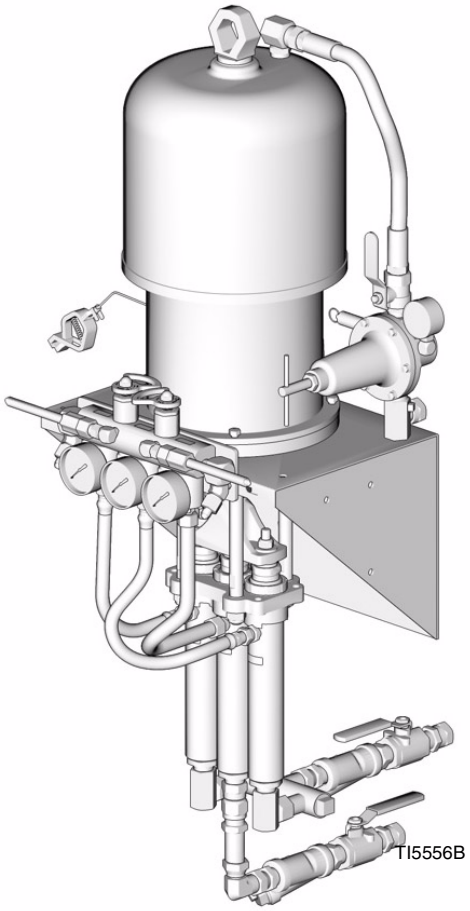
Operation

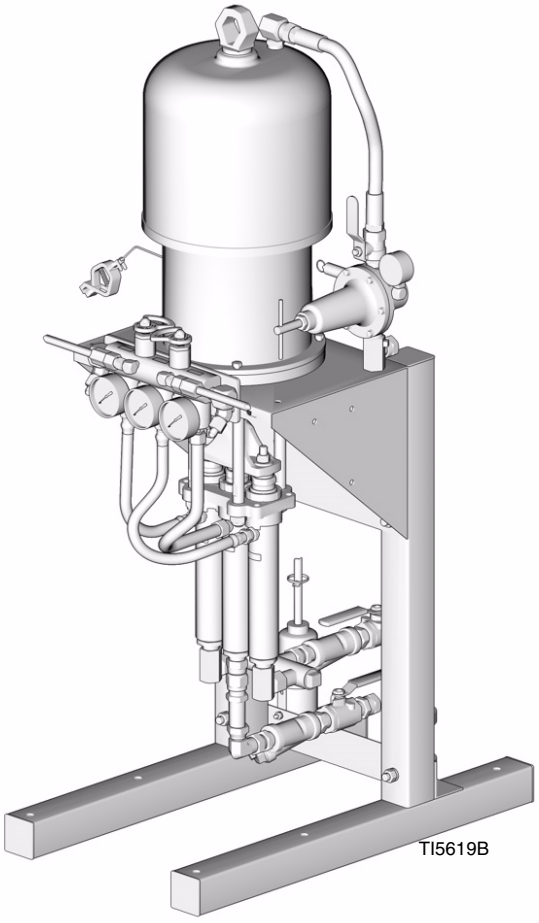
Hydra-Cat® Proportioners

310795 Rev.B

For fixed ratio proportioning of 2 component reactive materials.

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





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)
Xtreme Mix Proportioner	
309535	Xtreme Mix Proportioner, Operation Manual (English)
309518	Xtreme Mix Proportioner, Repair-Parts Manual (English)
Displacement Pumps	
307944	Instruction Manual (English)

King Air Motor	
309347	Instruction Manual (English)
Remote Mix Manifold Kit	
310797	Instruction Manual (English)
310861	Instruction Manual (Spanish)
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.

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 medical attention.**

- 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 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

Installation

Typical Installation

The Hydra-Cat proportioners are designed to be part of a system that will proportion, mix, and dispense two-component fluids. The typical installation in FIG. 1 is only a guideline to setting up a complete proportioning system. For assistance in designing your system, contact your nearest Graco distributor. Also see system manual 310794.

- Models with three displacement pumps always use the two outer pumps for resin and the middle pump for hardener.
- Label pumps, hoses, and other fluid components as resin or hardener, to prevent cross contamination of wetted parts.

