

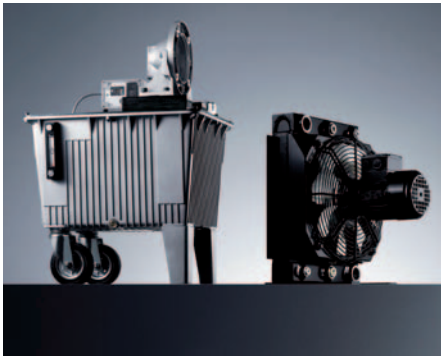
## Hydraulic Components:

- Bellhousings and Accessories
- Damping Elements
- Tanks
- Thermo Management

Made for Motion

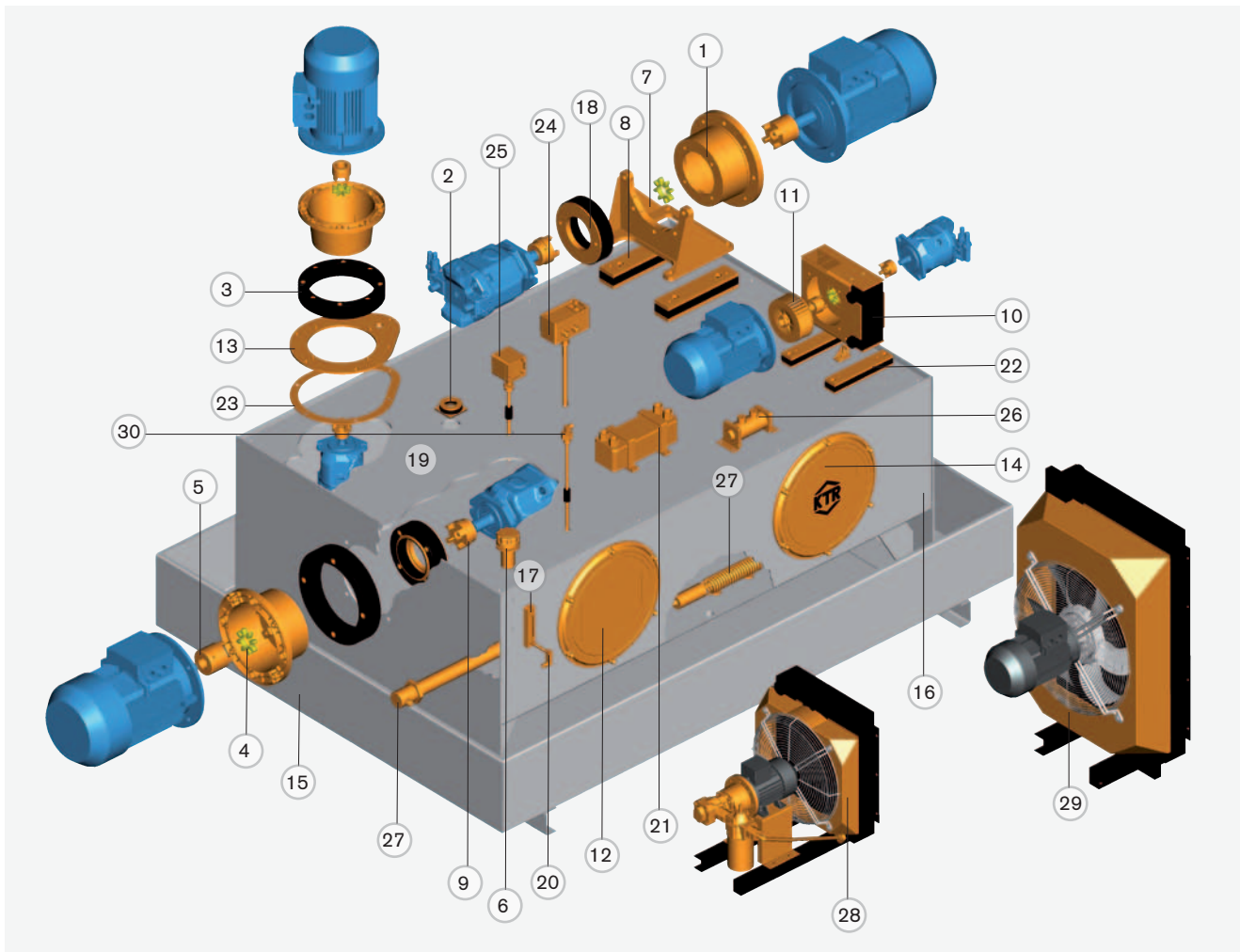


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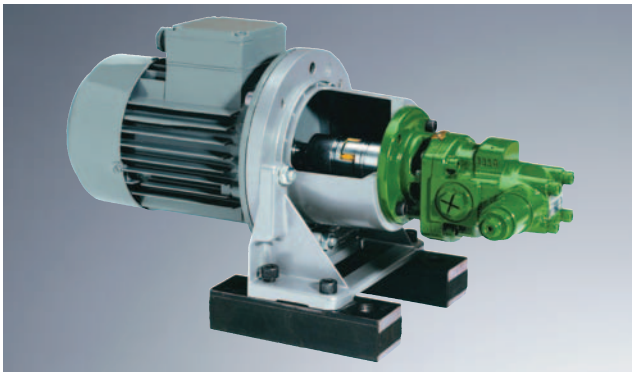
## Overview



- |  |  |
|--|--|
| ① Bellhousing type PK/PL                                       | ⑩ Bellhousing type PIK with integrated oil cooler              |
| ② Elastic flange   | ⑪ Fan for PIK  |
| ③ Damping ring type 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 Machining of tank cover according to customer specification  |
| ⑧ Damping rod type DSFS for foot flange type PTFS              | ⑰ Oil-level indicator type KO                                  |
| ⑨ ROTEX® coupling hub, pump side                               | ⑱ Plate heat exchanger type PHE                                |
| ⑪ Fan for PIK  | ⑳ Temperature switch type TS                                   |
| ⑫ Standard cleaning cover                                      | ㉑ Cooling-pump-unit type OPC with hydraulic pump filter        |
| ⑬ Additional flange type ZO                                    | ㉒ Oil/air cooler type OAC                                      |
| ⑭ Cleaning cover with logo according to customer specification | ㉓ Level-temperature-switch type NVT                            |
| ⑮ Oil sump pan   | ㉔ Steel tanks type BSK/BNK/BEK                                 |
|  | ㉕ Oil-level indicator type KO                                  |
|  | ㉖ Damping ring type D  |
|  | ㉗ Damping rod type DSK for PIK                                 |
|  | ㉘ Gasket type DZ for additional flange type ZO                 |
|  | ㉙ Industrial controller type IR                                |
|  | ㉚ Digital industrial control type IRDN with level switch       |
|  | ㉛ Horizontally mounted cooler type TAK                         |
|  | ㉜ Tank heater  |
|  | ㉝ Cooling-pump-unit type OPC with hydraulic pump filter        |
|  | ㉞ Oil/air cooler type OAC                                      |
|  | ㉟ Level-temperature-switch type NVT                            |

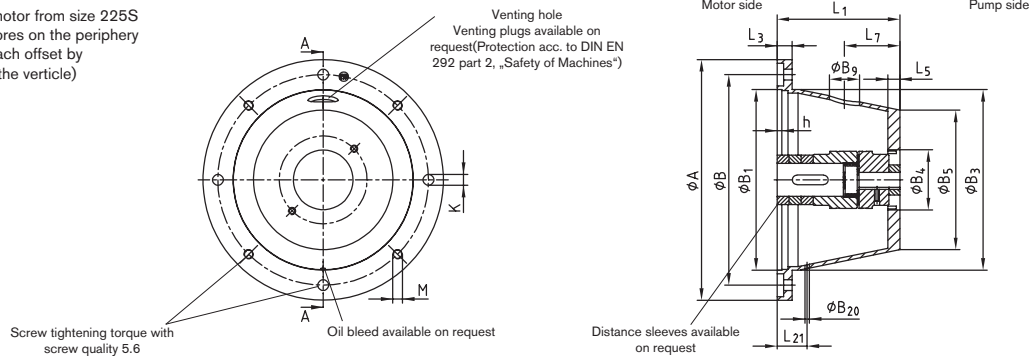
The customer has to protect rotating parts from accidental contact (Safety of Machines DIN EN 292 part 2).  
The fastening screws should be protected from unscrewing by the customer (e. g. by anaerobic bonding agents like Loctite®).

## Bellhousings



- Connecting components between IEC motor and hydraulic pump
- For almost every hydraulic pump from stock or short-term
- Both flange sides are finish machined
- Motor and pump shaft centered
- KTR bellhousings made of aluminium, from steel on request
- In many cases KTR bellhousings can be piled up
- Designed for high loads
- For the bellhousing selection you require 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 each 8 bores on the periphery (thread each offset by 22,5° on the verticle)



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

Bellhousings according to VDMA 24561 design A																				
IEC motor size (shaft end) d1 x l3	kW with n = 1500 rpm	Bellhousing size	Gasket DP size	Foot flange PTFE/PTFS	Dimensions [mm]												Venting hole		Oil bleed	
					A	B	B1	B3	h	K	M	L1	L3	L5 <sup>1)</sup>	B5	min. B4	B9	L7	B20	L21
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			102	29		38		
80 (19 x 40) 90S/90L (24 x 50)	0,55	PK 200/3/..	200	200	200	165	130	145	4	11	M10	100	16	12	124	40	36	47	7,5	36
	0,75	PL 200/3/..										110			140	37		60		
	1,1	PL 200/8/..										124			141	57		62		
	1,5	PFL 200/6/..										140			180	47		54		
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	57	7,5	43
	3	PL 250/3/..										124			126	42		52		
	4	PL 250/6/..										135			180	56		64		
		PL 250/4/..										148			180	56		64		
		PFL 250/18/..										175			250			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	68	7,5	45
		PL 300/15/..										150			231	77		66		
	7,5	PK 300/1/..										155			205	56		68		
		PL 300/4/..										168			220	57		74		
160M/160L (42 x 110) 180M/180L (48 x 110)	11	PK 350/4/..	350	350	350	300	250	260	6	17	M16	188	26	15	225	59	50	87	7,5	51
	15	PK 350/6/..										204			248	97		102		
	18,5	PK 350/10/..										228			248	97		115		
200L (55 x 110)	22	PL 350/7/..	400	400	400	350	300	300	6	17	M16	256	26	20	255	88	50	115	7,5	51
	30	PK 400/4/..										204			230	75		92		
		PK 400/5/..										228			279	95		104		
225S/225M (60 x 140)	37	PL 400/5/..	450	450	450	400	350	350	6	17	M16	256	25	20	290	97	50	118	7,5	51
	45	PK 450/2/..										234			260	107		107		
		PK 450/3/..										262			315	97		121		
		PL 450/3/..										285			325			133		
250M (65 x 140) 280S/280M (75 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			360	120		125		
	90	PK 550/3/..										275			340	97		130		
		PL 550/3/..										295			360	123		140		
315S/315M (80 x 170)	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			410	120		147		
	160	PK 660/2/..										330			400			157		
	200	PL 660/4/..										343			490	174		163		
355L/400M (100 x 210)	355	PK 880/1/..	880	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			487			160		



## Bellhousings

Other bellhousings																					
IEC motor size (shaft end) d <sub>1</sub> x l <sub>3</sub>	kW with n = 1500 rpm	Bellhousing 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.	Venting hole		Oil bleed		
71 (14 x 30)	0,25	PFK 160/6/..	160	160	160	130	110	110	4	9	M8	79	13	13	140	30	25	35	7,5	28	
	0,37	PFL 160/6/..										101									35
80 (19 x 40)	0,55	PK 200/11/..	200	200	200	165	130	145	4	11	M10	45	16	10	144	97	10	15	7,5	30	
	0,75	PL 200/11/..										55									18
90S/90L (24 x 50)	1,1	PK 200/13/..	200	200	200	165	130	145	4	11	M10	152	16	12	186	37	25	30	7,5	36	
	1,5	PL 200/30/..										79									37
100L/112M (28 x 60)	2,2	PK 250/13/..	250	250	250	215	180	190	5	14	M12	159	18	12	187	97	10	20	7,5	43	
	3	PL 250/15/..										61									29
	4	PK 250/17/..	250	250	250	215	180	190	5	14	M12	79	18	12	186	74	40	39	7,5	43	
		PK 300/8/..										100									39
132S/132M (38 x 80)	5,5	PK 300/9/..	300	300	300	265	230	234	5	14	M12	110	20	15	225	95	40	45	7,5	45	
	7,5	PL 300/9/..										85									32
		PK 300/13/..	300	300	300	265	230	234	5	14	M12	99	20	15	231	97	40	37	7,5	45	
		PL 300/13/..										210									37
160M/160L (42 x 110)	11	PK 350/8/..	350	350	350	300	250	260	6	17	M16	138	25	15	228	56	50	57	7,5	51	
	15	PK 350/11/..										204									53
180M/180L (48 x 110)	18,5	PL 350/11/..	350	350	350	300	250	260	6	17	M16	146	26	18	252	92	50	60	7,5	51	
	22	PK 350/18/..										159									67
200L (55 x 110)	30	PL 350/18/..	400	400	400	350	300	300	6	17	M16	184	25	15	244	77	50	73	7,5	51	
		PK 400/12/..										165									80
		PL 400/12/..	400	400	400	350	300	300	6	17	M16	170	25	20	290	97	50	75	7,5	51	
		PK 450/5/..										184									82
225S/225M (60 x 140)	37	PL 450/5/..	450	450	450	400	350	350	6	17	M16	165	25		260	120		73	7,5	51	
	45	PK 450/6/..										185									83
		PK 450/6/..	450	450	450	400	350	350	6	17	M16	176	26		259	98	50	80	7,5	51	
		PFL 450/9/..										253									90
		PK 450/12/..	450	450	450	400	350	350	6	17	M16	204	25	20	370	137	50	116	7,5	51	
		PL 450/12/..										222									101
250M (65 x 140)	55	PK 550/4/..	550	550	550	500	450	450 <sup>2)</sup>	6	17	M16	190/192	32	30	355	129	50	88	7,5	60	
		PL 550/4/..										207									96
280S/280M (75 x 140)	75	PK 550/8/..	550	550	550	500	450	450 <sup>2)</sup>	6	17	M16	217	26	25	330	124	50	100	7,5	51	
	90	PK 550/8/..										217									100
315S/315M (80 x 170)	110-	PK 660/3/..	660	660	660	600	550	550 <sup>2)</sup>	8	22	M20	247	40	36	465	80	50	115	7,5	60	
	160	PL 660/3/..										260									122
355L/400M (100 x 210)	355	PK 800/1/..	800	900	800	740	680	680 <sup>2)</sup>	8	22	M20	335	37	38	520	149	50	140	7,5	70	
	710	P 800/3/..										443									206

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

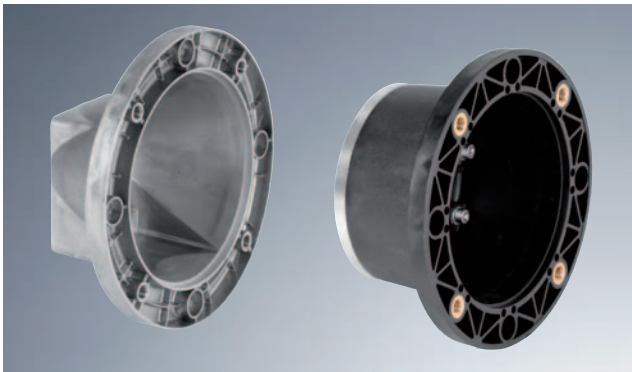
1) Bottom of pot does not consist of solid material ribbed

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

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

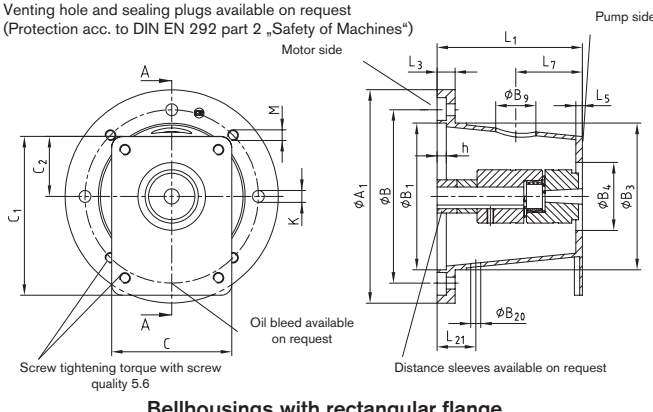
Ordering example:	PL	PK	P	450	3	8
	Bellhousing type, long	Bellhousing type, short, "k"	Former bellhousing type	Flange diameter of IEC Motor	Serial model code	Internal modification code

## Bellhousings

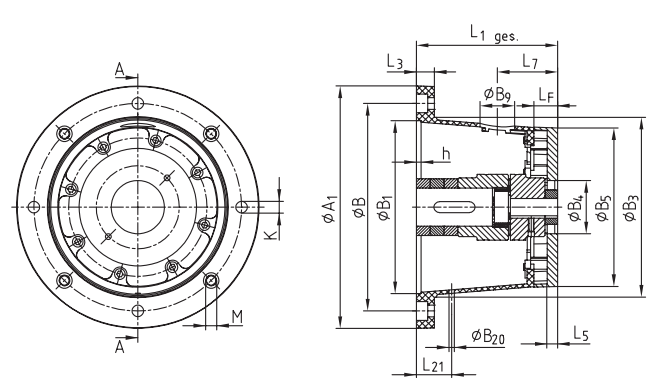


- Motor and pump shaft centered; designed for high loads
- Both flange sides are finish machined
- Type KPT: Bellhousing made of special nylon material
  - Accurate to size with higher temperatures and moisture
  - Stiffness is similar to aluminium bellhousings
  - Very good damping properties
  - Flange side for pump adapter from aluminium
- Low-cost alternative to bellhousings with damping ring
- Operating temperature: -10 °C to +60 °C
- For almost every hydraulic pump from stock or in short term
- For the bellhousing selection you require please see our selection programme at [www.ktr.com](http://www.ktr.com)

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



**Bellhousings with rectangular flange**



**Bellhousings made of nylon**

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

Bellhousings made of aluminium with rectangular pump connections																								
IEC motor size	kW with n = 1500 rpm	Bellhousing size	Gasket DP size	Foot fl. PTFL/PTFS	Dimensions [mm]															min.	Venting hole		Oil bleed	
					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> <sup>1)</sup>	C	C <sub>1</sub>	C <sub>2</sub>	B <sub>4</sub>	B <sub>9</sub>		L <sub>7</sub>	B <sub>20</sub>	L <sub>21</sub>	
																					B <sub>9</sub>	L <sub>7</sub>	B <sub>20</sub>	L <sub>21</sub>
71	0,25	PL 160/1/..	160	160	160	130	110	110	4	9	M8	70	13	12	90	120	45	22	25	50	7,5	28		
		95										43												
	0,37	PK 160/4/..										90								90			22	37
80	0,55	PL 200/1/..	200	200	200	165	130	145	4	11	M10	90	16	12	70	91	35	22	25	37	7,5	36		
		100										90											22	42
90S/90L	- 1,5	PL 200/2/..	200	200	200	165	130	145	4	11	M10	110	16	12	90	120	45	22	25	42	7,5	36		
		120										90											22	45
100L/112M	2,2	PL 250/1/..	250	250	250	215	180	190	5	14	M12	110	18	12	120	150	53	47	36	47	7,5	43		
		115										47												
	3	PL 250/2/..										125											145	180
4	2,2	PL 250/7/..	250	250	250	215	180	190	5	14	M12	125	18	12	145	180	64	46	52	7,5	43			
		145										180										64	46	
132S/132M	5,5	PL 300/1/..	300	300	300	265	230	234	5	14	M12	132	20	15	120	150	53	33	50	56	7,5	45		
		137										145											180	64
7,5	5,5	PK 300/2/..	300	300	300	265	230	234	5	14	M12	171	26	15	120	156	59	33	50	73	7,5	51		
		181										145											180	64
160M/160L	11	PL 350/1/..	350	350	350	300	250	260	6	18	M16	171	26	15	120	156	59	33	50	73	7,5	51		
180M/180L	- 22	PL 350/2/..										181											145	180

Bellhousings made of nylon																								
IEC motor size	kW with n = 1500 rpm	Bellhousing size	Gasket DP size	Foot fl. PTFL/PTFS	Dimensions [mm]															min.	Venting hole		Oil bleed	
					A <sub>1</sub>	B	B <sub>1</sub>	B <sub>3</sub>	h	K	M	L <sub>1</sub>	L <sub>F</sub>	L <sub>3</sub>	L <sub>5</sub>	B <sub>5</sub>	B <sub>4</sub>	B <sub>9</sub>	L <sub>7</sub>		B <sub>20</sub>	L <sub>21</sub>		
																					B <sub>4</sub>	B <sub>9</sub>	L <sub>7</sub>	B <sub>20</sub>
100L/112M	2,2	KPT 250/2/..	250	250	250	215	180	190	7	14	M12	120	12	19	12	166	35	42	40	52	7,5	43		
		124										16	42										52	
	3	KPT 250/3/..										135	27										58	57
4	2,2	KPT 250/4/..	250	250	250	215	180	190	7	14	M12	144	15	19	12	166	35	42	40	52	7,5	43		
		155										26	57										63	
132S/132M	5,5	KPT 300/3/..	300	300	300	265	230	234	7	14	M12	168	20	15	208	56	50	57	50	68	7,5	45		
		168										39											74	
	7,5	KPT 300/4/..										196											67	57
KPT 300/5/..	5,5	KPT 300/5/..	300	300	300	265	230	234	7	14	M12	188	18	15	208	56	50	57	50	68	7,5	45		
		196										67											57	84
160M/160L	11	KPT 350/2/..	350	350	350	300	250	260	7	17	M16	204	34	26	15	230	77	50	87	7,5	51			
		204										34										87		
180M/180L	-	KPT 350/3/..										228										58	97	102

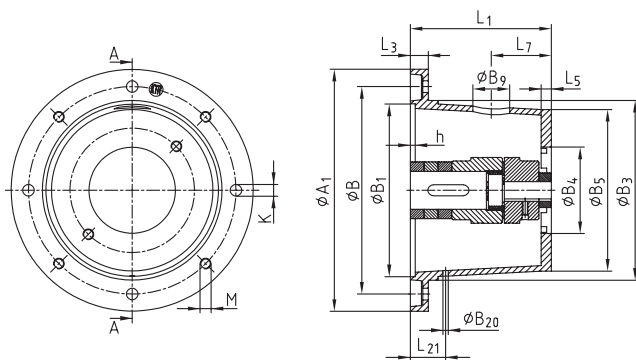
If venting holes or oil bleeds are required, please mention in your order.

