INSTRUCTIONS - PARTS LIST

GRACO

307-138

JULY, 1975

Supersedes Mar., 1974

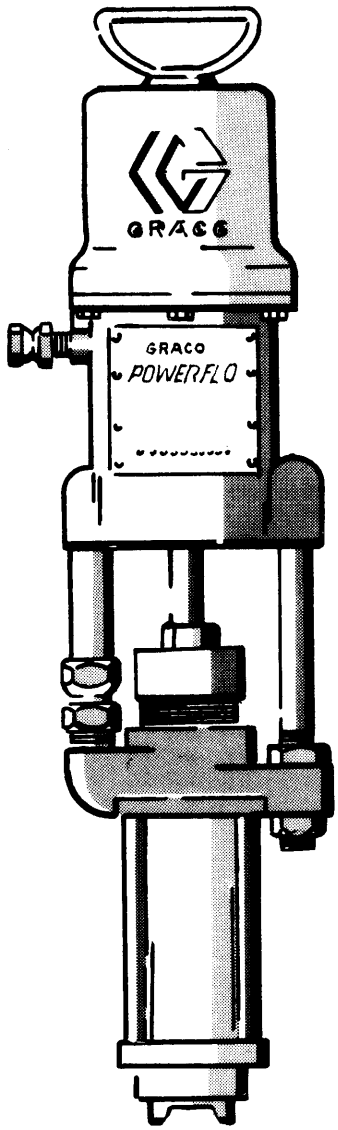
This manual contains IMPORTANT WARNINGS and INSTRUCTIONS
READ AND RETAIN FOR REFERENCE

2:1 RATIO

MONARK PUMP

360 PSI (25 bar) MAXIMUM WORKING PRESSURE

MODEL 210-003 SERIES "A"
FOR WATER REDUCIBLE MATERIALS



Air powered pump is easy to control; simply adjust air pressure.

Divorced design prevents air motor fouling.

Displacement pump valves are adjustable for varying viscosity requirements.

Accessories on page 5.

TECHNICAL DATA on back page.

GRACO INC. P.O. BOX 1441 **Minneapolis, MN** 55440

INSTALLATION

Mount Pump

Mount pump to suit the type of installation planned. Mounting accessories are shown on page 5. Pump dimensional drawings and mounting hole layout are given on page 5.

Connect Hoses

Connect a 3/8 ID (minimum) air supply hose to 3/8 npt inlet union. Main air line should include a bleed type valve for shutting down and relieving air pressure. See Fig 1.

Connect a 3/4 ID (minimum) fluid hose to the 3/4 NPT (M) outlet of pump with a suitable adapter. See Fig 1.

If pump is to be supplied by suction hose, connect a ¾" ID hose to the 1-½" NPT pump inlet with suitable adapter. If pump is to be supplied direct from the circulating or dead end supply line, mount pump in line with suitable plumbing.

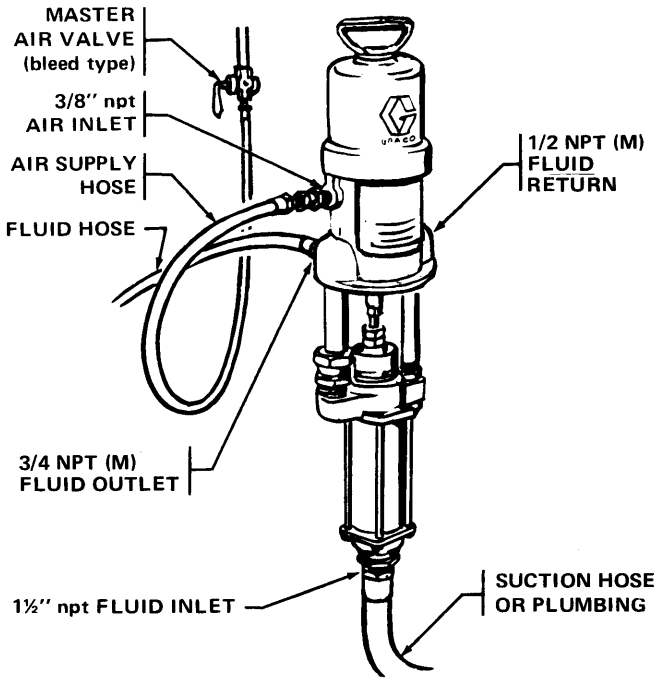


Fig 1

OPERATION

Adjusting Pump Speed and Pressure

In a direct supply system, with air supply turned on, the pump is remotely operated; it starts and stops as the fluid valve is opened or closed. In a circulating system, pump operates until the air supply is turned off.

