

REACTOR™

309812G

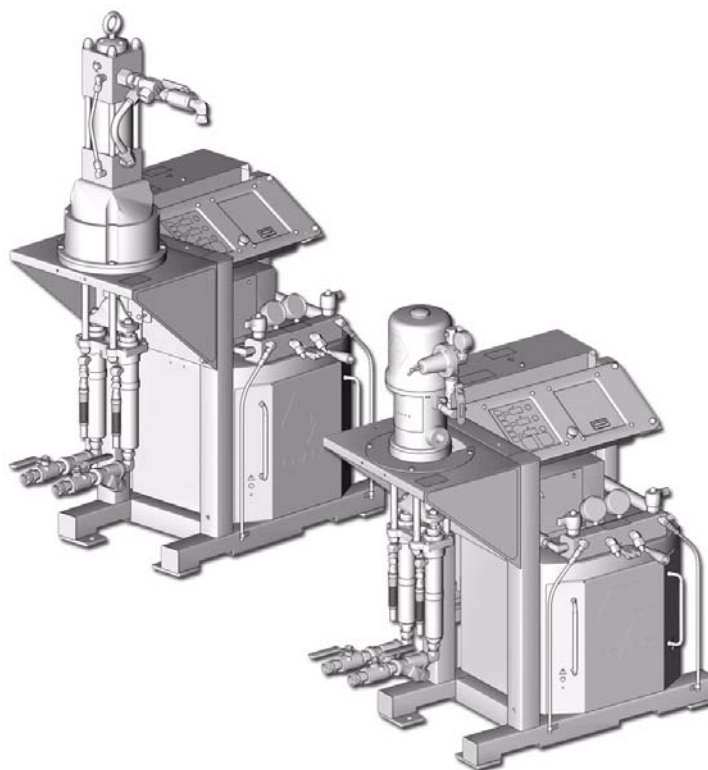
Air and Hydraulic, Heated, Plural Component Proportioners

For spraying polyurethane foam and polyurea coatings.
Not for use in explosive atmospheres.



Important Safety instructions.

Read all warnings and instructions in this manual.
Save these instructions. See **Models**, page 3.



TI3699b



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Models

Air Powered Reactors

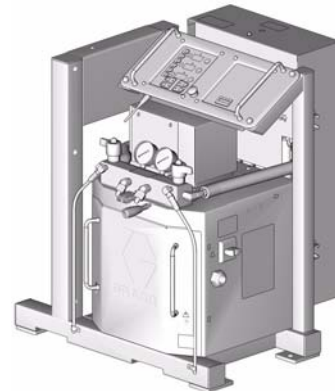
A-XP SERIES

Part No.	Series	Model	Voltage (phase)	Heater Watts (no hose)	Flow gpm (lpm) at 78 cpm	Output per Cycle (A + B) gal. (liter)	Pressure Ratio	Maximum Fluid Working Pressure psi (MPa, bar)
246639	B	A-XP2	230V (1)	10,200	1.5 (5.7)	.0193 (.073)	25:1	3000 (20.7, 207)
246752	B	A-XP2	230V (3)	10,200	1.5 (5.7)	.0193 (.073)	25:1	3000 (20.7, 207)
246753	B	A-XP2	380V (3)	10,200	1.5 (5.7)	.0193 (.073)	25:1	3000 (20.7, 207)

Heat Packages (do not include proportioner)

HT SERIES

Part No.	Series	Model	Voltage (phase)	Heater Watts (no hose)
246365	D	HT-6.0	230V (1)	6,000
246760	D	HT-6.0	230V (3)	6,000
246761	E	HT-6.0	380V (3)	6,000
246607	D	HT-10.2	230V (1)	10,200
246762	D	HT-10.2	230V (3)	10,200
246763	E	HT-10.2	380V (3)	10,200
246364	D	HT-15.3	230V (1)	15,300
246764	D	HT-15.3	230V (3)	15,300
246765	E	HT-15.3	380V (3)	15,300





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Manual Conventions

Warning

⚠ WARNING


A warning alerts you to possible serious injury or death if you do not follow instructions.

Symbols, such as fluid injection (shown), alert you to a specific hazard and direct you to read the indicated hazard warnings on pages 6-7.

Caution

CAUTION
A caution alerts you to possible equipment damage or destruction if you do not follow instructions.

Note

 A note indicates additional helpful information.

Supplied Manuals

The following manuals are shipped with the Reactor™. Refer to them for detailed equipment information.

Order Part No. 15B535 for a compact disk of Reactor manuals translated in several languages.

Air and Hydraulic Reactors	
Part No.	Description
309813	Air and Hydraulic Reactors, Repair-Parts Manual (English)
Proportioning Pumps (one of following included)	
Part No.	Description
308224	President® Pump (Models A-25 and A-XP2), Repair-Parts Manual (English)
307547	King® Pump (Model A-50), Repair-Parts Manual (English)
307547	Viscount® Pump (Models H-50 and H-XP3), Repair-Parts Manual (English)
Motors (one of following included)	
Part No.	Description
306982	President® Air Motor (Models A-25 and A-XP2), Repair-Parts Manual (English)
309347	King® Air Motor (Model A-50), Repair-Parts Manual (English)
307158	Viscount® Hydraulic Motor (Models H-50 and H-XP3), Repair-Parts Manual (English)
Displacement Pumps (one of following included)	
Part No.	Description
307430	Displacement Pumps (Models A-25, A-XP2, and H-XP3), Repair-Parts Manual (English)
307944	Displacement Pumps (Models A-50 and H-50), Repair-Parts Manual (English)
Reactor Electrical Diagrams (one of following included)	
Part No.	Description
309854	Electrical Diagrams, 230V 1 phase
309855	Electrical Diagrams, 230V 3 phase
309576	Electrical Diagrams, 380V 3 phase
Air Regulators (air powered units only)	
Part No.	Description
308168	Instruction-Parts Manual (English)

Related Manuals

The following manuals are for accessories used with the Reactor™.

Order Part No. 15B535 for a compact disk of Reactor manuals translated in several languages.

Order Part No. 15B381 for a compact disk of Fusion manual translated in several languages.

Hydraulic Power Supply	
Part No.	Description
307550	Instruction-Parts Manual (English)
Feed Pump Kits	
Part No.	Description
309815	Instruction-Parts Manual (English)
Air Supply Kit	
Part No.	Description
309827	Instruction-Parts Manual (English) for Feed Pump Air Supply Kit
Circulation and Return Tube Kits	
Part No.	Description
309852	Instruction-Parts Manual (English)
Heated Hose	
Part No.	Description
309572	Instruction-Parts Manual (English)
Fusion Air Purge Spray Gun	
Part No.	Description
309550	Instruction-Parts Manual (English)
Fusion Mechanical Purge Spray Gun	
Part No.	Description
309856	Instruction-Parts Manual (English)
Circulation Kit	
Part No.	Description
309818	Instruction-Parts Manual (English)
Data Reporting Kit	
Part No.	Description
309814	Instruction-Parts Manual (English)



WARNING



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 the gun at anyone or at any part of the body.
- Do not put your hand or fingers over the gun fluid nozzle.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Do not “blow back” fluid; this is not an air spray system.
- Follow **Pressure Relief Procedure**, page 29, when you stop spraying and before cleaning, checking, or servicing equipment.
- Use lowest possible pressure when flushing, priming, or troubleshooting.
- Engage spray gun piston safety lock when not spraying.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately. High pressure hose cannot be recoupled; replace the entire hose.



FIRE, EXPLOSION AND ELECTRIC SHOCK HAZARD

Solvent and fumes in work area can ignite or explode. High voltage components can cause electric shock. To help prevent fire, explosion, and electric shock:

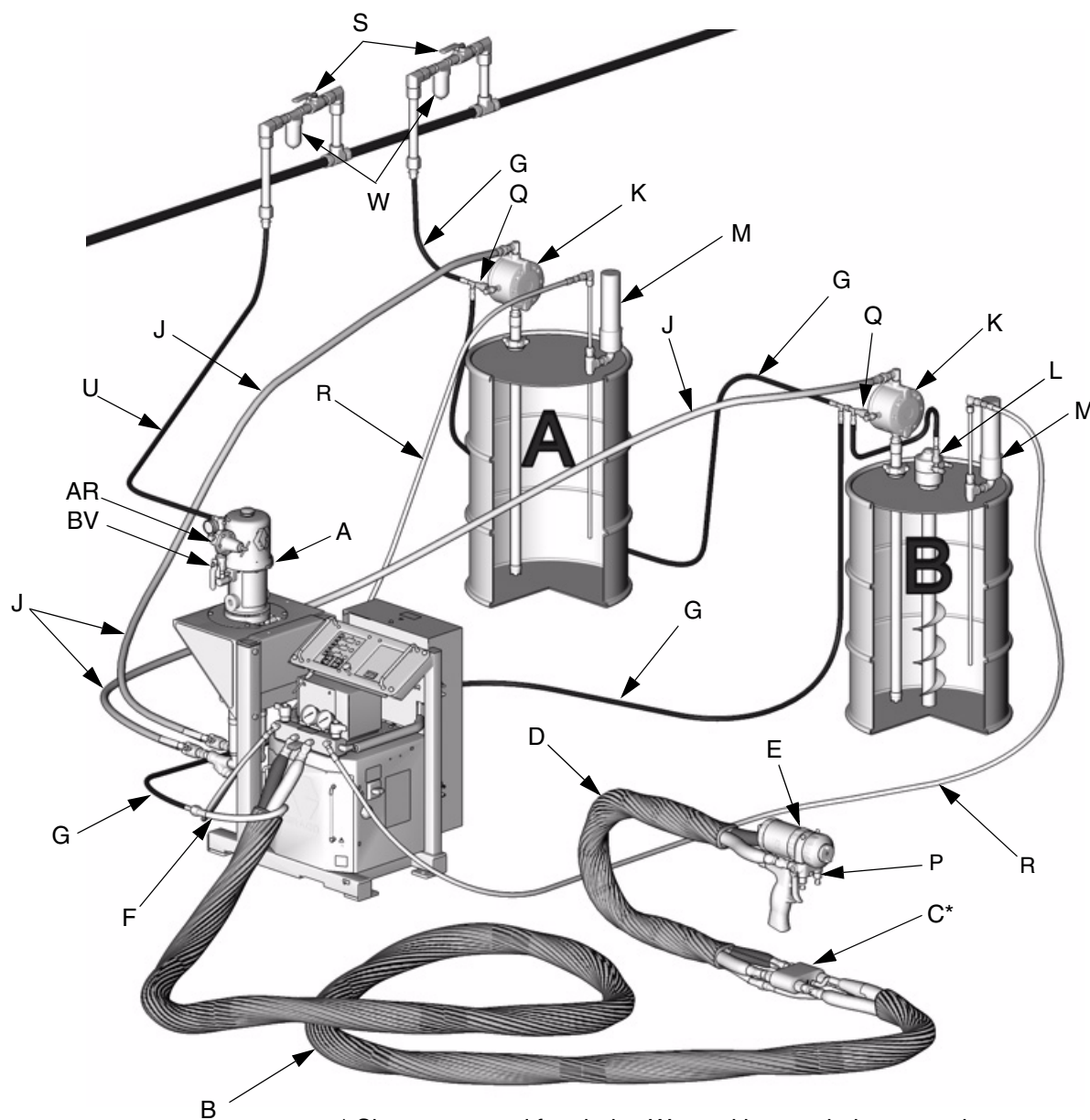
- Shut off main power switch and wait 5 minutes before opening Reactor cabinet door.
- All electrical wiring must be done by trained and qualified personnel and comply with all local codes.
- Ground equipment and conductive objects. See **Ground system**, page 22.
- Use equipment only in well ventilated area.
- Eliminate all ignition sources, such as pilot lights, cigarettes and plastic drop cloths (potential static arc).
- Do not plug or unplug power cords or turn lights on or off when flammable fumes are present.
- Keep the work area free of debris, including solvent, rags, and gasoline.
- Hold gun firmly to side of grounded pail when triggering into pail.
- Use only grounded hoses.
- If there is static sparking or you feel a shock, **stop operation immediately**. Do not use equipment until you identify and correct the problem.
- To avoid chemical reaction and explosion, do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents in pressurized aluminum equipment.

