Where Efficient Cooling is Best

FALLING FILM CHILLERS

MUELLER

Why Choose Mueller®?

Cool Products

Mueller® falling film chillers are designed to cool any liquid to within 2°F of its freezing point. Key applications include:

- Mueller falling film chillers cool food-grade liquids that will be used as ingredients in food products or will come into contact with food products.
- Our falling film chillers cool liquids with an initial temperature up to 105°F, a task most conventional chillers cannot handle.

Paul Mueller Company has cool products for all your refrigeration needs.

Chilling Solutions

To be classified as food-grade, chillers must comply with USDA and FDA standards. Consider these key requirements:

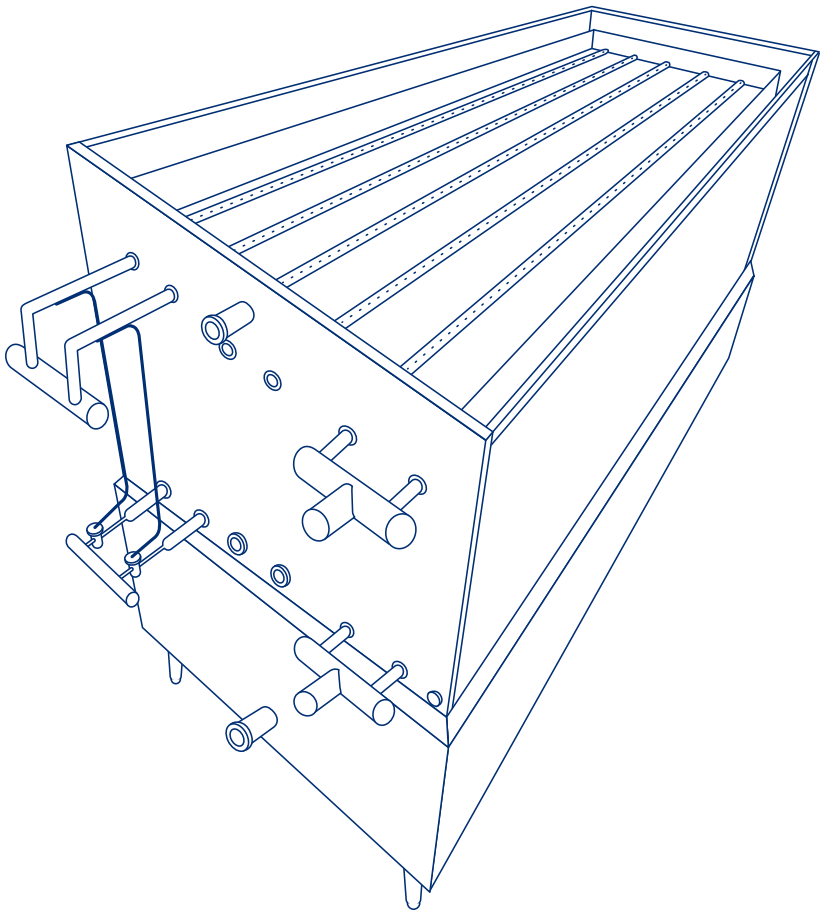
- Use of approved materials for construction
- All product contact surfaces must be visible for inspection
- All product contact surfaces must be smooth and without pits, crevices, or scale
- Product zones should be free of recesses, open seams, and gaps
- Internal corners or angles in the product zone must have a smooth, continuous radius of at least .25″
- The equipment must be capable of draining all the fluid it contains
- Gaskets and O-rings should be made from certified food-grade materials

Mueller falling film chillers are specifically designed to meet these requirements, providing an effective solution for all your chilling needs.

Expertise

Paul Mueller Company has decades of extensive experience in designing, engineering, and manufacturing falling film chillers for refrigeration applications.

Our expertise allows us to provide customized chilling solutions tailored to your specific needs.



Falling Film Chiller Components

Cabinet

Cabinets are designed to meet specific chilling needs. Standard units accommodate four 3 x 3 plates; eight 3 x 5 plates; or 8, 16, 24, or 32 4 x 8 plates.

Construction Features

Standard units are made of Type 304 stainless steel with a 2B finish, and all welds are bead-blasted. Optional materials include 316L stainless steel.

