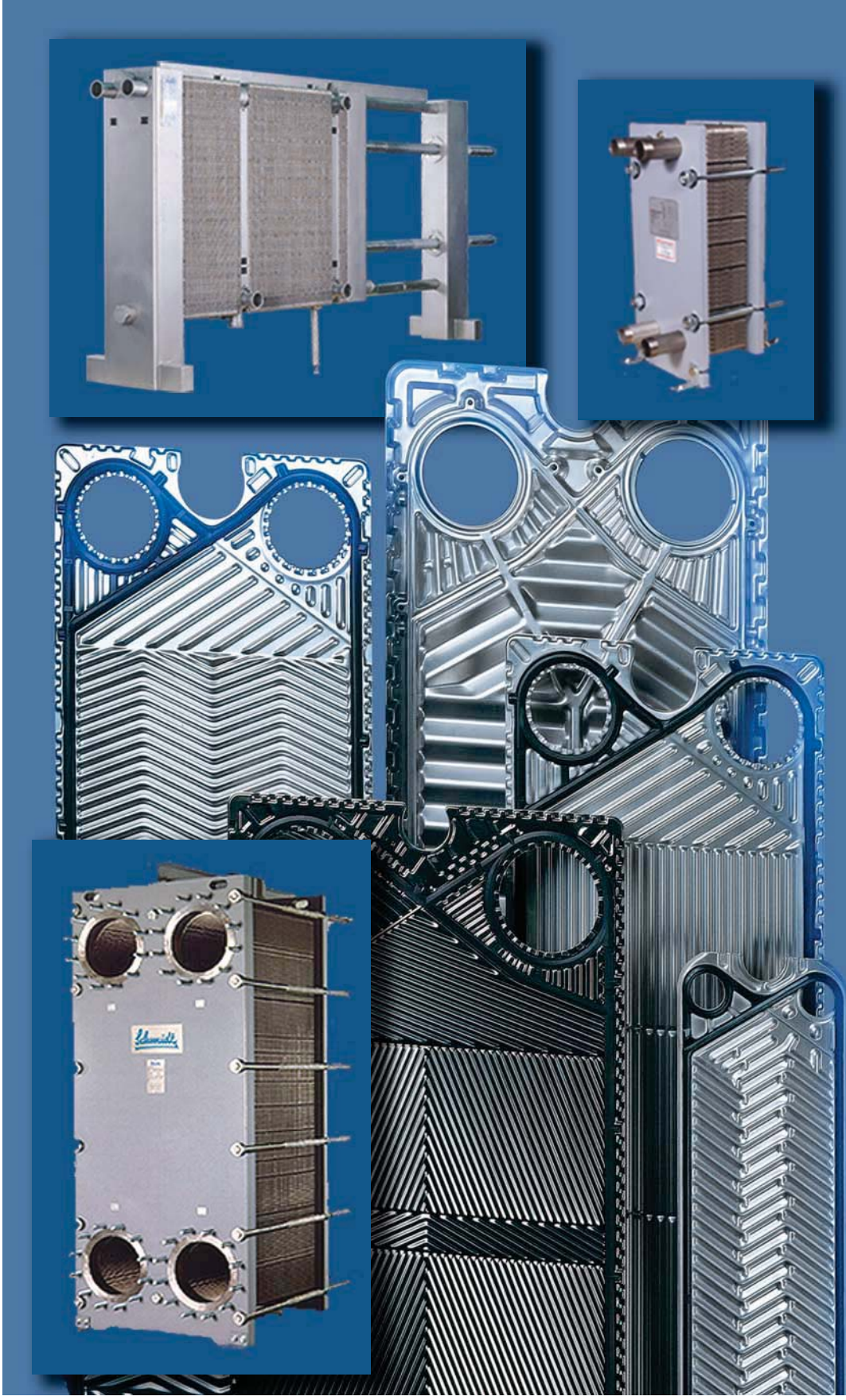
THERMAL PRODUCTS INC.
Engineered Solutions To Industrial Applications



SCHMIDT-BRETTEN GASKETED PLATE HEAT EXCHANGERS

API Heat Transfer

...world leaders in heat transfer technology

Thermal Products, Inc. / Phone: (518) 877-0231 **/ Email:** sales@thermalproducts.com / **Website:** www.thermalproducts.com

API Schmidt-Bretten

With more than 125 years of experience , API Schmidt-Bretten is the best choice for your heat transfer needs!

Leadership in plate heat exchangers since 1879.