When pressure feeding the proportioning pump, never exceed 25% of the Hydra-Cat pump outbound fluid pressure. Excess feed pressure will boost the output pressure on the upstroke, causing surging at the gun.

Mounting

The Hydra-Cat proportioners may be stand-mounted or wall mounted.

If you mount equipment on a wall, turn pump air and fluid inlets to face forward rather than backward.

1. Ensure that the wall and mounting hardware are strong enough to support the weight of the equipment, fluid, hoses, and stress caused during operation.
2. Mark mounting holes on the wall at a convenient height for the operator, and so equipment is easily accessible for maintenance. Ensure that equipment is level. See **Mounting Hole Layouts**, page 20.
3. Drill mounting holes in the wall or floor. Install anchors as needed. See **Mounting Hole Layouts**, page 20.
4. Bolt equipment securely to the wall or floor.

Bare Pumps

Bare proportioning pumps (E) are available for customized systems. For a safe and efficient system, use the air and fluid components supplied with the Wall Mount and Stand Mount models. Refer to manual 310796 for part numbers.

Be sure all accessories are sized properly for the air and fluid requirements of your system.

Typical Installation Key:

A Bleed-type Master Air Valve (required)
- A1 Proportioning Pump
- A2 Resin Feed Pump
- A3 Hardener Feed Pump
- A5 Main Air Line

B Pump Air Pressure Regulator
- B1 Proportioning Pump
- B2 Resin Feed Pump
- B3 Hardener Feed Pump
- B4 Solvent Pump (needle valve)

C Air Line Filter, with auto-drain
D Safety Relief Valve (air)
E Proportioning Pump
F Fluid Pressure Relief Valves (required)
G Fluid Shutoff Valves
- G1 Resin Valve
- G2 Hardener Valve

H Feed Pumps
- H1 Resin Feed Pump
- H2 Hardener Feed Pump

J Agitator
K Fluid Heaters (not included; order separately)
L Heated Fluid Hose
M Heated Hose Control
N Fluid Temperature Sensor
P Remote Mix Manifold
R Solvent Flush Pump (wall mounting shown; may also be mounted on back of proportioner stand)
S Static Mixers
T Fluid Whip Hose
U Spray Gun
V Fluid Pressure Gauges
Y Pump Ground Wire