<b>Ordering example:</b>	PL	PK	KPT	250	2	8
	Bellhousing type, long	Bellhousing type, short, "k"	Bellhousing type made of nylon	Flange diameter of IEC motor	Serial model code	Internal modification code

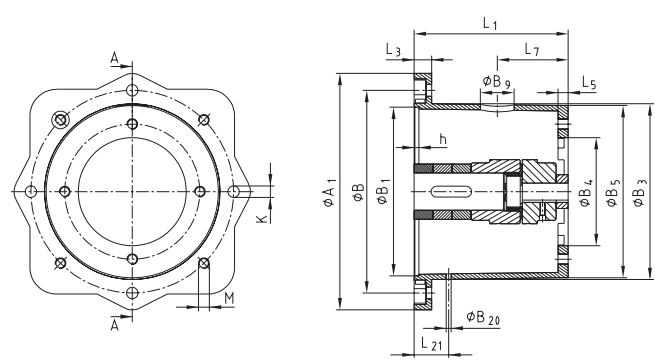
## Bellhousings



- Bellhousing made of 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
- Please note our mounting instructions



Bellhousings made of cast iron (type PG)



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

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

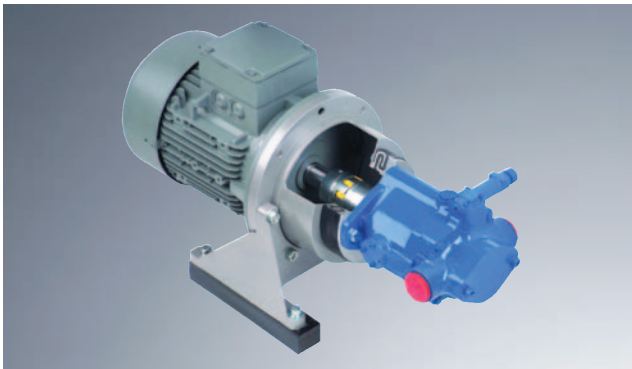
Bellhousings made of cast iron																				
IEC-motor size	kW with n = 1500 rpm	Bellhousing size	Gasket DP size	Foot fl. PTFL/PTFS	Dimensions [mm]															
					A <sub>1</sub>	B	B <sub>1</sub>	B <sub>3</sub>	h	K	M	L <sub>1</sub>	L <sub>3</sub>	L <sub>5</sub>	B <sub>5</sub>	min.	Venting hole		Oil bleed	
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			228			104		
225S/225M	37 45	PG 450/2/..	450	450	450	400	350	350	7	17	M16	234	26	24	289	97	50	107	7,5	51
	250M	55, 75										PG 450/3/..		262	20			315		
280S/280M	90	PG 550/1/..	550	550	550	500	450	450	7	17	M16	265	26	25	360	97	50	125	7,5	51
		PG 550/8/..										248			349			116		
315S/315M	110 - 160	PG 660/5/..	660	660	660	600	550	550	8	22	M20	330	32	33	425	119	50	157	7,5	60

Bellhousings made of cast iron for servo motors																			
Bellhousing 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		
PSG 200/1/..	200	200	200	165	130	145	7	11	M10	124	16	12	170	55	36	60	7,5	36	
For Servo and IEC-motors	PSG 250/1/..	250	250	250	215	180	190	7	13,5	M12	175	19	12	225	70	40	77	7,5	43
	PSG 250/2/..	250	250	250	215	180	190	7	13,5	M12	155	19	14	180	69	40	65	7,5	43
PSG 350/10/..	350	350	350	300	250	260	7	17,5	M16	228	26	17	255	95	50	102	7,5	51	

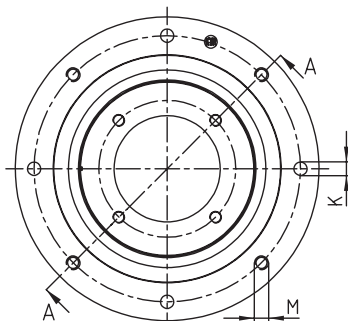
If venting holes or oil bleeds are required, please mention in your order.

Ordering example:	PG	PSG	250	1	4
	Bellhousing type made of cast iron	Bellhousing type for servo drives	Flange diameter of IEC motor	Serial model code	Internal modification code

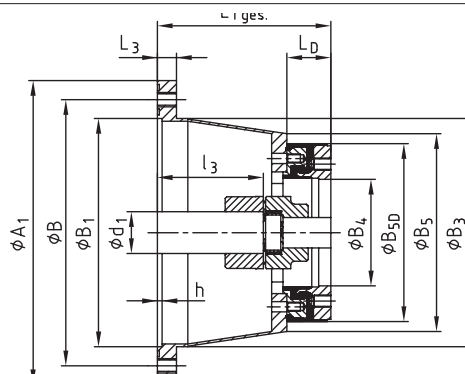
## Damping rings D in combination with bellhousings



- 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 realize a short design
- For the bellhousing selection you require please see our selection programme at [www.ktr.com](http://www.ktr.com)
- Please note our mounting instructions



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



For IEC-motor from size 225S/225M 8 tapped holes and through holes on the periphery (thread offset by 22,5° to the verticle).

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

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	Bellhousing size	Damping ring size	Footflange 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>	B <sub>4</sub>		B <sub>5</sub>	B <sub>5D</sub>
															min.	max.		
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	148
		PL 250/15/..						124										
		PK 250/17/..						145										
		PK 250/15/..	106	30	121	190												
		PL 250/15/..	124															
		PK 250/17/..	145															
132S/132M (38x80)	5,5 7,5	PK 300/8/..	D 150/..	PTFL 300	300	265	230	155	20	14	M12	5	45	234	30	121	231	190
		PK 300/9/..						130										
		PL 300/9/..						144										
		PK 300/15/..	179	45	18	83	231	148										
		PL 300/15/..	195															
		PK 300/8/..	155															
		PK 300/9/..	130	58	97	143	231	234										
		PL 300/9/..	144															
		PK 300/15/..	179															
		PK 300/8/..	155	58	97	143	231	234										
		PL 300/8/..	168															
		PK 300/9/..	143															
PL 300/9/..	157	58	97	143	231	234												
PK 300/15/..	196																	
PL 300/15/..	208																	
160M/160L (42x110)	11 15	PK 350/11/..	D 150/..	PTFL 350/PTFS 350	350	300	250	175	26	17	M16	6	260	30	121	244	190	
		PL 350/11/..						190										
		PK 350/18/..						204										
		PK 350/18/..	229	45	18	83	244	148										
		PL 350/18/..	229															
		PK 350/11/..	175															
		PK 350/18/..	188	58	97	143	244	190										
		PL 350/18/..	204															
		PK 350/11/..	229															
PK 350/18/..	188	58	97	143	244	190												
PL 350/18/..	229																	
PK 350/11/..	188																	
PL 350/11/..	204	58	97	143	244	190												
PK 350/18/..	217																	
PL 350/18/..	242																	



## Damping rings type 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> x l <sub>3</sub>	kW with n = 1500 rpm	Bellhousing 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>	B <sub>4</sub>		B <sub>5</sub>	B <sub>5D</sub>
															min.	max.		
160M/160L (42x110)	11	PK 350/11/..	D 260/..	PTFL 350/ PTFS 350	350	300	250	188	25	17	M16	6	58	260	97	143	252	264
	15	PL 350/11/..						204	26									
180M/180L (48x110)	18,5	PK 350/18/..	D 260/..	PTFL 350/ PTFS 350	350	300	250	217	25	17	M16	6	58	260	97	143	252	264
	22	PL 350/18/..						242	25									
		PL 400/3/..	D 190/..	PTFL 350/ PTFS 350	350	300	250	210		17	M16	6	58	260	97	143	252	264
		PK 400/12/..						215										
200L (55x110)	30	PL 400/12/..	D 230/..	PTFS 400	400	350	300	229	20	17	M16	6	58	300	97	143	260	264
		PK 400/12/..						228										
		PK 400/12/..	D 260/..	PTFS 400	400	350	300	242	20	17	M16	6	58	300	97	143	260	264
		PL 400/12/98						228										
		PL 400/12/..	D 260/..	PTFS 400	400	350	300	242	20	17	M16	6	58	300	97	143	260	264
		PL 400/12/98						242										
		PL 450/5/94	D 190/..	PTFS 450	450	400	350	230	25	17	M16	6	58	300	97	143	260	264
		PK 450/12/94						249										
		PL 450/5/96	D 230/..	PTFS 450	450	400	350	243	25	17	M16	6	58	300	97	143	260	264
		PK 450/6/96						234										
225S/225M (60x140)	37	PK 450/12/96	D 260/..	PTFS 450	450	400	350	262	25	17	M16	6	58	300	97	143	260	264
	45	PK 450/5/98						243										
		PK 450/6/98	D 260/..	PTFS 450	450	400	350	234	25	17	M16	6	58	300	97	143	260	264
		PK 450/12/98						262										
		PL 450/5/..	D 330/..	PTFS 450	450	400	350	268	25	17	M16	6	58	300	97	143	260	264
		PK 550/4/94						237										
		PL 550/4/94	D 190/..	PTFS 550	550	500	450	252	26	17	M16	6	58	450	97	143	260	264
		PK 550/8/94						262										
250M (65x140)	55	PK 550/4/96	D 230/..	PTFS 550	550	500	450	248	26	17	M16	6	58	450	97	143	260	264
		PL 550/4/96						265										
280S/280M (75x140)	75	PK 550/8/96	D 260/..	PTFS 550	550	500	450	275	26	17	M16	6	58	450	97	143	260	264
	90	PK 550/4/98						248										
		PL 550/4/98	D 260/..	PTFS 550	550	500	450	265	26	17	M16	6	58	450	97	143	260	264
		PK 550/8/98						275										
		PK 550/4/..	D 330/..	PTFS 550	550	500	450	275	26	17	M16	6	58	450	97	143	260	264
		PL 550/4/..						290										
		PK 550/8/..	D 330/..	PTFS 550	550	500	450	300	26	17	M16	6	58	450	97	143	260	264
		PL 550/8/..						275										
315S/315M (80x170)	110	PK 660/3/98	D 260/..	PTFS 660	660	600	550	310	32	22	M20	8	58	550	97	164	500	264
	132	PL 660/3/98						318										
315L (80x170)	160	PK 660/3/..	D 330/..	PTFS 660	660	600	550	330	32	22	M20	8	58	550	97	164	500	264
	200	PL 660/3/..						343										
		PK 660/3/..	D 125/..	PTFS 660	660	600	550	372	32	22	M20	8	58	550	97	164	500	264
		PL 660/3/..						372										

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

\* Passing from dimension B<sub>3</sub> to the flange with radius R=5

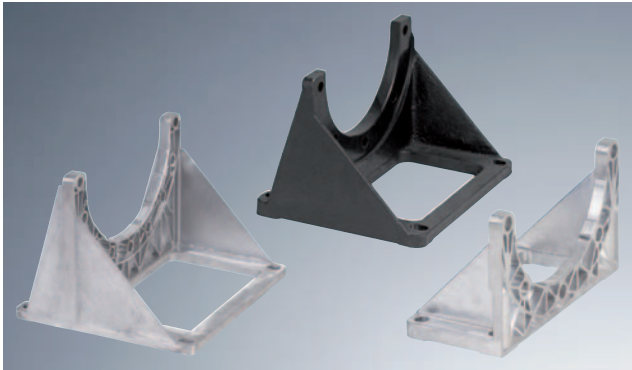
● Make sure your power pack provides for a separation of piping, e. g. by hoses or elastic flanges (see page 201).

● As another measure for noise reduction we recommend to use damping rods (see page 204/205) or DT/DTV rings (see page 203).

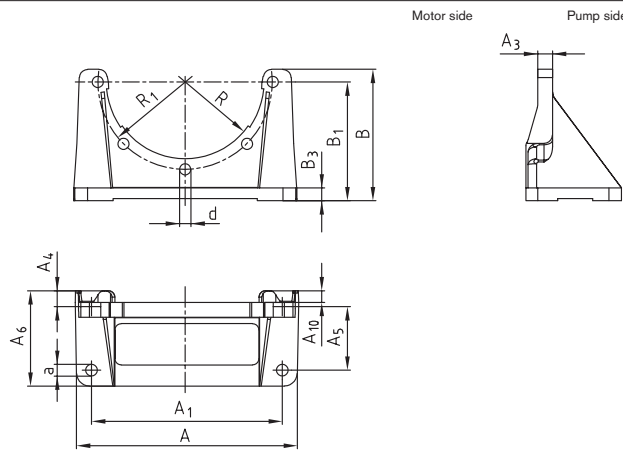
For the detailed order designation please see our PC/Internet selection programme or mention the IEC motor size and detailed pump type for selection.

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

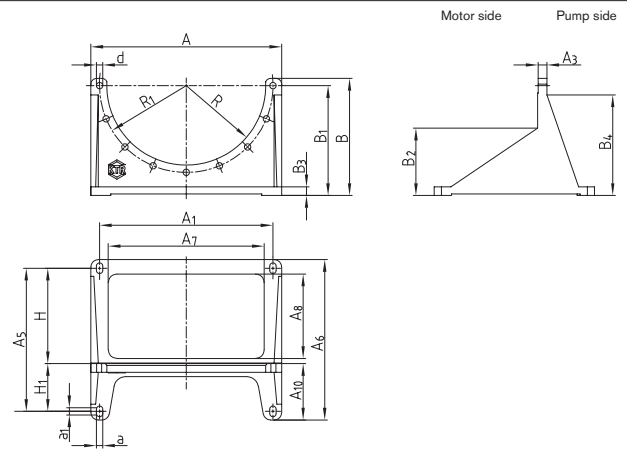
## Foot flanges



- 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
- Please note our mounting instructions



Foot flange PTFL\*



Foot flange PTFS\*

\*according to VDMA standard 24561 part 1

Foot flange type PTFL made of aluminium (Al)															
Foot flange size	For bellhousing size	Dimensions [mm]													
		A	A <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 type PTFS made of aluminium (Al)																					
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

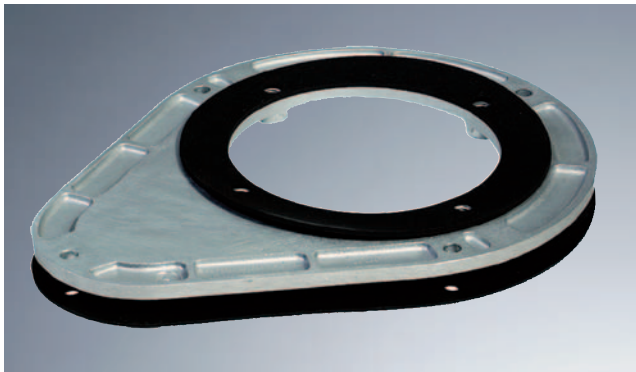
Foot flange type PTFS made of nodular iron (GJS)																						
Foot flange size	For bellhousing size	Dimensions [mm]																				
		A	A <sub>1</sub>	A <sub>3</sub>	A <sub>5</sub>	A <sub>6</sub>	A <sub>7</sub>	A <sub>8</sub>	A <sub>10</sub>	B	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	R	R <sub>1</sub>	a	a <sub>1</sub>	d	H	H <sub>1</sub>	
PTFS 200	200	200	165	12	150	185	130	85	68	138	125	90	15	120	72,5	82,5	11	8	11,5	100	50	
PTFS 250	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 400	400	405	350	20	300	350	300	192	125	277	260	220	22	275	150	175	18	12	18	200	100	
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 made of steel on request

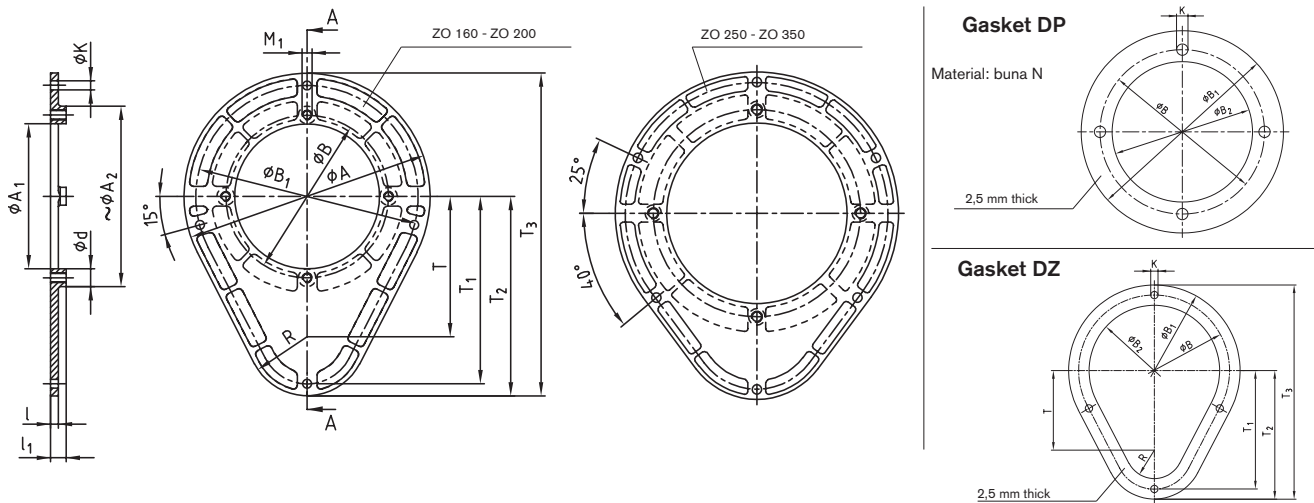
In order to obtain the full loading capacity of the foot flanges all existing fastening bores have to be screwed up with the bellhousing!

Ordering example:	PTFL	350	Al
	Foot flange design	Size	Material

## Accessories for 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
- Gaskets type DP and DZ made of buna N (NBR) available from stock
- Gaskets type DP are used between bellhousing and tank cover and also between bellhousing and ZO mounting flange
- Gaskets type DZ are used between ZO mounting flange and tank cover

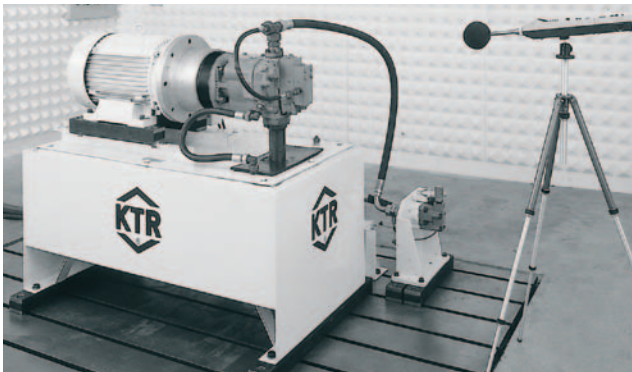


Mounting flange type ZO																	
Size	Dimensions [mm]															Gasket DZ size	Gasket DP size
	A	A <sub>1</sub>	~A <sub>2</sub>	B	B <sub>1</sub>	K	M <sub>1</sub>	R	T	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>	d	l	l <sub>1</sub>		
ZO 160	210	112	150	130	185	9	M8	60	97,5	145	157,5	262,5	18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

Ordering example:	ZO 300	DP 300
	Mounting flange size	Type and size of gasket

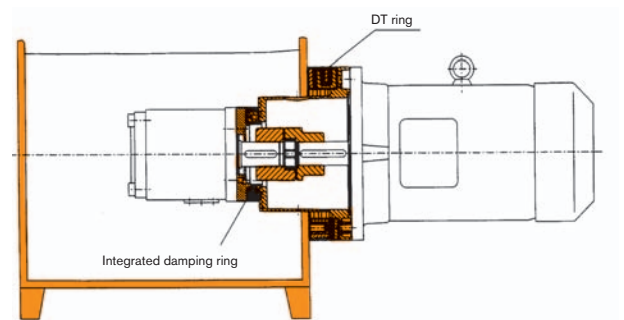
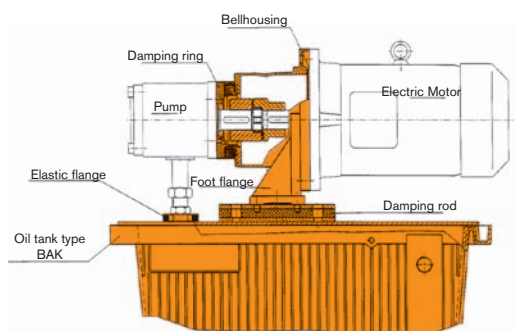
## Damping elements



- Noise measurement in the R & D test center
- Noise measurement locally at the customer
- Airborne noise level 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



### Potential noise reductions compared to the rigid arrangement:

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

### Effectiveness:

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

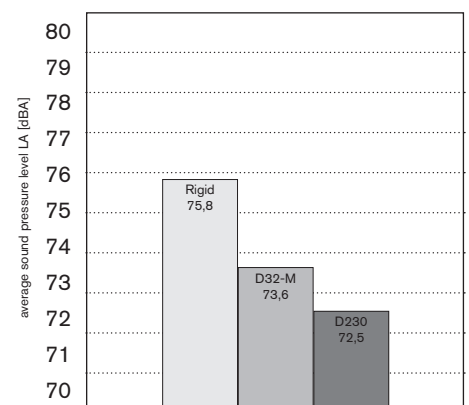
### Result of a noise measurement

#### Test data:

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

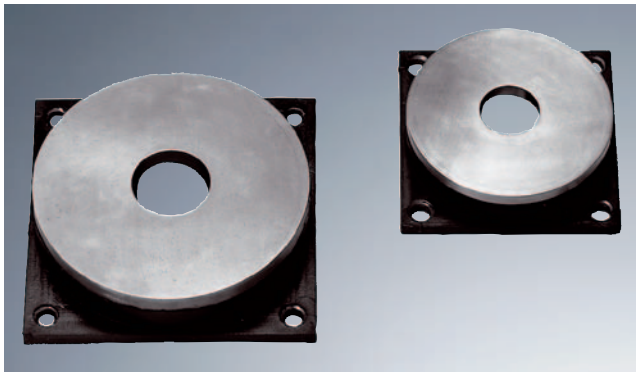
Pump: axial piston pump

Coupling: ROTEX® 42 - 92 Shore A

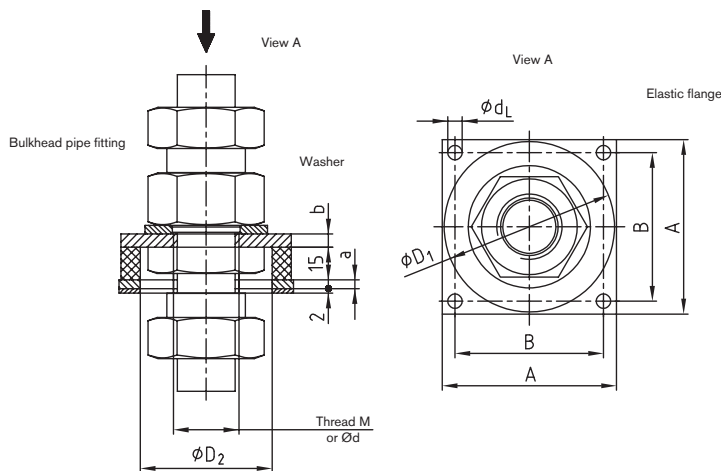




## Damping elements



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



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

■ Available from stock

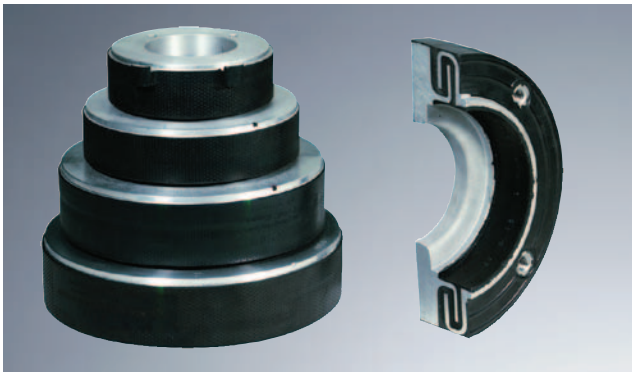
\*) Bulkhead pipe fitting and washer do not form part of our supply.

\*\*) Counter nut cannot be assembled!

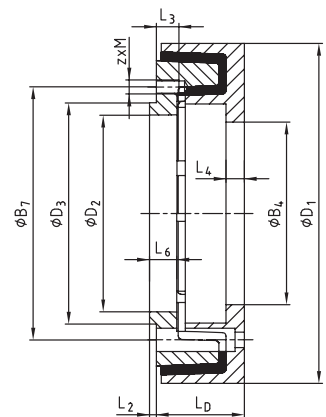
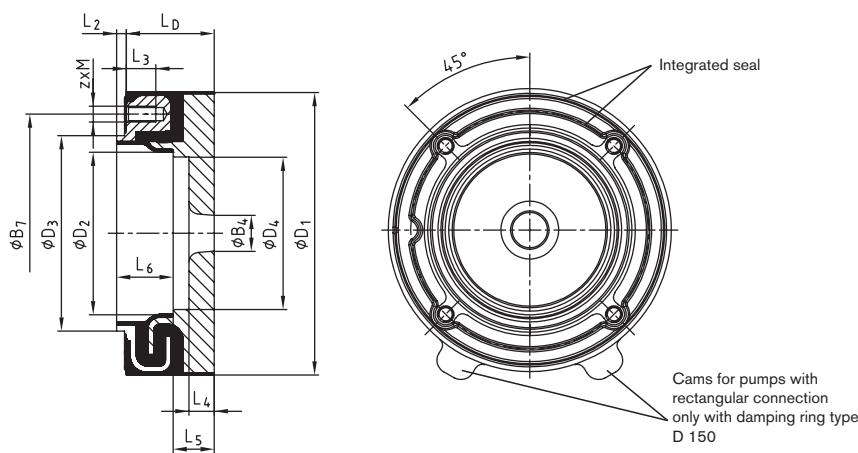
Ordering example:

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

## Damping elements



- Vulcanized and failsafe (up to D 330, patent pending)
- High weight loading permissible (e. g. multiple pumps)
- Excellent damping properties
- Excellent resistance to hydraulic oils
- Sealing lips are moulded on (up to size 330) – no additional sealing required
- For the bellhousing selection you require please see our selection programme at [www.ktr.com](http://www.ktr.com)



D 84 / D 125 / D 145

### Damping ring type 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/..JA	147	224	280	360	210	224	–	83	5	35	25	25	18	4 x M20
D 84/..JC														
D 125/..JA	260	320	360	484	285	315	–	125	10	33	25	25	40	M20 <sup>3)</sup>
D 145/..JA	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.