Use an air regulator to control material pressure and pump speed. See page 5 for an accessory Graco air regulator. Always use the lowest air pressure needed to give the results you want.

Lubrication and Care

Daily, with the air shut off, disconnect the air hose and place about 15 drops of light oil in the air inlet. Reconnect air hose and turn air supply on. If your air supply is very dry, we recommend a Graco air line oiler for automatic lubrication. See ACCESSORIES, page 5.

When operating the pump non-immersed, keep the wet-cup filled with Graco Throat Seal Liquid (TSL).

Check the tightness of the packing nut weekly. Packing nut should be tight enough to stop leakage — no tighter. Shut off air and relieve fluid pressure, then use a spanner wrench or a 1/4 in. rod to tighten nut.

If pump accelerates quickly, or is running too fast, stop pump immediately and check fluid supply. Don't leave a pump shut off if the fluid supply has been exhausted and air has gotten into the system. Prime pump and lines with material or flush and leave filled with solvent. Always stop the pump at the bottom of its stroke to prevent material from drying on the displacement rod.

When pumping materials which dry, harden, or set-up, flush system with a compatible solvent as often as necessary to prevent a build up.

If the material to be pumped can be contaminated by petroleum oil, flush pump before using.

For overnight and holiday shutdown, turn off air to pump and bleed off fluid pressure through gun. In a circulating system, "blow-back" paint in hoses into circulating line. Then remove and clean paint hoses and spray guns, and turn off all air to system.

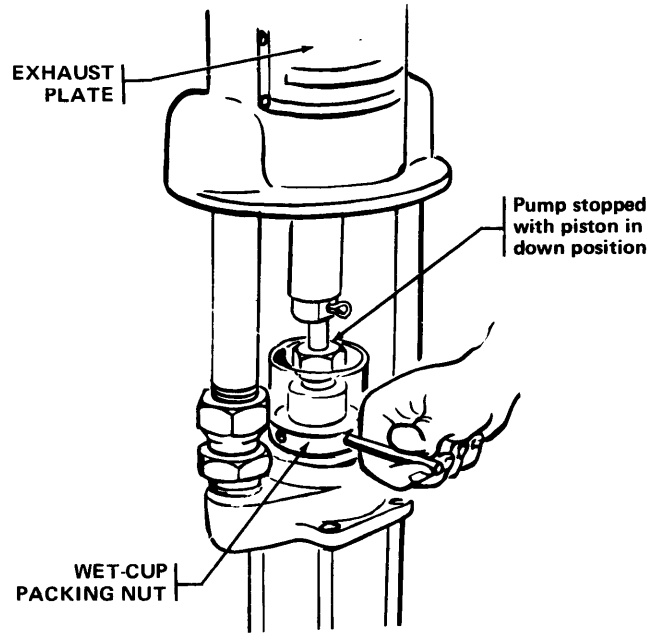


Fig 2

Fluid Piston & Intake Valve Adjustment

The fluid piston and intake valves are factory set for pumping medium viscosity fluids such as spray paints. Pin in intake valve is in lower set of holes and piston ball travel is set at 3/16 inch or four (4) complete turns of ball stop screw from rest on piston ball.

1. If extremely heavy paint is used and erratic pump operation develops, increase ball travel in intake valve by moving pin to center or upper set of holes (according to viscosity of paint) and in piston valve by backing out ball stop screw two (2) complete turns or 9/32 inch total travel. See Fig 3.
2. If extremely light paint is used and surging develops, reduce surging effect by screwing in ball stop screw two (2) complete turns or 3/32 inch total travel at piston valve. Refer to Fig 3.

