Product Catalog: MODEL 510P
Revision Date: 01/03/2023

MODEL 510P

HYDRAULIC COOLER & TANK STABILIZER

PROPANE/ANHYDROUS USE ONLY

INSTALLATION AND OWNERS MANUAL

Product Catalog: MODEL 510P
Revision Date: 01/03/2023

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 16 for our warranty terms and conditions.

APSCO, Inc.
4221 S 68th E Ave., Suite A,
Tulsa, OK 74145
Voice +1.918.622.5600
Fax +1.918.622.5469
sales@apscopower.com
www.apscopower.com

Management System Certification
Soleir
ISO 9001:2015
Cert # Q1820

NOTICE

PURCHASER/INSTALLER before proceeding be sure to check the following:

1) **Do you have a valid CT License? Proceed no further unless you have supplied APSCO, INC. with a copy of your CT License.**
2) **This system must be installed and operated in accordance with all DOT regulations and according to the instructions contained inside this manual.**
3) **PURCHASER/INSTALLER must have adequate training on how to operate this system.**
4) **Failure to follow these instructions will void any product warranty and subject the PURCHASER/ INSTALLER to any and all potential liabilities associated with this product and/or its use.**

Please read this guide carefully before installing and operating the Model 510P THERMAFLOW system.

HYDRAULIC FUNCTION

The Model 510P THERMAFLOW assembly is designed to cool and filter the oil required to operate your hydraulic system by using the product which is being pumped. This is accomplished via a special heat exchanger which is designed to transfer the heat of the hydraulic oil into the product which is being pumped. The amount of heat which is transferred into the product is safely limited only to the amount of cooling which is required. The product supplied to the heat exchanger by a pressure line which is tee'd into the pressure discharge line. APSCO, INC. provides an orifice fitting to be installed in the THERMAFLOW unit to limit the amount of product being pumped through the heat exchanger. The exhausting product is then pumped back into the supplying vessel through a suitable port (ex. motor fuel port).

Optional hydraulic controls for this system allow for easy integration with off- truck remote controls for either electric or air shut-offs.

And as with all hydraulic drive systems, this system will also eliminate the need for a driveline. This will reduce maintenance and downtime associated with shaft driven pumps.

TANK STABILIZER FUNCTION

The Model 510P THERMAFLOW is also a tank stabilizer. As the propane is pumped through the heat exchanger it is vaporized. Reintroducing this vaporized product back into the supplying vessel gives the added benefit of maintaining pump performance, reducing pump noise and prolonging pump life.

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 could result.

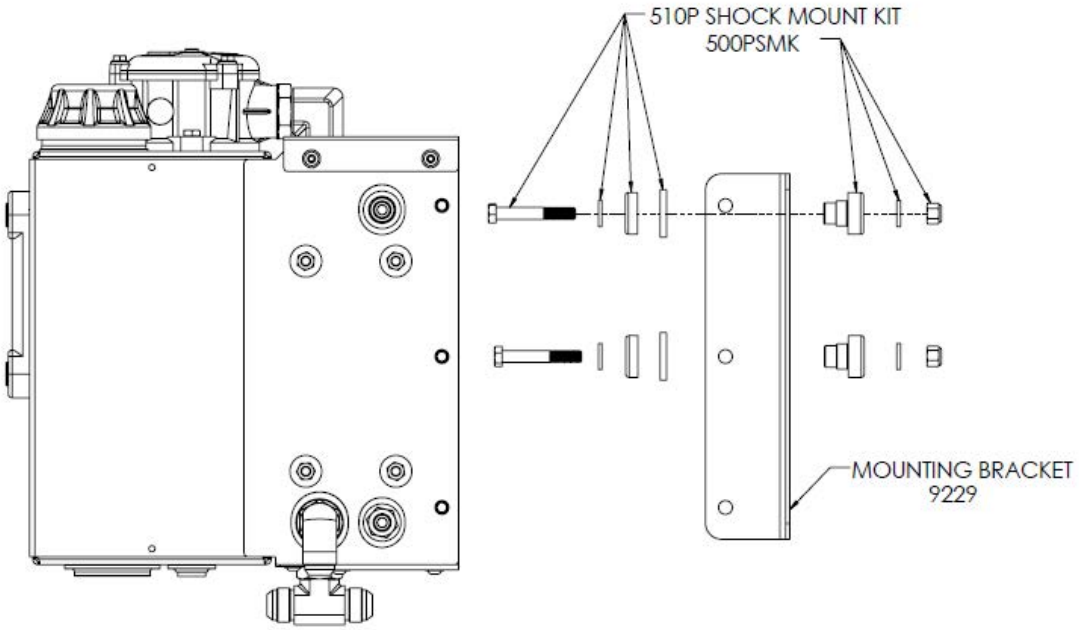
STEP 1: POSITIONING & MOUNTING

The Model 510P is required to be mounted in a position that meets the DOT's requirements for roll-over-protection. See diagram below for proper mounting bracket and shock mount installation.

NOTE: ***The THERMAFLOW Model 510P can be mounted from the rear mounting holes.***

NOTE: ***Please contact your local DOT representative if you have any questions concerning the DOT's requirements on mounting of equipment that require roll-over-protection.***

NOTE: ***APSCO, INC. does not assume any liability for its products if they are mounted or plumbed in a way that does not meet the DOT's requirements.***



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 lubricated with a open gear lube. This lube will prevent premature spline wear on the PTO and pump shafts.

STEP 3: HYDRAULIC PLUMBING

The following diagram shows the proper plumbing for the Model 510P THERMAFLOW assembly. Please carefully read the helpful hint 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.

