INSTRUCTIONS/PARTS LIST

308-161

This manual contain
IMPORTANT WARNINGS and INSTRUCTIONS.
READ AND RETAIN FOR REFERENCE

Rev. A

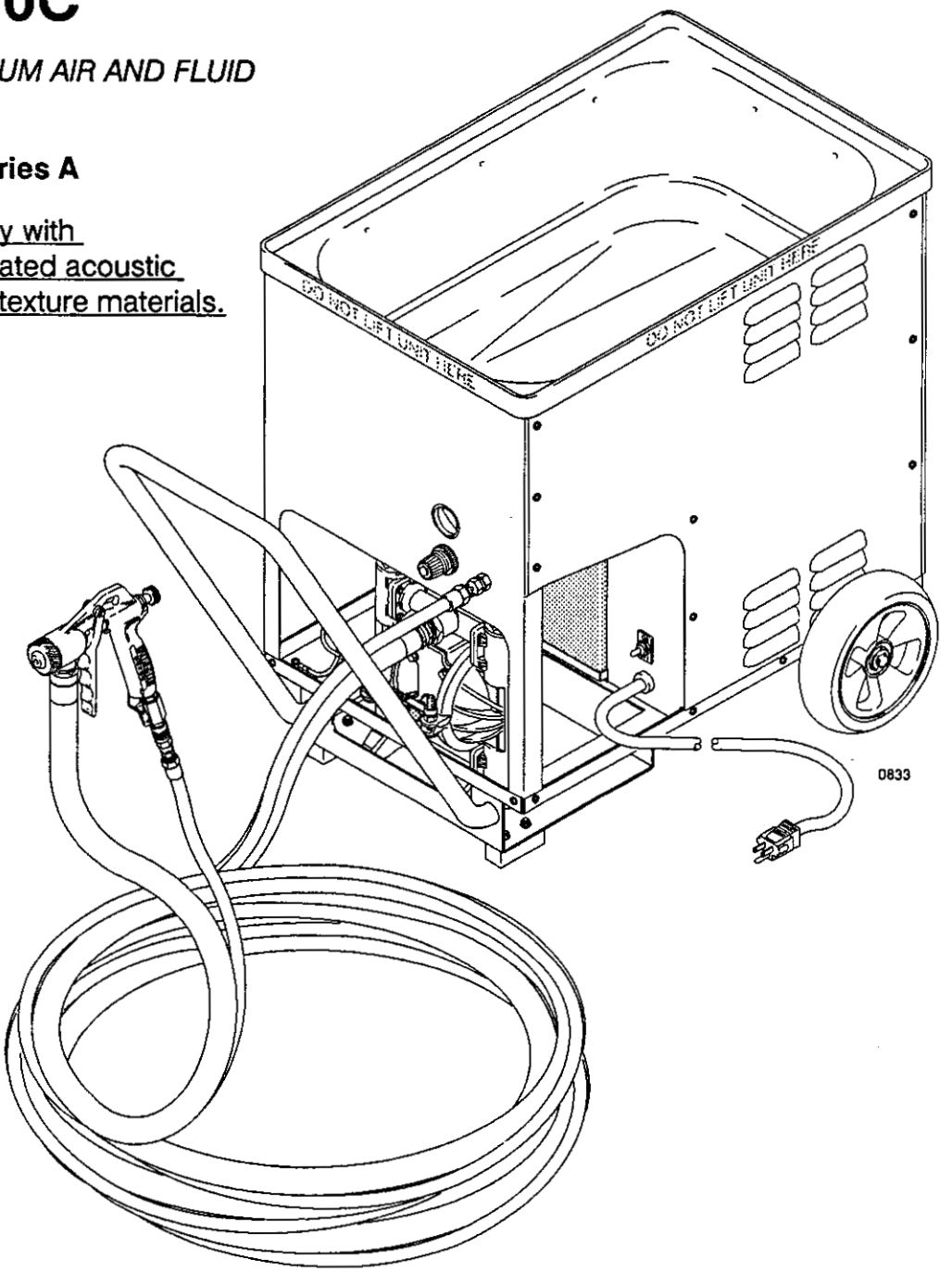
TEXSPRAY™ SYSTEM

Model E110C

100 psi (7 bar) MAXIMUM AIR AND FLUID WORKING PRESSURE

Part No. 231-182, Series A

For use only with
water-based simulated acoustic
and water-based wall texture materials.



See manual contents
on back cover.

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

⚠ WARNING

FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.
Read and understand all instruction manuals before operating equipment.

EQUIPMENT MISUSE HAZARD

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including electric shock and splashing fluid in the eyes, follow this procedure before checking, adjusting, cleaning, moving, or repairing any part of the system.

1. Shut off the system.
2. Trigger the gun.
3. Open the gun air valve (handle parallel with valve body).
4. Unplug the system.

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 components to rupture and result in serious bodily injury, including eye injury, fire, explosion or property damage.

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

Do not operate the system with the side panels removed. Internal components get extremely hot.

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

Always wear appropriate clothing and equipment, such as eye protection and breathing apparatus, to protect yourself.

System Pressure

This system has a 100 psi (7 bar) Maximum Working Pressure. Never exceed these pressures, or the maximum working pressure of the lowest rated component in your system.

Fluid Compatibility

The system is for use only with water-based simulated acoustic and wall texture materials. See the Wetted Parts on page 35.

FIRE OR EXPLOSION HAZARD

Static electricity is created by the fluid flowing through the pump and hose. If the equipment is not properly grounded, sparking may occur, and the system may become hazardous. Sparks can ignite fumes, dust particles and other flammable substances and cause a fire or explosion, serious bodily injury, and property damage.

Locate the system at least 20 ft (6.1 m) away from any explosive vapors to reduce the risk of a fire or explosion due to arcing parts.

Do not expose the system to rain. Always store the system indoors.

If you experience any static sparking STOP SPRAYING IMMEDIATELY. Do not use the system again until the cause of the problem is identified and corrected.

Grounding

To reduce the risk of static sparking, ground the pump and all other equipment used or located in the pumping area. CHECK your local electrical code for detailed grounding instructions for your area and type of equipment. *GROUND ALL OF THIS EQUIPMENT.*

1. *Spray System*: the pump is grounded to the cart. Plug the power cord into a properly grounded, 110 volt, 15 amp outlet. Be sure the plug is undamaged.

2. If the system is connected to a circuit protected by fuses, use a time delay fuse marked D.

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.

⚠ AVERTISSEMENT

Réservé exclusivement à l'usage professionnel. Observer toutes les consignes de sécurité. Bien lire et bien comprendre tous les manuels d'instructions avant d'utiliser le matériel.

RISQUES EN CAS DE MAUVAISE UTILISATION DU MATERIAL

Procedure de Decompression

Pour limiter les risques de blessures graves, y compris la protection de liquide dans les yeux, toujours suivre cet procédure avant de vérifier, regler, nettoyer, dèplacer ou réparer une partie quelconque du système.

1. Arrêter le système.
2. Actionner la gâchette du pistolet.
3. Ouvrir la vanne à boule du pistolet.
4. Debrancher le cordón d'elimination.

Consignes générales de sécurité

Toute utilisation anormale de l'appareil de pulvérisation ou des accessoires comme, par exemple, la mise sous une pression excessive, les modifications de pièces, l'utilisation de produits chimiques et de matières incompatibles et l'utilisation de pièces usées ou abîmées peut causer des dégâts à l'appareil ou des ruptures de pièces et entraîner une injection de liquide ou d'autres blessures sérieuses, un incendie, une explosion ou d'autres dégâts.

NE JAMAIS alterer ou modifier une piece de cet appareil; ceci risquerait d'entraîner son mauvais fonctionnement.

Ne pas faire fonctionner le système quand les panneau latéraux sont enlevé. Les composants internes sont très chauds.

Vérifiez régulièrement toutes les pièces du système et réparez ou remplacez les pièces usées ou abîmées immédiatement.

Porter toujours des vêtements et des équipements appropriés, tels que des lunettes de protection, ou un système respiratôire pour votre protection.

Pression

Ce système a une presion maximum de fonctionnement de 7 bar. Ne jamais déparer cette presion, ni la presion maximum de fonctionnement du composant le plus faible du système.

Compatibilité chimique des produits

Cet système est conçue seulement pour utiliser des produits acqueux utilisés dans les revêtements muraux textures ou accoustiques. Voir les materiaux en contact avec le produit en page 35.

RISQUES D'INCENDIE OU D'EXPLOSION

De l'électricite statique est créée par l'écoulement du fluides dans la pompe et dans le tuyau. Si l'équipement n'est pas correctement mis à la terre, des étincelles peuvent se produire et le système peut devenir dangereux. Les étincelles peuvent enflammer des vapeurs des poussieres et autres substances inflammables et provoquer un incendie ou une explosion, des blessures graves et des dégâts importants.

Place toujours le système à au moins 6 metres de toute vapeur explosive pour éviter les risques d'inflammation dues aux étincelles.

Pour réduire le risque de décharge électrique, n'exposez pas à la pluie. Rangez le système à l'intériuer.

S'il se produit des étincelles d'électricité statique, ou si vous ressentez la moindre décharge, ARRETEZ IMMEDIATEMENT LA PULVERISATION. Vérifiez que le système avant que le problème soit identifié et corrigé.

Mise à la terre ou à la masse

Pour reduire les risques d'étincelles dues á l'electricité statique, mettre à la terre la pompe et les autres équipements utilisés ou situés dans la zone d'utilisation. Vérifier le code électrique qui s'appliquent pour les détails de mise à la terre pour ce type d'équipement. Mettre à la terre tous les composants de cet équipement.

1. Système de pulvérisation – la pompe est mis à la terre sur le chariot. Brancher la prise sur une prise 110 Volts, 15 ampères. Vèiller à ce que la prise soit en bon état.

2. Si le système est branchée sur une circuit protégé par des fusibles, utiliser des fusibles à une action differée marques D.

NOTES

Key
A Air outlet
B Fluid outlet
47 ON/OFF switch
83 Pump air regulator

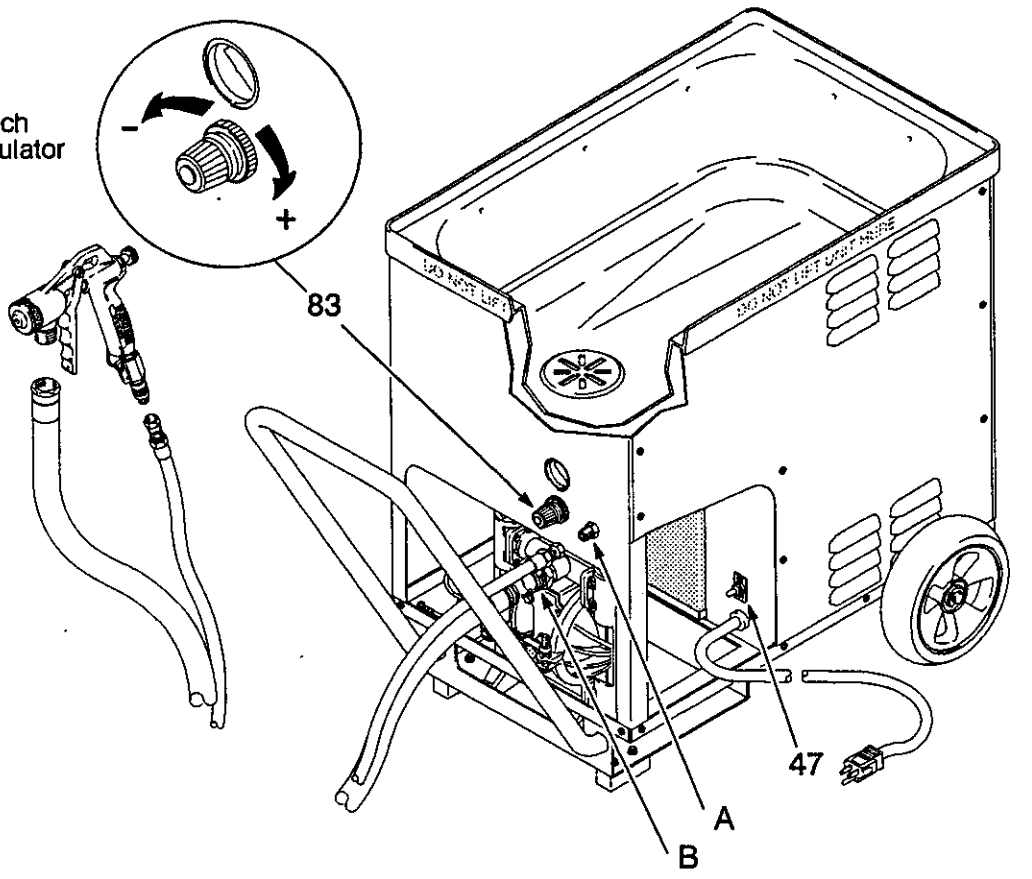


Fig 5–1 0834

Compressor break-in

The first time you use the system, run the compressor under no load to break it in, improve performance and lengthen its life.

1. Be sure the air hose is disconnected at A so there is no load on the compressor.

2. Turn the air regulator (83) fully counter-clockwise (–) to the minimum setting so the pump won't run.

3. Turn on the switch (47). Run the system for 15 minutes. Shut off the switch.

Hose size and lengths

The system is supplied with a 3/4 in. x 50 ft. (19 mm x 15 m) fluid hose. An optional 1 in. x 50 ft. (25 mm x 15 m) fluid hose is available for spraying heavier material. A gun adapter is required if connecting a 1 in. hose directly to the gun. See Accessories.

Do not use more than 100 ft. (30 m) of fluid hose. For multiple hoses, use a 1 in. dia. hose at the pump and a 3/4 in. dia. hose to the gun.

Setup the system

⚠ CAUTION

To avoid damage to the pump inlet, do not overtighten the fluid hose. Hold the pump outlet fitting (B) with a wrench when tightening the hose.

1. Connect the hoses and gun as shown.

2. Plug the power cord into a properly grounded, 120 Volt, 15 amp outlet.

3. If possible, use more hose-up to 100 ft (15 m) maximum–rather than an extension cord. If you do use an extension cord, be sure it has three 12 gauge minimum wires, an undamaged 3 prong plug and is no longer than 50 ft. (15 m). Do not use an adapter.

Operation characteristics

1. **The system will not start unless the compressor air has been relieved!** Be sure the gun air valve (423) is open (handle parallel to valve body), which relieves compressor air, every time you shut off the system. See Fig 6–1.

2. Air bleeds from the gun nozzle whenever the gun air valve (423) is open. Close the valve to stop the air, if desired. Otherwise, it can stay open except during priming. See Fig 6–1. See page 8 for more gun characteristics.

Key
423 Gun air valve *(shown open)*

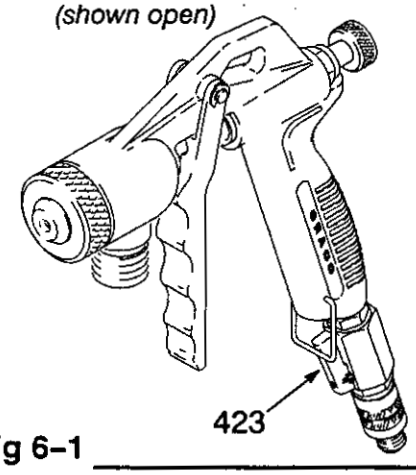


Fig 6–1 0631

3. A compressor pressure relief valve (79) is located behind the cart's front panel. Air escapes from the valve, causing a popping sound, when air to the pump or the gun is at minimum pressure. The valve resets automatically when air to the pump or gun is increased at the regulator (83). See Fig 7–1, page 7.

4. If air exhausts through the pump muffler (216) or the pump starts and then stops, press down the pump reset button (B). See Detail A in Fig 7–1, page 7.

5. The air regulator knob has two positions. Pull out the knob to adjust the pressure. Push in the knob to lock the adjustment in place.

⚠ WARNING

The motor has a thermal overload switch which shuts down the motor if it overheats.

To reduce the risk of serious bodily injury due to the system restarting unexpectedly, always turn off the system at the ON/OFF switch (47) if the motor shuts down.

Always wet the hose before pumping texture material!

Wet the inside of the hose before each use to flush out sediment and to prevent the texture material from packing out the hose.

NOTE: Refer to Fig 7–1, page 7, for this procedure.