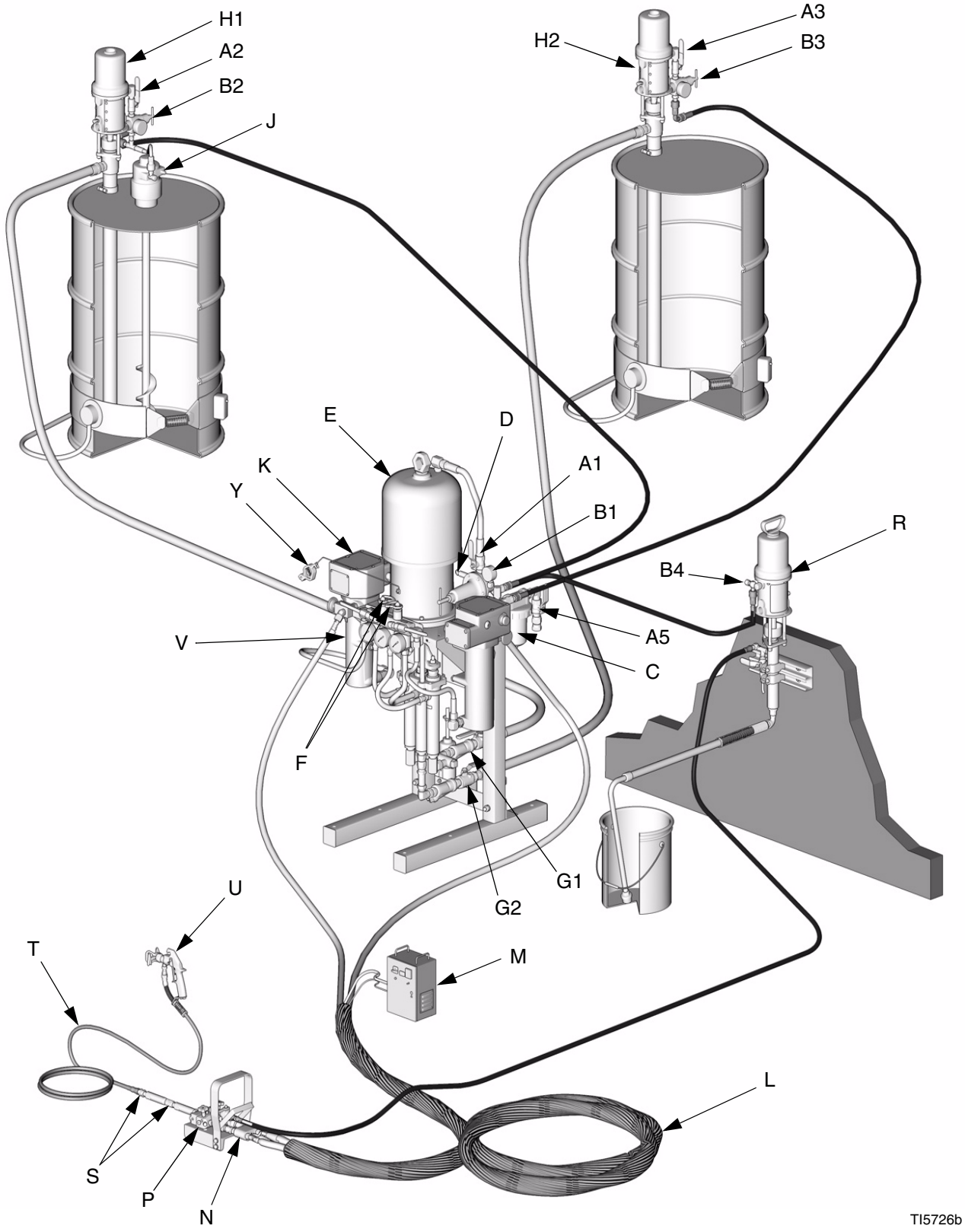


FIG. 1: Typical Installation (Hydra-Cat System Shown)

Air Line Accessories

- **Bleed-type master air valve (A):** required in your system to relieve air trapped between it and the air motor when the valve is closed.

WARNING

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

Be sure the valve is easily accessible from the pump and located downstream from the air regulator. Install a proportioning pump shutoff (A1), shutoffs for both feed pumps (A2, A3), and a main air line shutoff (A5).

- **Pump air regulator (B):** to control pump speed and outlet pressure. Locate it close to the pump. Install at proportioning pump (B1), both feed pumps (B2, B3), and the solvent pump (B4, needle valve).
- **Air line filter (C):** removes harmful dirt and moisture from compressed air supply. Automatic drain type is recommended.
- **Safety relief valve (D):** opens to prevent pump overpressurization if regulated inlet air pressure exceeds preset limit.

Fluid Line Accessories

- **SPRAY/PRESSURE RELIEF valves (F):** required in your system. Valves open automatically at 5300 psi (36.5 MPa, 365 bar) to protect operator and equipment from overpressurization. Valves can also be manually activated.

WARNING

Read warnings, page 5. Do not install shutoffs downstream of the PRESSURE RELIEF/SPRAY valve outlets. The valves function as overpressure relief valves when set to SPRAY. Lines must be open so valves can automatically relieve pressure.

Do not alter overpressure rupture disks or replace them with plugs.

- **Fluid shutoff valves (G):** shut off fluid flow to the proportioning pumps (2 required).
- **Feed pump kit 248825 (H):** to supply resin and hardener to the proportioner pump. Includes feed pump, air control, and supply hose (2 kits required).
- **Agitator kit 248824 (J):** stirs resin to prevent settling.
- **Fluid heaters (K):** to heat resin and hardener before mixing.
- **Two-component heated fluid hose (L):** can be heated by connecting to heated hose control.
- **Heated hose control 248921 (M):** controls temperature of fluid in heated hose. Includes fluid temperature sensor.
- **Fluid temperature sensor (N):** measures temperature of fluid in heated hose.
- **Remote mix manifold kit 248923 (P):** controls fluids and flush at the mix point.
- **Solvent flush kit 248826 (R):** to flush mix manifold. Includes solvent pump, mounting hardware, and solvent supply hose.
- **Static mixer/whip hose kit 248925 (S, T):** to mix the two fluids and deliver mix to the spray gun. Includes static mixer and whip hose.
- **Spray gun kit 248844 (U):** to dispense fluid. Includes fluid line swivel, spray gun, and Heavy Duty Reverse-A-Clean.

