

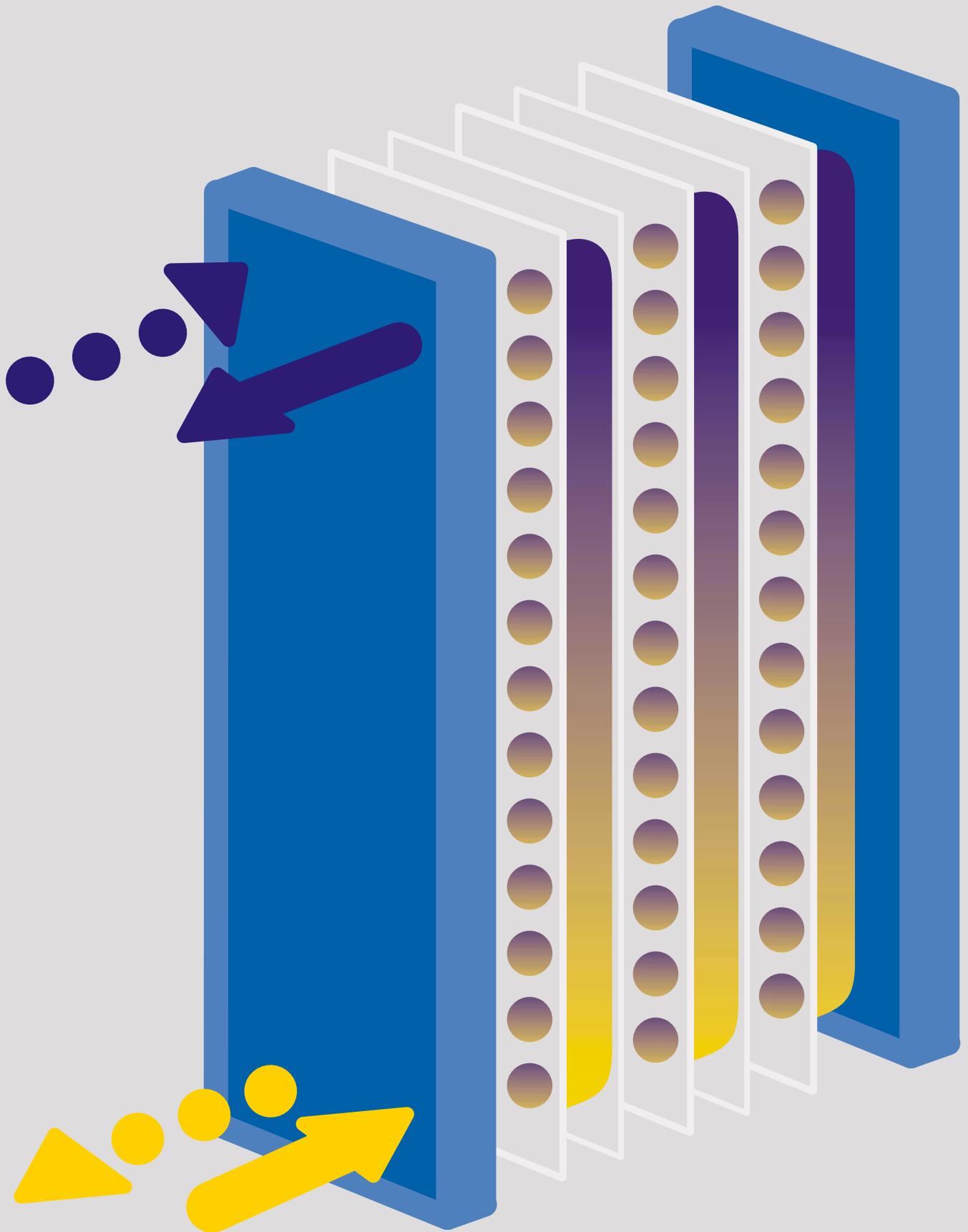
# ACCU-THERM<sup>®</sup> PLATE HEAT EXCHANGER



**MUELLER**<sup>®</sup>

HEAT TRANSFER PRODUCTS

# Accu-Therm<sup>®</sup> Operation





# Accu-Therm<sup>®</sup> Plate Heat Exchangers



## Performance Guarantee

Each Accu-Therm unit receives rigorous quality inspections for leaks and pressure capabilities. If your plate heat exchanger does not operate according to your exact order specifications, our factory service technicians will make the necessary adjustments immediately.

