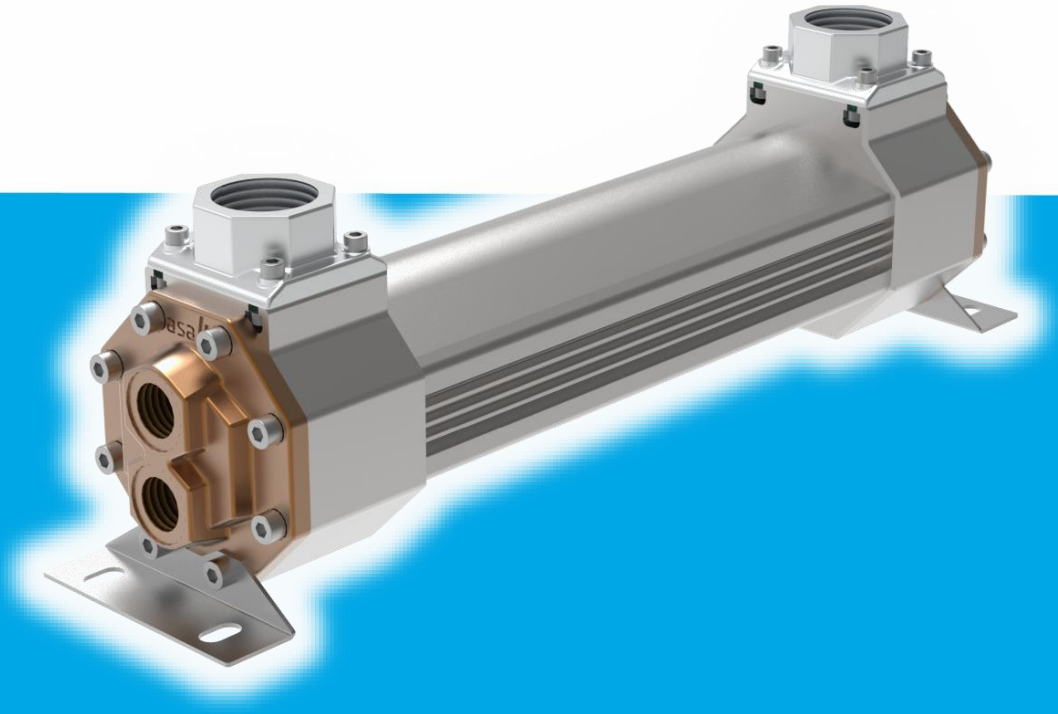


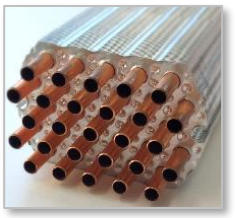
Thermal Systems

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.

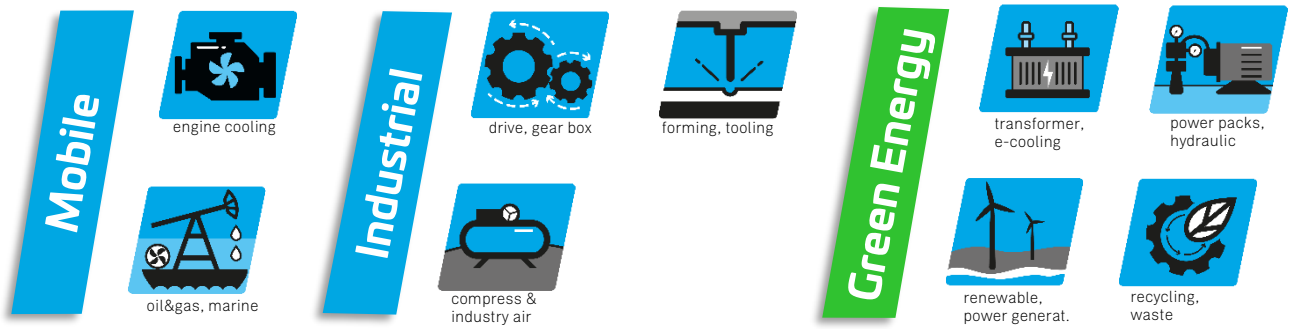
Design

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 bracket. 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 Aluminium fins, stacked onto the tube bundle, deliver a massive increase in heat exchange surface compared to outdated smooth tube designs.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 400 HP:** 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:** To safeguard your cooler against high-pressure spikes and cold-start damage, we offer an in-stock bypass option.

