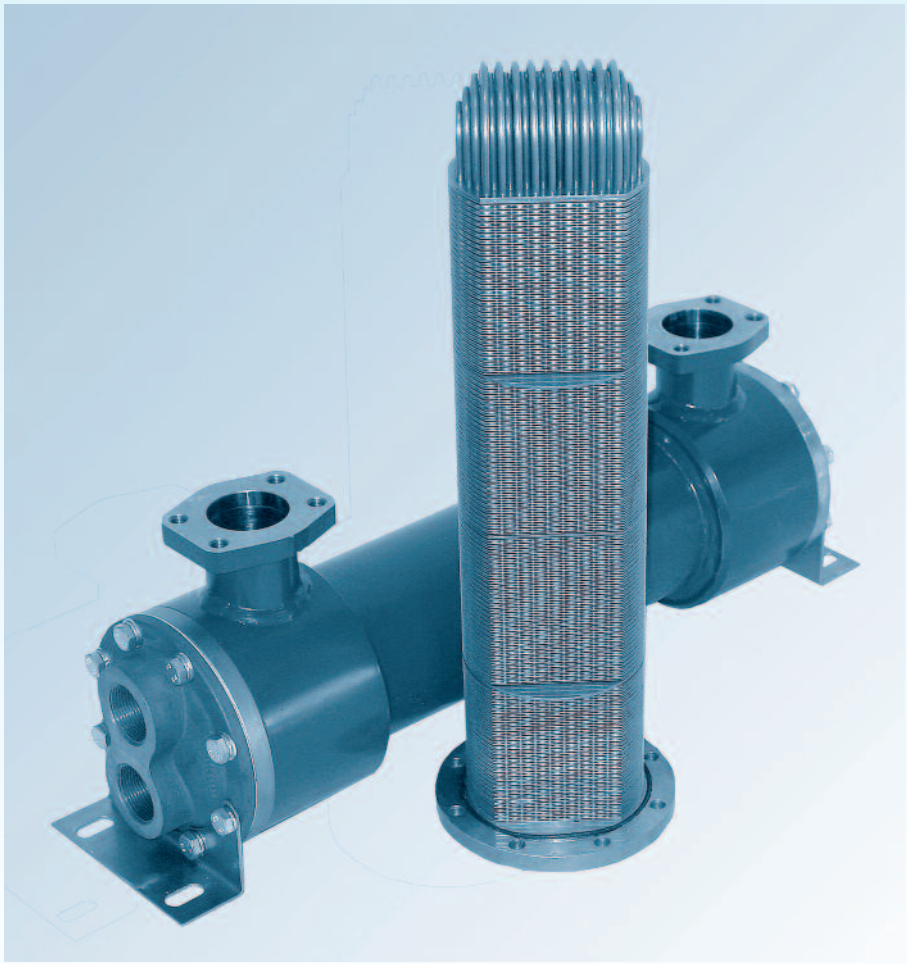
advanced quality
customised designs
made in europe

Fluid Dynamics
INTEGRITY

FluidEX™ HYBRID
Oil/Water heat exchangers

Series
FX-H

For industrial use



Applications:
Mainly hydraulic
Mobile / Gears / Compressors

- **Compact design**
- **High performance**
- **Low costs**

• PROVEN RELIABILITY • PROVEN PERFORMANCE •

High Performance Heat Exchangers

Product description

Product description

The FX-H series is a logical further development on a tube-bank heat exchanger for a wide range of industrial applications.
This range is particularly effective due to the additional cooling area.This is produced by aluminium fins, which are pushed over the bank of tubes with metal-to-metal contact. The FX-H range of heat exchangers has a cooling surface of from 0.73 m² to 29 m².
The FX-H series is constructed of more than 30 basic units, and is available as double and four pass versions.

