

Made for Motion



Hydraulic Components

Bellhousings
Damping elements
Oil tanks

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.

STANDING THE PRESSURE: HYDRAULIC COMPONENTS BY KTR

The power of hydraulics has moved mountains since the 1960s. Since the rapid development in hydraulic technology had finally reached mechanical and plant engineering as well. KTR took part in this development from the very

beginning. Thanks to the high processing quality of components and our design engineers' expertise, this industry soon became a second pillar for KTR besides mechanical drive technology.

„These products combine everything you need: accurate selection, top processing, fast availability and low prices.“

Christoph Bettmer, Product Manager Hydraulics





As powerful as necessary - as accurate as possible!

Up and down, open and closed, forth and back: No matter as to which motions your machines are to perform, this will work powerfully, accurately and reliably with KTR hydraulic components.

Just as manifold as the motions are the applications of customers trusting in the quality of KTR hydraulic components. No matter if mobile or stationary hydraulics are concerned - KTR can provide the right components for every application. The huge selection will allow you to find the suitable bell-housings, foot flanges, cooling systems and many more. In other words: Everything is available by one-stop shopping. And this is a way of shopping that even men like.

A specialist - also for custom-made designs

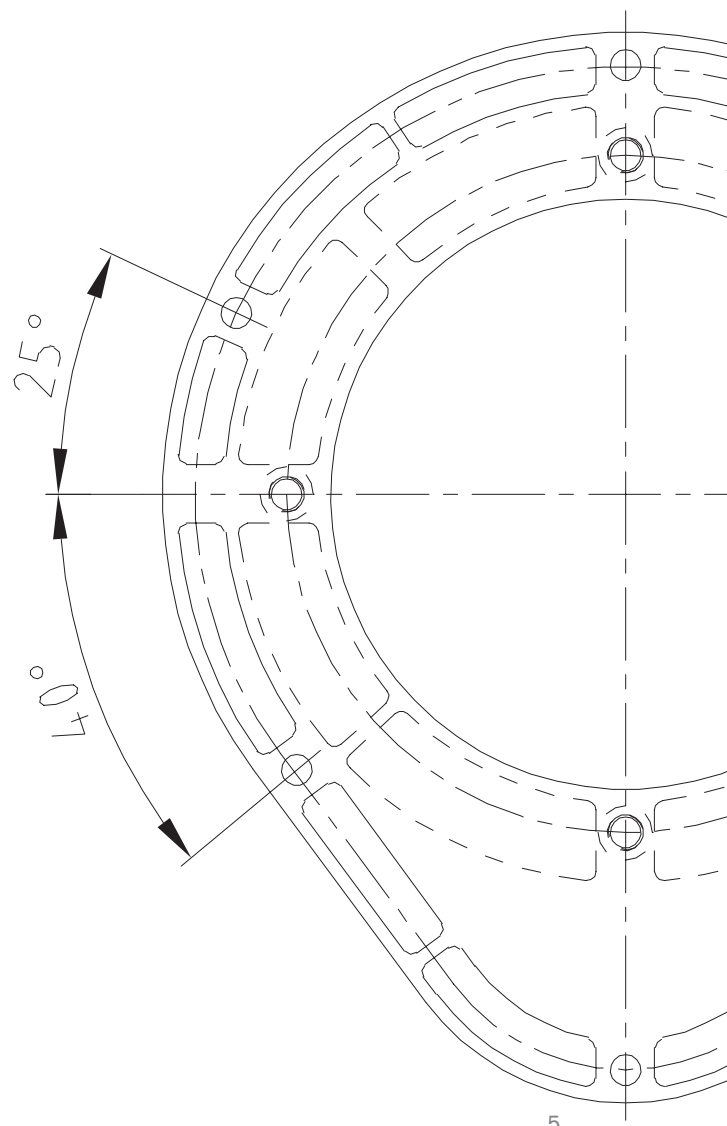
The standard programme already covers all demands: bellhousings and couplings, foot flanges, damping elements, oil/air and oil/water coolers, tank heaters, oil tanks, control and monitoring. Supplying standard products only does not meet with our standard. That is why we surely supply special sizes and designs. Whatever you like. Tailor-made. It goes without saying that you can specify the parameters of your product yourselves either by drawing, computer graphics or manual sketch - we will be pleased to support you with optimizing your product.

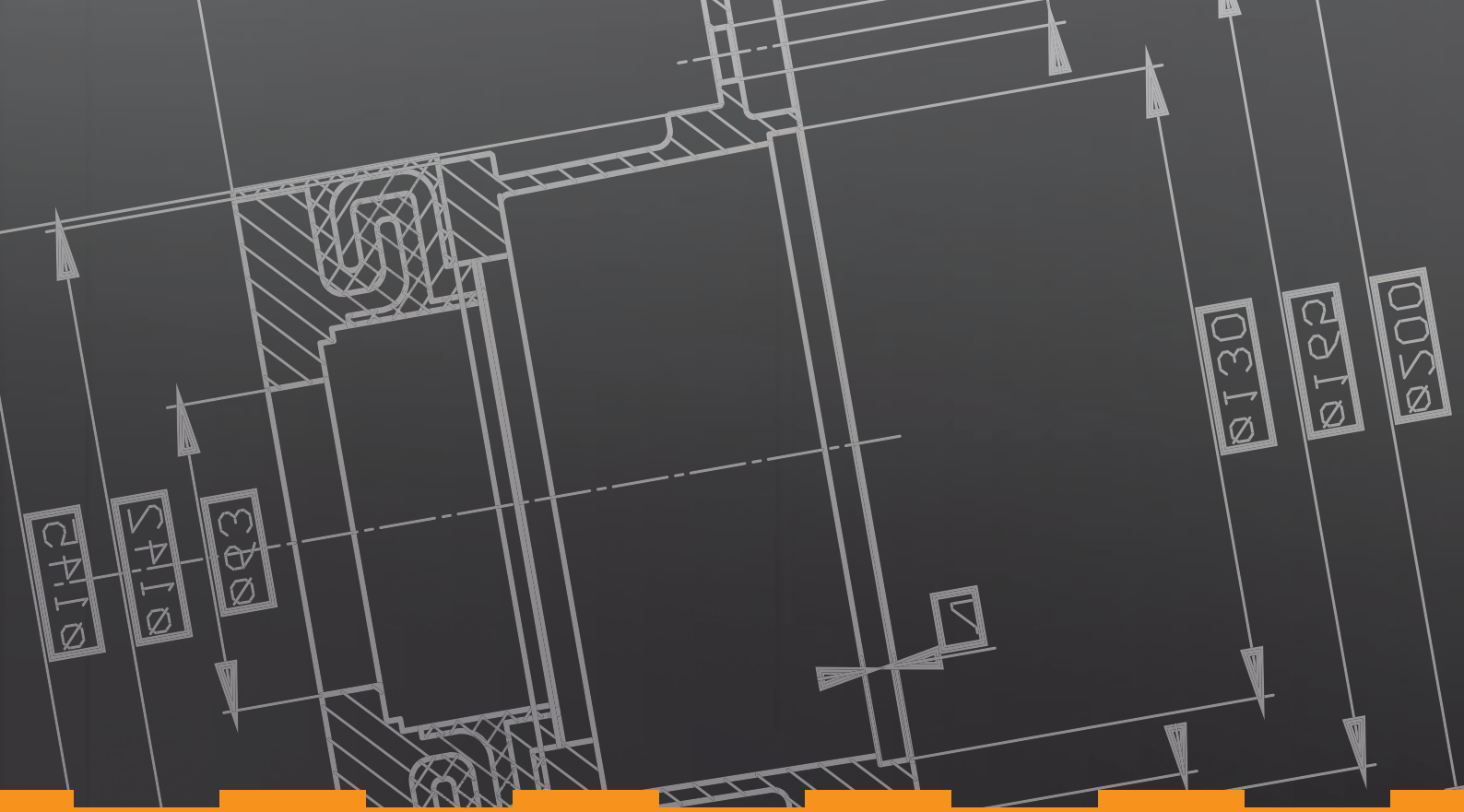
Competence under one roof

Another option is to have your special design developed by our design engineers in the new Power Transmission Center (PTC). It was opened in Rheine, the location of KTR's headquarters, in April 2015, combining the fields of research & development, quality management, mechatronics and assembly under one roof.

To have enough space for good ideas, KTR built one of the latest R & D centers in North Rhine-Westphalia on a total surface of approx. 8,800 square metres. Among others hydraulic components such as bellhousings and damping elements for global use are developed, designed and optimized here

It is obvious that the components shall operate smoothly. To ensure a smooth operation, the products are continuously tested and further developed by KTR. For this purpose more than 25 hydraulic and electric test benches are available to our engineers in the PTC. In this context we test our products under realistic conditions - since nothing is harder than reality.



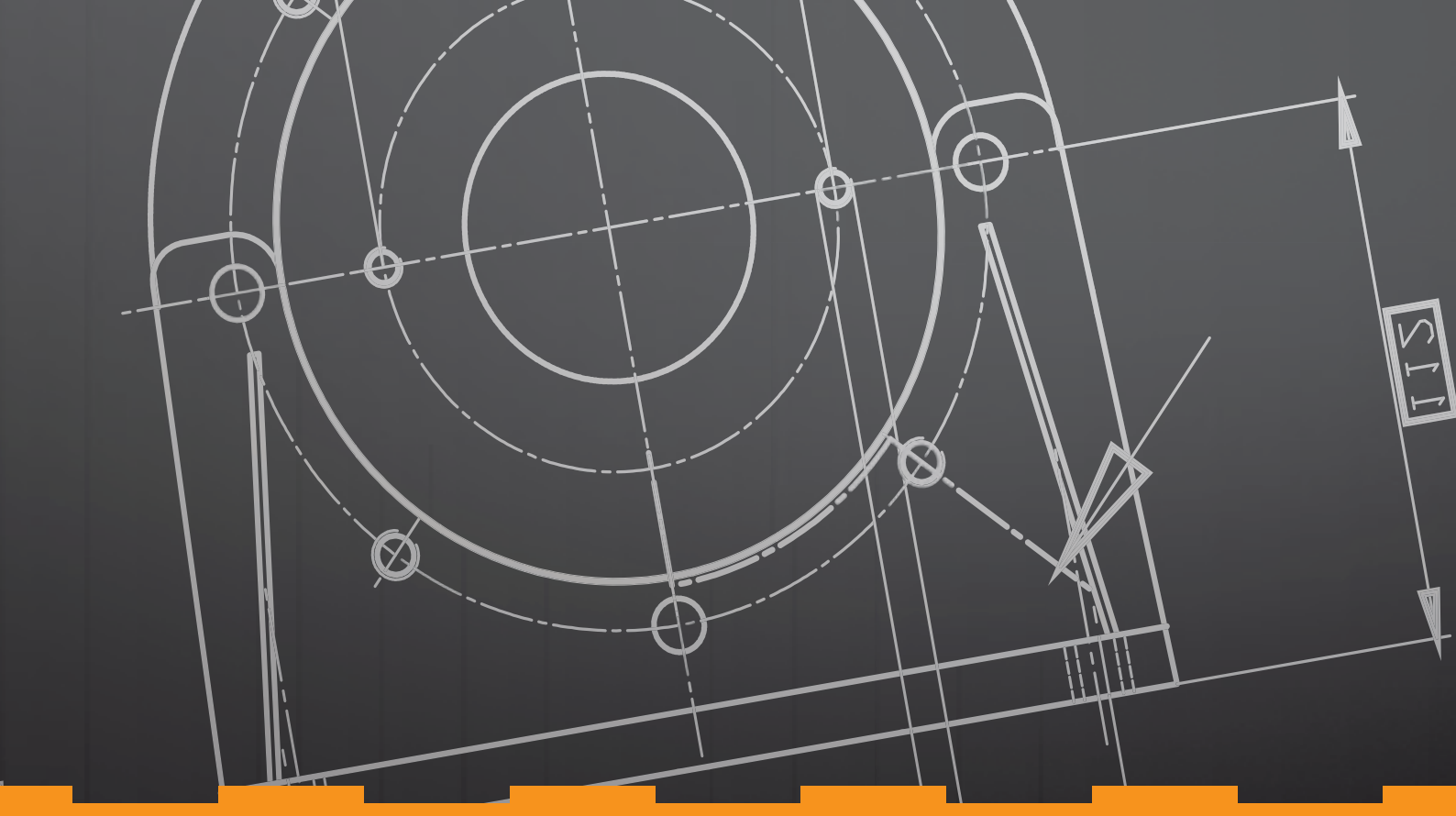


A short touch of a button assists you when you are pressed for time.

We all know this: During the selection stage the importance of hydraulic components is sometimes undervalued. Then you suddenly realize that the basis of power supply for the machine was left out of consideration - now a prompt reaction is vital. But even if you are pressed for time KTR is the right partner. Since with KTR many solutions require a touch of a button only.

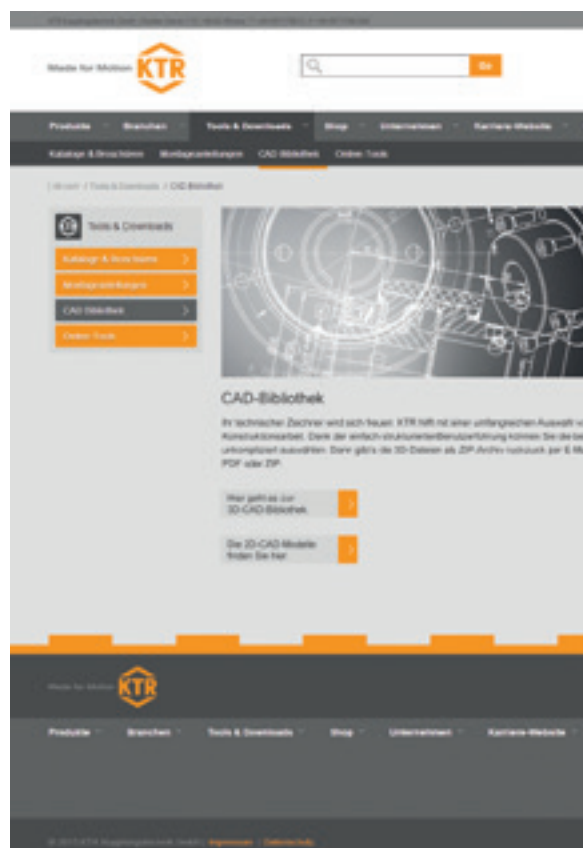
Support with designing: the 3D-SpaceCenter

Those who have no time to waste above all have no time for errors. Since drawings are often made under deadline pressure, you should play safe. The best is to visit the KTR 3D-SpaceCenter. The Internet provides for an extensive choice of couplings and hydraulic components supporting you optimally with your designing work. A user guidance with a simple structure allows for a quick selection of the models required. The 3D files are sent to you by e-mail by return and free of charge. It is no longer necessary to revise a component. This will save a lot of time and efforts - and above all errors which are unnecessary.

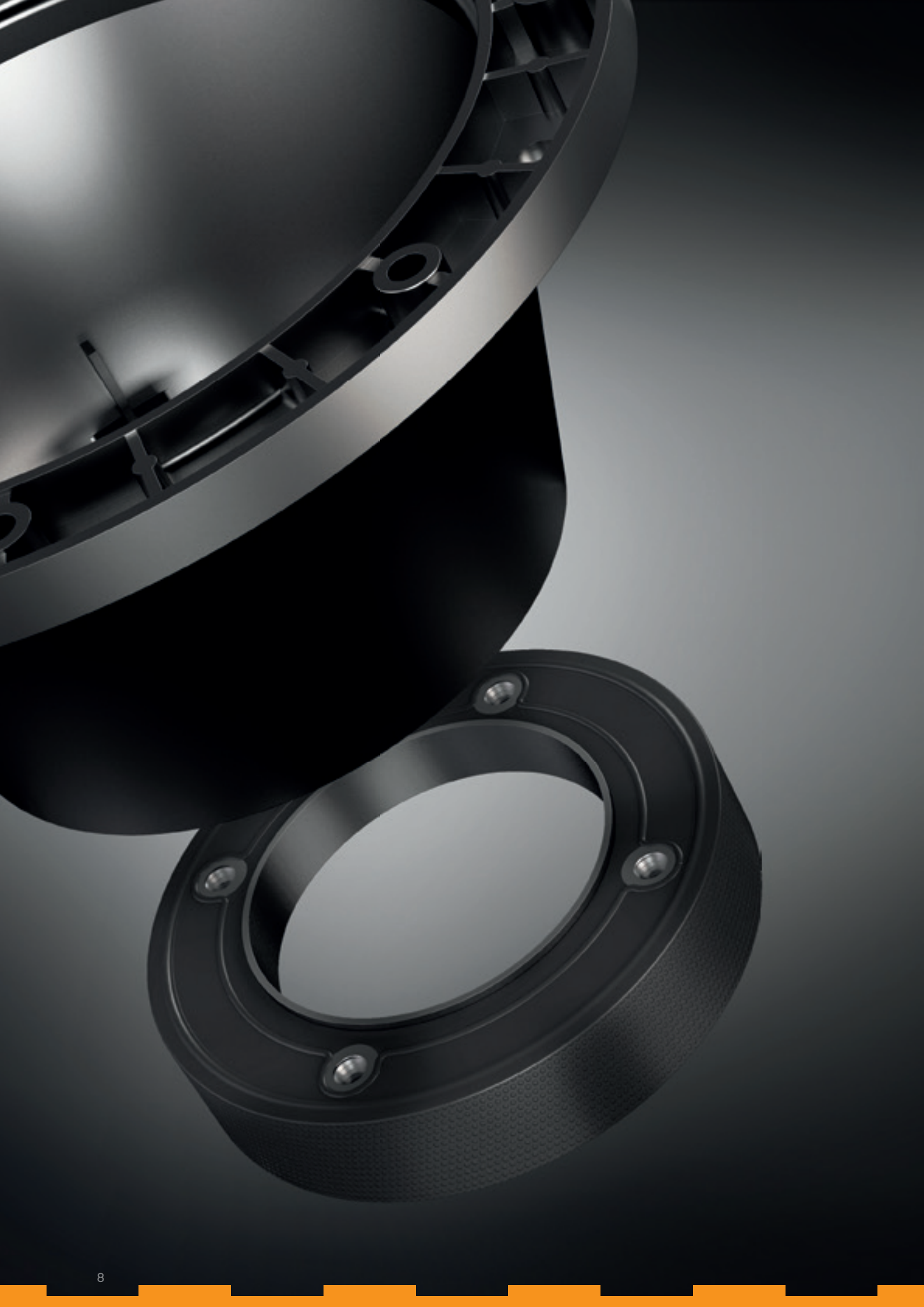


A matter of selection: the functional online configuration

A few clicks only will guide you to the aim: KTR is the only manufacturer of couplings providing for an extensive online selection program for hydraulic components. The operation is quite simple: First you define the pump manufacturer, type of pump and electric motor. In a matter of seconds the program provides a selection of suitable couplings and bellhousings. Depending on the application you can select extra components such as damping ring or foot flange. Afterwards the components selected can be displayed true to scale via Webviewer or as a PDF file. Having completed the selection you can order your individual online offer or order the components required directly in the KTR shop. This is functional— taking pressure off the timetable.



www.ktr.com



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Bellhousings



Coolers



Tanks

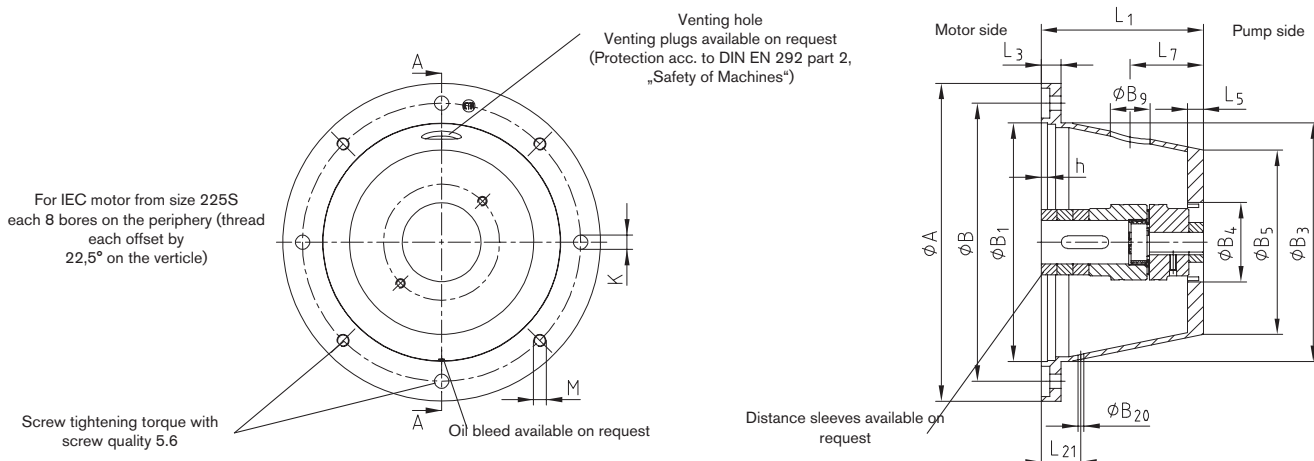


Tank heaters



BELLHOUSINGS HYDRAULIC COMPONENTS

Bellhousings made of aluminium



Please specify in the order if the bellhousing is needed in oilproof design! (Extra charge)

Bellhousings according to VDMA 24561 type A																					
IEC motor size (shaft end) d ₁ x l ₃	kW with n = 1500 rpm	Bellhousing size	Gasket DP size	Foot flange PTFE/PTFS	Dimensions [mm]											Venting hole		Oil bleed			
					A	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅ ¹⁾	B ₅	B ₄	B ₉	L ₇	B ₂₀	L ₂₁	
71 (14 x 30)	0,25	PK 160/5/..	160	160	160	130	110	110	4	9	M8	80	13	8	105	29	25	33	7,5	28	
	0,37	PL 160/5/..										90			102	29					38
80 (19 x 40)	0,55	PK 200/3/..	200	200	200	165	130	145	4	11	M10	100	16	12	124	40	36	47	7,5	36	
	0,75	PL 200/3/..										110			140	37					43
90S/90L (24 x 50)	1,1	PL 200/8/..	200	200	200	165	130	145	4	11	M10	124	16	12	143	40	36	47	7,5	36	
	1,5	PFL 200/6/..										140			180	47					62
100L/112M (28 x 60)	2,2	PK 250/6/..	250	250	250	215	180	190	5	14	M12	120	19	12	177	49	40	52	7,5	43	
	3	PL 250/3/..										124			126	42					54
	3	PL 250/6/..										135			180	42					52
	4	PL 250/4/..										148			180	76					64
132S/132M (38 x 80)	5,5	PFL 250/18/..	250	250	250	215	180	190	5	14	M12	175	19	12	250	77	40	57	7,5	43	
	5,5	PK 300/5/..										144			205	57					63
	5,5	PL 300/15/..										150			221	78					66
	7,5	PK 300/4/..										155			205	56					63
160M/160L (42 x 110)	11	PL 300/4/..	300	300	300	265	230	234	5	14	M12	168	20	15	205	56	50	68	7,5	45	
	11	PK 350/4/..										196			220	57					74
	15	PK 350/6/..										196			220	57					84
	18,5	PL 350/10/..										204			225	59					82
180M/180L (48 x 110)	18,5	PK 350/6/..	350	350	350	300	250	260	6	17	M16	204	26	15	248	97	50	87	7,5	51	
	22	PL 350/7/..										256			255	88					115
	22	PK 400/4/..										204			230	75					92
	22	PK 400/5/..										228			279	95					104
200L (55 x 110)	30	PL 400/5/..	400	400	400	350	300	300	6	17	M16	256	25	20	290	97	50	104	7,5	51	
	30	PK 450/2/..										234			260	107					115
	37	PK 450/3/..										262			315	97					121
	45	PL 450/3/..										285			325	97					133
225S/225M (60 x 140)	55	PL 550/8/..	550	550	550	500	450	450 ²⁾	6	17	M16	248	25	20	340	97	50	121	7,5	51	
	55	PL 550/1/..										265			360	120					125
	75	PK 550/3/..										275			340	97					130
	90	PL 550/3/..										295			360	123					140
250M (65 x 140)	90	PL 550/2/..	550	550	550	500	450	450 ²⁾	6	17	M16	315	26	25	400	150	50	130	7,5	51	
	110	PK 660/2/..										310			410	120					147
	132	PL 660/5/..										330			400	120					157
	160	PL 660/2/..										343			490	174					163
280S/280M (75 x 140)	200	PL 660/4/..	660	660	660	600	550	550 ²⁾	8	22	M20	395	32	30	500	197	50	135	7,5	60	
	355	PL 800/1/..										370			500	148					135
355L/400M (100 x 210)	710	PK 800/3/..	880	880	880	740	680	680 ²⁾	8	22	M20	395	40	36	487	160	50	160	7,5	70	

Other types of bellhousings

IEC motor size (shaft end) d1 x l3	kW with n = 1500 rpm	Bellhousing size	Gasket DP size	Foot flange PTFE/PTFS*)	Dimensions [mm]															
					A	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅ ¹⁾	B ₅	Min.	Venting hole		Oil bleed	
																		B ₄	B ₉	L ₇
71 (14 x 30)	0,25	PFK 160/6/..	160	160	160	130	110	110	4	9	M8	79	13	13	140	30	25	35	7,5	28
	0,37	PFL 160/6/..										101				60		46		
80 (19 x 40)	0,55	PK 200/11/..	200	200	200	165	130	145	4	11	M10	45	16	12	144	97	10	15	7,5	36
	0,75	PL 200/11/..										55				30		18		
90S/90L (24 x 50)	1,1	PK 200/30/..	200	200	200	165	130	145	4	11	M10	79	16	12	142	30	36	71	7,5	36
	1,5	PL 200/30/..										90				37		30		
100L/112M (28 x 60)	2,2	PK 250/13/..	250	250	250	215	180	190	5	14	M12	159	18	12	186	77	40	69	7,5	43
	3	PK 250/15/..										61				97		20		
	3	PL 250/15/..										79				10		29		
	4	PK 250/17/..										100				74		39		
132S/132M (38 x 80)	5,5	PK 300/8/..	300	300	300	265	230	234	5	14	M12	110	20	15	225	95	40	45	7,5	45
	5,5	PK 300/9/..										85				30		32		
	7,5	PL 300/9/..										99				40		37		
	7,5	PL 300/13/..										210				57		95		
160M/160L (42 x 110)	11	PK 350/8/..	350	350	350	300	250	260	6	17	M16	204	25	15	259	53	50	90	7,5	51
	15	PK 350/11/..										130				97		52		
	18,5	PL 350/11/..										146				92		60		
	22	PK 350/18/..										159				77		67		
180M/180L (48 x 110)	22	PL 350/18/..	350	350	350	300	250	260	6	17	M16	184	25	15	244	97	50	80	7,5	51
	22	PK 350/18/..										184				77		80		
	22	PL 350/18/..										184				97		80		
	22	PK 350/18/..										184				97		80		
200L (55 x 110)	30	PL 400/3/..	400	400	400	350	300	300	6	17	M16	165	25	20	290	97	50	73	7,5	51
	30	PK 400/12/..										170				95		82		
	30	PL 400/12/..										184				95		82		
	30	PK 400/12/..										184				95		82		
225S/225M (60 x 140)	37	PK 450/5/..	450	450	450	400	350	350	6	17	M16	165	25	20	260	120	50	73	7,5	51
	37	PL 450/5/..										185				98		83		
	45	PK 450/6/..										176				98		80		
	45	PFL 450/9/..										253				137		116		
250M (65 x 140)	55	PK 450/12/..	450	450	450	400	350	350	6	17	M16	204	25	20	260	97	50	90	7,5	51
	55	PK 550/4/..										190/192				355		129		
	55	PL 550/4/..										207				330		124		
	55	PK 550/8/..										217				340		97		
280S/280M (75 x 140)	75	PK 550/8/..	550	550	550	500	450	450 ²⁾	6	17	M16	247	26	25	465	80	50	115	7,5	60
	90	PL 660/3/..										260				340		156		
315S/315M (80 x 170)	110-	PK 660/3/..	660	660	660	600	550	550 ²⁾	8	22	M20	247	32	30	465	80	50	115	7,5	60
	160	PL 660/3/..										260				340		156		
355L/400M (100 x 210)	355	PK 800/1/..	800	900	800	740	680	680 ²⁾	8	22	M20	335	40	36	520	149	50	140	7,5	70
	710	P 800/3/..										443				37		38		

Venting hole and sealing plugs available on request
(Protection acc. to DIN EN 292 part 2, „Safety of Machines“)

Please specify in the order if the bellhousing is needed in oilproof design! (Extra charge)

¹⁾ Bottom of pot does not consist of solid material → ribbed

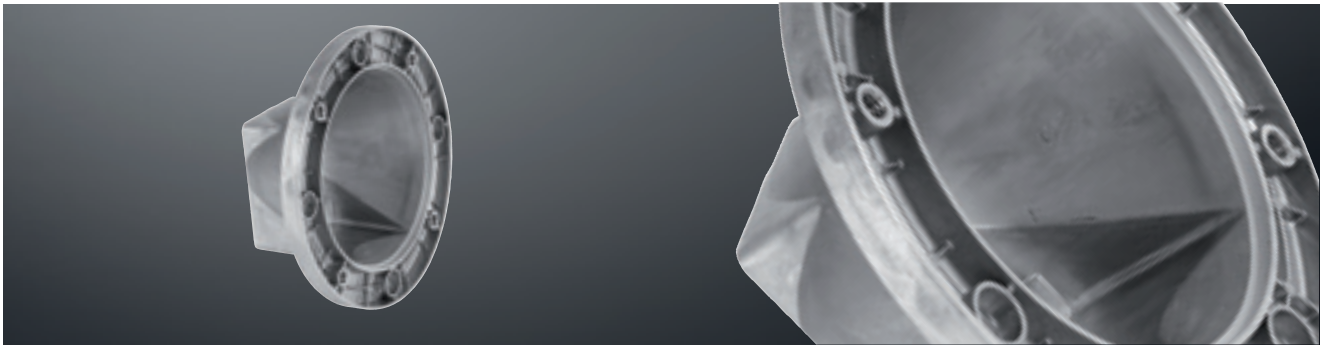
²⁾ Passing from dimension B₃ to flange radius R=5

*) For vertical or lateral mounting on the tank, gaskets (type DP, see page 199) are available. For the detailed ordering description please refer to our selection program on the PC/Internet or specify the IEC motor size and the detailed pump type for a selection. Venting holes or oil bleeds have to be mentioned in the order, too.

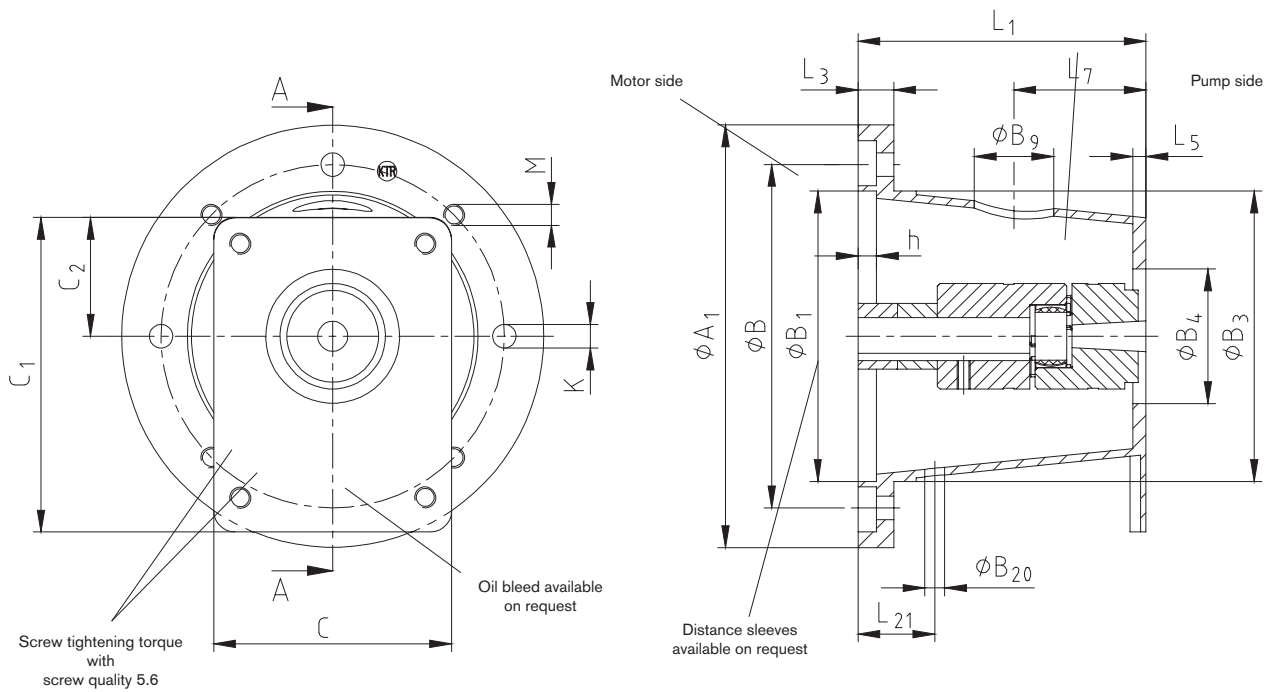
Ordering example:	PL	PK	P	450	3	8
	Bellhousing type, long	Bellhousing type, short	Former bellhousing type	Flange diameter of IEC Motor	Serial model code	In-house modification code

BELLOUSINGS HYDRAULIC COMPONENTS

Bellousings with rectangular flange



Bellousings with rectangular flange



Please specify in the order if the bellhousing is needed in oilproof design! (Extra charge)

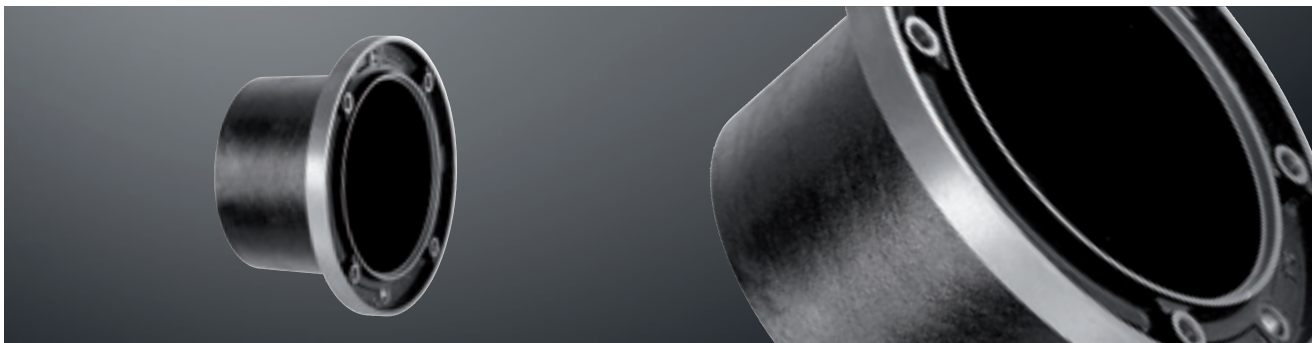
Bellousings made of aluminium with rectangular pump connections																								
IEC motor size	kW with n = 1500 rpm	Bellhousing size	Gasket DP size	Foot fl. PTFE/PTFS	Dimensions [mm]												Min.	Venting hole		Oil bleed				
					A ₁	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅ ¹⁾	C	C ₁		C ₂	B ₄	B ₉	L ₇	B ₂₀	L ₂₁	
71	0,25 0,37	PL 160/1/...	160	160	160	130	110	110	4	9	M8	70	13	8	70	91	35	20	16	27	7,5	28		
		PL 160/4/...										110											25	43
		PK 160/4/...										95											12	43
80 90S/90L	0,55 - 1,5	PL 200/1/...	200	200	200	165	130	145	4	11	M10	90	16	12	70	91	35	22	25	37	7,5	36		
		PL 200/2/...										100											45	42
		PL 250/1/...										110											45	45
100L/112M	3 4	PL 250/2/...	250	250	250	215	180	190	5	14	M12	115	18	12	120	150	53	47	36	47	7,5	43		
		PL 250/7/...										125											46	52
		PK 300/2/...										132											47	56
132S/132M	5,5 7,5	PL 300/1/...	300	300	300	265	230	234	5	14	M12	132	20	15	120	150	53	33	50	56	7,5	45		
		PK 300/2/...										137											33	59
		PL 350/1/...										171											33	73
160M/160L 180M/180L	11 - 22	PL 350/2/...	350	350	350	300	250	260	6	18	M16	181	25	15	120	156	59	33	50	73	7,5	51		
		PK 350/2/...										205											31	78

If venting holes or oil bleeds are required, please mention in your order.

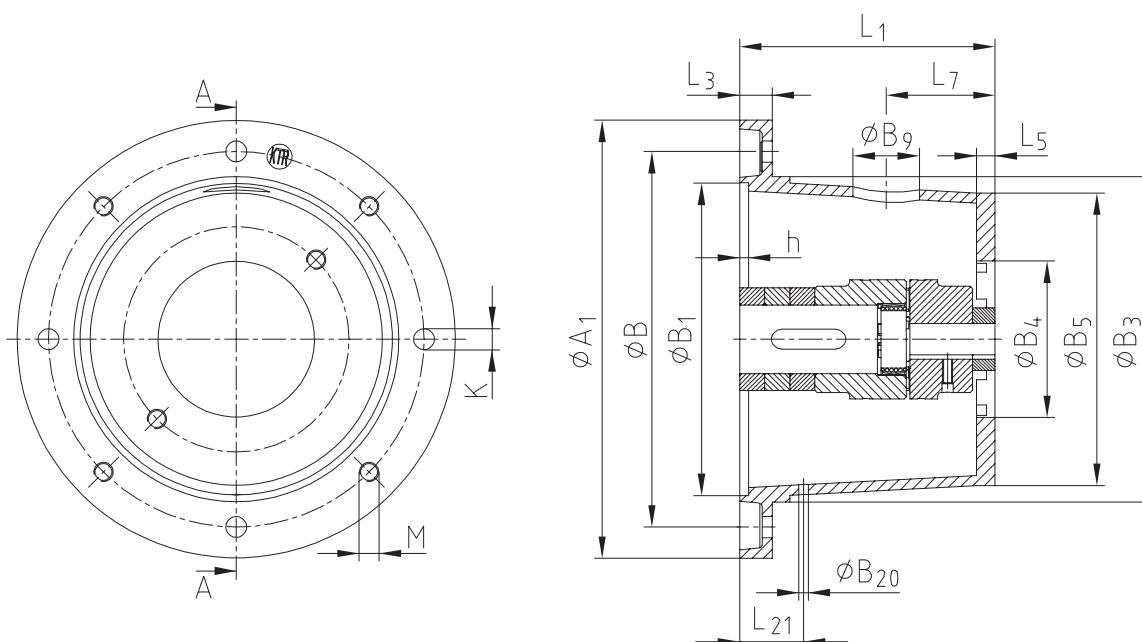
Ordering example:	PL	PK	KPT	250	2	8
		Bellhousing type, long	Bellhousing type, short	Bellhousing type made of nylon	Flange diameter of IEC motor	Serial model code

BELLHOUSINGS HYDRAULIC COMPONENTS

Bellhousings PG made of cast iron



Bellhousings made of cast iron (type PG)



Please specify in the order if the bellhousing is needed in oilproof design! (Extra charge)

Bellhousings made of cast iron																				
IEC motor size	kW w. n = 1500 rpm	Bellhousing size	Gasket DP size	Foot flange PTFE/PTFS	Dimensions [mm]															
					A ₁	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅	B ₅	min. B ₄	Venting hole		Oil bleed	
132S/132M	5,5 7,5	PG 300/5/..	300	300	300	265	230	234	5	14	M12	144	20	15	215	30	50	63	7,5	45
160M/160L 180M/180L	11 - 22	PG 350/4/..	350	350	350	300	250	260	7	17	M16	188	26	15	242	76	50	82	7,5	51
		204										235			87					
200L	30	PG 400/2/..	400	400	400	350	300	300	7	17	M16	256	26	20	280	97	50	118	7,5	51
		204										260			92					
		228										280			104					
225S/225M	37 45	PG 450/2/..	450	450	450	400	350	350	7	17	M16	234	26	24	289	97	50	107	7,5	51
		262										20		315	91			121		
250M	55, 75	PG 550/1/..	550	550	550	500	450	450	7	17	M16	265	26	25	360	97	50	125	7,5	51
		248										349			116					
280S/280M	90	PG 550/8/..	550	550	550	500	450	450	7	17	M16	248	26	25	349	97	50	116	7,5	51
		330										33			425			119		
315S/315M	110 - 160	PG 660/3/..	660	660	660	600	550	550	8	22	M20	330	32	33	425	119	50	157	7,5	60
		330										157								

NEW

If venting holes or oil bleeds are required, please mention in your order.

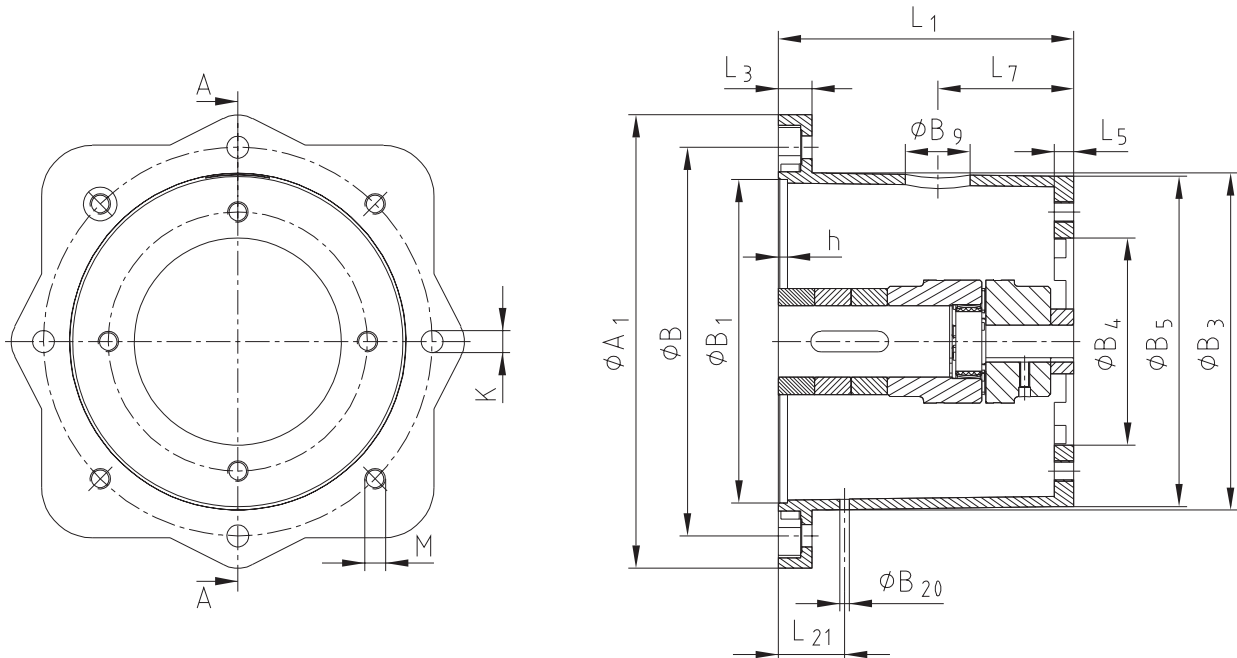
Ordering example:	PG	250	1	4
	Bellhousing type made of cast iron	Flange diameter of IEC motor	Serial model code	In-house modification code

BELLHOUSINGS HYDRAULIC COMPONENTS

Bellhousings PSG made of cast iron for servo motors



Bellhousings made of cast iron for servo motors (type PSG)



Please specify in the order if the bellhousing is needed in oilproof design! (Extra charge)

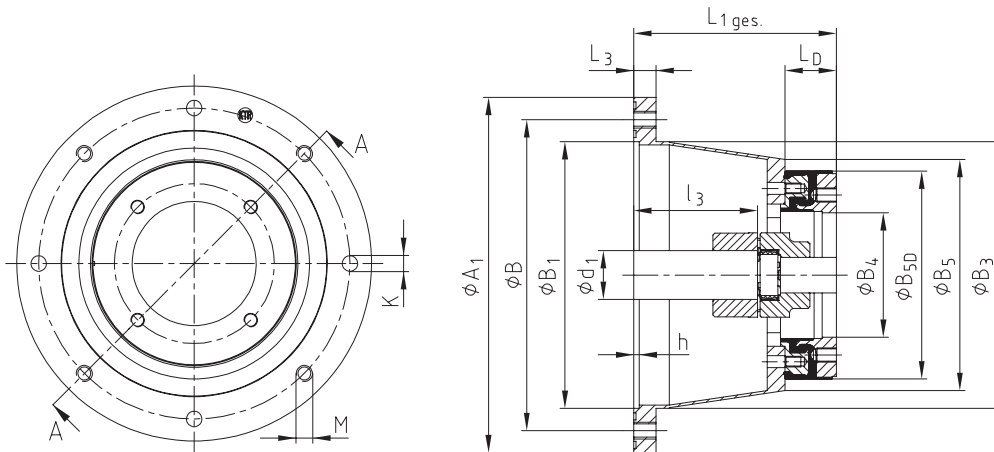
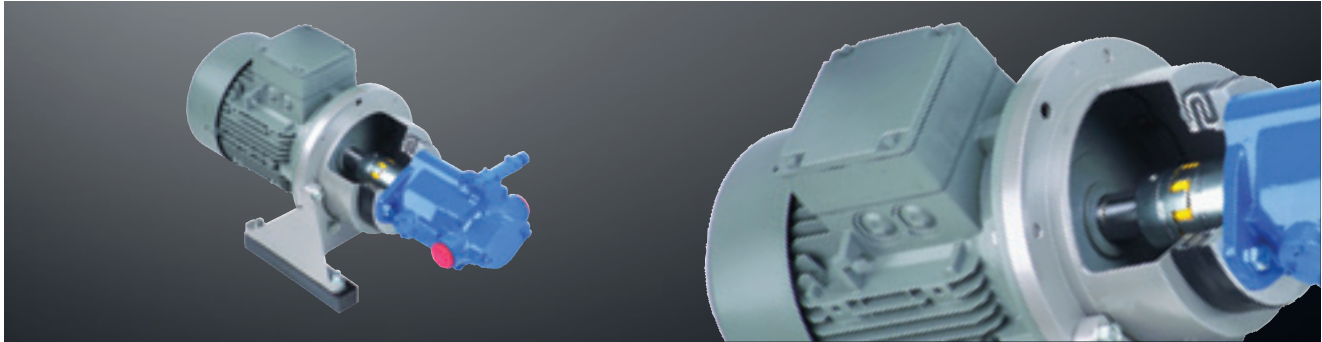
Bellhousings made of cast iron for servo motors																				
Bellhousing size	Gasket DP size	Foot flange PTFE/PTFS	Dimensions [mm]													min.	Venting hole		Oil bleed	
			A ₁	B	B ₁	B ₃	h	K	M	L ₁	L ₃	L ₅	B ₅	B ₄	B ₉		L ₇	B ₂₀	L ₂₁	
PSG 200/1/..	200	200	200	165	130	145	7	11	M10	124	16	12	170	55	36	60	7,5	36		
PSG 250/1/..	250	250	250	215	180	190	7	13,5	M12	175	19	12	225	70	40	77	7,5	43		
PSG 250/2/..	250	250	250	215	180	190	7	13,5	M12	155	19	14	180	69	40	65	7,5	43		
PSG 350/10/..	350	350	350	300	250	260	7	17,5	M16	228	26	17	255	95	50	102	7,5	51		
PSG 350/16/..	350	350	350	300	250	260	7	17,5	M16	204	26	17	350	139	50	87	7,5	51		

If venting holes or oil bleeds are required, please specify in your order.

