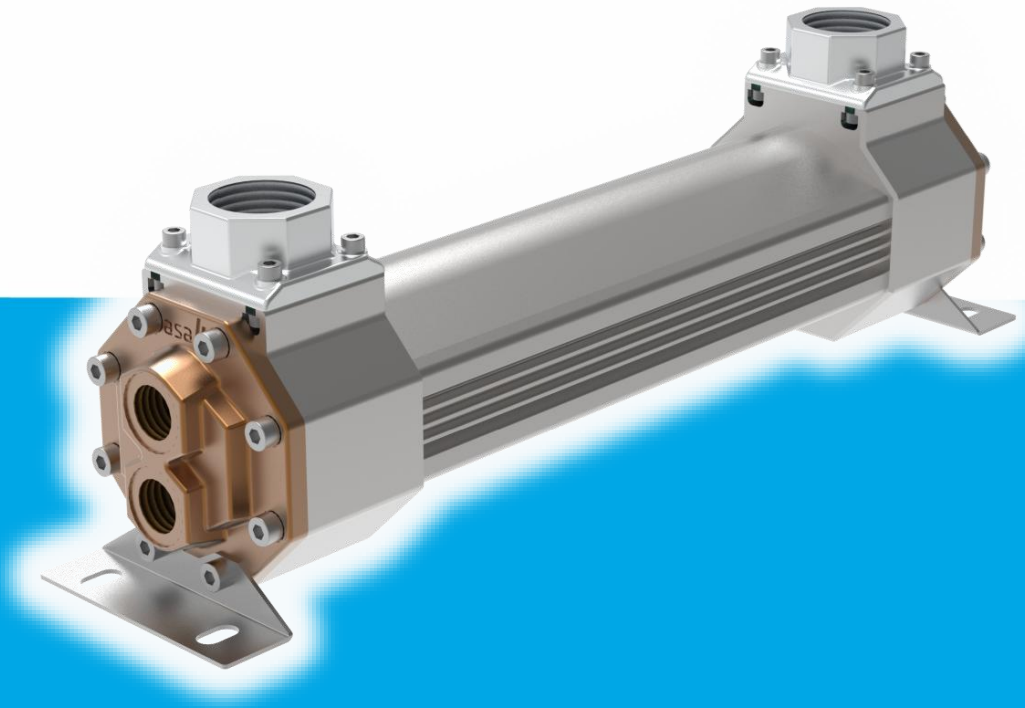


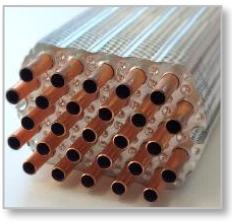
Thermal Systems

Shell & Tube Heat Exchanger
Fluid / Fluid Cooler
HM-Line

be different.
make a difference.

Fluid / Fluid Coolers
ST-Series, HM - Line

Function



The *asa* hybrid Shell & Tube HM-Line represents a major development of shell and tube heat exchangers for a wide range of industrial & mobile applications. Its innovative hybrid design with finned tubes provides an expanded cooling surface , while the heat exchanger can be disassembled to perform effortless cleaning both on the water and oil side thus maintaining the highest operational efficiency. The HM-Line stands out with its exceptional heat exchange capabilities, outperforming conventional designs. Its versatility ensures reliable operation regardless of fluid quality, making it a robust solution for even the most challenging environments. Available in single or multi-pass configurations, the *asa* HM-Line is the ultimate choice for superior performance and adaptability.

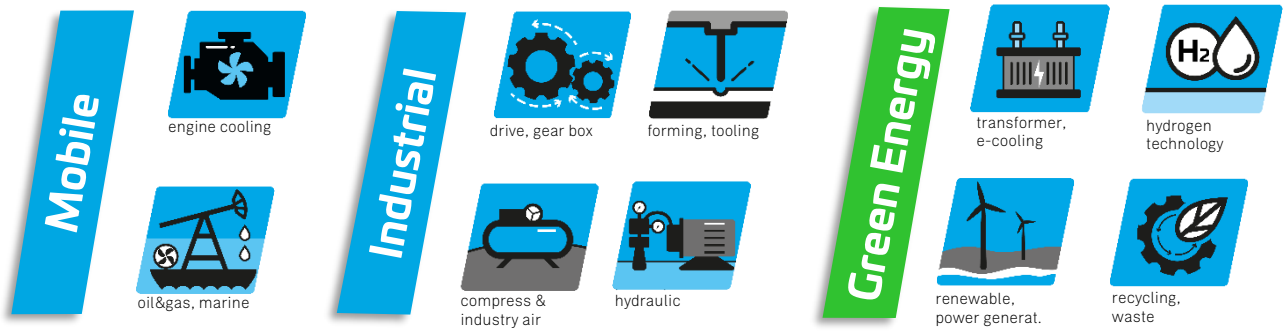
Design

The high corrosion resistant aluminium housing is precision-engineered, ensuring a lightweight and long-lasting solution for the heat transfer needs. Installation is easy thanks to the rotatable mounting feet. The innovative screw-assembly design, sealed with high quality O-rings, guarantees a leak-proof and maintenance-friendly operation. The copper-nickel tubes, rotary expanded into tube sheets, provide unparalleled structural integrity and optimal heat transfer. Aluminium fins, stacked onto the tube bundle, deliver a massive increase in heat exchange surface compared to outdated smooth tube designs. This ensures maximum performance with minimal footprint. Engineered for easy disassembly, this design allows fast cleaning and maintenance, reducing downtime and saving costs. With a sleek, corrosion-resistant build and enhanced thermal efficiency, this is the heat exchanger that can be trusted to outperform and outlast the competition.

