Parts

INSTRUCTIONS-PARTS LIST

GRACO

307-492

Rev. B
SUPERSEDES A

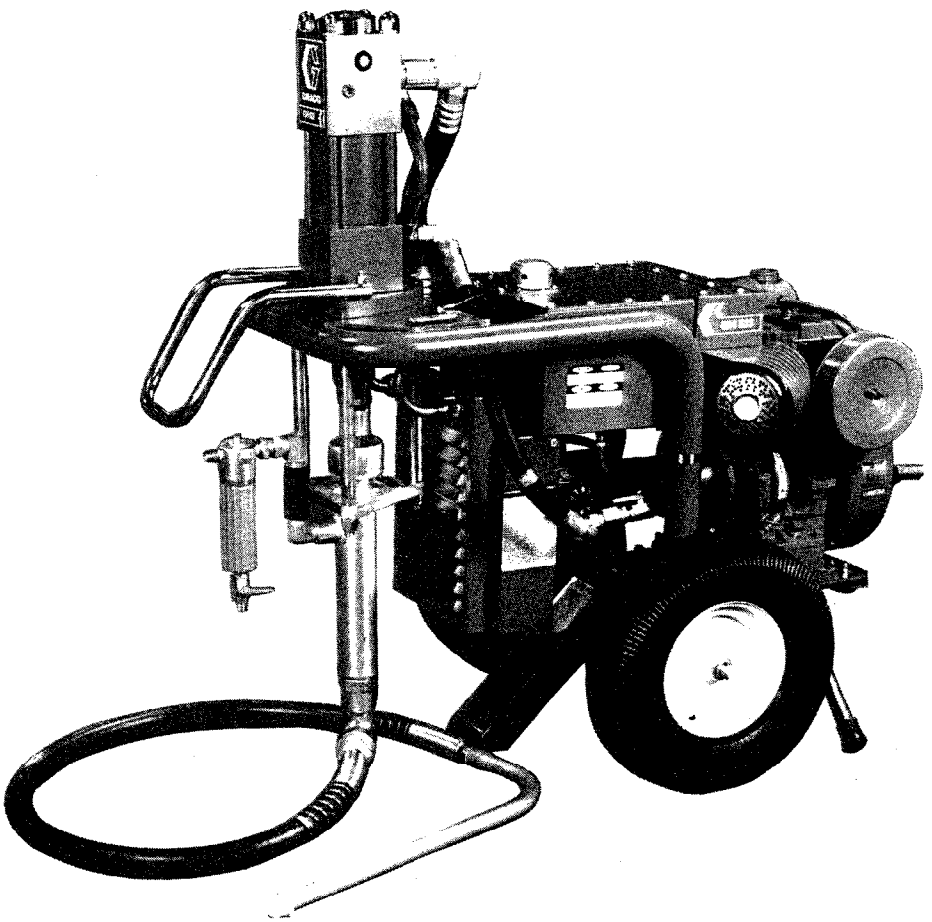
This manual contains IMPORTANT
WARNINGS and INSTRUCTIONS
READ AND RETAIN FOR REFERENCE

Gas-Powered Airless Supply Pump

GH 533 HYDRA-SPRAY®

3200 psi (221 bar) MAXIMUM WORKING PRESSURE

Model 226-973 Series B
Less hose, swivel, gun and tip.



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

WARNING

HIGH PRESSURE SPRAY CAN CAUSE SERIOUS INJURY.

FOR PROFESSIONAL USE ONLY.

OBSERVE ALL WARNINGS.

Read and understand all instruction manuals before operating equipment.

INJECTION HAZARD

Fluids under high pressure from spray or leaks can penetrate the skin and cause extremely serious injury, including the need for amputation.

NEVER point the spray gun at anyone or any part of the body.

NEVER put hand or fingers over the spray tip.

NEVER try to stop or deflect leaks with your hand or body.

ALWAYS have the tip guard in place when spraying.

MEDICAL TREATMENT

If any fluid appears to penetrate your skin, get
EMERGENCY MEDICAL CARE AT ONCE.
DO NOT TREAT AS A SIMPLE CUT.
Tell the doctor exactly what fluid was injected. For treatment instructions have your doctor call the
NATIONAL POISON CENTER NETWORK
(412)681-6669

USE EXTREME CARE WHEN CLEANING TIPS AND SERVICING.

Always follow this pressure relief procedure when shutting off the unit for any reason: shut off the engine, trigger the spray gun, engage the trigger safety, close the engine fuel cock, and open the filter drain valve.

SPRAY GUN SAFETY

When spray gun or dispensing valve is not actually spraying, always set the gun safety latch in the closed or "SAFE" position, making the trigger inoperative.

DO NOT REMOVE OR MODIFY *any part of the gun.*

Check diffuser operation by using the lowest possible spray pressure with spray tip removed. Trigger gun and maintain firm metal to metal contact between gun and metal waste container. Fluid emitted should be diffused into an irregular stream.

CHECK OPERATION OF ALL GUN SAFETY DEVICES BEFORE EACH USE.

AVOID COMPONENT RUPTURE

Always be sure that all components used with this unit have a maximum working pressure rating of at least 3200 psi (221 bar), which is the maximum working pressure of the GH 533.

NEVER alter or modify the equipment.

Before each use, check hoses for weak, worn or damaged conditions that may be caused by traffic, sharp corners, pinching, kinking and general wear. Tighten all fluid connections securely before each use.

REPLACE any damaged hose. *NEVER* use tape or any device to mend the hose.

PREVENT STATIC SPARKING

Always be sure all equipment and objects being sprayed are properly grounded. This unit is equipped with a grounding wire and clamp. The high velocity flow of fluid creates static electricity. Sparks may cause fire or explosion.

Use only conductive or grounded fluid hoses. Be sure gun is grounded through hose connections. Check ground continuity in hose and equipment once a week. Overall (end to end) resistance of unpressurized hose must not exceed 29 megohms for any coupled length or combination of hose lengths.

When flushing equipment, remove spray tip, use the lowest possible pressure, and maintain firm metal to metal contact between gun and metal waste container. This reduces the chance of static sparking.

GAS ENGINE PRECAUTIONS

ALWAYS locate unit at least 20 feet away from spraying area because of possible sparking hazard from gasoline engine.

NEVER fill fuel tank while engine is running or hot. Avoid the possibility of spilled fuel causing a fire. Always refuel slowly to avoid spillage.

NEVER operate engine in a closed building unless the exhaust is piped outside. The exhaust contains carbon monoxide, a poisonous, odorless and invisible gas which if breathed causes serious illness and possible death.

Always close the fuel cock and remove the ignition cable from the spark plug before adjusting or servicing any mechanical parts of the unit. Operating a mechanical part by hand could start the engine and the mechanical parts and cause serious injury to the operator.

NEVER alter the throttle setting.

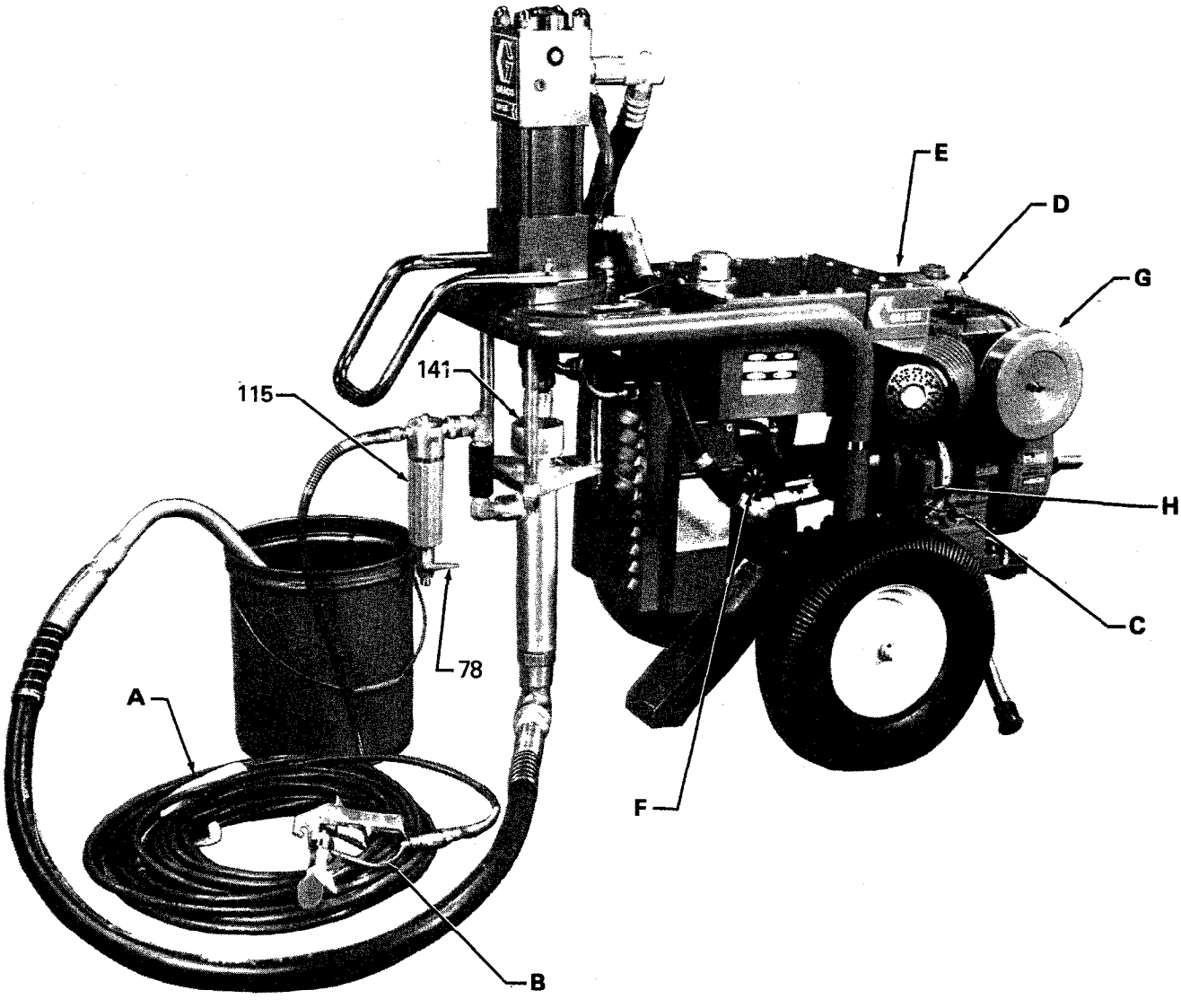
The maximum full load engine speed is 2800 RPM which occurs at *about 2500 psi (172 bar) working pressure.*

Precaution is the best insurance against an accident. When starting engine, maintain a safe distance from moving parts of equipment.

