Resource Manual

Installation Guide • Operating Procedures • Parts Breakdown

THERMAFLOW SS
STAINLESS STEEL
MOBILE HYDRAULIC SYSTEMS

MODEL SS675

TRANSPORT HYDRAULIC COOLING SYSTEM

MODELS

SS675ER
SS675HR
SS675E3000ND
SS675H3000ND

No drill mounting option available on all models.

Model #:_____

Serial #:_____

Installation Date:_____

THERMAFLOW SS
STAINLESS STEEL
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INSTALLATION GUIDE , OPERATING PROCEDURES & PARTS BREAKDOWN

MODEL SS675

INDEX

INSTALLATION GUIDE , OPERATING PROCEDURES & PARTS BREAKDOWN

Please read this guide carefully before installing and operating your THERMAFLOW system.

The THERMAFLOW assembly is designed to cool and filter the oil required to operate your hydraulic system. The oil is cooled by forcing air across cooling fins on the heat exchanger. This system utilizes either an electric or hydraulic fan motor to force air across the fins. The fan motor options are described below.

The Model SS675 has 2 fan motor options, Electric or Hydraulic. The Electric fan motor option has a 12VDC cooling fan which is operated with a manual, weather-tight toggle switch. This switch can be either wired hot or it can be wired with the ground wire connected to an air operated on/off switch. Wiring the fan switch through the air switch will give the operator automatic control. With the fan switch "ON" the fan will cycle on when the PTO is engaged and then cycle "OFF" when the PTO is disengaged. This option will also allow the operator to turn the fan off in cold weather to bring the oil temperature up quicker. If you choose to wire the fan switch hot you will run the risk of over-heating the hydraulic oil if you do not turn the fan "ON". The Hydraulic fan motor option has a fixed pressure compensated flow control that automatically cycles the fan "ON" when the hydraulic system is running and "OFF" when not running. This option comes plumbed from the factory.

Because different product pump applications require different speed and power requirements, your THERMAFLOW system was custom engineered for a particular application. If the system is operated beyond its designed capacity, overheating and/or component damage may result.

STEP 1 POSITIONING & MOUNTING

The Model SS675 is designed to mount behind the truck cab across the frame rail sides.

A) Diagram A describes two mounting options available. Allow a minimum of 4” on both sides of the unit for proper airflow.

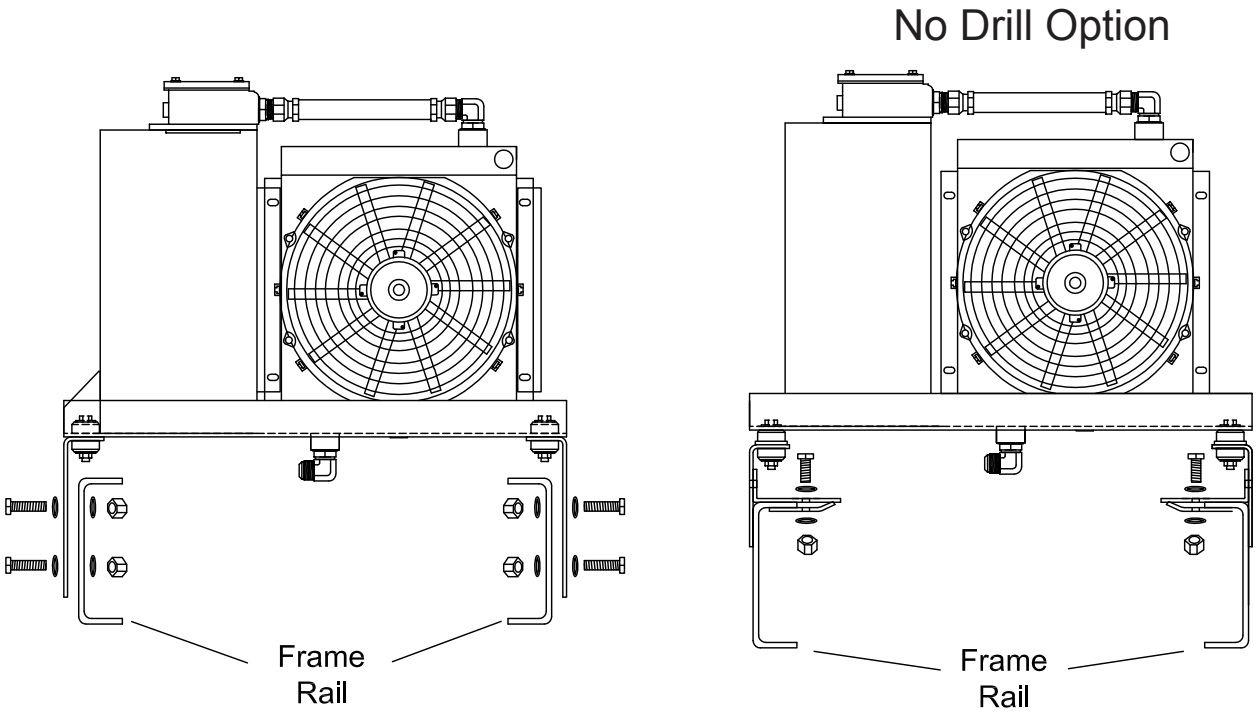


DIAGRAM A

STEP 2 INSTALLING THE PTO & HYDRAULIC PUMP

A) Install the PTO to the transmission and mount the hydraulic pump according to the instructions included with the PTO.

