Repair



EN

310643T

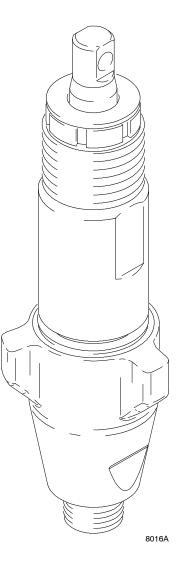
Displacement Pump

3300 psi (227 bar, 22.7 MPa) Maximum Working Pressure Model 248204, Series A Ultra® Max II and Ultimate Mx II 695 and 795 ASM Zip-Spray[™] 2700 Plus, 3100 Plus ASM AllPro Mach 8600 Plus and 11000 Plus ASM H2700 Plus Model 255968, Series A ASM 3600G Plus Model 248205, Series A Ultra Max II and Ultimate Mx II 1095 and 1595 Model 249059, Series A TexSpray[™] Mark V Model 249057, Series A TexSpray Mark V Model 277069, Series A LineLazer[™] IV 3900, R300 Model 277070, Series A LineLazer™ IV 5900 Model 253056, Series A Mark IV Model 257146, Series A Ironman 300E and Ironman 500G



Important Safety instructions

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



PROVEN QUALITY. LEADING TECHNOLOGY.

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	EQUIPMENT MISUSE HAZARD
	Misuse can cause death or serious injury.
	• Do not exceed the maximum working pressure temperature rating of the lowest rated system component. See Technical Data in all equipment manuals.
	• Use fluids and solvents compatible with equipment wetted parts. See Technical Data in all equipment manuals. Read manufacturer fluid and solvent warnings.
	Check equipment daily. Repair or replace worn or damaged parts immediately.
	• Do not alter or modify equipment.
	Read all instruction manuals, tags, and labels before operating the equipment.
	• Use equipment only for its intended purpose. Call your Graco distributor for information.
	• 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 safety regulations.
	MOVING PARTS HAZARD
55	Moving parts can pinch or amputate your fingers.
	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 on page 3. Disconnect power cord.
	SKIN INJECTION HAZARD
	High-pressure fluid from gun, hose leaks or ruptured components will pierce skin. This may look like just cut, but it is a serious injury that can result in amputation. Get immediate surgical treatment.
	 Do not point the gun at anyone or at any part of the body.
	• Do not put your hand over the spray tip.
	 Do not stop or deflect leaks with your hand, body, glove or rag.
	 Do not spray without tip guard and trigger guard installed.
	 Engage the gun trigger safety when you stop spraying.
	• Follow the Pressure Relief Procedure on page 3 if the spray tip clogs and before cleaning, checking or servicing the equipment.

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.
- Turn ON/OFF switch to OFF. 2.
- 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 Kits

Pump	Repair Kit
248204, 255968	248212
253056	287825
248205, 249057, 249059, 257146	248213

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

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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

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

your Graco distributor for removal.

Repair When Pump Is Off The Sprayer

Disassembling the pump

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

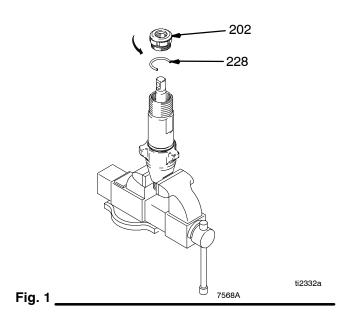


Fig. 2. Unscrew intake valve from cylinder.

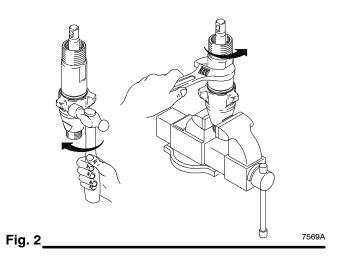


Fig. 3. Disassemble intake valve. Clean and inspect. O-ring (227) may require a pick for removal.

