

Displacement Pump

308798Z
EN

For professional use only.

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

Model 239923, Series A

UltraMax and Ultimate MX 795/1095
GMAX and GM 3900

Model 240291, Series A

UltraMax and Ultimate MX 1595
GMAX and GM 5900
GMAX 10000

Model 240917, Series A

GMAX and GM 7900

Model 240800, Series A

GMAX 5900HD and Mark V

Model 243344, Series A

LineLazer II 3900

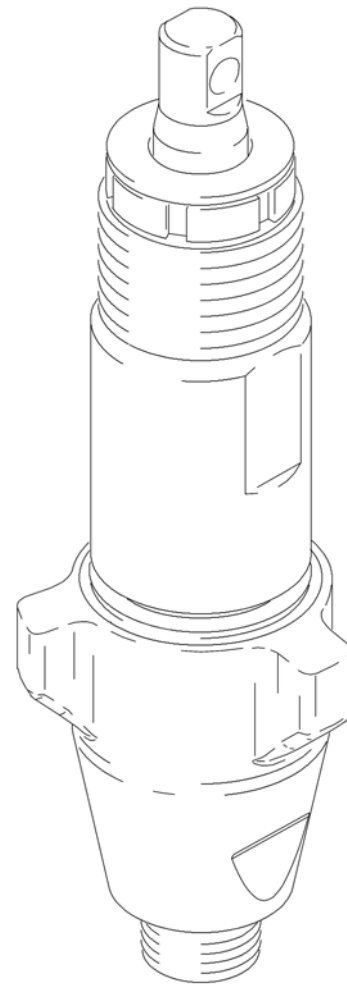
Model 243345, Series A

LineLazer II 5900



Important Safety Instructions

Read all warnings and instructions in this manual. Save these instructions.









8016A

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Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

 WARNING	
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause death or serious injury.</p> <ul style="list-style-type: none"> Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See Technical Data in all equipment manuals. Use fluids and solvents that are compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read fluid and solvent manufacturer’s warnings. For complete information about your material, request MSDS from distributor or retailer. Turn off all equipment and follow the Pressure Relief Procedure when equipment is not in use. Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer’s replacement parts only. Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards. Use equipment only for its intended purpose. Call your distributor for information. Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents. Comply with all applicable safety regulations.
	<p>MOVING PARTS HAZARD</p> <p>Moving parts can pinch, cut or amputate fingers and other body parts.</p> <ul style="list-style-type: none"> Keep clear of moving parts. Do not operate equipment with protective guards or covers removed. Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the Pressure Relief Procedure and disconnect all power sources.
  	<p>SKIN INJECTION HAZARD</p> <p>High-pressure spray is able to inject toxins into the body and cause serious bodily injury. In the event that injection occurs, get immediate surgical treatment.</p> <ul style="list-style-type: none"> Do not aim the gun at, or spray any person or animal. Keep hands and other body parts away from the discharge. For example, do not try to stop leaks with any part of the body. Always use the nozzle tip guard. Do not spray without nozzle tip guard in place. Do not leave the unit energized or under pressure while unattended. When the unit is not in use, turn off the unit and follow the Pressure Relief Procedure for turning off the unit. Always engage the trigger lock when not spraying. Verify the trigger lock is functioning properly.

 **WARNING****PERSONAL PROTECTIVE EQUIPMENT**

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

CALIFORNIA PROPOSITION 65

This product contains a chemical known to the State of California to cause cancer, birth defects or other reproductive harm. Wash hands after handling.

Service

Pressure Relief Procedure



Follow the Pressure Relief Procedure whenever you see this symbol.



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

1. Engage trigger lock.
2. Turn ON/OFF switch to OFF.
3. Unplug power cord.
4. Disengage trigger lock. Hold metal part of gun against grounded metal pail and trigger gun into pail to relieve pressure.
5. Engage the trigger lock.
6. Open all fluid drain valves in the system, having a waste container ready to catch drainage. Leave drain valve(s) open until you are ready to spray again.
7. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved:
 - a. VERY SLOWLY loosen tip guard retaining nut or hose end coupling to relieve pressure gradually.
 - b. Loosen nut or coupling completely.
 - c. Clear hose or tip obstruction.

Pump Repair Kits

Pump	Repair Kit
239923	244196
240291	244198
240917	240916
240800	244198
243344	244196
243345	244198

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

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.



COMPONENT RUPTURE HAZARD

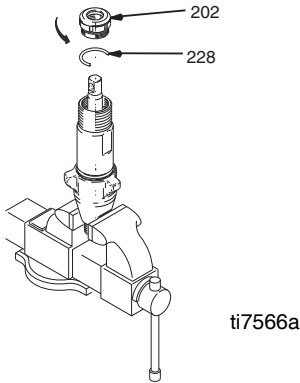
To reduce the risk of serious injury from pressurized fluid, never use sharp or pointed tools to remove sleeve. If the sleeve cannot be removed easily, return the sleeve and cylinder to a Graco distributor for removal.

NOTE: Remove and clean sleeve when repacking pump.

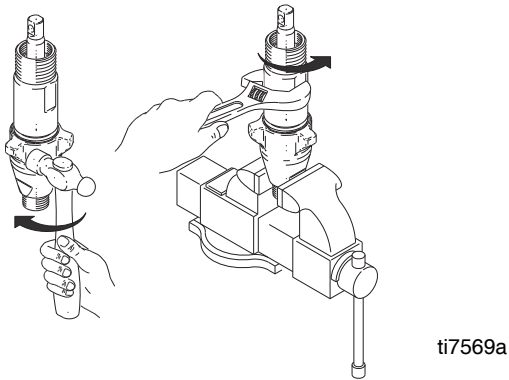
Repair When Pump is Separated From Sprayer

Disassembling the Pump

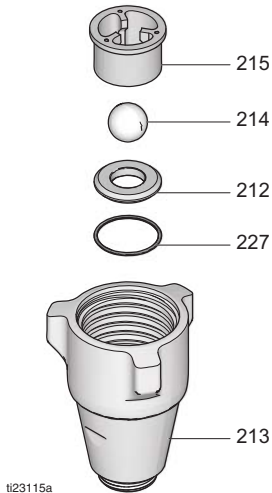
1. Remove packing nut (202) and throat adjustment spacer (228).