HELPFUL HINT: *If you are using a direct mount hydraulic pump/PTO combination, be sure that the pump splines are well lubrication with a heavy grease. This grease will prevent premature spline wear on the PTO and pump shafts. A small packet of this grease is available through STAC Inc P/N 300980. Also available from both MUNCIE and CHELSEA is a new option for a greaseable shaft. This option allows you to grease these splines without pulling the pump off the PTO.*

STEP 3 ELECTRICAL WIRING *(Models with Electric Fan)*

Models having a 12 VDC fan motor can be wired two different ways. Listed below are these options.

OPTION #1 - FAN SWITCH WIRED HOT

This option wires the fan switch so that you can turn the fan on at anytime regardless of whether the tractor is running or not.

ELECTRICAL CONNECTIONS

RED WIRE: ***Connect to the positive (+) 12VDC battery terminal (20 Amps) through circuit breaker (150153) provided in electrical kit (150525).***

BLACK WIRE: ***Connect to the truck frame or to the negative (-) battery terminal.***

For further illustration follow **DIAGRAM B** on Page 4.

NOTE: We recommend that the power supply be taken directly from a battery post or similar high current location.

OPTION #2 - FAN SWITCH GROUNDED THROUGH AN AIR SWITCH

This option wires the fan switch so that you will only be able to turn the fan on when the PTO is engaged. This option will allow you to leave the fan switch “ON” so that you have an automatic operation of the fan when the PTO is engaged. PTO disengaged fan “OFF”, PTO engaged fan “ON” via an air switch.

ELECTRICAL CONNECTIONS

RED WIRE: ***Connect to the positive (+) 12VDC battery terminal (20 Amps) through circuit breaker (150153) provided in electrical kit (150525).***

BLACK WIRE: ***Connect to air switch and frame ground.***

For further illustration follow **DIAGRAM C** on Page 5.

NOTE: We recommend that the power supply be taken directly from a battery post or similar high current location.

STEP 3 ELECTRICAL WIRING *(CONTINUED)*

Diagrams B below illustrated proper electrical wiring for electric fan models.

