



# ARC-45 *45GPM MAX*

## INSTALLATION AND OWNERS MANUAL

 **WARNING**

BEFORE BEGINNING INSTALLATION OF THIS  
APSCO PRODUCT READ AND FOLLOW ALL INSTALLATION  
INSTRUCTIONS



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Product Catalog: ARC-45-IOM  
Revision Date: 09.12.2022

## 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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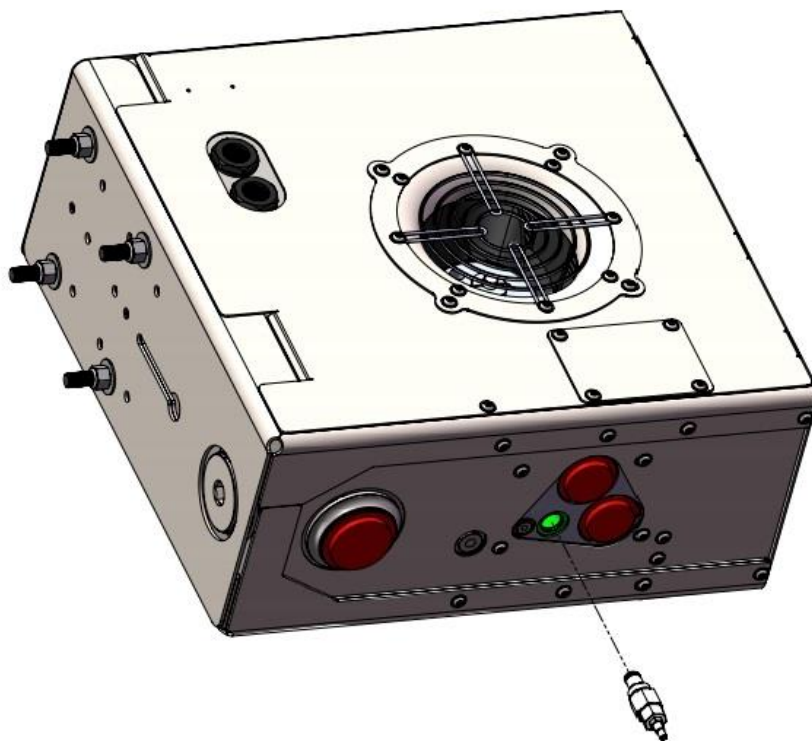
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Management System Certification



## FLOW CONTROL VALVE INSTALLATION

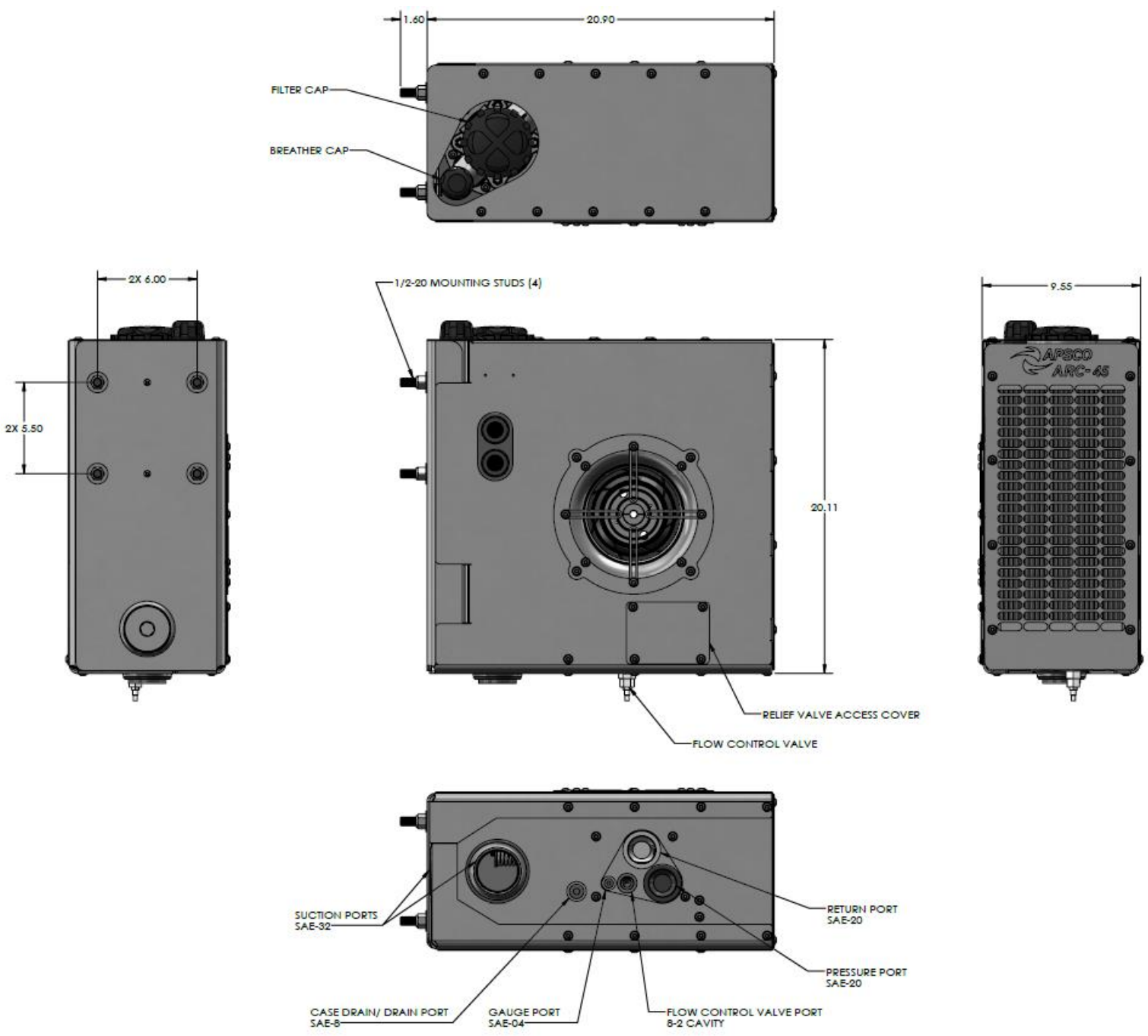
1. INSTALL FLOW CONTROL VALVE, AS SHOWN BELOW AFTER MOUNTING ARC-45.
2. INSTALL FLOW CONTROL VALVE TO 20FT-LB USING A 7/8" DEEP WELL SOCKET.
3. FLOW CONTROL VALVE IS FACTORY TESTED AND SET, **DO NOT ADJUST**.
4. FAILURE TO PROPERLY INSTALL THE FLOW CONTROL VALVE WILL VOID THE WARRANTY.



