



PILE DRIVER® III PUMP ASSEMBLY
Model Nos. 2319, 2328, 2341, 2356, 2370, 84923
Series "C"

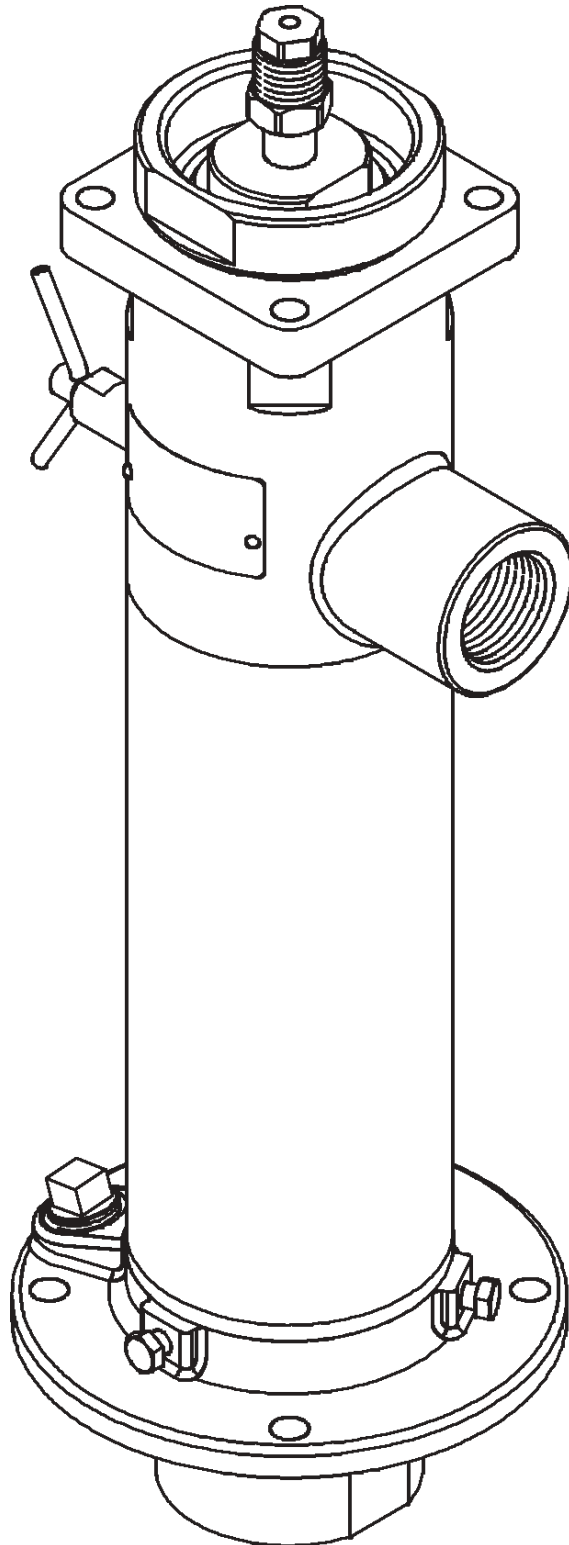




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SAFETY

Read and carefully observe these operating instruction before operating the pump. The pump must be operated, maintained and repaired exclusively by persons familiar with the operating instructions. Operate the pump only after Safety instructions and this Operation Manual are fully understood.

PRODUCT SPECIFICATIONS

Pump Stroke: 6 in. (152 mm)
 Output per cycle: 85 cu. in. (1393 cc)
 Operating Temperature: -30°F to +160° F (-34° C to +71°C)
 Max. Recommended Speed: 75 Cycles/Minute
 Output at 75 cpm: 27.6 gpm (104.5 liter/min.)
 Wetted part materials: Carbon steel, Bronze, Polyurethane, Nitrile
 Weight: 69 lbs. (31.3 kg.)

