# Startup

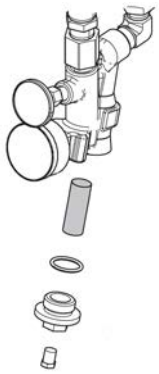
To prevent serious injury, only operate Reactor with all covers and shrouds in place.

**NOTICE**

Proper system setup, startup, and shutdown procedures are critical to electrical equipment reliability. The following procedures ensure steady voltage. Failure to follow these procedures will cause voltage fluctuations that can damage electrical equipment and void the warranty.

1. **Check fluid inlet filter screens.**

   Before daily startup, ensure that the fluid inlet screens are clean. See Flush Inlet Strainer Screen, page 56



2. **Check ISO lubrication reservoir.**

   Check level and condition of ISO lube daily. See Pump Lubrication System, page 57.

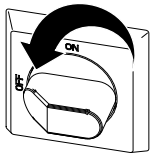
3. Use A and B Drum Level Sticks (24M174) to measure the material level in each drum.. If desired, the level can be entered and tracked in the ADM. See Advanced Setup Screens, page 34.

4. **Check generator fuel level.**

   **NOTICE**

   Running out of fuel will cause voltage fluctuations that can damage electrical equipment and void the warranty. Do not run out of fuel.

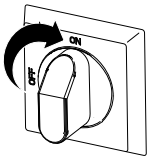
5. **Confirm main power switch is OFF before starting generator.**




6. Ensure the main breaker on the generator is in the off position.

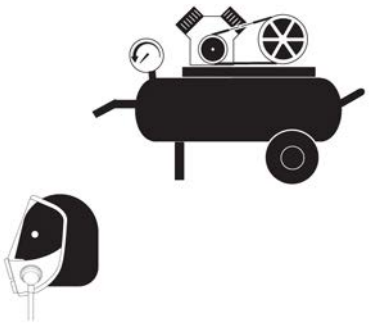
7. Start the generator. Allow it to reach full operating temperature.

8. **Turn main power switch ON.**




The ADM will display the following screen until communication and initialization is complete.

9. Switch on the air compressor, air dryer, and breathing air, if included.



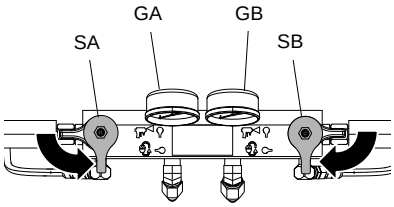
10. **For first startup of new system, load fluid with feed pumps.**

    a. Check that all **Setup** steps are complete. See Setup, page 27.

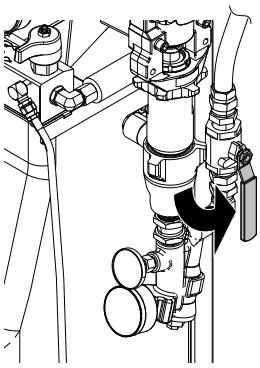
    b. If an agitator is used, open the agitator's air inlet valve.

    c. If you need to circulate fluid through the system to preheat the drum supply, see Circulation Through Reactor, page 45. If you need to circulate material through the heat hose to the gun manifold, see Circulation Through Gun Manifold, page 46.

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



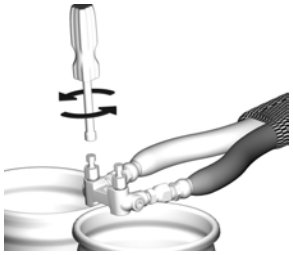

    e. Open fluid inlet valves (FV). Check for leaks.



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

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



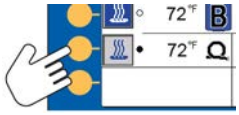
*The Fusion AP gun manifold is shown.*

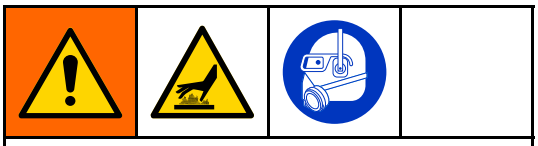
11. Press  to activate ADM.

