Instructions

XP Mix Manifold Kits

3A0590S

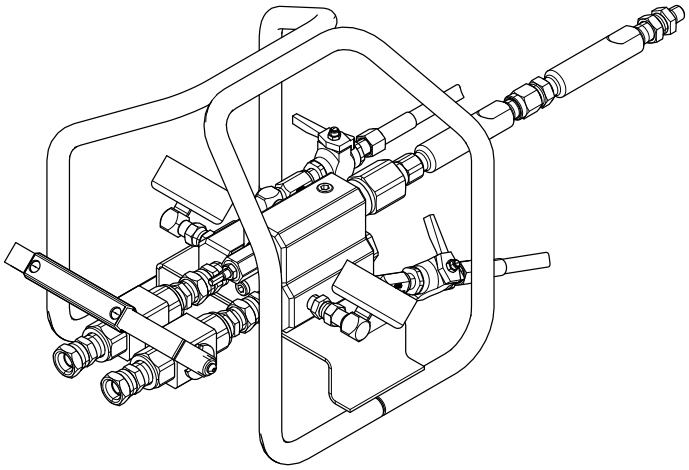
EN

For mixing two component reactive materials with plural-component sprayers.
For professional use only.

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

Important Safety Instructions

Read all warnings and instructions in this manual and in your proportioner manual before using the equipment. Save these instructions.



24M398 Shown

Contents

Related Manuals

Manuals are available at www.graco.com

Component Manuals in English:

Manual	Description
3A0420	XP Proportioner, Instructions-Parts
3A0421	Ratio Check Kit, Instructions-Parts
306861	Ball Valves, Check Valves, and Swivels, Instructions-Parts
339361	High Pressure Hose and Accessories Brochure
3A4381	XP-hf Proportioner, Instructions-Parts
3A6283	XPs-hf Proportioner, Instructions-Parts
3A5313	Xtreme-Wrap Water Heated Hose
3A7524	Xtreme-Wrap Electric Heated Hose

Model Information

Model	Mix Manifold	Maximum Working Pressure (A and B Materials)	Maximum Solvent Pressure	Maximum Fluid Temperature	Approvals
262807	Standard XP Mix Manifold	7250 psi (50 MPa, 500 bar)	5000 psi (34.5 MPa, 345 bar)	160 °F (71 °C)	CE Ex II 2G Ex h IIC T5 Gb
24M398	Quickset Mix Manifold	7250 psi (50 MPa, 500 bar)	5000 psi (34.5 MPa, 345 bar)	160 °F (71 °C)	CE Ex II 2G Ex h IIC T5 Gb

Accessories

Model	Description	Maximum Working Pressure	Maximum Fluid Temperature	For use with (items sold separately)
262522	Remote Mix Manifold Carriage			262807 with Heated Hose
24Z934	Remote Manifold Carriage (with heater block)			262807 and Water Heated Hose System
420033	Remote Recirculation Kit	7250 psi (50 MPa, 500 bar)	160 °F (71 °C)	262807 or 24M398 with Heated Hose

Warnings

The following warnings are for the setup, use, grounding, maintenance, and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbols refer to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body 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. Paint or solvent flowing through the equipment can cause static sparking. 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 sparking).
- Ground all equipment in the work area. See **Grounding** instructions.
- Never spray or flush solvent at high pressure.
- 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.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are anti-static or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock**.** Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Specifications** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Specifications** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request Safety Data Sheets (SDSs) from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

⚠ 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 spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

THERMAL EXPANSION HAZARD

Fluids subjected to heat in confined spaces, including hoses, can create a rapid rise in pressure due to the thermal expansion. Over-pressurization can result in equipment rupture and serious injury.

- Open a valve to relieve the fluid expansion during heating.
- Replace hoses proactively at regular intervals based on your operating conditions.

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 Safety Data Sheets (SDSs) for handling instructions and to know the specific hazards of the fluids you are using, including the effects of long-term exposure.
- When spraying, servicing equipment, or when in the work area, always keep work area well-ventilated and always wear appropriate personal protective equipment. See **Personal Protective Equipment** warnings in this manual.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.

BURN HAZARD

Equipment surfaces and fluid that is heated can become very hot during operation. To avoid severe burns:

- Do not touch hot fluid or equipment.

⚠ WARNING

PRESSURIZED ALUMINUM PARTS HAZARD

Use of fluids that are incompatible with aluminum in pressurized equipment can cause serious chemical reaction and equipment rupture. Failure to follow this warning can result in death, serious injury, or property damage.

- Do not use 1,1,1-trichloroethane, methylene chloride, other halogenated hydrocarbon solvents or fluids containing such solvents.
- Do not use chlorine bleach.
- Many other fluids may contain chemicals that can react with aluminum. Contact your material supplier for compatibility.

PERSONAL PROTECTIVE EQUIPMENT

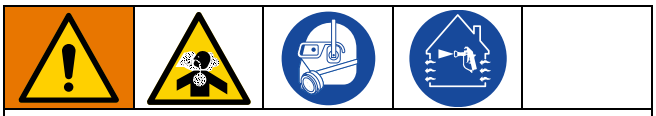
Always wear appropriate personal protective equipment and cover all skin when spraying, servicing equipment, or when in the work area. Protective equipment helps prevent serious injury, including long-term exposure; inhalation of toxic fumes, mists or vapors; allergic reaction; burns; eye injury and hearing loss. This protective equipment includes but is not limited to:

- A properly fitting respirator, which may include a supplied-air respirator, chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority.
- Protective eyewear and hearing protection.

Important Isocyanate (ISO) Information

Isocyanates (ISO) are catalysts used in two-component materials.

Isocyanate Conditions



Spraying or dispensing fluids that contain isocyanates creates potentially harmful mists, vapors, and atomized particulates.

- Read and understand the fluid manufacturer's warnings and Safety Data Sheets (SDSs) to know specific hazards and precautions related to isocyanates.
- Use of isocyanates involves potentially hazardous procedures. Do not spray with this equipment unless you are trained, qualified, and have read and understood the information in this manual and in the fluid manufacturer's application instructions and SDSs.
- Use of incorrectly maintained or mis-adjusted equipment may result in improperly cured material. Equipment must be carefully maintained and adjusted according to instructions in the manual.
- To prevent inhalation of isocyanate mists, vapors, and atomized particulates, everyone in the work area must wear appropriate respiratory protection. Always wear a properly fitting respirator, which may include a supplied-air respirator. Ventilate the work area according to instructions in the fluid manufacturer's SDSs.
- Avoid all skin contact with isocyanates. Everyone in the work area must wear chemically impermeable gloves, protective clothing and foot coverings as recommended by the fluid manufacturer and local regulatory authority. Follow all fluid manufacturer recommendations, including those regarding handling of contaminated clothing. After spraying, wash hands and face before eating or drinking.

Keep Components A and B Separate

Cross-contamination can result in cured material in fluid lines which could cause serious injury or damage equipment. To prevent cross-contamination:

- Never interchange component A and component B wetted parts.
- Never use solvent on one side if it has been contaminated from the other side.

Moisture Sensitivity of Isocyanates

Exposure to moisture (such as humidity) will cause ISO to partially cure, forming small, hard, abrasive crystal that become suspended in the fluid. Eventually a film will form on the surface and the ISO will begin to gel, increasing in viscosity.

NOTICE

Partially cured ISO will reduce performance and the life of all wetted parts.

- Always use a sealed container with a desiccant dryer in the vent, or a nitrogen atmosphere. **Never** store ISO in an open container.
- Keep the ISO pump wet cup or reservoir (if installed) filled with appropriate lubricant. The lubricant creates a barrier between the ISO and the atmosphere.
- Use only moisture-proof hoses compatible with ISO.
- Never use reclaimed solvents, which may contain moisture. Always keep solvent containers closed when not in use.
- Always lubricate threaded parts with an appropriate lubricant when reassembling.

NOTE: The amount of film formation and rate of crystallization varies depending on the blend of ISO, the humidity, and the temperature.

Changing Materials

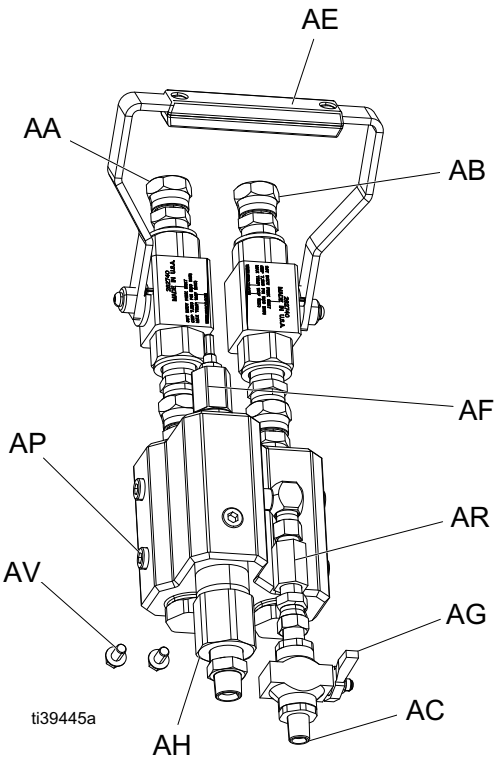
NOTICE

Changing the material types used in your equipment requires special attention to avoid equipment damage and downtime.

- When changing materials, flush the equipment multiple times to ensure it is thoroughly clean.
- Always clean the fluid inlet strainers after flushing.
- Check with your material manufacturer for chemical compatibility.
- When changing between epoxies and urethanes or polyureas, disassemble and clean all fluid components and change hoses. Epoxies often have amines on the B (hardener) side. Polyureas often have amines on the B (resin) side.

