

## Hydraulic components:

- Bellhousings and accessories
- Damping elements
- Tanks
- Thermomanagement

Made for Motion

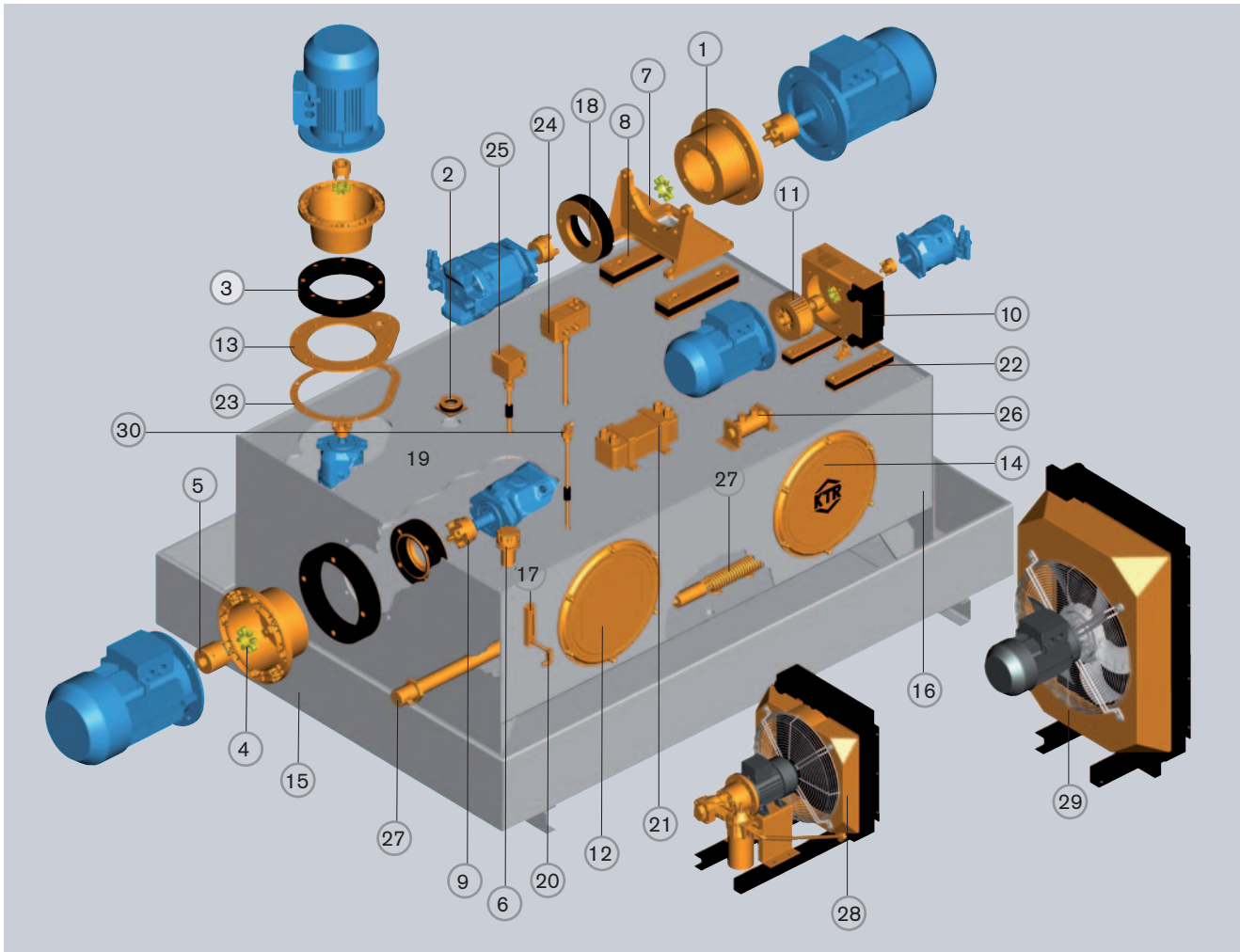


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## Overview

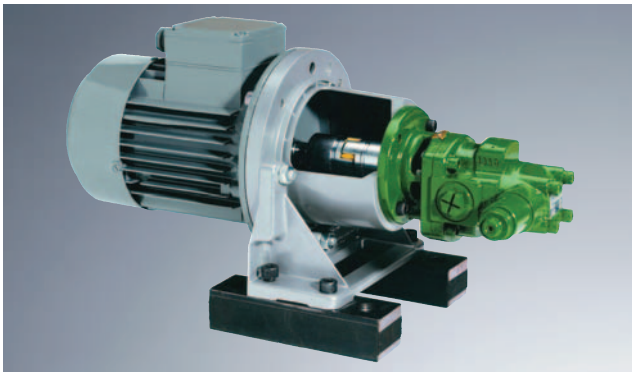


- |  |  |
|--|--|
| ① Bellhousing type PK/PL                                       | ⑩ Bellhousing PIK with integrated oil cooler                   |
| ② Elastic flange   | ⑪ Fan for PIK  |
| ③ Damping ring design DT                                       | ⑫ Standard cleaning cover                                      |
| ④ ROTEX® spider  | ⑬ Additional flange type ZO                                    |
| ⑤ ROTEX® coupling hub, motor side                              | ⑭ Cleaning cover with logo according to customer specification |
| ⑥ Filler breather (with ventilation filter)                    | ⑮ Oil sump pan   |
| ⑦ Foot flange type PTFS (VDMA 24 561 part 1)                   | ⑯ Level-temperatur-switch NVT                                  |
| ⑧ Damping rod design DSFS for foot flange type PTFS            | ⑰ Steel tanks type BSK/BNK/BEK                                 |
| ⑨ ROTEX® coupling hub, pump side                               | ⑱ Machining of tank according to customer specification        |
| ⑪ Fan for PIK  | ⑲ Oil-level indicator type KO                                  |
| ⑫ Standard cleaning cover                                      | ⑳ Damping ring type D  |
| ⑬ Additional flange type ZO                                    | ㉑ Temperature switch type TS                                   |
| ⑭ Cleaning cover with logo according to customer specification | ㉒ PHE-Plate heat exchanger                                     |
| ⑮ Oil sump pan   | ㉓ Damping rod design DSK for PIK                               |
|  | ㉔ Gasket type DZ for additional flange type ZO                 |
|  | ㉕ Industrial controller IR                                     |
|  | ㉖ IRDN Digital industrial control with level switch            |
|  | ㉗ Horizontally mounted cooler TAK                              |
|  | ㉘ Tank heaters   |
|  | ㉙ OPC Cooling-pump-unit with hydraulic pump filter             |
|  | ㉚ OAC-Oil/air coller   |
|  | ㉛ Level-temperatur-switch NVT                                  |

The customer has to protect rotating parts from unintended touch (Safety of Machines DIN EN 292 part 2).

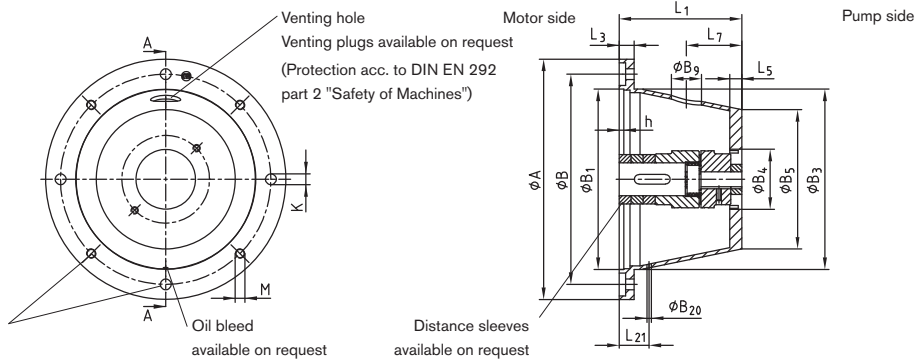
The fastening screws should be secured against release by the customer (e. g. by anaerobic bonding agents like Loctite®).

## 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](http://www.ktr.com)
- Operating temperature: -40 °C to +100 °C
- Notice our mounting instructions

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



Screw tightening torque with  
screw quality 5.6

Bellhousings according to VDMA 24561 design A																					
IEC-motor size (shaft end) d <sub>1</sub> x l <sub>3</sub>	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFE/PTFS *)	Dimensions [mm]												Min.	Venting hole		Oil bleed	
					A	B	B <sub>1</sub>	B <sub>3</sub>	h	K	M	L <sub>1</sub>	L <sub>3</sub>	L <sub>5</sub> <sup>1)</sup>	B <sub>5</sub>	B <sub>4</sub>		B <sub>9</sub>	L <sub>7</sub>	B <sub>20</sub>	L <sub>21</sub>
71 (14 x 30)	0,25	PK 160/5/..	160	160	160	130	110	110	4	9	M8	80	13	8	105	27	25	33	7,5	28	
	0,37	PL 160/5/..										90			29	38					
80 (19 x 40)	0,55	PK 200/3/..	200	200	200	165	130	145	4	11	M10	100	16	12	124	40	36	43	7,5	36	
	0,75	PL 200/3/..										110			37	47					
	1,1	PL 200/8/..										124			57	60					
	1,5	PFL 200/6/..										140			47	62					
100L/112M (28 x 60)	2,2	PK 250/6/..	250	250	250	215	180	190	5	14	M12	120	19	12	177	49	40	54	7,5	43	
	3	PL 250/3/..										124			42	52					
	4	PL 250/6/..										148			56	64					
		PFL 250/18/..										175			77	77					
132S/132M (38 x 80)	5,5	PK 300/5/..	300	300	300	265	230	234	5	14	M12	144	20	15	205	57	50	63	7,5	45	
	7,5	PL 300/15/..										150			77	66					
		PK 300/4/..										155			56	74					
		PL 300/4/..										168			57	74					
160M/160L (42 x 110)	11	PK 350/4/..	350	350	350	300	250	260	6	17	M16	188	26	15	225	59	50	82	7,5	51	
	15	PK 350/6/..										204			56	87					
	18,5	PK 350/10/..										228			97	102					
	22	PL 350/7/..										256			88	115					
200L (55 x 110)	30	PK 400/4/..	400	400	400	350	300	300	6	17	M16	204	26	20	230	75	50	92	7,5	51	
		PK 400/5/..										228			95	104					
		PL 400/5/..										256			97	118					
225S/225M (60 x 140)	37	PK 450/2/..	450	450	450	400	350	350	6	17	M16	234	25	20	260		50	107	7,5	51	
	45	PK 450/3/..										262			97	121					
		PL 450/3/..										285			133	133					
250M (65 x 140)	55	PK 550/8/..	550	550	550	500	450	450 <sup>2)</sup>	6	17	M16	248	26	25	340	97	50	116	7,5	51	
	75	PL 550/1/..										265			120	125					
	90	PK 550/3/..										275			97	130					
		PL 550/3/..										295			123	140					
280S/280M (75 x 140)	110	PK 660/2/..	660	660	660	600	550	550 <sup>2)</sup>	8	22	M20	315	32	30	400	150	50	135	7,5	60	
	132	PL 660/5/..										310			120	147					
	160	PK 660/2/..										330			97	157					
	200	PL 660/4/..										343			174	163					
355L/400M (100 x 210)	355	PK 880/1/..	800	800	800	740	680	680 <sup>2)</sup>	8	22	M20	370	40	36	500	148	50	135	7,5	70	
	710	PK 800/3/..										395			197	160					

## Bellhousings

Other bellhousings																					
IEC-motor size (shaft end) d <sub>1</sub> x l <sub>3</sub>	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFE/PTFS *)	Dimensions [mm]																
					A	B	B <sub>1</sub>	B <sub>3</sub>	h	K	M	L <sub>1</sub>	L <sub>3</sub>	L <sub>5</sub> <sup>1)</sup>	B <sub>5</sub>	Min. B <sub>4</sub>	Venting hole B <sub>9</sub> L <sub>7</sub>		Oil bleed B <sub>20</sub> L <sub>21</sub>		
71 (14 x 30)	0,25	PFK160/6/..	160	160	160	130	110	110	4	9	M8	79	13	13	140	30	25	35	7,5	28	
	0,37	PFL160/6/..										101				60		46			
80 (19 x 40)	0,55	PK 200/4/..	200	200	200	165	130	145	4	11	M10	109	16	10	144	57	10	46	7,5	36	
	0,75	PK 200/11/..										45				30		15		30	
90S/90L (24 x 50)	1,1	PK 200/13/..	200	200	200	165	130	145	4	11	M10	55	16	10	144	30	10	18	7,5	36	
	1,5	PK 200/30/..										152				30		71		30	
100L/112M (28 x 60)	2,2	PK 250/13/..	250	250	250	215	180	190	5	14	M12	79	18	12	187	97	10	20	7,5	43	
	3	PK 250/15/..										90				37		25		20	
132S/132M (38 x 80)	5,5	PK 300/8/..	300	300	300	265	230	234	5	14	M12	159	20	15	231	77	30	40	7,5	45	
	7,5	PK 300/9/..										85				97		32		32	
160M/160L (42 x 110)	11	PK 350/8/..	350	350	350	300	250	260	6	17	M16	99	25	15	259	53	50	90	7,5	51	
	15	PK 350/11/..										210				57		95		52	
180M/180L (48 x 110)	18,5	PL 350/11/..	350	350	350	300	250	260	6	17	M16	130	26	18	252	92	50	60	7,5	51	
	22	PK 350/18/..										146				77		67		80	
200L (55 x 110)	30	PL 400/3/..	400	400	400	350	300	300	6	17	M16	159	25	20	244	97	50	73	7,5	51	
	37	PK 400/12/..										184				82		73		83	
225S/225M (60 x 140)	45	PK 450/5/..	450	450	450	400	350	350	6	17	M16	165	26	20	260	120	50	80	7,5	51	
	45	PK 450/6/..										185				83		73		83	
250M (65 x 140)	55	PL 450/9/..	450	450	450	400	350	350	6	17	M16	176	26	20	259	98	50	116	7,5	51	
	75	PK 450/12/..										253				90		101		116	
280S/280M (75 x 140)	90	PL 450/12/..	450	450	450	400	350	350	6	17	M16	204	26	20	260	97	50	101	7,5	51	
	90	PK 550/8/..										222				90		101		116	
315S/315M (80 x 170)	110-	PK 550/4/..	550	550	550	500	450	450 <sup>2)</sup>	6	17	M16	190/192	32	30	465	80	50	115	7,5	60	
	160	PL 550/4/..										207				124		122		122	
355L/400M (100 x 210)	355	PK 660/3/..	660	660	660	600	550	550 <sup>2)</sup>	8	22	M20	217	40	36	520	149	50	140	7,5	70	
	710	P 800/3/..										443				305		206		206	

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

<sup>1)</sup> Bottom of pot does not consist of sold material → ribbed

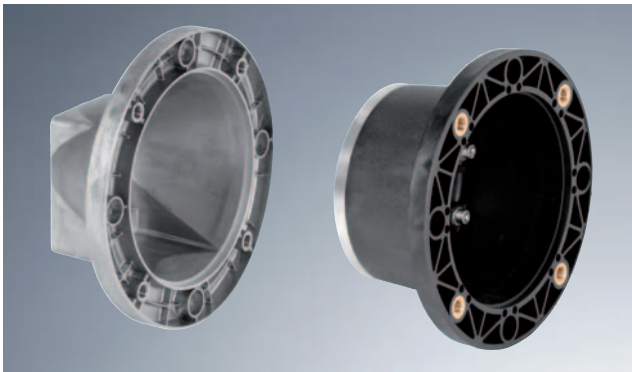
<sup>2)</sup> Passing from dimension B<sub>3</sub> to flange radius R = 5.

\*) For vertical assembly or lateral assembly on the tank gaskets are available (type DP, see page 189).

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 required, please mention in your order.

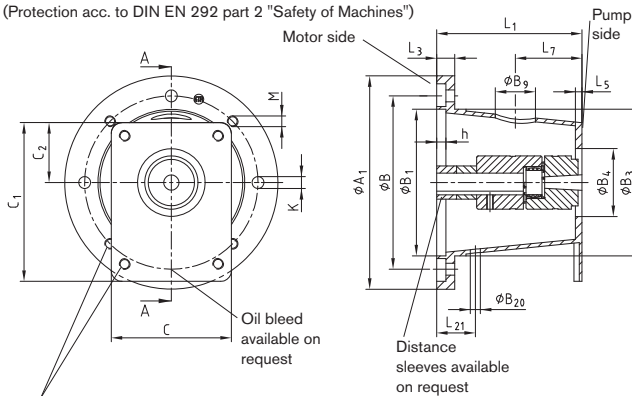
Order form	PL	PK	P	450	3	8
	Bellhousing type, Long	Bellhousing type, short, "K"	Former bellhousing type	Flange diameter of IEC Motor	Model code	Internal code

## Bellhousings



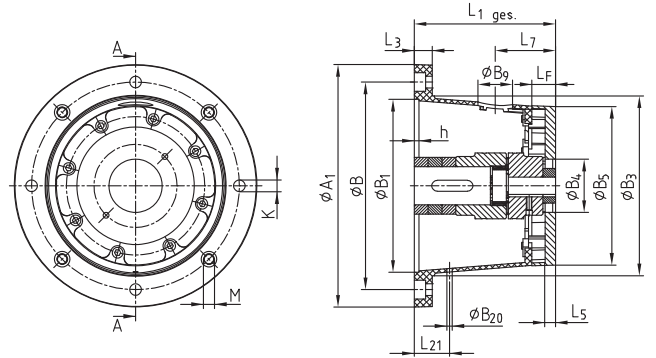
- Motor and pump shaft centered; designed for high loads
- Both flange sides are finish machined
- Type KPT: Bellhousing from special nylon material
  - Accurate to size with higher temperatures and moisture
  - Stiffness similar to aluminium bellhousings
  - Very good damping properties
  - Flange side for pump mounting from aluminium
- Low-cost alternative to bellhousings with damping ring
- Operating temperature: -10 °C to +60 °C
- 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](http://www.ktr.com)

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



Screw tightening torque with screw quality 5.6

**Bellhousings with rectangular flange**



**Bellhousings from nylon**

### Bellhousings from aluminium with rectangular flange

IEC-motor size	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/PTFS *)	Dimensions [mm]																																	
					A1	B	B1	B3	h	K	M	L1	L3	L5	C	C1	C2	Min.	Venting hole		Oil bleed																	
					B4	B9	L7	B20	L21																													
71	0,25 0,37	PL 160/1/..	160	160	160	130	110	110	4	9	M8	70	13	8	70	91	35	20	16	27	7,5	28																
		PL 160/4/..										110		12									90	120	45	22	25	43										
		PK 160/4/..										95		12									90	120	45	22	25	43										
80 90S/90L	0,55 1,5 2,2	PL 200/1/..	200	200	200	165	130	145	4	11	M10	90	16	12	70	91	35	22	25	37	7,5	36																
		PL 200/2/..										100		12									90	90	120	22	42											
		PL 250/1/..										110		12									90	120	45	22	45											
100L/112M	3 4	PL 250/2/..	250	250	250	215	180	190	5	14	M12	115	18	12	120	150	53	47	36	47	7,5	43																
		PL 250/7/..										125		12									145	180	64	46	52											
												132		20									15	145	180	64	33	50	56	7,5	45							
132S/132M	5,5 7,5	PL 300/1/..	300	300	300	265	230	234	5	14	M12	132	20	15	120	150	53	33	50	59	7,5	45																
		PK 300/2/..										137		15									145	180	64	33	59											
												171		26									15	120	156	59	33	50	73	7,5	51							
160M/160L	11	PL 350/1/..	350	350	350	300	250	260	6	18	M16	181	25	15	145	180	64	31	50	78	7,5	51																
180M/180L	22	PL 350/2/..																																				

### Bellhousings from nylon

IEC-motor size	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/PTFS *)	Dimensions [mm]																		
					A1	B	B1	B3	h	K	M	L1	L <sub>F</sub>	L3	L5	B5	Min.	Venting hole		Oil bleed			
					B4	B9	L7	B20	L21														
100L/112M	2,2 3 4	KPT 250/2/..	250	250	250	215	180	190	7	14	M12	120	12	19	12	166	35	40	54	7,5	43		
		KPT 250/3/..										124	16									42	52
		KPT 250/4/..										135	27									58	57
132S/132M	5,5 7,5	KPT 300/2/..	300	300	300	265	230	234	7	14	M12	144	15	20	15	208	57	50	63	7,5	45		
		KPT 300/3/..										155	26									56	68
		KPT 300/4/..										168	39									57	74
160M/160L 180M/180L	11 22	KPT 300/5/..	350	350	350	300	250	260	7	17	M16	196	67	26	15	230	57	50	84	7,5	51		
		KPT 350/2/..										188	18									56	82
		KPT 350/3/..										204	34									77	87
		KPT 350/4/..										228	58				97	102					

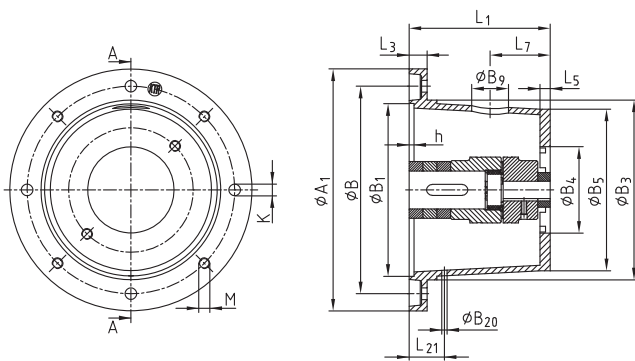
If venting holes or oil bleeds are required, please mention in your order.

Order form	PL	PK	KPT	250	2	8
	Bellhousing type, Long	Bellhousing type, short, "K"	Bellhousing design from nylon	Flange diameter of IEC Motor	Model code	Internal code

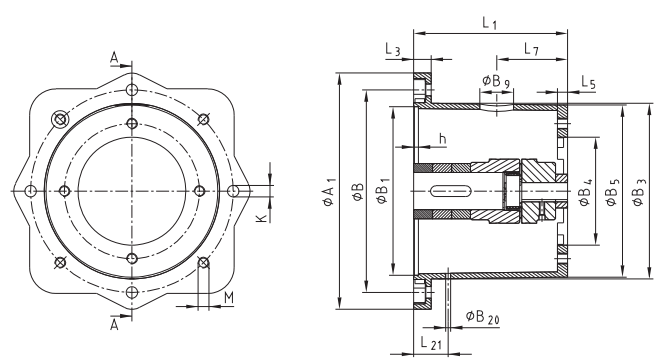
## Bellhousings



- Bellhousing from cast iron
- PSG types particularly for servo motor drives with square flange
- Bellhousing suitable for high loads
- Suitable for mining, offshore applications and servo drives
- 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 in short term
- Notice our mounting instructions



Bellhousings from cast iron (Type PG)



Bellhousings from cast iron for servo motors (Type PSG)

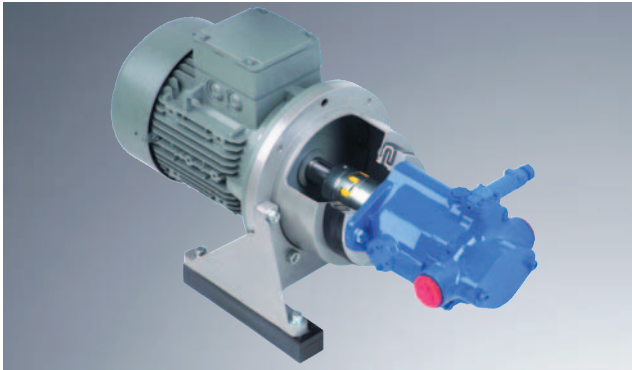
Bellhousings from cast iron																				
IEC-motor size	kW with n = 1500 rpm	Bell-housing Size	Gasket DP Size	Foot flange PTFL/PTFS *)	Dimensions [mm]															
					A <sub>1</sub>	B	B <sub>1</sub>	B <sub>3</sub>	h	K	M	L <sub>1</sub>	L <sub>3</sub>	L <sub>5</sub>	B <sub>5</sub>	Min.	Venting hole		Oil bleed	
					B <sub>9</sub>	L <sub>7</sub>	B <sub>20</sub>	L <sub>21</sub>												
132S/132M	5,5 7,5	PG 300/5/..	300	300	300	265	230	234	5	14	M12	144	20	15	215	30	50	63	7,5	45
160M/160L	11	PG 350/4/..	350	350	350	300	250	260	7	17	M16	188	26	15	242	76	50	82	7,5	51
180M/180L	22	PG 350/6/..										204			235			87		
200L	30	PG 400/2/..	400	400	400	350	300	300	7	17	M16	256	26	20	280	97	50	118	7,5	51
		PG 400/4/..										204			260			92		
		PG 400/5/..										228			280			104		
225S/225M	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		
250M	55	PG 550/1/..	550	550	550	500	450	450	7	17	M16	265	26	25	360	97	50	125	7,5	51
	75	PG 550/8/..										248			349			116		
280S/280M	90	PG 550/8/..	550	550	550	500	450	450	7	17	M16	248	26	25	349	97	50	116	7,5	51
315S/315M	110 - 160	PG 660/5/..	660	660	660	600	550	550	8	22	M20	330	32	30	425	119	50	157	7,5	60

Bellhousings from cast iron for servo motors																			
For Servo- and IEC-motors	Bell-housing Size	Gasket DP Size	Foot flange PTFL/PTFS *)	Dimensions [mm]															
				A <sub>1</sub>	B	B <sub>1</sub>	B <sub>3</sub>	h	K	M	L <sub>1</sub>	L <sub>3</sub>	L <sub>5</sub>	B <sub>5</sub>	Min.	Venting hole		Oil bleed	
				B <sub>9</sub>	L <sub>7</sub>	B <sub>20</sub>	L <sub>21</sub>												
	PSG 200/1/..	200	200	200	165	130	145	7	11	M10	124	16	12	170	55	36	60	7,5	36
	PSG 250/1/..	250	250	250	215	180	190	7	13,5	M12	175	19	12	225	70	40	77	7,5	43
	PSG 350/10/..	350	350	350	300	250	260	7	17,5	M16	228	26	15	255	95	50	102	7,5	51

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

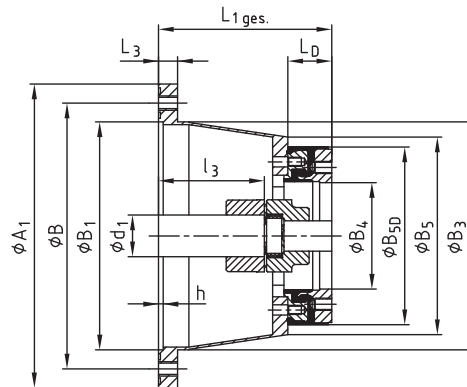
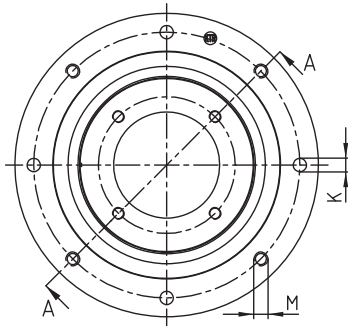
Order form	PG	PSG	250	1	4
	Bellhousing design from cast iron	Bellhousing design for servo drives	Flange diameter of IEC Motor	Model code	Internal code

## 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](http://www.ktr.com)
- Notice our mounting instructions

Please mention in your order if venting holes or oil bleeds, respectively, are requested.  
For dimensions see page 182/183.



