Hydraulic Components

Highest reliability in a tiny space

Made for Motion KTR

www.ktr.com

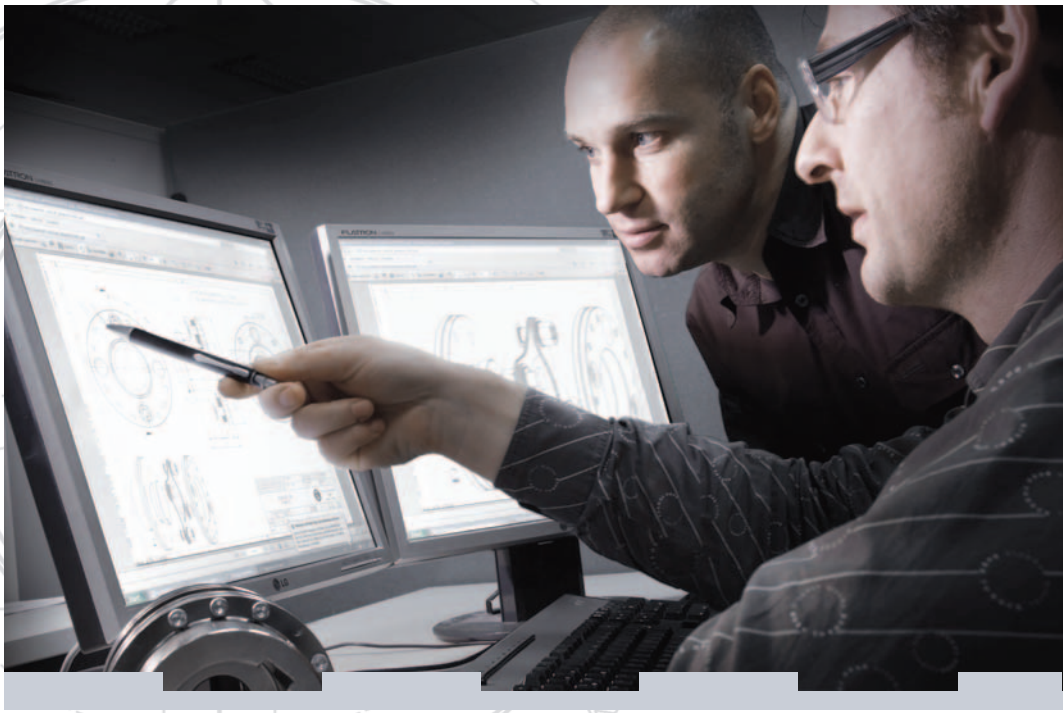
If you want to set things in motion: KTR

Competence meets creativity

As a leading manufacturer of high-quality drive components, KTR supplies mechanical couplings, clamping sets, torque limiters, torque measuring systems and hydraulic components all over the world. With more than 50 years experience in power transmission we are trendsetters in the development of coupling technology and offer customised solutions to all industries. The KTR trademark characterises quality and innovation, speed, reliability, flexibility and a close working relationship with customers.

Having started with the curved-tooth gear coupling® BoWex® and the torsionally flexible jaw coupling ROTEX®, KTR has built up an extensive product portfolio covering torques from 0,15 to over 750.000 Nm. The production by KTR's in-house, up-to-date machinery ensures that the couplings are made to the utmost accuracy. The couplings having a unit weight of up to 2 tons. Flexible automation ensures a quick and low-cost production even if the product has to be customised to meet customers individual specifications. KTR produce several million couplings a year.

Even though KTR's standard product portfolio is quite extensive, it only represents a fraction of the different options available. KTR is not only a subcontractor but also a solution provider. The knowledge gained from thousands of applications in the field allows us to find optimum, low-cost solutions for customised applications. We will consult you during the planning stage providing drawings and prototypes or arranging for local discussions if required. Every year KTR produces more than 10.000 new products ordered by customers. This trend increases year on year. This leads to many special products becoming standard items: We permanently give vital ideas to the Power Transmission technology – in cooperation with our customers.



Accuracy meets speed

KTR products are evidence of well-designed, quality components resulting in improved characteristics of the drive system and as a consequence, a longer service life. It is our aim to continually improve the quality of our products and services. We can analyse the stiffness of components by utilising FEM (Finite Element Method) system and we can also perform torsional vibration calculations for entire drive systems. In our in-house Research and Development Centre we test our products on accurate test benches in realistic operating conditions. Our main objective is to provide the uppermost satisfaction to our customers.

Our technical sales engineers and our well-trained sales staff will be pleased to give you advice. KTR provides you with extensive services online, too: At www.ktr.com you can request information, including our product catalogue, 3D-CAD-models and assembly instructions. Depending on your application you can select your drive component from of more than 3.500 standard products. Having selected which one is the right component for your application by using our online calculation program, you are now in a position to order the products by contacting your nearest KTR company. Alternatively our Euro shop is open 24 hours a day.

Our latest scheduling system SAP ERP ensures an optimum networking with our customers and allows for a quick and reliable delivery service. A selection of 3.500 couplings and hydraulic components are permanently available from stock. For orders placed by 2:00pm we guarantee the despatch of orders the same day! In the KTR Logistics Centre the overall flow of goods is supervised by radio-controlled barcode scanning. Leading distribution partners ensure delivery on time. Our tracking and tracing system allows you to follow the progress of your order at all times. KTR supplies to every location in the world.

For further details about us and our products:
www.ktr.com

For all those who aim high: KTR Hydraulic Components

Tension is getting higher. Blood pressure is getting higher. Oil pressure is getting higher. The simulator gets moving to make its passengers take off. To make sure that this feeling is as realistic as possible, a highly accurate operating technology is necessary - just like KTR's hydraulic components do. They provide for the necessary power at the right moment. Our service tools assist you with the correct selection. Once your project has reached the runway, there is not much time left for simulations.

Everything from one source: Our programme

KTR offers a wide range of components for stationary hydraulics in mechanical engineering, plant engineering and construction of vehicles. There is a wide choice of products from KTR thus reducing the number of suppliers you need to transact with. We can provide you with a vast range of products by means of one-stop-shopping, including bellhousings and cooling systems. In addition to a range of standard products we can supply you with special sizes and customised designs; following your dimensions; in a word – KTR.

KTR hydraulic components provide for highest power in a tiny space. The same applies for our delivery times and prices: less is more. We do not make any compromises regarding quality, long service life and variety. That is why our standard product range covers almost every demand and application:

- Bellhousings
- Base flanges
- Damping elements
- Oil-air-coolers
- Oil-water-coolers
- Oil tanks
- Control & monitoring
- Tank heaters
- Couplings

Practical: the online configuration

Everything available within short term: Thanks to the 3D SpaceCenter

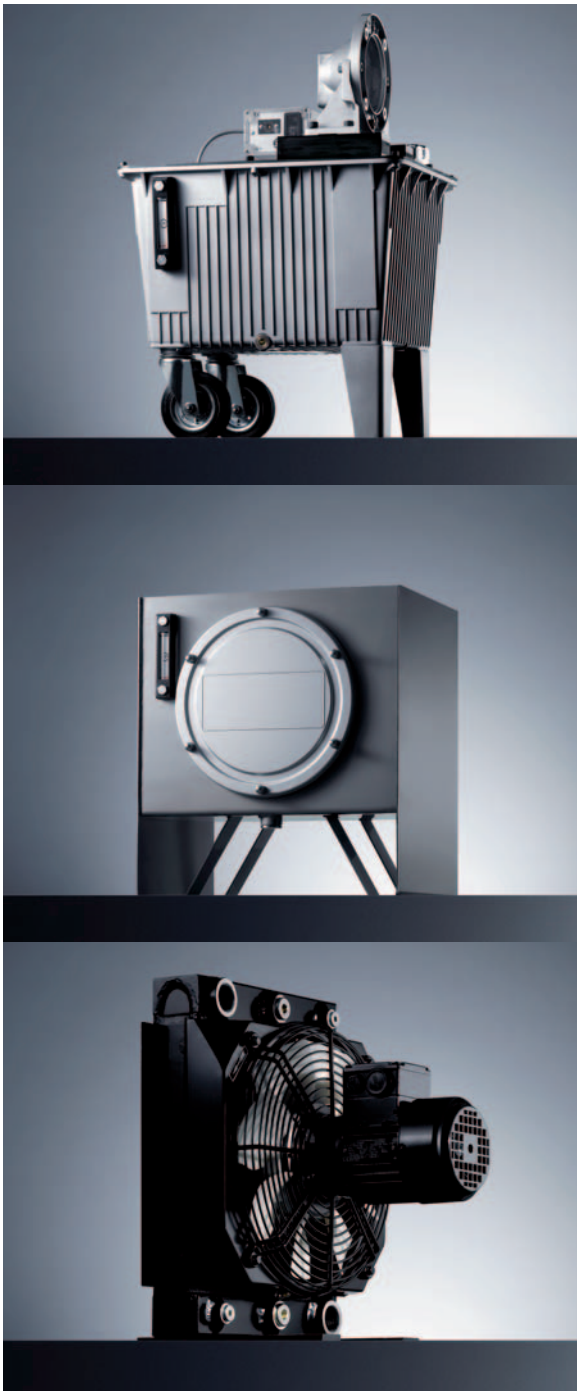
Oil pressure and time pressure mostly go together. For hydraulic applications speed is very important with the selection – while the accuracy must not suffer. In order to support your design work in an optimum way, our 3D-SpaceCenter shows an extensive portfolio of hydraulic components and couplings on the Internet.

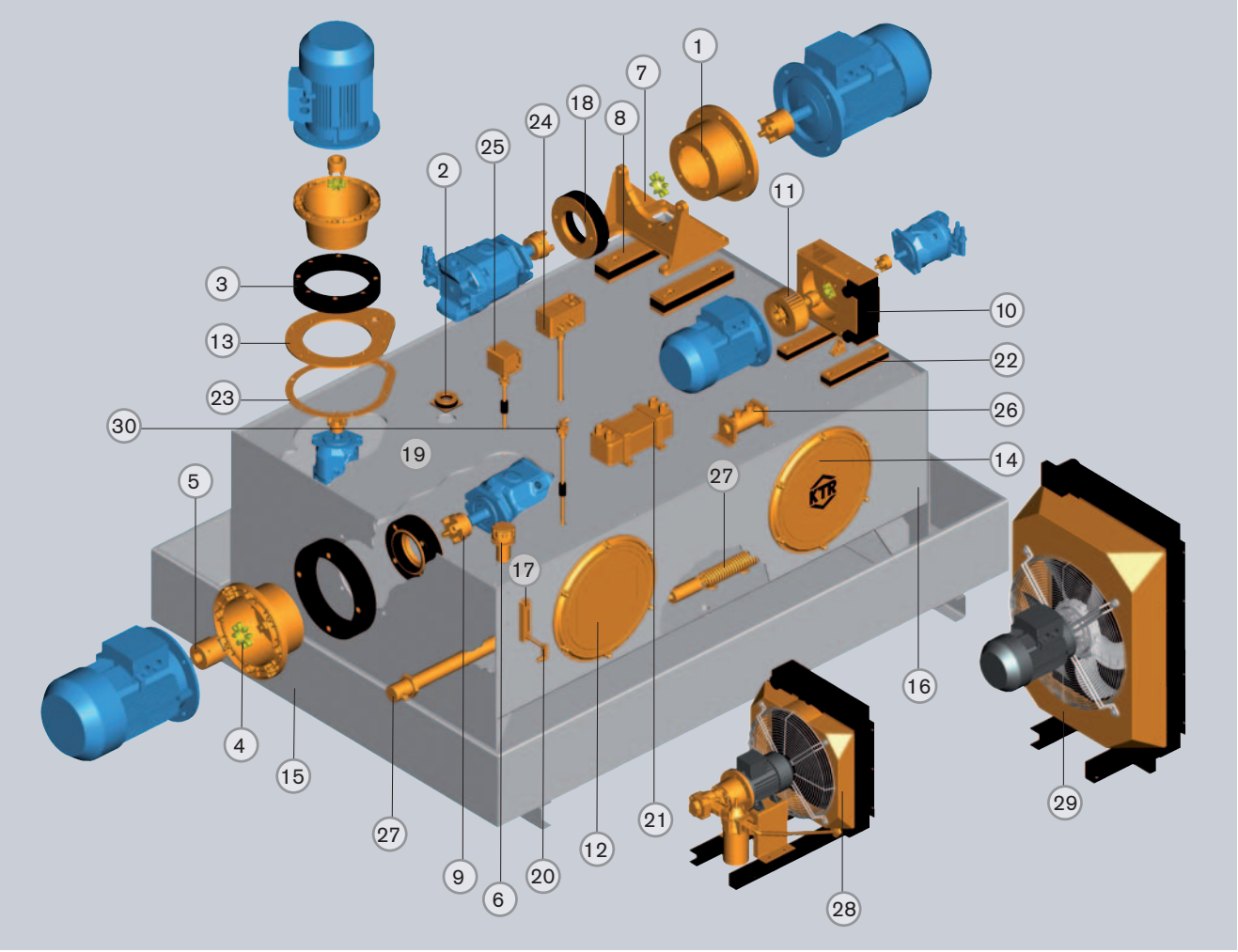
A user guide with a simple structure allows you to select the necessary types quickly. The 3D files are sent to you by email immediately and free of charge, which means that you have an assembly drawing, saving substantial time and effort in designing, while eliminating potential sources of error.

Everything made easily: Thanks to the online configuration

KTR is the only manufacturer of couplings offering you an extensive online selection program for hydraulic components. It is quite easy to operate: First of all you determine the pump manufacturer, pump type and electric motor. In a matter of seconds the program provides you with a selection of suitable couplings and bellhousings. Depending on your application, you can select the corresponding extra component like a damping ring or base flange. Afterwards you can have the components selected to scale via TDTwebgraph or as a PDF file. Having completed your selection successfully you can either order your individual online quotation or you can order the components required, directly from the KTR Euro Shop.

Now your project is ready to start!

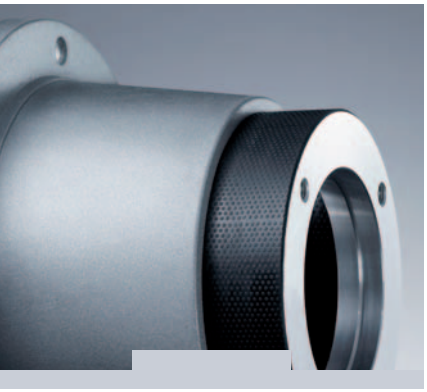




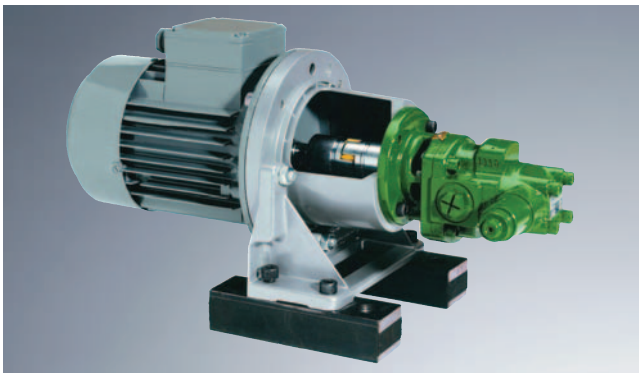
1 Bellhousing type PK/PL
2 Elastic flange
3 Damping ring design DT
4 ROTEX® spider
5 ROTEX® coupling hub, motor side
6 Filler breather (with ventilation filter)
7 Foot flange type PTFS (VDMA 24 561 part 1)
8 Damping rod design DSFS for foot flange type PTFS
9 ROTEX® coupling hub, pump side
10 Bellhousing PIK with integrated oil cooler
11 Fan for PIK
12 Standard cleaning cover
13 Additional flange type ZO
14 Cleaning cover with logo according to customer specification
15 Oil sump pan
16 Steel tanks type BSK/BNK/BEK
17 Oil-level indicator type KO
18 Damping ring type D
19 Machining of tank according to customer specification
20 Temperature switch type TS
21 PHE-Plate heat exchanger
22 Damping rod design DSK for PIK
23 Gasket type DZ for additional flange type ZO
24 Industrial controller IR
25 IRDN Digital industrial control with level switch
26 Horizontally mounted cooler TAK
27 Tank heaters
28 OPC Cooling-pump-unit with hydraulic pump filter
29 OAC-Oil/air cooler
30 Level-temperatur-switch NVT

The customer has to protect rotating parts from unintended touch (Safety of Machines DIN EN 292 part 2).
The fastening screws should be secured against release by the customer (e. g. by anaerobic bonding agents like Loctite®).

Overview

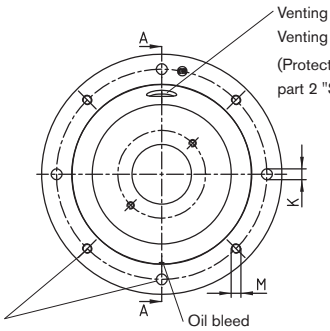


Bellhousings



- Links between IEC motor and hydraulic pump
- For almost every hydraulic pump either available from stock or in short term
- Both flange sides are finish machined
- Motor and pump shaft centered
- KTR bellhousings are made from aluminium (steel on request)
- In many cases KTR bellhousings can be piled up
- Designed for high loads
- For the bellhousing selection you require please either see our selection programme at www.ktr.com or order the selection stored on CD-ROM
- Notice our mounting instructions

For IEC motor from size 225S
8 fixing holes are offset
22,5° on the verticle

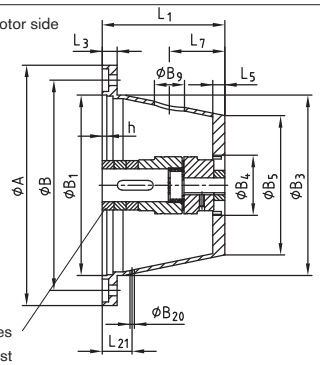


Venting hole
Venting plugs available on request
(Protection acc. to DIN EN 292 part 2 "Safety of Machines")

Screw tightening torque with screw quality 5.6

Oil bleed available on request

Motor side



Pump side

Distance sleeves available on request

Bellhousings according to VDMA 24561 design A

IEC - motor size (shaft end) d_1 x l_3	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/ PTFS *)	Dimensions [mm] A	B	B_1	B_3	h	K	M	L_1	L_3	L_5 [1)]	B_5	Min. B_4	Venting hole B_9	Venting hole L_7	Oil bleed B_{20}	Oil bleed L_{21}
71	0,25	PK 160/5/..	160	160	160	130	110	110	4	9	M8	80	13	8	105	27	25	33	7,5	28
(14 x 30)	0,37	PL 160/5/..										90			102	29		38		
80	0,55	PK 200/3/..										100			124	40		43		
(19 x 40)	0,75	PL 200/3/..										110				37		47		
		PL 200/8/..	200	200	200	165	130	145	4	11	M10	124	16	12	133	57	36	60	7,5	36
90S / 90L	1,1	PL 200/4/..													144	40		54		
(24 x 60)	1,5	PFL 200/6/..										140			180	47		62		
		PK 250/6/..										120	19		177	49		54		
	2,2	PL 250/3/..										124			124	42		52		
100L / 112M	3	PL 250/6/..	250	250	250	215	180	190	5	14	M12	135	18	12	180		40	57	7,5	43
(28 x 60)	4	PL 250/4/..										148			166	56		64		
		PFL 250/18/..										175			250			77		
		PK 300/5/..										144			205	57		63		
	5,5	PL 300/15/..										150			231	77		66		
132S / 132M		PK 300/4/..	300	300	300	265	230	234	5	14	M12	155	20	15	205	56	50	68	7,5	45
(38 x 80)	7,5	PL 300/4/..										168			220	57		74		
		PL 300/7/..										196						84		
160M / 160L	11	PK 350/4/..										188			225	59		82		
(42 x 110)	15	PK 350/6/..	350	350	350	300	250	260	6	17	M16	204	26	15		56	50	87	7,5	51
180M x 180L	18,5	PK 350/10/..										228			248	97		102		
(48 x 110)	22	PL 350/7/..										256			255	88		115		
		PK 400/4/..										204	26		230	75		92		
200L	30	PK 400/5/..	400	400	400	350	300	300	6	17	M16	228		20	279	95	50	104	7,5	51
(55 x 110)		PL 400/5/..										256	25		290	97		118		
		PK 450/2/..										234	25		260			107		
225S / 225M	37	PK 450/3/..	450	450	450	400	350	350	6	17	M16	262	26	20	315	97	50	121	7,5	51
(60 x 140)	45	PL 450/3/..										285	25		325			133		
	55	PL 550/8/..										248			340	97		116		
250M		PL 550/1/..										265			360	120		125		
(65 x 140)	75	PK 550/3/..	550	550	550	500	450	450[2)]	6	17	M16	275	26	25	340	97	50	130	7,5	51
280S / 280M	90	PL 550/3/..										295			360	123		140		
(75 x 140)		PL 550/2/..										315			400	150		135		
	110	PK 660/2/..										310			410	120		147		
315S / 315M	132	PL 660/5/..	660	660	660	600	550	550[2)]	8	22	M20	330	32	30	400		50	157	7,5	60
(80 x 170)	160	PL 660/2/..										343			490	174		163		
	200	PL 660/4/..										395			500	197		190		
355L / 400M	355	PL 880/1/..	800	800	800	740	680	680[2)]	8	22	M20	370	40	36	500	148	50	135	7,5	70
(100 x 210)	710	PK 800/3/..										395			487			160		

Bellhousings

Other bellhousings

IEC - motor size (shaft end) $d_1 \times l_3$	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/ PTFS *)	Dimensions [mm]												Min.	Venting hole		Oil bleed	
					A	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}
71	0,25	PFK160/6/..	160	160	160	130	110	110	4	9	M8	79	13	13	140	30	25	35	7,5	28
(14 x 30	0,37	PFL 160/6/..										101				60		46		
80	0,55	PK 200/4/..										109		12		57	36	46		36
(19 x 40)	0,75	PK 200/11/..										45		10	144	97	10	15		30
		PL 200/11/..	200	200	200	165	130	145	4	11	M10	55	16					18	7,5	
90S / 90L	1,1	PK 200/13/..										152		12		30	36	71		36
(24 x 50)	1,5	PK 200/30/..										79			142	37	25	30		
		PL 200/30/..										90			127			37		
		PK 250/13/..										159			186	77	40	69		
100L / 112M	2,2	PK 250/15/..	250	250	250	215	180	190	5	14	M12	61	18	12	187	97	10	20	7,5	43
(28 x 60)	3	PL 250/15/::										79					20	29		
	4	PK 250/17/..										100			186	74	40	39		
		PK 300/8/..										110			225	95	40	45		
	5,5	PK 300/9/..										85				97	30	32		
132S / 132M		PL 300/9/..	300	300	300	265	230	234	5	14	M12	99	20	15	231		40	37	7,5	45
(38 x 80)	7,5	PL 300/13/..										210				57	50	95		
		PK 300/15/.										138			228	56		57		
	11	PK 350/8/..										204	25	15	259	53		90		
160 / 160L	15	PK 350/11/..										130				97		52		
(42 x 110)	18,5	PL 350/11/..	350	350	350	300	250	260	6	17	M16	146	26	18	252	92	50	60	7,5	51
180M / 180L	22	PK 350/18/..										159	25	15		77		67		
(48 x 110)		PL 350/18/..										184						80		
		PL 400/3/..										165			290	97		73		
200L	30	PK 400/12/..	400	400	400	350	300	300	6	17	M16	170	25	20	260	95	50	75	7,5	51
(55 x 110)		PL 400/12/..										184						82		
		PK 450/5/..										165	25		260	120		73		
	37	PL 450/5/..										185			325			83		
225S / 225M	45	PK 450/6/..	450	450	450	400	350	350	6	17	M16	176	26	20	259	98	50	80	7,5	51
(60 x 140)		PFL 450/9/..										253			370	137		116		
		PK 450/12/..										204	25		260	97		90		
		PL 450/12/..										222						101		
250M	55	PK 550/4/..										190/192		26	355	129		88		
(65 x 140)		PL 550/4/..	550	550	550	500	450	450[2)]	6	17	M16	207	26		330	124	50	96	7,5	51
280S / 280M	75	PK 550/8/..										217		25	340	97		100		
(75 x 140)	90																			
315S / 315M	110-	PK 660/3/..	660	660	660	600	550	550[2)]	8	22	M20	247	32	30	500	80	50	115	7,5	60
(80 x 170)	160	PL 660/3/..										260			340	156		122		
355L / 400M	355	PK 800/1/..	800	900	800	740	680	680[2)]	8	22	M20	335	40	36	520	149	50	140	7,5	70
(100 x 210)	710	P 800/3/..										443	37	38	500	305		206		

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

[1)] Bottom of pot does not consist of sold material ➔ ribbed

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

*) For vertical assembly or lateral assembly on the tank gaskets are available (type DP, see page 175).

For the detailed order designation please see our PC/Internet selection programme or mention the IEC motor size and detailed pump type for selection.
If venting holes or oil bleeds are requred, please mention in your order.

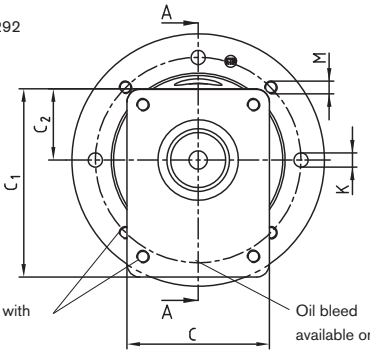
Order form

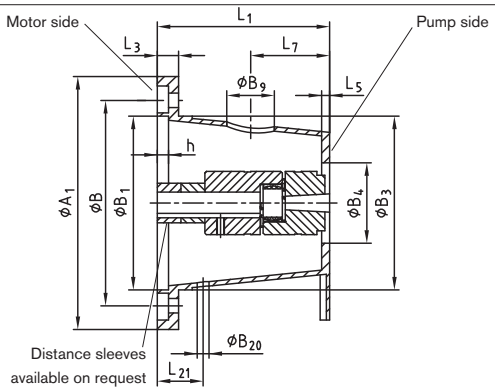
PL	PK	P	450	3	8
Bellhousing type, **L**ong	Bellhousing type, short, "**K**"	Former bellhousing type	Flange diameter of IEC Motor	Model code	Internal-code

Bellhousings

- Links between IEC motor and hydraulic pump
- Both flange sides are finish machined
- Motor and pump shaft centered
- KTR bellhousings are made from aluminium
- Designed for high loads
- For almost every hydraulic pump available from stock or in short term
- For the bellhousing selection you require please either see our selection programme at www.ktr.com or order the selection stored on CD-ROM
- Notice our mounting instructions

Venting hole and venting plugs available on request (Protection acc. to DIN EN 292 part 2 "Safety of Machines")





Bellhousings with rectangular flange

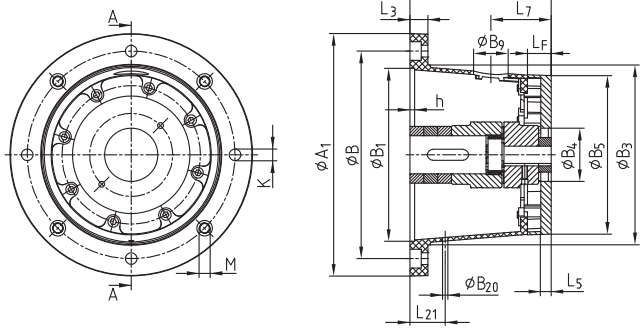
IEC-motor size (shaft end)	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/ PTFS *)	Dimensions [mm]														Min.	Venting hole		Oil bleed	
					A_1	B	B_1	B_3	h	K	M	L_1	L_3	L_5	C	C_1	C_2	B_4	B_9	L_7	B_{20}	L_{21}
71 (14x30)	0,25	PL 160/1/..	160	160	160	130	110	110	4	9	M8	70	13	8	70	91	35	20	16	27	7,5	28
	0,37	PL 160/4/..										110		12	90	120	45	22	25	50		
		PK 160/4/..										95								43		
80 (19x40)	0,55	PL 200/1/..	200	200	200	165	130	145	4	11	M10	90	16	12	70	91	35	22	25	37	7,5	36
	0,75	PL 200/2/..										100			90	90	120	22		42		
90S/90L (24x50)	1,1																					
	1,5																					
100L/112M (28x60)	2,2	PL 250/1/..	250	250	250	215	180	190	5	14	M12	110	18	12	90	120	45	22	36	45	7,5	43
	3	PL 250/2/..										115			120	150	53	47		47		
	4	PL 250/7/..										125			145	180	64	46		52		
132S/132M (38x80)	5,5	PL 300/1/..	300	300	300	265	230	234	5	14	M12	132	20	15	120	150	53	33	50	56	7,5	45
	7,5	PK 300/2/..										137			145	180	64	33		59		
160M/160L (42x110)	11	PL 350/1/..	350	350	350	300	250	260	6	18	M16	171	25	15	120	156	59	33	50	73	7,5	51
	15	PL 350/2/..										181			145	180	64	31		78		
180M/180L (48x110)	18,5																					
	22																					

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

Order form

PL	PK	P	450	3	8
Bellhousing type, Long	Bellhousing type, short, "K"	Former bellhousing type	Flange diameter of IEC Motor	Model code	Internal-code

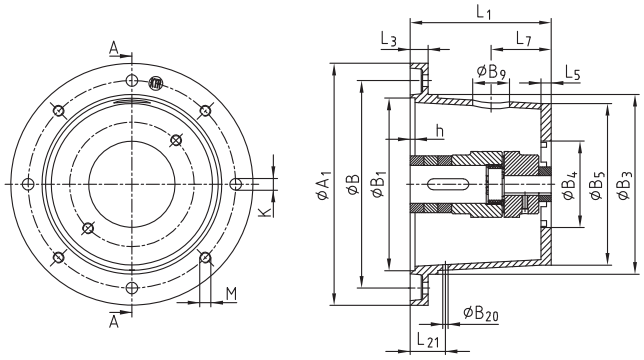
Bellhousings



- Bellhousing from special nylon material
  - Accurate to size with higher temperatures and moisture
  - Stiffness similar to aluminium bellhousings
  - Very good damping properties
- Low-cost alternative to bellhousings with damping ring
- Both mounting sides are finish machined
- Flange side for pump mounting from aluminium
- Motor and pump shaft centered
- For almost every hydraulic pump available within short term
- Notice our mounting instructions
- Operating temperature: -10 °C to +60 °C

