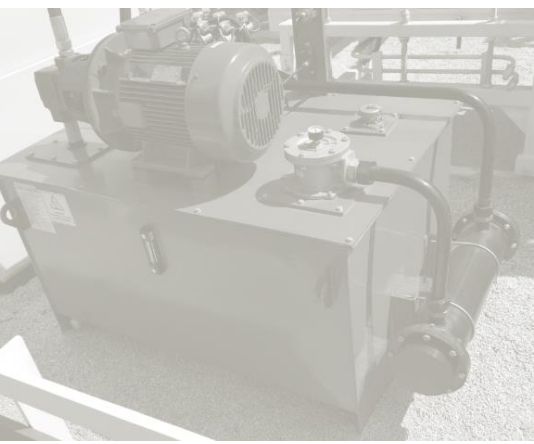




Thermal Systems / Oil/Water Coolers

ST Series

Shell tube heat exchanger



**be different.
make a difference.**

Oil/Water Coolers, ST Series

Shell tubes heat exchanger

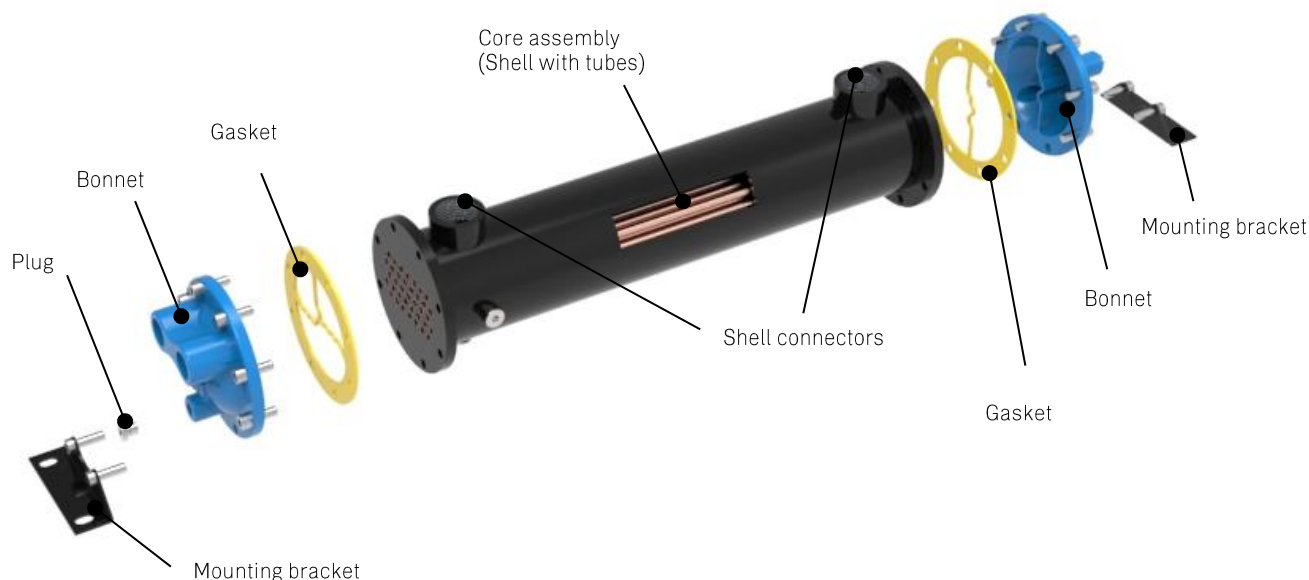


Function

Our ST series is a modular range of shell and tube design heat exchangers. The main benefits of this design are the versatility of applications more independent of the used fluid quality and good maintenance ability compared to other heat exchanger types. Our modular setup allows the best suitable connection and flow principle for lowest pressure drop at highest cooling performance. We supply single or more pass configurations as well as different material combinations. For raising efficiency we offer all these configurations with hybrid finned tube technology.

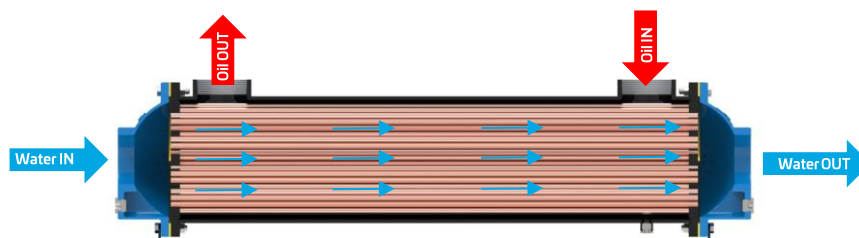
Design

A bundle of tubes are brazed at both the end flanges to create two fluid circuits, for heat exchanging purpose. The end flanges are sealed with a gasket and the connection to the hydraulic system is implemented in the bonnet. One side flows through the tubes (the tube side) and the other inside the outer tube (shell side), separated from each other. The heat transfers from one fluid to another through the tube walls, either from tube side to shell or the other way round.

