

ALL ABOUT ACCU-THERM®



MUELLER®
HEAT TRANSFER PRODUCTS

Paul Mueller Company

Mueller® is Your Heat Transfer Solutions Provider!

For over half a century, Paul Mueller Company has been building a reputation as an outstanding manufacturer of stainless steel tanks and industrial processing equipment that make the customer's process smoother, faster, and more reliable. Since our inception in 1940, we have evolved from a small-scale fabricator into a global process solution provider with 60 years of success in heat transfer applications. We offer manufactured equipment and components, integrated process systems, and expanded scope construction.

Mueller products are used in over 100 countries worldwide in a wide variety of industrial applications, including heat transfer; HVAC; heat recovery; food, dairy, and beverage processing; on dairy farms; pharmaceutical, biotechnological, and chemical processing; water distillation; process cooling; and thermal energy storage. Mueller is

Our philosophy is simple: We are committed to meeting and exceeding our customers' expectations of value by providing high quality equipment, excellent service, and complete process solutions.

uniquely qualified to handle large and complex fluid handling systems from project concept through installation. We also offer modular fabrication, field construction, plant maintenance and repair, and complete turnkey project execution. Mueller delivers

outstanding equipment and unique solutions to the process industries with our technical expertise, innovative engineering, and manufacturing resources.

State-of-the-art manufacturing facilities. Our plants, located in Springfield, Missouri; Osceola, Iowa; and Lichtenvoorde, The Netherlands; are equipped with the best in metal cutting, forming, and welding equipment, which provides us with the most state-of-the-art fabrication and machining capabilities available today.

Worldwide representation. Paul Mueller Company heat transfer products are supported by a worldwide network of factory trained representatives with thorough, up-to-date product knowledge ensuring rapid response to your inquiries.

Factory technicians and field service available. Our trained personnel offer rapid response to your service needs.



Mueller Field Operations, Inc.

Our field construction capabilities allow us to build on-site, offering our customers more versatility and flexibility.

Mueller Transportation, Inc.

allows us to provide you with competitive delivery rates on standard products. MTI offers dedicated handling for large or critical delivery items and are able to work with you directly to resolve any transportation issues.



Mueller® Accu-Therm® Plate Heat Exchangers

Worry-Free, Highly Efficient Heat Transfer Performance

Mueller Accu-Therm® plate heat exchangers are designed to provide you worry-free, high efficiency heat transfer performance — whether you are processing simple fluids, viscous solutions, or particulates.

The advantages of the Accu-Therm begins with its design. Plate heat exchangers deliver greater efficiency, lower cost, easier cleaning and maintenance, and closer approach temperatures than other heat transfer technology. When compared to shell-and-tube heat exchangers, plate heat exchangers of similar capacity require approximately one-fifth to one-half of the floor space and are easy to expand.

Mueller Accu-Therm plate heat exchangers truly stand apart from the rest with a vast array of plate sizes, configurations, and plate geometries. A variety of standard sizes are available, plus we have several plate geometries to choose from for different heat transfer effects. We will also custom build an Accu-Therm to suit your specific application and heat transfer requirements.

And there's even an innovative “free-flow” plate design made especially for slurry processing.



How Does the Mueller Accu-Therm Work?

The Mueller Accu-Therm is a compact plate heat exchanger consisting of a series of embossed heat transfer plates with perimeter gaskets to contain pressure and control the flow of each medium which can be designed for multiple fluids or thermal requirements in a single frame.

