Parts

INSTRUCTIONS-PARTS LIST

306-805
Rev E
SUPERSEDES B and PCN D

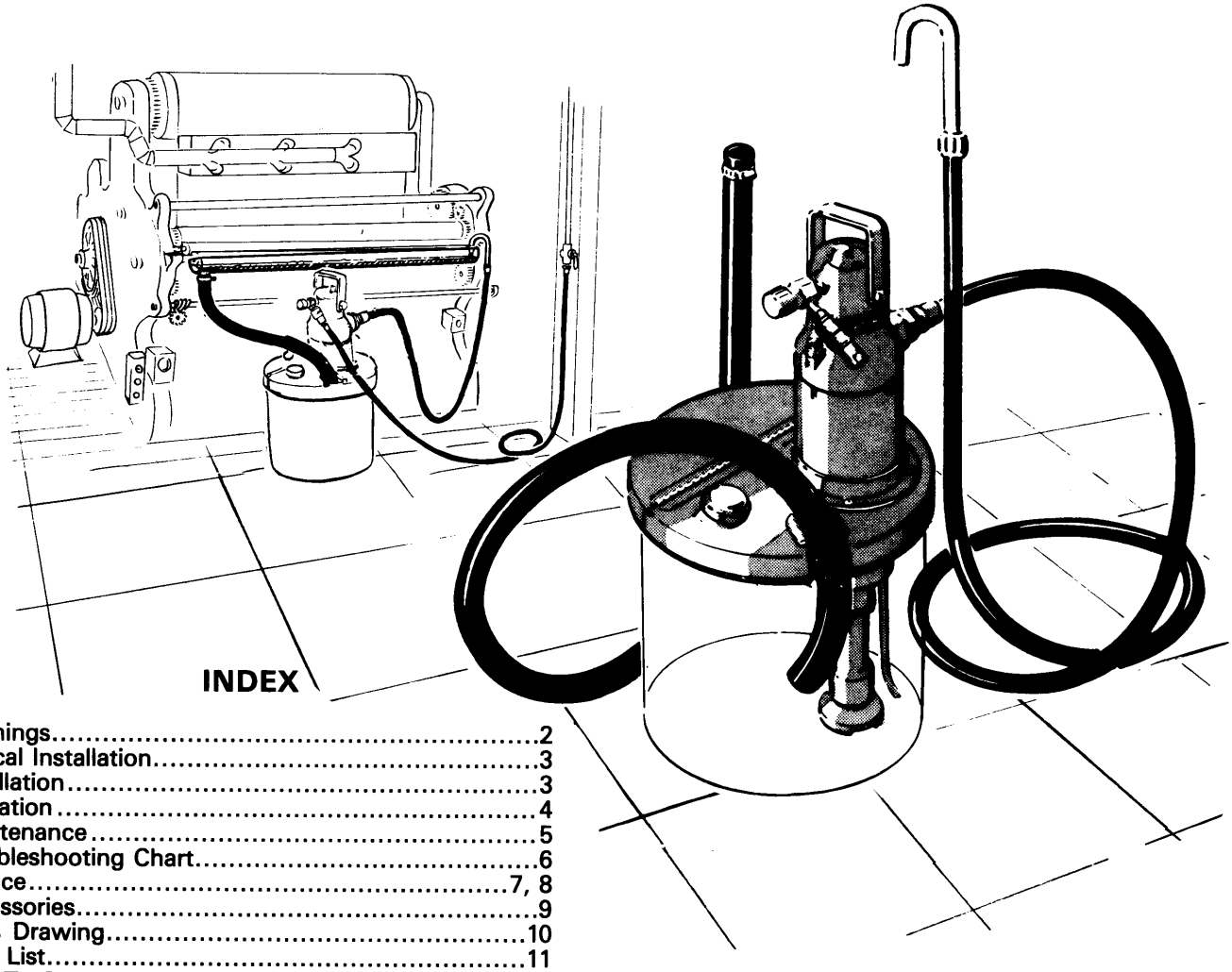
This manual contains **IMPORTANT WARNINGS** and **INSTRUCTIONS**
READ AND RETAIN FOR REFERENCE

AIR-POWERED

INK SUPPLY PUMP

90 psi (6 bar) MAXIMUM WORKING PRESSURE

Model 226-237, Series A
Includes Bare Pump Model 205-459, Series G



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WARNING

Never use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in this equipment. Such use could result in a serious chemical reaction, with the possibility of explosion, which could cause death, serious bodily injury and/or substantial property damage.
Consult your fluid suppliers to ensure that the fluids being used are compatible with aluminum and zinc parts.

GRACO INC. P.O. Box 1441 MINNEAPOLIS, MN 55440-1444

WARNING

FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.

Read and understand all instruction manuals before operating equipment.

EQUIPMENT MISUSE HAZARD

General Safety

Any misuse of the equipment or accessories, such as overpressurizing, modifying parts, using incompatible chemicals and fluids, or using worn or damaged parts, can cause them to rupture and result in serious bodily injury, such as splashing fluid in the eyes or on the skin, fire, explosion or property damage.

NEVER alter or modify any part of this equipment; doing so could cause it to malfunction.

CHECK all equipment regularly and repair or replace worn or damaged parts immediately.

ALWAYS read and follow the fluid and solvent manufacturer's recommendations regarding the use of protective clothing and equipment.

System Pressure

This pump can develop *90 psi (6 bar) MAXIMUM WORKING PRESSURE* at 180 psi (12 bar) MAXIMUM INCOMING AIR PRESSURE. Be sure that all equipment and accessories are rated to withstand the maximum working pressure of this pump. DO NOT exceed the maximum working pressure of any component or accessory used in the system.

Fluid Compatibility

BE SURE that all fluids and solvents used are chemically compatible with the wetted parts shown in the Technical Data on the back cover. Always read the fluid and solvent manufacturer's literature before using them in this system.

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the pump, when checking or servicing any part of the system, and whenever you stop dispensing.

1. Shut off the air to the pump.
2. Close the bleed-type master air valve (required in your system).
3. Let the fluid in the system drain from the fluid hose.

