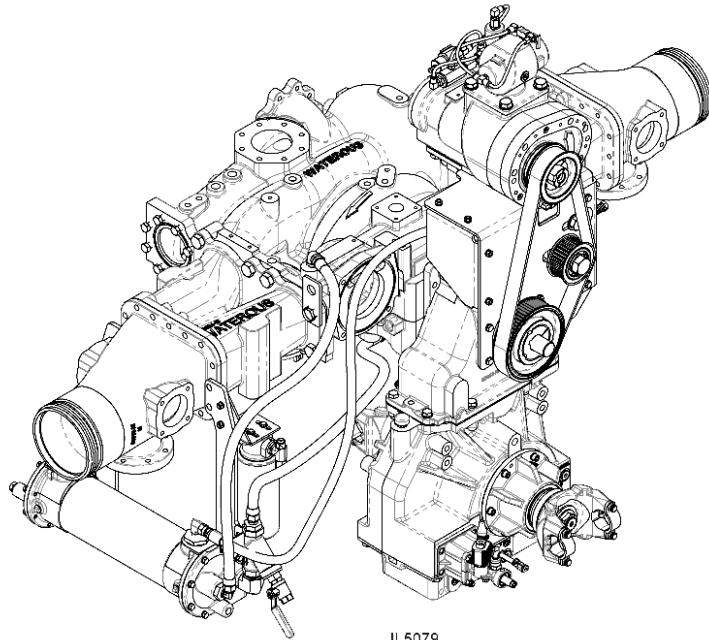




Eclipse GEN 2.0™ CAFSystem, Model 150-OS as used with CM and CS Fire Pumps Installation Instructions



IL5079



Read through the installation instructions carefully before beginning installation of the Eclipse GEN 2.0™.

NOTE: Instructions subject to change without notice

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F-1031, Section 3067 (Revised 5/10/23)

Introduction

This instruction covers the installation of the Waterous Eclipse GEN 2.0™ Model 150-ECL CAFSystem as used with CM/CS Series fire pumps, including the CMU/CSU Series.

New installation tasks include:

- Installing fire pump, see separate instruction F-1031, Section 3011
- Installing compressor sump and separator filter
- Installing foam pump:
 - See separate instruction:
 - Model Aquis 2.5 – F-1031, Section 3061
 - Models Advantus 3E or 6E, F-1031, Section 3062
- Installing CAFS generators and controls, see separate instruction, F-1031, Section 3069

Safety Information

WARNING

Compressed air can be dangerous. Read and understand the operating instructions for the Waterous compressed air foam unit and individual components prior to operating.

WARNING

Discharge outlets that are capped, hose lines that are valved and charged and the air compressor sump may contain compressed air. Relieve all pressure before attempting to remove any caps, fittings and nozzles or to perform maintenance to prevent serious personal injury.

WARNING

Operating the compressed air foam unit with water and compressed air pumped through a discharge without foam concentrate will create a potentially dangerous condition known as “slug flow,” where unmixed pockets of water and air are passed through the nozzle, causing erratic nozzle reaction.

CAUTION

Nozzle reaction force is significantly increased at the time the nozzle valve is opened in compressed air foam operations. Open CAFS nozzles slowly.

CAUTION

Do not use the compressed air foam unit as an air source for SCBA or any breathing air supply

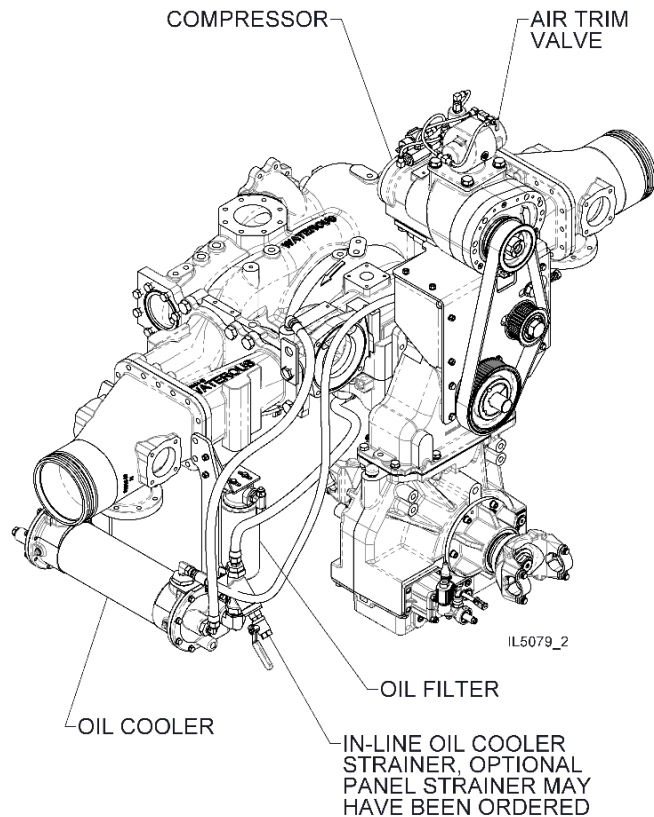
CAUTION

For compressed air foam operations, use only fire hose that is rated at 200 PSI or higher working pressure.

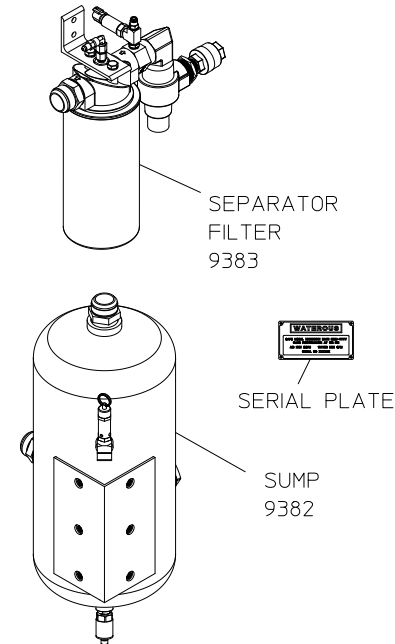
NOTICE

The unit operator should have a thorough understanding of “Boyle’s Law” (The law of compressed gases) prior to operating the compressed air foam unit.

Components – Compressor and Water Pump



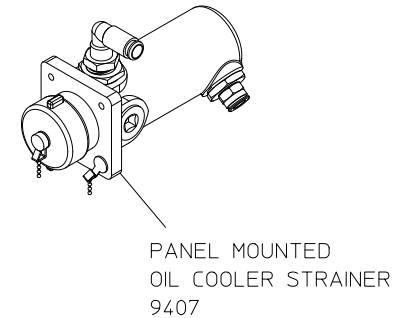
INSTALLED AT FACTORY



AIR FILTER
INSTALL KIT
L1178
INCLUDES:
- AIR FILTER
- INLET ADAPTER
- ELBOW
- CLAMPS

COMPRESSOR
COMPONENTS
INSTALL KIT
L1177
INCLUDES:
- AIR CIRCUIT TUBING
- SUMP TEMPERATURE SENDER
AND REDUCING BUSHING
- CAFS WARNING PANEL PLATE