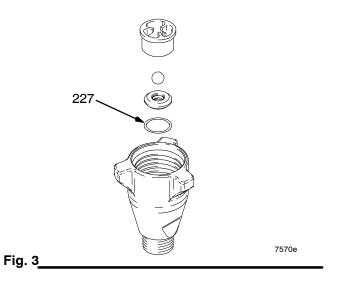


Fig. 4. Tap piston rod out of cylinder with a hammer or flip over and tap piston rod out against a bench.

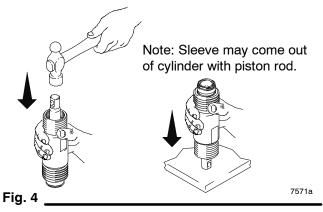
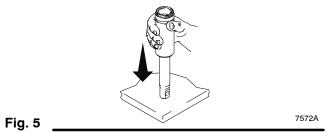


Fig. 5. Remove piston rod from sleeve, or remove sleeve from cylinder. Mark IV: Remove sleeve spacer (230) from sleeve.



A 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.

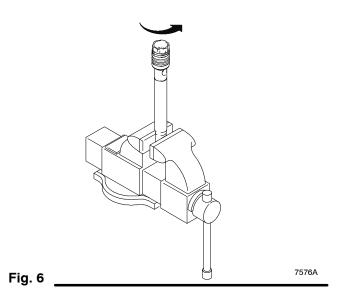


Fig. 7. Remove packings and glands from piston rod.

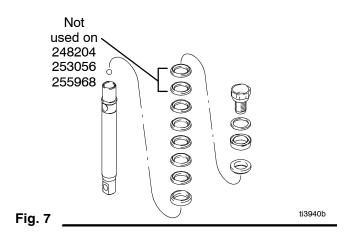
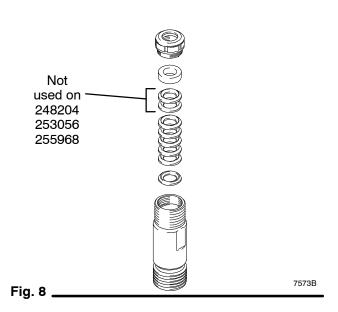


Fig. 8. Remove throat packings and glands from cylinder. Discard throat packings and glands.



Assembling the pump

Fig. 9. 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 (210). The special sealing patch on piston valve threads is good for four repackings. Use Loctite[®] on piston valve threads after four repackings.

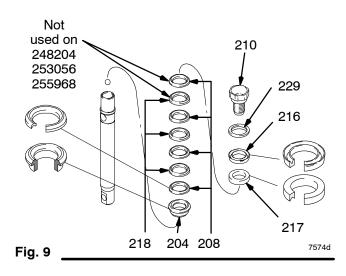


Fig. 10. Install ball (206) in piston rod. If Loctite[®] is applied to piston valve threads, ensure that none gets on ball.

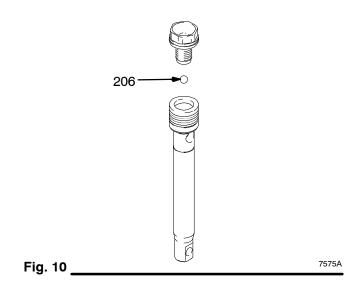


Fig. 11. Tighten piston valve to piston rod as specified:

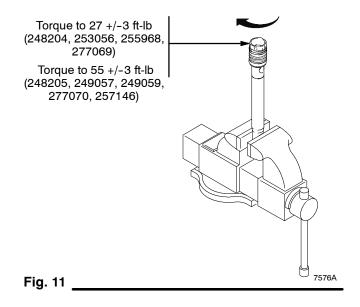


Fig. 12. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Place male gland (204) in cylinder. Alternately stack UHMWPE (203) and leather packings (223) (note orientation). Place female gland (224) in top of cylinder. Seat packings.

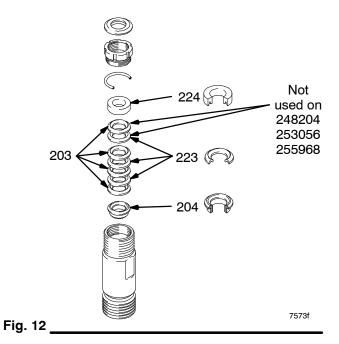


Fig. 13. Install seal (201) into packing nut (202). Install throat adjustment spacer (228) onto packing nut. Loosely install packing nut into cylinder.

