

Displacement Pump

334123B

EN

For professional use only.

3000 psi (207 bar, 20.7 MPa) Maximum Working Pressure

Model 17A138, Series A

Express 695

Express 3900 Express

Model 17A305, Series A

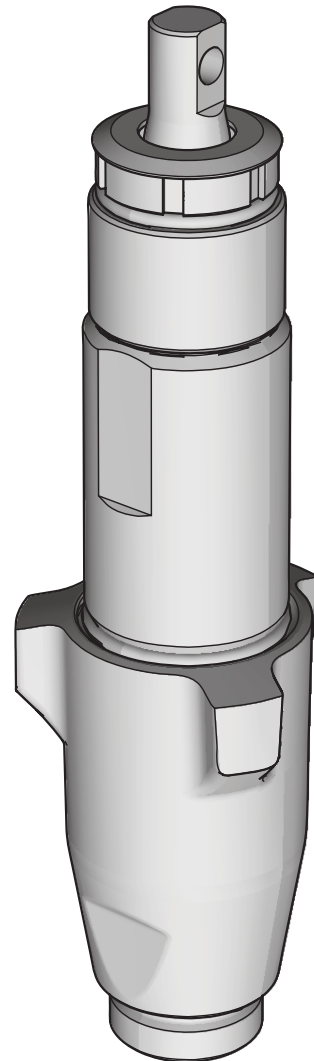
Express Mark IV



Important Safety Instructions

Read all warnings and instructions in this manual.

Be familiar with the controls and the proper usage of the equipment. Save these instructions.











t123116a

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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 operate the unit when fatigued or under the influence of drugs or alcohol. 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. Do not leave the work area while equipment is energized or under pressure. 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. Make sure all equipment is rated and approved for the environment in which you are using it. Use equipment only for its intended purpose. Call your distributor for information. Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces. Do not kink or over bend hoses or use hoses to pull equipment. Keep children and animals away from work area. 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
17A138	248212
17A305	287825

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

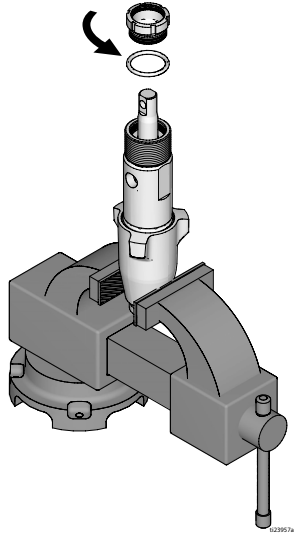
To reduce the risk of serious injury from pressurized fluid, never use sharp or pointed tools to remove sleeve. If the sleeve cannot be removed easily, return the sleeve and cylinder to a Graco distributor for removal.

NOTE: Remove and clean sleeve when repacking pump.

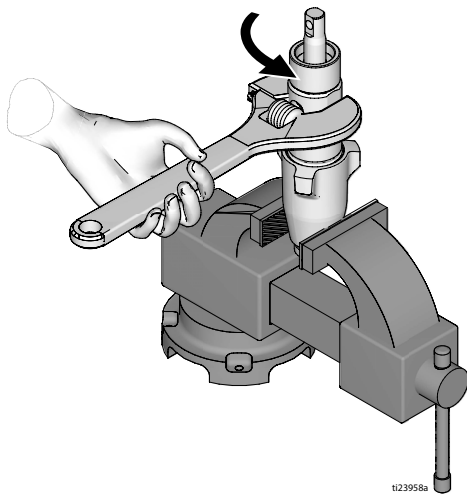
Repair When Pump is Separated From Sprayer

Disassembling the Pump

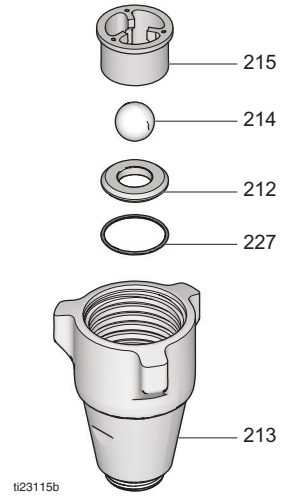
1. Remove packing nut (202) and o-ring (228).