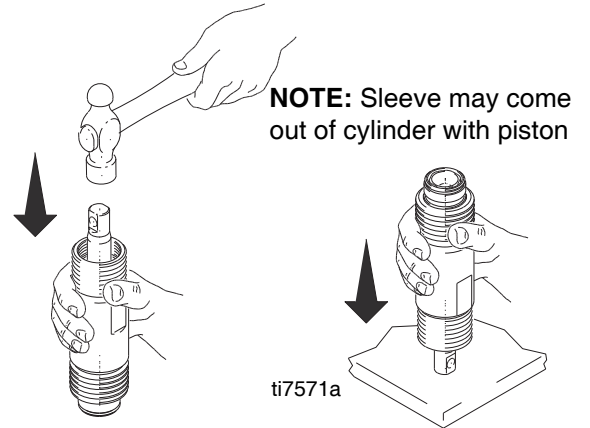
2. Unscrew intake valve from cylinder.



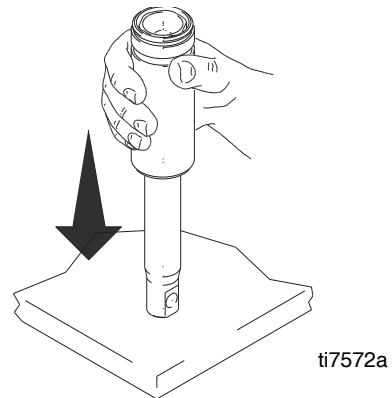
3. Disassemble intake valve. Clean and inspect o-ring (227). **NOTE:** A pick may be required to remove o-ring.



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

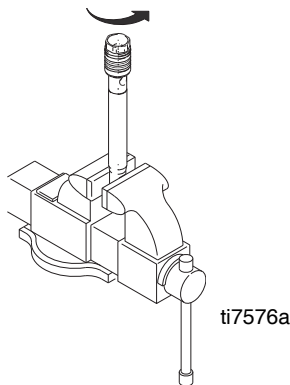


5. Remove piston rod from sleeve, or remove sleeve from cylinder. Remove o-ring (221) from top of sleeve (or from inside of cylinder if o-ring did not come out with sleeve).

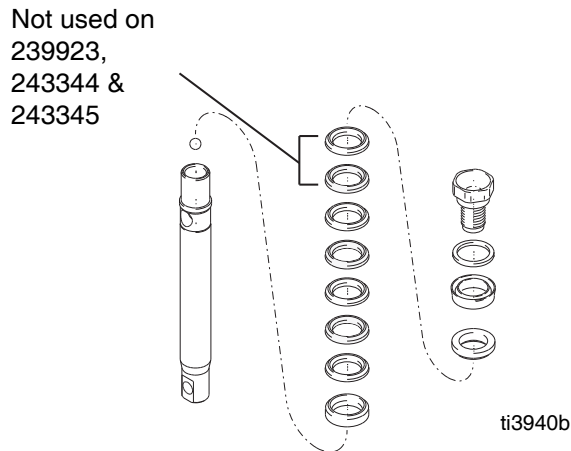


<p>COMPONENT RUPTURE HAZARD</p> <p>To reduce the risk of serious injury from pressurized fluid, do not clean or wipe the piston valve threads. Cleaning the piston valve threads could destroy the special sealing patch and cause the piston valve to come loose during operation.</p>						

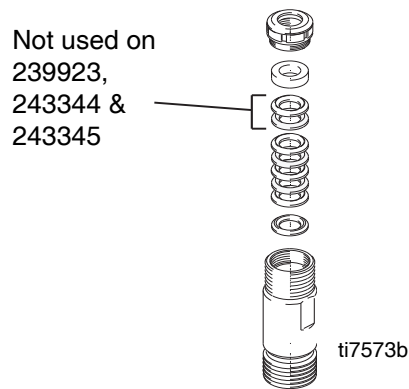
- Unscrew piston valve from piston rod. Clean and inspect parts. The piston has a special thread locking/sealing patch. Do not remove the patch. The patch allows four disassembly/assembly procedures before it is necessary to apply thread sealant to the threads.



- Remove packings and glands from piston rod.

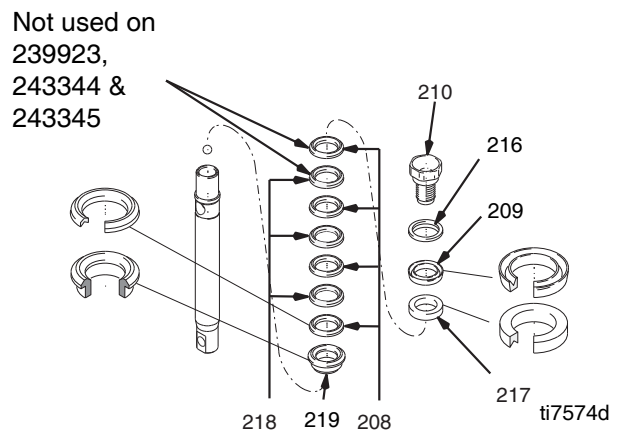


- Remove throat packings and glands from cylinder. Discard throat packings and glands.

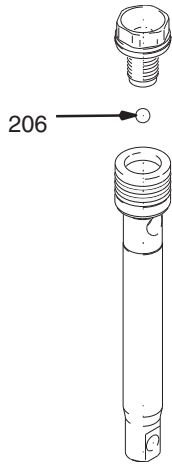


Assembling the Pump

- 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 packings. Use thread sealant on piston valve threads after four repackings.

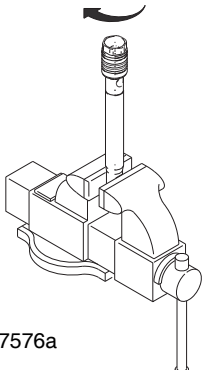


2. Install ball (206) in piston rod. If thread sealant is applied to piston valve threads, make sure that none gets on ball.

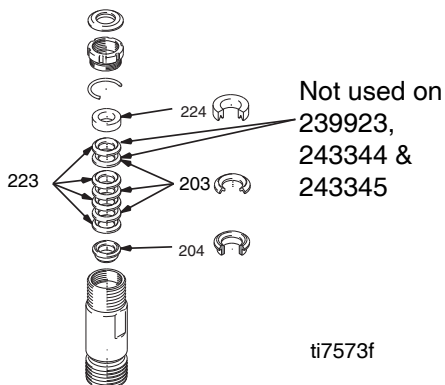


3. Tighten piston valve to piston rod as specified:

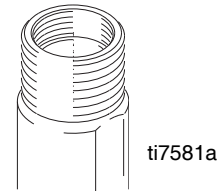
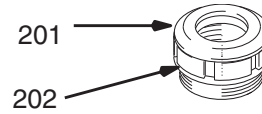
Models	Torque
239923	27 +/-3 ft-lb.
240291, 240800	55 +/-3 ft-lb.
240917	55 +/-5 ft-lb.



