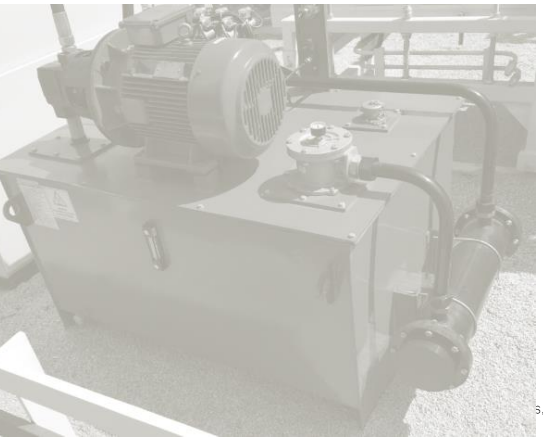
Thermal Systems / Oil/Water Coolers

ST Series

Shell tube heat exchanger

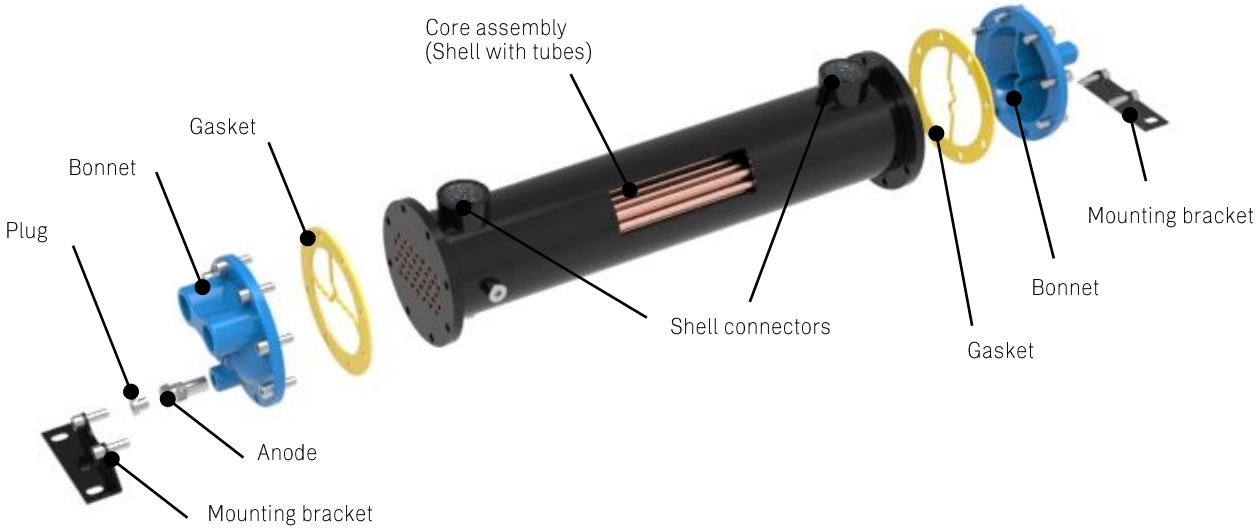


be different.
make a difference.

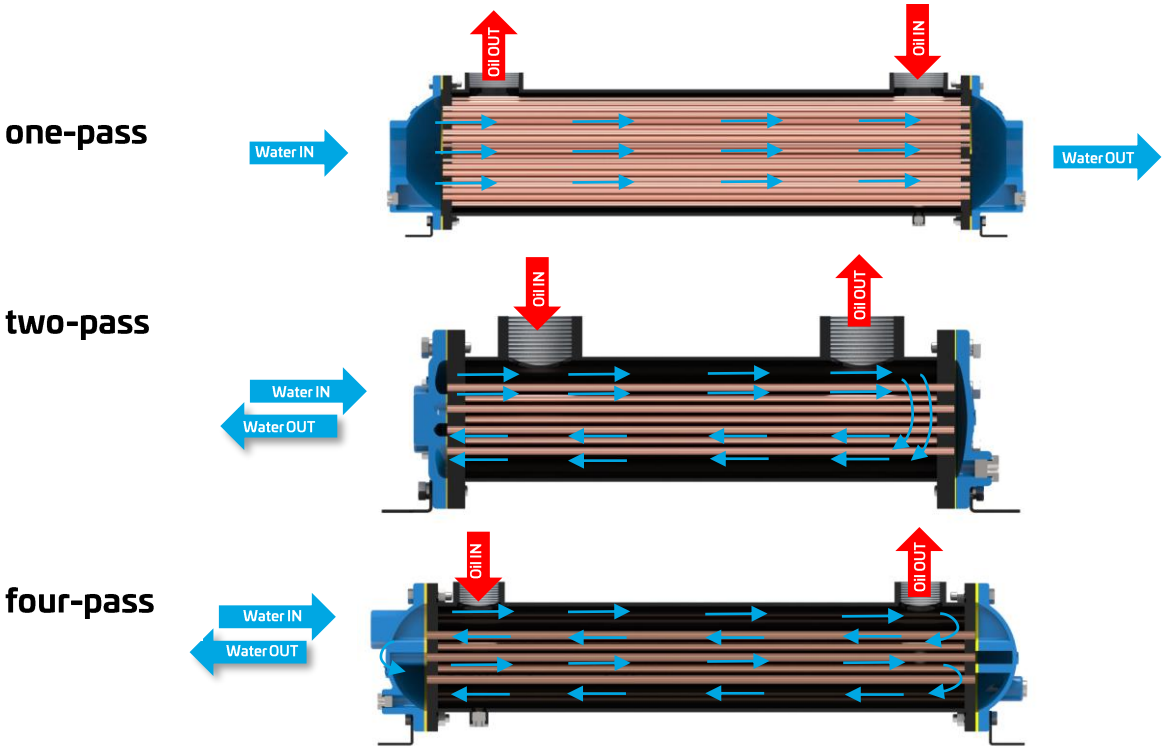
Oil/Water Coolers, ST Series
Shell tubes heat exchanger

