

Stainless Steel Pumps

Severe-Duty, UHMWPE/PTFE or PTFE Packed

308116W

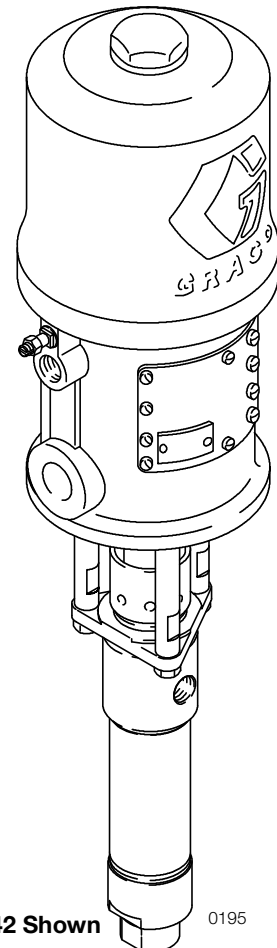
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For transferring or dispensing low viscosity sealants and adhesives. For professional use only.



Important Safety Instructions

Read all warnings and instructions in this manual before using the equipment. Save these instructions.



Model 224342 Shown

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Contents

Related Manuals	2	Parts	18
Models	3	Model 224342	18
Warnings	4	10:1 Ratio President Pump	18
Typical Installation	6	Models 261630, 224343 (shown)	19
Installation	7	5:1 Ratio Monark Pump	19
Grounding	7	Models 247147, 902147 (shown)	20
Mounting	7	5:1 Ratio Monark Pump	20
Accessories	8	Model 254999, 224341 (shown)	21
Air and Fluid Hoses	8	Severe-Duty, UHMWPE/PTFE Packed Stainless	
Air Line	8	Steel Displacement Pump	21
Fluid Line	8	Model 15G976	23
Flush Before Using Equipment	8	Severe-Duty, PTFE Packed Stainless Steel	
Operation	9	Displacement Pump	23
Pressure Relief Procedure	9	Performance Charts	25
Flush the Equipment	9	10:1 President	25
Packing Nut	10	5:1 Monark	25
Start and Adjust the Pump	10	Dimensions	26
Shutdown and Care for the Pump	11	Mounting Hole Layout	26
Troubleshooting	12	Technical Specifications	27
Repair	13	California Proposition 65	27
Disconnect the Displacement Pump	13	Graco Standard Warranty	28
Connect the Displacement Pump	13		
Disassemble the Displacement Pump	15		
Assemble the Displacement Pump	15		

Related Manuals

Manual in English	Description
306982	President Air Motors
307043	Monark Air Motors

Models

UHMWPE/PTFE Packed Pumps

Model 224342, Series A

10:1 Ratio President[®] Pump

1800 psi (13 MPa, 125 bar) Maximum Fluid Working Pressure

180 psi (1.3 MPa, 12.5 bar) Maximum Air Input Pressure



Ex II 2 G Ex h IIC T3 Gb

Model 224343, Series A

5:1 Ratio Monark[®] Pump

600 psi (4.2 MPa, 42 bar) Maximum Fluid Working Pressure

120 psi (0.8 MPa, 8.4 bar) Maximum Air Input Pressure



Ex II 2 G Ex h IIC T3 Gb

UHMWPE/PTFE Packed Pumps

Model 261630, Series A

PTFE PACKED PUMPS

Model 247147, Series A

Model 902147, Series A

5:1 Ratio Monark Pump









600 psi (4.2 MPa, 42 bar) Maximum Fluid Working Pressure

120 psi (0.8 MPa, 8.4 bar) Maximum Air Input Pressure

Severe-Duty Displacement Pumps have an abrasion-resistant displacement rod and cylinder. Refer to **Technical Specifications**, page 27, for Wetted Parts information.

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 <h1 style="margin: 0;">WARNING</h1>	
 	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> • Do not operate the unit when fatigued or under the influence of drugs or alcohol. • Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Specifications in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Specifications in all equipment manuals. Read fluid and solvent manufacturer’s warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer. • Do not leave the work area while equipment is energized or under pressure. • Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use. • Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer’s replacement parts only. • Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. • Make sure all equipment is rated and approved for the environment in which you are using it. • Use equipment only for its intended purpose. Call your distributor for information. • Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. • Do not kink or over bend hoses or use hoses to pull equipment. • Keep children and animals away from work area. • Comply with all applicable safety regulations.
    	<p>SKIN INJECTION HAZARD</p> <p>High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.</p> <ul style="list-style-type: none"> • Do not spray without tip guard and trigger guard installed. • Engage trigger lock when not spraying. • Do not point gun at anyone or at any part of the body. • Do not put your hand over the spray tip. • Do not stop or deflect leaks with your hand, body, glove, or rag. • Follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses and couplings daily. Replace worn or damaged parts immediately.



WARNING



MOVING PARTS HAZARD

Moving parts can pinch, cut or amputate fingers and other body parts.

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** and disconnect all power sources.



FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. Paint or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:

- Use equipment only in well-ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock. Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.



TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read Safety Data Sheets (SDSs) to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

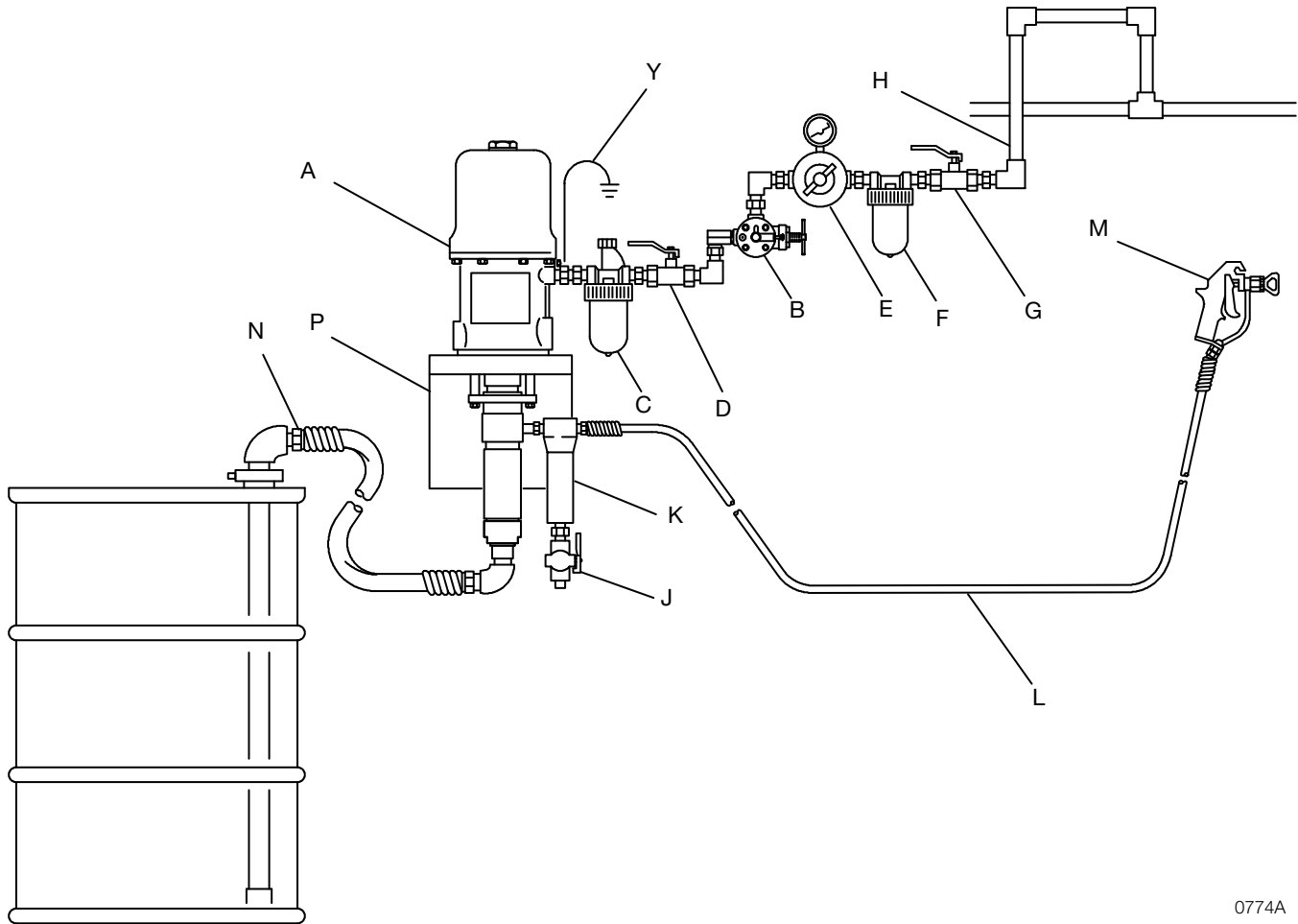


PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. Protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

