



**BASCO®
TYPE "OP"
(AEW) HEAT
EXCHANGERS**



API Heat Transfer

...world leaders in heat transfer technology



Quality, Value and Performance... An API Heat Transfer Tradition

For over 60 years, original equipment manufacturers and aftermarket providers have looked to API Heat Transfer for a wide variety of heat transfer products.

The Basco® Type "OP" optimizes standardized components in a highly configurable design for a wide variety of process applications.



Standard Heat Exchanger Designs Deliver Cost Effective Performance

First introduced in 1962, the Basco OP design has proven to be the preferred TEMA Type AEW shell & tube heat exchanger in the market. The OP, or "O" Ring Protected design, is available in single or two pass. The Basco design features removable tube bundle, nozzle location flexibility and a unique threaded O-ring retainer that permits removal of the reversing bonnet without disturbing the piping or draining the shellside fluid. Then removal of the channel cover permits full inspection and cleaning of the tube side.

The unique O-ring retainer prevents the possibility of over-tightening the bolts and damaging the O-rings. This same retainer incorporates two "tell-tale" holes that warn the operator of any fluid leaks from either the shell or tube side.

API Basco has standardized this design using stock components. This means the solution to your cooling requirement is closer than ever.

Quality

At API Heat Transfer, quality begins with properly applying the design to the process conditions, ensuring the design of the heat exchanger is mechanically correct for the service and applicable code requirements and finally manufacturing the unit to strict quality standards using only high quality code materials. The Basco OP has a proven track record for quality and service.

- Knowledgeable Application Engineers.
- Demand Flow Technology (DFT) to reduce lead-times, increase flexibility, improve efficiency, ensure consistently high quality and reduce cost.
- ASME, TEMA, API 614, ABS, USCG and other constructions available.

Value

Value means obtaining the best features and performance required to meet a particular need at the best price and lead-time. API Heat Transfer knows this and has designed the Basco OP to exceed your expectations.

- Unique double O-ring sealed floating heads provide leak detection and eliminate the possibility of over-tightening bolts, avoiding damage to the O-rings.
- Dome type shell nozzles available for higher flow rates at lower pressure drops.
- Highly efficient heat transfer with either bare or lo-fin tubes due to tight tolerances with baffles that minimizes fluid by-pass.
- Flexible configurations all manufactured from stock components means proven designs in the shortest possible lead-time.

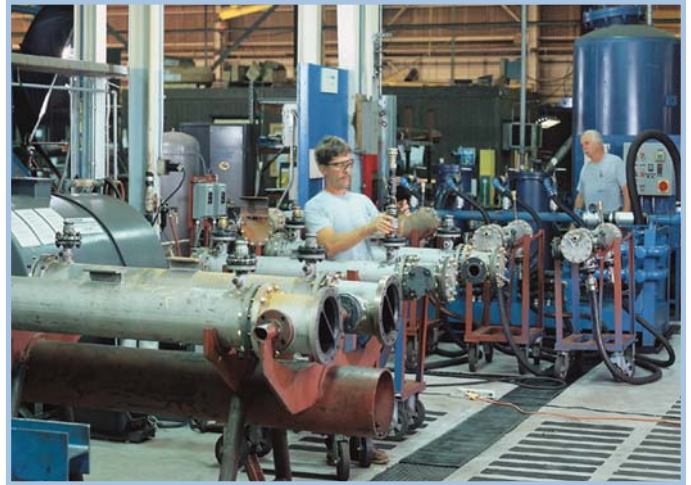
Performance

The wide range of OP configurations available have made these durable performers the first choice for a variety of cooling applications including:

- Compressed air
- Steam or gas turbine oil
- Hydraulic oil
- Lube oil
- Bearing water
- Jacket water
- Gland seal condensers
- Condensate cooling
- Ship board and marine engines

Quality materials machined and assembled by an experienced, dedicated workforce result in consistently high quality finished products

API Heat Transfer utilizes modern, high precision machining centers to convert raw materials into component parts. Then experienced skilled welders and assemblers transform these components into superior quality finished heat exchangers. High capacity oil flush stations, in-house shot blasting, controlled final paint application and even value-added packaging with other components such as valves and fans result in a heat exchanger fit for purpose and ready to provide years of trouble free service.