GLAND PACKING DESIGN*

Many industrial type materials (sealants, adhesives, inks, etc.) display a tendency to dry out and to build up on the pump plunger rod. These hard dried out materials cause the gland packing to wear rapidly, resulting in leakage and ultimate pump failure The second problem is the gland seal exposure to high pressure and in particular, to pressure fluctuation during pump operation (stroke change over).

The gland packing design* of Pile Driver III pumps addresses both problems:

Externally, a special spring type Metal wiper (Item 5) scrapes built-up and dried material from the pump plunger before it is pulled through the gland packing on the down stroke. In order to help the metal wiper work longer and more efficiently, the lube well of the pump should be filled with a fluid compatible with the material being pumped.

Do not fill the lube well to full capacity, as the reciprocating movement of the pump may draw fluid into the airmotor.

Internally, a special Protection Sleeve (Item 9) with concentric grooves creates a labyrinth path which reduces the effects of internal pressure and stroke change over fluctuation on the gland seal. In addition, a second internal wiper limits gland seal exposure to the pumped material.

The combination of the metal wipers and the protection sleeve results in longer gland seal life and prevents leakage.

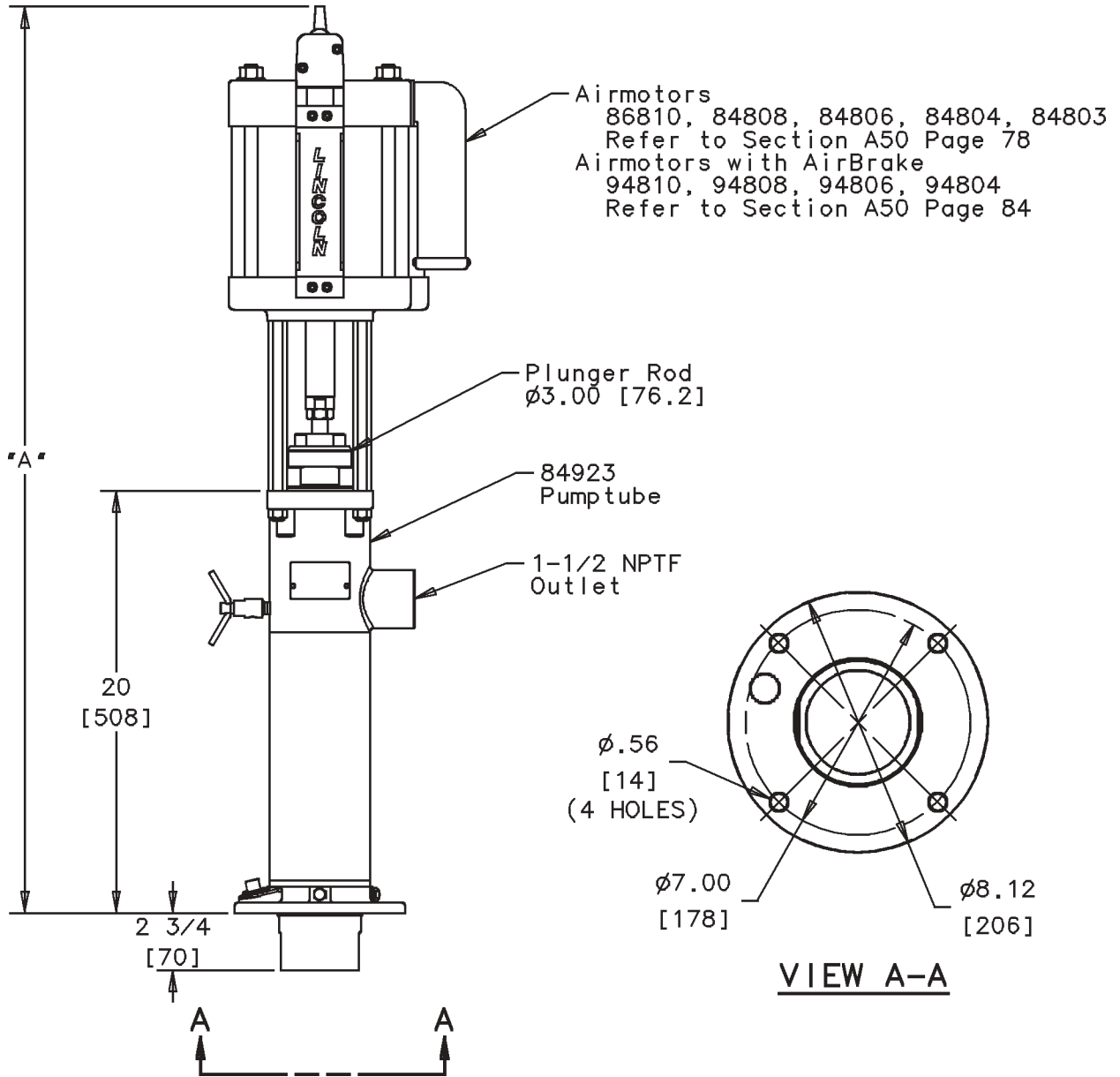
*U.S. Patent No. 4,976,192

MODEL CHART

Pump Model	Airmotor**	Ratio	Maximum Delivery Pressure	Maximum Air Pressure
2319	86810	10:1	1000 psi (69 bar)	100 psi (7 bar)
2328	84808	6:1	600 psi (41 bar)	
2356	84806	3:1	300 psi (21 bar)	
2370	84804	1.5:1	300 psi (21 bar)	200 psi (14 bar)
2341	84803	1:1	200 psi (14 bar)	

**Refer to Airmotor Owner/Operator Manual, Section A50 Page 78.

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Pump Tube	Airmotor	Airmotor w/ AirBrake	Dimension "A"	
			in.	[mm.]
84923	86810	94810	42-3/4	[1086]
	84808	94808		
	84806	94806		
	84804	94804	43-5/8	[1108]
	84803			