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 Constructon Standards, Part 1926—should be consulted.

TYPICAL INSTALLATION



KEY

A	Material Handling Hose
B	Spray Gun
C	Oil Fill Plug
D	Fuel Tank
E	Fuel Cock *(on lower port of fuel tank)*
F	Pressure Control
G	Choke *(behind air filter)*
H	Stop Button
141	Wet Cup/Packing Nut
115	Filter
78	Drain Valve

NOTE: Reference numbers and letters in parentheses in the text refer to the Typical Installation, Figures 1 through 9, and the Parts Drawing.

Refer to the back page for the available Graco accessories.

Install an accessory material handling hose (A) and gun (B) to the 1/4 in. npt(f) fluid outlet of the filter (115). See Typical Installation. Install a check valve near the pump outlet when pumping heavy fluids and/or when very long hose lengths are used. See ACCESSORIES. *Do not* install the spray tip on the gun yet; wait until the pump has been flushed. See page 5 for flushing procedure.

Be sure that the fittings on all of the hose connections in the sprayer are secure. Refer to the Typical Installation and the Parts Drawing.

Fill the wet-cup/packing nut (141) with Graco Throat Seal Liquid (TSL) so it is about 1/2 full.

Lubrication

CAUTION

Check the hydraulic oil and engine oil levels before operating the sprayer. Add the appropriate oil, if necessary.

Check the hydraulic oil. Unscrew the cap of the intake filter (9) to see if there is enough hydraulic oil in the system. There should be 1 in. (25 mm) of oil visible in the bottom of the filter screen. See Fig 1. If necessary, add Graco approved hydraulic oil to the proper level. A completely full hydraulic system contains approximately 5 gallons (18.9 liters) of oil. See the ACCESSORIES section for Graco-approved hydraulic oil.

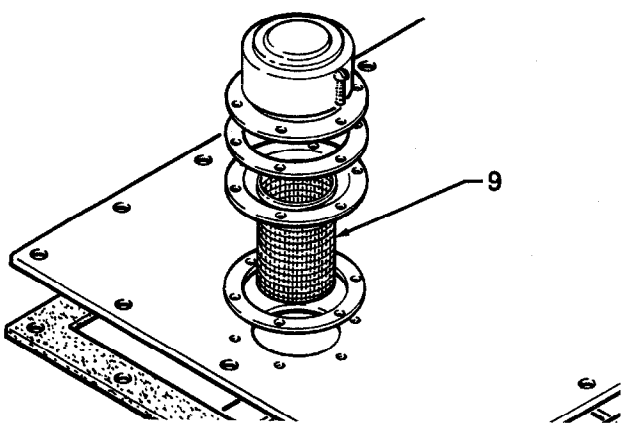


Fig 1

Check the engine oil. Unscrew the oil fill plug (C); the dipstick is attached. See Fig 2. Without threading the plug into place, check the oil level. The oil should be up to the top mark on the dipstick. Add fresh oil if necessary.

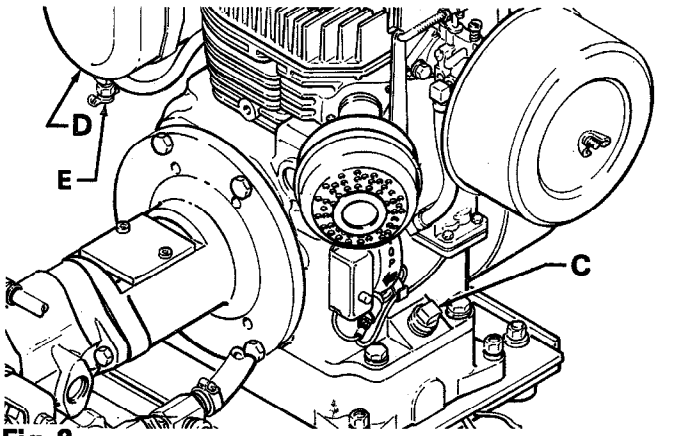


Fig 2

RECOMMENDED LUBRICATING OIL: Use a high quality, detergent oil classified "FOR SERVICE SD or SE", for regular use and for the breaking-in of a new engine.

GRADE OF OIL CHART	
SEASON OR TEMPERATURE	GRADE OF OIL
Spring, Summer, Autumn	SAE 30
30°F to 0°F Winter	SAE 10W-30
Below 0°	SAE 5W-20

Crankcase capacity: 2 quarts (1.9 liters)

Fuel

Fill the fuel tank (D) with clean, fresh gasoline. The tank holds approximately 1.5 gallons (5.7 liters). Refer to Fig 2. Use only reputable, well-known brands of *unleaded Regular Grade* gasoline. The minimum octane requirements are 86 octane in the U.S.A., and 96 octane elsewhere. At the maximum operating speed of 2800 RPM, the gasoline consumption is about 1.3 gallons/hour (4.9 liters/hour).

WARNING

Always shut off the engine and let it cool before refilling the fuel tank. Close the fuel cock (E). Refer to Fig 2. Be sure that the air vent in the tank fill cap (J) is not plugged so that fuel can flow to the carburetor. Refer to Fig 6, page 6. Then fill the tank.

Be careful not to spill any fuel, which could cause a fire.

Grounding

Connect the grounding clamp (107) to a good ground such as a steel water pipe. Check your local codes for regulations concerning electrical grounding.

Starting the Engine

CAUTION

Always open the bypass valve (78) before starting the engine.

Open the bypass valve (78) and the fuel cock (E). The bypass valve is open when the lever is parallel to the body of the valve. The fuel cock is open when it is screwed out as far as it will go. See Fig 3.

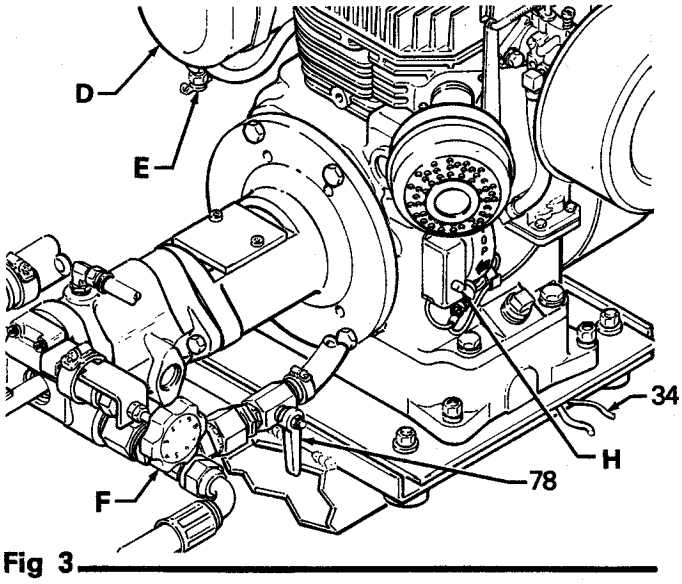


Fig 3

Lower the foot brace (26) by disengaging it from the hitch (34). See Fig 3 and the Parts Drawing.

If the engine is cold, close the choke by turning the lever (G) so it is horizontal. See Fig 4. If the engine is warm, or the air temperature is high, open the choke half way or completely.

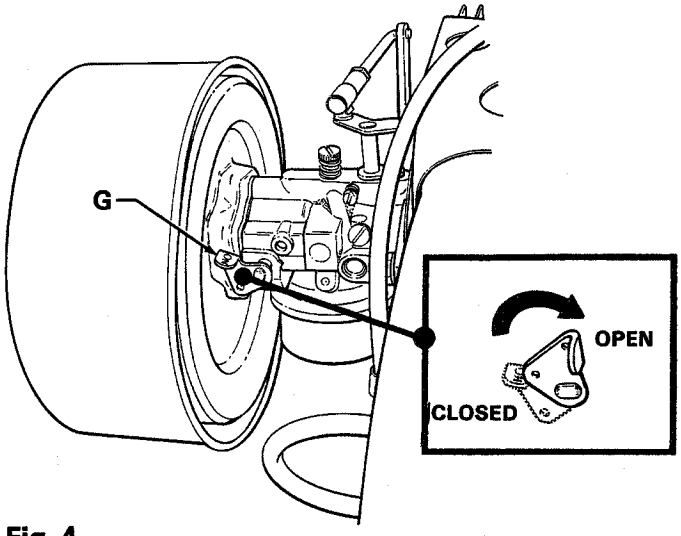


Fig 4

Brace one foot against the foot brace (26) and pull the starter rope.

CAUTION

Always hold on to the starter rope while pulling or rewinding it. If the rope rewinds too quickly, it can jam the starter assembly.