Ordering example:	PSG	250	1	4
	Bellhousing type for servo drives	Flange diameter of IEC motor	Serial model code	In-house modification code

DAMPING RINGS HYDRAULIC COMPONENTS

Damping rings in combination with bellhousings



For IEC motor from size 225S/225M 8 tapped holes and through holes on the periphery (thread offset by 22.5° to the verticle).

Please mention in your order if a design with or without venting holes or oil bleeds, respectively, is requested
For dimensions see page 192/193.

Please specify in the order if the bellhousing is needed in oilproof design! (Extra charge)

Damping rings D in combination with bellhousings ¹⁾																						
IEC motor size (shaft end) d ₁ x l ₃	kW with n = 1500 rpm	Bellhousing size	Damping ring size	Foot flange size	Dimensions [mm]														min.		max.	
					A ₁	B	B ₁	L ₁ total	L ₃	K	M	h	L _D	B ₃	B ₄	B ₅	B _{5D}					
90S/90L (24x50)	1,1 1,5	PK 200/11/..	D 150/..	PTFL 200	200	165	130	90	16	11	M10	4	45	145	18	83	145	148				
		PL 200/11/..						100														
		PK 200/30/..						124														
100L/112M (28x60)	2,2 3	PK 250/15/..	D 150/..	PTFL 250	250	215	180	106	18	14	M12	5	45	190	18	83	187	190				
		PL 250/15/..						124														
		PK 250/17/..	145																			
		PK 250/15/..	106																			
		PL 250/15/..	124																			
		PK 250/17/..	145																			
132S/132M (38x80)	5,5 7,5	PK 300/8/..	D 150/..	PTFL 300	300	265	230	155	20	14	M12	5	45	234	30	121	231	190				
		PK 300/9/..						130														
		PL 300/9/..						144														
		PK 300/15/..						179														
		PL 300/15/..						195														
		PK 300/8/..						155														
		PK 300/9/..	130																			
		PL 300/9/..	144																			
		PK 300/15/..	183																			
		PL 300/15/..	195																			
		PK 300/8/..	168																			
		PK 300/9/..	143																			
160M/160L (42x110)	11 15	PK 350/11/..	D 150/..	PTFL 350/ PTFS 350	350	300	250	175	17	M16	6	45	260	30	121	244	190					
		PL 350/11/..						190														
		PK 350/18/..						204														
		PL 350/18/..						229														
		PK 350/18/..	175																			
		PL 350/11/..	188																			
		PK 350/18/..	204																			
		PL 350/11/..	229																			
		PK 350/11/..	188																			
		PL 350/11/..	204																			
PK 350/18/..	217																					
180M/180L (48x110)	18,5 22	PK 350/18/..	D 230/..					242														
		PL 350/18/..						252														
		PK 350/18/..	217																			
		PL 350/18/..	242																			

DAMPING RINGS HYDRAULIC COMPONENTS

Damping rings in combination with bellhousings

Damping rings D in combination with bellhousings ¹⁾																		
IEC motor size (shaft end) d ₁ x l ₃	kW with n = 1500 rpm	Bellhousing size	Damping ring size	Foot flange size	Dimensions [mm]													
					A ₁	B	B ₁	L _{1 total}	L ₃	K	M	h	L _D	B ₃	B ₄		B ₅	B _{5D}
														min.	max.			
160M/160L (42x110)	11	PK 350/11/..																
	15	PL 350/11/..					188	25										
		PK 350/18/..	D 260/..	PTFL 350/ PTFS 350	350	300	250	204	26									
180M/180L (48x110)	18,5	PL 350/18/..					217		17	M16	6	58	260	97	143	252	264	
	22	PL 350/48/98					242	25										
								247										
200L (55x110)	30	PL 400/3/..					210									290		
		PK 400/12/..	D 190/..				215					45		30	121		190	
		PL 400/12/..					229											
	30	PK 400/12/..	D 230/..	PTFS 400	400	350	300	228	20	17	M16	6		300		143	260	
		PL 400/12/..					242											
		PK 400/12/..					228						58		97			264
		PL 400/12/..	D 260/..				242									164		
		PL 400/12/98				247												
225S/225M (60x140)	37	PL 450/5/94	D 190/..				230						45		30	121	325	190
		PK 450/12/94					249										260	
		PL 450/5/96					243										325	
	45	PK 450/6/96	D 230/..				234									143	260	234
		PK 450/12/96		PTFS 450	450	400	350	262	25	17	M16	6	58		97		260	
		PK 450/5/98					243										325	
		PK 450/6/98	D 260/..				234									164	260	265
		PK 450/12/98				262												
		PL 450/5/..	D 330/..				268					83		120	208	325	330	
250M (65x140)	55	PK 550/4/94	D 190/..				237										355	
		PL 550/4/94					252					45		30	121	330	190	
		PK 550/8/94					262										340	
	55	PK 550/4/96					248										355	
		PL 550/4/96	D 230/..				265									143	330	234
	75	PK 550/8/96		PTFS 550	550	500	450	275	26	17	M16	6	58	450	97		340	
		PK 550/4/98					248										355	
PL 550/4/98		D 260/..				265									164	330	264	
PK 550/8/98						275										340		
90	PK 550/4/..					275										355		
	PL 550/4/..	D 330/..				290						83		120	208	330	330	
	PK 550/8/..					300										340		
315S/315M (80x170)	110	PK 660/3/98	D 260/..				310					58		97	164	500	264	
	132	PL 660/3/98					318									340		
	160	PK 660/3/..	D 330/..	PTFS 660	660	600	550	330	32	22	M20	8	83	550	120	208	500	330
200		PL 660/3/..					343									340		
		PK 660/3/..	D 125/..				372					125		260	320	500	484	

¹⁾ Preferred combinations with short bellhousings, other combinations on request (see page 192 and 193), Phone: +49 5971 798-0

* Passing from dimension B₃ to flange radius R=5

● Make sure your power pack provides for a separation of piping, e. g. by hoses or elastic flanges (see page 201). ● As another measure for noise reduction we recommend to use damping rods (from page 25) or DT/DTV rings (see page 24).

For the detailed order designation please refer to our PC/Internet selection programme or specify the IEC motor size and detailed pump type for selection.

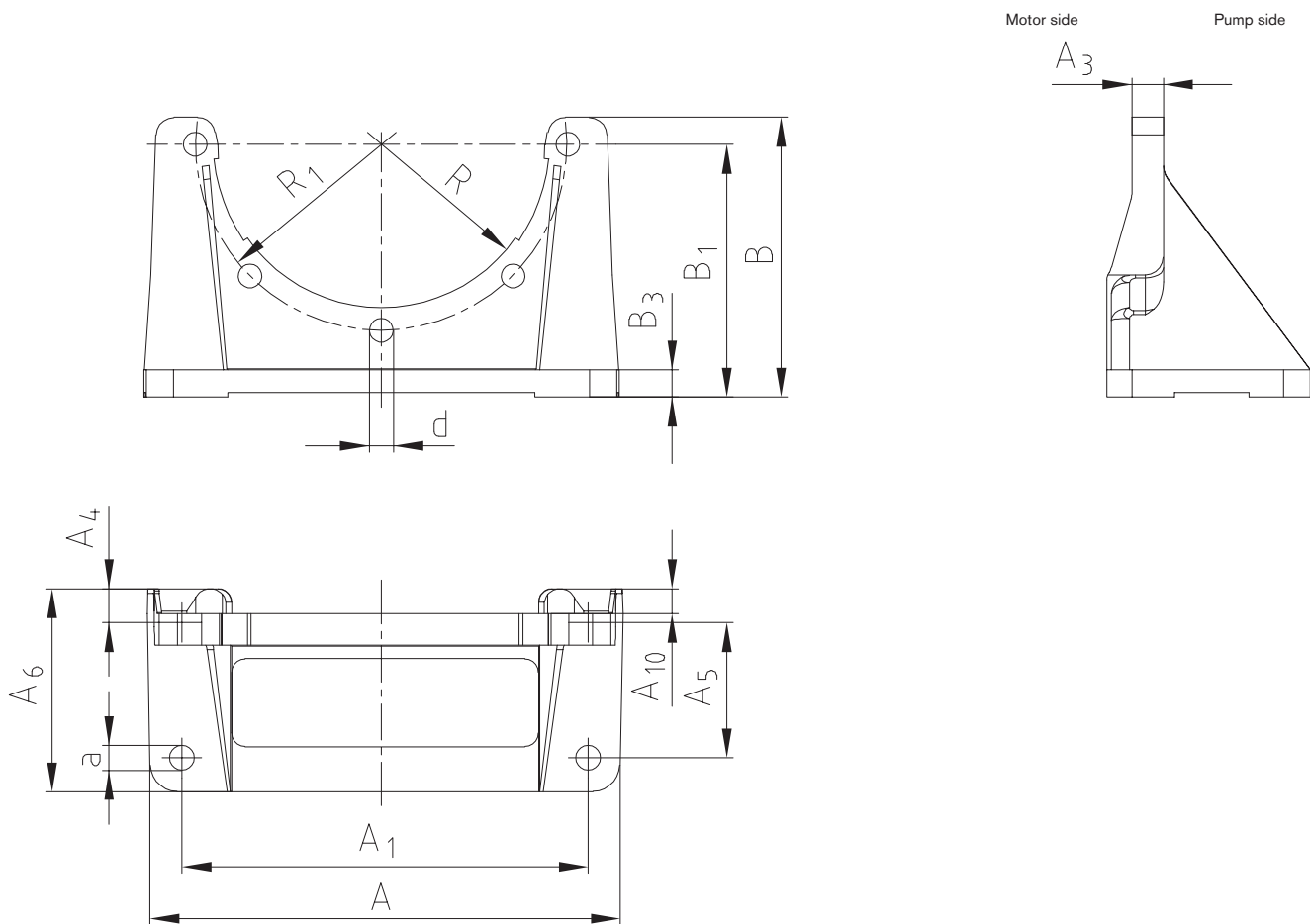
Ordering example:	PL	PK	250	15	92	D	150	23
	Bellhousing type, long	Bellhousing type, short	Flange diameter of IEC motor	Serial model code	In-house modification code	Damping ring	Size	In-house modification code

FOOT FLANGES PTFL HYDRAULIC COMPONENTS

Foot flange PTFL



Foot flange PTFL*



*according to VDMA standard 24561 part 1

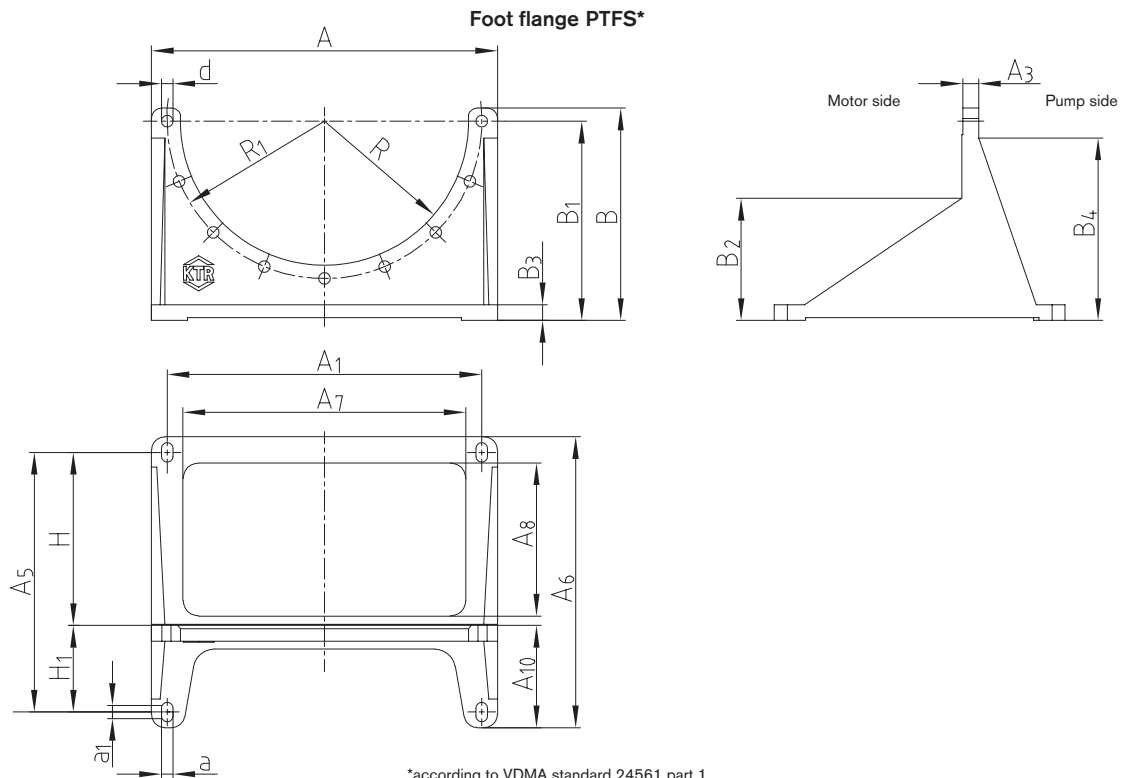
Foot flange type PTFL made of aluminium (Al)															
Foot flange size	For bellhousing size	Dimensions [mm]													
		A	A ₁	A ₃	A ₆	A ₄	A ₅	A ₁₀	B	B ₁	B ₃	R	R ₁	d	a
PTFL 160	160	160	140	12	80	15	50	8	110	100	10	55	65	9	9
PTFL 200	200	210	180	14	90	15	60	11	124	112	12	72,5	82,5	11	11
PTFL 250	250	250	220	16	97	21	60	-	145	132	15	95	107,5	13	13
PTFL 300	300	290	260	18	116	20	80	-	175	160	18	117	132,5	13	13
PTFL 350	350	340	300	20	150	20	110	-	195	180	22	130	150	18	16

In order to obtain the full loading capacity of the foot flanges all existing fastening bores have to be screwed up with the bellhousing!

Ordering example:	PTFL	350	Al
	Foot flange type	Size	Material

FOOT FLANGES PTFL HYDRAULIC COMPONENTS

Foot flange PTFS



Foot flange type PTFS made of aluminium (Al)

Foot flange size	For bellhousing size	Dimensions [mm]																			
		A	A ₁	A ₃	A ₅	A ₆	A ₇	A ₈	A ₁₀	B	B ₁	B ₂	B ₃	B ₄	R	R ₁	a	a ₁	d	H	H ₁
PTFS 250	250	250	215	18	185	230	190	127	82	165	155	120	16	150	95	107,5	14	10	14	125	60
PTFS 300	300	300	265	20	225	270	240	152	92	200	185	149	19	184	117	132,5	14	10	14	150	75
PTFS 350	350	350	300	25	265	305	260	160	110	252	235	188	18	228	130	150	18	12	18	175	90
PTFS 400	400	400	350	20	300	350	300	185	125	277	260	193	20	241	150	175	18	12	18	200	100
PTFS 450	450	450	400	25	335	385	350	207	138	312	295	232	20	290	175	200	18	12	18	225	110

Foot flange type PTFS made of nodular iron (GJS)

Foot flange size	For bellhousing size	Dimensions [mm]																			
		A	A ₁	A ₃	A ₅	A ₆	A ₇	A ₈	A ₁₀	B	B ₁	B ₂	B ₃	B ₄	R	R ₁	a	a ₁	d	H	H ₁
PTFS 200 GGG	200	200	165	12	150	185	130	85	68	138	125	90	15	120	72,5	82,5	11	8	11,5	100	50
PTFS 250 GGG	250	250	215	17	185	230	190	—	82	165	155	120	15	150	95	107,5	14	10	14	125	60
PTFS 350 GGG	350	350	300	20	265	305	260	160	110	252	235	193	22	232	130	150	18	12	18	175	90
PTFS 400 GGG	400	405	350	20	300	350	300	192	125	277	260	220	22	175	150	175	18	12	18	200	100
PTFS 450 GGG	450	450	400	25	335	385	350	214	138	312	295	234	22	290	175	200	18	12	18	225	110
PTFS 550 GGG	550	550	500	25	415	465	440	240	165	370	350	233	25	318	225	250	18	12	18	275	140
PTFS 660 GGG	660	660	600	30	495	555	540	292	195	405	380	233	30	348	275	300	22	15	22	330	165

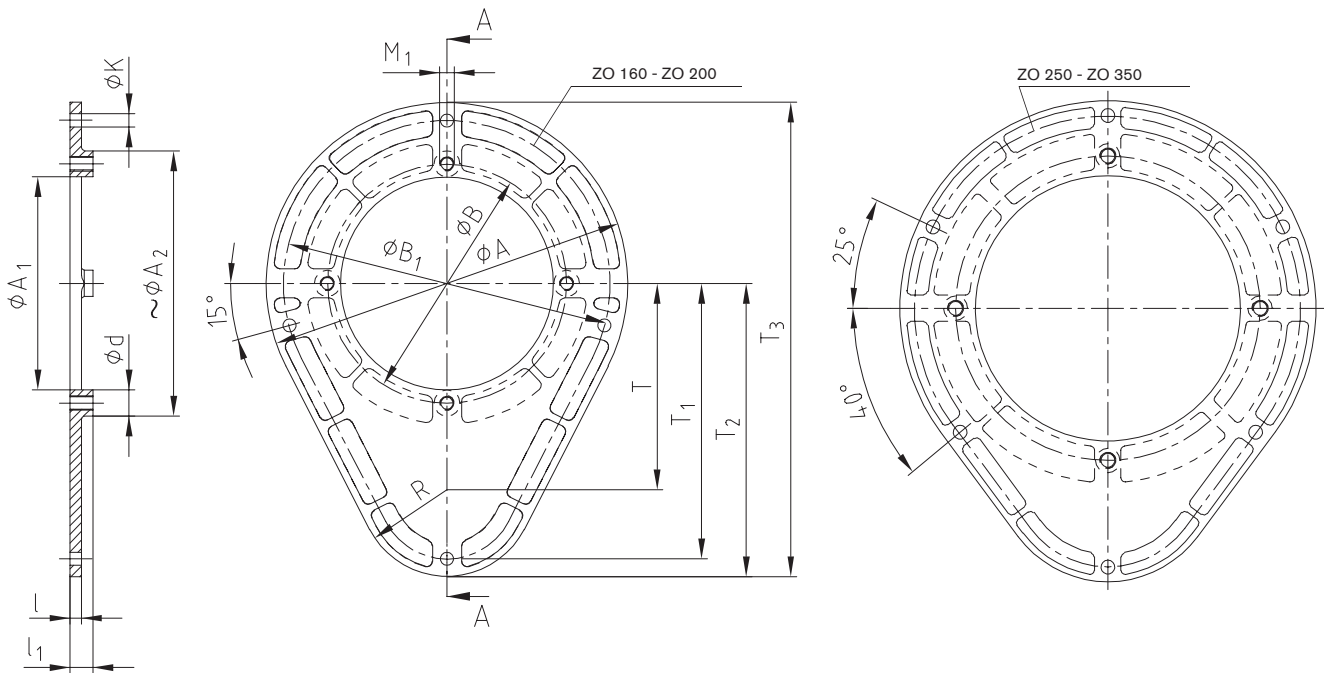
PTFS 800 made of steel on request

In order to obtain the full loading capacity of the foot flanges all existing fastening bores have to be screwed up with the bellhousing!

Ordering example:	PTFL	350	Al
	Foot flange design	Size	Material

ACCESSORIES FOR BELLHOUSINGS HYDRAULIC COMPONENTS

Mounting flange type ZO



Mounting flange type ZO																	
Size	Dimensions [mm]															Gasket DZ size	Gasket DP size
	A	A ₁	~A ₂	B	B ₁	K	M ₁	R	T	T ₁	T ₂	T ₃	d	l	l ₁		
ZO 160	210	112	150	130	185	9	M8	60	97,5	145	157,5	262,5	18	7	15	DZ 160	DP 160
ZO 200	250	147	187	165	225	9	M10	60	142,5	190	202,5	327,5	18	8	16	DZ 200	DP 200
ZO 250	300	192	239	215	275	9	M12	60	142,5	190	202,5	352,5	20	8	16	DZ 250	DP 250
ZO 300	360	236	289	265	330	14	M12	60	150	225	240	420	20	10	18	DZ 300	DP 300
ZO 350	410	262	332	300	380	14	M16	110	160	255	270	475	24	12	20	DZ 350	DP 350

Ordering
example:

ZO 300

Mounting flange size

ACCESSORIES FOR BELLHOUSINGS HYDRAULIC COMPONENTS

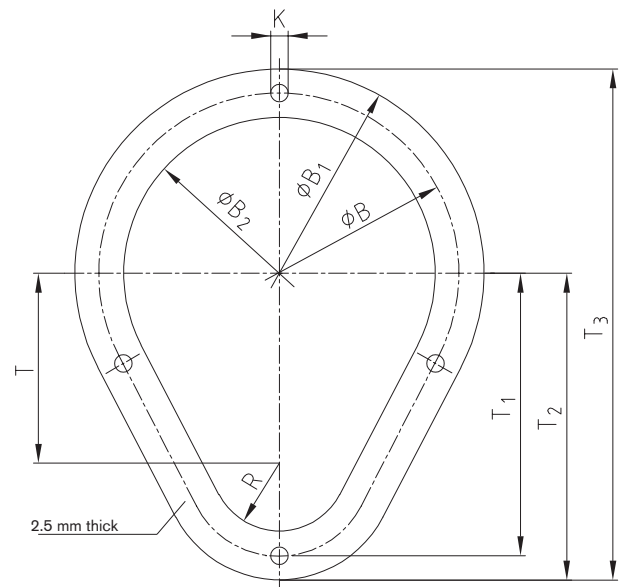
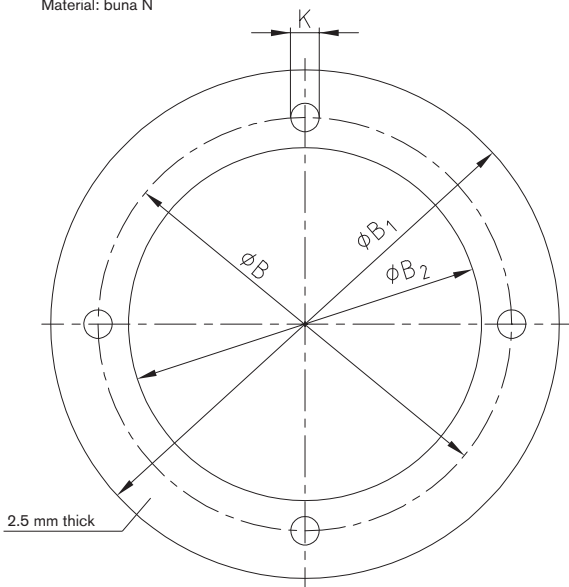
Gaskets DP and DZ for mounting flange ZO



Gasket DP

Gasket DZ

Material: buna N



Gaskets for bellhousings and mounting flanges

Size	Dimensions [mm]								
	B	B ₁	B ₂	T	T ₁	T ₂	T ₃	K	R
DP 160	130	160	111	–	–	–	–	4 x 9	–
DP 200	165	200	146	–	–	–	–	4 x 11	–
DP 250	215	250	191	–	–	–	–	4 x 13	–
DP 300	265	300	235	–	–	–	–	4 x 13	–
DP 350	300	350	261	–	–	–	–	4 x 17	–
DP 400	350	400	301	–	–	–	–	4 x 17	–
DP 450	400	450	351	–	–	–	–	4 x 17	–
DP 550	500	550	451	–	–	–	–	4 x 17	–
DZ 160	185	210	160	97,5	145	157,5	262,5	4 x 9	35
DZ 200	225	250	200	142,5	190	202,5	327,5	4 x 9	35
DZ 250	275	300	250	142,5	190	202,5	352,5	6 x 9	35
DZ 300	330	360	300	150	225	240	420	6 x 14	60
DZ 350	380	410	350	160	255	270	475	6 x 14	80

Ordering
example:

DP 300

Type and size of gasket

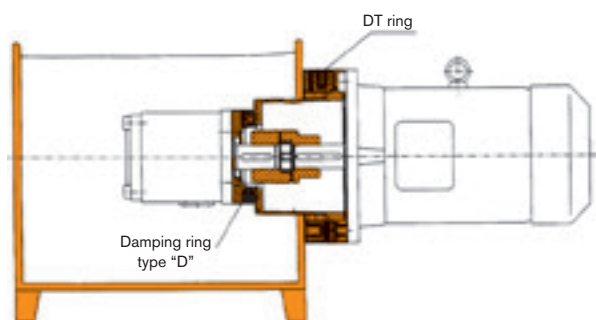
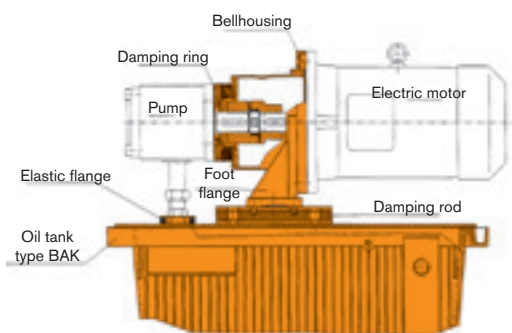
DAMPING ELEMENTS HYDRAULIC COMPONENTS

Damping elements



KTR has a sound measuring room integrated in the R + D test center allowing for low-reflecting testing conditions. Comparative measurements are performed on a realistic hydraulic power pack to test and optimize the efficiency of KTR damping elements. In addition to stationary measuring in the laboratory the efficiency of the damping measures used can be proven locally.

Examples of application



Potential noise reductions compared to the rigid arrangement:

- | | |
|--|------------|
| a) Damping ring only: | 3 – 6 dBA |
| b) Damping rod only: | 3 – 4 dBA |
| c) Damping ring and damping rod: | 6 – 8 dBA |
| d) Damping ring, damping rod and elastic flange: | 7 – 10 dBA |
| e) Damping ring type DT/DTV: | 3 – 6 dBA |
| f) DT/DTV damping ring and damping ring: | 6 – 8 dBA |

Efficiency:

The efficiency of the KTR damping elements is based on the reflection of the structure-borne noise vibrations by means of the vulcanized, non-prestressed rubber layer in the acoustic frequency range from about 200 Hz. The reduction of the structure-borne noise vibrations causes a reduced radiation of the airborne noise produced by the power pack.

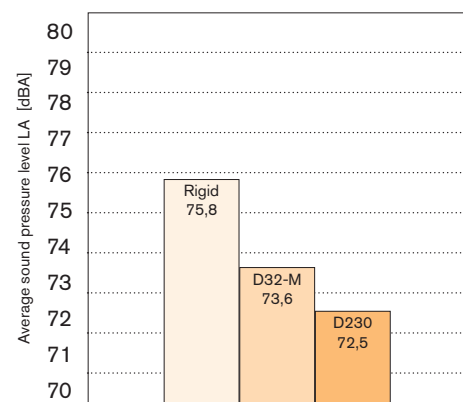
Result of a noise measurement

Test data:

Electric motor: Rotary current asynchronous 180M
18,5 kW, n = 1450 rpm
type B 3 / B 5

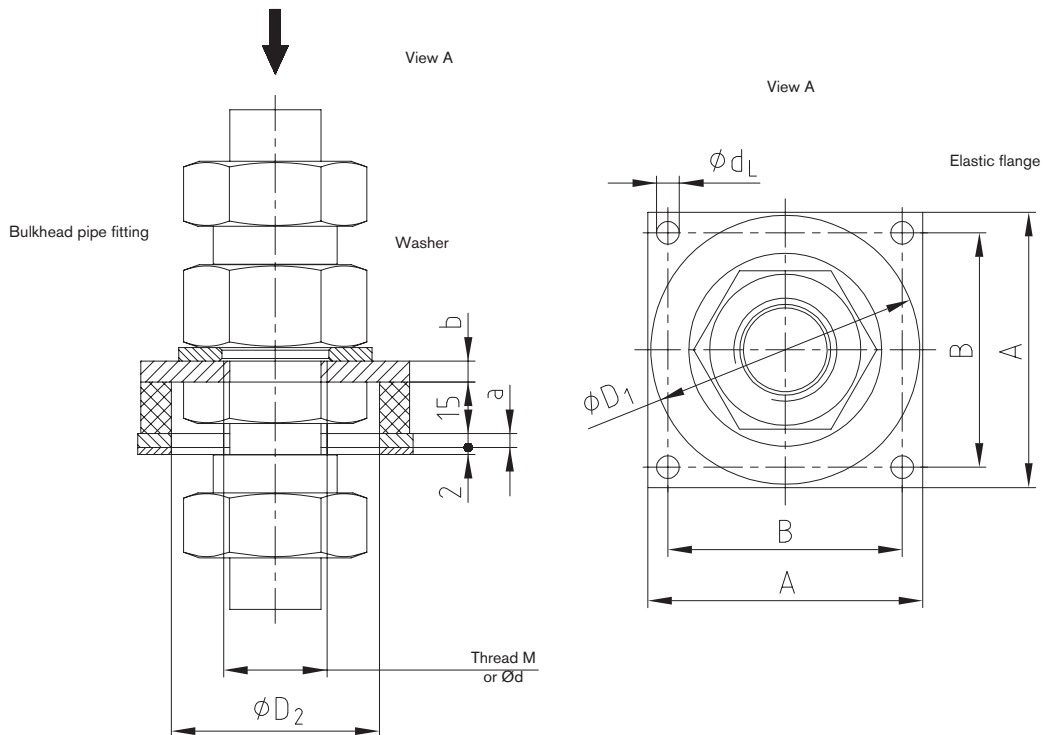
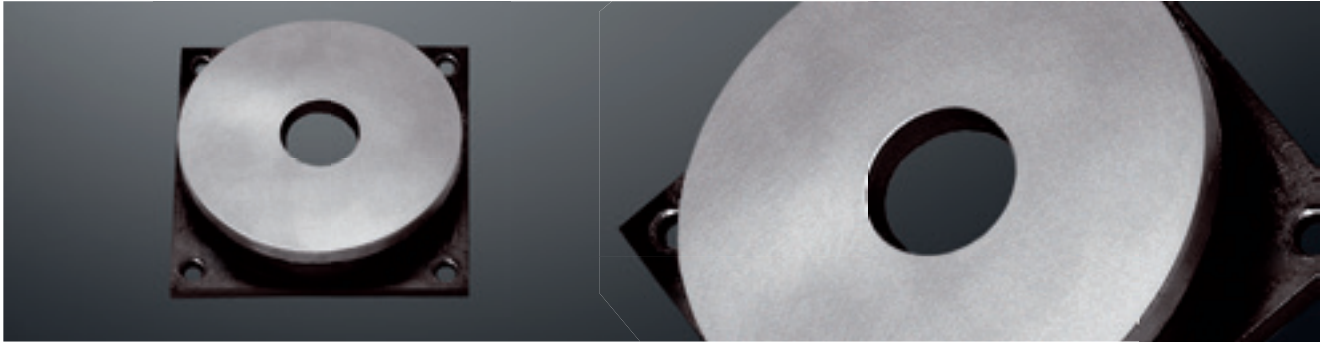
Pump: Axial piston pump

Coupling: ROTEX® 42 - 92 Shore A



DAMPING ELEMENTS HYDRAULIC COMPONENTS

Elastic flange



Elastic flange												
Size	Elastic flange				Bulkhead pipe fitting *)				Comment			
	A	B	a	b	D ₁	D ₂	d _L	Type L light-weight		Type S heavy-weight	Thread M	Pilot bore for Ød
80-2.11								SV 28-L	SV 25-S	M36 x 2	Ø34	
80-2.10								SV 22-L	SV 20-S	M30 x 2	Ø28	
80-2.9								SV 18-L	–	M26 x 1,5	Ø24,5	
80-2.8								–	SV 16-S	M24 x 1,5	Ø22,5	
80-2.7								SV 15-L	–	M22 x 1,5	Ø20,5	
80-2.6	80	68	4	6	78	60	6,6	–	SV 12-S	M20 x 1,5	Ø18,5	
80-2.5								SV 12-L	SV 10-S	M18 x 1,5	Ø16,5	
80-2.4								SV 10-L	SV 8-S	M16 x 1,5	Ø14,5	
80-2.3								SV 8-L	SV 6-S	M14 x 1,5	Ø12,5	
80-2.2								SV 6-L	–	M12 x 1,5	Ø10,5	
80-2.1								–	–	–	Ø10	Standard design
100-2.5								SV 42-L **)	SV 38-S **)	M52 x 2	Ø50	
100-2.4								–	SV 30-S	M42 x 2	Ø40	
100-2.3	100	82	5	8	95	65	9	SV 28-L	SV 25-S	M36 x 2	Ø34	
100-2.2								SV 22-L	SV 20-S	M30 x 2	Ø28	
100-2.1								–	–	–	Ø25	Standard design
130-2.4								SV 42-L	SV 38-S	M52 x 2	Ø50	
130-2.3								SV 35-L	–	M45 x 2	Ø43	
130-2.2	130	110	6	10	125	95	9	–	SV 30-S	M42 x 2	Ø40	
130-2.1								–	–	–	Ø35	Standard design

■ Available from stock

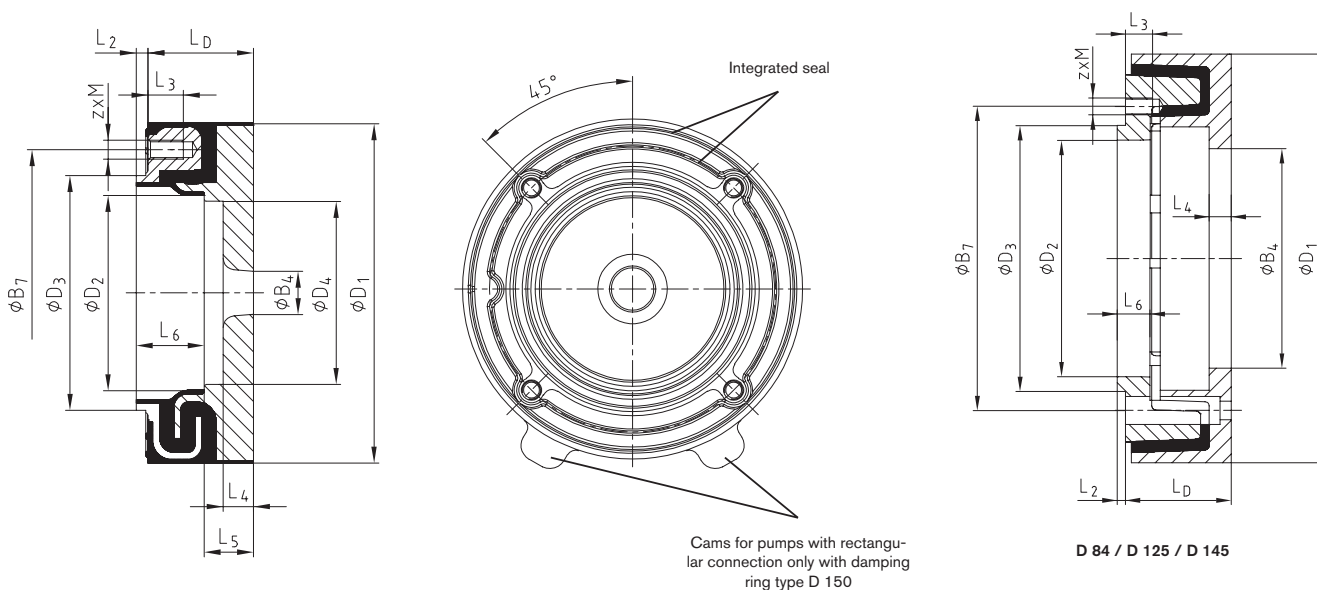
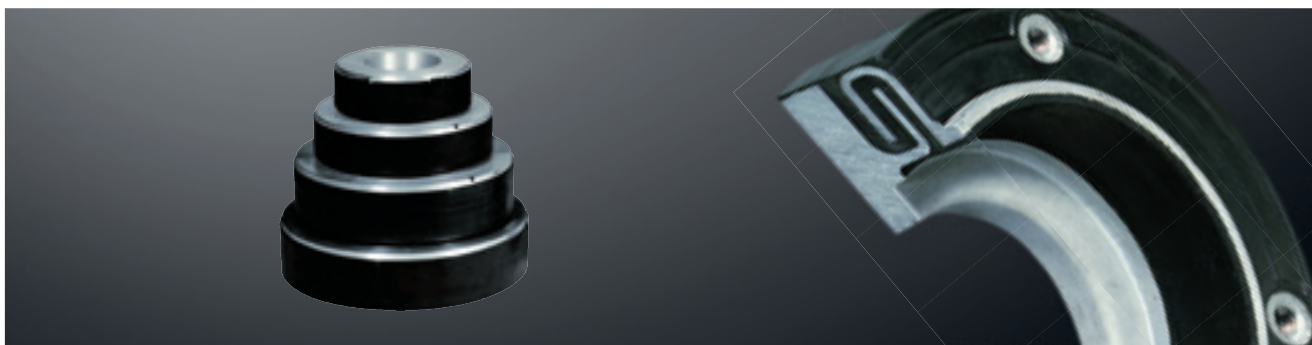
*) Bulkhead pipe fitting and washer do not form part of our scope of delivery.

**) Counter nut cannot be assembled!

Ordering example:	ERD	100 – 2.3	
	Elastic flange	Size	Finish bore with thread M36 x 2

DAMPING ELEMENTS HYDRAULIC COMPONENTS

Damping ring type D



D 84 / D 125 / D 145

Damping ring type D														
Size	Dimensions [mm]													
	B4		B7	D1	D2	D3	D4	LD	L2	L3	L4	L5	L6	z x M ²⁾
	min.	max.												
D 150/..	18	83	122	148	83	100	78	45	5	15	13	16	30	4 x M8
D 190/..	30	121	150	190	116	130	100	45	5	15	14	18	33	4 x M10
D 230/..	97	143	195	234	143	160	136	58	5	18	17	23	47	4 x M12
D 260/..	97	164	210	264	164	180	156	58	4	20	18	23	46	4 x M16
D 330/..	120	208	264	330	208	220	201	83	6	35	23	28	64	4 x M20
D 84/..A	147	224	280	364	210	224	-	83	5	35	25	25	18	4 x M20
D 84/..C														
D 125/..A	260	320	360	484	285	315	-	125	10	33	25	25	40	M20 ³⁾
D 145/..A	390	400	¹⁾	590	370	400	-	145	12	45	35	35	47	M24 ³⁾

¹⁾ Pitch circle diameter on request.

²⁾ Tightening torque of screw quality 5.6.³⁾ Number of fixing holes on request.

Permissible radial and axial weight of damping rings based on an ambient temperature of + 60 °C								
Distance of center of gravity for radial load L [mm]	D 150	D 190	D 230	D 260	D 330	D 84	D 125	D 145
	100	100	100	200	200	200	250	250
Perm. weight F _{max.} [N]	650	1800	3000	2300	4100	4000	6000	10000

With a modified distance of center of gravity L_X the permissible weight load is converted. If L_X < L, F_{perm.} = F_{perm.}

$$F_{perm.} = F_{max.} \cdot L / L_X \quad [N]$$

The permissible weight load F_{perm.}, must not be exceeded by the existing weight load F_G (neither radially nor axially).

Ordering example:	D	230	14
	Damping ring	Size	In-house modification code

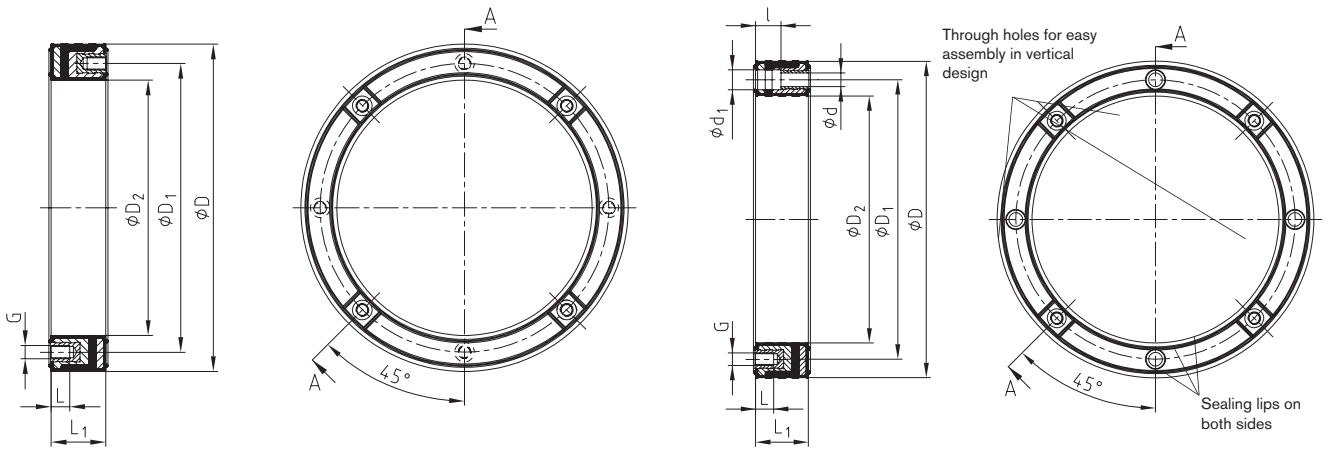
DAMPING ELEMENTS HYDRAULIC COMPONENTS

Damping rings type DT and DT.../2

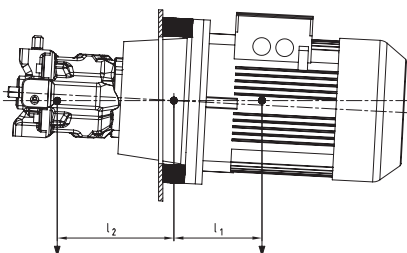


Damping ring type DT

Damping ring type DT.../2



Damping ring type DT (patent pending) and DTV											
IEC motor size	Damping ring size	Dimensions [mm]									Screw tightening torque [Nm]
		D	D ₁	D ₂	z x G	L	L ₁	z x d	z x d ₁	l	
71	DTV 160	160	130	111	4 x M8	16,5	35	4 x 9	4 x 14,5	18	12
80, 90S / 90L	DT 200	200	165	145,2	4 x M10	20	40	4 x 11	4 x 17,5	20	23
100L / 112M	DT 250	250	215	191	4 x M12	17,5	45	4 x 13	4 x 19,5	22	40
132S / 132M	DT 300	300	265	235	4 x M12	17,5	50	4 x 13	4 x 19	24	40
160M / 160L, 180M / 180L	DT 350	350	300	261	4 x M16	31	60	4 x 17	4 x 25	26	100
200L	DT 400	400	350	301	4 x M16	31	70	4 x 17	4 x 25	31	100
225S / 225M	DT 450	450	400	351	8 x M16	31	80	8 x 17	8 x 25	41	100
250M, 280S / 280M	DT 550	550	500	451	8 x M16	30	68	8 x 17	8 x 25	23	210
315S / 315M	DT 660	660	600	551	8 x M20	30	68	8 x 22	8 x 33	23	410
355	DTV 800	800	740	681	8 x M20	25	71	-	-	-	410



Permissible radial weight and bending load of damping rings type DT based on an operating temperature of + 60 °C								
DT size	200	250	300	350	400	450	550	660
F _{perm.} [N]	370	720	1450	3600	4800	6600	13000	24000
M _{b perm.} [Nm]	30	65	175	740	1100	1600	4400	9000

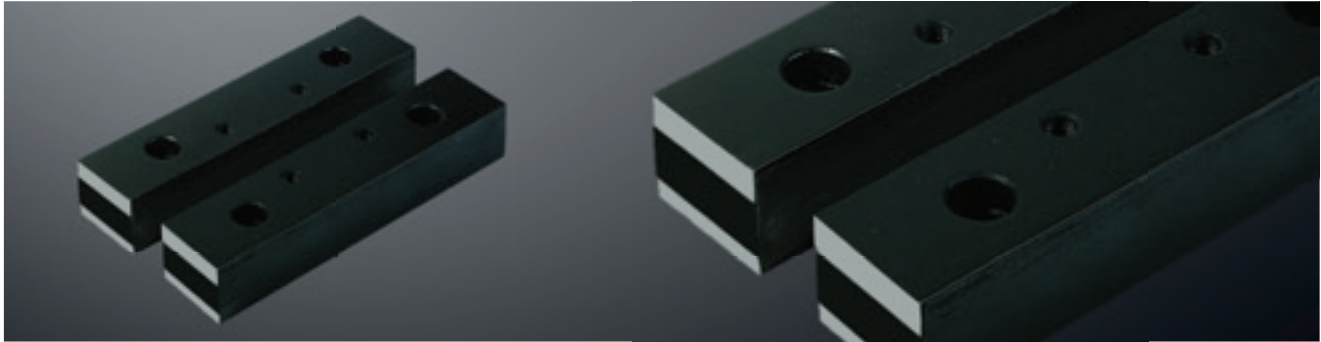
$$F_{perm.} \geq F_P + F_M$$

$$M_b perm. \geq F_M \cdot l_1 - F_P \cdot l_2$$

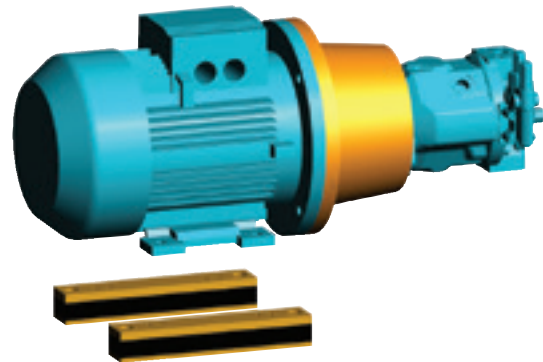
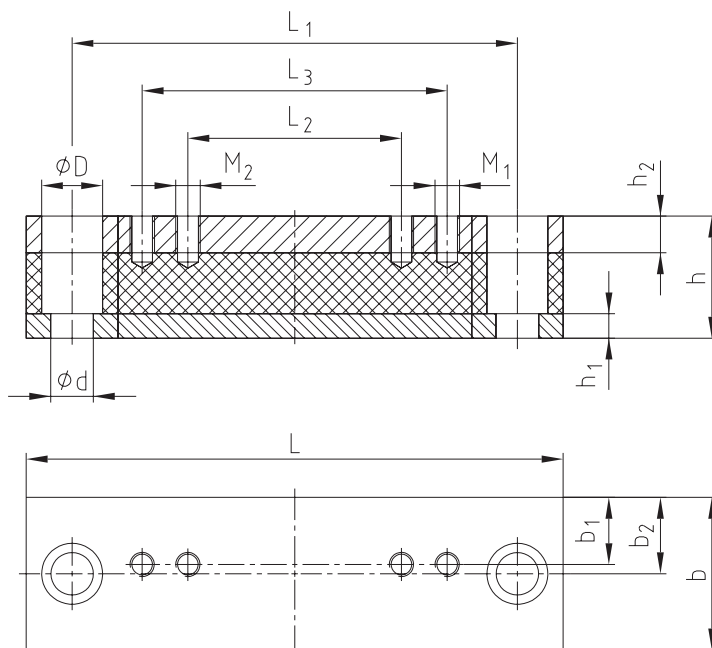
Ordering example:	DT	250
	Damping ring	Size

DAMPING ELEMENTS HYDRAULIC COMPONENTS

Damping rods type DSM



Type DSM



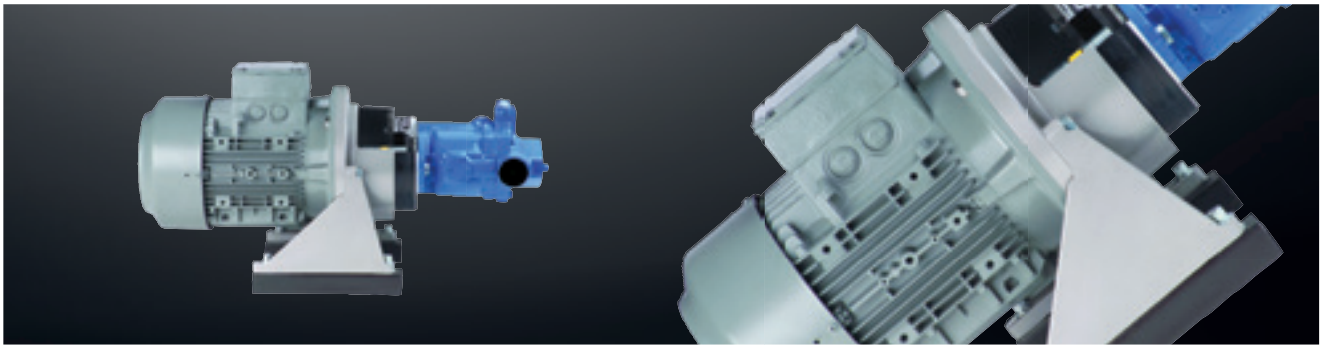
Damping rods type DSM for electric motors type IMB 35, protection IP 54															
Damping rod size	For motor size	Dimensions [mm]													
		L	L ₁	L ₂	L ₃	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M ₁	M ₂
DSM 71	71	196	156	90		40	8	12	50	21	25	14	20	M6	
DSM 80	80	176	146	100		40	8	12	50	22	25	14	20	M8	
DSM 90 S	90 S	196	156	100		40	8	12	50	24,5	25	14	20	M8	
DSM 90 L	90 L	240	205	125		40	8	12	50	24	25	14	20	M8	
DSM 100 L/112 M	100 L/112 M	240	205	140		40	8	12	50	22	25	14	20	M10	
DSM 132 S/132 M	132 S/132 M	280	245	140	178	45	8	12	50	20	25	14	20	M10	M10
DSM 160 M	160 M	340	300	210		60	15	15	70	28	35	18	26	M12	
DSM 160 L	160 L	416	370	254		60	15	15	70	28	35	18	26	M12	
DSM 180 M	180 M	416	370	241		60	15	15	70	35	35	18	26	M12	
DSM 180 L	180 L	446	400	279		60	15	15	70	35	35	18	26	M12	
DSM 200 L	200 L	492	430	305		60	15	15	70	35	35	22	33	M16	
DSM 225 S	225 S	492	430	286		60	15	15	70	35	35	22	33	M16	
DSM 225 M	225 M	492	445	311		60	15	15	70	35	35	22	33	M16	
DSM 250 M	250 M	492	445	349		60	15	15	100	50	50	22	33	M20	
DSM 280 S/280 M	280 S/280 M	614	570	368	419	60	15	15	100	50	50	22	33	M20	M20
DSM 315 S/315 M	315 S/315 M	614	570	406	457	60	15	15	120	60	60	22	33	M24	M24
DSM 315 L	315 L	704	660	508		60	15	15	120	60	60	22	33	M24	

Other sizes on request.