 **WARNING**

FAILURE TO HEED THE FOLLOWING WARNINGS INCLUDING MISUSE, OVER PRESSURIZING, MODIFYING PARTS, USING INCOMPATIBLE CHEMICALS AND FLUIDS, OR USING WORN OR DAMAGED PARTS, MAY RESULT IN EQUIPMENT DAMAGE AND/OR SERIOUS PERSONAL INJURY, FIRE, EXPLOSION OR PROPERTY DAMAGE.

- Do not exceed the stated maximum working pressure of the pump or of the lowest rated component in your system.
- Do not alter or modify any part of this equipment.
- Do not operate this equipment with combustible gas or fuel, gasoline, diesel fuel, kerosene, etc.
- Do not attempt to repair or disassemble the equipment while the system is pressurized.
- Make sure all fluid connections are securely tightened before using this equipment.
- Always read and follow the fluid manufacturer's recommendations regarding fluid compatibility, and the use of protective clothing and equipment.
- Check all equipment regularly and repair or replace worn or damaged parts immediately.
- Always check equipment for proper operation before each use, making sure safety devices are in place and operating properly.

NOTE: Pump should be installed upright for operation.
Use **Model 83727** stand pipe for bulk material dispensing. Locate pump as close to tank as possible and use a minimum 3 inch (76mm) I.D. inlet hose or pipe.

- **SERVICING.** Before servicing or cleaning pump, or removing fluid hose or gun from a unit that has been used, be sure to disconnect air lines and carefully bleed pressure off of the system.

ATTACHING AIRMOTOR TO PUMPTUBE

1. Tightly attach tie rods to the airmotor (use short threaded end of the tie rods).
2. Mount airmotor on top of the pumptube outlet and tightly connect Coupling Nut (Item 2) to airmotor piston rod.
3. Hand tighten tie rods to the pumptube with four nuts supplied with airmotor.
4. Slowly cycle the pump several times, using just enough air pressure to operate the pump without stalling.
5. Stop the pump on an "up" stroke and tighten the four nuts to securely fasten the airmotor to the pumptube.