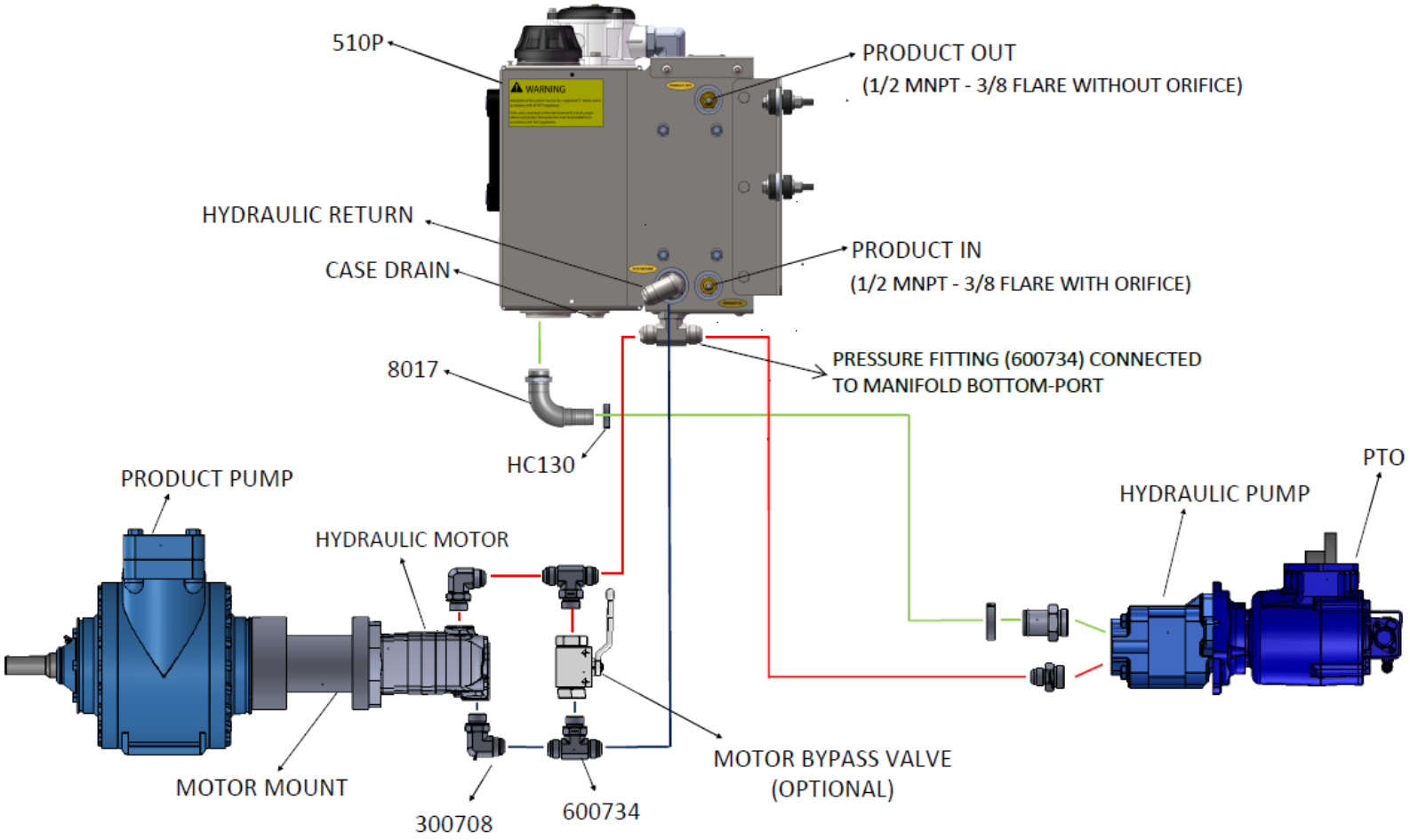


DIAGRAM A

NOTE: ***When mounting the THERMAFLOW Model 510P across the frame rails and behind the cab, make sure that the suction and pressure hoses are properly plumbed and secured away from the driveline.***

STEP 4: PRODUCT LINE PLUMBING

The following diagram shows the proper product plumbing for the Model 510P THERMAFLOW assembly. Please carefully read the helpful hint and notes listed below before beginning.

NOTE: ***We have provided the proper orifice fitting installed into the THERMAFLOW cooler assemblies Product Inlet Port. Failure to use the orifice fitting provided could cause your THERMAFLOW cooler assembly to improperly cool the hydraulic oil. Please consult APSCO, INC. with any questions regarding this orifice fitting.***