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

Damping rings type D in combination with bellhousings <sup>1)</sup>

IEC-motor size (shaft end) d <sub>1</sub> x l <sub>3</sub>	kW with n = 1500 rpm	Bell-housing Size	Damping ring Size	Foot flange Size	Dimensions [mm]														
					A <sub>1</sub>	B	B <sub>1</sub>	L <sub>1 ges.</sub>	L <sub>3</sub>	K	M	h	L <sub>D</sub>	B <sub>3</sub>	Min. B <sub>4</sub>	Max. B <sub>4</sub>	B <sub>5</sub>	B <sub>5D</sub>	
90S/90L (24x50)	1,1 1,5	PK 200/11/..	D 150/..	PTFL 200	200	165	130	90	16	11	M10	4	45	145	18	83	145	148	
		PL 200/11/..						100											
		PK 200/30/..						124											
100L/112M (28x60)	2,2 3	PK 250/15/..	D 150/..	PTFL 250	250	215	180	106	18	14	M12	5	45	190	18	83	187	190	
		PL 250/15/..						124											
		PK 250/17/..						145											
		PK 250/15/..	106	D 190/..															
		PL 250/15/..	124																
		PK 250/17/..	145																
132S/132M (38x80)	5,5 7,5	PK 300/8/..	D 150/..					155						45	18	83	231	148	
		PK 300/9/..						130											
		PL 300/9/..						144											
		PK 300/15/..	179	D 190/..	PTFL 300	300	265	230	195	20	14	M12	5	45	234	30	121	231	190
		PL 300/15/..	155																
		PK 300/8/..	130																
		PK 300/9/..	130	D 230/..															
		PL 300/9/..	157																
		PK 300/15/..	196																
		160M/160L (42x110)	11 15	PK 350/11/..	D 150/..					175						45			
PL 350/11/..	190																		
PK 350/18/..	204																		
PK 350/18/..	229			D 190/..	PTFL 350	350	300	250	25	26	17	M16	6		260	30	121	252	190
PL 350/18/..	175																		
PK 350/11/..	188																		
180M/180L (48x110)	18,5 22	PK 350/18/..	D 190/..					204											
		PL 350/18/..						229											
		PK 350/11/..						188											
		PK 350/18/..	204	D 230/..															
		PL 350/11/..	204																
		PK 350/18/..	217																
		PL 350/18/..						242											

Continued on page 187



## Damping rings D in combination with bellhousings

Damping rings type D in combination with bellhousings <sup>1)</sup>																			
IEC-motor size (shaft end) d <sub>1</sub> × l <sub>3</sub>	kW with n = 1500 rpm	Bell-housing Size	Damping ring Size	Foot flange Size	Dimensions [mm]										Min.	Max.	B <sub>5</sub>	B <sub>5D</sub>	
					A <sub>1</sub>	B	B <sub>1</sub>	L <sub>1 ges</sub>	L <sub>3</sub>	K	M	h	L <sub>D</sub>	B <sub>3</sub>					B <sub>4</sub>
160M/160L (42x110)	11	PK 350/11/..						188	25										
	15	PL 350/11/..						204	26										
180M/180L (48x110)	18,5	PK 350/18/..	D 260/..	PTFL 350	350	300	250	217		17	M16	6	58	260	97	143	252	264	
	22	PL 350/18/..						242	25										
200L (55x110)	30	PL 350/48/98						247											
		PL 400/3/..						210										290	
225S/225M (60x140)	37	PK 400/12/..	D 190/..					215					45		30	121		190	
		PL 400/12/..						229											
250M (65x140)	55	PK 400/12/..	D 230/..	PTFL 400	400	350	300	228	20	17	M16	6		300		143			
		PL 400/12/..						242										260	
280S/280M (75x140)	75	PK 400/12/..	D 260/..					242					58		97		164		264
		PL 400/12/98						247											
315S/315M (80x170)	110	PL 450/5/94						230										325	
		PK 450/12/94	D 190/..					249					45		30	121		260	190
315L (80x170)	160	PL 450/12/94						267											
		PK 450/5/96						243											325
315L (85x170)	200	PK 450/6/96	D 230/..					234								143		260	234
		PK 450/12/96		PTFL 450	450	400	350	262	25	17	M16	6							
315L (85x170)	200	PL 450/12/96						280											
		PK 450/5/98						243					58		97			325	
315L (85x170)	200	PK 450/6/98	D 260/..					234									164	260	265
		PK 450/12/98						262											
315L (85x170)	200	PL 450/12/98						280											
		PK 450/5/..	D 330/..					268					83		120	208		325	330
315L (85x170)	200	PK 550/4/94						237											355
		PL 550/4/94	D 190/..					252					45		30	121		330	190
315L (85x170)	200	PK 550/8/94						262											340
		PK 550/4/96						248											355
315L (85x170)	200	PL 550/4/96	D 230/..					265								143		330	234
		PK 550/8/96						275										340	
315L (85x170)	200	PK 550/4/98						248	26	17	M16	6	58	450	97			355	
		PL 550/4/98	D 260/..					265									164	330	264
315L (85x170)	200	PK 550/8/98						275											340
		PK 550/4/..						275											355
315L (85x170)	200	PL 550/4/..	D 330/..					290					83		120	208		330	330
		PK 550/8/..						300										340	
315L (85x170)	200	PK 660/3/98	D 260/..					310					58		97	164		500	264
		PL 660/3/98						318										340	
315L (85x170)	200	PK 660/3/..	D 330/..	PTFL 660	660	600	550	330	32	22	M20	8		550				500	
		PL 660/3/..						343					83		120	208		340	330
315L (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 182 and 183), phone +49 5971 798-0.

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

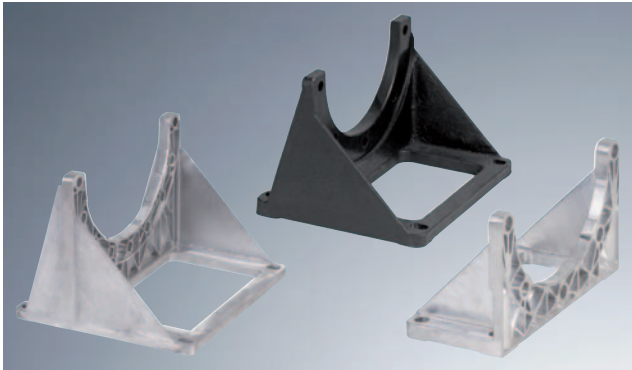
● For your power pack please pay attention to a separation of the piping, e. g. by tubes or elastic flanges (see page 191).

● For further measures of noise damping we recommend to use damping rods (see page 194/195) or DT/DTV rings (see page 193).

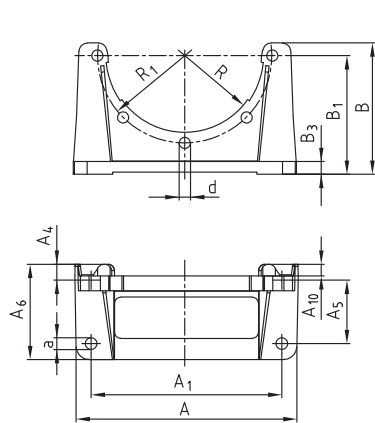
For the detailed order designation please see our PC/Internet selection programme or mention the IEC motor size and detailed pump type for selection.

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

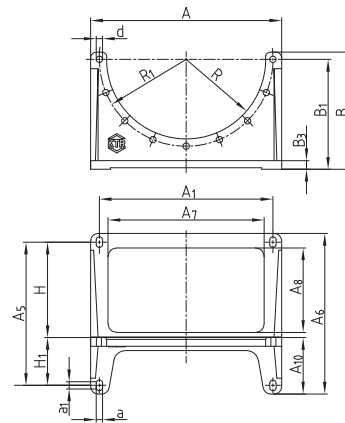
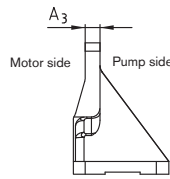
## Foot flange



- The designing of PTFL by means of the finite element method permits very high loading capacity with minimum weight
- 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 from aluminium (A1)

Foot flange size	For bellhousing size	Dimensions [mm]													
		A	A <sub>1</sub>	A <sub>3</sub>	A <sub>6</sub>	A <sub>4</sub>	A <sub>5</sub>	A <sub>10</sub>	B	B <sub>1</sub>	B <sub>3</sub>	R	R <sub>1</sub>	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 from aluminium (A1)

Foot flange size	For bellhousing size	Dimensions [mm]																			
		A	A <sub>1</sub>	A <sub>3</sub>	A <sub>5</sub>	A <sub>6</sub>	A <sub>7</sub>	A <sub>8</sub>	A <sub>10</sub>	B	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	R	R <sub>1</sub>	a	a <sub>1</sub>	d	H	H <sub>1</sub>
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	228	130	150	18	12	18	175	90
PTFS 400	400	400	350	20	300	350	300	185	125	277	260	193	20	241	150	175	18	12	18	200	100
PTFS 450	450	450	400	25	335	385	350	207	138	312	295	232	20	290	175	200	18	12	18	225	110

### Foot flange design PTFS from nodular iron (GJS)

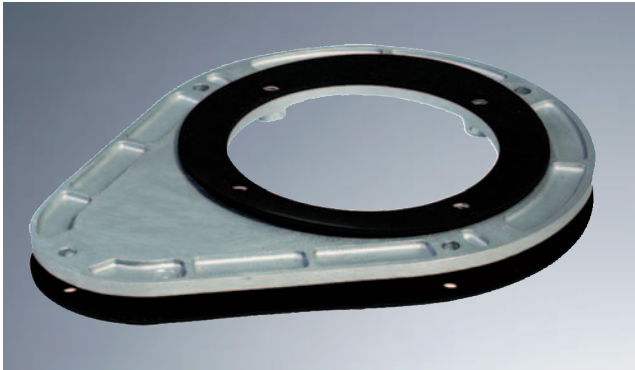
Foot flange size	For bellhousing size	Dimensions [mm]																			
		A	A <sub>1</sub>	A <sub>3</sub>	A <sub>5</sub>	A <sub>6</sub>	A <sub>7</sub>	A <sub>8</sub>	A <sub>10</sub>	B	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	R	R <sub>1</sub>	a	a <sub>1</sub>	d	H	H <sub>1</sub>
PTFS 250	250	250	215	17	185	230	190	–	82	165	155	120	15	150	95	107,5	14	10	14	125	60
PTFS 350	350	350	300	20	265	305	260	160	110	252	235	193	22	232	130	150	18	12	18	175	90
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

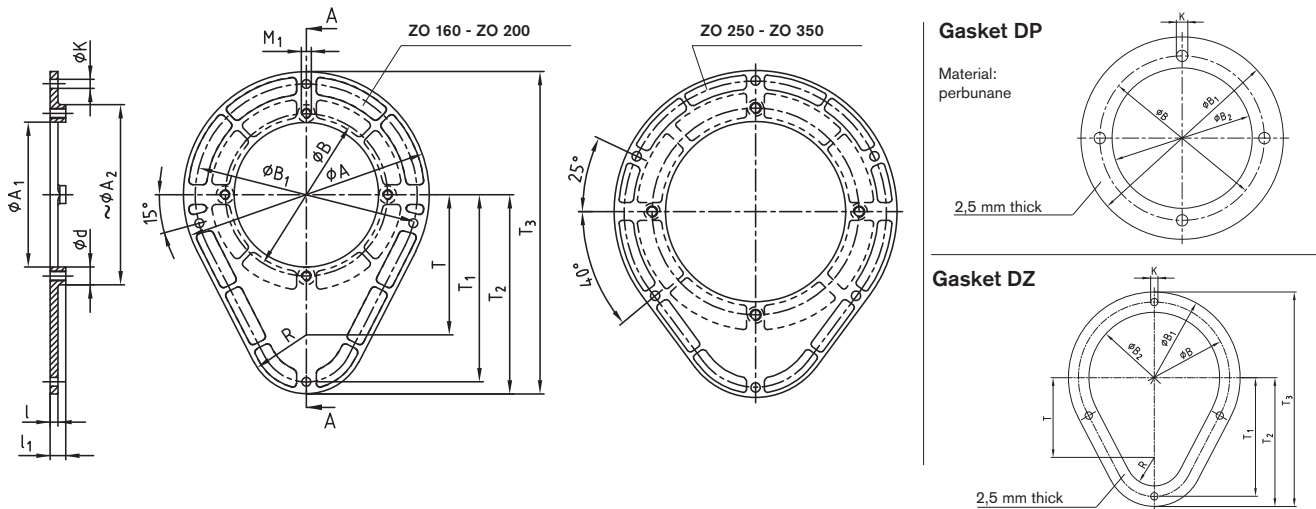
In order to obtain the full loading capacity of the foot flanges all existing fastening bores have to be screwed up with the bellhousing!

Order form	PTFL	350	GJS
	Foot flange design	Size	Material

## Accessories for bell housings



- 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 bell housings up to size P 350
- DP and DZ gaskets from Perbunane (NBR) available from stock
- 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

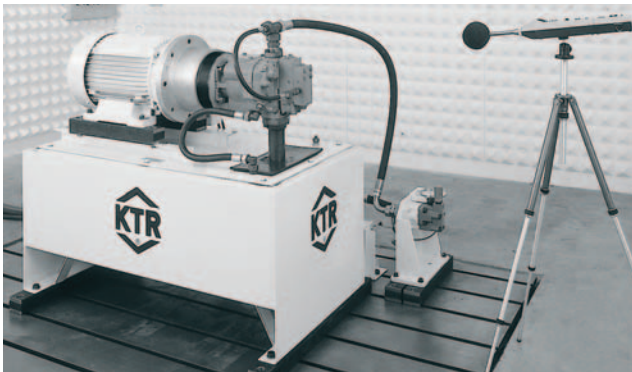


Mounting flange ZO																	
Size	Dimensions [mm]															Gasket DZ size	Gasket DP size
	A	A <sub>1</sub>	~A <sub>2</sub>	B	B <sub>1</sub>	K	M <sub>1</sub>	R	T	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	d	l	l <sub>1</sub>		
ZO 160	210	112	150	130	185	9	M8	60	97,5	145	157,5	262,5	18	7	15	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 bell housings and mounting flanges										
Size	Dimensions [mm]									
	B	B <sub>1</sub>	B <sub>2</sub>	T	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	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

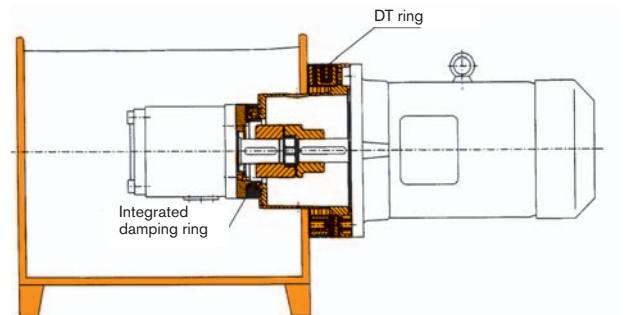
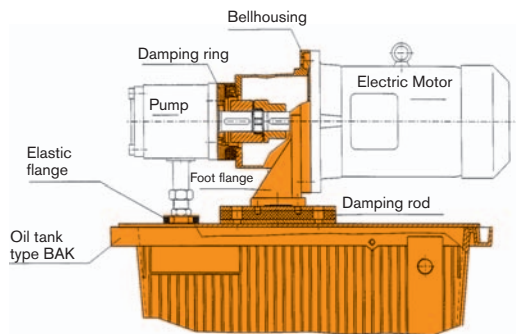
## Damping elements



- 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.

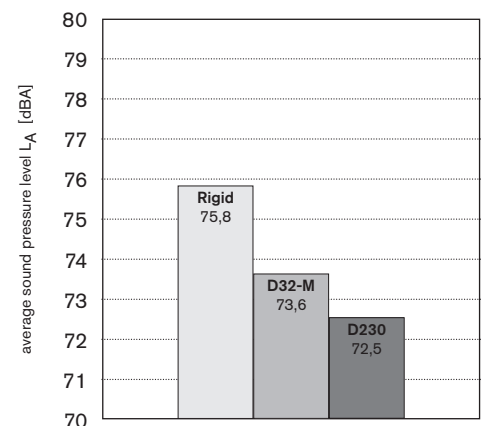
### Result of a noise measurement

#### Test data:

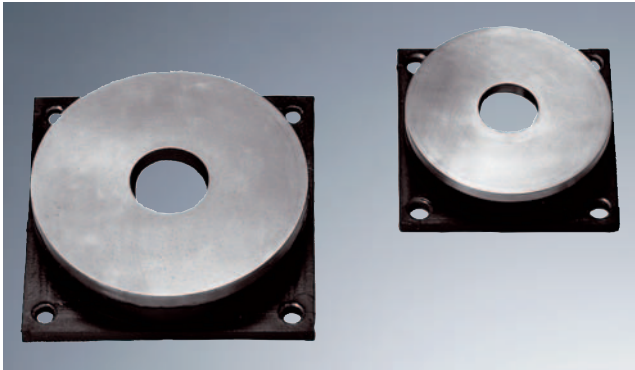
Electric motor: rotary current asynchronous 180M  
18,5 kW, n = 1450 rpm  
type B 3 / B 5

Pump: axial piston pump

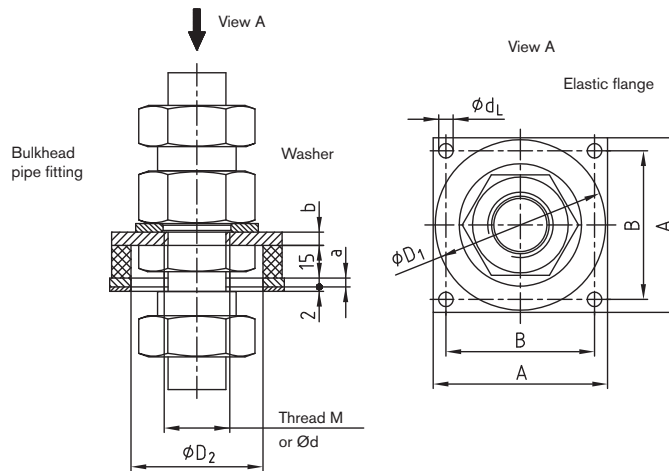
Coupling: ROTEX® 42 - 92 Shore A



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

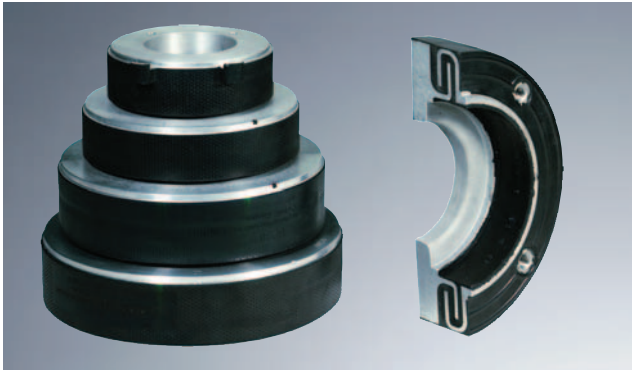
▲ Available from stock

<sup>\*)</sup> Bulkhead pipe fitting and washer do not form part of our supply.

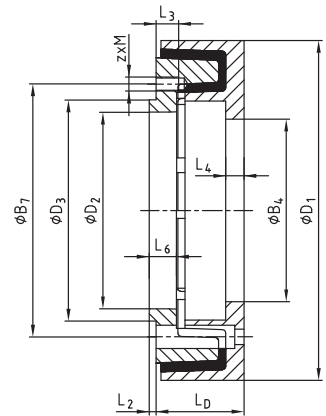
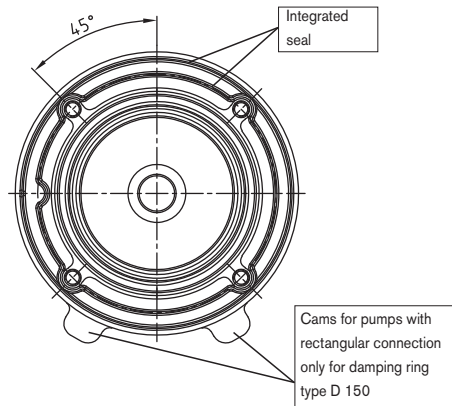
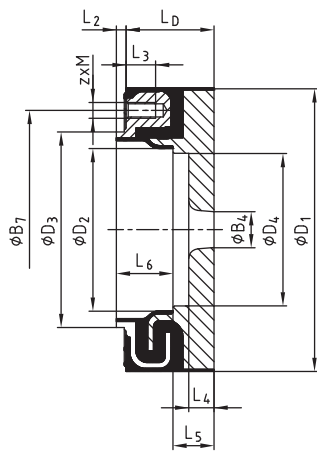
<sup>\*\*)</sup> Counter nut cannot be assembled.

Order form	ERD	100	–	2.3
	Elastic flange	Size	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](http://www.ktr.com)



D 84 / D 125 / D 145

Damping ring D														
Size	Dimensions [mm]													
	B <sub>4</sub>		B <sub>7</sub>	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	L <sub>D</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	L <sub>6</sub>	z x M <sup>2)</sup>
	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 <sup>3)</sup>
D 145/..A	390	400	<sup>1)</sup>	590	370	400	–	145	12	45	35	35	47	M24 <sup>3)</sup>

<sup>1)</sup> Pitch circle diameter on request.

<sup>2)</sup> Tightening torque of screw quality 5.6.

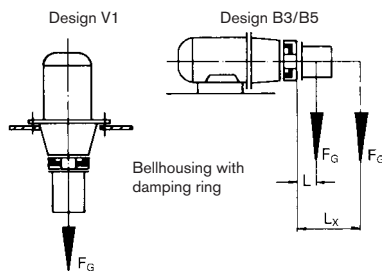
<sup>3)</sup> Number of fixing holes on request.

