

Made for Motion



Cooling systems

Oil/air coolers

Oil/water coolers

Combined coolers

FUTURE WITH A SYSTEM.

KTR have consistently continued to extend their expertise in building systems over the past few decades. Today we are a leading manufacturer providing solutions with highest quality standards in the fields of drive technology, brake and cooling systems as well as hydraulic components to our global business partners.

So what would be more obvious than adapting our company name to this development? KTR Kupplungstechnik GmbH has become KTR Systems GmbH.

The change of name takes account of the growing diversity of our performance range demonstrating the global markets and our customers that we are prepared to take over just more responsibility in machines and plants.

COOLING SYSTEMS BY KTR: ALWAYS AT THE PERFECT TEMPERATURE.

Wherever someone is working, heat is produced. And wherever KTR products are used, people are often working hard. That is why KTR has thought about heat dissipation. And has finally implemented the results of these thoughts - in

terms of high-performance and efficient cooling systems which are used both in mobile and stationary hydraulics.

**With our cooling systems
your plant will never take
a break from the heat
again.“**

Joachim Grunwald, Product Manager Cooling Systems





Cooling with a system – and with care

When the going gets hot, you must show a cool reaction. This is not only a wisdom for life, but also our design engineers' dictum which is mainly applied if the development of reliable cooling systems is concerned. No matter whether construction machines or hydraulic power packs, wind energy plants or elevator construction, rail technology or steel and iron industry are concerned: Wherever heavy-duty jobs have to be performed, heat has to be dissipated quickly and efficiently. This is the only way to preserve the performance capacity of the drive, extend its operating times and finally its service life.

In order to succeed in achieving a temperature compensation, we provide for highly efficient cooling systems for different media such as oil, air, coolants or fuel. And since a company having the slogan "Made for Motion" does not maintain the status quo, our design engineers continue to find new options to develop these systems.

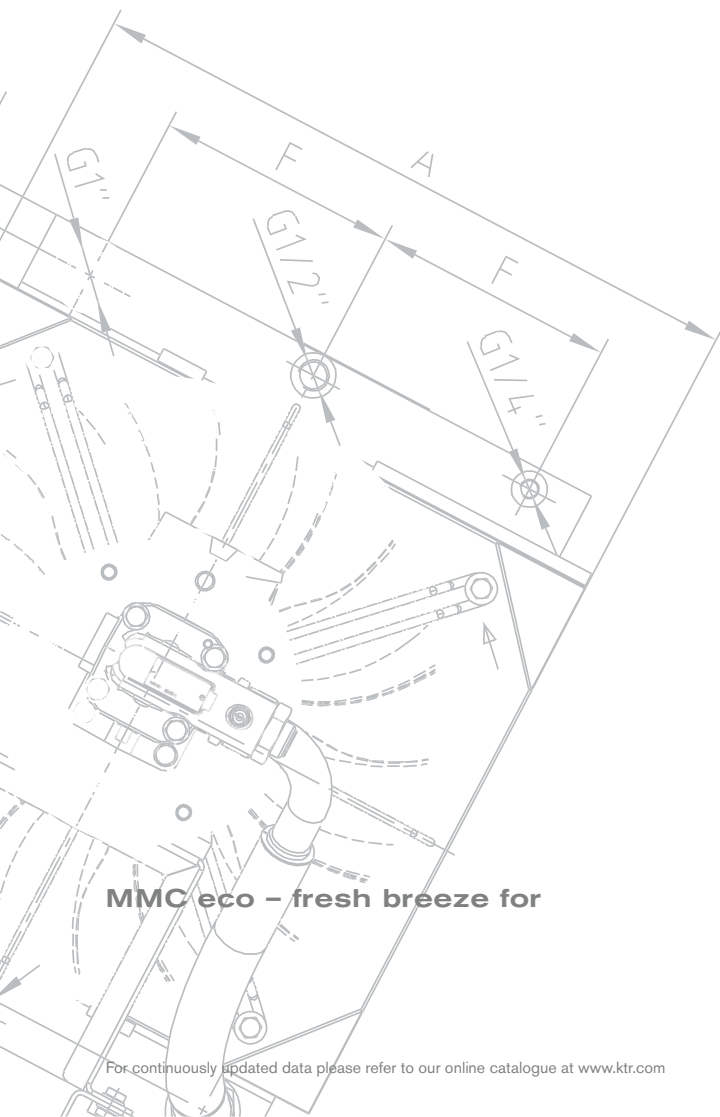
Wind energy plants

One example is the new high-performance cooler MMC eco for wind energy plants. As signified by the suffix eco, it allows for particularly energy-efficient cooling: It generates only as much cooling air as necessary. This is done by acting very carefully. A sensor measures the temperature of the medium and transmits it to a control unit. This unit tells the fan how much it has to operate - or how little. This is a sophisticated way of communication improving the degree of efficiency of the wind energy plant and reducing the operating expenses. By the way, the compact design is just as sophisticated: The high-performance cooler MMC eco generates much wind in a tight space so that it can comfortably be installed in narrow nacelles.

OAC eco – intelligent cooling for hydraulic systems

Sometimes less is more - the same applies with hydraulics. With the new OAC eco KTR is the first supplier having launched a cooling system with infinitely variable speed control for stationary drives onto the market. Like with its „big brother“ MMC eco the control unit has everything under control and defines the cooling capacity as needed. In this way the service life of the cooling system is increased while the life cycle costs and noise emissions of the overall plant are reduced.

Anyway, the OAC eco has a lot more to offer: a self-cleaning mode. At the touch of a button the torsional direction of the fan changes during 60 seconds, while the air pressure which is generated simply wipes away dust and dirt. This is a top performance which will finally pay off by the efficiency of the machine.



MMC eco – fresh breeze for



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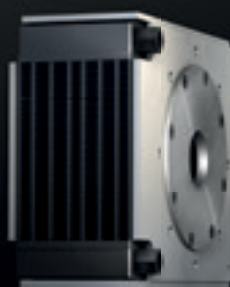
Oil/water coolers

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OAC



PIK



PHE



TAK-T



Selection system

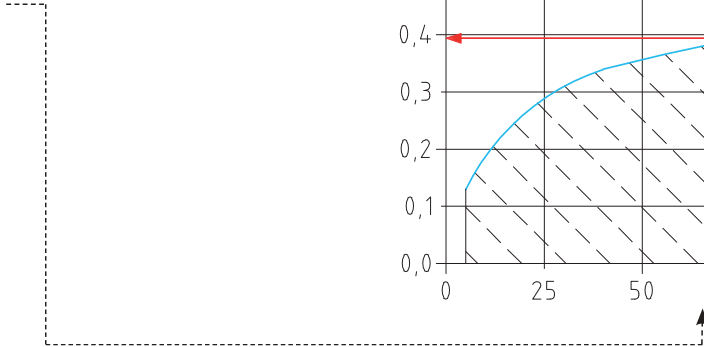
To select the suitable cooler you need to know the following details:

Q [kW]	Heat to be dissipated
V [l/min]	Oil flow
T _{oil} [°C]	Inlet temperature of oil into cooler
T _L [°C]	Inlet temperature of ambient air into cooler

Example of calculation

Details given:

Q = 12 kW
V = 75 l/min
T _{oil} = 65 °C
T _L = 30 °C



Calculation of specific cooling capacity

Inlet temperature difference ETD [°C] = T_{oil} - T_L

Specific cooling capacity required P_{requ.} = Q/ETD

The specific cooling capacity required must fall below the performance curve! → 12 kW/(65°C - 30°C) = 0.34 kW/°C

The following was selected: OAC 400

The actual cooling effect of the cooler is 0.39 kW/°C x 35°C = 13.65 kW

Calculation of pressure loss

The pressure loss in the curves of the different data sheets is based on a viscosity of 30 cSt

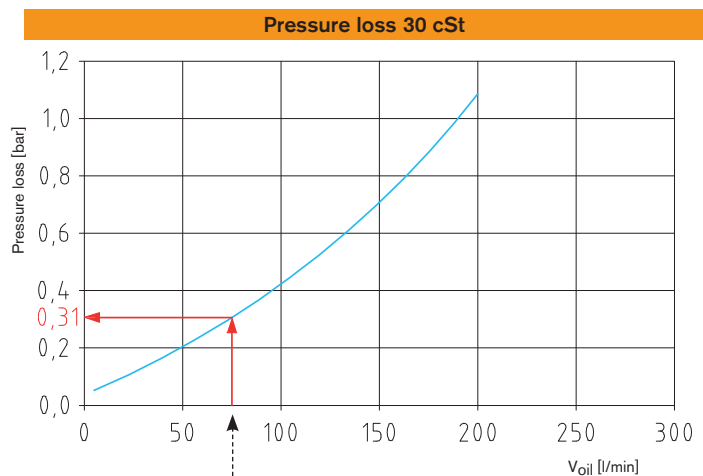
The effective pressure loss is calculated as follows:

Pressure loss (from curve) x factor = effective pressure loss

Example

V _{oil} : 75 l/min
Viscosity: 20 cSt

→ 0,31 bar x 0,75 = 0.233 bar

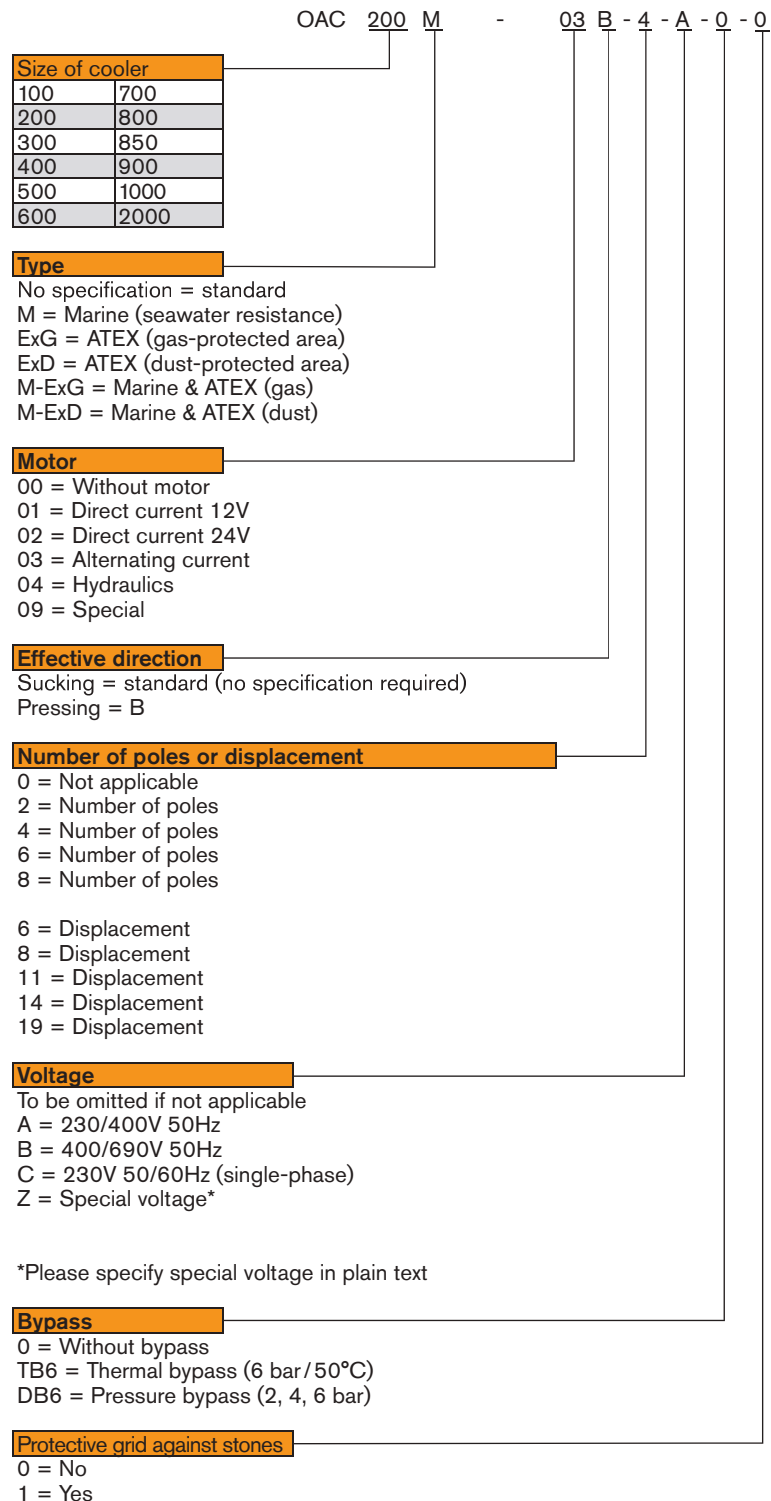


Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

Oil/air coolers type OAC

Cooling systems

Type code of industrial coolers oil/air



Oil/air coolers type OAC

Cooling systems

Technical data

12V and 24V fan drive										
Cooler type ¹⁾	Voltage [V]	Drive [kW]	Speed [rpm]	Amperage [A]	Protection	Fan Ø [mm]	Perm. pressure [bar]		Max. volume flow [l/min]	Mass [kg]
							Static	Dynamic		
OAC 100-01	12	0,09	3950	7,2	IP68	190			50	6
OAC 100-02	24	0,06	3625	2,6	IP68	190			6	6
OAC 200-01	12	0,10	2838	8,2	IP68	280			100	11
OAC 200-02	24	0,11	2925	4,4	IP68	280			11	11
OAC 300-01	12	0,22	3080	18,4	IP68	350			160	16
OAC 300-02	24	0,23	2730	9,4	IP68	350			16	16
OAC 400-01	12	0,22	3080	18,4	IP68	350			22	22
OAC 400-02	24	0,23	2730	9,4	IP68	350	26	14	200	22
OAC 500-01	12	0,24	2600	20,2	IP68	385			30	30
OAC 500-02	24	0,24	2700	9,8	IP68	385			30	30
OAC 600-01	12	2x0,10	2838	2x8,2	IP68	280			250	43
OAC 600-02	24	2x0,11	2925	2x4,4	IP68	280			43	43
OAC 700-01	12	2x0,24	2600	2x20,2	IP68	385			53	53
OAC 700-02	24	2x0,24	2700	2x9,8	IP68	385			53	53
OAC 800-01	12	2x0,24	2600	2x20,2	IP68	385			350	81
OAC 800-02	24	2x0,24	2700	2x9,8	IP68	385			81	81

Oil/air cooler type OAC eco							
Cooler type ¹⁾	Voltage [V]	Drive [kW]	Speed n [rpm]	Max. volume flow [l/min]	Current [A]	Protection	Fan Ø [mm]
OAC 300 eco	24	0,38	3400	160	14,5	IP 65	305
OAC 400 eco				200			
OAC 500 eco		0,34	2570	200	13		
OAC 600 eco	250						

230V/400V with 50Hz; 460V with 60Hz fan drive														
Cooler type ²⁾	Driving power [kW]		Speed [RPM]		Amperage [A]		Protection		Fan ø-mm	Noise [dbA]	Perm. pressure [bar]		Max. volume flow [l/min]	Mass [kg]
	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	Standard	Marine			Static	Dynamic		
OAC 100-03 C	0,07	0,08	2500	2700	0,29	0,33	IP54	-	250	64			50	16
OAC 200-03 C	0,12	0,16	2450	2650	0,55	0,72	IP54	-	250	69			100	16
OAC 200-03	0,18	0,21	1350	1650	0,58	0,57	IP55	IP56	280	66			100	16
OAC 300-03	0,37	0,43	1370	1670	1,04	1,02	IP55	IP56	380	76			160	24
OAC 300-03 D	0,14	0,17	1400	1600	0,35	0,32	IP44	-	350	72	26	14	160	21
OAC 400-03	0,37	0,43	1370	1670	1,04	1,02	IP55	IP56	380	76			200	29
OAC 500-03	0,37	0,43	1370	1670	1,04	1,02	IP55	IP56	380	78			200	37
OAC 600-03	0,75	0,86	1440	1740	1,79	1,72	IP55	IP56	520	78			250	57
OAC 700-03	0,75	0,86	1440	1740	1,79	1,72	IP55	IP56	520	78			350	70
OAC 800-03	1,5	1,75	1435	1730	3,3	3,3	IP55	IP56	630	78			350	97
OAC 850-03	2,2	2,55	965	1165	5,2	4,75	IP55	IP56	750	79			350	130
OAC 900-03	2,2	-	965	-	5,2	-	IP55	IP56	900	85			450	173
OAC 1000-03-6	2,2	-	965	-	5,2	-	IP55	IP56	900	87			700	187
OAC 1000-03-4	7,5kW	-	1465	-	14,3	-	IP55	IP56	900	97	21	14	700	212
OAC 2000-03-6	7,5kW	-	980	-	16	-	IP55	IP56	1000	92			700	357
OAC 2000-03-4	18,5kW	-	1470	-	35	-	IP55	IP56	1000	100			700	429