Certified Demand Flow Production Methods and ISO Quality

API Heat Transfer has fully embraced the superior quality, improved work-flow and cost controls inherent in Demand Flow Technology (DFT) manufacturing. Products are made "on-demand" from components and in-line support machining centers. With DFT, non-value procedures are eliminated, inventory costs are reduced and quality is maintained and verified at every phase of the assembly. API also has ISO 9001 certification assuring world-class manufacturing methods and full accountability to our customers.

DFT and ISO 9001 result in reduced cycle times, increased flexibility, higher efficiencies, consistently high quality, and ...



MORE VALUE FOR OUR CUSTOMERS!



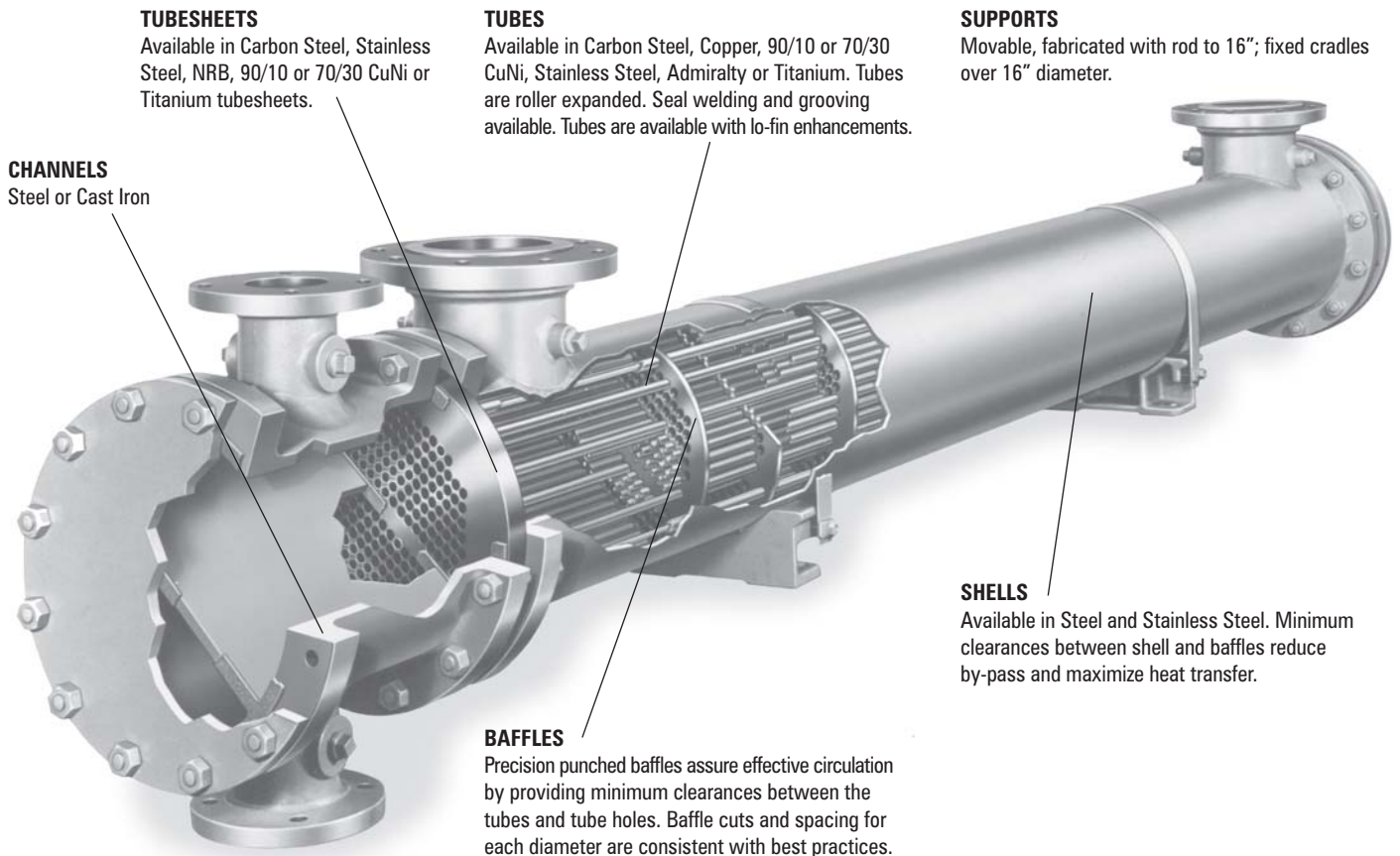
As one of the largest US manufacturers of industrial heat exchangers, API Heat Transfer's investment in machinery and people, quality procedures and manufacturing processes, has proven to be the right strategy to earn our customers' business over and over again.