1. Fill the hopper with 3–6 gal./11–23 l of clean water, depending on the hose length.

2. Turn the air regulator (83) fully counterclockwise (–) to minimum pressure.

3. Close the gun air valve (423); the system primes easier if no air is supplied to the gun.

4. Turn on the switch (47). Trigger the gun into the hopper. Turn the pump regulator (83) slowly to 40–50 psi (2.8–3.5 bar). Trigger the gun to circulate the water for a few minutes and wet the inside of the fluid hose.

5. Trigger the gun into a pail to lower the water to the hopper strainer (16) level.

6. Turn off the switch (47).

7. Open the gun air valve (423) to relieve the compressor air.

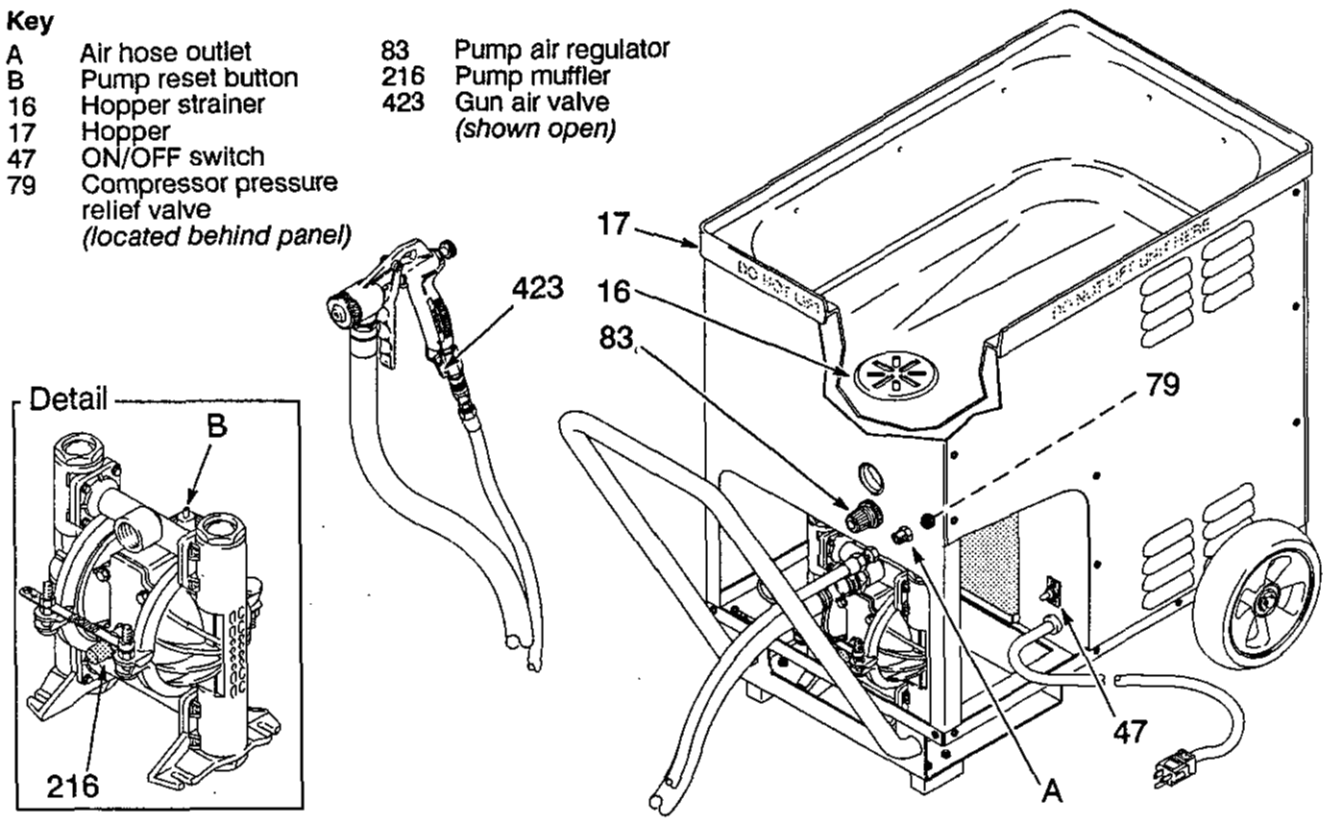


Fig 7–1 0835

Mix the material

⚠ CAUTION

Use only simulated acoustic and wall texture materials in this system. Do not spray cementious materials, which will damage the pump.

Proper material mixture is essential. The pump won't operate if the material is too thick.

Slowly add one 40 lb. (18 kg) of texture material to 5 gal. (19 l) of clean water. Agitate to a smooth, lump–free consistency. **Thin or thicken the material as needed before pouring it into the hopper.**

Prime the system

1. Fill the hopper (17) with the prepared texture material.
2. Install a tip. Refer to the Tip Selection Chart on page 8.
3. Open the gun air valve (423) to be sure air pressure is relieved and then close it again; the system primes easier if no air is supplied to the gun.
4. Be sure there are no kinks in the hose, which restricts fluid flow.
5. Turn on the switch (47). Trigger the gun into a pail. Adjust the air regulator (83) to 40–60 psi (2.8–4.2 bar). When texture material appears at the tip, move the gun to the hopper and circulate until there is a solid stream of texture material. Increase the pressure if a continuous stream is hard to obtain.
6. See SPRAY TECHNIQUES on pages 8 and 9 for how to balance the pump and gun adjustments for a good spray pattern.

Tip selection chart

Application	Tip Orifice	Air Volume[1]	Material Volume[2]
Simulated Acoustic	3/16" (fine, or small confined areas) 1/4" (fine to medium) 5/16" (coarse)	Med. to High	40-60 psi(2.8-4.2 bar) (fine to medium) 60-80 psi(4.2-5.6 bar) (coarse)
Fog	3/16"	High	40-60 psi(2.8-4.2 bar)
Orange Peel	3/16" to 1/4"	Med. to High	40-60 psi(2.8-4.2 bar)
Splatter Coat	1/4 to 5/16"	Low to Med.	40-60 psi(2.8-4.2 bar)
Knockdown	5/16"	Low	60-80 psi(4.2-5.6 bar)

1 Control air volume with the gun air flow valve.

2 For more material volume, try a larger orifice tip. Then, if more material volume is needed, increase the pump pressure.

Adjusting the spray pattern

A good spray pattern requires testing to balance the pump pressure and the air to the gun, and selecting the right tip size.

1. Refer to the chart above. Consider the size of aggregate in the material and the coarseness of the spray pattern. Remember, the larger the tip, the heavier the pattern.

2. Adjust the pump pressure at the regulator (83) until the material stream is about 8 in. (203) mm long.

3. Test the spray pattern on cardboard. Hold the gun 18-30 in. (457-762 mm) from the surface. Use this spraying distance for most applications.

4. Adjust the pump regulator and the gun air flow valve (424) to achieve a uniform, round spray pattern. Read pages 8 and 9 before adjusting the gun.

5. Overlap each stroke 50%.

⚠ CAUTION

Always run the pump at the lowest pressure needed. This maximizes the efficiency of the gun adjustments and prolongs the compressor life.

How to prevent material surge at the beginning of a spray pattern

Squeeze the trigger slowly to the fully triggered position while moving the gun quickly.

How the gun works

Adjust the material flow knob (418) so only 1 or 2 threads are visible. Fully open the air flow valve (424) by turning it as far as possible to +. See Fig 8-1. This is the standard adjustment for spraying texture materials. Before adjusting the gun, read pages 8 and 9.

For continuous spraying

Use the trigger bail (401) to hold the trigger open to reduce operator fatigue.

Key

401 Trigger bail
418 Material flow knob
423 Gun air valve *(shown open)*
424 Air flow valve

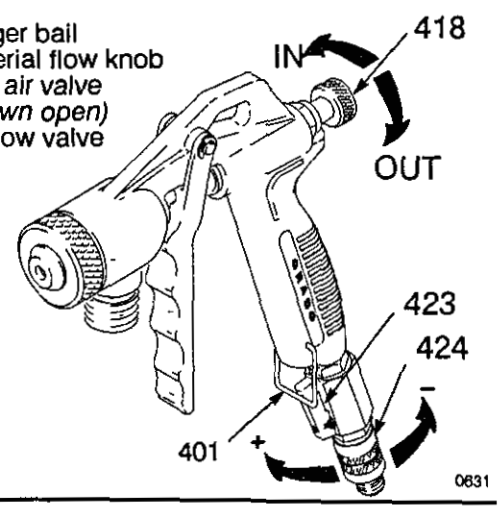


Fig 8-1

Spraying high ceilings

To avoid wearing stilts or using scaffolding when spraying 9–12 ft. (2.7–3.6 m) ceilings, use a higher pump pressure and air volume (controlled at the gun) to project the material onto the ceiling.

Key

418 Material flow knob
423 Gun air valve *(shown open)*
424 Air flow valve

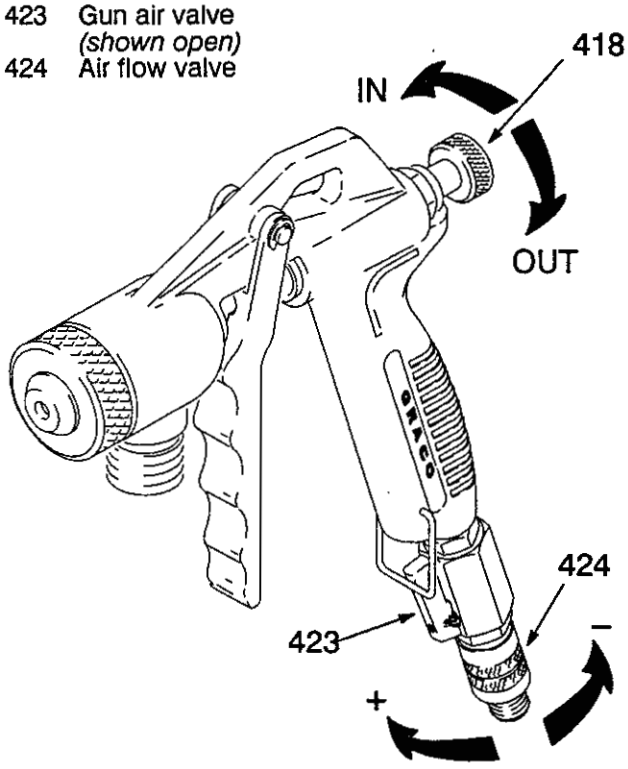


Fig 9–1 0631

Spraying small, confined areas

The valve and knob may be used to make fine adjustments without adjusting the pump when spraying smaller, confined areas, such as closets.

Material flow knob adjustment

1. For a lighter spray pattern, turn IN the knob (418).
2. For a heavier spray pattern, turn OUT the knob (418) so that no more than two threads are showing.

⚠ CAUTION

Turning the knob (418) out too far will remove the knob and the gun will not shut off when the trigger is released.

Air flow valve adjustment

1. To decrease air flow turn the valve (424) toward –.
2. To increase air flow, turn the valve (424) toward +.

Check material consistency periodically

Check and thin the material as needed to maintain the proper consistency. The material may thicken as it sits and slow down production or affect the spray pattern.

Key
16 Hopper strainer
17 Hopper
47 ON/OFF switch
62 Small sponge filter *(located behind large filter)*
67 Large sponge filter
83 Pump regulator
423 Gun air valve *(shown open)*

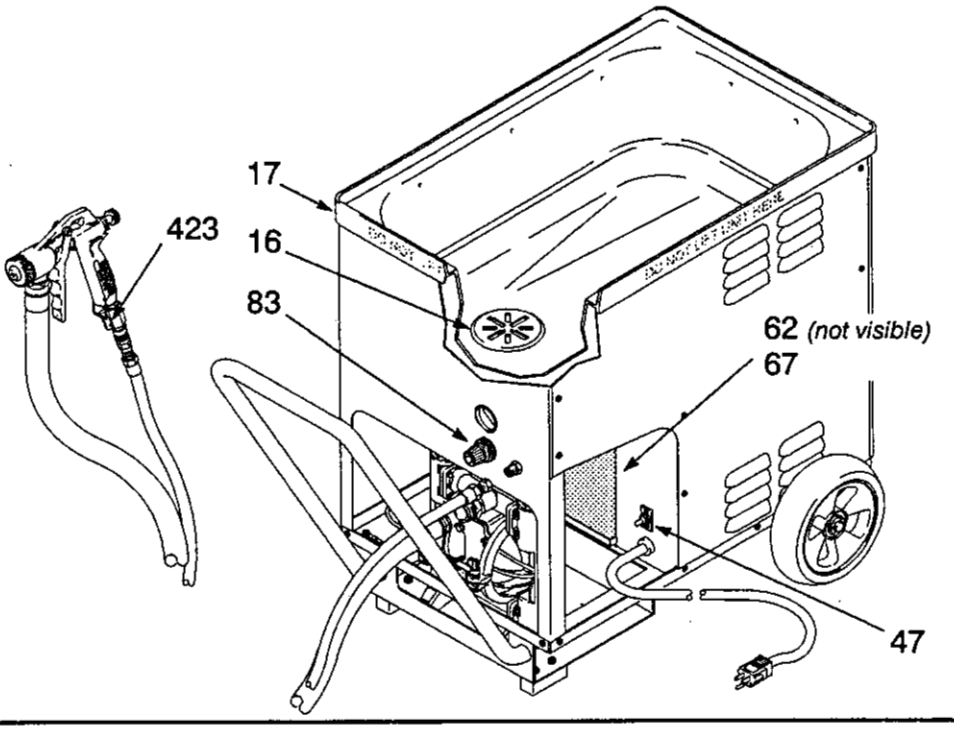


Fig 10–1 0835

1. Be sure the compressor pressure is relieved (gun air valve open). Close the valve again. Turn on the switch (47).

2. Trigger the gun into a pail to lower the fluid to the hopper strainer (16) level.

3. Fill the hopper with 3–6 gal. (11–23 l) of clean water, depending on the hose length. Clean the inside of the hopper with a brush.

4. Trigger the gun into a pail until most of the texture material is pumped out.

5. Fill the hopper with clean water.

6. Set the air regulator (83) to 50 psi (3.5 bar) for sufficient pressure to clean out material build up in the system. Spray half the water into a pail. Trigger the gun into the hopper to circulate the remaining water for several minutes.

7. Trigger the gun into the pail to empty the hopper and the hose.

8. Turn off the switch (47). Open the gun air valve (423) to relieve compressor pressure.

9. Pour 12 oz. (360 ml) of clean water into the hopper drain to KEEP THE PUMP WET DURING NON–USE.

NOTE: In cold weather, try to store the system where it will not freeze. If it does freeze, thaw it thoroughly before using it.

10. Remove the two sponge filters (62,67), clean them thoroughly, and reinstall them.

11. Clean and dry the gun. **Oil the gun daily** with a few drops of SAE–10 light oil at the points indicated in Fig 10–2.

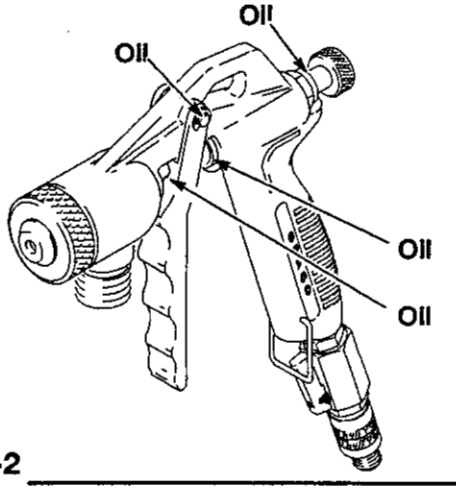


Fig 10–2 0831

⚠ WARNING

To reduce the risk of serious bodily injury, follow the **Pressure Relief Procedure** on page 2.

Daily checks

Before each use, check all hoses for wear or damage and replace as necessary. Be sure hose connections are tight and leak-free.

Pump lubrication

After every 500 hours of fluid pumped, remove the hose from the pump air inlet (A) and add two drops of machine oil or spray some WD-40 into the air inlet. Refer to Fig 11-1.

Tighten pump's threaded connections every six months

Remove the pump from the cart and thoroughly check and tighten all threaded connections.

When tightening the clamps (206), remove the grounding strip (245) and tighten the screws (214) and nuts (215) on both sides. Torque the screws to 72-120 in-lb (8-14 N.m). Reinstall the grounding strip. See Fig 11-1.