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 <sub>max.</sub> [N]	650	1800	3000	2300	4100	4000	6000	10000

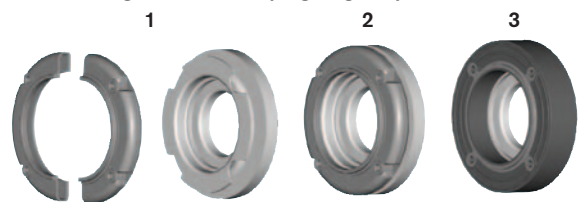
With a different distance of center of gravity L<sub>x</sub> the permissible weight load is converted. If L<sub>x</sub> < L, F<sub>max.</sub> = F<sub>perm.</sub>

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

The permissible weight load F<sub>perm.</sub> must not be exceeded by the existing weight load F<sub>G</sub> (radial or axial).



### Arrangement of damping ring D up to D 330

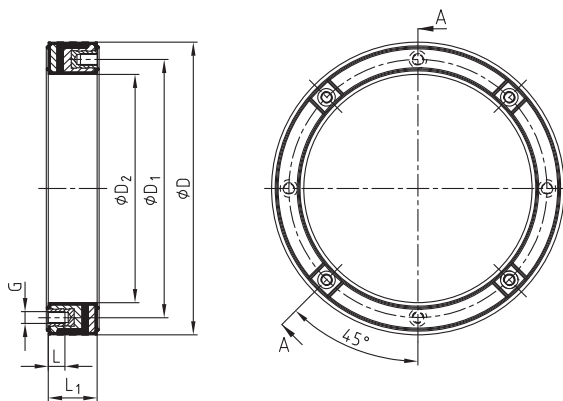


Order form	D	230	14
	Damping ring	Size	Internal code

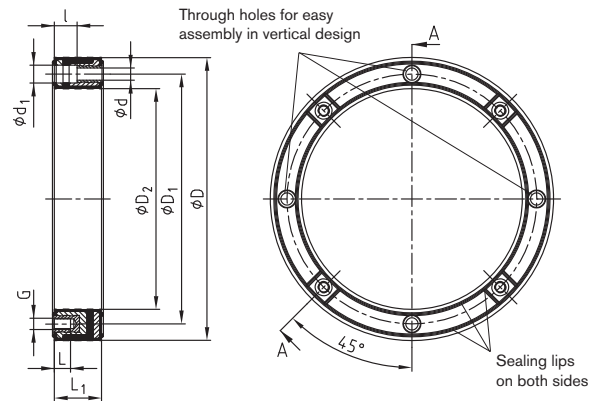
## Damping elements



- **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 the interconnected 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



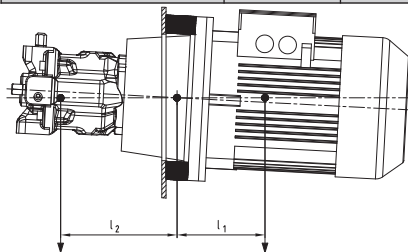
Damping ring type DT



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 <sub>1</sub>	D <sub>2</sub>	z x G	L	L <sub>1</sub>	z x d	z x d <sub>1</sub>	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



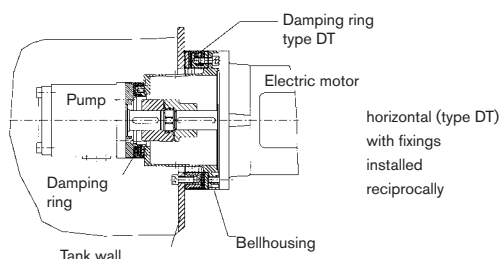
### Permissible radial weight and bending load of DT damping rings with an operating temperature of + 60 °C

DT size	200	250	300	350	400	450	550	660
F <sub>perm.</sub> [N]	370	720	1450	3600	4800	6600	13000	24000
M <sub>b perm.</sub> [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

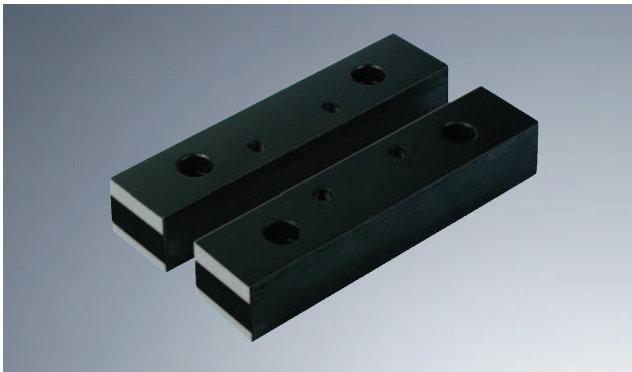


### Arrangement of DT ring

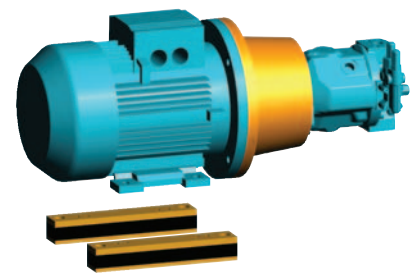
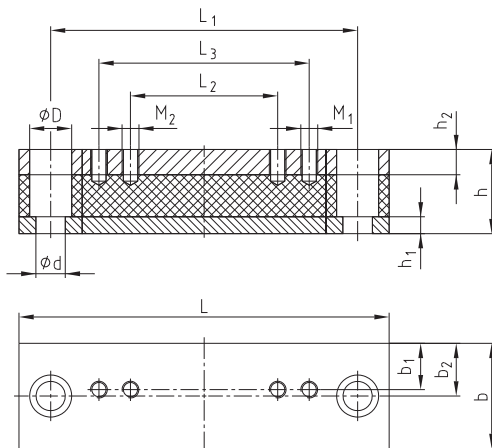


Order form	DT	250
	Damping ring	Size

## 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 lengths 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
- Thrust loading (V1) not permissible



Type DSM

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

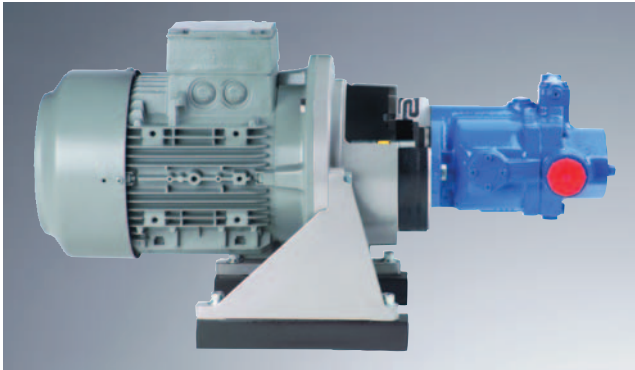
Damping rod Size	For motor Size	Dimensions [mm]													
		L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	h	h <sub>1</sub>	h <sub>2</sub>	b	b <sub>1</sub>	b <sub>2</sub>	d	D	M1	M2
DSM 71	71	196	156	90		40	8	12	50	21	25	14	20	M6	
DSM 80	80	176	146	100		40	8	12	50	22	25	14	20	M8	
DSM 90 S	90 S	196	156	100		40	8	12	50	24,5	25	14	20	M8	
DSM 90 L	90 L	240	205	125		40	8	12	50	24	25	14	20	M8	
DSM 100 L/112 M	100 L/112 M	240	205	140		40	8	12	50	22	25	14	20	M10	
DSM 132 S/132 M	132 S/132 M	280	245	140	178	45	8	12	50	20	25	14	20	M10	M10
DSM 160 M	160 M	340	300	210		60	15	15	70	28	35	18	26	M12	
DSM 160 L	160 L	416	370	254		60	15	15	70	28	35	18	26	M12	
DSM 180 M	180 M	416	370	241		60	15	15	70	35	35	18	26	M12	
DSM 180 L	180 L	446	400	279		60	15	15	70	35	35	18	26	M12	
DSM 200 L	200 L	492	430	305		60	15	15	70	35	35	22	33	M16	
DSM 225 S	225 S	492	430	286		60	15	15	70	35	35	22	33	M16	
DSM 225 M	225 M	492	445	311		60	15	15	70	35	35	22	33	M16	
DSM 250 M	250 M	492	445	349		60	15	15	100	50	50	22	33	M20	
DSM 280 S/280 M	280 S/280 M	614	570	368	419	60	15	15	100	50	50	22	33	M20	M20
DSM 315 S/315 M	315 S/315 M	614	570	406	457	60	15	15	120	60	60	22	33	M24	M20
DSM 315 L	315 L	704	660	508		60	15	15	120	60	60	22	33	M24	

Other sizes on request.

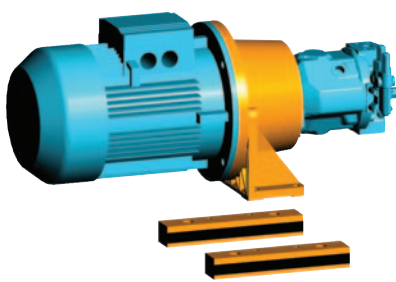
Order form	DSM	100 L/112 M
	Damping rod	



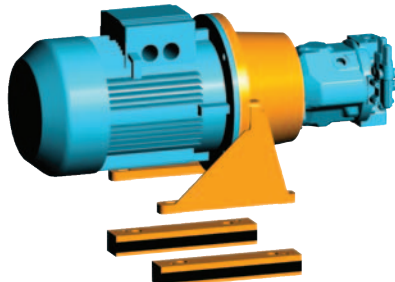
## Damping elements



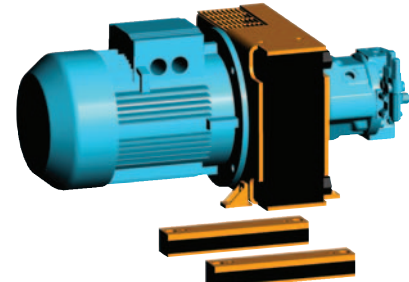
- Damping rods reduce the noise level and dampen vibrations
- Finish machined for motors IMB 35 (DSM), PTFL foot flanges (DSFL) or PTFS foot flanges (DSFS) and PIK oil coolers (DSK)
- Available from stock
- Special lengths or special designs on request
- Also suitable for Nema motors
- Damping rods are made from natural rubber (NR)
- All damping rods are adapted to the weight load that is produced
- Thrust loading (V1) not permissible



Type DSFL



Type DSFS



Type DSK

### Damping rods design DSFL for foot flange PTFL

Damping rod Size	For motor Size	Dimensions [mm]											
		L	L <sub>1</sub>	L <sub>2</sub>	h	h <sub>1</sub>	h <sub>2</sub>	b	b <sub>1</sub>	b <sub>2</sub>	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 <sub>1</sub>	L <sub>2</sub>	h	h <sub>1</sub>	h <sub>2</sub>	b	b <sub>1</sub>	b <sub>2</sub>	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 <sub>1</sub>	L <sub>2</sub>	h	h <sub>1</sub>	h <sub>2</sub>	b	b <sub>1</sub>	b <sub>2</sub>	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

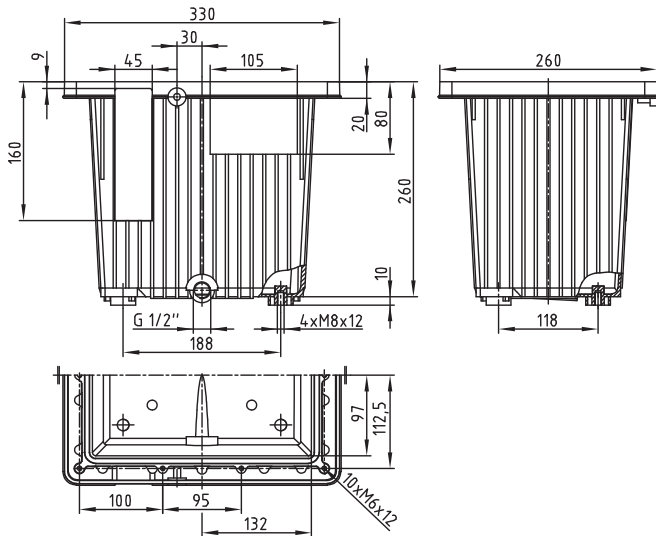
## Aluminium tanks



- 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 conductivity 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

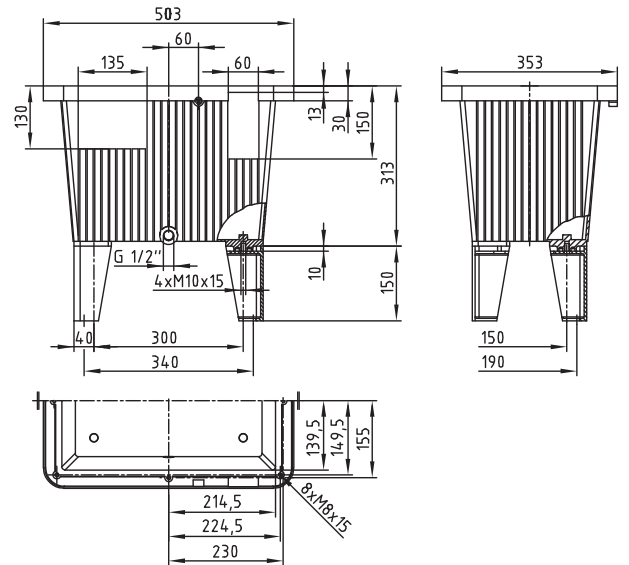
### Tanks with oil collecting groove BAK 13, BAK 30, BAK 44 and BAK 70

**BAK 13**



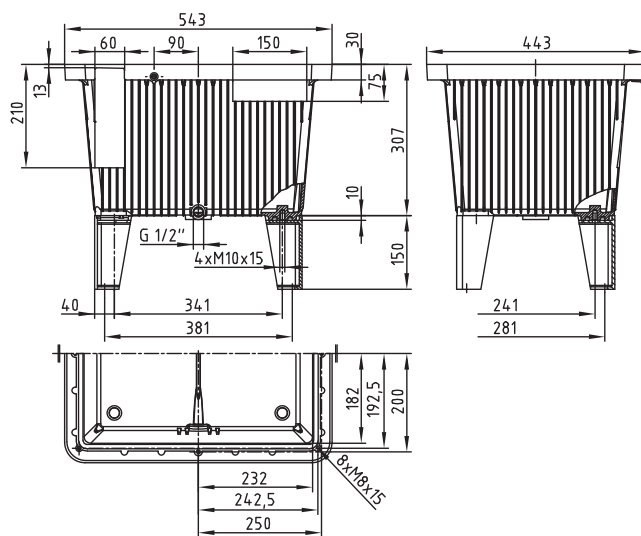
Available volume [Litres]	Seal
11,5	O-ring seal RS 13 NBR

**BAK 30**



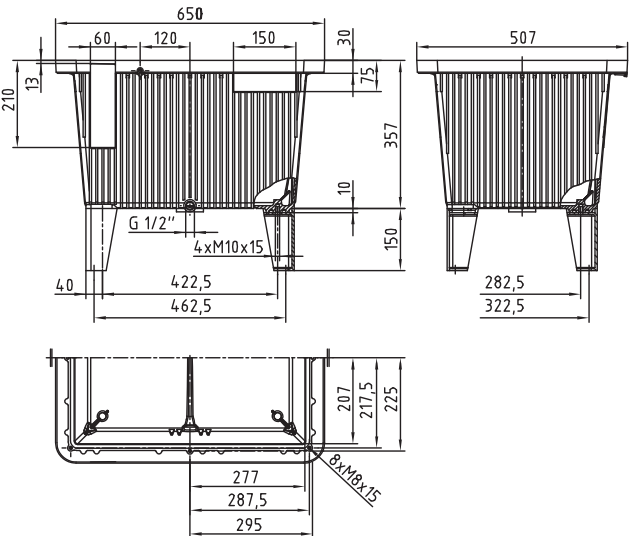
Available volume [Litres]	Seal
27,0	O-ring seal RS 30 NBR

**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

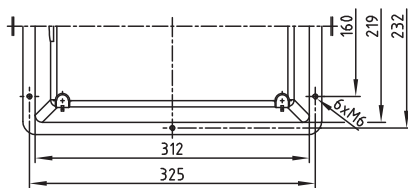
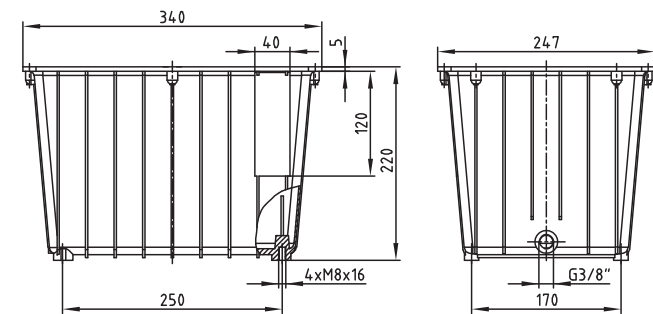
## Aluminium tanks



- 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 conductivity 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

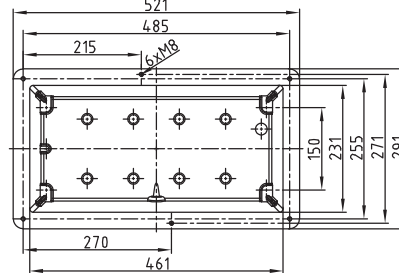
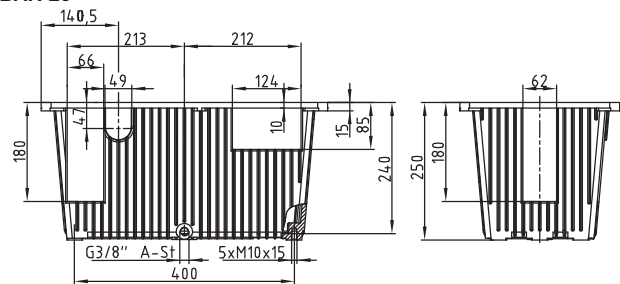
### Tanks without oil collecting groove BAK 10, BAK 20, BAK 40, BAK 63 and BAK 100

#### BAK 10



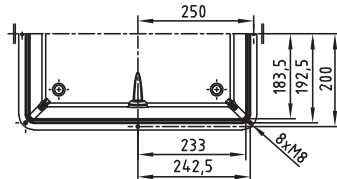
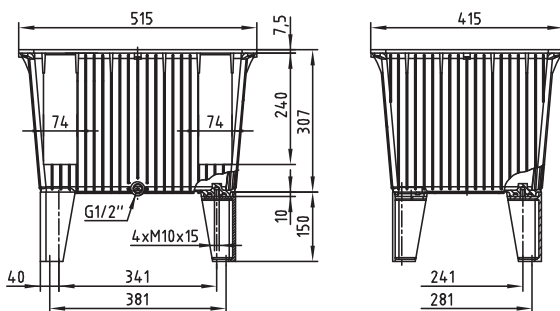
Available volume [Litres]	Seal
9,5	Flat seal FD 10

#### BAK 20



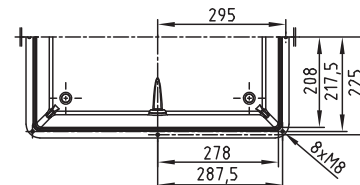
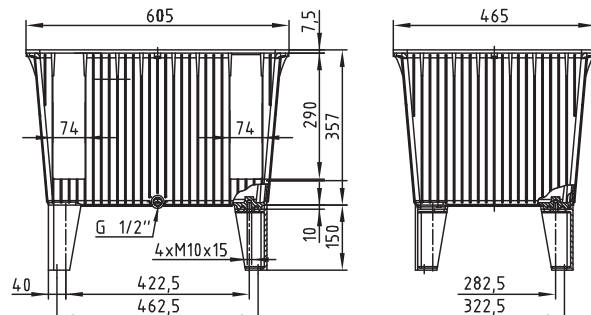
Available volume [Litres]	Seal
18,0	Flat seal FD 20

#### BAK 40



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

#### BAK 63



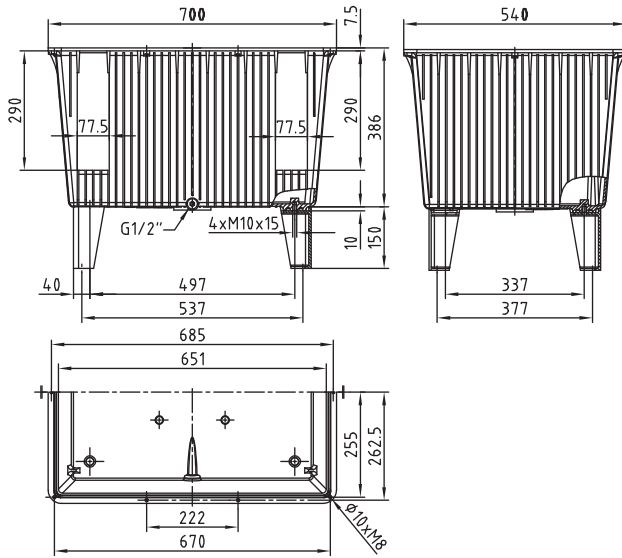
Available volume [Litres]	Seal
63,0	O-ring seal RS 63/70 NBR

#### Order form

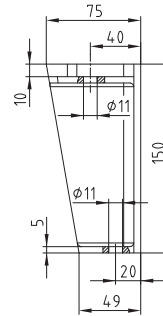
BAK	63
Aluminium tank	Size

## Aluminium tanks and accessories

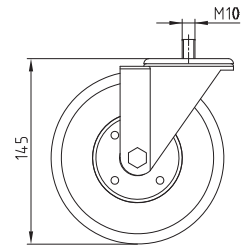
### BAK 100



Tank feet  
BF 150 made from  
cast aluminium



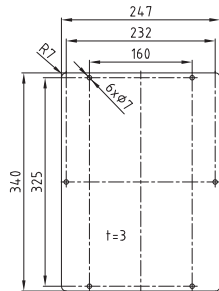
Wheels LR 150  
with or  
without lock



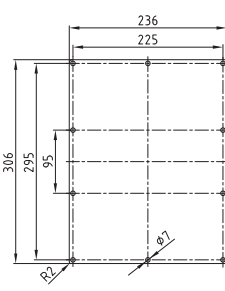
Available volume [Litres]	Seal
95	O-ring seal RS 100 NBR

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

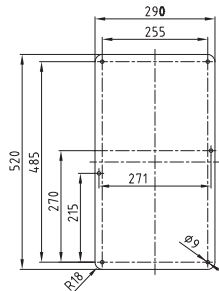
Cover		For tank	Dimensions [mm]							Cover thickness		Weight [kg]	
Steel	Al		A	A <sub>1</sub>	A <sub>2</sub>	B	B <sub>1</sub>	B <sub>2</sub>	R	St	Al	St	Al
ST 30	AL 30	BAK 30	475	460	449	325	310	299	25	5	5	6	2,1
ST 44	AL 44	BAK 40/BAK 44	515	500	485	415	400	385	32	5	8	8,5	4,6
ST 70	AL 70	BAK 63/BAK 70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



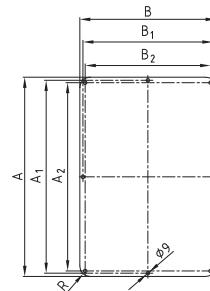
BAK 10 - ST 10  
St: 3 mm thick; 1,9 kg



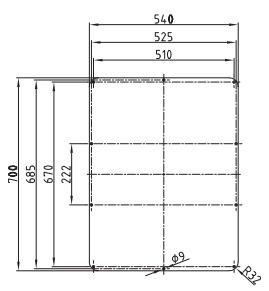
BAK 13 - ST 13 / AL 13  
St: 4 mm thick; 2,2 kg  
Al: 5 mm thick; 1,0 kg



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



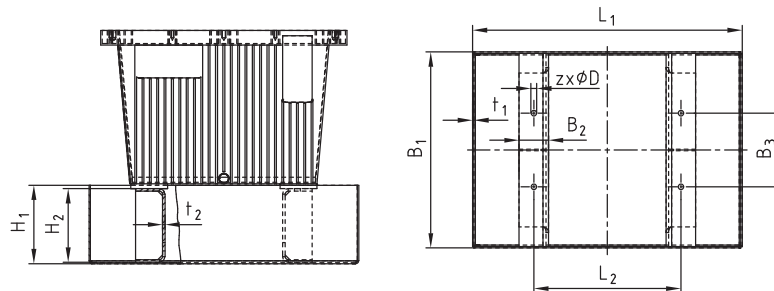
BAK 30-70  
ST 30-70  
AL 30-70



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

### Order form:

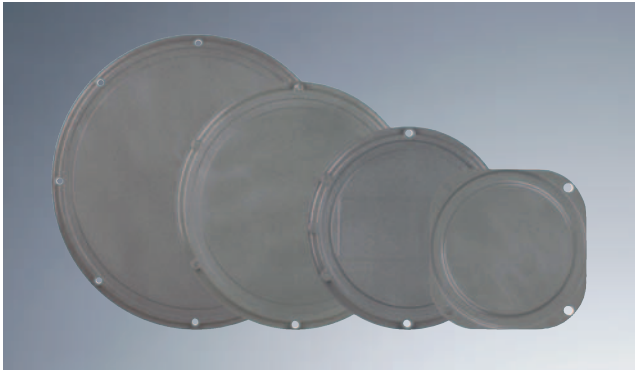
ST 44	BF 150	Plug DIN 908 with seal G 1/2 A
Tank cover for BAK 44 from steel	Feet for tank	Plug for BAK 44



