



# Thermal Systems

**Made in India!**

Special Ranges



**be different.  
make a difference.**

*DK-TS-special-ranges-ind-rev0*

# Company

Who we are and what we offer

asa stands for developments, advances and innovations already at work through our customers' various mobile and stationary applications. More than 38 years' experience in thermal systems, connection technology and fluid controls has made us a global leader in advanced technologies. Our experience creates progress to ensure you competitive pricing, consistent product performance and reliability.

asa india's main facility is located in Palej, near Vadodara. Palej is a census town in the Bharuch district, Gujarat, India. With its strong growth rate and fast developing infrastructure asa made the right choice and took the way into a prosperous future in India.



Our sales office in Mumbai is an addition for best service and sales support for India. Contact us at +91 22 28195557 or [salesindia@asahydraulik.com](mailto:salesindia@asahydraulik.com)



## Be different. Make a difference.

Over the years, asa continually developed into a globally active systems supplier. Despite this evolution, we consciously maintained the medium sized structure of a family owned company. As a result, we are able to respond quickly and flexibly to our customer's demands and promote our innovations. Our increasing product portfolio and quality targets developed asa as a brand to the next level. Thus made us create a new logo and appearance to strengthen our key values and highlight it in all our present and future markets. We are proud on looking back on almost 40 years of innovative products, but our major attitude is the view into the future. Please check out our newest products and technologies in this catalogue and contact us if more detailed information is required.



in this catalogue...



**Company**

**Thermal Systems**

**Standard Ranges**



**Special Ranges**

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**R & D Services**



**get in contact for this catalogue**

## General Data and Details

The oil / air coolers of our CC series are autonomous cooling systems with an integrated circulation pump. They work as a separate cooling unit or as a filter cooling unit with an adequate filter. The benefits of such circulation coolers are a constant cooling performance and a higher durability, because there are no pressure vibrations or peaks in the cooler unit.

### Conditions of use:

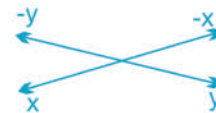
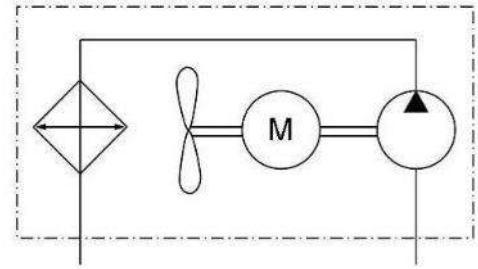
Maximum oil temperature: 100°C, maximum air temperature: 50°C. Motors can be used up to an altitude of 1.500m. For other conditions of use please contact our engineers.

### Noise level:

Noise levels are measured in accordance with 2006/42/EC and EN ISO 3744.

