INSTRUCTIONS-PARTS LIST

GRACO

306-625
Rev. B 8-79
SUPERSEDES 7-75

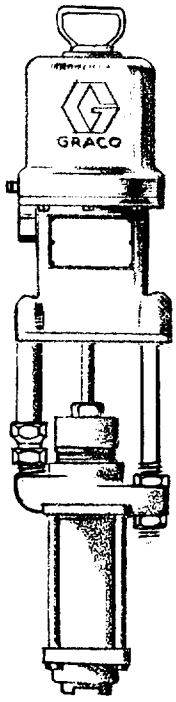
This manual contains **IMPORTANT WARNINGS** and **INSTRUCTIONS**
READ AND RETAIN FOR REFERENCE

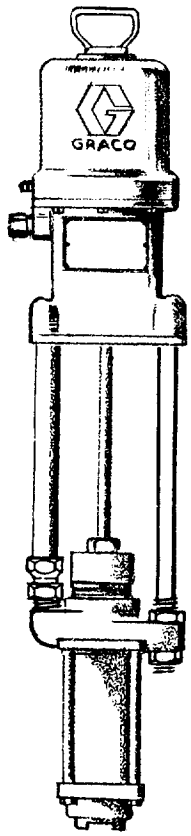
3:1 RATIO PRESIDENT PUMP

540 psi (37 bar) MAXIMUM WORKING PRESSURE

Model 205-000 Series D
For Drum or Tank Mounting

Model 206-828 Series D
Stubby Length For Off-Drum Mounting



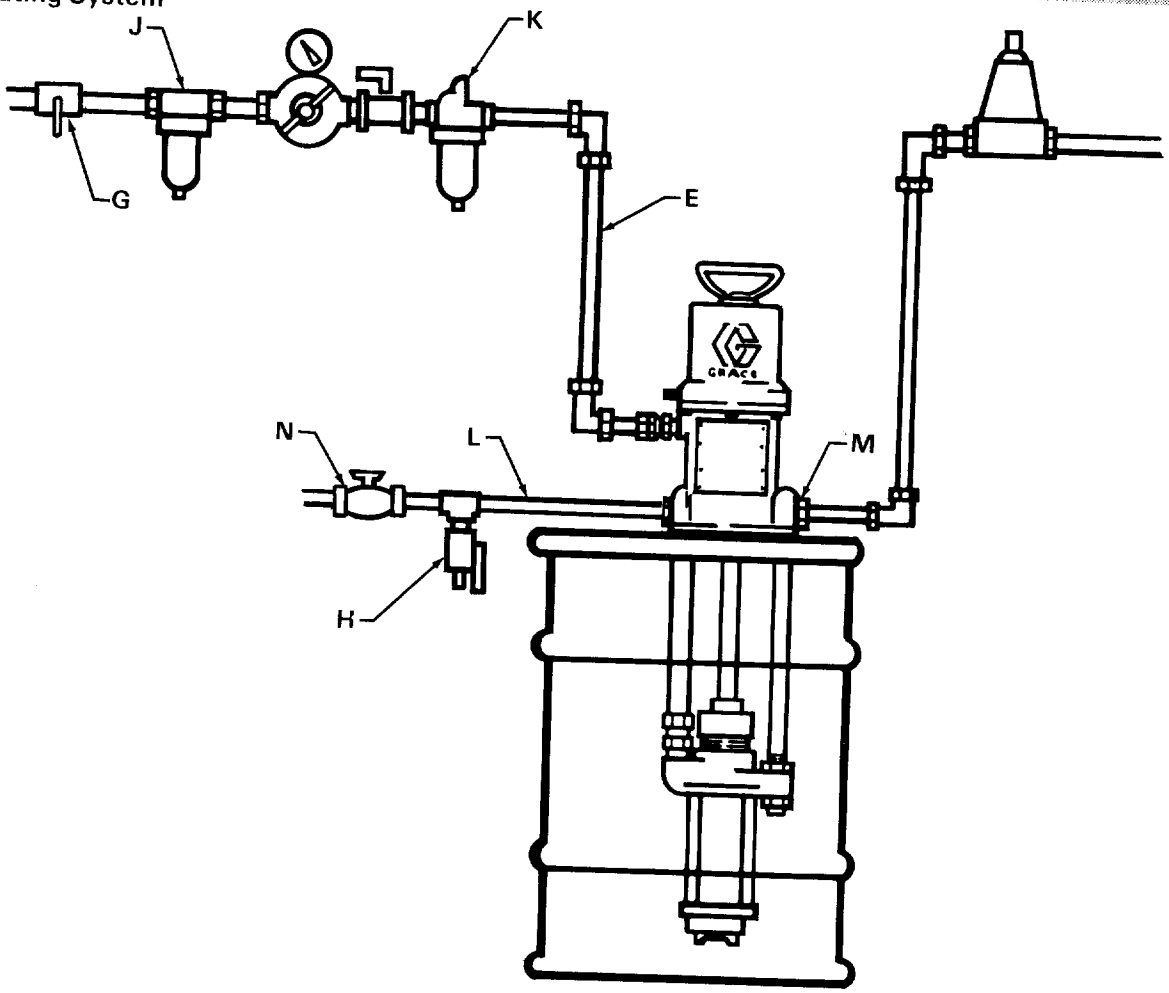


- Displacement pump check valves are adjustable for varying viscosity requirements
- TECHNICAL DATA on back page
- ACCESSORIES on pages 8 and 9

GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440

TYPICAL INSTALLATION

Circulating System



INSTALLATION

The dimensional drawing on the back page gives measurements needed for installing pump on a custom designed mounting. Graco mounting accessories on page 8.

