

Plate Heat Exchanger

Technical specification

Application : : Milk Cooler
Model : : FDMC-6-FMDB-62
Project: : PHE 3-1
Item : : 5000 l/h
Date : : 2022/1/28

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

Section 1: 35.0°C ->16.5°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1017	998.6
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	1.01
Volume flow rate	m3/h	5.0	14.9
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.9
Pressure drop	kPa	4.81	31.4
Heat Exchanged	kW	102.3	
L.M.T.D.	K	7.0	
O.H.T.C clean conditions	W/(m2*K)	3489	
O.H.T.C service	W/(m2*K)	3123	
Heat transfer area	m2	4.7	
Fouling resistance* 10000	m2*K/W	0.34	
Duty margin	%	11.7	
Relative directions of fluids		Countercurrent	
Number of plates		33M	
Effective plates		31	
Number of passes		1	1
Extension capacity		/	
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 -> A2	S4 <- S3

Section 2: 16.5°C ->6.0°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1023	1001
Specific heat capacity	kJ/(kg*K)	3.93	4.21
Thermal conductivity	W/(m*K)	0.535	0.579
Viscosity inlet	cP	2.32	1.57
Viscosity outlet	cP	3.29	1.40
Volume flow rate	m3/h	5.0	13.5
Inlet temperature	°C	16.5	4.0
Outlet temperature	°C	6.0	7.7
Pressure drop	kPa	14.1	74.3
Heat Exchanged	kW	58.51	
L.M.T.D.	K	4.6	

O.H.T.C clean conditions	W/(m ² *K)	4014	
O.H.T.C service	W/(m ² *K)	3157	
Heat transfer area	m ²	4.1	
Fouling resistance* 10000	m ² *K/W	0.68	
Duty margin	%	27.2	
Relative directions of fluids		Countercurrent	
Number of plates		29H	
Effective plates		27	
Number of passes		1	1
Extension capacity		/	
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		A2 -> T1	T3 <- T4
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	1055 x 320 x 920	
Liquid volume	dm ³	9.0	9.0
Net weight, empty / operating	kg	180 / 198	

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-FMDB-74
Project: : PHE 3-2
Item : : 6000 l/h
Date : : 2022/1/28

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

Section 1: 35.0°C ->16.5°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1017	998.6
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	1.01
Volume flow rate	m3/h	6.0	17.9
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.9
Pressure drop	kPa	4.95	32.5
Heat Exchanged	kW	122.8	
L.M.T.D.	K	7.0	
O.H.T.C clean conditions	W/(m2*K)	3517	
O.H.T.C service	W/(m2*K)	3148	
Heat transfer area	m2	5.6	
Fouling resistance* 10000	m2*K/W	0.33	
Duty margin	%	11.7	
Relative directions of fluids		Countercurrent	
Number of plates		39M	
Effective plates		37	
Number of passes		1	1
Extension capacity		/	
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 -> A2	S4 <- S3

Section 2: 16.5°C ->6.0°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1023	1001
Specific heat capacity	kJ/(kg*K)	3.93	4.21
Thermal conductivity	W/(m*K)	0.535	0.579
Viscosity inlet	cP	2.32	1.57
Viscosity outlet	cP	3.29	1.40
Volume flow rate	m3/h	6.0	16.2
Inlet temperature	°C	16.5	4.0
Outlet temperature	°C	6.0	7.7
Pressure drop	kPa	13.8	73.0
Heat Exchanged	kW	70.21	
L.M.T.D.	K	4.6	

O.H.T.C clean conditions	W/(m ² *K)	3985	
O.H.T.C service	W/(m ² *K)	3085	
Heat transfer area	m ²	5.0	
Fouling resistance* 10000	m ² *K/W	0.73	
Duty margin	%	29.2	
Relative directions of fluids		Countercurrent	
Number of plates		35H	
Effective plates		33	
Number of passes		1	1
Extension capacity		/	
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		A2 -> T1	T3 <- T4
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	1055 x 320 x 920	
Liquid volume	dm ³	10.8	10.8
Net weight, empty / operating	kg	192 / 214	