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. 290 PSI *
working pressure tube side	max. 145 PSI
max. working temperature oil	248°F
max. working temperature water	212°F
bypass	29 PSI (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	U	0	0
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	0.20 in tube Ø

4 Material configuration

M	M-configuration

5 Shell connection

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

6 Bonnet connection

N	NPT cone thread (US standard)
B	BSP thread (EU standard)

7 Bypass

P	29 PSI bar (only with 3 and 5 shell inner diameter)
0	no bypass

8 Shell inner diameter / compatible tube lengths)

2	2.5 in / only with 08 to 14
3	3 in / only with 08 to 24
5	5 in / only with 18 to 48

8 Tube length

08	8 in
10	10 in
12	12 in
14	14 in
18	18 in
18	18 in (05 - shell inner diameter)
24	24 in
24	24 in (05 - shell inner diameter)
36	36 in
48	48 in

9 Flow passes

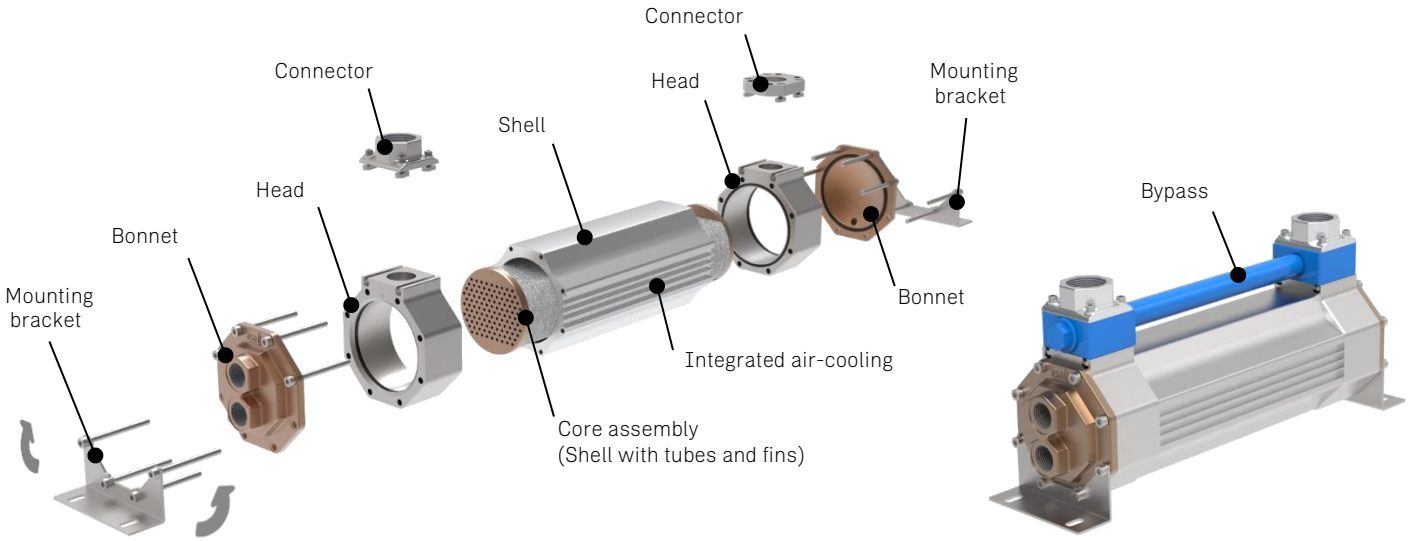
1	One pass
2	Two pass
4	Four pass

10 Sealing material

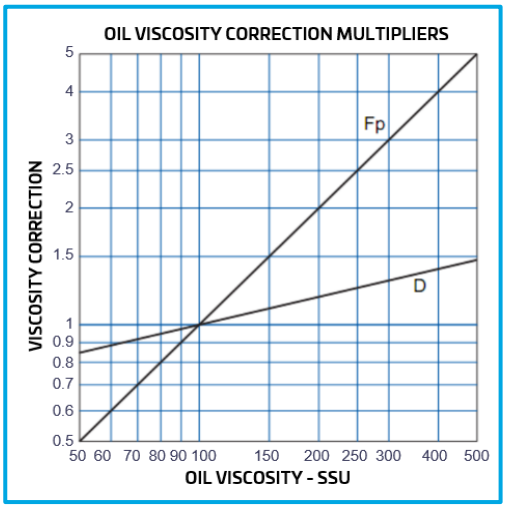
H	HNBR (standard)

11 Index /customized

U00	Standard US seals kit
UXX	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 hp.

