# **INSTRUCTIONS-PARTS LIST**



This manual contains important warnings and information. READ AND RETAIN FOR REFERENCE



Rev. S Supersedes P and PCN R

306-517

# 50:1 Ratio Fire-Ball Pumps

### FOR LUBRICATING PRODUCTS ONLY

8000 psi (560 bar) Maximum Fluid Working Pressure 160 psi (11 bar) Maximum Air Working Pressure

#### CHASSIS LUBE PUMPS With Lifetime Guarantee\*

- This guarantee is offered to the original purchaser for his entire lifetime. It covers all Fire-Ball and President Series lubrication pumps manufactured by Graco Inc., USA, when used in pumping non-corrosive and non-abrasive lubricants and greases.
- 2. Graco will repair or replace such pumps free of charge when inspection by Graco reveals defective materials or workmanship. Normal wear of packings and seals is not considered to be defective workmanship.
- 3. Graco will repair or replace such pumps at a reasonable charge if inspection by Graco reveals that damage was the result, in whole or in part, of causes other than defective materials or workmanship.
- 4. Pumps for which guarantee claims are made must be returned prepaid to the factory, factory branch or service agency accompanied by proof of purchase, establishing the owner as the original purchaser.
- 5. The foregoing is in lieu of all other warranties, expressed or implied, and the manufacturer neither assumes nor authorizes any person to assume for it any other obligation or liability in connection with said equipment.

\*30 years to corporations and purchasers other than natural persons. See page 6 for available models.

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These systems are designed to be used only in pumping non-corrosive and non-abrasive lubricants and greases. Any other use of the system can cause unsafe operating conditions and result in component rupture, fire, or explosion, which can cause serious injury, including fluid injection.



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### Terms

Be sure you read and understand each of these terms before reading the rest of the manual.

**NOTE:** Gives additional information or helpful hints.

**DISPENSE:** To release fluid through the dispensing valve, which allows the fluid to flow out in a steady or metered stream.

**DISPENSING VALVE:** Any fluid dispensing device which can be triggered on and off.

**FLEXIBLE NOZZLE:** A flexible rubber hose which extends from the dispense valve to a non-drip tip. Normally used for dispensing automatic transmission fluid.

**RIGID NOZZLE:** A rigid tube which extends from the dispense valve to a non-drip tip. Normally used for dispensing motor oil, gear oil, etc.

**NON-DRIP TIP:** A manually operated twist-type valve tip used to stop flow from the dispense nozzle when dispensing is completed.

# Symbols

#### Warning Symbol

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This symbol alerts you to the possibility of serious injury or death if you do not follow the instructions.

### **Caution Symbol**

### **A** CAUTION

This symbol alerts you to the possibility of damage to or destruction of equipment if you do not follow the instructions.

	EQUIPMENT MISUSE HAZARD
INSTRUCTIONS	Equipment misuse can cause the equipment to rupture or malfunction and result in serious injury.
	This equipment is for professional use only.
	• Read all instruction manuals, tags, and labels before operating the equipment.
	<ul> <li>Use the equipment only for its intended purpose. If you are not sure, call Graco Technical Assistance at 1–800–543–0339.</li> </ul>
	• Do not alter or modify this equipment.
	Check equipment daily. Repair or replace worn or damaged parts immediately.
	<ul> <li>Do not exceed the maximum working pressure of the lowest rated component in your system. This equipment has a 8000 psi (560 bar) maximum working pressure at 160 psi (11 bar) maximum incoming air pressure.</li> </ul>
	• Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the <b>Tech-nical Data</b> section of all equipment manuals. Read the fluid and solvent manufacturer's warn- ings.
	Handle hoses carefully. Do not pull on hoses to move equipment.
	<ul> <li>Route hoses away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not expose Graco hoses to temperatures above 82°C (180°F) or below –40°C (–40°F).</li> </ul>
	• Do not lift pressurized equipment.
	• Comply with all applicable local, state, and national fire, electrical, and safety regulations.

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#### **INJECTION HAZARD**

Spray from the dispensing valve, leaks or ruptured components can inject fluid into your body and cause extremely serious injury, including the need for amputation. Fluid splashed in the eyes or on the skin can also cause serious injury.

- Fluid injected into the skin might look like just a cut, but it is a serious injury. **Get immediate** medical attention.
- Do not point the dispensing valve at anyone or at any part of the body.
- Do not put your hand or fingers over the end of the dispensing valve.
- Do not stop or deflect leaks with your hand, body, glove or rag.
- Use only extensions and no-drip tips which are designed for use with your dispensing valve.
- Do not use a low pressure flexible nozzle with this equipment.
- Follow the **Pressure Relief Procedure** on page 9 if the grease fitting coupler clogs and before cleaning, checking or servicing the equipment.
- Tighten all fluid connections before operating the equipment.
- Check the hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. Do not repair high pressure couplings; you must replace the entire hose.
- Fluid hoses must have spring guards on both ends, to help protect them from rupture caused by kinks or bends near the couplings.

### TOXIC FLUID HAZARD

Hazardous fluids or toxic fumes can cause serious injury or death if splashed in the eyes or on the skin, inhaled, or swallowed.

- Know the specific hazards of the fluid you are using.
- Store hazardous fluid in an approved container. Dispose of hazardous fluid according to all local, state and national guidelines.
- Always wear protective eyewear, gloves, clothing and respirator as recommended by the fluid and solvent manufacturer.

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Kells.	FIRE AND EXPLOSION HAZARD
	Improper grounding, poor ventilation, open flames or sparks can cause a hazardous condition and result in a fire or explosion and serious injury.
	• Ground the equipment and the object being sprayed. Refer to <b>Grounding</b> on page 8.
	<ul> <li>If there is any static sparking or you feel an electric shock while using this equipment, stop spraying immediately. Do not use the equipment until you identify and correct the problem.</li> </ul>
	<ul> <li>Provide fresh air ventilation to avoid the buildup of flammable fumes from solvents or the fluid being sprayed.</li> </ul>
	• Keep the spray area free of debris, including solvent, rags, and gasoline.
	• Before operating this equipment, electrically disconnect all equipment in the spray area.
	• Before operating this equipment, extinguish all open flames or pilot lights in the spray area.
	• Do not smoke in the spray area.
	<ul> <li>Do not turn on or off any light switch in the spray area while spraying or while there are any fumes in the air.</li> </ul>
	• Do not operate a gasoline engine in the spray area.
	MOVING PARTS HAZARD
	Moving parts, such as the air motor piston, can pinch or amputate your fingers.
	• Do not operate the pump with the air motor plates removed.
	• Keep clear of all moving parts when starting or operating the pump.
	• Before servicing the equipment, follow the <b>Pressure Relief Procedure</b> on page 9 to prevent the equipment from starting unexpectedly.

# **Dimensional Drawings**



# Mounting Hole Layout



## **Technical Data**

Maximum Working Pressure	8000 psi (560 bar)
Fluid pressure ratio	50:1
Air operating range 40 to 1	60 psi (3 to 11 bar)
Air consumption 19	cfm (0.532 m3/min)
at 0.25 g	gpm (0.95 liter/min)
	at 100 psi (7 bar)
Pump cycles per gallon	
Pump cycles per liter	80
Maximum recommended pump spee 0.25 g	ed . 76 cycles/min gpm (0.95 liter/min)
Wetted parts Steel	, Brass, Aluminum, Iylon, Nitrile rubber
Approximate weight	22 lb (10 Kg)

PTFE ® is a registered trademark of the DuPont Co. Loctite® is a registered trademark of the Loctite Corp.

## Installation



#### Mounting

- 1. Plan the mounting layout for easy operator access to the pump air controls, sufficient room to change drums and a secure mounting platform.
- 2. If using a follow plate (H), remove the drum cover. Scoop the material to the center of the drum to make the surface concave. Place the plate on the material. Guide the pump foot valve through the plate.
- 3. Mount the pump to the drum cover or other suitable mounting device.
- 4. For ease in changing drums, install a pump elevator.

#### Air and Fluid Line and Accessories

Refer to Figure 1 above.

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The bleed-type master air valve (J) is required in your system to help reduce the risk of serious injury from moving parts if you are adjusting or repairing the pump. Locate the valve close to the pump, and downstream from the air regulator. The bleed valve relieves air trapped between it and the air motor after the air supply is shut off. Trapped air can cause the air motor to cycle unexpectedly, causing serious injury.

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Do not hang the air accessories directly on the air inlet. The fittings are not strong enough to support the accessories and may cause one or more to break. Provide a bracket on which to mount the accessories.

**NOTE:** Install the air line accessories in the order shown in Figure 1.

- 1. Install a pump runaway valve (G) to shut off the air to the pump if the pump accelerates beyond the pre-adjusted setting. A pump which runs too fast can be seriously damaged.
- 2. Install an air line lubricator (F) for automatic air motor lubrication.
- Install a bleed-type master air valve (J) to relieve air trapped between the valve and the motor (see WARNING at left). Order Part No. 107–142.
- 4. Install the air regulator (C) to control pump speed and pressure.
- Install an air line filter (E) to remove harmful dirt and contaminants from your compressed air supply.
- 6. Install a second bleed-type master air valve (J) upstream from all other accessories, to isolate the accessories for servicing.

# Installation

#### Grounding

Proper grounding is an essential part of maintaining a safe system.

To reduce the risk of static sparking, ground the pump. Check your local electrical code for detailed grounding instructions for your area and type of equipment. Be sure to ground all of this equipment:

- 1. *Pump:* use a ground wire and clamp as shown in Fig. 2.
- 2. *Air and fluid hoses:* use only electrically conductive hoses.
- 3. *Air compressor:* follow manufacturer's recommendations.
- 4. Fluid supply container: according to local code.
- 5. *To maintain grounding continuity when flushing or relieving pressure,* always hold a metal part of the valve firmly to the side of a grounded metal pail, then trigger the valve.

#### To ground the pump:

To ground the pump, loosen the grounding lug locknut (W) and washer (X). Insert one end of a 12 ga (1.5 mm<sup>2</sup>) minimum ground wire (Y) into the slot in lug (Z) and tighten the locknut securely. Connect the other end of the wire to a true earth ground. Order Part No. 222–011, Ground Wire and Clamp.



