Repair - Parts

ProMix™ Easy

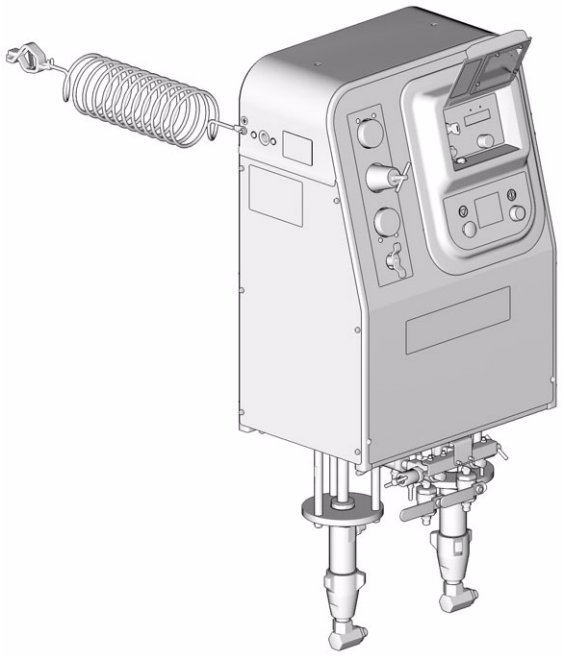
311045 Rev.A

Plural Component Proportioner, with carbon steel UltraMix™ Pump and remote mix manifold

250 psi (1.7 MPa, 17 bar) Maximum Fluid Working Pressure

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

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



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

CE

Contents

Manual Conventions

WARNING

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

Warnings included in instructions generally have a symbol indicating the hazard. Follow the instructions and read the hazard section on warning pages 4 to 5 for additional information.

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

Note

A note indicates additional helpful information.

ProMix Easy Models

Approved for Hazardous Location Class I, Div 1, Group D (North America); Class I, Zones 1 and 2 (Europe)			
ProMix Easy Part No.	**Series**	**Description and Approvals**	**Maximum Working Pressure psi (MPa, bar)**
249322	A	UltraMix carbon steel pumps and remote mix manifold	250 (1.7, 17)
		FM APPROVED Conforms to FM std 3600 & 3610 for use in Class I Div 1 Group D T3 Hazardous Locations Ex II 2 G ISSeP 04 ATEX 020X EEx ib IIA T3 CE CSA CAN/CSA 22.2 No. 157-92 & No. 1010.1-92	

Related Manuals

Manual	Description
311044	ProMix Easy with Remote Mix Manifold, Operation Manual
310655	Dispense Valve
310662	Displacement Pumps
310671	UltraMix Pumps
310673	Circulation Kits

Manual	Description
310675	AC Power Supply
310678	TSL Pump Kits
310700	Gun Air Regulator Kits
309192	ISO Supply Kit
309623	Data Download Kits
308034	Turbine Alternator Repair Kit

Warnings

The following general warnings are related to the safe setup, use, grounding, maintenance and repair of this equipment. Additional more specific warnings may be found throughout the text of this manual where applicable.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

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

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

PRESSURIZED EQUIPMENT HAZARD

Fluid from the gun/dispense valve, leaks, or ruptured components can splash in the eyes or on skin and cause serious injury.

- Follow **Pressure Relief Procedure** in this manual, when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses, tubes, and couplings daily. Replace worn or damaged parts immediately.

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings.
- Check equipment daily. Repair or replace worn or damaged parts immediately.
- Do not alter or modify equipment.
- For professional use only.
- Use equipment only for its intended purpose. Call your Graco distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or overbend hoses or use hoses to pull equipment.
- Comply with all applicable safety regulations.

⚠ WARNING

MOVING PARTS HAZARD

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

- Keep clear of moving parts.
- Do not operate equipment with protective guards or covers removed.
- Pressurized equipment can start without warning. Before checking, moving, or servicing equipment, follow the **Pressure Relief Procedure** in this manual. Disconnect power or air supply.

TOXIC FLUID OR FUMES HAZARD

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

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

PERSONAL PROTECTIVE EQUIPMENT

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

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

Pressure Relief Procedure

WARNING

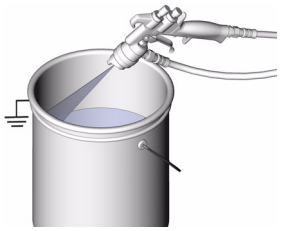
Relieve pressure from fluid manifold to gun whenever you stop spraying and before servicing gun or removing spray tip.

In addition, relieve pressure from pump to fluid manifold at end of day and before cleaning, checking, or servicing pump, manifold, or fluid line accessories or transporting equipment.

Read warnings, page 4.

Fluid Manifold to Gun

1. Press  .
2. Close all valves at mix manifold.
3. Hold a metal part of the gun firmly to a grounded metal pail. Trigger gun to relieve pressure.



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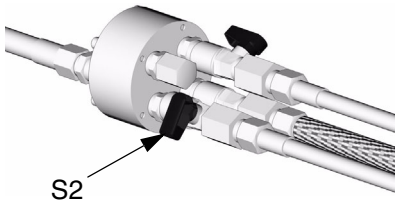
Pump to Fluid Manifold

1. Open all fluid valves at mix manifold. Leave solvent valve (S2) closed.



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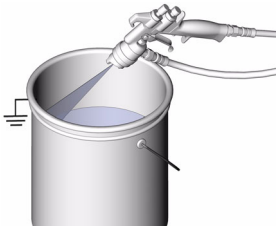
2. Open all fluid outlet valves.

3. Turn function knob to pressure relief/park  .

4. Press  . Indicator A comes on, and Pump A pressurizes.

Pump air supply pressure must be sufficient to cause pumps to stroke to bottom-most position when function knob to is set to pressure relief/park  .

5. Hold a metal part of the gun firmly to a grounded metal pail. Trigger gun to relieve component A pressure. Indicator A will stay on for 5 sec after Pump A reaches Park position, then go off.



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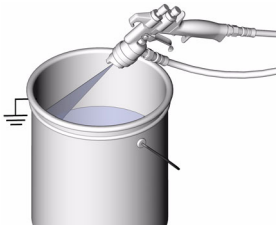
6. Indicator B comes on and Pump B pressurizes.

7. Hold a metal part of the gun firmly to a grounded metal pail. Trigger gun to relieve component B pressure. Indicator B will stay on for 5 sec after Pump B reaches Park position, then go off.



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If both pumps are not parked after 1 min, Alarm 26 will sound.

Maintenance

Preventive Maintenance Schedule

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

Dispense Valve

See dispense valve manual 310655.

Pump

See applicable pump manual 310671 or 310662.

Turbine Alternator

Replace bearings every 2000 hours. See page 18.

Air Filters

Drain and clean as necessary. See page 14.

Pump Test

See ProMix Easy Operation manual. If pumps fail test, see **Troubleshooting**, page 9.

Wet Cup

Check pump wet-cups daily. Keep filled with Graco Throat Seal Liquid (TSL), Part No. 206995.

Storage

Before storing the pump, always flush it, see ProMix Easy Operation manual. Relieve the pressure, page 6.

Troubleshooting

WARNING

Read warnings, page 4-5.

If an alarm code displays, see page 12.

Problem	Cause	Solution
Display not lit. No electric power.	Air valve not turned on.	Turn on main air valve to system.
	Air supply pressure too low.	Increase pressure to 60 psi (0.42 MPa, 4.2 bar) or greater.
	Air supply filters plugged.	Clean filter bowls; replace filter elements. Page 14.
	Turbine air regulator set too low.	Adjust to proper setting.
	Turbine alternator failure.	Repair or replace turbine. Page 18.
	Power supply not connected to main board.	Check power connections to main board. See **Electrical Schematic**, page 22.
	Main board not connected to display board.	Check electrical connections between display and main board. See **Electrical Schematic**, page 22, and **Main Control Board Schematic**, page 23.
	Display board failure.	Replace display board. Page 17.
Pumps do not run.	Air pressure to pumps too low.	Increase pressure to 50 psi (0.35 MPa, 3.5 bar).
	Solenoid valve stuck.	Actuate solenoid manually, if it does not operate, replace solenoid. Page 19.
	Dispense valve(s) not opening.	Service or replace valve(s). See 310655.
Pump test volume is not correct.	Air pressure to pumps too low	Increase pressure to 50 psi (0.35 MPa, 3.5 bar).
	Sensors not functioning properly.	Check position of sensors. See ProMix Easy Operation manual, and applicable pump manual. Check board calibration and recalibrate if necessary. See ProMix Easy Operation manual. Replace sensors. See pump manual 310671.
	Pump cavitating excessively.	Check for air in siphon lines caused by loose fitting or use of agitator. Material too viscous. Use heater.

Problem	Cause	Solution
Paint does not cure consistently.	Ratio not set correctly.	Check that correct ratio is set and set by volume. See ProMix Easy Operation manual.
	Material not mixing correctly.	Test pump. Page 8. Make sure mixer is clean; flush as needed. See ProMix Easy Operation manual.
	Pump not operating correctly.	Observe whether pumps are loading and checking correctly, if not, clean and repair pump. See displacement pump manual 310662.
Poor spray pattern.	Fluid pressure too low.	Increase pump pressure.
	Spray tip dirty or worn.	Relieve pressure. Clean or replace tip. Follow gun manual instructions.
	Fluid A or B filters plugged.	Clean filters.
	Mixer or hoses partially plugged or too restrictive.	Inspect parts for cured material. Clean or replace, or use larger hoses and mixer.
System runs erratically.	Air filter(s) clogged. Replace elements.	Clean. Replace element(s). See page 14.
	Air supply hoses undersized.	Replace hoses with appropriate size.
	Air compressor undersized.	Use larger air compressor.
	Air supply pressure tank undersized.	Use larger pressure tank.
Air supply relief valve opens.	Turbine air regulator set too high.	Lower setting to 23-25 psi (172-241 kPa, 1.7-2.4 bar).
Turbine alternator makes high-pitched whining noise.	Turbine bearings worn. (Setting turbine air regulator too high, wears bearings.)	Replace bearings. Page 18.
Display shows 88888 or unit reboots unexpectedly.	Turbine is not supplying enough power to board.	Increase turbine regulator setting to 23-25 psi (172-241 kPa, 1.7-2.4 bar).
		Check turbine and electrical control exhaust air for restrictions.
		Replace turbine bearings. Page 18.
ProMix Easy does not start when start button is pressed.	Faulty start switch or wire harness.	Check start switch and wiring harness continuity; switch is normally open circuit. See **Electrical Schematic**, page 22.
	Faulty stop switch or wiring harness.	Check stop switch and wiring harness continuity; stop switch is normally closed circuit. See **Electrical Schematic**, page 22.
	Bad I/O port on display board.	Replace board. Page 17.
	Bad I/O port on main board.	Replace board. Page 16.
Dispense valves leaking.	Loose or worn packings.	Tighten packing nut. If leak continues, replace packings. See 310655.

Problem	Cause	Solution
Flow rate too low, or no flow.	Inadequate air supply.	Use larger CFM compressor.
	Air pressure to pumps too low.	Increase pressure.
	Fluid A or B filters plugged.	Clean filters.
	Mixer or hoses partially plugged or too restrictive.	Inspect parts for cured material. Clean or replace, or use larger hoses and mixer.
	Insufficient dispense valve travel.	Increase travel. See 310655.
	Shutoff valves are not fully open.	Ensure that shutoff valves are fully open and sampling valves are closed.
	Fluid regulator on remote mix manifold is set to high pressure position.	Set regulator to lower pressure position.
Pump stops after 12 cycles.	Knob is set to Run pump A  or B  independently.	Turn knob to spray  if spraying material.

Alarms

* Indicates error where audible alarm sounds once briefly. ** Indicates error where audible alarm sound pulses.