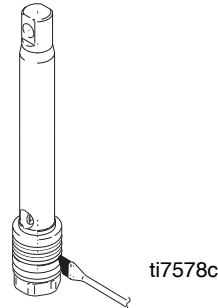
4. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Place male gland (204) in cylinder. Alternately stack UHMWPE (203) and leather packings (223) (note orientation). Place female gland (224) in top of cylinder. Seat packings.



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

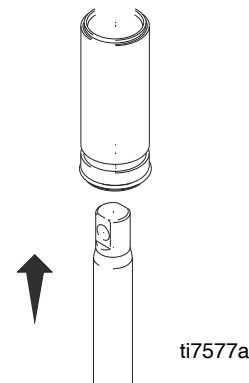


6. Grease piston packings.

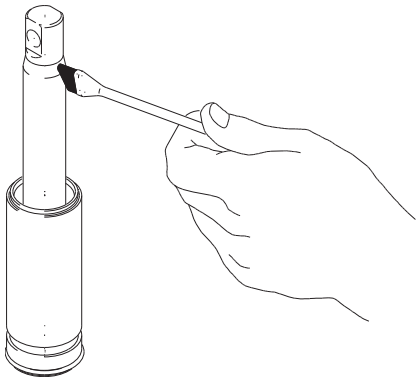


NOTICE
Do not slide piston assembly into top of sleeve as this may damage piston packing.

7. Slide piston assembly into bottom of sleeve. Assure u-cup is not rolled over or damaged.

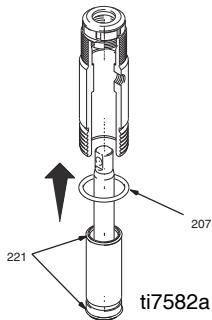


8. Grease top inch or two of piston rod that will go through the cylinder throat packings.



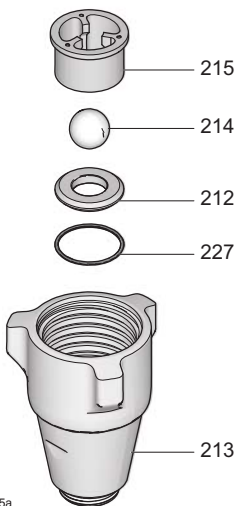
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9. Grease o-rings (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired. **NOTE:** O-ring (207) is not required for safe pump operation.



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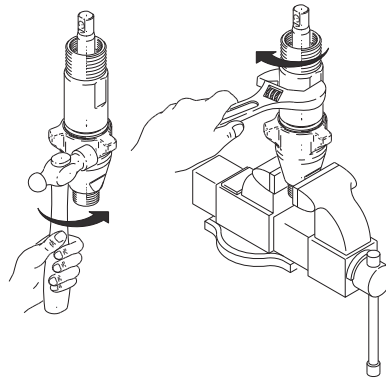
10. Reassemble intake valve with new o-ring (227), seat (212) and ball (214). Seat may be flipped over and used on other side. Clean seat thoroughly.



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

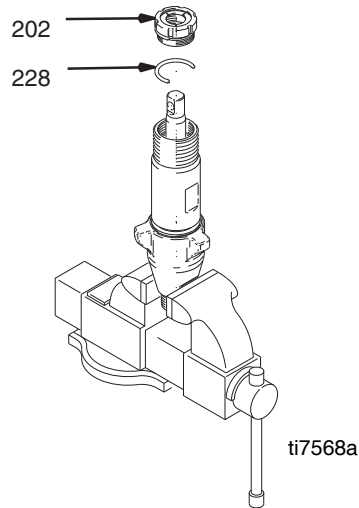
Models	Torque
239923	67 +/- 5 ft-lb
240291 & 240800	80 +/- 5 ft-lb
240917	150 +/- 5 ft-lb



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

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

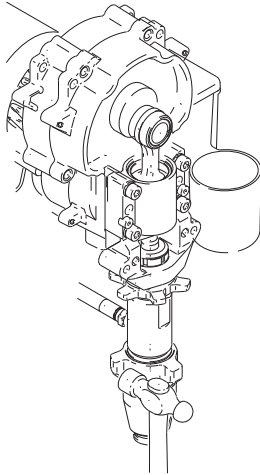


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Repair When Pump is On Sprayer