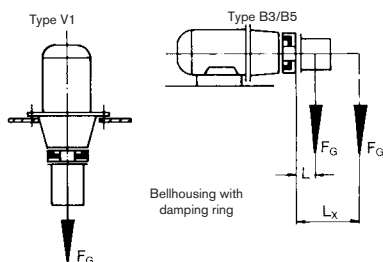
### Permissible radial and axial weight load of damping rings based on an ambient temperature of + 60 °C

	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

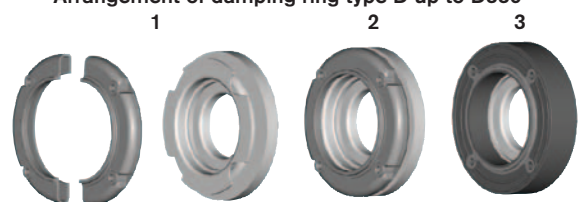
With a modified distance of center of gravity L<sub>X</sub> the permissible weight load is converted. If L<sub>X</sub> < L, dann F<sub>perm.</sub> = F<sub>perm.</sub>

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

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 type D up to D330



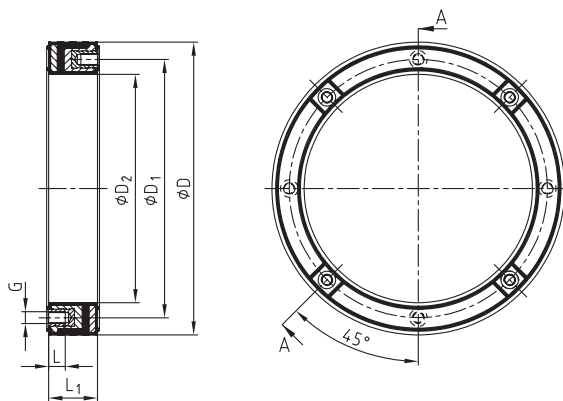
Ordering example:

D	230	14
Damping ring	Size	Internal modification code

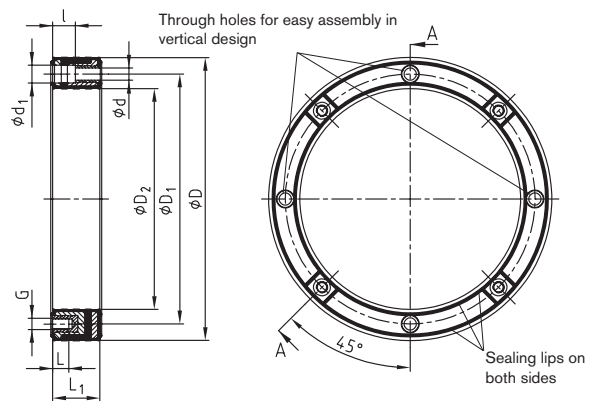
## Damping elements



- DTV for vertical assembly only!
- To reduce noise between drive unit and tank by means of rubber-elastic 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 part
- High permissible radial, angular and axial load
- Sealing lips are moulded on - no additional sealings required



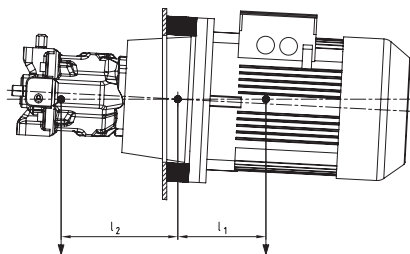
Damping ring DT



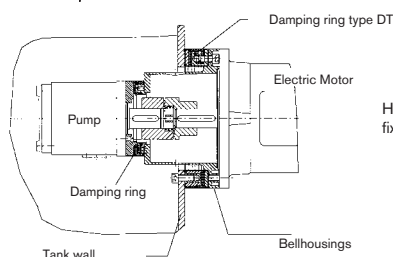
Damping ring DT.../2

### Damping ring type 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



Example of assembly



### Permissible radial weight and bending load of damping rings type DT 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

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

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

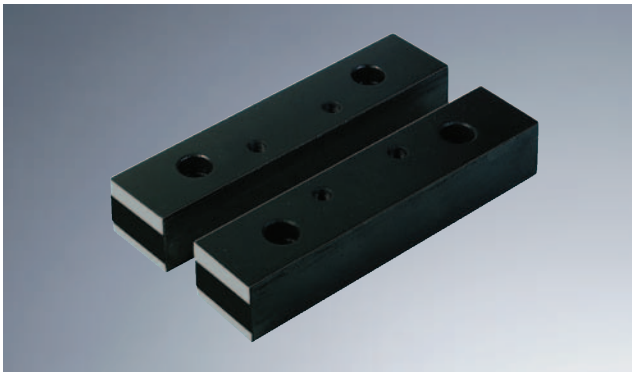
Horizontal (type DT) with fixings installed reciprocally



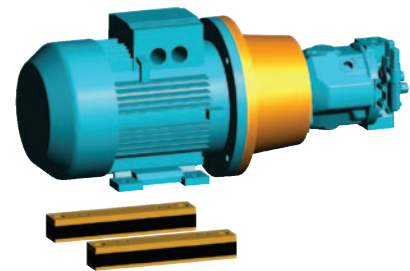
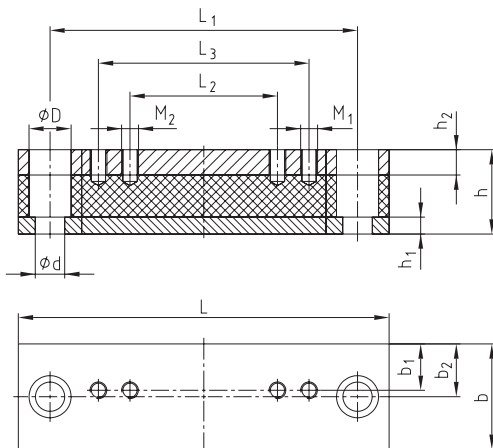
### Ordering example:

DT	250
Damping ring	Size

## Damping elements



- Damping rods reduce the noise level and dampen vibrations
- Finish machined for motors IMB 35 (DSM), PTFE foot flanges (DSFL) or PTFE 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 of natural rubber (NR)
- All damping rods are adapted to the weight load that is produced
- Thrust loading (V1) not permissible



Type DSM

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

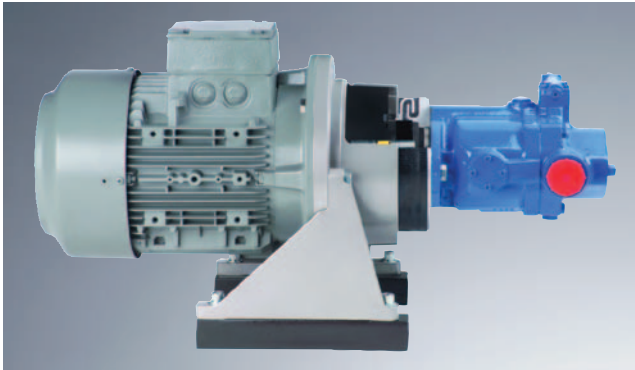
Damping rod size	For motor size	Dimensions [mm]													
		L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	h	h <sub>1</sub>	h <sub>2</sub>	b	b <sub>1</sub>	b <sub>2</sub>	d	D	M <sub>1</sub>	M <sub>2</sub>
DSM 71	71	196	156	90		40	8	12	50	21	25	14	20	M6	
DSM 80	80	176	146	100		40	8	12	50	22	25	14	20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

Other sizes on request.

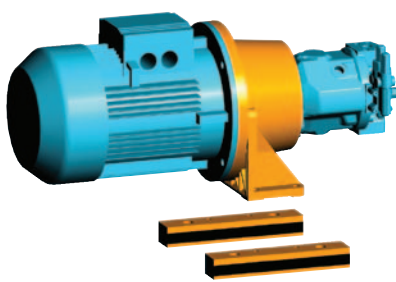
Ordering example:	DSM	100 L/112 M
	Damping rod	Size



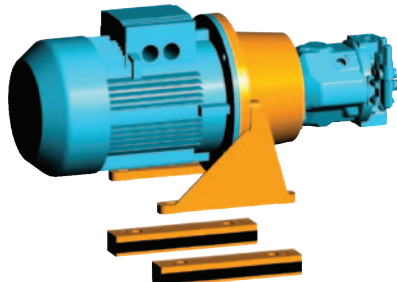
## Damping elements



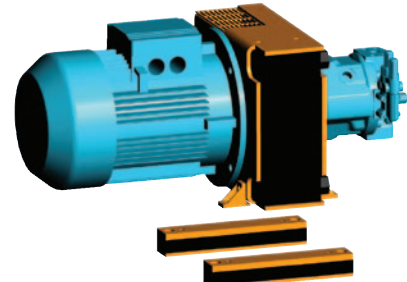
- Damping rods reduce the noise level and dampen vibrations
- Finish machined for motors IMB 35 (DSM), PTFL foot flanges (DSFL) or PTFS foot flanges (DSFS) and PIK oil coolers (DSK)
- Available from stock
- Special lengths or special designs on request
- Also suitable for Nema motors
- Damping rods are made of 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 type DSFL for foot flange type PTFL

Damping rod size	For foot flange	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 type DSFS for foot flange type PTFS

Damping rod size	For foot flange	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	M1/2
DSFS 250	PTFS 250	240	140	185		40	8	12	50	17,5	25	13	20	M12
DSFS 250/300L	PTFS 250/300	340	300	185	228	40	8	12	50	17,5	32,5	13	20	M12
DSFS 300	PTFS 300	280	180	225		40	8	12	50	17,5	25	13	20	M12
DSFS 350	PTFS 350	325	200	265		60	15	15	70	25	35	17	26	M16
DSFS 350/400L	PTFS 350/400	430	390	265	300	60	15	15	70	25	45	18	26	M16
DSFS 400	PTFS 400	350	234	300		60	15	15	70	25	35	17	26	M16
DSFS 450	PTFS 450	385	270	335		60	15	15	70	25	35	17	26	M16
DSFS 550	PTFS 550	490	350	415		60	15	15	100	25	50	18	26	M16
DSFS 660	PTFS 660	635	415	495		60	15	15	100	30	50	22	33	M20

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

Damping rod size	For cooler size	Dimensions [mm]											
		L	L <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

#### Ordering example:

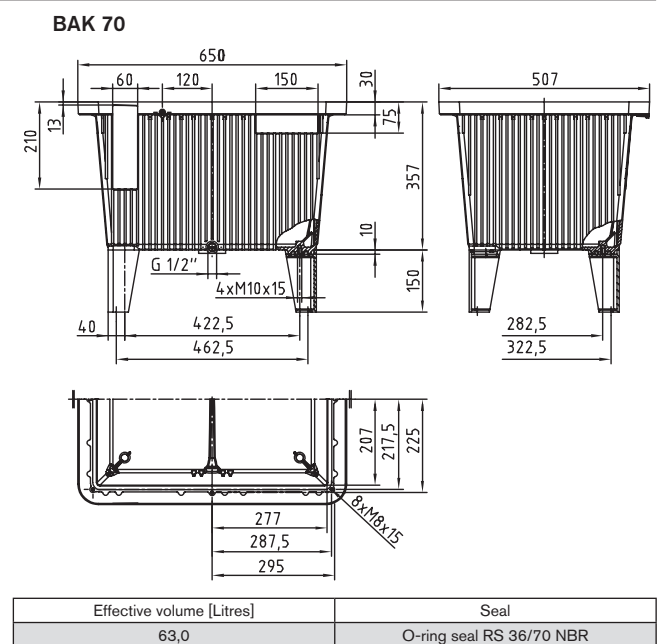
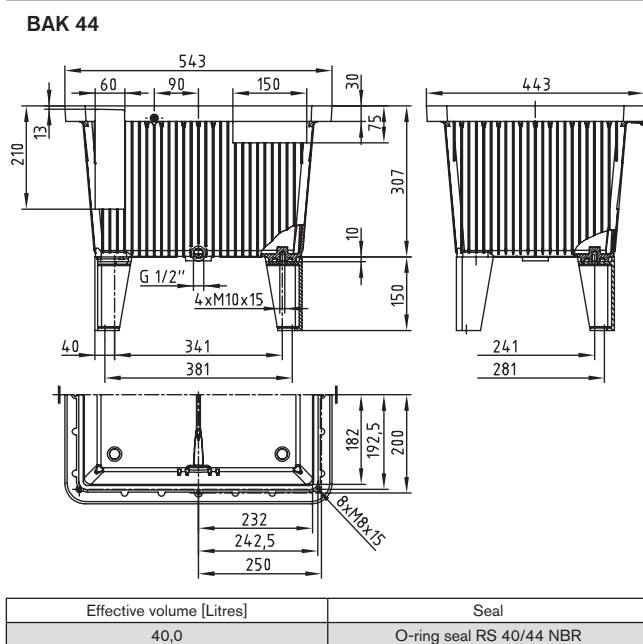
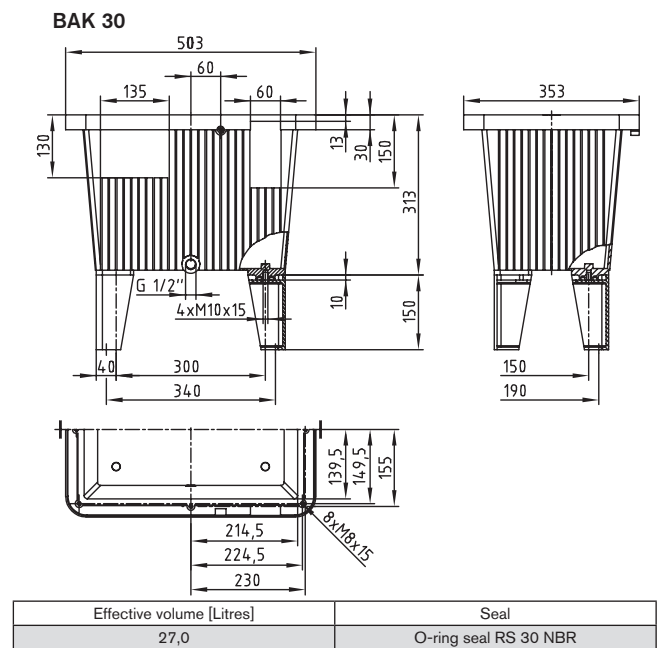
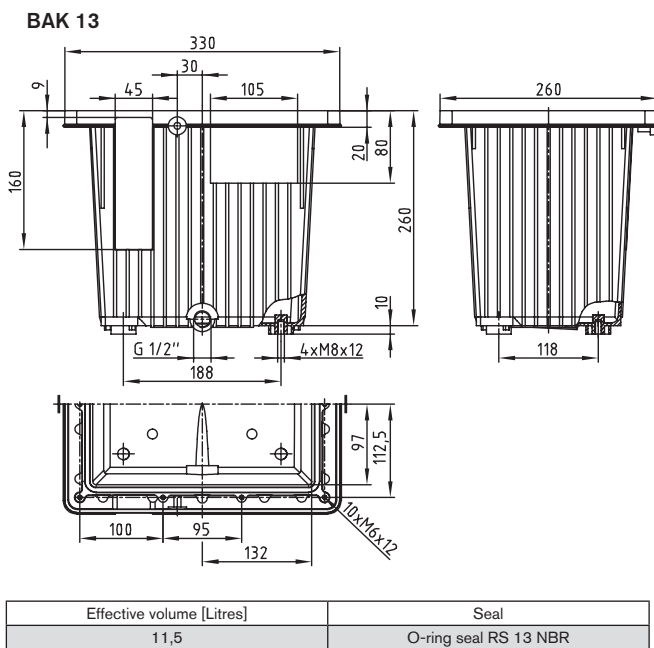
DSFS	300
Damping rod	Size

## Aluminium tanks



- Made of aluminium for depressurized operation (0,5 bar at the 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

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



Ordering example:

BAK	30
Aluminium tank	Size

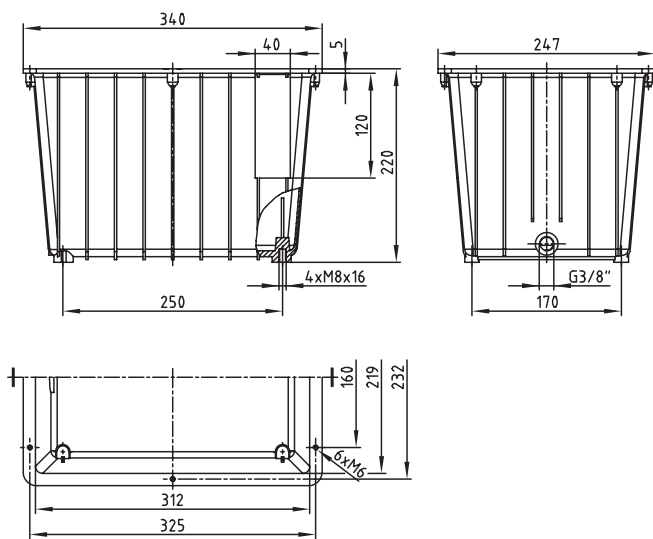
## Aluminium tanks



- Made of aluminium for depressurized operation (0,5 bar at the maximum)
- Without oil collecting 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

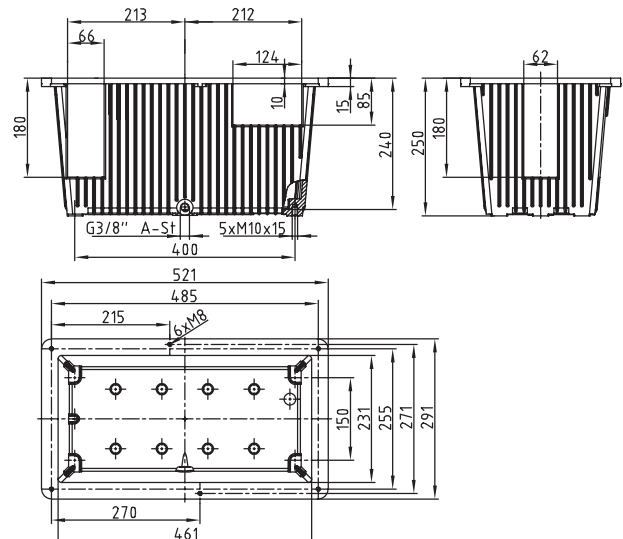
### Tank without oil collecting groove BAK 10, BAK 20, BAK 27, BAK 40, BAK 63 and BAK 100

**BAK 10**



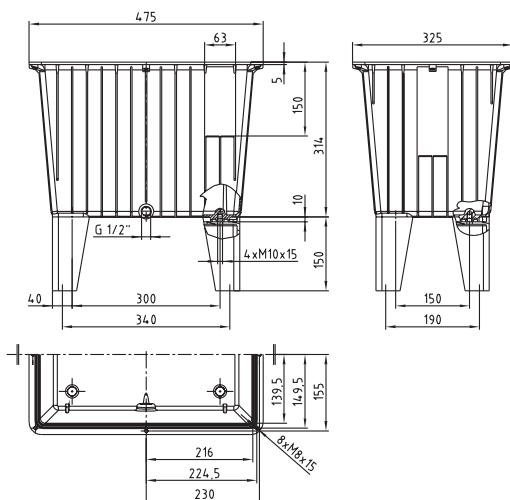
Effective volume [Litres]	Seal
9,5	Flat seal FD 20 FD 10

**BAK 20**



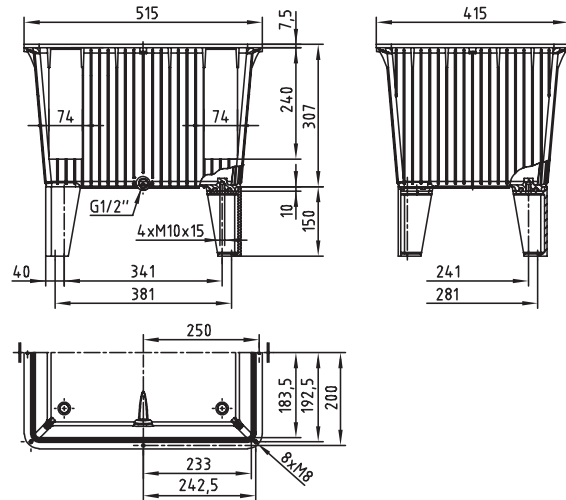
Effective volume [Litres]	Seal
18,0	Flat seal FD 20

**BAK 27**



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

**BAK 40**



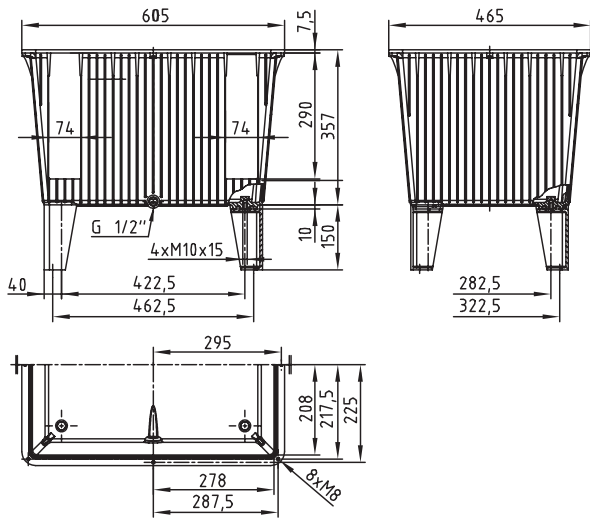
Effective volume [Litres]	Seal
40,0	O-ring seal RS 40/44 NBR

Ordering example:

BAK	63
Aluminium tank	Size

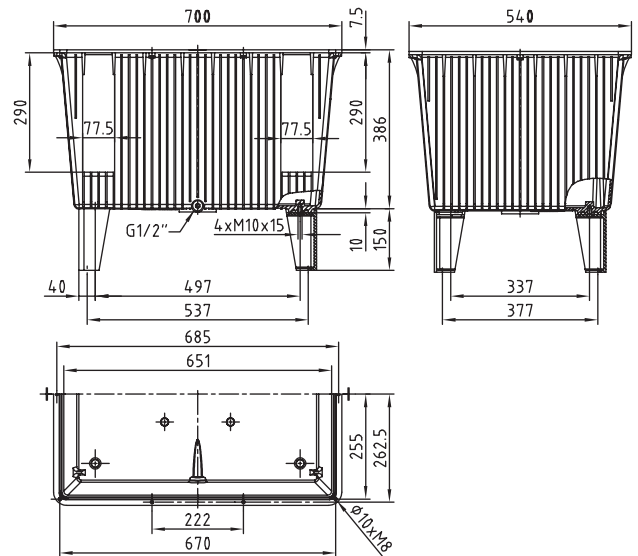
## Aluminium tanks and accessories

**BAK 63**



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

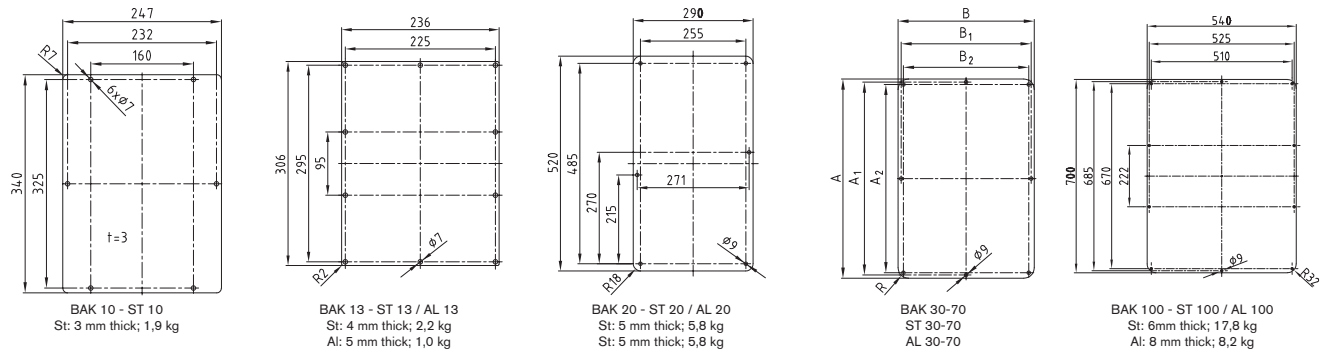
**BAK 100**



Effective volume [Litres]	Seal
95,0	O-ring seal RS 100 NBR

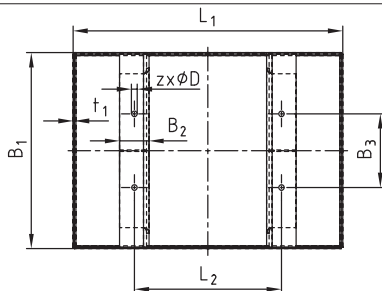
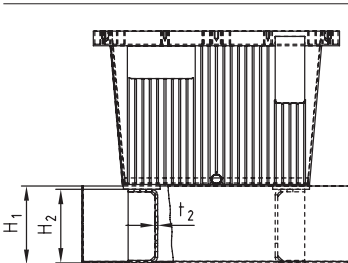
### Tank cover made of steel and aluminium, accessories for aluminium tank

