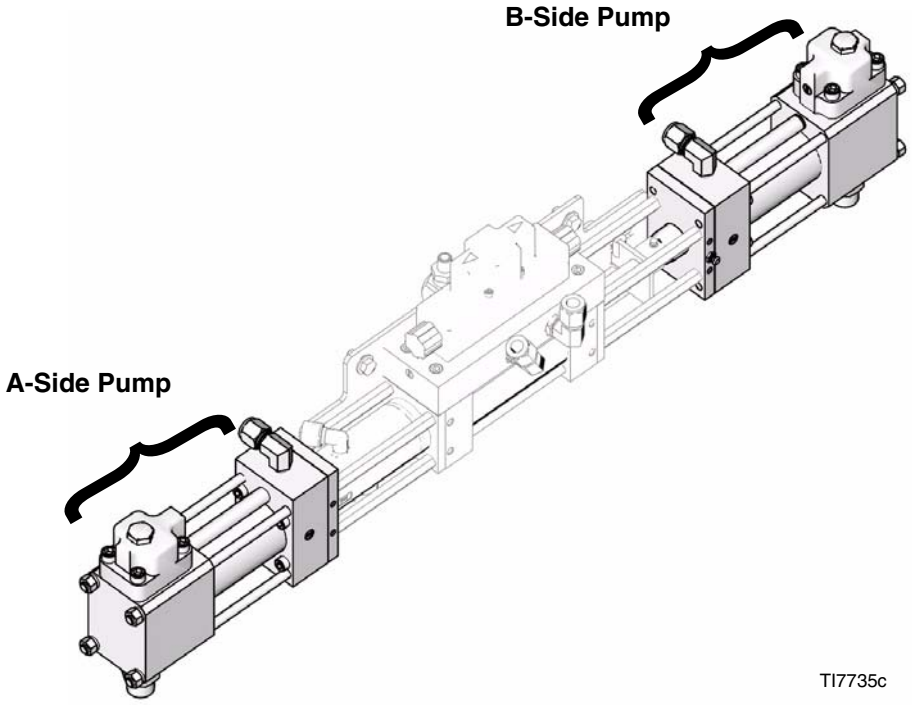
Repair - Parts

Old Proportioning Pumps 311391F

For proportioning pumps used on Gusmer and Old Graco H-25 and H-XP2 Hydraulic Proportioners.

Important Safety Instructions
Read all warnings and instructions in this manual and in your proportioner manual. Save these instructions.

See page 2 for model information, including maximum working pressure.



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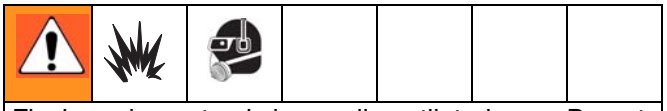
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Models

Part No., Series	Cylinder Size	A-Side or B-Side	Maximum Working Pressure psi (MPa, bar)
296757, A	#30	A-Side	3500 (24.0, 240)
295043, B	#30	B-Side	3500 (24.0, 240)
295044, B	#40	B-Side	3500 (24.0, 240)
295045, B	#48	B-Side	3500 (24.0, 240)
297675, B	#60	A-Side	3500 (24.0, 240)
296799, B	#60	B-Side	3500 (24.0, 240)
296807, B	#80	A-Side	3500 (24.0, 240)
296800, B	#80	B-Side	3500 (24.0, 240)
296750, A	#88	A-Side	3500 (24.0, 240)
296801, A	#88	B-Side	3500 (24.0, 240)
295155, A	#96	A-Side	3500 (24.0, 240)
296802, A	#96	B-Side	3500 (24.0, 240)
295156, B	#104	A-Side	3500 (24.0, 240)
295050, B	#104	B-Side	3500 (24.0, 240)
296806, A	#112	A-Side	3500 (24.0, 240)
295051, A	#112	B-Side	3500 (24.0, 240)
296749, B	#120	A-Side	3500 (24.0, 240)
296748, A	#120	B-Side	3500 (24.0, 240)

Repair

Flushing



Flush equipment only in a well-ventilated area. Do not spray flammable fluids. Do not turn on heaters while flushing with flammable solvents.

