FOAMPRO®

A Safe Fleet Brand

Form 947
Rev. 3/18

Hydraulic Cooler and Reservoir System

Models
2502-0002 (3012-3150) and 2502-0003 (3300)

INSTALLATION AND OPERATION MANUAL

Unit Serial Number _____

All quality FoamPro products are ruggedly designed, accurately machined, carefully assembled, thoroughly inspected and tested. In order to maintain the high quality of your unit, and to keep it in a ready condition, it is important to follow the instructions on care and operation. Proper use and good preventive maintenance will lengthen the life of your unit. ALWAYS INCLUDE THE UNIT SERIAL NUMBER IN CORRESPONDENCE.

FoamPro • 26 Southern Blvd. • Nesconset, NY 11767 USA • 800-533-9511 • FAX 816-892-3178

TABLE OF CONTENTS

Section		Page
1	SAFETY	3
2	A QUICK LOOK AT HOW THE SYSTEM WORKS	4
3	WHAT YOU GET	4
4	WHAT YOU SUPPLY	5
5	INSTALLATION PLANNING	6
6	PLUMBING THE SYSTEM	7-8
7	ELECTRICAL COMPONENT INSTALLATION AND HOOK-UP	9-10
8	MAINTENANCE	10
9	TROUBLESHOOTING	11
10	SPECIFICATIONS	12-17
11	WARRANTY	Back Cover

NOTE TO SYSTEM INSTALLERS
IMPORTANT: Please provide a copy of the FoamPro manual to the end user of the equipment. For additional FoamPro manuals, contact by FAX 816-892-3178, website www.foampro.com, or call (800) 533-9511. Request Form No. 947.

1 Safety

Please read all of the following safety precautions and follow them carefully. They are important for personal injury prevention or damage to the equipment.

1. **Always disconnect the power source** before servicing any part of the system.
2. **Release all pressure** within the system before servicing any of its component parts.
3. **Drain all liquids** from the system before servicing any of its component parts.
4. **Check all hoses** for weak or worn conditions monthly. Make sure that all connections and fittings are tight and secure.
5. **Use pipe, hose, and fittings** - from the hydraulic oil pump to the cooler/reservoir - which are rated at least the maximum hydraulic pressure rating of the system shown in Section 5, or better, and are approved for mobile hydraulic system use.
6. **Any electrical system** has the potential to cause sparks during service. Eliminate explosive or hazardous environments during service/repair.
7. **The components and fittings** used in this system must be compatible with the foam concentrates used and pressures at which the pump system operates.
8. **CAUTION: Do not operate the FoamPro system at or above an ambient temperature of 160°F (71°C), and an oil temperature above 220°F (104°C).**
9. **CAUTION: Make sure the electrical source of power for the unit is a constant 12-volt DC negative ground system for the 2502-0002 and 2502-0003 systems.**
10. **CAUTION: Periodically inspect all system components. Perform routine preventive maintenance as required.**
11. **Avoid spraying water** on the DC fan assemblies, as this could cause short circuits.
12. **CAUTION: Use only approved petroleum-based hydraulic fluids meeting the specifications as noted in Section 4. Never mix fluid types. Ensure all hoses and seals are compatible with fluids used. Do not use water or glycol-based fluids. Do not use phosphate ester-type fluids.**
13. **CAUTION: Dirt and contaminants are the primary causes of premature wear and failure in any hydraulic system. Use extreme care during assembly and service to keep contaminants out of the system.**
14. **CAUTION: All DOT, SAE or other applicable standards must be followed when installing the hydraulic supply system. Pay close attention to engine and transmission manufacturer drive limitations.**

2 A Quick Look at How the System Works

The FoamPro Hydraulic Cooler and Reservoir systems provide a pre-designed and configured hydraulic oil solution for any hydraulically-driven FoamPro proportioning system. For models 3012 through AccuMax 3150, a compact, easily installed package containing both the oil cooler and reservoir is offered. For AccuMax 3300, a hydraulically-driven cooler, control valve assembly and reservoir are provided. Both options are sized appropriately for the systems they are designated for, taking away the hassle of designing a cooler/reservoir solution.

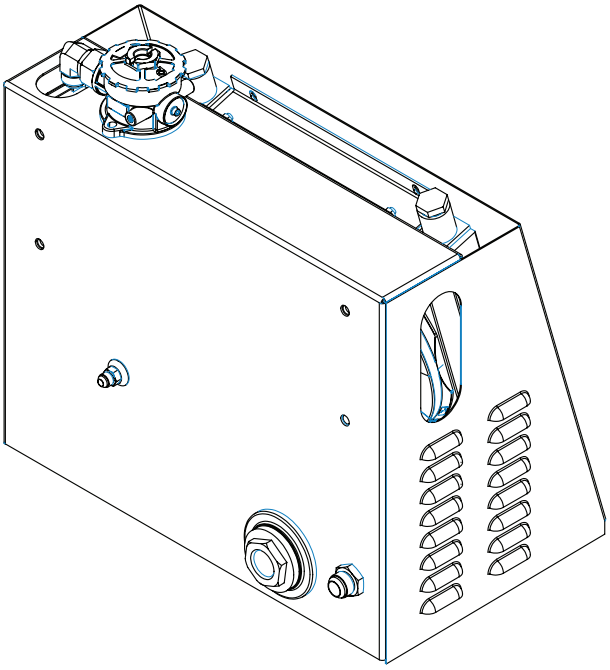
The cooler/reservoir package is designed to easily mount on the frame rail of an apparatus. Installers need only to provide power and hydraulic plumbing from the FoamPro foam system.

The larger 3300 kit is offered as modularized components to allow the installer greater freedom to place components where space allows on the apparatus.

Note: When ordering your 3300 system and the cooler kit, make sure to order the S111-3300B system for the multi-point and S121-3300B for the single-point system. These systems will include a standard rotation hydraulic pump with an SAE A auxiliary pad for the hydraulic driven cooler circuit. Please check with the factory for other options that may be available.

