Operation

REACTOR™

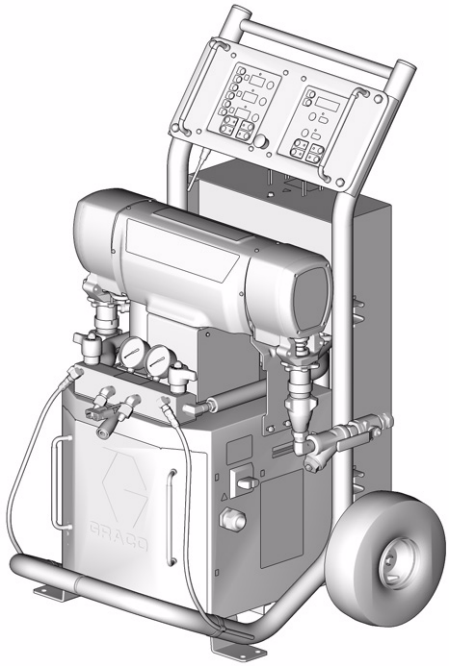
309551H

Electric, Heated, Plural Component Proportioner

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

See **Models** and Maximum Working Pressures on page 3.

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



TI3764a-1

PROVEN QUALITY. LEADING TECHNOLOGY.

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Models

E SERIES

Part No.	Series	Model	Voltage (phase)	Heater Watts	Flow lb/min (kg/min)	Output per Cycle (A + B) gal. (liter)	Maximum Fluid Working Pressure psi (MPa, bar)
246025	C	E-20	230V (1)	6,000	20 (9)	.0104 (.0395)	2000 (14, 140)
246026	B	E-30	230V (1)	10,200	30 (13.5)	.0272 (0.1034)	2000 (14, 140)
246030	C	E-20	380V (3)	6,000	20 (9)	.0104 (.0395)	2000 (14, 140)
246031	B	E-30	380V (3)	10,200	30 (13.5)	.0272 (0.1034)	2000 (14, 140)
246034	C	E-20	230V (3)	6,000	20 (9)	.0104 (.0395)	2000 (14, 140)
246035	B	E-30	230V (3)	10,200	30 (13.5)	.0272 (0.1034)	2000 (14, 140)
248657	A	E-30 with 15.3kW	230V (1)	15,300	30 (13.5)	.0272 (0.1034)	2000 (14, 140)
248658	A	E-30 with 15.3kW	230V (3)	15,300	30 (13.5)	.0272 (0.1034)	2000 (14, 140)
248659	A	E-30 with 15.3kW	380V (3)	15,300	30 (13.5)	.0272 (0.1034)	2000 (14, 140)

E-XP SERIES

Part No.	Series	Model	Voltage (phase)	Heater Watts	Flow gpm (lpm)	Output per Cycle (A + B) gal. (liter)	Maximum Fluid Working Pressure psi (MPa, bar)
246024	B	E-XP1	230V (1)	10,200	1 (3.8)	.0104 (.0395)	2500 (17.2, 172)
246028	B	E-XP2	230V (1)	15,300	2 (7.6)	.0203 (.0771)	3500 (24.1, 241)
246029	B	E-XP1	380V (3)	10,200	1 (3.8)	.0104 (.0395)	2500 (17.2, 172)
246032	B	E-XP2	380V (3)	15,300	2 (7.6)	.0203 (.0771)	3500 (24.1, 241)
246033	B	E-XP1	230V (3)	10,200	1 (3.8)	.0104 (.0395)	2500 (17.2, 172)
246036	B	E-XP2	230V (3)	15,300	2 (7.6)	.0203 (.0771)	3500 (24.1, 241)

Related Manuals

The following manuals are shipped with the Reactor™ Proportioner and the Fusion™ Spray Gun. Refer to these manuals for detailed equipment information.

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.

Reactor Electric Proportioner	
Part No.	**Description**
309574	Reactor Electric Proportioner, Repair-Parts Manual (English)
309577	Displacement Pump, Repair-Parts Manual (English)
Reactor Electrical Diagrams (one of the following is included)	
Part No.	**Description**
309726	Electrical Diagrams, E-XP1 and E-20, 230V, 1 phase
309727	Electrical Diagrams, E-XP2 and E-30, 230V, 1 phase
309728	Electrical Diagrams, E-XP1 and E-20, 380V, 3 phase
309729	Electrical Diagrams, E-XP2 and E-30, 380V, 3 phase
309730	Electrical Diagrams, E-XP1 and E-20, 230V, 3 phase
309731	Electrical Diagrams, E-XP2 and E-30, 230V, 3 phase
Reactor Data Reporting Kit	
Part No.	**Description**
309867	Instruction Manual (English)
Fusion Spray Gun	
Part No.	**Description**
309550	Instruction Manual (English)
Heated Hose	
Part No.	**Description**
309572	Instruction Manual (English)

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 5-6.

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.

⚠ 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 32, 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 24.
- 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



EQUIPMENT MISUSE HAZARD

Misuse can cause serious injury or death.

- 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.



BURN HAZARD

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).



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 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.



PERSONAL PROTECTIVE EQUIPMENT

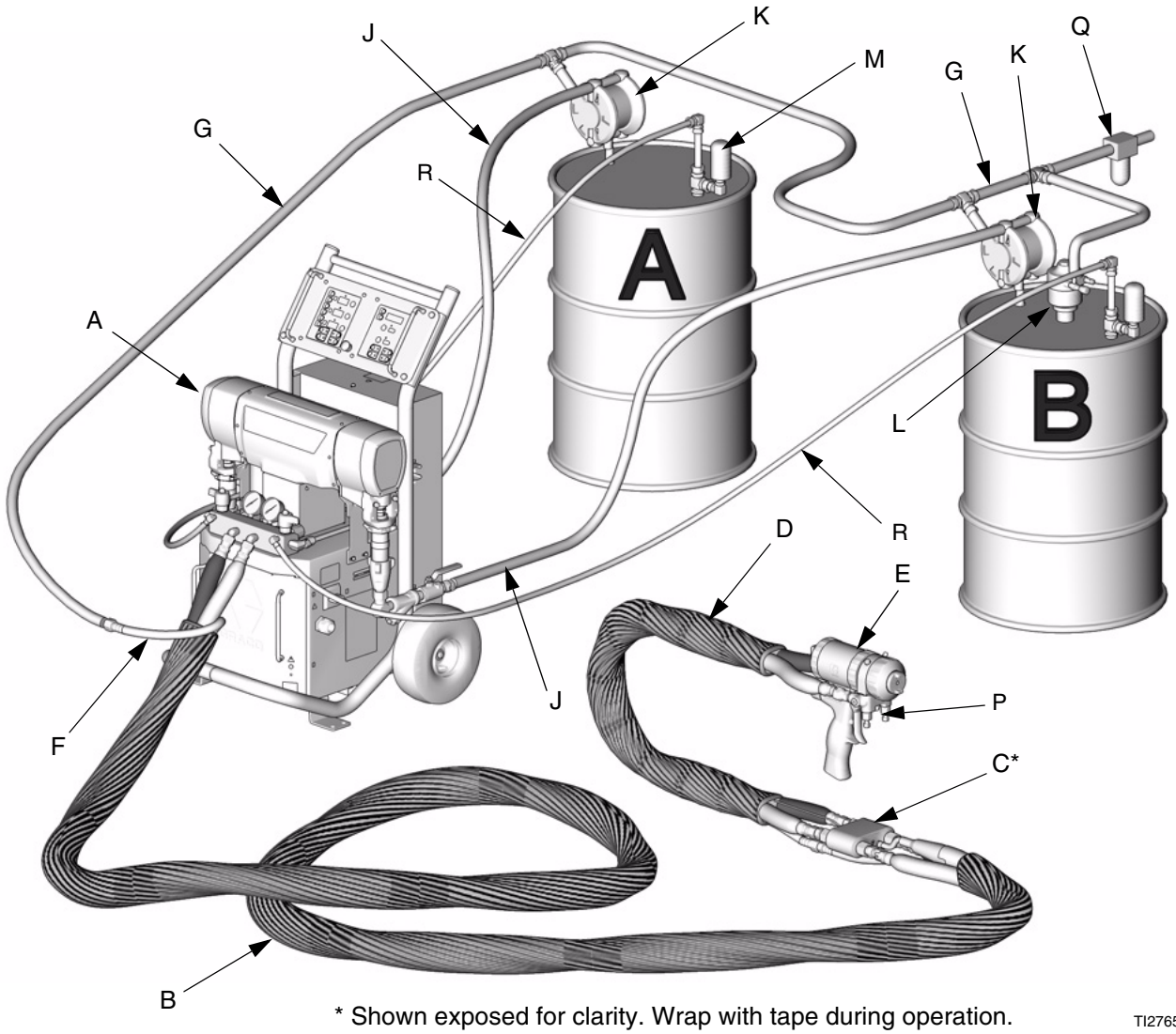
You must wear proper protective equipment when operating, servicing, or when in the operating area of the equipment to help protect you from serious injury, including eye injury; inhalation of toxic fumes; and hearing loss. This equipment includes but is not limited to:

- 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 Reactor Proportioner
B Heated Hose
C Fluid Temperature Sensor (FTS)
D Heated Whip Hose
E Fusion Spray Gun
F Gun Air Supply Hose
G Air Supply Lines
J Fluid Supply Lines
K Feed Pumps
L Agitator
M Desiccant Dryer
P Gun Fluid Manifold
Q Air Filter/Separator
R Return Lines



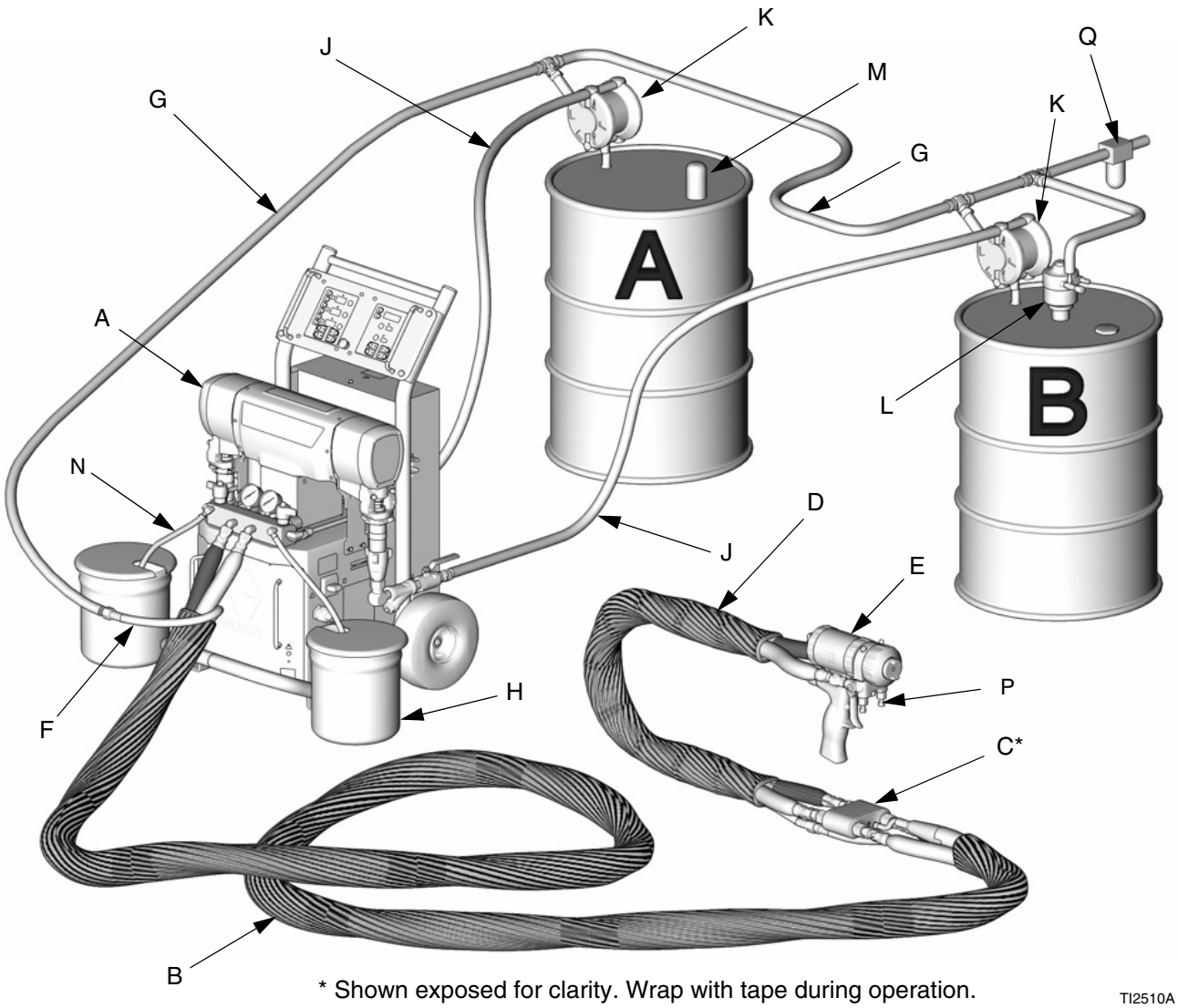
* Shown exposed for clarity. Wrap with tape during operation.

FIG. 1: Typical Installation, with circulation

Typical Installation, without circulation

Key for FIG. 2

A Reactor Proportioner
B Heated Hose
C Fluid Temperature Sensor (FTS)
D Heated Whip Hose
E Fusion Spray Gun
F Gun Air Supply Hose
G Air Supply Lines
H Waste Containers
J Fluid Supply Lines
K Feed Pumps
L Agitator
M Desiccant Dryer
N Bleed Lines
P Gun Fluid Manifold
Q Air Filter/Separator



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

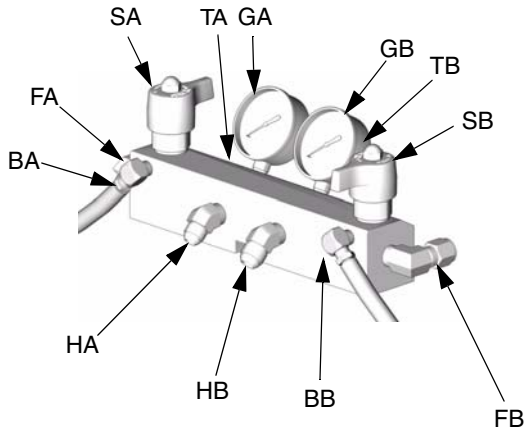
FIG. 2: Typical Installation, without circulation

Component Identification

Key for FIG. 3

BA Component A Pressure Relief Outlet
BB Component B Pressure Relief Outlet
FA Component A Fluid Manifold Inlet (behind manifold block)
FB Component B Fluid Manifold Inlet
GA Component A Pressure Gauge
GB Component B Pressure Gauge
HA Component A Hose Connection
HB Component B Hose Connection
PA Component A Pump
PB Component B Pump
SA Component A PRESSURE RELIEF/SPRAY Valve
SB Component B PRESSURE RELIEF/SPRAY Valve
TA Component A Pressure Transducer (behind gauge GA)
TB Component B Pressure Transducer (behind gauge GB)
DG Drive Gear Housing
EC Electrical Cord Strain Relief
EM Electric Motor
FH Fluid Heaters (behind shroud)
FM Reactor Fluid Manifold
FV Fluid Inlet Valve (B side shown)
HC Heated Hose Electrical Connector
MC Motor Control Display
MP Main Power Switch
RS Red Stop Button
SC Fluid Temperature Sensor Cable
TC Temperature Control Display