### Dimensions:

General tolerance according to DIN 2768-v

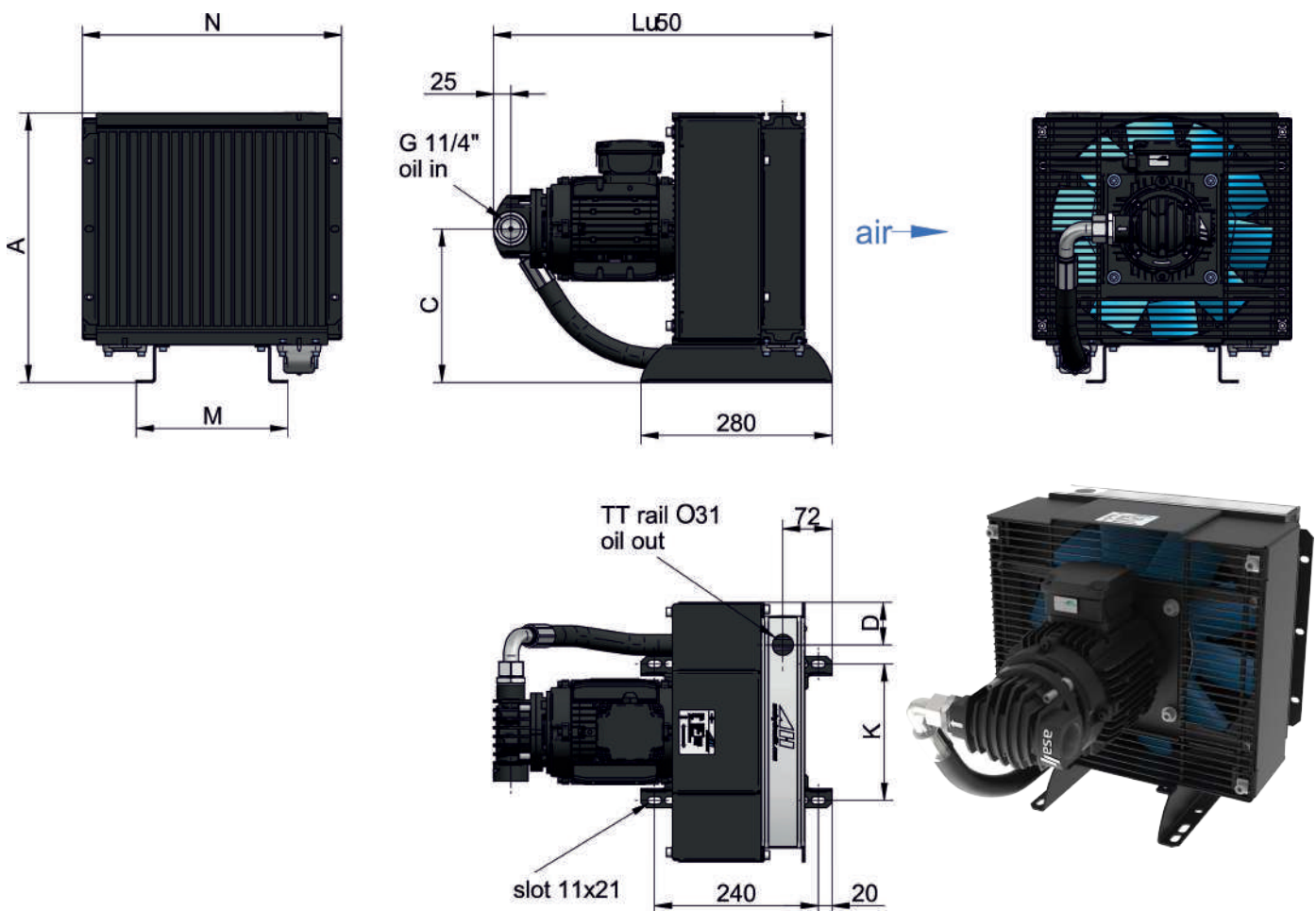


## Connection

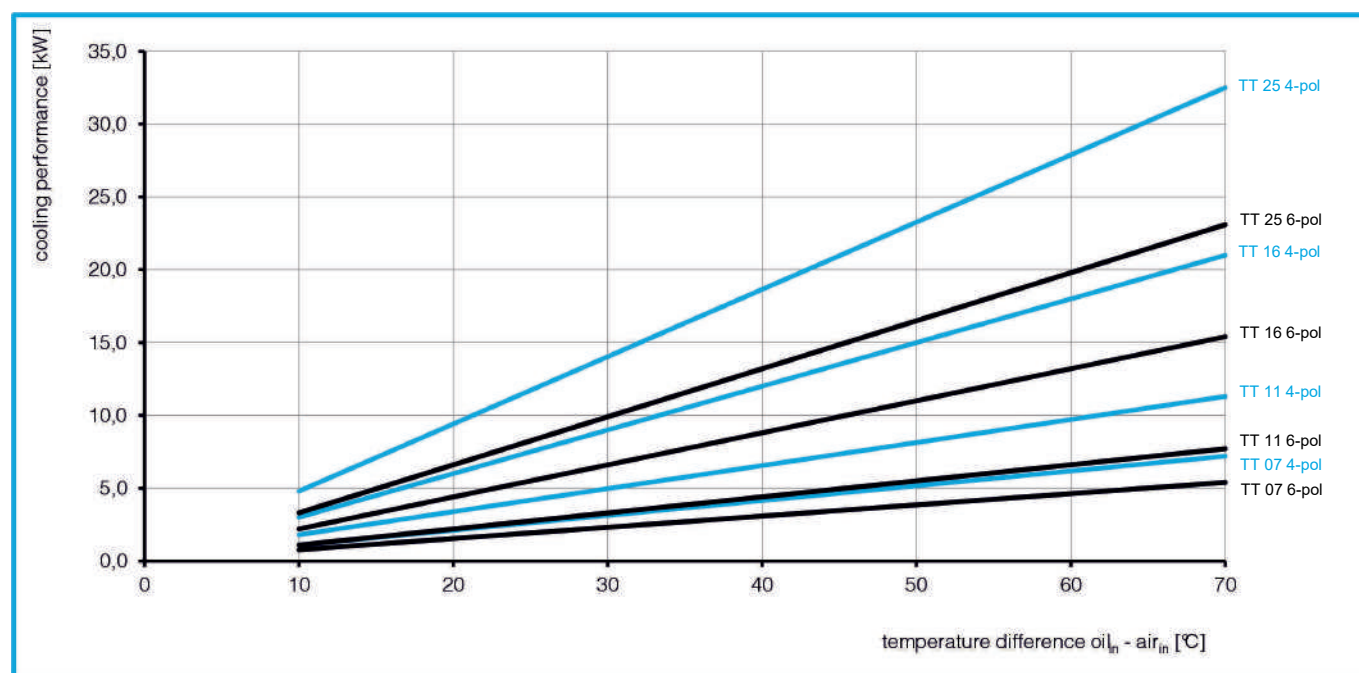
asa rail

The **asa** rail system is the first worldwide flexible mounting and connection system for air blast heat exchangers. It gives you the free choice of the connector direction through turnable ports. The rail slots in the radiator are the frame structure not only for connecting the ports, also for various possible mounting arrangements such as bypass systems, mounting of the cooler to aggregates, measurement devices and much more. Please contact us to discover the huge potential of this system for your application.

## Scale Drawing



## Performance



## Technical Data

order number	description	oil flow	max. working pressure	motor power	motor current	rotation	air flow	noise level	weight	A	C	D	K	L	M	N
		[lpm]	[bar]	[kW]	[A]	[rpm]	[kg/s]	[dB(A)]	[kg]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ASATT07RA47CCI00	TT 07 rail CC 4-pol	30	10	0,75	1,7	1445	0,28	65	24,4	355	205	72	135	493	157	320
ASATT11RA47CCI00	TT 11 rail CC 4-pol	30	10	0,75	1,7	1445	0,35	68	28,3	395	225	62	200	495	222	380
ASATT16RA47CCI00	TT 16 rail CC 4-pol	30	9	0,75	1,7	1445	0,72	74	35,8	520	288	66	200	511	222	460
ASATT25RA47CCI00	TT 25 rail CC 4-pol	30	6	0,75	1,7	1445	1,08	79	44,4	660	358	68	300	511	322	558
ASATT36RA47CCI00	TT 36 rail CC 4-pol															

The maximum suction pressure is -0,4 bar. The viscosity range is <100cSt. Motor voltage: 230/400V @ 50Hz\*. The protection level is IP55.

## Design

radiator material	aluminium
radiator air fin shape	wavy
pump type	gerotor
pump material (housing)	aluminium
sheet metal material	powder coated steel
suitable fluids	mineral oil

## Connection (BSP 1")

ILLZATT53G25KI00	requires 1pc per cooler
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## Options

asa rail connector	BSP 1 1/4" ILLZATT53G25KI00
temperature switch	50°C, 60°C
Rail filter	integrated spin on filter (page 15)
motor data*	alternative voltages, frequencies, protection levels, etc on request





# CC Series

## ASA Series 40/60lpm



### General Data and Details

The oil / air coolers of our CC series are autonomous cooling systems with an integrated circulation pump. They work as a separate cooling unit or as a filter cooling unit with an adequate filter. The benefits of such circulation coolers are a constant cooling performance and a higher durability, because there are no pressure vibrations or peaks in the cooler unit.

#### Conditions of use:

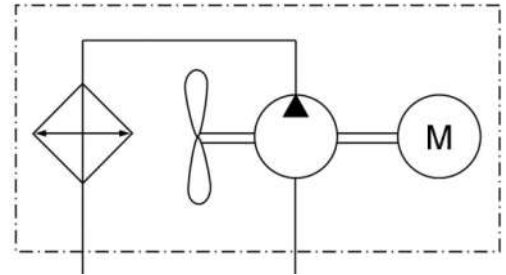
Maximum oil temperature: 100°C, maximum air temperature: 50°C. Motors can be used up to an altitude of 1.500m. For other conditions of use please contact our engineers.

#### Noise level:

Noise levels are measured in accordance with 2006/42/EC and EN ISO 3744.

#### Dimensions:

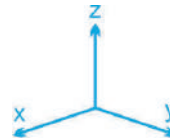
General tolerance according to DIN 2768-v



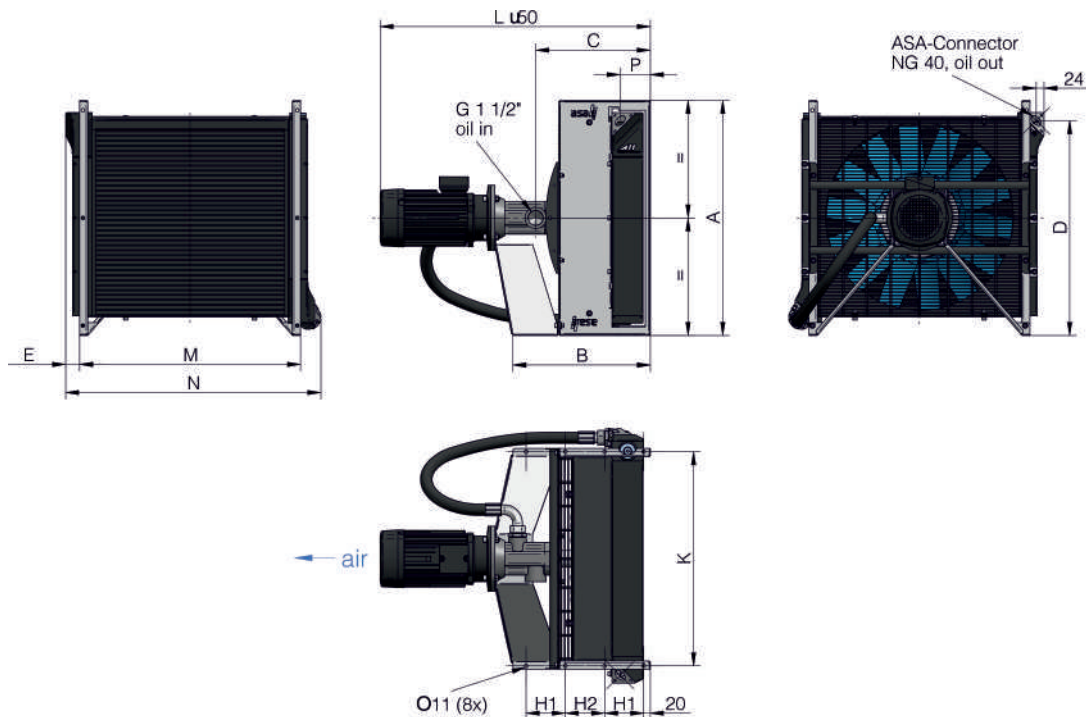
### Connection



The **AUC (asa universal connector)** system was the first worldwide flexible connection system for air blast heat exchangers. It gives you the free choice of the connector direction through turnable ports in 3 directions. Also the dimension of the ports can be varied with optional types. Please contact us to discover the huge potential of this system for your application.

