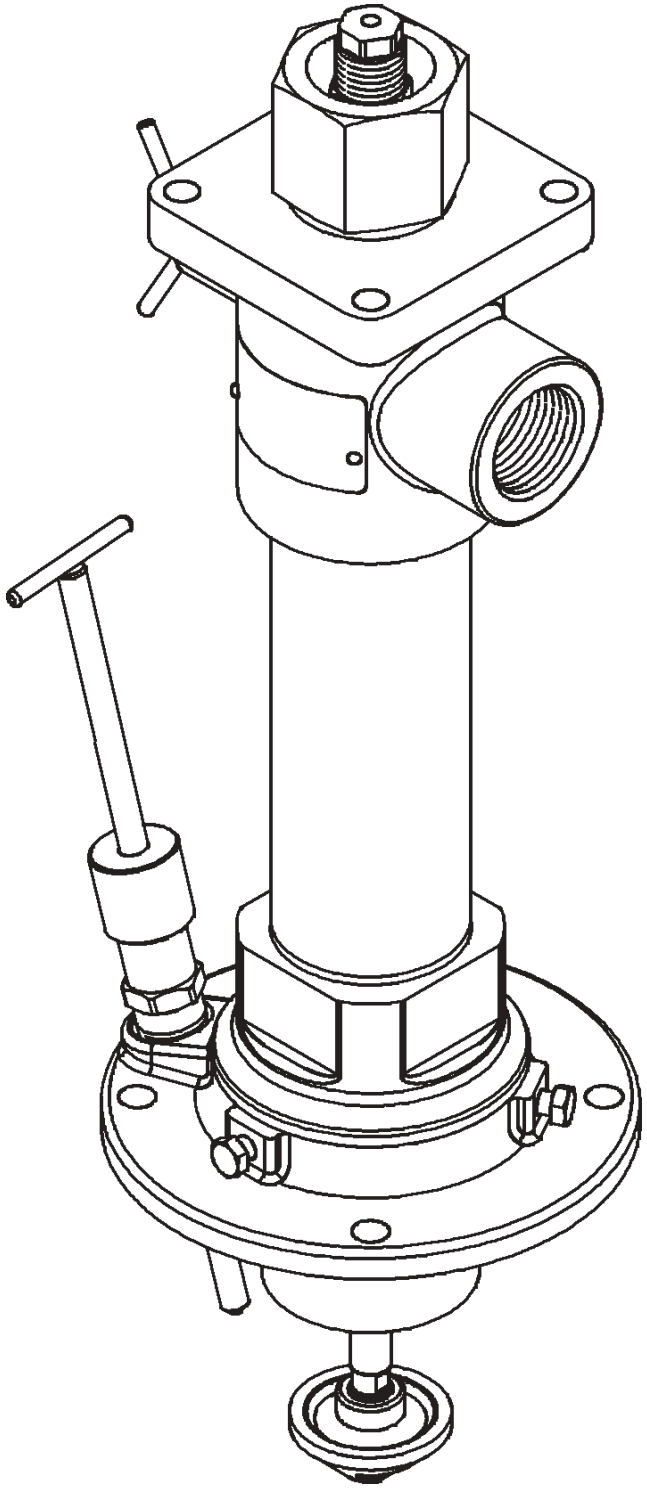

PILE DRIVER® III PUMP ASSEMBLY
MODELS 84900, 84901 and 84902

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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:	
84900	22 cu. in. (360 cc)
84901	17 cu. in. (278 cc)
84902	12 cu. in. (196 cc)
Operating Temperature:	-30°F to +160° F (-34° C to +71°C)
Max. Recommended Speed:	75 Cycles/Minute
Output at 75 cpm:	
84900	7.1 gpm (26.9 liter/min).
84901	5.5 gpm (20.8 liter/min.)
84902	3.9 gpm (14.8 liter/min.)
Wetted part materials:	Carbon steel, Bronze, Polyurethane, Nitrile
Weight:	56 lbs. (25.4 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.