- Flush out old fluid with new fluid, or flush out old fluid with a compatible solvent before introducing new fluid.
- Use lowest possible pressure when flushing.
- To flush entire system, circulate through gun fluid manifold (with manifold removed from gun).
- Always leave some type of fluid in system. Do not use water.

Pressure Relief Procedure



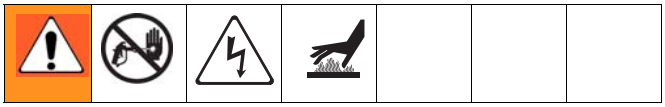
Trapped air can cause the pump to cycle unexpectedly, which could result in serious injury from splashing or moving parts.

1. Select **Park** on Pump Control Switch.
2. Turn off feed pumps.
3. Trigger gun to relieve pressure.
4. Close gun inlet valves.
5. Close fluid supply inlet valves.
6. Service spray gun. See corresponding spray gun manual.

Preventive Maintenance

When the pumps are functioning properly, it is not unusual for a trace amount of resin to seep past the pump packing onto the resin pump shaft. Routinely inspect the shaft and wipe away any residue when the proportioner is turned off. Disassemble and clean the proportioning pumps annually. Inspect the pistons and cylinder for marks or scratches, which may cause leakage and damage to packings. Replace all packings, o-rings, expanders, and packing springs annually.

Pump Base Disassembly



Disassemble and clean both pump bases annually.

1. Relieve pressure, page 3.
2. Turn OFF the main disconnect and lock out power at the source.
3. Remove the outlet valve assembly from the upper pump base:
   a. Unthread and remove the outlet valve retainer (222) and o-ring (207). See the parts drawing on page 6.
   b. Remove the outlet valve ball (205), using a magnet.
   c. Using the ball seat removal tool (Part No. 296609), loosen and remove the outlet valve seat (223) by turning it counterclockwise.
   d. Remove the valve seat seal (224) from the bottom of the cavity.

4. Remove the four screws (225) joining the upper (237) and lower (236) pump bases. Remove the upper base and two o-rings (207, 213).

5. Remove the inlet valve assembly from the lower pump base:

   a. Remove the ball stop (232) and spring (228) from the cavity.

   b. Remove the inlet valve ball (211), using a magnet.

   c. Using the 5/8 hex of the ball seat removal tool (Part No. 296608), loosen and remove the inlet ball seat (216) by turning it counterclockwise.

   d. Remove the valve seat seal (217) from the bottom of the cavity.

   e. Thoroughly clean all metal parts in a compatible solvent and inspect for wear or damage. Inspect each ball and seat for nicks or scratches; replace as required.

   f. Inspect all seals and o-rings and replace as required.

Pump Base Reassembly

1. Install the inlet valve in the lower pump base:

   a. Apply Blue Loctite® 242 to the threads of the inlet ball seat (216). See the parts drawing on page 6.

   b. Install the inlet seal (217) and seat (216) by threading the seat (216) into the lower base (236) by hand, until the seal bottoms in the base. Using a torque wrench on the ball seat removal tool, tighten the seat to 100 ft-lb (135 N•m).

   c. Install the valve ball (211), spring (228), and ball stop (232) in the cavity.

2. Install the two o-rings (207, 213) into the grooves on the top of the lower pump base (236). Then install and tighten the upper pump base (237) to the lower base, using the four screws (225).

3. Install the outlet valve in the upper pump base (237):

   a. Coat the threads of the outlet valve seat (223) liberally with Lubriplate grease.

   b. Install the outlet seal (224) and seat (223) by threading the seat (223) into the upper base (237) by hand, until the seal bottoms in the base. Use a 6 in. adjustable wrench on the ball seat removal tool to snug the seat approximately 1/4 turn. ***Do not overtighten.*** It may be necessary to periodically retighten the seat throughout the life of the seat seal.

   c. Install the valve ball (205) into the cavity.

   d. Install the o-ring (207) on the outlet valve retainer (222). Install and tighten the retainer.