### Oil sumps BAKW for KTR aluminium tanks BAK

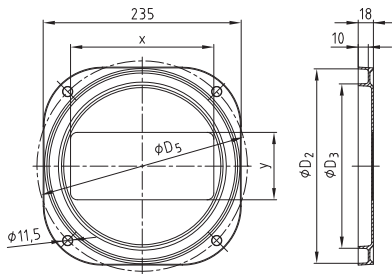
Oil sump	For tank	Volume of oil sump	Dimensions [mm]										
			L <sub>1</sub>	L <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	H <sub>1</sub>	H <sub>2</sub>	t <sub>1</sub>	t <sub>2</sub>	z	D
BAKW 13	BAK 13	11,8 l	380	188	310	60	118	110	100	3	3	4	9
BAKW 20	BAK 20	20 l	570	400	350	60	150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

## Accessories for oil tanks

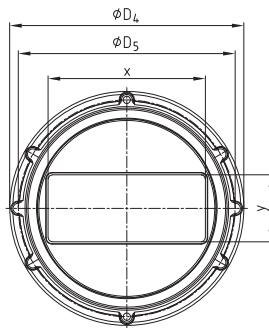


- Cleaning covers V324 and V449 according to DIN 24339
- Made from aluminium
- Screw tightening torque for all cleaning cover sizes 10 Nm at the maximum
- Cleaning cover V324-6/HFC, V449-6/HFC and V580-8/HFC are resistant to HFC fluids
- Gaskets type PRD made from perbunane (NBR), made from Viton on request
- On request available with logo
- Max. permissible pressure = 0,5 bar

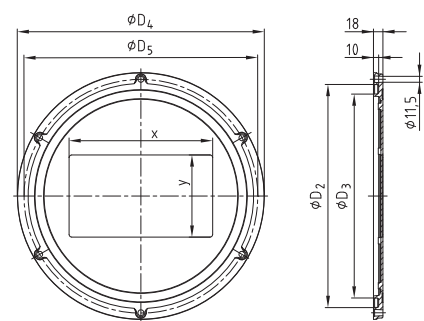
**Cleaning cover design V250-4 PRD**



**Cleaning cover DIN 24339**



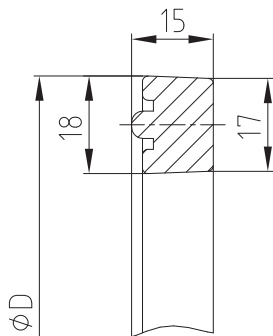
**Cleaning cover**



### Cleaning covers

Size	Dimensions [mm]							
	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>	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

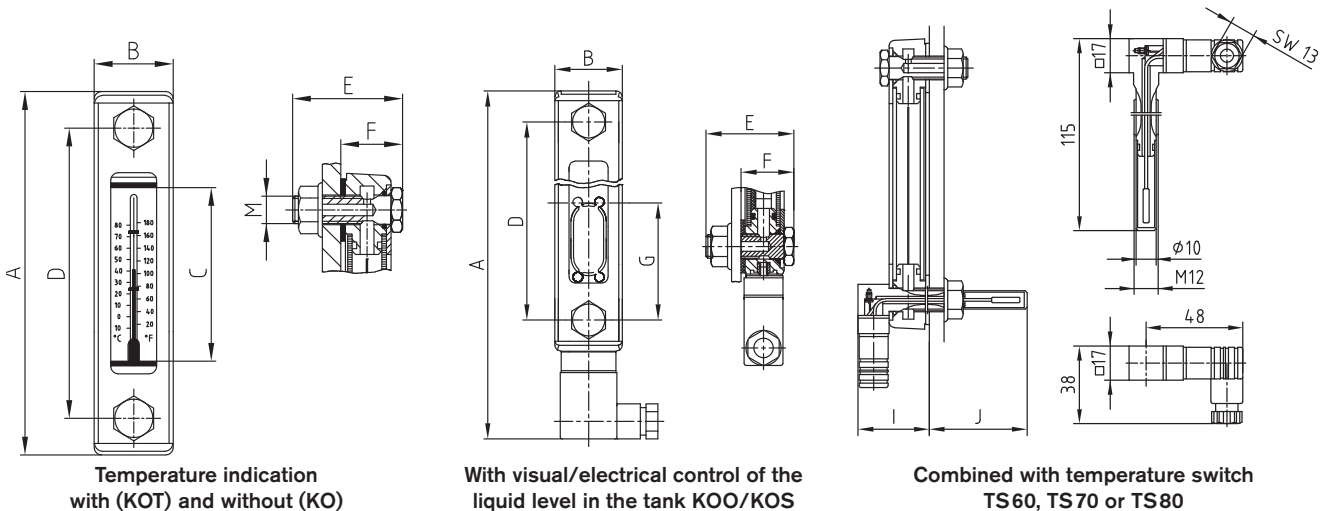
Order form

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 for hydraulic oil HL, HLP, gas to max. 80 °C and diesel gas up to max. 60 °C
- Good UV resistance



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

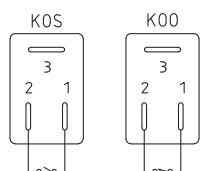
KOS: Electr. switch as closer

Operating range: - 10 °C to + 80 °C

Recommended screw tightening torque: 8 Nm

Prestress pressure of tank max. 1 bar

Electrical connections and functions:



Contact load:

KOS max. 10 W

KOO max. 3 W

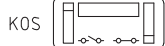
Voltage:

50 V AC/DC

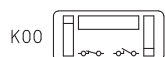
Switching current:

KOS max. 0,50 A

KOO max. 0,25 A



KOS



KOO

Line box with PG9

Protection IP 65

Connection 3 not used

Technical data (opener) of the temperature switch:

Shifting temperature: TS 60: Shifting temperature 60 °C / 140 °F

TS 70: Shifting temperature 70 °C / 158 °F

TS 80: Shifting temperature 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  $\cos \varphi = 1,0$

1,6 A with  $\cos \varphi = 0,6$

▪ max. current with 10.000 circuits

0,5 A with  $\cos \varphi = 1,0$

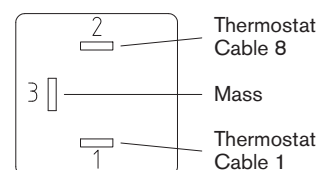
~0,25 A with  $\cos \varphi = 0,6$

▪ min. switching current 50 mA

**Direct current**

▪ max. voltage 42 V

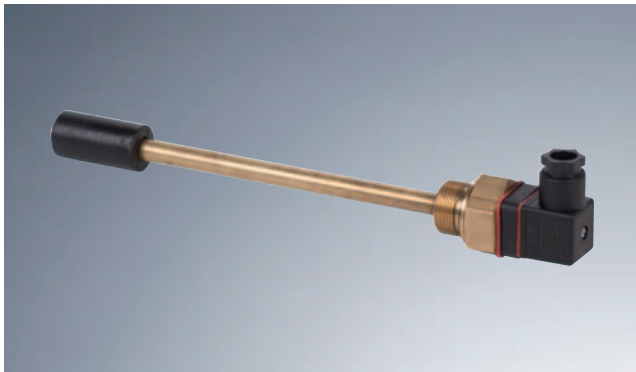
▪ max. current with 10.000 circuits 1 A



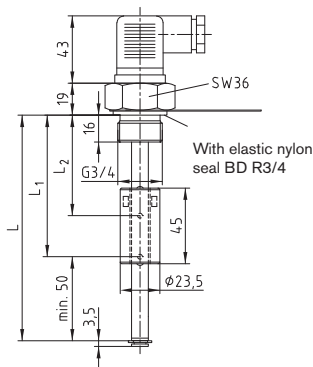
### Order form

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

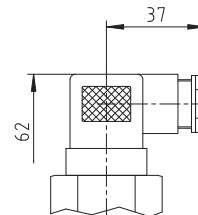


**Switching tube**  
 Operating pressure max. 1 bar  
 Operating temperature max. 80 °C  
 Density of fluid min. 0,8 kg/dm<sup>3</sup>  
 Swimmer SK 161 NBR  
 Switching tube MS  
 Flange MS

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

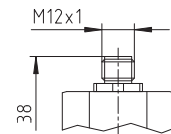
**Temperature contacts**  
 Max. voltage operating 250 V  
 Max. current switching 2 A  
 Max. contact load 100 VA  
 Switch-back difference 15 K ± 5 K

**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.

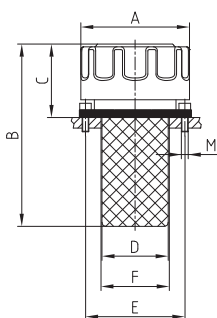


IP67\*\* protection  
 Cable screwing PG7\*\*  
 Max. voltage 24 V DC  
 \*\* with respective upper part of plug

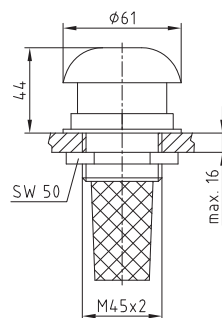
Level temperature switch			
Size	Dimensions [mm]		
	L	L <sub>1</sub>	L <sub>2</sub>
NVT22	220	170	40
NVT37	370	320	40
NVT45	450	400	40

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

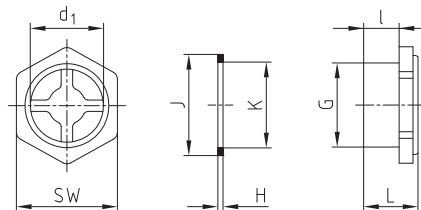
\* Type with level switch on request



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 m<sup>3</sup>/min

KE 02 = 0,45 m<sup>3</sup>/min

Order form	Filler breather	KE 01
Type		Size

Oil level sight glass								
Size	Dimensions [mm]							
	L	I	d <sub>1</sub>	G	H	J	K	SW
G <sup>1</sup> / <sub>2</sub> A	17,7	9,2	27,5	G <sup>1</sup> / <sub>2</sub>	2	27	21	27
G <sup>3</sup> / <sub>4</sub> A	18	9,2	23,8	G <sup>3</sup> / <sub>4</sub>	2	32	27	32
G1A	23,5	14	29	G1	2	40	34	40

Order form	Oil level sight glass	G <sup>3</sup> / <sub>4</sub> A
Type		Size

## Temperature control and monitoring



- Up to 4 programmable switching terminals to be selected either as level or temperature signal
- Combined continuous control of level and temperature
- Perfectly visible LED display, swinging by 270°
- Easy to program
- 2 x M12 plug bases 4 poles
- Programmable analogous terminal as 4-20 mA, 0-5V, 0-10V or 2-10V
- PNP switching terminal to be programed as frequency terminal
- Min./max. memory, log-book operation
- Available from stock

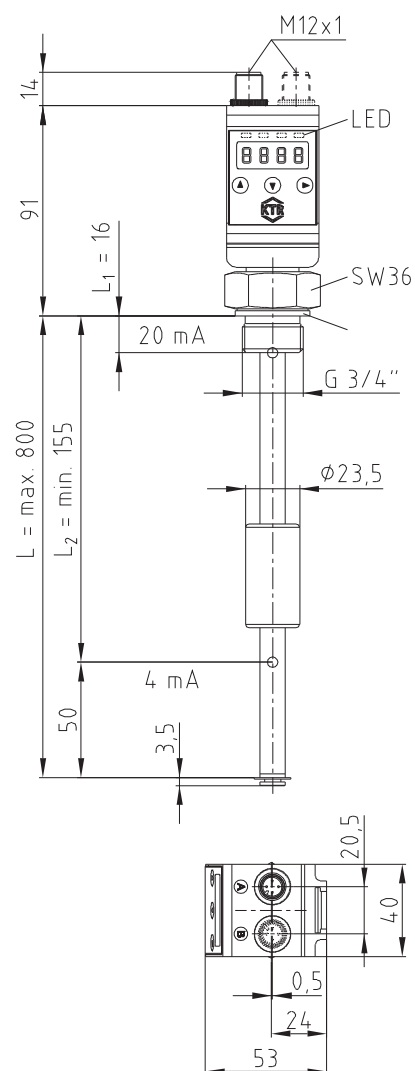
## Electronic level and temperature control

### Technical data

Operating pressure:	Max. 1 bar
Operating temperature:	-20 °C to +80 °C
Ambient temperature:	-20 °C to +70 °C
Weight:	ca. 400g
Sealing fluid:	Min. 0,8 kg/dm <sup>3</sup>
Swimmer:	PU
Immersion pipe:	MS
G 3/4 flange:	MS
Multiplier:	Reed chain
Resolution:	10 mm
Temperature sensor:	PT100 class B DIN 60751

### Display and control unit

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



Order form	NVT-E	20	4	M12
Type		20 = 200 mm contact tube 28 = 280 mm contact tube 37 = 370 mm contact tube 50 = 500 mm contact tube	4 = Switching points to be allocated freely 2NT = 2 switching terminals to be programed freely and 2 analogous terminals (level and temperature)	M12 = M12 plug base 4 poles



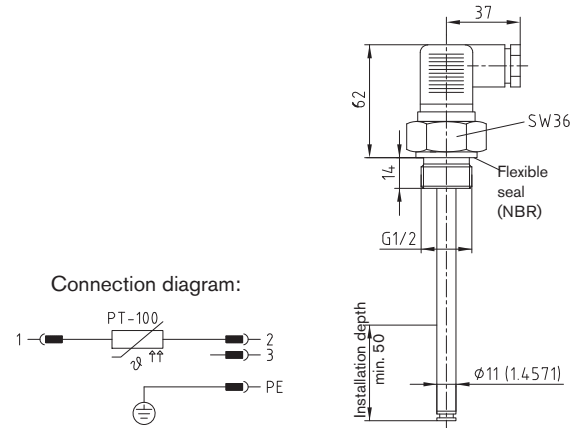
## Temperature control and monitoring



- 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

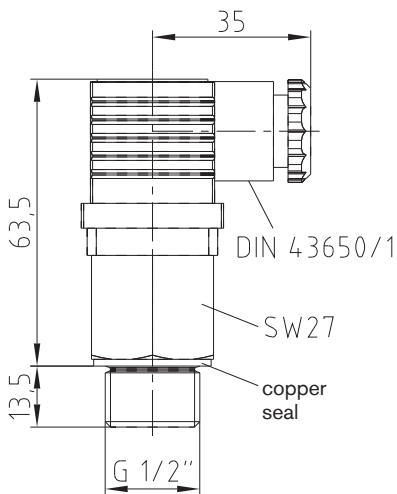
Temperature probe TE-PT-100											
Basic values of precision resistance PT-100											
°C	0	10	20	30	40	50	60	70	80	90	100
Ohm	100,00	103,90	107,79	111,67	115,54	119,40	123,24	127,07	130,89	134,70	138,50

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



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

## Temperature switch TSC



- Simple, solid design
- Electric insert easy to disassemble
- For plug acc. to DIN 43650 straight cable outlet direction rotatable by 360°
- Copper 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: brass  
 Operating pressure max.: 15 bar  
 Operating temperature: -20 °C up to +100 °C

Temperature contacts	Operating voltage max	230 V AC - 10 A	Shift point:	40 °C	TSC 40
	Switching current max.	2 A		50 °C	TSC 50
	Tolerance	± 5 K		60 °C	TSC 60
	Difference of shift back	15 K ± 3 K		70 °C	TSC 70
				80 °C	TSC 80

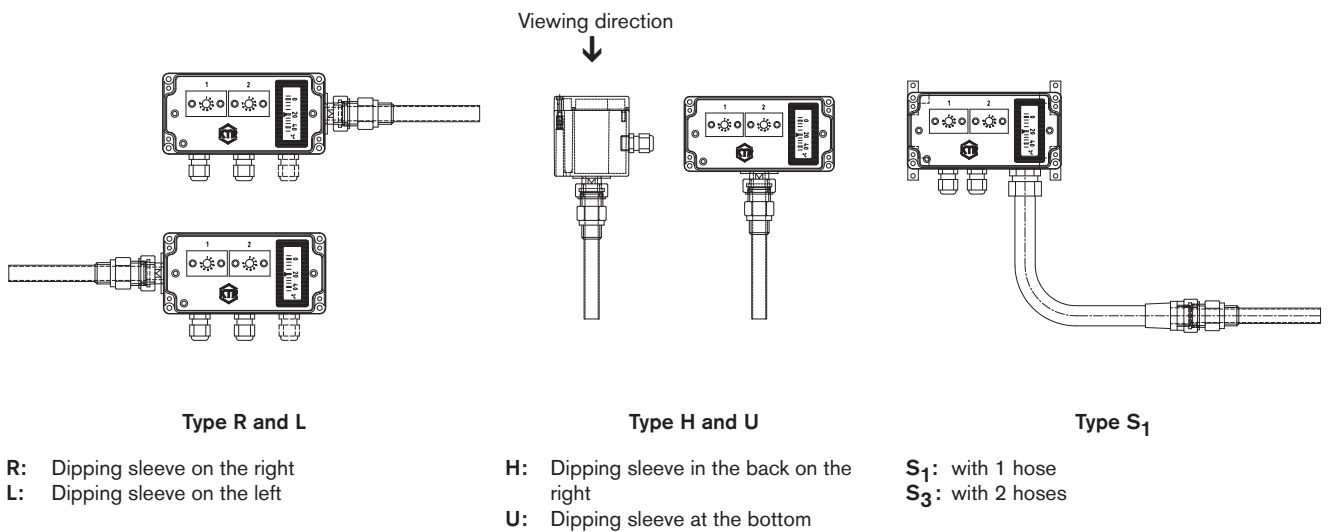
Order form	TSC	50
	Temperature switch	Shift point 50 °C

## 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 Reed contacts

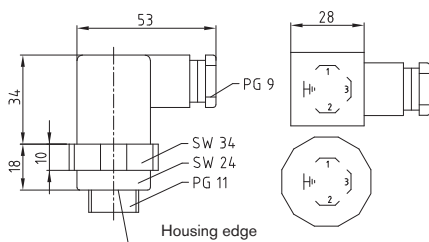
### Industrial control system: Type/position of the dipping sleeve



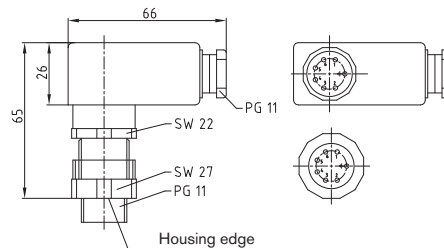
Hose lengths: S<sub>1</sub> = 1500 mm and S<sub>3</sub> = 2\* 1500 mm

### Electrical connections (IR)

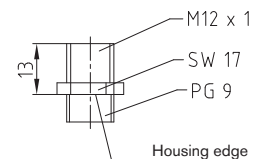
A01 standard: Flat plug 6,3 x 0,8; enclosed flat plug-in sleeves DIN 46247/3  
 A04 special design: Europe terminal strip completely cabled  
 Connectors A02, A03 and A05 see pictures.



**Plug A02**  
DIN 43650



**Plug A03**  
DIN 43651



Contacts



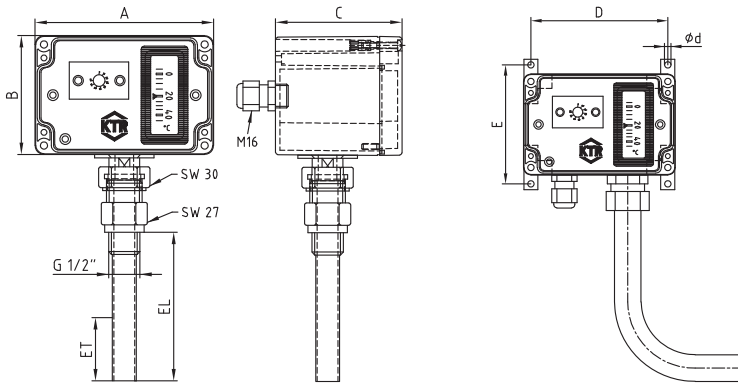
**Plug A05**  
M12 - 4pol.

### Controllers and temperature indication (IR)

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

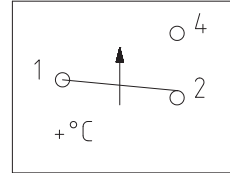
\* Manual adjustment

## Temperature control and monitoring



### Pin connection each controller IR

PE - connection (customer)



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

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

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

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					

### Type IR

#### Technical data

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

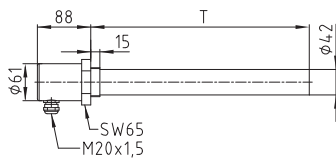
LED 12 -24 V	Index	LED 240 V	Index
green	2	green	5
red	3	red	6
red + green	4		

Order form	IR	200	H	A01	03 - 02 - 02 - T1
Type	Length of the dipping	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).	

## Tank heaters - Type EHP

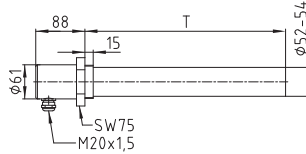


- Inserted heating cartridges to preheat hydraulic oil
- Temperature control by internal or external setting single-pole control 0 - 85 °C, 16 A
- Replaceable ceramic heating cartridges (assembly without oil drain)
- Steel cap from bright zinc coating/cover from stainless steel
- Suitable for horizontal assembly below oil level
- Material: steel (other material on request)
- Surface load 1.5 W/cm<sup>2</sup> 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



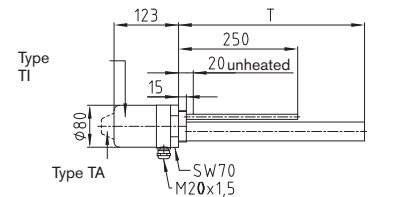
Without temperature control

Type EHP - G 1 1/2"



Without temperature control

Type EHP - G 2"



With temperature control switching accuracy  $\pm 3^\circ\text{C}$

Type EHP (TA/TI) - G 2"

### Inserted heating cartridges

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

As an alternative: Control of tank heater possible in combination with KTR industrial controls with more than one temperature switch point (see page 204 and 205). In this case the temperature control on the tank heater can be done without. Please notice our mounting instructions under [www.ktr.com](http://www.ktr.com).

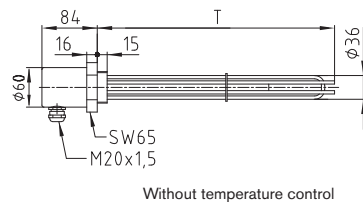
Order form	EHP	1950	1300	G 2"	TI	1 x 230 V
Type	Capacity [W]	Immersion depth T [mm]	Size of screwing thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your order, e. g. 1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

## Tank heaters - Type EH and Type TEHM

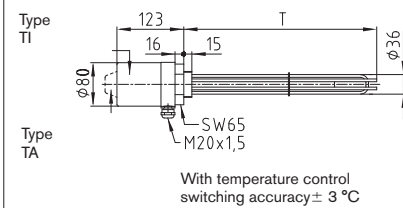


- Inserted tubular heating element to preheat hydraulic oil
- Suitable for horizontal assembly below oil level
- With or without temperature control for internal or external setting with single-pole control 0 - 85 °C, 16 Ampere
- Surface load 1.5 W/cm<sup>2</sup> for hydraulic oil
- Steel cap from bright 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](http://www.ktr.com))

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



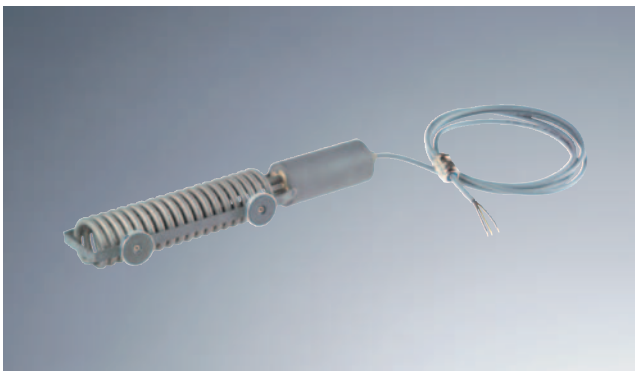
Type EH – G 1 1/2"



Type EH (TA/TI) – G 1 1/2"

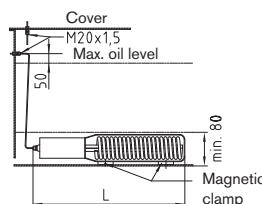
Order form	EH	990	450	G 1 1/2"	TI	1 x 230 V
Type	Capacity [W]	Immersion depth T [mm]	Size of screwing thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your order, e. g. 1 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)
- If requested, it is possible for the manufacturer to set shifting temperatures to the details specified by the customer
- Other media/operating fluids available on request
- The connector pin assignment is enclosed to the unit
- Notice our mounting instructions ([www.ktr.com](http://www.ktr.com))

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



### Technical data:


- Shifting accuracy: ± 3°
- Voltage: 230 V (other on request)
- Operation temperature: - 30 °C to + 80 °C
- Surface load: 1,2 W/cm<sup>2</sup>  
(0,6 W/cm<sup>2</sup> 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 204 and 205). In this case the temperature control on the tank heater can be done without.