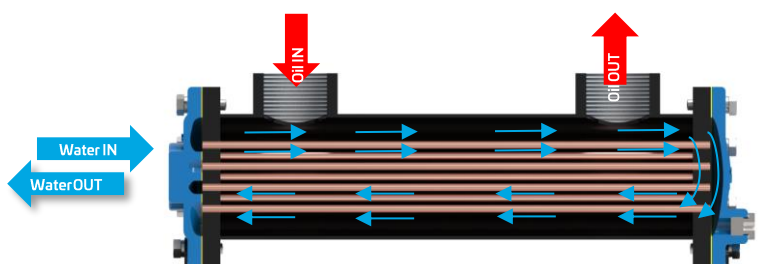


Apart from different sizes we offer one-pass, two pass and four pass configuration:

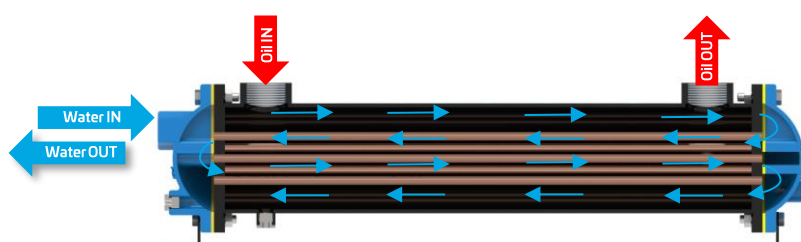
one-pass



two-pass



four-pass



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Oil/Water Coolers, ST Series

Shell tubes heat exchanger



Material and Limits

Depending on the projected application we offer different material configurations to all of our ST series modules.

Materials	A	B	C	D
shell	carbon steel	carbon steel	stainless steel	carbon
tube sheet	carbon steel	carbon steel	stainless steel	carbon
tube	copper	copper/nickel 90/10	stainless steel	admiralty (brass)
bonnet	cast iron	cast iron	Stainless steel	cast iron
extended fins	aluminium	aluminium	aluminium	no fins

Pressure

shell side	max. 20 bar
tube side	max. 10 bar

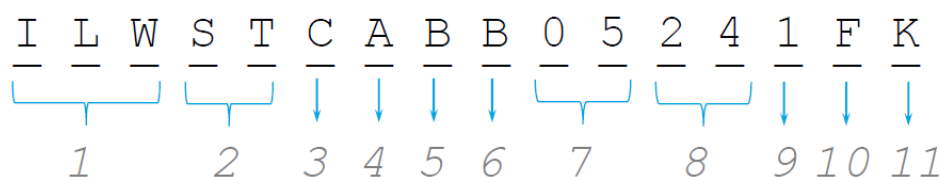
Temperatures/Sealings

compress fiber (F)	150°C
PTFE (P)	100°C
NBR (N)	80°C
Viton (V)	120°C

Fluid Compatibility for material configuration A

mineral oils with water or water/glycol as a coolant
--

Order Code



1 Product Series

I	Industrial Application
L	Heat exchanger
W	Oil/Water cooling

2 Product Series

ST	shell tube cooler series
----	--------------------------

3 Tube diameter

hybrid with fin	
C	5,0 mm tube Ø – with fin / only shell 03 & 05
D	9,5 mm tube Ø – with fin / only shell 05, 06 & 08

4 Material configuration

A	Hydraulic / standard configuration
B	Marine / standard configuration
C	Chemicals / stainless steel tube configuration
D	Industrial / admiralty tube configuration
...	any other configuration and material on request

5 Shell connection / compatible bonnet connection

B	BSP thread / only with BSP bonnet
N	NPT cone thread / only with NPT bonnet
U	SAE o-ring (UNF) / only with NPT bonnet
S	4-bolt SAE flange / only with NPT bonnet
F	Pipe flange (on request) / only with pipe flange bonnet

6 Bonnet connection

B	BSP thread
N	NPT cone thread
F	Pipe flange (on request)