API Schmidt-Bretten traces its roots to 1879 in Germany when company founder Wilhelm Schmidt patented a new, highly efficient counter flow external surface cooler. Following a brisk demand by the brewing and dairy industries both in Germany and abroad, a large number of the external surface coolers were produced.

1879
Counter flow external surface cooler

2002
Sigma 149

1932
Spiral Plate Unit

Schmidt's patented surface cooler was followed by the development of the first closed or pressurized spiral type plate heat exchanger. The unit was constructed of brass plates milled with spiral channels and then chrome plated. Subsequent models utilized stainless steel plates pressed to form corrugated flow channels.

The spiral heat exchanger provided the first opportunity for separate sections for pasteurizing and heat recovery within a single unit.

A major development by Schmidt in 1938 was the horizontal crossflow plate heat exchanger, available in two sizes. By 1948, the first design of a new generation of plate heat exchangers (SIGMA) was introduced. Continuous and systematic development by API Schmidt-Bretten led to the design of higher performance plates which maximized heat transfer coefficients.

Today, API Schmidt-Bretten offers one of the largest selections of plate heat exchangers, available with different surface areas, corrugations, plate materials, plate thickness, and gaskets.

Automated Production

API Schmidt-Bretten's commitment to meeting production demands is reflected by our continual improvement in manufacturing areas.

Our unique plate pressing equipment takes the plate material from its raw state and converts it to finished product in moments.

Pressing tools are changed in minutes to allow easy conversion from one plate style to another.

Special sensing equipment controls the pressure applied in the process to guarantee uniform thickness and the highest quality.

High performance gaskets for heat exchanger plates are available as mechanically attached or glued on.

Continuous Product Development

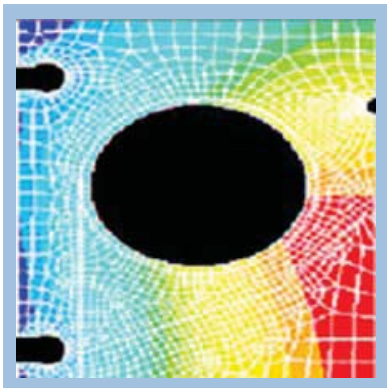
API Schmidt-Bretten continually develops new plate heat exchangers to meet the requirements of the many markets we serve. The most recent accomplishments of our program have been the development of the “X” series plate, and the all-welded style plate heat exchanger.

Competitive Lead Times

Each heat exchanger is immediately configured and entered into our system upon receipt of a sales order which allows API Schmidt-Bretten to offer competitive lead times.

Engineering Expertise

API Schmidt-Bretten engineers have the experience to quickly and efficiently provide economic, tailor-made solutions to meet your needs. We utilize state-of-the-art software programs to bring high quality, cost effective solutions to market faster.



Markets Served Include:

Beverage

Brewery

Chemical

Dairy

Food

Heat Recovery

HVAC

Marine

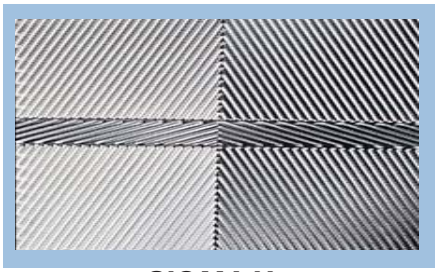
Pharmaceutical

Power

Refrigeration

Steel Production

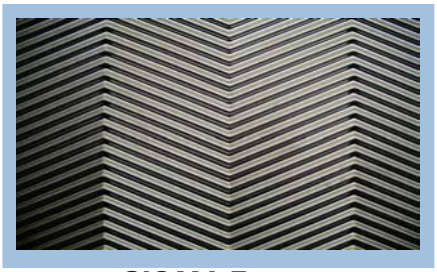
Thermal Plate Options



SIGMA X

SIGMA X Series High Performance Plates

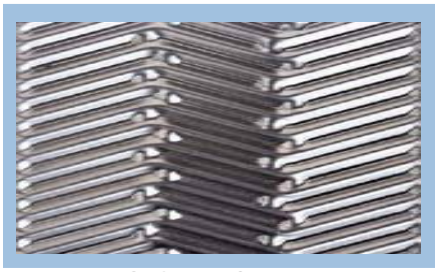
- Suitable for industrial and HVAC applications with clean, homogeneous, solid-free liquids.
- Thin film plates with corrugation depths between 2.0 and 3.0 mm for high thermal performance.
- Hard and soft plate corrugation patterns in the herringbone design to provide the most economic thermal solution for each application.
- Plates can be equipped with either the SIGMAFix adhesive-free gasket system or with glued high performance gaskets.