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.	

## Oil/air cooler — Type OAC



- 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
- Marine design for use in a corrosive atmosphere
- Alternative design available with OAC 200 to 900:  Approved according to EC Standard 94/9/EC

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)
- Fan 12 V/24 V IP68, 230 V/400 V IP55
- Fan with hydraulic drive

### Marine design:

- Refrigerating grid coated via KTL diving process
- Frame, fan cover, protection grid coated by KTL
- Electric motor as a design with double component coating

**NEW**

Order form	OAC	400	-01	M
	Type	Size	Variant	Marine

## Oil/air cooler — Type OAC

### Selection system

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

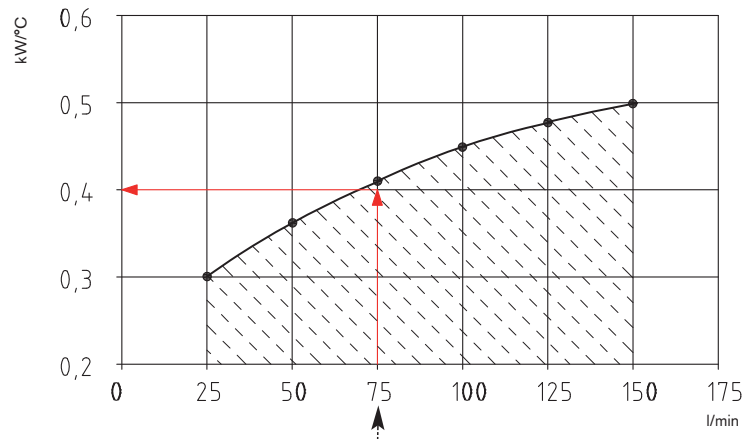
- Q [kW]            Heat to be dissipated
- V [l/min]        Oil flow
- T<sub>Oil</sub> [°C]        Inlet temperature of oil into cooler
- T<sub>L</sub> [°C]          Inlet temperature of ambient air into cooler

### Example of calculation

Details given:

- Q = 14 kW
- V = 75 l/min
- T<sub>Oil</sub> = 65 °C
- T<sub>L</sub> = 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<sub>erf</sub>.

$$= Q/ETD$$

The required specific cooling effect must be lower than the power curve!

$$\rightarrow 14 \text{ kW}/(65^\circ\text{C} - 30^\circ\text{C}) = \underline{0,4 \text{ kW}/^\circ\text{C}}$$

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

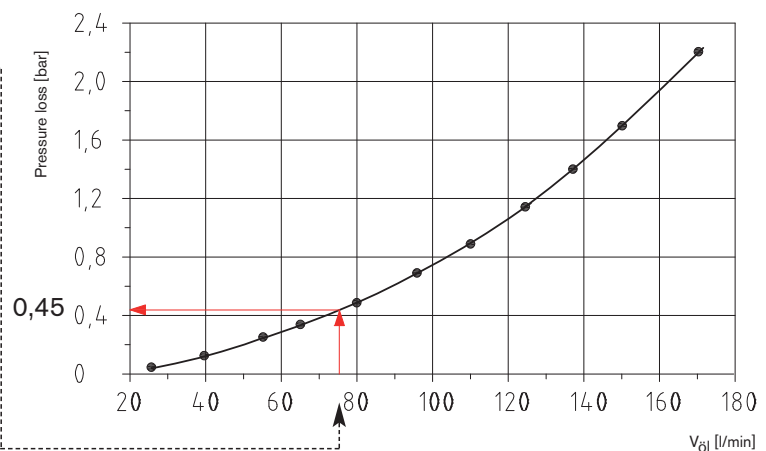
### Example

V<sub>öl</sub>: 75 l/min

Viscosity: 20 cSt

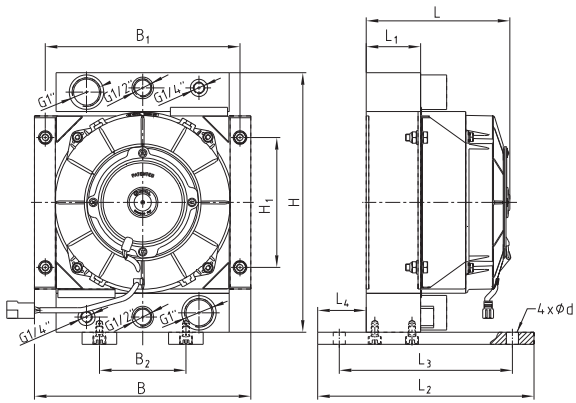
$$\rightarrow 0,45 \text{ bar} \times 0,75 = \underline{0,3375 \text{ bar}}$$

Pressure loss 30 cSt

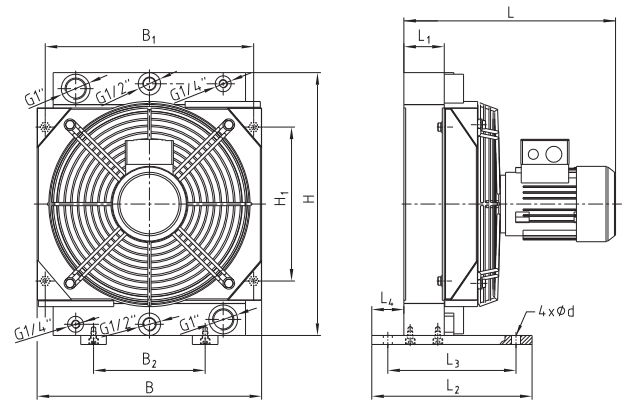


Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

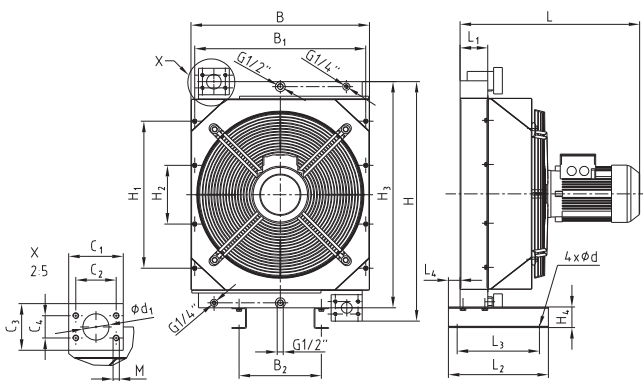
## Oil/air cooler — Type OAC



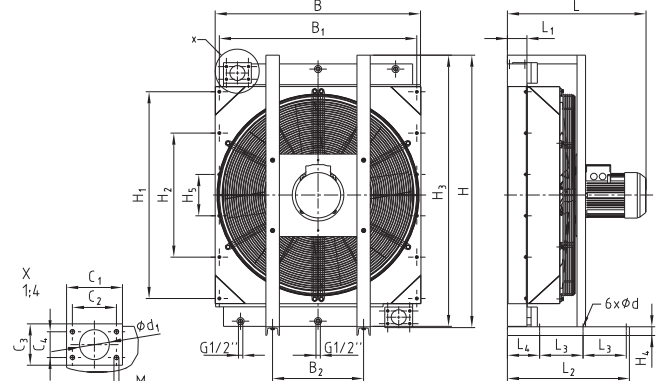
OAC 100



OAC 200 - OAC 400



OAC 500 - OAC 800



OAC 900 - OAC 1000

Oil/air cooler type OAC																					
Cooler type	Dimensions [mm]																				
	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	B	B <sub>1</sub>	B <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	d	d <sub>1</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	M
OAC 100-01	167	63	250	200	50	250	225	100	314	150					14						
OAC 100-02	167																				
OAC 200-01	167																				
OAC 200-02	63	250	200	50	350	325	174	410	250						14						
OAC 200-03	330																				
OAC 200-04	253																				
OAC 300-01	230																				
OAC 300-02	65	250	200	49	446	421	200	500	320						14						
OAC 300-03	404																				
OAC 300-04	297																				
OAC 400-01	260																				
OAC 400-02	95	280	230	55,5	446	421	200	500	320						14						
OAC 400-03	434																				
OAC 400-04	326																				
OAC 500-01	259																				
OAC 500-02	94	340	280	40	460	435	130	740	400	200	670	70			13,5	38	95	69,9	77	35,7	M12
OAC 500-03	433																				
OAC 500-04	325																				
OAC 600-01	222																				
OAC 600-02	94	340	280	40	607	582	280	815	500	200	770	70			13,5	51	105	77,8	90	42,9	M12
OAC 600-03	533																				
OAC 600-04	400																				
OAC 700-03	542	94	340	280	40	608	582	280	965	700	300	920	70		13,5	51	105	77,8	90	42,9	M12
OAC 700-04	410																				
OAC 800-03	692	140	450	390	40	701	676	280	965	700	300	920	70		13,5	51	105	77,8	90	42,9	M12
OAC 800-04	542																				
OAC 900-03	670	94	590	210	155	995	955	440	1318	1000	600	1312	42	200	14	73	135	106,5	100	62	M16
OAC 900-04	650																				
OAC 1000-03	690	113	615	212	173	995	955	440	1318	1000	600	1312	42	200	14x Ø20	73	135	106,5	100	62	M16
OAC 1000-04	670																				

NEW  
NEW



## Oil/air cooler — Type OAC

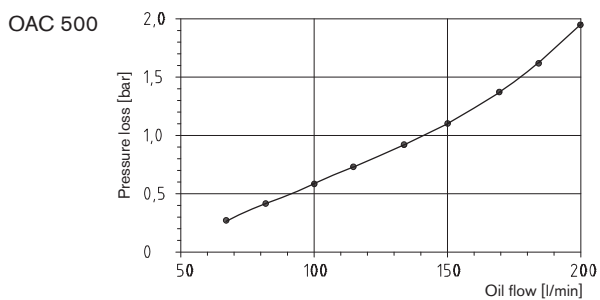
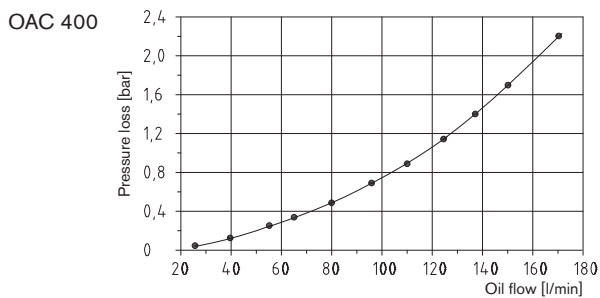
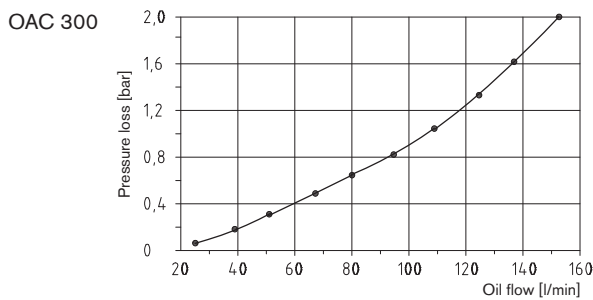
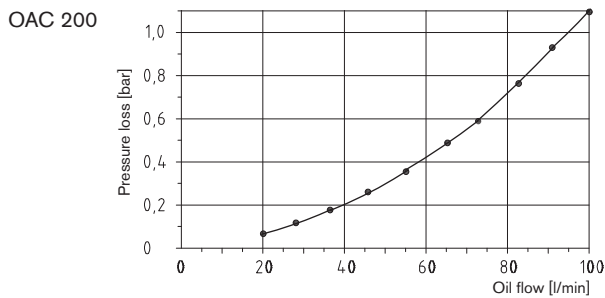
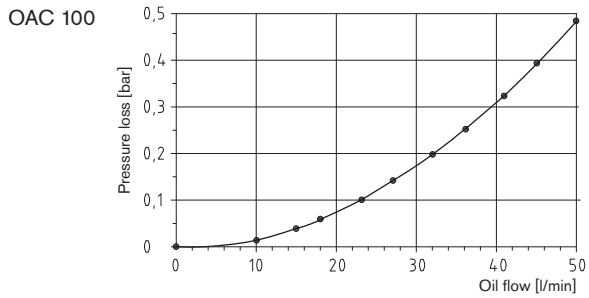
Technical data								
Cooler type	Drive	kW	Displacement [ccm]	A	IP	Fan-Ø [mm]	db [A]	Weight [kg]
<b>OAC 100</b>								
OAC 100-01	12 V DC	0,060		8,5	68	190	70	6,9
OAC 100-02	24 V DC	0,068		2,8	68	190	70	6,9
<b>OAC 200</b>								
OAC 200-01	12 V DC	0,084		4,7	68	280	73	14
OAC 200-02	24 V DC	0,192		9,8	68	280	73	14
OAC 200-03	230 V/400V	0,18		0,56	55	280	66	16
OAC 200-04-06	Hydraulic		6,3			280	66	16
<b>OAC 300</b>								
OAC 300-01	12 V DC	0,252		21	68	350	76	22
OAC 300-02	24 V DC	0,192		9,8	68	350	75	22
OAC 300-03	230 V/400V	0,37			55	380	75	22
OAC 300-04-06	Hydraulic		6,3			380	75	22
OAC 300-04-08	Hydraulic		8,0			380	75	22
OAC 300-04-11	Hydraulic		11,0			380	75	22
<b>OAC 400</b>								
OAC 400-01	12 V DC	0,252		21	68	350	76	27
OAC 400-02	24 V DC	0,192		9,8	68	350	75	27
OAC 400-03	230 V/400V	0,37			55	380	74	27
OAC 400-04-06	Hydraulic		6,3			380	74	27
OAC 400-04-08	Hydraulic		8,0			380	74	27
OAC 400-04-11	Hydraulic		11,0			380	74	27
<b>OAC 500</b>								
OAC 500-01	12 V DC	0,096		20,8	68	385	78	36
OAC 500-02	24 V DC	0,072		10,3	68	385	78	36
OAC 500-03	230 V/400V	0,370		1,03	55	380	74	38
OAC 500-04-06	Hydraulic		6,3			380	74	37
OAC 500-04-08	Hydraulic		8,0			380	74	37
OAC 500-04-11	Hydraulic		11,0			380	74	37
<b>OAC 600</b>								
OAC 600-01	2x12 V DC	2x0,11		4,7	68	2x280	79	46
OAC 600-02	2x24 V DC	2x0,09		9,8	68	2x280	79	46
OAC 600-03	230 V/400V	0,75		0,56	55	520	78	49
OAC 600-04-06	Hydraulic		6,3			520	78	48
OAC 600-04-08	Hydraulic		8,0			520	78	48
OAC 600-04-11	Hydraulic		11,0			520	78	48
<b>OAC 700</b>								
OAC 700-03	230 V/240 V	0,75		1,86	55	520	78	56
OAC 700-04-06	Hydraulic		6,3			520	78	56
OAC 700-04-08	Hydraulic		8,0			520	78	56
OAC 700-04-11	Hydraulic		11,0			520	78	56
<b>OAC 800</b>								
OAC 800-03	230 V/400 V	1,5		3,4	55	630	78	88
OAC 800-04-11	Hydraulic		11,0			630	78	87
OAC 800-04-14	Hydraulic		14,0			630	78	87
<b>OAC 900 *</b>								
OAC 900-03	230 V/400 V	2,2		5,8	55	900	79	190
OAC 900-04-14	Hydraulic		14,0			900	79	190
<b>OAC 1000 *</b>								
OAC 1000-03	230 V/400 V	2,2		5,8	55	900	79	210
OAC 1000-04	Hydraulic		19,0			900	79	210

\* Maximum static operating pressure: 10bar

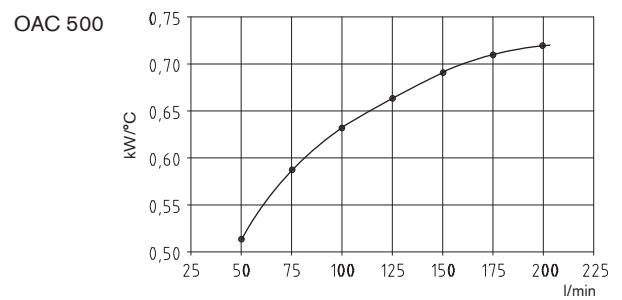
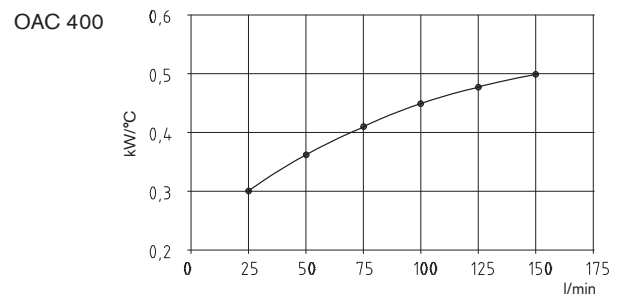
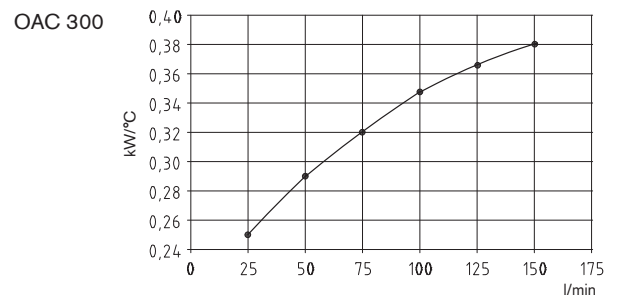
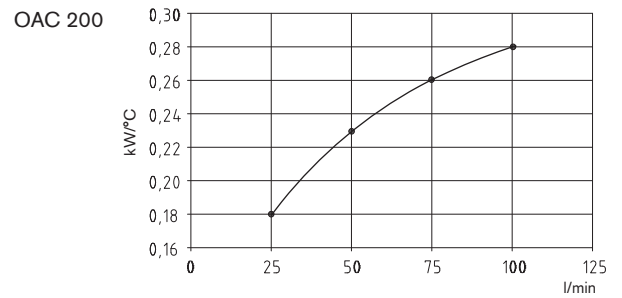
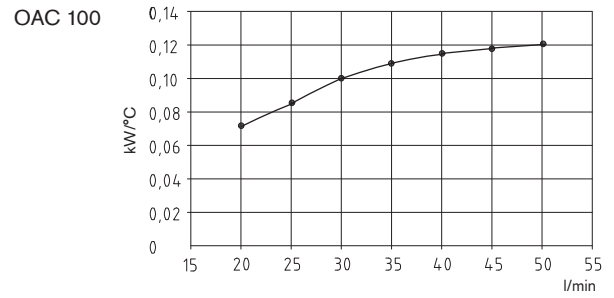
**NEW**  
**NEW**

## Oil/air cooler — Type OAC

Pressure loss 30 cSt



Power diagramme

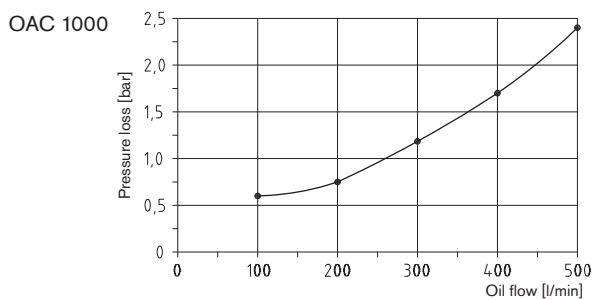
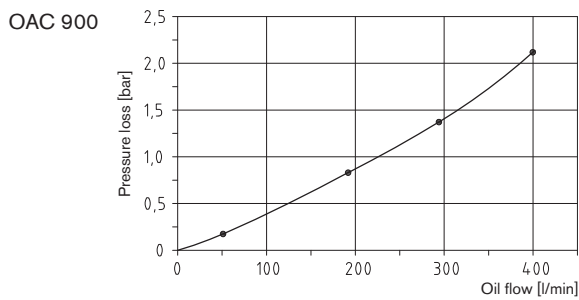
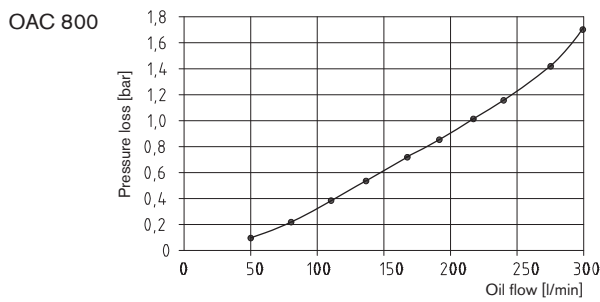
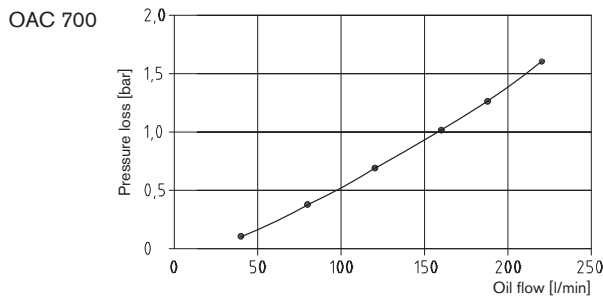
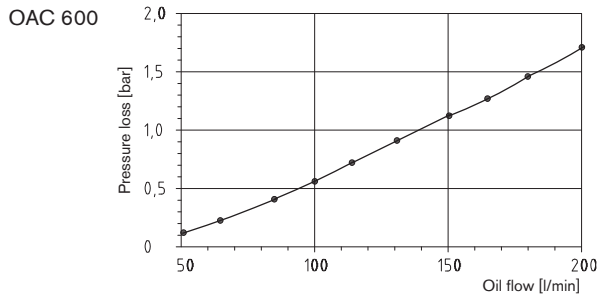


Conversion factor pressure loss

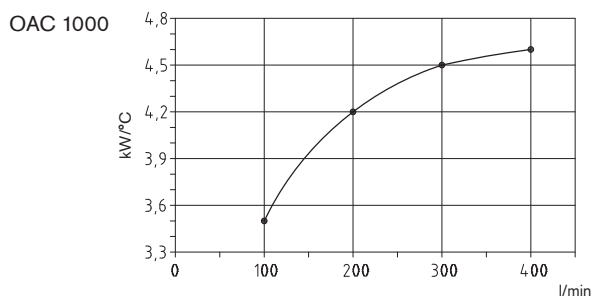
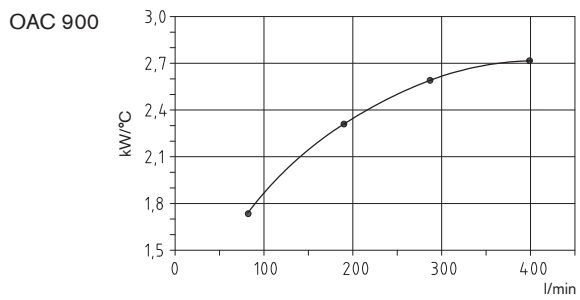
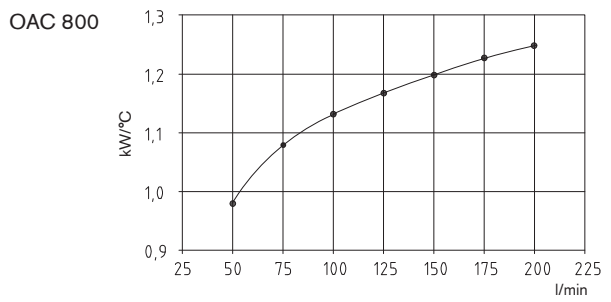
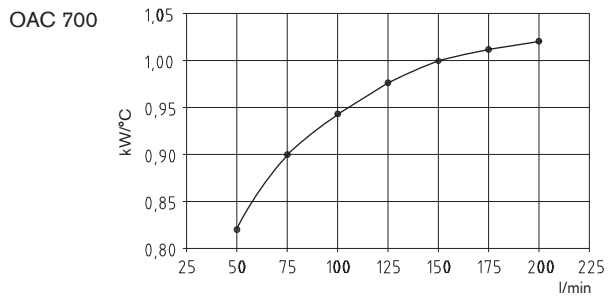
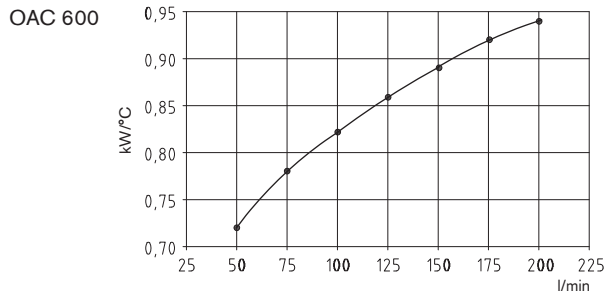
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

