



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

INSTRUCTIONS

First choice when quality counts.™

Displacement Pump

3600 psi (250 bar, 24.8 MPa) Maximum Working Pressure

Model 244197, Series A

Used in Ultra® Max and Ultimate Mx™ 795 and 1095 Sprayers

Model 244224, Series A

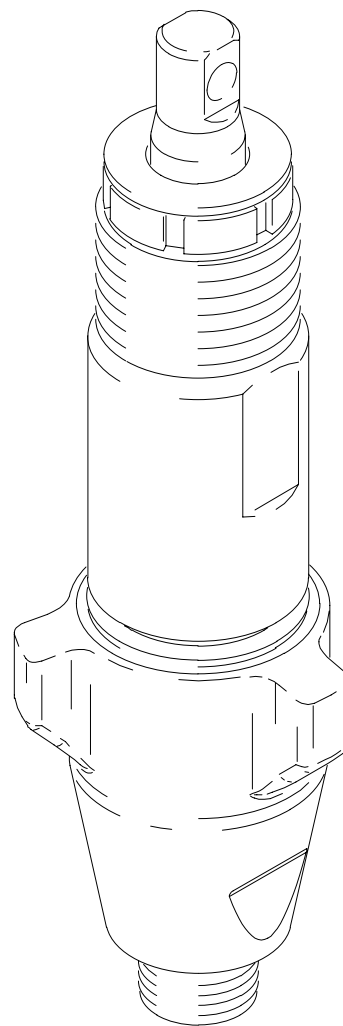
Used in Ultra Max and Ultimate Mx 1595 Sprayers

Model 244201, Series A

Used in 245044, 245046, 245049 Mark V™ Sprayers

Model 244409, Series A

Used in 245045, 245047 Mark V™ Sprayers



8016A

Table of Contents

Warnings	2	244224	17
Service	3	244201	17
Technical Data	15	244409	17
Parts, Pump		Warranty	18
244197	16	Graco Phone Number	18

Symbols

Warning Symbol



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

Caution Symbol



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

WARNING



INSTRUCTIONS

EQUIPMENT MISUSE HAZARD

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.
- Use the equipment only for its intended purpose. If you are uncertain about usage, call your Graco distributor.
- Do not alter or modify this equipment. Use only genuine Graco parts and accessories.
- Do not exceed the maximum working pressure of the lowest rated system component. Refer to the **Technical Data** on page 15 for the maximum working pressure of this equipment.
- Use fluids and solvents which are compatible with the equipment wetted parts. Refer to the **Technical Data** section of all equipment manuals. Read the fluid and solvent manufacturer's warnings.
- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in pressurized aluminum equipment. Such use could result in a chemical reaction, with the possibility of explosion.
- Comply with all applicable local, state, and national fire, electrical, and safety regulations.



MOVING PARTS HAZARD


Moving parts can pinch or amputate your fingers.

- Keep clear of all moving parts when starting or operating the pump.
- Before servicing the equipment, follow the **Pressure Relief Procedure** on page 3 to prevent the equipment from starting unexpectedly.

Service

Pressure Relief Procedure

⚠ WARNING

 **PRESSURIZED EQUIPMENT HAZARD**
The system pressure must be manually relieved to prevent the system from starting or spraying accidentally. To reduce the risk of an injury from accidental spray from the gun, splashing fluid, or moving parts, follow the **Pressure Relief Procedure** whenever you:

- are instructed to relieve the pressure,
- stop spraying,
- check or service any of the system equipment,
- or install or clean the spray nozzle.

1. Engage gun safety latch.
2. Turn ON/OFF switch to OFF.
3. Unplug power cord.
4. Disengage gun safety latch. Hold metal part of gun against grounded metal pail and trigger gun into pail to relieve pressure.
5. Engage gun safety latch.
6. Open any fluid drain valves in system. Leave drain valve open until ready to dispense again.

Pump Repair Kit

Pump	Repair Kit
244197	244196
244224	244198
244201	244198
244409	244200


Tools Needed

Vise
12 in. adjustable, open end wrench (2)
Hammer, 20 oz maximum
Small screwdriver
Throat Seal Liquid
Pick or long small screwdriver

Cleaning and Inspecting Parts

1. Clean and inspect parts. Pay particular attention to the ball seats in the intake valve and piston, which must have no nicks or wear, and to the inside of the sleeve and the outside of the piston rod, which must not be worn or scratched. Replace worn or damaged parts.

⚠ WARNING

 **COMPONENT RUPTURE HAZARD**
Never use sharp or pointed tools to remove sleeve or other components which could result in pump rupture and cause serious bodily injury. If the sleeve cannot be removed easily, return the sleeve and cylinder to your Graco distributor for removal.

2. Remove and clean the sleeve when you are repacking the pump.

Service

Repair When Pump Is Off The Sprayer

Disassembling the pump

Fig. 1. Remove packing nut (202) and throat adjustment spacer (228).

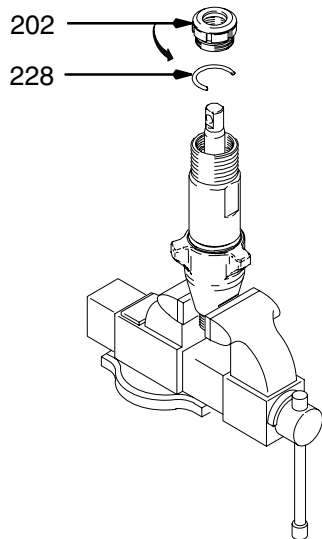


Fig. 1

7568A

Fig. 2. Unscrew intake valve from cylinder.

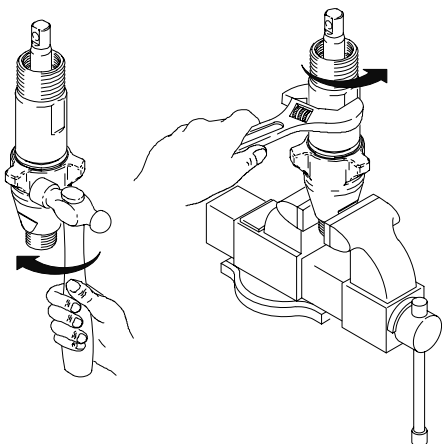


Fig. 2

7569A

Fig. 3. Disassemble intake valve. Clean and inspect. O-ring (227) may require a pick for removal.

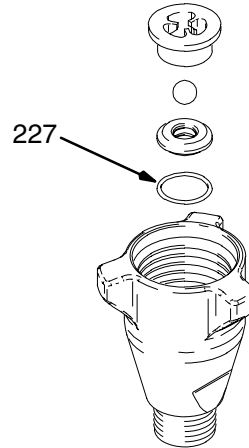


Fig. 3

7570A

Fig. 4. Tap piston rod out of cylinder with a hammer or flip over and tap piston rod out against a bench.

Note: Sleeve may come out of cylinder with piston rod.