Detail of Reactor Fluid Manifold



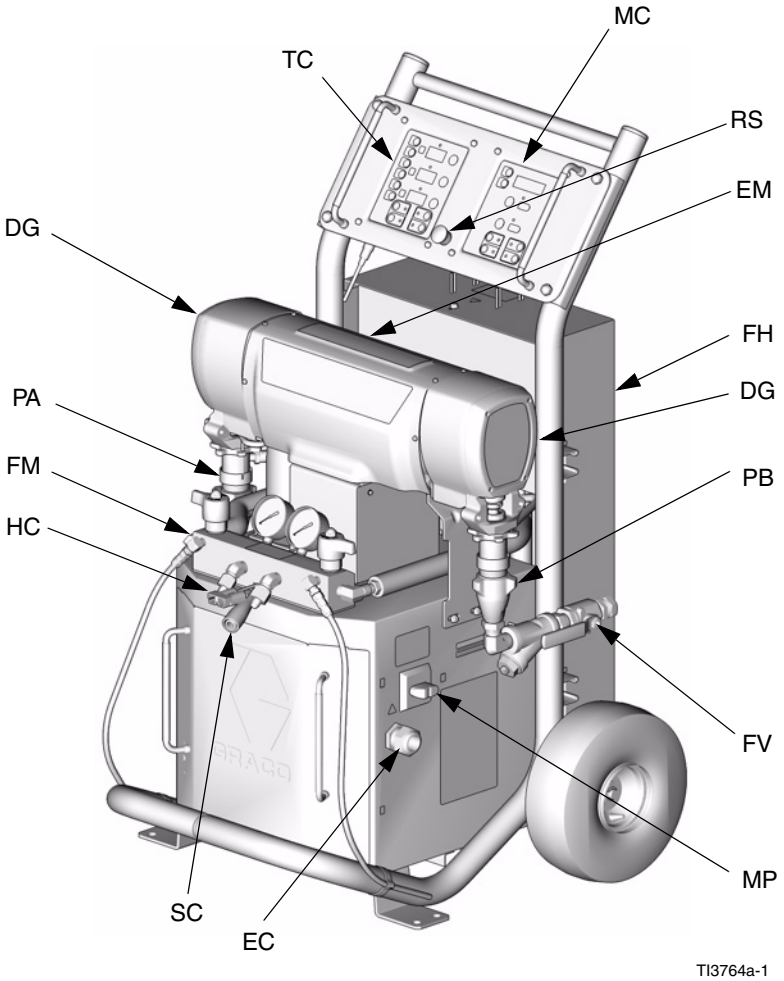


FIG. 3: Component Identification

Temperature Controls and Indicators

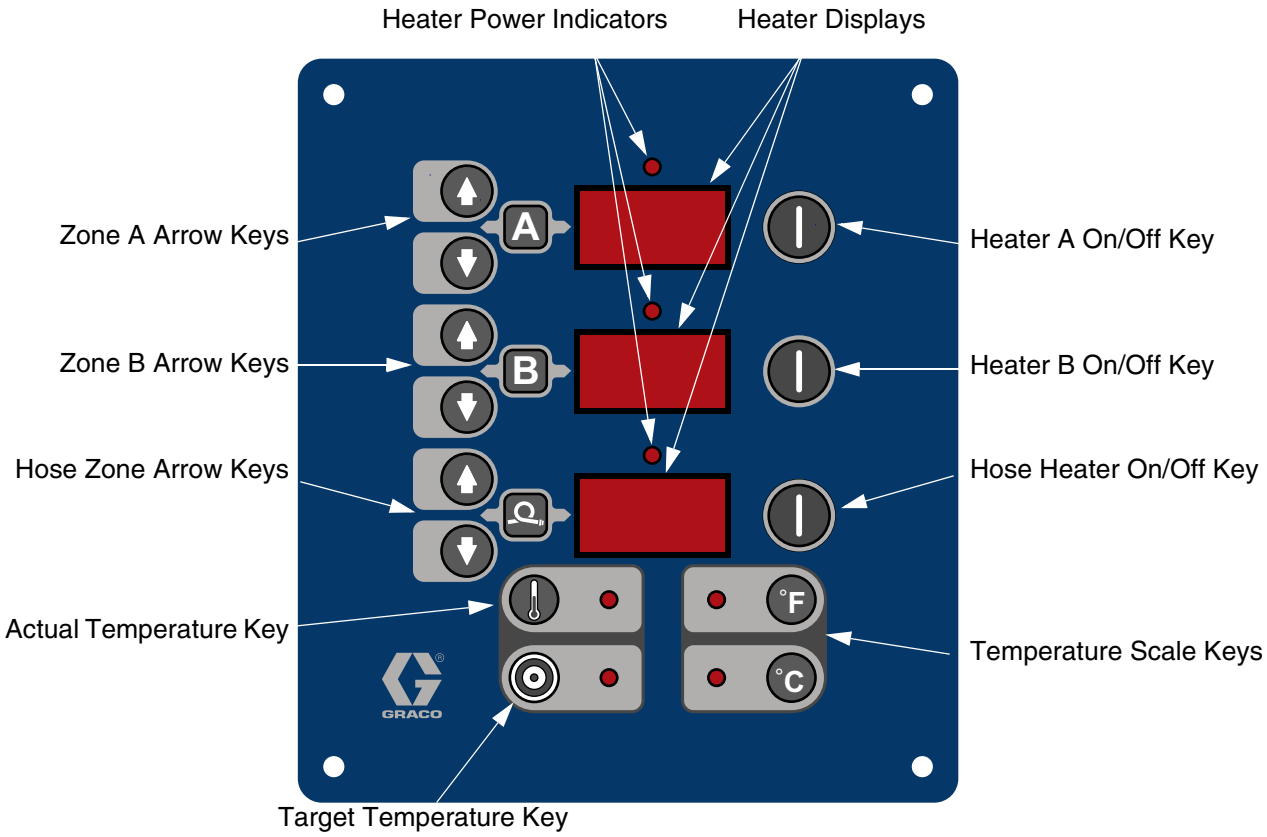
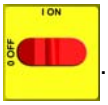


FIG. 4. Temperature Controls and Indicators

Main Power Switch

Located on right side of unit, page 9. Turns Reactor power ON  and OFF . Does not turn heater zones or pumps on.

Red Stop Button

Located between temperature control panel and motor control panel, page 9. Press  to shut off motor and heater zones only. Use main power switch to shut off all power to unit.

Actual Temperature Key/LED

Press to display actual temperature.

Target Temperature Key/LED

Press to display target temperature.

Temperature Scale Keys/LEDs

Press °F or °C to change temperature scale.

Heater Zone On/Off Keys/LEDs

Press to turn heater zones on and off. Also clears heater zone diagnostic codes, see page 36.

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.

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.

Circuit Breakers

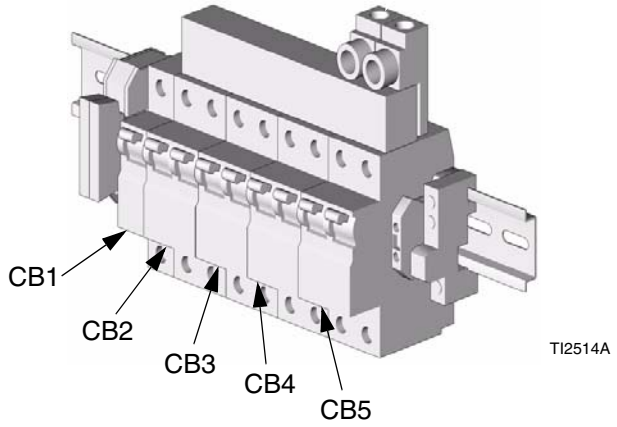
WARNING

Read warnings, page 5.

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	Motor/Pumps

* Depending on model.



For wiring and cabling, see repair manual.