3 What You Get

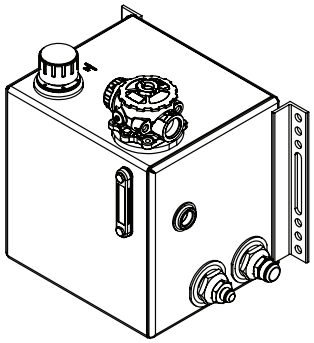
Deutsch Connector for electric fan



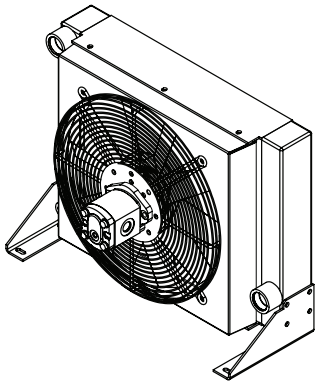
2502-0002 Kit for Models 3012 through 3150

Hydraulic Cooler and Reservoir

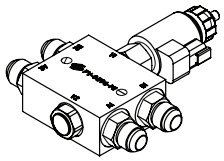
3300 Kit (Part No. 2502-0003)



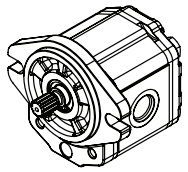
15 Gallon Reservoir 2502-0003 Kit for Model 3300 (2502-1001)



Cooler with Hydraulic Driven Fan and 2530-1001 temperature switch (2502-1002)



Hydraulic Fan Control Valve (2590-1001)



Hydraulic Pump for Fan Drive (2500-0059)

4 What You Supply

ITEMS NEEDED:

1. Hydraulic Oil – Premium hydraulic fluids containing oxidation, rust and foam inhibitors must be used. These premium fluids include premium turbine oils, API CD engine oils per SAE J183, M2C33F or G automatic transmission fluids (ATF), Dexron II, III, or IV (ATF) meeting Allison C-3 or Caterpillar TO-2 requirements. The recommended hydraulic fluid operating viscosities are typically 70 to 278 SUS (12 to 60 cSt) for optimum performance. The hydraulic oil should have an ISO rating of between 32 to 68 depending on climate conditions.

NOTE: Other types of hydraulic fluids are to viscous for proper load sense compensator operation. Do not mix hydraulic fluid types.

2. Hydraulic Hoses and Fittings – High pressure hydraulic hoses and fittings are to be rated at least at the maximum working pressure of the system. To reduce the potential of leaks at the hydraulic fittings, use SAE 37-degree flare JIC-type fittings or SAE straight thread o-ring fittings. In Section 5, see table for required fitting sizes, minimum hose size and minimum hose pressure ratings for the hydraulic components.

3. Mounting Hardware Sizes:
   2502-0003: Package: 1/2” (13 mm) bolts (4)
   Reservoir: 5/8” (16 mm) bolts (4)
   Cooler: 3/8” (10 mm) bolts (4)
   Fan Valve: 5/16” (8 mm) bolts (2)

4. SYSTEM WIRING
   Use a minimum of 14 AWG wire. Use wire that is an automotive type and resistant to abrasion and chemicals, such as oil and foam. It is recommended that wiring be bundled with wire ties and protected with loom.

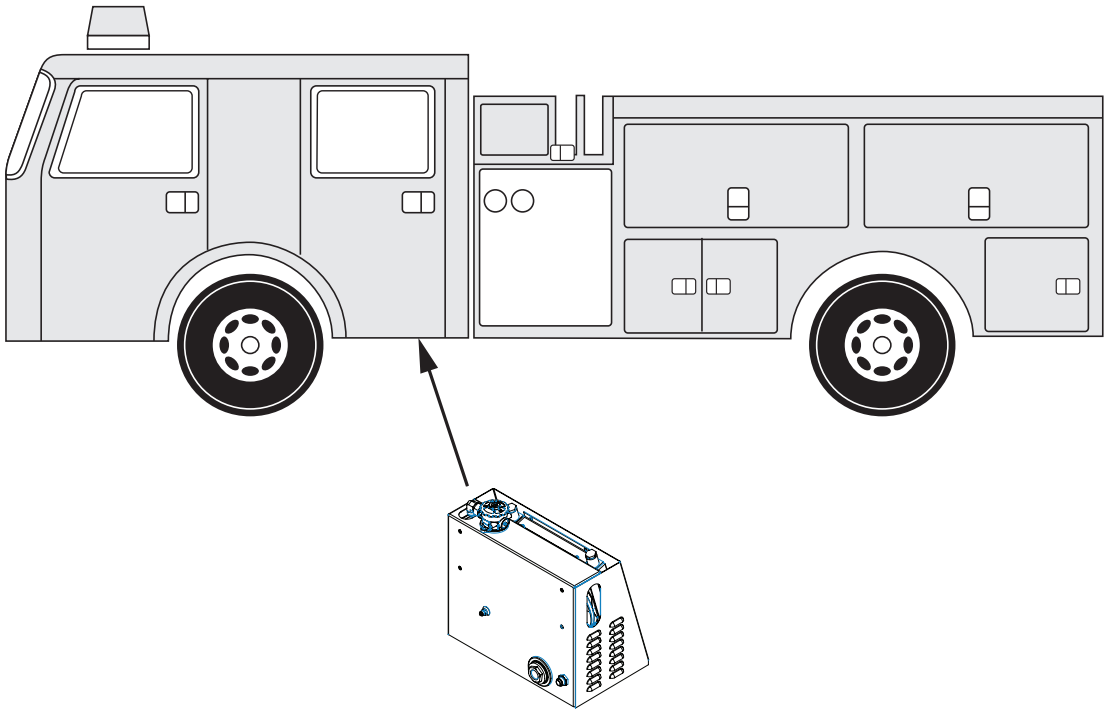
5 Installation Planning

Because of the potential differences in fire apparatus plumbing and foam system configuration, it is not practical to depict exactly how each Hydraulic Cooler/Reservoir unit will be installed on a particular apparatus. Most of the information contained in the following sections will apply to most situations.

Read these sections thoroughly. Plan and design where and how to install this equipment in the apparatus *before beginning* the actual installation. The following diagrams provide guidelines for the location of the system components. Try to place components in locations that will allow the least amount of hose and fittings.

Place the components of the hydraulic cooling system away from heat sources, such as exhaust systems, and in a location that allows easy access for checking and filling the oil.