Key

A	Air inlet	⚠1 Lubricate every 500 hours gallons pumped
206	Clamps	
214	Screws	
215	Nuts	⚠2 Torque to 72-120 in-lb (8-14 N.m)
245	Grounding strip	

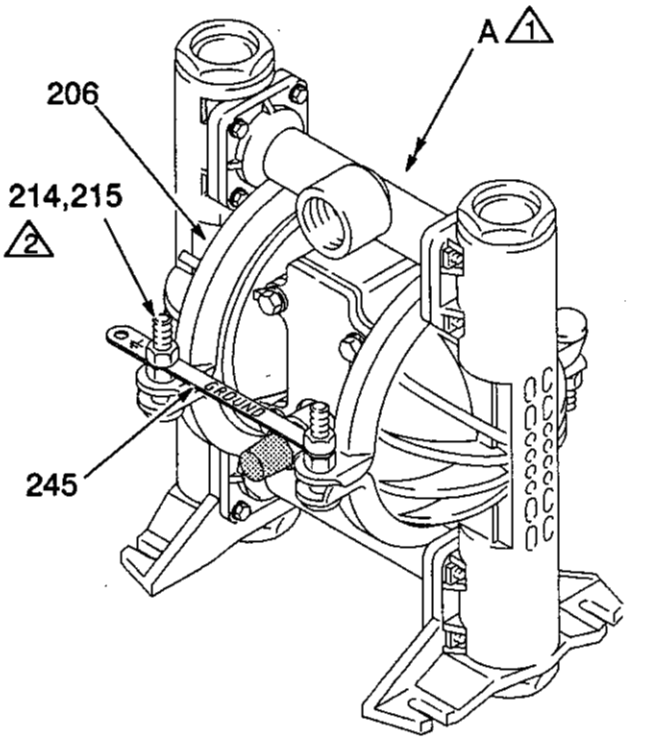


Fig 11-1

⚠ WARNING

To reduce the risk of serious bodily injury, relieve pressure before checking or repairing any part of the system. See the **Pressure Relief Procedure** on page 2.

system Troubleshooting

PROBLEM	CAUSE	SOLUTION
Spray pattern too coarse	Material too thick	Thin
	Not enough air volume	Increase air volume at the gun.
	Material volume too high	1. Decrease fluid pressure; 2. Change to smaller nozzle. 3. Turn spray pattern knob in
Spray pattern is too fine or produces too much overspray.	Too much air volume at gun	Decrease air volume at gun
	Too little material volume	1. Change to a larger nozzle 2. Increase fluid pressure. 3. Turn spray pattern knob out.
	Material too thin	Thicken
Speed of application seems slow.	Pump pressure too low	Increase
	Nozzle too small	Use larger nozzle.
	Material too thick	1. Thin material. 2. Use 1" dia. fluid hose and adapter.
Material surges when first triggering gun. (A slight surge is normal.)	Triggering too fast.	Squeeze trigger slowly to fully open position while moving gun quickly. Also see Spray Techniques on pages 8 and 9.
	Pump pressure is too high	Lower pump pressure.

Pump Troubleshooting

Check all possible problems and causes before disassembling the pump.

PROBLEM	CAUSE	SOLUTION
Pump will not cycle or cycles once and stops	Air valve stuck	Push air valve reset button. See page 5.
	Material too thick	Thin.
	Clogged or damaged pilot valves	Repair or replace. See page 24.
	Dirt in passageway	Clean valve housing and pilot area. See page 24.
	Director valve gaskets (220) and plate (228) installed incorrectly	Check and correct. See page 20.

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Pump cycles at stall or fails to hold pressure at stall	Leaky check valves or o-rings	Repair or replace. See page 19.
	Worn director valve (235)	Replace or replace. See page 20.
	Worn shaft seals (230)	Replace. See page 23.
Pump operates erratically	Clogged suction line	Inspect; clear.
	Check valve plug (226) is loose	Tighten. Refer to page 19.
	Sticky check valve balls	Clean or repair. See page 19.
	Diaphragm (212) ruptured	Replace. See page 22.
	Sticky director valve (235)	Add two drops machine oil or spray some WD-40 into air inlet. See page11.
Air bubbles in fluid	Suction line loose	Tighten.
	Diaphragm (212) ruptured	Replace. See page 22.
	Manifold o-ring (231) is leaking	Replace.
Fluid in exhaust air	Diaphragm (212) ruptured	Replace. See page 22.
Pump exhausts air at stall	Loose director valve (235)	Tighten four bolts (207) holding valve to pump housing. See page 20.
	Worn or damaged director valve	Repair or replace. See page 20.
	Sticky director valve (235)	Add two drops machine oil or spray some WD-40 into air inlet. See page 11.
	Worn shaft seals (230)	Inspect; replace. See page 23.
Pump exhausts air from cover	V-clamp (206) is loose	Tighten V-clamp. See page 22.
Pump exhausts air near director valve	Director valve bolts (207) are loose	Tighten. See page 20.
	Director valve gaskets (220) damaged	Inspect; replace. See page 20.
Pump leaks fluid from check valves	Worn or damaged o-rings (258)	Inspect; replace. See page 19.
		Tighten plug (226). See page 19.

REMOVING THE COMPRESSOR

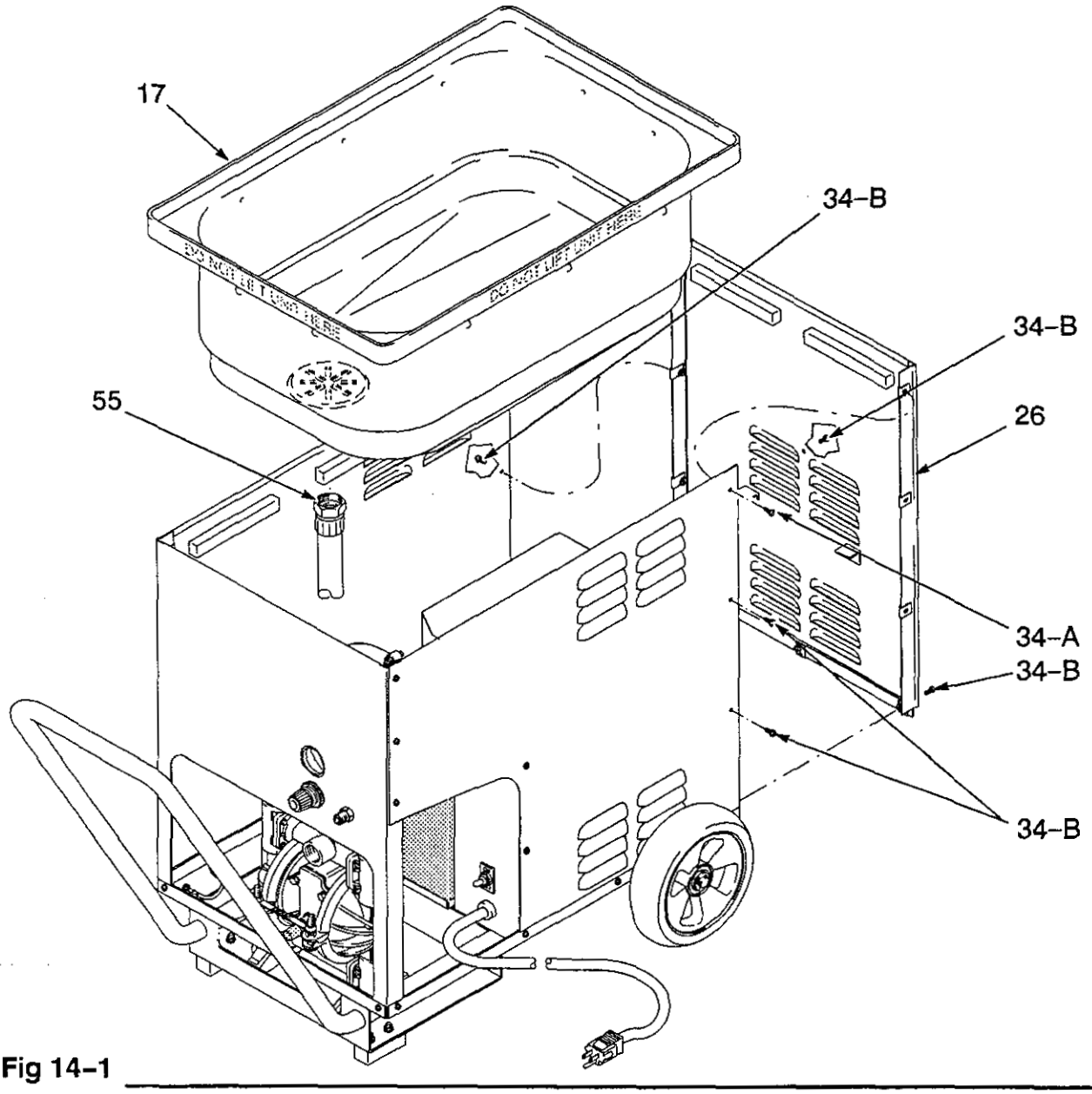


Fig 14–1

0837

⚠ CAUTION

Be sure the compressor duct work is cool before removing it. If the sprayer was operated recently, it will be very hot and can cause burns!

NOTE: Clean the cooler whenever the compressor is serviced.

NOTE: A compressor rebuild kit, part no. 224–989, is available. The kit includes repair instructions. For repair assistance or for compressor service center locations, call 1–800–535–0505.

Required Tools

2 adjustable open-end wrenches
#2 Phillips screwdriver
3/8" socket wrench

Procedure

1. Follow the **Pressure Relief Procedure**. See page 2.

2. Disconnect the tube (55) from the hopper (17).

Continued on page 15.

REMOVING THE COMPRESSOR

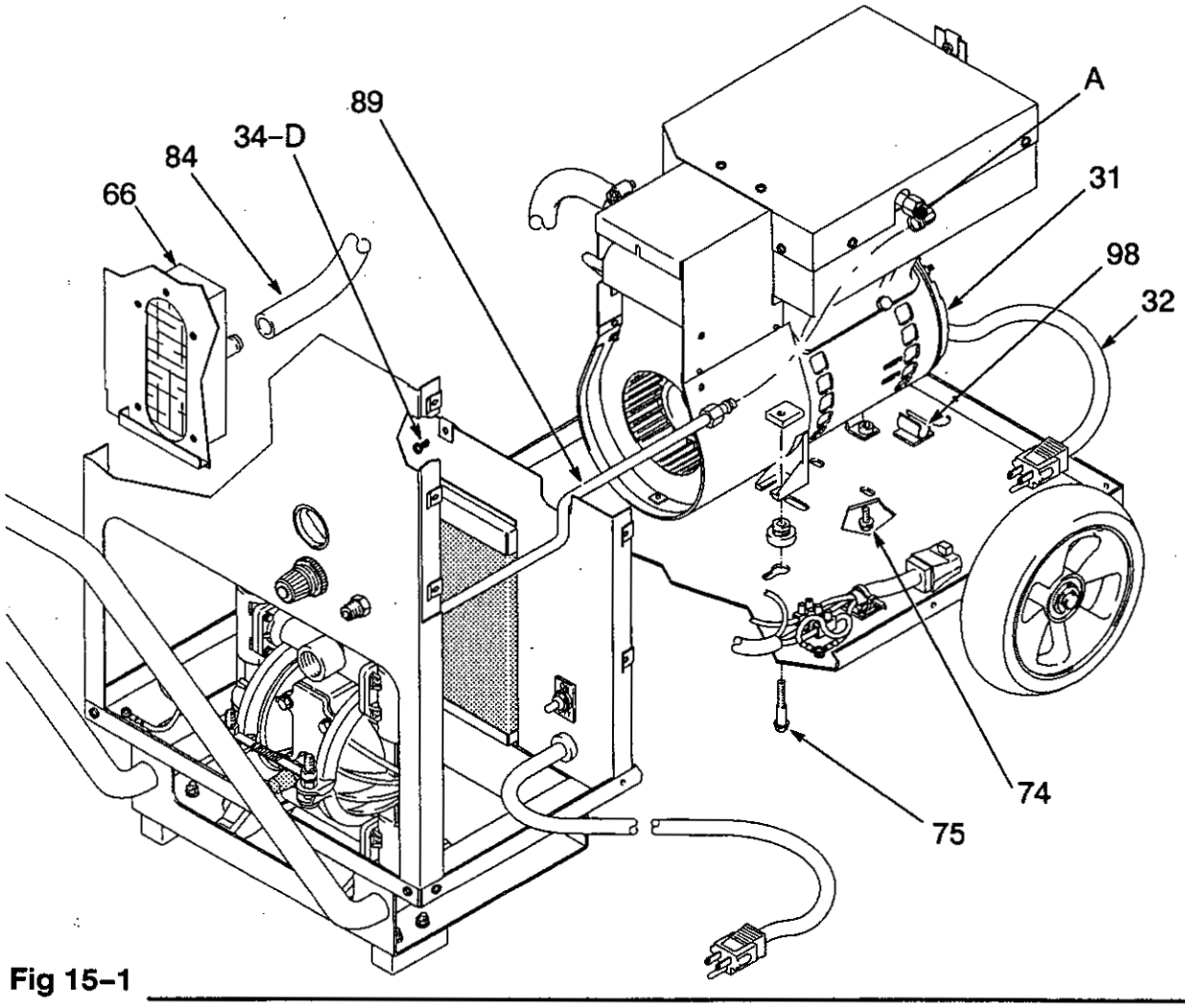


Fig 15-1 0838

3. Remove one screw (34-A) from the top rear corner of each side panel.
4. Lift out the hopper (17).
5. Remove the screws (34-B) holding the rear panel (26). Remove the rear panel.

NOTE: Fig 15-1 is shown with the side panels removed for visual purposes only. Refer to it for Steps 6 to 11.

6. Remove the two motor mounting screws (75) and remove the two screws (74).
7. Unplug the motor power cord (32) and remove the cord from the clip (98).
8. Loosen or remove the screw (34-D).
9. Disconnect the copper tube (89) at the cooler (A), using two wrenches.
10. Disconnect the air intake hose (84) at the air intake filter (66).
11. Grasp the motor (31) - not the duct work - and lift out the cooler/compressor assembly.

REMOVING and CLEANING THE COOLER

1. Remove the screws (34–A) and the air deflector (49). Hold the compression fitting (18–A) and unscrew the fitting (18–B). See Detail A, below.
2. Remove the two top screws (34–B) and the two lower screws (99). Remove the cooler assembly from the compressor.
3. Remove the remaining screws (34–C) and remove the upper duct (19).
4. Clean the cooler (71) whenever the compressor is serviced to improve its efficiency. Spray water through the cooler to thoroughly clean it.

NOTE: When reassembling the sprayer, be sure both pads (73) are in place on the lower duct (23). See Detail B, below, which shows the compressor from the rear.