Cover		For tanks	Dimensions [mm]							Cover thickness		Weight [kg]	
Steel	Alu		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

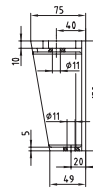


**Ordering example:**

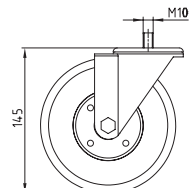
<b>ST 44</b> Tank cover for BAK 44 made of steel	<b>BF 150</b> Feet for tank	<b>Seal plug DIN 908 with seal G 1/2 A</b> Seal plug for BAK 44
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**Tank feet BF 150 made of cast aluminium**



**Wheels LR 150 with or without lock**

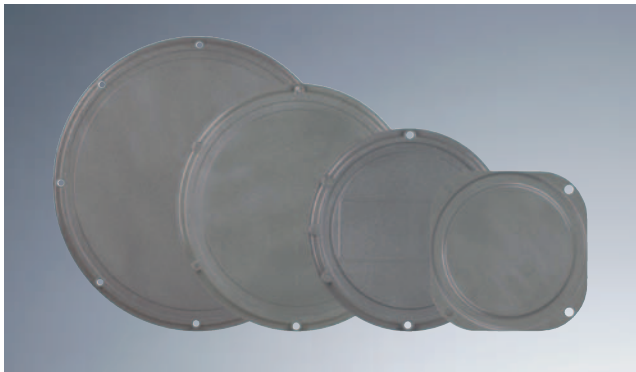


### Oil sumps type BAKW for KTR aluminium tanks BAK

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

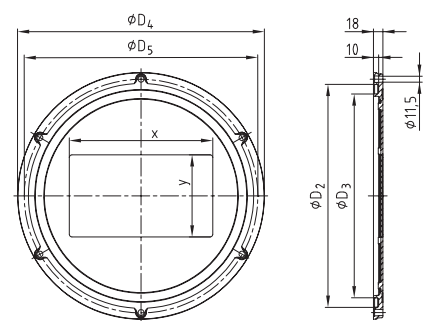
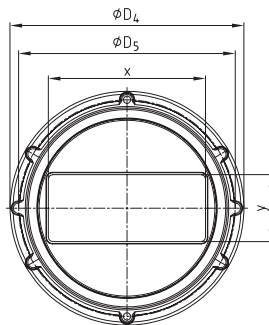
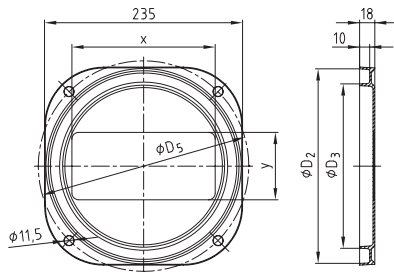


- Cleaning covers V324 and V449 according to DIN 24339
- Made of aluminium
- Screw tightening torque for all cleaning cover sizes 10 Nm at the maximum
- Cleaning cover V324-6/HFC, V449-6/HFC and V580-8/HFC are resistant to HFC fluids
- Gaskets type PRD made of buna N (NBR), made of material Viton on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

**Cleaning cover type  
V250-4 PRD**

**Cleaning cover  
DIN 24339**

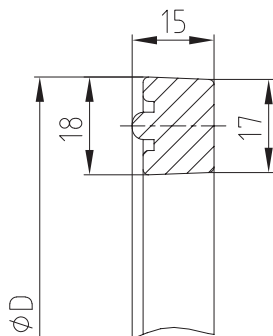
**Cleaning cover**



### Cleaning covers

Size	Dimensions [mm]						Number of bores	x	y
	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	D <sub>5</sub>				
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.



### Gaskets 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

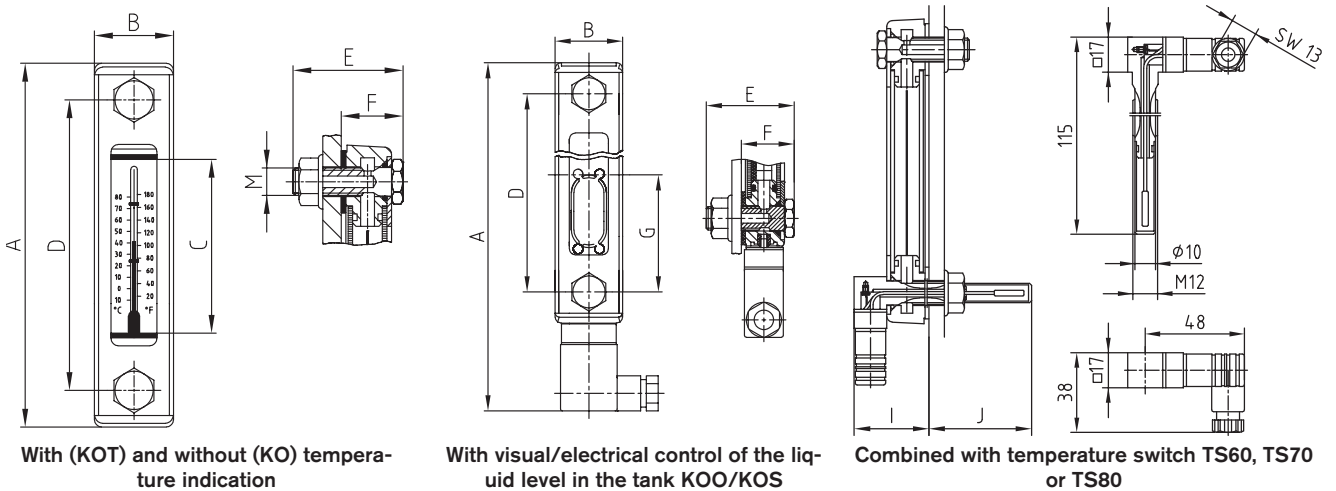
**Ordering example:**

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



With (KOT) and without (KO) temperature indication

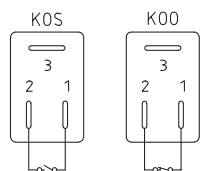
With visual/electrical control of the liquid level in the tank KOO/KOS

Combined with temperature switch TS60, TS70 or TS80

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

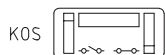
KOT 01: Indication range + 20 °C to + 80 °C  
 KOT 02: Indication range - 10 °C to + 80 °C  
 KOO: Electric switch as break contact  
 KOS: Electric switch as make contact  
 Operating range: - 10 °C to + 80 °C  
 Recommended screw tightening torque: 8 Nm  
 Charging pressure of tank max. 1 bar

### Electrical connections and functions:



Contact load:  
 KOS max. 10 W  
 KOO max. 3 W

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



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

### Technical data (break contact) of the temperature switch:

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

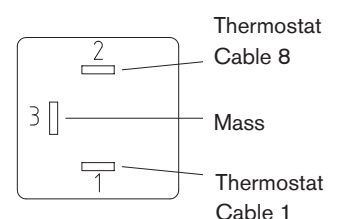
Hysteresis: 20 °C  
 Tolerance of shifting temperature: ± 5 °C

### Alternating current

- max. voltage - 250 V
- max. current with 10.000 circuits  
 2,5 A with - cos φ = 1,0  
 1,6 A with - cos φ = 0,6
- max. current with 100.000 circuits  
 0,5 A with cos φ = 1,0  
 ~0,25 A bei cos φ = 0,6
- min. switching current 50 mA

### Direct current

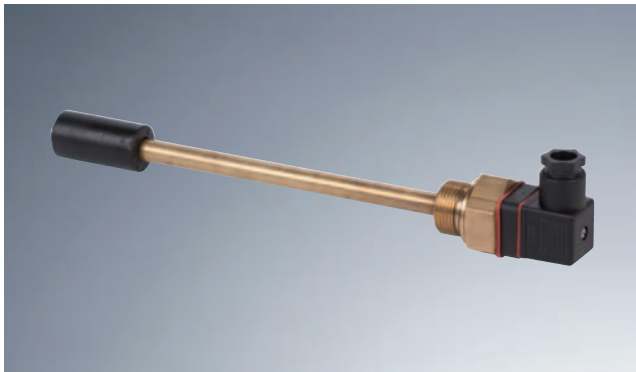
- max. voltage 42 V
- max. current with 10.000 circuits



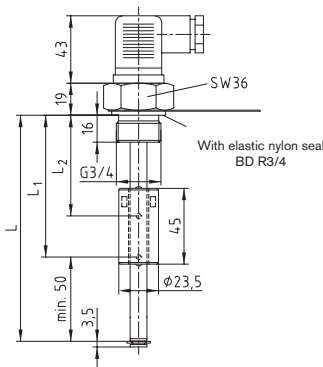
### Ordering example:

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

## Accessories for oil tanks



- Electrical level and temperature control
- Suitable for mineral oils
- Available either with 2 level contacts or 1 level contacts and 1 temperature probe
- Electrical switch:  
decreasing level „break contact“  
increasing temperature „break contact“
- Further lengths on request
- Design in accordance with ATEX on request

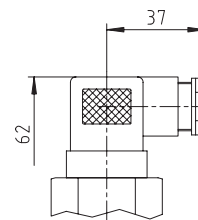


**Switching tube**  
 Operating pressure max. 1 bar  
 Operating temperature max. 80 °C  
 Density of fluid min. 0,8 kg/dm<sup>3</sup>  
 Float SK 161  
 Switching tube NBR  
 Flange MS

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

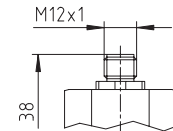
**Temperature contacts**  
 Max. operating voltage 250 V  
 Max. switching current 2 A  
 Max. contact load 100 VA  
 Switch-back difference 15 K ± 5 K

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



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

**Plug-in connection DM12**  
 3pol.



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

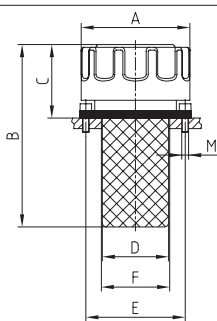
\*\* with respective upper part of plug

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

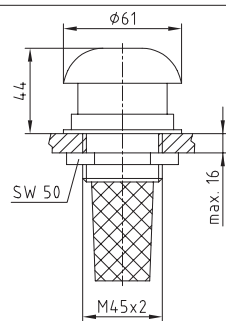
**Ordering example:**

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

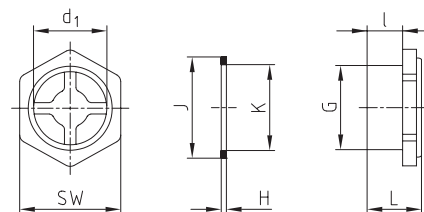
\* Other types on request



**KE 01 and KE 02**  
 filter grade 10 µm



**KE 03**  
 filter grade 45 µm



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

Air flow: KE 01 = 0,40 m<sup>3</sup>/min      KE 02 = 0,45 m<sup>3</sup>/min

**Ordering example:**

Filler breather	KE 01
Type	Size

Oil level sight glass								
Size	Dimensions [mm]							
	L	I	d <sub>1</sub>	G	H	J	K	SW
G1/2A	17,7	9,2	27,5	G1/2	2	27	21	27
G3/4A	18	9,2	23,8	G3/4	2	32	27	32
G1A	23,5	14	29	G1	2	40	34	40

**Ordering example:**

Oil level sight glass	G3/4A
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 analogue output as 4-20 mA, 0-5V, 0-10V or 2-10V
- PNP switching terminal to be programmed as frequency terminal
- Min./max. memory, log-book operation
- Available from stock

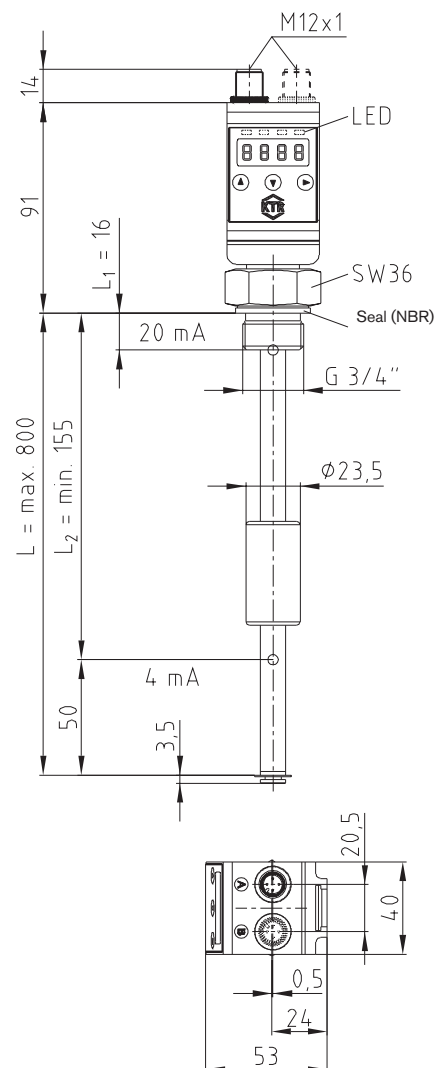
## Electronic level and temperature control

### Technical data

Operating pressure:	Max. 1 bar
Operating temperature:	-20 °C to +80 °C
Ambient temperature:	-20 °C to +70 °C
Weight:	approx. 400g
Sealing fluid:	Min. 0,8 kg/dm <sup>3</sup>
Float:	PU
Immersion pipe:	MS
G 3/4 flange:	MS
Measuring resistance:	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 class:	IP 65
Display units:	Level: %, cm, L, i, Gal Temperature: -20 °C to +120 °C or -4 °F to 248 °F
Setting range:	Level: e. g. 0-100 %l Temperature: 0 °C to +100 °C or 32 °F to 212 °F
Accuracy:	1% of final value



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

## Temperature control and monitoring

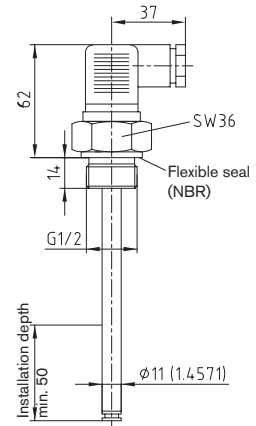
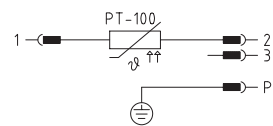


- Control of the operating temperature of the medium
- Value of resistance proportionally changeable to temperature
- Continuous signal change
- Elastische Dichtung am Einschraubgewindekopf
- Optionally available with transmitter
- Design in accordance with ATEX on request

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	

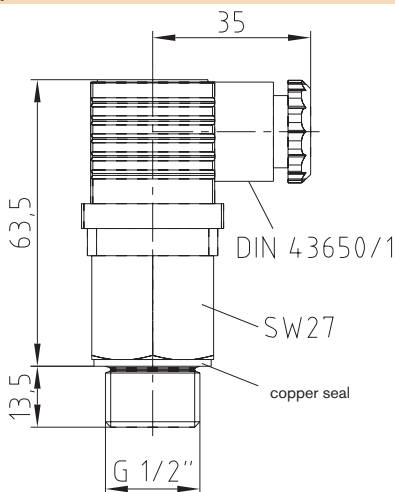
Screwing and immersion 1.4571 (stainless steel) – brass on request sleeve:  
 Lengths available: 100, 200 and 300 mm from stock (special lengths up to 1000 mm)  
 Operating pressure: 10 bar (immersion sleeve of stainless steel)  
 Operating temperature/ measuring range: - 40 °C to + 100 °C  
 Resistance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

Connection diagram:



Ordering example:	TE	PT-100	300
	Temperature probe - electronic	Resistance feeler element	Length of immersion sleeve

## Temperature switch TSC



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

### Technical data

Control element: Bi metal  
 Switching 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	Switching 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

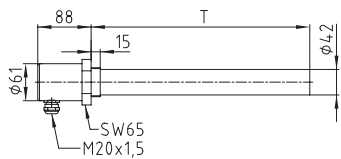
Ordering example:	TSC	50
	Temperature switch	Switching point 50 °C



## Tank heaters - Type EHP

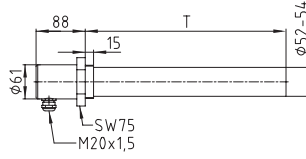


- Inserted heating cartridges to preheat hydraulic oil
- Temperature control by internal or external setting  
single-pole control 0 - 85 °C, 16 A
- Replaceable ceramic heating cartridges (assembly without oil drain)
- Steel cap from bright zinc coating/cover from stainless steel
- Suitable for horizontal assembly below oil level
- Material: steel (other materials 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



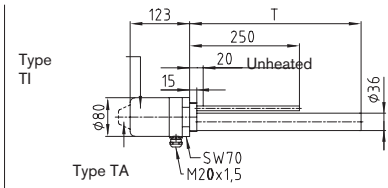
Without temperature control

**Type EHP – G 1 1/2"**



Without temperature control

**Type EHP – G 2"**



With temperature control  
Switching accuracy ± 3 °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. In this case the temperature control on the tank heater can be done without. Please refer to our mounting instructions at [www.ktr.com](http://www.ktr.com).

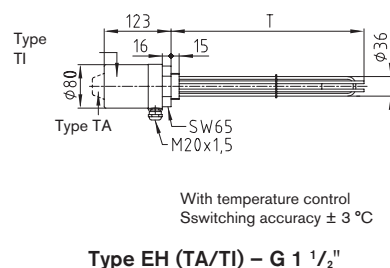
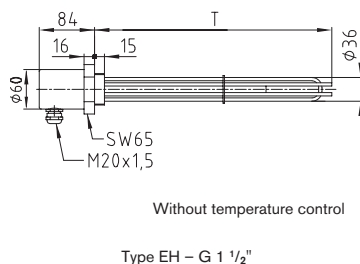
Ordering example	EHP	1950	1300	G 2"	TI	1 x 230 V
	Type	Heating capacity [W]	Immersion depth T [mm]	Size of screw-in thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your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

## 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 oils
- 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
- Please note our mounting instructions (www.ktr.com)

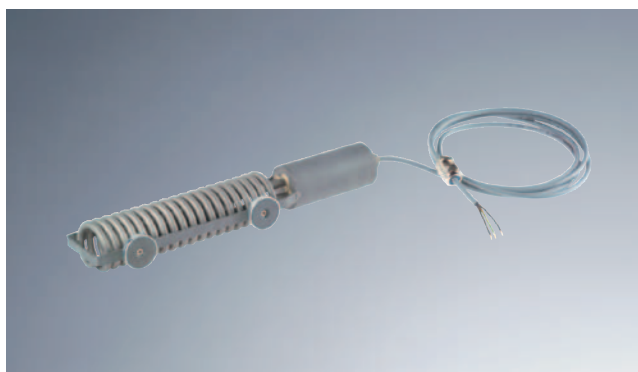
Inserted tubular heaters		
Type EH - G 1 1/2"		
without or with temperature control		
Heating capacity [Watt]	Immersion depth T [mm]	Voltage [V]
380	200	230
500	250	230
750	350	230
990	450	230
1460	650	230
1825	800	230
2300	1000	230



### Ordering example

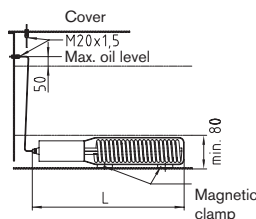
EH	990	450	G 1 1/2"	TI	1 x 230 V
Type	Heating capacity [W]	Immersion depth T [mm]	Size of screw-in thread	TA = temperature control with external setting TI = temperature control with internal setting O = without temperature control	Please make sure to mention the voltage [V] in your order, e. g. 1 x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

## Inserted tank heaters with magnetic clamp type TEHM



- To preheat hydraulic oil
- Inserted tank heater to be fixed 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 switching temperatures to the details specified by the customer
- Other media/operating fluids available on request
- The connector pin assignment is enclosed to the unit
- Please note our mounting instructions (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:

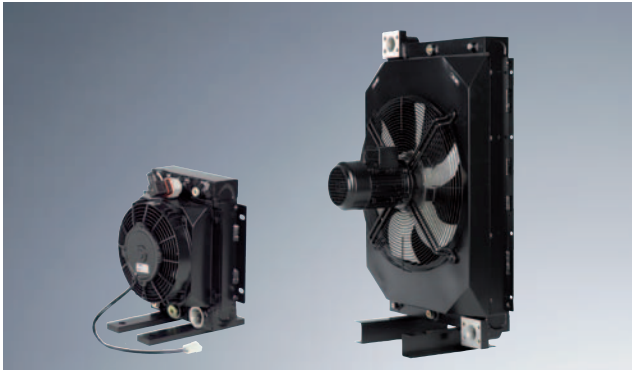
- Switching accuracy: ± 3°
- Voltage: 230 V (other on request)
- Operation temperature: - 30 °C to + 80 °C
- Surface load: 1,2 W/cm<sup>2</sup>  
(0,6 W/cm<sup>2</sup> on request)
- Connection cable: 3-poles, 2,5 m long, incl. screwed cable gland M20x1,5

As an alternative: Control of tank heater possible in combination with KTR industrial controls with more than one temperature switching point. In this case the temperature control on the tank heater can be done without.