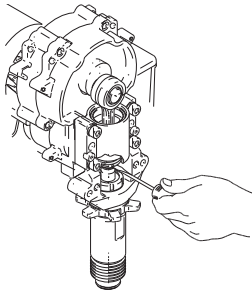


1. Perform **Pressure Relief Procedure**, page 4.
2. Remove intake valve.



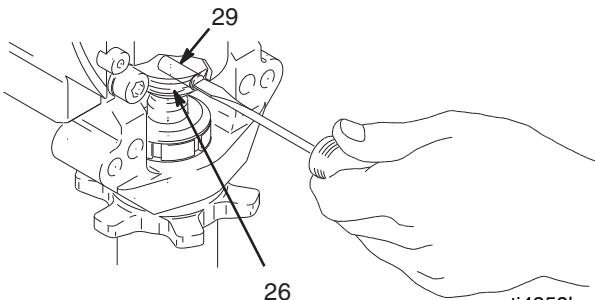
ti4258c

3. Use screwdriver to push retaining spring (26) up.



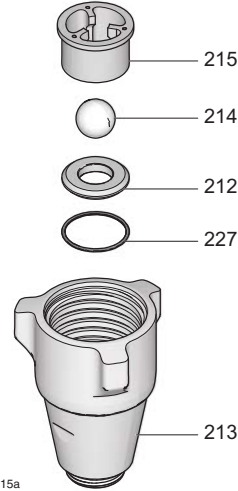
26 ti4258a

4. Push out pin (29).



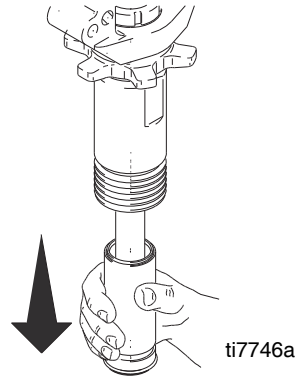
29 26 ti4258b

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



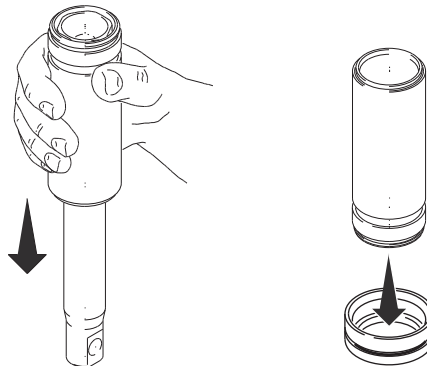
ti23115a

6. Remove piston rod and sleeve.



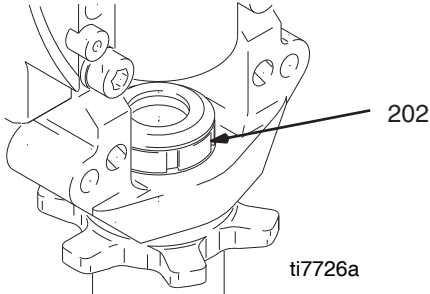
ti7746a

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

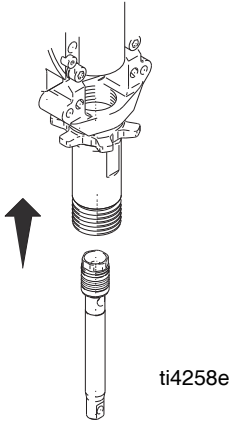


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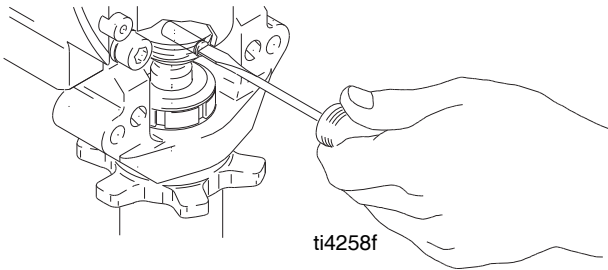
8. Remove packing nut (202).



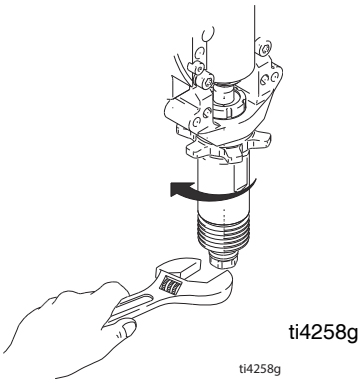
9. Invert piston rod and insert into cylinder to force out throat packings.



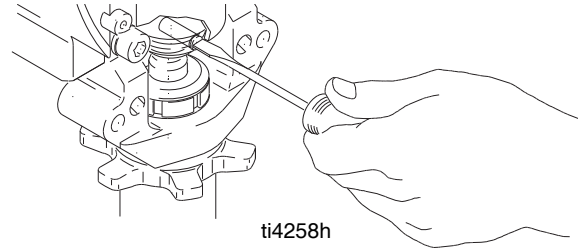
10. Insert piston rod into cylinder with pin hole up and piston valve down. Insert pin into piston rod and crank shaft.



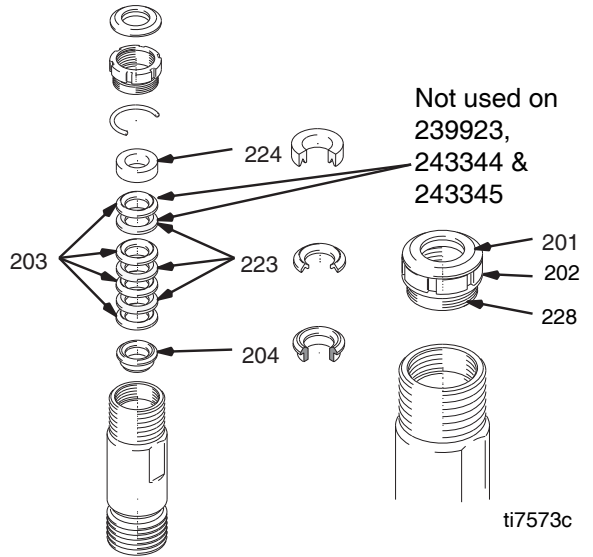
11. Remove piston valve from piston rod with a wrench.



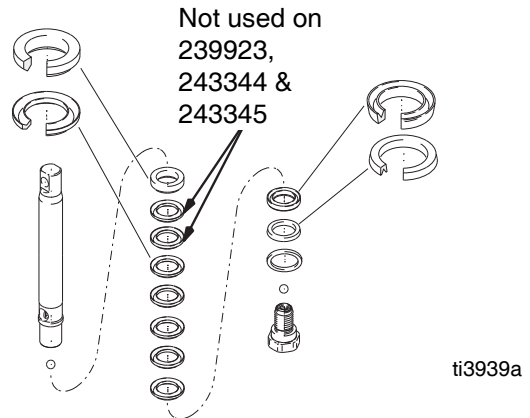
12. Remove pin and piston rod from cylinder.



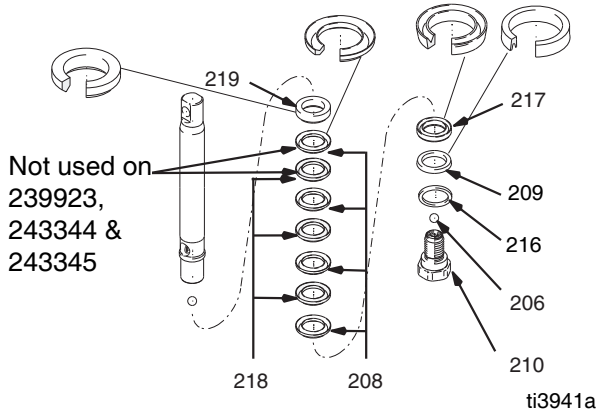
13. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (204). Alternately stack UHMWPE (203) and leather (223) packings (note orientation). Install female gland (224). Install seal (201) and packing nut (202) and throat adjustment spacer (228).



