

Solutions for Fluid Technology

GENERAL CATALOGUE

HYDRAULIC COMPONENTS

DRIVE COUPLINGS

OIL TANKS



COMPONENTS FOR THE HYDRAULIC AND DRIVE TECHNOLOGY

HBE's success is based on highest technical quality standards, comprehensive advice and reliable customer service. With a history of more than 35 years on the market, HBE has established itself as one of the leading manufacturers of components for fluid and drive technology. In addition to steel and aluminium oil tanks, the company's portfolio includes shaft and flange couplings as well as an extensive range of top quality hydraulic components.

Our love of craftsmanship binds things together. This applies not only to the manufacture of oil tanks in our in-house steel construction department, but also to our communication with our customers. In addition to an extensive selection of series-produced items that are always in stock, a large proportion of our products are manufactured to order.

Customer-oriented flexibility when implementing special requests is a matter of course for us, and is a feature of HBE that our customers have come to depend on over many years. From accessories for all aspects of pump and motor use to a ready-to-fit hydraulic tank – we can supply the complete package to our diverse product range.

Today, HBE products are used by well-known companies from all sectors of mechanical and plant engineering. They appreciate the short lead time that we can offer thanks to optimised warehousing, as well as the high quality.

With own subsidiaries in Italy, France, Great Britain, USA, China and India along with sales partners in all important industrial countries worldwide, we operate close to the customer. To ensure our quality standards for all our sales offices, HBE employees are being continuously trained.

We take part in regular audits by accredited certification agencies. The TÜV Nord confirms that our company fulfills the standards of the latest quality management system DIN EN ISO 9001:2015. Additionally, our steel construction is certified in accordance to DIN EN ISO 3834-2 and EN 1090-2:2011-10. All our welding processes are also certified according to DIN EN 1090. The corresponding qualification certificates (WPQR; DIN EN ISO 15614-1:2017-12) include normal and stainless steel.

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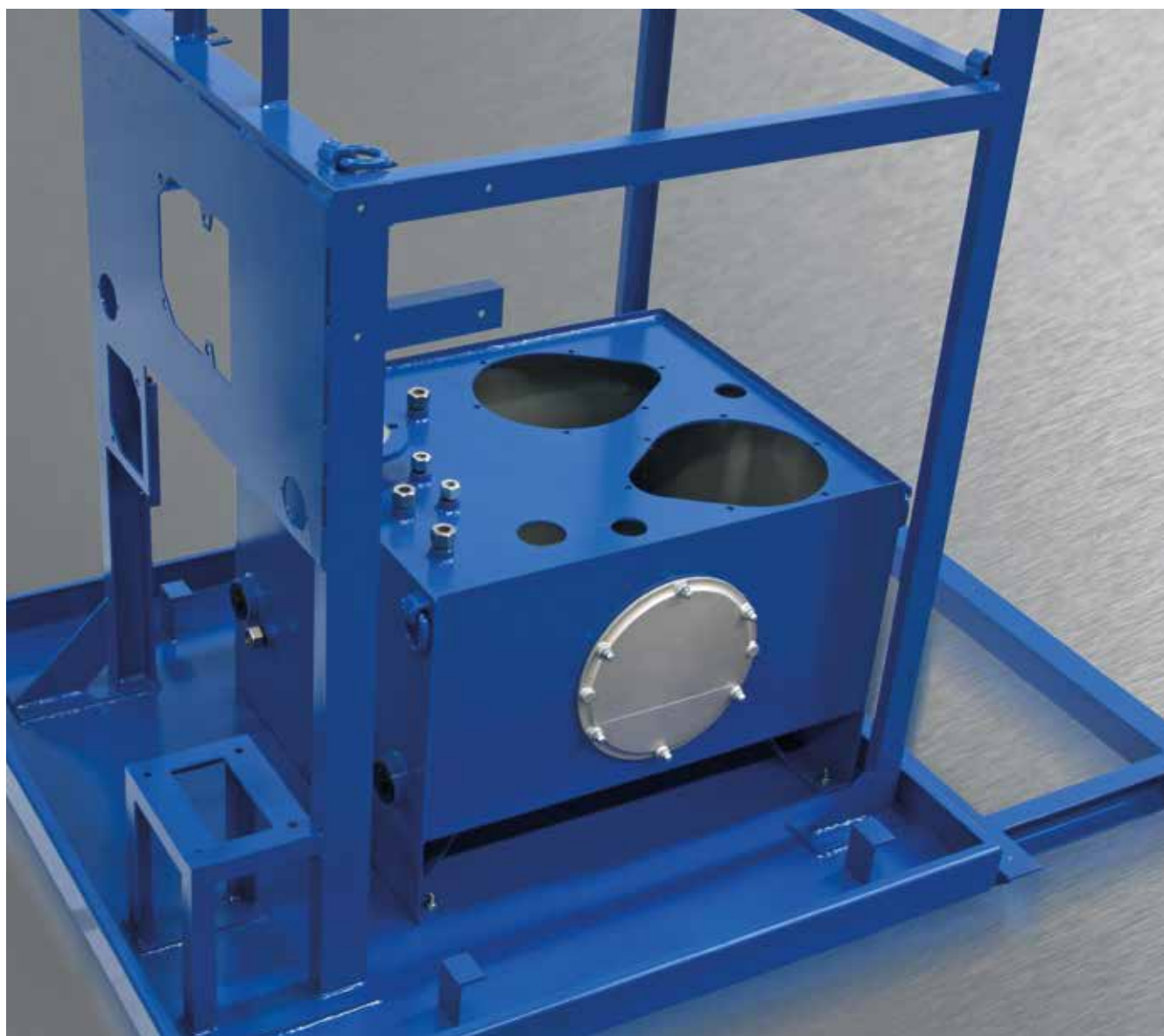




A detailed black and white photograph of industrial machinery, likely part of an oil tank. The image shows a large, flat metal plate with several circular openings. A vertical rectangular metal piece is welded to the plate. In the foreground, a U-shaped metal bracket with a circular hole is attached to the plate. To the right, a cluster of cylindrical metal components, possibly nozzles or valves, are visible. The overall scene emphasizes the precision and strength of welded steel construction.

OIL TANKS WELDED STEEL

OIL TANKS WELDED STEEL



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OIL TANKS WELDED STEEL

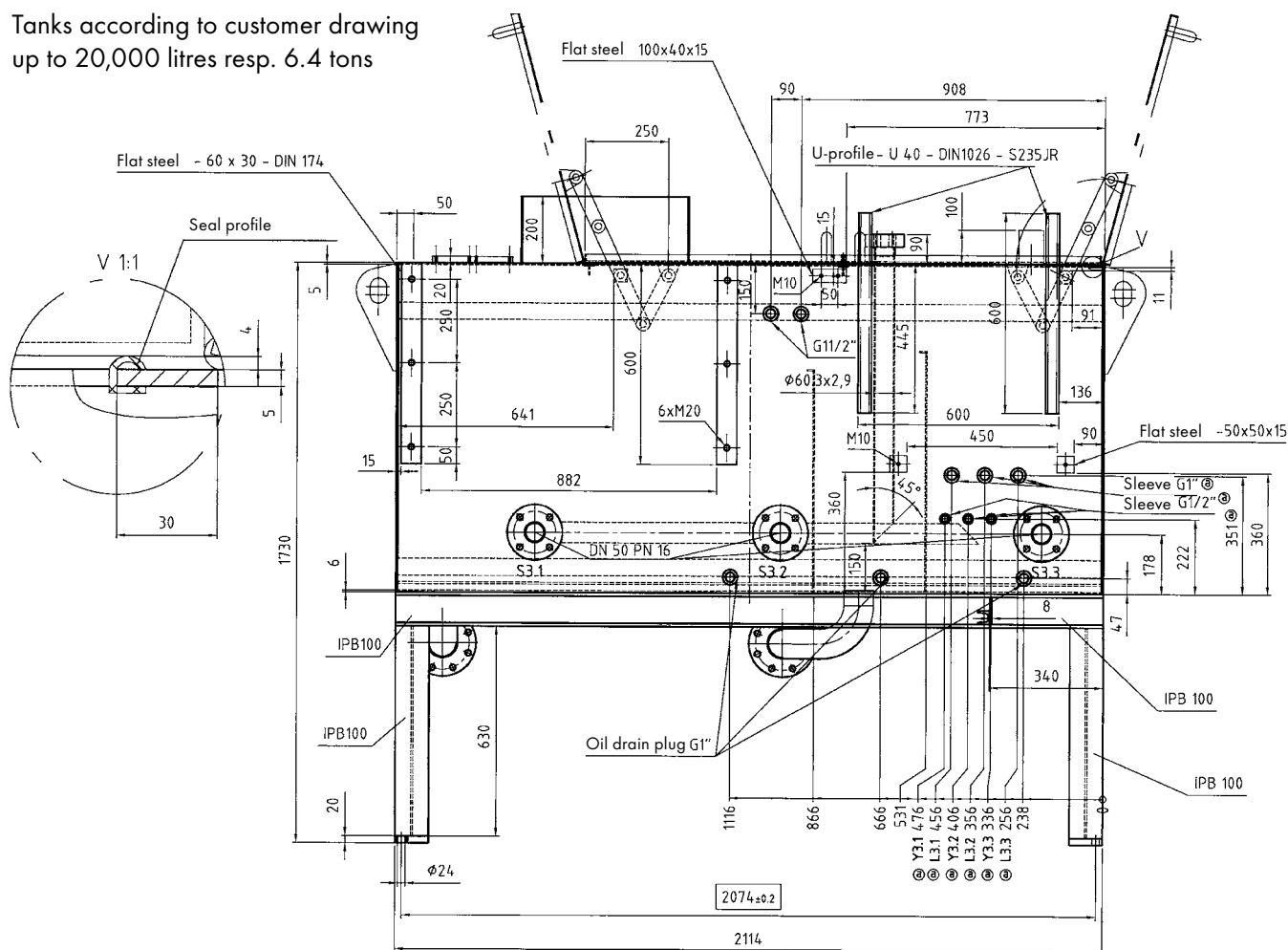
SERVICE RANGE

- Approved welding shop according to DIN 18800 - 7: 2002 - 09, class C
- Welding certificates available at www.hbe-hydraulics.com
- Approved shop according to § 19 I, WHG (Federal Water Act)
- Leak test with certificate on request
- Welding constructions and welded blanks
- Machining of normal steel S235JR (St37) or stainless steel 1.4301 (V2A) resp. 1.4571 (V4A)
- Reliable delivery periods and high quality standard

TANKS ACCORDING TO CUSTOMER SPECIFICATION

- Tanks ready for mounting, oil sumps and welding constructions according to customer specifications
- Up to 20,000 litres resp. 6.4 tons
- Welded blanks and sandblastings
- Material S235JR (St37)
- Stainless steel 1.4301 (V2A) resp. 1.4571 (V4A), glass bead blasted inside and outside

Tanks according to customer drawing
up to 20,000 litres resp. 6.4 tons



OIL TANKS WELDED STEEL

TANKS ACCORDING TO CUSTOMER SPECIFICATION



Special tank 250 L with cover
S235 JR, powder-coated



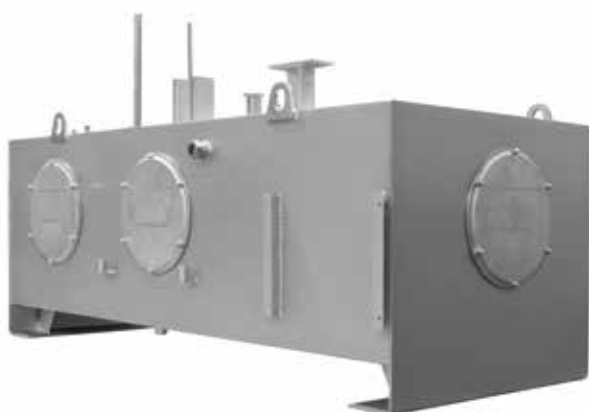
Special tank 2.300 L incl. additional tank
S235 JR, primed



Special tank 500 L with oil sump
S235 JR, painted



Special tank 2.500 L with base frame
S235 JR, painted



Special tank 2.200 L
1.4571, glass bead blasted



Special tank 1.400 L
1.4301, glass bead blasted

OIL TANKS WELDED STEEL

PRODUCT DESCRIPTION

- Material S235JR (St37)
- Sandblasted and grounded inside and outside, resistant to hydraulic oil on mineral oil base
- Leak detection with dye penetrant test
- Gasket 15 x 5 mm made of perbunan (NBR) in case of screwed tank lid
- Drain plug DIN 908 + Cu gasket for oil drain at the tank



AVAILABLE FOR EXTRA CHARGE

- Comprehensive range of HBE accessories, such as cleaning covers, gaskets, oil level gauges, fillers etc.
- Individual machining of lids
- Final varnish
- Primary coating resistant to special media (please see resistance table page 15)
- Stainless steel 1.4301 (V2A) resp. 1.4571 (V4A), glass bead blasted inside and outside
- Tightness certificate

Order code series WN-LC

Series		Size		Special lid machining
WN-LC	-	200	-	1020

Order code series STB

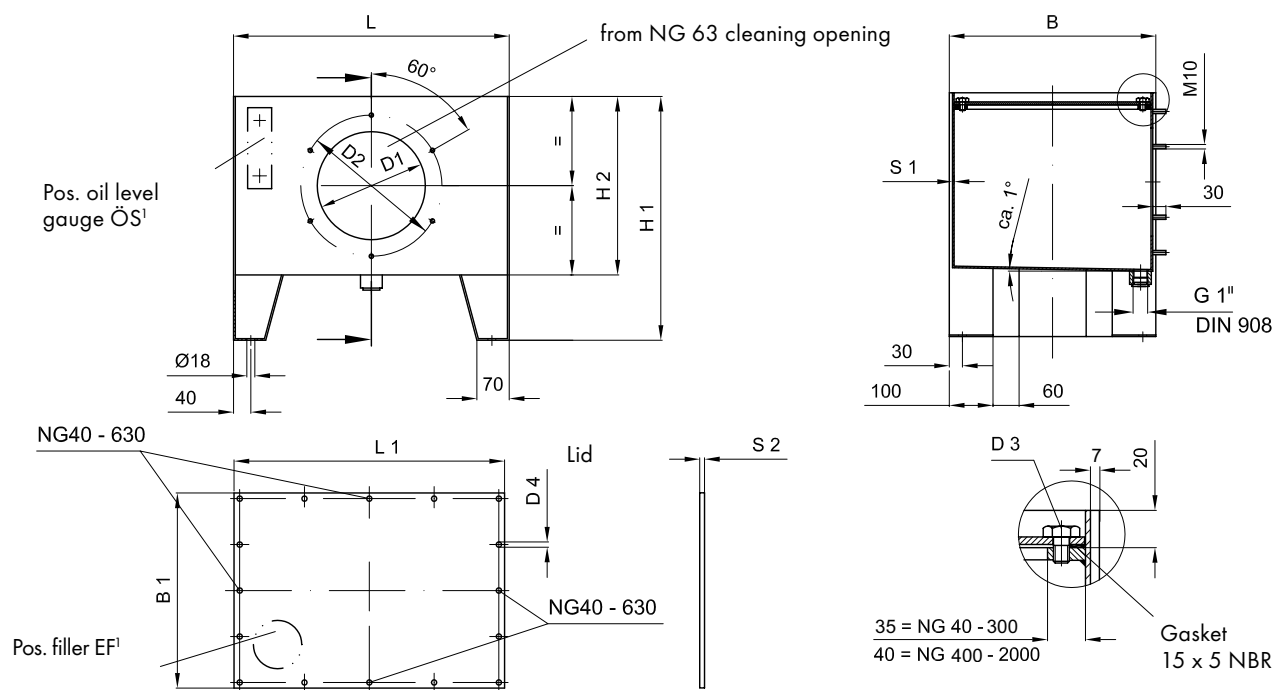
Series		Size		No. of cleaning openings		Fixing of filler		Fixing of level gauge
STB	-	630	-	2 RÖ	-	EF	-	ÖS
				0 RÖ				
				1 RÖ				
				2 RÖ				

Order code series DIN

Form		Size		Lid form		Fixing of filler		Fixing of level gauge	Version
A	-	1000	-	E	-	EF	-	ÖS	DIN 24339
A				A					
B				C					
				E					

SERIES WN-LC / STB NG 40 – 2000 L

DIMENSIONS



¹Standard for sizes 40 – 1,000 liters

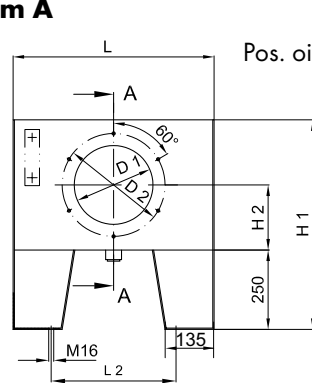
	Nominal size [Ltr.]	Tank dimensions [mm]								No of cleaning covers	Total weight [kg]
		L	B	H1	H2	D1	D2	D3	S1	z	
WN-LC	40*	508	379	430	280	-	-	M 10	4	-	40
	63*	508	379	560	410	248	324	M 10	4	1	53
	100*	633	474	560	410	248	324	M 10	4	1	60
	160*	810	604	560	410	248	324	M 10	4	1	85
	200*	900	654	560	410	248	324	M 10	4	1	98
	250*	1010	704	580	430	248	324	M 10	4	1	110
	300*	1150	714	580	430	248	324	M 10	4	1	150
	400*	1514	749	580	430	248	324	M 12	4	1	190
STB	630*	1514	959	770	520	383	449	M 12	4	2	285
	800*	2014	914	770	520	383	449	M 12	5	2	350
	1000*	2014	1079	800	550	383	449	M 12	5	2	420
	1250	2014	1349	800	550	383	449	M 12	5	2	540
	1600	2014	1444	900	650	383	449	M 12	6	2	660
	2000	2310	1564	900	650	383	449	M 12	6	2	800

*available at short notice

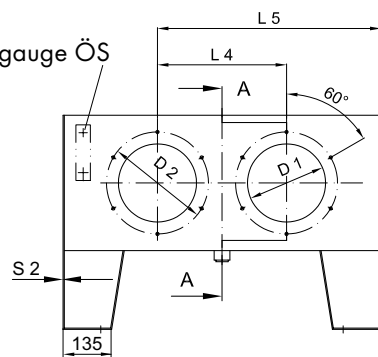
SERIES DIN 24339 NG 63 – 2000 L

DIMENSIONS

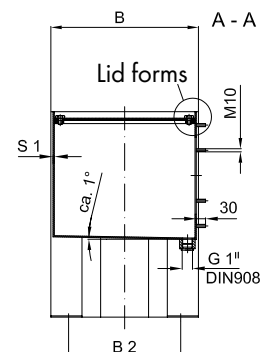
Form A



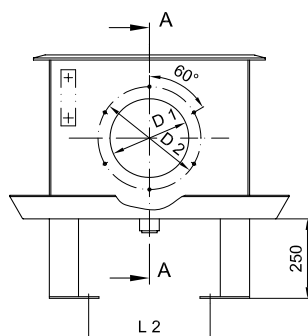
NG 63-250



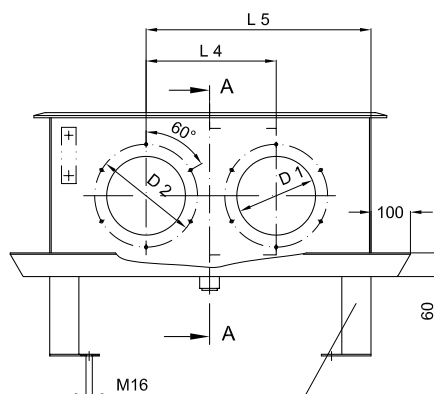
NG 400-2000



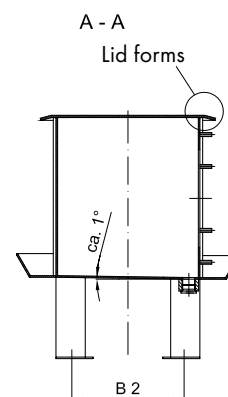
Form B (with sump)



NG 63-250



NG 400-2000



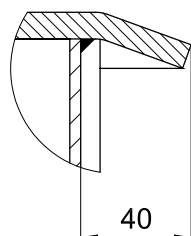
Feet of rectangular tube 80 x 80

Nominal size [Ltr.]	Net capacity [Ltr.]	Tank dimensions [mm]													Total weight [kg]
		L	L2	L4	L5	B	B2	H1	H2	D1	D2	S1	S2	*	
63	57	508	308	-	-	379	285	660	205	248	324	4	4	1	55
100	91	633	393	-	-	474	360	660	205	248	324	4	4	1	65
160	150	810	570	-	-	604	490	660	205	248	324	4	4	1	90
250	232	1010	770	-	-	704	590	680	215	248	324	4	4	1	115
400	367	1514	1274	750	1130	749	635	680	215	248	324	4	6	2	200
630	597	1514	1274	750	1130	959	845	770	265	383	449	4	6	2	300
800	756	2014	1774	1000	1505	914	800	770	265	383	449	5	6	2	360
1000	959	2014	1774	1000	1505	1079	965	800	285	383	449	5	6	2	440
1250	1200	2014	1774	1000	1505	1349	1235	800	285	383	449	5	6	2	550
1600	1574	2014	1774	1000	1505	1444	1330	900	325	383	449	6	8	2	670
2000	1960	2310	2070	1150	1730	1564	1450	900	325	383	449	6	8	2	825

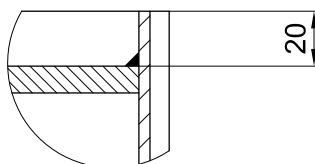
*Number and type of cleaning covers

LID DIMENSIONS

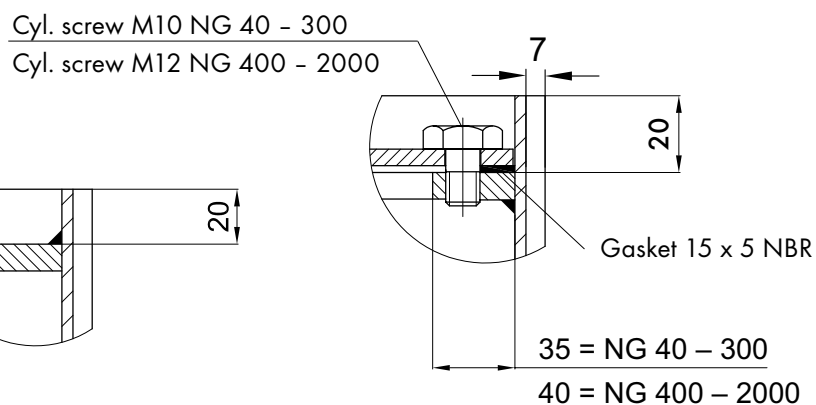
Lid forms



Form A

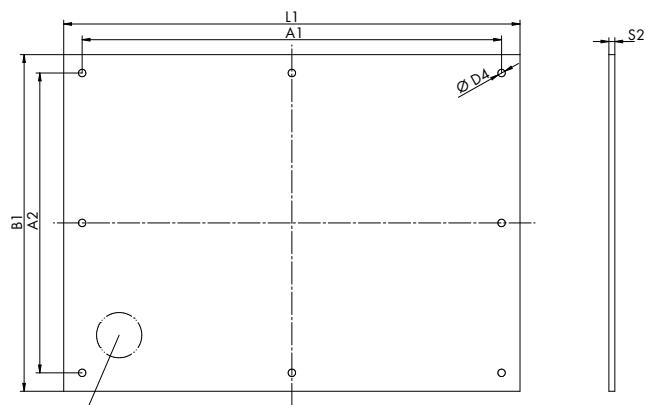


Form C



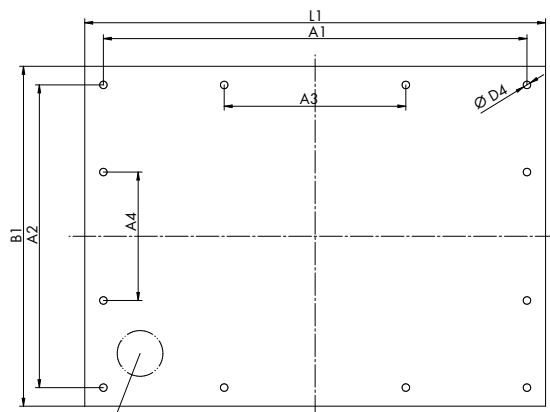
Form E

NG 40 - 300



Pos. filler

NG 400 - 2000



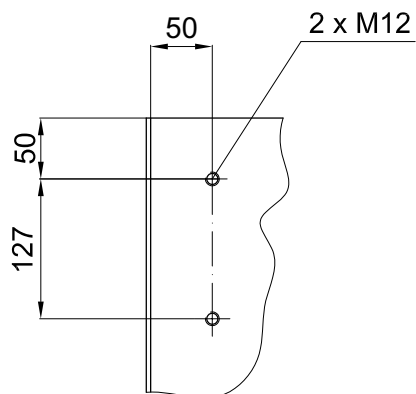
Pos. filler

Nominal size [Ltr.]	Lid dimensions form E [mm]								Weight [kg]
	L1	B1	A1	A2	A3	A4	D4	S2	
40	490	347	448	305	-	-	12	6	8
63	490	347	448	305	-	-	12	6	8
100	615	442	571	398	-	-	12	6	13
160	792	572	748	528	-	-	12	6	22
200	882	622	838	578	-	-	12	6	26
250	992	672	948	628	-	-	12	8	42
300	1138	688	1112	662	-	-	12	8	49
400	1492	717	1440	667	480	222	14	8	67
630	1492	927	1440	877	480	292	14	10	108
800	1992	880	1940	830	647	277	14	10	137
1000	1992	1045	1940	995	647	332	14	10	163
1250	1992	1315	1940	1265	647	422	14	10	204
1600	1988	1408	1940	1358	647	478	14	10	219
2000	2284	1528	2240	1478	1120	558	14	10	273

GENERAL DIMENSIONS NG 40 – 2000 L

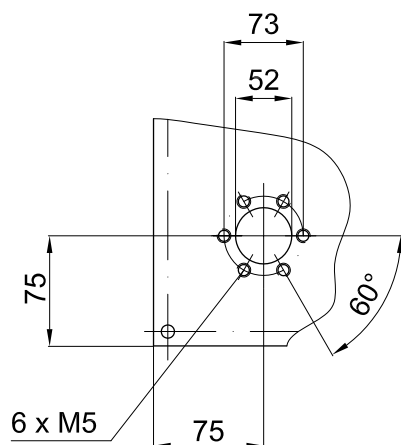
DIMENSIONS

Ös



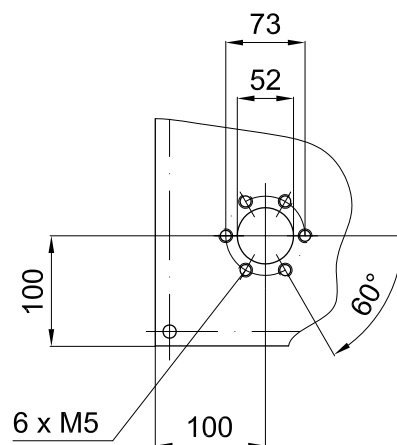
Bore for oil level gauge (standard)
ÖS 127 = NG 40 - 400
ÖS 254 = NG 630 - 2000

EF 40 – 300 Ltr.