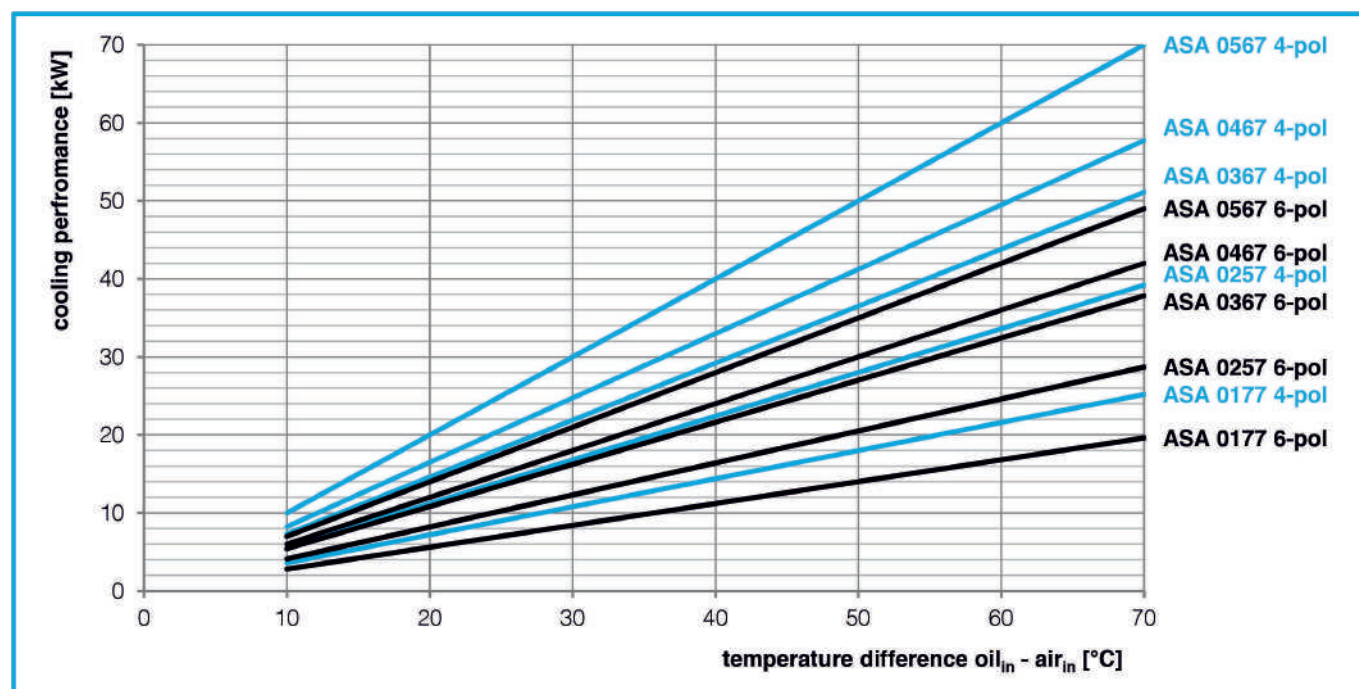


### Scale Drawing



order number	description	A	B	C	D	E	H1	H2	K	L	M	N	P
		[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
ASA0177AA49CCIO0	ASA 0177 CC 4-pol	530	400	331	471	60	120	90	442	807	462	601	89
ASA0257AA49CCIO0	ASA 0257 CC 4-pol	635	410	341	568	60	110	110	542	817	562	701	93
ASA0367AA49CCIO0	ASA 0367 CC 4-pol	720	420	351	658	46	120	120	656	827	676	781	92
ASA0467AA49CCIO0	ASA 0467 CC 4-pol	785	426	367	727	40	125	125	738	843	758	856	94
ASA0567AA49CCIO0	ASA 0567 CC 4-pol	860	416	361	802	43	125	125	806	837	826	931	94

## Performance



## Technical Data

order number	description	oil flow	max. working pressure	motor power	motor current	rotation	air flow	noise level	weight
		[lpm]	[bar]	[kW]	[A]	[rpm]	[kg/s]	[dB(A)]	[kg]
ASA0177AA49CCI00	ASA 0177 CC 4-pol	60	10	1,5	3,35	1445	0,57	74	70,7
ASA0257AA49CCI00	ASA 0257 CC 4-pol	60	10	1,5	3,35	1445	1,14	79	80,0
ASA0367AA49CCI00	ASA 0367 CC 4-pol	60	8	1,5	3,35	1445	1,47	83	90,4
ASA0467AA49CCI00	ASA 0467 CC 4-pol	60	7	1,5	3,35	1445	1,77	84	107,5
ASA0567AA49CCI00	ASA 0567 CC 4-pol	60	7	1,5	3,35	1445	1,89	84	108,1

The maximum suction pressure is -0,5 bar. The viscosity range is <240cSt. Motor voltage: 230/400V @ 50Hz\*. The protection level is IP55.

## Design

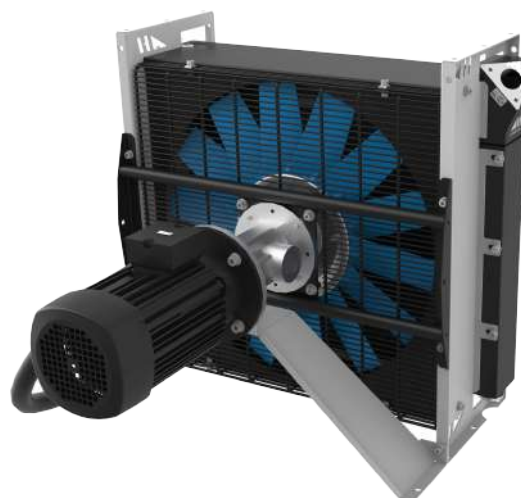
radiator material	aluminium
radiator air fin shape	wavy
pump type	screw pump
pump material (housing)	aluminium
sheet metal material	powder coated steel
suitable fluids	mineral oil

## Connection (BSP 1")

ILLZASA32G32I00 (BSP1¼")	1 per cooler required
ILLZASA40G40I00 (BSP1½")	1 per cooler required

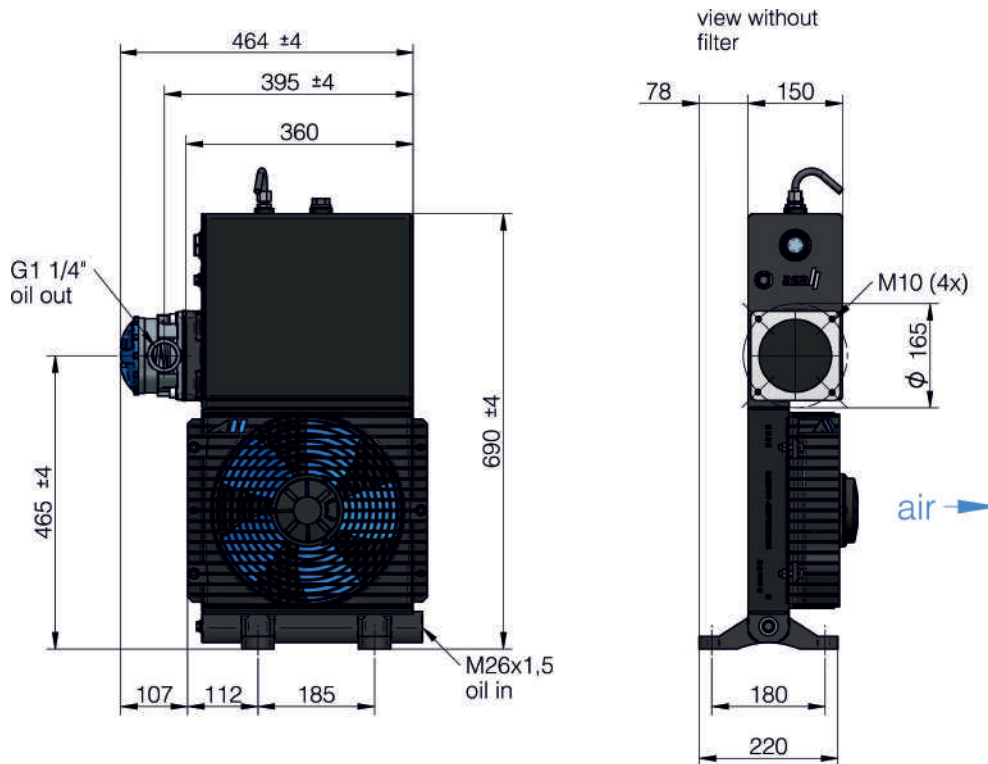
## Options

temperature switch	50°C, 60°C
motor data*	alternative voltages, frequencies, protection levels, etc on request