Code	Alarm	Active	Problem	Cause
	Startup Errors			
01	Sensor Error A*	Always	No signal from pump A sensor	Loose cable, failed sensor or cable, failed magnet assembly
02	Sensor Error B*	Always	No signal from pump B sensor	Loose cable, failed sensor or cable, failed magnet assembly
03	Communication Error*	Always	Loss of communication between main and display boards	Loose cable, failed board
	Operating Errors			
04	not used			
05	not used			
06	Pump Error A**	Spray Test Batch	Pump does not stall after top change over	Intake valve leak
07	Pump Error B**		Pump cavitating excessively	Air in siphon lines caused by loose fitting or use of agitator Empty fluid supply
08	Sensor Code Error	Always	Sensor values reverted to default	Sensor value data corrupt; board needs replacement and /or recalibration
09	not used			
10	not used			
11	Sensor Reading Low A*	Spray Test Batch	Pump stroke travels beyond sensor range at top change over	Sensor or bracket loose Sensor magnet dirty
12	Sensor Reading Low B*			
13	Sensor Reading High A*	Spray Test Batch	Pump stroke travels beyond sensor range at bottom change over	Sensor or bracket loose Sensor magnet dirty
14	Sensor Reading High B*			
21	Pot Life Error	Spray first, then Always	Pot life timer timed out	Not enough material sprayed after last reset

Code	Alarm	Active	Problem	Cause
	Operating Errors (continued)			
22	not used			
23	not used			
24	not used			
25	not used			
26	Park Timeout	Park	Pumps not at bottom of stroke	Sampling valves closed, or gun not triggered.
	Testing Error			
15	Piston packing/ball A*	Test	Pump does not completely stall in up stroke	Piston packing or ball check failure
16	Piston packing/ball B*			
17	Inlet Ball A*	Test	Pump does not completely stall in downstroke	Intake valve ball check failure
18	Inlet Ball B*			
19	Dispense Valve A*	Test	Pump does not completely stall in both up and down strokes	Throat packing or dispense valve failure
20	Dispense Valve B*			
27	Pump Calibration Timeout A	Run A	Pump doesn't run through calibration.	Sampling valves closed.
28	Pump Calibration Timeout B	Run B		

Repair

Flush before repairing equipment, if possible. See Pro-Mix Easy Operation manual.

WARNING

Read warnings, page 4.

Follow **Pressure Relief Procedure**, page 6, if service time may exceed pot life time, before servicing fluid components, and before transporting equipment to a service area.

Replacing Air Filter Element

There are 2 air filters on the unit: the 5 micron air manifold filter (7) and 40 micron pump air filter (9). Replace element as needed. Order 15D909 5 micron filter and 15D890 40 micron filter.

WARNING

Removing the bowl of a pressurized air filter could cause serious injury. Do not service air filter until air line is depressurized.

1. Close main air shutoff valve on air supply line and on unit.
2. Remove left side plate (21).
3. Unlock filter bowl guard and remove.
4. Unscrew filter bowl.

5. Remove and replace element.
6. Screw filter bowl on securely.
7. Reassemble.

User Interface

Removal

1. Close main air shutoff valve on air supply line and on unit.
2. Remove side panels (21).
3. Remove fasteners (45). Gently pull user interface (11) away from pneumatic control (10).

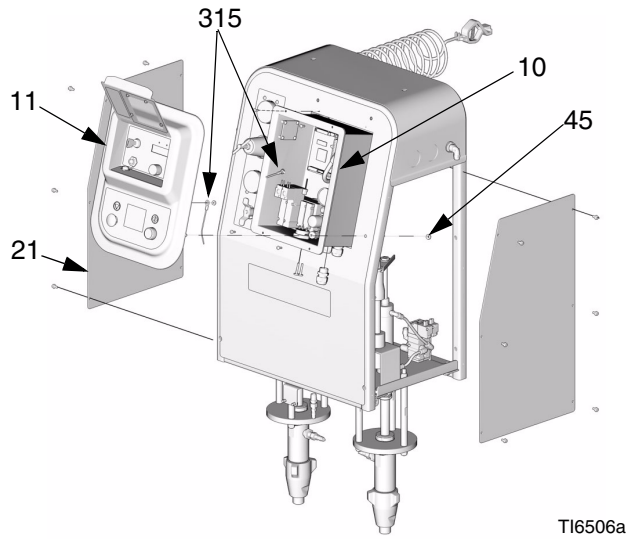


FIG. 1

4. To completely remove user interface (11), disconnect ground wire (315), and wires (416 and 406) from main control board (301). See **Electrical Schematic**, page 22.

Software Upgrades

CAUTION
To avoid damaging circuit board, wear a grounding strap.

1. Remove User Interface cover. See above.
2. Use a chip remover (D) to remove software chip (C). FIG. 2.

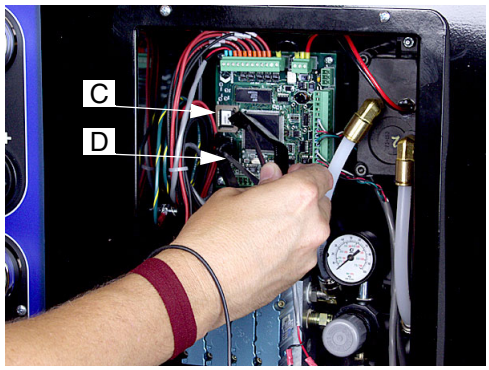


FIG. 2

3. Install new chip (beveled corner down).
4. Reassemble.
5. Recalibrate main circuit board. See ProMix Easy Operation Manual.

Replacing Main Circuit Board

CAUTION
To avoid damaging circuit board, wear a grounding strap.

1. Remove User Interface cover. See page 15.
2. Disconnect all wire connectors from board (301). FIG. 3.
3. Remove four screws (302) and replace board (301).
4. Reassemble. Refer to **Electrical Schematic**, page 22.
5. Recalibrate system. See ProMix Easy Operation Manual.

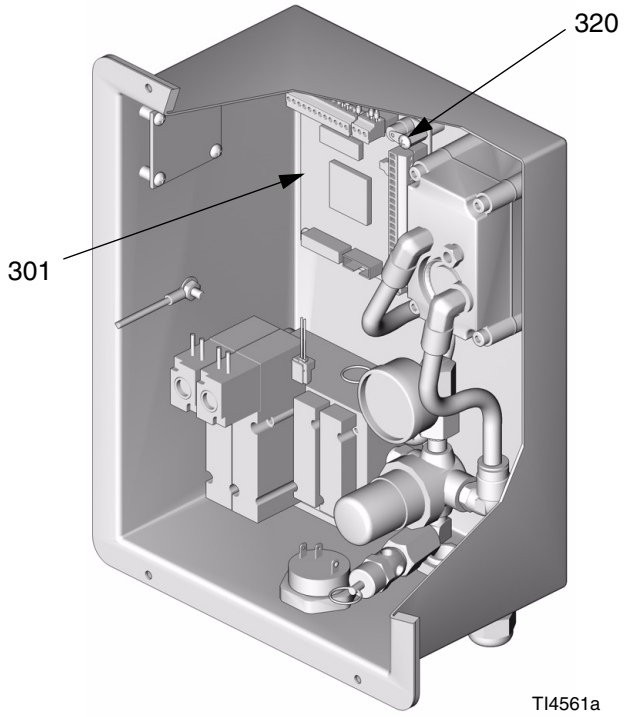
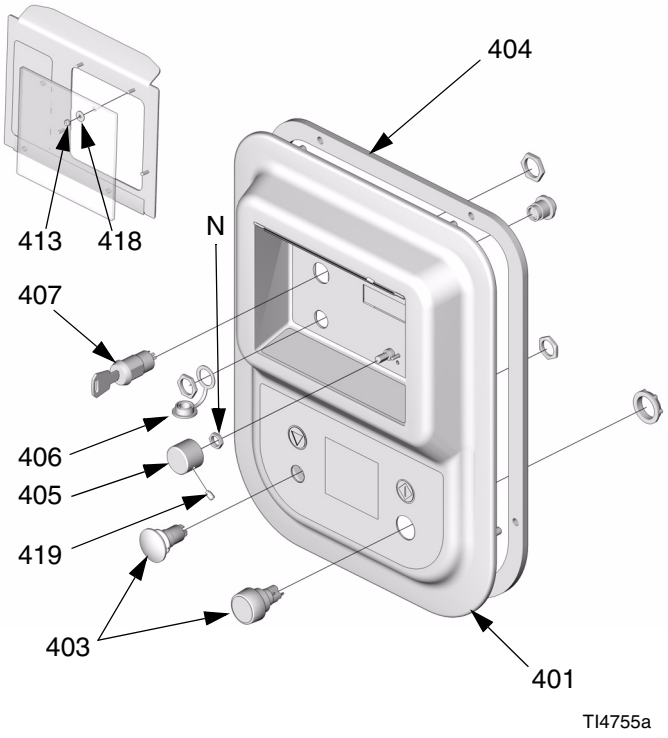


FIG. 3

Replacing Display Circuit Board

CAUTION
To avoid damaging circuit board, wear a grounding strap.

1. Remove User Interface cover. See page 15.
2. Disconnect wires from display board (410). FIG. 4.
3. Remove two screws (411).
4. Loosen setscrew (419) from knob (405) and remove knob assembly. Remove jam nut (N).
5. Remove and replace display board (410).
6. Reassemble. Refer to **Electrical Schematic**, page 22.



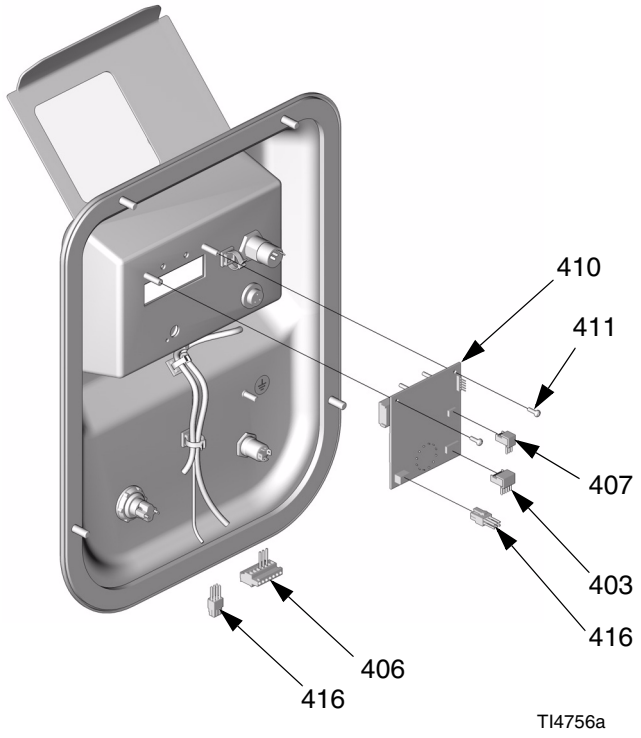


FIG. 4

Pneumatic Control

Alternator Repair

Turbine Alternator Repair Kit 223688 is available to replace turbine bearings.