14. Remove packings and glands from piston rod.

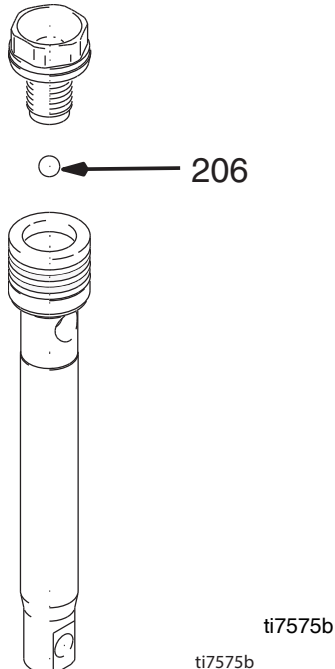


15. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (219) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) on piston rod. Install female gland (217). Install backup washer (216) and u-cup (209) (note orientation)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

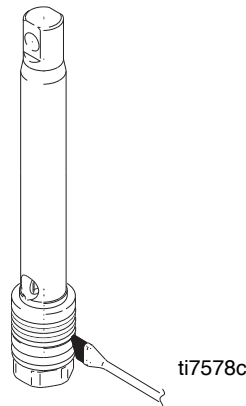


16. Install ball (206) in piston rod. **NOTE:** If thread sealant is applied to piston valve threads, make sure none gets on ball. Install piston valve on piston rod. Torque as follows:

Models	Torque
239923	27 +/- 3 ft-lb
240291 & 240800	55 +/- 3 ft-lb
240217	55 +/- 5ft-lb

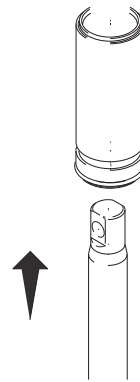


17. Grease piston packings.

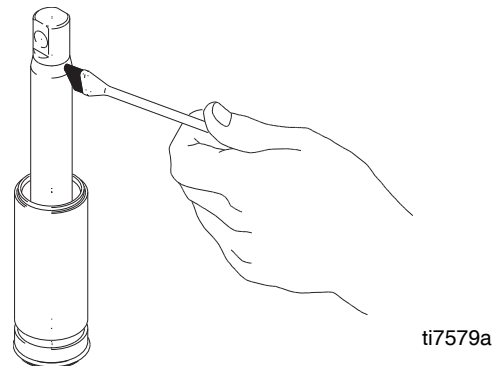


NOTICE
Do not slide piston assembly into top of sleeve as this may damage piston packing.

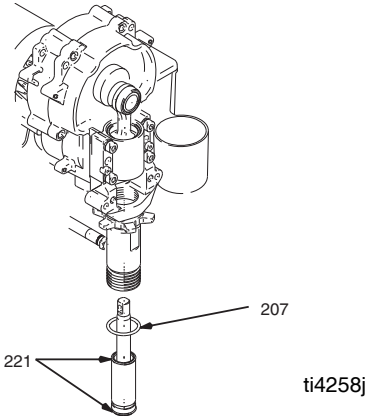
18. Slide piston assembly into bottom of sleeve. Make sure u-cup is not rolled over or damaged.



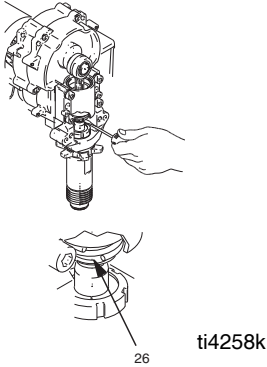
19. Grease top inch or two of piston rod that will go through the cylinder throat packings.



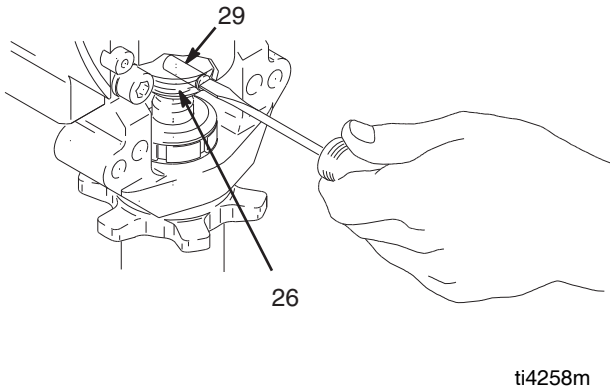
20. Grease o-ring (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired. **NOTE:** O-ring (207) is not required for safe pump operation.



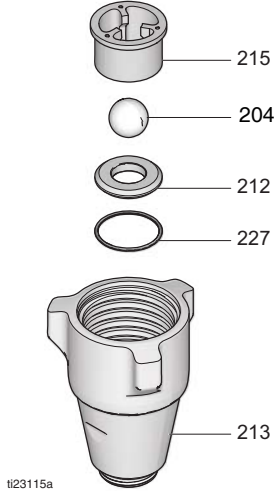
21. Use screwdriver to push retaining spring (26) up.



22. Push in pin (29).

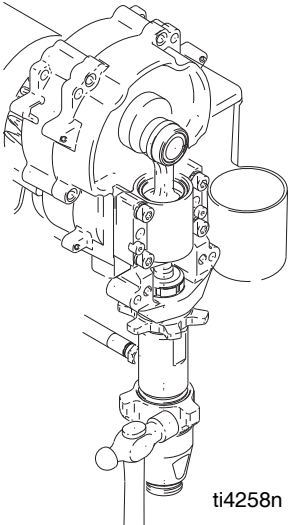


23. Reassemble intake valve with new o-ring (227), seat (212) and ball (204). Seat may be flipped over and used on other side. Clean seat thoroughly.