Piston and Cylinder Seals



Piston Seal (218*) and Cylinder Seal (219†) Repair Kits are available. See Table 2 on page 8 to order the correct kits for your pump. Also see kit manual 311356.

Disassembly

1. Relieve pressure, page 3.
2. Turn OFF the main disconnect and lock out power at the source.
3. Disconnect the pump inlet and outlet lines; see your proportioner repair manual. Remove the four screws holding the pump outlet flange (235) to the hydraulic cylinder. Remove the linkage pin from the clevis (221) to disconnect the pump from the drive. Take the pump assembly to a workbench.
4. Remove the four nuts (209) and washers (206). Unscrew the tie rods (234) from the flange retainer (238). See the parts drawing on page 6.
5. Remove the flange retainer (238) and the cylinder seals and gasket from the outlet flange (235). Note that the A-side and B-side pumps are not the same. See Details A and B in the parts drawing.
6. Pull the outlet flange (235) off the tie rods (234). Remove the tie rods (234), cylinder (215), o-rings (201), and piston assembly (239). The crossover tube (233) will come loose.
7. If necessary, remove the retaining ring and piston pin Unscrew the piston body from the piston shaft. Remove the piston parts. See Parts drawing.
8. Thoroughly clean all parts in a compatible solvent and inspect for wear or damage. Replace as required.

Reassembly

CAUTION
To prevent cross-contamination of the equipment's wetted parts, **never** interchange component A (isocyanate) and component B (resin) parts.

1. Assemble the piston parts on the piston body, using the new parts in the piston seal kit (218*). See Parts drawing on page 6. Apply Loctite (supplied with kit) to piston body threads. Screw the piston body into the piston shaft and torque according to Table 1 on page 6.
2. Install the cylinder seal kit parts (219†) into the outlet flange (235), as shown in the Parts drawing. On A-side pumps only, install the adapter flange ring (241). Do not install the gasket (219c†) or flange retainer (238) yet.
3. Slide the tie rods (234) through the outlet flange (235). Install the gasket (219c†) and flange retainer (238), oriented as shown. Screw the tie rods into the flange retainer.
4. Lubricate the o-rings (201) and install them in the grooves of the outlet flange (235) and pump base (236). Lubricate the piston body and shaft, and slide the piston assembly into the cylinder (215). Seat the cylinder in the outlet flange (235), so the piston rod slides through the cylinder seals (219†) and flange retainer (238).
5. Check that the o-rings (202, 210) are in place on each end of the crossover tube (233). Seat the crossover tube in the outlet flange (235).
6. Orient the outlet flange (235) to the pump base (236) as shown, guiding the tie rods (234) through the pump base (236) to seat the cylinder (215) and crossover tube (233) in the pump base.
7. Install the four nuts (209) and washers (206) on the tie rods (234). Torque to 30 ft-lb (41 N•m).
8. Reconnect the pump to the hydraulic cylinder. Reconnect the pump inlet and outlet lines.