## FEATURES INCLUDED

- **Stainless Steel Construction**
- **The basic size of our cooler is 20"X21"X9.5", making it the most compact cooler in its class.**
- **4.25 Gallon Hydraulic Reservoir**
- **Weight: 120 lbs dry, making it the lightest hydraulic cooler in its class**
- **Pressure rated to 3000 psi**
- **Heat rejection is 19HP at 45gpm with 80°F ETD. This is the highest heat rejection in its class**
- **Filter Bypass valve- Set at 36 psi. This feature protects the filter from over pressurization due to cold oil or a blocked element.**
- **Flow Rate to 45GPM**
- **System Cold Oil Bypass Valve – Set at 60psi. This feature ensures that the low pressure side of the hydraulic system stays at a low pressure. Primarily protects from over pressurization due to cold oil.**
- **System relief valve – This Feature ensures that the maximum system pressure does not go any higher than what you set the valve at. Factory set at 3000psi and is adjustable from 500psi to 3000psi.**
- **Hydraulic filter – This filters your return fluid with a ten-micron filter, has an integral bypass valve, and conveniently filters the oil that is added to the reservoir.**
- **Flow control valve – This feature ensures the delivery of consistent flow to the hydraulically powered cooling blower motor. It is factory set to ensure the most efficient blower speed.**

# FIGURE 1: ARC-45 DIMENSIONS



## INSTALLATION AND OPERATION



**Warning: High Pressure oil can cause severe injury.** Turn off PTO and bleed pressure before servicing hydraulic system.



**Warning: heavy object.** To avoid muscle strain or back injury, use lifting aids and proper lifting technique when removing or replacing.



**Warning: Rotating Fan Blade.** Can cause serious injury or cut. Keep hands clear. Turn off and lockout unit before servicing.



**Caution:** Surface May be Hot. Ensure PTO is off and unit has cooled before servicing.

### POSITIONING AND MOUNTING:

The ARC-45 is designed to fit in very tight spaces, its narrow profile allows for behind the cab or frame rail mounting. Unit will ship with a mounting template to aid in proper installation. (See FIG. 6) The ARC-45 requires at least 2" air gap on the fan shroud side to allow for adequate air intake.

**Install Flow control valve after mounting ARC-45 (SEE PAGE 1).**

### CONNECTIONS (SEE FIG.2):

**Note:** SAE ports do not require a thread sealant, they seal with an O-ring. Make sure your SAE fittings have a properly sized o-ring and are free of thread sealant.

**Suction Port-32 SAE** – Your hose will go from this port to the pump inlet port. Minimum hose size – 2”.

**Pressure Port -20 SAE** – The hose from your pump output will “T” into this port. One side of the “T” supplies the 1.2gpm to the hydraulic fan. Flow will only be greater than 1.2gpm through this line is if the pressure relief valve setting is exceeded. The other side of the “T” runs to the motor input or control valve input depending on your system. Minimum hose size – 1.25”.

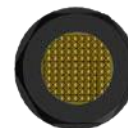
**Case Drain -8 SAE** – Some hydraulic pumps, motors, and control valves have a case drain line that needs to be plumbed directly back to the cooler reservoir. This is where you will make that connection. If your hydraulic system does not require a case drain line simply leave the APSCO provided hex plug in this port. This port can also double as a drain port.

**Return Port -20 SAE** – The hose from the outlet of your motor or control valve should be plumbed into this port. This port takes all of the return flow from your motor and sends it through the filter and heat exchanger built into the ARC-45. Minimum hose size – 1.25”.

**Gauge Port -4 SAE** – This is a test port on the bottom of your cooler. This port is connected to the input port of the manifold, for the purpose of connecting diagnostic equipment like a gauge or transducer to system pressure.

### START UP PROCEDURE:

Make up all hydraulic connections.



Remove Filter cap from top of cooler, leave filter in place and add fluid until the bottom sight glass is full with the top sight glass indicating empty with the PTO disengaged. This will filter the fluid as it is being added. Even new hydraulic fluid should be filtered. You will need to add hydraulic fluid in slowly because the filter is in place. Bleed air from lines and check fluid level again. Ensure that the lines are full of fluid and the air is bled from your system, some pumps and motors, particularly piston will be ruined in a matter of seconds if operated without fluid.

Depending on the length and diameter of the system hoses you may need to add fluid to the reservoir several times.

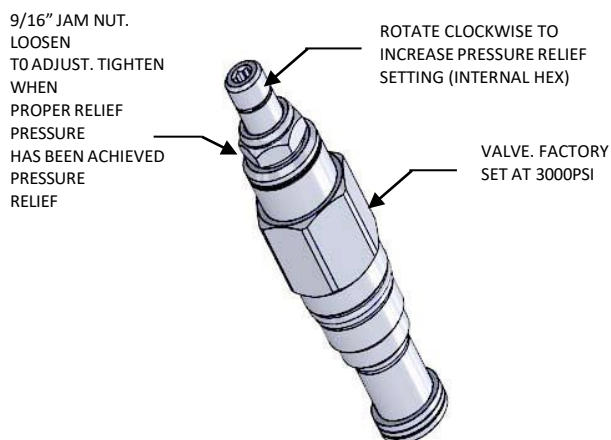
Install filter cap. Slowly engage PTO with engine at idle speed.

Check for hydraulic leaks and repair as needed.

Check for fan operation. Note that the fan will turn slowly when system pressure is low.

Recheck reservoir fluid level. Each time you add fluid disengage PTO, if the reservoir gets completely empty before you add fluid you will need to bleed air from the lines again.

**Pressure relief valve setting** – The ARC-45 pressure relief valve is factory set to 3000psi.



This is a good setting if all of your other system components are rated to at least 3000psi. Failure to set the relief valve 200psi higher than system pressure or any other system relief valve will result in excess buildup of heat. If you need to adjust the APSCO pressure relief valve it can be accessed by removing the relief valve access cover and manually adjusting with an Allen wrench. Any time the side cover is off the PTO should be off as well.

Once you verify system functionality with no leaks and the proper fluid level your ARC-45 is ready for operation.

**SYSTEM MAINTENANCE:**

**Filter** – Unscrew filter cap (use a screw driver or tool with a square shank) and replace element every three months.

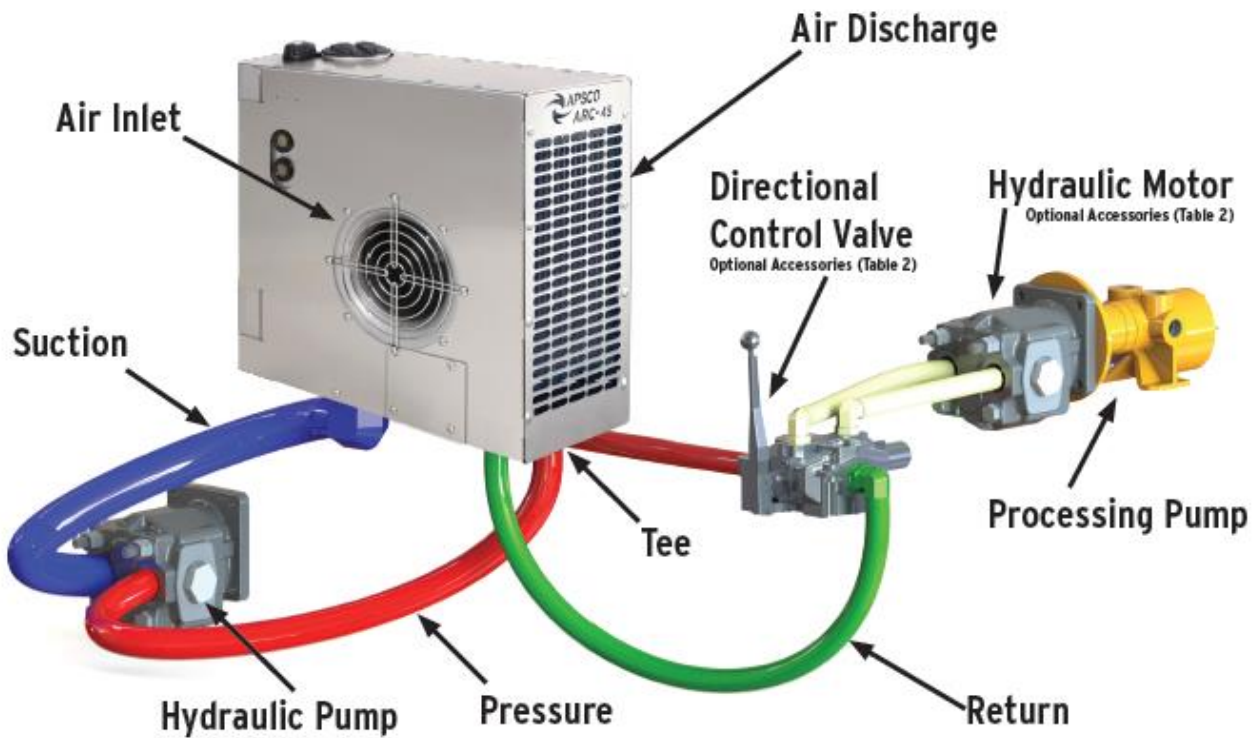
**Fluid** – Check fluid level daily (with the PTO off, the fluid level fills the bottom sight glass with the top sight glass still indicating empty). Drain and replace hydraulic oil every 6 to 12 months depending on use.