Typical Installation



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FIG. 1: Typical Installation

Key:

- | | |
|---|--|
| A Pump | J Fluid Drain Valve (required) |
| B Pump Runaway Valve | K Fluid Filter |
| C Air Line Lubricator | L Fluid Supply Hose |
| D Bleed--Type Master Air Valve (required, for pump) | M Spray Gun |
| E Pump Air Regulator | N Fluid Suction Hose |
| F Air Line Filter | P Wall Bracket |
| G Bleed--Type Master Air Valve (for accessories) | Y Ground Wire (required; see page 6 for installation instructions) |
| H Electrically Conductive Air Supply Line | |

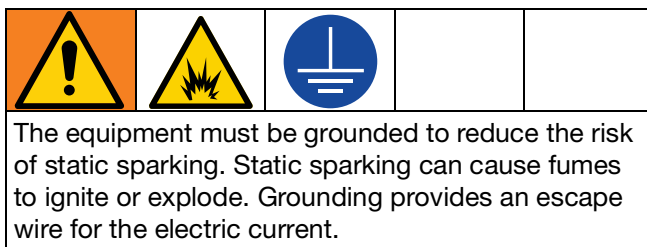
Installation

NOTE: Reference numbers and letters in parentheses in the text refer to the callouts in the figures and the parts drawing.

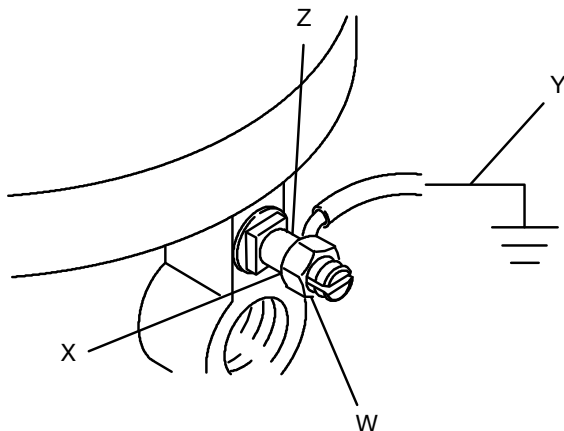
If you supply your own accessories, be sure they are adequately sized and pressure-rated to meet the system's requirements.

The **Accessories** shown on page 8 is only a guide for selecting and installing system components and accessories. Contact your Graco distributor for assistance in designing a system to suit your particular needs.

Grounding



Pump: use ground wire and clamp (supplied). Loosen grounding lug locknut (W) and washer. Insert ground wire end (Y) into lug (Z) slot and tighten locknut securely. Connect ground clamp to a true earth ground.



Air and fluid hoses: use only electrically conductive hoses. Check electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

Air compressor: follow manufacturer's recommendations.

Spray gun: ground through connection to a properly grounded fluid hose and pump.

Fluid supply container: follow local code.

Object being sprayed: follow local code.

Solvent pails used when flushing: follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

To maintain grounding continuity when flushing or relieving pressure: hold metal part of the spray gun/dispense valve firmly to the side of a grounded metal pail, then trigger the gun/valve.

Mounting

Mount the pump to suit the type of installation planned. The pump **Dimensions** and **Mounting Hole Layout** are shown on page 26.

If the pump is immersed, be sure the pump intake is 1/2 in. (13 mm) off the bottom of the fluid container.

If the pump is mounted on the wall or on a stand, connect a suction line to the pump's 3/4 in. npt(f) fluid inlet and place the other end of the line in the fluid container.

Accessories

Install the following accessories in the order shown in **Operation**, page 9, using adapters as necessary.

Air and Fluid Hoses

Be sure all air and fluid hoses are properly sized and pressure-rated for your system. Use only conductive air and fluid hoses. Fluid hoses must have spring guards on both ends.

Connect a conductive fluid hose (L) to the pump's fluid outlet. See **FIG. 1: Typical Installation** on page 6.

Connect a fluid suction hose (N) to the pump's 3/4 npt(f) fluid intake.

Use a conductive 1/2 in. I.D. (minimum) air hose (H) to supply air to the pump.

Air Line



Trapped air can cause the pump to cycle unexpectedly which could result in serious injury from moving parts or splashing. A bleed-type master air valve (D) is required in your system to relieve trapped air between the valve and the pump after the air is shut off.

- **Bleed-type master air valve (D):** required in your system to relieve air trapped between it and the air motor when the valve is closed.

NOTE: Be sure the valve is easily accessible from the pump and located downstream from the air regulator.

- **Pump runaway valve (B):** senses when the pump is running too fast and automatically shuts off the air to the motor. A pump which runs too fast can be seriously damaged.

- **Air line lubricator (C):** provides automatic air motor lubrication.
- **Pump air regulator (E):** to control pump speed and outlet pressure. Locate it close to the pump.
- **Air line filter (F):** removes harmful dirt and moisture from compressed air supply.
- **Second bleed-type air valve (G):** isolates air line accessories for servicing. Locate upstream from all other air line accessories.

Fluid Line



Unrelieved fluid pressure in the system can result in a skin injection injury. Triggering the gun to relieve pressure may not be sufficient. A fluid drain valve (J) is required in your system to help reduce the risk of serious bodily injury including skin injection operating or repairing the pump.

- **Fluid filter (K):** filters particles from the fluid as it leaves the pump.
- **Fluid drain valve (J):** required in your system, to relieve fluid pressure in the hose and gun
- **Gun (M):** to dispense fluid.

Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment. See **Flush the Equipment**.

If the pump is being used to supply a circulating system, allow the solvent to circulate until the pump is thoroughly flushed.

Operation

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.

This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Engage the spray gun (M) trigger lock.
2. Close the bleed-type master air valve (D) to shut off air supply to pump (A).
3. Disengage the spray gun trigger lock.
4. Hold a metal part of the spray gun (M) firmly to a grounded metal pail. Trigger the gun to relieve pressure.
5. Engage the spray gun trigger lock.
6. Open all fluid drain valves in the system, having a waste container ready to catch drainage. Leave drain valve(s) open until you are ready to spray again.
7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:
 - a. VERY SLOWLY loosen the tip guard retaining nut or the hose end coupling to relieve pressure gradually.
 - b. Loosen the nut or the coupling completely.
 - c. Clear the obstruction in the hose or tip.

Flush the Equipment

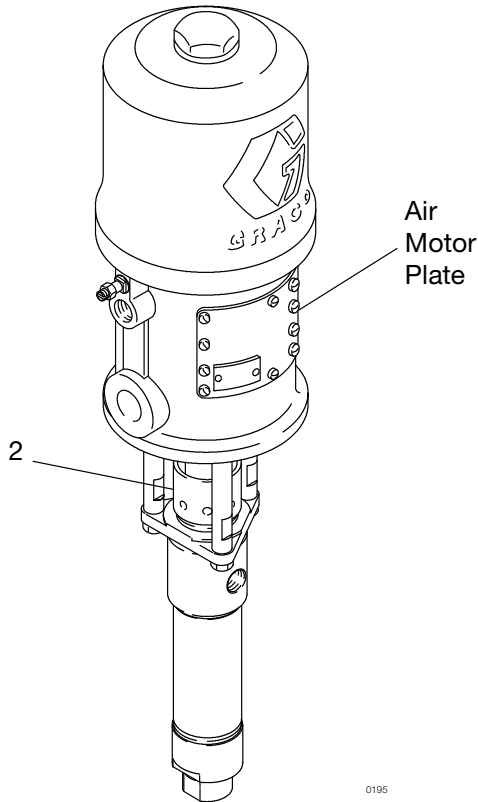


To avoid fire and explosion, always ground equipment and waste container. To avoid static sparking and injury from splashing, always flush at the lowest possible pressure.

- Flush before changing colors, before fluid can dry in the equipment, at the end of the day, before storing, and before repairing equipment.
 - Flush at the lowest pressure possible. Check connectors for leaks and tighten as necessary.
 - Flush with a fluid that is compatible with the fluid being dispensed and the equipment wetted parts.
1. Perform **Pressure Relief Procedure**.
 2. Remove spray tip and soak in solvent.
 3. Hold a metal part of the spray gun (M) firmly to a grounded metal pail.
 4. Set pump (A) to lowest possible fluid pressure, and start pump.
 5. Trigger the spray gun until clean solvent dispenses.
 6. Perform **Pressure Relief Procedure**.

Packing Nut

Keep the packing nut/wet-cup (2) filled with Graco Throat Seal Liquid (TSL™) or compatible solvent, to help prolong the packing life. Adjust the packing nut weekly so it is just tight enough to prevent leakage; do not overtighten. Always follow the **Pressure Relief Procedure**, page 9, before adjusting the packing nut.