# Operation

#### **Pressure Relief Procedure**



#### INJECTION HAZARD

The equipment stays pressurized until pressure is manually relieved. To reduce the risk of serious injury from pressur-

ized fluid, accidental spray from the valve or splashing fluid, follow this procedure whenever you:

- are instructed to relieve pressure,
- stop dispensing,
- check, clean or service any system equipment,
- install or clean dispensing devices.
- 1. Close the pump air regulator and the bleed-type master air valve (required in your system).
- 2. Hold a metal part of the dispensing valve firmly to a grounded metal waste container and trigger the valve to relieve the fluid pressure.

#### Startup

- 1. If there are multiple pumps on the air line, close the air regulators and bleed-type master air valves to all but one pump. If there is only one pump, close its air regulator and bleed-type master air valve.
- 2. Open the master air valve from the compressor.
- 3. For the pump which is supplied with air, open the dispensing valve into a grounded metal waste container, making firm metal-to-metal contact between the container and valve. Open the bleed-type master air valve and open the pump air regulator slowly, just until the pump is running. When the pump is primed and all air has been pushed out of the lines, close the dispense valve.
- 4. If you have more than one pump, repeat this procedure for each pump.

**NOTE:** When the pump is primed, and with sufficient air supplied, the pump starts when the dispensing valve is opened and shuts off when it is closed.

5. Set the air pressure to each pump at the lowest pressure needed to get the desired results.

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#### COMPONENT RUPTURE HAZARD

The maximum working pressure of each component in the system may not be the same. To reduce the risk of overpressur-

izing any component in the system, be sure you know the maximum working pressure of each component. **Never** exceed the maximum working pressure of the lowest rated component in the system. Overpressurizing any component can result in rupture, fire, explosion, property damage, and serious injury.

To determine the fluid output pressure using the air regulator reading, multiply the ratio of the pump by the air pressure shown on the regulator gauge. For example:

50 (:1) ratio x 100 psi air = 5000 psi fluid output

[50 (:1) ratio x 7 bar air = 350 bar fluid output]

Limit the air to the pump so that no air line or fluid line component or accessory is overpressurized.

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

**NOTE:** A pump runaway valve (G) can be installed on the air line to automatically shut off the pump if it starts to run too fast.

- 7. Read and follow the instructions supplied with each component in your system.
- 8. To shut off the system, always follow the **Pressure Relief Procedure Warning**, at the left.

# Toubleshooting

### A WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the Pressure Relief Procedure on page 9.

#### WARNING A

**MOVING PARTS HAZARD** Never operate the pump with the warning plate or the identification plate removed. These plates protect your fingers from pinching or amputation by moving parts in the air motor.

Relieve pressure before you check or service any system equipment.

NOTE: Check all other possible problems and solutions before disassembling the pump.

Problem	Cause	Solution
Pump fails to operate	Inadequate air supply pressure or restricted air lines	Increase air supply; clear
	Closed or clogged valves	Open; clean
	Clogged fluid lines, hoses, valves, etc.	Clear*
	Damaged air motor	Service air motor
	Exhausted fluid supply	Refill and reprime or flush
Continuous air exhaust	Worn or damaged air motor gasket, packing, seal, etc.	Service air motor
Erratic pump operation	Exhausted fluid supply	Refill and reprime or flush
	Held open or worn intake valve or piston packings	Clear; service
Pump operates, but output low on up stroke	Held open or worn piston packings	Clear; service
Pump operates, but output low on down stroke	Held open or worn intake valve	Clear; service
Pump operates, but output low on both strokes	Inadequate air supply pressure or restricted air lines	Increase air supply; clear
	Closed or clogged valves	Open; clean
	Exhausted fluid supply	Refill and reprime or flush
	Clogged fluid lines, hoses, valves, etc.	Clear*
	Packing nut too tight	Loosen
	Loose packing nut or worn packings	Tighten; replace

\*Follow the Pressure Relief Procedure Warning on page 9 and disconnect the fluid line. If the pump starts when the air is turned on again, the line, etc., is clogged.

## **Displacement Pump Service**

#### Before you start:

- 1. Be sure you have all necessary parts on hand. If using a repair kit, use all the parts in the kit for the best results.
- Displacement Pump Repair Kit 204–164 is available for Pumps 203–868, 203–869 and 207–609. Displacement Pump Repair Kit 221–036 is available for Pump 221–034. Parts included in the kits are marked with an asterisk or a dagger, for example, (10\*), in the text and drawings. See page 18 to order these kits.
- 3. A special **Tune–up Kit 221–037** is also available for Pump 221–034. See page 18 for parts included in this kit.
- 4. A 0.25 in. (6.4 mm) diameter rod (K) is required for disassembling the pump.

#### Disassembly

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To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 9.

- 1. Flush the pump.
- 2. Relieve the pressure before proceeding.
- 3. Disconnect the hoses, remove the pump from its mounting, and clamp the air motor base (35) in a vise.
- 4. Screw the priming tube (46) off of the displacement cylinder (61).
- 5. Hold the displacement tube (55) with the rod (K) and screw the priming piston (45) off the displacement tube. See Fig. 3.

 See Fig. 4. Use a pipe wrench at the knurled part of the displacement cylinder (61) to screw it out of the base. Screw the packing retainer (60) out of the cyclinder. Remove the seal (59), guides (56,58) and packing (57). See Fig. 4, Detail A.



- 7. Use the rod (K) to screw the displacement tube (55) out of the check valve packing retainer (54). Remove the gasket (49), seat (48) and ball (40). Then screw the packing retainer out of the coupling (47). Remove the upper gasket, seat and ball, and the guide (50), packing (51), and washer (52). Do not remove the press-fit brass guide (53) unless it is damaged. See Fig. 4, Detail B.
- 8. If the pressed-on brass guide (53) needs replacing, clamp it in a vise and drive the packing retainer (54) out with a plastic hammer. The new guide must be started onto the retainer squarely.
- 9. Clean all the parts in a compatible solvent and inspect them for wear or damage. Use all the parts in the repair kit, and replace other parts as necessary. The checkball seats (48) can be turned over to provide new seats.
- 10. Lubricate all the parts with light waterproof grease and reassemble the pump. Apply mediumstrength Loctite® to the threads of the intake packing retainer (60).
- 11. If the ground wire was disconnected before servicing, be sure to reconnect it before regular operation of the pump.

# **Displacement Pump Service**





# **Air Motor and Throat Service**

#### Before you start:

- Be sure you have all necessary parts on hand. Repair Kit 206–728 is available for the motor and throat. Use all the parts in the kit for the best results. Parts included in the kit are marked with one asterisk, for example, (10\*), in the text and drawings.
- Two accessory tools should be ordered. Use Padded Pliers, 207–579, to grip the trip rod without damaging its surface. Use Gauge, 171–818, to ensure the proper clearance between the poppets and seat of the transfer valve.

#### Disassembly

### WARNING

To reduce the risk of serious injury whenever you are instructed to relieve pressure, always follow the **Pressure Relief Procedure** on page 9.

- 1. Flush the pump.
- 2. Relieve the pressure before proceeding.
- 3. Disconnect the hoses, remove the pump from its mounting, and clamp the air motor base (35) in a vise.
- Use a pipe wrench on the knurled part of the cylinder (61) to screw it out of the base (35). See Fig. 5.

- 5. Pull the connecting rod (62) down as far as it will go.
- 6. Use a hammer and punch to remove the roll pin (42) from the piston rod (18), and then screw the connecting rod (62) out of the piston rod.

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Do not damage the plated surface of the trip rod. Damaging the surface of the trip rod can result in erratic air motor operation. Use the special padded pliers, 207–579, to grasp the rod.

- Manually push on the piston rod (18) to move the piston (39) up as far as it will go. Unscrew the cylinder cap nut (24). Pull the nut up. Grip the trip rod (34) with padded pliers and screw the nut off the rod. See Fig. 5.
- Remove the six screws (3) holding the cylinder (12) to the base. Carefully pull the cylinder straight up off the piston (39).

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To avoid damaging the cylinder wall, lift the cylinder straight up off of the piston. Never tilt the cylinder as it is being removed.

# **Air Motor and Throat Service**

### **WARNING**

To reduce the risk of pinching or amputating your fingers, **always** keep fingers clear of the toggle assemblies (L). See Fig. 6.

- 9. Use a screwdriver to push down on the trip rod yoke (7) and snap the toggles down. See Fig. 6. Remove the lockwires (13) from the adjusting nuts (11) of the transfer valves. Screw the top nuts off. Screw the stems (22) out of the grommets (10) and bottom nuts. Take the valve poppets (30) off the stems and squeeze them firmly to check for cracks.
- 10. Grip the toggle rockers (9) with a pliers. Compress the springs (26) and swing the toggle assembly (L) up and away from the piston lugs (M), and remove the parts. Check to see that the valve actuator (33) is supported by the spring clips (29), but slides easily into them. See Fig. 6.
- 11. Remove the trip rod yoke (7), actuator (33), and trip rod (34). Check the exhaust valve poppets (31) for cracks.

**NOTE:** To remove the exhaust valve poppets (31), stretch them out and cut them with a sharp knife.

Remove one of the air motor plates (32 or 64).
 Pull the piston (39) up out of the base (35). Remove the throat packing nut (19), v-packings (25), male gland (27), backup washer (20), flat packing (21) and bearing (28). See the Detail in Fig. 5.









## **Air Motor and Throat Service**

#### Reassembly

- 1. Clean all the parts carefully in a compatible solvent and inspect for wear or damage. Use all the repair kit parts during reassembly and replace other parts as necessary.
- 2. Check the polished surfaces of the piston (39), piston rod (18), and cylinder wall (12) for scratches or wear. A scored rod will cause premature packing wear and leaking.
- 3. Lubricate all parts with a light, waterproof grease.
- One at a time, install the male gland (27<sup>†</sup>), five v-packings (25<sup>†</sup>), bearing (28<sup>†</sup>), backup washer (20), and flat packing (21<sup>†</sup>), with the lips of the v-packings facing down. Screw the packing nut (19) into the base (35) loosely. See the Detail in Fig. 5.
- Slide the piston rod (18) down through the packings and lower the piston (39) into the base (35). Be sure the o-rings (14\*, 16, 17\*) are in place. See Fig. 5.