Mounting for the modular unit should allow for 6 to 8 inches of clearance along the bottom of the unit, and have the cooler facing away from any walls or obstructions. Mounting for the cooler used for the 300 gpm unit should have 12” clearance between the fan and any walls or obstructions. This space ensures that there will be adequate air flow going through the cooling element.



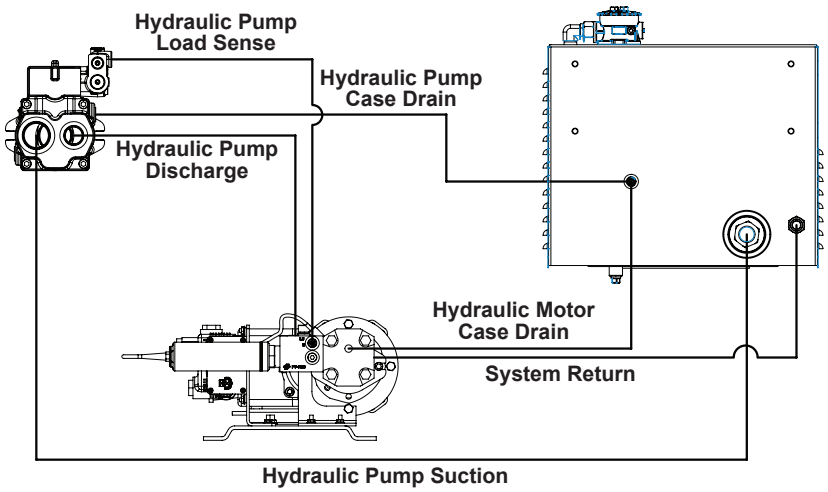
Hydraulic Cooler and Reservoir

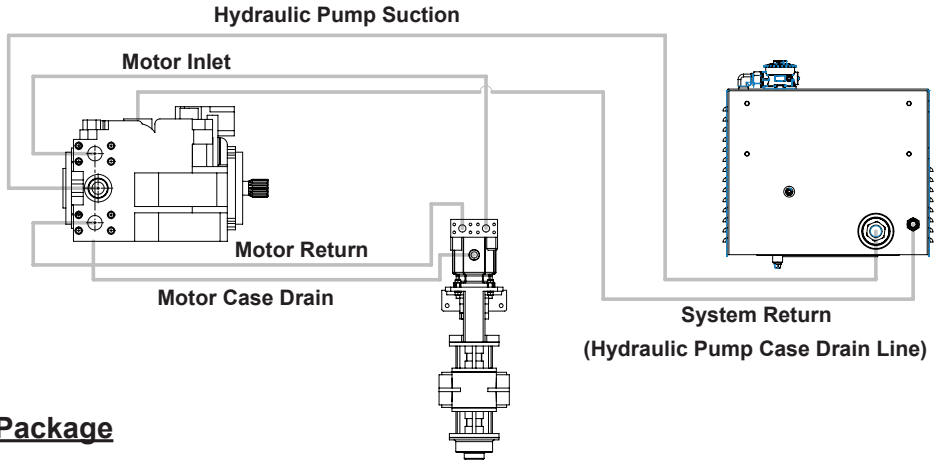
6 Plumbing the System

The system schematic shows the plumbing for both the package system and the 3300 kit.

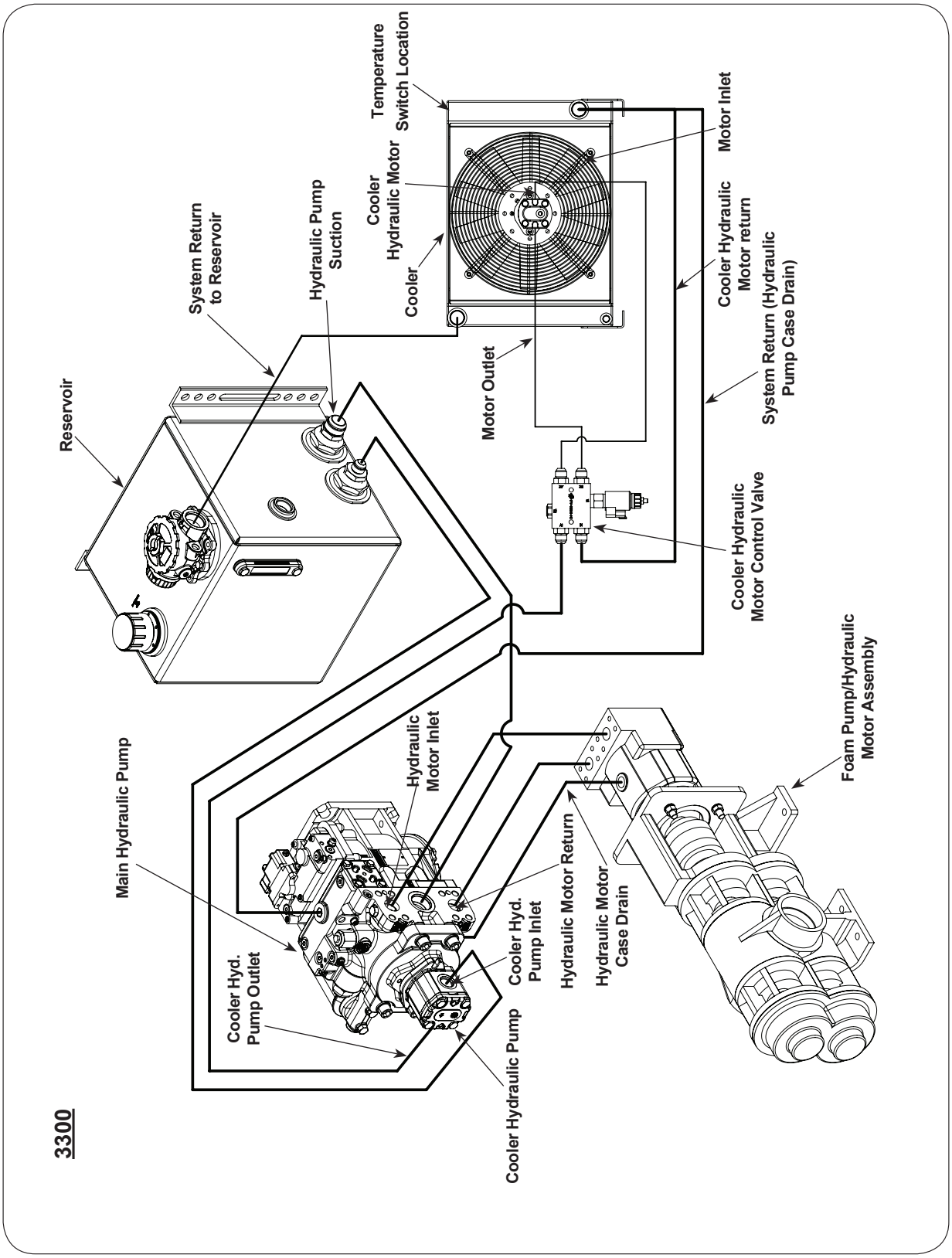
Refer to Section 4 and Section 5 for complete hydraulic fitting, hose and oil specifications.

