

INSTRUCTIONS-PARTS LIST



307-741

Rev B
SUPERSEDES A

600

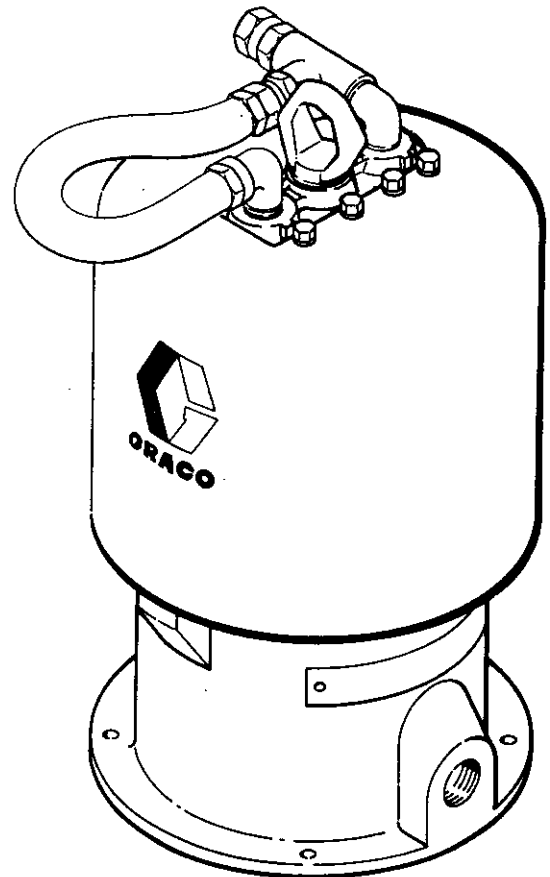
This manual contains **IMPORTANT**
WARNINGS and **INSTRUCTIONS**
READ AND RETAIN FOR REFERENCE

10 INCH (255 mm)

KING™ AIR MOTOR

6 bar (90 psi) MAXIMUM AIR WORKING PRESSURE

Model 220-106, Series A
Quiet Air Motor



INDEX

Warnings.....	2
Installation.....	4
Troubleshooting.....	4
Repair.....	6
Parts Drawing.....	10
Parts List.....	11
How To Order Replacement Parts.....	11
Accessories.....	11
Dimensional Drawings.....	Back Cover
Technical Data.....	Back Cover
Warranty.....	Back Cover

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

©COPYRIGHT 1985, GRACO INC.

FIRE OR EXPLOSION HAZARD

Static electricity is created by the high velocity flow of fluid through the pump and hose. If every part of the system is not properly grounded, sparking may occur, and the system may become hazardous. Sparking may also occur when plugging in or unplugging a power supply cord. Sparks can ignite fumes from solvents and the fluid being sprayed, dust particles and other flammable substances, whether you are spraying indoors or outdoors, and can cause a fire or explosion and serious bodily injury and property damage. Do not plug in or unplug any power supply cords in the spray/dispensing area when there is any chance of igniting fumes still in the air.

If you experience any static sparking or even a slight shock while using this equipment, **STOP SPRAYING IMMEDIATELY**. Check the entire system for proper grounding. Do not use the system again until the problem has been identified and corrected.

Grounding

To reduce the risk of static sparking, ground the pump and all other components used or located in the spray area. CHECK your local electrical code for detailed grounding instructions for your area and type of equipment and be sure to ground all of these components:

1. *Pump*: use ground wire and clamp as shown in Fig 1.
2. *Air and fluid hoses*: use only grounded hoses with a maximum of 500 feet (150 m) combined hose length to ensure grounding continuity. Refer to **Hose Grounding Continuity**, below.
3. *Air compressor*: follow air compressor manufacturer's recommendations.
4. *Spray gun or dispensing valve*: obtain grounding through connection to a properly grounded fluid hose and pump.
5. *Object being sprayed*: according to your local code.
6. *Fluid supply container*: according to local code.
7. *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.

HOSE SAFETY

High pressure fluid in the hoses can be very dangerous. If the hose develops a leak, split or rupture due to any kind of wear, damage or misuse, the high pressure spray emitted from it can cause a fluid injection injury or other serious bodily injury or property damage.

ALL FLUID SPRAY HOSES MUST HAVE SPRING GUARDS ON BOTH ENDS! The spring guards help protect the hose from kinks or bends at or close to the coupling which can result in hose rupture.