2. Unscrew intake valve from cylinder.

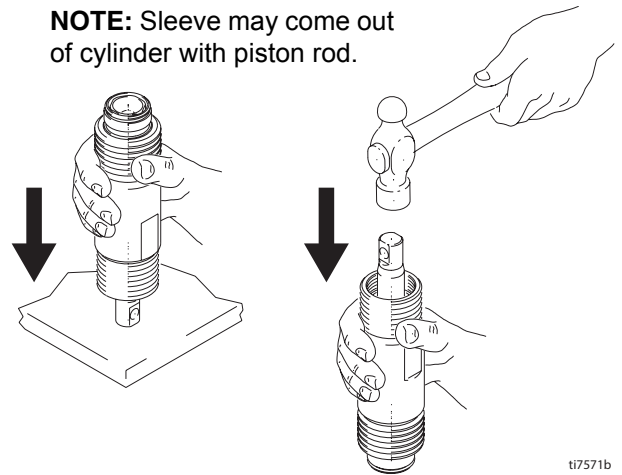


3. Disassemble intake valve. Clean and inspect o-ring (227). **NOTE:** A pick may be required to remove o-ring.

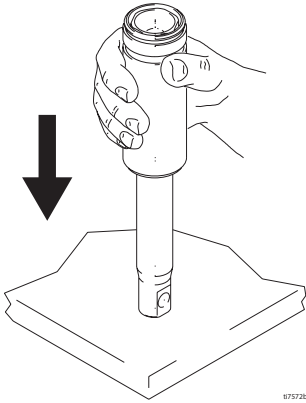


4. Tap piston rod out of cylinder with a hammer or flip over and tap piston rod out against a bench.

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



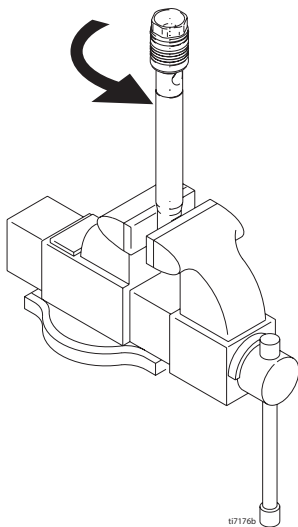
- Remove piston rod from sleeve, or remove sleeve from cylinder. **Mark IV models:** Remove sleeve spacer from sleeve.



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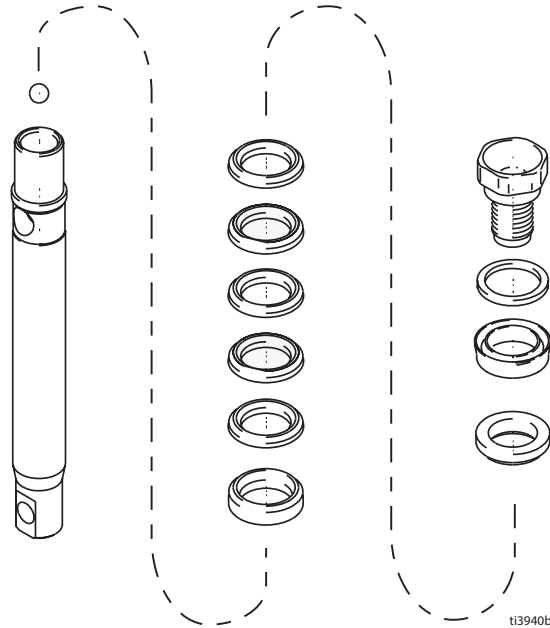
<p>COMPONENT RUPTURE HAZARD To reduce the risk of serious injury from pressurized fluid, do not clean or wipe the piston valve threads. Cleaning the piston valve threads could destroy the special sealing patch and cause the piston valve to come loose during operation.</p>							

- 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.



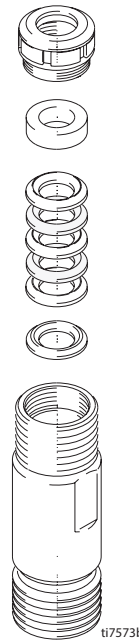
t17176b

- Remove packings and glands from piston rod.



t13940b

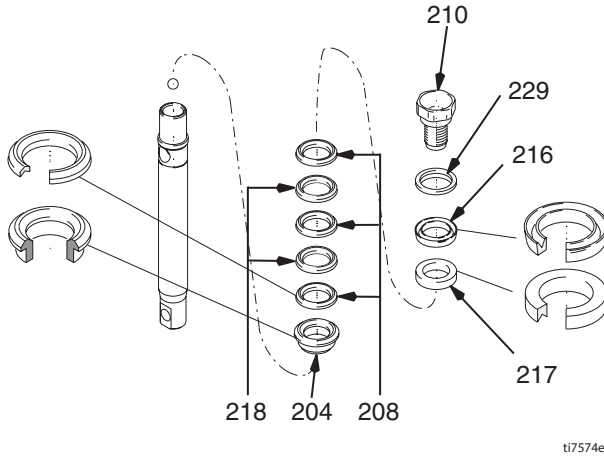
- Remove throat packings and glands from cylinder. Discard throat packings and glands.



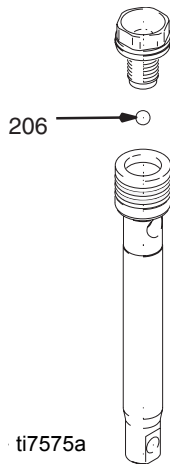
t17573b

Assembling the Pump

1. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (204) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) on piston rod. Install female gland (217). Install piston wiper (216) (note orientation) and backup washer (229) on piston valve, threads are good for four repackings. Use thread sealant on piston valve threads after four repackings.

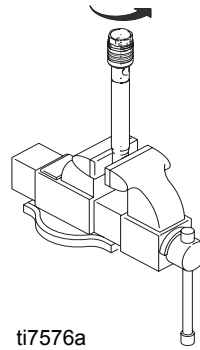


2. Install ball (206) in piston rod. If thread sealant is applied to piston valve threads, make sure that none gets on ball.