Component Identification

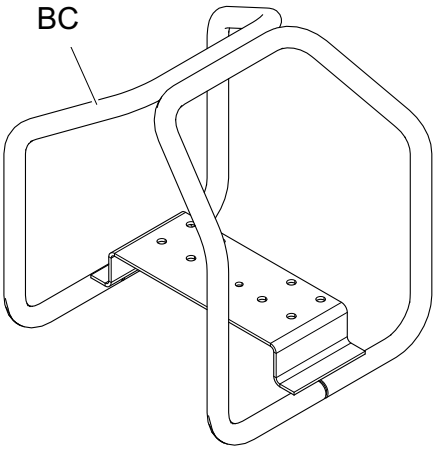
Standard XP Mix Manifold 262807



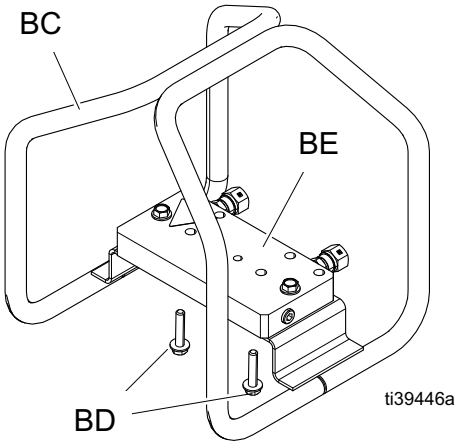
Ref.	Description
AA	“A” Material Inlet
AB	“B” Material Inlet
AC	Solvent Inlet, 1/4 npt(m)
AE	Dual Shutoff Handle
AF	Hardener Restrictor Adjustment
AG	Solvent Shutoff Handle
AH	Mix Manifold Outlet, 1/2 npt(f) with 3/8 npt(m) adapter
AP	Accessory Ports (see **Accessory Ports**, page 36)
AR	Solvent Inlet Check Valve
AV	Fasteners (assembled on Mix Manifold)

FIG. 1: Mix Manifold Component Identification

Remote Manifold Carriage 262522 and 24Z934



Remote Manifold Carriage

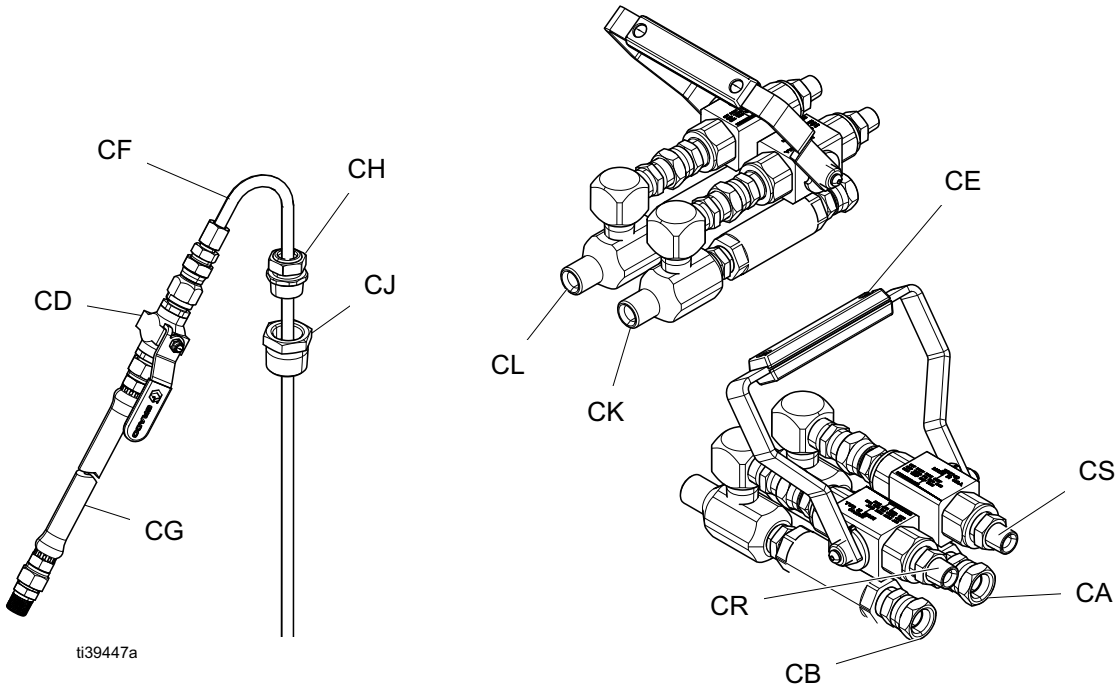


Remote Manifold Carriage with Heater Block 24Z934

Ref.	Description
BC	Remote Manifold Carriage
BD	Long Fasteners (shipped loose)
BE	Heater Block

FIG. 2: Remote Manifold Heater Block Component Identification

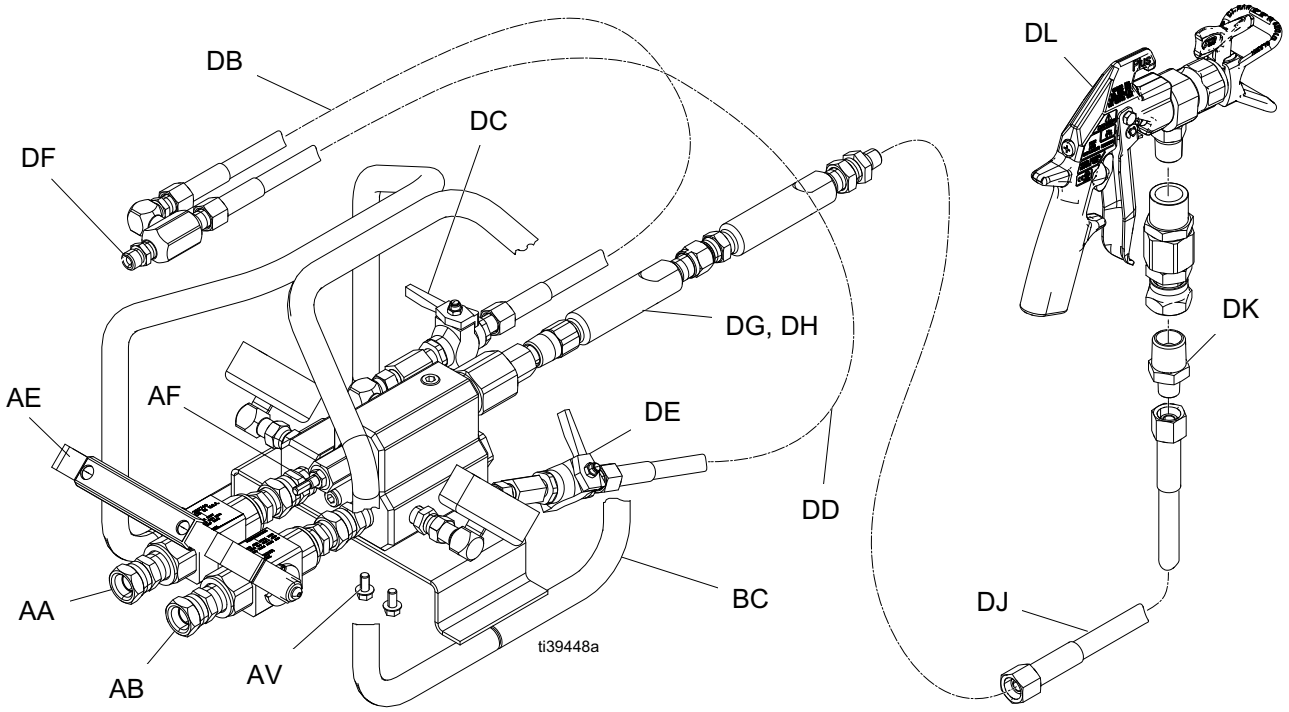
Remote Recirculation Kit 420033



Ref.	Description
CA	Recirculation Manifold “A” Inlet
CB	Recirculation Manifold “B” Inlet
CD	Recirculation Hose Shut-Off Valve
CE	Remote Recirculation Handle
CF	Remote Recirculation Tube
CG	Remote Recirculation Hose
CH	Bushing (shipped loose)
CJ	Adapter Fitting (shipped loose)
CK	“A” Fitting End
CL	“B” Fitting End
CR	Remote “B” Recirculation Port
CS	Remote “A” Recirculation Port

FIG. 3: Remote Recirculation Kit Component Identification

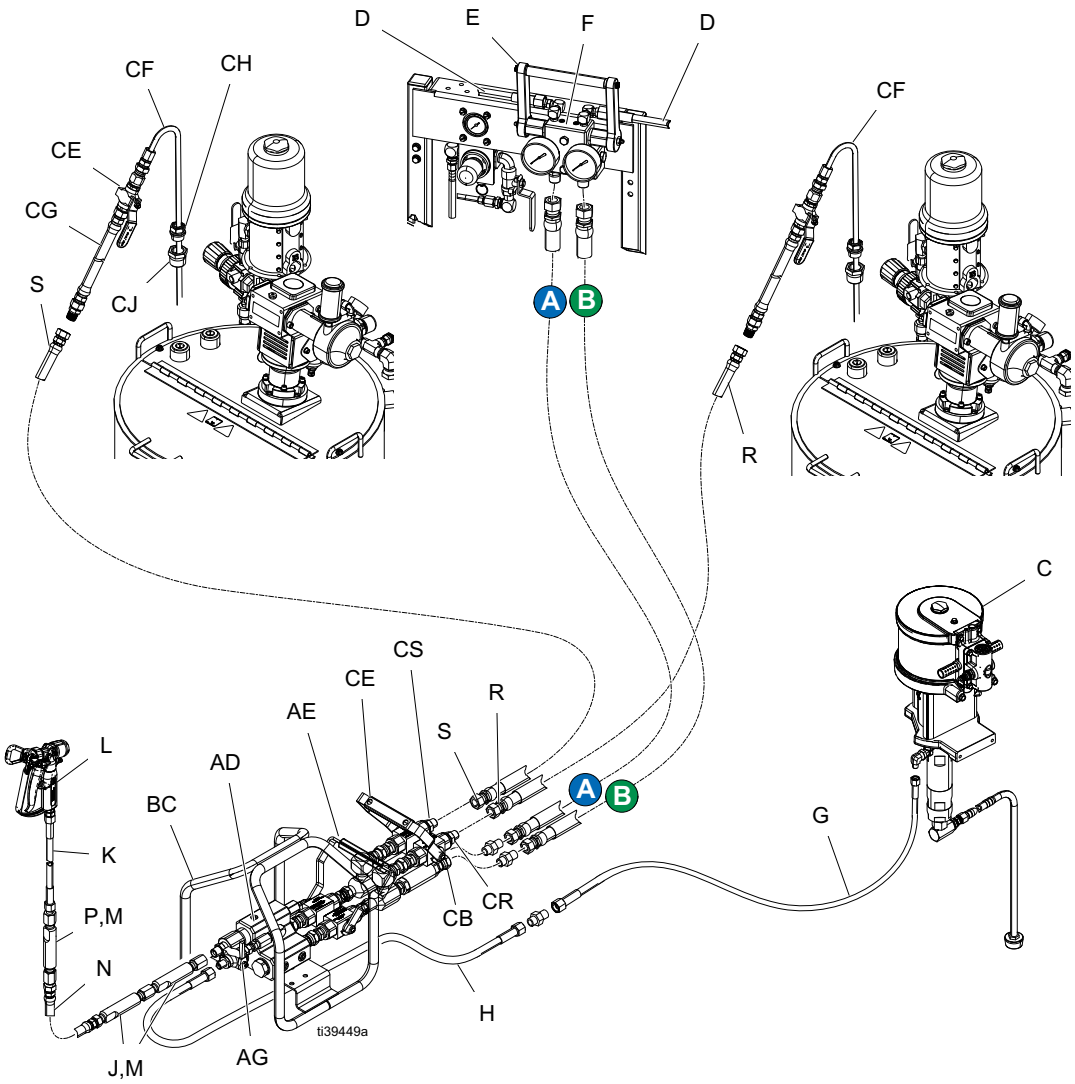
Quickset Manifold 24M398



Ref.	Description
AA	“A” Material Inlet
AB	“B” Material Inlet
AE	Dual Shutoff Handle
AF	Hardener Restrictor Adjustment
AV	Fasteners
BC	Remote Manifold Carriage
DB	“B” Side Solvent Line
DC	“B” Side Solvent Shutoff
DD	“A” Side Solvent Line
DE	“A” Side Solvent Shutoff
DF	Solvent Inlet Tree
DG	Primary Mix Housing
DH	Static Mixing Element (not shown, inside DH)
DJ	Fluid Whip Hose (shipped loose)
DK	Adapter Fitting (shipped loose)
DL	XHF Gun (shipped loose)