1. Remove User Interface cover. See page 15.

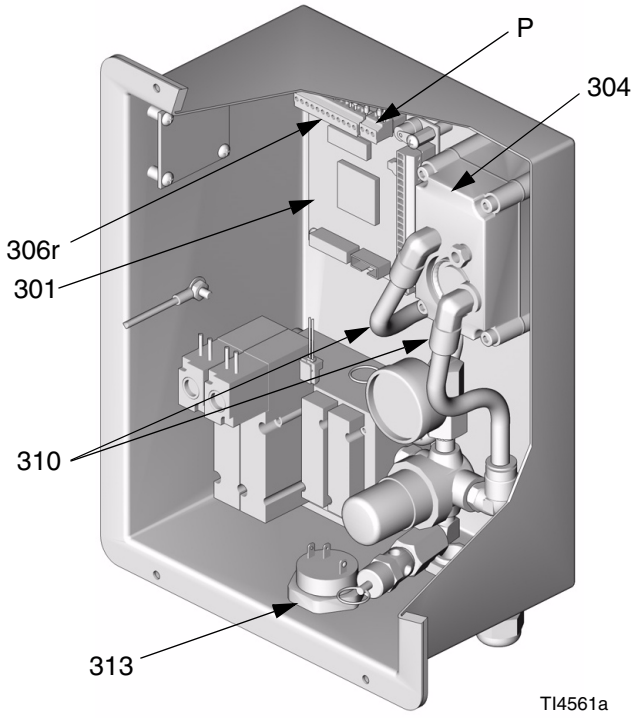


FIG. 5

2. Disconnect power supply wires (P). FIG. 5.
3. Disconnect two air lines (310) from alternator (304). FIG. 6.
4. Remove top nut (305) and loosen bottom nut. Slide alternator up and off bottom nut.
5. Remove four screws (304d) to separate alternator housings. FIG. 7.
6. Disconnect turbine (304e) from board (A). Follow instructions in turbine kit manual 308034 to remove and repair turbine.
7. Replace gasket (304a) if damaged. Place between housings before securing with screws (304d).
8. Reassemble. Refer to **Electrical Schematic**, page 22.

- Lightly lubricate turbine o-ring before installing turbine in housing.
- Connect alternator red wire to + side and black wire to – side of main circuit board.
- Connect turbine to 3-pin connector on main circuit board.

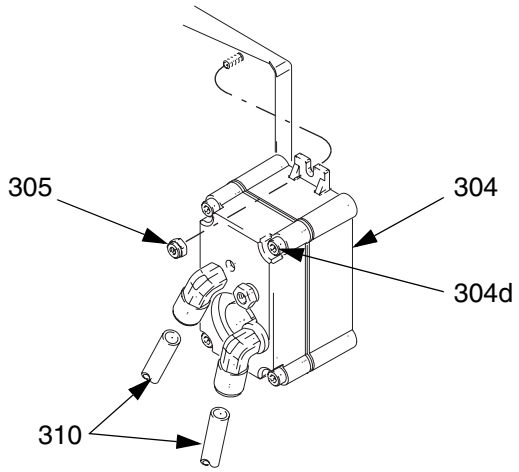
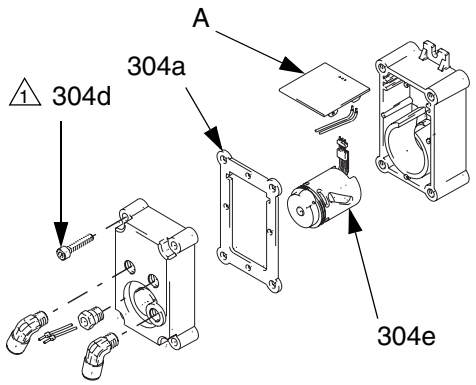


FIG. 6



1 Torque to 20 in-lbs (2 N•m)

FIG. 7

Replacing Solenoids

Follow this procedure to replace a single solenoid.

1. Remove User Interface cover. See page 15.
2. Disconnect two solenoid wires (V) from main board. FIG. 8.
3. Disconnect dispense valve pilot lines (A1, A2, B1, B2). FIG. 8.
4. Remove two screws (S).
5. Remove and replace solenoid (306b).

From left to right, solenoid functions are as follows:
- Component A
- Component B

6. Reassemble. Solenoid wires are polarized (red +, black –). Refer to **Electrical Schematic**, page 22.

Replacing Alternator Regulator

1. Remove User Interface cover. See page 15.
2. Remove two screws (309) from the back of the control box.
3. Disconnect supply and exhaust air lines (310). FIG. 5, page 18.
4. Disconnect solenoid wires 12 position Phoenix connector (306r) from main board.
5. Remove solenoid module (306) with regulator (306e). FIG. 8.
6. Unscrew and replace regulator (306e).
7. Reassemble. Refer to **Electrical Schematic**, page 22.

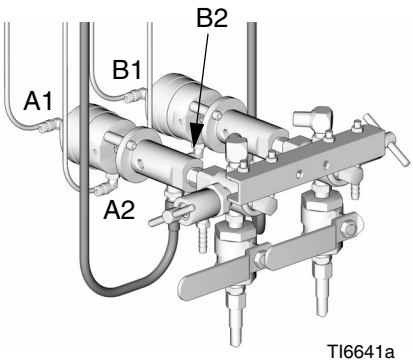
Make sure gaskets (306j, 306k) are in place when reinstalling solenoid module.

8. Set regulator to 24 psi (160 kPa, 1.6 bar).

Replacing Alarm

1. Remove User Interface cover. See page 15.
2. Disconnect alarm wires from main board.
3. Unscrew alarm (313) and replace. FIG. 5, page 18.
4. Reassemble. Refer to **Electrical Schematic**, page 22.

Dispense Valve Pilot Lines
A1 (off), clear tube
A2 (on), black tube
B1 (off), green tube
B2 (on), red tube



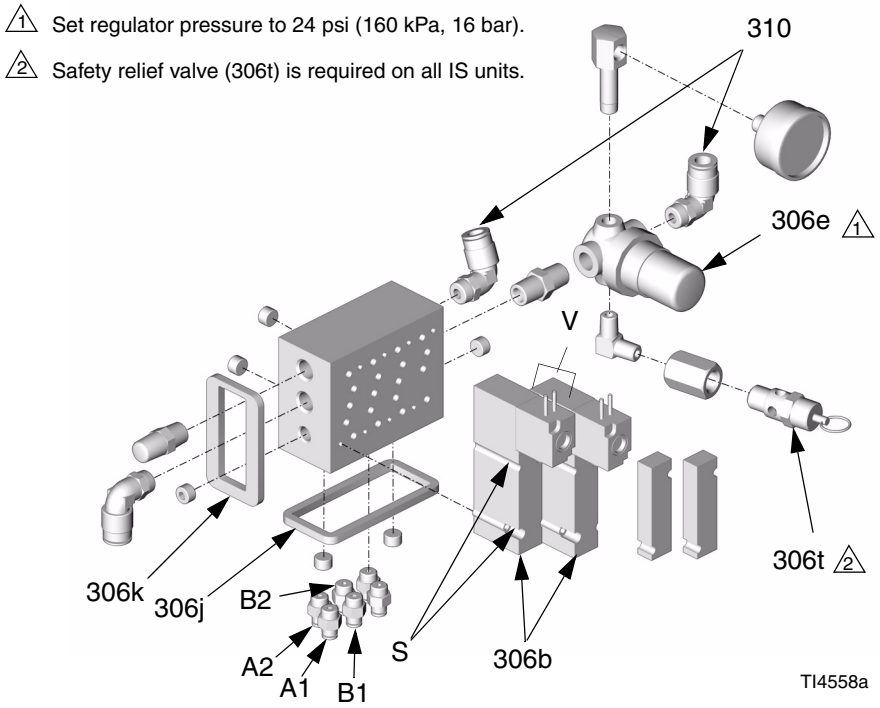


FIG. 8

Dispense Valve Assembly

See the **Parts** drawing for your model.

WARNING

Read warnings, page 4.

1. Follow **Pressure Relief Procedure**, page 6.
2. Label all air and fluid lines, and disconnect from fittings on manifold assembly.
3. Remove fasteners.
4. Remove mix manifold (2).
5. To repair mix manifold, see manual 310654. To repair dispense valves, see manual 310655.
6. Reassemble.

Pump Assembly

See the **Parts** drawing for your model.

WARNING

Read warnings, page 4.

1. Follow **Pressure Relief Procedure**, page 6.
2. Remove side plates (21).
3. Remove wire harnesses from sensor and solenoids. Refer to **Electrical Schematic**, page 22.
4. Disconnect fluid inlet and outlet lines from pump lower. Disconnect air supply from pump.
5. Label all tubing and disconnect from fittings on pump assembly.
6. Remove mounting hardware and slide pump out of frame.
7. Repair as instructed in pump manuals 310671, 310672, or 310662.
8. Reassemble.

Remote Mix Manifold and Fluid Regulator

Repair Kit 244012 is available. Order the kit separately. Parts included in the kit are marked with a symbol, for example (902†).

WARNING

Read warnings, page 4.

1. Follow **Pressure Relief Procedure**, page 6.
2. Remove the four short screws (920) and one long screw (921) holding the fluid regulator housing (906) to the regulator mounting plate (901). Remove the fluid regulator housing, spring (911), and retainer (910). See FIG. 9.
3. Remove the remaining long screws (921) holding the regulator mounting plate (901), mix manifold housing (903), and base (905) together. Separate the three parts.
4. Remove the two gaskets (902, 904) from the mix manifold housing (903).
5. Hold the nut (919) with a wrench and unscrew the valve stem (912). Disassemble the acetal washer (918), diaphragm (917), large gasket (916), small gasket (915), and metal washer (914).
6. Clean all parts and replace any damaged parts.
7. Place the gaskets (902†, 904†) in the grooves of the mix manifold housing (903). Align the indexing pin on the base (905) with the small hole in the housing (903), and assemble the two parts.
8. Reassemble the diaphragm assembly in the reverse order, following the notes in FIG. 9. Be sure the AIR SIDE of the diaphragm (917†) faces up toward the nut (919†).
9. Reassemble the remaining parts in the reverse order, following the notes in FIG. 9.