Filler bore (standard)

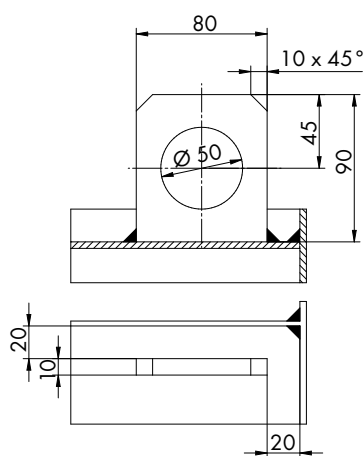
EF 400 – 2000 Ltr.



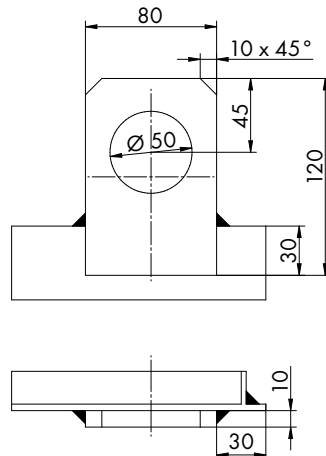
Filler bore (standard)

EYE BOLTS

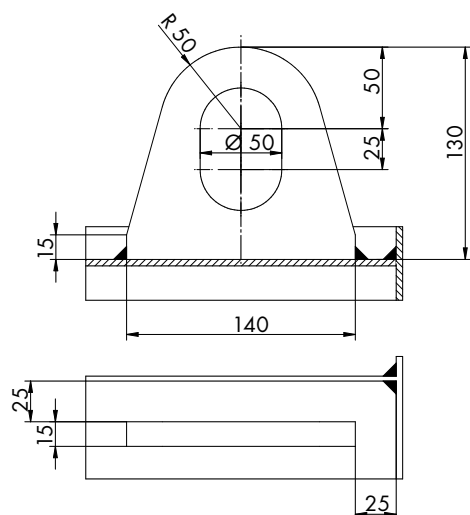
Version 1 (for NG 40 – 300)



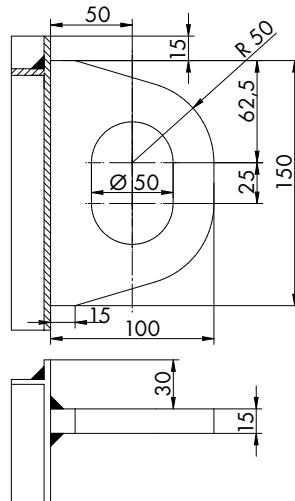
Version 2 (for NG 40 – 300)



Version 3 (for NG 40 – 2000)



Version 4 (for NG 40 – 2000)



OIL SUMPS NG 63 – NG 2000

PRODUCT DESCRIPTION

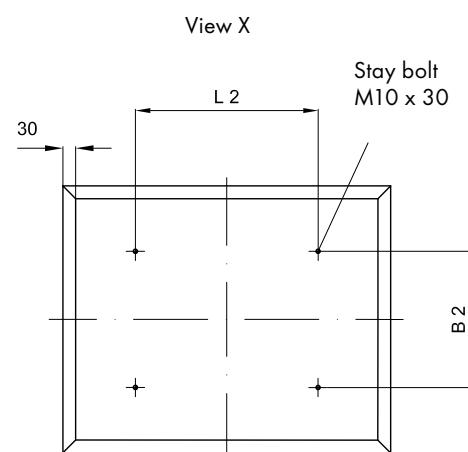
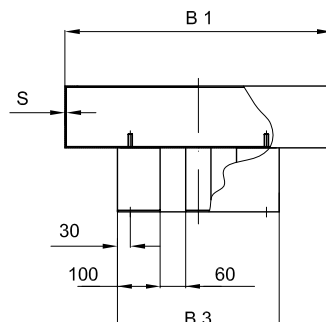
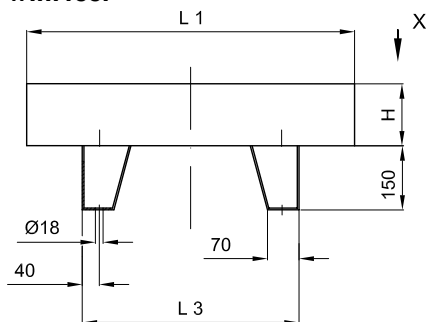
- Storage volume corresponds to the net volume of the tank
- Version corresponds to the requirements WHG (Federal Water Act)
- General folded edge for protection against risk of injury
- Special sizes on request



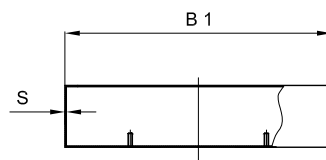
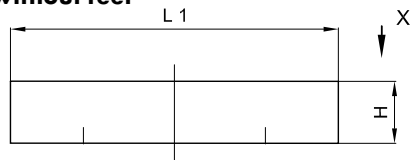
Order code					
Series		Size		Optional with feet	Tank series
ÖW	-	200	-	F	DIN

DIMENSIONS

with feet



without feet



Nominal size [Ltr.]	Dimensions [mm]										Weight [kg]	
	L1	B1	H	Feet				L3	B3	S	with feet	without feet
				L2	B2	L3	B3					
				STB*	DIN	STB*	DIN					
ÖW 63	768	625	145	428	308	319	285	508	379	3	27	23
ÖW 100	893	720	170	553	393	414	360	633	474	3	36	31
ÖW 160	1070	850	190	730	570	544	490	810	604	3	48	41
ÖW 200	1160	900	200	820	-	594	-	900	654	3	53	47
ÖW 250	1270	950	220	930	770	644	590	1010	704	3	62	55
ÖW 300	1410	960	235	1070	-	654	-	1150	714	3	70	62
ÖW 400	1874	1095	220	1434	1274	689	635	1514	749	4	122	111
ÖW 630	1874	1305	260	1434	1274	899	845	1514	959	4	149	134
ÖW 800	2374	1260	270	1934	1774	854	800	2014	914	4	176	162
ÖW 1000	2374	1425	300	1934	1774	1019	965	2014	1079	4	200	184
ÖW 1250	2374	1695	330	1934	1774	1289	1235	2014	1349	4	240	220
ÖW 1600	2400	1900	380	1934	1774	1384	1330	2014	1444	4	275	255
ÖW 2000	2800	1900	400	2234	2070	1504	1450	2314	1564	4	317	294

*also applies for series WN-LC

GENERAL TECHNICAL INFORMATION

**TABLE OF RESISTANCE AGAINST MINERAL OILS
AND FLAME RESISTANT FLUIDS**

Product	Material	Medium				
		Hydraulic oil / mineral oil base	HFA	HFB	HFC	HFD, HFD-R, HFD-S, HFD-T
Steel tanks	Steel	●	1	●	●	●
Coating	ME III	●	●	●	2	2
Gasket	NBR	●	●	●	●	●
Gasket	EPDM	●	●	●	●	●
AB tanks	Aluminium	●	●	●	●	●
Gasket	Paperboard	●	●	●	●	●
Gasket	Rubber cork	●	●	●	3	3
Lid SD	Steel	●	1	●	●	●
Oil level gauges						
with gasket	NBR	●	●	●	●	●
with gasket	FPM	●	●	●	●	●
Fillers	ST	●	●	●	●	●
Cleaning covers	Aluminium	●	●	●	●	●
with gasket	NBR	●	●	●	●	●
with gasket	FPM	●	●	●	●	●
with gasket	EPDM	●	●	●	●	●

● = Resistant

● = Not resistant

1 = Priming coat required

2 = If coating required, use epoxy resin

3 = Resistant to oil wetting

HYDRAULIC FLUIDS / MAIN COMPONENTS

HFA Oil in water emulsion, water content > 80%

HFB Water in oil emulsion, water content > 40%

HFC Watery polymer solution (water glycol),
water content > 45%

HFD Synthetic fluids (water free)

HFD-R Phosphoric acid ester

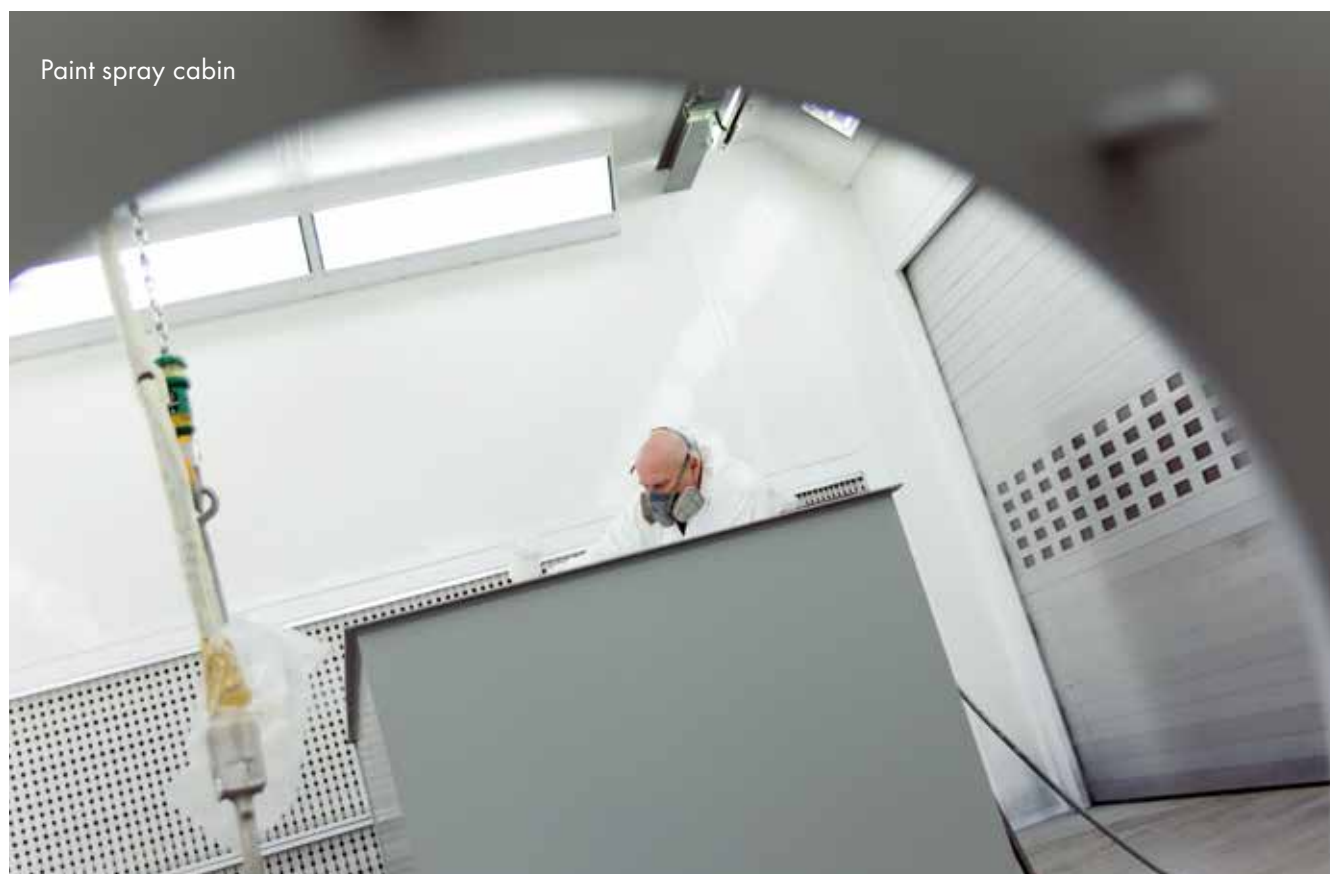
HFD-S Chlorinated hydrocarbon

HFD-T Mixture of HFD-R + HFD-S

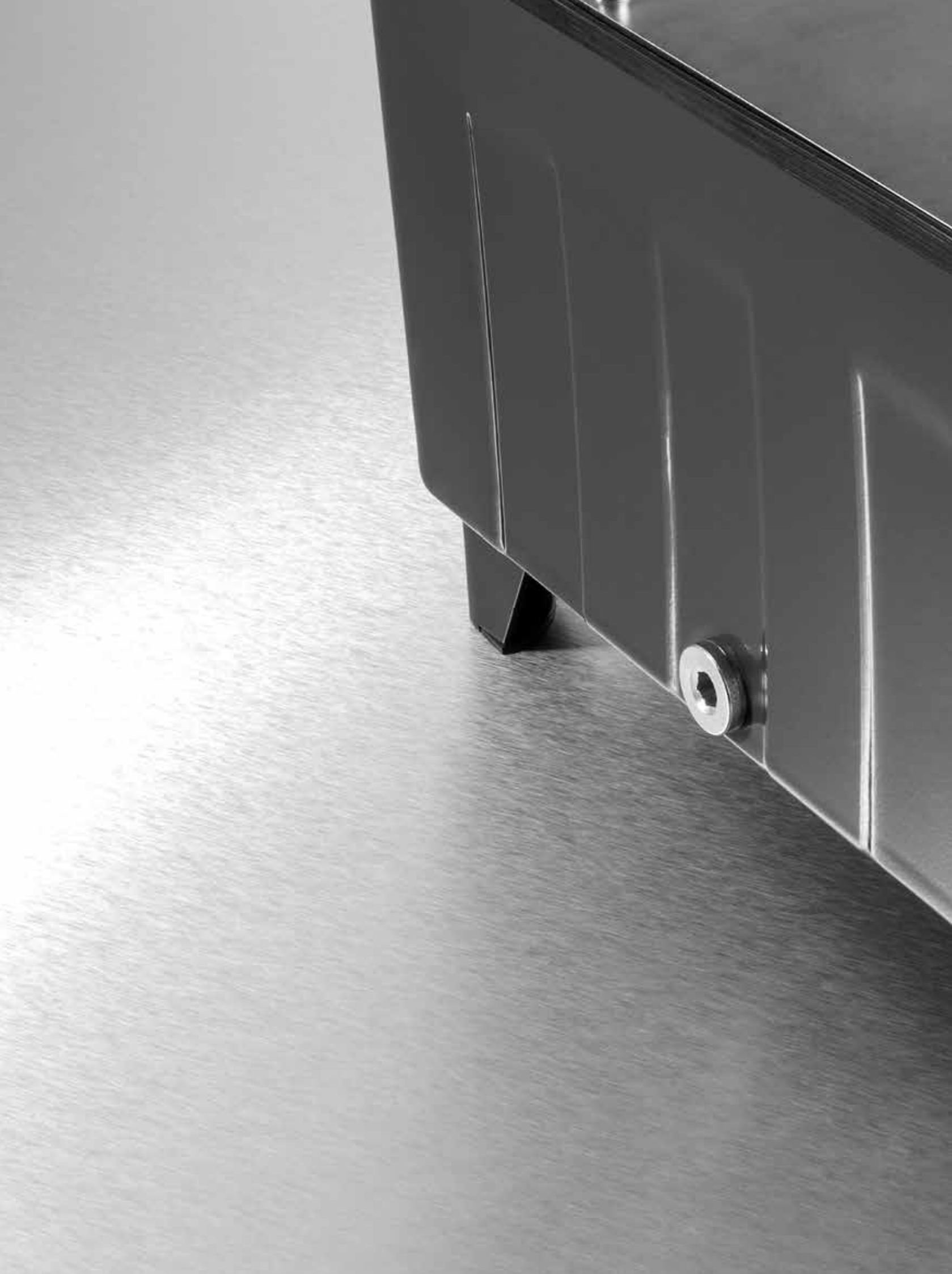




Paint spray cabin



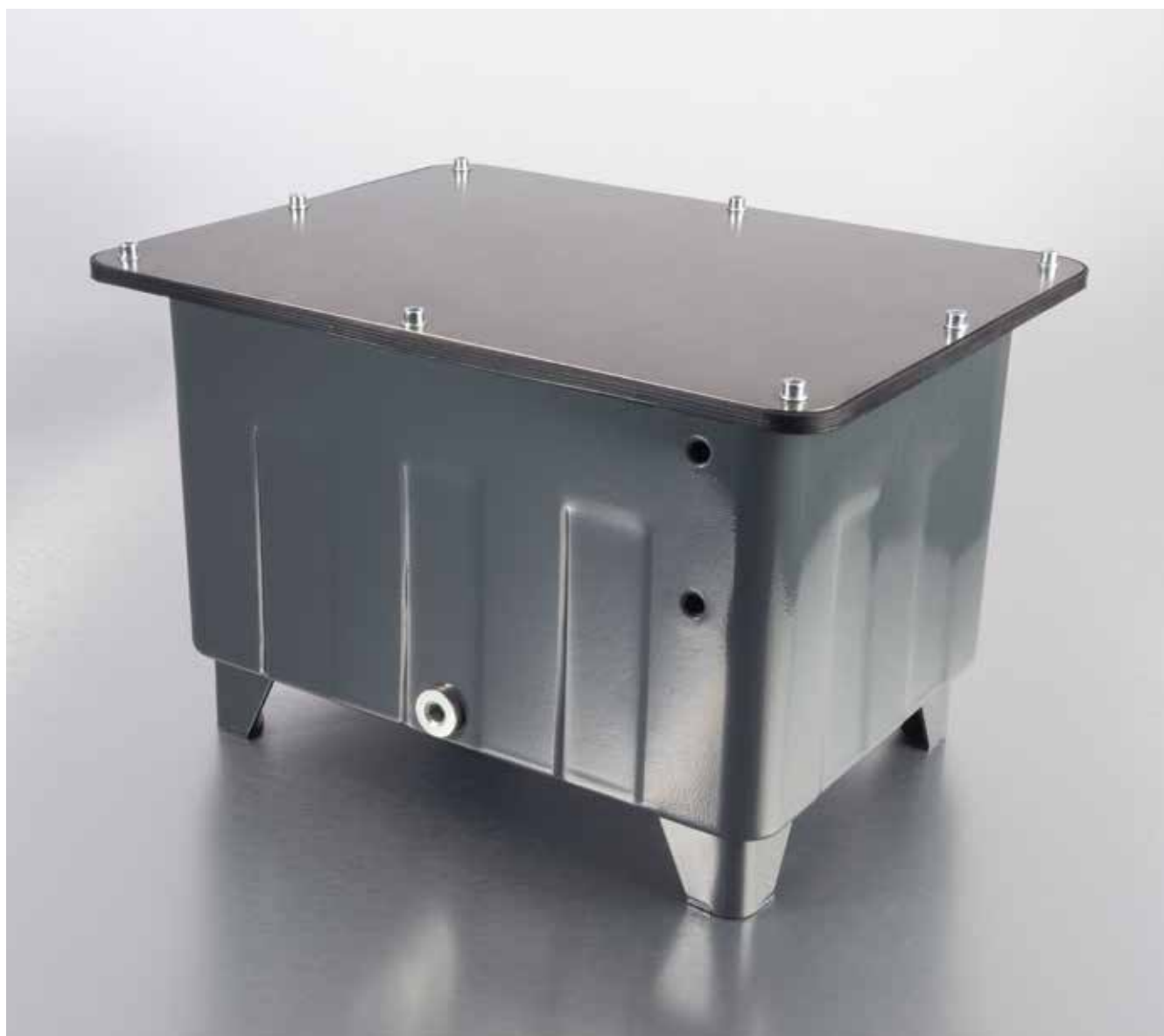
Paint spray cabin



OIL TANKS WELDLESS STEEL

OIL TANKS
WELDLESS STEEL

OIL TANKS WELDLESS STEEL



CONTENT

Product description / Order code	21
Dimensions tanks	22
Dimensions lids	23
Dimensions gasket	25

SERIES WLST

PRODUCT DESCRIPTION

- Weldless tanks produced by the deep drawing process
- Guarantee a 100% tightness
- High stability and weldless structure
- Thus, the tanks meet highest demands of various hydraulic applications
- Low weights are minimising freight costs
- Epoxy powder coating in RAL 7011 (iron grey) for a high level surface protection and an aesthetic appearance
- Delivery content (standard): NBR lid gasket, blank steel lid, drain plug, bores for level indicator and welded steel feet
- On request: individual machining of tank lids for extra charge
- Specially designed lid gaskets prevent leakage oil dripping down
- Vibration damping characteristics
- Short lead times due to stocking of tank sizes
WLST-6-12-25-40-70-100-160-250



Order code			
Type	Size*	Filler connection**	Heater connection**
WLST	25	EA	HA

* Size corresponds to the net volume of the tank

** optional lid machining

STANDARD DELIVERY CONTENT

- Epoxy powder coating RAL 7011 (iron grey)
- Welded steel feet
- Steel lid
- NBR 70° Shore gasket with oil catcher
- Oil drain plug
- Bores for level indicator

