Repair - Parts

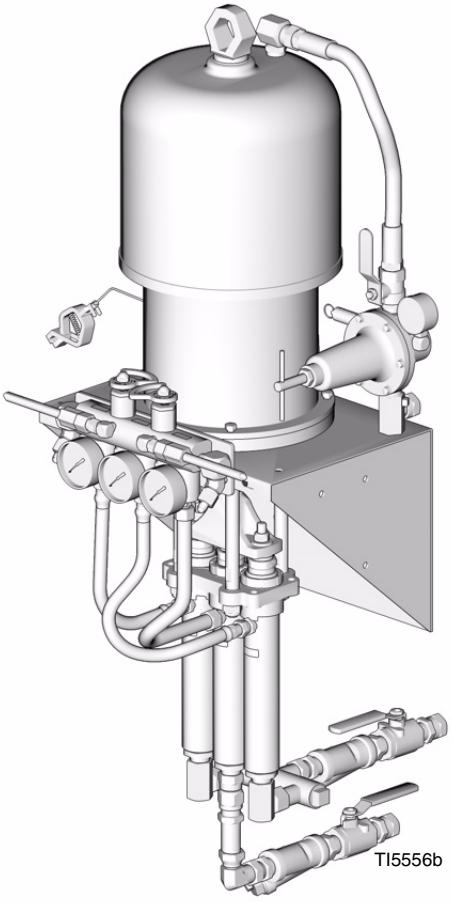
Hydra-Cat® Proportioners

310796 rev.D

For fixed ratio proportioning of 2 component reactive materials.

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

See page 3 for model information, including maximum working pressure.



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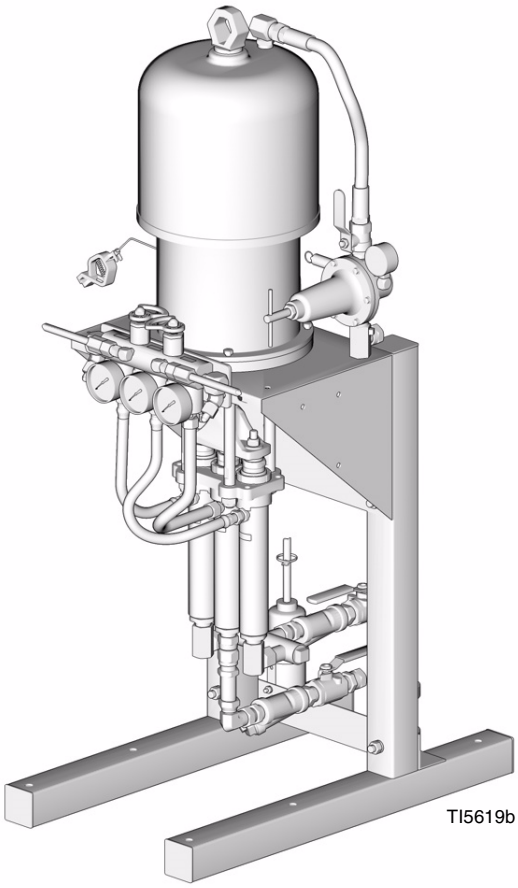

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PROVEN QUALITY. LEADING TECHNOLOGY.

Graco Inc. P.O. Box 1441 Minneapolis, MN 55440-1441

CE

Contents

Manual Conventions

WARNING

Hazard Symbol

WARNING: a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Warnings in the instructions usually include a symbol indicating the hazard. Read the general **Warnings** section for additional safety information.

CAUTION

CAUTION: a potentially hazardous situation which, if not avoided, may result in property damage or destruction of equipment.

Note

Additional helpful information.

Isocyanate Hazard

WARNING

Read Material Safety Data Sheet (MSDS) to know the specific hazards of isocyanates. Use equipment in a well-ventilated area. Wear respirator, gloves, and protective clothing when using isocyanates.

Keep Resin and Hardener Separate

CAUTION

To prevent cross-contamination of the wetted parts, do not interchange resin and hardener parts. Keep parts separate when cleaning the manifold. The manifold is shipped with the resin (high volume) side on the left and the hardener (low volume) side on the right.

Never leave hardener (isocyanate) wetted parts exposed to moisture in the air.

Models

Hydra-Cat® Proportioners

Part No., Series	Maximum Working Fluid Pressure psi (MPa, bar)	Maximum Air Input Pressure psi (MPa, bar)	Volume Ratio	Description	Includes:	
					Pump	Fluid Manifold
234931, A	5000 (34.5, 345)	70 (0.43, 4.3)	1:1	Stand Mount Proportioner	234921	248780
234932, A	4600 (31.7, 317)	100 (0.7, 7.0)	2:1	Stand Mount Proportioner	234922	248779
234933, A	5000 (34.5, 345)	100 (0.7, 7.0)	3:1	Stand Mount Proportioner	234923	248779
234934, A	5000 (34.5, 345)	90 (0.62, 6.2)	4:1	Stand Mount Proportioner	234924	248779
234991, A	5000 (34.5, 345)	70 (0.43, 4.3)	1:1	Wall Mount Proportioner	234921	248780
234992, A	4600 (31.7, 317)	100 (0.7, 7.0)	2:1	Wall Mount Proportioner	234922	248779
234993, A	5000 (34.5, 345)	100 (0.7, 7.0)	3:1	Wall Mount Proportioner	234923	248779
234994, A	5000 (34.5, 345)	90 (0.62, 6.2)	4:1	Wall Mount Proportioner	234924	248779

King® Proportioning Pumps

Pump Part No., Series	Maximum Working Fluid Pressure psi (MPa, bar)	Maximum Air Input Pressure psi (MPa, bar)	Pressure Ratio	Fluid Flow at 40 cpm gpm (lpm)
234921, A	5000 (34.5, 345)	70 (0.43, 4.3)	68:1	1.8 (6.8)
234922, A	4600 (31.7, 317)	100 (0.7, 7.0)	46:1	2.7 (10.0)
234923, A	5000 (34.5, 345)	100 (0.7, 7.0)	50:1	2.4 (9.0)
234924, A	5000 (34.5, 345)	90 (0.62, 6.2)	54:1	2.3 (8.7)

Related Manuals

Refer to these manuals for detailed equipment information. Manuals are available at www.graco.com.

Proportioning System	
Part No.	**Description**
310794	Proportioning System, Instructions-Parts Manual (English)
310858	Proportioning System, Instructions-Parts Manual (Spanish)
Hydra-Cat Proportioner	
310795	Hydra-Cat Proportioner, Operation Manual (English)
310859	Hydra-Cat Proportioner, Operation Manual (Spanish)
310796	Hydra-Cat Proportioner, Repair-Parts Manual (English)
310860	Hydra-Cat Proportioner, Repair-Parts Manual (Spanish)
Displacement Pumps	
307944	Instruction Manual (English)
King Air Motor	
309347	Instruction Manual (English)
Remote Mix Manifold Kit	
310797	Instruction Manual (English)

Heated Hose Control	
310798	Instruction Manual (English)
Heated Hose	
309572	Instruction Manual (English)
Feed Pump Kit	
310863	Instruction Manual (English)
Solvent Flush Pump Kit	
310863	Instruction Manual (English)
Agitator Kit	
310863	Instruction Manual (English)
Circulation and Return Tube Kits	
309852	Instruction Manual (English)
Air Supply Kit	
309827	Instruction Manual (English)
Air Regulator	
308167	Instruction Manual (English)
Airless Spray Gun	
309741	Instruction Manual (multilingual)

Warnings

The following warnings include general safety information for this equipment. Further product specific warnings may be included in the text where applicable.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground equipment and conductive objects in work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail.
- If there is static sparking or you feel a shock, **stop operation immediately.** Do not use equipment until you identify and correct the problem.
- Keep a fire extinguisher in the work area.

SKIN INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not point 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 trigger lock when not spraying.
- Follow **Pressure Relief Procedure** in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- 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.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not alter or modify equipment.
- For professional use only.
- Use equipment only for its intended purpose. Call your Graco 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.
- Comply with all applicable safety regulations.

MOVING PARTS HAZARD

Moving parts can pinch or amputate fingers and other body parts.