12. If necessary, setup the ADM in Setup Mode. See Advanced Display Module (ADM) Operation, page 31.

13. Preheat the system:

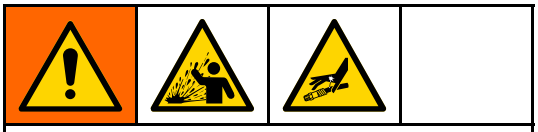
    a. Press  to turn on hose heat zone.





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

- Do not touch hot fluid or equipment.
- Do not turn on hose heat without fluid in hoses.
- Allow equipment to cool completely before touching it.
- Wear gloves if fluid temperature exceeds 110°F (43°C).



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

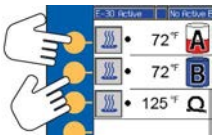
    b. If you need to circulate fluid through the system to preheat the drum supply, see Circulation Through Reactor, page 45. If you need to circulate material through the heat hose to the gun manifold, see Circulation Through Gun Manifold, page 46.

    c. Wait for the hose to reach set point temperature.

**Note**

Hose heat-up time may increase at voltages less than 230 VAC when maximum hose length is used.

    d. Press  to turn on A and B heat zones.



# Fluid Circulation

## Circulation Through Reactor

**NOTICE**

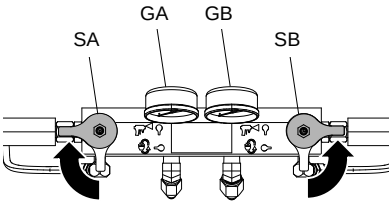
To prevent equipment damage, do not circulate fluid containing a blowing agent without consulting with your material supplier regarding fluid temperature limits.

**NOTE:** Optimum heat transfer is achieved at lower fluid flow rates with temperature set points at desired drum temperature. Low temperature rise deviation errors may result.
To circulate through gun manifold and preheat hose, see Circulation Through Gun Manifold, page 46.

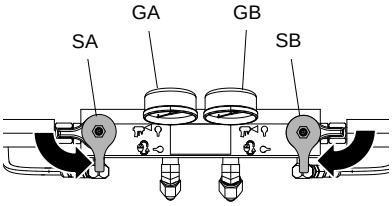
1. Follow Startup, page 42.

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

2. See Typical Installation, with system fluid manifold to drum circulation, page 14. Route circulation lines back to respective component A or B supply drum. Use hoses rated at the maximum working pressure of this equipment. See Technical Specifications, page 67.
3. Set PRESSURE RELIEF/SPRAY valves (SA, SB) to PRESSURE RELIEF/CIRCULATION .




4. Set temperature targets. See Targets, page 37.
5. Press to circulate fluid in jog mode until A and B temperatures reach targets. See Jog Mode, page 46 for more information about jog mode.
6. Press to turn on the hose heat zone.
7. Turn on the A and B heat zones. Wait until the fluid inlet valve temperature gauges (FV) reach the minimum chemical temperature from the supply drums.
8. Exit jog mode.
9. Set PRESSURE RELIEF/SPRAY valves (SA, SB) to SPRAY .



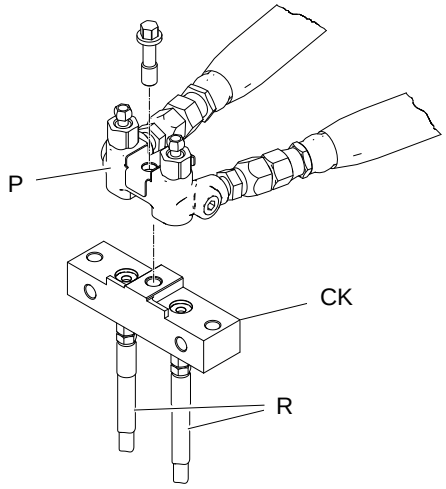
## Circulation Through Gun Manifold

**NOTICE**

To prevent equipment damage, do not circulate fluid containing a blowing agent without consulting with your material supplier regarding fluid temperature limits.

**NOTE:** Optimum heat transfer is achieved at lower fluid flow rates with temperature set points at desired drum temperature. Low temperature rise deviation errors may result.
Circulating fluid through the gun manifold allows rapid preheating of the hose.

1. Install gun fluid manifold (P) on accessory circulation kit (CK). Connect high pressure circulation lines (R) to circulation manifold.