Step 2 Determine Approach Temperature.

Desired oil leaving temp. = 122°F
Water inlet temperature = 86°F

Desired oil temp. °F leaving cooler – Water inlet temp. °F = Actual Approach
122°F – 86°F = 36°F

Step 3 Determine HP Curve Heat Load

HP heat load x $\frac{40}{\text{Actual Approach}}$ x Viscosity Correction D = Curve HP Power

Step 4 Enter Curves

Connect the Curve HP 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 100SSU. Multiply the pressure drop by the Correction factor Fp according to the actual hydraulic oil viscosity.

○ = 5 PSI, ☐ = 10 PSI, △ = 20 PSI

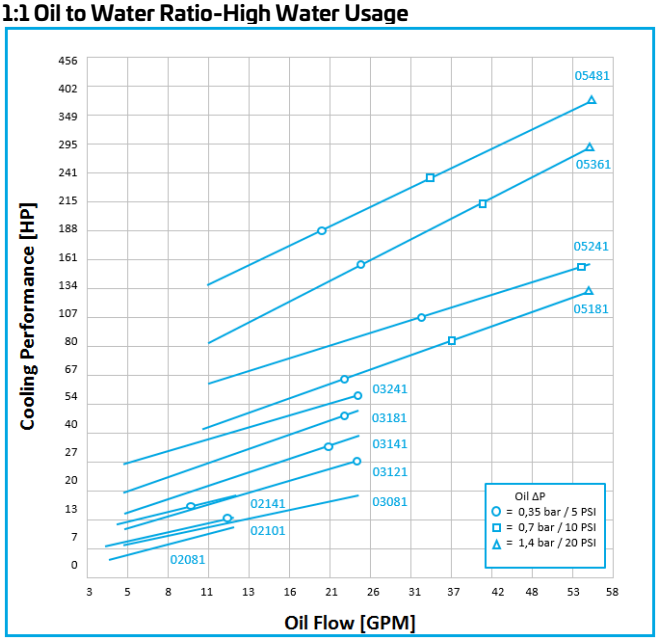
Oil Pressure Drop
- Most systems can tolerate a pressure drop through the heat exchanger of 15 to 30 PSI.
- Excessive pressure drop should be avoided.

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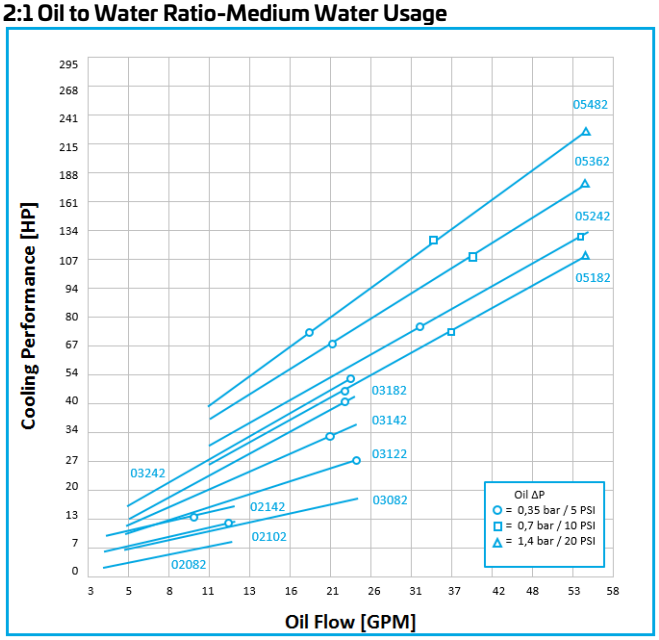
Fluid / Fluid Coolers
ST-Series, HM-Line