 WARNING	
	<p>EQUIPMENT MISUSE HAZARD</p> <p>Misuse can cause serious injury or death.</p> <ul style="list-style-type: none"> • For professional use only. • Use equipment only for its intended purpose. Call your Graco distributor for information. • Read manuals, warnings, tags, and labels before operating equipment. Follow instructions. • Check equipment daily. Repair or replace worn or damaged parts immediately. • Do not alter or modify equipment. Use only Graco parts and accessories. • 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. • 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.
	<p>BURN HAZARD</p> <p>This equipment is used with heated fluid, which can cause equipment surfaces to become very hot. To avoid severe burns:</p> <ul style="list-style-type: none"> • Do not touch hot fluid or equipment. • Allow equipment to cool completely before touching it. • Wear gloves if fluid temperature exceeds 110°F (43°C).
	<p>TOXIC FLUID OR FUMES HAZARD</p> <p>Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.</p> <ul style="list-style-type: none"> • Read Material Safety Data Sheet (MSDS) 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.
	<p>PERSONAL PROTECTIVE EQUIPMENT</p> <p>You must wear proper 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; and hearing loss. This equipment includes but is not limited to:</p> <ul style="list-style-type: none"> • Protective eyewear. • Gloves, clothing, and respirator as recommended by the fluid and solvent manufacturer. • Hearing protection.

Typical Installation, with circulation

Key for FIG. 1

- | | | | |
|---|---|----|---|
| A | Air Powered Reactor | L | Agitator |
| B | Heated Hose (see page 36) | M | Desiccant Dryer (part of Return Tube Kit, page 36) |
| C | Fluid Temperature Sensor (FTS) | P | Gun Fluid Manifold (part of Fusion gun) |
| D | Heated Whip Hose (see page 36) | Q | Air Quick-Disconnect (part of Circulation Kit, page 36) |
| E | Fusion Spray Gun (see page 36) | R | Air Purge Lines (part of Circulation Kit, page 36) |
| F | Gun Air Supply Hose | S | Air Line Shutoff Valve |
| G | Feed Pump Air Supply Lines
(part of Air Supply Kit, page 36) | U | Proportioner Air Supply Line |
| J | Fluid Supply Lines | W | Air Filter/Separator |
| K | Feed Pumps (see page 36) | AR | Air Regulator (part of Reactor, page 10) |
| | | BV | Bleed-Type Master Air Valve (part of Reactor, page 10) |



* Shown exposed for clarity. Wrap with tape during operation.

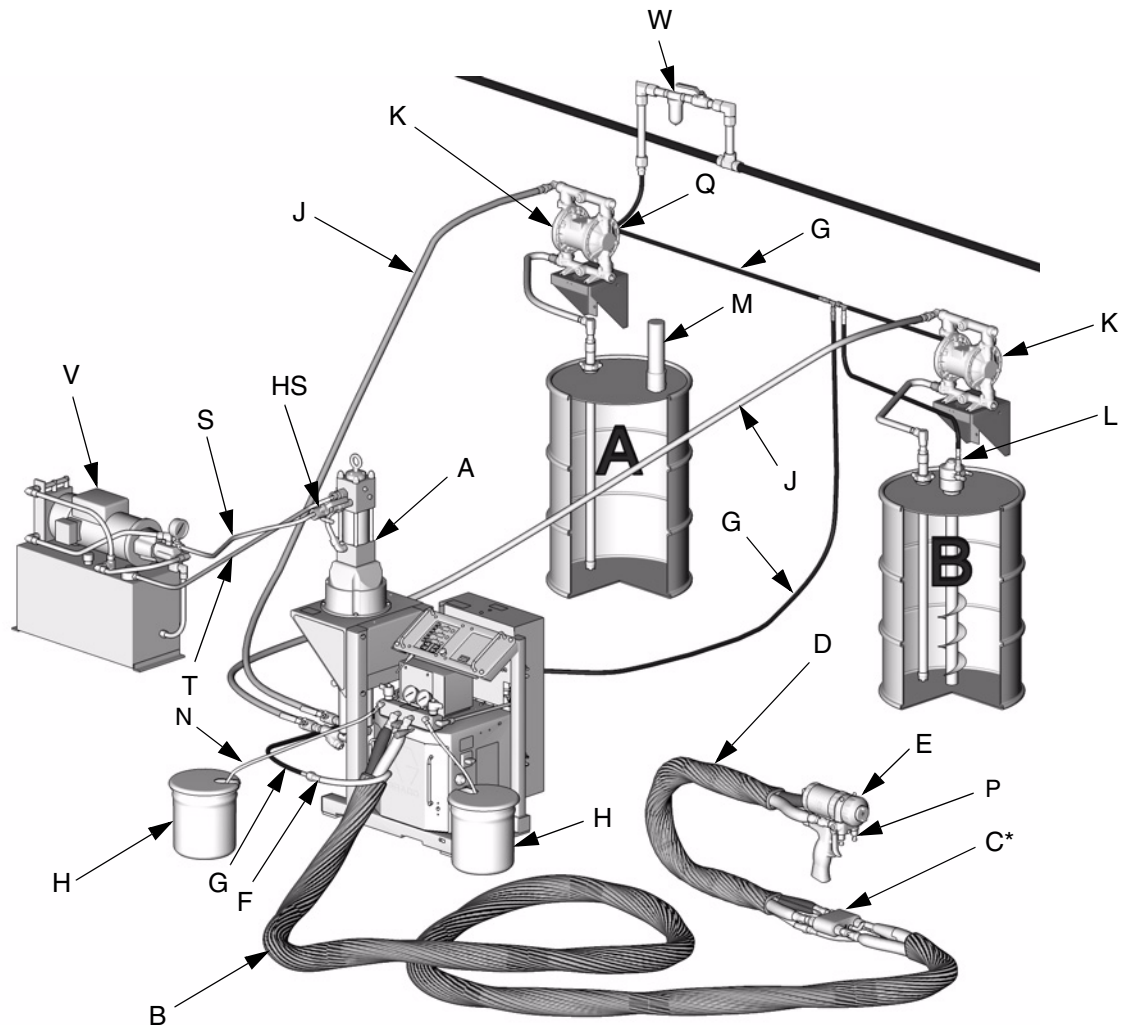
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FIG. 1: Typical Installation, with circulation (246037 Air Powered Reactor Shown)

Typical Installation, without circulation

Key for FIG. 2

- | | | | |
|---|--------------------------------|----|---|
| A | Reactor Proportioner | L | Agitator |
| B | Heated Hose (see page 36) | M | Desiccant Dryer (part of Return Tube Kit, page 36) |
| C | Fluid Temperature Sensor (FTS) | N | Bleed Lines |
| D | Heated Whip Hose (see page 36) | P | Gun Fluid Manifold (part of Fusion gun) |
| E | Fusion Spray Gun (see page 36) | Q | Air Quick-Disconnect (part of Circulation Kit, page 36) |
| F | Gun Air Supply Hose | S | Hydraulic Supply Line |
| G | Feed Pump Air Supply Lines | T | Hydraulic Return Line |
| H | Waste Containers | V | Hydraulic Power Supply, with enclosed return filter |
| J | Fluid Supply Lines | W | Air Filter/Separator |
| K | Feed Pumps (see page 36) | HS | Hydraulic Shutoff Valve (part of Reactor, page 10) |



* Shown exposed for clarity. Wrap with tape during operation.