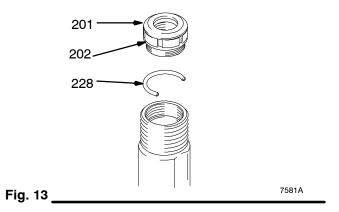
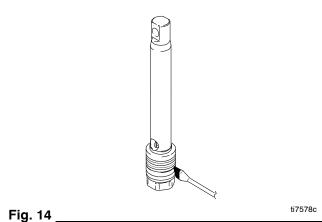


Fig. 14. Grease piston packings.



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

Fig. 15. Slide piston assembly into bottom of sleeve.

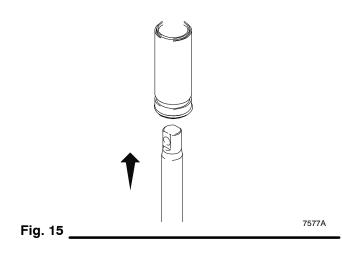


Fig. 16. Grease top inch or two of piston rod that will go through the cylinder throat packings.

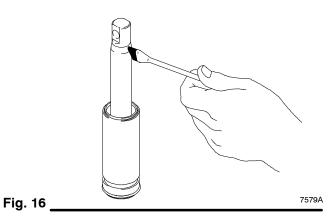


Fig. 17. Grease o-rings (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired.

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

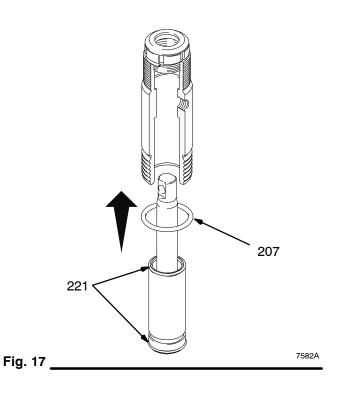


Fig. 18. Mark IV: Install o-ring (231) on sleeve spacer (230) and install sleeve spacer on sleeve.

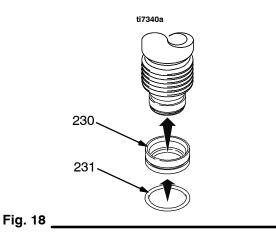
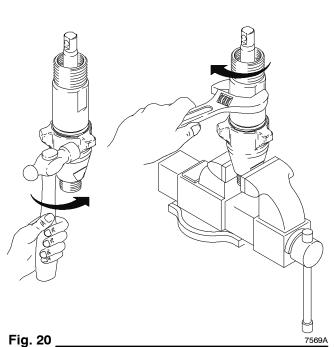


Fig. 19. Reassemble intake valve with new o-ring (227), seat (212) and ball (214). Seat may be flipped over and used on other side. Clean seat thoroughly.



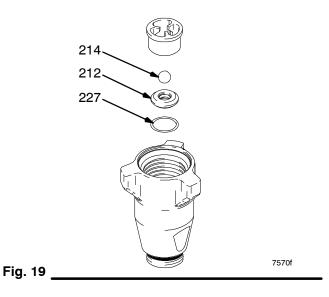
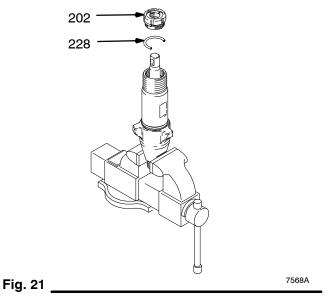


Fig. 20. Install intake valve on cylinder. If a wrench is used torque as follows:

- 67 +/-5 ft-lb (Model 248204, 253056, 255968, 277069)
- 80 +/-5 ft-lb (Model 248205, 249057, 249059, 277070, 257146)

If a wrench is not used, be sure intake valve is bottomed out against cylinder. Fig. 21. Torque packing nut (202) down onto adjustment spacer (228) 100 +/-10 in-lb.

Remove throat adjustment 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.



Repair When Pump Is On The Sprayer

WARNING Â



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

Fig. 1. Remove intake valve.