Pull the engine over against the compression stroke and then let the rope rewind slowly into the starter. Then pull the rope firmly and rapidly to start the engine. If the engine does not start after one or two attempts, try opening the choke a little further. If the engine floods, open the choke all the way and continue pulling the rope.

After the engine has warmed up, gradually open the choke lever (G) and close the bypass valve (78). See Figs 3 and 4. Raise the foot brace and engage the hitch.

In cold weather, run the engine for about 15 minutes before starting the material pump. This helps to make sure the hydraulic motor does not stall.

Stopping the Engine

Open the bypass valve (78) and depress the stop button (H), holding the button down until the engine stops. Close the fuel cock (E). See Fig 3.

Flush the Material Pump

Your new unit was tested in oil and the oil was left in to protect the displacement pump parts. Before using the sprayer, flush the pump as instructed below.

1. Pour enough clean, compatible solvent to fill the system into a large empty metal pail.

2. Place the suction tube into the pail, or tilt the unit back (it will support itself), place the pail under the pump, then tilt the unit forward to lower the pump into the pail.

3. Be sure the bypass valve (78) and fuel cock (E) are open. Turn the pressure control knob (F) all the way counterclockwise to keep pump from operating. See Fig 3. Start the engine.

4. Close the bypass valve (78). Point the gun into a metal waste container, holding a metal part of the gun firmly against the metal pail. See Fig 5. Squeeze the trigger. At the same time, slowly turn the pressure control knob (F) clockwise just enough to operate the pump. Refer to Fig 3. Always use the lowest possible pressure when flushing the unit. Operate the pump until clean solvent comes from the gun. Then release the trigger and engage the trigger safety.

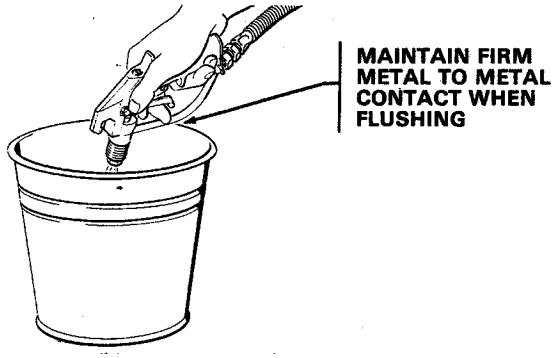


Fig 5

5. Check all hose connections and fittings for leakage. If there are any leaks, shut off the engine and relieve the fluid pressure before tightening the fittings. Then turn the unit on and check to be sure the leaks have stopped.

6. Remove the pump or suction hose from the solvent pail. Trigger the gun to force the solvent out of the hose. Open the bypass valve (78) and shut off the engine. Engage the trigger safety.

Prepare the Material and Prime the Pump
Prepare your material according to the manufacturer's instructions.

Place the pump or the suction tube into the material supply container. Install a spray tip in the gun (see the gun instruction manual), and start the engine. Trigger the gun into a metal waste container, holding a metal part of the gun firmly against the metal container. Refer to Fig 5. Hold the gun trigger open until all air is forced out of the system. Release the trigger, engage the trigger safety, and let the pump stall.

NOTE: The GH 533 can be tilted backwards and will support itself while placing a 5 gallon pail under the material pump.

Adjusting the Pressure
Turn the pressure control knob (F) to adjust the fluid pressure. See Fig 6. Turn the knob clockwise to *increase the pressure* and counterclockwise to *decrease the pressure.* Always use the lowest pressure necessary to completely atomize the material. Check the spray pattern. The tip size and angle determines the pattern width and flow rate. *Don't try to get more coverage by increasing the pressure; use a larger tip instead.* See the separate instruction manual 306-997 for the correct method of airless spraying.

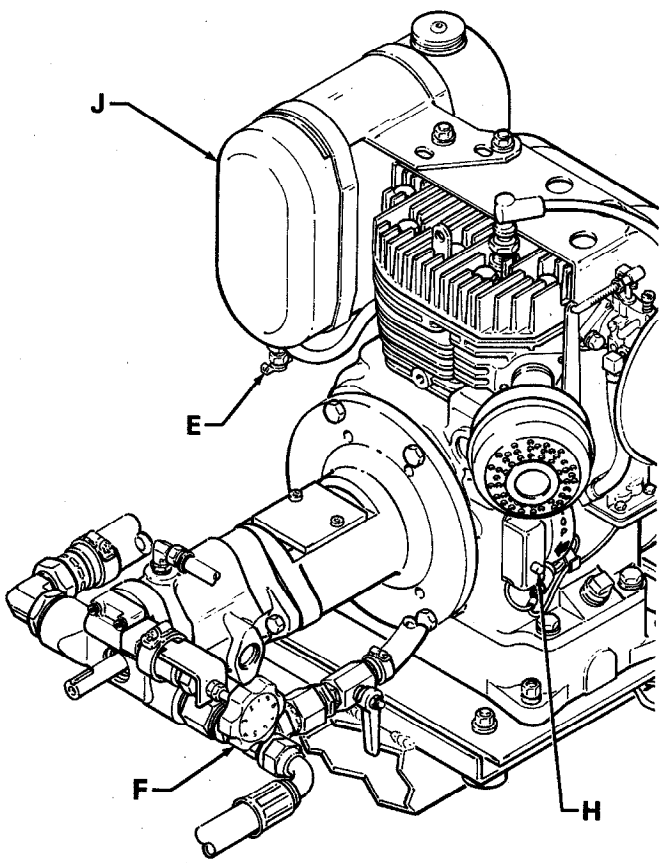


Fig 6

Cleaning a Clogged Tip

WARNING

Pressure Relief Procedure
Always relieve system pressure whenever you are done spraying for a while and before installing, removing or cleaning any parts to avoid possible injury from high pressure fluid in the system.

Always follow this procedure: stop the unit by depressing the engine stop button (H), trigger the spray gun, engage the trigger safety, close the fuel cock (E) and slowly open the drain valve (78). Leave the drain valve open until you are ready to use the unit again.

Clean out the front of the tip frequently during the day's operation with a solvent soaked brush. This helps to prevent material build up and tip clogging.

If the spray tip clogs while spraying, follow the Pressure Relief Procedure, above. Loosen the tip guard slowly before removing completely. Remove the tip and put it and the nozzle of the gun in solvent. Let the tip soak long enough to dissolve the obstruction, or blow it out with air through the front of the tip. If the air and solvent does not loosen the obstruction, tap the back of the tip against a flat surface to jar it out.

Shutdown and Care
If you stop spraying for a short time, relieve system pressure according to the Pressure Relief Procedure, above. Remove the tip from the gun. Place the nozzle of the gun and the tip in solvent.

Flush the unit if the material you are pumping will dry overnight in the unit, and for weekend or longer shutdowns. Flush the unit with a compatible solvent, then leave mineral spirits in the pump during storage to help prevent corrosion of material pump.

Whenever it is possible, park the unit in the shade or in a relatively cool area to reduce the possibility of overheating.

Remove and clean the gun tip at least twice a day when spraying. Always stop the pump at the bottom of its stroke when you are through spraying for the day. Check the tightness of the wet-cup/packing nut (141) periodically and tighten it if necessary. Refer to Fig 8, page 7. The nut should be tight enough to stop leakage, but no tighter. Always relieve the system pressure according to the Pressure Relief Procedure (see above) before adjusting the packing nut.

Check the hydraulic oil level occasionally. Unscrew the cap of the intake filter (9); there should be 1 in. (25 mm) of oil visible in the bottom of the filter screen. Refer to Fig 7, page 7. Use Graco-approved oil only. See ACCESSORIES.

Inspect the return line filter (3) frequently, and replace the filter after every 500 hours of operation or every 6 months, whichever comes first. Refer to Fig 7, page 7. A clogged filter can cause the cooler to leak or to fail.

Change the hydraulic oil after every 2000 hours of operation or every 12 months, whichever comes first. For continuous operation in temperatures above 85°F (30°C), change the oil after every 1000 hours or 6 months of use.

CAUTION

Cleanliness is essential when servicing the hydraulic system. Use special care to avoid getting dust or dirt into the hydraulic system.

To change the hydraulic oil or the filter (3), follow the Pressure Relief Procedure Warning on page 6. Place a waste container under the bypass valve (78), be sure the valve is closed, and unscrew the swivel union (76). See Fig 7. Open the valve and allow the oil to drain. Remove the 18 screws (2) and the reservoir cover (10). Remove the return line filter (3) and replace it with a new filter assembly. Secure the new filter with the seal nut (13) screwed firmly to the elbow fitting (14). Inspect the inlet strainer (15) and replace it if necessary. See Fig 7. Close the bypass valve, install the reservoir cover and pour 5 gallons (19 liters) of approved hydraulic oil into the reservoir, through the filler tube of filter (9).

NOTE: Whenever the reservoir cover (10) is removed, put silicone sealant on the threads of the screws (2) when reassembling the cover.

Periodically, or if the engine is overheating, follow the Pressure Relief Procedure Warning on page 6. Clean all dirt, dust, etc., off the fan blades, motor and cooler grill.

The unit should be level whenever you are checking the hydraulic oil or the engine oil and when replacing or refilling these oils. Refer to the section on "Lubrication" on page 4.