NOTE: Reference numbers and letters in parentheses in the text refer to the Typical Installation, Fig 1, 2, 3, 4 and Parts Drawing.

Whenever you are pumping flammable materials, connect a ground wire to pump air motor. Loosen grounding lug locknut (A) and washer (B). Insert one end of a 12 ga (1.5 mm^2) minimum ground wire (D) into slot in lug (C) and tighten locknut securely. See Fig 1.

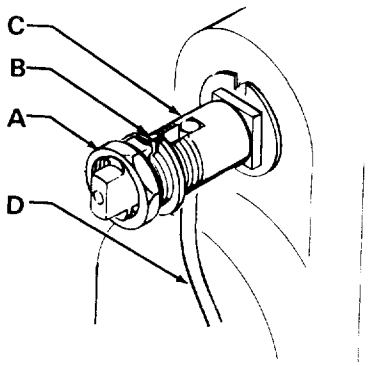


Fig 1

Connect the other end of wire to a good ground, such as a steel building column or water pipe. Check your local code. See ACCESSORIES on page 8 for available ground wire and clamp.

Connect a 1/2 in. minimum ID, grounded air supply hose (E) to the pump's 3/8 npt air inlet fitting or the air regulator's inlet fitting. See Typical Installation.

Your system should include a bleed type master air valve (G) in the air line, a drain valve (H) and a gate valve (N) at the pump's fluid outlet. See Typical Installation. These valves are used to shut off and relieve air and fluid pressures in the pump when shutting down, servicing the unit, and in case of clogged fluid hose.

We recommend that you install an air line filter (J) to remove dirt and moisture from your air supply. Downstream from the filter install an air line oiler (K) for automatic air motor lubrication. See Typical Installation and ACCESSORIES on pages 8 & 9. If you supply your own filter or oiler, be sure that it is adequately sized to meet your system air requirements.

Using a suitable adapter, connect grounded fluid hose (L) to the 1 in. npt(f) material outlet of pump, and a return hose (M) to pump's 3/4 npt(m) return inlet.

Connect a bushing, suction hose and siphon tube to the 1-1/2 npt(f) intake of pump 206-828. See ACCESSORIES on page 8.

OPERATION

Flush Pump Before Using

Pumps are tested with No. 10 motor oil which is left in to protect pump parts. To prevent contamination of material, flush pump with a compatible solvent before using. If pump is being used to supply a circulating system, allow solvent to circulate for at least 10 minutes.

Starting and Adjusting Pump

If pump is not immersed, fill wet-cup (40) one half full with Graco Throat Seal Liquid (TSL), trigger spray gun and slowly open air supply valve until pump starts (about 20 psi (1.4 bar)). Allow pump to cycle slowly until all air is pushed out of lines. Release trigger - pump will stall against pressure.

With pump and lines primed, and with adequate air pressure and volume supplied, the pump will start and stop as the spray gun is triggered and released. In a circulating system, it will run continuously and speed up or slow down as supply demands until air supply is shut off.

Use an adequately sized air regulator to control pump speed and material pressure. See ACCESSORIES. Always use the lowest air pressure necessary to give you the results you want.

Never exceed 180 psi (12 bar) air pressure to pump.

Keep the wet-cup/packing nut (40) filled with Graco Throat Seal Liquid (TSL) and check tightness of packing nut weekly. Packing nut should be tight enough to prevent leakage — no tighter. See Fig 2. Always shut off and relieve air pressure to pump and relieve material pressure before adjusting packing nut.

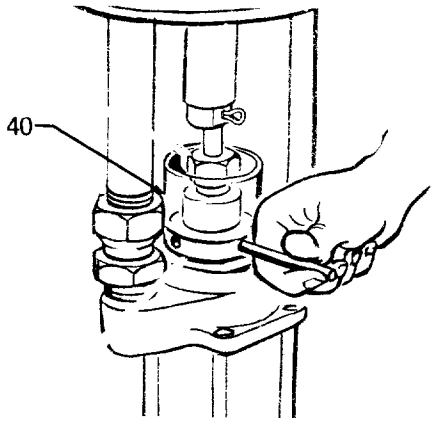


Fig 2

Never allow the pump to run dry of material being pumped. A dry pump will quickly accelerate to a high speed, possibly damaging itself. If your pump accelerates quickly, or is running too fast, stop it immediately and check the material supply. If the supply container is empty and air has been pumped into lines, prime pump and lines with material, or flush and leave filled with compatible solvent. Be sure to eliminate all air from fluid system.