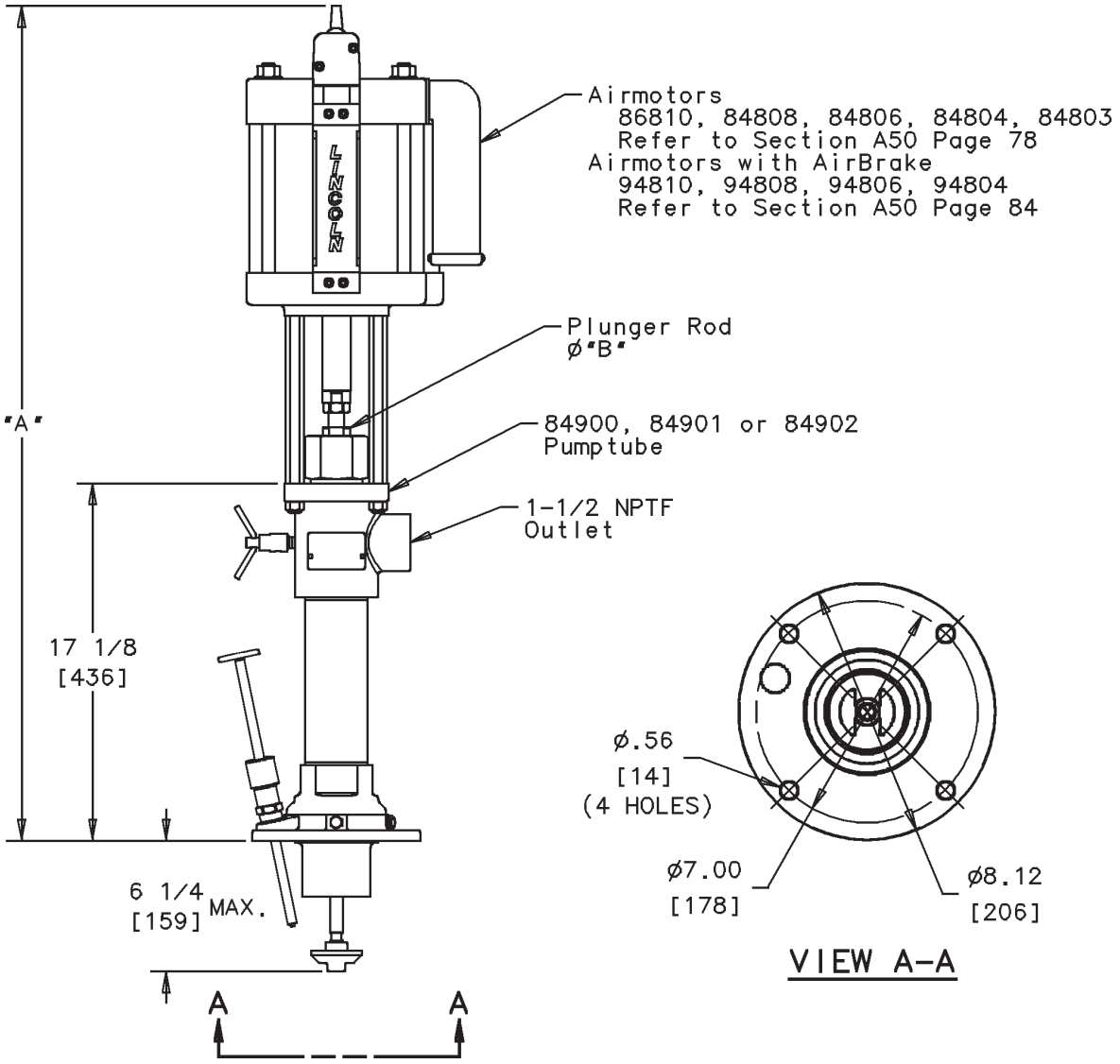
The combination of the metal wipers and the protection sleeve results in longer gland seal life and prevents leakage.