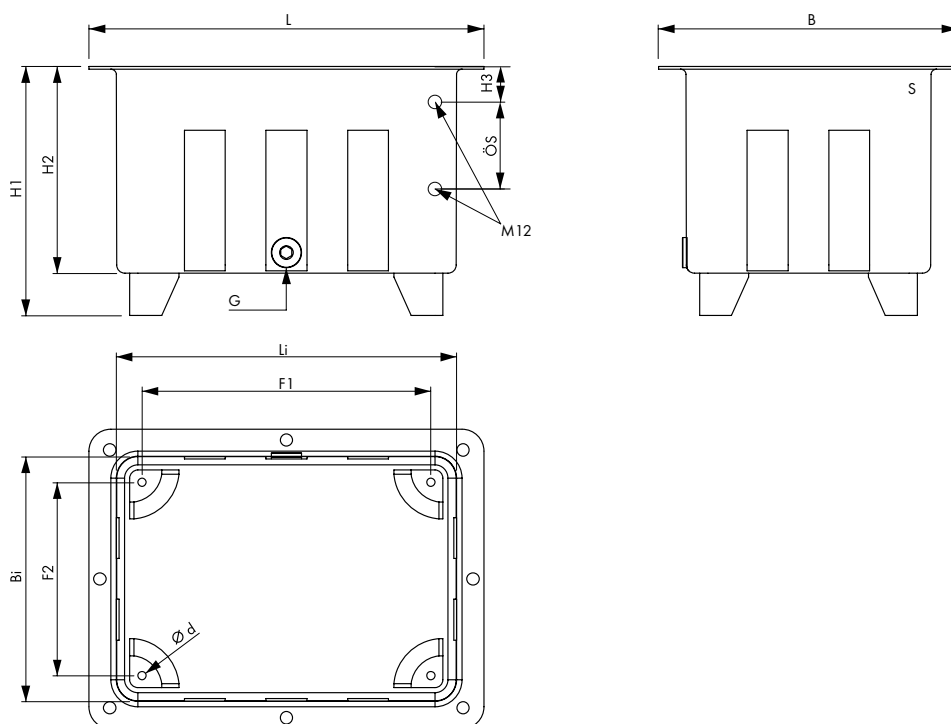
ACCESSORIES FOR EXTRA CHARGE

- Individual lid machining on request
- Level indicator, filler, desiccant breather

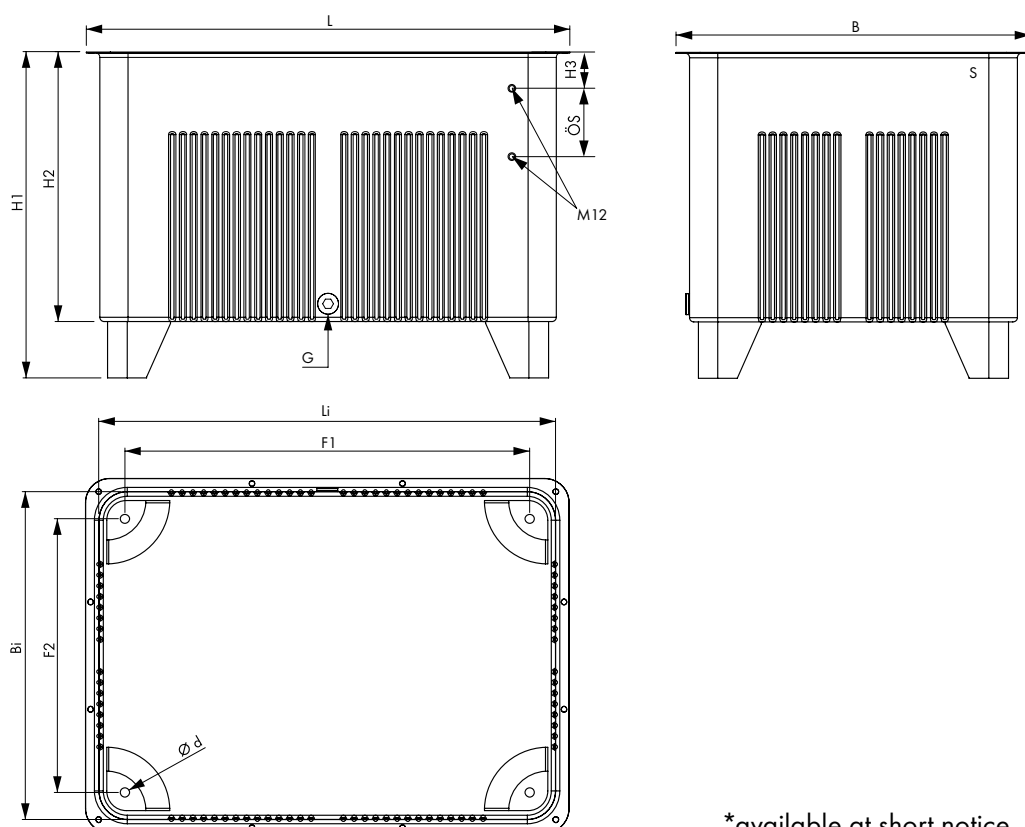
SERIES WLST

DIMENSIONS TANKS

NG 6 - 100*



NG 160 - 250*



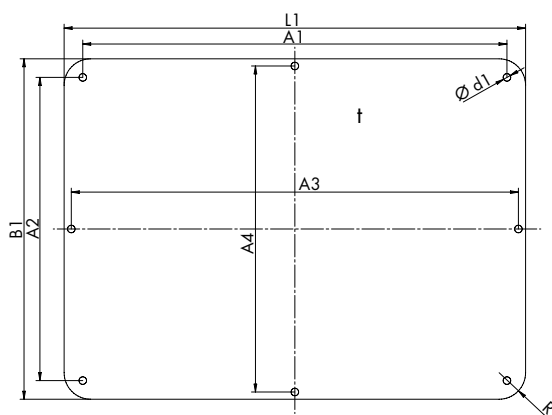
*available at short notice

DIMENSIONS TANKS

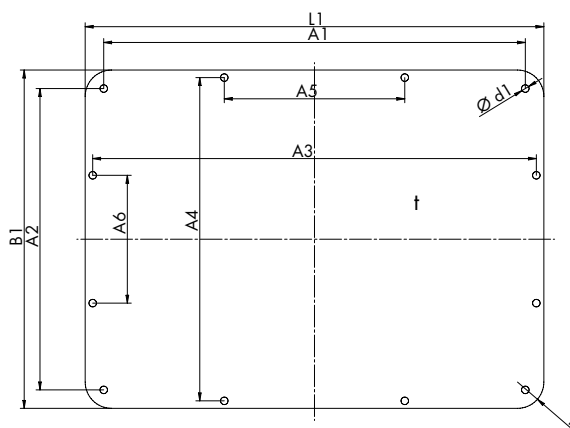
Art. No.	Type	Dimensions [mm]													Weight [kg]
		L	B	H1	H2	H3	G	ÖS	Li	Bi	F1	F2	Ø d	S	
1370	WLST 6	290	220	183	152	25	3/8"	76	250	180	212	142	6	2	3.2
1371	WLST 12	350	260	219	182	31	3/8"	76	310	220	265	175	7	2	4.7
1372	WLST 25	440	330	280	232	38	1/2"	76	390	280	338	228	9	2	7.5
1373	WLST 40	510	380	328	272	48	1/2"	127	460	330	400	270	11	2	10.3
1374	WLST 70	610	450	401	332	58	3/4"	127	560	400	490	330	13	2	14.7
1375	WLST 100	680	500	449	372	58	3/4"	127	630	450	556	376	15	2	18.5
1376	WLST 160	780	570	522	432	68	1"	127	730	520	645	435	17	2	25.4
1377	WLST 250	900	660	607	502	68	1"	127	850	610	753	509	17	2	35.3

DIMENSIONS LIDS

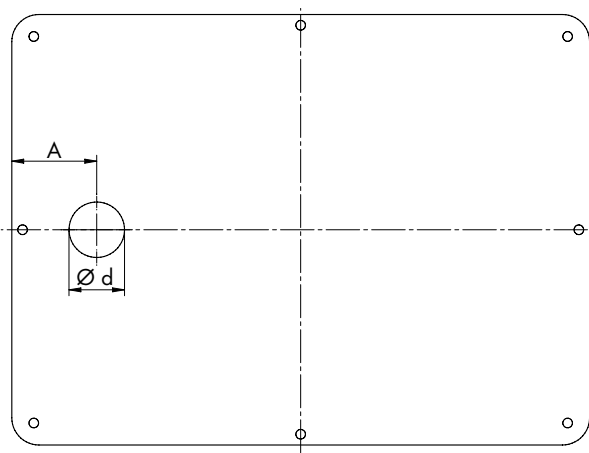
NG 6 – 100



NG 160 – 250

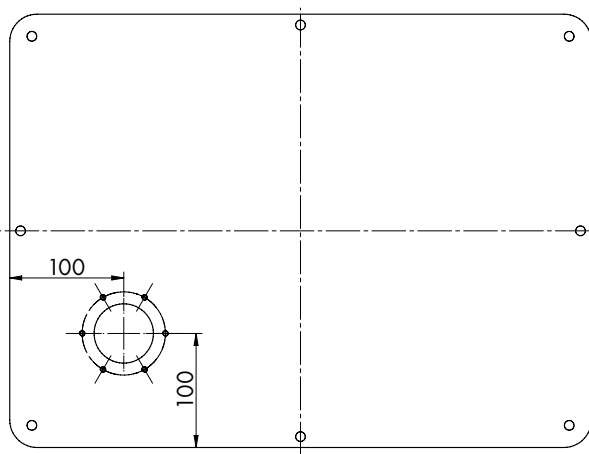


Art. No.	Type	Dimensions [mm]											Weight [kg]
		L1	B1	A1	A2	A3	A4	A5	A6	R	t	Ø d1	
1370-2	SD6-WLST	290	220	259.5	189.5	274	204	-	-	16	3	6	1.50
1371-2	SD12-WLST	350	260	319.5	229.5	334	244	-	-	16	3	6	2.15
1372-2	SD25-WLST	440	330	401.2	291.2	421	311	-	-	24	3	8	3.40
1373-2	SD40-WLST	510	380	471.2	341.2	491	361	-	-	24	3	8	4.55
1374-2	SD70-WLST	610	450	560.8	400.8	591	431	-	-	35	4	10	8.55
1375-2	SD100-WLST	680	500	630.8	450.8	661	481	-	-	35	4	10	10.60
1376-2	SD160-WLST	780	570	730.7	520.7	761	551	240	170	45	5	10	17.40
1377-2	SD250-WLST	900	660	850.7	610.7	881	641	280	200	45	5	10	23.20

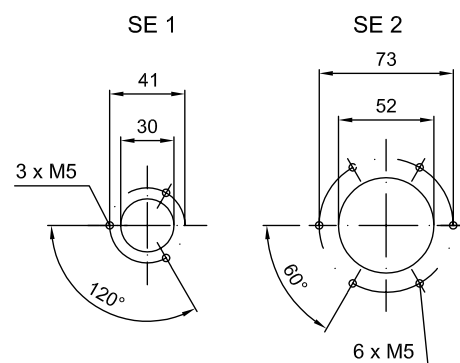
SERIES WLST**DIMENSIONS HEATER CONNECTION**

Lid size	Dimensions [mm]		Suitable heaters	
	A	Ø d		
SD40-WLST	75	49	1633	1643
SD70-WLST			1634	1644
SD100-WLST			1635	1645
SD160-WLST			1636	1646
SD250-WLST			1637	1647

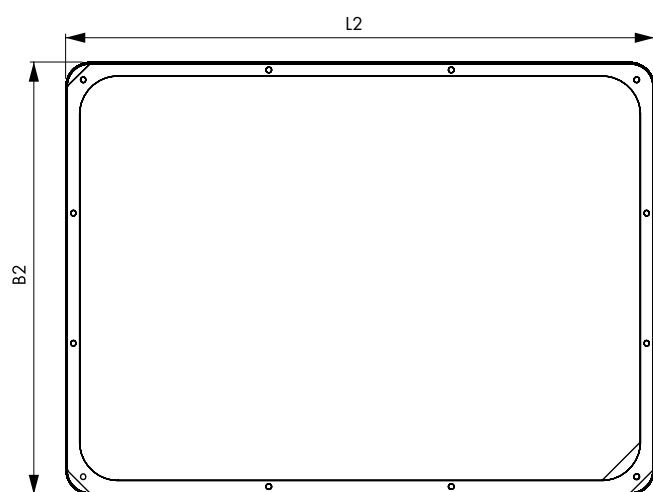
Tank heater dimensions can be found in chapter "tank heaters" on page 65.

DIMENSIONS FILLER CONNECTION

Assembly diagram



Tank heater and filler connection also possible in combination.

DIMENSIONS GASKET

Art. No.	Type	Dimensions [mm]		Weight [kg]
		L2	B2	
1370-1	D6-WLST	294	224	0.11
1371-1	D12-WLST	354	264	0.12
1372-1	D25-WLST	446	336	0.17
1373-1	D40-WLST	514	384	0.23
1374-1	D70-WLST	614	454	0.33
1375-1	D100-WLST	684	504	0.36
1376-1	D160-WLST	784	574	0.38
1377-1	D250-WLST	904	664	0.40



A close-up, black and white photograph of a metallic surface, likely aluminum, featuring a series of parallel diagonal ridges. Several bolts are visible, securing the structure. The lighting creates strong highlights and shadows, emphasizing the texture and form.

OIL TANKS CASTED ALUMINIUM

OIL TANKS CASTED ALUMINIUM



CONTENT

Product description / Order code	29
AB 3,5	30
AB 6,5	31
AB 12 NR	32
AB 20	33
AB 30 NR	34
AB 44	35
AB 70	36
Dimensions feet	37
Technical data	37
Dimensions oil sumps	38
General technical information	39

OIL TANKS CASTED ALUMINIUM

PRODUCT DESCRIPTION

- Low freight costs and space saving storage due to stackability
- Stable casted body with good heat dissipation by material aluminium and all-round fluting
- From AB 12 with feet and from size AB 44 optional with castors
- Flat gasket between tank lid and tank made of paperboard or rubber cork for AB 3,5 - AB 20
- Toroidal sealing ring (endless, without contact spot) 6 mm ø NBR for AB 30 - AB 70
- On request, all sizes with bores for oil level gauge
- On request, individual lid machining available at short notice



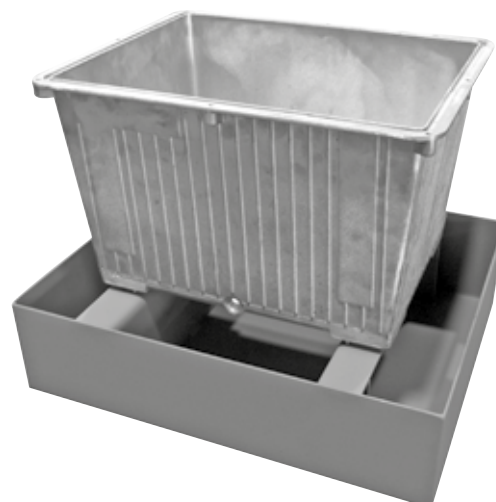
Order code			
Type	Size	Oil level gauge bores	Oil level gauge
AB	44	SB	ÖS 127
	3,5	- =>	without
	6,5	SB =>	with
	12		
	20		
	30		
	44		
	70		

OIL SUMPS

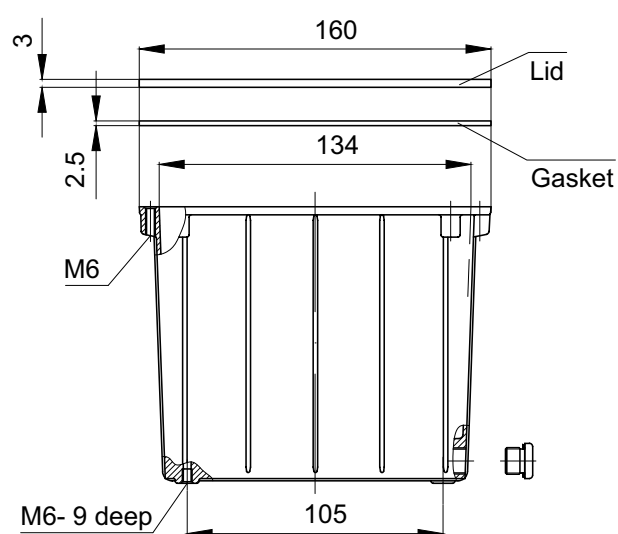
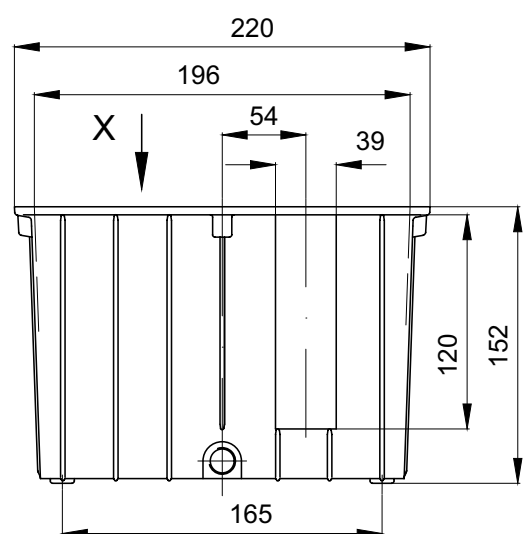
PRODUCT DESCRIPTION

- Oil sumps suitable for aluminium tanks AB 12 - AB 70
- Material S355J2 sandblasted and oil resistant primed (mineral oil HL / HLP)
- Alternative material VA, 1.4301 or 1.4571
- Approval acc. to WHG (Federal Water Act)

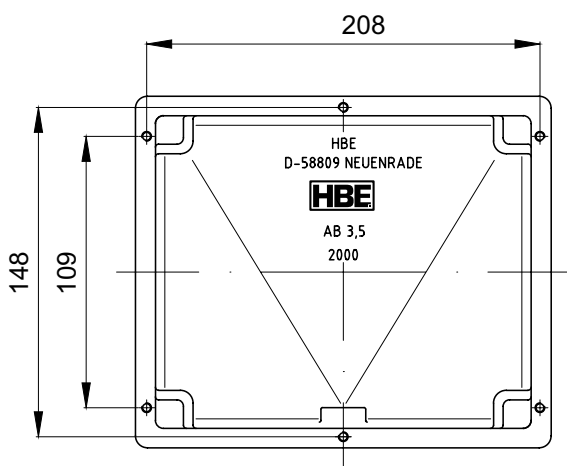
Order code	
Type	Size
ÖW	30



SERIES AB 3,5



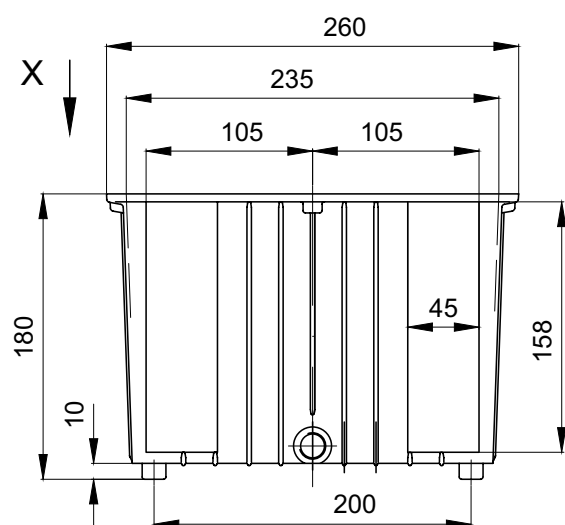
View X



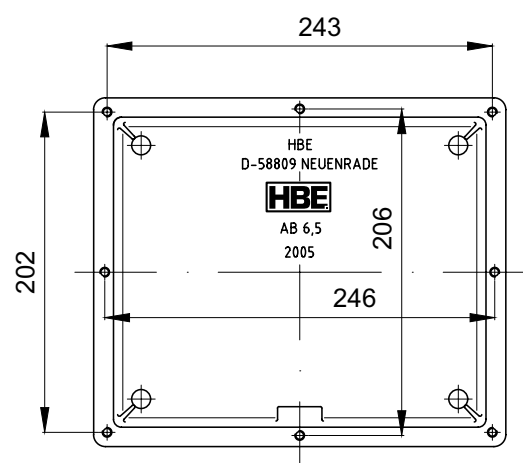
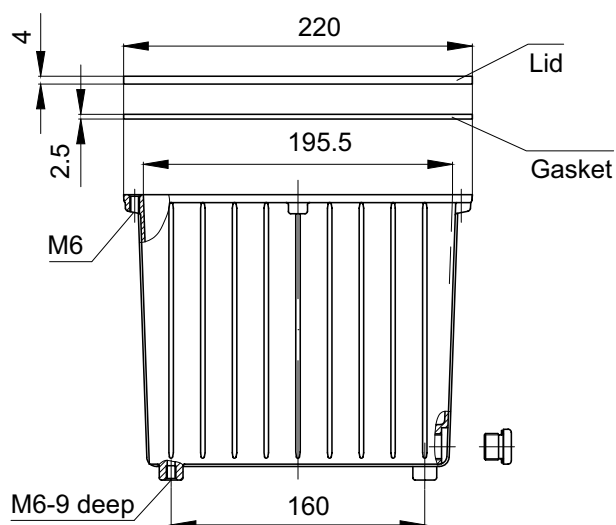
Art. No.	Type	Description
2000	AB 3,5	Tank Net volume approx. 3 L, weight approx. 1.4 kg
2200	SD 3,5	Steel lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2230	D3,5 A	Flat gasket (paperboard)
2238	D3,5 GK	Flat gasket (rubber cork)
2260	AS G 1/4"	Drain plug
2261	G 1/4"	CU gasket (14 x 18 x 1.5)
2371	SE 1	Filler and breather filter (metal) ¹
2340 / 2341	ÖS 76 / ÖS 76 TH	Level oil gauge (with thermometer) ¹

¹For technical data, please see chapter "tank accessories" from page 40.

SERIES AB 6,5



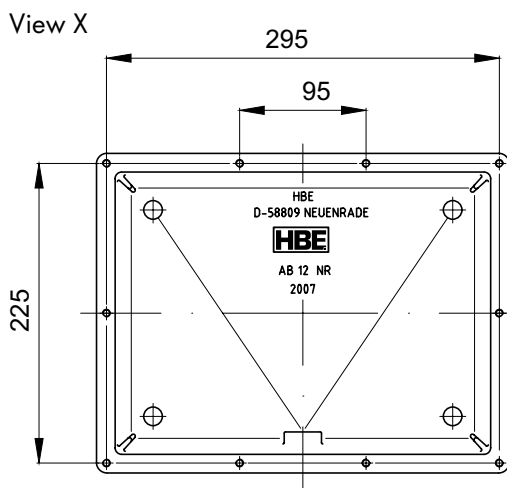
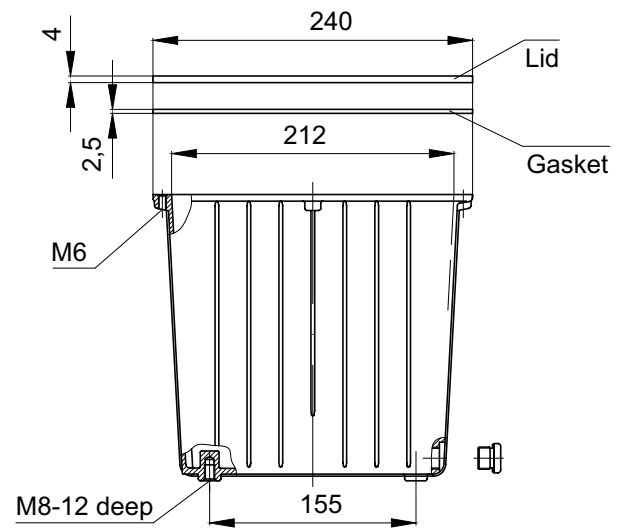
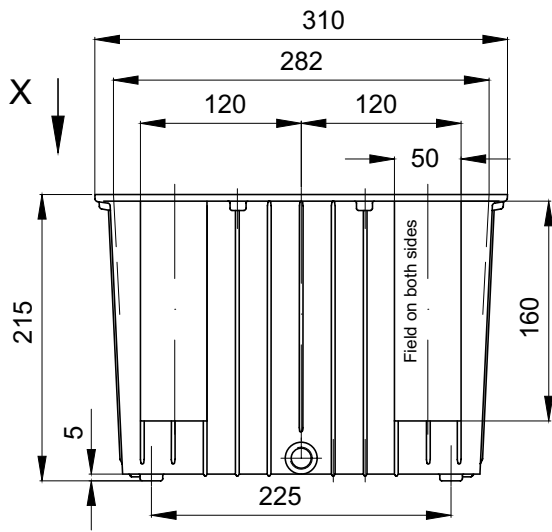
View X



Art. No.	Type	Description
2005	AB 6,5	Tank Net volume approx. 6 L, weight 1.5 kg
2205	SD 6,5	Steel lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2239	D 6,5 A	Flat gasket (paperboard)
2246	D 6,5 GK	Flat gasket (rubber cork)
2262	AS G 3/8"	Drain plug
2267	G 3/8"	CU gasket (16 x 22 x 2)
2371	SE 1	Filler and breather filter (metal) ¹
2340 / 2341	ÖS 76 / ÖS 76 TH	Level oil gauge (with thermometer) ¹
2350 / 2351	ÖS 127 / ÖS 127 TH	Level oil gauge (with thermometer) ¹

¹For technical data, please see chapter "tank accessories" from page 40.