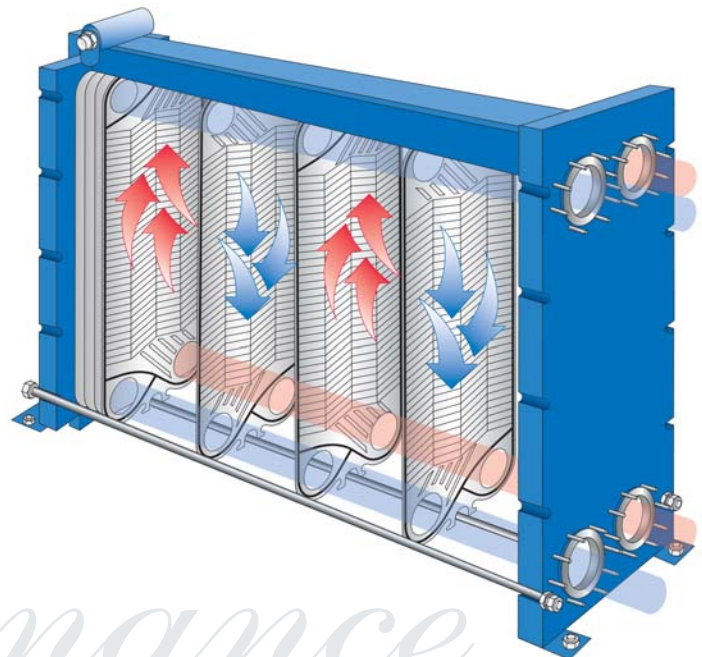
The gasketed plates are assembled in a pack, mounted on upper and lower guide rails, and compressed between two end frames with compression bolts. Fluids enter and exit the Accu-Therm through end-frame connections and are distributed to the plates through portholes in the plates.

The flow to individual passages between plates is controlled by alternate placement of port gaskets. Within the heat exchanger, the fluid to be heated (or cooled) flows down one side of each plate, while the heating (or

cooling) medium flows in the opposite direction on the other side of the plate. The temperature difference created by these opposite flows results in the closest possible approach temperature for maximum heat transfer efficiency.

While hot and cold fluids flow in opposite directions across a single plate, the flow pattern between plates can vary. Plate heat exchanger flow patterns can be single- or multi-pass. Single-pass exchangers have all four connections on the front. Multi-pass heat exchangers have connections on the front and rear.

Single-pass units are suitable for most applications, but extremely close approach temperatures or very low flow rates may call for the multi-pass configuration.



Performance
GUARANTEED

Every Mueller 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.

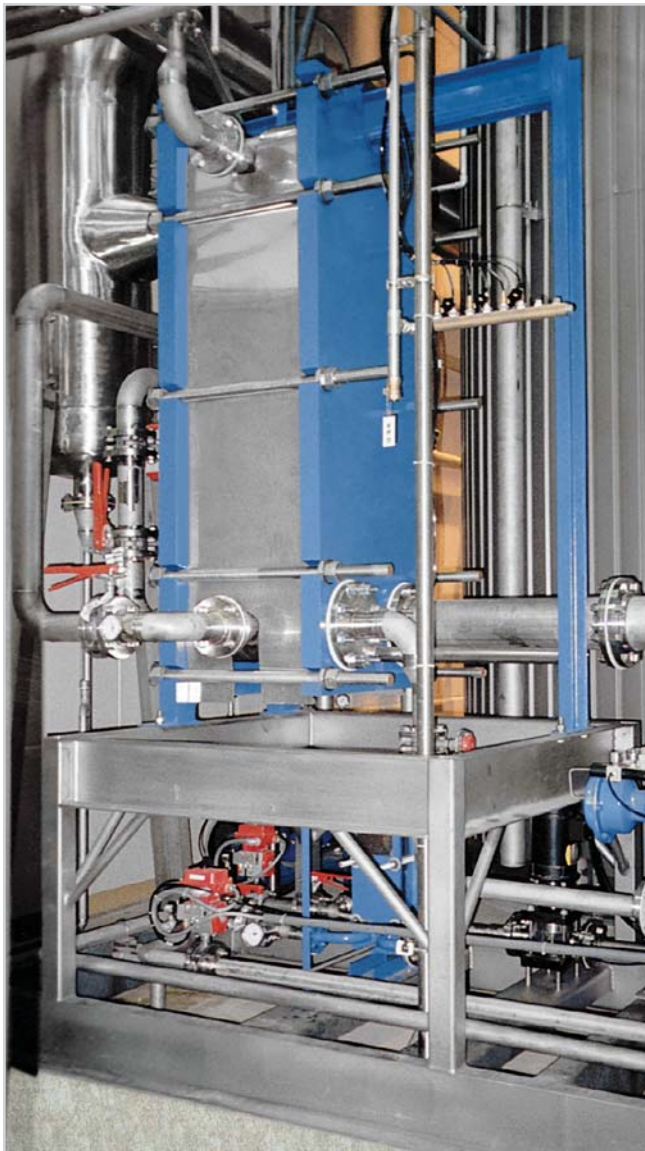
Mueller Accu-Therm Plate Heat Exchangers