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 rotary expanded 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 fluid flows through the tubes (the tube side) and the other through 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:

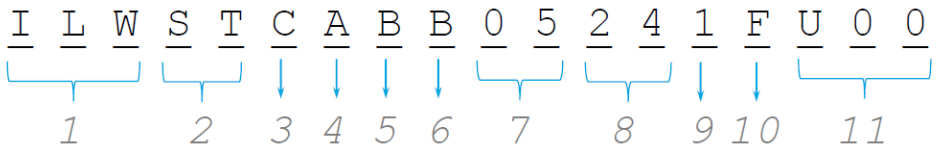


Oil/Water Coolers, ST Series
Shell tubes heat exchanger

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

Materials	A	B
shell	carbon steel	carbon steel
tube sheet	carbon steel	copper/nickel 90/10
tube	copper	copper/nickel 90/10
bonnet	cast iron	admiralty brass + zinc anode
extended fins	aluminium	aluminium
coat of paint	shell / black bonnet / blue	shell / black bonnet / blue
Pressure		
shell side	max. 300 PSI	
tube side	max. 150 PSI	
Temperatures/Sealings		
compress fiber (F)	max. 302 °F	

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	0.20 in tube Ø – with fin / only shell 03 & 05
D	0.37 in tube Ø – with fin / only shell 05, 06 & 08
plain w/o fin	
C	0.25 in tube Ø – on request
D	0.37 in tube Ø – on request

4 Material configuration

A	Oil/Water configuration A
B	Oil/Water configuration B
...	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-bold 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	2.36 in / only with 8 & 10
03	3.15 in / only with 14 & 24
05	4.92 in / only with 24 & 36
06	5.91 in / only with 24, 36 & 48
08	7.87 in / only with 36, 48, & 60

8 Tube length

08	8 in
10	10 in
12	12 in
14	14 in
18	18 in
24	24 in
36	36 in
48	48 in
60	60 in

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)