NEW

Fan with hydraulic drive										
Cooler type ¹⁾	Displacement [ccm]	Speed [RPM]	Fan - ø [mm]	Noise [dbA]	Perm. pressure [bar]		Max. volume flow [l/min]	Mass [kg]		
					Static	Dynamic				
OAC 200-04-06	6,30		280	66			100	15		
OAC 300-04-06	6,30		380	75				21		
OAC 300-04-08	7,90		380	75			160	21		
OAC 300-04-11	10,90		380	75				21		
OAC 400-04-06	6,30		380	74				25		
OAC 400-04-08	7,90		380	74			200	25		
OAC 400-04-11	10,9		380	74				25		
OAC 500-04-06	6,3		380	74				34		
OAC 500-04-08	7,9		380	74			200	34		
OAC 500-04-11	10,9		380	74	26	14		34		
OAC 600-04-06	6,3	1500	520	78				50		
OAC 600-04-08	7,9		520	78			250	50		
OAC 600-04-11	10,9		520	78				50		
OAC 700-04-06	6,3		520	78				60		
OAC 700-04-08	7,9		520	78			250	60		
OAC 700-04-11	10,9		520	78				60		
OAC 800-04-11	10,9		630	78				88		
OAC 800-04-14	13,9		630	78			350	88		
OAC 850-04-11	10,9		750	79				110		
OAC 850-04-14	13,9		750	79			350	110		
OAC 900-04-14	13,9	1000	900	85				155		
OAC 900-04-19	18,8		900	85			450	155		
OAC 900-04-19	28,2	1500	900	95	21	14		155		
OAC 1000-04-19	18,8	1000	900	85				188		
OAC 1000-04-19	28,2	1500	900	97			530	188		
OAC 2000-04-44	44,1	1000	1000	92				295		
OAC 2000-04-44	66,2	1500	1000	100			700	295		

¹⁾ Max. media temperature: 110 °C (higher temperatures on request) / Max. ambient temperature: 60 °C

²⁾ Max. media temperature: 110 °C (higher temperatures on request) / Max. ambient temperature: 40 °C

Oil/air cooler type OAC eco

Cooling systems

Reducing noise and saving energy



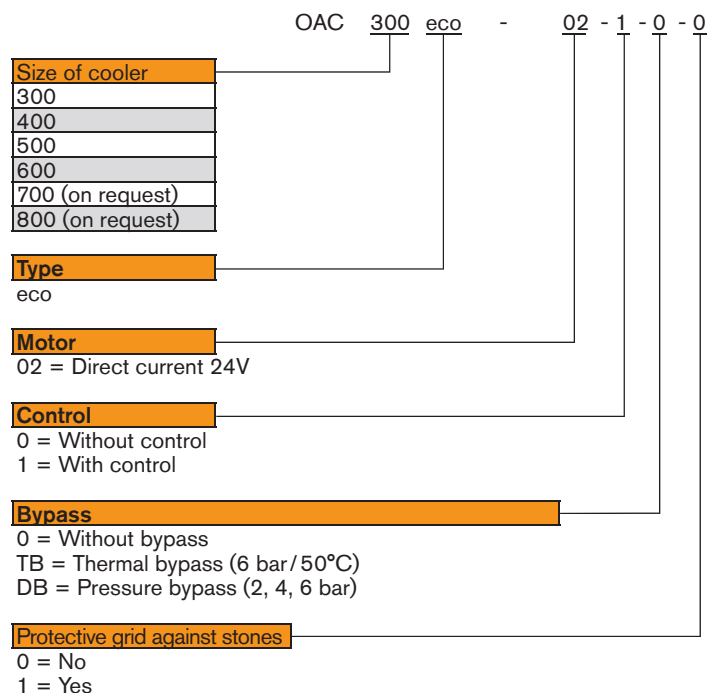
- Energy consumption optimised to requirements
- Variable speed fan motor
- Infinitely variable adaptation of cooling capacity oriented to requirements
- Operating voltage 24V
- Protective class IP65
- Up to 25 kW cooling capacity with ΔT : 40°K
- CE certification
- High-performance cooler core made of aluminium for a maximum static operating pressure of 10 bar
- Three temperature curves pre-set
- Cleaning operation & program change at the touch of a button during operation
- Oil inlet temperature is permanently displayed

Structure

- Cooler core made of aluminium
- Fan cover made of steel
- Fan made of nylon incl. protective grid
- Motor 24V, IP65
- Temperature Fan Speed Control (TFSC)
- Temperature sensor

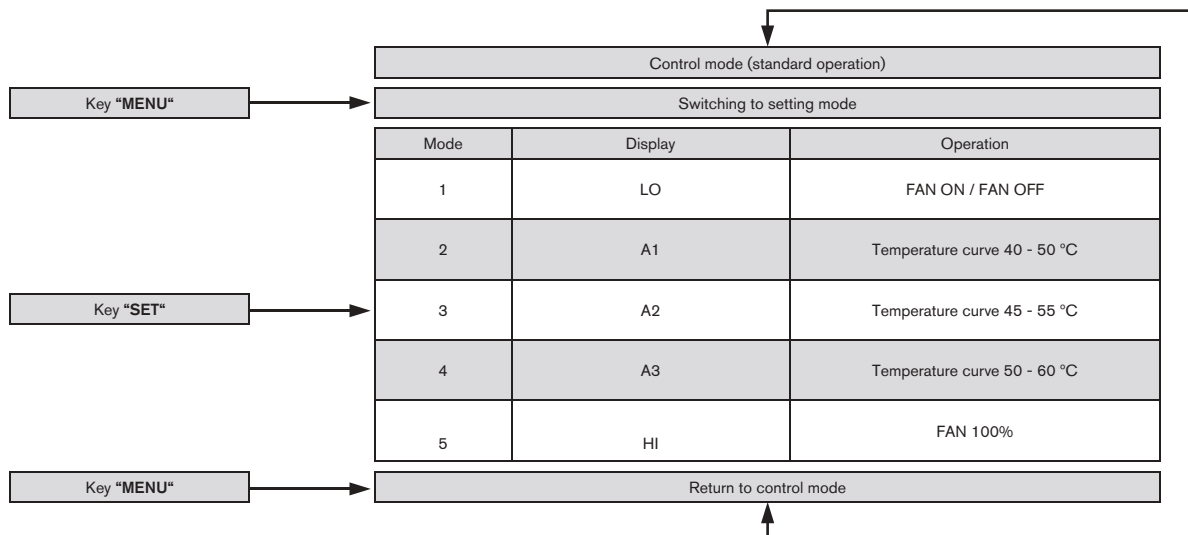
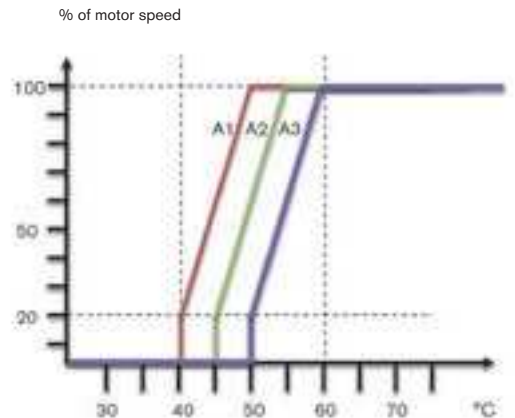
The OAC eco series is based on the previous standard, reduces noise which is generated and the energy consumption without accepting any loss in performance.

Type code

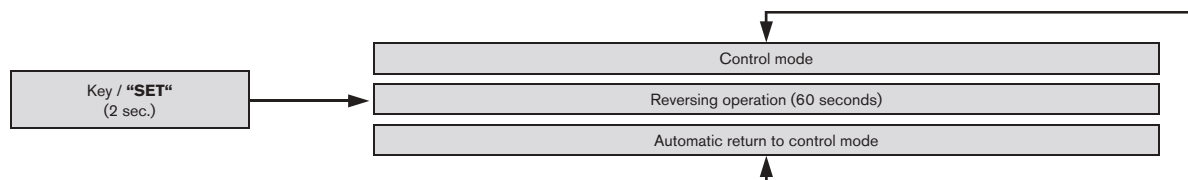


Operation

The control module TFSC is part of the cooler series eco controlling the speed of the motor. For that purpose the temperature value of the sensor is directly assigned to the motor speed. For various loads three temperature curves defined by the manufacturer are available (mode 2, 3, 4). In addition the fan can be permanently switched on or off, mode 1 and 5.



TSFC is operated via three buttons. The device is switched on or off via „ON/OFF“, while it is started in the control mode which is set as a standard by the manufacturer (mode 2). Via „MENU“ you can switch between control mode and setting mode (mode 1, 2, 3, 4, 5). With the control mode the current temperature of the sensor is displayed, with the setting mode the operating mode selected is displayed. The key „SET“ serves for changing the parameters 1-5.



Pressing the SET key may call the cleaning operation in addition. Here the fan rotates with full speed during 60 seconds in opposite direction. In the meantime the display counts back the remaining time in seconds. On completion the device restarts in the control mode. The cleaning operation can be interrupted by pressing the key „MENU“ at any time.

Oil/air coolers type OAC

Cooling systems

Diagrammes of performance and pressure loss

Performance diagramme

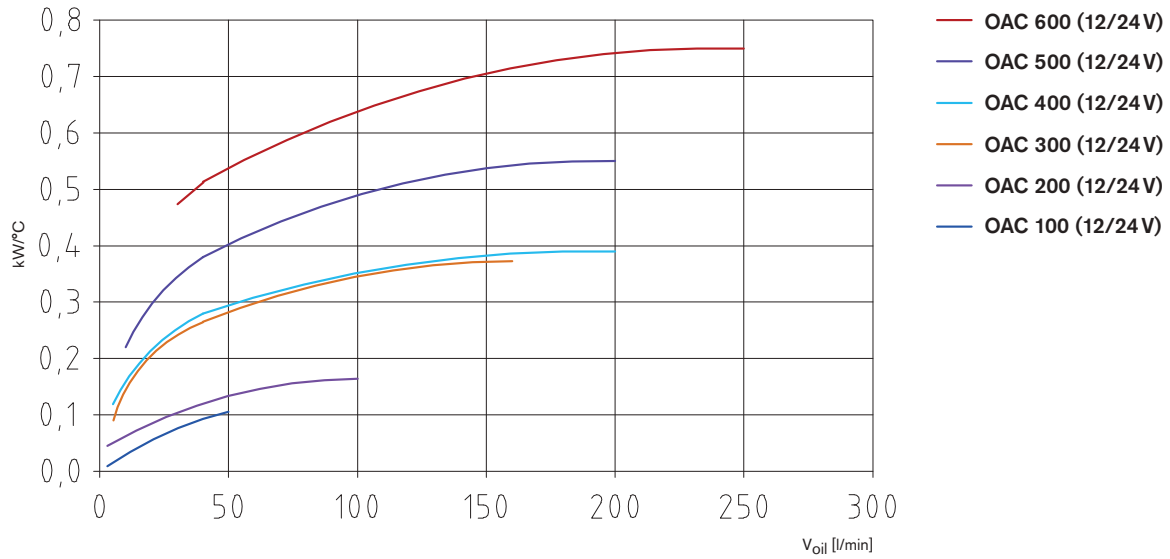
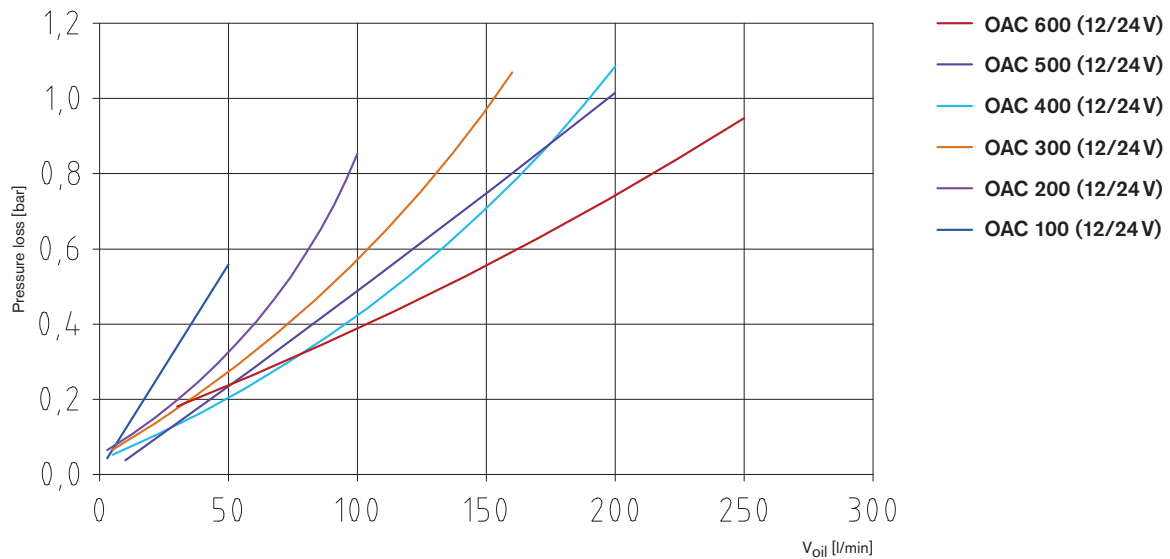


Diagramme of pressure loss



Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

Performance diagramme

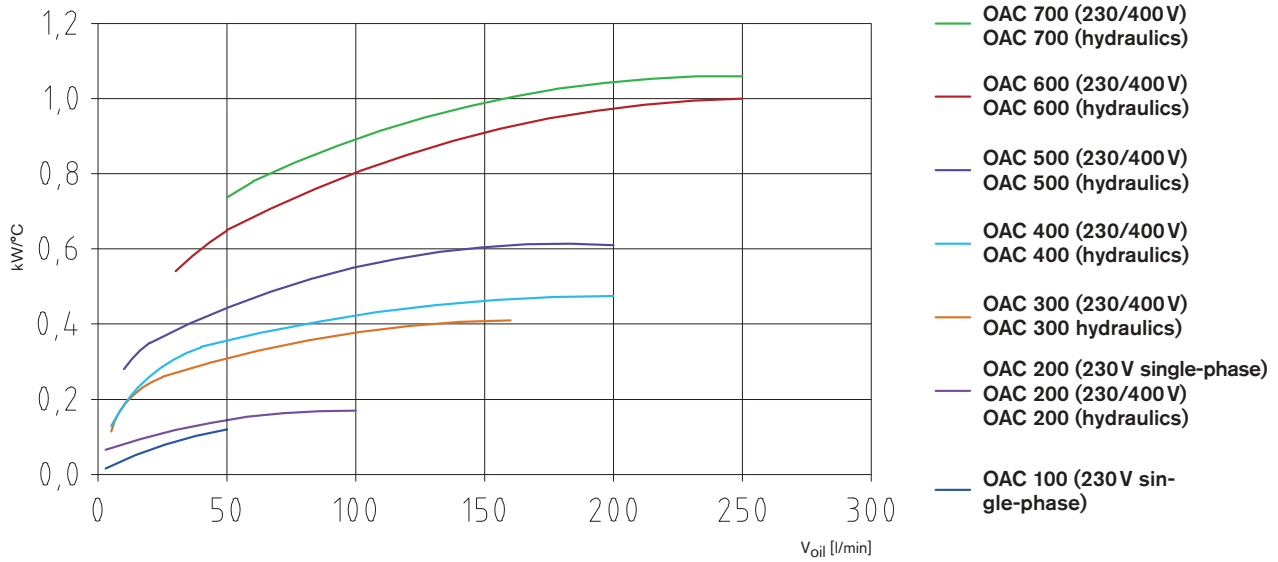
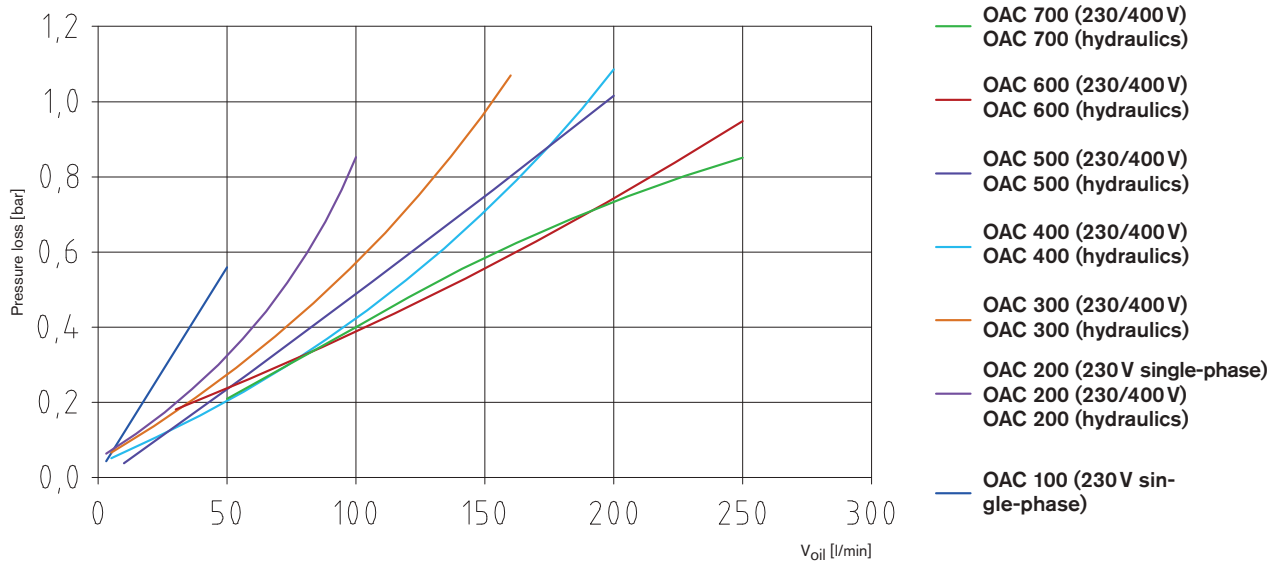