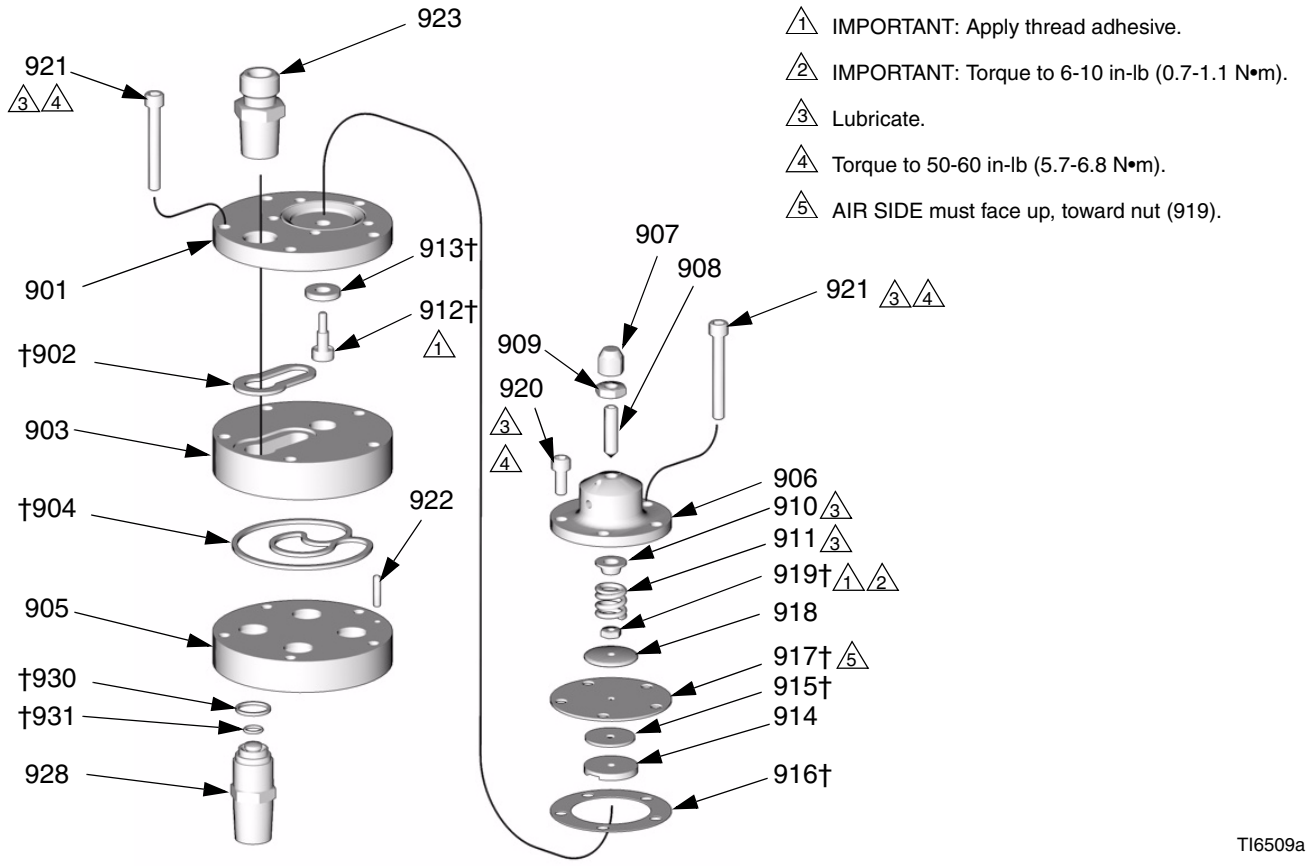
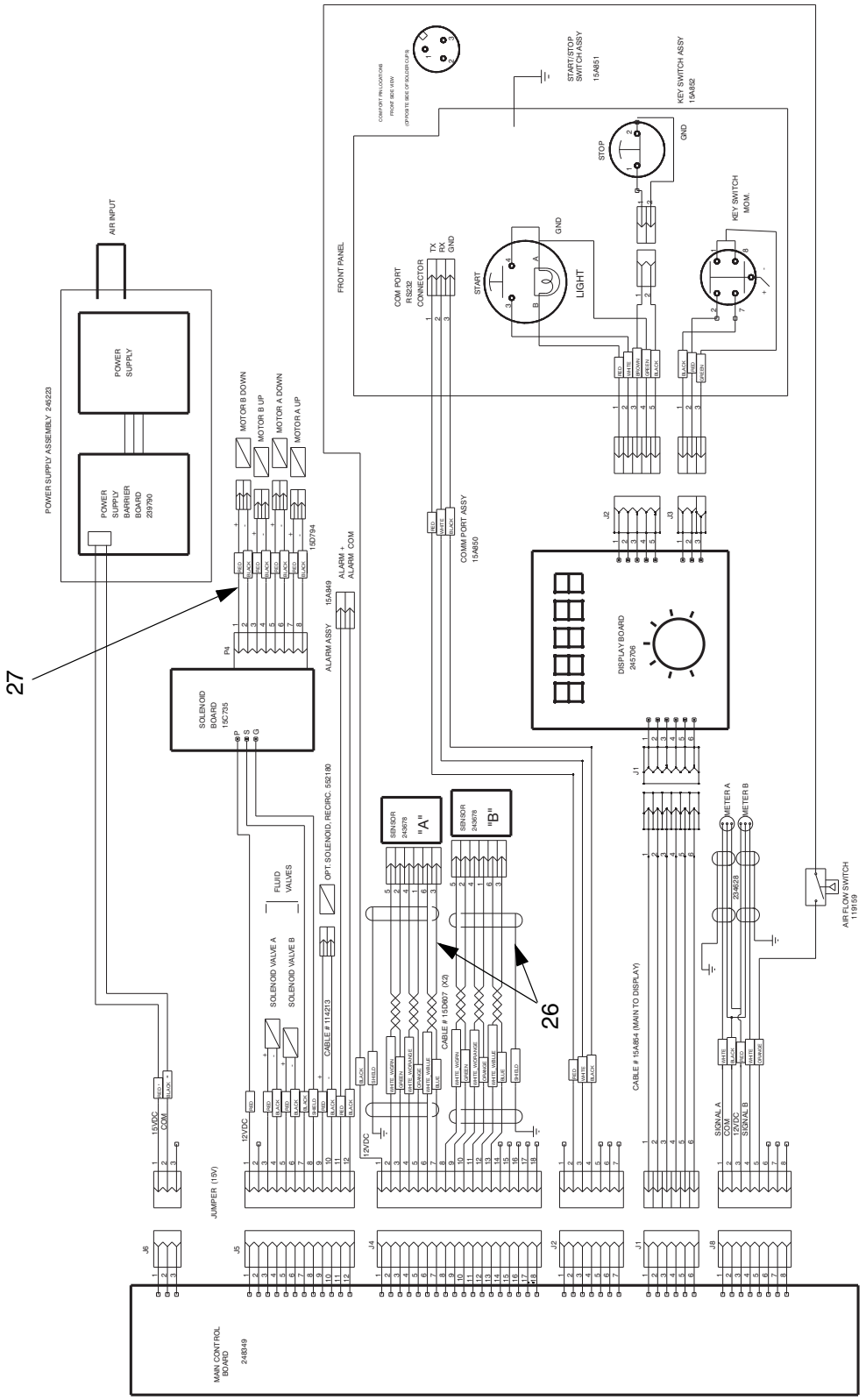
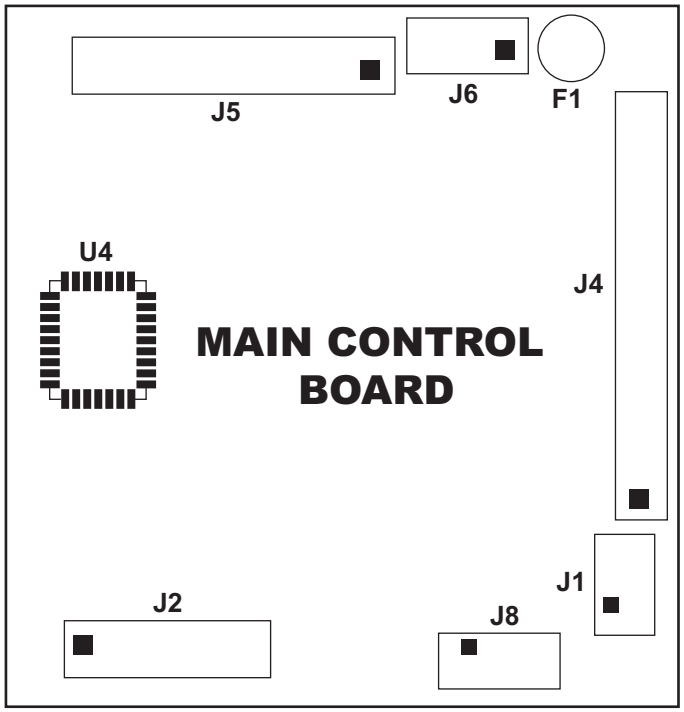