- 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** in this manual. Disconnect power or air supply.

⚠ WARNING

TOXIC FLUID OR FUMES HAZARD

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDS's to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

PERSONAL PROTECTIVE EQUIPMENT

You must wear appropriate protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury, inhalation of toxic fumes, burns, and hearing loss. This equipment includes but is not limited to:

- Protective eyewear
- Clothing and respirator as recommended by the fluid and solvent manufacturer
- Gloves
- Hearing protection

Pressure Relief Procedure

If your system includes Circulation and Return Tube Kit 246978 (see manual 309852), see **Alternate Pressure Relief Procedure**, page 8.

WARNING

Follow **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, servicing, or transporting equipment. Read warnings, page 5.

1. Engage trigger lock.

Trigger lock may vary, depending on gun.

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2. If your system uses heaters, shut off the main power to the heaters and heated hose control, and circulate the fluid for at least 10 minutes to cool the heated fluid and heaters.

3. Shut off the feed pump and proportioning pump air regulators and bleed-type master air valves.

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4. Disengage trigger lock.

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5. Hold a metal part of the gun firmly to a grounded metal pail. Trigger the gun to relieve pressure.

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6. Engage trigger lock.

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continued on page 8.

7. Flush mix manifold, hoses, and gun, see manual 310797. Shut off solvent supply pump and repeat steps 4-6 to relieve solvent pressure.

8. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved after following the steps above, **very slowly** loosen tip guard retaining nut or hose end coupling to relieve pressure gradually, then loosen completely. Clear hose or tip obstruction.

9. If static mixer, whip hose, and gun cannot be flushed because of mixed and cured material, **very slowly** loosen static mixer tube from mix manifold outlet to relieve pressure gradually, then loosen completely. Replace or clean clogged components.

Alternate Pressure Relief Procedure

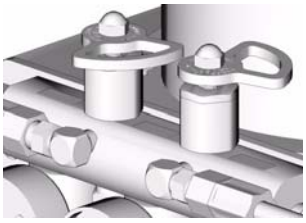
Use this procedure if your system includes Circulation and Return Tube Kit 246978 (see manual 309852), to relieve fluid pressure back to the supply drums. This method allows:

- fluid pressure relief without flushing the mixer, hose, and gun again
- circulation back to drums after a drum change, to purge air from feed pumps and lines
- if using drum heaters, warm material may be circulated through proportioner before beginning to spray.

CAUTION
Do not circulate contaminated material back to the drums.

1. Follow steps 1-6 under **Pressure Relief Procedure**, page 7.

2. Turn SPRAY/PRESSURE RELIEF valves to PRESSURE RELIEF (hardener valve must be opened first).



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Troubleshooting

Problem	Cause	Solution
System stops or will not start.	Air pressure or volume too low.	Increase; check air compressor.
	Closed or restricted air line or air valve.	Open or clean.
	Fluid valves closed.	Open.
	Clogged fluid hose.	Replace.
	Air motor worn or damaged.	Repair air motor; see 309347.
	Displacement pump stuck.	Repair pump; see 307944.
System speeds up or runs erratically.	Fluid containers are empty.**	Check often; keep filled.
	Air in fluid lines.**	Purge; check connections.
	Displacement pump parts worn or damaged.	Repair pump; see 307944.
Pump operates, but resin output pressure drops on upstroke.*	Dirty, worn, or damaged resin pump piston valve or piston packings.	Clean, repair pump; see 307944.
Pump operates, but resin output pressure drops on downstroke.	Dirty, worn, or damaged resin pump intake valve.	Clean, repair pump; see 307944.
Pump operates, but resin output pressure drops on both strokes.*	Hardener output restriction.	Clean, unplug hardener side.
	Fluid supply low.**	Refill or change container.
Pump operates, but hardener output pressure drops on upstroke.*	Dirty, worn, or damaged hardener pump piston valve or piston packings.	Clean, repair pump; see 307944.
Pump operates, but hardener output pressure drops on downstroke.*	Dirty, worn, or damaged hardener pump intake valve.	Clean, repair pump; see 307944.
Pump operates, but hardener output pressure drops on both strokes.	Resin output restriction.	Clean, unplug resin side.
	Fluid supply low.**	Refill or change container.
Fluid leak around packing nut.	Loose packing nut or worn throat packings.	Tighten; replace; see 307944.
Relief valve opens too soon or will not close.	Relief valve is dirty or damaged.	Replace valve cartridge (209) with kit 246842.
No pressure on one side; fluid leaking from fluid manifold.	Overpressure rupture disk blown.	Determine cause of overpressurization and correct. Replace rupture disk assembly (202).
Pressure and flow surges on upstroke.	Feed pressure too high. Every pound of feed pressure adds 2 psi boost during upstroke.	Reduce feed pressure. See **Technical Data**, page 25.
Fluid outlet pressure gauges split at top changeover (if one gauge drops, the others will rise).	Not fully loading one side on upstroke.	Increase pressure on side that dropped. Increase feed hose size. Clean inlet strainer (12a).

* Fluid ratio will be wrong. ** Purge all air from system before proportioning fluids.

Troubleshooting continued on page 10.

WARNING

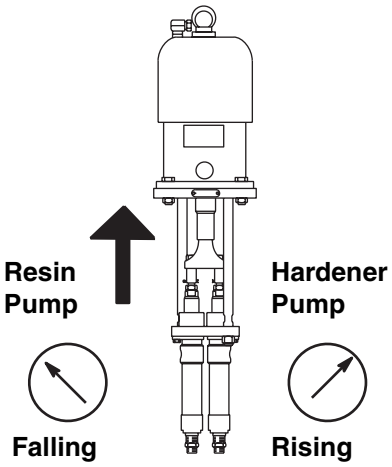
Read warnings, page 5.

1. Relieve pressure, page 7. Stop pump at bottom of its stroke before servicing.
2. Faulty fluid manifold check valves (219) can mask pump problems. Keep the check valves operating properly.
3. This chart is specific to the air motor and pump. Refer to the other supplied manuals to troubleshoot individual components.

This chart uses proportioner gauges to determine pump malfunctions. A 2 pump proportioner is shown for clarity. Observe the gauge readings during the stroke direction indicated by the bold arrow, and immediately after closing the manifold.

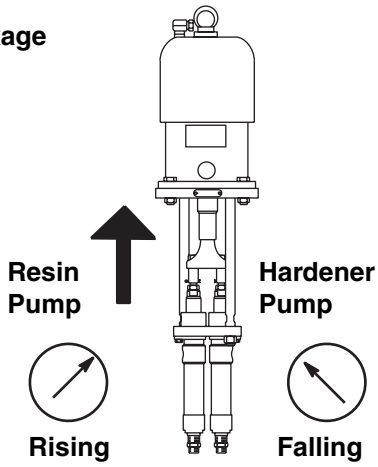
TROUBLE AREA:
Resin Pump Leakage

1. Throat packing
2. Piston packing
3. Piston ball check



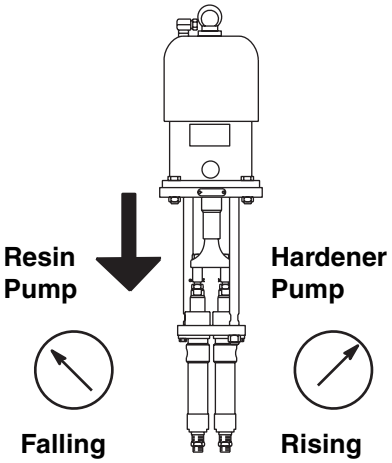
TROUBLE AREA:
Hardener Pump Leakage

1. Throat packing
2. Piston packing
3. Piston ball check



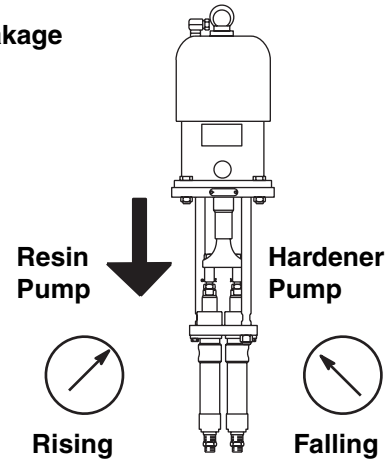
TROUBLE AREA:
Resin Pump Leakage

1. Throat packing
2. Intake ball check



TROUBLE AREA:
Hardener Pump Leakage

1. Throat packing
2. Intake ball check



Repair

Air Motor

1. Flush before repairing equipment, if possible. See Hydra-Cat Operation manual 310795.

WARNING

Read warnings, page 5.