### Ordering example

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 core 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 TSC, see page 213
- Thermal bypass valves oil temperature valve OTV, see page 235

### Applications

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

### Arrangement

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

### Marine design:

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

### ATEX design:

- Electric motor in accordance with ATEX ⊠ II 2 G Exll T3
- Special fan

<b>Ordering example</b>	OAC	400 M	03
	Type	Size/type No specification = Standard M = Marine design ExG = ATEX design	Option

## Oil/air cooler — Type OAC

### Selection system

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

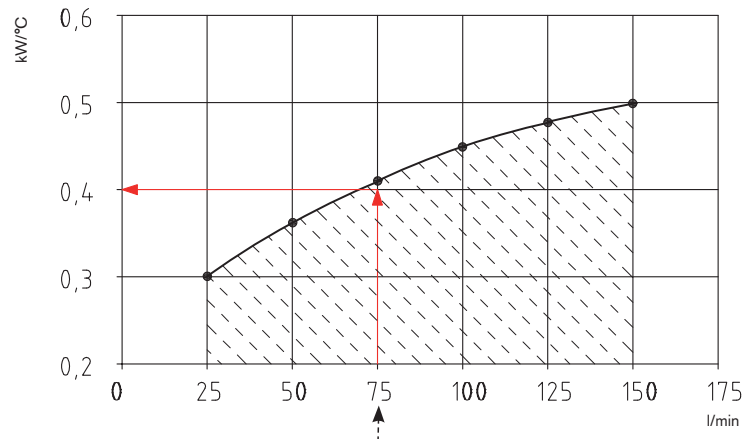
Q [kW]	Heat to be dissipated
V [l/min]	Oil flow
T <sub>Oil</sub> [°C]	Inlet temperature of oil into cooler
T <sub>L</sub> [°C]	Inlet temperature of ambient air into cooler

### Example of calculation

Details given:

Q = 14 kW
V = 75 l/min
T <sub>Oil</sub> = 65 °C
T <sub>L</sub> = 30 °C

Performance diagramme OAC 400



Calculation of the specific cooling effect

Inlet temperature difference ETD [°C] = T<sub>Oil</sub> - T<sub>L</sub>

Specific cooling effect required P<sub>erf.</sub> = Q/ETD

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

The following was selected: OAC 400

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

### Calculation of the pressure loss

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

The effective pressure loss is calculated as follows:

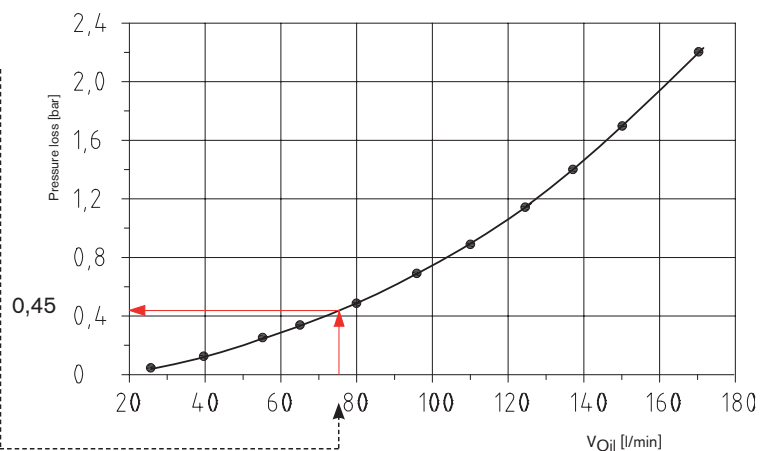
Pressure loss (from curve) x factor = effective pressure loss

### Example

V <sub>Oil</sub> : 75 l/min
Viscosity: 20 cSt

→ 0,45 bar x 0,75 = 0,3375 bar

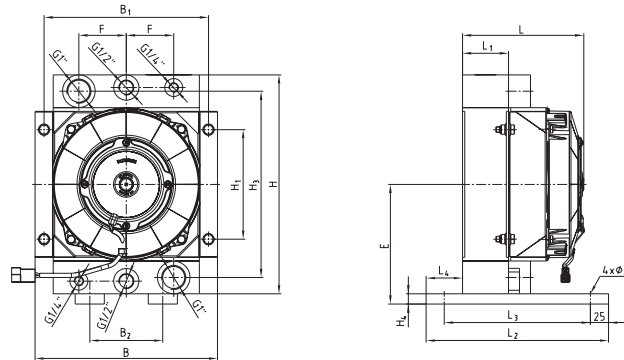
Pressure loss 30 cSt



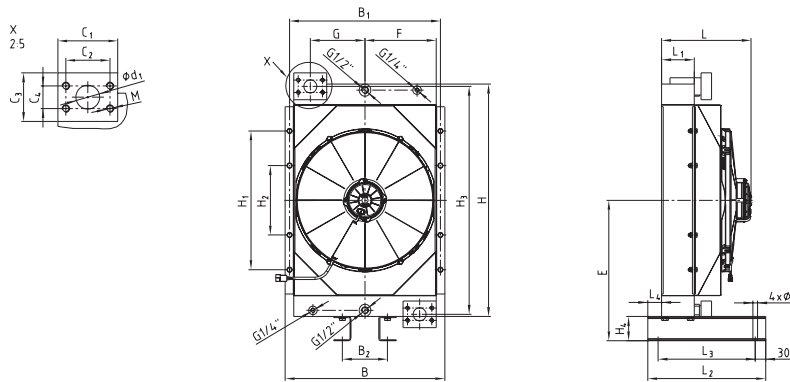
Conversion factor pressure loss

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

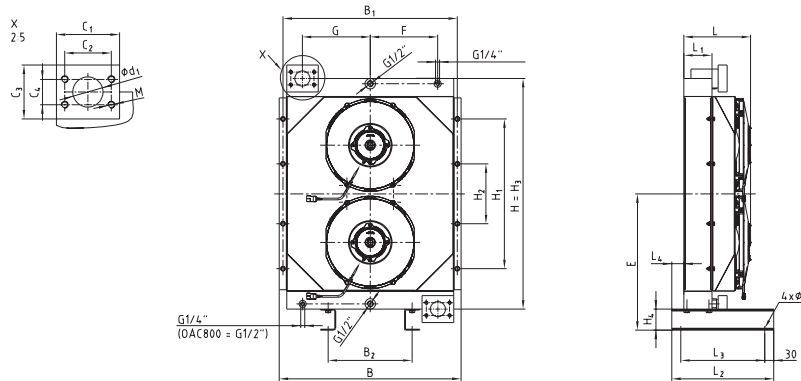
## Oil/air cooler — Type OAC



OAC 100 - OAC 400 12V/24V



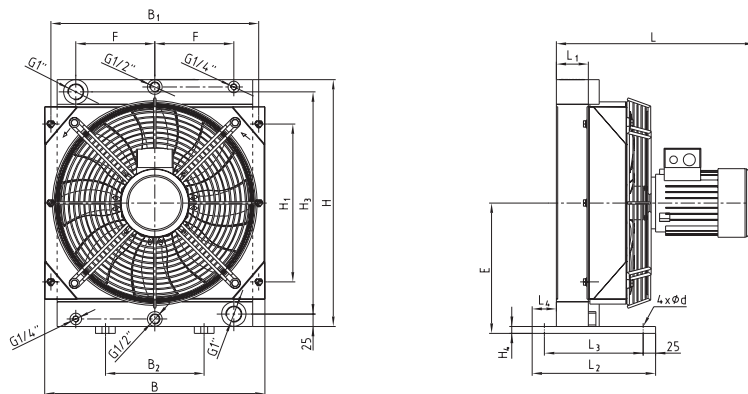
OAC 500 12V/24V



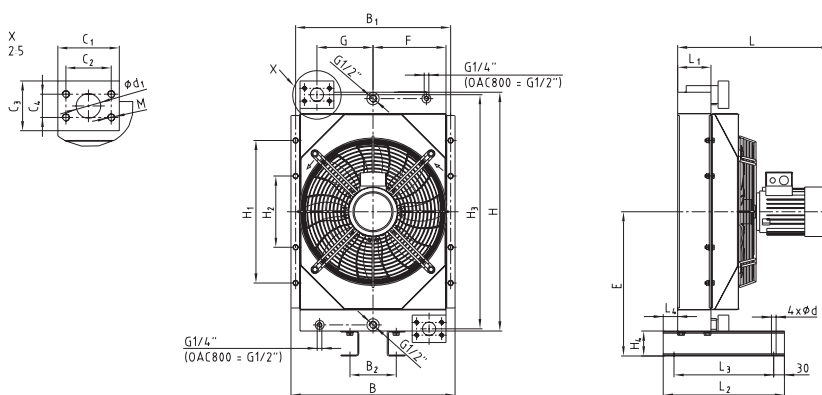
OAC 600 12V/24V

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

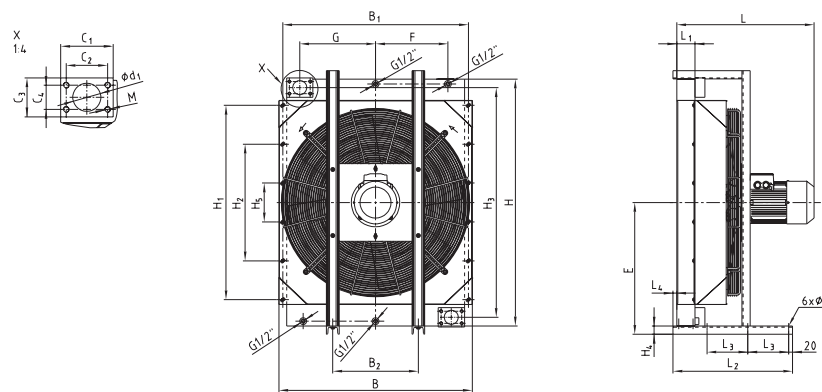
## Oil/air cooler — Type OAC



OAC 200 - OAC 400 230V/400V



OAC 500 - OAC 800 230V/400V

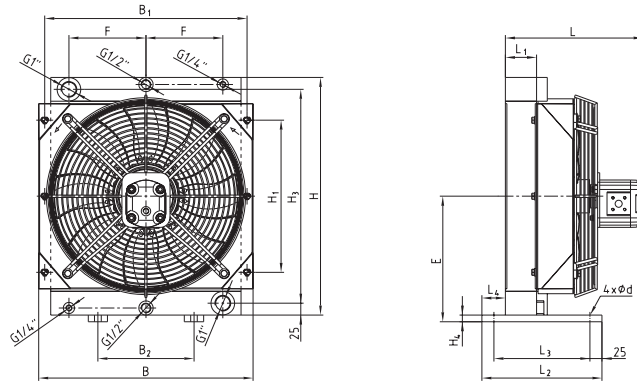


OAC 850 - OAC 1000 230V/400V

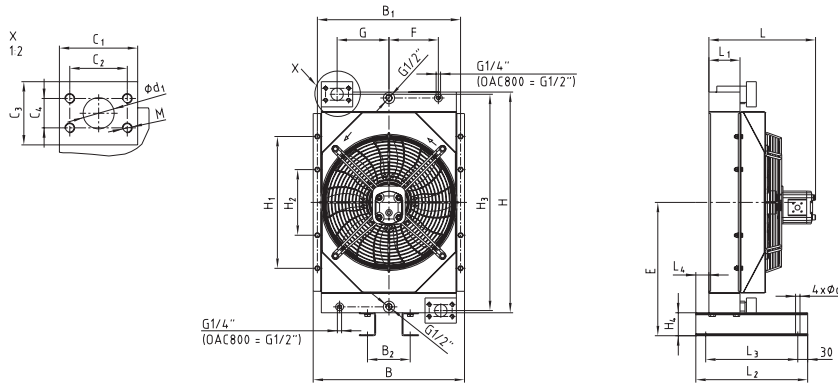
Oil/air cooler type OAC 230V/400V																								
Cooler type	Dimensions [mm]																							
	L	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	B	B <sub>1</sub>	B <sub>2</sub>	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	d	d <sub>1</sub>	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	M	F	G	E
OAC 200-03	334	65	250	200	50	350	325	174	410	240	-	360	14	-	14	-	-	-	-	-	-	115	-	219
OAC 300-03	404	65	250	200	49	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	160	-	264
OAC 400-03	434	95	280	230	55,5	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	160	-	264
OAC 500-03	431	95	340	280	40	460	435	130	670	400	200	657	70	-	13,5	38	95	69,9	77	35,7	M12	150	157,5	405
OAC 600-03	532	95	340	280	40	607	582	280	770	500	200	770	70	-	13,5	51	105	77,8	90	42,9	M12	225	226	455
OAC 700-03	542	95	340	280	40	608	582	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	M12	225	226	530
OAC 800-03	665	140	450	390	40	701	676	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	M12	272	273	530
OAC 850-03	667	95	500	180	-	870	835	350	960	690	230	910	42	-	14	51	105	77,8	90	42,9	M12	350	340	523
OAC 900-03	670	95	590	210	-	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62	M16	372,5	390	678
OAC 1000-03	690	113	615	210	-	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62	M16	372,5	390	678



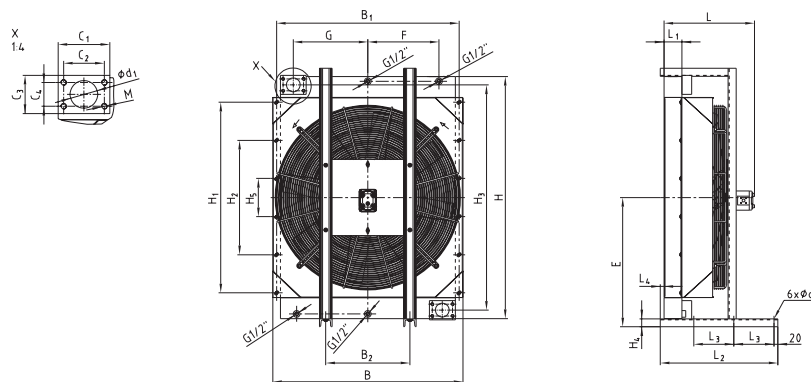
## Oil/air cooler — Type OAC



OAC 200 - OAC 400 hydraulic



OAC 500 - OAC 800 hydraulic



OAC 850 - OAC 1000 hydraulic

Oil/air cooler type OAC hydraulic																									
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	F	G	E	
OAC 200-04	245	65	250	200	50	350	325	174	410	240	-	360	14	-	14	-	-	-	-	-	-	-	115	-	219
OAC 300-04	295	65	250	200	49	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	160	-	264
OAC 400-04	325	95	280	230	55,5	446	421	200	500	320	-	450	14	-	14	-	-	-	-	-	-	-	160	-	264
OAC 500-04	323	95	340	280	40	460	435	130	670	400	200	657	70	-	13,5	38	95	69,9	77	35,7	M12	150	157,5	405	
OAC 600-04	400	95	340	280	40	607	582	280	770	500	200	770	70	-	13,5	51	105	77,8	90	42,9	M12	225	226	455	
OAC 700-04	411	95	340	280	40	608	582	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	M12	225	226	530	
OAC 800-04	546	140	450	390	40	701	676	280	920	700	300	920	70	-	13,5	51	105	77,8	90	42,9	M12	272	273	530	
OAC 900-04	475	95	615	210	19,5	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62	M16	372,5	390	678	
OAC 1000-04	505	113	615	210	-	995	955	440	1270	1000	600	1182	42	200	14	73	135	106,5	100	62	M16	372,5	390	678	

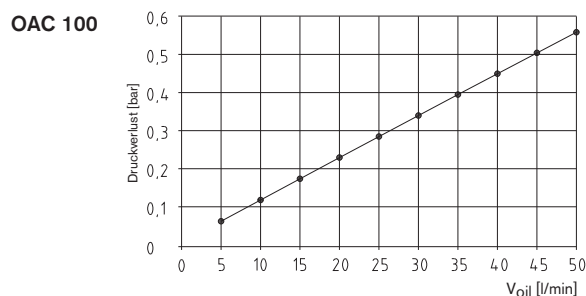
## Oil/air cooler — Type OAC (Technical data)

12V und 24V fan drive							
Cooler type	[V]	Drive [kW]	Speed [rpm]	Amperage [A]	Protection	Fan [mm]	Mass
OAC 100-01	12	0,0864	3950	7,2	IP68	190	6
OAC 100-02	24	0,0624	3625	2,6	IP68	190	6
OAC 200-01	12	0,0984	2838	8,2	IP68	280	11
OAC 200-02	24	0,1056	2925	4,4	IP68	280	11
OAC 300-01	12	0,2208	3080	18,4	IP68	350	16
OAC 300-02	24	0,2256	2730	9,4	IP68	350	16
OAC 400-01	12	0,2208	3080	18,4	IP68	350	22
OAC 400-02	24	0,2256	2730	9,4	IP68	350	22
OAC 500-01	12	0,2424	2600	20,2	IP68	385	30
OAC 500-02	24	0,2352	2700	9,8	IP68	385	30
OAC 600-01	12	2x0,0984	2838	2x 8,2	IP68	280	43
OAC 600-02	24	2x0,1056	2925	2x 4,4	IP68	280	43

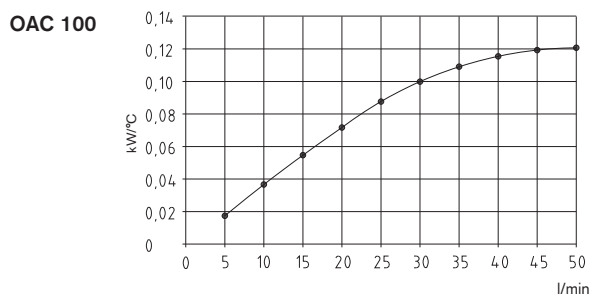
230V/400V with 50Hz; 440 V with 60 Hz fan drive											
Cooler type	Driving power [kW]		Speed [rpm]		Amperage [A]		Protection		Fan	Noise	Mass
	50Hz	60Hz	50Hz	60Hz	50Hz	60Hz	standard	marine	ø-mm	[dbA]	[kg]
OAC 200-03	0,18	0,21	1350	1650	0,58	0,57	IP55	IP56	280	66	16
OAC 300-03	0,37	0,43	1370	1670	1,04	1,02	IP55	IP56	380	76	24
OAC 400-03	0,37	0,43	1370	1670	1,04	1,02	IP55	IP56	380	76	29
OAC 500-03	0,37	0,43	1370	1670	1,04	1,02	IP55	IP56	380	78	37
OAC 600-03	0,75	0,86	1440	1740	1,79	1,72	IP55	IP56	520	78	57
OAC 700-03	0,75	0,86	1440	1740	1,79	1,72	IP55	IP56	520	78	70
OAC 800-03	1,5	1,75	1435	1730	3,3	3,3	IP55	IP56	630	78	97
OAC 850-03	2,2	2,55	965	1165	5,2	4,75	IP55	IP56	750	79	130
OAC 900-03	2,2	-	965	-	5,2	-	IP55	IP56	900	79	190
OAC 1000-03	2,2	-	965	-	5,2	-	IP55	IP56	900	79	215

Hydraulic fan drive					
Cooler type	Swallowing capacity [ccm]	Speed [rpm]	Fan ø [mm]	Noise [dbA]	Mass [kg]
OAC 200-04-06	6,3	1500	280	66	15
OAC 300-04-06	6,3		380	75	21
OAC 300-04-08	8,0		380	75	21
OAC 300-04-11	11,0		380	75	21
OAC 400-04-06	6,3		380	74	25
OAC 400-04-08	8,0		380	74	25
OAC 400-04-11	11,0		380	74	25
OAC 500-04-06	6,3		380	74	34
OAC 500-04-08	8,0		380	74	34
OAC 500-04-11	11,0		380	74	34
OAC 600-04-06	6,3		520	78	50
OAC 600-04-08	8,0		520	78	50
OAC 600-04-11	11,0		520	78	50
OAC 700-04-06	6,3		520	78	60
OAC 700-04-08	8,0		520	78	60
OAC 700-04-11	11,0		520	78	60
OAC 800-04-11	11,0		630	78	88
OAC 800-04-14	14,0		630	78	88
OAC 850-04-11	11,0		750	79	110
OAC 850-04-14	14,0		750	79	11
OAC 900-04-14	14,0	900	79	155	
OAC 900-04-19	19,0	900	79	155	
OAC 1000-04-19	19,0	900	79	188	

### Pressure loss 30 cSt

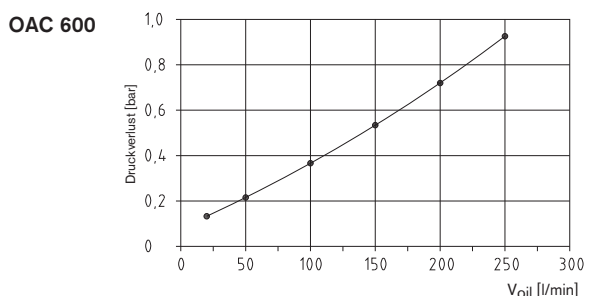
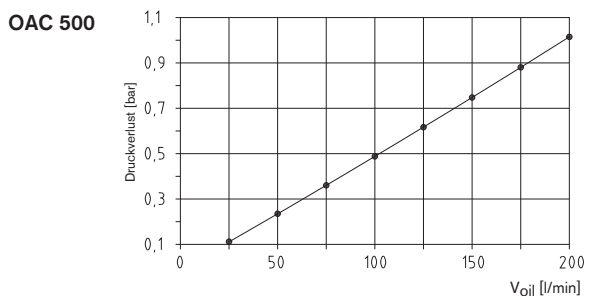
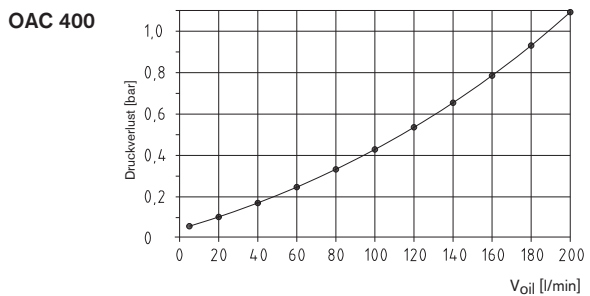
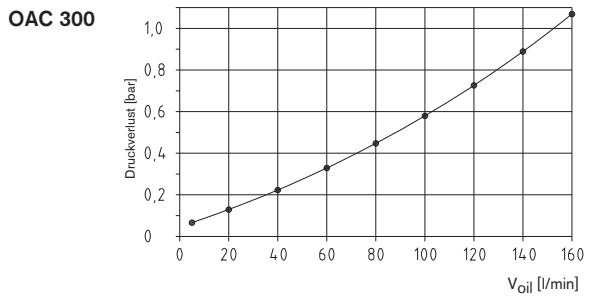
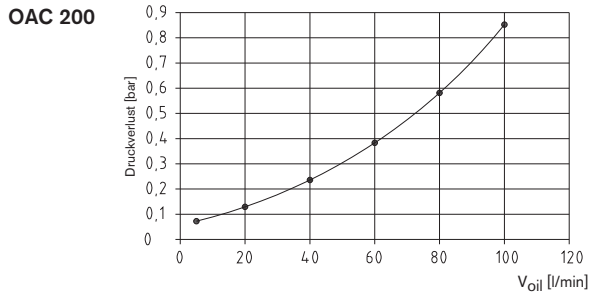


### Performance diagramme

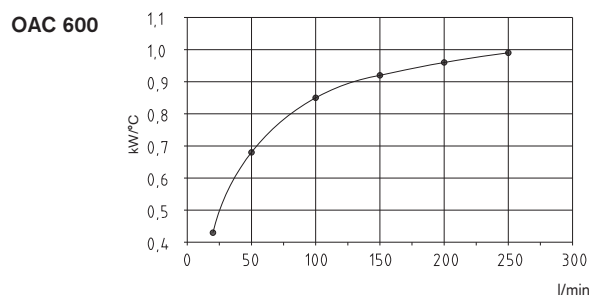
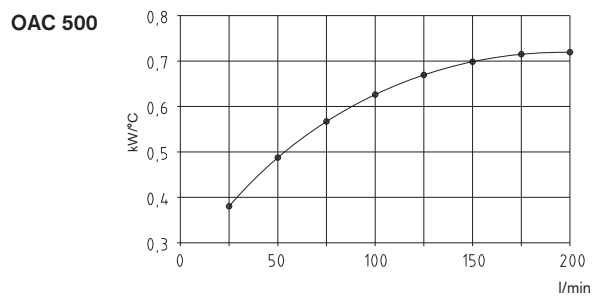
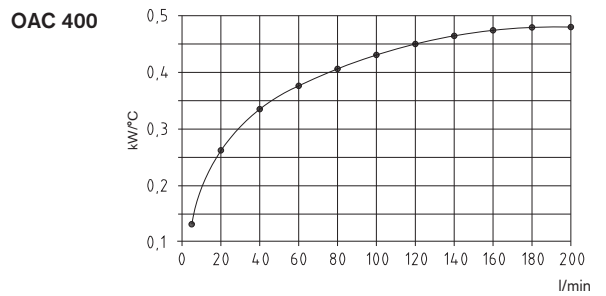
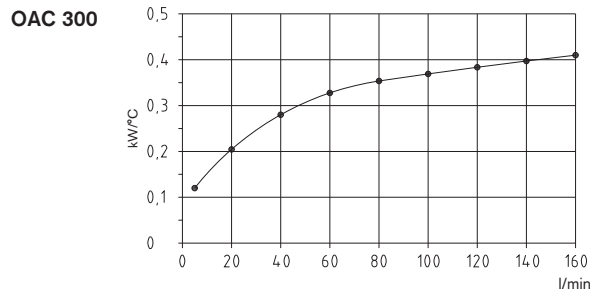
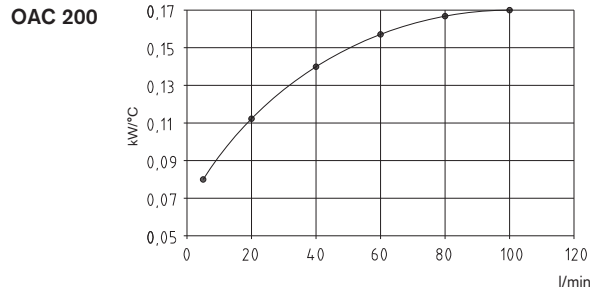