SHIPPED LOOSE
WITH EACH
SYSTEM



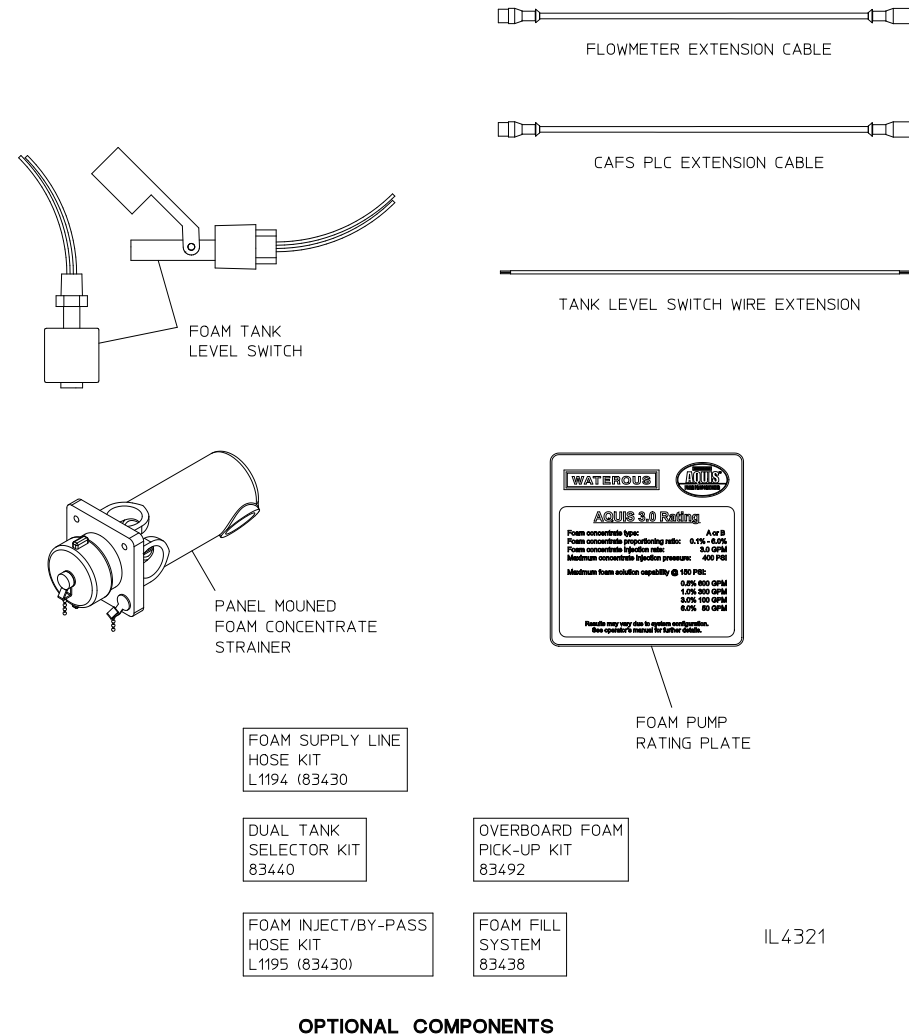
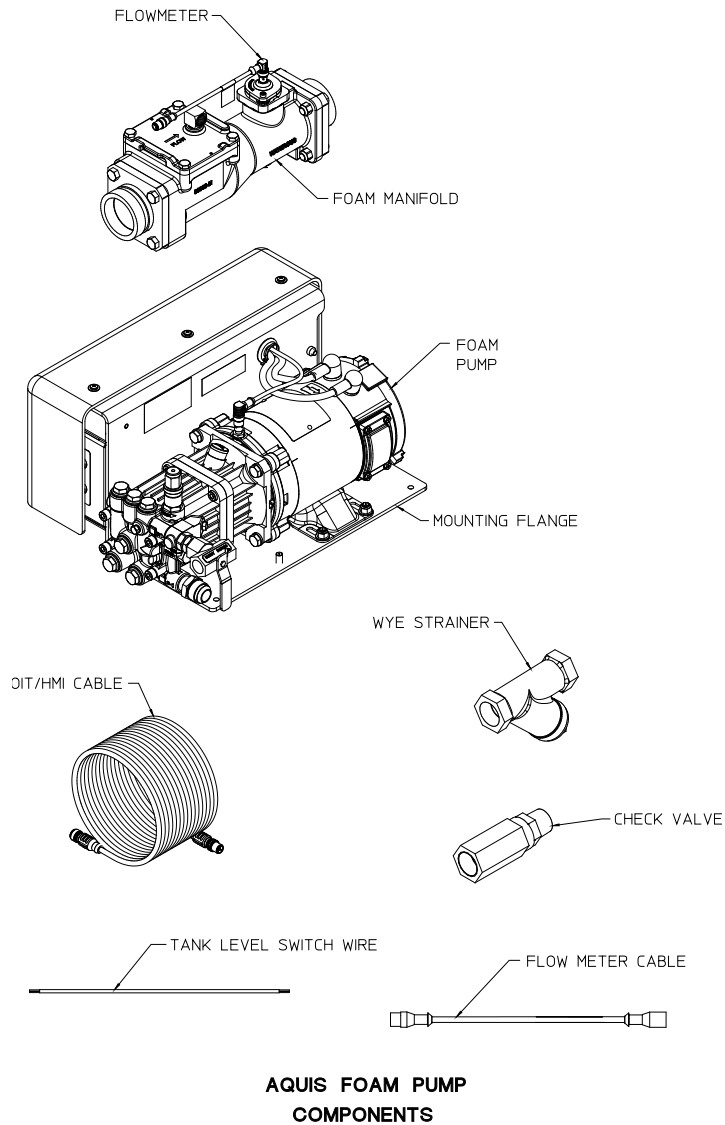
HOSE AND FITTING INSTALL KIT
L1188 (83368)

AUXILIARY AIR DISCHARGE KIT
L1193 (83360)

COMPRESSOR OIL INJECT CHECK VALVE KIT
L1188-5 (83368)