Shutdown and Care of Pump

For overnight shutdown, shut off and relieve air pressure and relieve material pressure by opening dispensing valve and drain valve. Always stop the pump at the bottom of its stroke to keep material from drying on the exposed displacement rod and damaging throat packings.

Always flush the pump before the material dries on rod. If the pump is to be stored for any period of time, and you are pumping water based material, first flush with water, then with mineral spirits to protect the pump parts.

Fluid Piston & Intake Valve Adjustment

The fluid piston and intake valves are factory set for pumping medium viscosity fluids such as spray paint. Pin (25) in intake valve is in lower set of holes and piston ball travel is set at 0.19 in. (4.8 mm) (See Fig 3) or 4 complete turns of plunger bolt (48) from the top of piston ball. See Fig 4.

1. If heavy viscosity paint is used and erratic pump operation develops, increase ball travel in intake valve by moving pin (25) to center or upper set of holes, and in piston valve by backing out ball stop screw (48) 2 complete turns or 0.28 in. (7.1 mm) total travel. See Fig 3.

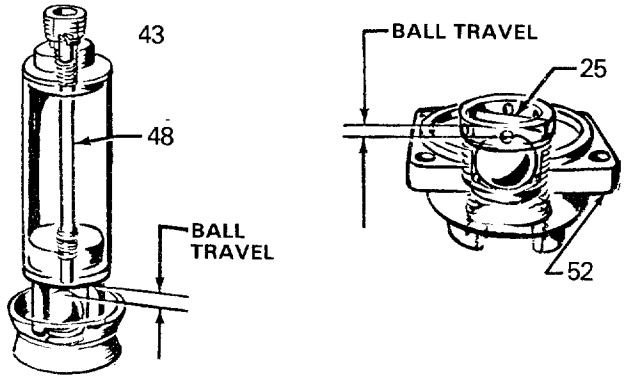


Fig 3

2. If extremely light paint is used and surging develops reduce surging effect by screwing in ball stop screw 2 complete turns or 0.09 in. (2.3 mm) total travel at piston valve. See 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 displacement plunger (47) to relieve tension on ball stop screw (48), adjust ball stop screw for desired ball travel and retighten upper displacement plunger (47) securely. Refer to Fig 4. Set intake valve pin as desired and reassemble pump.

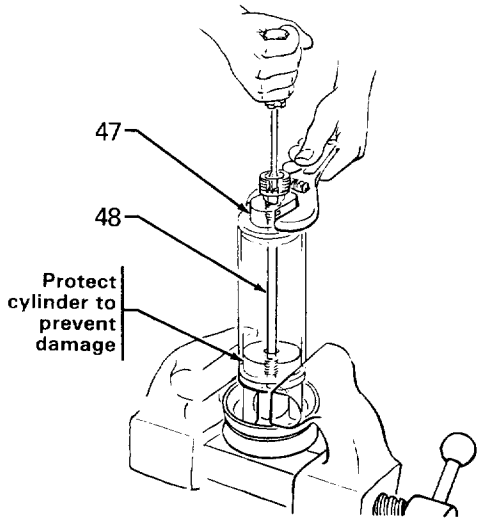


Fig 4

TROUBLESHOOTING CHART

WARNING

Always disconnect air supply and relieve all pressures in system before attempting any service. Never operate pump with air motor shield removed.

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; replace
	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 fluid line. Turn on air — if pump starts the line, etc., is clogged.

Check all other possible remedies before disassembling pump.

Displacement Pump Service

Solvent flush material from pump, shut off air supply to pump, trigger spray gun, engage trigger safety, and open drain valve to relieve system pressures. Disconnect hoses, remove pump from its mounting and clamp in a vise.

NOTE: If you are using a repair kit to service the pump, use all the new parts, even if the old ones look good. The old parts will wear faster, making pump service needed again sooner.

Unscrew coupling nut (29) from displacement plunger (43). Unscrew lower locknut (11) from return mounting tube (8 or 53) and swivel union (27) from supply mounting tube (9 or 54). See Fig 5. If mounting tubes are to be removed, wrench tubes close to air motor base to prevent thread damage in base.

Unscrew the four tie bolts (21) from pump head (36), loosen packing nut (40) and disassemble fluid pump as necessary to correct trouble. See Fig 6.

NOTE: If ball stop pin (25) or plunger bolt (48) are to be removed, note their position before removal and reinstall in proper location. See Fig 3 and 4.

Clean and inspect all parts carefully for wear or damage and replace as necessary. Give special attention to displacement plunger tube (50) and piston cylinder (30), packings (32 & 35), valve balls (18 & 19), and seats (28 & 51).