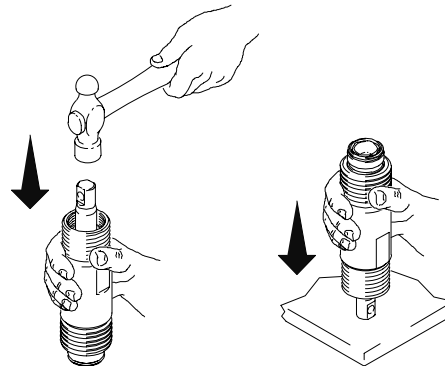


Fig. 4

7571a

Fig. 5. Remove piston rod from sleeve, or remove sleeve from cylinder.

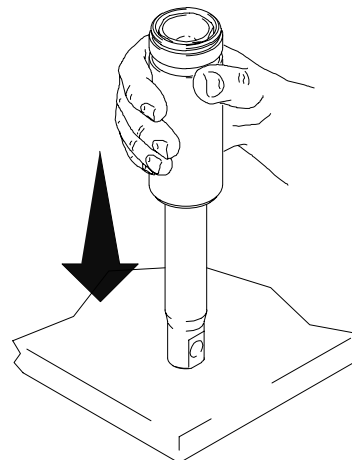


Fig. 5

7572A

Service

⚠ WARNING

COMPONENT RUPTURE HAZARD
 Do not clean or wipe the piston valve threads. Cleaning the piston valve threads could destroy the special sealing patch and cause the piston valve to come loose during operation, causing pump bursting and possible serious bodily injury.




Fig. 6. Unscrew piston valve from piston rod. Clean and inspect parts. The piston has a special thread locking/sealing patch. Do not remove the patch. The patch allows four disassembly/assembly procedures before it is necessary to apply Loctite® to the threads.

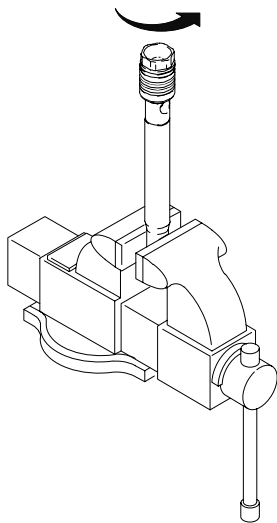


Fig. 6 7576A

Fig. 7. Remove packings and glands from piston rod.

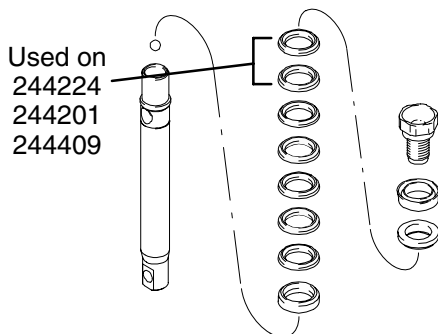


Fig. 7

Fig. 8. Remove throat packings and glands from cylinder. Discard throat packings and glands.

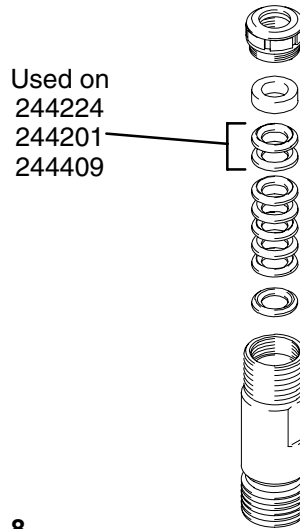


Fig. 8 7573B

Assembling the pump

Fig. 9. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (219) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) on piston rod. Install female gland (217). Install piston guide (216) (note orientation) on piston valve (210). The special sealing patch on piston valve threads is good for four repackings. Use Loctite® on piston valve threads after four repackings.

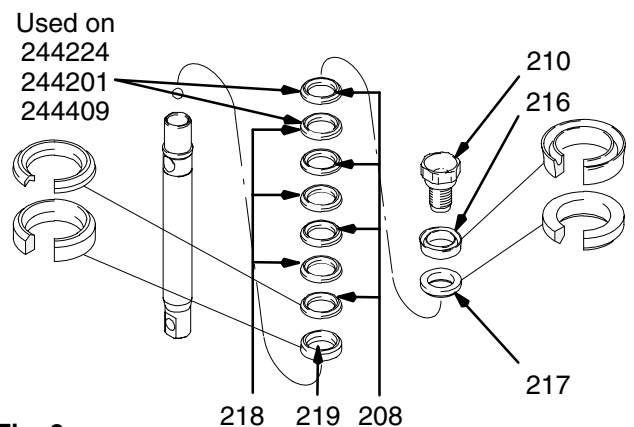


Fig. 9

Service

Fig. 10. Install ball (206) in piston rod. If Loctite® is applied to piston valve threads, ensure that none gets on ball.

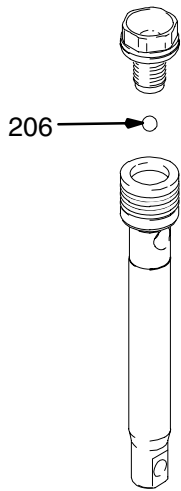


Fig. 10

7575A

Fig. 11. Tighten piston valve to piston rod as specified:

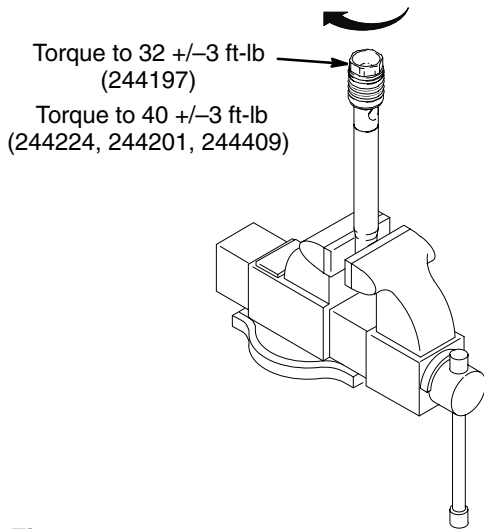


Fig. 11

7576A

Fig. 12. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Place male gland (204) in cylinder. Alternately stack UHMWPE (203) and leather packings (223) (note orientation). Place female gland (224) in top of cylinder. Seat packings.

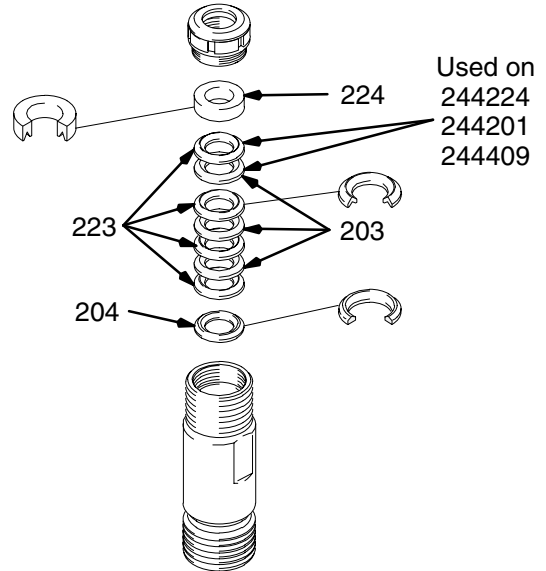


Fig. 12

7573B

Fig. 13. Install seal (201) into packing nut (202). Install throat adjustment spacer onto packing nut. Loosely install packing nut into cylinder.

