

# Plate Heat Exchanger



## Technical specification

**Application :** : Milk Cooler  
**Model :** : FDMC-6-FMMW-31  
**Project:** : PHE1-1  
**Item :** : 5000 I/h  
**Date :** : 2022/1/28

**Product Group:** FD0705  
**Item Code:** FD0510  
**Painted Frame:** YES  
**Triclamp Connections:** YES

		Hot side	Cold side
<b>Fluid</b>		Milk	Water
Density	kg/m <sup>3</sup>	1018	998.7
Specific heat capacity	kJ/(kg*K)	3.93	4.20
Thermal conductivity	W/(m*K)	0.550	0.596
Viscosity inlet	cP	1.39	1.17
Viscosity outlet	cP	2.32	1.03
Volume flow rate	m <sup>3</sup> /h	5.0	17.6
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.0
Pressure drop	kPa	5.37	48.2
Heat Exchanged	kW	102.3	
L.M.T.D.	K	7.3	
O.H.T.C clean conditions	W/(m <sup>2</sup> *K)	3681	
O.H.T.C service	W/(m <sup>2</sup> *K)	3220	
Heat transfer area	m <sup>2</sup>	4.4	
Fouling resistance* 10000	m <sup>2</sup> *K/W	0.39	
Duty margin	%	14.3	
Relative directions of fluids		Countercurrent	
Number of plates		31M	
Effective plates		29	
Number of passes		1	1
Extension capacity		8	
Plate material / thickness		SS316 / 0.50 mm	
Sealing material		NBRFF CLIP-ON	NBRFFCLIP-ON
Connection material		Stainless steel	Stainless steel
Connection diameter		2" Tri-clamp	2" Tri-clamp
Nozzle orientation		S1 -> S2	S4 <- S3
Pressure vessel code		PED	
Flange rating		DIN	
Design pressure	kPa	600	600
Test pressure	kPa	780	780
Design temperature	°C	50.0	50.0
Overall length x width x height	mm	550 x 320 x 920	
Liquid volume	dm <sup>3</sup>	4.5	4.5
Net weight, empty / operating	kg	112 / 121	

Performance is conditioned on the accuracy of customers data and customers ability to supply equipment.

# Plate Heat Exchanger

## Technical Specification

**Application :** : Milk Cooler  
**Model :** : FDMC-6-FMMW-37  
**Project:** : PHE1-2  
**Item :** : 6000 l/h  
**Date :** : 2022/1/28

**Product Group:** FD0705  
**Item Code:** FD0510  
**Painted Frame:** YES  
**Triclamp Connections:** YES

Fluid		Hot side	Cold side
Density	kg/m <sup>3</sup>	Milk 1018	Water 998.7
Specific heat capacity	kJ/(kg*K)	3.93	4.20
Thermal conductivity	W/(m*K)	0.550	0.596
Viscosity inlet	cP	1.39	1.17
Viscosity outlet	cP	2.32	1.03
Volume flow rate	m <sup>3</sup> /h	6.0	21.1
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.0
Pressure drop	kPa	5.43	48.9
Heat Exchanged	kW	122.8	
L.M.T.D.	K	7.3	
O.H.T.C clean conditions	W/(m <sup>2</sup> *K)	3687	
O.H.T.C service	W/(m <sup>2</sup> *K)	3225	
Heat transfer area	m <sup>2</sup>	5.3	
Fouling resistance* 10000	m <sup>2</sup> *K/W	0.39	
Duty margin	%	14.3	
Relative directions of fluids		Countercurrent	
Number of plates		37M	
Effective plates		35	
Number of passes		1	1
Extension capacity		12	
Plate material / thickness		SS316 / 0.50 mm	
Sealing material		NBRFF CLIP-ON	NBRFFCLIP-ON
Connection material		Stainless steel	Stainless steel
Connection diameter		2" Tri-clamp	2" Tri-clamp
Nozzle orientation		S1 -> S2	S4 <- S3
Pressure vessel code		PED	
Flange rating		DIN	
Design pressure	bar	6.0	6.0
Test pressure	bar	7.8	7.8
Design temperature	°C	50.0	50.0
Overall length x width x height	mm	550 x 320 x 920	
Liquid volume	dm <sup>3</sup>	5.4	5.4
Net weight, empty / operating	kg	116 / 127	

Performance is conditioned on the accuracy of customers data and customers ability to supply equipment.

