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**SAFETY**

Read and carefully observe these operating instructions 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: 46 cu. in. (754 cc)  
 Operating Temperature: -30°F to +160° F (-34° C to +71°C)  
 Max. Recommended Speed: 75 Cycles/Minute  
 Output at 75 cpm: 14.9 gpm (56.4 liter/min).  
 Wetted part materials: Carbon steel, Bronze, Polyurethane, Nitrile  
 Weight: 76 lbs. (34.5 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.

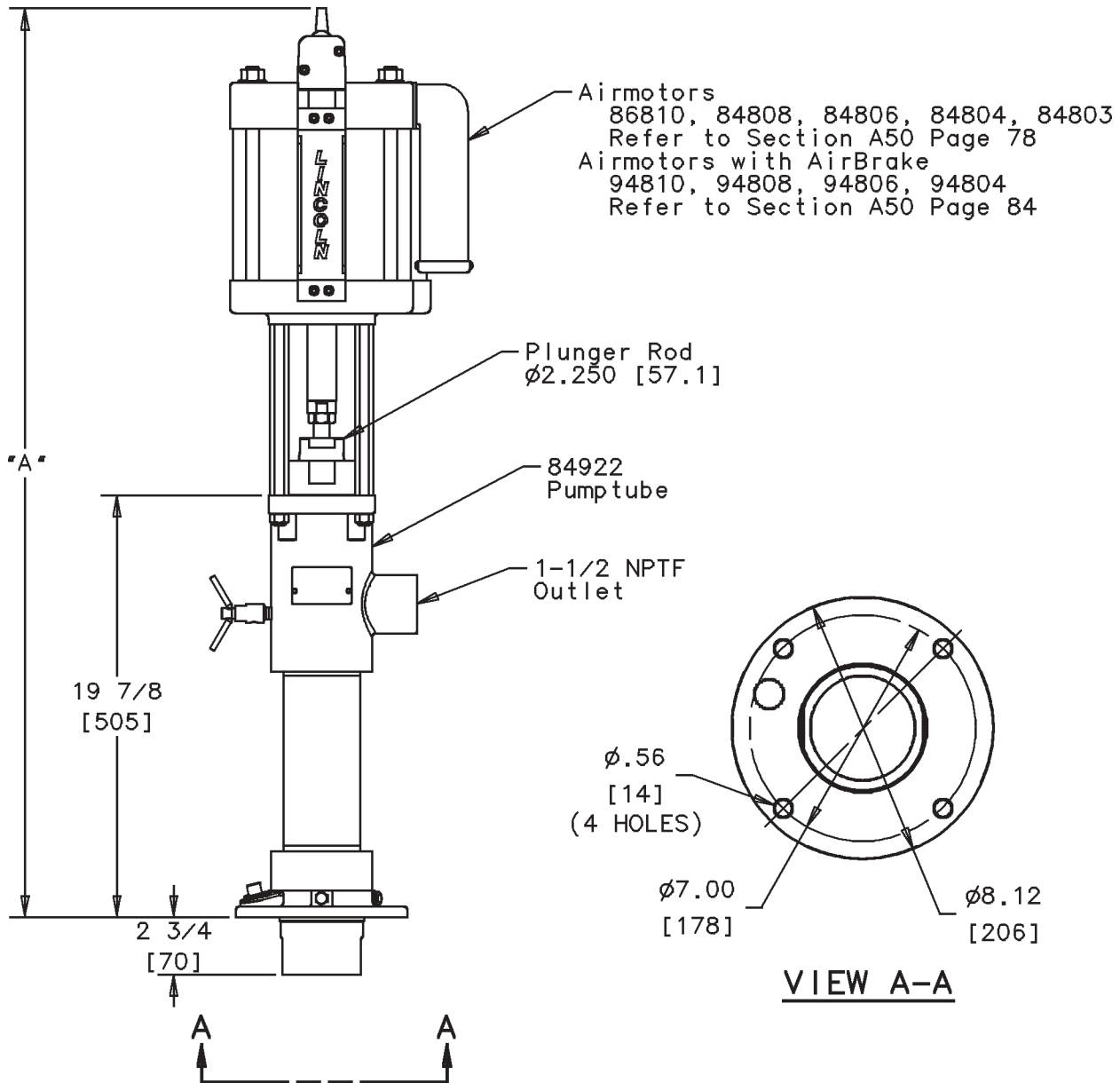
\*U.S. Patent No. 4,976,192

**MODEL CHART**

Pump Model	Airmotor**	Ratio	Maximum Delivery Pressure	Maximum Air Pressure
2321	86810	20:1	2000 psi (138 bar)	100 psi (7 bar)
2327	84808	13:1	1300 psi (90 bar)	
2354	84806	7:1	700 psi (48 bar)	
2369	84804	3:1	600 psi (41 bar)	200 psi (14 bar)
2329	84803	1.5:1	300 psi (21 bar)	

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

**PILE DRIVER® III PUMP ASSEMBLY**  
**Models 2321, 2327, 2329, 2354, 2369, 84922**



Pump Tube	Airmotor	Airmotor w/ AirBrake	Dimension "A" in. [mm.]
84922	86810	94810	42-5/8 [1083]
	84808	94808	
	84806	94806	
	84804	94804	43-1/2 [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 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 of 3 inch (76 mm) I.D. inlet hose or pipe.