Product features

- Aluminium fins and copper or copper-nickel tubes ensure maximum levels of heat exchange
- Large-bore oil connections for minimum flow resistance
- Oil flow rates of up to 650 l/min
- Removable end cap
- Flanges allow the heat exchanger to be turned through 90°
- Optionally available with internal bypass check valve (patented)
- High-quality materials
- Max. pressure: oil 35 bar / water 16 bar
- Full range of accessories available
- Delivery ex-stock

Option

- Sea water version

Materials

	Standard	**Sea water**
Shell Mounting bracket Baffles	Steel	
End plates	Brass	Special brass
Cooling fins Type destignation plate	Aluminium	
Tubes:	Copper	Copper/Nickel
End caps	Cast iron	*Cast iron
Gaskets	Nitrile rubber, cellulose fibre	
Additional installation		zinc anode

**Nickel coating treatment*

Example calculation

For different oil outlet temperatures, water inlet temperatures and viscosities, the following calculation must be made:

Where:

Heat to be dissipated (AW)	=	17kW
Oil flow (V)	=	80 l/mn.
Oil outlet temp. ($t_{oil\ out}$)	=	45°C
Water inlet temp. ($t_{water\ in}$)	=	25°C
Oil type	=	ISO 68
Effective heat to be dissipated	=	kW eff.

1. The viscosity correction factor is calculated as follows:

Temperature difference ΔT (°C) =

$$\frac{AW\ (kW) \times 34{,}1}{Q\ (l/mn)} = \mathbf{7{,}2}$$

Average oil temp. therefore (°C) =

$$\frac{t_{oil\ out} + \Delta t + t_{oil\ out}}{2} = \mathbf{49°C}$$

2. From oil manufacturer's data for ISO 68:
Viscosity at 49°C = 38 cSt

3. From viscosity correction table „A":
38 cSt = 1,11

AW_{eff} =

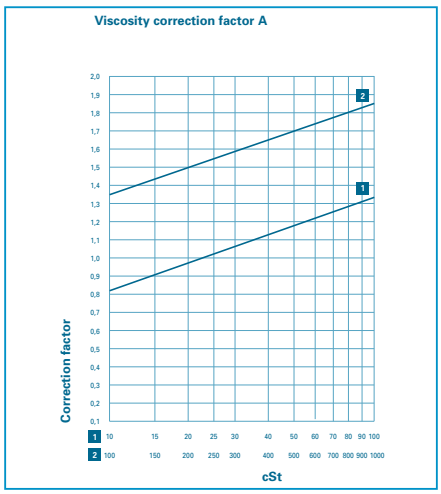
$$\frac{AW\ (kW) \times 25 \times \text{viscosity}\ (cSt)\ \text{Tab. A}}{t_{oil\ out}\ (°C) - t_{water\ in}\ (°C)}$$

$$= \frac{17 \times 25 \times 1{,}11}{20} = \mathbf{23.6\ kW}$$

From oil/water 2:1 performance diagram at an oil flow of 80 l/min and 23.6 kW, we thus arrive at:

Cooler n° 31 = FX-H - 718 -T

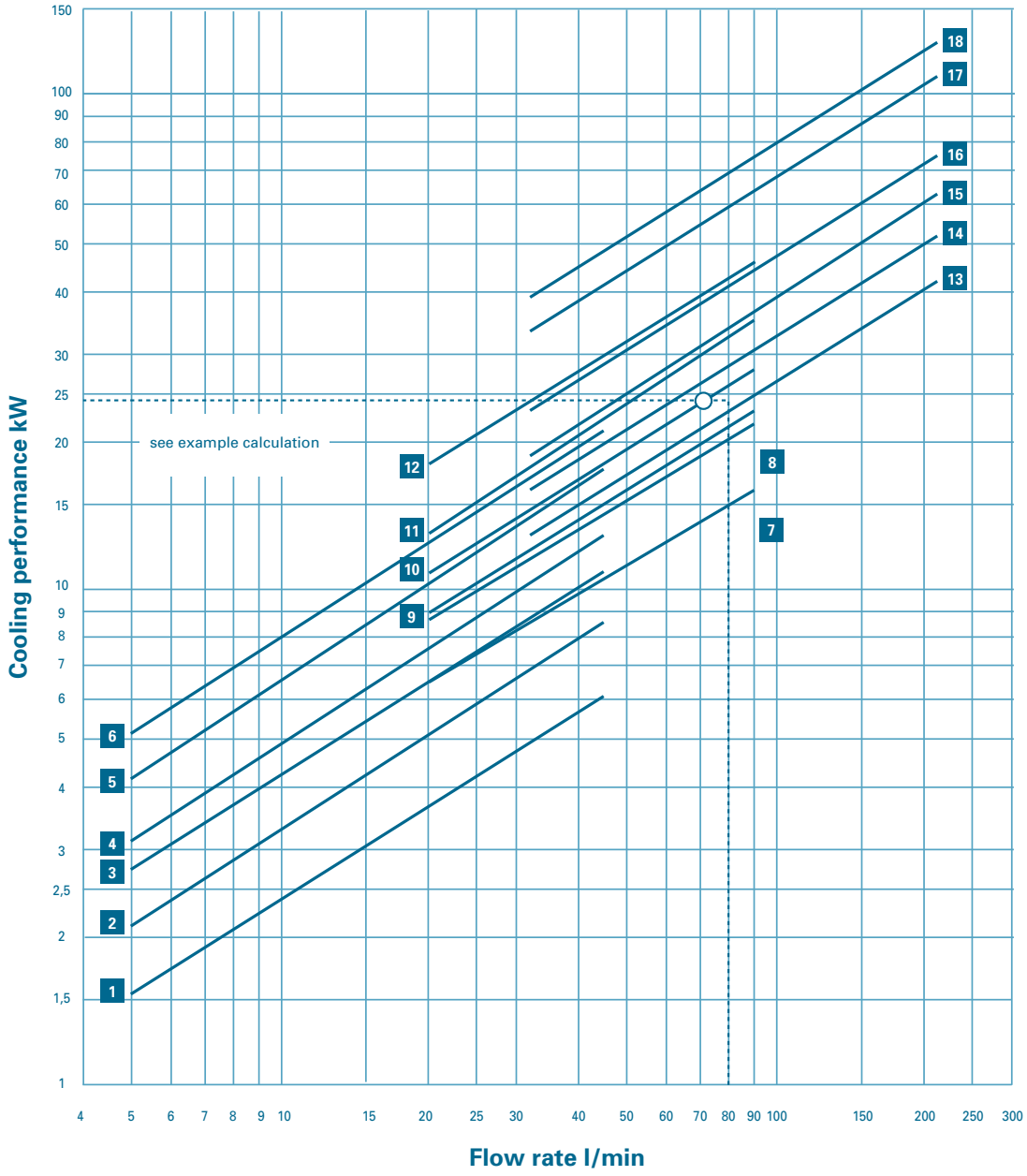
Choice of cooler



The performance data shown is based on a water inlet temperature of 25°C and an oil outlet temperature of 50°C, together with an oil viscosity of 20.6 cSt.
For different viscosities, the correction factor "A" can be read off from the performance curve beside.