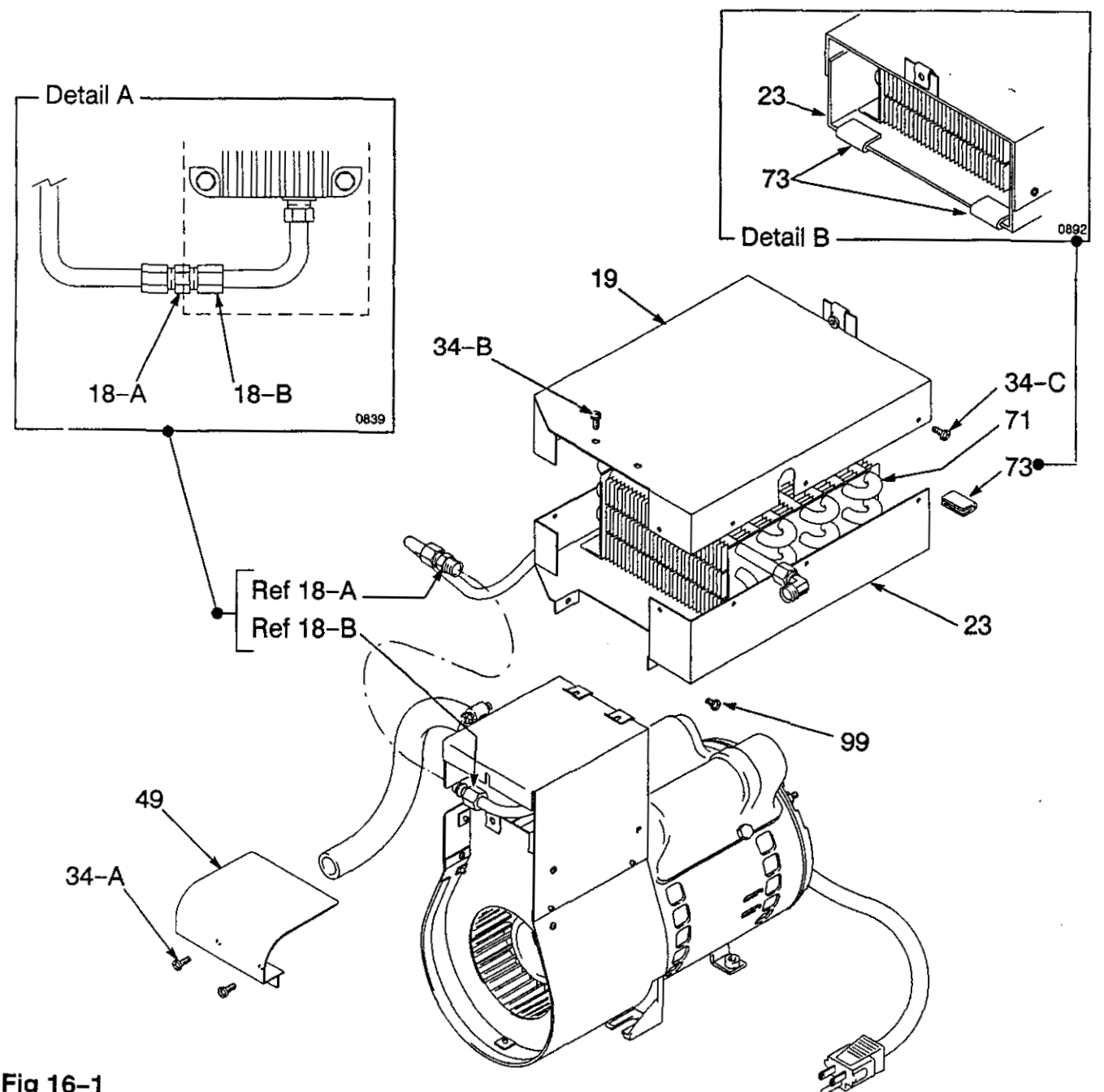


Fig 16–1

COMPRESSOR/COOLER REASSEMBLY

1. Assemble all of the duct work on the compressor/cooler.

2. Push a pad (73) over the rear foot (A) of the motor (31). Push the bracket (109) onto the rear foot (A). See Detail B, below.

3. Put the motor on the cart (B), aligning the holes and slots. Be sure the lip (D) of the front duct work is mounted over the cart's filter panel (70). See Detail A, below. See Fig 15-1 also.

4. Push the screw (75) through the foot pad (77). Place the square nut (72) on top of the screw and hold it in place while engaging only two or three threads. Slide the motor forward.

5. Thread the rear motor mounting screws (74) into the bracket (109) and tighten them.

6. Tighten the screws (75) while holding down the nuts (72).

7. Continue reassembling the sprayer in the reverse order of disassembly.

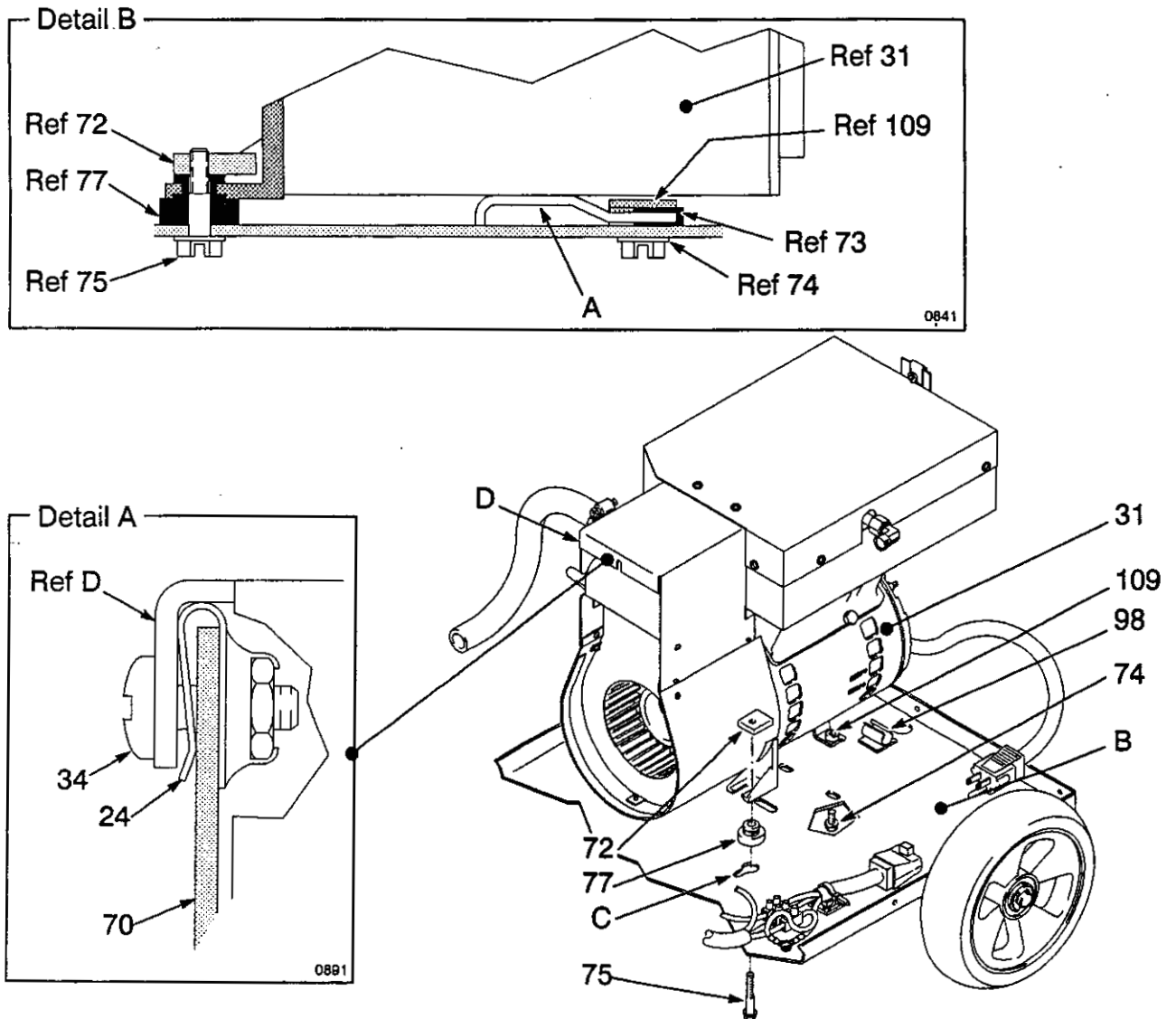


Fig 17-1

REMOVING THE PUMP

NOTE: Refer to Fig 18–2 except where noted.

1. Follow the **Pressure Relief Procedure.** See page 2.
2. Disconnect the air outlet hose at (A) and the fluid outlet hose at (B). See Fig 18–1.
3. Pull the pins (54) and remove the handle (2).
4. Disconnect the hose (55) at the hopper.
5. Disconnect the air hose (100) from the back of the air regulator.
6. Disconnect the ground wire (61).
7. Remove the pump mounting nuts (21).
8. See pages 19–24 for pump repair.

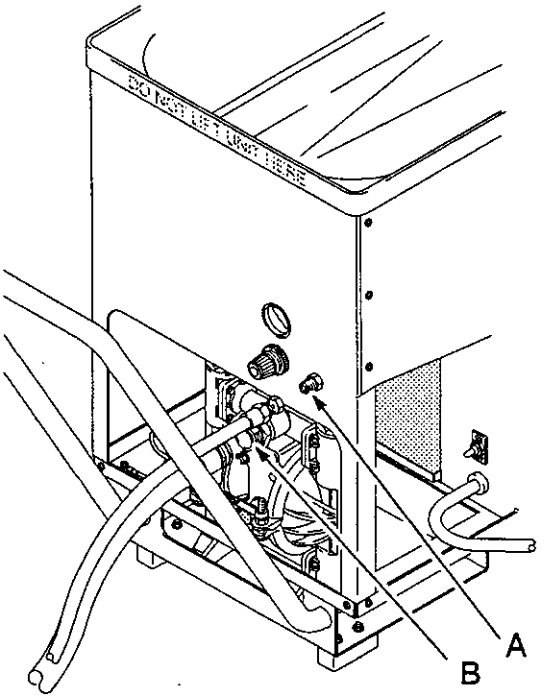


Fig 18–1

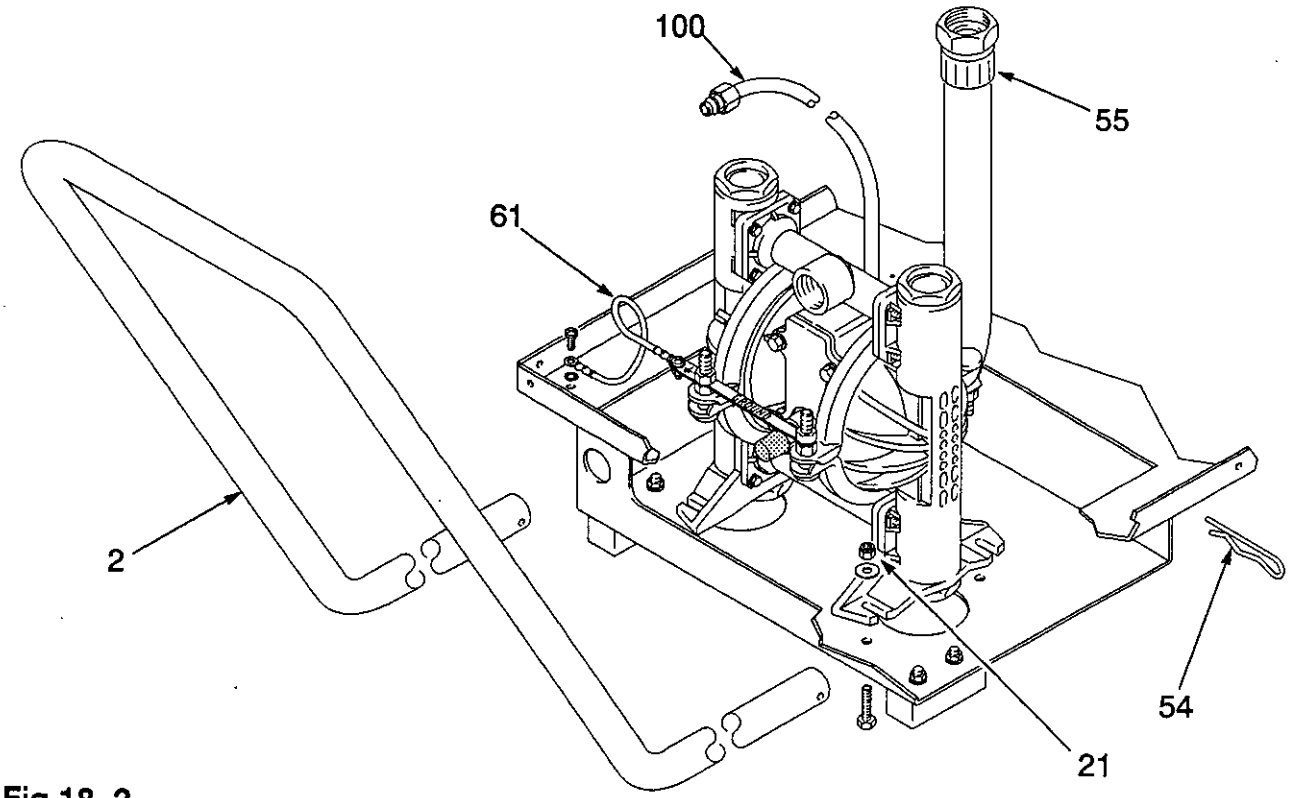


Fig 18–2

0836

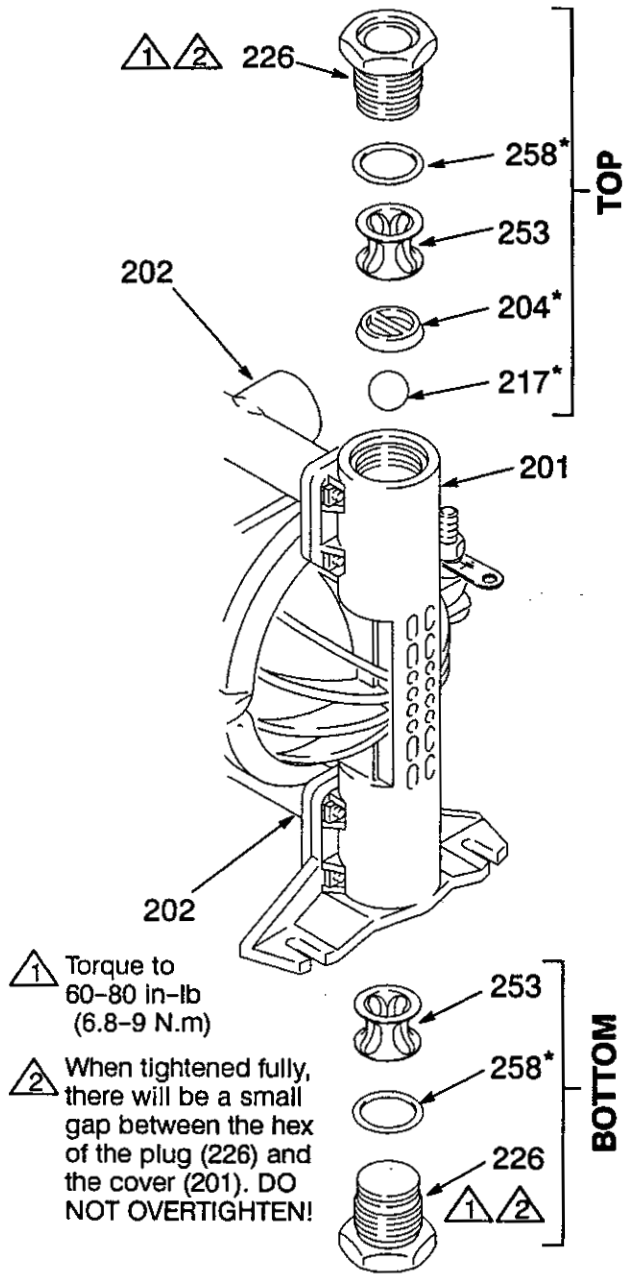


Fig 19–1 0816

NOTE: Repair Kit 224–970 is available. Kit parts are shown with a * after the Ref No. Use all the parts in the kit.

NOTE: For proper ball seating, replace the guides (203*) when replacing the balls. Use new o-rings (258) if the old ones are removed for any reason.

1. Remove the pump from its mounting. See page 18.
2. Disassemble the top ball checks. Turn the pump over. Remove the plug (226) and spacer (253). See Fig 19–1.
3. Insert a 3/8" dia. x 8" dowel (A) through the top ball guide (203*). Press on the bottom ball stop (204*) to push out the ball guide (203*), ball (217*), o-ring (258*), and ball stop. See Fig 19–2.
4. Turn the pump over. Insert the dowel at an angle so it contacts the edge of the top ball guide (203*), and push out the guide and o-ring (258). See Fig 19–2.
5. Clean all parts. Inspect parts and replace worn or damaged ones.
6. Reassemble. Follow all notes in Fig 19–1.