OPERATING PRECAUTIONS

- Use Lincoln replacement parts to assure compatible pressure rating.
- HEED ALL WARNINGS.
- Be sure material hoses and other components are able to withstand fluid pressures developed by this pump.
- Do not operate pump continuously at speeds in excess of 75 cycles per minute.
- Disconnect air line from pump airmotor when system sits idle for long periods of time.

 **WARNING**

PREVENT STATIC SPARKING. If static sparking occurs, fire or explosion could result. Pump, dispensing valve, and containers must be grounded when handling inflammable fluids, such as petroleum products, paints, lacquers, etc. and wherever discharge of static electricity is a hazard.

- Check continuity (a good static wire connection) with an ohmmeter. Place one probe on one hose fitting and the other probe on other hose fitting, continuity or proper grounding through hose is good when a reading is obtained on the ohmmeter.
- **PREVENT FIRES.** When pumping, flushing or recirculating volatile solvents, the area must be adequately ventilated.
- Keep solvents away from heat, sparks and open flames. Keep containers closed when not in use.

 **CAUTION**

DO NOT allow pump to operate when out of material.



PUMP PRIMING

To begin operation, the pump has to be primed with the pumped material. The Pile Driver III pump is a double acting (pumps material on "up" & "down" stroke) positive displacement reciprocating pump and as such intakes material only on the "up" stroke.

To prime pump, open output line (material valve) and slowly open air supply valve until pump starts. Allow pump to cycle very slowly until all air is pushed out of lines and material fills up pump and lines. Close output line (material shut-off valve) - pump should stall against pressure.

If pump fails to prime properly, open Bleeder Valve (Item 12) slightly to expel trapped air and at the sign of material coming out of the valve close it tightly.

Note: Pumps are factory tested with light oil and some of it is left in to protect pump parts during storage and transportation. To prevent contamination of material to be pumped, flush pump before using.

OUTLET POSITION ADJUSTMENT

The position of the pump outlet may be adjusted by loosening the three set screws (Item 30) and rotating the pump-tube outlet into the position desired. Retighten the screws to 25 ft/lbs.

