

Repair/Parts



MODEL MVP_{Liquid} LIQUID TRANSFER PUMP

3A6396B EN

Electric diaphragm pump for solvent extraction processing.

For volatile solvents (LPG/Ethanol)

Delivery and Slurry Circulation

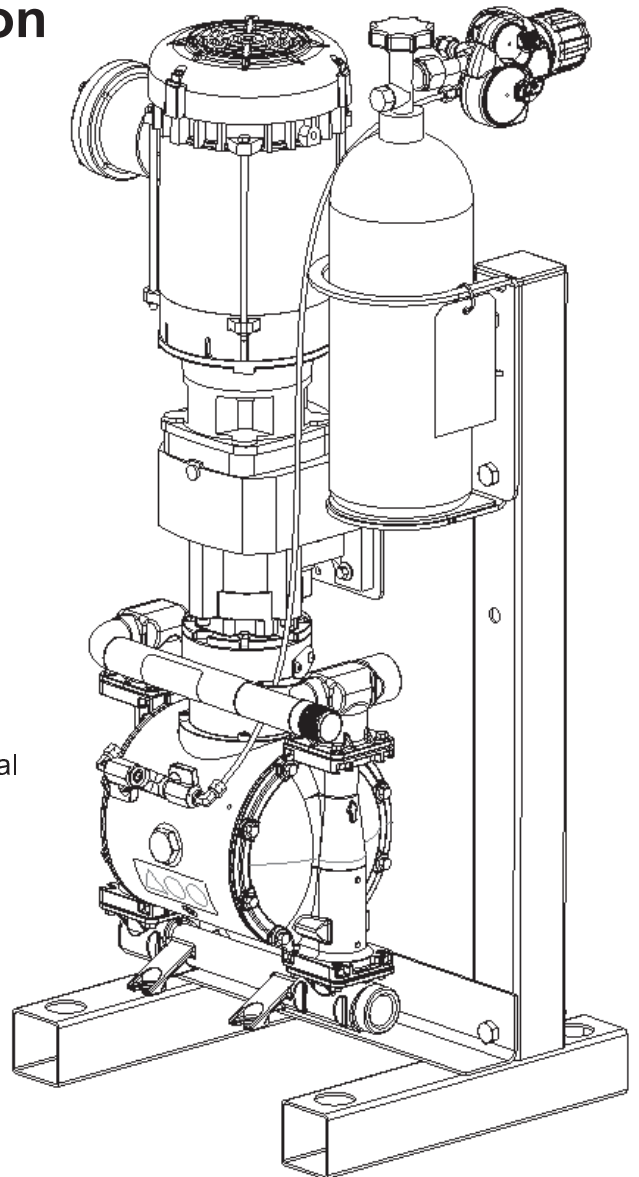
Electric-Powered

Dual-Diaphragm

Explosion-Proof Motor

Stainless Steel Wetted Parts

Rated MAWP: LPG-350-PSI



For professional use only.



Important Safety Instructions

Read all warning and instruction in this manual
and in the pump Repair/Parts manual.

Save these instructions.

Contents

Models.....	2	Check Valve Repair	8
Related Manuals	2	Diaphragm Repair.....	9
Approvals.....	2	Center Section Repair	11
Warnings	3	Torque Instructions	15
Troubleshooting.....	6	Parts.....	16
Repair.....	7	Technical Data	20
Pressure Relief Procedure.....	7	MVP Standard Warranty	22

Models



See ID tag for model number.

Model	Includes:		
	Motor	Pump	CO ₂ Cylinder
MVP _{Liquid} 1PH	2 HP 1 Phase	yes	no
MVP _{Liquid} 3PH	2 HP 3 Phase	yes	no

Related Manuals











Manual Number	Title
3A6395	Model MVP _{Liquid} Liquid Transfer Pump, Operation









Approvals




Motor Approvals	
	Explosion-proof for Class I, Division 1 (C1D1) hazardous areas
	Class I Group C&D, Class II Group F&G, T3C

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>ELECTRIC SHOCK HAZARD</p> <p>This equipment must be grounded. Improper grounding, setup, or usage of the system can cause electric shock.</p> <ul style="list-style-type: none"> • Turn off and disconnect power at main switch before disconnecting any cables and before servicing or installing equipment. • Connect only to grounded power source. • All electrical wiring must be done by a qualified electrician and comply with all local codes and regulations.
   	<p>FIRE AND EXPLOSION HAZARD</p> <p>Flammable fumes in work area can ignite or explode. Vapor or solvent flowing through the equipment can cause static sparking. To help prevent fire and explosion:</p> <ul style="list-style-type: none"> • 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 arc). • Ground all equipment in the work area. See Grounding instructions. • 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. • 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.
  	<p>PRESSURIZED EQUIPMENT HAZARD</p> <p>Fluid from the equipment, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.</p> <ul style="list-style-type: none"> • Follow the Pressure Relief Procedure when you stop operation and before cleaning, checking, or servicing equipment. • Tighten all fluid connections before operating the equipment. • Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.

 <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 Data in all equipment manuals. • Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheet (SDS) from distributor or retailer. • 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>THERMAL EXPANSION HAZARD</p> <p>Liquids subjected to heat in confined spaces, especially in hoses and pipes, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.</p> <ul style="list-style-type: none"> • All hoses and pipes possibly exposed to liquid LP-Gas must be fitted with proper hydrostatic relief valves to prevent over-pressurization. • Replace hoses proactively at regular intervals based on your operating conditions.
 	<p>LP-GAS HAZARD</p> <p>LP-Gas can cause serious injury or death if splashed in the eyes or on skin, inhaled, or ignited.</p> <ul style="list-style-type: none"> • Read Safety Data Sheet (SDS) to know the specific hazards of the solvents you are using. • Store hazardous solvent in approved containers, and dispose of it according to applicable guidelines.