7 Shell inner diameter / compatible tube lengths

02	60 mm / only with 8 & 10
03	80 mm / only with 14 & 24
05	125 mm / only with 24 & 36
06	150 mm / only with 24, 36 & 48
08	200 mm / only with 36, 48, & 60

8 Tube length

08	203,2 mm
10	254 mm
12	304,8 mm
14	355,6 mm
18	457,2 mm
24	609,6 mm
36	914,4 mm
48	1219,2 mm
60	1524 mm

9 Flow passes

1	One pass
2	Two pass
4	Four pass

10 Gasket material

F	Compress fiber (standard)
P	PTFE (on request)
N	NBR (on request)
V	Viton / FPM (on request)

11 Index /customized

K	Standard EU sales kit
BXX	To be advised by asa

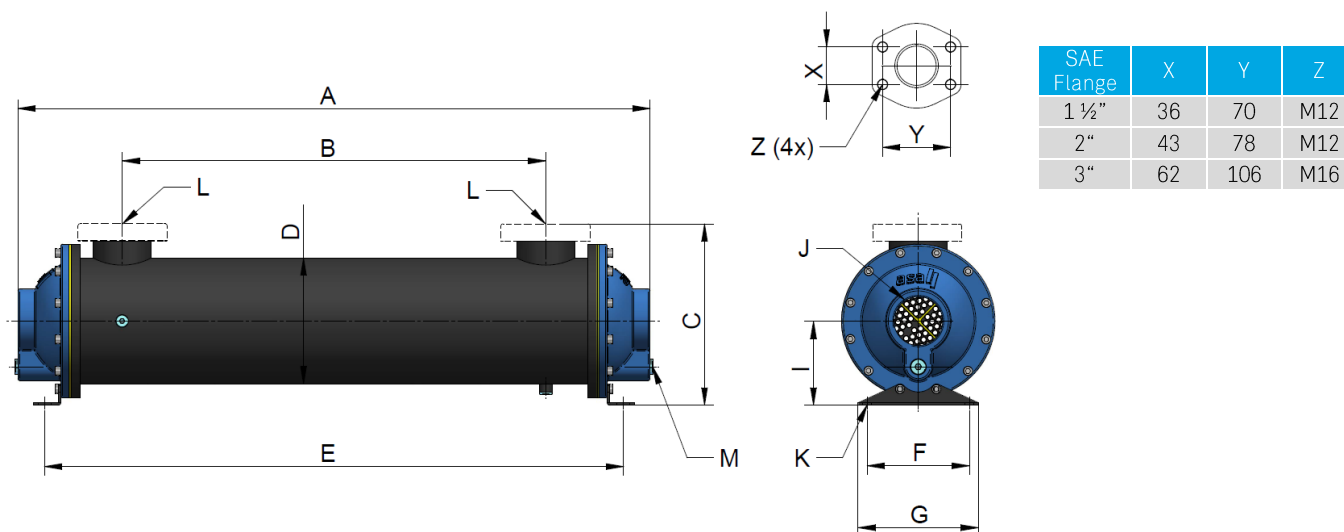
Oil/Water Coolers, ST Series

Shell tubes heat exchanger



ONE PASS

Dimension



Technical Data

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]
ILWSTCA....02081F	264	98	99	n/a	65	265	64	89	41	3/4"	9x16	3/4"	n/a	n/a	3
ILWSTCA....02101F	315	142	99	n/a	65	316	64	89	41	3/4"	9x16	3/4"	n/a	n/a	3
ILWSTCA....03141F	435	228	139	145	89	424	76	127	66	1 1/4"	11x19	1 1/2"	1 1/2"	1/4"	9
ILWSTCA....03241F	689	482	139	145	89	679	76	127	66	1 1/4"	11x19	1 1/2"	1 1/2"	1/4"	12
ILWSTCA....05181F	542	310	195	211	127	545	102	165	102	1 1/2"	11x25	1 1/2"	2"	1/4"	19
ILWSTCA....05241F	694	462	195	211	127	697	102	165	102	1 1/2"	11x25	1 1/2"	2"	1/4"	23
ILWSTCA....05361F	999	767	195	211	127	1002	102	165	102	1 1/2"	11x25	1 1/2"	2"	1/4"	30
ILWSTDA....05241F	762	511	190	203	133	697	102	133	102	2"	13x19	1 1/2"	2"	3/8"	20
ILWSTDA....05361F	1067	816	190	203	133	1002	102	133	102	2"	13x19	1 1/2"	2"	3/8"	30
ILWSTDA....06241F	765	483	222	238	159	714	127	159	114	3"	13x19	2"	2"	3/8"	45
ILWSTDA....06361F	1070	787	222	238	159	1019	127	159	114	3"	13x19	2"	2"	3/8"	57
ILWSTDA....06481F	1375	1092	222	238	159	1324	127	159	114	3"	13x19	2"	2"	3/8"	68
ILWSTDA....08361F	1149	781	295	318	219	1064	178	210	146	4"	16x22	3"	3"	3/8"	91
ILWSTDA....08481F	1454	1086	295	318	219	1369	178	210	146	4"	16x22	3"	3"	3/8"	114
ILWSTDA....08601F	1759	1391	295	318	219	1674	178	210	146	4"	16x22	3"	3"	3/8"	137



