



MODELS AVAILABLE

- | | |
|---------|----------------------------------|
| SS934HR | Hydraulic Fan With Relief Valve |
| SS934HV | Hydraulic Fan With Control Valve |
| SS934ER | Electric Fan With Relief Valve |
| SS934EV | Electric Fan With Control Valve |

MODEL SS934

MOBILE HYDRAULIC COOLING SYSTEMS

VARIABLE SPEED DRIVE SYSTEMS

INSTALLATION AND OWNERS MANUAL



Product Catalog: SS934-IOM
Revision Date: 30-01-2024

HELPFUL INFORMATION

ORDERING – Orders can be placed with us by phone, fax or email at sales@apscopower.com

SHIPPING – All orders will be shipped via APSCO's default method, UPS ground, with freight invoiced to the customer unless otherwise specified at the time of order. APSCO facilitates drop shipments at no extra charge.

RETURNS – Unused, standard products may be returned to APSCO for full credit within 30 days of purchase. A 20% restocking fee is charged thereafter.

An RMA is required for all returns.

QUALITY – APSCO commitment to quality was recognized by becoming certified to ISO 9001:2000 in 2004. Our continued commitment to quality in all of our processes is reflected by our current certification ISO 9001:2015.

WARRANTY – All APSCO products are warranted for 1 year of service, but in no case more than 2 years beyond the original date of purchase. See page 19 for our warranty terms and conditions.

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Management System Certification



INSTALLATION GUIDE

Please read this guide carefully before installing and operating your MODEL 934 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 and control valve options are described below.

The Model 934 has 2 fan motor options, Electric or Hydraulic. The Electric fan motor option has a 12VDC cooling fan which is operated with a temperature control switch. This switch gets wired into keyed power. When the key is turned on, the switch will be ready to activate the fan when the oil temperature gets to 110°F. When the oil temperature falls to 105°F the fan will turn off.

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.

Models 934ER,HR comes with a standard relief valve system. While Models 934EV,HV have the optional control valve system installed. This control valve system will allow the operator to start, stop, and change rotation of the product pump by simply shifting the control valve.

This control valve is integrally mounted and plumbed within the cabinet to save frame rail space, lower installation times, and to reduce hose and fitting costs.

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.

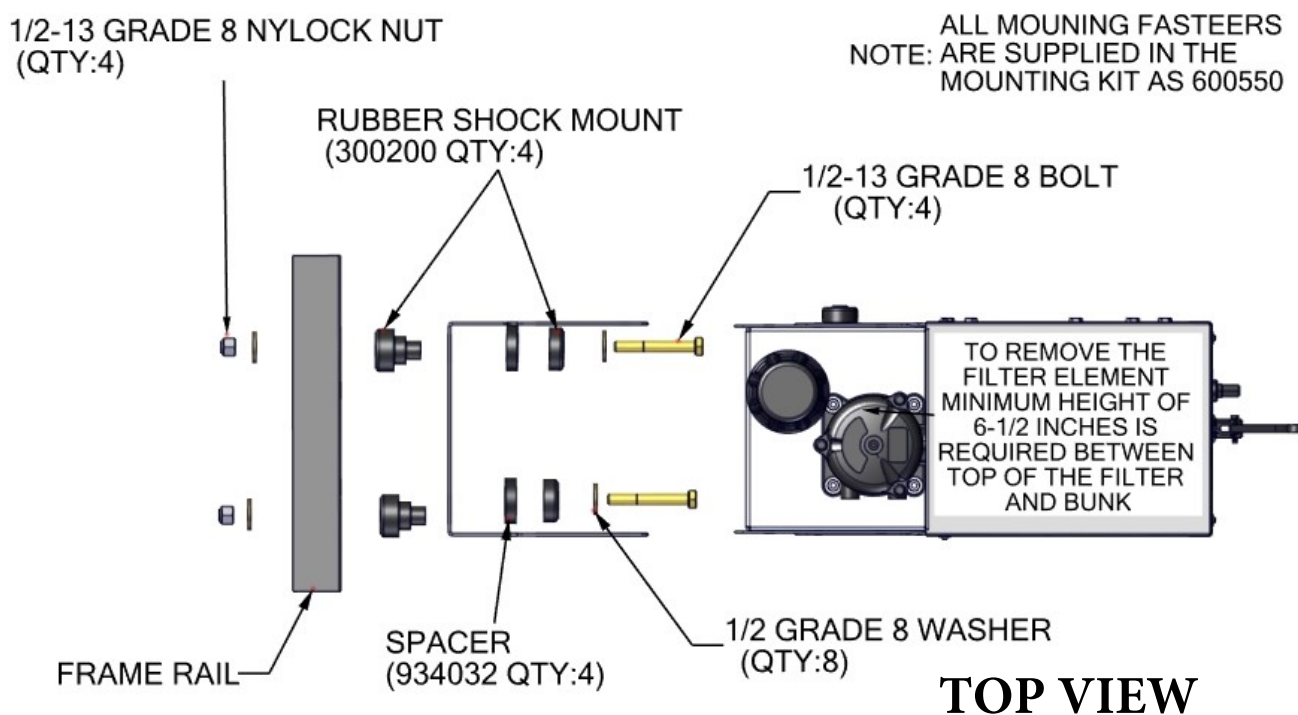
OPERATING PROCEDURES

STEP 1 POSITIONING & MOUNTING

The Model 934 is designed to mount on the frame rail, either on the driver or passenger sides.

- A) Follow Diagram A for proper mounting and shock mount assembly.

NOTE: You will need a minimum of 6 1/2" clearance to remove the filter when mounting under the bunk.



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. 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.

OPERATING PROCEDURES

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 temp switch so that when the key is turned on it has power going to it.

ELECTRICAL CONNECTIONS

10 Gauge RED WIRE: Connect to the positive (+) 12VDC battery terminal (20 Amps) through circuit breaker (150153) provided in electrical kit (934525TC).

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

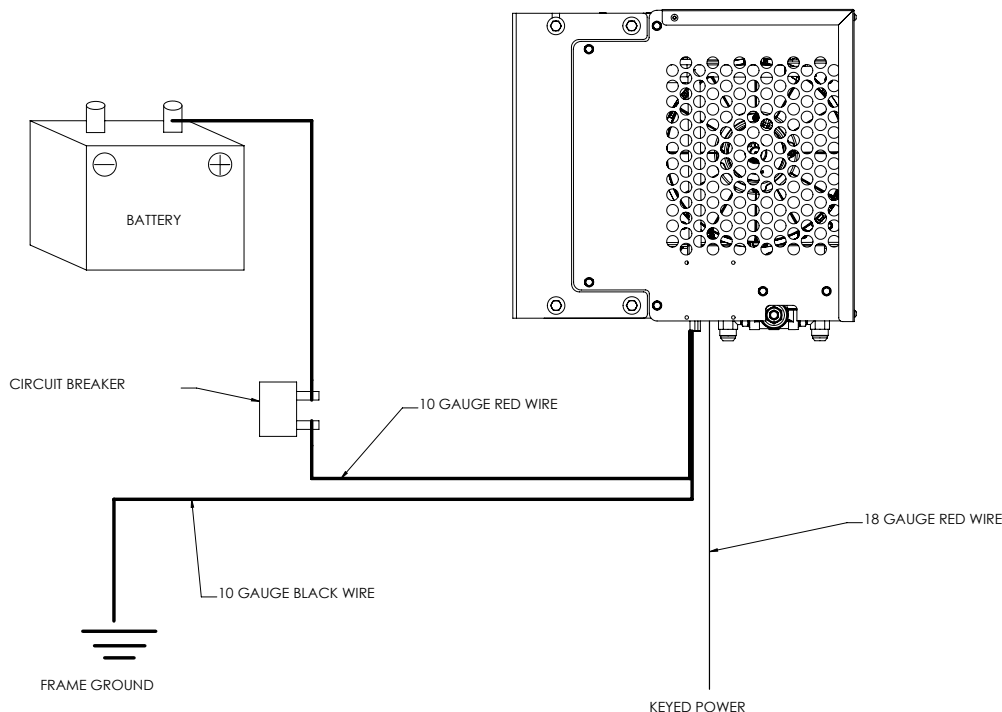
18 Gauge RED WIRE: Connect to a keyed power source.