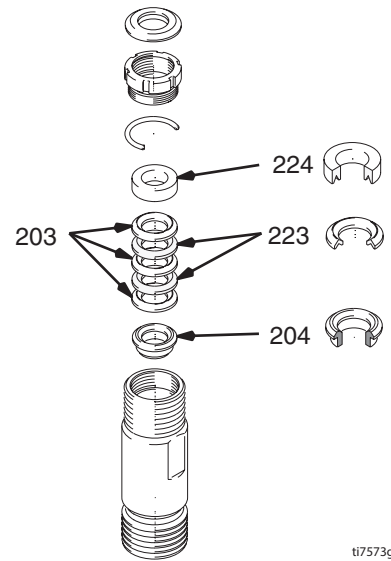


3. Tighten piston valve to piston rod as specified:

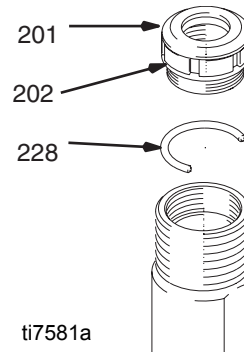
Models	Torque
17A138, 17A305	27 +/-3 ft-lb.(36.1 +/-4.1 N•m)



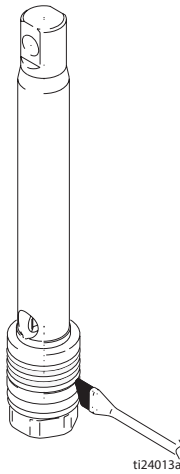
4. Soak all leather packings in SAE 30W oil for one hour minimum prior to assembly. Place male gland (204) in cylinder. Alternately stack UHMWPE (203) and leather packings (223) (note orientation). Place female gland (224) in top of cylinder seat packings.



5. Install seal (201) into packing nut (202). Install o-ring (228) onto packing nut. Loosely install packing nut into cylinder.

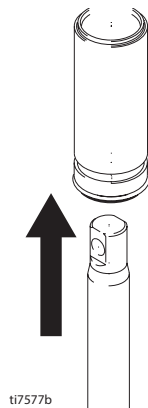


6. Grease piston packings.

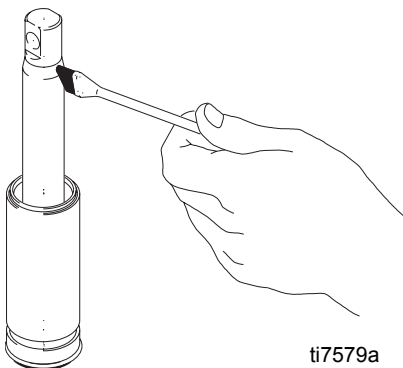


NOTICE
Do not slide piston assembly into top of sleeve as this may damage piston packing.

7. Slide piston assembly into bottom of sleeve.

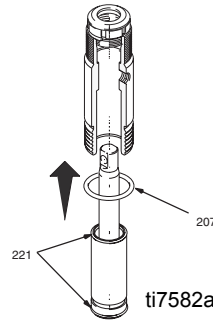


8. Grease top inch or two of piston rod that will go through the cylinder throat packings.

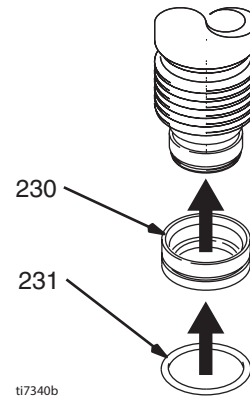


9. Grease o-rings (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired.

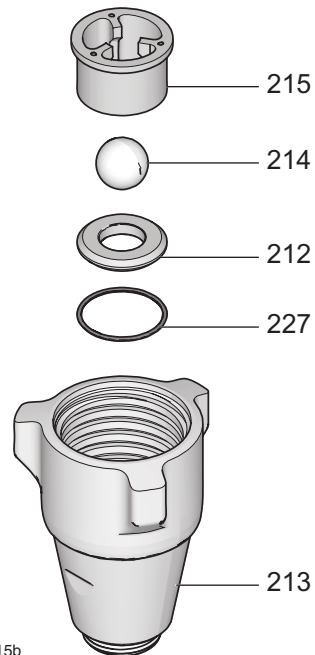
NOTE: O-ring (207) is not required for safe pump operation.



10. **Mark IV models:** Install o-ring (231) on sleeve spacer (230) and install sleeve spacer on sleeve.

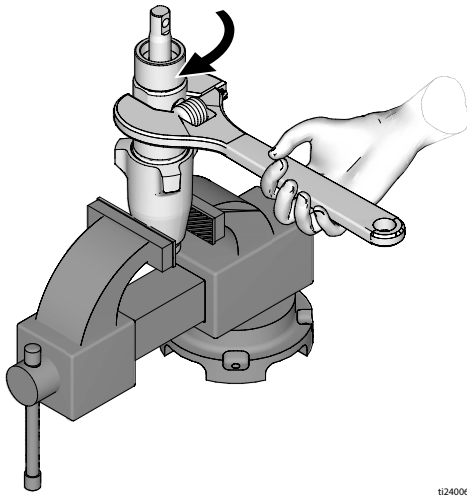


11. Reassemble intake valve with new o-ring (227), seat (212) and ball (214). Seat may be flipped over and used on other side. Clean seat thoroughly.