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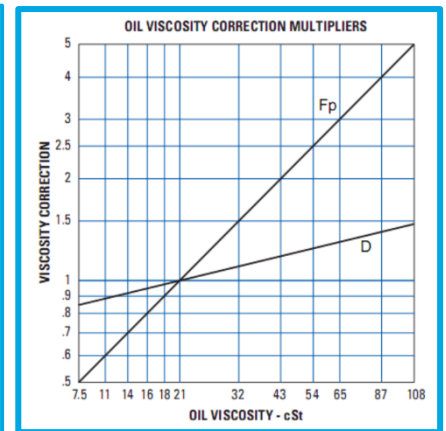
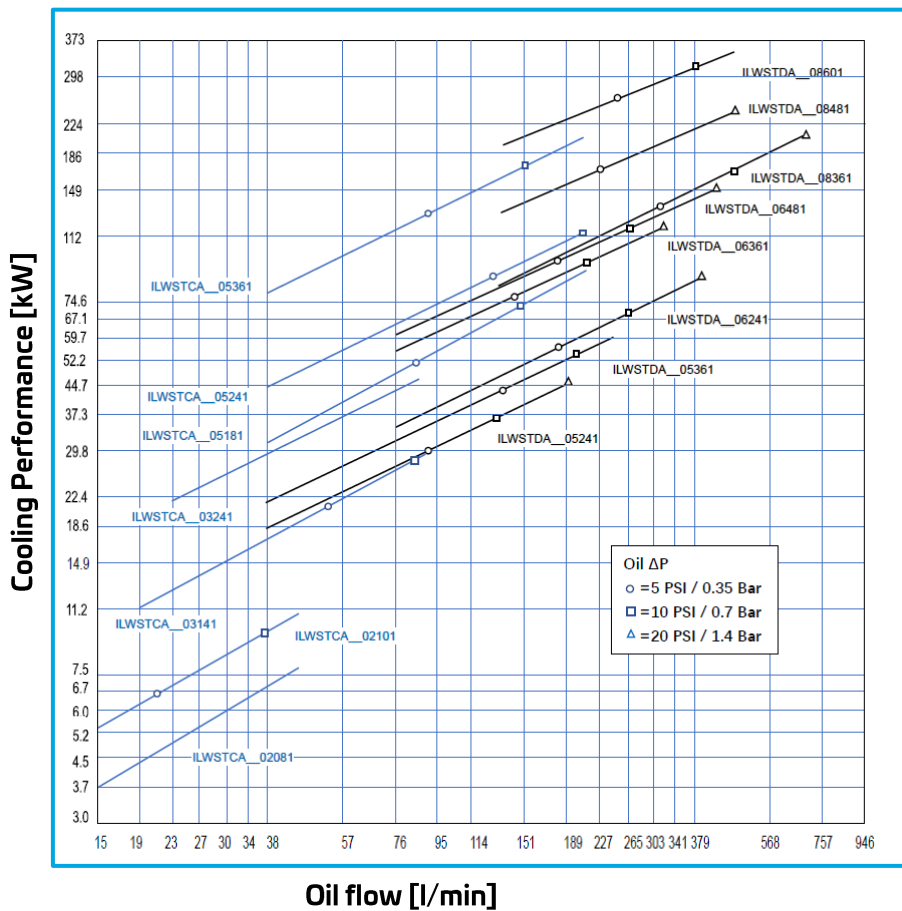
Oil/Water Coolers, ST Series

Shell tubes heat exchanger



Performance

1:1 Oil to Water Ratio-High Water Usage



Maximum Water Flow Rates 1 Pass	
size	l/min
2"	49
3"	91
5" (5mm)	212
5" (9,5 mm)	246
6"	454
8"	833

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.