For further illustration follow DIAGRAM B below.

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

DIAGRAM B

Below electrical schematic illustrates the proper wiring diagram for Option 1.



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

OPTION #2 - TEMP SWITCH WIRED THROUGH AN AIR SWITCH

This option wires the temp switch so that you will only be able to run the fan when the PTO is engaged.

PTO disengaged fan "OFF", PTO engaged fan "ON" via an air switch.

ELECTRICAL CONNECTIONS

10 Gauge RED WIRE: Connect to the positive (+) 12VDC battery terminal (20 Amps) through circuit breaker (150153) provided in electrical kit (934525TC).

10 Gauge BLACK WIRE: Connect to truck frame or to negative (-) battery terminal.

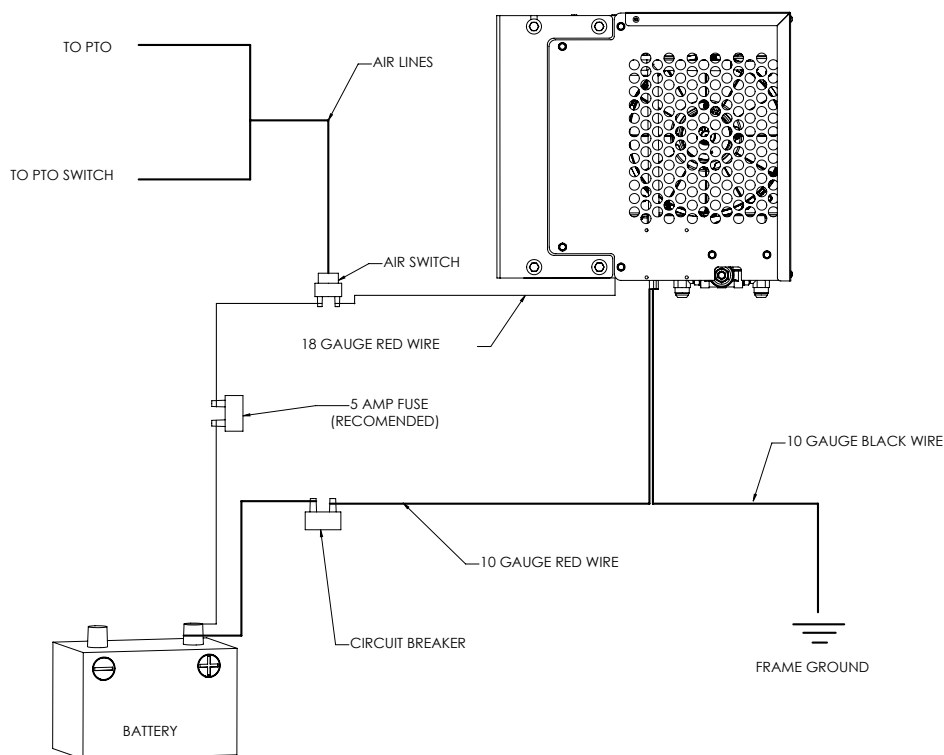
18 Gauge RED WIRE: Connect to air switch and to positive (+) 12VDC battery terminal with recommended 5 amp fuse.

For further illustration follow **DIAGRAM C** below.

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

DIAGRAM C

Below electrical schematic illustrates the proper wiring diagram for Option 2.



HYDRAULIC PLUMBING

PLUMBING DIAGRAMS D & E show proper plumbing for Models 934ER, 934EV, 934HR & 934HV. Please carefully read the Helpful Hints and Notes listed below before beginning.

HELPFUL HINT: We recommend the use of 1 1/2" suction hose for all applications, especially if the THERMAFLOW Assembly will be operated in cold weather. If the suction hose is too small the hydraulic pump will cavitate and fail prematurely. 3/4" pressure hose recommended for flows up to 25 gpm. 1" pressure hose recommended for flows greater than 25 gpm.

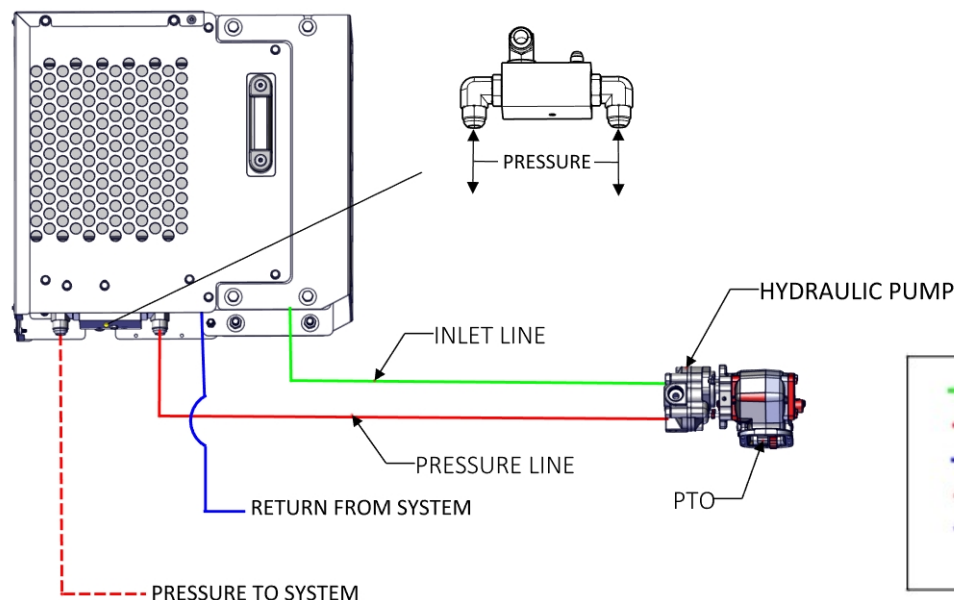
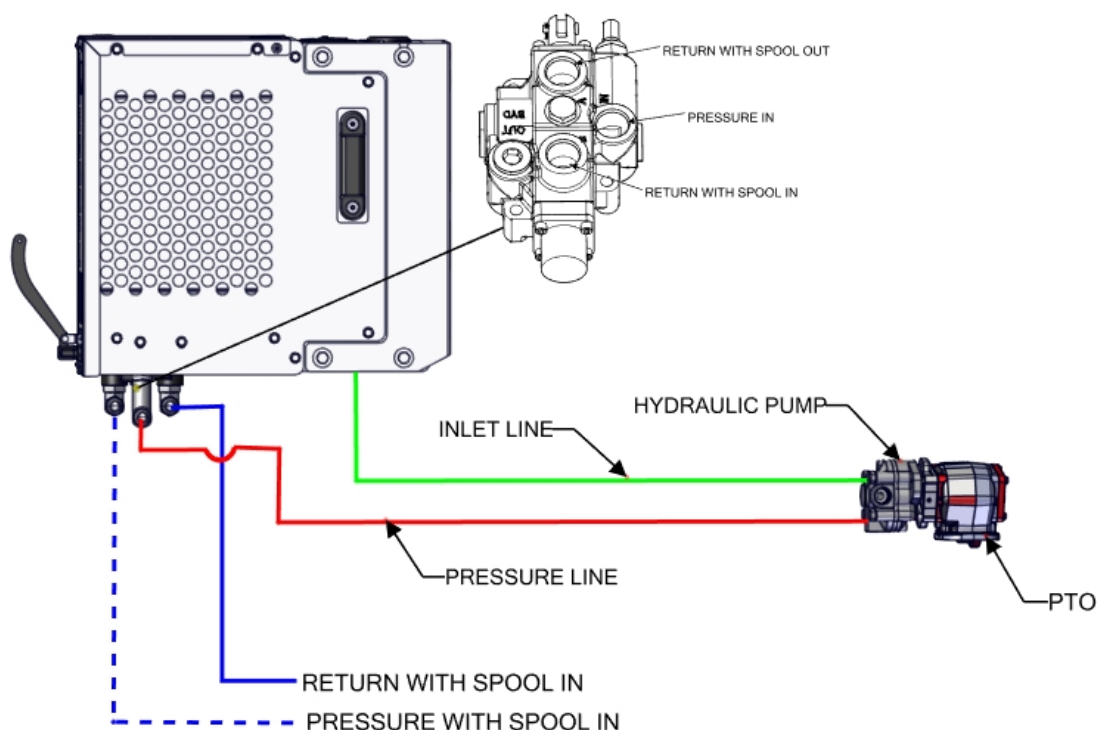