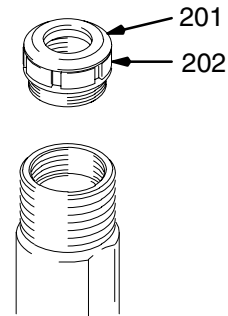


Fig. 13

7581A

Service

Fig. 14. Grease piston packings and sleeve top edge.

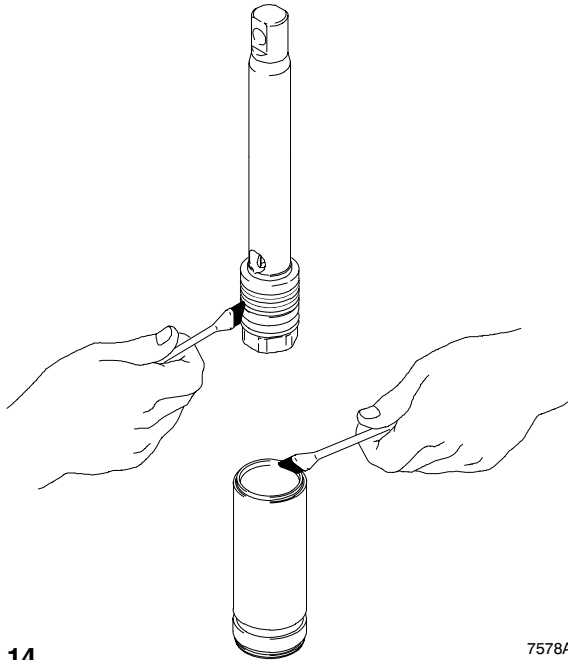


Fig. 14

7578A

Fig. 15. Carefully slide piston assembly into top of sleeve.

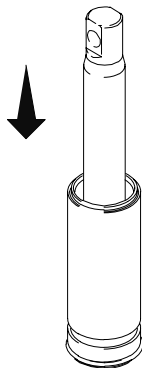


Fig. 15

7577A

Fig. 16. Grease top inch or two of piston rod that will go through the cylinder throat packings.

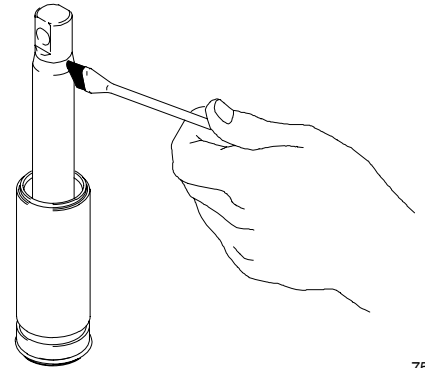


Fig. 16

7579A

Fig. 17. Grease o-ring (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired.

Note: O-ring (207) is not required for safe pump operation.

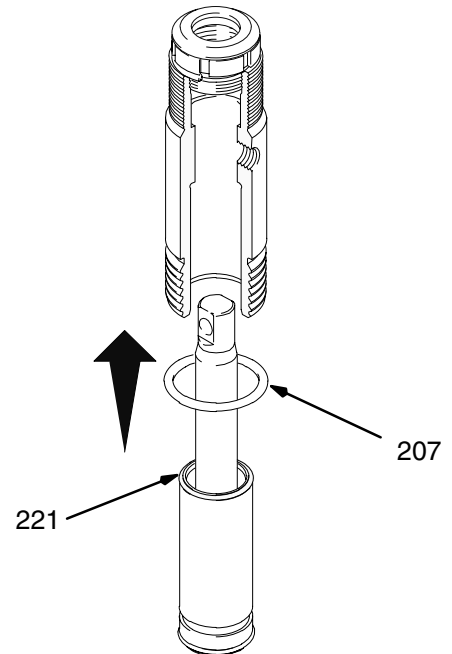
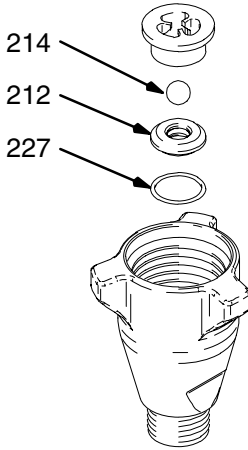


Fig. 17

7582A

Service

Fig. 18. Reassemble intake valve with new o-ring (227), seat (212) and ball (214). Seat may be flipped over and used on other side. Clean seat thoroughly.



7570A

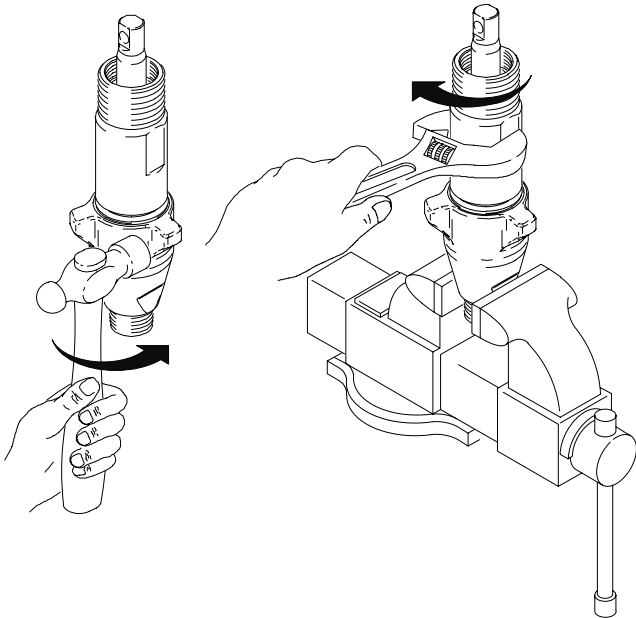
Fig. 18

Fig. 19. Install intake valve on cylinder. If a wrench is used torque as follows:

67 +/- 5 ft-lb (for model 244197)

80 +/- 5 ft-lb (for models 244201, 244224 & 244409)

If a wrench is not used, be sure intake valve is bottomed out against cylinder.

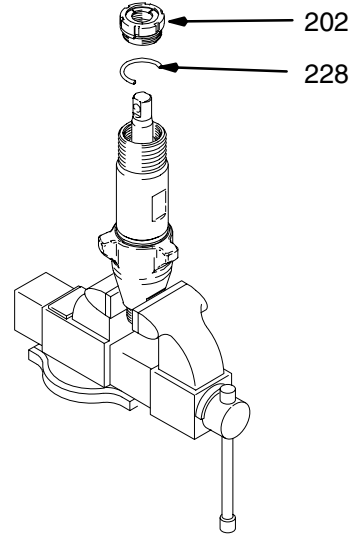


7569A

Fig. 19

Fig. 20. Torque seal and packing nut (202) down onto throat nut spacer (228) to 100 +/- 10 in-lb.