"OP" Exchanger Design Technology

Basco Type "OP" Heat Exchanger

Offers cost-effective performance by utilizing standardized designs and stock components.

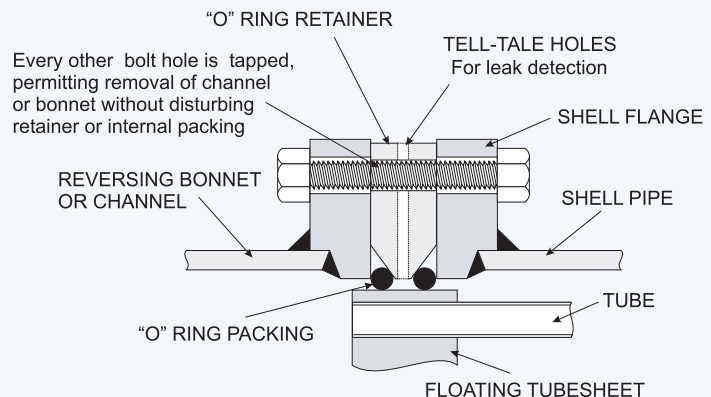


Basco's Double "O" Ring Seal Protection

Permits tube bundle to expand and contract without strain or intermixing of shell and tubeside fluids. O-Rings retain compression and are unaffected by vibration and temperature changes. Telltale holes reveal any leakage.

Special Feature

The unique construction of the Basco OP permits inspection and maintenance of the tubeside without draining the shellside or disturbing the piping.



Selecting Type "OP" Exchangers

Standard Materials From Stock

Shell	Steel
Channel	Steel or Cast Iron
Reversing Bonnet.	Steel or Cast Iron
"O" Rings	Buna "N"
Tubesheets	Steel or N RB
Baffles	Steel or Brass
Tubes	Admiralty (Bare or Lo-Fin)
	Copper (Bare)



Standard Design Pressures & Temperatures

		Design Press.		Test Press.		Design Temp*	
		psi	kg/cm2	psi	kg/cm2	°F	°C
Shellside	All models	150	10.5	per code		300°	149°
 Tubeside	3"-18" models	150	10.5	per code		300°	149°
	20"-42" models	75	5.3	per code		300°	149°

Complies with ASME-TEMA "C", AEW design. USCG, ABS and TUV approved.
 *Non-ferrous tubesheets designed for 300°F mean metal temperature.