NOTE: ***Always use UP Approved hoses and fittings.***

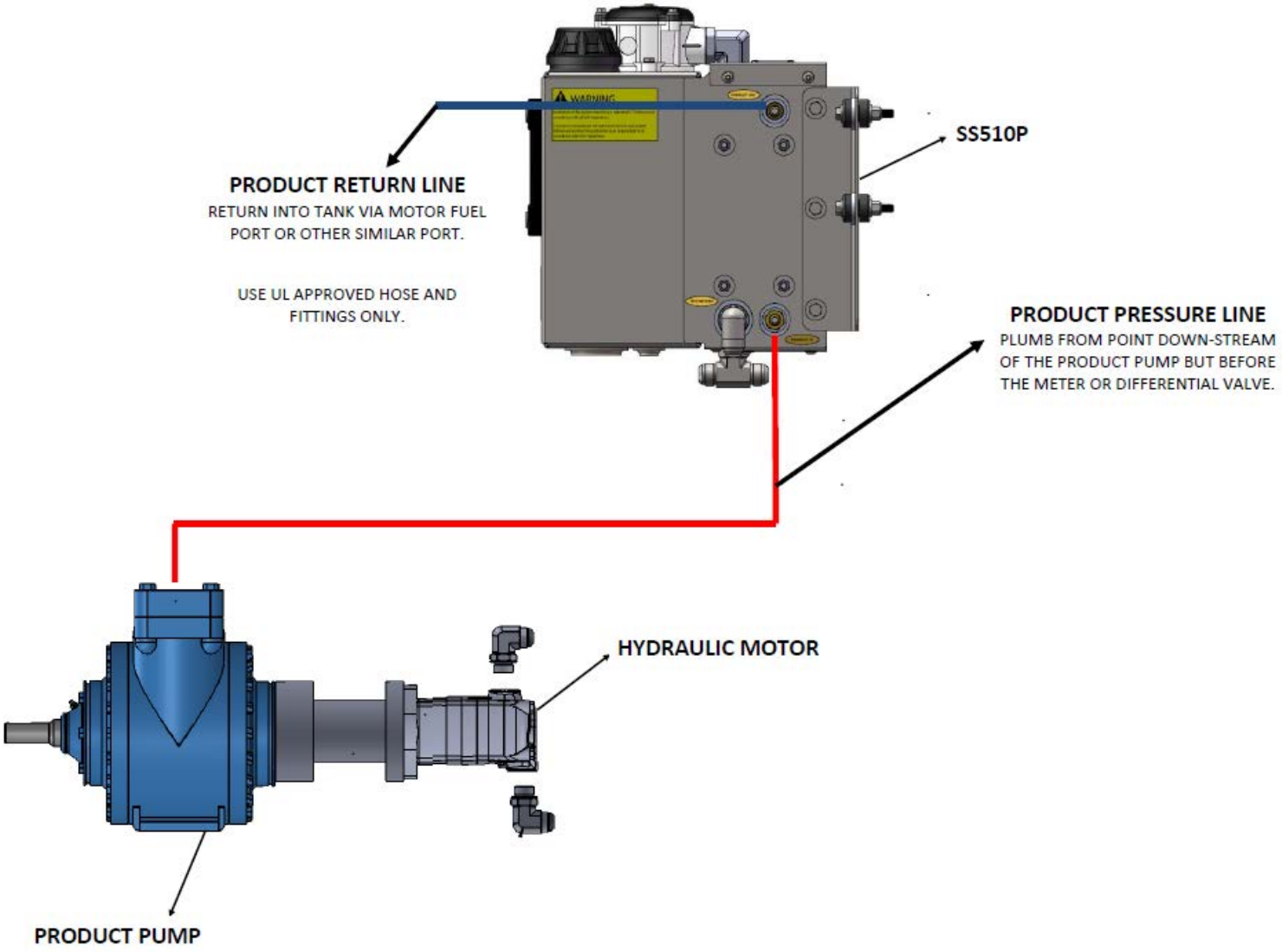


DIAGRAM B

STEP 5: FINAL ASSEMBLY

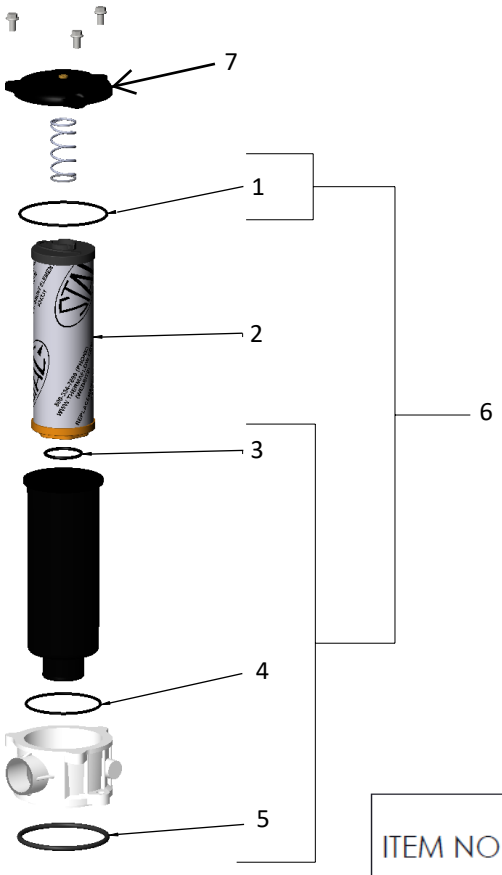
A) Complete all hydraulic and product plumbing.
B) Fill the reservoir until the oil level gets to the top black line on the site level gauge.

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 DTE 10-32 or equivalent.***

DIAGRAM C



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	934330ORC	934330 Cover O-Ring	1
2	934331	934330 Filter Element	1
3	934330ORE	934330 Element O-Ring	1
4	934330OREC	934330 Canister O-Ring	1
5	934330ORH	934330 Head O-Ring	1
6	934330ORK	934330 O-Ring Kit	***
7	8693	Filter Cap	1

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 and product lines are plumbed and properly tightened.***

1) Connect product hose to proper location so that system can circulate product back into the tank.
2) 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 gauge.***

3) Check for hydraulic and product leaks and repair as needed.
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. You should see approximately a 10-20°F rise in the hydraulic oil temperature above the product temperature. This oil temperature should then be maintained throughout the entire pumping cycle depending how long the system is run.