Performance at 100SSU

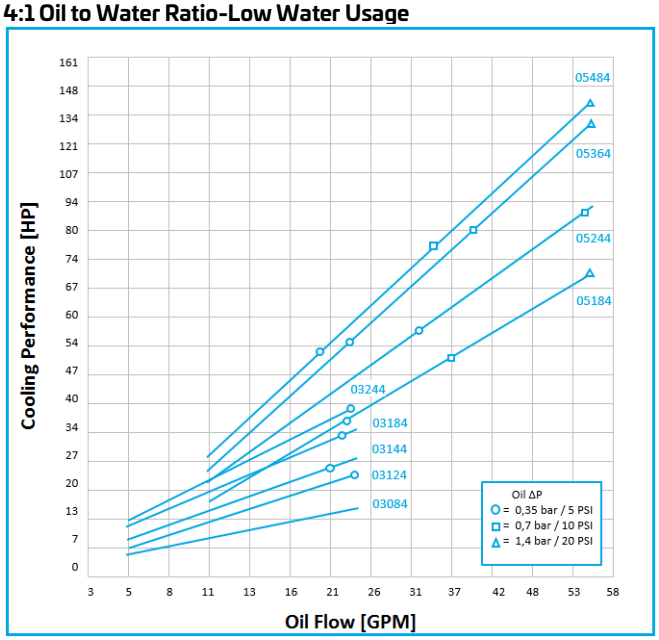
ONE PASS
1:1 Oil to Water Ratio-High Water Usage



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



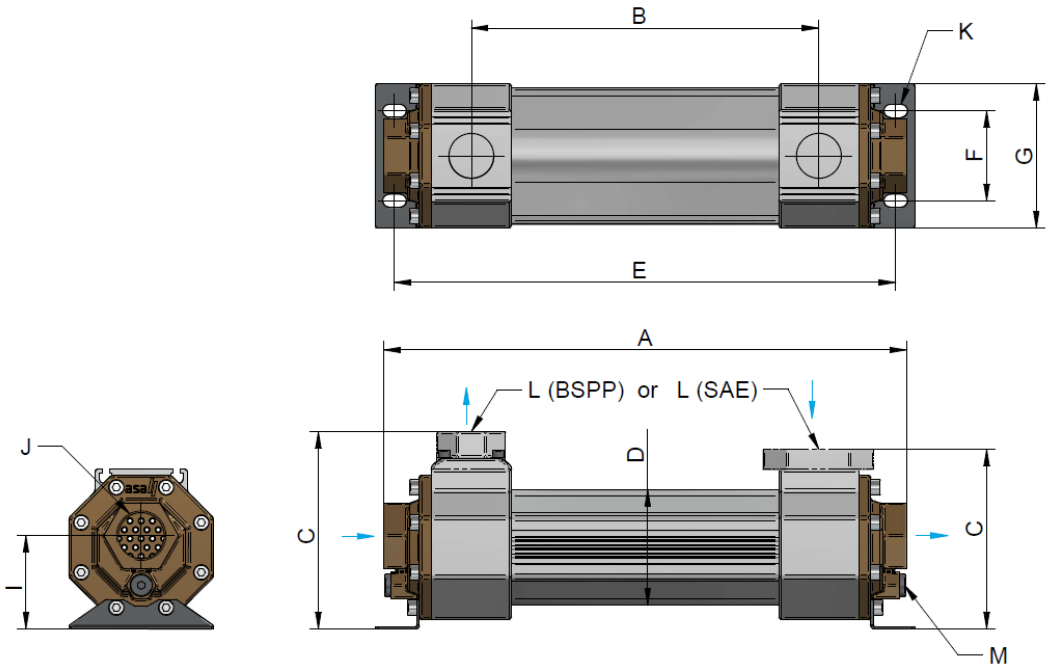
FOUR PASS
4:1 Oil to Water Ratio-Low Water Usage



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Fluid / Fluid Coolers
ST-Series, HM-Line