 WARNING	
	<p>BURN HAZARD</p> <p>Equipment surfaces can become very hot during operation. To avoid severe burns:</p> <ul style="list-style-type: none">• Do not touch hot equipment.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of fumes, and burns. This protective equipment includes but is not limited to:</p> <ul style="list-style-type: none">• Protective eyewear, and hearing protection.• Respirators, protective clothing, and gloves as recommended by the solvent manufacturer.

Troubleshooting








- Follow the [Pressure Relief Procedure, page 7](#) , before checking or servicing the equipment.
- Check all possible problems and causes before disassembly.

Problem	Cause	Solution
Pump cycles but will not prime and/or pump.	Pump head center section has no CO ₂ pressure, or CO ₂ pressure is too low.	Check CO ₂ supply, adjust CO ₂ to 70 psi.
	Check valve balls or seats are worn.	Replace.
	Inlet or outlet hose is shut off.	Remove the restriction.
The center section is excessively hot.	The drive shaft is broken.	Replace.
Motor will not run.	Motor or controller is wired improperly.	Wire per manual.
	No power to motor.	Check electrical circuit.
The motor is operating, but the pump will not cycle.	The jaw coupling between the motor and gearbox is not connected properly.	Check the motor coupling.
Pump flow rate is erratic.	Inlet or outlet hose is pinched.	Inspect hoses.
	Check valve balls or seats are worn.	Replace.
	Diaphragm ruptured.	Replace diaphragms.
CO ₂ consumption is higher than expected.	CO ₂ fitting is loose or hose damaged.	Inspect CO ₂ fittings and hoses.
	Loose or damaged o-rings or shaft seal in center section.	Rebuild center section.
	Diaphragm ruptured.	Replace diaphragms.
Pump leaks externally from joints.	Loose diaphragm cover screws or fittings.	Check screws and fittings for tightness.

NOTE: For problems with a Variable Frequency Drive (VFD), see your VFD manual.




Repair

				
<p>To avoid serious injury or death from fumes or fluids:</p> <ul style="list-style-type: none"> • Never move or lift a pump under pressure. If dropped, the center section may rupture. Always follow the Pressure Relief Procedure, page 7, before moving or lifting the pump. 				

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.

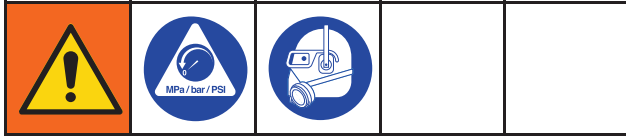
				
<p>This equipment stays pressurized until pressure is relieved manually. To help prevent serious injury from pressurized fluid, follow the Pressure Relief Procedure when you stop pumping for an extended period of time, and before you clean, check, or service the equipment.</p>				

1. Remove electric power from the system.
2. Vent/drain all solvent from the pump and hoses according to extractor system instructions.
3. Close the shutoff valve on the CO₂ cylinder.
4. On CO₂ port (E), open the pump CO₂ bleed valve and CO₂ supply valve.

NOTE: In the event of a diaphragm rupture, LP-Gas may be present in the pump center section. Always vent all LP-Gas according to extractor system instructions.

5. If performing repairs, remove CO₂ regulator and tank from the pump prior to performing the work.

Check Valve Repair



NOTE: Kits are available for new check valve balls and seats. Fastener kits also are available.

NOTE: To ensure proper seating of the check balls, always replace the seats when replacing the balls.

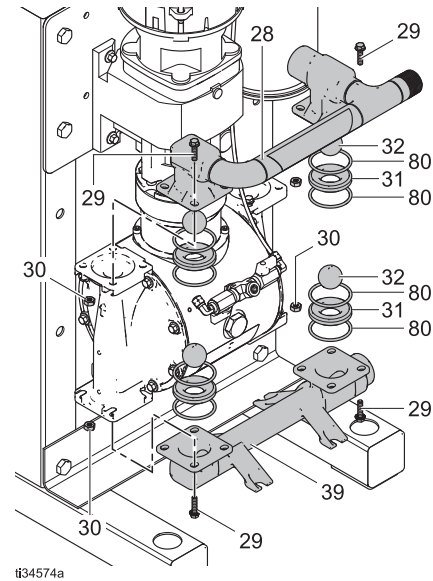
Disassemble the Check Valve

1. Follow the [Pressure Relief Procedure, page 7](#) . Remove power from the motor. Disconnect all hoses.
2. Use a 10 mm (M8) socket wrench to remove the manifold fasteners (29) and nuts (30), then remove the outlet manifold (28).
3. Remove the seats (31), balls (32), and o-rings (80).
4. Repeat for the inlet manifold (39), seats (31), and balls (32).

To continue disassembly, see [Disassemble the Diaphragms, page 9](#) .

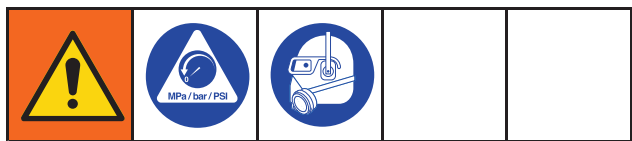
Reassemble the Check Valve

1. Clean all parts and inspect for wear or damage. Replace parts as needed.
2. Reassemble in the reverse order. Put the inlet manifold on first. Be sure the ball checks and manifolds are assembled **exactly** as shown. The arrows on the fluid covers (27) **must** point toward the outlet manifold (28).



3. Apply medium-strength (blue) thread locker to manifold bolts. Torque as specified in [Torque Instructions, page 15](#).