OPTIONAL COMPONENTS
SHIPPED LOOSE

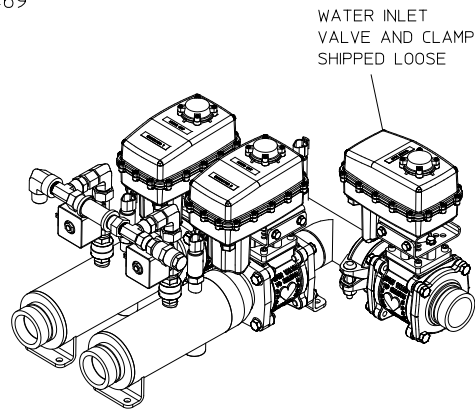
Components – Foam Pump



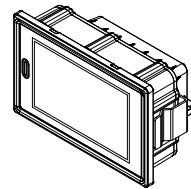
IL4321

Components – Eclipse GEN 2.0™ Generators and Controls

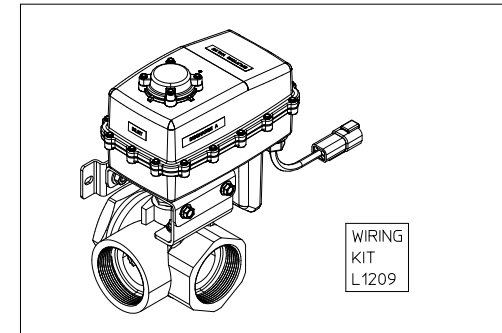
IL4469



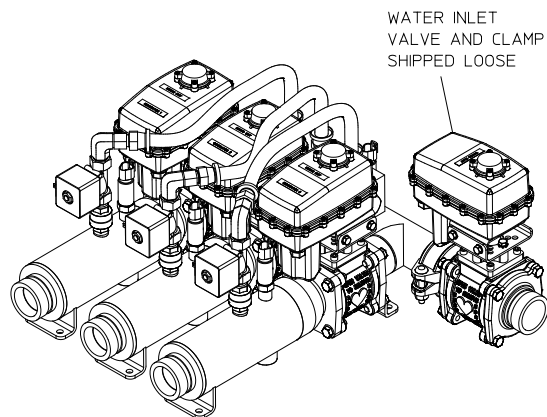
DOUBLE CAFS FOAMULATORS



HMI CONTROL PANEL

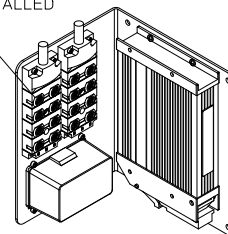


DISCHARGE SPLITTING VALVE, 9439

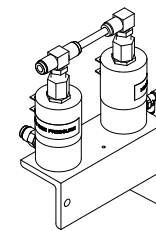


TRIPLE CAFS FOAMULATORS

ALL CABLES CONNECTED HERE WILL BE INSTALLED AT THE FACTORY



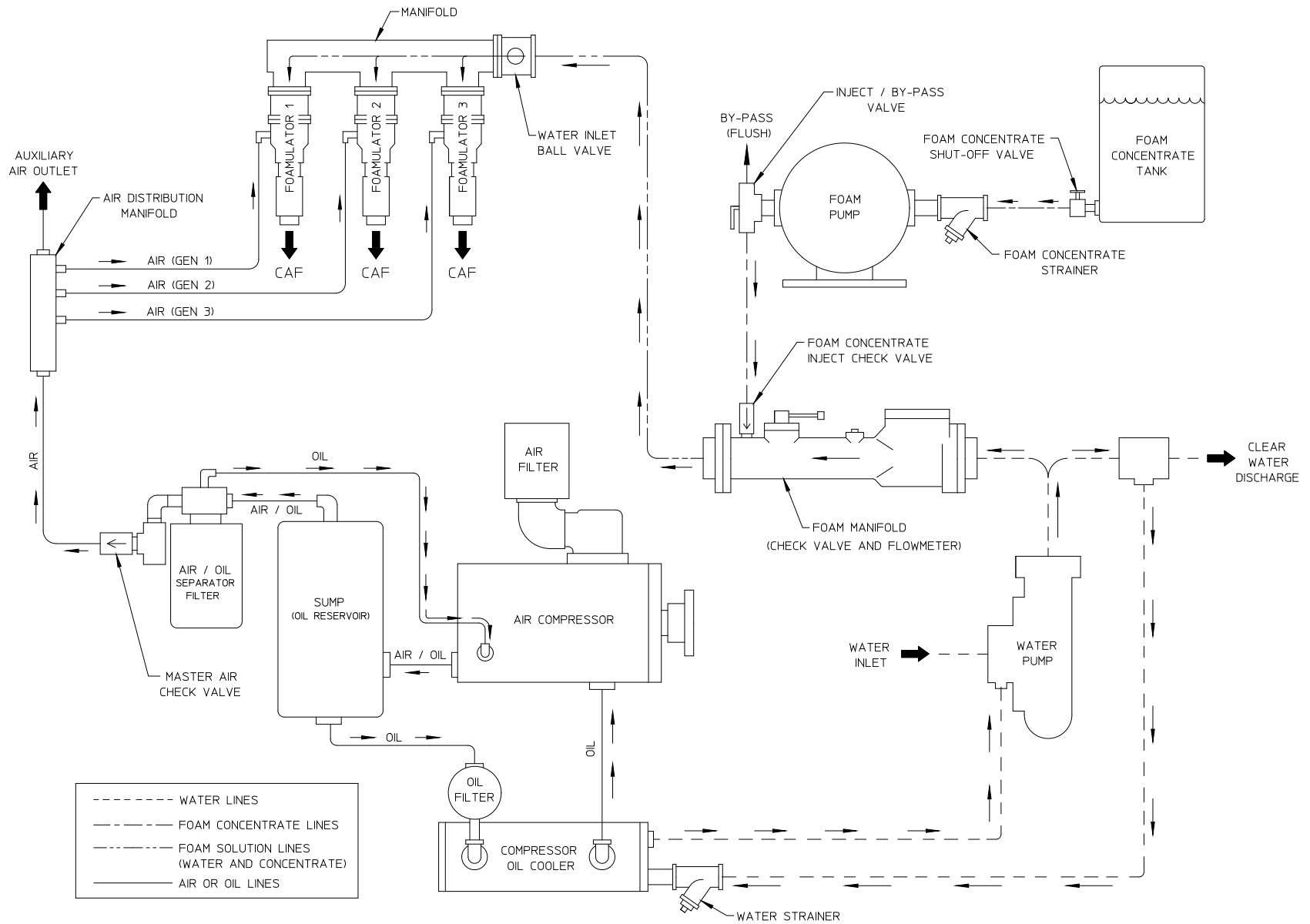
PLC



AUTO-SYNC FOR ECLIPSE GEN 2.0 HIGH RISE OPTION, 9395 FURNISHED WITH COMPRESSOR

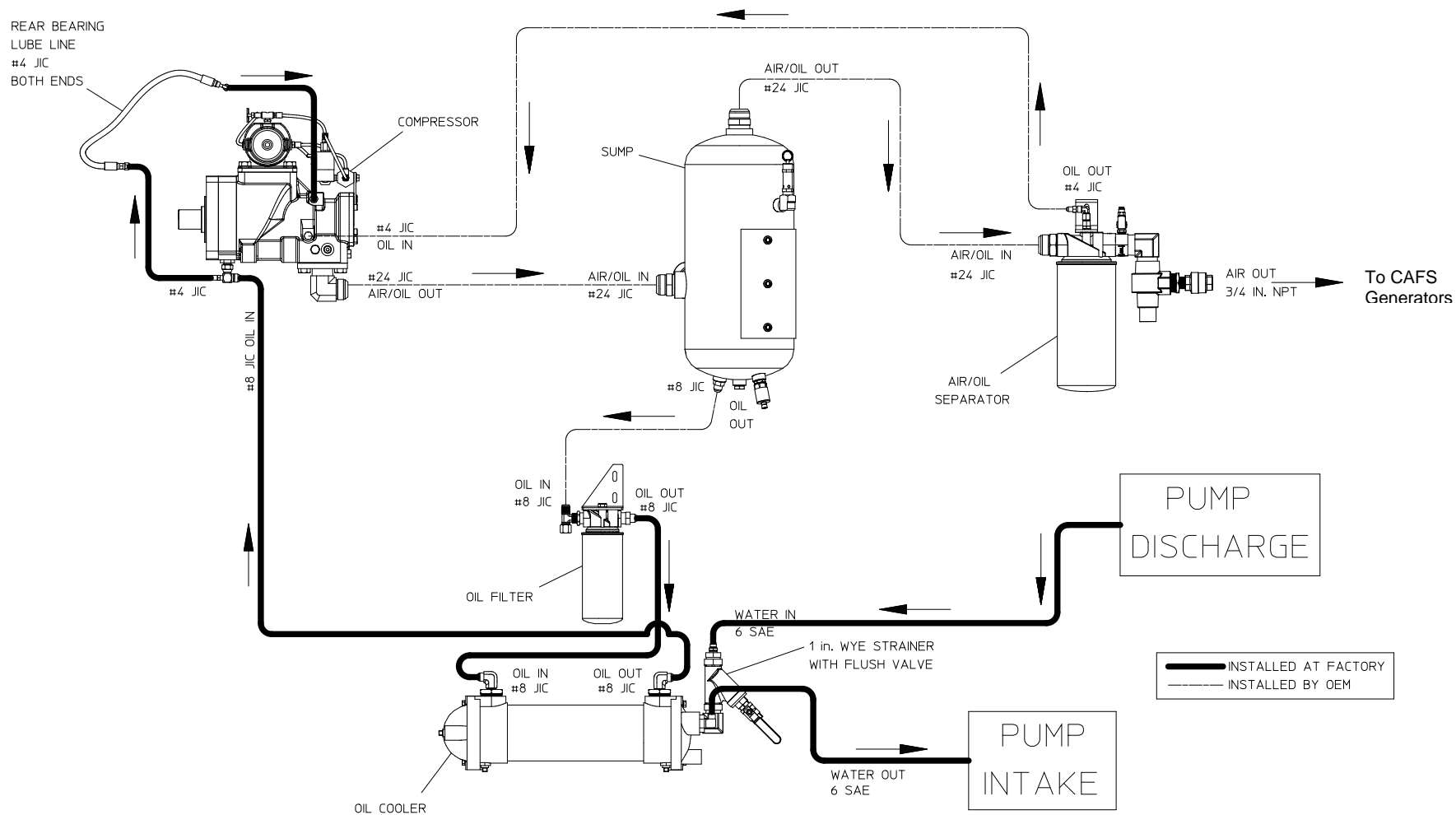
OPTIONAL COMPONENTS