If you suspect that the hose is completely clogged, or that pressure has not been fully relieved after following the steps above, VERY SLOWLY loosen the hose end coupling and relieve pressure gradually, then loosen completely. Now clear the hose.

MOVING PARTS HAZARD

Moving parts can pinch or amputate your fingers or other body parts. KEEP CLEAR of moving parts when starting or operating the pump. Follow the Pressure Relief Procedure above to prevent the pump from starting accidentally.

FIRE OR EXPLOSION HAZARD

Static electricity is created by the high velocity flow of fluid through the pump and hose. When static electricity is discharged, sparking occurs. Sparks can ignite fumes from solvents, the ink, dust particles, and other flammable substances, resulting in fire or explosion and serious bodily injury.

In a low pressure system, static sparking is generally not a problem. However, some simple precautions should be taken to reduce the risk. Check your local code for detailed grounding instructions for your area and type of equipment, and ground all of this equipment:

1. *Pump:* use a ground wire and clamp as shown in Fig 1.
2. *Air compressor:* according to manufacturer's recommendations.
3. *Printing press and ink fountain:* according to local code.
4. *All solvent pails used when flushing,* according to local code. *Use only metal pails,* which are conductive. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts the grounding continuity.
5. *To maintain grounding continuity when flushing or relieving pressure,* always hold the metal nozzle firmly to the side of a grounded *metal* pail.

To ground the pump, loosen the grounding lug locknut (W) and washer (X). Insert one end of a 12 ga (1.5 mm^2) minimum ground wire (Y) into the slot in lug (Z) and tighten locknut securely. See Fig 1. Connect the other end of the ground wire to a true earth ground. See ACCESSORIES on page 9 to order a ground wire and clamp.

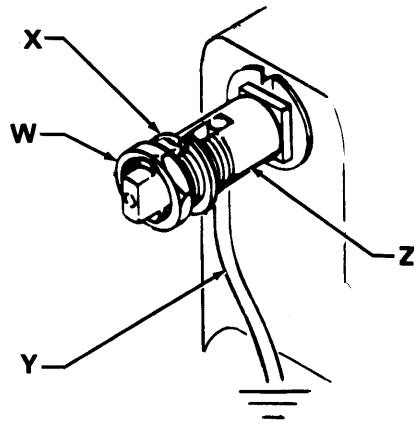


Fig 1

Flushing Safety

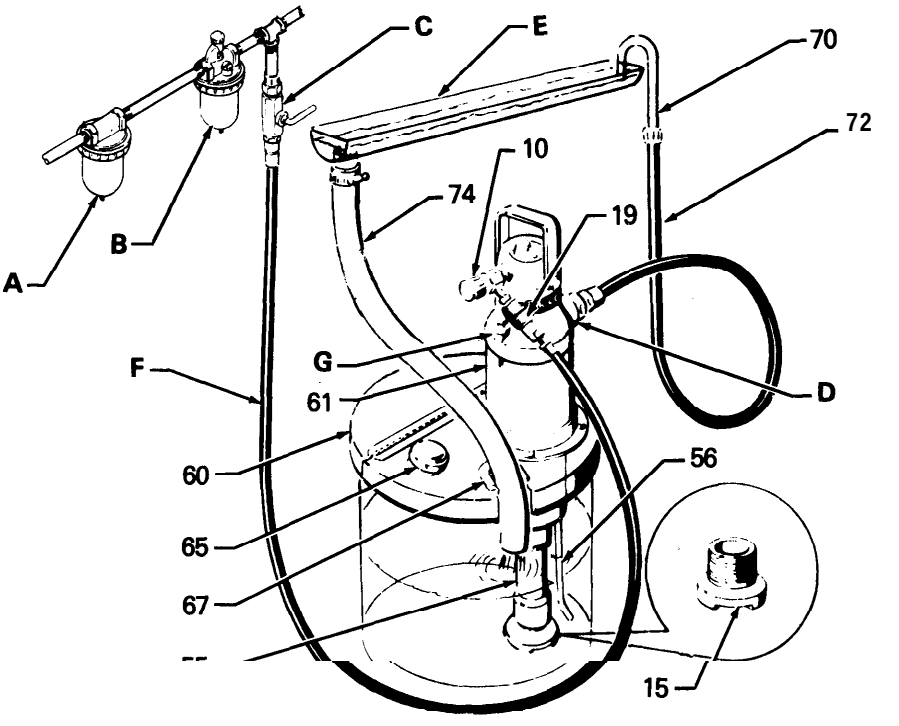
To reduce the risk of injury from splashing or static sparking, always hold the metal nozzle firmly to the side of a grounded metal pail, and use the lowest possible fluid pressure when flushing.

IMPORTANT

United States Government safety standards have been adopted under the Occupational Safety and Health Act. These standards-particularly the General Standards, Part 1910, and the Construction Standards, Part 1926—should be consulted.

TYPICAL INSTALLATION

KEY
A Air Line Filter
B Air Line Oiler
C Bleed-Type Master Air Valve
D Pump Outlet Port
E Ink Fountain
F Air Hose
G Solvent Port
10 Air Control Valve
16 Intake Strainer
19 Air Line Coupler
55 Extension Tube
99 Bypass Tube
60 Cover
61 Mounting Collar
96 Cover Plug
97 Hose Guard
70 Nozzle
72 Supply Hose
74 Return Hose



INSTALLATION

This pump is designed for use in a circulating supply system from a 5 gallon ink pail to a printing press ink fountain. See the next column for adapting the pump to a 3 gallon pail.

NOTE: Letters and numbers in the text refer to the Typical Installation, Figs l-4, and the Parts Drawing.

Fasten the pump mounting collar (61) to the pail cover (60) with the screws (63), washers (64) and nuts (62). Mount the cover on the pail. Lower the pump into the pail.

System Accessories

Refer to the Typical Installation drawing and to ACCESSORIES on page 9. The Typical Installation is only an example; your Graco representative can provide assistance in helping you set up a system which meets your needs.