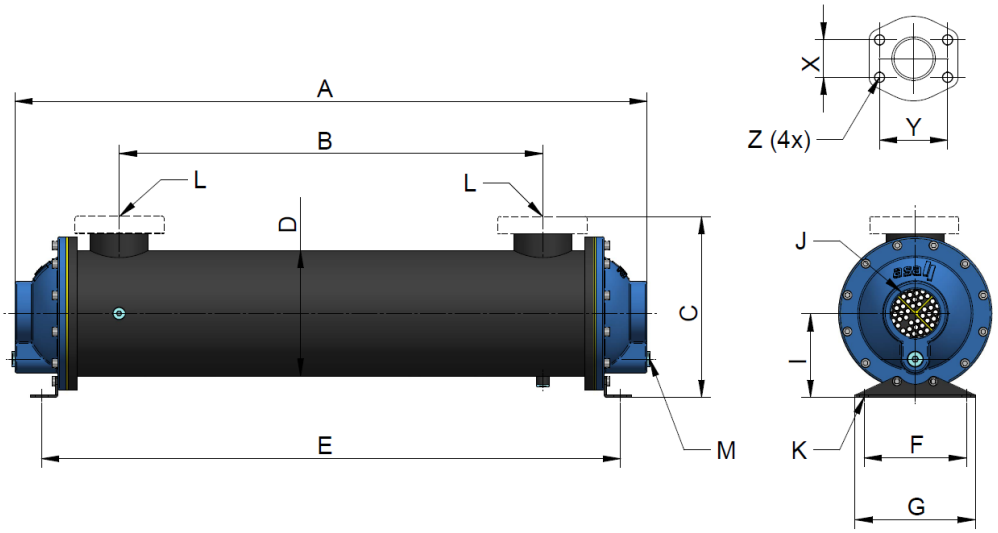
11 Index /customized

U00	Standard US sales kit
UXX	To be advised by asa

Oil/Water Coolers, ST Series
Shell tubes heat exchanger

ONE PASS

Dimension



SAE Flange	X	Y	Z
1 ½"	1.42	2.76	M12
2"	1.69	3.07	M12
3"	2.44	4.17	M16

Technical Data

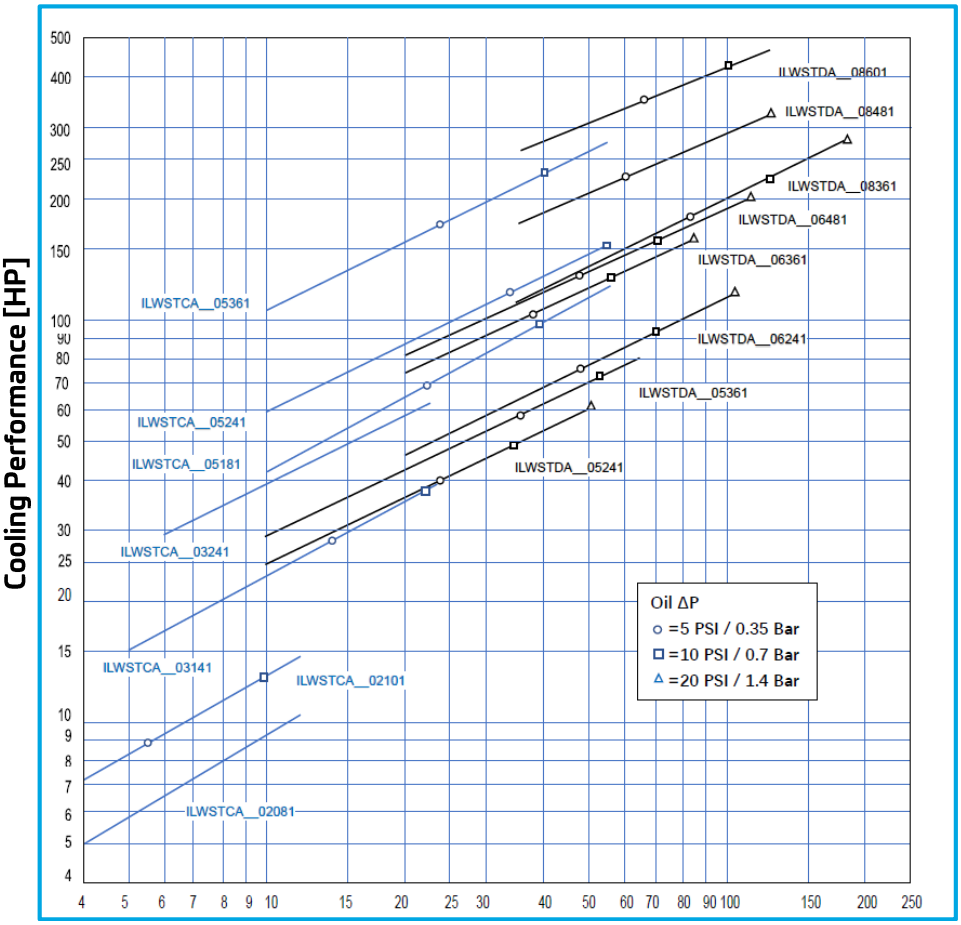
order number	A	B	C		D	E	F	G	I	J	K	L		M	weight
	[in]	[in]	BSPP [in]	SAE [in]	Ø [in]	[in]	[in]	[in]	[in]	BSPP/ NPT	slot [in]	BSPP/ NPT	SAE	BSPP	[lbs]
ILWSTCA....02081FU00	10.39	3.86	3.90	n/a	2.56	10.43	2.52	3.50	1.61	¾"	0.31x0.63	¾"	n/a	n/a	6.6
ILWSTCA....02101FU00	12.40	5.59	3.90	n/a	2.56	12.44	2.52	3.50	1.61	¾"	0.31x0.63	¾"	n/a	n/a	6.6
ILWSTCA....03141FU00	17.13	8.98	5.47	5.71	3.50	16.69	2.99	5.00	2.60	1 ¼"	0.43x0.75	1 ½"	1 ½"	¼"	19.8
ILWSTCA....03241FU00	27.13	18.98	5.47	5.71	3.50	26.73	2.99	5.00	2.60	1 ¼"	0.43x0.75	1 ½"	1 ½"	¼"	26.5
ILWSTCA....05181FU00	21.34	12.20	7.68	8.31	5.00	21.46	4.02	6.50	4.02	1 ½"	0.43x0.98	1 ½"	2"	¼"	41.9
ILWSTCA....05241FU00	27.32	18.19	7.68	8.31	5.00	27.44	4.02	6.50	4.02	1 ½"	0.43x0.98	1 ½"	2"	¼"	50.7
ILWSTCA....05361FU00	39.33	30.20	7.68	8.31	5.00	39.45	4.02	6.50	4.02	1 ½"	0.43x0.98	1 ½"	2"	¼"	66.1
ILWSTDA....05241FU00	30.00	20.12	7.48	7.99	5.24	27.44	4.02	5.24	4.02	2"	0.51x0.75	1 ½"	2"	⅜"	44.1
ILWSTDA....05361FU00	42.01	32.13	7.48	7.99	5.24	39.45	4.02	5.24	4.02	2"	0.51x0.75	1 ½"	2"	⅜"	66.1
ILWSTDA....06241FU00	30.12	19.02	8.74	9.37	6.26	28.11	5.00	6.26	4.49	3"	0.51x0.75	2"	2"	⅜"	99.2
ILWSTDA....06361FU00	42.13	30.98	8.74	9.37	6.26	40.12	5.00	6.26	4.49	3"	0.51x0.75	2"	2"	⅜"	125.7
ILWSTDA....06481FU00	54.13	42.99	8.74	9.37	6.26	52.13	5.00	6.26	4.49	3"	0.51x0.75	2"	2"	⅜"	149.9
ILWSTDA....08361FU00	45.24	30.75	11.61	12.52	8.62	41.89	7.01	8.27	5.75	4"	0.63x0.87	3"	3"	⅜"	200.6
ILWSTDA....08481FU00	57.24	42.76	11.61	12.52	8.62	53.90	7.01	8.27	5.75	4"	0.63x0.87	3"	3"	⅜"	251.3
ILWSTDA....08601FU00	69.25	54.76	11.61	12.52	8.62	65.91	7.01	8.27	5.75	4"	0.63x0.87	3"	3"	⅜"	302.0