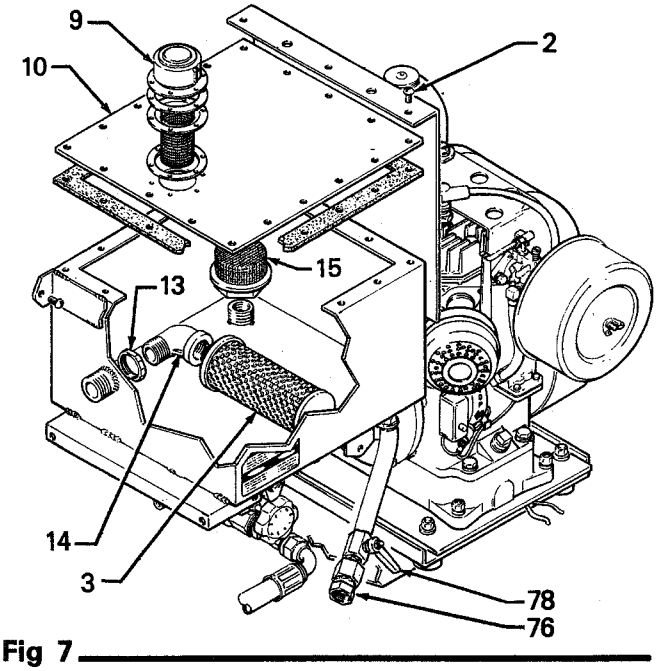


Fig 7

CAUTION

The engine throttle has been set and locked at 2800 RPM.

The warranty will be voided and the pump life shortened if this adjustment is tampered with.

Check Valve Adjustment

The piston (142) and intake (144) check valves of the displacement pump are set for high volume, heavy spray viscosity material. To set the valve for lighter viscosity material or less volume, move the ball stop pin (131 or 138) to a lower set of holes to decrease the check ball travel. See Fig 8 and refer to page 10 for disassembly instructions.

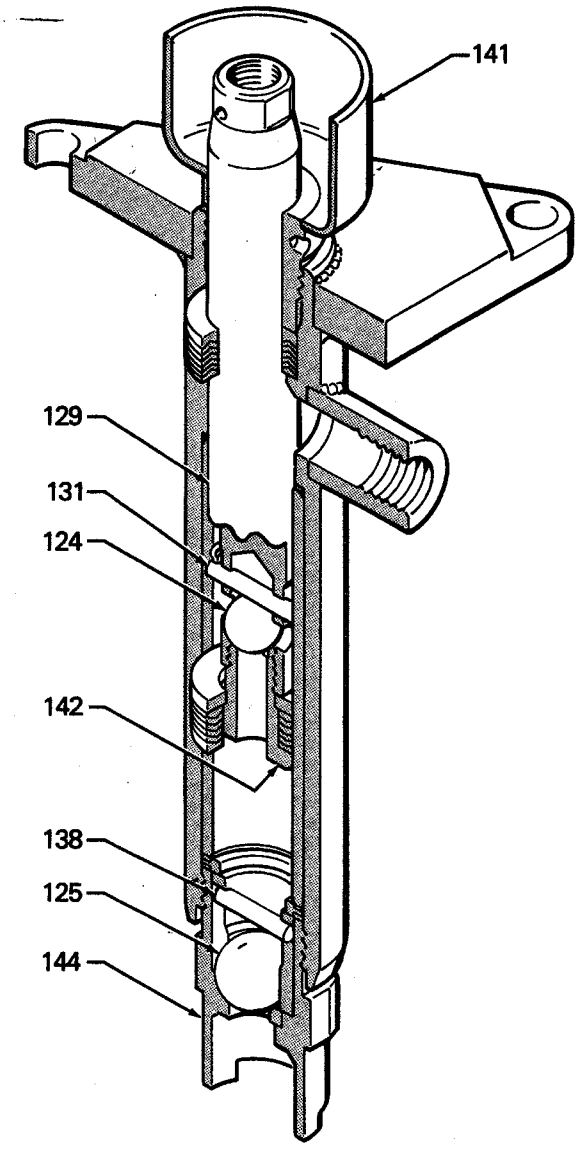


Fig 8

WARNING

Pressure Relief Procedure
Always relieve system pressure whenever you are done spraying for a while and before installing, removing or cleaning any parts to avoid possible injury from high pressure fluid in the system.

Always follow this procedure: shut off the unit by depressing the engine stop button (H), trigger the spray gun, engage the trigger safety, close the fuel cock (E) and slowly open the drain valve (78). Leave the drain valve open until you are ready to use the unit again. Refer to the Typical Installation on page 3.

TROUBLESHOOTING CHART

PROBLEM	CAUSE	SOLUTION
The gas engine doesn't work properly.		Consult the engine manual.
The gas engine operates, but the displacement pump doesn't operate.	The hydraulic motor has stalled.	See "Starting the Engine" on page 5.
	The pressure setting is too low.	Increase the pressure. See page 6.
	The displacement pump outlet filter (if used) is dirty or clogged.	Clean the filter.
	The tip or tip filter (if used) is clogged.	Remove the tip and/or the filter and clean them.
	The hydraulic fluid is too low.	Shut off the unit and add fluid immediately.* See page 4.
	The hydraulic pump is worn or damaged.	Replace the pump. Refer to page 11.
	The hydraulic motor is worn or damaged.	Service the motor. See manual 307-158.
	The displacement pump rod is seized by dried paint.	Service the pump. See page 10.
The displacement pump operates, but the output is low on the upstroke.	The piston ball check is not seating properly.	Service the piston ball check. See page 10.
	The piston packings are worn or damaged.	Replace the packings. See page 10.
The displacement pump operates but the output is low on the downstroke and/or on both strokes.	The piston packings are worn or damaged.	Replace the packings. See page 10.
	The intake valve ball check is not seating properly.	Service the intake valve ball check. See page 10.
Paint leaks into the wet-cup.	The throat packings are worn or damaged.	Replace the packings. See page 10.
There is excessive leakage around the hydraulic motor piston rod wiper.	The piston rod or seal is worn or damaged.	Replace these parts. See manual 307-158.
There are excessive surges at the application valve.	The displacement pump outlet filter is dirty or clogged.	Clean the filter.
	The spray tip is too big or it is worn.	Change or replace the tip.

PROBLEM	CAUSE	SOLUTION
The fluid delivery is low.	The pressure setting is too low.	Increase the pressure.
	The displacement pump outlet filter is dirty or clogged.	Clean the filter.
	The hydraulic pump is worn or damaged.	Replace the pump. See page 11.
	The hydraulic motor is worn or damaged.	Service the motor. See manual 307-158.
	There is a large pressure drop in the material handling hose.	Use a larger diameter hose.
The material coating is too thick.	The spray tip is too big or it is worn.	Change the tip.
There is spitting from the gun.	The material supply is low or empty.	Refill the supply container.
	The gun is not closing properly.	Service the gun valve.

Check everything in the Troubleshooting Chart before disassembling the unit.

*Check the hydraulic fluid level often. *Do not* allow it to become too low. Use only Graco approved hydraulic fluid; see the ACCESSORIES section.

Solvent flush the material from the displacement pump, if possible. Then follow the Pressure Relief Procedure on page 8.

Hydraulic Motor

CAUTION

Cleanliness is essential when repairing hydraulic motors. Use special care to avoid getting dust or dirt into the motor during servicing.

See instruction manual 307-158 for motor service.

To remove the hydraulic motor, disconnect all hoses (84, 86, 88) from the motor. See Fig 9. Plug the ends of the hoses to prevent contaminating the hydraulic system. Remove the three tie rod nuts (101). Support the displacement pump and unscrew the connecting rod nut (100). Remove the cotter pin (99) and remove the pump. Unscrew the five capscrews (36, 95) from the bottom side of the pump frame (17). Lift the motor straight up. The tie rods (110) will pass through the holes in the frame's mounting plate. See Fig 9.

CAUTION

Support the engine on 2 x 4's when removing the motor to prevent the unit from tipping.

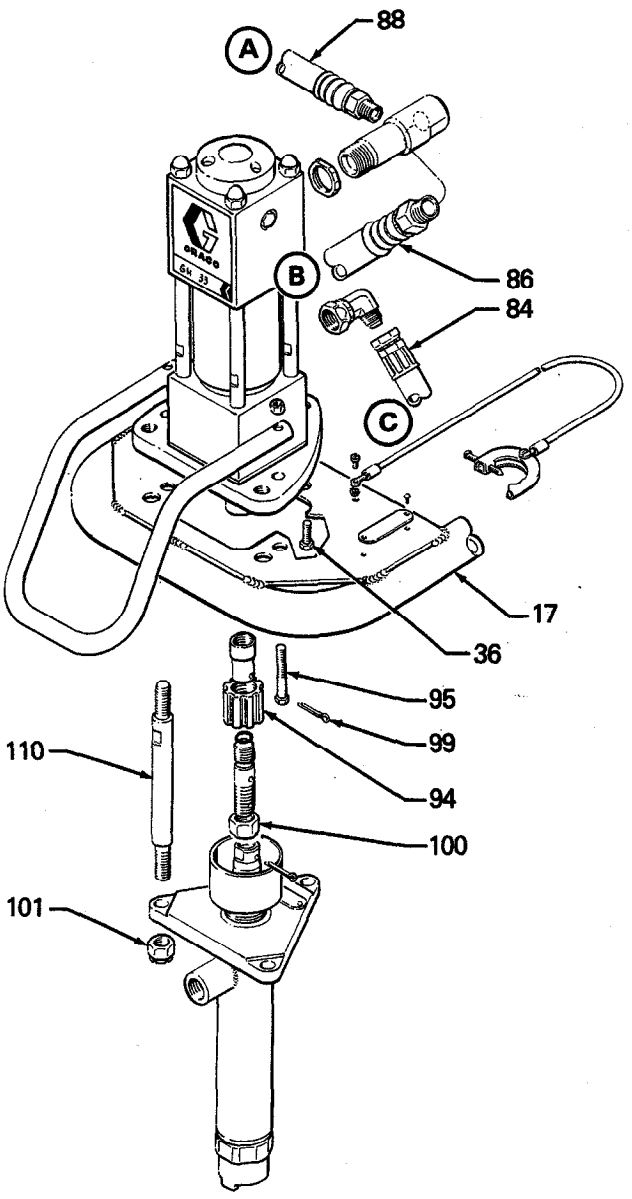


Fig 9

Displacement Pump Service

NOTE: Repair Kit No. 207-966 is available for servicing the pump. Use all new parts in the kit, even if the old ones look good. The old parts will wear faster and the pump will need servicing sooner.