Diagramme of pressure loss



Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

Oil/air coolers type OAC

Cooling systems

Diagramme of performance and pressure loss

Performance diagramme

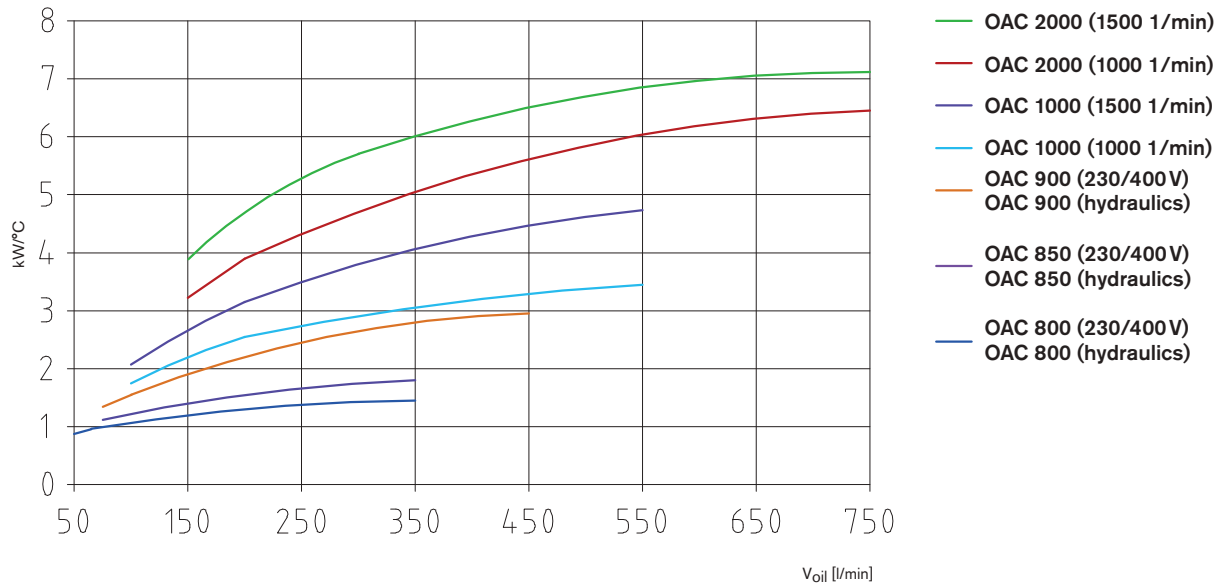
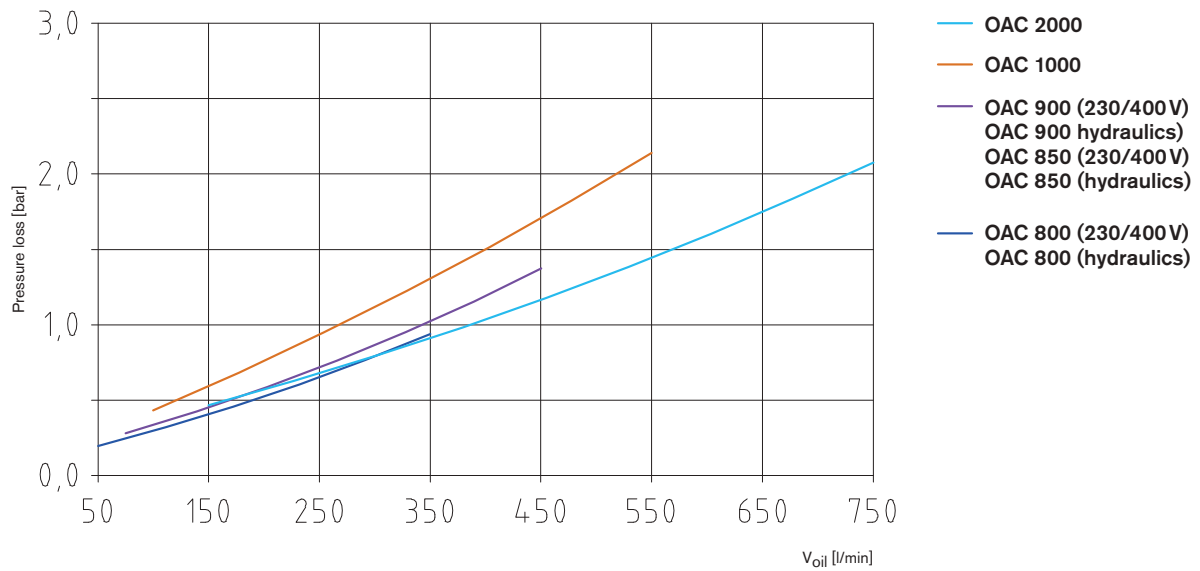


Diagramme of pressure loss

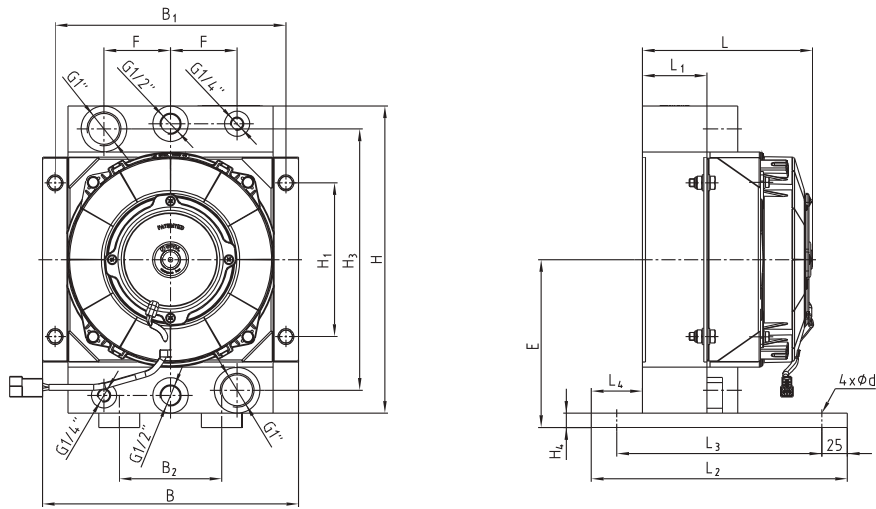


Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

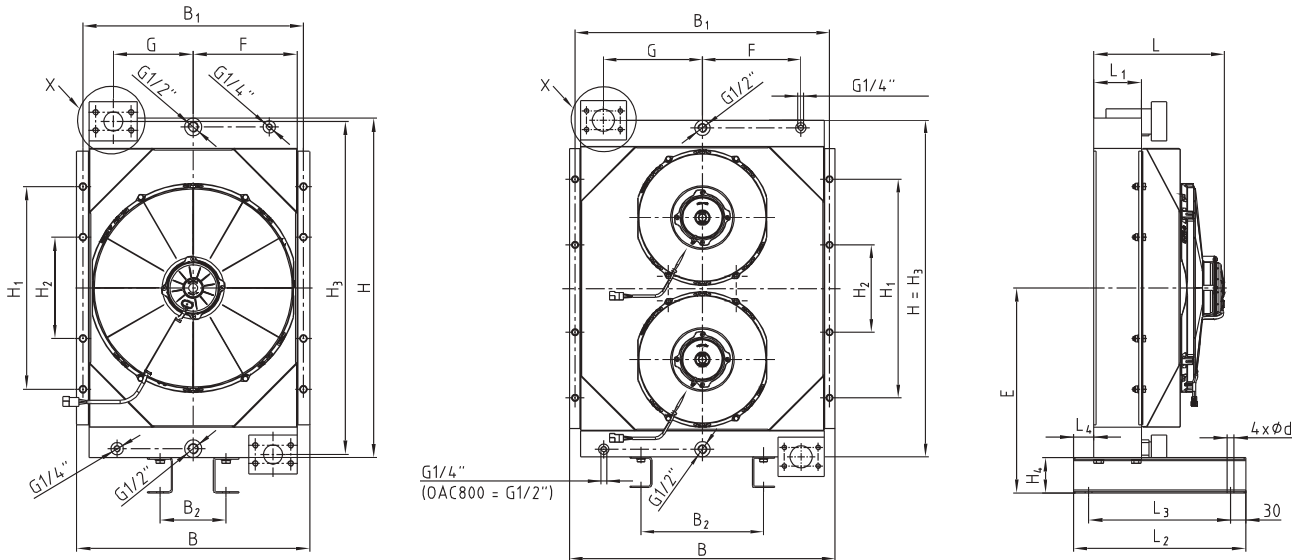
Oil/air coolers type OAC

Cooling systems

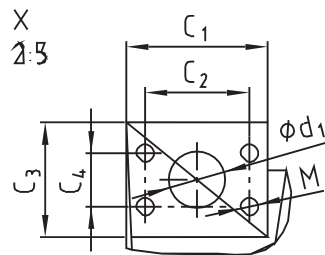
Dimensions of OAC 100 - 600 (12/24V)



OAC 100 - OAC 400 12V/24V



OAC 500/600 12V/24V

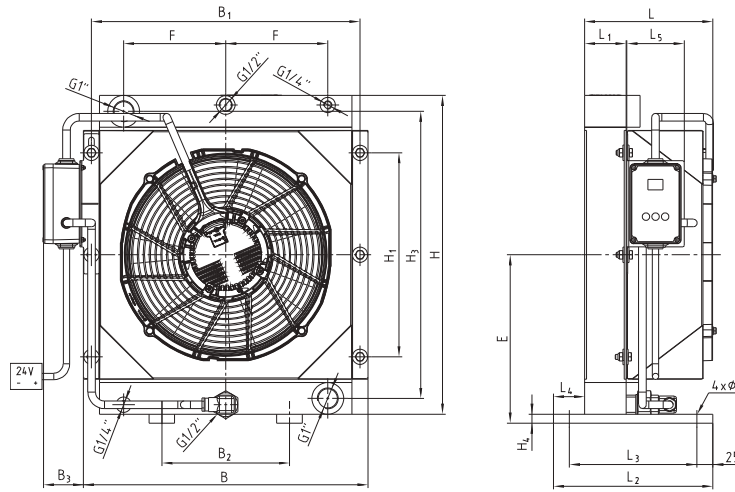


Oil/air cooler type OAC 12V/24V																										
Cooler type	Dimensions [mm]																									
	L	L ₁	L ₂	L ₃	L ₄	B	B ₁	B ₂	H	H ₁	H ₂	H ₃	H ₄	H ₅	d	d ₁	C ₁	C ₂	C ₃	C ₄	SAE flange	M	F	G	E	
OAC 100-01	167	65	250	200	50	250	225	100	300	150	-	255	14	-	14	-	-	-	-	-	-	-	-	65	-	164
OAC 100-02	167	65	250	200	50	350	325	174	410	240	-	360	14	-	14	-	-	-	-	-	-	-	-	115	-	219
OAC 200-01	230	65	250	200	49	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	-	160	-	264
OAC 200-02	260	95	280	230	55,5	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	-	160	-	264
OAC 300-01	259	95	340	280	40	460	435	130	670	400	200	657	70	-	13,5	38	95	69,9	77	35,7	1½"	M12	150	157,5	405	
OAC 300-02	222	95	340	280	40	607	582	280	770	500	200	770	70	-	13,5	51	105	77,8	90	42,9	2"	M12	225	226	-	

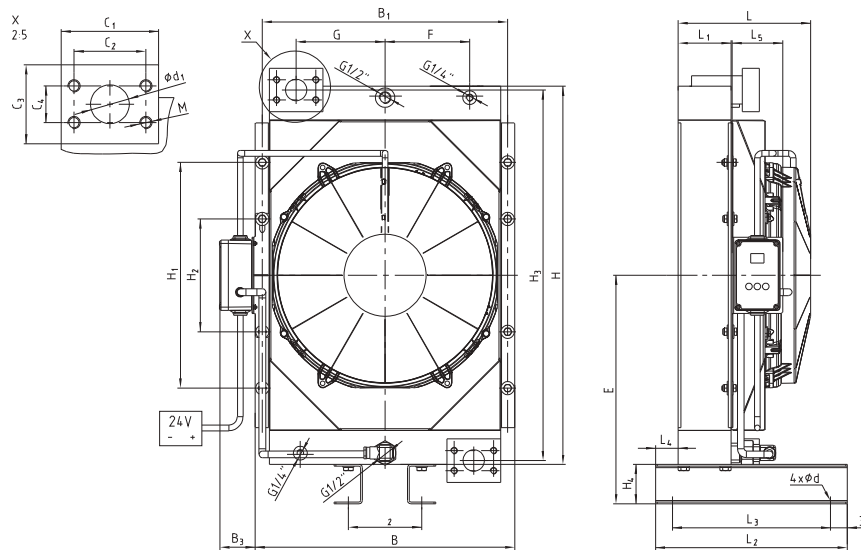
Oil/air coolers type OAC eco

Cooling systems

Dimensions of OAC eco 300 - 600 (24V)



OAC 300 - OAC 400 eco



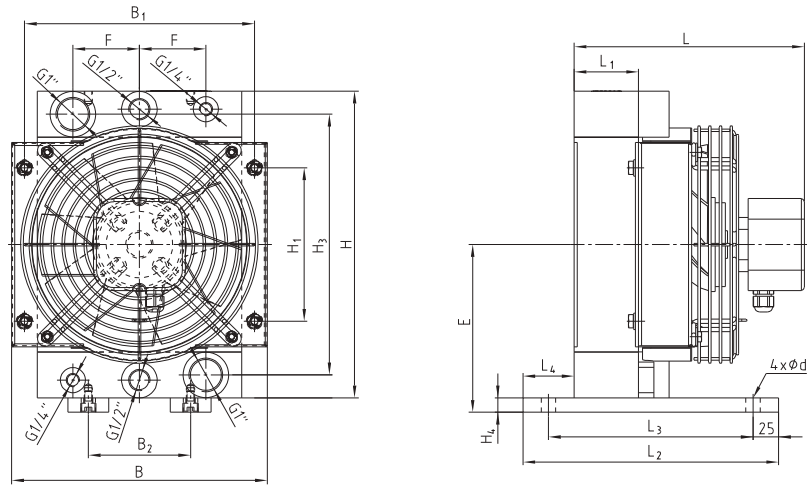
OAC 500 - OAC 600 eco

Oil/air cooler type OAC eco																												
Cooler type	Dimensions [mm]																				SAE flange	M	F	G	E			
	L	L ₁	L ₂	L ₃	L ₄	L ₅	B	B ₁	B ₂	B ₃	H	H ₁	H ₂	H ₃	H ₄	d	d ₁	C ₁	C ₂	C ₃						C ₄		
OAC 300 eco -02	201	65	250	200	49	90	446	421	200	63	500	320	-	450	14	14	-	-	-	-	-	-	-	-	-	160	-	264
OAC 400 eco -02	231	95	280	230	55,5	90	446	421	200	63	500	320	-	450	14	14	-	-	-	-	-	-	-	-	-	160	-	264
OAC 500 eco -02	234,7	94	340	280	40	90	460	435	130	63	670	400	200	657	70	13,5	38	95	69,9	77	35,7	1 1/2"	M12	150	157	405		
OAC 600 eco -02	294,7	94	340	280	40	90	607	582	280	63	770	500	200	770	70	13,5	51	105	77,8	90	42,9	2"	M12	225	226	455		