2. Relieve pressure, page 7. Stop pump at bottom of its stroke.
3. Remove air supply line from air motor inlet. Remove pump ground wire.

Repairing the air motor's air valve does not require removal of the motor. Stop here and see manual 309347 for air valve repair. For complete air motor repair, continue with step 4.

4. Remove screws (102) and washers (103) holding adapter plate (104) to motor (101). See FIG. 1.
5. Remove screws (115), washers (116) and nuts (117) holding pump assembly to mounting bracket.
6. Using a hoist, lift air motor (101) 4 in. (101 mm) from adapter plate (104).
7. Hold flats of coupler (105) with wrench to keep it from turning, and unscrew air motor rod (R).
8. See manual 309347 for air motor repair.
9. Reassemble in reverse order, following all assembly notes in FIG. 1.

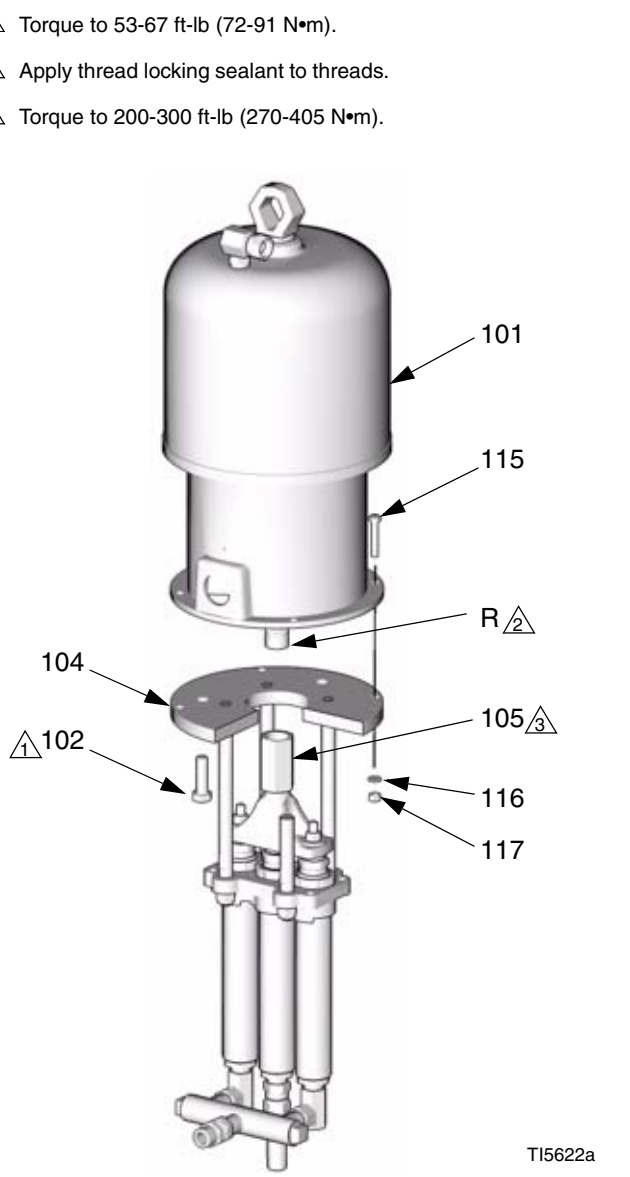


FIG. 1. Air Motor

Displacement Pump

Disassembly

1. Flush before repairing equipment, if possible. See Hydra-Cat Operation manual 310795.

WARNING

Read warnings, page 5.

2. Relieve pressure, page 7. Stop pump at bottom of its stroke.
3. Remove fluid outlet hoses (17, 18) and fittings (19, 20) from displacement pumps (110).
4. Unscrew 90° swivel unions (131) from supply manifold (130), then remove from outside displacement pumps. *On three pump models only,* unscrew swivel union (134) from center displacement pump.
5. Remove locknuts (112) from displacement rods of the two outer pumps. See FIG. 2. Unscrew the two outer locknuts (108) from the top of the tie plate (109) on the two displacement pumps. Use a punch and hammer to loosen.
6. Remove the two outer pumps from tie plate. Remove washers (107) from rods of each pump.
7. *On three pump models only,* screw center pump's displacement rod out of yoke (106), using a wrench on flats of rod. Remove pump from yoke, then remove washer (107) from pump rod.
8. See manual 307944 for displacement pump repair.

Loosen tie rod nuts (119). Retorque tie rods (118) into plate (104) to 75-85 ft-lb (101-114 N•m), then retorque nuts (119) to 75-85 ft-lb (101-114 N•m).

Reassembly

1. *On three pump models only,* slide center displacement pump rod through tie plate (109), center locknut (108), and washer (107). Thread displacement rod into yoke (106) by turning complete cylinder. Use a wrench on flats of displacement rod for final tightening. Torque to 53-67 ft-lb (72-91 N•m). Push cylinder up into place in tie plate and torque center locknut (108) to 100-200 ft-lb (135-270 N•m).
2. Slide the outer two displacement pump rods through tie plate (109), outer locknuts (108), and washers (107). Install locknuts (112) loosely on displacement rods. Push cylinders up into place in tie plate and torque outer locknuts (108) to 100-200 ft-lb (135-270 N•m).
3. Move air motor to bottom of its stroke. Check for movement of air motor yoke at each displacement rod. With rods centered, tighten locknuts (112) securely and torque to 53-67 ft-lb (72-91 N•m).
4. Tighten throat packing nut just enough to prevent leakage, no tighter.
5. Reconnect swivel unions to the pumps. Hold intake valves steady with a wrench to prevent from turning.