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

MODEL CHART

Pump Tube	Pump Model	Airmotor**	Ratio	Maximum Delivery Pressure	Maximum Air Pressure
84900	2342	86810	42:1	4200 psi (290 bar)	100 psi (7 bar)
	2325	84808	25:1	2500 psi (172 bar)	
	2352	84806	15:1	1500 psi (104 bar)	
	2367	84804	7:1	1400 psi (97 bar)	200 psi (14 bar)
	2374	84803	3:1	600 psi (41 bar)	
84901	2355	86810	55:1	5500 psi (379 bar)	100 psi (7 bar)
	2323	84808	35:1	3500 psi (241 bar)	
	2350	84806	20:1	2000 psi (138 bar)	
	2365	84804	10:1	2000 psi (138 bar)	200 psi (14 bar)
	2372	84803	4:1	800 psi (55 bar)	
84902	2375	86810	75:1	7500 psi (517 bar)	100 psi (7 bar)
	2322	84808	45:1	4500 psi (310 bar)	
	2349	84806	25:1	2500 psi (172 bar)	
	2364	84804	12:1	2400 psi (166 bar)	200 psi (14 bar)
	2371	84803	6:1	1200 psi (83 bar)	

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



Pump Tube	Airmotor	Airmotor w/ AirBrake	Dimension "A" in.	[mm.]	Dimension "B" in.	[mm.]
84900	86810	94810	39-7/8	[1083]	1.625	[41.3]
	84808	94808				
	84806	94806				
	84804	94804	40-3/4	[1105]		
	84803					
84901	86810	94810	39-7/8	[1083]	1.500	[38.1]
	84808	94808				
	84806	94806				
	84804	94804	40-3/4	[1105]		
	84803					
84902	86810	94810	39-7/8	[1083]	1.312	[33.3]
	84808	94808				
	84806	94806				
	84804	94804	40-3/4	[1105]		
	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 quipment 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 of 3 in (76 mm) I.D. inlet hose or pipe.

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 outlet 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.

⚠ WARNING

Keep hands away from pump inlet while airline is connected. Do not operate pump unless it is firmly mounted on to Pressure Primer or Standpipe and area around pump inlet is clear of obstructions.

- 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.
- 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.

⚠ 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 start operating, the pump has to be primed with pumped materials. 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 out pump and lines. Close output line (material valve) - pump should stall against pressure.

If pump fails to prime properly, open Bleeder Valve (Item 11) 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

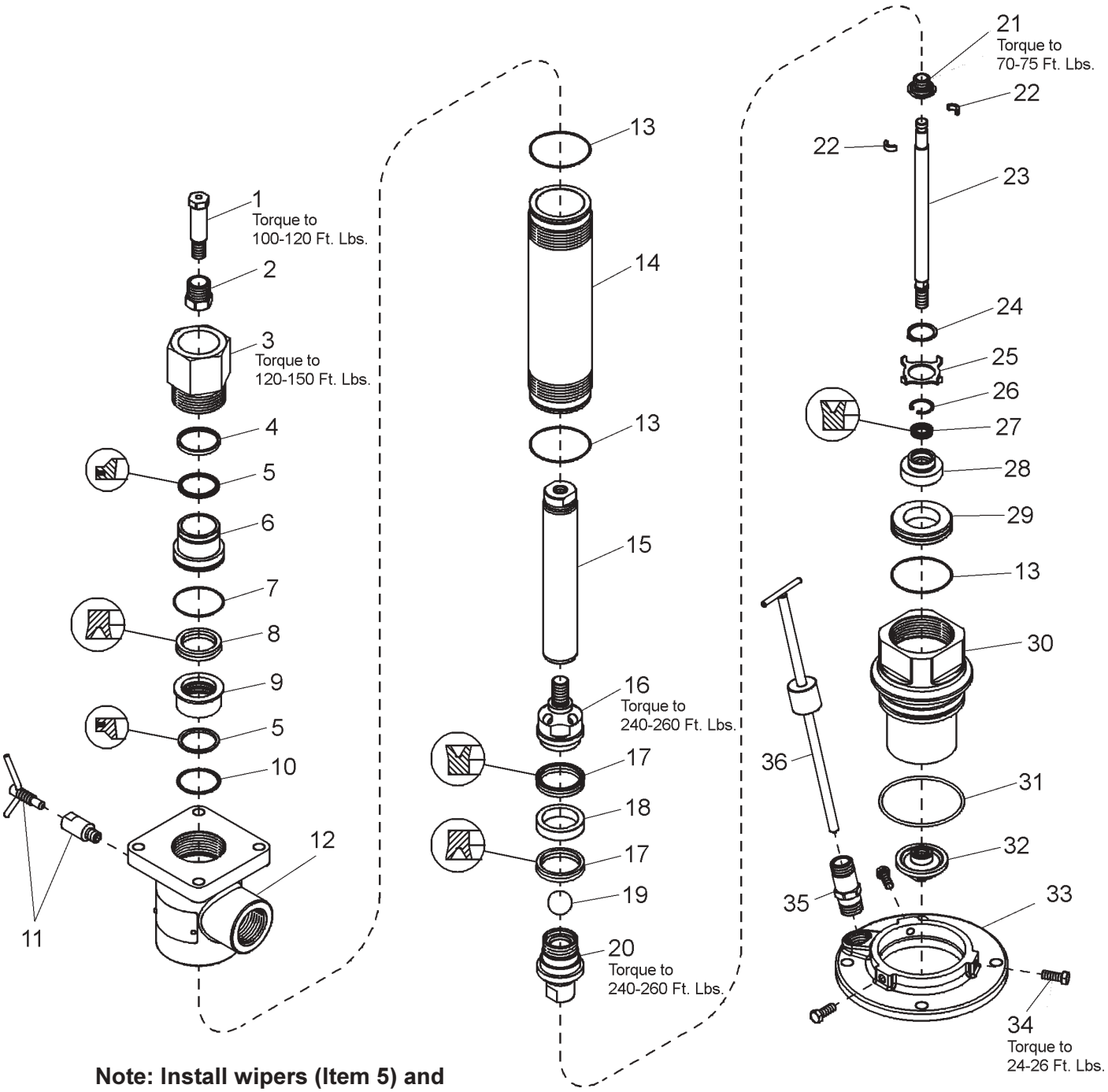
The position of the pump outlet may be adjusted by loosening the three screws (Item 26) and rotating the pumptube outlet into the position desired. Retighten the screws to 25 ft/lbs.