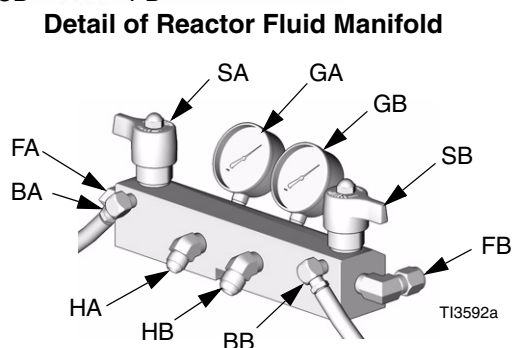
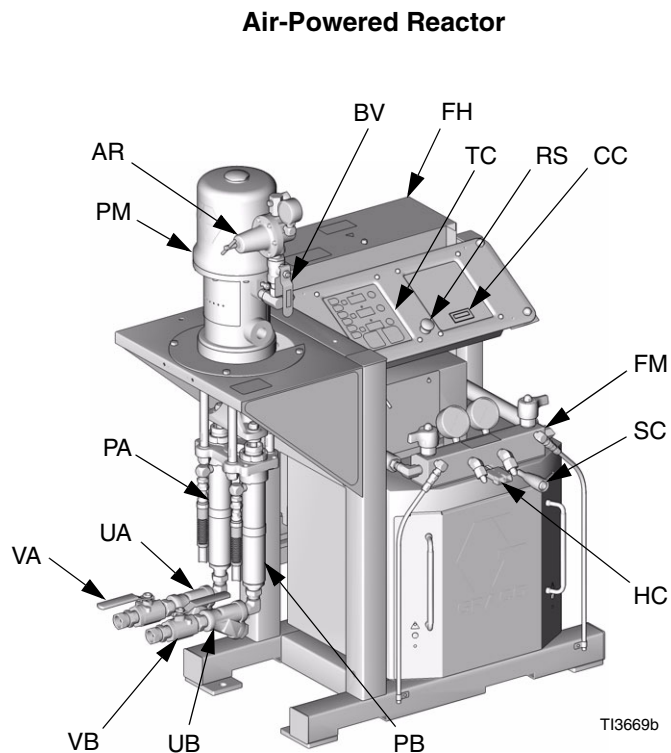
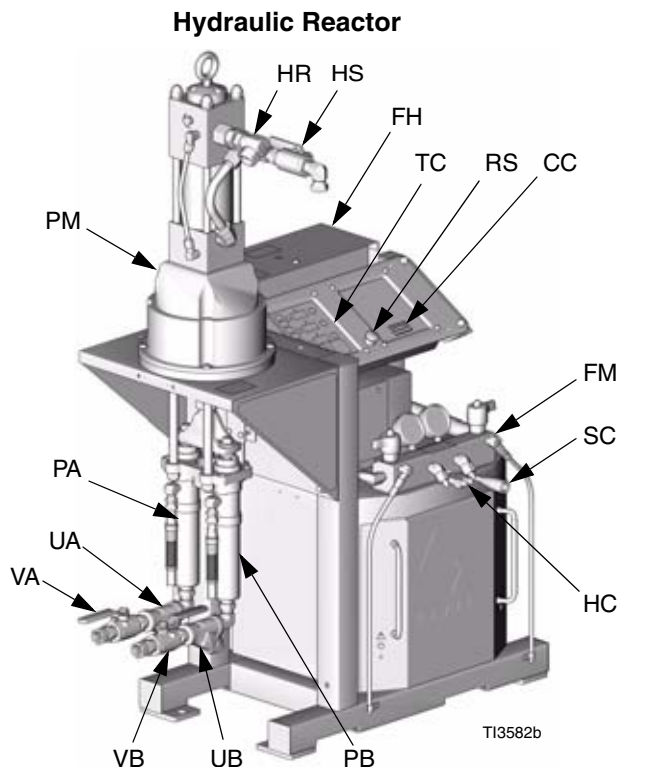
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FIG. 2: Typical Installation, without circulation (246040 Hydraulic Powered Reactor Shown)

Component Identification

Key for FIG. 3

AR	Air Regulator	HR	Hydraulic Return Fitting, 1" npt(f)
BA	Component A Pressure Relief Outlet	HS	Hydraulic Shutoff Valve, 3/4 npt(f)
BB	Component B Pressure Relief Outlet	MP	Main Power Switch
BV	Bleed-Type Master Air Valve	PA	Component A Pump
CC	Cycle Counter	PB	Component B Pump
EC	Electrical Cord Strain Relief	PM	Pump Motor
FA	Component A Fluid Manifold Inlet (behind manifold block)	RS	Red Heat Stop Button
FB	Component B Fluid Manifold Inlet	SA	Component A PRESSURE RELIEF/SPRAY Valve
FH	Fluid Heaters (behind shroud)	SB	Component B PRESSURE RELIEF/SPRAY Valve
FM	Reactor Fluid Manifold	SC	Fluid Temperature Sensor Cable
GA	Component A Pressure Gauge	TC	Temperature Control Display
GB	Component B Pressure Gauge	UA	Component A Fluid Inlet Strainer
HA	Component A Hose Connection	UB	Component B Fluid Inlet Strainer
HB	Component B Hose Connection	VA	Component A Fluid Inlet Valve
HC	Heated Hose Electrical Connector	VB	Component B Fluid Inlet Valve



Detail of Main Power Switch (right side of unit)

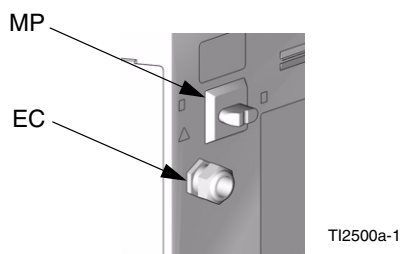


FIG. 3: Component Identification

Controls and Indicators

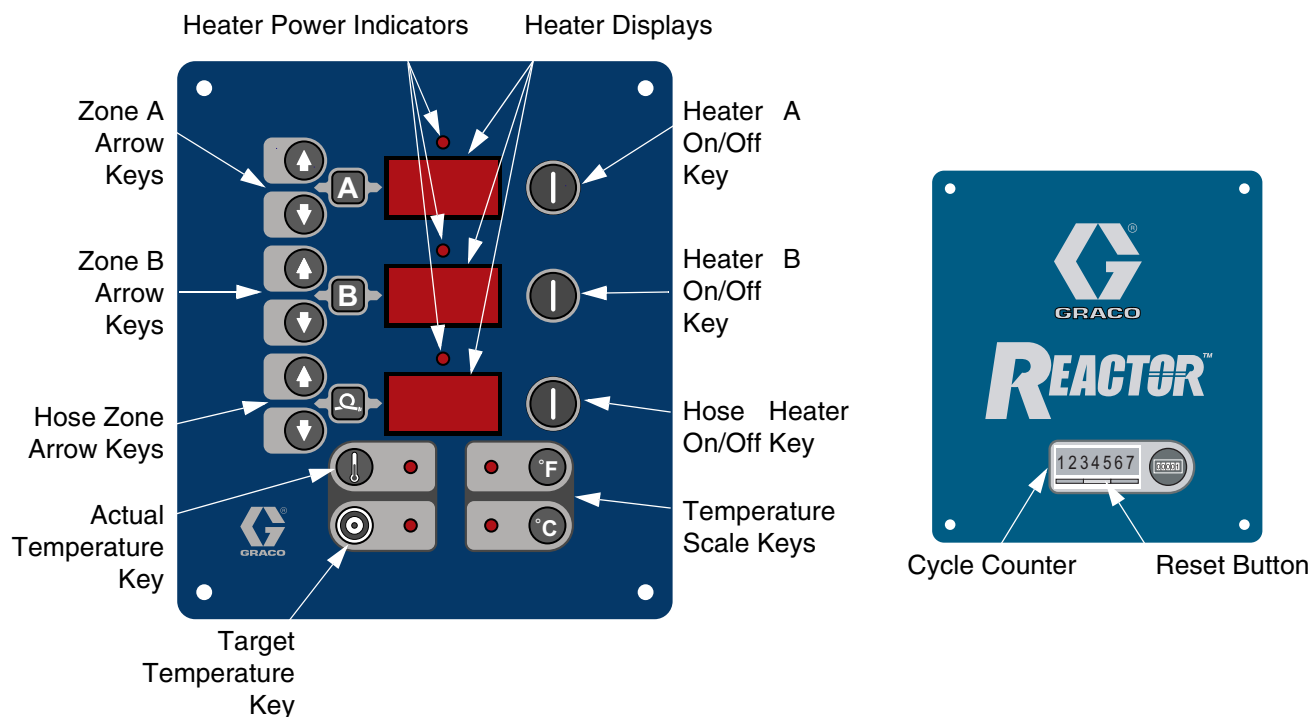



FIG. 4. Controls and Indicators



Actual Temperature Key/LED

Press  to display actual temperature.




Target Temperature Key/LED

Press  to display target temperature.

Temperature Scale Keys/LEDs

Press  or  to change temperature scale.


Temperature Arrow Keys

Press , then press  or  to adjust temperature settings in 1 degree increments.

Temperature Displays

Show actual temperature or target temperature of heater zones, depending on selected mode. Defaults to actual at startup. Range is 32-190°F (0-88°C) for A and B, 32-180°F (0-82°C) for hose.

Heater Zone On/Off Keys/LEDs

Press  to turn heater zones on and off. Also clears heater zone diagnostic codes, see page 33.

LEDs are on steady when heater zones are powering up. Begin flashing as heat reaches targets.



LEDs will also flash if cutback point is reached.


Main Power Switch

Located on right side of unit, page 10. Turns Reactor

power ON  and OFF . Does not turn heater zones or pumps on.

Red Stop Button

Located between temperature control panel and cycle

counter panel, page 10. Press  to shut off heater zones only. Does not stop air or hydraulic power to pumps. Use main power switch to shut off all power to heat control box. Close red-handled valve (BV or HS, page 10) to shut off power to motor.


Cycle Counter

Displays cycle count.



To clear counter, press reset button.

Circuit Breakers

 **WARNING**

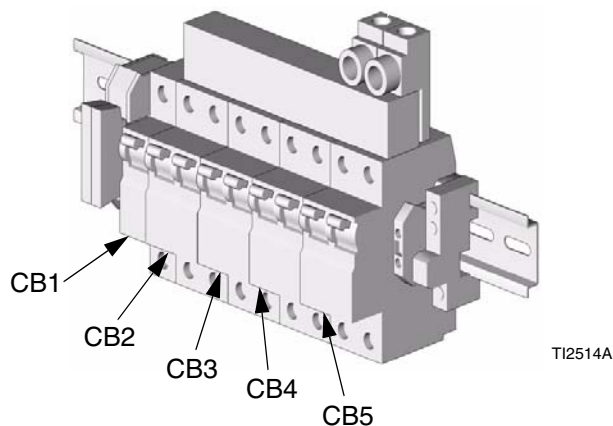

Read warnings, page 6.