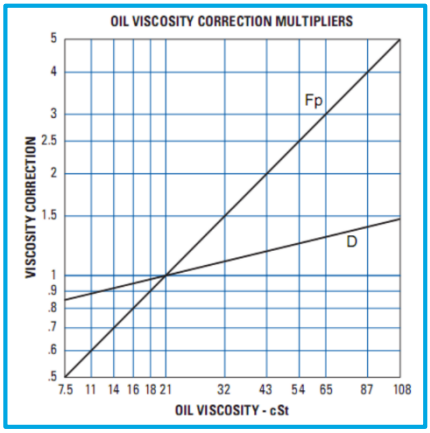
Oil/Water Coolers, ST Series
Shell tubes heat exchanger

ONE PASS

Performance at 150SSU

1:1 Oil to Water Ratio-High Water Usage





Maximum Water Flow Rates 1 Pass	
size	[gpm]
2”	1.93
3”	3.58
5” (5mm)	8.35
5” (9,5 mm)	9.69
6”	17.87
8”	32.80

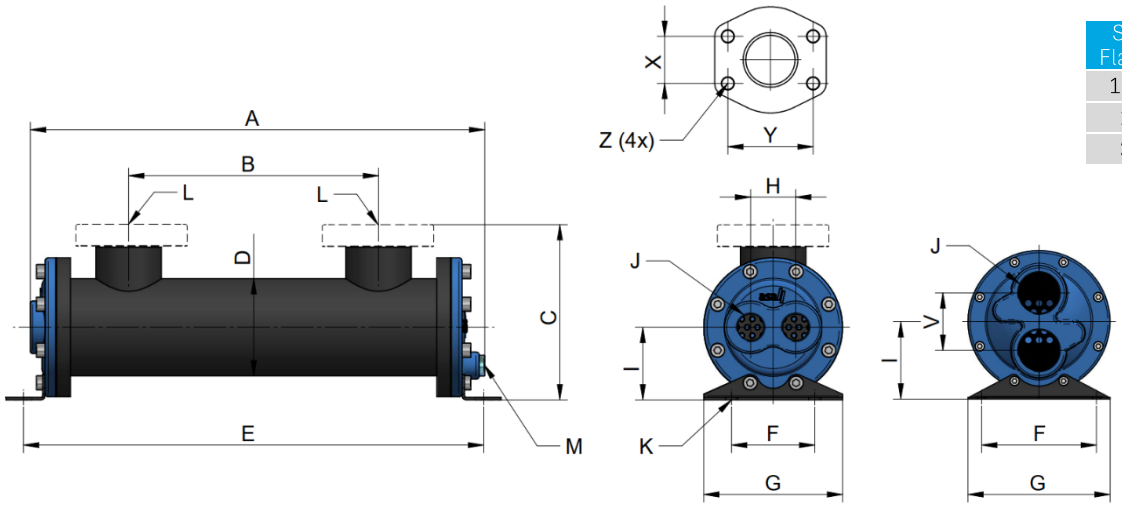
Oil Pressure Drop

- 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



SAE Flange	X	Y	Z
1 ½"	1.42	2.76	M12
2"	1.69	3.07	M12
3"	2.44	4.17	M16

Technical Data

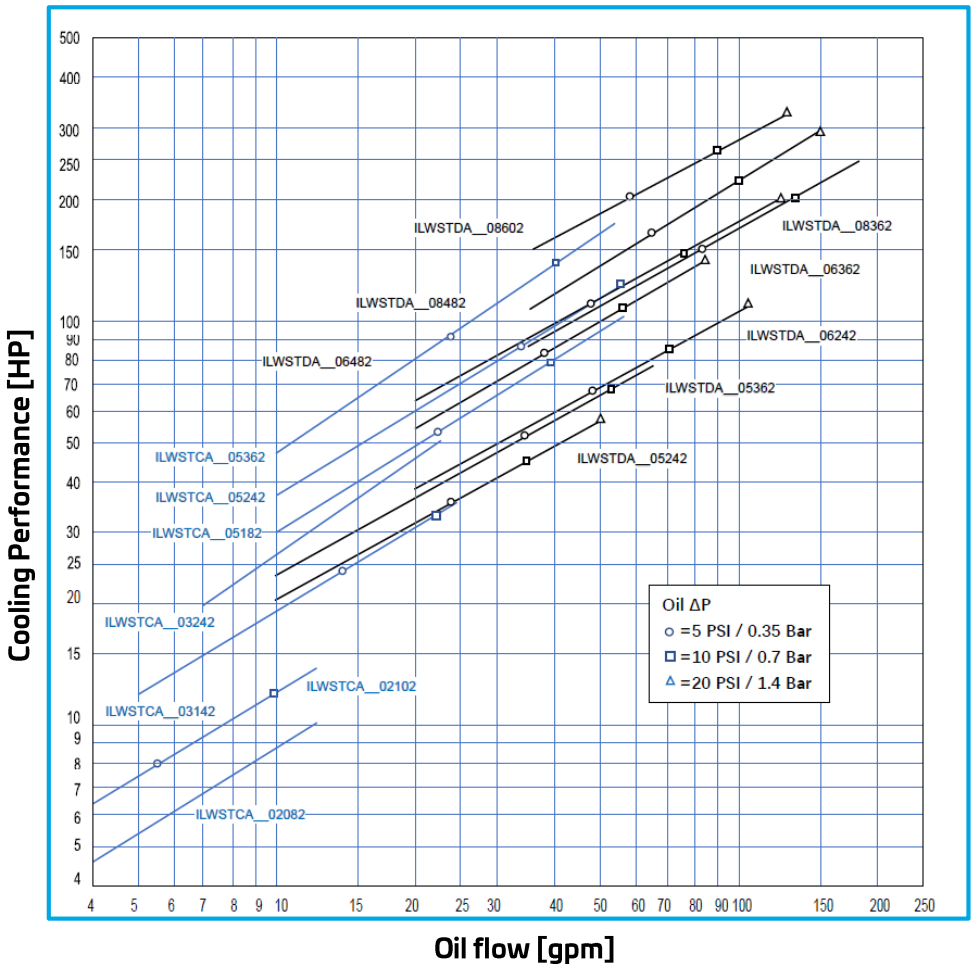
order number	A	B	C	D		E	F	G	H	I	J	K	L		M	V	weight
	[in]	[in]	BSPP [in]	SAE [in]	Ø [in]	[in]	[in]	[in]	[in]	[in]	BSPP/ NPT	slot [in]	BSPP/ NPT	SAE	BSPP	[in]	[lbs]
ILWSTCA....02082FU00	10.39	3.86	3.90	n/a	2.56	10.43	2.52	3.50	1.14	1.61	⅜"	0.35x0.63	¾"	n/a	n/a	-	6.6
ILWSTCA....02102FU00	12.40	5.59	3.90	n/a	2.56	12.44	2.52	3.50	1.14	1.61	⅜"	0.35x0.63	¾"	n/a	n/a	-	6.6
ILWSTCA....03142FU00	16.18	8.98	5.47	5.71	3.50	16.38	2.99	5.00	1.61	2.60	¾"	0.43x0.75	1 ½"	1 ½"	¼"	-	19.8
ILWSTCA....03242FU00	26.18	18.98	5.47	5.71	3.50	26.73	2.99	5.00	1.61	2.60	¾"	0.43x0.75	1 ½"	1 ½"	¼"	-	26.5