3012





3020 - 3150 Package


Temperature Switch Location
Cooler Hydraulic Motor
Cooler
Motor Inlet
Cooler Hydraulic Motor return
System Return (Hydraulic Pump Case Drain)
System Return to Reservoir
Hydraulic Pump Suction
Reservoir
Motor Outlet
Cooler Hydraulic Motor Control Valve
Foam Pump/Hydraulic Motor Assembly
Main Hydraulic Pump
Hydraulic Motor Inlet
Cooler Hyd. Pump Outlet
Cooler Hydraulic Pump
Cooler Hyd. Pump Inlet
Hydraulic Motor Return
Hydraulic Motor Case Drain
3300

7 Electrical Component Installation and Hook-Up

Some things to keep in mind:

Do not hook up main power until all connections have been made and are tight.

Use 14 AWG wire gauge or larger.

The system can only perform when electrical connections are sound, so make sure each one is correct and tight.

Do not mount radio transmitter or transmitter cables in direct or close contact with the system wiring.

Electrical devices can be easily damaged by a weak or erratic power supply. The Cooling system is no different - the better the power supply, the better the system will perform.

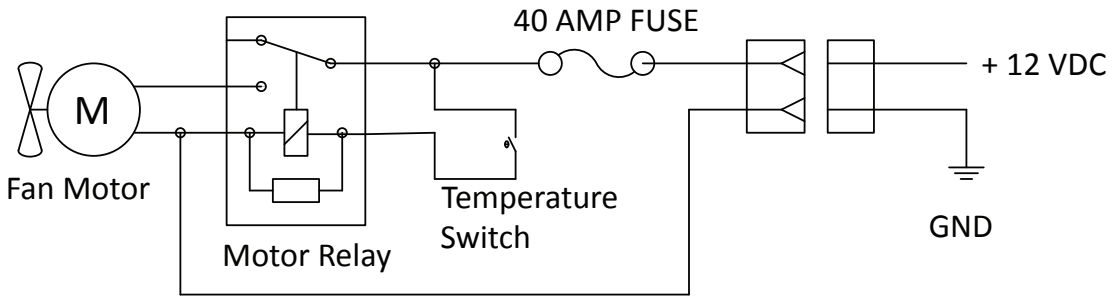
DO NOT connect the main power to leads that supply power to some other device, such as a light bar, siren, primer pump, or starters and hose reels.

CAUTION: Always disconnect the power and ground connections before electric arc welding at any point on the apparatus. Failure to do so will cause damage to electrical components.

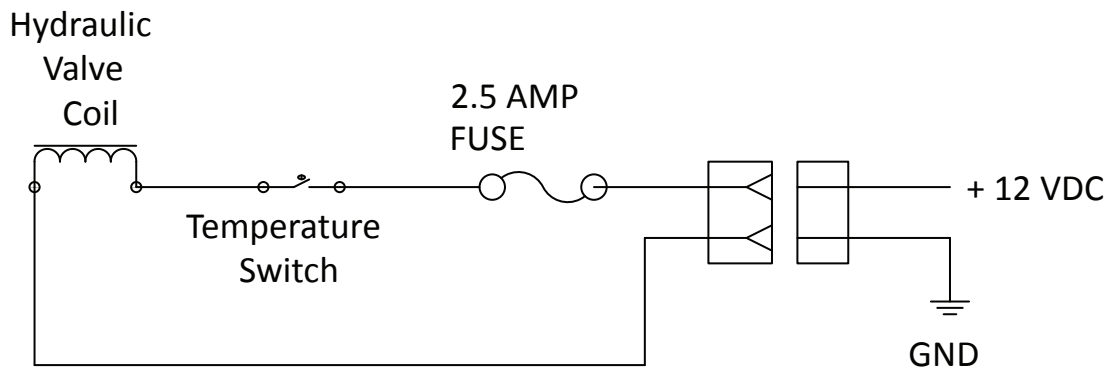
Use of standard automotive wire of the size specified on the schematic that is grease and fuel resistant is recommended.

CAUTION: Low battery voltage or voltage drop may cause the system to malfunction. Provide power from a master switch terminal. Accessories, such as pump primers, starters, hose reels and lights, may cause voltage drops when activated. Do not place such accessories on the same circuit.

The following is the schematic for the wiring for the **2502-0002** module:



To wire the **2502-0003** cooler kit, follow the wiring diagram below:



8 Maintenance

1. **Monthly**: Inspect wiring, hoses and connections for tightness, corrosion, leaks and/or damage.
2. **Monthly**: Check and top off hydraulic oil reservoir as needed.

NOTE: The hydraulic oil should not require refilling. If the system requires oil regularly, an undetected leak is present in the system. Do not mix hydraulic oils.

3. **Monthly**: Ensure oil cooler intake and cooler surface is free of obstructions.
4. **Bi-Annually**: Drain hydraulic oil and clean suction strainer. Refill the hydraulic oil reservoir with proper hydraulic oil as noted in Section 4.
5. **Bi-Annually**: Change hydraulic oil filter.

NOTE: Dirt is the "enemy" of any hydraulic system. Use care when installing and maintaining the system to keep dirt particles from entering the hydraulic system.

WARNING: Release all pressure within the system before servicing any of its components.