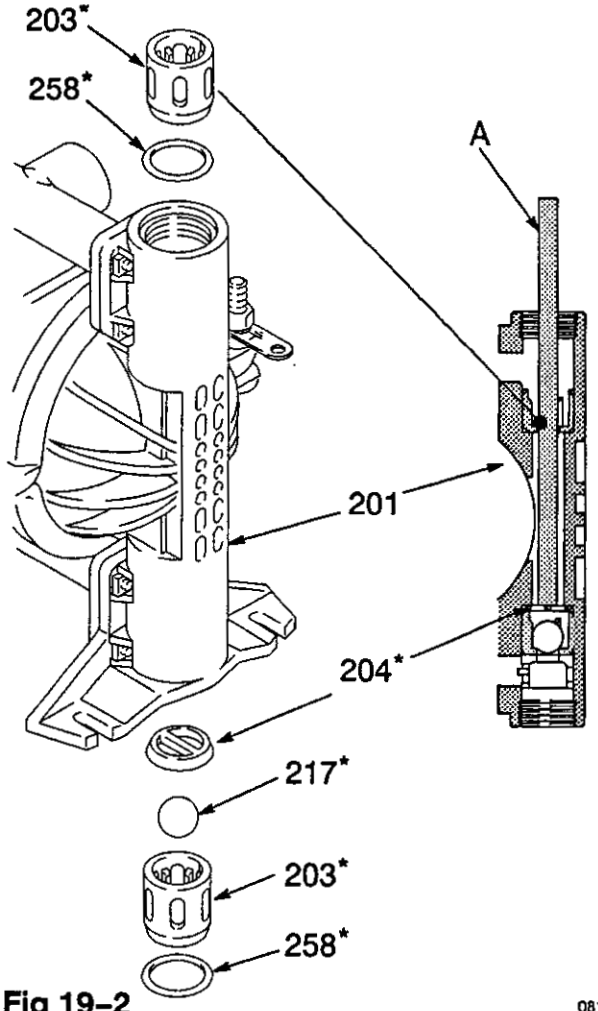


Fig 19–2 0817

NOTES:

a. A complete air director valve, p/n 224-015, is available. To replace the complete valve follow steps 1 and 11, install the new valve and reassemble the pump. To replace individual parts, follow all steps.

b. Repair Kit 221-090 is available. Kit parts are marked with a ** after the Ref No. Use all the parts in the kit.

c. Use a pick to remove o-rings.

d. Refer to Fig 21-1 except where noted otherwise.

Procedure

1. Remove the director valve (235). See Fig 20-1.
2. Remove the retaining ring (314). Insert a screwdriver through hole (D) and pull out the cylinder (313). Repeat for the other cylinder.
3. Remove the upper washer and o-rings.
4. Unscrew the two halves of the piston (302). The valve stem (303) will stay connected to one of the pistons; do not remove the stem unless you are replacing one of these parts.

⚠ CAUTION

Check both internal and external sealing surfaces of the valve housing (304) for nicks and burrs, and replace if damage is noted.

5. Insert a screwdriver through the housing (304) to the opposite spacer (306) and knock it out. See DETAIL A in Fig 21-1. Repeat for the other side.
6. Remove the o-rings and u-cup packings.
7. Install the u-cup packings (307**, 308**) in the spacer (306). Place o-rings (309, 310) on the outside of the spacer. Use a socket to press the spacer in. Repeat for the other side.

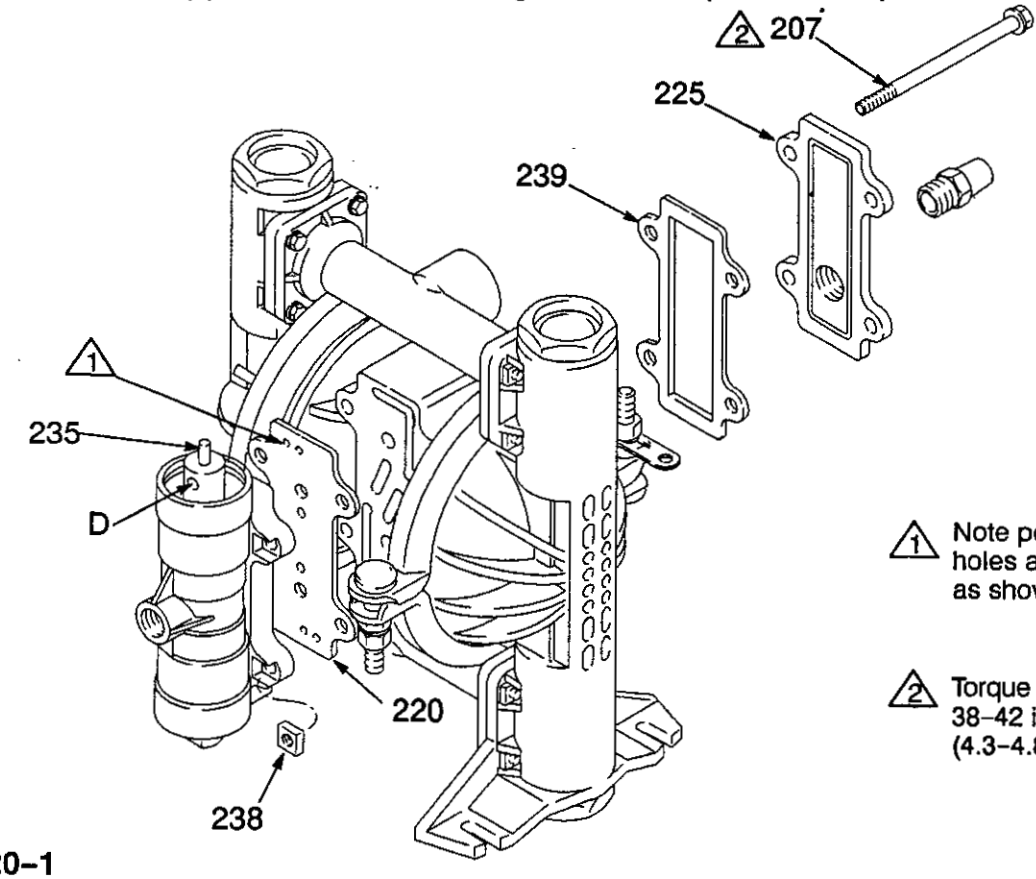


Fig 20-1

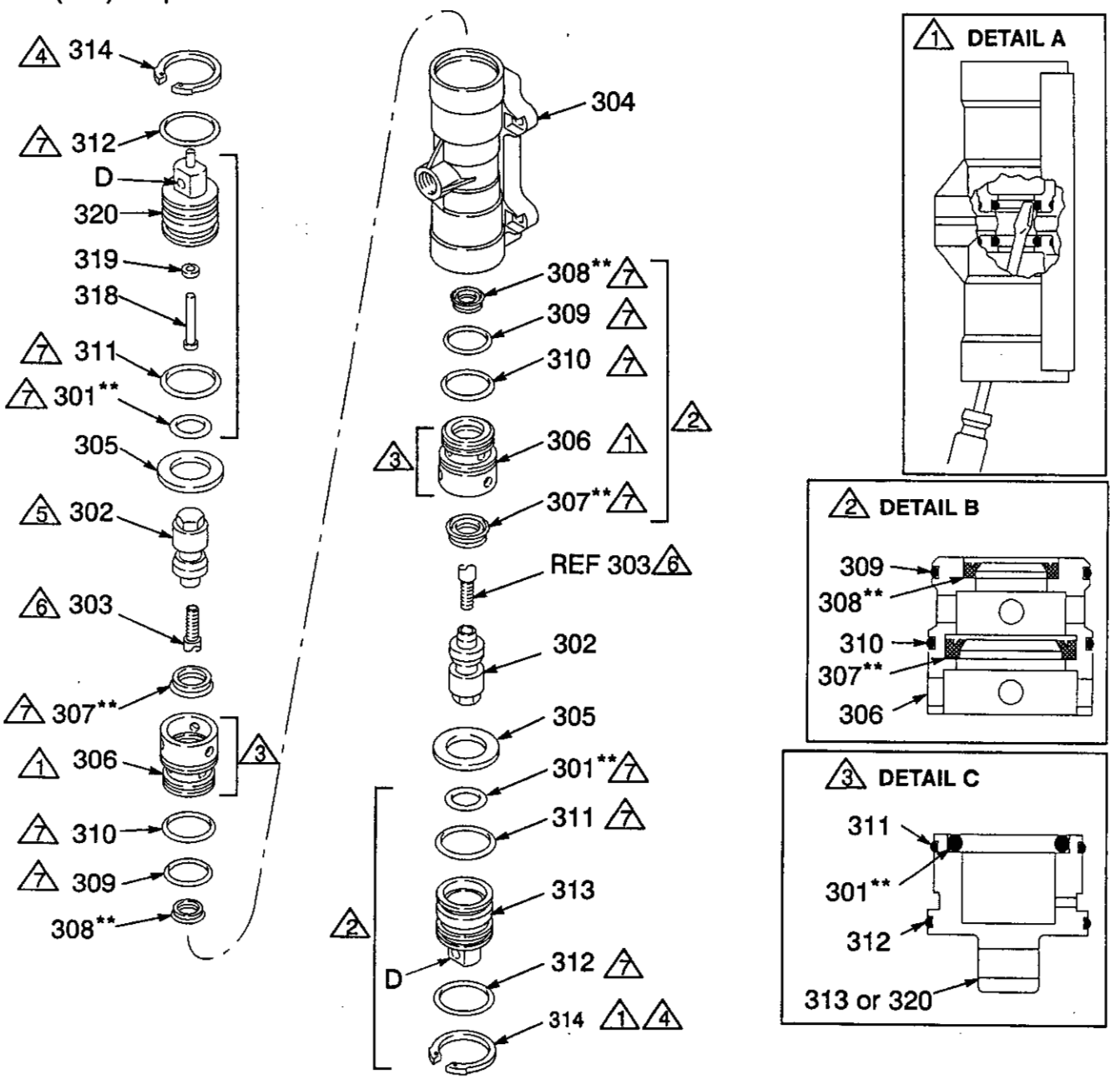
0818

8. Apply one drop of Loctite® TL-242 (blue) to the threads at one end of the valve stem (303) and screw it into one piston (302). Guide the piston through the housing (304). Apply Loctite® to the other end of the valve stem, and install the other piston from the other side.

9. Install the washer (305) in the housing (304). Repeat for the other side.

10. Install the o-rings (301**, 311 and 312) on the cylinder (313). Press the cylinder into the housing (304). Install the retaining ring (314) flat side out. Repeat for the other side.

11. Install the director valve; align the holes in the gaskets (220) and plate (228) exactly as shown in Fig 20-1.



4 Flat side out

5 Torque to 38-42 in-lb (4.3-4.8 N.m)

6 Apply Loctite TL-242 (blue) to threads

7 Lubricate with lightweight lithium-based grease

0640

Fig 21-1

NOTE: Repair Kit 221-089 is available. Kit parts have a † behind the Ref No. Use all the parts in the kit.

NOTE: In Step 4 a 13/32 in. EZY-OUT (B) screw extractor is needed to remove the bearings (229†). Other removal methods may damage the pump housing (205).

1. Remove the grounding strip (245), the v-clamps (206) and one of the covers (201).
2. Hold the hex (A) of one plate (213) while removing the opposite plate. Pull out the diaphragm (212†) and rod. Grasp the flats of the diaphragm rod (218) and remove the other diaphragm plate (213). Remove the inner diaphragm plates (224) and diaphragm (212†).
3. Inspect the diaphragm rod (218) and replace it if it is damaged.

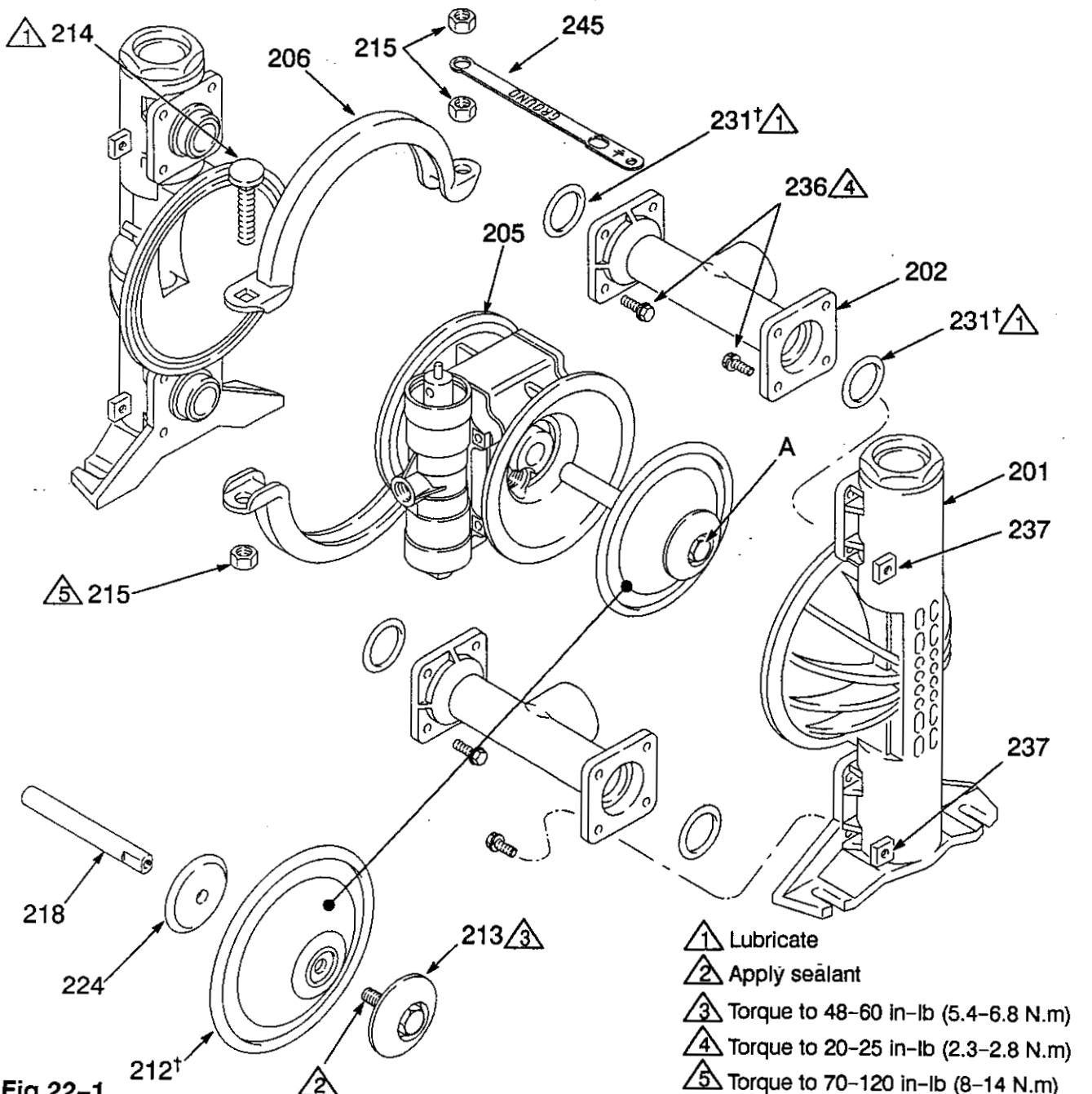


Fig 22-1

0818

4. To remove the bearings (229†), clamp the EZY-OUT (B) in a vise (C) as shown in Fig 23-1. Turn the housing (205) in the direction shown by the arrows.

5. Pull the seal (230) out of the housing (205) using a pick. Repeat for the other side. See Fig 23-1.

6. Clean all parts. Inspect the parts replace any worn ones.

7. Install the u-cup seals (230†) so the lips of the seals *face out* of the housing (205). Install the bearings (229†) so the holes face out of the housing. See Fig 23-1.

8. Continue reassembling the pump until the rod (218) is installed. Follow all notes in Fig 22-1.

9. Assemble the diaphragm (212†) and diaphragm plates (224 and 213) ***exactly*** as shown in Fig 23-2.

10. Torque the diaphragm plates (213) into the diaphragm rod (218) as indicated. Continue reassembling the pump, following the notes in Fig 22-1.

11. Before installing the grounding strip, tighten the screws (214) and nuts (215) on both sides of the clamps (206). Torque as indicated in Fig 22-1. Install the grounding strip (245).