To remove the pump, remove the three tie rod nuts (101), support the pump, remove the cotter pin (99), unscrew the coupling nut (94) and remove the pump.

Intake Valve

Screw the intake valve (144) out of the pump housing (143). If the valve is stuck in the housing, squirt penetrating oil around the threads and *gently* tap around the housing with a hammer to loosen it. See Fig 10.

Remove the pin (138), the gaskets (128), the valve stop (139), the ball (125) and the ball guide (140). See Fig 10. Clean all the parts and inspect them for wear or damage. Reassemble the valve with new parts, if necessary, and screw it into the pump housing.

Piston, Cylinder or Displacement Rod

Screw the intake valve (144) out of the pump housing (143). Unscrew the coupling nut (94). Screw the locknut (100) up and remove the lower cotter pin (99). Unscrew the displacement rod (129) from the connecting rod (97). Loosen the packing nut (141) and push the displacement rod down and out of the housing. Secure the rod in a vise and screw the piston (142) out of the housing. Remove the ball (124), the retainer (132) the glands (133, 135), and the packings (134, 137). Refer to Fig 10.

Clean all parts and inspect them carefully for signs of wear or damage. Check the rod carefully for nicks, scratches or wear. Use the new parts from the repair kit and any other new parts needed and reassemble the piston, packings, and ball into the displacement rod. Torque the piston (142) to 150-175 ft-lb (203-237 N·m) Lubricate the outside of the packings with a grease that is compatible to the material being pumped. Always use new glands with new packings. Inspect the inside of the cylinder sleeve (136) for score marks. If it needs to be replaced, be sure to install the new cylinder with the tapered end down. If you can't remove it easily from the housing, contact your nearest Graco Factory Branch or Service Depot.

Throat Packings

Screw the intake valve (144) out of the housing and remove the piston and rod as explained above. Then screw the packing nut (141) out of the housing (143) and remove the packings (134,137) and glands (133,134) from the cavity. See Fig 10. Lubricate the inside of the new packings with a grease that is compatible to the material being pumped. Always use new glands with new packings.

Reassemble the pump in the reverse order of disassembly. Check the tie rods (110) to be sure that they are tightened securely into the hydraulic motor base. Assemble the connecting rod (97) to the hydraulic motor and screw the locknuts (101) loosely onto the tie rods. Tighten the packing nut (141) just snug to prevent leaking, but no tighter. Finish tightening the locknuts evenly to 35-50 ft-lb (47-68 N·m). Then tighten the packing nut just enough to stop leakage, but no tighter. Start the pump and operate it at a slow speed to check the tie rods for signs of binding. Adjust the tie rod locknuts if necessary.

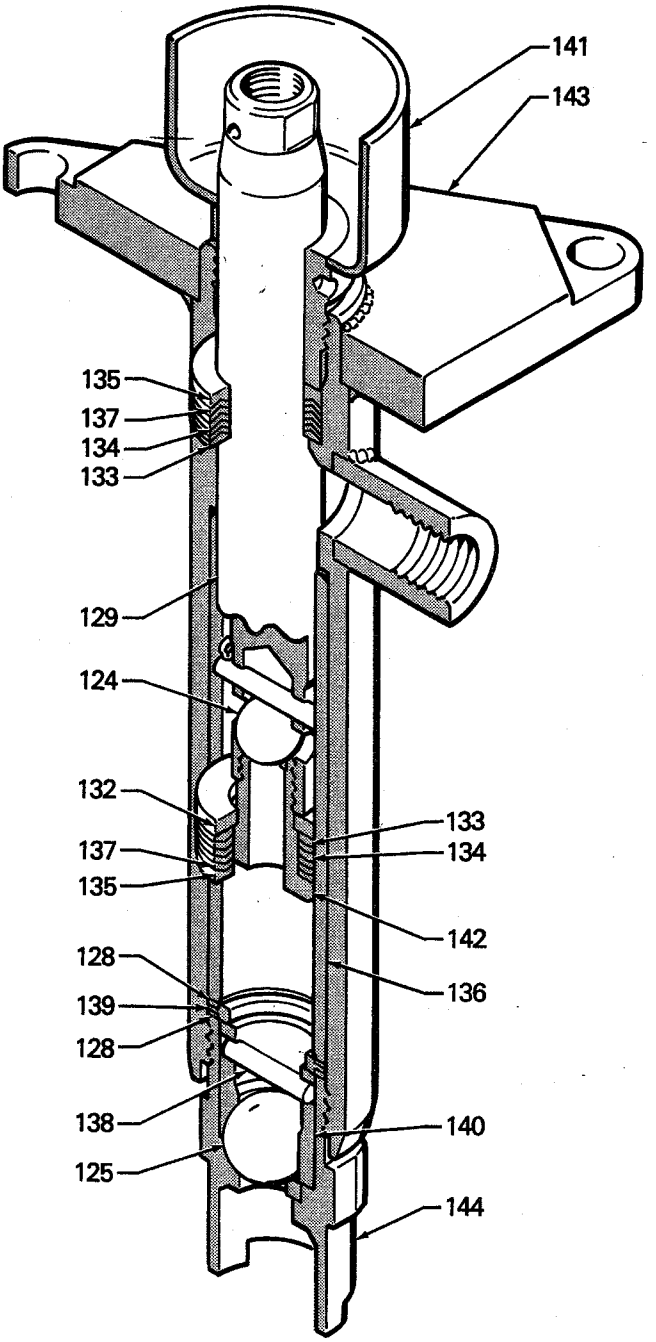


Fig 10

Hydraulic Pump

WARNING

**The hydraulic pump and the pressure control knob are sold as a complete assembly only. Do not attempt to service these parts yourself. Send them to an authorized Graco service center for replacement or repair.

CAUTION

Cleanliness is essential when repairing hydraulic systems. Use special care to avoid getting dust or dirt into the pump during servicing.

Unscrew the swivel (76) from the tee (75) so the reservoir (12) can be drained. See Fig 11. Open the bypass valve (78) and drain the hydraulic oil into a waste container.

Disconnect the hose (88) (see Fig 11, reference A) between the cooler (47) and the hydraulic motor (89). Loosen the hose clamp (118) nearest to the cooler, on the short section of hose (51) that is located between the reservoir and the cooler.

Remove the six screws (2) holding the cooler assembly to the fan shield (52). Remove the cooler and the fan.

Unscrew the hose fitting (60) to disconnect the suction hose (59) between the reservoir and the hydraulic pump. See Fig 11, reference E. Disconnect the drain hose (55) coupling stud (67) from the elbow (68) and disconnect the pressure hose (84) from the tee (75) in the outlet of the hydraulic pump (69). See Fig 11, reference D.

Remove the two screws (71) from the pump (69) and flange (64). Remove the plate (63), loosen the setscrew on the coupling (66) and pull the pump (69) out.

Reassemble in the reverse order of disassembly. When installing the fan (50), slide it about 1 in. (25 mm) onto the pump shaft and tighten the setscrews.

CAUTION

The alignment of the engine mounting flange (64) to the engine and the alignment of the coupler (66) which connects the hydraulic pump (69) shaft and the engine shaft are critical. If the coupler has failed, Graco recommends that you contact your nearest factory branch or the Graco Service Department for detailed service information.

NOTE: Whenever the reservoir cover (10) is removed, put silicone sealant on the threads of the screws (3) when reassembling the cover.

Cooler

Special care must be used when removing the cooler hose (121) or the 90° elbow (43) or the hose (88) leading into it from the cooler (47). The elbow and the cooler hose each connects to a hex-shaped female adapter (K) which is part of the cooler core assembly. See Fig 11. The adapter is made of aluminum and can be easily damaged. So, whenever you are working on these parts, hold a wrench stationary on the hex of the female adapter. Remove and replace the necessary cooler parts as instructed in paragraphs 2 and 3 of the Hydraulic Pump section (left column). Reassemble the cooler in the reverse order of disassembly. When installing the elbow or hose, use a liquid sealant on the threads and screw the parts into the adapter by hand; then tighten the nuts (L). Refer to Fig 11.

Motor Mounts

If the motor mounts (32) must be replaced, be careful to install them correctly and evenly. The nut (30) must be screwed onto the capscrew (31) so the first thread of the screw is just flush with the top of the nut. Refer to the Parts Drawing, page 14.