Evaporator

The evaporator chills water to 34°F and other solutions within a few degrees of their freezing points without freezing or damaging the chiller. Multi-size evaporators (3 x 3, 3 x 5, and 4 x 8) are available to meet specific load requirements. Plates are designed for optimal oil return and refrigeration efficiency.

The system is compatible with R-404a, R-448a/R-449a, R-454c, and R-717 refrigerants in flooded, recirculated, or direct-expansion systems. It meets ASHRAE 15 standards, rated at 300 psi at 400°F. ASME code-stamped evaporators are available upon request.

Fill Connection

Chillers feature a threaded fill connection for electronic level controls, located on the water pan inlet.

Overflow Connections

Chillers include a threaded overflow connection for easy piping of excess fluid.

Tank Reservoir

Tank sizes range from 73 to 1,113 gallons. The insulated holding tank (with a minimum of 2-inch insulation) prevents heat loss and condensation. A sloped bottom ensures complete drainage, while adjustable legs allow the chiller to sit level on uneven surfaces, ensuring optimal pan operation and laminar flow for maximum cooling.

Water Distribution Pan

The distribution pan has holes above each vertical evaporate plate to ensure uniform flow of solution on both sides. Hole size and spacing are tailored to flow rate requirements. Pans are available in extra-low, low, and high flow, with flow rates from 1.2 to 6.2 gpm per linear foot of plate..

Options, Accessories, and Other Equipment

Refrigerant Controls

Refrigerant controls for ammonia and other refrigerants, including direct expansion, flooded, and recirculated systems, are available.

Refrigerant Circuit Manifolds

Refrigerant circuit manifolds simplify installation. DX system manifolds come with valves and external equalizers premounted. Flooded and recirculated manifolds are available in copper or stainless steel.

Refrigerant Manifolding

Optional manifolding for all refrigerants is available, including expansion valves for direct expansion systems. Copper or stainless steel are recommended materials.

Temperature Control

Temperature control assembly packages are available to manage temperature, circulating pumps, and makeup water levels.

Pumps

Circulating pumps are available in various flow ranges and materials to meet your specific needs.

Condensing Units

Condensing units with semi-hermetic or scroll compressors are offered in air-cooled, remote air-cooled, or water-cooled models.

Falling Film Chiller Features and Benefits

Standard Option Concept

Cabinets are designed to meet specific chilling needs. The falling film chiller is designed around a standard option concept to improve quotation lead time, delivery time, and reduce costs. By predesigning the product line, we eliminate the need for custom engineering with each order. This approach also ensures customers only pay for what they need, providing the lowest cost and fastest lead times in the industry. Mueller falling film chillers also handle incoming fluid temperatures over 105°F.

Cabinet Sizes

Mueller offers three falling film chiller sizes: 3 x 3, 3 x 5, and 4 x 8. The 3 x 3 chiller comes in a 4-plate cabinet, while the 3 x 5 chiller comes in either a 4- or 8-plate cabinet, and the 4 x 8 chiller is available in a 4-, 8-, 16-, 24-, or 32-plate cabinet. Each chiller is paired with a tank sized to meet its requirements. Mueller also offers tankless chiller cabinets in the following sizes: a 4-plate 3 x 5, 8-plate 3 x 5, 4-plate 4 x 8, 8-plate 4 x 8, 16-plate 4 x 8, or a 24-plate 4 x 8.

Cabinet Top Options

Cabinets are available with either a welded-in top or a hinged door over each distribution pan, providing access to the chiller top based on your needs.

Cabinet Expandability

Expanding a falling film chiller by adding plates (up to the cabinet's capacity) is easy due to its advanced design. Select a cabinet that allows for future expansion, so when the time comes you will only pay for additional plates and distribution pans instead of a new chiller and costly installation.

Evaporator Features and Options

We offer 3 x 3, 3 x 5, and 4 x 8 plate sizes, suitable for DX, recirculated, and flooded refrigerant controls with R-404A, R-448A/R-449A, R-454C, and R-717 refrigerants. The plate design eliminates the need for special refrigerant controls, making DX more affordable and suitable when appropriate. All plates meet ASHRAE 15 standards, rated for 300 psi at 400°F. Optional ASME-rated plates are available.