NOTE: ***If the hydraulic oil temperature is higher or lower than the 10-20°F rise, please consult APSCO, INC. at 800-334-7699. DO NOT OPERATE THIS SYSTEM UNTIL AFTER YOU HAVE CONSULTED APSCO, INC.***

7) Slow engine to idle and disengage the PTO.
8) System is ready for operation.

STEP 7: OPERATING PROCEDURES

1) Engage PTO.
2) Set engine speed with the throttle control to the correct RPM.

NOTE: ***This system is self-contained and there is no fan motor to operate.***

3) To disengage the product pump either disengage any installed control valve or disengage the PTO.

SYSTEM MAINTENANCE

Hydraulic

Fluid:

- Drain and replace hydraulic oil every 6 to 12 months depending on use.
- Recommended Fluid: Mobil DTE 10-32 or equivalent.

Filter:

- Remove 3 cap screws 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.

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 propane orifice fitting.
- 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.

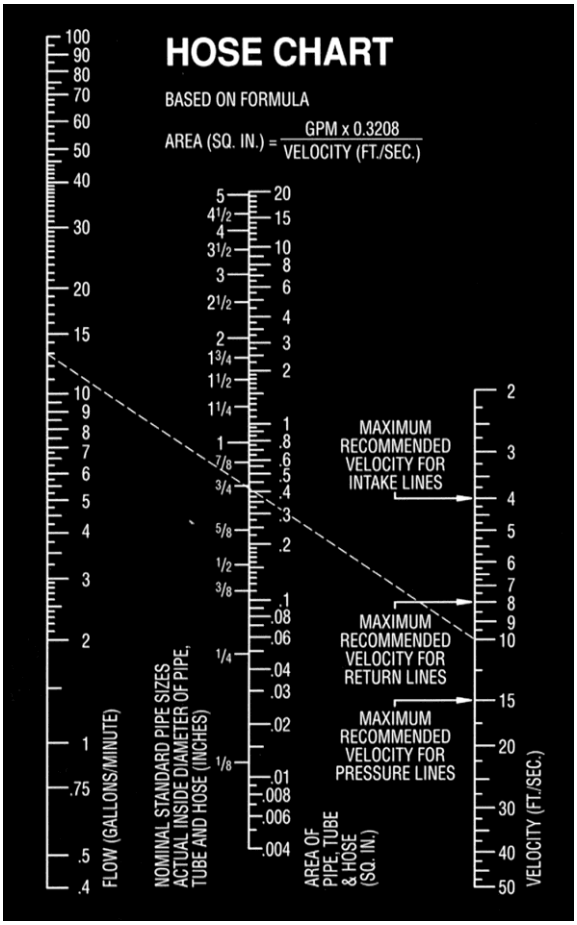
Oil Discoloration:

- 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.