SIGMA 7

SIGMA 7 Series Universal Plates

- Suitable for industrial, HVAC and liquid food applications.
- Hard and soft plate corrugation patterns designed to provide the most economic thermal solution for each application.
- Corrugation depths vary between 2.5 and 4.0 mm.
- Plates can be equipped with either the SIGMAFix adhesive-free gasket system or with glued high performance gaskets.
- Available in various patterns and a wide range of materials.



SIGMA 2

SIGMA 2 Series Specialized Free Flow Plates

- For industrial and food applications with viscous, fibrous or pulpy liquids, e.g. for pasteurization of beverages and pulpy products.
- Free-flow plates with a corrugation depth between 4.5 and 5.5 mm.
- Wide range of plate and gasket materials.

Semi-Welded

Semi-Welded Plates

- Combines the high thermal efficiency, compact design, and low volumetric liquid hold-up of a plate heat exchanger with the leak prevention of a shell & tube.
- Ideal for ammonia applications.

Plate Material Options	304/304L	Incoloy 825	Nickel	Titanium
	316/316L	Inconel	SMO 254	Titanium-Pd
	Hastelloy	Monel	Tantalum	Others - consult factory

Gasket Options

Gasket Sealing

Superior Gasket Sealing

- The sealing system used with the API Schmidt-Bretten heat exchanger plates is designed as a one piece molded gasket with a vented double gasket boundary.
- This design prevents the two process fluids from mixing and gives you added peace of mind.
- If there are any leaks at the gasket around the plate or port areas, the leakage is to atmosphere and easily detectable.

SIGMAFix

SIGMAFix Gasket

- Our patented, adhesive-free gasket fastening system allows quick and easy gasket replacement through laterally built in mounting clips.
- Ensures high resistance against front-face sticking and minimizes the risk of the gasket being stuck to the following plate.
- The large area of contact between the mounting clips and the heat exchanger plate ensures a better attachment to the plate and a superior gasket seal.

SIGMACoat

SIGMACoat Gasket

- SIGMACoat gasket has a protective PTFE coating over an elastomer (NBR or EPDM) core. This ensures a highly resistant gasket against aggressive mediums at processing temperatures of up to 320 °F.
- Prolongs gasket life which ensures production with minimum downtime.
- Available in the patented SIGMAFix, adhesive-free gasket fastening system.

SIGMA Glued

SIGMA Glued Gasket

- Gaskets are glued into place by a computer-controlled robotic process that ensures consistent mixing and application.
- All glued gaskets are heat cured for maximum bond strength.
- Available for all of our standard plate heat exchangers in various gasket materials.