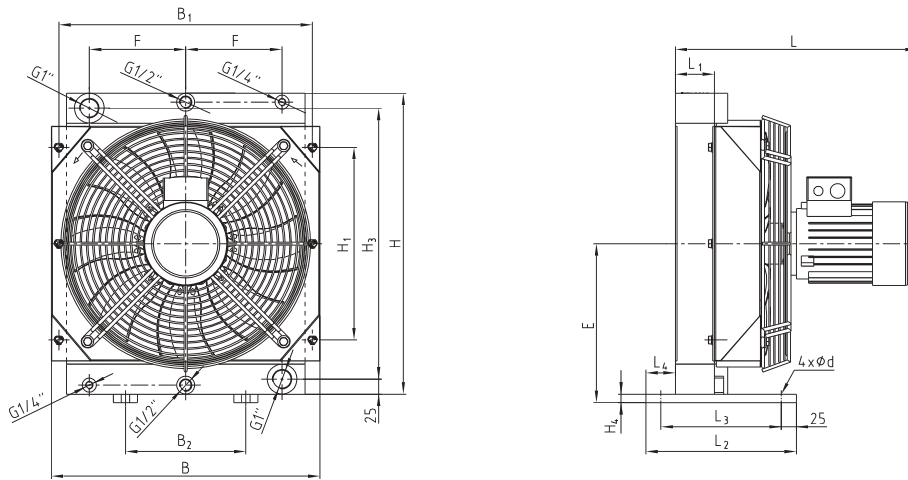
Oil/air coolers type OAC

Cooling systems

Dimensions of OAC 100 - 400 (230/400V)



OAC 100 - OAC 200 230V (single-phase)



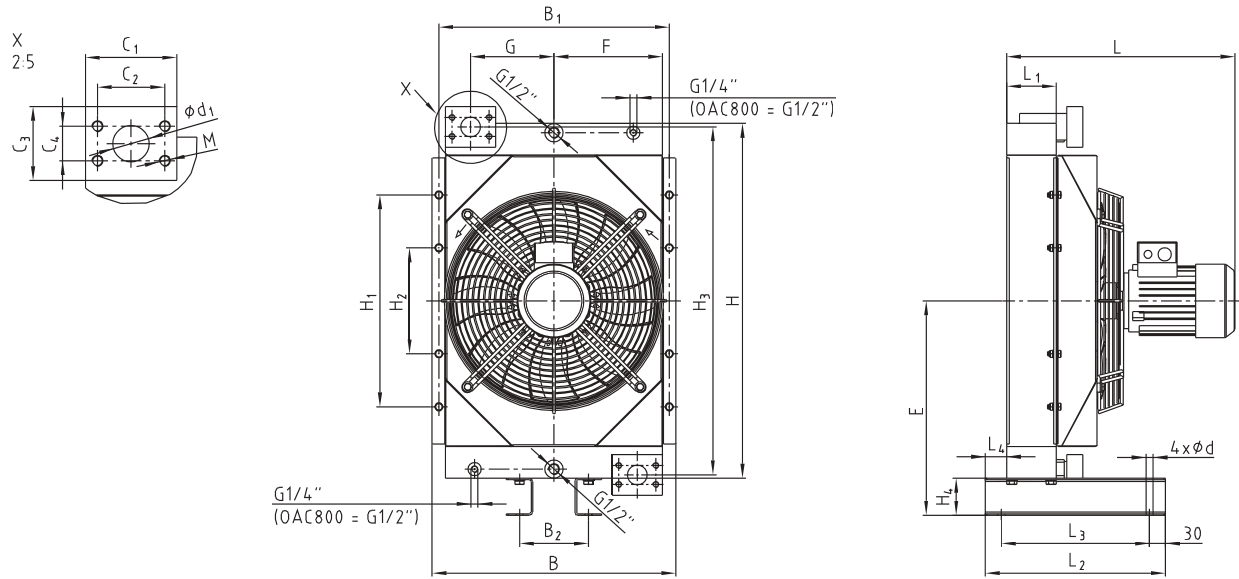
OAC 200 - OAC 400 230V/400V

Oil/air cooler type OAC 230V/400V																									
Cooler type	Dimensions [mm]																								
	L	L ₁	L ₂	L ₃	L ₄	B	B ₁	B ₂	H	H ₁	H ₂	H ₃	H ₄	H ₅	d	d ₁	C ₁	C ₂	C ₃	C ₄	M	F	G	E	
OAC 100-03-C	225	63	250	200	50	250	225	100	200	150	-	255	14	-	14	-	-	-	-	-	-	-	65	-	164
OAC 200-03-C	273	63	250	200	50	350	325	174	410	240	-	360	14	-	14	-	-	-	-	-	-	-	115	-	219
OAC 200-03	334	65	250	200	50	350	325	174	410	240	-	360	14	-	14	-	-	-	-	-	-	-	115	-	219
OAC 300-03	404	65	250	200	49	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	160	-	264
OAC 400-03	434	95	280	230	55,5	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	160	-	264

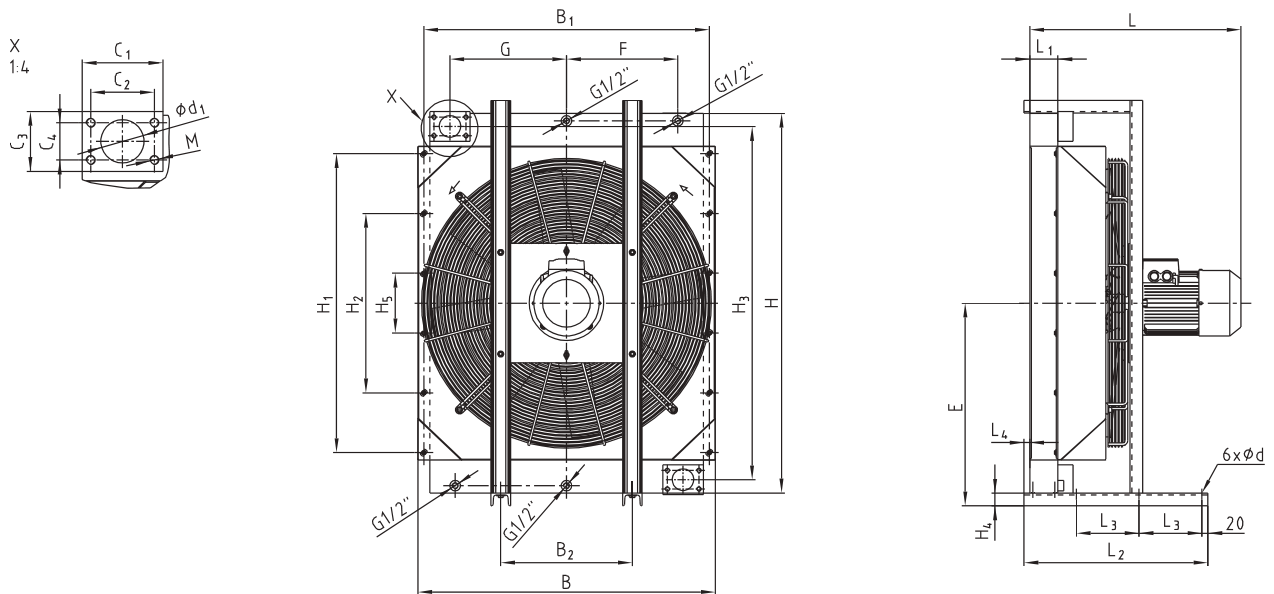
Oil/air coolers type OAC

Cooling systems

Dimensions of OAC 500-2000 (230/400/690V)



OAC 500 - OAC 800 230V/400V

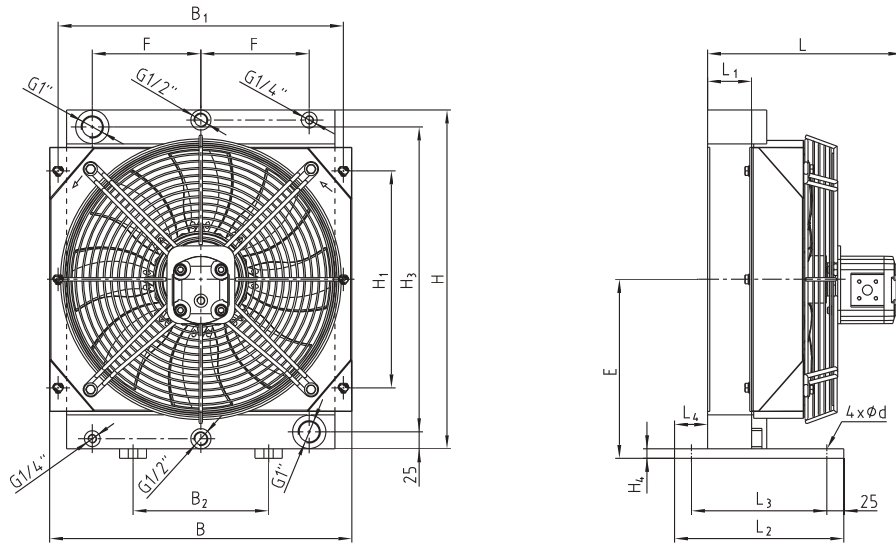


OAC 850 - OAC 2000 230V/400V (400V/690V)

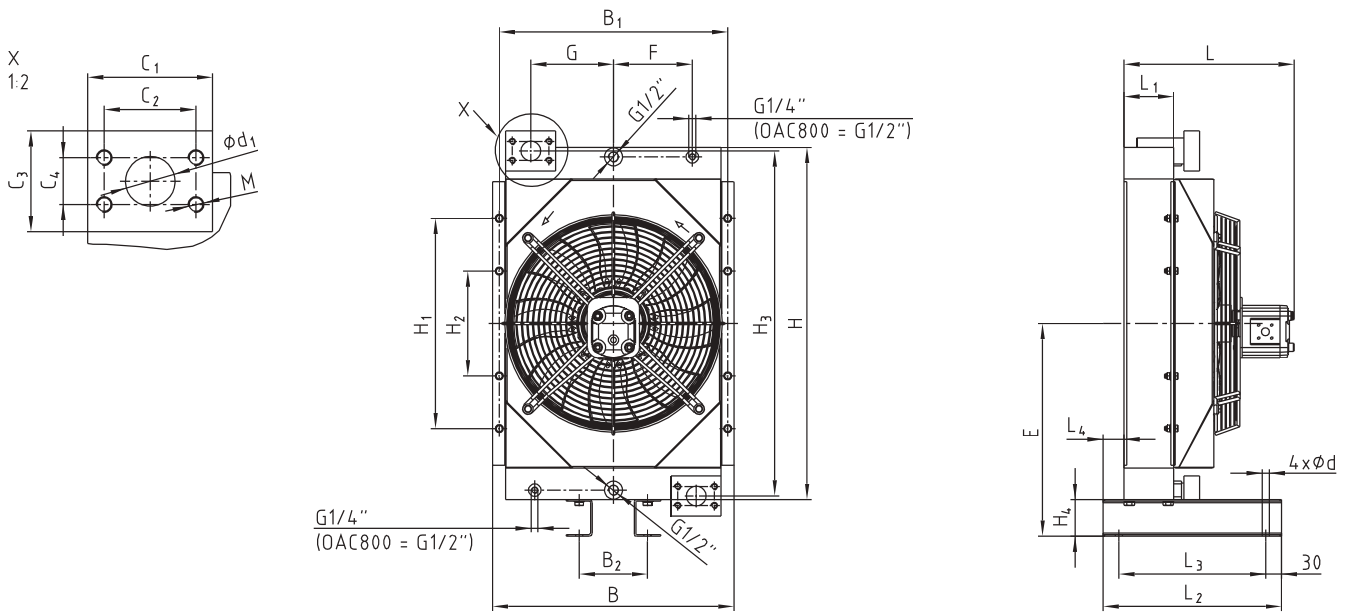
Oil/air cooler type OAC 230V/400V																										
Cooler type	Dimensions [mm]																									
	L	L ₁	L ₂	L ₃	L ₄	B	B ₁	B ₂	H	H ₁	H ₂	H ₃	H ₄	H ₅	d	d ₁	C ₁	C ₂	C ₃	C ₄	SAE flange	M	F	G	E	
OAC 500-03	431	95	340	280	40	460	435	130	670	400	200	657	70	-	13,5	51	95	69,9	77	35,7	1 1/2"	M12	150	157,5	405	
OAC 600-03	532	95	340	280	40	607	582	280	770	500	200	770	70	-	13,5	51	105	77,8	90	42,9	2"	M12	225	226	455	
OAC 700-03	542	95	340	280	40	608	582	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	2"	M12	225	226	530	
OAC 800-03	665	140	450	390	40	701	676	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	2"	M12	272	273	530	
OAC 850-03	667	95	500	180	-	870	835	350	960	690	230	910	42	-	14	51	105	77,8	90	42,9		M12	350	340	523	
OAC 900-03	670	95	590	210	-	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62		M16	372,5	390	678	
OAC 1000-03-06	690	113	615	210	-	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62		M16	372,5	390	678	
OAC 1000-03-04	729	113	615	210	-	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62	3"	M16	372,5	390	678	
OAC 2000-03-06	900	140	750	210	-	1286	1246	525	1420	1000	600	1332	45	200	14	73	135	106,5	100	62		M16	532	532	756	
OAC 2000-03-04	980	140	750	210	-	1286	1246	525	1420	1000	600	1332	45	200	14	73	135	106,5	100	62		M16	532	532	756	

Oil/air coolers type OAC Cooling systems

Dimensions of OAC 200 - 800 (hydraulic)



OAC 200 - OAC 400 hydraulic



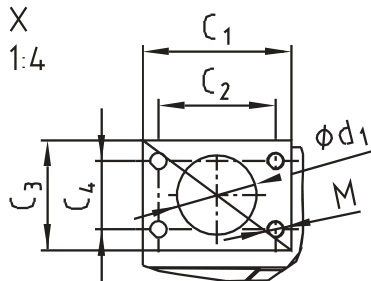
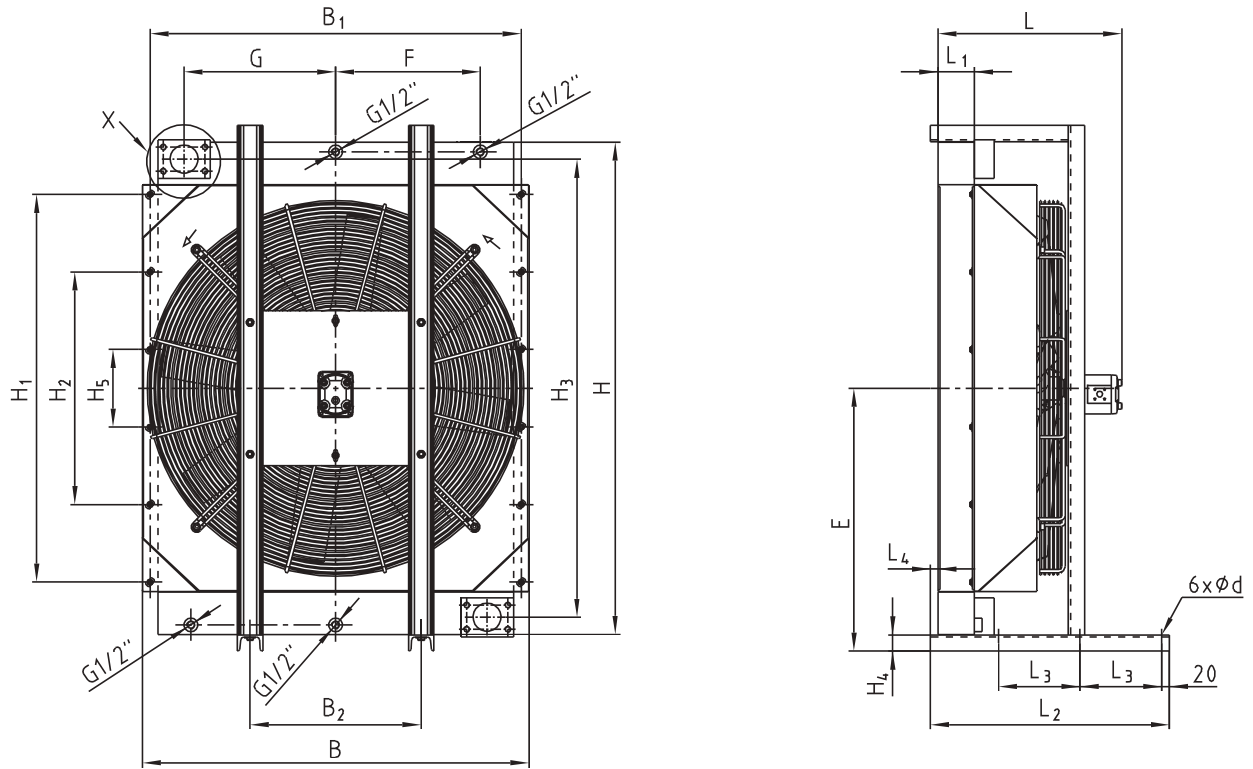
OAC 500 - OAC 800 hydraulic