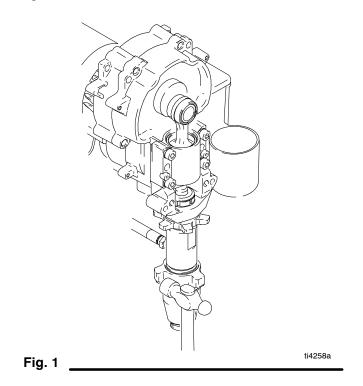


Fig. 2. Push up retaining spring (26).

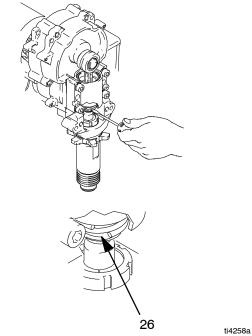


Fig. 2

Fig. 3. Push out pin (29).

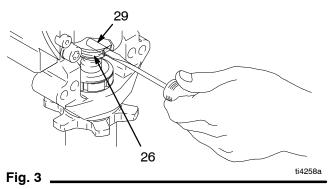
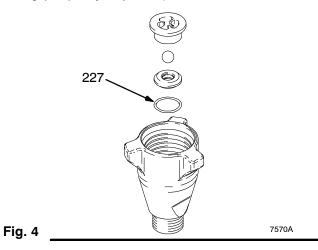


Fig. 4. Disassemble intake valve. Clean and inspect. O-ring (227) may require a pick for removal.



out throat packings.

Fig. 5. Remove piston rod and sleeve.

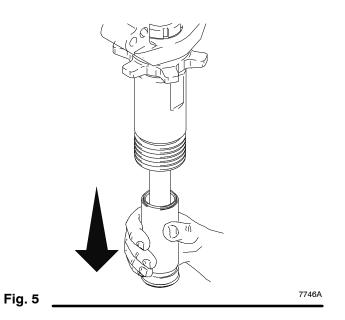
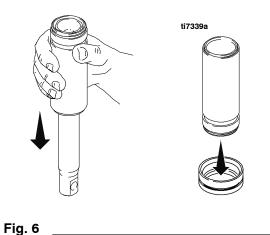


Fig. 5. Invert piston rod and sleeve and pound on hard surface until piston rod comes out of sleeve. Mark IV: Remove sleeve spacer from sleeve.



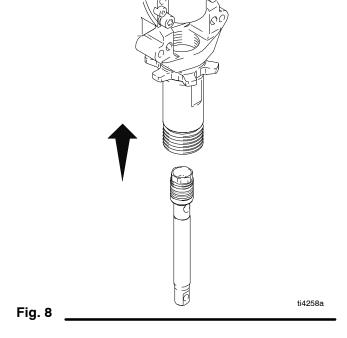
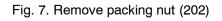
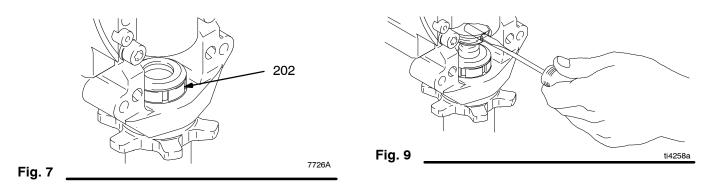


Fig. 8. Invert piston rod and insert into cylinder to force

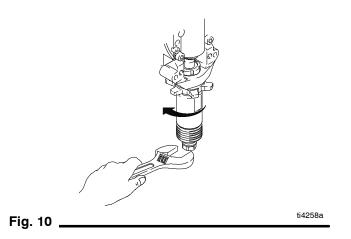
Fig. 9. Insert piston rod into cylinder with pin hole up and piston valve down. Insert pin into piston rod and crank shaft.

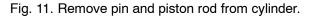




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Fig. 10. Remove piston valve from piston rod with a wrench.