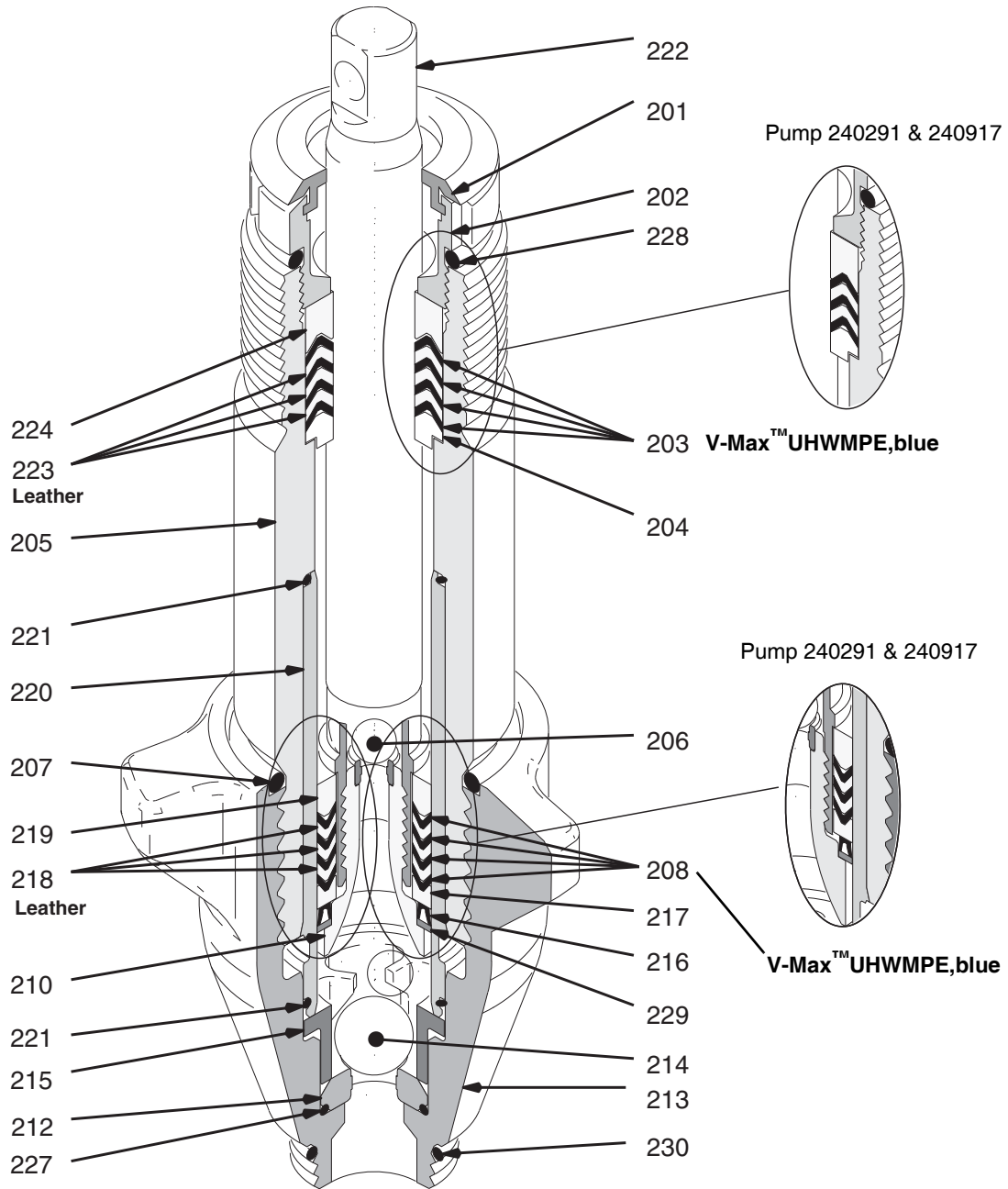


24. Install intake valve on cylinder. Torque as follows:

Models	Torque
239923	67 +/- 5 ft-lb
240291 & 240800	80 +/- 5 ft-lb
240917	150 +/- 5 ft-lb



Pump Packings



Parts - Pump 239923, 243344

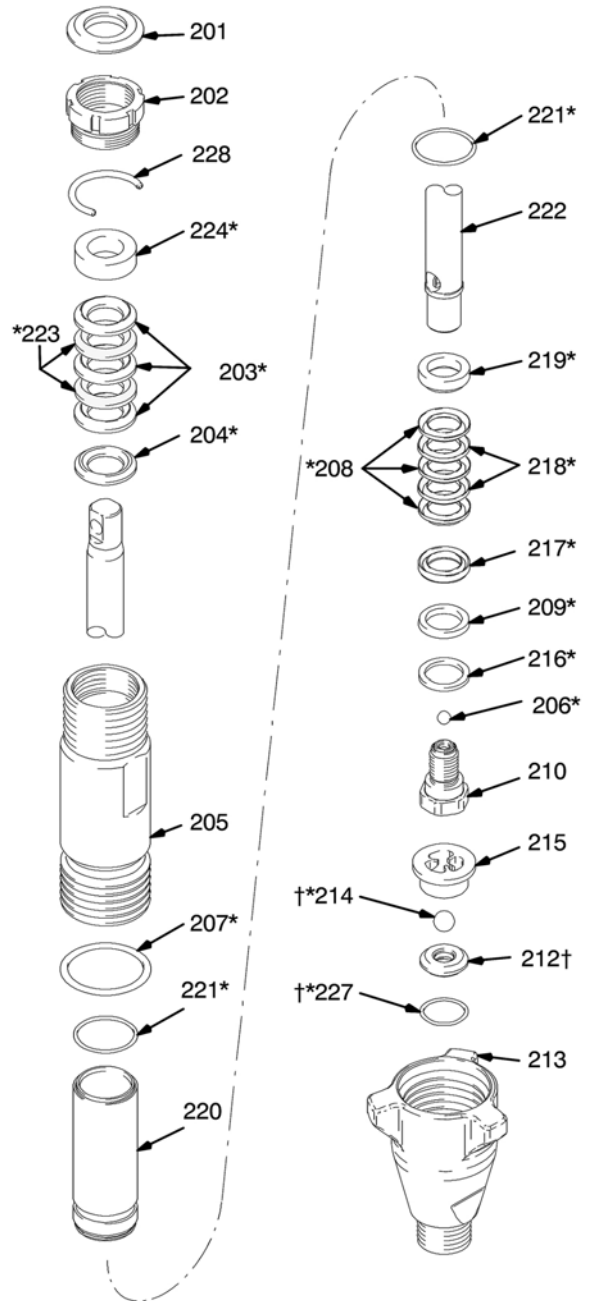
Model 239923, Series A

Carbon Steel Displacement Pump

Ref.	Part	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	240522	CYLINDER, pump (239923)	1
	243346	CYLINDER, pump (243344)	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
209*	107093	SEAL, u-cup	1
210	239932	VALVE, piston	1
212†	239922	KIT, seat, carbide (includes 214, 227)	1
213	192724	VALVE, intake (foot), pump (239923)	1
	195892	VALVE, intake (foot) pump (243344)	1
214*†	105445	BALL, sst, 0.5000 in.	1
215	192624	GUIDE, ball	1
216*	181338	WASHER, backup	1
217*	178969	GLAND, female, piston	1
218*	178939	V-PACKING, leather, piston	2
219*	192848	GLAND, male	1
220	240521	SLEEVE, cylinder	1
221*	108526	O-RING, ptf	2
222	240518	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.