Advantages

- **Aluminium housing without welds**: Precision-engineered with a seamless aluminium housing, ensuring lightweight durability and resistance to corrosion.
- **Admiralty brass bonnets:** Robust and corrosion-resistant, are built to handle demanding environments while maintaining reliable performance.
- **Copper-nickel tubes:** High-quality copper-nickel tubing provides excellent thermal conductivity and corrosion resistance, ensuring long-term performance in demanding environments.
- **Screw-assembly design with o-ring seals:** The modular design eliminates the need for welding, offering enhanced integrity and easy disassembly for maintenance and cleaning.
- **Enhanced cooling with aluminum fins:** Stacked aluminum fins maximize surface area, boosting cooling performance in compact dimensions.
- **Turnable mounting bracket:** Easily rotatable for seamless installation in any orientation, simplifying the mounting process.
- **Heat dissipation up to 300kW:** Powerful and efficient, with capability to handle high heat loads for a wide range of applications.
- **Same housing with different connection port types:** With the *asa* rail system the connection ports are outside of the housing. Allowing an easy port change in case of different connection types or damaged thread.
- **Connector sizes:** The connectors are available in the sizes 1 ½BSP, 1 ½NPT, 1 ⅞-12 UN, and 1 1/2 SAE and therefore allow adaptability of the shell and tube to different installation contexts.
- **Bypass:**

Applications



Fluid / Fluid Coolers
ST-Series, HM - Line

General data

shell	aluminium
head	aluminium
tube sheet	copper/nickel
tube	copper/nickel
bonnet	admiralty brass
extended fins	aluminium
mounting brackets	stainless steel
working pressure shell side (oil side)	max. 20 bar *
working pressure tube side	max. 10 bar
max. working temperature oil	120°C
max. working temperature water	100°C
bypass	2 bar (other pressure on request)

*Valid only for liquids (oil) from group 2, of PED 2014/68/EU

Order Code

I	L	W	S	T	C	M	B	B	P	5	2	4	1	H	_	_	_
1			2		3	4	5	6	7	8		9	10	11		12	

1 Product Series

I	Industrial Application
L	Heat exchanger
W	Oil/Water cooling

2 Product Series

ST	shell tube heat exchangers

3 Tube diameter

hybrid with fin	
C	Ø5 mm tubes

4 Material configuration

M	M-configuration

5 Shell connection

B	BSP thread (standard)
N	NPT cone thread (on request)
S	4-bolt SAE flange (on request)
U	SAE O-Ring (UNF) (on request)

6 Bonnet connection

B	BSP thread (standard)
N	NPT cone thread (on request)

7 Bypass

P	2 bar (only with 3 and 5 shell inner diameter)
0	no bypass

8 Shell inner diameter / compatible tube lengths

2	60 mm / only with 08 to 14
3	84 mm / only with 08 to 24
5	121 mm / only with 18 to 48

9 Tube length

08	208 mm
10	259 mm
12	310 mm
14	361 mm
18	462 mm
18	458 mm (05 - shell inner diameter)
24	615 mm
24	610 mm (05 - shell inner diameter)
36	915 mm
48	1220 mm