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-FMDB-92
Project: : PHE 3-2
Item : : 7500 l/h
Date : : 2022/1/28

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

Section 1: 35.0°C ->16.5°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1017	998.6
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	1.01
Volume flow rate	m3/h	7.5	22.3
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.9
Pressure drop	kPa	4.98	32.9
Heat Exchanged	kW	153.4	
L.M.T.D.	K	7.0	
O.H.T.C clean conditions	W/(m2*K)	3493	
O.H.T.C service	W/(m2*K)	3099	
Heat transfer area	m2	7.1	
Fouling resistance* 10000	m2*K/W	0.36	
Duty margin	%	12.7	
Relative directions of fluids		Countercurrent	
Number of plates		49M	
Effective plates		47	
Number of passes		1	1
Extension capacity		/	
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 -> A2	S4 <- S3

Section 2: 16.5°C ->6.0°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1023	1001
Specific heat capacity	kJ/(kg*K)	3.93	4.21
Thermal conductivity	W/(m*K)	0.535	0.579
Viscosity inlet	cP	2.32	1.57
Viscosity outlet	cP	3.29	1.40
Volume flow rate	m3/h	7.5	20.3
Inlet temperature	°C	16.5	4.0
Outlet temperature	°C	6.0	7.7
Pressure drop	kPa	14.2	75.5
Heat Exchanged	kW	87.76	
L.M.T.D.	K	4.6	

O.H.T.C clean conditions	W/(m ² *K)	4020	
O.H.T.C service	W/(m ² *K)	3112	
Heat transfer area	m ²	6.2	
Fouling resistance* 10000	m ² *K/W	0.73	
Duty margin	%	29.2	
Relative directions of fluids		Countercurrent	
Number of plates		43H	
Effective plates		41	
Number of passes		1	1
Extension capacity		/	
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		A2 -> T1	T3 <- T4
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	1055 x 320 x 920	
Liquid volume	dm ³	13.5	13.5
Net weight, empty / operating	kg	206 / 233	

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-FMDB-98
Project: : PHE 3-4
Item : : 8000 l/h
Date : : 2022/1/28

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

Section 1: 35.0°C ->16.5°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1017	998.6
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	1.01
Volume flow rate	m3/h	8.0	23.8
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.9
Pressure drop	kPa	4.90	32.5
Heat Exchanged	kW	163.7	
L.M.T.D.	K	7.0	
O.H.T.C clean conditions	W/(m2*K)	3455	
O.H.T.C service	W/(m2*K)	3038	
Heat transfer area	m2	7.7	
Fouling resistance* 10000	m2*K/W	0.40	
Duty margin	%	13.7	
Relative directions of fluids		Countercurrent	
Number of plates		53M	
Effective plates		51	
Number of passes		1	1
Extension capacity		19	
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 -> A2	S4 <- S3

Section 2: 16.5°C ->6.0°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1023	1001
Specific heat capacity	kJ/(kg*K)	3.93	4.21
Thermal conductivity	W/(m*K)	0.535	0.579
Viscosity inlet	cP	2.32	1.57
Viscosity outlet	cP	3.29	1.40
Volume flow rate	m3/h	8.0	21.6
Inlet temperature	°C	16.5	4.0
Outlet temperature	°C	6.0	7.7
Pressure drop	kPa	14.7	78.5
Heat Exchanged	kW	93.61	
L.M.T.D.	K	4.6	

O.H.T.C clean conditions	W/(m ² *K)	4069	
O.H.T.C service	W/(m ² *K)	3175	
Heat transfer area	m ²	6.5	
Fouling resistance* 10000	m ² *K/W	0.69	
Duty margin	%	28.2	
Relative directions of fluids		Countercurrent	
Number of plates		45H	
Effective plates		43	
Number of passes		1	1
Extension capacity		/	
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		A2 -> T1	T3 <- T4
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	1055 x 320 x 920	
Liquid volume	dm ³	14.4	14.4
Net weight, empty / operating	kg	211 / 240	