TIGHTEN all fluid connections securely before each use. High pressure fluid can dislodge a loose coupling or allow high pressure spray to be emitted from the coupling.

NEVER use a damaged hose. Before each use, check entire hose for cuts, leaks, abrasion, bulging cover, or damage or movement of the hose couplings. If any of these conditions exist, replace the hose immediately. **DO NOT** try to recouple high pressure hose or mend it with tape or any other device. A repaired hose cannot contain the high pressure fluid.

HANDLE AND ROUTE HOSES CAREFULLY. Do not pull on hoses to move equipment. Do not use fluids or solvents which are not compatible with the inner tube and cover of the hose. **DO NOT** expose Graco hose to temperatures above 180°F (82°C) or below -40°F (-40°C).

8. To maintain grounding continuity when flushing or relieving pressure, always hold a metal part of the gun firmly to the side of a grounded *metal* pail, then trigger the gun.

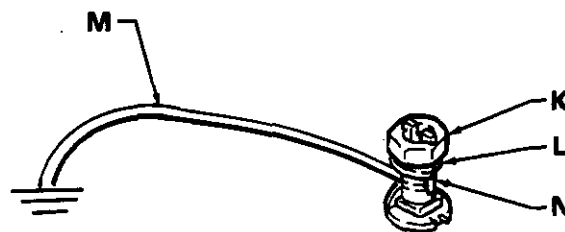


Fig 1

To ground the pump, loosen the grounding lug locknut (K) and washer (L). Insert one end of the ground wire (12 ga minimum) (M) into the slot in the lug (N) and tighten the locknut securely. See Fig 1. Connect the other end of the wire to a true earth ground. Refer to page 11 to order a ground wire and clamp.

Flushing Safety

Before flushing, be sure the entire system and flushing pails are properly grounded. Refer to **Grounding**, above. Follow the **Pressure Relief Procedure** on page 2, and *remove the spray tip if using a spray gun*. Always use the lowest possible fluid pressure, and maintain firm metal to metal contact between the gun/valve and the pail during flushing to reduce the risk of fluid injection injury, static sparking and splashing in the eyes or on the skin.

Hose Grounding Continuity

Proper hose grounding continuity is essential to maintaining a grounded spray system. Check the electrical resistance of your air and fluid hoses at least once a week. If your hose does not have a tag on it which specifies the maximum electrical resistance, contact the hose supplier or manufacturer for the maximum resistance limits. Use a resistance meter in the appropriate range for your hose to check the resistance. If the resistance exceeds the recommended limits, replace it immediately. An ungrounded or poorly grounded hose can make your system hazardous. Also, read **FIRE OR EXPLOSION HAZARD**, above.

MOVING PARTS HAZARD

The piston in the air motor, located behind the air motor shield, moves when air is supplied to the motor. Moving parts can pinch or amputate your fingers or other body parts. Therefore, **NEVER** operate the pump with the air motor shield removed. **KEEP CLEAR** of moving parts when starting or operating the pump. Before checking or servicing the pump, follow the **Pressure Relief Procedure** on page 2 to prevent the pump from starting accidentally.

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.