Located inside Reactor cabinet.

Ref.	Size	Component
CB1	50 A	Hose/Transformer Secondary






CB2	20 A	Transformer Primary
CB3	25 or 40 A*	Heater A
CB4	25 or 40 A*	Heater B
CB5	20 A	Not Used

* Depending on model.



For wiring and cabling, see repair manual.

Isocyanate Hazard

						
<p>Spraying materials containing isocyanates creates potentially harmful mists, vapors, and atomized particulates.</p> <p>Read material manufacturer's warnings and material MSDS to know specific hazards and precautions related to isocyanates.</p> <p>Prevent inhalation of isocyanate mists, vapors, and atomized particulates by providing sufficient ventilation in the work area. If sufficient ventilation is not available, a supplied-air respirator is required for everyone in the work area.</p> <p>To prevent contact with isocyanates, appropriate personal protective equipment, including chemically impermeable gloves, boots, aprons, and goggles, is also required for everyone in the work area.</p>						

Moisture Sensitivity of Isocyanates

Isocyanates (ISO) are catalysts used in two component foam and polyurea coatings. ISO will react with moisture (such as humidity) to form small, hard, abrasive crystals, which become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity. If used, this partially cured ISO will reduce performance and the life of all wetted parts.



The amount of film formation and rate of crystallization varies depending on the blend of ISO.

To prevent exposing ISO to moisture:

- Always use a sealed container with a desiccant dryer in the vent, or a "nitrogen blanket." **Never** store ISO in an open container.
- Keep the wet-cup of the pump filled with Graco ISO pump oil, Part No. 217374. The lubricant creates a barrier between the ISO and the atmosphere.

- Use moisture resistant hoses. The component A (ISO) hose must be constructed of polyethylene (PE), PTFE, polyolefin, or moisture-proof rubber compounds. Dry hoses before use.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.

Spray Adjustments

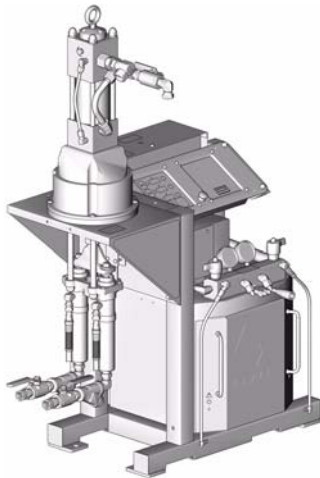
Flow rate, atomization, and amount of overspray are affected by four variables.

- **Fluid pressure setting.** Too little pressure results in an uneven pattern, coarse droplet size, low flow, and poor mixing. Too much pressure results in excessive overspray, high flow rates, difficult control, and excessive wear.
- **Fluid temperature.** Similar effects to fluid pressure setting. The A and B temperatures can be offset to help balance the fluid pressure.
- **Mix chamber size.** Choice of mix chamber is based on desired flow rate and fluid viscosity.
- **Cleanoff air adjustment.** Too little cleanoff air results in droplets building up on the front of the nozzle, and no pattern containment to control overspray. Too much cleanoff air results in air-assisted atomization and excessive overspray.

Setup

1. Locate Reactor



- a.** Locate Reactor on a level surface.
- b.** Do not expose Reactor to rain.
- c.** To mount on truck, bolt mounting feet of Reactor to truck bed. See page 37.



TI3582b

2. Electrical requirements

See TABLE 1. Does not include air compressor or hydraulic power supply.


WARNING


Installing this equipment requires access to parts which may cause electric shock or other serious injury if work is not performed properly. Have a qualified electrician connect power and ground to main power switch terminals, see page 16. Be sure your installation complies with all National, State and Local safety and fire codes.

**Table 1: Electrical Requirements
(kW/Full Load Amps)**

A-XP SERIES				
Part No.	Model	Voltage (phase)	Full Load Peak Amps*	System Watts**
246639	A-XP2	230V (1)	62	14,540
246752	A-XP2	230V (3)	40	14,540
246753	A-XP2	380V (3)	22	14,540
HT SERIES (Heat Package Only)				
246365	HT-6.0	230V (1)	44	10,340
246760	HT-6.0	230V (3)	27	10,340
246761	HT-6.0	380V (3)	18	10,340
246607	HT-10.2	230V (1)	62	14,540
246762	HT-10.2	230V (3)	40	14,540
246763	HT-10.2	380V (3)	22	14,540
246364	HT-15.3	230V (1)	84	19,640
246764	HT-15.3	230V (3)	57	19,640
246765	HT-15.3	380V (3)	33	19,640

* Full load amps with all devices operating at maximum capabilities. Fuse requirements at various flow rates and mix chamber sizes may be less.

** Total system watts for all units, using 310 ft (94.6 m) hose.

3. Connect electrical cord


 Power cord is not supplied. See TABLE 2. Use 5/32 or 4 mm hex allen wrench to make connections.

Table 2: Power Cord Requirements

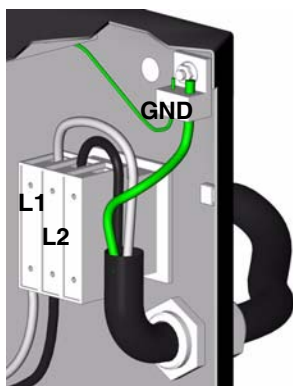
Part No.	Model	Cord Specification AWG (mm ²)
246639	A-XP2	6 (13.3), 2 wire + ground
246752	A-XP2	8 (8.4), 3 wire + ground
246753	A-XP2	10 (5.3), 4 wire + ground
246365	HT-6.0	8 (8.4), 2 wire + ground
246760	HT-6.0	10 (5.3), 3 wire + ground
246761	HT-6.0	12 (3.3), 4 wire + ground
246607	HT-10.2	6 (13.3), 2 wire + ground
246762	HT-10.2	8 (8.4), 3 wire + ground
246763	HT-10.2	10 (5.3), 4 wire + ground
246364	HT-15.3	4 (21.2), 2 wire + ground
246764	HT-15.3	8 (8.4), 3 wire + ground
246765	HT-15.3	8 (8.4), 4 wire + ground

WARNING



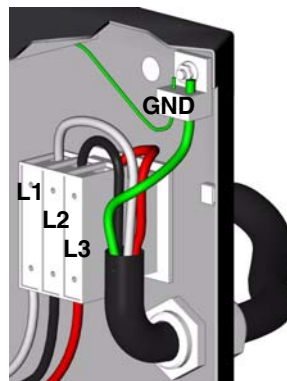
Read warnings, page 6.

- a. 230V, 1 phase:** Connect power leads to L1 and L2, and green to ground (GND).



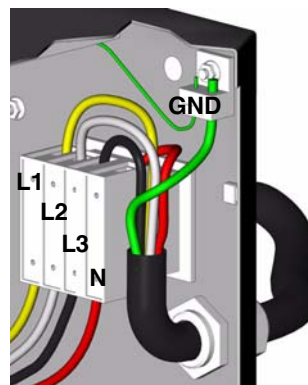
TI2515c

- b. 230V, 3 phase:** Connect power leads to L1, L2, and L3. Connect green to ground (GND).



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- c. 380V, 3 phase:** Connect power leads to L1, L2, and L3. Connect neutral to N. Connect green to ground (GND).



TI2725b

4. Connect power source to motor

a. Air powered models:

See FIG. 1. Connect air supply line (U) to air regulator kit inlet. See **Technical Data** on page 38 for inlet sizes, recommended hose sizes, and air consumption requirements.

b. Hydraulic powered models:

Hydraulic shutoff valve (HS, FIG. 3 on page 10) may be disconnected for shipping. Connect valve to hydraulic inlet fitting before connecting hydraulic supply line.

See FIG. 2. Connect hydraulic supply line (S) to shutoff valve (HS). Connect return line (T) to return fitting. See **Technical Data** on page 38 for fitting sizes, recommended hose sizes, and hydraulic flow and consumption requirements.

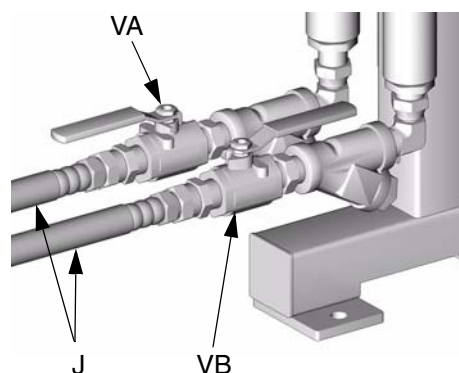
Typical hydraulic power supply will have:


- pressure compensated piston pump
- adjustable pressure range from 300-1200 psi (2.1-8.4 MPa, 21-84 bar)
- suction strainer
- return line filter
- air bleed valve
- pressure gauge
- case drain cooler
- appropriate motor starter.


b. Seal component A drum and use desiccant dryer (M) in vent.

c. Install agitator (L) in component B drum, if necessary.

d. Inlet valve/strainer assemblies may be disconnected for shipping. Connect to pump fluid inlets, then connect supply hoses (J) from feed pumps to Reactor fluid inlet valves (VA, VB).




 Supply hoses from feed pumps should be 3/4 in. (19 mm) ID minimum.


 Model HT heat packages only: connect proportioner hoses to 1/2 npt(f) connections on heater inlet blocks.

5. Connect feed pumps

a. Install feed pumps (K) in component A and B supply drums. See FIG. 1 and FIG. 2, pages 8 and 9.

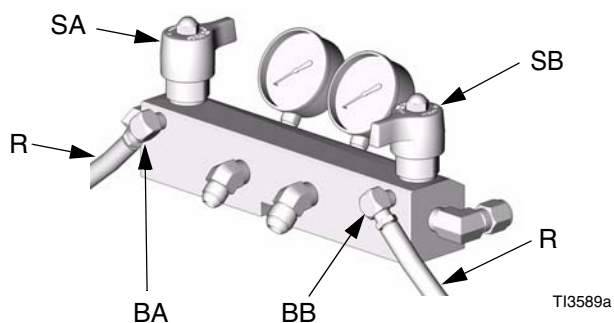
6. Connect pressure relief lines

**WARNING**




Do not install shutoffs downstream of the PRESSURE RELIEF/SPRAY valve outlets (BA, BB). The valves function as overpressure relief valves when set to SPRAY. Lines must be open so valves can automatically relieve pressure when Reactor is operating.