# FTF Series

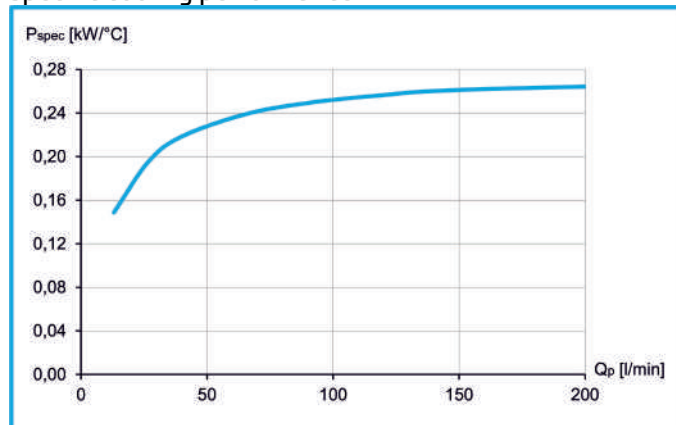
## 12V/24V with integrated suction filter and tank



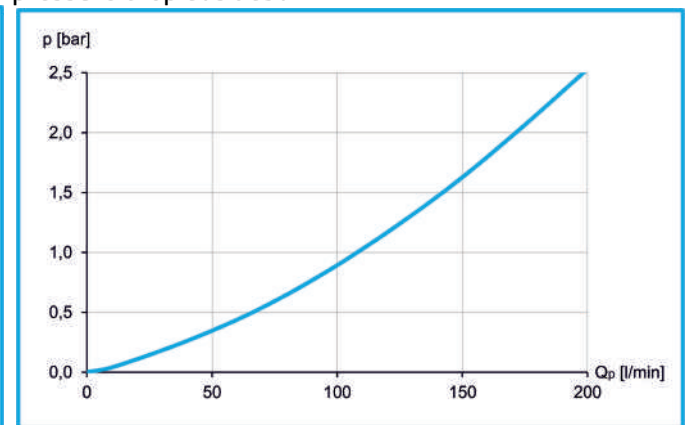
### Technical Data

order number	description	motor power	current	protection	air flow	noise level	weight
		[kW]	[A]		[kg/s]	[dB(A)]	[kg]
ILLCO1101FTFI00	ECO 11 12V DC filter tank incl. filter	0,25	15,0	IP 68	0,62	79	18,7
ILLCO1102FTFI00	ECO 11 24V DC filter tank incl. filter	0,25	7,7	IP 68	0,62	79	18,7

### specific cooling performance



### pressure drop at 30cSt



### Radiator

material:	aluminium
working temperature range:	-20°C to +120°C (oil temperature)*
air fin shape:	wavy
max. working pressure:	1,2 bar

### Tank

capacity	12 l
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### Options

temperature control box	ILLZTC24-2KI00(24V)
temperature switch	ILLZTH6069-14KI00 (60°C)

\*...the indicated temperature is the maximum inlet temperature for the cooler radiator, sealing material to be checked.



# FTF Series

Oil/Air Cooler ECO 11FT

12V/24V with integrated suction filter and tank



## Available spare parts

sketch number	description	order number
1	aluminium radiator with tank	ILLEC11FTC00
2	oil level gauge	HTFTLA5GC00 (MN0743)
3	temperature switch M14x1,5 including counter connector	ILLZTH6069-14KC00
	<i>compatible to ILLZTH6067-14, ILLZTH6067-14S and ILLZTH6067-14A</i>	
4 (12V)	fan unit kit (incl. fan, motor, guard and mounting material)	ILLELE0295A1C00
4 (24V)	fan unit kit (incl. fan, motor, guard and mounting material)	ILLELE0295O6C00
5a	complete suction filter incl. cartridge	HFSE000074B02
6a	filter cap and o-ring to 5a	ILLEFTFDK
5b	complete suction filter incl. cartridge and flange sealing	HFSE000074B02
6b	filter cap incl. spring mounting bar and end cap with sealing to 5b	ILLEFTFDKB00
5c	complete suction filter incl. cartridge and flange sealing	HFSE000074B02 (ASA original)
6c	filter cap and o-ring to 5c	ILLEFTFDKB01
7	filter cartridge with o-ring compatible to HFEP000074, HFEP000074B01 MP Filtri SF251P10NP05, SF250M10NP01, Argo Hytos P2.0923-01 (ES 074 series), P3.1130-01 (ES 075 series) AKG spare 8061.001.0001	HFEP000074B03
8	breather pipe	MW1661

Please contact us for further information at [support@asa-innovation.in](mailto:support@asa-innovation.in) or online [www.asa-innovation.com](http://www.asa-innovation.com)

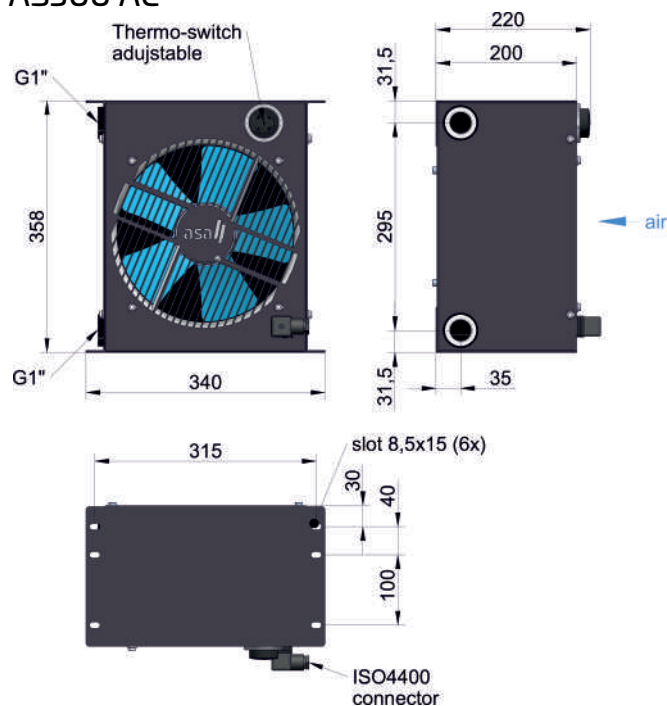
This data sheet and the corresponding scale drawings are to be used as a general guideline and technical overview of our products. Please contact us if more exact information is needed. As we are constantly improving our products, their characteristics, dimensions and weights may also change, although we do our best to incorporate these changes continually. asa assumes no liability for any information therein, any errors, omissions, misprints, nor any direct or indirect damages, losses or costs resulting therefrom. Any cooling performances and general technical values indicated in this catalogue are measured at a test bench according to asa testing procedures or calculated, based on such tests. Because there is no standardized testing procedure, tests used by other manufacturers could have different results. Due to different conditions in testing and application environments the cooling performance may also vary by +/- 15%. Therefore we recommend all products to be checked under the system operating conditions. This is also true of vibrations and mechanical stress as well as for pressure peaks and thermal stress and any other relevant factors. General tolerances according to DIN ISO 2768-v, General tolerances for casted parts according to EN ISO 8062-3 (DCTG 10). Tolerances for rubber parts are according to ISO 3302-1 (class M4-F+C). The tolerances of welding seams are defined by quality group D according to EN ISO 10042, if it is not specified on the actual scale drawing or data sheet. In addition to that we point out that any data sheet and corresponding scale drawing is no substitution for the manual.