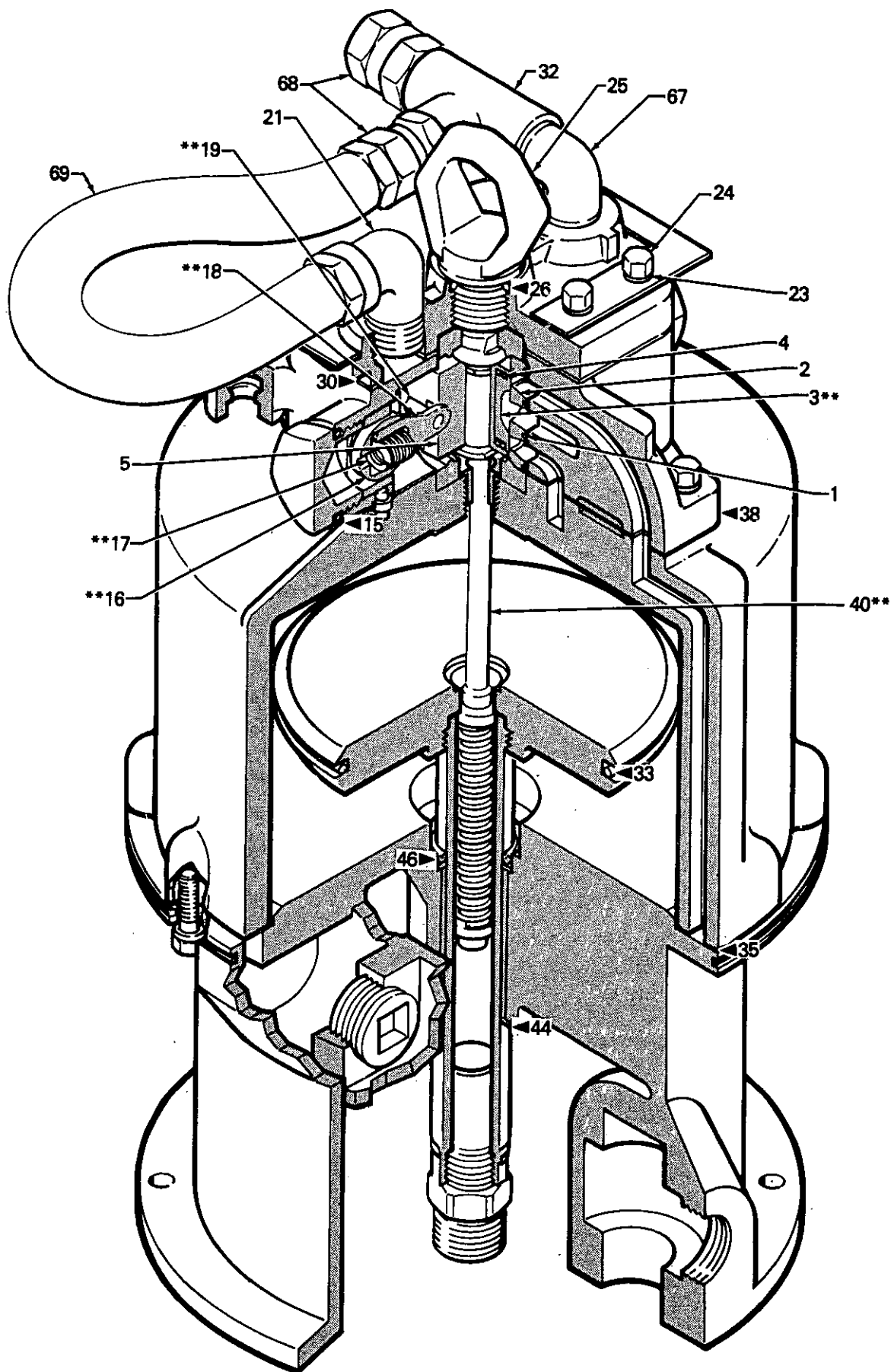


Fig 2

13. Install the housing (5), lockwasher (6) and nut (7). Hold the flats of the valve housing with a wrench and with another wrench, torque the nut to 27-33 N·m (20-25 ft-lb), leaving 1 mm (0.039 in.) of the trip rod extending above the nut. See Fig 7. Release the pliers.

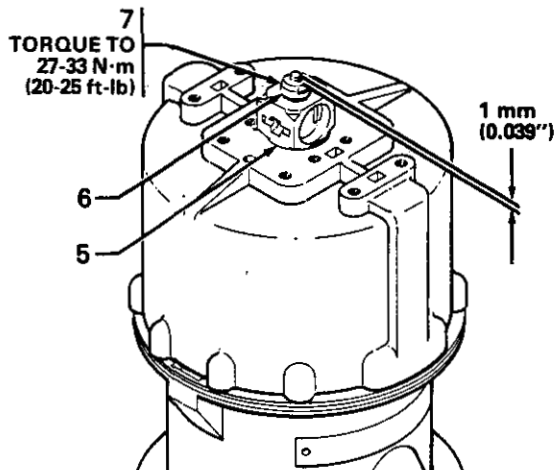


Fig 7

14. Place the gasket (38*) on the air cylinder. See Fig 8.
15. If the valve plates were removed, place a seal (1) on each valve plate (2) and install the valve plates in the air manifold. Reinstall the adjusting screw and nut (11, 12).

WARNING

The openings in the valve plates (2) are razor sharp! Be careful not to cut yourself when checking or handling them.