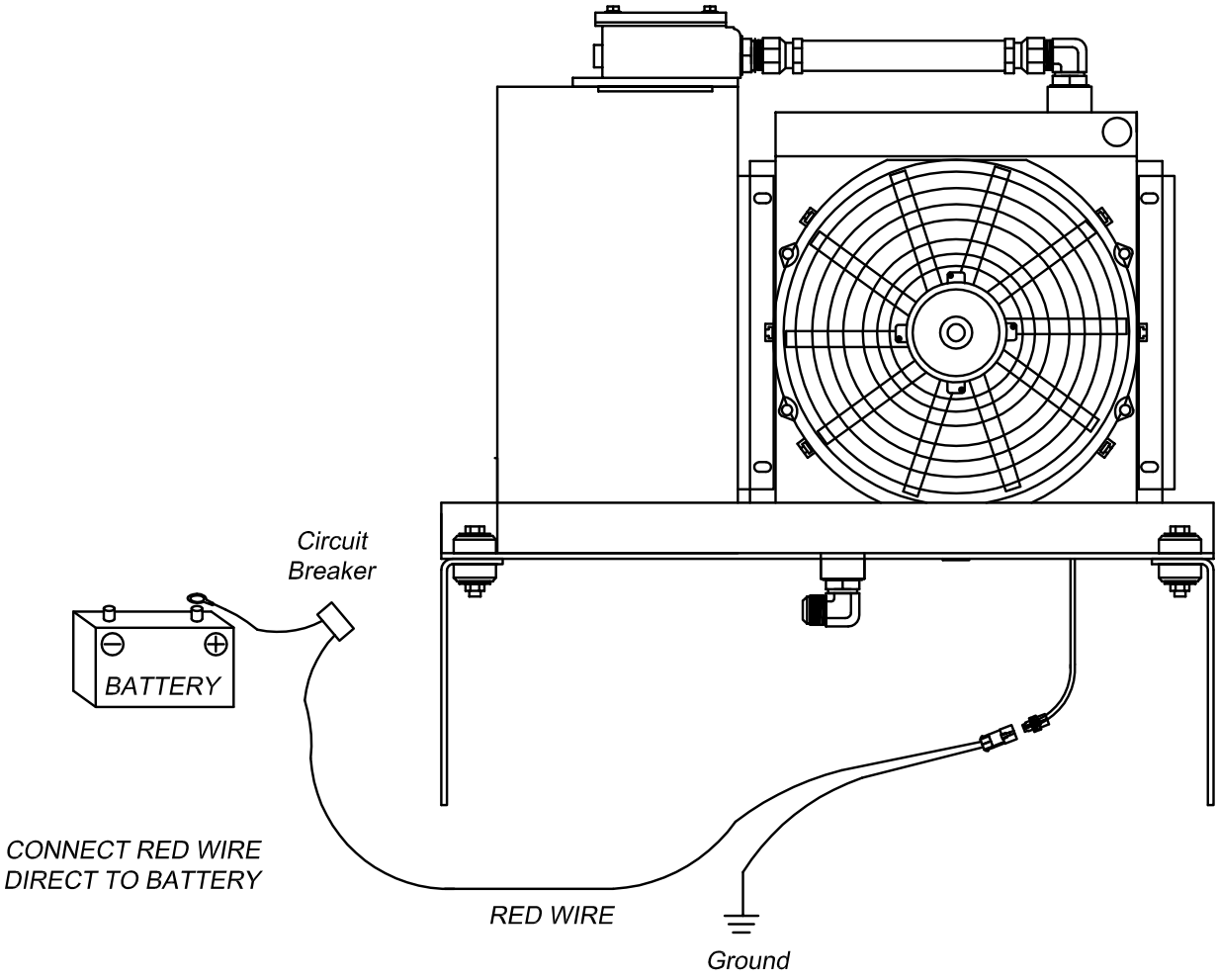


DIAGRAM B

Above electrical schematic illustrates the proper wiring for **OPTION #1** from Page 3.

STEP 3 ELECTRICAL WIRING *(CONTINUED)*

Diagrams C below illustrated proper electrical wiring for electric fan models.

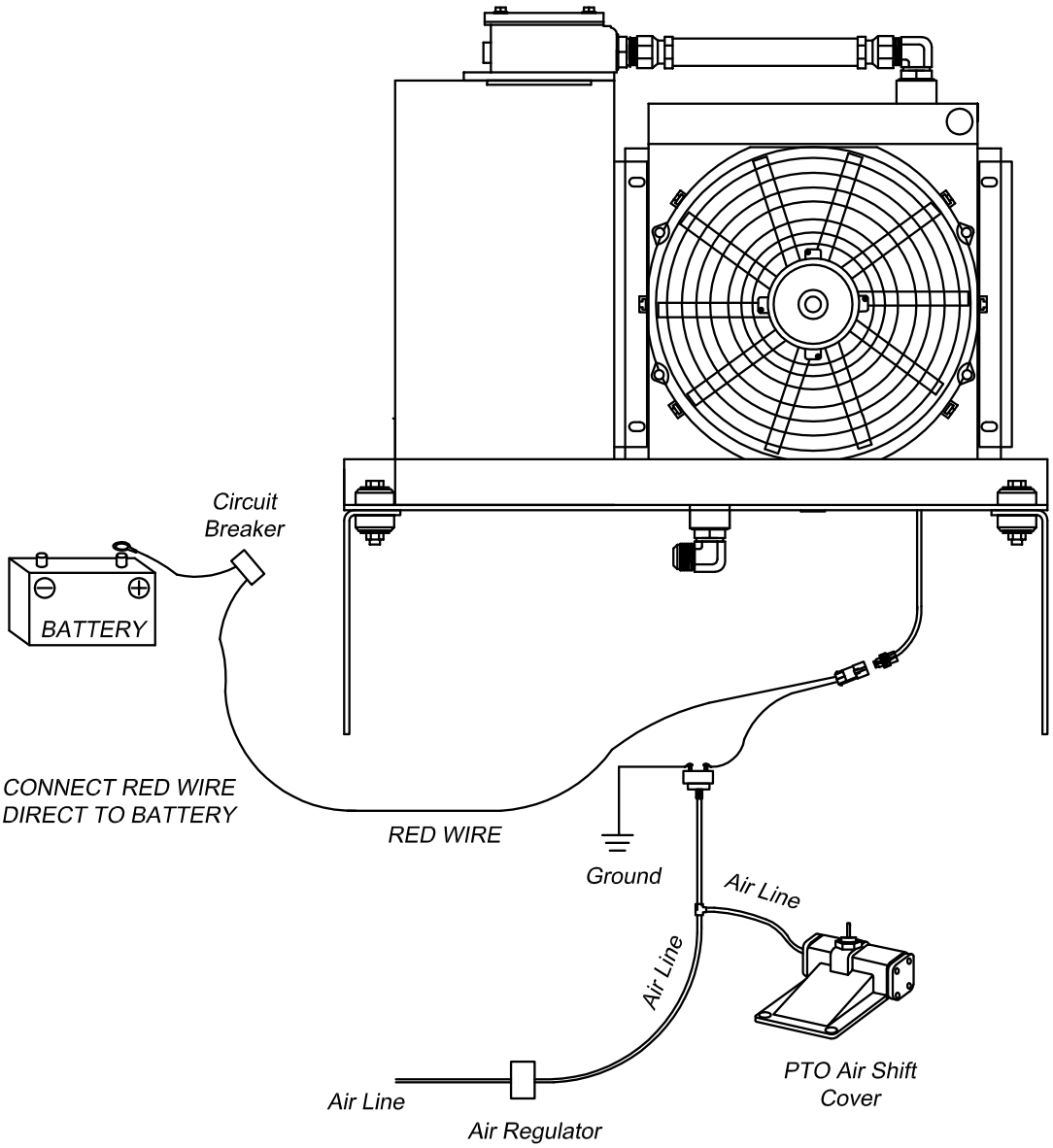


DIAGRAM C

Above electrical schematic illustrates the proper wiring for **OPTION #2** from Page 3.