## On-Time Delivery

Mueller has one of the best on-time shipping records in the industry. Many orders are shipped in as few as six working days; shipment of equipment with complex specifications often takes less than four weeks.

## Heat Transfer for Every Part of Your Process

You'll find solutions to every heat transfer need within our specialized product lines. In addition to Accu-Therm plate heat exchangers, we offer our Temp-Plate® line of heat transfer surfaces, including immersion and clamp-on sections and custom products; and our Hybrid® heat exchanger, a unique combination of PHE performance in a fully welded, high-pressure design. Call us for free literature on these products or to discuss how we can improve your entire heat transfer process.

### MATERIALS AVAILABLE

#### PLATES

- 304 stainless steel
- 316 stainless steel
- Titanium®
- Avesta SMO 254®
- Hastelloy® C-276
- Nickel
- Incoloy®
- Monel®

#### GASKETS

- Nitrile® (NBR)
- Ethylene propylene rubber (EPDM)
- Silicone
- Viton®
- Butyl (resin cured)
- Hypalon®

# Applications

**AUTOMOTIVE** Phosphate tank heaters, seal water coolers, plating solution cooling, paint heating, welder water cooling, induction heater cooling, hydraulic oil coolers, quench oil heat exchangers, and cooling tower isolation.

**BREWING** Brine cooling, water heating, and wort cooling.

**CAUSTIC SODA** Caustic coolers, acid coolers, hydrogen gas coolers, and brine heaters and coolers.

**CHEMICAL** Process interchangers, brine heating and cooling, salt refining, process water isolation, vapor condensers, acid heating and cooling, and gas scrubber heaters and coolers.

**FOOD** Sugar refining, fructose solution heating and cooling, whiskey recuperators, yeast coolers, starch coolers and heaters, corn syrup cooling, and edible-oil heaters and coolers.

**HVAC** Cooling tower isolation, free cooling, heat pump systems, thermal storage systems, condenser water heat recovery, district heating and cooling, sea-water isolation, geo-thermal heating, engine cooling, lube oil cooling, fuel oil heating, generator cooling, and heating water with steam.

**MARINE** Seawater isolation/exchanger.

**METAL WORKING** Quench oil coolers, plating heaters and coolers, anodizer heaters and coolers, strike solution cooling, and pickling tank heating.

**PETROLEUM** Oil refining, natural gas processing, offshore drilling, and petrochemical processing.

**POWER** Auxiliary cooling circuit isolation, condenser water isolation, co-generation applications, geo-thermal applications, refuse burning applications, lubrication oil cooling, and diesel engine cooling and heat recovery.

**PULP AND PAPER** Digester heaters, blowdown liquor coolers, caustic soda coolers, boiler blowdown heat recovery, white water, and black liquor heating.

**STEEL** Scrubber coolers, jacket water coolers, slab induction heating coolers, hydraulic oil cooling, mold water cooling, refractory liner cooling, roll oil cooling, and cooling of continuous casting installations.