DIAGRAM D
Hydraulic plumbing diagram for
THERMAFLOW MODEL 934ER &
934HR

DIAGRAM E
Hydraulic plumbing diagram
for THERMAFLOW MODEL
934EV & 934HV



FILTER ASSEMBLY

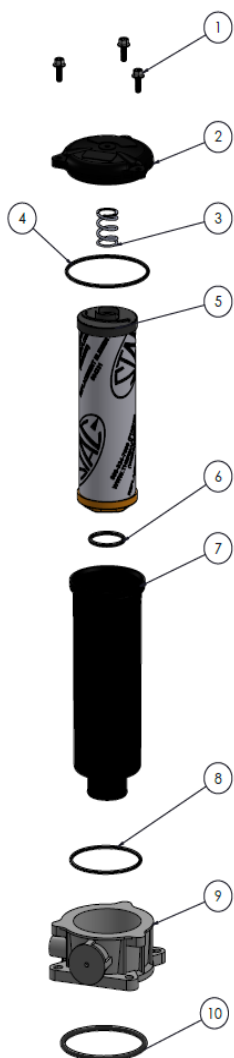
- A) Complete all hydraulic plumbing.
- B) Fill the reservoir until the oil level gets to half way up the site level gauge.

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 DTE10-32 or equivalent.



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	934330BOLT	HEX HEAD 1/4-20 X 1 LG	3
2	934330CAP	CAP	1
3	934330SPRING	SPG 1.45 ID 1.70 OD 1.70 LG	1
4	9343300RC	934330 COVER O-RING	1
5	934331	934330 FILTER ELEMENT	1
6	9343300RE	934330 ELEMENT O-RING	1
7	934330CANISTER	RETURN FILTER ASSEMBLY	1
8	9343300REC	934330 CANISTER O-RING	1
9	9362 HEAD	FILTER HEAD	1
10	9343300RH	934330 HEAD O-RING	1

DIAGRAM F

Filter assembly procedures for all Model 934 Thermaflow's.

START-UP PROCEDURES

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 black and red lines on the site level gage.

- 2) Check for hydraulic leaks and fix 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. If you have a Hydraulic Flow Meter Kit set required pressure and flow rates as needed.
- 7) Slow engine to idle and disengage the PTO.
- 8) System is ready for operation.

SYSTEM MAINTENANCE

HydraulicFluid:

Drain and replace hydraulic oil every 6 to 12 months depending on use.
Recommended Fluid: MOBIL DTE10-32 or equivalent.

Filter:

Remove 3 cap screws (10mm) on top of filter housing.
Remove filter cartridge and spring.
Replace with new filter cartridge and spring part number 934331
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.

TROUBLE SHOOTING

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.

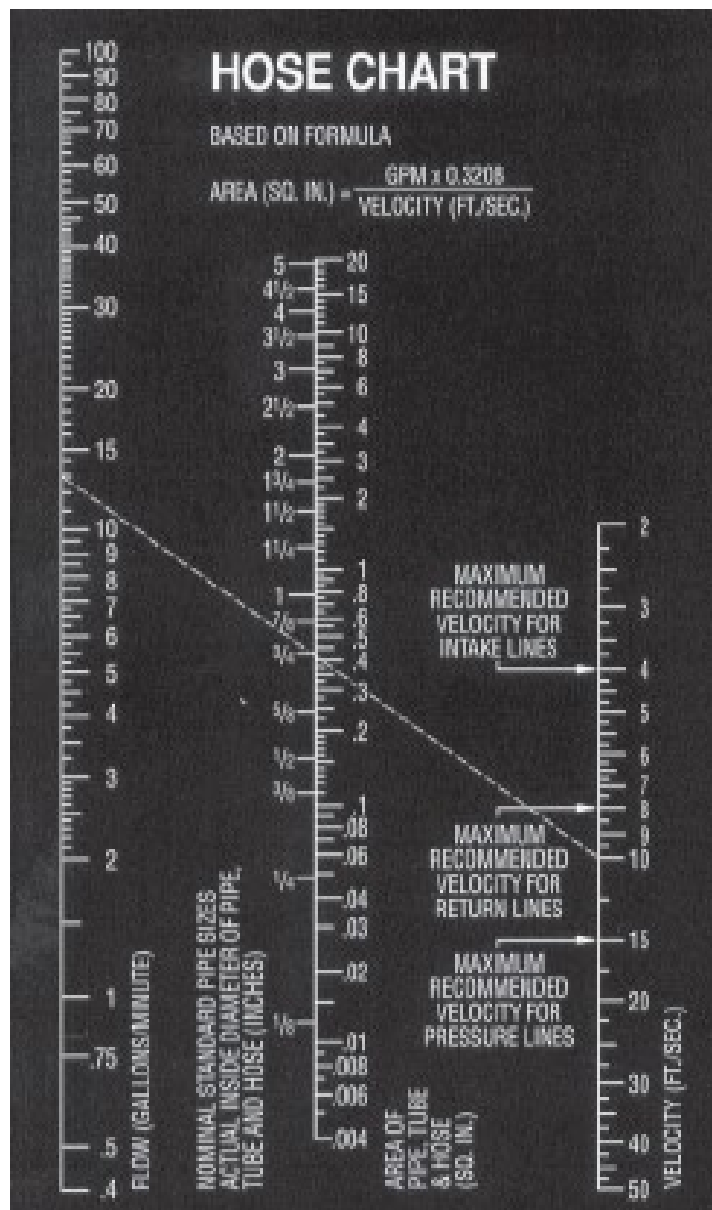
- Ensure oil is free from water and contaminants. Drain and refill with recommended oil and replace filter.