STEP 4 HYDRAULIC PLUMBING

DIAGRAMS D & E show proper plumbing for Models SS675ER, SS675HR, SS675E3000ND & SS675H3000ND. Please carefully read the Helpful Hints and Notes listed below before beginning.

HELPFUL HINT: *We recommend the use of minimum 1 1/2" suction hose. If the suction hose is too small the hydraulic pump will cavitate and fail prematurely. A 3/4" pressure hose is recommended for flows up to 25 gpm. A 1" pressure hose is recommended for flows greater than 25 gpm. The 675 Series has a 2" suction port for high flow and tandem applications.*

NOTE*: Be careful not to over tighten NPT threads. It is very easy to crack these types of ports when tightening fittings.*

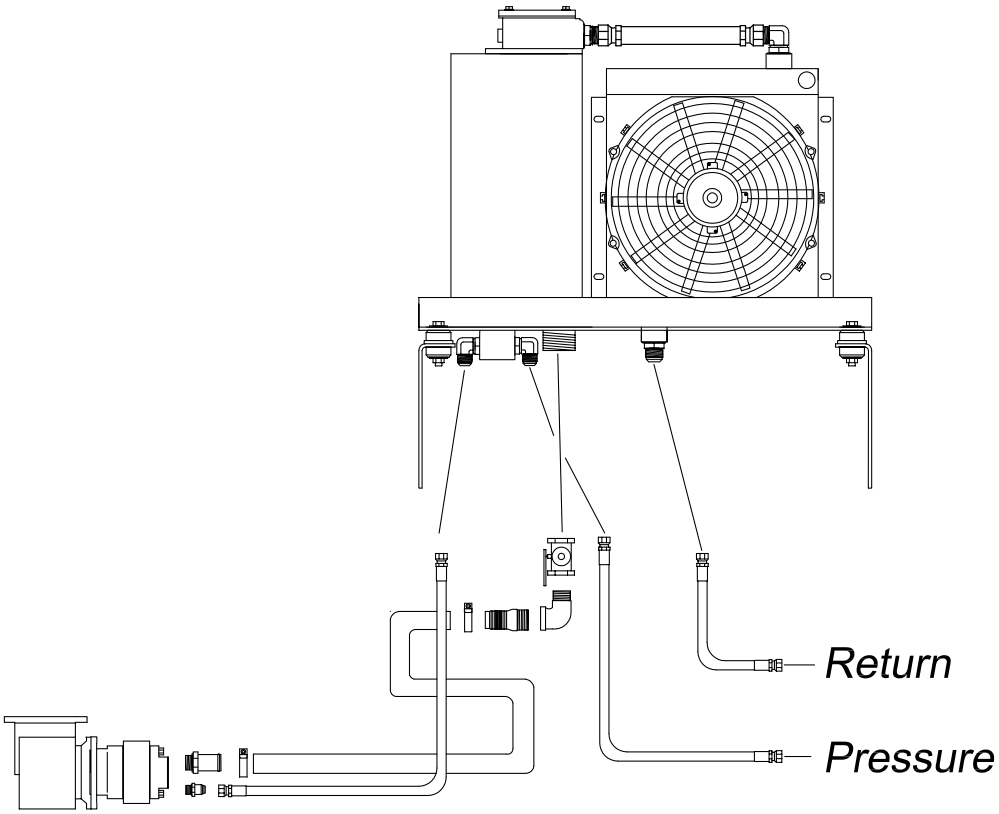


DIAGRAM D

STEP 4 HYDRAULIC PLUMBING (Continued)