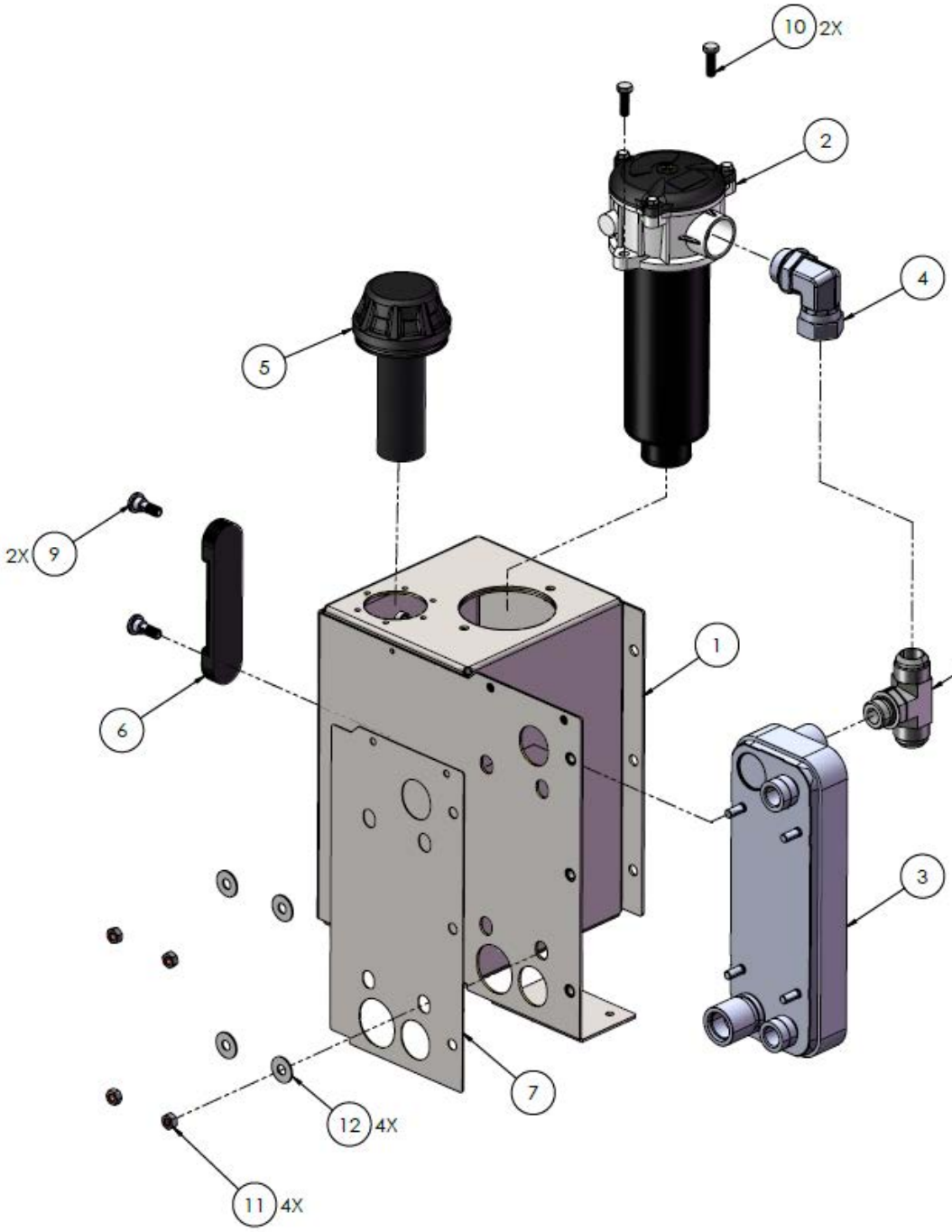
SPECIFICATIONS

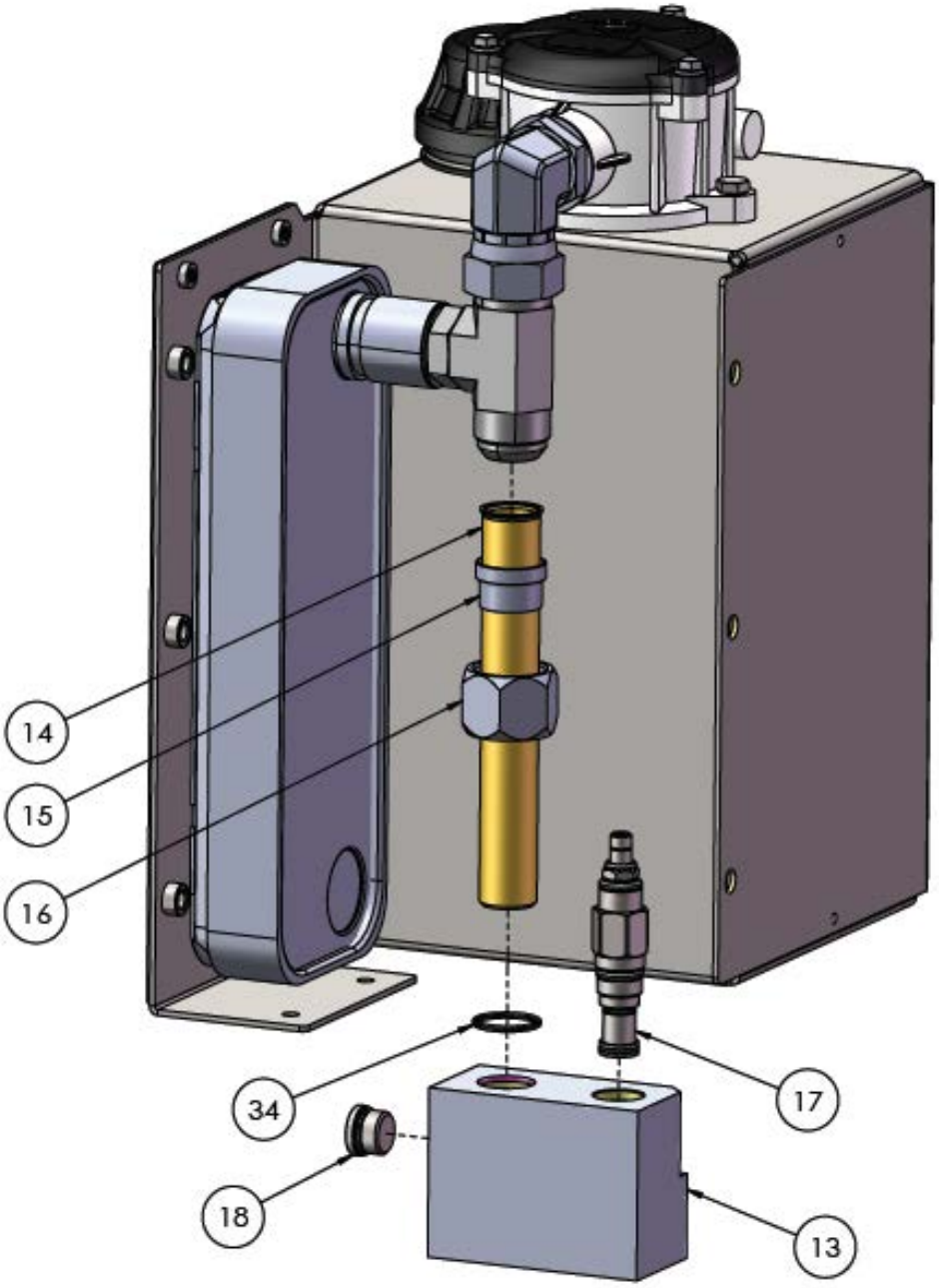
Max Flow Rate:	**25 gpm**
Max Pressure:	**3000 psi**
Reservoir:	**2.5 gal**
Weight:	**50 lbs**
Suction Line:	**1.5 Inch (1.5" HB)**
Pressure Lines:	**3/4 Inch (-12 Male JIC)**
Return Line:	**3/4 Inch (-12 Male JIC)**