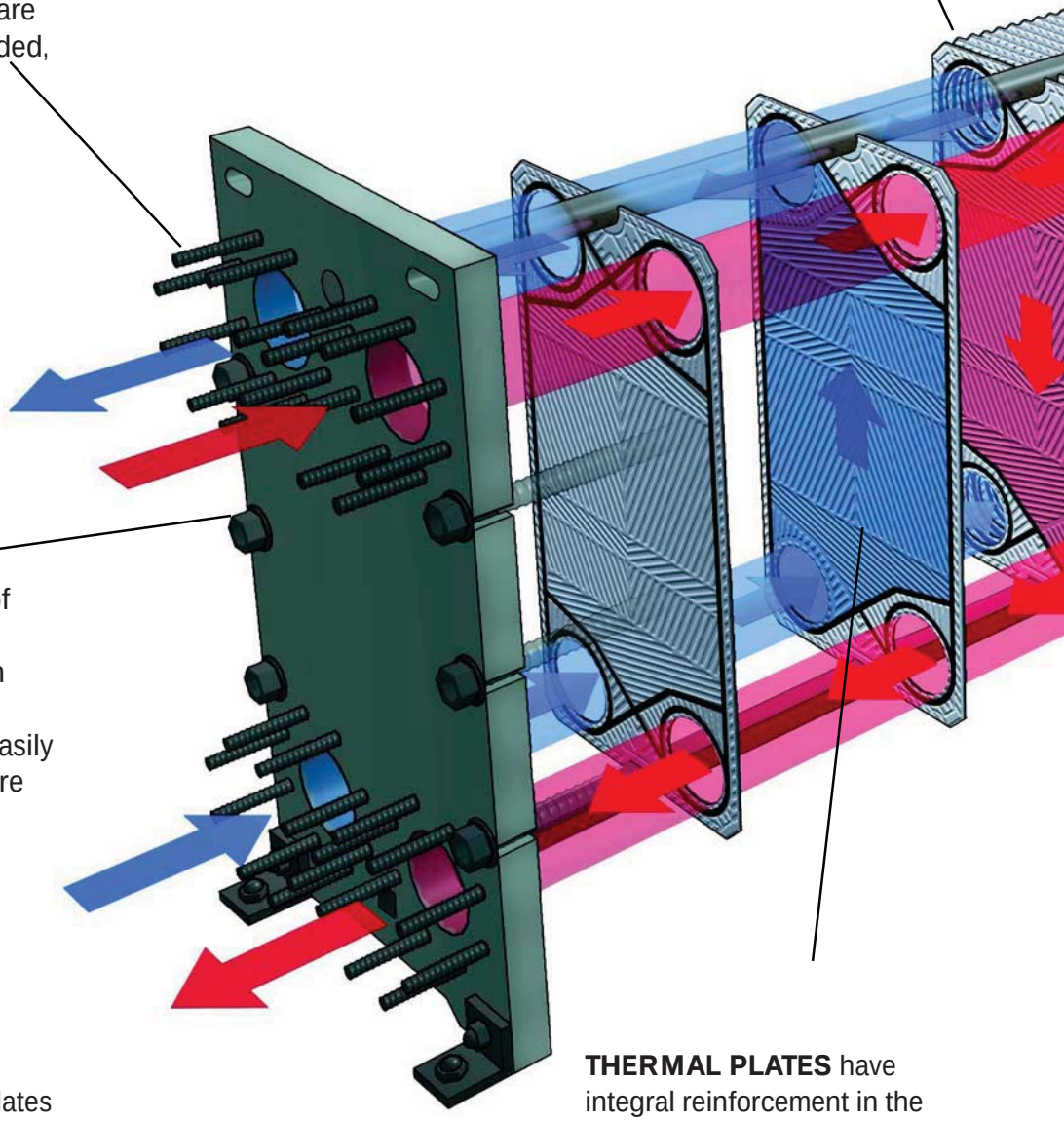
Gasket Material Options	Nitrile	Viton
	EPDM	AFM 34
	PTFE	Sil C-4400

Features at a Glance

PRESSURE RETAINING COVERS are designed in accordance with ASME code. These plates are designed so no external reinforcing is required. Steel pressure plates are provided with an epoxy paint finish for durability and extended life.

ELASTOMER GASKETS can be either mechanically fixed (adhesive-free) or glued to the heat transfer plate.

PIPING CONNECTIONS are available as studded, threaded, flanged, or sanitary clamp.



TIGHTENING BOLT ASSEMBLIES are made of zinc coated alloy steel or stainless steel for corrosion resistance and ease of opening. All tightening is easily done from the fixed pressure plate end of the unit.