Tandem System w/ Dual Relief

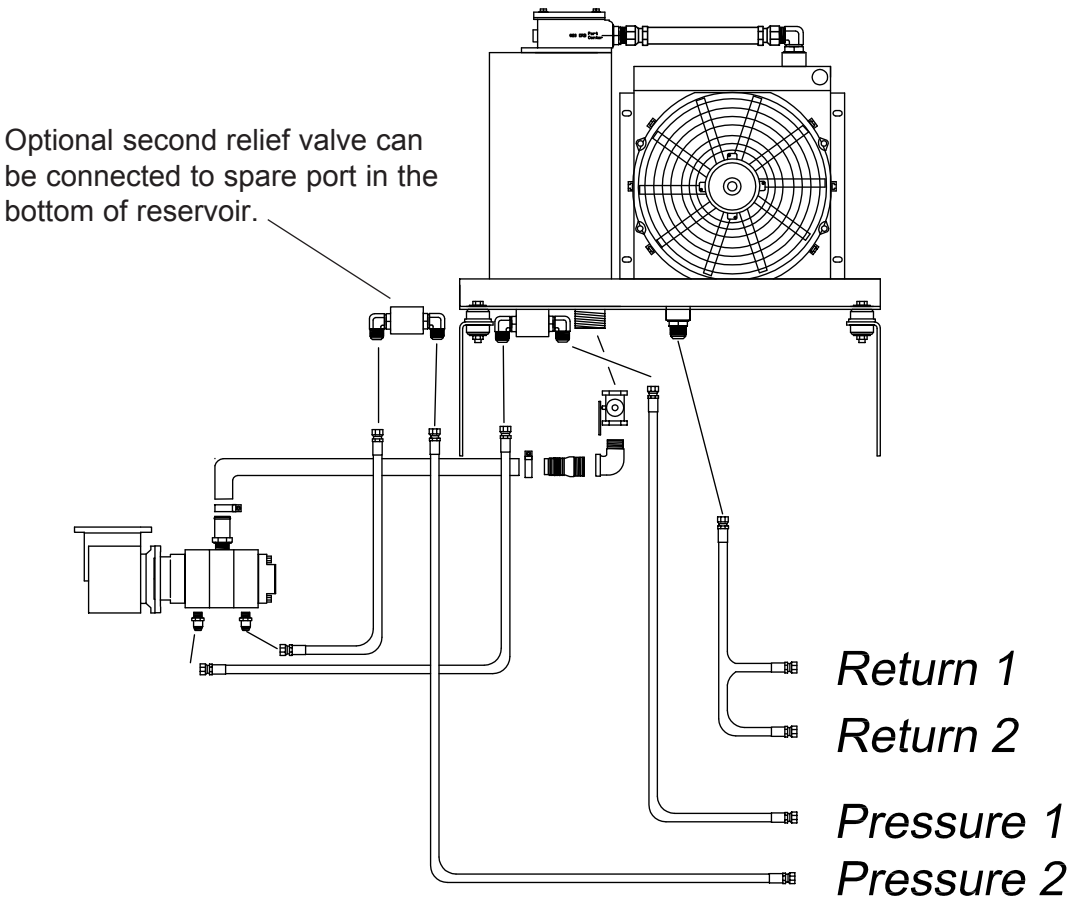


DIAGRAM E

STEP 5 Final Assembly

A) Complete all hydraulic plumbing.

B) Fill the reservoir until the oil level gets to the top blue line on the site level gage.

C) Set relief valve for system requirements.

NOTE: After the initial start up procedure you will need to add oil due to the hydraulic lines filling up to capacity.

NOTE: *Over-filling the reservoir will cause the oil to expand up through the breather assembly when the oil warms up.*

NOTE: We recommend using a high grade of hydraulic oil with a Pour Point of -50 F. This will ensure proper oil flow during extreme cold weather operation. Use of synthetic hydraulic oils is also recommended. Recommended Oil: MOBIL DTE13 or equivalent.

STEP 6 START-UP PROCEDURES

The following steps are to ensure that the THERMAFLOW assembly is operating properly.

NOTE: Before engaging the PTO, make sure that all hydraulic lines are plumbed and properly tightened.

1) Slowly engage the PTO with engine at idle speed.

NOTE: Watch the oil level in the reservoir. Be ready to add more oil as needed to maintain the oil level between the level indication lines on the site level gage.

2) Check for hydraulic leaks and repair as needed.

3) Check for fan operation (Electric & Hydraulic).

4) Carefully Tach the product pump speed.

5) Slowly increase the engine speed until desired product pump speed is obtained.

6) Run system for at least five minutes to ensure that system is sufficiently cooling the hydraulic oil. Using a Hydraulic Flow Meter Kit, set required pressure and flow rates to system requirements.

7) Slow engine to idle and disengage the PTO.

8) System is ready for operation.

System Maintenance

Hydraulic

Fluid:

- Drain and replace hydraulic oil every 6 to 12 months depending on use.
- Recommended Fluid: Mobil DTE 13 or Equivalent.

Filter:

- Remove 4 cap screws on top of filter housing.
- Remove filter cartridge and spring.
- Replace with new filter cartridge and spring Part Number 675331.
- Apply anti-seize to cap screws and tighten.

Pump:

- Inspect periodically for leaks.
- Check hoses for signs of wear.

Motor:

- Inspect periodically for leaks.
- Check hoses for signs of wear.

PTO

- Grease output shaft every 6 to 12 months depending on use.
- If PTO does not have a grease zerk on output shaft, remove direct mount hydraulic pump and grease the output shaft using a high quality gear lube.

Troubleshooting

Safety First!

Think about it before you do it. Our systems use controlled fluid pressure and converts it to rotational movement. This means that the system pressure operates around 2000 psi. A pin hole leak of fluid at this pressure can be dangerous. Use caution when loosening fittings, system pressure can be maintained for a period of time after shutdown.

Troubleshooting

Always inspect the things easiest to eliminate first. Look for faulty linkage or wiring that controls the PTO,pump or motor. Look at the fluid level and appearance of the oil. Check temperatures and pressures.

Excessive Heat:

- Clean air passages through heat exchanger.
- Check fan operation.
- Check setting of relief valve.
- Check temperature of suction line vs outlet line temperature. If the outlet temperature is noticeably hotter, the pump is cavitating.
- Check for contamination in relief valve. Clean and replace.
- Check for added flow controls. If a flow control has been added to the system, excess heat can be generated by the added restriction to flow.