Performance Data

2 pass



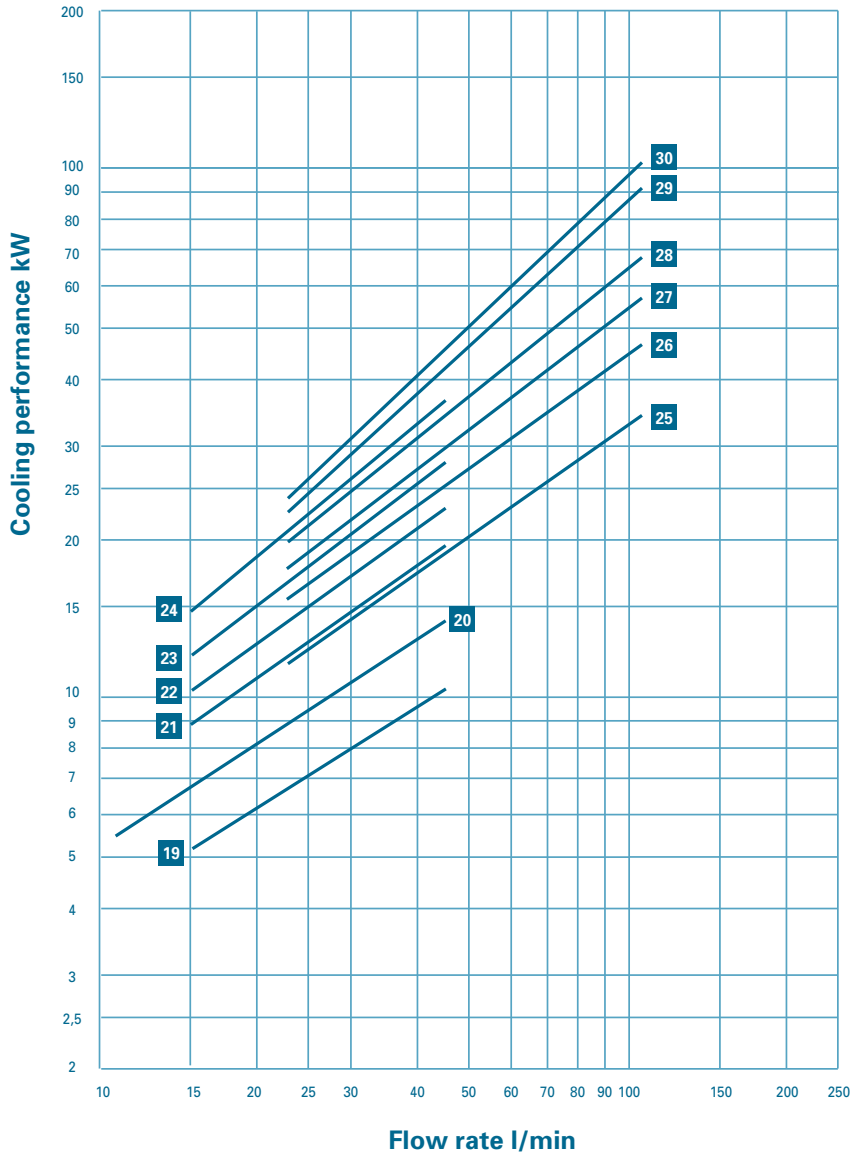
model

1. FX-H-508-T	10. FX-H-718-T
2. FX-H-512-T	11. FX-H-714-T
3. FX-H-514-T	12. FX-H-736-T
4. FX-H-518-T	13. FX-H-1012-T
5. FX-H-524-T	14. FX-H-1014-T
6. FX-H-536-T	15. FX-H-1018-T
7. FX-H-708-T	16. FX-H-1024-T
8. FX-H-712-T	18. FX-H-1036-T
9. FX-H-714-T	19. FX-H-1048-T

The performance data shown in the diagram are limited by the flow rate, and may be exceeded after consultation with the manufacturer.