Strainer & Filter Replacement Parts		
Kit Number	Suction Strainer Part No.	Return Filter Part No.
2502-0002	3800-1003	3800-1001
2502-0003	3800-1002	3800-1001

9 Troubleshooting

Most electrical system problems can be traced to faulty wiring. Follow the diagrams carefully and check all connections. Make sure the proper power is being supplied and solid, clean ground connections are made. Excessive electrical interference or momentary low voltage on the power line may cause erratic operation.

Following the troubleshooting guide will allow quick diagnosis of the problem and the corrective action to take.

Symptom	Probable Cause(s)	Corrective Action
Oil temperature is too high.	Cooler obstructed.	Check and remove any debris from the cooler surface.
	Oil level too low.	Check and fill hydraulic oil in reservoir as needed.
Cooler fan not running (package).	Power wired incorrectly.	Check wiring and connection of power wires to system.
	Power line fuse blown.	Check fuse and replace if blown.

10 Specifications

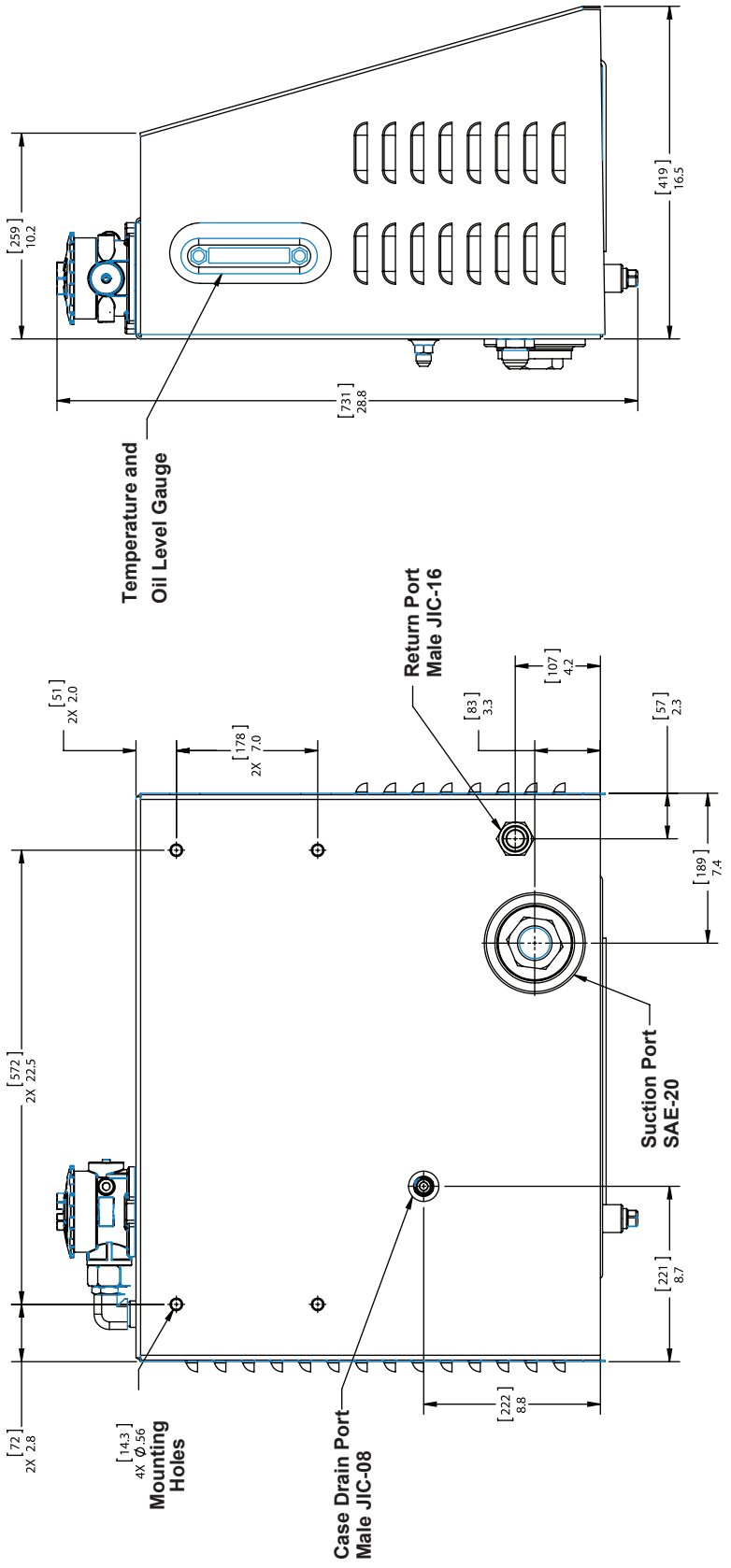
Foam System Hydraulic Specifications							
	3012	3020	3040	3060	3090	3150	3300
Max. Hydraulic Oil Pressure PSI (BAR)	1250 (86.2)	1734 (119.6)	2649 (182.6)	3484 (240.2)	4479 (308.8)	4378 (301.9)	5873 (404.9)
Max. Hydraulic Oil Flow GPM (LPM)	12 (45.4)	16.8 (63.6)	16.3 (61.7)	22.9 (86.7)	23.7 (89.7)	29.5 (111.7)	47.4 (179.4)
Max. Hydraulic Oil Temperature °F (°C)	180 (82)	220 (104)	220 (104)	220 (104)	220 (104)	220 (104)	220 (104)
Hydraulic Heat Load - BTU/Min	170	244	359	663	886	1073	2312
Hydraulic Flow Rate through Cooler GPM (LPM)	12 (45.4)	5 (18.9)	5 (18.9)	5.9 (22.3)	5.4 (20.4)	6.7 (25.4)	9.5 (36.0)
Minimum Cooler Capacity Gallons (Liters)	8 (30.3)	8 (30.3)	8 (30.3)	8 (30.3)	8 (30.3)	8 (30.3)	15 (56.8)
Recommended Cooler Kit	2502-0002	2502-0002	2502-0002	2502-0002	2502-0002	2502-0002	2502-0003