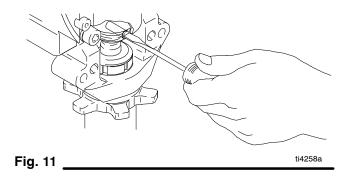
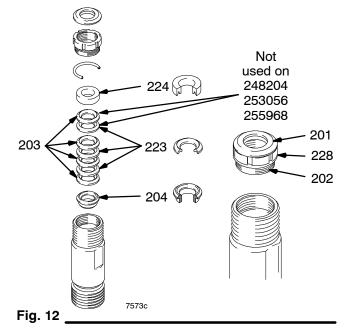
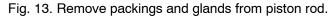


Fig. 12. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (204). Alternately stack UHMWPE (203) and leather (223) packings (note orientation). Install female gland (224). Install seal (201) and packing nut (202) and throat adjustment spacer (228).





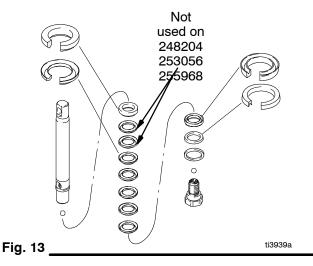


Fig. 14. Soak all leather packings in SAE 30W oil for 1 hour minimum prior to assembly. Stack male gland (219) on piston rod. Alternately stack UHMWPE (208) and leather (218) packings (note orientation) on piston rod. Install female gland (217). Install piston wiper (216) and backup washer (229) (note orientation) on piston valve (210). The special sealing patch on piston valve threads is good for four repackings. Use Loctite[®] on piston valve threads after four repackings.

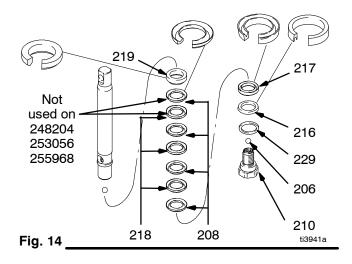


Fig. 10. Install ball (206) in piston rod. If Loctite[®] is applied to piston valve threads, ensure that none gets on ball. Install piston valve on piston rod. Torque as follows:

27 +/-3 ft-lb (Model 248204, 253056, 255968, 277069)

55 +/-3 ft-lb (Model 248205, 249057, 249059, 277070, 257146)

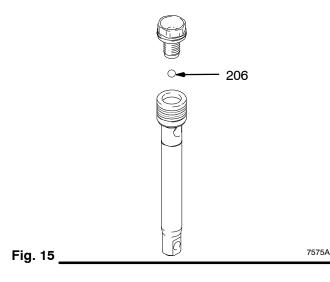
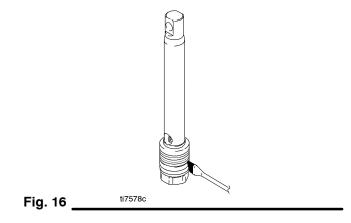


Fig. 16. Grease piston packings.



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

Fig. 17. Slide piston assembly into bottom of sleeve. Assure V-packing and u-cup are not rolled over or damaged. Mark IV: Install o-ring (231) on sleeve spacer (230). Install sleeve spacer on sleeve.

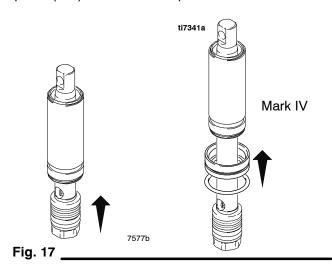


Fig. 18. Grease top inch or two of piston rod that will go through the cylinder throat packings.

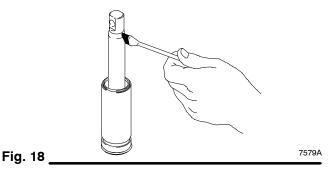


Fig. 19. Grease o-ring (221) and place on sleeve. Slide sleeve/piston rod assembly into bottom of cylinder. Replace o-ring (207) if desired.

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



Fig. 21. Torque seal and packing nut (202) down onto throat adjustment spacer (228) to 100 +/-10 in-lb.

Remove throat adjustment 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.

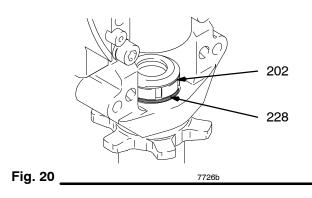


Fig. 21. Push up retaining spring (26) with screwdriver.