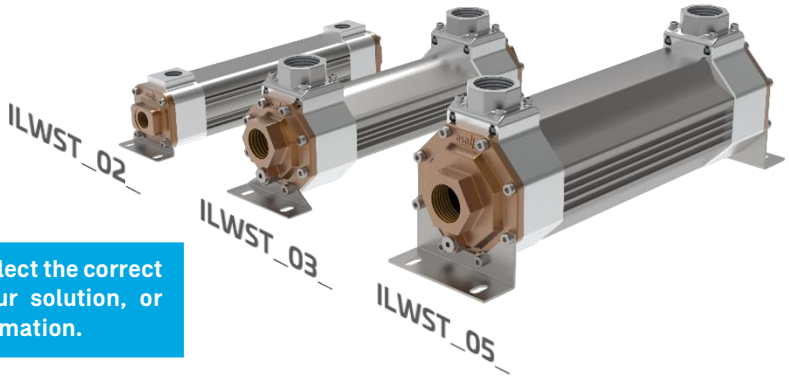
ONE PASS



Dimension

order number	A	B	C		D	E	F	G	I	J	K	L		M	weight
	[in]	[in]	NPT [in]	SAE [in]	Ø [in]	[in]	[in]	[in]	[in]	NPT	slot [in]	NPT	SAE	BSPP	[lbs]
ILWSTCM....02081HU00	10.24	5.94	3.78	-	3.07	10.39	2.52	3.54	1.73	3/4"	0.35x0.63	3/4"	-	-	8.8
ILWSTCM....02101HU00	12.24	7.95	3.78	-	3.07	12.40	2.52	3.54	1.73	3/4"	0.35x0.63	3/4"	-	-	11.0
ILWSTCM....02141HU00	16.26	11.97	3.78	-	3.07	16.42	2.52	3.54	1.73	3/4"	0.35x0.63	3/4"	-	-	13.2
ILWSTCM....03081HU00	11.38	5.55	6.57	6.02	3.86	10.67	2.99	4.80	3.11	1 ¼"	0.43x0.79	1 ½"	1 ½"	1/4"	17.6
ILWSTCM....03121HU00	15.39	9.57	6.57	6.02	3.86	14.69	2.99	4.80	3.11	1 ¼"	0.43x0.79	1 ½"	1 ½"	1/4"	19.9
ILWSTCM....03141HU00	17.40	11.57	6.57	6.02	3.86	16.69	2.99	4.80	3.11	1 ¼"	0.43x0.79	1 ½"	1 ½"	1/4"	22.1
ILWSTCM....03181HU00	21.38	15.55	6.57	6.02	3.86	20.67	2.99	4.80	3.11	1 ¼"	0.43x0.79	1 ½"	1 ½"	1/4"	24.3
ILWSTCM....03241HU00	27.40	21.57	6.57	6.02	3.86	26.69	2.99	4.80	3.11	1 ½"	0.43x0.79	1 ½"	1 ½"	1/4"	28.7
ILWSTCM....05181HU00	21.38	15.39	8.19	7.64	5.83	21.46	4.02	5.91	3.46	1 ½"	0.43x0.98	1 ½"	1 ½"	1/4"	46.3
ILWSTCM....05241HU00	27.36	21.38	8.19	7.64	5.83	27.44	4.02	5.91	3.46	1 ½"	0.43x0.98	1 ½"	1 ½"	1/4"	52.9
ILWSTCM....05361HU00	39.37	33.39	8.19	7.64	5.83	39.45	4.02	5.91	3.46	1 ½"	0.43x0.98	1 ½"	1 ½"	1/4"	72.8
ILWSTCM....05481HU00	53.15	45.39	8.19	7.64	5.83	51.46	4.02	5.91	3.46	1 ½"	0.43x0.98	1 ½"	1 ½"	1/4"	88.2