*The Fusion AP gun manifold is shown.*

| CK | Gun | Manual |
|---|---|---|
| 246362 | Fusion AP | 309818 |
| 256566 | Fusion CS | 313058 |

2. Route circulation lines back to respective component A or B supply drum. Use hoses rated at the maximum working pressure of this equipment. See Technical Specifications, page 67.
3. Follow procedures from Startup, page 42.
4. Turn main power switch on  .
5. Set temperature targets. See Targets, page 37.
6. Press  to circulate fluid in jog mode until A and B temperatures reach targets. See Jog Mode, page 46 for more information about jog mode.

# Jog Mode

Jog mode has two purposes:

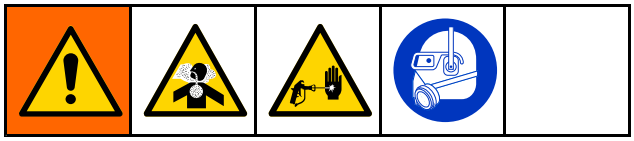
- It can speed fluid heating during circulation.
- It can ease system flushing and priming.

1. Turn main power switch on  .
2. Press circulate  to enter jog mode.
3. Press up or down  to change jog speed (J1 through J20).

   **Note**

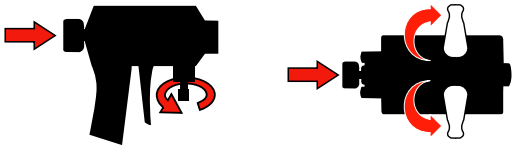
   Jog speeds correlate to 3-30% of motor power, but will not operate over 700 psi (4.9 MPa, 49 bar) for either A or B.
4. Press  to start motor.
5. To stop the motor and exit jog mode press  or  .

# Spraying



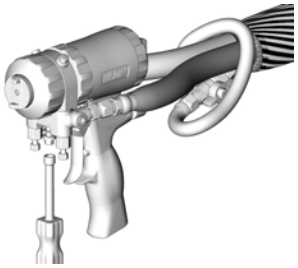
*The Fusion AP gun is shown.*

1. Engage gun piston safety lock and close gun fluid inlet valves A and B.

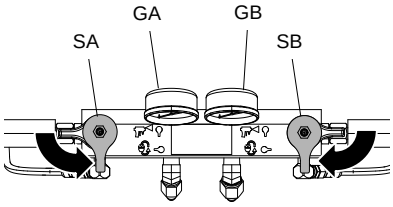


**Fusion** **Probler**

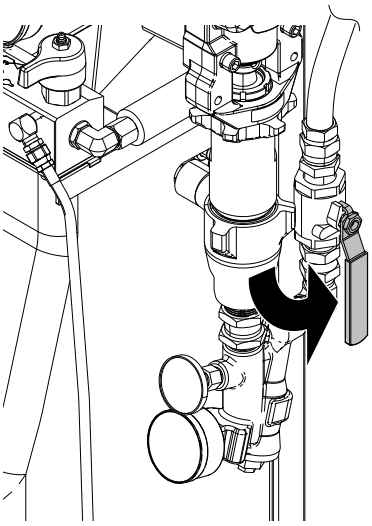
2. Attach gun fluid manifold. Connect gun air line. Open air line valve.



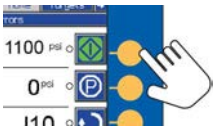
3. Adjust the gun air regulator to desired gun air pressure. Do not exceed the maximum rated air pressure.
4. Set PRESSURE RELIEF/SPRAY valves (SA, SB) to SPRAY .



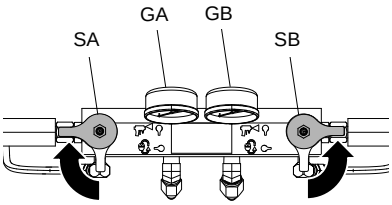

5. Verify heat zones are on and temperatures and pressures are on target, see Home screen, page 37.
6. Open fluid inlet valve located at each pump inlet.



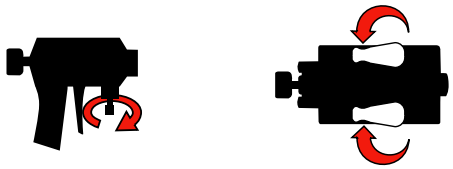
7. Press to start motor and pumps.