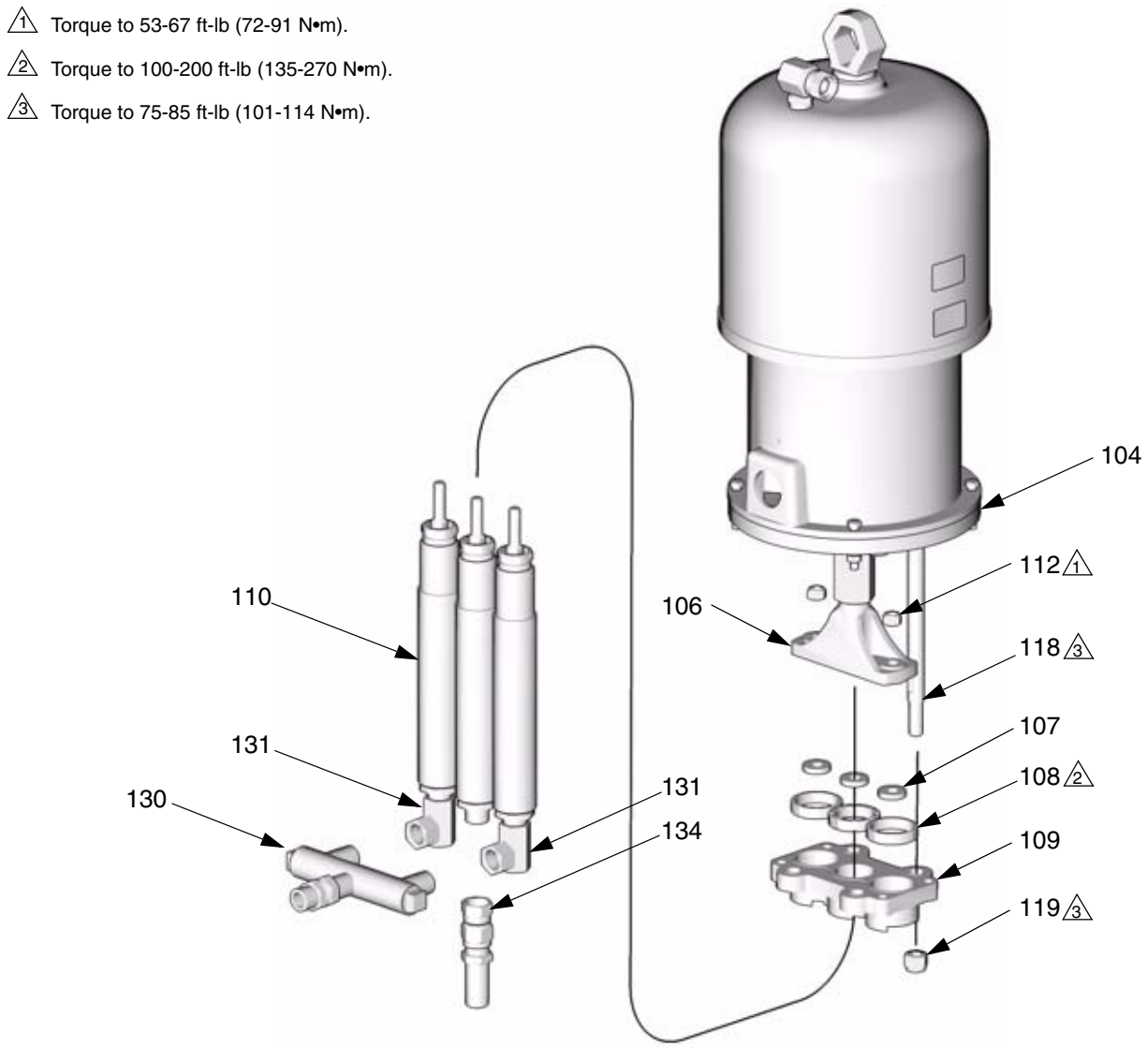


FIG. 2. Displacement Pumps

Fluid Manifold

1. Flush before repairing equipment, if possible. See Hydra-Cat Operation manual 310795.

WARNING

Read warnings, page 5.

2. Relieve pressure, page 7. Stop pump at bottom of its stroke.

Rupture Disks

1. Relieve pressure, page 7.
2. Remove rupture disk assembly (202) from fluid manifold (201). See FIG. 3.
3. Install new rupture disk kit. Hole in red outlet cap must face toward rear plate (215).

Check Valves

1. Relieve pressure, page 7.
2. Remove screws (204) holding check valve assembly to fluid manifold (201). See FIG. 3. Push check valve cartridge (219) out of housing from the bottom.
3. Clean or replace check valve cartridge (219). To disassemble for cleaning, insert 1/8 in. (3 mm) punch through the middle top hole and tap out ball (219a) and seat (219b). See **Check Valve (219) Detail** in FIG. 3.
4. Clean check valve bore in fluid manifold (201).
5. Reassemble check valve, coat with Part No. 118665 Grease, and install in fluid manifold (201).

Drain Valves

1. Relieve pressure, page 7. Turn valve handles to SPRAY position. See FIG. 3.
2. Remove nut (212), handle (211), and spring (210).
3. Unscrew elbow (213) from fluid manifold (201).
4. Unscrew valve (209) from fluid manifold (201). Clean and inspect for damage. Replace with kit 246842 if necessary. Add 10 drops of ISO pump oil inside spring cavity.
5. Remove seat (216) and seal (217). Clean drain valve bore in fluid manifold (201).
6. Inspect o-ring (231) and replace if necessary.
7. Install seal (217) and seat (216) in fluid manifold (201). Beveled side of seat must face up.
8. Apply sealant to valve threads and install in fluid manifold (201). Torque to 355-395 in-lb (40.1-44.6 N•m).
9. Reinstall elbow (213). Elbow outlets must face away from each other.
10. Apply sealant to threads of valve stud. Lubricate ends of spring. Install spring (210), handle (211), and nut (212). Position valve handles as shown with valves in SPRAY position, to ensure that hardener valve must be opened before resin valve. Torque nut to 175-195 in-lb (19.8-22.0 N•m).

1 Hole in disc housing must face toward rear.

2 Handles must be oriented as shown in SPRAY position.

3 Beveled side must face up.

4 Apply sealant to threads.

5 Torque to 355-395 in-lb (40.1-44.6 N•m).

6 Elbow outlets must face away from each other.

7 Lubricate ends of spring.

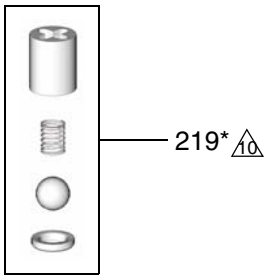
8 Torque to 175-195 in-lb (19.8-22.0 N•m).