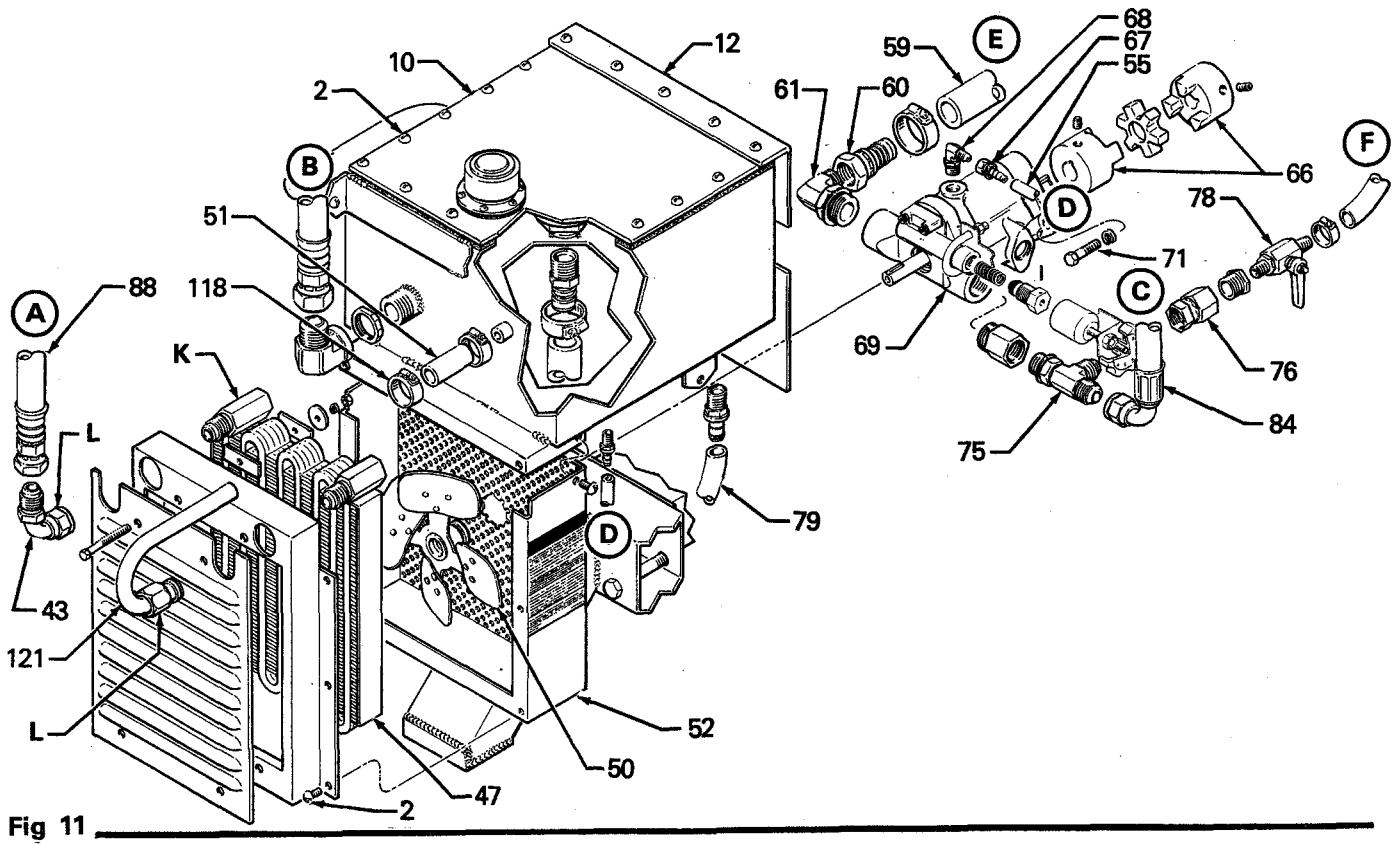
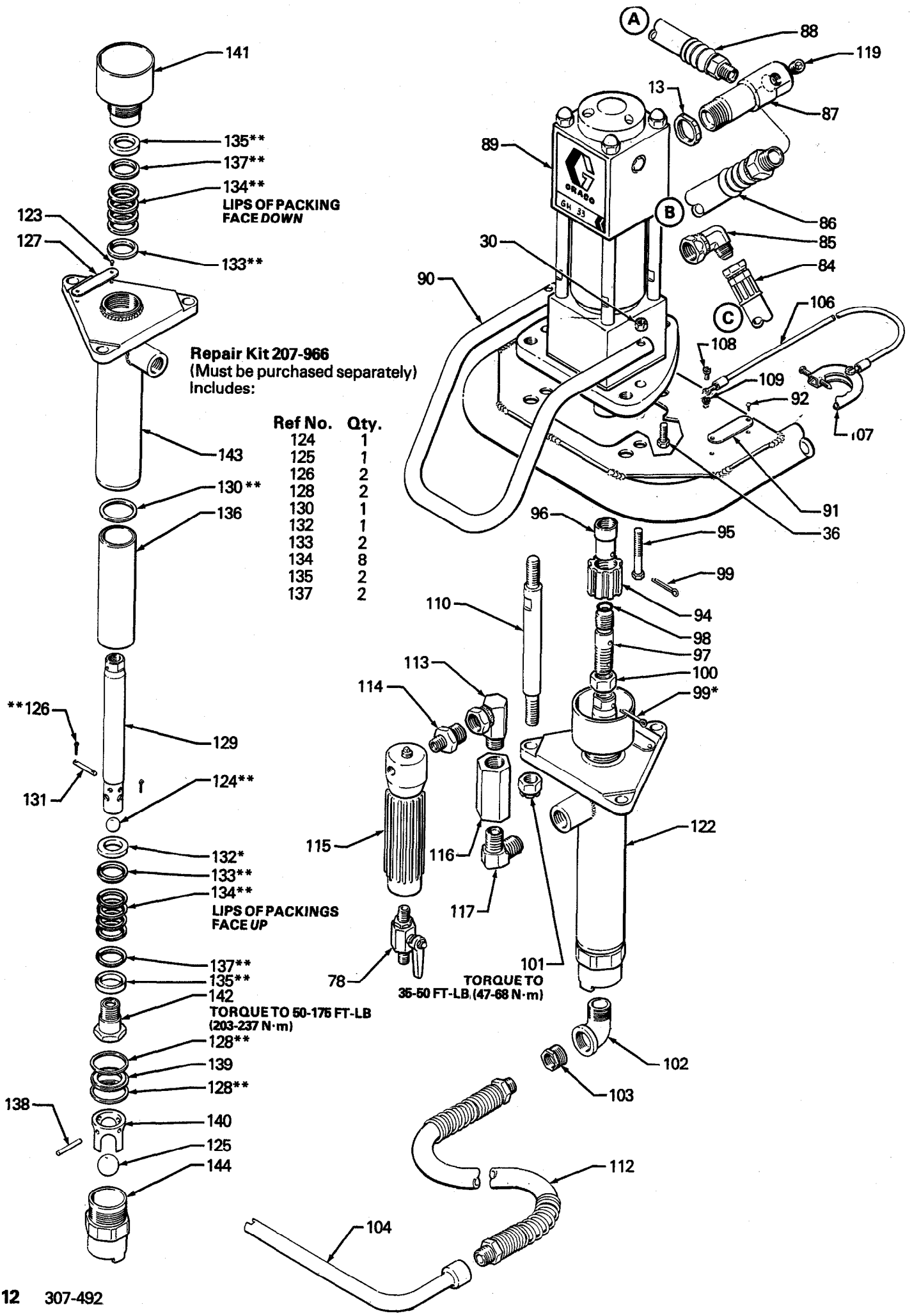
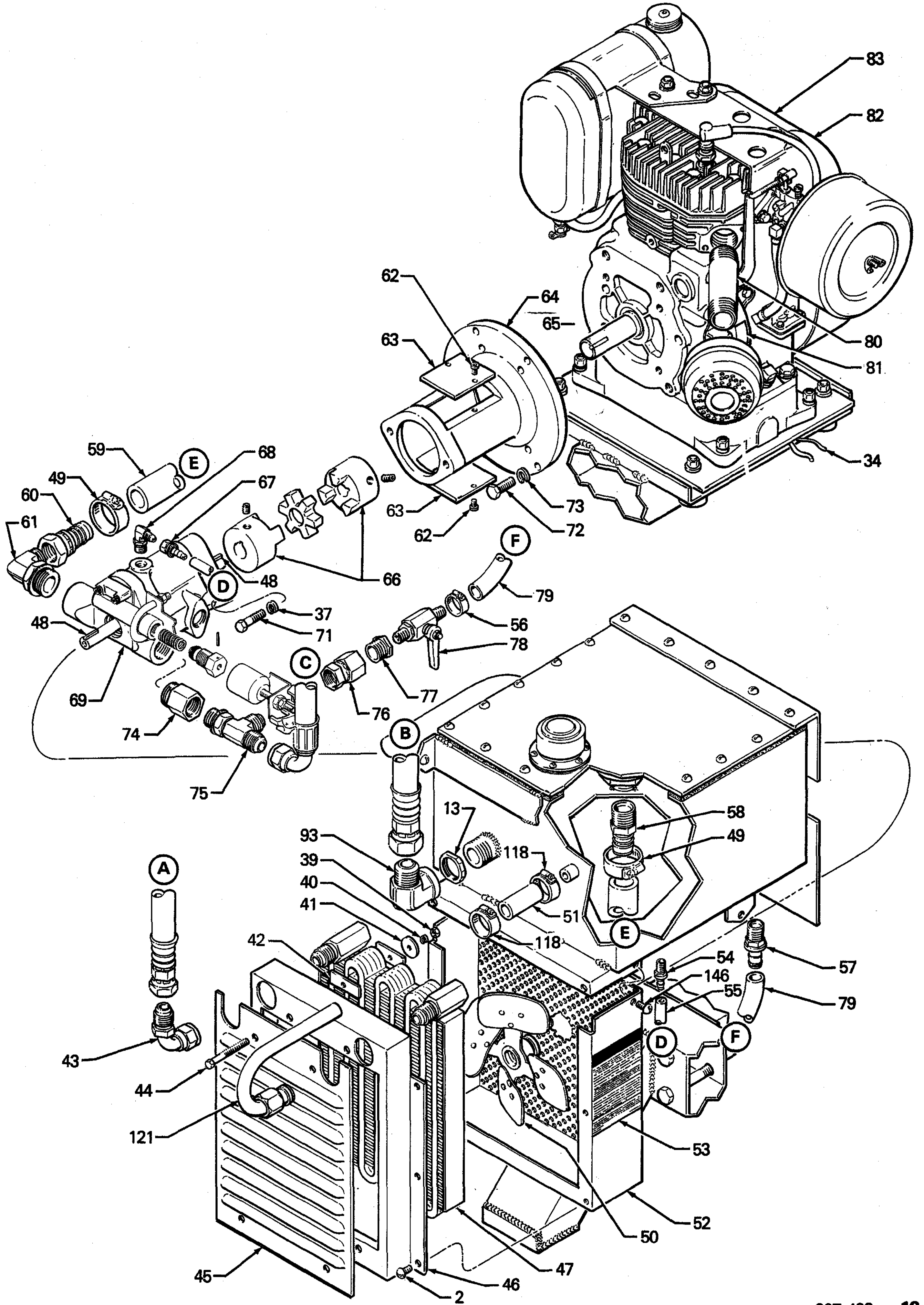
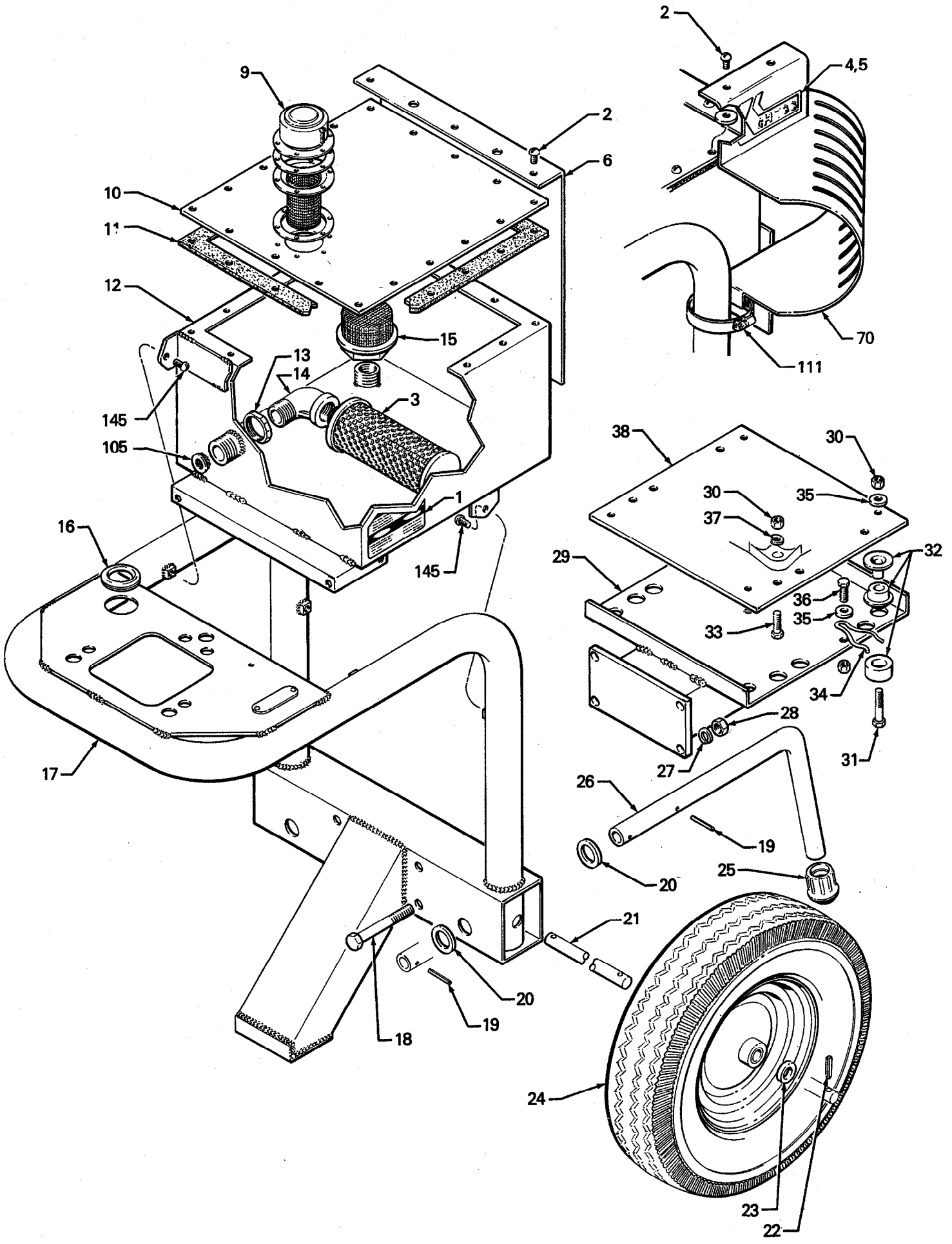