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Start and Adjust the Pump



Moving parts can pinch or amputate your fingers or other body parts. When air is supplied to the motor, the air motor piston (located behind the air motor plates) moves. Never operate the pump with the air motor plates removed.

1. See the **Typical Installation** on page 6. Be sure the air regulator (E) and bleed--type master air valve (D) are closed.

2. Connect a suction hose (N) to the pump fluid inlet.
3. Hold a metal part of the spray gun (M) firmly to the side of a grounded metal pail and hold the trigger open.
4. Open the pump bleed-type master air valve (D).
5. Slowly open the air regulator until the pump starts, at about 40 psi (0.9 MPa, 2.8 bar).
6. Cycle the pump slowly until all the air is pushed out and the pump and hoses are fully primed.
7. Release the spray gun trigger and engage the trigger lock. The pump should stall against pressure when the trigger is released.
8. Perform the **Pressure Relief Procedure**, page 9.
9. Install the spray tip in the gun.
10. With the pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as you open and close the gun. In a circulating system, the pump will speed up or slow down on demand, until the air supply is shut off.

NOTICE

Do not allow the pump to run dry. It will quickly accelerate to a high speed, causing damage. If your pump is running too fast, stop it immediately and check the fluid supply.

NOTE: If the container is empty and air has been pumped into the lines, refill the container and prime the pump and the lines, or flush and leave it filled with a compatible solvent. Eliminate all air from the fluid system.

11. Use an adequately sized air regulator (E) to control the pump speed and the fluid pressure.

NOTICE

Always use the lowest air pressure necessary to get the desired results. Higher pressures cause premature tip and pump wear.

Shutdown and Care for the Pump



1. Perform the **Pressure Relief Procedure**, page 9.
2. Stop the pump at the bottom of its stroke.

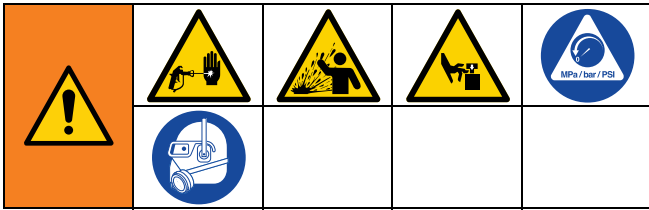
NOTICE

If the pump stops at the top of its stroke, then fluid may dry on the exposed displacement rod and damage the throat packings.

NOTICE

Always flush the pump before fluid dries on the displacement rod and causes damage.

Troubleshooting



1. Perform **Pressure Relief Procedure**, page 9, before checking or repairing the pump.
2. Check all possible problems and causes before disassembling pump.

Problem	Cause	Solution
Pump fails to operate.	Restricted line or inadequate air supply.	Clear; increase air supply.
	Insufficient air pressure; closed or clogged air valves, etc.	Open; clean.
	Exhausted fluid supply.	Refill; purge all air from pump and fluid lines.
	Damaged air valving mechanism; stalling.	Service air motor (see Related Manuals , page 2).
	Dried fluid seizure of displacement rod (13).	Clean, check, or replace throat packings (5, 24); always stop pump at bottom of stroke and keep wet cup filled with compatible solvent.
Pump operates but output is low on both strokes.	Restricted line or inadequate air supply.	Clear; increase air supply.
	Insufficient air pressure; closed or clogged air valves, etc.	Open; clean.
	Exhausted fluid supply.	Refill; purge all air from pump and fluid lines.
	Clogged fluid line, valves, etc.	Clear.*
	Packing nut (2) too tight.	Loosen (see page 10).
	Loose packing nut (2) or worn throat packings (5, 24).	Tighten packing nut (see page 10); replace throat packings.
Pump operates but output is low on downstroke.	Held open or worn intake valve.	Clear; service.
Pump operates but output is low on upstroke.	Held open or worn fluid piston valve or packings (20, 23).	Clear; service.
Erratic or accelerated operation.	Exhausted fluid supply.	Refill; purge all air from pump and fluid lines.
	Held open or worn intake valve.	Clear; service.
	Held open or worn fluid piston valve or packings (20, 23).	Clear; service.

* To determine if the fluid hose or gun is obstructed, perform the **Pressure Relief Procedure**, page 9. Disconnect the fluid hose and place a container at the pump fluid outlet to catch any fluid. Turn on the air just enough to start the pump (about 20-40 psi [0.1-0.3 MPa, 1.4-2.8 bar]). If the pump starts when the air is turned on, the obstruction is in the fluid hose or gun.

Repair

Disconnect the Displacement Pump

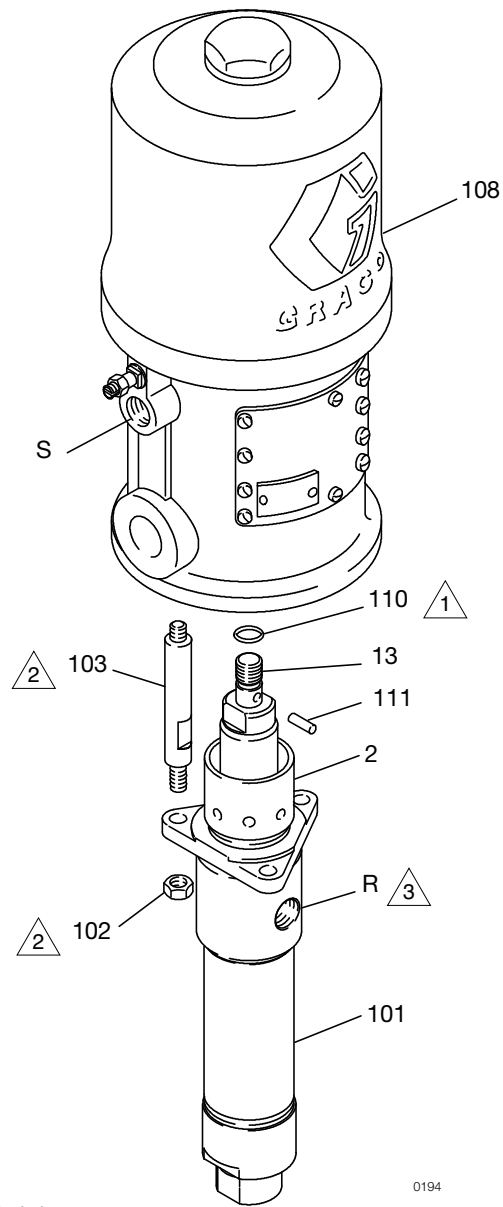
1. Perform **Flush the Equipment** procedure, page 9. Stop the pump at the bottom of its stroke.
2. Perform the **Pressure Relief Procedure**, page 9.
3. Disconnect the air and fluid hoses. Remove the pump from its mounting.

NOTE: Note the relative position of the pump fluid outlet (R) to the air motor air inlet (S).
4. Unscrew the tie rod locknuts (102) from the tie rods (103). Remove the cotter pin (111).
5. Unscrew the displacement rod (13) from the air motor (108). Carefully pull the displacement pump (101) off the air motor (108).
6. Inspect the o-ring (110). See FIG. 2, page 14.

NOTE: To service the displacement pump, refer to **Disassemble the Displacement Pump**, page 15, and **Assemble the Displacement Pump**, 15. To service the air motor, refer to the separate motor manual, supplied.-

Connect the Displacement Pump

1. Lubricate the o-ring (110) and check that it is in place on the displacement rod (13).
2. Align the pump fluid outlet (R) with the air motor air inlet (S) as was noted in step 2 under Disconnecting the Displacement Pump. Position the displacement pump (101) on the tie rods (103). See FIG. 2, page 14.
3. Screw the locknuts (102) onto the tie rods (103) loosely.
4. Screw the displacement rod (13) into the shaft of the air motor (108) until the pin holes in the rod and shaft align. Install the cotter pin (111).
5. Apply thread sealant to the pump fluid outlet (R) and the threads of the fluid hose.
6. Mount the pump and reconnect all hoses. Reconnect the ground wire if it was disconnected during repair.
7. Tighten the packing nut/wet-cup (2) so it is snug. Fill the wet-cup with TSL or compatible solvent.
8. Tighten the tie rod locknuts (102):
 - **Model 224342:** Torque to 20-30 ft-lb (27-41 N•m)
 - **Models 224343, 902147, 247147, 261630:** Torque to 10-15 ft-lb (14-20 N•m).
9. Start the pump and run it at about 40 psi (0.3 MPa, 2.8 bar) air pressure, to ensure proper pump operation.
10. Check for fluid leakage at the packing nut/wet-cup (2). Perform the **Pressure Relief Procedure**, page 9, before tightening the packing nut/wet-cup.