Evaporator Internal Plate Capacity

Mueller's Temp-Plate® heat transfer surface is the most efficient evaporator available, using the smallest refrigerant charge possible. The 3 x 3 plate has an internal volume of 0.09 cubic feet, the 3 x 5 plate has an internal volume of 0.15 cubic feet, and the 4 x 8 plate has an internal volume of 0.42 cubic feet, which is 8 to 10 times less than our competitors.

Tank Connection Options

Chillers feature multiple tank connection locations. You can select the connection size and location from our standard options listed on the submittal drawing for each cabinet.

Refrigerant Controls

Mueller provides DX and flooded refrigerant controls for all refrigerants. For specific component details, refer to our Falling Film Chiller Operations and Installation Manual.

Water Level Control Option

All Mueller falling film chiller systems come with connections for installing an optional water level control. The system includes the following:

- Dual level probes
- Water valve(s)
- A water level control module

Refrigeration Units

Mueller provides a complete line of condensing units tailored to the falling film chiller's performance requirements. Condensing units are available in outdoor air-cooled, water-cooled, and remote air-cooled configurations. These units range from 5 to 80 horsepower. Some sizes may not be available in all configurations.

Control Panel Options

An optional Mueller multi-stage chiller control panel includes the following:

- Temperature control box to cycle up to 10 compressors based on water temperature
- Water inlet temperature sensor
- Three-phase pump motor starters, quantity of two

Quotation Lead Time

For chillers with standard options, quotations are typically available within 24 hours of receiving your request. Quotes for non-standard options may take longer.

3 x 3 Falling Film Chillers

Benefits of the 3 x 3 Falling Film Chiller

Paul Mueller Company's 3 x 3 falling film chillers are ideal for bakery water chilling and produce chilling applications. Mueller 3 x 3 chillers reduce chilling time, are easy to clean and inspect, and require minimal downtime for maintenance.

Temp-Plate® Heat Transfer Surface

Mueller Temp-Plate® inflated heat transfer surface prevents chiller freeze-up and eliminates the need for a secondary heat exchanger.

Fully-Enclosed Design

The 3 x 3 falling film chiller's fully-enclosed design prevents product contamination.

Pairing with an E-Star® HiPerForm® Condensing Unit

For maximum efficiency, pair your 3 x 3 falling film chiller with an E-Star® HiPerForm® condensing unit.

Cabinet and Tank

The 3 x 3 falling film chiller is available in a four-plate cabinet, with a tank properly sized to ensure optimal performance.