SERIES AB 12 NR

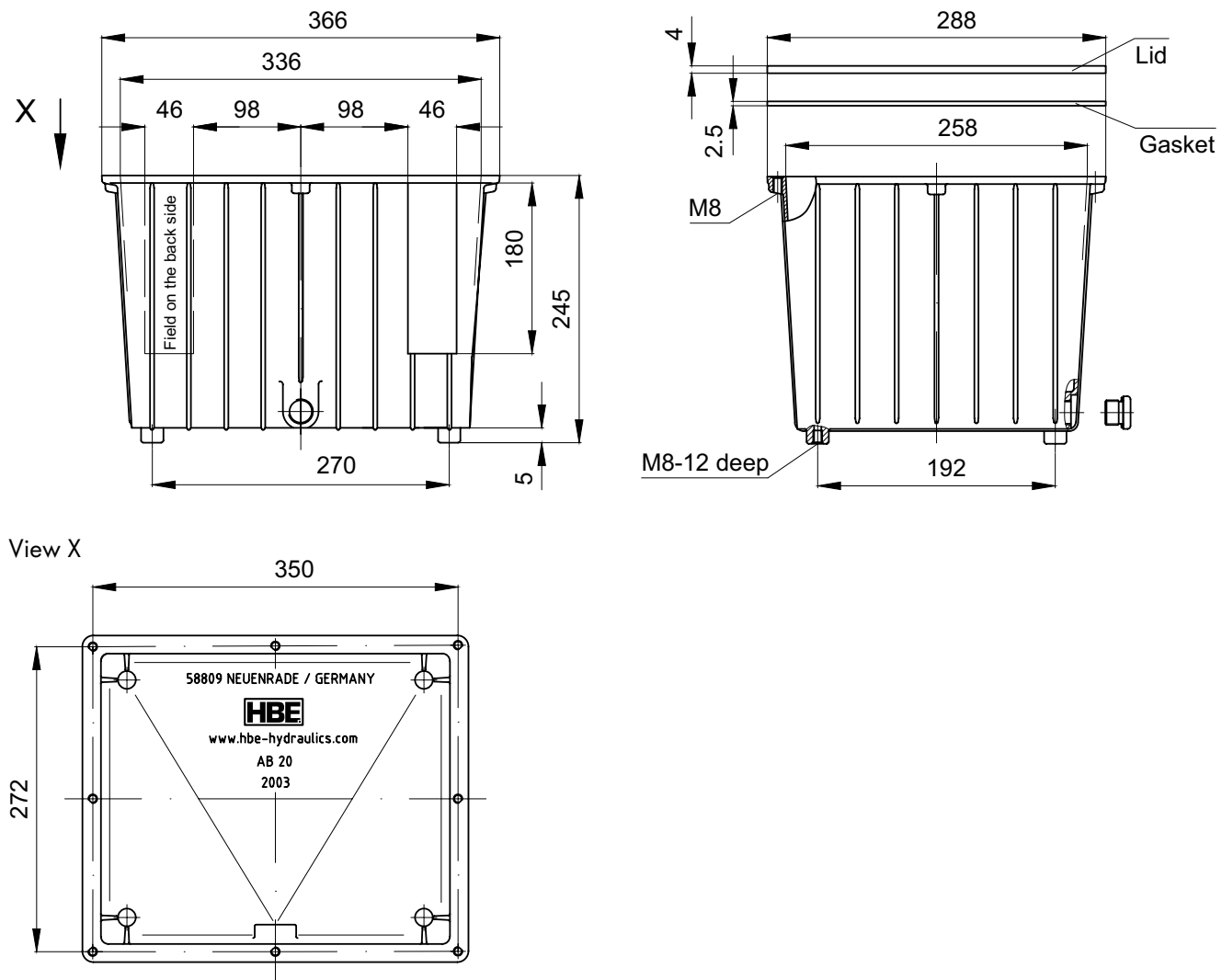


Art. No.	Type	Description
2007	AB 12	Tank Net volume approx. 10 L, weight approx. 2.2 kg
2216	SD 12	Steel lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2236	D 12 A	Flat gasket (paperboard)
2240	D 12 GK	Flat gasket (rubber cork)
2262	AS G 3/8"	Drain plug
2267	G 3/8"	CU gasket (16 x 22 x 2)
2299	F 12	Aluminium feet for AB 12 (Set = 4 pcs.) ¹
2371	SE 1	Filler and breather filter (metal) ²
2340 / 2341	ÖS 76 / ÖS 76 TH	Level oil gauge (with thermometer) ²
2350 / 2351	ÖS 127 / ÖS 127 TH	Level oil gauge (with thermometer) ²

¹Dimensions can be found on page 37

²For technical data, please see chapter "tank accessories" from page 40.

SERIES AB 20

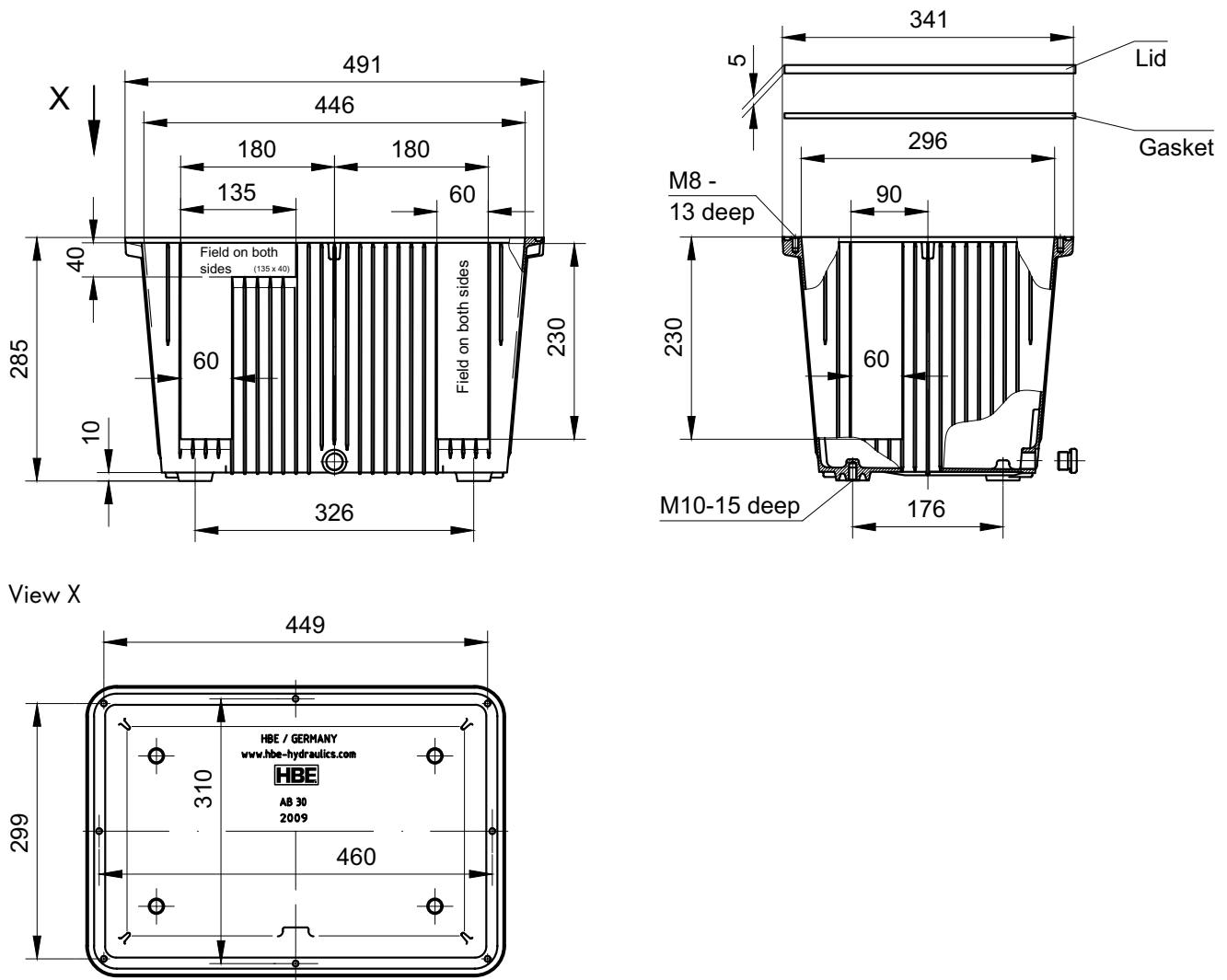


Art. No.	Type	Description
2003	AB 20	Tank Net volume approx. 17 L, weight approx. 3.8 kg
2203	SD 20	Steel lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2233	D 20 A	Flat gasket (paperboard)
2245	D 20 GK	Flat gasket (rubber cork)
2263	AS G 1/2"	Drain plug
2268	G 1/2"	CU gasket (21 x 26 x 1.5)
2299	F 20	Aluminium feet for AB 20 (Set = 4 pcs.) ¹
2371	SE 1	Filler and breather filter (metal) ²
2340 / 2341	ÖS 76 / ÖS 76 TH	Level oil gauge (with thermometer) ²
2350 / 2351	ÖS 127 / ÖS 127 TH	Level oil gauge (with thermometer) ²

¹Dimensions can be found on page 37

²For technical data, please see chapter "tank accessories" from page 40.

SERIES AB 30 NR

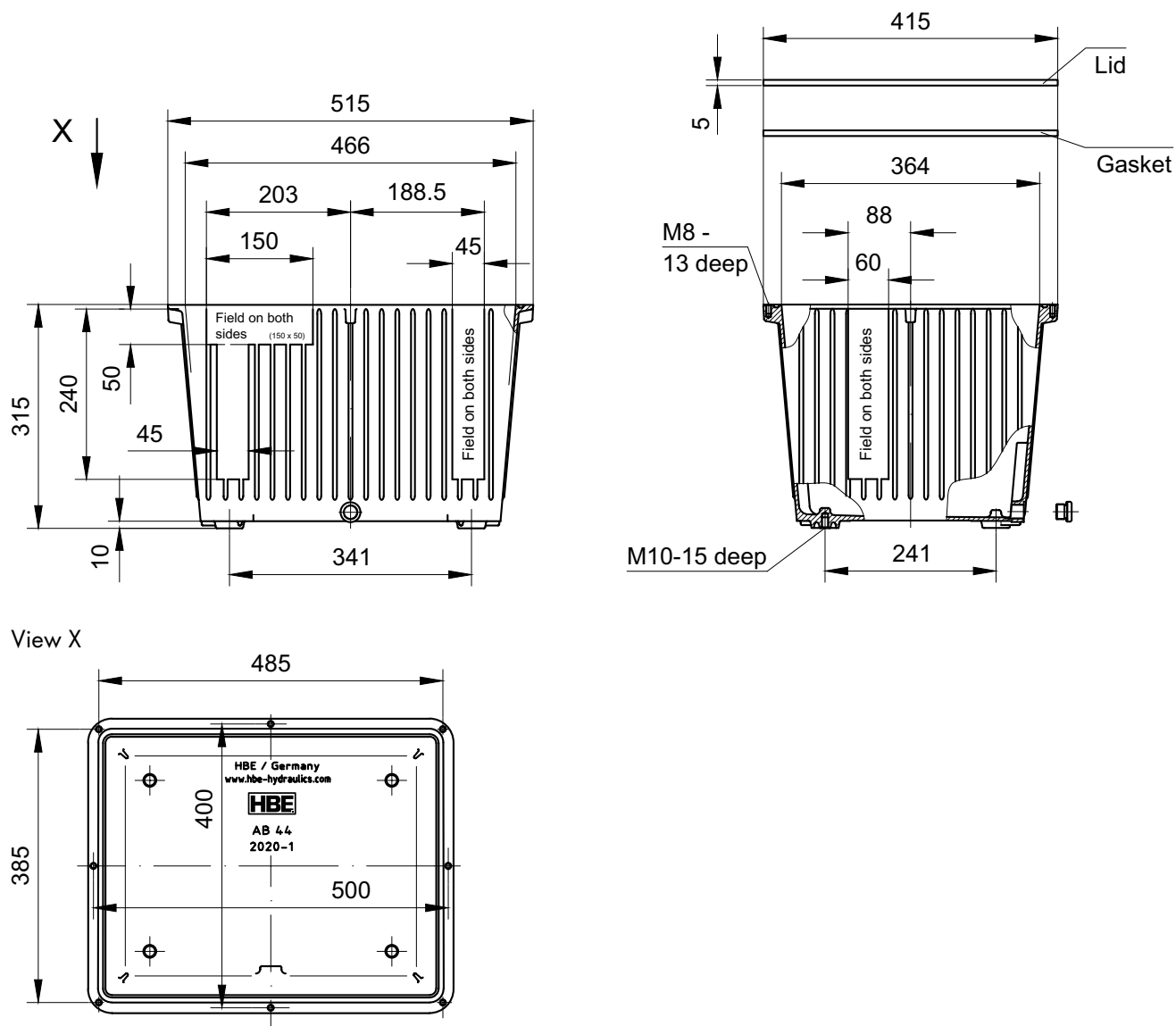


Art. No.	Type	Description
2009	AB 30	Tank Net volume approx. 27 L, weight approx. 5.5 kg
2204	SD 30	Steel lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2214	AD 30	Aluminium lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2234	D 30 NBR	Toroidal sealing ring \varnothing 6 mm NBR
2263	AS G 1/2"	Drain plug
2268	G 1/2"	CU gasket (21 x 26 x 1.5)
2300	F 30	Aluminium feet for AB 30 (Set = 4 pcs.) ¹
2372	SE 2	Filler and breather filter (metal) ²
2340 / 2341	ÖS 76 / ÖS 76 TH	Level oil gauge (with thermometer) ²
2350 / 2351	ÖS 127 / ÖS 127 TH	Level oil gauge (with thermometer) ²

¹Dimensions can be found on page 37

²For technical data, please see chapter "tank accessories" from page 40.

SERIES AB 44

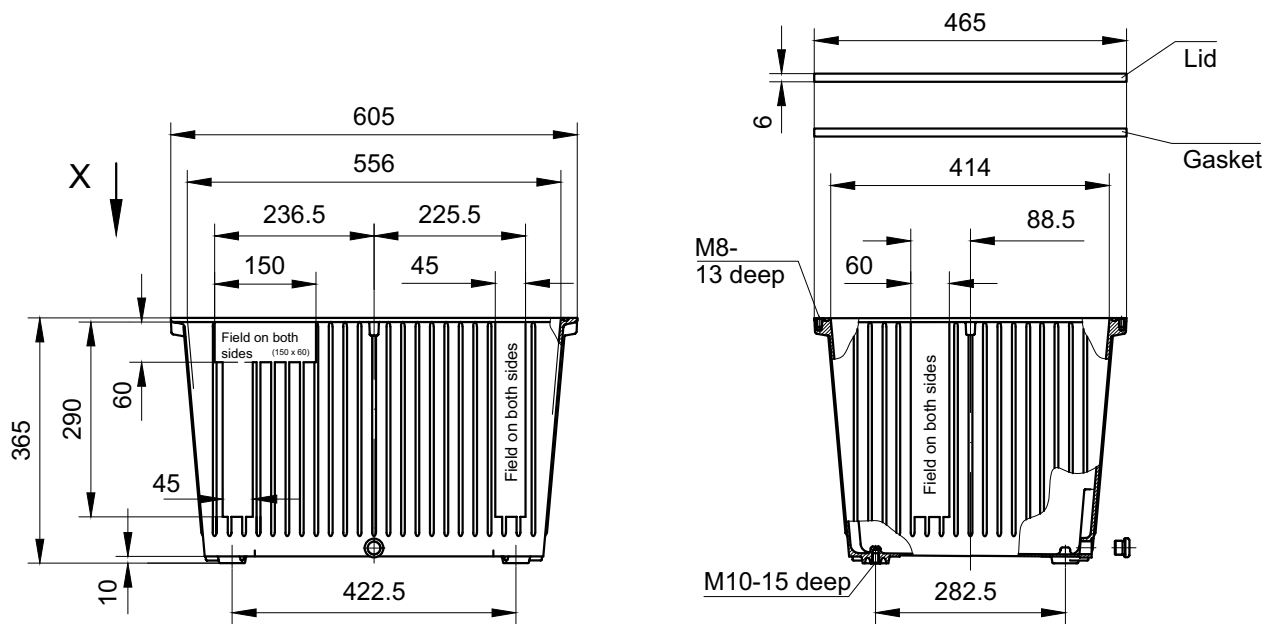


Art. No.	Type	Description
2020-1	AB 44	Tank Net volume approx. 40 L, weight approx. 7 kg
2221	SD 44	Steel lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2241	D 44 NBR	Toroidal sealing ring \varnothing 6 mm NBR
2263	AS G 1/2"	Drain plug
2268	G 1/2"	CU gasket (21 x 26 x 1.5)
2300	F 44	Aluminium feet for AB 44 (Set = 4 pcs.) ¹
2372	SE 2	Filler and breather filter (metal) ²
2340 / 2341	ÖS 76 / ÖS 76 TH	Level oil gauge (with thermometer) ²
2350 / 2351	ÖS 127 / ÖS 127 TH	Level oil gauge (with thermometer) ²
2352 / 2355	ÖS 176 / ÖS 176 TH	Level oil gauge (with thermometer) ²
2384	LR 150	Castors 150 mm

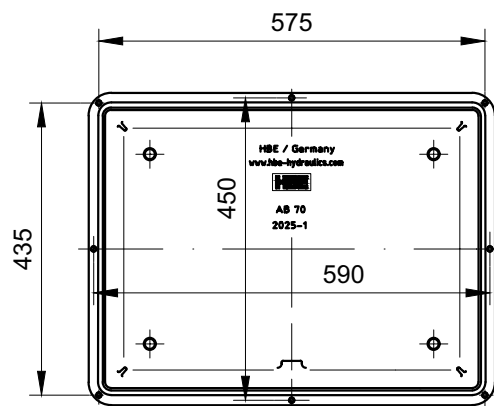
¹Dimensions can be found on page 37

²For technical data, please see chapter "tank accessories" from page 40.

SERIES AB 70



View X



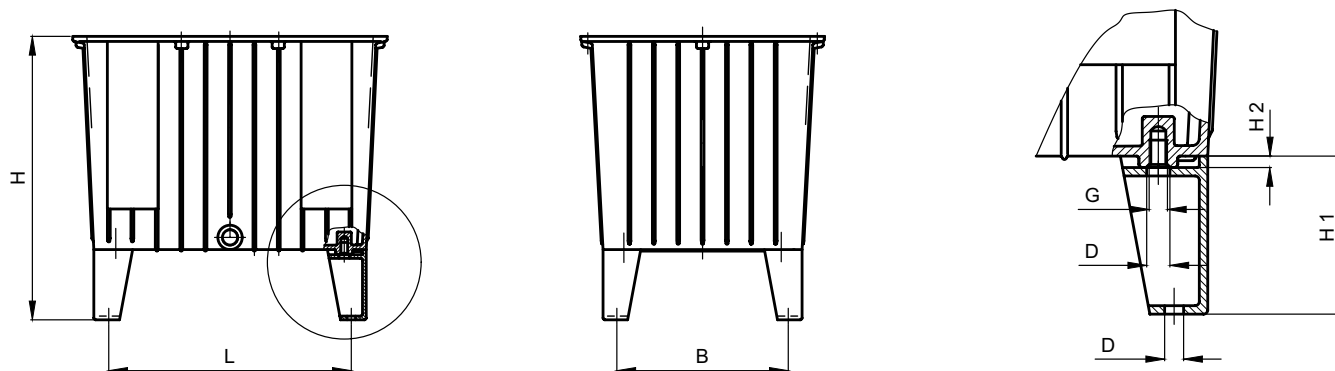
Art. No.	Type	Description
2025-1	AB 70	Tank Net volume approx. 63 L, weight approx. 9 kg
2225	SD 70	Steel lid machined for mounting on the tank, otherwise unmachined, unprimed or completely machined acc. to customer drawing
2242	D 70 NBR	Toroidal sealing ring \varnothing 6 mm NBR
2263	AS G 1/2"	Drain plug
2268	G 1/2"	CU gasket (21 x 26 x 1.5)
2300	F 70	Aluminium feet for AB 70 (Set = 4 pcs.) ¹
2372	SE 2	Filler and breather filter (metal) ²
2340 / 2341	ÖS 76 / ÖS 76 TH	Level oil gauge (with thermometer) ²
2350 / 2351	ÖS 127 / ÖS 127 TH	Level oil gauge (with thermometer) ²
2352 / 2355	ÖS 176 / ÖS 176 TH	Level oil gauge (with thermometer) ²
2384	LR 150	Castors 150 mm

¹Dimensions can be found on page 37

²For technical data, please see chapter "tank accessories" from page 40.