Performance Data

4 Pass

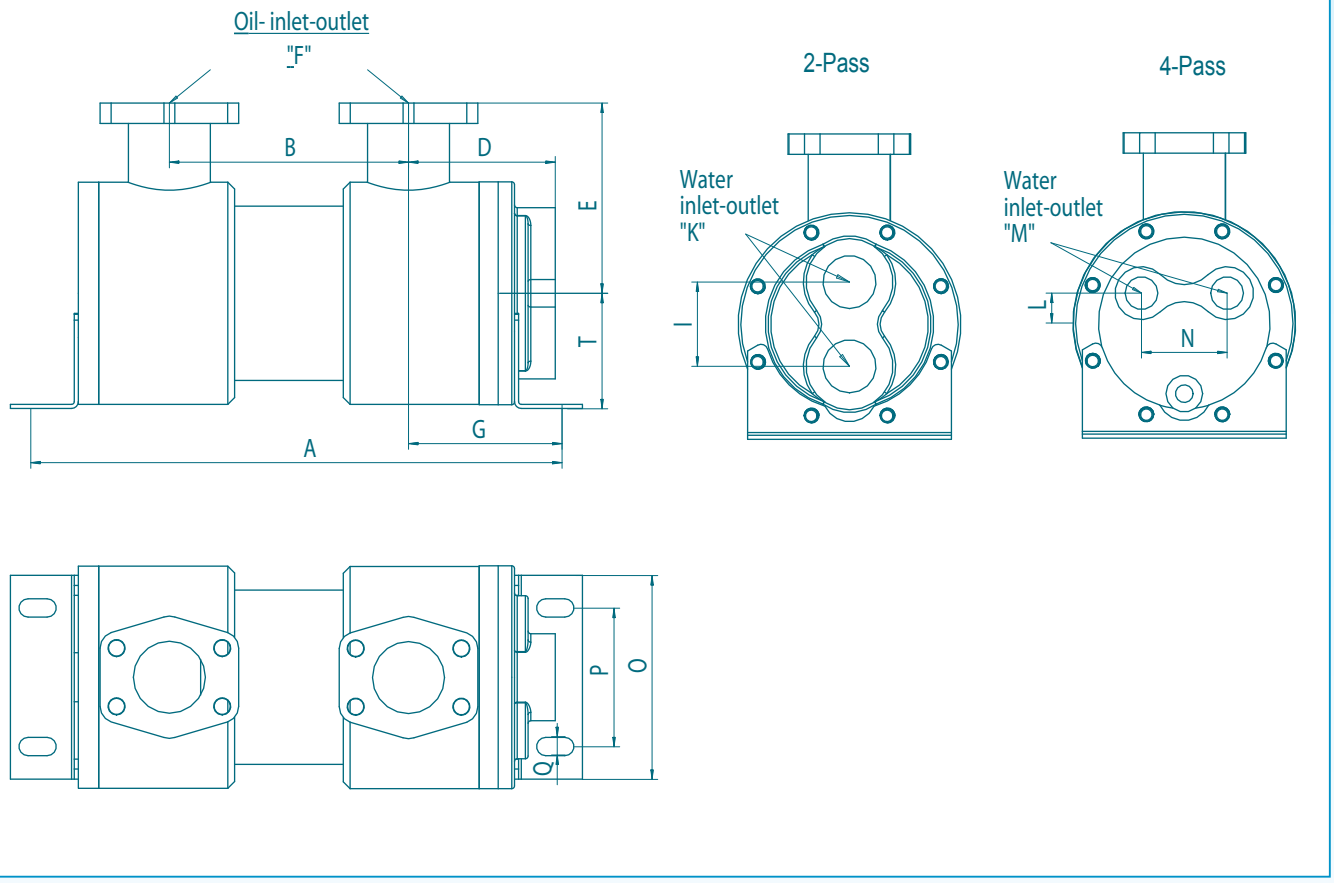


model

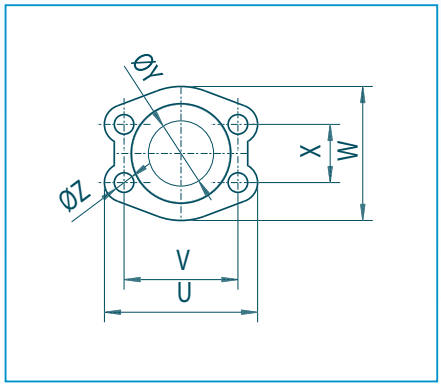
19. FX-H-708-F	25. FX-H-1012-F
20. FX-H-712-F	26. FX-H-1014-F
21. FX-H-714-F	27. FX-H-1018-F
22. FX-H-718-F	28. FX-H-1024-F
23. FX-H-724-F	29. FX-H-1036-F
24. FX-H-736-F	30. FX-H-1048-F

The performance data shown in the diagram are limited by the flow rate, and may be exceeded after consultation with the manufacturer.

Dimensions FX-H



Dimensions flange



	U	V	W	X	Z
SAE 1“	70	52,4	55	26,2	M10
SAE 1 1/4“	79	58,7	68	30,2	M10
SAE 1 1/2“	93	69,9	78	35,7	M12
SAE 2“	102	77,8	90	42,9	M12
SAE 2 1/2“	114	88,9	105	50,8	M12