Grounding

WARNING

Your system must be grounded. Read warnings, page 5.

- **Pump:** use ground wire and clamp 244524 (supplied). Install ground wire (Y) securely to pump with screw (Z). Connect ground clamp to a true earth ground.

- **Air and fluid hoses:** use only electrically conductive hoses, with a maximum of 500 ft (150 m) combined hose length to ensure grounding continuity. Check electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.
- **Mix manifold and solvent flush system:** use only a Graco approved grounded solvent hose. Not all heated hoses are grounded, and the mix manifold primary ground is through the solvent hose. Ensure that the solvent pump is properly grounded, as instructed in your solvent pump manual. Ensure electrical continuity from the spray tip to the grounded solvent hose.
- **Air compressor:** follow manufacturer's recommendations.
- **Spray gun:** ground through connection to a properly grounded fluid hose and pump.
- **Fluid supply containers, feed pumps, and solvent pump:** follow instructions in separate pump manuals.
- **Hose heat control (if used):** follow local code.
- **Object being sprayed:** follow local code.
- **Solvent pails used when flushing:** follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a non-conductive surface, such as paper or cardboard, which interrupts grounding continuity.
- **To maintain grounding continuity when flushing or relieving pressure:** hold metal part of the spray gun firmly to the side of a grounded metal pail, then trigger the gun.

Pressure Relief Overflow Kits

Two relief overflow kits are included with wall models (unassembled) and stand mount models (assembled) to catch the drainage if the automatic SPRAY/PRESSURE RELIEF valves (F) open.

For wall mount models, assemble kit as shown in FIG. 2, and mount securely to a wall or bracket. Use tie wrap to hold hoses out of the way.

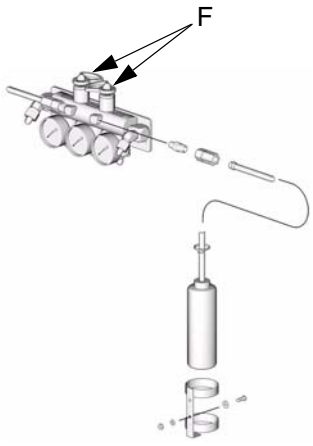


FIG. 2. Relief Overflow Kit

Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment. See **Flushing the System**, page 17.

Operation

Pressure Relief Procedure

If your system includes Circulation and Return Tube Kit 246978 (see manual 309852), see **Alternate Pressure Relief Procedure**, page 13.

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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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

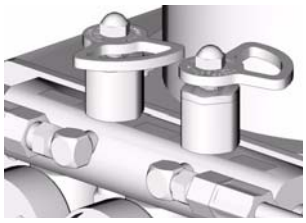
Use this procedure if your system includes Circulation and Return Tube Kit 246978 (see manual 309852), to relieve fluid pressure back to the supply drums. This method allows:

- 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 12.

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



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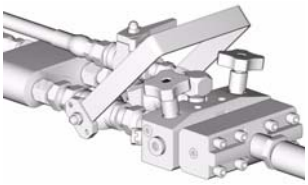
Priming

The equipment is tested with oil at the factory. If necessary, flush out the oil with a compatible solvent before spraying. See **Flushing the System**, page 17.

1. Install full containers of resin and hardener at feed pumps.

2. Remove static mixers/whip hose from mix manifold. Place mix manifold outlet over a waste container. Open mix manifold handle (FORWARD).



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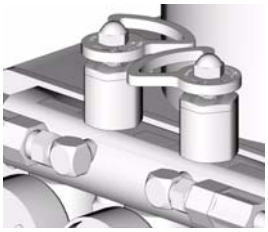
3. Check that SPRAY/PRESSURE RELIEF valves are set to SPRAY.



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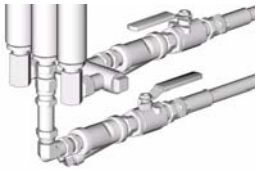
4. Open both fluid shutoff valves (G1, G2).