9 See **Check Valve (219) Detail**.

10 Coat outside of check valves (219) with liberal amount of 118665 Grease.

* *Parts included in Check Valve Kit 249035.*

Check Valve (219) Detail



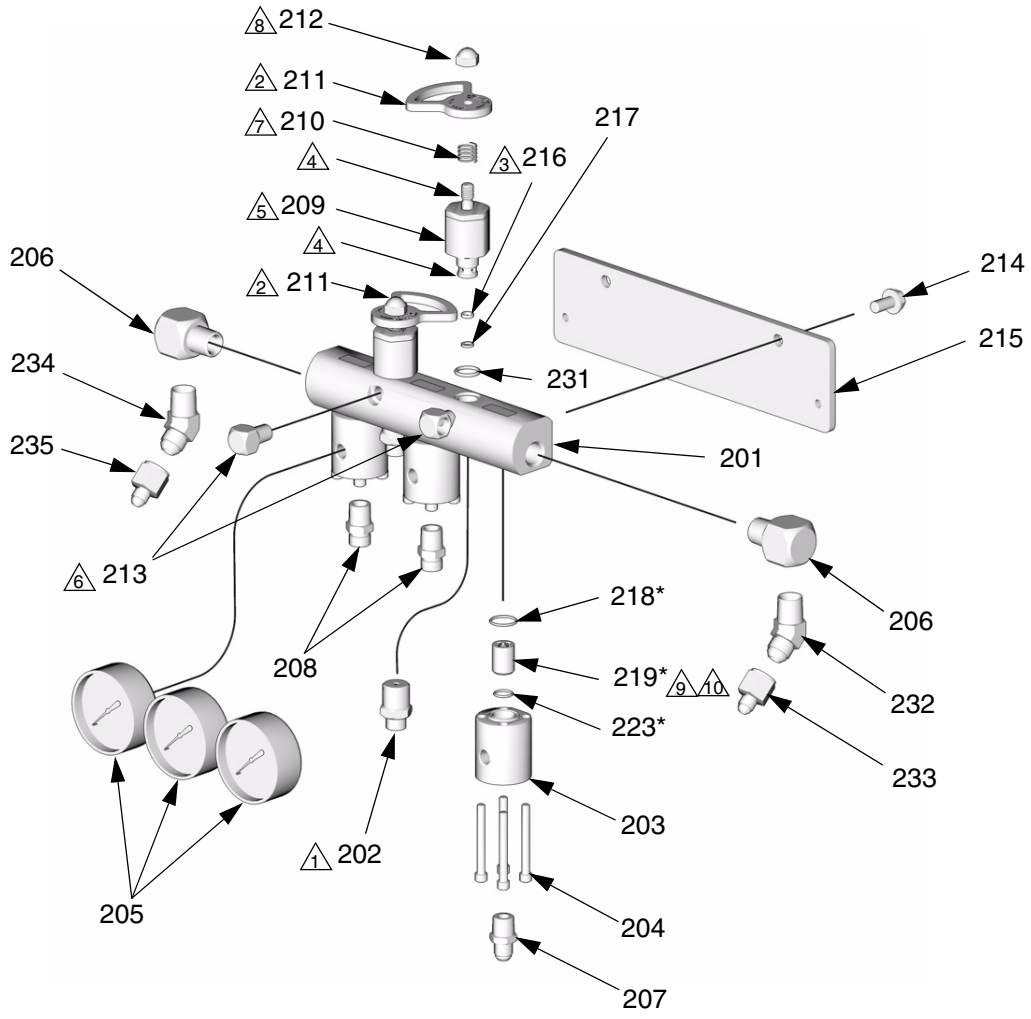


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FIG. 3. Fluid Manifold

Parts

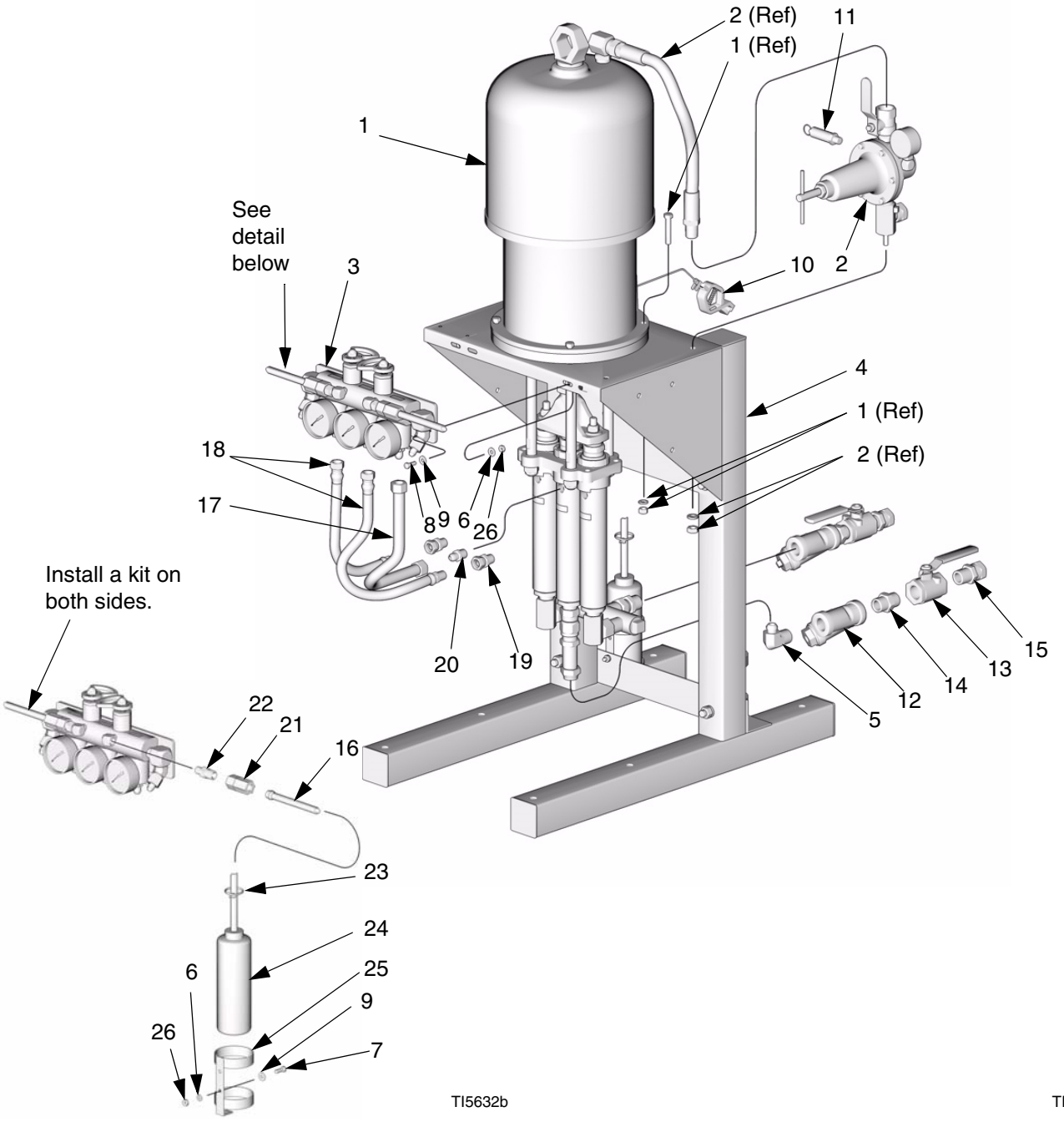
Stand Mount Proportioners

234931 Series A, 1:1 Mix Ratio

234932 Series A, 2:1 Mix Ratio

234933 Series A, 3:1 Mix Ratio

234934 Series A, 4:1 Mix Ratio



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Stand Mount Proportioners

234931 Series A, 1:1 Mix Ratio

234932 Series A, 2:1 Mix Ratio

234933 Series A, 3:1 Mix Ratio

234934 Series A, 4:1 Mix Ratio

Ref. No.	Part No.	Description	Qty.
1	234921	PUMP, proportioner; 234931; see page 20	1
	234922	PUMP, proportioner; 234932; see page 20	1
	234923	PUMP, proportioner; 234933; see page 20	1
	234924	PUMP, proportioner; 234934; see page 20	1
2	207651	KIT, air regulator; see 308168	1
3	248780	MANIFOLD, fluid, two pump; 234931 only; see page 22	1
	248779	MANIFOLD, fluid, three pump; 234932, 234933, and 234934; see page 22	1
4	241693	KIT, stand; see page 24	1
5	160327	ELBOW, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
6	100016	WASHER, lock; 1/4	4
7	100022	SCREW, cap, hex hd; 1/4-20 x 3/4 in. (19 mm)	2
8	100021	SCREW, cap, hex hd; 1/4-20 x 1 in. (25 mm)	2
9	110755	WASHER, plain	6
10	244524	GROUND WIRE	1
11	108124	VALVE, safety relief; 234931 only	1
	103347	VALVE, safety relief; 234932, 234933, and 234934	1
12	101078	Y-STRAINER; includes item 12a	2
12a	180199	. ELEMENT, 20 mesh; not shown	1
13	109077	VALVE, ball; 3/4 npt (fbe)	2
14	C20487	NIPPLE; 3/4 npt	2
15	157785	UNION, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
16	190738	TUBE; nylon; 3/8 in. (10 mm) ID; 1/2 in. (13 mm) OD; 36 in. (915 mm)	2
17	15E601	HOSE, hardener; PTFE, braided sst; 16-1/2 in. (419 mm)	1
18	198847	HOSE, resin; 3/8 npt(m) x 3/8 npsm(f); 3/8 in. (10 mm) ID; nylon, with steel braid; 13 in. (330 mm); 234931 only	1
	198847	HOSE, resin; 3/8 npt(m) x 3/8 npsm(f); 3/8 in. (10 mm) ID; nylon, with steel braid; 13 in. (330 mm); 234932, 234933, and 234934	2
19	155665	UNION, adapter; 3/8 npt(m) x 3/8 npsm(f); 234931 only	1
	155665	UNION, adapter; 3/8 npt(m) x 3/8 npsm(f); 234932, 234933, and 234934	2
20	112100	ADAPTER; 3/8 npt(m) x 9/16-18 unf-2a	1
21	205439	COUPLING; 3/8 npsm(f) x 3/8 in. (10 mm) ID tube	2
22	165198	NIPPLE, reducing; 3/8 npt x 1/4 npt	2
23	112278	WRAP, tie	2
24	112279	BOTTLE	2
25	236272	HOLDER, bottle	2
26	100015	NUT, hex; 1/4-20	4