Accu-Therm® Applications

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.



An Accu-Therm used in a heating and cooling system.

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, process water isolation, 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.



An Accu-Therm skid mounted in an oil drilling rig's brake cooling package for an onshore platform.

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, blow-down liquor coolers, caustic soda coolers, boiler blow-down 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.

Mueller Accu-Therm Plate Heat Exchangers

Accu-Therm Features and Benefits

Features and Benefits

Close Approach Temperatures

- Approach temperatures of 2-3°F are possible because of the true counter-flow and high heat transfer efficiency of the plates.

Compact and Lightweight

- Requires 1/5 to 1/2 less floor space than other types of heat transfer equipment.

Connections

- Studded ports are standard.
- Provides protection under all pipe loading conditions.
- Studded ports can be fully lined to protect against erosion and corrosion of frame material.
- Lap-joint, weld-neck, ferrule, and victaulic connections are also available.

Cross Contamination Eliminated

- Each medium is individually gasketed.
- The space between gaskets is vented to atmosphere.
- Eliminates cross contamination of fluids.

Easy to Inspect and Clean

- Simply remove the compression bolts and slide away the movable end frame to inspect 100% of the Accu-Therm heat transfer surface.
- Easy and economical to clean-in-place (CIP).

Expandable

- Adjust the unit's thermal performance by adding or removing heat transfer plates.

Extensive Selection

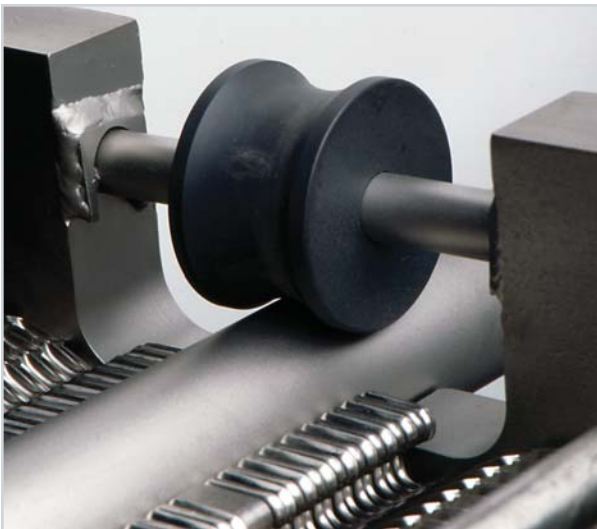
- Plate heat transfer surface areas from 0.5 to 25 square feet.
- Multiple embossed patterns and exclusive "free-flow" plate design.

Frame Assembly

- Heavy-duty construction. Optimum plate pack compression and leak prevention.

Gaskets

- Designed to positively locate in gasket grooves.
- Lock-in feature available on most models.



Larger Accu-Therm frames have roller bearing support on the moveable frame for ease of assembly.



Lock-in gaskets speed the assembly process. They can be replaced during shutdown — saving you time and money.