**Recommended Fluid** – Use non foaming hydraulic fluid and see Pump and Motor Manufacturer recommendations.

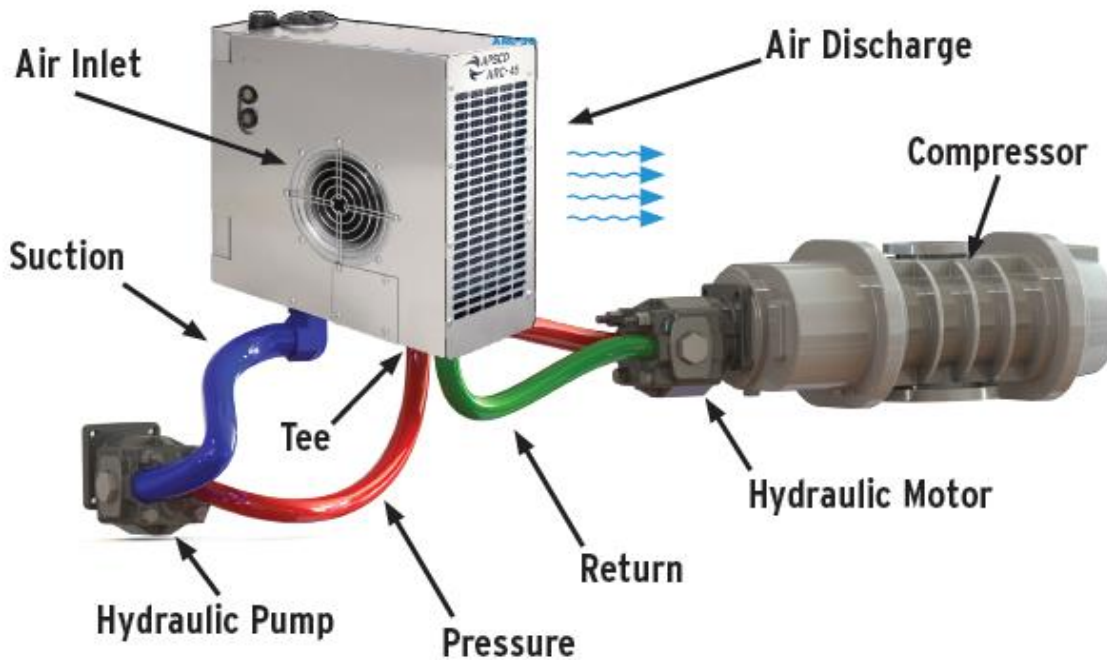
**Clean Radiator** – Use a mild cleaner compatible with aluminum. Be careful not to damage fins if using a power washer to rinse cleaner off of radiator. Visually inspect daily and clean if necessary.