- 1 Lubricate.
- 2 Model 224342: Torque to 20--30 ft-lb (27--41 Nm).
Models 224343, 902147, 247147, 261630: Torque to 10--15 ft-lb (14--20 Nm).
- 3 Apply sealant, as required.

FIG. 2

Disassemble the Displacement Pump

NOTE: When disassembling the pump, lay out removed parts in sequence to ease reassembly. Clean all parts with a compatible solvent and inspect them for wear or damage. Refer to Fig 5.

NOTE: Standard Repair Kit 224401 (UHMWPE/PTFE packings) is available. For the best results, use all the new parts in the kit. Parts included in the kit are denoted with one asterisk, for example (3*).

NOTE: Conversion Kit 224889 is available to convert the pump to all PTFE packings. See page 19 for details.

NOTE: Clean all the parts thoroughly when disassembling. Check them carefully for damage or wear, replacing parts as needed.

1. Perform the **Disconnect the Displacement Pump** procedure, page 13.
2. Unscrew the locking ring (7) from the cylinder (8). See Fig FIG. 3. Remove the intake valve housing (15).
3. Remove the o-ring (12), ball stop pin (6), ball guide (9) and ball (4) from the intake valve housing (15).
4. Loosen the packing nut (2). Push the displacement rod (13) down as far as possible, then pull it out the bottom of the cylinder (8).
5. Secure the flats of the displacement rod (13) in a vise. Use a wrench on the flats of the piston mounting stud (28) to screw the piston off the rod.
6. Remove one cotter pin (3) and the ball stop pin (21), taking note which set of holes it is in. Remove the ball (4).
7. Place the flats of the piston mounting stud (28) in a vise, and unscrew the piston stud (26). Remove the piston packings (20, 23), glands (25, 27), washer (19), and shims (31).
8. Remove the packing nut (2), throat packings (5, 24), and glands (11, 14) from the outlet housing (1).
9. Inspect all parts for damage. Clean all parts and threads with a compatible solvent before reassembling.
10. Inspect the polished surfaces of the displacement rod (13) and cylinder (8) for scratches, scoring or other damage, which can cause premature packing wear and leaking. To check, run a finger over the surface or hold the part up to the light at an angle. Be sure the ball seats of the piston (26) and intake valve housing (15) are not chipped or nicked. Replace any worn or damaged parts.

Assemble the Displacement Pump

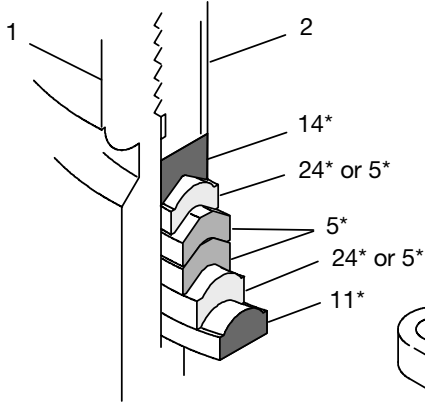
NOTE: On UHMWPE/PTFE packed pumps, the packing order is one UHMWPE packing, two PTFE packings, and one UHMWPE packing. On PTFE packed pumps, all four packings are PTFE.

1. Lubricate the throat packings and place them in the outlet housing (1) in the following order, with the lips of the v-packings facing down (see FIG. 3 on page 17):
 - male gland (11*),
 - v-packings (24* or 5*)
 - female gland (14*).
2. Apply thread lubricant and install the packing nut (2) loosely.
3. If you removed the cylinder (8), apply thread lubricant and reinstall it in the outlet housing (1), making sure to replace the o-ring (10).
4. Install shims (31*) onto the piston stud (26) as required to eliminate end play.
5. Lubricate the piston packings and place them on the piston stud (26) in the following order, with the lips of the v-packings facing down:
 - female gland (25*)
 - v-packings (23* or 20*)
 - male gland (27*)
 - washer (19*).
6. Apply thread sealant and screw the piston stud (26) onto the piston mounting stud (28). Torque to 50-70 ft-lb (68-95 N•m).
7. Install the piston ball (4*) on the piston seat. Slide the ball stop pin (21*) into the desired set of holes, and secure with the cotter pin (3*).

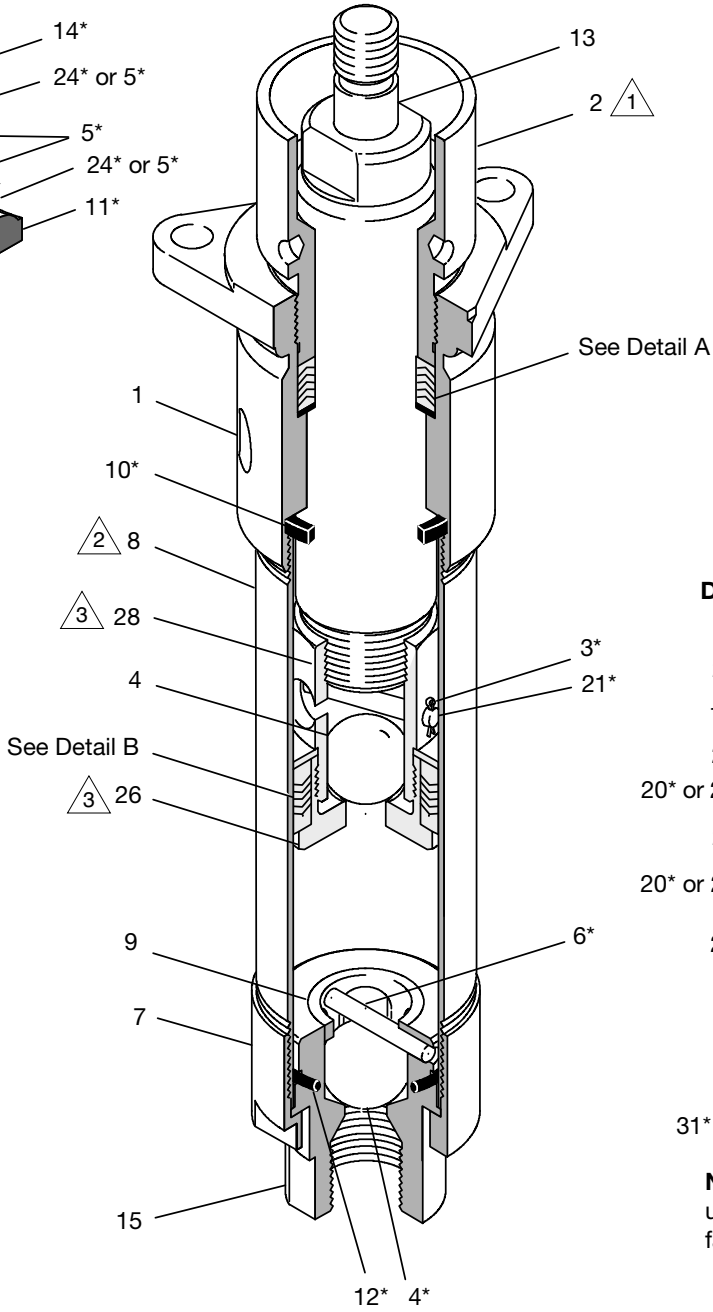
Repair

8. Place the flats of the displacement rod (13) in a vise. Apply sealant and screw the piston assembly onto the displacement rod. Torque to 50-70 ft-lb (68-95 Nm).
9. Insert the displacement rod (13) into the bottom of the cylinder (8), being careful not to scratch the cylinder. Push the rod straight up until it protrudes from the packing nut (2).
10. Install the ball (4*), guide (9), o-ring (12), and ball stop pin (6*) in the intake valve housing (15).
11. Place the intake valve assembly in the locking ring (7). Apply thread sealant to the locking ring and cylinder (8), and screw the ring onto the cylinder.
12. Follow **Connect the Displacement Pump**, page 13.

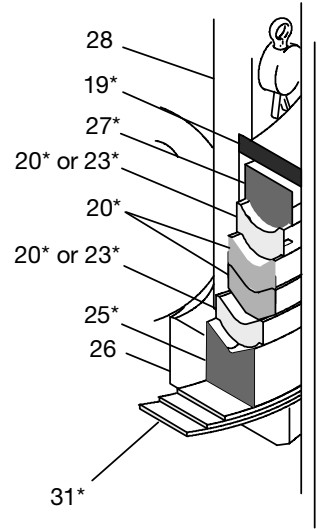
Detail A: Throat Packings



NOTE: Lips of v-packings must face down.