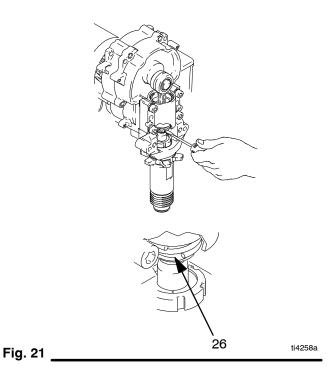


Fig. 22. Push in pin (29).

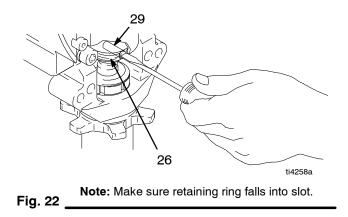
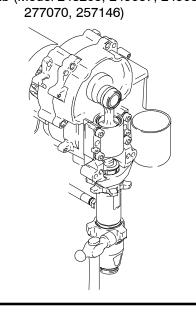


Fig. 24

Fig. 23. 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.

Fig. 24. Install intake valve on cylinder. Torque: 70 +/-5 ft-lb (model 248204, 253056, 255968, 277069) 80 +/-5 ft-lb (Model 248205, 249057, 249059,



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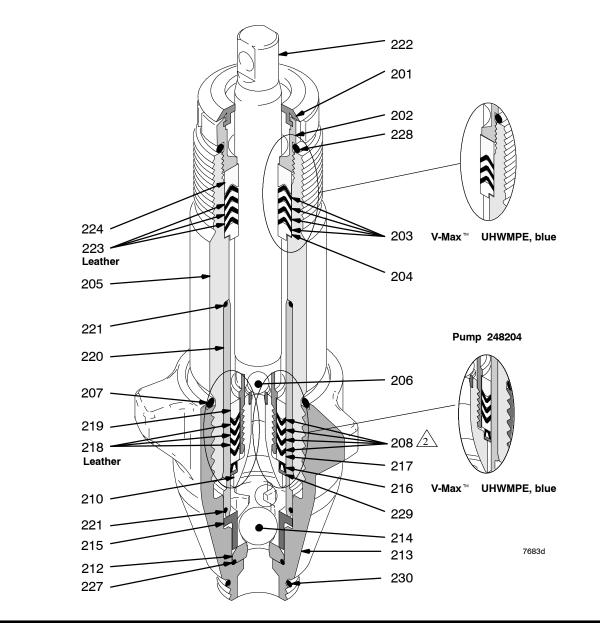


Fig 25 .

Technical Data

Maximum working pressure	3300 psi
	(227 bar, 22.7 MPa)
Fluid inlet size	1-5/16–12 un(m)

Fluid outlet size	Fluid	outlet size
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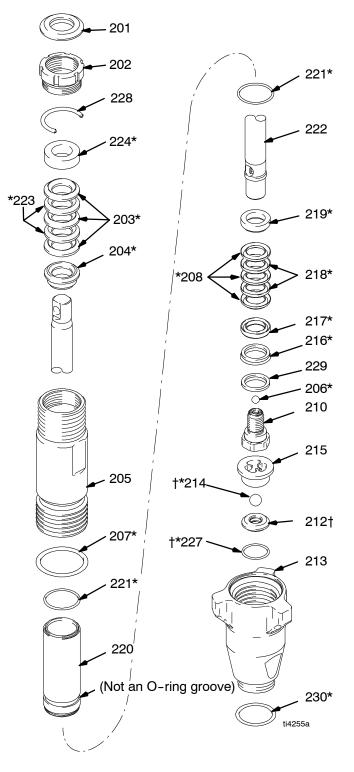
248204, 255968, 277069	1/4 npt(f)
248205, 249057, 249059, 253056,	
277070, 257146	3/8 npt(f)
Wetted parts stainless steel, PTFI	E, leather,
nylon, zinc-plated carbon steel, tungsten ca	rbide,
chrome plating, fluoroelastomer, acetal, poly	yethylene