- Ensure use of recommended oil type and weight

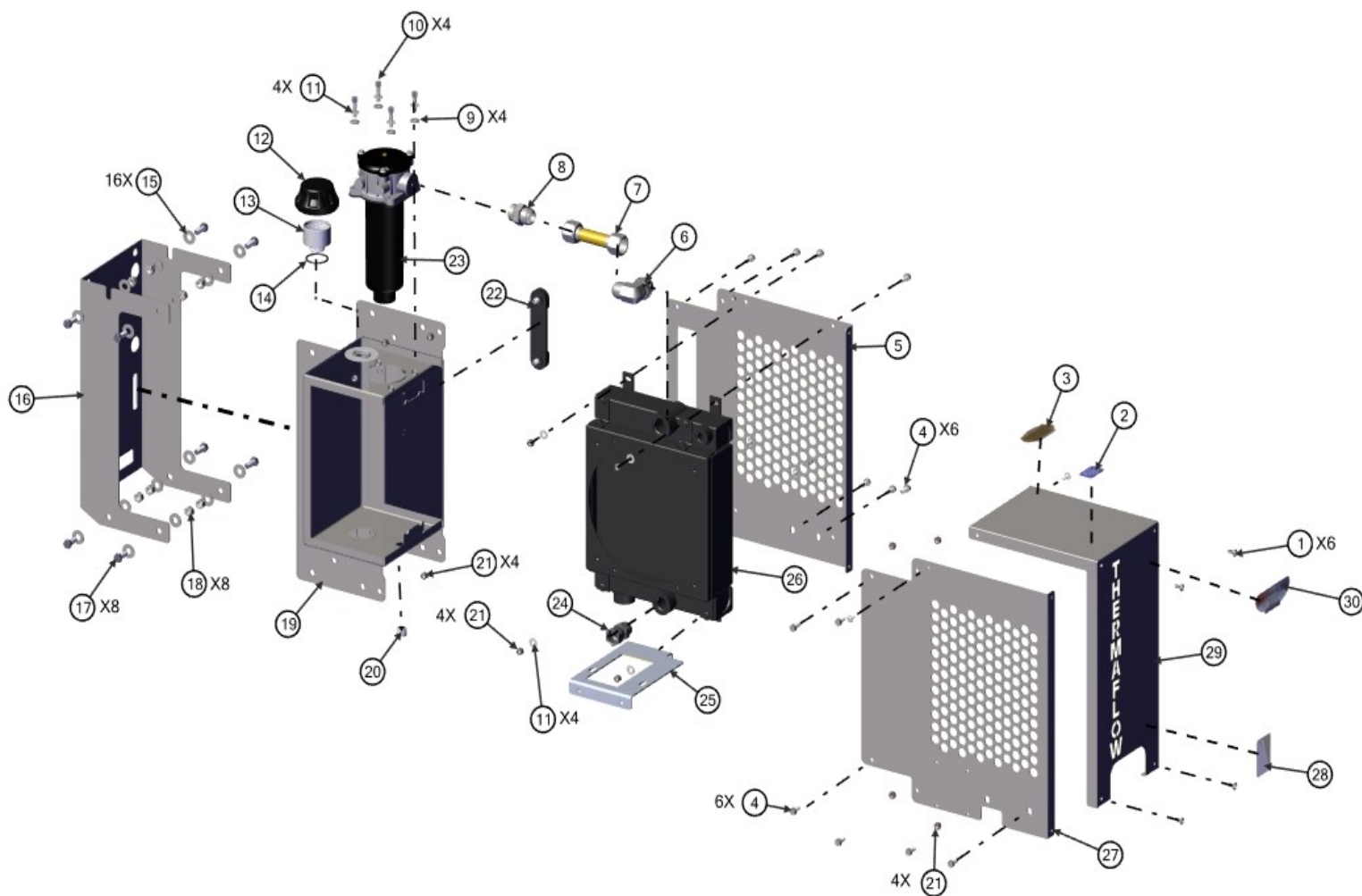
SPECIFICATIONS OF HOSE

Max Flow Rate:	30 gpm
Max Pressure	3000 psi
Reservoir:	3.5 gal
Weight	79 lbs
Suction Line	1.5 Inch
Pressure Lines	3/4 Inch
Warranty	2 years

Oil - The recommended oil is MOBIL DTE10-32 or equivalent. Mobil DTE 10-32 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.