- Schematic - System



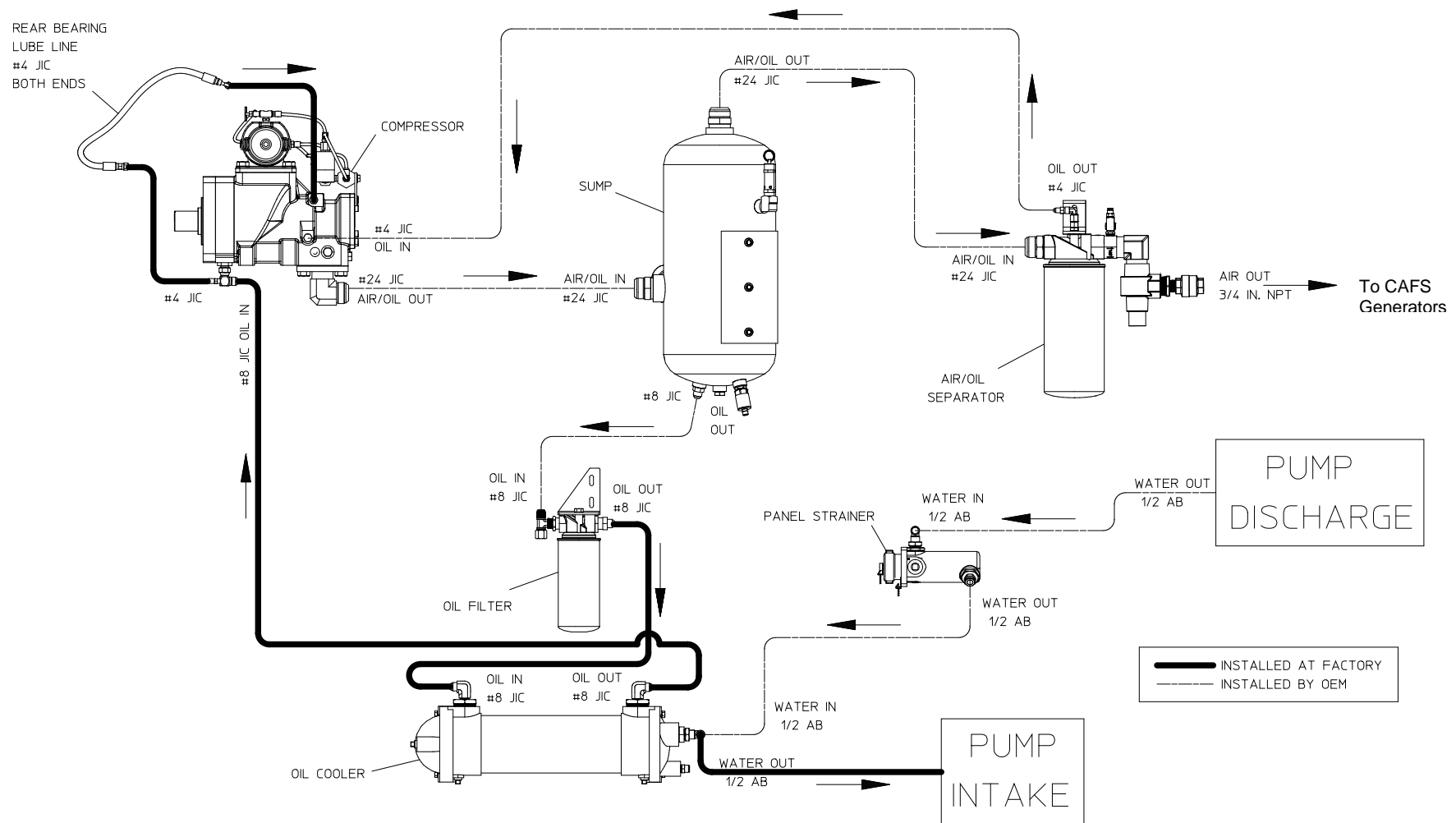
IL4470

Schematic – Hydraulic, with In-Line Oil Cooler Strainer



PL83522.12

Schematic – Hydraulic, with Panel Mounted Oil Cooler Strainer



PL83522.13

Installation – Air Filter

Location:

The air filter is to be installed on the air compressor air inlet.

The air intake area should be unobstructed.

Note that the filter is a maintenance item so it should be accessible in the apparatus with adequate space for removal.

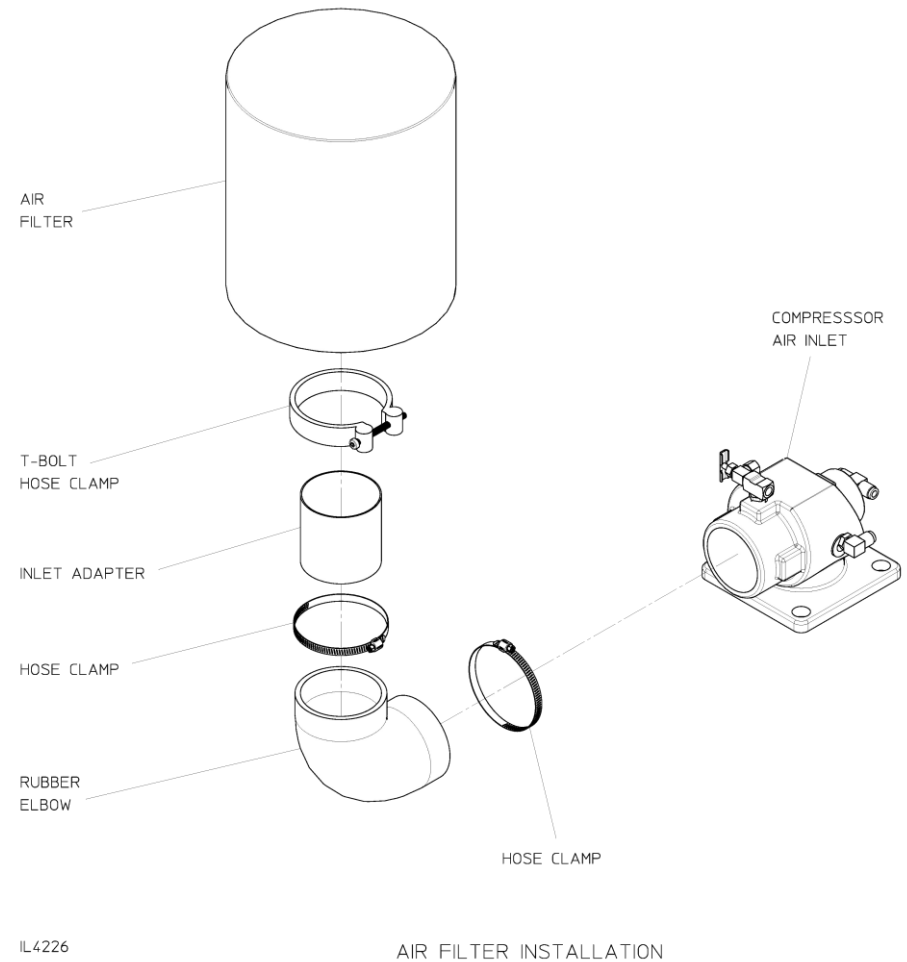
Mounting:

Use the rubber elbow, inlet adapter and clamps furnished with install kit L1178. See drawing **DPL83925, Model 150-OS One-Step CAF System as used with CM and Series Fire Pumps** for dimensions.