# Plate Heat Exchanger



## Technical specification

**Application :** : Milk Cooler  
**Model :** : FDMC-6-FMMW-47  
**Project:** : PHE1-3  
**Item :** : 7500 l/h  
**Date :** : 2022/1/28

**Product Group:** FD0705  
**Item Code:** FD0510  
**Painted Frame:** YES  
**Triclamp Connections:** YES

Fluid		Hot side	Cold side
Density	kg/m <sup>3</sup>	Milk 1018	Water 998.7
Specific heat capacity	kJ/(kg*K)	3.93	4.20
Thermal conductivity	W/(m*K)	0.550	0.596
Viscosity inlet	cP	1.39	1.17
Viscosity outlet	cP	2.32	1.03
Volume flow rate	m <sup>3</sup> /h	7.5	26.4
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.0
Pressure drop	kPa	5.34	48.5
Heat Exchanged	kW	153.4	
L.M.T.D.	K	7.3	
O.H.T.C clean conditions	W/(m <sup>2</sup> *K)	3630	
O.H.T.C service	W/(m <sup>2</sup> *K)	3121	
Heat transfer area	m <sup>2</sup>	6.8	
Fouling resistance* 10000	m <sup>2</sup> *K/W	0.45	
Duty margin	%	16.3	
Relative directions of fluids		Countercurrent	
Number of plates		47M	
Effective plates		45	
Number of passes		1	1
Extension capacity		32	
Plate material / thickness		SS316 / 0.50 mm	
Sealing material		NBRFF CLIP-ON	NBRFFCLIP-ON
Connection material		Stainless steel	Stainless steel
Connection diameter		2" Tri-clamp	2" Tri-clamp
Nozzle orientation		S1 -> S2	S4 <- S3
Pressure vessel code		PED	
Flange rating		DIN	
Design pressure	bar	6.0	6.0
Test pressure	bar	7.8	7.8
Design temperature	°C	50.0	50.0
Overall length x width x height	mm	750 x 320 x 920	
Liquid volume	dm <sup>3</sup>	6.9	6.9
Net weight, empty / operating	kg	126 / 140	

Performance is conditioned on the accuracy of customers data and customers ability to supply equipment.

# Plate Heat Exchanger



## Technical specification

**Application :** : Milk Cooler  
**Model :** : FDMC-6-FMMW-51  
**Project:** : PHE1-4  
**Item :** : 8000 I/h  
**Date :** : 2022/1/28

**Product Group:** FD0705  
**Item Code:** FD0510  
**Painted Frame:** YES  
**Triclamp Connections:** YES

Fluid		Hot side	Cold side
Density	kg/m <sup>3</sup>	Milk 1018	Water 998.7
Specific heat capacity	kJ/(kg*K)	3.93	4.20
Thermal conductivity	W/(m*K)	0.550	0.596
Viscosity inlet	cP	1.39	1.17
Viscosity outlet	cP	2.32	1.03
Volume flow rate	m <sup>3</sup> /h	8.0	28.1
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.0
Pressure drop	kPa	5.22	47.5
Heat Exchanged	kW	163.7	
L.M.T.D.	K	7.3	
O.H.T.C clean conditions	W/(m <sup>2</sup> *K)	3583	
O.H.T.C service	W/(m <sup>2</sup> *K)	3054	
Heat transfer area	m <sup>2</sup>	7.4	
Fouling resistance* 10000	m <sup>2</sup> *K/W	0.48	
Duty margin	%	17.3	
Relative directions of fluids		Countercurrent	
Number of plates		51M	
Effective plates		49	
Number of passes		1	1
Extension capacity		28	
Plate material / thickness		SS316 / 0.50 mm	
Sealing material		NBRFF CLIP-ON	NBRFFCLIP-ON
Connection material		Stainless steel	Stainless steel
Connection diameter		2" Tri-clamp	2" Tri-clamp
Nozzle orientation		S1 -> S2	S4 <- S3
Pressure vessel code		PED	
Flange rating		DIN	
Design pressure	bar	6.0	6.0
Test pressure	bar	7.8	7.8
Design temperature	°C	50.0	50.0
Overall length x width x height	mm	750 x 320 x 920	
Liquid volume	dm <sup>3</sup>	7.5	7.5
Net weight, empty / operating	kg	129 / 144	

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# Plate Heat Exchanger



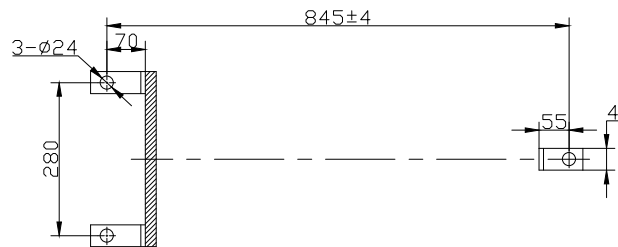
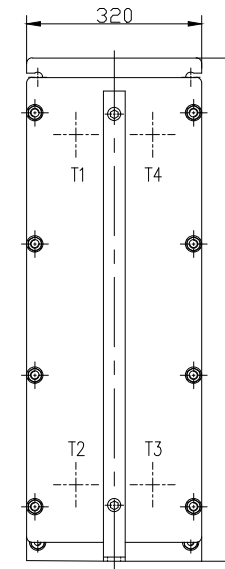
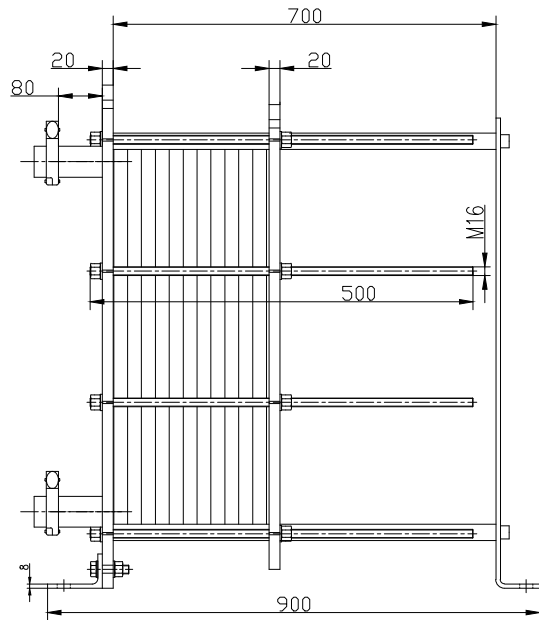
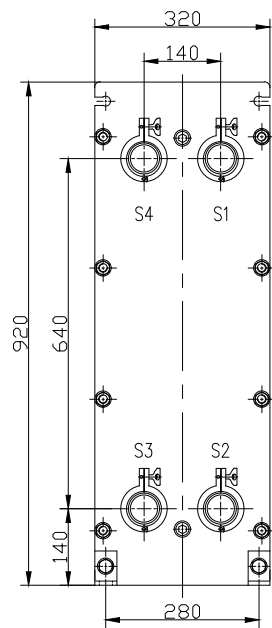
## Technical specification