FIG. 9. Mix Manifold and Fluid Regulator

Electrical Schematic

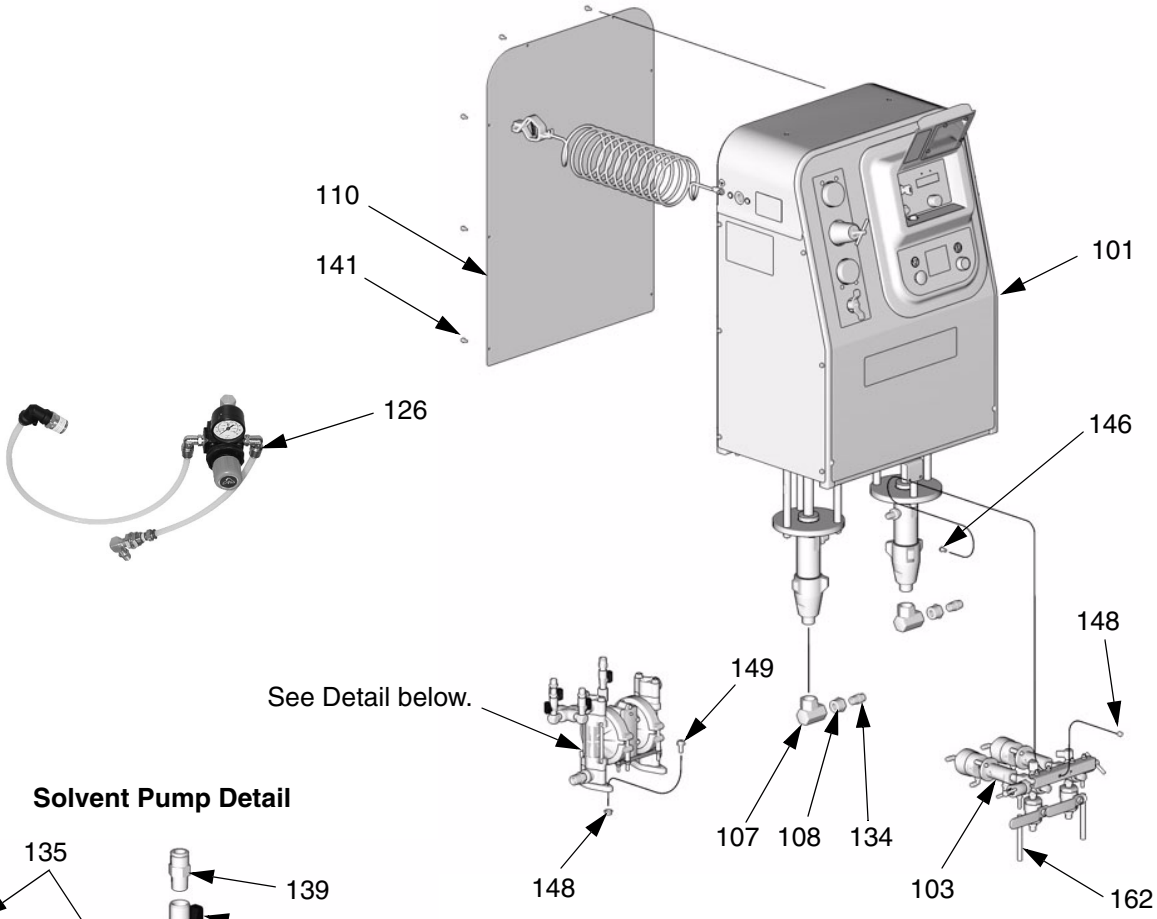


Main Control Board Schematic

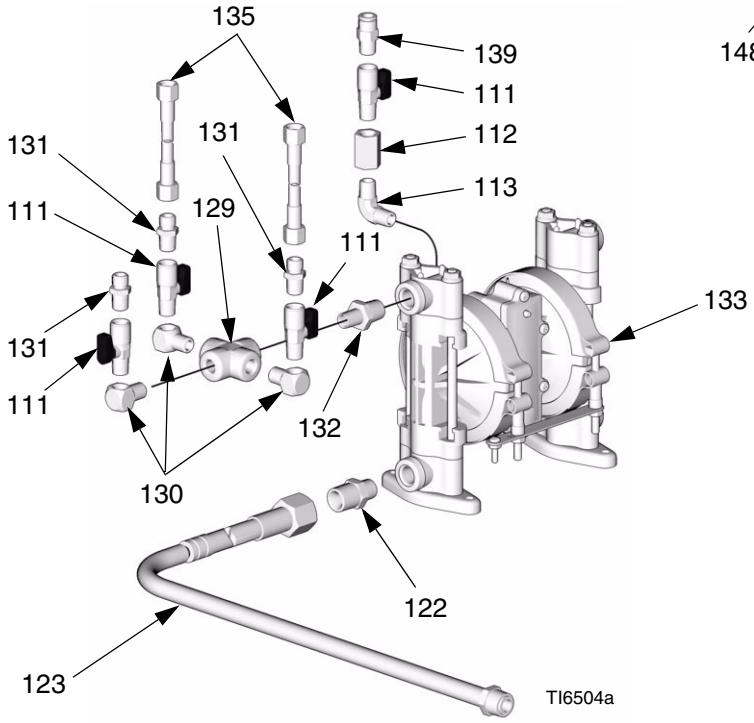


Parts

Part No. 249322 System, Series A



Solvent Pump Detail



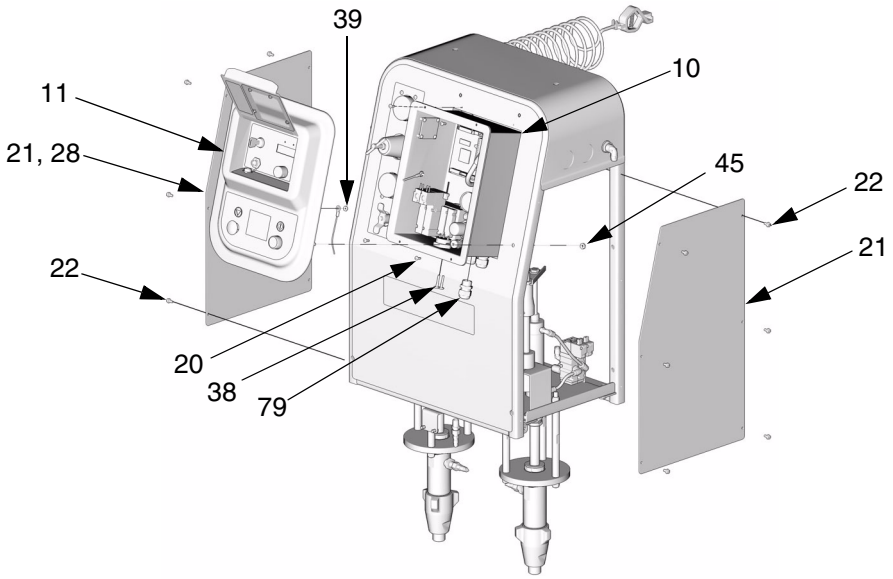
TI6385a

Part No. 249322 System, Series A

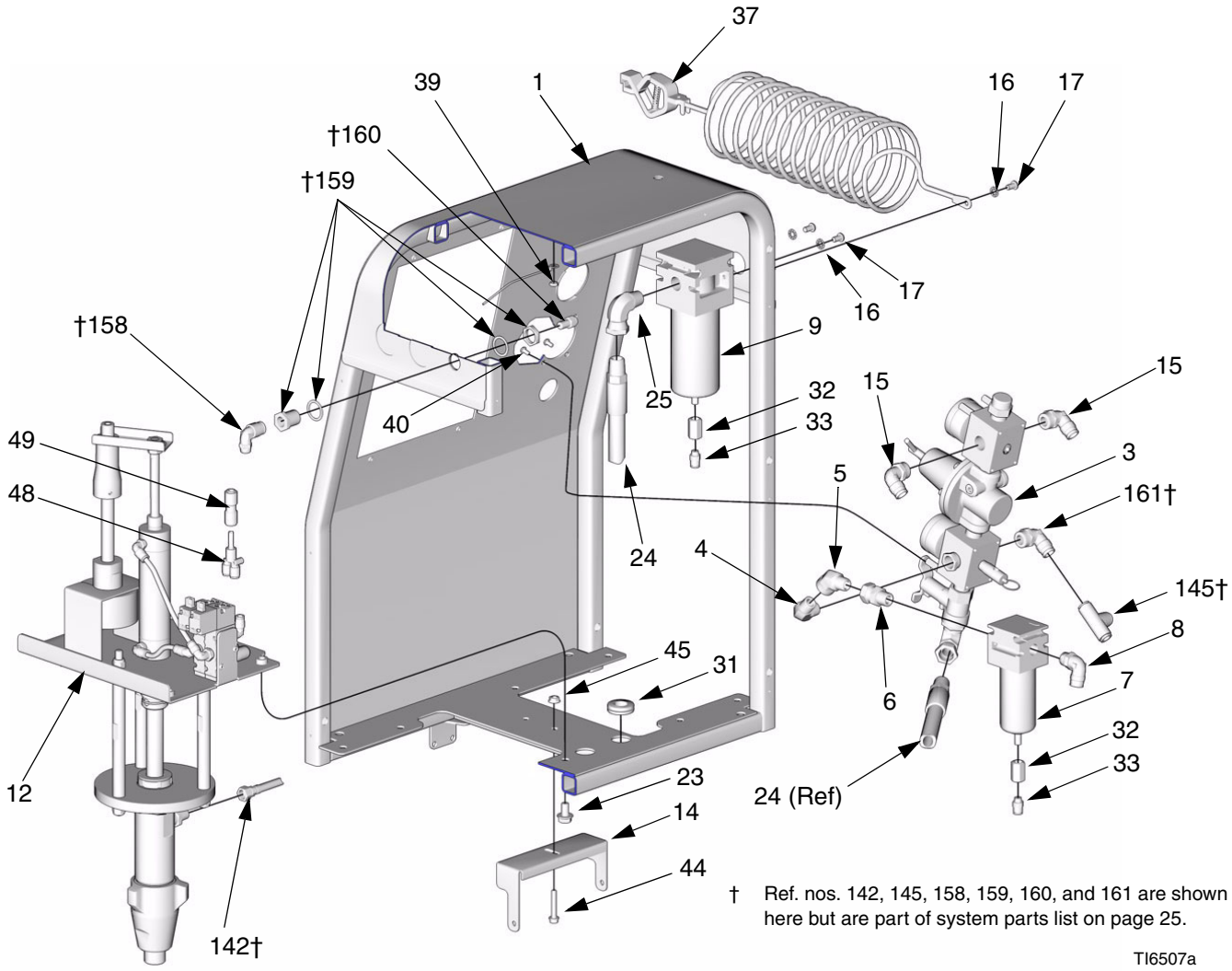
Ref. No.	Part No.	Description	Qty.
101	249302	PROPORTIONER; see page 26	1
103	249387	DISPENSE VALVE ASSEMBLY; see page 34	1
107	156589	UNION, adapter, 90°; 3/4 npt(f) x 3/4 npsm(f)	2
108	100505	BUSHING, pipe; 3/4 npt(m) x 3/8 npt(f)	2
110	15D986	PLATE, rear	1
111	116698	VALVE, ball; 1/4 npt(m) x 1/4 npt(f)	4
112	113093	CONNECTOR, pipe; 1/4 npt (fbe)	1
113	110249	ELBOW, 90°; 1/4 npt (mbe)	1
122	159239	NIPPLE; 1/2 npt x 3/8 npt	1
123	243832	HOSE, siphon, solvent pump	1
126	248588	KIT, air regulator, gun; see 310700	1
127	249386	HOSES/MIX MANIFOLD; see page 35	1
129	102959	CROSS, pipe; 1/4 npt(f)	1
130	100840	ELBOW, street; 1/4 npt(m) x 1/4 npsm(f)	3
131	162453	NIPPLE; 1/4 npt x 1/4 npsm	3
132	165198	NIPPLE, reducing; 3/8 npt x 1/4 npt	1
133	D32911	PUMP, double diaphragm, solvent; see 308553	1
134	162485	NIPPLE; 3/8 npt x 3/8 npsm	2
135	243803	HOSE, fluid; 1/4 npsm (fbe); 1/4 in. (6 mm) ID; nylon; 3 ft (0.9 m)	2
139	C19413	CONNECTOR; 1/4 npt(m) x 3/8 in. (10 mm) OD tube	1
141	119291	SCREW, self-tapping	10
142†	206966	HOSE, fluid; 1/4 npsm (fbe); PTFE; 1/4 in. (6 mm) ID; 18 in. (457 mm)	2
145†	119798	CONNECTOR, tee; 3/8 in. (10 mm) OD tube	1
146	113796	SCREW, cap, hex flanged hd; 1/4-20 x 3/4 in. (19 mm)	2
148	115942	NUT, hex, flange hd; 1/4-20	6
149	100021	SCREW, cap, hex hd; 1/4-20 x 1 in. (25 mm)	4
157	C12508	TUBE; nylon; 3/8 in. (10 mm) OD; see pages 28 and 29	4.5 ft
158†	115841	ELBOW; 1/4 npt(m) x 3/8 in. (10 mm) OD tube	1
159†	104641	FITTING, bulkhead	1
160†	113319	FITTING, air; 1/4 npt(m) x 3/8 in. (10 mm) OD tube	1
161†	C38211	ELBOW; 1/2 npt(m) x 3/8 in. (10 mm) OD tube fitting	1
162	116750	TUBE; nylon; 1/4 in. (6 mm) ID	2

† *These parts are shown on page 26.*

Part No. 249302 Proportioner, Series A



TI6506a



† Ref. nos. 142, 145, 158, 159, 160, and 161 are shown here but are part of system parts list on page 25.