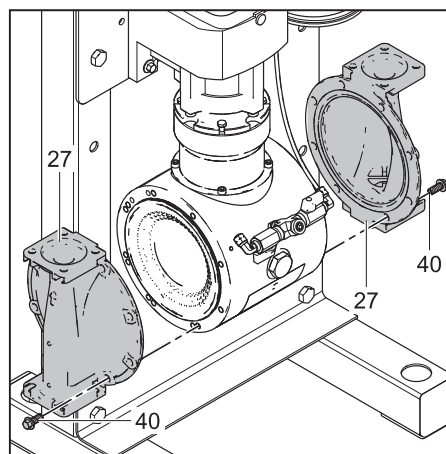
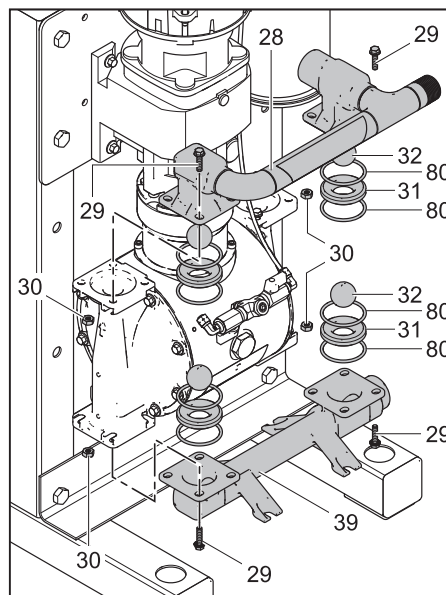
Diaphragm Repair



Disassemble the Diaphragms

NOTE: Diaphragm kit is available. See Parts section.

1. Follow the [Pressure Relief Procedure, page 7](#) . Remove power from the motor. Disconnect all hoses.
2. Remove the manifolds and disassemble the ball check valves as explained in [Disassemble the Check Valve, page 8](#) .
3. Use a 10 mm socket wrench to remove the screws (40) from the diaphragm covers (27), then pull the covers off of the pump.
4. To remove the diaphragms, the piston must be moved fully to the side toward the diaphragm to be removed. If the pump is not attached to the motor, turn the shaft by hand to move the piston. If the pump is still attached to the motor, loosen the screws and remove the motor fan cover. Turn the fan by hand in one direction to rotate the shaft to shift the piston to one side.
5. Hold a 16 mm wrench on the wrench flats of the exposed piston shaft. Use a firm grip to unscrew the diaphragm from the pump.
6. Rotate the drive shaft to move the piston fully to the opposite side, as described in step 4. Then remove the other diaphragm assembly.
7. To continue with disassembly, see [Disassemble the Center Section, page 11](#).



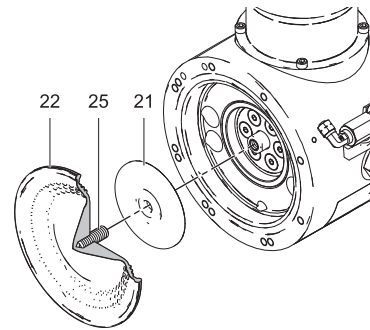
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Reassemble the Diaphragms

TIP: If you are also repairing or servicing the center section (drive shaft, piston, etc.), see [Center Section Repair, page 11](#), before you put the diaphragms back on.

1. Clean all parts and inspect for wear or damage. Replace parts as needed. Be sure the center section is clean and dry.
2. Assemble the diaphragm (22) and the CO₂ side diaphragm plate (21) exactly as shown.
3. Clean the female threads of the piston shaft with a wire brush dipped in solvent to remove any residual thread locker. Apply thread-locking primer and allow it to dry.
4. Apply medium-strength (blue) thread locker to the threads of the bolt.
5. Rotate the drive shaft to move the piston fully to one side. See instructions in step 4 of [Disassemble the Diaphragms, page 9](#).
6. On the side where the shaft extends outward the farthest from the center section, hold a 16 mm wrench on the wrench flats of the piston shaft. Screw the diaphragm in tightly.
7. Repeat to install the other diaphragm assembly.

8. Attach the diaphragm covers. Apply medium-strength (blue) thread locker to the screw threads. See [Torque Instructions, page 15](#), to tighten.



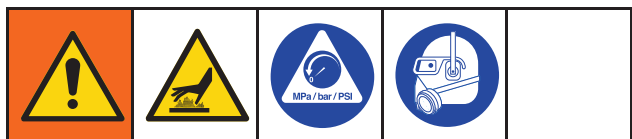
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NOTICE

After reassembly, allow the thread locker to cure for 12 hours, or according to manufacturer's instructions, prior to operating the pump. Damage to the pump will occur if the diaphragm shaft bolt loosens.

9. Reassemble the check valves and manifolds. See [Reassemble the Check Valve, page 8](#).

Center Section Repair



Disassemble the Center Section

See the illustrations in [Drive Section](#).

1. Follow the [Pressure Relief Procedure, page 7](#) . Remove power from the motor. Disconnect all hoses.
2. Remove the manifolds.
3. Remove the covers and diaphragms as directed in [Disassemble the Diaphragms, page 9](#) .

TIP: Remove pump from stand and secure gearbox to bench. Leave the pump connected to the motor.

4. Remove the drive shaft:
 - a. Use a 5 mm hex wrench to remove 4 bolts (117). Pull the pump off of the alignment housing (116).

TIP: It may be necessary to tap the pump with a rubber mallet to disengage the coupler.
 - b. Remove plug (123) to access end of drive shaft assembly. Use a 30 mm socket wrench to remove the bearing bolt (106) and the o-ring (108).
 - c. Turn the shaft so the groove on the shaft is in line with the alignment markings on the center section.
 - d. Use a 3/4–16 bolt to push out the drive shaft assembly (112). You can also use the bearing bolt (106), but remove the bearing (107) first. Be sure that the groove on the drive shaft remains aligned with the markings in the center section.

NOTICE

Proper alignment is essential. Do not apply more than about 10 in-lb (1.1 N•m) of torque. Excessive torque could strip the housing thread. If you encounter resistance, check alignment or contact your distributor.