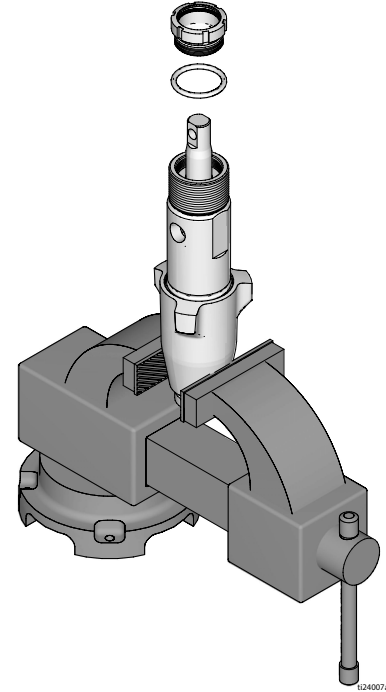
12. Install intake valve on cylinder. If a wrench is used torque as follows:

Models	Torque
17A138, 17A305	67 +/- 5 ft-lb (90.8 +/-6.8 N•m)



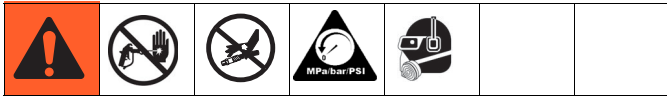
13. Torque packing nut (202) as follows:

Models	Torque
17A138, 17A305	100 +/- 10 in-lb (11.3 +/-1.1 N•m)

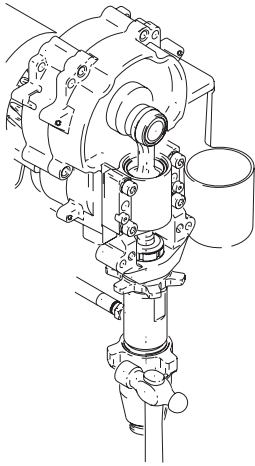


14. Remove o-ring (228) when pump packings begin to leak after extended use. Then tighten packing nut down until leakage stops or lessens. This allows approximately 100 gallons of additional operation before a repacking is required.

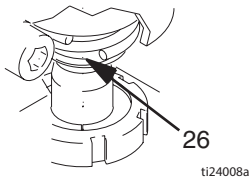
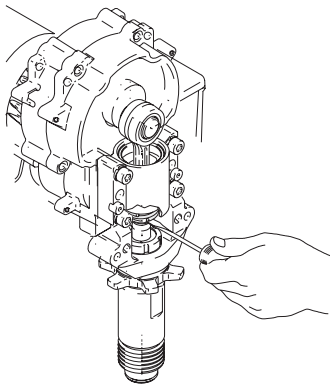
Repair When Pump is On Sprayer



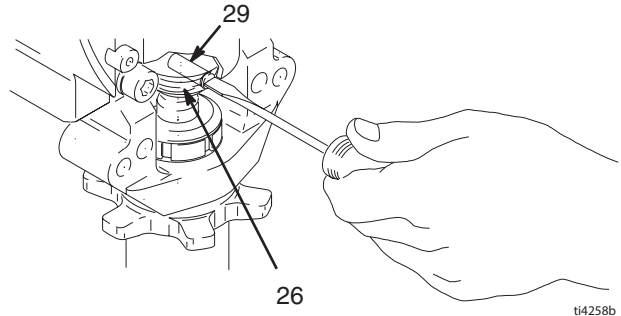
1. Perform **Pressure Relief Procedure**, page 4.
2. Remove intake valve.



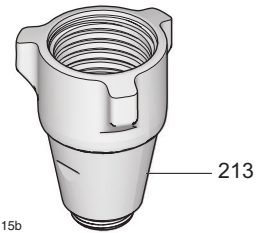
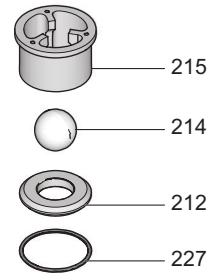
3. Push up retaining spring (26).



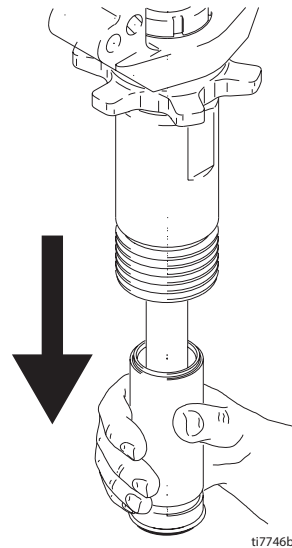
4. Push out pin (29).



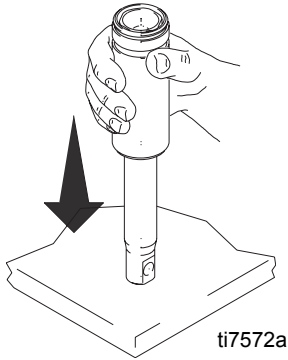
5. Disassemble intake valve. Clean and inspect. O-ring (227) may require a pick for removal.



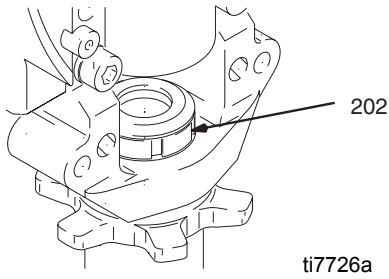
6. Remove piston rod and sleeve.