TI6507a

Part No. 249302 Proportioner, Series A

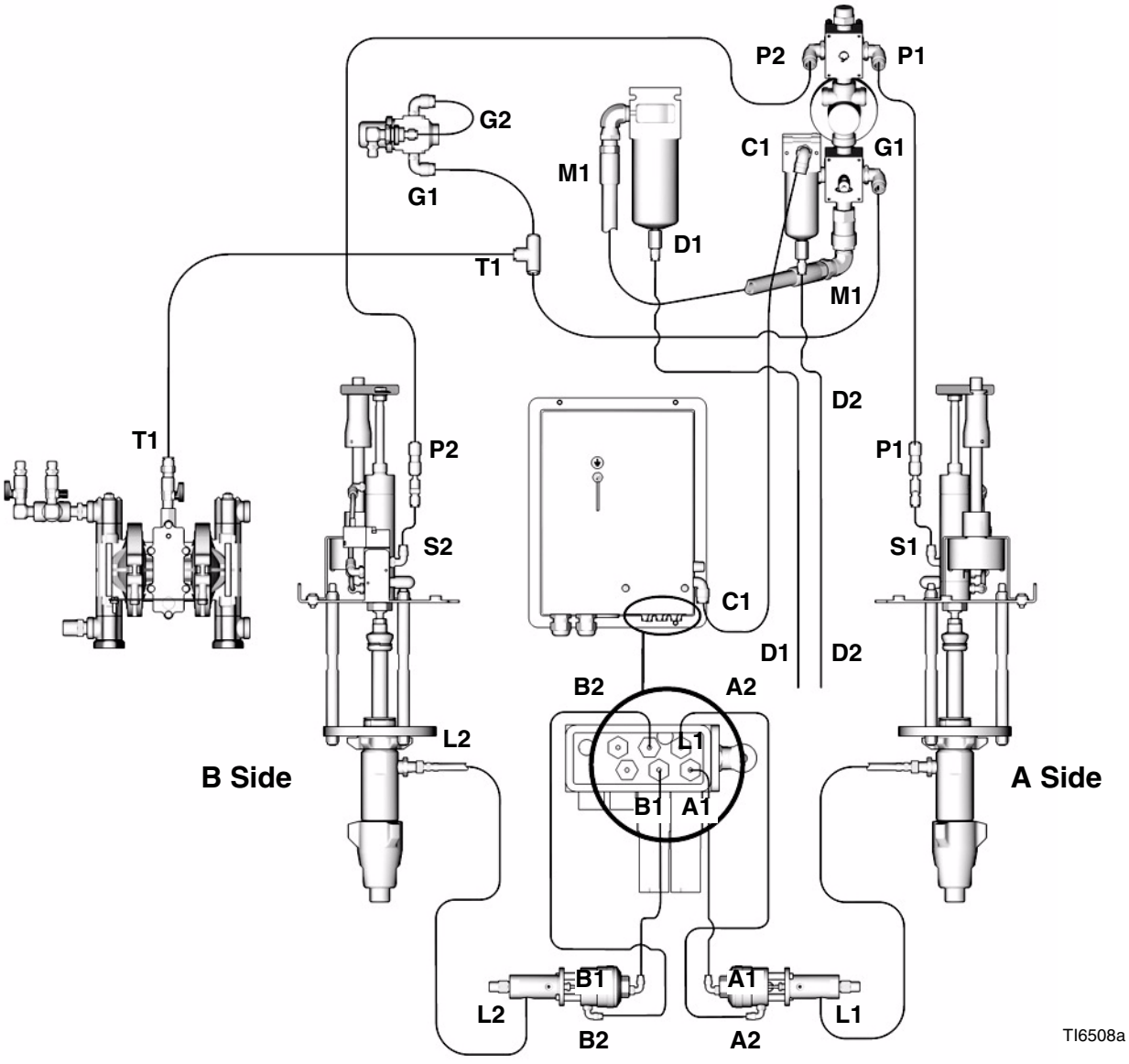
Ref. No.	Part No.	Description	Qty.
1	15D771	FRAME, wall mount	1
3	287230	CONTROL, air; see page 33	1
4	109544	ELBOW, pipe; 3/8 npt (mbe)	1
5	116756	ELBOW, street, 45°; 3/8 npt (mxf)	1
6	155665	UNION, adapter; 3/8 npsm(f) x 3/8 npt(m)	1
7	117629	FILTER, air; 5 micron	1
8	114316	ELBOW; 3/8 npt(m) x 3/8 in. (10 mm) OD tube fitting	1
9	15D795	FILTER, air; 40 micron	1
10	248270	PNEUMATIC CONTROL see page 30	1
11	234620	USER INTERFACE; see page 32	1
12	248570	PUMP, UltraMix, cst; see 310671	2
14	15D873	BRACKET, support, fluid manifold	1
15	C38211	ELBOW; 1/2 npt(m) x 3/8 in. (10 mm) OD tube fitting	2
16	C19038	WASHER, lock; 1/4	5
17	112925	SCREW, cap, button hd; 1/4-20 x 3/8 in. (10 mm)	5
20	103196	SCREW, machine, phillips; 8-32 x 7/16 in. (11 mm)	4
21	15D767	PLATE, side	2
22	119291	SCREW, self-tapping	12
23	113802	SCREW, hex hd, flanged; 3/8-16 x 5/8 in. (16 mm)	8
24	220598	HOSE, air; nitrile; 1/2 in. (13 mm) ID; 1/2 npt (mbe); 18 in. (457 mm); see also pages 28 and 29	1
25	C19024	ELBOW, swivel; 1/2 npt(m) x 1/2 npsm(f)	1
26	15D607	CABLE, sensor; see **Electrical Schematic**, page 22	2
27	15D794	HARNESS, connector; see **Electrical Schematic**, page 22	2
28▲	290331	LABEL, warning	1
31	101765	GROMMET	2
32	100451	COUPLING; 1/8 npt (fbe)	2
33	115671	CONNECTOR; 1/8 npt(m) x 1/4 in. (6 mm) OD tube	2
37	244524	GROUND WIRE	1
38	113279	PLUG, tube fitting; 5/32 in. (4 mm) OD tube	2
39	113505	NUT, keps, hex hd; 10-24	2
40	551787	SCREW, cap, button hd; 10-32 x 3/8 in. (10 mm)	4
44	114104	SCREW, machine; 1/4-20 x 1-1/2 in. (38 mm)	1
45	115942	NUT, hex, flange hd; 1/4-20	7
48	114158	FITTING, Y-adapter; 1/4 in. (6 mm) OD tube	2
49	115743	ADAPTER; 3/8 in (10 mm) tube x 1/4 in. (6 mm) tube	2
56	598095	TUBE; nylon; 5/32 in. (4 mm) OD; clear; see pages 28 and 29	2 ft
57	054753	TUBE; nylon; 5/32 in. (4 mm) OD; black; see pages 28 and 29	2 ft
58	054754	TUBE; nylon; 5/32 in. (4 mm) OD; red; see pages 28 and 29	2 ft
59	054757	TUBE; nylon; 5/32 in. (4 mm) OD; green; see pages 28 and 29	2 ft
60	C12508	TUBE; nylon; 3/8 in. (10 mm) OD; see pages 28 and 29	6.7 ft
63	162453	NIPPLE; 1/4 npsm x 1/4 npt	2
70	054123	TUBE; nylon; 1/4 in. (6 mm) OD; see pages 28 and 29	4.2 ft
79	195889	BUSHING, strain relief	2

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

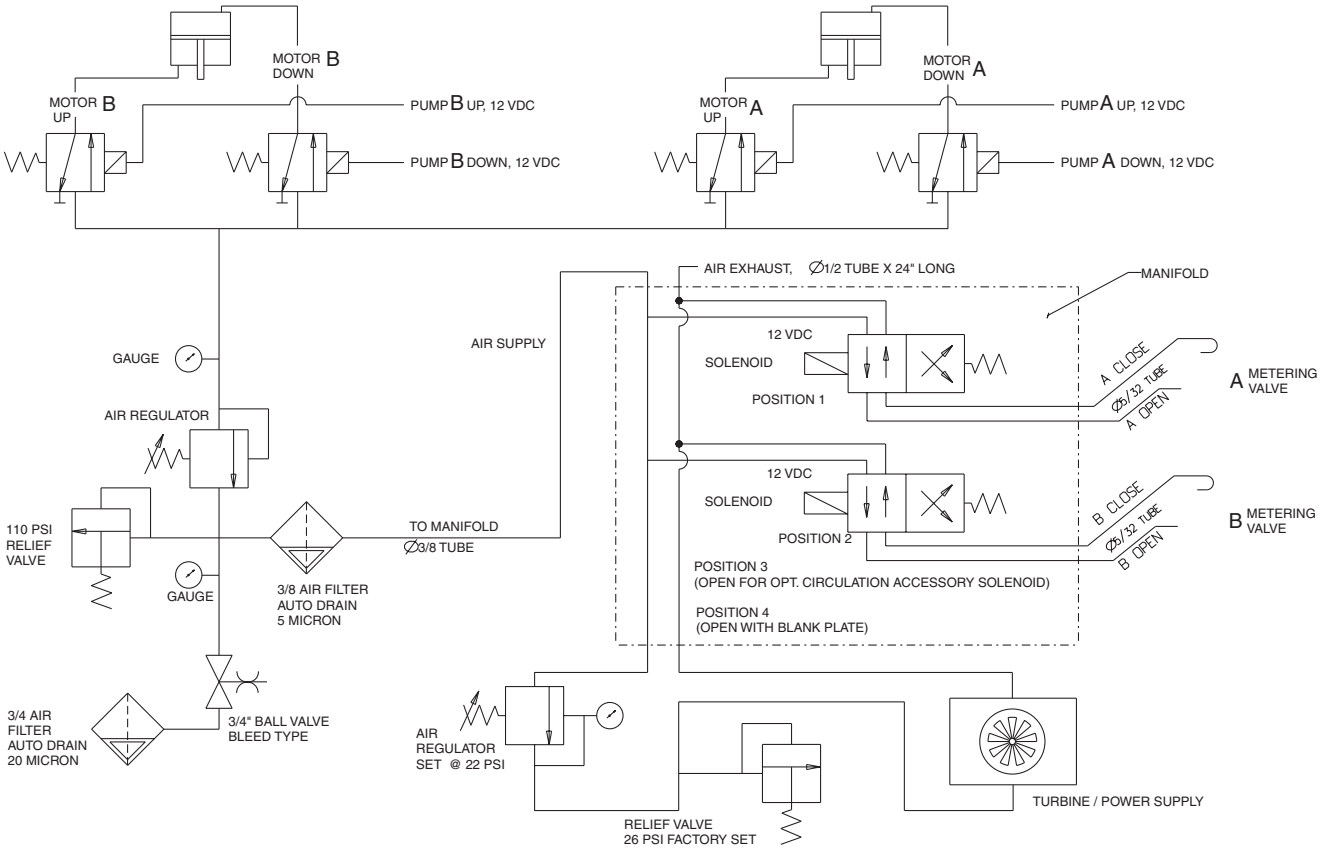
Tube Connections

Find the keys on the drawing to ensure proper connections.

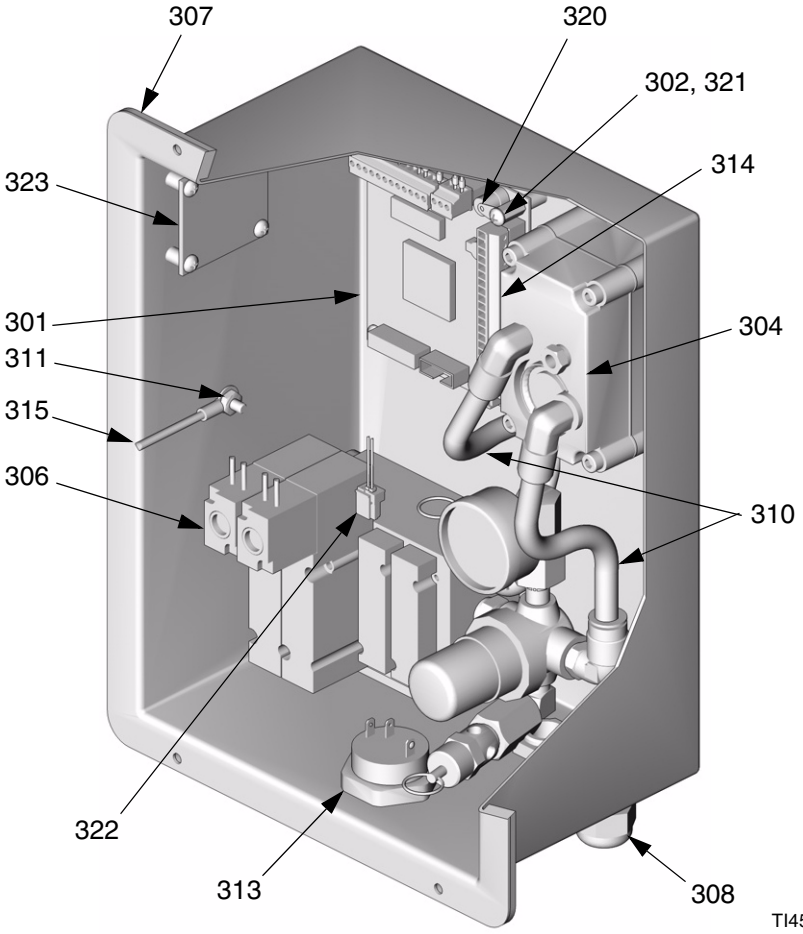
Key	Description	Ref. No.	Length, in. (mm)
A1	Dispense Valve A OFF	56	24 (610)
A2	Dispense Valve A ON	57	24 (610)
B1	Dispense Valve B OFF	59	24 (610)
B2	Dispense Valve B ON	58	24 (610)
C1	Air to Pneumatic Control (10)	60	8 (203)
D1	Air Filter (9) Drain Tube	70	24 (610)
D2	Air Filter (7) Drain Tube	70	18 (457)
G1	Gun Air Regulator (74) Input	60	31 (787)
G2	Gun Air Regulator (74) Output	60	30 (762)
L1	Fluid Line, Pump A to Dispense Valve A	142	18 (457)
L2	Fluid Line, Pump B to Dispense Valve B	142	18 (457)
M1	Air Filter (9) to Air Control (3)	24	18 (457)
P1	Pump A Input Air	60	17 (432)
P2	Pump B Input Air	60	21 (533)
S1	Pump A Solenoid Inputs (2 tubes)	70	2 (51)
S2	Pump B Solenoid Inputs (2 tubes)	70	2 (51)
T1	Solvent Pump Air Supply	157	54 (1372)