**TEXTILE** Heat recovery, caustic solution heating and cooling, washers, and dye concentrate heating.

# Accu-Therm Exclusive Benefits

## MOST EXTENSIVE SELECTION

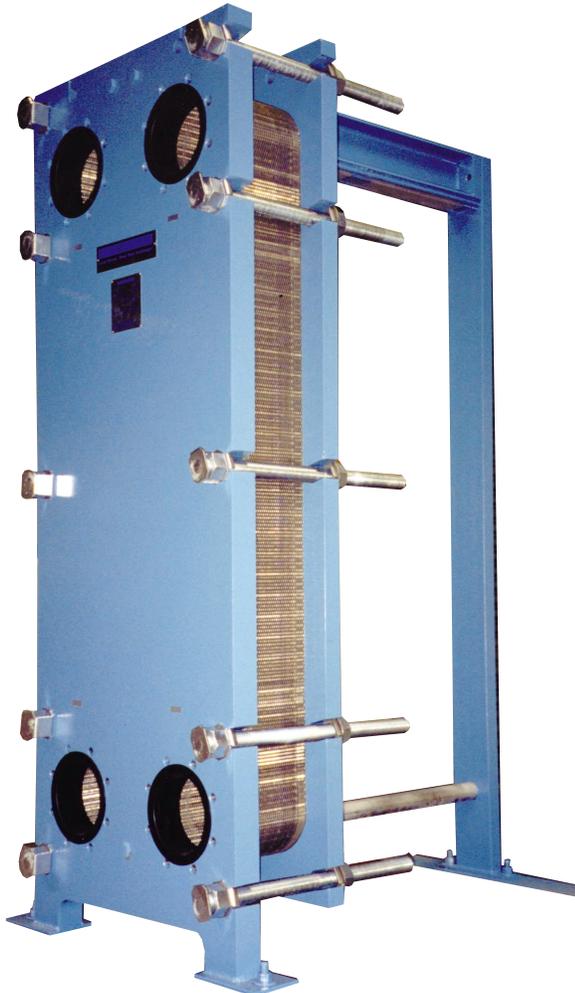
Mueller offers an extensive selection of plate heat exchangers. Accu-Therm plate heat transfer surface areas are available in sizes from less than ½ square foot to more than 27 square feet (0.05-2.5 square meters). This broad selection of sizes, combined with multiple embossed patterns and varying flow capacities, guarantees the best technical solution to specific heating or cooling requirements.

## HIGH FLOW RATES

Flows up to 16,000 gpm (60,600 lpm) are possible with the largest Accu-Therm plate heat exchanger. This high flow capacity generally eliminates the need for multiple units in large flow applications, greatly reducing installation costs.

## FRAME ASSEMBLY

The frame assembly is a heavy-duty construction, built to very strict tolerances. This ensures optimum plate pack compression and leak prevention.



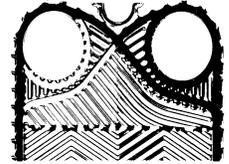
*Shown with shroud removed.*

## MORE SQUARE FEET OF HEAT TRANSFER SURFACE

A single Accu-Therm unit can have up to 25,000 square feet (2,323 square meters) of heat transfer surface. This extensive surface area, combined with high thermal efficiency, offers potential for tremendous heat transfer capacity.

## HEAT TRANSFER PLATE

A Mueller Accu-Therm is a precision-engineered, high-quality plate. Its performance criteria include high thermal efficiency, uniform fluid distribution, minimal fouling, clean operation, and suitability for full differential pressure rating.

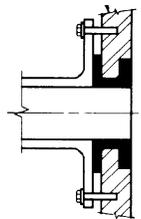


## GASKETS

Accu-Therm gaskets are designed to positively locate in gasket grooves. Also, gaskets are fabricated of carefully selected compositions to ensure trouble-free performance. The snap-in feature (available on most models) is useful for easy gasket removal and replacement.

## CONNECTIONS

The studded port is the standard construction on all but the smallest Accu-Therm unit. This design provides absolute protection for heat transfer plates under all pipe loading conditions. In addition, all studded ports can be fully lined to protect against erosion of frame material and corrosion of heat transfer plates. Lap-joint, weld-neck, and ferrule connections are available.



## SHROUDS

Durable shrouds are standard on all Accu-Therm units and are OSHA approved. These shrouds protect plates and gaskets and help maintain a clean, distinctive appearance for the life of the heat exchanger.

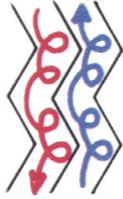
## INSPECTION AND TESTING

The Accu-Therm unit is subjected to rigorous quality assurance inspections. For example, to ensure all units are leak tight under all possible operating conditions, each circuit is independently tested at full design pressure with the other circuit open to atmosphere. Then, all circuits are tested simultaneously at full test pressure. ASME registration is available on all of our heat exchangers.

# Plate Heat Exchanger Benefits

## HIGH EFFICIENCY HEAT TRANSFER PERFORMANCE

The embossed pattern of the Mueller Accu-Therm heat transfer plates promotes high turbulence at low fluid velocities. The high turbulence results in very high heat transfer coefficients. "U" values of 1,500 and greater are common.

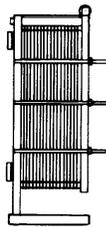


## REDUCED FOULING

The Accu-Therm plate heat exchanger's high turbulence, uniform fluid flow, and smooth plate surface reduce fouling and the need for frequent cleaning.