- 6. Pull the exhaust valve poppets (31\*) into the valve actuator (33) and clip off the top part shown with dotted lines. See Fig. 6.
- Install the transfer valve grommets (10\*), then reassemble the valve mechanism. Before installing the lockwires (13\*) in the adjusting nuts (1 1\*), use the special gauge, 171–818, to adjust the transfer valve so there is 0.145 in. (3.7 mm) clearance between the poppets (30\*) and the seat when it is open. See Fig. 6. Snap the toggles (15) to the up position.
- 8. Reassemble the air motor and assemble to the displacement pump. Before installing the air motor plate, tighten the throat packing nut (19) just snug don't overtighten.
- 9. Before remounting the pump, connect an air hose and run the pump slowly [at about 40 psi (3 bar)] to see that it operates smoothly.
- 10. Reconnect the ground wire before regular operation of the pump.



Cut off tops of poppets as indicated by dotted lines.



**Cutaway View** 

 $\stackrel{\frown}{2}$  Turn wires up. 2 Push toggles (L) in and then up.

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## **Parts**



### Parts

Model 207–609, Series D 50 lb pail size, buna-N packings

Model 221–034, Series A

400 lb drum size, PTFE packings

#### Model 203–868, Series H

400 lb drum size, buna-N packings

Model 203-869, Series H

120 lb drum size, buna-N packings

1         203-364         AIR MOTOR ASSY, Program (2014)         44*1*: 50-667         150-667         CASKET: copper         1           206-04         AIR MOTOR ASSY, Program (2014)         45         160-667         FORD, priming         1           206-04         AIR MOTOR ASSY, Program (2014)         45         160-667         FORD, priming         1           206-040         AIR MOTOR ASSY, Program (2014)         45         160-678         FORD, priming         1           2100-078         FORD, Program (2014)         497         160-671         GASKET: copper         2           2100-078         SCREW, Nex head, no. 8-32 x 0.38 in (10 mm) long.         1         660-273         PACKING, block, upper piston; PTFE (Pump Model 221-034 only)         1           101-578         SCREW, Nex head, no. 8-32 x 0.38 in (10 mm) long.         1         53*         160-677         TDE, lower         1           1         104-582         WASHER, tab         1         54         160-678         PACKING, block, upper piston; PTFE (Pump Model 221-034 only)         1           1         104-582         WASHER, tab         1         54         160-678         GLOE, lower         1           1         104-582         WASHER, tabck, upper loiston; tupprot         1         55	Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	ty.
SERIES P         (Pump Models 203-868 and 203-869 and) Includes terms 2-39, 64, 67, 68         45         160-667         PISTON, priming         1           SERIES P         (Pump Model 207-690 ank) Includes terms 2-39, 64, 67, 68         47         160-670         SERIES Q         COUPLING, hex x         1           SERIES D         (Pump Model 221-034 ank) Includes terms 2-39, 64, 67, 68         1         451         160-671         SERIES Q         (Pump Model 221-034 ank) Includes terms 2-39, 64, 67, 68         1         461         160-672         SUBCL, upper, brass and 207-690 ank)         (Pump Model 203-868, 203-669 and 207-690 ank)         1           100-078         SCREW, hex head, and C07-690 ank)         1         531         160-675         SUBC2, upper piston, PTFE         1           100-078         SCREW, hex head, and 207-690 ank)         1         531         160-675         SUBC2, upper piston, PTFE         1           104-582         WASHER, tab         1         54         160-677         SUBC, lower         1           15         168-680         ORING, block, showel tube; protent         1         551         160-678         SUDE, displa tube; ratent         1           16         166-681         SCL/SUBC, showel tube; protent         1         1         160-682         SUBC, showel tube; protent	1	203–964	AIR MOTOR ASSY,		44*†☞	150–694	GASKET; copper	1
Includes items 2-39, 64, 67, 68         1         46         160-668         TUBE, priming         1           SERIES K         (Pump Model 27-690 only)         48         160-671         GASKET, copper         2           SERIES K         (Pump Model 221-630 only)         48         160-671         GASKET, copper         2           SERIES K         (Pump Model 221-630 only)         51°         160-673         SCAREW, prepriston; buna-N (Pump Model 221-630 only)         51°           101-578         SCREW, hex head;         51°         160-673         PACKING, block, upper piston; buna-N (Pump Model 221-630 only)         1           1         54         160-673         FACKING, block, upper piston; buna-N (Pump Model 221-630 only)         1           1         101-578         SCREW, hex head;         1         54         160-677         RETAINER, packing         1           1         104-582         WASHER, kab         1         54         160-678         GUDE, displacement         1           1         15         160-671         CHAINM, block, shovel tube; buna-N (Pump Model 221-630 only)         1           1         15         160-671         CHAINM, block, shovel tube; buna-N (Pump Model 221-630 only)         1           1         156         160-671		SERIES P	(Pump Models 203–868 and 203–869 or	nly)	45	160–667	PISTON, priming	1
206-404         AIR MOTOR ASSY, (Pump Model 207-609 only) Includes items 2-39, 64, 67, 68         47         160-670         COUPLING, hex         1           221-060         AIR MOTOR ASSY, Includes items 2-39, 64, 67, 68         1         49°         160-672         GUIDE, upper, brass         1           2         100-078         SCREW, hex head; Inc. 8-32 to .38 in; (10 mm) long.         51°         160-672         GUIDE, upper, brass         1           3         101-578         SCREW, hex head; Inc. 8-32 to .38 in; (10 mm) long.         52°         160-674         MASHER, backup; nylon         1           4         104-029         LUG, grounding         1         53°         160-677         GUIDE, upper, brass         1           6         156-689        ORKING, buna-N         1         56         160-677         GUIDE, displ. tube, brass         1           7         158-362        ORKING, buna-N         1         56         160-677         TUBE, displacement         1           11         160-613        OTXINGRE, transfer valve         2         56°         160-628         CUIDE, displ. tube, brass         1           11         160-628        OLKINGR, pather valve         2         56°         160-640         RUD, kotking retainst, nylon         1<			Includes items 2–39, 64, 67, 68	1	46	160–668	TUBE, priming	1
SERIES K         (Pump Model 207-690 enly)         48         160-671         SEAT, valve: reversible         2           221-060         AIR MOTOR ASSY,         50°         160-671         GASKET: copper         2           3ERIES R         (Pump Model 221-030 enly includes items 2-39, 64, 67, 68         50°         160-673         PACKING, block, upper piston; buna-N (Pump Model 221-034 enly)         1           101-76         SCREW, hex head;         680-239         PACKING, block, upper piston; buna-N (Pump Model 221-034 enly)         1           101-76         SCREW, hex head;         15         160-677         PACKING, block, upper piston; buna-N (Pump Model 221-034 enly)         1           104-582         WASHER, tab         1         54         160-677         RETAINER, packing         1           17         158-360         YOKE, rod, trip         1         56°         160-677         RETAINER, packing         1           16         156-680         ORING, tuna-N         155         160-677         RETAINER, packing         1           17         158-364         ROCKER, toggle         2         57°         160-678         GUIDE, displatuber, tuber, tub		206–404	AIR MOTOR ASSY,		47	160–669	COUPLING, hex	1
Includes items 2-39, 64, 67, 68         1         49°         160-671         GASKET, copper         2           SERIES B         (Pump Model 221-034 only)         50°         160-672         GUIDE, upper, trass         1           2         100-078         SCREW, hex head;         7         7         7         7           3         101-578         SCREW, hex head;         7         7         7         7           4         104-029         LUG, grounding         1         53°         160-677         GUIDE, upper, trass         1           5         104-582         WASHER, tab         1         54         160-678         GUIDE, displ. tube, trass         1           6         156-689         O.YOKE, rod, trip         1         55'         160-677         GUIDE, displ. tube, trass         1           7         158-362         PIN, toggle         2         57'         160-678         GUIDE, displ. tube, trass         1           10*         158-367         GROMMET, rubber, air intake         2         77'         160-680         GUIDE, displ. tube, trass         1           11*         160-613         LOCXWIRE, transfer valve         2         56'         160-680         SCLING, adon N/         1<		SERIES K	(Pump Model 207–609 only)		48	160–670	SEAT, valve; reversible	2
221-060         AIR MOTOR ASSY, SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 101-67 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 101-67 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 101-67 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 101-67 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 101-68 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 101-68 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 101-68 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 105-67 S. SCREW, hex head; no. 8-32 x 0.38 in, (10 mm) long, 10 156-368 J. ORING, buna-N         10 6-67 S. GUIDE, lower         10 0-67 S. CHIDE, logale, packing, 10 -67 S. SCREW, hex head; (Pump Model 221-034 only)         10 0-67 S. CHIDE, logale, packing, 10 -67 S. SCREW, hex head; (Pump Model 221-034 only)         10 0-67 S. CHIDE, logale, packing, 10 -67 S. CHIDE, logale, packing, 10 -67 S. CHIDE, logale, packing, 11 -10 0-62 S. CHIDE, logale, packing, 11 -10 0-62 S. CHIDE, logale, packing, 12 -10 0-63 S. CHIDE, logale, packing, 13 -10 0-64 S. CHIDE, logale, packing, 14 -10 0-63 S. CHIDE, logale, packing, 14 -10 0-63 S. CHIDE, logale, packing, 15 -10 0-64 S. CHIDE, logale, packing, 16 -10 0-64 S. CHIDE, logale, packing, 17 -10 0-64 S. CHIDE, logale, packing, 18 -10 0-64 S. CHIDE, logale, packing, 19 -10 0-64 S. CHIDE, logale, packing, 10 -10			Includes items 2–39, 64, 67, 68	1	49†	160–671	GASKET; copper	2
SERIES B         (Pump Model 221-034 only Includes times 2-39, 64, 67, 68         511         160-673         PACKING, block, upper piston; DUna-N           2         100-078         SCREW, hex head; Inc, 8-32 0, 38 in, (10 mm) long, 51 04-582         227-034 only)         1           3         101-578         SCREW, hex head; Inc, 8-32 0, 38 in, (10 mm) long, 51 04-582         160-674         GB0-239         PACKING, block, upper piston; PTFE (Pump Model 221-034 only)         1           4         104-029         LUG, grounding, 158-362         NOR, End, 158-362         NOR, End, 158-367         GROMMET, rubber, air intake         2         6         GB0-279         PACKING, block, shovel tube; bras. 10*         156         GB0-277         PACKING, block, shovel tube; bras. 11*         160-673         GUIDE, displ. tube; ras. 12*         160-673         GUIDE, displ. tube; ras. 13*         160-673         PACKING, block, shovel tube; bras. 14*         160-673         PACKING, block, shovel tube; bras. 15*         160-673         PACKING, block, shovel tube; ras. 14*         160-673         PACKING, block, shovel tube; ras. 15*         160-673         PACKING, block, shovel tube; ras. 15*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*         16*		221–060	AIR MOTOR ASSY.,		50†	160–672	GUIDE, upper; brass	1
Includes items 2-39, 64, 67, 68         (Pump Models 203–868, 203–869           101-76         SCREW, hex head;         (Pump Models 203–868, 203–869           101-77         SCREW, hex head;         (Pump Models 203–868, 203–869           101-78         SCREW, hex head;         1           102-812         NUK, siggle         2           103         158–364         POKER, toggle         2           104         160–673         ROCKER, toggle         2           104         160–674         WASHER, tab         1           116         FOCKER, toggle         2         57†         160–677           107         158–367         NUT, adjusting         4         680–277         PACKING, block, shovel tube; brans         1           116         FOCKER, toggle         2         681         160–681         CYLINDER, transfer valve         2           116         FOCKING, buna-N         1         61         160–685         CYLINDER, transfer valve         2           116		SERIES B	(Pump Model 221–034 only		51†	160–673	PACKING, block, upper piston; buna-N	
