



HIGH PERFORMANCE TURBULATOR

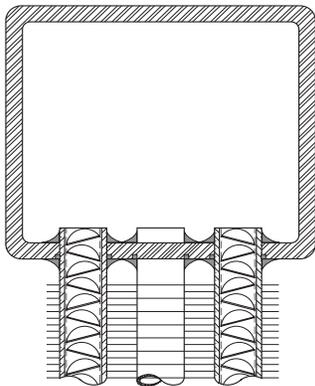
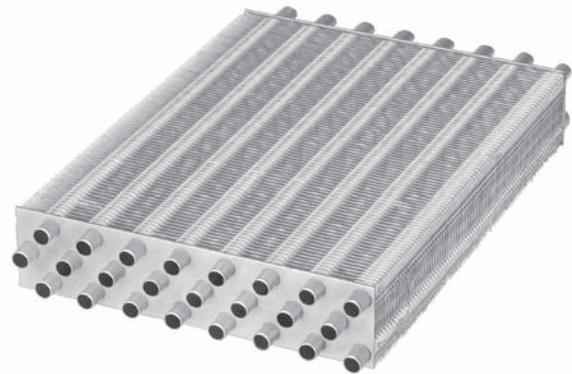
Exclusive American Industrial Turbulators (installed in every flow tube) increase heat transfer by more than 100%.

American Industrial Turbulators eliminate the laminar flow condition normally associated with other smooth tube heat exchangers. High viscosity hydraulic and lubricating oils are easily cooled by this new state-of-the-art turbulator.

SUPERIOR COOLING FINNS

Seamless copper tubes are mechanically bonded to highly efficient aluminum cooling fins. Die-formed fin collars provide a durable precision fit for maximum heat transfer.

Custom fin design forces air to become turbulent and carry heat away more efficiently than old flat fin designs.



TANKS

State-of-the-art 21st century high temperature brazing method insures permanent bond and positive contact of tube to manifold, eliminating leaks and providing maximum service life.

CONSTRUCTION MATERIALS & RATINGS

Standard Construction Materials		Optional Construction Materials	Standard Unit Ratings	
Tubes	Copper	Carbon Steel	Operating Pressure	300 psig
Fins	Aluminum	Copper	Operating Temperature	400 °F
Turbulators	Steel	Brass	Max. Flow Internal Relief	38 gpm
Manifold	Steel	Brass	Max. Fan Over-speed	10 %
Connection pipes	Steel	Brass	Max. Ambient Conditions	104 °F
Cabinet & frame	Steel	316L Stainless Steel, Galvanized Steel	Altitude	0-3300 ft.
Fan Blade	Aluminum with steel hub	Plastic, Non-sparking		
Fan Guard	Zinc plated steel			

note: AIHTI reserves the right to make reasonable design changes without notice.

HYDRAULIC MOTOR DATA

Model	Motor RPM	Displacement		Required Flow		Min. pressure start / run PSIG	External Case Drain SAE O-Ring	SAE Size	Side Port SAE O-Ring	Max. Continuous Pressure PSIG
		in ³ /rev	ccm/rev	GPM	LPM					
ACHM - 5 - *	1725	0.43	7.0	3.75	14.2	500 / 300	#6; 9/16 -18	A	#10 7/8 -14	3000
ACHM - 10 - *	1725	0.43	7.0	3.75	14.2	500 / 300	#6; 9/16 -18	A	#10 7/8 -14	3000
ACHM - 15 - *	1725	0.43	7.0	3.75	14.2	500 / 300	#6; 9/16 -18	A	#10 7/8 -14	3000
ACHM - 20 - *	1725	0.43	7.0	3.75	14.2	500 / 300	#6; 9/16 -18	A	#10 7/8 -14	3000
ACHM - 25 - *	1140	0.43	7.0	2.50	9.5	500 / 300	#6; 9/16 -18	A	#10 7/8 -14	3000
ACHM - 30 - *	1140	0.43	7.0	2.50	9.5	500 / 300	#6; 9/16 -18	A	#10 7/8 -14	3000
ACHM - 35 - *	1140	0.43	7.0	2.50	9.5	600 / 400	#6; 9/16 -18	A	#10 7/8 -14	3000
ACHM - 40 - *	1140	0.43	7.0	2.50	9.5	600 / 400	#6; 9/16 -18	A	#10 7/8 -14	3000

HYDRAULIC MOTOR NOTES:

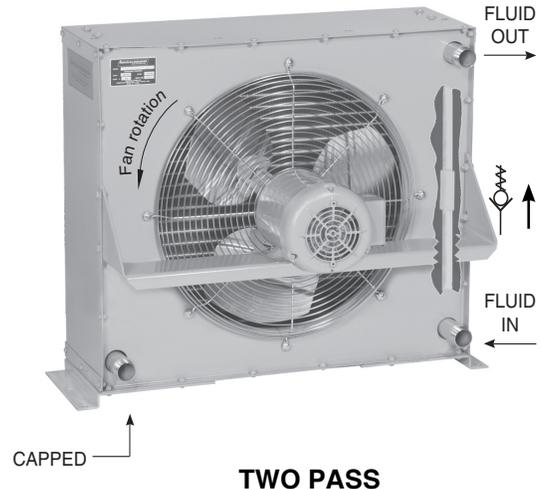
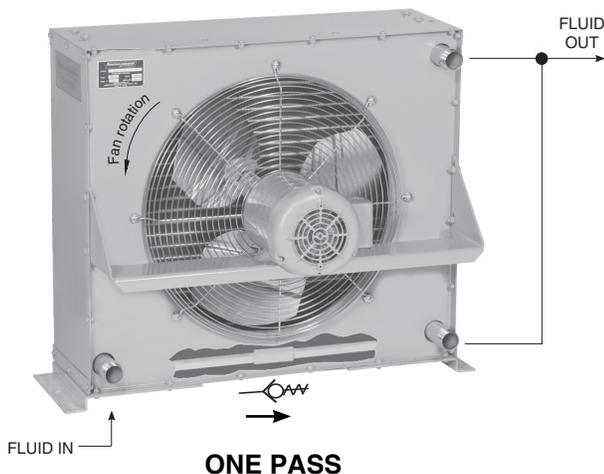
- Standard ACHM units are supplied with a hydraulic gear motor for the fan drive. The gear motor requires an external case drain be used during operation. The external case drain should be connected directly to hydraulic reservoir or a return line with not greater than 10PSIG back pressure. (NOTE: *Failure to properly connect and use the external case drain during motor operation could result in motor failure and external leakage of hydraulic fluid.*)
- Hydraulic motor flow requirements are provided with an efficiency rating of approximately 85%. Pressure requirements are calculated theoretical minimum operating requirements.
- Shaft adapters are used to bridge the differences in length between the fan and hydraulic motor.
- Maximum degree of fluid contamination, class 18/15 according to ISO 4406. Therefore, it is recommended to use a filter with retention rating of B20>. For longer life, it is recommended to use class 17/14 achievable with filter B10>-100.
- Fan rotation is clockwise when facing the motor shaft.
- Optional displacement motors available upon request.
- American industrial reserves the right to enact changes to hydraulic motor, brand, type, ratings, port sizes, or any additional non-specified attribute for standard products without notice.

COMMON DATA

Model	Air Flow		Sound Level dB(A) @ 7ft	Liquid Volume		Approx. Weight Electric		Approx. Weight Hydraulic		Serviceable Core
	CFM	m ³ /s		gal.	cm ³	lb	kg	lb	kg	
Model - 5 - *	494	.233	68	.59	2233	65	30	55	25	No
Model - 10 - *	710	.335	70	.72	2725	85	39	75	34	No
Model - 15 - *	1015	.479	70	.85	3218	95	43	85	39	No
Model - 20 - *	1555	.733	71	1.15	4352	130	59	110	50	No
Model - 25 - *	2240	1.05	72	1.52	5753	165	75	150	68	No
Model - 30 - *	3100	1.46	75	1.88	7116	190	86	175	79	No
Model - 35 - *	4370	2.06	76	2.26	8554	235	107	220	100	No
Model - 40 - *	5450	2.51	78	2.95	11166	275	125	260	118	No