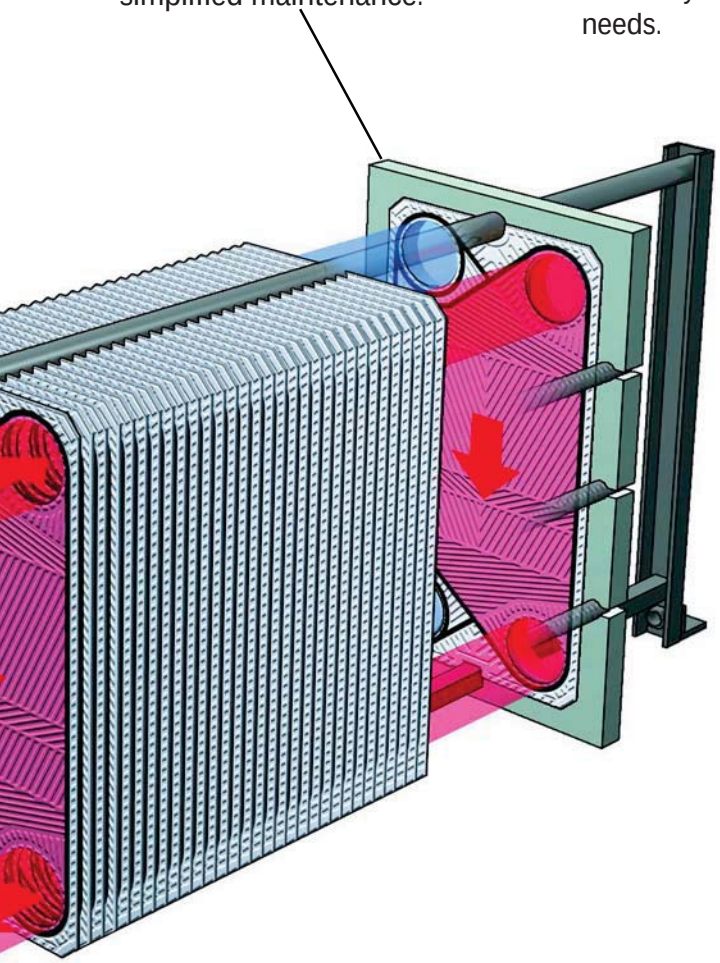
HEAT TRANSFER PERFORMANCE

The unique design of API Schmidt-Bretten's thermal plates produces high heat transfer coefficients for a given application, resulting in lower surface area and lower capital cost.

THERMAL PLATES have integral reinforcement in the neck area of the plate. This yields greater sealing reliability and allows for greater operating pressures.

Schmidt Advantages

MOVEABLE PRESSURE PLATE allows easy access to heat transfer surfaces for simplified maintenance.



VERSATILITY
Plates are formed in a wide variety of patterns and materials to meet your heat transfer needs.

LOWER LIQUID VOLUME
Since the gap between plates is small, a plate heat exchanger contains only low quantities of process fluids reducing cost due to lower volume requirements.

EXPANDABLE
Plate arrangement can be changed and plates can be added or removed. It is possible to install several sections in one frame and permit several process steps in a single unit.

DURABILITY
Under the gasket groove the heat exchanger plates are integrally reinforced on both sides.

MINIMAL FOULING
Fouling of the heat transfer surfaces of an API Schmidt-Bretten plate heat exchanger is extraordinarily low. The high induced turbulence yields a self-cleaning effect which minimizes fouling.

RELIABILITY
The unique design of API Schmidt-Bretten plates allows for optimum alignment during assembly for greatest sealing capabilities.

PEAK EFFICIENCY
With high heat transfer coefficients and a true counter-current flow path, API Schmidt-Bretten plate heat exchangers can cool hot fluids to within one degree of the cold fluid making heat recovery in excess of 96% technically and economically possible.

EASY MAINTENANCE
Units can be cleaned without dismantling by clean-in-place (CIP) systems, by reverse flow cleaning or by addition of suitable cleaning fluids.
Plate removal is easily accomplished by releasing the tightening bolts that compress all of the heat transfer plates.

API Heat Transfer

API Heat Transfer, Inc.
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Divisions:

API Airtech *ISO-9001 Certified*

Air Cooled Aluminum Heat Exchangers

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Arcade, New York 14009-0068

(585) 496-5755 • Fax: (585) 496-5776

API Basco *ISO-9001 Certified*

Basco®/Whitlock® Shell & Tube Heat Exchangers

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Plate Heat Exchangers and

Thermal Process Systems

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Visit us at www.apiheattransfer.com or e-mail us at sales@apiheattransfer.com

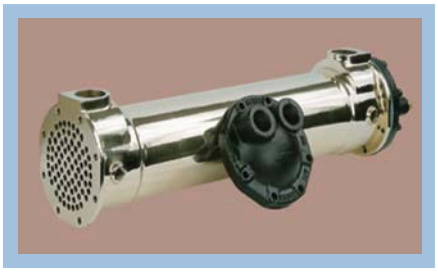
Form PHE-600 8/04

Other Products Available from API Heat Transfer

Brazed Plate Heat Exchangers

Off-the-shelf, standard units reflects the latest in plate heat exchanger technology for maximum performance and low cost. Ideal for OEM or aftermarket applications. Many Models stocked and ready to ship. Models for process or refrigeration applications.

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.



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).

SigmaStar® Evaporator Systems

Utilizing the SigmaStar® plate, this evaporator system is designed to remove water or other solvents, while concentrating solutions. SigmaStar® systems can be pre-assembled and pre-tested prior to shipment for quick and easy start up.

OptiDesign®

Straight-tube, removable bundle exchangers made from standard components. Floating tube sheet for seal leak detection and easy maintenance. Diameters from 3" (7.62 cm) to 42" (106.68 cm). ASME, API, TEMA, ABS and other codes available.

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).

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.

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