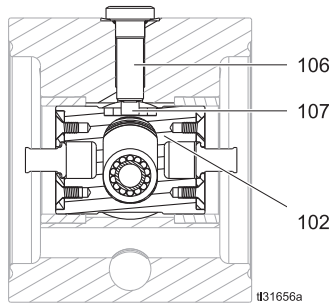
- e. The shaft coupler (113) might come out with the drive shaft assembly. If not, reach into the alignment housing (116) and remove the shaft coupler (113).
- f. Remove the seal cartridge (110), the o-ring (109) and the radial seal (111) with o-ring (111a) from the drive shaft assembly.

5. Slide the piston assembly (102) out of the center.
6. Leave the gearbox coupler (114) attached to the gearbox shaft (118) unless it is damaged. If you need to remove it, first remove the screws (128) and the access cover (126) on the alignment housing. Turn the gearbox coupler until you have access to screw (115) on the coupler (114). Use an 8 mm hex wrench to remove the screw (115), then remove the gearbox coupler (114).

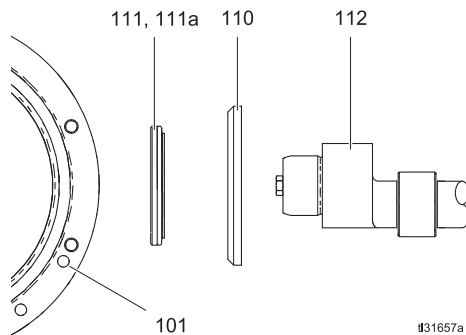
NOTE: Do not remove the alignment housing (116) from the gearbox unless it is damaged.

Reassemble the Center Section

1. Clean and dry the center housing (101), the center of the piston (102) and the drive shaft (112).
2. Inspect the piston for excessive wear and replace if needed. Grease the piston as shown and install it in the center section with the groove in line with the alignment markings on the center section.
3. Install the o-ring (108) and the bearing bolt (106). Apply medium-strength (blue) thread locker and torque the bolt to 15–25 ft-lb (20–34 N•m). Be sure that the bearing (107) is in the groove on the piston, as shown. Be sure that the piston moves freely.



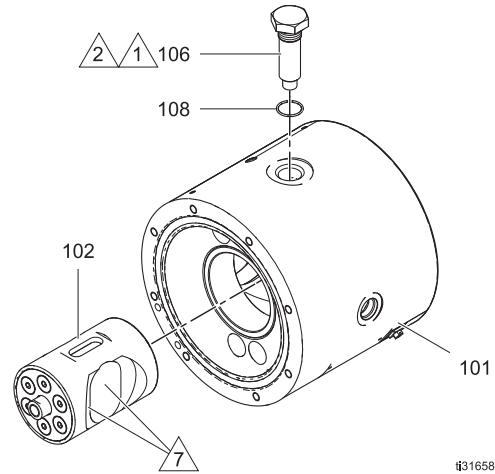
4. Install the drive shaft:
 - a. Be sure the sealing surface of the drive shaft (112) is clean. Install the seal cartridge (110) and the radial seal (111) on the drive shaft. The lips on the radial seal (111) must face **IN** toward the center.



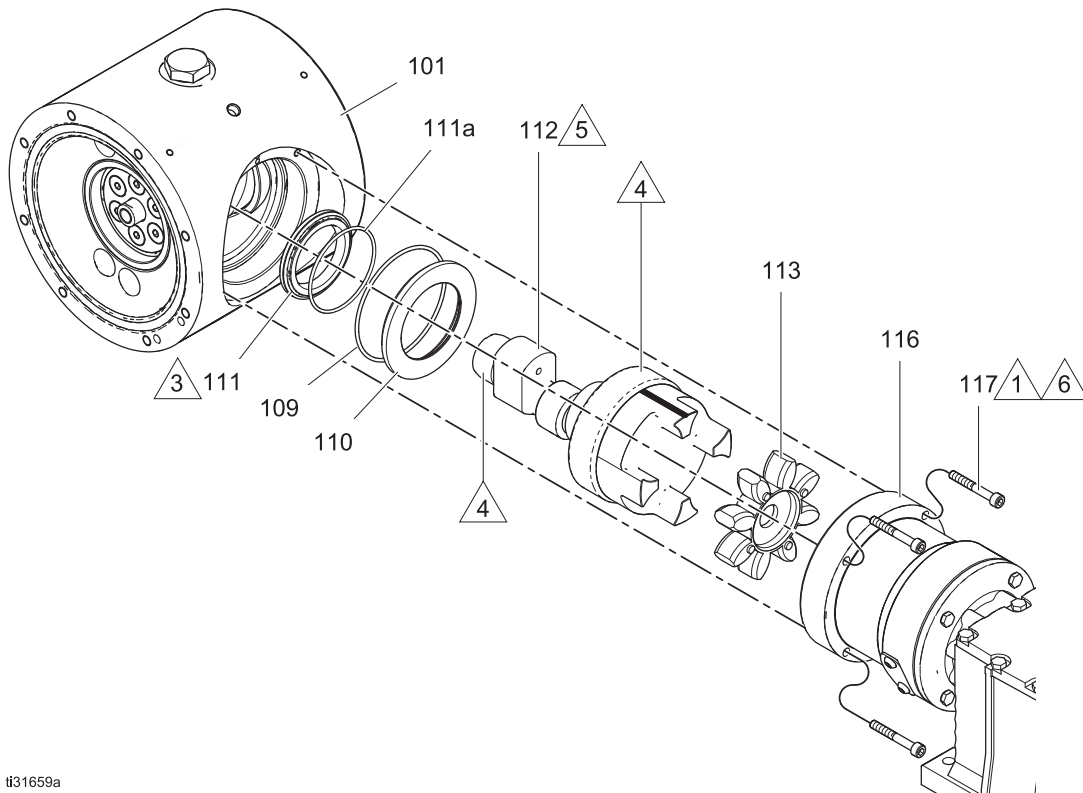
- b. Install o-ring (109).
- c. Apply anti-seize lubricant on the mating edges of the drive shaft, as shown in the illustration, on the following page.
- d. Center the piston in the housing and install the drive shaft assembly (112) into the center housing (101) with the groove facing up.
- e. Inspect the shaft coupler (113) for wear and replace if needed. Install on the drive shaft.