10 Flow passes

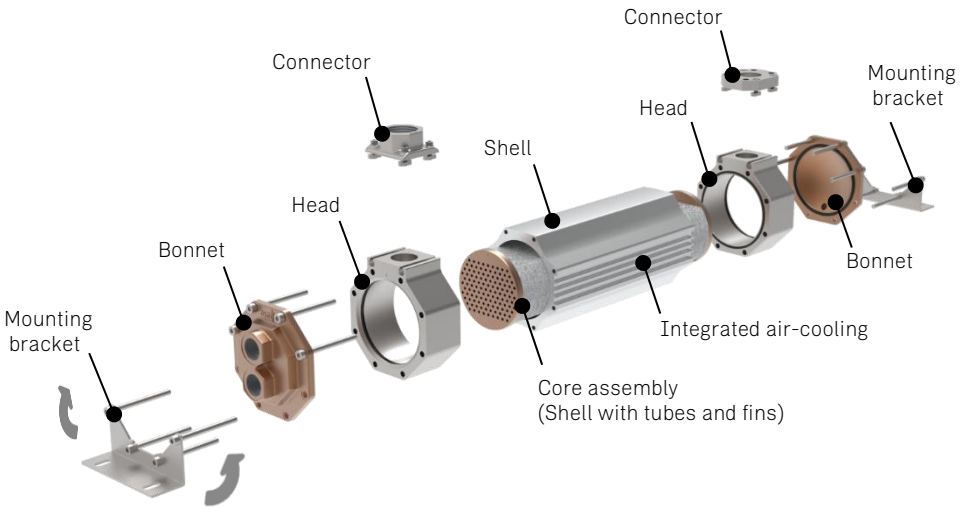
1	One pass
2	Two pass
4	Four pass

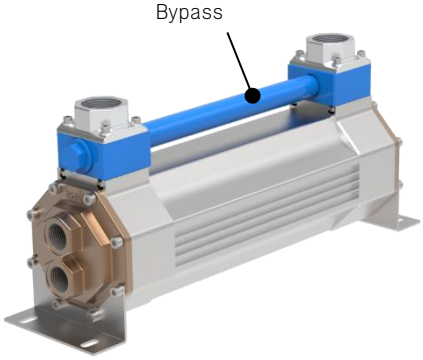
11 Sealing material

H	HNBR (standard)

12 Index /customized

BXX	To be advised by asa

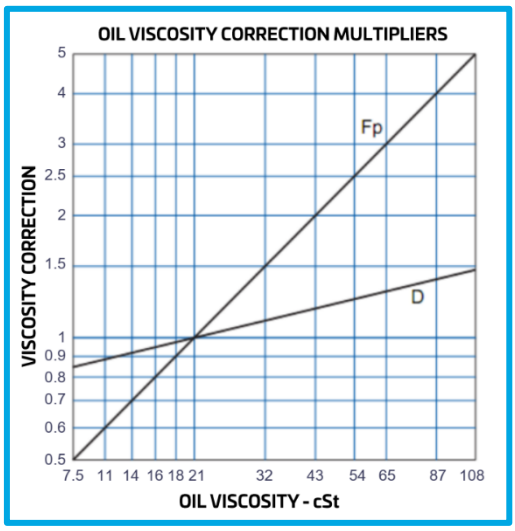




Selection procedure

Step 1 Thermal Duty Determination.

This will vary with different systems, but typically coolers are sized to remove 20% to 35% of the input nameplate kW.



Step 2 Determine Approach Temperature.

Desired oil leaving temp. = 50°C
Water inlet temperature = 30°C

Desired oil temp. °C leaving cooler – Water inlet temp. °C = Actual Approach
50°C – 30°C = 20 °C

Step 3 Determine kW Curve Heat Load

$$\text{kW heat load} \times \frac{22}{\text{Actual Approach}} \times \text{Viscosity Correction D} = \text{Curve kW Power}$$

Step 4 Enter Curves

Connect the Curve kW Power result and the oil flow rate with a dot on the Performance diagram (Page 5). Any curve above the intersecting point will work.

Step 5 Determine oil pressure drop

The values indicated in the diagram are valid for hydraulic oil with a viscosity of 21cSt. Multiply the pressure drop by the Correction factor Fp according to the used hydraulic oil viscosity.

○ = 0,35 bar, ☐ = 0,7 bar, △ = 1,4 bar

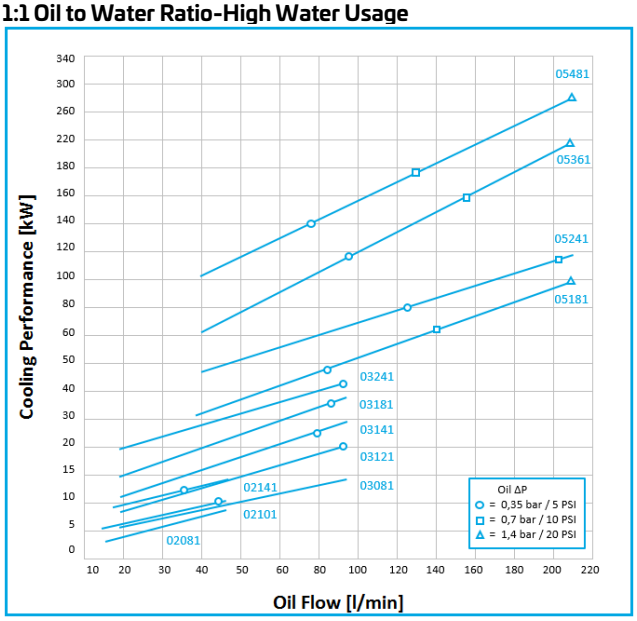
Oil Pressure Drop
- Most systems can tolerate a pressure drop through the heat exchanger of 1 to 2 bar.
- Excessive pressure drop should be avoided.