Motor Controls and Indicators

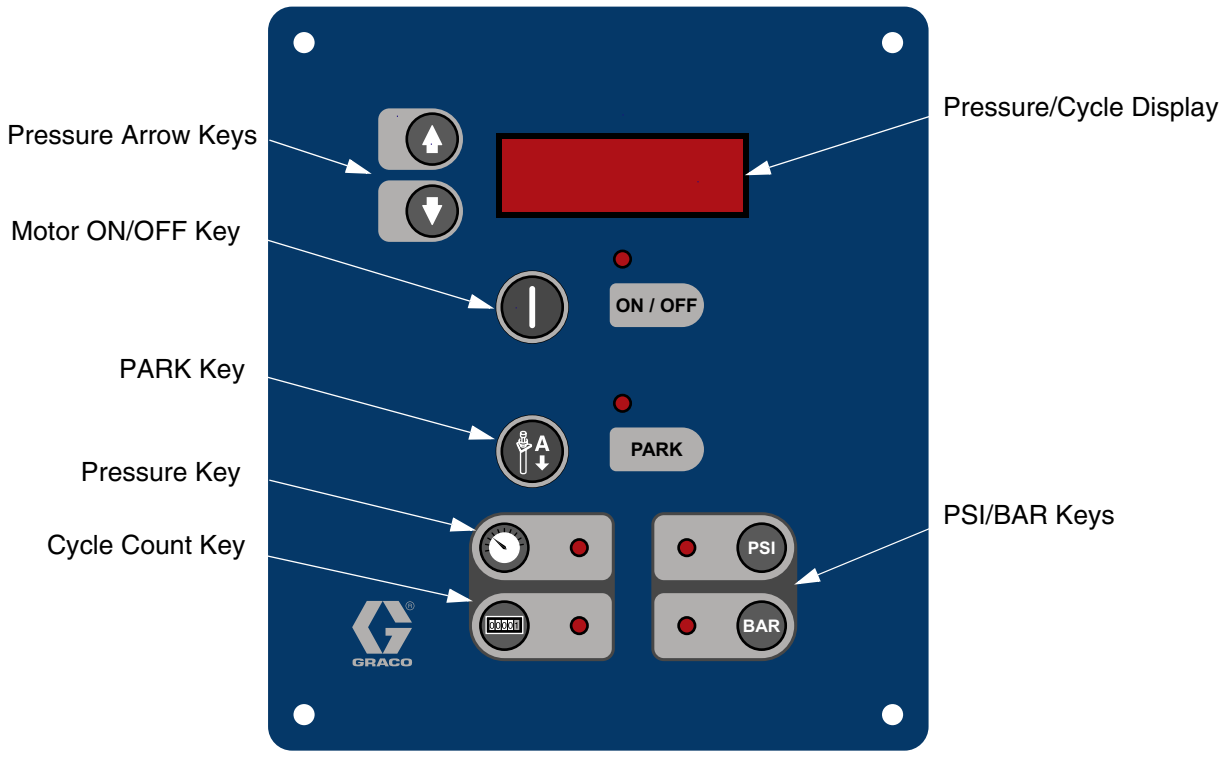


FIG. 5. Motor Controls and Indicators

Motor ON/OFF Key/LED

Press  to turn motor ON and OFF. Also clears some motor control diagnostic codes, see page 36.

PARK Key/LED

Press  at end of day to cycle component A pump to home position, submerging displacement rod. Trigger gun until pump stops. Once parked, motor will automatically shut off.

PSI/BAR Keys/LEDs

Press  or  to change pressure scale.

Pressure Key/LED

Press  to display fluid pressure.

If pressures are imbalanced, display shows higher of two pressures.

Cycle Count Key/LED

Press  to display cycle count.

To clear counter, press and hold  for 3 sec.

Pressure Arrow Keys

Press  or  to adjust fluid pressure when motor is ON. Setpoint displays for 10 sec.

When motor is OFF, pressing  will enter jog mode.

To exit jog mode, press  until display shows dashes or current pressure.

Pressure/Cycle Display

Shows fluid pressure or cycle count, depending on mode selected.

Displays J 1 through J 10 when in jog mode, page 35.



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.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always park component A pump when you shutdown, see page 13.

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.

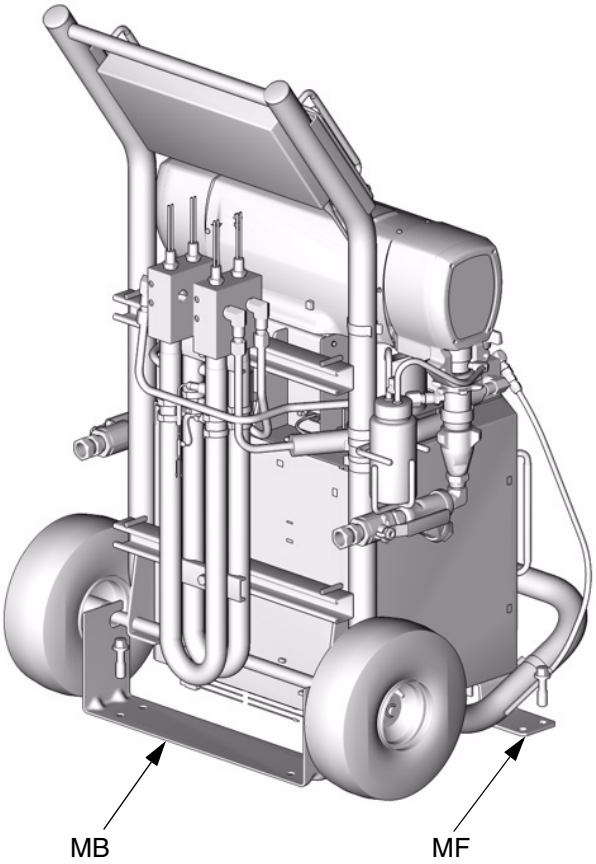
Setup

1. Locate Reactor

a. Locate Reactor on a level surface.

b. Do not expose Reactor to rain.

c. To mount on a truck bed, secure rear axle with 15B805 Mobile Mounting Bracket (MB), available separately. Bolt bracket and mounting feet (MF) of Reactor to truck bed.



TI3548a

2. Electrical requirements

See TABLE 1.

⚠ 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 17. Be sure your installation complies with all National, State and Local safety and fire codes.

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

E SERIES				
Part No.	**Model**	**Voltage (phase)**	**Full Load Peak Amps***	**System Watts****
246025	E-20	230V (1)	48	10,200
246026	E-30	230V (1)	78	17,900
246030	E-20	380V (3)	24	10,200
246031	E-30	380V (3)	34	17,900
246034	E-20	230V (3)	32	10,200
246035	E-30	230V (3)	50	17,900
248657	E-30†	230V (1)	100	23,000
248658	E-30†	230V (3)	62	23,000
248659	E-30†	380V (3)	35	23,000
E-XP SERIES				
246024	E-XP1	230V (1)	69	15,800
246028	E-XP2	230V (1)	100	23,000
246029	E-XP1	380V (3)	24	15,800
246032	E-XP2	380V (3)	35	23,000
246033	E-XP1	230V (3)	43	15,800
246036	E-XP2	230V (3)	62	23,000

* Full load amps with all devices operating at maximum capabilities. Fuse requirements at various flow rates and mix chamber sizes may be less.
** E-20 and E-XP1 with 210 ft (64.1 m) hose; E-30 and E-XP2 with 310 ft (94.6 m) hose.
† E-30 with 15.3 kW of heat.

3. Connect electrical cord

Power cord is not supplied. See TABLE 2.

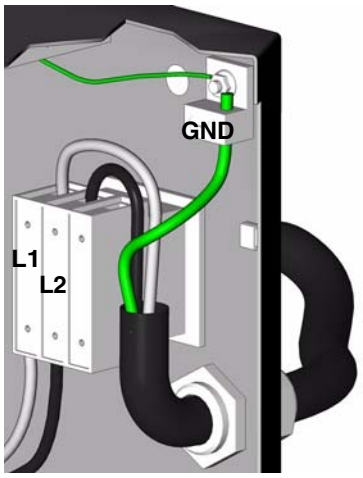
Table 2: Power Cord Requirements

Part No.	Model	Cord Specification AWG (mm^2)
246024	E-XP1	6 (13.3), 2 wire + ground
246025	E-20	8 (8.4), 2 wire + ground
246026	E-30	6 (13.3), 2 wire + ground
246028	E-XP2	4 (21.2), 2 wire + ground
246029	E-XP1	10 (5.3), 4 wire + ground
246030	E-20	10 (5.3), 4 wire + ground
246031	E-30	10 (5.3), 4 wire + ground
246032	E-XP2	10 (5.3), 4 wire + ground
246033	E-XP1	8 (8.4), 3 wire + ground
246034	E-20	10 (5.3), 3 wire + ground
246035	E-30	8 (8.4), 3 wire + ground
246036	E-XP2	6 (13.3), 3 wire + ground
248657	E-30	4 (21.2), 2 wire + ground
248658	E-30	6 (13.3), 3 wire + ground
248659	E-30	10 (5.3) 4 wire + ground

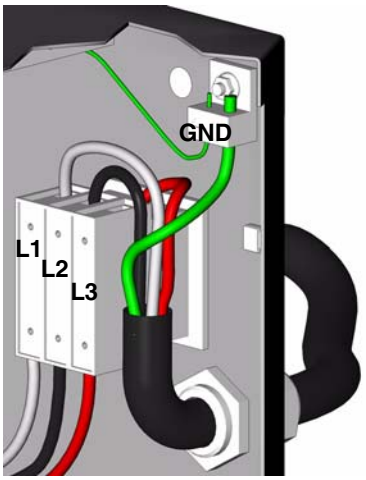
WARNING

Read warnings, page 5.

a. **230V, 1 phase:** Using 5/32 or 4 mm hex allen wrench, connect two power leads to L1 and L2. Connect green to ground (GND).