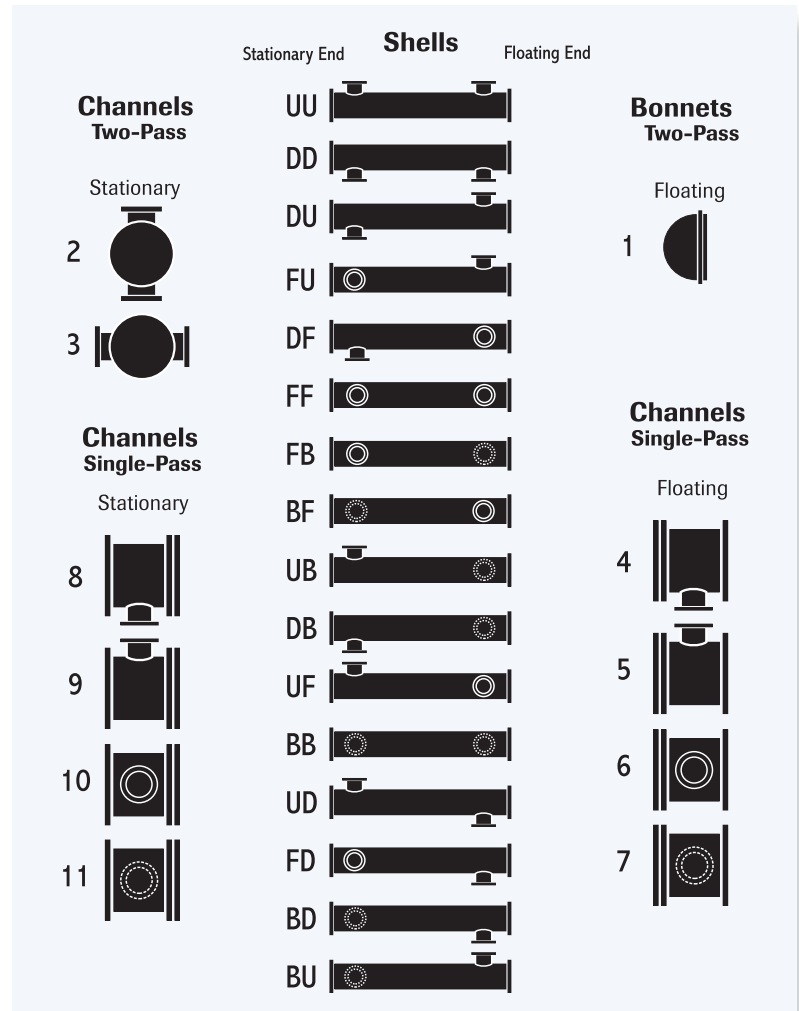
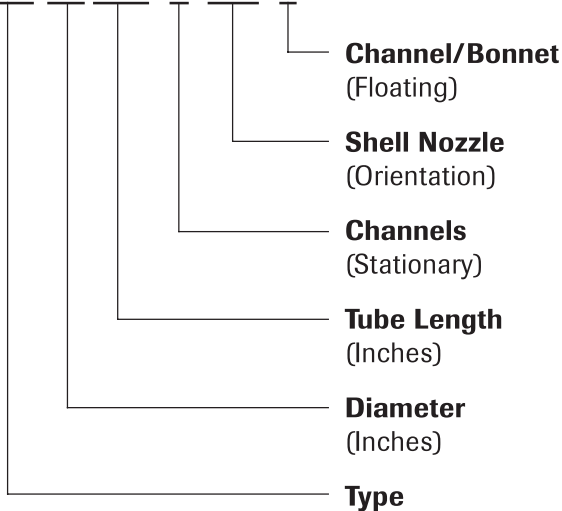
Determining Nozzle Locations

Single and two-pass models with a wide variety of nozzle locations are available. Select the desired nozzle location for the stationary and floating end of the exchanger from the chart on this page.

Example:

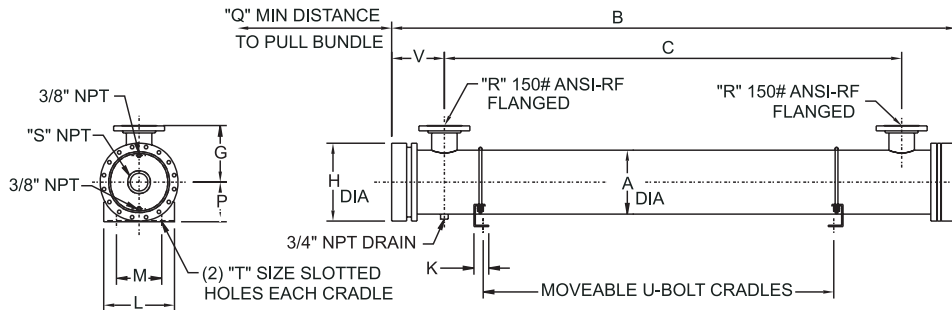
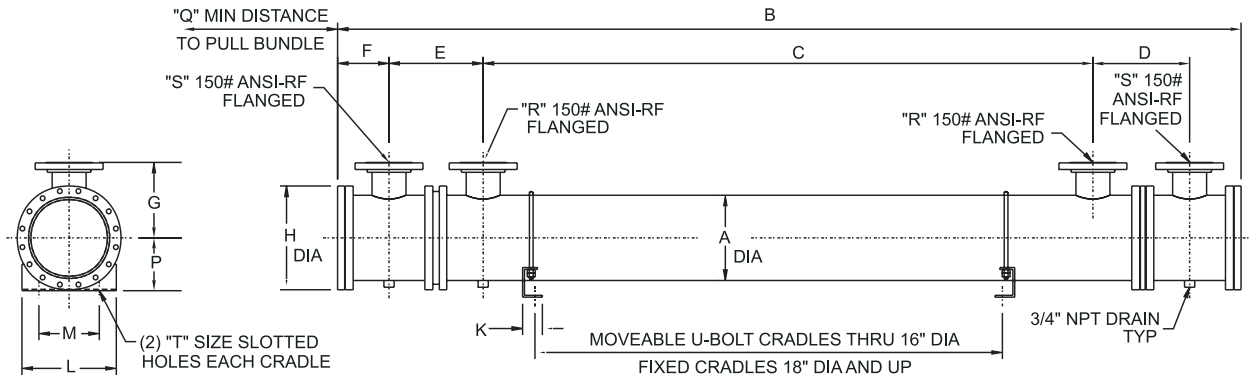
The complete model designation for an 18" diameter, Type OP with a 120" tube length would be as follows:

OP 18120-9-UU-5



Nozzle locations

Single Pass Type "OP" Heat Exchangers



Model	A	B	C	D	E	F	G	H	K	L	M	P	Q	R	S	T	V
03120	3 1/2	137 7/16	111	8 9/16	8 3/8	4 3/4	7	6 3/8	2	5	3	3 1/2	118	1	1 1/2	5/8 x 7/8	6 9/16
04120	4 1/2	137 9/16	111	8 11/16	8 1/2	4 7/8	7	7 3/8	2	6	4	4	118	1 1/2	2	5/8 x 7/8	6 9/16
05120	5 9/16	140 3/16	111	9 3/16	9	5 1/2	7 1/2	8 1/2	2	7	5	4 1/2	118	1 1/2	2 1/2	5/8 x 7/8	6 9/16
06120	6 5/8	137 15/16	110 1/2	8 7/8	8 11/16	4 15/16	5 11/16	9	2	8	6 1/2	5	117	2	3	5/8 x 7/8	
08120	8 5/8	140 15/16	109	10 3/8	10 3/16	5 11/16	9	11 1/2	2	10	6 1/2	6	115	3	4	5/8 x 7/8	
10120	10 3/4	145 3/16	108	11 7/8	11 11/16	6 13/16	10	13 3/4	2 1/4	12 1/2	8	7	113	4	6	3/4 x 1	
12120	12 3/4	145 9/16	105 1/2	13 1/16	13 1/8	6 15/16	11	15 3/4	2 1/4	14 1/2	10	8 1/4	113	6	6	3/4 x 1	
14120	14	150 11/16	103	15 9/16	15 5/8	8 1/4	13	17	2 1/2	16	11	9 1/2	110	8	8	3/4 x 1 1/4	
16120	16	150 15/16	102 7/8	15 9/16	15 3/4	8 3/8	14	19	2 1/2	18	12	10 1/2	110	8	8	3/4 x 1 1/4	
18120	18	153 11/16	102 3/4	16 3/16	16 1/2	9 1/8	15	21	5 3/4	14	11	12 1/2	108	8	8	7/8	
20120	20	153 3/16	103 1/4	16 1/16	16 1/8	8 7/8	16	23	5 3/4	14 1/2	11 1/2	13 1/2	109	8	8	7/8	
22120	22	153 3/16	101 3/4	16 13/16	16 7/8	9 3/16	17	25	5 3/4	15	12	14 1/2	109	8	8	7/8	
24120	24	158 5/16	101	17 1/16	17 3/8	10 7/16	18	27	5 3/4	15 1/2	12 1/2	15 1/2	107	8	10	7/8	
25120	25 3/4	160 1/2	99 3/4	19 1/4	19 3/8	11 1/16	19	29 1/4	5 3/4	16	13	16 1/2	105	10	10	7/8	
27120	27 3/4	162 1/2	98 7/8	20 1/8	20 3/8	11 9/16	20	31 1/4	5 3/4	17	14	17 1/2	104	10	10	7/8	
29120	29 3/4	166 5/8	98 1/4	21 3/8	21 3/4	12 5/8	21	33 1/4	5 3/4	18	15	18 1/2	102	10	12	7/8	
31120	31 3/4	166 3/4	97 1/4	21 7/8	22 1/4	12 11/16	22	35 1/4	5 3/4	19	16	19 1/2	102	10	12	7/8	
33120	33 3/4	173	92 7/8	25 7/8	26 1/8	14 5/16	23	37 1/4	5 3/4	22	18 1/2	20 1/2	99	12	14	1	
35120	35 3/4	173	91 1/8	26 1/4	26 7/8	14 3/8	24	39 1/4	5 3/4	23	19 1/2	21 1/2	99	12	14	1	
37120	37 3/4	174 1/16	89 1/2	27 3/16	26	14 11/16	25	41 3/8	5 3/4	24	20 1/2	22 1/2	98	14	14	1	
39120	39 3/4	180 5/16	88 3/4	29 1/16	29 7/8	16 5/16	26	43 3/8	5 3/4	25	21 1/2	23 1/2	95	14	16	1	
42120	43	182 1/2	86 1/8	30 3/4	31 3/4	16 15/16	28	46 1/2	5 3/4	26	22 1/2	25	94	16	16	1	