Parts - Pump 248204, 277069, 255968

Model 248204, Series A; 277069, Series A; 255968, Series A

Ref No.	Part No.	Description	Qty.
201	179810	SEAL, throat	1
202	193046	NUT, packing	1
203*	192692	V-PACKING, throat,	3
		V-Max™ UHMWPE, blue	
204*	15C987	GLAND, male, throat	1
205		CYLINDER, pump	
	243346	Model 248204, 255968	1
	243346	Model 277069	1
206*	105444	BALL, sst, 0.3125 in.	1
207*	114054	PACKING, o-ring	1
208*	192693	V-PACKING, piston	3
		V-Max™ UHMWPE, blue	
210	239932	VALVE, piston	1
212†	239922	KIT, seat, carbide	1
		includes 214 and 227	
213	15C785	VALVE, intake (foot)	1
		Model 248204, 255968	
	195892	VALVE, intake, Model 277069	
214*†		BALL, sst, 0.5000 in.	1
215	192624	GUIDE, ball	1
216*	118503	WIPER, piston	1
217*	178969	GLAND, female, piston	1
218*	178939	V-PACKING, leather, piston	2
219*	196880	GLAND, male	1
220	248209	SLEEVE, cylinder	1
221*	108526	O-RING, PTFE	2
222	248206	ROD, piston	1
223*	178940	V-PACKING, leather, throat	2
224*	15C988	GLAND, female	
	107079	PACKING, o-ring	1
228	192714	SPACER, throat, nut	1
229*	15C997	WASHER, backup	1
230*	118494	O-RING, fluoroelastomer (not used	
		on Lo-boy)	1

- * These parts are also included in Repair Kit 248212, which may be purchased separately.
- † These parts are also included in Carbide Seat Kit 239922, which may be purchased separately.



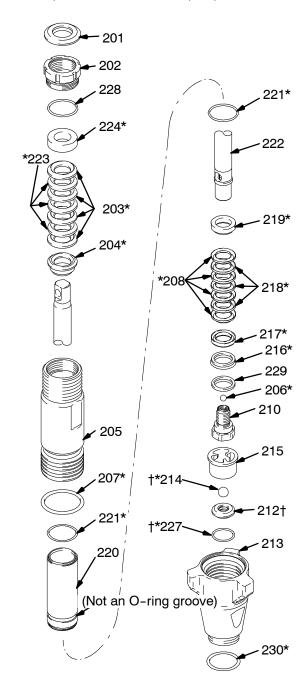
Parts - Pumps 248205, 249057, 249059, 277070, 257146

Model 248205, Series A; 249057, Series A; 249059, Series A; 277070, Series A; 257146, Series A

Ref No	. Part No.		Qty.
201+	183171	PLUG	1
202	193032	NUT, packing	1
203*+	193124	V-PACKING	4
		V-Max [™] UHMWPE, blue	
204*+	15C989	GLAND, packing, male, throat	1
205		CYLINDER, pump	1
	243347	Model 248205, 277070	
	196754	Model 249057, 249059, 257146	
206		BALL, 0.375 in.	
	101947*	Model 248205, 249057, 277070,	
		257146, sst	1
	116327+	Model 249059, ceramic	1
207*+	156633	PACKING, o-ring	1
208*+	193125	V-PACKING, piston	4
		V-Max [™] UHMWPE, blue	
210	240150	VALVE, piston	1
212†		KIT, SEAT, carbide	
		includes 214 and 227	
	244199	Model 248205, 249057, 277070,	
		257146	1
	244571	Model 249059	1
213		HOUSING, intake (foot)	
	15C783	Model 248205,	1
	196753	Model 249059, 249057	1
	195894	Model 277070, 257146	1
214		BALL	
	102972*†	Model 248205, 249057, 277070,	1
		257146 sst, 0.875 in.	
	111453+	Model 249059, ceramic, 0.750 in.	1
215		GUIDE, ball	1
	196967	Model 249059, 249057	1
a (a)	193027	Model 248205, 277070, 257146	1
	118504	WIPER, piston	1
	183185	GLAND, female, piston	1
	15E329	V-PACKING, leather, piston	3
219*+	183178	GLAND, packing, male	1
220	040010	SLEEVE, cylinder	1
	248210	Model 248205, 249057, 249059,	
	257021	277070 Model 257146	
221*+	257031 107098	PACKING, o-ring	2
221 +	107098	ROD, piston	2
222	248207	Model 248205, 277070	1
	248207	Model 249059, 249057, 257146	1
223*+	183175	V-PACKING, leather, throat	3
223°+ 224*+	15C990	GLAND, packing, female	1
	108526	PACKING, o-ring	1
227 [+	C20987	SPACER, nut	1
	15C998	WASHER, backup	1
230*+		O-RING, fluoroelastomer	1
200 1		(not used on 249057, 249059, 257146)	-
			,