Highly Efficient Heat Transfer Performance

- Mueller plates promote high turbulence at low fluid velocities.
- High turbulence results in very high heat transfer coefficients.
- “U” values of 1,500 and greater are possible.

High Flow Rates

- Flows up to 12,600 gpm.
- Port diameters up to 16".

Inspection and Testing

- Rigorous quality assurance inspections.
- Each circuit independently tested at full design pressure.
- ASME registration available.

Lightweight

- Lighter in total weight than other heat exchangers because of reduced liquid volume and less surface area for a given application.



Lower Cost

- More economical than other types of heat exchangers due to the higher thermal efficiency and lower manufacturing costs.

Multiple Duties with a Single Unit

- Heat or cool two or more fluids within the same Accu-Therm unit by installing intermediate divider sections.

More Heat Transfer Surface

- Up to 25,000 square feet (2,323 square meters) of heat transfer surface in a single exchanger.

Reduced Fouling

- High turbulence, uniform fluid distribution, smooth plate surface, and high shear stresses reduce fouling.

Shrouds

- Optional OSHA-approved plate pack shrouds are available in attractive and durable embossed aluminum or 2B stainless steel to protect personnel.



Compression bolts are zinc coated for effective corrosion resistance and are mechanically locked into place on medium-to-large units.

Mueller Accu-Therm Plate Heat Exchangers

Accu-Therm Types

Plate Designs

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

Horizontal (H)

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

Combination

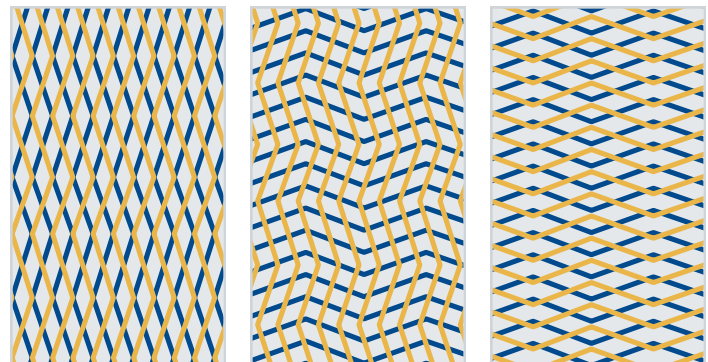
A combination of H and V plates for an intermediate range of heat transfer co-efficients and pressure drop.

Vertical (V)

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

Special Performance (F, G, & P)

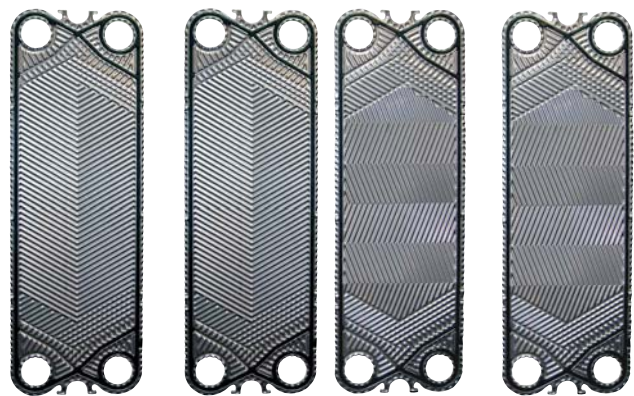
Special plate geometries for custom heat transfer needs.



Horizontal

Combination

Vertical



Innovative “Free-Flow” Plate Design

Mueller also offers the expandable, lightweight Accu-Therm “Free-Flow” plate heat exchanger, which features a clever heat transfer plate designed with a more open fluid-flow channel, making it ideal for viscous products, slurries, and effluent streams that contain particles and fibers which can block the flow channels and plug up conventional heat exchangers.

Each medium is individually gasketed in the “Free-Flow” plate heat exchanger, making it ideal for applications where product contamination cannot be tolerated.

In addition, these compact units are easy to disassemble and clean, which means less downtime and cost during maintenance.