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-FMDB-124
Project: : PHE 3-5
Item : : 10000 l/h
Date : : 2022/1/28

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

Section 1: 35.0°C ->16.5°C

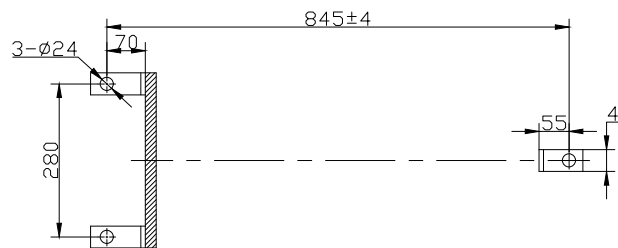
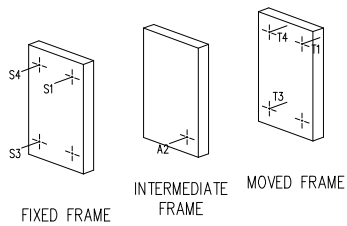
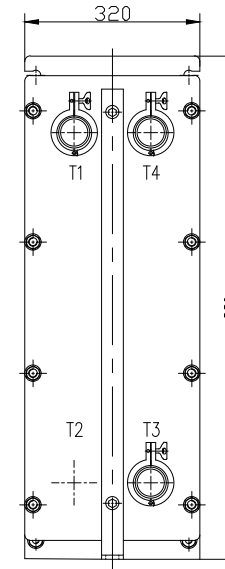
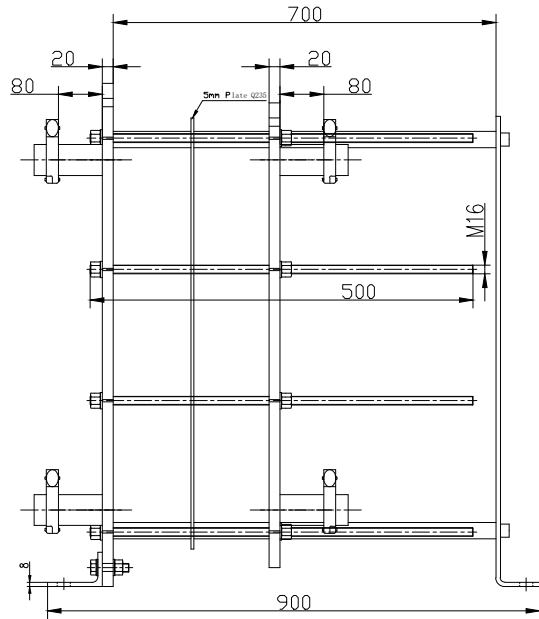
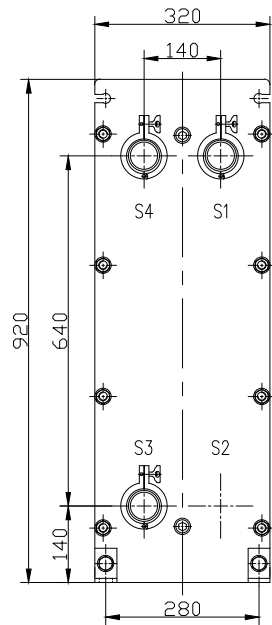
		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1017	998.6
Specific heat capacity	kJ/(kg*K)	3.93	4.20
Thermal conductivity	W/(m*K)	0.550	0.596
Viscosity inlet	cP	1.39	1.17
Viscosity outlet	cP	2.32	1.01
Volume flow rate	m3/h	10.0	29.8
Inlet temperature	°C	35.0	14.0
Outlet temperature	°C	16.5	19.9
Pressure drop	kPa	4.99	33.6
Heat Exchanged	kW	204.6	
L.M.T.D.	K	7.0	
O.H.T.C clean conditions	W/(m2*K)	3420	
O.H.T.C service	W/(m2*K)	2981	
Heat transfer area	m2	9.8	
Fouling resistance* 10000	m2*K/W	0.43	
Duty margin	%	14.7	
Relative directions of fluids		Countercurrent	
Number of plates		67M	
Effective plates		65	
Number of passes		1	1
Extension capacity		/	
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 -> A2	S4 <- S3