Remove throat nut spacer (228) when pump packings begin to leak after much use. Then tighten packing nut down until leakage stops or lessens. This allows approximately 100 gallons of additional operation before a repacking is required.



7568A

Fig. 20

Service

Repair When Pump Is On The Sprayer

⚠ WARNING

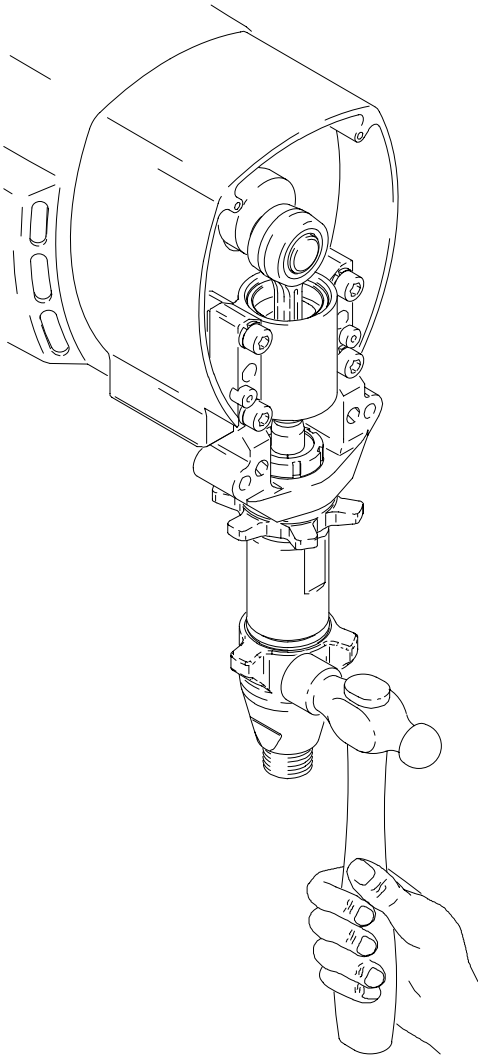


INJECTION HAZARD

To reduce the risk of serious injury, whenever you are instructed to relieve pressure, follow the **Pressure Relief Procedure** on page 3.

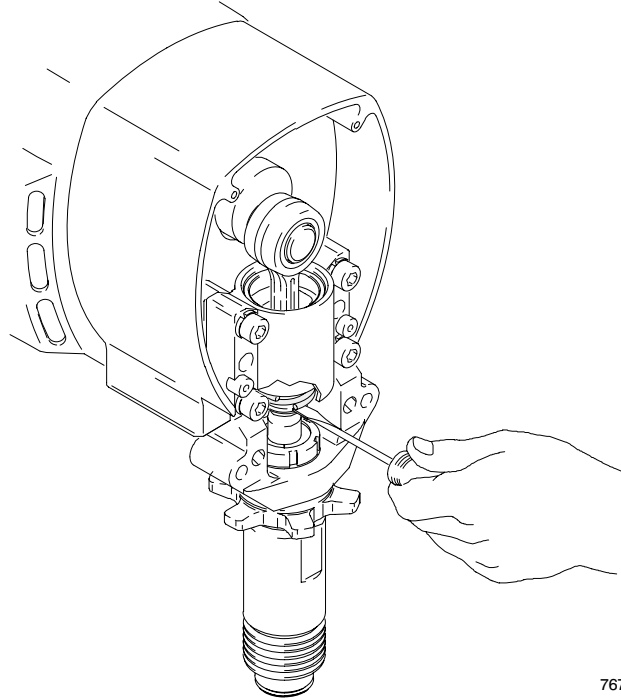
Procedure on page 3.

Fig. 1. Remove intake valve.



7673A

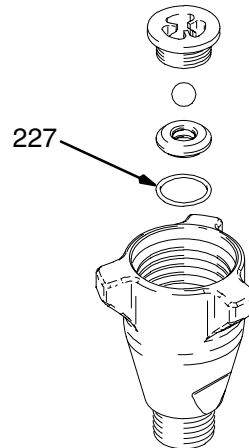
Fig. 2. Use screwdriver to push retaining spring up and push pin out.



7674A

Fig. 2

Fig. 3. Disassemble intake valve. Clean and inspect. O-ring (227) may require a pick for removal.



7570A

Fig. 3

Fig. 1

Service

Fig. 4. Remove piston rod and sleeve.

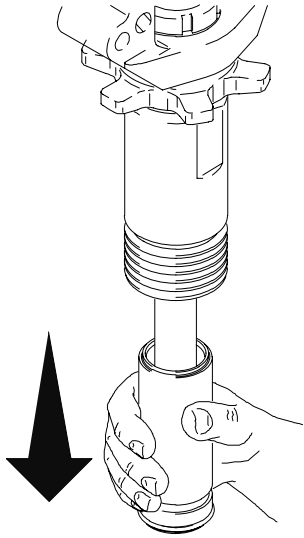


Fig. 4

7746A

Fig. 4. Invert piston rod and sleeve and pound on hard surface until piston rod comes out of sleeve.

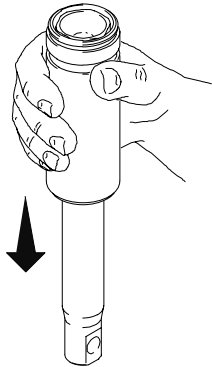


Fig. 5

7572A

Fig. 6. Remove packing nut (202)

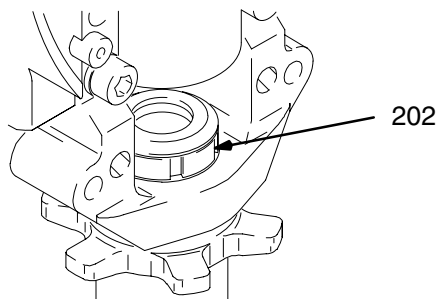


Fig. 6

7726A

Fig. 7. Invert piston rod and insert into cylinder to force out throat packings.

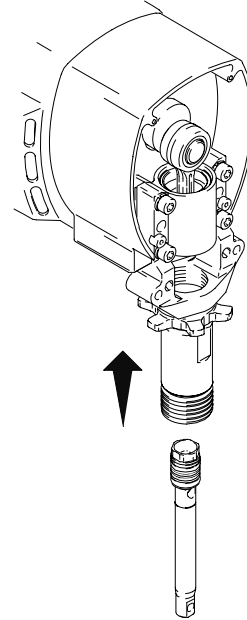


Fig. 7

7747A

Fig. 8. Insert piston rod into cylinder with pin hole up and piston valve down. Insert pin into piston rod and crank shaft.