8. Check fluid pressure gauges (GA, GB) to ensure proper pressure balance. If imbalanced, reduce pressure of higher component by **slightly** turning PRESSURE RELIEF/SPRAY valve for that component toward PRESSURE RELIEF/CIRCULATION until gauges show balanced pressures.



9. Open gun fluid inlet valves A and B.

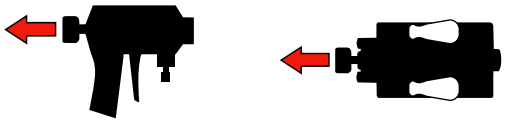


Fusion Probler

**NOTICE**

To prevent material crossover on impingement guns, **never** open fluid manifold valves or trigger gun if pressures are imbalanced.

10. Disengage gun piston safety lock.



Fusion Probler

11. Pull gun trigger to test spray onto cardboard. If necessary, adjust pressure and temperature to get desired results.

## Spray Adjustments

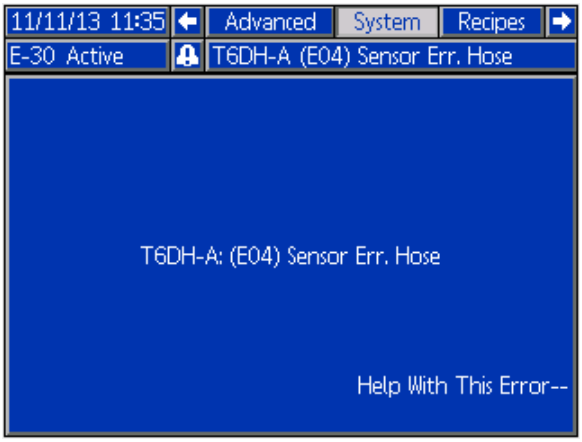
Flow rate, atomization, and amount of overspray are affected by four variables.

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

# Manual Hose Heat Mode

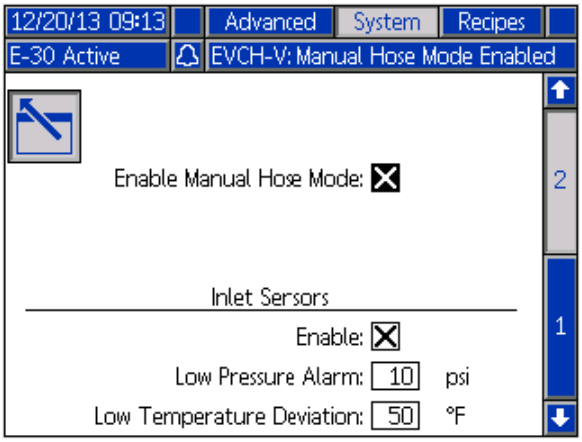
If the system produces the T6DH sensor error hose alarm or the T6DT sensor error TCM alarm, use manual hose heat mode until the hose RTD cable or FTS temperature sensor can be repaired.

Do not use Manual Hose Mode for extended periods of time. The system performs best when the hose has a valid RTD and can operate in temperature control mode. If a hose RTD breaks, the first priority is to fix the RTD. Manual Hose Mode can help finish a job while waiting for repair parts.




## Enable Manual Hose Mode

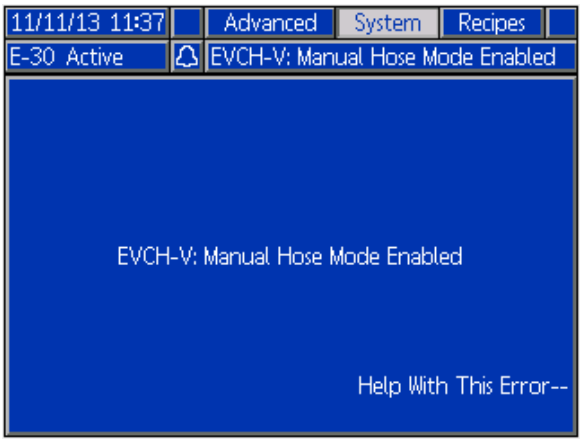
1. Disconnect the hose RTD sensor from the TCM.
2. Enter Setup Mode and navigate to System Screen 2.