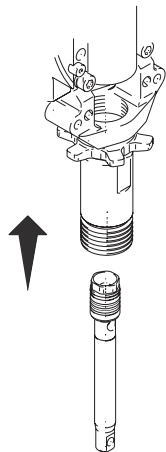
7. Invert piston rod and sleeve and pound on hard surface until piston rod comes out of sleeve.
Mark IV models: Remove sleeve spacer from sleeve.



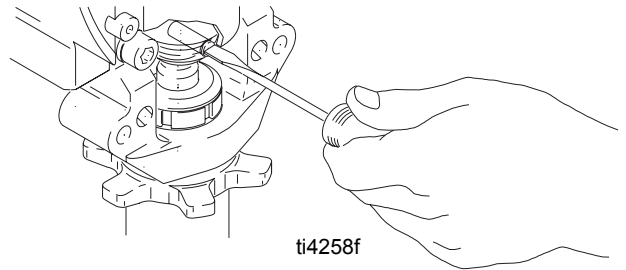
8. Remove packing nut (202).



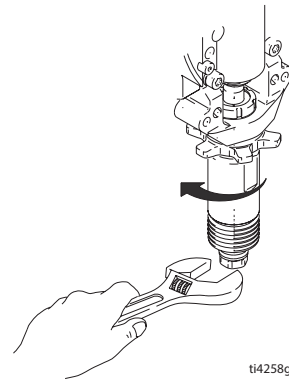
9. Invert piston rod and insert into cylinder to force out throat packings.



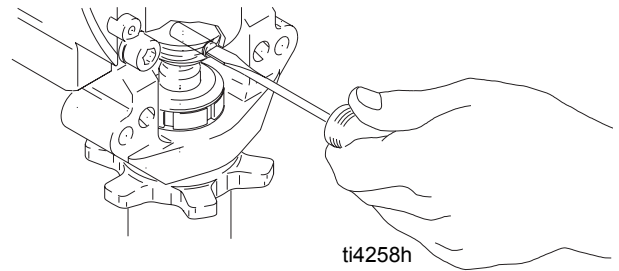
10. Insert piston rod into cylinder with pin hole up and piston valve down. Insert pin into piston rod and crank shaft.



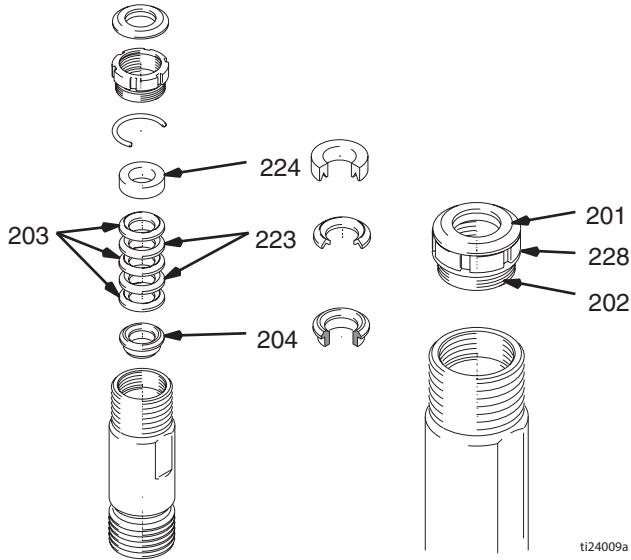
11. Remove piston valve from piston rod with a wrench.



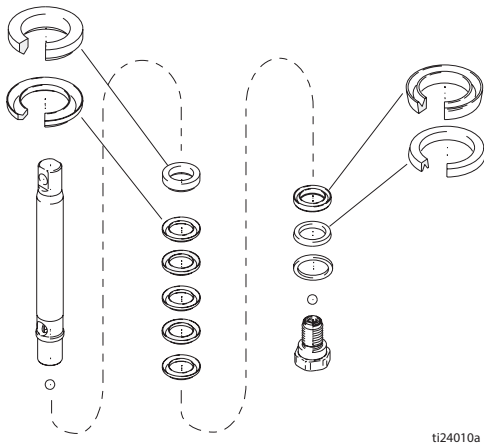
12. Remove pin and piston rod from cylinder.



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 o-ring (228).

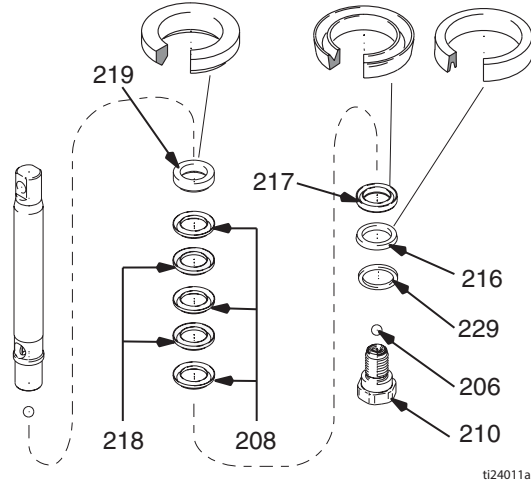


14. Remove packings and glands from piston rod.



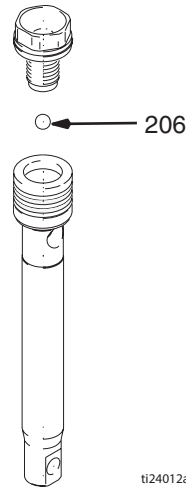
15. Soak all leather packings in SAE 30W oil for one hour minimum prior to assembly. Stack male gland (219) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) on piston rod. Install female gland (217). Install pis-

ton wiper (216) and backup washer (229) (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.