Lubricate, assemble and install all parts of fluid pump reverse from disassembly. See Fig 6. Install new female gland (34) and throat V-packings (35,39) one at a time. *Be sure* the V of packings in throat are *face down,* against the pressure. See Fig 6. Leave packing nut (40) loose until displacement plunger (43) is installed. Then tighten packing nut (40) to within one turn of point where threads bottom out.

CAUTION

Do not attempt to reseat balls (18 & 19) in intake or fluid piston valves. The hard seats (28 & 51) are easily chipped.

Place fluid pump on mounting tubes (9 & 8 or 54 & 53). Thread upper locknut (11) onto return mounting tube a couple of turns and tighten swivel union (27) securely onto supply mounting tube (9 or 54). See Fig 5. Butt connecting rod (15 or 55) and displacement plunger (43) together and adjust locknut (11) on return mounting tube to align rods. Then tighten locknuts securely, being careful not to disturb alignment. Tighten coupling nut (29) securely onto plunger (43).

Operate pump at minimum air pressure, about 50 psi (3.5 bar) maximum. Adjust locknuts (11) on return mounting tube (8 or 53) as necessary until pump operates smoothly on 15 psi (1 bar) or less. Then tighten nuts (11) securely. See Fig 5.

Remount pump in system and attach air and fluid lines.

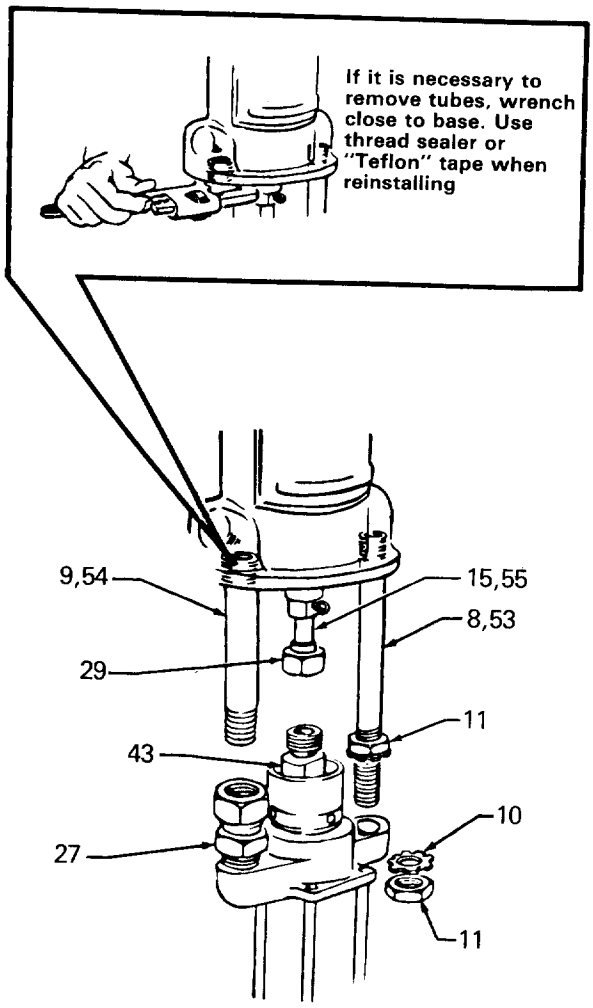

If it is necessary to remove tubes, wrench close to base. Use thread sealer or "Teflon" tape when reinstalling
9,54
15,55
8,53
29
11
43
10
27
11