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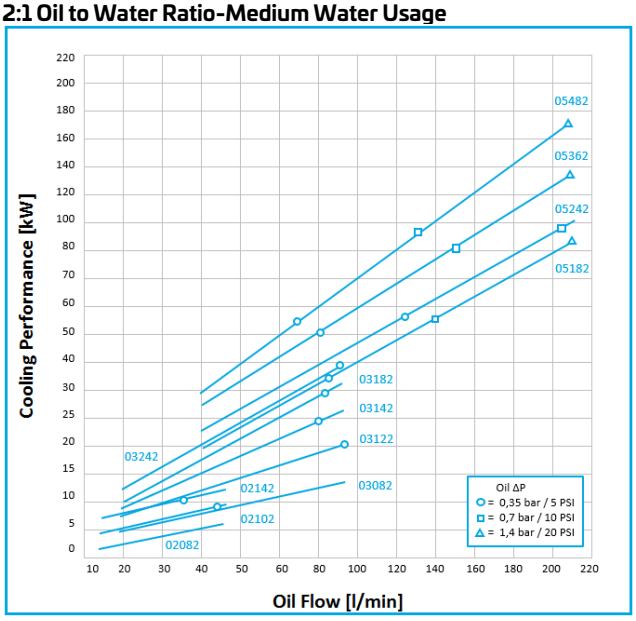
Fluid / Fluid Coolers
ST-Series, HM-Line

Performance at 21cSt

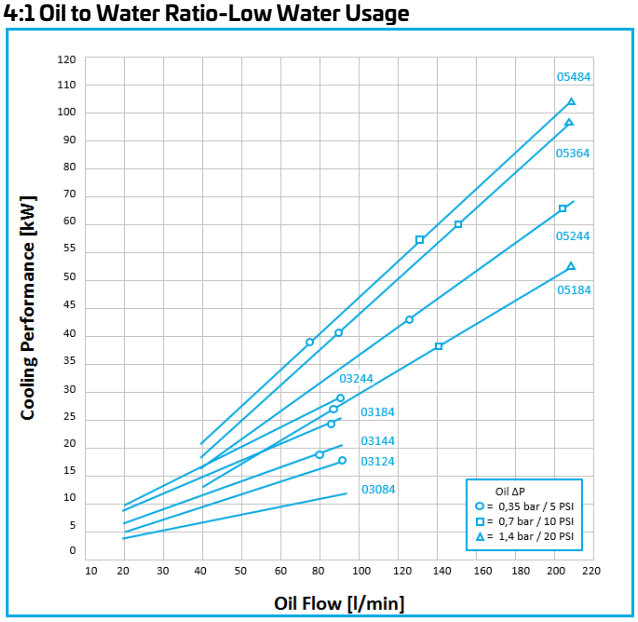
ONE PASS
1:1 Oil to Water Ratio-High Water Usage



TWO PASS
2:1 Oil to Water Ratio-Medium Water Usage



FOUR PASS
4:1 Oil to Water Ratio-Low Water Usage

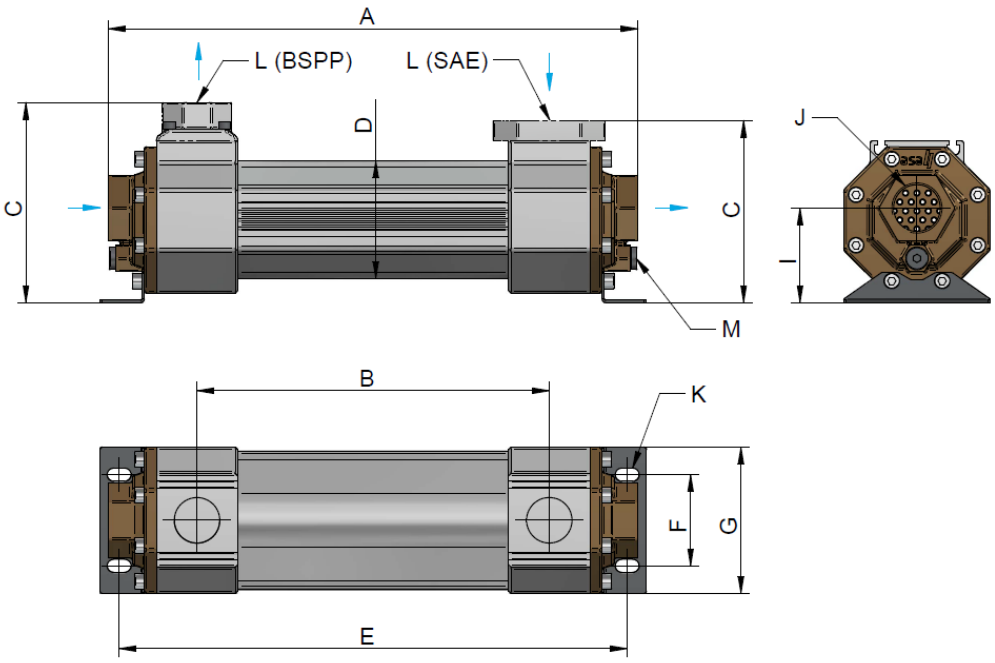


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Fluid / Fluid Coolers
ST-Series, HM-Line