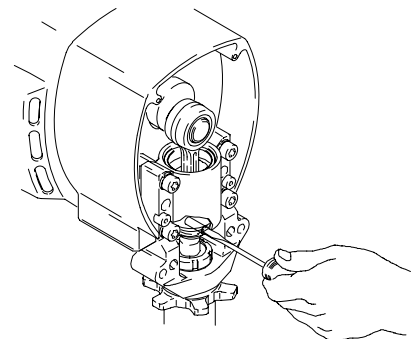
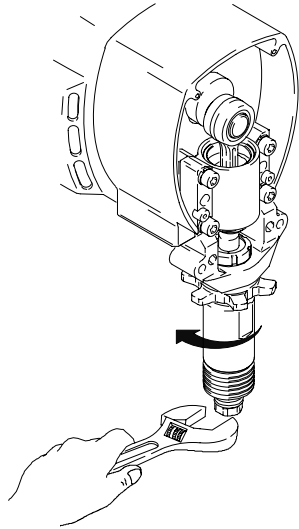


Fig. 8

7675A

Service

Fig. 9. Remove piston valve from piston rod with a wrench.



7748A

Fig. 9

Fig. 11. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (204). Alternately stack UHMWPE (203) and leather (223) packings (note orientation). Install female gland (201) and packing nut (202) and throat adjustment spacer (228).

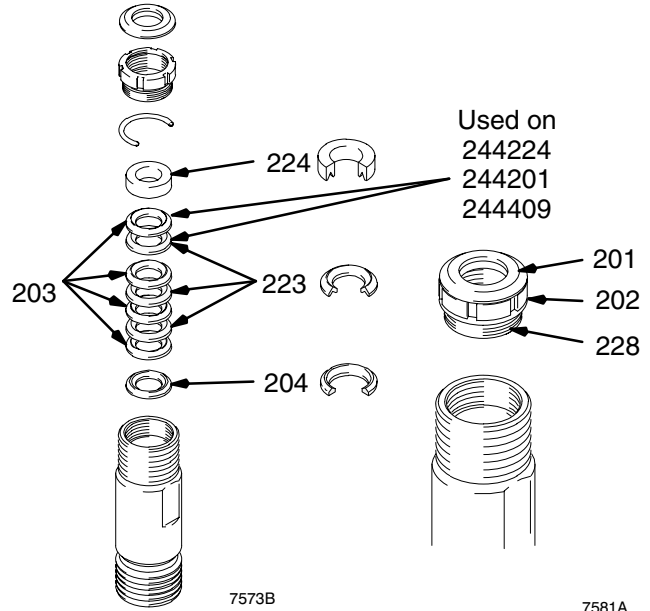
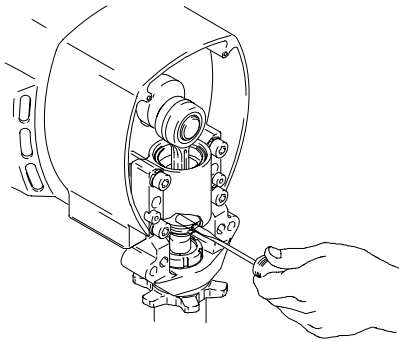


Fig. 11

Fig. 10. Remove pin and piston rod from cylinder.



7675A

Fig. 10

Fig. 12. Remove packings and glands from piston rod.

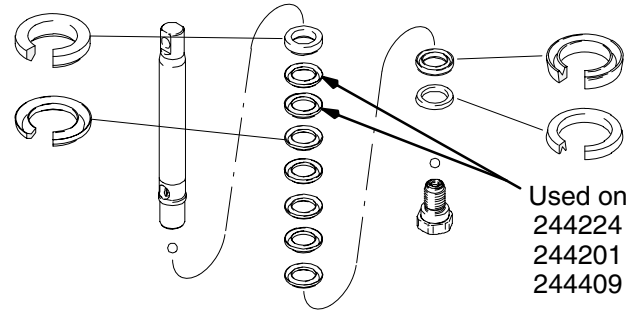


Fig. 12

Service

Fig. 13. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (219) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) on piston rod. Install female gland (217). Install backup washer (216) and u-cup (209) (note orientation) on piston valve (210). The special sealing patch on piston valve threads is good for four repackings. Use Loctite® on piston valve threads after four repackings.

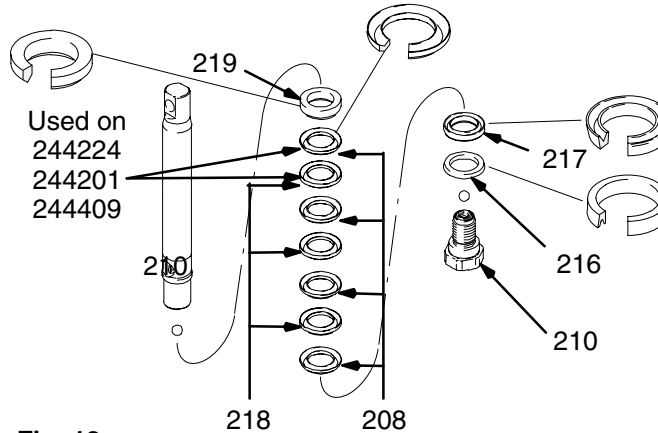


Fig. 13

Fig. 10. Install ball (206) in piston rod. If Loctite® is applied to piston valve threads, ensure that none gets on ball. Install piston valve on piston rod.

Torque as follows:

32 +/-3 ft-lb (for model 244197)

40 +/-3 ft-lb (for model 244224, 244201 & 244409)

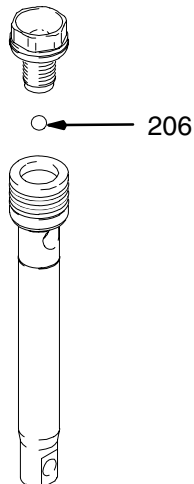


Fig. 14

7575A

Fig. 15. Grease piston packings and sleeve top edge.

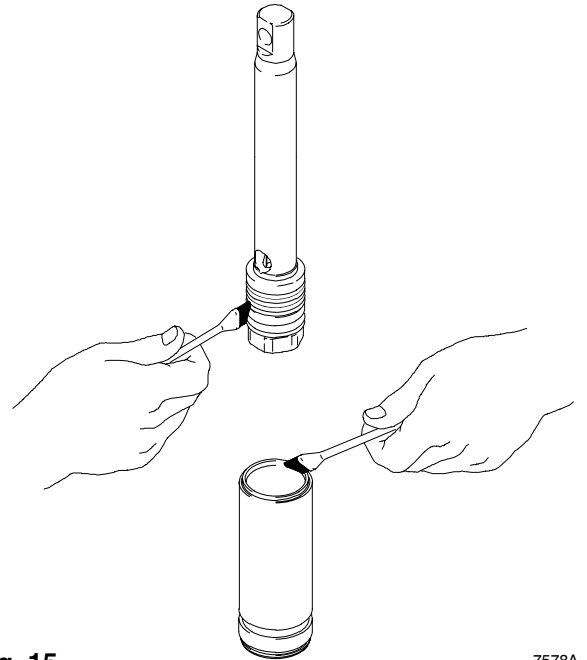


Fig. 15

7578A

Fig. 16. Carefully slide piston assembly into top of sleeve. Assure u-cup is not rolled over or damaged.