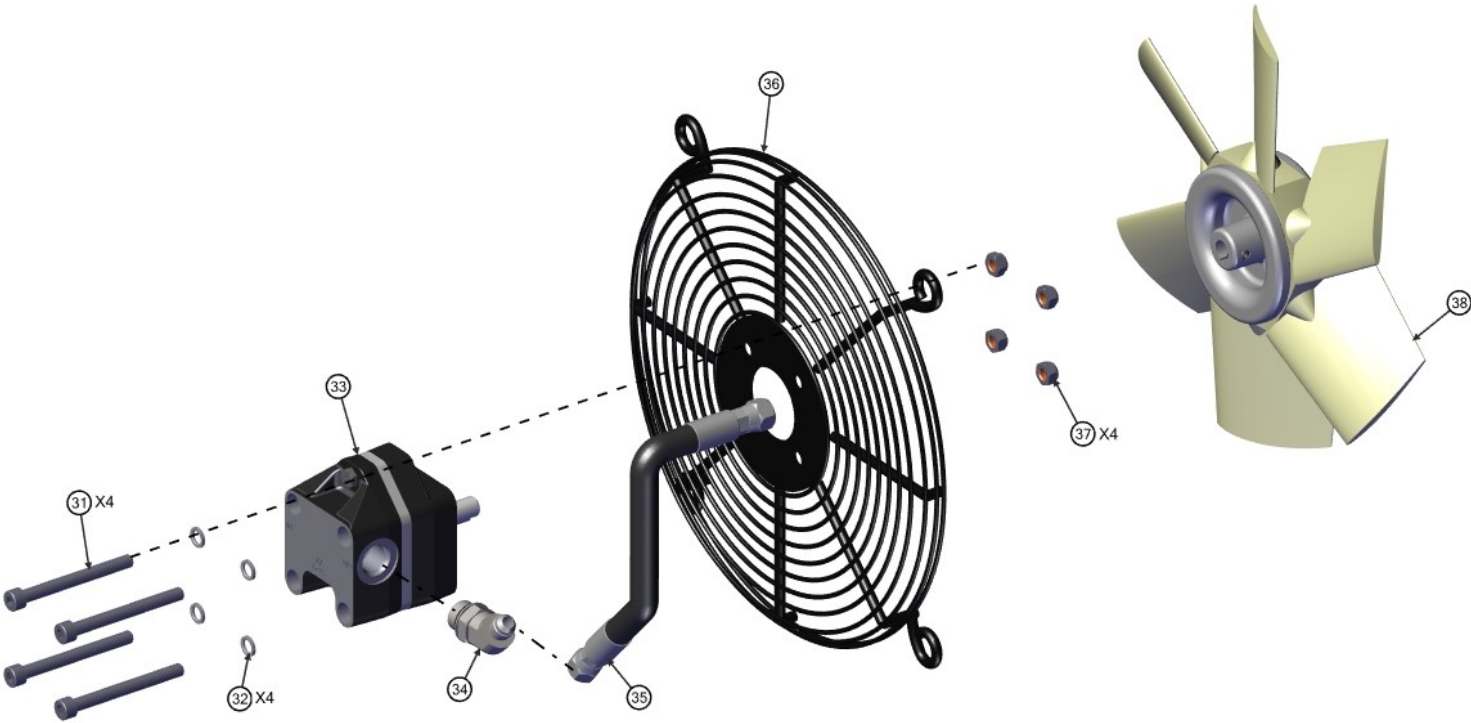


934 VIEWS

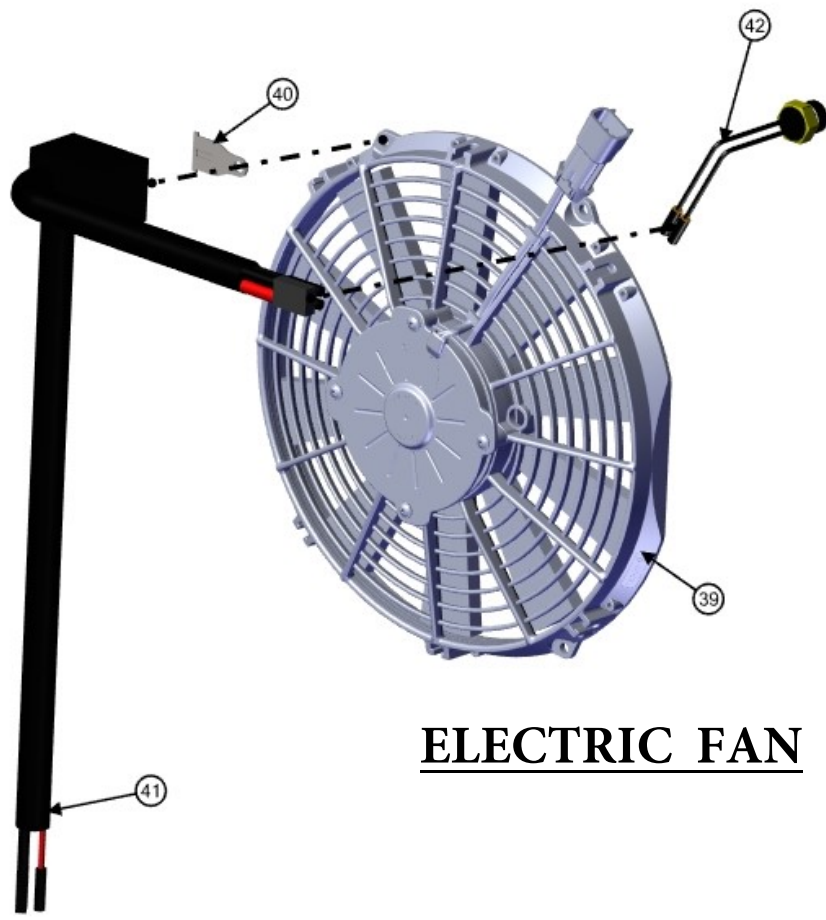


**COMMON PARTS FOR TANK, HEAT EXCHANGER &
SHEET METAL PARTS**

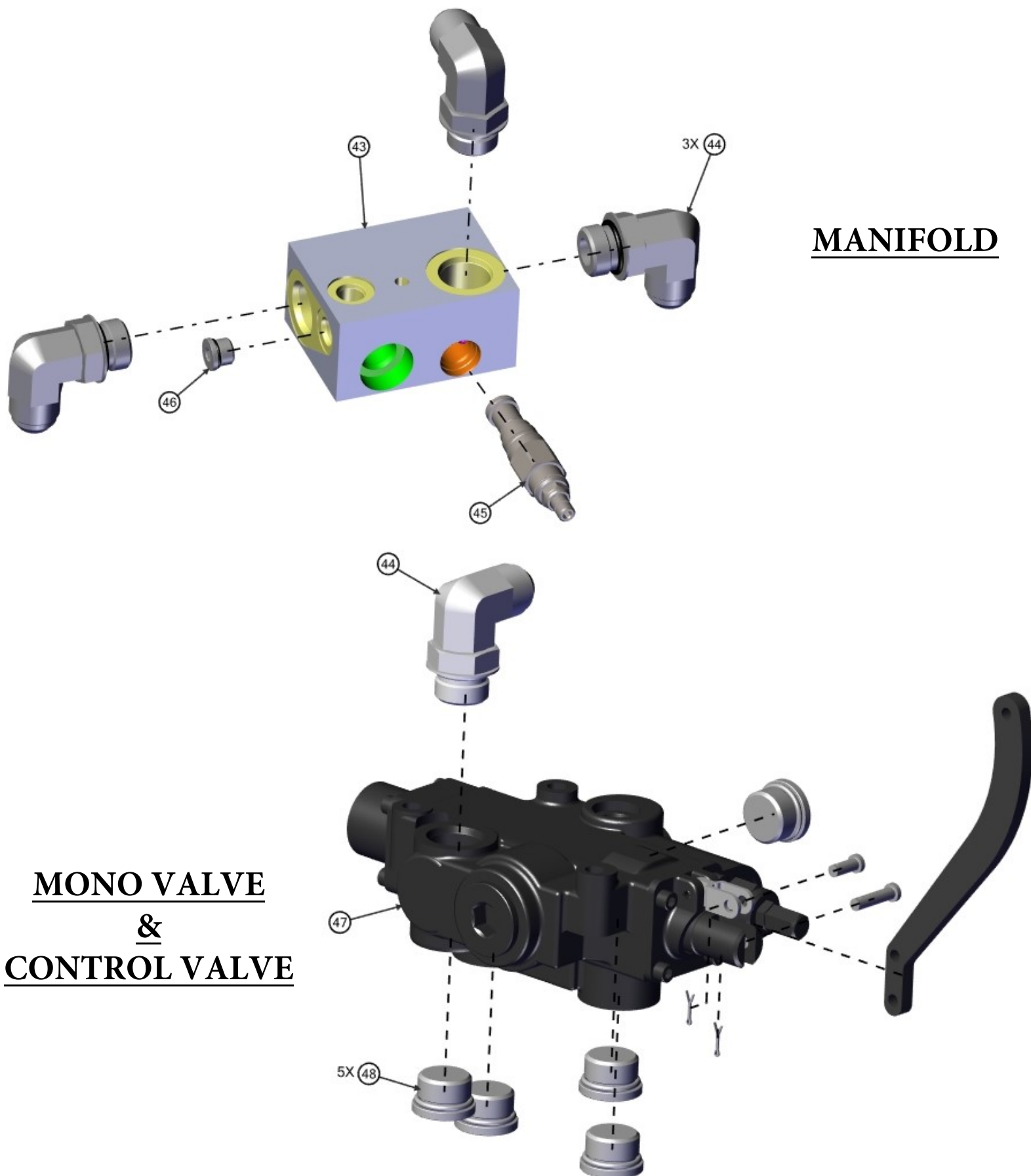
NOTE: Please check the particular assembly for part numbers in further exploded views