16. Place the springs (4) and director valves (3) in the valve housing (5) and hold them in with your thumb and index finger. Place the manifold (20) over the valve housing, push down and release your thumb and forefinger from the director valves. Align the pins (9) with the mating hole in the air cylinder.
17. Install the four screws and lockwashers (31, 13) loosely. Alternately and evenly, torque the screws to 34 N·m (25 ft-lb).
18. Grease and assemble the spring housings (18), pins (19), springs (17) and guides (16). Install the assemblies in the manifold openings, making sure the housings and pins align properly with the slots in the valve housing (5). Place an o-ring (15) on each retainer (14) and screw them into the manifold.
19. Place a bumper (8) in the manifold so the ribbed side faces out.
20. Place the gasket (30*), manifold cap (29) and gasket (53) on the air manifold. Install the air motor shield (27), screws (24) and lockwashers (23).
21. Screw the elbows (21 and 67) into the outer ports of the manifold cap (29). Connect the hose (69) to the swivel (68). Place the o-ring (26) on the lift ring (25) and screw the lift ring into the manifold cap. See Fig 8.

22. Reconnect the ground wire.

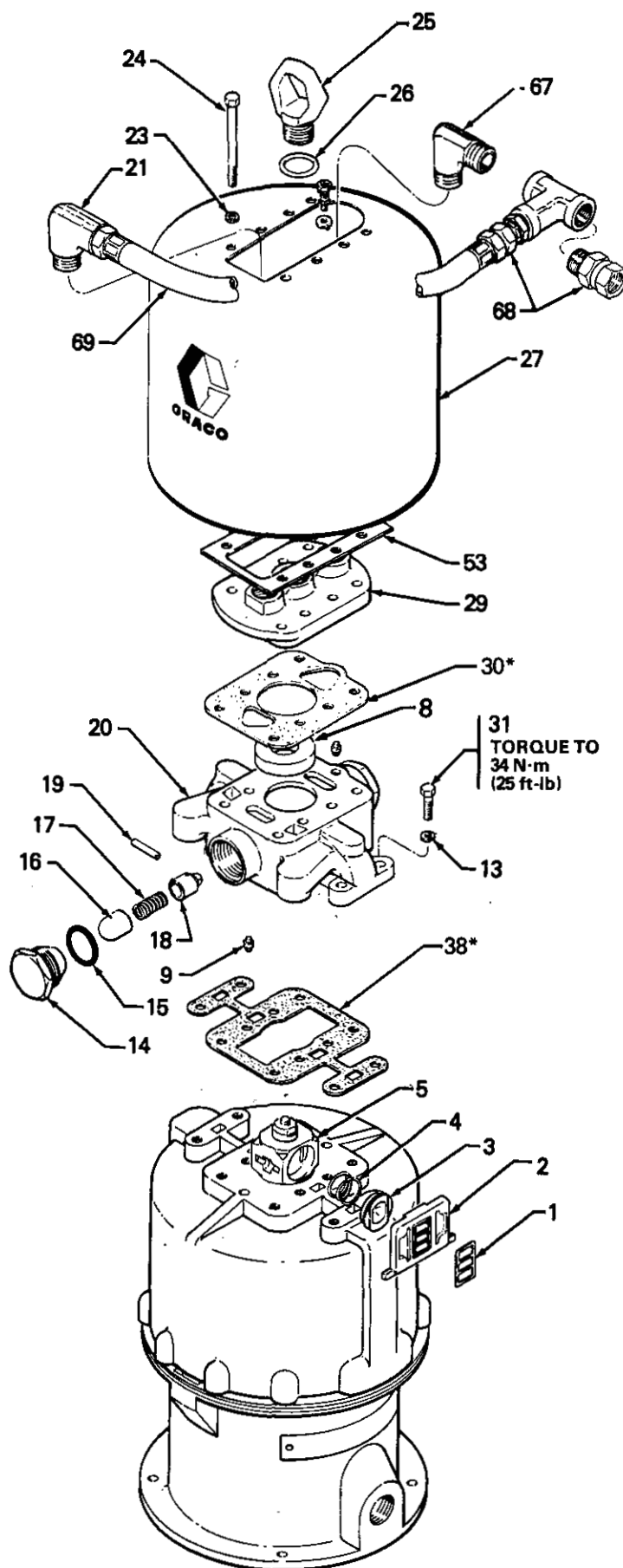


Fig 8

PARTS LIST

Model 220-106, Series A
Includes items 1-69

REF PART NO.	DESCRIPTION	QTY	REF PART NO.	DESCRIPTION	QTY
1	168-184 SEAL, plate	2	32	166-466 TEE, pipe; 3/4 npt(f)	1
2	176-536 PLATE, valve	2	33	*102-727 O-RING, nitrile rubber	1
3	**176-518 VALVE, director	2	34	220-105 PISTON ASSEMBLY	1
4	176-543 SPRING, compression	2	35	*168-189 GASKET	1
5	176-519 HOUSING, air valve	1	36	181-297 CYLINDER	1
6	105-319 LOCKWASHER, 10 mm	1	37	**215-933 BEARING, trip rod	1
7	176-569 NUT, trip rod	1	38	*176-575 GASKET, cellulose fiber	1
8	**176-549 BUMPER, valve	2	39	176-564 ROD, piston	1
9	105-323 PIN, alignment	3	40	**218-597 TRIP ROD ASSEMBLY	1
10	176-568 BUSHING, trip rod	1	41	**102-737 O-RING, buna-N	1
11	176-550 SCREW, adjusting	4	42	101-845 SCREW, tapping, pnhd, No. 6-32 x 3/8" long	6