Bellhousings from nylon

IEC - motor size (shaft end)	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/ PTFS *)	Dimensions [mm]																
					A_1	B	B_1	B_3	h	K	M	L_1	L_F	L_3	L_5	B_5	Min. B_4	Venting hole B_9	Venting hole L_7	Oil bleed B_{20}	Oil bleed L_{21}
100L/112M (28X60)	2,2	KPT 250/2/..	250	250	250	215	180	190	7	14	M12	120	12	19	12	166	35	40	54	7,5	43
	3	KPT 250/3/..										124	16				42		52		
	4	KPT 250/4/..										135	27				58		57		
132S/132M (38x80)	5,5	KPT 300/2/..	300	300	300	265	230	234	7	14	M12	144	15	20	15	208	57	50	63	7,5	45
	7,5	KPT 300/3/..										155	26				56		68		
		KPT 300/4/..										168	39				57		74		
		KPT 300/5/..										196	67						84		
160M/160L (42x110)	11	KPT 350/2/..	350	350	350	300	250	260	7	17	M16	188	18	26	15	230	56	50	82	7,5	51
	15	KPT 350/3/..										204	34				77		87		
180M/180L (48x110)	18,5	KPT 350/4/..										228	58				97		102		
	22																				



- Bellhousing from cast iron EN-GJL-250
- Bellhousing suitable for high loads
- To be used in mining and offshore applications
- Resistant to almost every hydraulic oil and salt water
- Both mounting sides are finish machined
- The bellhousings are primed, machined surfaces are preserved.
- Good damping properties due to the relatively big mass
- For almost every hydraulic pump available from stock or within short term
- Notice our mounting instructions

Bellhousings from cast iron

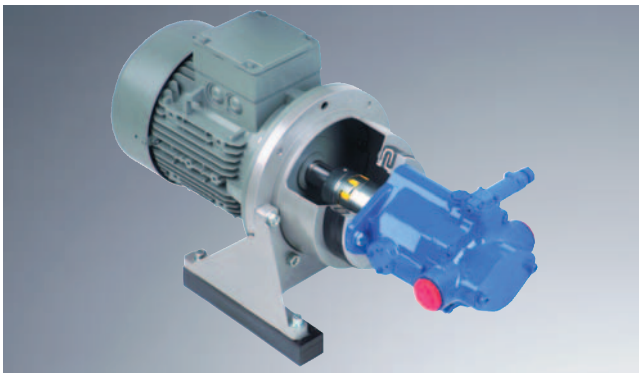
IEC - motor size (shaft end)	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/ PTFS *)	Dimensions [mm]																
					A_1	B	B_1	B_3	h	K	M	L_1	L_3	L_5	B_5	Min. B_4	Venting hole B_9	Venting hole L_7	Oil bleed B_{20}	Oil bleed L_{21}
132S/132M (38x80)	5,5	PG 300/5/..	300	300	300	265	230	234	5	14	M12	144	20	15	215	30	50	63	7,5	45
	7,5																			
160M/160L (42x110)	11 - 22	PG 350/4/..	350	350	350	300	250	260	7	17	M16	188	26	15	242	76	50	82	7,5	51
		PG 350/6/..										204			235					
180M/180L (48x110)																		87		
200L (55x110)	30	PG 400/4/..	400	400	400	350	300	300	7	17	M16	204	26	20	260	97	50	92	7,5	51
		PG 400/5/..										228			280			104		
225S/225M (60x140)	37	PG 450/2/..	450	450	450	400	350	350	7	17	M16	234	26	24	289	97	50	107	7,5	51
	45	PG 450/3/..										262		20	315	91		121		
250M (65x140) 280S/280M (75x140	55 - 90	PG 550/1/..	550	550	550	500	450	450	7	17	M16	265	26	25	360	97	50	125	7,5	51
		PG 550/8/..										248			349			116		
315S/315M (80x170)	110 - 160	PG 660/5/..	660	660	660	600	550	550	8	22	M20	330	32	30	425	119	50	157	7,5	60

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

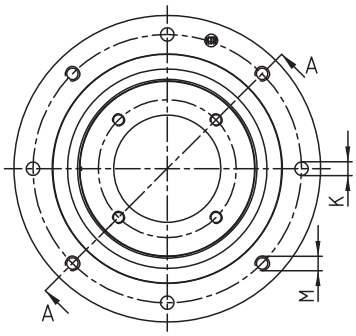
Order form

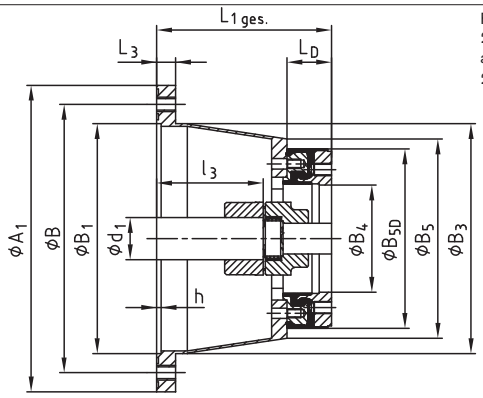
PG	KPT	250	1	4
Bellhousing design from nylon	Bellhousing design from cast iron	Flange diameter of IEC Motor	Model code	Internal-code

Damping rings D in combination with bellhousings



- The damping ring forms a centering unit with the bellhousing
- Combination also available for multiple pumps
- For the mounting of the damping ring special bellhousings are available to build a short design
- For the bellhousing selection you require please either see our selection programme at www.ktr.com or order the selection stored on CD-ROM
- Notice our mounting instructions





For IEC-motor from size 225 S / 225 M 8 fixing holes and through holes are offset 22,5° to the verticle.

Please mention in your order if venting holes or oil bleeds, respectively, are requested.
For dimensions see page 8/9.

Damping rings type D in combination with bellhousings [1)]

IEC - Motor size (shaft end) d_1xl_3	kW with n = 1500 rpm	Bellhousing Size	Damping-ring Size	Foot flange Size	Dimensions[mm] A_1	B	B_1	$L_{1\,ges.}$	L_3	K	M	h	L_D	B_3	B_4 min.	B_4 max.	B_5	B_{5D}
90S/90L (24x50)	1,1 1,5	PK 200/11/..						90										
		PL 200/11/..	D 150/..	PTFL 200	200	165	130	100	16	11	M10	4	45	145	18	83	145	148
		PK 200/30/..						124										
		PK 250/15/..						106										
		PL 250/15/..	D 150/..					124							18	83		148
100L/112M (28x60)	2,2 3	PK 250/17/..		PTFL 250	250	215	180	145	18	14	M12	5	45	190			187	
		PK 250/15/..						106										
		PL 250/15/..	D 190/..					124							30	121		190
		PK 250/17/..						145										
		PK 300/8/..						155									225	
		PK 300/9/..						130										
		PL 300/9/..	D 150/..					144					45		18	83	231	148
		PK 300/15/..						179										
		PL 300/15/..						195										
		PK 300/8/..						155									225	
		PK 300/9/..						130										
132S/132M (38x80)	5,5 7,5	PL 300/9/..	D 190/..	PTFL 300	300	265	230	144	20	14	M12	5	45	234	30	121	231	190
		PK 300/15/..						183										
		PL 300/15/..						195										
		PK 300/8/..						168									225	
		PK 300/9/..						143										
		PL 300/9/..	D 230/..					157					58		97	143	231	234
		PK 300/15/..						196										
		PL 300/15/..						208										
		PK 350/11/..						175	25									
		PL 350/11/..	D 150/..					190	26						18	83		148
		PK 350/18/..						204										
		PL 350/18/..						229	25				45					
160M/160L (42x110)	11 15	PK 350/18/..						175										
		PL 350/11/..	D 190/..	PTFL 350	350	300	250	188	26	17	M16	6		260	30	121	252	190
		PK 350/18/..						204										
180M/180L (48x110)	18,5 22	PL 350/18/..						229	25									
		PK 350/11/..						188										
		Pl 350/11/..	D 230/..					204	26				58		97	143		234
		PK 350/18/..						217										
		PL 350/18/..						242	25									

Continued on page13

Damping rings D in combination with bellhousings

Damping rings type D in combination with bellhousings [1)]

IEC - Motor size (shaft end) $d_1 \times l_3$	kW with n = 1500 rpm	Bellhousing Size	Damping-ring Size	Foot flange Size	Dimensions[mm] A_1	B	B_1	$L_{1\ ges}$	L_3	K	M	h	L_D	B_3	B_4 min.	B_4 max.	B_5	B_{5D}
160M/160L	11	PK 350/11/..						188	25									
(42x110)	15	PL 350/11/..						204	26									
		PK 350/18/..	D 260/..	PTFL 350	350	300	250	217		17	M16	6	58	260	97	143	252	264
180M/180L	18,5	PL 350/18/..						242	25									
(48x110)	22	PL 350/48/98						247										
		PL 400/3/..						210									290	
		PK 400/12/..	D 190/..					215					45		30	121		190
		PL 400/12/..						229										
200L	30	PK 400/12/..	D 230/..	PTFL 400	400	350	300	228	20	17	M16	6		300		143		
(55x110)		PL 400/12/..						242									260	
		PK 400/12/..						228					58		97			264
		PL 400/12/..	D 260/..					242								164		
		PL 400/12/98						247										
		PL 450/5/94						230									325	
		PK 450/12/94	D 190/..					249					45		30	121	260	190
		PL 450/12/94						267										
		PL 450/5/96						243									325	
		PK 450/6/96	D 230/..					234								143		234
225S/225M	37	PK 450/12/96		PTFL 450	450	400	350	262	25	17	M16	6					260	
(60x140)	45	PL 450/12/96						280					58		97			
		PK 450/5/98						243									325	
		PK 450/6/98	D 260/..					234								164		265
		PK 450/12/98						262									260	
		PL 450/12/98						280										
		PL 450/5/..	D 330/..					268					83		120	208	325	330
		PK 550/4/94						237									355	
		PL 550/4/94	D 190/..					252					45		30	121	330	190
		PK 550/8/94						262									340	
		PK 550/4/96						248									355	
250M	55	PL 550/4/96	D 230/..					265								143	330	234
(65x140)		PK 550/8/96		PTFL 550	550	500	450	275	26	17	M16	6	58	450	97		340	
		PK 550/4/98						248									355	
280S/280M	75	PL 550/4/98	D 260/..					265								164	330	264
(75x140)	90	PK 550/8/98						275									340	
		PK 550/4/..						275									355	
		PL 550/4/..	D 330/..					290					83		120	208	330	330
		PK 550/8/..						300									340	
315S/315M	110	PK 660/3/98	D 260/..					310					58		97	164	500	264
(80x170)		PL 660/3/98						318									340	
315L	132 160	PK 660/3/..	D 330/..	PTFL 660	660	600	550	330	32	22	M20	8	83	550	120	208	500	330
(80x170)		PL 660/3/..						343									340	
(85x170)	200	PK 660/3/..	D 125/../..					372					125		260	320	500	484

1) Preferred combinations with short bellhousings, other combinations on request (see pages 8 and 9), phone +49 5971 798-0.

* Passing from dimension B3 to the flange with radius R = 5

- For your power pack please pay attention to a separation of the piping, e. g. by tubes or elastic flanges (see page 17).
- For further measures of noise damping we recommend to use damping rods (see page 20/21) or DT/DTV rings (see page 19).

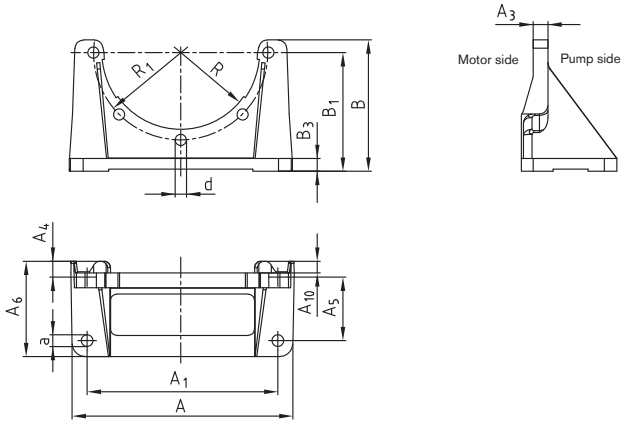
For the detailed order designation please see our PC/Internet selection programme or mention the IEC motor size and detailed pump type for selection.

Order form

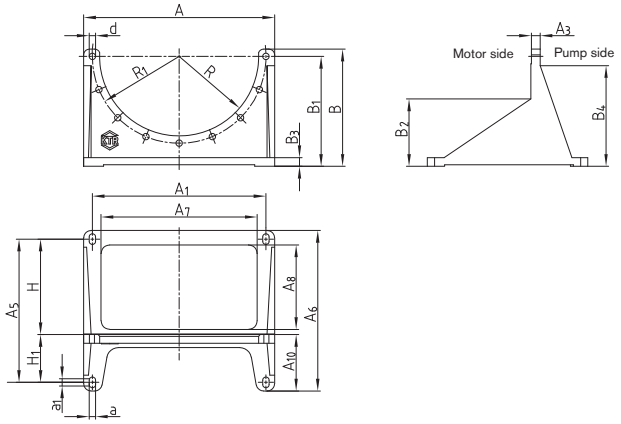
PL	PK	250	15	92	D	150	23
Bellhousing type, **L**ong	Bellhousing type, short, "**K**"	Flange diameter of IEC Motor	Model code	Internal code	Damping ring	Size	Internal code

Foot flange

- Material: PTFL; PTFS = aluminium
  from PTFS 550 = EN-GJS-400-15
- The designing of PTFL by means of the finite element method permits very high loading capacity with minimum weight (DBGM)
- PTFL as a compact, space-saving design in combination with KTR bellhousing and damping ring
- Storage of only one electric motor type both for horizontal and vertical construction
- PTFS preferably for mobile applications
- All types available from stock - other sizes on request
- Notice our mounting instructions



Foot flange PTFL*



Foot flange PTFS*

*according to VDMA guideline 24561 part 1

Foot flange design PTFL (DBGM)

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

Foot flange design PTFS

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	–	82	165	155	120	15	150	95	107,5	14	10	14	125	60
PTFS 300	300	300	265	20	225	270	240	–	92	200	185	148	18	183	117	132,5	14	10	14	150	75
PTFS 350	350	350	300	25	265	305	260	160	110	252	235	188	18	28	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
PTFS 550	550	550	500	25	415	465	440	240	165	370	350	233	25	318	225	250	18	12	18	275	140
PTFS 660	660	660	600	30	495	555	540	292	195	405	380	233	30	348	275	300	22	15	22	330	165

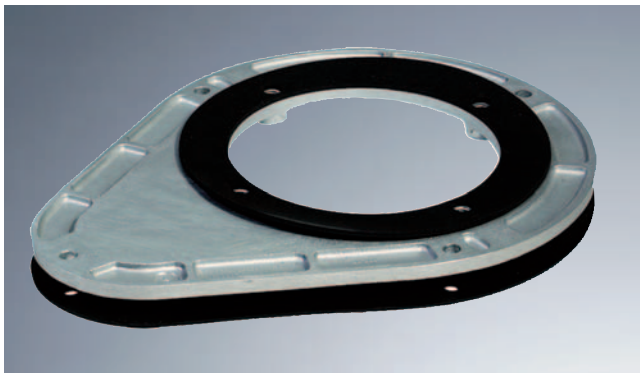
PTFS 800 from steel on request

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

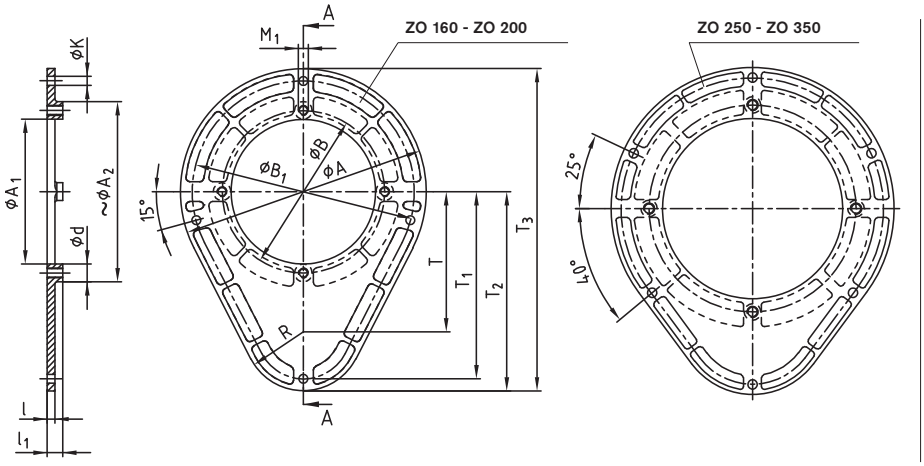
Order form

PTFL	250
Foot flange design	Size

Accessories for bellhousings



- Assembly and disassembly of the fully mounted drive unit outside the tank is possible
- Facilitates cleaning and maintenance
- Penstock connections via mounting flange
- Material aluminium
- Suitable for bellhousings up to size P 350
- Gaskets type DP and DZ made from perbunane (NBR)
- Gaskets type DP are used between bellhousing and tank cover and furthermore between bellhousing and ZO mounting flange
- Gaskets type DZ are used between ZO mounting flange and tank cover



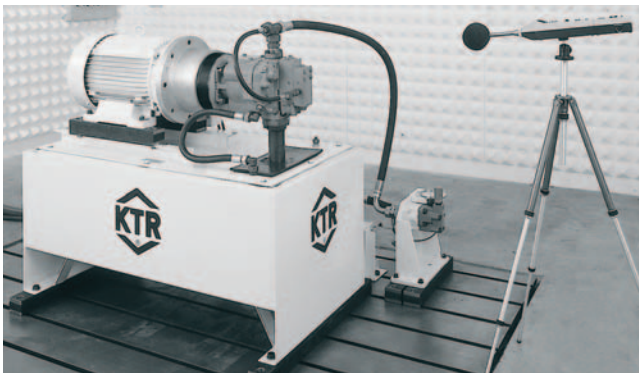
Mounting flange ZO																	
Size	Dimensions [mm]															Gasket DZ size	Gasket DP size
	A	A_1	~A_2	B	B_1	K	M_1	R	T	T_1	T_2	T_3	d	l	l_1		
ZO 160	210	112	150	130	185	9	M8	60	97,5	145	157,5	262,5	18	7	15	DZ 160	DP 160
ZO 200	250	147	187	165	225	9	M10	60	142,5	190	202,5	327,5	18	8	16	DZ 200	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	225	270	475	24	12	20	DZ 350	DP 350

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

Order form

ZO 300	DP 300
Mounting flange size	Gasket design and size

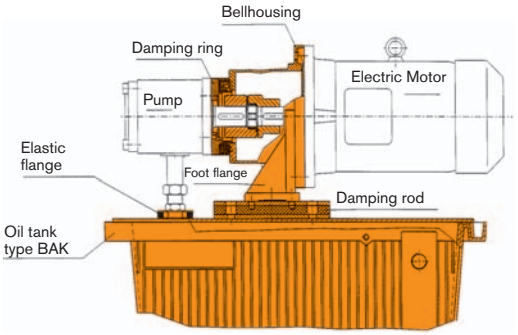
Damping elements

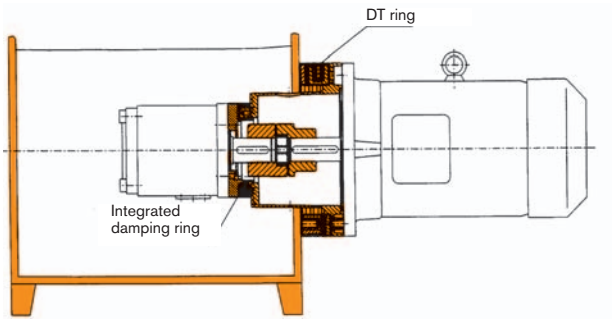


- Noise measurement in the R & D test center
- Noise measurement locally at the customer
- Airborne noise measurement on individual hydraulic components and complete units
- Structure-borne noise measurement to prove the efficiency of KTR damping elements
- Optimization of noise levels of systems or hydraulic units

In its research and development test center, KTR has provided for a sound measurement room allowing for low reflective test conditions. Comparative measurements are performed on an actual hydraulic power pack in order to test and optimize the efficiency of KTR damping elements. Apart from the stationary measurement in the laboratory, the efficiency of the KTR damping measurements taken can be proven locally.

Examples of application





Possible 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)	DT/DTV damping ring	3 – 6 dBA
f)	DT/DTV damping ring and damping ring	6 – 8 dBA

Effect:

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

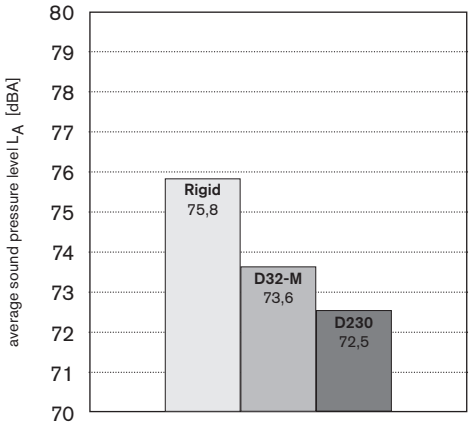
Result of a noise measurement

Test data:

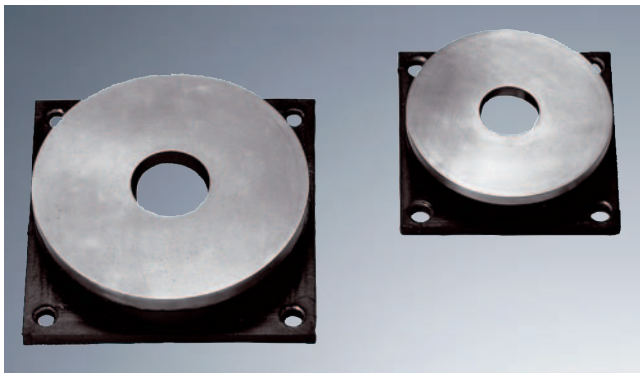
Electric motor: rotary current asynchronous 180M
18,5 kW, n = 1450 rpm
type B 3 / B 5

Pump: axial piston pump

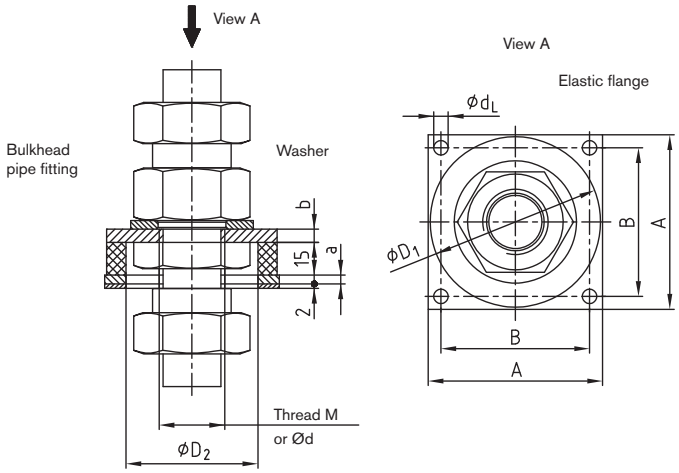
Coupling: ROTEX® 42 - 92 Shore A



Damping elements



- For structure-borne noise separation on the pressure and suction lines to the tank
- Suitable for bulkhead pipe fitting SV6 - SV42
- Sealing surface is moulded on
- Made from oil-resistant perbunane
- Larger types on request



Elastic flange												
Elastic flange								Bulkhead pipe fitting *)				Comment
Size	A	B	a	b	D_1	D_2	d_L	Type L light	Type S heavy	Thread M	Pilot bore for Ød	
80-2.11								SV 28-L	SV 25-S	M36 x 2	∅34	
80-2.10								SV 22-L	SV 20-S	M30 x 2	∅28	
80-2.9								SV 18-L	–	M26 x 1,5	∅24,5	
80-2.8								–	SV 16-S	M24 x 1,5	∅22,5	
80-2.7								SV 15-L	–	M22 x 1,5	∅20,5	
80-2.6	80	68	4	6	78	60	6,6	–	SV 12-S	M20 x 1,5	∅18,5	
80-2.5								SV 12-L	SV 10-S	M18 x 1,5	∅16,5	
80-2.4								SV 10-L	SV 8-S	M16 x 1,5	∅14,5	
80-2.3								SV 8-L	SV 6-S	M14 x 1,5	∅12,5	
80-2.2								SV 6-L	–	M12 x 1,5	∅10,5	
80-2.1								–	–	–	∅10	Standard design
100-2.5								SV 42-L	SV 38-S	M52 x 2	∅50	
100-2.4								–	SV 30-S	M42 x 2	∅40	
100-2.3	100	82	5	8	95	65	9	SV 28-L	SV 25-S	M36 x 2	∅34	
100-2.2								SV 22-L	SV 20-S	M30 x 2	∅28	
100-2.1								–	–	–	∅25	Standard design
130-2.4								SV 42-L	SV 38-S	M52 x 2	∅50	
130-2.3	130	110	6	10	125	95	9	SV 35-L	–	M45 x 2	∅43	
130-2.2								–	SV 30-S	M42 x 2	∅40	
130-2.1								–	–	–	∅35	Standard design

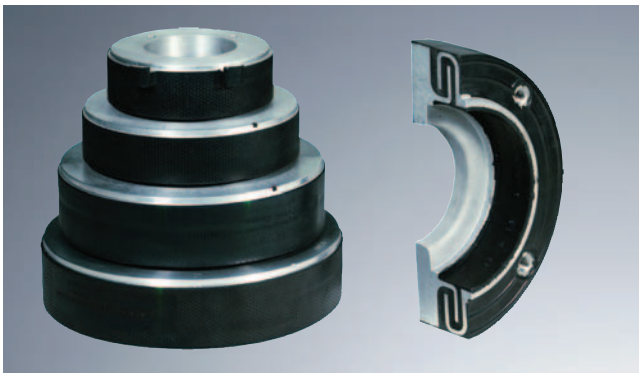
Available from stock

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

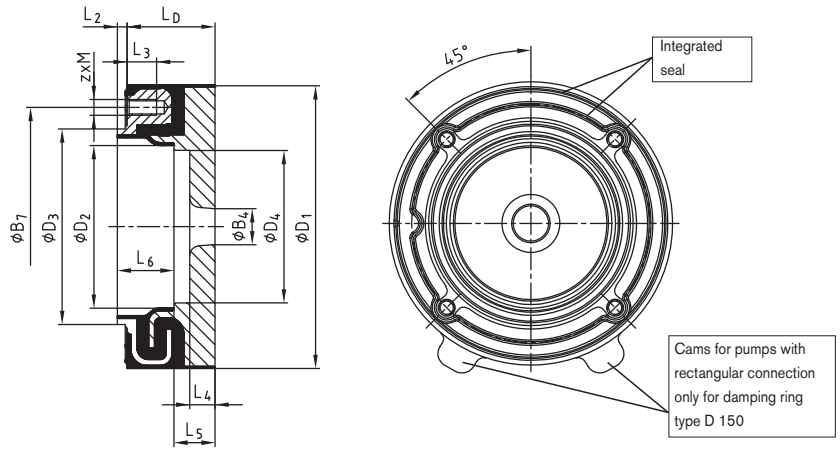
Order form

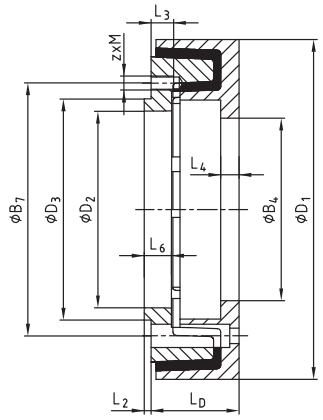
ERD	100 – 2.3	
	Size 100	Finish bore with thread M36 x 2

Damping elements



- Vulcanized and failsafe (up to D 330, DBGM)
- High weight load permissible (e. g. multiple pumps)
- Excellent damping properties
- Excellent resistance to hydraulic oil
- Sealing lips are moulded on (up to size 330) – no additional sealing required
- For the bellhousing selection you require please either see our selection programme at www.ktr.com or order the selection stored on CD-ROM





D 84 / D 125 / D 145

Damping ring D														
Size	Dimensions [mm]													
	B_4		B_7	D_1	D_2	D_3	D_4	L_D	L_2	L_3	L_4	L_5	L_6	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	360	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]

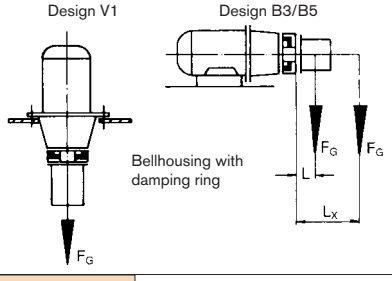
[1] Pitch circle diameter on request. [2] Tightening torque of screw quality 5.6. 3) Number of fixing holes on request.

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

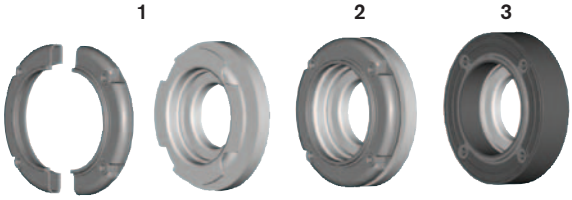
With a different distance of center of gravity L_X the permissible weight load is converted. If $L_X < L$, $F_{max.} = F_{perm.}$

$$F_{zul.} = \frac{F_{max.} \cdot L}{L_x} \quad [N]$$

The permissible weight load $F_{perm.}$ must not be exceeded by the existing weight load F_G (radial or axial).