## Oil/air cooler — Type OAC (Diagrammes of performance and pressure loss)

**Pressure loss 30 cSt**



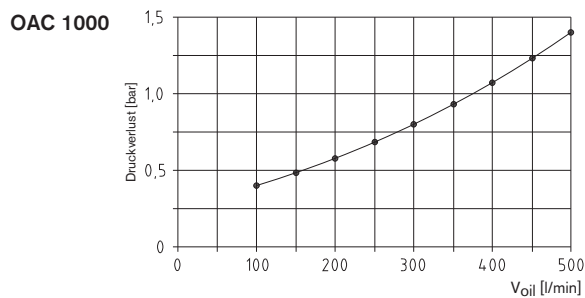
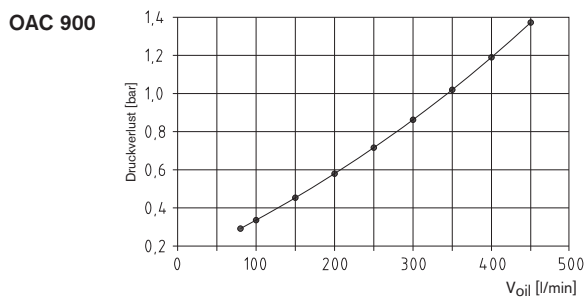
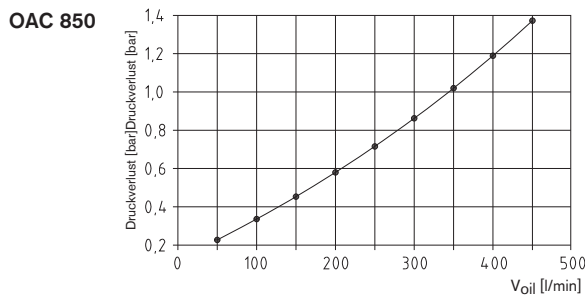
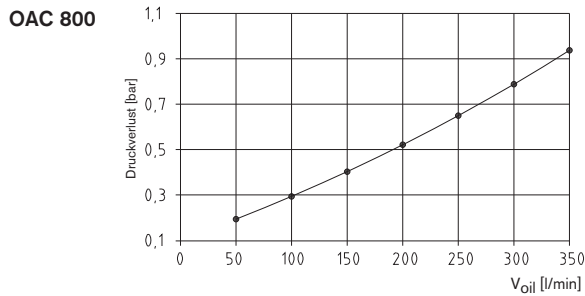
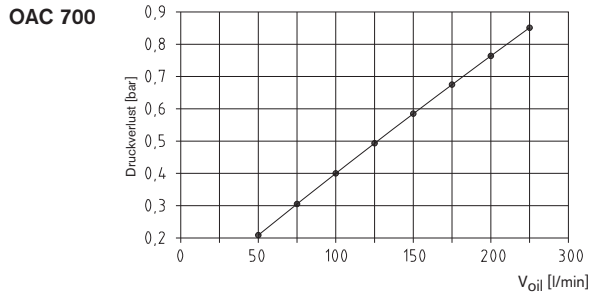
**Power diagramme**



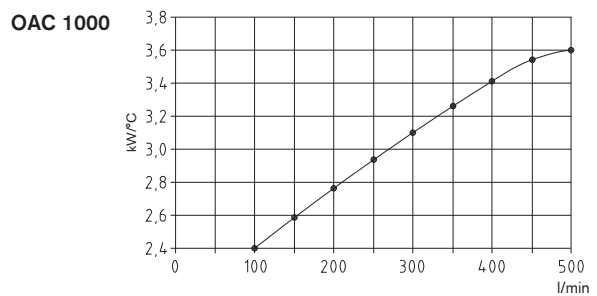
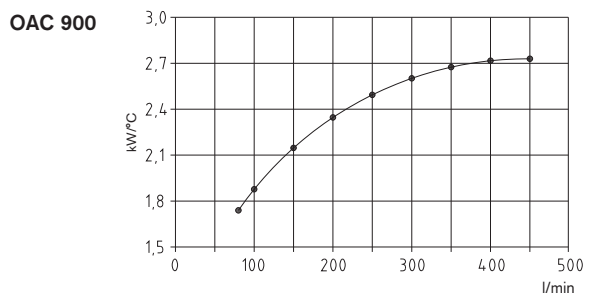
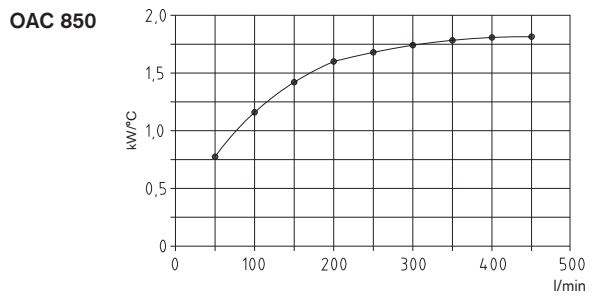
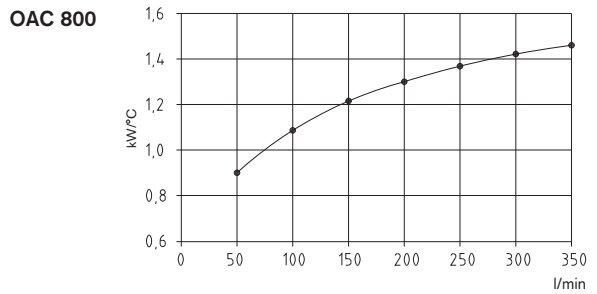
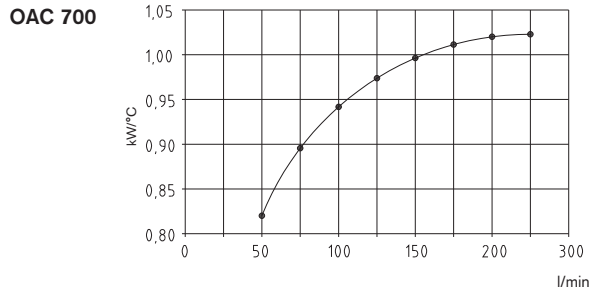
Conversion factor pressure loss									
cSt	10	15	20	30	40	50	60	80	100
Factor	0,5	0,65	0,75	1	1,2	1,4	1,6	2,1	2,8

## Oil/air cooler — Type OAC (Diagrammes of performance and pressure loss)

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 OPC (cooling-pump-unit)



- 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 TSC, see page 213
- Oil temperature valve OTV, see page 235

### Applications

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

### Arrangement

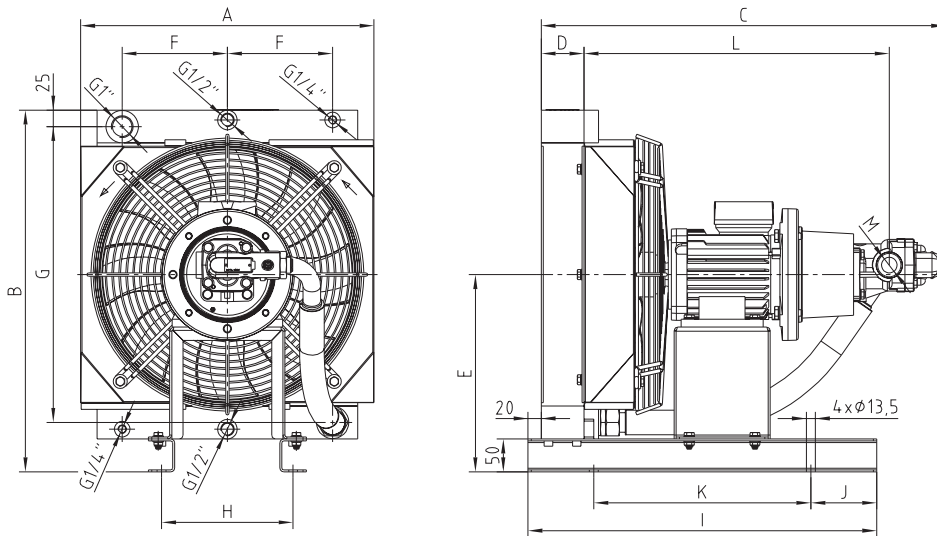
- Cooler grid (plate and bar) made of aluminium with industrial lamina in black (RAL 9005)
- Fan cover made of steel in black (RAL 9005)
- Fan made of nylon PAG
- Protective grid made of steel in black (RAL 9005)
- Electric motor 230 V/400 V
- Bellhousing and coupling
- Gearwheel feed pump with pressure limiting valve 0-15 bar, recommended setting 5 bar
- Filter with visual maintenance indicator, optionally

### Maritime design

- Cooling grid with KTL coating
- Frame, cooling grid, cover with KTL coating
- Electric motor with special painting and protection IP56

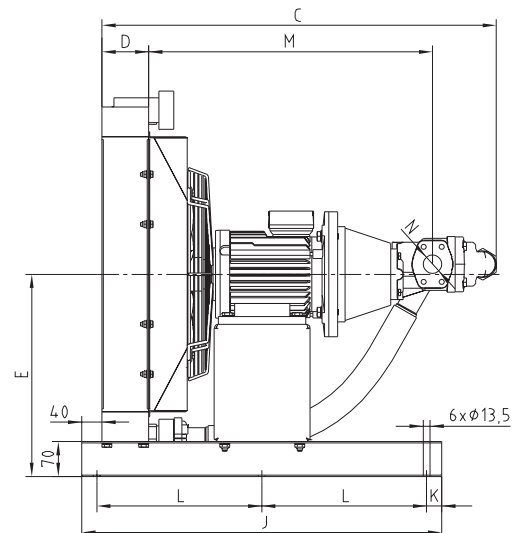
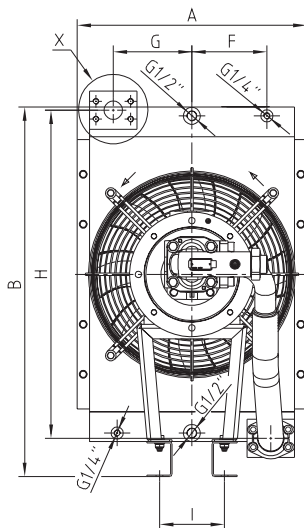
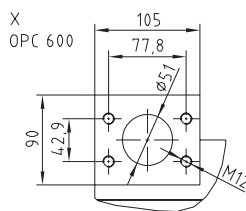
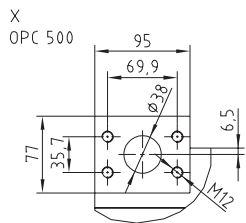
Ordering example	OPC	300 M	16 D	0,75 kW	F10
	Type	Size/type No specification = Standard M = marine design ExG = ATEX design	Pump flow rate D = DBV	Motor power	Optionally with filter

## Oil/air cooler — Type OPC (cooling-pump-unit)



**Type OPC 200 to 400**

Cooler type	Voltage	Strom [A]	Drehzahl [rpm]	l/min	kW/°C	Dimensions													Gewicht [kg]
						A	B	C	D	E	F	G	H	I	J	K	L	M	
OPC 200-4D-0,75kW	230/400V 50 Hz	1,8	1400	5,5	0,10	350	460	572	65	255	115	360	174	530	100	330	426	G 3/4"	35
OPC 200-12D-0,75kW				16,7	0,13			596									435	G 1"	
OPC 200-16D-0,75kW				21,4	0,15	446	550	615	65	300	160	450	200	530	100	330	464	G 3/4"	42
OPC 300-4D-0,75kW				5,5	0,20												638	473	
OPC 300-12D-0,75kW				16,7	0,22	446	550	645	95	300	160	450	200	550	75	400	465	G 3/4"	46
OPC 300-16D-0,75kW				21,4	0,25												668	474	
OPC 400-4D-0,75kW				5,5	0,22	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	474	
OPC 400-16D-0,75kW				21,4	0,28	446	550	668	95	300	160	450	200	550	75	400	474	SAE 1 1/2"	46
OPC 400-32D-0,75kW				42,7	0,30												720		

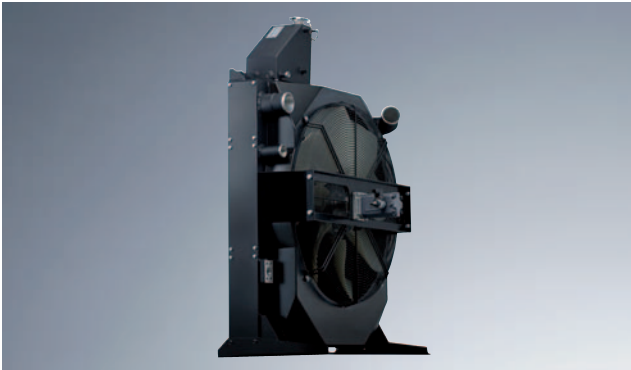


**Type OPC 500 and 600**

Cooler type	Voltage	Current [A]	Speed [rpm]	l/min	kW/°C	Dimensions													Weight [kg]	
						A	B	C	D	E	F	G	H	I	J	K	L	M		N
OPC 500-16D-2,2kW	230/400V 50 Hz	4,9	1410	21,5	0,40	460	740	740	95	405	150	157,5	657	130	720	30	330,0	547	G 1"	75
OPC 500-25D-2,2kW				33,4	0,48			790										568	SAE 1 1/2"	
OPC 500-32D-2,2kW				42,7	0,50	607	840	819	95	455	225	226,0	770	280	795	30	367,5	626	G 1"	96
OPC 600-4D-2,2kW				53,5	0,52													868	647	
OPC 600-16D-2,2kW				21,5	0,65	607	840	819	95	455	225	226,0	770	280	795	30	367,5	626	G 1"	96
OPC 600-25D-2,2kW				33,4	0,68													868	647	
OPC 600-32D-2,2kW				42,7	0,70	607	840	868	95	455	225	226,0	770	280	795	30	367,5	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)

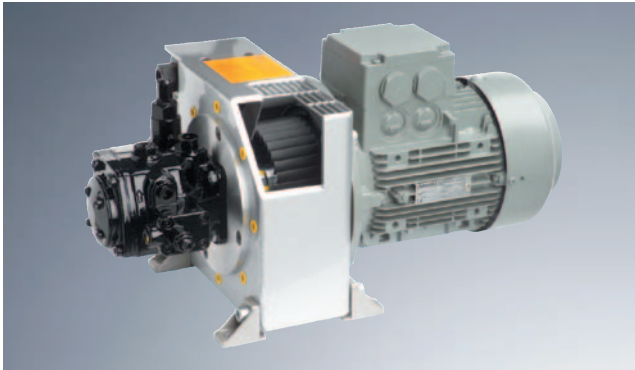
The MMC cooler series is used on construction machines, agricultural machines and stationary I. C.-engines. Being used as a water cooler, series MMC tempers the cooling water. Being used as an oil cooler it ensures the cooling of hydraulic or gear oil, as a charge air cooler it operates the cooling of 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.

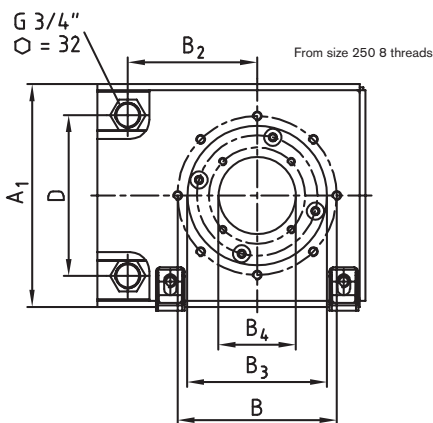
## Potential applications



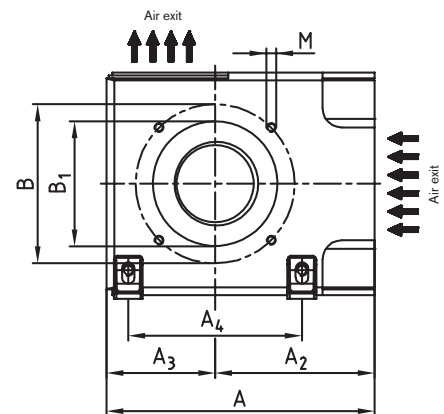
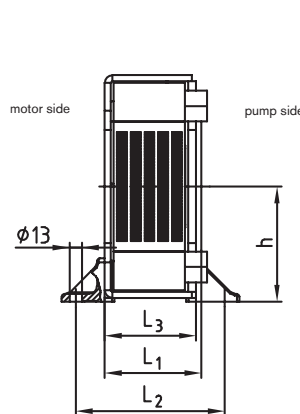
## Oil/air cooler - Type PIK



- Suitable to cool the entire oil volume (return pass)
- Constant air flow rate of the heat exchanger due to a low pressure principle (patent pending)
- Optimum utilization of the high-performance heat exchanger
- Optimum matching 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 see our selection programme at [www.ktr.com](http://www.ktr.com)



View pump side



View motor side

### Bellhousings with integrated oil cooler type PIK (patent pending)

IEC motor		PIK oil cooler type	Dimensions [mm] *															
Size (Shaft)	kW with 1500 rpm		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																	
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 250/4/... **	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
	7,5	PIK 300/3/...	155	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
		PIK 300/4/...	168	199,5	139,5	359	300	205	154	260	265	230	175	234	30	242	M12	154
160M / 160L (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
180M / 180L (48 x 110)	18,5	PIK 350/2/...	204	243,5	183,5	405	360	230	175	310	300	250	200	260	50	292	M16	184
	22																	

\* Dimensions following the VDMA standard 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 12 bar in the reverse motion (danger of bursting)! Please consider our mounting instructions under [www.ktr.com](http://www.ktr.com).

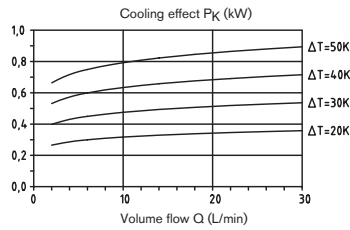
For PIK sizes 200 and 350 please mention the IEC motor sizes in your order.

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

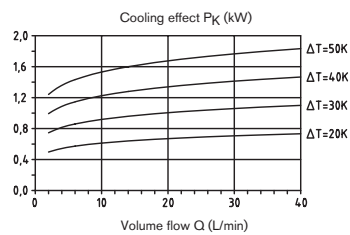
## Oil/air cooler – Type PIK

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

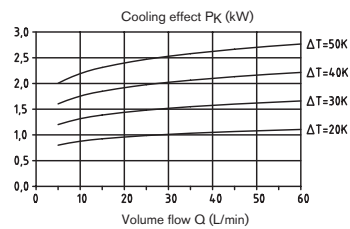
PIK 200



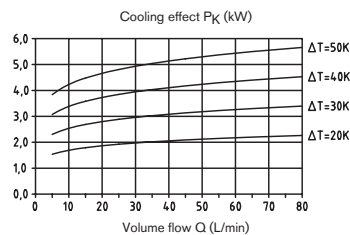
PIK 250



PIK 300



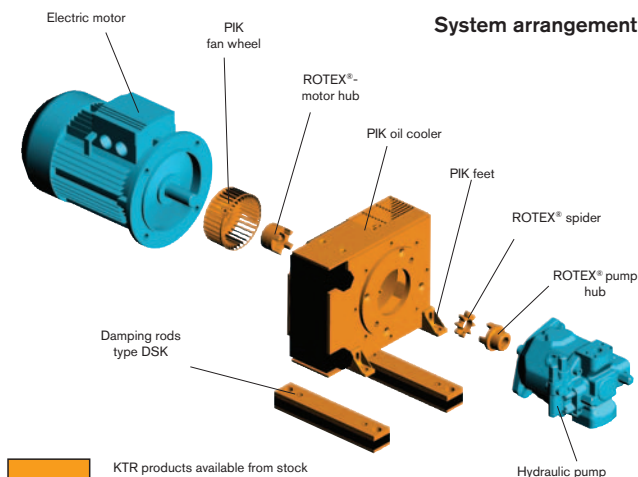
PIK 350



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

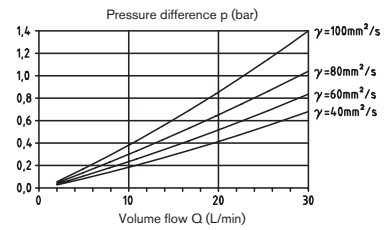
### 2. Operating pressure

The maximum permissible operating pressure for the oil cooler is 12 bar. Max. operating pressure in case of static load 20 bar. (All values apply for the medium pressure cooler.)

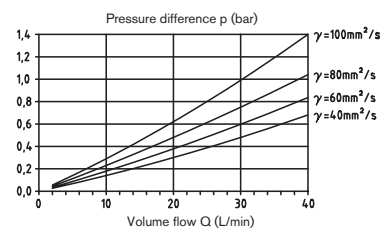


3. Pressure difference depending on oil flow and oil viscosity

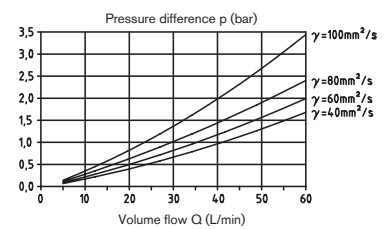
PIK 200



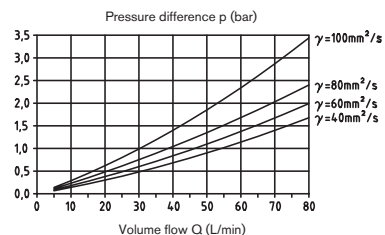
PIK 250



PIK 300



PIK 350



Viscosity measured up to 100 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 with 1500 rpm

PIK 200 = approx. 90 m<sup>3</sup>/h

PIK 250 = approx. 200 m<sup>3</sup>/h

PIK 300 = approx. 400 m<sup>3</sup>/h

PIK 350 = approx. 860 m<sup>3</sup>/h

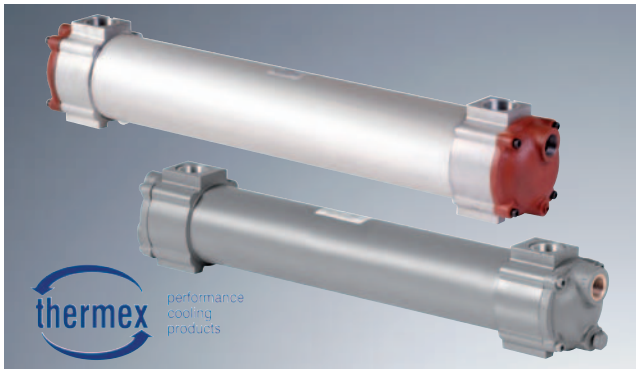
### 5. Cooler connection

R <sup>3</sup>/<sub>4</sub>" internal thread

### 6. Oil flow

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

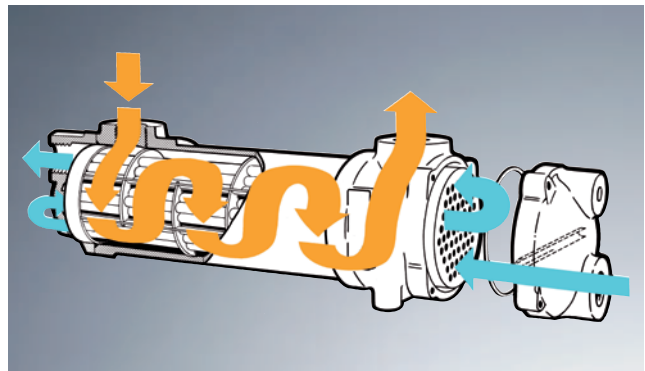
## Oil/water cooler — Type TAK/T



- Oil cooler as tube bundle heat exchanger
- Type TAK/T
- The cooler series 20 have been designed specifically for hydraulic systems
- Highly efficient up to 340 kW
- Available in marine version (seawater)
- Easy cleaning by dismantlable tube stacks
- Please note our mounting instructions ([www.ktr.com](http://www.ktr.com))

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

The 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 27 and 28 ranges have twin seals and witness rings fitted as standard to provide maximum protection against fluid cross-contamination.