ONE PASS



Dimension

order number	A	B	C		D	E	F	G	I	J	K	L		M	weight
	[mm]	[mm]	BSPP [mm]	SAE [mm]	Ø [mm]	[mm]	[mm]	[mm]	[mm]	BSPP/ NPT	slot [mm]	BSPP/ NPT	SAE	BSPP	[kg]
ILWSTCM....02081H	260	151	96	-	78	264	64	90	44	3/4"	9x16	3/4"	-	-	4
ILWSTCM....02101H	311	202	96	-	78	315	64	90	44	3/4"	9x16	3/4"	-	-	5
ILWSTCM....02141H	413	304	96	-	78	417	64	90	44	3/4"	9x16	3/4"	-	-	6
ILWSTCM....03081H	289	141	167	153	98	271	76	122	79	1 ¼"	11x20	1 ½"	1 ½"	1/4"	8
ILWSTCM....03121H	391	243	167	153	98	373	76	122	79	1 ¼"	11x20	1 ½"	1 ½"	1/4"	9
ILWSTCM....03141H	442	294	167	153	98	424	76	122	79	1 ¼"	11x20	1 ½"	1 ½"	1/4"	10
ILWSTCM....03181H	543	395	167	153	98	525	76	122	79	1 ¼"	11x20	1 ½"	1 ½"	1/4"	11
ILWSTCM....03241H	696	548	167	153	98	678	76	122	79	1 ½"	11x20	1 ½"	1 ½"	1/4"	13
ILWSTCM....05181H	543	391	208	194	148	545	102	150	88	1 ½"	11x25	1 ½"	1 ½"	1/4"	21
ILWSTCM....05241H	695	543	208	194	148	697	102	150	88	1 ½"	11x25	1 ½"	1 ½"	1/4"	24
ILWSTCM....05361H	1000	848	208	194	148	1002	102	150	88	1 ½"	11x25	1 ½"	1 ½"	1/4"	33
ILWSTCM....05481H	1305	1153	208	194	148	1307	102	150	88	1 ½"	11x25	1 ½"	1 ½"	1/4"	40

Water Flow Rates 1 Pass	
size	l/min
2"	49
3"	91
5"	212

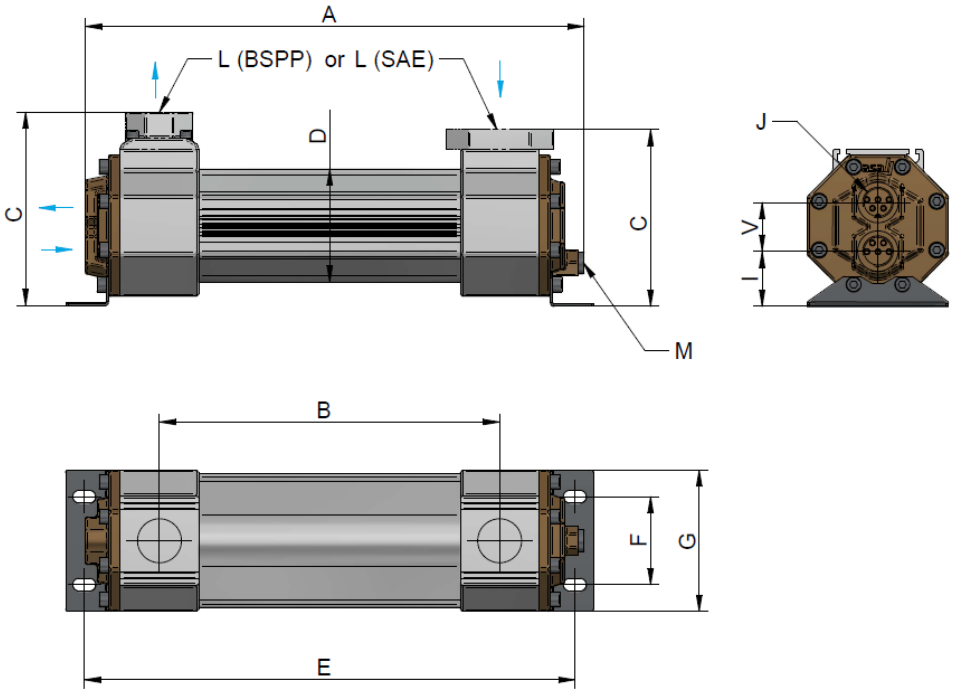


As standard, HM-Line coolers come with BSP connectors. For more options, refer to page 9.

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Fluid / Fluid Coolers
ST-Series, HM-Line