- a. Recommended:** Connect air purge hose (R) to relief fittings (BA, BB) of both PRESSURE RELIEF/SPRAY valves. Route hose back to component A and B drums. Also see FIG. 1, page 8.



- b. Alternately:** Secure supplied bleed tubes (N) in grounded, sealed waste containers (H). See FIG. 2, page 9.

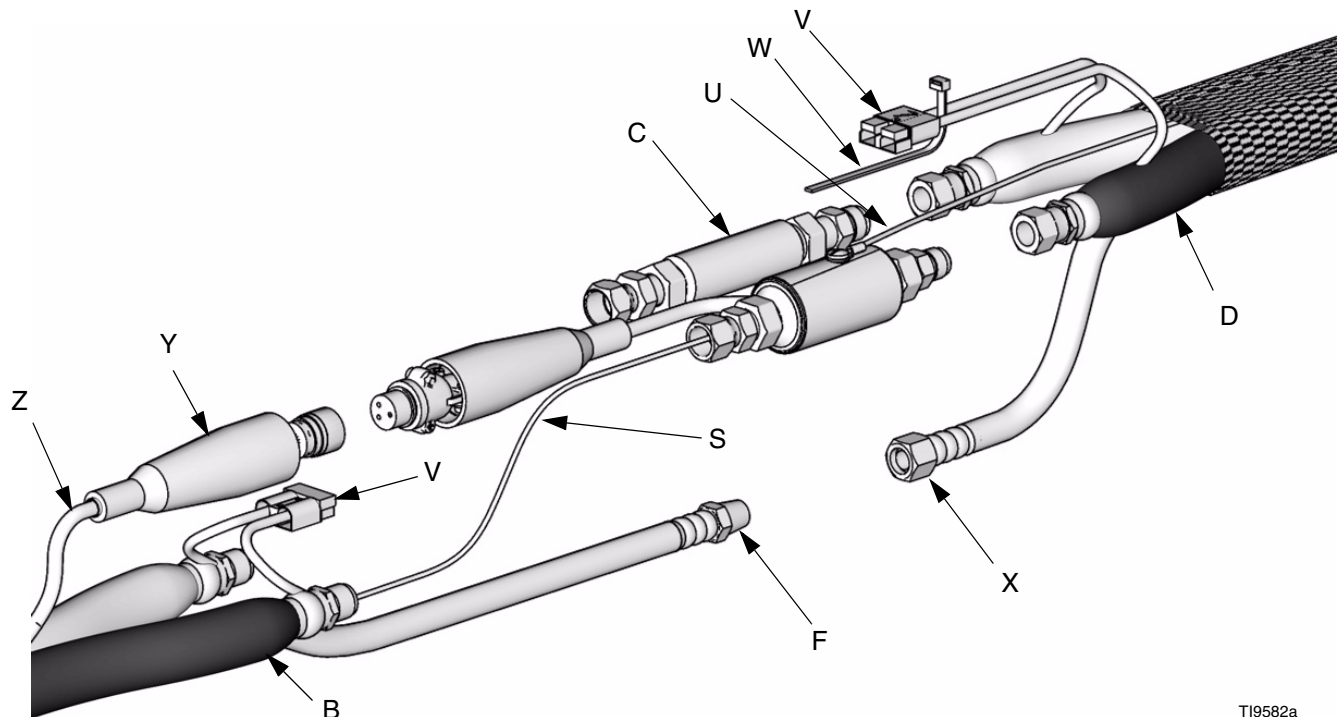
7. Install Fluid Temperature Sensor (FTS)

 The Fluid Temperature Sensor (FTS) is supplied. Install FTS between main hose and whip hose.

CAUTION

To prevent damage to probe, do not kink or excessively bend whip hose. Do not coil hose tighter than the minimum bend radius of 3 ft (0.9 m). Do not subject hose to excessive weight, impact, or other abuse.


- a.** Carefully extend FTS probe (S). Do not bend or kink probe. Insert in component A (ISO) side of main hose (B).
- b.** Connect FTS (C) to whip hose (D).
- c.** Connect whip hose ground wire (U) to ground screw on underside of FTS.
- d.** Connect main hose (B) to FTS (C).
- e.** Connect electrical connectors (V). Secure connections with plastic ties (W).
- f.** Connect air hose (F) to whip air hose (X).
- g.** Connect main hose cable (Y) to FTS. Slide insulator sleeves over connection. Leave slack (Z) in cables as stress relief, to prevent cable failure.



T19582a

FIG. 5. Install Fluid Temperature Sensor (FTS)

8. Connect heated hose

 See 309572 for detailed instructions for Graco heated hoses.

CAUTION

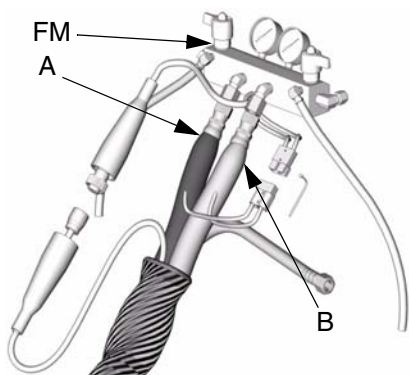
The fluid temperature sensor (FTS) and whip hose must be used with heated hose, see page 19. Hose length, including whip hose, must be 60 ft (18.3 m) minimum.

- a.** Turn main power OFF



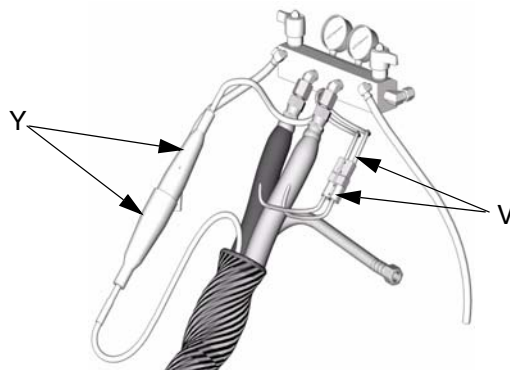
- b.** Assemble heated hose sections, FTS, and whip hose.

- c.** Connect A and B hoses to A and B outlets on Reactor fluid manifold (FM). Hoses are color coded: red for component A (ISO), blue for component B (RES). Fittings are sized to prevent connection errors.



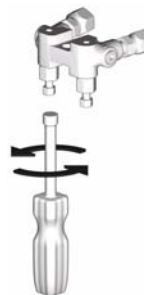
TI2726A

- d.** Connect cables (Y). Connect electrical connectors (V). Secure with plastic ties. Be sure cables have slack when hose bends. Wrap cable and electrical connections with electrical tape.



TI2727A

9. Close gun fluid manifold valves A and B



TI2411A

10. Connect whip hose to gun fluid manifold

Do not connect manifold to gun yet.



TI2417A


11. Pressure check hose

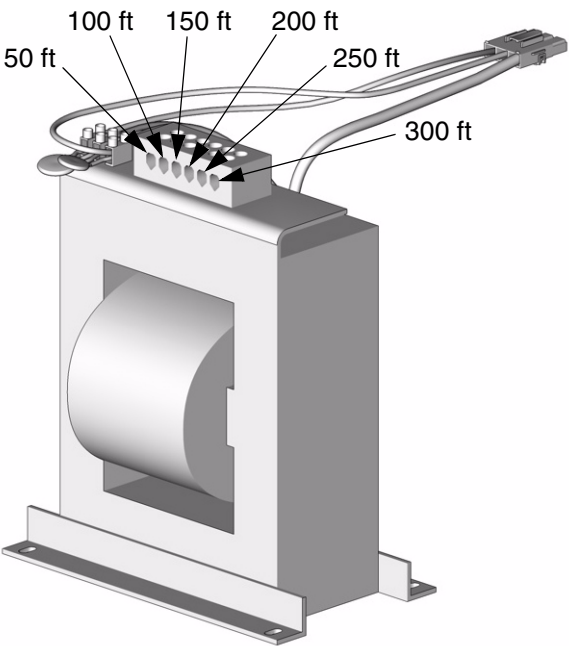
See hose manual. Pressure check for leaks. If no leaks, fully wrap hose and electrical connections with tape to protect from damage.

12. Set transformer wire taps

**WARNING**

Read warnings, page 6.

Turn main power switch OFF . Transformer tap wire connections vary depending on length of heated hose. See FIG. 6. Verify that tap wire connections are correct.



TI3470a


Hose Length* ft (m)	Tap Terminal Label (ft)
60-85 (18.3-25.9)	50
110-135 (33.5-41.2)	100
160-185 (48.8-56.4)	150
210-235 (64.1-71.7)	200
260-285 (79.3-86.9)	250
310 (94.6)	300

* Length includes heated fluid hose and whip hose.

FIG. 6: Transformer Wire Taps

13. Ground system


WARNING



Read warnings, page 6.

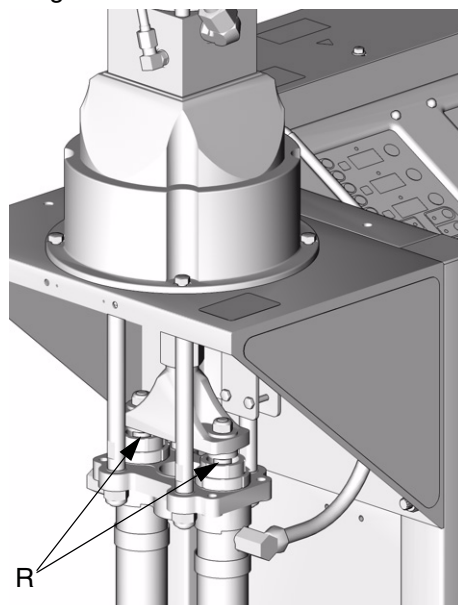
- a.** *Reactor:* is grounded through power cord. See page 16.
- b.** *Spray gun:* connect whip hose ground wire to FTS, page 19. Do not disconnect wire or spray without whip hose.
- c.** *Fluid supply containers:* follow your local code.
- d.** *Object being sprayed:* follow your local code.
- e.** *Solvent pails used when flushing:* follow your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.
- f.** *To maintain grounding continuity when flushing or relieving pressure,* hold a metal part of spray gun firmly to the side of a grounded *metal* pail, then trigger gun.