Detail B: Piston Packings



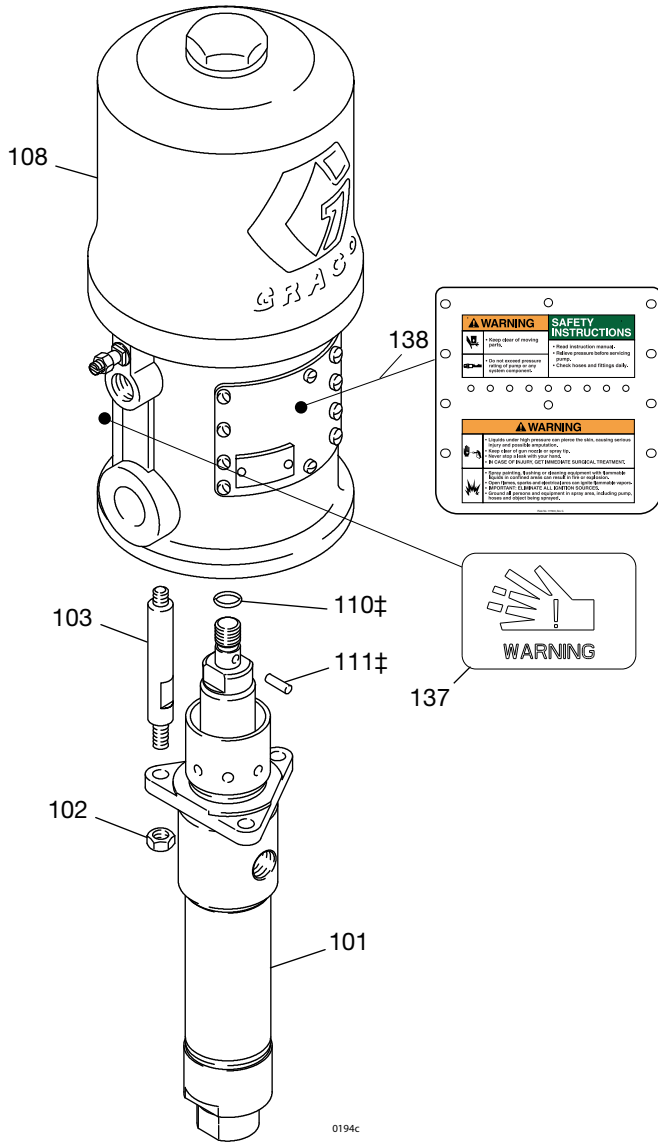
NOTE: Lips of u-packings must face up.

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FIG. 3

Parts

Model 224342 10:1 Ratio President Pump

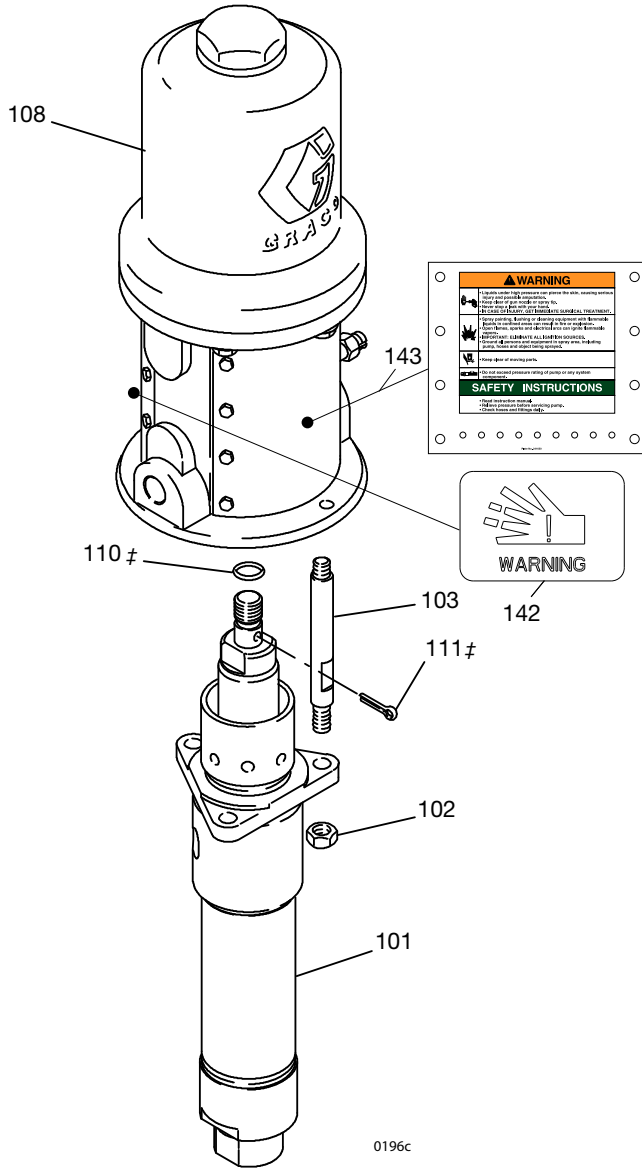


Ref.	Part	Description	Qty.
101	224341	DISPLACEMENT PUMP ASSY.	1
		See pages 18--19 for parts	
102	102021	NUT, lock; 3/8--16; stainless steel	3
103	166237	ROD, tie; stainless steel; 3.5 in. (89 mm) shoulder to shoulder	3
108	207352	AIR MOTOR	1
		See 306982 for parts	
110‡	156082	SEAL, o-ring; nitrile rubber	1
111‡	101946	PIN, cotter; stainless steel; 0.12 in. (3.2 mm) x 1.5 in. (3.8 mm)	1
137▲	180233	LABEL, warning	1
138▲	177843	LABEL, warning	1

‡ Keep spare parts on hand to reduce down time.

▲ Replacement safety labels, tags, and cards are available at no cost.

Models 261630, 224343 (shown) 5:1 Ratio Monark Pump

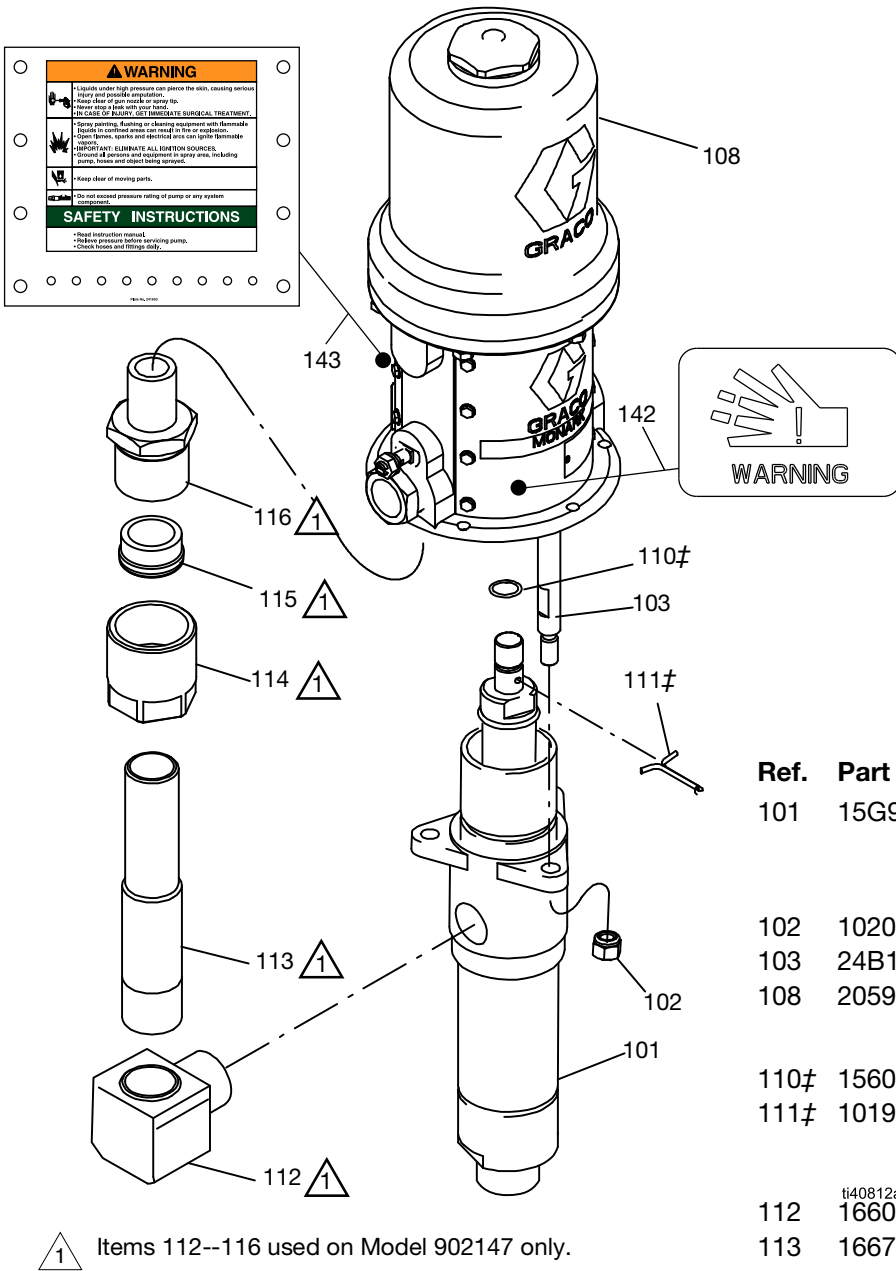


Ref.	Part	Description	Qty.
101	224341	DISPLACEMENT PUMP ASSY. for Model 224343 only; See pages 18--19 for parts	1
	254999	DISPLACEMENT PUMP ASSY. for Model 261630 only; See pages 18--19 for parts	1
102	102021	NUT, lock; 3/8--16; stainless steel	3
103	24B189	KIT, tie rod	3
108	205997	AIR MOTOR	1
		See 307043 for parts	
110	156082	SEAL, o-ring; nitrile rubber	1
111	101946	PIN, cotter; stainless steel; 0.12 in. (3.2 mm) x 1.5 in. (3.8 mm)	1
142	180233	LABEL, warning	1
143	177843	LABEL, warning	1

‡ Keep spare parts on hand to reduce down time.