NOTE: To ensure maximum pump performance, be sure that all accessories used are properly sized to meet your system requirements.

In the air line, install an air filter (A) to remove harmful dirt and moisture from the compressed air supply. Downstream from the filter install an air line oiler (B), which provides automatic lubrication to the air motor. Within easy reach of the pump, install a bleed-type master air valve (C) (required).

WARNING

A bleed-type master air valve is required in your system to help reduce the risk of serious bodily injury, such as splashing of fluid in the eyes or on the skin, or injury from moving parts if you are adjusting or repairing the pump. The bleed-type master air valve relieves air trapped between the valve and the pump after the pump is shut off. Trapped air can cause the pump to cycle unexpectedly and result in serious bodily injury, including amputation.

If you are using an agitator (see ACCESSORIES on page 9), remove the plug (65) from the pail cover (60) and install the agitator in the hole.

Use with a 3 gallon pail.

Before mounting the pump in a 3 gallon pail, remove the bypass tube (56) and the extension tube (55). Screw the fluid intake strainer (15) directly into the fluid intake valve housing (37).

Connect the Hoses

Screw the male end of the fluid supply hose (72) into the outlet port (D) of the pump. Hook the nozzle (70) on the other end of the hose on the ink fountain (E). Clamp one end of the return hose (74) to the ink fountain drain, and place the other end in the pail through the hole, making sure the hose guard (67) is in place.

Screw the air line coupler (19) onto the air hose (F), but do not connect it to the pin fitting (58) on the pump's air control valve (10) yet.

If you are using a drip feed or automatic system to add solvent to the ink, connect the solvent line to the 1/8 npt(f) solvent port (G) on the pump.

Grounding

Ground the pump and all other system components as explained under FIRE OR EXPLOSION HAZARD on page 2.

WARNING

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the pump, when checking or servicing any part of the system, and whenever you stop dispensing.

1. Shut off the air to the pump.
2. Close the bleed-type master air valve (required in your system).
3. Let the fluid in the system drain from the fluid hose.

If you suspect that the hose is completely clogged, or that pressure has not been fully relieved after following the steps above, **VERY SLOWLY loosen the hose end coupling and relieve pressure gradually, then loosen completely. Now clear the hose.**

Flush Pump Before Using

Pumps are tested with lightweight oil which is left in to protect pump parts. To prevent contamination of ink, flush the pump with a compatible solvent before using it. See "Flushing" below. Also flush thoroughly when changing colors.

Starting and Adjusting the Pump

Check the level and viscosity of ink in the pail. Add solvent as recommended by the ink manufacturer.

Pour 1 oz. (30 ml) of solvent into the solvent port of the **pump, to fill the wet-cup (41) prior to initial use.** Thereafter, be sure the wet-cup is filled with solvent and that no ink dries on the displacement rod (18). Dried ink will damage the packings.

Place the cover and pump on the ink pail. Hook the curved nozzle (70) on the supply hose (72) onto the ink fountain. Insert the return hose (74) in the return port of the cover.

Close the master air valve and the pump's air control valve (10). Connect the air line coupler (19) to the pin fitting (58) on the air control valve.

Open the master air valve and slowly open the air control valve until the pump is delivering ink at the desired rate. Always use the lowest pressure necessary to get the desired results.

WARNING

NEVER exceed the 180 psi (12 bar) maximum air pressure to the pump, to avoid damage to the pump and to reduce the risk of component rupture which can cause extremely serious bodily injury, including splashing of fluids in the eyes or on the skin.

Never allow the pump to run dry of ink. 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 ink supply. If the pail is empty and air has been pumped into the lines, prime the pump and lines with ink, or flush and leave filled with compatible solvent. Be sure to eliminate all air from the fluid system.

Shutdown and Care of the Pump

At the end of the day, always follow the Pressure Relief Procedure on page 4.

Flush the system as often as necessary to prevent ink from drying in the pump or hoses. Dried ink can damage the packings when the pump is restarted.

If the solvent is not added to the ink automatically, pour **at least 1 oz. (30 ml) of solvent in the solvent port** whenever solvent is added to the ink pail. See Fig 2.

When shutting down for a short time, add 1 oz. (30 ml) **of solvent in the solvent port. For a long shutdown,** flush the pump. Ink must not be allowed to dry in the pump.

After each week of operation, follow the Pressure Relief Procedure on page 4, lift the pump from the pail **and check the tightness of the packing nut/wet-cup (41). The nut should be just tight enough to prevent** leaking. If it is too tight it will cause premature packing wear. To turn the nut, insert a 1/4 in. (6 mm) diameter metal rod in one of the holes of the nut.

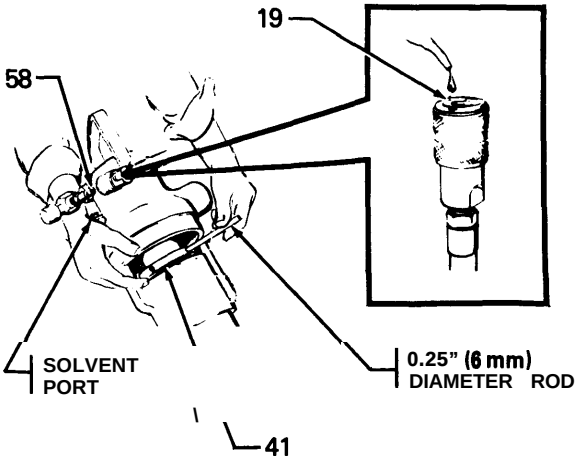


Fig 2

Flushing

Raise the hinged part of the pail cover and hook the nozzle of the supply hose to the pail. Use the handle (54) to lift the pump out of the pail and operate it until as much ink as possible has been pumped out. Drain the remaining ink from the supply hose.

Set the pump upright in an empty solvent pail. Pour solvent into the pail until it is level with the top of the packing nut/wet-cup (41). See Fig 3.

Run the pump slowly for several minutes, to clean the inside of the pump and hose.