FIG. 4: Quickset Manifold Component Identification

Typical Installation



Ref.	Description
C	Solvent Pump
D	Recirculation Lines
E	Recirculation Handles
F	Recirculation Manifold
G	Solvent Supply Hose
H	Solvent Hose Extension
J	Primary Mixer Housing
K	Fluid Whip Hose
L	Airless Spray Gun
M	Static Mixing Element (not shown inside J or P)
N	Fluid Mix Hose

Ref.	Description
P	Clean-up Mixer Tube
R	“B” Recirculation Hose
S	“A” Recirculation Hose
AD	Mix Manifold
AE	Dual Shutoff Handle
AG	Solvent Shutoff Handle
BC	Remote Carriage
CE	Remote Recirculation Handle
CF	Remote Recirculation Tube
CR	Remote “B” Recirculation Port
CS	Remote “A” Recirculation Port

FIG. 5: Typical Installation

Overview

The left side of the mix manifold is intended for the major volume material, or the higher viscosity material if using a 1:1 volume mix. This side is referred to throughout the manual as the resin side or “A” side.

The right side is referred to as the Hardener side or “B” side. The “B” side incorporates an adjustable restrictor for balancing the system back pressure and flow.

See FIG. 2 to view flow of “A” and “B” material inside the Mix Manifold.

The resin and hardener enter the mix manifold through the manifold inlet ports and spring loaded carbide ball checks. The “A” material flows through the manifold to the material outlet port. The injector tube creates a hollow stream of “A” material for the “B” material to fill once the hardener exits the injector tube. The resin and hardener material mix after they have left the mix manifold.

On the standard XP mix manifold, mixed material is flushed out by sending a flush solvent through the B side center tube. On the Quickset mix manifold, solvent is also flushed across the A side fluid check valve.

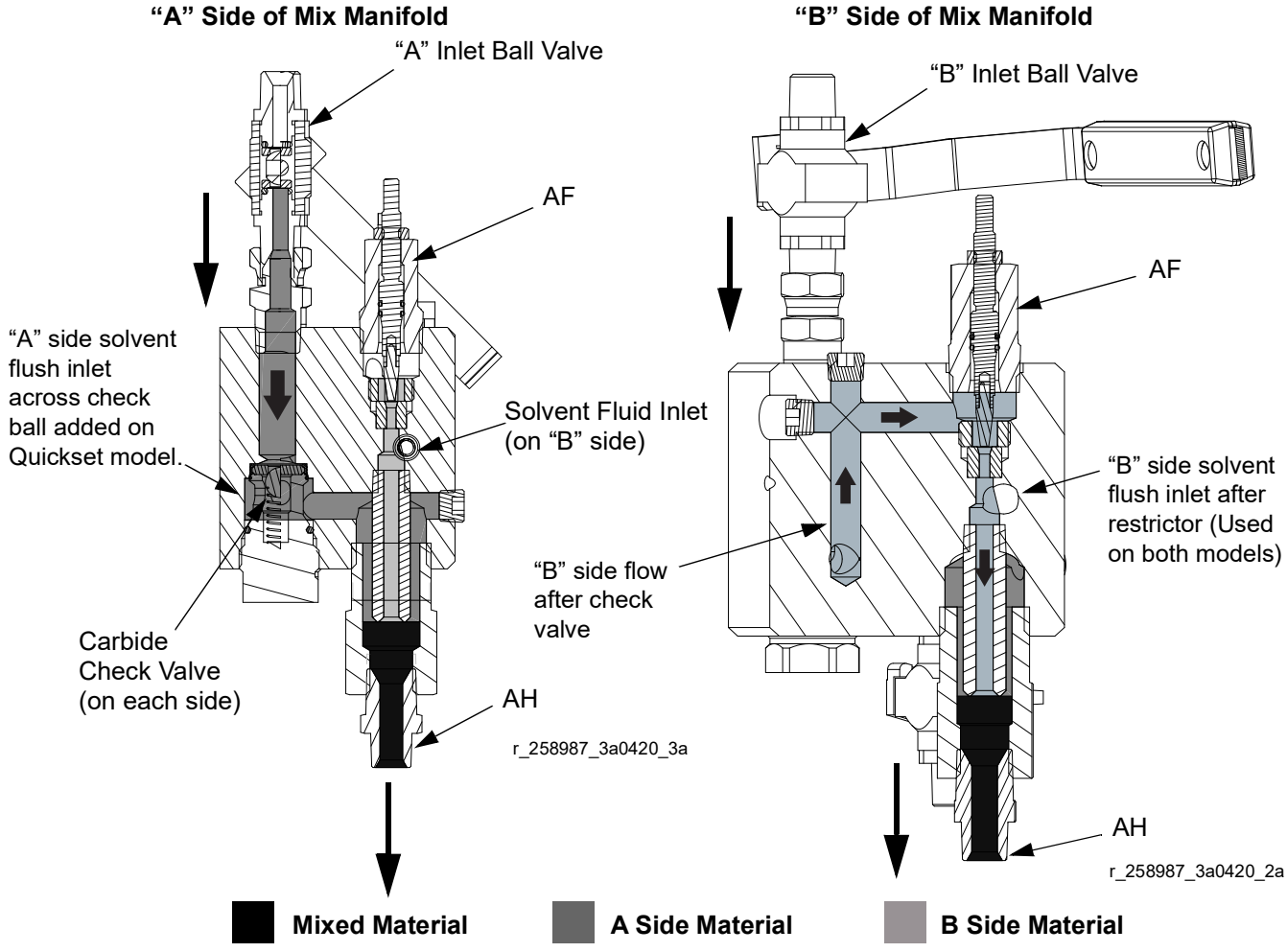


FIG. 6: Cross-Section Side Views of A and B Flow

Remote Mix Manifold

The standard XP mix manifold can be removed from the proportioner and mounted closer to the gun. This reduces the volume of mixed material and flush solvent for quick setting materials (less than 10 minute pot life).

When the standard XP mix manifold is mounted remote from the proportioner, follow the steps in **Volume Balancing the Mix Manifold** on page 24.

262522 Remote Mix Manifold Carriage

The carriage holds and protects the mix manifold assembly when mounted remotely.

24Z934 Remote Mix Manifold Heater Block Kit

The remote mix manifold carriage 262522 with heating block is used with water jacketed heated hoses, heating fluid is circulated under the mix manifold to maintain temperature. See your water jacketed heated hoses manual for details for connecting heated hoses.

24M398 Quickset Manifold

The remote mix manifold with dual flush and pressure gauges is used for quick setting materials. The mix manifold comes assembled on the carriage with static mixers, and includes mixed material hose and XTR gun. Before installing, follow steps in **Volume Balancing the Mix Manifold** on page 24.

Installation

For assistance in setting up a plural component sprayer, contact your Graco distributor, to ensure that you select the proper type and size equipment for your system.

A and B Material Inlets

Standard XP Mix Manifold 262807 (See illustration in FIG. 1 on page 9) and Quickset Mix Manifold 24M398: The A and B material inlets (AA and AB) are equipped with 1/2 npt(f) ball valves. Connect 1/2 in., 3/8 in., or 1/4 in. npsm(f) fluid hoses with adapter nipples as needed.

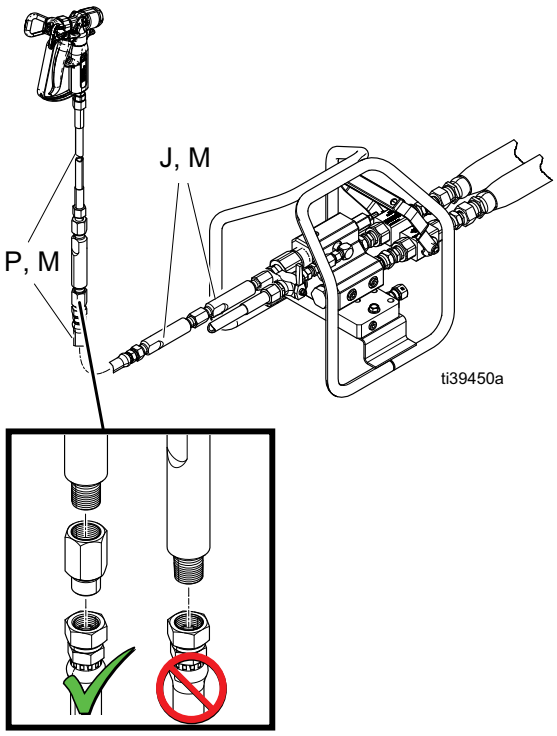
Solvent Inlet

For Standard XP Mix Manifold 262807: Connect the solvent extension hose (H) to the solvent supply hose (G). Connect the other end of the solvent extension hose (H) to the solvent inlet (AC).

For Quickset Mix Manifold 24M398: Connect the solvent supply hose (G) to the solvent inlet tee (DF).

Use a Graco approved grounded hose rated to withstand the maximum fluid working pressure of the solvent pump. The hose core must be chemically compatible with the solvent being used, such as nylon or PTFE.

Mixed Material Outlet



Standard XP Mix Manifold 262807

Connect the outlet to two primary static mixer tubes (J), with mixer elements (M), to the mix hose (N), cleanup mixer (P), whip hose (K), and spray gun (L).

NOTICE

To prevent creating a flare on the mixer tube, do not use a union swivel end on the mix tube inlet.

Quickset Manifold 24M398

Connect the whip hose (DJ), adapter fitting (DK) and spray gun (DL).