Disassemble pump as explained on page 4 and adjust valves as follows: Place piston in vise as shown in Fig 4, loosen upper plunger cap to relieve tension on ball stop screw, adjust ball stop screw for desired ball travel and retighten upper plunger cap securely. Refer to Fig 4. Set intake valve pin as desired and reassemble pump.

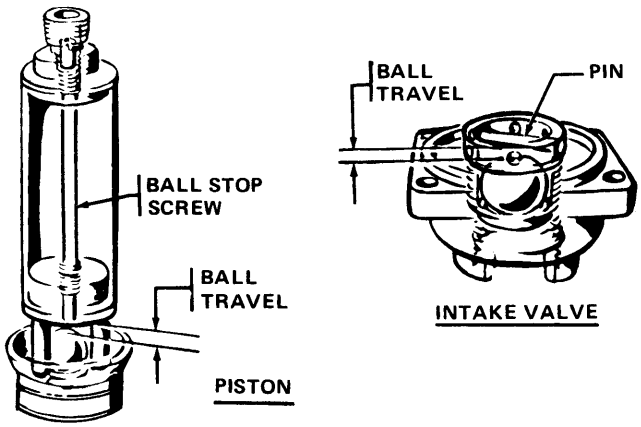


Fig 3

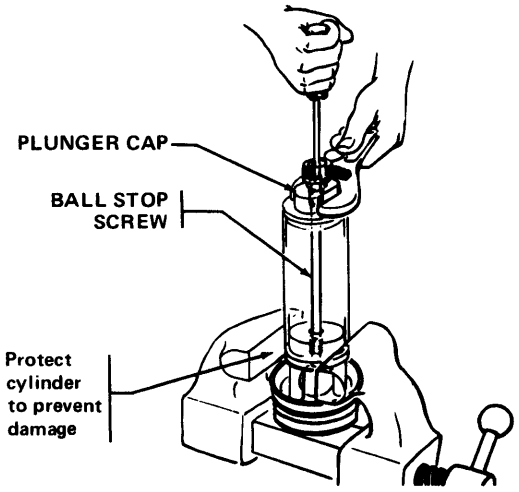


Fig 4

SERVICE

WARNING

TO AVOID POSSIBLE PERSONAL INJURY: ALWAYS disconnect air line and relieve pressure before servicing pump. NEVER run pump with air muffler plates removed.

TROUBLESHOOTING CHART

What's wrong	Why	What to do
Pump fails to operate	Restricted line or inadequate air supply	. . Clear; increase
Pump operates but – output low on both strokes	Insufficient air pressure – closed or clogged air valves, etc.	. . Open, clean
– output low on down stroke	Exhausted material supply	. . Refill
– output low on up stroke	Obstructed material line, valves, gun, etc.	. . Clear* *
Erratic or accelerated operation	Fluid check valves need adjustment	. . Adjust
	Loose throat packing nut or worn packings	. . Tighten nut or replace packings
	Held open or worn fluid intake valve	. . Clear, service
	Held open or worn fluid piston or packing	. . Clear, service
	Damaged air motor	. . Service,

** Release pressures and disconnect material line. Turn on air – if pump starts, the line, etc. is clogged.

Check all other possible remedies before disassembling pump.

FLUID PUMP SERVICE

Flush pump with suitable solvent, release pressures and remove pump from system.

Unscrew coupling cut from displacement plunger. Unscrew lower lock nut from return mounting tube and swivel union from supply mounting tube. See Fig 5. If mounting tubes are to be replaced, wrench tubes close to air motor base to prevent thread damage in base.

Unscrew the four tie bolts from pump head, loosen packing nut and disassemble fluid pump as necessary to correct trouble. See Fig 6.

NOTE: If ball stop pin or screw are to be removed, note their position before removal and re-install in proper holes.