2         100–078         .SCREW, hex head; no. 8–32 × 0.38 in. (10 mm) long.         12         and 207–039 only)         1           3         101–578         .SCREW, hex head; no. 8–32 × 0.38 in. (10 mm) long.         6         62–239         PACKING, block, upper jstory, prion         1           4         104–029         .LUG, grounding.         531         160–675         GUIDE, lower         1           5         164–582         WASHER, tab.         54         160–676         GUIDE, displ. tube; brass.         1           6         156–698         .O-RING; buna-N         1         55         160–677         TUBE, displacement         1           7         158–367         GROMMET, rubber, air intake         2         680–277         PACKING, block, shovel tube; PTFE           10*         158–367         GROMMET, trubber, air intake         2         680–277         PACKING, block, shovel tube; PTFE           11*         160–613         L/LWRE, transfer valve         2         581         160–681         SEAL, packing         1           14*         160–624         O-RING, buna-N         1         61         160–683         SEAL, packing         1           160–641         LWR, walve         2         60         160–684         CYLIN			Includes items 2–39, 64, 67, 68				(Pump Models 203–868, 203–869	
no.         3         101-378         SCREW, hex head; no.         680-239         PACKING, block, upper piston; PTFE           104-582         WASHER, tab         521         160-676         WASHER, backup; nylon         1           5         104-582         WASHER, tab         1         54         160-676         RETAINER, packing;         1           7         158-360         YOKE, rod, trip         1         561         160-676         RETAINER, packing;         1           1         158-360         YOKE, rod, trip         561         160-679         PACKING, block, shovel tube; brans         1           1         160-628         CRINC, trip         561         160-679         PACKING, block, shovel tube; brans         1           1         160-628         CRINC, trip         584         160-680         GUIDE, displic dask         207-699 ant/y         1           1         160-621         JO-RINC, triting, trianstr valve         2         584         160-680         CYLINDER, transfer valve         2         584         160-680         CYLINDER, transfer valve         2         584         160-681         CYLINDER, block, transfer valve         2         584         160-680         CYLINDER, block, transfer valve         2         584         <	2	100–078	.SCREW , hex head;				and 207–609 only)	1
3         101-578         SCREW, hex head; no. 8-32 x 0.38 in (10 mm) long         6         52°         60-675         GUIDE, lower         1           4         104-029         LUG, grounding         1         53°         160-675         GUIDE, lower         1           5         104-58         WASHER, tab         1         54         160-677         TUBE, displacement         1           6         158-680         OCKER, toggle         2         57°         160-679         PACKING, block, shovel tube; buna-N           9         158-367         GROMMET, rubber, air intake         2         and 207-609 only         1           11°         160-618         LOCKWIRE, transfer valve         2         58°         160-680         GUIDE, displ. tube; ruser         1           14°         160-621         O-RING, buna-N         1         610-682         RCHINER, backing         1           15         160-641         NUT, radjusting         4         680-277         PACKING, block, shovel tube; PTFE         (Pump Model 221-034 only)         1           14°         160-618         LOCKWIRE, transfer valve         2         58°         160-681         SCLINC, block, shovel tube; PTFE         (Pump Model 221-034 only)         1           15 </td <td></td> <td></td> <td>no. 8–32 x 0.38 in. (10 mm) long.</td> <td>12</td> <td></td> <td>680–239</td> <td>PACKING, block, upper piston; PTFE</td> <td></td>			no. 8–32 x 0.38 in. (10 mm) long.	12		680–239	PACKING, block, upper piston; PTFE	
no. 8-32 x 0.38 in. (10 mm) long         6         52°         160-674         WASHER, backup; nylon         1           5         104-582         WASHER, tab         1         54'         160-676         RETAINER, packing         1           7         158-360         YOKE, rod, trip         1         56'         160-677         TUBE, displacement         1           7         158-360         YOKE, rod, trip         2         57'         160-678         GUIDE, displ. tube; brass         1           8         158-362         PIN, toggle         2         57'         160-678         GUIDE, displ. tube; brass         1           9         158-367         GROMMET, rubber, air intake         2         and 207-600 only         1           14'         160-613         CYLINDER, air motor         1         680-27T         PACKING, block, shovel tube; PTFE           14'         160-621         O-RING, buna-N         1         611         160-681         SEAL, packing retainer; nylon         1           14'         160-643         RCM, Indik, buna-N         1         611         160-685         CYLINDER, 22' (58.8m) long         1           16         160-644         MASHER, back-up         1         160-685         CYLIND	3	101–578	.SCREW, hex head;				(Pump Model 221–034 only)	1
4         104-029         LUG, grounding         1         53 <sup>+</sup> 160-675         GUIDE, lower         1           5         104-029         LUG, grounding         1         53 <sup>+</sup> 160-676         RETAINER, packing         1           6         156-698         ORKE, rod, trp         1         55         160-677         TUBE, displacement         1           7         158-362         PIN, toggle         2         57 <sup>+</sup> 160-679         PACKING, block, shovel tube; buna-N           10*         158-367         GROMMET, rubber, air intake         2         and 207-690 only)         1           11*         160-613         LOCKWIRE, transfer valve         2         58 <sup>+</sup> 160-680         GUIDE, displ. tube; nylon         1           12*         160-618         LOCKWIRE, buna-N         1         610-622         RCHINE, buna-N         1         610-622         CRINC, buna-N         1         610-622         RCL packing retainer, nylon         1           14*         160-625         O-RING, buna-N         1         610-682         RCTAINER, packing         1           16*         160-684         NUT, packing         1         160-687         CUINDER; 2:75'(52.39 mm) long         (Pump Model 203-868 and)			no. 8–32 x 0.38 in. (10 mm) long	6	52†	160–674	WASHER, backup; nylon	1
5       104-582       JWASHER, tab       1       54       160-676       RETAINLER, packing       1         7       158-360       JYOKE, rod, trip       1       56       160-677       TUBE, displacement       1         9       158-362       PIN, toggle       2       57 <sup>+</sup> 160-678       GUIDE, displ. tube; brass       1         9       158-364       ROCKER, toggle       2       57 <sup>+</sup> 160-679       PACKING, block, shovel tube; DTF 1         11       160-613       .CYLINDER, air motor       1       (Pump Models 223-868, 203-869       mat 207-690 only)       1         12       160-613       .CYLINDER, air motor       1       59 <sup>+</sup> 160-681       GUIDE, displ. tube; nylon       1         14       160-621       .O-RING, buna-N       1       61       160-682       RETAINER, packing       1         16       160-624       .O-RING, buna-N       1       61       160-682       CYLINDER; 12.75' (32.3 mm) long       (Pump Models 203-868 and 221-034 only)       1         17       160-641       .VASHER, back-up       1       160-682       CYLINDER; 12.75' (32.3 mm) long       (Pump Models 203-869 only)       1         18       160-641       .VASHER, back-up       1       <	4	104–029	.LUG, grounding	1	53†	160–675	GUIDE, lower	1
6         156-698         .O-RING; buna-N         1         55         160-677         TUBE, displacement         1           8         158-360         YOKE, rod, trip         1         56'         160-678         GUIDE, displacement         1           9         158-367         GROMMET, rubber, air intake         2         57'         160-678         GUIDE, displ. tube; robrass         1           10°         158-367         GROMMET, rubber, air intake         2         680-277         PACKING, block, shovel tube; rubor         1           11°         160-618         LOCKWIRE, transfer valve         2         58'         160-680         GUIDE, displ. tube; rubor         1           14*         160-621         .O-RING, buna-N         1         61         160-683         CYLINDER, 22' (58 mm) long           17*         160-625         .O-RING, buna-N         1         160-668         CYLINDER, 22' (53 cm) long           18         160-630         NUT, packing         1         160-647         CUINDER, 23' (33.48 mm) long           11*         160-644         PACKING, fiat; leather         1         160-688         CYLINDER, 28.94' (73.51 mm) long           121*         160-644         PACKING, fiat; leather         1         160-688	5	104–582	.WASHER, tab	1	54	160–676	RETAINER, packing	1
7       158-360       .YOKE, rod, trip       1       56 <sup>+</sup> 160-678       GUIDE, displ. tube; brass       1         9       158-364       .ROCKER, toggle       2       57 <sup>+</sup> 160-679       PACKING, block, shovel tube; DTFE         10*       158-367       .GROMMET, rubber; air intake       2       58 <sup>+</sup> 160-679       PACKING, block, shovel tube; PTFE         11*       160-613       .CYLINDER, air motor       1       (Pump Models 203-868, 203-869       au 207-690 only)       1         12*       160-613       .CYLINDER, air motor       1       680-277       PACKING, block, shovel tube; PTFE         12*       160-614       .CYLINDER, air motor       1       59 <sup>+</sup> 160-681       GUIDE, displ. tube; rupton       1         14*       160-621       .O-RING, buna-N       1       61       160-682       RETAINER, packing       1         17*       160-640       .NUT, packing       1       160-681       CYLINDER; 22*, 957       100         18       160-640       .NUT, packing       1       160-684       ROD, connecting;       12*, 1357       135, 1mn) long         22*       160-945       .STEM, valve       2       62       160-688       ROD, connecting;       12*, 136	6	156–698	.O-RING; buna-N	1	55	160–677	TUBE, displacement	1
8         158-362         PACKING, block, shovel tube; buna-N           9         158-367         GROMMET, rubber, air intake         2         57†         160-679         PACKING, block, shovel tube; buna-N           11*         160-261         .NUT, adjusting         4         680-277         PACKING, block, shovel tube; DTFE           12*         160-618         .LOCKWIRE, transfer valve         2         58†         160-681         GUIDE, displ. tube; nylon         1           13*         160-619         .LOCKWIRE, transfer valve         2         58†         160-680         GUIDE, citispl. tube; nylon         1           14*         160-623         .ARM, toggle         2         60         160-681         SEAL, packing         1           16         160-623         .ORING, buna-N         1         161         160-683         CYLINDER; 22 (53 mm) long           17*         160-641         .NUT, packing         1         160-687         CYLINDER; 22 (53 mm) long           18         160-683         .NUT, packing         1         160-686         CYLINDER; 22 (53 mm) long           19*         160-641         .NUT, wildler, cap         1         160-686         CYLINDER; 22 (53 mm) long           10*         160-686         ROD,	7	158–360	.YOKE, rod, trip	1	56†	160–678	GUIDE, displ. tube; brass	1
9         158-364         ROCKÉR, toggle         2         (Pump Models 203-868, 203-869	8	158–362	.PIN, toggle	2	57†	160–679	PACKING, block, shovel tube; buna-N	