Frame Selection

B Frame

B frames are for larger units and have the capacity to hold up to 1,000 heat transfer plates.

C Frame

These compact, cantilever-type frames are ideal for use where space is limited.

F Frame

Intermediate-size frame.



B Frame

C Frame

F Frame



Mueller Accu-Therm Plate Heat Exchangers

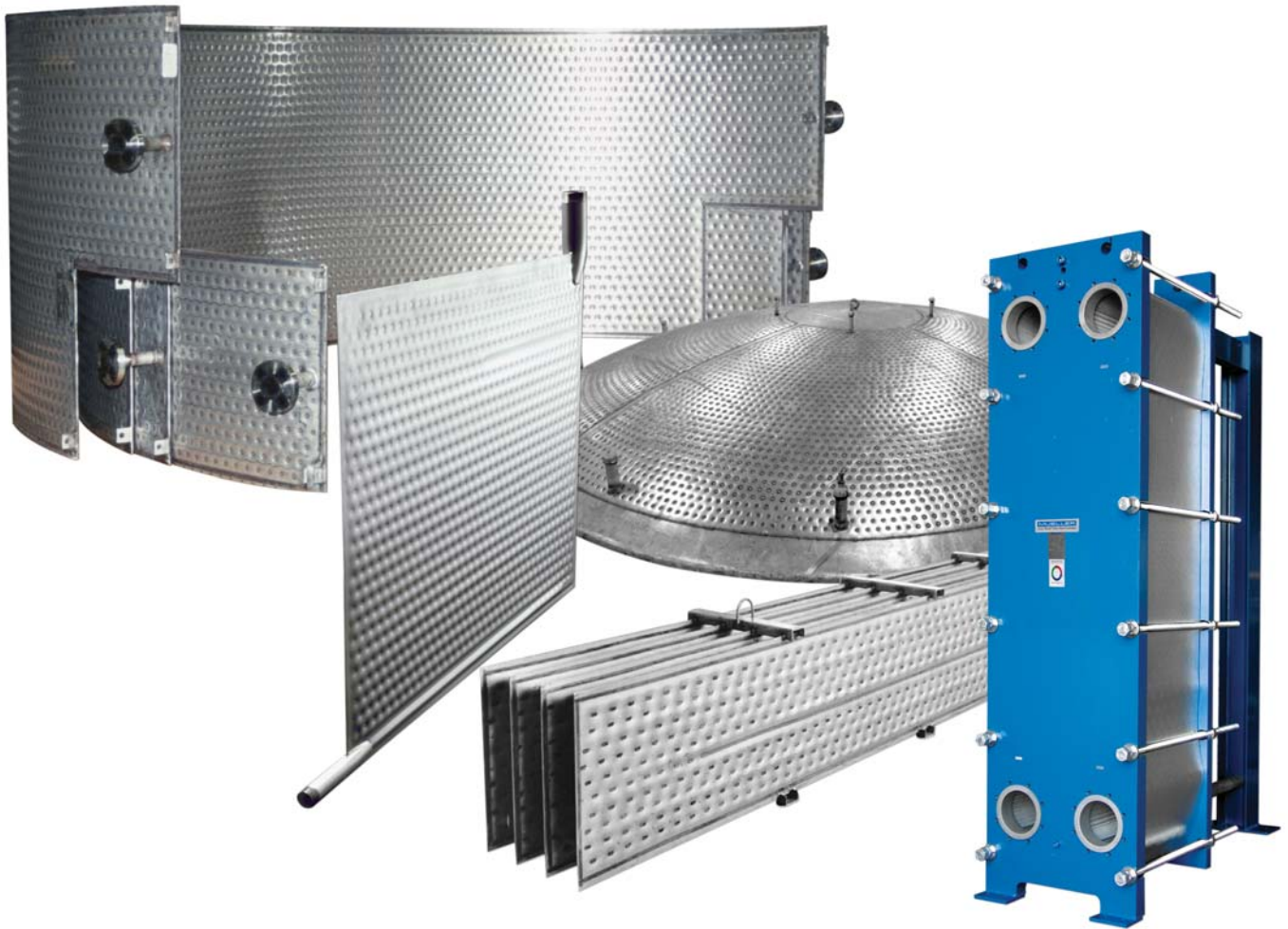
Mueller Quality Delivered Right to Your Door