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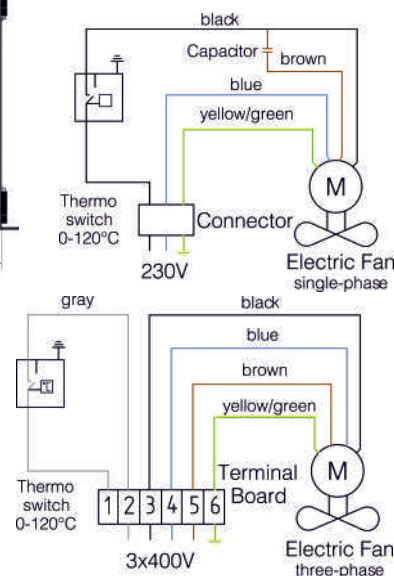
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# AS Series

## AS300 AC



### Electric Connection:



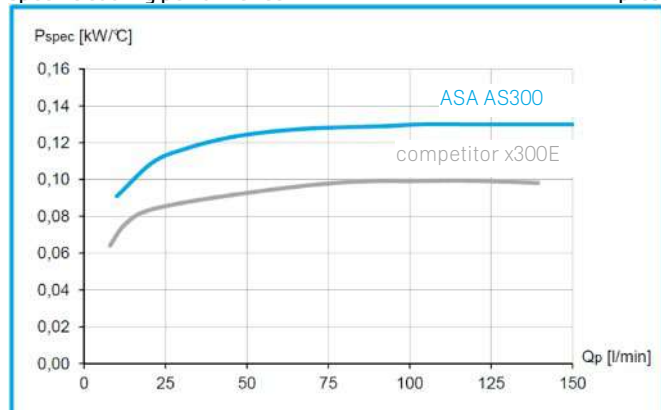
## Technical Data

order number	description	current	motor power	protection level	rotation	air flow	noise level	weight
		[A]	[kW]		[rpm]	[kg/s]	[db(A)]	[kg]
ILLCC00603I00	AS300 230V 2-pol AC	0,35	0,09	IP 44	2530	0,33	69	12,9 kg

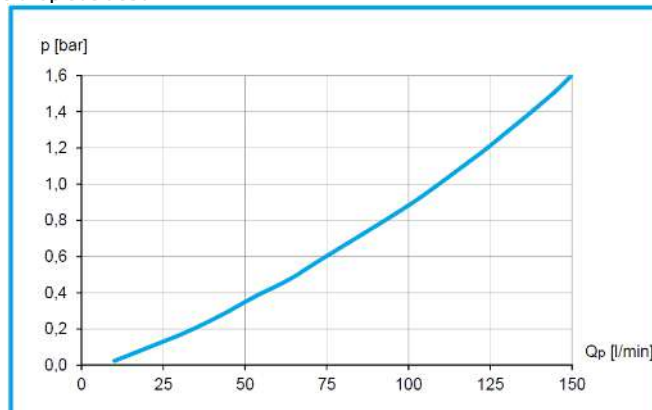
## Performance

The performances in this catalogue have been verified on a test bench according to asa test procedures. The parameters and test conditions are equal to competitor and the corresponding asa product.

### specific cooling performance



### pressure drop at 30cSt



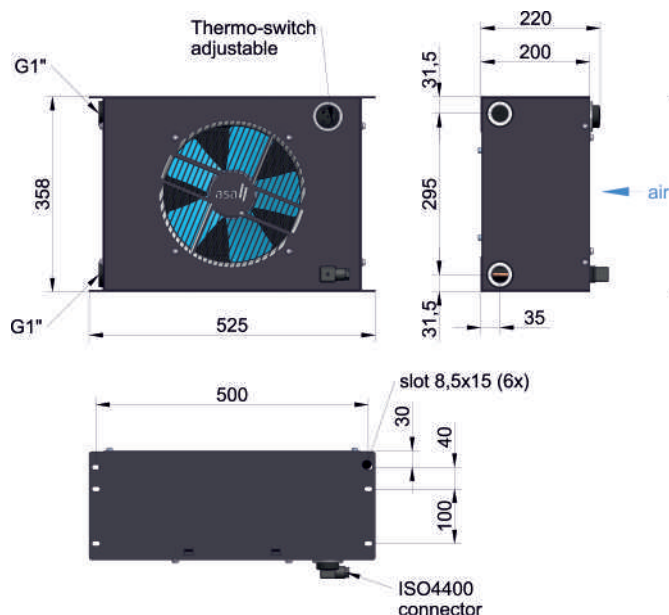
## Radiator

material:	aluminium
working temperature range:	-20°C to +100°C (oil temperature)
air fin shape:	wavy
working pressure:	26 bar (static)

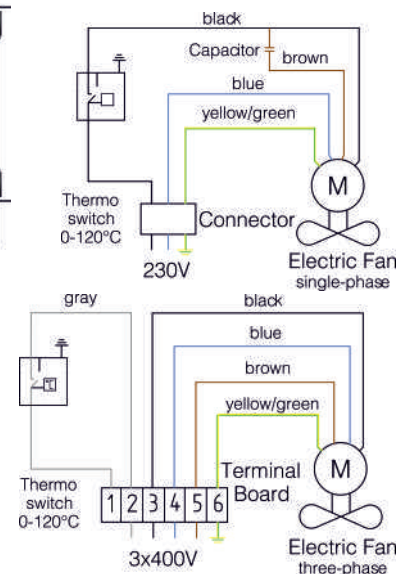


# AS Series

## AS300-2 AC



### Electric Connection:



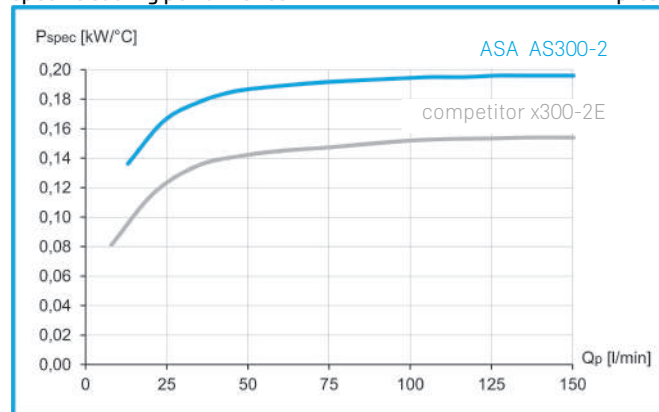
## Technical Data

order number	description	current	motor power	protection level	rotation	air flow	noise level	weight
		[A]	[kW]		[rpm]	[kg/s]	[db(A)]	[kg]
ILLCO1003I00	AS300-2 230V 2-pol AC	0,35	0,09	IP 44	2530	0,41	68	17,9 kg

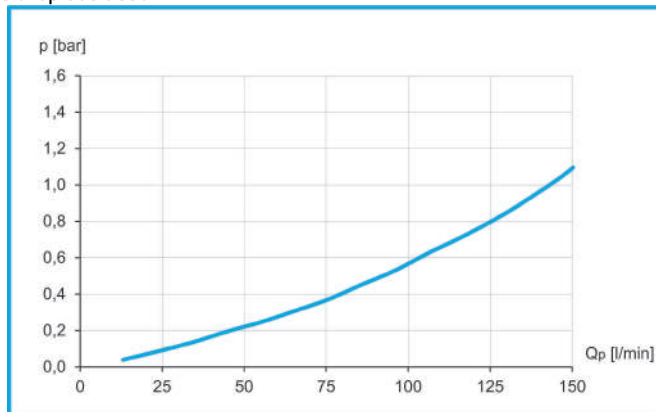
## Performance

The performances in this catalogue have been verified on a test bench according to asa test procedures. The parameters and test conditions are equal to competitor and the corresponding asa product.