Fig 11


141
135**
137**
134**
LIPS OF PACKING FACE DOWN
123
127
133**
143
130**
136
**126
129
131
124**
132*
133**
134**
LIPS OF PACKINGS FACE UP
137**
135**
142
TORQUE TO 50-175 FT-LB (203-237 N·m)
128**
139
128**
138
140
125
144
Repair Kit 207-966
(Must be purchased separately)
Includes:
Ref No. Qty.
124 1
125 1
126 2
128 2
130 1
132 1
133 2
134 8
135 2
137 2
A
88
119
13
87
89
B
86
30
85
84
90
C
106
108
109
92
107
91
36
96
95
99
110
94
98
97
100
113
114
99*
115
116
117
122
78
101
TORQUE TO 35-50 FT-LB (47-68 N·m)
102
103
112
104


83
82
62
64
65
63
80
81
34
59
E
68
49
67
60
61
73
63
72
62
F
48
D
66
79
37
56
48
71
78
C
69
77
76
74
B
75
13
58
93
118
49
39
A
40
51
41
E
118
42
54
57
146
55
79
43
D
F
44
121
53
52
50
45
47
46
2


2
4,5
9
2
6
10
11
12
15
13
14
3
145
105
1
145
16
17
18
19
20
21
24
23
22
70
111
38
30
30
35
37
29
32
36
35
33
34
28
27
31
26
19
20
25