If it is necessary to remotely mount the air filter, thin wall metal tubing and rubber elbows should be used.

Plumb it as though it were an engine air inlet, do not use flexible exhaust tubing or any material that water and dirt can easily penetrate.

The tubing run should be as short and straight as possible.



Installation – Sump (Oil Reservoir)

Location:

The sump works best when it is installed so the sight glass opening is below the air discharge outlet on the air compressor, however having the sight glass at the same level is acceptable.

In some cases, finding room for the sump can be difficult. It is acceptable to mount the sump to 12 in. /30 cm. higher than the air compressor. For these installations a check valve should be installed in the line returning oil to the compressor to prevent flooding the compressor with oil. The check valve is an option that can be ordered from Waterous.

For either installation, it is imperative that the sight glass is easily viewed so that the oil level can be monitored and replenished as required.

CAUTION

Waterous will not be responsible for damage to systems where the sump and sight glass are installed such that the oil level cannot be checked or does not display the correct oil level due to improper installation.

Additional Components Required:

You will need to install a temperature sender which is furnished with **Compressor Component Kit L1177** in the bottom of the sump using the reducing bushing furnished.

Mounting:

Use the bracket welded to the sump to attach to the apparatus frame. See drawing DPL83522 for dimensions of sump and bracket.

Hose Connections:

1. Connect the compressor air outlet to the #24 JIC fitting on the side of the sump using 1-3/8" hydraulic hose.
2. Connect the separator filter to the #24 JIC fitting on the top of the sump using 1-3/8" hydraulic hose.
3. Connect the oil cooler filter to the #8 JIC fitting on the bottom of the sump using 1/2" hydraulic hose.
4. See the Hose Specification section of this instruction for hose specifications.

Note that all hoses and fittings are available as an optional kit from Waterous, see drawing DPL83925.

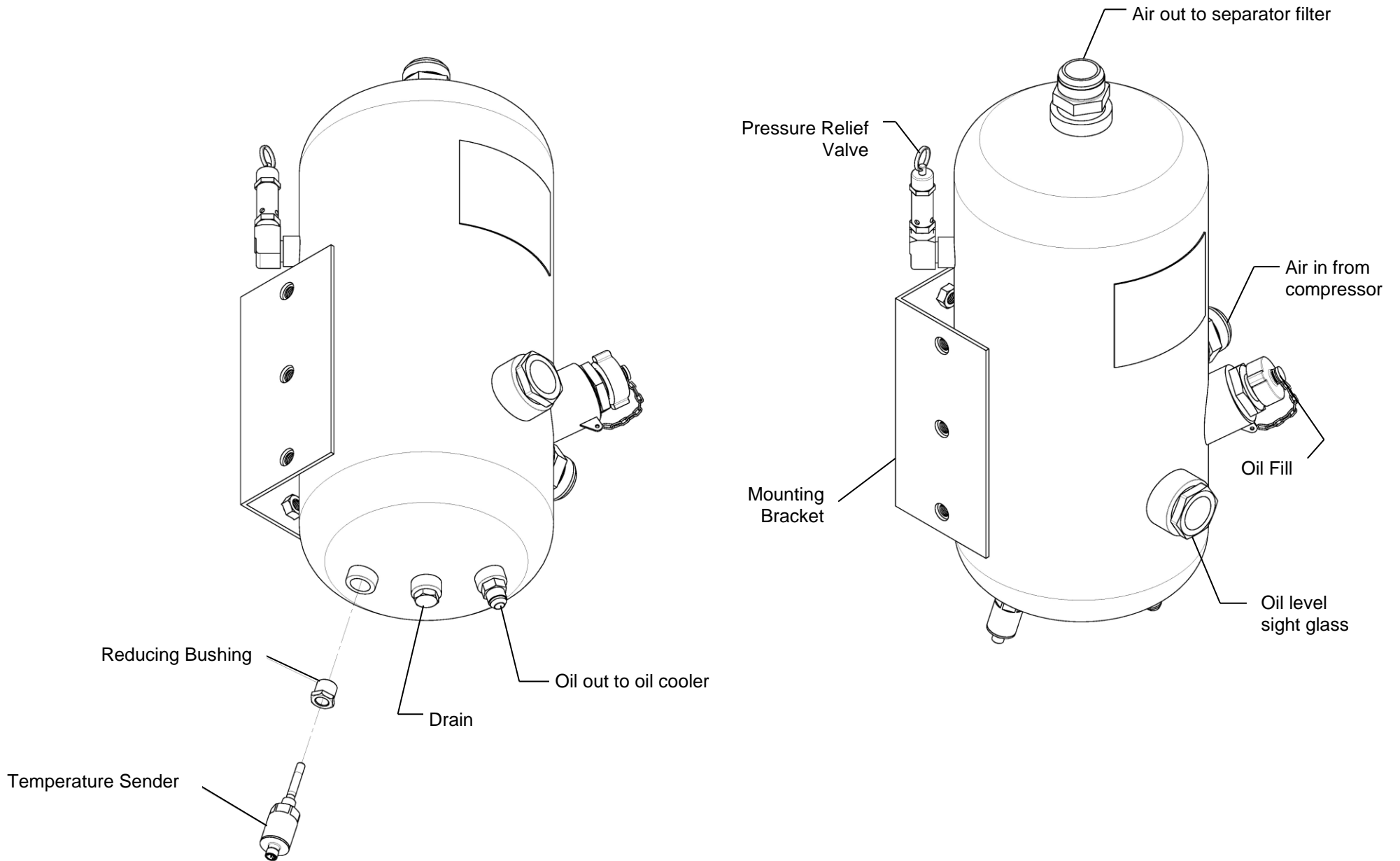
Electrical Conditions:

The temperature sender will be connected to the CAFS Generator wiring, see **Generators and Controls Instruction F-1031-3069**.

Drain:

A plug is located in the bottom of the sump for draining oil.

Installation – Sump (Oil Reservoir) (con't)



IL4281

Installation – Separator Filter

Location:

The separator filter can be installed anywhere there is room in the apparatus. Install vertically with the housing up and filter element down. Leave room under the filter facilitate its removal for maintenance.

Mounting:

Use the angle bracket on the filter to attach to the apparatus frame. See drawing **DPL83925, Model 150-OS One-Step CAF System as used with CM and Series Fire Pumps** for dimensions and required maintenance space.

Hose Connections:

Note the flow directions arrows on the top of the filter.

Hydraulic Lines:

1. Connect the intake side to the #24 JIC fitting on the top of the sump using 1-3/8" hydraulic hose.
2. Connect the discharge side 3/4" NPT tap to the #8 JIC fitting on the Foam Generators using 1/2" air line.
3. Connect the #4 JIC elbow on the top of the filter to the #4 JIC oil return fitting on the air compressor using 1/4" hydraulic hose.

See the hose specification section of this instruction for hose specifications.