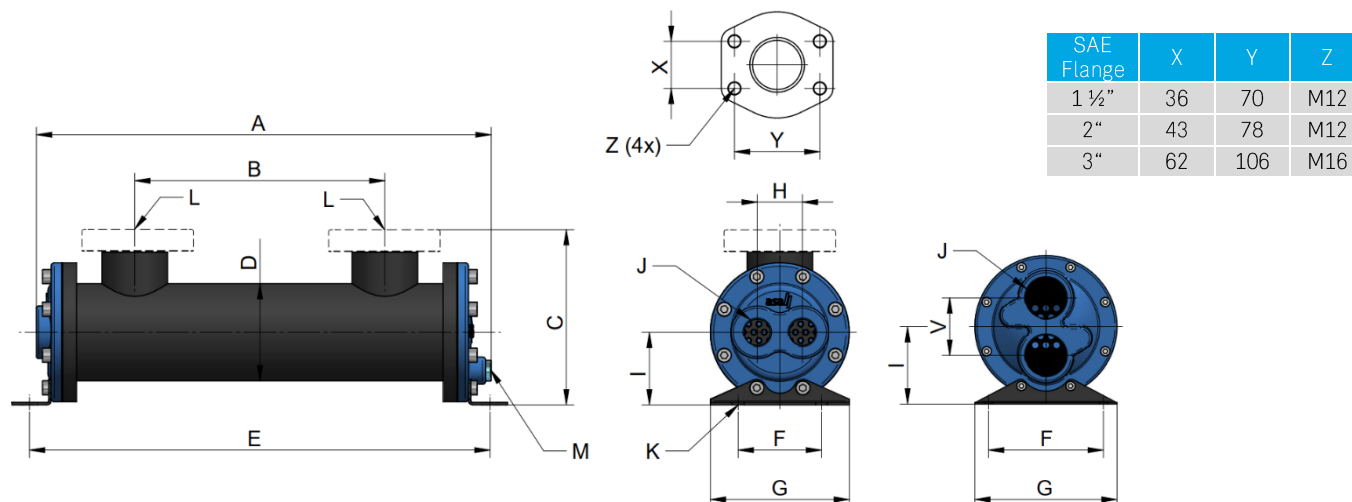
Oil/Water Coolers, ST Series

Shell tubes heat exchanger



TWO PASS

Dimension



Technical Data

order number	A	B	C		D	E	F	G	H	I	J	K	L		M	V	weight
	[mm]	[mm]	BSPP [mm]	SAE [mm]	Ø [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	BSPP/ NPT	slot [mm]	BSPP/ NPT	SAE	BSPP	[mm]	[kg]
ILWSTCA....02082F	264	98	99	n/a	65	265	64	89	29	41	¾"	9x16	¾"	n/a	n/a	-	3
ILWSTCA....02102F	315	142	99	n/a	65	316	64	89	29	41	¾"	9x16	¾"	n/a	n/a	-	3
ILWSTCA....03142F	411	228	139	145	89	416	76	127	41	66	¾"	11x19	1 ½"	1 ½"	¼"	-	9
ILWSTCA....03242F	665	482	139	145	89	679	76	127	41	66	¾"	11x19	1 ½"	1 ½"	¼"	-	12
ILWSTCA....05182F	522	310	195	211	127	545	102	165	61	102	1"	11x25	1 ½"	2"	¼"	-	19
ILWSTCA....05242F	674	462	195	211	127	697	102	165	61	102	1"	11x25	1 ½"	2"	¼"	-	23
ILWSTCA....05362F	979	767	195	211	127	1002	102	165	61	102	1"	11x25	1 ½"	2"	¼"	-	30
ILWSTDA....05242F	762	511	190	203	133	697	102	133	-	102	1 ½"	13x19	1 ½"	2"	¼"	76	20
ILWSTDA....05362F	1067	816	190	203	133	1002	102	133	-	102	1 ½"	13x19	1 ½"	2"	¼"	76	30
ILWSTDA....06242F	765	483	222	238	159	714	159	197	-	114	2"	13x19	2"	2"	¾"	80	45
ILWSTDA....06362F	1070	787	222	238	159	1019	159	197	-	114	2"	13x19	2"	2"	¾"	80	57
ILWSTDA....06482F	1375	1092	222	238	159	1324	159	197	-	114	2"	13x19	2"	2"	¾"	80	68
ILWSTDA....08362F	1149	781	292	318	219	1064	210	267	-	146	2 ½"	16x22	3"	3"	¾"	114	91
ILWSTDA....08482F	1454	1086	292	318	219	1369	210	267	-	146	2 ½"	16x22	3"	3"	¾"	114	114
ILWSTDA....08602F	1759	1391	292	318	219	1674	210	267	-	146	2 ½"	16x22	3"	3"	¾"	114	137