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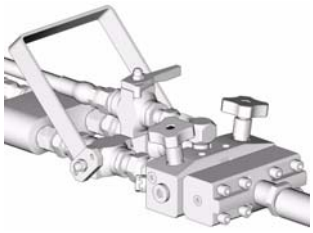
5. Start feed pumps. Adjust air regulators (B2, B3) just enough to run pumps slowly.

The proportioning pump does not run during priming. The feed pumps will prime the proportioning pump displacement pumps.

6. Run feed pumps until clean fluid flows from mix manifold outlet. Close mix manifold handle (BACK). Feed pumps will stall against pressure.



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7. Replace static mixers, whip hose, and spray gun.

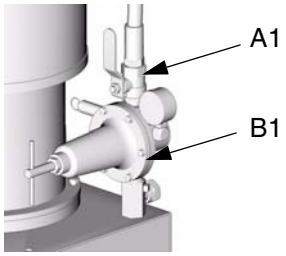
Startup

1. Prime system, see page 14.

2. Install static mixers, whip hose, and spray gun. Do not install the spray tip yet.

3. Turn on heaters and heated hose control, if used, and warm up for 20 minutes.

4. Open proportioning pump air valve (A1) and slowly open regulator (B1) to start proportioning pump.



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5. Trigger gun into a grounded metal pail until consistently mixed material is dispensed.

6. Follow **Pressure Relief Procedure**, page 12.

7. Engage trigger lock. Install tip on gun.

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8. Set feed pump air pressure to deliver 100-200 psi (0.7-1.4 MPa, 7-14 bar) or 25% of proportional pressure at the fluid outlets, whichever is less. Higher feed pressures may prevent proportioning pump inlet ball checks from seating properly and will boost the output pressure on the upstroke, causing surging at the gun.

9. Set proportioning pump air pressure to obtain required fluid pressure. Refer to **King® Proportioning Pumps** chart on page 3 for fluid to air pressure ratio. Excess pressure increases overspray and pump wear.

10. Trigger gun and check fluid outlet pressure gauges, recording pressure readings. Check and record gauge readings frequently during operation. A change in gauge readings indicates a change in system performance.

A pressure drop occurs during pump stroke changeover. It should be quick and synchronous.

Flush mix manifold frequently during the day's operation. See manual 310797.

To avoid lead/lag errors at the mix point when the gun is triggered, use restrictors to balance pressures at the mix manifold. See manual 310797.

Monitor Fluid Supply

Never allow feed pump or solvent pump containers to run dry. A dry container pumps air into the system and causes incorrect proportioning. A dry pump will quickly accelerate to a high speed, and may damage itself and the other displacement pump because it causes a pressure rise in the other pump. If a supply container runs dry, stop pump immediately, refill container, and prime system. Be sure to eliminate all air from the system.

Check Pot Life

Check fluid manufacturer's instructions for fluid pot life. Flush mixed fluid out of mix manifold, hose, and gun before pot life time expires, or before a rise in viscosity affects the spray pattern.

Check Drainage Bottles and Hoses

Check drain hose and bottle at the start of each shift, and whenever there is an imbalance of material, to see if automatic pressure drain valves have released material. Clean hose and bottle as needed. Regularly check drain hose for cuts, leaks, or bulges and replace damaged components before using system.

CAUTION
Plugged lines can rupture. Never operate equipment with plugged overpressure relief lines.

Check for Normal Operation

Every time you start spraying:

- Watch the gauges. A pressure drop occurs during pump stroke changeover. It should be quick and synchronous.
- Stop the pumps on the upstroke. Check that all gauges hold pressure.

If one gauge drops, the others will rise.

- Stop the pumps on the downstroke. Check that all gauges hold pressure.
- Check that both feed pumps run during the proportioner upstroke.

Check Mix Ratio

See mix manifold manual 310797.

Since this is a fixed ratio system, you typically do not have to check the mix ratio if you have checked for normal operation.

Shutdown

1. Follow **Pressure Relief Procedure**, page 12.
2. Flush mix manifold, hoses, and gun, see manual 310797.
3. Close main air shutoff valve (A5).