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Parts - Pump 240291, 243345

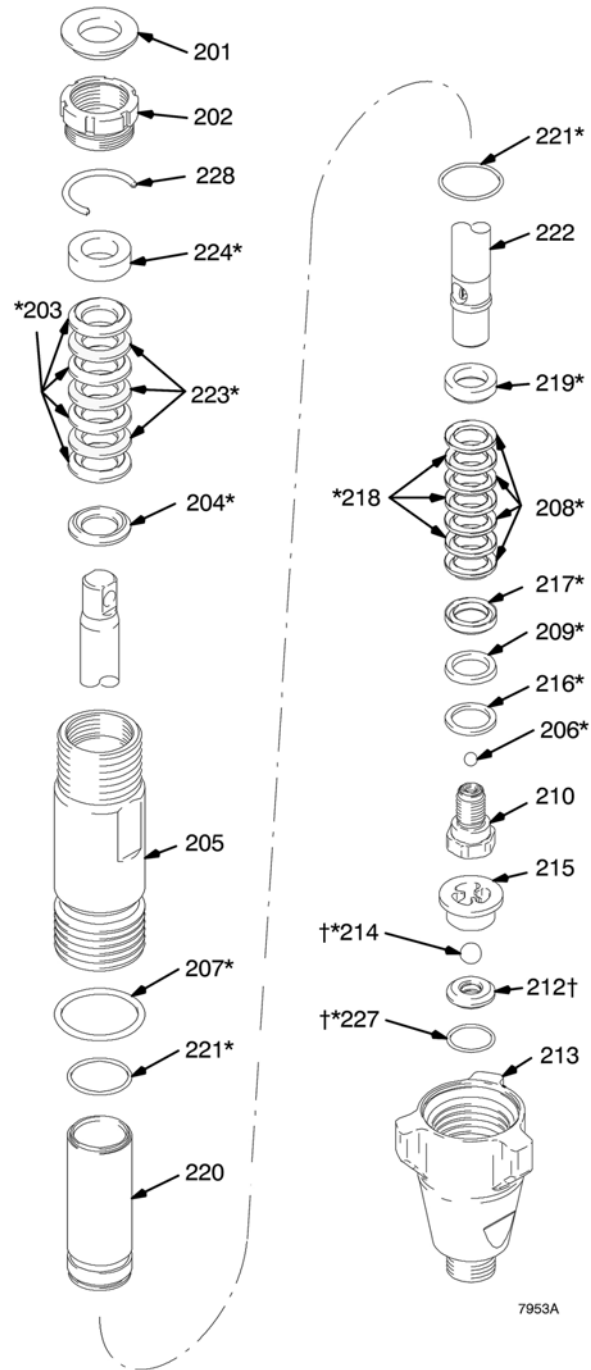
Model 240291, Series A

Carbon Steel Displacement Pump

Ref.	Part	Description	Qty
201	183171	PLUG	1
202	193032	NUT, packing	1
203*	193124	V-PACKING, V-Max™, UHM-WPE, blue	4
204*	183176	GLAND, packing, male, throat	1
205	240520	CYLINDER, pump (240291)	1
	243347	CYLINDER, pump (243345)	1
206*	101947	BALL, sst, 0.3750 in.	1
207*	106556	PACKING, o-ring	1
208*	193125	V-PACKING, piston, V-MAX™, UHMWPE, blue	4
209*	108690	SEAL, u-cup	1
210	240150	VALVE, piston	1
212†	244199	SEAT, carbide, includes 214 and 227	1
213	195894	HOUSING, intake (foot) pump 240291	1
	195894	HOUSING, intake (foot) pump 243345	1
214*†	102972	BALL, sst, 0.875 in.	1
215	193027	GUIDE, ball	1
216*	186653	WASHER, back-up	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	PACKING, o-ring	2
222	240517	ROD, piston	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, which may be purchased separately.

† These parts are also included in Carbide Seat Kit 244199, which may be purchased separately.