10°         158-367         .GROMMET, Tubber, air intake         2         ind 207-609 only)         1           11°         160-613         .CYLINDER, air motor         1         (Pump Model 221-034 only)         1           13°         160-613         .CYLINDER, itransfer valve         2         58°         160-680         GUIDE, displ. tube; nylon         1           14°         160-621         .O-RING, nitrile rubber         1         59°         160-681         SEAL, packing retainer; nylon         1           16         160-623         .ARM, toggle         2         60         160-683         CYLINDER; 22' (58 mn) long           17°         160-623         .O-RING, buna-N         1         160-685         CYLINDER; 22' (53 mn) long         (Pump Model 203-869 only)         1           18         160-643         .ROLN, packing         1         160-685         CYLINDER; 22' (53 8m) long         (Pump Model 203-869 only)         1           21°         160-443         .NUT, oylinder, cap         1         160-684         ROD, connecting;         2'' (304.8 mm) long         (Pump Model 207-609 only)         1           22'         160-932         .GASKET; copper         1         160-688         ROD, connecting;         2'' (304.8 mm) long         (Pump Model 2	9	158–364	.ROCKER, toggle	2			(Pump Models 203–868, 203–869	
11*       160–261       NUT, adjusting       4       680–277       PACKING, block, shovel tube; PTFE         12       160–613       CYLINDER, air motor       1       Pump Model 221–034 only)       1         13*       160–613       LOCKWIRE, transfer valve       2       58†       160–680       GUIDE, displ. tube; nylon       1         14*       160–623       ARM, toggle       2       60       160–682       RETAINER, packing       1         16       160–624       -ORING, buna-N       1       61       160–682       CYLINDER; 22*(58.8 mm) long         17*       160–640       NUT, packing       1       160–685       CYLINDER; 12.75*(323.9 mm) long         19       160–640       NUT, cylinder, cap       1       160–686       CYLINDER; 22.94*(735.1 mm) long         21*       160–636       SAKET; copper       1       160–687       CYLINDER; 22.94*(735.1 mm) long         22*       160–638       ROD, connecting;       12*'(304.8 mm) long       (Pump Model 207–609 only)       1         24*       161–435       NUT, cylinder cap       160–688       ROD, connecting;       275*(69.9 mm) long         25*       162–314       N-PACKING; Benter       1       160–688       ROD, connecting;       10*////////	10*	158–367	.GROMMET, rubber, air intake	2			and 207–609 only)	1
12       160–613       CYLINDËR, air motor       1       (Pump Model 221–034 only)       1         13*       160–613       LOCKWIRE, transfer valve       2       58*       160–680       GUIDE, displ. tube; nylon       1         14*       160–621       O-RING, intrile rubber       1       59*       160–680       SEAL, packing retainer; nylon       1         15       160–624       O-RING, buna-N       1       61       160–682       CYLINDER; 22: (5.8 mm) long         17*       160–642       O-RING, buna-N       1       160–683       CYLINDER; 22: (5.8 mm) long         18       160–643       PACKING, fait, leather       1       160–685       CYLINDER; 22: (5.8 mm) long         19       160–644       PACKING, fait, leather       1       160–685       CYLINDER; 22: (5.8 mm) long         12*       160–644       PACKING, fait, leather       1       160–684       ROD, connecting; 2.75* (5.9 mm) long         12*       160–845       STEM, valve       2       62       160–684       ROD, connecting; 2.75* (69.9 mm) long         12*       161–435       NUT, cylinder, cap       (Pump Model 203–868, and 221–034 only)       1         164–704       NUT, cylinder cap       1       160–681       ROD, connecting; 2.75* (69.9	11*	160–261	.NUT, adjusting	4		680–277	PACKING, block, shovel tube; PTFE	
13*       160–618       LOCKWIRE, transfer valve       2       58*       160–680       GUIDE, displ. tube; nylon       1         14*       160–621       .O-RING, buna-N       1       59*       160–680       SEAL, packing retainer; nylon       1         16       160–623       .ARM, toggie       2       60       160–680       CYLINDER; 22''       58.*       molecular         17*       160–625       .O-RING, buna-N       1       160–643       CYLINDER; 22.7''       323.49 mm) long       1         18       160–644       .NUT, packing       1       160–647       CYLINDER; 28.94*''       735.1 mm) long         12*       160–644       .NUT, packing       1       160–668       CYLINDER; 28.94*''       735.1 mm) long         21*       160–636       SEL, varve       2       62       160–668       ROD, connecting;       1         23       160–932       .GASKET; copper       1       160–668       ROD, connecting;       1         24       161–435       .NUT, cylinder cap       1       160–668       ROD, connecting;       1         203       .668, 203–689, and 207–609 only)       1       160–688       ROD, connecting;       1         164–704       .NUT, cyl	12	160–613	.CYLINDER, air motor	1			(Pump Model 221–034 only)	1
14*       160-621       .O-RING, nitrile rubber       1       59†       160-681       SEAL, packing retainer, nylon       1         15       160-623       .ARM, toggle       2       60       160-681       SEAL, packing retainer, nylon       1         16       160-624       .O-RING, buna-N       1       61       160-681       SEAL, packing retainer, nylon       1         17*       160-625       .O-RING, buna-N       1       61       160-683       RCPLINDER; 22' (55.8 mm) long         18       160-640       .NUT, packing       1       160-685       CYLINDER; 28.94' (735.1 mm) long         19       160-644       .PACKING, filt; leather       1       160-687       CYLINDER; 28.94' (735.1 mm) long         23       160-932       .GASKET; copper       1       160-688       ROD, connecting;         24       161-435       .NUT, cylinder cap       180-688       ROD, connecting;       12' (304.8 mm) long         164-505       .V-PACKING; PTFE       67       160-688       ROD, connecting;       18.94' (481.1 mm) long         25†       162-591       .V-PACKING; PTFE       67       162-718       ADAPTER; 38 npt(m) x 14' npt(f)       1         164-555       .V-PACKING; PTFE       67       162-718	13*	160–618	LOCKWIRE, transfer valve	2	58†	160–680	GUIDE, displ. tube; nylon	1
15       160-623       ARM, toggle       2       60       160-628       RETAINER, packing       1         16       160-624       .O-RING, buna-N       1       61       160-638       CYLINDER; 22*(55.8 mm) long       1         18       160-639       .RCD, piston       1       61       160-683       CYLINDER; 12.75" (32.9 mm) long       1         19       160-640       .NUT, packing       1       160-687       CYLINDER; 12.75" (32.9 mm) long       1         21 <sup>+</sup> 160-644       .PACKING, flat; leather       1       160-687       CYLINDER; 28.94" (735.1 mm) long       1         22 <sup>+</sup> 160-686       .STEM, valve       2       2       160-687       CYLINDER; 28.94" (735.1 mm) long       1         24       161-435       .NUT, cylinder, cap       1       160-688       RDD, connecting;       1         24       161-435       .NUT, cylinder cap       1       160-688       RDD, connecting;       1         25 <sup>+</sup> 162-391       .V-PACKING; Ieather (Pump Models 203-869, and 227-699 only)       1       1       1         26 <sup>+</sup> 167-585       .SPRING, helical compression       2       69       207-069       PISTON ASSEMBLY (Pump Models 203-869, and 207-690 only)      1	14*	160–621	.O-RING, nitrile rubber	1	59†	160–681	SEAL, packing retainer; nylon	1
16       160-624       O-RING, buna-N       1       61       160-683       CYLINDER; 22 (55 mm) long         17*       160-625       O-RING, buna-N       1       (Pump Model 203-869 only)       1         18       160-639       ROD, piston       1       160-686       CYLINDER; 12.75" (323.9 mm) long         19       160-641       WASHER, back-up       1       160-687       CYLINDER; 28.94" (735.1 mm) long         12*       160-830       STEM, valve       2       62       160-684       RDD, connecting;         23       160-932       GASKET; copper       1       12" (304.8 mm) long       (Pump Model 207-609 only)       1         24       161-435       NUT, cylinder cap       (Pump Model 207-609 only)       1       (Pump Model 207-609 only)       1         25'+       162-391       V-PACKING; leather (Pump Models 203-868, a02-869, and 207-609 only)       1       160-688       ROD, connecting;       1         26'+       167-585       .SPRING, helical compression       2       64       225-01       PLATE, warning with muffler       1         19       172-866       .GLAND, male       1       203-868, 203-69, and 207-609 only)       5       64       222-019       PISTON ASSEMBLY (Pump Models 203-868 and 221-034 only)       <	15	160–623	ARM, toggle	2	60	160–682	RETAINER, packing	1
17*       160-625       .O-RING, buna-N       1       (Pump Model 203-869 only)       1         18       160-639       .ROD, piston       1       160-640       .NUT, packing       1         10       160-641       .NUT, packing       1       160-685       CYLINDER; 12.75" (32.9 mm) long         21*       160-644       .PACKING, fatt leather       1       160-687       CYLINDER; 28.94" (735.1 mm) long         21*       160-932       .GASKET; copper       1       160-688       ROD, connecting;       17" (304.8 mm) long         24       161-435       .NUT, cylinder, cap       (Pump Model 207-609 only)       1       160-688       ROD, connecting;       2.75" (69.9 mm) long         24       164-570       .NUT, cylinder cap       160-688       ROD, connecting;       2.75" (69.9 mm) long       (Pump Model 207-609 only)       1         164-555       .V-PACKING; leather(Pump Models       203-868, 203-869, and 207-609 only)       1       18.94" (481.1 mm) long       (Pump Model 207-609 only)       1         164-555       .V-PACKING; helical compression       2       69       18.0-233       LABEL, warning with muffler       1         17       168-851       .GLAND, male       1       Includes items 40, 42 (qty 2), and 47 to 55       1	16	160–624	.O-RING, buna-N	1	61	160–683	CYLINDER; 22" (55.8 mm) long	
18       160–639       .ROD, piston       1       160–640       .NUT, packing       1         19       160–640       .NUT, packing       1       160–641       .WASHER, back-up       1       160–687       CYLINDER; 12.75" (32.3 g mm) long (Pump Model 207–609 only)       1         21*       160–644       .PACKING, flat; leather       1       160–687       CYLINDER; 28.94" (735.1 mm) long (Pump Model 203–668 and 221–034 only)       1         24       161–435       .NUT, cylinder, cap (Pump Models 203–868, 203–869, and 221–034 only)       1       62       160–686       ROD, connecting; (Pump Model 203–869 only)       1         25*       164–704       .NUT, cylinder cap (Model 207–609 only)       1       160–688       ROD, connecting; (Pump Model 203–868 and 221–034 only)       1         25*       162–391       .V-PACKING; leather/Pump Models 203–868, 203–869, and 207–609 only)       1       18.94" (481.1 mm) long (Pump Models 203–868 and 221–034 only)       1         26       167–585       .SPRING, heical compression       2       69       207–069       PISTON ASSEMBLY (Pump Models 203–868, 203–869, and 207–609 only)       2         28*       168–851       GLAND, male       1       1       1       1       1       1       1       1       1       1       <	17*	160–625	.O-RING, buna-N	1			(Pump Model 203–869 only)	1
19       160–640       .NUT, 'packing       1       (Pump Modei 207–609 only)       1         20       160–641       .NASHER, back-up       1       160–687       CYLINDER; 28.94" (735.1 mm) long         21 <sup>+</sup> 160–684       .NACKING, flat; leather       1       160–687       CYLINDER; 28.94" (735.1 mm) long         22 <sup>+</sup> 160–689       .STEM, valve       2       62       160–687       ROD, connecting;         23       160–932       .GASKET; copper       1       12" (304.8 mm) long       (Pump Modei 207–609 only)       1         24       161–435       .NUT, cylinder cap       (Pump Modei 207–609 only)       1       (Pump Modei 207–609 only)       1         25 <sup>+</sup> 162–391       .V.PACKING; leather(Pump Models       203–868, and 207–609 only)       1       160–688       ROD, connecting;       1         26       167–585       .SPRING, helical compression       2       69       207–609       PISTON ASSEMBLY (Pump Models       203–868, and 207–609 only)       2         27 <sup>+</sup> 168–851       .GLAND, male       1       Includes items 40, 42 (qty 2), and 47 to 55       1         20 <sup>+</sup> 169–207       .SPENING, hetnoat       1       1       Includes items 40, 42 (qty 2), and 47 to 55       1	18	160–639	.ROD, piston	1		160–685	CYLINDER; 12.75" (323.9 mm) long	
20         160–641         .WASHER, back-up         1         160–684         .WASHER, back-up         1         160–684         .PACKING, flat; leather         1         (Pump Models 203–868 and 221–034 only)         1           21         160–896         STEM, valve         2         62         160–687         CYLINDER; 28.94" (735.1 mm) long           23         160–896         STEM, valve         2         62         160–687         CYLINDER; 28.94" (735.1 mm) long           24         161–435         .NUT, cylinder, cap         1         62         160–687         ROD, connecting;         1           24         161–435         .NUT, cylinder cap         160–688         ROD, connecting;         1         160–688         ROD, connecting;         1         160–688         ROD, connecting;         1 <td< td=""><td>19</td><td>160–640</td><td>.NUT, packing</td><td>1</td><td></td><td></td><td>(Pump Model 207–609 only)</td><td>1</td></td<>	19	160–640	.NUT, packing	1			(Pump Model 207–609 only)	1