CAUTION

NEVER completely immerse the pump in solvent, or allow the solvent level to rise above the packing nut window. Doing so will damage the air motor.

Lift the pump from the solvent pail with the handle (54) and continue pumping until all solvent is forced from the pump and hose. Then carefully tip the pump sideways to empty solvent from the packing nut/wet-cup (41).

Repeat this procedure until the pump is completely clean.

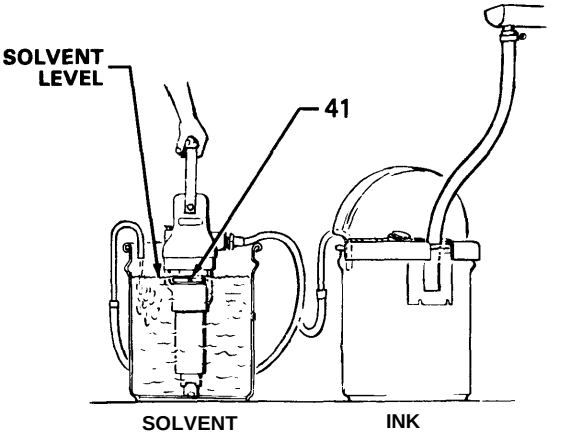


Fig 3

TROUBLESHOOTING CHART

WARNING

Always follow the Pressure Relief Procedure on page 7 before performing any service.

NOTE: Check all possible remedies before disassembling pump.

PROBLEM	CAUSE	SOLUTION
Fluid leaks around displacement rod	Loose packing nut or worn throat packings	Tighten, replace
Erratic or accelerated pump operation	Ink supply exhausted	Replace or refill pail
	Clogged or worn fluid piston	Clear, replace
	Clogged screen or worn intake valve	Clear, replace
	Air cylinder spring broken	Replace
Output low on downstroke only	Clogged or worn air piston or packing	Clear, replace
	Clogged screen or worn intake valve	Clear, replace
Output low on upstroke only	Clogged or worn air piston or packing	Clear, replace
	Clogged or worn fluid piston	Clear, replace
Output low on both strokes	Restricted air supply	Clear
	Closed or clogged air control valve	Open, clear
	Clogged supply hose	Clear
	Clogged or worn air piston or packing	Clear, replace
	Ink supply exhausted	Replace or refill pail
	Clogged or worn fluid piston	Clear, replace
	Clogged screen or worn intake valve	Clear, replace
	Loose packing nut or worn throat packings	Tighten, replace
	Tight packing nut	Loosen
Pump does not operate	Restricted air supply	Clear
	Closed or clogged air control valve	Open, clear
	Clogged supply hose	Clear
	Clogged or worn air piston or packing	Clear, replace
	Clogged or worn fluid piston	Clear, replace
	Clogged screen or worn intake valve	Clear, replace
	Pump seized by dry ink	Service, clean

WARNING

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including splashing in the eyes or on the skin, or injury from moving parts, always follow this procedure whenever you shut off the pump, when checking or servicing any part of the system, and whenever you stop dispensing.

1. Shut off the air to the pump.
2. Close the bleed-type master air valve (required in your system).
3. Let the fluid in the system drain from the fluid hose.

If you suspect that the hose is completely clogged, or that pressure has not been fully relieved after following the steps above, VERY SLOWLY loosen the hose end coupling and relieve pressure gradually, then loosen completely. Now clear the hose.

Before You Start

A. A repair kit, part no. **207-096,** is available. If you have a repair kit, use all of the new parts for the best results. Parts included in the kit are marked with a double asterisk, for example **(2**).**

B. To reduce downtime, be sure you have all necessary repair parts available. Recommended "tool box" spare parts are listed in the parts list with an asterisk(").

C. Whenever you replace the packings, also replace the glands and bearing.

D. When cleaning parts, use a compatible solvent. Inspect parts for wear or damage and replace as necessary.

Disassem bly

1. If **possible,** flush the pump before servicing. Follow the **Pressure Relief Procedure** above before proceeding. Disconnect all hoses.

2. Clamp the pump head **(36)** in a vise. Unscrew the bypass tube **(56).** Unscrew the fluid intake strainer assembly **(15)** and the extension tube **(55)** (if used) from the intake housing **(37).** Remove the screen **(16) from** the strainer housing **(17)** and clean. See **Fig 4.**

3. Use a wrench on the intake valve housing (37) to unscrew the fluid cylinder **(50)** from the pump head **(36).** Do not use a wrench on the cylinder, as damage will result. Pull the cylinder straight off to avoid scratching the inner surface.

4. Remove the four screws **(20)** and washers **(22)** from the bottom of the cylinder **(50).** Push the intake valve housing **(37)** up and out of the cylinder, being careful not to scratch the inner cylinder surface. Inspect the o-ring **(51)** at the bottom of the cylinder.

5. Remove the retaining ring **(26),** stop ring **(45),** and valve plate **(46)** from the intake valve housing **(37).** The valve plate and stop ring may be inverted during reassembly if they are worn.

6. Insert a metal rod **1/4** in. **(6** mm) in diameter in the slots at the base of the displacement rod **(18),** to keep it from turning. Use a wrench to screw the piston **(47)** out of the rod **(18).**

7. Remove the packing retainer ring **(49)** and cup packing **(48)** from the piston body **(47).** Also remove the retaining ring **(26),** stop ring **(45),** and valve plate **(46).** The valve plate and stop ring may be inverted during reassembly if they are worn.