DISASSEMBLY PROCEDURE

Tools Required	(Used on Item #)
9/16” wrench	(Item 34)
1/2” wrench	(Item 23)
3/4” wrench	(Item 11)
7/8” wrench	(Items 1 & 32)
1” Wrench	(84902 Item 15)
1-1/8” wrench	(Items 20, 21, 35 & 84901 Item 15)
1-1/4” wrench	(Item 2 & 84900 Item 15)
1-3/8” wrench	(84902 Item 16)
1-5/8” wrench	(84901 Item 16)
1-7/8” wrench	(84900 Item 16)
2-5/8” wrench	(Item 3)
3-1/2” wrench	(Item 30)
3” dia. strap wrench	(Item 14)
Internal retaining ring pliers	(Item 26)
External retaining ring pliers	(Item 24)
Two screwdrivers	(Items 6 & 10)

Procedure

1. Remove Screws (Item 34) from Mounting Flange (Item 33).
2. Remove Mounting Flange (Item 33) from Inlet Bushing (Item 30).
   a. Remove Priming Plug (Item 36) from Connector (Item 35).
   b. Remove Connector (Item 35) from Mounting Flange (Item 33).
3. Remove Priming Plunger Nut (Item 32) from Priming Rod (Item 23).
4. Remove Inlet Bushing (Item 30) from Pump Tube (Item 14).
   a. Remove O-ring (Item 31) from Inlet Bushing (Item 30).
   b. Remove Check Seat (Item 29) from Inlet Bushing (Item 30).
   c. Remove O-ring (Item 13) from Check Seat (Item 29).
5. Remove Bolt Connector (Item 1) from Plunger (Item 15).
   a. Slide Coupling Nut (Item 2) off Bolt Connector (Item 1).
6. Remove priming rod, piston and plunger assembly from bottom of Pump Tube (Item 14).
   a. Remove Adapter (Item 21) from Piston Body (Item 20).
   b. Remove Keepers (Item 22) and Adapter (Item 21) from Priming Rod (Item 23).
   c. Remove check assembly from Priming Rod (Item 23).
   d. Remove Retaining Ring (Item 24) and Guide Washer (Item 25) from Check (Item 26).
   e. Remove Retaining Ring (Item 26) and U-cup (Item 27) from Check (Item 28).
   f. Remove piston assembly from Plunger (Item 15).
   g. Remove Piston Nut (Item 16) and Check Ball (Item 19) from Piston Body (Item 20).
   h. Remove U-cup (Item 17) from Piston Nut (Item 16).
   i. Remove Piston Collar (Item 18) and U-cup (Item 17) from Piston Body (Item 20).
7. Remove Pump Tube (Item 14) from Outlet Body (Item 12).
   a. Remove O-rings (Item 13) from Pump Tube (Item 14).
8. Remove Bleeder Valve (Item 11) from Outlet Body (Item 12).
9. Remove Gland Nut (Item 3) from Outlet Body (Item 12).
   a. Remove Wiper (Item 5) and Spacer (Item 4) from Gland Nut (Item 3).
10. Remove Bushing (Item 6) from Outlet Body (Item 12).
    a. Remove O-ring (Item 7) and U-cup (Item 8) from Bushing (Item 6).
11. Remove Sleeve (Item 9), Scraper (Item 5), and Retaining Ring (Item 10) from Outlet Body (Item 12).
12. To re-assemble pump, reverse disassembly procedure. (Refer to illustration for torque specifications.)