Ordering example:	DSM	100 L/112 M
	Damping rod	Size

DAMPING ELEMENTS HYDRAULIC COMPONENTS

Damping rods type DSFI, DSFS and DSK



Damping rods type DSFL for foot flange type PTFL

Damping rod size	For foot flange	Dimensions [mm]											
		L	L ₁	L ₂	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M
DSFL 160	PTFL 160	176	130	50	40	8	12	50	10	25	14	20	M8
DSFL 200	PTFL 200	176	130	60	40	8	12	50	15	25	14	20	M10
DSFL 250	PTFL 250	230	140	60	40	8	12	50	15	25	14	20	M12
DSFL 300	PTFL 300	270	170	80	40	8	12	50	15	25	14	20	M12
DSFL 350	PTFL 350	305	200	110	60	15	15	70	25	35	18	26	M16

Damping rods type DSFS for foot flange type PTFS

Damping rod size	For foot flange	Dimensions [mm]												
		L	L ₁	L ₂	L ₃	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M1/2
DSFS 200L	PTFS 200	245	205	150	-	40	8	12	50	19	25	13	20	M10
DSFS 250	PTFS 250	240	140	185		40	8	12	50	17,5	25	13	20	M12
DSFS 250/300L	PTFS 250/300	340	300	185	225	40	8	12	50	17,5	32,5	13	20	M12
DSFS 300	PTFS 300	280	180	225		40	8	12	50	17,5	25	13	20	M12
DSFS 350	PTFS 350	325	200	265		60	15	15	70	25	35	17	26	M16
DSFS 350/400L	PTFS 350/400	430	390	265	300	60	15	15	70	25	45	18	26	M16
DSFS 400	PTFS 400	350	234	300		60	15	15	70	25	35	17	26	M16
DSFS 450	PTFS 450	385	270	335		60	15	15	70	25	35	17	26	M16
DSFS 550	PTFS 550	490	350	415		60	15	15	100	25	50	18	26	M16
DSFS 660	PTFS 660	635	415	495		60	15	15	100	30	50	22	33	M20

Damping rods type DSK for bellhousings type PIK with integrated oil cooler with feet

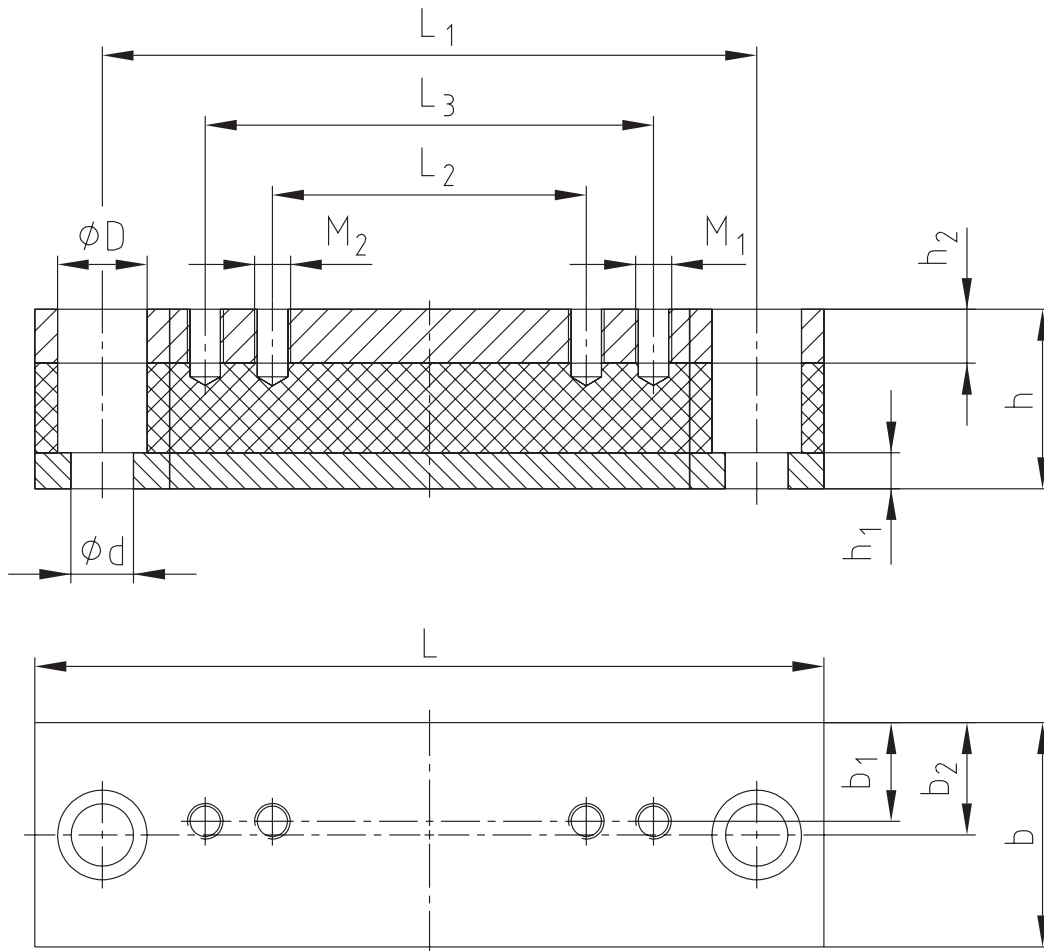
Damping rod size	For cooler size	Dimensions [mm]											
		L	L ₁	L ₂	h	h ₁	h ₂	b	b ₁	b ₂	d	D	M
DSK 200	PIK 200	240	210	154,5	40	8	12	50	25	25	14	20	M12
DSK 250	PIK 250	270	240	175,5	40	8	12	50	25	25	14	20	M12
DSK 300	PIK 300	280	250	199,5	45	8	12	50	25	25	14	20	M12
DSK 350	PIK 350	325	295	243,5	60	15	15	70	35	35	14	20	M12



- Damping rods reduce the noise level and dampen vibrations
- Special lengths or types available on request
- Damping rods are made of natural rubber (NR)
- Thrust loading (V1) not permissible
- Available from stock

Ordering example:

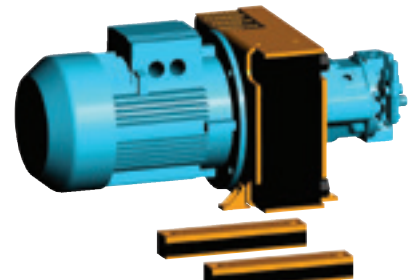
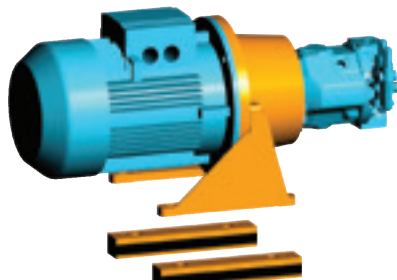
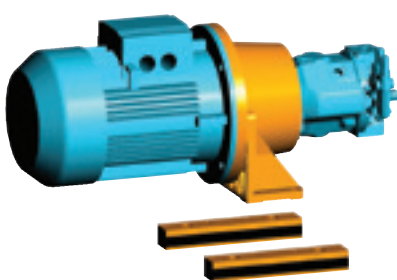
DSFS	300
Damping rod	Size



Type DSFL

Type DSFS

Type DSK



Oil/air coolers type OAC

Cooling systems

High-performance cooling of hydraulic and lubricating oils



A compact and high-performance cooler series comprising twelve sizes was developed for high-performance cooling of hydraulic and lubricating oils.

Applications

- Construction machines
- Agricultural machines
- Rail technology
- Machine tools
- Hydraulic power packs
- Wind power
- Hydraulic presses
- Iron and steel industry etc.

Applicable for cooling of:

- Hydraulic oil
- Gear oil
- Lubricating grease
- Water-glycol (min. 40 % glycol)

Structure

- Cooler core (plate and bar) made of aluminium with industrial lamina in black (RAL 9005)
- Fan cover made of steel in black (RAL 9005)
- Fan made of nylon PAG
- Protective grid made of steel in black (RAL 9005)
- Fan 12 V/24 V IP68, 230V/400V, 400V/690V, IP55
- Fan with hydraulic drive

Marine design:

- Refrigerating grid coated via KTL immersion process
- Frame, fan cover, protection grid coated by KTL
- Electric motor with special painting and protection IP56

ATEX design:

- Electric motor in ATEX design  II 2 G Exell T3
- Special fan

Accessories, protective grid, TSC

- Thermal bypass valves, oil temperature valves OTV, see page 26/27

The OAC coolers have to be protected from direct solar radiation.

Selection system

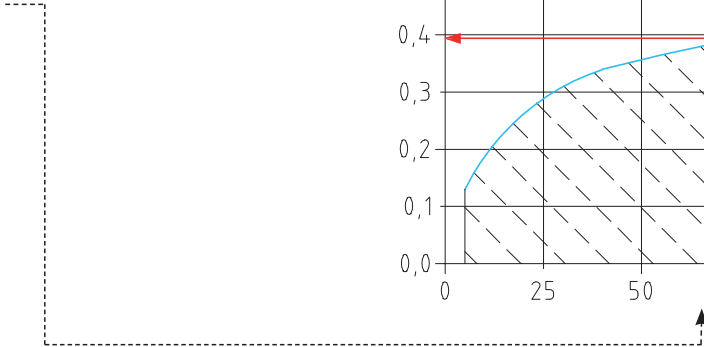
To select the suitable cooler you need to know the following details:

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

Difference of inlet temperature 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

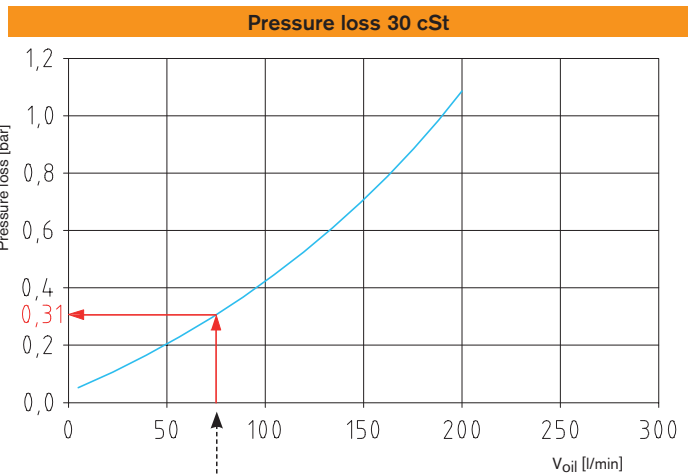
The effective pressure loss is calculated as follows:

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

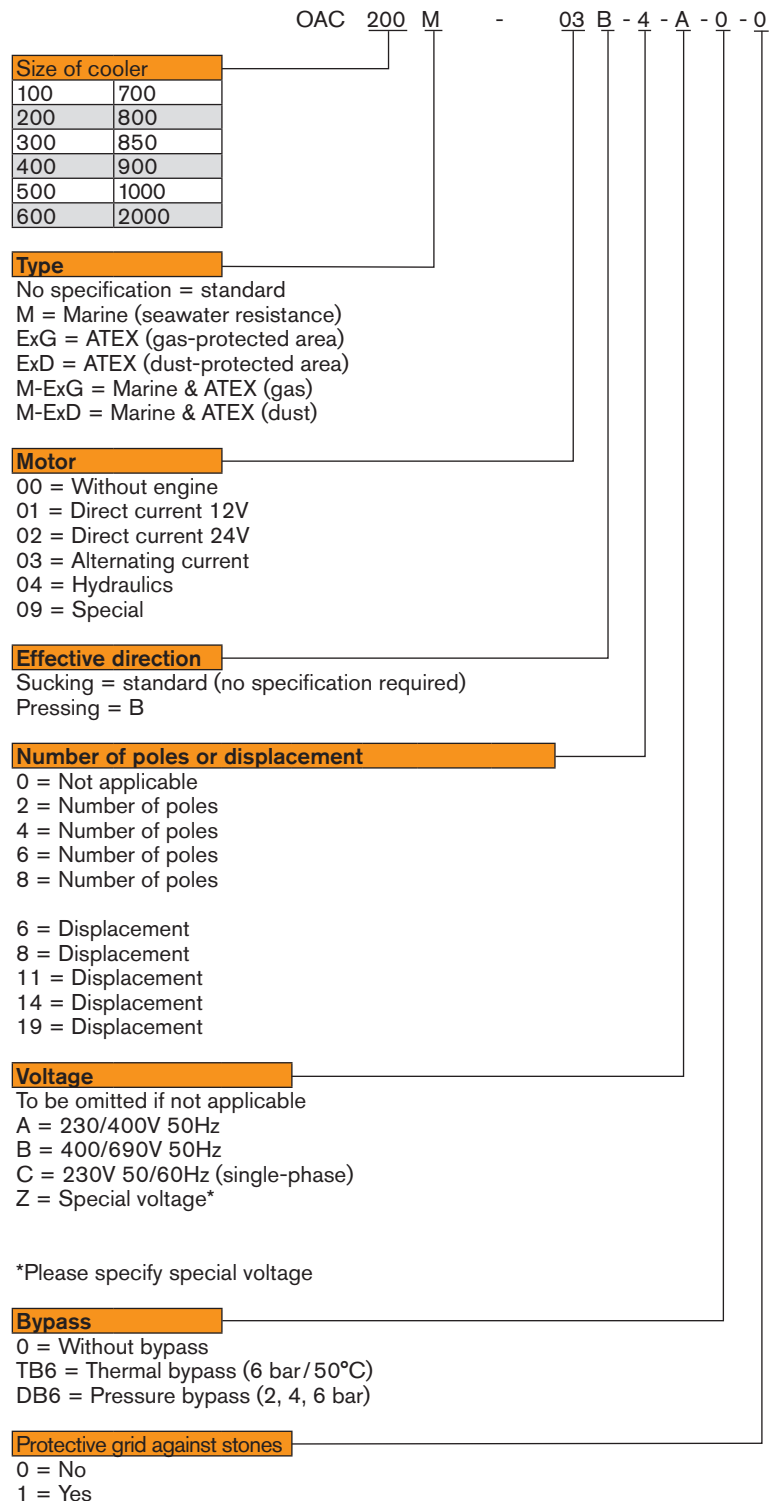


Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

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			50	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			100	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			160	16
OAC 400-01	12	0,22	3080	18,4	IP68	350			220	22
OAC 400-02	24	0,23	2730	9,4	IP68	350			220	22
OAC 500-01	12	0,24	2600	20,2	IP68	385	26	14	200	30
OAC 500-02	24	0,24	2700	9,8	IP68	385			200	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			250	43
OAC 700-01	12	2x0,24	2600	2x20,2	IP68	385			350	53
OAC 700-02	24	2x0,24	2700	2x9,8	IP68	385			350	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			350	81

Oil/air cooler type OAC eco							
Cooler type ¹⁾	Voltage [V]	Drive [kW]	Speed [rpm]	Max. volume flow [l/min]	Current [A]	Protection [kW]	Fan Ø [mm]
OAC 300 eco	24	0,38	3400	160	14,5	IP 65	305
OAC 400 eco				200			
OAC 500 eco	24	0,34	2570	200	13	IP 65	380
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	Noise	Perm. pressure [bar]		Max. volume flow	Mass
	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	Standard	Marine	ø-mm	[dB(A)]	Static	Dynamic	[l/min]	[kg]
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			160	21
OAC 400-03	0,37	0,43	1370	1670	1,04	1,02	IP55	IP56	380	76	26	14	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 [dB(A)]	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				34		
OAC 600-04-06	6,3	1500	520	78	26	14		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			350	110		
OAC 850-04-14	13,9		750	79				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



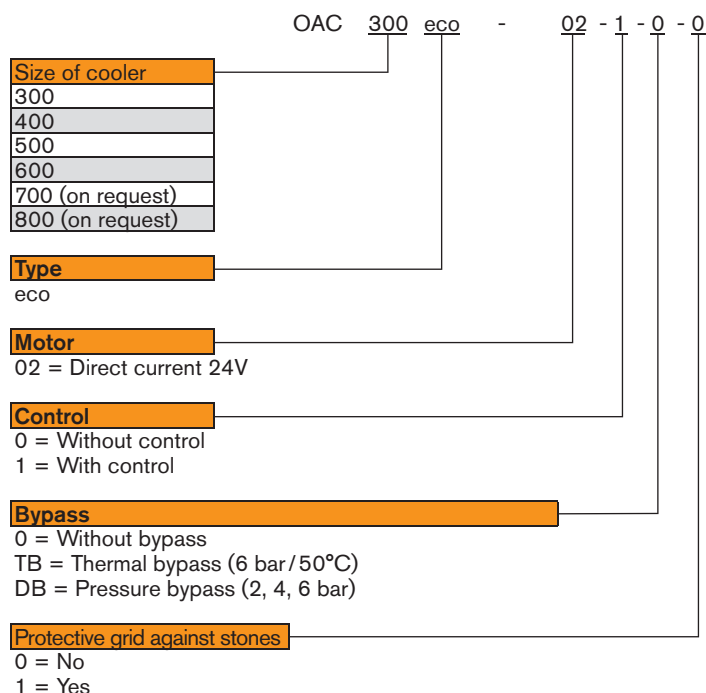
- Energy consumption optimised to requirements
- Variable speed fan motor
- Infinitely variable adaptation of cooling capacity oriented to requirements
- Operating voltage 24V
- Protective class IP65
- Up to 25 kW cooling capacity with ΔT : 40°K
- CE certification
- High-performance cooler core made 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

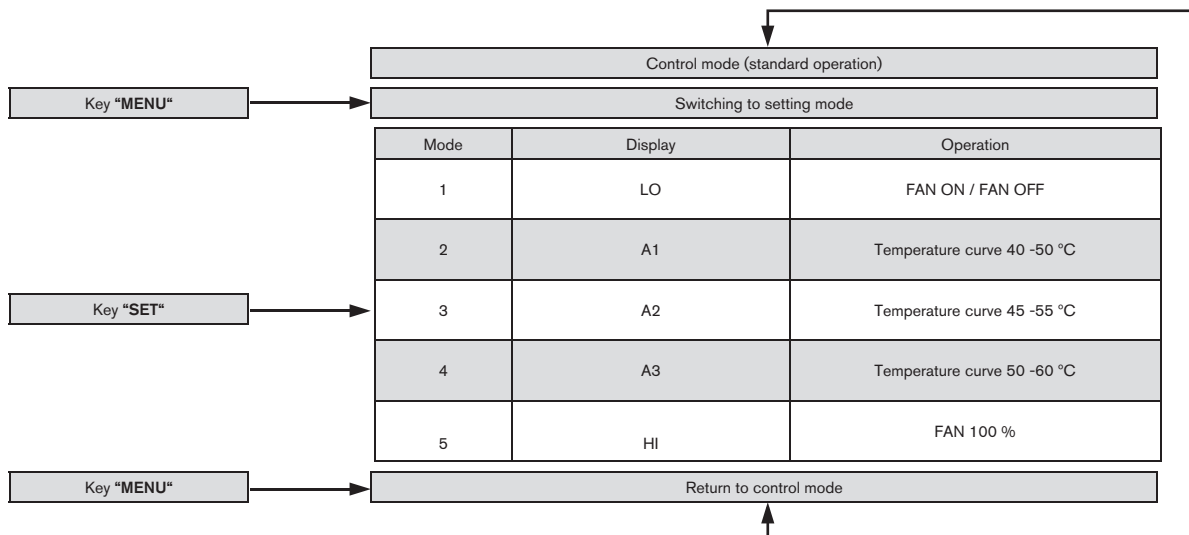
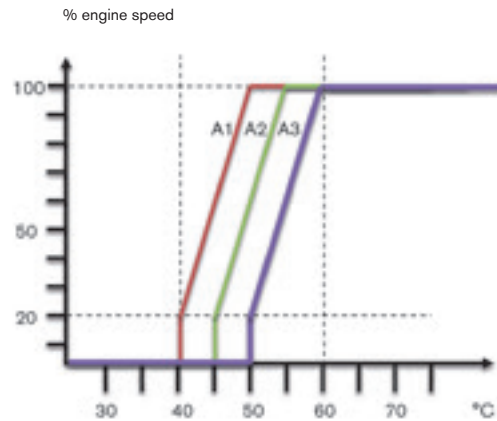
The OAC eco series is based on the previous standard, reduces noise which is generated and the energy consumption without accepting any loss in performance.

Type code

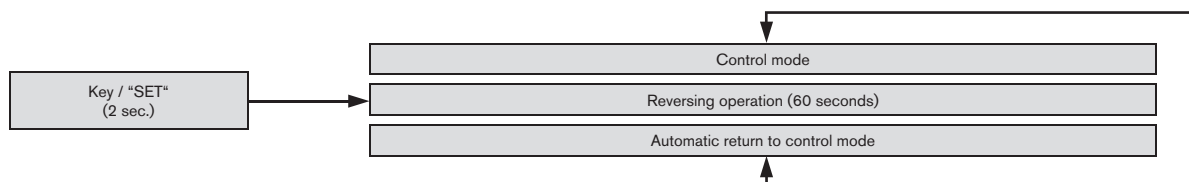


Bedienung

The control module TSFC 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 (mode 2) which is set as a standard by the manufacturer. 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 key SET may call the cleaning operation in addition. Here the fan rotates with full speed in opposite direction during 60 seconds. In the meantime the display counts down 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

Diagramme of performance

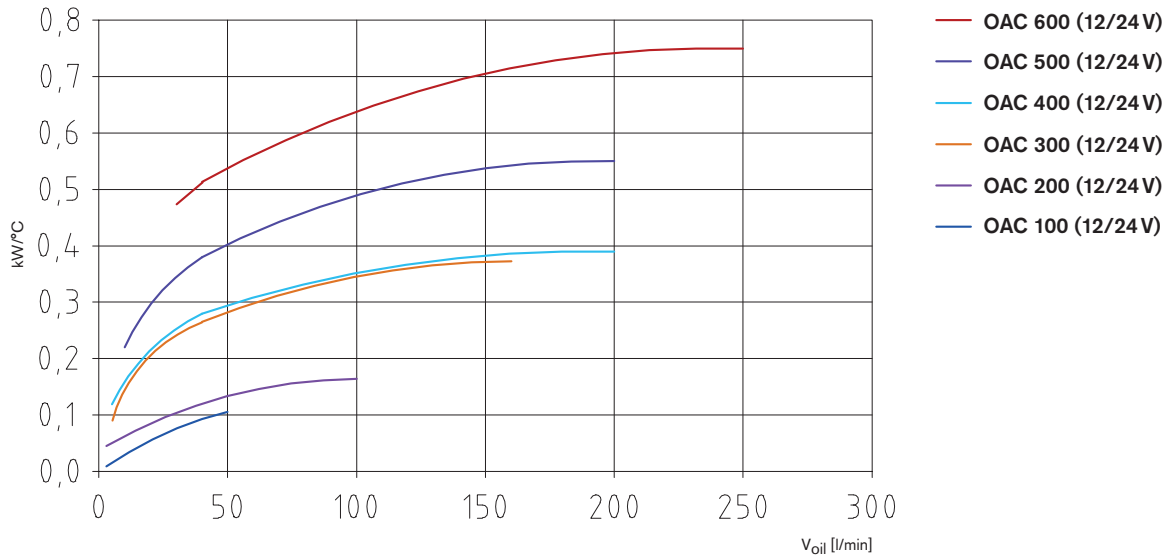
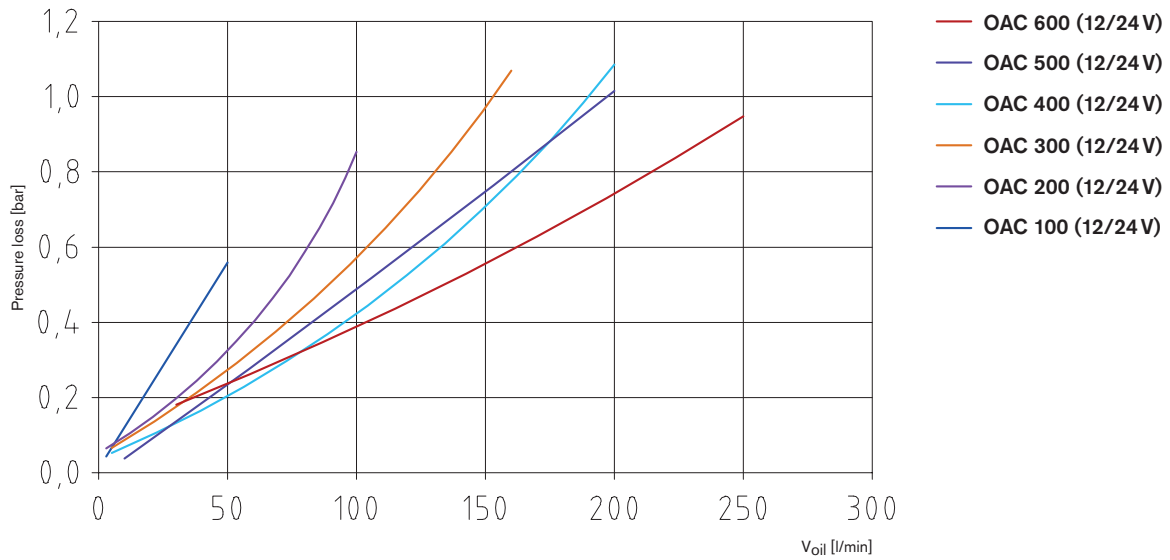


Diagramme of pressure loss



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

Diagramme of performance

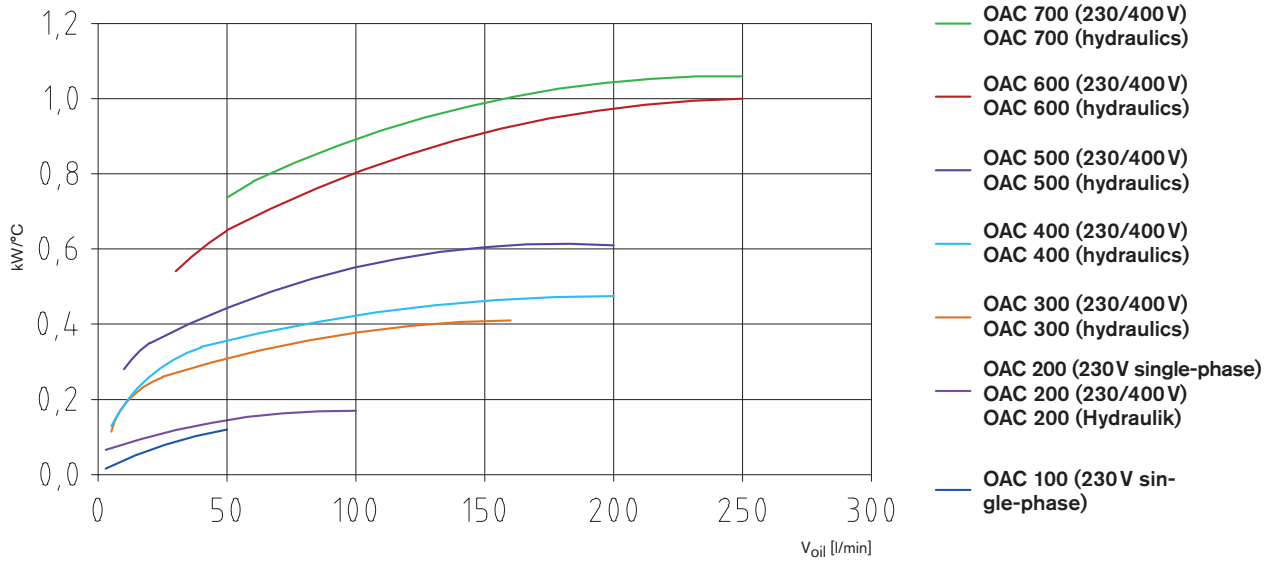
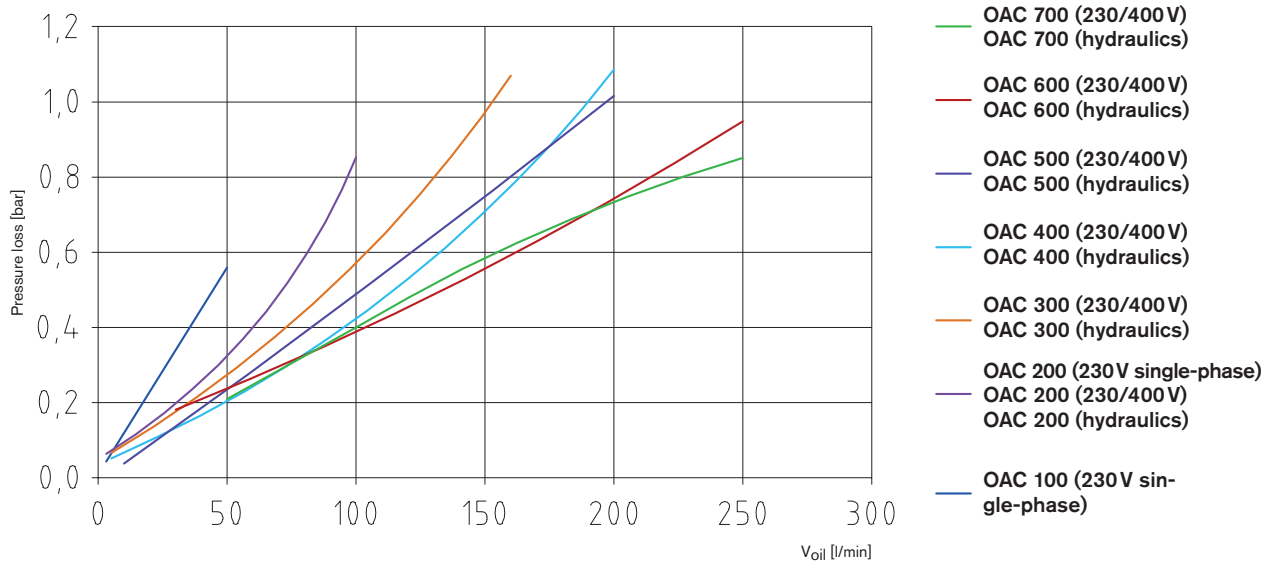


Diagramme of pressure loss



Conversion factor pressure loss									
cSt	10	15	20	30	40	50	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

Diagrammes of performance and pressure loss

Diagramme of performance

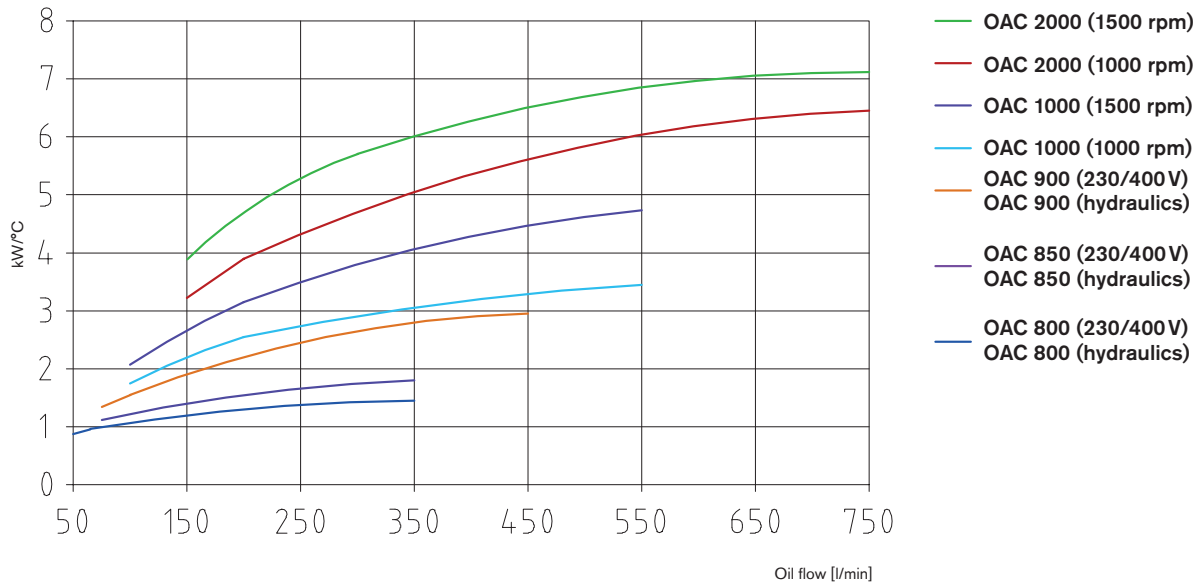
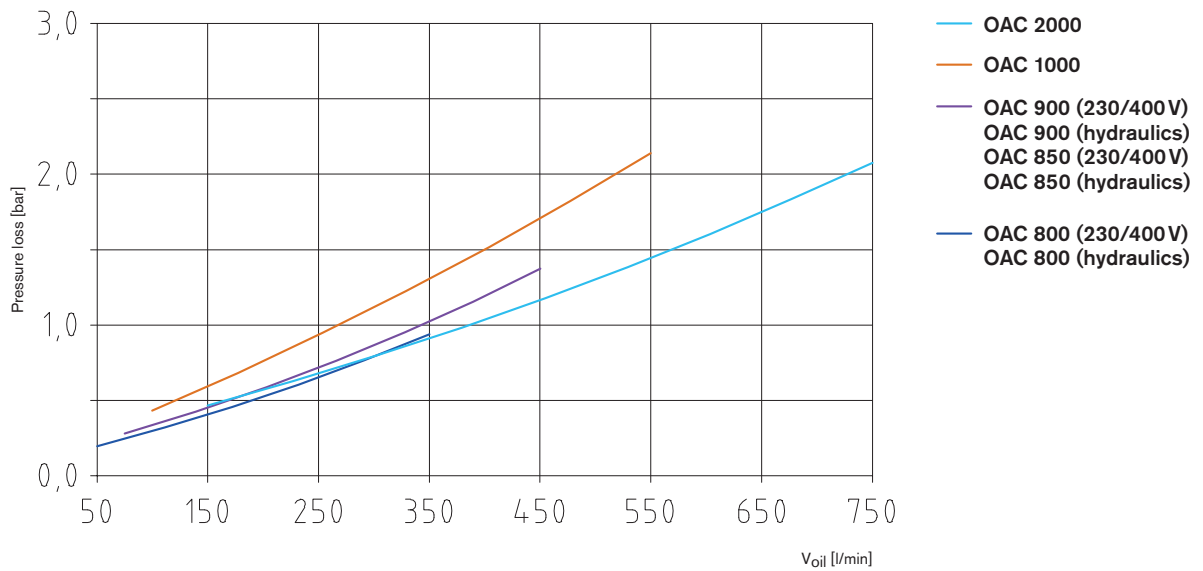


Diagramme of pressure loss

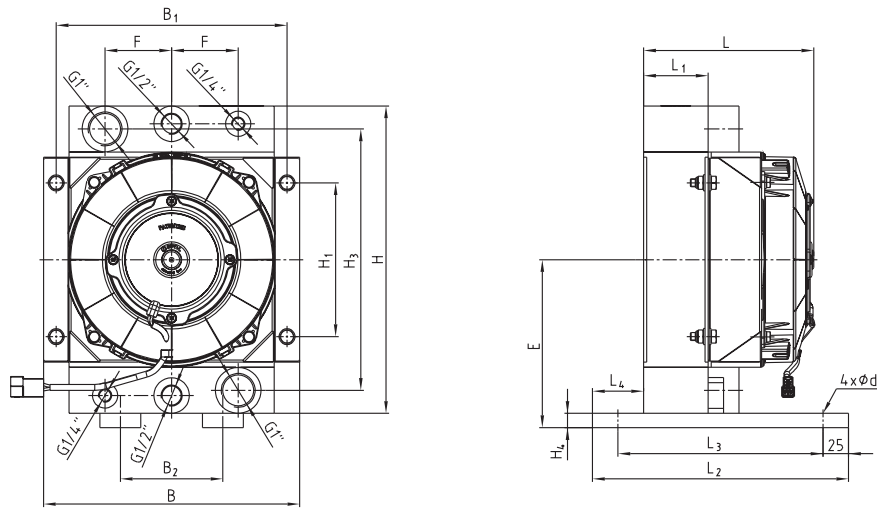


Conversion factor of pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

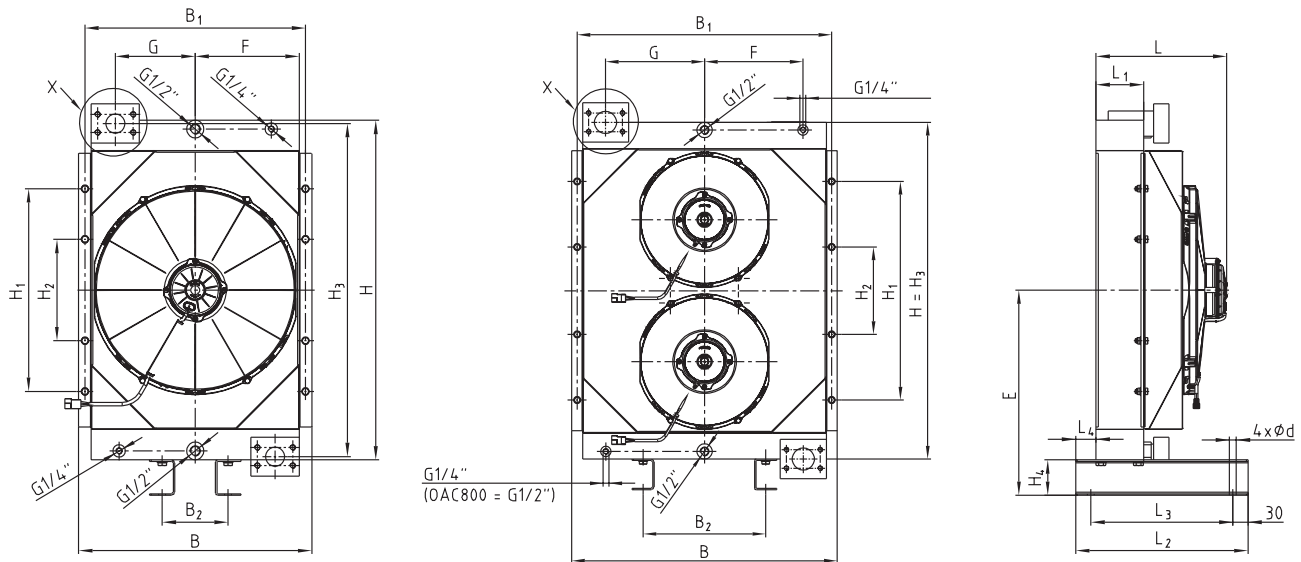
Oil/air coolers type OAC

Cooling systems

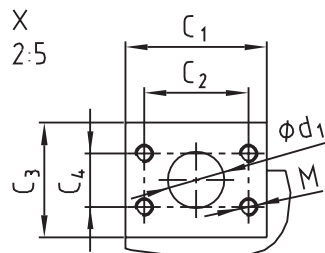
Dimensions of OAC 100 - 600 (12/24V)



OAC 100 - OAC 400 12V/24V



OAC 500/600 12V/24V



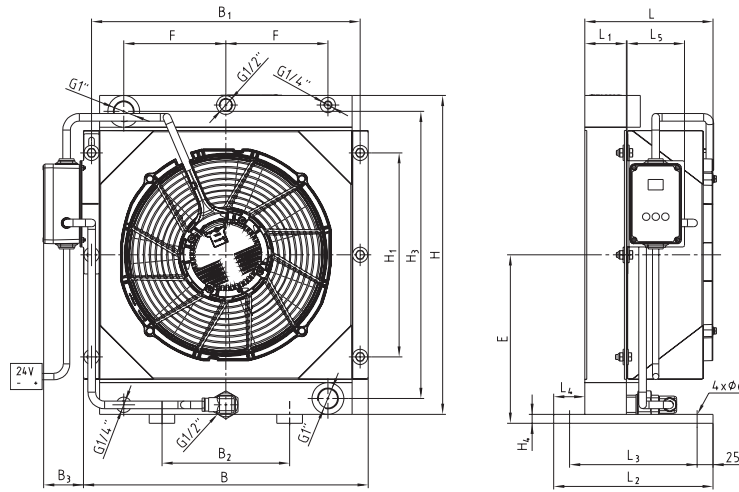
Oil/air cooler type OAC 12V/24V

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	-	

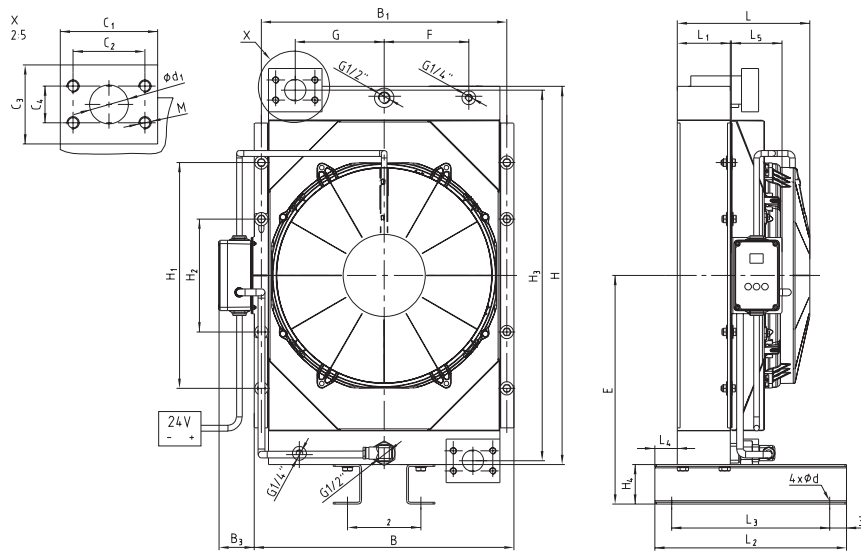
Oil/air coolers type OAC eco

Cooling systems

Dimensions of OAC eco 300 - 600 (24V)