5. If removed, install the gearbox coupler (114) in the alignment housing (116) until the coupler seats securely on the shaft. Apply medium strength thread locker and install the screw (115). Torque to 35–45 ft-lb (47–61 N•m). Then install the access cover (126). Torque the screws (128) to 10–20 in-lb (1–2 N•m).
6. Be sure the gearbox coupler (114) is aligned properly. Turn by hand if needed. Connect the pump to the gearbox assembly, engaging the couplers.
7. Apply medium-strength (blue) thread locker and install the housing screws (117). Tighten about 5 turns at a time, in a crisscross pattern, to fully engage the coupler. Torque to 130–160 in-lb (15–18 N•m).
8. Install CO₂ inlet fittings.
9. See [Reassemble the Diaphragms, page 10](#), and [Check Valve Repair, page 8](#).

- 1 Apply medium-strength (blue) thread locker to threads.
- 2 Torque to 15–25 ft-lb (20–34 N•m).
- 3 Lips must face **IN** toward the center.
- 4 Apply anti-seize lubricant liberally on the radial surfaces of the drive shaft assembly.
- 5 Install the drive shaft assembly with the groove facing up.
- 6 Tighten screws in a crisscross pattern, 5 turns at a time, to engage the coupler evenly. Torque to 130–160 in-lb (15–18 N•m).
- 7 Apply lubricant to inner mating surface.



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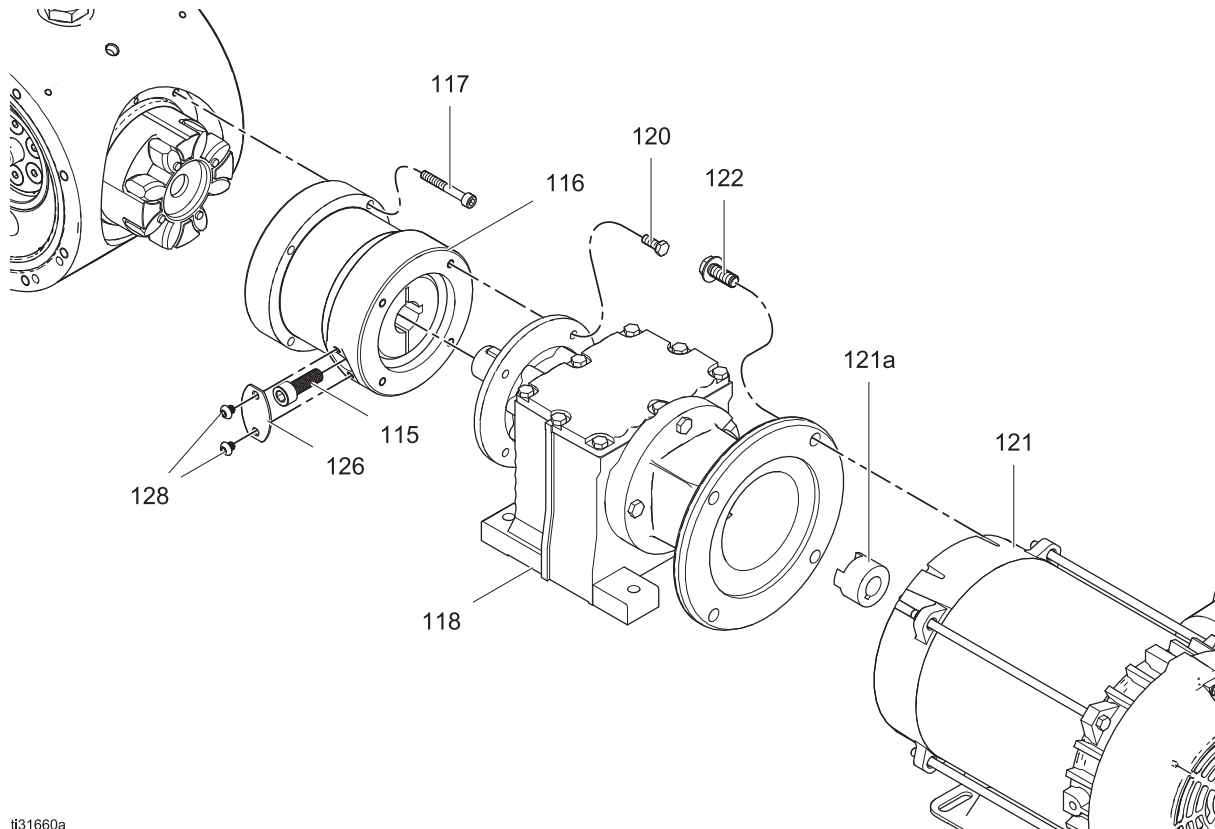


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Disconnect the Motor and Gearbox

NOTE: Normally, the motor remains connected to the gearbox. Disconnect the motor only if you suspect that the motor or gearbox must be replaced.

1. Remove the pump from the stand.
2. Use a 9/16 in. socket wrench to remove 4 screws (122).
3. Pull the motor (121) straight off of the gearbox (118).
4. Use a 5 mm hex wrench to remove 4 screws (117). Pull the gearbox, with alignment housing (116) attached, off of the pump.
5. Remove the screws (128) and the access cover (126) on the alignment housing. Turn the gearbox coupler (114) until you have access to the screw (115) on the coupler. Use an 8 mm hex wrench to remove the screw (115). Remove the gearbox coupler (114).
6. Use a 10 mm socket wrench to remove 4 screws (120). Pull the alignment housing off of the gearbox.