DISASSEMBLY PROCEDURE

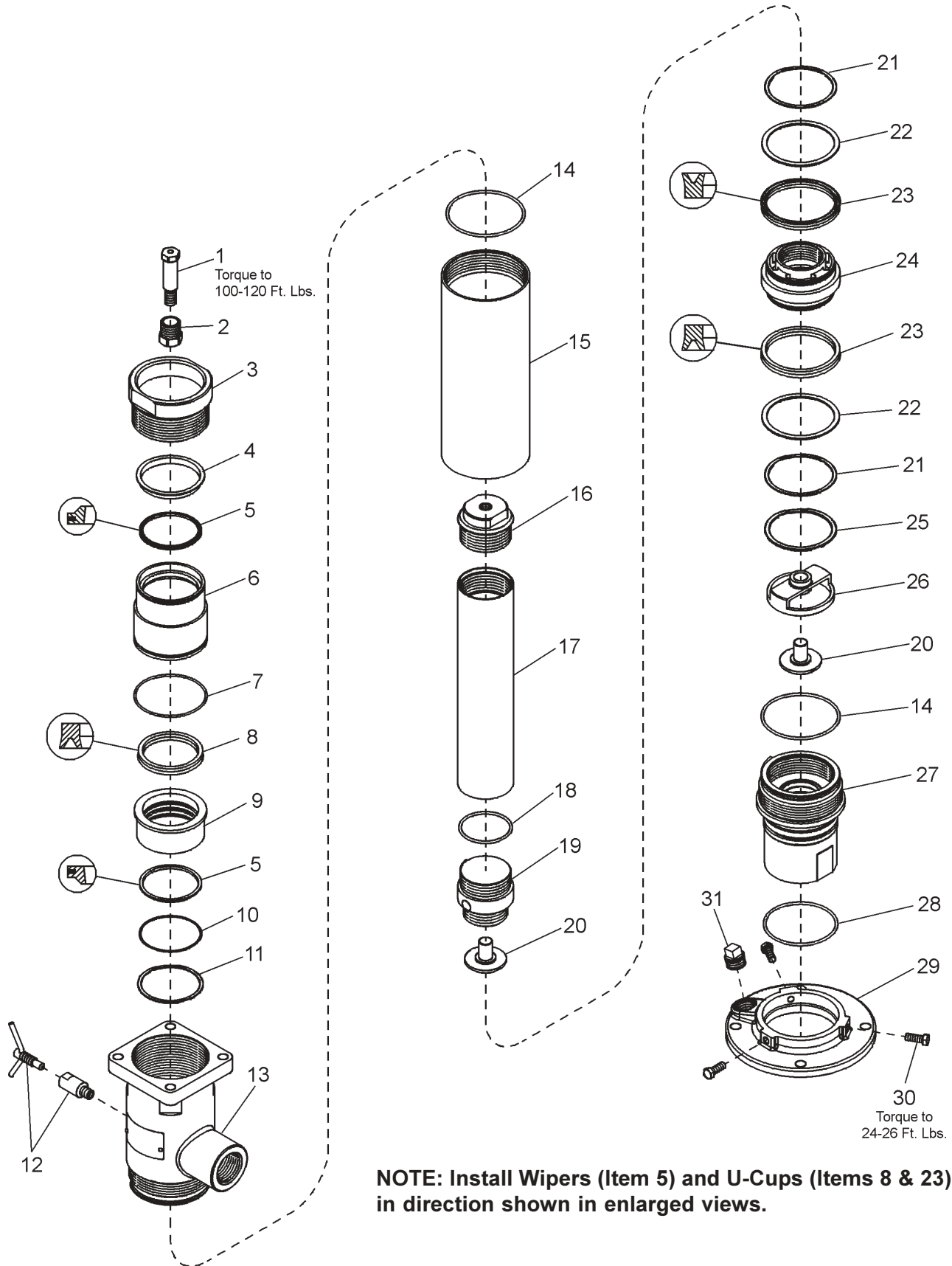
Tools Required

9/16" wrench	(Item 30)
5/8" wrench	(Item 31)
3/4" wrench	(Item 12)
7/8" wrench	(Item 1)
1-1/4" wrench	(Item 2)
2" wrench	(Item 16)
3-3/4" wrench	(Item 27)
4-1/8" wrench	(Item 3)
4-3/4" dia. strap wrench	(Item 15)
2 Screwdrivers	(Items 6, 11, 21 & 25)

Procedure

1. Remove Screws (Item 30) from Mounting Flange (Item 29).
2. Remove Mounting Flange (Item 29) from Inlet Bushing (Item 27).
 - a. Remove Pipe Plug (Item 31) from Mounting Flange (Item 29).
3. Remove Inlet Bushing (Item 27) from Pump Tube (Item 15).
 - a. Remove O-ring (Item 28) from Inlet Bushing (Item 27).
 - b. Remove O-ring (Item 14) from Inlet Bushing (Item 27).
4. Remove Bolt Connector (Item 1) from End Plug (Item 16).
 - a. Slide Coupling Nut (Item 2) off Bolt Connector (Item 2).
5. Remove piston and plunger assembly from bottom of Pump Tube (Item 15).
 - a. Remove piston assembly from Piston (Item 19).
 - b. Remove Check (Item 20) from Piston (Item 19).
 - c. Remove Retaining Rings (Item 21) from Piston (Item 24).
 - d. Remove Washers (Item 22) and U-cups (Item 23) from Piston (Item 24).
 - e. Remove Piston (Item 19) from Piston Tube (Item 17).
 - f. Remove O-ring (Item 18) from Piston (Item 19).
 - g. Remove End Plug (Item 16) from Piston Tube (Item 17).
6. Remove Pump Tube (Item 15) from Outlet Body (Item 13).
7. Remove O-ring (Item 14) from Outlet Body (Item 13).
8. Remove Bleeder Valve (Item 12) from Outlet Body (Item 13).
9. Remove Gland Nut (Item 3) from Outlet Body (Item 13).
 - a. Remove Wiper (Item 5) and Spacer (Item 4) from Gland Nut (Item 3).
10. Remove Bushing (Item 6) from Outlet Body (Item 13).
 - a. Remove O-Ring (Item 7) and U-Cup (Item 8).
11. Remove Sleeve (Item 9), Wiper (Item 5), Washer (Item 10) and Retaining Ring (Item 11) from Outlet Body (Item 11).
12. To re-assemble pump, reverse disassembly procedure. (Refer to illustration for torque specifications.)