OIL TANKS CASTED ALUMINIUM

DIMENSIONS FEET



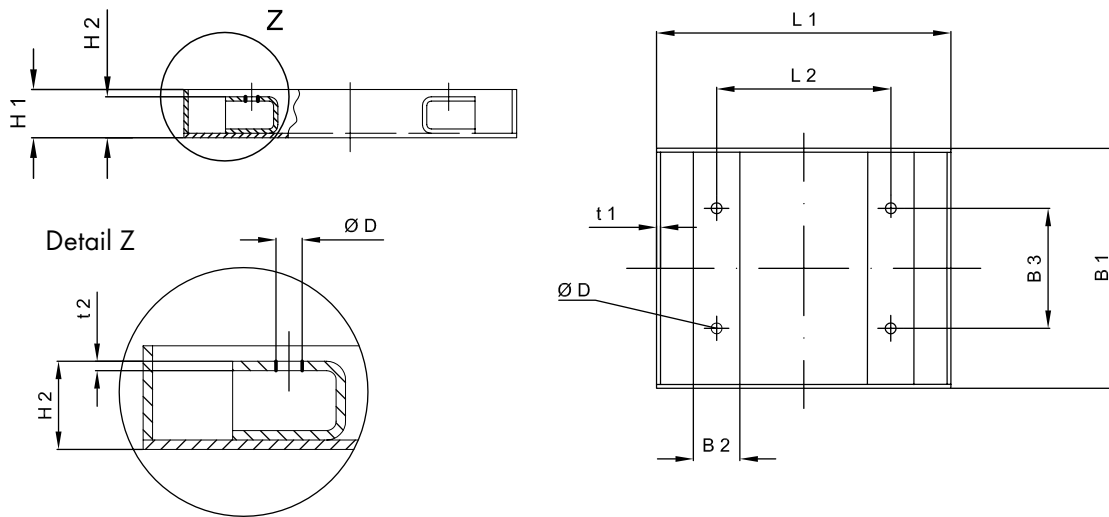
Size	Dimensions [mm]						
	L	B	H	H1	H2	G	D
AB 12	240	170	285	75	5.5	M8	9
AB 20	285	207	315	75	5.5	M8	9
AB 30	366	216	425	150	10	M10	11
AB 44	381	281	455	150	10	M10	11
AB 70	462.5	322.5	505	150	10	M10	11

TECHNICAL DATA

Size	Net volume V [Ltr.]	Specific cooling capacity P / ΔT [W/K]	Cooling capacity at ΔT = 40K P [kW]	Surface with lid [m²]	Weight [kg]
AB 3,5	3	4	0.16	0.15	1.40
AB 6,5	6	9	0.36	0.25	1.50
AB 12	10	15	0.60	0.35	2.20
AB 20	17	18	0.72	0.50	3.80
AB 30	27	23	0.92	0.75	5.50
AB 44	40	26	1.04	1.00	7.00
AB 70	63	29	1.16	1.30	9.00

OIL TANKS CASTED ALUMINIUM

DIMENSIONS OIL SUMPS



Art. No.	Type	Volume [Ltr.]	Dimensions [mm]									
			L1	L2	B1	B2	B3	H1	H2	t1	t2	Ø D
1080	ÖW 12 ST	11.8	380	225.0	310	60	155.0	110	100	3	3	9.5
1081	ÖW 20 ST	20.0	570	270.0	350	60	192.0	110	100	3	3	9.5
1082	ÖW 30 ST	33.0	550	326.0	400	60	176.0	160	150	3	5	12.0
1083	ÖW 44 ST	45.0	600	341.0	500	60	241.0	160	150	3	5	12.0
1084	ÖW 70 ST	63.5	730	422.5	580	60	282.5	160	150	3	5	12.0



GENERAL TECHNICAL INFORMATION

**TABLE OF RESISTANCE AGAINST MINERAL OILS
AND FLAME RESISTANT FLUIDS**

Product	Material	Medium				
		Hydraulic oil / mineral oil base	HFA	HFB	HFC	HFD, HFD-R, HFD-S, HFD-T
Steel tanks	Steel	●	1	●	●	●
Coating	ME III	●	●	●	2	2
Gasket	NBR	●	●	●	●	●
Gasket	EPDM	●	●	●	●	●
AB tanks	Aluminium	●	●	●	●	●
Gasket	Paperboard	●	●	●	●	●
Gasket	Rubber cork	●	●	●	3	3
Lid SD	Steel	●	1	●	●	●
Oil level gauges						
with gasket	NBR	●	●	●	●	●
with gasket	FPM	●	●	●	●	●
Fillers	ST	●	●	●	●	●
Cleaning covers	Aluminium	●	●	●	●	●
with gasket	NBR	●	●	●	●	●
with gasket	FPM	●	●	●	●	●
with gasket	EPDM	●	●	●	●	●

● = Resistant

● = Not resistant

1 = Priming coat required

2 = If coating required, use epoxy resin

3 = Resistant to oil wetting

HYDRAULIC FLUIDS / MAIN COMPONENTS

HFA Oil in water emulsion, water content > 80%

HFB Water in oil emulsion, water content > 40%

HFC Watery polymer solution (water glycol),
water content > 45%

HFD Synthetic fluids (water free)

HFD-R Phosphoric acid ester

HFD-S Chlorinated hydrocarbon

HFD-T Mixture of HFD-R + HFD-S



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REMOVE TRANSPORT SEALS

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TANK ACCESSORIES

TANK ACCESSORIES



CONTENT

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Level switches	48
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Filler and breather filter	54
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CLEANING COVERS

PRODUCT DESCRIPTION

- For a safe closure of inspection openings
- Mounting via flange or central assembling
- Types RD 250-4 and RD 250/235 for steel oil tanks of low size
- Types RD 350 and RD 475 acc. to DIN 24339
- Test pressure for all RD types max. 0.5 bar
- O-ring and form gasket available in perbunan (NBR standard), viton (FPM) and EPDM
- Material: aluminium
- All cleaning covers with flange assembling also available in steel or VA
- Version „W“ with sight glass made of polycarbonate
- All aluminium cleaning covers also available with customised company logo



Order code cleaning covers					
Type	Size	Material		Version**	
RD	350-V324-6	-		W	
	250/235	-	=> Alu (standard)	-	=> standard
	250-4	ST	=> S235JR	W	=> sight glass
	320-6	V2A	=> 1.4301		
	350-V324-4	V4A	=> 1.4571		
	350-V324-6				
	475-V449-6				
	595-V570-8				
	235-200*				
	345-300*				

* central assembling

** available in sizes 350 and 475



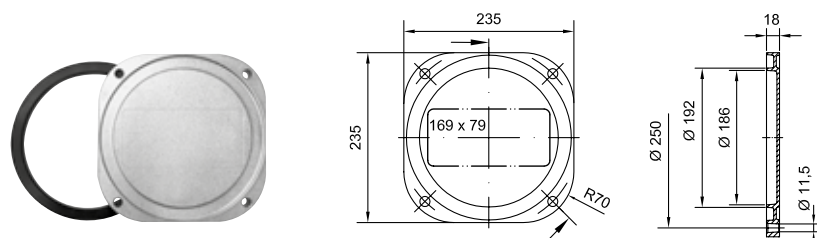
Order code gasket		
Type	Size	Material
D	268	NBR
		NBR
		FKM (Viton®)
		EPDM



CLEANING COVERS

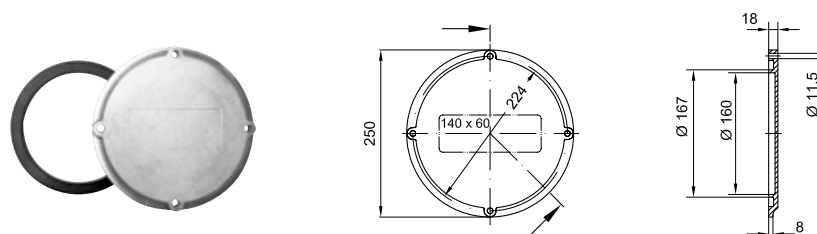
DIMENSIONS

VERSION FLANGE ASSEMBLING



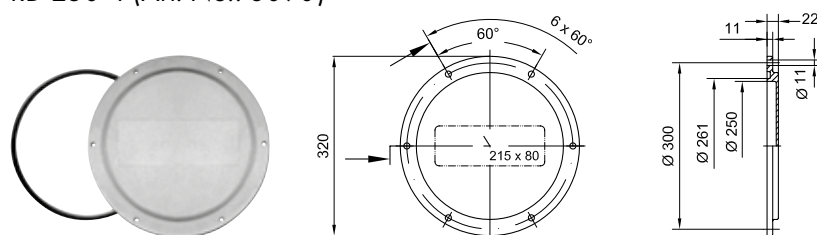
RD 250/235 (Art. No.: 3081)

Form gasket 16 x 18	
Art. No.	Type
3079	D193 NBR
3086	D193 FKM



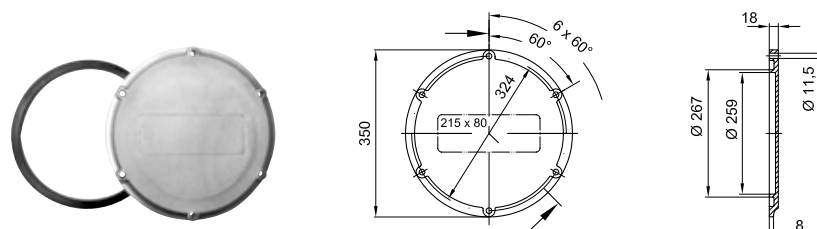
RD 250-4 (Art. No.: 3090)

Form gasket 16 x 18	
Art. No.	Type
3091	D168 NBR
3092	D168 FKM



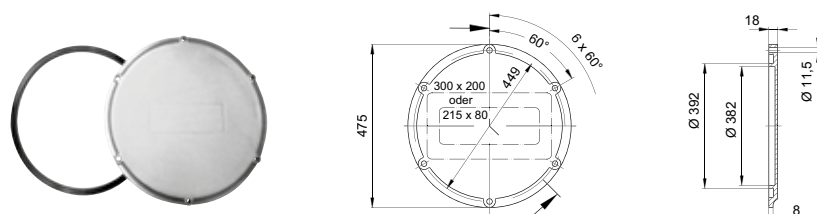
RD 320-6 (Art. No.: 3000)

O-ring gasket	
Art. No.	Type
3003	260 x 10 NBR
3004	260 x 10 FKM



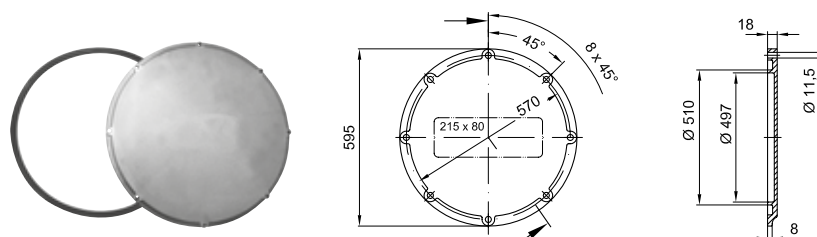
RD 350-V 324-6 DIN 24339 (Art. No.: 3299)

Form gasket 16 x 18	
Art. No.	Type
3151	D268 NBR
3152	D268 FKM
3153	D268 EPDM



RD 475-V 449-6 DIN 24339 (Art. No.: 3450)

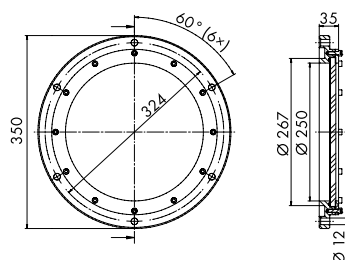
Form gasket 16 x 18	
Art. No.	Type
3451	D393 NBR
3452	D393 FKM
3453	D393 EPDM



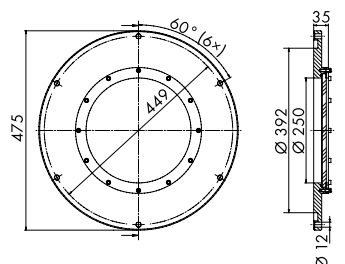
RD 595-V 570-8 (Art. No.: 3652)

Form gasket 16 x 18	
Art. No.	Type
3651	D512 NBR
3661	D512 FKM

The recommended **screw torque** of the cap nuts is **10 Nm** for all sizes.

DIMENSIONS**VERSION WITH SIGHT GLASS**

RD 350-V 324-6-W (Art. No.: 3440)



RD 475-V 449-6-W (Art. No.: 3545)

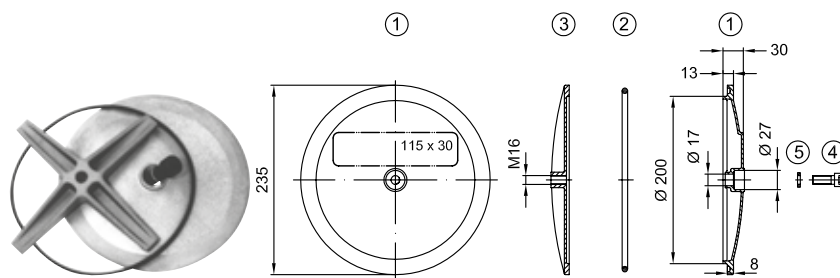
Form gasket 16 x 18

Art. No.	Type
3151	D268 NBR
3152	D268 FKM
3153	D268 EPDM

Form gasket 16 x 18

Art. No.	Type
3451	D393 NBR
3452	D393 FKM
3453	D393 EPDM

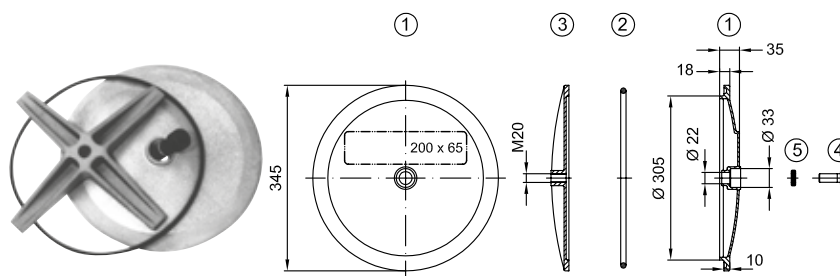
The recommended **screw torque** of the cap nuts is **10 Nm** for all sizes.

VERSION CENTRAL ASSEMBLING

RD 235-200 (Art. No.: 3550)

RD 235-200

Code No.	Art. No.	Type
1	3550	Lid
2	3551/ 3562	O-ring gasket 214 x 5 NBR/FPM
3	3552	Cross GGG
4	3553	Gasket Usit 22 x 16
5	3554	Screw M16 x 40



RD 345-300 (Art. No.: 3600)

RD 345-300

Code No.	Art. No.	Type
1	3600	Lid
2	3601/ 3607	O-ring gasket 315 x 10 NBR/FPM
3	3602	Cross GGG
4	3603	Gasket Usit 22.7 x 30
5	3604	Screw M20 x 60

The recommended **screw torque** of the cap nuts is **40 Nm** for both sizes.

LEVEL OIL GAUGES

SCALE PLATE VERSION

- Optical / thermal monitoring of the liquid level in the tanks
- 4 sizes from 76 mm up to 254 mm
- Suitable for hydraulic fluids HL and HLP
- Gaskets made of perbunan (NBR standard) or Viton® (FKM)
- Steel housing - powder coated
- Plug & sight glass made of PA
- Scale plate made of PVC
- Optional version with thermometer

Order code		
Type	Size	Option
ÖS	76	TH
	76	
	127	
	176	
	254	



ÖS ...

ÖS ... TH

FLOAT SWITCH VERSION

- Optical / electrical monitoring of the liquid level in the tanks
- 2 sizes from 127 mm up to 254 mm
- Suitable for hydraulic fluids HL and HLP
- Optional use with probe thermometer
- Optionally available as break contact or make contact
- Contact box acc. to DIN EN 175301-803-B/ISO6952
- Gaskets made of Viton® (FKM)
- Aluminium housing - powder coated
- Plug, sight glass and float switch made of PA

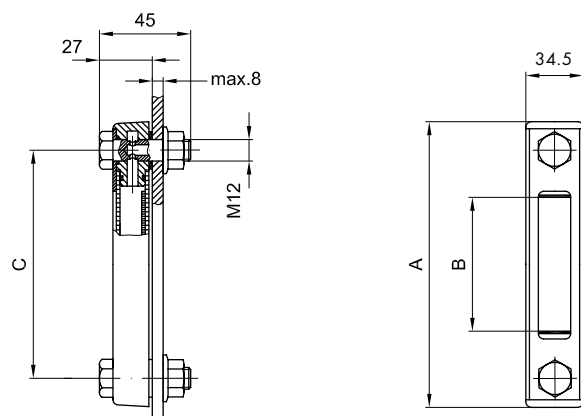


ÖS-EK...

Order code									
Type	Size	Gasket	Electrical function		Probe thermometer		Fixing	Electrical switch*	
ÖS-EK	127	FKM	C		-		M12	R/L	
	127		C	Make contact closes at min. level	-	without		R	Right
	254		O	Break contact opens at min. level	T	probe thermometer 200 mm		L	Left
					TS	temperature switch 70 °C			

*When connecting the electrical contacts, the direction of the contact box (right/left) for the types C and O can be determined by the user.

DIMENSIONS SCALE PLATE VERSION



Art. No.	Type	Dimensions [mm]		
		A	B	C
2340 2341	ÖS 76 ÖS 76 TH*	108	31	76
2350 2351	ÖS 127 ÖS 127 TH*	159	76	127
2352 2355	ÖS 176 ÖS 176 TH*	208	124	176
2360 2361	ÖS 254 ÖS 254 TH*	285	192	254

*Version with thermometer

TECHNICAL DATA

Application range: -20°C ... +80°C

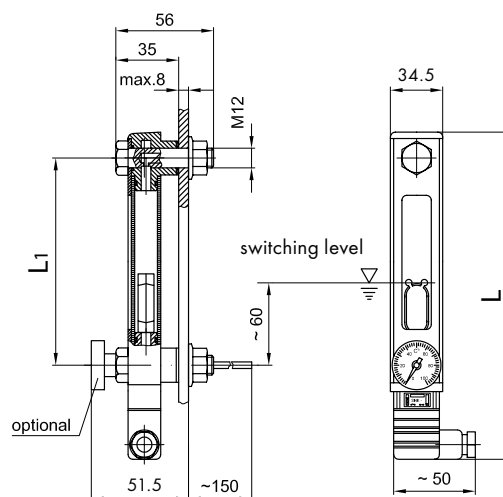
Indication range thermometer:

ÖS 76: +20°C ... +80°C

ÖS 127/176/254: -10°C ... +80°C

Screw torque: max. 8 Nm

DIMENSIONS FLOAT SWITCH VERSION



Art. No.	Type	Dimensions [mm]	
		L	L1
2366 2367	ÖS-EK-127-FPM-C/M12 R/L ÖS-EK-127-FPM-O/M12 R/L	159	127
2377 2378	ÖS-EK-127-FPM-C/T/M12 R/L ÖS-EK-127-FPM-O/T/M12 R/L	159	127
2381 2379	ÖS-EK-127-FPM-C/TS70/M12 R/L ÖS-EK-127-FPM-O/TS70/M12 R/L	159	127
2387 2382	ÖS-EK-254-FPM-C/M12 R/L ÖS-EK-254-FPM-O/M12 R/L	285	254
2383 2386	ÖS-EK-254-FPM-C/T/M12 R/L ÖS-EK-254-FPM-O/T/M12 R/L	285	254
2374 2375	ÖS-EK-254-FPM-C/TS70/M12 R/L ÖS-EK-254-FPM-O/TS70/M12 R/L	285	254

TECHNICAL DATA

Temperature range of medium: -20°C ... +80°C

Indication range probe thermometer:

0°C up to +100°C

Tank pressure: max. 1 bar

Screw torque: max. 8 Nm

ELECTRICAL CONNECTIONS / FUNCTIONS

Contact load:

max. 10 W (type C)

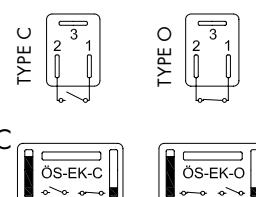
max. 5 W (type O)

Switching voltage: 50 VAC / DC

Switching current: 0.25 A

Electrical switch with PG9:

Protection class IP 65, connection 3 not in use



LEVEL SWITCHES

PRODUCT DESCRIPTION

- Electrical level monitoring
- Suitable for mineral oils, diesel and benzine, as well as for water
- Electrical circuit for level min. / max.
- Standard version level max. = contact open
- Contact pipe: brass
- Float switch: nylon
- Max. temp: 80°C
- Protection class: IP 65
- Hysteresis: 2 – 3 mm
- Max. voltage: 250 V AC
- Max. switch current: level 1 A
- Power AC/DC: level 80 W/VA

VERSION WITH 1 SWITCH CONTACT

- Optional with additional temperature monitoring:
1 switch contact level / 1 switch contact temperature
- Electrical circuit
for temperature < 70°C = contact closed
- Power AC/DC: temperature 10 W/VA

Order code		
Type	Length	Option
NS1-NO	200	TE70° NC

VERSION WITH 2 SWITCH CONTACTS

- Electrical level monitoring with 2 float switches

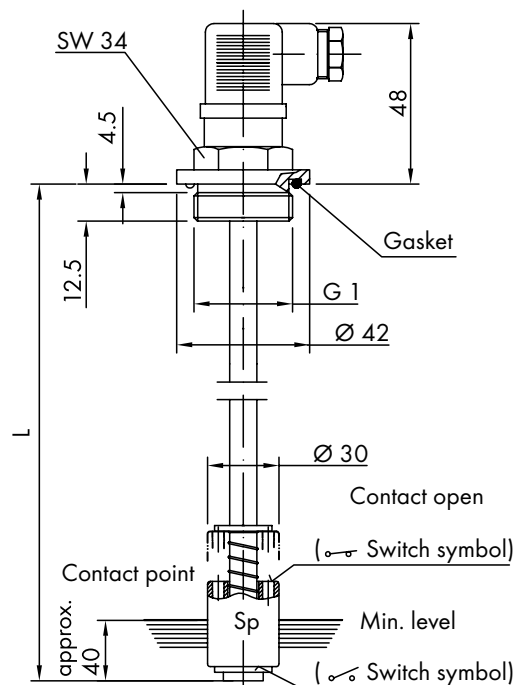
Order code		
Type	Length	Distance
NS2-NO	300	105

VERSION WITH VARIABLE SWITCH CONTACTS

- Adjustable length by cutting the contact pipe to the required length
- Contact pipe: Indox aisi 304
- Float switch: NBR
- Contact type: Reed
- Power AC/DC: level 50 W/VA

Order code	
Type	Length
NS1	VR



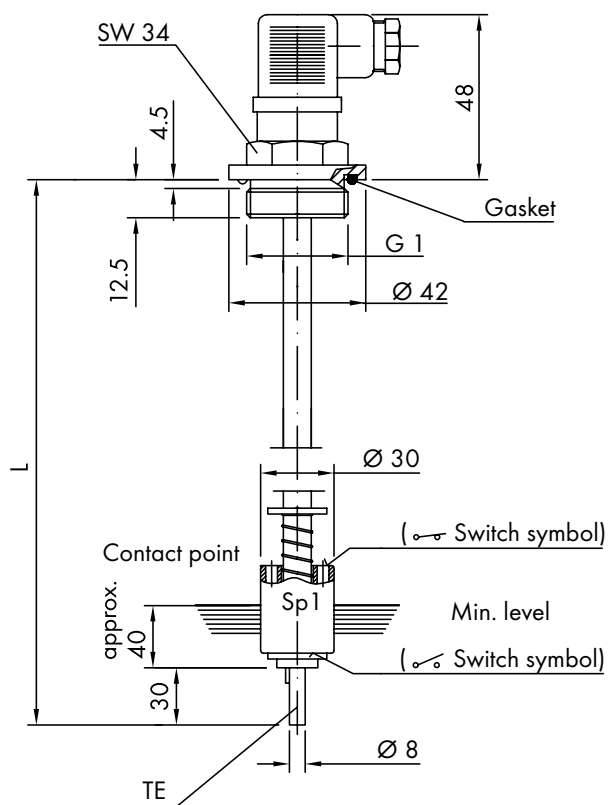
DIMENSIONS**VERSION 1 SWITCH CONTACT**

Art. No.	Type	Dimensions [mm]
		L
1420	NS 1-NO / 100	100
1422	NS 1-NO / 150	150
1424	NS 1-NO / 200	200
1426	NS 1-NO / 250	250
1428	NS 1-NO / 300	300
1430	NS 1-NO / 350	350
1432	NS 1-NO / 400	400
1434	NS 1-NO / 500	500

By turning the float switch the contact is changed to:

Max. level = contact closed

Min. level = contact open

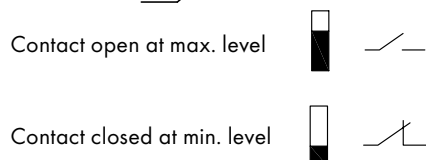


Art. No.	Type	Dimensions [mm]
		L
1502	NS 1-NO / 150 TE 70° NC	150
1504	NS 1-NO / 200 TE 70° NC	200
1505	NS 1-NO / 240 TE 70° NC	240
1506	NS 1-NO / 250 TE 70° NC	250
1508	NS 1-NO / 300 TE 70° NC	300
1510	NS 1-NO / 350 TE 70° NC	350
1512	NS 1-NO / 400 TE 70° NC	400
1513	NS 1-NO / 450 TE 70° NC	450
1514	NS 1-NO / 500 TE 70° NC	500

By turning the float switch the contact is changed to:

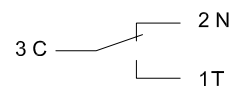
Max. level = contact closed

Min. level = contact open



> 70° Contact open

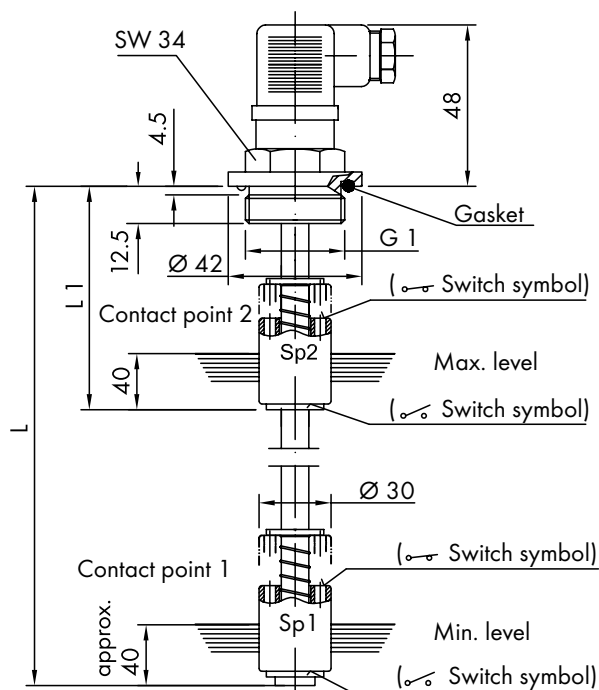
< 70° Contact closed



LEVEL SWITCHES

DIMENSIONS

VERSION 2 SWITCH CONTACTS



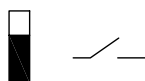
Art. No.	Type	Dimensions [mm]	
		L	L1
1457	NS 2-NO/250/105	250	105
1459	NS 2-NO/300/105	300	105
1461	NS 2-NO/350/115	350	115
1463	NS 2-NO/400/115	400	115
1465	NS 2-NO/500/125	500	125