NOTICE

To prevent material from curing inside the manifold, never split the flow to multiple guns until the two fluids are mixed after the mix manifold assembly.

Converting to Remote Mix Manifold

Loosen the swivel fittings of the A and B material inlets (AA, AB) and remove the standard XP mix manifold (AD).

For 262522: Use the mounting fasteners (AV) to mount the standard XP mix manifold (AD) to the remote carriage. See **Mounting without Carriage (page** 17**)** if not using a remote carriage.

For 24Z934: Remove the existing mounting fasteners (AV) and discard. Use the long fasteners (BD) (shipped loose with kit) to install the standard XP mix manifold to the remote carriage with heater manifold. Refer to your heated hose manual for heated hose connection instructions.

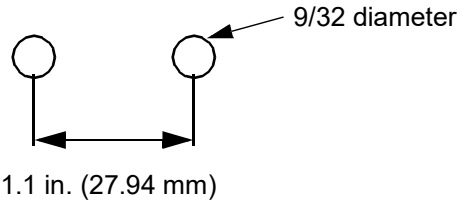
Installing Remote Recirculation Manifold

1. Follow the **Converting to Remote Mix Manifold** procedure on page 17.
2. Connect the remote recirculation manifold to the mix manifold by connecting the “A” fitting end (CK) to A material inlets (AA) and the “B” fitting end (CL) to B material inlets (AB).
3. Connect “A” and “B” material hoses to the recirculation manifold inlet (CA, CB).
4. Connect the recirculation hoses (R, S) of the heated hose bundle to the corresponding remote recirculation ports (CR, CS).

   NOTE: Not all heated hose bundles include recirculation hoses.
5. Connect the recirculation hoses (R, S) to the corresponding return hoses.

Mounting without Carriage

To mount the bare manifold, drill two holes in the mounting surface, and secure with the two 1/4-20 screws (28).



Grounding

The equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current. See your sprayer manual for additional warning information.

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

Flush Before Using Equipment

The equipment was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the equipment with a compatible solvent before using the equipment. See **Flushing**, page 16.

Ratio Check

Perform the ratio check procedure after any changes to the proportioning system. Use Ratio Check Kit 24F375 to check the ratio at the mix manifold. See manual 3A0421 for instructions and parts.

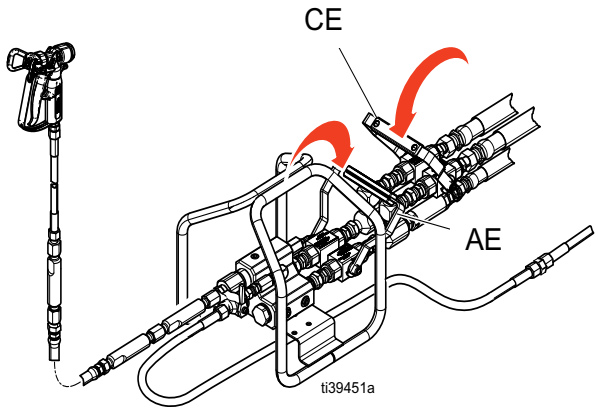
NOTE: To prevent an inaccurate ratio check when feed pumps are used in your system, the feed pressure cannot be more than a maximum of 25% of the proportioner outlet pressure while dispensing. High feed pressure can float the proportioner pump check balls, resulting in an inaccurate ratio check.

Operation

Prime Remote Mix Manifold

To help prevent injury from solvents and heated fluids, wear gloves when using solvents and/or if the fluid temperature exceeds 110 °F (43 °C).

1. Follow steps in your XP proportioner manual to prime the proportioner.
2. Close the dual shutoff handle (AE).



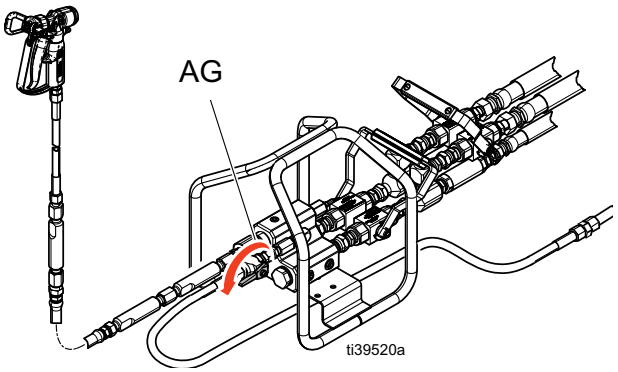
3. Open the remote recirculation handle (CE), and make sure the remote recirculation tubes (CG) are inserted in the correct hopper.

   NOTE: If a remote recirculation manifold is not installed, disconnect the material hoses at the material inlets (AA and AB). Prime the material hoses over grounded metal pails, then reconnect the material hoses.

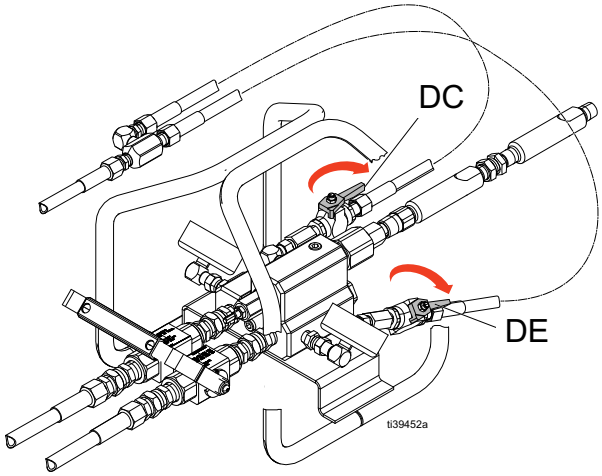
4. Run the XP pumps until fluid flows through the “A” and “B” material hoses.

Prime Solvent Hose, Mixed Material Hose and Gun

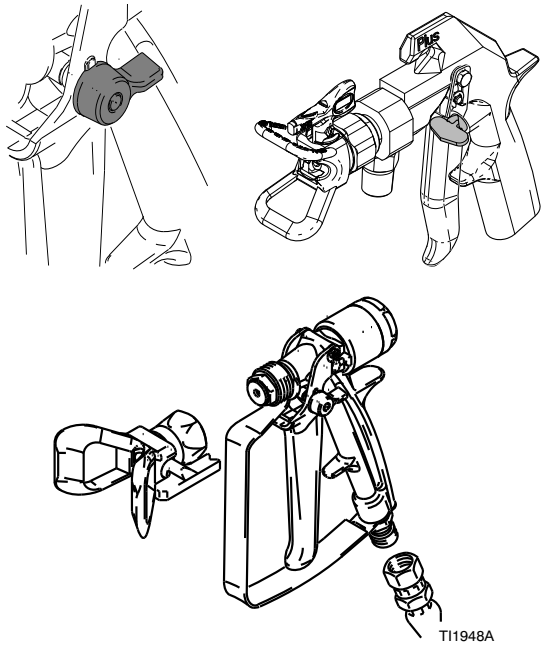
1. Connect a ground wire (not included) to a metal pail of solvent.
2. Dispense solvent to the remote mix manifold. See your XP manual for operation instructions.
3. Open the solvent shutoff valve (AG) on the mix manifold.



4. On Quickset manifolds, open the “A” side solvent valve (DE) and “B” side solvent valve (DC).

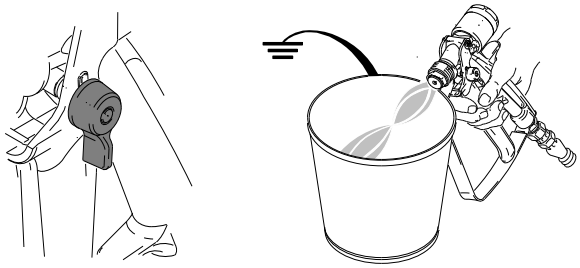


5. Make sure the trigger lock is engaged. Remove the spray tip.



6. Disengage the trigger lock and trigger the gun into a grounded pail. Use a pail lid with a hole to dispense through.

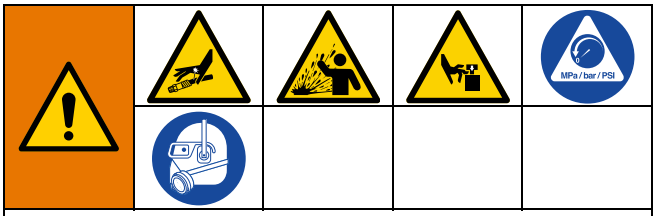
   NOTE: To prevent splash-back, use a rag to seal around the hole and gun. Be careful to keep fingers away from the front of the gun.



7. Close the solvent flush valves and trigger the gun to relieve pressure. Engage the trigger lock.

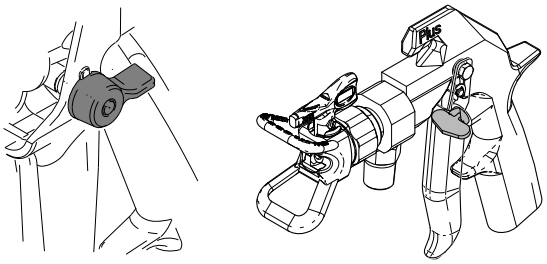
Pressure Relief Procedure

Follow the Pressure Relief Procedure whenever you see this symbol.

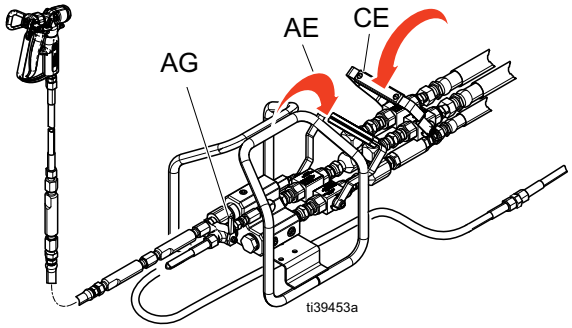


This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing the equipment.

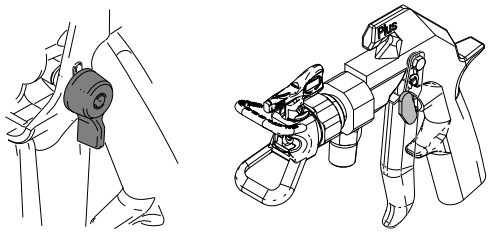
1. Engage the trigger lock.