Clean and inspect all parts carefully for wear or damage and replace as necessary. Give special attention to displacement plunger and fluid cylinders, packings, and valve balls and seats.

NOTE: Replace packing glands whenever throat or piston packings are replaced.

Lubricate, assemble and install all parts of fluid pump reverse from disassembly. Refer to Fig 6. Install new throat v-packings one at a time and leave packing nut loose until displacement plunger is installed. Then tighten just enough to prevent leakage – DO NOT overtighten packing nut.

CAUTION

DO NOT attempt to reseat balls in intake or fluid piston valves. The hard nitralloy seats are easily chipped.

Place fluid pump on mounting tubes. Thread upper lock nut onto return mounting tube a couple turns and tighten swivel union securely onto supply mounting tube. Refer to Fig 5. Butt connecting rod and displacement plunger together and adjust lock nuts on return mounting tube to align rod and plunger. Then tighten lock nuts securely, being careful not to disturb alignment. Tighten coupling nut securely onto plunger.

Operate pump at minimum of air pressure: 50 psi (3.5 bar) maximum. Adjust lock nuts on return mounting tube as necessary until pump operates smoothly on 15 psi (1 bar) or less. Tighten nuts securely. See Fig 5.

Remount pump in system and attach air and fluid lines.

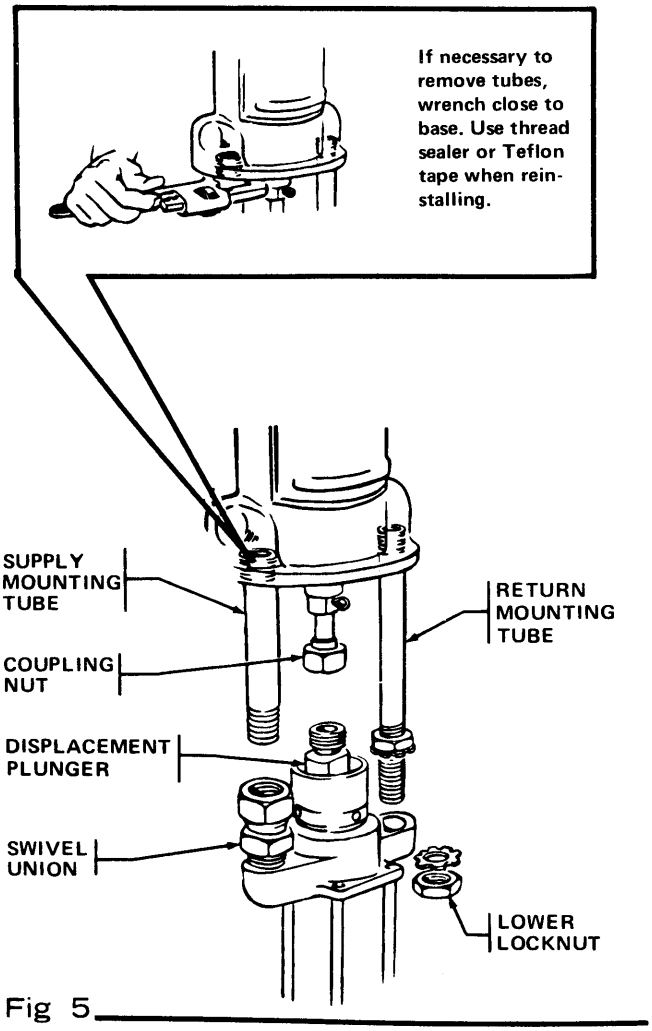


Fig 5

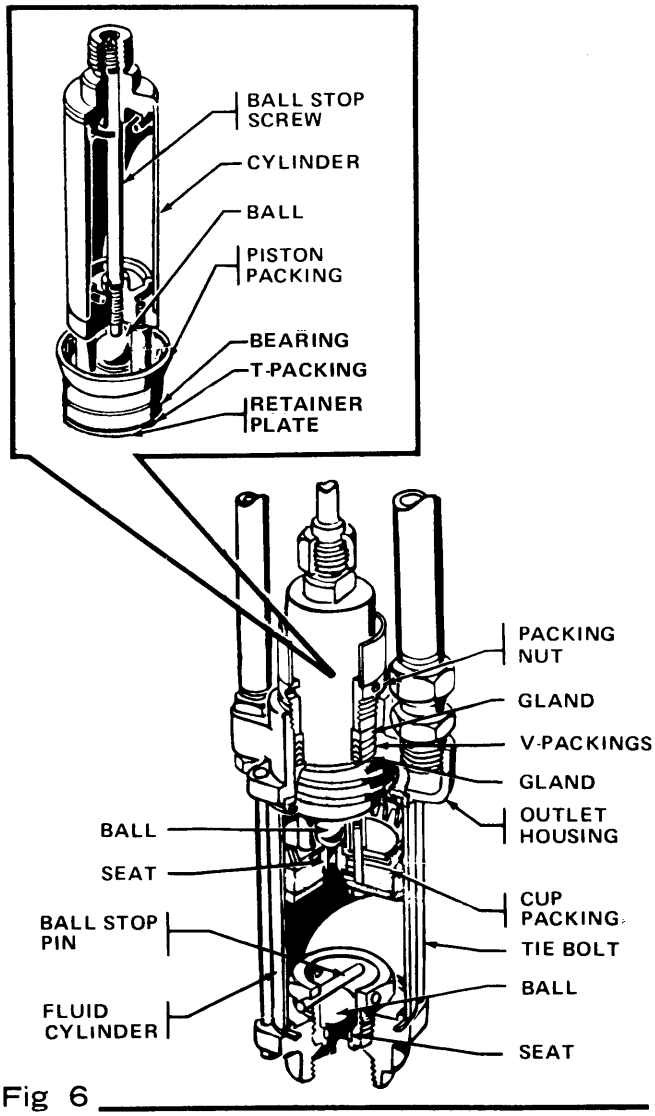
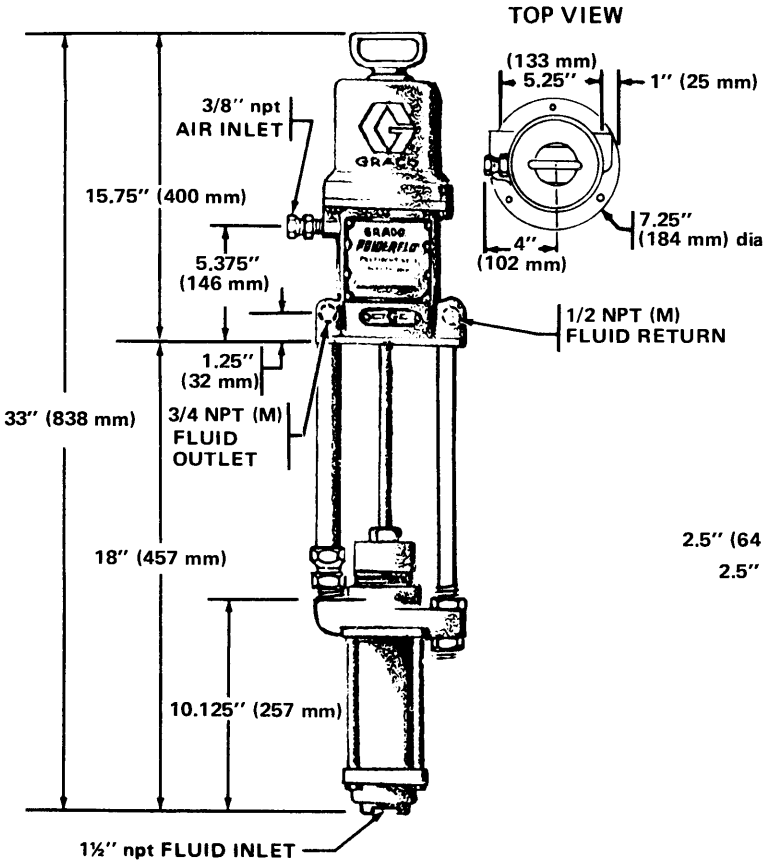
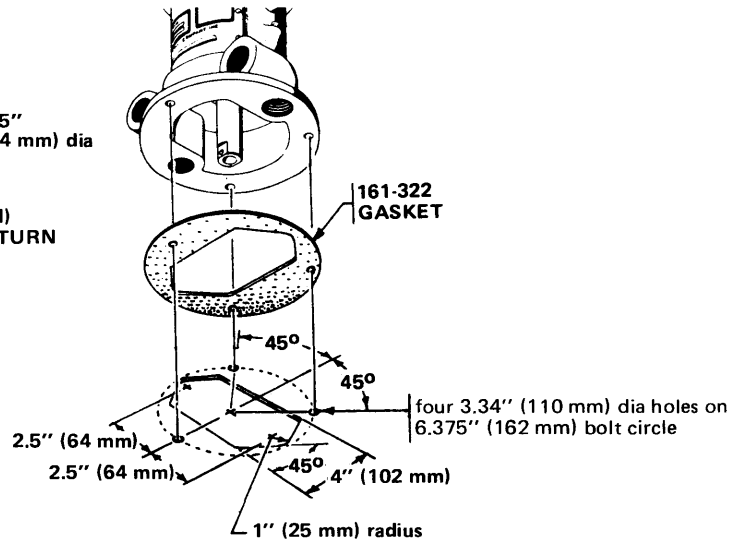