HYDRAULIC FAN

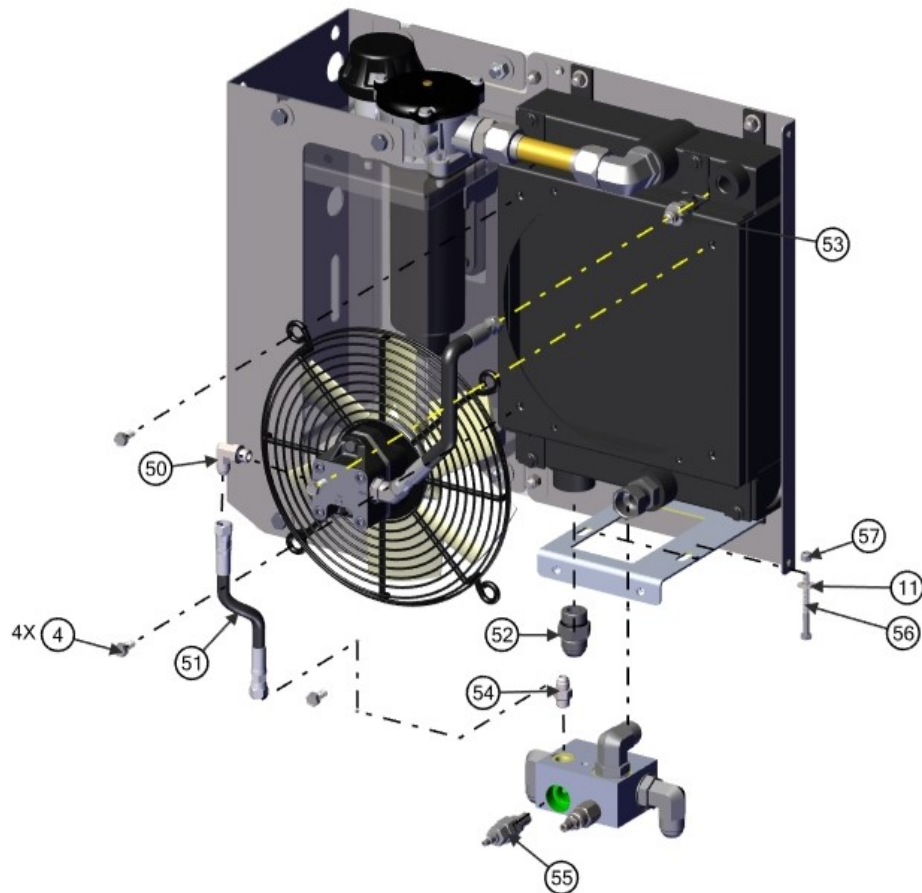


ELECTRIC FAN

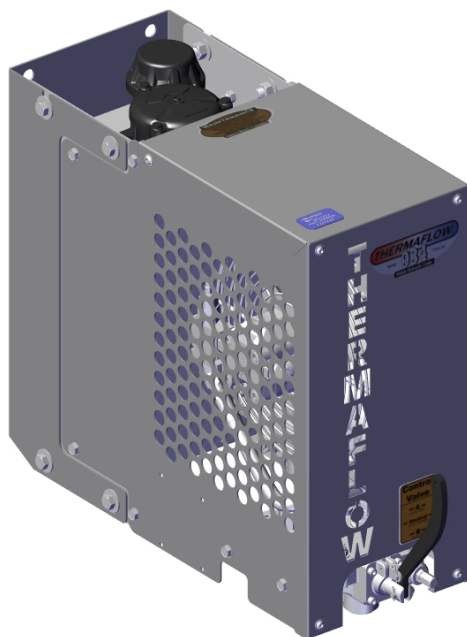


MANIFOLD

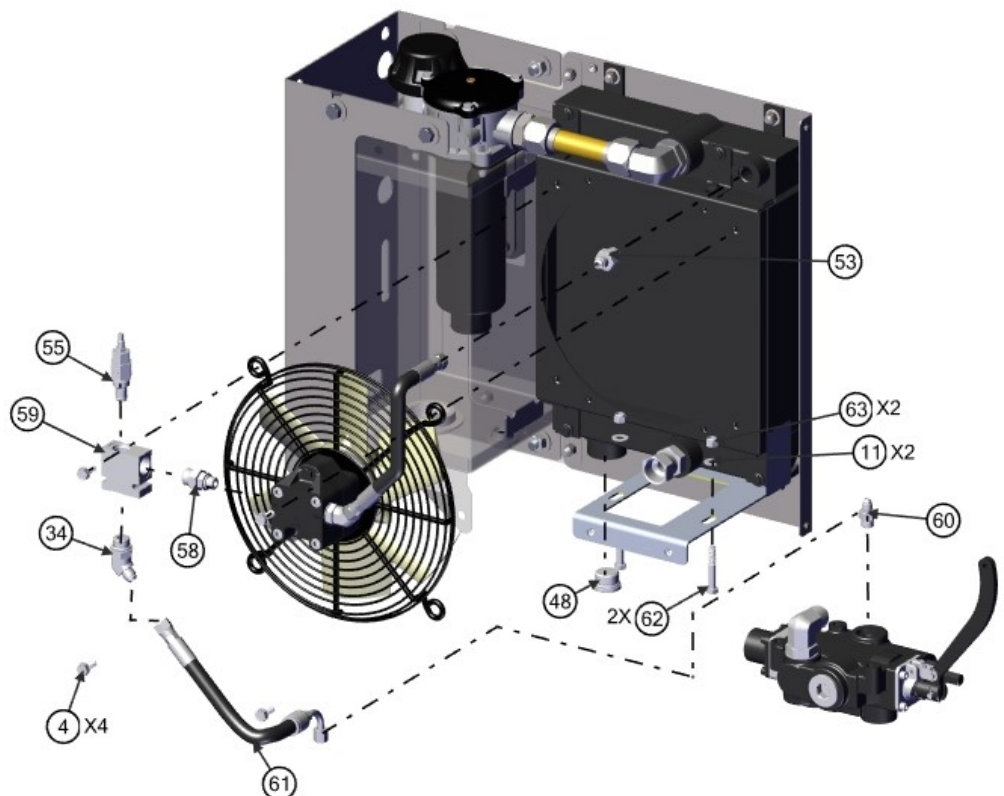
MONO VALVE & CONTROL VALVE

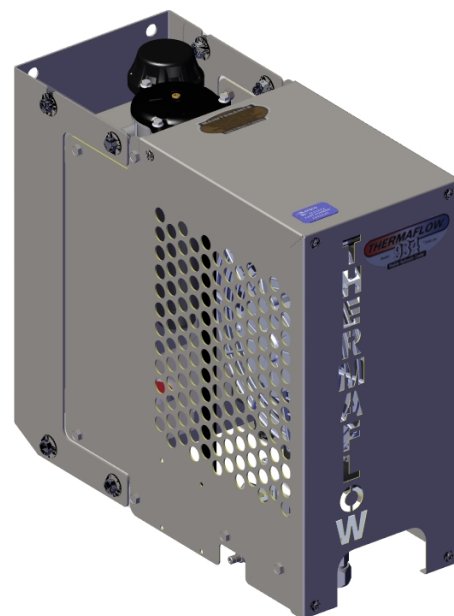
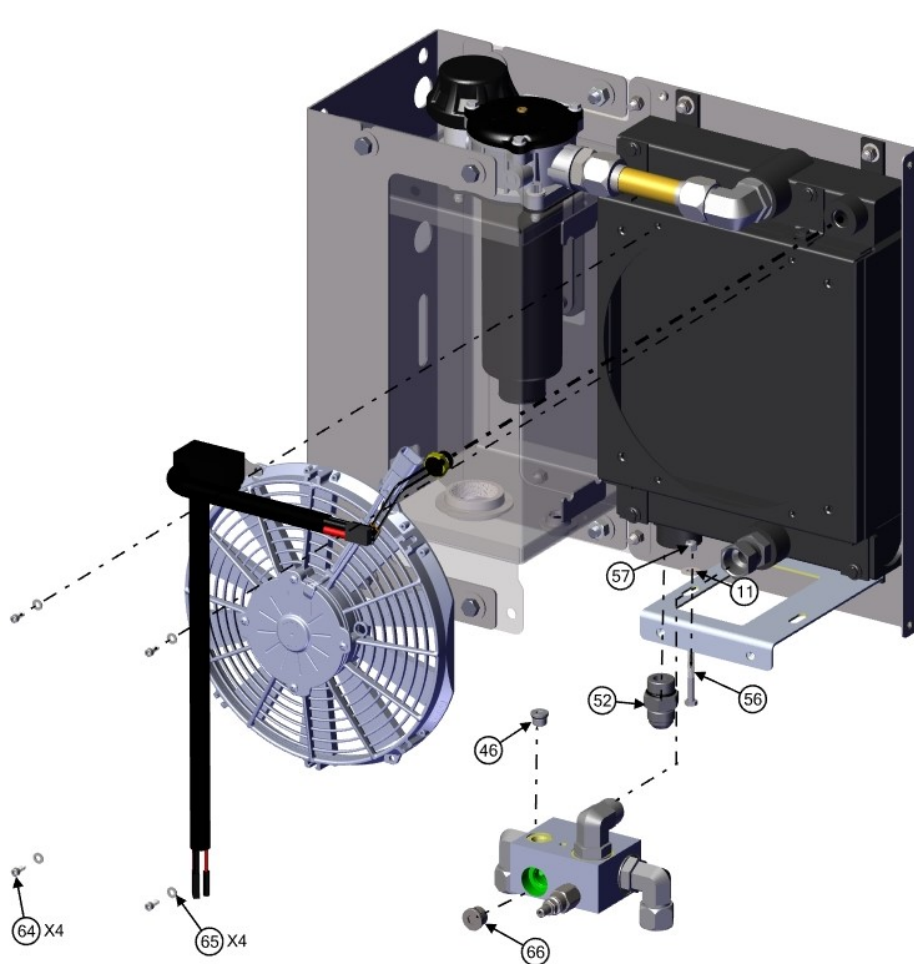