Loss of Motor Speed:

- Check oil level.
- Ensure recommended engine idle speed is maintained.
- Check output pressure of the pump. If system pressure cannot be maintained, attempt to adjust the relief valve setting to max system pressure. If this does not make a noticeable change, make sure to return relief setting to original position and bring the pump and motor to a hydraulic specialist for bench testing and possible replacement.

Excessive Noise:

- Check oil level. Fill to proper level.
- Ensure use of recommended oil type and weight.
- Ensure suction line to pump is at least 1 1/2”.
- Ensure there is no restriction in suction line.

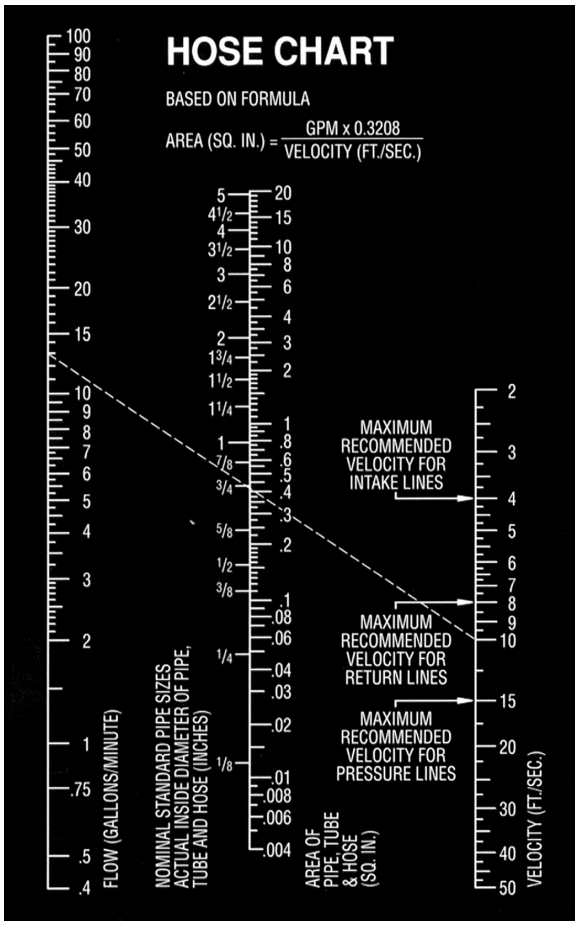
Oil Discoloration:

- Ensure suction line connections are tight.
- Ensure oil is free from water and contaminants. Drain and refill with recommended oil and replace filter.
- Ensure use of recommended oil type and weight.