By turning the float switch the contact is changed to:

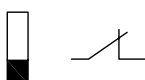
Max. level = contact closed

Min. level = contact open

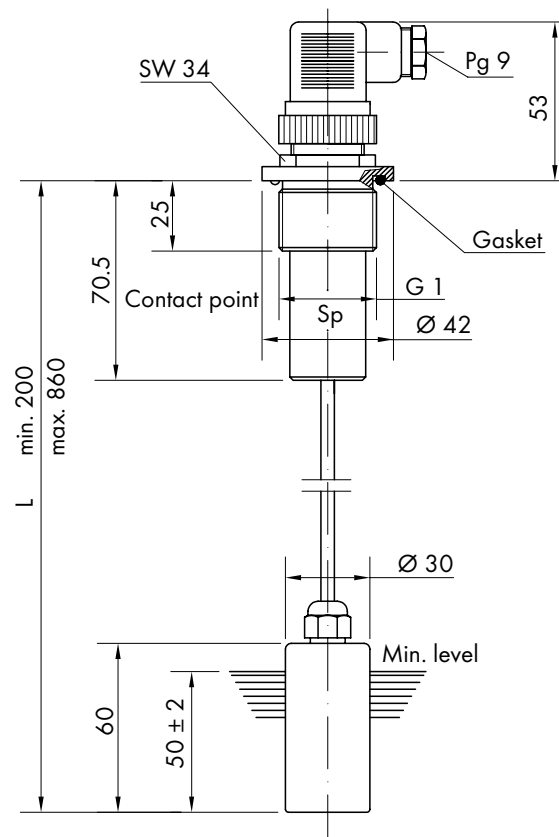
Contact open at max. level



Contact closed at min. level



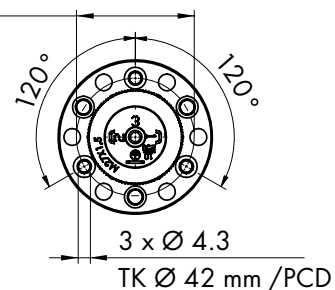
VERSION VARIABLE SWITCH CONTACT



Art. No.	Type
1411	NS 1-VR (200-860 mm)

3 C 2 NC Connection 3 + 2 = break contact
1 NO Connection 3 + 1 = make contact

Flange fixing



DESICCANT BREATHERS

PRODUCT DESCRIPTION

- Tank breathing, humidity absorption and cleaning of the inflowing air in one unit
- Refillable with separately available desiccant "EG"
- Easy disposal of desiccant in the household waste
- No content of any hazardous material acc. to EG directive 99/45/EC and 2001/60/EC
- Easy capacity control of the desiccant by colour changing from red to orange
- Easy replacement of the air filter cartridge
- Reduction of oxidation inside the hydraulic system
- Service life extension of oil and machinery
- Available incl. adapter plates "A" and dust indicator "VA"

Order code			
Type	Size	Option	
LEF	93	A9	VA
	61	A9	
	93	A12	
	96		
	121		
	122		



ACCESSORIES

DUST INDICATOR "VA"

- Is being mounted on the adapter plate
- Displays the contamination level of the air filter
- After changing the air filter cartridge, the dust indicator is reusable by pressing the RESET button



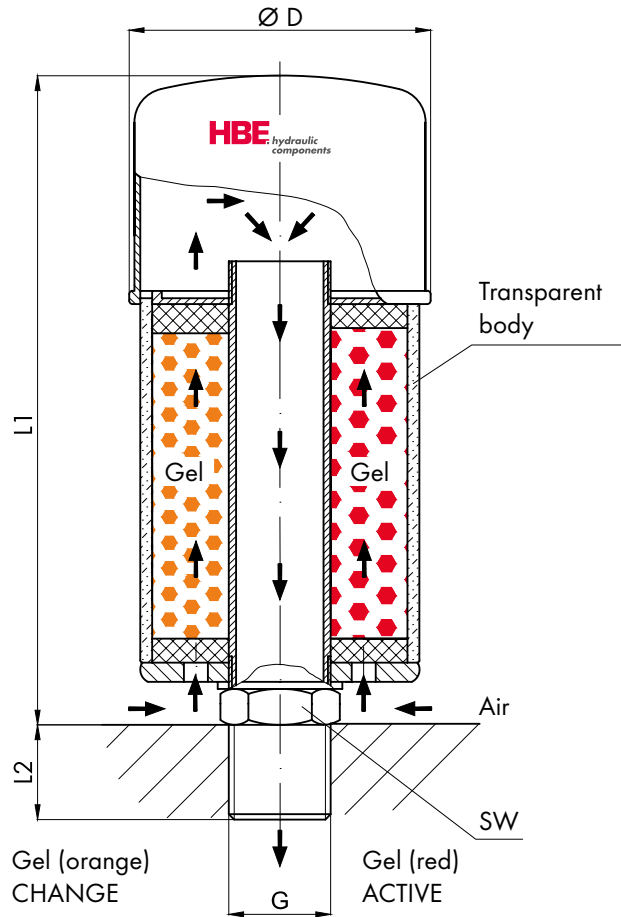
ADAPTER PLATE "A"

- Allows a direct mounting on existing connections
- Connection possibilities for dust indicator as well as suction and return lines
- Material: plastics
- Plug, O-ring and Allen screws are included



DESICCANT BREATHERS

DIMENSIONS AND TECHNICAL DATA



MATERIALS

- Inner tube: stainless steel
- Body: SAN (Styrol Acrylnitril)
- Desiccant: ZR gel (3 – 6 mm)

FLUID COMPABILITY

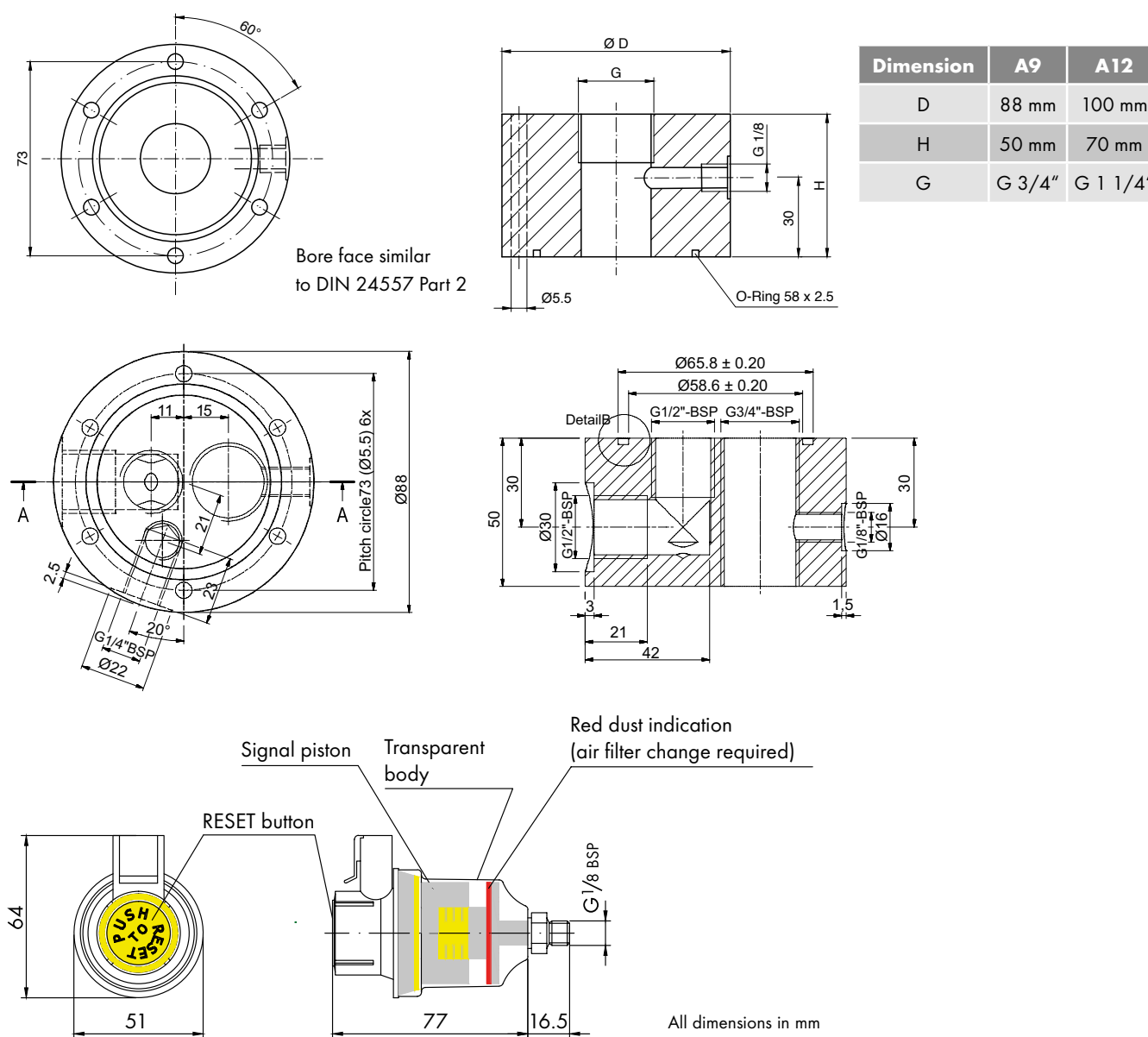
- Mineral oil: OK
- H, HL, HLP, HVLP: OK
- HEES (Synt. Ester): OK

For other fluids please contact HBE

On request all sizes with check valve
(standard for LEF61)

	LEF desiccant breathers				
Type	LEF 61	LEF 93	LEF 96	LEF 121	LEF 122
Article No.	2700	2701	2702	2703	2704
L1	136 mm	160 mm	220 mm	256 mm	366 mm
L2	without	180 mm	240 mm	281 mm	391 mm
D	68 mm	100 mm	100 mm	123.5 mm	123.5 mm
G	3/8" (inside)	3/4"	3/4"	1 1/4"	1 1/4"
SW	without	32 mm	32 mm	50 mm	50 mm
Max. airflow	0.05 m ³ /min	0.7 m ³ /min	0.7 m ³ /min	1.5 m ³ /min	1.5 m ³ /min
Air filter mesh	3 µm	3 µm	3 µm	3 µm	3 µm
Max. water absorption	29 g	86 g	172 g	288 g	576 g
Recommended tank size	< 30 l	< 250 l	< 500 l	< 1250 l	> 1250 l
Operating temperature	-40°C up to +90°C	-40°C up to +90°C	-40°C up to +90°C	-40°C up to +90°C	-40°C up to +90°C
Weight	0.4 kg	1.2 kg	1.5 kg	2.7 kg	4.0 kg

DIMENSIONS AND TECHNICAL DATA



SPARE PARTS / ACCESSORIES

Spare parts					
Air filter cartridge	LF 6	LF 9	LF 9	LF 12	LF 12
Article No.	2710	2711	2711	2713	2713
Desiccant kit	EG 6	EG 93	EG 96	EG 121	EG 122
Article No.	2720	2721	2722	2723	2724
Optional accessories					
Adapter plate	-	A 9	A 9	A 12	A 12
Article No.	-	2731	2731	2733	2733
Dust indicator	-	VA	VA	VA	VA
Article No.	-	2741	2741	2741	2741

FILLER AND BREATHER FILTER

PRODUCT DESCRIPTION

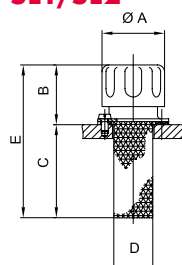
- Filling and ventilation of hydraulic tanks
- Permanent ventilation while protecting against contamination
- On request, metal version available with logo

Order code	
Type	Size
SE	2

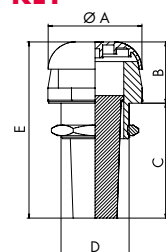


DIMENSIONS

SE1/SE2

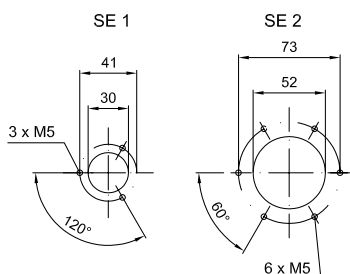


KE1



Type	Art. No.	Dimensions [mm]					Air filter	Material
		Ø A	B	C	D	E		
KE 1	2370	62	40	76	M45 x 2	116	45 µm	Plastics
SE 1	2371	47	45	63	Ø 28	110	10 µm	Metal (chromium free)
SE 2	2372	80	53	80	Ø 50	133	10 µm	Metal (chromium free)

Assembly diagram

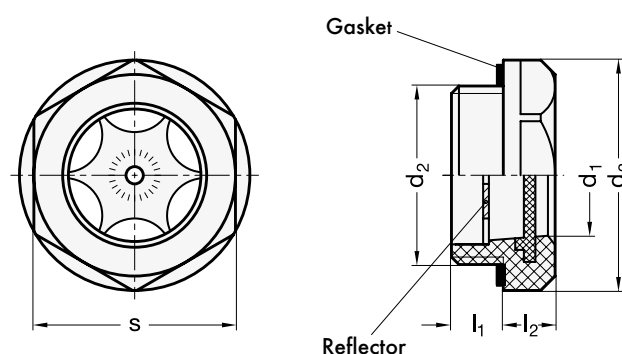


SIGHT GLASS

Order code	
Type	Size
ÖS	G 3/4"



DIMENSIONS



Size	Dimensions [mm]				
	d ₁	d ₃	l ₁	l ₂	s
G 1/2"	15	28	10	8.5	24
G 3/4"	18	35	10	8.5	32
G 1"	23	43	11	9.5	38
G 1 1/4"	30	50	11	9.0	46

GENERAL TECHNICAL INFORMATION

**TABLE OF RESISTANCE AGAINST MINERAL OILS
AND FLAME RESISTANT FLUIDS**

Product	Material	Medium				
		Hydraulic oil / mineral oil base	HFA	HFB	HFC	HFD, HFD-R, HFD-S, HFD-T
Steel tanks	Steel	●	1	●	●	●
Coating	ME III	●	●	●	2	2
Gasket	NBR	●	●	●	●	●
Gasket	EPDM	●	●	●	●	●
AB tanks	Aluminium	●	●	●	●	●
Gasket	Paperboard	●	●	●	●	●
Gasket	Rubber cork	●	●	●	3	3
Lid SD	Steel	●	1	●	●	●
Oil level gauges						
with gasket	NBR	●	●	●	●	●
with gasket	FPM	●	●	●	●	●
Fillers	ST	●	●	●	●	●
Cleaning covers	Aluminium	●	●	●	●	●
with gasket	NBR	●	●	●	●	●
with gasket	FPM	●	●	●	●	●
with gasket	EPDM	●	●	●	●	●

● = Resistant

● = Not resistant

1 = Priming coat required

2 = If coating required, use epoxy resin

3 = Resistant to oil wetting

HYDRAULIC FLUIDS / MAIN COMPONENTS

HFA Oil in water emulsion, water content > 80%

HFB Water in oil emulsion, water content > 40%

HFC Watery polymer solution (water glycol),
water content > 45%

HFD Synthetic fluids (water free)

HFD-R Phosphoric acid ester

HFD-S Chlorinated hydrocarbon

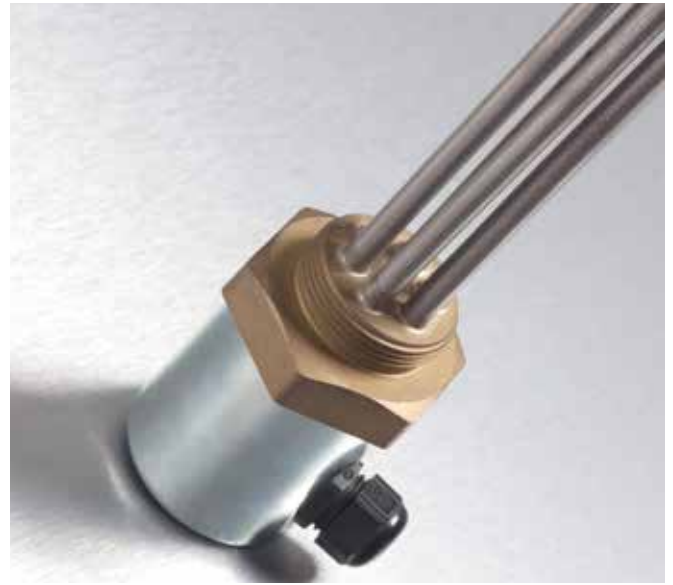
HFD-T Mixture of HFD-R + HFD-S



TANK HEATERS

TANK HEATERS

TANK HEATERS



CONTENT

VR immersion heaters with magnetic clamp	59
Screwed-in heaters	60
Cartridge heaters	62
Tube heaters	64
Shaped	65
Oil pre-heaters	66

VR IMMERSION HEATERS WITH MAGNETIC CLAMP

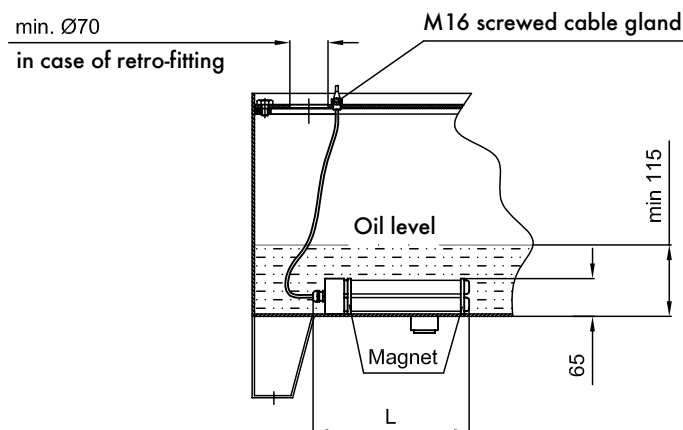
PRODUCT DESCRIPTION

- Pre-heating of the medium by direct heating
- Stable welded version
- Easy installation
- No lateral tank machining
- Low minimum oil level in horizontal position
- Pick up of iron particles with integrated magnetic clamps
- Protection class IP 68
- Integrated thermostat with switch-off temperature +40°C (other temperatures on request)
- Integrated temperature limiter, wired for direct switching
- 3 pole, 4 mtr. long cable with screwed cable gland M16
- Temperature resistant up to -20°C
- Medium touched pieces made of stainless steel 1.4571 (protection tubes), brass (cable gland) and plastics (cable)
- Resistant against HLP and HFA fluids, diesel, heating and vegetable oil (for other fluids, e.g. HFC, please contact HBE)



Order code				
Art. No.	Type	Power		Surface charge
1962	VR	1,000 W	/	1.2-M

DIMENSIONS



ASSEMBLY INFORMATION

- Fixing of the heater by magnetic clamps either horizontally at the tank bottom or vertically at the tank wall
- Do not hang up the heater at the cable
- Lead the cable outside above oil level and fix it at the lid or tank with screwed cable gland M16
- Tank heater must be covered by at least 50 mm of the medium
- A retro-fitting requires an opening in the tank lid of Ø 70 mm

Art. No.	Type	Power [W]	L [mm]	Voltage [V]	Surface charge [W/cm ²]
1955	VR 125 W/0,6-M	125	200	230 V/AC	0.6 HFA/HFD-R
1956	VR 250 W/0,6-M	250	300		0.6 HFA/HFD-R
1957	VR 500 W/0,6-M	500	500		0.6 HFA/HFD-R
1960	VR 250 W/1,2-M	250	200		1.2 HLP*
1961	VR 500 W/1,2-M	500	300		1.2 HLP*
1962	VR 1000 W/1,2-M	1000	500		1.2 HLP*
1963	VR 250 W/1,2-M	250	300	24 V/DC	1.2 HLP*

*available at short notice

SCREWED-IN HEATERS

PRODUCT DESCRIPTION

- Heater for pre-heating of hydraulic oil on mineral oil base
- For horizontal mounting under oil level
- Surface charge approx. 1.5 W/cm^2 for hydraulic oils
- Bright galvanised steel cap
- Material: steel (further materials on request)
- Wiring schemes for various supply voltages on request

SERIES PTHK 90

- Exchangeable ceramic heating insert (mounting / dismounting possible without oil drain)
- Protection class IP 65



Series PTHK 90

SERIES PTHK 92

- Exchangeable ceramic heating insert (mounting / dismounting possible without oil drain)
- Temperature control for internal (THI) or external (THA) regulation, single pole $0 - 85^\circ\text{C}$, 16 ampere
- Protection class IP 54 for THA resp. IP 65 for THI



Series PTHK 92

SERIES RHK - G1 1/2"

- Protection class IP 65



Series RHK - G 1 1/2"

SERIES RHK - G1 1/2" THA / THI

- Temperature control for internal (THI) or external (THA) regulation, single pole $0 - 85^\circ\text{C}$, 16 ampere
- Protection class IP 54 for THA resp. IP 65 for THI



Series RHK - G 1 1/2" THA / THI

SERIES WHK G 1 1/2"

- Mounting via tank lid
- Protection class IP 54
- Optional with temperature control for internal regulation (THI)

Order code				
Art. No.		Type		Voltage*
1808	-	PTHK 92 - G 2" THA	-	2 x 400 V
		PTHK 90 - G 1 1/2"		1 x 230V
		PTHK 90 - G 2"		2 x 380V
		PTHK 92 - G 2" THA		3 x 380V
		PTHK 92 - G 2" THI		2 x 400V
		RHK - G 1 1/2"		3 x 400V
		RHK - G 1 1/2" THA		
		RHK - G 1 1/2" THI		
		WHK - G 1 1/2"		
		WHK - G 1 1/2" THI		



*available at extra charge:

3 phases
> 400 V

REQUIRED DETAILS FOR QUOTATION

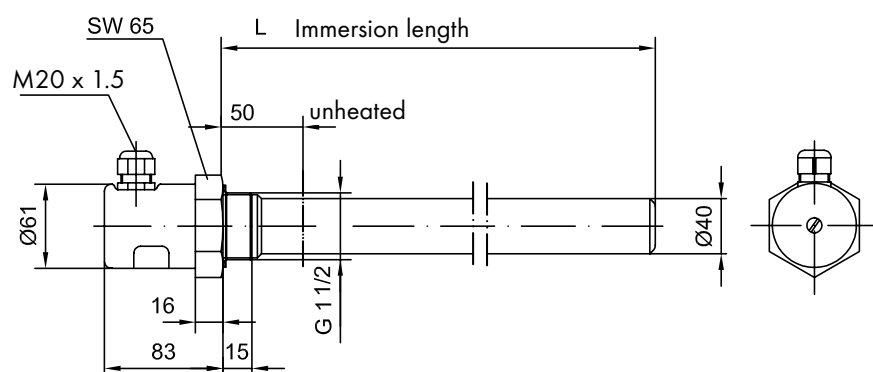
In order to provide you a specific quotation, we need the following information:

- Power
- Max. immersion length
- Voltage
- Surface load
- Thermostat yes / no

For the calculation of the tank heater, you will find a questionnaire and selection programme in the download section of our website www.hbe-hydraulics.com.