Oil/air cooler type OAC hydraulic																										
Cooler type	Dimensions [mm]																									
	L	L ₁	L ₂	L ₃	L ₄	B	B ₁	B ₂	H	H ₁	H ₂	H ₃	H ₄	H ₅	d	d ₁	C ₁	C ₂	C ₃	C ₄	SAE flange	M	F	G	E	
OAC 200-04	245	65	250	200	50	350	325	174	410	240	-	360	14	-	14	-	-	-	-	-	-	-	-	115	-	219
OAC 300-04	295	65	250	200	49	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	-	160	-	264
OAC 400-04	325	95	280	230	55,5	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	-	160	-	264
OAC 500-04	323	95	340	280	40	460	435	130	670	400	200	657	70	-	13,5	38	95	69,9	77	35,7	1 1/2"	M12	150	157,5	405	
OAC 600-04	400	95	340	280	40	607	582	280	770	500	200	770	70	-	13,5	51	105	77,8	90	42,9	-	M12	225	226	455	
OAC 700-04	411	95	340	280	40	608	582	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	2"	M12	225	226	530	
OAC 800-04	546	140	450	390	40	701	676	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	-	M12	272	273	530	

Oil/air coolers type OAC

Cooling systems

Dimensions of OAC 850 - 2000 (hydraulic)



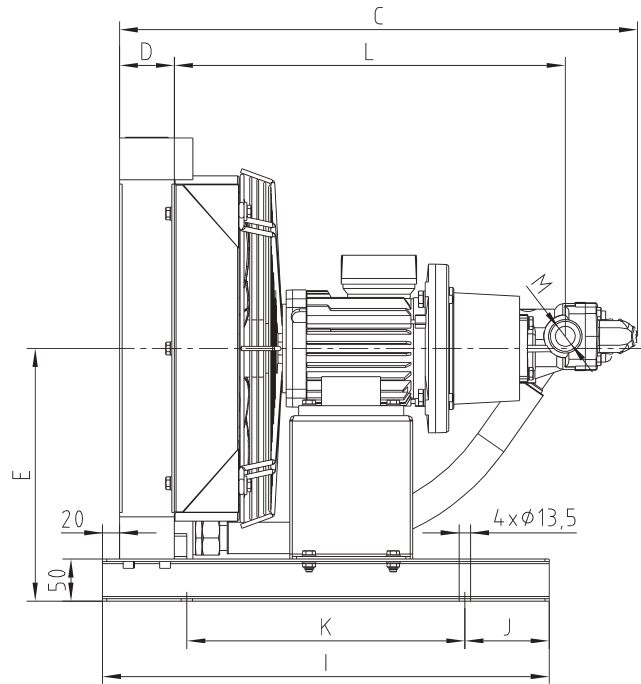
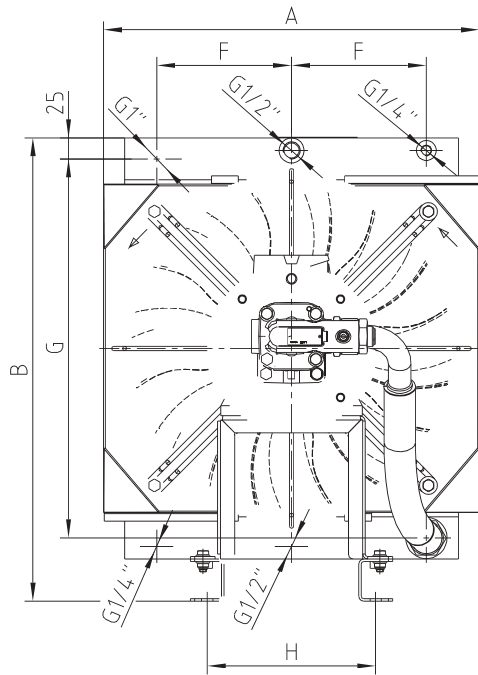
OAC 850 - OAC 2000 hydraulic

Oil/air cooler type OAC hydraulic																										
Cooler type	Dimensions [mm]																									
	L	L ₁	L ₂	L ₃	L ₄	B	B ₁	B ₂	H	H ₁	H ₂	H ₃	H ₄	H ₅	d	d ₁	C ₁	C ₂	C ₃	C ₄	SAE flange	M	F	G	E	
OAC 850-04	475	95	590	210	-	870	835	350	960	690	230	910	42	-	14	51	105	77,8	90	42,9	2"	M12	350	340	523	
OAC 900-04	475	95	615	210	19,5	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62	2"	M16	372,5	390	678	
OAC 1000-04	505	113	615	210	-	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62	3"	M16	372,5	390	678	
OAC 2000-04	620	140	750	210	-	1286	1246	525	1420	1000	600	1332	45	200	14	73	135	106,5	100	62	3"	M16	532	532	756	

Oil/air coolers / cooling-pumping unit OPC

Cooling systems

Dimensions of OPC 200-400 (230/400V)

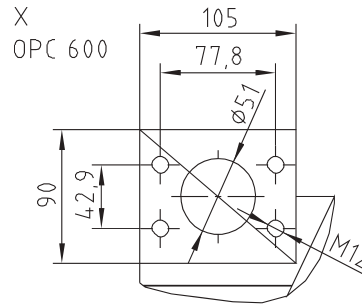
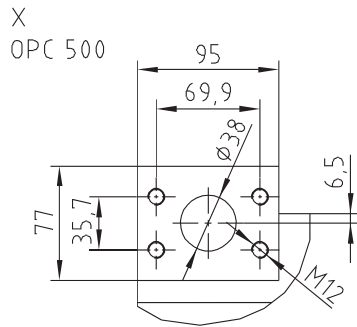
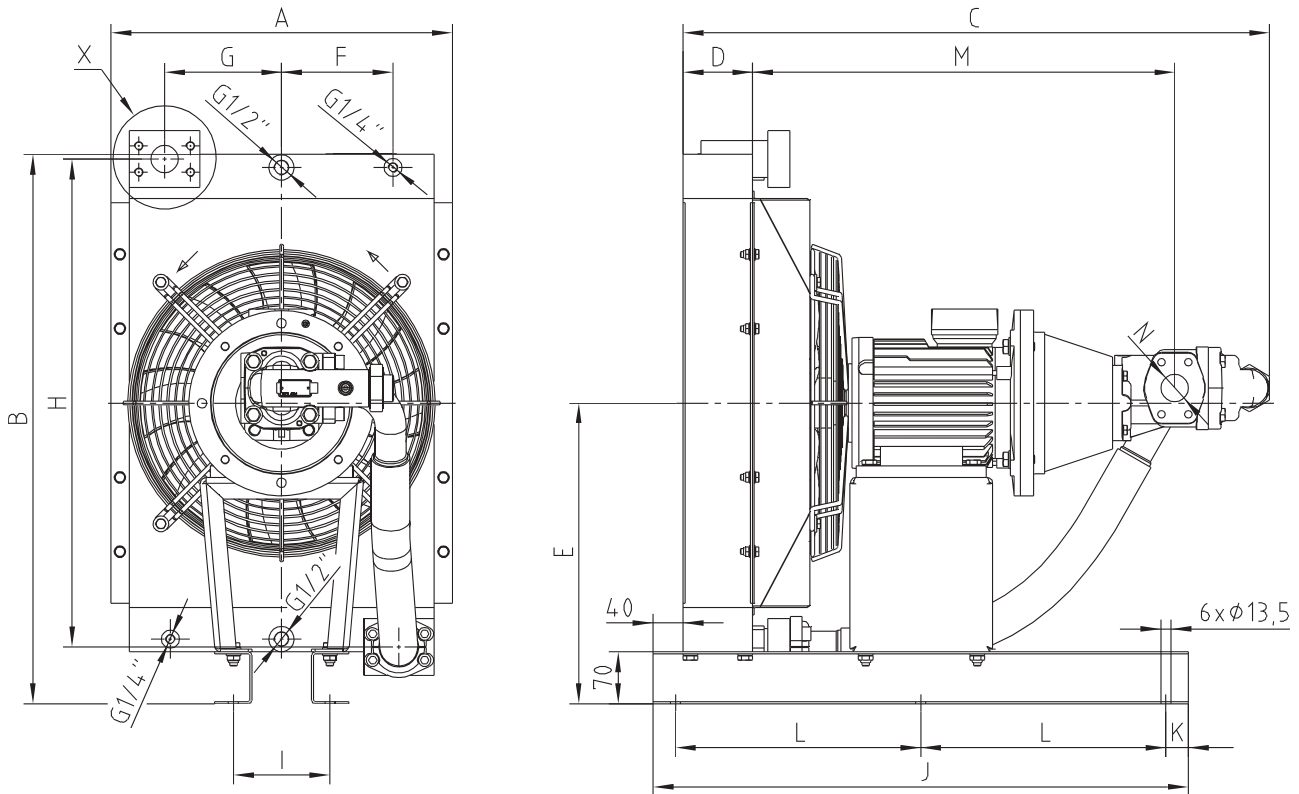


OPC 200- OPC 400

Technical data																									
Cooler type	Voltage	Current [A]	Speed [rpm]	l/min	kW/°C	A	B	C	D	E	F	G	H	I	J	K	L	M	Weight [kg]						
OPC 200-4D-0,75kW	230/400V 50Hz	1,8	1400	5,5	0,07	350	460	572	65	255	115	360	174	530	100	330	426	G 3/4"	35						
OPC 200-12D-0,75kW				16,7	0,09			596									435	G 1"							
OPC 200-16D-0,75kW				21,4	0,10			615									464	G 3/4"							
OPC 300-4D-0,75kW				230/400V 50Hz	1,8	1400	5,5	0,12	446	550	615	65	300	160	450	200	530	100	330	464	G 3/4"	42			
OPC 300-12D-0,75kW							16,7	0,23			638									473	G 1"				
OPC 300-16D-0,75kW							21,4	0,25			645									465	G 3/4"				
OPC 400-4D-0,75kW							230/400V 50Hz	1,8	1400	5,5	0,13	446	550	645	95	300	160	450	200	550	75	400	465	G 3/4"	46
OPC 400-12D-0,75kW										16,7	0,24			668									474	SAE	
OPC 400-16D-0,75kW										21,4	0,27			720									474	1 1/2"	
OPC 400-32D-0,75kW										42,7	0,34														

Oil/air coolers / Cooling-pumping unit OPC Cooling systems

Dimensions of OPC 500 - 600 (230/400V)



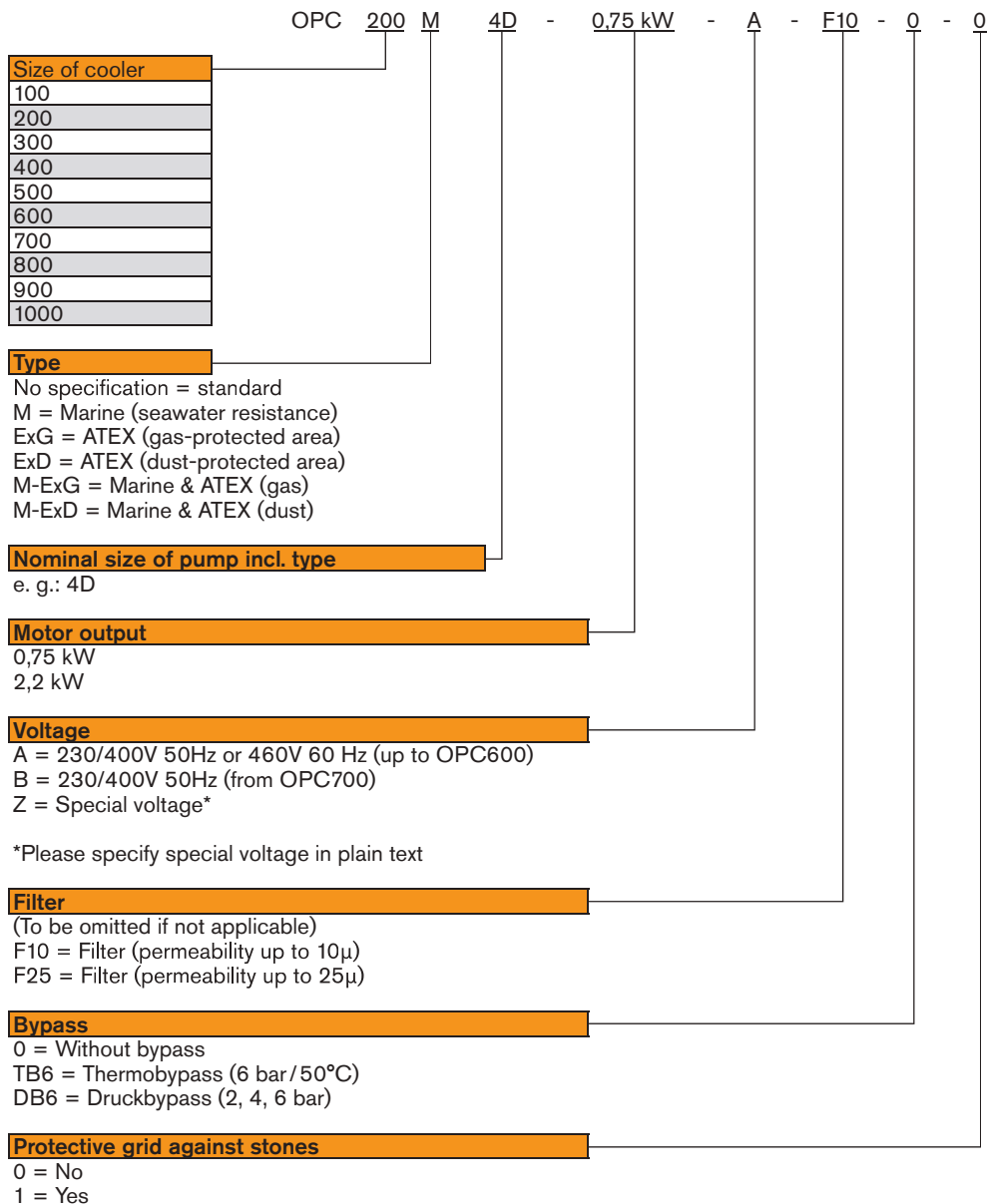
OPC 500 - OPC 600

Technical data																							
Cooler type	Voltage	Current [A]	Speed [rpm]	l/min	kW/°C	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight [kg]			
OPC 500-16D-2,2kW	230/400V 50Hz	4,9	1410	21,5	0,35	460	740	740	95	405	150	157,5	657	130	720	30	330,0	547	G 1"	75			
OPC 500-25D-2,2kW				33,4	0,40			790										568	SAE 1 1/2"	77			
OPC 500-32D-2,2kW				42,7	0,42	607	840	819	95	455	225	226,0	770	280	795	30	367,5	626	G 1"	96			
OPC 500-40D-2,2kW				53,5	0,45			868										647	SAE 1 1/2"	98			
OPC 600-16D-2,2kW				230/400V 50Hz	4,9	1410	21,5	0,47	607	840	819	95	455	225	226,0	770	280	795	30	367,5	626	G 1"	96
OPC 600-25D-2,2kW							33,4	0,56			868										647	SAE 1 1/2"	98
OPC 600-32D-2,2kW							42,7	0,61	607	840	819	95	455	225	226,0	770	280	795	30	367,5	626	G 1"	96
OPC 600-40D-2,2kW							53,5	0,66			868										647	SAE 1 1/2"	98

Oil/air coolers / cooling-pumping unit type OPC

Cooling systems

Type code of industrial coolers oil/air



Bypass, protective grid

Bypass operation for OAC & OPC coolers



Thermal pressure bypass

- The pressure relief valve opens with pressure peaks from 6 bar
- The bypass piping is closed from an oil temperature of 50 °C via thermocouple