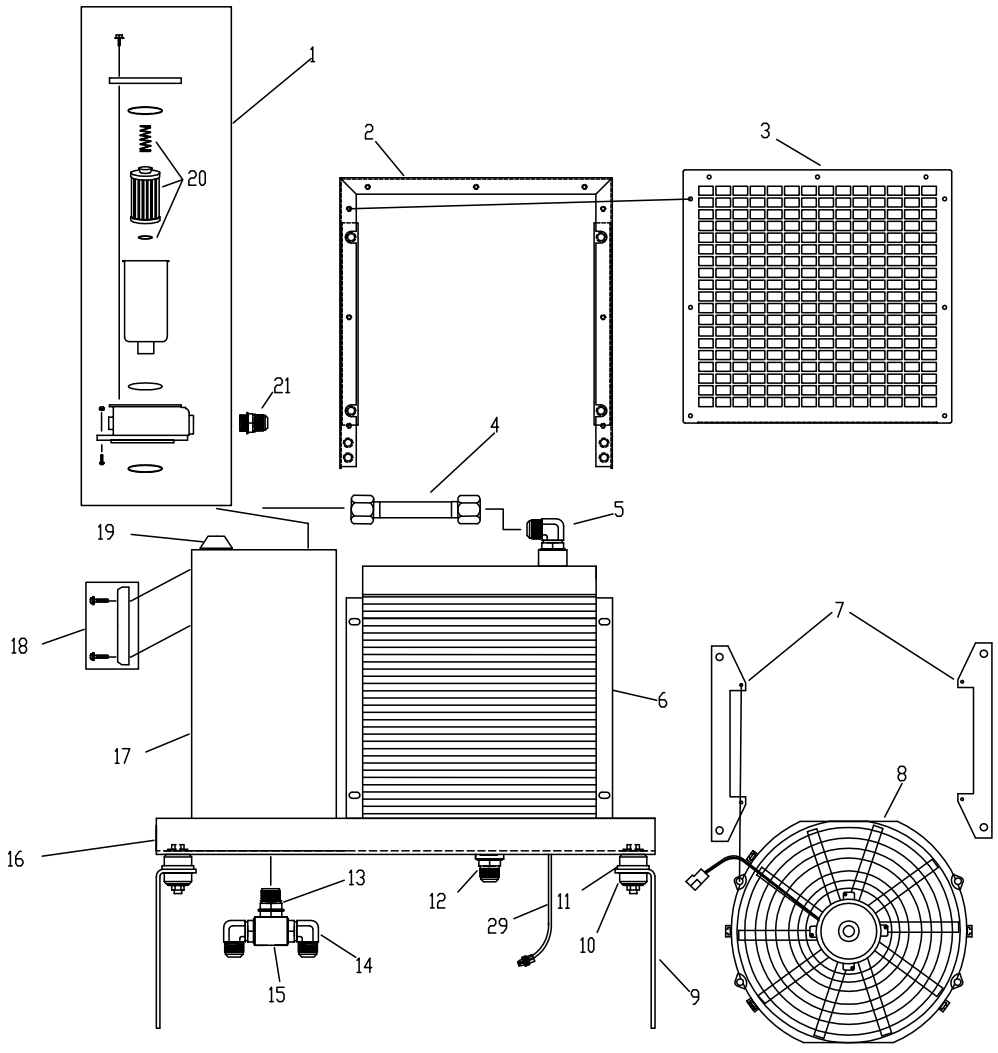
Specifications

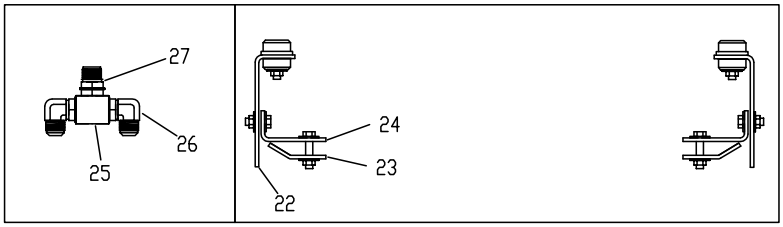
Max Flow Rate:	50 gpm
Max Pressure:	5000 psi with optional high pressure relief valve
Reservoir:	7.2 gal
Weight:	100 lbs
Suction Line:	1.5-2 Inch
Pressure Lines:	1 Inch
Warranty:	2 years

Oil - The recommended oil is Mobil DTE 13 or equivalent. Mobil DTE 13 is a supreme performance anti-wear hydraulic oil engineered for wide temperature range applications. It exhibits optimum flow characteristics at sub-zero temperatures and is resistant to shearing and viscosity loss so that system efficiency is maintained and internal pump leakage is minimized at high operating temperatures and pressures.