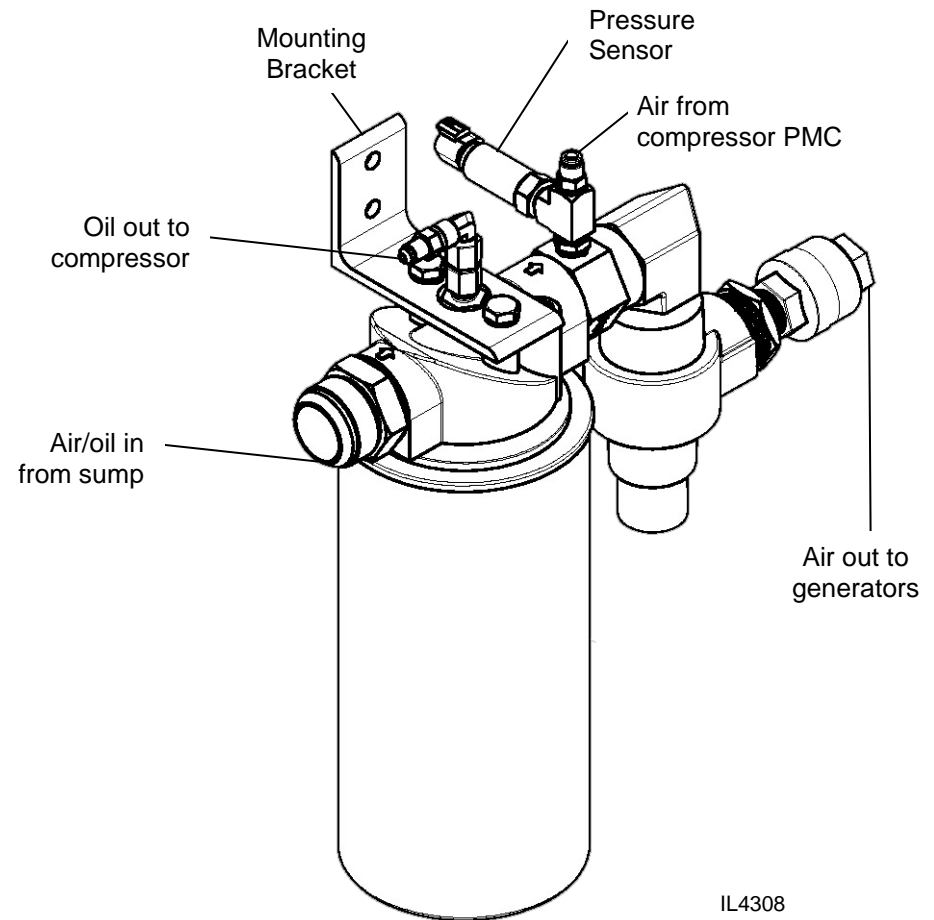
Note that all hoses and fittings are available as an optional kit from Waterous, see drawing DPL83925.

Air Line Connection:

The push-on fitting on the top of the filter is to be connected to the air compressor pressure modulating control (PMC). See Air Line section of this instruction.

Electrical Connection:

The pressure switch will be connected to the CAFS Generator wiring, see **Generator and Controls Instruction F-1031-3069**.



Installation – Oil Cooler

Location:

The oil cooler and oil filter are mounted on the pump at the factory.

If cooler ordered has an in-line water strainer, maintenance access must be provided for cleaning the strainer screen.

If cooler ordered has a panel mounted water strainer, the strainer screen is accessed at the apparatus panel.

CAUTION

Waterous will not be responsible for damage due to plugged strainers. Without adequate water flow through the cooler, the compressor will overheat and possibly fail. Removing the screen does not improve water flow as it will allow debris to enter the cooler which can clog the small internal cooler tubes and restrict water flow.

CAUTION

Do not install a shut off valve in the oil cooler water supply line. This could cause the system to overheat and fail and void the manufacturer's warranty.

Mounting:

If cooler is ordered with a panel mounted strainer, the strainer must be installed on the apparatus panel. See drawing DPL83925 for dimensions.

Hose Connections:

Water Lines:

- If cooler is ordered with an in-line strainer, all hoses are installed at the factory.
- If cooler is ordered with the optional panel mounted strainer, the water return line to the pump is installed at the factory.
- The water supply from the pump to the cooler is not furnished. Install $\frac{1}{2}$ " tubing from the pump discharge to the panel strainer and from the panel strainer to the oil cooler. The pump and cooler have $\frac{1}{2}$ " push-on fittings for this tubing.

See the hose specification section of this instruction for hose specifications.

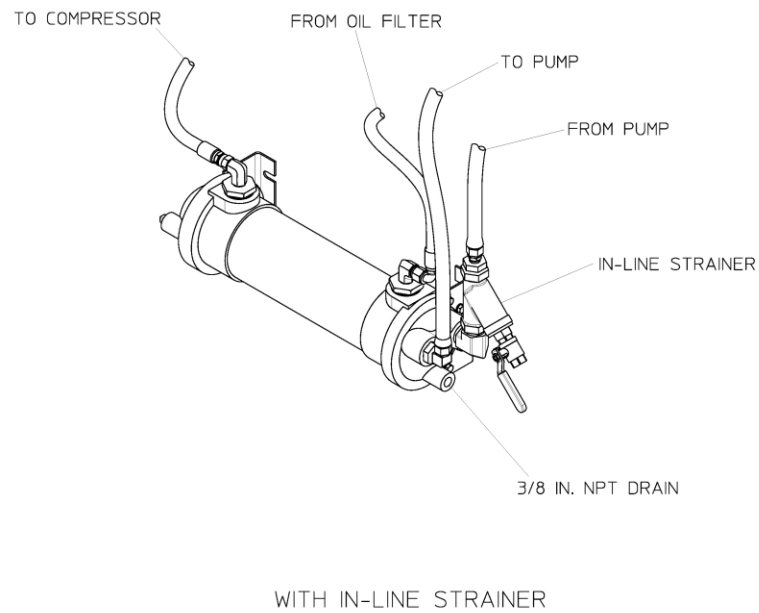
Note that this tubing is included in the optional hose and fitting are available from Waterous, see drawing DPL83925.

Note that all hoses and fittings are available as an optional kit from Waterous, see drawing DPL83925.

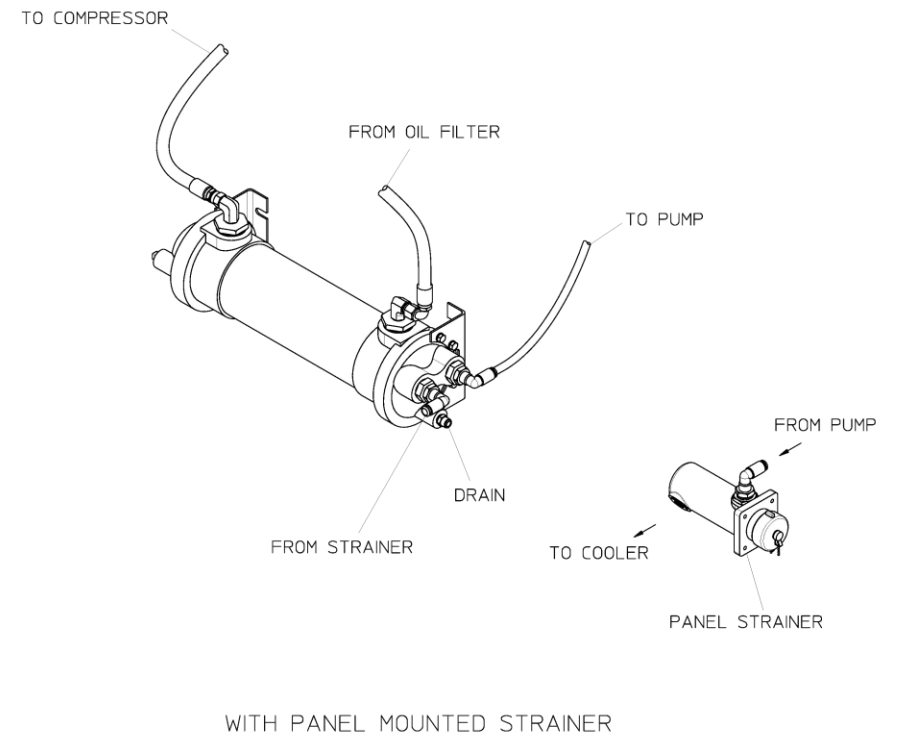
Drain Lines:

The oil cooler has a $\frac{3}{8}$ " NPT tap located on the end of the cooler where water lines are connected. This line can be tied into the pump drain valve or a separate valve used. It is recommended that $\frac{1}{2}$ " I.D. hose be used for the drain line. Waterous does not furnish the hose or separate valve.