S934HR



SS934HV

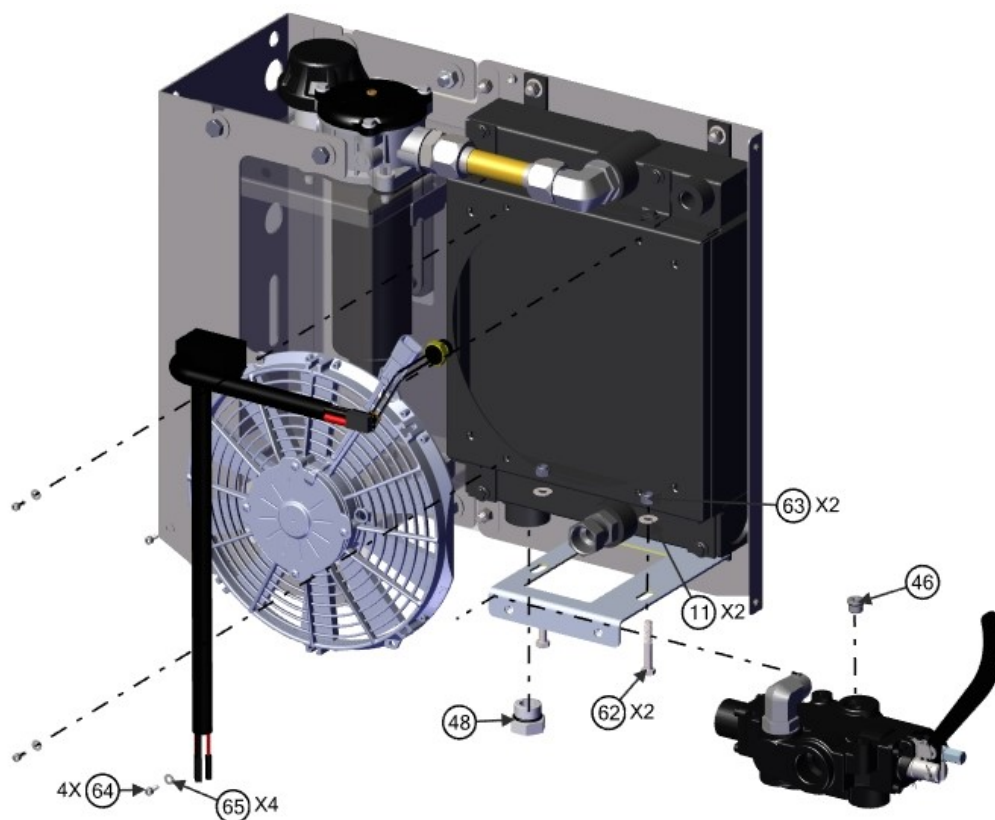




SS934ER



SS934EV



PARTS LIST

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	TORQUE
1	7709	1/4-20 X 5/8" TORX T30 ADHESIV	6	6 FT LBS
2	9444	SERIALIZED TAG, SS934HR	1	
3	MAINTDECAL	MAINTENANCE DECAL	1	
4	934240	CAPS 5/16-18 X 3/4 SS IND FLG	12	12 FT LBS
5	934020	934 RIGHT SIDE	1	
6	7870	16MORB-16MJ90	1	115 FT LBS
7	934728	1 OD X .065 WALL, J525	1	115 FT LBS
8	7869	16MORB-16MJS	1	115 FT LBS
9	9471	WASHER FLAT 5-16 SS RBR SL	4	
10	5014	CAPSCREW 5/16-18 NC 1 1/4 LG SS	4	12 FT LBS
11	300258	WASHER FLAT 5/16 SS	10	
12	600332	BREATHER CAP	1	
13	9361	BREATHER RISER 1 BSPP	1	
14	9474	O-RING 2-223 1 7/8 OD 1 5/8 ID	1	
15	300264	WASHER FLAT 7/16 SS SMALL OD	16	
16	934050	934 SUPPORT BRACKET	1	
17	300260	CAPS 7/16-14 X 1 LG SS HH	8	
18	934262	NUT 7/16-14 ZINC GA HEX	8	30 FT LBS
19	9429	934 TANK WELDMENT	1	
20	7845	PLUG, #08 SAE MAGNETIC	1	40 FT LBS
21	300254	NUT 5/16-18 ZINC G2 NYLOCK	12	
22	9180	SIGHT GLASS	1	6 FT LBS
23	9362	RETURN FILTER ASSY	1	
24	8575	FTG 12MORB - 12FJS STRAIGHT	1	80 FT LBS
25	9181	934 VALVE BRACKET	1	
26	934300	934 HEAT EXCHANGER	1	
27	934010	934 LEFT SIDE	1	
28	934080	DECAL SET MOD 934	1	
29	934030	934 COVER	1	
30	934083	934 THERMAFLOW DECAL	1	
31	150240	CAPS M8-1.25 X 80 12.9 SHCS	4	12 FT LBS
32	9326	WASHER M8 LOCK G2 PLT	4	
33	150520	HYDRAULIC MOTOR 202.5	1	