Fig 5

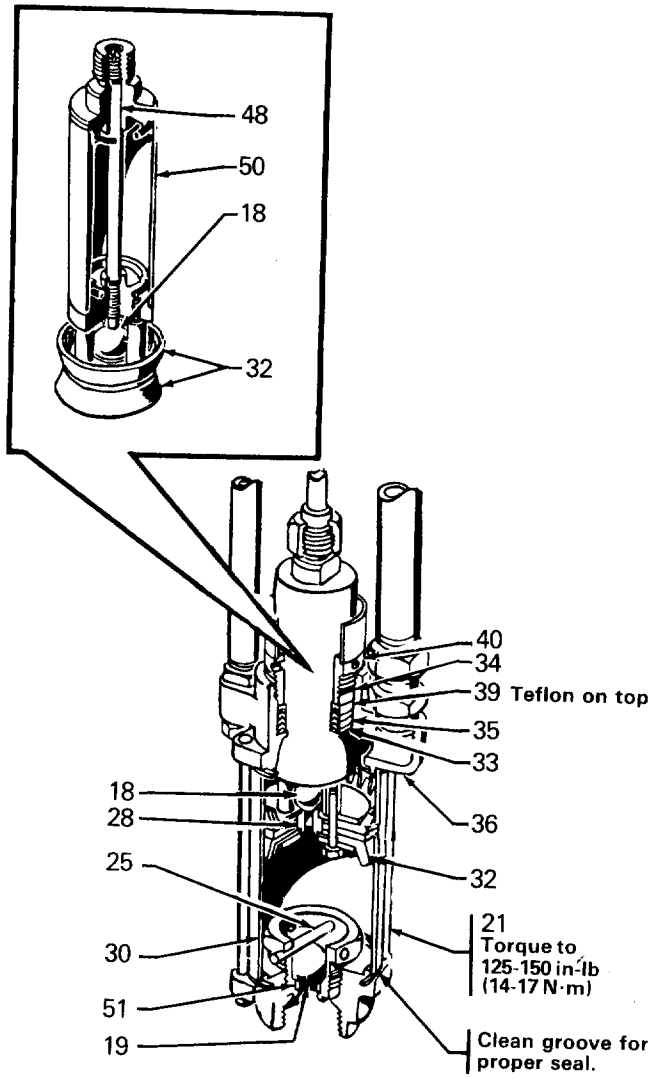
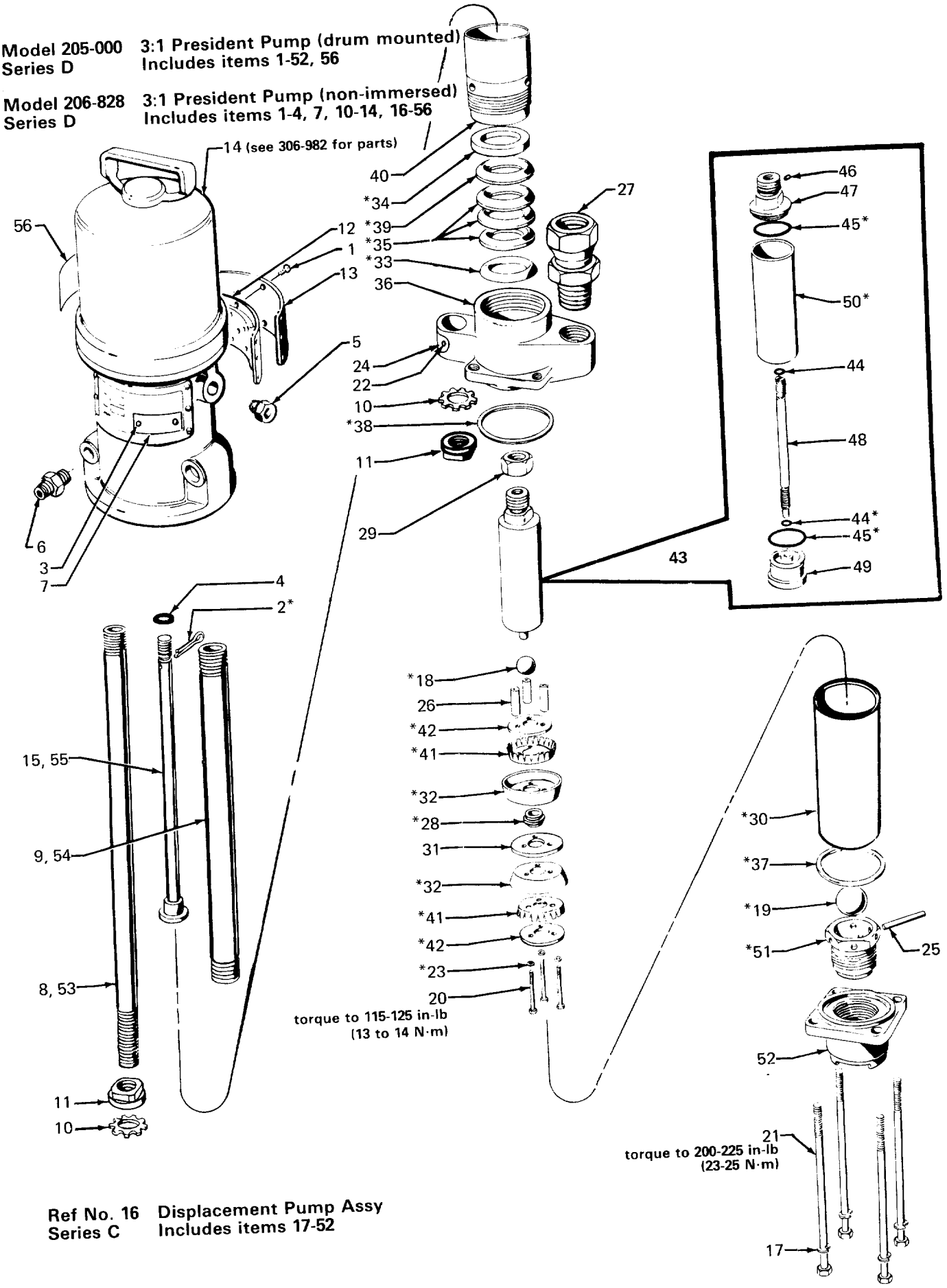

48
50
18
32
40
34
39 Teflon on top
35
33
18
28
36
25
32
21
Torque to 125-150 in-lb (14-17 N·m)
30
51
19
Clean groove for proper seal.