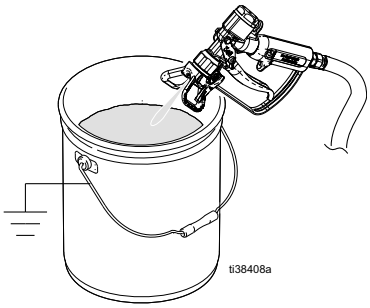
2. Close all air motor supply valves or any source of fluid pressure.
3. Close the dual shut-off handle (AE), open the remote recirculation handle (CE), if used. Open the recirculation handle on the XP proportioner.



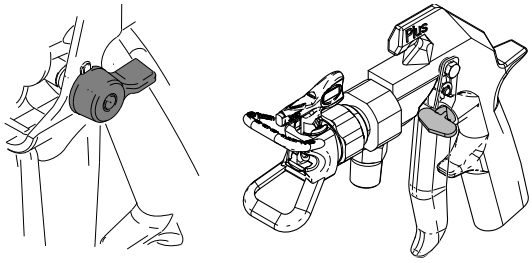
4. Shut off fluid heaters, if used.
5. Shut off feed pumps, if used.
6. Disengage the trigger lock.



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



8. Engage the trigger lock.



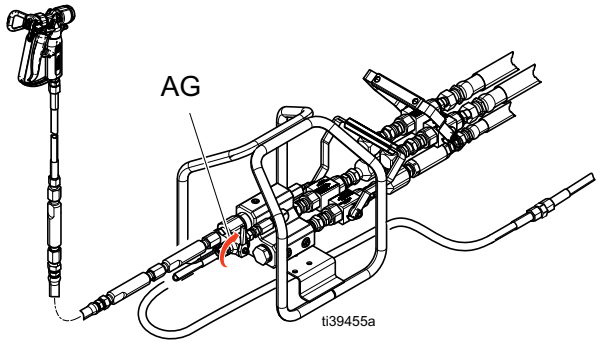
9. Open all fluid drain valves in the system, having a waste container ready to catch drainage. Leave drain valves open until you are ready to spray again.
10. If you suspect the spray tip or hose is clogged or that pressure has not been fully relieved after following the steps above, VERY SLOWLY loosen tip guard retaining nut or hose end coupling to relieve pressure gradually, then loosen completely. Clear hose or tip obstruction.

Trigger Lock

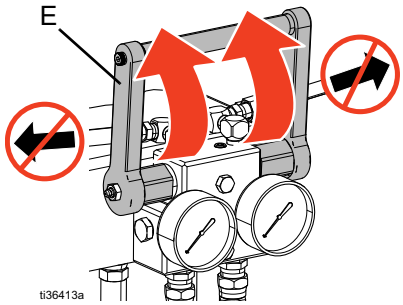
Always engage the trigger lock when you stop spraying to prevent the gun from being triggered accidentally by hand or if dropped or bumped.

Dispensing and Spraying

1. Close the solvent inlet valve (AG).



2. Close the recirculation handle (E).

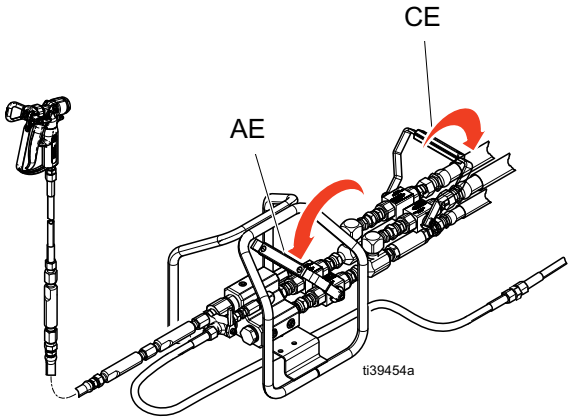


3. Close the remote recirculation handle (CE), if equipped.

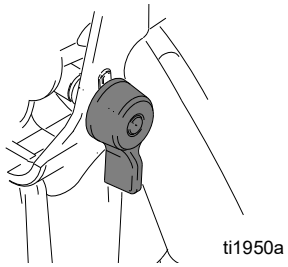
4. Open the dual shutoff handle (AE).

NOTICE

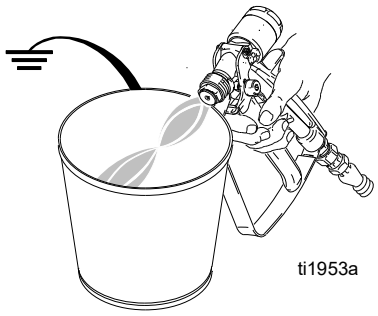
To prevent damage to the valve balls and seats, always fully open or fully close the dual shutoff handle. Also increase the fluid pressure after opening the ball valves to allow valves to last longer.



5. Disengage the trigger lock.



6. Hold the metal part of the gun firmly to a grounded metal pail with a lid to avoid splashing. Trigger the gun until mixed coating material is evident and purge solvent is gone.



7. Proceed spraying.

Flushing

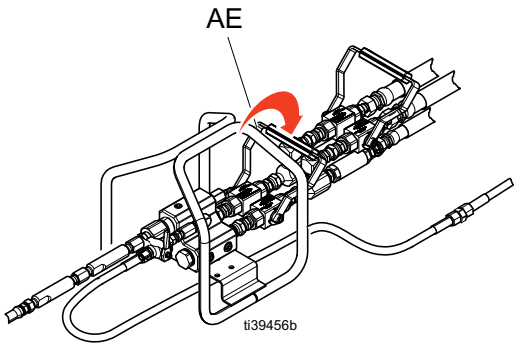
To help prevent injury from solvents and heated fluids, wear gloves when using solvents and/or if the fluid temperature exceeds 110 °F (43 °C).

NOTICE

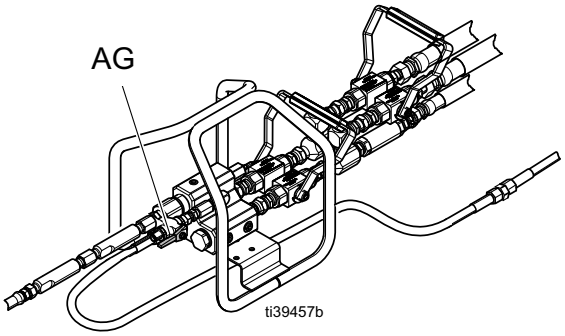
To prevent damage to the valve balls and seats, always fully open or fully close the dual shutoff handle. Also increase the fluid pressure after opening the ball valves to allow valves to last longer.

- Ensure flushing fluid is compatible with dispense fluid and the equipment wetted parts.
- Use a solvent that dissolves the material you are mixing
- Solvent may channel through viscous fluids and leave a coating of mixed fluid on the inner tube of your hose. Make sure all fluid is thoroughly flushed from the hose after each use.
- Remove spray tip for more thorough cleaning of the whip hose and static mixers.
- Always leave equipment filled with fluid to avoid drying and scaling.
- Frequently remove, clean and replace the static mixer elements.

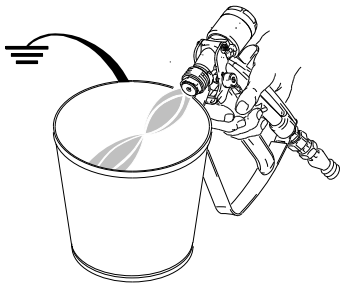
1. Follow the **Pressure Relief Procedure** on page 21.
2. Remove the spray tip and soak in solvent.
3. Close the dual shutoff handle (AE).



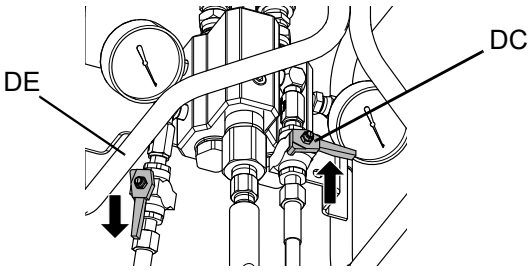
4. Open the shutoff valve (AG). For the Quickset manifold, close the A side flush valve (DE).



5. Turn on solvent flush pump.
6. Disengage spray gun trigger lock.
7. Trigger the gun into a grounded metal pail with lid. Use a lid with a hole to dispense through to avoid splashing. Trigger the gun until clean solvent dispenses.



   a. For the standard mix manifold, proceed to step 8.
   b. For the Quickset mix manifold, after briefly flushing with the B side valve, close the B side flush valve (DC) and open the A side flush valve (DE). Repeat step 7 until clean.



8. Turn off the solvent pump air assembly.
9. Hold the metal part of the gun firmly to a grounded metal pail with the lid in place. Trigger the gun until all fluid pressure is relieved.

Volume Balancing the Mix Manifold

If the mix manifold is mounted on the machine, you do not need to adjust the restrictor (F). Leave open two turns minimum.

When the manifold is remote, two things must be done to reduce momentary ratio errors that can occur due to the compressible nature of paint hoses.

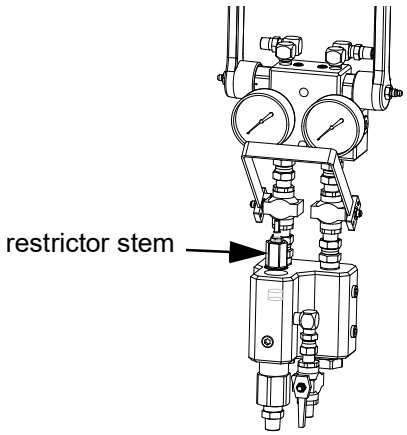
- Adjust Restriction
- Select correct sized hoses

Adjust Restriction at the Mix Manifold

The B side restrictor (F) in the mix manifold is only used when the mix manifold is positioned remote from the machine with a short mix hose to the spray gun.

The restrictor (F) controls “lead/lag” ratio errors of the A and B flow into the static mixer tubes. These errors occur momentarily when the gun opens. The error is caused by differences in viscosity, volume, and hose expansion between the proportioner outlets and the mix point.

Adjust the restrictor (F) stem clockwise while spraying until you see a slight rise in the B side pressure gauge. The point where the pressure starts to rise is a good adjustment setting.



Unless you are dispensing directly out of the mix manifold and mixer, this an approximate adjustment.

For low viscosity fluids, an optional 40 mesh screen can be installed in the mix manifold, in front of the restrictor. This keeps the carbide tapered stem and seat from plugging.

For high viscosity 1:1 applications, the entire restrictor assembly and seat can be removed and replaced by a high pressure 3/4 npt plug.

Hose Selection for Feeding A Remote Mix Manifold

The mix manifold can be removed from the machine and used closer to the spray gun to minimize the mixed material in the hoses and reduce flush solvent with the following restrictions.

- Only one mix manifold can be used on a proportioner.
- Splitting flow to two or more guns can only be done after the two fluids are mixed.

This applies to applications that are not 1:1 ratio, and don’t have near balanced viscosities.