Dimensions are in inches unless specified otherwise. Catalog dimensions are subject to variations. Use only certified drawings for construction.

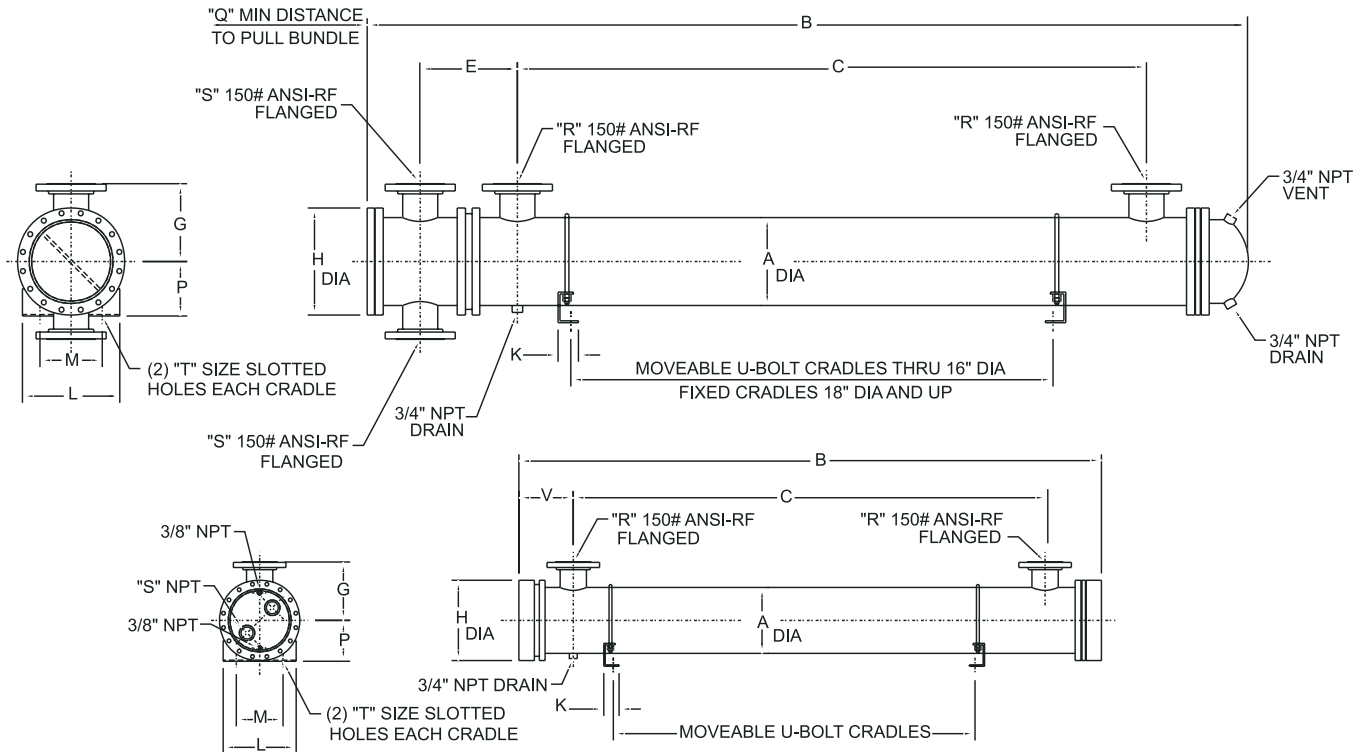
Using The Dimension Chart

Dimension chart shows common dimensions with 120" tube length. You must adjust any length dimensions accordingly for your model.