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Torque Instructions

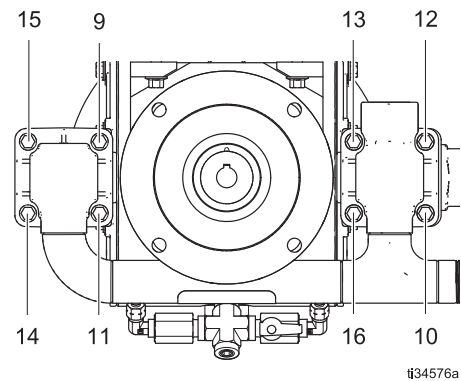
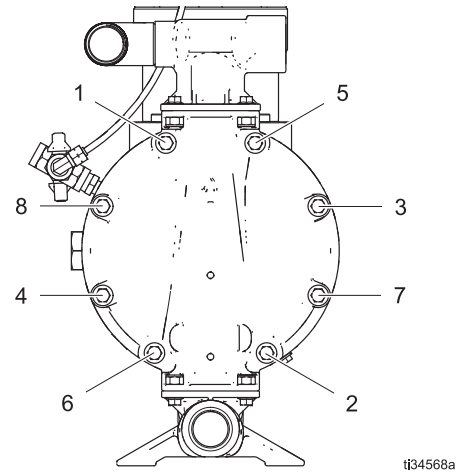
If diaphragm cover or manifold fasteners have been loosened, it is important to torque them using the following procedure to improve sealing.

NOTE: Diaphragm cover screws have a thread-locking adhesive patch applied to the threads. If this patch is excessively worn, the screws may loosen during operation. Replace screws with new ones or apply medium-strength (blue) thread locker to the threads.

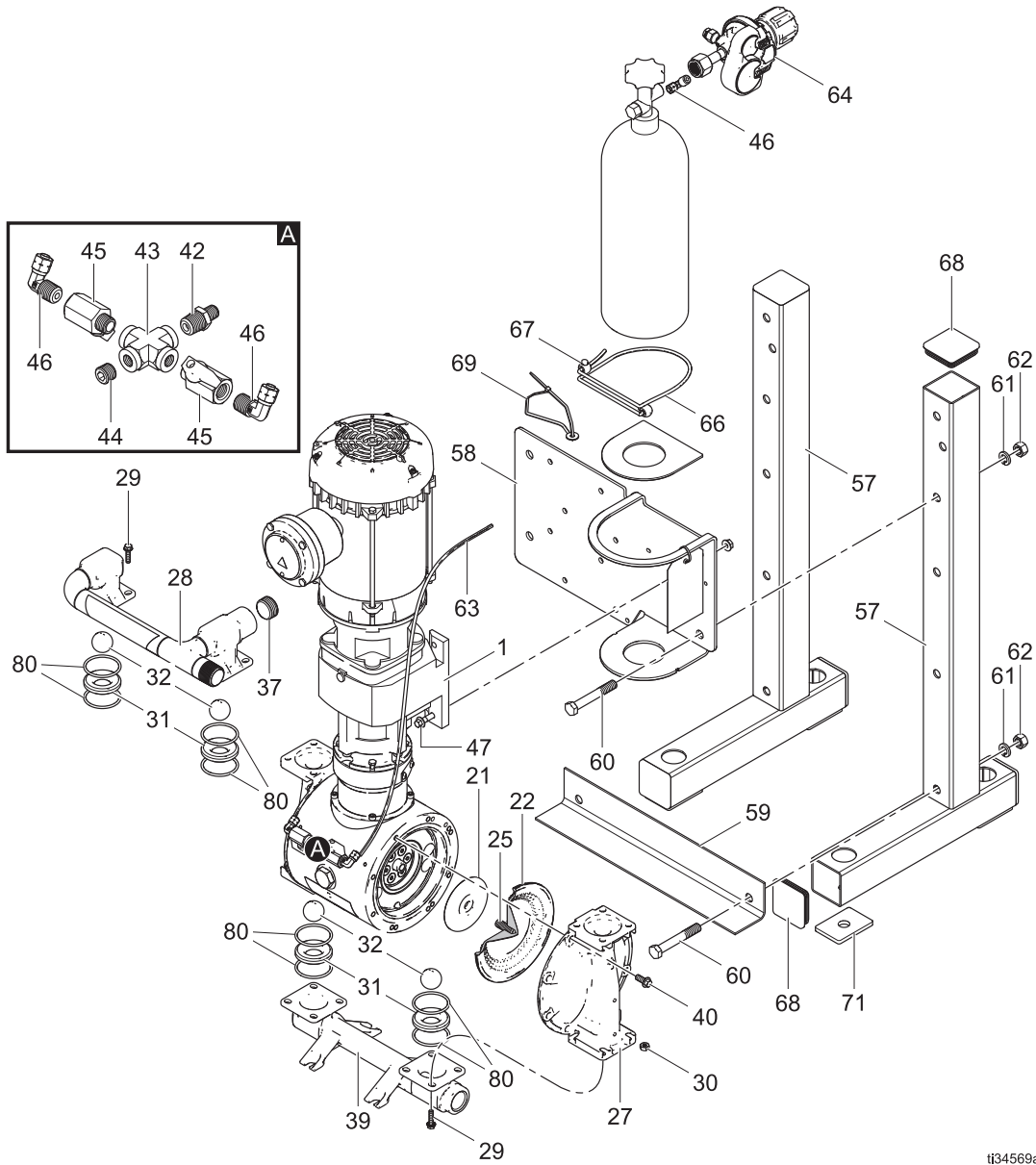
NOTE: Always completely torque diaphragm covers before tightening manifolds.