### Materials:

These coolers are available in both industrial and marine versions.

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

## Oil/water cooler — Type TAK/T

KTR tubular coolers - cooling performance of the 20 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		

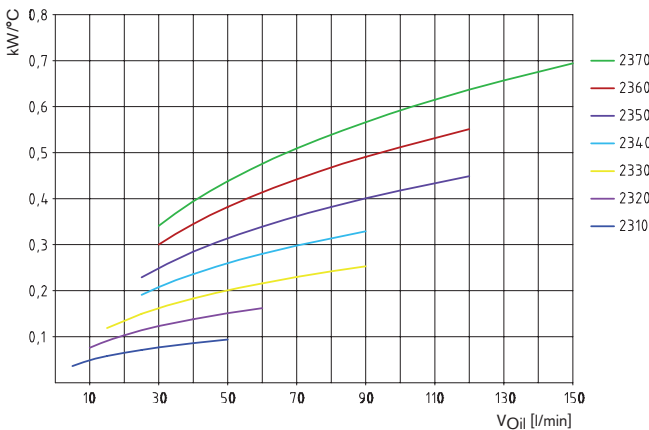
Operating conditions for the above table:

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

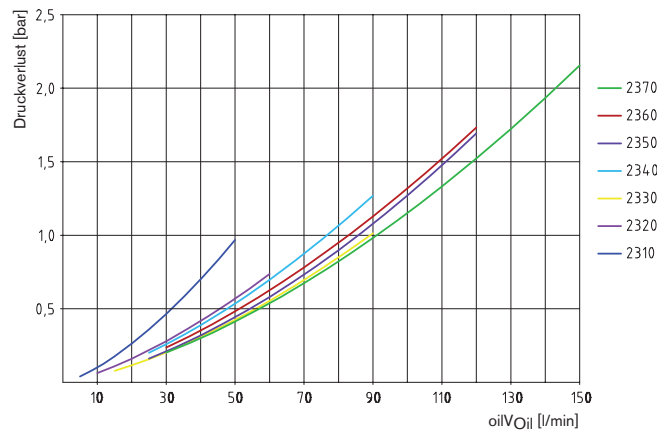
Tube circuit: Plain water at an inlet temperature of 20 °C

**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 calculation please contact the KTR engineering team: phone +49 5971 798-0 or [www.ktr.com](http://www.ktr.com).

Power diagramme of the 23 series

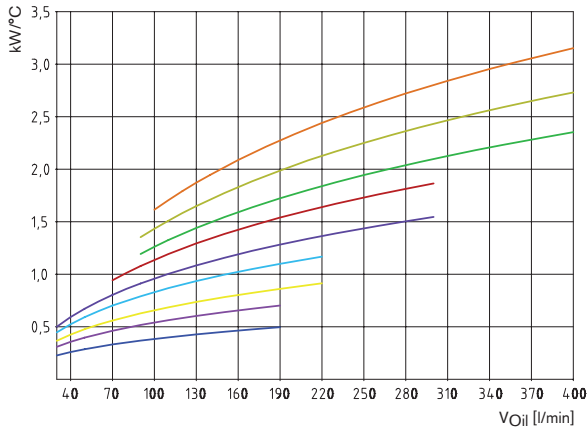


Pressure loss of the 23 series

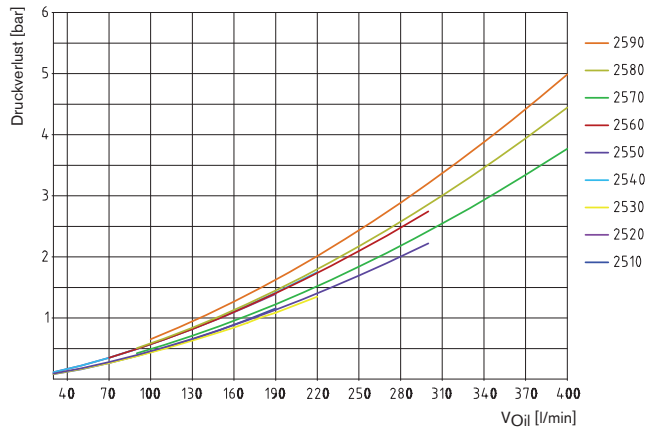


## Oil/water cooler — Type TAK/T

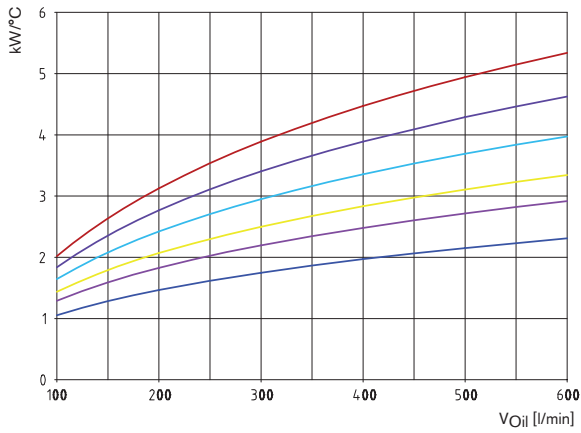
Power diagramme of the 25 series



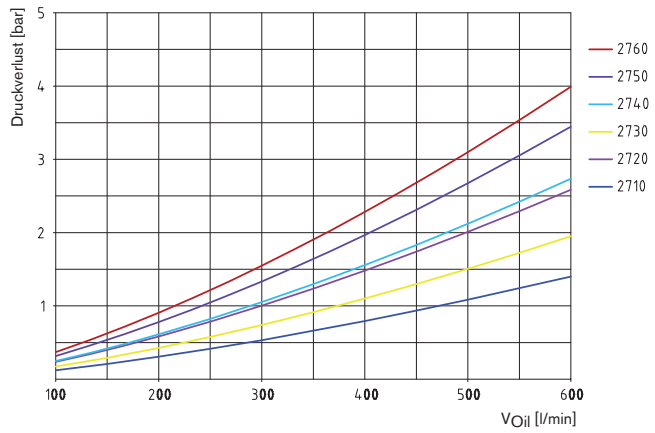
Pressure loss of the 25 series



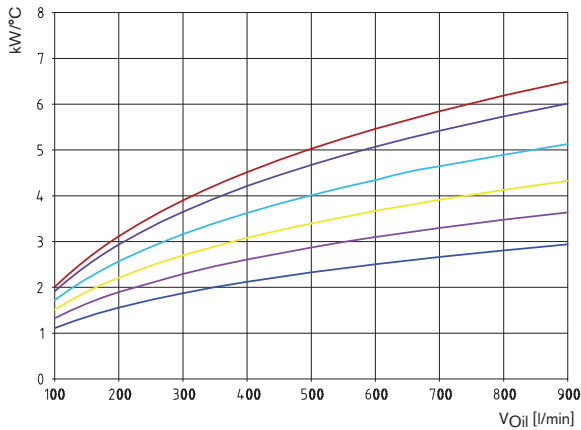
Power diagramme of the 27 series



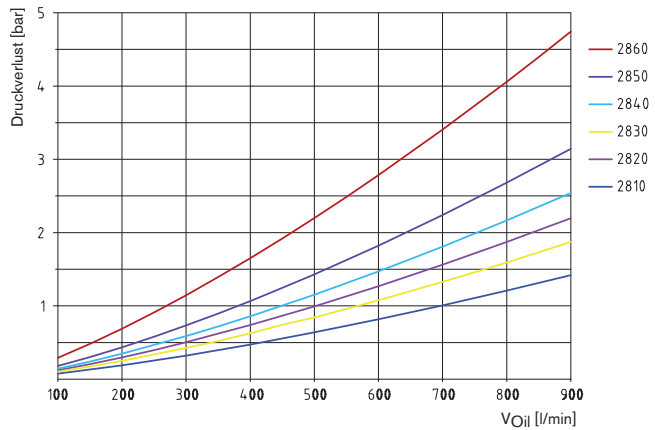
Pressure loss of the 27 series



Power diagramme of the 28 series

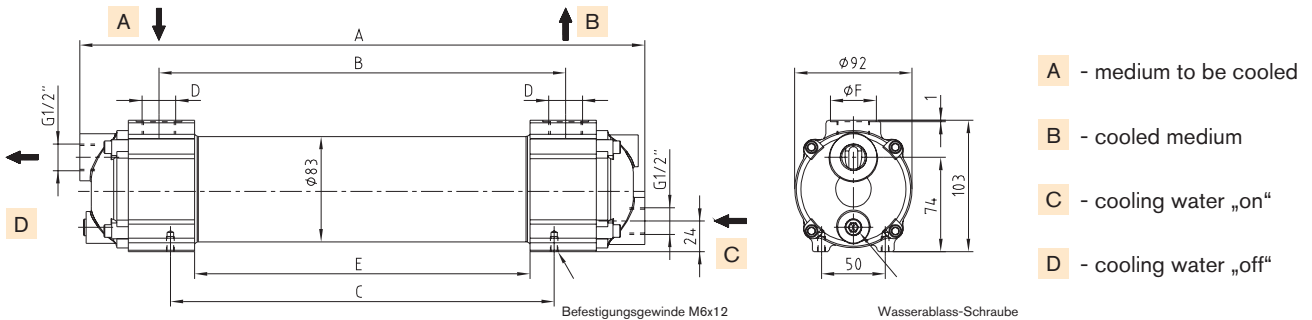


Pressure loss of the 28 series





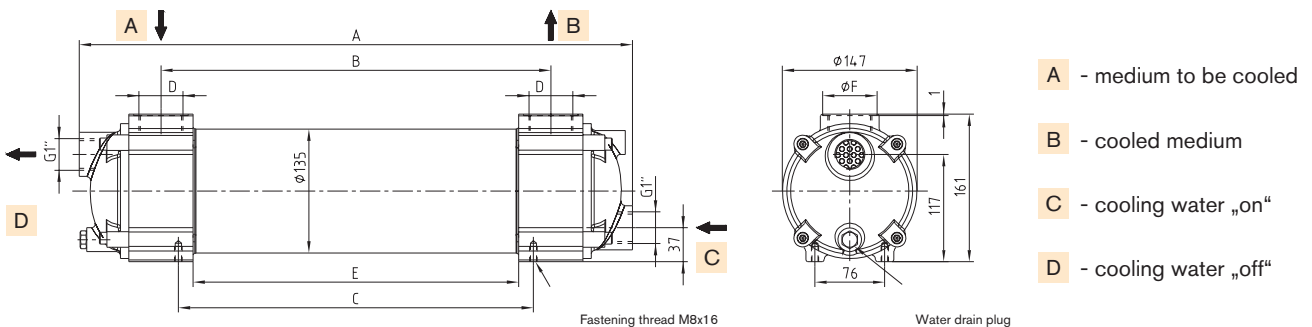
## Oil/water cooler — Type TAK/T



TAK/T Series 23									
type	A [mm]	B [mm]	C [mm]	D [BSP]	E [mm]	ØF [mm]	Weight [kg]	Oil volume [l]	Water volume [l]
TAK/T 2312	175	59	<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> With model series 2310 only 2-off fastening threads M6x12 are situated centrally under the oil connections.  
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.



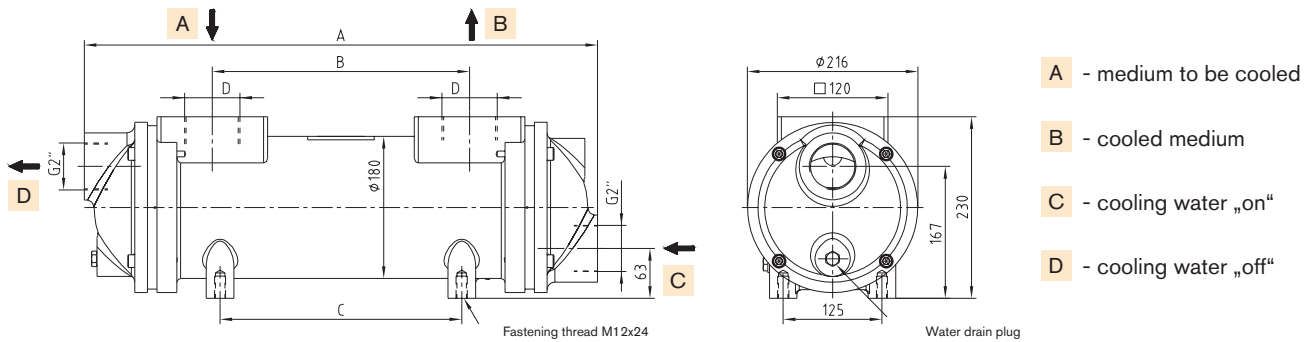
TAK/T Series 25									
type	A [mm]	B [mm]	C [mm]	D [BSP]	E [mm]	ØF [mm]	Weight [kg]	Oil volume [l]	Water volume [l]
TAK/T 2512	291	129	75	G1	-	45	10	1,4	1,4
TAK/T 2522	377	199	161	G1 1/4	-	53	12	1,9	1,7
TAK/T 2532	475	297	259	G1 1/4	-	53	13	2,5	2,1
TAK/T 2542	603	425	387	G1 1/4	333	53	14	3,5	2,6
TAK/T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

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

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

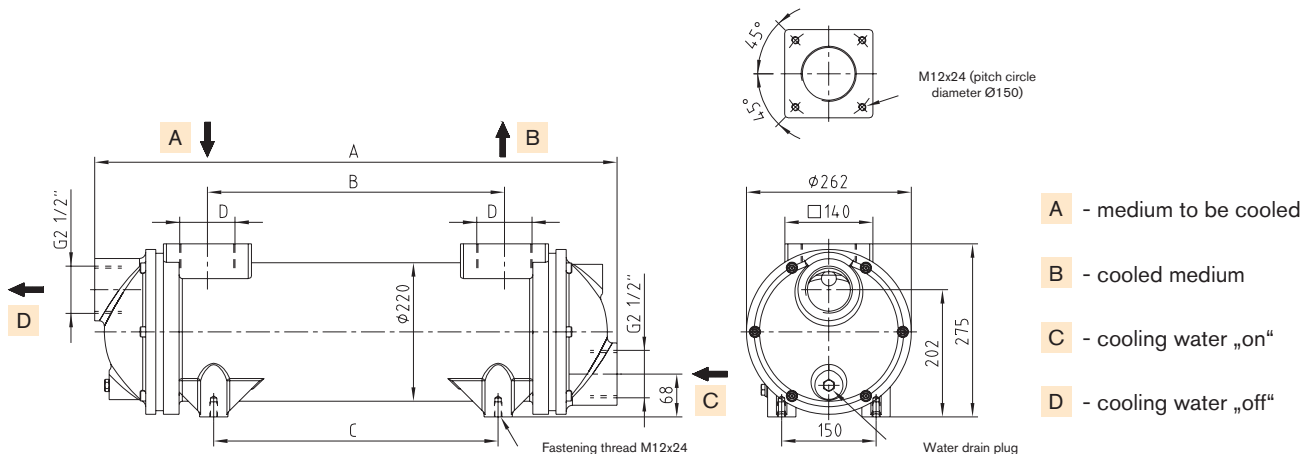
Ordering example:	TAK/T	231	2	SW
Type	Series/size	2 = Industrial design (Standard) 3 = Industrial design with viton seal, temperature >100 °C 4 = Marine version 5 = Marine version with viton seals, temp. >100 °C 6 = Special marine version for severely polluted or poor quality water 7 = Special marine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

## Oil/water cooler — Type TAK/T



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

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



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

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

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

## Oil/water cooler — Type 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 made of 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 made of 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.

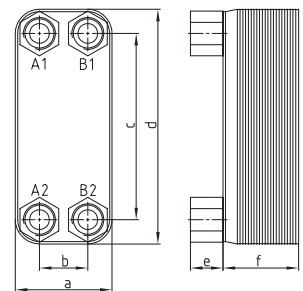
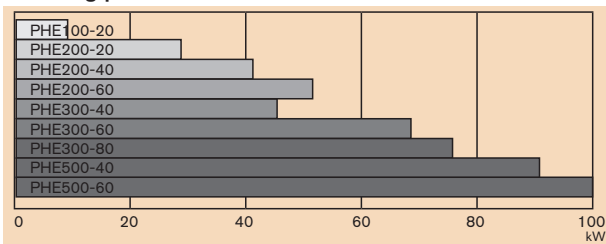
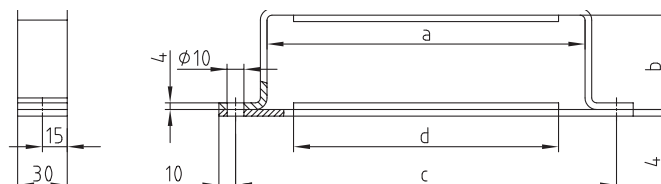


Plate heat exchanger									
Series	Type	Thread	Plates	a	b	c	d	e	f
PHE	100	4 x 3/4"	20	73	40	154	191	24	52
PHE	200	4 x 1"	20						55
PHE	200	4 x 1"	40	116	72	243	286	24	103
PHE	200	4 x 1"	60						151
PHE	300	4 x 1"	40						103
PHE	300	4 x 1"	60	112	50	466	526	24	151
PHE	300	4 x 1"	80						203
PHE	500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

### Cooling power



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



From size PHE 200 we recommend 2 supports per cooler.

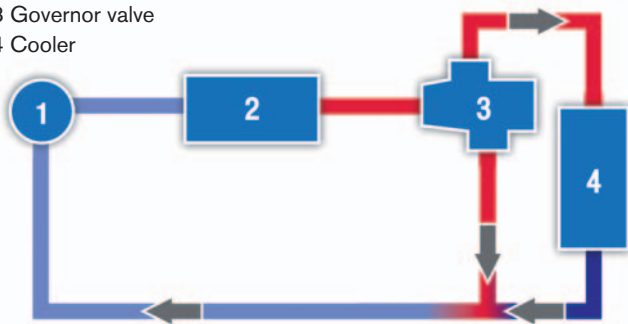
Fastening device				
	a	b	c	d
BH100-20	80	51	114	75
BH200/300-20		54		
BH200/300-40		102		
BH200/300-60	120	150	150	118
BH200/300-80		201		
BH500-40		102		
BH500-60	195	150	235	193

### Ordering example

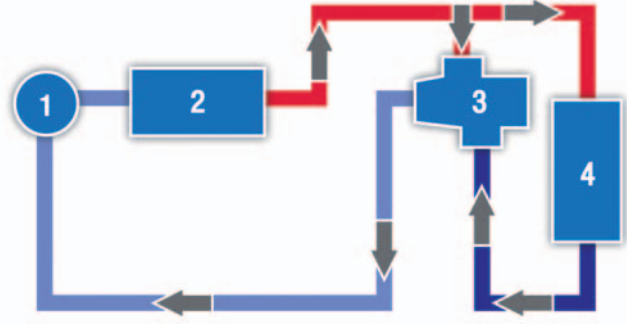
PHE	100	20
PHE = Plate heat exchanger	Size	Number of plates

## Oil thermostat valve

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



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



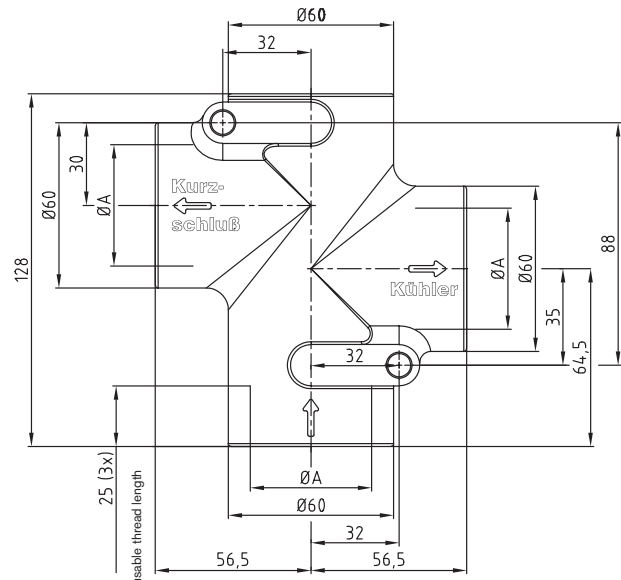
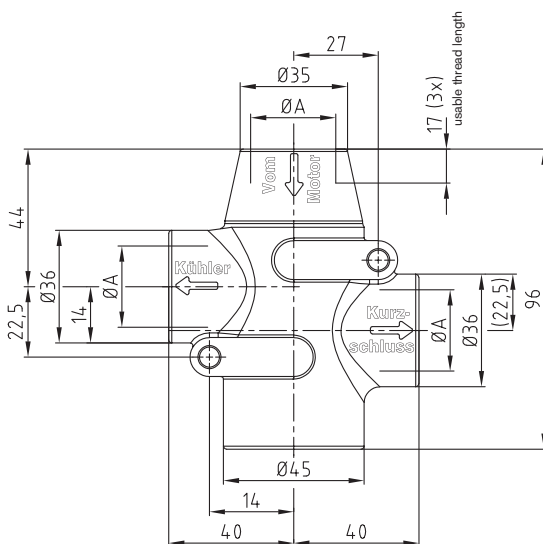
Use as a mixing valve:  
Constant temperature on load inlet

### 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
- Sound design
- Insensitive to vibrations
- Insensitive to shocks
- Operation independent of the mounting situation
- Maintenance-free
- Long service life



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

max. operating pressure 16 bar

Ordering example	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 on mineral oil base	Biological hydraulic oils		
							HETG	HEES	HEPG
Bellhousings P, PK, PL	ALU	●	●	6	●	●	●	●	●
Bellhousings PG	GG	●	●	6	6	●	6	6	6
Bellhousings PS	Steel	●	●	6	6	●	6	6	6
Bellhousings KPT	Nylon/ALU	●	●	6	●	●	●	●	●
Damping ring aD, DT, DTV	ALU/NBR	●	●	6	1	●	●	●	●
Bellhousing with integrated oil cooler PIK	Steel/ALU	●	●	6	1	●	●	●	●
Oil-water cooler TAK	-	●	●	6	6	●	6	6	6
Foot flanges PTFE, PTFE	ALU	●	●	6	●	●	●	●	●
Foot flanges PTFE, PTFE	Steel/GGG	●	●	6	6	●	6	6	6
ZO flange	ALU	●	●	6	●	●	●	●	●
Pump bracket bK	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
BAKW steel tank	Steel	●	●	6	6	●	6	6	6
Tank covers from steel	Steel	3	●	6	6	3	●	●	●
Tank covers from aluminium	ALU	●	●	6	●	●	●	●	●
Oil level indicator	-	●	●	●	5	●	6	6	6
Oil level sight glass	-	●	●	●	5	●	6	6	6
Filler breather	-	●	●	●	5	●	6	6	6
Cleaning cover	ALU	●	●	6	●	●	●	●	●
O-ring seal	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 flange	Steel/NBR	●	●	●	1	●	●	●	●
Elastic cover support EDL	Steel/NBR/ALU	●	●	7	1	●	●	●	●
Industrial control systems IR, IRD	Stainless steel	●	●	●	●	●	●	●	●
Level temperature switch NVT	Brass/NBR	5	5	5	5	●	5	5	5
Temperature probe TE-PT-100	Stainless steel/NBR	●	●	●	●	●	●	●	●
Temperature switch TS	Steel (anodized)	●	●	●	●	●	●	●	●
Tank heater EH	Brass/stainless steel	●	●	●	●	●	●	●	●
Tank heater EHP	Steel/fibre NBR	●	●	6	●	●	●	●	●
Tank heater TEHM	Stainless steel/copper	5	5	5	5	●	5	5	5
Plate heat exchanger	-	●	●	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 coating 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).