21†       160–644       .PACKING, flat; leather       1       (Pump Models 203–868 and 221–034 only) 1         22*       160–894       .ROD, connecting;       3         24       161–435       .NUT, cylinder, cap (Pump Models 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, 203–868, and 221–034 only)       1         164–704       .NUT, cylinder cap (Model 207–609 only)       1       160–688       ROD, connecting; (Pump Models 203–868, 203–869, and 207–609 only)       1         25†       162–391       .V-PACKING; PTFE (Pump Model 221–034 only)       1       160–688       ROD, connecting; (Pump Models 203–868, and 221–04 only)       1         26       167–585       .S-PRING, helical compression (Pump Model 221–034 only)       5       64       222–501       PLATE, warning with muffler (Pump Models 203–868, and 207–609 only)       1         26       167–585       .S-PRING, helical compression (Pump Model 221–034 only)       5       64       222–501       PLATE, warning (not shown)       1         27†       168–851       .GLAND, male       1       1       1       203–868, 203–869, and 207–609 only)       1         28†       168–852       .BEARING, throat       1       1       1       1       1         3172–867       <	20	160–641	.WASHER, back-up	1		160–687	CYLINDER; 28.94" (735.1 mm) long	
22*       160–896       .STEM, valve       2       62       160–684       ROD, connecting;       12" (304.8 mm) long         24       161–435       .NUT, cylinder, cap       (Pump Models 203–868, 203–869, and 221–034 only)       1       160–686       ROD, connecting;       2.75" (69.9 mm) long         25†       162–391       .V-PACKING; leather (Pump Models 203–868, and 207–609 only)       1       160–688       ROD, connecting;       (Pump Model 207–609 only)       1         25†       162–391       .V-PACKING; PTFE       160–688       ROD, connecting;       (Pump Model 221–034 only)       1         26       167–585       .SPRING, helical compression       2       69       207–069       PISTON ASSEMBLY (Pump Models 203–869, and 207–609 only)       1         26       167–585       .SPRING, helical compression       2       69       207–069       PISTON ASSEMBLY (Pump Models 203–869, and 207–609 only)       203–868, 203–869, and 207–609 only)       1         27†       168–851       .GLAND, male       1       Includes items 40, 42 (qty 2), and 47 to 55       1         28†       170–709       .POPPET, valve; urethane       2       Includes items 40, 42 (qty 2), and 47 to 55       1         31       170–709       .POPPET, valve; urethane       1       70       172–479	21‡	160–644	.PACKING, flat; leather	1			(Pump Models 203–868 and 221–034 only)	1
23       160–932       .GASKET; copper       1       12" (304.8 mm) long (Pump Model 203-869 only)       1         24       161–435       .NUT, cylinder, cap (Pump Model 203-869 only)       1       160–686       ROD, connecting; 2.75" (6.9.9 mm) long (Pump Model 207-609 only)       1         164–704       .NUT, cylinder cap (Model 207-609 only)       1       160–688       ROD, connecting;       1         25†       162–391       .V-PACKING; leather(Pump Models 203-868, 203-869, and 207-609 only)       1       160–688       ROD, connecting;       1         26       167–585       .V-PACKING; PTFE (Pump Model 221–034 only)       5       64       222–501       PLATE, warning with muffler       1         26       167–585       .SPRING, helical compression       2       69       207–609       PISTON ASSEMBLY       Pump Models       2         27†       168–851       .GLAND, male       1	22*	160–896	.STEM, valve	2	62	160–684	ROD, connecting;	
24       161-435       .NUT, cylinder, cap (Pump Models 203-868, 203-869, and 221-034 only)       160-686       ROD, connecting; 2.75" (69.9 mm) long (Pump Models 207-609 only)       1         164-704       .NUT, cylinder cap (Model 207-609 only)       1       160-688       ROD, connecting; (Pump Models 207-609 only)       1         25†       162-391       .V-PACKING; leather (Pump Models 203-868, 203-869, and 207-609 only)       5       64       222-501       PLATE, warning with muffler       1         164-555       .V-PACKING; PTFE (Pump Model 221-034 only)       5       68       180-233       LABEL, warning with muffler       1         26       167-585       SPRING, helical compression       2       69       207-609       PISTON ASSEMBLY       Pump Models 221-034 only)       2         28†       168-852       .BEARING, throat       1       1       1       203-868, 203-869, and 207-609 only)       1         29*       172-866       .CLIP, spring       2       221-035       PISTON ASSEMBLY       1       1         31       172-867       .ACTUATOR, valve       1       70       172-479       TAG, warning (not shown)       1         33       172-867       .ACTUATOR, valve       1       *The replacements for these parts are available in Repair Kit         30* <td>23</td> <td>160–932</td> <td>.GASKET; copper</td> <td>1</td> <td></td> <td></td> <td>12" (304.8 mm) long</td> <td></td>	23	160–932	.GASKET; copper	1			12" (304.8 mm) long	
(Pump Models 203-868, 203-869, and 221-034 only)         1         160-686         ROD, connecting; 2.75 <sup>°</sup> (69.9 mm) long (Pump Model 207-609 only)         1           164-704         NUT, cylinder cap (Model 207-609 only)         1         160-688         ROD, connecting; 2.75 <sup>°</sup> (69.9 mm) long (Pump Model 207-609 only)         1           25†         162-391         V-PACKING; leather (Pump Models 203-868, 203-869, and 207-609 only)         5         64         222-501         PLATE, warning with muffler         1           164-555         V-PACKING; PTFE         67         162-718         ADAPTER; 3/8 npt(m) x 1/4 npt(f)         1           168-851         .GLAND, male         1         203-868, 203-869, and 207-609 only)         5         68         180-233         LABEL, warning         2           26         167-585         .SPRING, helical compression         2         69         207-069         PISTON ASSEMBLY (Pump Models           27 <sup>+</sup> 168-852         .BEARING, throat         1         Includes items 40, 42 (qty 2), and 47 to 55         1           30*         170-708         .POPPET, valve; urethane         2         (Pump Model 221-034 only)         1           31 172-867         .ACTUATOR, valve         1         * The replacements for these parts are available in Repair Kit           37         102-975<	24	161–435	.NUT, cylinder, cap				(Pump Model 203–869 only)	1
and 221-034 only)       1       (Pump Model 207-609 only)       1         164-704       NUT, cylinder cap (Model 207-609 only)       1       160-688       ROD, connecting;         25†       162-391       V-PACKING; leather (Pump Models 203-868, 203-869, and 207-609 only)       5       64       222-501       PLATE, warning with muffler       1         164-555       V-PACKING; PTFE (Pump Model 221-034 only)       5       68       180-233       LABEL, warning       2         26       167-585       SPRING, helical compression       2       69       PISTON ASSEMBLY (Pump Models 203-868, 203-869, and 207-609 only)       2         27†       168-851       GLAND, male       1       Includes items 40, 42 (qty 2), and 47 to 55       1         29       172-866       CLIP, spring       2       221-035       PISTON ASSEMBLY       1         30*       170-709       POPPET, valve; urethane       2       (Pump Model 221-034 only)       1         31*       170-709       POPPET, valve; urethane       2       (Pump Model 221-034 only)       1         32       222-499       PLATE, identification; with muffler       1       70       172-479       TAG, warning (not shown)       1         33       172-867       ACTUATOR, valve       1       <			(Pump Models 203–868, 203–869,			160–686	ROD, connecting; 2.75" (69.9 mm) lon	g
164-704       .NUT, cylinder čap (Model 207-609 only)       1       160-688       ROD, connecting;         25†       162-391       .V-PACKING; leather (Pump Models 203-868, 203-869, and 207-609 only)       5       64       222-501       PLATE, warning with muffler       1         164-555       .V-PACKING; PTFE (Pump Model 221-034 only)       5       64       222-501       PLATE, warning       21         26       167-585       .SPRING, helical compression       2       69       207-609       PISTON ASSEMBLY (Pump Models         27†       168-851       .GLAND, male       1       203-868, 203-869, and 207-609 only)       1         26       167-585       .SPRING, helical compression       2       69       207-069       PISTON ASSEMBLY (Pump Models         27†       168-851       .GLAND, male       1       1       1       1         29       172-866       .CLIP, spring       2       221-035       PISTON ASSEMBLY       (pump Model 221-034 only)       1         31*       170-709       .POPPET, valve; urethane       2       70       172-479       TAG, warning (not shown)       1         32       222-499       .PLATE, identification; with muffler       1       70       172-479       TAG, warning (not shown)       1			and 221–034 only)	1			(Pump Model 207–609 only)	ັ1
(Model 207-609 only)       1       18.94" (481.1 mm) long         25†       162-391       V-PACKING; leather(Pump Models       203-868, 203-868, and 221-034 only)       1         164-555       V-PACKING; PTFE       67       162-718       ADAPTER; 3/8 npt(m) x 1/4 npt(f)       1         26       167-585       .SPRING, helical compression       2       69       207-069       PISTON ASSEMBLY (Pump Models         27†       168-851       .GLAND, male       1       203-868, 203-869, and 207-609 only)       1         28†       168-852       .BEARING, throat       1       203-868, 203-869, and 207-609 only)       1         29       172-866       .CLIP, spring       2       221-035       PISTON ASSEMBLY       (Pump Models 221-034 only)         30*       170-708       .POPPET, valve; urethane       2       (Pump Model 221-034 only)       1         31*       170-708       .POPPET, valve; urethane       2       (Pump Model 221-034 only)       1         33       172-867       .ACTUATOR, valve       1       70       172-479       TAG, warning (not shown)       1         34       203-965       .GD, trip       1       70       172-479       TAG, warning (not shown)       1         35       204-896		164–704	.NUT, cylinder cap			160–688	ROD, connecting;	
25†       162–391       .V-PACKING; leather(Pump Models 203–868, 203–869, and 207–609 only)       5       64       222–501       PLATE, warning with muffler       1         164–555       .V-PACKING; PTFE       67       162–718       ADAPTER; 3/8 npt(m) x 1/4 npt(f)       1         26       167–585       .SPRING, helical compression       2       69       207–069       PISTON ASSEMBLY (Pump Models         27†       168–851       .GLAND, male       1       203–868, 203–869, and 207–609 only)       1         28†       168–852       .BEARING, throat       1       203–868, 203–869, and 207–609 only)       1         29       172–866       .CLIP, spring       2       221–035       PISTON ASSEMBLY       203–868, 203–869, and 207–609 only)         30*       170–708       .POPPET, valve; urethane       2       221–035       PISTON ASSEMBLY         31*       170–708       .POPPET, valve; urethane       2       1       1       1         33       172–867       .ACTUATOR, valve       1       70       172–479       TAG, warning (not shown)       1         34       203–965       .ROD, trip       1       70       172–479       TAG, warning (not shown)       1         35       204–896       .BASE, air mo			(Model 207–609 only)	1			18.94" (481.1 mm) long	
203-868, 203-869, and 207-609 only)       5       64       222-501       PLATE, warning with muffler       1         164-555       .V-PACKING; PTFE       67       162-718       ADAPTER; 3/8 npt(m) x 1/4 npt(f)       1         26       167-585       .SPRING, helical compression       2       69       207-069       PISTON ASSEMBLY       (Pump Models         27†       168-851       .GLAND, male       1       203-868, 203-869, and 207-609 only)       Includes items 40, 42 (qtv 2), and 47 to 55       1         29       172-866       .CLIP, spring       2       221-035       PISTON ASSEMBLY       9       1         30*       170-709       .POPPET, valve; urethane       2       .CLIP, spring       1       1       1       1         31*       170-709       .POPPET, valve; urethane       2       .CLIP, spring       1       70       172-479       TAG, warning (not shown)       1         33       172-867       .ACTUATOR, valve       1       .       * The replacements for these parts are available in Repair Kit         34       203-965       .ROD, trip       1	25†	162–391	V-PACKING; leather (Pump Models				(Pump Models 203–868and 221–034 only)	1