7953A

Parts - Pump 240917

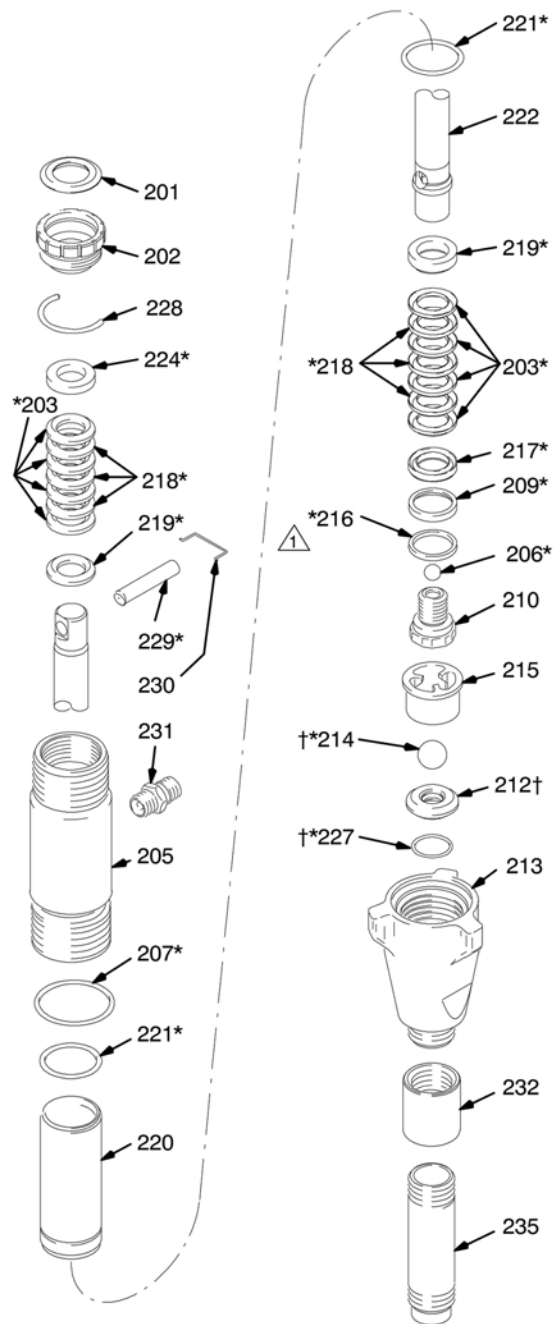
Model 240917, Series A

Carbon Steel Displacement Pump

Ref.	Part	Description	Qty
201	112590	PLUG	1
202	189589	NUT, packing	1
203*	193722	V-PACKING, V-Max™, UHM-WPE, blue	8
205	240920	CYLINDER, pump	1
206*	107203	BALL, sst, 0.5625 in.	1
207*	107306	PACKING, o-ring	1
209*	112589	SEAL, u-cup	1
210	240580	VALVE, piston	1
212 †	240918	SEAT, carbide, includes 214 and 227	1
213	198219	HOUSING, intake (foot)	1
214* †	107167	BALL, sst, 1.0 in.	1
215	193391	GUIDE, ball	1
216*	195488	GUIDE, piston	1
217*	189588	GLAND, female, piston	1
218*	112591	V-PACKING, leather, piston	6
219*	189585	GLAND, packing, male	2
220	240921	SLEEVE, cylinder	1
221*	108822	PACKING, o-ring	2
222	240919	ROD, piston	1
224*	194175	GLAND, packing, female	1
227* †	107098	PACKING, o-ring	1
228	193397	SPACER, nut	1
229	195523	PIN	1
230	194060	CLIP, retaining	1
231	162485	NIPPLE, adapter	1
232	114967	COUPLING	1
235	244823	TUBE, intake, includes 232	1

* These parts are also included in Repair Kit 240916, which may be purchased separately.

† These parts are also included in Carbide Seat Kit 240918, which may be purchased separately.



⚠ Assemble piston guide (216) with lip toward piston (210)

8557E

Parts - Pump 240800

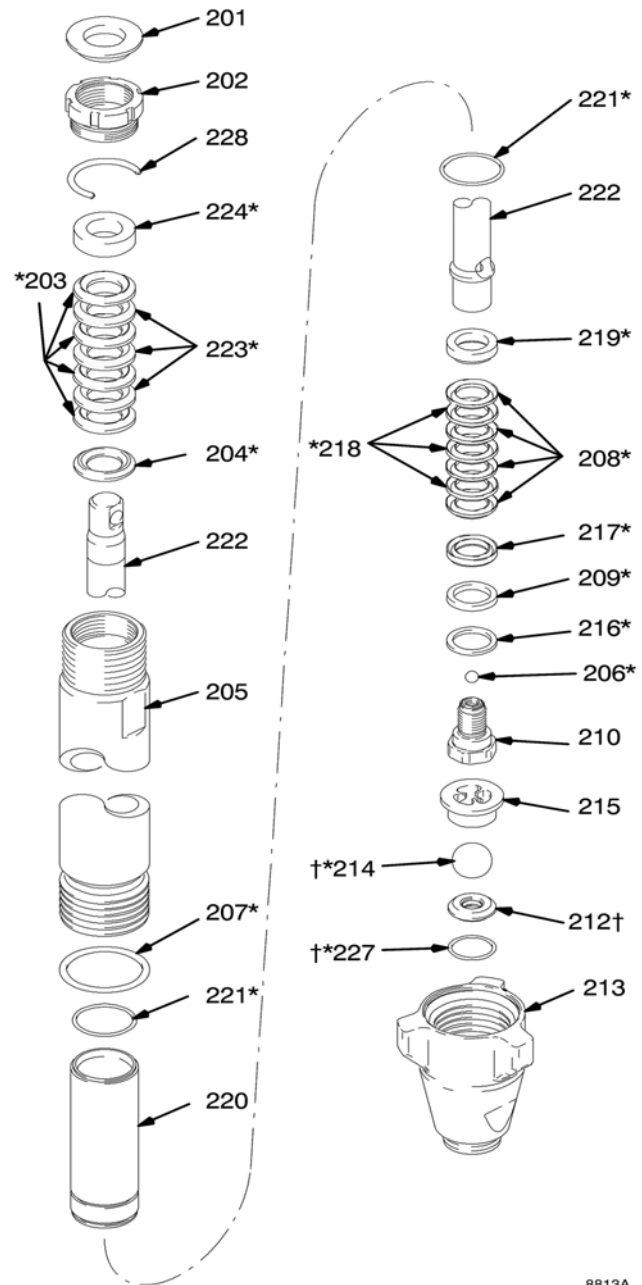
Model 240800, Series A

Carbon Steel Displacement Pump

Ref.	Part	Description	Qty
201	183171	PLUG	1
202	193032	NUT, packing	1
203*	193124	V-PACKING, V-Max™, UHM-WPE, blue	4
204*	183176	GLAND, packing, male, throat	1
205	241334	CYLINDER, pump	1
206*	101947	BALL, sst, 0.3750 in.	1
207*	106556	PACKING, o-ring	1
208*	193125	V-PACKING, piston, V-MAX™, UHMWPE, blue	4
209*	108690	SEAL, u-cup	1
210	240150	VALVE, piston	1
212 †	244199	SEAT, carbide, includes 214 and 227	1
213	194326	HOUSING, intake (foot)	1
214* †	102972	BALL, sst, 0.875 in.	1
215	196967	GUIDE, ball	1
216*	186653	WASHER, back-up	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	PACKING, o-ring	2
222	241285	ROD, piston	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, which may be purchased separately.

† These parts are also included in Carbide Seat Kit 244199, which may be purchased separately.



8813A

Technical Data

	U.S.	Metric
Maximum Working Pressure	3600 psi	250 bar, 24.8 MPa
Fluid Inlet Size 239923 & 240291 240917 & 240800	3/4 npt(f) 1 npt(f)	3/4 npt(f) 1 npt(f)
Fluid Outlet Size 239923 240291, 240217 & 240800	1/4 npt(f) 3/8 npt(f)	1/4 npt(f) 3/8 npt(f)
Wetted Parts	stainless steel, PTFE, leather, polyurethane, zinc-plated carbon steel, tungsten carbide, chrome plating, acetal, polyethylene	

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Original instructions. This manual contains English. MM 333028

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