Fig 6

Model 205-000 3:1 President Pump (drum mounted)
Series D Includes items 1-52, 56

Model 206-828 3:1 President Pump (non-immersed)
Series D Includes items 1-4, 7, 10-14, 16-56



Ref No. 16 Displacement Pump Assy
Series C Includes items 17-52

REF NO.	PART NO.	DESCRIPTION	QTY
1	100-078	SCREW, rd hd mach; no. 8-32 x 3/8	8
2	*100-579	PIN, cotter; 0.11 in. (2.8 mm) dia; 1 in. (25 mm) lg	1
3	104-088	RIVET, blind	2
4	*156-082	SEAL, o-ring; nitrile rubber	1
5	158-212	BUSHING; 3/8 npt(f) x 1/2 npt(m)	1
6	160-032	NIPPLE, pipe; 3/4 npt	1
7	172-446	PLATE, serial	1
8	162-646	TUBE, mounting; 0.75 in. (19 mm) OD	1
9	162-647	TUBE, mounting; 1 in. (25 mm) OD	1
10	162-648	. LOCKWASHER	2
11	162-649	NUT, lock	2
12	162-654	PLATE, muffler	1
13	172-458	PLATE, name	1
14	205-038	AIR MOTOR (see 306-982 for parts)	1
15	205-549	ROD, connecting	1
16	206-658 Series C	DISPLACEMENT PUMP Assy Includes items 17-52	1
17	100-133	. LOCKWASHER, spring; 3/8 in.	4
18	*100-279	. BALL, steel; 0.88 in. (22.4 mm) dia	1
19	*101-178	. BALL, steel; 1.25 in. (31.8 mm) dia	1
20	101-529	. SCREW, hex hd cap; 3/8-16 x 2-3/4 in.	3
21	102-293	. SCREW, hex hd cap; 3/8-16 x 8-1/2 in.	4
22	102-641	. SCREW, type "t" self tap; no. 6-32 x 7/8	2
23	*150-540	. GASKET, copper	3
24	150-707	. PLATE, serial	1
25	160-006	. PIN, ball stop	1
26	160-016	. SPACER, fluid piston	3
27	160-022	. UNION, str swivel; 1 in. npt (mxf)	1
28	*160-068	. SEAT, ball	1
29	160-502	. NUT, coupling	1
30	*162-639	. CYLINDER, fluid pump	1
31	162-641	. SPACER, packing	1
32	*162-642	. PACKING, leather cup	2
33	*166-487	. GLAND, male packing	1
34	*166-488	. GLAND, female packing	1
35	*166-490	. V-PACKING, leather	3
36	166-491	. HEAD, pump	1
37	*166-652	. GASKET; aluminum	1
38	*166-653	. GASKET; aluminum	1
39	*166-769	. V-PACKING; "Teflon"	1
40	167-711	. NUT, packing	1
41	*171-591	. SPREADER, packing	2
42	*171-592	. WASHER, back-up	2
43	205-039	. DISPLACEMENT PLUNGER Assy Includes items 44-50	1
44	*157-277	. . O-RING: nitrile rubber	2
45	*160-325	. . O-RING; nitrile rubber	2
46	160-519	. . PELLET; nylon	1
47	162-631	. . CAP, upper	1
48	162-632	. . BOLT; plunger	1
49	162-633	. . CAP, lower	1
50	*162-669	. . TUBE, plunger	1
51	*205-061	. BODY and SEAT; intake valve	1
52	205-063	. HOUSING, intake valve	1
53	166-723	TUBE, mounting; 0.27 in. (19 mm) OD	1
54	166-724	TUBE, mounting; 1 in. (25 mm) OD	1
55	205-427	ROD, connecting	1
56	172-447	LABEL, warning	1

**Recommended "tool box" spare parts. Keep on hand to reduce down time.*

Order parts by name and number. Always give the model number and series letter of the assembly for which you are ordering.

206-761 Repair Kit for Displacement Pump (must be purchased separately) consists of:

Ref No.	Qty.	Ref. No.	Qty.
32	2	38	1
33	1	39	1
34	1	41	2
35	3	42	2
37	1		

SERVICE INFORMATION

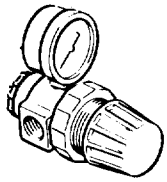
Listed below by the assembly changed are OLD and NEW parts.

ASSEMBLY CHANGED	PART DESIGNATION	REF NO.	PART NO.	NAME
205-000	OLD		102-556	Rivet
206-828	NEW	3	104-088	Rivet
Final Assy	OLD		160-637	Serial Plate
Series to D	NEW	7	172-446	Serial Plate
	OLD		167-692	Name Plate
	NEW	13	172-458	Name Plate
	ADDED	56	172-447	Label

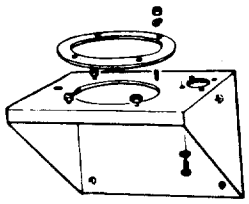
INTERCHANGEABILITY NOTE: NEW parts replace OLD parts.