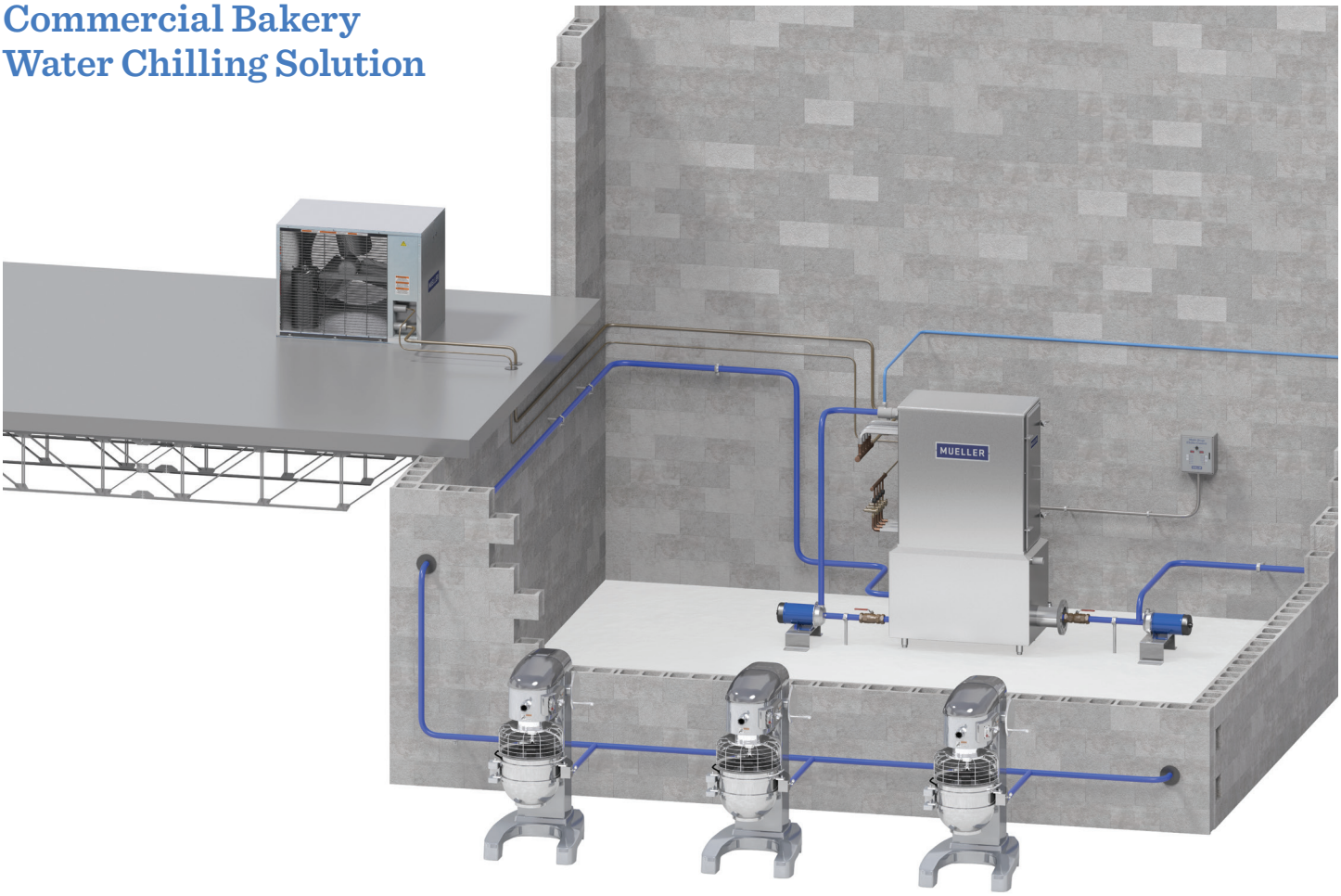
Increased Production and ROI

Our chillers help increase production and offer a faster return on investment by preserving product quality and freshness.

3 X 3 FALLING FILM CHILLER PLATE OPTIONS				
Number of Plates	Gallons Per Minute to Wet	Btuh	E-Star HiPerForm Condensing Unit	Gallons Per Hour
2	7.2	43,000	5 HP	144
3	10.8	65,000	7.5 HP	216
4	14.4	87,000	9 HP	288

3 X 3 FALLING FILM CHILLER SPECIFICATIONS AND SIZING			
Number of Plates	Length x Width x Height in (cm)	Maximum Shipping Weight lb (kg)	Tank Capacity gal (l)
2–4	44.5 x 22.25 x 77.125 (113.03 x 64.14 x 195.9)	925 (419.6)	73 (276.3)

Commercial Bakery Water Chilling Solution



3 x 5 Falling Film Chillers

Benefits of the 3 x 5 Falling Film Chiller

Mueller 3 x 5 falling film chillers are easy to clean and inspect, and require minimal downtime for maintenance. These chillers bring a faster return on investment by reducing chilling time and increasing production.

Design and Construction

- Built for lower-capacity applications
- Fully welded cabinet with a hinged and gasketed door for easy access
- Equipped with a 173- or 365-gallon self-contained storage tank

Distribution Pan Options

Distribution pans are available in extra-low, low, and high flow rates, based on chilled water usage:

- Extra-low flow: 4–10 gpm
- Low flow: 8–15 gpm
- High flow: 16–30 gpm (per evaporator)