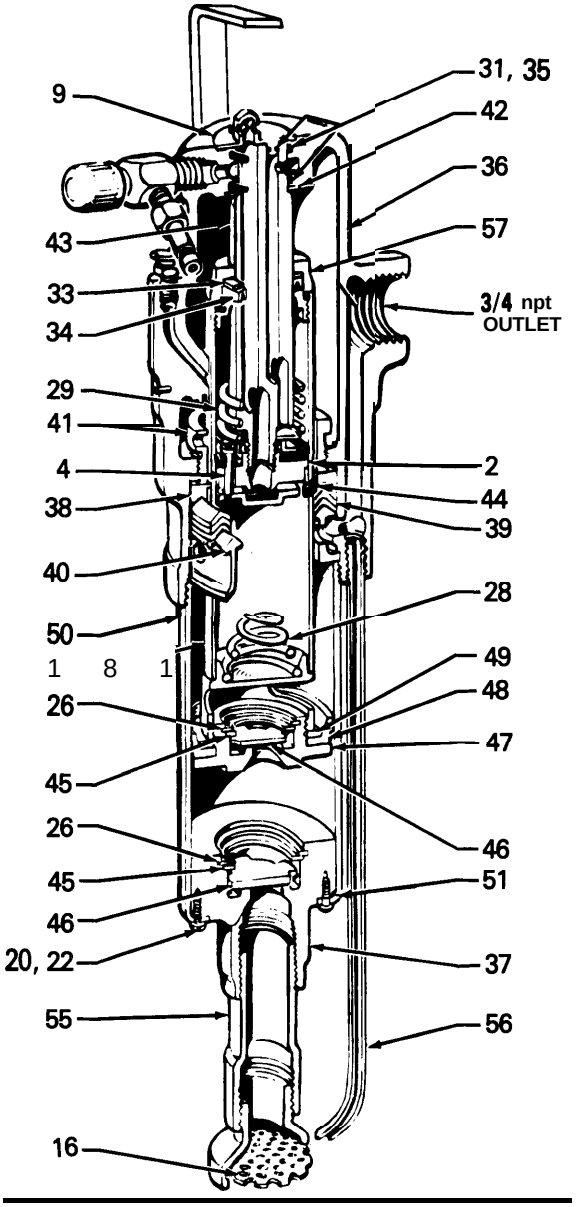


Fig 4

8. Remove the two screws (20) and washers (22) holding the air cap (9) to the piston rod (43). Inspect the o-rings (31, 35) under the air cap. Insert a 1/4 in. (6 mm) diameter metal rod into one of the holes in the packing nut/wet-cup (41) and loosen it. Pull the displacement rod (18) and piston rod (43) out the bottom of the pump head (36). The spacer washer (42) will come out with the piston rod.

9. Remove the packings and glands from the pump throat. Clean and inspect all parts.

10. Unscrew the displacement rod cap (57) from the piston rod (18). Pull the piston rod (43) out the top of the displacement rod (18).

11. Use wrenches on the flats of the piston rod (43) and the air valve and piston assembly (2) to unscrew the piston from the rod. Remove the washer (30), spring (29), and rod cap (57) from the piston rod (43). Remove the o-ring (27), v-packing (34), and backup (33) from the displacement rod cap (57).

12. Disassemble the air valve and piston assembly (2) and inspect the plates (6, 7) for dirt that will hold the valve open and cause continuous exhausting of air. Clean the parts with a compatible solvent and a soft brush. Blow dry. If one of the spacers (4) needs replacement, replace all three.

NOTE: An optional air valve and piston assembly, part no. 220-168, is available for severe duty applications. See page 11.

13. Check the surfaces of the displacement rod (18) and piston rod (43) for wear or scoring by running a finger over the surface or holding the part up to the light at an angle. Scoring of these parts will damage the packings.

14. Remove the tapered spring (28) from the base of the displacement rod (18) by catching the spring at its base with a hooked wire and jerking sharply upward. Be careful not to scratch the polished surface of the displacement rod.

Reassembly

1. Reinstall the spring (28) in the displacement rod (18) by snapping it in place. Be careful not to scratch the polished surface of the rod.

2. Reinstall the backup (33**) and v-packing (34**) in the displacement rod cap (57). The lips of the v-packing must face down. Fit the o-ring (27**) in place on the outside of the rod cap (57). Slide the rod cap and the spring (29) onto the piston rod (43).

3. Reassemble the air valve and piston assembly (2). Remember that if one spacer (4) needs replacement, all three must be replaced. Reinstall the washer (30) on the piston rod (43) and then screw the air valve and piston assembly (2) onto the piston rod. Use wrenches and tighten only enough to form an airtight seal.

4. Carefully slide the piston rod (43) into the displacement rod (18). Screw the displacement rod cap (57) into the displacement rod (18).

5. Reinstall the throat packings one at a time in the following order: female gland (38**), bearing (44**), three v-packings (39**) with the lips facing down, and the male gland (40).

6. Push the piston rod (43) and displacement rod (18) assembly up into the pump head (36) until it reaches the top. Use the 1/4 in. diameter rod to tighten the packing nut/wet-cup (41) just tight enough to prevent leaking.

7. Ensure that the o-rings at the top of the pump head are in position and fasten the air cap (9) to the piston rod (43) using the two screws (20) and washers (22).

8. Reinstall the valve plate (46), stop ring (45), and retaining ring (26) in the piston body (47). The valve plate and stop ring may be inverted if they are worn.

9. Reinstall the cup packing (48**) and retainer ring (49) on the piston body (47), with the lips of the packing facing up. Screw the piston body into the displacement rod (18) and tighten with a wrench.

10. Reinstall the valve plate (46), stop ring (45) and retaining ring (26) in the intake valve housing (37). If the valve plate or stop ring are worn they may be inverted.

11. Be sure the o-ring (51) is in position at the bottom of the cylinder (50). Lower the valve housing (37) into the cylinder, being careful not to scratch the cylinder's smooth inner surface. Fasten the intake housing to the cylinder with the four screws (20) and washers (22).

12. Carefully raise the cylinder (50) up over the displacement rod (18) and screw it into the pump head (36). To tighten, use a wrench on the intake valve housing (37). Never use a wrench on the cylinder.

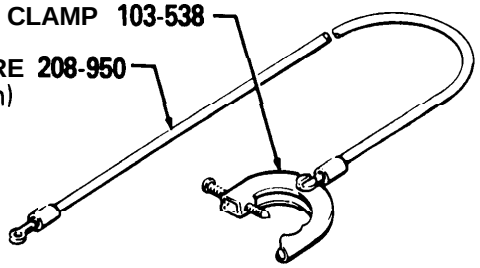
13. Reinstall the screen (16) in the strainer housing (17). Screw the strainer assembly (15) into the extension tube (55) (if used) and then screw these parts into the intake valve housing (37).