Water Flow Rates 1 Pass	
size	[gpm]
2"	13
3"	24
5"	56

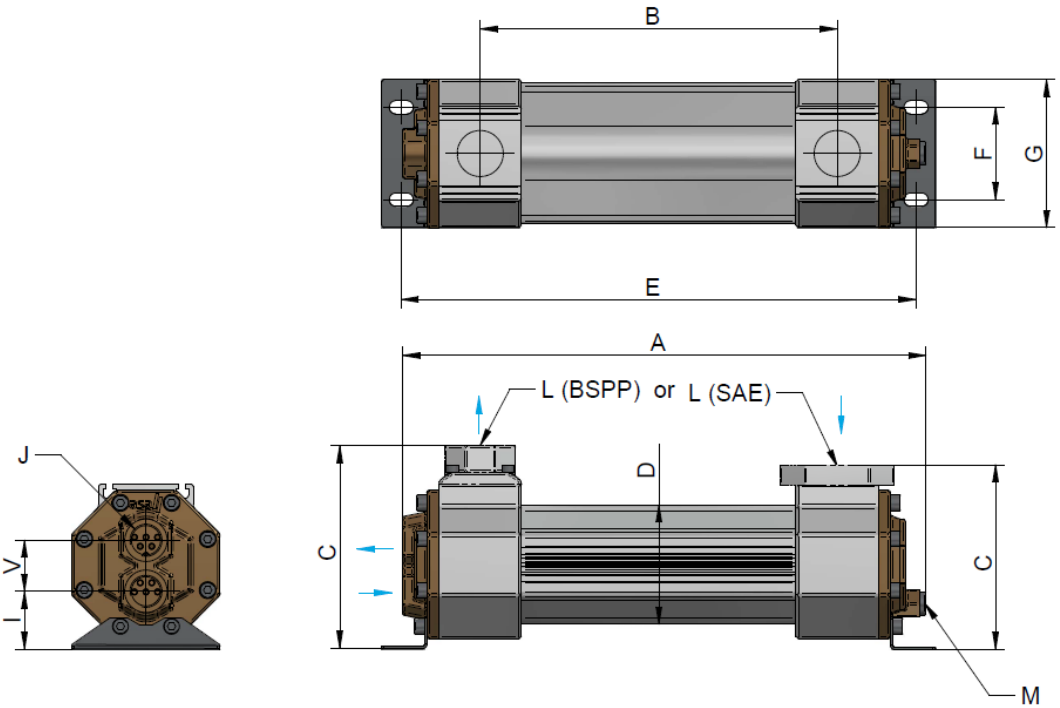


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Fluid / Fluid Coolers
ST-Series, HM-Line

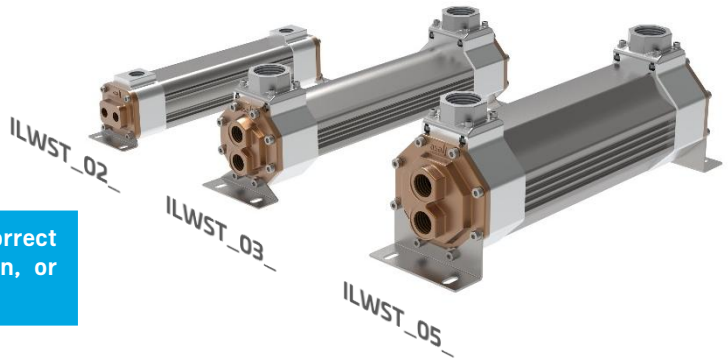
TWO PASS



Dimension

order number	A	B	C		D	E	F	G	I	J	K	L		M	V	weight
	[in]	[in]	NPT [in]	SAE [in]	Ø [in]	[in]	[in]	[in]	[in]	NPT	slot [in]	NPT	SAE	BSPP	[in]	[lbs]
ILWSTCM....02082HU00	9.84	5.94	3.78	-	3.07	10.39	2.52	3.54	1.73	3/8”	0.35x0.63	3/4"	-	-	1.10	8.8
ILWSTCM....02102HU00	11.85	7.95	3.78	-	3.07	12.40	2.52	3.54	1.73	3/8”	0.35x0.63	3/4"	-	-	1.10	11.0
ILWSTCM....02142HU00	15.87	11.97	3.78	-	3.07	16.42	2.52	3.54	1.73	3/8”	0.35x0.63	3/4"	-	-	1.10	13.2
ILWSTCM....03082HU00	10.94	5.55	6.57	6.02	3.86	10.67	2.99	4.80	1.85	3/4”	0.43x0.79	1 ½“	1 ½“	1/4“	1.65	17.6
ILWSTCM....03122HU00	14.96	9.57	6.57	6.02	3.86	14.69	2.99	4.80	1.85	3/4“	0.43x0.79	1 ½“	1 ½“	1/4“	1.65	19.9
ILWSTCM....03142HU00	16.97	11.57	6.57	6.02	3.86	16.69	2.99	4.80	1.85	3/4“	0.43x0.79	1 ½“	1 ½“	1/4“	1.65	22.1
ILWSTCM....03182HU00	20.94	15.55	6.57	6.02	3.86	20.67	2.99	4.80	1.85	3/4“	0.43x0.79	1 ½“	1 ½“	1/4“	1.65	24.3
ILWSTCM....03242HU00	16.97	21.57	6.57	6.02	3.86	26.69	2.99	4.80	1.85	3/4“	0.43x0.79	1 ½“	1 ½“	1/4“	1.65	28.7
ILWSTCM....05182HU00	21.18	15.39	8.19	7.64	5.83	21.46	4.02	5.91	2.48	1”	0.43x0.98	1 ½“	1 ½“	1/4“	1.97	46.3
ILWSTCM....05242HU00	27.17	21.38	8.19	7.64	5.83	27.44	4.02	5.91	2.48	1”	0.43x0.98	1 ½“	1 ½“	1/4“	1.97	52.9
ILWSTCM....05362HU00	39.17	33.39	8.19	7.64	5.83	39.45	4.02	5.91	2.48	1”	0.43x0.98	1 ½“	1 ½“	1/4“	1.97	72.8
ILWSTCM....05482HU00	51.18	45.39	8.19	7.64	5.83	51.46	4.02	5.91	2.48	1“	0.43x0.98	1 ½“	1 ½“	1/4“	1.97	88.2