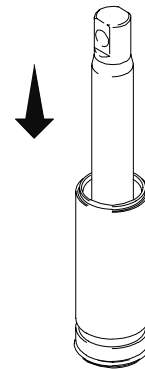


Fig. 16

7577A

Fig. 17. Grease top inch or two of piston rod that will go through the cylinder throat packings.

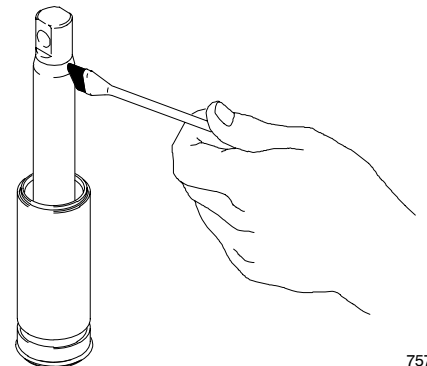


Fig. 17

7579A

Service

Fig. 18. Grease o-ring (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired.

Note: O-ring (207) is not required for safe pump operation.

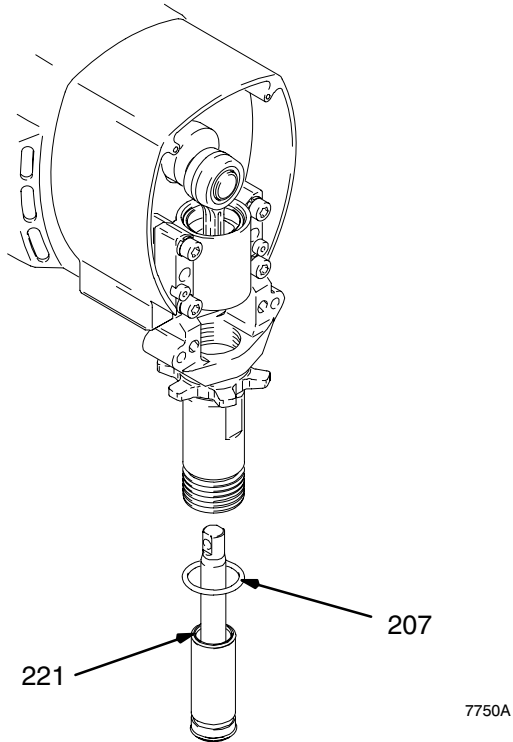
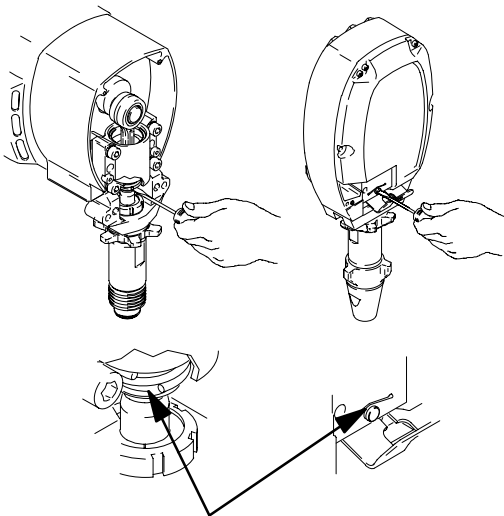


Fig. 18

Fig. 19. Use screwdriver to push retaining spring up.

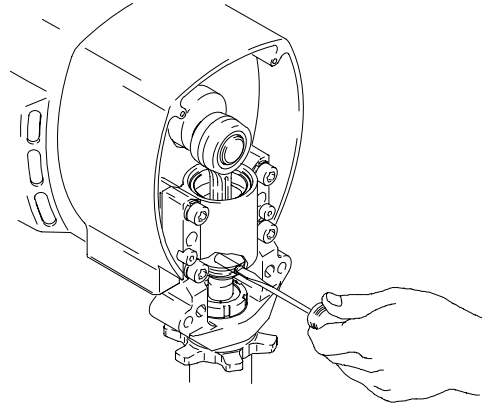


Note: Make sure retaining ring falls into slot.

7674B

Fig. 19

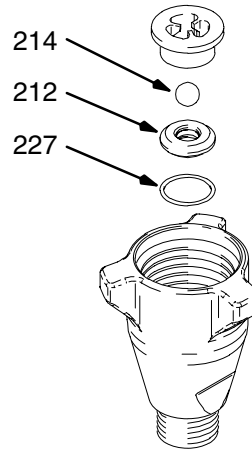
Fig. 20. Push in pin.



7675A

Fig. 20

Fig. 21. Reassemble intake valve with new o-ring (227), seat (212) and ball (214). Seat may be flipped over and used on other side. Clean seat thoroughly.



7570B

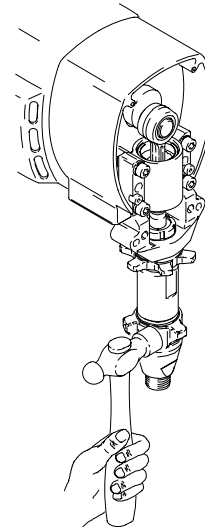
Fig. 21

Fig. 22. Install intake valve on cylinder.

Wrench torque as follows:

67 +/-5 ft-lb (for model 244197)

80 +/-5 ft-lb (for model 244224, 244201 & 244409)