Flushing the System

WARNING

Read warnings, page 5. Follow **Grounding** instructions, page 11. If your system uses heaters, shut off the main power to the heaters and heated hose control before flushing.

There are times when you only want to flush the fluid manifold, such as:

- breaks in spraying
- overnight shutdown
- end of potlife.

To only flush the mix manifold, static mixer, whip hose, and gun, see manual 310797.

Other times, you need to flush the entire system:

- first time material is loaded into equipment, to remove oil left in after factory testing
- material change
- servicing
- frequently enough during operation to prevent clogged passages
- shutting down equipment for prolonged period (depends on material)
- putting equipment into storage
- before restarting after storage, to remove any moisture

For first time flushing, use mineral spirits to flush out the oil. Then flush again using a solvent that is compatible with the fluid you will be dispensing. However, be sure mineral spirits is compatible with the material you will be pumping. If it is not, check with your fluid supplier to determine an appropriate solvent for flushing out the light oil.

For equipment storage, flush with a solvent compatible with the material you have been pumping, and leave the solvent in the equipment during storage. Check with your material manufacturer for a recommendation.

1. Follow **Pressure Relief Procedure**, page 12. Engage trigger lock. Remove spray tip and soak in solvent. Flush mix manifold, hoses, and gun, see manual 310797.

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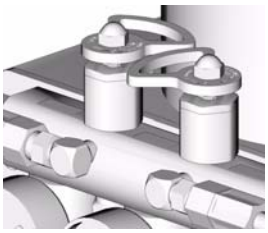
2. Place each feed pump intake into a separate 5 gal. (19 liter) grounded pail, containing 3 gal. (12 liters) of solvent.

3. Set SPRAY/PRESSURE RELIEF valves to SPRAY.



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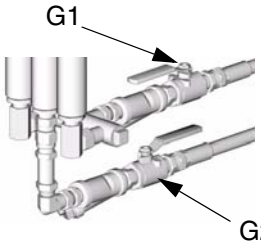
4. Open both fluid shutoff valves (G1, G2).



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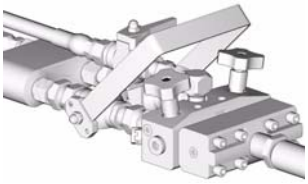
5. Open feed pump air valves (A2, A3). Leave proportioning pump air valve (A1) closed.

The proportioning pump does not run during flushing. Solvent from the feed pumps will flush the proportioning pump displacement pumps.

6. Set feed pump air regulators (B2, B3) to minimum pressure.

7. Open mix manifold handle (FORWARD).



TI5650a

8. Trigger gun into a grounded metal pail until clean solvent flows from gun. For thorough cleaning, disconnect hoses from mix manifold and circulate clean solvent back to the pails.

9. Remove solvent supply from feed pumps. Follow **Pressure Relief Procedure** on page 12.

10. Plug feed pump inlets. Keep equipment filled with fluid during storage.

Maintenance

Preventive Maintenance Schedule

Establish a preventive maintenance schedule, based on the equipment's repair history.

Tighten Threaded Connections

Tighten all threaded connections before use.

Check Hoses Daily

Check for frayed covers, bulges, or leaks.

Mix Manifold

For the Graco remote mix manifold, see manual 310797. Regularly clean any filters and restrictors in the system.

Static Mixers

Clean or replace before each use. To clean Part No. 15E592 mixer housing and replace the mix element (Part No. 248927):

1. Relieve pressure, page 12. Remove mixer housings from mix manifold and from whip hose.
2. Place flats of mixer housing in a grounded vise.
3. Using a 1/2 in. drill bit, drill out old material and the mix element from the inlet end, down to the internal shoulder at the outlet end.
4. Run a brush through the housing to clean any debris.
5. Insert new mix element, broad shouldered end first.

Whip Hose

Check for mixed material buildup before each use. Replace as needed.

Spray Gun and Tips

Check for mixed material buildup before each use. Clean as needed.

Main Air Inlet Filter

Check water drain daily, if not using an automatic drain filter.

Pump Inlet Strainer

If fluid pressure from feed pumps cannot be maintained, remove plugs and clean fluid inlet screens.