OAC 300 - OAC 400 eco



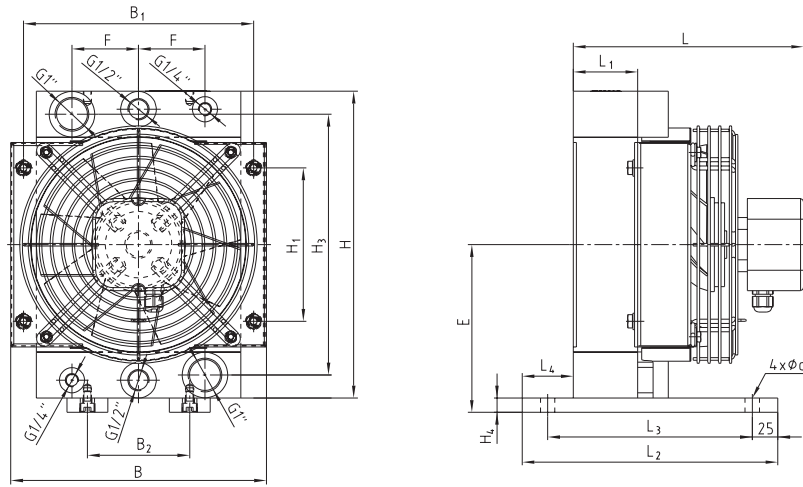
OAC 500 - OAC 600 eco

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	

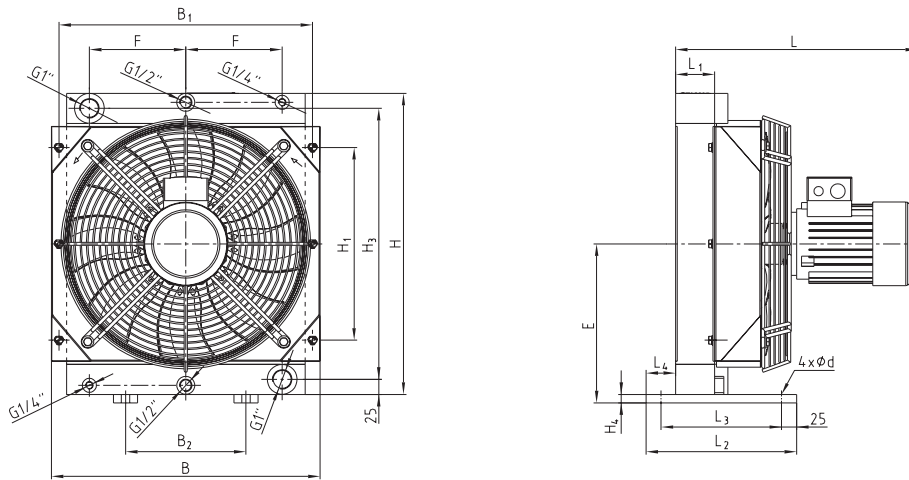
Oil/air coolers type OAC

Cooling systems

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



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



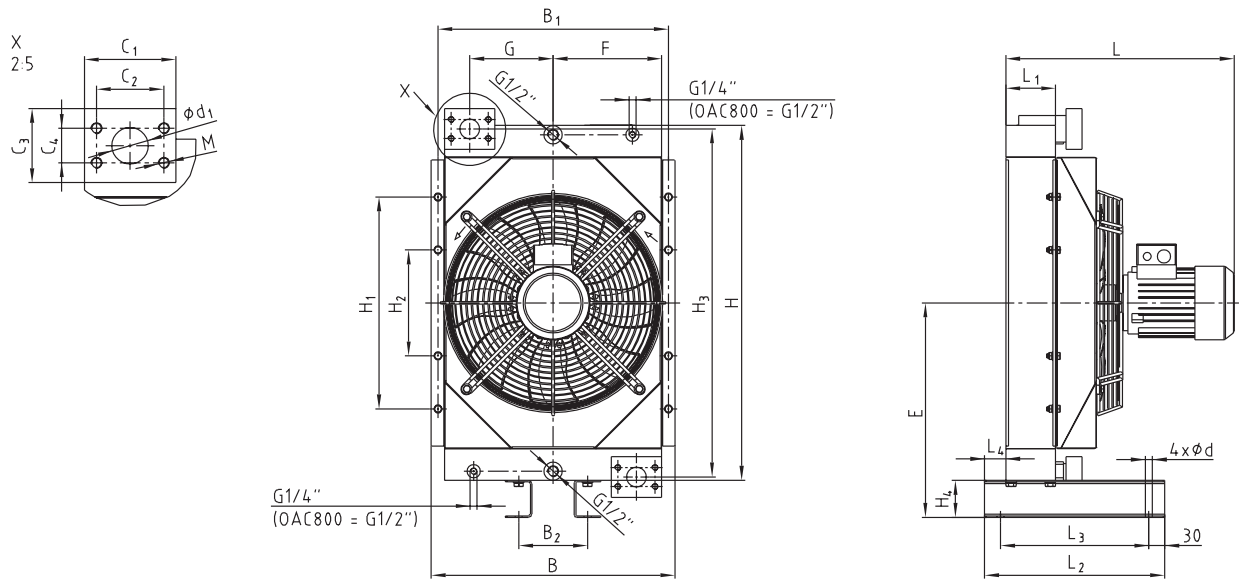
OAC 200 - OAC 400 230V/400V

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

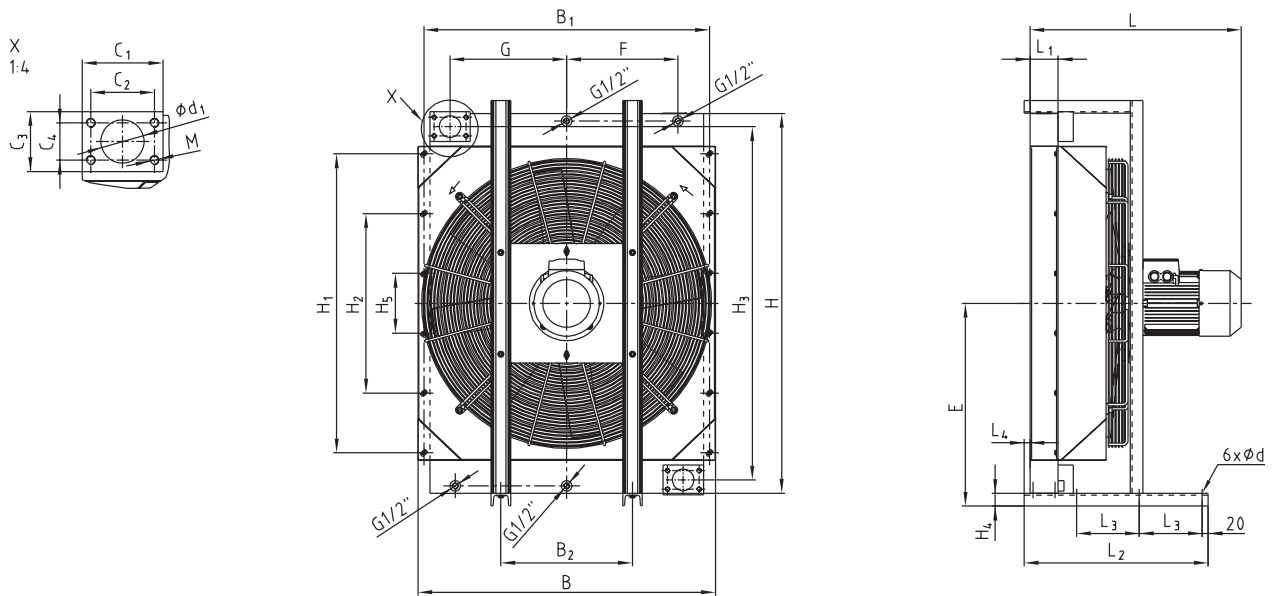
Oil/air coolers type OAC

Cooling systems

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



OAC 500 - OAC 800 230V/400V



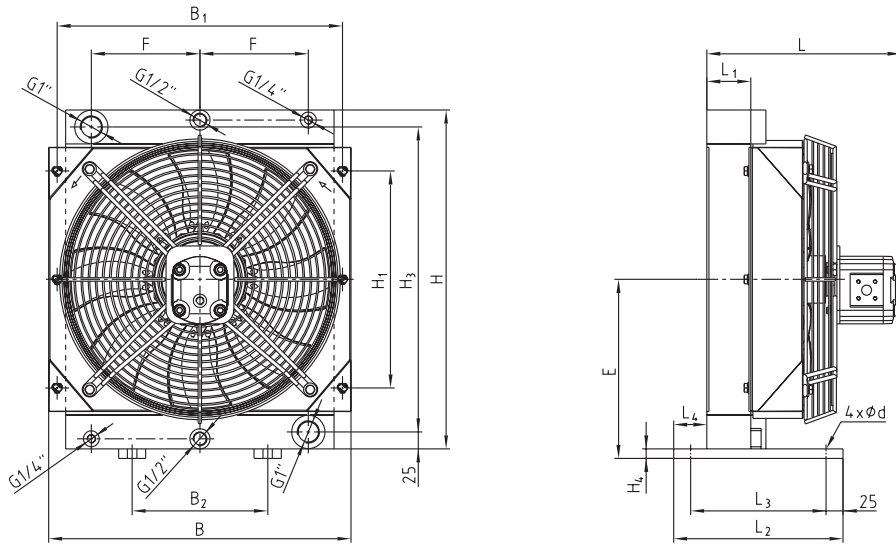
OAC 850 - OAC 2000 230V/400V (400V/690V)

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	38	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	

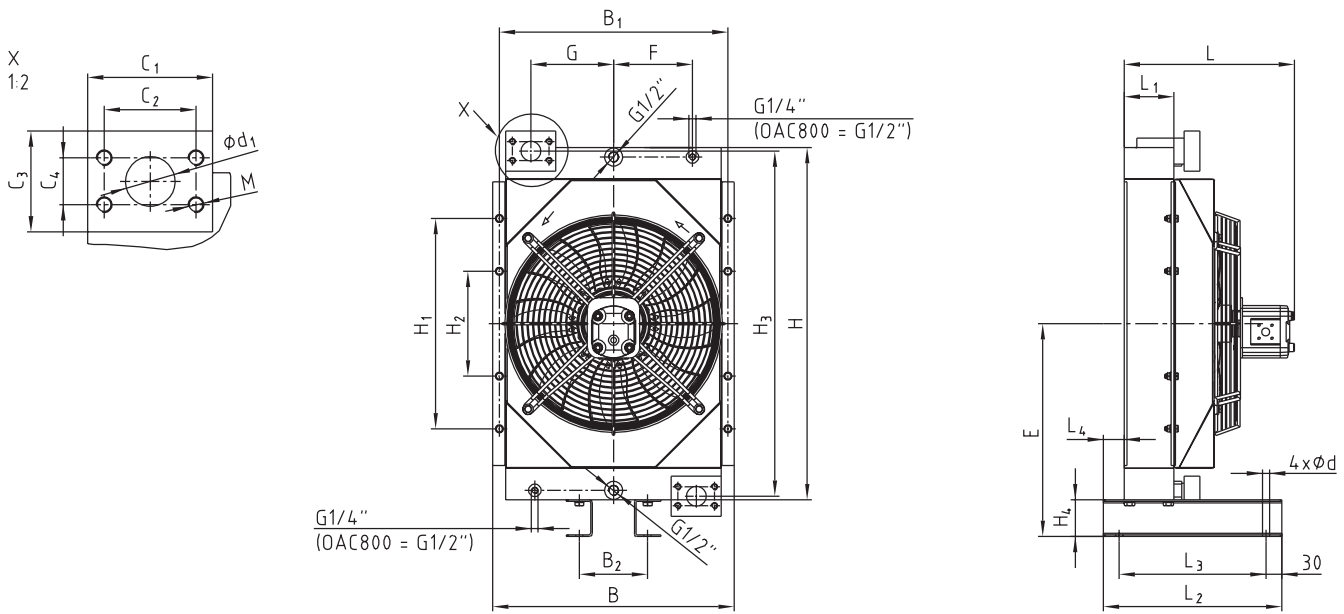
Oil/air coolers type OAC

Cooling systems

Dimensions of OAC 200 - 800 (hydraulic)



OAC 200 - OAC 400 hydraulic



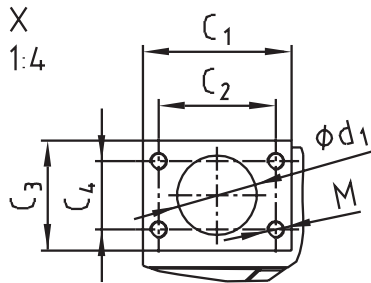
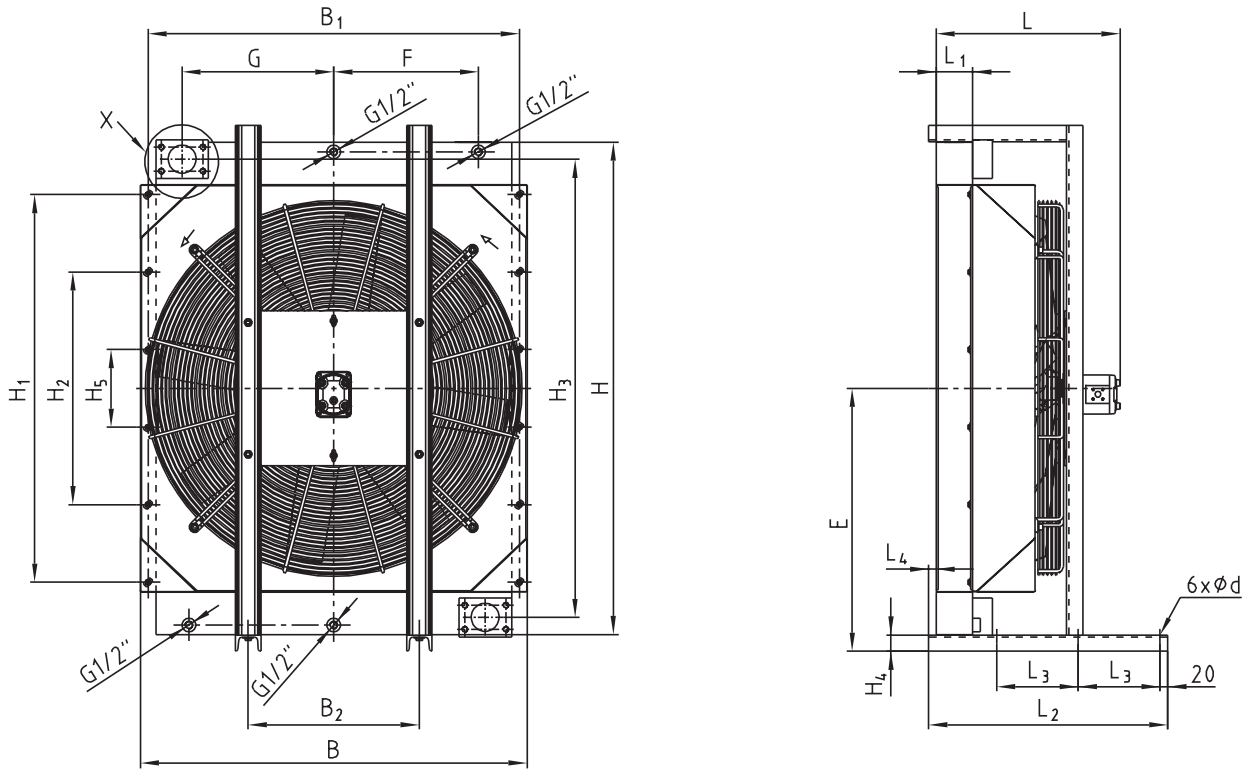
OAC 500 - OAC 800 hydraulic

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	3"	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

Bypass flow cooling with integrated pump



The OPC oil cooler unit is a system specifically developed for cooling in the bypass flow as an independent unit. The unit consists of a cooler, fan, electric motor, pump and may be supplemented by a filter on request of the customer.

Applications

- Machine tools
- Elevators
- Test benches
- Add-on coolers
- Bypass flow cooling

Applicable for cooling of:

- Hydraulic oil
- Gear oil
- Lubricating grease
- Water-glycol (min. 40 % glycol)

Structure

- Cooler core (plate and bar) made of aluminium with industrial lamina in black (RAL 9005)
- Fan cover made of steel in black (RAL 9005)
- Fan made of nylon PAG
- Protective grid made of steel in black (RAL 9005)
- Electric motor 230 V/400 V, IP55
- Bellhousing and coupling
- Gear feed pump with pressure relief valve 0-15 bar, recommended setting 5 bar, max. media temp. 80 °C (higher temperatures on request)
- Filter with visual maintenance display, as an option

Marine design:

- Cooler core with CDP coating
- Frame, protective grid, cover with CDP coating
- Electric motor with special painting and protection IP56

ATEX design:

- Electric motor in ATEX design  II 2 G Exell T3
- Special fan

Accessories, protective grid, TSC

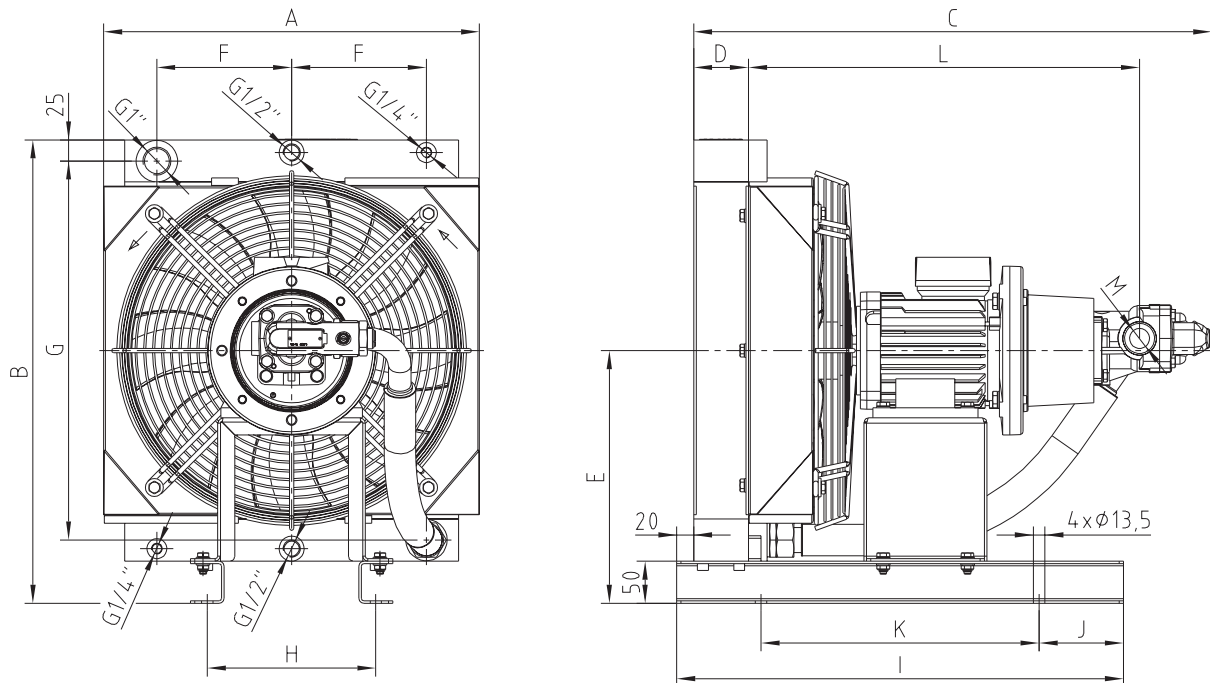
- Thermal bypass valves, oil temperature control valve OTV, see page 47

The OAC coolers have to be protected from direct solar radiation.

Oil/air coolers / cooling-pumping unit OPC

Cooling systems

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



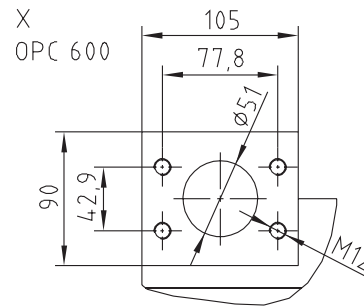
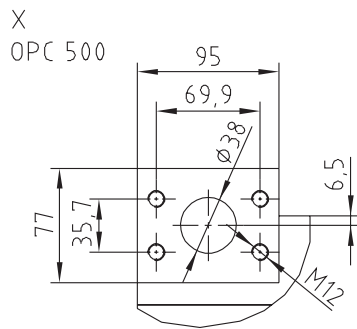
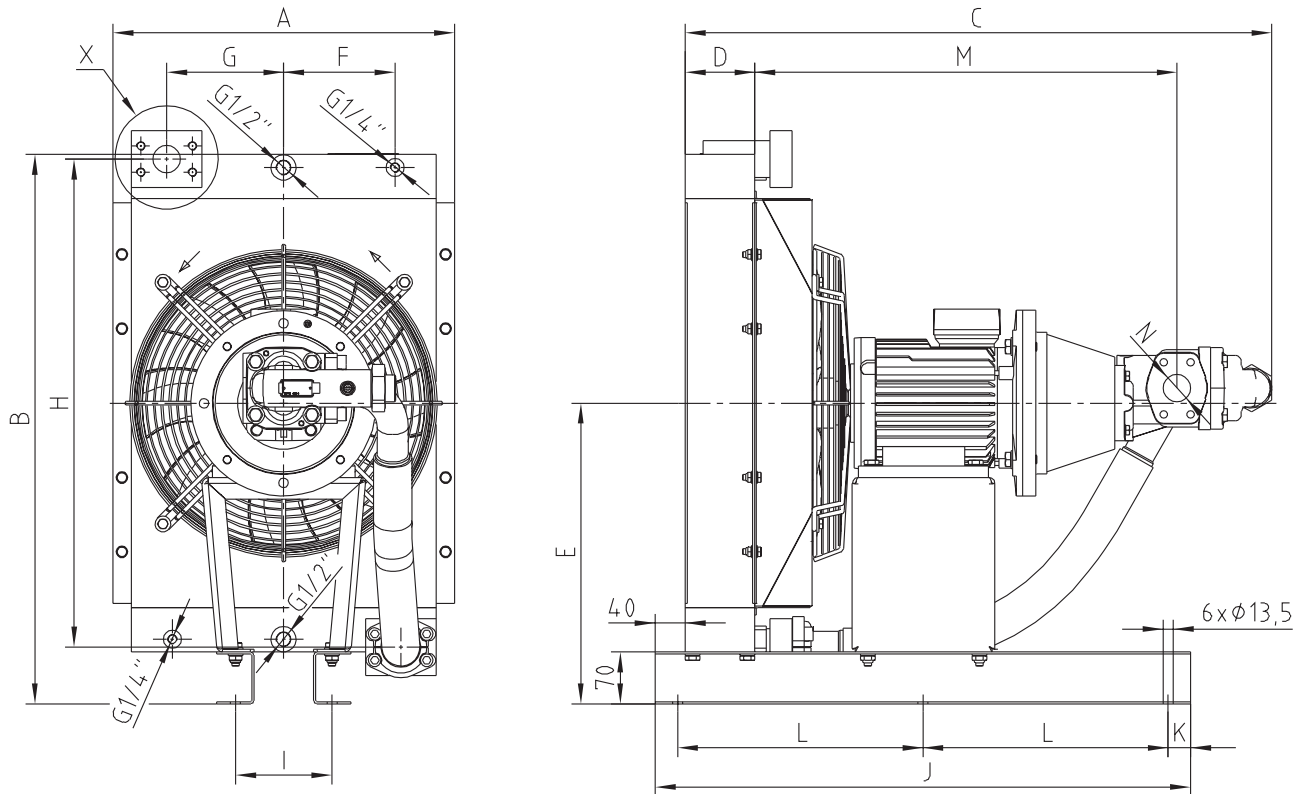
OPC 200 - OPC 400

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				400	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							400	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)



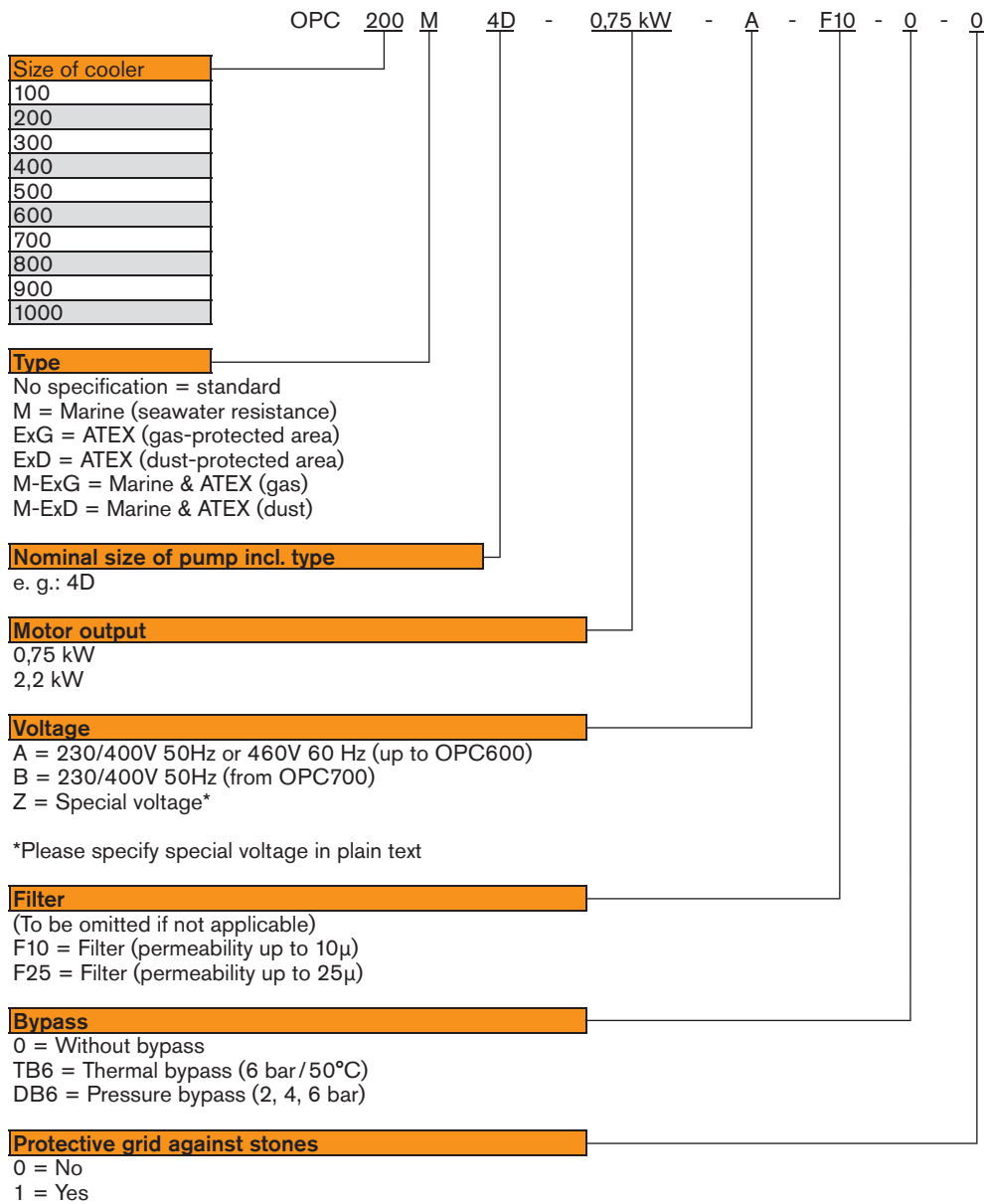
OPC 500 - OPC 600

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				740										547	G 1"	75			
OPC 500-25D-2,2kW				33,4	0,40	460	740		95	405	150	157,5	657	130	720	30	330,0		568	SAE 1 1/2"	77			
OPC 500-32D-2,2kW				42,7	0,42		790																	
OPC 500-40D-2,2kW				53,5	0,45		819																	
OPC 600-16D-2,2kW				21,5	0,47																	626	G 1"	96
OPC 600-25D-2,2kW				33,4	0,56		607	840		95	455	225	226,0	770	280	795	30	367,5		647	SAE 1 1/2"	98		
OPC 600-32D-2,2kW				42,7	0,61																			
OPC 600-40D-2,2kW				53,5	0,66																			

Oil/air coolers / cooling-pumping unit 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

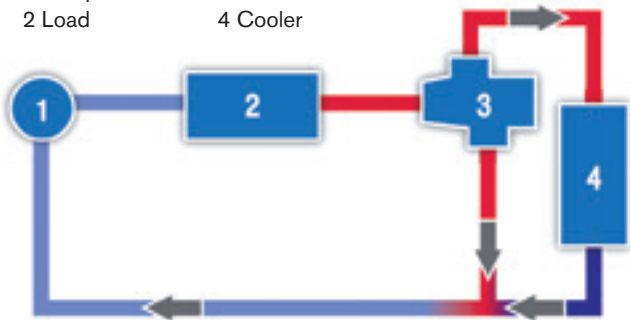
Oil/air coolers accessories

Cooling systems

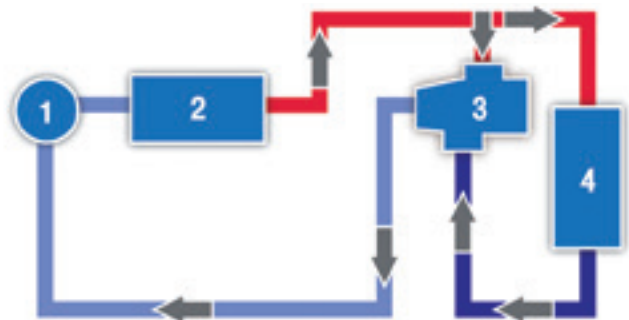
Oil thermostat valve

1 Pump
2 Load

3 Governor valve
4 Cooler



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



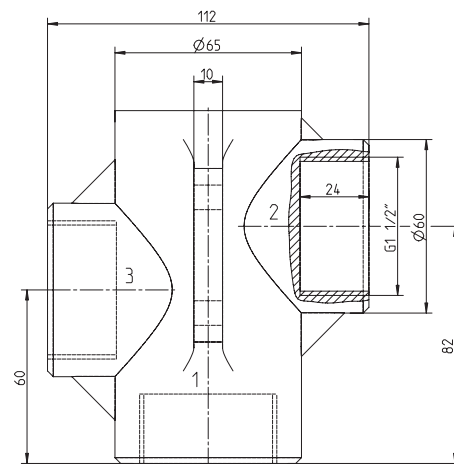
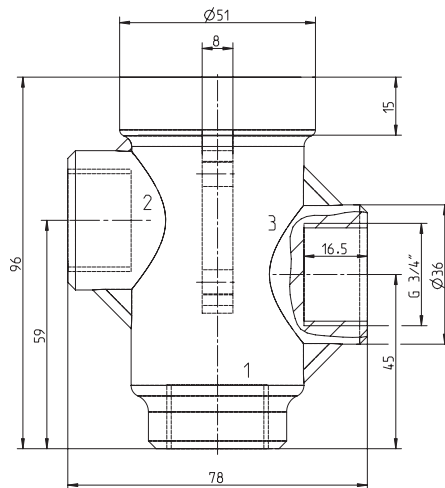
Use as a mixing valve:
Constant temperature on load inlet

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				
Spider type	Max. volume flow [m ³ /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

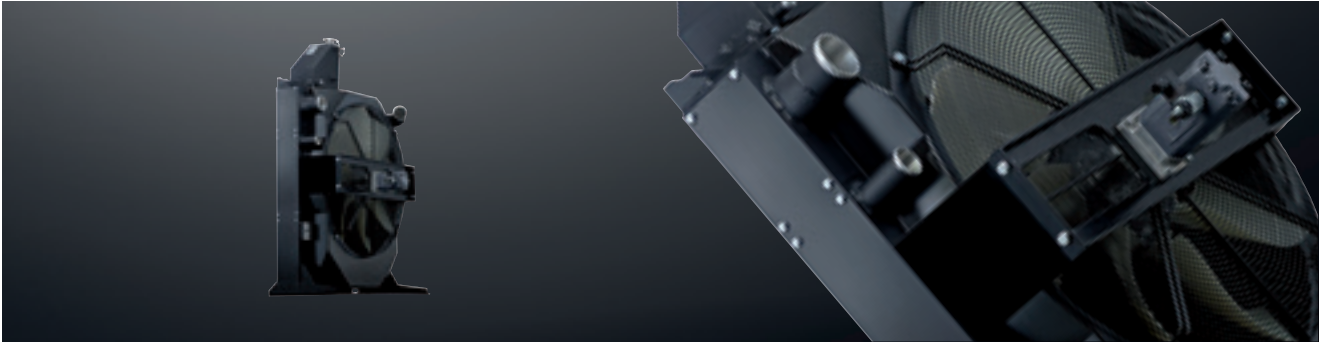
max. operating pressure 16 bar

Ordering example:	Oil thermostat valve	1	55
		Size	Inlet temperature

Combined cooler type MMC

Cooling systems

Mobile combined cooler



The MMC cooler series is used on construction machines, agricultural machines and stationary I. C.-engines. Being used as a water cooler, series MMC tempers the cooling water. Being used as an oil cooler it ensures the cooling of hydraulic or gear oil, as a charge air cooler it operates the cooling of the combustion air. As a result such kind of high-power cooling system meets with all demands on the temperature regulation of media, including applications as fuel coolers.

It goes without saying that such cooling systems are developed individually, taking into account the necessary cooling power and in a close cooperation with the customers. If several power packs for cooling are requested, they can be arranged either „side by side“ or one after another. Depending on the application the MMC coolers are equipped with fans which are driven either by hydraulic fan drives, 12/24V or 230/400V electric motors, the hydraulic systems having the benefit of a higher efficiency, lower sound emission and a better adaptability to the different operating conditions on bigger machines. Regardless of the mode of drive the latest types of fans are used which are not only operating very efficiently, but also very quietly.

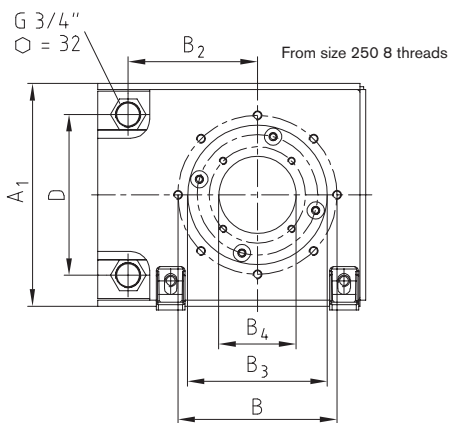
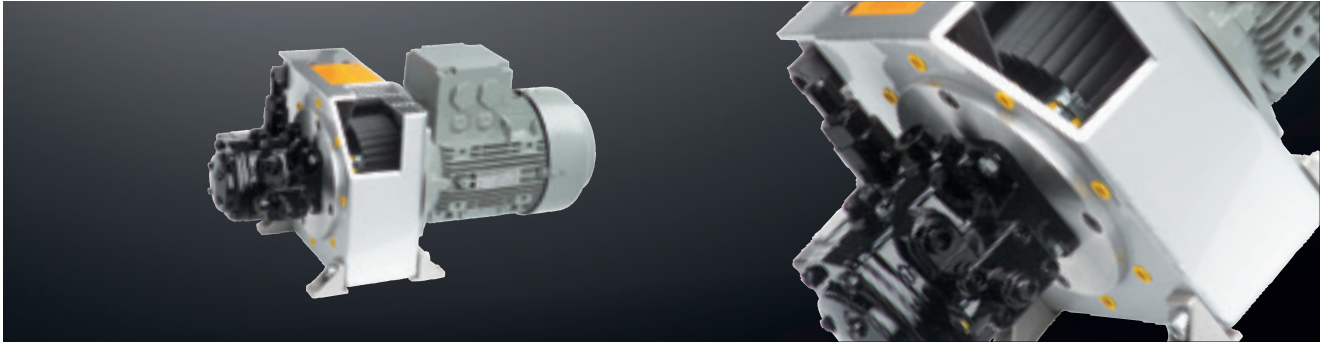
Potential applications



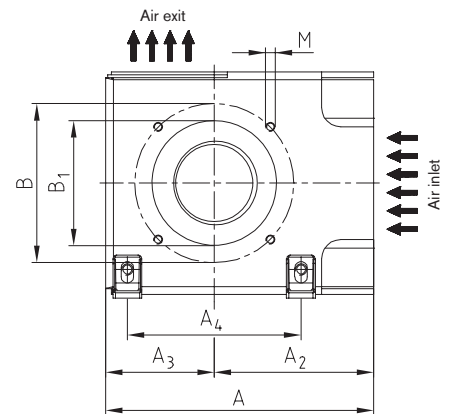
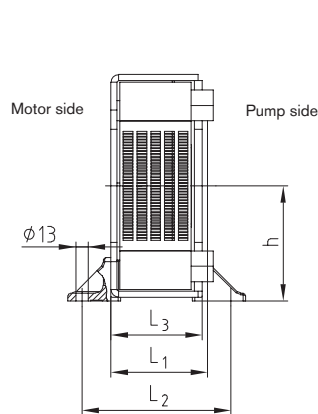
Oil/air coolers type PIK

Cooling systems

Bellhousing with integrated oil/air cooler



View pump side



View motor side

Bellhousing with integrated oil/air cooler type PIK (patent pending)																		
IEC motor		PIK oil cooler type	Dimensions [mm] *															
Size (shaft)	kW with 1500 rpm		L ₁	L ₂	L ₃	A	A ₁	A ₂	A ₃	A ₄	B	B ₁	B ₂	B ₃	min. B ₄	D	M	h
80	0,55	PIK 200/1/...	100	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
(19 x 40)	0,75	PIK 200/2/...	110	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
90S / 90L	1,1	PIK 200/4/...	124	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
(24 x 50)	1,5																	
100L / 100M	2,2	PIK 250/2/... **	124	175,5	115,5	308	250	180	125	220	215	180	150	190	20	192	M12	129
(28 x 60)	3,4	PIK 250/4/... **	135	175,5	115,5	305	250	180	125	220	215	180	150	190	20	192	M12	129
132S / 132M	5,5	PIK 300/1/...	144	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
(38x80)	7,5	PIK 300/3/...	155	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
		PIK 300/4/...	168	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
160M / 160L	11	PIK 350/1/...	188	243,5	183,5	405	360	230	175	310	300	250	200	260	50	292	M16	184
(42 x 110)	15	PIK 350/2/...	204	243,5	183,5	405	360	230	175	310	300	250	200	260	50	292	M16	184
180M / 180L	18,5																	
(48 x 110)	22																	

* Dimensions following the VDMA standard 24561.

** In case of an engine speed of ≥ 1900 rpm a steel fan must be used.

Assembly

With assembly and disassembly of the oil connection pipes please hold up with a hexagon key (max. tightening torque 40 Nm). No reduction of the cross section behind the cooler. Return filter to be installed in front of the cooler (dynamic pressure, danger of bursting). Tensions inside the connection pipes have to be avoided! Vibration of the piping is to be avoided (should possibly be intercepted in front of the connection). Supply and discharge to be chosen alternatively. Please note that several hydraulic systems produce pressure peaks of more than 12 bar in the reverse motion (danger of bursting)! Please observe our assembly instructions at www.ktr.com.

For PIK sizes 200 and 350 please specify the IEC motor sizes in your order.

Ordering example:	PIK	300	3	5	15
	Bellhousing with integrated oil cooler	Flange diameter of IEC motor	Serial model code (code referring to length)	In-house modification code	Standard type 15 - V1 design

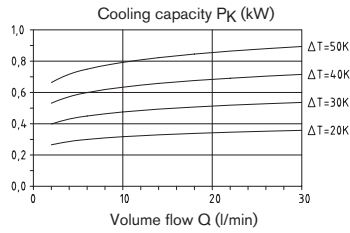
Oil/air coolers type PIK

Cooling systems

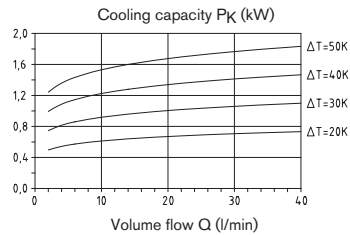
Oil/air cooler type PIK 200 - 350

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

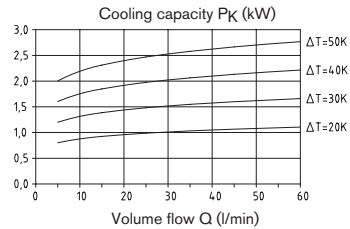
PIK 200



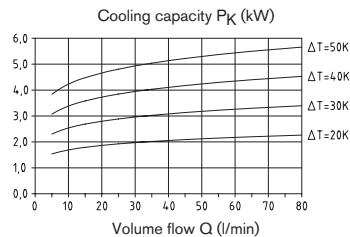
PIK 250



PIK 300



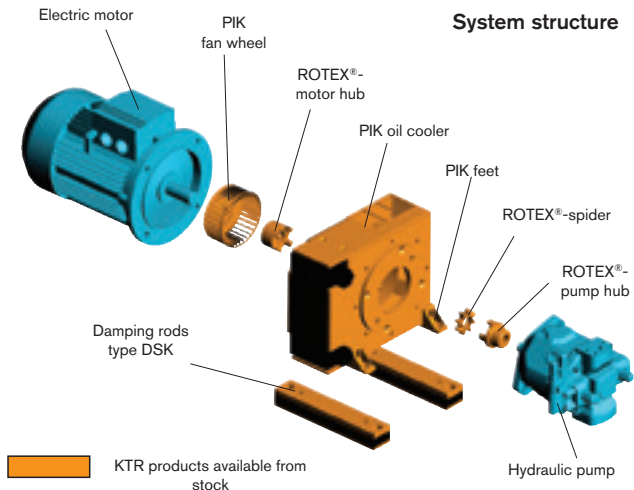
PIK 350



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

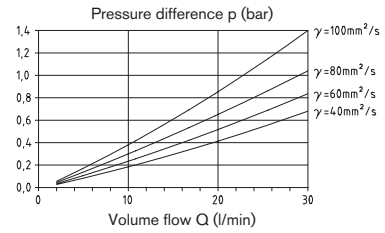
2. Operating pressure

The permissible operating pressure for the oil cooler is 12 bar. Max. operating pressure with static load 20 bar. (All values apply for the average pressure cooler.)

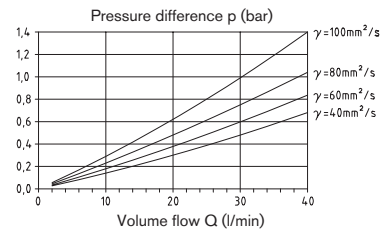


3. Pressure difference depending on oil flow and oil viscosity

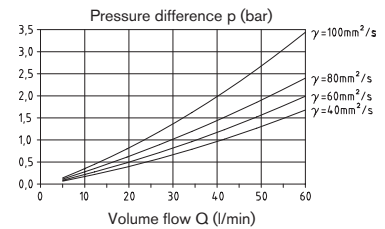
PIK 200



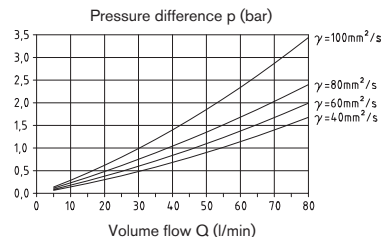
PIK 250



PIK 300



PIK 350



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

4. Fan

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 = approx. 90 m³/h

PIK 250 = approx. 200 m³/h

PIK 300 = approx. 400 m³/h

PIK 350 = approx. 860 m³/h

5. Cooler connection

R 3/4" internal thread

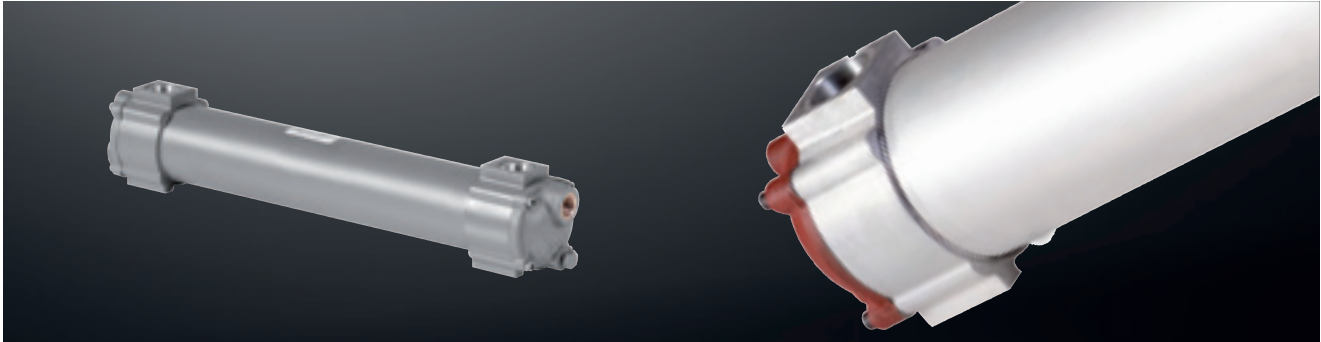
6. Oil flow

For an oil flow higher than indicated in the above diagramme, please consult with our Engineering Department, phone +49 5971 798-0.

Oil/water coolers type TAK/T

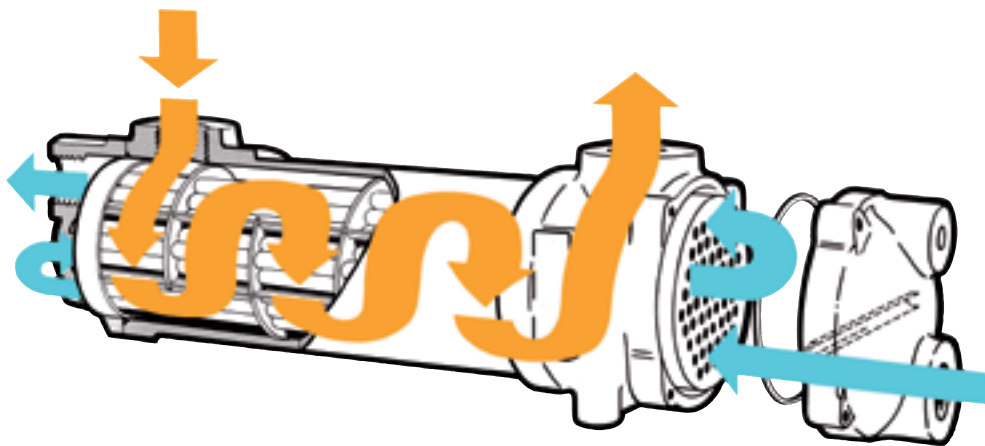
Cooling systems

Cooling of lubricating oil, heat recovery



The cooler series TAK/T have been designed specifically for hydraulic systems, but they are equally suitable for cooling lubricating oils, heat transfers fluids, etc.

The tube bundle is designed such that it may expand to both sides, consequently minimizing thermal stresses. The unique tube-to-tubeplate joint ensures reliability under extreme operating conditions. The 27 and 28 ranges have twin seals and witness rings fitted as standard to provide maximum protection against fluid cross-contamination.