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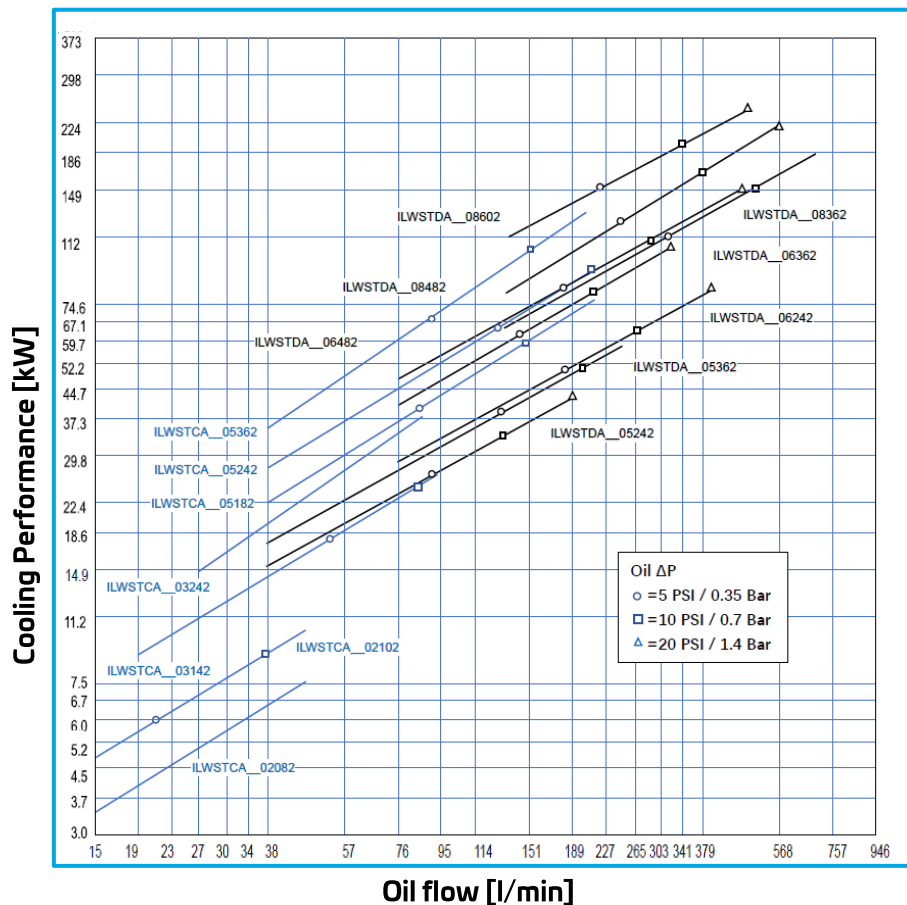
Oil/Water Coolers, ST Series

Shell tubes heat exchanger



Performance

2:1 Oil to Water Ratio-Medium Water Usage



Maximum Water Flow Rates 2 Pass	
size	[l/min]
2"	23
3"	45
5" (5mm)	106
5" (9,5 mm)	121
6"	227
8"	416