Unit Dimensions

	Dimensions							2-Pass			4-Pass			Foot		
in mm / BSPP	A	B	D	E	G	F	T	I	K	L	M	N	0	P	Q (Ø)	m²
FX-H-508	309	177,5	66	75	71	G 1“	55	35	G 1/2“	-	-	-	95	63	8,5x16	0,73
FX-H-512	410	278,5	66	75	71	G 1“	55	35	G 1/2“	-	-	-	95	63	8,5x16	1,13
FX-H-514	461	329,5	66	75	71	G 1“	55	35	G 1/2“	-	-	-	95	63	8,5x16	1,43
FX-H-518	563	431,5	66	75	71	G 1“	55	35	G 1/2“	-	-	-	95	63	8,5x16	1,74
FX-H-524	715	583,5	66	75	71	G 1“	55	35	G 1/2“	-	-	-	95	63	8,5x16	2,35
FX-H-536	1020	888,5	66	75	71	G 1“	55	35	G 1/2“	-	-	-	95	63	8,5x16	3,57
FX-H-708	324	155	85	90	89	G 11/2“	66	47	G 1“	18	G 1/2“	48	120	76	11x25	1,38
FX-H-712	425	256	85	90	89	G 11/2“	66	47	G 1“	18	G 1/2“	48	120	76	11x25	2,18
FX-H-714	476	307	85	90	89	G 11/2“	66	47	G 1“	18	G 1/2“	48	120	76	11x25	2,53
FX-H-718	578	409	85	90	89	G 11/2“	66	47	G 1“	18	G 1/2“	48	120	76	11x25	3,29
FX-H-724	730	561	85	90	89	G 11/2“	66	47	G 1“	18	G 1/2“	48	120	76	11x25	4,44
FX-H-736	1035	866	85	90	89	G 11/2“	66	47	G 1“	18	G 1/2“	48	120	76	11x25	6,73
FX-H-1012	464	261	105	140	108	G 11/2“	85	62	G 11/4“	22	G 3/4“	63	150	102	13x28	4,38
FX-H-1014	515	312	105	140	108	G 11/2“	85	62	G 11/4“	22	G 3/4“	63	150	102	13x28	5,17
FX-H-1018	617	414	105	140	108	G 11/2“	85	62	G 11/4“	22	G 3/4“	63	150	102	13x28	6,73
FX-H-1024	769	566	105	140	108	G 11/2“	85	62	G 11/4“	22	G 3/4“	63	150	102	13x28	9,06
FX-H-1036	1074	871	105	140	108	G 11/2“	85	62	G 11/4“	22	G 3/4“	63	150	102	13x28	13,74
FX-H-1048	1379	1176	105	140	108	G 11/2“	85	62	G 11/4“	22	G 3/4“	63	150	102	13x28	18,41
FX-H-1060	1684	1481	105	140	108	G 11/2“	85	62	G 11/4“	22	G 3/4“	63	150	102	13x28	23,1
FX-H-1218	618	390	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	6,00
FX-H-1224	770	542	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	8,06
FX-H-1230	923	695	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	10,19
FX-H-1236	1075	847	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	12,25
FX-H-1242	1228	1000	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	14,38
FX-H-1248	1380	1152	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	16,35
FX-H-1254	1532	1304	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	18,48
FX-H-1260	1685	1457	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	20,52
FX-H-1266	1837	1609	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	22,63
FX-H-1272	1990	1762	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	24,74
FX-H-1278	2143	1915	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	26,88
FX-H-1284	2295	2067	131	145	116	SAE 2 1/2“	120	87	G 2“	25	G 1“	70	190	142	13x28	28,99

** Option: Unit size 500 + 700: SAE 1 1/2“; Unit size 1000: Thread*
** Option: Unit size 1200: K - R 1“, R 1 1/4“, R 1 1/2“*

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Ordering code

FX-HM - 1014 - 2 - T - R - CN - W - SW - 01 -GL - S

Connection type
NPT = **-**
SAE = **S**
BSPF = **M**
SAE flange = **FM**

Unit size

Guide segment setting

Cooling water connection system
2-pass = **T**
4-pass, without series 500 = F

R = Bypass valve (partly opened)
RS = Bypass valve (fully opened)

CU = Tubes Copper
CN = Tubes Copper/Nickel

W = End plates Copper/Nickel

SW = Sea water

Serie 01

GL =German Lloyd

S = Special version

Technical data

Maximum operating Pressure	Shell	35 bar
	Tubes	16 bar
Maximum operating temperature		95 °C

Maximum flow rate

l/min	**Oil** Shell	**Water** Tubes CU		**Water** Tubes CN		**Sea water** Tubes CN	
Version		**T**	**F**	**T**	**F**	**T**	**F**
FX-H - 500	75	17	-	26	-	22	-
FX-H - 700	225	34	16	52	24	43	21
FX-H - 1000	400	82	40	122	58	102	51
FX-H - 1200	650	182	91	272	136	227	114

The technical data of this sheet is depending on the described operational conditions and individual cases. At different operational conditions and differing individual cases contact Fluid Dynamics.

Technical modifications reserved. Please also pay attention to our operation manuals and maintenance documentations.

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