Materials:

These coolers are available in both industrial and marine versions.

Industrial version (standard)			
Tubes	90/10 copper/nickel		ISO: CuNi10Fe1Mn
Tubeplates	Naval Brass		ISO: CuZn38Sn1
Housings	Aluminium	(2300 & 2500) (2700 & 2800)	ISO: AlSi1MgMn ISO: AlSi12
Headers	Cast iron		ISO: R185Gr20
Leak detection rings	Carbon Steel		ISO: Fe430A
Gaskets	Nitrile		

Marine version (standard)			
Headers	Gunmetal		ISO: GCuSn5Pb5Zn5

Marine version (Special designs for severely polluted or poor quality water)			
Tubes	70/30 copper/nickel		ISO: CuNi30Mn1Fe
Tubeplates	90/10 copper/nickel		ISO: CuNi10Fe1Mn
Headers	Gunmetal		ISO: GCuSn5Pb5Zn5

Oil/water coolers type TAK/T

Cooling systems

Cooling capacities, diagramme of performance, diagramme of pressure loss

KTR tubular coolers - cooling performance of the 20 series									
Type	Cooling capacity [kW]	Oil flow [l/min]	Oil pressure loss		Water flow [l/min]	Water pressure loss		Sea water flow [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		

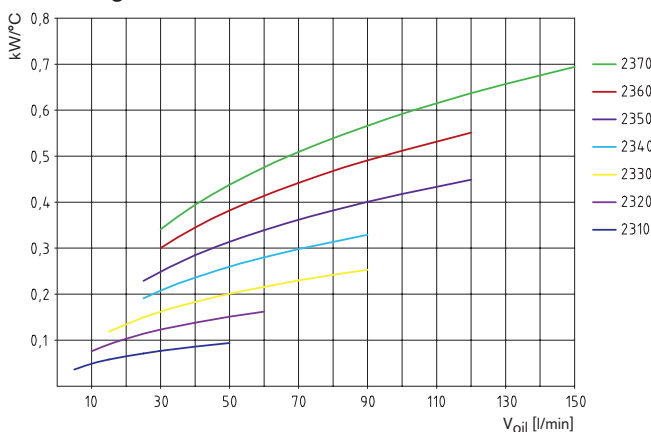
Operating conditions for the above table:

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

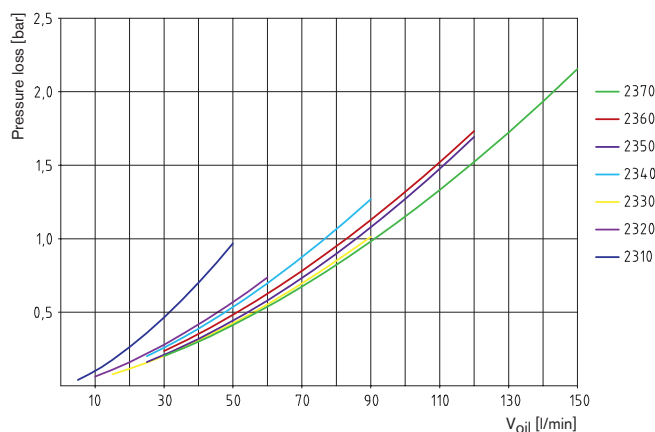
Tube circuit: Plain water with an inlet temperature of 20 °C

Note: Different fluids have different thermal and mechanical properties. Fluids other than those indicated above will generate different performance characteristics than those specified in the table. For an accurate performance calculation 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

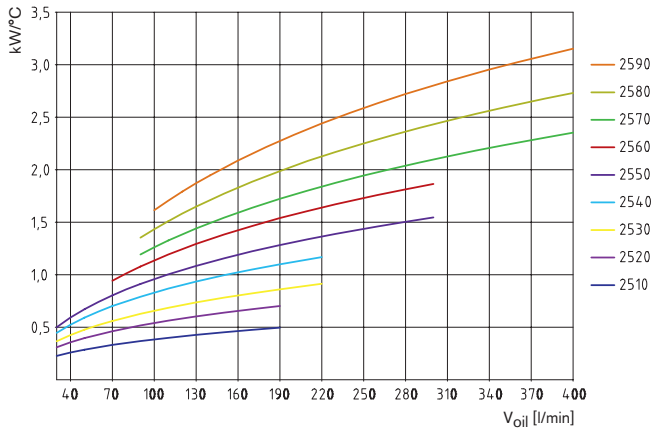


Oil/water coolers type TAK/T

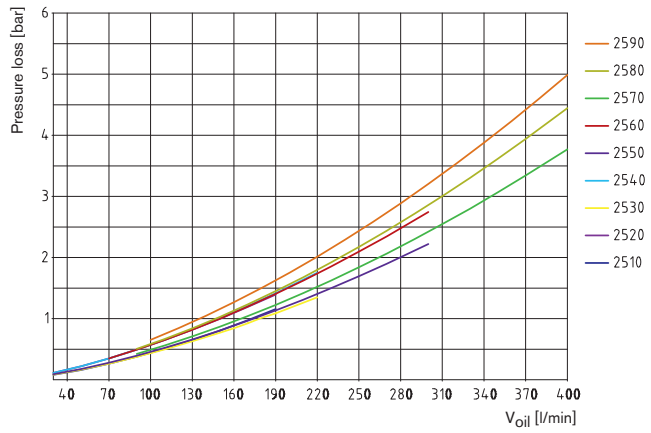
Cooling systems

Diagramme of performance, diagramme of pressure loss

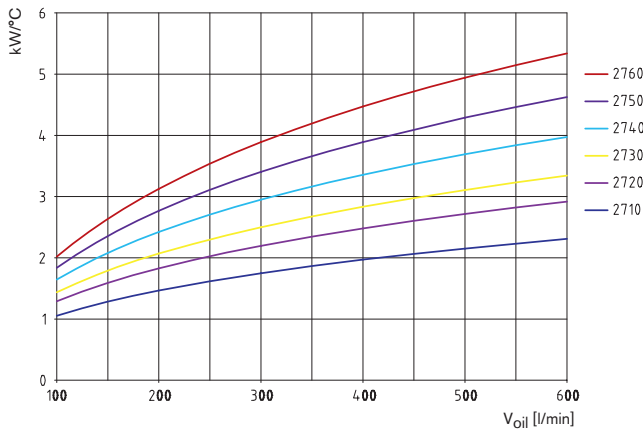
Power diagramme of the 25 series



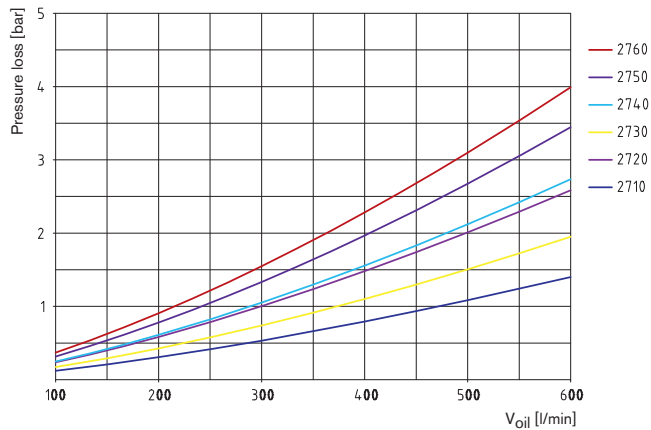
Pressure loss of the 25 series



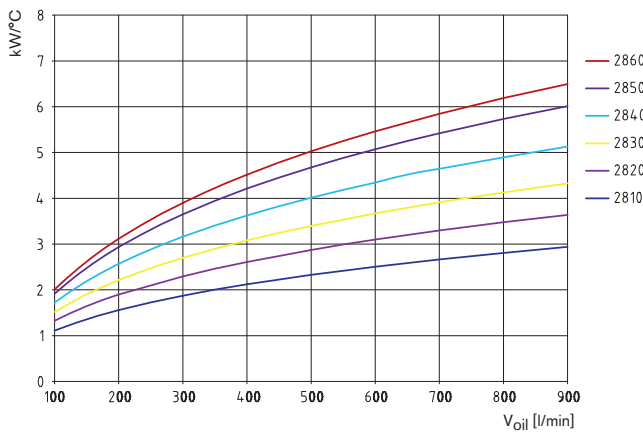
Power diagramme of the 27 series



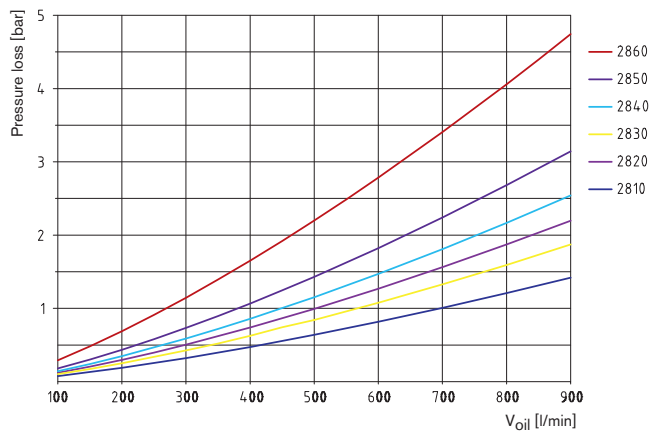
Pressure loss of the 27 series



Power diagramme of the 28 series



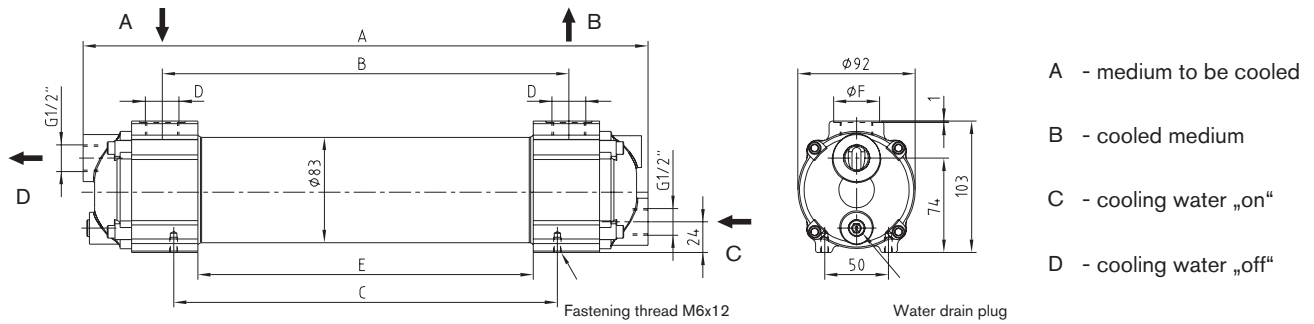
Pressure loss of the 28 series



Oil/water coolers type TAK/T

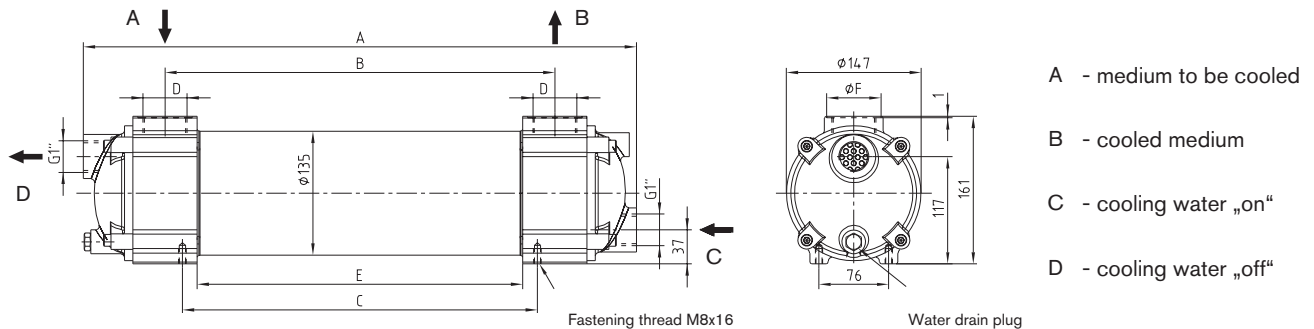
Cooling systems

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	1)	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 note: For M6x12 fastening holes, connections provided on the base midway between the oil port centres.
 Max. permissible oil temperature 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

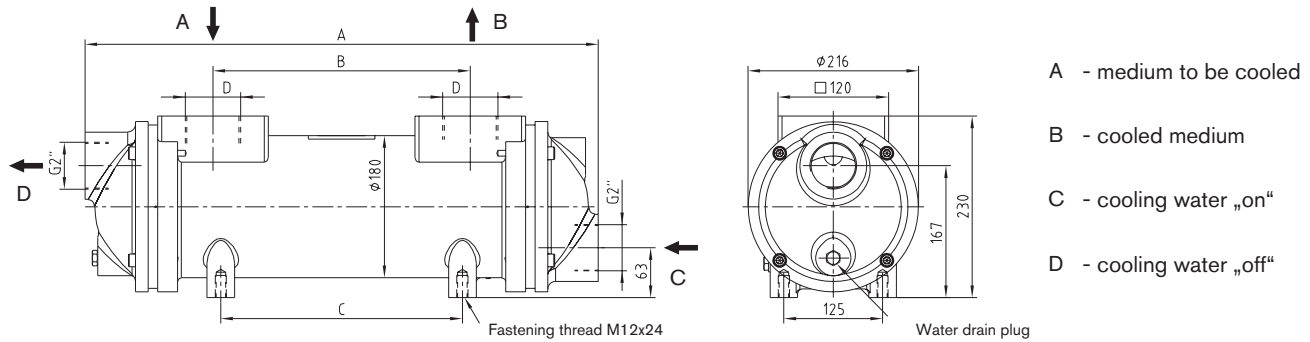
Add suffix H to part number for 1 1/2" BSP water connections (A = +14mm).
 Max. permissible oil temperature 100 °C. Max. oil pressure 30 bar. Max. water pressure 10 bar.

Ordering example:	TAK/T	231	2	SW
	Type	Series/size	2 = Industrial version (standard) 3 = Industrial version with viton seals, temp. >100 °C 4 = Marine version 5 = Marine version with viton seals, temp. >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

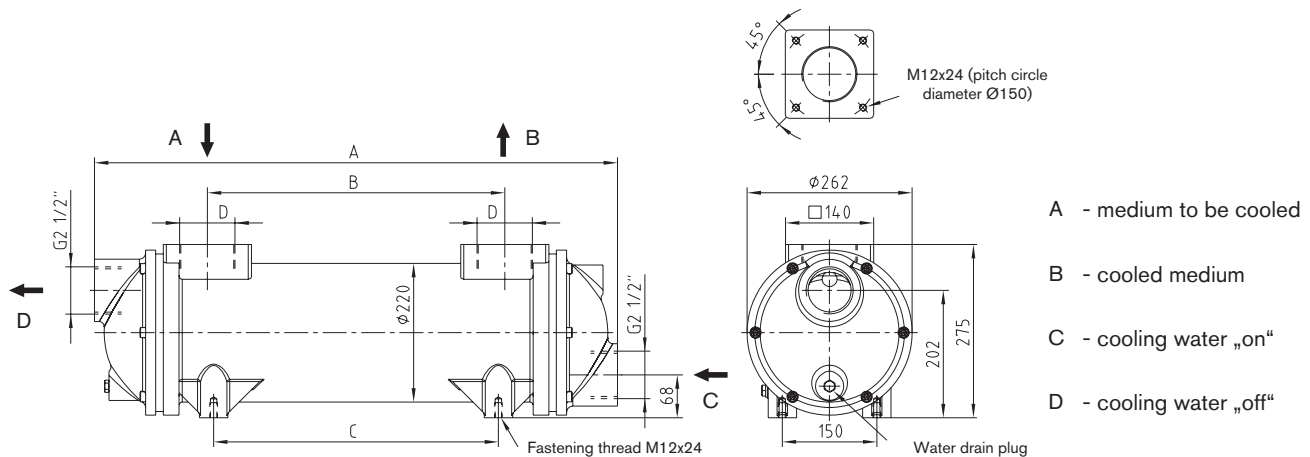
Series 27 and 28



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. permissible oil temperature 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

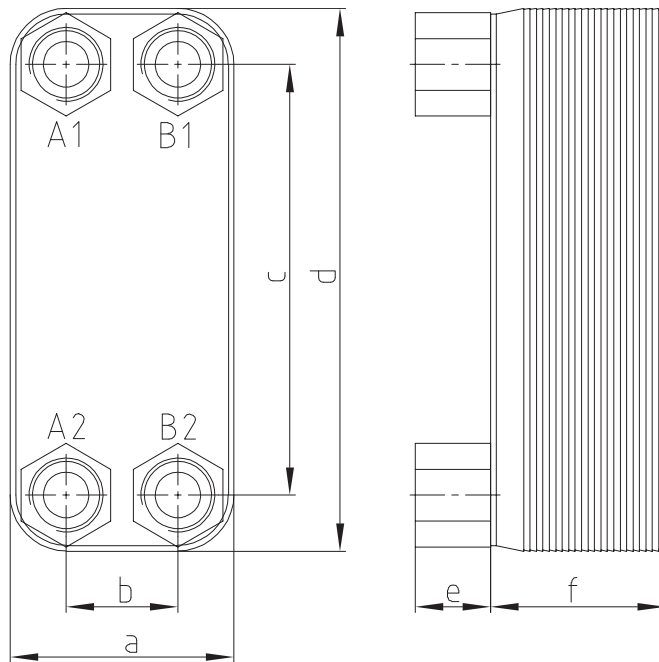
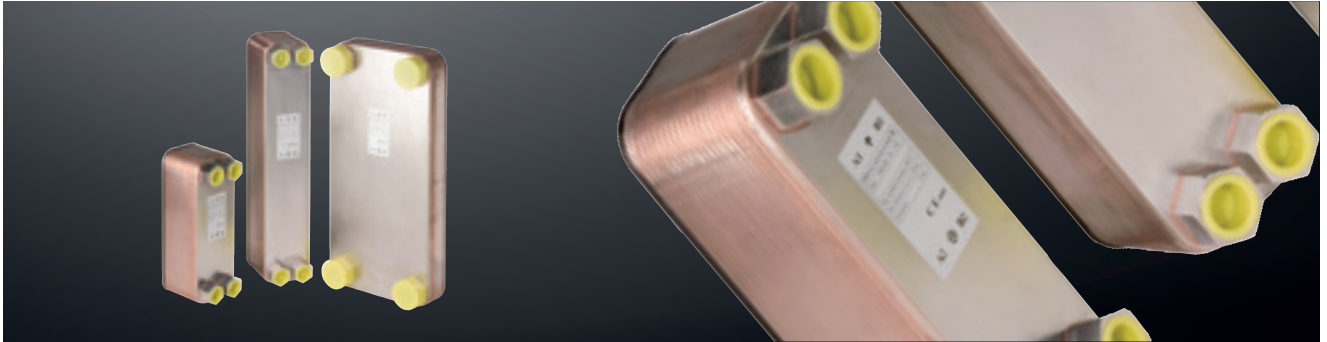
Max. permissible oil temperature 100 °C. Max. oil pressure 20 bar. Max. water pressure 10 bar.

Ordering example:	TAK/T	271	2	SW
	Type	Series/size	2 = Industrial version (standard) 3 = Industrial version with viton seals, temp. >100 °C 4 = Marine version 5 = Marine version with viton seals, temp. >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	

Oil/water coolers type PHE

Cooling systems

High power density in a tight space



Technical data

Plate heat exchanger made of stainless steel 1.4401 soldered to copper. The stamped plates generate a high power density in a tight space. Compared to a bundle of pipes heat exchanger, the plate heat exchanger only requires approx. 25 % - 30 % of space with less weight. Applications are, as an example, machine tools, test benches, moulding machines, pump units, waste heat utilization, etc. It is possible to use other media like, for example, oil, water glycol, water, refrigerating agents, air, etc.

Operating temperature: -10 °C to +200 °C.

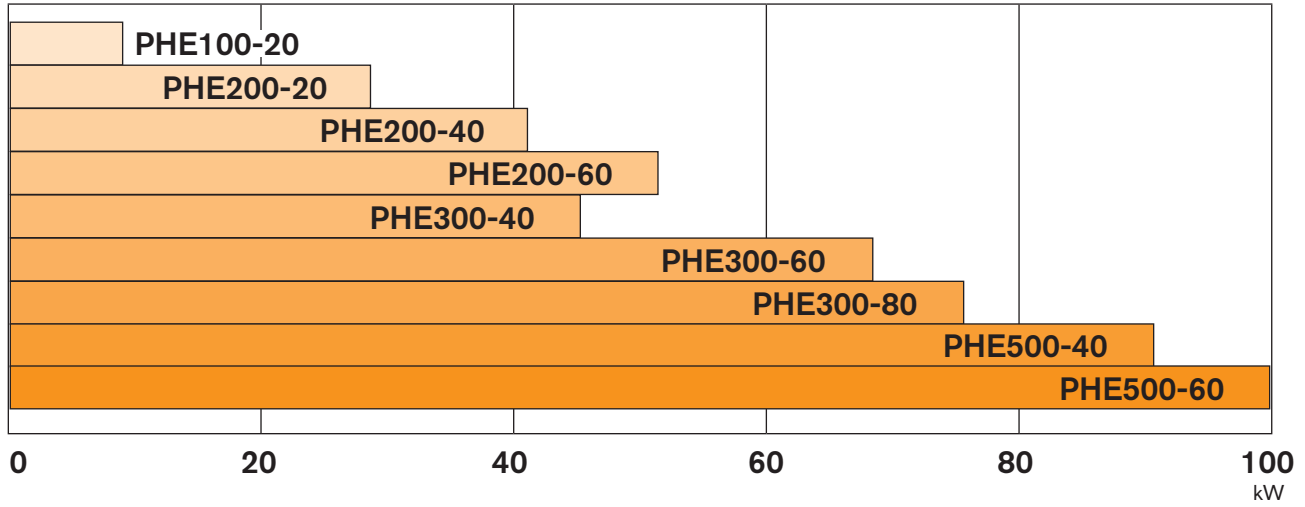
Please observe boiling point and freezing point!

Maximum permissible operating pressure: PHE 100: 10 bar / PHE 200-500: 30 bar

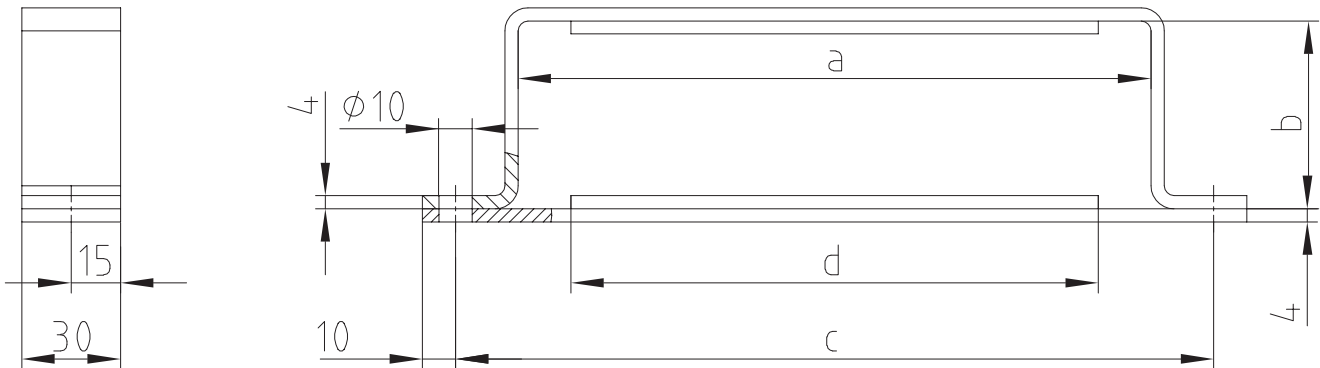
Plate heat exchanger										
Series	Type	Thread	Plates	a	b	c	d	e	f	
PHE	100	4 x 3/4"	20	73	40	154	191	24	52	
PHE	200	4 x 1"	20						55	
PHE	200	4 x 1"	40	116	72	243	286	24	103	
PHE	200	4 x 1"	60						151	
PHE	300	4 x 1"	40						103	
PHE	300	4 x 1"	60	112	50	466	526	24	151	
PHE	300	4 x 1"	80						203	
PHE	500	4 x 1 1/2"	40						103	
PHE	500	4 x 1 1/2"	60	191	92	519	616	30	151	

Ordering example:	PHE	100	20
	PHE = Plate heat exchanger	Size	Number of plates

Cooling capacity



Type	Oil temperature switched on [°C]	Water temperature switched on [°C]	Oil flow [l/min]	Water flow [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.

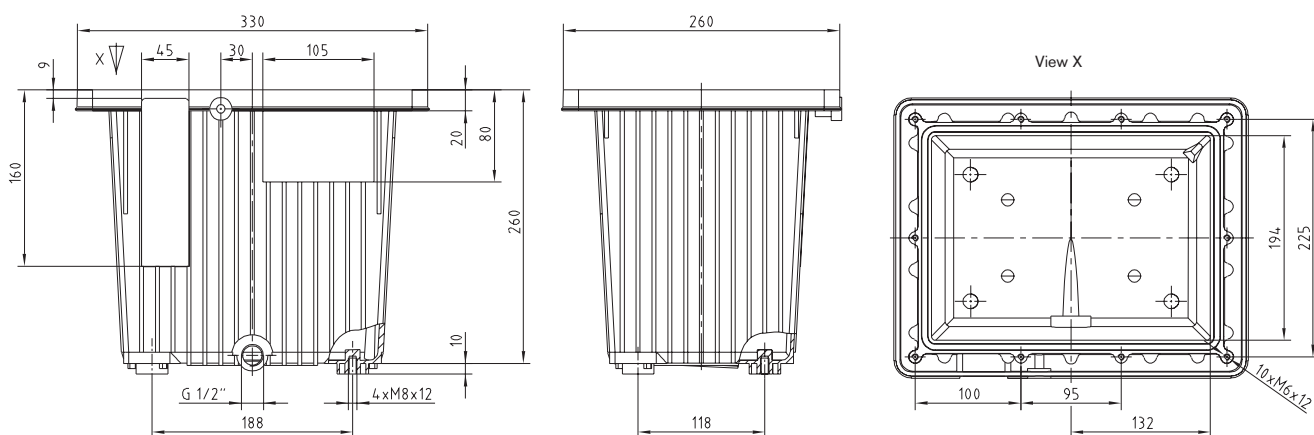
Fastening device				
	a	b	c	d
BH100-20	80	56	114	75
BH200/300-20		59		
BH200/300-40		107		
BH200/300-60	120	155	150	118
BH200/300-80		207		
BH500-40		107		
BH500-60	195	155	235	193

ALUMINIUM TANK TYPE BAK HYDRAULIC COMPONENTS

Tank with oil collecting groove

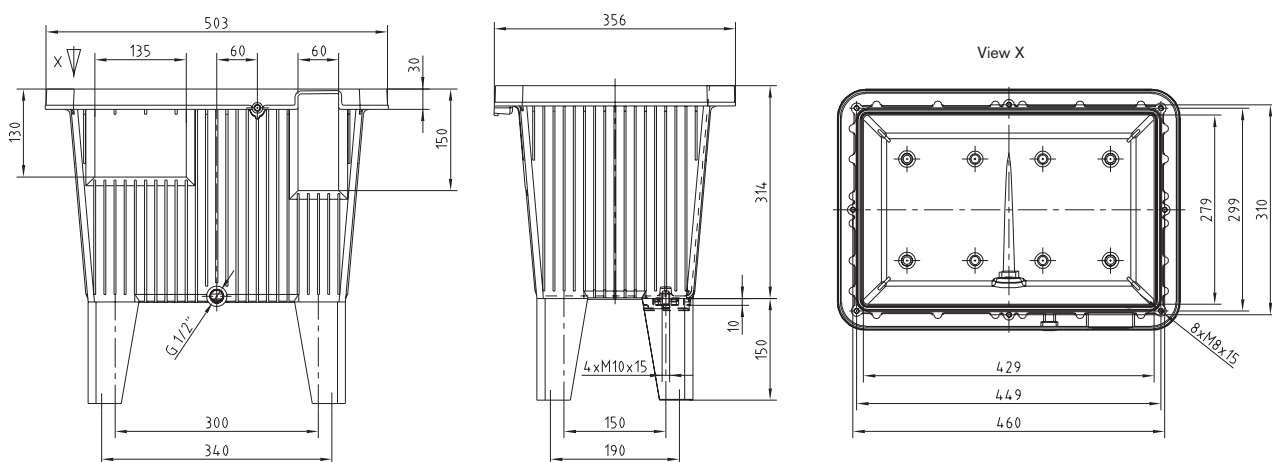


Tank with oil collecting groove BAK 13



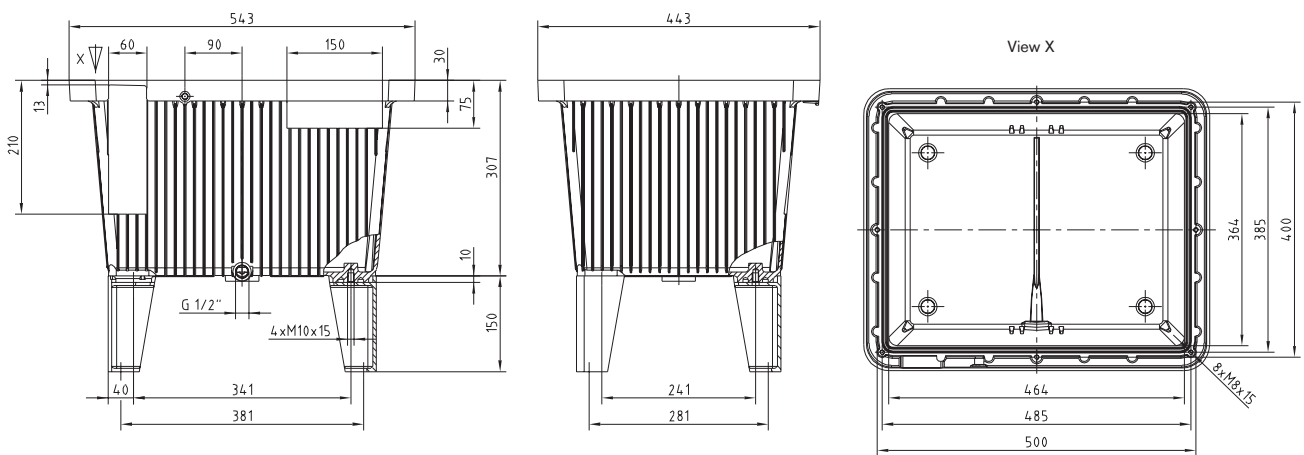
Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
11,5 L	RS 13 NBR	G1/2" = 80 Nm	100 °C	0,5 bar

Tank with oil collecting groove BAK 30



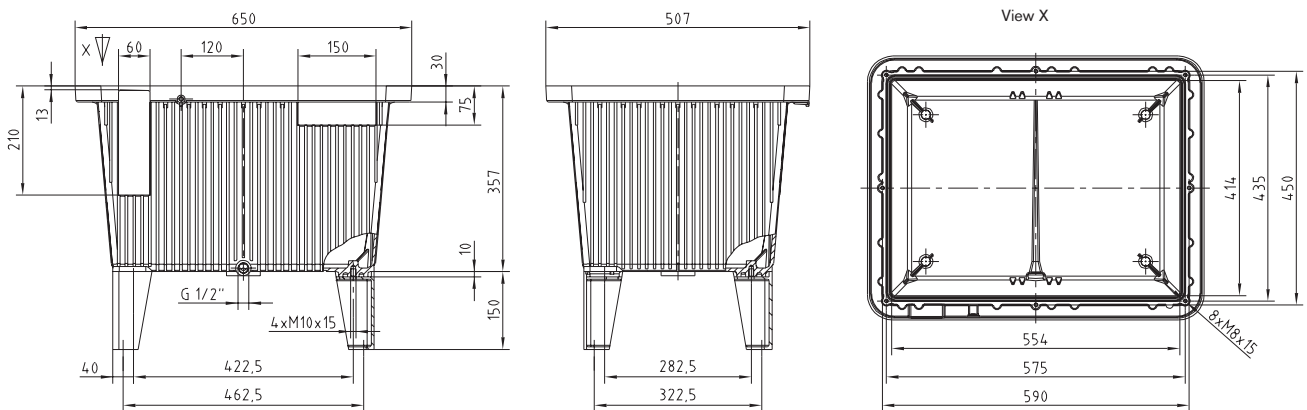
Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
27,0 L	RS 30 NBR	G1/2" = 80 Nm	100 °C	0,5 bar

Tank with oil collecting groove BAK 44



Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
40 L	RS 40/44 NBR	G1/2" = 80 Nm	100 °C	0,5 bar

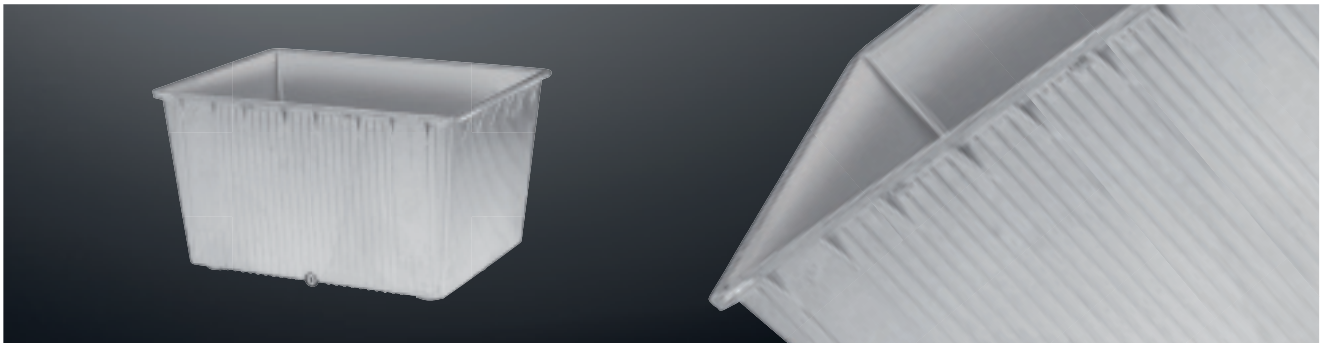
Tank with oil collecting groove BAK 70



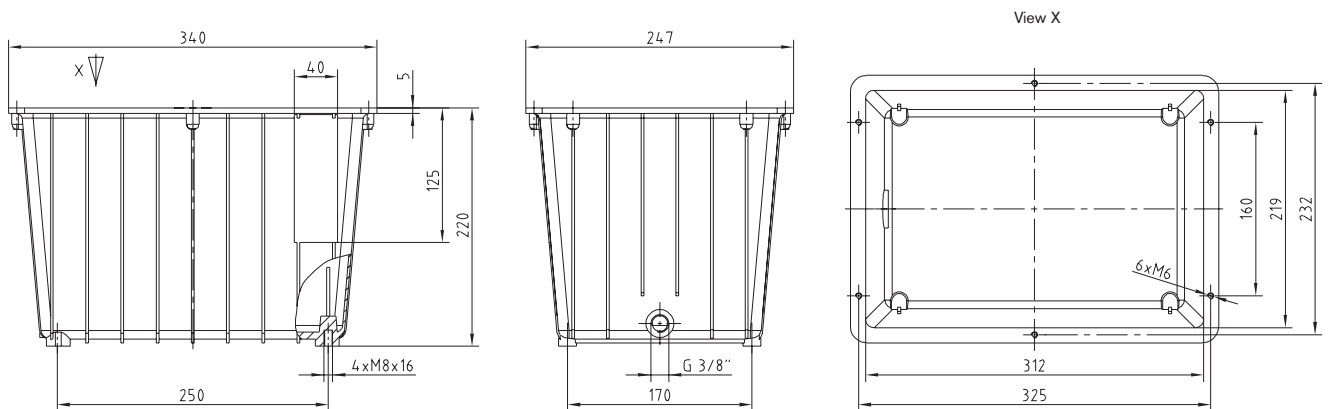
Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
63 L	RS 63/70 NBR	G1/2" = 80 Nm	100 °C	0,5 bar

ALUMINIUM TANK TYPE BAK HYDRAULIC COMPONENTS

Tank without oil collecting groove

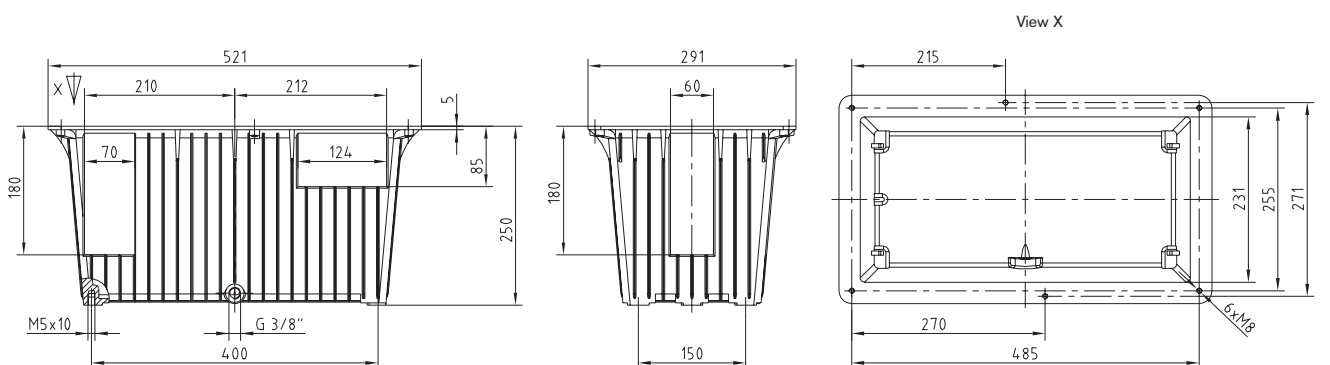


Tank without oil collecting groove BAK 10



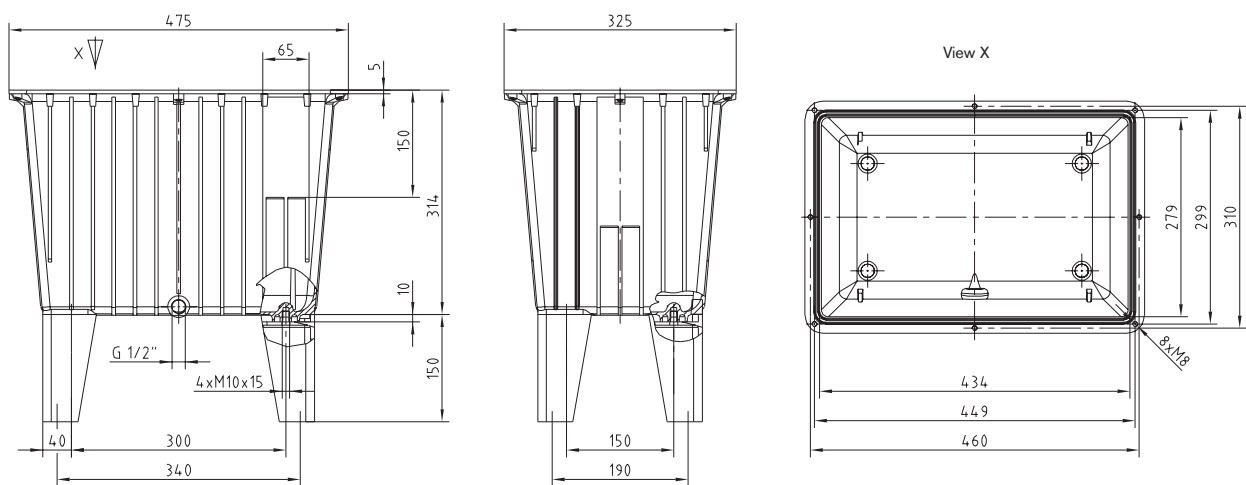
Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
9,5 L	FD 10	G3/8" = 50 Nm	100 °C	0,5 bar

Tank without oil collecting groove BAK 20



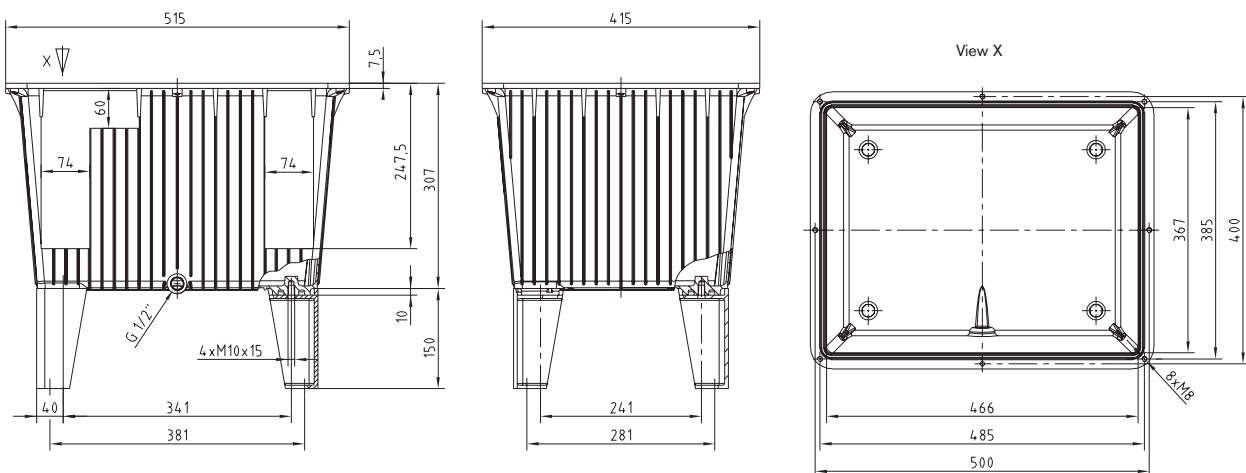
Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
18 L	FD 20	G3/8" = 50 Nm	100 °C	0,5 bar

Tank without oil collecting groove BAK 27



Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
27 L	RS 30 NBR	G1/2" = 80 Nm	100 °C	0,5 bar

Tank without oil collecting groove BAK 40

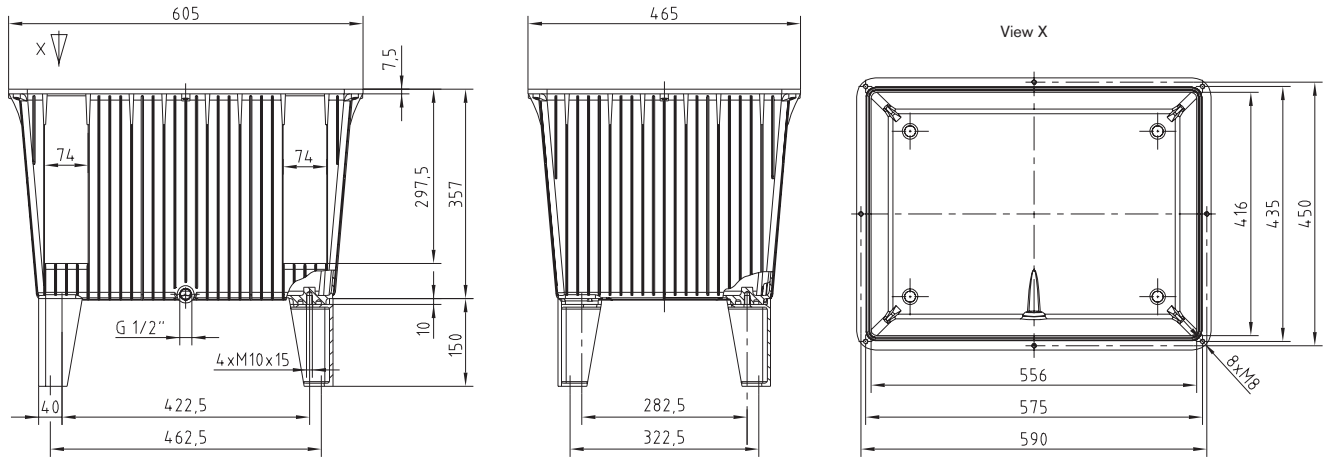


Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
40 L	RS 40/44 NBR	G1/2" = 80 Nm	100 °C	0,5 bar

ALUMINIUM TANK TYPE BAK HYDRAULIC COMPONENTS

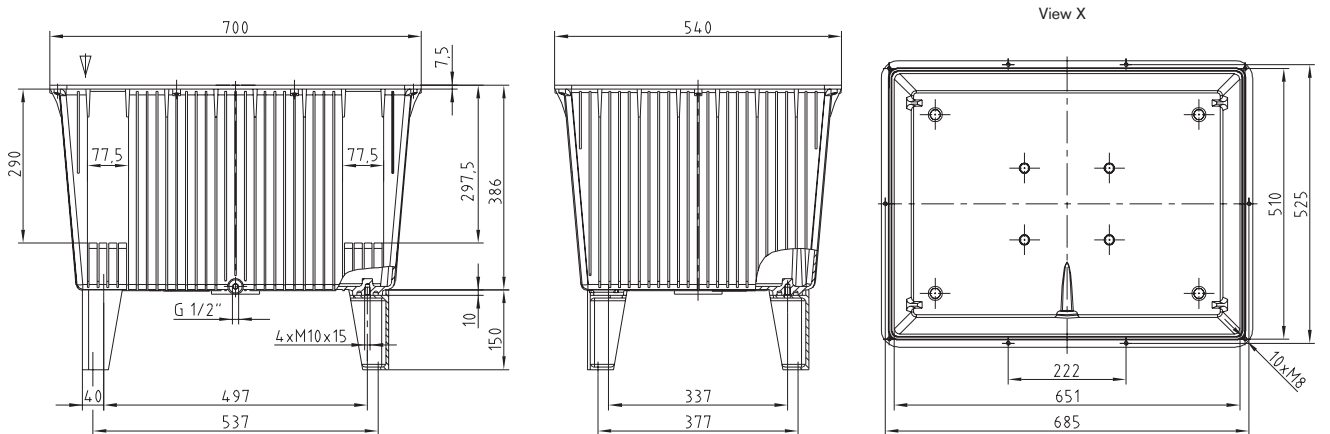
Tank without oil collecting groove

BAK 63

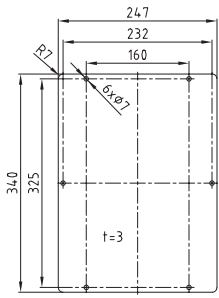


Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
63 L	RS 63/70 NBR	G1/2" = 80 Nm	100 °C	0,5 bar

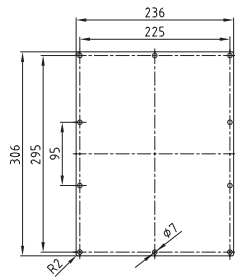
BAK 100



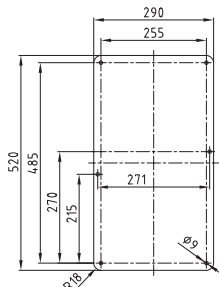
Effective volume	Gasket	Tightening torque of drain plug	Max. media temperature	Max. permissible pressure
95 L	RS 100 NBR	G1/2" = 80 Nm	100 °C	0,5 bar