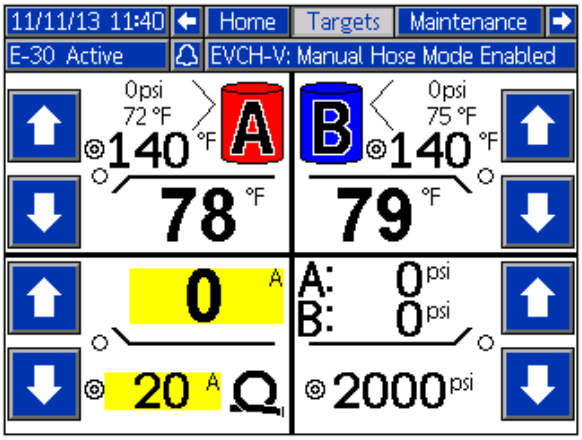

3. Select Enable Manual Hose Mode.

   **Note**

   When manual hose mode is enabled, the manual hose mode advisory EVCH-V will appear.

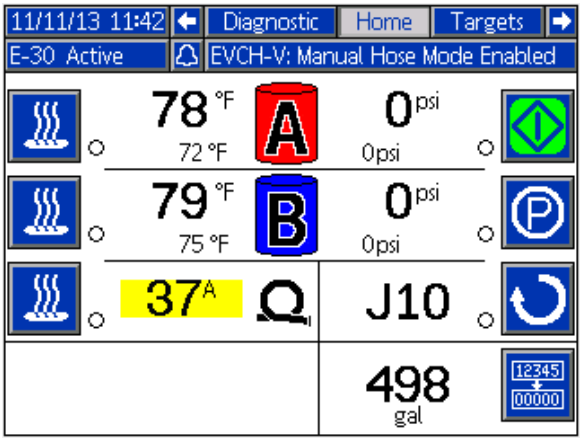



4. Enter Run Mode and navigate to the Target screen. Use the up and down arrows to set the desired hose current.




| Hose Current Settings | Hose Current |
|---|---|
| Default | 20A |
| Maximum | 37A |

5. Navigate back to the Run Mode Home screen. The hose now displays a current instead of a temperature.

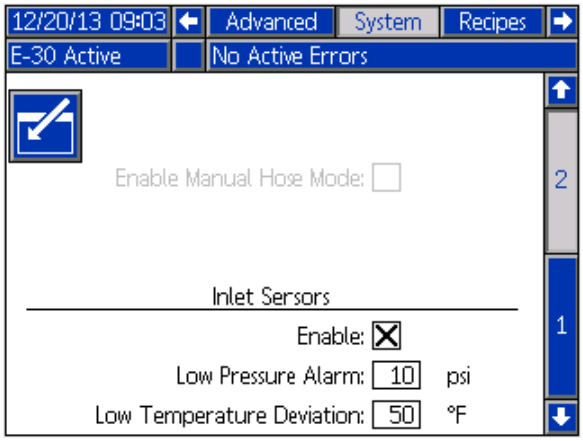



**Note**

Until the RTD sensor is repaired, the T6DH sensor error alarm will display each time the system is powered up.

## Disable Manual Hose Mode

1. Enter Setup Mode and navigate to System 2 Screen and deselect Enable Manual Hose Mode, or repair the hose RTD cable or FTS.



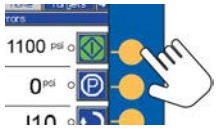

2. Manual hose mode is automatically disabled when the system detects a valid RTD sensor in the hose.

# Shutdown

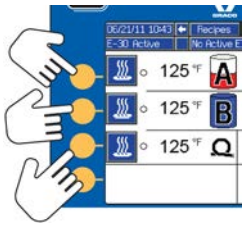
**NOTICE**

Proper system setup, startup, and shutdown procedures are critical to electrical equipment reliability. The following procedures ensure steady voltage. Failure to follow these procedures will cause voltage fluctuations that can damage electrical equipment and void the warranty.