Water Flow Rates 2 Pass	
size	[gpm]
2”	6.1
3”	11.9
5”	28.0

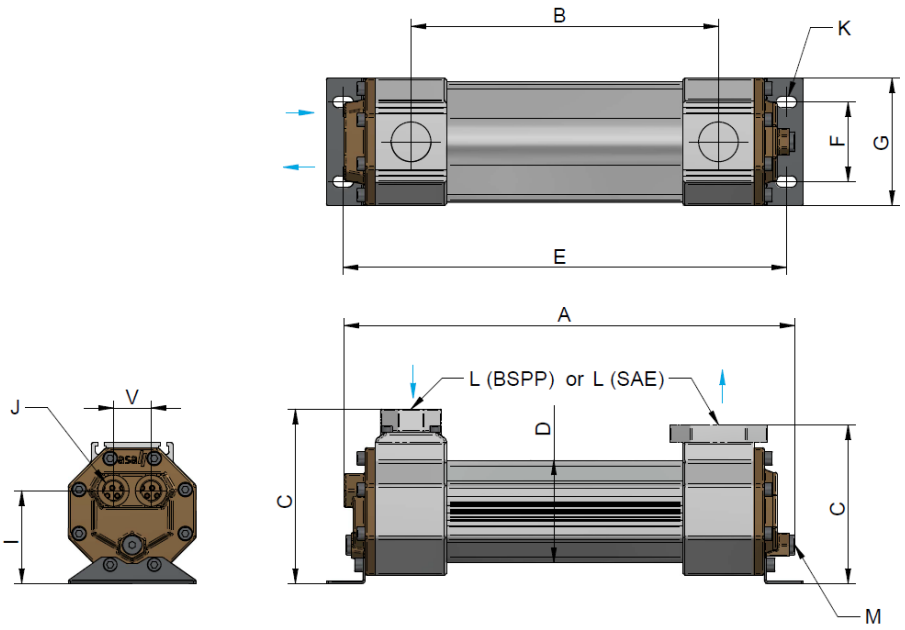


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Fluid / Fluid Coolers
ST-Series, HM-Line