## COMPACT SIZE

Because of the high thermal efficiency and high surface density, the Mueller Accu-Therm requires  $\frac{1}{3}$  to  $\frac{1}{2}$  less floor space than other types of equivalent-duty heat transfer equipment. You can also service and maintain the plate heat exchanger in the same area it occupies when in operation.



## EASY TO INSPECT AND CLEAN

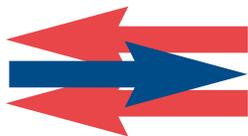
By simply removing the compression bolts and sliding away the movable end frame, you can visually inspect every square inch of the Accu-Therm heat transfer surface. The unit also lends itself to easy and economical clean-in-place (CIP) procedures because the amount of retained liquid is very low.

## TRUE COUNTERFLOW

In the plate heat exchanger, fluids flow in opposite directions, resulting in greater effective temperature differences. This reduces the amount of heat transfer surface required.

## CLOSE-APPROACH TEMPERATURES

An important factor in regeneration and heat recovery applications is the approach temperatures of the heat transfer media. In the Accu-Therm, very close-approach temperatures of 1-2°F (0.5-1.0°C) are possible because of the true counterflow and high heat transfer efficiency of the plates.



## MULTIPLE DUTIES WITH A SINGLE UNIT

It is possible to heat or cool two or more fluids within the same Accu-Therm unit by simply installing intermediate divider sections between the heat transfer plates.



## LOWER COST

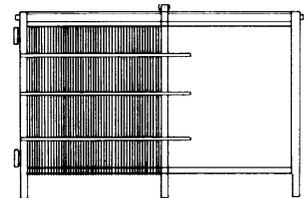
Plate heat exchangers are generally more economical than other types of equivalent-duty heat exchangers due to the higher thermal efficiency and lower manufacturing costs of plate heat exchangers.

## LIGHTWEIGHT

The Accu-Therm is lighter in total weight than other types of heat exchangers because of reduced liquid volume and less surface area for a given application.

## EXPANDABLE

The expandable feature of the Accu-Therm protects your investment. If your heat transfer requirements change, your Accu-Therm unit will not become obsolete. Instead, you can adjust the unit's thermal performance by releasing the compression bolts, rolling back the end frame, and adding or removing heat transfer plates.



## HIGH VISCOSITY APPLICATIONS

Because the Accu-Therm induces turbulence at low fluid velocities, it has practical application for high viscosity fluids.