12	176-548 NUT, adjusting	4	43	102-725 PLUG, pipe	1
13	100-018 LOCKWASHER	4	44	*161-569 SEAL, wiper	1
14	178-428 RETAINER, toggle	4	45	*161-563 WASHER, backup	1
15	**105-318 O-RING, nitrile rubber	2	46	*161-562 V-PACKING, nitrile rubber	1
16	**178-427 GUIDE, housing	2	47	207-649 AIR MOTOR BASE ASSEMBLY	1
17	**178-429 SPRING, compression	2	53	*177-081 GASKET, neoprene	1
18	**178-426 HOUSING, spring	2	55	172-450 PLATE, identification	1
19	**105-321 PIN, dowel	2	58	172-451 PLATE, instruction	1
20	181-322 MANIFOLD, air	1	62	104-582 WASHER, tab	1
21	100-549 ELBOW, pipe; 90° street; 3/4 npt(m x f)	1	63	104-029 LUG, grounding	1
22	168-491 GRACO EMBLEM	1	64	*161-559 V-PACKING	1
23	104-572 LOCKWASHER, 8 mm	8	65	*161-560 WASHER, backup	1
24	105-322 CAPSCREW, hex head; M8 x 1.5 x 100	8	66	**150-647 GASKET, flat, copper	1
25	176-537 RING, lift	1	67	108-307 ELBOW, pipe, 90°; 3/4 npt(mbe)	1
26	**166-221 O-RING nitrile rubber	1	68	157-785 UNION, swivel; 3/4 nps(f) swivel x 3/4 npt(m)	2
27	181-276 AIR MOTOR SHIELD	1	69	214-953 HOSE, air; buna-N; 3/4" ID; cpld 3/4 npt(mbe); 1.25' (381 mm)	1
28	181-308 INSULATION	2			
29	181-321 CAP, manifold	1			
30	*181-323 GASKET, cellulose fiber	1			
31	105-324 CAPSCREW, hex head; M8 x 1.5 x 30	16			

*Included in Repair Kit 220-153.

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

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.

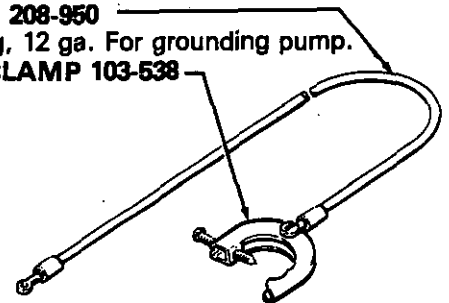
6 digit PART NUMBER	QTY	PART DESCRIPTION

Motor Repair Kit 220-153
(Purchase kit separately)
Includes:

Ref No.	Qty.
30	1
33	1
35	1
38	1
44	1
45	1
46	1
64	1
65	1

ACCESSORIES (Must be purchased separately)

GROUND WIRE 208-950
7.6 m (25 ft) long, 12 ga. For grounding pump.
GROUNDING CLAMP 103-538



SERVICE INFORMATION

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

ASSEMBLY PART CHANGED	STATUS	REF PART NO.	PART NO.	NAME
220-106	DELETED (12)	13	100-018	Lockwasher
Air Motor	OLD		100-884	Screw
	NEW	42	101-845	Screw

INTERCHANGEABILITY NOTE: NEW parts replace the OLD parts listed directly above them.

NOTE: The number in parentheses is the quantity deleted.