WARNING



Pump rod and connecting rod move during operation. Moving parts can cause serious injury such as pinching or amputation. Keep hands and fingers away from wet-cups (R) during operation. Shut off pumps before filling wet cups.

Check pump wet-cups (R) daily. Keep filled with Graco ISO pump oil, Part No. 217374, to keep air or moisture from reacting with fluids.





TI3582-3

14. Fill wet-cups

Startup

⚠ WARNING

Do not operate Reactor without all covers and shrouds in place.

1. Fluid Temperature Sensor (FTS) Calibration



Calibrate the FTS **ONLY** at initial startup (the first time the unit is operated) and any time the hose length changes.

- a.** Before turning on the unit, ensure all hoses and cables are properly connected. To ensure that the FTS in the hose is at the same temperature as the heaters, keep heat off and store the hose FTS near the machine for several minutes.
- b.** While holding down the temperature unit button (Fahrenheit - "F" or Celsius - "C") turn the Reactor main power ON.
- c.** Hold the temperature unit button until temperature is shown on the display. The fluid temperature sensor is now correctly calibrated.

2. Load fluid with feed pumps

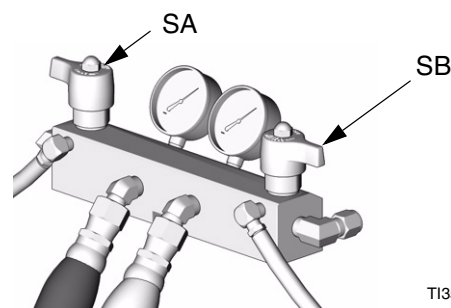


The Reactor is tested with oil at the factory. If necessary, flush out the oil with a compatible solvent before spraying. See page 35.



Equipment and hoses contain some residual moisture. Do not load with isocyanate and leave unused for a long period. Pumping and spraying helps remove moisture from system.

- a.** Check that **Setup** steps 1-14 are complete, pages 14-22.
- b.** Turn on component B agitator, if used.
- c.** Turn both PRESSURE RELIEF/SPRAY valves (SA, SB) to SPRAY.

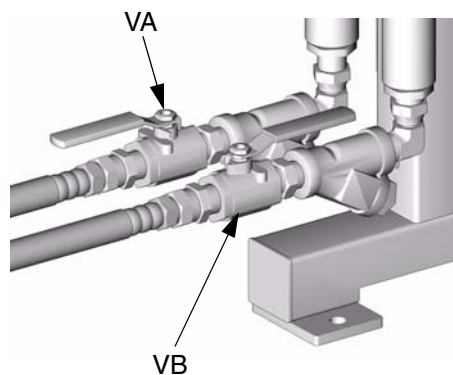


TI3591a



After changing drums, set PRESSURE RELIEF/SPRAY valves to PRESSURE RELIEF. This provides sufficient fluid velocity to purge air from pumps and heaters.

- d.** Open fluid inlet valves (VA, VB).



TI3590b

- e.** Start feed pumps.

WARNING

Always provide two grounded waste containers to keep component A and component B fluids separate.

- f.** Hold gun fluid manifold over two grounded waste containers. Open fluid valves A and B until clean, air-free fluid comes from valves. Close valves.



TI2484A

3. Set temperatures

WARNING

This equipment is used with heated fluid, which can cause equipment surfaces to become very hot. To avoid severe burns:

- Do not touch hot fluid or equipment.
- Allow equipment to cool completely before touching it.
- Wear gloves if fluid temperature exceeds 110°F (43°C).

- a.** Turn main power ON



- b.** Press or to change temperature scale.

- c.** Press .

- d.** To set heat zone target temperature, press or until display shows desired temperature. Repeat for and zones.



heat zone target cannot be set higher than or heat zone targets.



For zone only, if FTS is disconnected at startup, display will show hose current (0A). See step h, page 25.

- e.** Press to display actual temperatures.

**WARNING**

Read warnings, page 6. Do not turn on hose heat without fluid in hoses.

- f.** Turn on heat zone by pressing



. Preheat hose (15-60 min). Indicator will flash very slowly when fluid reaches target temperature. Display shows actual fluid temperature in hose near FTS.

⚠ WARNING

Read warnings, page 6. Thermal expansion can cause overpressurization, resulting in equipment rupture and serious injury, including fluid injection. Do not pressurize system when preheating hose.

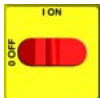

- g.** Turn on **A** and **B** heat zones by pressing **I** for each zone.

- h.** **Manual current control mode only:**

⚠ WARNING


Read warnings, page 6. When in manual current control mode, monitor hose temperature with thermometer. Install per instructions below. Thermometer reading must not exceed 160°F (71°C).

If FTS is disconnected or display shows diagnostic code E04, turn main power

switch OFF  then ON  to clear diagnostic code and enter man-

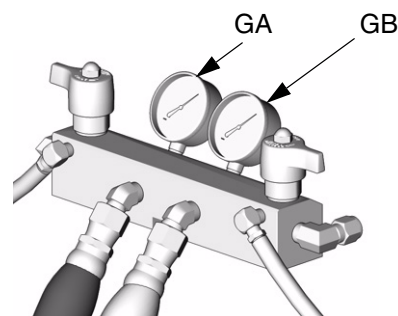
ual current control mode. **P** display will show current to hose. Current is not limited by target temperature.

To prevent overheating, install hose thermometer close to gun end, within operator view. Insert thermometer through foam cover of A component hose so stem is next to inner tube. Thermometer reading will be about 20°F less than actual fluid temperature.

If thermometer reading exceeds 160°F (71°C), reduce current with  key.

4. Set pressure

- a.** Turn on air or hydraulic pressure to motor.
- b.** Adjust motor input pressure until fluid pressure gauges (GA, GB) show desired fluid pressure.



TI3591a

Spraying

1. Engage gun piston safety lock.



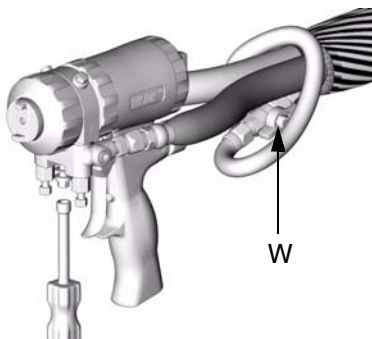
TI2409A

2. Close gun fluid manifold valves A and B.



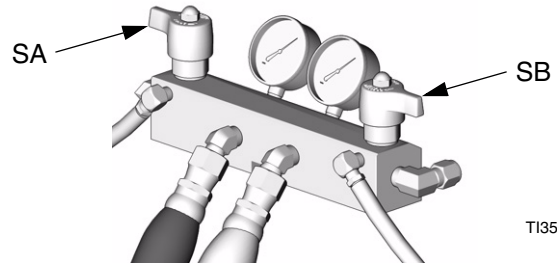
TI2728A

3. Attach gun fluid manifold. Connect gun air line. Open gun air line valve (W).



TI2543A

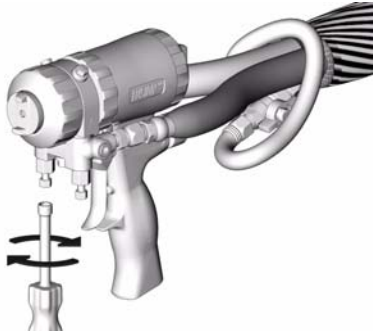
4. Set PRESSURE RELIEF/SPRAY valves (SA, SB) to SPRAY.



TI3591a

5. Check that heat zones are on and temperatures are on target, page 24.
6. Check for proper pressure balance, page 25.

- 7.** Open gun fluid manifold valves A and B.



TI2414A





- 8.** Disengage gun piston safety lock.



TI2410A

- 9.** Test spray onto cardboard for several seconds. Adjust pressure and temperature to get desired results.
- 10.** Equipment is ready to spray.

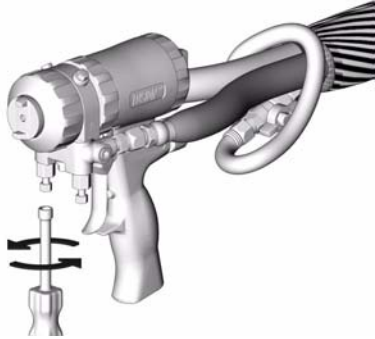
Shutdown

- 1.** Shut off  ,  , and  heat zones.
- 2.** Trigger gun to park pumps at bottom of stroke.
- 3.** Fill wet-cups, page 22.
- 4.** Turn main power OFF .
- 5.** Close red-handled valve (BV or HS, page 10) to shut off power to motor.
- 6.** Relieve pressure, page 29.

Pressure Relief Procedure

1. Relieve pressure in gun and perform gun shut-down procedure. See gun manual.

2. Close gun fluid manifold valves A and B.

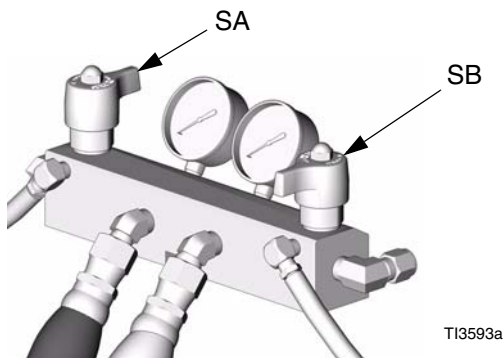


TI2421A

3. Shut off feed pumps and agitator, if used.

4. Check that red-handled valve (BV or HS, page 10) is closed, to shut off power to motor.

5. Turn PRESSURE RELIEF/SPRAY valves (SA, SB) to PRESSURE RELIEF. Route fluid to waste containers or supply tanks. Ensure gauges drop to 0.