3 X 5 FALLING FILM CHILLER SPECIFICATIONS AND SIZING

Cabinet Size	Number of Plates		Length x Width x Height in (cm)	Maximum Shipping Weight lb (kg)	Tank Capacity gal (l)	Distribution Pan Connection Size
	Minimum	Maximum				
N	2	8	68.5 x 39.125 x 77.75 (174 x 99.4 x 197.5)	1,520 (689.5)	173 (654.4)	2″ or 3″
O	2	8	68.5 x 39.125 x 99.25 (174 x 99.4 x 197.5)	1,720 (781)	365 (1,382.6)	2″ or 3″

NOTES:

• The refrigerant inlet connection size per plate is 1.125″ tube. The outlet size is 1.25″ tube.
• Maximum weight is based on the chiller's plate capacity.
• Low flow/extra-low flow distribution pan connection size is 2″.
• High flow distribution pan connection size is 3″.

4 x 8 Falling Film Chillers

Benefits of the 4 x 8 Falling Film Chiller

Mueller 4 x 8 falling film chiller's fully enclosed design eliminates product contamination, ensuring that your product remains free from airborne particles during the chilling process.

Design and Construction

- Designed for large-capacity chilling applications
- Fully enclosed structure
- Gasketed doors offer easy access

Distribution Pan Options

Distribution pans are available in three flow rate options to suit different chilling needs:

- Extra-low flow: 6–16 gpm
- Low flow: 13–24 gpm
- High flow: 25–48 gpm (per evaporator)

4 X 8 FALLING FILM CHILLER SPECIFICATIONS AND SIZING

Cabinet Size	Number of Plates		Length x Width x Height in (cm)	Maximum Shipping Weight lb (kg)	Tank Capacity gal (l)	Distribution Pan Connection Size
	Minimum	Maximum				
J	2	8	104.5 x 39.125 x 90.75 (265.4 x 99.5 x 230.2)	2,735 (1,240.7)	293 (1,108.4)	4″ or 6″
K	2	16	104.5 x 72.375 x 90.75 (265.4 x 183.8 x 230.2)	5,220 (2,368.5)	525 (1,986.3)	(2) 4″ or 6″
L	2	24	104.5 x 105.875 x 90.75 (265.4 x 269.5 x 230.2)	7,705 (3,497)	750 (2,839.1)	(3) 4″ or 6″
M	2	32	104.5 x 139 x 90.75 (265.4 x 353.1 x 230.2)	10,190 (4,617.2)	1,113 (4,216.9)	(4) 4″ or 6″

NOTES:

• The refrigerant inlet connection size per plate is 1.125″ tube. The outlet size is 1.25″ tube.
• Maximum weight is based on the chiller's plate capacity.
• Low flow/extra-low flow distribution pan connection size is 4″.
• High flow distribution pan connection size is 6″.

Tankless Falling Film Chillers

Benefits of Tankless Chillers

- Exceptional versatility for a wide range of storage needs
- Ideal for applications where the chiller needs to be placed over an existing tank
- Space-saving and performance-enhancing benefits

Design and Construction

- Available 3 x 5 and 4 x 8 evaporator options
- Cabinets range from 4- to 24-plate configurations
- Engineered for durability and optimal performance in various applications

Distribution Pan Options

- Available extra-low, low, and high flow distribution pans
- Provides precise control over cooling performance based on operational needs

TANKLESS FALLING FILM CHILLER SPECIFICATIONS AND SIZING

Cabinet Size	Number of Plates	Refrigerant Connection Sizes		Length x Width x Height in (cm)	Weight With Plates lb (kg)	Water Pan Connection Size
		Inlet*	Outlet*			
3 x 5	4	1.125″ Tube	1.5″ Tube	70 x 25 x 47 (177.8 x 63.5 x 119.4)	643 (291.9)	2″ or 3″ MPT
3 x 5	8	1.125″ Tube	1.5″ Tube	70 x 41 x 47 (177.8 x 104.1 x 119.4)	990 (449.4)	2″ or 3″ MPT
4 x 8	4	1.125″ Tube	2″ Pipe	108 x 29 x 62 (274.3 x 73.7 x 157.5)	1,020 (462.4)	4″ or 6″ MPT
4 x 8	8	1.125″ Tube	2″ Pipe	108 x 43 x 62 (274.3 x 109.2 x 157.5)	1,550 (703.1)	4″ or 6″ MPT
4 x 8	16	1.125″ Tube	2″ Pipe	108 x 67 x 62 (274.3 x 170.2 x 157.5)	2,980 (1,356.7)	(2) 4″ or 6″ MPT
4 x 8	24	1.125″ Tube	2″ Pipe	108 x 104x 62 (274.3 x 264.2 x 157.5)	4,220 (1,912.8)	(3) 4″ or 6″ MPT