Arrangement of damping ring D up to D 330

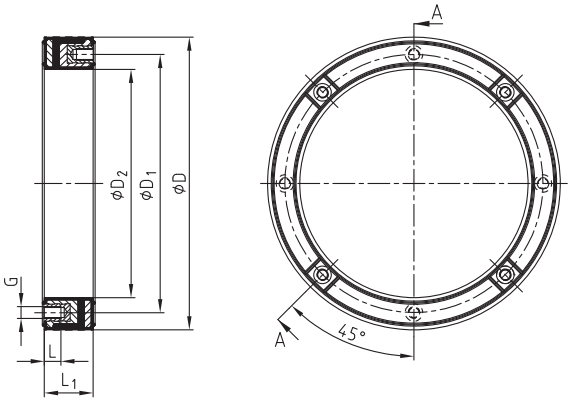


Order form

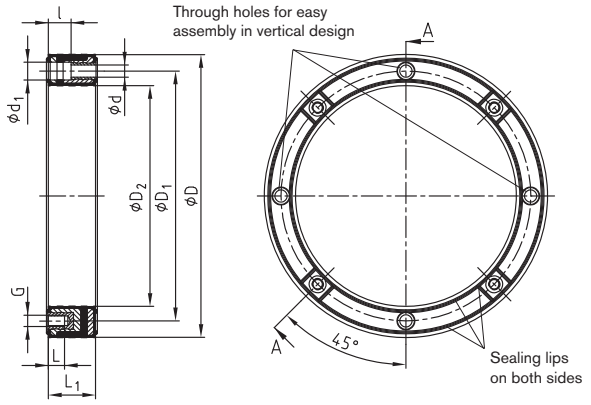
D	230	14
Damping ring	Size	Internal code

Damping elements

- **DTV for vertical assembly only!**
- To reduce noise between drive unit and tank by means of rubber flexible separation
- Type DT for horizontal and vertical assembly
- Type DT is protected against separation (failsafe) by means of a special design (registered design of theinterconnected parts)
- Pressure-loaded elastomer due to the interconnected parts
- High permissible radial, angular and axial load
- Sealing lips are moulded on - no additional sealings required

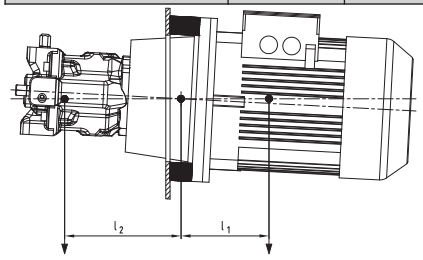


Damping ring type DT



Damping ring type DT.../2

Damping ring DT (DBGM) 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 / DTV 550	550	500	451	8 x M16	30	68	8 x 17	8 x 25	23	210
315S / 315M	DT / DTV 660	660	600	551	8 x M20	30	68	8 x 22	8 x 33	23	410

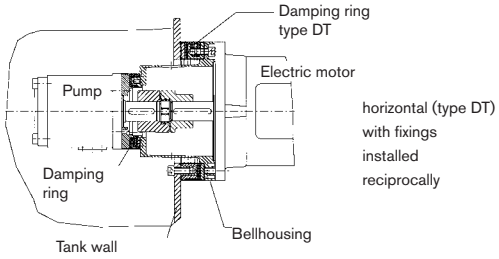


Permissible radial weight and bending load of DT damping rings with an operating temperature of + 60 °C								
DT size	200	250	300	350	400	450	550	660
$F_{perm.}$ [N]	370	720	1450	3600	4800	6600	13000	24000
$M_{b\ perm.}$ [Nm]	30	65	175	740	1100	1600	4400	9000

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

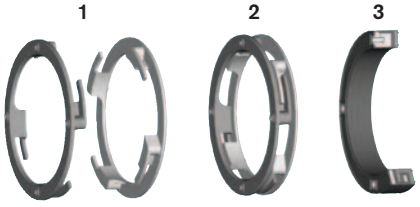
$M_{b\ perm.} \geq F_M \cdot l_1 - F_P \cdot l_2$

Example of assembly



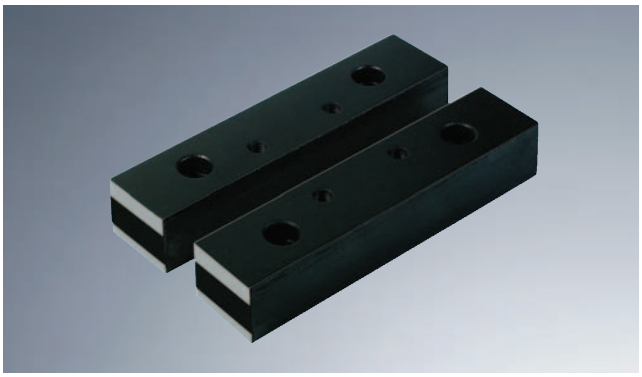
horizontal (type DT) with fixings installed reciprocally

Arrangement of DT ring

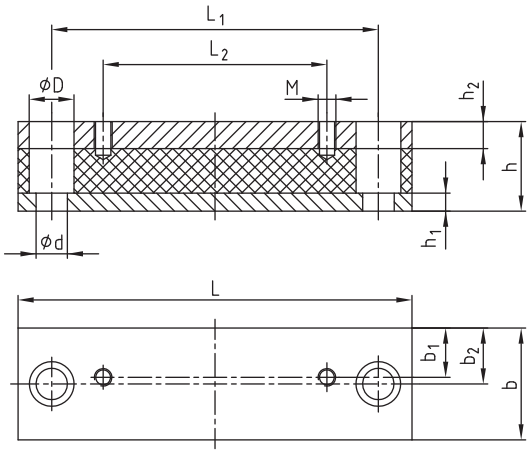


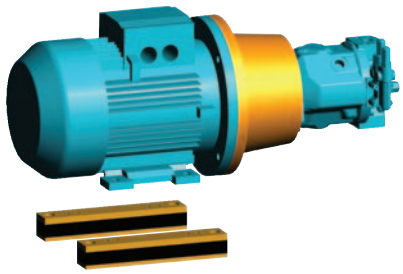
Order form	DT	250
	Damping ring	Size

Damping elements



- Damping rods reduce the noise level and dampen vibrations
- Finish machined for motors IMB 35 (DSM), PTFL foot flanges (DSFL) or PTFS foot flanges (DSFS) and PIK oil coolers (DSK)
- Available from stock
- Special lengthes or special designs on request
- Also suitable for Nema motors
- Damping rods are made from natural rubber (NR)
- All damping rods are adapted to the weight load that is produced





Type DSM

Damping rods design DSM for electric motors type IMB 35, protection IP 54

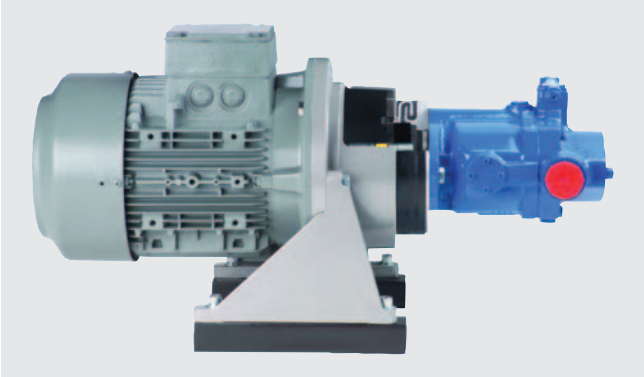
Damping rod Size	For motor Size	Dimensions [mm]											
		L	L_1	L_2	h	h_1	h_2	b	b_1	b_2	d	D	D
DSM 71	71	196	156	90	40	8	12	50	21	25	14	20	M6
DSM 80	80	176	146	100	40	8	12	50	22	25	14	20	M8
DSM 90 S	90 S	196	156	100	40	8	12	50	24,5	25	14	20	M8
DSM 90 L	90 L	240	205	125	40	8	12	50	24	25	14	20	M8
DSM 100 L	100 L	240	205	140	40	8	12	50	22	25	14	20	M10
DSM 112 M	112 M	240	205	140	40	8	12	50	22	25	14	20	M10
DSM 132 S	132 S	280	245	140	45	8	12	50	20	25	14	20	M10
DSM 132 M	132 M	280	245	178	45	8	12	50	20	25	14	20	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	570	349	60	15	15	100	50	50	22	33	M20
DSM 280 S	280 S	614	570	368	60	15	15	100	50	50	22	33	M20
DSM 280 M	280 M	614	570	419	60	15	15	100	50	50	22	33	M20
DSM 315 S	315 S	614	570	406	60	15	15	120	60	60	22	33	M24
DSM 315 M	315 M	614	570	457	60	15	15	120	60	60	22	33	M24
DSM 315 L	315 L	704	660	508	60	15	15	120	60	60	22	33	M24

Other sizes on request.

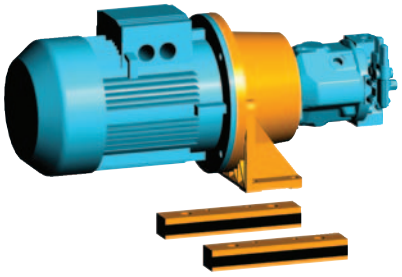
Order form

DSM	112 M
Damping rod	Size

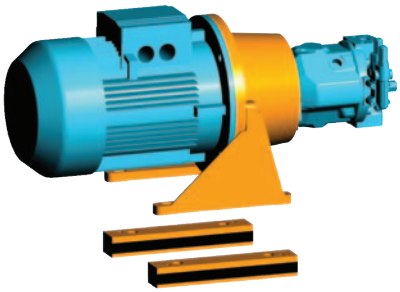
Damping elements



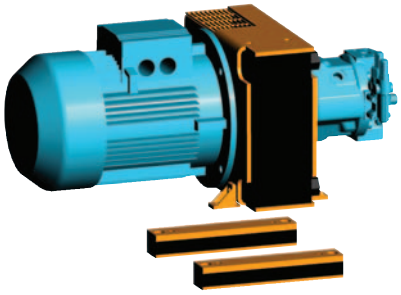
- Damping rods reduce the noise level and dampen vibrations
- Finish machined for motors IMB 35 (DSM), PTFL foot flanges (DSFL) or PTFS foot flanges (DSFS) and PIK oil coolers (DSK)
- Available from stock
- Special lengthes or special designs on request
- Also suitable for Nema motors
- Damping rods are made from natural rubber (NR)
- All damping rods are adapted to the weight load that is produced



Type DSFL



Type DSFS



Type DSK

Damping rods design DSFL for foot flange PTFL													
Damping rod Size	For motor Size	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

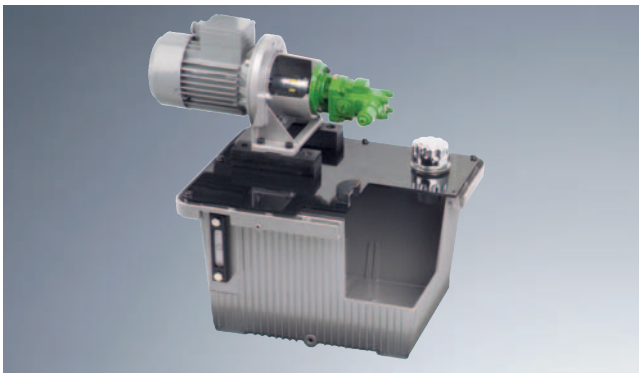
Damping rods design DSFS for foot flange PTFS													
Damping rod Size	For motor Size	Dimensions [mm]											
		L	L_1	L_2	h	h_1	h_2	b	b_1	b_2	d	D	M
DSFS 250	PTFS 250	240	140	185	40	8	12	50	17,5	25	13	20	M12
DSFS 300	PTFS 300	280	180	225	40	8	12	50	17,5	25	13	20	M12
DSFS 350	PTFS 350	325	200	265	60	15	15	70	25	35	17	26	M16
DSFS 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 design DSK for PIK bellhousings 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

Order form

DSFS	300
Damping rod	Size

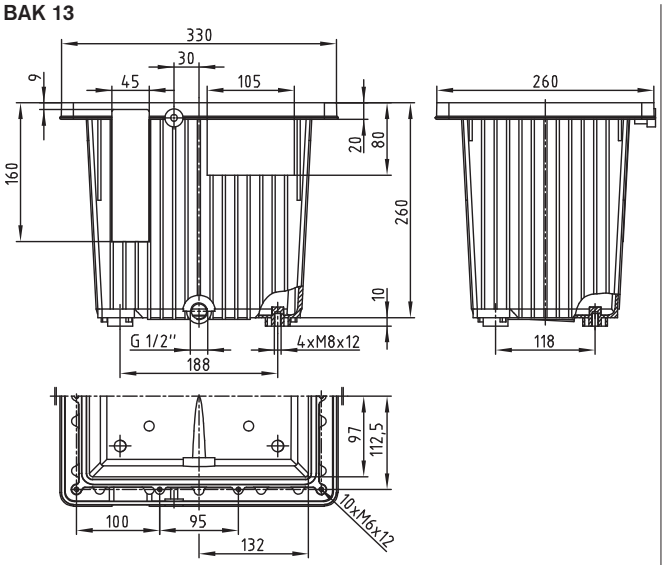
Aluminium tanks



- Made from aluminium for depressurized operation (0,5 bar at maximum)
- With oil collecting groove moulded on periphery for collection of leakage oil (Water Resources Act)
- O-ring seal for all tank sizes, ready to use
- No painting or priming of the tank required
- Good heat loss capacity due to high caloric conductibility and large heat dissipating surfaces
- All tanks are 100 % tight and may be stacked without jamming
- All sizes available from stock
- All tanks **including drain plug similar to DIN 908**
- Temperature resistant up to + 100 °C

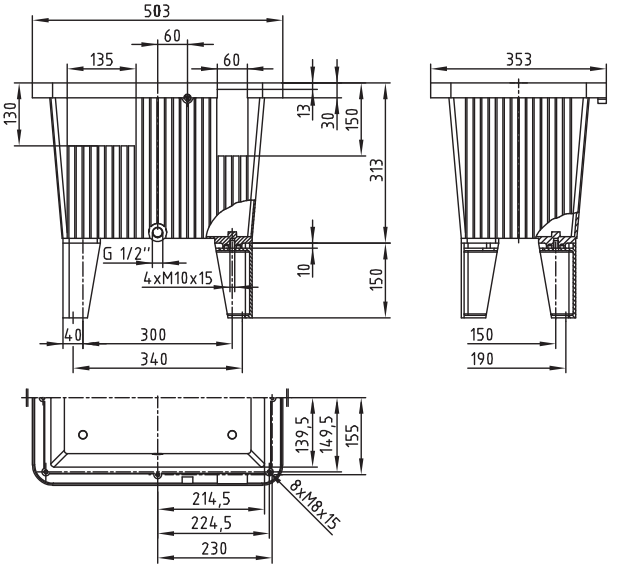
Tanks with oil collecting groove BAK 13, BAK 30, BAK 44 and BAK 70

BAK 13



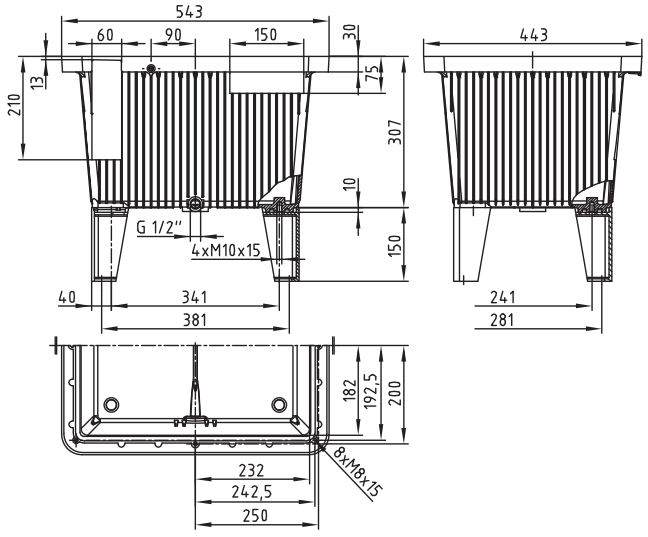
Available volume [Litres]	Seal
11,5	O-ring seal RS 13 NBR

BAK 30



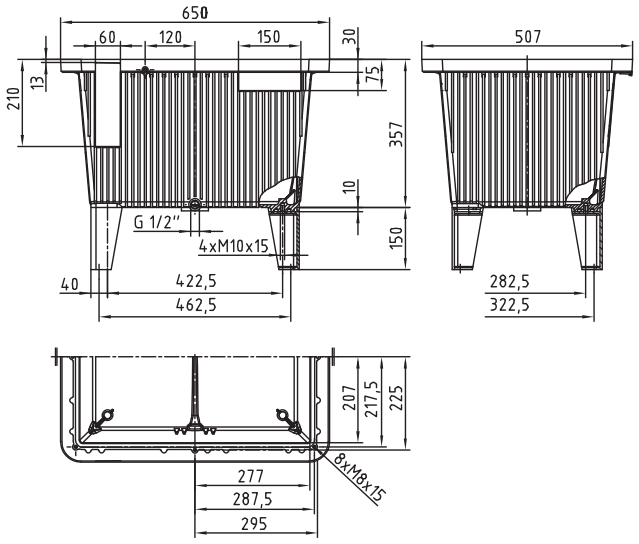
Available volume [Litres]	Seal
27,0	O-ring seal RS 30 NBR

BAK 44



Available volume [Litres]	Seal
40,0	O-ring seal RS 40/44 NBR

BAK 70



Available volume [Litres]	Seal
63,0	O-ring seal RS 63/70 NBR

Order form

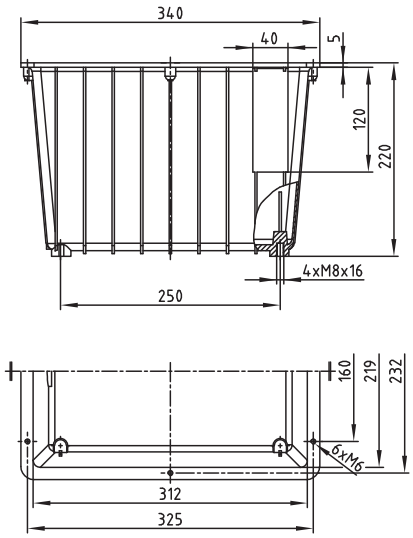
BAK	30
Aluminium tank	Size

Aluminium tanks

- Made from aluminium for depressurized operation (0,5 bar at maximum)
- Without oil connecting groove
- O-ring seal or flat seal for all tank sizes, ready to use
- No painting or priming of the tank required
- Good heat loss capacity due to high caloric conductibility and large heat dissipating surfaces
- All tanks are 100 % tight and may be stacked without jamming
- All sizes available from stock
- All tanks **including drain plug similar to DIN 908**
- Temperature resistant up to + 100 °C

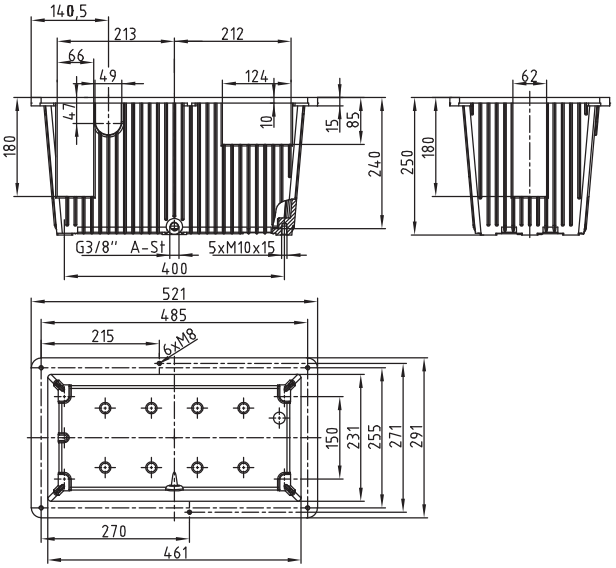
Tanks without oil collecting groove BAK 10, BAK 20, BAK 40, BAK 63 and BAK 100

BAK 10



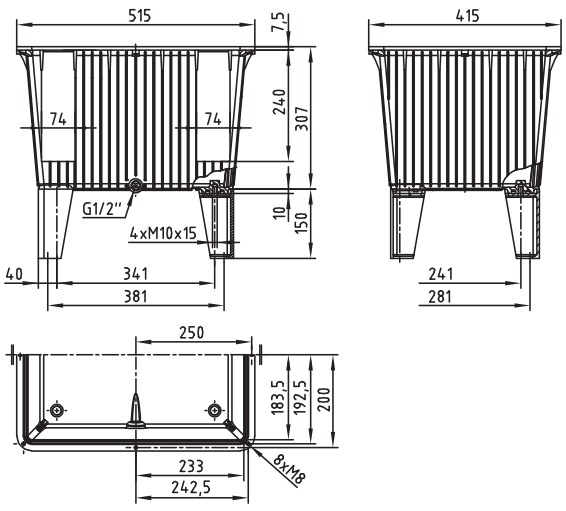
Available volume [Litres]	Seal
9,5	Flat seal FD 10

BAK 20



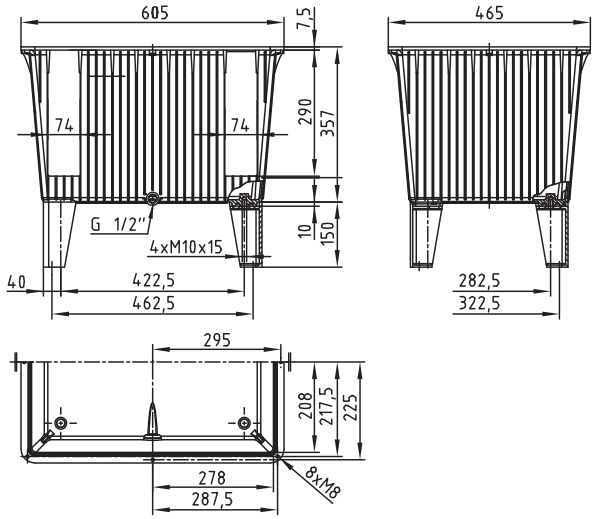
Available volume [Litres]	Seal
18,0	Flat seal FD 20

BAK 40



Available volume [Litres]	Seal
40,0	O-ring seal RS 40/44 NBR

BAK 63



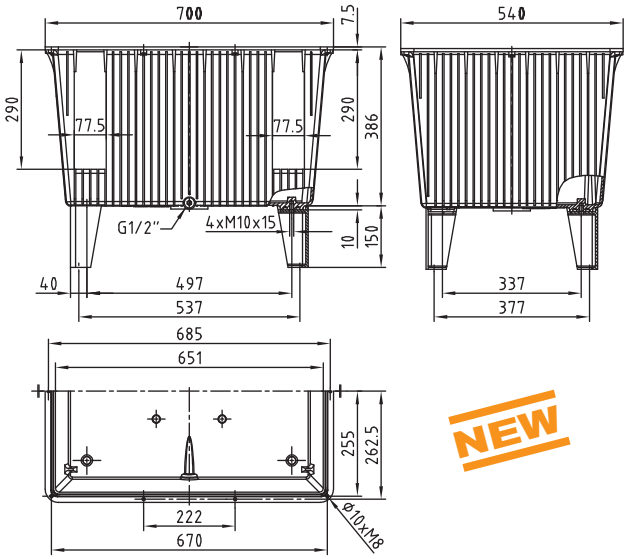
Available volume [Litres]	Seal
63,0	O-ring seal RS 63/70 NBR

Order form

BAK	30
Aluminium tank	Size

Aluminium tanks and accessories

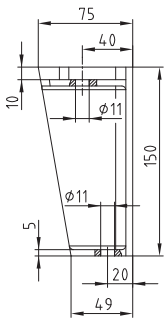
BAK 100



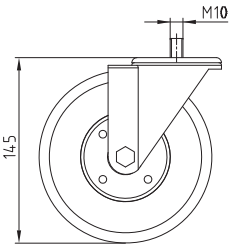
NEW

Available volume [Litres]	Seal
95	O-ring seal RS 100 NBR

Tank feet BF 150 made from cast aluminium

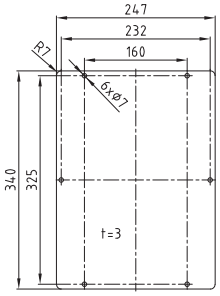


Wheels LR 150 with or without lock

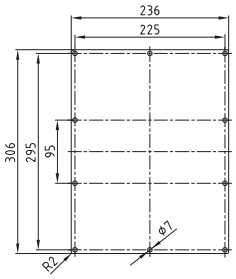


Tank cover made of steel and aluminium, accessories for aluminium tank

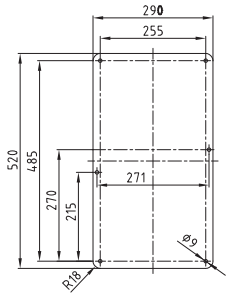
Cover		For	Dimensions [mm]							Cover thickness		Weight [kg]	
Steel	Al	tank	A	A_1	A_2	B	B_1	B_2	R	St	Al	St	Al
ST 30	AL 30	BAK 30	475	460	449	325	310	299	25	5	5	6	2,1
ST 44	AL 44	BAK 40/BAK 44	515	500	485	415	400	385	32	5	8	8,5	4,6
ST 70	AL 70	BAK 63/BAK 70	605	590	575	465	450	435	32	5	8	10,5	6,1



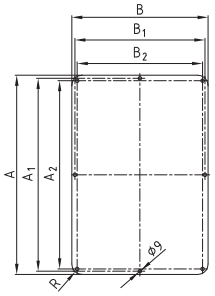
BAK 10 - ST 10
St: 3 mm thick; 1,9 kg



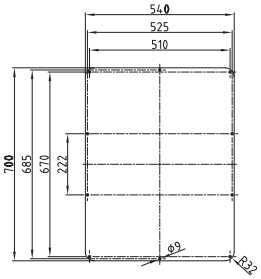
BAK 13 - ST 13 / AL 13
St: 4 mm thick; 2,2 kg
Al: 5 mm thick; 1,0 kg



BAK 20 - ST 20 / AL 20
St: 5 mm thick; 5,8 kg
Al: 5 mm thick; 2,0 kg



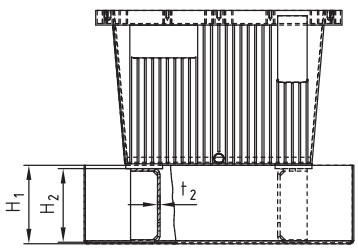
BAK 30-70
ST 30-70
AL 30-70

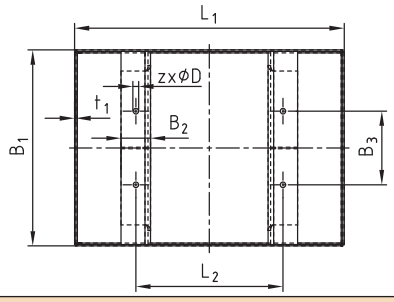


BAK 100 - ST 100 / AL 100
St: 6mm thick; 17,8 kg
Al: 8 mm thick; 8,2 kg

Order form:

ST 44	BF 150	Plug DIN 908 with seal G 1/2 A
Tank cover for BAK 44 from steel	Feet for tank	Plug for BAK 44





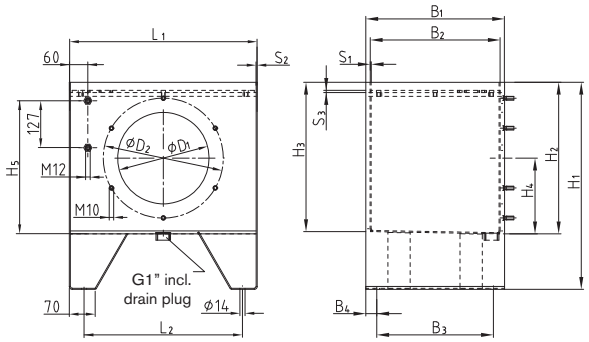
Oil sumps BAKW for KTR aluminium tanks BAK

Oil sump	For tank	Volume of oil sump	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	357	160	150	3	5	4	12

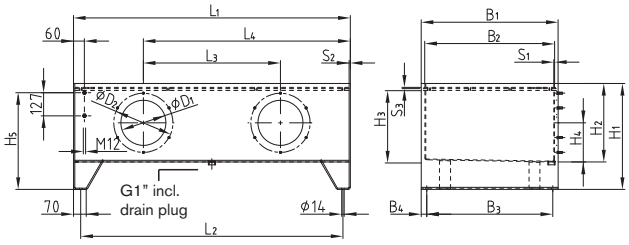
Steel Tanks — Series BSK

- Tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Subsequent assembly of KTR standard separation sheet metals possible for all tank sizes (assembly of separation sheet metals across cleaning hole)
- Cover machining as per customer's request
- Transport eyes on request of customer

up to NG 200



as from NG 250

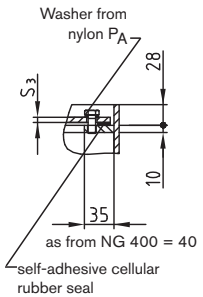


Series BSK, NG 40-400

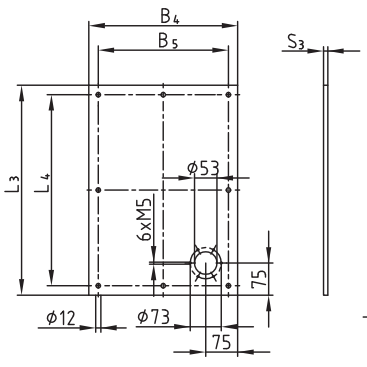
Order description	Avail. vol.	Weight	Tank dimensions [mm]																		Cleaning cover		Tank completely available from stock Tank cover E	
NG	Litres	kg	L_1	L_2	L_3	L_4	B_1	B_2	B_3	B_4	H_1	H_2	H_3	H_4	H_5	D_1	D_2	S_1	S_2	S_3	No.	Type	Standard t = S_3	Reinforced t = 10
BSK 40	38	34	508	428	—	—	375	365	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	●	on request
BSK 200	184	101	900	820	—	—	654	640	594	30	560	410	399	205	360	248	324	4	4	6	1	V 324-6	●	
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	●	

Tank cover

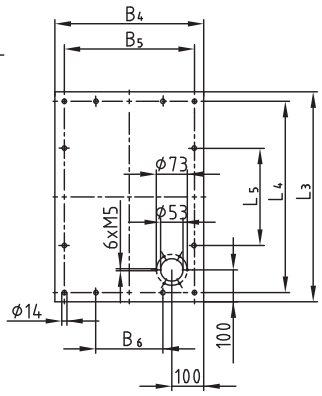
Cover type E



for NG 40-300



for NG 400



Cover type „E"

	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

● = Standard programme available from stock and in short term

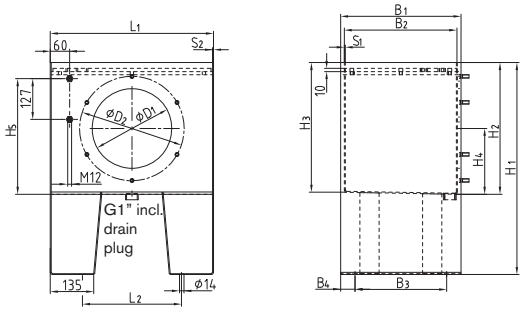
Order form

BSK	250	E
KTR standard tank	Tank size	Cover type "E"

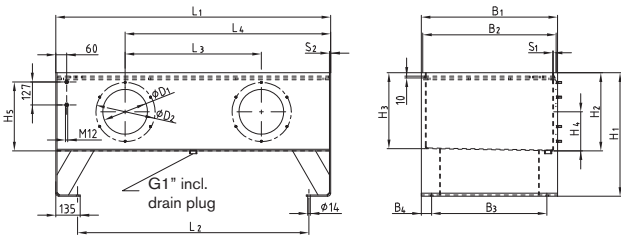
Steel Tanks — Serie BNK design A

- DIN tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Subsequent assembly of KTR standard separation sheet metals possible for all tank sizes (assembly of separation sheet metals across cleaning hole)
- Cover machining as per customer's request
- Transport eyes on request of customer

up to NG 160



as from NG 250

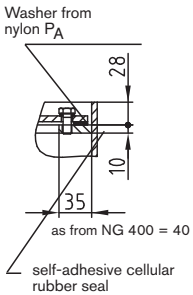


Serie BNK Form A, NG63-1250

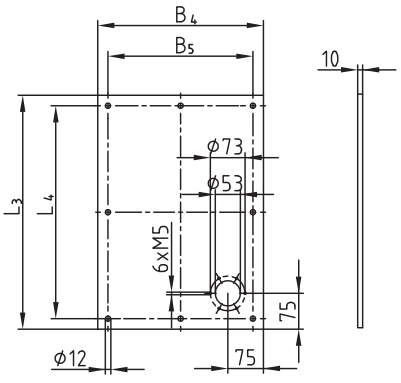
Order description	Avail. vol.	Weight	Tank dimensions [mm]																Cleaning cover		Tank completely available from stock	
NG	Litres	kg	L_1	L_2	L_3	L_4	B_1	B_2	B_3	B_4	H_1	H_2	H_3	H_4	H_5	D_1	D_2	S_1	S_2	No..	Type	Cover design E	Cover design C
BNK 63	59	47	508	308	—	—	375	365	285	45	660	410	403	205	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	●	
BSK 250	235	148	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	2	V 324-6	●	on request
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		

Tank cover

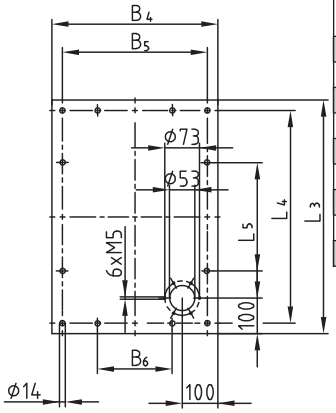
Cover design E
Design E



for NG 63-250
Design E



for NG 400-1250
DesignE



Cover design „E"

NG	Design [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

● = Standard programme available from stock and in short term.