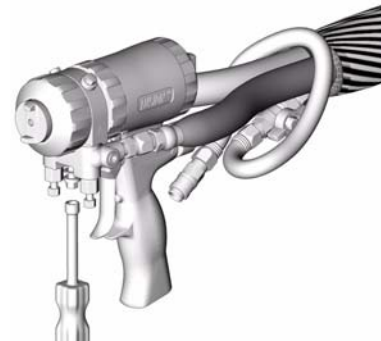
TI3593a

6. Engage gun piston safety lock.



TI2409A

7. Disconnect gun air line and remove gun fluid manifold.

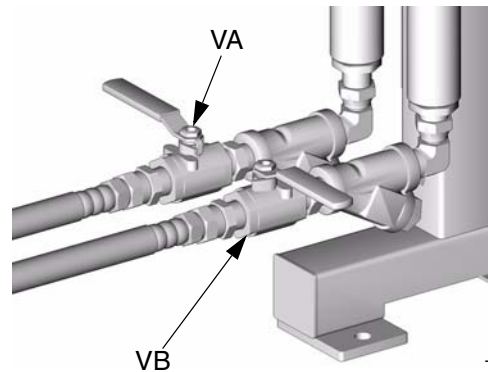


TI2554A



Pump throat seals work best under pressure. Close fluid inlet valves (VA, VB) when Reactor is depressurized, to prevent drum head pressure from leaking past pump rod seals.


8. Close fluid inlet valves (VA, VB).





TI3698b

Fluid Circulation

Circulation Through Reactor

 Use this procedure to purge air from pumps, heaters, and lines.


 **WARNING**




Read warnings, page 6. Do not circulate fluid containing a blowing agent without consulting with your material supplier regarding fluid temperature limits.

To circulate through gun manifold and preheat hose, see page 31.

- 1.** Load fluid with feed pumps, page 23.

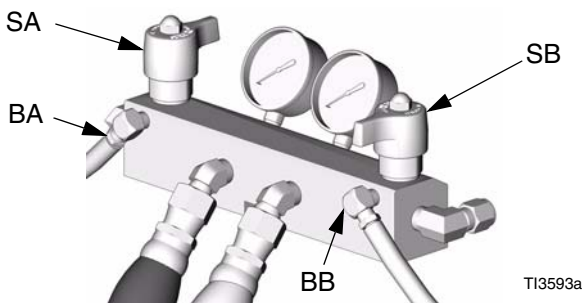
 **WARNING**



Do not install shutoffs downstream of the PRESSURE RELIEF/SPRAY valve outlets (BA, BB). The valves function as overpressure relief valves when set to SPRAY. Lines must be open so valves can automatically relieve pressure when machine is operating.

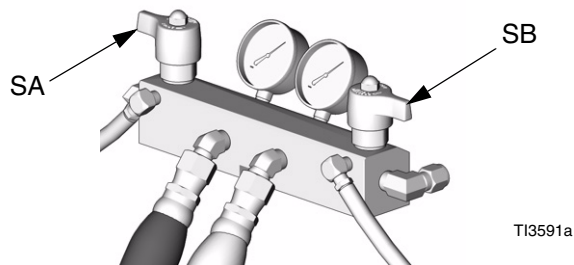
- 2.** Route air purge lines back to respective component A or B supply drum. Use hoses rated at the maximum working pressure of this equipment. See FIG. 1, page 8.

- 3.** Set PRESSURE RELIEF/SPRAY valves (SA, SB) to PRESSURE RELIEF.



- 4.** Circulate fluid with feed pumps until air is purged through pumps.

- 5.** Set PRESSURE RELIEF/SPRAY valves (SA, SB) to SPRAY.



Circulation Through Gun Manifold

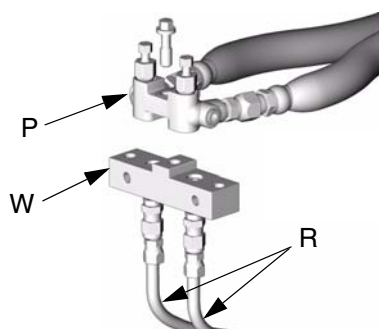
WARNING









Read warnings, page 6. Do not circulate fluid containing a blowing agent without consulting with your material supplier regarding fluid temperature limits.

Circulating fluid through the gun manifold allows rapid preheating of hose.

1. Install gun fluid manifold (P) on Part No. 246362 accessory manifold circulation kit (W).



T14063a

2. Connect high pressure circulation lines (R) to circulation manifold. Route circulation lines back to respective component A or B supply drum. Use hoses rated at the maximum working pressure of this equipment.
3. Follow **Load fluid with feed pumps**, page 23.
4. Turn main power ON .
5. Set temperature targets, see page 24. Turn on , , and  heat zones by pressing .
6. Press  to display actual temperatures.
7. Circulate fluid at lowest possible pressure until temperatures reach targets.



Lined writing area consisting of 20 horizontal lines.

Diagnostic Codes

Temperature Control Diagnostic Codes


Temperature control diagnostic codes E01 through E05 appear on temperature display.

These alarms turn off heat. Turn main power OFF



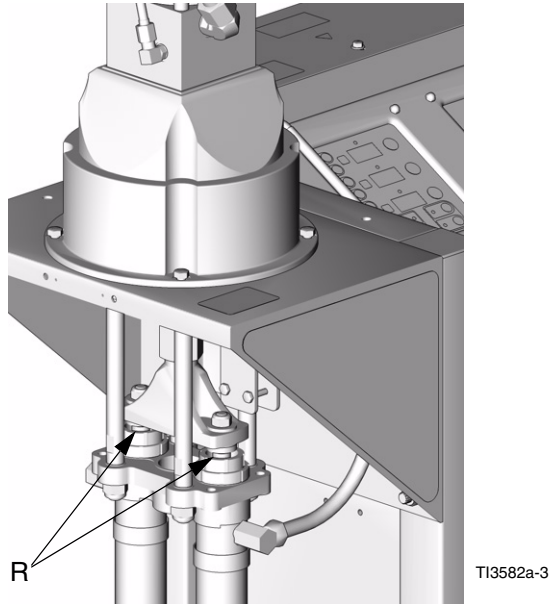
See repair manual for corrective action.

Code No.	Code Name	Alarm Zone
01	High fluid temperature	Individual
02	High hose current	Hose only
03	No hose current with hose heater on	Hose only
04	FTS or thermocouple not connected	Individual
05	Board overtemperature	All

 For hose zone only, if FTS is disconnected at startup, display will show hose current 0A.

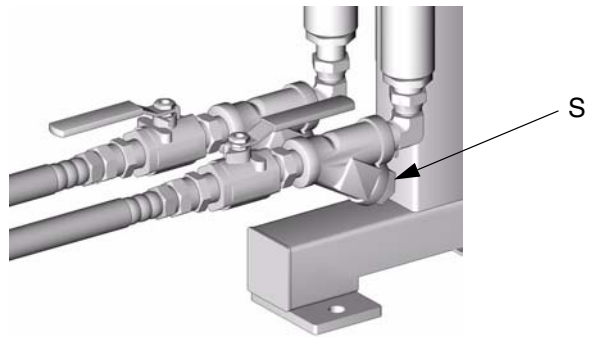
Maintenance

- Check pump wet-cups (R) daily, page 22. Keep filled with Graco ISO pump oil, Part No. 217374, to keep air or moisture from reacting with fluids. If oil on rods appears milky from crystallization, wipe rods clean and refill wet-cups with fresh ISO pump oil.



- Keep component A from exposure to moisture in atmosphere, to prevent crystallization.
- Store Reactor with pumps at bottom of stroke. See page 28.

- Remove plugs (S) and clean fluid inlet screens as needed.



- Clean gun mix chamber ports regularly. See gun manual.
- Clean gun check valve screens regularly. See gun manual.
- Use compressed air to prevent dust buildup on control boards, fan, and motor (under shield).

Flushing

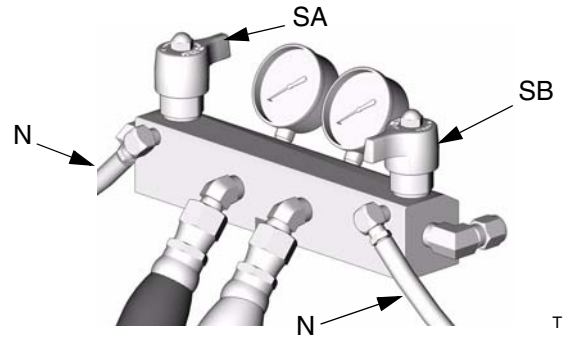
WARNING



Read warnings, page 6. 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 the lowest possible pressure when flushing.
- All fluid components are compatible with common solvents. Use only moisture-free solvents.

- To flush feed hoses, pumps, and heaters separately from heated hoses, set PRESSURE RELIEF/SPRAY valves (SA, SB) to PRESSURE RELIEF. Flush through bleed lines (N).



TI3593a

- 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.

Accessories

Feed Pump Kits

Pumps, hoses, and mounting hardware to supply fluids to Reactor. Includes 246483 Air Supply Kit. See 309815.

246483 Air Supply Kit

Hoses and fittings to supply air to feed pumps, agitator, and gun air hose. Included in feed pump kits. See 309827.

246978 Circulation Kit

Return hoses and fittings to make circulation system. Includes two 246477 Return Tube Kits. See 309852.

246477 Return Tube Kit

Desiccant dryer, return tube, and fittings for one drum. Two included in 246978 Circulation Kit. See 309852.

Heated Hoses

50 ft (15.2 m) and 25 ft (7.6 m) lengths, 1/4 in. (6 mm), 3/8 in. (10 mm), or 1/2 in. (13 mm) diameter, 2000 psi (14 MPa, 140 bar) or 3500 psi (24 MPa, 241 bar). See 309572.

Heated Whip Hoses

10 ft (3 m) whip hose, 1/4 in. (6 mm) or 3/8 in. (10 mm) diameter, 2000 psi (14 MPa, 140 bar) or 3500 psi (24 MPa, 241 bar). See 309572.

Fusion Spray Gun

Air purge gun, available in round or flat pattern. See 309550.

Mechanical purge gun, available in round or flat pattern. See 309856.