1. Start all screws a few turns. Then, turn down each screw just until head contacts cover.
2. Turn each screw by 1/2 turn or less working in a crisscross pattern in the order shown to specified torque.

Diaphragm covers and manifold screws: 110 in-lb (12.4 Nm)



Parts



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Parts/Kits Quick Reference

Use this table as a quick reference for kits. Go to the kit table on page 20 for a full description of kit contents.

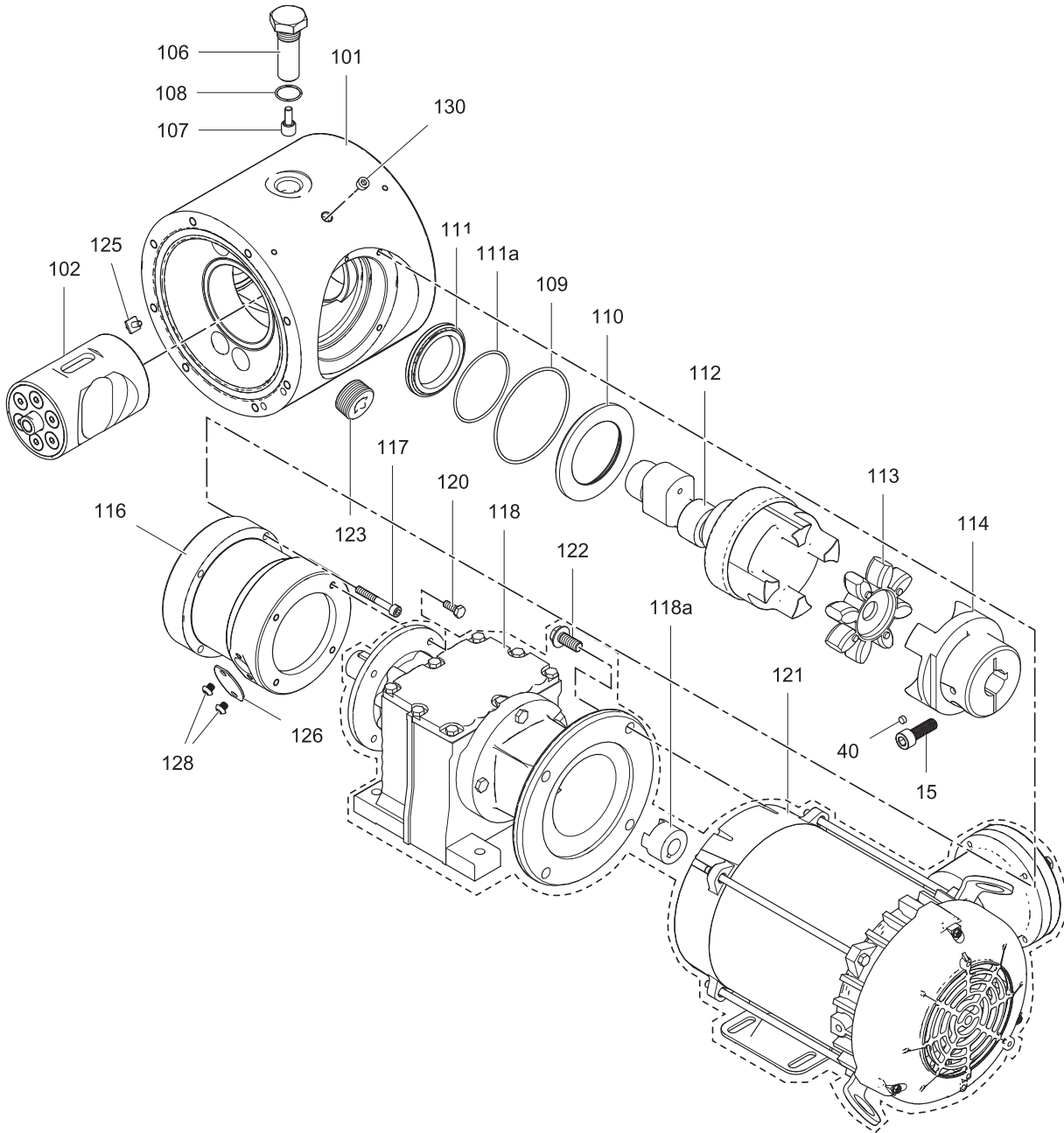
Ref.	Kit Ref	Description	Qty.
1	— — —	MODULE, drive; <i>See following page.</i>	1
21	— — —	PLATE, CO ₂ side	2
22	208	DIAPHRAGM	2
25	208	STUD, shaft	2
27	217	DIAPHRAGM COVER, SST	2
28	215	MANIFOLD, outlet	1
29	215	SCREW, manifold	16
30	215	NUT, manifold	16
31	216	SEAT, SST	4
32	216	BALL, SST	4
37	— — —	PLUG, manifold	2
39	215	MANIFOLD, inlet	1
40	217	SCREWS, cover, M8 x 1.25 x 25 mm	16
42	221	FITTING, adapter	1
43	221	CROSS, pipe	1
44	221	PLUG	3
45	221	VALVE, ball	2
46	218 221	FITTING, elbow, 1/4T x 1/4 NPT	3
47	214	BOLT	4

Ref.	Kit Ref	Description	Qty.
48	214	NUT	4
57	219	FRAME, leg	2
58	220	BRACKET	1
59	219	BRACE, frame	1
60	219 220	SCREW	6
61	219 220	WASHER, lock	6
62	219 220	NUT	6
64	218	REGULATOR, CO ₂	1
66	— — —	CORD	1
67	— — —	CLAMP, ball, cord lock	2
68	219 220	PLUG	6
80	216	O-RING	8
—	25D054▲	LABEL, caution, electric shock (not shown)	1
—	25D054▲	LABEL, warning, fire and explosion (not shown)	1