1. Press  to stop the pumps.

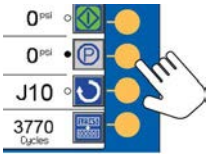



2. Turn off all heat zones.



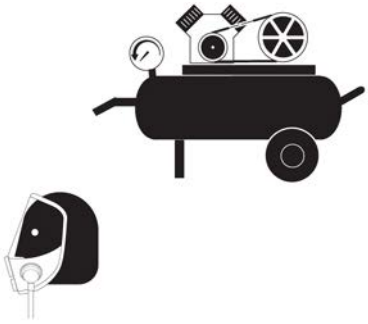

3. Relieve pressure. See Pressure Relief Procedure, page 53.

4. Press  to park the Component A Pump. The park operation is complete when green dot goes out. Verify the park operation is complete before moving to next step.

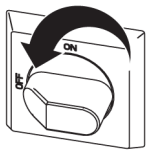


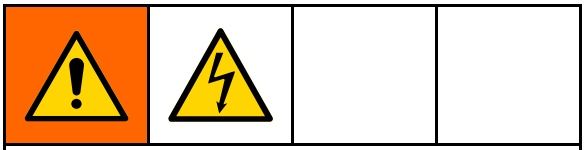

5. Press  to deactivate the system.


6. Turn off the air compressor, air dryer, and breathing air.



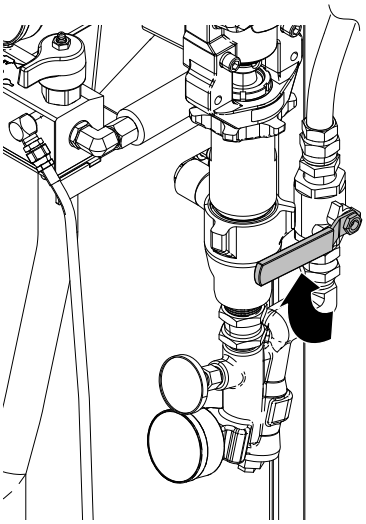
7. Turn main power switch OFF.



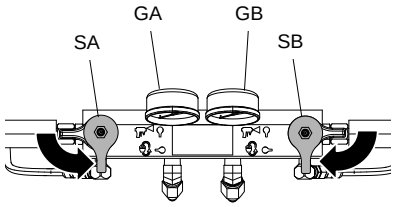



To prevent electric shock do not remove any shrouds or open the electrical enclosure door.

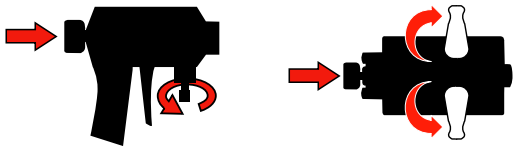
8. Close all fluid supply valves.



9. Set PRESSURE RELIEF/SPRAY valves (SA, SB) to SPRAY  to seal out moisture from drain line.



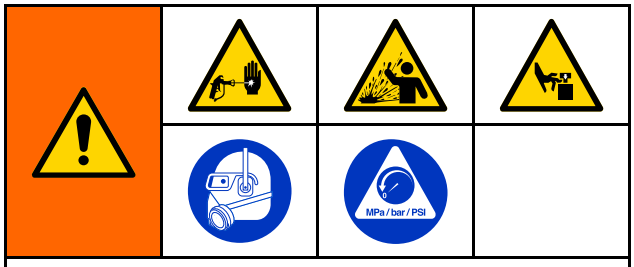

10. Engage gun piston safety lock then close fluid inlet valves A and B.



**Fusion** **Probler**

# Pressure Relief Procedure


Follow the Pressure Relief Procedure whenever you see this symbol.

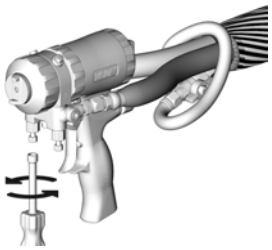



This equipment stays pressurized until pressure is manually relieved. To help prevent serious injury from pressurized fluid, such as skin injection, splashing fluid and moving parts, follow the Pressure Relief Procedure when you stop spraying and before cleaning, checking, or servicing equipment.

*The Fusion AP gun is shown.*

1. Relieve pressure in gun and perform gun shutdown procedure. See gun manual.
2. Engage gun piston safety lock.

3. Close gun fluid inlet valves A and B.



4. Shut off feed pumps and agitator, if used.
5. Route fluid to waste containers or supply tanks. Turn PRESSURE RELIEF/SPRAY valves (SA, SB) to PRESSURE RELIEF/CIRCULATION  . Ensure gauges drop to 0.