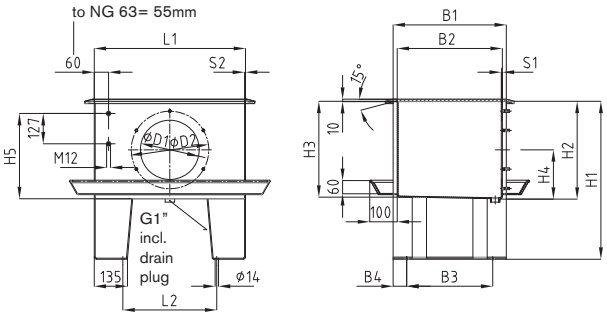
Order form

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

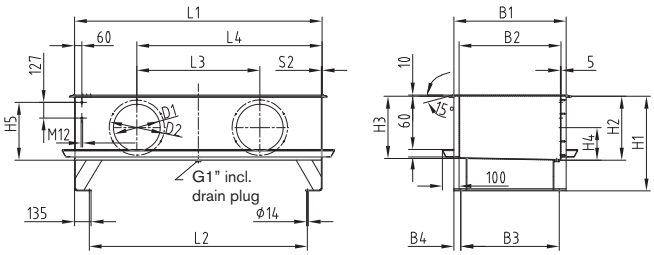
Steel Tanks — Serie BNK design B

- DIN tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Cover machining as per customer's request
- Transport eyes on request of customer

up to NG 160

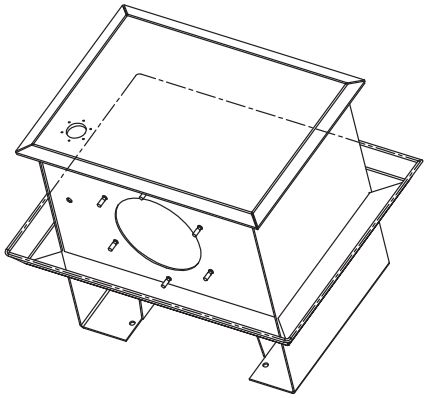


as from NG 250

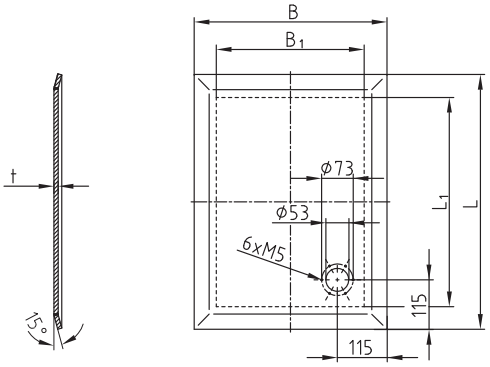


Serie BNK Form B, NG63-1250																					
Order description	Avail. vol.	Weight	Tank dimensions [mm]																Tank completely available from stock		
NG	Litres	kg	L_1	L_2	L_3	L_4	B_1	B_2	B_3	B_4	H_1	H_2	H_3	H_4	H_5	D_1	D_2	S_1	S_2	No..	Type	
BNK 63	59	56	508	308	—	—	375	365	285	45	660	410	403	205	360	248	324	3	3	1	V 324-6	
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	
BSK 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	on reuquest
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	

Tank cover



Cover design A

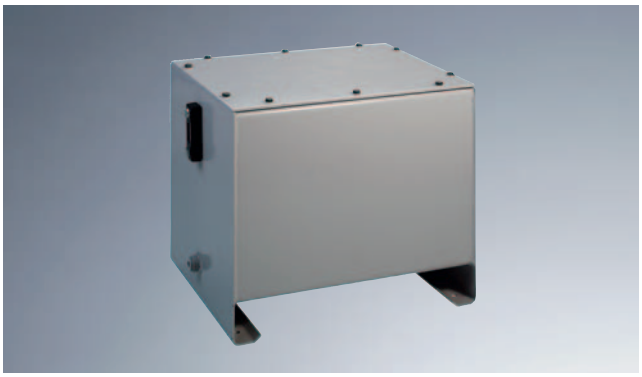


Cover design „A“			
NG	Design [mm]		
	L	B	t
63	588	445	10
100	713	540	10
160	890	670	10
250	1090	770	10
400	1594	815	10
630	1594	1025	10
800	2094	980	10
1000	2094	1145	10
1250	2094	1415	10

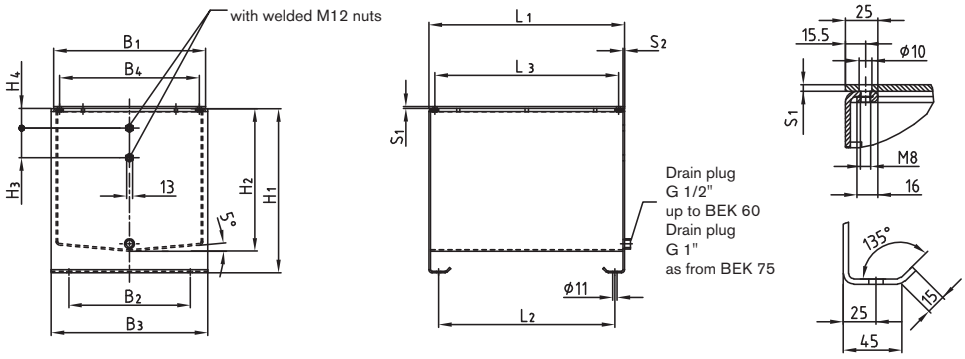
Order form

BNK	250	B	E
KTR tank standard	Tank size	Tank design “B”	Cover design “E”

Steel Tanks — Serie BEK



- Tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Cover machining as per customer's request



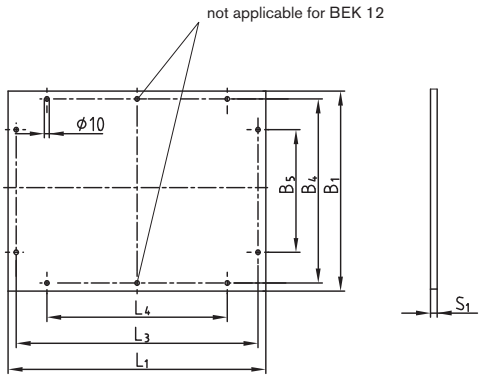
Serie BEK, NG 12-300

Order description	Available volume	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 type 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	●

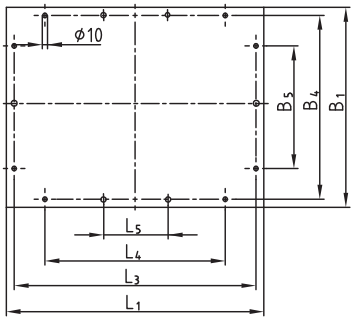
Tank cover

Cover design E

up to NG 75



as from NG 100



Cover design „E"

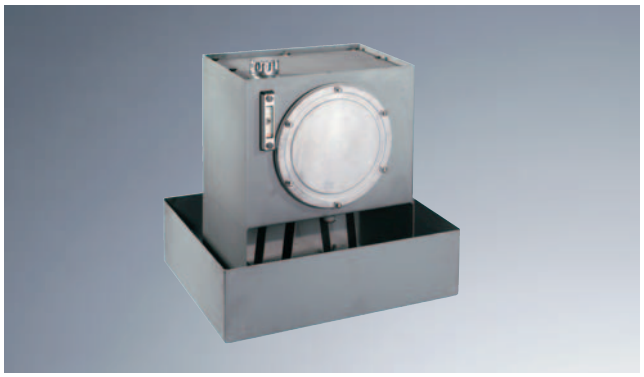
NG	dimensions [mm]							
	S_1	L_1	B_1	L_3	B_4	L_4	B_5	L_5
12	4	310	298	279	267	160	148	—
20	4	400	298	369	267	250	148	—
35	5	470	298	439	267	320	148	—
50	5	500	388	469	357	350	238	—
60	5	550	388	519	357	400	238	—
75	5	550	388	519	357	400	238	—
100	6	700	388	669	357	550	238	184
150	6	750	488	719	457	600	338	200
225	8	900	588	869	557	750	438	250
300	8	900	688	869	657	750	538	250

● = Standard programme available from stock and in short term.

Order form

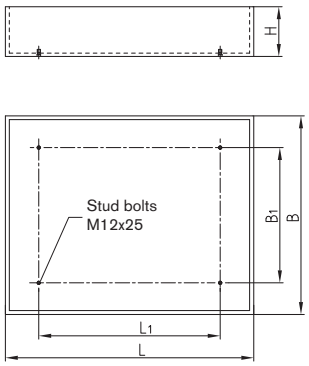
BEK	100	E
KTR Euro tank	Tank size	Cover design "E"

Steel Tanks — Oil Sumps



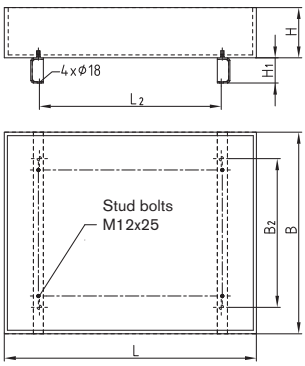
- Oil sumps made of high-grade steel
- Collection volume corresponds to the full load volume of the tank
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All oil sumps are subject to 100 % tightness test
- **Oil sumps meet with the standards of WHG**

Oil sump without feet



Distance dimensions for stud bolts see table L_1 and B_1

Oil sump with feet



Oil Sumps for BSK and BNK														
Order description	Volume	Weight in kg		Tank dimensions [mm]										Available from stock without feet
NG	litres	without feet	with feet	L	L_1 BSK	L_1 BNK	L_2	B	B_1 BSK	B_1 BNK	B_2	H	H_1	
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 according to regulations §19 WHG available against extra charge.
Please indicate in the order.

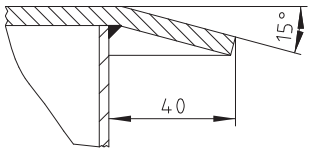
Order form

Ö	63	BSK	F
Oil sump	Tank size	Tank design	F = with feet

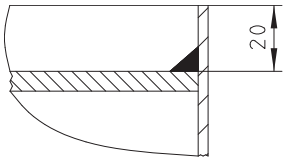
Steel Tanks — Cover design, separation sheet metals, transport eyes and creasings

Cover designs for DIN tanks of the BKN series:

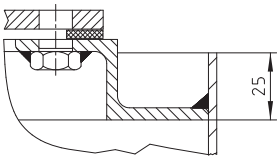
Design A



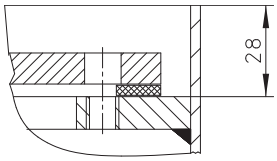
Design C



Design D

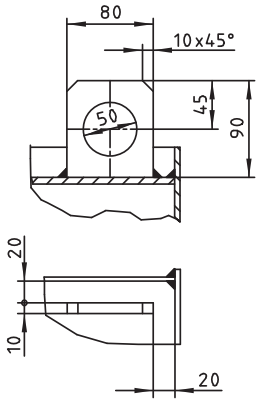


Design E

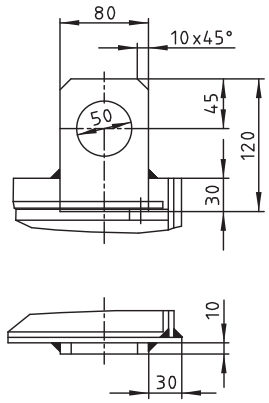


Transport eyes:

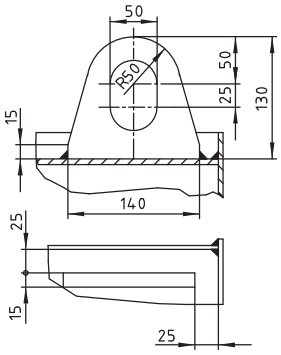
Design 1
(for NG 40-300)



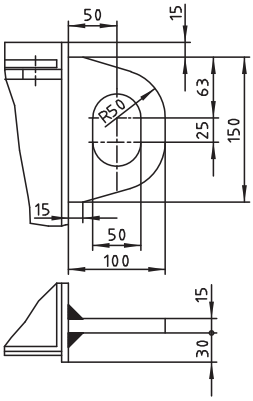
Design 2
(for NG 40-300)



Design 3
(for NG 40-2000)

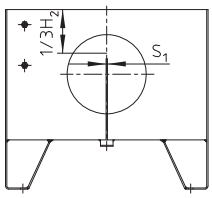


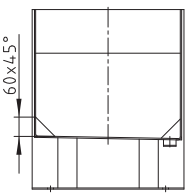
Design 4
(for NG 40-2000)



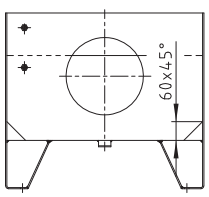
Separation sheet metals:

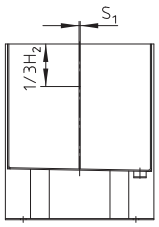
Design 1



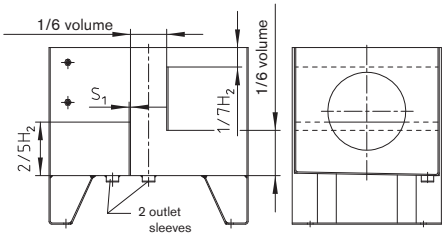


Design 2



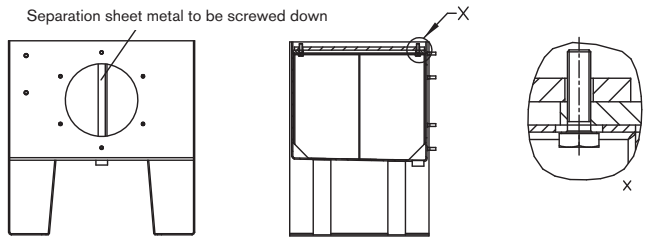


Design 3

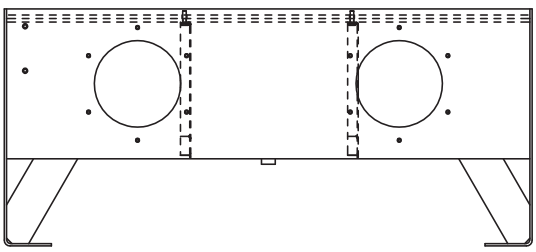


Separation sheet metals to be screwed down:

Separation sheet metal up to BSK/BNK 300

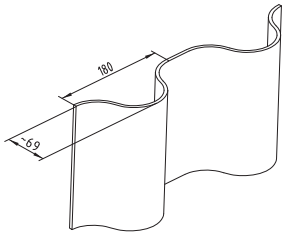


From BSK/BNK 400 separation sheet metals alternatively right or left

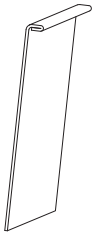


Creasings:

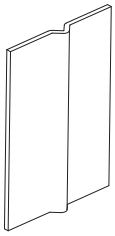
Design 1



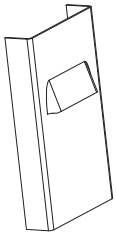
Design 2



Design 3



Design 4



Certificates — Special tanks

Certifikates

Welding approval for rail rehicles and vehicle parts acc. to DIN 6700-2

Complete qualification proof for steel components and tanks according to DIN18800-7

The manufacturing plant of KTR is certified according to ISO 9001: 2000

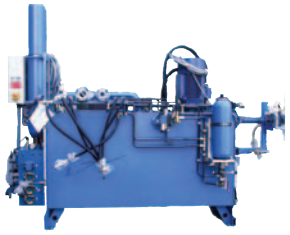
Recognized expert plant acc. to the water resources law §19 I WHG

Special tanks on request

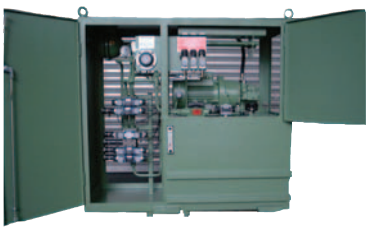
Combi-tank Hydraulic diesel with battery box

Mobile hydraulics

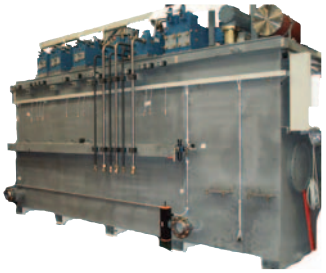
Hydraulic tank

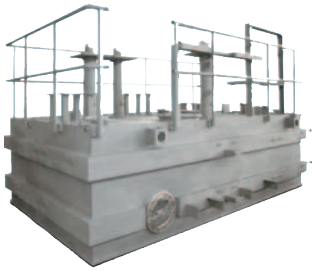


Tank with housing

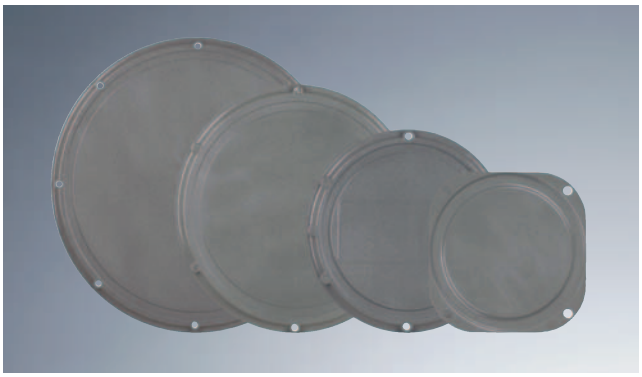


Large tanks for presses and units



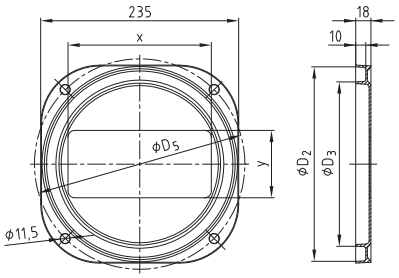


Accessories for oil tanks

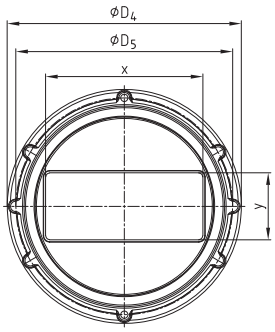


- Cleaning covers V324 and V449 according to DIN 24339
- Made from aluminium
- Screw tightening torque for all cleaning cover sizes 10 Nm at the maximum
- Cleaning cover V324-6/HFC and V449-6/HFC are resistant to HFC fluids
- Gaskets type PRD made from perbunane (NBR), made from Viton on request
- On request available with logo
- Max. permissible pressure = 0,5 bar

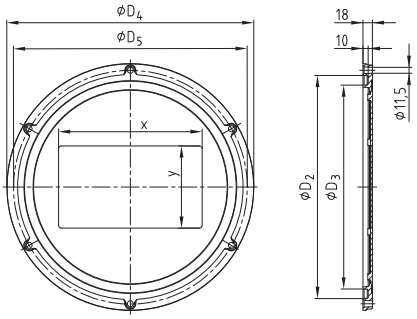
Cleaning cover design V250-4 PRD



Cleaning cover DIN 24339

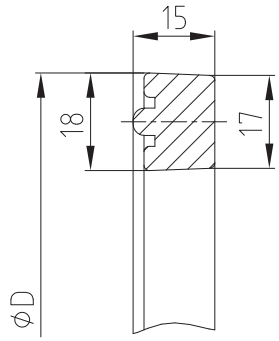


Cleaning cover



Cleaning covers								
Size	Dimensions[mm]							
	D_1	D_2	D_3	D_4	D_5	Number of bores	x	y
V250-4 PRD	11,5	229	193	-	250	4	170	80
V324-6 / V324-6/HFC *	11,5	304	268	350	324	6	235	100
V324-6 Mould *	11,5	304	268	350	324	6	276	158
V449-6 / V449-6/HFC	11,5	429	393	475	449	6	276	158
V530-12	11,5	505	471	560	530	12	276	158
V580-8	11,5	560	523	620	580	8	370	210

* Cover with 4-hole fixing on request.

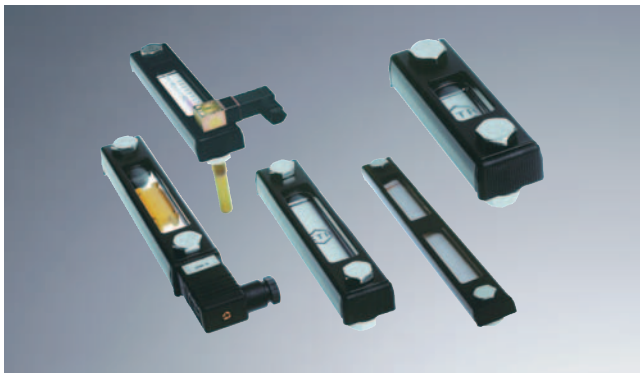


Gasket for cleaning covers			
Size		for cleaning cover	D [mm]
PRD 193 NBR	PRD 193 Viton	V250- PRD	229
PRD 268 NBR	PRD 268 Viton	V324	304
PRD 393 NBR	PRD 393 Viton	V449	429
PRD 471 NBR	-	V530	507
PRD 525 NBR	-	V580	561

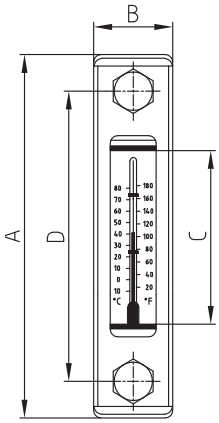
Order form

V449-6	PRD 393 NBR
Cleaning cover	Gasket

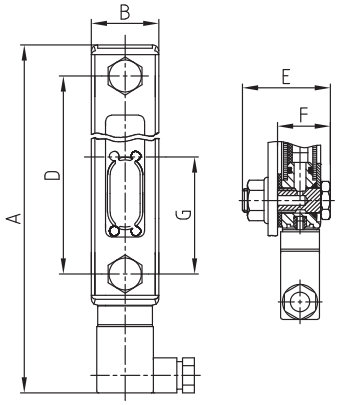
Accessories for oil tanks



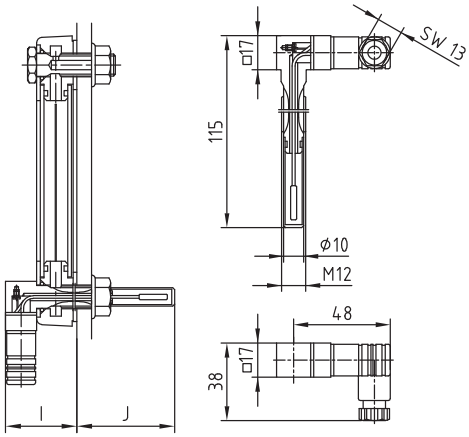
- Oil level indicator with and without temperature indication
- Oil level indicator with liquid level control indication
- Oil level indicator to be combined either with temperature switch TS60, TS70 or TS 80
- Suitable fot hydraulic oil HL, HLP, gas to max. 80 °C and diesel gas up to max. 60 °C
- Good UV resistance



Temperature indication with (KOT) and without (KO)



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

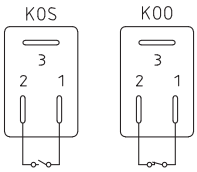


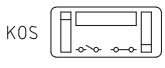
Combined with temperature switch TS60, TS70 or TS80

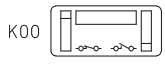
Oil level indicator										
Designation	Dimensions [mm]								with TS	
	A	B	C	D	E	F	M	G	I	J
KO 01 / KOT 01	108	34	37	76	45	26	M12	—	39	76
KO 02 / KOT 02	159		76	127				—		
KOO 02 / KOS 02	205			127				50	47	68
KO 03	286		203	254				—	39	76

KOT 01: Indication range + 20 °C to + 80 °C
KOT 02: Indication range - 10 °C to + 80 °C
KOO: Electr. switch as opener
KOS: Electr. switch as closer
Operating range: - 10 °C to + 80 °C
Recommended screw tightening torque: 8 Nm
Prestress pressure of tank max. 1 bar

Elecrical connections and functions:







Contact load:
KOS max. 10 W
KOO max. 3 W
Voltage:
50 V AC/DC
Switching current:
KOS max. 0,50 A
KOO max. 0,25 A

Line box with PG9
Protection IP 65
Connection 3 not used

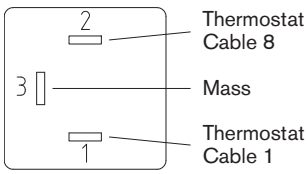
Technical data (opener) of the temperature switch:

Shifting temperature:
TS 60: Shifting temperture 60 °C / 140 °F
TS 70: Shifting temperture 70 °C / 158 °F
TS 80: Shifting temperture 80 °C / 176 °F

Hysteresis: 20 °C
Tolerance of the shifting temp.: ± 5 °C.

Alternating current
- max. voltage 250 V
- max. current with 10.000 circuits
  2,5 A with cos φ = 1,0
  1,6 A with cos φ = 0,6
- max. current with 10.000 circuits
  0,5 A with cos φ = 1,0
  ~0,25 A with cos φ = 0,6
- min. switching current 50 mA

Direct current
- max. voltage 42 V
- max. current with 10.000 circuits 1 A

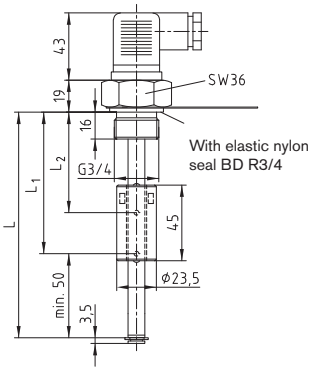


Order form

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]

Accessories for oil tanks

- Electrical level and temperature control
- Suitable for mineral oils
- Available with 1 or 2 level contacts and with 1 temperature probe
- Electrical switch: decreasing level „opener“
  increasing temperature „opener“
- Further lengths on request



Level temperature switch			
Size	Dimensions [mm]		
	L	L_1	L_2
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
Swimmer SK 161	NBR
Switching tube	MS
Flange	MS

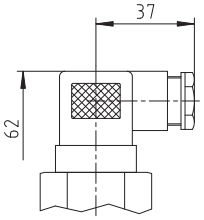
Level contacts

Function	NC (opener)
Max. voltage operating	230 V
Max. current	0,5 A
Contact load	10 VA

Temperature contacts

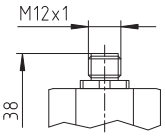
Max. voltage operating	250 V
Max. current switching	2 A
Max. contact load	100 VA
Switch-back difference	15 K ± 5 K

Plug-in connection D03
Three-pole + PE DIN 43650



IP65 protection
Cable screwing PG11
Max. voltage 230 V AC/DC

Plug-in connection DM12
3pol.