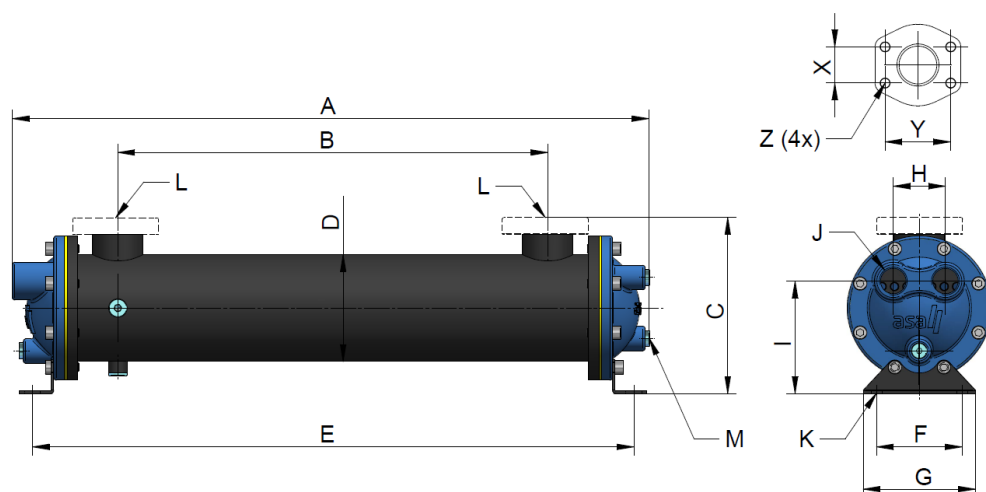
Oil/Water Coolers, ST Series

Shell tubes heat exchanger



FOUR PASS

Dimension



SAE Flange	X	Y	Z
1 1/2"	36	70	M12
2"	43	78	M12
3"	62	106	M16

Technical Data

order number	A	B	C		D	E	F	G	H	I	J	K	L		M	weight
	[mm]	[mm]	BSPP [mm]	SAE [mm]	Ø [mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[BSPP]	slot [mm]	BSPP	SAE	BSPP	[kg]
ILWSTCA....03144F	411	228	139	145	89	424	76	127	45	84	½"	11x19	1 ½"	1 ½"	¼"	9
ILWSTCA....03244F	665	482	139	145	89	679	76	127	45	84	½"	11x19	1 ½"	1 ½"	¼"	12
ILWSTCA....05184F	522	310	195	211	127	545	102	165	64	125	¾"	11x25	1 ½"	2"	¼"	19
ILWSTCA....05244F	674	462	195	211	127	697	102	165	64	125	¾"	11x25	1 ½"	2"	¼"	23
ILWSTCA....05364F	979	767	195	211	127	1002	102	165	64	125	¾"	11x25	1 ½"	2"	¼"	30
ILWSTDA....05244F	762	511	190	203	133	697	102	133	62	134	1"	13x19	1 ½"	2"	¼"	20
ILWSTDA....05364F	1067	816	190	203	133	1002	102	133	62	134	1"	13x19	1 ½"	2"	¼"	30
ILWSTDA....06244F	765	483	222	238	159	714	159	197	73	150	1 ½"	13x19	2"	2"	⅜"	45
ILWSTDA....06364F	1070	787	222	238	159	1091	159	197	73	150	1 ½"	13x19	2"	2"	⅜"	57
ILWSTDA....06484F	1375	1092	222	238	159	1324	159	197	73	150	1 ½"	13x19	2"	2"	⅜"	68
ILWSTDA....08364F	1149	781	292	318	219	1064	210	267	108	190	2"	16x22	3"	3"	⅜"	91
ILWSTDA....08484F	1454	1086	292	318	219	1369	210	267	108	190	2"	16x22	3"	3"	⅜"	114
ILWSTDA....08604F	1759	1391	292	318	219	1674	210	267	108	190	2"	16x22	3"	3"	⅜"	137