ILWSTCA....05182FU00	20.55	12.20	7.68	8.31	5.00	21.46	4.02	6.50	2.40	4.02	1"	0.43x0.98	1 ½"	2"	¼"	-	41.9
ILWSTCA....05242FU00	26.54	18.19	7.68	8.31	5.00	27.44	4.02	6.50	2.40	4.02	1"	0.43x0.98	1 ½"	2"	¼"	-	50.7
ILWSTCA....05362FU00	38.54	30.20	7.68	8.31	5.00	39.45	4.02	6.50	2.40	4.02	1"	0.43x0.98	1 ½"	2"	¼"	-	66.1
ILWSTDA....05242FU00	30.00	20.12	7.48	7.99	5.24	27.44	4.02	5.24	1.50	4.02	1 ½"	0.51x0.75	1 ½"	2"	¼"	1.50	44.1
ILWSTDA....05362FU00	42.01	32.13	7.48	7.99	5.24	39.45	4.02	5.24	1.50	4.02	1 ½"	0.51x0.75	1 ½"	2"	¼"	1.50	66.1
ILWSTDA....06242FU00	30.12	19.02	8.74	9.37	6.26	28.11	6.26	7.76	1.57	4.49	2"	0.51x0.75	2"	2"	⅜"	1.57	99.2
ILWSTDA....06362FU00	42.13	30.98	8.74	9.37	6.26	40.12	6.26	7.76	1.57	4.49	2"	0.51x0.75	2"	2"	⅜"	1.57	125.7
ILWSTDA....06482FU00	54.13	42.99	8.74	9.37	6.26	52.13	6.26	7.76	1.57	4.49	2"	0.51x0.75	2"	2"	⅜"	1.57	149.9
ILWSTDA....08362FU00	45.24	30.75	11.50	12.52	8.62	41.89	8.27	10.51	2.24	5.75	2 ½"	0.63x0.87	3"	3"	⅜"	2.24	200.6
ILWSTDA....08482FU00	57.24	42.76	11.50	12.52	8.62	53.90	8.27	10.51	2.24	5.75	2 ½"	0.63x0.87	3"	3"	⅜"	2.24	251.3
ILWSTDA....08602FU00	69.25	54.76	11.50	12.52	8.62	65.91	8.27	10.51	2.24	5.75	2 ½"	0.63x0.87	3"	3"	⅜"	2.24	302.0