- Do not operate pump continuously at speeds in excess of 75 cycles per minute.
- **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 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 outlet body flange 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**

**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.

 **WARNING**

KEEP HANDS AWAY FROM PUMP INLET WHILE AIRLINE IS CONNECTED. DO NOT OPERATE PUMP UNLESS IT IS FIRMLY MOUNTED ONTO PRESSURE PRIMER OR STANDPIPE AND AREA AROUND PUMP INLET IS CLEAR OF OBSTRUCTIONS.

**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.

 **CAUTION**

**DO NOT allow pump to operate when out of material.**

# PILE DRIVER® III PUMP ASSEMBLY

## Models 2321, 2327, 2329, 2354, 2369, 84922



### 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 "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 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 screws (Item 27) and rotating the pumptube outlet into the position desired. Retighten the screw to 25 ft. lbs.

### DISASSEMBLY PROCEDURE

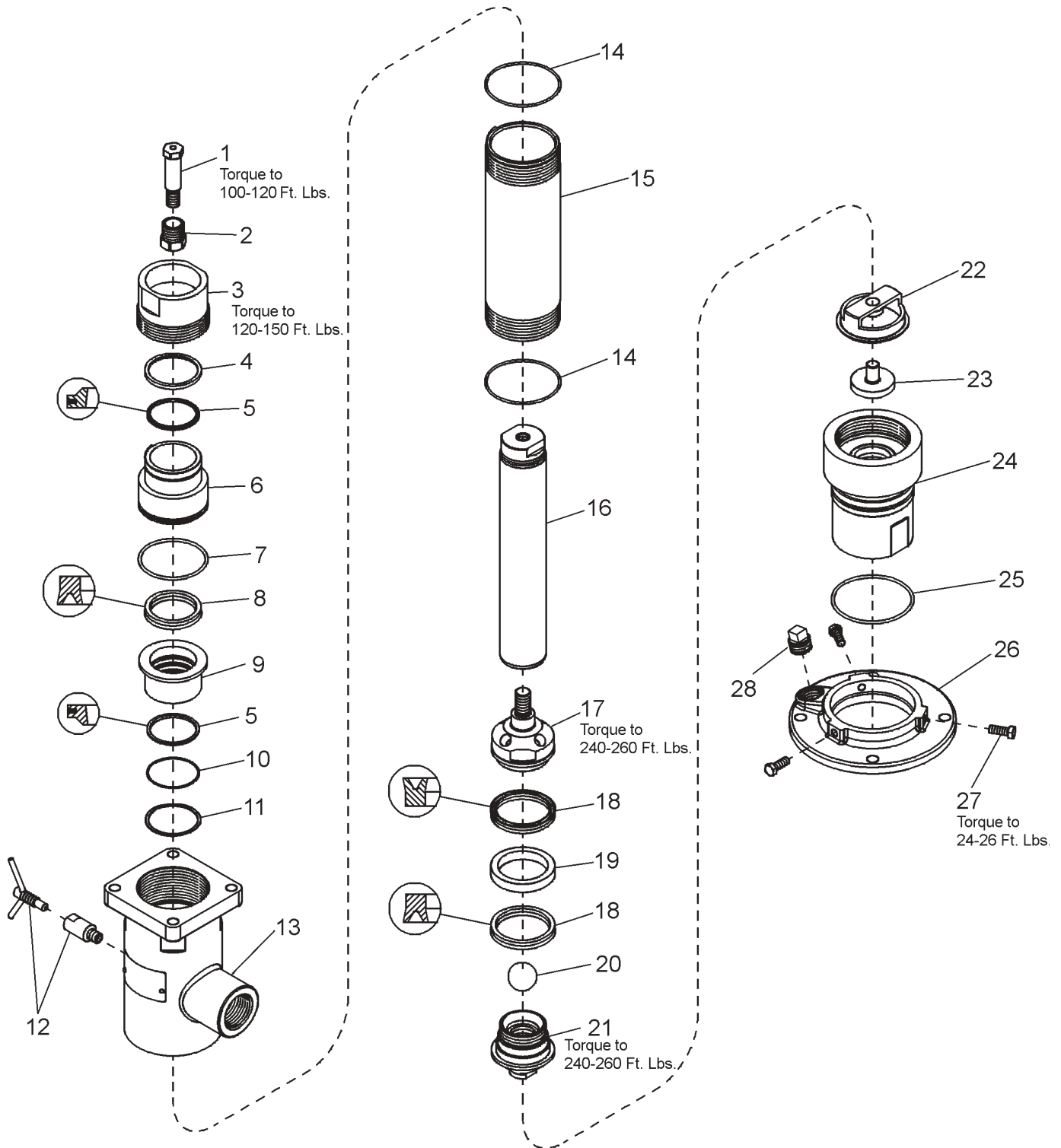
Tools Required	Used on Item #
9/16" wrench	(Item 27)
3/4" wrench	(Item 12)
7/8" wrench	(Item 1)
1-1/8" wrench	(Item 21)
1-1/4" wrench	(Item 2)
1-3/4" wrench	(Item 16)
2-3/4" wrench	(Item 17)
3-1/8" wrench	(Item 3)
3-3/4" wrench	(Item 24)
3-5/8" dia. strap wrench	(Item 15)
2 Screwdrivers	(Items 6 & 11)