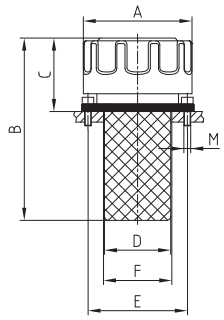
IP67** protection
Cable screwing PG7**
Max. voltage 24 V DC

** with respective upper part of plug

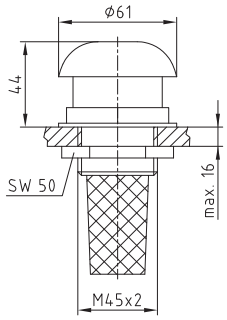
Order form

NVT	22	2	60	D3
Type	Size 22 = 220 mm cantact tube 37 = 370 mm cantact tube 45 = 450 mm cantact tube	Type * 1 = 2 switch contact area H a. L 2 = 1 switch contact area L and 1 temperature switch	Shifting temperature O = without temperature switch 60 = 60 °C 70 = 70 °C 80 = 80 °C	Voltage D3 = max. 230 Volt (Standard) DM12 = max. 24 Volt

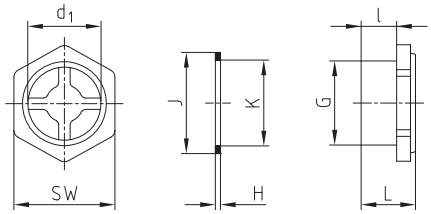
* Type with level switch on request



KE 01 and KE 02
filter grade 10 µm



KE 03
filter grade 45 µm



Filler breather with aeration 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	d_1	G	H	J	K	SW
$G^1/_2A$	17,7	9,2	27,5	$G^1/_2$	2	27	21	27
$G^3/_4A$	18	9,2	23,8	$G^3/_4$	2	32	27	32
G1A	23,5	14	29	G1	2	40	34	40

Order form

Filler breather	KE 01
Type	Size

Order form

Oil level sight glass	$G^3/_4A$
Type	Size

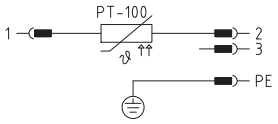
Temperature control and monitoring

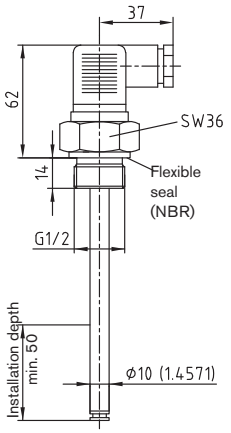
- Control of the operating temperature of the medium
- Value of resistance proportionally changeable to the temperature
- Continuous signal change
- Flexible seal at the screwed thread head
- Optionally available with transmitter

Temperature probe TE-PT-100											
Basic values of precision resistance 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

Screwing and dipping sleeve:	1.4571 (stainless steel) – brass on request
Available lengths:	100, 200 and 300 mm from stock (special lengths up to 1000 mm)
Operating pressure:	10 bar (dipping sleeve of stainless steel)
Operating temperature/ measuring range:	- 40 °C to + 100 °C
Resistance feeler element:	PT-100 Class B DIN/IEC 751
Max. S-wire current PT-100:	1 mA
Plug:	according to DIN 43650 – 3 pl. + PE, Protection class IP65, cable screwing PG11

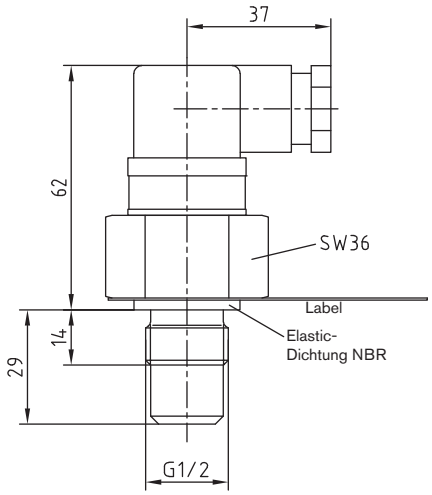
Connection diagram:





Order form	TE	PT-100	300
	Temperature probe - electronic	Resistance feeler element	Lenght of dipping sleeve

Temperature switch



- Simple, solid design
- Electric insert easy to disassemble
- For plug according to DIN 43650 direction of cable outlet can be set in steps of 90°
- Elastic seal
- Protective system IP 65

Technical data

Control element	DI metal
Switching function	NO = make contact
Switching temperature	+ 25 °C up to + 80 °C
Material of probe	aluminium anodisedt
Operating pressure max.	15 bar
Operating temperature	- 40 °C to + 80 °C

Temperature contacts

Operating voltage max	230 V AC
Switching current max.	2 A
Contact load max.	100 VA
Tolerance	± 5 K
Difference of shift back	15 K ± 3 K

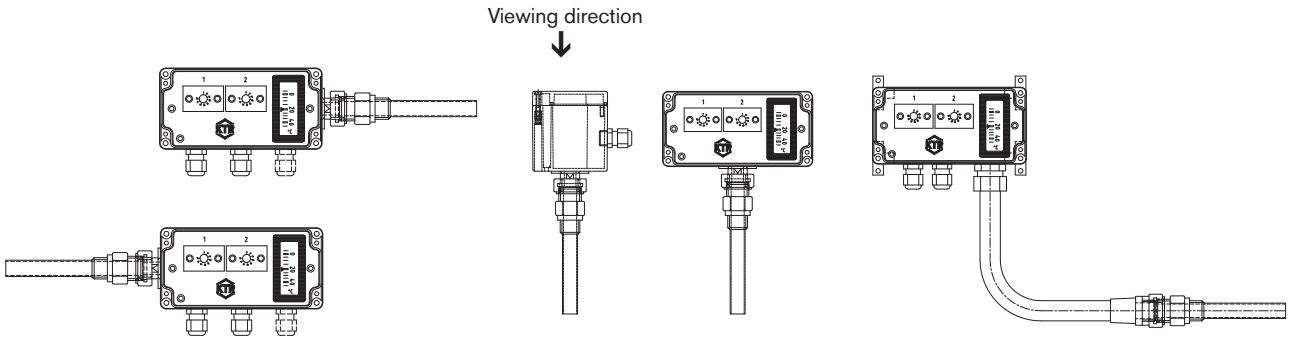
Shift point:		
	40 °C	TSC 40
	50 °C	TSC 50
	60 °C	TSC 60
	70 °C	TSC 70
	80 °C	TSC 80

Order form	TSC	50
	Temperature switch	Shift point 50 °C

Temperature control and monitoring

- Temperature control, indication and control of cooling and heating circles
- Excess temperature safety device of units
- Level control (IRDN)
- Used in hydraulic, lubrication and tempering units
- Up to 7 functions in one housing
- Dipping sleeve made from stainless steel
- Stable housing made from hardly inflammable and self-extinguishing Makrolon
- Operating range from - 30 °C to + 160 °C (IR)
- **IRDN:** Large LED display
  Level monitoring by means of 2-off firmly set Read contacts

Industrial control system: Type/position of the dipping sleeve



Type R and L

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

Type H and U

H: Dipping sleeve in the back on the right
U: Dipping sleeve at the bottom

Type S_1

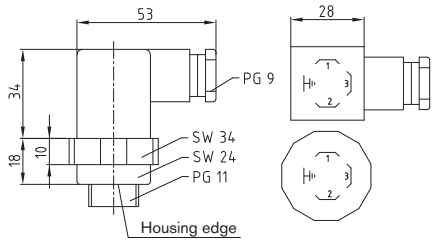
S_1: with 1 hose
S_3: with 2 hoses

Hose lengths: S_1 = 1500 mm and S_3 = 2* 1500 mm

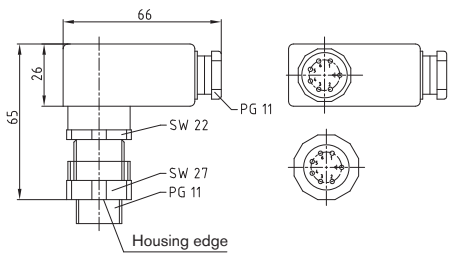
Electrical connections (IR)

A01 standard:	Flat plug 6,3 x 0,8; enclosed flat plug-in sleeves DIN 46247/3
A04 special design:	Europe terminal strip completely cabled

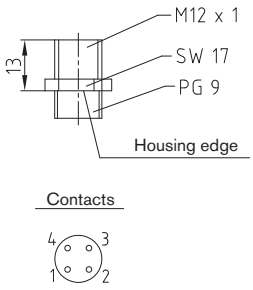
Connectors A02, A03 and A05 see pictures.



Plug A02
DIN 43650

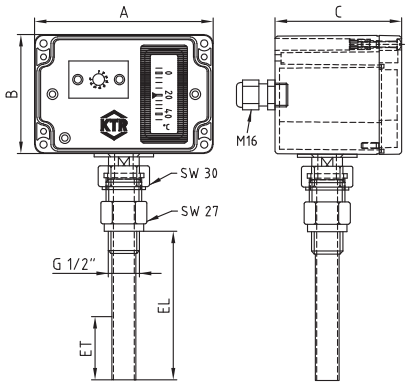


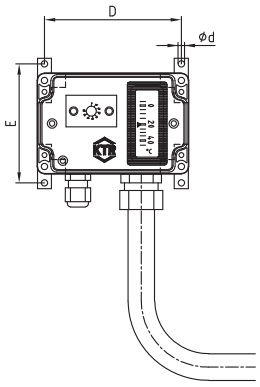
Plug A03
DIN 43651

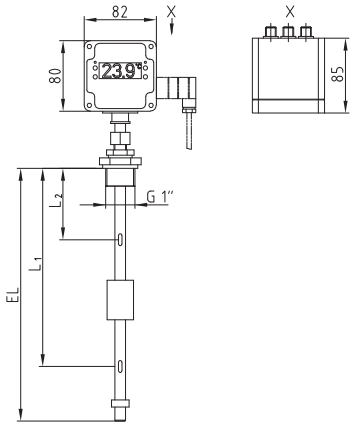


Plug A05
M12 - 4pol.

Temperature control and monitoring







Type IR						
Dimensions of the housing [mm]						
Number of functions	Type S_1 - S_3					
	A	B	C	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

Type IRDN			
Type	EL	L_1	L_2
IRDN 220	220	160	65
IRDN 370	370	310	65
IRDN 450	450	390	65

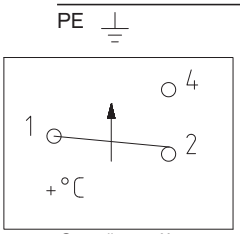
Dimensions of the dipping sleeve IR						
Typ/EL -installation length	100	200	300	400	500	900
ET - mm min. minimum depth of immersion referring to the number of installed functions						
1 - 3 functions	90					
4 - 6 functions	180					
7 functions	270					

Controllers and temperature indication (IR)				
Type	Function	Range	Max. probe temperature limiting temperature	Shifting difference Kelvin
00	Adjustable controller	-30 °C bis +40 °C	80	~5
02	Adjustable controller	0 °C bis +80 °C	120	~5
03	Adjustable controller	+10 °C bis +120 °C	160	~5
04	Adjustable controller	+10 °C bis +120 °C	160	~10
05	Adjustable controller	+60 °C bis +160 °C	200	~5
07	Adjustable limiter *	0 °C bis +150 °C	200	~5
T1	Thermometer	0 °C bis +120 °C	140	
T2	Thermometer	-40 °C bis +80 °C	100	

* Manual adjustment

Pin connection each controller IR

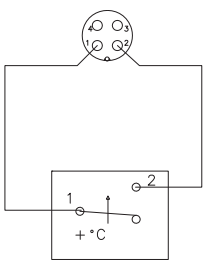
PE - connection (customer)



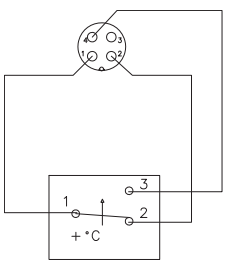
Controller 1 ... X
Connection 6,3 AMP
Insulated plug

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

Pin connection IRDN



Controller



Level switch

Temperature control and monitoring

Type IR

Technical data

Contact selection	Unipolar changer
Contact material	Hard silver Ag
Setting gange	~ 30 °C to 160 °C
Shifting accuracy	~ 4 °C
Ambient temperature	~ 35 °C to 80 °C
Test Certificates	VDE 0631, NF, SEMKO, Demko, ÖVE, KEMA
Isulation	According to VDE
Protection class	IP 65
Cable screwing	M16 with strain relief
Max. operating pressure of the dipping sleeve	16 bar
Indication of thermometer	~ 30 °C to 160 °C
Accuracy of indication	Class 3 according to DIN 16203
Housing material	Polycarbonate (makrolon)
Dipping sleeve	1.4301
Cable screwing	Polyamide
Probe + capillary tube	Cu
Shifting power	16 A (2,5)/250 VAC 10 A (1,5)/400 VAC 0,5 A/24 VDC further data on request
Failsafety	2000 VAC between unified contacts and mass 1150 VAC between open contacts

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

LED 240 V	Index
green	5
red	6

Order form

IR	200	H	A01	03 - 02 - 02 - T1
Typ	Length of the dipping sleeve	Position of dipping sleeve	Connection	Requested controller or thermometer (max. 7). Arrangement according to requested assembly. If LED is requested, the figure 0 in the controller name is replaced by the respective index number (e. g. controller 02 and LED red = 32).

Type IRDN

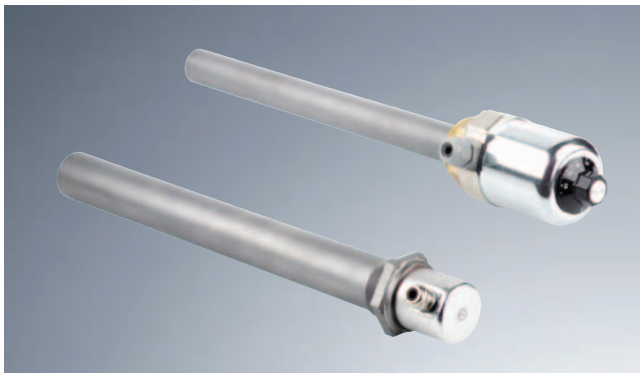
Technical data

Operating temperature:	min. 0 °C - max. 100 °C
Measuring input:	
Description	PT100 DIN EN 60751
Measuring range	-200... +300 °C
Accuracy	0,10 %
Overflow/underflow	is not recognized
Environmental influences:	
Ambient temperature range	0 ... +55 °C
Storage temperature range	-40 ... +70 °C
Temperature drift	<= 100 ppm/K from the measuring range
Climate resistance	<= 75 % % relative moisture without dew
Output:	
Relay	150.000 switchings with 250 VAC/10 A Ohmic load 800.000 switchings with 250 VAC/3 A Ohmic load Upper/lower figure adjustable - each as “OPENER”
Control temperature range:	min. 0 °C - max. 100 °C
Power supply:	230VAC +10 / -15 % 12 ... 24 VDC +15 / -15 %
Power consumption	< 3 VA
Material:	
Dipping pipe	Stainless steel (1.4301)
Swimmer	Hostaform C
Housing	Polycarbonate (Makrolon)
Plug:	
Power supply	230 VAC DIN EN 175301-803 form B
Power supply	12 ... 24 VDC M12 - 4 poles
Outputs	M14 - 4 poles

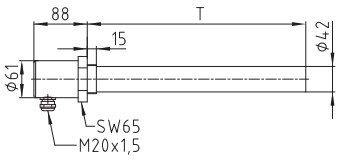
Order form

IRDN	220	01
Type	Immersion depth of dipping sleeve [EL]	Power supply 01 = 230VAC +10/-15 %, 48 ... 63 Hz 02 = 12 ... 24 VDC +15/-15 %

Tank heaters

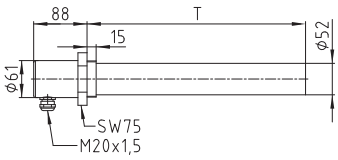


- Inserted heating cartridges to preheat hydraulic oil
- Temperature control by internal or external setting single-pole control 0 - 85 °C, 16 A
- Replaceable ceramic heating cartridges (assembly without oil drain)
- Steel cap from bright zinc coating
- Suitable for horizontal assembly below oil level
- Material: steel (other material on request)
- Surface load 1.5 W/cm² for hydraulic oils
- Protection class IP 65 (excluding design EHP (TA) IP 54)
- Further designs available on request
- The connector pin assignment is enclosed to the unit



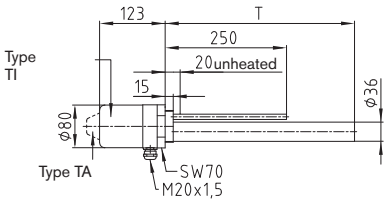
Without temperature control

Type EHP – G 1 1/2”



Without temperature control

Type EHP – G 2”



With temperature control switching accuracy ± 3 °C

Type EHP (TA/TI) – G 2”

Inserted heating cartridges EHP

Type EHP G 1 1/2”	Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]
	400	200	230
	600	300	230
	800	400	230
	1000	500	230
	1200	600	230
	1400	700	230
	1600	800	230
	1800	900	230
	2000	1000	230
	2200	1100	230
	2400	1200	230
	2800	1400	230
	3200	1600	230
	3600	1800	3 x 400
	4000	2000	3 x 400

Type EHP G 2”	Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]
	500	200	230
	750	300	230
	1000	400	230
	1250	500	230
	1450	600	230
	1700	700	230
	1950	800	230
	2200	900	230
	2450	1000	230
	2700	1100	230
	2950	1200	230
	3450	1400	3 x 400
	3900	1600	3 x 400
	4400	1800	3 x 400
	4900	2000	3 x 400

Type EHP (TA/TI) G 2” with temperature control	Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]
	450	300	230
	600	400	230
	750	500	230
	900	600	230
	1050	700	230
	1200	800	230
	1350	900	230
	1500	1000	230
	1650	1100	230
	1800	1200	230
	1950	1300	230
	2100	1400	230
	2250	1500	230
	2400	1600	230

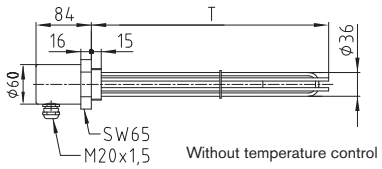
As an alternative: Control of tank heater possible in combination with KTR industrial controls with more than one temperature switch point (see page 36 to 38). In this case the temperature control on the tank heater can be done without.

Order form

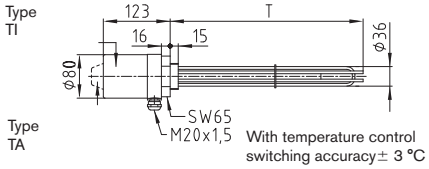
EHP	1950	1300	G 2”	TI	1 x 230 V
Type	Capacity [W]	Immersion depth T [mm]	Size of screwing thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your order, e. g. 1 x 230 V; 2 x 400 V; 3 x 400 V (from 1000 W)

Tank heaters

- Inserted tubular heating element to preheat hydraulic oil
- Suitable for horizontal assembly below oil level
- With or without temperature control for internal or external setting with single-pole control 0 - 85 °C, 16 Ampere
- Surface load 1.5 W/cm² for hydraulic oil
- Steel cap from bright zinc coating/cover from stainless steel
- Material: stainless steel (1.4541)/brassy nipple (other material on request)
- Protection class IP 65 (excluding design EH (TA) IP 54)
- Further designs available on request
- The connector pin assignment is enclosed to the unit
- Notice our mounting instructions (www.ktr.com)



Type EH – G 1 1/2”



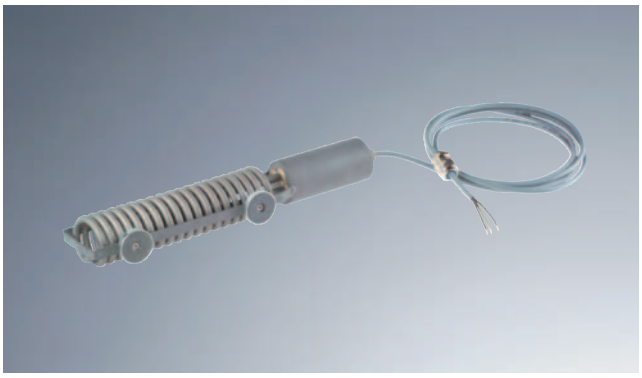
Type EH (TA/TI) – G 1 1/2”

Inserted tubular heatings type EH			
	Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]
Type EH G 1 1/2” without ot with temperature control	380	200	230
	500	250	230
	750	350	230
	990	450	230
	1460	650	230
	1825	800	230
	2300	1000	230

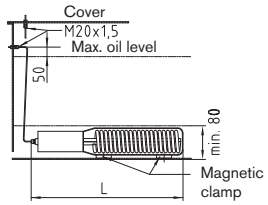
Order form

EH	990	450	G 1 1/2”	TI	1 x 230 V
Type	Capacity [W]	Immersion depth T [mm]	Size of screwing thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your order, e. g. 1 x 230 V; 2 x 400 V; 3 x 400 V (from 1000 W)

Inserted tank heater with magnetic clamp type TEHM



- To preheat hydraulic oil
- Inserted tank heater either horizontally to the tank ground or vertically to the tank wall by means of magnetic clamps
- Ideal solution to retrofit existing machines and plants
- Assembly without oil drain
- Internal control with preset cut-in or cut-off temperature (standard 20 °C, switching precision 3 °C)
- Shifting temperatures may be amended by KTR on customer’s request
- Other media/operating fluids available on request
- The connector pin assignment is enclosed to the unit
- Notice our mounting instructions (www.ktr.com)



Type TEHM	Heating capacity [Watt]	Overall length L [mm]	Voltage [V]
	250	265	230
	500	290	230
	1000	400	230

Order form:

TEHM	1000	00
Type	Capacity [W]	Cut-off temp. set by the company to 20 °C = 00 Without temperature control = 01. Requested cut-off temperature e. g. 35 °C = 35.

Technical data:

Shifting accuracy:	± 3°	Surface load:	1,2 W/cm² (0,6 W/cm² on request)
Voltage:	230 V (other on request)	Connection cable:	Three-pole, 2,5 m long including screwed cable gland M20x1,5

As an alternative: Control of tank heater possible in combination with KTR industrial controls with more than one temperature switch point (see page 36 to 39). In this case the temperature control on the tank heater can be done without.

NEW

Made for Motion KTR

Oil/air cooler

- High-performance cooler net for a maximum static operating pressure of 26 bar in aluminium (Al)
- Suitable for hydraulic oil, gear lubricant oil, lubricating oil, motor oil and water-glycine
- Fan drive in 12 V, 24 V, 230 V/400 V and hydraulic drive
- Easy maintenance and good options for cleaning
- Low sound pressure level
- CE certification
- Short delivery period

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

Accessories
- Thermal switch
- Thermal bypass valves

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

Arrangement
- Cooler net (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)
- Fan12 V/24 V IP68, 230 V/400 V IP55
- Fan with hydraulic drive

Order form

OAC	400	-01
Type	Size	Variant

Oil/air cooler

Selection system

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

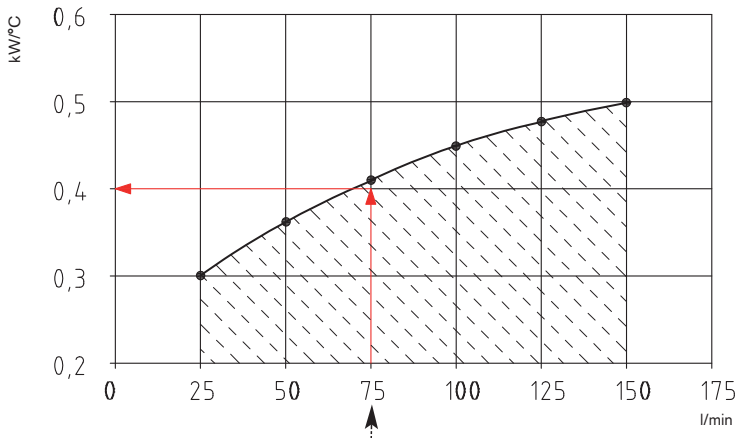
Q [kW]	Heat to be dissipated
V [l/min]	Oil flow
T_{Oil} [°C]	Inlet temperature of oil into cooler
T_L [°C]	Inlet temperature of ambient air into cooler

Example of calculation

Details given:

Q	=	14 kW
V	=	75 l/min
T_{Oil}	=	65 °C
T_L	=	30 °C

Power diagramme OAC 400



Calculation of the specific cooling effect

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

required specific cooling effect $P_{erf.}$ = Q/ETD

The required specific cooling effect must be lower than the power curve! ➔ 14 kW/(65°C - 30°C)= 0,4 kW/°C

The following was selected: OAC 400

The actual cooling effect of the cooler is 0,41 kW/°C x 35°C = 14,35 kW

Calculation of the pressure lost

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

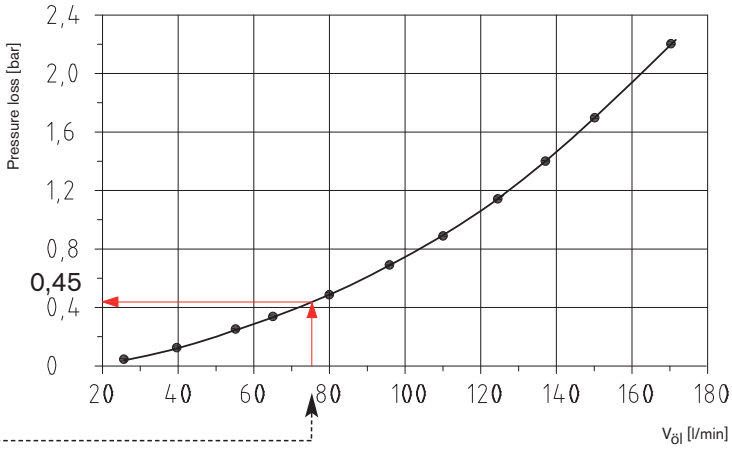
Example

$V_{öl}$: 75 l/min

Viscosityt: 20 cSt

➔ 0,45 bar x 0,75 = 0,3375 bar

Pressure loss 30 cSt



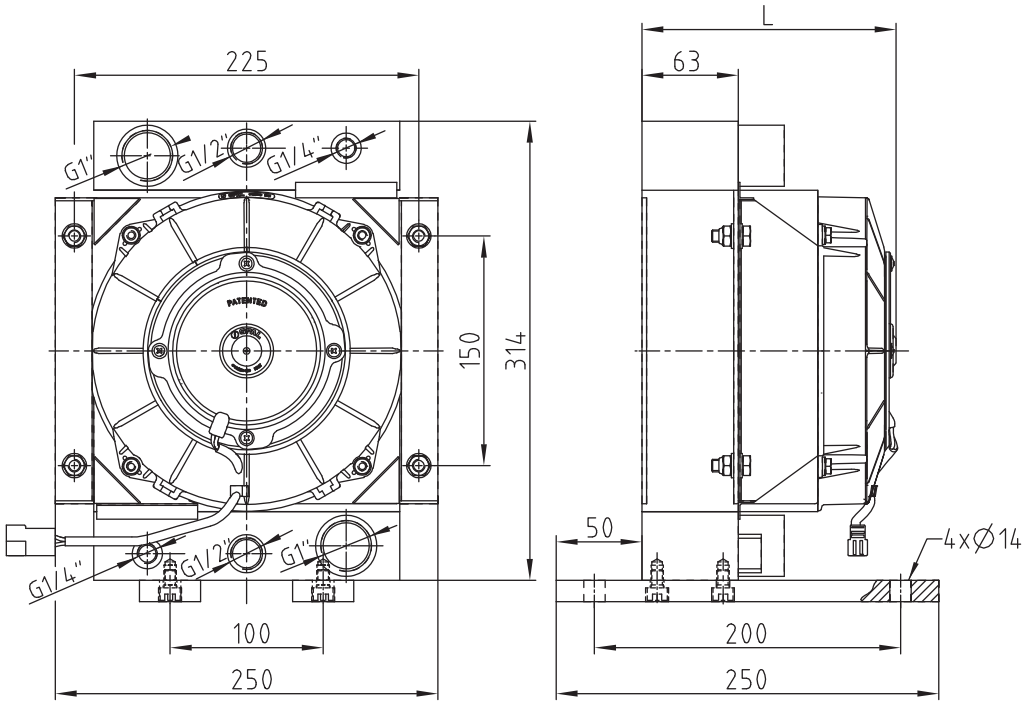
Conversion factor pressure loss

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

NEW

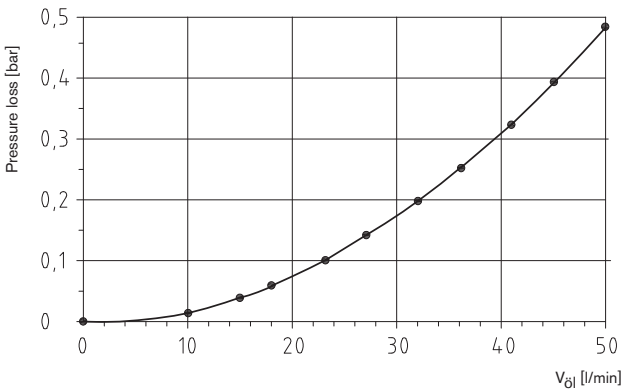
Made for Motion KTR

Oil/air cooler



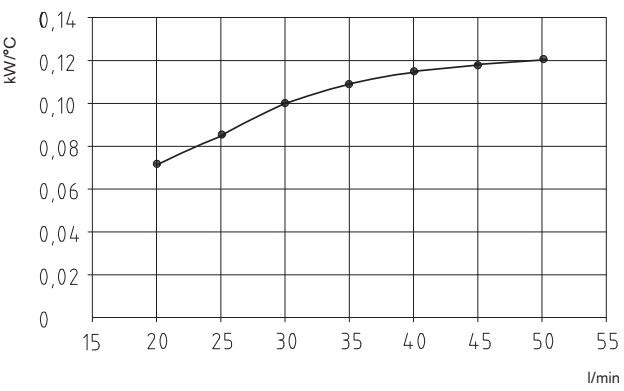
OAC 100								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC100-01	12 V DC	0,060	8,5	68	190	70	167	6,9
OAC100-02	24 V DC	0,068	2,8	68	190	70	167	6,9