Balance the hoses inside area sizes in relation to the mix ratio by volume. This is most important when the mix manifold gets close to the spray gun.

The proportioner will put out the two materials in the exact ratio by volume. If the hose sizes are not balanced to the ratio, one hose will always come up to pressure first. This ratio error at the mix point can occur anytime that there is a change in pressure. Balance the hose sizes by effective area, not by inside diameter.

Area = (3.1416 * radius^2) or see Table 1.

For balancing purposes, it is always assumed that the A side is the high volume side.

Table 1: Volume Ratio of “A” to “B” Hose

Mix Ratio	Hose Selection “A” x “B”	Volume Ratio
1:1	1/2 x 1/2	1.0:1
	3/8 x 3/8	
1.5:1, 2:1	1/2 x 3/8	1.78:1
2:1	3/8 x 1/4	2.25:1
2.5:1	3/8 x 1/4	2.25:1
3:1		
4:1	1/2 x 1/4	4.0:1

Example: At a 4:1 mix ratio, a 1/2 in. ID resin hose and a 1/4 in. ID hardener hose matches the 4:1 volume ratio.

Use Table 2 and the examples provided to approximate how much pressure drop you can expect for every 50 ft (15.2 m) of hose at 1 gpm flow in that particular hose for a 1000 cps viscosity material. Adjust for your applications flow rate and viscosity.

Typical flow rates are usually 0.4-0.8 gpm (1.5-3 l/mn) per gun depending on tip size and viscosity.

Table 2: Hose Selection by Pressure Drop

Hose ID (in.)	Pressure drop per 50 ft section per 1000 cps at 1 gal/min. (psi)	Pressure Drop per 15.24 meter section per 1000 cps at 1 liter/min. (Bar)
1/8	55910	1018
3/16	11044	201
1/4	3494	64
3/8	690	13
1/2	218	4
5/8	89	1.62
3/4	43	0.78

Reference Formula

Pressure drop = $0.0273\ QVL/D^4$

Key:
Q = Vis poise (centipoise/100)
V= Gallons per minute
L= Length (ft)
D=Inside diameter (in.)

Example 1: What is the pressure loss of a 2000 cps material through 150 ft of 3/8 in. ID hose at 0.75 gpm?

690 psi (from chart) x 2 (viscosity factor 2 x 1000 cps) x 3 (3 x 50 ft hoses) x 0.75 (% of gpm) = 3105 psi loss

That is a lot of pressure loss before the spray gun. Try a 1/2 in. hose. See Example 2.

Example 2: What is the pressure loss of a 2000 cps material through 150 ft of 1/2 in. ID hose at 0.75 gpm?

218 psi (from chart) x 2 (viscosity factor 2 x 1000 cps) x 3 (3 x 50 ft hoses) x 0.75 (% of gpm) = 981 psi loss

Avoid under sizing the high volume side. Pressure drop during flow conditions will increase momentary hose induced ratio errors. See Table 2.

Maintenance

Follow **Pressure Relief Procedure** the when you stop spraying or dispensing and before cleaning, checking, servicing, or transporting equipment.

Clean Static Mixers

See FIG. 1 on page 9. Typically, two static mixer housings are connected to the mix manifold outlet (H). These housings use plastic mix elements, available in a package of 25 (Part No. 248927).

NOTICE

Never use a swivel union on the mixer inlets. The union will compress the tube and make it impossible to remove the mix element.

To clean the housing and replace the mix element:

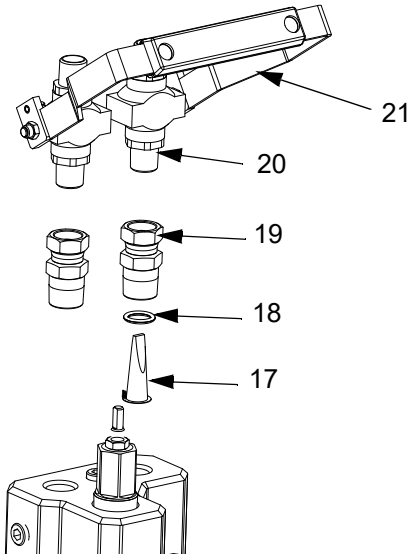
1. Follow the **Pressure Relief Procedure** on page 21.
2. Remove mixer housings (J) from whip hose (K).
3. Place flats of mixer housing (J) in a vise. Push mix element (P) out of the inlet end.
4. If necessary, use a 1/2 in. drill bit to drill out old material and the mix element from the inlet end, down to the internal shoulder at the outlet end.
5. Use a brush to clean any debris in housing (J).
6. Insert new mix element, wide end first.

Clean “B” Side Screen

The following instructions apply only when using the strainer accessory for low viscosity fluids. See **Accessories** on page 36.

1. Loosen swivels (19) and remove shutoff handle (21) and valves (20). See FIG. 7.
2. Remove “B” inlet union (19) from manifold block (1).
3. Pull “V” screen (17) and retainer o-ring (18) straight up and out with a needle nose pliers.
4. Clean or replace screen (17).
5. Reinstall screen (17) and o-ring (18) with accessory tool 15T630.

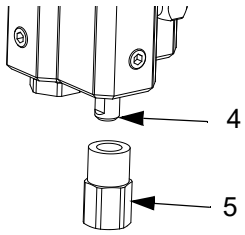
The o-ring (18) is used as a retainer ring, not a seal. It may be scratched or deformed from pushing the screen (17) back in.



6. Install “B” inlet union (19) from manifold block (1).

Clean Mix Manifold Outlet

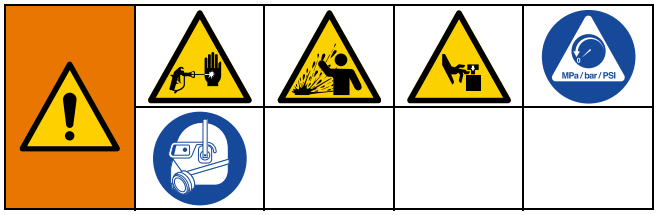
1. Remove outlet fitting (5) to expose “B” center injection tube (4).
2. Clean any build-up on, around, or inside the tube (4).
3. Reinstall outlet fitting (5).



End of Product Life

At the end of a product’s useful life, recycle it in a responsible manner.

Troubleshooting



1. Follow the **Pressure Relief Procedure** on page 21.
2. Check all possible causes and solutions in the troubleshooting chart before disassembling the manifold.

Problem	Cause	Solution
Little or no resin output.	Fluid inlet is plugged.	Clean inlet; remove obstruction.
	Fluid container is empty.	Refill.
Little or no hardener output.	Fluid inlet is plugged.	Clean inlet; remove obstruction.
	Fluid container is empty.	Refill.
	Hardener screen (18) is plugged.	Clean hardener screen. See **Clean "B" Side Screen**, page 26.
Mixed fluid will not flush out.	Fluid is hardened in static mixers or whip hose.	Clean with compatible solvent. See **Maintenance**, page 26. Replace as necessary.
	Solvent supply container is empty.	Refill.
	Solvent is not compatible with fluid.	Change to compatible solvent.
Hardener pressure higher than normal.	Hardener is cold.	Correct heat problem.
	Restrictor or screen plugging up.	Open restrictor or clean screen. See **Clean "B" Side Screen**, page 26.
Hardener pressure lower than normal.	Resin is cold. Flow rate is low.	Correct heat problem.
	Worn hardener restrictor.	Adjust restrictor. See **Adjust Restriction at the Mix Manifold**, page 24.
Spray pattern developing tails.	Static mixer and/or whip hose plugging up.	**Clean Static Mixers**, page 26.
		Clean spray gun and tip. See gun manual.
	Low pressure from proportioner.	Check air supply pressure. Check inlet air gauges while spraying.
	Cold material.	Increase heat.
	Too much pressure drop.	Use larger hoses or more heat.
	Not enough air supply. Gauge drops while spraying.	Air hose is too small.
		Compressor is too small.
	Motor is icing.	Use De-Ice Bleed Air on motor. Dry or cool air before use.
		Wait for motor to thaw.
	Dirty filter in pumps or spray gun.	Clean filters.

Problem	Cause	Solution
Resin or hardener does not shut off.	Damaged ball or seat or seal in valve (20).	Replace or rebuild valve (2). See manual 306861.
Off ratio condition after increasing spray pressure in spray mode with a remote mix manifold.	Hoses not volume balanced.	Volume balance A and B remote material hoses closer to volume mix ratio. See **Hose Selection for Feeding A Remote Mix Manifold**, page 24 and **Maintenance**, page 26.

Repair

Follow **Pressure Relief Procedure** the when you stop spraying or dispensing and before cleaning, checking, servicing, or transporting equipment.

NOTICE

Be sure to label all fluid parts “resin” or hardener” when disassembling them. Doing so prevents interchanging resin and hardener parts during reassembly and prevents contamination of the materials and fluid path through the equipment.

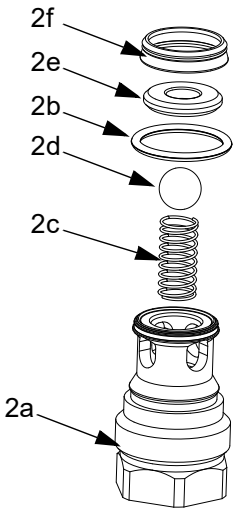
Color-coded chemically resistant tape may be used to label the parts. Use blue for resin and green for hardener.

Cartridge Assemblies

1. Follow **Pressure Relief Procedure**, page 21.
2. Use a wrench to remove the cartridge assemblies (2) from the manifold.
3. Use a 90° Allen wrench to pop the seat (2e) and seal (2f) out of the housing, or tap them out from the “A” and “B” inlet side.

Seat retainer seal (2f) normally splits into two pieces when it is fully torqued into the housing. The lip is meant to retain the seat, spring, and ball during assembly. The seat retainer seal (2f) must always be replaced once it is disassembled.

4. Use a soft bristle brush to clean the manifold passageways.
5. Remove the seat (2e), ball (2d), spring (2c), and o-ring (2b) from housing (2a).