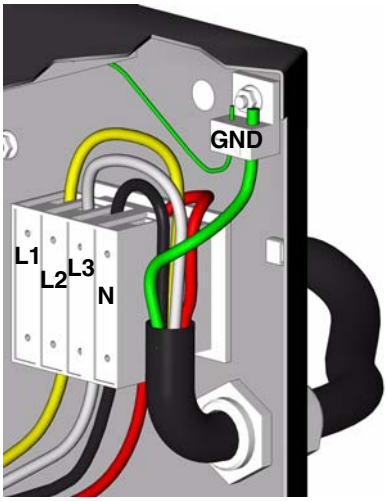


b. **230V, 3 phase:** Using 5/32 or 4 mm hex allen wrench, connect three power leads to L1, L2, and L3. Connect green to ground (GND).



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c. **380V, 3 phase:** Using 5/32 or 4 mm hex allen wrench, connect three power leads to L1, L2, and L3. Connect neutral to N. Connect green to ground (GND).



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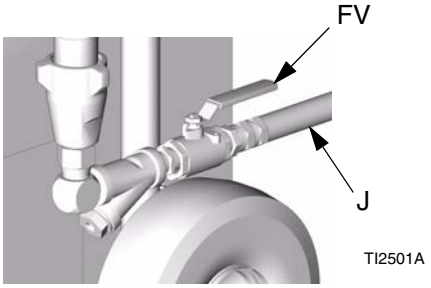
4. Connect feed pumps

a. Install feed pumps (K) in component A and B supply drums. See FIG. 1 and FIG. 2, pages 7 and 8.

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

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

d. Connect supply hoses (J) from feed pumps to Reactor fluid inlet valves (FV).



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

5. Connect pressure relief lines

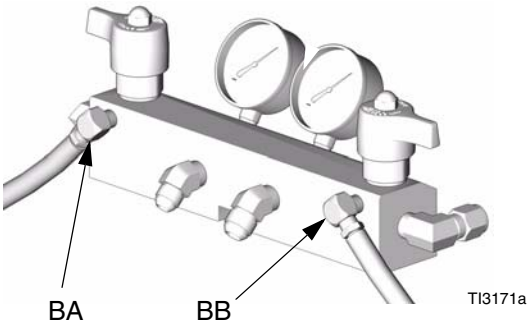
WARNING



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 machine is operating.

If circulating fluid back to the supply drums, use high pressure hose rated to withstand the maximum working pressure of this equipment.

a. **Recommended:** Connect high pressure hose (R) to relief fittings (BA, BB) of both PRESSURE RELIEF/SPRAY valves, Route hose back to component A and B drums. See FIG. 1, page 7.



b. **Alternately:** Secure supplied bleed tubes (N) in grounded, sealed waste containers (H). See FIG. 2, page 8.

6. 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.

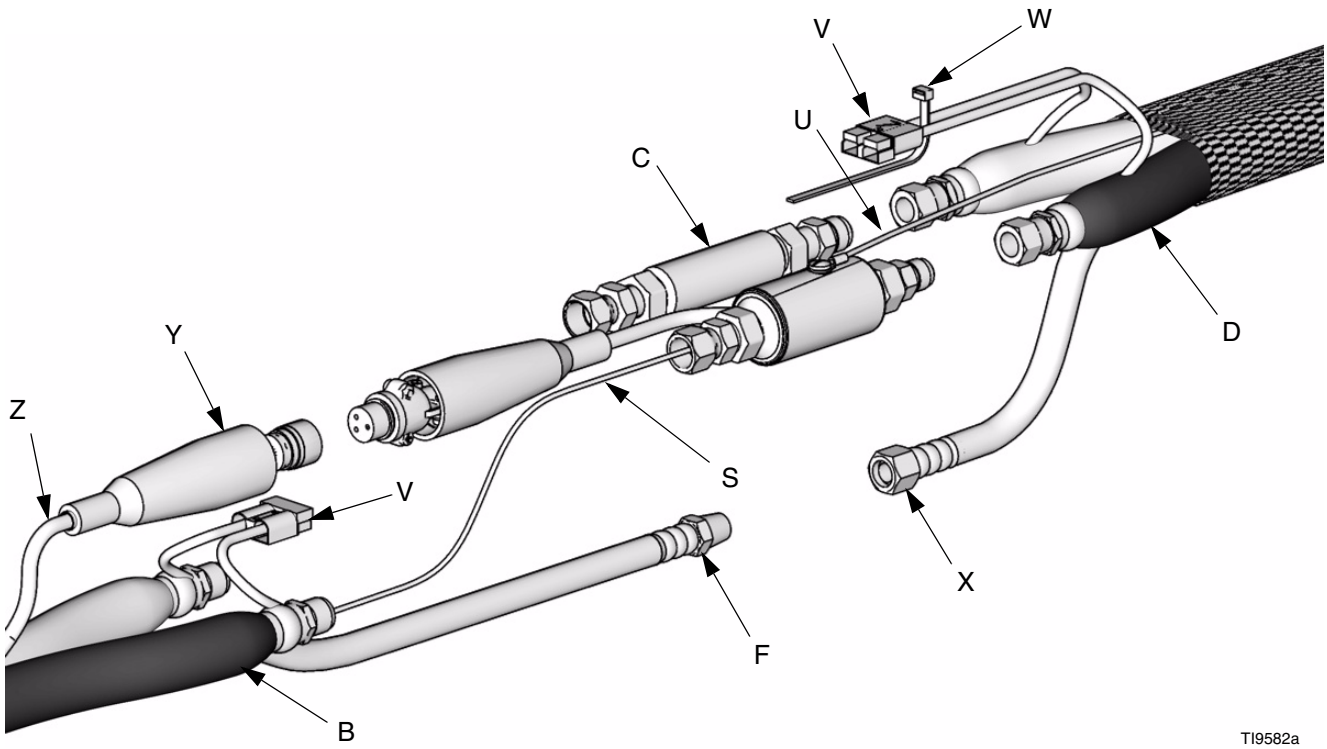


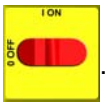
FIG. 6. Install Fluid Temperature Sensor (FTS)

7. Connect heated hose

See 309572 for detailed instructions for Graco heated hoses.

⚠ CAUTION

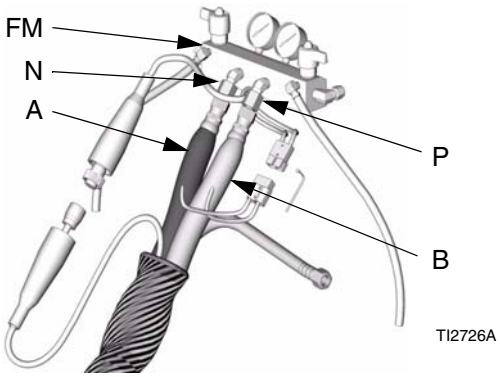
The fluid temperature sensor (FTS) and whip hose must be used with heated hose, see page 20. Hose length, including whip hose, must be 60 ft (18.3 m) minimum.

a. Turn main power OFF 

.

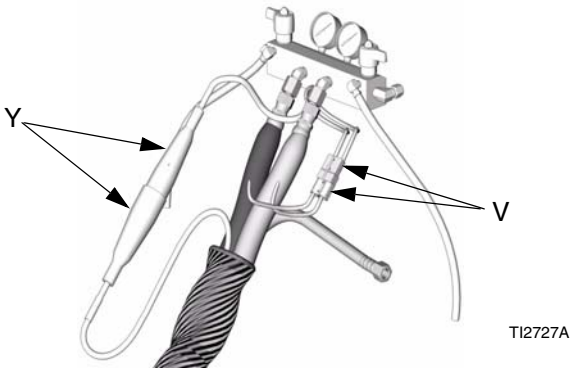
b. Assemble heated hose sections, FTS, and whip hose.

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.

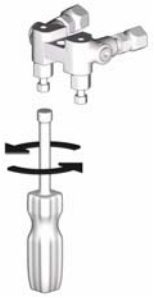


Manifold hose adapters (N, P) allow use of 1/4 in. and 3/8 in. ID fluid hoses. To use 1/2 in. (13 mm) ID fluid hoses, remove adapters from fluid manifold and install as needed to connect whip hose.

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.



8. Close gun fluid manifold valves A and B



TI2411A

9. Connect whip hose to gun fluid manifold

Do not connect manifold to gun.