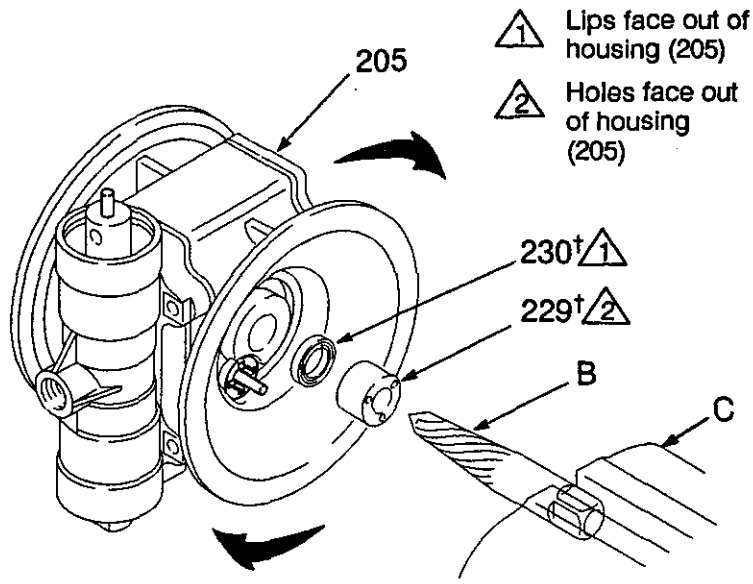
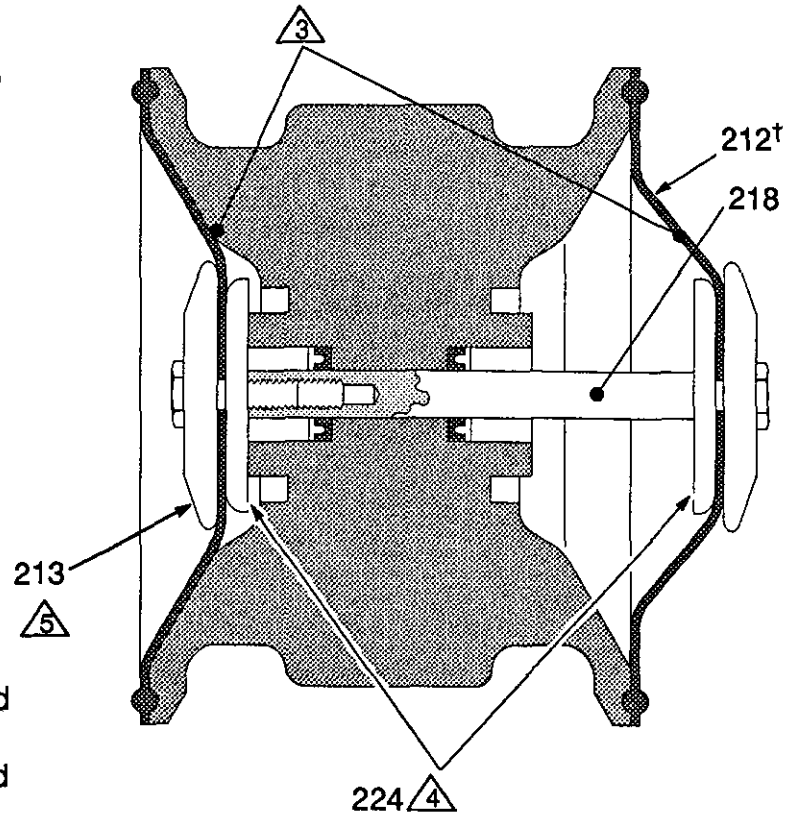


Fig 23-1 0820



3 The words "AIR SIDE" on diaphragm (212) must face into the pump housing

4 Flat side of plates (224) must face center of pump

5 Torque to 48-60 in-lb (5.4-6.8 N.m)

Fig 23-2 0862

REPAIR - PILOT VALVE

NOTE: Repair Kit 221-087 is available. Kit parts are marked with a ‡ after the Ref No. Use all the parts in the kit.

NOTE: Tool 183-899 is available to ease removing the pilot valve (208).

1. With the diaphragms removed (see page 20), use a screwdriver or Tool 183-899 to unscrew the valve nut (208). Remove the valve parts.
2. Clean all parts. Inspect the parts and replaced any worn ones.
3. Reassemble. Follow all notes in Fig 24-1.

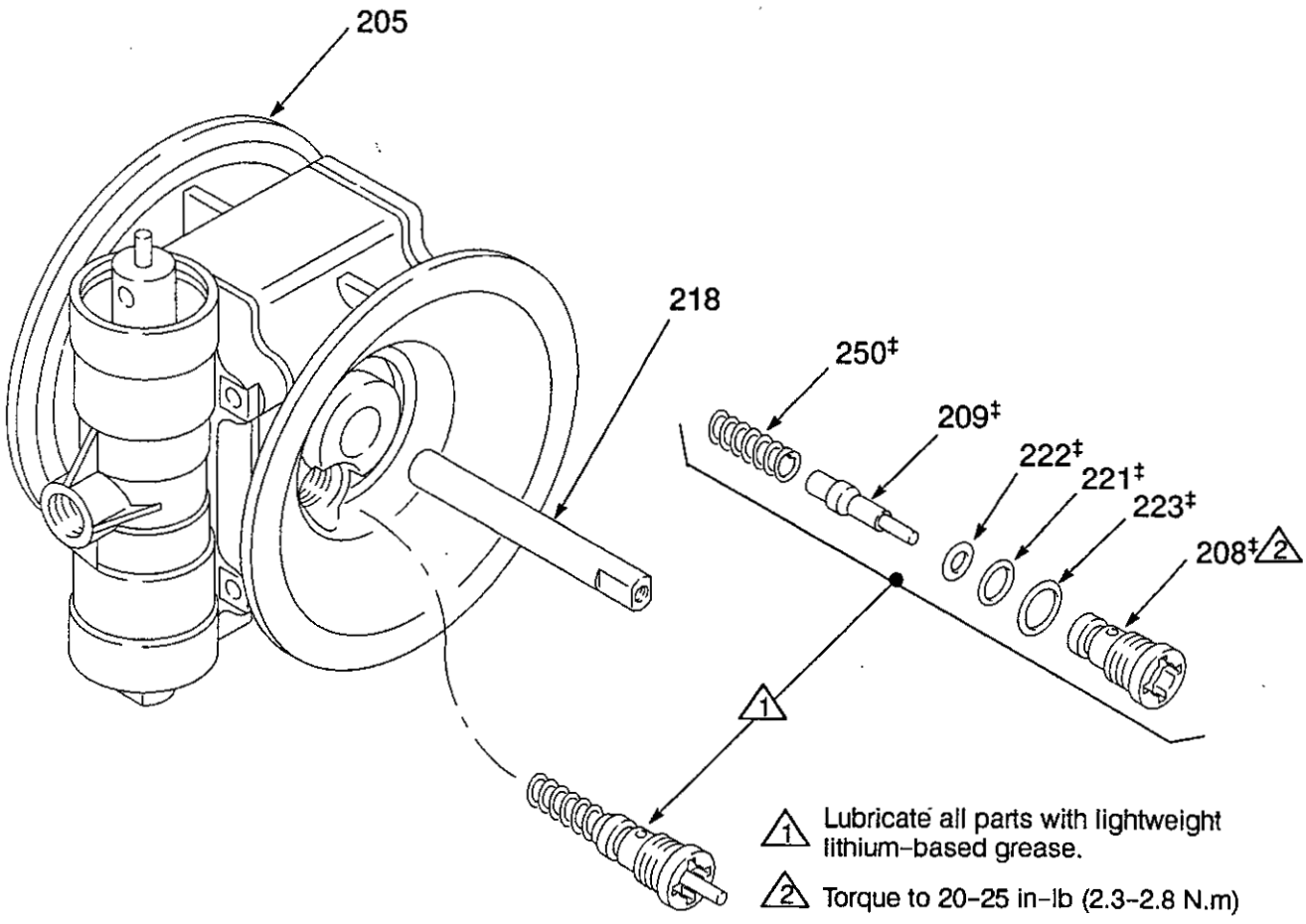
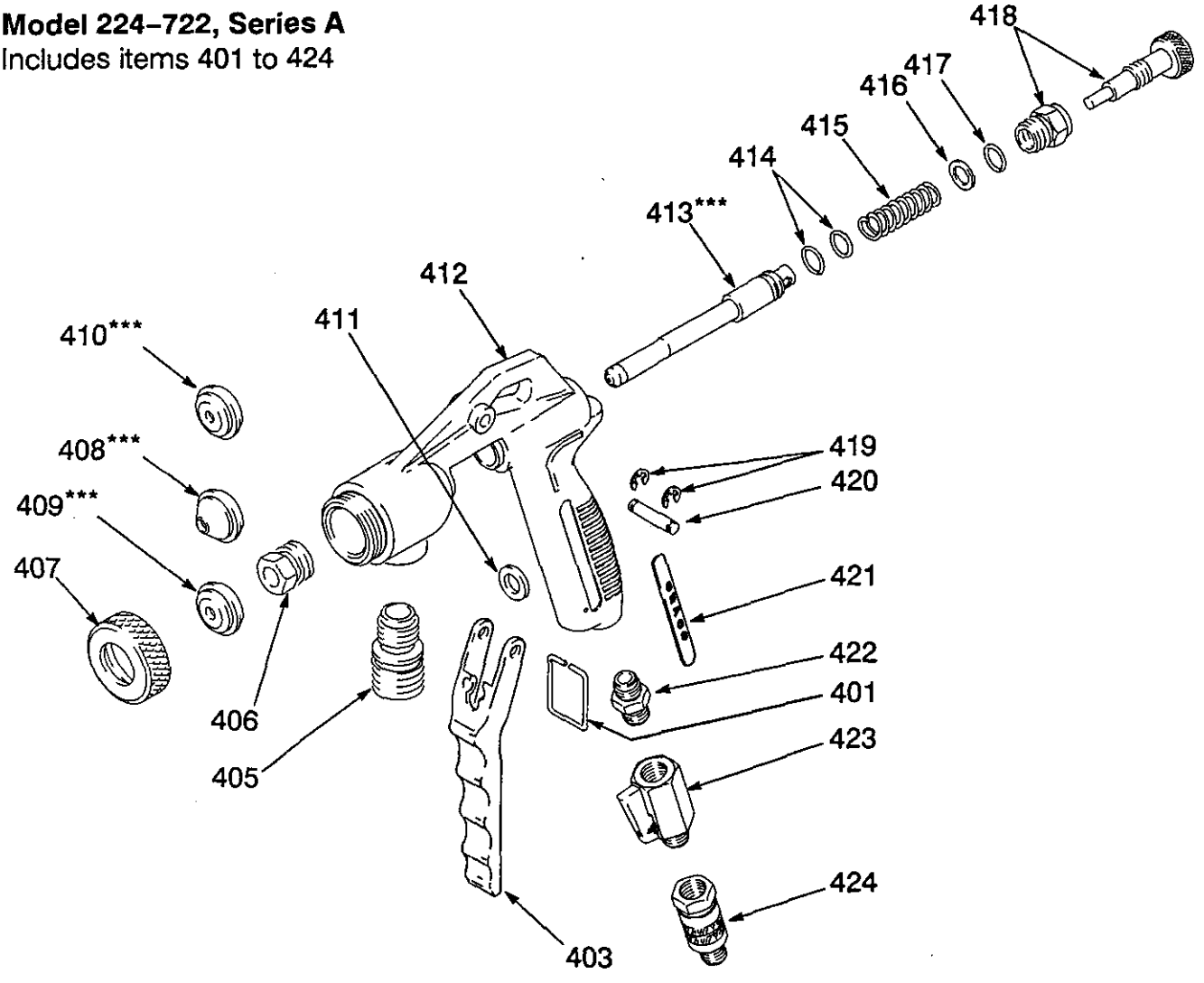


Fig 24-1 0822

Model 224–722, Series A
Includes items 401 to 424



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Ref No	Part No.	Description	Qty
401	187–391	BAIL, trigger	1
403	111–550	TRIGGER	1
405	111–558	FITTING, fluid inlet	1
406	111–549	PACKING NUT	1
407	111–548	RETAINING NUT, nozzle	1
408***	111–547	5/16" TIP	1
409***	111–546	1/4" TIP	1
410***	111–545	3/16" TIP	1
411	187–397	WASHER, flat	1
412	111–544	GUN BODY	1
413***	224–714	NEEDLE	1
414	111–561	O–RING	2
415	111–551	SPRING	1
416	111–553	WASHER	1
417	154–594	O–RING	1

Ref No	Part No.	Description	Qty
418	111–555	FLUID REGULATOR	1
419	111–559	RETAINING RING	2
420	111–552	PIN	1
421	187–419	LABEL, identification	1
422	111–542	FITTING, air inlet	1
423	111–560	BALL VALVE	1
424	111–543	AIR RESTRICTOR VALVE	1

REPAIR KIT

Keep a repair kit on hand to reduce down time. Purchase kits separately.

Gun Repair Kit 224–718
Includes items marked with *** behind the Ref No.

PUMP - PARTS LIST

Model 224-726
Includes items 201 to 258

Ref No	Part No.	Description	Qty
201	181-922	COVER	2
202	181-924	MANIFOLD	2
203*	187-449	GUIDE, ball	4
204*	186-692	STOP, ball	4
205	181-923	HOUSING, pump	1
206	183-006	V-CLAMP	4
207	110-347	SCREW, hex washer hd, 1/4-20 x 3 ¾"	4
208‡	223-856	NUT, valve, acetal	2
209‡	186-299	STEM, valve	2
212†	187-313	DIAPHRAGM	2
213□	186-241	PLATE, diaphragm	2
214	108-945	BOLT, sq neck, rd hd, 5/16-18	4
215	108-946	NUT, hex, 5/16	6
216	110-760	MUFFLER	1
217*	108-944	BALL, ¾"	4
218	186-759	ROD, diaphragm	1
220	183-268	GASKET	1
221‡	155-685	O-RING	2
222‡	154-741	O-RING	2
223‡	108-632	O-RING	2
224	186-265	PLATE, diaphragm	2
225	181-930	COVER, exhaust	1
226	185-040	PLUG	4
229†	183-019	BEARING	2
230†	108-641	PACKING, u-cup	2
231†	109-197	O-RING	4
235	224-015	VALVE, director *See parts list on page 28*	1
236	108-630	SCREW, hex washer hd 10-24 x 5/8"	16
237	108-947	NUT, hex, 10-24	16
238	108-948	NUT, sq, 1/4-20	4
239	183-057	GASKET, cover	1
245	187-019	STRIP, grounding	1
246	187-450	LABEL, identification	1
247◇	183-656	LABEL, warning	1
250‡	108-980	SPRING, compression	1
253□	187-647	SPACER	4
258*	105-400	O-RING	8

◇ *Extra Warning labels available at no charge*

□ *Keep extra on hand to reduce down time.*

REPAIR KITS

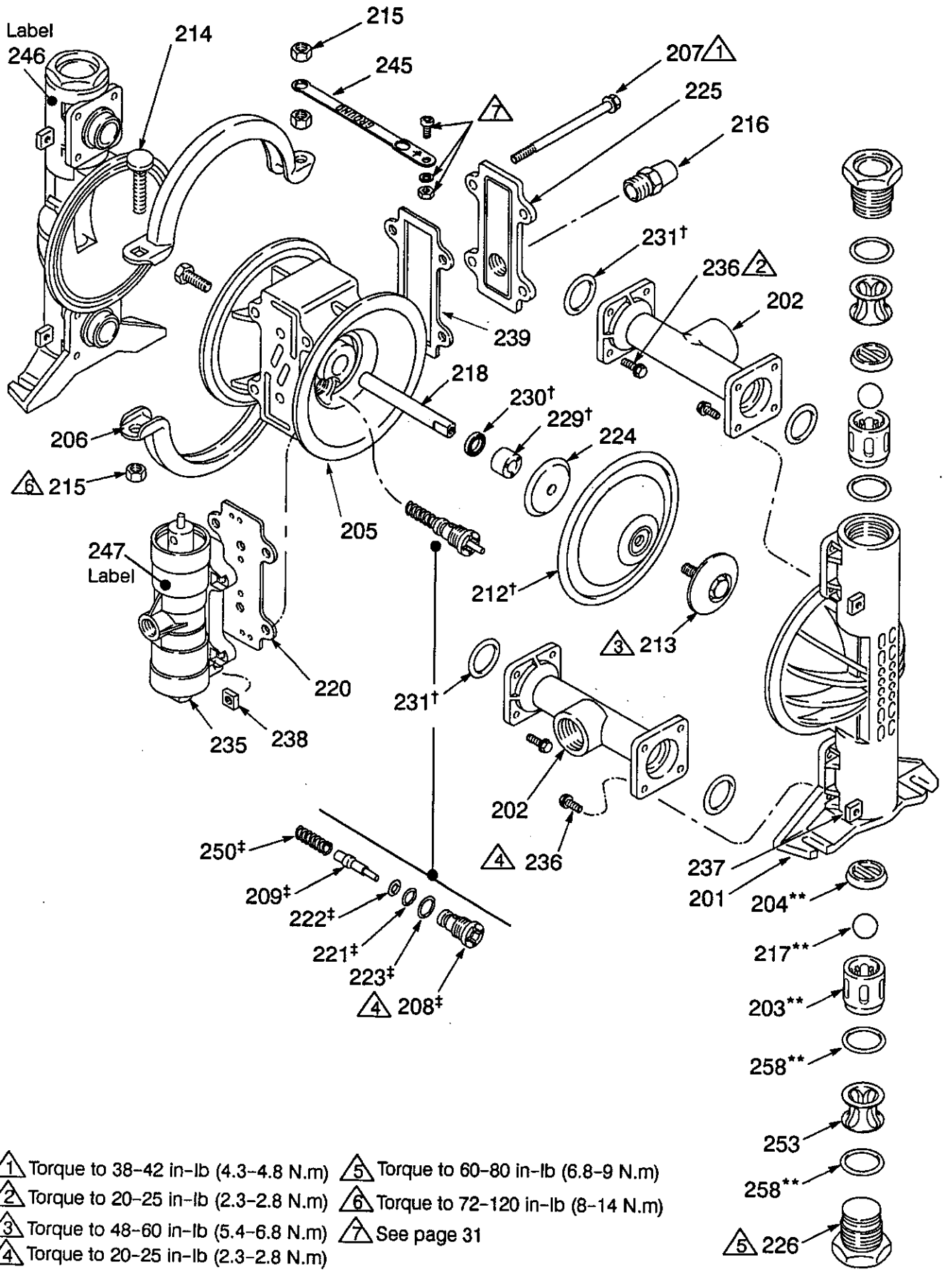
Keep a repair kit on hand to reduce down time. Purchase kits separately.