Hydraulic Fittings and Hose Specifications

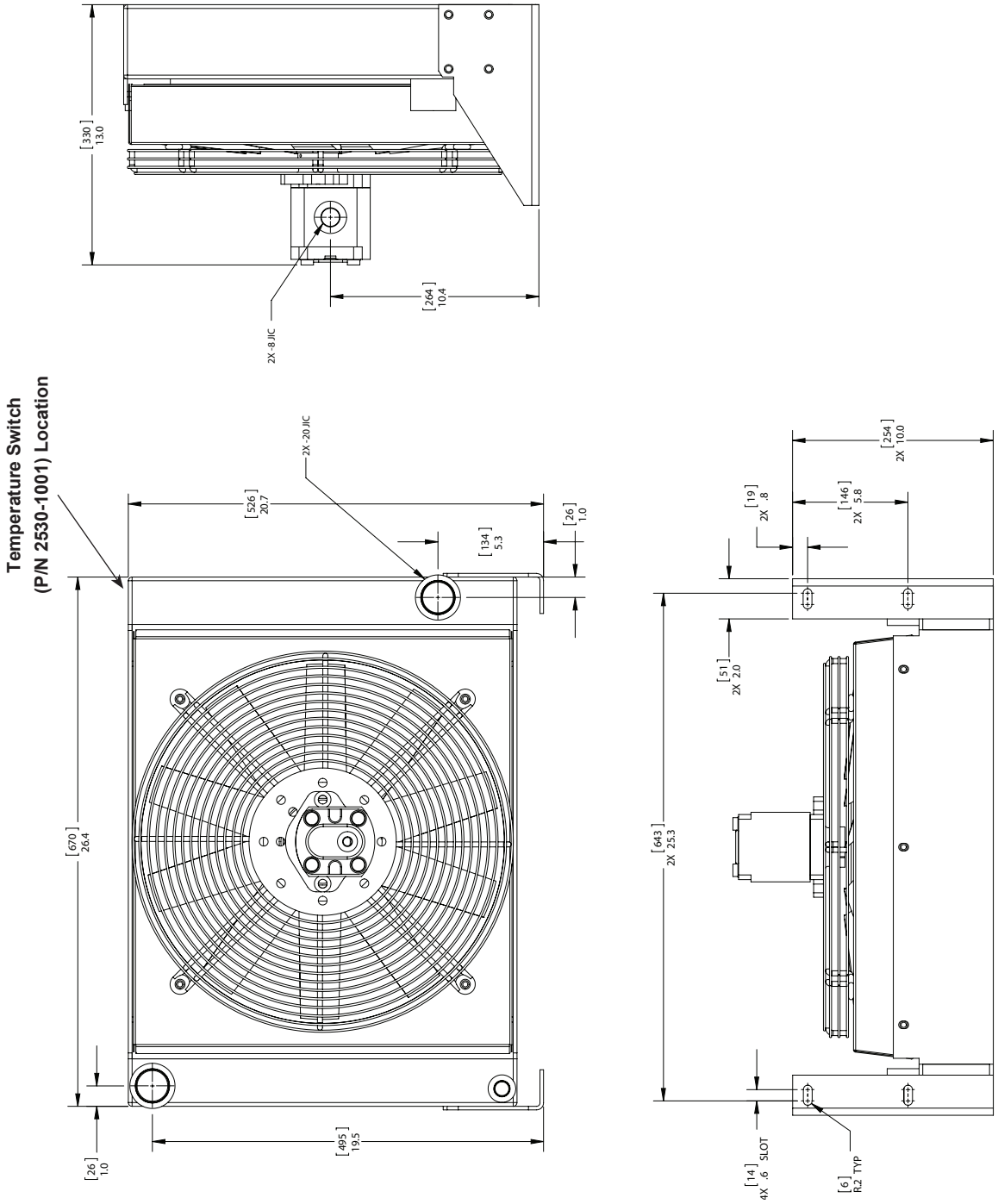
Connection	Model	Min. Hose ID	Min. Hose Pressure Rating	Pump Port Fitting Type & Size	Tank Port Fitting Type & Size	Cooler Port Fitting Size & Type	Cooler Fan Valve Port Type & Size	Cooler Fan Motor Port Type & Size
Hyd. Pump Inlet from Tank	3012	1-1/2”	See Note	#24 SAE O-Ring	SAE -20			
Hyd. Pump Case Drain to Tank		5/8”	1500 PSI	#10 SAE O-Ring	JIC -08			
Hyd. Motor Outlet to Cooler		3/4”	1500 PSI	#10 SAE O-Ring	JIC -16			
Hyd. Motor Case Drain to Tank		3/8”	1500 PSI	#6 SAE O-Ring	JIC -08			
Hydraulic Tank to	3020/3040	1”	See Note	#16 SAE O-Ring	SAE -20			
Hydraulic Charge Pump Inlet	3060	1”	See Note	#16 SAE O-Ring	SAE -20			
	3090	1”	See Note	#16 SAE O-Ring	SAE -20			
	3150	1”	See Note	#16 SAE O-Ring	SAE -20			
Hydraulic Pump Case Drain to	3020/3040	3/4”	1500 PSI	#12 SAE O-Ring	JIC -16			
Hydraulic Cooler	3060	3/4”	1500 PSI	#12 SAE O-Ring	JIC -16			
	3090	3/4”	1500 PSI	#12 SAE O-Ring	JIC -16			
	3150	3/4”	1500 PSI	#12 SAE O-Ring	JIC -16			
Hyd. Tank to Charge Pump Inlet	3300	1-1/4”	See Note	#20 SAE O-Ring	JIC -20			
Hyd. Pump Case Drain to Cooler		3/4”	1500 PSI	#12 SAE O-Ring		JIC -20		
Hyd. Cooler to Tank		3/4”	1500 PSI		JIC -20	JIC -20		
Hyd. Cooler Pump Inlet to Tank		1”	See Note	JIC -12	JIC -12			
Hyd. Cooler Pump Outlet to Valve		3/4”	1500 PSI	JIC -10			JIC -10	
Valve Outlet to Fan Motor Inlet		3/4”	1500 PSI				JIC -10	JIC -08
Fan Motor Outlet to Valve		3/4”	1500 PSI				JIC -10	JIC -08
Valve Outlet to Tank		3/4”	1500 PSI		JIC -16		JIC -10	

Notes:
SAE O-Ring Ports per SAE J514
SAE Split Flange Ports per SAE J518 Code 62
JIC Ports per SAE J514
Hydraulic Pump Suction Hose to conform to SAE 100R4