Example: Dimensional adjustments for a model 10144-1 with steel channels would be as follows:

"B" (overall length) - 145 3/16" + 24" = 169 3/16"; "C" (nozzle ctr-to-ctr) - 108" + 24" = 132"; "Q" (bundle removal) - 113" + 24" = 137"

Two Pass Type "OP" Heat Exchangers



Model	A	B	C	D	E	F	G	H	K	L	M	P	Q	R	S	T	V
03120	3 1/2	129	111	5 7/8	7 7/8	4 1/4	7	6 3/8	2	5	3	3 1/2	118	1	1	5/8 x 7/8	6 9/16
04120	4 1/2	130 1/2	111	6 1/8	8 1/2	4 7/8	7	7 3/8	2	6	4	4	118	1 1/2	1 1/2	5/8 x 7/8	6 9/16
05120	5 9/16	131 1/4	111	6 3/4	8 1/2	5 1/2	7 1/2	8 1/2	2	7	5	4 1/2	118	1 1/2	1 1/2	5/8 x 7/8	6 9/16
06120	6 5/8	132 15/16	110 1/2	8 13/16	8 11/16	4 15/16	8	9 1/2	2	8	6 1/2	5	117	2	2	5/8 x 7/8	
08120	8 5/8	135 1/16	109	10 3/16	10 3/16	5 11/16	9	11 1/2	2	10	6 1/2	6	115	3	3	5/8 x 7/8	
10120	10 3/4	138 3/16	108	11 11/16	11 11/16	6 13/16	10	13 3/4	2 1/4	12 1/2	8	7	113	4	4	3/4 x 1	
12120	12 3/4	139	105 1/2	13 7/16	13 1/8	6 15/16	11	15 3/4	2 1/4	14 1/2	10	8 1/4	113	6	4	3/4 x 1	
14120	14	142 1/16	103	15 3/16	15 5/8	8 1/4	13	17	2 1/2	16	11	9 1/2	110	8	6	3/4 x 1 1/4	
16120	16	142 13/16	102 7/8	15 13/16	15 3/4	8 3/8	14	19	2 1/2	18	12	10 1/2	110	8	6	3/4 x 1 1/4	
18120	18	144 11/16	102 3/4	16 5/16	16 1/2	9 1/8	15	21	5 3/4	14	11	12 1/2	108	8	6	7/8	
20120	20	144 5/8	103 1/4	16 3/8	16 1/8	8 7/8	16	23	5 3/4	14 1/2	11 1/2	13 1/2	109	8	8	7/8	
22120	22	145 7/16	101 3/4	17 5/8	16 7/8	9 3/16	17	25	5 3/4	15	12	14 1/2	109	8	8	7/8	
24120	24	148 3/16	101	17 3/8	17 3/8	10 7/16	18	27	5 3/4	15 1/2	12 1/2	15 1/2	107	8	10	7/8	
25120	25 3/4	149 7/8	99 3/4	19 11/16	19 3/8	11 1/16	19	29 1/4	5 3/4	16	13	16 1/2	105	10	10	7/8	
27120	27 3/4	151 1/2	98 7/8	20 11/16	20 3/8	11 9/16	20	31 1/4	5 3/4	17	14	17 1/2	104	10	10	7/8	
29120	29 3/4	153 7/8	98 1/4	21 1/4	21 3/4	12 5/8	21	33 1/4	5 3/4	18	15	18 1/2	102	10	12	7/8	
31120	31 3/4	154 1/2	97 1/4	22 5/16	22 1/4	12 11/16	22	35 1/4	5 3/4	19	16	19 1/2	102	10	12	7/8	
33120	33 3/4	158 1/16	92 7/8	24 3/4	26 1/8	14 5/16	23	37 1/4	5 3/4	22	18 1/2	20 1/2	99	12	14	1	
35120	35 3/4	158 1/2	91 1/8	26 1/8	26 7/8	14 3/8	24	39 1/4	5 3/4	23	19 1/2	21 1/2	99	12	14	1	
37120	37 3/4	159 1/2	89 1/2	27 5/16	26	14 11/16	25	41 3/8	5 3/4	24	20 1/2	22 1/2	98	14	14	1	
39120	39 3/4	161 5/16	88 3/4	28 3/8	29 7/8	16 5/16	26	43 3/8	5 3/4	25	21 1/2	23 1/2	95	14	14	1	
42120	43	165 3/8	86 1/8	30 9/16	31 3/4	16 15/16	28	46 1/2	5 3/4	26	22 1/2	25	94	16	16	1	

Dimensions are in inches unless specified otherwise. Catalog dimensions are subject to variations. Use only certified drawings for construction.