Pressure bypass

- The pressure relief valve opens with pressure peaks from 6 bar

Protective grid for OAC & OPC coolers



Plain protective grid

- Wire mesh made of steel protecting against foreign particles

Protective grid with filter element

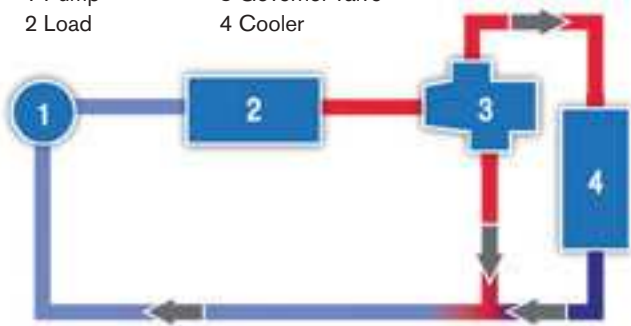
- The wire mesh is provided with a dust protection filter additionally

Oil/air coolers accessories

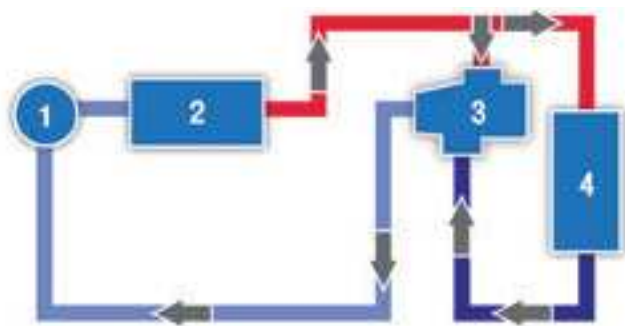
Cooling systems

Oil thermostat valve

1 Pump
2 Load
3 Governor valve
4 Cooler



Use as a short circuit control:
Constant temperature on load outlet



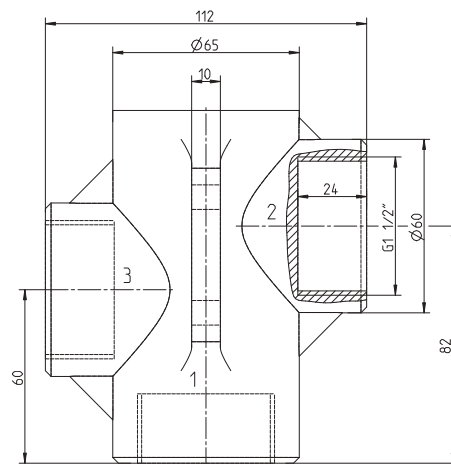
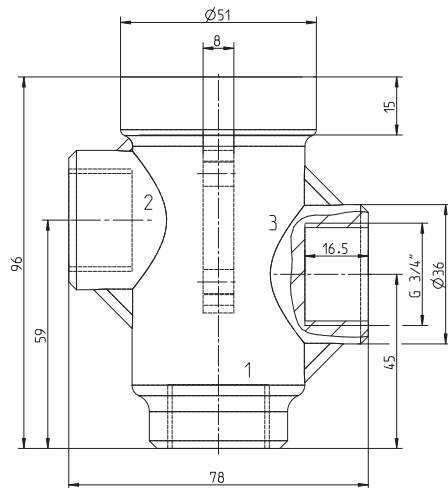
Use as a mixing valve:
Constant temperature on load inlet

Main applications of oil thermostat valves

- Agricultural machines
- Construction machines
- Compressors
- Coolers
- Special applications, e. g. wind power stations, gearboxes, hydraulics, general engineering

Particular characteristics

- Temperature figures set
- High control accuracy
- Control operation independent of static and dynamic oil pressure
- Low pressure loss
- Sound design
- Insensitive to vibrations
- Insensitive to shocks
- Operation independent of the mounting situation
- Maintenance-free
- Long service life



OTV Oil thermostat valve				
Description	Max. volume flow [m³/h]	Connection thread	Inlet temperature [°C]	Max. inflow to the cooler obtained with °C
OTV1-45	4	G 3/4"	45	60
OTV1-55	4	G 3/4"	55	70
OTV1-70	4	G 3/4"	70	85
OTV2-45	10	G 1 1/2"	45	60
OTV2-55	10	G 1 1/2"	55	70
OTV2-70	10	G 1 1/2"	70	85

max. operating pressure 16 bar

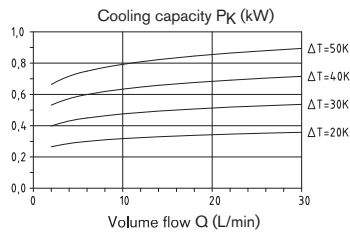
Ordering example:		1	55
	Oil thermostat valve	Size	Inlet temperature

Oil/air coolers type PIK Cooling systems

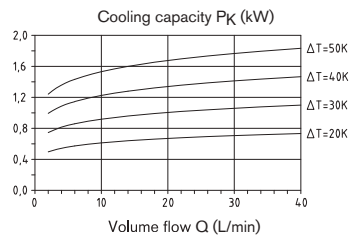
Oil/air cooler type PIK 200 - 350

1. Cooling capacity for a speed of 1500 rpm depending on the temperature difference between oil intake and air intake and oil volume

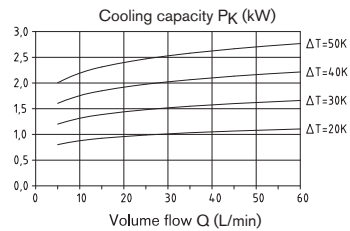
PIK 200



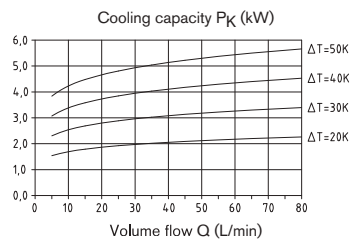
PIK 250



PIK 300



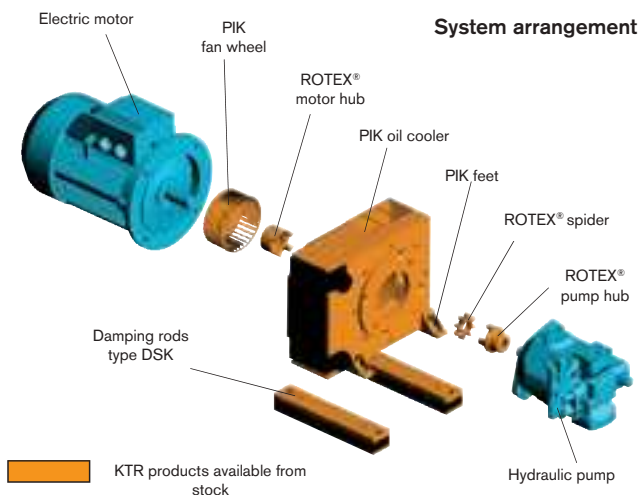
PIK 350



The diagrammes shown are based on actual measurements of the PIK oil cooler performed in the KTR R & D test center. With 3000 rpm the cooling capacity is increased by approx. 50 %.

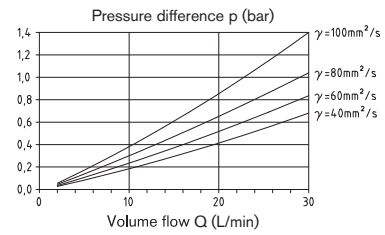
2. Operating pressure

The permissible operating pressure for the oil cooler is 12 bar with dynamic operation. Max. operating pressure with static load is 20 bar. (All figures apply for the medium pressure cooler.)

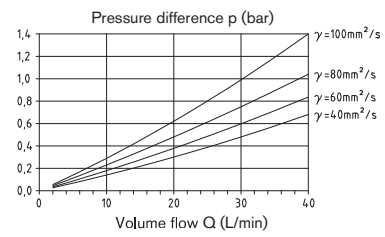


3. Pressure difference depending on oil flow and oil viscosity

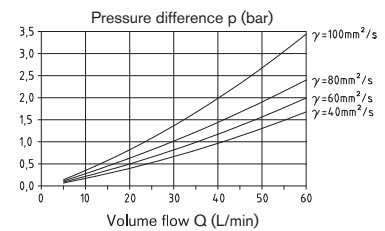
PIK 200



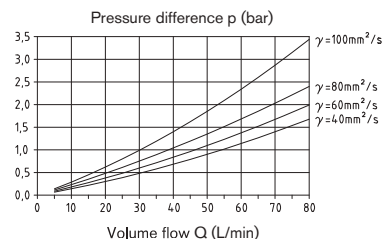
PIK 250



PIK 300



PIK 350



Viscosity measured up to 100 mm²/s. Higher viscosity on request.

4. Fan wheel

Torsional direction view onto the pump – right – standard type.

Performance of the fan with 1500 rpm

PIK 200 = 25 W

PIK 250 = 40 W

PIK 300 = 125 W

PIK 350 = 230 W

Air pressure rate in m³/h with 1500 rpm

PIK 200 = ca. 90 m³/h

PIK 250 = ca. 200 m³/h

PIK 300 = ca. 400 m³/h

PIK 350 = ca. 860 m³/h

5. Cooler connection

R 3/4" internal thread

6. Oil flow

With higher flow rates than specified in the diagramme, please consult with us. Phone: +49 5971 798-0

Oil/water coolers type TAK/T

Cooling systems

Cooling capacities, diagramme of performance, diagramme of pressure loss

Tube-bank coolers - cooling effect of the 20 series									
Type	Cooling effect [kW]	Oil volume [l/min]	Oil pressure loss		Water volume [l/min]	Water pressure loss		Sea water volume [l/min]	
			[kPa]	[bar]		[kPa]	[bar]	min.	max.
TAK/T-2312	3,6	40	40	0,4	8	1	0,01		
TAK/T-2322	6	50	60	0,6	8	1	0,01		
TAK/T-2332	10	65	50	0,5	13	3	0,03		
TAK/T-2342	15	80	80	0,8	16	5	0,05	20	45
TAK/T-2352	19	90	60	0,6	19	8	0,08		
TAK/T-2362	24	100	90	0,9	21	13	0,13		
TAK/T-2372	31	120	120	1,2	24	15	0,15		
TAK/T-2512	17	120	60	0,6	30	1	0,01		
TAK/T-2522	25	140	70	0,7	40	2	0,02		
TAK/T-2532	32	160	60	0,6	45	4	0,04		
TAK/T-2542	42	180	90	0,9	50	6	0,06		
TAK/T-2552	51	200	80	0,8	60	10	0,10	50	120
TAK/T-2562	68	220	100	1,0	70	17	0,17		
TAK/T-2572	85	250	80	0,8	87	30	0,30		
TAK/T-2582	110	280	110	1,1	120	65	0,65		
TAK/T-2592	135	300	170	1,7	120	75	0,75		
TAK/T-2712	92	340	50	0,5	170	18	0,18		
TAK/T-2722	124	360	100	1,0	180	23	0,23		
TAK/T-2732	140	380	80	0,8	190	29	0,29		
TAK/T-2742	175	400	120	1,2	200	37	0,37	100	210
TAK/T-2752	208	420	160	1,6	210	46	0,46		
TAK/T-2762	241	440	180	1,8	220	59	0,59		
TAK/T-2812	124	460	40	0,4	230	16	0,16		
TAK/T-2822	168	490	70	0,7	245	20	0,20		
TAK/T-2832	193	520	60	0,6	260	26	0,26		
TAK/T-2842	240	550	80	0,8	275	33	0,33	140	300
TAK/T-2852	288	580	100	1,0	290	42	0,42		
TAK/T-2862	339	610	110	1,1	305	54	0,54		

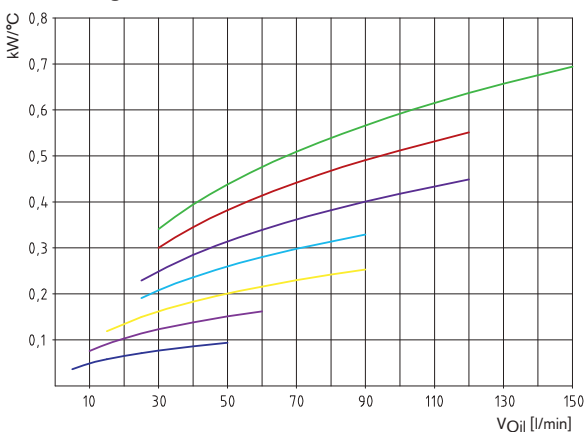
Operating conditions for the above table:

Shell circuit: VG37 oil with an inlet temperature of 60 °C

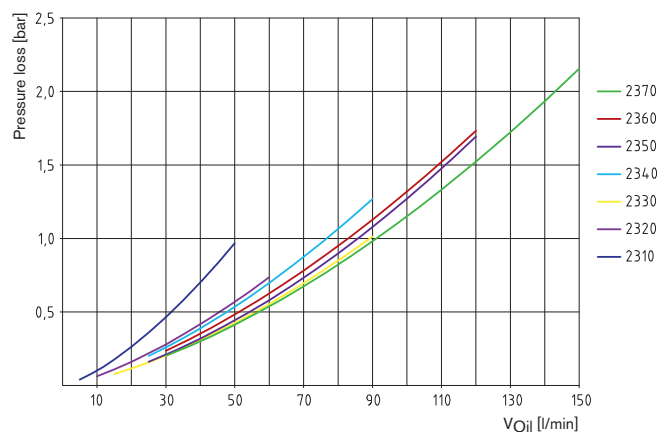
Tube circuit: Plain water with an inlet temperature of 20 °C

Please note: Different fluids have different thermal and mechanical properties. Fluids other than those indicated above will generate different performance characteristics to those shown in the table. For an accurate calculation of cooling performance please contact the KTR engineering team, phone: +49 5971 798-0 or www.ktr.com.