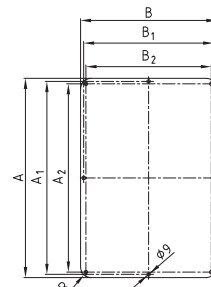
BAK 10 - ST 10
St: 3 mm thick; 1,9 kg



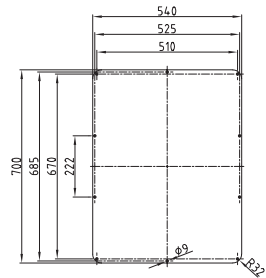
BAK 13 - ST 13 / AL 13
St: 4 mm thick; 2,2 kg
Al: 5 mm thick; 1,0 kg



BAK 20 - ST 20 / AL 20
St: 5 mm thick; 5,8 kg
Al: 5 mm thick; 5,8 kg



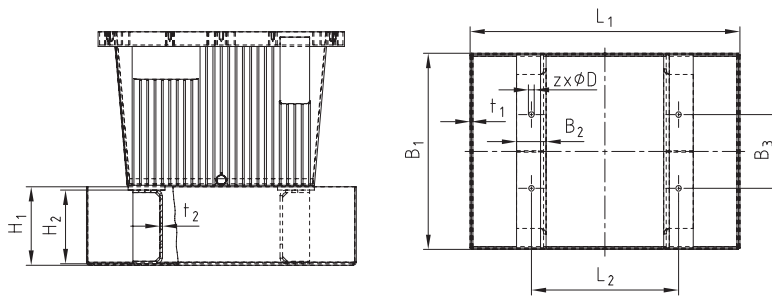
BAK 30-70
ST 30-70
AL 30-70



BAK 100 - ST 100 / AL 100
St: 6 mm thick; 17,8 kg
Al: 8 mm thick; 8,2 kg

Tank cover made of steel and aluminium, accessories for aluminium tank

Cover		For tank	Dimensions [mm]							Cover thickness		Weight [kg]	
Steel	Alu		A	A ₁	A ₂	B	B ₁	B ₂	R	St	Al	St	Al
ST 30	AL 30	BAK 30	475	460	449	325	310	299	25	5	5	6	2,1
ST 44	AL 44	BAK 40/BAK 44	515	500	485	415	400	385	32	5	8	8,5	4,6
ST 70	AL 70	BAK 63/BAK 70	605	590	575	465	450	435	32	5	8	10,5	6,1

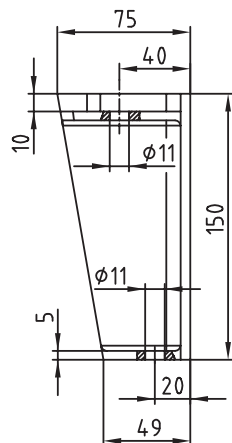


Oil sump BAKW made of steel for KTR aluminium tanks BAK/available acc. WHG

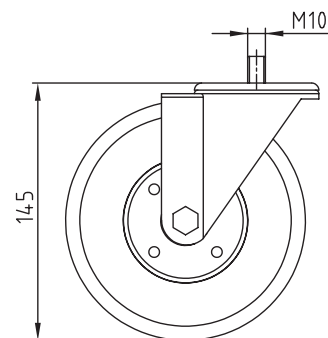
Oil sump pan	For tank	Volume of oil sump pan	Dimensions [mm]										
			L ₁	L ₂	B ₁	B ₂	B ₃	H ₁	H ₂	t ₁	t ₂	z	D
BAKW 13	BAK 13	11,8 l	380	188	310	60	118	110	100	3	3	4	9
BAKW 20	BAK 20	20 l	570	400	350	60	150	110	100	3	3	4	12
BAKW 30	BAK 30	33 l	550	300	400	60	150	160	150	3	5	4	12
BAKW 44	BAK40/BAK 44	45 l	600	341	500	60	241	160	150	3	5	4	12
BAKW 70	BAK 63/BAK 70	63,5 l	730	422,5	580	60	282,5	160	150	3	5	4	12
BAKW 100	BAK 100	104 l	920	497	770	60	337	160	150	3	5	4	12

Accessories

Tank feet BF 150 made of cast aluminium



Wheels LR 150 and LR 150 F with lock

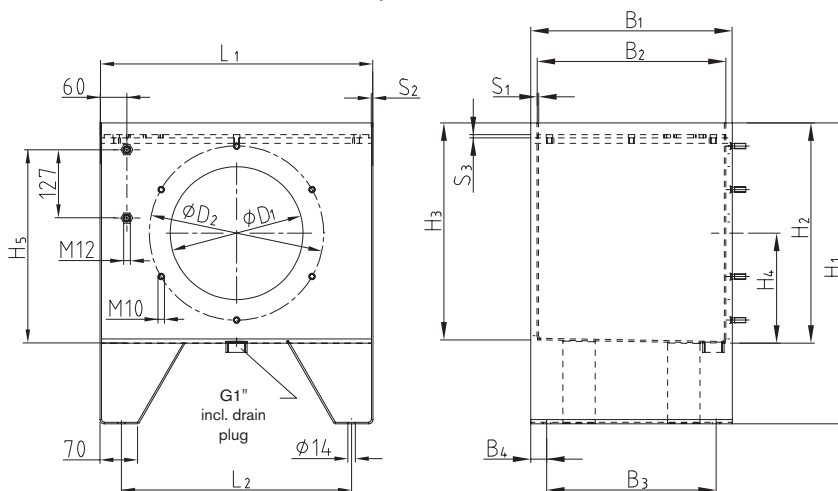


STEEL TANKS TYPE BSK HYDRAULIC COMPONENTS

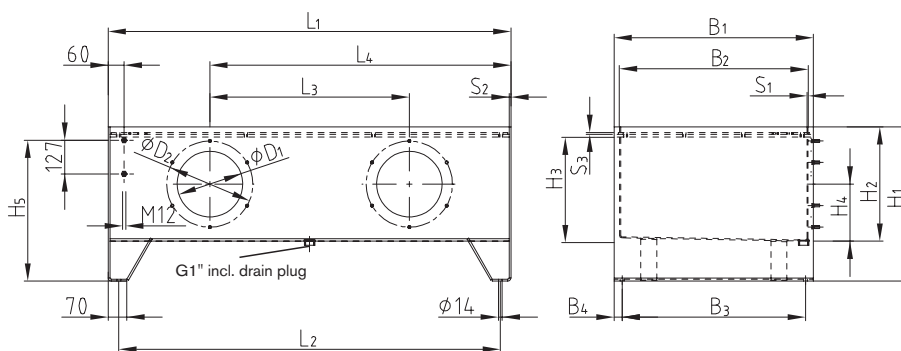
Series BSK



up to size 200



from size 250



Series BSK, NG 40-400

Order description	Effective vol.	Weight	Tank dimensions [mm]															Cleaning cover			Tank complete available from stock tank cover design E					
			L1	L2	L3	L4	B1	B2	B3	B4	H1	H2	H3	H4	H5	D1	D2	S1	S2	S3	No.	Type	Standard t = S3	Reinforced t = 10		
NG	Litres	kg																								
BSK 40	38	34	508	428	-	-	375	365	315	30	430	280	273	140	230	195	250	3	3	6	1	V 250-4	●			
BSK 63	59	38	508	428	-	-	375	365	315	30	560	410	403	205	360	248	324	3	3	6	1	V 324-6	●			
BSK 100	92	70	633	553	-	-	474	460	414	30	560	407	399	205	357	248	324	4	4	6	1	V 324-6	●			
BSK 160	152	86	810	730	-	-	604	590	544	30	560	410	400	205	360	248	324	4	4	6	1	V 324-6	●			
BSK 200	184	101	900	820	-	-	654	640	594	30	560	410	399	205	360	248	324	4	4	6	1	V 324-6	●	On request		
BSK 250	235	138	1010	930	410	710	704	690	644	30	580	430	418	215	380	248	324	4	4	7	2	V 324-6	●			
BSK 300	272	144	1208	1128	410	809	714	700	654	30	580	412	400	206	362	248	324	4	4	7	2	V 324-6	●			
BSK 400	375	201	1514	1434	750	1132	749	735	689	30	580	430	417	215	380	248	324	4	7	7	2	V 324-6	●			

● = Standard programme available from stock and in short term

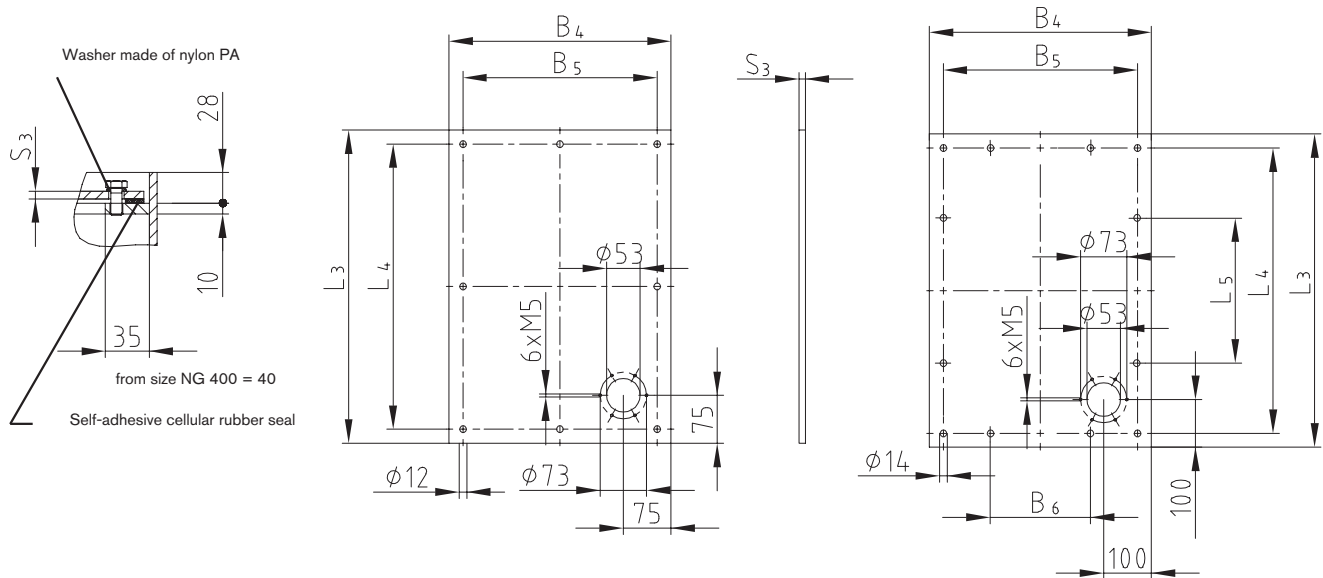
Ordering example:	BSK	250	E
		KTR standard tank	Tank size

Tank cover

Cover design E

For size 40-300

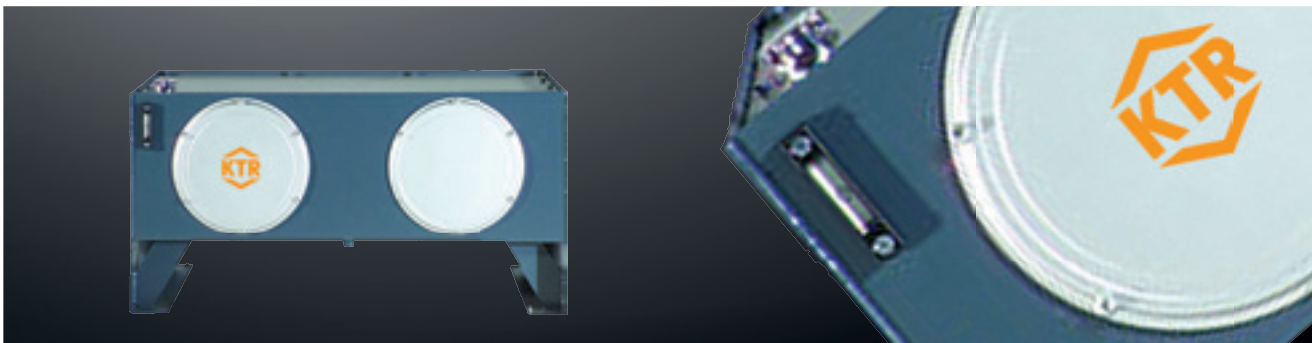
For size 400



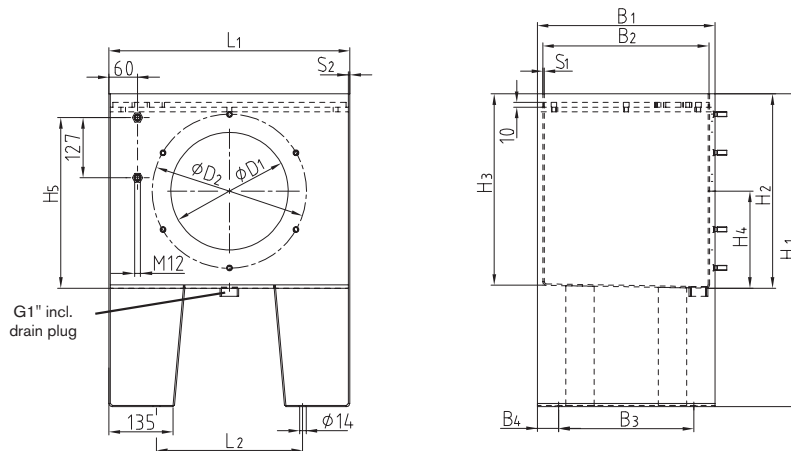
Cover design „E“								
NG	Dimensions [mm]							Number of holes
	L ₃	L ₄	L ₅	B ₄	B ₅	B ₆	S ₃	
40	492	448	-	349	305	-	6	8x
63	492	448	-	349	305	-	6	8x
100	615	571	-	442	398	-	6	8x
160	792	748	-	572	528	-	6	8x
200	882	838	-	622	578	-	6	8x
250	992	948	-	672	628	-	7	8x
300	1190	1146	-	682	638	-	7	8x
400	1490	1440	480	717	667	222	7	12x

STEEL TANK TYPE BNK HYDRAULIC COMPONENTS

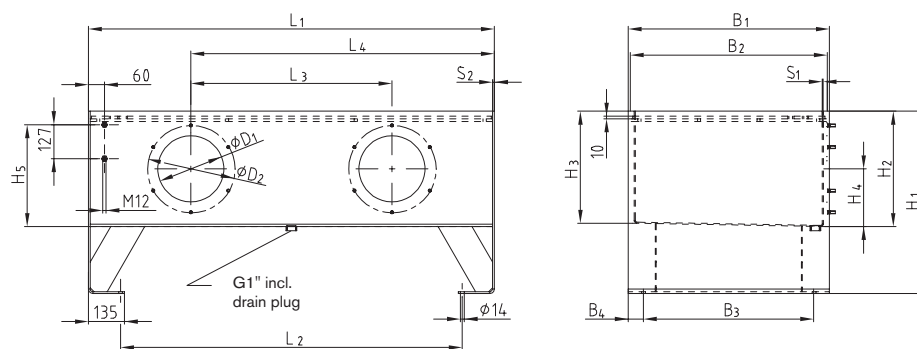
Series BNK type A



up to size 160



from NG 250



Series BNK design A, NG 63-1250																							
Order description	Effective vol.	Weight	Tank dimensions [mm]																Cleaning cover		Tank completely available from stock		
			NG	Litres	kg	L ₁	L ₂	L ₃	L ₄	B ₁	B ₂	B ₃	B ₄	H ₁	H ₂	H ₃	H ₄	H ₅	D ₁	D ₂	S ₁	S ₂	No.
BNK 63	59	47	508	308	-	-	375	365	285	45	660	410	403	205	360	248	324	3	3	1	V 324-6	●	
BNK 100	92	77	633	393	-	-	474	460	360	57	660	407	399	205	357	248	324	4	4	1	V 324-6	●	
BNK 160	152	112	810	570	-	-	604	590	490	57	660	410	400	205	360	248	324	4	4	1	V 324-6	●	
BNK 250	235	148	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	2	V 324-6	●	
BNK 400	375	245	1514	1274	750	1132	749	735	635	57	680	430	417	215	380	248	324	4	7	2	V 324-6	●	
BNK 630	595	366	1514	1274	750	1132	959	945	845	57	770	520	504	265	470	383	449	4	7	2	V 449-6	●	
BNK 800	752	400	2014	1774	1000	1507	914	900	800	57	770	520	504	265	470	383	449	5	7	2	V 449-6	●	
BNK 1000	945	452	2014	1774	1000	1507	1079	1065	965	57	800	550	531	285	500	383	449	5	7	2	V 449-6		
BNK 1250	1180	600	2014	1774	1000	1507	1349	1335	1235	57	800	550	527	285	500	383	449	5	7	2	V 449-6		

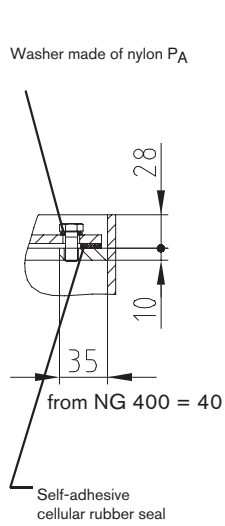
● = Standard programme available from stock and in short term

Ordering example:	BNK	250	A	E
	KTR standard tank	Tank size	Tank design "A"	Cover design "E"

Tank cover

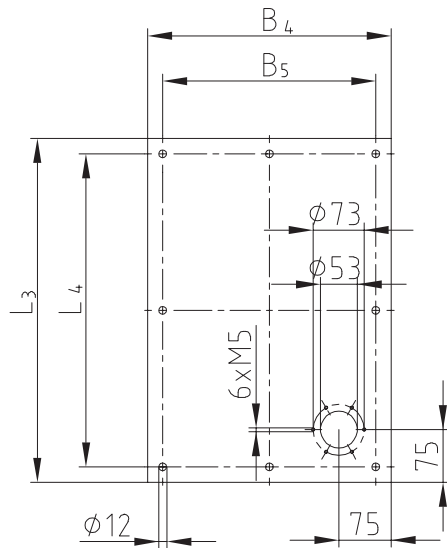
Cover design E

Design E



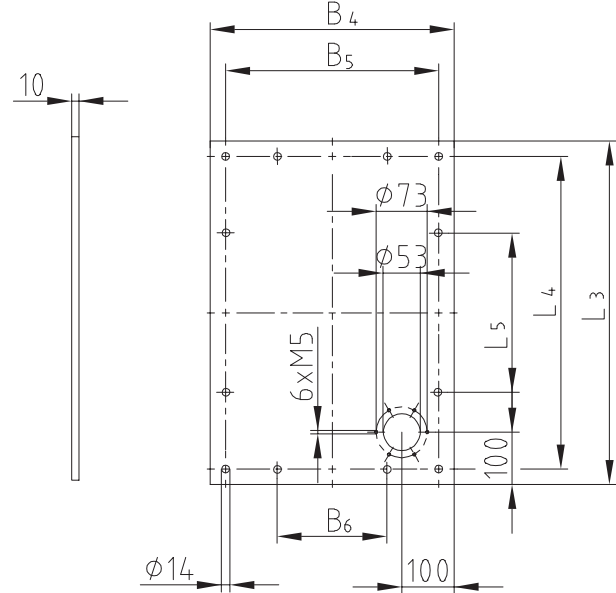
For size 63-250

Design E



For size 400-1250

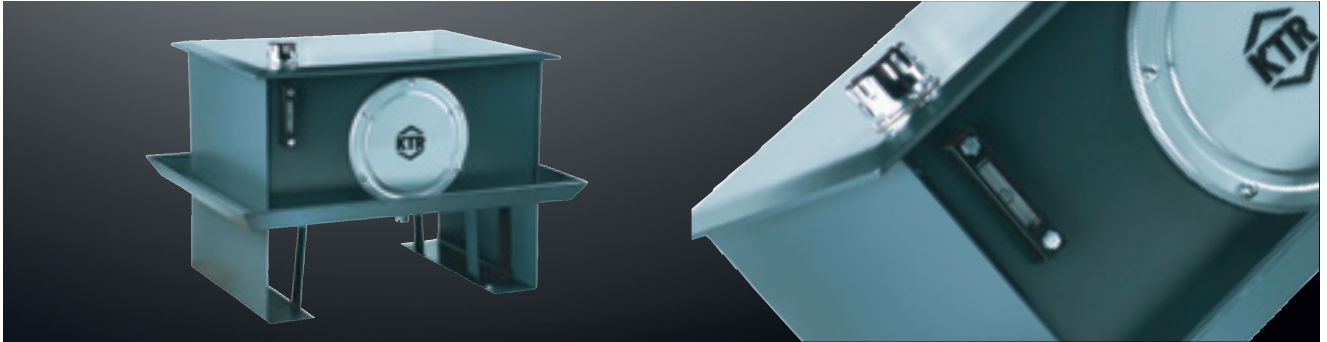
Design E



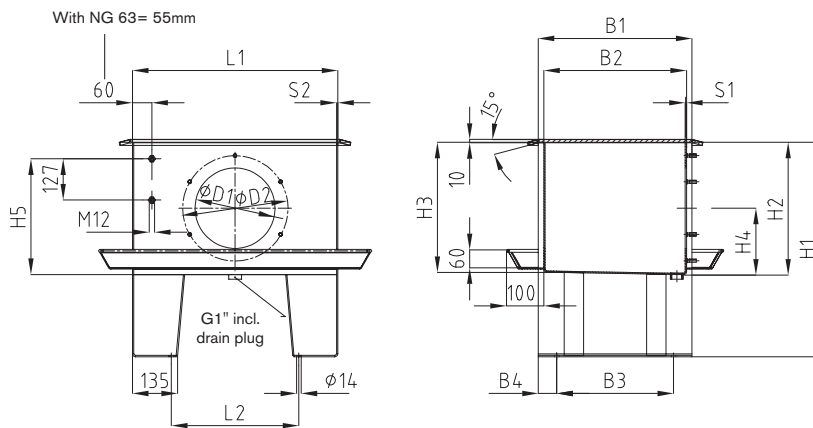
Cover type "E"							
NG	Dimensions [mm]						Number of holes
	L ₃	L ₄	L ₅	B ₄	B ₅	B ₆	
63	492	448	-	349	305	-	8x
100	615	571	-	442	398	-	8x
160	792	748	-	572	528	-	8x
250	992	948	-	672	628	-	8x
400	1490	1440	480	717	667	222	12x
630	1490	1440	480	927	877	292	12x
800	1990	1940	647	880	830	277	12x
1000	1990	1940	647	1045	995	332	12x
1250	1990	1940	647	1315	1265	422	12x

Steel tank type BNK HYDRAULIC COMPONENTS

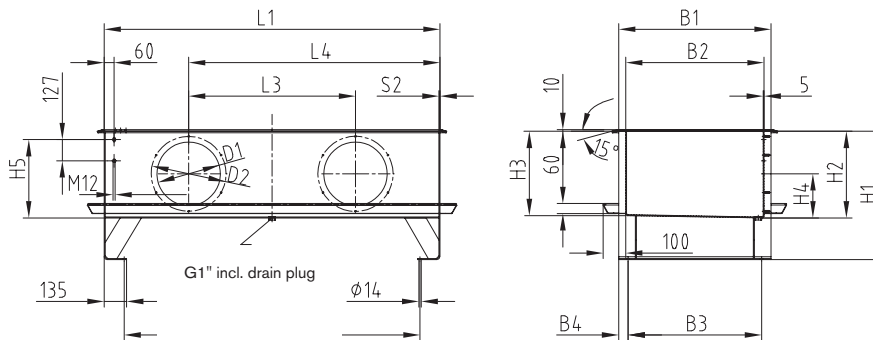
Series BNK type B



up to size 160



from size 250



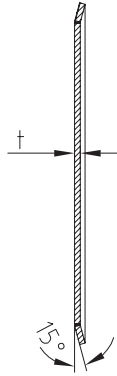
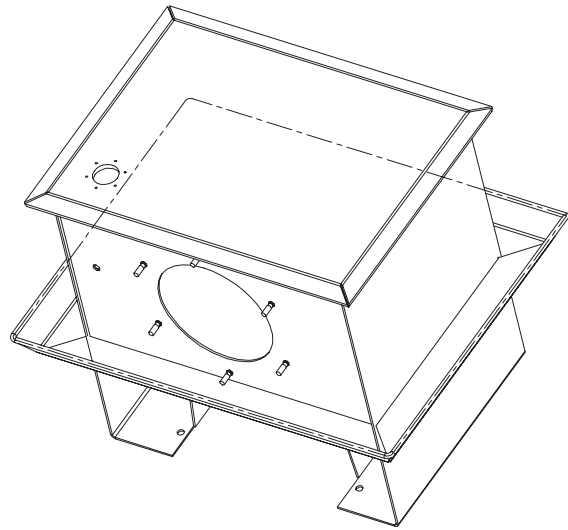
Series BNK design B, NG 63-1250

Order description	Effective vol.	Weight	Dimensions of tanks [mm]																	Cleaning cover		
			NG	Litres	kg	L ₁	L ₂	L ₃	L ₄	B ₁	B ₂	B ₃	B ₄	H ₁	H ₂	H ₃	H ₄	H ₅	D ₁	D ₂	S ₁	
BNK 63	59	56	508	308	-	-	375	365	285	45	660	410	403	205	360	248	324	3	3	1	V 324-6	Delivery time on request
BNK 100	95	88	633	393	-	-	474	460	360	57	660	407	399	205	360	248	324	4	4	1	V 324-6	
BNK 160	152	130	810	570	-	-	604	590	490	57	660	410	400	205	360	248	324	4	4	1	V 324-6	
BNK 250	235	170	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	1	V 324-6	
BNK 400	375	270	1514	1274	750	1132	749	735	635	57	680	430	417	215	380	248	324	4	7	1	V 324-6	
BNK 630	595	375	1514	1274	750	1132	959	945	845	57	770	520	504	265	470	383	449	4	7	2	V 449-6	
BNK 800	752	420	2014	1774	1000	1507	914	900	800	57	770	520	504	265	470	383	449	5	7	2	V 449-6	
BNK 1000	945	490	2014	1774	1000	1507	1079	1065	965	57	800	550	531	285	500	383	449	5	7	2	V 449-6	
BNK 1250	1180	636	2014	1774	1000	1507	1349	1335	1235	57	800	550	527	285	500	383	449	5	7	2	V 449-6	

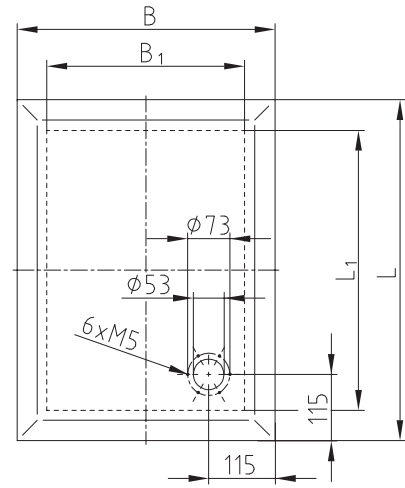
● = Standard programme available from stock and in short term

Ordering example:	BNK	250	B	A
	KTR standard tank	Tank size	Cover design "B"	Cover design "A"

Tank cover



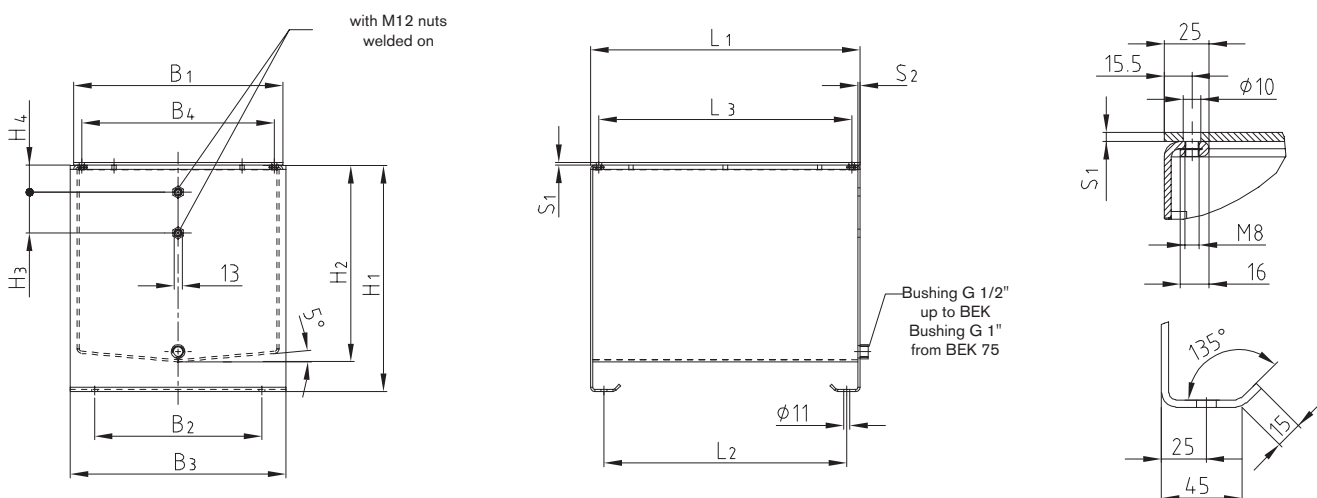
Cover design A



Cover design „A“			
NG	Dimensions [mm]		
	L	B	t
63	588	445	10
100	713	540	10
160	890	670	10
250	1090	770	10
400	1594	815	10
630	1594	1025	10
800	2094	980	10
1000	2094	1145	10
1250	2094	1415	10

STEEL TANK TYPE BEK HYDRAULIC COMPONENTS

Series BEK



Series BEK, size 12-300													
Order description	Effective vol.	Weight	Tank dimensions [mm]										Tank completely available from stock
NG	Litres	kg	L ₁	L ₂	B ₁	B ₂	B ₃	H ₁	H ₂	H ₃	H ₄	S ₂	Cover design E
BEK 12	16	17	310	260	298	220	310	275	220	76	50	4	●
BEK 20	26	23	400	350	298	220	310	325	270	76	50	4	●
BEK 35	40	30	470	420	298	220	310	400	345	76	50	4	●
BEK 50	58	40	500	450	388	310	400	420	365	76	50	4	●
BEK 60	69	43	550	500	388	310	400	445	390	76	50	4	●
BEK 75	85	46	550	500	388	310	400	530	475	127	50	4	●
BEK 100	109	54	700	650	388	310	400	530	475	127	50	4	●
BEK 150	175	79	750	700	488	410	500	620	565	127	80	4	●
BEK 225	267	115	900	850	588	510	600	650	595	127	80	4	●
BEK 300	339	127	900	850	688	610	700	700	645	127	80	4	●

● = Standard programme available from stock and in short term

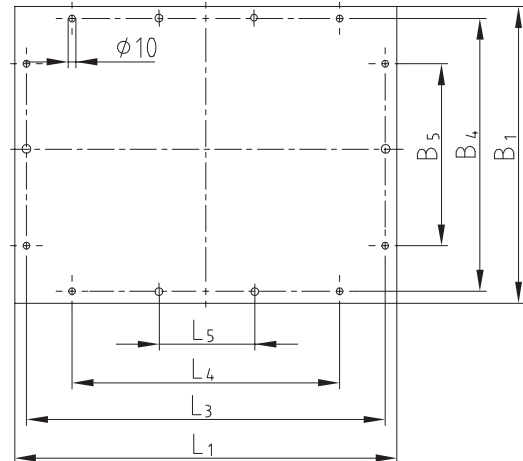
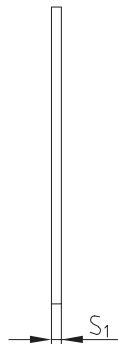
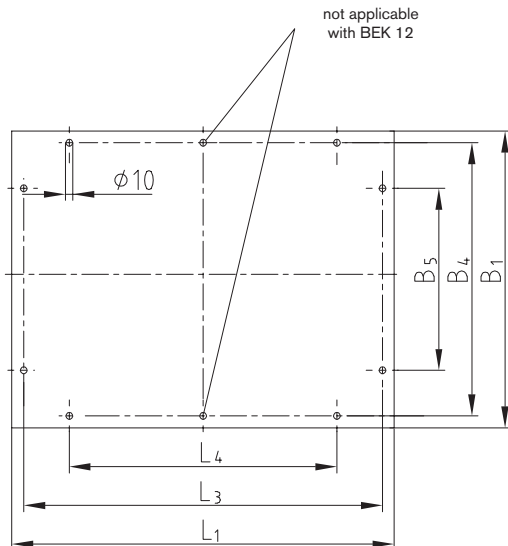
Ordering example:	BEK	100	E
	KTR standard tank	Tank size	Cover design "E"

Tank cover

Cover design E

up to size 75

as from size 100



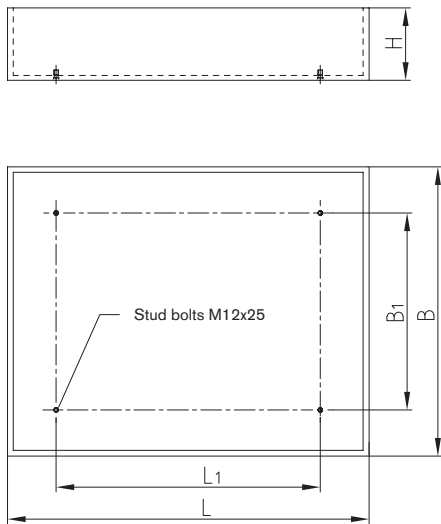
Cover design „E“								
NG	Dimensions [mm]							
	S ₁	L ₁	B ₁	L ₃	B ₄	L ₄	B ₅	L ₅
12	4	310	298	279	267	160	148	-
20	4	400	298	369	267	250	148	-
35	5	470	298	439	267	320	148	-
50	5	500	388	469	357	350	238	-
60	5	550	388	519	357	400	238	-
75	5	550	388	519	357	400	238	-
100	6	700	388	669	357	550	238	184
150	6	750	488	719	457	600	338	200
225	8	900	588	869	557	750	438	250
300	8	900	688	869	657	750	538	250

OIL SUMP PANS HYDRAULIC COMPONENTS

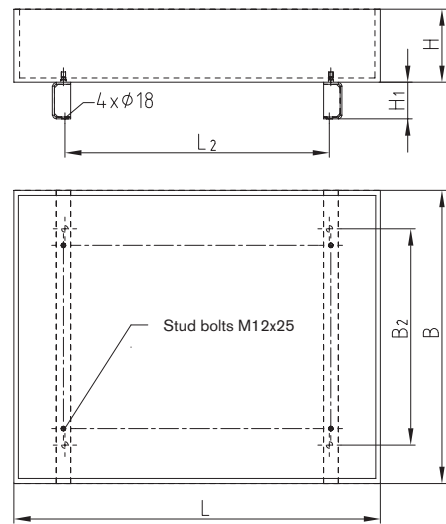
Oil sump pans for steel tanks



Oil sump pan without feet



Oil sump pan with feet



For distance dimensions of stud bolts see table L₁ and B₁

Oil sump pan for BSK and BNK															
Order description	Effective vol.	Weight in kg		Tank dimensions [mm]											Available from stock without feet
		without feet	with feet	L	L ₁		L ₂	B	B ₁		B ₂	H	H ₁		
NG	Litres				BSK	BNK			BSK	BNK				BSK	BNK
63	74	22	30	700	428	308	420	600	315	285	365	200	100	●	
100	105	29	38	850	553	393	545	700	414	360	460	200	100	●	
160	160	36	47	1000	730	570	722	800	544	490	590	200	100	●	
200	200	42	54	1100	820	-	812	850	594	-	640	220	100	●	
250	250	50	64	1250	930	770	922	1000	644	590	690	200	100	●	
300	300	57	69	1400	1128	-	1120	900	654	-	700	250	100	●	
400	400	72	87	1720	1434	1274	1426	980	689	635	735	250	100	●	
630	630	93	112	1810	-	1274	1426	1190	-	845	945	300	100	●	
800	800	110	138	2410	-	1774	1926	1190	-	800	900	300	100		
1000	1000	123	155	2420	-	1774	1926	1380	-	965	1065	300	100		
1250	1250	156	184	2380	-	1774	1926	1770	-	1235	1335	300	100		

● = Standard programme available from stock and in short term

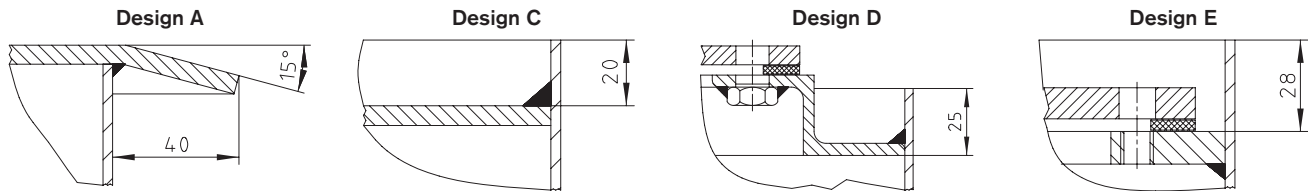
Type plate and certificates in accordance with standards S19 WHG available at an extra charge. Please specify in your order.

Ordering example:	Ö	63	BSK	F
	Oil sump pan	Tank size	Tank type	F = with feet O = without feet

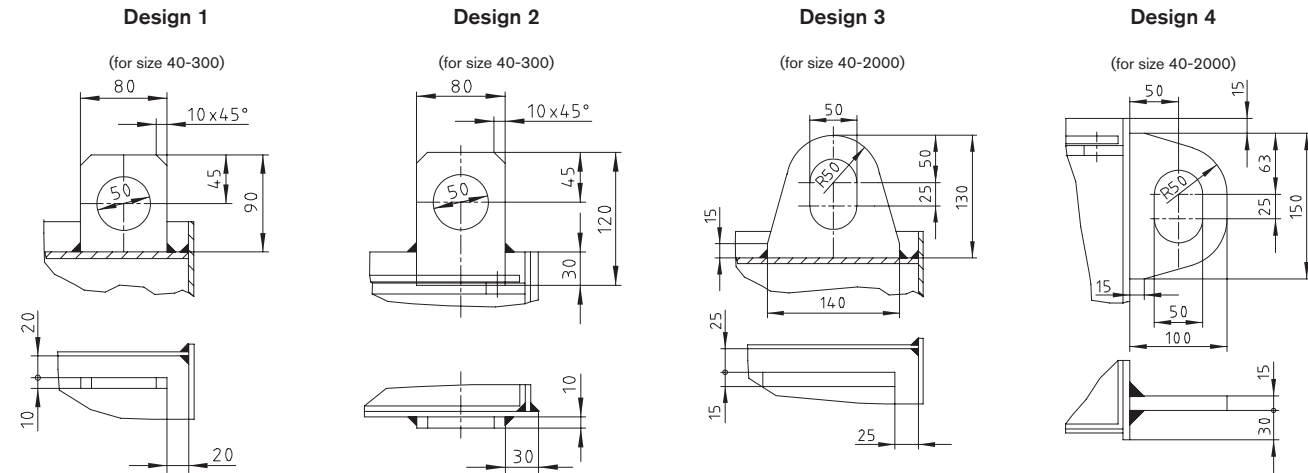
STEEL TANKS TYPE BNK HYDRAULIC COMPONENTS

Cover design, separation sheet metals, transport eyes and seams

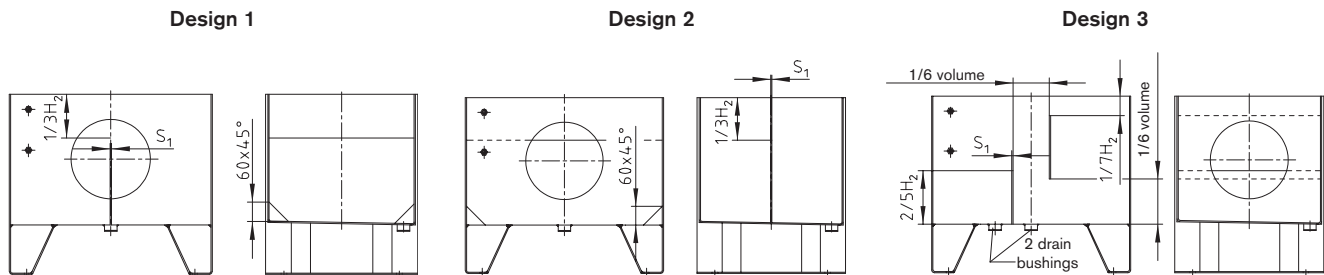
Cover designs for DIN tanks of the BKN series:



Transport eyes:



Separation sheet metals:

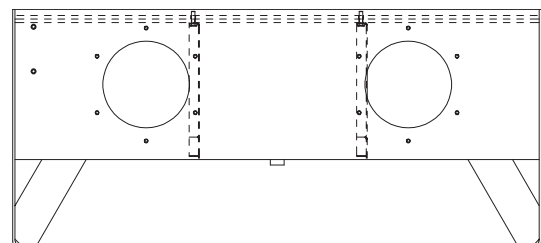
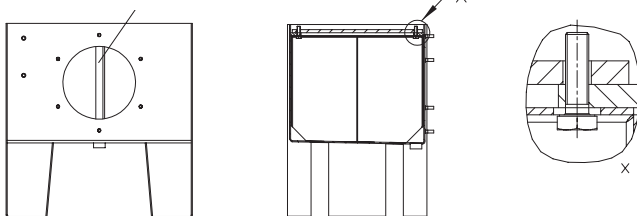


Separation sheet metals to be screwed on:

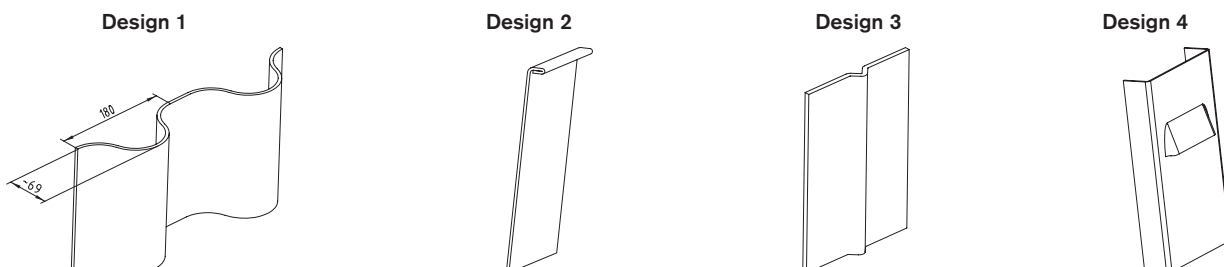
Separation sheet metal up to BSK/BNK 300

From BSK/BNK 400 separation sheet metals optionally on the right or on the left

Separation sheet metals to be screwed on



Creasings:



CERTIFICATES

Welding approval for rail vehicles and vehicle parts acc. to EN 15085-2

The manufacturing plant of KTR is certified according to ISO 9001: 2008



Complete qualification proof for steel components and tanks according to DIN 18800-7

Recognized expert plant acc. to the water resources law §19 I WHG

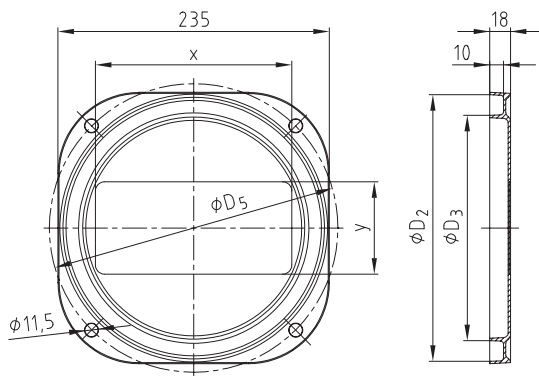


ACCESSORIES FOR OIL TANKS HYDRAULIC COMPONENTS

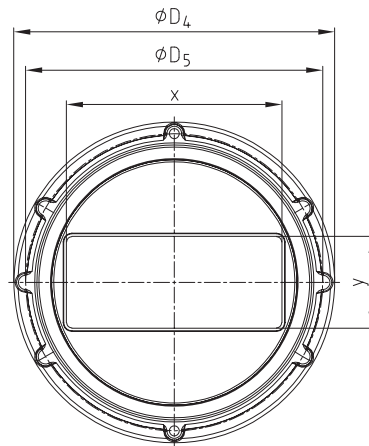
Cleaning covers



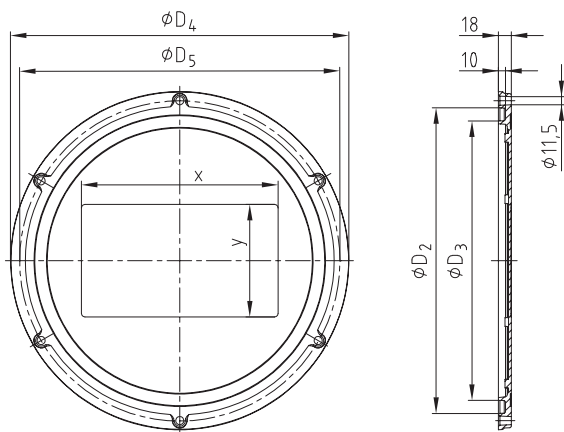
Cleaning cover V250-4 PRD



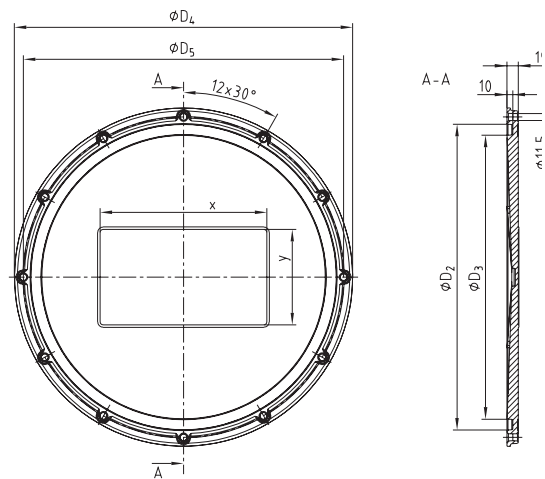
Cleaning cover V324-6 acc. to DIN 24339



Cleaning cover V449-6 acc. to DIN 24339



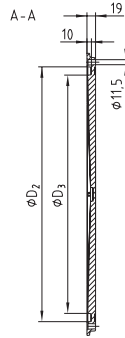
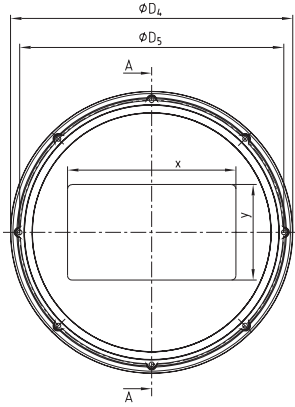
Cleaning cover V530-12



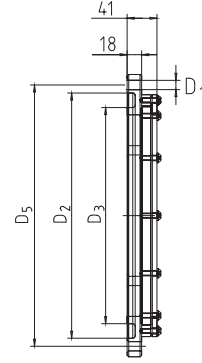
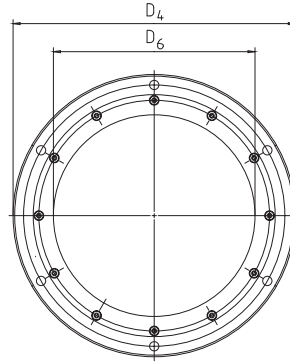
Technical data				
Screw tightening torque	Max. permissible pressure	HFC liquids	Perm. temperature range	Logo
10 Nm	0,5 bar	Order suffix/HFC	-20 to 100 °C	on request

Ordering example:	V324-6/W	PRD 393 NBR
	Cleaning cover	Spline seal

Cleaning cover V580-8

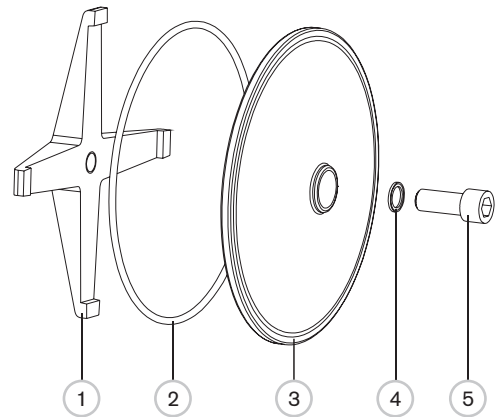
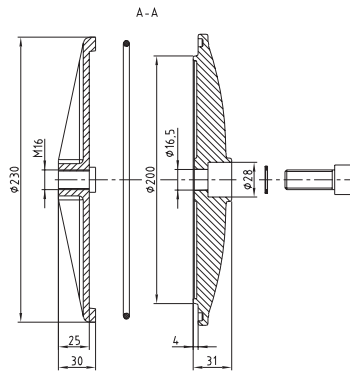
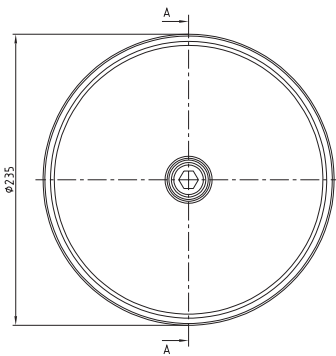


Cleaning cover
Type W aluminium/polycarbonate
Type WCW \cong with inspection glass



- Screw tightening torque max. 10 Nm
- Max. permissible pressure = 0.5 bar
- Permissible temperature range type W -20°C to 90°C

Cleaning cover V235

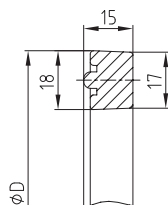


List of components:

- 1 Fixing cross
- 2 O-ring 214 x 5
- 3 Cover
- 4 Gasket Usit 22 x 16
- 5 Screw M 16 x 40 max. tightening torque 40 Nm

Cleaning covers									
Size	Dimensions [mm]								
	D ₁	D	D ₃	D ₄	D ₅	Inspection glass	Number of bores	x	y
V250-4 PRD		229	193	-	250	-	4	170	80
V324-6 / V324-6 HFC		304	268	350	324	-		235	100
V324-6 Kokille*		304	268	350	324	-		-	-
V324-6 /W	11,5	304	268	350	324	$\phi 250$	6	276	158
V449-6 / V449-6 HFC		429	393	475	449	-		276	158
V449-6 /W		429	393	475	449	$\phi 250$		-	-
V530-12 / V530-12 HFC		505	471	560	530	-	12	276	158
V580-8 / V580-8 HFC		560	523	620	580	-	8	370	210

* Cover with fixing by 4 holes on request.