NOTE:

**Inlet and outlet connection sizes are per plate connection sizes.*

Model Number Breakdown

Plate Sizes
B = 3 x 3
N = 3 x 5
L = 4 x 8

Cabinet Models
J = 293
K = 525
L = 750
M = 1,113
N = 173
O = 465
P = 73

Sanitary/Non-Sanitary
1 = Sealed Edge
2 = Non-Sealed Edge

ASME/Non-ASME
A = ASME
N = Non-ASME

No. of Plates
3 x 3 = 2–4
3 x 5 = 2–8
4 x 8 = 2–32

Refrigerant Control Type	
A = R-22	DX
B = R-404A & R-507A	DX
C = R-134A	DX
D = R-717	DX
E = R-22	Flooded
F = R-404A & R-507A	Flooded
G = R-134A	Flooded
H = R-717	Flooded
I = R-22	Recirculated
J = R-404A & R-507A	Recirculated
K = R-134A	Recirculated
L = R-717	Recirculated
M = Glycol	
N = Other	
P = R-448A & R-449A	DX
R = R-454C	DX

Cabinet/Plate Material
1 = 304/304
2 = 304/316L
3 = 316L/316L

Manifold
1 = Yes
2 = No

Pan Type
1 = High Flow
2 = Low Flow
3 = Extra-Low Flow

Falling Film Chiller Images

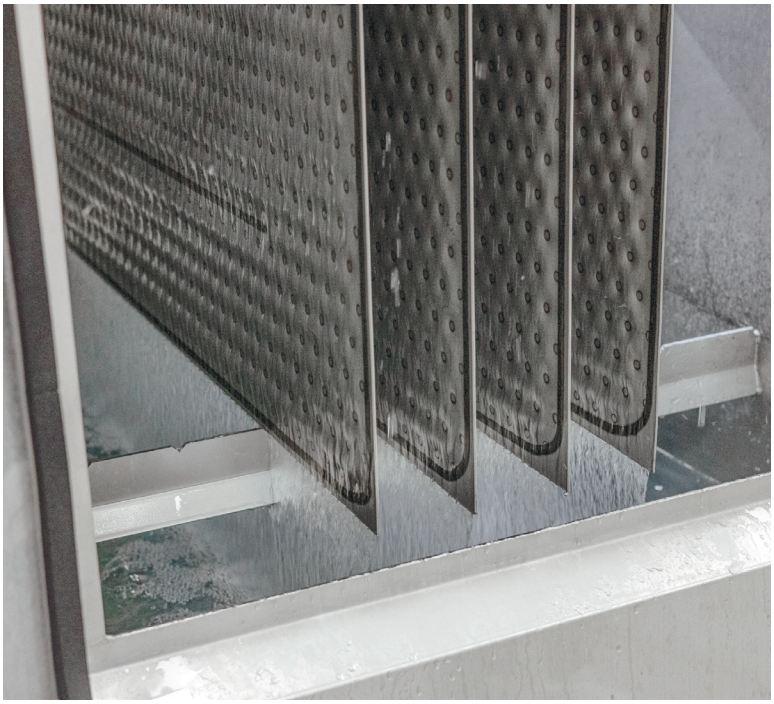
3 x 3 Falling Film Chiller

Tankless Falling Film Chiller

4 x 8 Falling Film Chiller

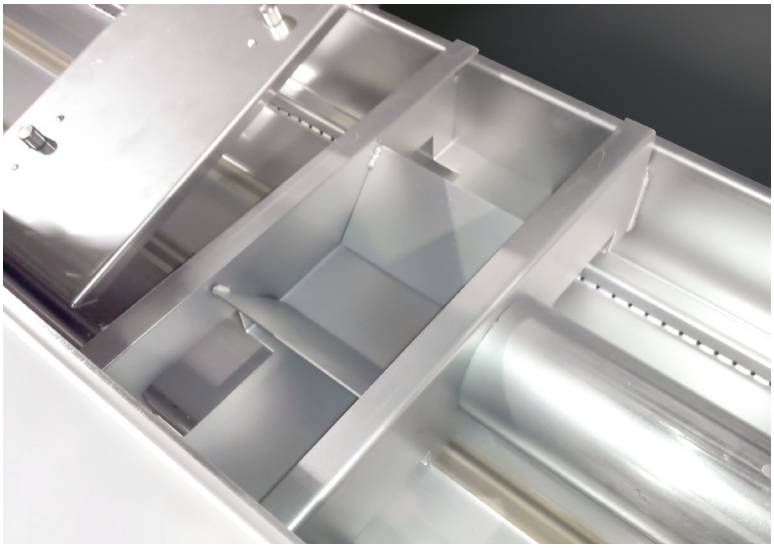
3 x 5 Falling Film Chiller

Inlet Connection With Optional Makeup Water Valve



Internal Plates

Chilled Water Solution Out Port



Falling Film Chiller Interior

PAUL MUELLER COMPANY

Who We Are

At Paul Mueller Company, we are united by a belief that the only quality that matters is quality that works for life. With every piece of processing equipment we build, our goal is to have lasting impact. This collective vision has led us from a small sheet metal shop to a global supplier of heating, cooling, processing, and storage solutions. Our equipment allows farmers, brewers, and engineers to keep their products fresh and their inventory strong. Whether our equipment preserves milk in rural areas or helps manufacture medicine with broad health benefits, we are making an impact across the globe.

Creating Quality for *Life*

Our Products and Services

Skids and Integrated Systems
- Small Scale to Custom Automated Systems
- Modular Process Systems
- Water-for-Injection Distribution Skids

Custom Tanks and Vessels