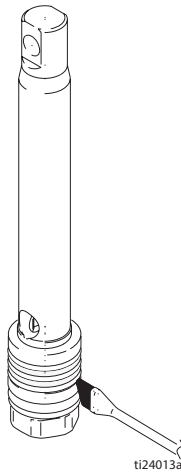


16. Install ball (206) in piston rod. **NOTE:** If thread sealant is applied to piston valve threads, make sure none gets on ball. Install piston valve on piston rod. Torque as follows:

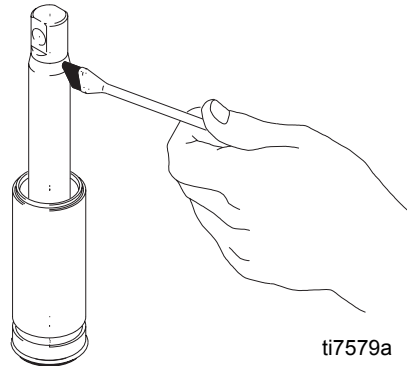
Models	Torque
17A138, 17A305	27 +/- 3 ft-lb (36.6 +/- 4.1 N•m)



17. Grease piston packings.

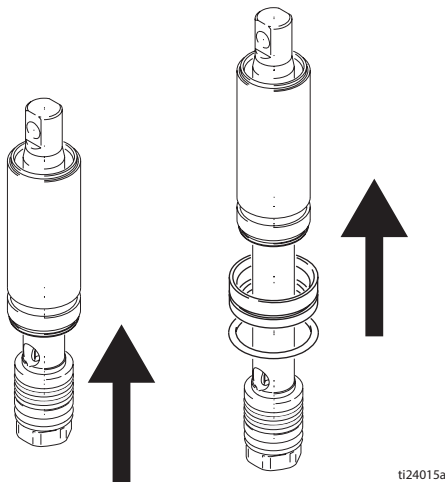


19. Grease top inch or two of piston rod that will go through the cylinder throat packings.

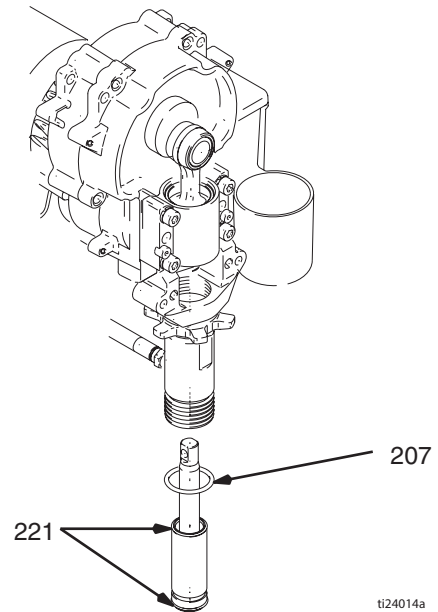


NOTICE
Do not slide piston assembly into top of sleeve as this may damage piston packing.

18. Slide piston assembly into bottom of sleeve. Make sure V-packing and u-cup are not rolled over or damaged. **Mark IV models:** Install o-ring (231) on sleeve spacer (230). Install sleeve spacer on sleeve.



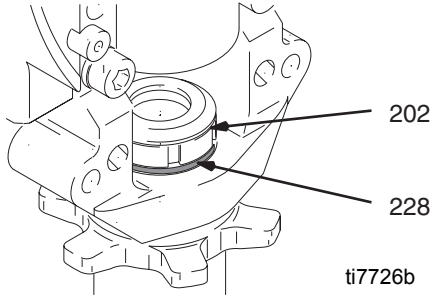
20. Grease o-ring (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired. **NOTE:** O-ring (207) is not required for safe pump operation.



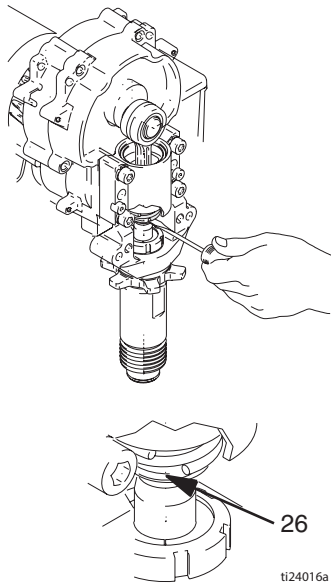
21. Torque seal and packing nut (202) to the following:

Models	Torque
17A138, 17A305	100 +/- 10 in-lb (11.3 +/-1.1 N•m)

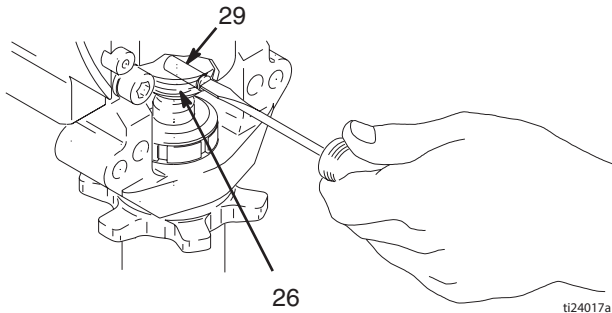
Remove o-ring when pump packings begin to leak after extended use. Then tighten packing nut down until leakage stops or reduces. This allows approximately 100 gallons of additional operation before a repacking is required.