Power diagramme of the 23 series



Pressure loss of the 23 series

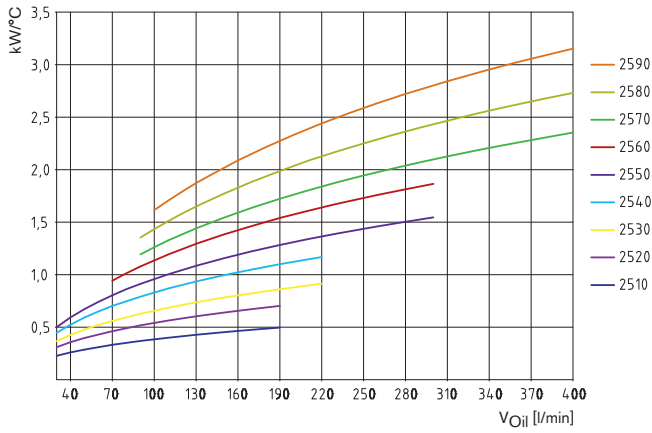


Oil/water coolers type TAK/T

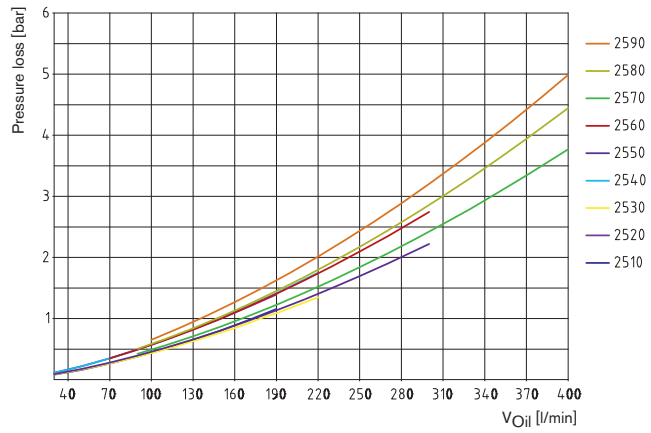
Cooling systems

Diagramme of performance, diagramme of pressure loss

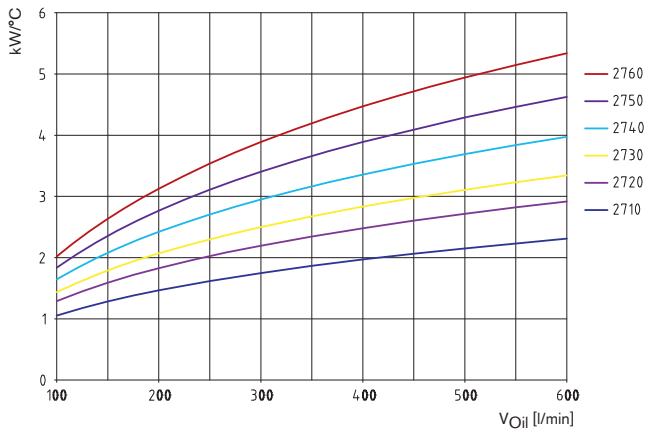
Power diagramme of the 25 series



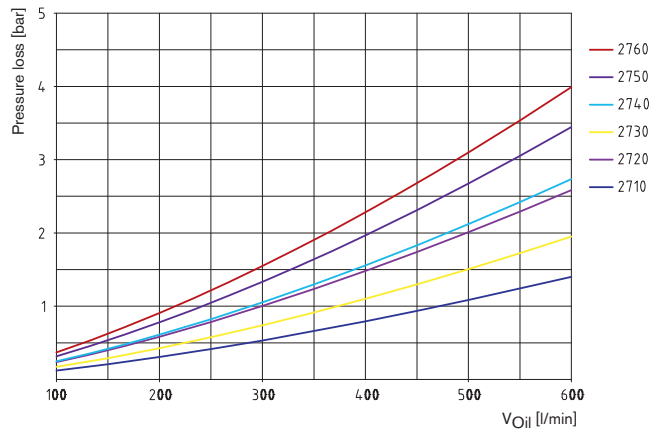
Pressure loss of the 25 series



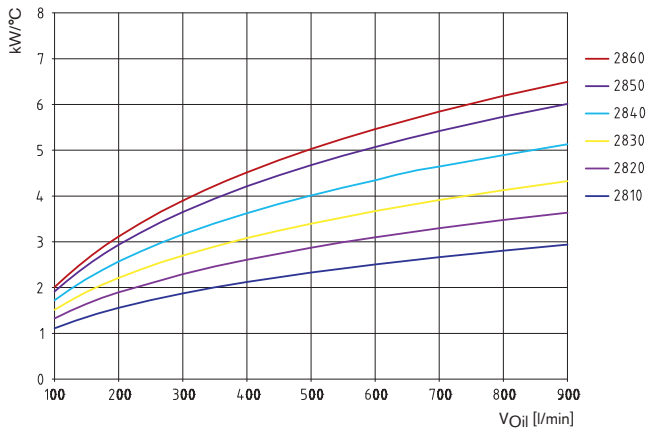
Power diagramme of the 27 series



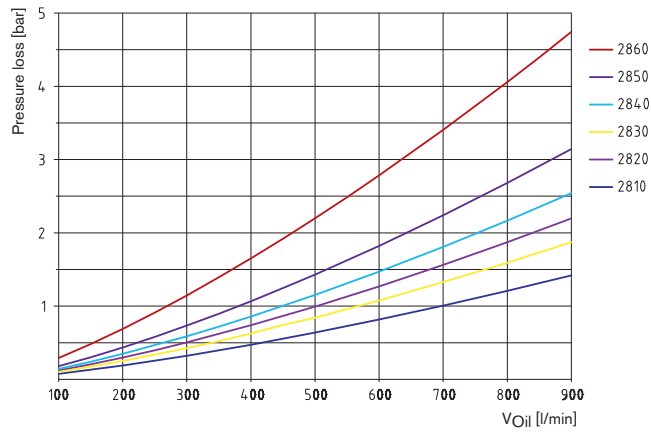
Pressure loss of the 27 series



Power diagramme of the 28 series



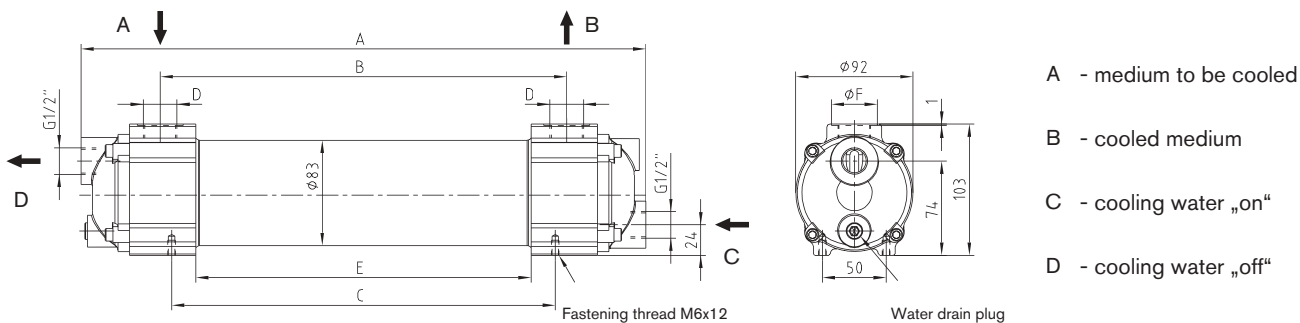
Pressure loss of the 28 series



Oil/water coolers type TAK/T

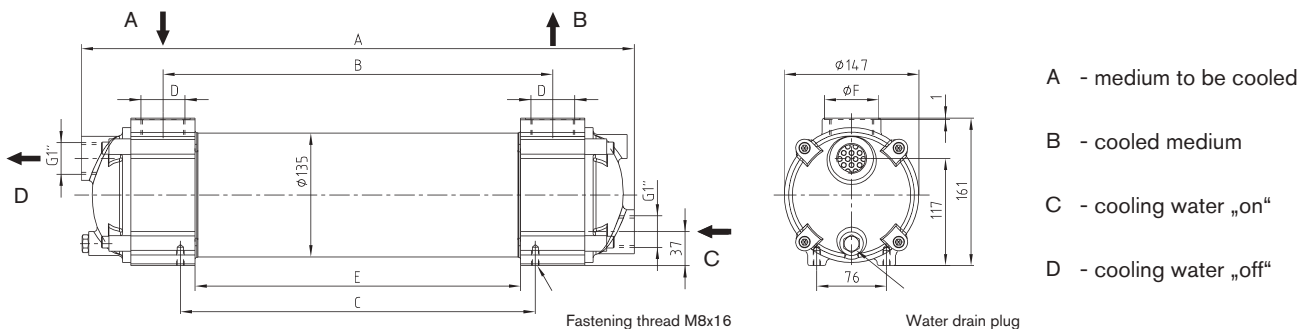
Cooling systems

Series 23 and 25



TAK/T Series 23									
Type	A [mm]	B [mm]	C [mm]	D [BSP]	E [mm]	ØF [mm]	Weight [kg]	Oil volume [l]	Water volume [l]
TAK/T 2312	175	59	117	G 1/2	-	29,1	3	0,3	0,4
TAK/T 2322	259	135	117	G 3/4	-	36	4	0,5	0,5
TAK/T 2332	345	221	203	G 3/4	-	36	5	0,7	0,6
TAK/T 2342	443	319	301	G 3/4	263	36	5	1,0	0,7
TAK/T 2352	571	447	429	G 3/4	391	36	6	1,3	0,9
TAK/T 2362	717	587	575	G1	537	-	7	1,7	1,1
TAK/T 2372	895	765	753	G1	715	-	8	2,2	1,4

Additional No. 2312 and 2332 has a fastening hole as provided on the base midway between the oil port centres.
 Max. perm. oil temperatur 100 °C. Max. oil pressure 30 bar. Max. water pressure 10 bar.



TAK/T Series 25									
Type	A [mm]	B [mm]	C [mm]	D [BSP]	E [mm]	ØF [mm]	Weight [kg]	Oil volume [l]	Water volume [l]
TAK/T 2512	291	129	75	G1	-	45	10	1,4	1,4
TAK/T 2522	377	199	161	G1 1/4	-	53	12	1,9	1,7
TAK/T 2532	475	297	259	G1 1/4	-	53	13	2,5	2,1
TAK/T 2542	603	425	387	G1 1/4	333	53	14	3,5	2,6
TAK/T 2552	749	571	533	G1 1/2	479	59	17	4,5	3,2
TAK/T 2562	927	749	711	G1 1/2	657	59	20	5,8	3,9
TAK/T 2572	1129	951	913	G1 1/2	859	59	23	7,3	4,8
TAK/T 2582	1381	1203	1165	G1 1/2	1111	59	27	9,0	5,8
TAK/T 2592	1727	1549	1511	G1 1/2	1457	59	32	11,5	7,2

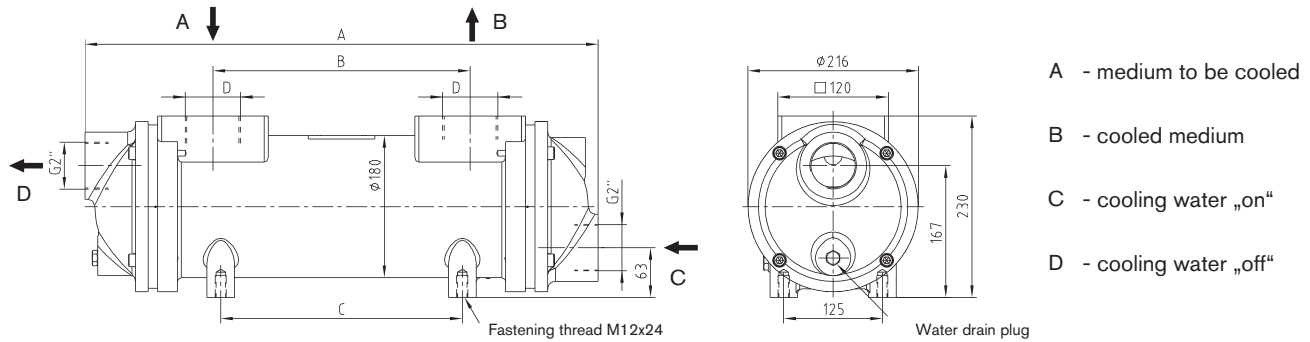
Add suffix H to part number for 1 1/2" BSP water connections (A = +14mm).
 Max. perm. oil temperatur 100 °C. Max. oil pressure 30 bar. Max. water pressure 10 bar.

Ordering example:	TAK/T	231	2	SW
	Type	Series/size	2 = Industrial version (standard) 3 = Industrial version with viton gaskets, temperature >100 °C 4 = Marine version 5 = Marine version with viton gaskets, temperature >100 °C 6 = Special marine version for severely polluted or poor quality water 7 = Special marine version for severely polluted or poor quality water with viton seals, temp. >100 °C	Additional details SW = seawater version

Oil/water coolers type TAK/T

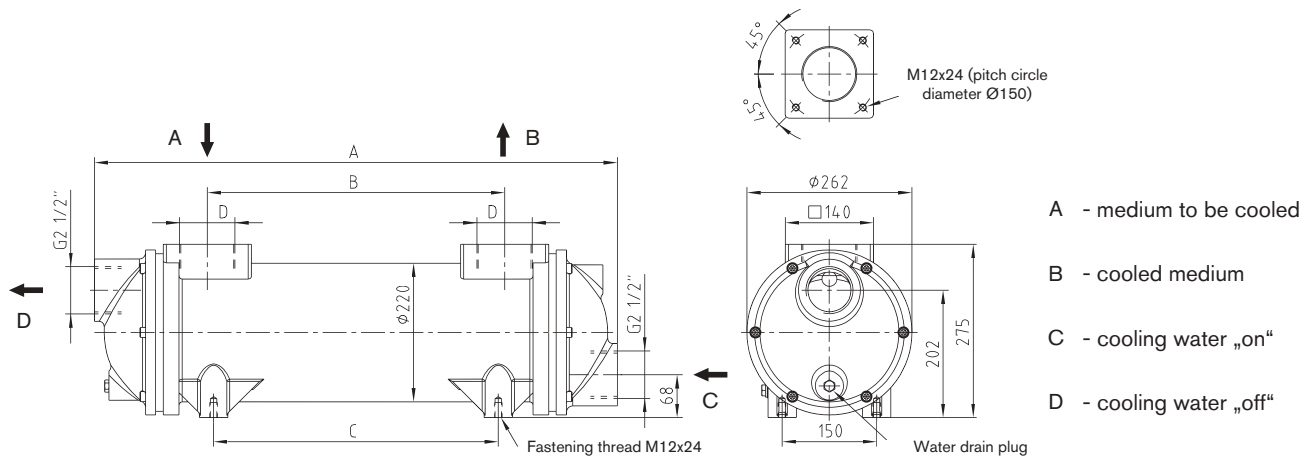
Cooling systems

Series 27 and 28



TAK/T Series 27							
Type	A [mm]	B [mm]	C [mm]	D [BSP]	Weight [kg]	Oil volume [l]	Water volume [l]
TAK/T 2712	650	326	306	G2	38	5,5	5,0
TAK/T 2722	796	472	452	G2	43	7,0	6,0
TAK/T 2732	974	650	630	G2	48	9,0	7,5
TAK/T 2742	1176	852	832	G2	55	11,0	9,0
TAK/T 2752	1428	1104	1084	G2	63	14,0	10,5
TAK/T 2762	1777	1453	1433	G2	74	17,5	13,0

Max. perm. oil temperatur 100 °C. Max. oil pressure 20 bar. Max. water pressure 10 bar.

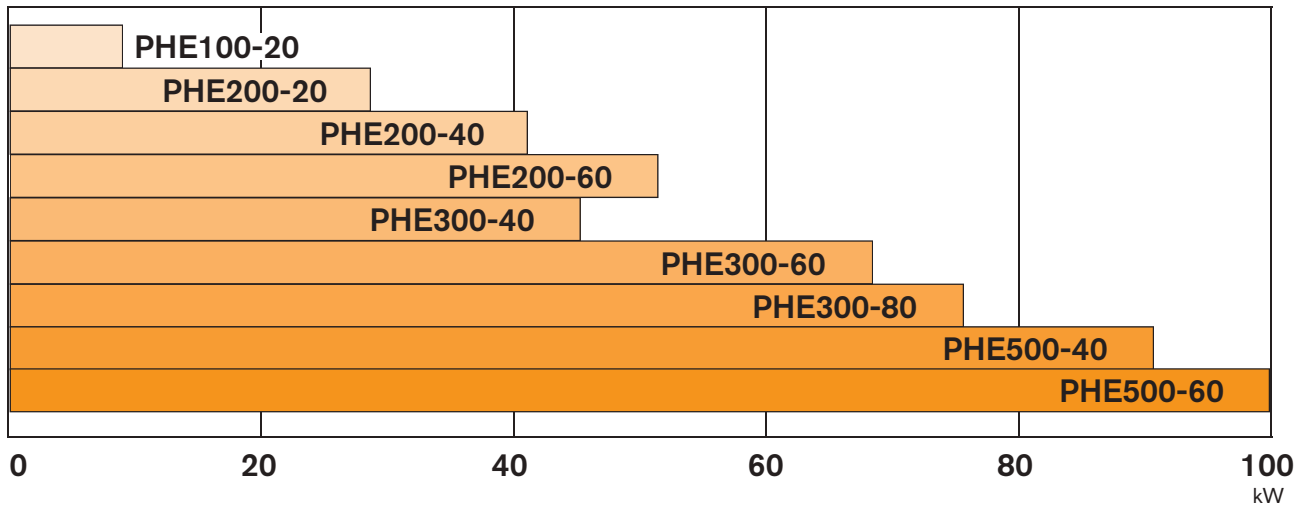


TAK/T Series 28							
Type	A [mm]	B [mm]	C [mm]	D [BSP]	Weight [kg]	Oil volume [l]	Water volume [l]
TAK/T 2812	684	326	306	G3	48	9,0	7,5
TAK/T 2822	830	472	452	G3	54	11,5	9,0
TAK/T 2832	1008	650	630	G3	62	15,0	10,5
TAK/T 2842	1210	852	832	G3	71	18,5	13,0
TAK/T 2852	1462	1104	1084	G3	82	23,0	15,5
TAK/T 2862	1811	1453	1433	G3	97	29,5	19,0

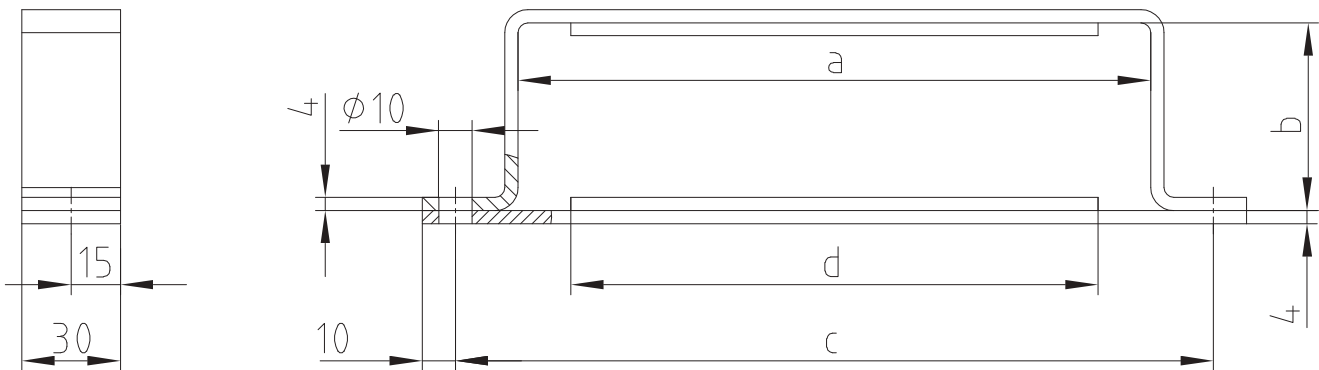
Max. perm. oil temperatur 100 °C. Max. oil pressure 20 bar. Max. water pressure 10 bar.