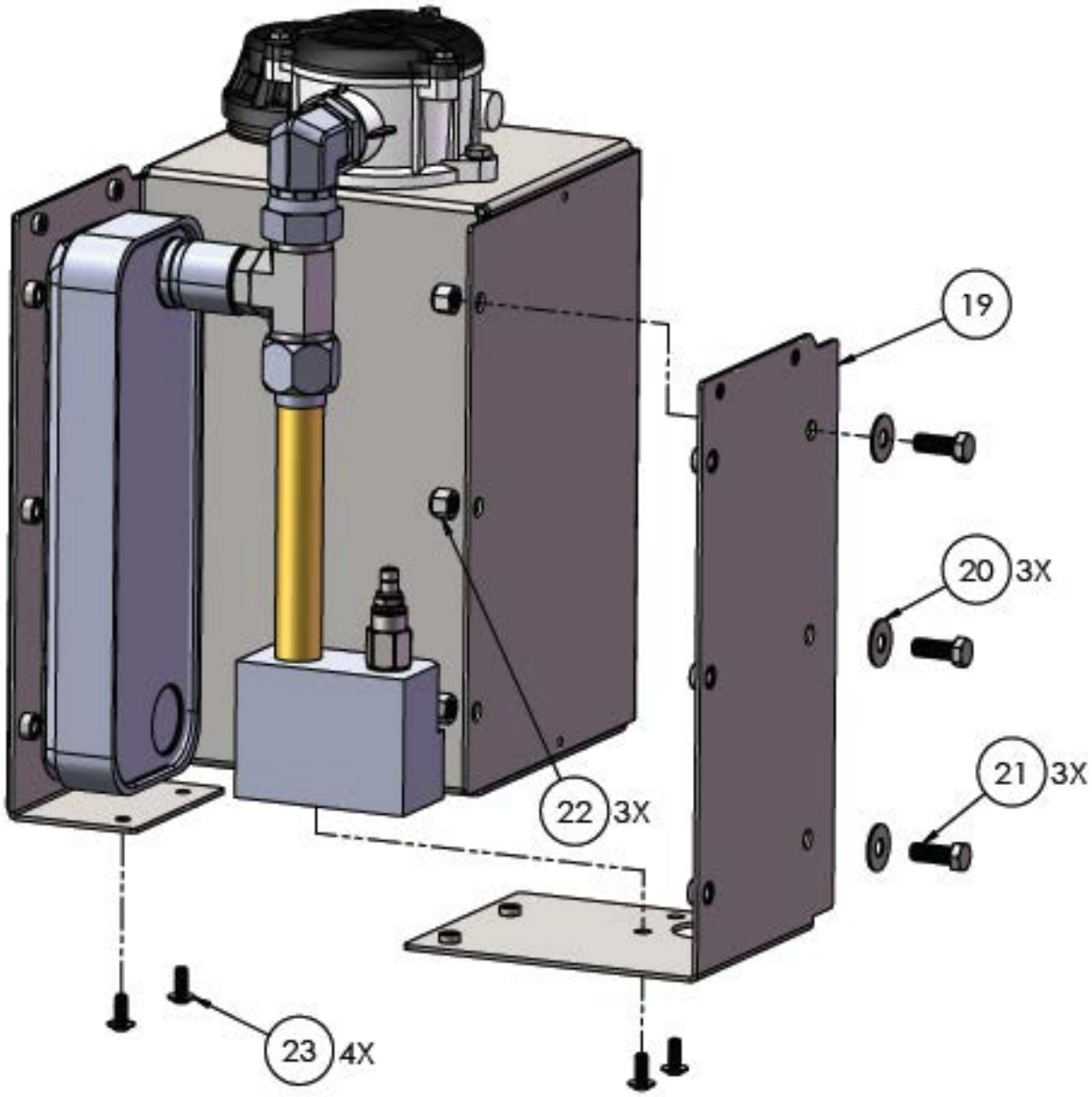
Oil: The recommended oil is Mobil DTE 10-32 or equivalent. Mobil DTE 10-32 is a supreme performance anti-wear hydraulic oil engineered for wide temperature range applications. It exhibits optimum flow characteristics at sub-zero temperatures and is resistant to shearing and viscosity loss so that system efficiency is maintained and internal pump leakage is minimized at high operating temperatures and pressures.