Oil/Water Coolers, ST Series
Shell tubes heat exchanger

TWO PASS

Performance at 150SSU

2:1 Oil to Water Ratio-Medium Water Usage

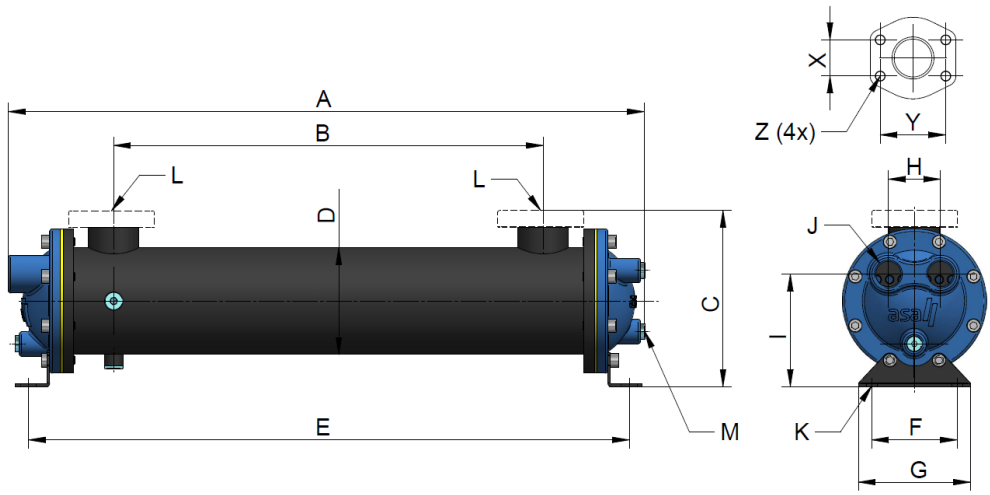


Maximum Water Flow Rates 2 Pass	
size	[gpm]
2”	6.1
3”	11.9
5” (5mm)	28.0
5” (9,5 mm)	32.0
6”	60.0
8”	109.9