ACCESSORIES (Must be purchased separately)

AIR PRESSURE REGULATOR AND GAUGE 202-156
200 psi (14 bar) MAXIMUM WORKING PRESSURE
1/2" NPT INLET & OUTLET

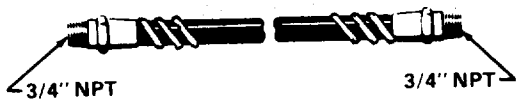


WALL BRACKET 206-220
For mounting President 206-828 pump to wall.



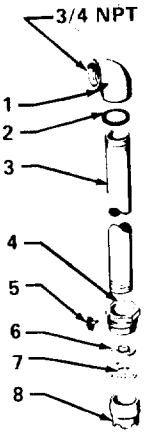
PIPE BUSHING 101-496
1-1/2" x 3/4 npt
For adapting pump 206-828 to suction hose below

SUCTION HOSE 214-961
Nylon,6 ft (1.8 m) long, coupled 3/4 npt (mbe). Spring guard both ends.



55 GAL. (200 liter) SIPHON TUBE 206-266

REF NO.	PART NO.	DESCRIPTION	QTY
1	156-591	ELBOW, 90°; 3/4" npt; 1-1/2-24 ns thd	1
2	156-593	PACKING, o-ring	1
3	156-592	TUBE, riser	1
4	176-684	ADAPTER, bung	1
5	100-200	THUMBSCREW	1
6	159-100	RETAINER, screen	1
7	161-377	SCREEN, filter	1
8	169-101	NUT, screen retainer	1



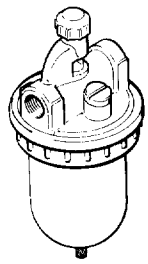
TEFLON PACKINGS
For use with strong solvent and corrosive materials which attack leather.

166-709 Teflon V-packing (6 required at throat)
164-920 Teflon Cup packing (2 required at piston)

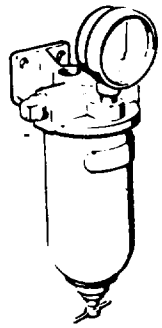
AIR SUPPLY HOSE, with Static Ground Wire
175 psi (12 bar) MAXIMUM WORKING PRESSURE
1/2 in. ID, 1/2 npt(m) Couplings, Buna-N.

205-418 6 ft (1.8 m)
205-216 15 ft (4.6 m)
205-273 25 ft (7.6 m)
208-594 50 ft (15.2 m)

AIR LINE OILER 214-848
250 psi (17.5 bar) MAXIMUM WORKING PRESSURE
1/2" NPT INLET & OUTLET



AIR LINE FILTER 203-421
200 psi (14 bar) MAXIMUM WORKING PRESSURE
1/2" NPT INLET & OUTLET

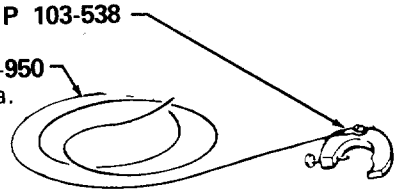


GRACO THROAT SEAL LIQUID
Non-evaporating solvent for wet cup.

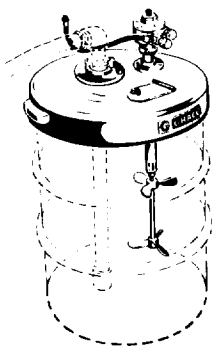
206-995 1 quart (0.95 liter)
206-996 1 gallon (3.8 liter)

GROUNDING CLAMP 103-538

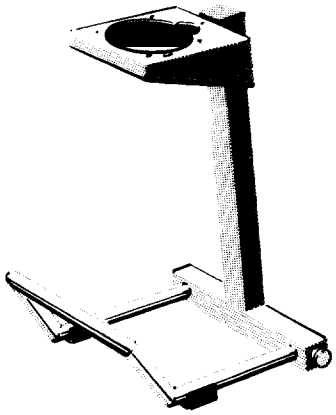
GROUND WIRE 208-950
25 ft (7.6 m) lg., 12 ga.



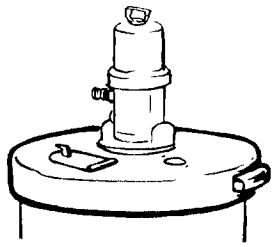
COVER & AGITATOR 207-199
Fits 55 gallon drum.



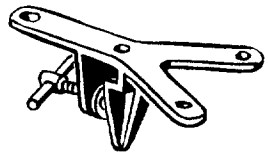
PUMP MOUNTING STAND 208-211
For pump 206-828 only.



DRUM COVER 203-723
For mounting pumps in open head 55 gallon drums.



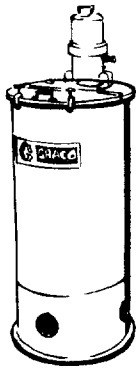
STURDI-CLAMP 203-813
Holds pump securely to side of open head drum.