Ordering example:	TAK/T	271	2	SW
	Type	Series/size	2 = Industrial version (standard) 3 = Industrial version with viton gaskets, temperature >100 °C 4 = Marine version 5 = Marine version with viton gaskets, temperature >100 °C 6 = Special marine version for severely polluted or poor quality water 7 = Special marine version for severely polluted or poor quality water with viton seals, temp. >100 °C	

Cooling capacity



Type	Oil temperature switched on [°C]	Water temperature switched on [°C]	Oil volume [l/min]	Water volume [l/min]	Max. volume flow [l/min]
PHE100-20			60	30	66
PHE200-20			120	60	
PHE200-40			160	80	
PHE200-60			180	100	
PHE300-40	60	20	120	60	200
PHE300-60			160	100	
PHE300-80			160	140	
PHE500-40			180	100	
PHE500-60			180	120	580



From size PHE 200 we recommend 2 supports per cooler.

Fastening device				
	a	b	c	d
BH100-20	80	56	114	75
BH200/300-20		59		
BH200/300-40	120	107	150	118
BH200/300-60		155		
BH200/300-80		207		
BH500-40	195	107	235	193
BH500-60		155		

Summary of literature

No matter if a perfect drive, a brake that takes effect, space-saving cooling or accurate hydraulics is required, if on land, by sea or at an airy height - KTR's product portfolio is just as manifold as its applications. The following catalogues and leaflets provide for a survey. Available at www.ktr.com

Product catalogues



Industry leaflets



ATEX leaflet



Image leaflet



KTR Germany:

Headquarter:

KTR Systems GmbH
Carl-Zeiss-Straße 25
D-48432 Rheine
Phone: +49 5971 798-0
Fax: +49 5971 798-698 or 798-450
E-Mail: mail@ktr.com
Internet: www.ktr.com

KTR Brake Systems GmbH

Competence Center for Brake Systems
Zur Brinke 14
D-33758 Schloß Holte-Stukenbrock
Phone: +49 5207 99161-0
Mobile: +49 175 2650033
Fax: +49 5207 99161-11

Leiter Vertrieb Bremsen Wind

Jörn Edzards, Dipl.-Ing. (FH)
Zur Brinke 14
D-33758 Schloß Holte-Stukenbrock
Phone: +49 5207 99161-0
Mobile: +49 175 2650033
E-mail: j.edzards@ktr.com

Leiter Vertrieb Bremsen Industrie

Thomas Wienkotte, Dipl.-Ing. (FH)
Peter-Schumacher-Straße 102
D-50171 Kerpen
Phone: +49 2237 971796
Mobile: +49 172 5859448
E-mail: t.wienkotte@ktr.com

Außendienst Norddeutschland für Hydraulik-

Komponenten

Gunnar Ehlers
Finkenstieg 4b
21629 Neu Wulmstorf
Mobile: +49 174 3301536
E-mail: g.ehlers@ktr.com

Außendienst Bayern, Baden-Württemberg und Österreich für Hydraulik-Komponenten

Klaus-Peter Sprödhuber
Hussengutstr.55
95445 Bayreuth
Phone: +49 921 16388991
Mobile: +49 172 1096496
E-Mail: k.sproedhuber@ktr.com

Schleswig-Holstein, Nord-Niedersachsen, Hamburg, Bremen

Martin Lau, Maschinenbautechniker
KTR, Ingenieurbüro Hamburg
Geschwister-Scholl-Allee 44
25524 Itzehoe
Phone: +49 4821 4050812
Mobile: +49 172 5310014
E-Mail: m.lau@ktr.com

NRW: Reg.-Bez.: Düsseldorf

Günter Enk, Dipl.-Ing.
KTR Ingenieurbüro Bocholt
Stormstraße 35
46397 Bocholt
Phone: +49 2871 227488
Mobile: +49 172 5355704
E-Mail: g.enk@ktr.com

Emsland, Mitte- und Süd-Niedersachsen, Ostwestfalen

Rainer Lüttmann
KTR Systems GmbH
Carl-Zeiss-Straße 25
48432 Rheine
Phone: +49 5971 798-340
Mobile: +49 172 5322164
E-Mail: r.luettmann@ktr.com

Ruhrgebiet, Siegerland, Hessen-Nord

René Pottmann, Maschinenbautechniker
KTR Ingenieurbüro Dortmund
Lindemannstraße 9
44137 Dortmund
Phone: +49 231 91259060
Mobile: +49 162 2186045
E-Mail: r.pottmann@ktr.com

Hessen, Rheinland-Pfalz, Saarland

Martin Dietrich, Ingenieur
KTR Ingenieurbüro Frankfurt
Im Mühlahl 6
61203 Reichelsheim
Phone: +49 6035 2077284
Mobile: +49 172 5329968
E-Mail: m.dietrich@ktr.com

Berlin, Mecklenburg-Vorpommern Südost, Sachsen-Anhalt, Brandenburg

Thüringen Nord, Sachsen
Harald Scholze, Dipl.-Ing. (TU)
KTR Ingenieurbüro Wittenberg
August-Bebel-Straße 7
06886 Lutherstadt-Wittenberg
Phone: +49 3491 663526
Mobile: +49 172 5329887
E-Mail: h.scholze@ktr.com

Baden-Württemberg Nord

Eberhard Maier, Dipl.-Ing. (FH)
Hortensienweg 1
70374 Stuttgart, Somerrain
Phone: +49 7116 5842957
Mobile: +49 172 5355056
E-Mail: e.maier@ktr.com

Baden-Württemberg Süd

Jochen Glöckler, Maschinenbautechniker
KTR Ingenieurbüro Balingen
Hölzlestraße 44
72336 Balingen
Phone: +49 7433 91381
Mobile: +49 172 5310049
E-Mail: j.gloeckler@ktr.com

Bayern-Nord, Thüringen Süd

Eduard Schadly, Ingenieur
KTR Ingenieurbüro Prebitz
In der Heide 27
95473 Prebitz-Engelmannsreuth
Phone: +49 9270 9666
Mobile: +49 172 5329967
E-Mail: e.schadly@ktr.com

Bayern-Süd, Baden-Württemberg Ost

Peter Benkard, Dipl.-Ing. (FH)
KTR Ingenieurbüro Adelsried
Am Mittelfeld 13
86477 Adelsried
Phone: +49 8293 960504
Mobile: +49 172 5313059
E-Mail: p.benkard@ktr.com

For all representatives and sales partners please refer to www.ktr.com.

KTR worldwide:

Algeria

KTR Alger
Algeria Business Center -
Pins Maritimes
DZ-16130 Alger Mohammadia
Phone: +213 661 92 24 00
E-mail: ktr-dz@ktr.com

Belgium/Luxemburg

KTR Benelux B. V. (Bureau Belgien)
Blancefloerlaan 167/22
B-2050 Antwerpen
Phone: +32 3 2110567
Fax: +32 3 2110568
E-mail: ktr-be@ktr.com

Brazil

KTR do Brasil Ltda.
Rua Jandaia do Sul 471 -
Bairro Emiliano Perneta
Pinhais - PR - Cep: 83324-040
Phone: +55 41 36 69 57 13
Fax: +55 41 36 69 57 13
E-mail: ktr-br@ktr.com

Chile

KTR Systems Chile SpA
Calle Bucarest 17
Oficina 33 Providencia
Santiago de Chile
Phone: +56 23 22 46 674
Mobile: +56 9 44 75 57 02
E-mail: ktr-cl@ktr.com

China

KTR Power Transmission Technology
(Shanghai) Co. Ltd.
Building 1005, ZOBON Business Park
999 Wangqiao Road
Pudong
Shanghai 201201
Phone: +86 21 58 38 18 00
Fax: +86 21 58 38 19 00
E-mail: ktr-cn@ktr.com

Czech Republic

KTR CR, spol. s. r. o.
Olomoucká 226
CZ-569 43 Jevicko
Phone: +420 461 325 014
E-mail: ktr-cz@ktr.com

Finland

KTR Finland OY
Tiistiniityntie 4
SF-02230 Espoo
PL 23
SF-02231 Espoo
Phone: +358 2 07 41 46 10
Fax: +358 2 07 41 46 19
E-mail: ktr-fi@ktr.com

France

KTR France S.A.R.L.
46-48 Chemin de la Bruyère
F-69570 Dardilly
Phone: +33 478 64 54 66
Fax: +33 478 64 54 31
E-mail: ktr-fr@ktr.com

India

KTR Couplings (India) Pvt. Ltd.,
T-36 / 37 / 38, MIDC Bhosari
Pune 411026
Phone: +91 20 27 12 73 22
Fax: +91 20 27 12 73 23
E-mail: ktr-in@ktr.com

Italy

KTR Systems GmbH
Sede Secondaria Italia
Via Giovanni Brodolini, 8
I - 40133 Bologna (BO)
Phone: +39 051 613 32 32
Fax: +39 02 700 37 570
E-mail: ktr-it@ktr.com

Japan

KTR Japan Co., Ltd.
Toei Bldg.2F, 6-1-8 Motomachi-dori
Chuo-ku, Kobe
650-0022 Japan
Phone: +81 7 89 54 65 70
Fax: +81 7 85 74 03 10
E-mail: ktr-jp@ktr.com

KTR Japan - Tokyo Office
1-11-6, Higashi-Ueno, Taito-Ku,
Tokyo 110-0015 Japan
(Takeno-building, 5F)
Japan
Phone: +81 3 58 18 32 07
Fax: +81 3 58 18 32 08

Korea

KTR Korea Ltd.
101, 978-10, Topyung-Dong
Guri-City, Gyeonggi-Do
471-060 Korea
Phone: +82 3 15 69 45 10
Fax: +82 3 15 69 45 25
E-mail: ktr-kr@ktr.com

Netherlands

KTR Benelux B. V.
Postbus 87
NL-7550 AB Hengelo (O)
Oosterveldsingel 3
NL-7558 PJ Hengelo (O)
Tel.: +31 74 2553680
Fax: +31 74 2553689
E-mail: ktr-nl@ktr.com

Norway

KTR Systems Norge AS
Fjellbovegen 13
N-2016 Frogner
Phone: +47 64 83 54 90
Fax: +47 64 83 54 95
E-mail: ktr-no@ktr.com

Poland

KTR Polska Sp. z o. o.
ul. Czerwone Maki 65
PL-30-392 Kraków
Phone: +48 12 267 28 83
Fax: +48 12 267 07 66
E-mail: ktr-pl@ktr.com

KTR Steel Construction Sp. z o. o.

ul. Kolejowa 1
46-040 Ozimek
Phone: +48 77 402 68 50
Fax: +48 77 465 11 36
E-mail: ks.ozimek@ks.com.pl

Russia

KTR RUS LLC
6 Verhni Pereulok 12
Litera A, Office 229
194292 St. Petersburg
Phone: +7 812 383 51 20
Fax: +7 812 383 51 25
E-mail: ktr-ru@ktr.com
Internet: www.ktr.ru

South Africa

KTR Couplings SA (Pty) Ltd.
28 Spartan Road, Kempton Park,
GautengSpartan Ext. 21
Phone: +27 11 281 3801
Fax: +27 11 281 3812
E-mail: ktr-za@ktr.com

Spain

KTR Systems GmbH
Estartetxe, nº 5-Oficina 218
E-48940 Leioa (Vizcaya)
Phone: +34 9 44 80 39 09
Fax: +34 9 44 31 68 07
E-mail: ktr-es@ktr.com

Sweden

KTR Sverige AB
Box 742
S-191 27 Sollentuna
Phone: +46 86 25 02 90
Fax: +46 86 25 02 99
E-mail: info.se@ktr.com

Switzerland

KTR Systems Schweiz AG
Bahnstr. 60
CH-8105 Regensdorf
Phone: +41 4 33 11 15 55
Fax: +41 4 33 11 15 56
E-mail: ktr-ch@ktr.com

Taiwan

KTR Taiwan Ltd.
No.: 30-1, 36 Rd
Taichung Industry Zone
Taichung City
407 Taiwan (R. O. C.)
Phone: +886 4 23 59 32 78
Fax: +886 4 23 59 75 78
E-mail: ktr-tw@ktr.com

Turkey

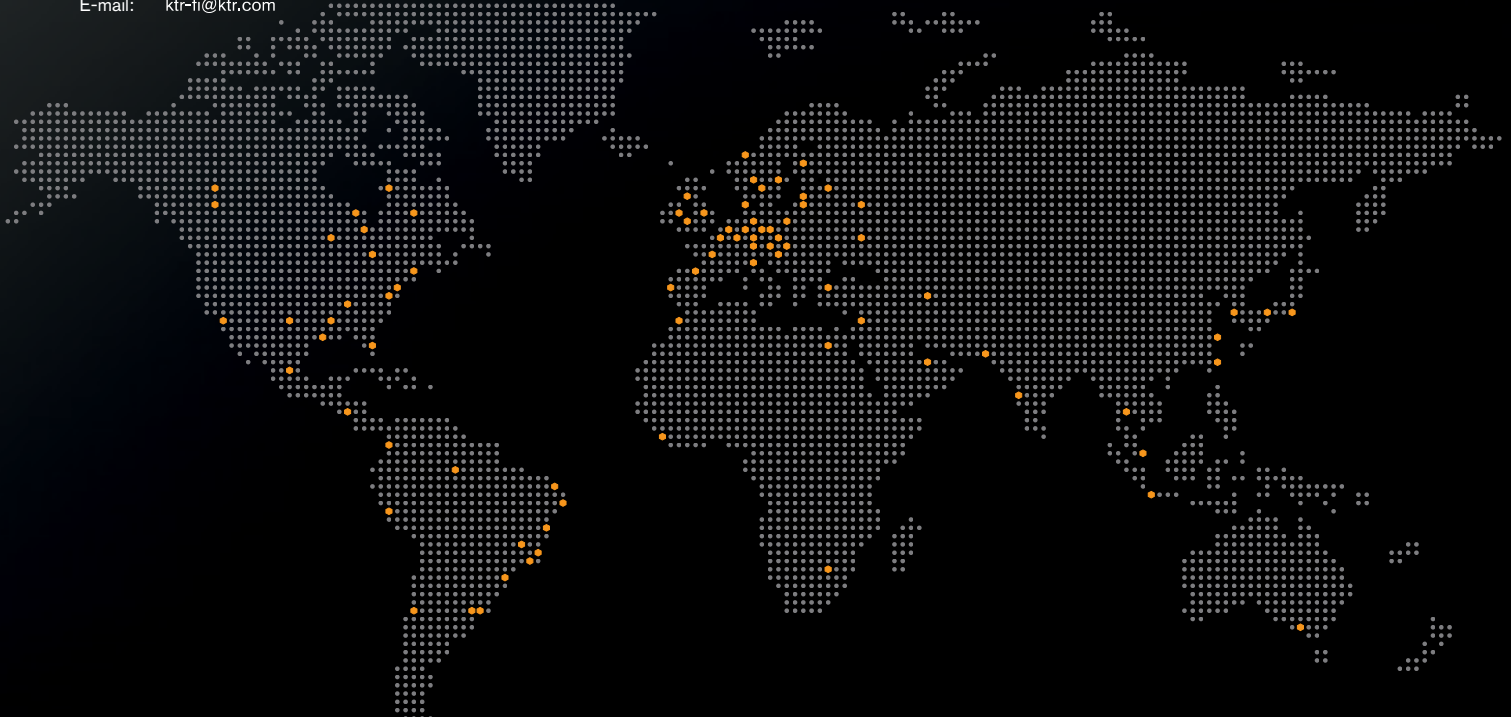
KTR Turkey
Güç Aktarma Sistemleri San. ve Tic. Ltd.
Sti.
Kayışdağı Cad. No: 117/2
34758 Atasehir -Istanbul
Phone: +90 216 574 37 80
Fax: +90 216 574 34 45
E-mail: ktr-tr@ktr.com

United Kingdom

KTR U.K. Ltd.
Robert House
Unit 7, Acorn Business Park
Woodseats Close
Sheffield
United Kingdom, S8 0TB
Phone: +44 11 42 58 77 57
Fax: +44 11 42 58 77 40
E-mail: ktr-uk@ktr.com

USA

KTR Corporation
122 Anchor Road
Michigan City, Indiana 46360
Phone: +1 2 19 8 72 91 00
Fax: +1 2 19 8 72 91 50
E-mail: ktr-us@ktr.com





Headquarter

KTR Systems GmbH

Carl-Zeiss-Str. 25

D-48432 Rheine

Phone: +49 5971 798-0

Fax: +49 5971 798-698 or 798-450

E-Mail: mail@ktr.com

Internet: www.ktr.com

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