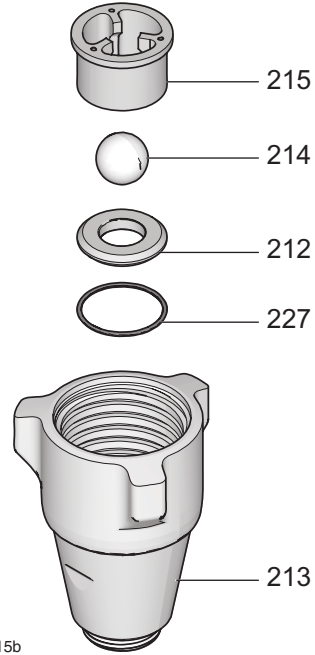
22. Push up retaining spring (26) with screwdriver.



23. Push in pin (29).

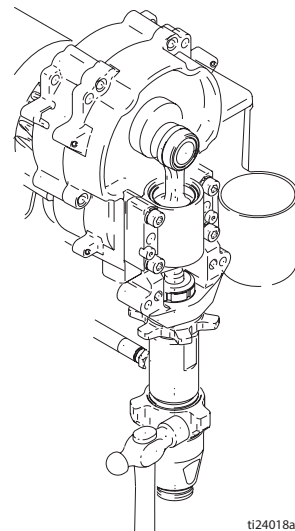


24. Reassemble intake valve with new o-rings (227) and (230), seat (212) and ball (214). Seat may be flipped over and used on other side. Clean seat thoroughly.

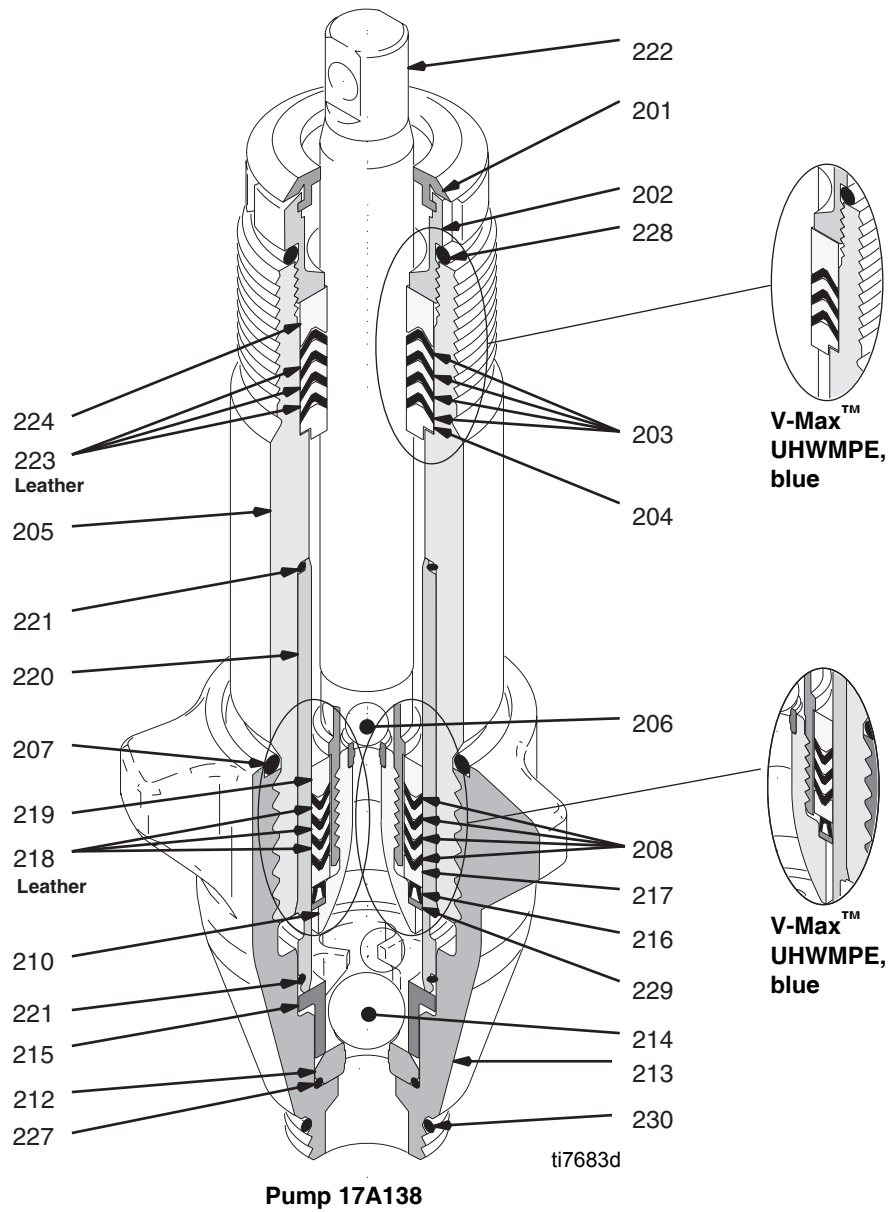


25. Install intake valve on cylinder. Torque as follows:

Models	Torque
17A138, 17A305	70 +/- 5 ft-lb (94.9 +/-6.8 N•m)