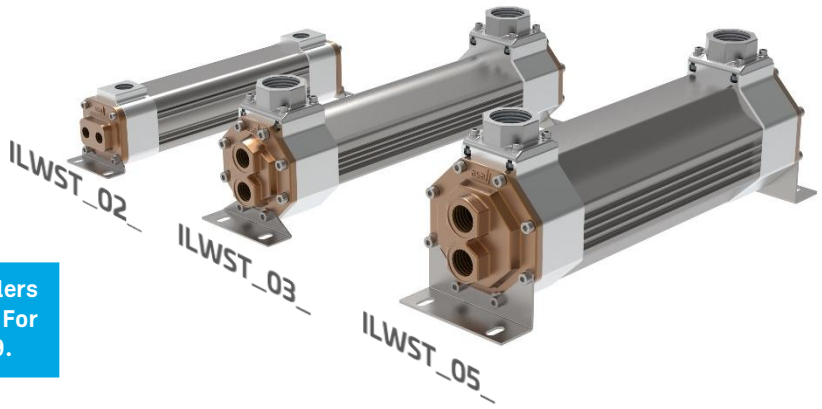
TWO PASS



Dimension

order number	A	B	C		D	E	F	G	I	J	K	L		M	V	weight
	[mm]	[mm]	BSPP [mm]	SAE [mm]	Ø [mm]	[mm]	[mm]	[mm]	[mm]	BSPP/ NPT	slot [mm]	BSPP/ NPT	SAE	BSPP	[mm]	[kg]
ILWSTCM....02082H	250	151	96	-	78	264	64	90	44	3/8”	9x16	3/4"	-	-	28	4
ILWSTCM....02102H	301	202	96	-	78	315	64	90	44	3/8”	9x16	3/4"	-	-	28	5
ILWSTCM....02142H	403	304	96	-	78	417	64	90	44	3/8”	9x16	3/4"	-	-	28	6
ILWSTCM....03082H	278	141	167	153	98	271	76	122	47	3/4”	11x20	1 ½“	1 ½“	1/4“	42	8
ILWSTCM....03122H	380	243	167	153	98	373	76	122	47	3/4“	11x20	1 ½“	1 ½“	1/4“	42	9
ILWSTCM....03142H	431	294	167	153	98	424	76	122	47	3/4“	11x20	1 ½“	1 ½“	1/4“	42	10
ILWSTCM....03182H	532	395	167	153	98	525	76	122	47	3/4“	11x20	1 ½“	1 ½“	1/4“	42	11
ILWSTCM....03242H	685	548	167	153	98	678	76	122	47	3/4“	11x20	1 ½“	1 ½“	1/4“	42	13
ILWSTCM....05182H	538	391	208	194	148	545	102	150	63	1”	11x25	1 ½“	1 ½“	1/4“	50	21
ILWSTCM....05242H	690	543	208	194	148	697	102	150	63	1”	11x25	1 ½“	1 ½“	1/4“	50	24
ILWSTCM....05362H	995	848	208	194	148	1002	102	150	63	1”	11x25	1 ½“	1 ½“	1/4“	50	33
ILWSTCM....05482H	1300	1153	208	194	148	1307	102	150	63	1“	11x25	1 ½“	1 ½“	1/4“	50	40

Water Flow Rates 2 Pass	
size	[l/min]
2”	23
3”	45
5” (5mm)	106

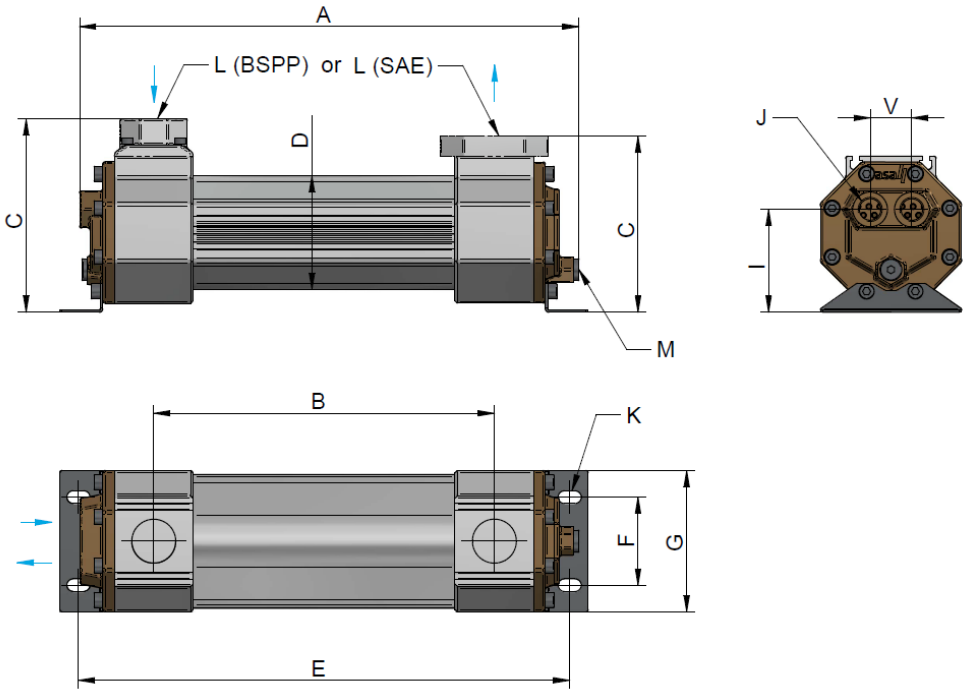


As standard, HM-Line coolers come with BSP connectors. For more options, refer to page 9.