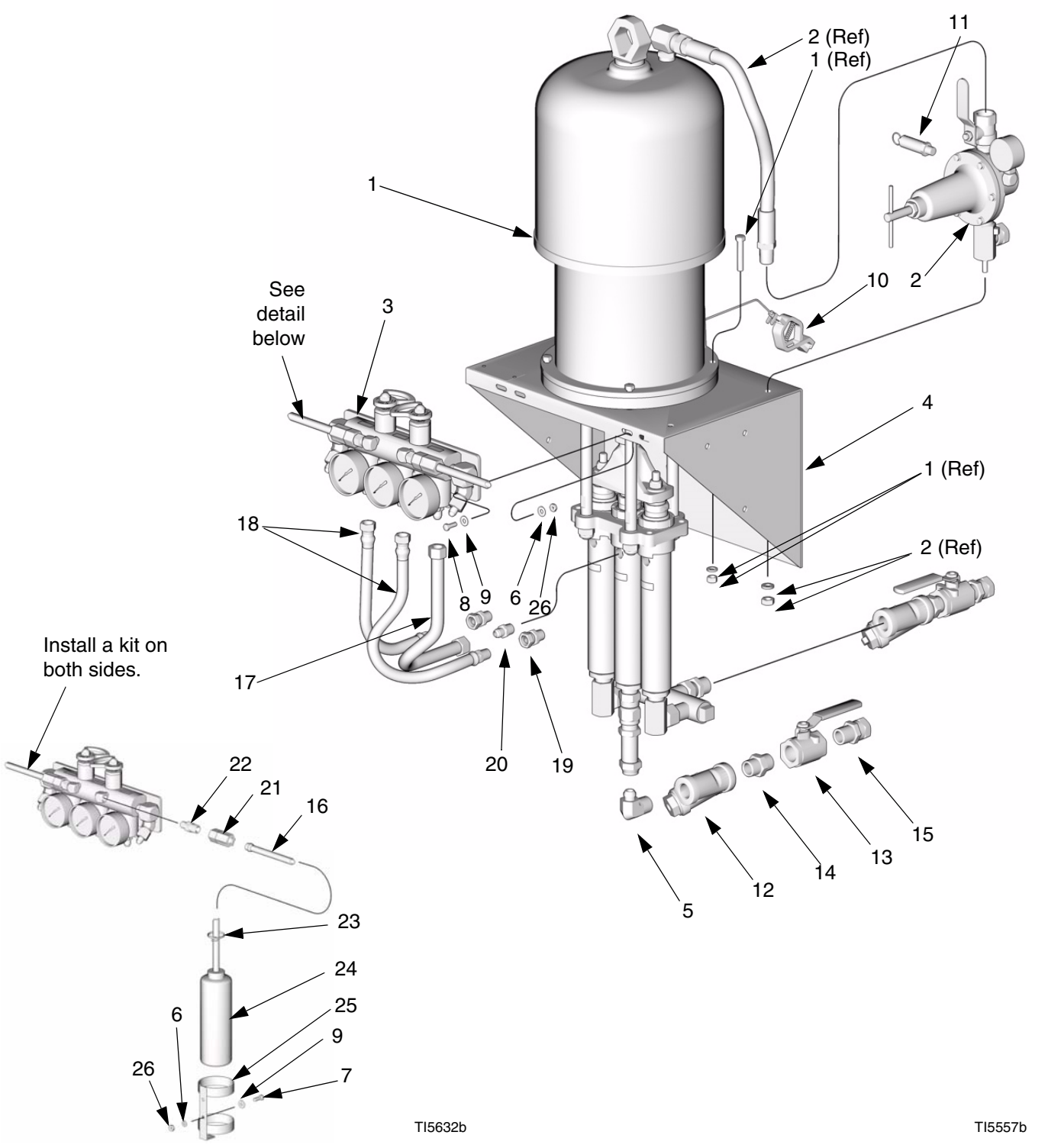
Wall Mount Proportioners

234991 Series A, 1:1 Mix Ratio

234992 Series A, 2:1 Mix Ratio

234993 Series A, 3:1 Mix Ratio

234994 Series A, 4:1 Mix Ratio



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Wall Mount Proportioners

234991 Series A, 1:1 Mix Ratio

234992 Series A, 2:1 Mix Ratio

234993 Series A, 3:1 Mix Ratio

234994 Series A, 4:1 Mix Ratio

Ref. No.	Part No.	Description	Qty.
1	234921	PUMP, proportioner; 234991; see page 20	1
	234922	PUMP, proportioner; 234992; see page 20	1
	234923	PUMP, proportioner; 234993; see page 20	1
	234924	PUMP, proportioner; 234994; see page 20	1
2	207651	KIT, air regulator; see 308168	1
3	248780	MANIFOLD, fluid, two pump; 234991 only; see page 22	1
	248779	MANIFOLD, fluid, three pump; 234992, 234993, and 234994; see page 22	1
4	236061	BRACKET, mounting	1
5	160327	ELBOW, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
6	100016	WASHER, lock; 1/4	4
7	100022	SCREW, cap, hex hd; 1/4-20 x 3/4 in. (19 mm)	2
8	100021	SCREW, cap, hex hd; 1/4-20 x 1 in. (25 mm)	2
9	110755	WASHER, plain	6
10	244524	GROUND WIRE	1
11	108124	VALVE, safety relief; 234991 only	1
	103347	VALVE, safety relief; 234992, 234993, and 234994	1
12	101078	Y-STRAINER; includes item 12a	2
12a	180199	. ELEMENT, 20 mesh; not shown	1
13	109077	VALVE, ball; 3/4 npt (fbe)	2
14	C20487	NIPPLE; 3/4 npt	2
15	157785	UNION, swivel; 3/4 npt(m) x 3/4 npsm(f)	2
16	190738	TUBE; nylon; 3/8 in. (10 mm) ID; 1/2 in. (13 mm) OD; 36 in. (915 mm)	2
17	15E601	HOSE, hardener; PTFE, with steel braid; 16-1/2 in. (419 mm)	1
18	198847	HOSE, resin; 3/8 npt(m) x 3/8 npsm(f); 3/8 in. (10 mm) ID; nylon, with steel braid; 13 in. (330 mm); 234991 only	1
	198847	HOSE, resin; 3/8 npt(m) x 3/8 npsm(f); 3/8 in. (10 mm) ID; nylon, with steel braid; 13 in. (330 mm); 234992, 234993, and 234994	2
19	155665	UNION, adapter; 3/8 npt(m) x 3/8 npsm(f); 234991 only	1
	155665	UNION, adapter; 3/8 npt(m) x 3/8 npsm(f); 234992, 234993, and 234994	2
20	112100	ADAPTER; 3/8 npt(m) x 9/16-18 unf-2a	1
21	205439	COUPLING; 3/8 npsm(f) x 3/8 in. (10 mm) ID tube	2
22	165198	NIPPLE, reducing; 3/8 npt x 1/4 npt	2
23	112278	WRAP, tie	2
24	112279	BOTTLE	2
25	236272	HOLDER, bottle	2
26	100015	NUT, hex; 1/4-20	4

Proportioner Pumps

234921 Series A, 1:1 Mix Ratio, with two displacement pumps

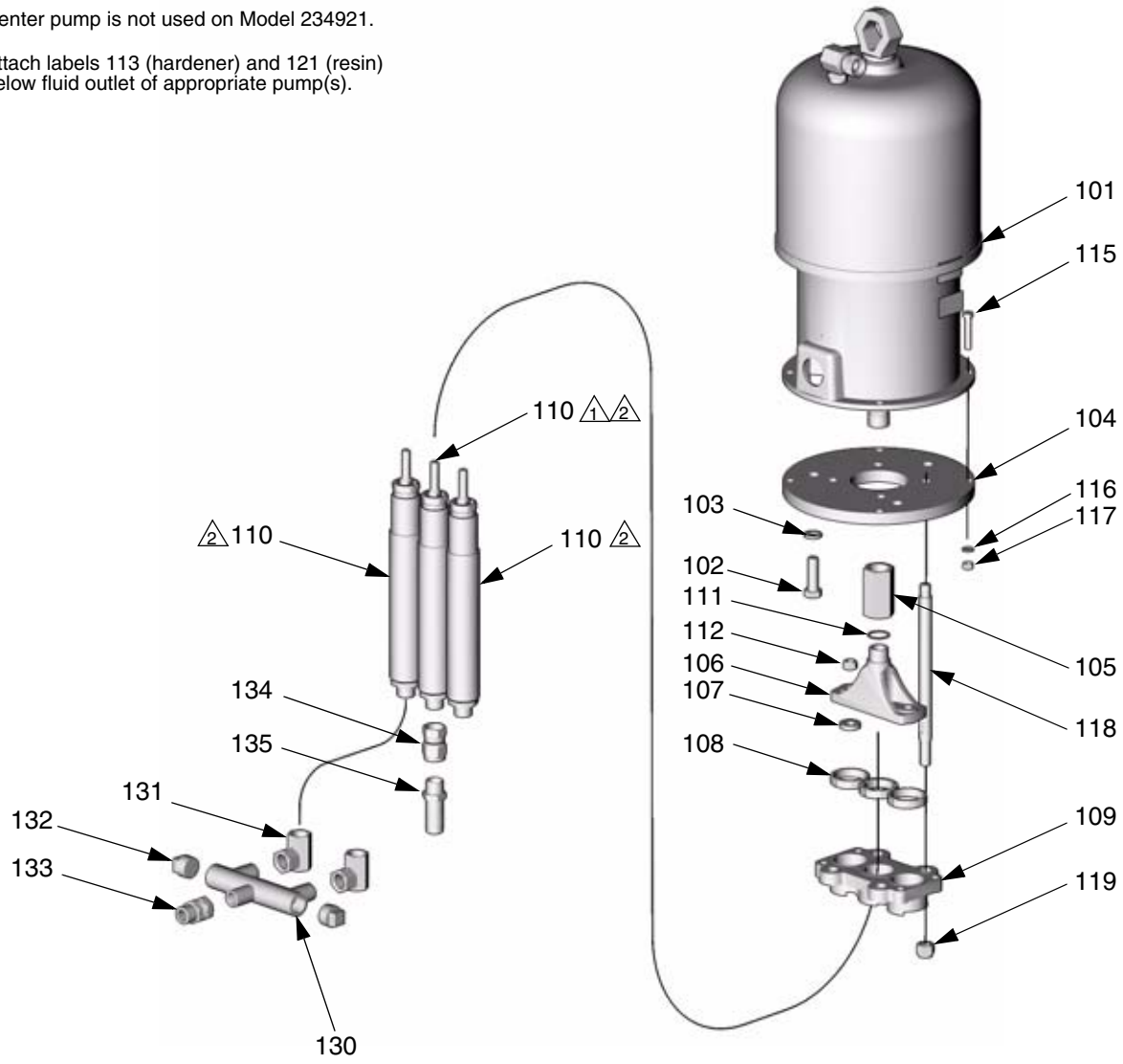
234922 Series A, 2:1 Mix Ratio, with three displacement pumps