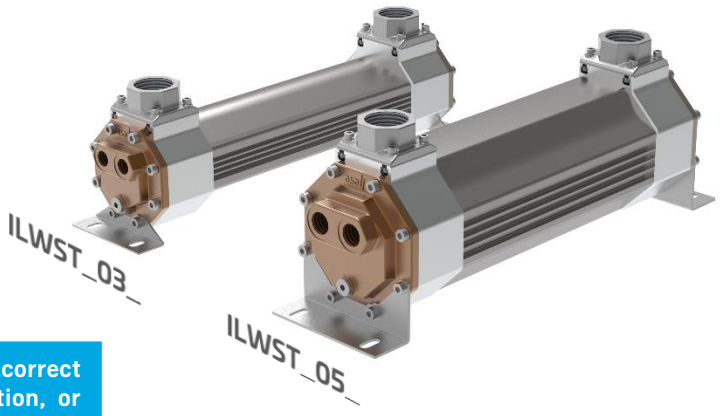
FOUR PASS



Dimension

order number	A	B	C		D	E	F	G	I	J	K	L		M	V	weight
	[in]	[in]	NPT [in]	SAE [in]	Ø [in]	[in]	[in]	[in]	[in]	[NPT]	slot [in]	NPT	SAE	BSPP	[in]	[lbs]
ILWSTCM....03084HU00	10.94	5.55	6.57	6.02	3.86	10.67	2.99	4.80	3.50	1/2"	0.43x0.79	1 ½"	1 ½"	1/4"	1.42	17.6
ILWSTCM....03124HU00	14.96	9.57	6.57	6.02	3.86	14.69	2.99	4.80	3.50	1/2"	0.43x0.79	1 ½"	1 ½"	1/4"	1.42	19.9
ILWSTCM....03144HU00	16.97	11.57	6.57	6.02	3.86	16.69	2.99	4.80	3.50	1/2"	0.43x0.79	1 ½"	1 ½"	1/4"	1.42	22.1
ILWSTCM....03184HU00	20.94	15.55	6.57	6.02	3.86	20.67	2.99	4.80	3.50	1/2"	0.43x0.79	1 ½"	1 ½"	1/4"	1.42	24.3
ILWSTCM....03244HU00	26.97	21.57	6.57	6.02	3.86	26.69	2.99	4.80	3.50	1/2"	0.43x0.79	1 ½"	1 ½"	1/4"	1.42	28.7
ILWSTCM....05184HU00	21.18	15.39	8.19	7.64	5.83	21.46	4.02	5.91	4.33	3/4"	0.43x0.98	1 ½"	1 ½"	1/4"	1.73	46.3
ILWSTCM....05244HU00	27.17	21.38	8.19	7.64	5.83	27.44	4.02	5.91	4.33	3/4"	0.43x0.98	1 ½"	1 ½"	1/4"	1.73	52.9
ILWSTCM....05364HU00	39.17	33.39	8.19	7.64	5.83	39.45	4.02	5.91	4.33	3/4"	0.43x0.98	1 ½"	1 ½"	1/4"	1.73	72.8
ILWSTCM....05484HU00	51.18	45.39	8.19	7.64	5.83	51.46	4.02	5.91	4.33	3/4"	0.43x0.98	1 ½"	1 ½"	1/4"	1.73	88.2

Water Flow Rates 4 Pass	
size	[gpm]
3"	6.1
5"	14.0



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Fluid / Fluid Coolers
Connectors, HM-Line

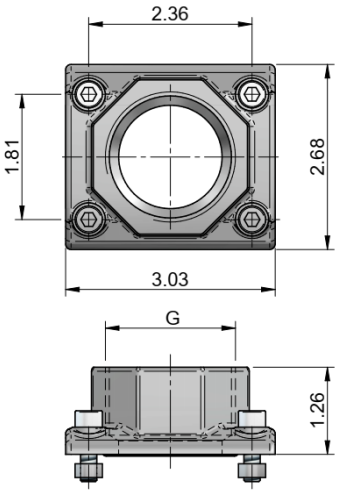
Thanks to its connectors, the new asa HM - Line offers great flexibility during both installation and maintenance. The octagonal shape of the connectors offers a good grip for a wrench to hold against when fastening the connections, thus preventing any damages. Furthermore, should a connector become 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:

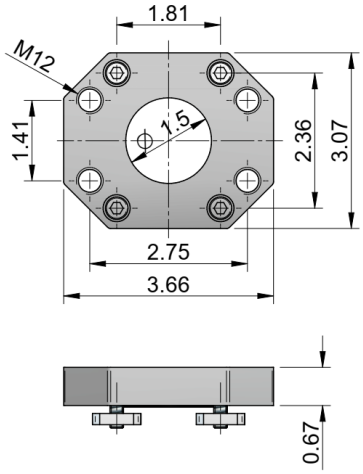




ILWZASTTS0N40U00
(ILWZASTTS0U40U00)
(ILWZASTTS0G40U00)



ILWZASTTS0S40U00



Technical Data

order number	description	G	connector material	o-ring	content	weight
						[lbs]
ILWZASTTS0N40U00	Connector block S&T rail 1 ½ NPT	1 ½ NPT	aluminum	HNBR	asa connector 1x o-ring 1x screw 4x slot nut 4x	0.99
ILWZASTTS0G40U00	Connector block S&T rail 1 ½ BSP	1 ½ BSPP				0.99
ILWZASTTS0U40U00	Connector block S&T rail 1 ⅞-12 UN	1 ⅞-12 UN				0.99
ILWZASTTS0S40U00	Connector block S&T rail SAE 61					0.45

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.

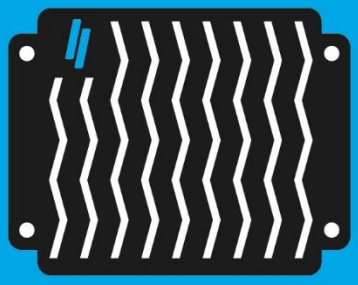
Company

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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