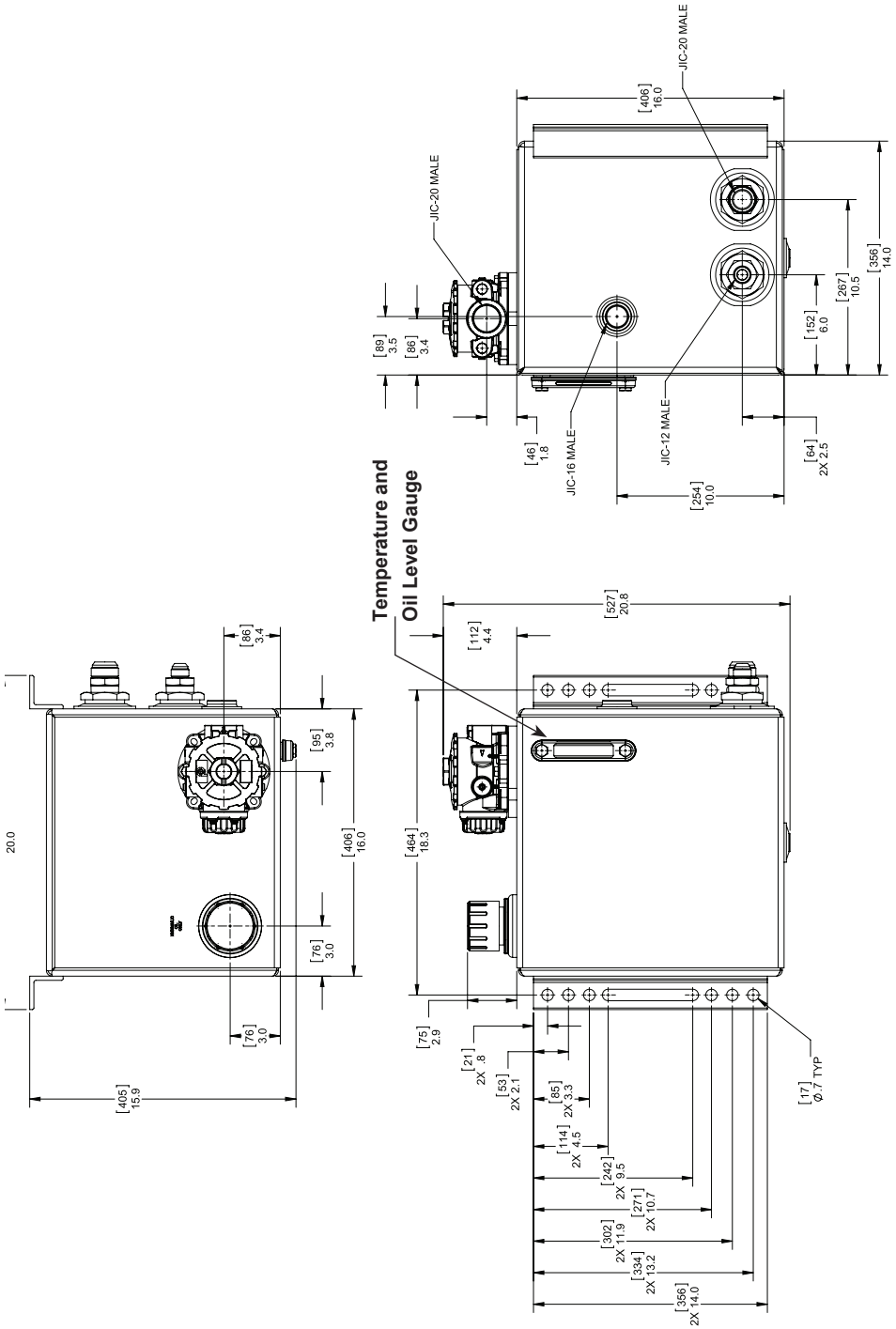
Modular Cooler/Reservoir Dimensions (P/N 2502-0002)



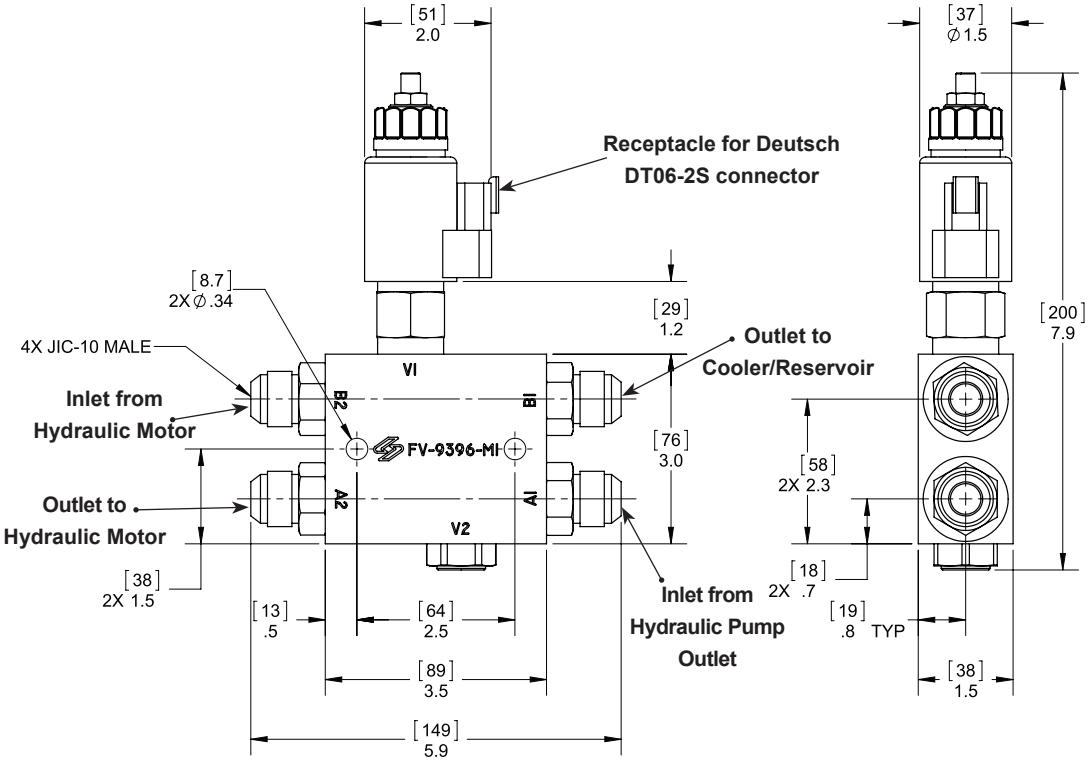
Cooler Dimensions (P/N 2502-1002) for Kit 2502-0003