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Fluid / Fluid Coolers
ST-Series, HM-Line

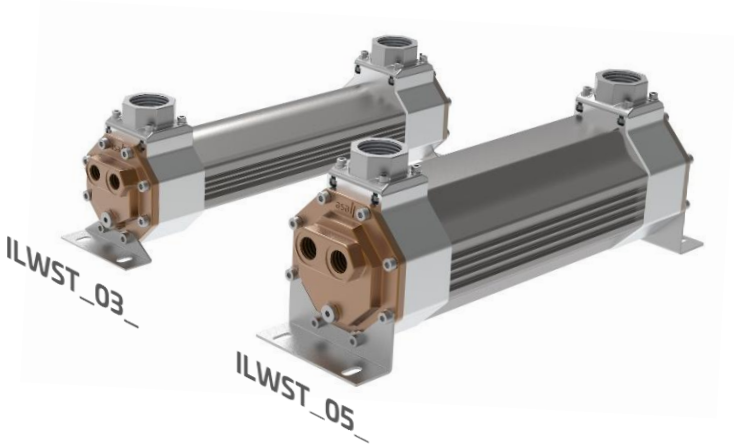
FOUR PASS



Dimension

order number	A	B	C		D	E	F	G	I	J	K	L		M	V	weight
	[mm]	[mm]	BSPP [mm]	SAE [mm]	Ø [mm]	[mm]	[mm]	[mm]	[mm]	[BSPP]	slot [mm]	BSPP/ NPT	SAE	BSPP	[mm]	[kg]
ILWSTCM....03084H	278	141	167	153	98	271	76	122	89	1/2”	11x20	1 ½”	1 ½”	1/4”	36	8
ILWSTCM....03124H	380	243	167	153	98	373	76	122	89	1/2”	11x20	1 ½”	1 ½”	1/4”	36	9
ILWSTCM....03144H	431	294	167	153	98	424	76	122	89	1/2”	11x20	1 ½”	1 ½”	1/4”	36	10
ILWSTCM....03184H	532	395	167	153	98	525	76	122	89	1/2”	11x20	1 ½”	1 ½”	1/4”	36	11
ILWSTCM....03244H	685	548	167	153	98	678	76	122	89	1/2”	11x20	1 ½”	1 ½”	1/4”	36	13
ILWSTCM....05184H	538	391	208	194	148	545	102	150	110	3/4”	11X25	1 ½”	1 ½”	1/4”	44	21
ILWSTCM....05244H	690	543	208	194	148	697	102	150	110	3/4”	11X25	1 ½”	1 ½”	1/4”	44	24
ILWSTCM....05364H	995	848	208	194	148	1002	102	150	110	3/4”	11X25	1 ½”	1 ½”	1/4”	44	33
ILWSTCM....05484H	1300	1153	208	194	148	1307	102	150	110	3/4”	11X25	1 ½”	1 ½”	1/4”	44	40

Water Flow Rates 4 Pass	
size	[l/min]
3”	23
5”	53



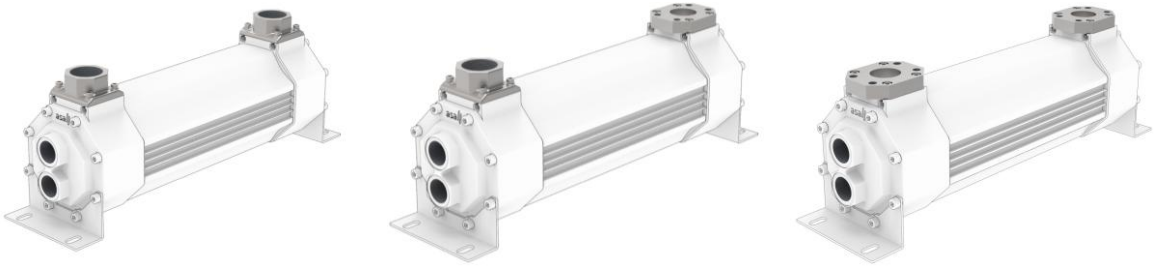
As standard, HM-Line coolers come with BSP connectors. For more options, refer to page 9.

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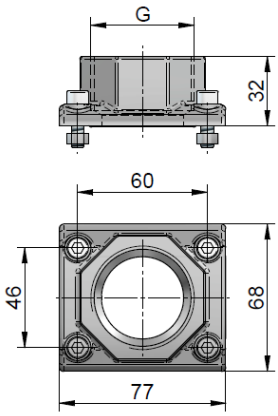
Fluid / Fluid Coolers
ST-Series, HM-Line

Thanks to its connectors, the new asa HM - Line offers great flexibility during both installation and maintenance. The octagonal shape of the connectors offers a good grip for a wrench to hold against when fastening the connections, thus preventing any damages. Furthermore, should a connector become damaged over time, it can be easily substituted, while damage to the shell and tube body is improbable due to the threadless plugin system, thus helping the user to limit maintenance costs.

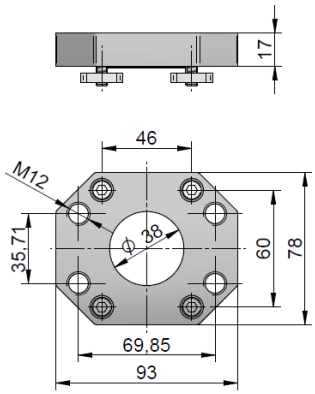
Connection Example:



ILWZASTTS0G40K
(ILWZASTTS0U40K)
(ILWZASTTS0N40K)