14. Screw the bypass tube (56) into the pump head (36). Reconnect the ground wire if it was disconnected during service. Reconnect all hoses.

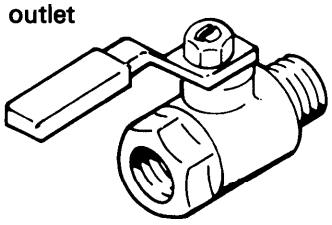
ACCESSORIES (Must be purchased separately)

GROUNDING CLAMP 103-538

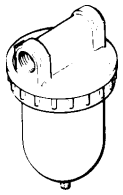
GROUND WIRE 208-950
25 ft lg (7.6 m)



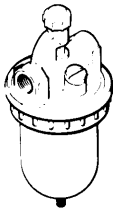
BLEED-TYPE MASTER AIR VALVE 107-142
300 psi (21 bar) MAXIMUM WORKING PRESSURE
Relieves air trapped in the air line between the pump air inlet and this valve when closed.
1/2 npt(m x f) inlet and outlet



AIR LINE FILTER 106-149
250 psi (7 7.5 bar) MAXIMUM WORKING PRESSURE
1/2 npt inlet and outlet



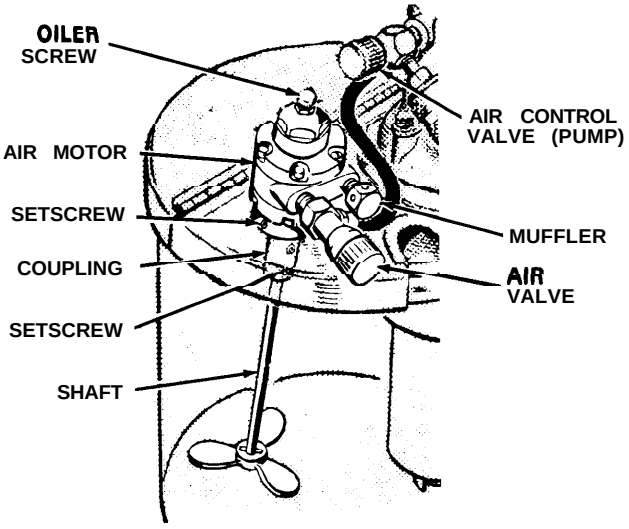
AIR LINE OILER 214-848
250 psi (7 7.5 bar) MAXIMUM WORKING PRESSURE
1/2 npt inlet and outlet



AIR POWERED AGITATOR 205-588
For mixing and reducing viscosity of paint by agitation.

To install agitator: remove shaft from agitator motor (loosen lower setscrew in coupling); mount agitator in inspection port of paint pail cover as shown in figure and tighten setscrews on port; insert shaft in coupling from underside of cover and tighten coupling setscrew.

To hook-up air supply: remove a 1/8 npt plug from air manifold and attach fixed end of agitator air hose to manifold; connect other swivel end of hose to agitator air valve.



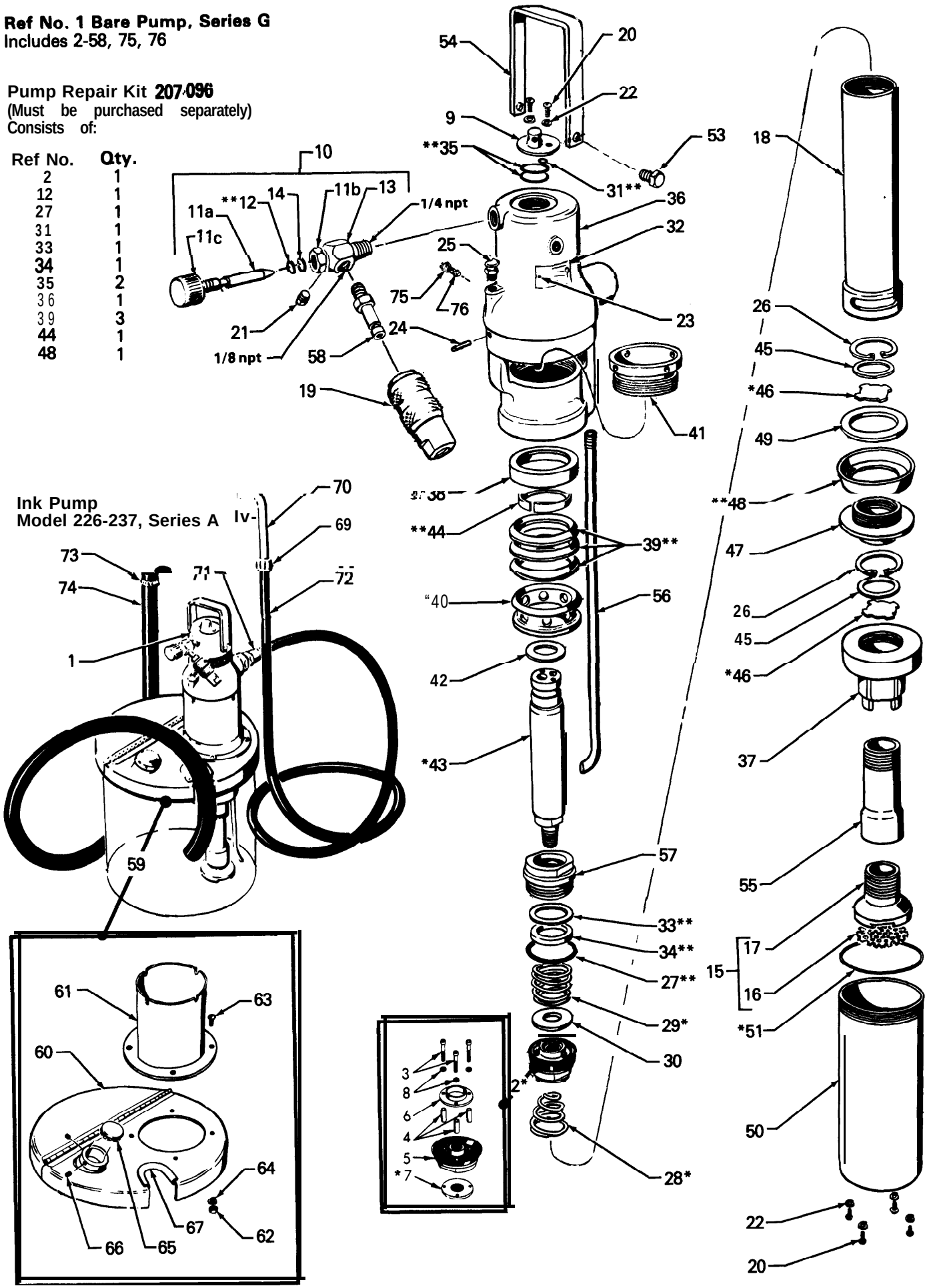
See instruction manual 306-565 for parts list.