MODEL SS675ER / SS675E3000ND

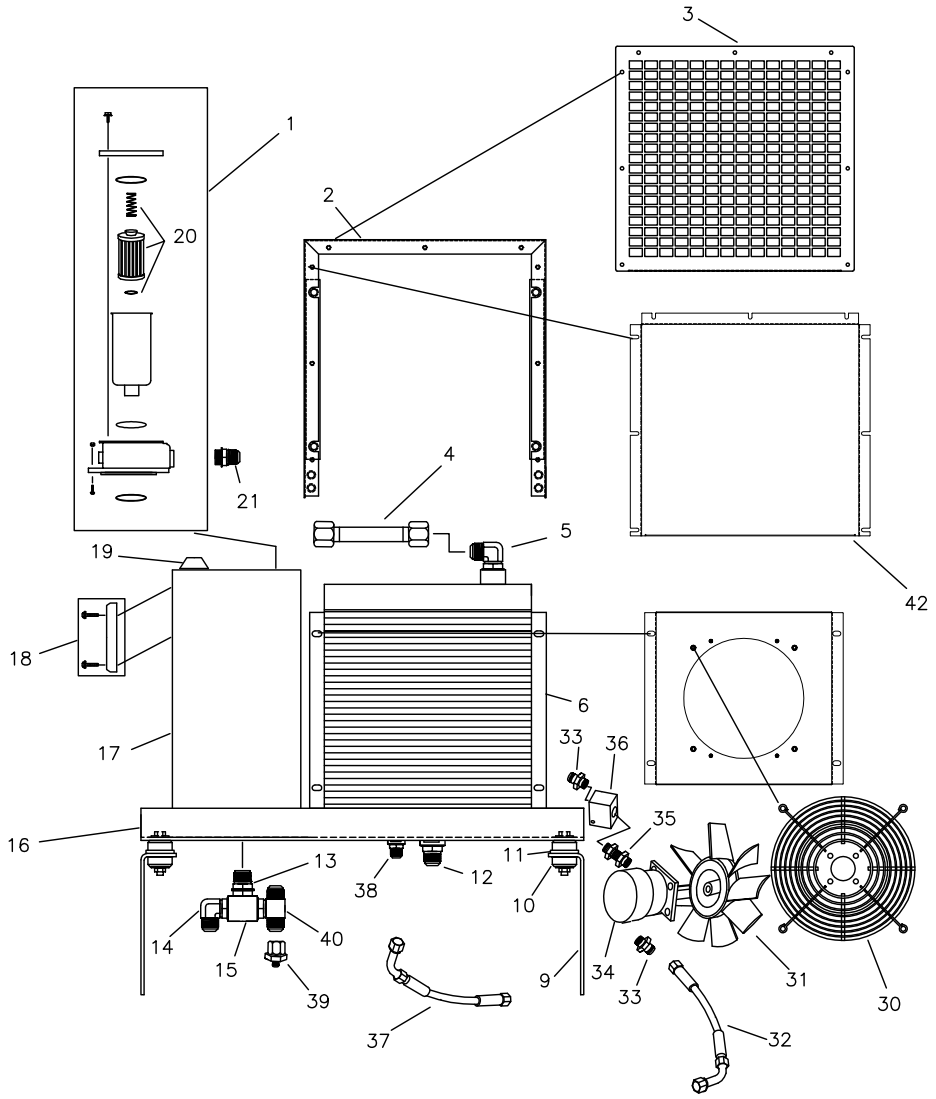


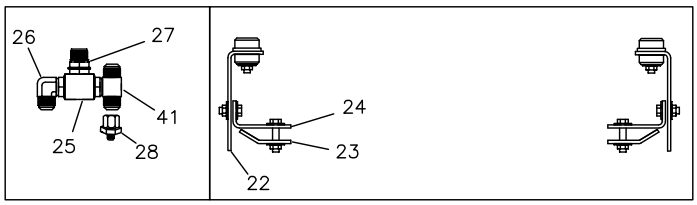


30 GPM Option

Optional No-Drill Mounting

MODEL SS675HR / SS675H3000ND





30 GPM Option

Optional No-Drill Mounting

Parts List

Item #	Part #	Description
1	675330	Filter Assembly
2	675020	Heat Ex. Housing
3	675050	Screen
4	675728	Tube
5	300416	Elbow
6	675300	Heat Exchanger
7	675060	Fan Bracket (2)
8	300306	Fan, Electric
9	675071	Leg, Drill Type (2)
10	300200	Sock Mount (4)
11	300032	Spacer (4)
12	375418	Fitting, Return
13	150714	Fitting, Relief Valve
14	300416	Elbow, Relief Valve (2)
15	675702	Relief Valve, 50 gpm
16	675030	Bottom Tray
17	675010	Tank
18	300334	Site Glass
19	600332	Breather Assembly
20	675331	Replacement Filter
21	375418	Fitting, Filter
22	675070	Leg, No Drill Option
23	675074	Lower Frame Clamp
24	675072	Upper Frame Clamp
25	300702	30 gpm Relief Valve
26	300708	Elbow
27	300748	Fitting
28	2406-12-8	Reducer
29	675515	Switch Harness
30	934850	Fan Guard
31	600820	Hyd Fan Blade
32	675892	Hyd Fan Motor Return Hose
33a	600732	Fitting, SS675HR Model
33b	150912	Fitting, SS675H3000ND Model
34	150510	Hyd Fan Motor
35	150908	Fitting
36	600830	Flow Control
37	675890	Hyd Fan Motor Pressure Hose
38	2501-6-8	Fitting
39	2406-16-8	Reducer
40	675734	Tee
41	600734	Tee
42	675850	Hydraulic Fan Shroud

Product Offering

Fans
Spal
Crowley

Fittings
Tompkins
Weatherhead
Faster

Heat Exchangers
AKG Thermal Systems
Thermal Transfer
Flat Plate

Hydraulic Motors
Barnes
Eaton/Charlynn
Muncie
Permco
Rexroth

PTO's
Muncie

Pumps
Muncie
Parker
Permco
Rexroth

THERMAFLOW WARRANTY

The THERMAFLOW SS675 Series Hydraulic Cooler is warranted against any defect in material and workmanship which existed at the time of sale by STAC Inc. according to the following provisions, subject to the requirements that the Cooler must be used only in accordance with the catalogue and package instructions.

The Cooler is warranted for a period of TWO Years from the date of installation. If during the warranty period the cooler fails to operate to STAC's specifications due to a defect in any part in material or workmanship that existed at the time of sale by STAC Inc., the defective part will be repaired or replaced, at STAC Inc.'s discretion, at no charge, if the defective part is returned to STAC Inc. with transportation prepaid.

The above warranty shall terminate if any alterations or repairs are made to the System other than at an authorized dealer or if the cooler is used on any equipment other than the equipment upon which it is first installed.

THE FORGOING WARRANTIES ARE IN LIEU OF ALL OTHER OBLIGATIONS AND LIABILITIES, INCLUDING NEGLIGENCE AND ALL WARRANTIES OF MERCHANTABILITY AND SUITABILITY, EXPRESSED OR IMPLIED AND STATE STAC INC.'S ENTIRE AND EXCLUSIVE LIABILITY AND BUYER'S EXCLUSIVE REMEDY FOR ANY CLAIM OF DAMAGES IN CONNECTION WITH THE SALE, REPAIR OR REPLACEMENT OF THE ABOVE GOODS, THEIR DESIGN, INSTALLATION OR OPERATION. STAC INC. WILL IN NO EVENT BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND OUR LIABILITY UNDER NO CIRCUMSTANCES WILL EXCEED THE CONTRACT PRICE FOR THE GOODS FOR WHICH LIABILITY IS CLAIMED.

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Form 675901 Rev: 02/12