On-Time Delivery

Paul Mueller Company has one of the best on-time shipping records in the industry! Shipment of equipment with complex specifications often takes less than four weeks.

Our "Quick Ship" program is available on some units with shipment in just 3-5 days.





**Mueller
Offers Heat
Transfer for
Every Part
of Your
Process!**

You will 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.

Call us for literature on Temp-Plate or to discuss how we can improve your entire heat transfer process.

*Let Mueller Provide Your
Heat Transfer Solution!*

Mueller Accu-Therm Plate Heat Exchangers

Accu-Therm Details

Specifications

Accu-Therm Specifications					
Model	Height(in)	Width(in)	Typical Length(in)	Standard Connection Size (in)	Max Flow (gpm) @ 20 fps*
AT4	23	8	12 to 23	1	54
AT10	37	14	15 to 51	2	209
AT20	56	24	20 to 160	3	461
AT405	56	27	21 to 160	4	794
AT40	71	27	34 to 160	4	794
AT60	83	27	34 to 160	4	794
AT75	75	26	64 to 124	6	1,800
AT805	63	36	35 to 161	6/8	1,800/3,100
AT80	85	36	35 to 161	6/8	1,800/3,100
AT120	105	36	35 to 161	6/8	1,800/3,100
ATX150	108	36	66 to 186	10	4,900
ATP180	113	47	70 to 190	12	6,980

Based on selection: Design pressure up to 300 psi (full differential pressure rating). Design temperature up to 360°F. ASME code standard available.
 *Values based on true ID of sch 40 pipe.

“Free-Flow” Accu-Therm Specifications					
Model	Height(in)	Width(in)	Typical Length(in)	Standard Connection Size (in)	Max Flow (gpm) @ 20 fps
AT40FF	71	27	34 to 160	4	794
AT184FF	91	36	35 to 161	8	3,100

Based on selection: Design pressure up to 150 psig on AT40FF and up to 100 psig on AT184FF and AT192FF.

Materials of Construction	
Plates	Gaskets
304 and 316 stainless steel	Nitrile® (NBR)
Titanium®	Ethylene Propylene Rubber (EPDM)
Avesta SMO 254®	Silicone
Hastelloy®	Viton®
Nickel	Butyl (Resin Cured)
Incoloy®	Hypalon®

Custom Designing Your Accu-Therm 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. Our engineers will then figure the exact plate size and channel configuration you'll need. Submit your applications through our Web site at www.muel.com or www.hrx.com, call us at 1-800-MUELLER (683-5537), or fax us at (417) 575-9885.

	Hot Side	Cold Side
Fluid Circulated		
Flow Rate, gpm		
Temperature In, °F		
Temperature Out, °F		
Operating Pressure, psig		
Maximum Pressure Drop, psi		
Specific Heat		
Specific Gravity		
Density		
Viscosity		
Thermal Conductivity		
Required Gasket Material		
Required Plate Material		
ASME Code Requirements		



Need More Info?

Complete detailed information on the installation, operation, and maintenance of the Accu-Therm plate heat exchanger is available in our instruction manual, Part No. 9804186.

Call 1-800-Mueller to request a copy or visit our Web site at www.hrx.com.



Visit our
Web site at
[www.hxrx.com!](http://www.hxrx.com)

All products, specifications, and features listed herein are representative of the final product and are intended as reference only. We reserve the right to make alterations without notice.

MUELLER[®]

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