REF NO.	PART NO.	DESCRIPTION	QTY
1	177-760	LABEL, caution	1
2	103-813	SCREW, mscr, rnhd; 5/16" thd; 0.025" lg.	18
3	167-748	FILTER, fluid; hyd. return	1
4	178-137	LABEL, identification, right hand	1
5	178-138	LABEL, identification, left hand	1
6	177-643	SHIELD, heat	1
9	106-061	BREATHER, filter, filler	1
10	177-586	COVER, reservoir	1
11	177-587	GASKET, reservoir, Buna-N	1
12	217-280	RESERVOIR, oil	1
13	105-430	NUT, seal, 1" npt	3
14	100-467	ELBOW, 90°, 1" npt (m x f)	1
15	106-114	STRAINER, inlet	1
16	177-654	GROMMET, rubber	1
17	216-142	FRAME, pump	1
18	106-123	CAPSCREW, hex hd, 1/2 npt x 4"	4
19	103-420	PIN, spring, straight	4
20	158-884	WASHER	2
21	177-570	AXLE	1
22	101-354	PIN, spring, straight	2
23	177-641	WASHER, wheel	2
24	106-039	WHEEL, pneumatic	2
25	101-725	TIP, crutch	1
26	177-656	BRACE, foot	1
27	100-018	LOCKWASHER, 1/2"	4
28	100-321	NUT, 1/2-13	4
29	216-141	MOUNT, engine	1
30	101-566	LOCKNUT, 3/8"	11
31	100-468	CAPSCREW, hex hd; 3/8" thd; 1.5" lg.	4
32	104-766	MOUNT, motor, vibration insulation	4
33	102-637	CAPSCREW, hex hd; 3/8" thd; 1.5" lg.	4
34	106-106	PIN, hitch, extension	1
35	100-023	WASHER, flat	5
36	100-101	CAPSCREW, hex hd; 3/8" thd; 1" lg.	3
37	100-133	LOCKWASHER, 3/8"	6
38	177-585	PLATE, engine	1
39	101-345	NUT, jam, hex; 1/4" thd	4
40	100-016	LOCKWASHER; 1/4"	6
41	159-346	WASHER, 1/4"	4
42	174-077	PAD, mounting	8
43	106-268	ELBOW, 90°; 7/8 npt(m) x 1/2 npt(f)	1
44	100-646	SCREW, machine, hex hd; 1/4-20 thd; 2.75" lg.	4
45	177-645	GRILL, cooler	1
46	177-580	FRAME, cooler	1
47	504-944	COOLER, air to oil	1
48	150-062	KEY, 3/16" sq.	2
49	101-818	CLAMP, hose	2
50	106-105	FAN, cooler	1
51	061-215	HOSE; 1" ID, 0.188" lg.	1
52	216-155	SHIELD, fan	1
53	172-532	LABEL, warning	2
54	106-046	STUD, hose; 1/4 npt(m) x 1/4" barb	1
55	177-667	HOSE, 1/4" ID; 6" lg.	1
56	103-126	CLAMP, hose	2
57	106-043	STUD, hose; 1-1/2 npt(m) x 5/8" barb	1
58	106-044	STUD, hose; 1" npt(m) x 1" barb	1
59	177-665	HOSE, suction; 1" ID; 10.5" lg.	1
60	106-045	STUD, hose; 1-5/16" str thd swivel; 1" barb	1
61	106-057	ELBOW, 90°	1
62	104-859	SCREW, self-tapping, pnhd; No.10	4
63	177-715	COVER, plate	2
64	177-972	FLANGE, engine mounting	1
65	605-358	KEY, 1/4"	1
66	106-063	COUPLING	1
67	106-047	STUD, hose; 7/16" thd (swivel) x 1/4" barb	1
68	106-057	ELBOW, 90°	1
69	217-204	PUMP, hydraulic	1
70	178-058	GUARD, muffler	1
71	100-004	CAPSCREW, hex hd; 3/8-16" x 1-1/4"	2
72	101-032	CAPSCREW, hex hd; 7/16" thd; 1.25" lg.	4
73	100-052	LOCKWASHER, 7/16"	4
74	106-049	REDUCER, 1-5/16" str thd swivel, 1-1/16"(f) str thd	1
75	106-050	TEE; 1-1/16"(f) str thd	1
76	106-040	SWIVEL, 1-1/16" str thd swivel; 3/4 npt(f)	1
77	100-505	BUSHING, pipe; 3/4 x 3/8 npt	1
78	210-658	BALL VALVE, 3/8 npt (see 306-861 for parts)	2
79	177-666	HOSE; 5/8" ID; 6-1/2" (173 mm) lg.	1
80	178-139	NIPPLE, 1-1/4 npt	1
81	178-078	LABEL, ident	1
82	106-220	ENGINE, gas, 10 HP	1
83	177-761	LABEL, stop	1
84	217-019	HOSE, 3/4" ID; cpld 1-1/16 npt(f) swivel x 1-1/16 npt(f)	1
85	106-053	ELBOW, 90°, 1-1/16" str thd	1
86	217-017	HOSE, 1" ID; rubber; cpld 1-5/16 npt(f) swivel x 3/4 npt(f)	1
87	620-188	ADAPTER	1
88	178-206	HOSE, 3/4" ID; 1/2 npt(m) swivel x 1/2 npt(m); rubber	1
89	217-022	VISCOUNT II HYDRAULIC MOTOR (See 307-108 for parts)	1
90	177-652	HANDLE	1
91	150-707	PLATE, serial	1
92	102-472	RIVET, blind	2
93	106-056	ELBOW, 90°; 1-5/16" str thd	1
94	168-211	NUT, connecting rod	1
95	106-212	CAPSCREW, hex hd; 3/8 npt; 2.75" lg	3
96	168-210	NUT, shouldered; 1-1/4" thd	1
97	168-212	ROD, connecting	1
98	158-674	SEAL, o-ring, Buna-N	1
99	*100-103	PIN, cotter	2
100	101-936	NUT, jam hex; 3/4"-10	1
101	101-712	LOCKNUT, 5/8" thd	3
102	101-552	ELBOW, 90°, suction	1
103	102-000	BUSHING	1
104	169-528	TUBE, suction	1
105	178-044	RESTRICTOR	1
106	208-950	CABLE	1
107	103-538	CLAMP, grounding	1
108	101-845	SCREW, self-tapping; No. 6-32 x 3/8"	1
109	103-181	LOCKWASHER; No. 6	1
110	608-822	ROD, tie	3
111	101-368	CLAMP, hose	1
112	214-959	HOSE, suction; 1" ID, 6 ft (1.8 m)	1
113	160-327	UNION, 90°, swivel	1
114	161-800	ADAPTER	1
115	214-570	FLUID FILTER, see 307-273 for parts	1
116	501-175	ELBOW, 3/4 npt(m)	1
117	510-106	CHECK VALVE	1
118	103-927	CLAMP, hose	2
119	101-062	PLUG, pipe	1
120	177-765	PLUG	2
121	217-202	TUBE, cooler	1
122	207-773	DISPLACEMENT PUMP Assy	
	Series C	Includes items 123 thru 144	1
123	100-055	. SCREW, drive; type "U"; No. 6 size; 1/4" lg	2
124	**100-279	. BALL, steel; 0.88" (22.2 mm) dia	1
125	**101-178	. BALL, steel; 1.25" (31.7 mm) dia	1
126	**101-274	. PIN, cotter; 0.12" (3.2 mm) dia; 1.5" (38.1 mm) lg	2
127	150-707	. PLATE, serial	1
128	**161-635	. GASKET, copper	2
129	164-651	. ROD, displacement	1
130	**164-652	. GASKET; PTFE, n"	1
131	164-653	. PIN, ball stop	1
132	*164-654	. RETAINER, packing	1
133	**164-655	. GLAND, male	2
134	**164-656	. V-PACKING; leather	8
135	**164-657	. GLAND, female	2
136	164-659	. SLEEVE, cylinder	1
137	**164-918	. V-PACKING; PTFE, n"	2
138	172-399	. PIN, ball stop	1
139	172-757	. STOP, valve	1
140	176-532	. GUIDE, ball	1
141	205-514	. NUT, packing; w/wet-cup	1
142	205-516	. HOUSING, piston	1
143	206-776	. HOUSING, pump	1
144	214-004	. HOUSING,intake valve	1
145	100-057	SCREW	4
146	100-001	SCREW	8

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

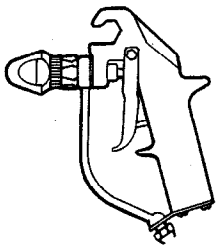
***Included in repair kit.*

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

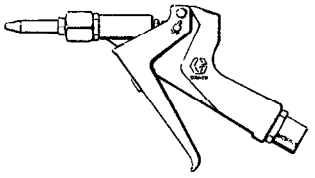
ACCESSORIES (Must be purchased separately)

AIRLESS SPRAY GUN
5000 psi (344 bar) MAXIMUM WORKING PRESSURE
0.090 in. fluid passage orifice; 1/4 npsm(m) fluid inlet.

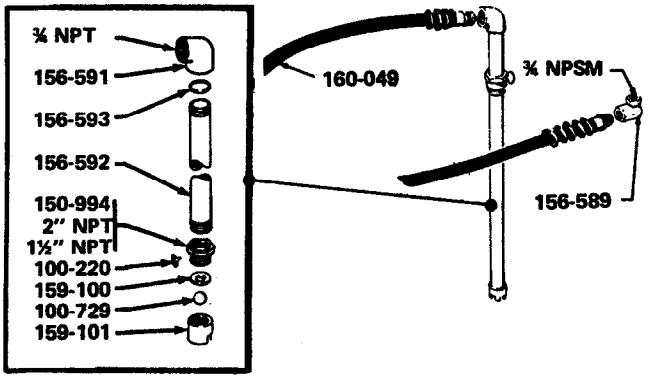
208-633 with two-finger trigger
208-644 with four-finger trigger



FLO-GUN 207-945
6000 psi (415 bar) MAXIMUM WORKING PRESSURE
For heavy materials. 1/2 npt(f) inlet.

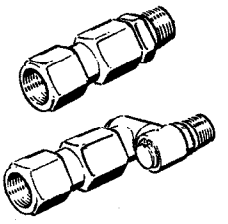


55-GAL. SUCTION TUBE 207-485

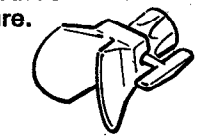


HYDRA-MASTIC SWIVELS
6000 psi (413 bar) MAXIMUM WORKING PRESSURE

207-946 Straight Swivel, 3/8 npt(f) x 1/2 npsm(f)
207-947 Straight Swivel, 1/2 npt(f x m)
207-948 90° Swivel, 1/2 npt(f x m)



REVERSE-A-CLEAN III 216-001
5000 psi (344 bar) MAXIMUM WORKING PRESSURE
Clears tip stoppages by paint pressure.



HIGH PRESSURE FLUID HOSE
5000 psi (344 bar) MAXIMUM WORKING PRESSURE

1/2 in. ID, Buna N tube, coupled 1/2 npt(mbe)
215-441 10 ft (3 m)
215-442 15 ft (4.5 m)
215-443 25 ft (7.6 m)
215-444 50 ft (15.2 m)

3/4 in. ID, Neoprene tube, coupled 3/4 npt(mbe)
215-238 10 ft (3 m)
215-239 15 ft (4.5 m)
215-240 25 ft (15.2 m)

HYDRAULIC FLUID 207-428
1 gallon (3.8 liter)

SERVICE INFORMATION

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

ASSEMBLY CHANGED	PART DESIGNATION	REF NO.	PART NO.	NAME
226-973	DELETED (12)	2	103-813	Screw
GH 533	ADDED (4)	145	100-057	Screw
To Series B	ADDED (8)	146	100-001	Screw
	OLD		106-065	Elbow
	NEW	43	106-268	Elbow
	OLD		216-156	Reservoir
	NEW	12	217-280	Reservoir
	ADDED (2)	40	100-016	Lockwasher

INTERCHANGEABILITY NOTE: NEW parts replace OLD parts listed directly below them.

QUANTITY CHANGE NOTE: Numbers in parentheses in the Status column indicate the quantity changed.

TECHNICAL DATA

Engine	: KOHLER, Model K241-T, 4 cycle, single cylinder, air cooled, 10 HP (7.5 KW)
Gasoline tank	: 1.5 gallon (5.7 liter) capacity; consumes 1.3 gal/hr (4.9 liter/hour)
Hydraulic pump	: 9 GPM (34 liter/min) max. volume; 200-1500 psi (14-103 bar) pressure range
Hydraulic fluid sump	: 5 gallon (19 liter)
Hyd. pump suction filter	: 30 mesh screen
Hydraulic oil return filter	: 400 sq in (2580 cm^2) surface area; 25 micron filtration; disposable type
Material pump	: 2600 psi (180 bar) max. working pressure; 2 GPM (7.5 liter/min) output; 15 cycles/gal
Fluid outlet filter	: 60 mesh (250 micron) 18 sq. in. (116 cm^2) screen, reusable type. 1/4 npt(f) outlet
Pump Fluid Outlet	: 1/2 npt(f)
Wetted parts	: Steel, Nitralloy, Tungsten Carbide, PTFE n, Leather
Weight	: 500 lb (225 kg)
Dimensions	: Length: 48 in. (1.2 m) Width: 29 in. (736 mm) Height: 48 in. (1.2 m)

Factory Branches: Atlanta, Dallas, Detroit, 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 55440-1444
PRINTED IN U.S.A. 307-492 1-82