**Application :** : Milk Cooler  
**Model :** : FDMC-6-FMMW-65  
**Project:** : PHE1-5  
**Item :** : 10000 l/h  
**Date :** : 2022/1/28

**Product Group:** FD0705  
**Item Code:** FD0510  
**Painted Frame:** YES  
**Triclamp Connections:** YES

Fluid		Hot side	Cold side
Density	kg/m <sup>3</sup>	Milk 1018	Water 998.7
Specific heat capacity	kJ/(kg*K)	3.93	4.20
Thermal conductivity	W/(m*K)	0.550	0.596
Viscosity inlet	cP	1.39	1.17
Viscosity outlet	cP	2.32	1.03
Volume flow rate	m <sup>3</sup> /h	10.0	35.1
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.0
Pressure drop	kPa	5.24	48.3
Heat Exchanged	kW	204.6	
L.M.T.D.	K	7.3	
O.H.T.C clean conditions	W/(m <sup>2</sup> *K)	3530	
O.H.T.C service	W/(m <sup>2</sup> *K)	2983	
Heat transfer area	m <sup>2</sup>	9.5	
Fouling resistance* 10000	m <sup>2</sup> *K/W	0.52	
Duty margin	%	18.3	
Relative directions of fluids		Countercurrent	
Number of plates		65M	
Effective plates		63	
Number of passes		1	1
Extension capacity		14	
Plate material / thickness		SS316 / 0.50 mm	
Sealing material		NBRFF CLIP-ON	NBRFFCLIP-ON
Connection material		Stainless steel	Stainless steel
Connection diameter		2" Tri-clamp	2" Tri-clamp
Nozzle orientation		S1 -> S2	S4 <- S3
Pressure vessel code		PED	
Flange rating		DIN	
Design pressure	bar	6.0	6.0
Test pressure	bar	7.8	7.8
Design temperature	°C	50.0	50.0
Overall length x width x height	mm	750 x 320 x 920	
Liquid volume	dm <sup>3</sup>	9.6	9.6
Net weight, empty / operating	kg	140 / 159	

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DESIGN DATA	
PLATE MATERIAL	SS316
PLATE THICKNESS	0.5mm
GASKET MATERIAL	NBRFF
FRAME MATERIAL	CS(Q235)
NUMBER OF PLATES	31/37/47/51/65
PLATE GROUP	//
HEAT TRANSFER AREA	//
DESIGN TEMPERATURE	50.0 °C
DESIGN/TEST PRESSURE	6.0/7.8 bar
EMPTY/OPERATING WEIGHT	//

Milk Cooling Model Single Bank Mains Water	
Unit 1	FD0705-PHE-1.1 5000l/h-31Plt
Unit 2	FD0705-PHE-1.2 6000l/h-37Plt
Unit 3	FD0705-PHE-1.3 7500l/h-47Plt
Unit 4	FD0705-PHE-1.4 8000l/h-51Plt
Unit 5	FD0705-PHE-1.5 10000l/h-65Plt

CONNECTION DATA			
No.	Size	Type	Application
S1	2	2 inch Tri-clamp SS316	Hot In
S2	2	2 inch Tri-clamp SS316	Hot Out
S3	2	2 inch Tri-clamp SS316	Cold In
S4	2	2 inch Tri-clamp SS316	Cold Out

REV.	ITEM	DESIGNATION	SIGNATURE	DATE
DESIGNED		STANDARDIZED APPR		
CHECKED		FINAL APPR		
APPROVED		APPROVAL		
TECHNICAL AUDIT		DATE	2022.02.15	

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NO.	WEIGHT	SCALE	INSTALLAION DRAWING
Single Bank Milk Cooler Mains Water		DNS	
ME	Rev 0		