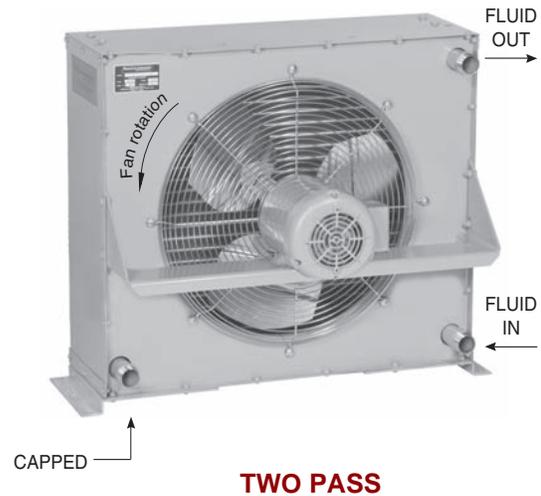
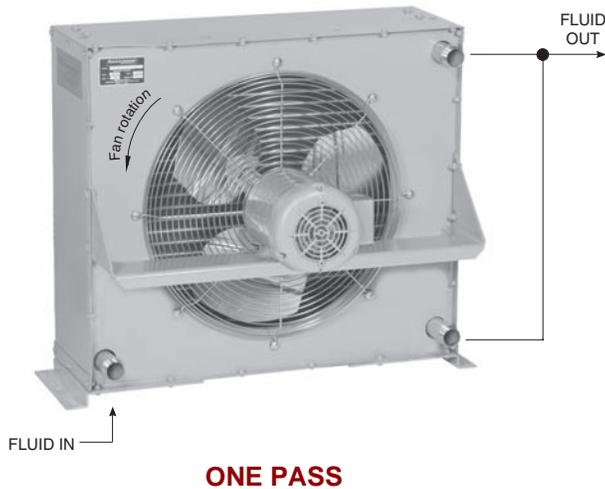
- NOTES:
- * Represents the options for motor drive.
 - To estimate the sound level at distances other than 13 feet (4 meters) from the cooler, add 6 db for each halving of distance, or subtract 6 db for each doubling of the distance.

PIPING HOOK UP *shown with relief valve*



note: AIHTI reserves the right to make reasonable design changes without notice.

PIPING HOOK UP



Receiving / Installation

a) Inspect unit for any shipping damage before uncrating. Indicate all damages to the trucking firms' delivery person and mark it on the receiving bill before accepting the freight. Make sure that the core and fan are not damaged. Rotate the fan blade to make sure that it moves freely. The published weight information located in this brochure is approximate. True shipment weights are determined at the time of shipping and may vary. Approximate weight information published herein is for engineering approximation purposes and should not be used for exact shipping weight. *Since the warranty is based upon the unit date code located on the model identification tag, removal or manipulation of the identification tag will void the manufacturers warranty.*

b) When handling the heat exchanger, special care should be taken to avoid damage to the core and fan. All units are shipped with wood skids for easy forklift handling

c) Standard Enamel Coating: American Industrial provides its standard products with a normal base coat of oil base air cure enamel paint. The enamel paint is applied as a temporary protective and esthetic coating prior to shipment. While the standard enamel coating is durable, American Industrial does not warranty it as a long-term finish coating. It is strongly suggested that a more durable final coating be applied after installation or prior to long-term storage in a corrosive environment to cover any accidental scratches, enhance esthetics, and further prevent corrosion. It is the responsibility of the customer to provide regular maintenance against chips, scratches, etc... and regular touch up maintenance must be provided for long-term benefits and corrosion prevention.

d) Special Coatings: American Industrial offers as customer options, Air-Dry Epoxy, and Heresite (Air-Dry Phenolic) coatings at additional cost. American Industrial offers special coatings upon request, however American Industrial does not warrantee coatings to be a permanent solution for

any equipment against corrosion. It is the responsibility of the customer to provide regular maintenance against chips, scratches, etc... and regular touch up maintenance must be provided for long-term benefits and corrosion prevention.

e) American Industrial recommends that the equipment supplied should be installed by qualified personnel who have solid understanding of system design, pressure and temperature ratings, and piping assembly. Verify the service conditions of the system prior to applying any air cooled heat exchanger series cooler. If the system pressure or temperature does not fall within the parameters on model rating tag located on the heat exchanger, contact our factory prior to installation or operation.

g) Heat exchanger should be securely fastened using the mounting foot brackets (included). All mounting holes should be used to secure unit into place. Optional horizontal mounting with vertical airflow is allowable by removing the foot brackets and using the (4 or 8) 1/2"-13 screw hard points located on the top and bottom panel for fastening. Heat exchanger unit must be set into a fabricated channel type frame with provision for additional motor support for heavy motors in conjunction with 1/2" frame fastening bolt points. Since the units are normally operated in the vertical position (horizontal airflow) reinforced motor support is suggested.

h) Connections should be made in "one pass" or "two pass" configurations exactly as indicated in the "piping hook up" illustration above. The process flow entering the "Fluid IN" port and exiting the "Fluid OUT" port eliminates air pockets and assures that the unit will stay completely flooded. Flexible hose can be applied to reduce the risk of core failure due to thermal expansion or system vibration. Piping alignment and support is required for hoses longer than four feet in length and for piping exerting more than 20 lbs of dynamic force. It is recommended that filtration be located ahead of the heat exchanger to prevent excessive

AC, ACF & ACHM Series *installation & maintenance*

backpressure and clogging.