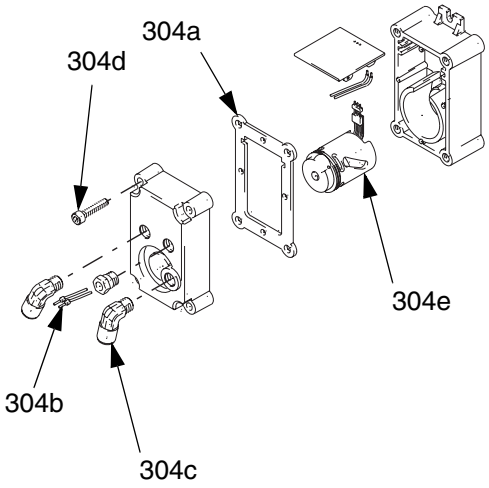
Pneumatic Schematic



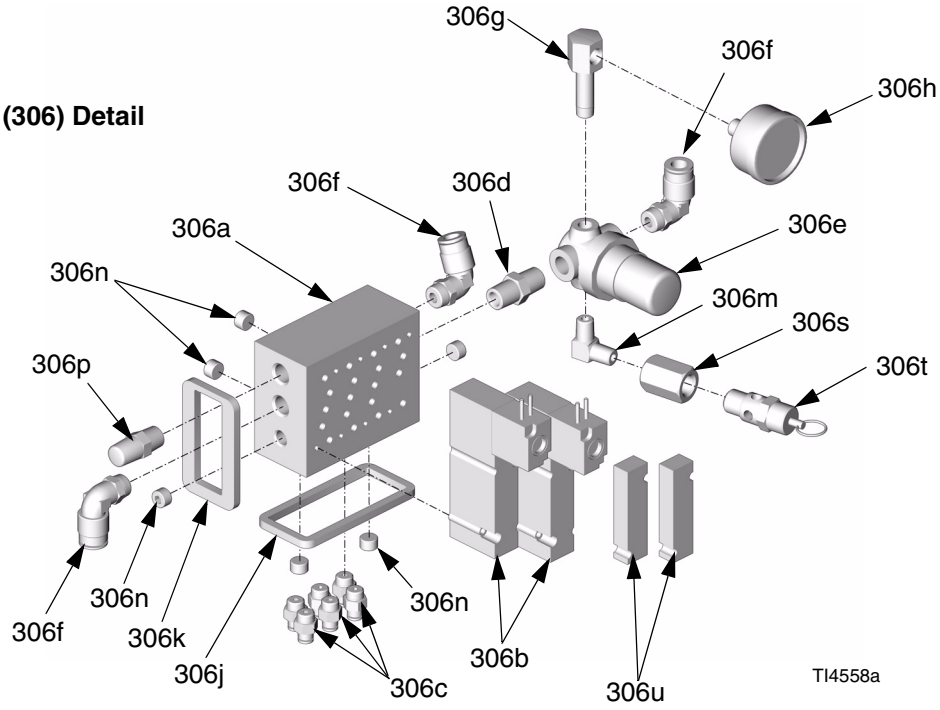
248270 Intrinsically Safe Pneumatic Control



Alternator Module (304) Detail



Solenoid Module (306) Detail

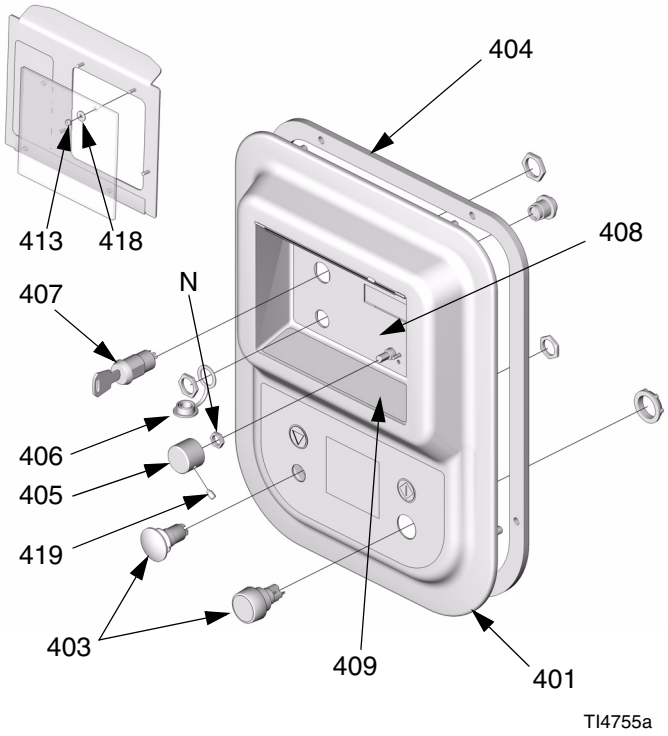


248270 Intrinsically Safe Pneumatic Control, continued

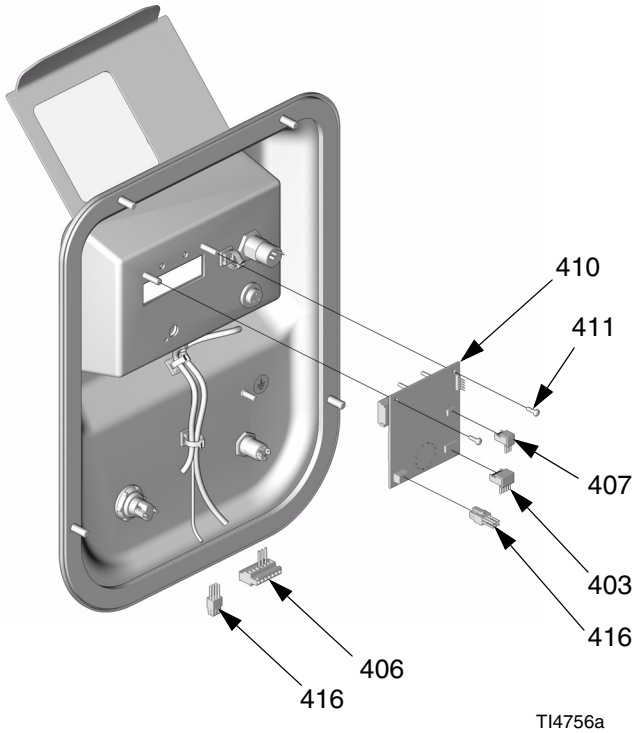
Ref. No.	Part No.	Description	Qty.
301	248349	CIRCUIT BOARD, main	1
302	100035	SCREW, machine, phillips; 8-32 x 5/16 in. (8 mm)	8
304	245854	MODULE, alternator; includes items 304a-304e	1
304a	193154	• GASKET; LDPE foam	1
304b	15A853	• WIRE HARNESS	1
304c	111225	• ELBOW; 1/8 npt(m) x 3/8 in. (10 mm) tube fitting	2
304d	114380	• SCREW; M5 x 25	4
304e	222319	• TURBINE ALTERNATOR	1
305	109466	NUT, lock, w/nylon insert; 8-32	2
306	248268	MODULE, solenoid, IS; includes items 306a-306u	1
306a	15A822	• MANIFOLD	1
306b	117356	• VALVE, 12 VDC, IS	2
306c	114263	• FITTING; 1/8 npt x 5/32 in. (4 mm) tube	6
306d	156971	• NIPPLE; 1/4 npt	1
306e	115243	• AIR REGULATOR; 1/4 npt	1
306f	115841	• ELBOW; 1/4 npt x 3/8 in. (10 mm) tube fitting	3
306g	160701	• ELBOW, street; 1/8 npt(m x f)	1
306h	108190	• GAUGE	1
306j	15A798	• GASKET, neoprene	1
306k	15A799	• GASKET, neoprene	1
306m	110207	• ELBOW; 1/8 npt (mbe)	1
306n	104765	• PLUG, pipe; 1/8 ptf	6
306p	517449	• MUFFLER	1
306q	112512	• WIRE FERRULE, orange (not shown)	8
306r	117369	• CONNECTOR, 12 position	1
306s	150278	• ADAPTER, 1/4 x 1/8 npt	1
306t	117480	• SAFETY RELIEF VALVE, 26 psi (179 kPa, 1.8 bar)	1
306u	552183	• PLATE	2
307	15A800	GASKET; neoprene	1
308	114421	BUSHING, strain relief	2
309	106084	SCREW, machine; M5 x 0.8; 10 mm	2
310	590385	TUBE, poly-flo	1 ft
311	113505	NUT, keps; 10-24	1
312	104029	CLAMP, ground	1
313	15A849	HARNESS, wire, alarm	1
314	117442	CONNECTOR, plug, 18 position	1
315	15B090	WIRE, grounding, door	1
317	111307	WASHER, lock, external tooth; M5	1
318	065213	WIRE, copper	3 ft
320	118132	TERMINAL, lug, lockwasher	1
321	118129	SPACER	1
322	114213	HARNESS, connector	1
323	246899	CIRCUIT BOARD	1
324	112512	FERRULE, wire	2

234620 User Interface

Ref. No.	Part No.	Description	Qty.
401	15B062	DISPLAY	1
403	15A851	HARNESS, wire	1
404	15A801	GASKET; neoprene	1
405	15D853	KNOB, control	1
406	15A850	HARNESS, wire	1
407	15A852	HARNESS, wire, switch	1
408	15D796	LABEL, control, upper	1
409	15D798	LABEL, control, lower	1
410	245706	CIRCUIT BOARD, display; includes jam nut (N)	1
411	112546	SCREW, machine; 4-40 x 3/8 in. (10 mm)	2
412	15A856	PANEL, display	1
413	C27076	NUT, lock, w/nylon insert; 4-40	4
414	111907	MOUNT, tie wrap	3
416	15A854	HARNESS, wire, display	1
418	188438	WASHER; 0.120 in.	4
419	101366	SCREW, set; socket hd; 10-24 x 5/16 (8 mm)	1