## Oil/air cooler — Type OAC

Pressure loss 30 cSt



Power diagramme



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

## 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

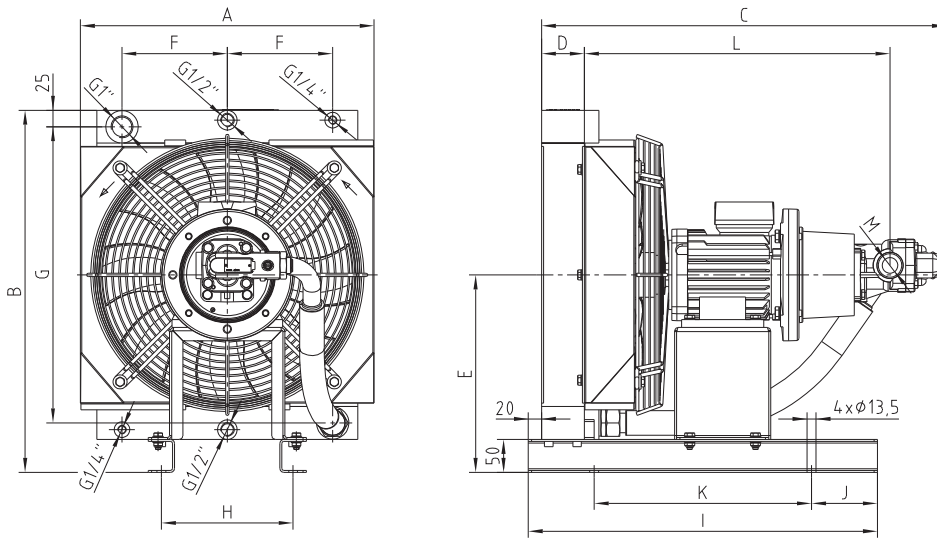
- Machine tools
- Elevators
- Test benches
- Add-on coolers
- Bypass flow cooling

### 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

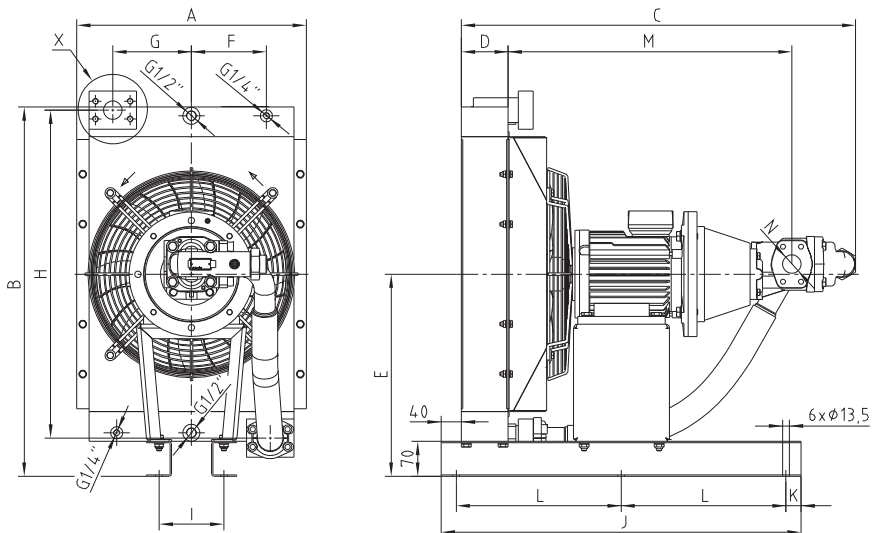
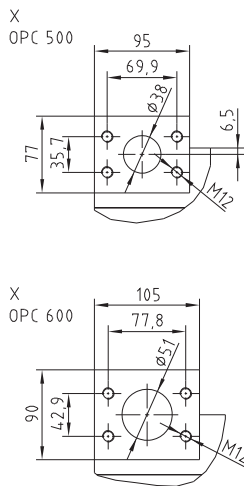
Order form	OPC	400	16	00
	Type	Size	Pump flow rate	Filter (00 = without; with filter please advise quality, e. g. 10 = 10)

## OPC Cooling-pump-unit with hydraulic pump and filter



**Type OPC 200 to 400**

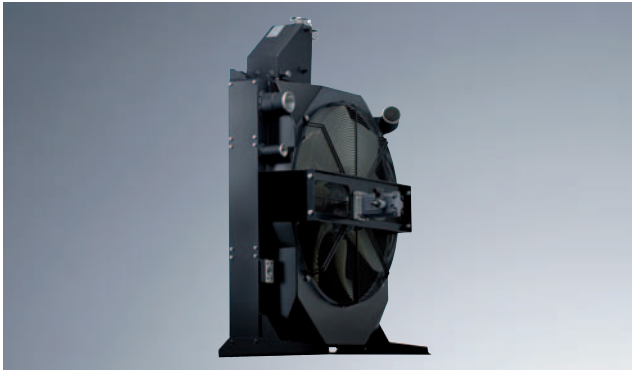
Cooler type	Voltage	Current [A]	Speed [1/min]	l/min	kW/°C	A	B	C	D	E	F	G	H	I	J	K	L	M	Weight [kg]
OPC 200-4D-0,75kW	230/400V 50 Hz	1,8	1400	5,5	0,12	350	460	572	63	255	115	360	174	530	100	330	426	G 3/4"	35
OPC 200-12D-0,75kW				16,7	0,14			596											
OPC 200-16D-0,75kW				21,4	0,15			596											
OPC 300-4D-0,75kW				5,5	0,20	446	550	615	65	300	160	450	200	530	100	330	464	G 3/4"	42
OPC 300-12D-0,75kW				16,7	0,22			638											
OPC 300-16D-0,75kW				21,4	0,24			638											
OPC 400-4D-0,75kW				5,5	0,24	446	550	645	95	300	160	450	200	550	75	400	465	G 3/4"	46
OPC 400-12D-0,75kW				16,7	0,26			668											
OPC 400-16D-0,75kW				21,4	0,28			668											



**Type OPC 500 and 600**

Cooler type	Voltage	Current [A]	Speed [1/min]	l/min	kW/°C	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Weight [kg]
OPC 500-16D-2,2kW	230/400V 50 Hz	4,9	1410	21,5	0,40	460	740	740	94	405	150	157,5	657	130	720	30	330,0	547	G 1"	75
OPC 500-25D-2,2kW				33,4	0,48			94												
OPC 500-32D-2,2kW				42,7	0,50			790												
OPC 500-40D-2,2kW				53,5	0,52	607	840	819	94	455	225	226,0	770	280	795	30	367,5	626	G 1"	96
OPC 600-16D-2,2kW				21,5	0,65			868												
OPC 600-25D-2,2kW				33,4	0,68			868												
OPC 600-32D-2,2kW				42,7	0,70	53,5	0,73	647	SAE 1 1/2"	98										
OPC 600-40D-2,2kW				53,5	0,73															

## MMC combined cooler



- Multi-circle cooler for combustion engines (water, oil, charge air, fuel)
- Various lamina systems, applications in different ambient conditions
- Solid design from aluminium in plate and bar
- Systems with fan
- Different drives (hydraulic motor or 12/24 V fan)

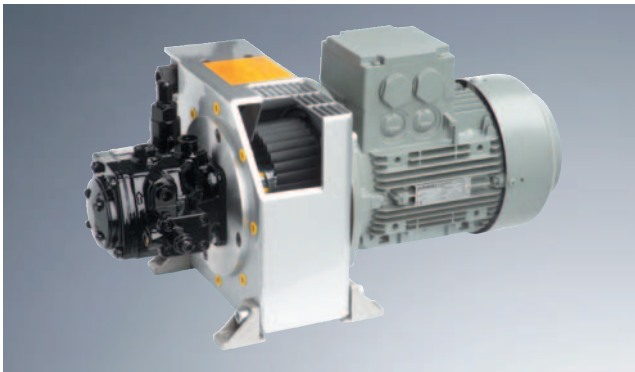
The MMC cooler series is used on construction machines, agricultural machines and stationary I. C.-engines. Being used as a water cooler, series MMC tempers the cooling water. Being used as an oil cooler it ensures the cooling of hydraulic or gear oil, as a charge air cooler it operates the cooling of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

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

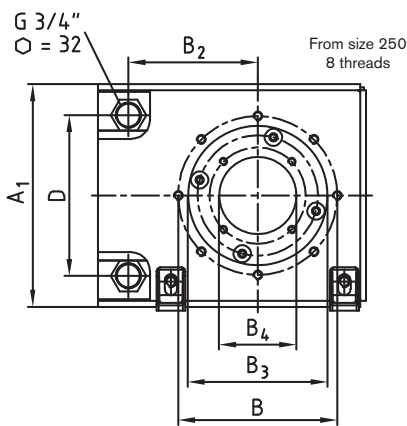
## Potential applications



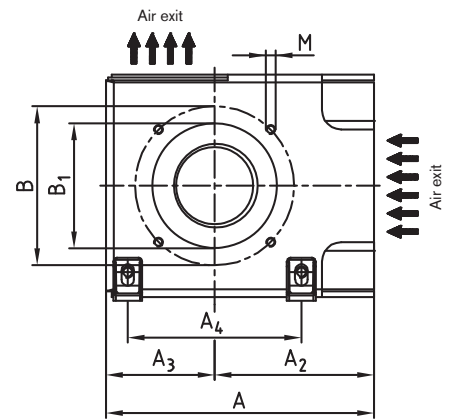
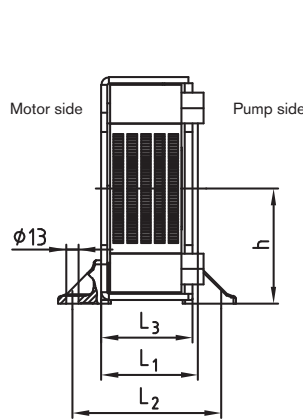
## Oil/air cooler



- 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](http://www.ktr.com)



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 <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	A	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>	B	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	min. B <sub>4</sub>	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
	0,75	PIK 200/2/...	110	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
90S / 90L (24 x 50)	1,1	PIK 200/4/...	124	154,5	94,5	275	225	163	112,5	180	165	130	130	145	20	167	M10	116,5
	1,5		124	175,5	115,5	308	250	180	125	220	215	180	150	190	20	192	M12	129
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	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
	7,5	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	PIK 350/1/...	188	243,5	183,5	405	360	230	175	310	300	250	200	260	50	292	M16	184
	15	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  $\geq 1900$  rpm 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)!

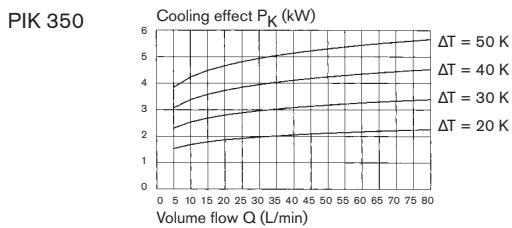
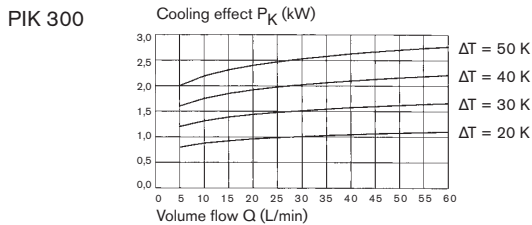
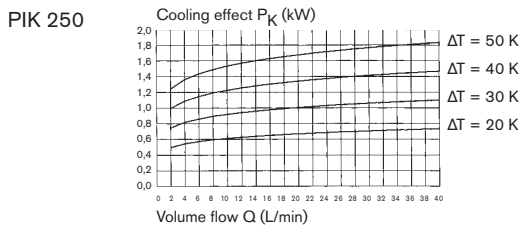
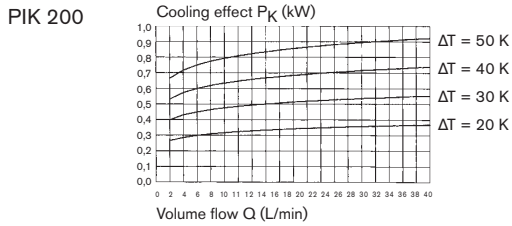
Please consider our mounting instructions under [www.ktr.com](http://www.ktr.com).

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 15 - V1 design

## Oil/air cooler

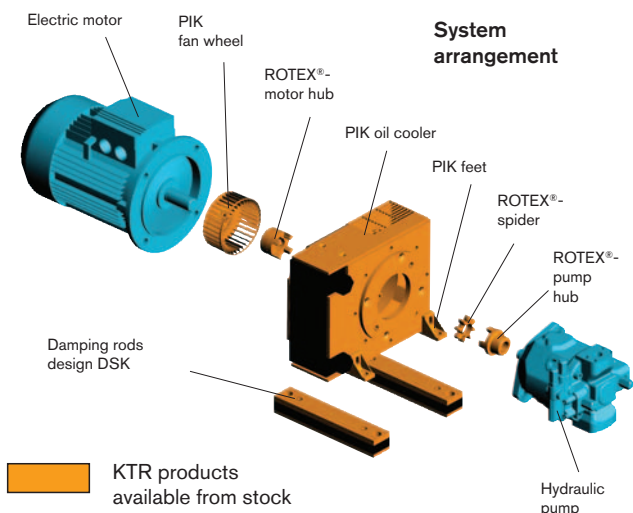
1. Cooling effect for a speed of 1500 rpm depending on the temperature difference between oil intake and air intake and oil volume



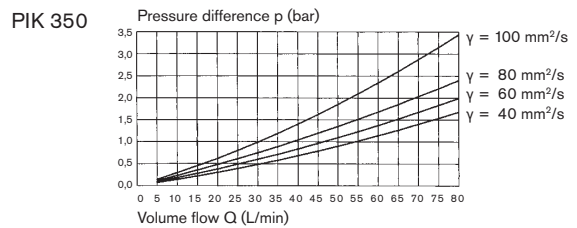
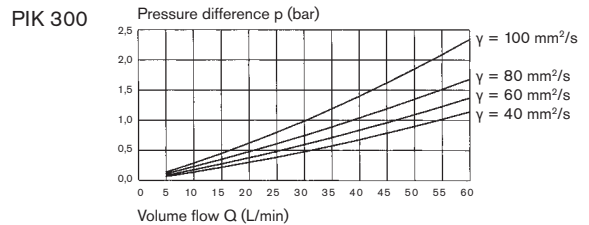
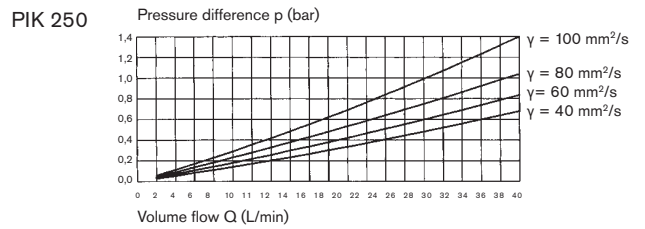
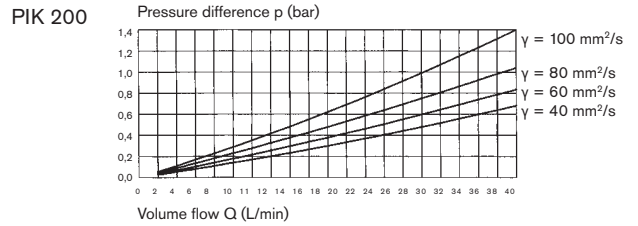
The diagrammes shown are based on actual measurements of the PIK oil cooler performed in the KTR R & D test center. With 3000 rpm the cooling effect is increased by 50%.

### 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.)



3. Pressure difference depending on oil flow and oil viscosity



Viscosity measured up to 100 mm<sup>2</sup>/s.  
 Higher viscosity on request.

### 4. Fan wheel

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

Performance of the fan with 1500 rpm

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

Air pressure rate in m<sup>3</sup>/h at 1500 rpm

- PIK 200 = abt. 90 m<sup>3</sup>/h
- PIK 250 = abt. 200 m<sup>3</sup>/h
- PIK 300 = abt. 400 m<sup>3</sup>/h
- PIK 350 = abt. 860 m<sup>3</sup>/h

### 5. Cooler connection

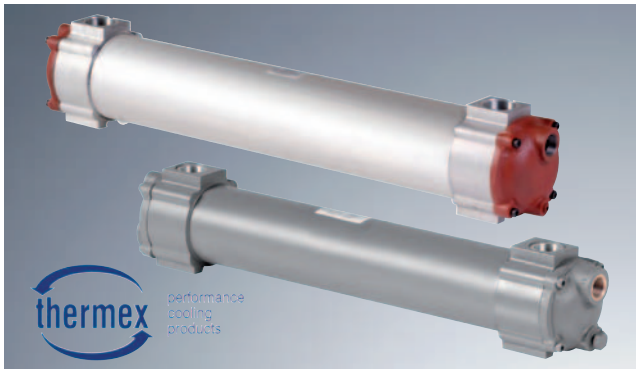
R 3/4" internal thread

### 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.



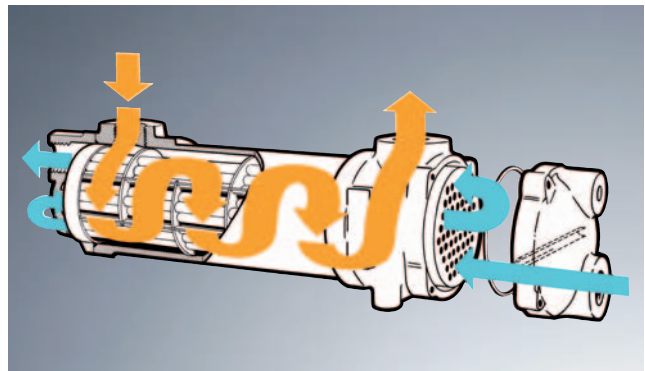
## Oil/water cooler — Type TAK/T



- Shell and tube oil cooler
- Type TAK/T
- The cooler series TAK/T-2000 have been designed specifically for hydraulic systems
- Highly efficient up to 340 kW
- In marine version (seawater) available
- Easy cleaning by dismountable tube stacks
- Notice our mounting instructions ([www.ktr.com](http://www.ktr.com))

The cooler series TAK/T-2000 have been designed specifically for hydraulic systems, but they are equally suitable for cooling lubricating oils, heat transfers fluids, etc.

The high efficiency tubestack is fully floating to minimise thermal stresses and incorporates the unique tube-to-tubeplate joint ensuring reliability under extreme operating conditions. The 2700 and 2800 ranges have twin seals and witness rings fitted as standard to provide maximum protection against fluid cross-contamination.



### Materials:

These coolers are available in both industrial and marine versions.

Industrial version specifications (standard)		
Tubes	90/10 Copper/Nickel	ISO: CuNi10Fe1Mn
Tubeplates	Naval Brass	ISO: CuZn38Sn1
Body	Aluminium (2300 & 2500) (2700 & 2800)	ISO: AlSi1MgMn ISO: AlSi12
Headers	Cast Iron	ISO: R185Gr20
Leak detection rings	Carbon Steel	ISO: Fe430A
Seals	Nitrile	

Marine version specifications (standard)		
Headers	Gunmetal	ISO: GCuSn5Pb5Zn5

Marine version specifications (Special differences for severely polluted or poor quality water.)		
Tubes	70/30 Copper/Nickel	ISO: CuNi30Mn1Fe
Tubeplates	90/10 Copper/Nickel	ISO: CuNi10Fe1Mn
Headers	Gunmetal	ISO: GCuSn5Pb5Zn5

## Oil/water cooler — Type TAK/T

KTR tube and shell cooler performance of the 2000 series									
Type	Cooling effect [kW]	Oil flow [l/min]	Oil pressure loss		Water flow [l/min]	Water pressure loss		Sea water flow [l/min]	
			[kPa]	[bar]		[kPa]	[bar]	Min.	Max.
TAK/T-2312	3,6	40	40	0,4	8	1	0,01		
TAK/T-2322	6	50	60	0,6	8	1	0,01		
TAK/T-2332	10	65	50	0,5	13	3	0,03		
TAK/T-2342	15	80	80	0,8	16	5	0,05	20	45
TAK/T-2352	19	90	60	0,6	19	8	0,08		
TAK/T-2362	24	100	90	0,9	21	13	0,13		
TAK/T-2372	31	120	120	1,2	24	15	0,15		
TAK/T-2512	17	120	60	0,6	30	1	0,01		
TAK/T-2522	25	140	70	0,7	40	2	0,02		
TAK/T-2532	32	160	60	0,6	45	4	0,04		
TAK/T-2542	42	180	90	0,9	50	6	0,06		
TAK/T-2552	51	200	80	0,8	60	10	0,10	50	120
TAK/T-2562	68	220	100	1,0	70	17	0,17		
TAK/T-2572	85	250	80	0,8	87	30	0,30		
TAK/T-2582	110	280	110	1,1	120	65	0,65		
TAK/T-2592	135	300	170	1,7	120	75	0,75		
TAK/T-2712	92	340	50	0,5	170	18	0,18		
TAK/T-2722	124	360	100	1,0	180	23	0,23		
TAK/T-2732	140	380	80	0,8	190	29	0,29	100	210
TAK/T-2742	175	400	120	1,2	200	37	0,37		
TAK/T-2752	208	420	160	1,6	210	46	0,46		
TAK/T-2762	241	440	180	1,8	220	59	0,59		
TAK/T-2812	124	460	40	0,4	230	16	0,16		
TAK/T-2822	168	490	70	0,7	245	20	0,20		
TAK/T-2832	193	520	60	0,6	260	26	0,26	140	300
TAK/T-2842	240	550	80	0,8	275	33	0,33		
TAK/T-2852	288	580	100	1,0	290	42	0,42		
TAK/T-2862	339	610	110	1,1	305	54	0,54		

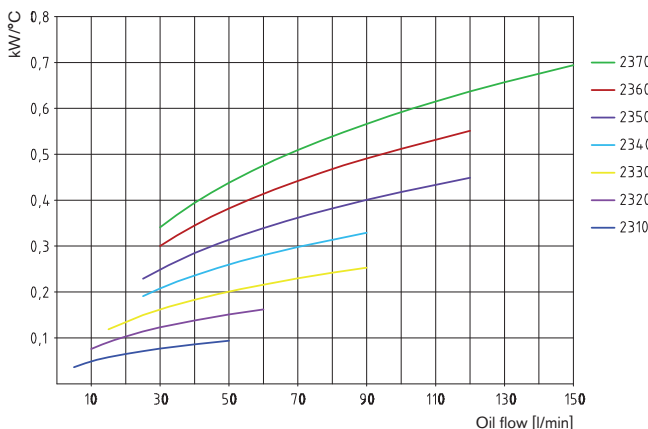
Operating conditions for the above predictions:

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

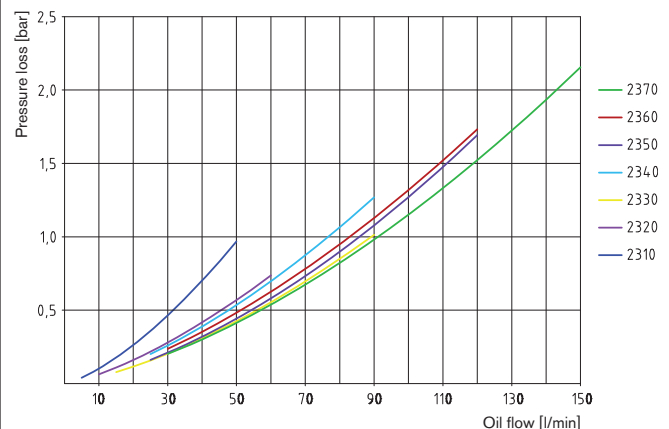
Tube circuit: Plain water at an inlet temperature of 20 °C

**Note:** Different fluids possess different thermal and mechanical properties. Fluids other than those indicated above will generate different performance characteristics to those shown in the table. For an accurate performance prediction contact the KTR engineering team. Tel. 05971- 798-0 oder [www.ktr.com](http://www.ktr.com).