TI2417A

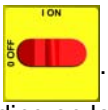
10. Pressure check hose

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

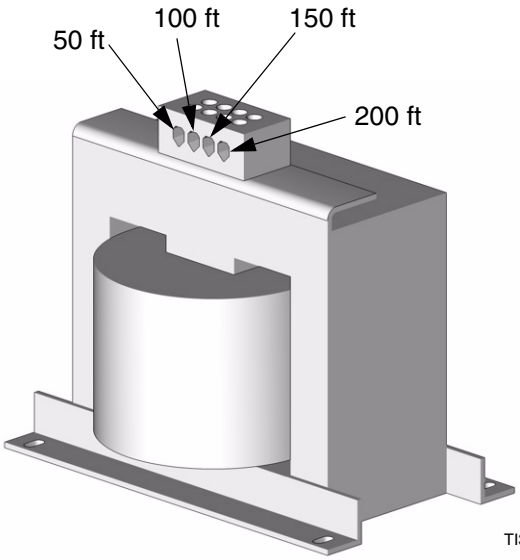
11. Set transformer wire taps

WARNING

Read warnings, page 5.

Turn main power switch OFF 

. Transformer tap wire connections vary depending on length of heated hose. See FIG. 7 and FIG. 8. Verify that tap wire connections are correct.

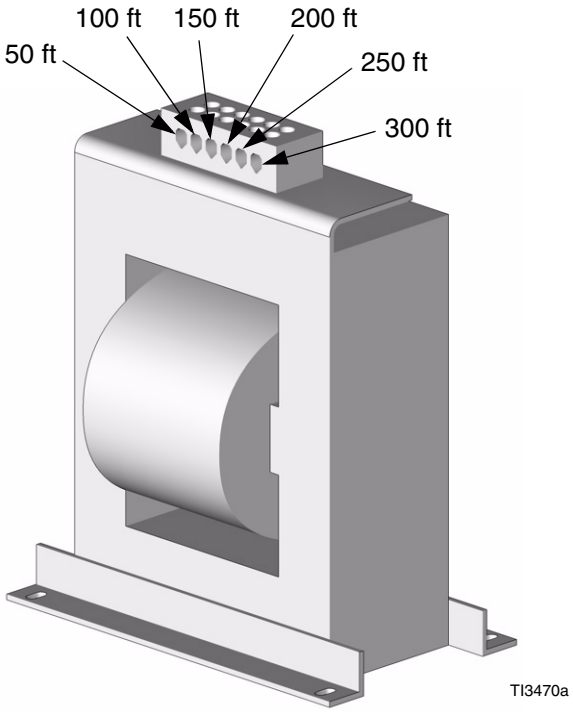


.

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

* Length includes heated fluid hose and whip hose.

FIG. 7: Model E-20 and E-XP1 Transformer Wire Taps



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. 8: Model E-30 and E-XP2 Transformer Wire Taps

12. Ground system

WARNING



Read warnings, page 5.

a. *Reactor:* is grounded through power cord. See page 17.

b. *Spray gun:* connect whip hose ground wire to FTS, page 20. 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.

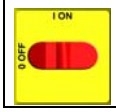
e. *Solvent pails used when flushing:* follow your local code. Use only metal pails, which are conductive, placed on a grounded surface. Do not place pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

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.

13. Supply wet-cups with Throat Seal Liquid

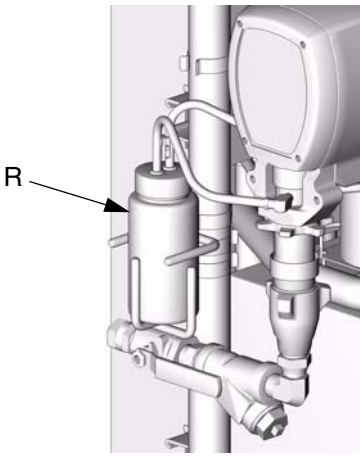
WARNING

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-cup during operation. Turn main power OFF



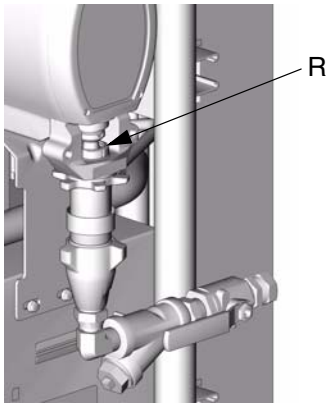
before filling wet cup.

a. **Component A (ISO) Pump:** Keep reservoir (R) filled with Graco Throat Seal Liquid (TSL), Part No. 206995. Wet-cup piston circulates TSL through wet-cup, to carry away isocyanate film on displacement rod.



TI3765a-2

b. **Component B (Resin) Pump:** Check felt washers in packing nut/wet-cup (R) daily. Keep saturated with Graco Throat Seal Liquid (TSL), Part No. 206995, to prevent material from hardening on displacement rod. Replace felt washers when worn or contaminated with hardened material.



TI3765a-1

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.

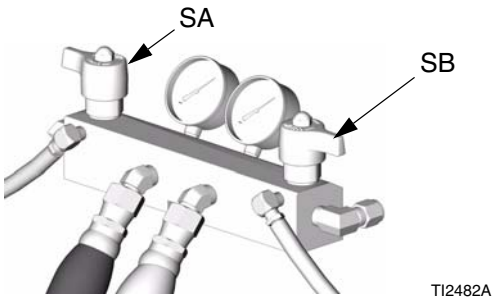
2. Load fluid with feed pumps

The Reactor is tested with oil at the factory. Flush out the oil with a compatible solvent before spraying. See page 37.

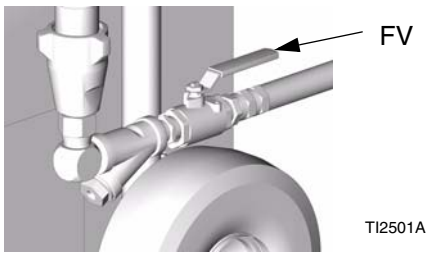
a. Check that **Setup** steps 1-13 are complete, pages 16-25.

b. Turn on component B agitator, if used.

c. Turn both PRESSURE RELIEF/SPRAY valves (SA, SB) to SPRAY.



d. Open fluid inlet valves (FV).

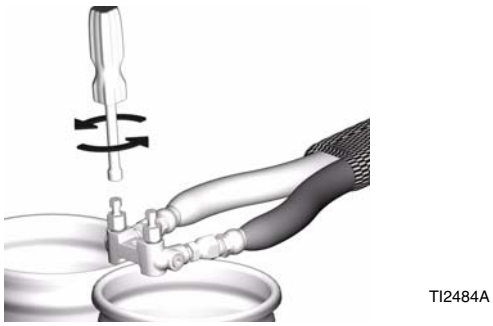


e. Start feed pumps.

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.



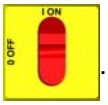
3. Set temperatures

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 °F or °C to change temperature scale.

c. Press ◎ .

d. To set A heat zone target temperature, press ▲ or ▼ until display shows desired temperature. Repeat for B and ⏦ zones.

For ⏦ zone only, if FTS is disconnected at startup, display will show hose current (0A). See step h, page 28.

e. Press ⏽ to display actual temperatures.

WARNING



Read warnings, page 5. 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 5. 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 ⏻ for each zone.

h. Manual current control mode only:

WARNING



Read warnings, page 5. 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 manual current control mode. 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. Press .

b. Press motor . Motor and pumps start. Display shows system pressure. Motor runs until setpoint reached.

c. Press or until display shows desired fluid pressure. Display will show setpoint for 10 sec, then change to actual pressure.

If display pressure is greater than setpoint pressure, trigger gun to reduce pressure.

If display shows J xx, unit is in jog mode. To exit jog mode, see page 35.

d. To display cycle count, press .

To clear counter, press and hold for 3 sec.

e. Press PSI or BAR to change pressure scale.