### specific cooling performance



### pressure drop at 30cSt



## Radiator

material:	aluminium
working temperature range:	-20°C to +100°C (oil temperature)
air fin shape:	wavy
working pressure:	26 bar (static)



# E – Series Brazen Plate Heat Exchangers



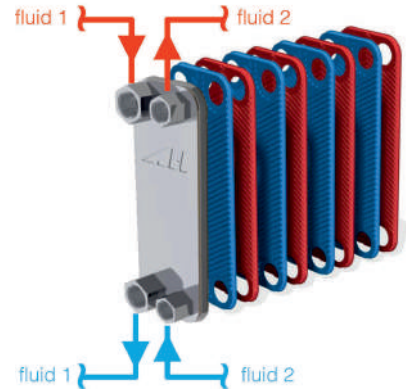
## Construction

The Plate Heat Exchangers ASA-PL is designed for hydraulic fluid and lubricating. The benefits of plate heat exchangers are:

- strength
- installation dimension
- efficiency
- low maintenance

## Design

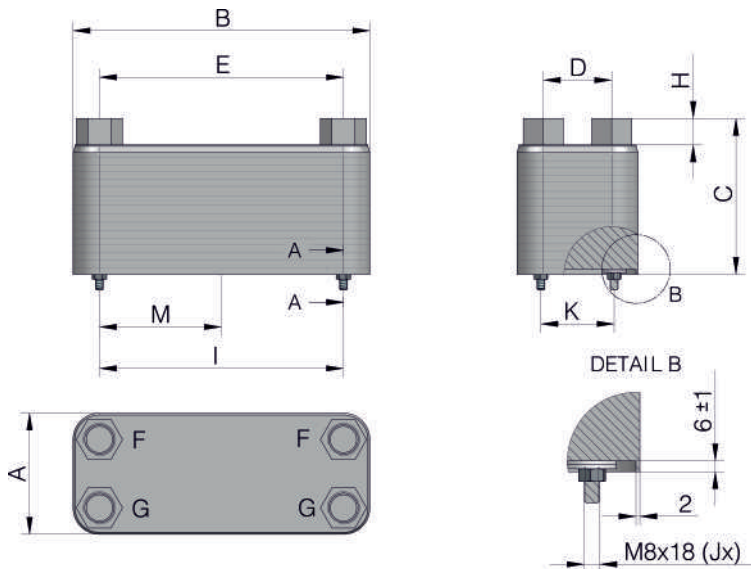
The structure of the ASA-PL cooling surfaces, i. thin, profiled plates made of acid-proof stainless steel (1.4306) is compact and powerful. The plates are profiled on the one hand to achieve optimum heat transfer and on the other hand to form channels in which oil or water is guided. The plate pack has a cover plate on each side. The entire heat exchanger is soldered together at the outer edges and at the inner points of contact. The cooler can be installed in a feed pump circuit and in return lines with large pressure variations. This product is also suitable for water, air and gas.



## Standard Range

Our standard range of plate heat exchanger covers a large field of applications to ensure you competitive pricing, high quality and short delivery times. Contact us for more information and non standard coolers to work out the optimal solution for you.

## Technical Data



### material

plates	steel 1.4306
upper plate	steel 1.4306
connectors	steel 1.4306
solder	copper

### temperature

max.working temperature	-160°C to +200 °C
-------------------------	-------------------

### pressure

test pressure	43 bar
max. pressure	30 bar

order number	description	A	B	C	D	E	F	G	H	I	J	K	M	weight
		[mm]	[mm]	[mm]	[mm]	[mm]			[mm]	[mm]	#bolt	[mm]	[mm]	[kg]
ILWPL10014EKI00	ASA – PL 10-14 E	73	205	65,5	42	172	G ½"	G ½"	27	120	2	-	-	1,8
ILWPL20020EKI00	ASA – PL 20-20 E	80	194	85	40	154	G ¾"	G ¾"	27	150	2	-	-	1,6
ILWPL22030EKI00	ASA – PL 22-30 E	106	306	111,5	50	250	G 1"	G ¾"	27	250	4	40	-	5,2
ILWPL22060EKI00	ASA – PL 22-60 E	106	306	183,5	50	250	G 1"	G ¾"	27	250	4	40	-	8,8
ILWPL40050EKI00	ASA – PL 40-50 E	124	304	159,5	70	250	G 1"	G 1"	27	250	4	75	-	8,5
ILWPL53020EKI00	ASA – PL 53-20 E	124	504	87,5	64	444	G 1"	G 1"	27	450	4	75	-	8,3
ILWPL53040EKI00	ASA – PL 53-40 E	124	504	135,5	64	444	G 1"	G 1"	27	450	4	75	-	13,1
ILWPL53060EKI00	ASA – PL 53-60 E	124	504	183,5	64	444	G 1"	G 1"	27	450	4	75	-	17,9
ILWPL70020EKI00	ASA – PL 70-20 E	246	528	86,5	174	456	G 1½"	G 1½"	27	420	6	150	210	17,6
ILWPL70060EKI00	ASA – PL 70-60 E	246	528	182,5	174	456	G 1½"	G 1½"	27	420	6	150	210	39,9
ILWPL70120EKI00	ASA – PL 70-120 E	246	528	326,5	174	456	G 1½"	G 1½"	27	420	6	150	210	69,6
ILWPL70160EKI00	ASA – PL 70-160 E	246	528	422,5	174	456	G 1½"	G 1½"	27	420	6	150	210	90,4

This data sheet and the corresponding scale drawings are to be used as a general guideline and technical overview of our products. Please contact us if more exact information is needed. As we are constantly improving our products, their characteristics, dimensions and weights may also change, although we do our best to incorporate these changes continually. asa assumes no liability for any information therein, any errors, omissions, misprints, nor any direct or indirect damages, losses or costs resulting therefrom. Any cooling performances and general technical values indicated in this catalogue are measured at a test bench according to asa testing procedures or calculated, based on such tests. Because there is no standardized testing procedure, tests used by other manufacturers could have different results. Due to different conditions in testing and application environments the cooling performance may also vary by +/- 15%. Therefore we recommend all products to be checked under the system operating conditions. This is also true of vibrations and mechanical stress as well as for pressure peaks and thermal stress and any other relevant factors. General tolerances according to DIN ISO 2768-v, General tolerances for casted parts according to EN ISO 8062-3 (DCTG 10). Tolerances for rubber parts are according to ISO 3302-1 (class M4-F+C). The tolerances of welding seams are defined by quality group D according to EN ISO 10042, if it is not specified on the actual scale drawing or data sheet. In addition to that we point out that any data sheet and corresponding scale drawing is no substitution for the manual.