Oil/Water Coolers, ST Series
Shell tubes heat exchanger

FOUR PASS

Dimension



SAE Flange	X	Y	Z
1 ½"	1.42	2.76	M12
2"	1.69	3.07	M12
3"	2.44	4.17	M16

Technical Data

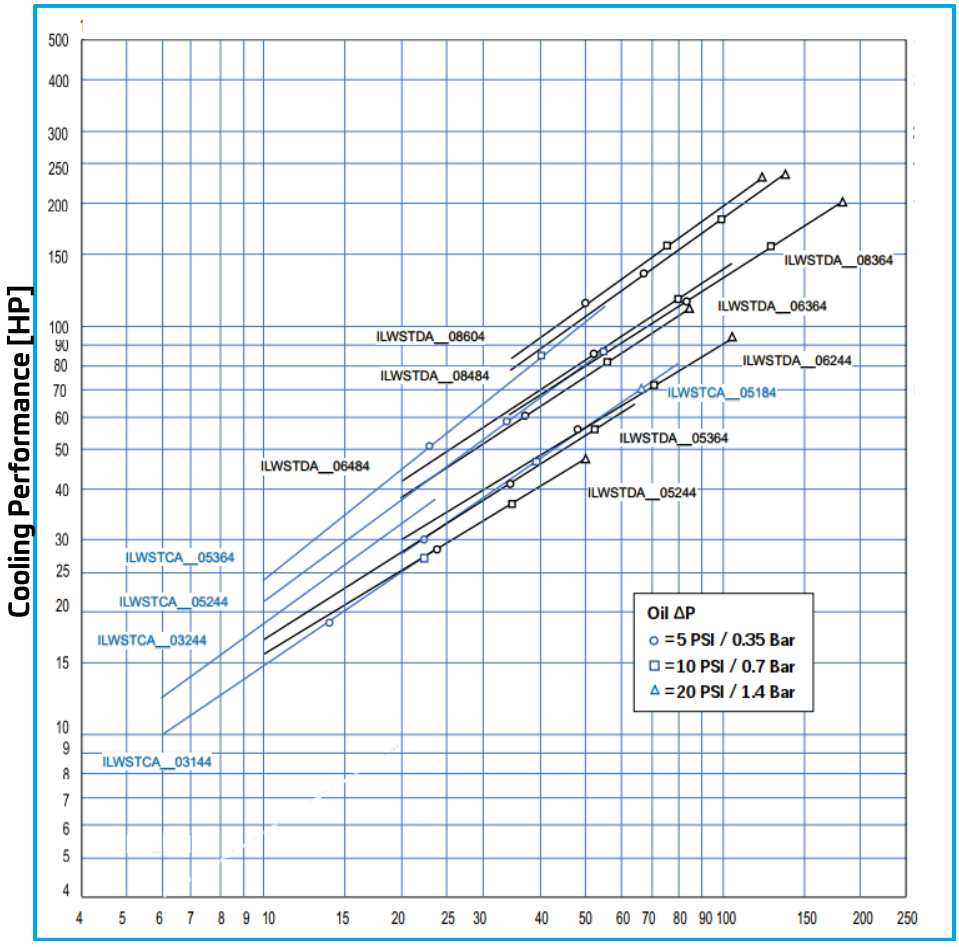
order number	A	B	C		D	E	F	G	H	I	J	K	L		M	weight
	[in]	[in]	BSPP [in]	SAE [in]	Ø [in]	[in]	[in]	[in]	[in]	[in]	BSPP/ NPT	slot [in]	BSPP/ NPT	SAE	BSPP	[lbs]
ILWSTCA....03144FU00	16.18	8.98	5.47	5.71	3.50	16.69	2.99	5.00	1.77	3.31	½"	0.43x0.75	1 ½"	1 ½"	¼"	19.8
ILWSTCA....03244FU00	26.18	18.98	5.47	5.71	3.50	26.73	2.99	5.00	1.77	3.31	½"	0.43x0.75	1 ½"	1 ½"	¼"	26.5
ILWSTCA....05184FU00	20.55	12.20	7.68	8.31	5.00	21.46	4.02	6.50	2.52	4.92	¾"	0.43x0.98	1 ½"	2"	¼"	41.9
ILWSTCA....05244FU00	26.54	18.19	7.68	8.31	5.00	27.44	4.02	6.50	2.52	4.92	¾"	0.43x0.98	1 ½"	2"	¼"	50.7
ILWSTCA....05364FU00	38.54	30.20	7.68	8.31	5.00	39.45	4.02	6.50	2.52	4.92	¾"	0.43x0.98	1 ½"	2"	¼"	66.1
ILWSTDA....05244FU00	30.00	20.12	7.48	7.99	5.24	27.44	4.02	5.24	2.44	5.28	1"	0.51x0.75	1 ½"	2"	¼"	44.1
ILWSTDA....05364FU00	42.01	32.13	7.48	7.99	5.24	39.45	4.02	5.24	2.44	5.28	1"	0.51x0.75	1 ½"	2"	¼"	66.1
ILWSTDA....06244FU00	30.12	19.02	8.74	9.37	6.26	28.11	6.26	7.76	2.87	5.91	1 ½"	0.51x0.75	2"	2"	⅜"	99.2
ILWSTDA....06364FU00	42.13	30.98	8.74	9.37	6.26	42.95	6.26	7.76	2.87	5.91	1 ½"	0.51x0.75	2"	2"	⅜"	125.7
ILWSTDA....06484FU00	54.13	42.99	8.74	9.37	6.26	52.13	6.26	7.76	2.87	5.91	1 ½"	0.51x0.75	2"	2"	⅜"	149.9
ILWSTDA....08364FU00	45.24	30.75	11.50	12.52	8.62	41.89	8.27	10.51	4.25	7.48	2"	0.63x0.87	3"	3"	⅜"	200.6
ILWSTDA....08484FU00	57.24	42.76	11.50	12.52	8.62	53.90	8.27	10.51	4.25	7.48	2"	0.63x0.87	3"	3"	⅜"	251.3
ILWSTDA....08604FU00	69.25	54.76	11.50	12.52	8.62	65.91	8.27	10.51	4.25	7.48	2"	0.63x0.87	3"	3"	⅜"	302.0