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.	TORQUE
34	600732	FTG 6MJ - 8MORB 45	2	40 FT LBS
35	934892	RETURN HOSE	1	20 FT LBS
36	934850	FAN FINGER GUARD 675 934	1	
37	150242	NUT M8-1.25 NYLOCK ZINC	4	
38	600820	FAN ASSY 675 934	1	
39	600306	FAN ELECTRIC 11" 12V	1	
40	8998	RELAY BRACKET	1	
41	934535	HARNESS 934 TEMP SWITCH	1	
42	800515	TEMP SWITCH	1	
43	9284	MANIFOLD 3000 PSI RELIEF/ FLOW	1	
44	8471	12MJ-12MAORB 90 FITTING	4	80 FT LBS
45	7657	SYSTEM RELIEF PILOT OPERATED	1	35 FT LBS
46	8334	SAE-6 HOLLOW HEX PLUG	1	20 FT LBS
47	9179	MONO BLOCK VALVE, SAE-12 PORTS	1	
48	8333	SAE-12 HOLLOW HEX PLUG	5	80 FT LBS
49	934070	934 HANDLE	1	
50	9282	FTG, 6MJ-6MORB 90	1	20 FT LBS
51	934894	HYD HOSE 934 FAN INLET HR	1	20 FT LBS
52	8472	FTG 12MJ - 12MORB STRAIGHT	1	80 FT LBS
53	150912	FTG 06MJ-08MORB STRAIGHT	1	40 FT LBS
54	9283	FTG, 6MJ-6MORB STRT	1	20 FT LBS
55	8103	FLOW REG, ARC-60	1	20 FT LBS
56	9489	CAPS 1/4-20 X 2 3/4 HH SS	1	
57	3786	NUT 1/4-20 NC SS HEX NYLOCK	1	
58	934748	FTG 08MAORB-06MORB STG ADJ	1	40 FT LBS
59	9289	MANIFOLD 2 WAY 8 SAE 3K PSI	1	
60	934721	FTG 4MJ - 6MORB STRAIGHT	1	20 FT LBS
61	934891	HYD HOSE 934 FAN PRES HV	1	20 FT] LBS
62	300740	CAPS 5/16-18 X 2" LG HH SS	2	
63	300254	NUT 5/16-18 ZINC G2 NYLOCK	2	
64	300238	CAPS 10-32 x 1/2 SS SHCS	4	2 FT LBS
65	5325	WASHER FLAT #10 SS	4	
66	7645	8MORB INT HEX PLUG, FITTING	1	40 FT LBS

NOTES

WARRANTY- TERMS AND CONDITIONS OF SALE

Buyer's assent to these terms and conditions of sale shall be conclusively presumed from Buyer's execution of a Sales Contract, submission of an Order Receipt of any material ordered or services rendered or from APSCO's commencement of work on the goods. Acceptance of Buyer's order shall be conditioned upon and subject to these terms and conditions. No other term that purports to vary these terms and conditions, shall be binding upon APSCO unless set forth in writing signed by APSCO. Additional terms listed on the reverse side hereof. If inconsistent herewith, shall control and be deemed a part hereof: All negotiations, proposals and representations, if any, made prior and with reference hereto are incorporated herein. This writing shall constitute a complete and exclusive statement of the terms of the agreement between Buyer and APSCO.

1. Prices and shipping terms are F.O.B. APSCO's dock Tulsa, Oklahoma. Payment is due net thirty (30) days after the rendering of this invoice and is to be made in the U.S. funds or their equivalent. Buyer agrees to pay a sum equal to 18% per annum until paid and all cost of collection, including attorney's fees, on any sums not paid when due.
2. Dates of delivery are determined from the date of APSCO's acceptance of any order by Buyer and are estimates of approximate dates of delivery, not a guaranty of a particular day of delivery. APSCO shall not be liable for failure or delay in shipping goods if such failure or delay is due to an act of God, War, Labor difficulties, Accident, inability to obtain containers or raw materials, or any other causes of any kind whatever beyond the control of APSCO.
3. Prices do not include, and Buyer agrees to pay any tax, duty, tariff, or other assessment imposed by federal, state or other governmental authority on the sale of the merchandise and service shall be paid by Buyer in addition to the purchase price.
4. Buyer hereby indemnifies, agrees to hold harmless and defend APSCO, its officers, directors, employees, agents, divisions, subsidiaries and affiliates from and against any, and all liabilities, claims, losses, damages, costs and expenses (including without limitation, special and consequential damages, damages for patent infringement or similar cause of action) resulting from Buyer's use, furnishing of any specification, plan, design, or modification of the goods; omission, neglect, or Buyer's misapplication of proprietary or other information furnished regarding the goods sold by APSCO; whether or not the goods or information originated with APSCO; and further from any, and all, damage to property or personal injury or death arising out of or attributable to the goods, including but not limited to any part not manufactured by APSCO. Buyer accepts all responsibility for the installation and use of adequate safety guards and devices and agrees to hold APSCO harmless in the event of personal injury resulting from inadequate safety guards or devices.

APSCO warrants to the original Buyer only, the goods sold conform to the specifications set forth on the invoice and shall be tested to indicate that the same are free from defects in materials and workmanship under normal recommended use for 1 year of service, but in no case more than 2 years beyond the original date of purchase. Except for the warranty that the goods are made in a workmanlike manner and in accordance with the specifications therefore supplied or agreed to by buyer and are made or packaged pursuant to the customary manufacturing procedures of APSCO. TO THE EXTENT IMPERMISSIBLE UNDER APPLICABLE LAW THIS WARRANTY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED; INCLUDING ANY

IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, WHETHER ARISING BY LAW, CUSTOM OR CONDUCT. THE FOREGOING RIGHTS AND REMEDIES ARE EXCLUSIVE AND IN LIEU OF OTHER CLAIMS, RIGHT OR REMEDIES WHATSOEVER, WHETHER STATUTORY OR BASED ON CONTRACT, TORT OR OTHERWISE.

5. APSCO's obligation under this warranty is limited to repair or replacement of any part judged defective by APSCO at a point designated by APSCO. APSCO will not be liable for any consequential damages, loss or expense arising in connection with the inability to use its good for any purpose whatever. APSCO's maximum liability shall not in any case exceed the contract price for the goods claimed to be defective or unsuitable. This warranty does not apply to any goods manufactured by manufacturers other than APSCO, which are separately warranted by such other manufacturers (appropriate adjustments therefore being provided by their respective manufacturers); and any of the goods which have been altered, subjected to misuse, negligence or accident.
6. The products covered hereby shall be deemed finally inspected and accepted within ten (10) days after delivery thereof, unless notice of non-conformity is given in writing to APSCO within said period. Acceptance as aforesaid shall be deemed full performance of APSCO's obligation hereunder.
7. APSCO shall not be responsible for products that have been modified in any way after leaving APSCO's facility, and APSCO does not assume responsibility for any rework applied to parts without its consent. No goods shall be returned without APSCO's permission. Defective material will be replaced or credited, whichever APSCO elects.
8. This Agreement shall be governed by the laws of the State of Oklahoma, United States of America, without regard to its provisions for conflict of laws. The parties specifically exclude application of the United Nations Convention on Contracts for the Sale of Goods. The parties agree that each will in good faith attempt to resolve any controversy or claim arising out of or related to this agreement promptly through negotiations between authorized representatives of APSCO and Buyer within ninety (90) days of such claim or written notice of dispute. Should such negotiations not resolve such claim or dispute within such period, such claim or dispute shall be finally settled under the Rules of the American Arbitration Association by one or more arbitrators appointed in accordance with the rules thereof, and whose decision will be binding upon both parties. The arbitration proceedings, if any, shall be conducted solely in the English language, including any documentation supplied by the parties in connection therewith. Application may be made to any court for confirmation of any award rendered in any arbitration proceeding having jurisdiction over the parties for a judicial acceptance of such award and for an order of enforcement or other legal remedy as the case may be. The arbitration proceedings shall be conducted in the City of Tulsa, Oklahoma, United States of America. Consent is hereby given to the jurisdiction of any court regarding any matter arising out of such arbitration or the enforcement of any such award. The arbitral award shall be final and binding upon both parties. Application may be made to any court for confirmation or enforcement of any such award having jurisdiction over the party against whom such enforcement is sought. Each party represents that any such arbitral award shall be enforceable against it under the laws of its domicile.

Product Offering

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Heat Exchangers
Thermal Transfer
Flat Plate
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