Diaphragm Kit 224-015
Includes items marked with † behind the Ref. No.

Pilot Valve Kit 221-087
Includes items marked with ‡ behind the Ref. No.

Ball Check Kit 224-970
Includes items marked with * behind the Ref. No.

PUMP – PARTS DRAWING



△1 Torque to 38–42 in-lb (4.3–4.8 N.m)
△2 Torque to 20–25 in-lb (2.3–2.8 N.m)
△3 Torque to 48–60 in-lb (5.4–6.8 N.m)
△4 Torque to 20–25 in-lb (2.3–2.8 N.m)
△5 Torque to 60–80 in-lb (6.8–9 N.m)
△6 Torque to 72–120 in-lb (8–14 N.m)
△7 See page 31

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DIRECTOR VALVE - PARTS LIST & DRAWING

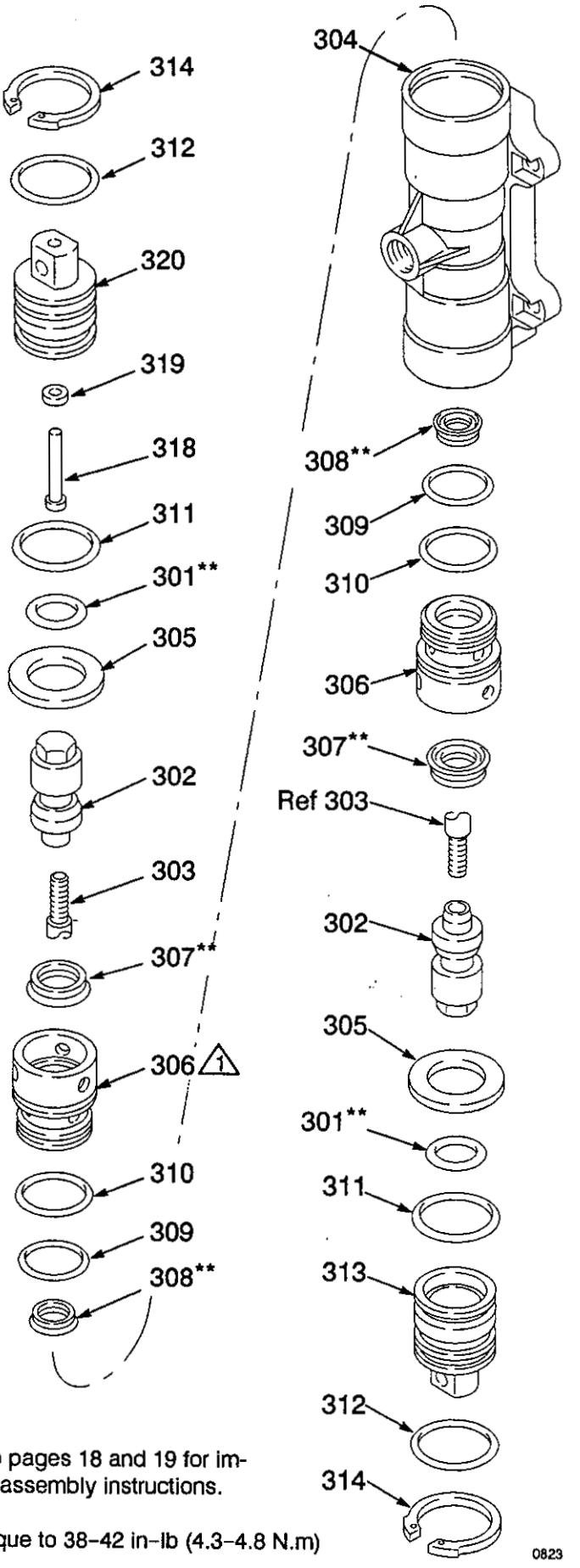
Model 224-015
Includes items 301 to 320

Ref No	Part No.	Description	Qty
301**	159-076	O-RING	2
302	183-265	PISTON	2
303	183-266	STEM, valve	1
304	185-612	HOUSING, valve	1
305	186-013	WASHER	2
306	186-014	SPACER	2
307**	108-732	PACKING, u-cup	2
308**	108-731	PACKING, u-cup	2
309	110-066	O-RING	2
310	109-072	O-RING	2
311	166-080	O-RING	2
312	105-399	O-RING	2
313	183-267	CYLINDER	1
314	110-928	RING, retaining, internal	2
318	186-641	PIN	1
319	111-046	SEAL	1
320	186-640	CYLINDER	1

REPAIR KIT

Keep a repair kit on hand to reduce down time. Purchase kits separately.

Director Valve Kit 221-090
Includes items marked with ** behind the Ref No.



Refer to pages 18 and 19 for important assembly instructions.

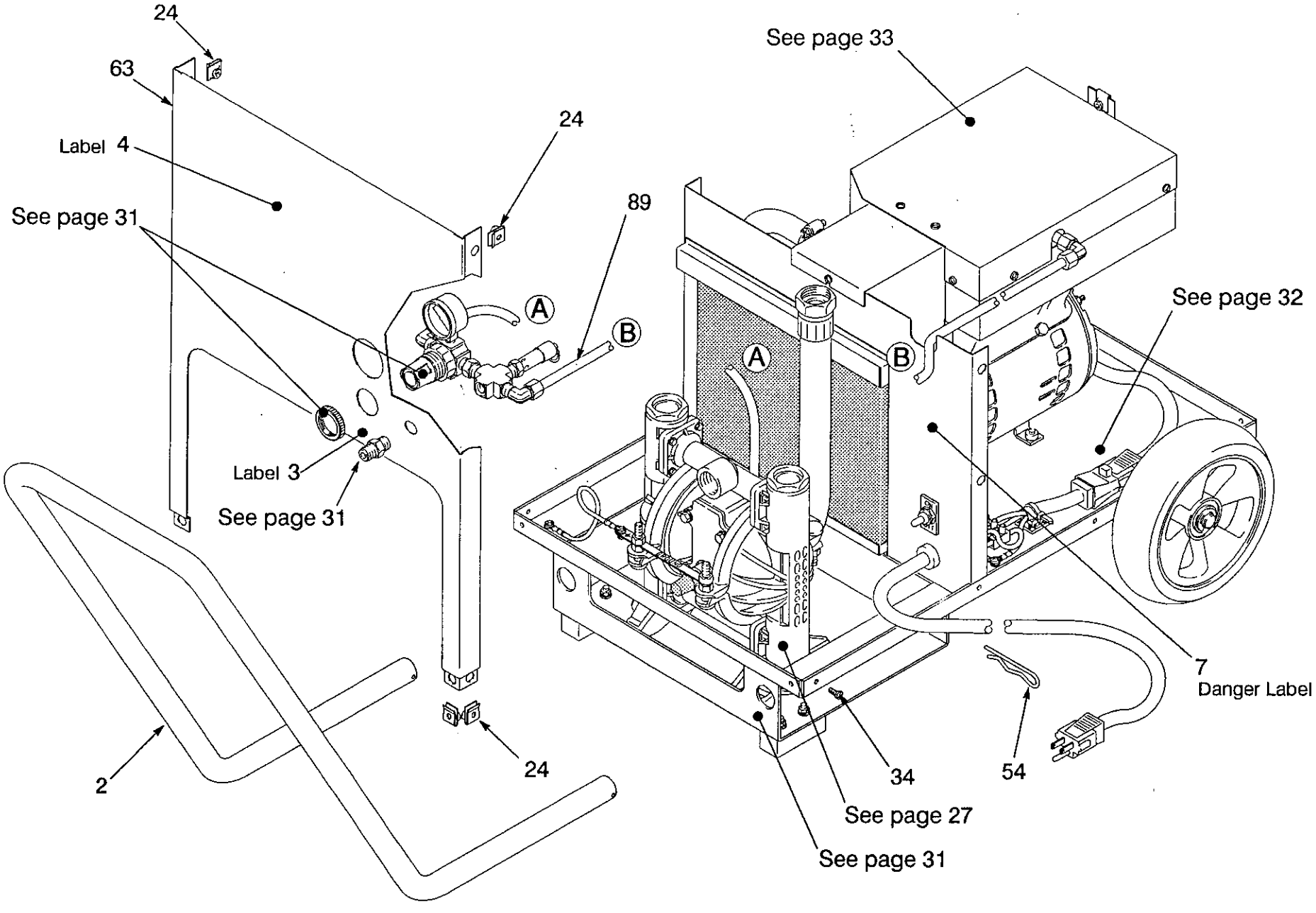
⚠1 Torque to 38-42 in-lb (4.3-4.8 N.m)

0823

Model 231–182, Series A

Ref No	Part No.	Description	Qty
1	224-722	TEXTURE SPRAY GUN	1
2	187-382	HANDLE	1
3	187-451	DESIGNATION LABEL	1
4	187-643	IDENTIFICTION LABEL, front	1
5	187-641	IDENTIFICATION LABEL, right	1
6	187-642	IDENTIFICATION LABEL, left	1
7◇	187-452	DANGER LABEL	1
8	224-987	POWER CORD, 14 awg	1
9	224-726	DIAPHRAGM PUMP	1
10	187-632	NIPPLE, special	1
11	224-981	HOSE SET	
		Includes items 11a, 11b	1
11a	224-978	.AIR HOSE, 3/8" ID x 50'(15 m)	1
11b	224-979	.FLUID HOSE, ¾" ID x 50'(15 m)	1
12	176-762	NUT, 1½"-18	1
14	104-010	O-RING	1
15	187-398	OUTLET FITTING	1
16	111-505	COVER STRAINER	1
17	187-414	HOPPER	1
18	111-563	ELBOW, 90° compression	2
19	187-416	UPPER DUCT	1
20	100-333	CAPSCREW, ¼-20 x ½"	4
21	102-040	LOCKNUT, ¼-20	12
22	103-473	WIRE TIE STRAP	1
23	187-415	LOWER DUCT	1
24	111-499	SELF-RETAINING NUT	34
25◇	187-453	CAUTION LABEL	1
26	224-975	REAR PANEL	1
29	187-606	TERMINAL COVER PLATE	1
30	111-593	GROUNDING SCREW	1
31	224-985	AIR COMPRESSOR, 3.5 HP	1
32	224-778	POWER CORD, motor	1
33	224-790	POWER CORD, unit	1
34	110-037	SCREW, pan head, 10-24 x ½"	44
35◇	186-620	GROUND SYMBOL LABEL	2
36	100-718	LOCKWASHER, #10	3
37	154-636	WASHER, 0.630" ID	4
38	101-242	RETAINING RING, external	2
39	111-481	WHEEL	2
40	224-777	GROUND CONDUCTOR	1
41	107-436	TERMINAL STRIP	1
42	187-393	SIDE PANEL, right	1
43	187-434	FOAM SPACER	1
44	224-986	COMPRESSOR FAN	1
45	111-591	FAN WASHER	1
46	111-584	SCREW, hex shoulder	1
47	105-679	TOGGLE SWITCH	1
48	224-738	BLOWER DUCT	1
49	187-601	AIR DEFLECTOR	1
50	105-658	LOCKING RING	1
51	105-774	ON/OFF SWITCH PLATE	1
52	105-659	TOGGLE BOOT	1
53	104-514	STRAIN RELIEF BUSHING	1
54	111-576	HITCH PIN CLIP	2
55	187-433	INLET HOSE	1
56	109-059	RUBBER PAD	2
57	100-644	CAPSCREW, sch, ¼-20 x ¾"	4
58	111-570	CARRIAGE BOLT, ¼-20 x ¾"	4
59	100-527	WASHER	4
60	100-179	NUT, 10-24	1
61	224-792	GROUND CONDUCTOR	1
62	111-587	FILTER, air compressor	1
63	187-385	FRONT PANEL	1
64	187-640	SCREEN, filter	1
65	111-589	RETAINING RING	2
66	187-444	FILTER DUCT	1
67	111-494	FILTER, air cooling	1
68	187-384	SIDE PANEL, left	1
69	187-445	HOSE BARB	2
70	224-753	FILTER PANEL	1
71	187-480	AIR COOLER	1
72	187-463	NUT, special	2
73	111-583	VIBRATION PAD, motor	3
74	111-597	SCREW, hex washer head, ¼-20 x ½"	2
75	224-974	MOTOR MOUNTING SCREW	2
77	111-585	VIBRATION PAD, compressor	2
78	111-598	AIR PRESSURE GAUGE, 1/8 npt, 0-160 psi(0-11 bar)	1
79	103-347	SAFETY RELIEF VALVE, ¼-18 npt, 100 psi(6.9 bar) relief pressure	1
80	111-566	ELBOW, 90° compression	3
81	162-453	NIPPLE, ¼ npsm x ¼ npt	1
82	110-209	AIR REGULATOR NUT	1
83	110-318	AIR REGULATOR See manual 308-167 for parts	1
84	187-644	HOSE, air intake	1
85	103-927	HOSE CLAMP, 1¼" max.	1
86	107-439	SCREW, hex washer head, 10-32 x ¾"	2
87	102-920	LOCKNUT, 10-32	2
88	187-639	CAUTION LABEL	1
89	187-430	AIR TUBE, 17" /432 mm	1
90	111-573	SLEEVE	1
91	111-572	COMPRESSION NUT	1
92	187-637	COPPER TUBE	1
93	111-565	COMPRESSION UNION	1
94	187-431	AIR TUBE, u-shaped	1
95	111-562	NIPPLE, ¼ npt	1
96	111-567	CROSS PIPE, ¼ npt	1
97	111-594	TIE HOLDER	1
98	111-595	WIRE CLIP	1
99	111-596	SCREW, pnh, 10-24 x ¼"	2
100	187-432	AIR TUBE, 14" (356 mm)	1
101	187-446	FILTER DUCT	1
102	224-721	CART	1
103	224-779	ELECTRICAL CONDUCTOR	1
108	100-139	PIPE PLUG, headless, 1/8	1
109	187-439	MOUNTING BRACKET	1
110	100-705	SCREW, pnh, 6-32 x 5/8"	2
111	103-837	SCREW, flh, 8-32 x 3/8"	1