Spraying

1. Engage gun piston safety lock.



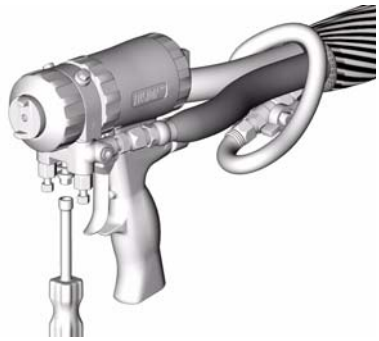
TI2409A

2. Close gun fluid manifold valves A and B.



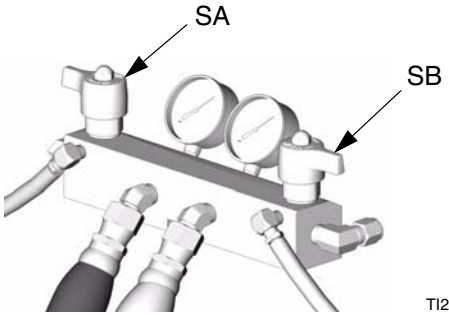
TI2728A

3. Attach gun fluid manifold. Connect gun air line. Open air line valve.



TI2543A

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



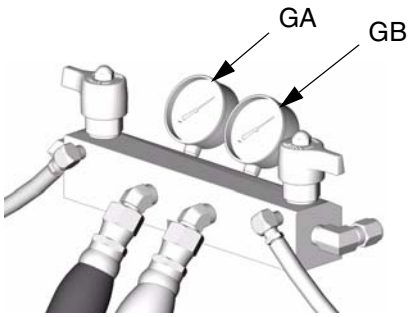
TI2482A

5. Check that heat zones are on and temperatures are on target, page 27.

6. Press motor  to start motor.

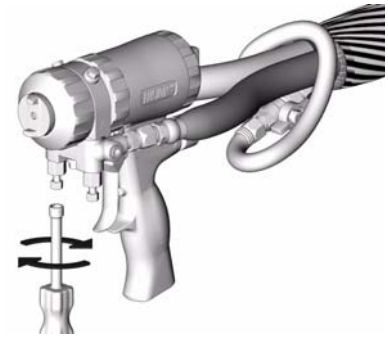
7. Check fluid pressure display and adjust as necessary, page 28.

8. Check fluid pressure gauges (GA, GB) to ensure proper pressure balance. If imbalanced, see repair manual.



TI2482A

9. Open gun fluid manifold valves A and B.



TI2414A

10. Disengage gun piston safety lock.



TI2410A

11. Test spray onto cardboard for several seconds, to allow Reactor to adjust motor speed as required for gun mix chamber nozzle. Adjust pressure and temperature to get desired results.

12. Equipment is ready to spray.

Shutdown

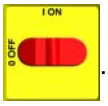
1. Shut off A, B, and heat zones.

2. Park component A pump.

   a. Press .

   b. Trigger gun until pump A stops. After fluid pressure drops below 700 psi (4.9 MPa, 49 bar), motor will run until component A pump is at bottom of its stroke, then shut off.

   c. Fill wet-cups, page 25.

3. Turn main power OFF 

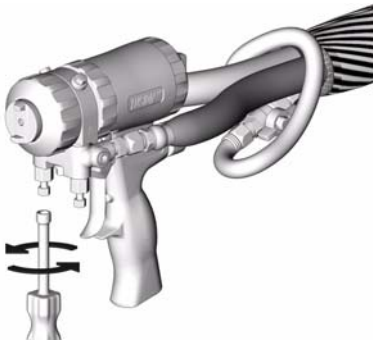
.

4. Relieve pressure, page 32.

Pressure Relief Procedure

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

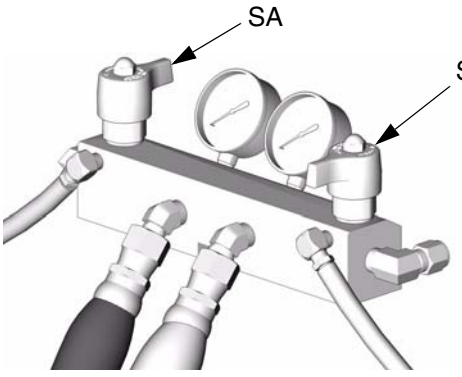
2. Close gun fluid manifold valves A and B.



TI2421A

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

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



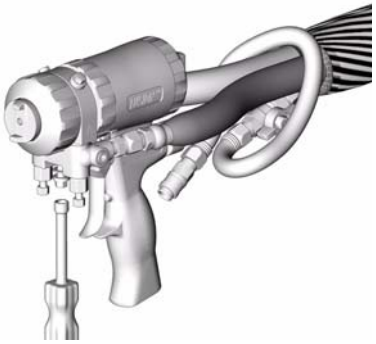
TI2481A

5. Engage gun piston safety lock.



TI2409A

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



TI2554A

Fluid Circulation

Circulation Through Reactor

WARNING

Read warnings, page 5. 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 34.

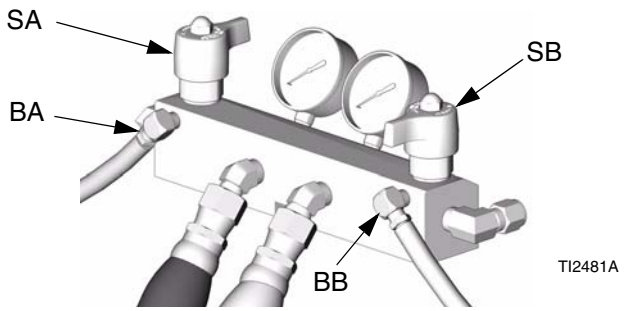
1. **Load fluid with feed pumps**, page 26.

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 circulation 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 7.

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



4. Turn main power ON .

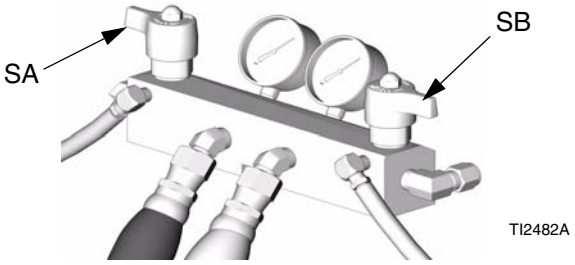
5. Set temperature targets, see page 27. Turn on A and B heat zones by pressing . **Do not** turn on heat zone unless hoses are already loaded with fluid.

6. Press to display actual temperatures.

7. Circulate fluid in jog mode (see page 35) until A and B temperatures reach targets.

8. Turn on heat zone by pressing .

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



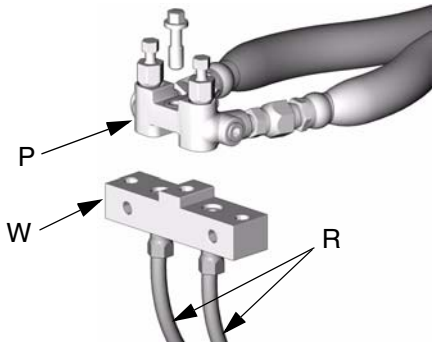
Circulation Through Gun Manifold

WARNING

Read warnings, page 5. Do not circulate fluid containing a blowing agent without consulting with your material supplier regarding fluid temperature limits.

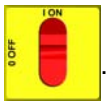
Circulating fluid through the gun manifold allows rapid preheating of hose.

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



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 26.

4. Turn main power ON 

.

5. Set temperature targets, see page 27. Turn on A , B , and heat zones by pressing .

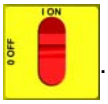
6. Press to display actual temperatures.

7. Circulate fluid only in jog mode (see page 35) until temperatures reach targets.

Jog Mode

Jog mode has two purposes:

- It can speed fluid heating during circulation
- It can make pump repair/replacement easier. See repair manual.

1. Turn main power ON 

.

2. Check that motor  is OFF (LED is off; display may show dashes or pressure).

3. Press  to select J 1 (jog speed 1).

4. Press motor  to start motor.

5. Press  or  to change jog speed (J 1 through J 10).

Jog speeds correlate to 3-30% of motor power, but will not operate over 700 psi (4.9 MPa, 49 bar) for either A or B.

6. To exit jog mode, press  until display shows dashes or current pressure.

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  then ON  to clear.

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 start-up, display will show hose current 0A.

Motor Control Diagnostic Codes

Motor control diagnostic codes E21 through E29 appear on pressure display.

There are two types of motor control codes: alarms and warnings. Alarms take priority over warnings.

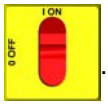
See repair manual for corrective action.

Alarms

Alarms turn off Reactor. Turn main power OFF  then ON  to clear.

Alarms can also be cleared, except for code 23, by pressing .

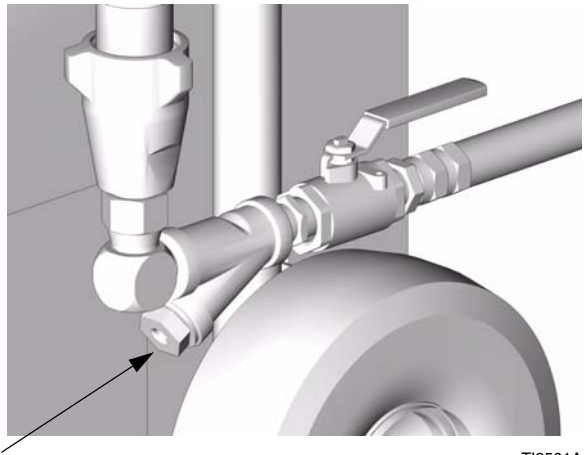
Warnings

Reactor will continue to run. Press  to clear. A warning will not recur for a predetermined amount of time (varies for different warnings), or until main power is turned OFF  then ON .