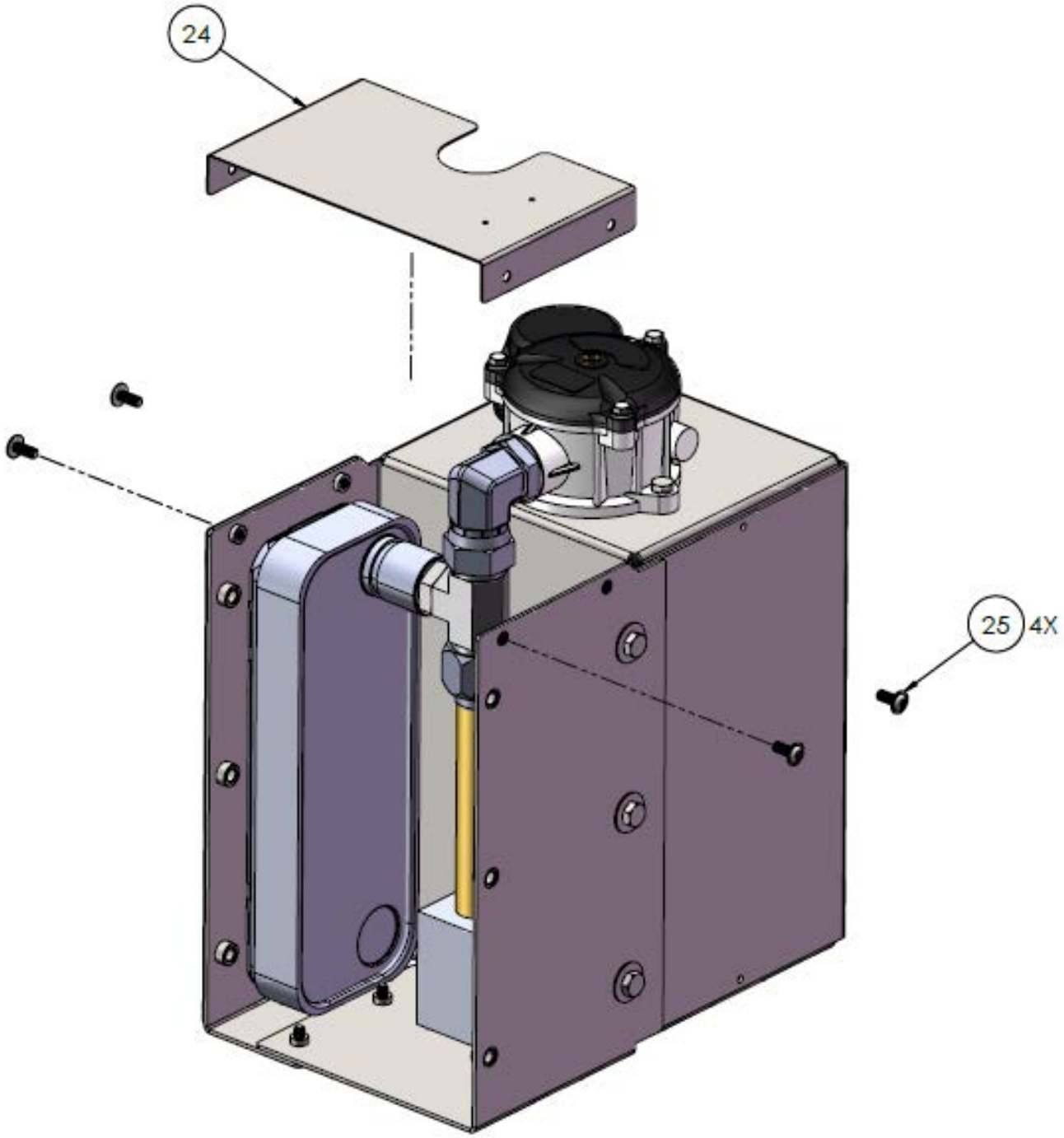


MODEL 510P PARTS BREAKDOWN

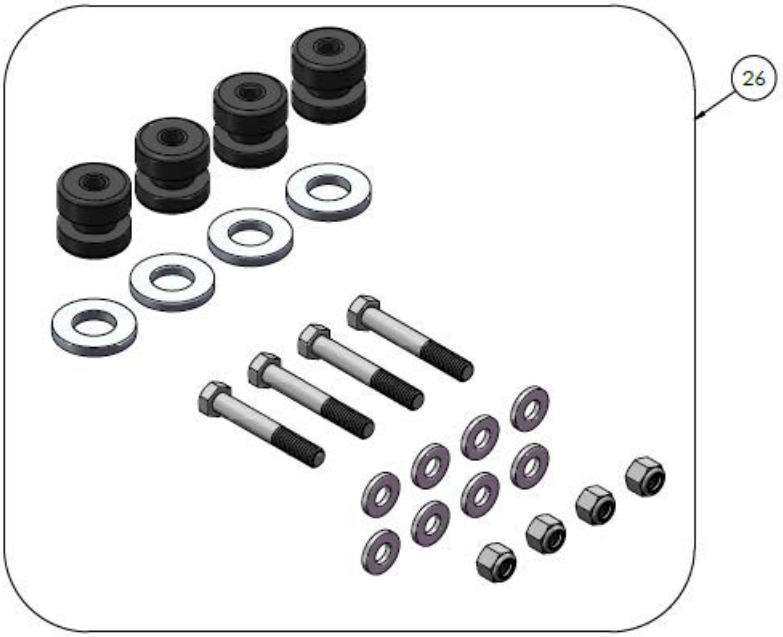


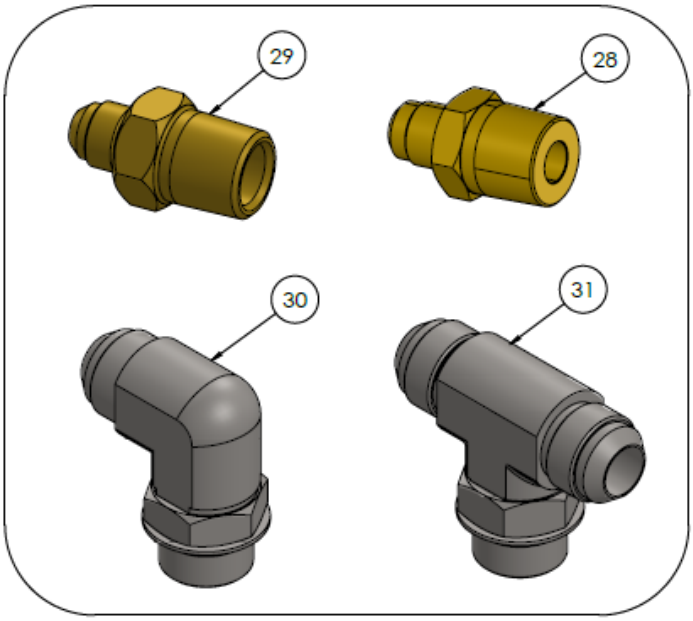

14
15
16
34
17
18
13

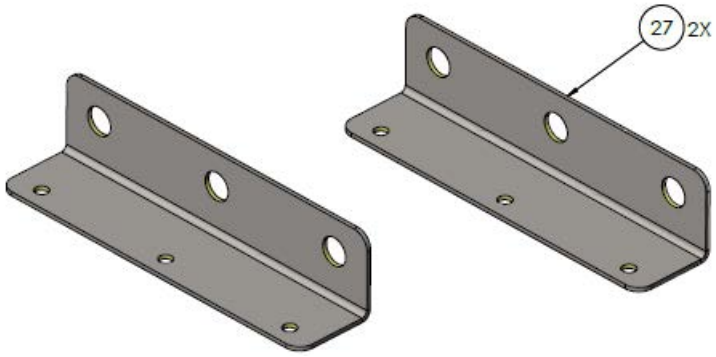

19
20 3X
21 3X
22 3X
23 4X

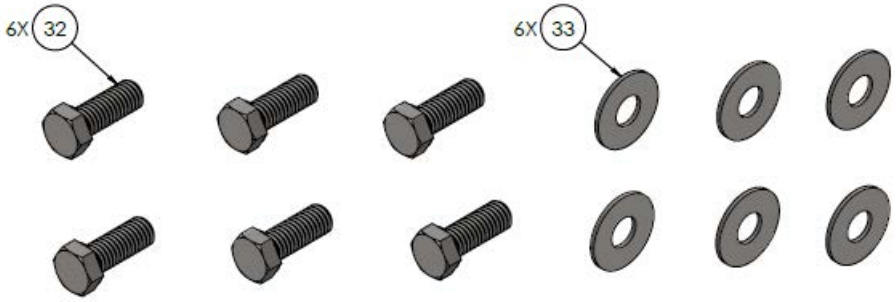

24
25
4X

MODEL 510P SHIP LOOSE ITEMS









PARTS LIST

Item No.	Part Number	Description	Quantity
1	9225	TANK WELDMENT, SS510P	1
2	934330	FILTER ASSY MPFX100 3 LENGTH	1
3	500301	HEAT EXCHANGER 510P	1
4	9249	FTG 16MAORB-16FJS 90 ELBOW	1
5	600332	BREATHER ASSY FLG 10 MICRON	1
6	300334	SIGHT GLASS 5 IN THERM M 12	1
7	9228	H-EX PANEL, SS510P	1
8	6803-16-16-12	FTG 16MJ-16MJ-12MAORB TEE	1
9	9184	BOLT SIGHT GLASS 3/8-16	2
10	300250	CAPS 5/16-18 X 1 SS HEX HEAD	2
11	8880	NUT, 8-1.25 HEX SST	4
12	675258	WASHER FLAT 3/8 SS	4
13	9230	MANIFOLD, SS510P	1
14	9233	1 OD X 0.065 WALL, J525	1
15	9235	16 JIC TUBE SLEEVE	1
16	9234	16 JIC TUBE NUT	1
17	7657	SYSTEM RELIEF PILOT OPERATED	1
18	7645	8MORB INT HEX PLUG; FITTING	1
19	9226	SIDE PANEL, SS510P	1
20	675258	WASHER FLAT 3/8 SS	3
21	980240	CAPS 3/8-16 X 1 HH SS	3
22	7710	3/8-16 X 1 ½" LOCK NUT 18-8	3
23	7709	1/4-20 X 5/8" SS TORX T27 BUTTON HD	4
24	9227	TOP COVER, SS510P	1
25	7709	1/4-20 X 5/8" SS TORX T27 BUTTON HD	4
26	500PSMK	500P SHOCK MOUNT KIT	1
27	9229	ANGLE BRACKET, SS510P	2
28	500418	1/2 MNPT-3/8 FLARE WITH ORIFICE	1