#### Procedure

1. Remove Screws (Item 27) from Mounting Flange (Item 26).
2. Remove Mounting Flange (Item 26) from Inlet Bushing (Item 24).
3. Remove Inlet Bushing (Item 24) from Pump Tube (Item 15).
  - a. Remove O-ring (Item 25) from Inlet Bushing (Item 24).
  - b. Remove O-ring (Item 14) from Inlet Bushing (Item 24).
  - c. Remove Check Guide (Item 22) and Check (Item 23) from Inlet Bushing (Item 24).

4. Remove Bolt Connector (Item 1) from Plunger (Item 16).
  - a. Slide Coupling Nut (Item 2) off Bolt Connector (Item 1).
5. Remove piston and plunger assembly from bottom of Pump Tube (Item 15).
  - a. Remove piston assembly from Plunger (Item 16).
  - b. Remove Piston Nut (Item 17) and Check Ball (Item 20) from Piston Body (Item 21).
  - c. Remove U-cup (Item 18) from Piston Nut (Item 17).
  - d. Remove Piston Collar (Item 19) and U-cup (Item 18) from Piston Body (Item 21).
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 (6) from Outlet Body (Item 13).
  - a. Remove O-Ring (Item 7) and U-cup (Item 8) from Bushing (Item 6).
11. Remove Sleeve (Item 9), Wiper (Item 5), Washer (Item 10), and Retaining Ring (Item 11) from Outlet Body (Item 17).
12. To reassemble pump, reverse disassembly procedure. (Refer to illustration for torque specifications.)

**PILE DRIVER® III PUMP ASSEMBLY**  
**Models 2321, 2327, 2329, 2354, 2369, 84922**



**NOTE: Install wipers (Item 5) and U-Cups (Items 8 & 18) in direction shown in enlarged views.**



**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 (3-1/8" flats)	1	272832
4	Spacer	1	239951
5	Wiper	^ 2	239950
6	Bushing	1	272831
7	O-ring (polyurethane)	# * ^ 1	244246
8	U-cup (polyurethane)	# * ^ 1	239945
9	Sleeve	1	247271
10	Washer	^ 1	247279
11	Retaining Ring	^ 1	247277
12	Bleeder Valve (3/4" flats)	1	84012
13	Outlet Body	1	241047
14	O-ring (polyurethane)	* ^ 2	239943
15	Pump Tube	1	239952
16	Plunger Rod (1-3/4" flats)	1	239954
17	Piston Nut (2-3/4" flats)	1	246912
18	U-cup (polyurethane)	* ^ 2	239934
19	Piston Collar	1	246914
20	Check Ball	1	68996
21	Piston Body (1-1/8" flats)	1	246913
22	Check Guide	1	241016
23	Check	1	241018
24	Inlet Bushing (3-3/4" flats)	1	246918
25	O-ring (nitrile)	* ^ 1	246837
26	Mounting Flange	1	246920
27	Hex Cap Screw (9/16" hex)	3	272821
28	Pipe Plug (5/8" square)	1	67224

^ Included in Repair Parts Kit No. 241681

\* Included in Seal Kit No. 84930

# Included in Gland Seal Kit No. 85315

**PUMPTUBE SERVICE KITS**

	Polyurethane	Teflon	Polyethylene
Repair Kit	241681		
Seal Kit	84930	84931	84932
Gland Seal Kit	85315	85325	85331

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**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
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 18) or piston check (Items 20 and 21).	Check and replace if needed.
Pump operates on "up" stroke only (missing "down" stroke).	Worn or damaged inlet check (Items 23 and 24).	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 23 and 24) is not seating or is damaged.	Check and replace if needed.

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