7678A

Fig. 22

Service

Cross Sectional Reference

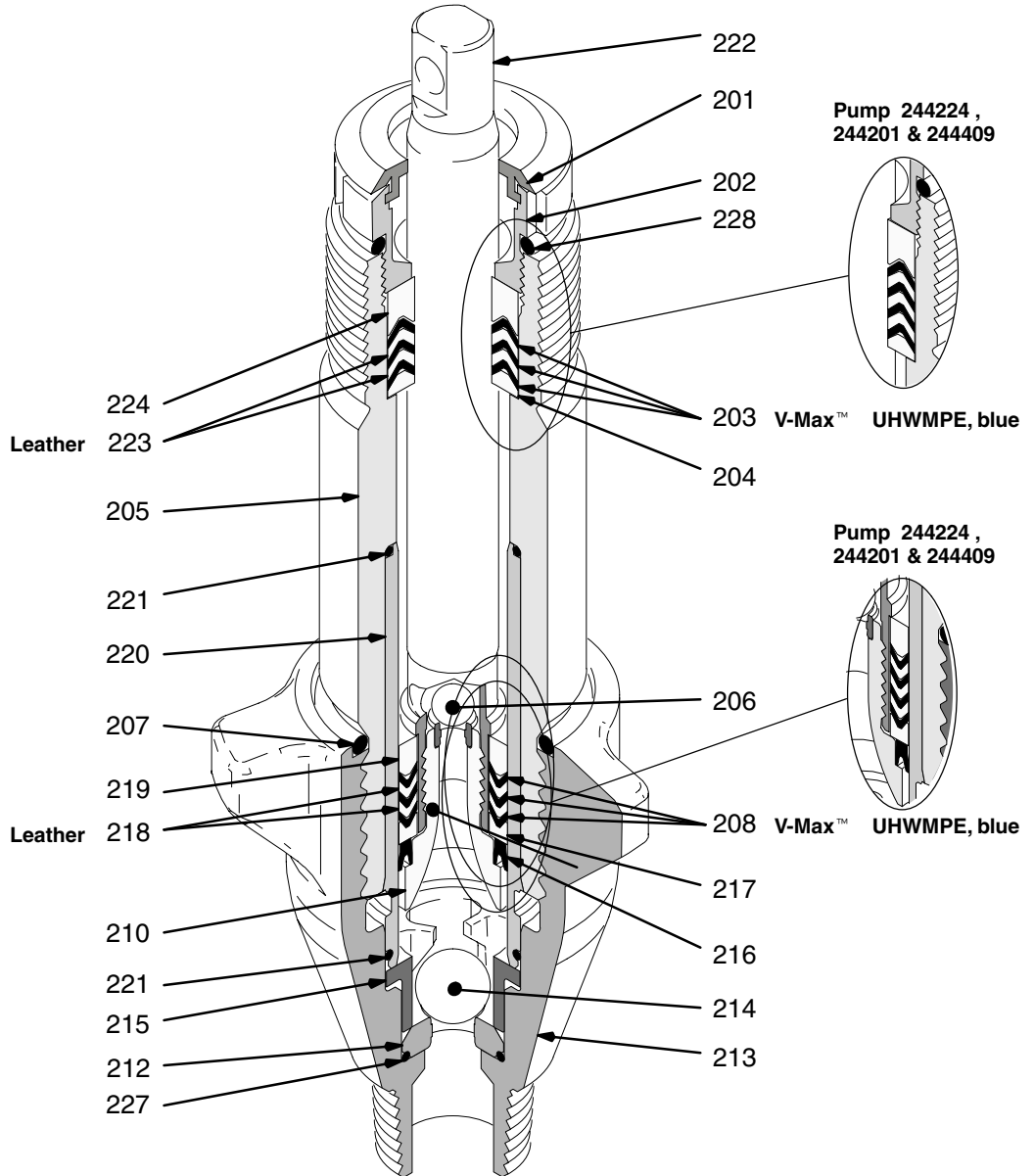


Fig 23

Technical Data

Maximum working pressure	3600 psi (250 bar, 24.8 MPa)
Fluid inlet size	
244224, 244197	3/4 npt(f)
244201, 244409	1/2 npt(f)
Fluid outlet size	
244197	1/4 npt(f)
244224, 244201, 244409	3/8 npt(f)

Wetted parts stainless steel, PTFE®, leather, nylon, zinc-plated carbon steel, tungsten carbide, chrome plating, Delrin®, polyethylene

NOTE: Delrin® and PTFE®
 Loctite® is a registered trademark of the Loctite Company.

Parts – Pump 244197

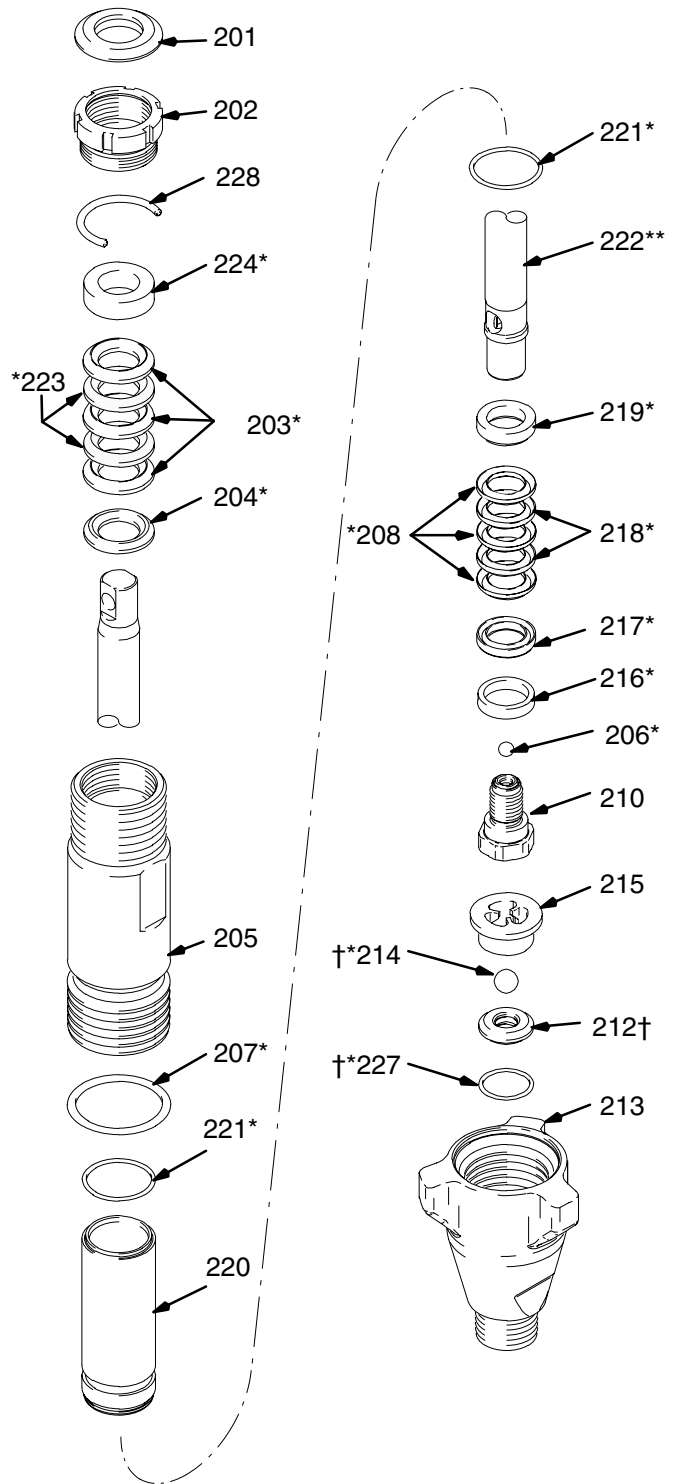
Model 244197, Series A

Ref No.	Part No.	Description	Qty.
201	179810	SEAL, throat	1
202	193046	NUT, packing	1
203*	192692	V-PACKING, throat, V-Max™ UHMWPE, blue	3
204*	178942	GLAND, male, throat	1
205	243346	CYLINDER, pump	1
206*	105444	BALL, sst, 0.3125 in.	1
207*	114054	PACKING, o-ring	1
208*	192693	V-PACKING, piston V-Max™ UHMWPE, blue	3
210	239932	VALVE, piston	1
212†	239922	KIT, seat, carbide includes 214 and 227	1
213	195892	VALVE, intake (foot)	1
214*†	105445	BALL, sst, 0.5000 in.	1
215	192624	GUIDE, ball	1
216*	196758	Guide, piston	1
217*	178969	GLAND, female, piston	1
218*	178939	V-PACKING, leather, piston	2
219*	196880	GLAND, male	1
220	240521	SLEEVE, cylinder	1
221*	108526	O-RING, PTFE®	2
222**	244216	ROD, piston	1
223*	178940	V-PACKING, leather, throat	2
224*	178943	GLAND, female	1
227*†	107079	PACKING, o-ring	1
228	192714	SPACER, throat, nut	1

* These parts are also included in Repair Kit 244196, which may be purchased separately.