Parts

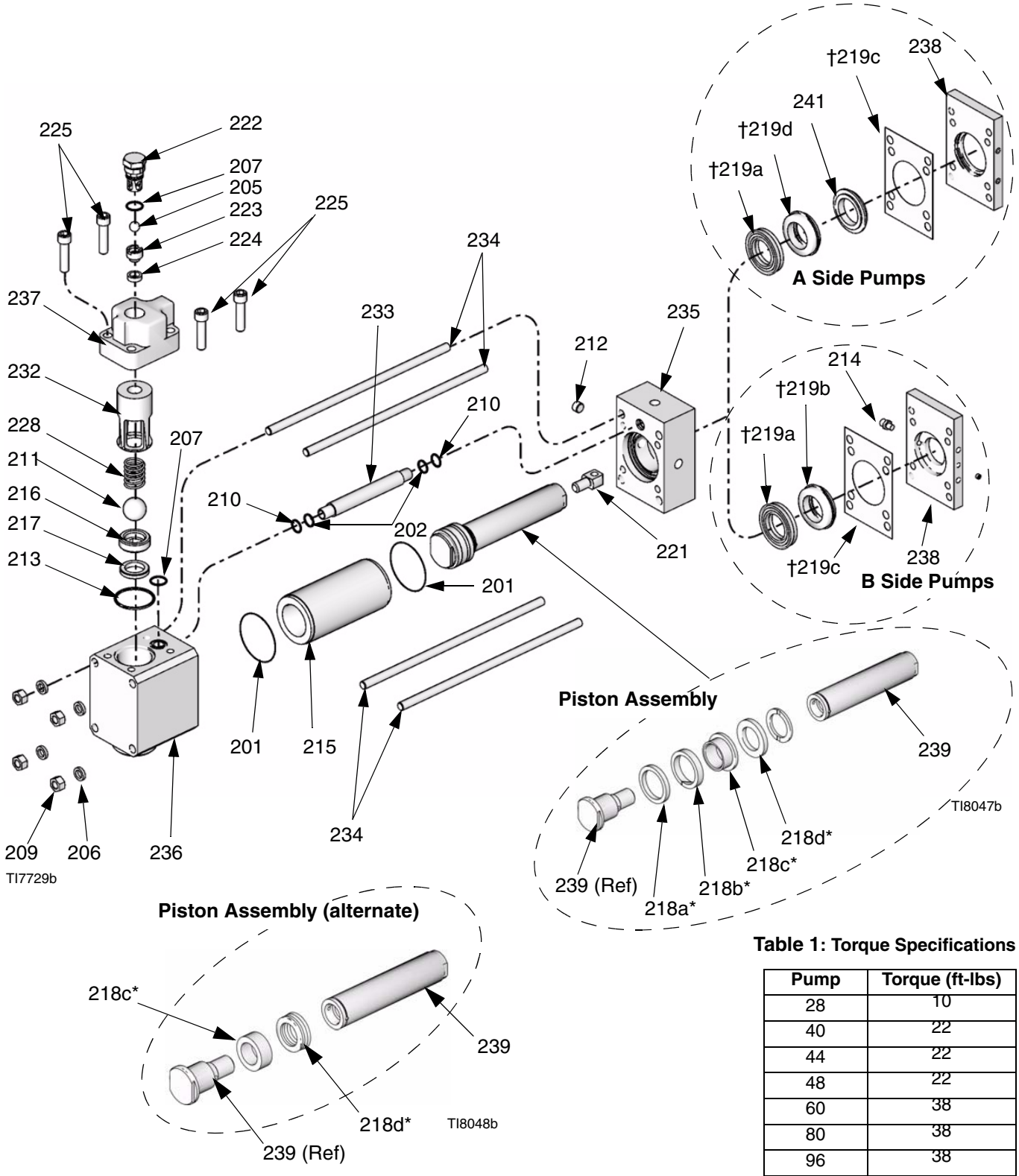


Table 1: Torque Specifications

Pump	Torque (ft-lbs)
28	10
40	22
44	22
48	22
60	38
80	38
96	38
104	38
120	55

Ref.	Part	Description	Qty.
201	296640	O-RING; fluoroelastomer	2
202	296641	RING, backup; PTFE	2
205	111279	BALL, valve, outlet; 7/16 in. (11 mm) diameter	1
206	100133	WASHER, packing support	4
207	108195	O-RING; fluoroelastomer	2
208	100721	PLUG, pipe, flush seal; 1/4 npt	2
209	106292	NUT, hex; 3/8-24	4
210	103610	O-RING; fluoroelastomer	2
211	107167	BALL, valve, inlet; 1 in. (25 mm) diameter	1
212	295225	PLUG, 1/4 in. pipe, flush	2
213	108103	O-RING; fluoroelastomer	1
214	295229	FITTING, grease; 1/4-28	1
215		CYLINDER; see Table 2 for part nos.	1
216	296647	SEAT, ball, inlet	1
217	295095	SEAL, seat, inlet	1
218*		KIT, seal, piston; see Table 2 for part nos.; includes items 218a-218d	1
218a*		. RING, wiper, piston seal	1
218b*		. RING, wear	1
218c*		. SUPPORT, piston seal	1
218d*		. SEAL, piston	1
219†		KIT, seal, cylinder; see Table 2 for part nos.; includes items 219a, 219c, 219d	1
219a†		. SEAL, cylinder	1
219b†		. BUSHING, grease; used on B-side pumps only	1
219c†		. GASKET	1
219d†		. BEARING; used on A-side pumps only	1
221		CLEVIS, pump; see Table 2 for part nos.	1
222	296793	RETAINER, valve, outlet	1
223	295099	SEAT, valve, outlet	1
224	296794	SEAL, valve, outlet	1
225	110141	SCREW, cap, socket hd; 3/8-16 x 1-1/2 in. (38 mm)	4
226		WASHER, piston support; see Table 2 for part nos.	1
228	295226	SPRING	1
232	295139	STOP, ball, inlet	1
233	295140	TUBE, crossover	1
234	295141	ROD, tie	4
235		FLANGE, outlet; see Table 2 for part nos.	1
236	296804	BASE, pump, lower	1
237	296805	BASE, pump, upper	1
238		FLANGE, retainer; see Table 2 for part nos.	1
239		ROD, piston; see Table 2 for part nos.	1
241		RING, flange, adapter; used on A-side pumps only; see Table 2 for part nos.	1

* *Included in Piston Repair Kits (see manual 312348).*

† *Included in Seal Repair Kits (see manual 312348).*

Table 2. Proportioning Pump Parts Matrix