Oil/Water Coolers, ST Series
Shell tubes heat exchanger

FOUR PASS

Performance at 150SSU

4:1 Oil to Water Ratio-Medium Water Usage



Maximum Water Flow Rates 4 Pass	
size	[gpm]
2”	n/a
3”	6.1
5” (5mm)	14.0
5” (9,5 mm)	16.1
6”	30.1
8”	65.0

Oil/Water Coolers, ST Series
Shell tubes heat exchanger

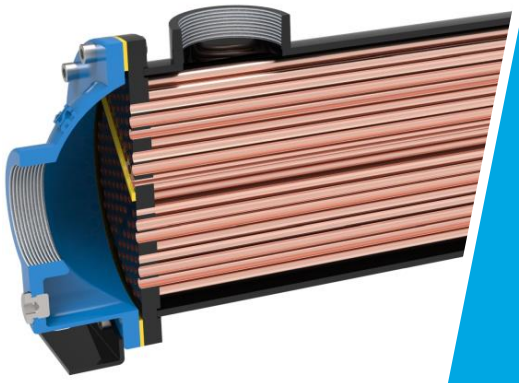
Customized to your applications

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:

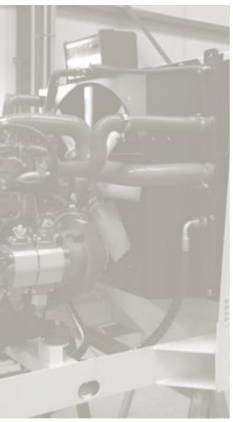
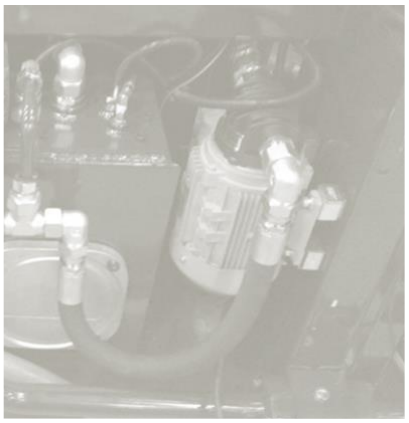
- ✓ project management
- ✓ calculation and simulation
- ✓ verification on test bench
- ✓ procurement option system
- ✓ approved quality



discover reliable technology!

Thermal Systems
Connection Technology
Fluid Controls

be different.
make a difference.


USA
asa hydraulik of America
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

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

AUSTRALIA
asa Products Pty Ltd
Quinlan Road 23
3076 Epping, Victoria
Tel.: +61 3 9397 6129
melbourne@asahydraulik.com

BRASIL
asa hydraulik do Brasil Ltda.
Rua Maria Fett 96 Bloco B
Vila Mercedes, 03263000, Sao Paulo, SP
Tel.: +55 11 9 8862-0022
sales_brazil@asayhdraulik.com

CHINA
asa Hydraulik Technology (Suzhou) Co.Ltd
江苏省苏州市工业园区方洲路 128 号 6 区 B 幢
Area 6, Building B,
Fangzhou Road No 128,
Suzhou industrial park,
Suzhou City, Jiangsu Province
Tel.: +86 512 62381988
suzhou@asahydraulik.com

INDIA
asa heatexchanger Pvt Ltd
Plot no.1226, Phase-3, GIDC, Vatva
Ahmedabad - 382445
Tel.: +91 70 43907273
salesindia@asahydraulik.com