## CROSS CONTAMINATION ELIMINATED

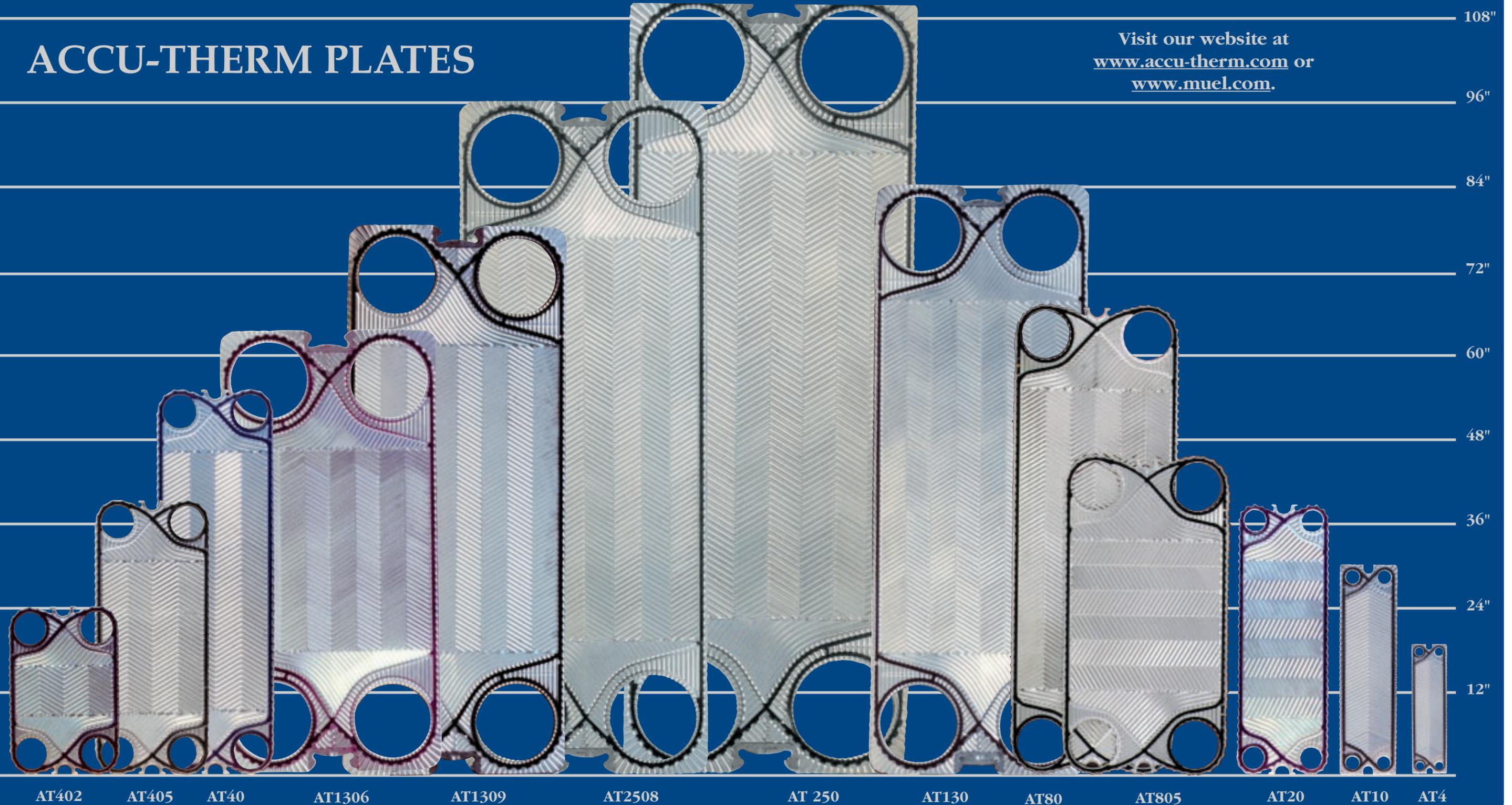
In the Accu-Therm unit, each medium is individually gasketed. The space between gaskets is vented to atmosphere, eliminating the possibility of any cross contamination of fluids. This feature makes the Accu-Therm especially ideal for applications where product contamination cannot be tolerated.



# Large Selection of Plates Available

ACCU-THERM PLATES

Visit our website at  
[www.accu-therm.com](http://www.accu-therm.com) or  
[www.muel.com](http://www.muel.com).



AT402

AT405

AT40

AT1306

AT1309

AT2508

AT 250

AT130

AT80

AT805

AT20

AT10

AT4

# Plate Designs

Mueller Accu-Therm plates are available in several different configurations for various heat transfer effects. Your Mueller dealer can recommend the best plate or plate combination for your needs.

## HORIZONTAL (H)

Horizontal herringbone embossing. Highest heat transfer coefficients and pressure drop.

## COMBINATION

A combination of H and V plates for an intermediate range of heat transfer coefficients and pressure drop.

## VERTICAL (V)

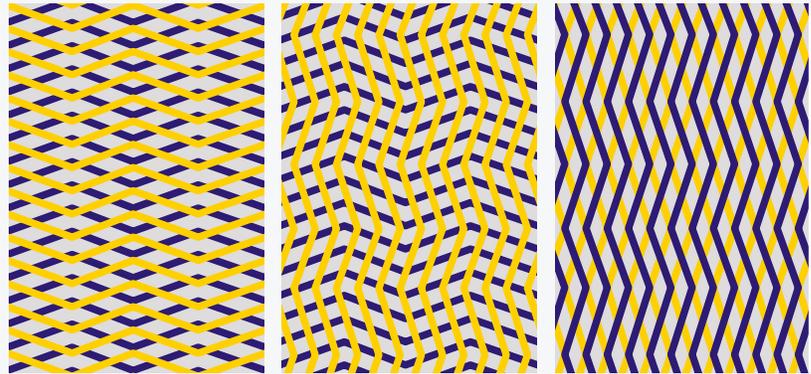
Vertical herringbone embossing. Slightly lower heat transfer coefficients and pressure drop.

## SPECIAL PERFORMANCE

### (F, G, AND P)

Special plate geometries for custom heat transfer needs.

