production or progress of construction, regardless of the cause of such damages or losses. In any event, Seller's aggregate total liability under the Order or otherwise shall not exceed the contract price.

**MODELS COVERED:** This warranty covers the following models: GP30, GP60, GP120, GP160, GP200, GP300, GP350 and GP500.

**DOCUMENT #99.013.6 • EFFECTIVE DATE May 22, 2019**



#### Ordering

Please use Trident part numbers and descriptions when placing orders. All orders must be type written and sent along with your quote via E-Mail to (sales@tridentdirect.com). All orders will be acknowledged by Trident within 2 business days and shall become final after acknowledgment, if not challenged. *No verbal orders will be accepted.*



#### Freight

All orders are shipped EX-Works Hatboro, PA, USA. Our responsibility ceases upon delivery to common carrier. Consignee must file claim for storage and damaged freight with the carrier.

#### Return Policy

No material will be accepted for return without authorization by the factory, and a return goods authorization number assigned. Materials must be returned prepaid. A 20% restocking fee normally applies. No material accepted for credit after one year from purchase date.



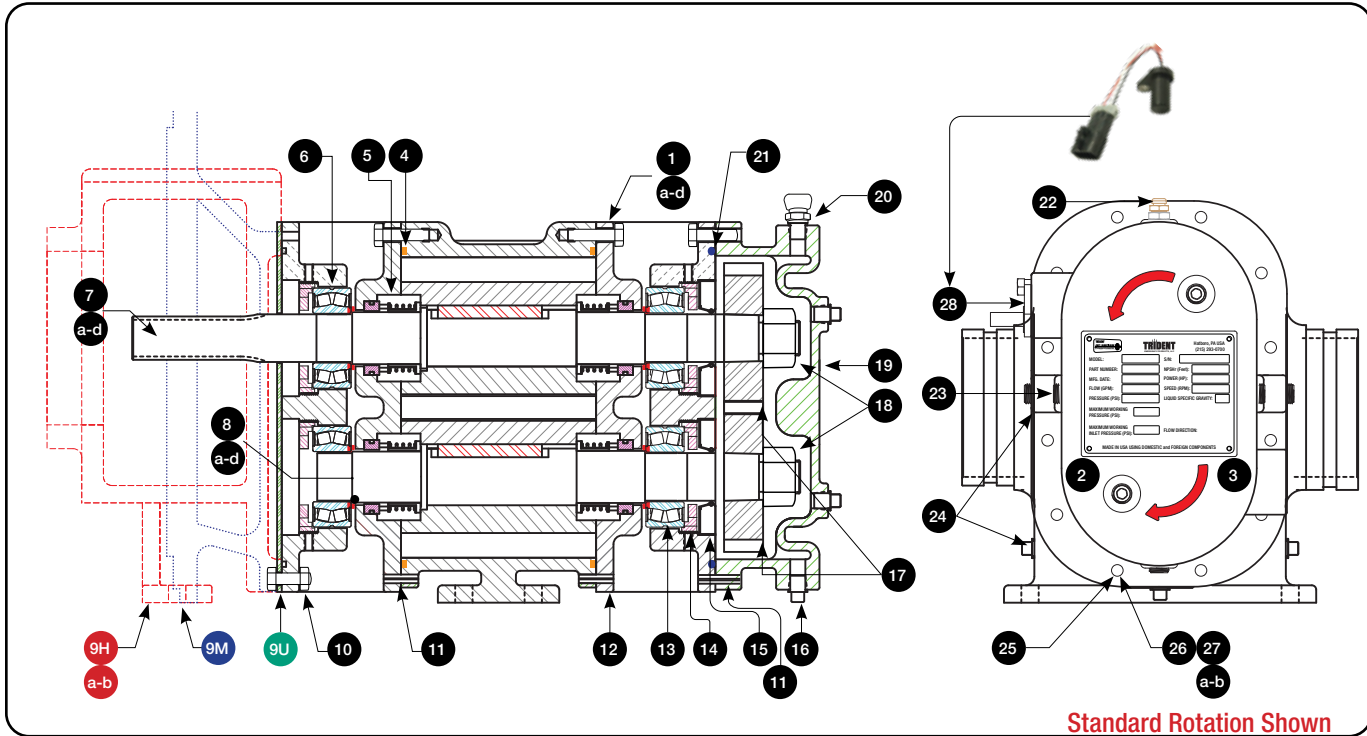
#### Customer Service Phone (215) 293-0700

We pride ourselves with exceptional customer service and are available to answer questions pertaining to new or existing orders and any of your after the sale support concerns. If a product needs to be returned, please call and request a Returned Goods Authorization (RGA) number. Warranty claims must be made by an authorized TRIDENT employee. Be prepared to provide the product model number and purchase invoice number. Replacement parts ordered will be invoiced to your account. Once an RGA number is received you must write it on all boxes and paperwork. TRIDENT will not accept your returned goods without an RGA number. Upon receiving the return, if it is determined to be covered under warranty, a credit memo will be issued and mailed to you for your records.