SAFETY MIXING TANKS
For water reducible materials

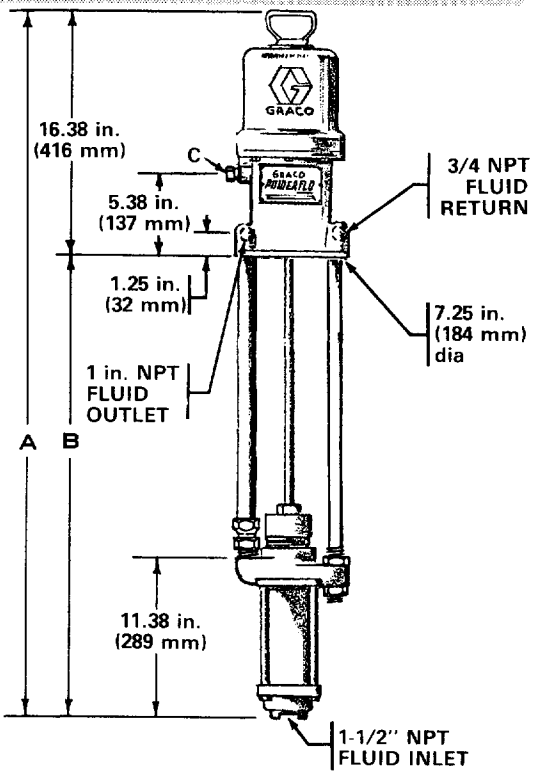
210-035 30 Gallon
210-036 15 Gallon

Includes Fluid Couplers and Nipple
104-134 and 104-133 1/2 npt
104-136 and 104-135 3/4 npt

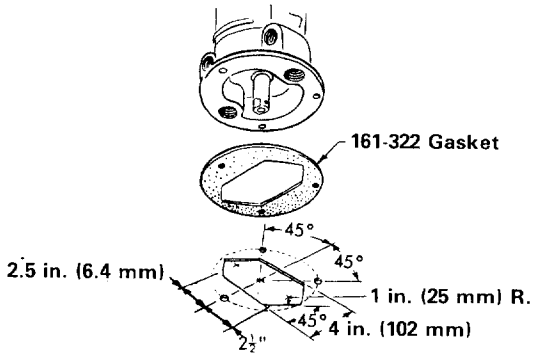


DIMENSIONAL DRAWING

PUMP NO.	A OVERALL LENGTH	B PUMP LENGTH	C AIR INLET
205-000	48.88 in. (1242 mm)	32.5 in. (826 mm)	3/8 npt
206-828	22.28 in. (848 mm)	17 in. (432 mm)	1/2 npt



MOUNTING HOLE LAYOUT



Three 0.34 (8.6 mm) dia holes on 6.38 in. (162.1 mm) bolt circle

TECHNICAL DATA

Air operating range	:	40 to 180 psi (3 to 12 bar)
Air consumption	:	4 cfm per gallon pumped (0.112 m^3/min/liter) at 100 psi (7 bar): up to 44 cfm (1.23 m^3/min/liter) with pump operated within recommended range
Pump cycles per gallon (3.8 liter)	:	6
Maximum recommended pump speed	:	66 cycles per minute: 11 gpm (42 liter/min)
Recommended speed for optimum pump life	:	15-25 cycles per minute: 2.5 to 4.2 gpm (9 to 16 liter/min)
Wetted Parts	:	Aluminum, Nitralloy, Steel, Copper, Bronze, "Teflon", Leather, Nitrile Rubber
Weight	:	Model 205-000; 46 lb (21 kg) Model 206-828; 41 lb (19 kg)

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. This warranty extends to the original purchaser for a period of 12 months from the date of purchase and applies only when the equipment is installed and operated in accordance with written factory recommendations. This warranty does not cover damage or wear which, in the reasonable judgment of Graco, arises from misuse, abrasion, corrosion, negligence, accident, substitution of non-Graco parts, faulty installation or tampering.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective for examination by Graco to verify the claimed defect. If the claimed defect is verified, Graco 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 workmanship or material, repairs will be made at a reasonable charge and return transportation will be charged.

THIS LIMITED WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES (EXPRESS OR IMPLIED) INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF ANY NON-CONTRACTUAL LIABILITIES INCLUDING PRODUCT LIABILITIES BASED ON NEGLIGENCE OR STRICT LIABILITY. EVERY FORM OF LIABILITY FOR DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS IS EXPRESSLY EXCLUDED AND DENIED.

EQUIPMENT NOT COVERED BY GRACO WARRANTY. Accessories or components of equipment sold by Graco that are not manufactured by Graco (such as electric motors, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making such claims.

Factory Branches: Atlanta, Cleveland, Dallas, Detroit (Southfield), Los Angeles, West Caldwell (N.J.)
Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan
GRACO INC. P.O. BOX 1441 MINNEAPOLIS, MN 55440
PRINTED IN U.S.A. 306-625 6-68 Revised 8-79