▲ Replacement safety labels, tags, and cards are available at no cost.

Models 247147, 902147 (shown) 5:1 Ratio Monark Pump

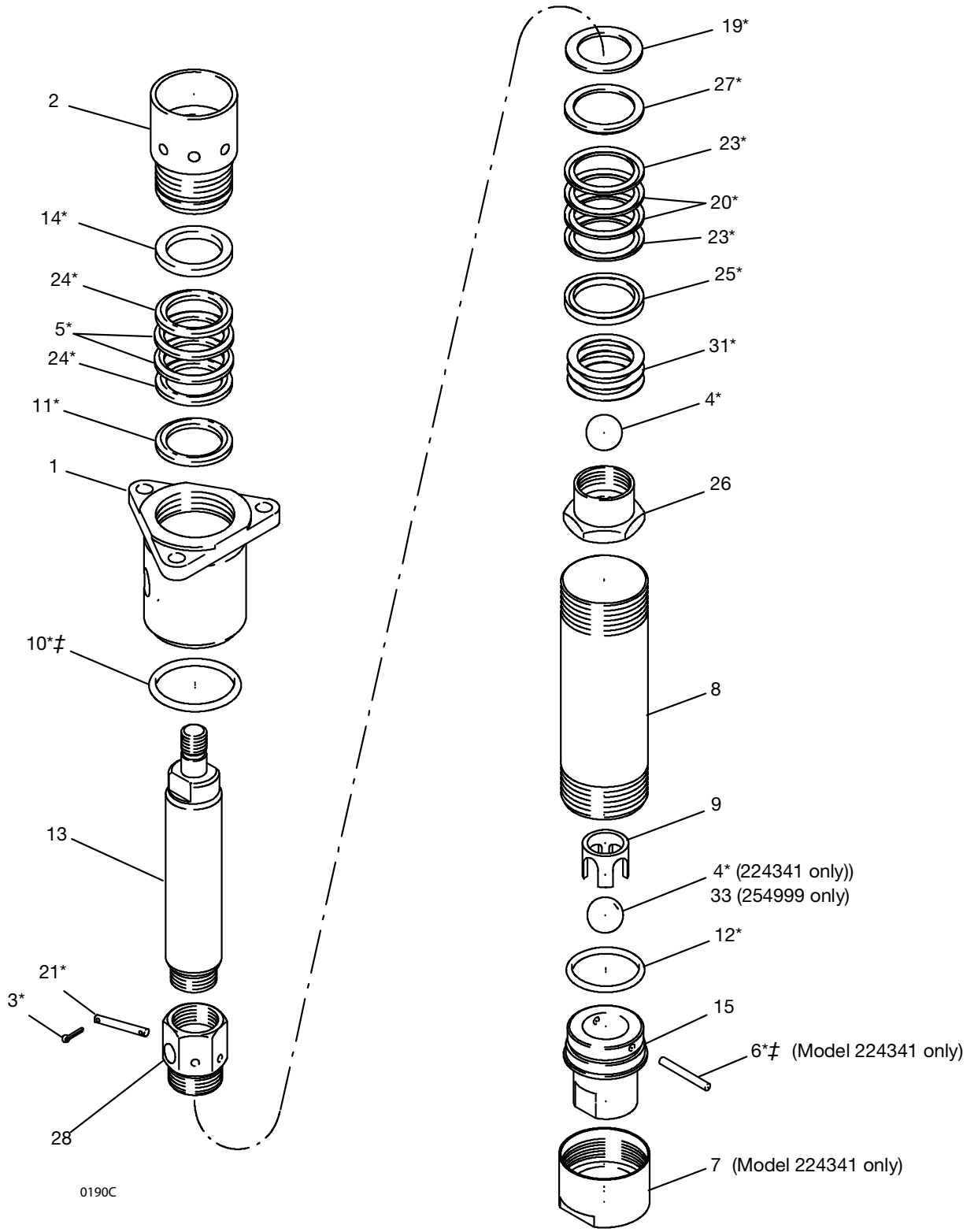


Ref.	Part	Description	Qty.
101	15G976	DISPLACEMENT PUMP ASSY.	1
		See pages 20--21 for parts	
102	102021	NUT, lock; 3/8--16; sst	3
103	24B189	KIT, tie rod	3
108	205997	AIR MOTOR	1
		See 307043 for parts	
110‡	156082	SEAL, o-ring; nitrile rubber	1
111‡	101946	PIN, cotter; stainless steel; 0.12 in. (3.2 mm) x 1.5 in. (3.8 mm)	1
112	ti40812a 166027	ELBOW, street; 90; sst	1
113	166719	TUBE, rise; sst	1
114	166029	NUT, flareless tube; sst	1
115	102186	FERRULE, for 3/4 in. OD tube; sst	1
116	166030	ADAPTER, tube	1
142▲	180233	LABEL, warning	1
143▲	177843	LABEL, warning	1

‡ Keep spare parts on hand to reduce down time.

▲ Replacement safety labels, tags, and cards are

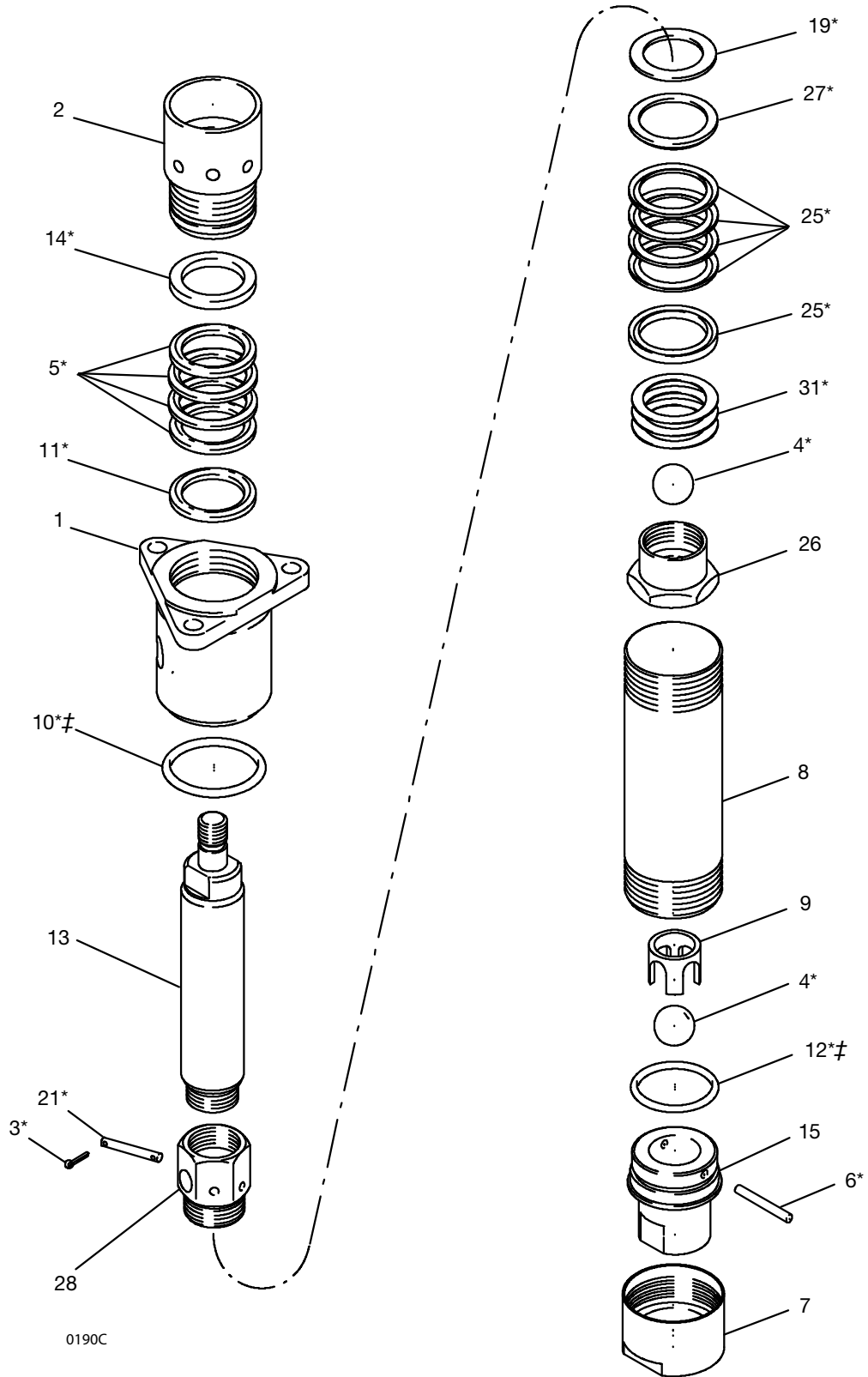
Model 254999, 224341 (shown) Severe-Duty, UHMWPE/PTFE Packed Stainless Steel Displacement Pump