† These parts are also included in Carbide Seat Kit 239922, which may be purchased separately.

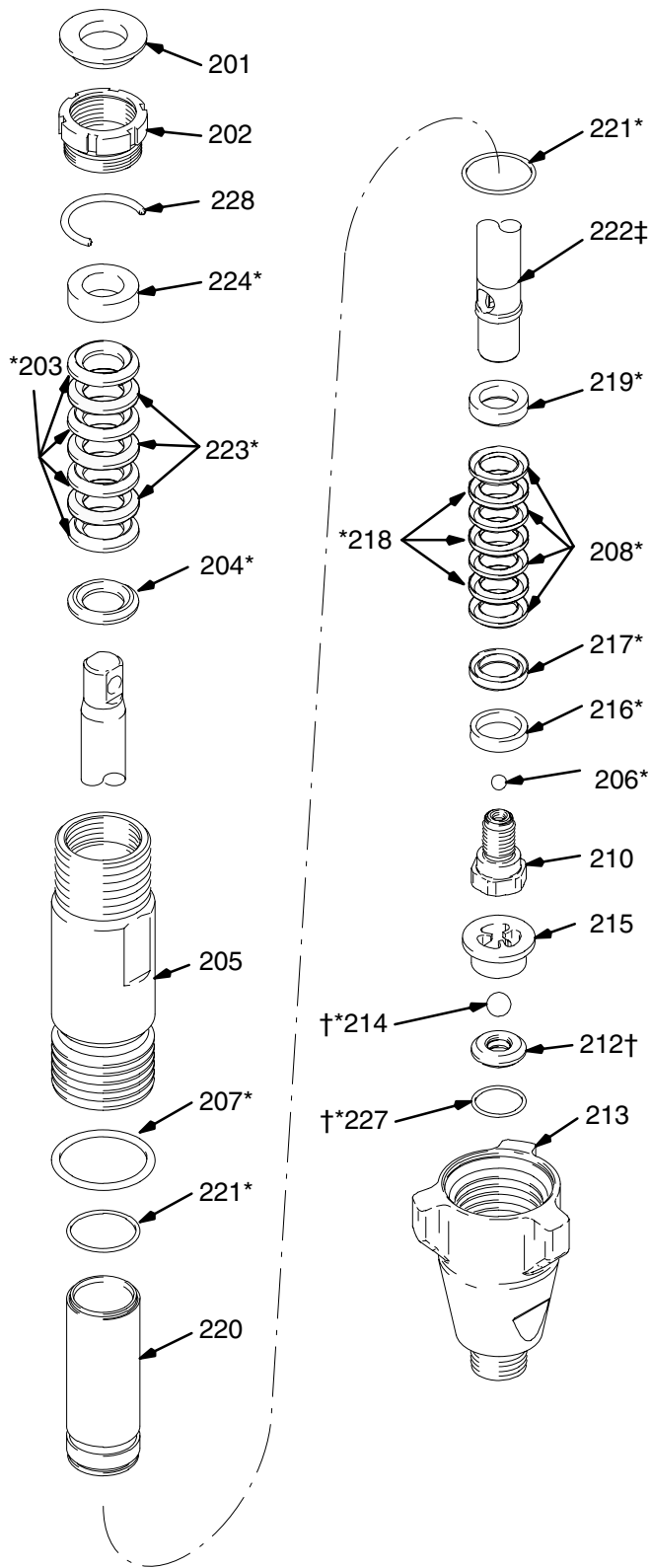
** The new Xtreme™ Life pump rod color is due to a unique metal treatment that was developed to add significant life to the rod. After initial use, the working surface will be enhanced to a polished metallic appearance.



Parts – Pumps 244224, 244201 and 244409

Model 244224, Series A; Model 244201, Series A; Model 244409, Series A

Ref No.	Part No.	Description	Qty.
201	183171	PLUG	1
202	193032	NUT, packing	1
203*	193124	V-PACKING V-Max™ UHMWPE, blue	4
204*	183176	GLAND, packing, male, throat	1
205	196754	CYLINDER, pump Pump 244201, 244409	1
	243347	Pump 244224	1
206*	101947	BALL, sst, 0.375 in. Pump 244224, 244201	1
	116327	BALL, ceramic, 0.375 in. Pump 244409	1
207*	106556	PACKING, o-ring	1
208*	193125	V-PACKING, piston V-Max™ UHMWPE, blue	4
210	240150	VALVE, piston	1
212†	244199	SEAT, carbide (196866) Pump 244224, 244201 includes 214 and 227	1
	244571	SEAT, carbide (197470) Pump 244409 includes 214 and 227	1
213	196753	HOUSING, intake (foot) Pump 244201, 244409	1
	195894	Pump 244224	1
214*†	102972	BALL, sst, 0.875 in. Pump 244224, 244201	1
	111453	BALL, ceramic, 0.75 in. Pump 244409	1
215	196967	GUIDE, ball Pump 244224	1
	193027	Pump 244201, 244409	1
216*	196757	GUIDE, piston	1
217*	183185	GLAND, female, piston	1
218*	183174	V-PACKING, leather, piston	3
219*	183178	GLAND, packing, male	1
220	240525	SLEEVE, cylinder	1
221*	107098 P	ACKING, o-ring	2
222‡		ROD, piston	
††	196752	Pump 244201, 244409	1
**	196645	Pump 244224	1
223*	183175 V	-PACKING, leather, throat	3
224*	183177	GLAND, packing, female	1
227*†	108526	PACKING, o-ring	1
228	193127	SPACER, nut	1



* These parts are also included in Repair Kit 244198 (pump 244224, 244201) or Repair Kit 244200 (pump 244409), which may be purchased separately.

† These parts are also included in Carbide Seat Kit 244199 (pump 244224, 244201) or Carbide Seat Kit 244571 (pump 244409), which may be purchased separately.

‡ The new Xtreme™ Life pump rod color is due to a unique metal treatment that was developed to add significant life to the rod. After initial use, the working surface will be enhanced to a polished metallic appearance.

** This part is also included in Piston Rod Kit 244217, which may be purchased separately.

†† This part is also included in Piston Rod Kit 244218, which may be purchased separately.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco 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. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be 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 general wear and tear, or 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 of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, 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.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

ADDITIONAL WARRANTY COVERAGE

Graco does provide extended warranty and wear warranty for products described in the "Graco Contractor Equipment Warranty Program".

Graco Phone Number

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:
1-800-690-2894 Toll Free

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
Graco reserves the right to make changes at any time without notice.*

Sales Offices: Minneapolis, Detroit
International Offices: Belgium, Korea, Hong Kong, Japan

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

<http://www.graco.com>

PRINTED IN U.S.A. 309277 10/2000, Revised 05/2001