234923 Series A, 3:1 Mix Ratio, with three displacement pumps

234924 Series A, 4:1 Mix Ratio, with three displacement pumps

△1 Center pump is not used on Model 234921.

△2 Attach labels 113 (hardener) and 121 (resin) below fluid outlet of appropriate pump(s).



Proportioner Pumps

234921 Series A, 1:1 Mix Ratio, with two displacement pumps

234922 Series A, 2:1 Mix Ratio, with three displacement pumps

234923 Series A, 3:1 Mix Ratio, with three displacement pumps

234924 Series A, 4:1 Mix Ratio, with three displacement pumps

Ref. No.	Part No.	Description	Qty.
101	245111	MOTOR, air, King; see 309347	1
102	100428	SCREW, cap, hex hd; 5/8-11 x 2 in. (51 mm)	3
103	100128	WASHER, lock; 5/8	3
104	171122	PLATE, adapter	1
105	172726	COUPLER	1
106	164414	YOKE, connecting tube	1
107	164416	WASHER, flat; 234921 only	2
	164416	WASHER, flat; 234922, 234923, and 234924	3
108	164417	NUT, lock, pump	2
109	164413	PLATE, tie	1
110	see table	PUMP, displacement; 234921 only; see 307944	2
	see table	PUMP, displacement; 234922, 234923, 234924 only; see 307944	3
111	150429	GASKET, copper	1
112	101926	NUT, lock; 1/2-20	2
113▲	188974	LABEL, hardener	1
115	100468	SCREW, cap, hex hd; 3/8-16 x 2 in. (51 mm)	4
116	100133	WASHER, lock; 3/8	4
117	100307	NUT, hex; 3/8-16	4
118	168455	ROD, tie	4
119	101712	NUT, lock; 5/8-11	4
121▲	188975	LABEL, resin	2
130	208334	MANIFOLD; 1 in. npt(f) run; 3/4 npt(f) branches; 234922, 234923, 234924 only	1
131	156589	UNION, adapter, 90°; 3/4 npt(f) x 3/4 npsm(f)	2
132	100345	PLUG, pipe; 1 in. npt	2
133	157785	SWIVEL; 3/4 npt(m) x 3/4 npsm(f)	1
134	156172	UNION, swivel; 3/4 npt(f) x 3/4 npsm(f)	1
135	157129	NIPPLE; 3/4 npt	1

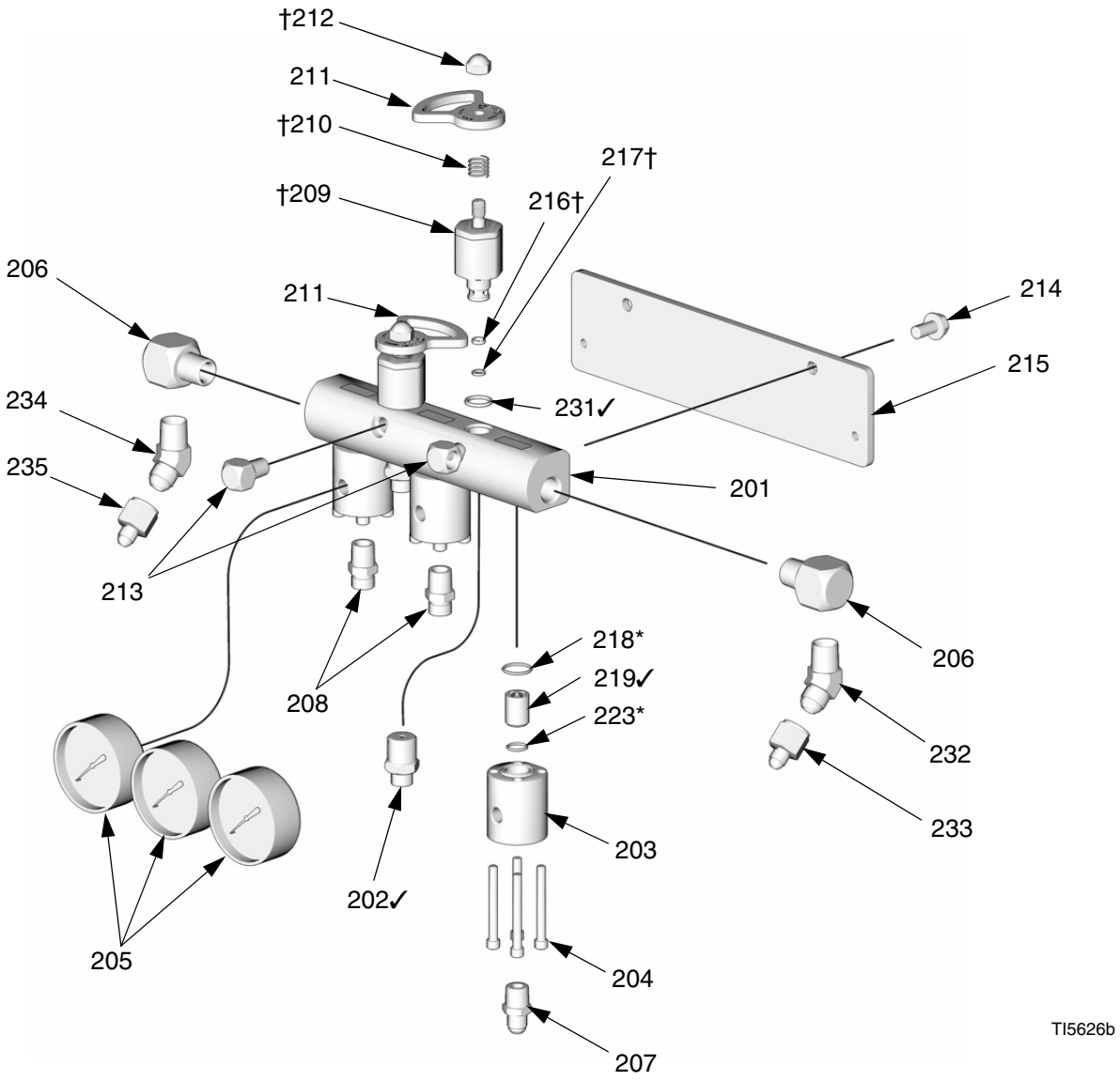
▲ *Replacement Danger and Warning labels, tags, and cards are available at no cost.*