Pressure loss 30 cSt



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

Power diagramme OAC 100

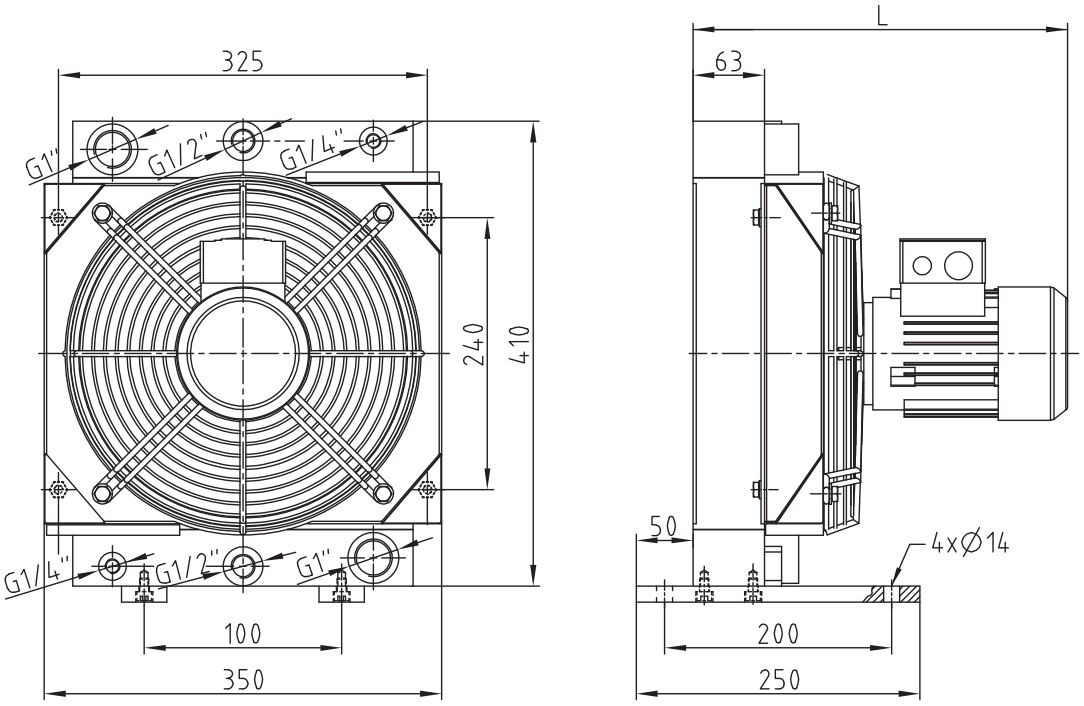


HEATING
CONTROL
COOLING

NEW

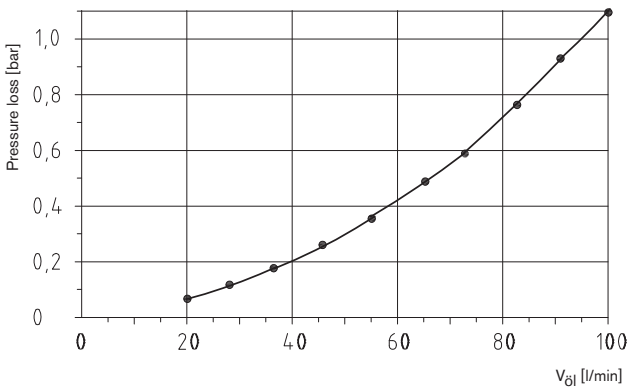
Made for Motion KTR

Oil/air cooler



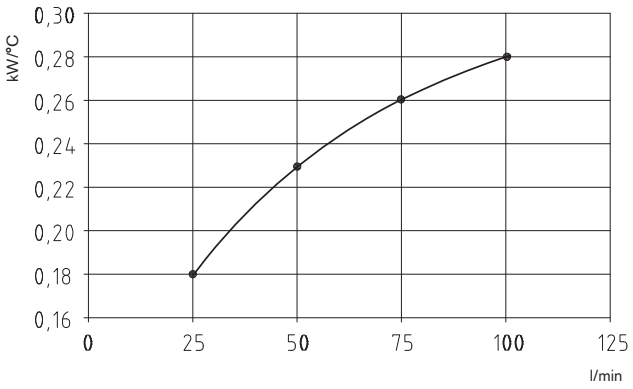
OAC 200								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC200-01	12 V DC	0,084	4,7	68	280	73	167	14
OAC200-02	24 V DC	0,192	9,8	68	280	73	167	14
OAC200-03	230 V/400V	0,18	0,56	55	280	77	329	16
OAC200-04	Hydraulic				280	77	277	16

Pressure loss 30 cSt



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

Power diagramme OAC 200



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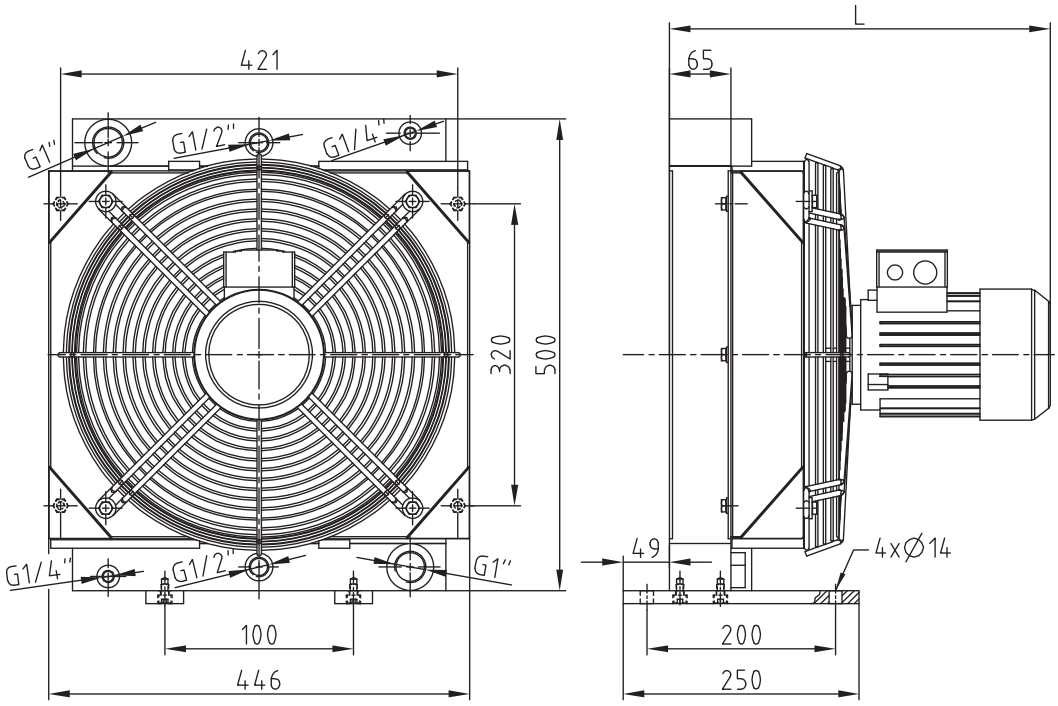
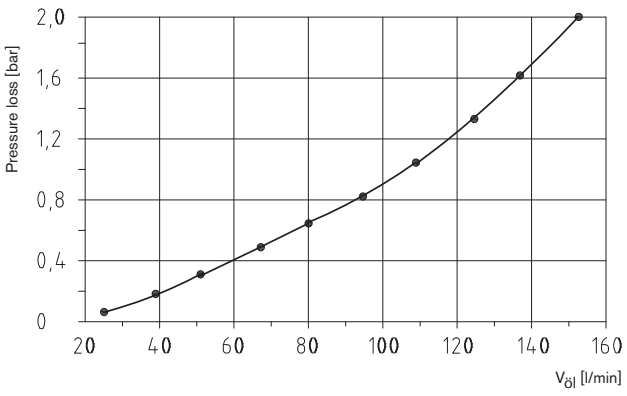
Oil/air cooler



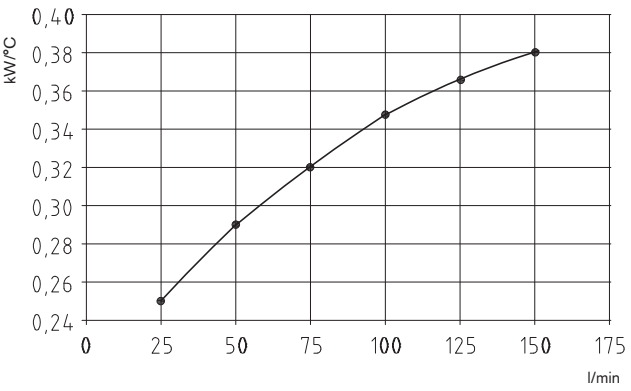
OAC 300								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC300-01	12 V DC	0,252	21	68	385	76	230	22
OAC300-02	24 V DC	0,192	9,8	68	385	75	230	22
OAC300-03	230 V/400V	0,37		55	380	77	369	22
OAC300-04	Hydraulic				380	77	314	22

Pressure loss 30 cSt



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

Power diagramme OAC 300



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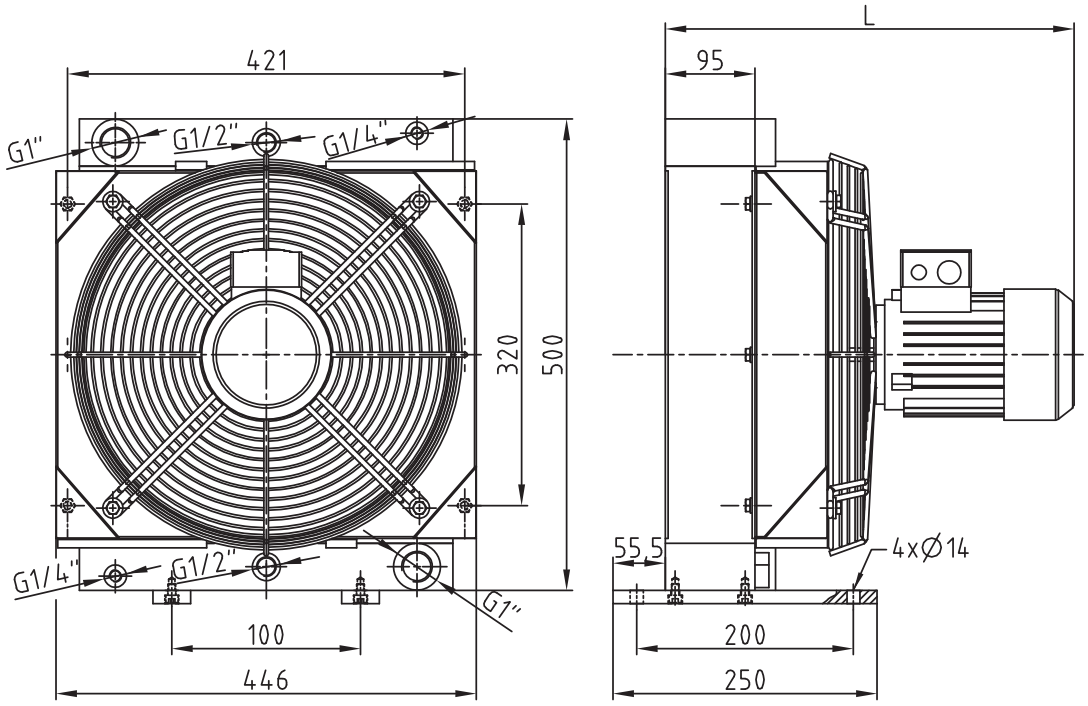
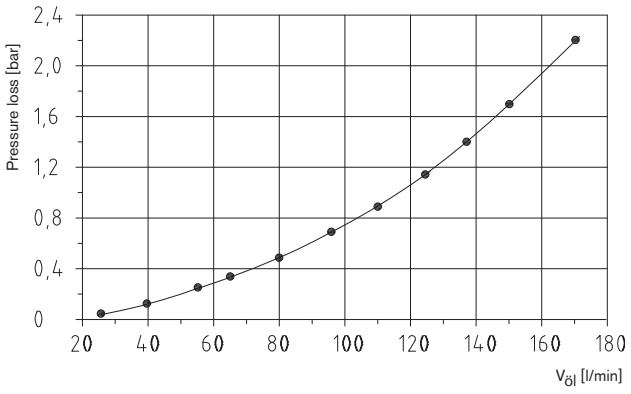
Oil/air cooler



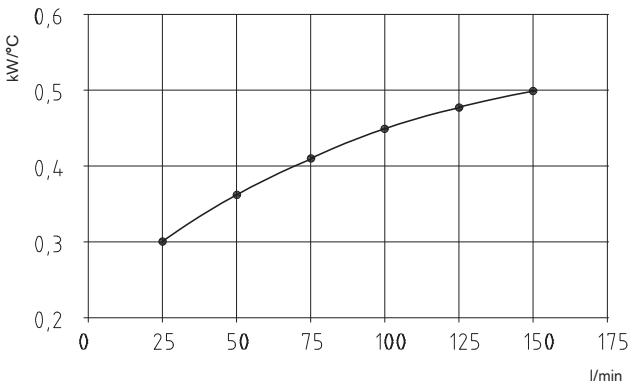
OAC 400								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC400-01	12 V DC	0,252	21	68	385	76	260	27
OAC400-02	24 V DC	0,192	9,8	68	385	75	260	27
OAC400-03	230 V/400V	0,37		55	380	77	426	27
OAC400-04	Hydraulic				380	77	344	27

Pressure loss 30 cSt



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

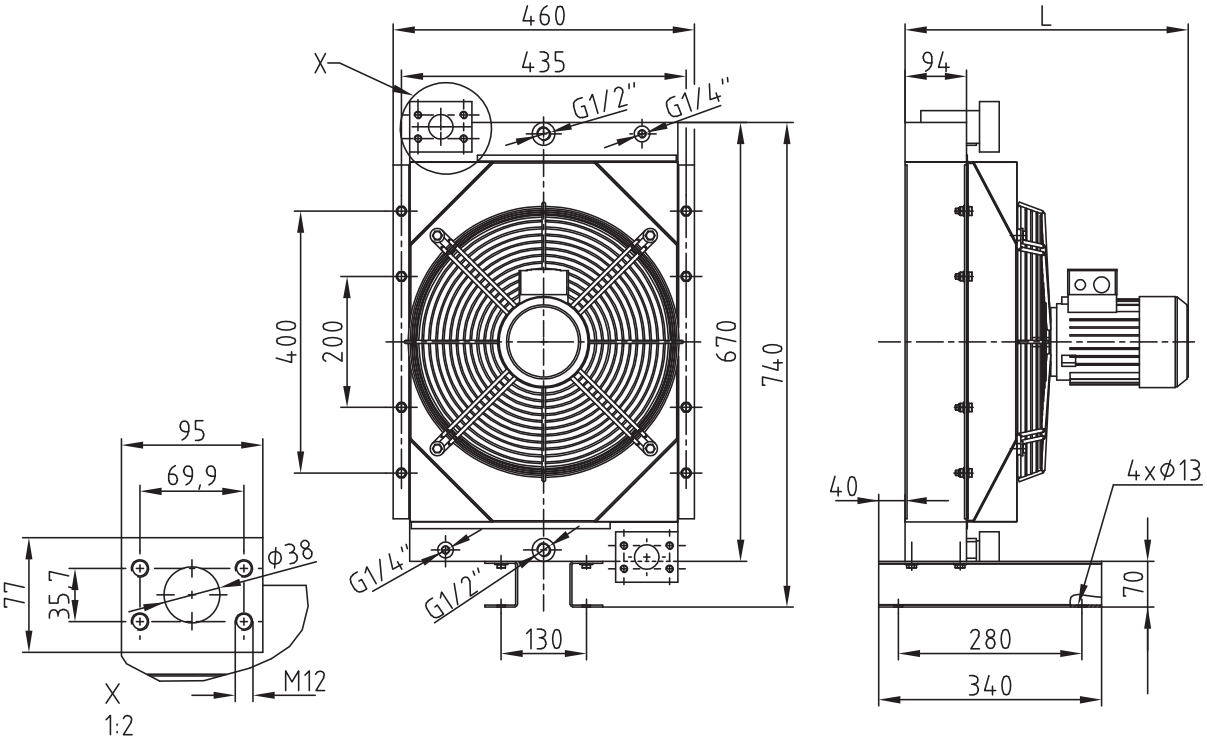
Power diagramme OAC 400



NEW

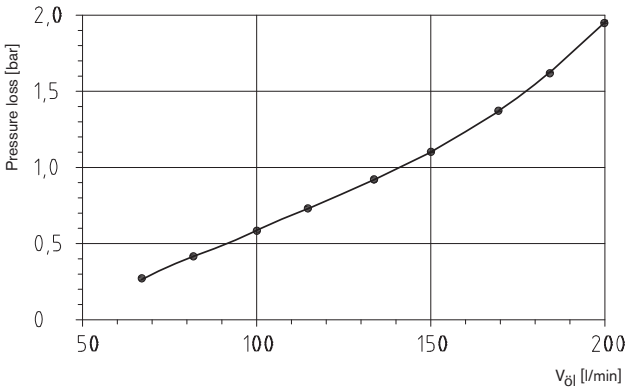
Made for Motion KTR

Oil/air cooler



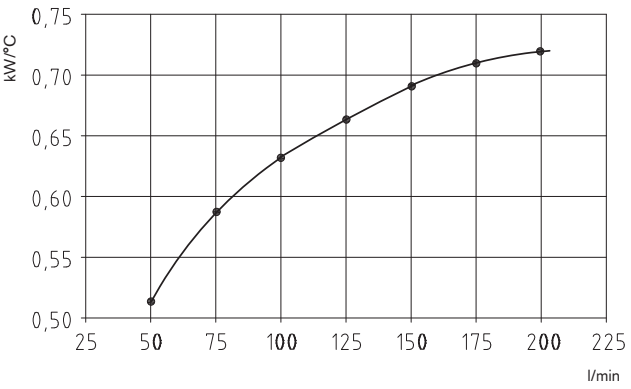
OAC 500								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC500-01	12 V DC	0,096	20,8	68	385	78	167	36
OAC500-02	24 V DC	0,072	10,3	68	385	78	167	36
OAC500-03	230 V/400V	0,37	1,03	55	380	77	430	38
OAC500-04	Hydraulic				380	77	353	37

Pressure loss 30 cSt



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

Power diagramme OAC 500



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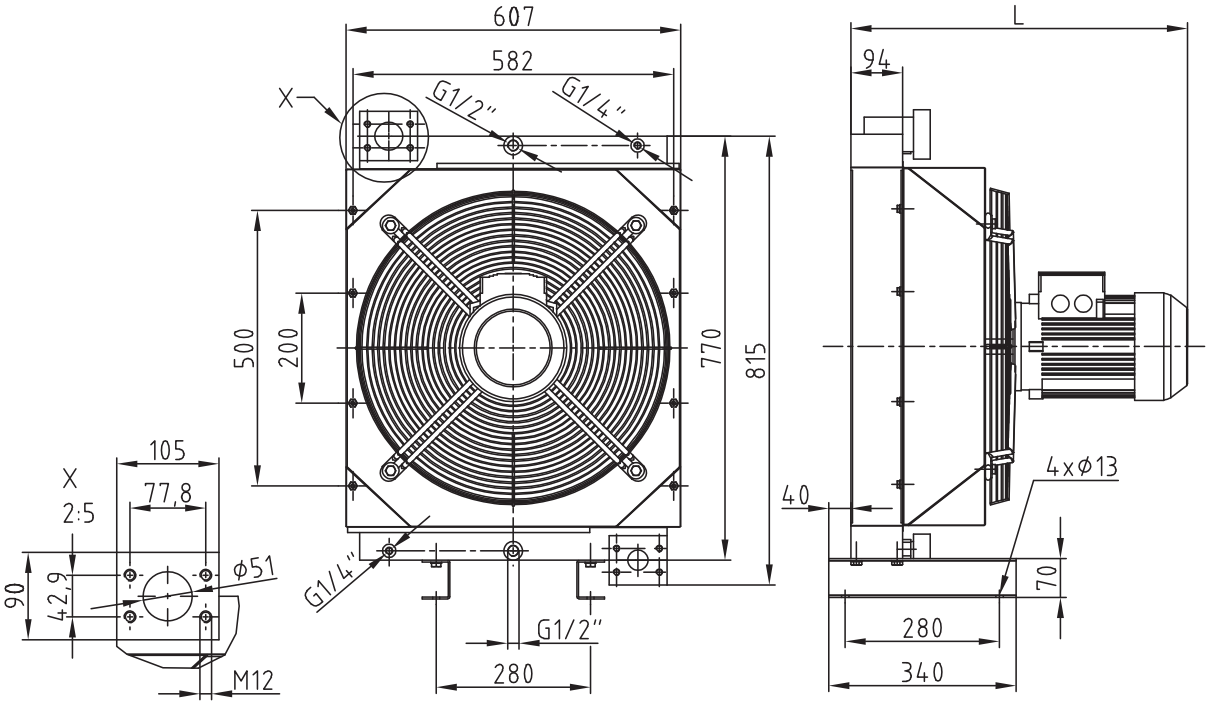
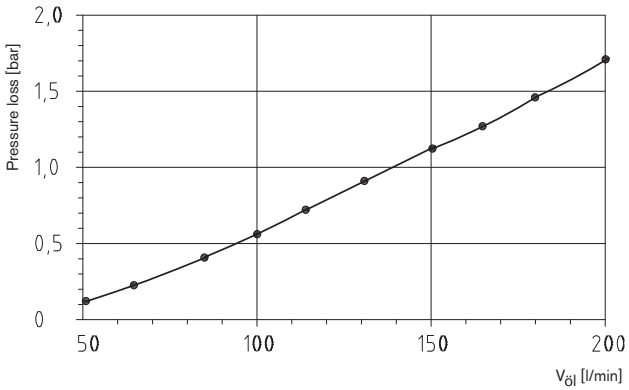
Oil/air cooler



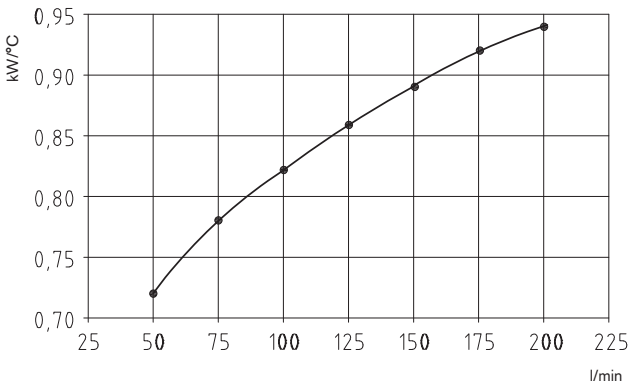
OAC 600								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC600-01	2x12 V DC	2x0,11	4,7	68	2x280	79	296	46
OAC600-02	2x24 V DC	2x0,09	9,8	68	2x280	79	269	46
OAC600-03	230 V/400V	0,75	0,56	55	520	79	530	49
OAC600-04	Hydraulic				520	79	430	48

Pressure loss 30 cSt



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

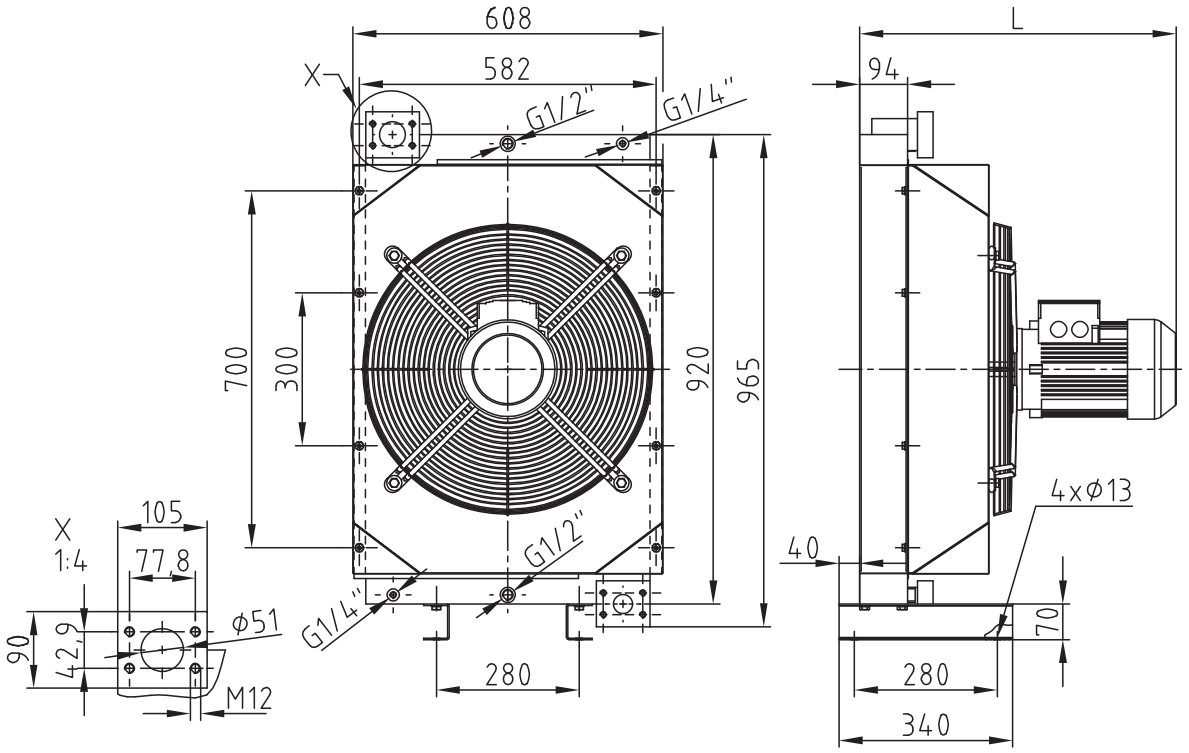
Power diagramme OAC 600



NEW

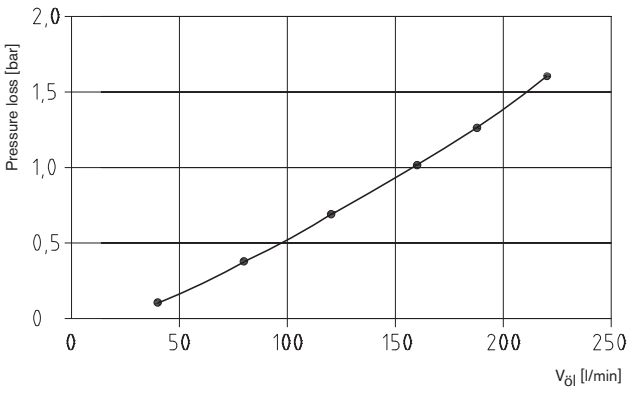
Made for Motion KTR

Oil/air cooler



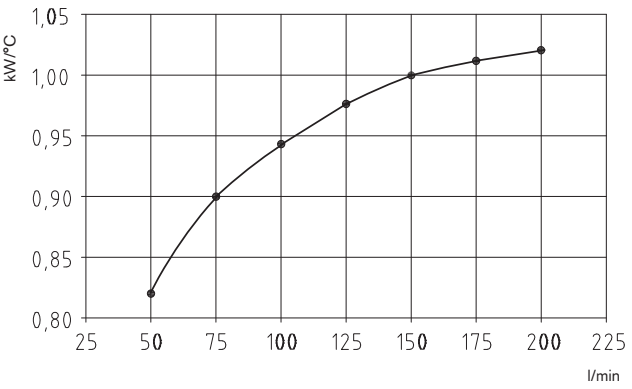
OAC 700								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC700-03	230 V/240 V	0,75	1,86	55	510	78	441	56
OAC700-04	Hydraulic				510	78	353	56

Pressure loss 30 cSt



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

Power diagramme OAC 700



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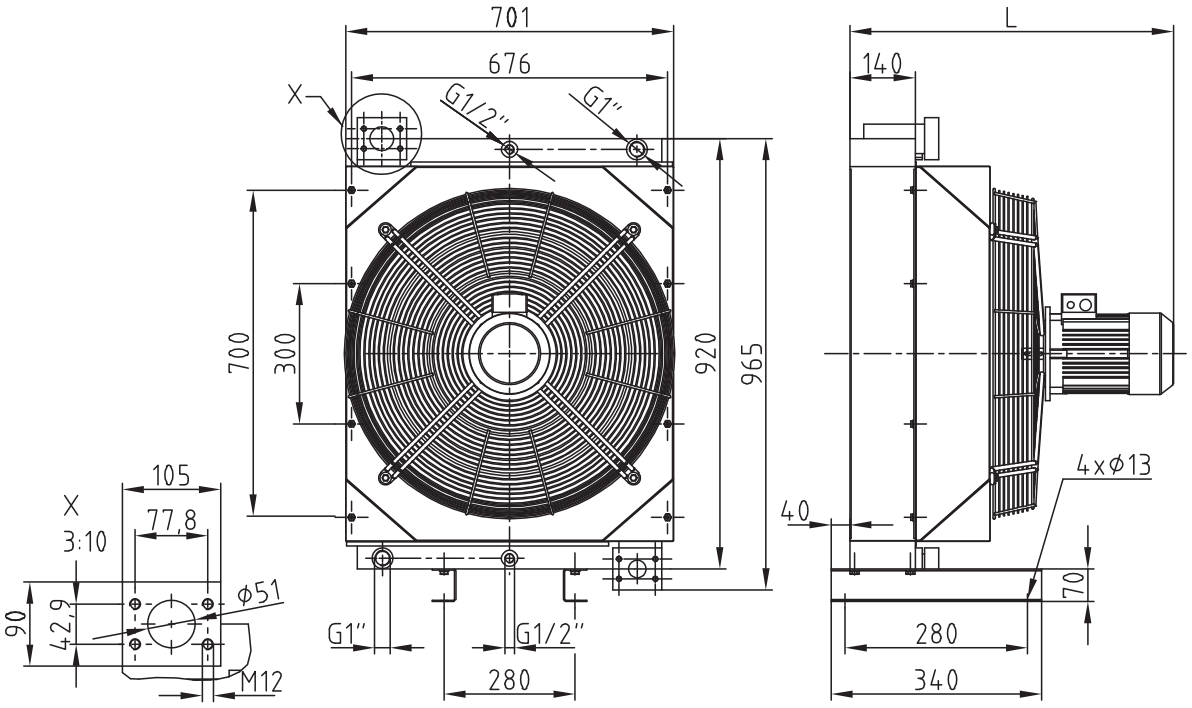
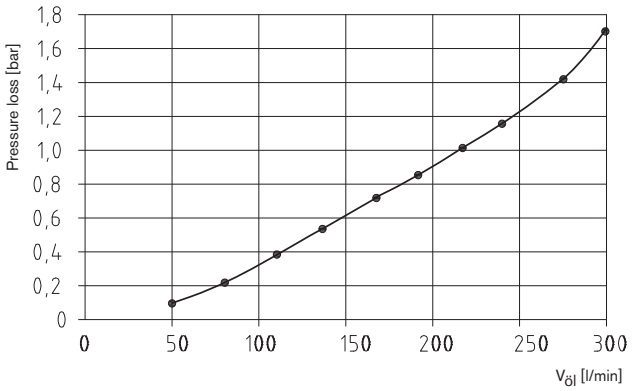
Oil/air cooler



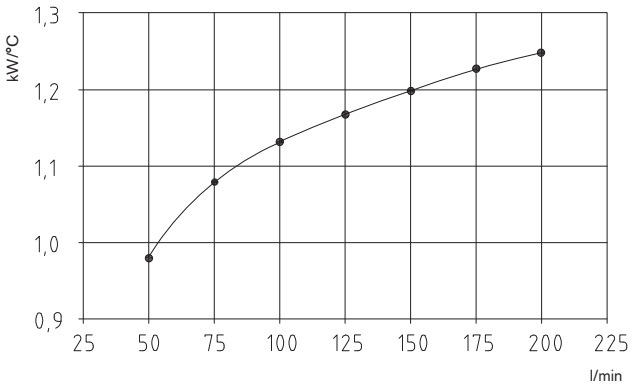
OAC 800								
Cooler type	Drive	kW	A	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OAC800-03	230 V/400 V	1,5	3,4	55	670	78	690	88
OAC800-04	Hydraulic				670	78	542	87

Pressure loss 30 cSt



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

Power diagramme OAC 800



NEW

Made for Motion KTR

OPC Cooling-pump-unit with hydraulic pump and filter

- High-performance cooler for a maximum static operating pressure of 26 bar
- Driving motor 230 V/400 V IP55
- Suitable for hydraulic oil, gear lubricant oil and lubricating oil
- Easy maintenance and good options for cleaning
- Available with filter
- Low sound pressure level
- CE certification
- Short delivery period

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.