Fig 6

DIMENSIONAL DRAWING

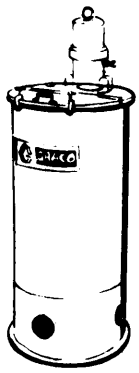


MOUNTING HOLE LAYOUT

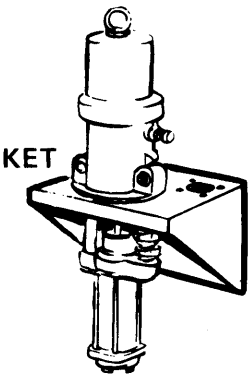


ACCESSORIES (Must be purchased separately)

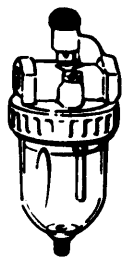
MIXING TANKS
210-035, 30 Gallon
210-036, 15 Gallon



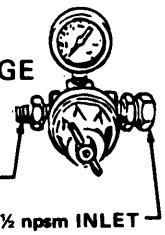
206-220
WALL MOUNTING BRACKET

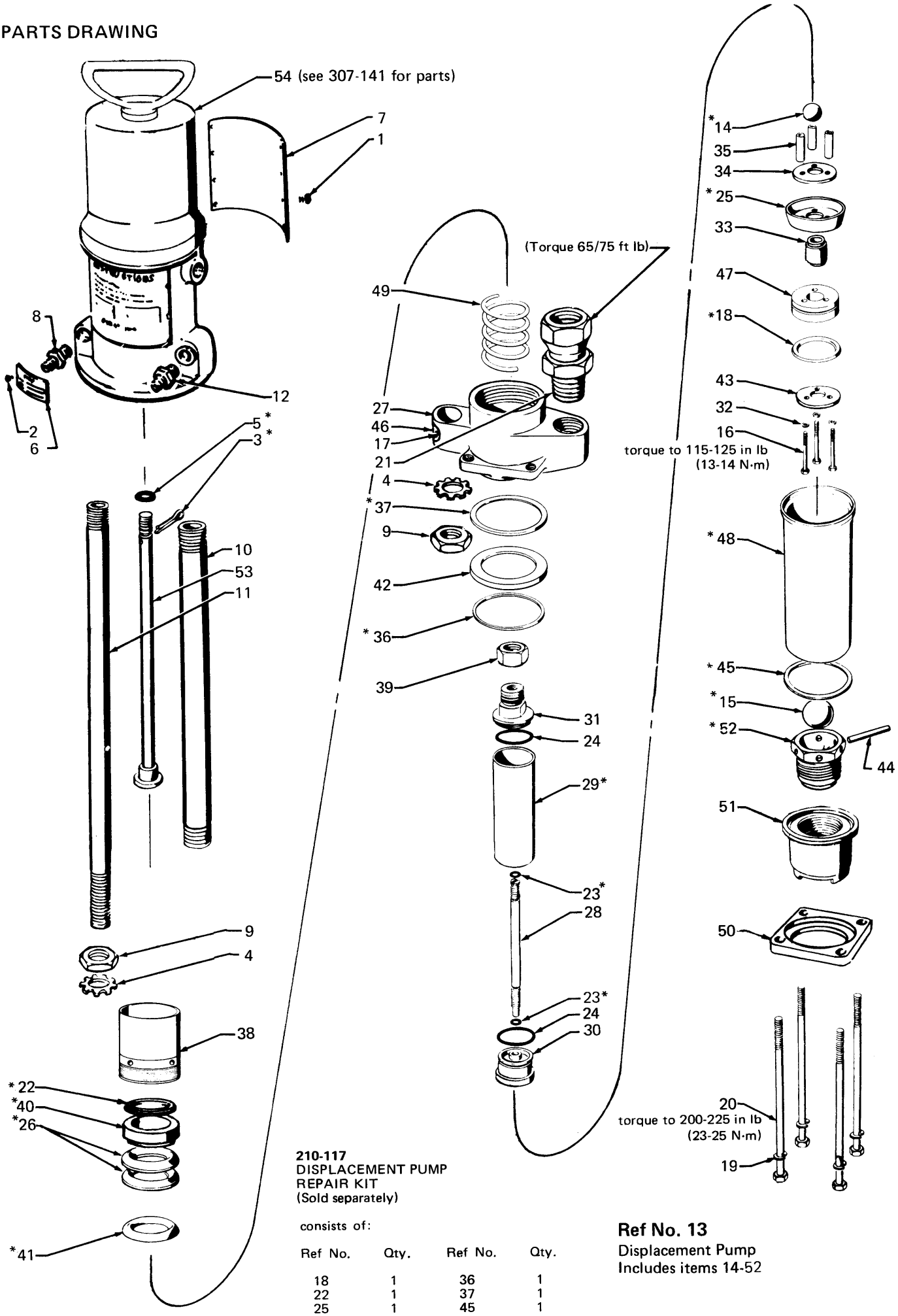


206-243
AIR LINE OILER



202-858
AIR REGULATOR & GAUGE
For accuracy controlling volume of air delivered to pump.





210-117
DISPLACEMENT PUMP
REPAIR KIT
(Sold separately)

consists of:

Ref No.	Qty.	Ref No.	Qty.
18	1	36	1
22	1	37	1
25	1	45	1
26	2		

Ref No. 13
Displacement Pump
Includes items 14-52

PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	QTY.
1	100-078	SCREW, rd hd mach; 8-32 x 3/8	8
2	100-203	SCREW, self tap, type "z", No. 4 x 5/16	2
3	* 100-579	PIN, cotter, 7/64 dia x 1"	1
4	103-960	LOCKWASHER, ext tooth, 1" id	2
5	* 156-082	O-RING, nitrile rubber	1
6	160-637	PLATE, serial	1
7	162-406	PLATE, name	1
8	166-443	NIPPLE, hex reducing, 3/4 npt x 1/2 npt	1
9	171-217	NUT, lock, 3/4-11	2
10	171-218	TUBE, supply mounting	1
11	171-220	TUBE, return mounting	1
12	171-439	NIPPLE, hex reducing, 1" npt x 3/4 npt	1
13	209-014 Series "A"	DISPLACEMENT PUMP Assy Includes items 14-52	1
14	* 101-917	. BALL, 7/8" dia	1
15	* 101-968	. BALL, 1¼" dia	1
16	103-971	. CAPSCREW, hex hd, 3/8-16 x 2¾"	3
17	103-972	. SCREW, drive, type "u" 1/8 x 3/16	2
18	* 103-974	. V-PACKING, neoprene and cotton duck	1
19	103-975	. LOCKWASHER, spring, 3/8 size	4
20	103-976	. CAPSCREW, hex hd, 3/8-16 x 7¾"	4
21	103-977	. UNION, str adapter, 1" npt (m) x 1" npsm (f)	1
22	* 103-978	. RING, wiper	1
23	* 160-015	. O-RING, nitrile rubber	2
24	161-547	. O-RING, nitrile rubber	2
25	162-870	. PACKING, cup, "Teflon"	1
26	* 165-949	. V-PACKING, neoprene and cotton duck	2
27	171-156	. HOUSING, outlet	1
28	171-158	. ROD, plunger	1
29	* 171-159	. ROD, displacement	1
30	171-160	. PLUNGER, displacement, lower	1
31	171-161	. PLUNGER, displacement, upper	1
32	171-163	. WASHER	3
33	171-164	. SEAT, valve	1
34	171-165	. WASHER, piston	1
35	171-167	. SPACER	3
36	* 171-168	. GASKET, nylon	1
37	* 171-169	. GASKET, nylon	1
38	171-170	. NUT, packing	1
39	171-171	. NUT, coupling	1
40	* 171-172	. GLAND, packing, female	1
41	* 171-173	. GLAND, packing, male	1
42	171-174	. RETAINER, spring	1
43	171-175	. PLATE, retainer	1
44	171-176	. PIN, straight headless	1
45	* 171-177	. GASKET, nylon	1
46	171-178	. PLATE, designation	1
47	171-179	. BEARING, piston	1
48	* 171-180	. CYLINDER, displacement	1
49	171-181	. SPRING, tapered compression	1
50	171-250	. PLATE, tie	1
51	171-251	. HOUSING, intake valve	1
52	* 209-016	. VALVE SEAT	1
53	210-002	CONNECTING ROD	1
54	210-004	AIR MOTOR (see 307-141 for parts)	1

*SUGGESTED REPLACEMENT PARTS

Order parts by number and name. Also give series letter and model number for which parts are ordered. Call or write your Graco distributor, nearest Graco factory branch or service depot for parts or service.