29	9288	FTG 1/2 MNPT-3/8 FLARE 45° BRASS	1
30	300708	12MJ-12MORB 90	1
31	600734	FTG-12MJ-12MJ-12MAORB TEE FOR	1
32	980240	CAPS 3/8-16 X 1 HH SS	6
33	675258	WASHER FLAT 3/8 SS	6
34	3189	O-RING 2-120 1 3/16 OD 1 ID	1

WARRANTY- TERMS AND CONDITIONS OF SALE

The THERMAFLOW 510P Hydraulic Cooler & Tank Stabilizer is warranted against any defect in material and workmanship which existed at the time of sale by APSCO, 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 APSCO's specifications due to a defect in any part in material or workmanship that existed at the time of sale by APSCO, Inc., the defective part will be repaired or replaced, at APSCO, Inc.'s discretion, at no charge, if the defective part is returned to APSCO, 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 APSCO, 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. APSCO, 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.

 Form 9311 Rev: 01/03/2023

Product Offering

Fans
Spal
Multi-Wing

Fittings
Tompkins
Stucci
Ryco

Heat Exchangers
Thermal Transfer
Flat Plate
AKG

Hydraulic Motors
Eaton/Char-lynn
Muncie
Permco
Hydro Leduc

PTO's
Muncie
Bezares
Chelsea

Pumps
Muncie
Parker
Permco
Hydro Leduc

APSCO, Inc.
4221 S 68th E Ave., Suite A,
Tulsa, OK 74145

Voice: +1.918.622.5600
Fax: +918.622.5469
sales@apscopower.com
www.apscopower.com

Management System Certification
Soleir
ISO 9001:2015
Cert # Q1820

Distributed by