Model 254999, 224341, Severe-Duty, UHMWPE/PTFE Packed Stainless Steel Displacement Pump

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
1	205999	HOUSING, outlet; stainless steel	1	20*	176635	V-PACKING, piston; PTFE	2
2	186995	PACKING NUT/WET-CUP; stainless steel	1	21*	176637	PIN, ball stop, piston; stainless steel	1
3*	100063	PIN, cotter; 1/16 in. x 1/2 in.;	2	23*	176638	V-PACKING, piston; UHMWPE	2
4*	101917	BALL; stainless steel; 0.875 in. (22 mm) dia. (224341 only)	2	24*	176639	V-PACKING, throat; UHMWPE	2
	101917	BALL; stainless steel; 0.875 in. (22 mm) dia. (254999 only)	1	25*	186989	GLAND, piston, female; stainless steel	1
5*	162866	V-PACKING, throat; PTFE	2	26	186993	STUD, piston; stainless steel	1
6*	162947	PIN, ball stop, intake; stainless steel (224341 only)	1	27*	186990	GLAND, piston, male; stainless steel	1
7	164630	RING, locking; stainless steel (224341 only)	1	28	176644	STUD, mounting, piston; stainless steel	1
8	24C505	CYLINDER; stainless steel	1	31*	190484	SHIM (use as required)	3
9	164679	GUIDE, ball, intake; stainless steel (224341 only)	1	33	101178	BALL, intake (254999 only)	1
	15J577	RETAINER, ball, intake (254999 only)	1	<i>‡ Keep spare parts on hand to reduce down time.</i>			
10*‡	164782	O-RING; PTFE	1	<i>* These parts are included in Repair Kit 224401, which may be purchased separately.</i>			
11*	186987	GLAND, throat, male; stainless steel	1	Optional PTFE Packing Conversion Kit 224889			
12*‡	164846	O-RING; PTFE	1	Use to convert the pump to all PTFE packings. Kit must be purchased separately. Includes the following items:			
	C38225	O--RING; fluoroelastomer (254999 only)	1	Part	Description	Qty.	
13	24C506	ROD, displacement; stainless steel	1	100063	PIN, cotter; 1/16 in. x 1/2 in.;	2	
14*	186988	GLAND, throat, female; stainless steel	1		stainless steel		
15	186992	HOUSING, valve, intake; stainless steel (224341 only)	1	162866	V-PACKING; PTFE	4	
	15J574	HOUSING, valve, intake (254999 only)	1	162947	PIN, ball stop, intake;	1	
19*	176634	WASHER, piston; stainless steel	1		stainless steel		
				186987	GLAND, throat, male; stainless steel	1	
				186988	GLAND, throat, female; stainless steel	1	
				176634	WASHER, piston; stainless steel	1	
				176635	V-PACKING, piston; PTFE	4	
				176637	PIN, ball stop, piston; stainless steel	1	
				186989	GLAND, piston, female; stainless steel	1	
				186990	GLAND, piston, male; stainless steel	1	
				190484	SHIM (use as required)	3	

Model 15G976 Severe-Duty, PTFE Packed Stainless Steel Displacement Pump

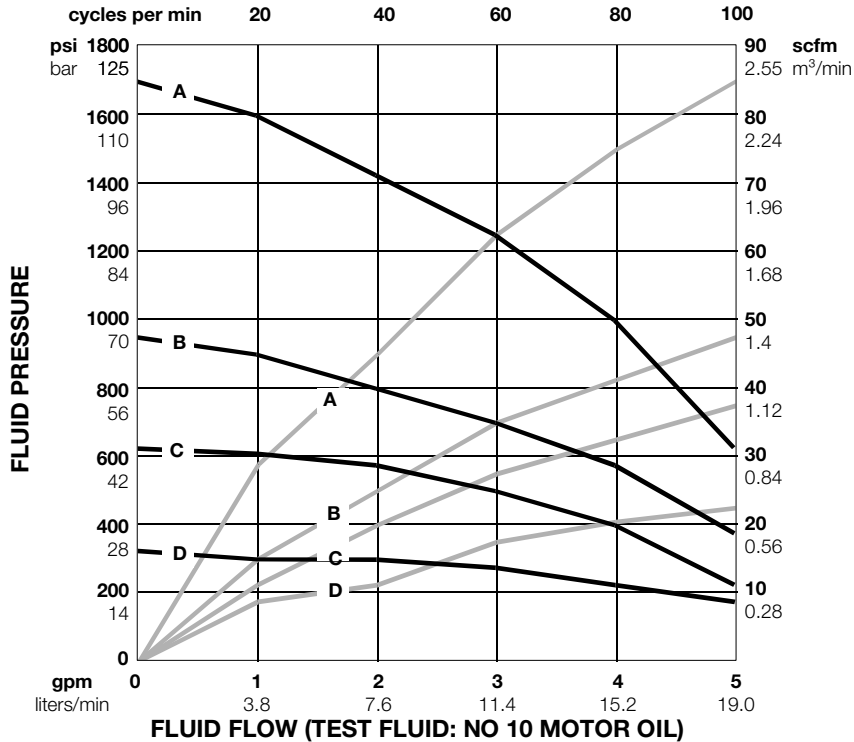


Model 15G976 Severe-Duty, PTFE Packed Stainless Steel Displacement Pump

Ref.	Part	Description	Qty.	Ref.	Part	Description	Qty.
				14*	186988	GLAND, throat, female; stainless steel	1
1	205999	HOUSING, outlet; stainless steel	1	15	186992	HOUSING, valve, intake; stainless steel	1
2	186995	PACKING NUT/WET-CUP; stainless steel	1	19*	176634	WASHER, piston; stainless steel	1
3*	100063	PIN, cotter; 1/16 in. x 1/2 in.; stainless steel	2	20*	176635	V-PACKING, piston; PTFE	4
4	101917	BALL; stainless steel; 0.875 in. (22 mm) dia.	2	21*	176637	PIN, ball stop, piston; stainless steel	1
5*	162866	V-PACKING, throat; PTFE	4	25*	186989	GLAND, piston, female; stainless steel	1
6*	162947	PIN, ball stop, intake; stainless steel	1	26	186993	STUD, piston; stainless steel	1
7	164630	RING, locking; stainless steel	1	27*	186990	GLAND, piston, male; stainless steel	1
8	24C505	CYLINDER; stainless steel	1	28	176644	STUD, mounting, piston; stainless steel	1
9	164679	GUIDE, ball, intake; stainless steel	1	31*	190484	SHIM (use as required)	3
10*‡	164782	O-RING; PTFE	1	‡ <i>Keep spare parts on hand to reduce down time.</i>			
11*	186987	GLAND, throat, male; stainless steel	1				
12*‡	164846	O-RING; PTFE	1	* <i>These parts are included in Repair Kit 224889, which may be purchased separately.</i>			
13	24C506	ROD, displacement; stainless steel	1				

Performance Charts

10:1 President



Key:

Fluid Outlet Pressure - Black Curves
Air Consumption - Gray Curves

- A 180 psi (1.3 MPa, 12.5 bar) air pressure
- B 100 psi (0.7 MPa, 7 bar) air pressure
- C 70 psi (0.5 MPa, 4.9 bar) air pressure
- D 40 psi (0.3 MPa, 2.8 bar) air pressure