## FIGURE 2: TYPICAL INSTALLATION

### ARC-45 WITH DIRECTIONAL CONTROL VALVE

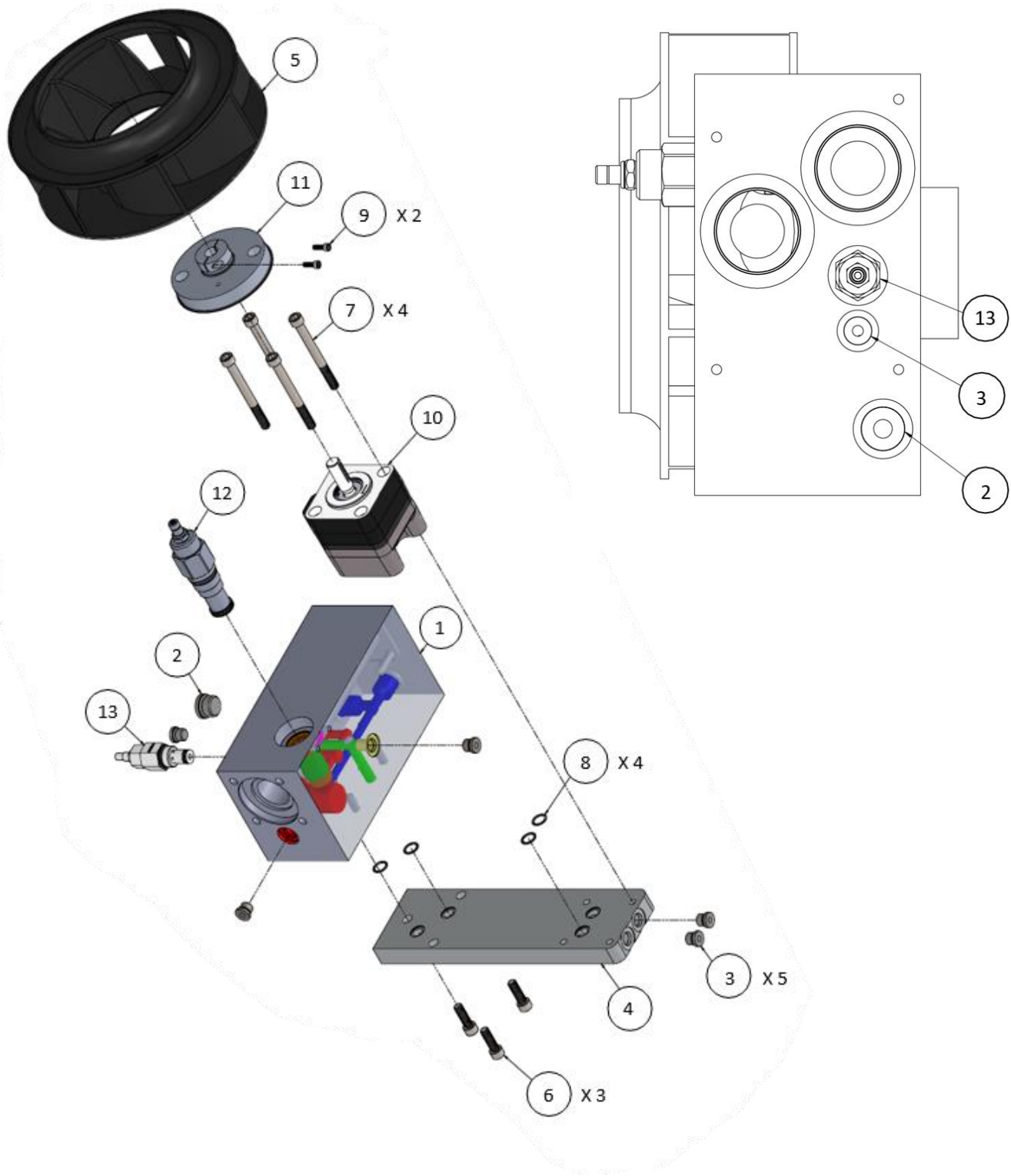


### ARC-45 WITHOUT DIRECTIONAL CONTROL VALVE





**FIGURE 3: MOTOR ASSEMBLY ARC-45**



# FIGURE 4: ARC-45 INTERNAL COMPONENTS EXPLODED VIEW

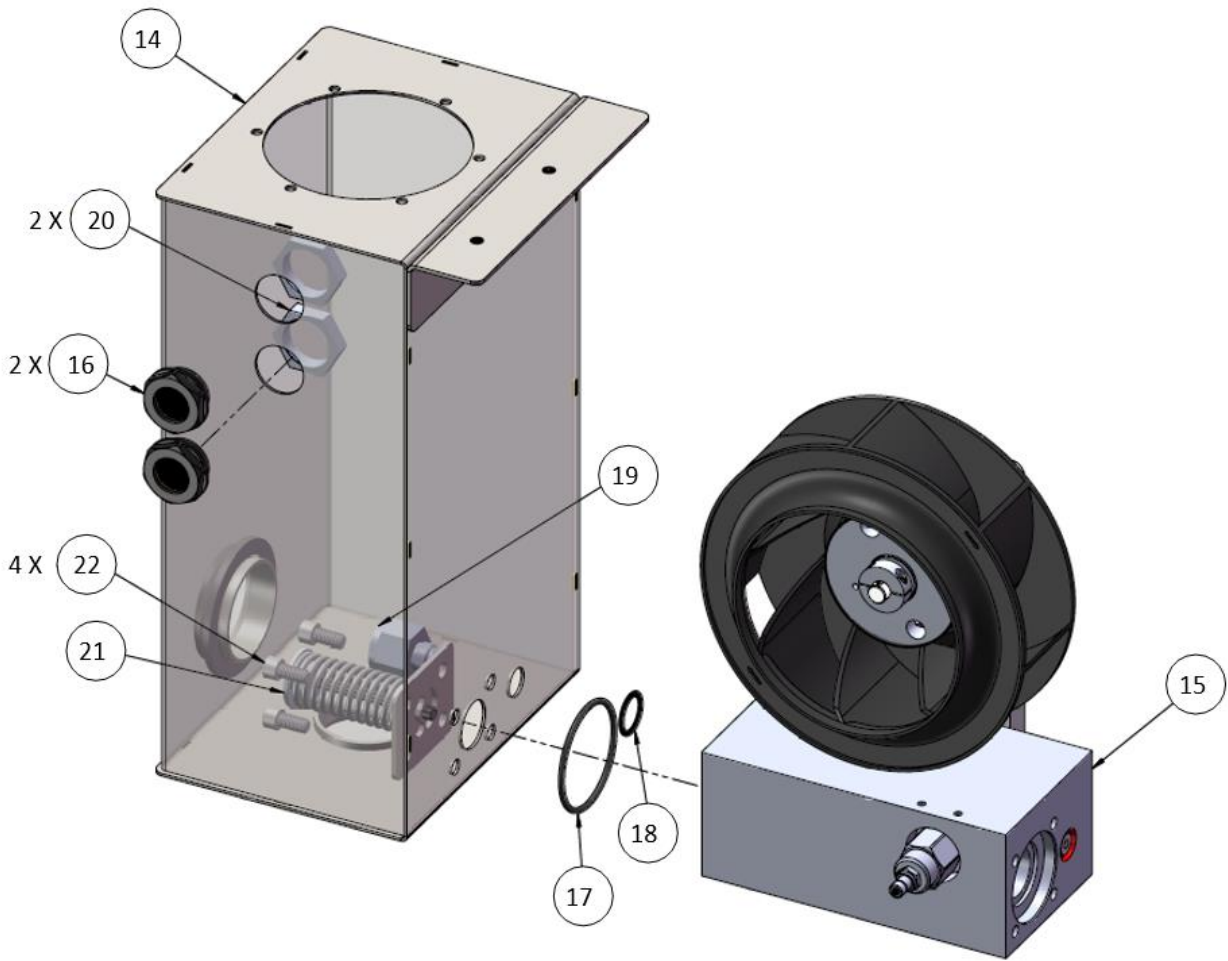


FIGURE 4A

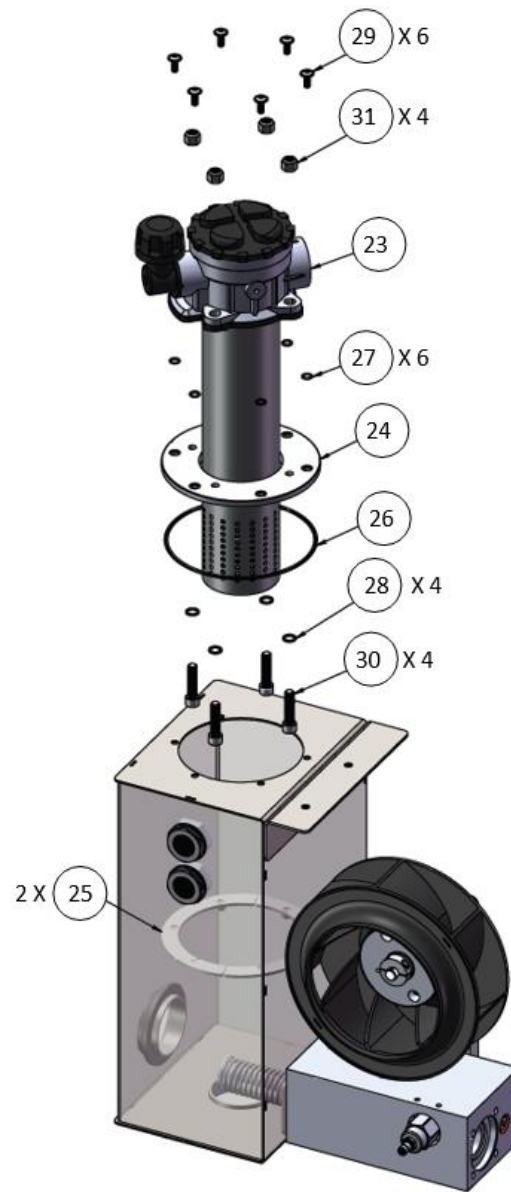


FIGURE 4B

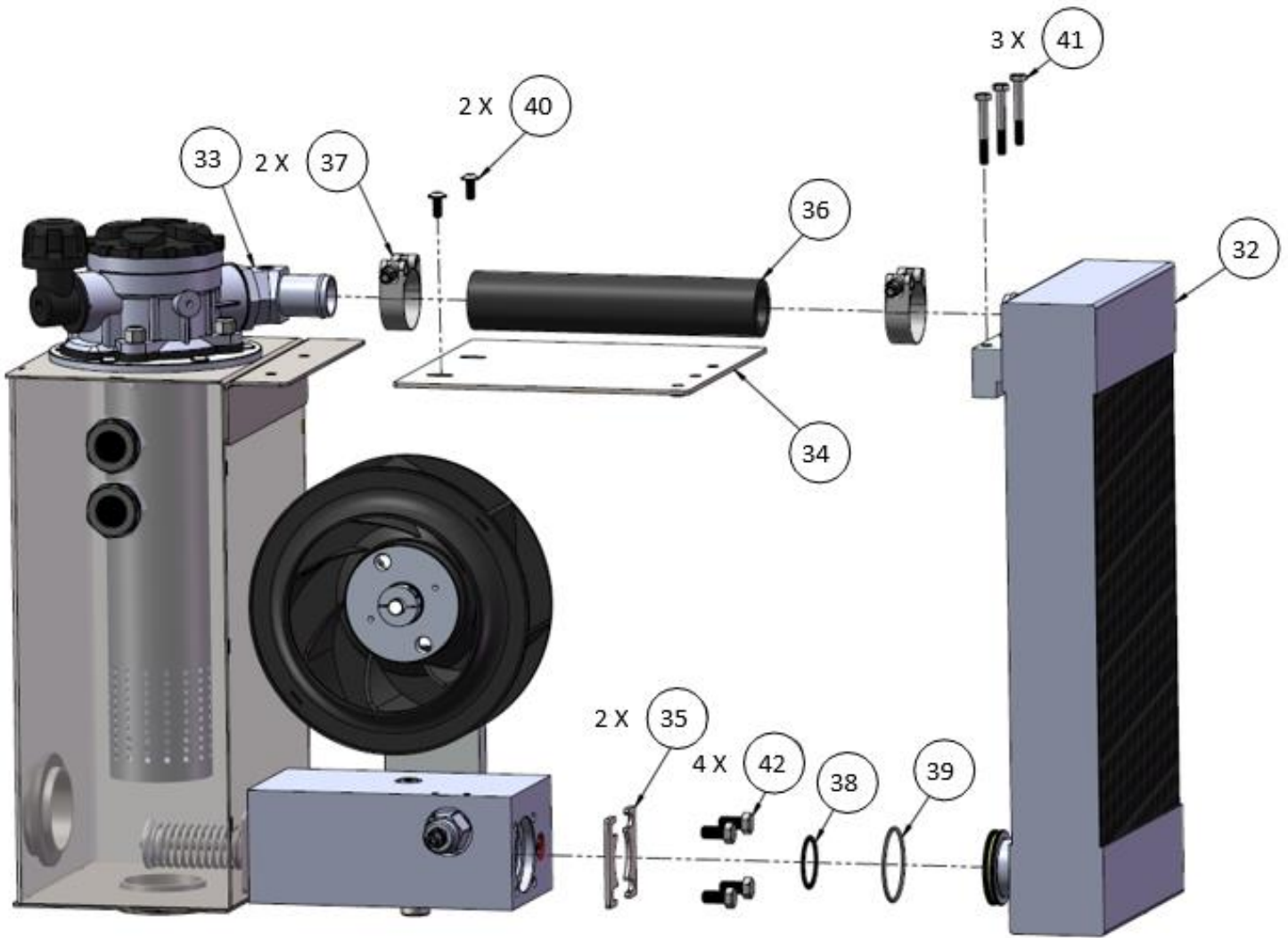


FIGURE 4C

## FIGURE 5: ARC-45 EXTERNAL SHELL EXPLODED VIEW

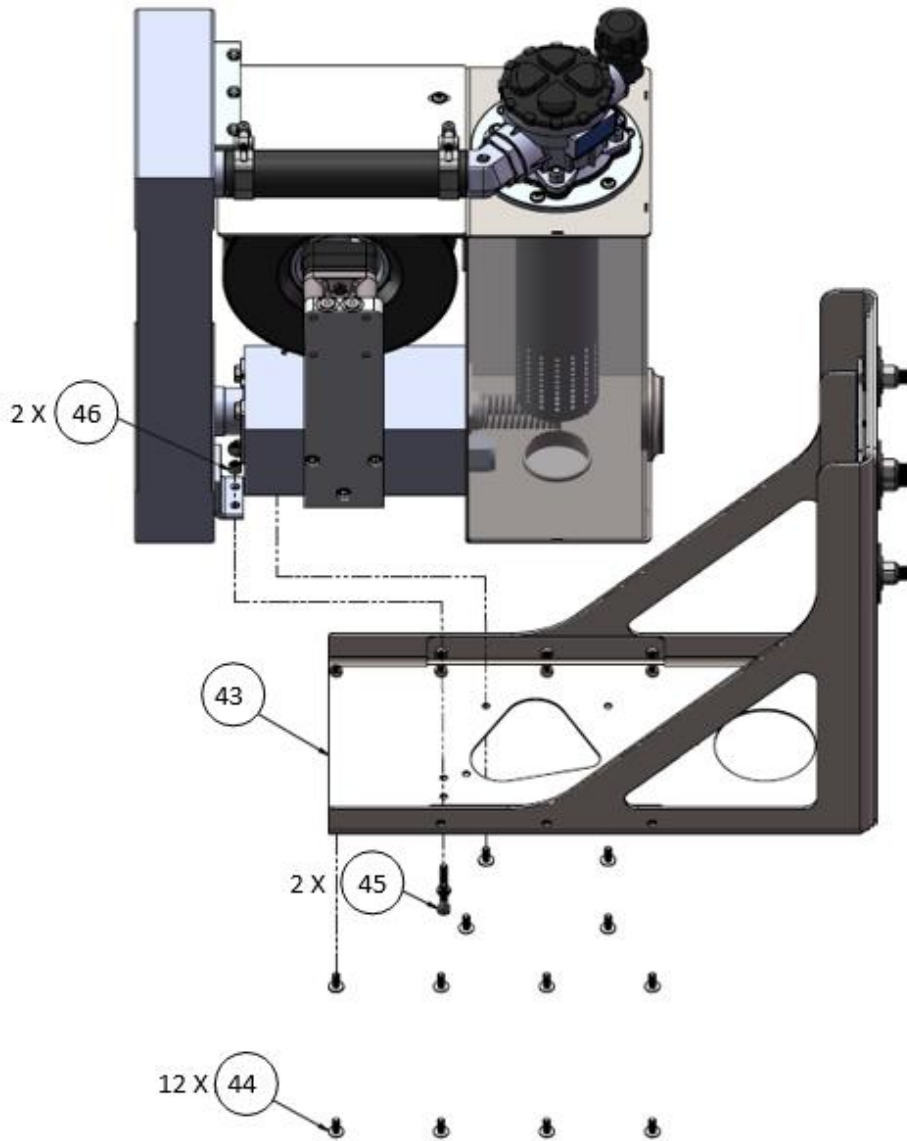


FIGURE 5A

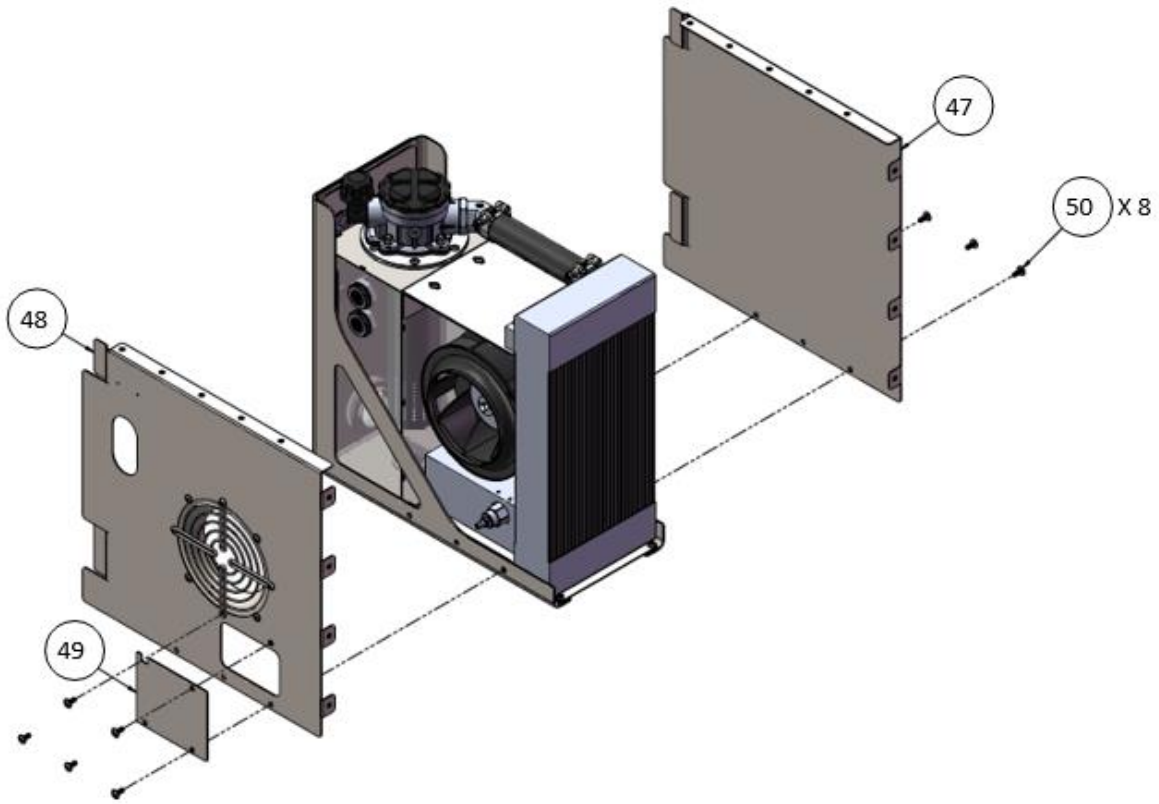


FIGURE 5B

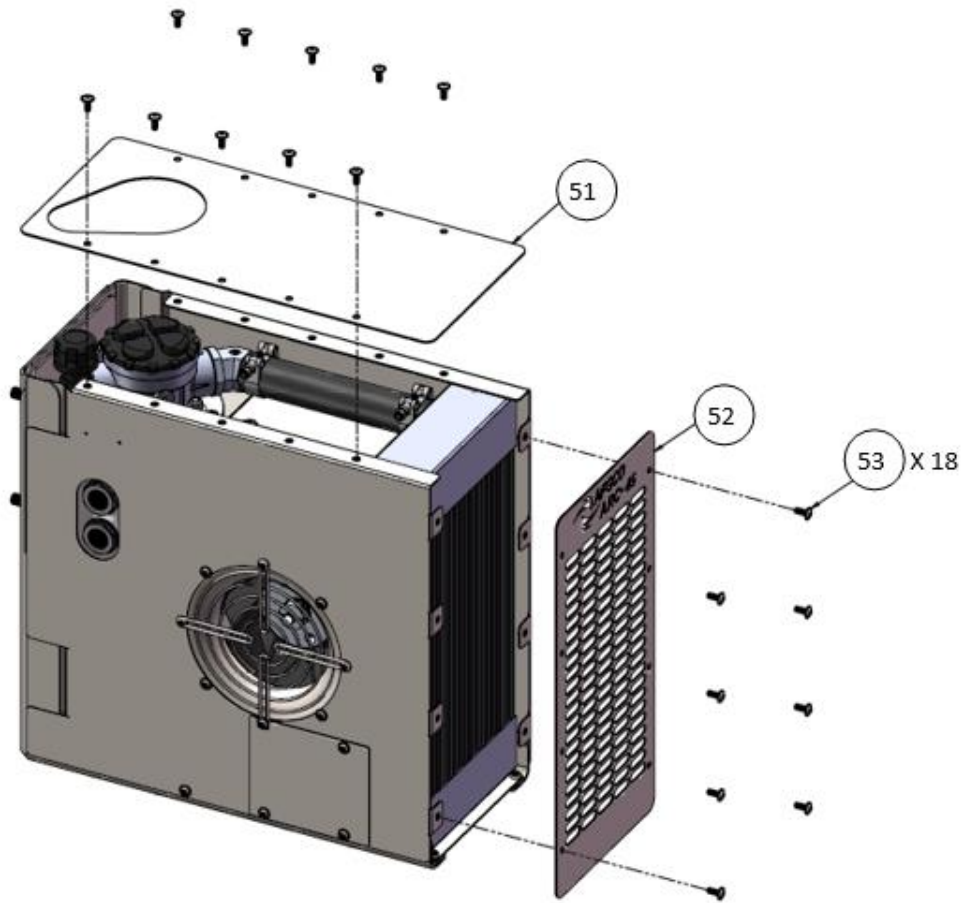


FIGURE 5C

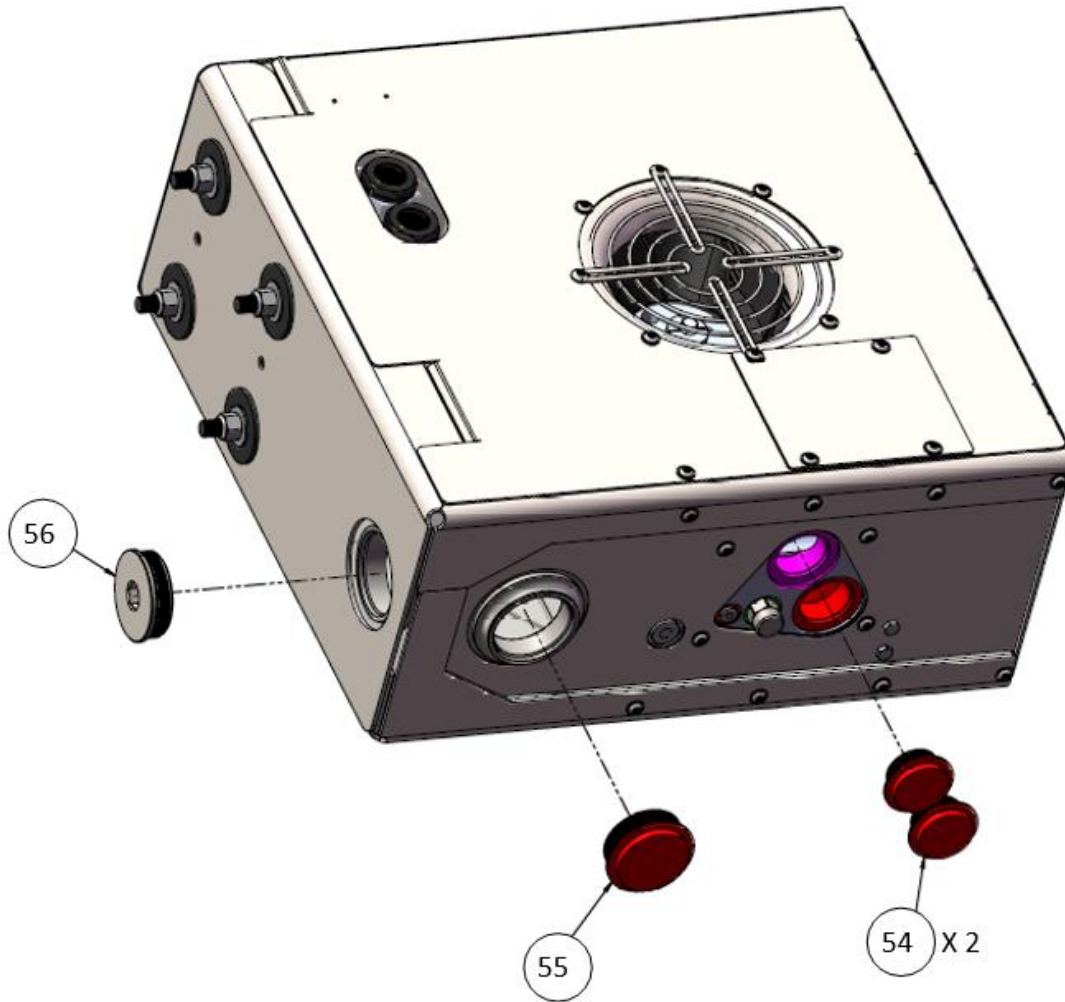


FIGURE 5D



## TABLE 1: PART LIST

Item No.	Part Number	Part Name	Quantity	Torque Value