## PLATE GEOMETRIES



*Horizontal*

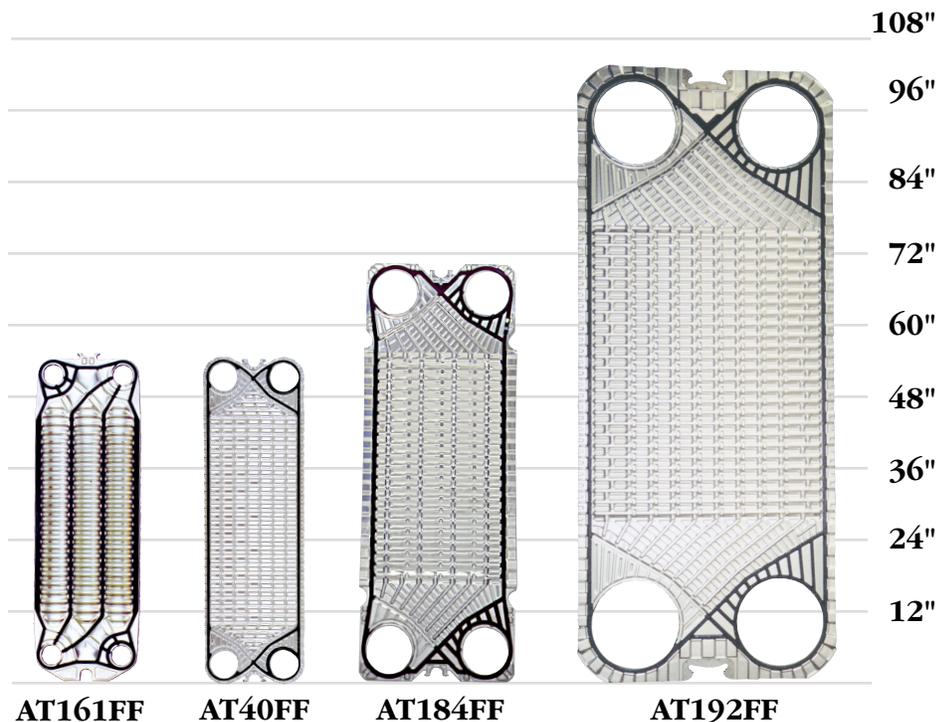
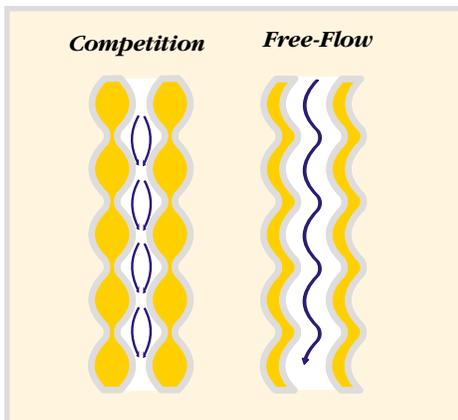
*Combination*

*Vertical*



# Exclusive Free-Flow Design

Competitive plate heat exchanger designs claim wide-gap advantages, but pinch points in their design can block flow and create slurry buildup. The Free-Flow's channels handle bigger particles and require less maintenance because they are a constant width.



# Frame Selection

CHOOSE FROM THE FOLLOWING ACCU-THERM FRAME SIZES:



## B FRAME

Available for the AT20 and larger units with the capacity to hold up to 900 heat transfer plates.



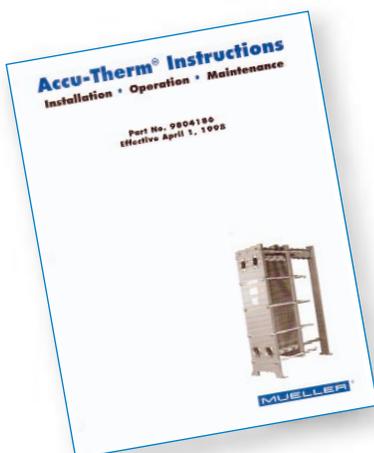
## C FRAME

Compact, cantilever-type frame for use where space is limited. Available in sizes up to the AT405.



## F FRAME

Intermediate-size frame. Available in sizes up to the AT40.



Complete detailed information for the installation, operation, and maintenance of the Mueller Accu-Therm is available in our Instruction Manual, No. 9804186.

Call 1-800-MUELLER for immediate mailing or visit our website at [www.accu-therm.com](http://www.accu-therm.com) or [www.muel.com](http://www.muel.com).