PARTS DRAWING

Ref No. 1 Bare Pump, Series G
Includes 2-58, 75, 76

Pump Repair Kit 207-096
(Must be purchased separately)
Consists of:

Ref No.	Qty.
2	1
12	1
27	1
31	1
33	1
34	1
35	2
36	1
39	3
44	1
48	1



Model 226-237 Pump, Series A
Includes items 1-76

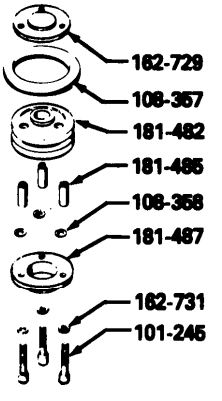
REF NO.	PART NO.	DESCRIPTION	QTY
1	205-459	1/2-1 TRANSFER PUMP ASSY.	
	Series G	Includes items 2-58, 75, 76	1
2	†**205-101	.AIR VALVE and PISTON ASSY. Includes items 3-8	1
3	101-245	..SCREW, socket hd, cap; No. 6-32 thd size; 1" lg	3
4	157-634	..SPACER, valve plate	3
5	174-096	..PISTON, air	1
6	162-728	. . PLATE, intake valve	1
7	"162-729	. . PLATE, exhaust valve	1
8	162-731	. . GAS KET, copper	1
9	206-485	.AIR CAP	1
10	206-487	.AIR VALVE ASSY. Includes items 1 la-14	1
11a	166-529	. .VALVE, needle	1
11b	166-532	..NUT, packing	1
11c	164-698	. .KNOB, adjusting	1
12	**157-628	..O-RING, nitrile rubber	1
13	166-161	..BODY, valve	1
14	166-531	. .WASHER, split ring; nylon	1
15	206-488	.FLUID INTAKE STRAINER ASSY. Includes items 16, 17	1
16	166-162	..SCREEN, strainer	1
17	166-163	. .HOUSING, strainer	1
18	207-669	.DISPLACEMENT ROD	1
19	208-536	.COUPLER, air line	1
20	loo-268	.SCREW, rd hd mach; No. 10-24 thd size, 3/8" lg	6
21	100-403	.PLUG, pipe; 1/8 npt	1
22	100-020	.WASHER, spring lock; No. 10	6
23	101-330	.SCREW, type "u", No. 2; 1/4" lg	2
24	102-203	.PIN, roll; 1/8" dia; 5/16" lg	
25	102-228	.COVER, solvent port; 1/8 npt(m) size	1
26	102-229	.RING, retaining	2
27	""156-633	.O-RING; nitrile rubber	
28	"157-630	.SPRING, tapered helical compression	1
29	* 157-633	.SPRING, helical compression	1
30	157-872	.WASHER, valve trip	1
31	""158-486	.O-RING; nitrile rubber	1
32	172-446	.PLATE, pump serial	1
33	**163-010	.BACK-UP, packing	1
34	**163-011	.V-PACKING; nitrile rubber	1
35	""166-080	.O-RING; nitrile rubber	2
36	166-139	.HEAD, pump	1
37	166-140	.HOUSING, intake valve	1
38	**166-164	.GLAND, female	1
39	**166-165	.V-PACKING; PTFE	3
40	*166-166	.GLAND, male	1
41	166-167	.NUT, packing	1
42	166-168	.WASHER, spacer	1
43	"166-169	.ROD, air piston	1
44	""166-170	.BEARING; PTFE	1
45	166-172	.RING, valve stop	2
46	*166-173	. PLATE, valve	2
47	166-174	.BODY, piston	1
48	**166-175	.PACKING, cup; PTFE	1
49	166-176	.RING, packing retainer	1
50	166-177	.CYLINDER, fluid	1
51	*166-178	.O-RING; nitrile rubber	1
53	166-464	.SCREW, handle	2
54	166-465	.HANDLE, pump lift	1
55	167-344	.TUBE, inlet extension	1
56	167-345	.TUBE, by-pass	1
57	168-236	.CAP, displacement rod	1
58	169-969	.FITTING, air line	1
59	206-461	COVER ASSY Includes items 60-67	1
60	206-489	.5 GAL. PAIL COVER	1
61	206-490	.PUMP MOUNTING COLLAR	1
62	loo-179	.NUT, hex; No. 10-24 thd size	4
63	loo-268	.SCREW, rd hd, mach; No. 10-24 thd size; 3/8" lg	
64	100-020	.WASHER, spring lock; No. 10	4
65	101-342	.BUTTON, plug; for l-l /4" dia hole	1
66	101-962	.SETSCREW, socket hd; 1/4-20 thd size; 5/8" lg	2
67	166-186	.GUARD, hose	1
69	102-473	CLAMP, hose	2
70	162-678	NOZZLE, hose	1
71	166-181	STUD, hose	1
72	167-343	HOSE, 1/2" ID; 10 ft lg	1
73	101-368	CLAMP, hose; for 2-1/8" OD hose	1
74	166-264	HOSE, return; 1-1/4" ID; 10 ft lg	1
75	104-029	LUG, grounding	1
76	104-582	WASHER, tab	1