Using The Dimension Chart

Dimension chart shows common dimensions with 120" tube length. You must adjust any length dimensions accordingly for your model.

Example: Dimensional adjustments for a model 10144-2 with steel channels would be as follows:

"B" (overall length) - 138 3/16" + 24" = 162 3/16"; "C" (nozzle ctr-to-ctr) - 108" + 24" = 132"; "Q" (bundle removal) - 113" + 24" = 137"

API Heat Transfer

API Heat Transfer Inc.
2777 Walden Avenue
Buffalo, New York 14225
(716) 684-6700
www.apiheattransfer.com

Divisions:

API Airtech ISO-9001 Certified

Air Cooled Aluminum Heat Exchangers

91 North Street • P.O. Box 68

Arcade, New York 14009-0068

(585) 496-5755 • Fax: (585) 496-5776

API Basco ISO-9001 Certified

Basco®/Whitlock® Shell & Tube Heat Exchangers

2777 Walden Avenue

Buffalo, New York 14225

(716) 684-6700 • Fax: (716) 684-2129

API Schmidt-Bretten Americas

Plate Heat Exchangers and Thermal Systems

2777 Walden Avenue

Buffalo, New York 14225

(716) 684-6700 • Fax: (716) 684-2129

API Schmidt-Bretten GmbH. & Co. KG

ISO-9001 Certified

Plate Heat Exchangers and Thermal Systems

Langenmorgen 4

D-75015 Bretten, Germany

(49)725253-0 • Fax: (49)725253-200

API Heat Transfer (Suzhou) Co. Ltd.

Air Cooled Aluminum Heat Exchangers

Shell & Tube Heat Exchangers

Plate Heat Exchangers

156 Qingqiu Street, 3rd District

Suzhou Industrial Park

Suzhou, Jiangsu 215126 China

(86)512-88168000 • Fax: (86)512-88168003

**Contact your local API Sales Representative
or API Heat Transfer directly
toll-free @ 1-877-API-HEAT
e-mail @ sales@apiheattransfer.com**

Other Products Available from API Heat Transfer

Hubbed Shell and Tube Heat Exchangers



Straight or U-tube, fixed or removable tubesheet general purpose exchangers designed to cool oil, water, compressed air and other industrial fluids. A variety of port configurations and materials are available. Diameters from 3" (7.62 cm) to 12" (30.48 cm).

TEMA Shell and Tube



A wide variety of TEMA types are available using pre-engineered or custom designs in various sizes and materials. Shell diameters from 6" (15.24 cm) to 60" (152.4 cm), ASME, TEMA, API, ABS, TUV, PED and other code constructions available.

Extended Surface



Unique, patented plate-fin design for centrifugal or axial compressor intercooler and aftercooler applications and minimal pressure loss. Design eliminates separators. ASME code design is standard. Diameters from 20" (50.8 cm) to 120" (304.8 cm).

Gasketed Plate Heat Exchangers



The Schmidt line of gasketed plate & frame heat exchangers provide excellent heat transfer in a compact space. Plates are pressed from stainless steel, titanium and other alloys. Gaskets of nitrile, EPDM, Viton®, compressed fiber and Teflon® are used. Capacities range from 0.5 to 10,000 GPM.

Pipeline Aftercoolers



Straight-tube, counterflow aftercoolers designed to yield cool, dry compressed air. Available with or without accompanying moisture separators and constructed to a wide variety of design codes. Diameters from 3" (7.62 cm) to 42" (106.68 cm).

Moisture Separators



Compact centrifugal separators efficiently remove entrained moisture and solids from compressed air or gas streams. Available in capacities from 22 to 4,000 SCFM, the Type TC comes with an integral trap assembly and the Type T is designed for a remote trap.

Air-Cooled Heat Exchangers



High efficiency, brazed aluminum coolers for cooling a wide variety of liquids and gases with ambient air. Lightweight, yet rugged. Capable of cooling multiple fluids in single unit. Models can be supplied with cooling fan and a variety of drives.

SigmaWig Welded Plate Heat Exchangers



Fully welded and require no gaskets. Available in all 316SS construction, titanium and other higher alloy materials. These units have a design temperature of 750°F and can handle operating pressures as high as 360 psi with an ASME Code stamp.