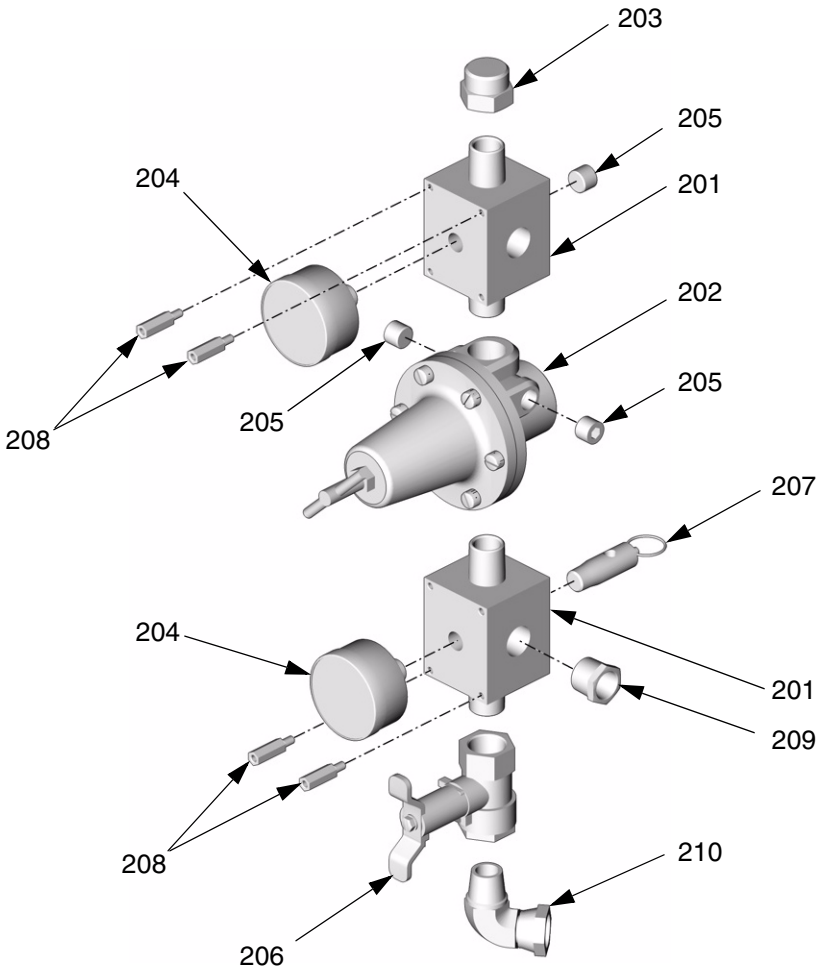
TI4755a



TI4756a

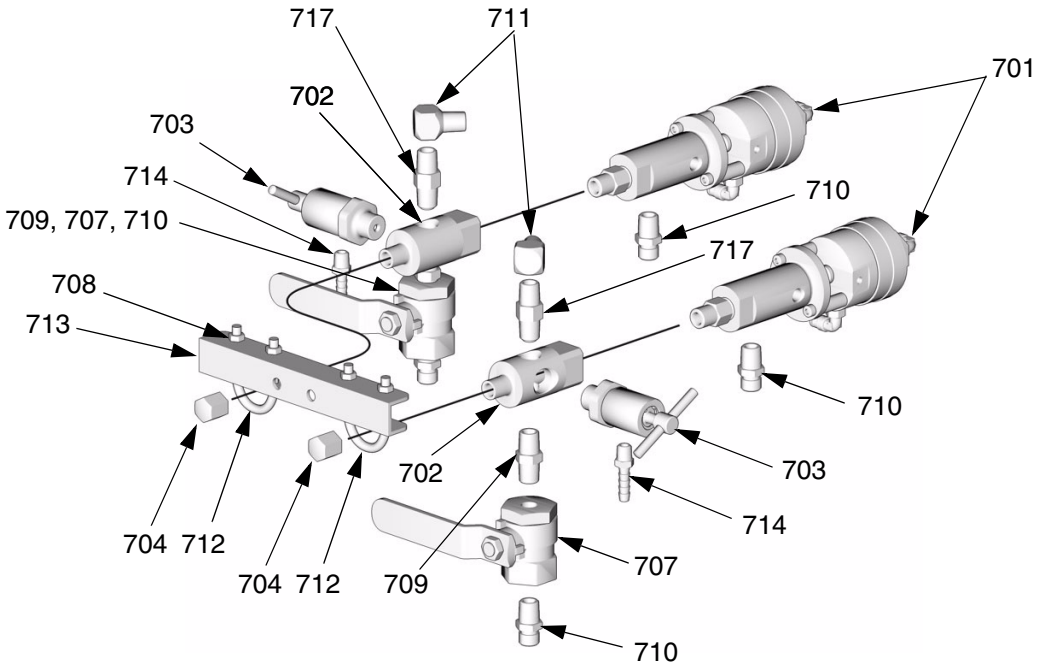
287230 Pump Air Control

Ref. No.	Part No.	Description	Qty.
201	15D814	MANIFOLD, air	2
202	206197	REGULATOR, air; 1/2 npt(f) inlet and outlet; see manual 308168	1
203	119240	CAP, pipe, 1/2 in. (13 mm)	1
204	101689	GAUGE, air pressure	2
205	112678	PLUG; 1/4 npt	3
206	118762	VALVE, ball, bleed-type; 1/2 npt(fbe)	1
207	113498	VALVE, safety relief; 110 psi (0.8 MPa, 8 bar)	1
208	119246	STANDOFF	4
209	100081	BUSHING, pipe; 1/2 npt(m) x 3/8 npt(f)	1
210	C19024	ELBOW, swivel; 1/2 npt(m) x 1/2 npsm(f)	1



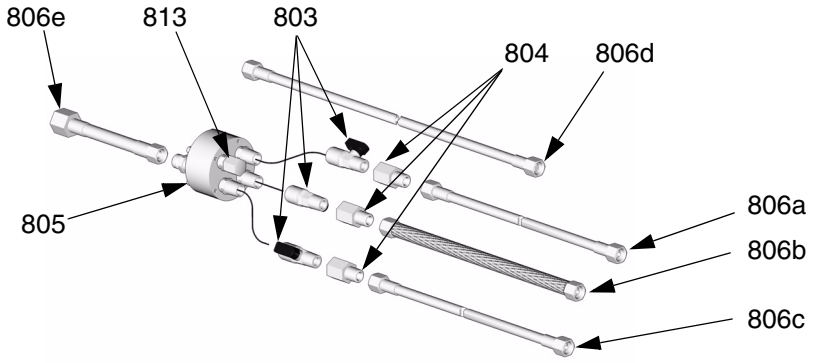
TI4601a

249387 Dispense Valve Assembly



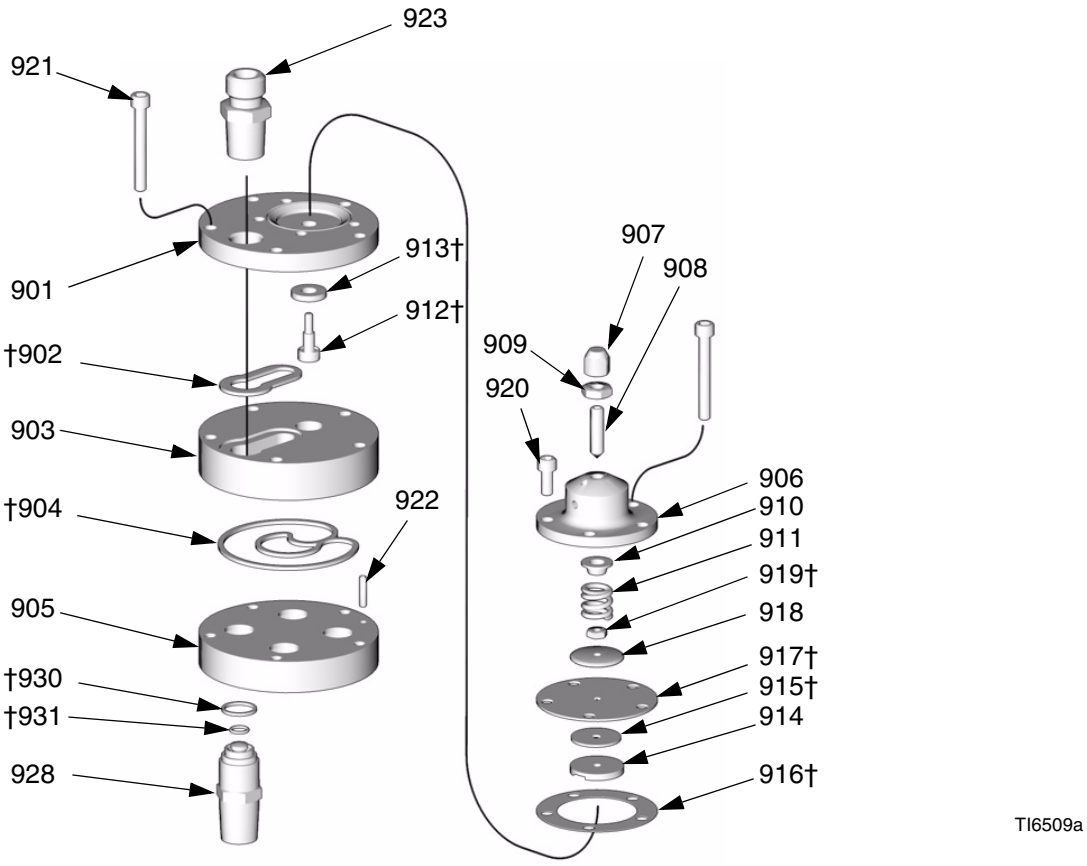
Ref. No.	Part No.	Description	Qty.
701	287222	VALVE, dispense; see 310655	2
702	15D336	HOUSING, ratio	2
703	245143	VALVE, pressure relief	2
704	115781	PLUG, cap; 1/4 npt	2
707	512148	VALVE, ball; 1/4 npt (fbe)	2
708	104123	WASHER, lock	4
709	156971	NIPPLE; 1/4 npt	2
710	162453	NIPPLE; 1/4 npt x 1/4 npsm	4
711	100840	ELBOW, street, 90°; 1/4 npt (mxf)	2
712	106285	U-BOLT, with 2 nuts; 1/4-20	2
713	15F381	BRACKET, dispense	1
714	116746	FITTING, barbed	2
717	501867	VALVE, check	2

249386 Hose Bundle and Remote Mix Manifold



Ref. No.	Part No.	Description	Qty.
803	116698	VALVE, ball; 1/4 npt(m) x 1/4 npt(f)	3
804	15F741	FITTING, adapter; 1/4 npt(m) x 1/4 npt(f)	3
805	244022	MANIFOLD, mix, remote; see page 36	1
806	249385	HOSE SET; includes items 806a-806e, and protective cover	1
806a		HOSE, component A; 35 ft (10.7 m)	1
806b		HOSE, component B; 35 ft (10.7 m)	1
806c		HOSE, solvent; 35 ft (10.7 m)	1
806d		HOSE, air; 41 ft (12.5 m)	1
806e	249288	HOSE, whip; with static mixer; 5 ft (1.52 m)	1
813	115781	PLUG, cap; 1/4 npt(f)	1

244022 Remote Mix Manifold



Ref. No.	Part No.	Description	Qty.
901	196340	PLATE, mounting, regulator	1
902†	196343	GASKET, mix manifold, outlet	1
903	196341	HOUSING, mix manifold	1
904†	196342	GASKET, mix manifold, inlet	1
905	196339	BASE, mix manifold	1
906	168877	HOUSING, regulator	1
907	170303	NUT, cap	1
908	102433	SCREW, set, socket hd; 10-32 x 3/4 in. (19 mm)	1
909	100166	NUT, hex; 10-32	1
910	167244	RETAINER, spring	1
911	167245	SPRING, compression	1
912†	168872	STEM, valve	1
913†	169597	SEAT, valve	1
914	168879	WASHER, backup	1
915†	178322	GASKET	1
916†	178320	GASKET, non-metallic	1
917†	178321	DIAPHRAGM, regulator	1
918	168881	WASHER, acetal	1
919†	102980	NUT, hex; 4-40	1
920	103229	SCREW, cap, socket hd; 8-32 x 3/8 in. (10 mm)	4
921	115968	SCREW, cap, socket hd; 8-32 x 1-1/4 in. (31 mm)	5
922	102411	PIN, spring	1
923	162453	NIPPLE; 1/4 npt x 1/4 npsm	1
928	115966	CHECK VALVE; includes item 931	4
930†	196512	GASKET; acetal	4
931†	111504	PACKING, o-ring, check valve	4

† *These parts are included in Repair Kit 244012, which may be purchased separately.*

Technical Data

Mix ratio range	0.1:1-10:1 (in 0.1 increments)
Ratio tolerance range	up to +/- 1%
Flow rates	
Minimum	0.02 qt/min (0.02 lpm)*
Maximum	1 gpm (3.8 lpm)
Pump size	54 cc/cycle
Pump cycle length (one cycle = one upstroke and one downstroke)	6 in. (152 mm)/cycle
Fluid viscosity range	50-2000 cps (heavier viscosities can be mixed with use of optional heaters, heated hoses, and hardware)
Fluid filtration	60 mesh (238 micron) standard
Maximum fluid working pressure	250 psi (1.7 MPa, 17 bar)
Air supply pressure range	70-110 psi (490-800 kPa, 4.9-8 bar)
Maximum air consumption at 100 psi (0.7 MPa, 7 bar)	20 scfm (0.56 m^3/min)
Ambient temperature range	
Operating	32-104° F (0-40° C)
Storage	30-160° F (–1-71° C)
Environmental Conditions Rating	Altitude up to 4000 meters Maximum relative humidity to 99% up to 40° C Pollution degree (1)
Sound pressure**	70.3 dBA
Sound power**	78.4 dBA
Wetted parts	
Pumps	See 310662
Dispense Valves	See 310655
PC Communications	RS-232

* *Minimum flow rate is dependent on the material being sprayed and mixing capability. Test your material for specific flow rate.*

** *Tested in accordance with ISO 3744 at 100 psi (0.7 MPa, 7 bar) inlet air pressure.*

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 présente 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 to identify the nearest distributor.
Phone: 612-623-6921 **or Toll Free:** 1-800-328-0211, **Fax:** 612-378-3505

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