Power diagramme of the 2300 series

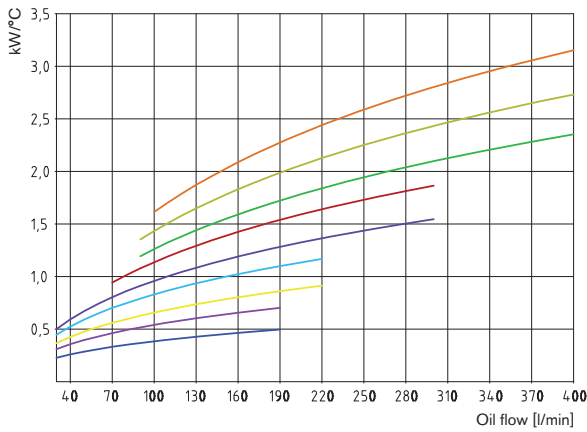


Pressure loss of the 2300 series

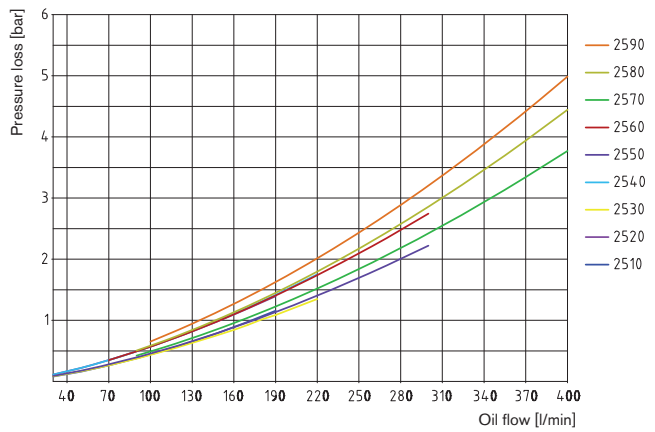


## Oil/water cooler — Type TAK/T

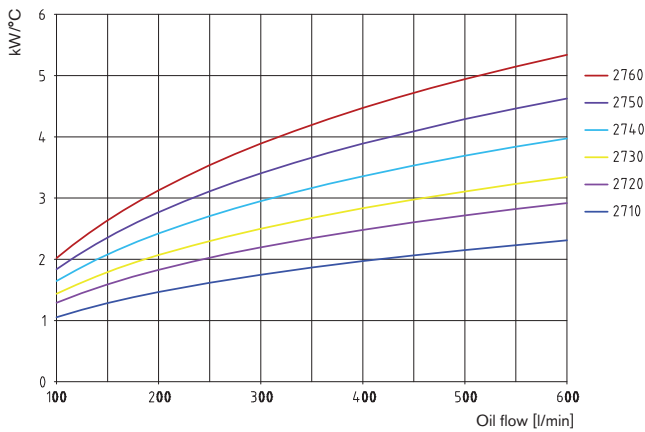
Power diagramme of the 2500 series



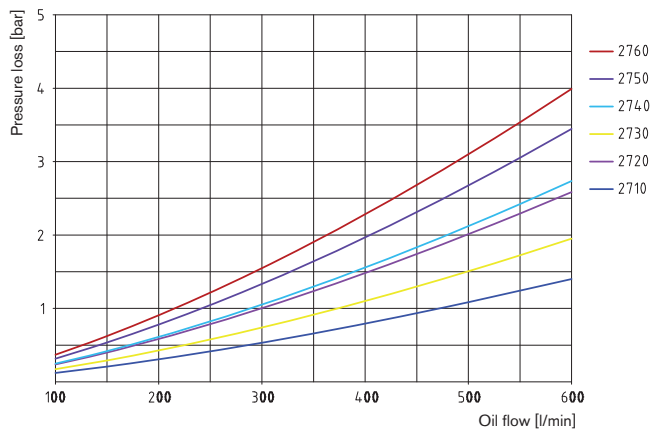
Pressure loss of the 2500 series



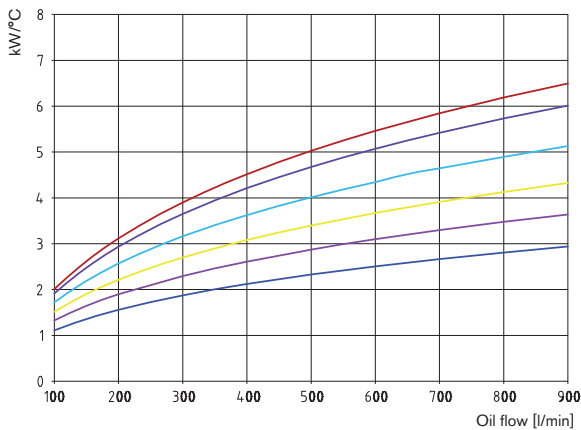
Power diagramme of the 2700 series



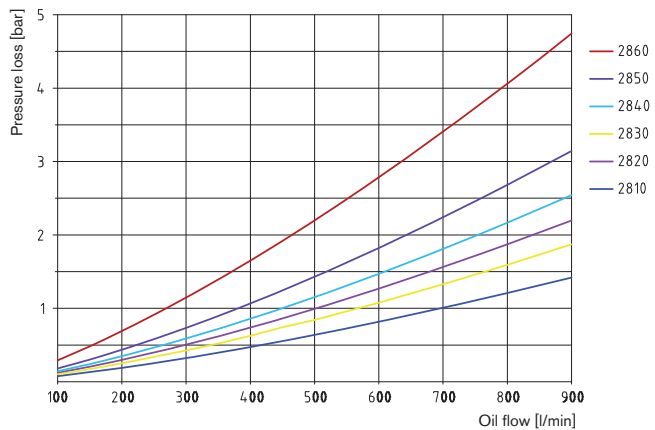
Pressure loss of the 2700 series



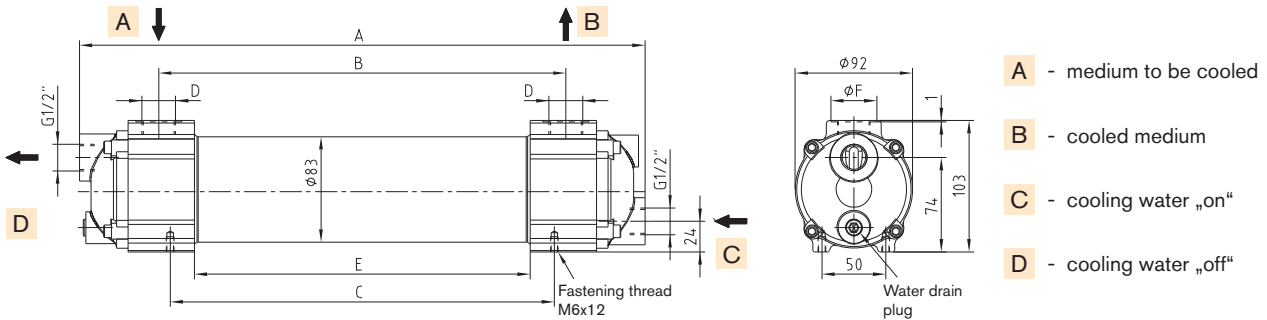
Power diagramme of the 2800 series



Pressure loss of the 2800 series



## Oil/water cooler — Type TAK/T



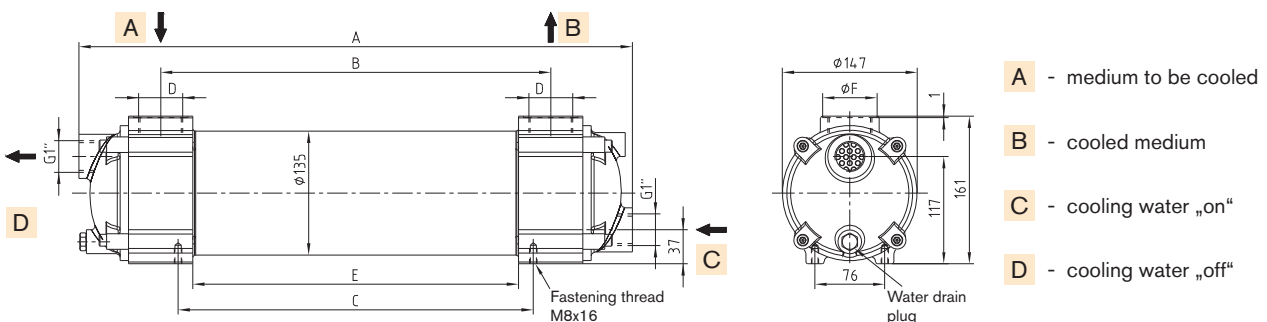
- A** - medium to be cooled
- B** - cooled medium
- C** - cooling water „on“
- D** - cooling water „off“

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

<sup>1)</sup> On Model No 2312 two M6 x 12 mounting holes are provided on the base midway between the oil port centres.

Add suffix H to part number for 3/4" BSP water connections.

Max. permissible oil temperature 100 °C. Max. oil pressure 30 bar. Max. water pressure 10 bar.



- A** - medium to be cooled
- B** - cooled medium
- C** - cooling water „on“
- D** - cooling water „off“

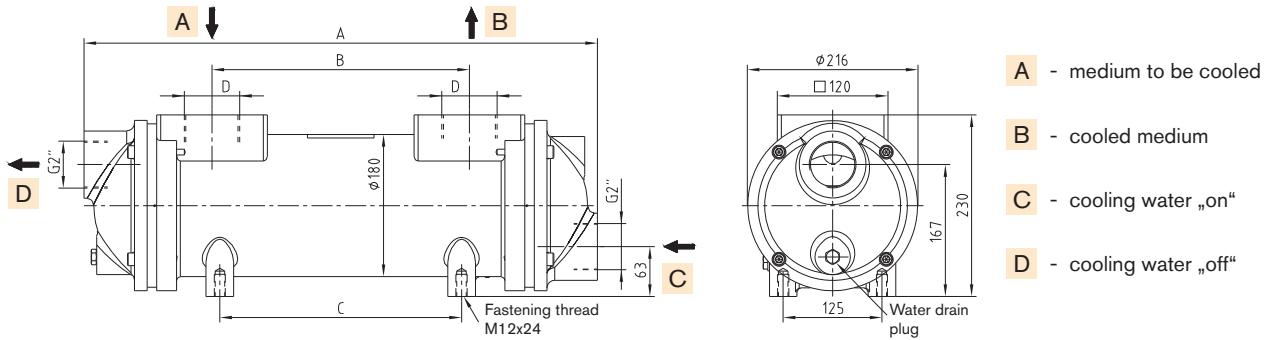
TAK/T Serie 25									
Type	A [mm]	B [mm]	C [mm]	D [BSP]	E [mm]	ØF [mm]	Weight [kg]	Oil vol. [l]	Water vol. [l]
TAK/T 2512	291	129	75	G1	-	45	10	1,4	1,4
TAK/T 2522	377	199	161	G1 1/4	-	53	12	1,9	1,7
TAK/T 2532	475	297	259	G1 1/4	-	53	13	2,5	2,1
TAK/T 2542	603	425	387	G1 1/4	333	53	14	3,5	2,6
TAK/T 2552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

Add suffix H to part number for 1 1/2" BSP water connections (A = +14mm).

Max. permissible oil temperature 100 °C. Max. oil pressure 30 bar. Max. water pressure 10 bar.

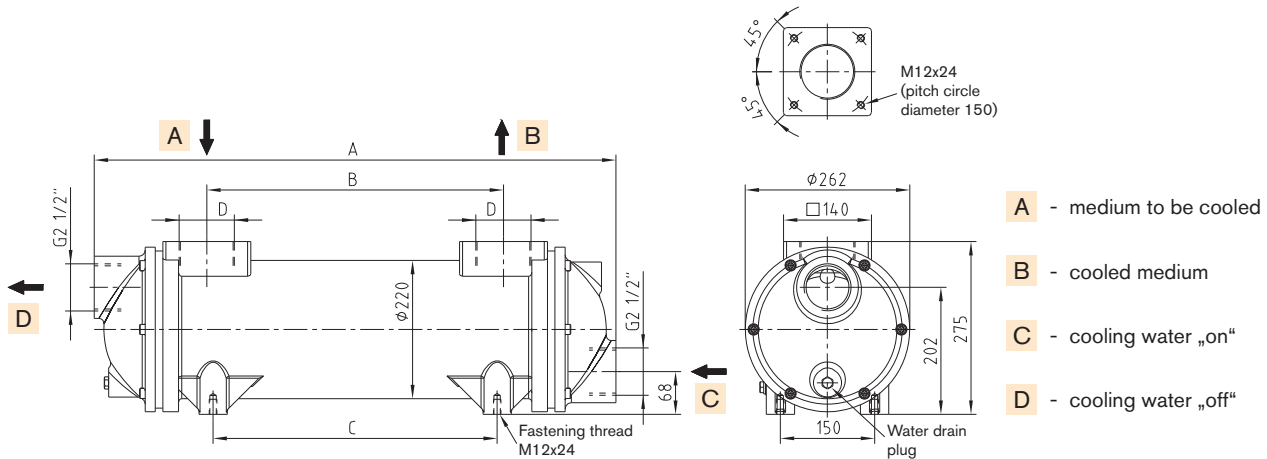
Order form	TAK/T	231	2	SW
Type	Series/Size	2 = Industrial version (standard) 3 = Industrial version with viton seals, Temp. > 100 °C 4 = Marine version 5 = Marine version with viton seals, Temp. > 100 °C 6 = Special Marine version for severely polluted or poor quality water 7 = Special Marine version for severely polluted or poor quality water with viton seals, Temp. > 100 °C	Additional details SW = Sea water version	

## Oil/water cooler — Type TAK/T



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

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



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

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

Order form	TAK/T	271	2	SW
Type	Series/Size	2 = Industrial version (standard) 3 = Industrial version with viton seals, Temp. > 100 °C 4 = Marine version 5 = Marine version with viton seals, Temp. > 100 °C 6 = Special Marine version for severely polluted or poor quality water 7 = Special Marine version for severely polluted or poor quality water with viton seals, Temp. > 100 °C	Additional details SW = Sea water version	

## Oil/water cooler — Type TAK



- 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 m<sup>2</sup> up to 18,41 m<sup>2</sup>)
- 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
5..	75	45	22
7..	225	90	46
10..	330	210	106

All flows l/min.

#### 2) Operating temperature

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

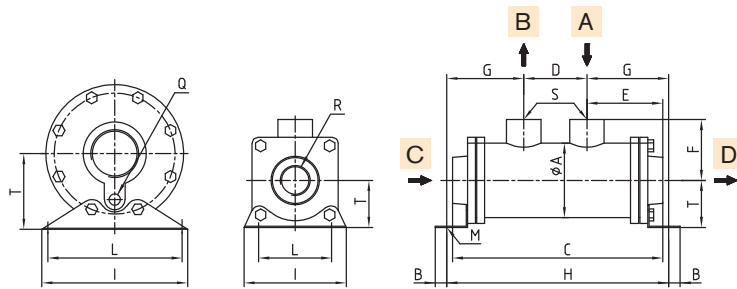
#### 3) Operating pressure

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 5971 798-424).

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	Bypass valve O=without	FW= fresh water SW= sea-water	Tubes 2=copper/nickel (standard)	Tube sheet 1=Stahl (standard) 3=saltwater-proof	

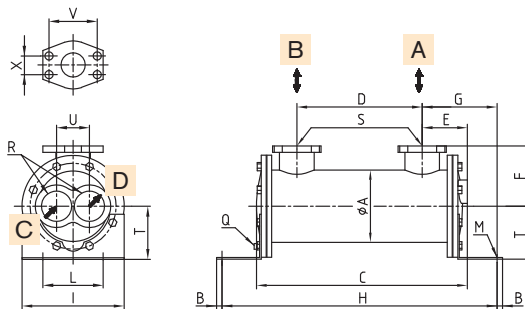
## Oil/water cooler — Type TAK



- 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	∅9x16	—	G 3/4"	41
TAK-7..	90	15	103	103	127	76	∅11x19	G 1/4"	G 1 1/4"	66
TAK-10..	128	20	116	116	165	102	∅11x25	G 1/4"	G 1 1/2"	102

\* outsider TAK - 505 = 66 mm



- A** - medium to be cooled
- B** - cooled medium
- C** - cooling water „on“
- D** - cooling water „off“

TAK - Typ „2-pass“											
Type	Dimensions [mm]										
	A	B	E	G	I	L	M	Q	R	T	U
TAK-5..	65	12	83	85	89	63,5	∅9x16	—	G 3/8"	41	28
TAK-7..	90	15	91	95	127	76	∅11x19	—	G 1"	66	41
TAK-10..	128	20	113	110	165	102	∅11x25	G 1/4"	G 1 1/4"	102	60

Unit dimensions											
Type	C		D	F	H	W <sub>T</sub> <sup>1)</sup> [m <sup>2</sup> ]	Weight [kg]	Oil connection			
	1-pass	2-pass						Standard S	Optional		
									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	76	73	272	1,38	7,3	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-712	385	360	177	73	373	2,18	8,4	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-714	435	411	228	73	424	2,53	8,8	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-718	537	513	330	73	526	3,29	10,2	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-724	689	665	482	73	678	4,44	11,6	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-736	994	995	787	73	983	6,73	15,5	G 1 1/2"	SAE 1 1/2"	35,8	69,9
TAK-1012	389	369	157	92	392	4,38	15,4	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1014	440	420	207	92	443	5,17	16,9	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1018	541	522	309	92	544	6,73	19,8	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1024	694	674	461	92	697	9,06	21,8	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1036	999	979	766	92	1002	13,74	30,5	G 1 1/2"	SAE 2"	42,9	77,7
TAK-1048	1303	1284	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"

<sup>1)</sup> W<sub>T</sub> = Heat exchange surface [m<sup>2</sup>]

## Oil/water cooler — Plate heat exchanger PHE



- 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 1.4301 (AISI 304) and the use of copper filler metal
- Maximum operating pressure: 30 bar /  
Maximum operating temperature: 200 °C
- Available from stock

### 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.

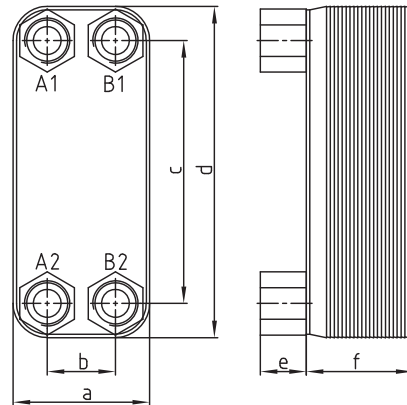
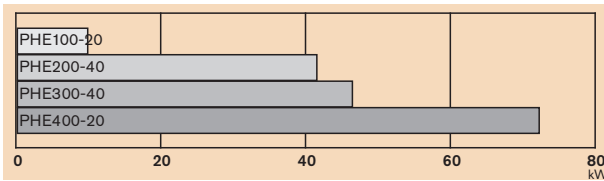
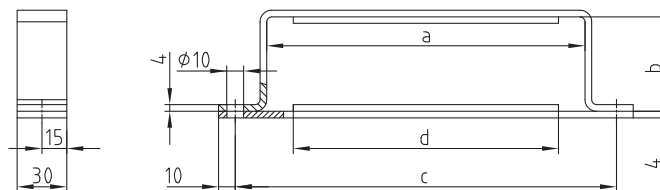


Plate heat exchanger									
Series	Type	Thread	Plates	a	b	c	d	e	f
PHE	100	4 x 3/4"	20	73	40	154	191	24	52
PHE	200	4 x 1"	40	116	72	243	286	24	103
PHE	300	4 x 1"	40	112	50	466	526	24	103
PHE	400	4 x 1 1/2"	20	246	174	456	528	27	59,5

### 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



Fastening device			
	a	b	d
BH100-20	80	51	75
BH200-40 / BH300-40	120	102	115
BH400-20	250	57	240

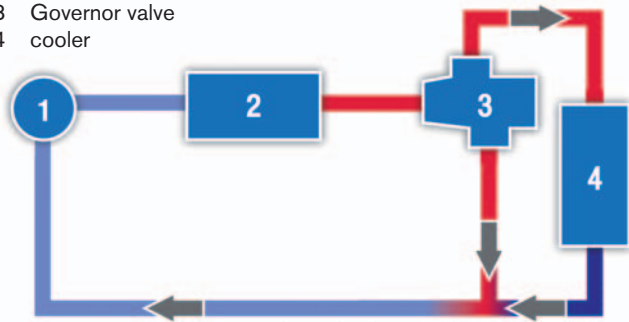
From size PHE 200 we recommend 2 supports per cooler.

Order form	PHE	100	20
	PHE=Plate heat exchanger	Size	Number of plates

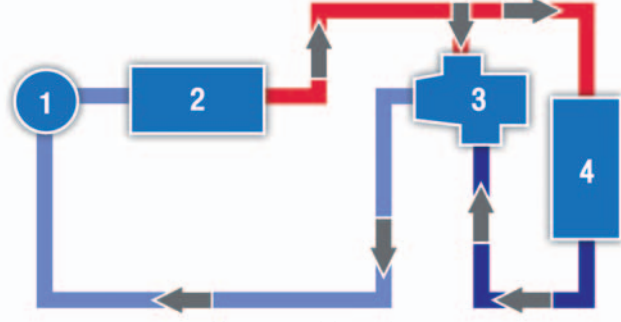


## Oil thermostat valve

- 1 Pump
- 2 Load
- 3 Governor valve
- 4 cooler



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



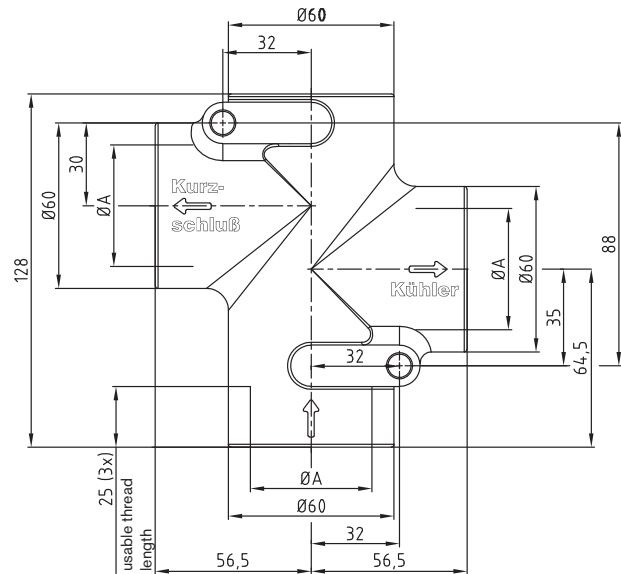
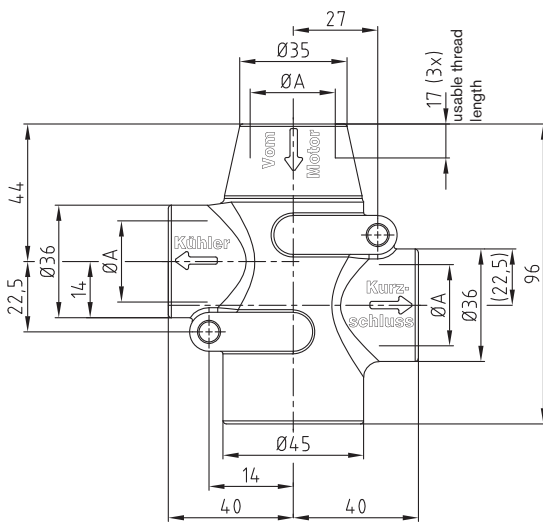
Use as a mixing valve:  
Constant temperature on load inlet

### 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 thread	Inlet temperature [°C]	Max. inflow to the cooler obtained with °C
OTV1-45	4	G 3/4"	45	60
OTV1-55	4	G 3/4"	55	70
OTV1-70	4	G 3/4"	70	85
OTV2-45	10	G 1 1/2"	45	60
OTV2-55	10	G 1 1/2"	55	70
OTV2-70	10	G 1 1/2"	70	85

max. operating pressure 16 bar

Order form	OTV	1	55
	Oil temperature valve	Size	Inlet temperature

## 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	-	●	●	6	6	●	6	6	6	
Foot flange PTFE, PTFS	ALU	●	●	6	●	●	●	●	●	
Foot flange PTFE, 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 cover	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	●	●	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:

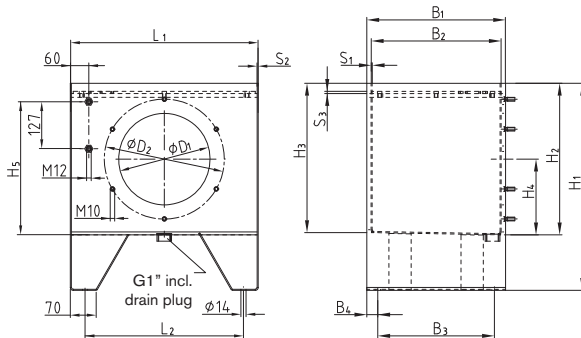
The figures indicated may only be considered as a general standard. In case of doubt we would absolutely recommend to perform a test. The aforementioned details do not entitle for any legal claim, we definitely do neither take over any warranty nor liability. Purely the chemical and mechanical resistance 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).