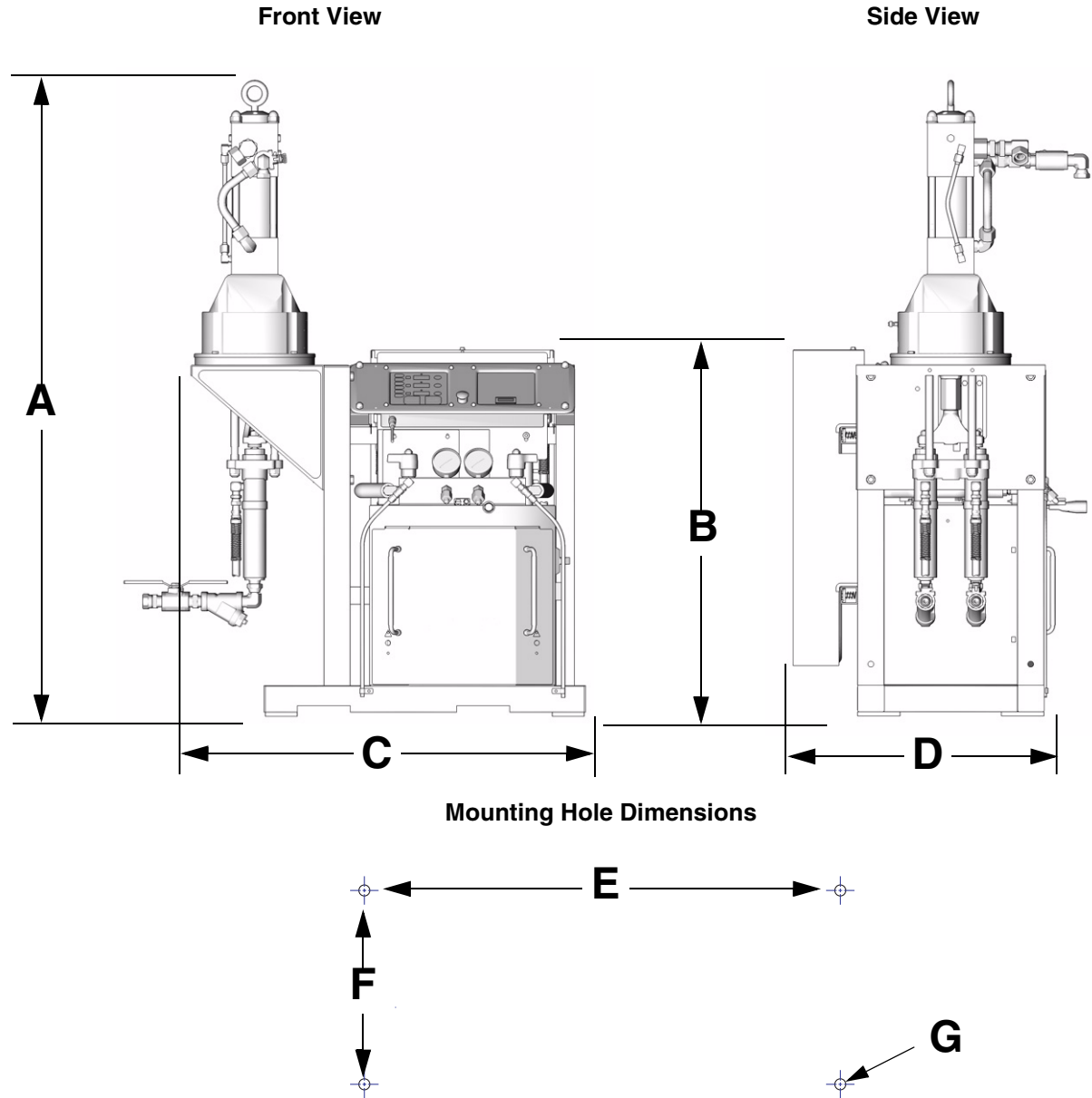
246086 Data Reporting Kit

Records actual temperature, temperature setpoint, actual pressure, cycles, and diagnostic code data from Reactor. Downloads data to PC with Microsoft® Windows 98 or later. See 309814.

Dimensions

Dimension	Model	in. (mm)
A	A-25, A-XP2,	49 (1245)
	A-XP2 2:1	55 (1397)
	A-50	53 (1346)
	H-50	60.5 (1537)
	H-XP3	
B	All	35 (889)
C	All	36.5 (927)
D	All	25 (635)
E	All	27 (686)

Dimension	Model	in. (mm)
F	All	11 (279)
G (hole diameter)	All	0.625 (16)
Weight	A-25, A-XP2	400 lb (180 kg)
	A-50	480 lb (216 kg)
	H-50	475 lb (214 kg)
	H-XP3	485 lb (218 kg)
	HT Series	333 lb (150 kg)



TI3700a

Technical Data

Category	Data
Maximum Fluid Working Pressure	Model A-25: 1920 psi (13 MPa, 130 bar) Models A-50 and H-50: 2000 psi (14 MPa, 140 bar) Models A-XP2 2:1: 2000 psi (14 MPa, 140 bar) Models A-XP2 and H-XP3: 3000 psi (20.7 MPa, 207 bar)
Maximum Input Pressure to Motor	Models A-25, A-XP2, and A-XP2 2:1: 120 psi (0.82 MPa, 8.2 bar) air Model A-50: 75 psi (0.5 MPa, 5 bar) air Models H-50 and H-XP3: 1200 psi (8.4 MPa, 84 bar) oil
Pressure Ratio	
Fluid:Air	Model A-25: 16:1 Model A-XP2 2:1: 17.1:1 Model A-XP2: 25:1 Model A-50: 26:1
Fluid:Oil	Model H-50: 1.65:1 Model H-XP3: 2.76:1
Air Inlet	Models A-25, A-XP2, and A-XP2 2:1: 1/2 npsm(f) Model A-50: 3/4 npsm(f)
Recommended Air Supply Hose Size	Models A-25, A-XP2, and A-XP2 2:1: 1/2 in. (13 mm) ID minimum Model A-50: 3/4 in. (19 mm) ID minimum
Air Consumption	Model A-25: 40 scfm at 120 psi (0.82 MPa, 8.2 bar), 1.6 gpm (6.1 lpm) Model A-XP2: 40 scfm at 120 psi (0.82 MPa, 8.2 bar), 1.0 gpm (3.8 lpm) Model A-XP2 2:1: 40 scfm at 120 psi (0.82 MPa, 8.2 bar), 1.5 gpm (5.7 lpm) Model A-50: 80 scfm at 75 psi (0.5 MPa, 5 bar), 5.0 gpm (19 lpm); 35 scfm at 75 psi (0.5 MPa, 5 bar), 2.0 gpm (7.6 lpm)
Hydraulic Supply Inlet	Models H-50 and H-XP3: 3/4 npt(f)
Hydraulic Return Outlet	Models H-50 and H-XP3: 1 in. npt(f)
Recommended Hydraulic Hose Size	Supply Hose: 3/4 in. (19 mm) ID minimum Return Hose: 1 in. (25 mm) ID minimum
Maximum Hydraulic Oil Flow	Models H-50 and H-XP3: 10 gpm (3.8 lpm), 50 cycles/min
Hydraulic Oil Consumption	Models H-50 and H-XP3: 1.0 gpm (38 lpm) per 5 cycles

Category	Data
Fluid Inlets	Models A-25, A-XP2, A-XP2 2:1, and H-XP3: 3/4 npt(f) Models A-50 and H-50: 1" npt(f) Model HT heat packages: 1/2 npt(f) on heater inlet blocks
Fluid Outlets	Component A (ISO): #8 JIC (3/4-16 unf), with #5 JIC adapter Component B (RES): #10 JIC (7/8-14 unf), with #6 JIC adapter
Fluid Circulation Ports	1/4 npsm(m), with plastic tubing, 250 psi (1.75 MPa, 17.5 bar) maximum
Maximum Fluid Temperature	190°F (88°C)
Maximum Output (10 weight oil at ambient temperature)	Model A-25: 25 lb/min (11 kg/min) at 75 cycles/min Models A-50 and H-50: 50 lb/min (22.5 kg/min) at 45 cycles/min Model A-XP2: 1.5 gpm (5.7 liter/min) at 78 cycles/min Model A-XP2 2:1: 1.5 gpm (5.7 liter/min) at 60 cycles/min Model H-XP3: 3.6 gpm (13.7 liter/min) at 50 cycles/min
Output per Cycle (A and B)	Model A-25: 0.031 gal. (0.117 liter) Models A-50 and H-50: 0.114 gal. (0.431 liter) Model A-XP2: 0.0193 gal. (.073 liter) Model A-XP2 2:1: 0.02895 gal. (0.110 liter) Model H-XP3: 0.072 gal. (0.274 liter)
Line Voltage Requirement	230V 1 phase and 230V 3 phase units: 195-264 Vac, 50/60 Hz 380V 3 phase units: 338-457 Vac, 50/60 Hz
Amperage Requirement	See TABLE 1, page 15.
Heater Power (A and B heaters, no hose)	Model HT-6.0: 6000 Watts Models A-25, A-XP2, A-XP2 2:1, and HT-10.2: 10200 Watts Models A-50, H-50, H-XP3, and HT-15.3: 15300 Watts
Sound Power, per ISO 9614-2	Model A-25: 94.7 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm), 15 cpm Model A-50: 86.5 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm), 15 cpm Model A-XP2: 94.7 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm), 15 cpm Model A-XP2 2:1: 94.7 dB(A) at 1370 psi (9.4 MPa, 94 bar), 0.75 gpm (2.8 lpm), 15 cpm Model H-50: 88 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm), 20 cpm Model H-XP3: 103 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm), 25 cpm
Sound Pressure, 1 m from equipment	Model A-25: 81 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm), 15 cpm Model A-50: 78.8 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm), 15 cpm Model A-XP2: 81 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm), 15 cpm Model A-XP2 2:1: 81 dB(A) at 1370 psi (9.4 MPa, 94 bar), 0.75 gpm (2.8 lpm), 15 cpm Model H-50: 78 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm), 20 cpm Model H-XP3: 88 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm), 25 cpm
Wetted Parts	Aluminum, stainless steel, zinc-plated carbon steel, brass, carbide, chrome, chemically resistant o-rings, PTFE, ultra-high molecular weight polyethylene

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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.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présent document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

TO PLACE AN ORDER, contact your Graco distributor, or call this number to identify the distributor closest to you:

1-800-328-0211 Toll Free

612-623-6921

612-378-3505 Fax

*All written and visual data contained in this document reflects the latest product information available at the time of publication.
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