1	8134	ARC-45 MANIFOLD	1	
2	7645	-08 SAE PLUG	1	40 FT-LB
3	7644	-04 SAE PLUG	5	13 FT-LB
4	7594	ADAPTER, MANIFOLD	1	
5	7642	FAN 225MM BACKWARD CURVE	1	
6	7653	SHCS 3/8"-16 SS 1" LG	3	23 FT-LB
7	7654	MOTOR MANIFOLD SHCS 5/16"-18	4	13 FT-LB
8	1195	O-RING 2-013 9/16 OD 7/16 ID	4	
9	7643	SHCS 8-32 1/2" LG	2	25 IN-LB
10	7641	HYDRAULIC MOTOR, CW ROTATION	1	
11	7626	HUB, PRESS FIT	1	
12	8352	RELIEF VALVE ARC-45	1	48 FT-LB
13	7656	FLOW REGULATOR 8-2 CAVITY	1	20 FT-LB
14	8133	TANK WELDMENT ARC-45	1	
15	8328	ARC-45 MOTOR, FAN ASSEMBLY	1	
16	7660	SIGHT LEVEL PLUG 1" BSPP	2	8 FT-LB
17	8110	O-RING 2-231 2 7/8 OD 2 5/8 ID	1	
18	1733	O-RING 2-212 1 1/8 OD 7/8 ID	1	
19	7646	12FJ-08MJ STRAIGHT LARGE HEX	1	40 FT-LB