231	117608	NIPPLE, straight	1
		Model 249057, 249059 (not shown)	
232	162485	ADAPTER, 3/8 npt x 3/8 npsm	1
		Model 249057, 249059, 257146	
		(not shown)	

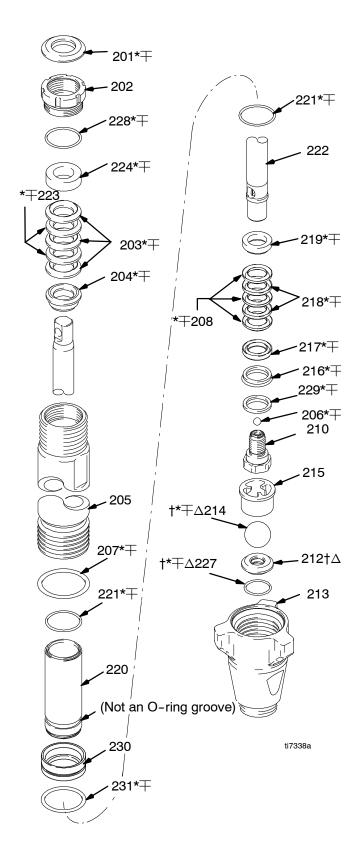
- These parts are also included in Repair Kit 248213, which * may be purchased separately.
- These parts are also included in Carbide Seat Kit 244199, t which may be purchased separately
- + These parts are included in Pump Repair Kit 249189.



Parts - Pump 253056

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*∓	- 15C987	GLAND, male, throat	1
205	287876	CYLINDER, pump	1
	105444	BALL, sst, 0.3125 in. (optional)	1
206+	119259	BALL, ceramic, 0.3125 in. (standard)	1
207* ∓	- 156593	PACKING, o-ring	1
208*∓	- 192693	V-PACKING, piston V-Max™ UHMWPE, blue	3
210	287877	VALVE, piston	1
-	<u>197470</u>	SEAT, carbide	1
	287878	HOUSING, intake	1
	102972	BALL, sst, 0.875 in. (optional)	. 1
214∓ dard)	∆ 1	111453 BALL, ceramic, 0.750 (stan-
215	196967	GUIDE, ball	1
216*∃	- 118503	WIPER, piston	1
217*∃	- 178969	GLAND, female, piston	1
218*∃	- 178939	V-PACKING, leather, piston	2
219*∃	- 196880	GLAND, male	1
220	248209	SLEEVE, cylinder	1
221*∓	108526	O-RING, PTFE	2
222	249969	ROD, pump (MARK IV)	1
223*∃	178940	V-PACKING, leather, throat	2
	= 15C988	GLAND, female	
	108526	PACKING, o-ring	1
$\mp \Delta$			
	- 158776	SPACER, throat, nut	1
	- 15C997	WASHER, backup	1 1
230 001*⊐	15G494	SPACER, sleeve	•
231*+	- 107098	O-RING	1

- * These parts are also included in Repair Kit with stainless steel ball, 287825, purchased separately.
- ∓ These parts are also included in Repair Kit with ceramic ball, 24V063, purchased separately.
- † These parts are also included in Carbide Seat Kit with stainless steel ball, 244199, purchased separately.
- △ These parts are also included in Carbide Seat Kit with ceramic ball, 2V071, purchased separately.
- 18 310643



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

TO PLACE AN ORDER, contact your Graco distributor, or call 1-800-690-2894 to identify the nearest distributor.

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> For patent information, see www.graco.com/patents. Original insttructions. This manual contains English. MM 310643

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