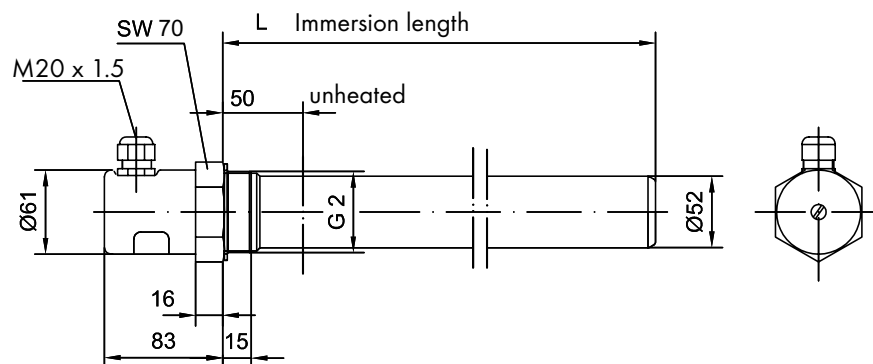
CARTRIDGE SCREWED-IN HEATERS

PTHK 90 - G 1 1/2"



Art. No.	Power [W]	L= Immersion depth [mm]
1705*	400	200
1707*	600	300
1709*	800	400
1711*	1000	500
1713*	1200	600
1715*	1400	700
1717	1600	800
1719	1800	900
1721	2000	1000
1723	2200	1100
1725	2400	1200
1727	2800	1400
1729	3200	1600
1731	3600	1800
1733	4000	2000

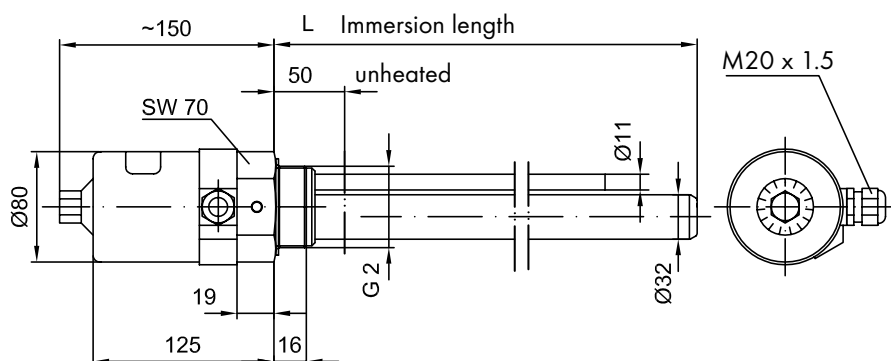
PTHK 90 - G 2"



Art. No.	Power [W]	L= Immersion depth [mm]
1750*	500	200
1752*	750	300
1754	1000	400
1756	1250	500
1758	1450	600
1760	1700	700
1762	1950	800
1764	2200	900
1766	2450	1000
1768	2700	1100
1770	2950	1200
1772	3450	1400
1774	3900	1600
1776	4400	1800
1778	4900	2000

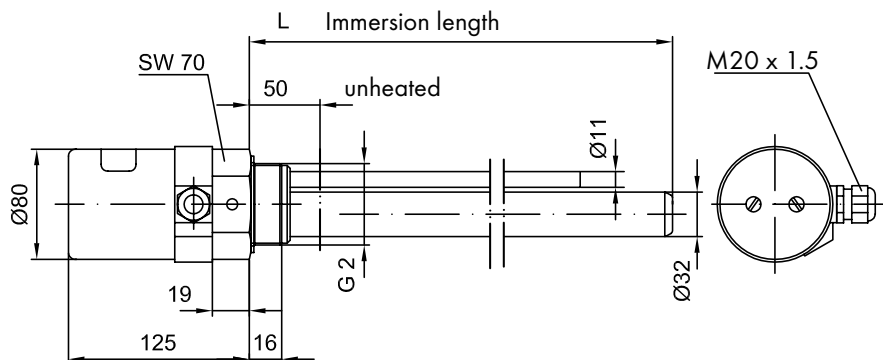
*Voltage two-phase max.

PTHK 92 - G 2" THA



Art. No.	Power [W]	L= Immersion depth [mm]
1800*	450	300
1802*	600	400
1804*	750	500
1806*	900	600
1808*	1050	700
1810	1200	800
1812	1350	900
1814	1500	1000
1816	1580	1100
1818	1730	1200
1820	1880	1300
1822	2030	1400
1824	2180	1500
1826	2330	1600

PTHK 92 - G 2" THI

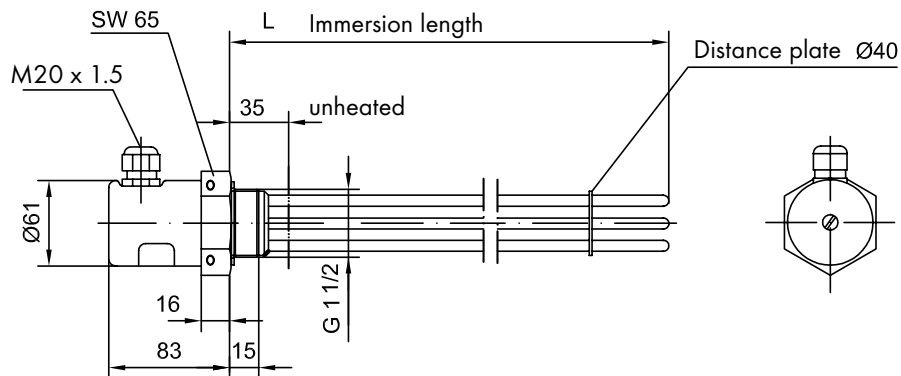


Art. No.	Power [W]	L= Immersion depth [mm]
1801*	450	300
1803*	600	400
1805*	750	500
1807*	900	600
1809*	1050	700
1811*	1200	800
1813	1350	900
1815	1500	1000
1817	1580	1100
1819	1730	1200
1821	1880	1300
1823	2030	1400
1825	2180	1500
1827	2330	1600

*Voltage two-phase max.

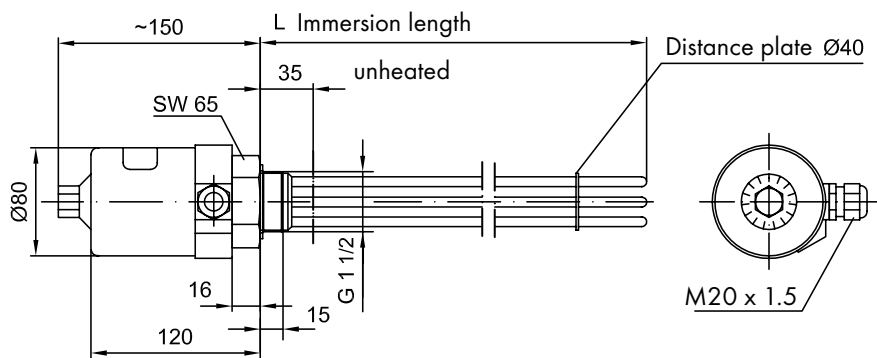
TUBE SCREWED-IN HEATERS

RHK - G 1 1/2"



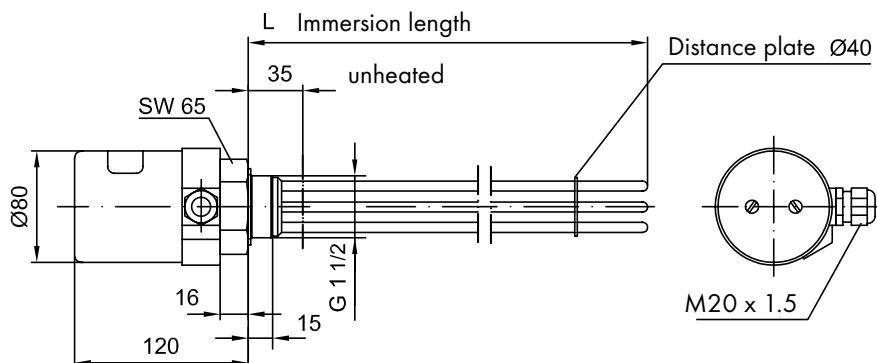
Art. No.	Power [W]	L= Immersion depth [mm]
1830*	380	200
1832*	500	250
1834	750	350
1836	990	450
1838	1450	650
1840	1825	800
1842	2300	1000

RHK - G 1 1/2" THA



Art. No.	Power [W]	L= Immersion depth [mm]
1860*	380	200
1862*	500	250
1864	750	350
1866	990	450
1868	1460	650
1870	1825	800
1872	2300	1000

RHK - G 1 1/2" THI



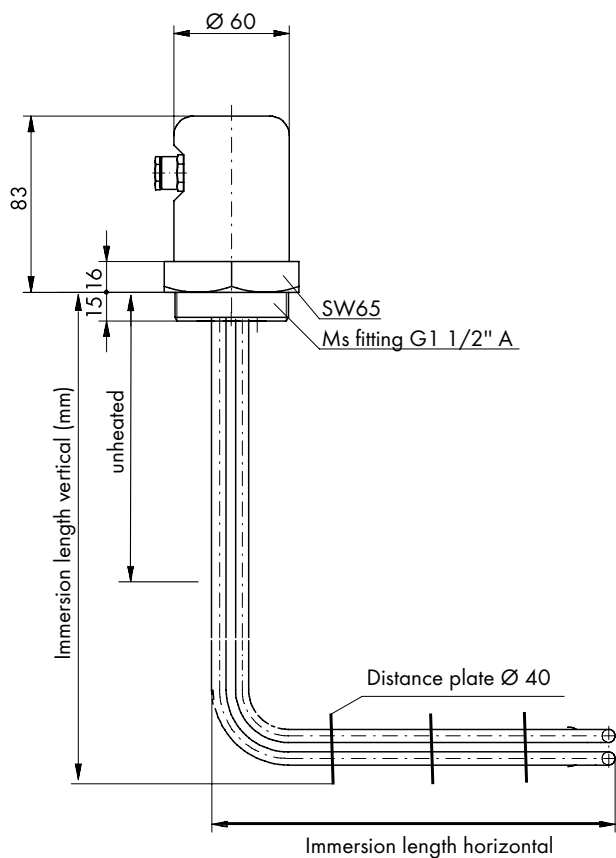
Art. No.	Power [W]	L= Immersion depth [mm]
1861*	380	200
1863*	500	250
1865	750	350
1867	990	450
1869	1460	650
1871	1825	800
1873	2300	1000

*Voltage two-phase max.

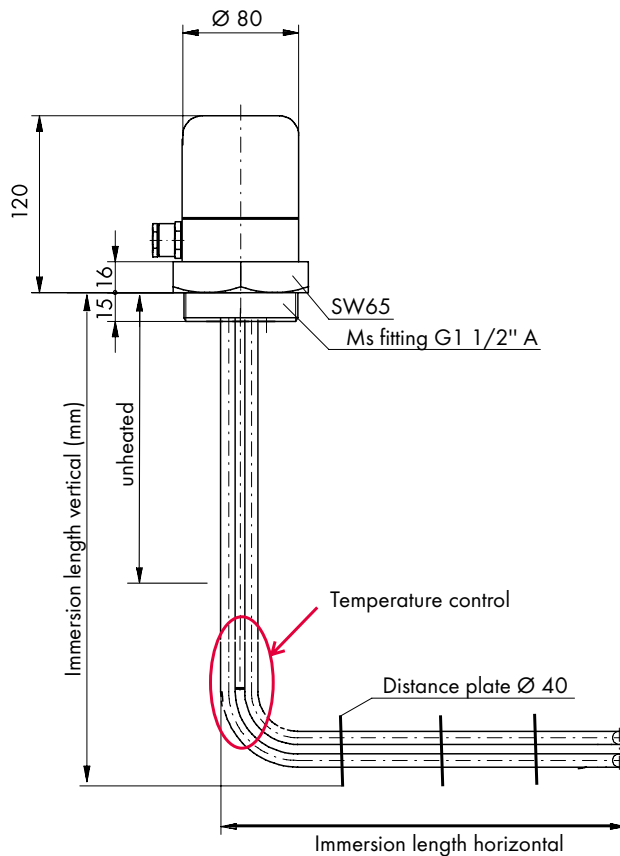
TUBE SCREWED-IN HEATERS – SHAPED

DIMENSIONS

STANDARD VERSION



VERSION WITH TEMPERATURE CONTROL (THI)



Art. No.		Power [W]	Length [mm]			No. of RHK
Standard	THI		vertical	horizontal	unheated	
1633*	1643*	260	265	300	250	1
1634*	1644*	370	320	430	300	1
1635*	1645*	800	365	490	350	2
1636*	1646*	1000	425	600	410	2
1637*	1647*	1200	480	740	460	2

*Voltage two-phase max.

OIL PRE-HEATER EDH

PRODUCT DESCRIPTION

- For the pre-heating of hydraulic oil, heating oil or other hard-inflammation agents
- The fluid to be heated is lead through a heating element bundle with the aid of baffles
- With pre-determined minimum flow rate a sufficient flow velocity is reached
- Thus, the carbonisation temperature is avoided

PRODUCT FEATURES

- The mounting position is either vertically or horizontally. Vertically: Provide electrical connection on top.
- Heating capacity 0 - 90 kW
- Thermostat: 0 - 90°C (without EDH-500)
- Temperature limiter at 100°C (without EDH-500)

RECOMMENDATIONS

- Installation of a flow control
- Avoid after-heating effect / Make sure that baffles are cooled down (let the medium flow further for app. 15 min after device is turned off)

TECHNICAL DATA

Caution: Incorrect installation can lead to damage to the oil pre-heater.



OPTION

- Surface charge: 1 W/cm²
- Water and water mixtures
- Temperature regulation (without EDH-500)

Maximum operating pressure = 16 bar

Higher operating pressures on request

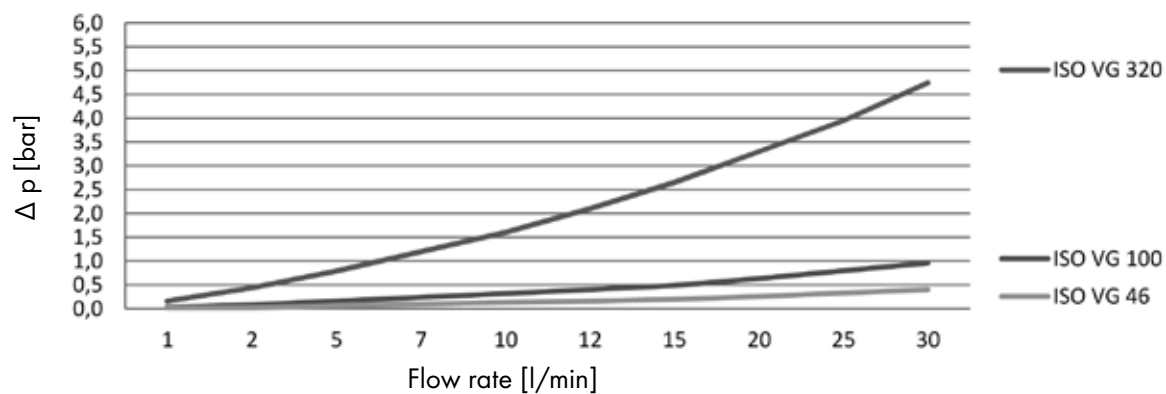
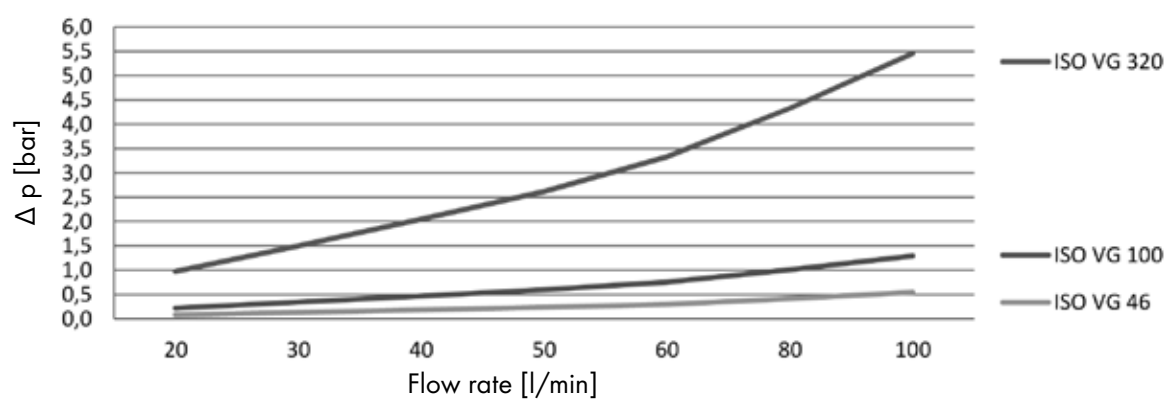
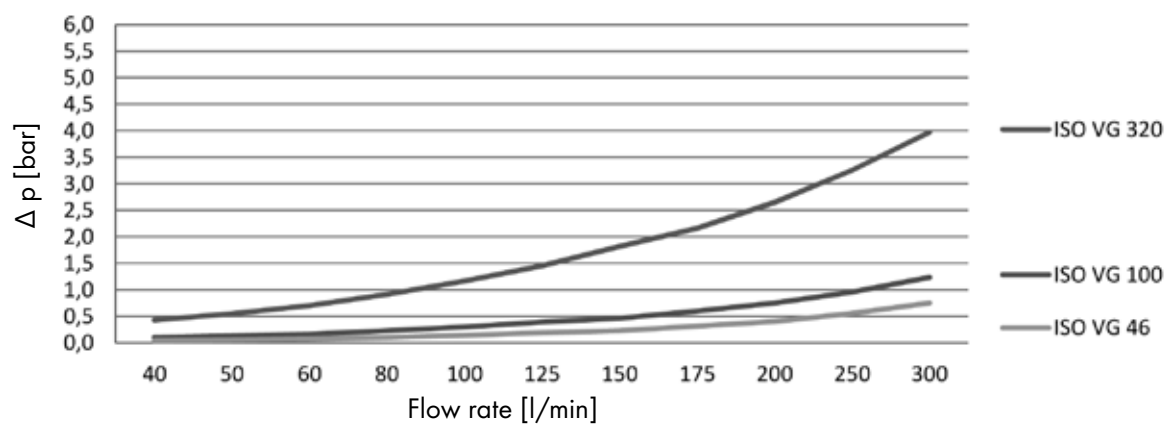
Operating temperature = 0 - 95°C

Size	Heating capacity [kW]	Surface charge [W/cm ²]	Minimum oil flow [l/min]	Recommended oil flow [l/min]	Thermostat [°C]	Differential [K]
EDH - 500	0.5 - 3	0.8 - 2	1	5	-	-
EDH - 700	2.5 - 5	1 - 2	20	30	0 - 90	2
EDH - 1000	5 - 10	1 - 2	40	50	0 - 90	2
EDH - 1200	7.5 - 30	1 - 2	60	75	0 - 90	2
EDH - 1700	22.5 - 90	1 - 2	80	100	0 - 90	2

For media with a viscosity of more than 1000 cSt, a surface charge of 1 W/cm² is recommended.

Order code						
Type		Size		Power		Voltage*
EDH	-	1036	-	10 kW	-	3 x 400 V

*Other voltages on request

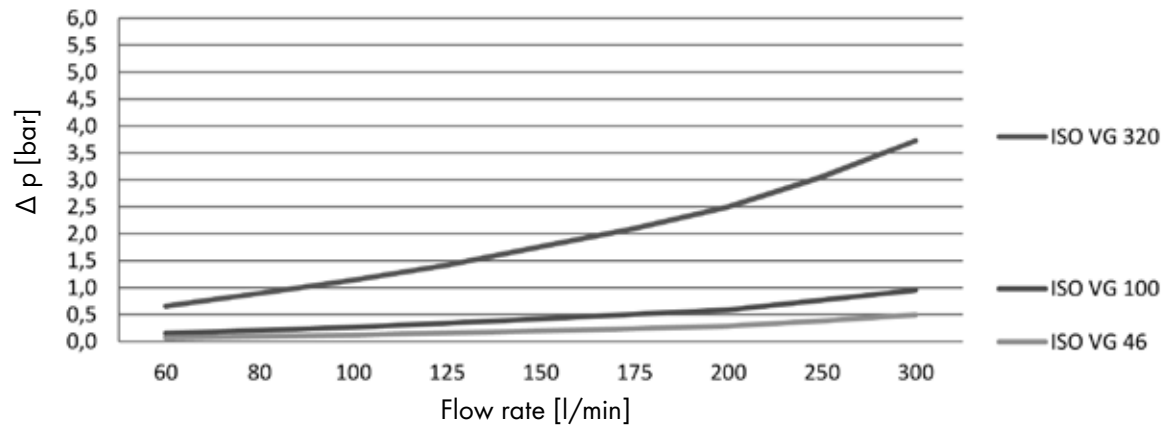
PERFORMANCE DATA***EDH 524-24-1,5kW****EDH 724-3-5kW****EDH 1036-5-10kW**

*The performance data are based on a medium intake temperature of 5°C and are theoretically determined with the VDI heat atlas.