20	7650	BSPP LOCKNUT (FOR USE WITH SIGHTGLASS)	2	
21	8292	BYPASS VALVE, 60 PSI	1	
22	8168	CAPS 3/8-16, 3/4 LG	4	23 FT-LB
23	8093	HYDRAULIC FILTER MPH1144	1	
24	7986	CLEANOUT COVER 6.50 OD	1	
25	7981	CLEANOUT COVER RING 6.50 OD	2	
26	7662	O-RING 0-258 6 1/4"OD 6"ID (CLEAN OUT COVER)	1	
27	7748	O-RING 2-011 IL 7/16OD 5/16ID	6	
28	7842	SEALING WASHER, COPPER	4	
29	7709	1/4-20 X 5/8" SS TORX T30 BUTTON HD	6	6 FT-LB
30	7711	3/8-16 X 1 1/2 SHCS BOLT 18-8	4	20 FT-LB
31	7710	3/8-16 X 1 1/2" LOCK NUT 18-8	4	10 FT-LB
32	8048	HEAT EXCHANGER, EZ TRAC	1	
33	8043	20MORB-20HB 45	1	
34	8143	BRACKET, ARC-45	1	
35	8084	HE-MANIFOLD PLATE	2	
36	8106	HOSE, HYD #20	1	
37	8171	HOSE CLAMP	2	
38	2574	O-RING 2-220 1 5/8 OD 1 3/8 ID	1	
39	8111	O-RING 2-138 2 5/16 OD 2 1/8 ID	1	