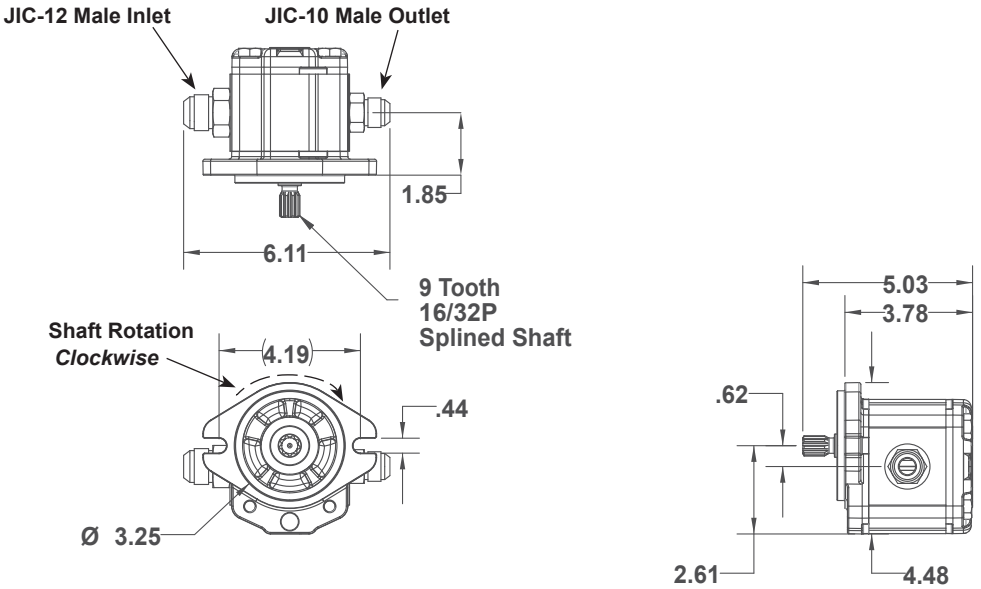
Reservoir Dimensions (P/N 2502-1001) for Kit 2502-0003



Valve Dimensions (P/N 2590-1001) for Kit 2502-0003



Hydraulic Pump Dimensions (P/N 2500-0059) for Kit 2502-0003



NOTES

NOTES

11 Limited Warranty

Fire Research Corp. (FRC), as supplier of FoamPro, warrants to the original purchaser, each new pump, system or other product of its own manufacture, for a period of two years from the date of shipment from the factory, to be free from defects in material and workmanship under normal use and service. “Normal use and service” means not in excess of recommended maximum speeds, pressures, and temperatures, or handling fluids not compatible with components materials, as noted in applicable FoamPro product catalogs, technical literature, and instructions. This warranty shall not apply to any pump, system or other product which shall have been repaired or altered to adversely affect the performance or reliability of the pump, system or other product.

Neither this warranty nor any implied warranty apply to damage or harm caused by any or all of the following: (1) Freight damage; (2) Freezing damage; (3) Damage caused by parts and/or accessories or components not obtained from or approved by FRC; (4) ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES, OTHER THAN INJURY TO THE PERSON, ARISING FROM THE USE OF ANY PUMP OR OTHER PRODUCT MANUFACTURED BY FRC EXCEPT in states that do not allow the exclusion or limitation of incidental or consequential damages; (5) Damage due to misapplication and/or misuse; (6) Normal wear of moving parts or components affected by moving parts.

The liability of FRC under the foregoing warranty is limited to the repair or replacement at FRC's option without charge for labor or materials of any parts upon return of the entire pump, system or other product or of the particular part to the FRC factory within the warranty period, at the sole expense of the purchaser, which part shall upon examination appear to FRC’s satisfaction to have been defective in material and workmanship. The liability of FRC under any theory of recovery (except any express warranty where the remedy is set forth in the above paragraph) for loss, harm or damage, shall be limited to the lesser of the actual loss, harm or damage or the purchase price of the involved pump, system or other product when sold by FRC to its customer.

FRC expressly warrants its pumps and other products as above stated. THERE ARE NO OTHER EXPRESS WARRANTIES. ANY IMPLIED WARRANTIES, INCLUDING IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO TWO YEARS FROM THE DATE OF PURCHASE BY THE ORIGINAL PURCHASER EXCEPT in states that do not allow time limitations on implied warranties. THERE IS NO IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE OR MERCHANTABILITY WHEN THIS PRODUCT IS PUT TO RENTAL USE.

No person including any dealer or representative of FoamPro is authorized to make any representation or warranty concerning FRC’s FoamPro products on behalf of FRC, or to assume for FRC the obligations contained in this warranty. FRC reserves the right to make changes in design and other changes and improvements upon its products without imposing any obligations upon itself to install the same, upon its existing products then in process or manufacture.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

IMPORTANT NOTICE

It is imperative to package all FoamPro components properly, before shipment (with Return Goods Authorization attached) back to FRC. The FoamPro contains electronic components that may receive damage from improper shipping procedures! All FoamPro components shipped back to FRC will pass through Quality Control Inspection, and will be photographed after the box is opened. Any shipping damage, such as superficial scratches, nicks, etc., to the unit makes it unusable (even after the internal warranty problem is repaired) and thus must be refinished to “like-new” condition during the warranty process. You are responsible for any physical damage occurring to FoamPro components at your facility and during shipment back to FRC.

Package the FoamPro, complete with all the recommended parts the Customer Service representative requires (i.e., Digital Display control with all premolded wire cables etc.) in its original carton with the Styrofoam and other packaging materials, as it was received at your facility. FRC appreciates your attention in this matter, as we feel it will help us to serve you in a better fashion, while keeping the cost of the FoamPro product competitive. Thank you.

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