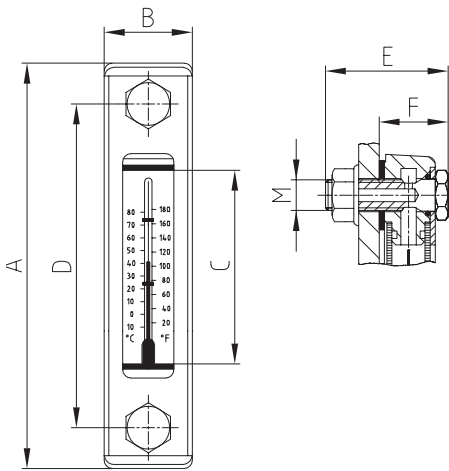


Gaskets for cleaning covers			
Size	For cleaning cover		D [mm]
PRD 193 NBR	PRD 193 FKM	V250- PRD	229
PRD 268 NBR	PRD 268 FKM	V324	304
PRD 393 NBR	PRD 393 FKM	V449	429
PRD 471 NBR	-	V530	507
PRD 525 NBR	-	V580	561
O-Ring 214-5 NBR	215-5 FKM	V235	224

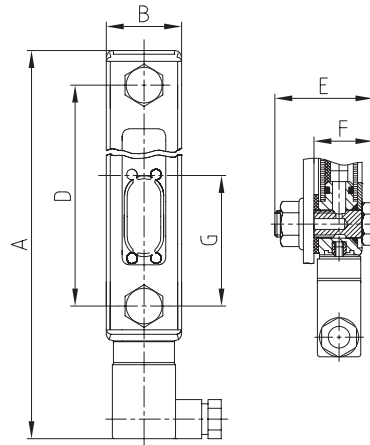
ACCESSORIES FOR OIL TANKS

HYDRAULIC COMPONENTS

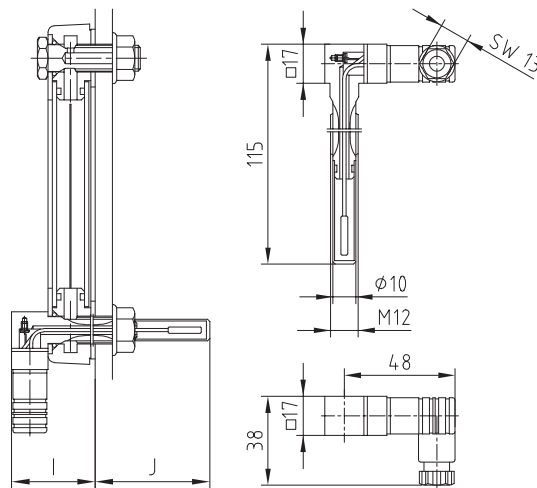
Oil level indicator, filler and oil level sight glass



With (KOT) and without (KO) temperature indication



With visual/electrical monitoring of liquid level in the tank KOO/KOS



Combined with temperature switch TS60, TS70 or TS80

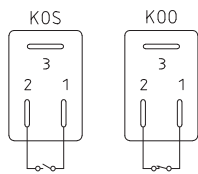
Oil level indicator										
Description	Dimensions [mm]								with TS	
	A	B	C	D	E	F	M	G	I	J
KO 01 / KOT 01	108		37	76				—	39	76
KO 02 / KOT 02	159	34	76	127	45	26	M12	—		
KOO 02 / KOS 02	205			127				50	47	68
KO 03 / KOT 03	286		203	254				—	39	76

Technical data

KOT 01: display range +20 °C to +80 °C
 KOT 02: display range
 KOO: electric switch as break contact
 KOS: electric switch as make contact
 Operating range: -10 °C to +80 °C

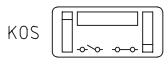
Recommended screw tightening torque: 8 Nm
 preload pressure of tank max. 1 bar

Electrical connections and functions:

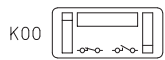


Contact load:
 KOS max. 10 W
 KOO max. 5 W

Switching voltage:
 50 V AC/DC
 Connection 3 not used



Switching current:
 KOS max. 0,50 A
 KOO max. 0,25 A
 Line box with PG9
 Protection class IP 65
 Connection 3 not used



Technical data (break contact) of the temperature switch:

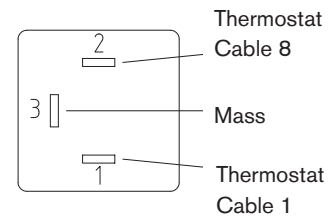
Switching temperature: TS 60: Switching temperature 60 °C / 140 °F
 TS 70: Switching temperature 70 °C / 158 °F
 Switching temperature 80 °C / 176 °F
 Hysteresis: 20 °C
 Tolerance of the shifting temperature: ± 5 °C

Alternating current

- max. voltage - 250 V
- max. current with 10,000 circuits 2,5 A with $\cos \phi = 1,0$
 1,6 A with $\cos \phi = 0,6$
- max. current with 100,000 circuits 0,5 A with $\cos \phi = 1,0$
 ~0,25 A with $\cos \phi = 0,6$
- min. switching current 50 mA

Direct current

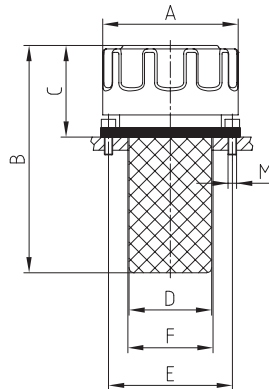
- max. voltage 42 V
- max. current with 10.000 circuits



Ordering example:

KO	02	+ TS 80
Type [KO, KOT KOO or KOS]	Size [01, 02 or 03]	with temperature switch [TS 60, TS 70 or TS 80]

KE 01 and KE 02 filter grade 10 µm

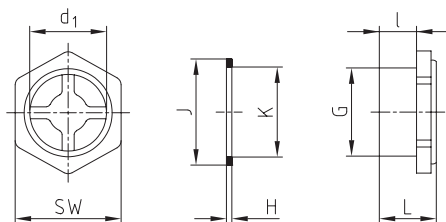


Filler breather with air filter

Size	Dimensions [mm]						
	A	B	C	D	E	F	M
KE 01	44,5	110	48,5	28	41,3	30	3xM5
KE 02	79,9	134	54	48,7	73	53	6xM5

Air flow: KE 01 = 0,40 m³/min

KE 02 = 0,45 m³/min



Oil level sight glass

Size	Dimensions [mm]							
	L	l	d1	G	H	J	K	SW
G ¹ / ₂ A	17,7	9,2	27,5	G ¹ / ₂	2	27	21	27
G ³ / ₄ A	18	9,2	23,8	G ³ / ₄	2	32	27	32
G1A	23,5	14	29	G1	2	40	34	40

Ordering example:

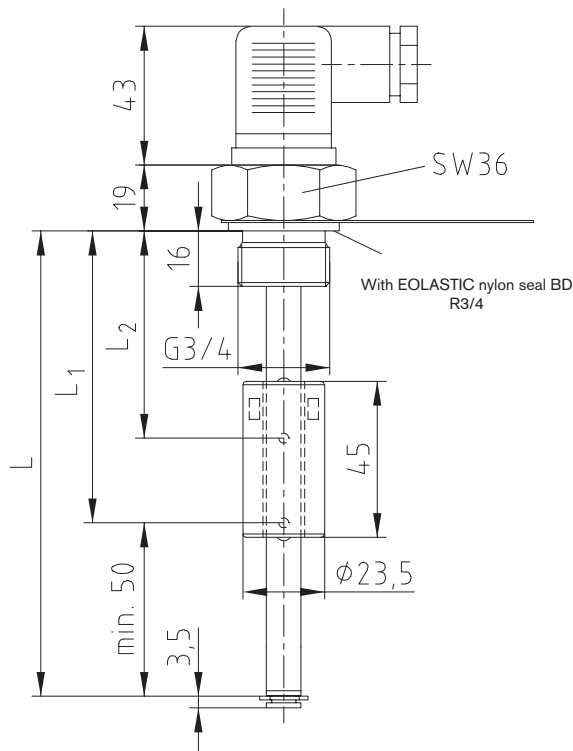
Filler breather	KE 01
Type	Size

Ordering example:

Oil level sight glass	G ³ / ₄ A
Type	Size

TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Level and temperature switch



Level temperature switch			
Size	Dimensions [mm]		
	L	L1	L2
NVT22	220	170	40
NVT37	370	320	40
NVT45	450	400	40

Switching tube

Operating pressure max. 1 bar
 Operating temperature max. 80 °C
 Density of fluid Min. 0,8 kg/dm³
 Float PU
 Switching tube MS
 Flange MS

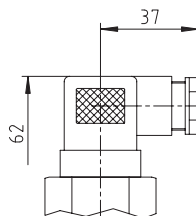
Level contacts

Operation NC (break cont.)
 Max. operating voltage 230 V
 Max. switching current 0,5 A
 Contact load 10 VA

Temperature contacts

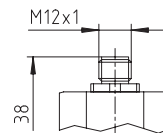
Function NC (break cont.)
 Max. operating voltage 250 V
 Max. switching current 2 A
 Max. contact load 100 VA
 Switch-back difference 15 K ± 5 K

Plug-in connection D03
 3pol. + PE DIN 43650



Protection class IP 65
 Cable screwing PG11
 Max. voltage 230 V AC/DC

Plug-in connection DM12
 3pol.



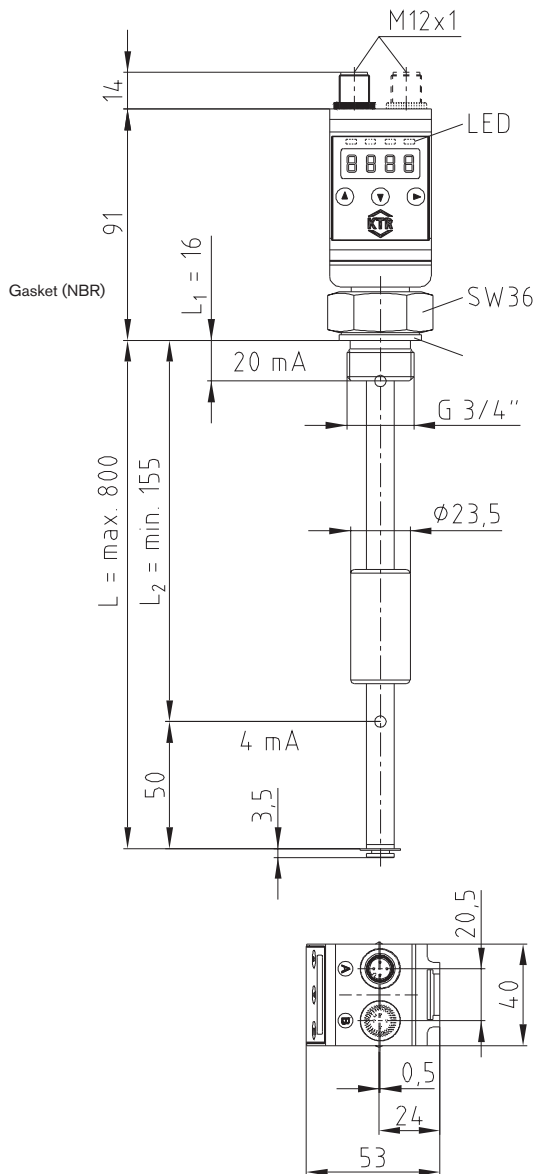
IP67** protection class
 Cable screwing PG7**
 Max. voltage 24 V DC

Ordering example:

NVT	22	2	60	D3
Type	Size	Type	Switching temperature	Voltage
	22 = 220 mm contact tube 37 = 370 mm contact tube 45 = 450 mm contact tube	1 = 2 switch contact area H a. L 2 = 1 switch contact area L and 1 temperature switch Other types on request	O = without temperature switch 60 = 60 °C 70 = 70 °C 80 = 80 °C	D3 = max. 230 Volt (standard) DM12 = max. 24 Volt

TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Electronic level and temperature control



Technical data

Operating pressure:	max. 1 bar
Operating temperature:	-20 °C up to +80 °C
Ambient temperature:	-20 °C up to +70 °C
Weight:	approx. 400g
Sealing fluid:	min. 0.8 kg/dm ³
Float:	PU
Immersion pipe:	MS
G 3/4 flange:	MS
Measuring resistor:	Reed chain
Resolution:	10 mm
Temperature sensor:	PT100 class B DIN 60751

Display and control unit

Display:	4-digit 7-segment LED display
Operation:	over 3 keys
Memory:	Min. and max. value memory
Current consumption with starting:	approx. 100 mA for 100 ms
Current consumption during operation:	approx. 50 mA
Supply voltage (UB):	10-32 V DC (nominal voltage 24V DC)
Protection class:	IP 65
Display units:	Level: %, cm, L, i, Gal Temperature: -20 °C to +120 °C or -4 °F to 248 °F
Setting range:	Level: e. g. 0-100 % Temperature: 0 °C to +100 °C or 32 °F to 212 °F
Accuracy:	1% of final value

Ordering example:

NVT-E	20	4	M12
Type	20 = 200 mm contact tube 28 = 280 mm contact tube 37 = 370 mm contact tube 50 = 500 mm contact tube	4 = Switching points to be assigned freely 2NT = 2 switch. terminals to be programmed freely and 2 analogue outputs (level and temp.)	M12 = M12 plug base 4 poles

TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Temperature probe TE-PT-100



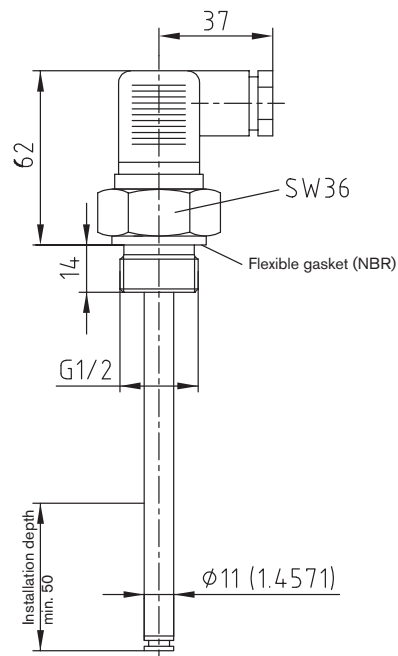
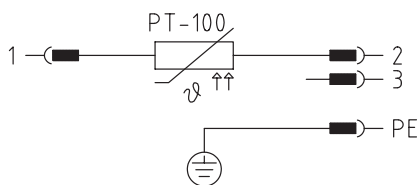
Temperature probe TE-PT-100

Basic values of precision resistor PT-100												
°C	0	10	20	30	40	50	60	70	80	90	100	
Ohm	100,00	103,90	107,79	111,67	115,54	119,40	123,24	127,07	130,89	134,70	138,50	

Technical data

Screwing and immersion sleeve:	1.4571 (stainless steel) – brass on request
Lengths available:	100, 200 and 300 mm from stock (special lengths up to 1000 mm)
Operating pressure:	10 bar (immersion sleeve of stainless steel)
Operating temperature/ measuring range:	- 40 °C up to + 100 °C
Resistance feeler element:	PT-100 class B DIN/IEC 751
Max. S-wire current PT-100:	1 mA
Plug:	acc. to DIN 43650 – 3 poles + PE, protection IP 65, cable screwing PG11

Connection diagram:

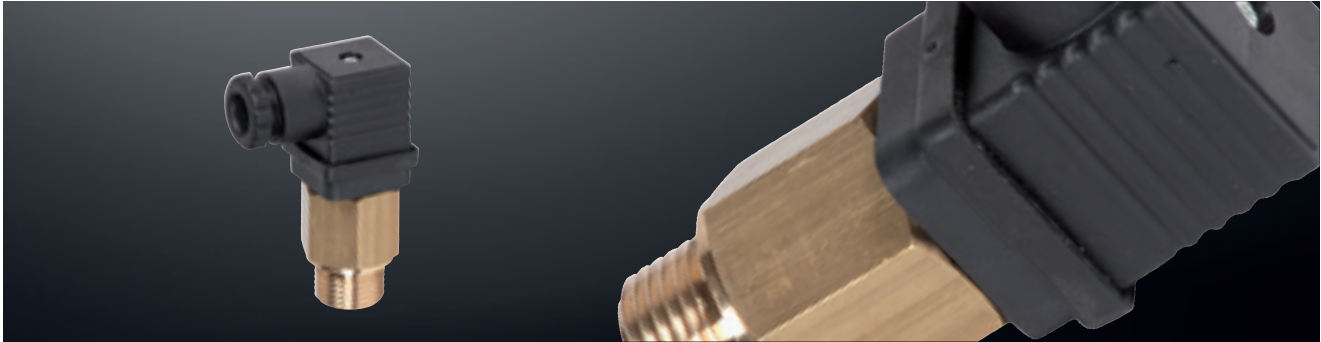


Ordering example:

TE	PT-100	300
Electronic temperature probe	Resistance feeler element	Length of immersion sleeve

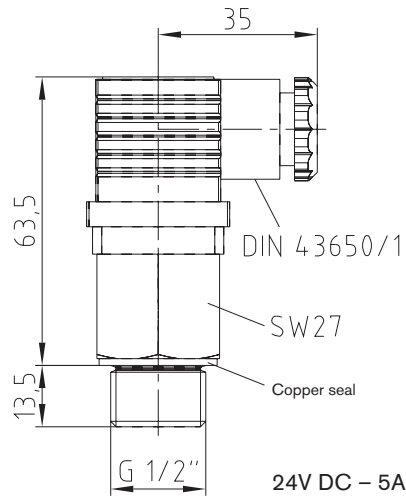
TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Temperature switch TSC



- Simple, solid design
- Electric insert easy to disassemble
- For plug acc. to DIN 43650 straight cable outlet direction swinging by 360°
- Copper seal
- Protective class IP65

Technical data		
Control element:	Bi metal	Switching point:
Switching operation:	NO = make contact	TSC 40 = 40 °C
Switching temperature:	+25 °C up to +80 °C	TSC 50 = 50 °C
Material of probe:	Brass	TSC 60 = 60 °C
Operating pressure max.:	15 bar	TSC 70 = 70 °C
Operating temperature:	20 °C up to +100 °C	
Plug:	acc. to DIN 43650 – 3 poles + PE, protection IP 65, cable screwing PG11	



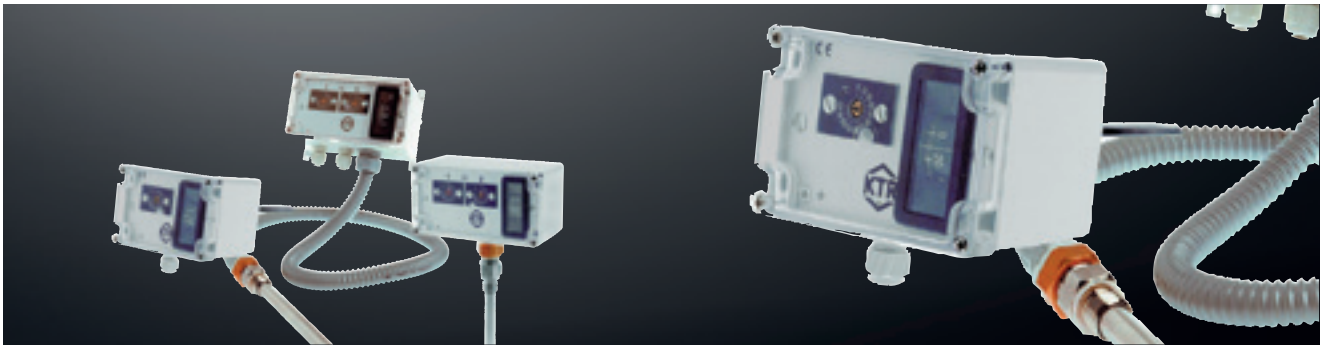
Temperature contacts:	Max. operating voltage	250 V AC - 8 A
	Max. switching current	2 A
	Tolerance	± 5 K
	Difference of shift back	15 K ± 3 K

Ordering example:

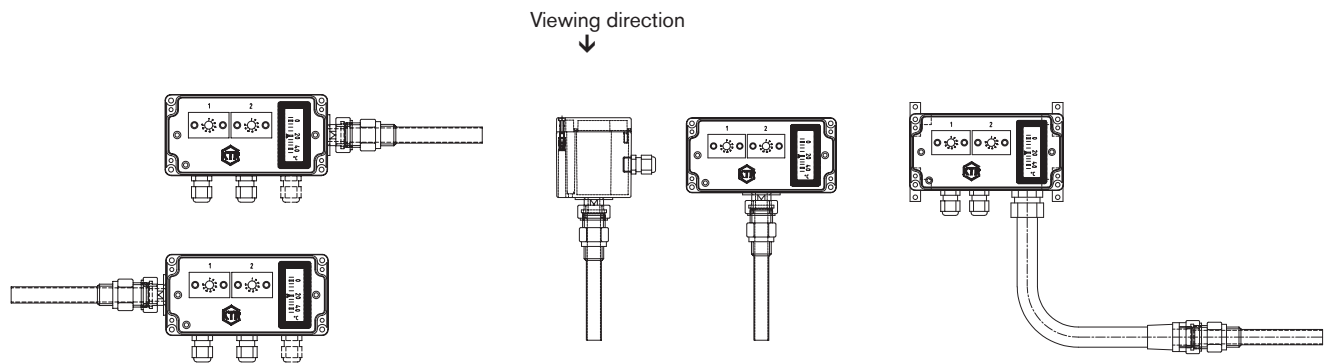
TSC	50
Temperature switch	Switching point 50 °C

TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Industrial controller IR



Industrial controller: Type/position of immersion sleeve



Type R and L

R: Immersion sleeve on the right
L: Immersion sleeve on the left

Type H and U

H: Immersion sleeve in the back
U: Immersion sleeve at the bottom

Type S₁

S₁: with 1 hose
S₃: with 2 hoses

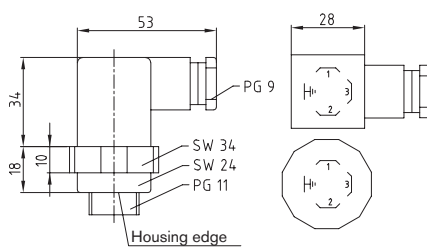
Lengths of hose: S₁ = 1500 mm and S₃ = 2 x 1500 mm

Electrical connections (IR)

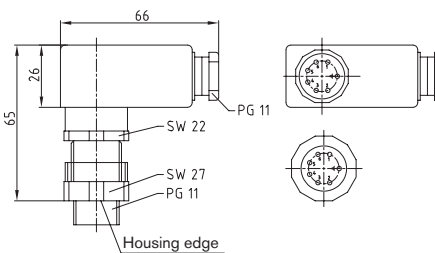
A01 standard: flat plug 6.3 x 0.8; receptacles attached to DIN 46247/3

A04 special design: European terminal strip fully cabled

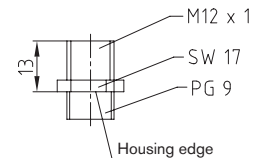
Connectors A02, A03 and A05 see illustrations.



Plug A02
DIN 43650



Plug A03
DIN 43651



Contacts

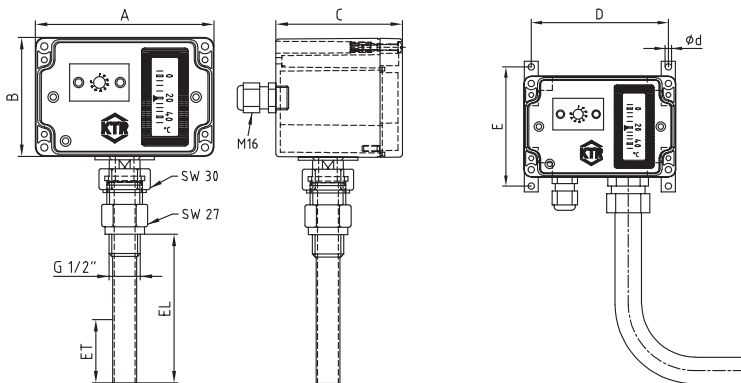


Plug A05
M12 - 4 poles

Controllers and temperature display (IR)

Type	Operation	Range	Max. probe temperature limiting temperature	Switching difference Kelvin
00	Adjustable controller	-30 °C up to +40 °C	80	~5
02	Adjustable controller	0 °C up to +80 °C	120	~5
03	Adjustable controller	+10 °C up to +120 °C	160	~5
04	Adjustable controller	+10 °C up to +120 °C	160	~10
05	Adjustable controller	+60 °C up to +160 °C	200	~5
07	Adjustable controller *	0 °C up to +150 °C	200	~5
T1	Thermometer	0 °C up to +120 °C	140	
T2	Thermometer	-40 °C up to +80 °C	100	

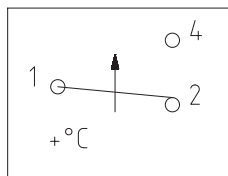
* Manual adjustment



Pin connection each controller IR

PE connection (customer)

PE



Controller 1 ... X
Connection 6,3 AMP
Insulated plug

Type IR						
Dimensions of housing [mm]						
Number of functions	A	B	C	Type S1 - S3		
				D	E	d
1	82	80	85	70	94	5,2
2	120	80	85	108	94	5,2
3	160	80	85	148	94	5,2
4 / 5 / 6 / 7	240	120	100	228	134	5,2

Technical data	
16 A (2,5)/250 VAC	0,5 K/min.
10 A (1,5)/400 VAC	
	T max. depending on type

Dimensions of the immersion sleeve IR						
Type/EL - Installation length	100	200	300	400	500	900
ET - mm minimum depth of immersion referring to the number of functions installed						
1 - 3 functions	90					
4 - 6 functions	180					
7 functions	270					

Type IR

Technical data

Contact selection:	Unipolar changer	Accuracy of display:	Class 3 according to DIN 16203
Contact material:	Hard silver Ag	Housing material:	Polycarbonate (Makrolon)
Setting range:	~ 30 °C to 160 °C	Immersion sleeve:	1.4301
Switching accuracy:	~ 4 °C	Cable screwing:	Polyamide
Ambient temperature:	~ 35 °C to 80 °C	Probe + capillary tube:	Cu
Test certificates:	VDE 0631, NF, SEMKO, Demko,	Switching power:	16 A (2.5)/250 VAC
Insulation:	ÖVE, KEMA		10 A (1.5)/400 VAC
Protection class:	Acc. to VDE		0.5 A/24 VDC
Cable screwing:	IP 65		Further data on request
Max. operating pressure of immersion sleeve:	M16 with strain relief	Dielectric strength:	2000 VAC between combined contacts and mass
Display of thermometer:	16 bar		1150 VAC between open contacts
	~ 30 °C to 160 °C		

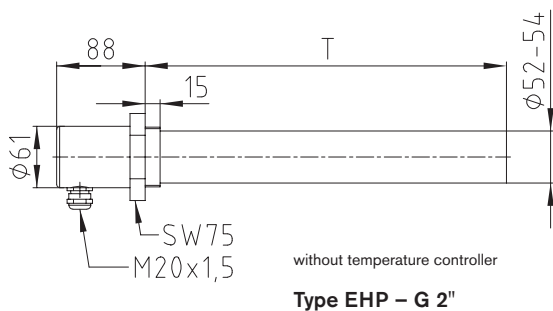
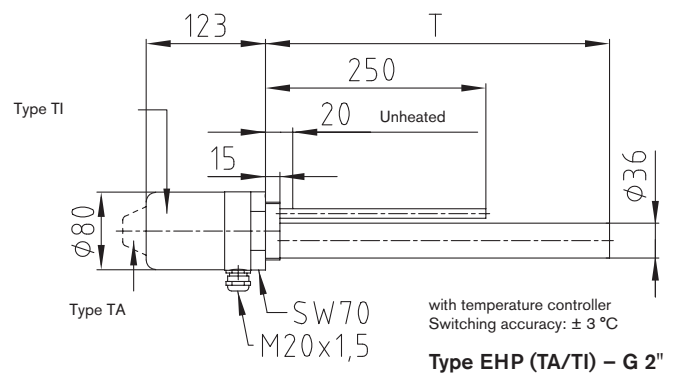
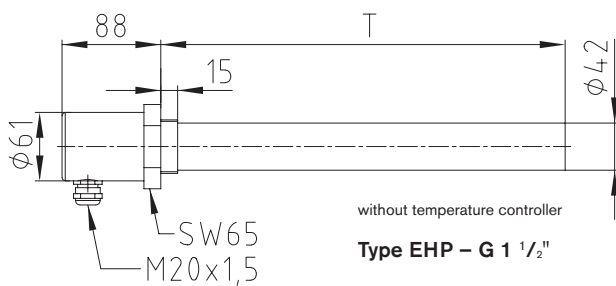
LED 12 -24 V	Index
green	2
red	3
red + green	4

LED 240 V	Index
green	5
red	6

Ordering example:	IR	200	H	A01	03 - 02 - 02 - T1
Type	Lenght of immersion sleeve	Position of immersion sleeve	Electric connection	Requested controller or thermometer (max. 7). Sequence as requested. If LED is requested to be assembled, the figure 0 in the controller name is replaced by the respective index number (e. g. controller 02 and LED red = 32).	

TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Tank heater - Type EHP



Technical data: EHP :

Temperature controller for internal or external setting: 0-85°C, 16 ampere
Surface load: 1.5W/cm²
Protection IP65 (type TA IP54)

Inserted heating cartridge

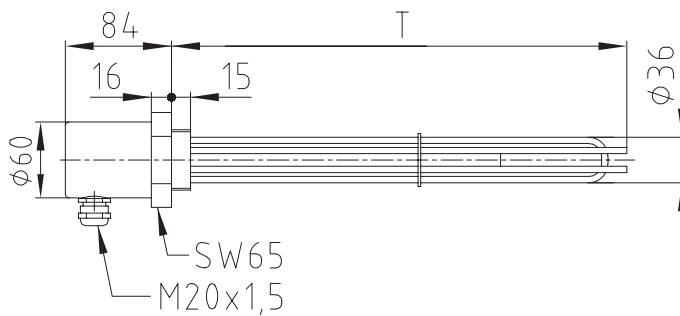
Type EHP - G 1 1/2" without temperature controller			Type EHP - G 2" without temperature controller			Type EHP (TA/TI) - G 2" with temperature controller		
Heating capacity [watts]	Immersion depth T [mm]	Voltage [V]	Heating capacity [watts]	Immersion depth T [mm]	Voltage [V]	Heating capacity [watts]	Immersion depth T [mm]	Voltage [V]
400	200	230	500	200	230	450	300	230
600	300	230	750	300	230	600	400	230
800	400	230	1000	400	230	750	500	230
1000	500	230	1250	500	230	900	600	230
1200	600	230	1450	600	230	1050	700	230
1400	700	230	1700	700	230	1200	800	230
1600	800	230	1950	800	230	1350	900	230
1800	900	230	2200	900	230	1500	1000	230
2000	1000	230	2450	1000	230	1650	1100	230
2200	1100	230	2700	1100	230	1800	1200	230
2400	1200	230	2950	1200	230	1950	1300	230
2800	1400	230	3450	1400	3 x 400	2100	1400	230
3200	1600	230	3900	1600	3 x 400	2250	1500	230
3600	1800	3 x 400	4400	1800	3 x 400	2400	1600	230
4000	2000	3 x 400	4900	2000	3 x 400			

As an alternative: control of tank heater via KTR temperature controller (NVT-E/IR). In this case the temperature controller on the tank heater can be done without. Other types on request. Please note our mounting instructions at www.ktr.com.

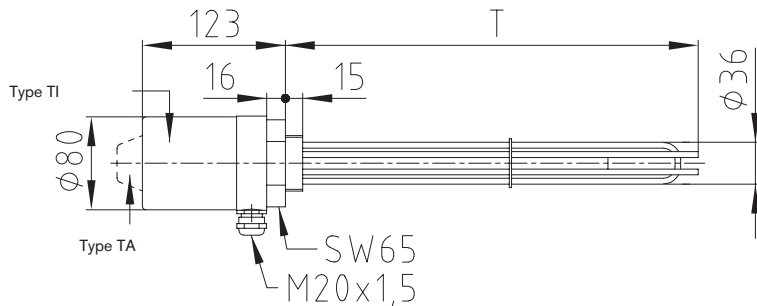
Ordering example:	EHP	1950	1300	G 2"	TI	1 x 230 V
	Type	Heating capacity [W]	Immersion depth T [mm]	Size of screw-in thread	TA = temperature controller with external setting TI = temperature controller with internal setting O = without temperature controller	Voltage [V] must be specified in the order, e. g. 1 x 230 V; 2 x 400 V; 3 x 400 V (from 1000 Watt)

TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Tank heater - Type EH



Type EH – G 1 1/2"
without temperature controller



Type EH (TA/TI) – G 1 1/2"
with temperature controller
Switching accuracy: $\pm 3\text{ }^\circ\text{C}$

Inserted tubular heaters		
Type EH – G 1 1/2"		
without or with temperature controller		
Heating capacity [watts]	Immersion depth T [mm]	Voltage [V]
380	200	230
500	250	230
750	350	230
990	450	230
1460	650	230
1825	800	230
2300	1000	230

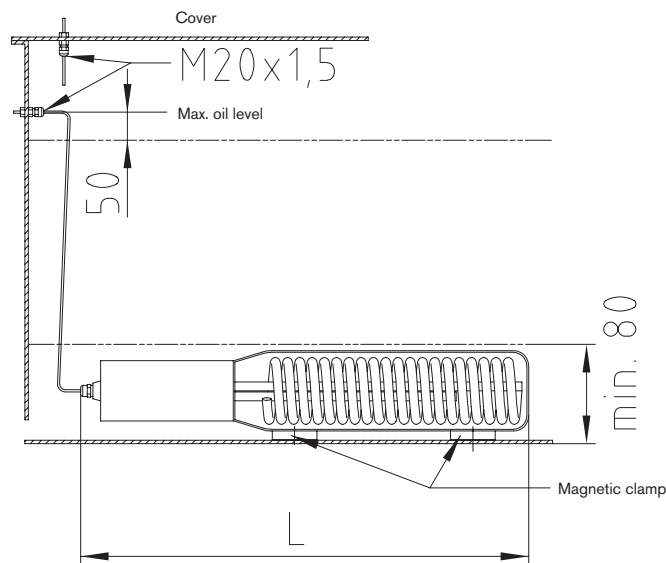
Technical data: EH :
Temperature controller for internal or external setting: 0-85°C, 16 ampere
Surface load: 1.5W/cm²
Protection IP65 (type TA IP54)

As an alternative: control of tank heater via KTR temperature controller (NVT-E/IR). In this case the temperature controller on the tank heater can be done without. Other types on request. Please note our mounting instructions at www.ktr.com.

Ordering example:	EH	990	450	G 1 1/2"	TI	1 x 230 V
	Type	Heating capacity [W]	Immersion depth T [mm]	Size of screw-in thread	TA = temperature controller with external setting TI = temperature controller with internal setting O = without temperature controller	Voltage [V] must be specified in the order, e. g. 1 x 230 V; 2 x 400 V; 3 x 400 V (from 1000 watts)

TEMPERATURE CONTROL AND MONITORING HYDRAULIC COMPONENTS

Inserted tank heaters with magnetic clamp - Type TEHM



Technical data:

Switching accuracy:	$\pm 3^\circ$
Voltage:	230 V (other types available on request up to a max. of 2x400V)
Operation temperature:	- 30 °C up to + 80 °C
Surface load:	1,2 W/cm ² (0.6 W/cm ² on request)
Connection cable:	3 poles, 2.5 m long, incl. screwed cable gland M20x1,5

Inserted tank heater		
Type TEHM		
Heating capacity [watts]	Overall length L [mm]	Voltage [V]
250	265	230
500	290	230
1000	400	230

As an alternative: control of tank heater via KTR temperature controller (NVT-E/IR). In this case the temperature controller on the tank heater can be done without. Other types on request. Please note our mounting instructions at www.ktr.com.

Ordering example:	TEHM	1000	00	1 x 230 V
	Type	Heating capacity [W]	Cut-off temperature set by the company is 20 °C = 00. Without temperature controller = 01. Requested cut-off temperature e. g. 35 °C = 35.	Please make sure to specify the voltage [V] in your order, e. g. 1 x 230 V; 2 x 400 V; 3 x 400 V 3 x 400 V (from 1000 watts)

LIST OF RESISTANCE HYDRAULIC COMPONENTS

List of resistance

KTR Product		Medium							
Component	Material	HFA	HFB	HFC	HFD, HFD-R HFD-S, HFD-T	Hydraulic fluid on mineral oil base	Biological hydraulic oils		
							HETG	HEES	HEPG
Bellhousings P, PK, PL	ALU	●	●	6	●	●	●	●	●
Bellhousings PG/PSG	GG/GGG	●	●	6	6	●	6	6	6
Bellhousings PS	Steel	●	●	6	6	●	6	6	6
Damping ring D, DT, DTV	ALU/NBR	●	●	6	1	●	●	●	●
Bellhousing with integrated oil cooler PIK	Steel/ALU	●	●	6	1	●	●	●	●
Oil/water cooler TAK	-	●	●	6	6	●	6	6	6
Foot flange PTFL, PTFS	ALU	●	●	6	●	●	●	●	●
Foot flange PTFL, PTFS	Steel/GGG	●	●	6	6	●	6	6	6
ZO flange	ALU	●	●	6	●	●	●	●	●
Pump bracket K	ALU	●	●	6	●	●	●	●	●
	Steel	●	●	6	6	●	6	6	6
Alu tank BAK with feet	ALU	●	●	6	●	●	●	●	●
Oil sump BAKW	Steel	●	●	6	6	●	6	6	6
Steel tanks	Steel	●	●	6	6	●	6	6	6
Tank cover ST	Steel	3	●	6	6	3	●	●	●
Tank cover AL	ALU	●	●	6	●	●	●	●	●
Oil level indicator	-	●	●	●	5	●	6	6	6
Oil level sight glass	-	●	●	●	5	●	6	6	6
Filler breather	-	●	●	●	5	●	6	6	6
Cleaning covers	ALU	●	●	6	●	●	●	●	●
O-ring seal	NBR	●	●	●	1/2	●	●	●	●
Spline seal	NBR	●	●	●	1/2	●	●	●	●
Gaskets DP, DZ	NBR	●	●	●	1/2	●	●	●	●
Damping rod	Steel/NR	1	1	1	5	1	6	6	6
Elastic flange	Steel/NBR	●	●	●	1	●	●	●	●
Elastic cover support EDL	Steel/NBR/ALU	●	●	7	1	●	●	●	●
Industrial control system IR, IRD	Stainless steel	●	●	●	●	●	●	●	●
Level temperature switch NVT	Brass/NBR	5	5	5	5	●	5	5	5
Temperature probe TE-PT-100	Stainless steel/NBR	●	●	●	●	●	●	●	●
Temperature switch TS	Steel (anodized)	●	●	●	●	●	●	●	●
Tank heater EH	Brass/stainless steel	●	●	●	●	●	●	●	●
Tank heater EHP	Steel/fibre-NBR	●	●	6	●	●	●	●	●
Tank heater TEHM	Stainless steel/copper	5	5	5	5	●	5	5	5
Plate heat exchanger PHE	Stainless steel/copper	●	●	6	6	●	6	6	6
BoWex®-sleeve	PA	●	●	●	●	●	●	●	●
BoWex®-hub	Steel	3	●	4	4	3	●	●	●
ROTEX®-spider → standard made of Polyurethane	PUR	1	1	1	5	1	6	6	6
ROTEX®-hub	Steel	●	●	4	4	3	●	●	●
ROTEX®-hub	ALU	●	●	6	●	●	●	●	●

Composition of hydraulic fluids

HFA = Oil in water emulsion → water content > 80%
HFB = Water in oil emulsion → water content > 40%
HFC = Aqueous polymer solution (water glycols) water content > 45%
HFD = Synthetical liquids (anhydrous)
HFD-R = Phosphoric ester
HFD-S = Chlorinated hydrocarbons
HFD-T = Compound of HFD-R + HFD-S

Explanation of items marked

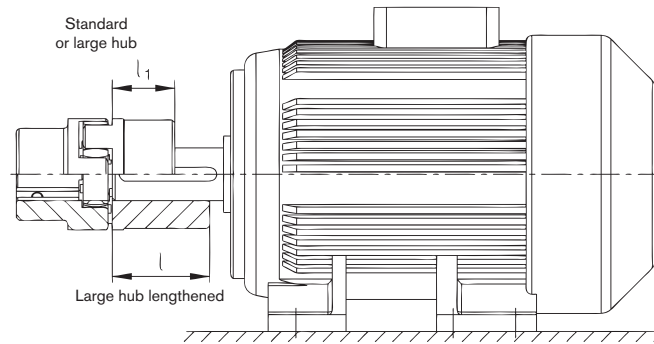
● = Resistant
1 = Oil splash resistant
Not resistant when continuously flushed with oil!
2 = With continuous oil flushing use EPDM gasket!
3 = Priming coat required
4 = Additional coating with epoxy resin/DD coating is necessary
5 = Not resistant
6 = Consultation is necessary, phone +49 5971 798-0

Please note:

The figures specified may only be considered as a general standard. In case of doubt we recommend to run a test. The aforementioned details do not entitle for any legal claims, we decline any liability and warranty. The chemical and mechanical resistance only is not sufficient to assess whether a product is suitable or not. The standards have to be considered in particular, as an example, with flammable liquids (explosion protection).