Code No.	Code Name	Alarm or Warning
21	No transducer (component A)	Alarm
22	No transducer (component B)	Alarm
23	High pressure	Alarm
24	Pressure imbalance	Selectable; see repair manual
25	High line voltage	Alarm
26	Low line voltage	Alarm
27	High motor temperature	Alarm
28	High current	Alarm
29	Brush wear	Warning

Maintenance

- Check wet-cup TSL supply daily, page 25.
- Do not overtighten packing nut/wet-cup. Throat u-cup is not adjustable.
- Keep component A from exposure to moisture in atmosphere, to prevent crystallization.
- Remove plug (S) and clean fluid inlet screens as needed.



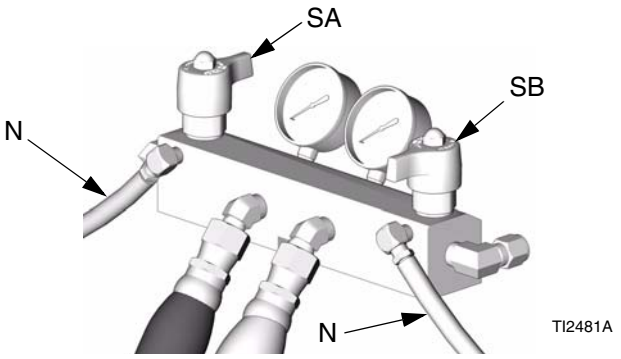
- Clean gun mix chamber ports regularly. See gun manual.
- Clean gun check valve screens regularly. See gun manual.
- Use compressed air to prevent dust buildup on control boards, fan, and motor (under shield).

Flushing

WARNING

Read warnings, page 5. 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).



- 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.

248669 Conversion Kit

Convert any E-XP2 to a E-30 with 15.3kW of heat. Include new pumps, bearing, and fitting to accomplish conversion. See manual 309574.

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.

246085 Data Reporting Kit

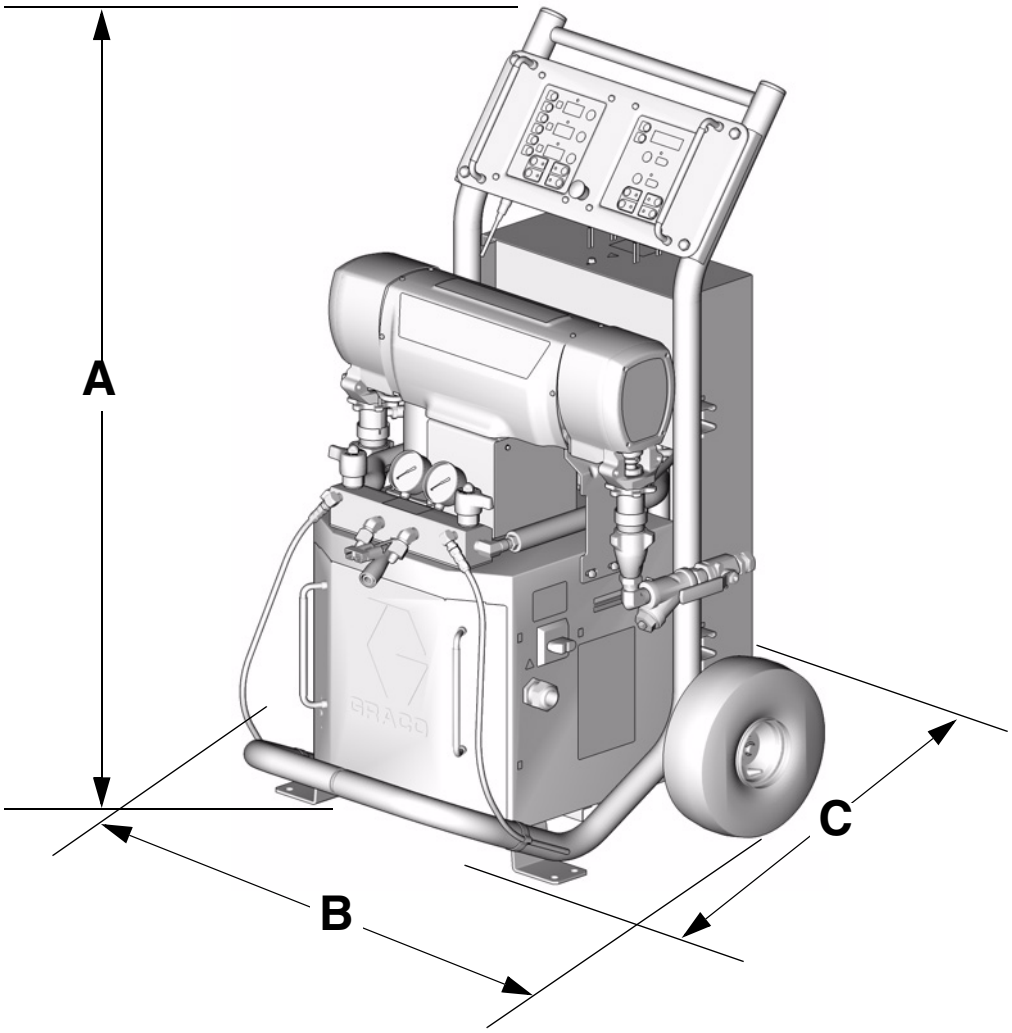
Records actual temperature, temperature setpoint, actual pressure, cycles, and diagnostic code data from Reactor. Downloads data to PC with Microsoft® Windows 98 or later. See 309867.

248848 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. Does not include interface module. See 309867.

Dimensions

Dimension	in. (mm)
A	46 (1168)
B	31 (787)
C	32 (813)



TI3764a-1



Technical Data

Category	Data
Maximum Fluid Working Pressure	Models E-20 and E-30: 2000 psi (14 MPa, 140 bar) Model E-XP1: 2500 psi (17.2 MPa, 172 bar) Model E-XP2: 3500 psi (24.1 MPa, 241 bar)
Maximum Fluid Temperature	190°F (88°C)
Maximum Output	Model E-20: 20 lb/min (9 kg/min) Model E-30: 30 lb/min (13.5 kg/min) Model E-XP1: 1 gpm (3.8 liter/min) Model E-XP2: 2 gpm (7.6 liter/min)
Output per Cycle (A and B)	Model E-20 and E-XP1: 0.0104 gal. (0.0395 liter) Model E-30 0272 gal. (0.1034 liter) Model E-XP2: 0.0203 gal. (.0771 liter)
Line Voltage Requirement	Part Nos. 246024, 246025, 246026, 246028, 248657: 195-264 Vac, 50/60 Hz Part Nos. 246029, 246030, 246031, 246032, 248659: 338-457 Vac, 50/60 Hz Part Nos. 246033, 246034, 246035, 246036, 248658: 195-264 Vac, 50/60 Hz
Amperage Requirement	See TABLE 1, page 16.
Heater Power	Model E-20: 6000 Watts Model E-30 and E-XP1: 10200 Watts Models E-XP2 and E-30 with 15.3kW of heat: 15300 Watts
Sound Power, per ISO 9614-2	Model E-20: 80 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm) Model E-30: 93.5 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm) Model E-XP1: 80 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm) Model E-XP2: 83.5 dB(A) at 3000 psi (21 MPa, 210 bar), 1.0 gpm (3.8 lpm)
Sound Pressure, 1 m from equipment	Model E-20: 70.2 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm) Model E-30: 83.6 dB(A) at 1000 psi (7 MPa, 70 bar), 3.0 gpm (11.4 lpm) Model E-XP1: 70.2 dB(A) at 2000 psi (14 MPa, 140 bar), 0.5 gpm (1.9 lpm) Model E-XP2: 73.6 dB(A) at 3000 psi (21 MPa, 210 bar), 1.0 gpm (3.8 lpm)
Fluid Inlets	3/4 npt(f), with 3/4 npsm(f) union
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
Weight	Model E-20 and E-XP1: 342 lb (155 kg) Model E-30: 400 lb (181 kg) Models E-XP2 and E-30 with 15.3kW of heat: 438 lb (198 kg)
Wetted Parts	Aluminum, stainless steel, carbon steel, brass, carbide, chrome, chemically resistant o-rings, PTFE, ultra-high molecular weight polyethylene

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.

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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.

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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

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