- Mixing, Storage, and Process
- Design and Fabrication
- Routine to Extreme Specialty Process

Refrigeration Solutions
- Falling Film Chillers
- Batch Chillers
- Packaged Chillers
- Air-Cooled Condensing Units
- Heat Recovery
- Controls

Clean Utilities
- Pure Steam Generators
- Multiple-Effect Stills
- Water-for-Injection Distribution Systems

Heat Transfer Solutions
- Heat Transfer Surfaces
- Preformed Heat Transfer Panels
- Plate Heat Exchangers
- Replacement Parts
- Service and Repair

Component Products
- Tank Heads
- Tank Shells
- Manways
- Agitators

Cleaning Systems
- Clean-in-Place (CIP) Systems
- Chemical Dosing Systems

Specialty Hauling with Mueller Transportation, Inc.
- Door-to-Door Specialty Handling
- Oversized Hauling Capabilities

Industries We Serve

- Animal Health
- Battery Production and Recycling
- Beverage
- Brewing
- Chemical
- Dairy Farm
- Dairy Processing
- Food
- Heat Transfer
- HVAC
- Mining
- Oil and Gas
- Personal Care
- Pharmaceutical
- Refrigeration
- Tank Fabrication
- Wine
- And More

Facilities and Resources

- Domestic Facilities With Nearly One Million Square Feet Under Roof
- Comprehensive Test Facilities for Factory Acceptance Testing
- Expert Fabricators and Manufacturing Staff
- Onsite, Experienced Engineering Department

Project Support Services

- Comprehensive, Customizable Documentation Packages
- IQ/OQ Protocols and Execution
- Seamless Shipping with Mueller Transportation, Inc.
- Expanded Scope Facility Construction and Expansion
- Installation Supervision and Site Acceptance Testing

Quality and Process Certification

- ASME (American Society of Mechanical Engineers)
- ASME BPE (American Society of Mechanical Engineers Bioprocessing Equipment Standard)
- API (American Petroleum Institute)
- UL (Underwriters Laboratories)
- CSA (Canadian Standards Association)
- PED CE (Pressure Equipment Directive Certification)
- UKCA (United Kingdom Conformity Assessed)
- CRN (Canadian Registration Number)
- TSSA (Technical Standards and Safety)

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