## Series BSK

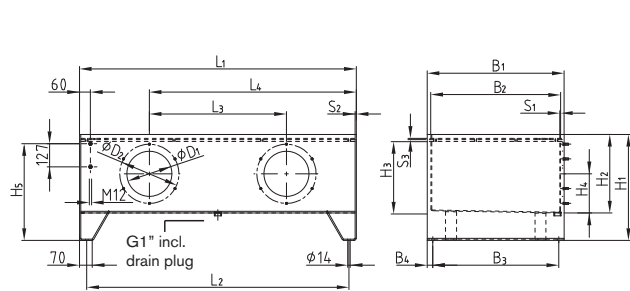


- Tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Subsequent assembly of KTR standard separation sheet 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

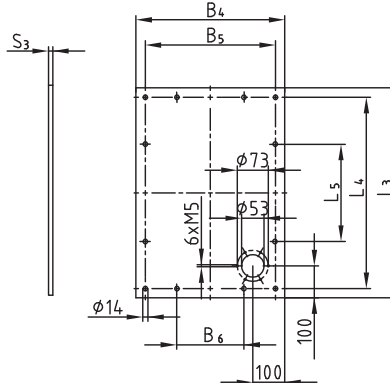
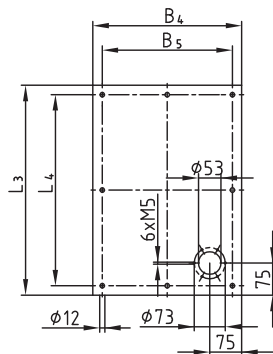
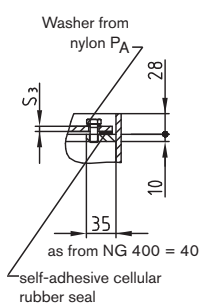
Order description	Avail. vol.	Weight	Tank dimensions [mm]															Cleaning cover			Tank completely available from stock			
			L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	D <sub>1</sub>	D <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	No.	Type	Standard t = S <sub>3</sub>	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	●	
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	●	on request
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“

NG	Dimensions [mm]							Number of holes
	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	B <sub>4</sub>	B <sub>5</sub>	B <sub>6</sub>	S <sub>3</sub>	
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"

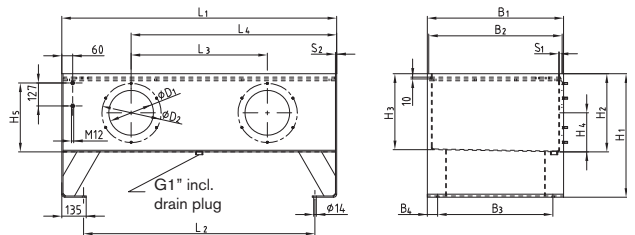
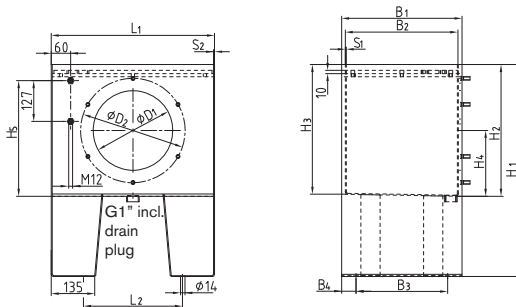
## Series BNK design A



- 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

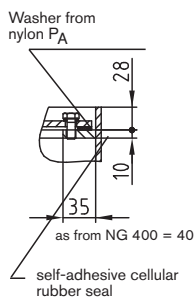


### Series BNK Form A, NG 63-1250

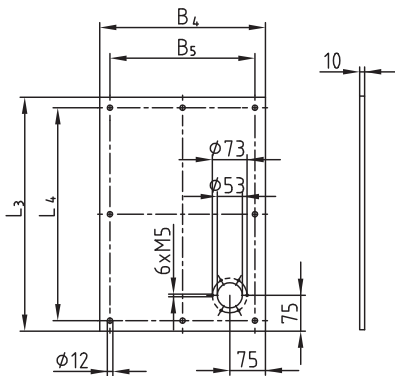
Order description	Avail. vol.	Weight	Tank dimensions [mm]																	Cleaning cover		Tank completely available from stock	
			NG	Litres	kg	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	D <sub>1</sub>	D <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	No.
BNK 63	59	47	508	308	—	—	375	365	285	45	660	410	403	205	360	248	324	3	3	1	V 324-6	●	
BNK 100	92	77	633	393	—	—	474	460	360	57	660	407	399	205	357	248	324	4	4	1	V 324-6	●	
BNK 160	152	112	810	570	—	—	604	590	490	57	660	410	400	205	360	248	324	4	4	1	V 324-6	●	
BNK 250	235	148	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	2	V 324-6	●	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	●	on request
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

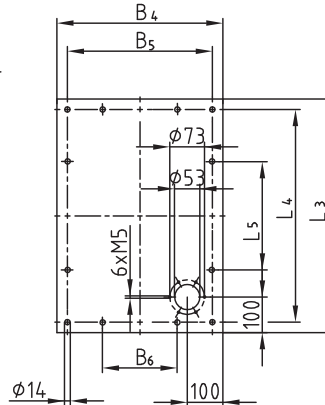
Cover design E  
Design E



for NG 63-250  
Design E



for NG 400-1250  
Design E



### Cover design „E“

NG	Dimensions [mm]						Number of holes
	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	B <sub>4</sub>	B <sub>5</sub>	B <sub>6</sub>	
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"

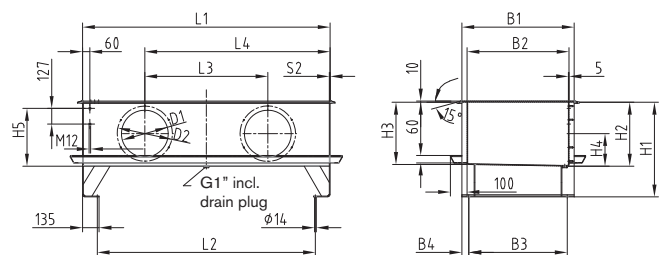
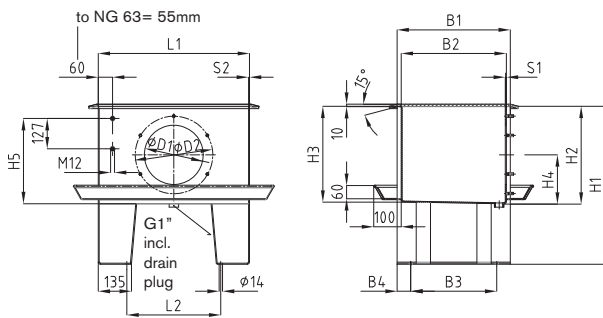
## Series BNK design B



- 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

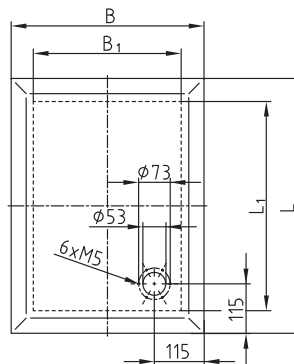
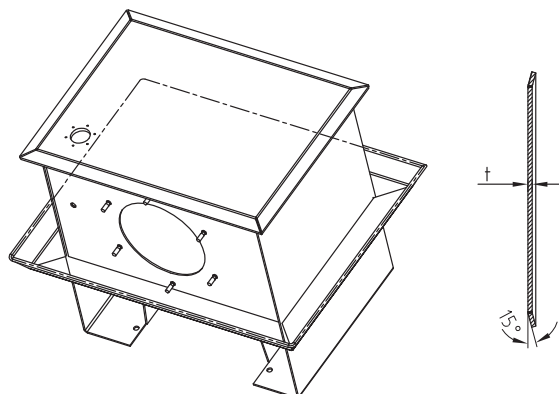


### Series BNK design B, NG 63-1250

Order description	Avail. vol.	Weight	Tank dimensions [mm]																	Tank completely available from stock			
			NG	Litres	kg	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	D <sub>1</sub>	D <sub>2</sub>	S <sub>1</sub>	S <sub>2</sub>	No..
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		
BNK 250	235	170	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	1	V 324-6		
BNK 400	375	270	1514	1274	750	1132	749	735	635	57	680	430	417	215	380	248	324	4	7	1	V 324-6		
BNK 630	595	375	1514	1274	750	1132	959	945	845	57	770	520	504	265	470	383	449	4	7	2	V 449-6		
BNK 800	752	420	2014	1774	1000	1507	914	900	800	57	770	520	504	265	470	383	449	5	7	2	V 449-6		
BNK 1000	945	490	2014	1774	1000	1507	1079	1065	965	57	800	550	531	285	500	383	449	5	7	2	V 449-6		
BNK 1250	1180	636	2014	1774	1000	1507	1349	1335	1235	57	800	550	527	285	500	383	449	5	7	2	V 449-6		

### Tank cover

#### Cover design A



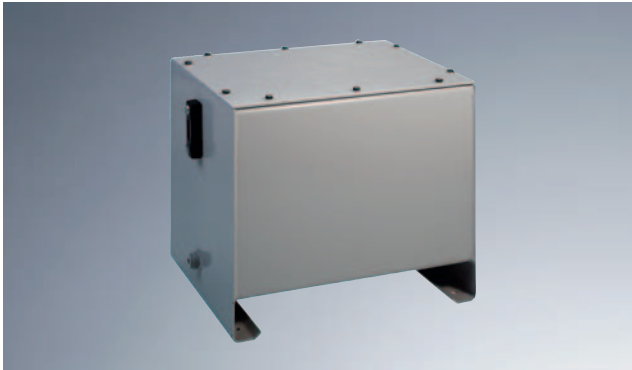
#### Cover design „A“

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

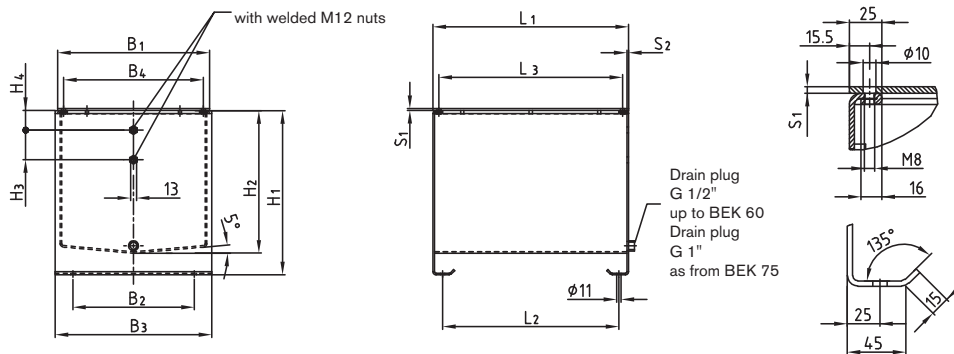
#### Order form

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

## Series BEK



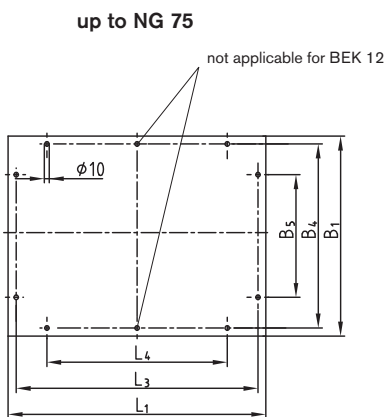
- Tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Cover machining as per customer's request



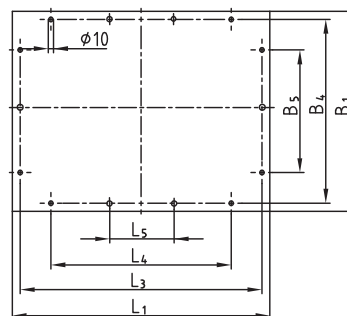
Series BEK, NG 12-300													
Order description	Available volume	Weight	Tank dimensions [mm]										Tank completely available from stock
			NG	Litres	kg	L <sub>1</sub>	L <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	H <sub>1</sub>	H <sub>2</sub>	
BEK 12	16	17	310	260	298	220	310	275	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



#### as from NG 100



#### Cover design „E“

NG	dimensions [mm]							
	S <sub>1</sub>	L <sub>1</sub>	B <sub>1</sub>	L <sub>3</sub>	B <sub>4</sub>	L <sub>4</sub>	B <sub>5</sub>	L <sub>5</sub>
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.

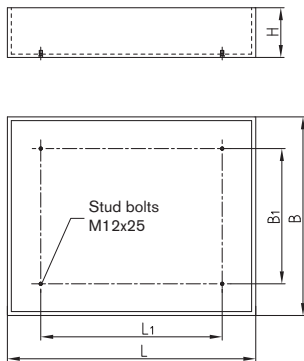
Order form	BEK	100	E
	KTR Euro tank	Tank size	Cover design "E"

## Oil Sumps

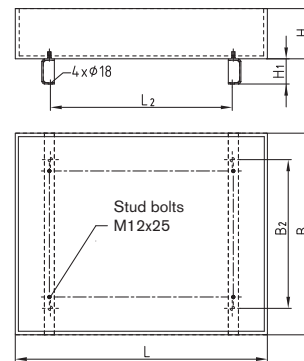


- Oil sumps made of high-grade steel
- Collection volume corresponds to the full load volume of the tank
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All oil sumps are subject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

Oil sump without feet



Oil sump with feet



Distance dimensions for stud bolts see table L<sub>1</sub> and B<sub>1</sub>

### Oil Sumps for BSK and BNK

Order description	Volume	Weight in kg		Tank dimensions [mm]										Available from stock without feet
		without feet	with feet	L	L <sub>1</sub>		L <sub>2</sub>	B	B <sub>1</sub>		B <sub>2</sub>	H	H <sub>1</sub>	
NG	litres				BSK	BNK			BSK	BNK	B <sub>2</sub>	H	H <sub>1</sub>	
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	

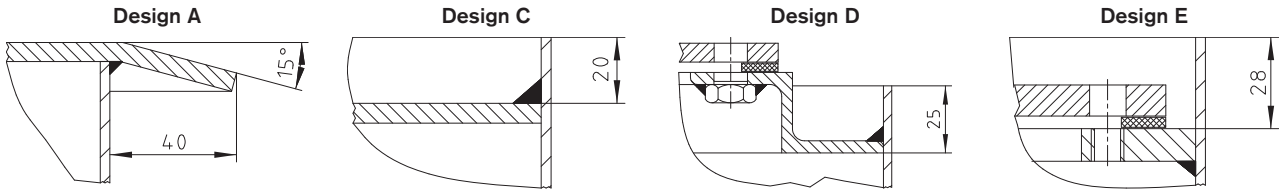
● = Standard programme available from stock and in short term.

Type plate and certificates according to regulations §19 WHG available against extra charge. Please indicate in the order.

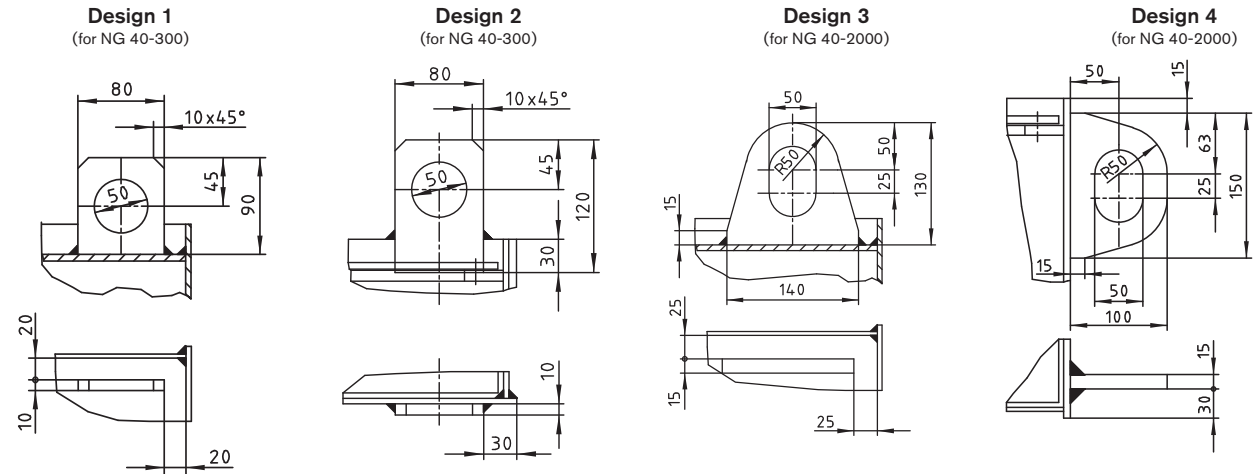
Order form	Ö	63	BSK	F
Oil sump		Tank size	Tank design	F = with feet O = without feet

## Cover design, separation sheet metals, transport eyes and creasings

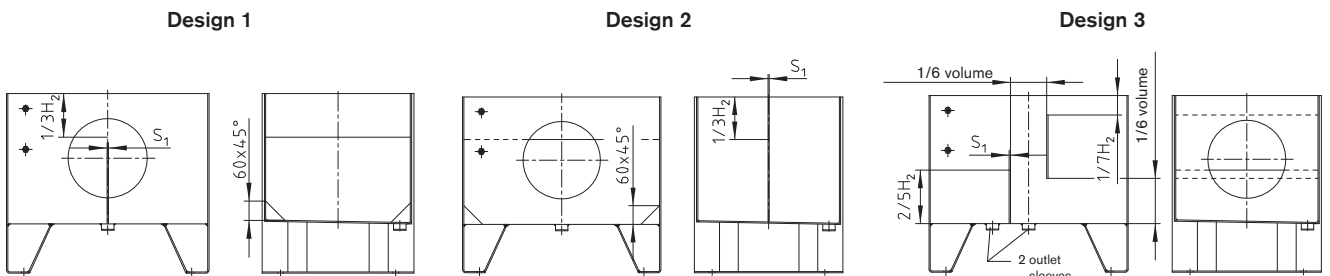
Cover designs for DIN tanks of the BKN series:



Transport eyes:

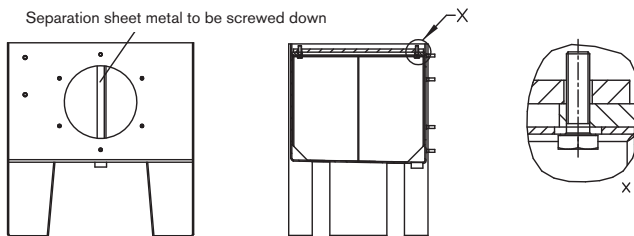


Separation sheet metals:

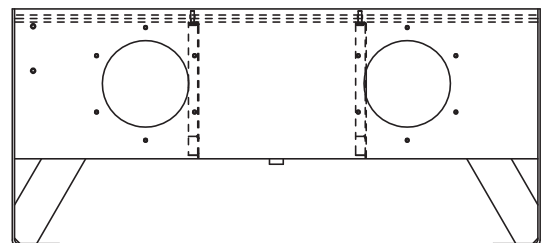


Separation sheet metals to be screwed down:

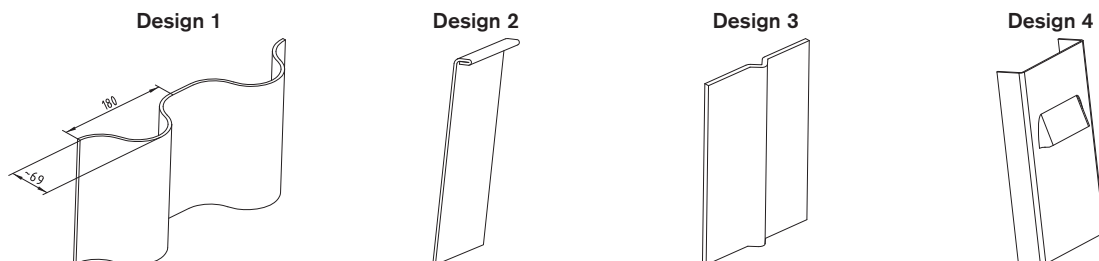
Separation sheet metal up to BSK/BNK 300



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



Creasings:





## Special tanks on request

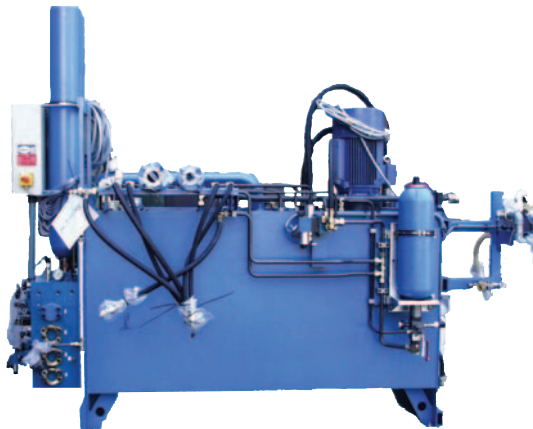
Combi-tank Hydraulic diesel with battery box



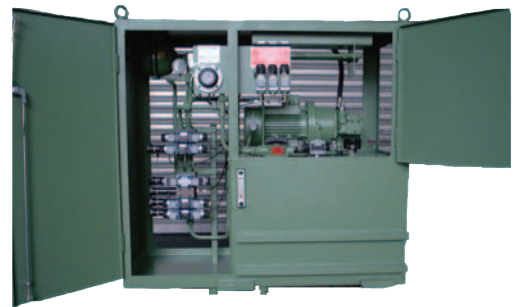
Mobile hydraulics



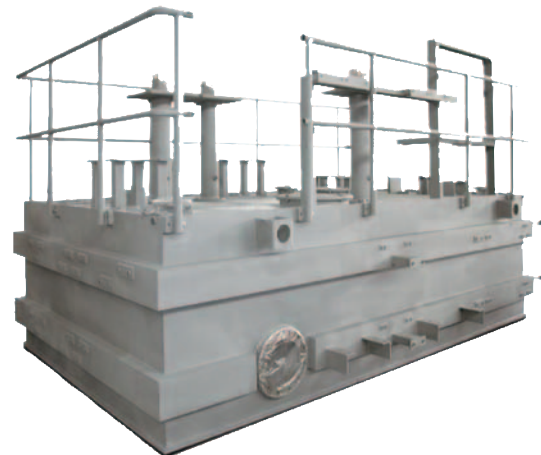
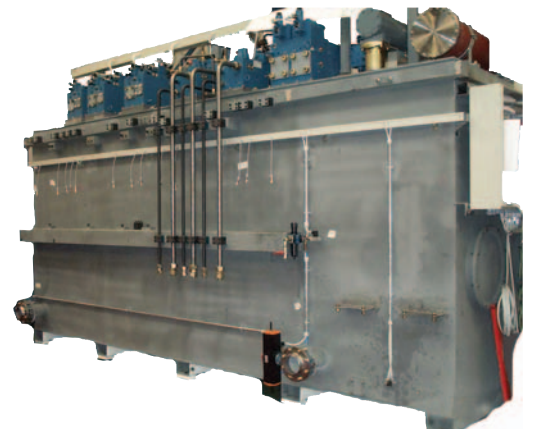
Hydraulic tank



Tank with housing



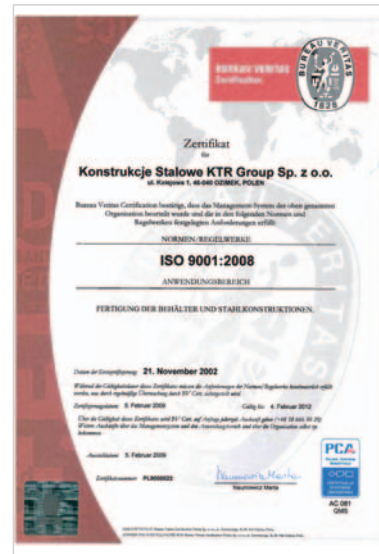
Large tanks for presses and units



## Certificates

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

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



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

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