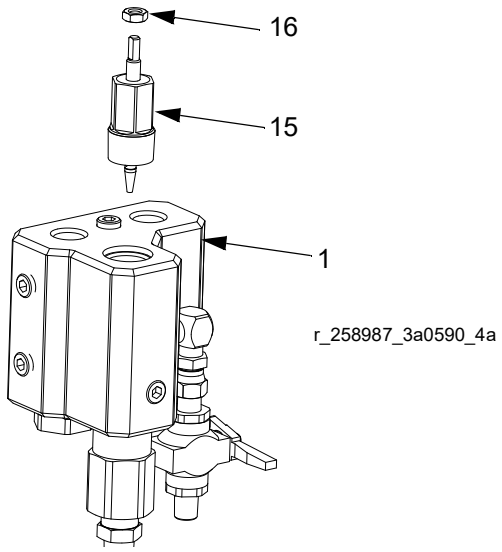


6. Inspect parts for damage and replace as necessary.
7. Assemble parts in reverse order from steps above. Press the assembly against a flat clean surface until seal (2f) snaps into place on the end of housing (2a). The seal (2f) will hold the spring (2c), ball (2d), seat (2e), and o-ring (2b) in place during assembly.
8. Apply lubricant to o-ring (2b) and end seal (2f).
9. Apply anaerobic sealant to external threads of cartridge.
10. Install cartridge assemblies in manifold and torque to 125 ft-lbs (170 N•m).

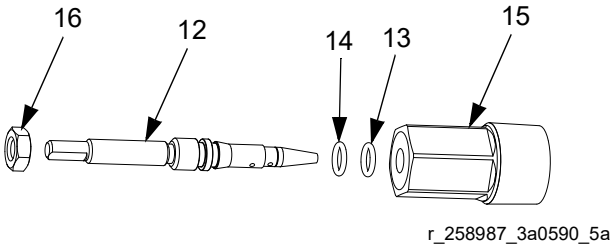
The high torque crushes the seal (2f) for a reliable seal up to 7250 psi (50 MPa, 500 bar).

Remove Restrictor

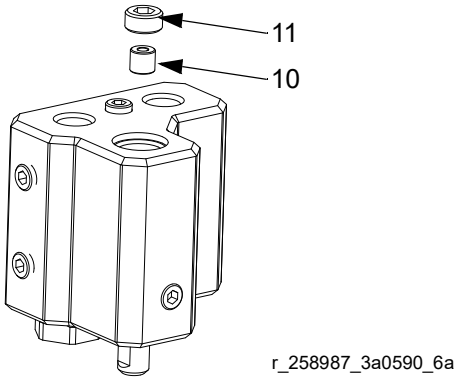
1. Note number of turns from open to closed position. Remove restrictor housing (15) from manifold (1).
2. Place restrictor housing (15) in a vice and remove nut (16).



3. Unscrew stem (12) clockwise and remove from restrictor housing (15).

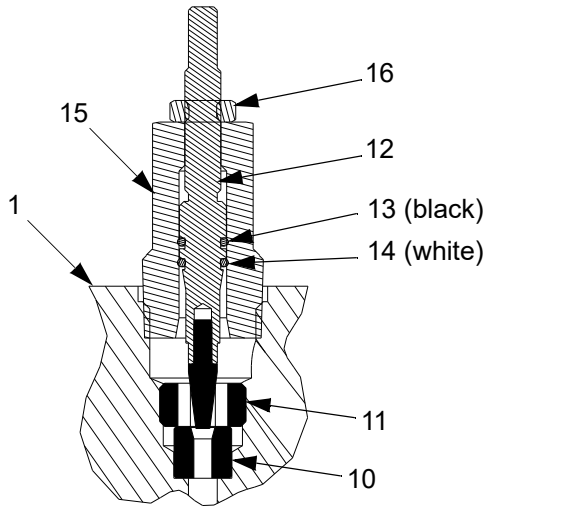


4. Remove and replace o-rings (13, 14).
5. Remove set screw (11) and seat (10) from manifold.



Assemble Restrictor

1. Insert seat (10) with larger tapered end facing up in manifold (1).

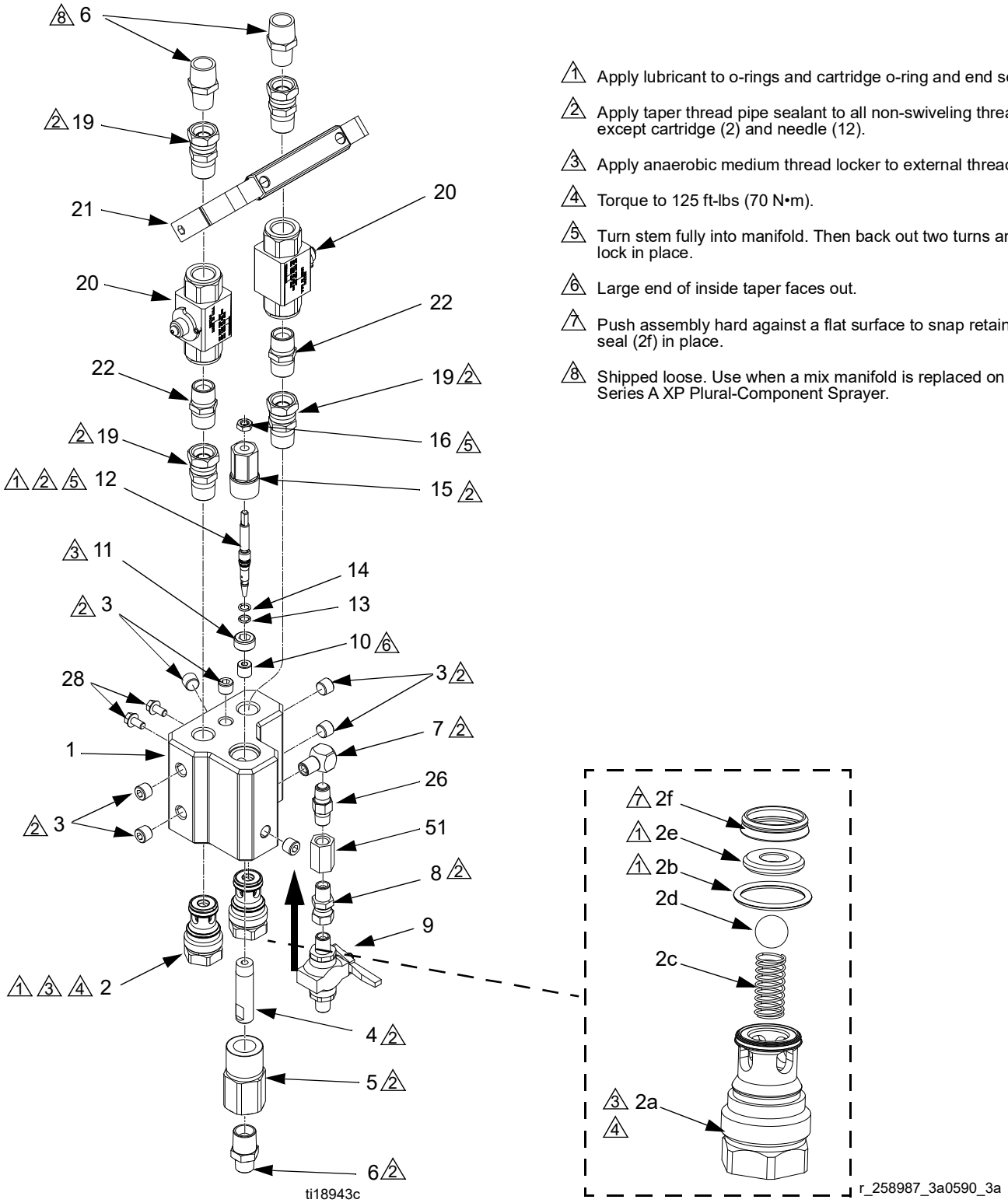


2. Apply blue thread lock to external threads to set screw (11) and install in manifold.
3. Install o-rings (13, 14) and insert stem (12) into restrictor housing (15). Turn stem (12) counter-clockwise until in open position.
4. Loosely install lock nut (16) on stem (12).
5. Tighten restrictor housing (15) into manifold (1).
6. Tighten stem (12) down until it bottoms on seat (10). Then back stem out to previously noted position or two full turns and lock in place with lock nut (16).

For high volume or high viscosity “B” side applications, the restrictor parts can be replaced by a high pressure 3/4 npt plug.