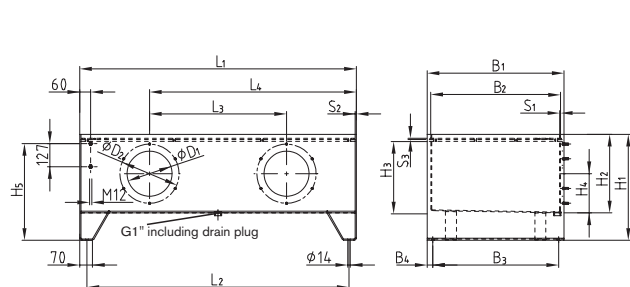
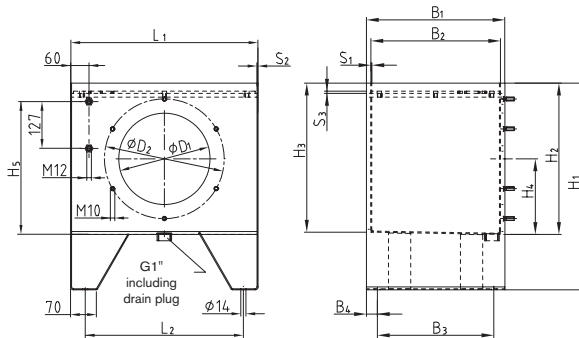
## Series BSK



- Tanks made of high-grade steel
- Tanks 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

from NG 250



### Series BSK, NG 40-400

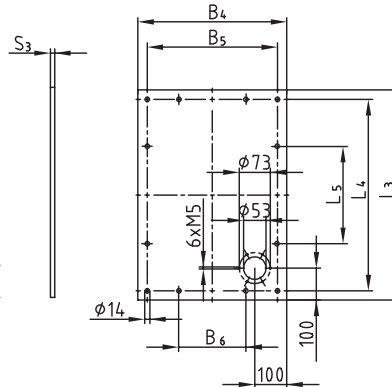
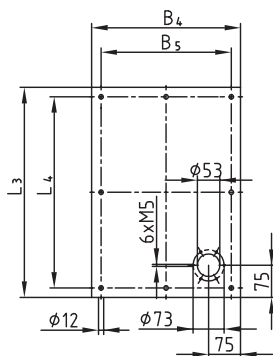
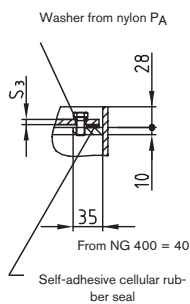
Order description	Useful vol.	Weight	Tank dimensions [mm]															Cleaning cover		Tank completely available from stock tank cover type E				
			NG	Litres	kg	L1	L2	L3	L4	B1	B2	B3	B4	H1	H2	H3	H4	H5	D1	D2	S1	S2	S3	No.
BSK 40	38	34	508	428	-	-	375	365	315	30	430	280	273	140	230	195	250	3	3	6	1	V 250-4	●	
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	●	
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
	L3	L4	L5	B4	B5	B6	S3	
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

### Ordering example

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

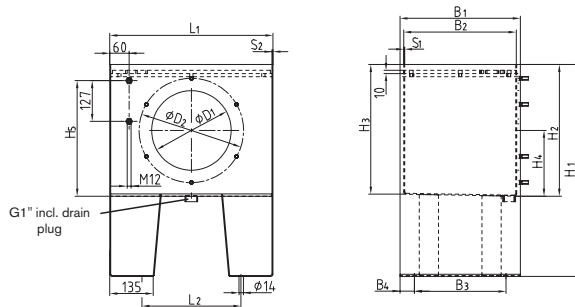


## Series BNK type A

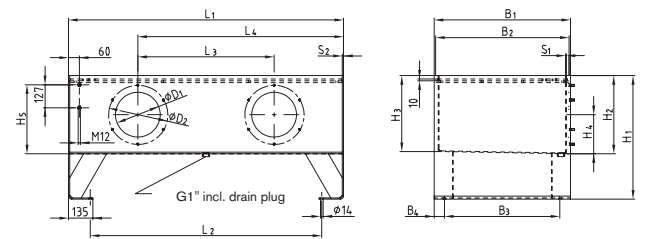


- DIN tanks made of high-grade steel
- Tank sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis.
- Priming is compatible with other varnish paints
- All tanks are subject to 100 % tightness test
- Subsequent assembly of KTR standard separation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



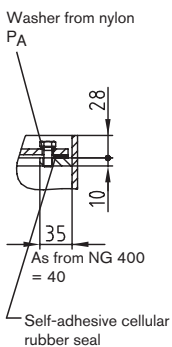
as from NG 250



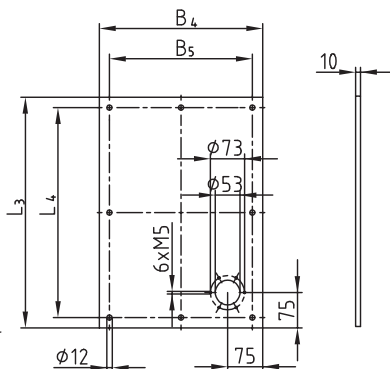
Series BNK type A, NG 63-1250																							
Order description	Useful vol.	Weight	Tank dimensions [mm]																	Cleaning cover		Tank completely available from stock	
NG	Litres	kg	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <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.	Type	Cover type E	Cover type C
BNK 63	59	47	508	308	-	-	375	365	285	45	660	410	403	205	360	248	324	3	3	1	V 324-6	●	
BNK 100	92	77	633	393	-	-	474	460	360	57	660	407	399	205	357	248	324	4	4	1	V 324-6	●	
BNK 160	152	112	810	570	-	-	604	590	490	57	660	410	400	205	360	248	324	4	4	1	V 324-6	●	
BNK 250	235	148	1010	770	410	710	704	690	590	57	680	430	418	215	380	248	324	4	4	2	V 324-6	●	
BNK 400	375	245	1514	1274	750	1132	749	735	635	57	680	430	417	215	380	248	324	4	7	2	V 324-6	●	
BNK 630	595	366	1514	1274	750	1132	959	945	845	57	770	520	504	265	470	383	449	4	7	2	V 449-6	●	
BNK 800	752	400	2014	1774	1000	1507	914	900	800	57	770	520	504	265	470	383	449	5	7	2	V 449-6	●	
BNK 1000	945	452	2014	1774	1000	1507	1079	1065	965	57	800	550	531	285	500	383	449	5	7	2	V 449-6		
BNK 1250	1180	600	2014	1774	1000	1507	1349	1335	1235	57	800	550	527	285	500	383	449	5	7	2	V 449-6		

### Tank cover

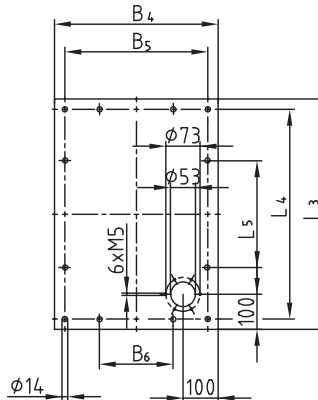
#### Cover design E Design E



#### For NG 63-250 Design E



#### For NG 400-1250 Design E



#### Cover design „E“

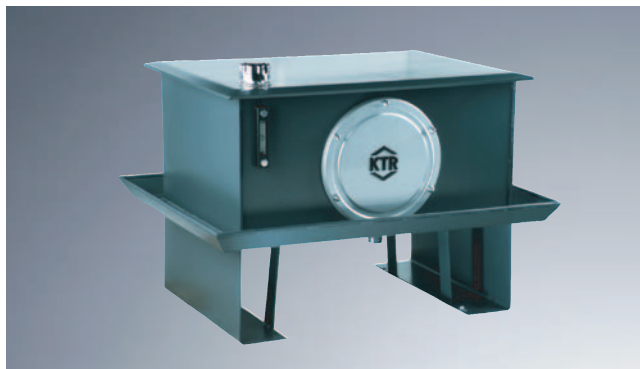
NG	Dimensions [mm]						Number of holes
	L <sub>3</sub>	L <sub>4</sub>	L <sub>5</sub>	B <sub>4</sub>	B <sub>5</sub>	B <sub>6</sub>	
63	492	448	-	349	305	-	8x
100	615	571	-	442	398	-	8x
160	792	748	-	572	528	-	8x
250	992	948	-	672	628	-	8x
400	1490	1440	480	717	667	222	12x
630	1490	1440	480	927	877	292	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

#### Ordering example

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

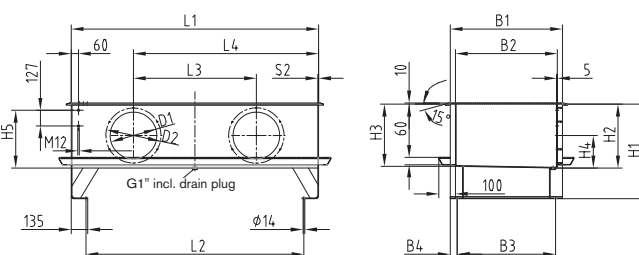
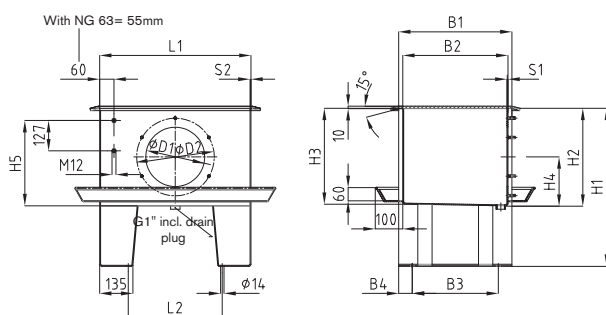
## Series BNK design B



- 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

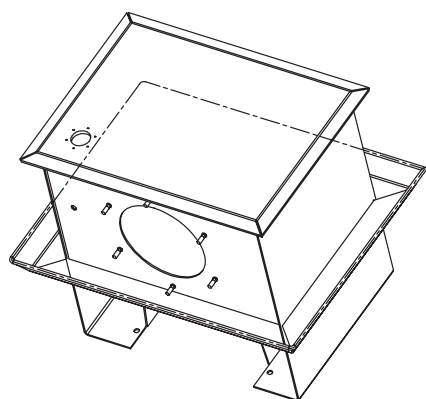
up to NG 160

as from NG 250

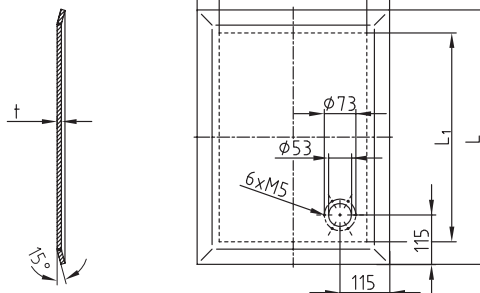


Series BNK design B, NG 63-1250																						
Order description	Useful vol.	Weight	Tank dimensions [mm]																Cleaning cover			
			NG	Litres	kg	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>	B <sub>4</sub>	H <sub>1</sub>	H <sub>2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

### Tank cover



### Cover design A



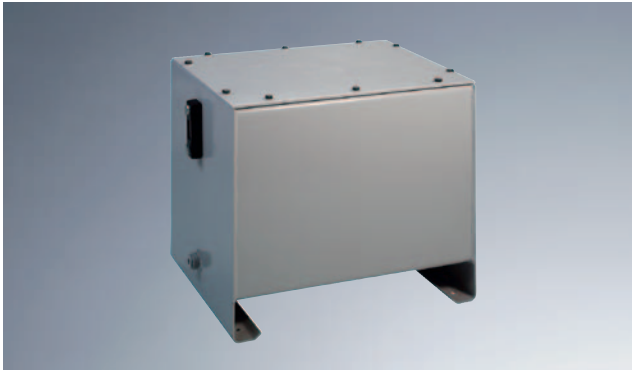
### Cover design „A“

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

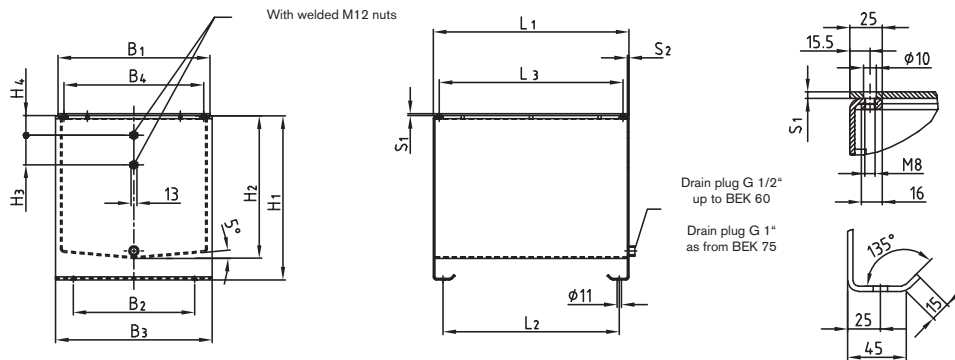
### Ordering example

BNK	250	B	A
KTR standard tank	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	Useful vol.	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>	H <sub>3</sub>	H <sub>4</sub>	S <sub>2</sub>	Cover design E
BEK 12	16	17	310	260	298	220	310	275	220	76	50	4	●
BEK 20	26	23	400	350	298	220	310	325	270	76	50	4	●
BEK 35	40	30	470	420	298	220	310	400	345	76	50	4	●
BEK 50	58	40	500	450	388	310	400	420	365	76	50	4	●
BEK 60	69	43	550	500	388	310	400	445	390	76	50	4	●
BEK 75	85	46	550	500	388	310	400	530	475	127	50	4	●
BEK 100	109	54	700	650	388	310	400	530	475	127	50	4	●
BEK 150	175	79	750	700	488	410	500	620	565	127	80	4	●
BEK 225	267	115	900	850	588	510	600	650	595	127	80	4	●
BEK 300	339	127	900	850	688	610	700	700	645	127	80	4	●

## Tank cover

up to NG 75

not applicable with BEK 12

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.

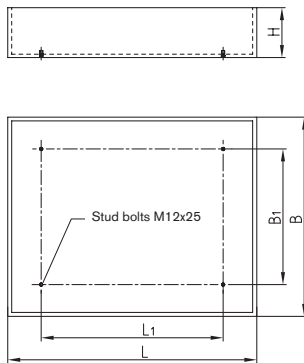
<b>Ordering example</b>	BEK	100	E
	KTR standard tank	Tank size	Cover design "E"

## Oil Sump Pans

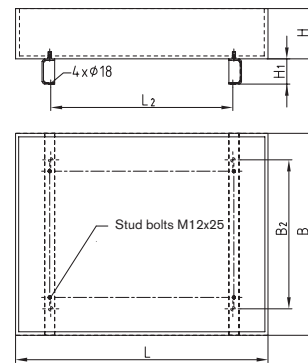


- Oil sump pans made of high-grade steel
- Collection volume corresponds to the full load volume of the tank
- Oil sump pans are sand-blasted, with high-quality internal and external coating resistant to hydraulic oils on a mineral oil basis
- Priming is compatible with other varnish paints
- All oil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

Oil sump pans without feet



Oil sump pans with feet



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

### Oil Sump pans for BSK and BNK

Order description	Useful vol.	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				
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

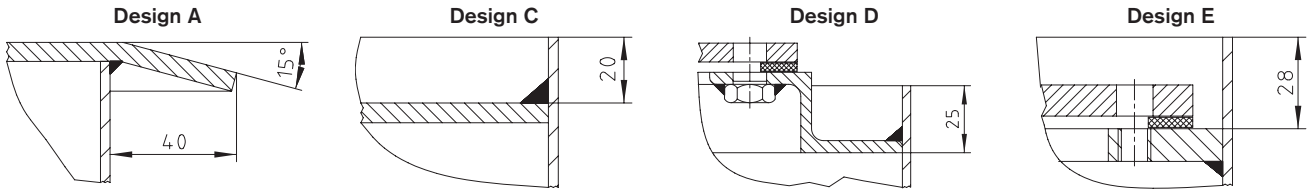
Type plate and certificates according to regulations \$19 WHG available against extra charge. Please indicate in the order.

**Ordering example**

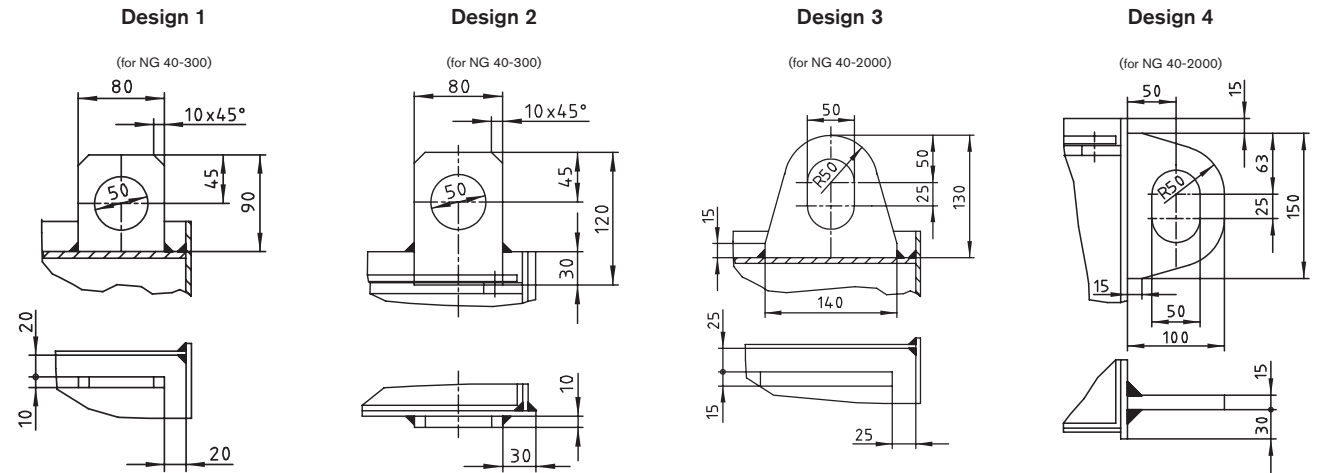
Ö	63	BSK	F
Oil sump pan	Tank size	Tank type	F = with feet O = without feet

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

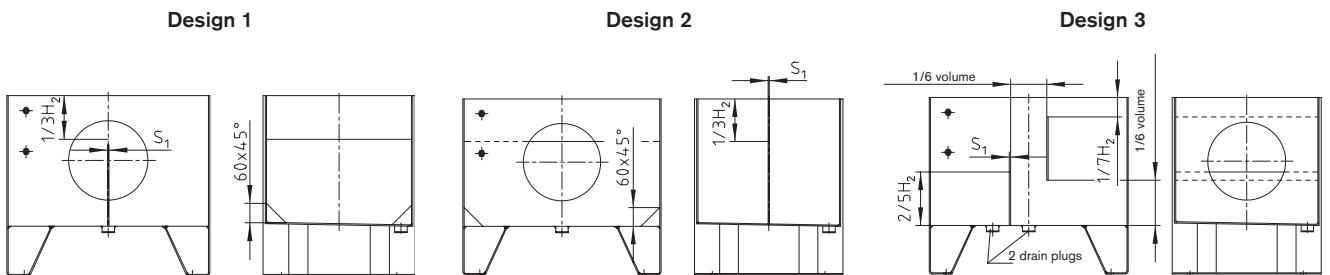
Cover designs for DIN tanks of the BKN series:



Transport eyes:

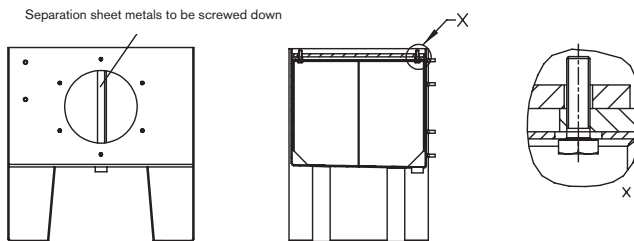


Separation sheet metals:

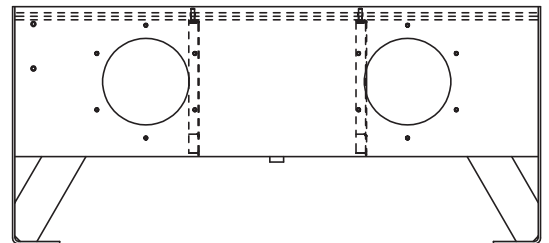


Separation sheet metals to be screwed down:

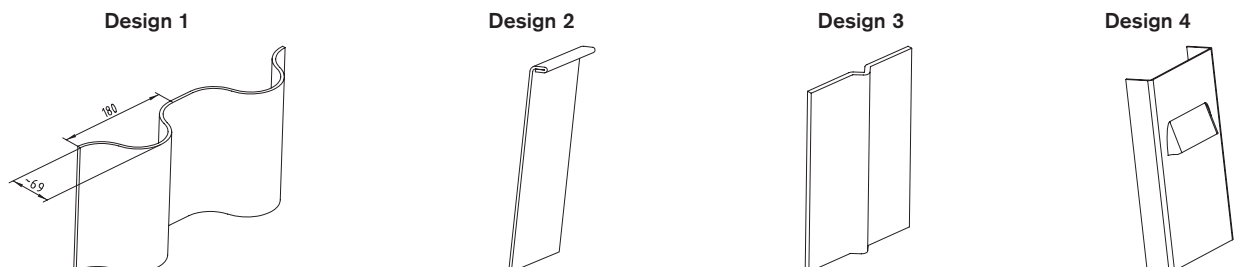
Separation sheet metal up to BSK/BNK 300



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



Creasings:



## Special tanks on request of customers

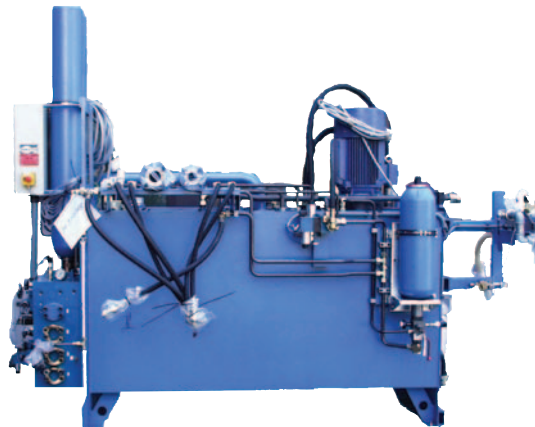
Combined tank hydraulic diesel with battery box



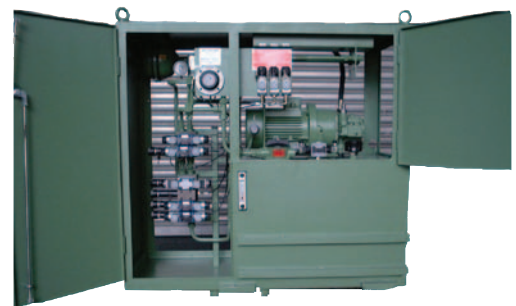
Mobile hydraulics



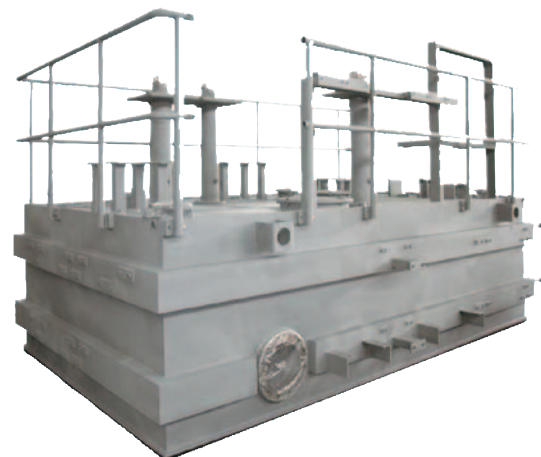
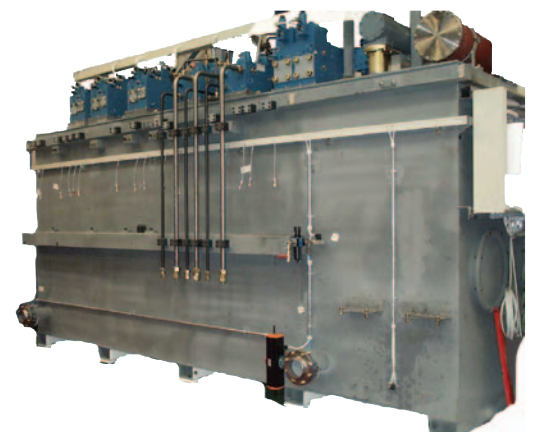
Hydraulic tank



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 DIN 18800-7

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