Note: Install wipers (Item 5) and u-cups (Items 8 & 17) in direction shown in enlarged views.

PARTS LIST

Item No.	Description	Qty.	Model 84900	Model 84901	Model 84902
1	Bolt Connector (7/8" hex)	1	236225	236225	236225
2	Coupling Nut (1-1/4" hex)	1	237051	237051	237051
3	Gland Nut (2-5/8" hex)	1	237659	237659	237659
4	Spacer	1	237649	237674	237651
5	Wiper	2	237650	237584	237652
6	Bushing	1	237005	236234	237044
7	O-ring (polyurethane) # *	1	236238	236238	236238
8	U-cup (polyurethane) # *	1	237007	34701	34421
9	Sleeve	1	247267 (Stamped "J")	247268 (Stamped "K")	247269 (Stamped "L")
10	Retaining Ring	1	247273	247274	247275
11	Bleeder Valve (3/4" flats)	1	84012	84012	84012
12	Outlet Body	1	236266	236266	236266
13	O-ring (polyurethane) *	3	236237	236237	236237
14	Pump Tube	1	237012	236257	237049
15	Plunger Rod	1	237006 (1-1/4" flats)	236232 (1-1/8" flats)	237042 (1" flats)
16	Piston Nut	1	246903 (1-7/8" flats)	246906 (1-5/8" flats)	246909 (1-3/8" flats)
17	U-cup (polyurethane) * *	2	237027	236236	237068
18	Piston Collar	1	246905	246908	246911
19	Check Ball	1	246877	68649	246889
20	Piston Body (1-1/8" flats)	1	246904	246907	246910
21	Adapter (1-1/8" flats)	1	16003	16003	16003
22	Keeper	2	16008	16008	16008
23	Priming Rod (1/2" flats)	1	236227	236227	236227
24	Retaining Ring	1	69034	69034	69034
25	Guide Washer	1	236239	236239	236239
26	Retaining Ring *	1	68886	68886	68886
27	U-cup (polyurethane) *	1	34710	34710	34710
28	Check	1	236231	236231	236231
29	Check Seat	1	236228	236228	236228
30	Inlet Bushing (3-1/2" flats)	1	246917	246917	246917
31	O-ring (nitrile) *	1	246837	246837	246837
32	Priming Plunger Nut (7/8" flats)	1	14398	14398	14398
33	Mounting Flange	1	246920	246920	246920
34	Hex Cap Screw (9/16" hex)	3	272821	272821	272821
35	Connector (1-1/8" hex)	1	13252	13252	13252
36	Priming Plug	1	93075	93075	93075

* Included in Seal Kit

Included in Gland Seal Kit

PUMPTUBE SERVICE KITS

Pumptube Model	Seal Kits			Gland Seal Kits		
	Polyurethane	Teflon	Polyethylene	Polyurethane	Teflon	Polyethylene
84900	84907	84912	84913	85311	85321	85327
84901	84911	84905	84906	85312	85322	85328
84902	84908	84914	84913	85313	85323	85329

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 17) or piston check (Items 19 and 20).	Check and replace if needed.
Pump operates on "up" stroke only (missing "down" stroke).	Worn or damaged inlet check (Items 29 and 30) or priming rod packing (Item 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 29 and 30) is not seating or is damaged.	Check and replace if needed.

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