164–555       .V-PACKING; PTFE (Pump Model 221–034 only)       67       162–718       ADAPTER; 3/8 npt(m) x 1/4 npt(f)       1         26       167–585       .SPRING, helical compression       2       69       207–069       PISTON ASSEMBLY (Pump Models 203–868, 203–869, and 207–609 only) Includes items 40, 42 (qty 2), and 47 to 55       1         29       172–866       .CLIP, spring       2       221–035       PISTON ASSEMBLY (Pump Model 221–034 only)       1         30*       170–708       .POPPET, valve; urethane       2       221–035       PISTON ASSEMBLY (Pump Model 221–034 only)       1         31*       170–709       .POPPET, valve; urethane       2       221–035       PISTON ASSEMBLY (Pump Model 221–034 only)       1         31*       170–709       .POPPET, valve; urethane       2       2       21–035       PISTON ASSEMBLY (Pump Model 221–034 only)       1         33       172–867       .ACTUATOR, valve       1       70       172–479       TAG, warning (not shown)       1         34       203–965       .ROD, trip       1       206–728. Purchase the kit separately. See page 18.       *         37       102–975       .SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)       2       *       The replacements for these parts are available in Repair Kits 204–164 (buna–N) or 221–036 (PTFE), as appropri at			203–868, 203–869, and 207–609 only)	5	64	222–501	PLATE, warning with muffler	1
(Pump Model 221–034 only)       5       68       180–233       LABEL, warning       2         26       167–585       .SPRING, helical compression       2       69       207–069       PISTON ASSEMBLY (Pump Models         27†       168–851       .GLAND, male       1       203–868, 203–869, and 207–609 only)       Includes items 40, 42 (qty 2), and 47 to 55       1         29       172–866       .CLIP, spring       2       221–035       PISTON ASSEMBLY       9         30*       170–708       .POPPET, valve; urethane       2       221–035       PISTON Assembly       1         31*       170–709       .POPPET, valve; urethane       2       221–035       PISTON Assembly       1         32       222–499       .PLATE, identification; with muffler       1       70       172–479       TAG, warning (not shown)       1         33       172–867       .ACTUATOR, valve       1       * The replacements for these parts are available in Repair Kit         34       203–965       .ROD, trip       1       * The replacements for these parts are available in Repair         37       102–975       .SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm) dia.       *       * The replacements for these parts are available in Repair         40†       100–069       BALL,		164–555	.V-PACKING; PTFE		67	162–718	ADAPTER; 3/8 npt(m) x 1/4 npt(f)	1
26       167–585       .SPRING, helical compression       2       69       207–069       PISTON ASSEMBLY (Pump Models         27†       168–851       .GLAND, male       1       203–868, 203–869, and 207–609 only)         28†       168–852       .BEARING, throat       1       Includes items 40, 42 (qty 2), and 47 to 55       1         29       172–866       .CLIP, spring       2       221–035       PISTON ASSEMBLY       1         30*       170–708       .POPPET, valve; urethane       2       221–035       PISTON ASSEMBLY       1         31*       170–709       .POPPET, valve; urethane       2       221–035       PISTON ASSEMBLY       1         32       222–499       .PLATE, identification; with muffler       1       70       172–479       TAG, warning (not shown)       1         34       203–965       .ROD, trip       1       1       * The replacements for these parts are available in Repair Kit         37       102–975       .SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)       2       * The replacements for these parts are available in Repair         40†       100–069       BALL, steel; .0.25" (6.3 mm) dia.       2       * The replacements for these parts are available in Repair         42       101–579       PIN, roll 0.12" (3.2 mm) dia. </td <td></td> <td></td> <td>(Pump Model 221–034 only)</td> <td>5</td> <td>68</td> <td>180–233</td> <td>LABEL, warning</td> <td>2</td>			(Pump Model 221–034 only)	5	68	180–233	LABEL, warning	2
27†       168–851       .GLAND, male       1       203–868, 203–869, and 207–609 only)         28†       168–852       .BEARING, throat       1       1       Includes items 40, 42 (qty 2), and 47 to 55       1         29       172–866       .CLIP, spring       2       221–035       PISTON ASSEMBLY       1         30*       170–708       .POPPET, valve; urethane       2       .POPPET, valve; urethane       2       .POPPET, valve; urethane       2         32       222–499       .PLATE, identification; with muffler       1       .ACTUATOR, valve       1         34       203–965       .ROD, trip       1       .ACTUATOR, valve       1         35       204–896       .BASE, air motor       1       .SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)       1         39       160–614       .PISTON, air motor       1       .Fis 204–164 (buna–N) or 221–036 (PTFE), as appropri         30*       101–579       PIN, roll 0.12" (3.2 mm) dia.       2       .Replace gasket every time the cylinder is removed for repair.	26	167–585	SPRING, helical compression	2	69	207–069	PISTON ASSEMBLY (Pump Models	
28†       168–852       .BEARING, throat       1       Includes items 40, 42 (qty 2), and 47 to 55       1         29       172–866       .CLIP, spring       2       221–035       PISTON ASSEMBLY         30*       170–708       .POPPET, valve; urethane       2       (Pump Model 221–034 only)         31*       170–709       .POPPET, valve; urethane       2       (Pump Model 221–034 only)         32       222–499       .PLATE, identification; with muffler       1       70       172–479       TAG, warning (not shown)       1         33       172–867       .ACTUATOR, valve       1       * The replacements for these parts are available in Repair Kit         34       203–965       .ROD, trip       1       * The replacements for these parts are available in Repair Kit         35       204–896       .BASE, air motor       1       * The replacements for these parts are available in Repair         37       102–975       .SCREW, rd hd mach; o. 6–32 x 0.25" (6.3 mm)       2       * The replacements for these parts are available in Repair         39       160–614       .PISTON, air motor       1       2         42       101–579       PIN, roll 0.12" (3.2 mm) dia.       2         9.75" (19 mm) long       4       9       9         42 <td>27†</td> <td>168-851</td> <td>.GLAND. male</td> <td>1</td> <td></td> <td></td> <td>203–868, 203–869, and 207–609 only)</td> <td></td>	27†	168-851	.GLAND. male	1			203–868, 203–869, and 207–609 only)	
29       172–866       .CLIP, spring       2       221–035       PISTON ASSEMBLY         30*       170–708       .POPPET, valve; urethane       2       (Pump Model 221–034 only)         31*       170–709       .POPPET, valve; urethane       2       (Pump Model 221–034 only)         32       222–499       .PLATE, identification; with muffler       1       70       172–479       TAG, warning (not shown)       1         33       172–867       .ACTUATOR, valve       1       70       172–479       TAG, warning (not shown)       1         34       203–965       .ROD, trip       1       70       172–479       TAG, warning (not shown)       1         35       204–896       .BASE, air motor       1       1       * The replacements for these parts are available in Repair Kit         36       160–614       .PISTON, air motor       1       * The replacements for these parts are available in Repair         39       160–614       .PISTON, air motor       1       *       * The replacements for these parts are available in Repair         42       101–579       PIN, roll 0.12" (3.2 mm) dia.       2       *       * The replace gasket every time the cylinder is removed for repair.         42       101–579       PIN, roll 0.12" (3.2 mm) dia.       * </td <td>28‡</td> <td>168-852</td> <td>.BEARING, throat</td> <td>1</td> <td></td> <td></td> <td>Includes items 40, 42 (gty 2), and 47 to 55</td> <td>1</td>	28‡	168-852	.BEARING, throat	1			Includes items 40, 42 (gty 2), and 47 to 55	1
30*170–708.POPPET, valve; urethane2(Pump Model 221–034 only)31*170–709.POPPET, valve; urethane2Includes items 40, 42 (qty 2), and 47 to 55 132222–499.PLATE, identification; with muffler170172–47933172–867.ACTUATOR, valve134203–965.ROD, trip135204–896.BASE, air motor137102–975.SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)139160–614.PISTON, air motor140*100–069BALL, steel; . 0.25" (6.3 mm) dia.242101–579PIN, roll 0.12" (3.2 mm) dia.20.75" (19 mm) long4pair.	29	172-866	.CLIP. spring	2		221–035	PISTON ASSEMBLY	
31*170–709.POPPET, valve; urethane2.includes items 40, 42 (qty 2), and 47 to 55132222–499.PLATE, identification; with muffler1170172–479TAG, warning (not shown)133172–867.ACTUATOR, valve1170172–479TAG, warning (not shown)134203–965.ROD, trip11*The replacements for these parts are available in Repair Kit35204–896.BASE, air motor1206–728. Purchase the kit separately. See page 18.37102–975.SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)239160–614.PISTON, air motor140†100–069BALL, steel; .0.25" (6.3 mm) dia.242101–579PIN, roll 0.12" (3.2 mm) dia.20.75" (19 mm) long4pair.	30*	170-708	.POPPET. valve: urethane	2			(Pump Model 221–034 only)	
32222-499.PLATE, identification; with muffler133172-867.ACTUATOR, valve134203-965.ROD, trip135204-896.BASE, air motor137102-975.SCREW, rd hd mach; .no. 6-32 x 0.25" (6.3 mm)139160-614.PISTON, air motor140†100-069BALL, steel; . 0.25" (6.3 mm) dia.242101-579PIN, roll 0.12" (3.2 mm) dia.20.75" (19 mm) long4pair.	31*	170-709	POPPET, valve; urethane	2			Includes items 40, 42 (gty 2), and 47 to 55	1
<ul> <li>33 172–867</li> <li>34 203–965</li> <li>35 204–896</li> <li>36 204–896</li> <li>37 102–975</li> <li>37 102–975</li> <li>39 160–614</li> <li>40<sup>+</sup> 100–069</li> <li>40<sup>+</sup> 100–069</li> <li>42 101–579</li> <li>PIN, roll 0.12" (3.2 mm) dia.</li> <li>42 101–579</li> <li>PIN, roll 0.12" (3.2 mm) dia.</li> <li>44</li> </ul>	32	222-499	.PLATE. identification: with muffler	1	70	172–479	TAG, warning (not shown)	1
34203–965.ROD, trip1* The replacements for these parts are available in Repair Kit35204–896.BASE, air motor1206–728. Purchase the kit separately. See page 18.37102–975.SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)1* The replacements for these parts are available in Repair39160–614.PISTON, air motor1* The replacements for these parts are available in Repair40†100–069BALL, steel; . 0.25" (6.3 mm) dia.242101–579PIN, roll 0.12" (3.2 mm) dia.20.75" (19 mm) long4pair.	33 172-	-867	ACTUATOR, valve	1				
35204–896.BASE, air motor1206–728. Purchase the kit separately. See page 18.37102–975.SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)1206–728. Purchase the kit separately. See page 18.39160–614.PISTON, air motor1if The replacements for these parts are available in Repair Kits 204–164 (buna–N) or 221–036 (PTFE), as appropri ate. Purchase the kits separately. See page 18.40†100–069BALL, steel; . 0.25" (6.3 mm) dia.242101–579PIN, roll 0.12" (3.2 mm) dia.20.75" (19 mm) long4pair.	34	203-965	ROD, trip	1	* The r	eplacement	ts for these parts are available in Repair i	Kit
37102–975.SCREW, rd hd mach; .no. 6–32 x 0.25" (6.3 mm)239160–614.PISTON, air motor140†100–069BALL, steel; . 0.25" (6.3 mm) dia.242101–579PIN, roll 0.12" (3.2 mm) dia.20.75" (19 mm) long49	35	204-896	BASE air motor	1	206-72	28. Purchas	e the kit separately. See page 18.	
$\begin{array}{c} Interplacements for these parts are available in Repair in the replacements for the replacements for the replacements for the replacements for the replacement in the r$	37	102-975	SCREW rd hd mach	•	+ The	roplosses	nto for those parts are quallable in Des	-ir
39160-614.PISTON, air motor140†100-069BALL, steel; . 0.25" (6.3 mm) dia.242101-579PIN, roll 0.12" (3.2 mm) dia.20.75" (19 mm) long4ate. Purchase the kits separately. See page 18.	5.		no $6-32 \times 0.25^{\circ}$ (6.3 mm)	2				111
40†100–069BALL, steel; . 0.25" (6.3 mm) dia.ate. Purchase the kits separately. See page 18.42101–579PIN, roll 0.12" (3.2 mm) dia.Image: Construction of the co	39	160-614	PISTON, air motor	1	KITS 20	4—164 (bun	a–IN) of 221–036 (PTFE), as appropri	
42 101–579 PIN, roll 0.12° (3.2 mm) dia. 0.75° (19 mm) long 4 pair.	40+	100_069	BALL steel: 0.25" (6.3 mm) dia	2	ate. Pu	irchase the	kits separately. See page 18.	
0.75" (19 mm) long 4 pair.	42	101_579	PIN_roll 0 12" (3.2 mm) dia	4	🖙 Ren	lace gasket	every time the cylinder is removed for re	<u></u>
			0.75" (19 mm) lona	4	pair.		, ,	