# Specifications

ACCU-THERM PLATE HEAT EXCHANGER				
MODEL	HEIGHT (in.)	WIDTH (in.)	TYPICAL LENGTH (in.)	STANDARD CONNECTION SIZE
AT4	23	8	12 to 22 $\frac{1}{2}$	1
AT10	37	14	14 $\frac{1}{2}$ to 50 $\frac{1}{2}$	2
AT20	56	24	20 to 159 $\frac{3}{8}$	2 $\frac{1}{2}$
AT402	39 $\frac{1}{4}$	27	20 $\frac{1}{2}$ to 159 $\frac{1}{2}$	4
AT405	56	27	20 $\frac{1}{2}$ to 159 $\frac{3}{8}$	4
AT40	70 $\frac{1}{4}$	27	33 $\frac{3}{8}$ to 159 $\frac{3}{8}$	4
AT805	63	36	34 $\frac{5}{8}$ to 160 $\frac{5}{8}$	6
AT80	85	36	34 $\frac{5}{8}$ to 160 $\frac{5}{8}$	6
AT1306	84 $\frac{3}{4}$	43	50 $\frac{3}{4}$ to 176 $\frac{3}{4}$	10
AT1309	99 $\frac{1}{2}$	43	50 $\frac{3}{4}$ to 176 $\frac{3}{4}$	10
AT130	106 $\frac{3}{4}$	43	50 $\frac{3}{4}$ to 176 $\frac{3}{4}$	10
AT180	126 $\frac{3}{4}$	54	74 to 164	14
AT2508	120	57	65 to 245	16
AT250	134	57	65 to 245	16
AT161FF	70 $\frac{3}{4}$	29	33 $\frac{5}{8}$ to 159 $\frac{5}{8}$	3
AT40FF	70 $\frac{1}{4}$	27	33 $\frac{3}{8}$ to 159 $\frac{3}{8}$	4
AT184FF	91	36	34 $\frac{5}{8}$ to 160 $\frac{5}{8}$	8
AT192FF	111 $\frac{3}{4}$	51 $\frac{1}{16}$	50 $\frac{3}{4}$ to 176 $\frac{3}{4}$	12

Based on selection: Design pressure up to 350 psi (full differential pressure rating). Design temperature up to 410°F.  
ASME code standard available.

FREE-FLOW CONNECTIONS AND PRESSURES		
MODEL	STUDED PORT SIZE*(in.)	OPERATING PRESSURES†
AT161FF	3	up to 86 psig (6.9 bar)
AT40FF	4	up to 150 psig (11.3 bar)
AT184FF	8	up to 86 psig (6.9 bar)
AT192FF	12	up to 86 psig (6.9 bar)

\* Standard studed port-type connections provide maximum cost effectiveness and are available from stock.

Lap joint and weld-neck flanged connections are available at additional cost with longer delivery.

† Temperatures up to 300°F are available on all models.

MATERIALS OF CONSTRUCTION	
PLATES	GASKETS
T304 stainless steel	Nitrile® (NBR)
T316 stainless steel	Ethylene Propylene Rubber (EPDM)
Titanium®	Silicone
Avesta SMO 254®	Viton®
Hastelloy®	Butyl (Resin Cured)
Nickel	Hypalon®
Incoloy®	

Note: All specifications are subject to change.

# Custom Designing Your PHE

For assistance with custom designing a heat exchanger, contact your Mueller representative or call 1-800-MUELLER for the representative nearest you. You'll be asked to complete the following chart and fax a copy to Mueller.

Our engineers will then figure the exact plate size and channel configuration you'll need.

	HOT SIDE	COLD SIDE
<b>Fluid Circulated</b>		
<b>Flow Rate</b>		
<b>Temperature In</b>		
<b>Temperature Out</b>		
<b>Operating Pressure</b>		
<b>Maximum Pressure Drop</b>		
<b>Specific Heat</b>		
<b>Specific Gravity</b>		
<b>Density</b>		
<b>Viscosity</b>		
<b>Thermal Conductivity</b>		
<b>Required Gasket Material</b>		
<b>Required Plate Material</b>		
<b>ASME Code Requirements</b>		

Submit your applications through our website at

[www.muel.com](http://www.muel.com) • [www.accu-therm.com](http://www.accu-therm.com)

or call 1-800-MUELLER (683-5537) • Fax: (417) 831-6642.





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