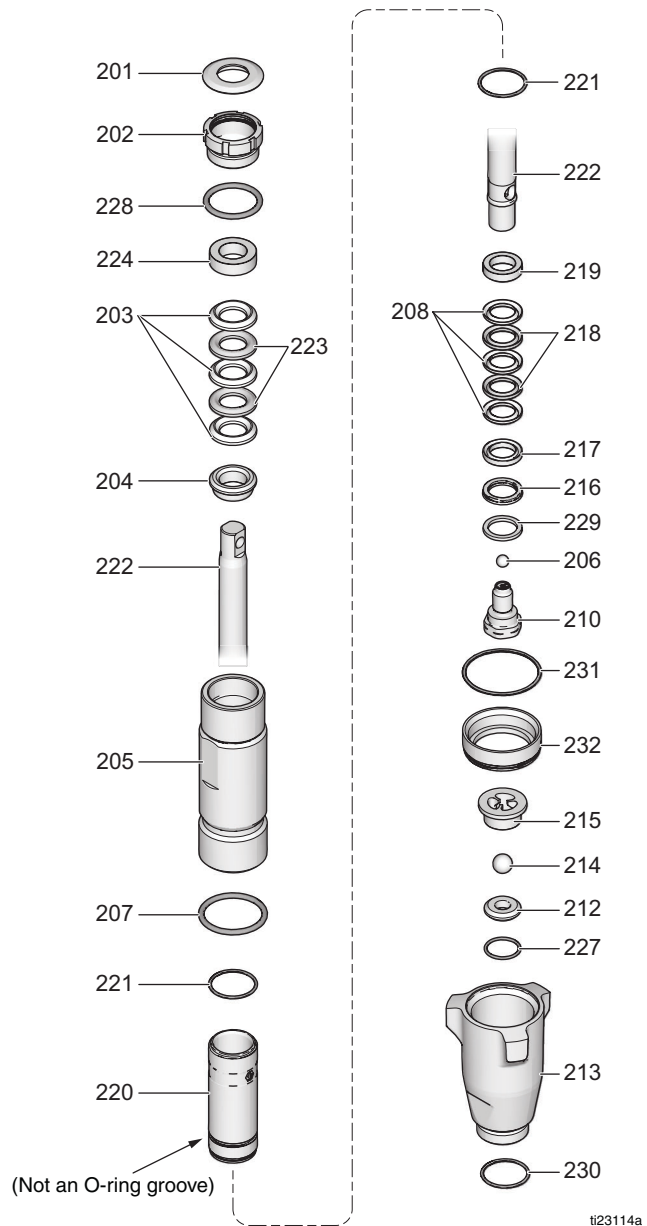


Pump Packings



Parts - Pump 17A138, 17A305

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*†	15C987	GLAND, male, throat,	1
205	17A030	CYLINDER, pump	1
	287876	Model 17A138	
	287876	Model 17A305	
206*†	105444	BALL check	1
207*†	156593	PACKING, o-ring	1
208*†	192693	V-PACKING, piston, V-MAX, UHMWPE, blue	3
210	287877	VALVE, piston	1
212	239922	KIT, seat, carbide	1
	244199	Model 17A138, (includes 214, 215, 227)	
	244199	Model 17A305 (includes 214, 227)	
213	15C785	VALVE, intake (foot)	1
	287878	Model 17A138	
	287878	Model 17A305	
214	105445*	BALL, check, inlet	1
	102972†	Model 17A138	
	102972†	Model 17A305	
215	192624	GUIDE, ball	1
	196967	Model 17A138	
	196967	Model 17A305	
216*†	118503	WIPER, piston	1
217*†	178969	GLAND, female, piston	1
218*†	178939	V-PACKING, leather, piston	2
219*†	196880	GLAND, male, piston	1
220	17D848	SLEEVE, cylinder	1
221*†	108526	O-RING, ptfe	2
222	248206	ROD, piston	1
	249969	Model 17A138	
	249969	Model 17A305	
223*†	178940	V-PACKING, leather, throat	2
224*†	15C988	GLAND, female, throat	1
227	107079*	O-RING, ptfe	1
	108526†	Model 17A138	
	108526†	Model 17A305	
228*†	158776	O-RING	1
229*†	15C997	WASHER, backup	1
230*†	118494	O-RING, fluoroelastomer (not used on 17A305)	1
231†	107098	O-RING (Model 17A305 only)	1
232	15G494	SPACER, sleeve (Model 17A305 only)	1



ti23114a

* These parts are also included in Repair Kit 248212, which may be purchased separately.

† These parts are also included in Repair Kit 287825, which may be purchased separately.

Technical Data

	U.S.	Metric
Maximum Working Pressure	3000 psi	207 bar, 20.7 MPa
Fluid Inlet Size	1-5/16-12 un(m)	1-5/16-12 un(m)
Fluid Outlet Size	3/8 npt(f)	3/8 npt(f)
Wetted Parts	stainless steel, PTFE, leather, nylon, zinc-plated carbon steel, tungsten carbide, chrome plating, fluoroelastomer, acetal, polyethylene	

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 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.

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Original instructions. This manual contains English. MM 334123

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