Parts

262807 Standard XP Mix Manifold



1 Apply lubricant to o-rings and cartridge o-ring and end seal.

2 Apply taper thread pipe sealant to all non-swiveling threads except cartridge (2) and needle (12).

3 Apply anaerobic medium thread locker to external threads.

4 Torque to 125 ft-lbs (70 N•m).

5 Turn stem fully into manifold. Then back out two turns and lock in place.

6 Large end of inside taper faces out.

7 Push assembly hard against a flat surface to snap retainer seal (2f) in place.

8 Shipped loose. Use when a mix manifold is replaced on a Series A XP Plural-Component Sprayer.

262807 Standard XP Mix Manifold

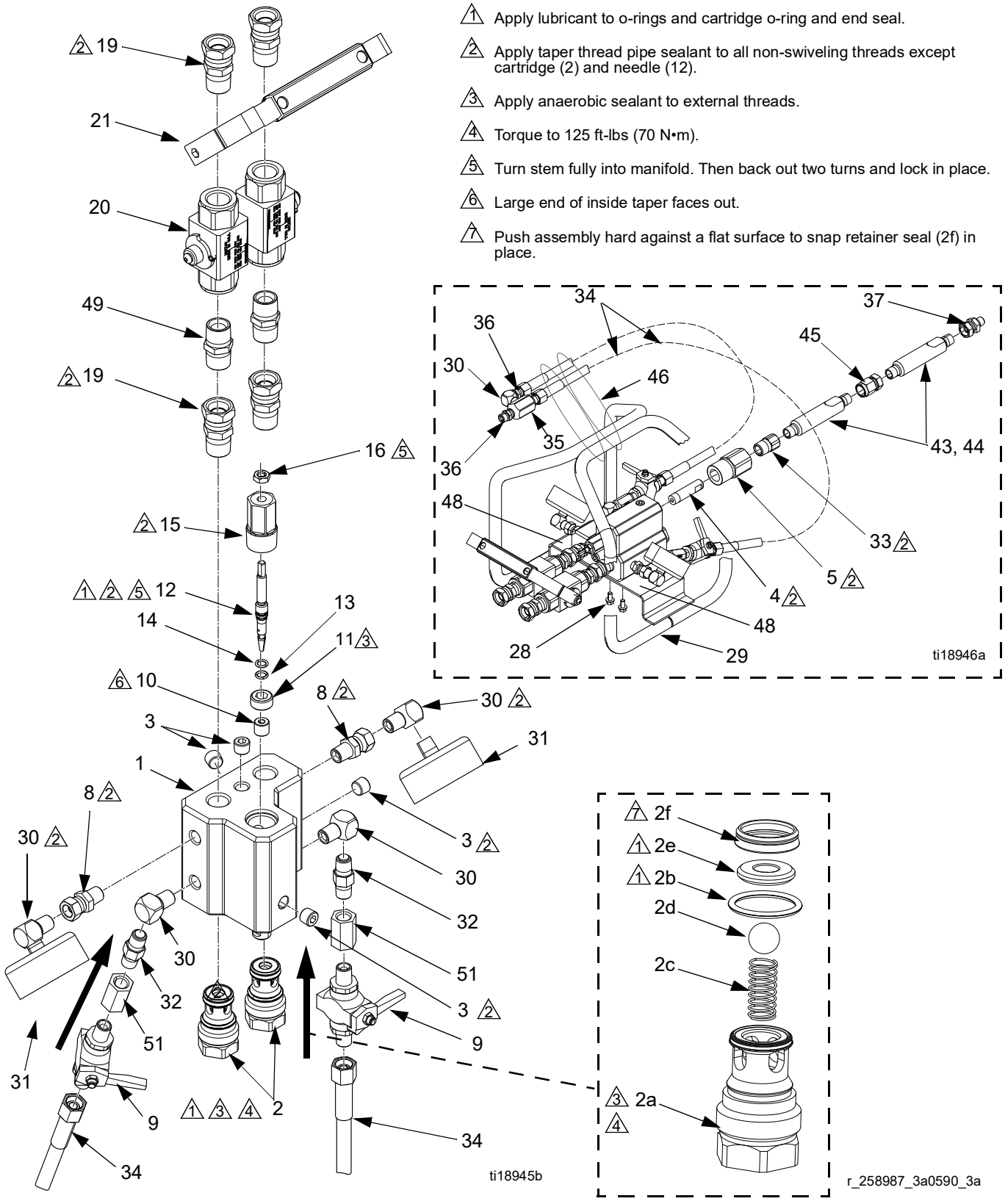
Ref.	Part	Description	Qty.
1	24P869	BLOCK, manifold, mix	1
2	258986	CARTRIDGE, valve, check; includes items 2a-2f	2
2a	16D614	HOUSING, check valve	1
2b	121138	O-RING, PTFE, white	1
2c	15M530	SPRING, check valve	1
2d	116166	BALL	1
2e	15A968	SEAT, foot valve	1
2f	15K692	SEAL, retainer	1
3	100721	PLUG, pipe; 1/4 npt	7
4	15R378	TUBE, injector, hardener	1
5	15R067	PIPE, outlet, mixer manifold	1
6	159239	FITTING, nipple, pipe, reducing	3
7	100840	ELBOW, street, lapped	1
8	156823	UNION, swivel; 1/4 m x f	1
9	214037	VALVE, ball, solvent; 1/4-18 npt; see manual 306861	1
10	183951	SEAT, valve, carbide	1
11	15R382	SCREW, set, hollow, 3/4-16	1
12	235205	STEM, valve	1
13	110004	O-RING, PTFE, white	1
14	113137	O-RING, solvent resistant, black	1
15	15M969	NUT, packing, restrictor	1
16	110005	NUT, jam, hex	1
19	156684	UNION, swivel; 1/2 npt m x f	4
20	262740	VALVE, ball; 1/2 npt (f); see manual 306861	2
21	24M421	LEVER, valve	1
22	158491	NIPPLE, 1/2-14 npt	2
26†	501867	VALVE, check, mxm, 1/4 npt	1
28	113161	SCREW, flange, hex hd; 1/4-20 x 1/2 in. (12.7 mm)	2
50	126786	TOOL, restrictor	1
51	113093	COUPLING, 1/4 npt	

Provided in mix manifold repair kit 258992*. See* ***Provided in Kit 248927 (bag of 25).****, page 35.*

Not shown.

† *Older models with a date code before January 2013 used mxf solvent check valves. If replacing the mxf check valve (563210) with mxm check valve (32), you must also order coupling (51).*

24M398 Quickset Mix Manifold



24M398 Quickset Mix Manifold

Ref.	Part	Description	Qty.
1	24P866	BLOCK, manifold, mix	1
2	258986	CARTRIDGE, valve, check; includes items 2a-2f	2
2a	16D614	HOUSING, check valve	1
2b	121138	O-RING, PTFE, white	1
2c	15M530	SPRING, check valve	1
2d	116166	BALL	1
2e	15A968	SEAT, foot valve	1
2f	15K692	SEAL, retainer	1
3	100721	PLUG, pipe; 1/4 npt	4
4	15R378	TUBE, injector, hardener	1
5	15R067	PIPE, outlet, mixer manifold	1
8	156823	UNION, swivel; 1/4 m x f	2
9	214037	VALVE, ball, solvent; 1/4-18 npt; see manual 306861	2
10	183951	SEAT, valve	1
11	15R382	SCREW, set, hollow, 3/4-16	1
12	235205	STEM, valve	1
13	110004	O-RING; PTFE, white	1
14	113137	O-RING; solvent resistant, black	1
15	15M969	NUT, packing, restrictor	1
16	110005	NUT, jam, hex	1
19	156684	UNION, swivel; 1/2 npt m x f	4
20	262740	VALVE, ball; 1/2 npt (f); see manual 306861	2
21	24M421	LEVER, valve	1
22	158491	NIPPLE, 1/2-14 npt	2
28	113161	SCREW, flange, hex hd; 1/4-20 x 1/2 in. (12.7 mm)	2
29	262522	CARRIAGE, remote manifold	1
30	100840	ELBOW, street	5
31	114434	GAUGE, pressure, fluid, sst	2
32†	501867	VALVE, check, mxm, 1/4 npt	2
33	121433	BUSHING, 1/2 x 3/8, 7250 psi	1
34	H42503	HOSE, coupled, 1/4 ID, 3 ft	2
35	15R875	TEE, 1/4 (m x f x f)	1
36	162453	FITTING, 1/4 npsm x 1/4 npt	2
37	157705	UNION, swivel, 1/4 m x 3/8 f	1
43	262478	HOUSING, mixer	2
44	---	MIXER, 1/2-12 element	2
45	156173	UNION, swivel, 3/8 fbe	1
46	114958	STRAP, tie	2
47	119400	SEALANT, pipe, sst	1
48	15U654	LABEL, identification, A/B	1
49	158491	NIPPLE, 1/2 in. npt	2
50	126786	TOOL, restrictor	1
51	113093	COUPLING, 1/4 npt	
52	H72510	HOSE, CPLD, 7250 psi, .25 ID, 10’	1
53	248844	KIT, gun, RMIX, 2K	1

Provided in mix manifold repair kit 258992. *See* ***Provided in Kit 248927 (bag of 25).***.

Not shown.

† *Older models with a date code before January 2013 used mxf solvent check valves. If replacing the mxf check valve (563210) with mxm check valve (32), you must also order coupling (51).*

Provided in Kit 248927 (bag of 25).

Accessories

10,000 psi Fluid Pressure Gauge (2.5 in)

114434 - 1/4 npt(m) back mount pressure gauge can be used in ports as gun pressure gauge.

551387 - 1/4 npt bottom mount version.

High Pressure Hoses and Accessory Fittings

See brochure 349329 for parts and accessories.

2262478, 7250 psi Static Mixer Housing

3/8 npt(m) holds 1/2 in. 12 element plastic sticks.

511352, Mixer

Stainless 3/8 npt(m) pipe with 12 element stainless welded stick; 7250 psi (50 MPa, 500 bar).

248927, Plastic Mix Elements

25 pack of 1/2 in. x 12 element plastic sticks.

B-side screen

40 mesh strainer for low viscosity fluids only.

Ref.	Part	Description	Qty.
17	185416	STRAINER, 40 mesh	1
18	121410	PACKING, screen retainer; PTFE	1

15T630, Screen Installation Tool

Use to reinstall B-side screen.

24F375, Ratio Check Kit

Use to check ratio at mix manifold. See manual 3A0421 for instructions.

Accessory Ports

AP1 and AP2:

These 1/4 npt ports are located after “A” and “B” shutoff handle.

Can be used for an inlet pressure gauge. These are before the fluid check valves and hardener restrictor.

AP3 and AP5:

Can be used for a pressure gauge to measure outlet pressure or check ratio with the 24F375 kit. These ports are downstream of the check valve.

The **AP3** port is used as the second flush inlet on the Quickset model of the mix manifold. It flushes across the resin check ball, but not through it.

AP4:

Can be used for a pressure gauge to measure hardener pressure before the restrictor, but after the check valve.

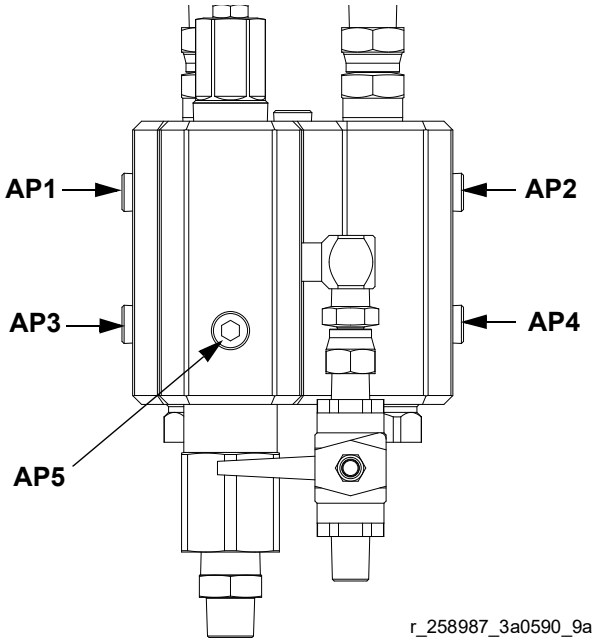


FIG. 7: Accessory Ports

Technical Data

XP Remote Mix Manifold **Quickset Mix Manifold** **XP Remote Circulation Manifold**		
	US	**Metric**
Maximum Working Pressure	7250 psi	50 MPa, 500 bar
Maximum fluid temperature	160° F	71° C
A/B Material Inlets	1/2 npsm union with adapter fittings for 1/2 in., 3/8 in., or 1/4 in. hoses	
A/B Recirculation Outlets	3/8 npt(m)	
Mixed Material Outlet	3/8 npt(m)	
Solvent Inlet Tee	1/4 npt(m)	
Maximum Solvent Working Pressure	5000 psi	34.5 MPa, 345 bar
Wetted parts		
Manifold block and internal parts	302 and 303 stainless steel, PTFE, tungsten carbide, electroless nickel plated steel, zinc plated steel, UHMWPE	
Flush valves and fittings	440 stainless steel, plated carbon steel, hardened alloy steel, acetal, PTFE, aluminum	

California Proposition 65

CALIFORNIA RESIDENTS

⚠ **WARNING:** Cancer and reproductive harm – www.P65warnings.ca.gov.

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