# **Repair Kits**

#### 206–728 Air Motor Repair Kit

*Must be purchased separately* Consists of:

Ref No.	Qty	
10	2	
11	4	
13	2	
14	1	
17	1	
22	2	
30	2	
31	2	
44	1	

#### 204–164 Displacement Pump Repair Kit For Pump Models 203–868, 203–869 and 207–609 only

Must be purchased separately Consists of:

Ref No.	Qty	Ref	Qty
21	1	51	1
25	5	52	1
27	1	53	1
28	1	56	1
40	2	57	1
44	1	58	1
49	2	59	1
50	1		

## 221–036 Displacement Pump Repair Kit *For Pump Model 221–034 only*

Must be purchased separately Consists of:

Ref No.	Qty	Ref	Qty
21	1	51	1
25	5	52	1
27	1	53	1
28	1	56	1
40	2	57	1
44	1	58	1
49	2	59	1
50	1		

#### 221–037 Tune-Up Kit

*For Pump Models 221–034 only Must be purchased separately* Consists of:

Ref No.	Qty
44	1
50	1
51	1
52	1
53	1
56	1
57	1
58	1
59	1

## Manual Change Summary

The manual was revised to add Part Number 150–694 , gasket (Ref. No. 44, Qty. 1), to Repair Kits 204–164, 206–728, 221–036 and 221–037.

Also, a torque requirement of 75-85 ft-lb. was added to the cylinder (Ref. No. 61) on pages 12 and 16.

### **Notes**


# **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 claim. 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: **1–800–367–4023 Toll Free** 

*FOR TECHNICAL ASSISTANCE,* service repair information or assistance regarding the application of Graco equipment: **1–800–543–0339 Toll Free** 

Sales Offices: Atlanta, Chicago, Dallas, Detroit, Los Angeles, Mt. Arlington (N.J.) Foreign Offices: Canada; England; Korea; Switzerland; France; Germany; Hong Kong; Japan

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