NOTE: 306 & 307 Numbers in description refer to separate instruction manuals.

TECHNICAL DATA

Recommended air operating range	:	40-180 psi (3-12 bar)
Air consumption (Rule of thumb)	:	2.5 cfm per gallon pumped (0.03 m^3/min/liter) at 100 psi (7 bar) air pressure: *up to 15 cfm (0.42 m^3/min) with pump operated within recommended range.*
Pump cycles/gallon (3.785 liter)	:	11
Recommended Max pump delivery (continuous duty)	:	6 gpm (23 liter/min)
Wetted parts	:	Stainless steel, electroless nickel plated metal, "Teflon", delrin, nitrile rubber

THE GRACO WARRANTY

Graco Inc. warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship under normal use and service. Scope of this warranty extends to the original purchaser for a period of 12 months from the date of purchase and is applicable only when the equipment is installed and operated in accordance with factory recommendations. The warranty does not extend to damage or wear caused by misuse, abrasion, corrosion, negligence, accident, faulty installation or tampering in a manner to impair its normal operation.

In the event the equipment supplied by Graco Inc. is found to be defective within the above-stated 12-month period, Graco Inc. will repair or replace free of charge such defective parts if rendered prepaid to the factory or to an authorized Graco service agency and is found by Graco Inc.'s inspection to be truly defective in workmanship or material. In the event said material is deemed defective in workmanship or material, it will be corrected and shipped transportation prepaid within the continental U.S. If inspection of any such equipment by Graco Inc. does not disclose any defect in workmanship or material, repairs will be made at a reasonable charge. Purchased assemblies which are incorporated into Graco equipment, carry the manufacturer's regular warranty.

The foregoing warranties are exclusive, and are in lieu of all other warranties (whether written, oral or implied) including warranty of merchantability in other respects than expressly set forth above and warranty of fitness for a particular purpose. Except as herein provided, every form of liability for direct or consequential damages or loss is expressly excluded and denied.

GRACO

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