ILWZASTTS0S40K



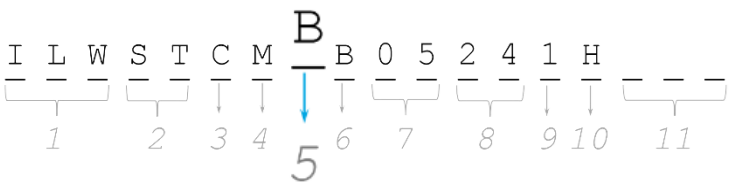
Technical Data

order number	description	G	connector material	o-ring	content	weight
						[kg]
ILWZASTTS0G40K	Connector block S&T rail 1 ½ BSP	1 ½ BSPP	aluminium	HNBR	asa connector 1x o-ring 1x screw 4x slot nut 4x	0,45
ILWZASTTS0N40K	Connector block S&T rail 1 ½ NPT	1 ½ NPT				0,45
ILWZASTTS0U40K	Connector block S&T rail 1 7/8-12 UN	1 7/8-12 UN				0,45
ILWZASTTS0S40K	Connector block S&T rail 1 ½ SAE					0,3

See Order Code (Page 3)

5 Shell connection

B	*BSP thread (standard)*
N	*NPT cone thread (on request)*
S	*4-bolt SAE flange (on request)*
U	*SAE O-Ring (UNF) (on request)*



This data sheet and the corresponding technical drawings serve solely as a general guideline and a technical overview of our products. Please contact us for additional information. We always try to keep the technical data up to date. However, due to constant development, no guarantee can be given for the correctness of the information (or printing errors). This applies to general properties such as dimensions, colors and weight. Any cooling performances and general technical values indicated in this catalogue are measured at a test benches according to asa testing procedures or calculated based on such tests and may therefore deviate from values obtained by test procedures from other manufacturers. The performance can vary by around +/- 15%. All information and calculation values are provided to the best of our knowledge, they do not represent intrinsic product properties and it is strongly recommended that the product is tested under the actual operating conditions. All drawings shown here are to be understood as schematic representations. For exact dimensions and the applicable tolerances, please ask for the corresponding scale drawings. Any form of liability is excluded for the information included in this datasheet. asa GmbH reserves the right to modify the product without any separate notification. This refers to both technical data and the product itself. Furthermore, it is herewith specified that the datasheet and the corresponding scale drawings are not a substitute for the assembly, installation and operating instructions.

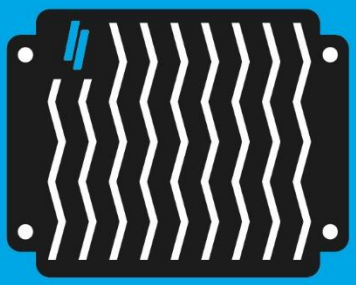
Company

asa stands for innovations and reliable solutions that are already being used by our customers in various mobile and stationary applications. With over 40 years of experience in thermal systems, connection technology, and fluid control, we have become a global leader in advanced fluid power solutions. Our experience fosters progress to grant you competitive pricing, consistent product performance, and exceptional reliability.

History

1980-1990

- Hydraulic components distribution, service and system integration
- Manufacture of valves and components
- Heat exchanger Shell & Tube platform "Silver ST80



Thermal Management Systems

Our heat exchangers are designed and produced with an innovative spirit and a passion for technology, ensuring highest performance and quality.

- Bar & Plate: oil and water/glycol coolers
- Tube & Fin: coolant cooler, silent pump, electronics cooler
- Shell & Tube

1990 - 2000

- Specializing on heat exchanger market
- Manufacture first modular cooler system in plate & bar "OKO" (2 brazing lines)
- Foundation of asa hydraulic of America Inc./ USA



Ventilation & Drive

We offer a broad range of ventilation solutions. The installation space influences the choice of the most suitable airflow technology, thus ensuring the optimal configuration for volume flow, efficiency and noise reduction.

- Ventilation: adjustable fan blade systems
- Six phase sensorless VR-motor
- Electronic fan speed control, temperature control

2000 - 2010

- Foundation of asa Products Pty Ltd / Australia
- Foundation of asa Hydraulik Technology
- Patents:
  - AUC - 1st flexible connectors
  - ABP - 1st intergated bypass tube
  - ATT - asa extruded profil



Fluid Controls

The asa gerotor pumps meet the demands of modern fluid power systems, while our centrifugal water pump units are designed primarily to create compact, cost-efficient cooling circuits for electric devices, such as battery packs and electric motors.

- Gerotor pumps
- Centrifugal water pumps

2010 - 2020

- New R&D Center / Austria
- Manufacture of water/oil pumps
- Foundation of asa heat exchanger Pvt. Ltd / India
- Patents:
  - x-changer "Fusion of heat exchanger & ventilation"
  - Multiaxial silent absorber



Connection Technology

Our connection product collection fills technological gaps in various markets and applications.

- Silent absorbers
- Multi-axle vibration absorbers
- Expansion joints
- Hybrid SAE/DIN shut-off valves

2020 - today

- New technology of six phase sensorless VR-motors
- Manufacture ST heat exchanger
- Manufacture X wings (new lead fins)
- Foundation of asahydraulic do Brasil Pvt. Ltd /Brazil
- Patents:
  - META - microchannel with flexible lead fins
  - AHM - hybrid shell tube heat exchanger

discover reliable technology!



Thermal Systems
Connection Technology
Fluid Controls



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