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PARTS LIST

Item No.	Description	Qty.	Part Number
1	Bolt Connector (7/8" hex)	1	236225
2	Coupling Nut (1-1/4" hex)	1	237051
3	Gland Nut (4-1/8" flats)	1	272833
4	Spacer	1	272830
5	Wiper	^ 2	241603
6	Bushing	1	272834
7	O-ring (polyurethane)	# * ^ 1	239921
8	U-cup (polyurethane)	# * ^ 1	239927
9	Sleeve	1	247272
10	Washer	^ 1	247280
11	Retaining Ring	^ 1	247278
12	Bleeder Valve (3/4" flats)	1	84012
13	Outlet Body	1	241046
14	O-ring (polyurethane)	* ^ 2	239920
15	Pump Tube	1	239915
16	End Plug (2" flats)	1	239922
17	Piston Tube	1	239916
18	O-ring (polyurethane)	* ^ 1	239932
19	Piston	1	241019
20	Check	1	241037
21	Retaining Ring	^ 2	239906
22	Washer	2	239905
23	U-cup (polyurethane)	* ^ 2	239904
24	Piston	1	241061
25	Retaining Ring	^ 1	241036
26	Check Guide	1	241035
27	Inlet Bushing (3-3/4" flats)	1	246919
28	O-ring (nitrile)	* ^ 1	246837
29	Mounting Flange	1	246920
30	Hex Cap Screw (9/16" hex)	3	272821
31	Pipe Plug (5/8" square)	1	67224

^ Included in Repair Parts Kit No. 241682

* Included in Seal Kit No. 84924

Included in Gland Seal Kit No. 85316

PUMPTUBE SERVICE KITS

	Polyurethane	Teflon	Polyethylene
Repair Kit	241682		
Seal Kit	84924	84925	84926
Gland Seal Kit	85316	85326	85332

Repair Kit contains all parts needed for complete pumptube rebuild.

Polyurethane Seal Kit contains all soft seals.

Teflon and Polyethylene Seal Kits contain gland and piston u-cups only.

Gland Seal Kits contain gland u-cup and o-ring only.



TROUBLESHOOTING

Problem	Possible Cause	Solution
Pump does not operate.	Restricted or inadequate air supply.	Check air supply pressure and air hose diameter (see Airmotor manual for minimum air supply hose diameter).
	Obstructed material output.	Check output line for restrictions.
Erratic or accelerated operation.	Pump is not primed.	Prime pump (see "Pump Priming" instructions).
	Insufficient material supply.	Refill material supply.
	Material is too heavy for priming.	Decrease output with material valve. Increase pressure to pressure primer (if in use). Check for inlet restrictions.
Pump operates on "down" stroke only (missing "up" stroke).	Worn or damaged piston u-cup (Item 23) or piston check (Items 20 and 24).	Check and replace if needed.
Pump operates on "up" stroke only (missing "down" stroke).	Worn or damaged inlet check (Items 20 and 27).	Check and replace if needed.
	Insufficient material supply. Pump is not intaking enough material to dispense on both strokes.	Check inlet for restrictions. Decrease output with material valve.
Pump is operating but not dispensing material.	Inlet check (Items 20 and 27) is not seating or is damaged.	Check and replace if needed.

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