**Note:** All designs, specifications, and dimensional data contained in this catalog are subject to change without notice. No additional warranties, express or implied, including warranties of merchantability for fitness for a particular purpose, are created by the descriptions and depictions of the products on or in this catalog. Not responsible for typographical errors.

# Repair/Replacement Parts



REF #	DESCRIPTION	QTY	PART #	MATERIAL
1a	Pump Body GP120	1	07.042.0	C83600 Brass
1b	Pump Body GP160	1	07.024.0	C83600 Brass
1c	Pump Body GP200	1	07.043.0	C83600 Brass
1d	Pump Body GP300	1	07.022.0	C83600 Brass
2	Nameplate, Pump Data	1	02.026.4	C26000 Brass
3	Drive Pins, #4, Nameplate Attachment, Stainless Steel	4	04.115.0	18-8 Stainless Steel
4	Sealing Ring, Square, Pump Head to Pump Body	2	03.020.0	EDPM, 70 Durometer
5	Mechanical Seals	4	03.018.0	Silicon Carbide Seat, Carbon Face, SS Hardware, EPDM Boot & O Ring
6	1/4"-20 Knurled Cup Point Stainless Steel Set Screw	4	04.114.0	18-8 Stainless Steel
7a	Drive Shaft Assembly with Rotor and Key for GP120	1	05.052.0	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
7b	Drive Shaft Assembly with Rotor and Key for GP160	1	05.038.1	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
7c	Drive Shaft Assembly with Rotor and Key for GP200	1	05.055.0	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
7d	Drive Shaft Assembly with Rotor and Key for GP300	1	05.038.0	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
8a	Driven Shaft Assembly with Rotor and Key for GP120	1	05.052.1	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
8b	Driven Shaft Assembly with Rotor and Key for GP160	1	05.039.1	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
8c	Driven Shaft Assembly with Rotor and Key for GP200	1	05.055.1	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
8d	Driven Shaft Assembly with Rotor and Key for GP300	1	05.039.0	Shaft: 17-4 PH Stainless Steel, Rotor: C95400 Alum Bronze, Key: AISI 304 SS
9Ha	Hydraulic Motor Adapter - 2/4 Bolt Mount for GP120 - GP300	1	18.018.0	SAE G3500 Gray Iron
9Hb	Hydraulic Motor Adapter - 2/4 Bolt Mount for GP120	1	18.018.1	SAE G3500 Gray Iron
9M	Engine Bell Housing Adapter SAE 4/5 GP120-GP300	1	07.037.0	SAE G3500 Gray Iron
9U	Universal End Plate	1	18.021.0	AISI 304 Stainless Steel

REF #	DESCRIPTION	QTY	PART #	MATERIAL
10	3/8" 16 Stainless Steel Hex Nuts	12	04.091.0	18-8 Stainless Steel
Note: Two (2) Additional Roll Pins are required for the Hydraulic and Bell Housing Adapters				
11	Alignment Roll Pins, Stainless Steel	6	17.010.0	18-8 Stainless Steel
12	Pump Head	2	06.001.0	C83600 Brass
13	Double Row Spherical Roller Bearings, Sealed	4	16.010.0	BS2-2207
14	Adjusting Nuts	4	04.073.0	Brass
15	Oil Seals	2	03.019.0	CR #13934
16	1/4" NPT Pipe Plug, Oil Drain, Magnetic Tip	1	09.005.3	Plated Steel
17	Timing Gears, 40 Tooth	2	15.002.1	SAE E4140 or 4340 Steel Heat Treated
18	Lock Nuts, Timing Gear	2	04.074.0	Zinc Plated Grade 2 Steel
19	Timing Gear Cover	1	08.028.0	SAE G3500 Gray Iron
20	Bushing, Brass, 1/4" NPT M x 1/4" NPT F	1	09.006.0	Brass
21	O-Ring, Round, Timing Gear Cover to Head	1	26.264.0	Nitrile 70 Durometer
22	Oil Fill and Vent, 1/4" NPT	1	09.061.0	Plated Steel
23	1/4" NPT Pipe Plug, Stainless Steel, Socket Head	2	09.011.0	Stainless Steel
24	1/4" NPT Plugs, Brass, Socket Head (8 each)	8	09.005.2	Brass
25	3/8" Split Lock Washers, Stainless Steel (48 each)	48	04.076.0	18-8 Stainless Steel
26	3/8"-16 x 1" Hex Head SS Bolts (8 each-GP120/GP160)	8	04.090.0	304 Stainless Steel, ASTM F593C
27a	3/8"-16 x 1 1/4" Hex Head SS Bolts (40 each-GP120/GP160)	40	04.075.0	304 Stainless Steel, ASTM F593C
27b	3/8"-16 x 1 1/4" Hex Head SS Bolts (48 each-GP200/GP300)	48	04.075.0	304 Stainless Steel, ASTM F593C
28	Optional Speed Sensor	1	49.001.1	Glass Filled Nylon

Example nameplate shown. If a replacement nameplate is needed, contact Trident with your pump serial number.



GP120, GP160 and GP200 Models are available with UL® Listing.

## Trident Emergency Products, LLC

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 sales@tridentdirect.com Email

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05/04/2020  
 P/N: 99.013.2



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 Fire Industry  
 Products

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