Section 2: 16.5°C ->6.0°C

		Hot side	Cold side
Fluid		Milk	Water
Density	kg/m3	1023	1001
Specific heat capacity	kJ/(kg*K)	3.93	4.21
Thermal conductivity	W/(m*K)	0.535	0.579
Viscosity inlet	cP	2.32	1.57
Viscosity outlet	cP	3.29	1.40
Volume flow rate	m3/h	10.0	27.0
Inlet temperature	°C	16.5	4.0
Outlet temperature	°C	6.0	7.7
Pressure drop	kPa	14.5	77.3
Heat Exchanged	kW	117.0	

L.M.T.D.	K	4.6	
O.H.T.C clean conditions	W/(m ² *K)	4023	
O.H.T.C service	W/(m ² *K)	3090	
Heat transfer area	m ²	8.3	
Fouling resistance* 10000	m ² *K/W	0.75	
Duty margin	%	30.2	
Relative directions of fluids		Countercurrent	
Number of plates		57H	
Effective plates		55	
Number of passes		1	1
Extension capacity		/	
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		A2 -> T1	T3 <- T4
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	1055 x 320 x 920	
Liquid volume	dm ³	18.3	18.3
Net weight, empty / operating	kg	230 / 267	

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



Milk Cooling Model Double Bank Mains & Chilled Water	
Unit 1	FD0705-PHE-3.1 5000l/h-62Plt
Unit 2	FD0705-PHE-3.2 6000l/h-74Plt
Unit 3	FD0705-PHE-3.3 7500l/h-92Plt
Unit 4	FD0705-PHE-3.4 8000l/h-98Plt
Unit 5	FD0705-PHE-3.5 10000l/h-124Plt

CONNECTION DATA			
No.	Size	Type	Application
S1	2	2 inch Tri-clamp SS316	Hot In
A2	2	Metal insert 2 inch SS316 Lining	Hot Out
S3	2	2 inch Tri-clamp SS316	Cold In
S4	2	2 inch Tri-clamp SS316	Cold Out
A2	2	Metal insert 2 inch SS316 Lining	Hot In
T1	2	2 inch Tri-clamp SS316	Hot Out
T4	2	2 inch Tri-clamp SS316	Cold In
T3	2	2 inch Tri-clamp SS316	Cold Out

DESIGN DATA	
PLATE MATERIAL	SS316
PLATE THICKNESS	0.5mm
GASKET MATERIAL	NBRFF
FRAME MATERIAL	CS(Q235)
NUMBER OF PLATES	62/74/92/98/124
PLATE GROUP	//
HEAT TRANSFER AREA	//
DESIGN TEMPERATURE	50.0 °C
DESIGN/TEST PRESSURE	6.0/7.8 bar
EMPTY/OPERATING WEIGHT	//

REV.	ITEM	DESIGNATION	SIGNATURE	DATE

Fluid Dynamics Pty. Limited
 HEAT EXCHANGERS • OIL COOLERS
 INDUSTRIAL • AUTOMOTIVE • MARINE
 25-27 Star Crescent, Hailam, VIC. 3803, AUSTRALIA
 Tel +61 3 8789 4500 Fax +61 3 8786 5777
 www.fluidynamics.com.au



DESIGNED	STANDARDIZED APPR	NO.	WEIGHT	SCALE	INSTALLAION DRAWING
CHECKED	FINAL APPR	Double Bank Milk Cooler, Chilled & Mains Water		DNS	
APPROVED	APPROVAL	ME Rev 0			
TECHNICAL AUDIT	DATE	2022.02.15			