Ref. No.110 Displacement Pump Table

Model	Left Pump			Center Pump			Right Pump		
	Pump Part No.	Description	Qty	Pump Part No.	Description	Qty	Pump Part No.	Description	Qty
234921	222012	Resin (A) Pump	1	Not Used			222012	Hardener (B) Pump	1
234922	222012	Resin (A) Pump	1	222012	Hardener (B) Pump	1	222012	Resin (A) Pump	1
234923	222012	Resin (A) Pump	1	222017	Hardener (B) Pump	1	222012	Resin (A) Pump	1
234924	222012	Resin (A) Pump	1	222019	Hardener (B) Pump	1	222012	Resin (A) Pump	1

248779 Fluid Manifold, 3 pump; includes items 201-223, 231-235 (shown)

248780 Fluid Manifold, 2 pump; includes items 201-235



248779 Fluid Manifold, 3 pump; includes items 201-223, 231-235 (shown)

248780 Fluid Manifold, 2 pump; includes items 201-235

Ref. No.	Part No.	Description	Qty.
201	15E152	MANIFOLD, fluid	1
202✓	248187	HOUSING, rupture disk	2
203	15E182	HOUSING, check valve; 248779	3
	15E182	HOUSING, check valve; 248780	2
204	C19817	SCREW, cap, socket hd; 1/4-20 x 2-1/4 in. (57 mm); 248779	12
	C19817	SCREW, cap, socket hd; 1/4-20 x 2-1/4 in. (57 mm); 248780	8
205	114434	GAUGE, pressure, fluid; 248779	3
	114434	GAUGE, pressure, fluid; 248780	2
206	158683	ELBOW; 1/2 npt (m x f)	2
207	112100	ADAPTER; 3/8 npt(m) x 9/16-18 unf-2a	1
208	162485	NIPPLE; 3/8 npt x 3/8 npsm; 248779	2
	162485	NIPPLE; 3/8 npt x 3/8 npsm; 248780	1
209†	246161	VALVE, drain, cartridge	2
210†	114708	SPRING	2
211	15E181	HANDLE, valve, interlocking	2
212†	117623	NUT, cap; 3/8-16	2
213	100840	ELBOW, street; 1/4 npt (m x f)	2
214	112395	SCREW, cap, flange hd; 3/8-16 x 3/4 in. (19 mm)	2
215	15E144	PLATE, mounting, manifold	1
216†	193709	SEAT, valve	2
217†	193710	SEAL, seat; nylon	2
218*	110135	O-RING; TFE	3
219✓	249035	CHECK VALVE; 248779	3
	249035	CHECK VALVE; 248780	2
223*	104319	O-RING; TFE; 248779	3
	104319	O-RING; TFE; 248780	2
229	112166	SCREW, cap, socket hd; 1/4-20 x 3/4 in. (19 mm); 248780 only (not shown)	4
230	15E183	PLUG, manifold; 248780 only (not shown)	1
231✓	158674	O-RING; buna-N	2
232	117556	NIPPLE; #8 JIC x 1/2 npt	1
233	117502	REDUCER; #5 JIC x #8 JIC	1
234	117557	NIPPLE; #10 JIC x 1/2 npt	1
235	117677	REDUCER; #6 JIC x #10 JIC	1

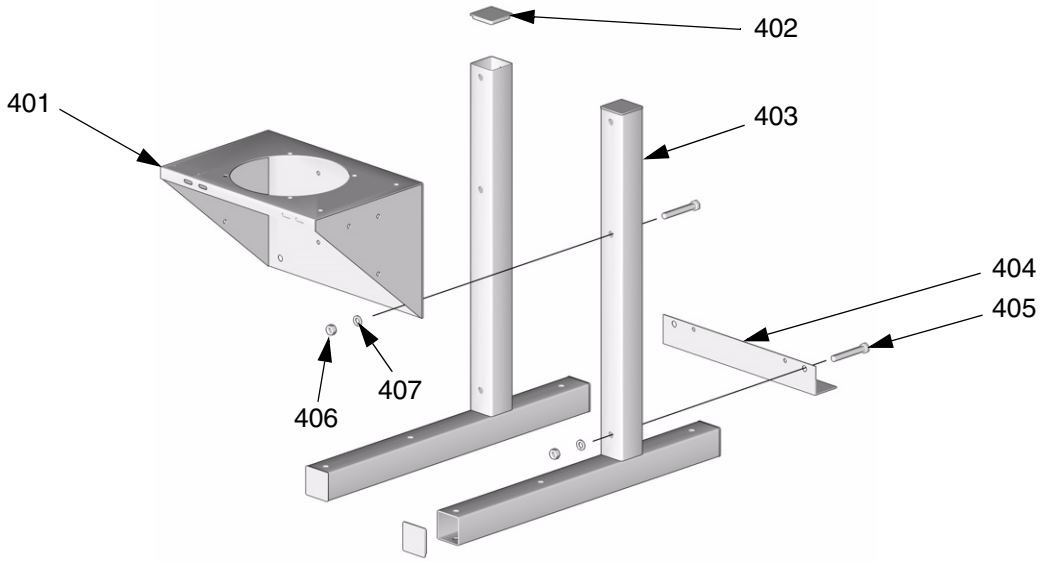
* *Parts included in Check Valve Kit 249035.*

† *Parts included in Repair Kit 246842.*

✓ *Recommended spare parts. Keep on hand to avoid downtime.*

241693 Stand Kit

Ref. No.	Part No.	Description	Qty.
401	236061	BRACKET, mounting	1
402	168422	CAP, square	6
403	217297	LEG, frame	2
404	178473	BRACE, frame	1
405	100679	SCREW, cap, hex hd; 1/2-13 x 3-1/2 in. (89 mm)	6
406	100321	NUT, hex; 1/2-13	6
407	100018	WASHER, lock; 1/2	6



TI5629a

Technical Data

Maximum fluid working pressure	*Models 234932 and 234992:* 4600 psi (31.7 MPa, 317 bar) *All other models:* 5000 psi (34.5 MPa, 345 bar)
Maximum air input pressure	*Models 234931 and 234991:* 70 psi (0.43 MPa, 4.3 bar) *Models 234934 and 234994:* 90 psi (0.62 MPa, 6.2 bar) *Models 234932, 234933, 234992, and 234993:* 100 psi (0.7 MPa, 7.0 bar)
Pressure ratio	*Models 234931 and 234991:* 68:1 *Models 234932 and 234992:* 46:1 *Models 234933 and 234993:* 50:1 *Models 234934 and 234994:* 54:1
Automatic overpressure relief	5300 psi (36.5 MPa, 365 bar)
Rupture disk protection	7100 psi (49 MPa, 490 bar)
Maximum recommended feed pressure	250 psi (1.7 MPa, 17 bar), or 25% of outlet pressure, whichever is lower
Volume ratio	*Models 234931 and 234991:* 1:1 *Models 234932 and 234992:* 2:1 *Models 234933 and 234993:* 3:1 *Models 234934 and 234994:* 4:1
Fluid flow at 40 cpm	*Models 234931 and 234991:* 1.8 gpm (6.8 lpm) *Models 234932 and 234992:* 2.7 gpm (10.0 lpm) *Models 234933 and 234993:* 2.4 gpm (9.0 lpm) *Models 234934 and 234994:* 2.3 gpm (8.7 lpm)
Sound pressure, at 15 cycles/minute*	at 70 psi (0.48 MPa, 4.8 bar) input air pressure: 82.7 dB(A) at 100 psi (0.7 MPa, 7.0 bar) input air pressure: 88.2 dB(A)
Sound power, at 15 cycles/minute**	at 70 psi (0.48 MPa, 4.8 bar) input air pressure: 88.8 dB(A) at 100 psi (0.7 MPa, 7.0 bar) input air pressure: 98.0 dB(A)
Wetted parts	*Proportioner:* carbon steel, stainless steel, brass, PTFE, LDPE, nylon *Fluid manifold:* carbon steel, stainless steel, brass, tungsten carbide, chemically resistant fluoroelastomer, Kynar® *Displacement pumps:* see 307944

All other brand names or marks are used for identification purposes and are trademarks of their respective owners.

** Sound pressure measured 1 meter from equipment.*

*** Sound power measured per ISO 9614-2.*

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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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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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