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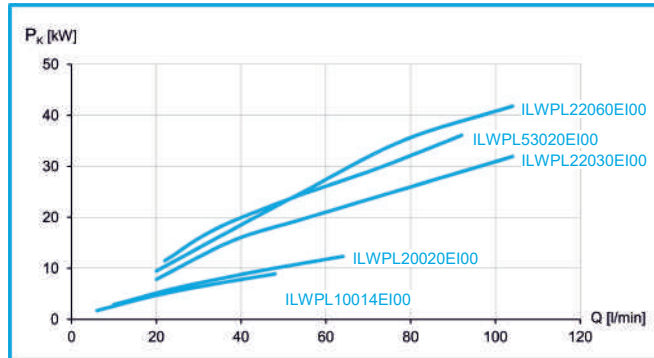
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# E – Series Brazen Plate Heat Exchangers

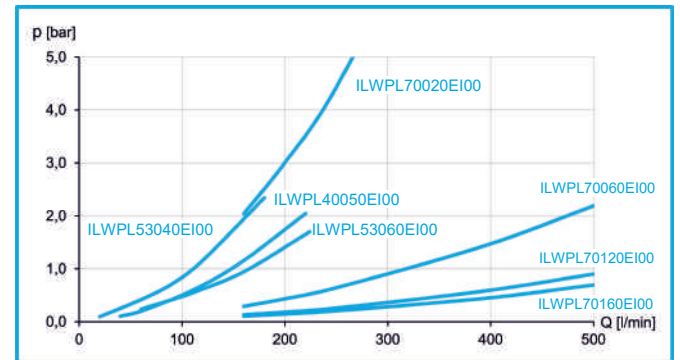
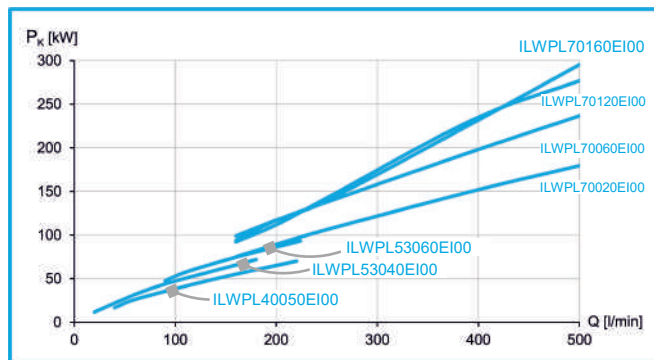
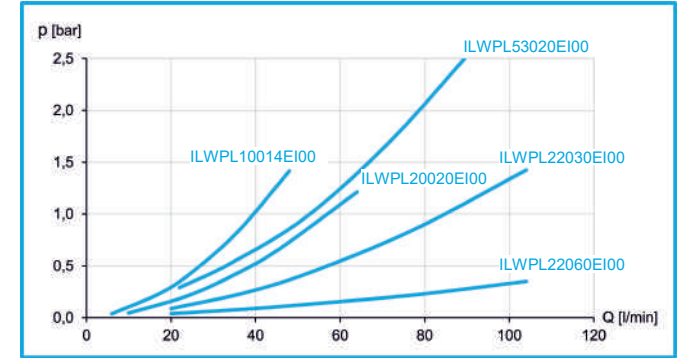


The shown performance curves created at an oil / water ratio of 2:1 with hydraulic oil ISO VG 32 at an oil inlet temperature of 60°C and a water entrance of 20°C. Please contact us for other technical parameters to select the optimal cooler for you.

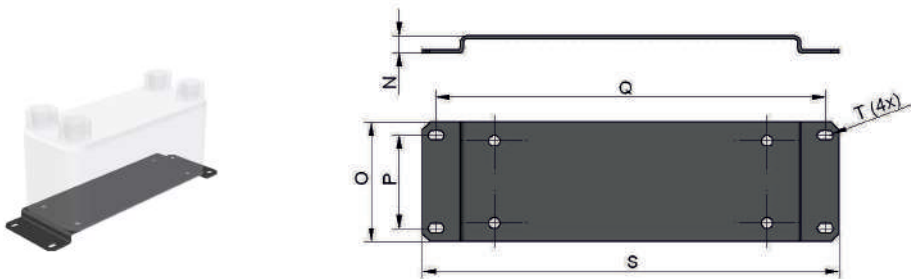
## colling performance



## pressure drops (oil side)



## Mounting brackets



### cooler number with mounting brackets

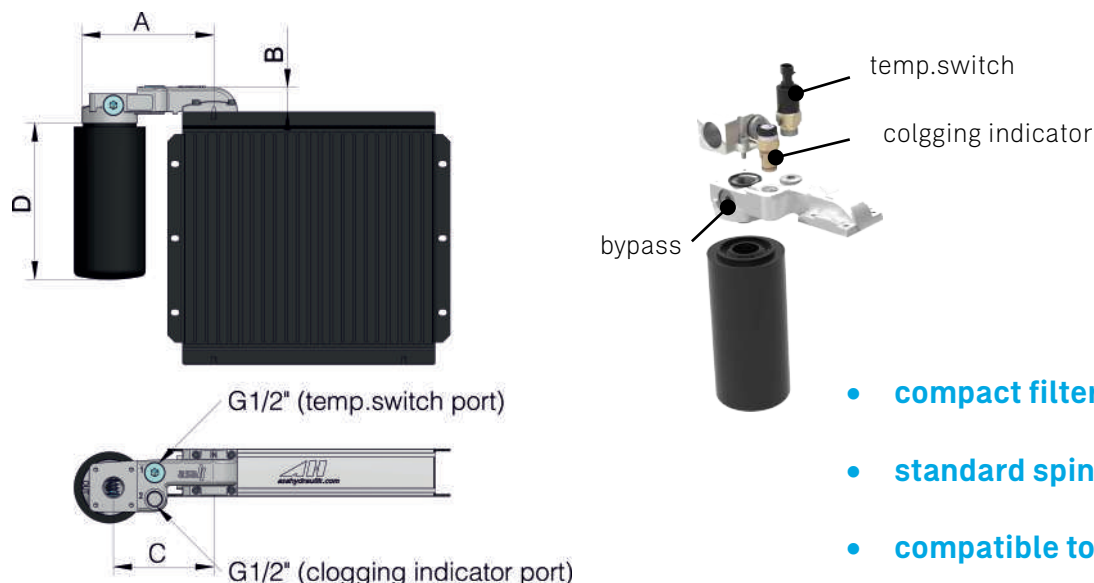
ILWPL10014EPI00
ILWPL20020EPI00
ILWPL22030EPI00
ILWPL22060EPI00
ILWPL40050EPI00
ILWPL53020EPI00
ILWPL53040EPI00
ILWPL53060EPI00
ILWPL70020EPI00
ILWPL70060EPI00
ILWPL70120EPI00
ILWPL70160EPI00

order number	description	N	O	P	Q	S	T slot hole	weight
		[mm]	[mm]	[mm]	[mm]	[mm]		[kg]
ILWPZMON10I00	ASA – PL 10-14E	16	58	33	228	253	9 x 15	0,3
ILWPZMON20I00	ASA – PL 20-20E	16	70	50	255	280	9 x 15	0,5
ILWPZMON22I00	ASA – PL 22-__E	16	74	50	350	375	9 x 15	0,7
ILWPZMON40I00	ASA – PL 40-50E	16	109	85	357	382	9 x 15	1,0
ILWPZMON53I00	ASA – PL 53-__E	16	107	85	555	580	9 x 15	1,5
ILWPZMON70I00	ASA – PL 70-__E	16	254	230	552	580	11 x 20	3,5

Please contact us for details or get further information at [www.asahydraulik.com](http://www.asahydraulik.com) or [support@asahydraulik.com](mailto:support@asahydraulik.com)  
Please read the manual before operating



The H-Set is an optional system to integrate another hydraulic set to the asa rail system. The H-Set currently offers 2 sizes of kits to mount a spin on filter to the cooler application. This is a very compact and cost efficient integration. This system can also be combined with various other filters or the shown configurations. Contact us for further options and assistance to select the optimal product for you.