Accessories

- Thermal switch
- Thermostat

Applications

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

Arrangement

- Cooler net (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
- Bellhousing and coupling
- Gearwheel feed pump
- Filter with visual maintenance indication on request of the customer

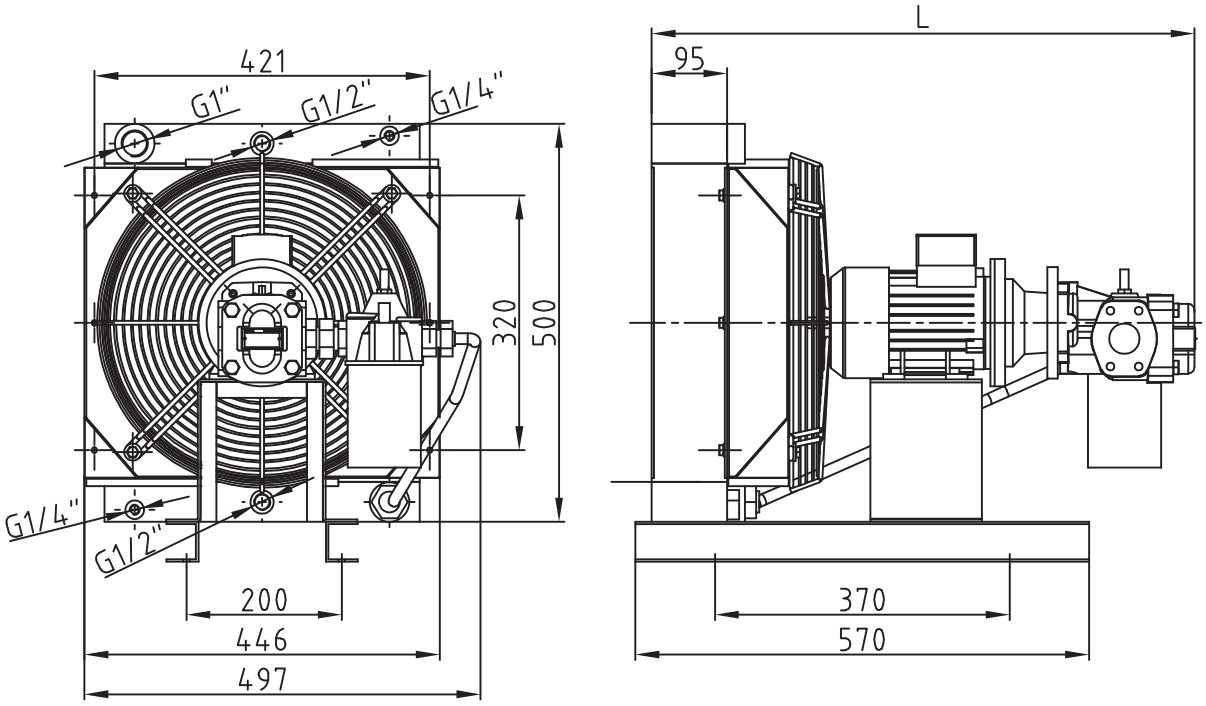
Order form

OPC	400	16	00
Type	Size	Pump flow rate	Filter (00 = without; with filter please advise quality, e. g. 10 = 10)

NEW

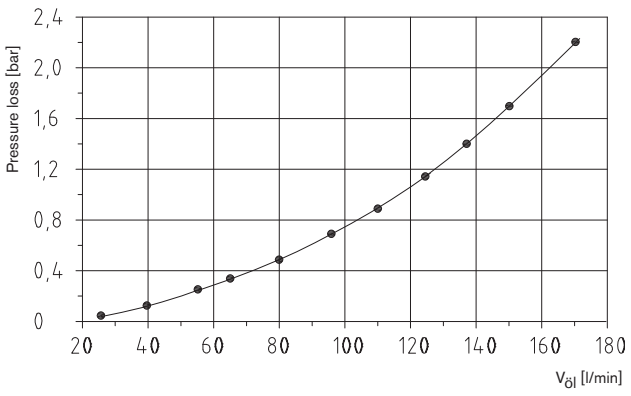
Made for Motion KTR

OPC Cooling-pump-unit with hydraulic pump and filter



OPC 400							
Cooler type	Drive	kW	IP	Fan-Ø [mm]	db [A]	L	Weight [kg]
OPC400-16	230 V/400 V	0,6	55	385	77	662	39
OPC400-32	230 V/400 V	0,6	55	385	78	704	39

Pressure loss 30 cSt



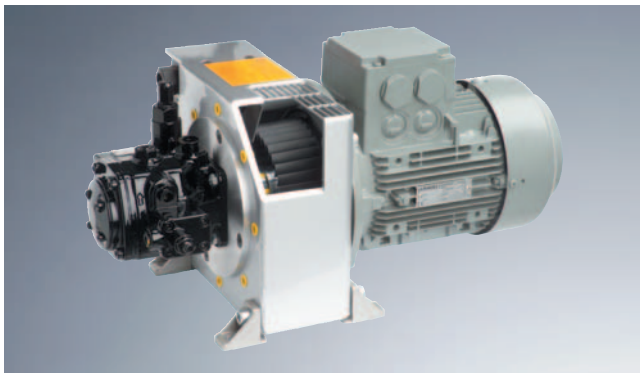
Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

Cooling effect		
Cooler type	Flow rate pump [l/min]	Cooling effect [kW/°C]
OPC400-16	22	0,30
OPC400-32	44	0,35

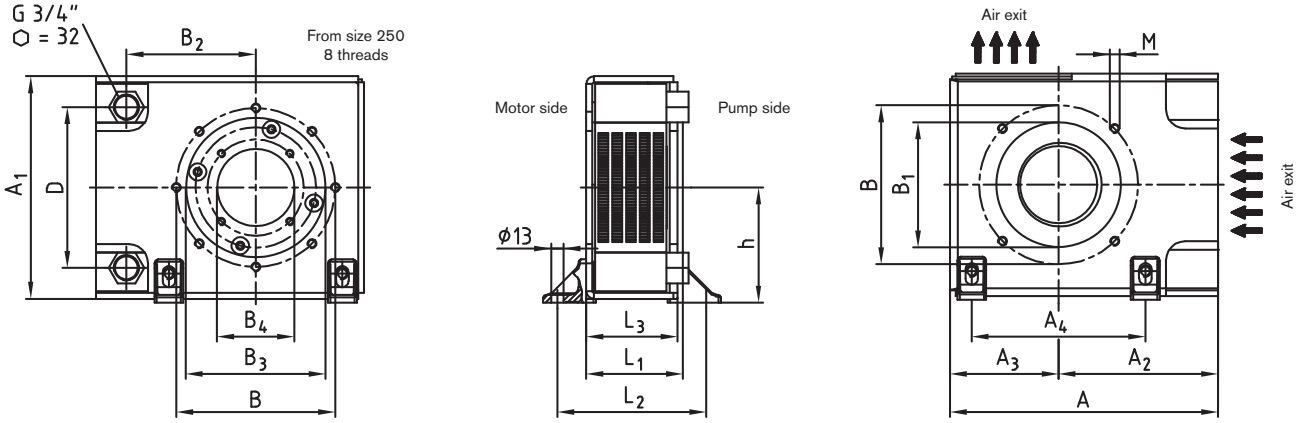
Available with filter

- Visual maintenance indication
- Bypass 3,5 bar
- Filter cartridge 5m x 10

Oil/air cooler



- Suitable to cool the entire oil volume (return pass)
- Constant air flow rate of the heat exchanger due to a low pressure principle (DBGM)
- Optimum utilization of the high-performance heat exchanger
- Optimum accommodation of housing and fan wheel
- Direct suction of cold ambient air by the heat exchanger
- Heat exchanger can easily be cleaned externally (without any disassembly)
- For the bellhousing selection you require please either see our selection programme at www.ktr.com or order the selection stored on CD-ROM



View pump side **View motor side**

Bellhousings with integrated oil cooler PIK (DBGM)

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

* Dimensions following the VDMA guideline 24561.
** In case of an engine speed of ≥1900 min^{-1} a steel fan must be used.

Assembly

For 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 16 bar in the reverse motion (danger of bursting)!
Please consider our mounting instructions under www.ktr.com.

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

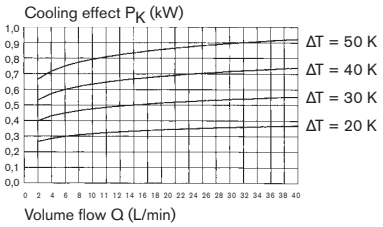
Order form

PIK	300	3	5	15
Bellhousing with integrated oil cooler	Flange diameter of IEC-motor	Model code (code referring to length)	Internal code	Standard design 11 – with feet 15 – V1 design

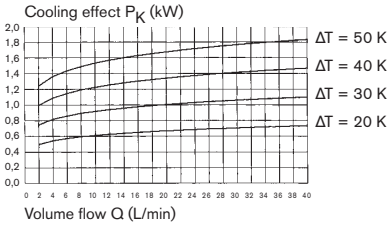
Oil/air cooler

1. Cooling effect for a speed of 1500 1/min depend-ing on the temperature difference between oil intake and air intake and oil volume

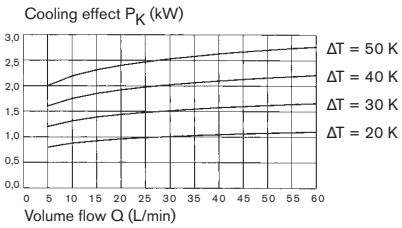
PIK 200



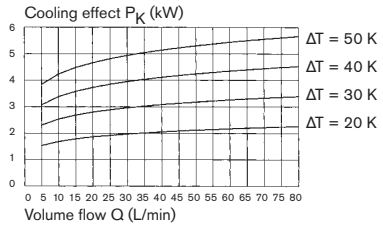
PIK 250



PIK 300



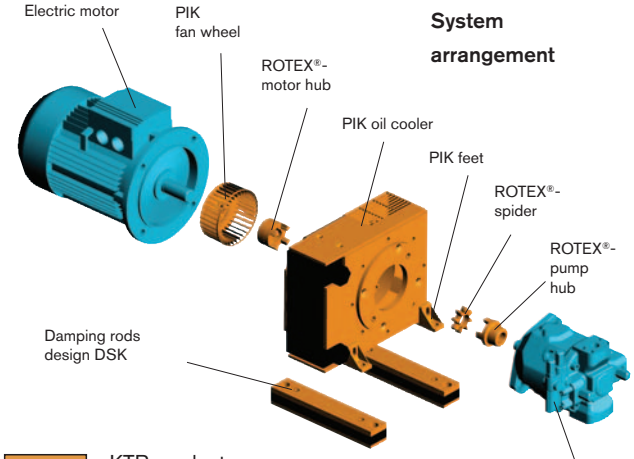
PIK 350



The diagrammes shown are based on actual measurements of the PIK oil cooler performed in the KTR R & D test center. With 3000 1/min the cooling effect is increased by 50 %.

2. Working pressure

The maximum permissible working pressure for the oil cooler is 16 bar. Max. operating pressure in case of static load 30 bar. (All values apply for the medium pressure cooler.)

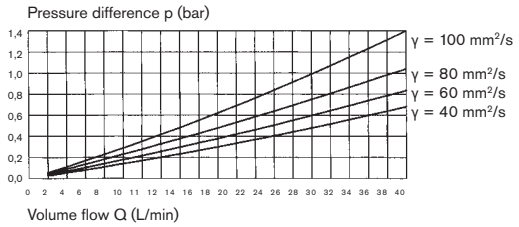


System arrangement

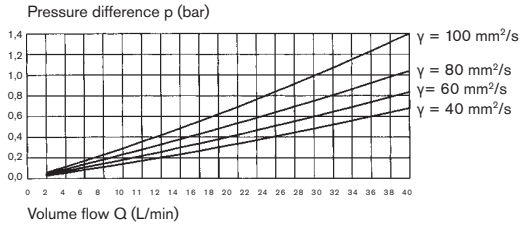
KTR products available from stock

3. Pressure difference depending on oil flow and oil viscosity

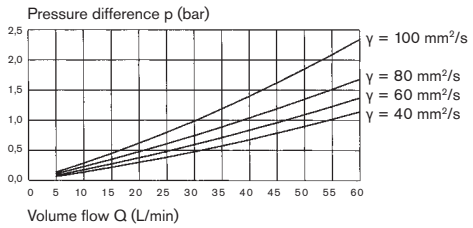
PIK 200



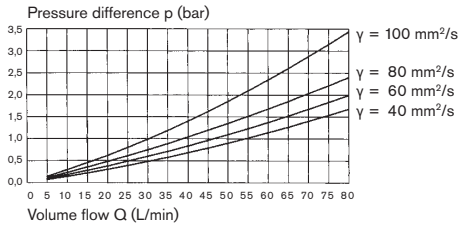
PIK 250



PIK 300



PIK 350



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

4. Fan wheel

Torsional direction looking onto the pump – **right** – standard design.

Performance of the fan with 1500 1/min

PIK 200 = 25 W
PIK 250 = 40 W
PIK 300 = 125 W
PIK 350 = 230 W

Air pressure rate in m³/h at 1500 1/min

PIK 200 = abt. 90 m³/h
PIK 250 = abt. 200 m³/h
PIK 300 = abt. 400 m³/h
PIK 350 = abt. 860 m³/h

5. Cooler connection

R 3/4“ internal thread

6. Oil flow

For a higher oil flow than indicated in the above diagramme, please consult with our Engineering Department, phone +49 59 71 798-0.

Oil-water coolers

- Oil-water coolers as tube-bank heat exchanger
- Designs: **TAK** (built-on cooler)
- Wide fields of applications in industry
- Large cooling surface with low dimension
- High effectivity - heat exchange performance up to 230 kW due to aluminium laminas pushed over bank of tubes (cooling surface = 0,43 m² up to 18,41 m²)
- Minimum flow resistance due to large oil connections
- Maximum pressure: oil = 35 bar; water = 16 bar
- Optionally available in saltwater-proof design
- Easy to clean due to removable end caps

TAK

Materials		
Components	Standard coolers	Seawater coolers
mounting bracket shell baffle	steel	steel
end plates	TAK = steel	copper nickel alloy
cooling fins type designation plate	aluminium	aluminium
tubes	TAK = copper/nickel	TAK = copper/nickel
end caps	grey cast iron	grey cast iron (with copper/nickel layer)
gaskets	nitrile rubber cellulose fibres	nitrile rubber cellulose fibres
additional installation		zinc anode

Technical data

ATTENTION: Incorrect assembly can lead to a damage to the cooler!

1) Maximum flows

Series TAK	Oil Shell	TAK Water		
		1-pass	2-pass	4-pass
5..	75	45	22	-
7..	225	90	46	23
10..	330	210	106	53

All flows l/min.

2) Operating temperature
The max. operating temperature is:
TAK = 120 °C

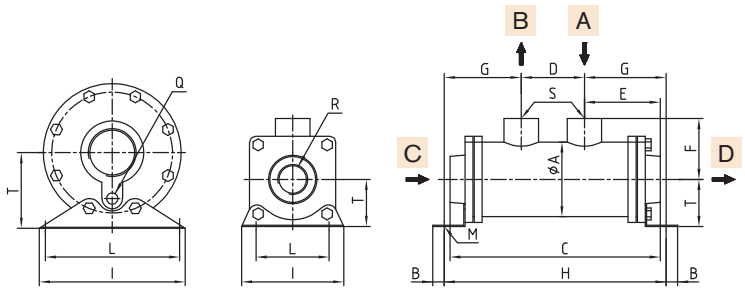
3) Operating pressure
The max. operating pressure of TAK is:
Shell = 35 bar; Tubes = 16 bar

To define the cooling performance or the cooler please contact **KTR** (phone: +49-59 71/7 98-4 24).

Order form

TAK	1014	M	2W	O	FW	2	1
Typ built-on cooler	Size	Oil connection type M=BSPF FM= SAE flange (optional)	Cooling water connection system 1W=1 pass 2W= 2 pass 4W= 4 pass	Bypass valve O=without	FW= fresh water SW= seawater	Tubes 2=copper/ nickel (standard)	Tube sheet 1=Stahl (standard) 3=saltwater-proof

Oil-water coolers



A - medium to be cooled

B - cooled medium

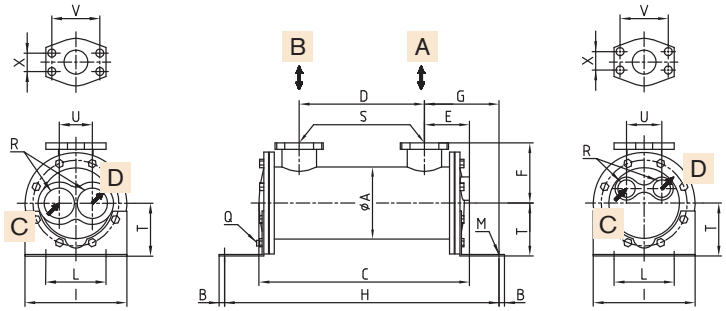
C - cooling water „on“

D - cooling water „off“

TAK - Type „1-pass“

Type	Dimensions [mm]									
	A	B	E	G	I	L	M	Q	R	T
TAK-5..	65	12	82*	83	89	63,5	Ø9x16	—	G 3/4”	41
TAK-7..	90	15	103	103	127	76	Ø11x19	G 1/4”	G 1 1/4”	66
TAK-10..	128	20	116	116	165	102	Ø11x25	G 1/4”	G 1 1/2”	102

* outsider TAK - 505 = 66 mm



Type „2-pass“ Type „4-pass“

A - medium to be cooled

B - cooled medium

C - cooling water „on“

D - cooling water „off“

TAK - Type „2-pass/4-pass“

Type	Dimensions [mm]										
	TAK - Typ “2-pass”										
	A	B	E	G	I	L	M	Q	R	T	U
TAK-5..	65	12	83	85	89	63,5	Ø9x16	—	G 3/8”	41	28
TAK7..	90	15	91	95	127	76	Ø11x19	—	G 1”	66	41
TAK10..	128	20	113	110	165	102	Ø11x25	G 1/4”	G 1 1/4”	102	60
	TAK - Typ “4-pass”										
TAK-7..	90	15	107	95	127	75	Ø11x19	G 1/4”	G 1/2”	66	44
TAK-10..	128	20	112	110	165	101	Ø11x25	G 1/4”	G 3/4”	102	64

Unit dimensions

Type	C			D	F	H	W_T [1] [m²]	Weight [kg]	Oil connection			
									Standard S	Optional		
	1-pass	2-pass	4-pass							SAE-flange	X	V
TAK-505	187	187	—	55	53	189	0,43	3,15	G 3/4”	—	—	—
TAK-508	263	265	—	97	57	265	0,73	3,60	G 3/4”	—	—	—
TAK-510	314	314	—	148	57	316	0,94	3,45	G 3/4”	—	—	—
TAK-512	365	365	—	199	57	367	1,13	4,05	G 3/4”	—	—	—
TAK-514	416	416	—	250	57	418	1,43	4,5	G 3/4”	—	—	—
TAK-518	517	517	—	351	57	519	1,74	5,1	G 3/4”	—	—	—
TAK-524	670	672	—	504	57	672	2,35	6,0	G 3/4”	—	—	—
TAK-536	975	976	—	809	57	976	3,57	7,8	G 3/4”	—	—	—
TAK-708	283	258	262	76	73	272	1,38	7,3	G 1 1/2”	SAE 1 1/2”	35,8	69,9
TAK-712	385	360	364	177	73	373	2,18	8,4	G 1 1/2”	SAE 1 1/2”	35,8	69,9
TAK-714	435	411	415	228	73	424	2,53	8,8	G 1 1/2”	SAE 1 1/2”	35,8	69,9
TAK-718	537	513	516	330	73	526	3,29	10,2	G 1 1/2”	SAE 1 1/2”	35,8	69,9
TAK-724	689	665	669	482	73	678	4,44	11,6	G 1 1/2”	SAE 1 1/2”	35,8	69,9
TAK-736	994	995	974	787	73	983	6,73	15,5	G 1 1/2”	SAE 1 1/2”	35,8	69,9
TAK-1012	389	369	363	157	92	392	4,38	15,4	G 1 1/2”	SAE 2”	42,9	77,7
TAK-1014	440	420	413	207	92	443	5,17	16,9	G 1 1/2”	SAE 2”	42,9	77,7
TAK-1018	541	522	515	309	92	544	6,73	19,8	G 1 1/2”	SAE 2”	42,9	77,7
TAK-1024	694	674	667	461	92	697	9,06	21,8	G 1 1/2”	SAE 2”	42,9	77,7
TAK-1036	999	979	972	766	92	1002	13,74	30,5	G 1 1/2”	SAE 2”	42,9	77,7
TAK-1048	1303	1284	1277	1071	92	1306	18,41	39,8	G 1 1/2”	SAE 2”	42,9	77,7

Flange TAK 700 = 1 1/2”; flange TAK 1000 = 2”

[1] W_T = Heat exchange surface [m²]

Cooling systems

- Plate heat exchanger to cool hydraulic oil and other media
- Applied in industry and mobile technology
- Compact design with high cooling performance
- High corrosion resistance subject to plates from stainless steel 1.4401 (AISI316) and the use of copper filler metal
- Maximum operating pressure 30 bar / Maximum operating temperature: 200 °C

Technical data

Plate heat exchanger from stainless steel 1.4401 soldered to copper (solder metal based on nickel on request).
The stamped plates produce 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 power packs, waste heat utilization, etc.
It is possible to use other media like, for example, oil, water glycole, water, refrigerating agents, air, etc.
Operating temperature: -10 °C to +200 °C.
Please observe boiling point and freezing point!
Maximum permissible operating pressure: 30 bar.

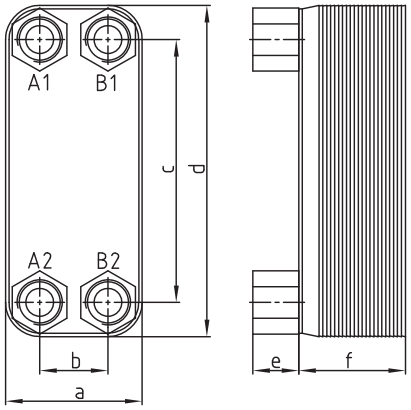
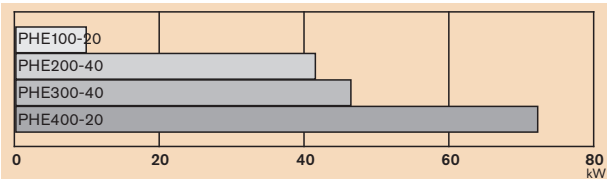
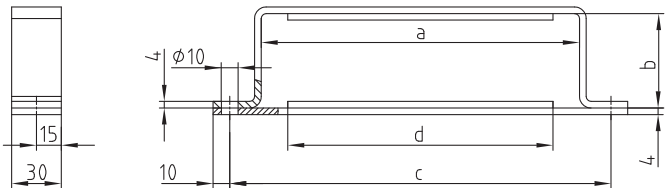


Plate heat exchanger									
Series	Type	Thread	Plates	a	b	c	d	e	f
PHE	100	4 x 3/4"	20	80	40	154	194	27	55
PHE	200	4 x 1"	40	106	50	250	302	27	106
PHE	300	4 x 1"	40	106	50	466	522	27	106
PHE	400	4 x 1 1/2"	20	246	174	456	528	27	59,5

Cooling power



Typ	Oil temperatur switched on [°C]	Water temperature switched on [°C]	Oil V [l/min]	Water V [l/min]
PHE100-20	60	20	60	30
PHE200-40	60	20	160	80
PHE300-40	60	20	120	60
PHE400-20	60	20	180	90



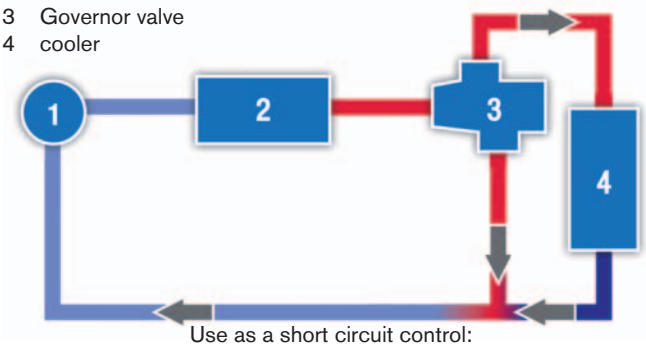
Fasting device				
	a	b	c	d
BH100-20	84	53	114	70
BH200-40 / BH300-40	110	104	140	100
BH400-20	250	57	280	240

Order form

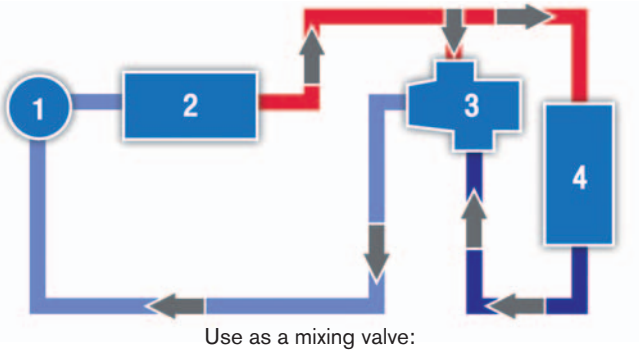
PHE	100	20	1
PHE=Plate heat exchanger	Size	Number of plates	Clamp (0= with, 1= without)

Oil thermostat valve

1 Pump
2 Load
3 Governor valve
4 cooler



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



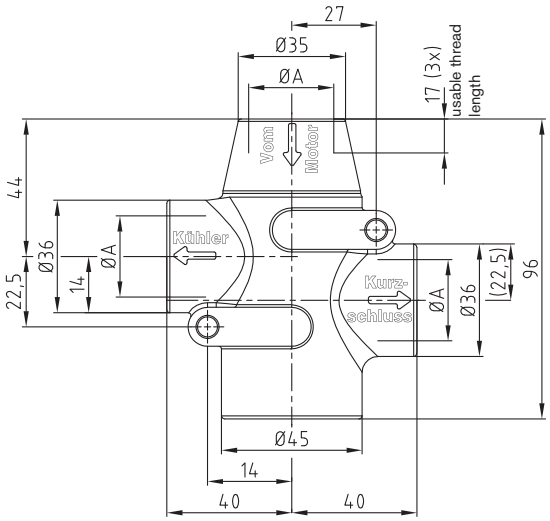
Use as a mixing valve:
Constant temperature on load inlet

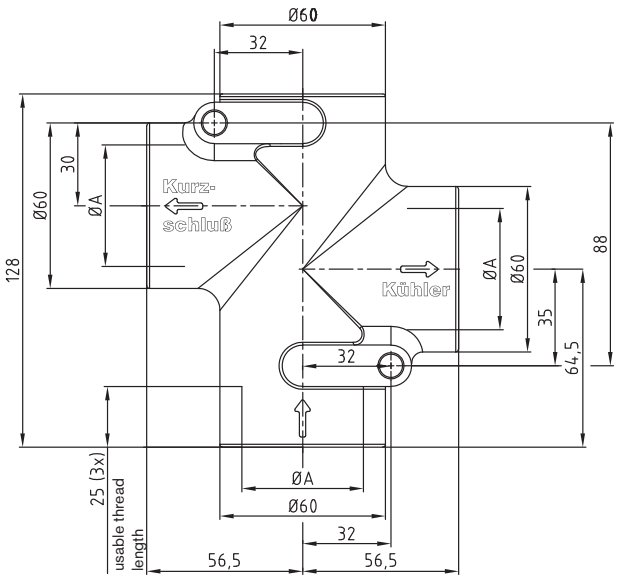
Main applications of oil thermostat valves

- 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
- Solid design
- Insensitive to vibrations
- Insensitive to shocks
- operation independent of the mounting situation
- Maintenance-free
- Long service life





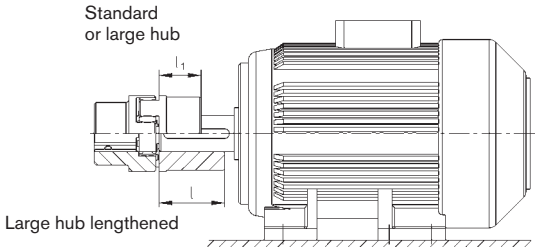
OTV Oil thermostat valve				
Description	max. volume flow [m³/h]	Connection therad	Inlet temperature [°C]	Max. inflow to the cooler obtained with °C
OTV1-45	4	G 3/4"	45	60
OTV1-55	4	G 3/4"	55	70
OTV1-70	4	G 3/4"	70	85
OTV2-45	10	G 1 1/2"	45	60
OTV2-55	10	G 1 1/2"	55	70
OTV2-70	10	G 1 1/2"	70	85

max. Betriebsdruck 16 bar

Order form

OTV	1	55
Oil temperature valve	Size	Inlet temperature

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 1/min 2-pole		ROTEX® coupling size	Motor output n = 1500 1/min 4-pole		ROTEX® coupling size	Motor output n = 1000 1/min 6-pole		ROTEX® coupling size	Motor output n = 750 1/min 8-pole		ROTEX® coupling size
Size	Shaft end dxl [mm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]	
	2-pole	4,6,8 pole												
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		0,12	0,88		0,06	0,7				
			0,25	0,86	14	0,18	1,3	14	0,09	1,1	14			
71	14 x 30		0,37	1,3		0,25	1,8		0,18	2		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		0,55	3,7		0,37	3,9		0,18	2,5	
			1,1	3,7	19	0,75	5,1	19	0,55	5,8	19	0,25	3,5	19
90S	24 x 50		1,5	5		1,1	7,5		0,75	8		0,37	5,3	
90L			2,2	7,4		1,5	10		1,1	12		0,55	7,9	
100L	28 x 60		3	9,8		2,2	15		1,5	15		0,75	11	
					24	3	20	24			24	1,1	16	24
112M			4	13		4	27		2,2	22		1,5	21	
132S	38 x 80		5,5	18		5,5	36		3	30		2,2	30	
			7,5	25	28			28			28			28
132M						7,5	49		4	40		3	40	
									5,5	55				
160M	42 x 110		11	36		11	72		7,5	75		4	54	
			15	49	38			38			38	5,5	74	38
160L			18,5	60		15	98		11	109		7,5	100	
180M	48 x 110		22	71		18,5	121							
180L						22	144	42	15	148	42	11	145	42
200L	55 x 110		30	97	42	30	196		18,5	181		15	198	
			37	120					22	215				
225S	55 x 110	60 x 140				37	240	48				18,5	244	48
225M			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	65 [2]	30	392	65
280S		75 x 140	75	241	55	75	484	65 [2]	45	438		37	483	65 [2]
280M			90	289		90	581		55	535		45	587	75
315S		80 x 170	110	353		110	707	75	75	727	75	55	712	
315M			132	423	65	132	849		90	873		75	971	
	65 x 140		160	513		160	1030		110	1070		90	1170	90
315L			200	641		200	1290	90	132	1280	90	110	1420	
					75				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	1140		355	2280	100						
355	75 x 140	95 x 170	400	1280	90	400	2570		315	3040	110	250	3220	110
			500	1600		500	3210	110	400	3850	125	315	4060	125
			560	1790		560	3580	125	450	4330		355	4570	
400	80 x 170	110 x 210	630	2020		630	4030		500	4810		400	5150	140
			710	2270	100	710	4540		560	5390	140	450	5790	
			800	2560		800	5120	140	630	6060		500	6420	
450	90 x 170	120 x 210	900	2880	110	900	5760		710	6830	160	560	7190	160
			1000	3200		1000	6400	160	800	7690		630	8090	

The arrangement of couplings is valid for an ambient temperature of up to + 30 °C. For the selection there is a minimum safety factor of 2 of the max. coupling torque ($T_{Kmax.}$).