◇ *Replacement Danger, Caution and Instruction labels are available at no charge.*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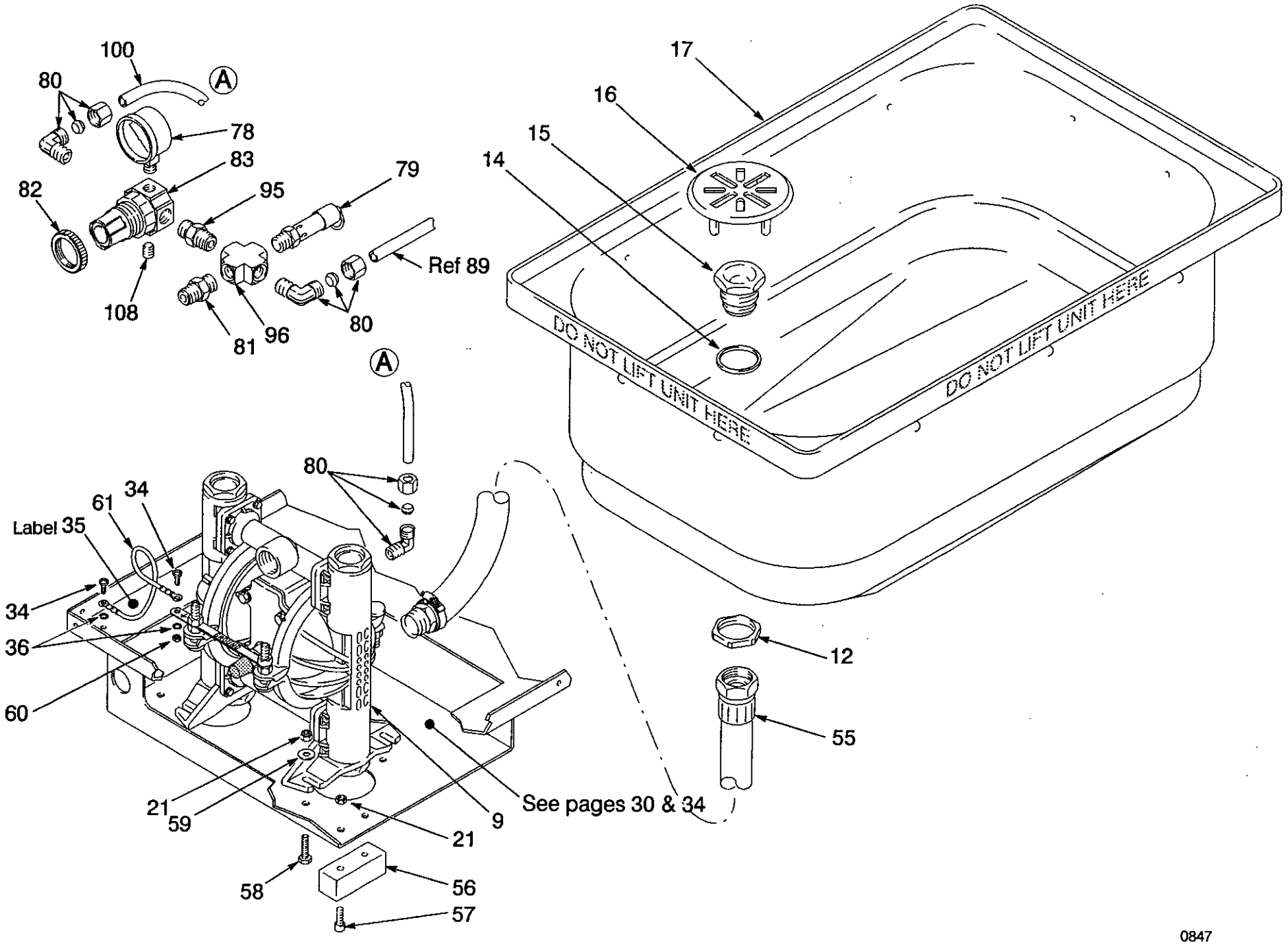
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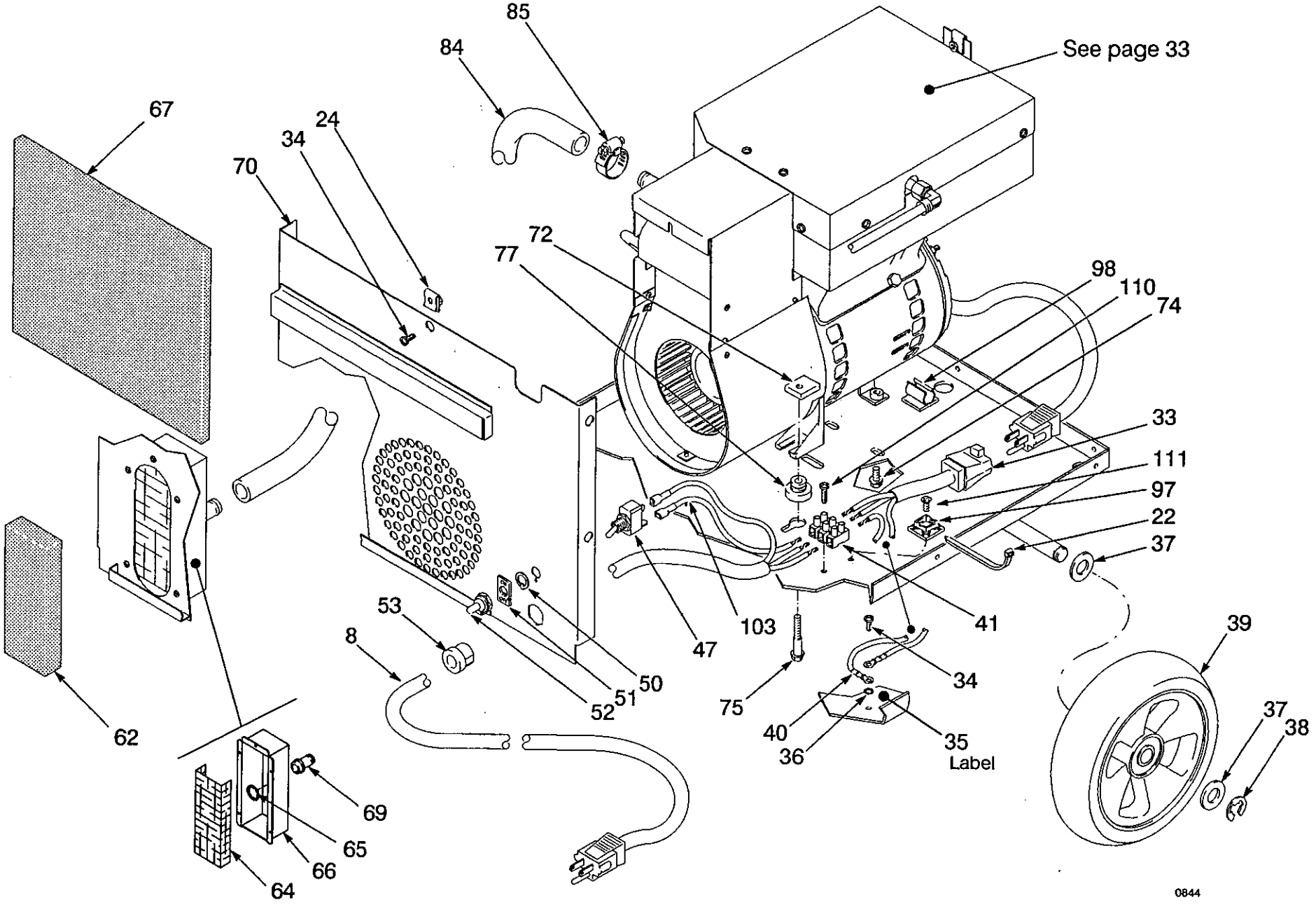
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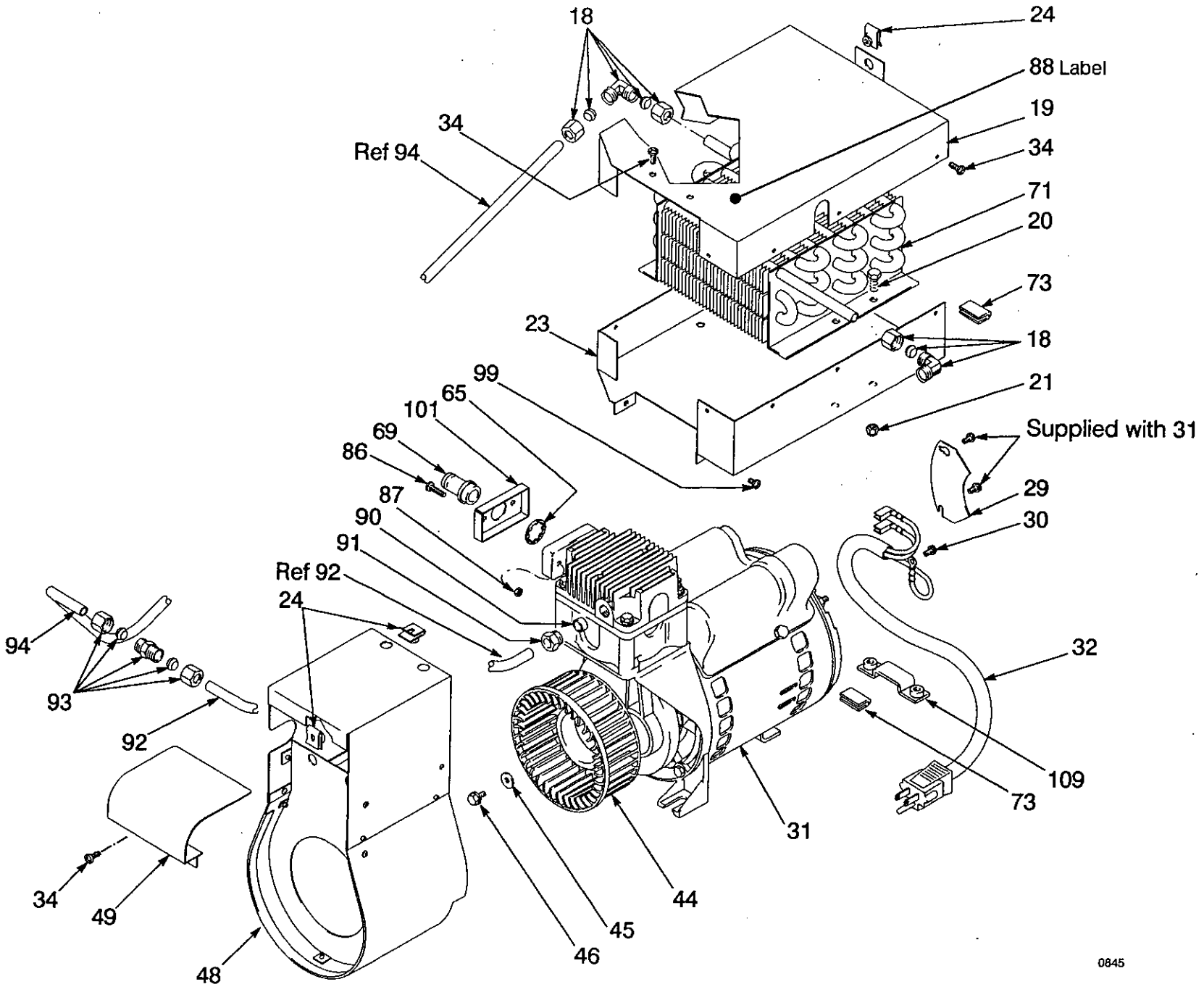
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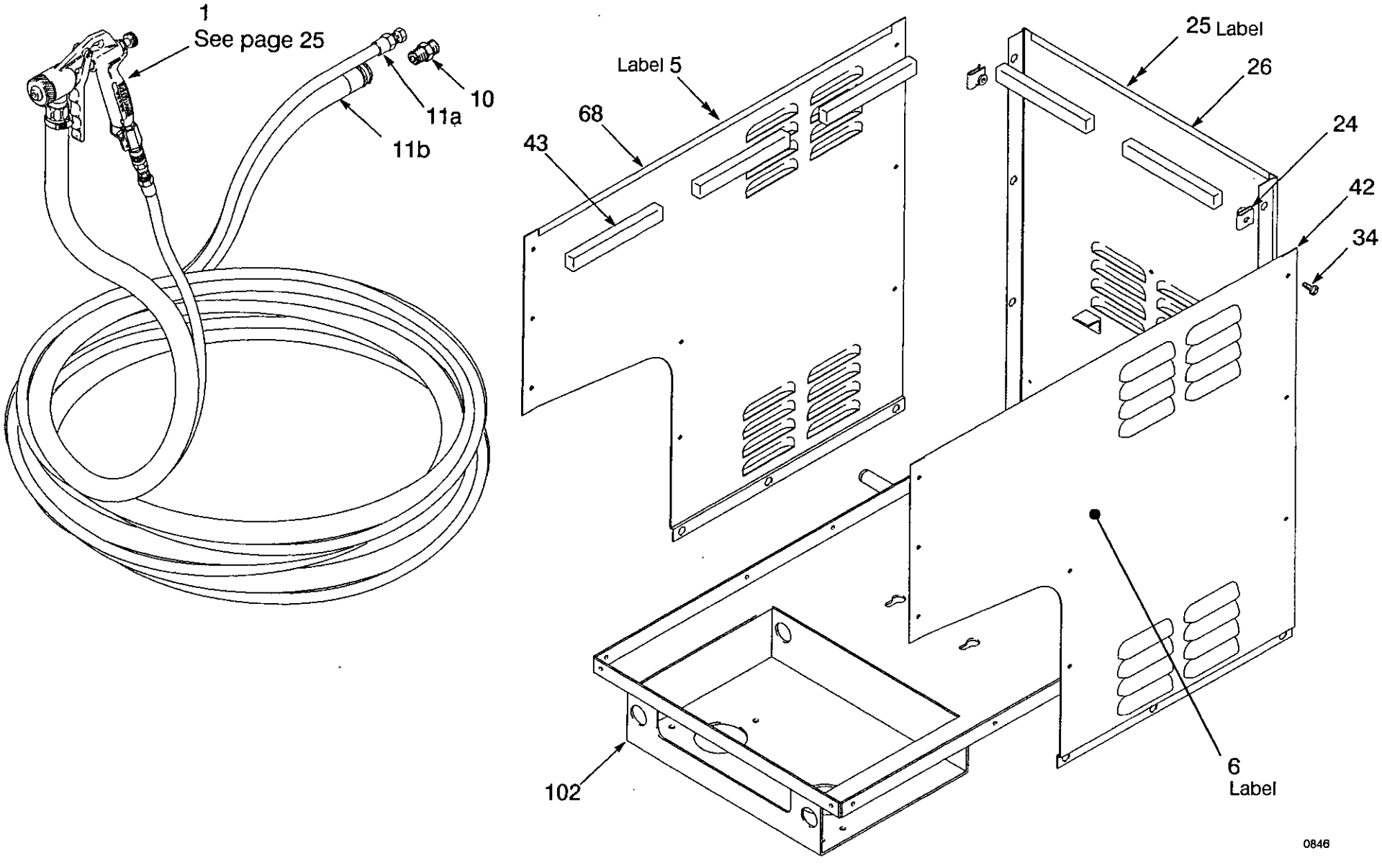
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TECHNICAL DATA

Maximum Air and Fluid Working Pressure	100 psi (6.9 bar)
Air Pressure Operating Range	25–100 psi (1.75–7 bar)
Compressor Specifications	AC brushless open motor, thermally protected, oilless 110/220 Volt, 15/7.5 Amp
Compressor Air Consumption	11.9 displacement SCFM 8.5 scfm at 40 psi (0.238 m^3/min at 2.8 bar) 6.8 scfm at 90 psi (0.19 m^3/min at 6.3 bar)
Maximum Delivery with Texture Material	1–1.5 gpm (3.8–5.7 lpm)
Hopper Capacity	16 gallons (60.8 liters)
Dimensions	
Length	40.5 in. (114 mm) with handle 28 in. (711 mm) without handle
Width	22.25 in. (565 mm)
Height	27 in. (686 mm)
Weight	
System w/o hoses or gun	120 lb (54 kg)
System with hoses and gun	150 lb (67 kg)
Gun	35 oz (1000 gr)
Wetted Parts	Acetal, Glass-Filled Acetal, Buna-N, Aluminum, Brass

ACCESSORIES

Must be purchased separately.

224-980	**Fluid Hose**, 1 in. ID x 50 ft. (13 ID mm x 15 m)	**187-633**	**1 in. Gun Adapter** For use with 1 in. fluid hose
224-982	**Air And Fluid Hose Set** Includes 1 in. ID fluid hose 224-980 and 3/8 in. ID air hose 224-978		

CONTENTS

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-Graco 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 to an authorized Graco distributor for verification of 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 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.

GRACO PHONE NUMBERS

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:

1-800-328-0211 Toll Free

FOR TECHNICAL ASSISTANCE, service repair information or assistance regarding the application of Graco equipment:

1-800-543-0339 Toll Free

Factory Branches: Atlanta, Chicago, Dallas, Detroit, Los Angeles, West Caldwell (N.J.)
Subsidiary and Affiliate Companies: Canada; England; Korea; Switzerland; France; Germany; Hong Kong; Japan

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

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Use only ***GENUINE GRACO PARTS AND ACCESSORIES.***