ROTEX® Flexible jaw couplings

Selection of standard IEC motors



ROTEX® couplings for standard IEC motors, protection IP 54/IP 55 (spider 92 Shore A)

A. C. motor 50 Hz		Motor output n= 3000 rpm 2 poles		Size of ROTEX® coupling	Motor output n= 1500 rpm 4 poles		Size of ROTEX® coupling	Motor output n= 1000 rpm 6 poles		Size of ROTEX® coupling	Motor output n= 750 rpm 8 poles		Size of ROTEX® coupling	
Size	Shaft end dcl [mm]	Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		Power P [kW]	Torque T [Nm]		
56	9 x 20	0,09	0,32	9 ¹⁾	0,06	0,43	9 ¹⁾	0,037	0,43	9 ¹⁾				
		0,12	0,41		0,09	0,64		0,045	0,52					
63	11 x 23	0,18	0,62	14	0,12	0,88	14	0,06	0,7	14				
		0,25	0,86		0,18	1,3		0,09	1,1					
71	14 x 30	0,37	1,3	14	0,25	1,8	14	0,18	2	14	0,09	1,4	14	
		0,55	1,9		0,37	2,5		0,25	2,8		0,12	1,8		
80	19 x 40	0,75	2,5	19	0,55	3,7	19	0,37	3,9	19	0,18	2,5	19	
90S	24 x 50	1,1	3,7		0,75	5,1		0,55	5,8		0,25	3,5		
90L			1,5	5		1,1	7,5		0,75	8		0,37	5,3	
		2,2	7,4		1,5	10		1,1	12		0,55	7,9		
100L	28 x 60	3	9,8	24	2,2	15	24	1,5	15	24	0,75	11	24	
					3	20					1,1	16		
112M		4	13		4	27		2,2	22		1,5	21		
132S		5,5	18		5,5	36		3	30		2,2	30		
132M	38 x 80	7,5	25	28			28	4	40	28	3	40	28	
					7,5	49		5,5	55					
160M		11	36		11	72		7,5	75		4	54		
160L	42 x 110	15	49	38			38			38	5,5	74	38	
		18,5	60		15	98		11	109		7,5	100		
180M		22	71		18,5	121								
180L	48 x 110				22	144		15	148	42	11	145	42	
200L	55 x 110	30	97	42	30	196	42	18,5	181	42	15	198	42	
		37	120					22	215					
225S					37	240	48				18,5	244	48	
225M	55 x 110	60 x 140	45	145		45	292	55	30	293	55	22	290	55
250M	60 x 140	65 x 140	55	177	48	55	356		37	361		30	392	65
280S			75	241	55	75	484	65 ²⁾	45	438	65 ²⁾	37	483	65 ²⁾
280M		75 x 140	90	289		90	581		55	535		45	587	
315S			110	353		110	707	75	75	727	75	55	712	75
315M			132	423	65	132	849		90	873		75	971	90
			160	513		160	1030		110	1070		90	1170	
315L	65 x 140	80 x 170	200	641		200	1290	90	132	1280	90	110	1420	90
							160		1550	132		1710		
315		85 x 170	250	802		250	1600		200	1930		160	2070	
			315	1010		315	2020		250	2410	100	200	2580	100
355	75 x 140	95 x 170	355	1140		355	2280	100						
			400	1280	90	400	2570		315	3040	110	250	3220	110
400	80 x 170	110 x 210	500	1600		500	3210	110	400	3850		315	4060	125
			560	1790		560	3580		450	4330	125	355	4570	
450	90 x 170	120 x 210	630	2020	100	630	4030	125	500	4810	140	400	5150	140
			710	2270		710	4540		560	5390		450	5790	
			800	2560		800	5120	140	630	6060		500	6420	
			900	2880		900	5760		710	6830		560	7190	160
			1000	3200	110	1000	6400	160	800	7690	160	630	8090	

The coupling is selected for an ambient temperature up to + 30 °C. The selection considers a minimum safety factor of 2 versus the maximum coupling torque (T_{Kmax}). For a detailed selection see catalogue on page 10 et seqq. Drives with periodical torque curves must be selected according to DIN 740 part 2. On request the selection is made by KTR. Torque T = rated torque as per Siemens catalogue M 11 . 1994/95.

¹⁾ Dimensions see series ROTEX® GS

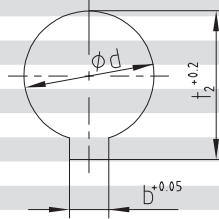
²⁾ Motor hub made of steel see page 96

ROTEX®

Flexible jaw couplings

Inch bores and taper bores

Bore and keyway acc. to ANSI/AGMA 9002-C14 Bore (clearance fit) keyway (commercial class fit)						Size															
						19	24	28	38	42	48	55	65	75	90						
KTR code	Ø bore ["]	Width of keyway ["]	Ø bore [mm]	Width of keyway [mm]	Keyway depth/tolerance +0,381 [mm]	Steel				Cast iron (GJL)											
Tb	3/8	1/8	9,525 +0,0254	3,175 +0,051	10,972																
DNB	7/16	3/32	11,112 +0,0254	2,382 + 0,051	12,293																
T	1/2	3/16	12,7 +0,0254	4,762 +0,051	14,757																
Ta	1/2	1/8	12,7+0,0254	3,175+0,051	14,224	●	●														
DNC	17/32	1/8	13,495 +0,0254	3,175+0,051	15,011																
Do	9/16	1/8	14,287 +0,0254	3,175+0,051	15,824																
E	5/8	1/8	15,875 +0,0254	3,175+0,051	17,424																
Es	5/8	5/32	15,875+0,0254	3,968+0,051	17,729	●	●	●													
Ed	5/8	3/16	15,875+0,0254	4,762+0,051	18,008	●	●														
DNH	11/16	3/16	17,462 +0,0254	4,762+0,051	19,634																
Ad	3/4	1/8	19,05+0,0254	3,175+0,051	20,624																
A	3/4	3/16	19,05+0,0254	4,762+0,051	21,259	●	●	●	●												
G	7/8	3/16	22,225+0,0254	4,762+0,051	24,485	●	●	●	●	●											
F	7/8	1/4	22,225+0,0254	6,35+0,051	25,069		●	●	●	●	●										
Gf	15/16	1/4	23,812 +0,0254	6,35+0,051	26,695					●	●										
H	1	3/16	25,4+0,0254	4,762+0,051	27,686																
Hs	1	1/4	25,4+0,0254	6,35+0,051	28,295			●	●												
R	1 1/16	3/16	26,987+0,0254	4,762+0,051	29,286				●	●											
Sb	1 1/8	1/4	28,575+0,0254	6,35+0,051	31,521			●	●												
Sd	1 1/8	5/16	28,575+0,0254	7,937 +0,051	32,105																
Js	1 1/4	1/4	31,75+0,0254	6,35+0,051	34,721					●											
K	1 1/4	5/16	31,75+0,0254	7,937 +0,051	35,331				●	●	●	●	●	●							
Ma	1 3/8	5/16	34,925+0,0254	7,937 +0,051	38,557			●	●												
RH1	1 3/8	3/8	34,925+0,0254	9,525+0,063	39,141																
Cb	1 7/16	3/8	36,512+0,0254	9,525+0,063	40,767																
Ca	1 1/2	5/16	38,1+0,0254	7,937+0,051	41,783																
C	1 1/2	3/8	38,1+0,0254	9,525+0,0635	42,392			●	●	●	●	●	●	●	●						
Nb	1 5/8	3/8	41,275+0,0254	9,525+0,0635	45,618				●	●											
Ls	1 3/4	3/8	44,45+0,0254	9,525+0,0635	48,818					●	●										
L	1 3/4	7/16	44,45+0,0254	11,112+0,0635	49,428																
Lu	1 7/8	1/2	47,625+0,0254	12,7+0,0635	53,238					●	●										
Da	1 15/16	1/2	49,212+0,0254	12,7+0,0635	54,864																
Ds	2	1/2	50,8+0,0254	12,7+0,0635	56,464																
Pa	2 1/8	1/2	53,975+0,0381	12,7+0,063	59,69																
U	2 1/4	1/2	57,15+0,0381	12,7+0,063	62,915																
Ub	2 3/8	5/8	60,325+0,0381	15,875+0,076	67,335																
Wd	3 3/8	7/8	85,725+0,0381	22,225+0,076	95,504																
Wf	3 5/8	7/8	92,075+0,0381	22,225+0,076	101,955																

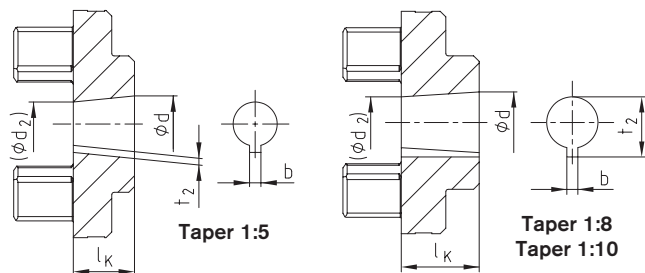


Basic programme taper 1:3					
Code	$d^{+0.05}$	(d_2)	b_{JS9}	$t_2^{+0.1}$	l_K
N/ 1	9,7	7,575	2,4 ^{+0.05}	10,85	17,0
N/ 1c	11,6	9,5375	3 ^{JS9}	12,90	16,5
N/ 1e	13,0	10,375	2,4 ^{+0.05}	13,80	21,0
N/ 1d	14,0	11,813	3 ^{JS9}	15,50	17,5
N/ 1b	14,3	11,8625	3,2 ^{+0.05}	15,65	19,5
N/ 2	17,287	14,287	3,2 ^{+0.05}	18,24	24,0
N/ 2a	17,287	14,287	4 ^{JS9}	18,94	24,0
N/ 2b	17,287	14,287	3 ^{JS9}	18,34	24,0
N/ 3	22,002	18,502	4 ^{JS9}	23,40	28,0
N/ 4	25,463	20,963	4,78 ^{+0.05}	27,83	36,0
N/ 4b	25,463	20,963	5 ^{JS9}	28,23	36,0
N/ 4a	27,0	22,9375	4,78 ^{+0.05}	28,80	32,5
N/ 4g	28,45	23,6375	6 ^{JS9}	29,32	38,5
N/ 5	33,176	27,676	6,38 ^{+0.05}	35,39	44,0
N/ 5a	33,176	27,676	7 ^{JS9}	35,39	44,0

For code N/6 and N/6a keywith parallel to the taper.

Basic programme taper 1:10					
Code	$d^{+0.05}$	(d_2)	b_{JS9}	$t_2^{+0.1}$	l_K
CX	19,95	16,75	5 ^{JS9}	22,08	32
DX	24,95	20,45	6 ^{JS9}	26,68	45
EX	29,75	24,75	8 ^{JS9}	31,88	50

Basic programme taper 1:5					
Code	$d^{+0.05}$	(d_2)	b_{JS9}	$t_2^{+0.1}$	l_K
A-10	9,85	7,55	2 ^{JS9}	1,0	11,5
B-17	16,85	13,15	3 ^{JS9}	1,8	18,5
C-20	19,85	15,55	4 ^{JS9}	2,2	21,5
Cs-22	21,95	17,65	3 ^{JS9}	1,8	21,5
D-25	24,85	19,55	5 ^{JS9}	2,9	26,5
E-30	29,85	23,55	6 ^{JS9}	2,6	31,5
F-35	34,85	27,55	6 ^{JS9}	2,6	36,5
G-40	39,85	32,85	6 ^{JS9}	2,6	35,0



ROTEX®

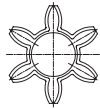
Flexible jaw couplings

Properties of standard spiders

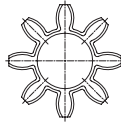
ROTEX® 14



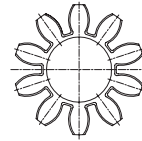
ROTEX® 19



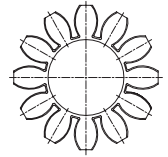
ROTEX® 24 - 65







ROTEX® 75 - 160





ROTEX® 180

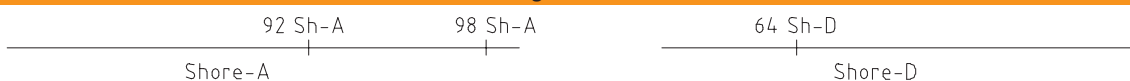


Spider type (Shore hardness)	92 Shore-A (T-PUR®)	92 Shore-A
	 T-PUR®	
Size	14 to 180	14 to 90
Material	T-PUR®	Polyurethane (PUR)
Permissible temperature range Permanent temperature Short-term temperature	-50 °C to +120 °C -50 °C to +150 °C	-40 °C to +90 °C -50 °C to +120 °C
Properties	<ul style="list-style-type: none"> – significantly higher service life expectancy – very good temperature resistance – improved damping of vibrations – good damping, average flexibility – suitable for all hub materials 	<ul style="list-style-type: none"> – good damping, average flexibility – suitable for all hub materials

Spider type (Shore hardness)	98 Shore-A (T-PUR®) ¹⁾	98 Shore-A ¹⁾
	 T-PUR®	
Size	14 to 180	14 to 90
Material	T-PUR®	Polyurethane (PUR)
Permissible temperature range Permanent temperature Short-term temperature	-50 °C to +120 °C -50 °C to +150 °C	-30 °C to +90 °C -40 °C to +120 °C
Properties	<ul style="list-style-type: none"> – significantly higher service life expectancy – very good temperature resistance – improved damping of vibrations – transmission of high torques with average damping – recommended hub material: steel, GJL and GJS 	<ul style="list-style-type: none"> – transmission of high torques with average damping – recommended hub material: steel, GJL and GJS

Spider type (Shore hardness)	64 Shore-D (T-PUR®)	64 Shore-D
	 T-PUR®	
Size	14 to 180	14 to 90
Material	T-PUR®	Polyurethane (PUR)
Permissible temperature range Permanent temperature Short-term temperature	-50 °C to +120 °C -50 °C to +150 °C	-30 °C to +110 °C -30 °C to +130 °C
Properties	<ul style="list-style-type: none"> – significantly higher service life expectancy – very good temperature resistance – improved damping of vibrations – transmission of very high torques with low damping – recommended hub material: steel and GJS 	<ul style="list-style-type: none"> – transmission of very high torques with low damping – suitable to shift critical speeds – suitable with high humidity, resistant to hydrolysis – recommended hub material: steel and GJS

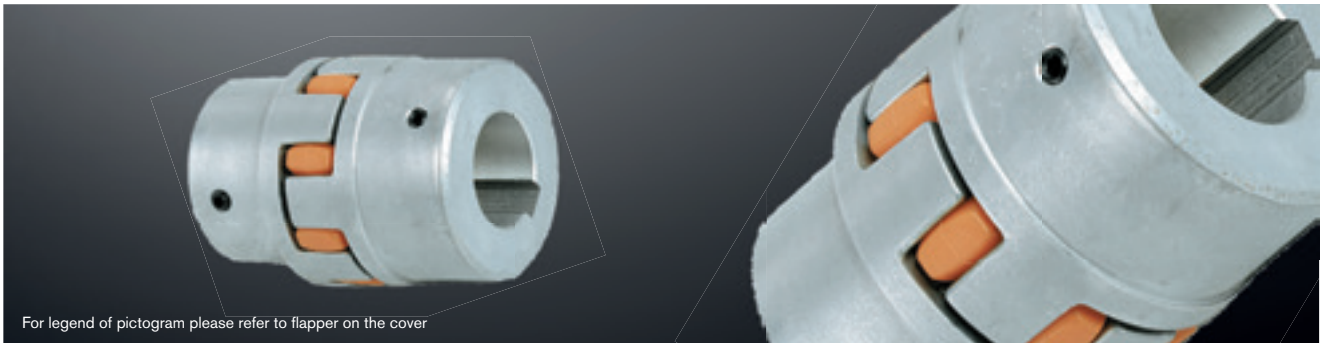
Degree of hardness



Increasing hardness

ROTEX® Standard Flexible jaw couplings

Material cast + powder metal



For legend of pictogram please refer to flapper on the cover

ROTEX® Sintered steel (Sint)

Size	Component	Spider (part 2) ¹⁾ Rated torque [Nm]			Finish bore d	Dimensions [mm]												
		92 Sh-A	98 Sh-A	64 Sh-D		General												
						L	l ₁ ; l ₂	E	b	s	D _H	d _H	D	N	G	t	T _A [Nm]	
14	1a	7,5	12,5	16	unbored: 8, 10, 11, 12, 14, 15, 16	35	11	13	10	1,5	30	10	30	-	M4	5	1,5	
19	1a	10	17	21	unbored, 14, 16, 19, 20, 22, 24	66	25	16	12	2,0	40	18	40	-	M5	10	2	
24	1a	35	60	75	unbored, Ø 24	78	30	18	14	2,0	56	27	40	-	M5	10	2	

ROTEX® Aluminium diecast (AI-D)

19	1	10	17	-	6-19	66	25	16	12	2	41	18	32	20	M5	10	2
	1a				19-24								41				
24	1	35	60	-	9-24	78	30	18	14	2	56	27	40	24	M5	10	2
	1a				22-28								56				
28	1	95	160	-	10-28	90	35	20	15	2,5	66	30	48	28	M8	15	10
	1a				28-38								66				

ROTEX® cast iron (GJL)

38	1	190	325	405	12-40	114	45	24	18	3	80	38	66	37	M8	15	10
	1a				38-48								78				
	1b				12-48								62				
42	1	265	450	560	14-45	126	50	26	20	3	95	46	75	40	M8	20	10
	1a				42-55								94				
	1b				14-55								65				
48	1	310	525	655	15-52	140	56	28	21	3,5	105	51	85	45	M8	20	10
	1a				48-62								104				
	1b				15-62								69				
55	1	410	685	825	20-60	160	65	30	22	4	120	60	98	52	M10	20	17
	1a				55-74								118				
65	1	625	940	1175	22-70	185	75	35	26	4,5	135	68	115	61	M10	20	17
75	1	1280	1920	2400	30-80	210	85	40	30	5	160	80	135	69	M10	25	17
90	1	2400	3600	4500	40-100	245	100	45	34	5,5	200	100	160	81	M12	30	40

ROTEX® nodular iron (GJS)

100	1	3300	4950	6185	50-115	270	110	50	38	6	225	113	180	89	M12	30	40
110	1	4800	7200	9000	60-125	295	120	55	42	6,5	255	127	200	96	M16	35	80
125	1	6650	10000	12500	60-145	340	140	60	46	7	290	147	230	112	M16	40	80
140	1	8550	12800	16000	60-160	375	155	65	50	7,5	320	165	255	124	M20	45	140
160	1	12800	19200	24000	80-185	425	175	75	57	9	370	190	290	140	M20	50	140
180	1	18650	28000	35000	85-200	475	195	85	64	10,5	420	220	325	156	M20	50	140

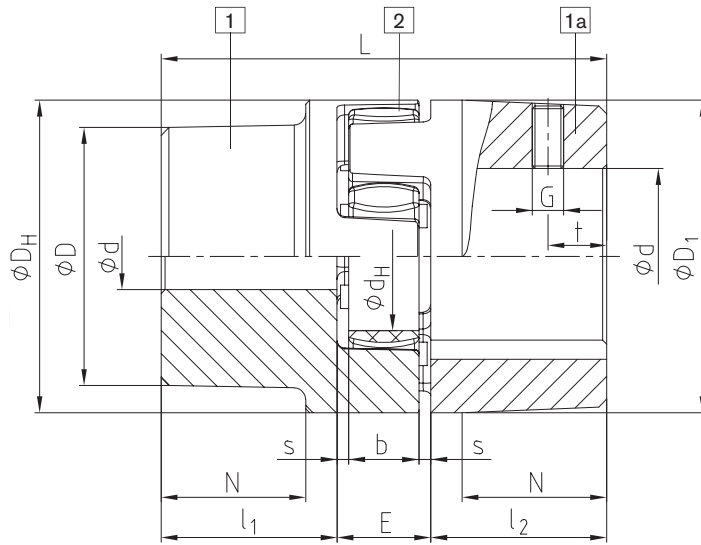
■ = If no material is specified in the order, it is stipulated in the calculation/order.

¹⁾ Maximum torque of coupling T_{Kmax.} = rated torque of coupling T_{K rated} x 2. For selection see page 10 et seqq.

Ordering example:

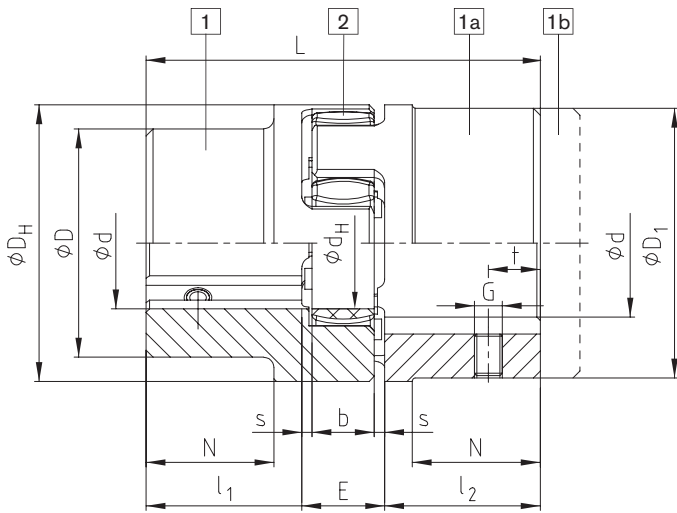
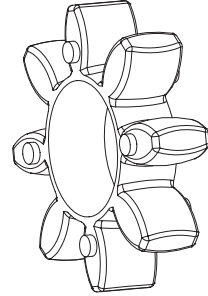
ROTEX® 38	GJL	92 Sh-A	1a	Ø 45	1	Ø 25
Coupling size	Material	Spider hardness	Component	Finish bore	Component	Finish bore

Components

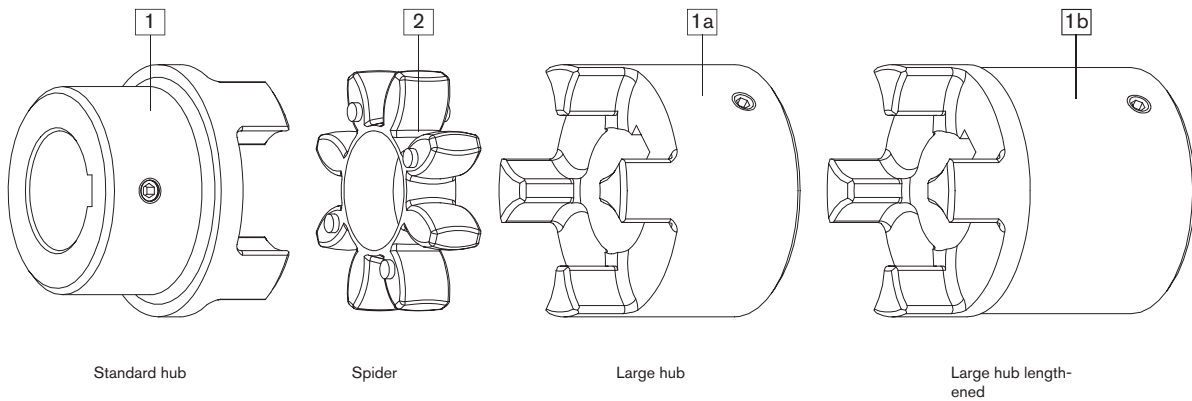


AL-D (Thread opposite to the keyway)

Spider
in hardness 92Sh-A, 98Sh-A,
64Sh-D
Standard from size
14 - 180

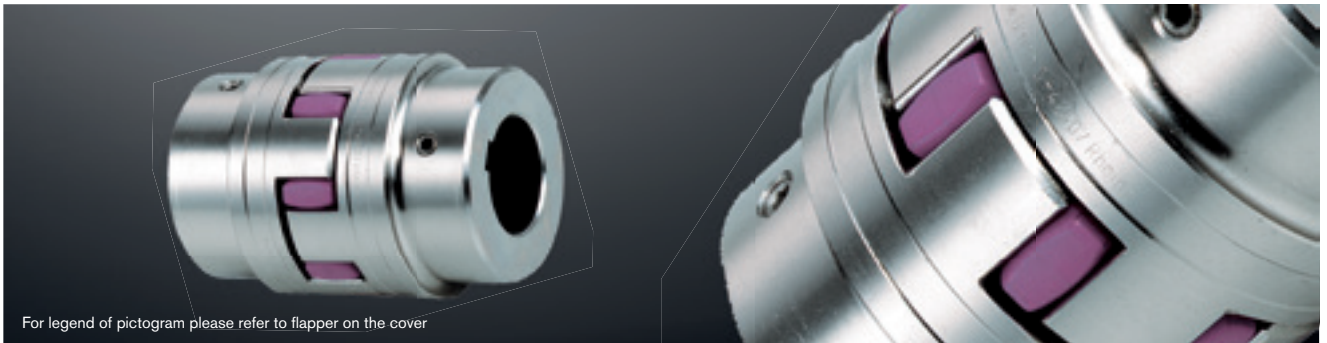


GJL / GJS (Thread on the keyway)



ROTEX® Standard Flexible jaw couplings

Material steel



For legend of pictogram please refer to flapper on the cover

ROTEX® Steel (St)																		
Size	Component	Spider (part 2) rated torque [Nm]			Finish bore d (min-max)	Dimensions [mm]												
		92 Sh-A	98 Sh-A	64 Sh-D		General												
					L	l ₁ ; l ₂	E	b	s	D _H	d _H	D	N	Thread for setscrews				
					G	t	T _A [Nm]											
14	1a	7,5	12,5	16	0-16	35	11	13	10	1,5	30	10	30	—	M4	5	1,5	
	1b					50	18,5											
19	1a	10	17	21	0-25	66	25	16	12	2	40	18	40	—	M5	10	2	
	1b					90	37											
24	1a	35	60	75	0-35	78	30	18	14	2	55	27	55	—	M5	10	2	
	1b					118	50											
28	1a	95	160	200	0-40	90	35	20	15	2,5	65	30	65	—	M8	15	10	
	1b					140	60											
38	1	190	325	405	0-48	114	45	24	18	3	80	38	70	27	M8	15	10	
	1b					164	70						80	—				
42	1	265	450	560	0-55	126	50	26	20	3	95	46	85	28	M8	20	10	
	1b					176	75						95	—				
48	1	310	525	655	0-62	140	56	28	21	3,5	105	51	95	32	M8	20	10	
	1b					188	80						105	—				
55	1	410	685	825	0-74	160	65	30	22	4	120	60	110	37	M10	20	17	
	1b					210	90						120	—				
65	1	625	940	1175	0-80	185	75	35	26	4,5	135	68	115	47	M10	20	17	
	1b					235	100						135	—				
75	1	1280	1920	2400	0-95	210	85	40	30	5	160	80	135	53	M10	25	17	
	1b					260	110						160	—				
90	1	2400	3600	4500	0-110	245	100	45	34	5,5	200	100	160	62	M12	30	40	
	1b					295	125						200	—				
100	1	3300	4950	6185	0-115	270	110	50	38	6	225	113	180	89	M12	30	40	
110	1	4800	7200	9000	0-125	295	120	55	42	6,5	255	127	200	96	M16	35	80	
125	1	6650	10000	12500	60-145	340	140	60	46	7	290	147	230	112	M16	40	80	
140	1	8550	12800	16000	60-160	375	155	65	50	7,5	320	165	255	124	M20	45	140	
160	1	12800	19200	24000	80-185	425	175	75	57	9	370	190	290	140	M20	50	140	
180	1	18650	28000	35000	85-200	475	195	85	64	10,5	420	220	325	156	M20	50	140	

■ = If no material is specified, it is stipulated in the calculation/order.

¹⁾ Maximum torque of coupling TK_{max}. = rated torque of coupling TK rated. x 2. For selection see page 10 et seqq.



Use in fire extinguisher pumps
ROTEX® couplings comply with the specifications of NFPA 20 standard for the installation of stationary pumps for fire protection and on completion of the necessary endurance tests they also comply with the specifications of UL 448A, flexible couplings and connection shafts for stationary fire extinguisher pumps.

Sizes available:

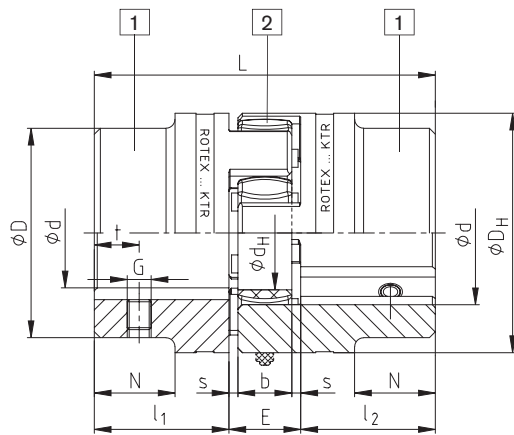


ROTEX® UL-Listed									
Size	Component	Material	Spider (part 2) rated torque [Nm]	Dimensions [mm]					
				Finish bore d (min-max)		L	l ₁ ; l ₂	E	D _H
42	1	St	265	18-55		126	50	26	95
55	1	St	410	24-74		160	65	30	120
65	1	St	625	24-80		185	75	35	135
75	1	St	1280	24-95		210	85	40	160
90	1	St	2400	30-110		245	100	45	200

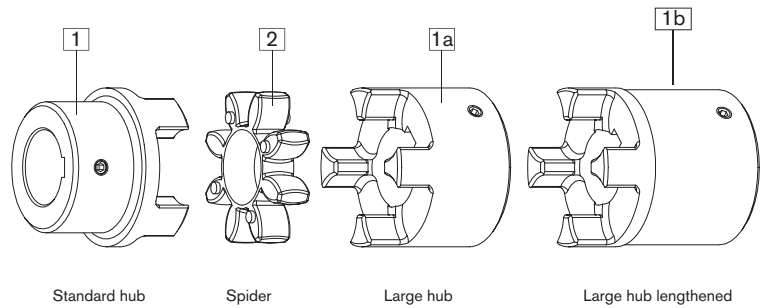
* For complete dimensions see table on page 36

Ordering example:	ROTEX® 38	St	92 Sh-A	1 – Ø 45		1 – Ø 25	
	Coupling size	Material	Spider hardness	Component	Finish bore	Component	Finish bore

Components



Steel (thread on the keyway)



ROTEX® coupling hubs with inspection certificate ¹⁾				
Size	Component	Material ²⁾	Inspection certificate acc. to DIN EN 10204	Notch impact strength
19	1a	S355 ²⁾	3.1	>=27 J
24	1a	S355 ²⁾	3.1	>=27 J
28	1a	S355 ²⁾	3.1	>=27 J
38	1a	S355 ²⁾	3.1	>=27 J
42	1	S355 ²⁾	3.1	>=27 J
48	1	S355 ²⁾	3.1	>=27 J
55	1	S355 ²⁾	3.1	>=27 J
65	1	S355 ²⁾	3.1	>=27 J
75	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		
90	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		
100	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		
110	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		
120	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		
140	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		
160	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		
180	1	S355 ²⁾	3.1 / 3.2	>=27 J
		42CrMoS4+QT ³⁾		

¹⁾ S355 suitable for feather key connections, 42CrMoS4+QT for oil press-fits

²⁾ Notch impact strength with -40°C

³⁾ Notch impact strength with -20°C

Marine programme:

Hub materials S355J2+N and 42CrMo4+QT acc. to DIN EN10204-3.1+3.2, size 75-180 available from stock.



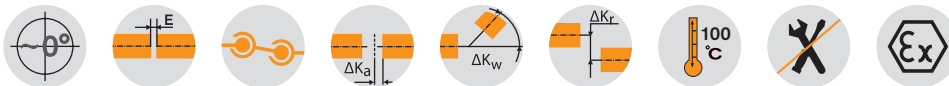
ClassNK

BoWex® M, I and M...C Curved-tooth gear coupling®

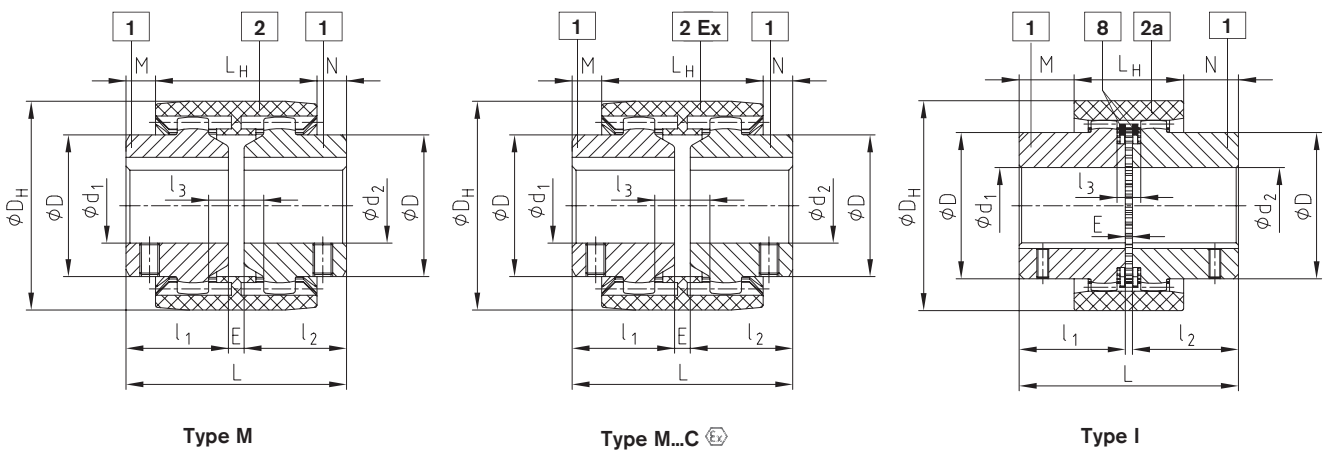
Compact and maintenance-free



For legend of pictogram please refer to flapper on the cover



Components



BoWex® type M, type I and type M...C																				
Size		Finish bore d_1, d_2		Dimension [mm]											Weight with max. bore \varnothing			Mass moment of inertia J with max. bore \varnothing		
		Pilot bored	max.	l_1, l_2	E	L	L_H	M, N	l_3	D	D_H	Tip circle- $\varnothing D_Z$ hub	Number of teeth	hub length. l_1, l_2 max.	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm ²]	Hub [kgcm ²]	Total [kgcm ²]
White sleeve	Black sleeve Ex	-	15	23	4	50	37	6,5	10	25	40	33	20	40	0,03	0,07	0,10	0,08	0,09	0,26
M-14	M-14C	-	20	25	4	54	37	8,5	10	32	47	39	24	40	0,03	0,10	0,23	0,15	0,16	0,47
M-19	M-19C	-	24	26	4	56	41	7,5	14	36	53	45	28	50	0,04	0,14	0,32	0,21	0,36	0,93
M-24	M-24C	-	28	40	4	84	46	19	13	44	65	54	34	55	0,08	0,33	0,74	0,65	1,22	3,09
M-28	M-28C	-	32	40	4	84	48	18	13	50	75	63	40	55	0,09	0,43	0,95	1,14	2,17	5,48
M-32	M-32C	-	38	40	4	84	48	18	13	58	83	69	44	60	0,13	0,55	1,23	1,58	3,55	8,68
M-38	M-38C	-	42	42	4	88	50	19	13	65	92	78	50	60	0,14	0,68	1,50	2,32	5,98	14,28
M-42		-	48	50	4	104	50	27	13	68	95	78	50	60	0,23	0,79	1,81	3,90	7,22	18,34
M-48	M-48C	-	65	55	4	114	68	23	16	96	132	110	42	70	0,55	1,90	4,35	21,2	31,8	84,8
M-65	M-65C	21	80	90	6	186	93	46,5	20	124	178	145	46	-	1,13	5,20	11,53	68,9	150,8	370,5
I-80	M-80C	31	80	90	6	186	93	46,5	20	124	178	145	46	-	1,13	5,20	11,53	68,9	150,8	370,5
I-100		38	100	110	8	228	102	63	22	152	210	176	48	-	1,78	9,37	20,52	158,6	401,3	961,2
I-125		45	125	140	10	290	134	78	30	192	270	225	54	-	3,88	19,44	42,76	562,9	1362,3	3287,5

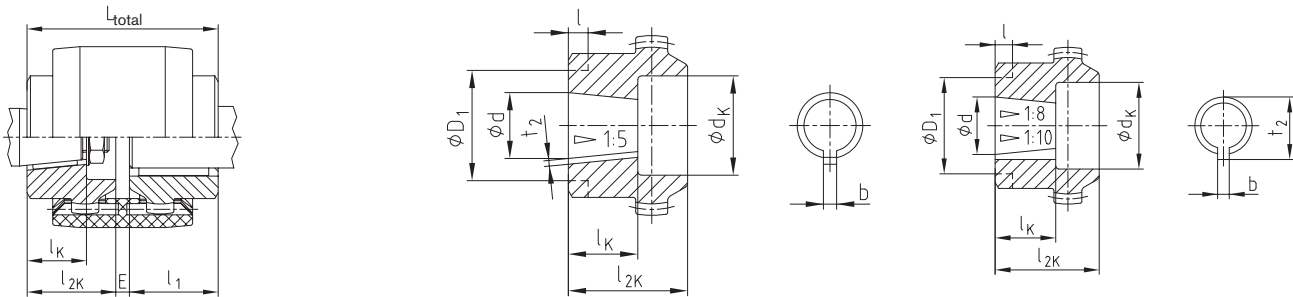
BoWex® M applicable up to +120°C with black sleeve
BoWex® M applicable for higher torques with black sleeve

Ordering example:	BoWex® M-28	$d_1 \varnothing 20$	$d_2 \varnothing 28$
	Size and type of coupling	Finish bore H7 keyway to DIN 6885 sh. 1 (JS9)	Finish bore H7 keyway to DIN 6885 sh. 1 (JS9)

BoWex® Curved-tooth gear coupling®

Taper bores

BoWex® with taper bore



$$L_{total} = l_1 + E + l_{2K}$$

Stock items see page 86

Taper bores 1:5																						
Dimensions [mm]					Recess d_K and length of hub l_{2K} [mm] Recess on hub collar $D_1 \times l$ [mm]																	
Code	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{S9}	$t_2^{+0,1}$	IK	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
A-10	9,85	2	1,0	11,5	18	23	18	25	25	26	25	26	25	26	25	26						
B-17	16,85	3	1,8	18,5			25	30	28	30	36	40	36	40	36	40	45	42	45	42	45	50
C-20	19,85	4	2,2	21,5					28	36	36	40	36	40	36	40	45	42	45	42	45	50
Cs-22	21,95	3	1,8	21,5					28	36	36	40	36	40	36	40	45	42	45	42		
D-25	24,85	5	2,9	26,5							36	40	36	40	36	40	45	42	45	42	45	50
E-30	29,85	6	2,6	31,5											45	55	45	55	45	55	45	55
F-35	34,85	6	2,6	36,5														52	60	55	60	
G-40	39,85	6	2,6	41,5														52	60	65	70	

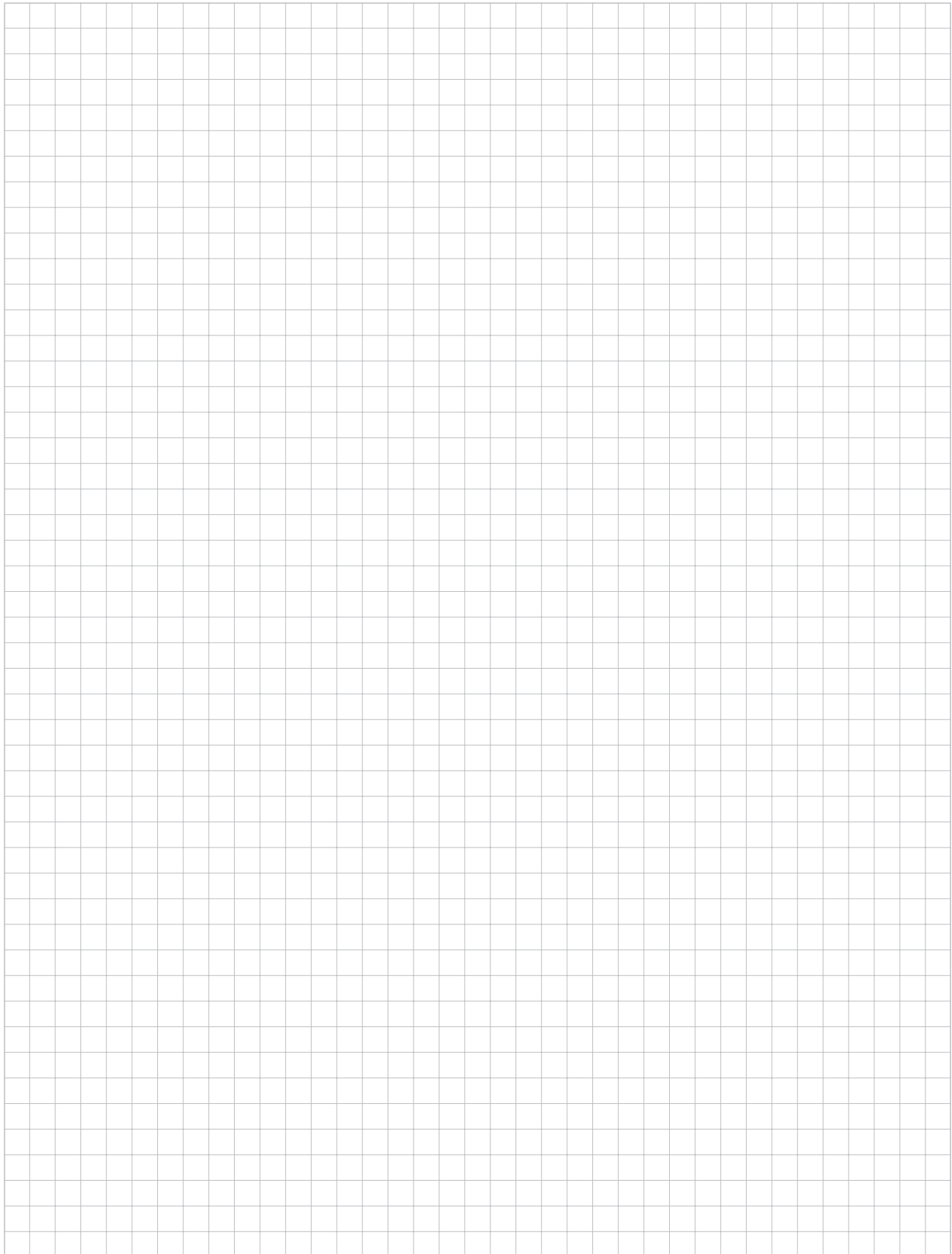
Taper bores 1:8																						
Dimensions [mm]					Recess d_K and length of hub l_{2K} [mm] Recess on hub collar $D_1 \times l$ [mm]																	
Code	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{S9}	$t_2^{+0,1}$	IK	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
N/1	9,7 $\pm 0,015$	$2,4^{+0,05}$	10,85	17	18	26	18	25	25	26	25	30	25	30	25	30						
N/1c	11,6	3^{S9}	12,90	16,5	18	23			25	26	25	30										
N/1e	13	$2,4^{+0,05}$	13,80	21					25	30	25	30			25	30						
N/1d	14	3^{S9}	15,50	17,5	20	23	25	30	28	30	28	30	28	40								
N/2	17,287	$3,2^{+0,05}$	18,24	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
N/2a	17,287	4^{S9}	18,94	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
N/2b	17,287	3^{S9}	18,34	24					28	35					36	40	45	42	45	42		
N/3	22,002	4^{S9}	23,40	28							36	40	36	40	36	40	45	42	45	42	45	50
N/4	25,463	$4,78^{+0,05}$	27,83	36							36	50	36	50	36	50	45	50	45	50	45	62
N/4b	25,463	5^{S9}	28,23	36													58 x 10	58 x 10				
N/4a	27	$4,78^{+0,05}$	28,80	32,5							36	50			36	50						
N/4g	28,45	6^{S9}	29,32	38,5											36	60	45	60	45	60		
N/5	33,176	$6,38^{+0,05}$	35,39	44											45	60	45	60	45	60	45	62
N/5a	33,176	7^{S9}	35,39	44													45	60	45	60	45	62

Taper bores 1:10																						
Dimensions [mm]					Recess d_K and length of hub l_{2K} [mm]																	
Code	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{S9}	$t_2^{+0,1}$	IK	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
CX-20	19,85	5	22,08	32							36	50			36	50	45	50	45	50		
DX-25	24,95	6	26,68	45									36	50			45	60	45	60	45	60
EX-30	29,75	8	31,88	50													45	60	45	60	45	70

Notizen



Notizen



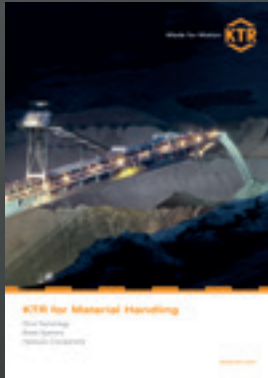
Summary of literature

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:

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KTR Systems GmbH
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D-48432 Rheine
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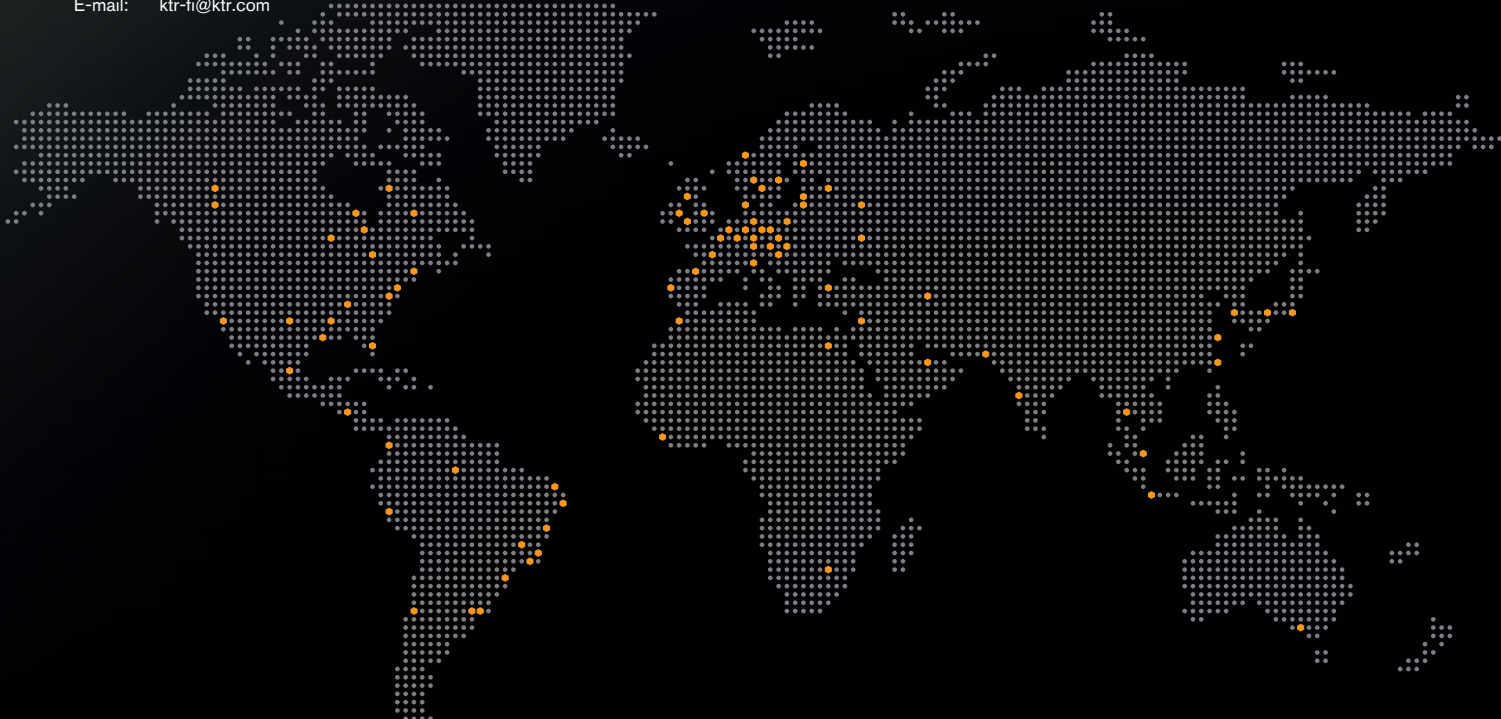
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