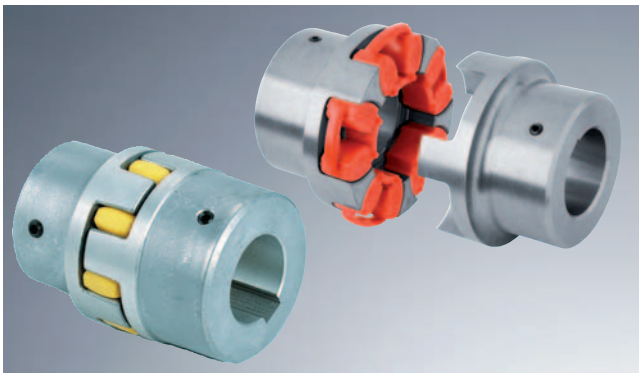
A detailed arrangement is possible according to our catalogue. Drives with periodical torque curves must be selected according to DIN 740 part 2. If requested, KTR will make the selection.

Torque T = nominal torque according to Siemens catalogue M 11 · 1994/95.

[1] For dimensions see ROTEX® GS line

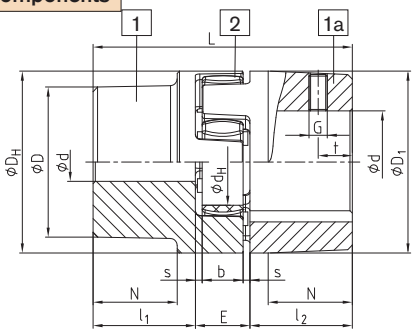
[2] Motor hub from steel see page 61

Shaft coupling design No. 001 - casted materials

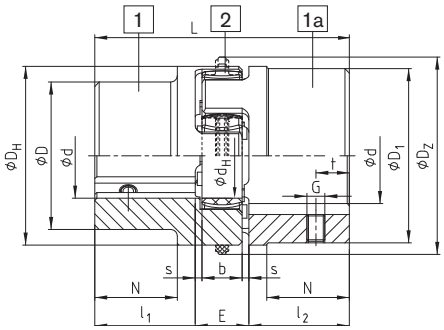


- Torsionally flexible, maintenance-free
- Damping vibrations
- Axial plug-in, fail-safe
- Allover machining – good dynamic properties
- Compact design/small flywheel effect
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Ex Approved according to EC Standard 94/9/EC (without aluminium AL-D)
- Mounting instructions under www.ktr.com

Components

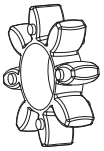


AL-D (thread opposite the keyway)



EN-GJL-250 / EN-GJS-400-15 (thread on the keyway)

Spider
as hardness 92 Sh-A and 95/98 Sh-A standard from size 14 - 90 and 64 Sh-D size 14 - 180



NEW

elements DZ (double tooth elements)
as hardness 92 Sh-A and 95 Sh-A standard from size 100 - 180

ROTEX® Aluminium diecast (Al-D)

Size	Compo-nent	Spider (part 2) [1] Rated torque [Nm]			Finish bore	Dimensions [mm] General										Thread for setscrews		
		92 Sh A	98 Sh A	64 Sh D	d (min-max)	L	l_1; l_2	E	b	s	D_H	D_Z	d_H	D; D_1	N	G	t	T_A [Nm]
14 [2]	1a	7,5	12,5	-	6-16	35	11	13	10	1,5	30	-	10	30	-	M4	5	1,5
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 EN-GJL-250 (GG 25)

	1				12-40	114	45							66	37			
38	1a	190	325	405	38-48			24	18	3	80	-	38	78		M8	15	10
	1b				12-48	164	70								62			
	1				14-45	126	50							75	40			
42	1a	265	450	560	42-55			26	20	3	95	-	46	94		M8	20	10
	1b				14-55	176	75								65			
	1				15-52	140	56							85	45			
48	1a	310	525	655	48-62			28	21	3,5	105	-	51	104		M8	20	10
	1b				15-62	188	80								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	40-97	245	100	45	34	5,5	200	218	100	160	81	M12	30	40

ROTEX® Nodular iron EN-GJS-400-15 (GGG 40)

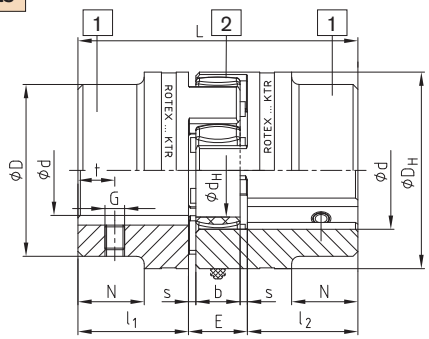
100	1	3300	4950	6185	50-115	270	110	50	38	6	225	246	113	180	89	M12	30	40
110	1	4800	7200	9000	60-125	295	120	55	42	6,5	255	276	127	200	96	M16	35	80
125	1	6650	10000	12500	60-145	340	140	60	46	7	290	315	147	230	112	M16	40	80
140	1	8550	12800	16000	60-160	375	155	65	50	7,5	320	345	165	255	124	M20	45	140
160	1	12800	19200	24000	80-185	425	175	75	57	9	370	400	190	290	140	M20	50	140
180	1	18650	28000	35000	85-200	475	195	85	64	10,5	420	450	220	325	156	M20	50	140

◣ = If no material is mentioned in the order, the calculation/order is based on the material marked with
[1] Maximum torque of the coupling $T_{Kmax.}$ = rated torque of the coupling $T_{K\ Nenn.}$ x 2 [2] Material Al-H.

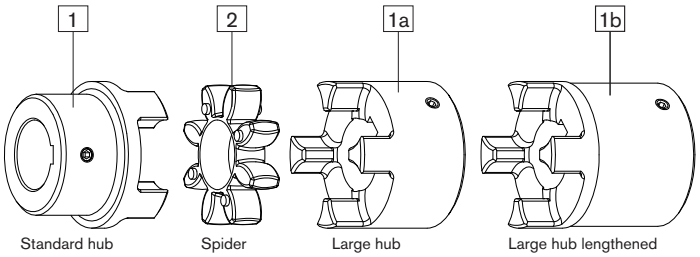
Shaft coupling design No. 001 - material steel

- Hubs from steel, specifically suitable for drive elements subject to high loads, e. g. steel mills, elevator drives, spline hubs, etc.)
- Torsionally flexible, maintenance-free, vibration-damping
- Axial plug-in, fail-safe
- Allover machining - good dynamic properties
- Compact design/small flywheel effect
- Finish bore according to ISO fit H7, feather keyway according to DIN 6885 sheet 1 - JS9
- Ex Approved according to EC Standard 94/9/EC
- Mounting instructions under www.ktr.com

Components



Steel (thread on the keyway)



ROTEX® steel

Size	Compo-nent	Spider (part 2) [1] Rated torque [Nm] 92 Sh A	98Sh A	64 Sh D	Finish bore d (min-max)	Dimensions [mm] 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	-	0-16	35	11	13	10	1,5	30	10	30	-	M4	5	1,5
	1b					50	18,5										
19	1a	10	17	-	0-25	66	25	16	12	2	40	18	40	-	M5	10	2
	1b					90	37										
24	1a	35	60	-	0-35	78	30	18	14	2	55	27	55	-	M5	10	2
	1b					118	50										
28	1a	95	160	-	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	-			

ROTEX® sintered steel

Size	Compo-nent	Spider (part 2) [1] Rated torque [Nm] 92 Sh-A	98 Sh-A	Finish bore d	Dimensions [mm] 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	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	unbored, 14, 16, 19, 20, 22, 24	66	25	16	12	2	40	18	40	-	M5	10	2

= If no material is mentioned in the order, the calculation/order is based on the material marked with

[1] Maximum torque of the coupling $T_{Kmax.}$ = rated torque of the coupling $T_{K\ Nenn.}$ x 2

ROTEX® 19 – 48 from stainless steel available from stock

- ROTEX® 19, 28 and 42 – hub material X10CrNiS 18-9 material number 1.4305 (V2A) DIN 17440
- ROTEX® 24, 38 and 48 – hub material X6CrNiMoTi17-12-2 material number 1.4571 (V4A) DIN 17440

Order form:

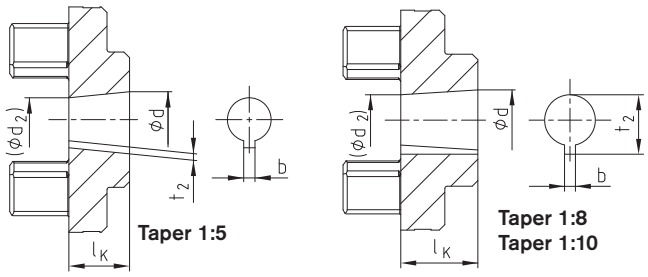
ROTEX®-38	St	92	1 – Ø 45		1 – Ø 25	
Coupling size	Material	Spider hardness Shore A]	Hub design	Finish bore	Hub design	Finish bore

Taper bores — spline bores — Inch bores

Basic programme taper 1:8					
Code	$d^{+0,05}$	(d_2)	b^{JS9}	$t_2{}^{+0,1}$	l_K
...N.../ 1	9,7	7,575	2,4	10,85	17,0
...N.../ 1c	11,6	9,5375	3	12,90	16,5
...N.../ 1e	13,0	10,375	2,4	13,80	21,0
...N.../ 1d	14,0	11,813	3	15,50	17,5
...N.../ 1b	14,3	11,8625	3,2	15,65	19,5
...N.../ 2	17,287	14,287	3,2	18,24	24,0
...N.../ 2a	17,287	14,287	4	18,94	24,0
...N.../ 2b	17,287	14,287	3	18,34	24,0
...N.../ 3	22,002	18,6895	4	23,40	28,0
...N.../ 4	25,463	20,963	4,78	27,83	36,0
...N.../ 4b	25,463	20,963	5	28,23	36,0
...N.../ 4a	27,0	22,9375	4,78	28,80	32,5
...N.../ 4g	28,45	23,6375	6	29,32	38,5
...N.../ 5	33,176	27,676	6,38	35,39	44,0
...N.../ 5a	33,176	27,676	7	35,39	44,0
Basic programme taper 1:10					
CX	19,95	16,75	5	22,08	32
DX	24,95	20,45	6	26,68	45
EX	29,75	24,75	8	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	1,0	11,5
B-17	16,85	13,15	3	1,8	18,5
C-20	19,85	15,55	4	2,2	21,5
Cs-22	21,95	17,65	3	1,8	21,5
D-25	24,85	19,821	5	2,9	26,5
E-30	29,85	23,55	6	2,6	31,5
F-35	34,85	27,55	6	2,6	36,5
G-40	39,85	32,85	6	2,6	35,0

With codes N.../6 and N.../6a parallel to taper the respective pump code should be started before ...N and the respective size of coupling before and behind ...N.../.



Basic programme SAE involute spline											
Spline code	Size	Pitch circle	Pitch	No. of teeth	Angle	Spline code	Size	Pitch circle	Pitch	No. of teeth	Angle
PH-S	5/8"	14,28	16/32	9	30°	**PS-S**	1 1/2"	35,98	12/24	17	30°
PI-S	3/4"	17,46	16/32	11	30°	**PD-S**	1 1/2"	36,51	16/32	23	30°
PB-S	7/8"	20,63	16/32	13	30°	**PE-S**	1 3/4"	42,86	16/32	27	30°
PB-BS	1"	23,81	16/32	15	30°	**PK**	1 3/4"	41,275	8/16	13	30°
PJ	1 1/8"	26,98	16/32	17	30°	**PT-C**	2"	47,625	8/16	15	30°
PC-S	1 1/4"	29,63	12/24	14	30°	**PQ-C**	2 1/4"	53,975	8/16	17	30°
PA-S	1 3/8"	33,33	16/32	21	30°						

Basic programme spline bores to DIN 5482									
Size	Pitch circle	Pitch	No. of teeth	Profile correctio	Size	Pitch circle	Pitch	No. of teeth	Profile correction
A 17 x 14	14,40	1,6	9	+0,600 [1]	**A 35 x 31**	31,50	1,75	18	+0,676
A 20 x 17	19,20	1,6	12	-0,2	**A 40 x 36**	38,00	1,9	20	+0,049
A 25 x 22	22,40	1,6	14	+0,550	**A 45 x 41**	44,00	2	22	+0,181
A 28 x 25	26,25	1,75	15	+0,302	**A 50 x 45**	48,00	2	24	+0,181
A 30 x 27	28,00	1,75	16	+0,327					

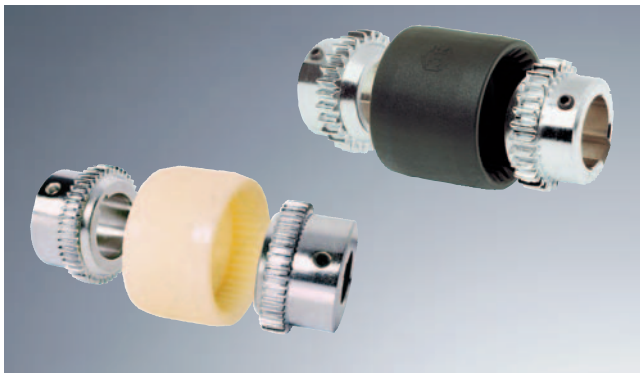
Basic programme spline bores to DIN 5480							
Spline code	Pitch circle	Module	No. of teeth	Spline code	Pitch circle	Module	No. of teeth
20 x 1 x 18 x 7H	18,0	1	18	**40 x 2 x 18 x 7H**	36,0	2	18
20 x 1,25 x 14 x 7H	17,5	1,25	14	**45 x 2 x 21 x 7H**	41,0	2	21
25 x 1,25 x 18 x 7H	22,5	1,25	18	**48 x 2 x 22 x 9H**	44,0	2	22
28 x 1,25 x 21 x 7H	26,25	1,25	21	**50 x 2 x 24 x 7H**	48,0	2	24
30 x 2 x 13 x 7H	26,0	2	13	**60 x 2 x 28 x 8H**	56,0	2	28
30 x 2 x 14 x 8H	28,0	2	14	**75 x 3 x 24 x 7H**	72,0	3	24
35 x 2 x 16 x 8H	32,0	2	16	**80 x 3 x 25 x 8H**	75,0	3	25

Basic programme spline bores to DIN 9611			
Size	Type	No. of teeth	Tip circle
1 3/8"	1	6	34,93

Spline clamping hubs are often adapted to the shafts of hydraulic pumps/hydraulic motors. Please ask us about the corresponding hub length of the spline code!
[1] spline correction different with DIN

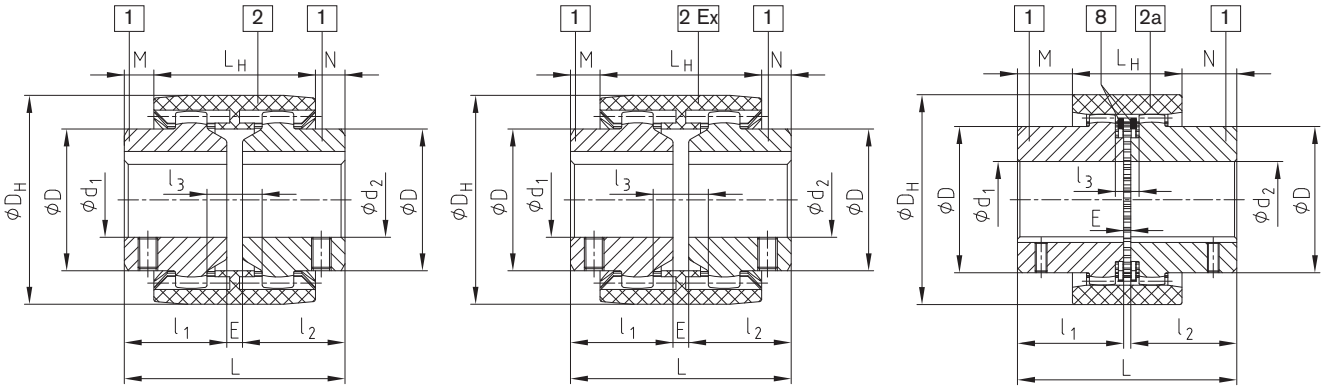
Basic programme inch bores																			
Code	Ød	Ød Zoll	$b^{+0,05}$	$t_2{}^{+0,2}$	Code	Ød	Ød Zoll	$b^{+0,05}$	$t_2{}^{+0,2}$	Code	Ød	Ød Zoll	$b^{+0,05}$	$t_2{}^{+0,2}$	Code	Ød	Ød Zoll	$b^{+0,05}$	$t_2{}^{+0,2}$
Tb	$9,5^{+0,03}$	3/8	3,17	11,1	**A**	$19,05^{+0,03}$	3/4	4,78	21,3	**Sb**	$28,58^{+0,03}$	1 1/8	6,35	31,5	**L**	$44,45^{K7}$	1 3/4	11,11	49,4
DNB	$11,11^{M7}$	7/16	2,4	12,5	**Gs**	$22,22^{+0,03}$	7/8	4,78	24,4	**Sd**	$28,58^{+0,03}$	1 1/8	7,93	32,1	**Lu**	$47,625^{M7}$	1 7/8	12,7	53,5
T	$12,69^{H7}$	1/2	4,75	14,6	**G**	$22,22^{+0,03}$	7/8	4,75	24,7	**Js**	$31,75^{+0,03}$	1 1/4	6,35	34,6	**Da**	$49,20^{+0,03}$	1 15/16	12,7	55,0
Ta	$12,7^{+0,03}$	1/2	3,17	14,3	**F**	$22,22^{+0,03}$	7/8	6,38	25,2	**K**	$31,75^{K7}$	1 1/4	7,93	35,5	**Ds**	$50,77^{+0,03}$	2	12,7	56,4
DNC	$13,45^{H7}$	17/32	3,17	14,9	**Gd**	$22,225^{M7}$	7/8	4,76	24,7	**Ma**	$34,925^{M7}$	1 3/8	7,93	38,7	**D**	$50,80^{+0,03}$	2	12,7	55,1
Do	$14,29^{+0,03}$	9/16	3,17	15,6	**Gf**	$23,80^{+0,03}$	15/16	6,35	26,8	**RH1**	$34,93^{M7}$	1 3/8	9,55	37,8	**Pa**	$53,975^{M7}$	2 1/8	12,7	60,0
E	$15,87^{+0,03}$	5/8	3,17	17,5	**Bs**	$25,38^{+0,03}$	1	6,37	28,3	**Cb**	$36,50^{+0,03}$	1 7/16	9,55	40,9	**U**	$57,10^{+0,03}$	2 1/4	12,7	62,9
Es	$15,88^{+0,03}$	5/8	4,00	17,7	**H**	$25,40^{+0,03}$	1	4,78	27,8	**Ca**	$38,07^{+0,03}$	1 1/2	7,93	42,0	**Ub**	$60,325^{M7}$	2 3/8	15,875	67,6
Ed	$15,87^{+0,03}$	5/8	4,75	18,1	**Hs**	$25,40^{+0,03}$	1	6,35	28,7	**C**	$38,07^{+0,03}$	1 1/2	9,55	42,5	**Wd**	$85,725^{M7}$	3 3/8	22,225	95,8
DNH	$17,465^{H7}$	11/16	4,75	19,6	**R**	$26,95^{+0,03}$	1 1/16	4,78	29,3	**Nb**	$41,275^{M7}$	1 5/8	9,55	45,8	**Wf**	$92,075^{M7}$	3 5/8	22,225	101,9
Ad	$19,02^{+0,03}$	3/4	3,17	20,7	**Sa**	$28,575^{M7}$	1 1/8	6,35	31,7	**Ls**	$44,42^{+0,03}$	1 3/4	9,55	48,8					

Type M, type I and type M...C



- For all applications in the range of general engineering and hydraulics
- Maintenance-free due to the material combination nylon/steel
- Compensating for axial, radial and angular shaft misalignment
- Axial plug-in - easy assembly
- Available with finish bore to ISO fit H7, keyway to DIN 6885 sheet 1 - JS9 as well as taper and inch bores
- Ex Type M...C with carbon fiber reinforced PA, low backlash, higher torques and approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)

Components



Type M **Type M...C** Ex **Type I**

BoWex® type M, type I and type M...C Ex

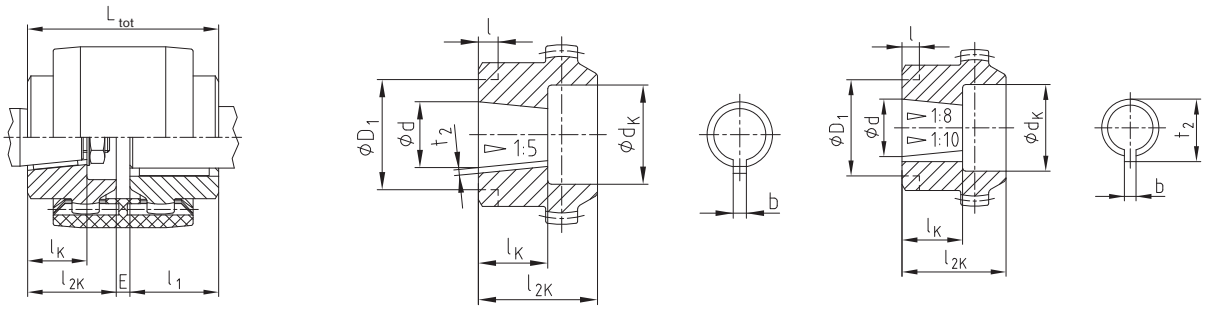
Size		Nominal torque T_{KN} [Nm]		Finish bore d_1, d_2		Dimensions [mm]										Weight with max. bore-Ø			Massmoment of inertia J with max. bore-Ø		
Ex		Type M/I	Type M...C	Pilot bored	max.	l_1, l_2	E	L	L_H	M, N	l_3	D	D_H	Tip circle $ØD_Z$ of hub	Lengthened l_1, l_2 max.	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm²]	Hub [kgcm²]	Total [kgcm²]
M-14	M-14C	10	15	-	15	23	4	50	37	6,5	10	25	40	33	40	0,03	0,07	0,10	0,08	0,09	0,26
M-19	M-19C	16	24	-	20	25	4	54	37	8,5	10	32	47	39	40	0,03	0,10	0,23	0,15	0,16	0,47
M-24	M-24C	20	30	-	24	26	4	56	41	7,5	14	36	53	45	50	0,04	0,14	0,32	0,21	0,36	0,93
M-28	M-28C	45	70	-	28	40	4	84	46	19	13	44	65	54	55	0,08	0,33	0,74	0,65	1,22	3,09
M-32	M-32C	60	90	-	32	40	4	84	48	18	13	50	75	63	55	0,09	0,43	0,95	1,14	2,17	5,48
M-38	M-38C	80	120	-	38	40	4	84	48	18	13	58	83	69	60	0,13	0,55	1,23	1,58	3,55	8,68
M-42		100		-	42	42	4	88	50	19	13	65	92	78	60	0,14	0,68	1,50	2,32	5,98	14,28
M-48	M-48C	140	200	-	48	50	4	104	50	27	13	68	95	78	60	0,23	0,79	1,81	3,90	7,22	18,34
M-65	M-65C	380	560	26 70 lg.	65	55	4	114	68	23	16	96	132	110	70	0,55	1,90	4,35	21,2	31,8	84,8
I-80		700		31	80	90	6	186	93	46,5	20	124	175	145	-	1,13	5,20	11,53	68,9	150,8	370,5
I-100		1200		35	100	110	8	228	102	63	22	152	210	176	-	1,78	9,37	20,52	158,6	401,3	961,2
I-125		2500		45	125	140	10	290	134	78	30	192	270	225	-	3,88	19,44	42,76	562,9	1362,3	3287,5

Order form:

BoWex® M-28	d_1 Ø 20	d_2 Ø 28
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

Taper bores

BoWex® with taper bores



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

Taper bores 1:5

Code	Dimensions [mm] Details of bores				Counterbore d_K and hub length l_{2K} [mm] Recess on hub collar D_1 x l [mm]															
					14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{JS9}	$t_2{}^{+0,1}$	l_K	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						
					-		30 x 7		30 x 7		30 x 5		-		30 x 5							
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

Code	Dimensions [mm] Details of bores				Counterbore d_K and hub length l_{2K} [mm] Recess on hub collar D_1 x l [mm]															
					14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{JS9}	$t_2{}^{+0,1}$	l_K	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 ±0,015	2,4	10,85	17	18	26	18	25	25	26	25	30	25	30	25	30						
					23 x 8		23 x 8		23 x 8		23 x 8		-		23 x 8							
N/1c	11,6	3 JS9	12,90	16,5	18	23			25	26	25	30										
N/1e	13	2,4	13,80	21					25	30	25	30			25	30						
N/1d	14	3 JS9	15,50	17,5	20	23	25	30	28	30	28	30	28	40								
					-		-		-		28 x 10		-									
N/2	17,287	3,2	18,24	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
									-		35 x 12		-		-		-		-		-	
N/2a	17,287	4 JS9	18,94	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
									-		35 x 12		-		-		-		-		-	
N/2b	17,287	3 JS9	18,34	24					28	35					36	40	45	42	45	42		
									-						-		-		-			
N/3	22,002	4 JS9	23,40	28							36	40	36	40	36	40	45	42	45	42	45	50
											-		-		-		-		-		48 x 14	
N/4	25,463	4,78	27,83	36							36	50	36	50	36	50	45	50	45	50	45	62
											-		-		-		58 x 10		58 x 10		-	
N/4b	25,463	5 JS9	28,23	36							36	50					45	50	45	50	45	62
N/4a	27	4,78	28,80	32,5											36	50						
N/4g	28,45	6 JS9	29,32	38,5											36	60	45	60	45	60		
N/5	33,176	6,38	35,39	44											45	60	45	60	45	60	45	62
N/5a	33,176	7 JS9	35,39	44													45	60	45	60	45	62

Taper bores 1:10

Code	Dimensions [mm] Details of bores				Counterbore d_K and hub length l_{2K} [mm]																	
					14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{JS9}	$t_2{}^{+0,1}$	l_K	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

Resistance

KTR-product		Medium							
Component	Material	HFA	HFB	HFC	HFD, HFD-R HFD-S, HFD-T	Hydraulic fluid with mineral oil base	Biological hydraulic oils		
							HETG	HEES	HEPG
Bellhousing P, PK, PL	ALU	●	●	6	●	●	●	●	●
Bellhousing PG	GG	●	●	6	6	●	6	6	6
Bellhousing PS	steel	●	●	6	6	●	6	6	6
Bellhousing KPT	synthetic/ALU	●	●	6	●	●	●	●	●
Damping ring D, DT, DTV	ALU/NBR	●	●	6	1	●	●	●	●
Bellhousing with integrated oil cooler PIK	steel/ALU	●	●	6	1	●	●	●	●
Oil-water coolers TAK, TEK	-	●	●	6	6	●	6	6	6
Foot flange PTFL, PTFS	ALU	●	●	6	●	●	●	●	●
Foot flange PTFS, 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 pan BAKW	steel	●	●	6	6	●	6	6	6
Steel tanks	steel	●	●	6	6	●	6	6	6
Tank covers from steel	steel	3	●	6	6	3	●	●	●
Tank covers from aluminium	ALU	●	●	6	●	●	●	●	●
Oil level indicators	-	●	●	●	5	●	6	6	6
Oil level sight glass	-	●	●	●	5	●	6	6	6
Filler breather	-	●	●	●	5	●	6	6	6
Cleaning cober	ALU	●	●	6	●	●	●	●	●
O-sealing ring	NBR	●	●	●	1/2	●	●	●	●
Spline seal	NBR	●	●	●	1/2	●	●	●	●
Gaskets type DP, DZ	NBR	●	●	●	1/2	●	●	●	●
Damping rod	steel/NR	1	1	1	5	1	6	6	6
Elastic flanges	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 heaters EH	brass/stainless steel	●	●	●	●	●	●	●	●
Tank heaters EHP	steel/Fiber NBR	●	●	6	●	●	●	●	●
Tank heaters TEHM	stainless steel/copper	5	5	5	5	●	5	5	5
Plate heat exchanger	-	●	●	6	6	●	6	6	6
BoWex® sleeve	PA	●	●	●	●	●	●	●	●
BoWex® hub	steel	3	●	4	4	3	●	●	●
ROTEX® spider ➔ standard from polyurethane	PUR	1	1	1	5	●	6	6	6
ROTEX® hub	steel	3	●	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 column notes

● = 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 = An additional layer with epoxy resin / DD lacquers is necessary.
5 = Not resistant
6 = Consultation is necessary, phone +49 5971 798-0

Please note:

The figures indicated may only be considered as a general standard. In case of doubt we would absolutely recommend to perform a test. The aforementioned details do not entitle for any legal claim, we definitely do neither take over any warranty nor liability. Purely the chemical and mechanical resistance is not sufficient to assess whether a certain product is suitable or not. The standards have to be considered in particular, as an example, with flammable liquids (explosion protection).

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