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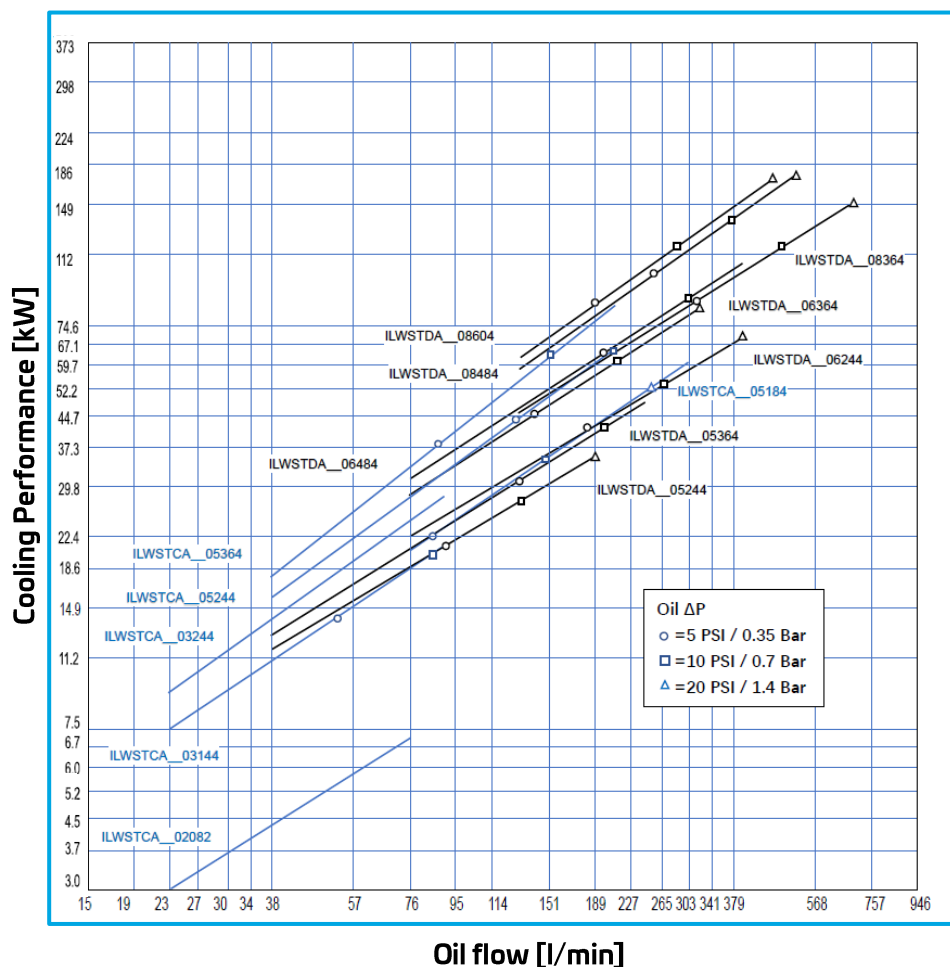
Oil/Water Coolers, ST Series

Shell tubes heat exchanger



Performance

4:1 Oil to Water Ratio-Low Water Usage



Maximum Water Flow Rates 4 Pass	
size	[l/min]
2"	n/a
3"	23
5" (5mm)	53
5" (9,5 mm)	61
6"	114
8"	246

Oil/Water Coolers, ST Series

Shell tubes heat exchanger

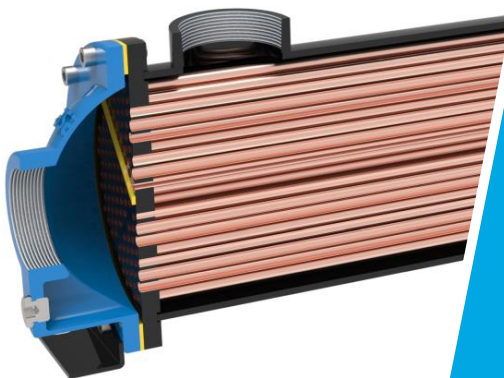
Customized to your applications

Apart from the actual application parameters of the fan drive, ambient conditions and scope of delivery, we offer customized heat exchanger solutions for many types of fluids. Please contact us with your specific requirements and use our benefits regarding consultation and most realistic verification.

Selection	Application
Type of fluids	Ambient / fluid conditions for material configuration
Flow rates	Connection size and flange types
In/outlet temperatures or heat load data	Space restrictions and mounting situation
Allowable pressure drops	Possible specified water fouling factors
Operating and design pressure	

your advantages:

- ✓ project management
- ✓ calculation and simulation
- ✓ verification on test bench
- ✓ procurement option system
- ✓ approved quality





**Thermal Systems
Connection Technology
Fluid Controls**

**be different.
make a difference.**



AUSTRIA

asa technology GmbH
Prager Strasse 280
A-1210, Vienna
Tel.: +43 1 292 40 20
support@asahydraulik.com

USA

asa hydraulik of America Inc
160 Meister Avenue 20 A
Branchburg, New Jersey 08876
Tel.: +1 800 473 94 00
Tel.: +1 908 541 15 00
sales_us@asahydraulik.com

CHINA

安飒液压科技（苏州）有限公司
asa Hydraulik Technology (Suzhou) Co.Ltd
Area 6, Building B,
Fangzhou Road No 128,
Suzhou industrial park,
Suzhou City, Jiangsu Province
Tel.: +86 512 62381988
suzhou@asahydraulik.com

AUSTRALIA

23 Quinlan Road,
Epping, VIC 3076,
Tel.: +61 3 9397 6129
melbourne@asahydraulik.com

INDIA

asa heatexchanger Pvt Ltd
Plot no.1226, Phase-3, GIDC, Vatva
Ahmedabad-382445
Tel.: +91 7043907273
salesindia@asahydraulik.com