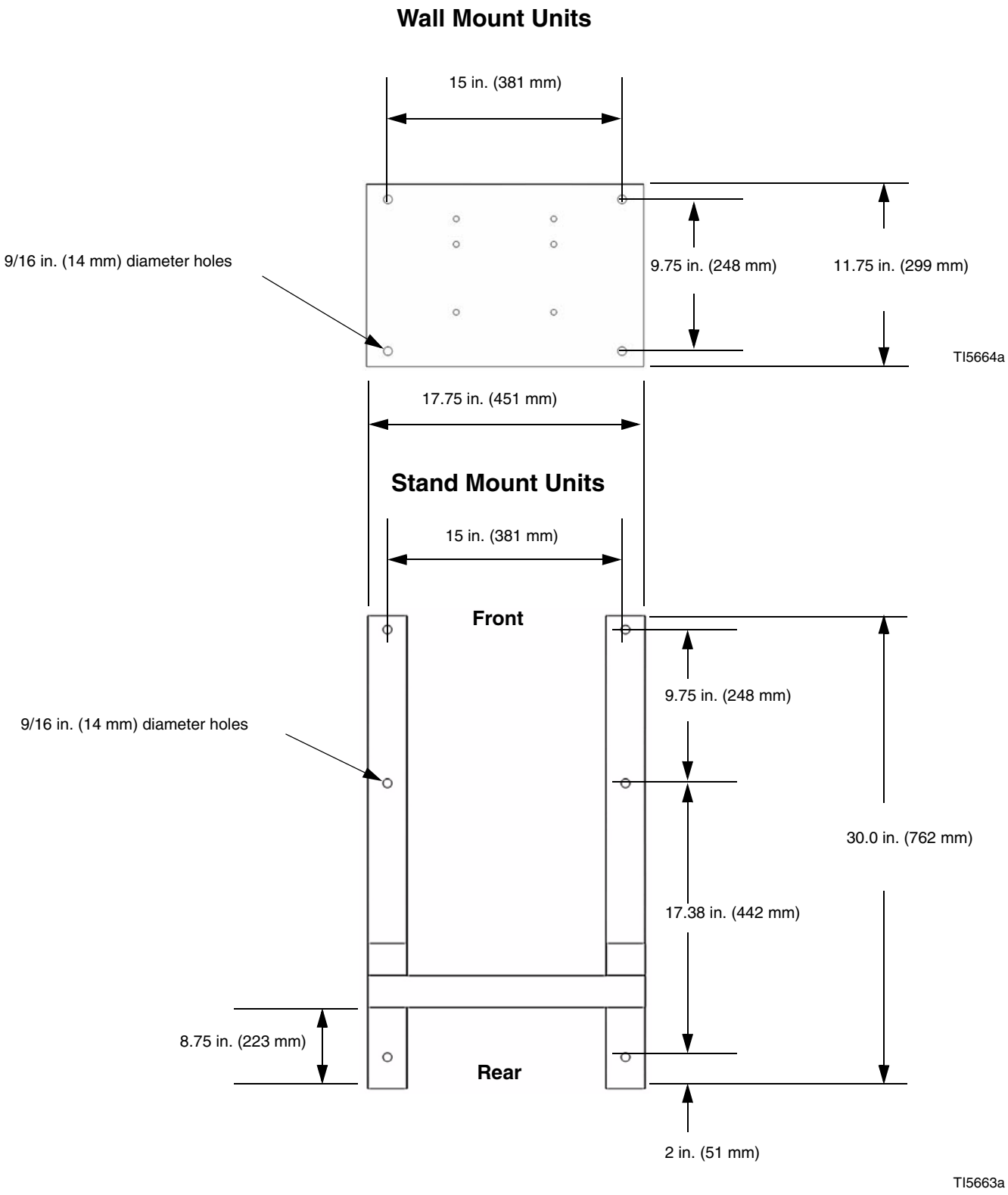
Wet Cup

Check pump wet-cups daily. Keep filled with Graco ISO Pump Oil. Check tightness of packing nuts weekly. When pumping isocyanates, always leave ISO pump displacement rods in the down position to prevent isocyanate from crystallizing on the rods.

Storage

Before storing the pump, always flush it and leave it filled with fluid, see page 17. Relieve the pressure, page 12.

Mounting Hole Layouts



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 operating 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.*

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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Graco Information

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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