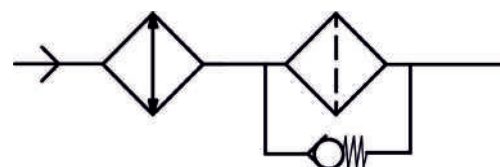
- compact filter integration
- standard spin on filter
- compatible to whole rail series

### Dimension

order number	description	filter rating	working pressure	spin on	A	B	C
		[ $\mu$ m]	[bar]	[BSP]	[mm]	[mm]	[mm]
ILLZRF11G2010I00	Spin on filter kit rail 10 $\mu$ m, 60lpm	10	10	1"	177,5	33	135
ILLZRF11G2025I00	Spin on filter kit rail 25 $\mu$ m, 60lpm	25	10	1"	177,5	33	135

### Rail-filter Block

material:	aluminium
working temperature range:	-20°C to +100°C (oil temperature)*
Sealing to rail flange:	o-ring NBR
bypass:	incl.2 bar standard setting



### Hydraulic Connection

compatible to	any rail connection set (page 16)
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### Application

main application	are offline circuits, lubrication, cooling and filtration circuits
oil flow	from cooler to filter

### Options

temperature switches	ILLZTH5069K, ILLZTH4765K, ILLZTH6065K
clogging indicator	electric, optical



\*...the indicated temperature is the maximum inlet temperature for the cooler radiator.  
Depending on the sealings in use, the application needs appropriate checking.

Please contact us for further options and assistance, read manual before installation!

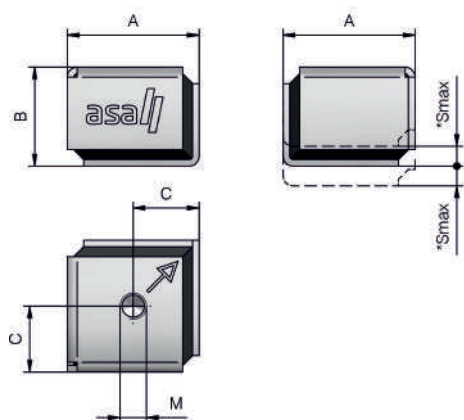
# Accessories

rubber vibration absorber, foot mounting brackets



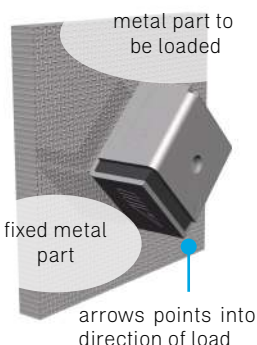
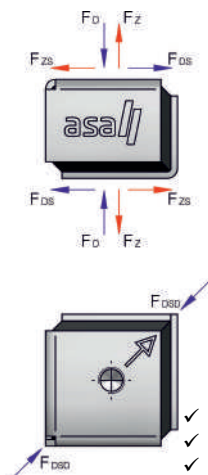
## Rubber Vibration Absorber

The asa vibration absorbers are rubber metal connected parts to absorb impact loads on components to protect them and to extend the life time of the system. The patented solution is especially designed for highest shear loads. An assembly system can be checked by arrows on the metal parts to help to optimize and raise the load capability of the vibration absorber.

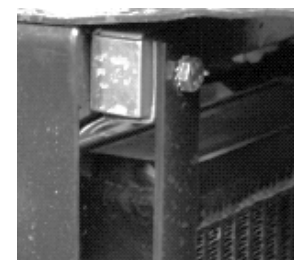


\*Smax.....maximum working distance /maximaler Arbeitsweg

\*Smax.....maximum working distance



- ✓ Zinc coated metal parts
- ✓ Elastomer: natural rubber
- ✓ Working temp. -30°C to +80°C



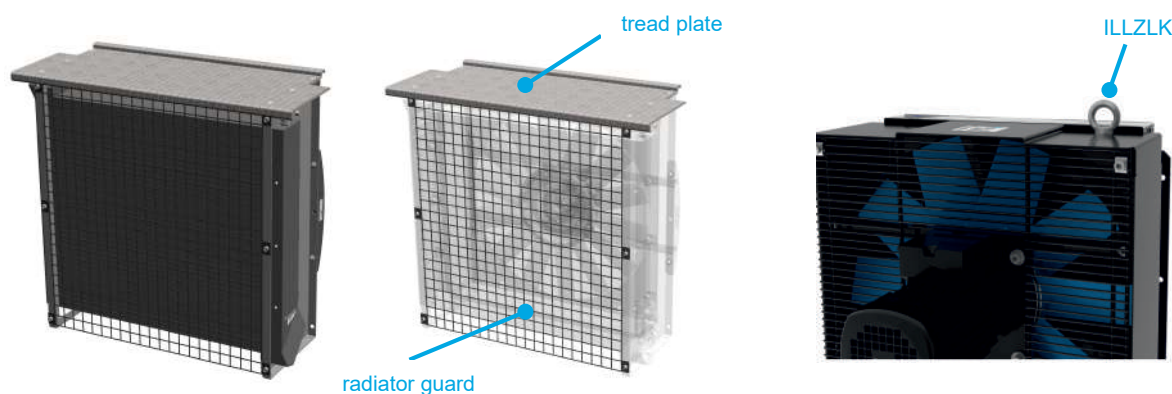
## Dimensions

order number	description	A	B	C	M	Smax	weight
		[mm]	[mm]	[mm]		[mm]	[kg]
MDGQ403008IIKI00	40x40x30 M8	40	30	20	M8 x 10	± 3	0,127
MDGQ504510IIKI00	50x50x45 M10	50	45	25	M10 x 12	± 6	0,280
MDGQ755512IIKI00	75x75x55 M12	75	55	37,5	M12 x 15	± 8	0,659
MDGQ1007516IIKI00	100x100x75 M16	100	75	50	M16 x 16,5	± 9	1,920

Contact us for full data sheet with load capacities, maximum static loads and spring rates.

## Tread Plate / Radiator Guard / Lifting Kit

The tread plates are accessories for the asa series cooler types with side frames. The solid plates are used for applications where maintenances and servicing procedures require the cooler as a safe surface to step on. The radiator guard is a solid protection to avoid damages on the radiator air fins and oil channels. For safe and simple handling during installation and relocation only used for installation and maintenance.



order number	description	fits on cooler type					
		ASA 0177	ASA 0257	ASA 0367	ASA 0467*	ASA 0567*	ASA 0927*
tread plate kit	plate, flat screws;	•	•	MW2089	○	○	○
radiator guard	grid, screws, washers;	ILLEGIT017SKI00	ILLEGIT025SKI00	ILLEGIT036SKI00	○	○	○

•...optional available, ○...available on request, \*...DC drive versions are not compatible with these accessories

order number	description	delivery content
ILLZLK100	Lifting kit standard coolers	one kit contains 2 ring bolts, 4 nylon washers and 2 screw s

This data sheet and the corresponding scale drawings are to be used as a general guideline and technical overview of our products. Please contact us if more exact information is needed. As we are constantly improving our products, their characteristics, dimensions and weights may also change, although we do our best to incorporate these changes continually. asa assumes no liability for any information therein, any errors, omissions, misprints, nor any direct or indirect damages, losses or costs resulting therefrom. Any cooling performances and general technical values indicated in this catalogue are measured at a test bench according to asa testing procedures or calculated, based on such tests. Because there is no standardized testing procedure, tests used by other manufacturers could have different results. Due to different conditions in testing and application environments the cooling performance may also vary by +/- 15%. Therefore we recommend all products to be checked under the system operating conditions. This is also true of vibrations and mechanical stress as well as for pressure peaks and thermal stress and any other relevant factors. General tolerances according to DIN ISO 2768-vL. General tolerances for casted parts according EN ISO 8062-3 (DCTG 10). Tolerances for rubber parts are according to ISO 3302-1 (class M4-F+C). The tolerances of welding seams are defined by quality group D according to EN ISO 10042, if it is not specified on the actual scale drawing or data sheet. In addition to that we point out that any data sheet and corresponding scale drawing is no substitution for the manual.  
DK-TS-special-ranges-ind-rev0

**[www.asahydraulik.in](http://www.asahydraulik.in)**



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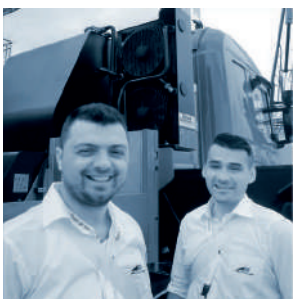
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