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

***Included in Repair Kit 207-096.*

†Optional Air Valve and Piston Assembly, 220-168, for severe duty applications. Consists of:

PART NO.	DESCRIPTION	QTY
181485	SPACER, valve plate	3
181-482	PISTON, air; nylon	1
181-487	PLATE, air intake valve	1
108-357	O-RING; Viton®	1
108-358	O-RING; Viton®	3
101-245	SCREW; socket hd cap; No. 6-32; 1" long	3
162-729	PLATE, air exhaust valve	1
162-731	GASKET; copper	3

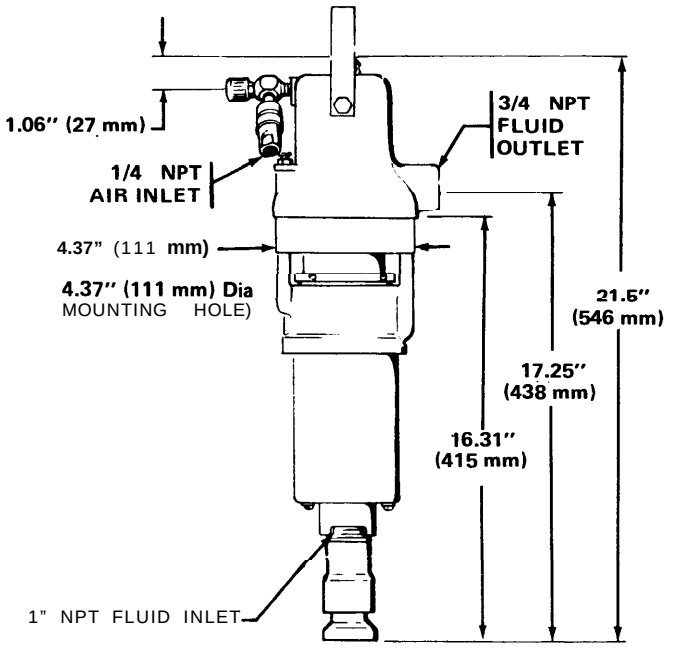


HOW TO ORDER REPLACEMENT PARTS

1. To be sure you receive the correct replacement parts, kit or accessories, always give all of the information requested in the chart below.
2. Check the parts list to identify the correct part number; *do not use the ref. no. when ordering.*
3. Order all parts from your nearest Graco distributor.

6 digit PART NUMBER	QTY	PART DESCRIPTION

PUMP DIMENSIONAL DRAWING



SERVICE INFORMATION

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

ASSEMBLY CHANGED	PART STATUS	REF NO.	PART NO.	NAME
205-101 Air Valve & Piston Assy.	OLD		157645	Piston
	NEW	5	174496	Piston
206-487 Air Valve Assy	DELETED	11	206-263	Needle Valve Assy
	ADDED	1 la	166-529	Needle Valve
	ADDED	11b	166-532	Nut
	ADDED	11c	164-698	Knob
226-237 Pump	DELETED	66	206462	Hose Assy
205459 Pump Assy, Series to G	ADDED	75	104-029	Grounding Lug
	ADDED	76	104-582	Washer

INTERCHANGEABILITY NOTE: NEW **parts replace the OLD parts listed directly above them. ADDED and** DELETED parts are not interchangeable.

KIT ADDITION: Optional Air Valve and Piston Assembly **220-168** is added to the manual for severe duty applications.

TECHNICAL DATA

Air operating range : 40 to 180 psi (3 to 12 bar)
Air consumption : 1 cfm per gallon pumped (0.01 m^3/min/liter) at 100 psi (7 bar): up to 10 cfm (0.28m^3/min) with pump operated within recommended range
Pump cycles per gallon (liter) : 9 (34 liter)
Maximum recommended pump speed : 90 cycles per minute: 10 gpm (37.8 liter/min)
Fluid outlet : 3/4 npt
Air inlet : npt
1/4Wetted parts : Aluminum, Stainless Steel,, PTFE
Weight : 23 lb (10.4 kg)

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THE GRACO WARRANTY AND DISCLAIMERS

WARRANTY

Graco warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment proven defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for, any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Grace component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility with Graco equipment of structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

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 material or workmanship, repairs will be made at a reasonable charge, which charges may include the the costs of parts, labor and transportation.

DISCLAIMERS AND LIMITATIONS

THE TERMS OF THIS WARRANTY CONSTITUTE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AND ARE 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. IN NO CASE SHALL GRACO'S LIABILITY EXCEED THE AMOUNT OF THE PURCHASE PRICE. ANY ACTION FOR BREACH OF WARRANTY MUST BE BROUGHT WITHIN TWO (2) YEARS OF THE DATE OF SALE.

EQUIPMENT NOT COVERED BY GRACO WARRANTY

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO ACCESSORIES, EQUIPMENT, MATERIALS, OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motor, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

Factory **Branches:Atlanta,** Dallas, Detroit, Los Angeles, West **Caldwell (N.J.)**
Subsidiary and Affiliate **Companies:Canada;** England; Switzerland; France; Germany; Hong Kong; Japan
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PRINTED IN U.S.A. **306-805 10-63** Revised 4-86

Parts Change Notice

Some parts in Rev. E of manual 306–805 have changed but have not yet been changed in the instruction manual. Please note the changes below and mark them in your manual or keep this sheet with your manual.

Assembly No.	Series Letter Change	Part That Changed	Ref No.	Part Description	Description of Change
Model 205–459 Pump Assembly	H	205–101	2	Air Piston & Valve	Replaced by Part No. 220–168 Air Piston and Valve. Consists of: 220–884 Capscrew (3) 181–485 Spacer (3) 189–210 Piston (1) 181–487 Intake Valve Plate (1) 162–729 Exhaust Valve Plate (1) 108–357 O-ring (1) 108–358 O-ring (3)

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