40	7709	1/4-20 X 5/8" SS TORX T30 BUTTON HD		6 FT-LB
41	7841	HH 1/4-20 X 2" CAP SCREW		6 FT-LB
42	8169	HEX 3/8-16, 3/4 LG, SS	4	23 FT-LB
43	8331	ARC-45 FRAME ASSEMBLY	1	
44	7709	1/4-20 X 5/8" SS TORX T30 BUTTON HD	12	6 FT-LB

Item No.	Part Number	Part Name	Quantity	Torque Value
45	8291	CAP SCREW HH 1/4-20 X 1 1/4	2	6 FT-LB
46	3786	NUT 1/4-20 NC SS HEX NYLOCK	2	6 FT-LB
47	8138	RIGHT PANEL, ARC-45	1	
48	8326	SIDE PANEL ASSEM ARC-45	1	
49	8146	ACCESS PANEL, ARC-45	1	
50	7709	1/4-20 X 5/8" SS TORX T30 BUTTON HD	8	6 FT-LB
51	8140	TOP PANEL, ARC-45	1	
52	8141	FRONT PANEL, ARC-45	1	
53	7709	1/4-20 X 5/8" SS TORX T30 BUTTON HD	18	6 FT-LB
54	7743	PLUG, #20 SAE PLASTIC	2	
55	8197	PLUG, #32 SAE PLASTIC	1	
56	8199	ORB PLUG, -32 INT HEX SS	1	115 FT-LB