Installation – Oil Cooler



IL4325



Installation – High Rise Option, Auto-Sync Solenoids

Location:

The Auto-Sync solenoids are mounted on the pump at the factory.

Air Line Connections:

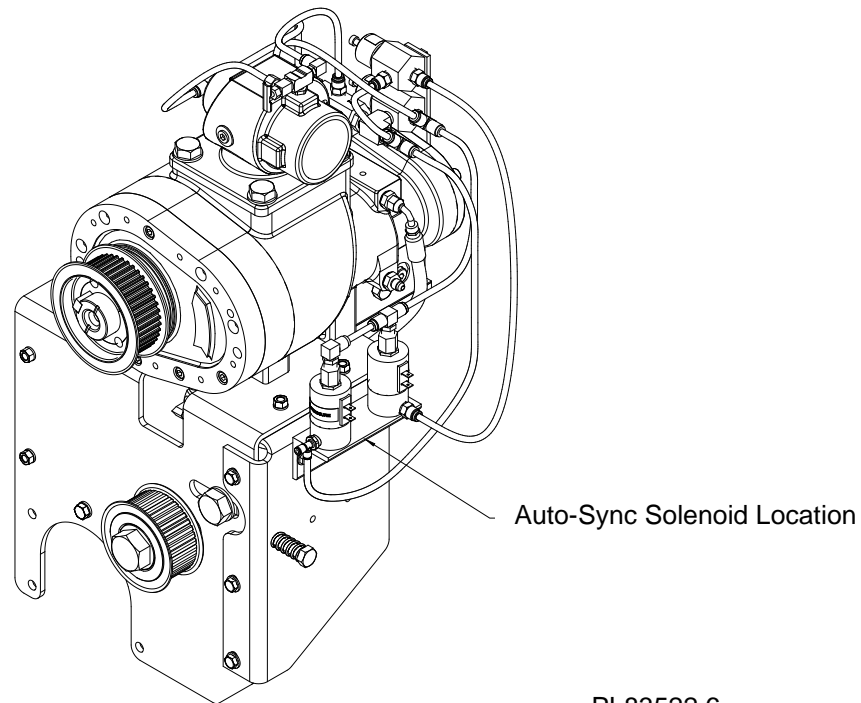
Use black air line tubing furnished with **Compressor Component Kit L1177**.

See Air Lines – With High Rise Option for connections.

Electrical Connections:

Each solenoid will be connected to the CAFS Generator wiring.

See **Generators and Controls instruction F-1031-3069**.

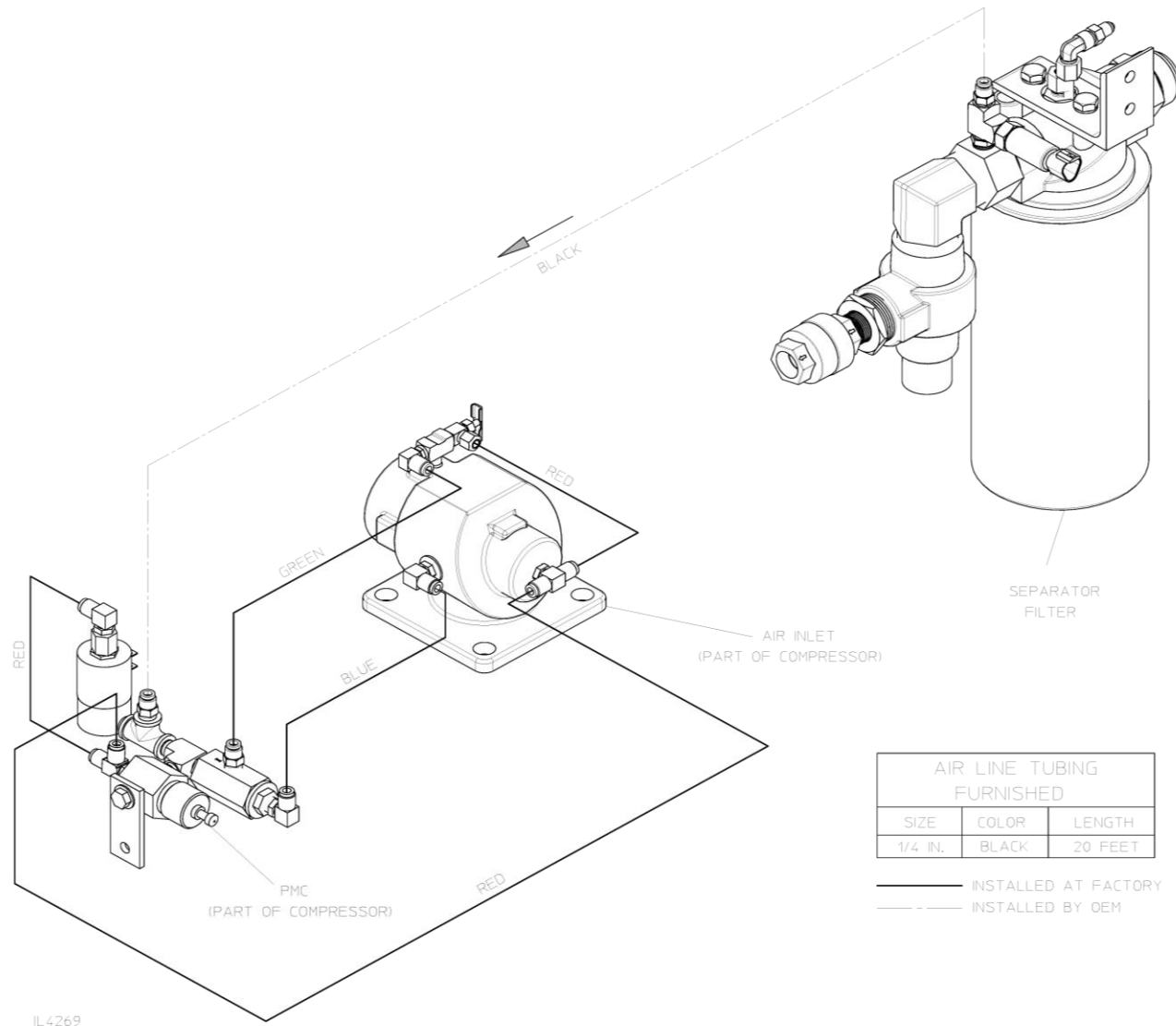


PL83522.6

Installation – Air Lines, Without High Rise Option

Air Line Connections:

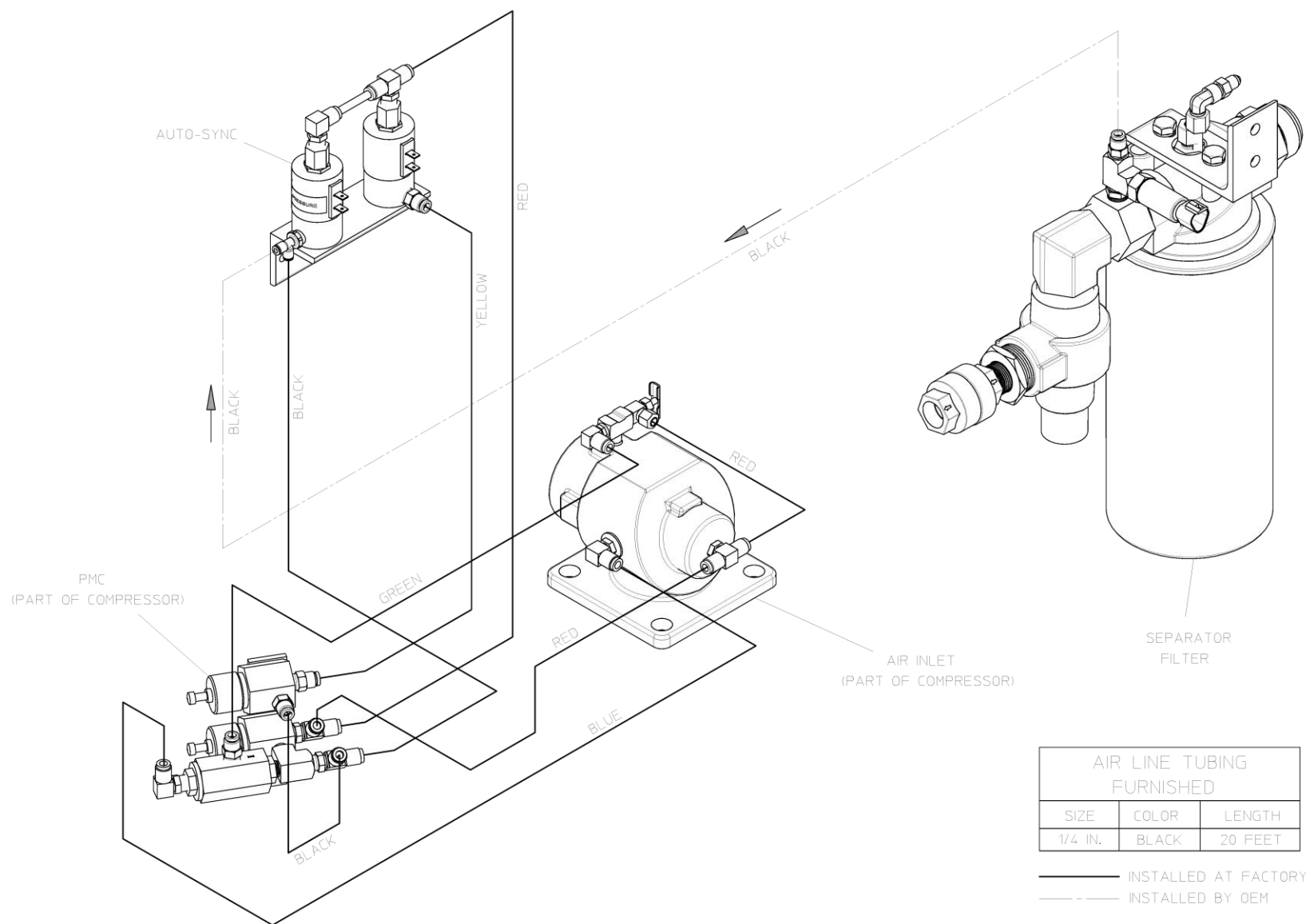
1. Use black 1/4" air line tubing furnished with **Compressor Component Kit L1177**.
2. Connect the separator filter to PMC mounted on the compressor.



Installation – Air Lines, With High Rise Option

Air Line Connections:

1. Use black 1/4" air line tubing furnished with **Compressor Component Kit L1177**.
2. Connect the separator filter to the Auto-Sync Solenoid labeled "Normal Pressure".



IL4270

Installation – Panel Plates

Location:

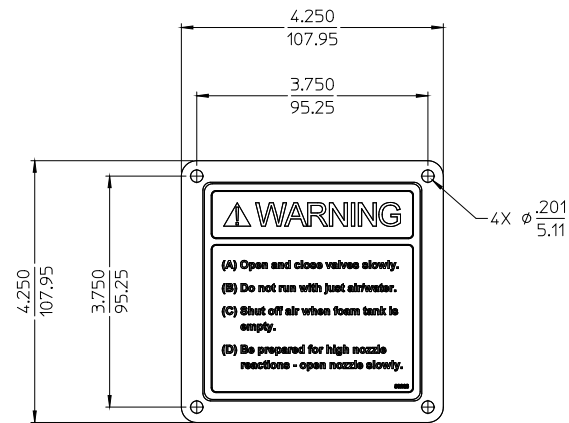
Two panel plates require installation on the operator's panel:

- CAFS Warning Plate furnished with **Compressor Component Kit L1177**.
- Serial Plate shipped loose with the compressor.

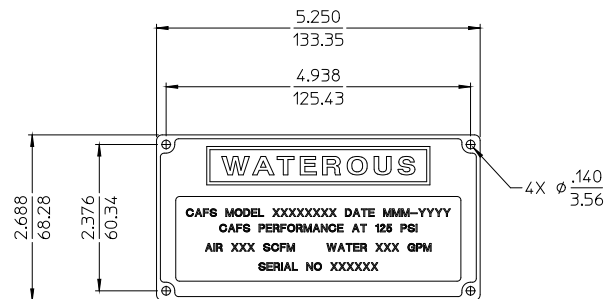
Mounting:

Use four screws to install each panel plate (not furnished by Waterous).

See drawing **DPL83925, Model 150-ECL Eclipse GEN 2.0™ CAF System as used with CM and Series Fire Pumps** for dimensions of each plate.



CAFS WARNING



SERIAL PLATE

PL83522.6

Installation – Hose Specifications

Hydraulic Oil (and air):

For compressor hydraulic system, use a hose that complies with SAE J517, 100R1 or 100R5 as a minimum.

Air:

For air compressor control circuit and gauging, ¼" OD air brake tubing is typically used. Tubing such as Eaton Synflex Eclipse or equivalent is suggested. The tubing shall comply with SAE J844 Type A.

For compressed air distribution, "push-on" type hose is typically used. An H101 or H201 general purpose hose with a working pressure rating of 300 psi or better is acceptable. The hose shall also have a minimum burst pressure of 4 times rated working pressure ($4 \times 300 = 1200$ psi).

Water:

For cooling water hose or any hose connected to the discharge of the pump, use a hose that complies with SAE J517, 100R3 as a minimum.

General practice factors to avoid with hose (and tubing):

- Bending the hose to less than the minimum specified bend radius.
- Pulling, twisting, crushing or kinking.
- Routing hose over sharp edges, abrasive or hot surfaces.
- Pressure spikes in excess of rated working pressure.

Initial Power-up

Assembly Checks:

- Remove all tools, shop towels, hose trimmings and other debris from the apparatus compartment.
- Double check all hydraulic, air and water lines against schematics, checking to make sure each connection is tight and that the hose or tubing is fully inserted into fittings.
- Check that all unused inlets have the shipping plugs removed and replaced with appropriate plugs or caps.
- Make sure all drain valves are closed.
- Make sure the fire pump is operating properly and that water flows through the compressor oil cooler.
- Make sure the foam pump is operating properly.

Lubrication:

Fill the sump with hydraulic oil until the level 1/2 way up the sight glass. Use ISO AW68, low foaming/anti-foaming hydraulic oil.

Note that the level will need to re-checked and additional oil added to compensate for oil that fills the hydraulic lines and compressor after the initial compressor run.

Air Circuit Adjustment:

The air trim valve located on the compressor air inlet is factory set at three full turns open from its closed position. If necessary to reset, loosen lock nut, turn to fully close and then open three full turns. Tighten locknut after adjustment. See page 4 for location of air trim valve.

Power-up:

CAUTION

Compressed air can be dangerous. Make sure the pressure is allowed to bleed down to atmospheric pressure before opening any connections or valves.

Check ALL fluids in the entire vehicle before initial power-up.

1. Remove the compressor air filter piping and pour 8 to 16 ounces of hydraulic oil into the air inlet.
2. Replace the air filter piping.
3. Start the vehicle and engaged the CAFSystem.
4. Check for leaks by listening for hissing noises at the fittings.
5. Shut the system off and allow for air pressure to bleed off.

Re-check the sump oil level and add additional oil added to compensate for oil that fills the hydraulic lines and compressor after the initial compressor run.