i) With respect to the heat exchangers nozzle size, flow line sizes should be sized to handle the appropriate flow rate and system pressure drop requirements, normally flow line rates of about 8-12 feet per second and inlet pressure less than 100psig are experienced. If the flow line size is larger than the heat exchanger nozzle size, additional pressure loss beyond the published pressure loss data may occur.

j) Electric motors should be connected only to supply source of the same characteristics as indicated on the electric motor information plate. Prior to starting, verify that the motor and fan spin freely without obstruction. Check carefully that the fan turns in the correct rotation direction (normally counter clockwise) from the motor side (fan direction arrow). Failure to operate the fan in the proper direction could reduce performance or cause serious damage to the heat exchanger or other components. Fan blades should be rechecked for tightness after the first 100 hours of operation.

k) It is important to apply the catalog recommended flow rate for the hydraulic motor that corresponds with the specific model being used. A case drain is required for hydraulic motor installation. Failure to connect case drain can result in motor failure. The proper flow rate and direction to the hydraulic motor are critical to ensure fan direction and RPM. Exceeding the recommended RPM could result in fan failure and cause severe damage to the heat exchanger. See fan rotation on installation diagram

Maintenance

Regular maintenance intervals based upon the surrounding and operational conditions should be maintained to verify equipment performance and to prevent premature component failure. Since some of the components such as, motors, fans, load adapters, etc... are not manufactured by American Industrial, maintenance requirements provided by the manufacture must be followed.

a) Inspect the entire heat exchanger and motor/fan assembly for loosened bolts, loose connections, broken components, rust spots, corrosion, fin/coil clogging, or external leakage. Make immediate repairs to all affected areas prior to restarting and operating the heat exchanger or its components.

b) Heat exchangers operating in oily or dusty environments will often need to have the coil cooling fins cleaned. Oily or clogged fins should be cleaned by carefully brushing the fins and tubes with water or a non-aggressive degreasing agent mixture (*Note: Cleaning agents that are not compatible with copper, brass, aluminum, steel or stainless steel should not be used*). A compressed air or a water stream can be used to dislodge dirt and clean the coil further. Any external dirt or oil on the electric motor and fan assembly should be removed. *Caution: Be sure to disconnect the electric motor from its power source prior to doing any maintenance.*

c) In most cases it is not necessary to internally flush the coil. In circumstances where the coil has become plugged or has a substantial buildup of material, flushing the coil

with water or a solvent may be done. Flushing solvents should be non-aggressive suitable for the materials of construction. Serviceable Core® models can be disassembled and inspected or cleaned if required.

d) Most low horsepower electric motors do not require any additional lubrication. However, larger motors must be lubricated with good quality grease as specified by the manufacture at least once every 6-9 months or as directed by the manufacture. T.E.F.C. air ventilation slots should be inspected and cleaned regularly to prevent clogging and starving the motor of cooling air. To maintain the electric motor properly see the manufactures requirements and specifications.

e) Fan blades should be cleaned and inspected for tightness during the regular maintenance schedule when handling a fan blade care must be given to avoid bending or striking any of the blades. Fan blades are factory balanced and will not operate properly if damaged or unbalanced. Damaged fan blades can cause excessive vibration and severe damage to the heat exchanger or drive motor. Replace any damaged fan with an American industrial suggested replacement.

f) Air cooled exchanger cabinets are constructed using 7ga. through 18ga. steel that may be bent back into position if damaged. Parts that are not repairable can be purchased through American Industrial.

g) Coil fins that become flattened can be combed back into position. This process may require removal of the coil from the cabinet.

h) It is not advisable to attempt repairs to brazed joints of a brazed construction coil unless it will be done by an expert in silver solder brazing. Brazed coils are heated uniformly during the original manufacturing process to prevent weak zones from occurring. Uncontrolled reheating of the coil may result in weakening of the tube joints surrounding the repair area. In many instances brazed units that are repaired will not hold up as well to the rigors of the system as will a new coil. American Industrial will not warranty or be responsible for any repairs done by unauthorized sources. Manipulation in any way other than normal application will void the manufactures warranty.

i) Solely at the request of customers, American Industrial provides direct acting internal inlet port to outlet port bypass relief valves as an additional safe guard against excessive flow and over pressurization of the heat exchanger. American Industrial purchases and applies high quality hydraulic system cartridge valves and components made available for hydraulic system use. However, American Industrial does not specify, recommend, suggest, guarantee, or warrantee the internal relief valve or its performance to safe guard the heat exchanger from damage or prevent failure due to excessive flow or over pressurization. It is the ultimately the sole responsibility of the customer/user to verify with the original equipment manufacture all conditions associated with applying an additional system relief valve prior to application.