— — — *Not sold separately.*

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

Drive Section



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Ref	Kit Ref	Description	Qty
101	209	HOUSING, center, assembly; <i>includes plugs (Refs. 123, 124)</i>	1
102	---	PISTON, assembly	1
106	---	BOLT, bearing; <i>includes Refs. 107 and 108</i>	1
107	---	BEARING, cam follower. <i>included with Ref. 106</i>	1
108	---	O-RING, Size 019, Fluoroelastomer; <i>included with Ref. 106</i>	1
109	204 205	O-RING, Size 153, Buna-N	1
110	204 205	CARTRIDGE, seal	1
111	204 205	SEAL, radial	1
111a	204 205	O-RING, seal	1
112	204	SHAFT, drive	1
113	203	COUPLER, shaft	1
114	---	COUPLER, gearbox	1
115	---	SCREW, socket head, M10 x 30 mm	1
116	210	HOUSING, alignment	1
117	210	SCREW, socket head, M6 x 40 mm	4
118	214	GEARBOX	1
118a	---	COUPLER	
120	214	SCREW, cap, hex head, M6 x 16 mm	4
121	212 213	MOTOR	1
122	212 213 214	SCREW, cap, hex head, 3/8 X 7/8	4
123	209	PLUG, pipe, headless	1
125	---	SCREW, ground, M5 x 0.8	1
126	210 211	COVER, access	1
128	210 211	SCREW, button head, M6 x 8 mm	2

--- Not sold separately.

Kit Table

Ref.	Kit	Description	Qty.
202	25E496	Kit, VFD	1
203	25D034	Kit, coupler, includes: Ref 113	1
204	25D035	Kit, shaft assembly, includes: Ref 112, 110, 109, 111, 111a	1 ea
205	25D036	Kit, shaft seal, includes: Ref 110, 109, 111, 111a	1 ea
206	25D037	Kit, piston, includes Ref 102	1
208	25P795	Kit, diaphragm, includes: Ref 22, 25	2 ea
209	25E523	Kit, center section, includes: Ref 101	1
210	25D041	Kit, alignment housing, includes: Ref 116, 126 Ref 117 Ref 128	1 ea 4 ea 2 ea
211	25D042	Kit, access cover, includes: Ref 126 Ref 128	1 ea 2 ea
212	25E504	Kit, motor, 2Hp, 3 Phase, includes: Ref 121 Ref 122	1 ea 4 ea
213	25E503	Kit, motor, 2Hp, 1 Phase, includes: Ref 121 Ref 122	1 ea 4 ea
214	25E519	Kit, gear reducer, includes: Ref 118 Ref 47, 48, 120, 122	1 ea 4 ea
215	25E520	Kit, manifold assembly, includes: Ref 28, 39 Ref 29, 30	1 ea 16 ea
216	25E521	Kit, check valves, includes Ref 31, 32, 80	1 ea
217	25E522	Kit, fluid cover, includes: Ref 27 Ref 40	2 ea 16 ea
218	25D049	Kit, CO ₂ regulator, includes: Ref. 33	1 ea
219	25E506	Kit, stand legs, includes: Ref 59 Ref 57 Ref 71, 72 Ref 60-62, 68	1 ea 2 ea 4 ea 6 ea
220	25E507	Kit, stand bracket, includes: Ref 58 Ref 60-62	1 ea 4 ea
221	25D052	Kit, fill/vent fittings, includes: Ref 42-44 Ref 45, 46	1 ea 2 ea

Technical Data

	US	Metric
Model MVP_{Liquid} Vapor Recovery Pump		
Maximum pumping outlet pressure	70 psi	0.48 MPa, 4.8 bar
Center section CO ₂ charge range	5 to 80 psi	0.03–0.55 MPa, 0.3–5.5 bar
Equipment Withstand Pressure	350 psi	2.41 MPa, 24.1 bar
Maximum CO ₂ consumption	<0.2 scfh	<0.006 cubic meters/hour
CO ₂ inlet size	1/4 in. npt(f)	
Maximum pump speed	135 cpm	
Process Inlet and Outlet Size	1 in. npt	
Weight	173.2 lb	78.6 kg
Electric Motor: Explosionproof for C1D1 hazardous areas (see approvals page)		
Model MVP _{Liquid} , 3PH, inverter rated		
Power	2 Hp	1.5 kW
Speed	3600 rpm (60 Hz)	
Gear Ratio	25.85	
Voltage	3-phase 208-230/460V	
Maximum Amperage Load	5.2 A (230V) / 2.6 A (460V)	
Model MVP _{Liquid} , 1PH		
Power	2 Hp	1.5 kW
Speed	3600 rpm (60 Hz)	
Gear Ratio	25.85	
Voltage	1-phase 115/208-230V	
Maximum Amperage Load	20 A (115V) / 10 A (230V)	
Noise Data		
Sound Power (measured per ISO-9614-2)	88.5 dBa	
Sound Pressure [tested 3.28 ft (1 m) from equipment]	80.5 dBa	
Materials		
Process Pressure Section and Check Valves	stainless steel	
Diaphragms	PTFE	
Process Vapor Temperature Range	PTFE: -40° to 220°F (-40° to 104°C)	

MVP Standard Warranty

MVP warrants all equipment referenced in this document which is manufactured by MVP and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by MVP, MVP will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by MVP to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with MVP's written recommendations.

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This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized MVP distributor for verification of the claimed defect. If the claimed defect is verified, MVP will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

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MVP Information

For the latest information about MVP products, visit MasterVaporPumps.com.

Protected as patented technology.

To place an order, contact your MVP Distributor or call to identify the nearest distributor.

Toll Free: 1-888-502-3303

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All written and visual data contained in this document reflects the latest product information available at the time of publication.

MVP reserves the right to make changes at any time without notice.

Original Instructions. This manual contains English. MM 3A6396

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