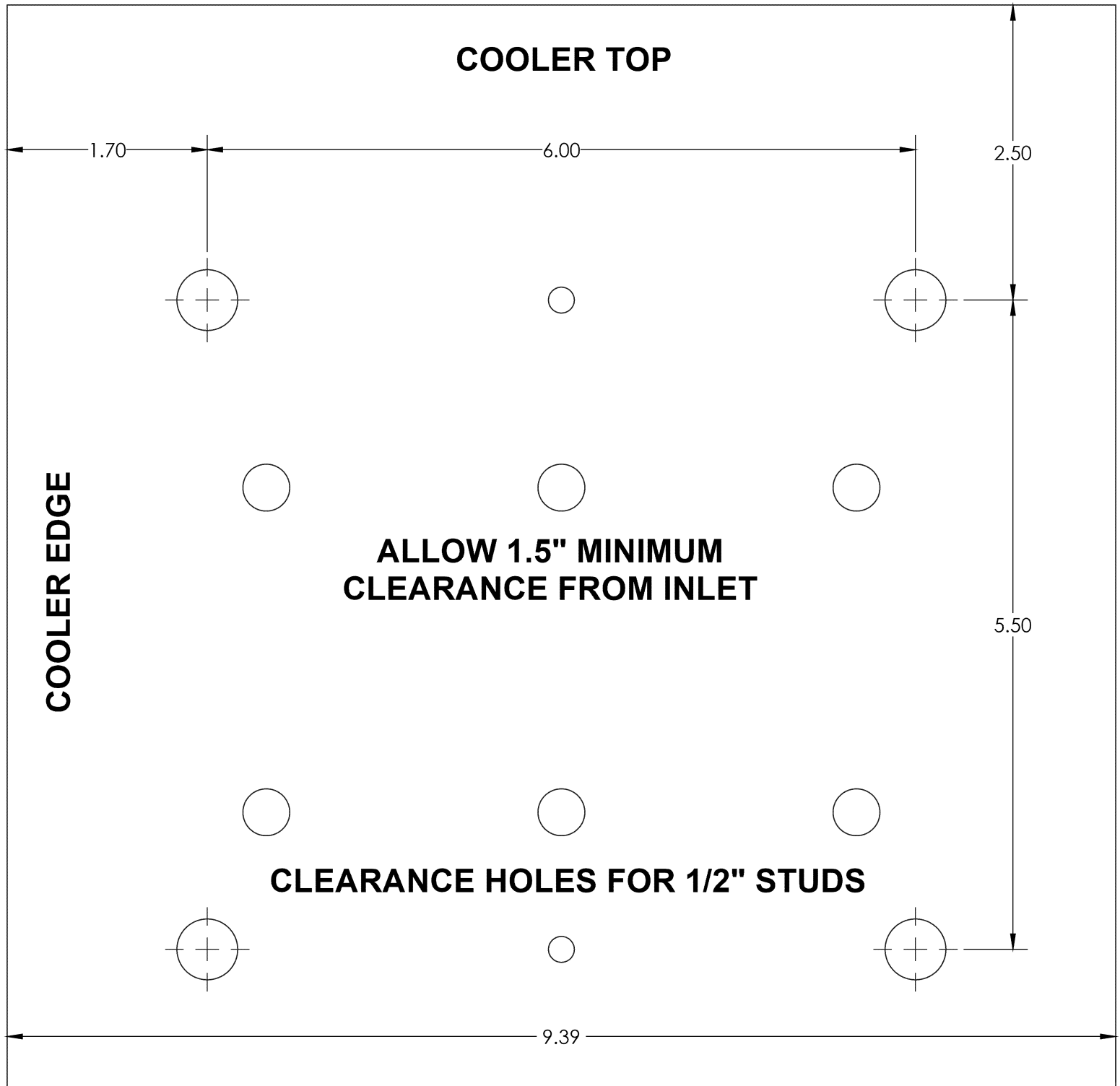
## ARC-45 REPAIR

Drain hydraulic fluid from unit by removing the magnetic drain plug, once all the fluid has been drained replace and torque accordingly. Do not re-use this fluid. Remove all connections to the ARC45, these connections will be wet so be sure to have a catch pan for the fluid that will be spilled. Cap and plug all hoses and ports to prevent contamination. It is recommended to do any repair work on a clean surface in a dust free environment. Once the ARC-45 is out of its case you will be able to remove and replace any of the components. If the repair requires you to remove the tank mount bracket (Item 34) mark the position of the bolts on the bracket so you can reinstall in the same position. This will help ensure that your sight glass and tank cap will fit concentrically within the case when you put the ARC-45 back together. When re-assembling the ARC-45 be sure to use blue loctite on all fasteners and torque according to TABLE 1.

## TABLE 2: TROUBLESHOOTING GUIDE

Problem	Cause	Corrective Action
<b>Fan not spinning</b>	<ul style="list-style-type: none"> <li>• Low system pressure</li> <li>• Low oil level in tank</li> <li>• Air leak in suction hose or fitting connections</li> <li>• Pinch Bolts are loose or missing</li> <li>• Collapsed Suction Hose</li> <li>• Flow Control Valve has blocked orifice</li> <li>• Fan sucked in road trash such as a plastic bag and has caused fan to be in a bind</li> </ul>	<ul style="list-style-type: none"> <li>• The system pressure must be higher than 900 psi for the fan to spin at full speed. Slower fan speeds in an unloaded condition are part of normal operation.</li> <li>• Fill Tank, tighten fittings, and bleed air from lines</li> <li>• Tighten fittings and bleed air from lines</li> <li>• Replace and re-torque</li> <li>• Replace suction hose</li> <li>• Remove and clean or replace valve. Change fluid and filter element</li> <li>• With Unit de-energized, remove debris, check for proper torque of pinch bolts. Check to make sure the fan is not broken or cracked and motor functions properly.</li> </ul>
<b>High Oil Temperature</b>	<ul style="list-style-type: none"> <li>• Dirty Heat Exchanger Assembly</li> <li>• System Relief Valve is opening</li> <li>• low oil level in tank</li> <li>• Collapsed Suction Hose</li> <li>• Air leak in suction hose or fitting connections</li> </ul>	<ul style="list-style-type: none"> <li>• Clean Heat Exchanger. Use mild cleaner compatible with aluminum. Be careful not to damage fins when using a pressure washer.</li> <li>• Ensure that valve relief pressure is set higher than your system pressure. Remove and clean or replace valve. Change fluid and filter element.</li> <li>• Fill Tank and tighten fittings.</li> <li>• Replace suction hose.</li> <li>• Bleed air and tighten fittings.</li> </ul>
<b>Aeration of oil (Milky looking oil)</b>	<ul style="list-style-type: none"> <li>• Water Contamination</li> <li>• Air leak in suction hose or fitting connections</li> <li>• Pump is not lower than the tank</li> <li>• Restricted suction line</li> <li>• low oil level in tank</li> </ul>	<ul style="list-style-type: none"> <li>• Replace Fluid and Filter Element. Check all fittings and Filter Cap for tightness. Tighten fittings and bleed air from lines.</li> <li>• Reposition to ensure the fluid can gravity feed into the pump through the suction line.</li> <li>• Route suction line to make as straight and short of a run as possible. Ideally you would want a 2" suction line for minimum flow restriction.</li> <li>• Fill Tank and tighten fittings, verify proper fill level before use.</li> </ul>
<b>Heat exchanger Assembly leaks</b>	<ul style="list-style-type: none"> <li>• Loose Fittings or cut O-rings</li> <li>• Burst Heat Exchanger</li> </ul>	<ul style="list-style-type: none"> <li>• Replace O-rings and tighten fittings.</li> <li>• Replace Cold start relief valve and Heat exchanger assembly.</li> </ul>

# FIGURE 6: DRILL DIMENSIONS (NOT TO SCALE)



## 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 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.



**DUMP**



**BULKTRANSFER**



**SNOW & ICE**



**REFUSE & WASTE**



**REFUSE &WASTE**



**OIL & GAS**

Product Catalog: ARC-45-IOM

Revision Date: 09.12.2022

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