	Pump Sizes and Part Numbers									
	#30	**#40**	**#48**	**#60**	**#80**	**#88**	**#96**	**#104**	**#112**	**#120**
Part Ref.	**296757 (A) 295043 (B)**	**295044 (B only)**	**295045 (B only)**	**297675 (A) 296799 (B)**	**296807 (A) 296800 (B)**	**296750 (A) 296801 (B)**	**295155 (A) 296802 (B)**	**295156 (A) 295050 (B)**	**296806 (A) 295051 (B)**	**296749 (A) 296748 (B)**
215	295053	295054	295055	295056	296646	295058	295059	295060	295061	296645
218	not used	261726	261729	261732	298013	not used	297848	261753	not used	298011
219 (A-side)	not used	261724	261727	261730	261733	not used	297871	261754	not used	298010
219 (B-side)	not used	261725	261728	261731	261734	not used	not used	261755	not used	261735
221	295296	295296	295296	296789	296789	296789	296789	296789	296789	296789
226	295302	295647	295648	295276	296796	295278	295279	295284	295285	296795
235	295063	295064	295065	295066	296803	295068	295069	295070	295071	295072
238	295159 (A) 295075 (B)	295076	295078	295159 (A) 295079 (B)	295159 (A) 295080 (B)	295159 (A) 295081 (B)	295159 (A) 295082 (B)	295159 (A) 295083 (B)	295159 (A) 295084 (B)	295159 (A) 295085 (B)
239	295303	295649	295650	295304	296765	295299	295300	295297	295298	296735
241 (A-side only)	297856	295243	297877	295244	295245	not used	295247	295248	295249	not used

Technical Data

Category	Data
Maximum working pressure	3500 psi (24.0 MPa, 240 bar)
Maximum fluid temperature	190°F (88°C)
Viscosity range	250-1500 centipoise
Maximum material inlet pressure	400 psi (2.7 MPa, 27 bar)
Wetted parts	Carbon Steel, Stainless Steel, Chrome Aluminum, PTFE, Acetal, UHMWPE, fluoroelastomer

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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.

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.

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TO PLACE AN ORDER, contact your Graco distributor or call to identify the nearest distributor.
Phone: 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

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