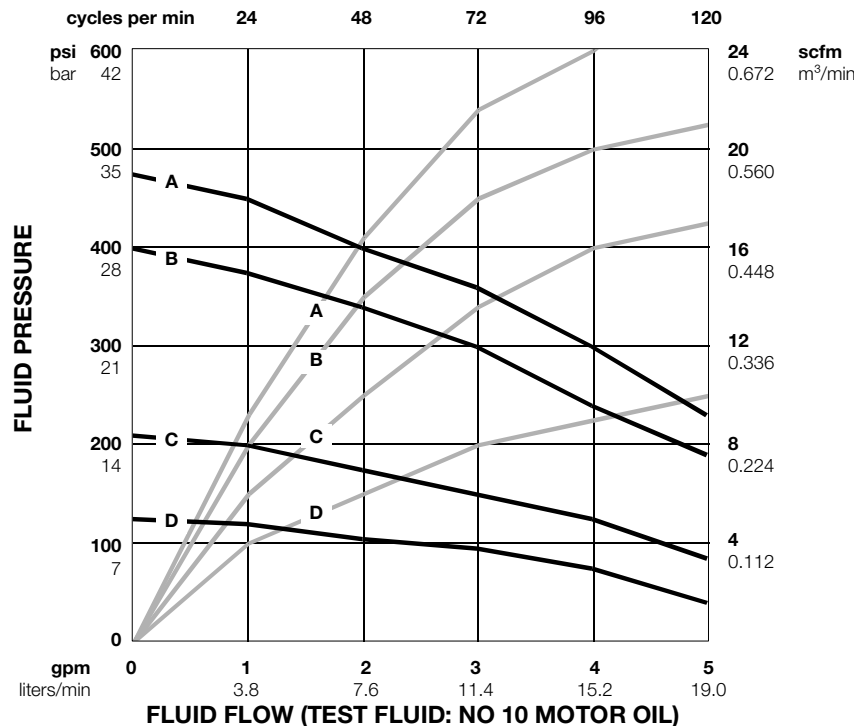
To find Fluid Outlet Pressure (bar/psi) at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black). Follow left to scale and read fluid outlet pressure.

To find Pump Air Consumption (m-/min or scfm) at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected air consumption curve (gray). Follow right to scale and read air consumption.

5:1 Monark



Key:

Fluid Outlet Pressure - Black Curves
Air Consumption - Gray Curves

- A 120 psi (0.8 MPa, 8.4 bar) air pressure
- B 100 psi (0.7 MPa, 7 bar) air pressure
- C 70 psi (0.5 MPa, 4.9 bar) air pressure
- D 40 psi (0.3 MPa, 2.8 bar) air pressure

To find Fluid Outlet Pressure (bar/psi) at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

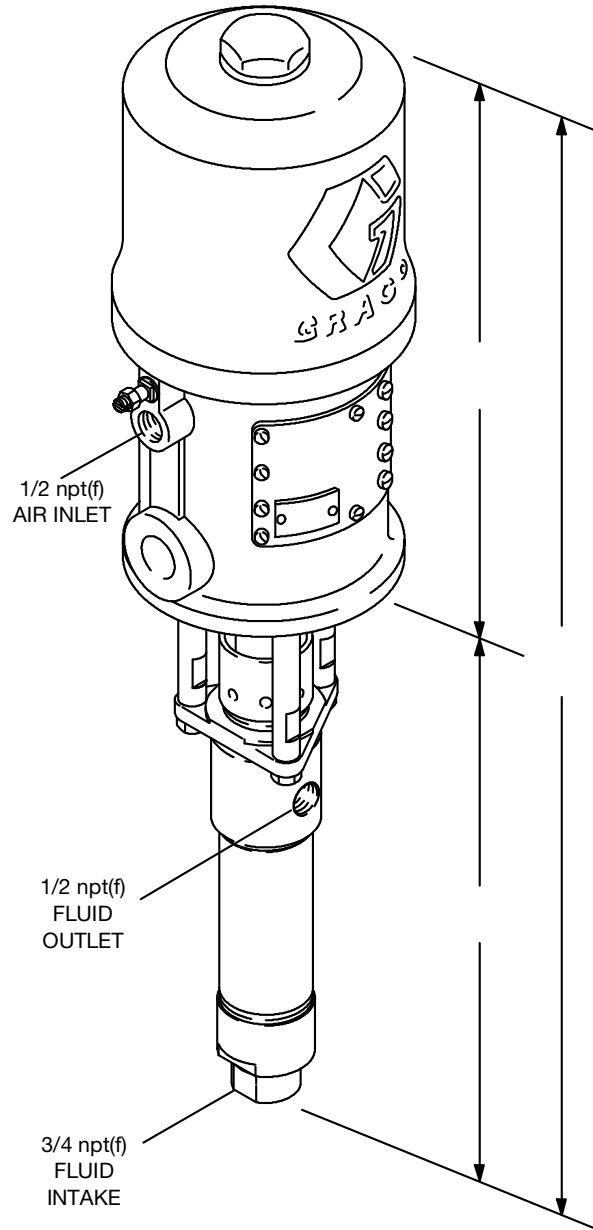
1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected fluid outlet pressure curve (black). Follow left to scale and read fluid outlet pressure.

To find Pump Air Consumption (m-/min or scfm) at a specific fluid flow (lpm/gpm) and operating air pressure (bar/psi):

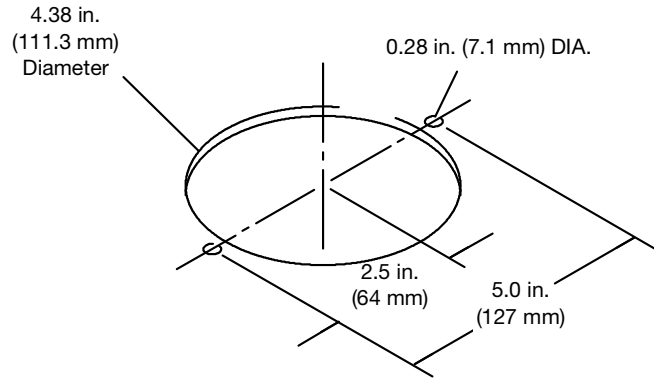
1. Locate desired flow along bottom of chart.
2. Follow vertical line up to intersection with selected air consumption curve (gray). Follow right to scale and read air consumption.

Dimensions

Model 224342 Shown



Mounting Hole Layout



Pump Model	A	B	C
224342	28.38 in. (721 mm)	14.63 in. (372 mm)	13.75 in. (349 mm)
224343	25.25 in. (641 mm)	11.5 in. (292 mm)	13.75 in. (349 mm)
902147			
247147			
261630	26.25 (667 mm)	14.63 (372 mm)	13.75 in. (349 mm)

Technical Specifications

10:1 President Stainless Steel Pump		
	US	Metric
Maximum fluid working pressure	1800 psi	12.5 MPa, 125 bar
Maximum air input pressure	180 psi	1.3 MPa, 12.5 bar
Pump cycles per 1 gallon (3.8 liters)	20 cycles	
Maximum recommended pump speed for continuous operation	60 cycles/min	
Maximum flow at continuous duty	3 gallon (11.4 liters) at 60 cycles/min	
Recommended speed for optimum pump life	15--25 cycles/min; 0.75--1.25 gpm (2.84--4.73 liters/min)	
Air consumption	approx. 15 scfm (0.42 m ³ /min) at 1 gpm (3.8 liters/min) at 100 psi (0.7 MPa, 7 bar) air pressure	
Weight	approx. 31 lb	14 kg
Wetted parts	AISI 302, 303, 304, 316, and 17--4 PH grades of Stainless Steel; Chrome Plating; PTFE; Ultra--High Molecular Weight Polyethylene	
5:1 Monark Stainless Steel Pump		
	US	Metric
Maximum fluid working pressure	600 psi	4.2 MPa, 42 bar
Maximum air input pressure	120 psi	0.8 MPa, 8.4 bar
Pump cycles per 1 gallon (3.8 liters)	24 cycles	
Maximum recommended pump speed for continuous operation	60 cycles/min	
Maximum flow at continuous duty	2.5 gallon (9.46 liters) at 60 cycles/min	
Recommended speed for optimum pump life	15-25 cycles/min; 0.63-1.04 gpm (2.38-3.94 liters/min)	
Air consumption	approx. 8.2 scfm (0.23 m ³ /min) at 1 gpm (3.8 liters/min) at 100 psi (0.7 MPa, 7 bar) air pressure	
Weight	approx. 20 lb	9 kg
Wetted parts	AISI 302, 303, 304, 316, and 17-4 PH grades of Stainless Steel; Chrome Plating; PTFE; Ultra--High Molecular Weight Polyethylene	
Notes		
All trademarks or registered trademarks are the property of their respective owners.		

California Proposition 65

CALIFORNIA RESIDENTS

 **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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Original instructions. This manual contains English. MM 308116

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Revision W, August 2024