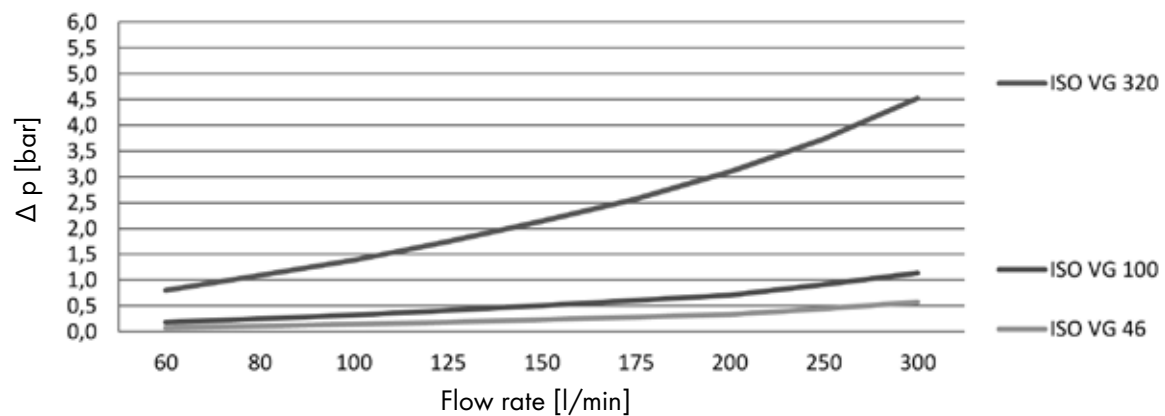
OIL PRE-HEATER EDH

PERFORMANCE DATA*

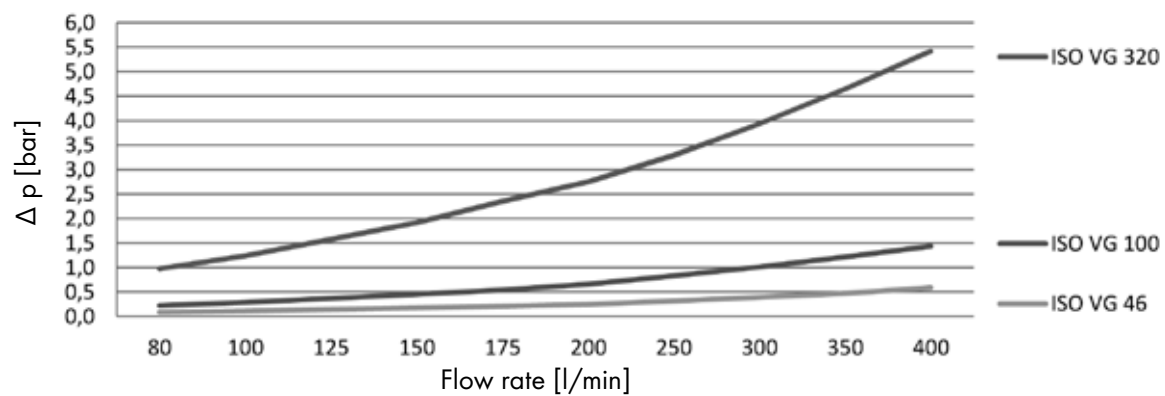
EDH 1236-5-15kW



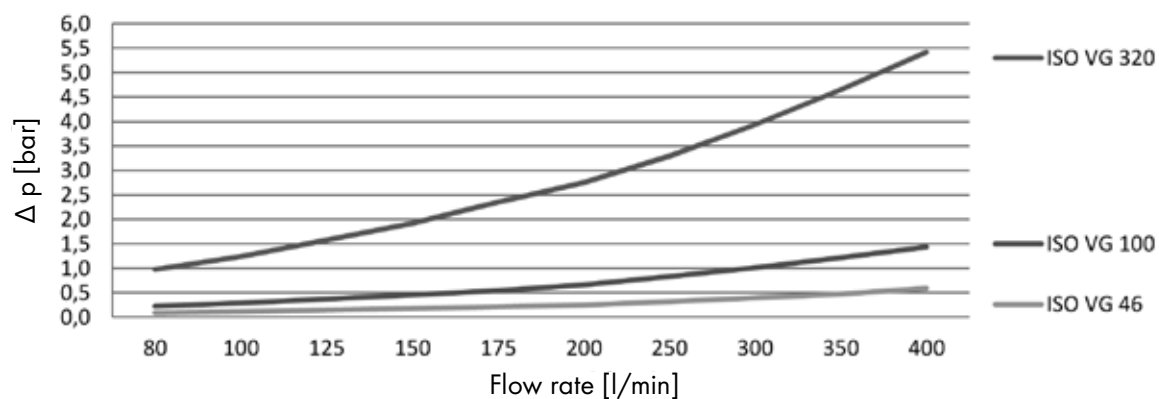
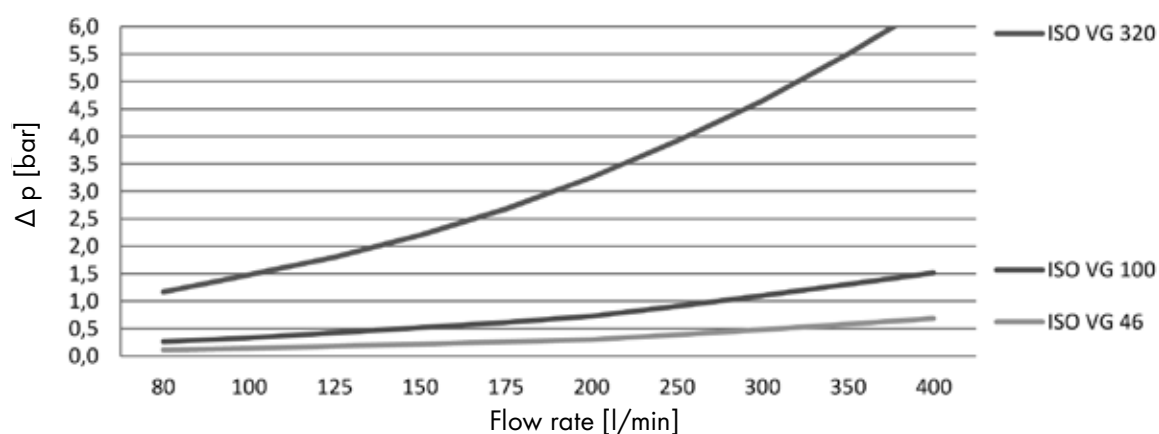
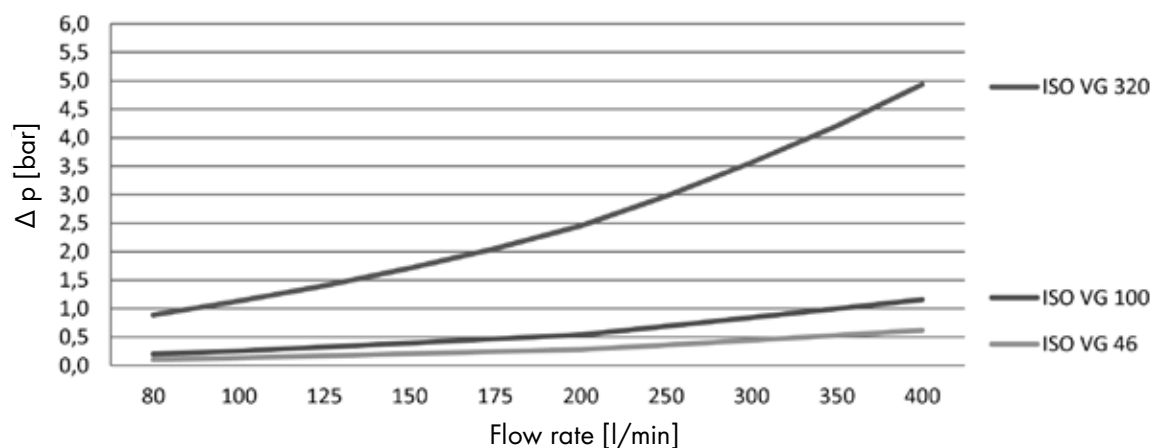
EDH 1248-5-20kW



EDH 1260-5-30kW



*The performance data are based on a medium intake temperature of 5°C and are theoretically determined with the VDI heat atlas.

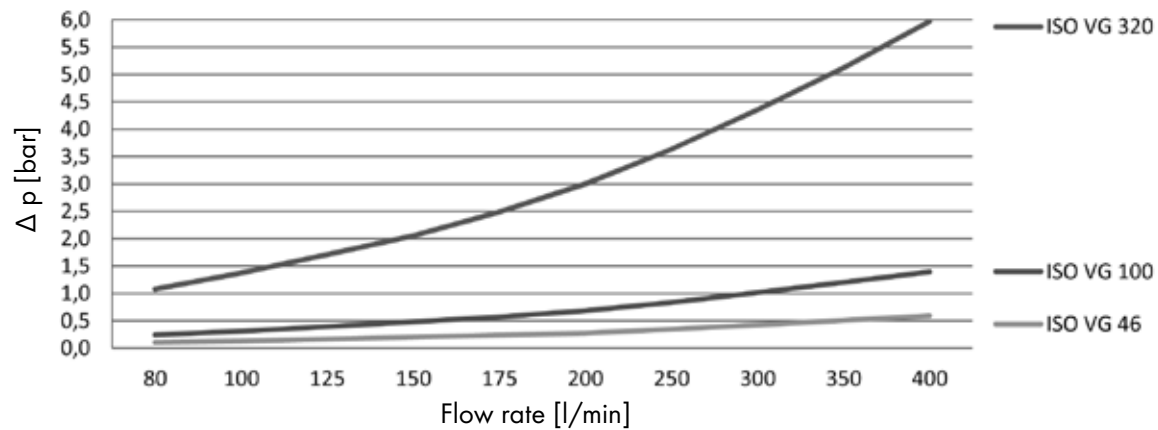
PERFORMANCE DATA***EDH 1748-5-45kW****EDH 1760-5-60kW****EDH 1772-8-75kW**

*The performance data are based on a medium intake temperature of 5°C and are theoretically determined with the VDI heat atlas.

OIL PRE-HEATER EDH

PERFORMANCE DATA*

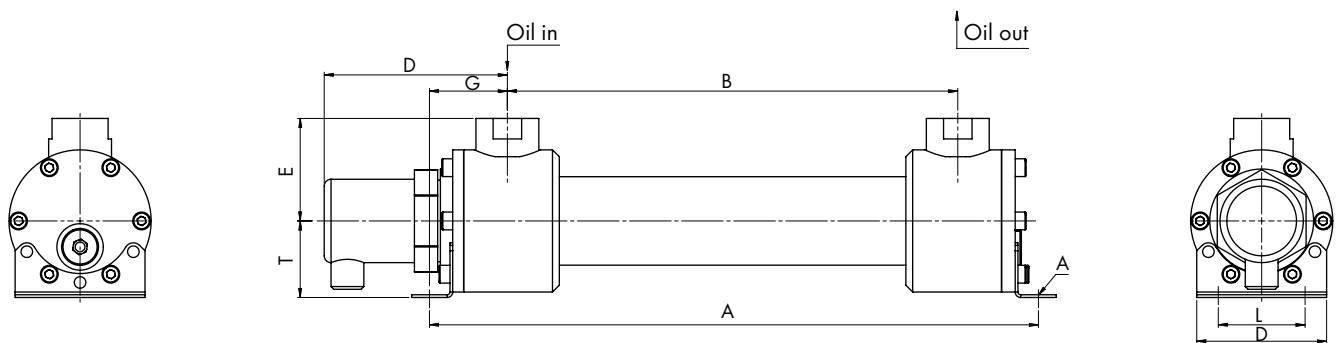
EDH 1784-7-90kW



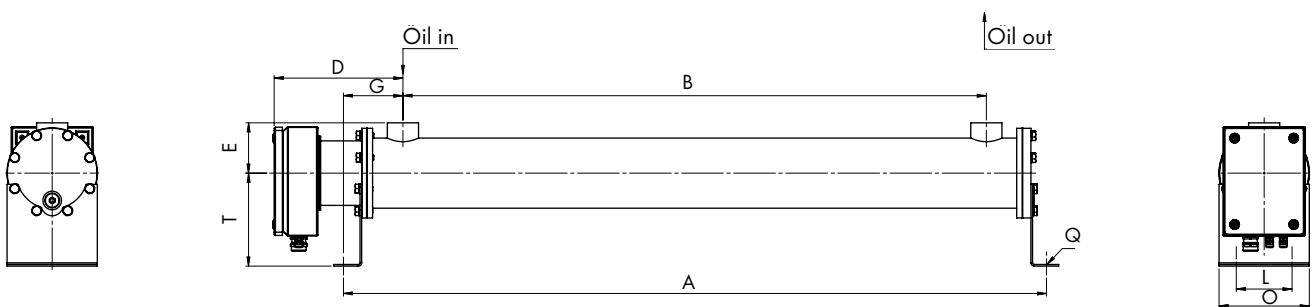
*The performance data are based on a medium intake temperature of 5°C and are theoretically determined with the VDI heat atlas.

DIMENSIONS

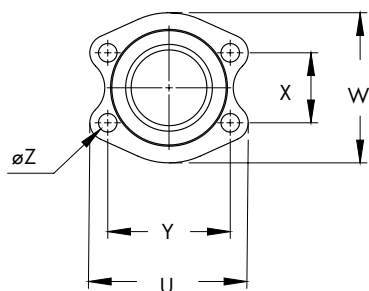
EDH 500



EDH 700/1000



Dimensions EDH [mm/BSPP]													Weight [kg]
	A	B	D	E	F	G	L	O	T	Q	X	Y	
EDH-514	446	329.5	134	75	G 1"	57	63.5	95	100	Ø 8.5 x 16	-	-	7
EDH-524	700	583.5	134	75	G 1"	57	63.5	95	100	Ø 8.5 x 16	-	-	8.5
EDH-536	1005	888.5	134	75	G 1"	57	63.5	95	100	Ø 8.5 x 16	-	-	10.5
EDH-724	670	483	225	73	G 1 1/2"	93	76	127	147	Ø 11 x 19	-	-	8
EDH-1036	990	766	235	92	G 1 1/2"	110	102	165	155	Ø 11 x 25	-	-	18
EDH-1236	970	707	260	145	SAE 1 1/2"	132	142	190	160	Ø 13 x 28	50.8	88.9	31
EDH-1248	1275	1012	260	145	SAE 1 1/2"	132	142	190	160	Ø 13 x 28	50.8	88.9	37
EDH-1260	1580	1317	260	145	SAE 1 1/2"	132	142	190	160	Ø 13 x 28	50.8	88.9	44
EDH-1748	1291	978	320	188	SAE 3"	157	178	210	226	Ø 16 x 38	62	106.4	76
EDH-1760	1596	1283	320	188	SAE 3"	157	178	210	226	Ø 16 x 38	62	106.4	90
EDH-1772	1900	1587	320	188	SAE 3"	157	178	210	226	Ø 16 x 38	62	106.4	104
EDH-1784	2205	1892	320	188	SAE 3"	157	178	210	226	Ø 16 x 38	62	106.4	118



Dimensions flange [mm]					
	U	Y	W	X	Z
SAE 1"	70	52.4	55	26.2	M10
SAE 1 1/4"	79	58.7	68	30.2	M10
SAE 1 1/2"	93	69.9	78	35.7	M12
SAE 2"	102	77.8	90	42.9	M12
SAE 2 1/2"	114	88.9	105	50.8	M12
SAE 3"	135	106.4	130.6	62	M16

OIL PRE-HEATER EDH

HEATING TIME OF A DEFINED OIL QUANTITY

The specified values are only for rough orientation.
Depending on the flow rate of the pump and the installation of the system small tolerances are possible.

Desired temperature increase (ΔT) = 10K								
Electrical heating power	Tank 50 l	Tank 100 l	Tank 250 l	Tank 500 l	Tank 750 l	Tank 1000 l	Tank 2000 l	Tank 5000 l
EDH-724 - 5 kW	< 10 min	10 min	20 min	35 min	1 h	1 h 15 min	2 h 30 min	6 h
EDH-1036 - 10 kW	< 5 min	< 10 min	10 min	20 min	30 min	35 min	1 h 15 min	3 h
EDH-1236 - 15 kW	< 5 min	< 5 min	< 10 min	15 min	20 min	25 min	45 min	2 h
EDH-1248 - 20 kW	< 5 min	< 5 min	< 10 min	10 min	15 min	20 min	35 min	1 h 30 min
EDH-1260 - 30 kW	< 5 min	< 5 min	< 5 min	< 10 min	10 min	15 min	25 min	1 h
EDH-1748 - 45 kW	< 5 min	< 5 min	< 5 min	< 10 min	< 10 min	10 min	20 min	45 min
EDH-1760 - 60 kW	< 5 min	< 5 min	< 5 min	< 10 min	< 10 min	< 10 min	15 min	30 min
EDH-1772 - 75 kW	< 5 min	< 5 min	< 5 min	< 10 min	< 10 min	< 10 min	10 min	25 min
EDH-1784 - 90 kW	< 5 min	< 5 min	< 5 min	< 10 min	< 10 min	< 10 min	< 10 min	20 min

Desired temperature increase (ΔT) = 20K								
Electrical heating power	Tank 50 l	Tank 100 l	Tank 250 l	Tank 500 l	Tank 750 l	Tank 1000 l	Tank 2000 l	Tank 5000 l
EDH-724 - 5 kW	10 min	20 min	40 min	1 h 10 min	2 h	2 h 30 min	5 h	12 h
EDH-1036 - 10 kW	< 10 min	10 min	20 min	40 min	1 h	1 h 10 min	2 h 30 min	6 h
EDH-1236 - 15 kW	< 10 min	< 10 min	15 min	30 min	40 min	50 min	1 h 30 min	4 h
EDH-1248 - 20 kW	< 5 min	< 10 min	10 min	20 min	30 min	40 min	1 h 10 min	3 h
EDH-1260 - 30 kW	< 5 min	< 10 min	< 10 min	15 min	20 min	30 min	50 min	2 h
EDH-1748 - 45 kW	< 5 min	< 5 min	< 10 min	10 min	15 min	20 min	40 min	1 h 30 min
EDH-1760 - 60 kW	< 5 min	< 5 min	< 10 min	< 10 min	10 min	15 min	30 min	1 h
EDH-1772 - 75 kW	< 5 min	< 5 min	< 10 min	< 10 min	< 10 min	10 min	20 min	50 min
EDH-1784 - 90 kW	< 5 min	< 5 min	< 10 min	< 10 min	< 10 min	< 10 min	15 min	40 min

Desired temperature increase (ΔT) = 30K								
Electrical heating power	Tank 50 l	Tank 100 l	Tank 250 l	Tank 500 l	Tank 750 l	Tank 1000 l	Tank 2000 l	Tank 5000 l
EDH-724 - 5 kW	15 min	30 min	1 h	1 h 45 min	3 h	3 h 45 min	7 h 30 min	18 h
EDH-1036 - 10 kW	< 10 min	15 min	30 min	1 h	1 h 30 min	1 h 45 min	3 h 45 min	9 h
EDH-1236 - 15 kW	< 10 min	< 15 min	20 min	45 min	1 h	1 h 15 min	2 h 15 min	6 h
EDH-1248 - 20 kW	< 5 min	< 10 min	15 min	30 min	45 min	1 h	1 h 45 min	4 h 30 min
EDH-1260 - 30 kW	< 5 min	< 10 min	< 15 min	20 min	30 min	45 min	1 h 15 min	3 h
EDH-1748 - 45 kW	< 5 min	< 10 min	< 10 min	15 min	20 min	30 min	1 h	2 h 15 min
EDH-1760 - 60 kW	< 5 min	< 5 min	< 10 min	< 15 min	15 min	20 min	45 min	1 h 30 min
EDH-1772 - 75 kW	< 5 min	< 5 min	< 10 min	< 15 min	< 15 min	15 min	30 min	1 h 15 min
EDH-1784 - 90 kW	< 5 min	< 5 min	< 10 min	< 10 min	< 15 min	< 15 min	25 min	1 h

Desired temperature increase (ΔT) = 40K								
Electrical heating power	Tank 50 l	Tank 100 l	Tank 250 l	Tank 500 l	Tank 750 l	Tank 1000 l	Tank 2000 l	Tank 5000 l
EDH-724 - 5 kW	20 min	40 min	1 h 20 min	2 h 20 min	4 h	5 h	10 h	24 h
EDH-1036 - 10 kW	10 min	20 min	40 min	1 h 20 min	2 h	2 h 20 min	5 h	12 h
EDH-1236 - 15 kW	< 10 min	< 20 min	30 min	1 h	1 h 20 min	1 h 40 min	3 h	8 h
EDH-1248 - 20 kW	< 10 min	10 min	20 min	40 min	1 h	1 h 20 min	2 h 20 min	6 h
EDH-1260 - 30 kW	< 10 min	< 10 min	15 min	30 min	40 min	1 h	1 h 40 min	4 h
EDH-1748 - 45 kW	< 5 min	< 10 min	10 min	20 min	30 min	40 min	1 h 20 min	3 h
EDH-1760 - 60 kW	< 5 min	< 10 min	< 10 min	15 min	20 min	30 min	1 h	2 h
EDH-1772 - 75 kW	< 5 min	< 10 min	< 10 min	< 15 min	< 20 min	20 min	40 min	1 h 40 min
EDH-1784 - 90 kW	< 5 min	< 10 min	< 10 min	< 15 min	< 20 min	< 20 min	30 min	1 h 20 min

OIL PRE-HEATER EDH

HEATING POWER (kW) IN RELATION OF FLOW RATE AND DESIRED TEMPERATURE INCREASE

Depending on the type of oil, small tolerances are possible.
(Please consider the minimum flow rates of the selected device.)

ΔT [K]	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min	75 l/min	100 l/min	125 l/min	150 l/min	175 l/min	200 l/min	300 l/min
1	0.39	0.77	1.16	1.54	1.93	2.89	3.85	4.81	5.78	6.74	7.70	11.55
2	0.77	1.54	2.31	3.08	3.85	5.78	7.70	9.63	11.55	13.48	15.40	23.10
3	1.16	2.31	3.47	4.62	5.78	8.66	11.55	14.44	17.33	20.21	23.10	34.65
4	1.54	3.08	4.62	6.16	7.70	11.55	15.40	19.25	23.10	26.95	30.80	46.20
5	1.93	3.85	5.78	7.70	9.63	14.44	19.25	24.06	28.88	33.69	38.50	57.75
6	2.31	4.62	6.93	9.24	11.55	17.33	23.10	28.88	34.65	40.43	46.20	69.30
7	2.70	5.39	8.09	10.78	13.48	20.21	26.95	33.69	40.43	47.16	53.90	80.85
8	3.08	6.16	9.24	12.32	15.40	23.10	30.80	38.50	46.20	53.90	61.60	92.40
9	3.47	6.93	10.40	13.86	17.33	25.99	34.65	43.31	51.98	60.64	69.30	103.95
10	3.85	7.70	11.55	15.40	19.25	28.88	38.50	48.13	57.75	67.38	77.00	115.50
11	4.24	8.47	12.71	16.94	21.18	31.76	42.35	52.94	63.53	74.11	84.70	127.05
12	4.62	9.24	13.86	18.48	23.10	34.65	46.20	57.75	69.30	80.85	92.40	138.60
13	5.01	10.01	15.02	20.02	25.03	37.54	50.05	62.56	75.08	87.59	100.10	150.15
14	5.39	10.78	16.17	21.56	26.95	40.43	53.90	67.38	80.85	94.33	107.80	161.70
15	5.78	11.55	17.33	23.10	28.88	43.31	57.75	72.19	86.63	101.06	115.50	173.25
16	6.16	12.32	18.48	24.64	30.80	46.20	61.60	77.00	92.40	107.80	123.20	184.80
17	6.55	13.09	19.64	26.18	32.73	49.09	65.45	81.81	98.18	114.54	130.90	196.35
18	6.93	13.86	20.79	27.72	34.65	51.98	69.30	86.63	103.95	121.28	138.60	207.90
19	7.32	14.63	21.95	29.26	36.58	54.86	73.15	91.44	109.73	128.01	146.30	219.45
20	7.70	15.40	23.10	30.80	38.50	57.75	77.00	96.25	115.50	134.75	154.00	231.00
21	8.09	16.17	24.26	32.34	40.43	60.64	80.85	101.06	121.28	141.49	161.70	242.55
22	8.47	16.94	25.41	33.88	42.35	63.53	84.70	105.88	127.05	148.23	169.40	254.10
23	8.86	17.71	26.57	35.42	44.28	66.41	88.55	110.69	132.83	154.96	177.10	265.65
24	9.24	18.48	27.72	36.96	46.20	69.30	92.40	115.50	138.60	161.70	184.80	277.20
25	9.63	19.25	28.88	38.50	48.13	72.19	96.25	120.31	144.38	168.44	192.50	288.75

ΔT [K]	10 l/min	20 l/min	30 l/min	40 l/min	50 l/min	75 l/min	100 l/min	125 l/min	150 l/min	175 l/min	200 l/min	300 l/min
26	10.01	20.02	30.03	40.04	50.05	75.08	100.10	125.13	150.15	175.18	200.20	> 300
27	10.04	20.79	31.19	41.58	51.98	77.96	103.95	129.94	155.93	181.91	207.90	> 300
28	10.78	21.56	32.34	43.12	53.90	80.85	107.80	134.75	161.70	188.65	215.60	> 300
29	11.17	22.33	33.50	44.66	55.83	83.74	111.65	139.56	167.48	195.39	223.30	> 300
30	11.55	23.10	34.65	46.20	57.75	86.63	115.50	144.38	173.25	202.13	231.00	> 300
31	11.94	23.87	35.81	47.74	59.68	89.51	119.35	149.19	179.03	208.86	238.70	> 300
32	12.32	24.64	36.96	49.28	61.60	92.40	123.20	154.00	184.80	215.60	246.40	> 300
33	12.71	25.41	38.12	50.82	63.53	95.29	127.05	158.81	190.58	222.34	254.10	> 300
34	13.09	26.18	39.27	52.36	65.45	98.18	130.90	163.63	196.35	229.08	261.80	> 300
35	13.48	26.95	40.43	53.90	67.38	101.06	134.75	168.44	202.13	235.81	269.50	> 300
36	13.86	27.72	41.58	55.44	69.30	103.95	138.60	173.25	207.90	242.55	277.20	> 300
37	14.25	28.49	42.74	56.98	71.23	106.84	142.45	178.06	213.68	249.29	284.90	> 300
38	14.63	29.26	43.89	58.52	73.15	109.73	146.30	182.88	219.45	256.03	292.60	> 300
39	15.02	30.03	45.05	60.06	75.08	112.61	150.15	187.69	225.23	262.76	> 300	> 300
40	15.40	30.80	46.20	61.60	77.00	115.50	154.00	192.50	231.00	269.50	> 300	> 300
41	15.79	31.57	47.36	63.14	78.93	118.39	157.85	197.31	236.78	276.24	> 300	> 300
42	16.17	32.34	48.51	64.68	80.85	121.28	161.70	202.13	242.55	282.98	> 300	> 300
43	16.56	33.11	49.67	66.22	82.78	124.16	165.55	206.94	248.33	289.71	> 300	> 300
44	16.94	33.88	50.82	67.76	84.70	127.05	169.40	211.75	254.10	296.45	> 300	> 300
45	17.33	34.65	51.98	69.30	86.63	129.94	173.25	216.56	259.88	> 300	> 300	> 300
46	17.71	35.42	53.13	70.84	88.55	132.83	177.10	221.38	265.65	> 300	> 300	> 300
47	18.10	36.19	54.29	72.38	90.48	135.71	180.95	226.19	271.43	> 300	> 300	> 300
48	18.48	36.96	55.44	73.92	92.40	138.60	184.80	231.00	277.20	> 300	> 300	> 300
49	18.87	37.73	56.60	75.46	94.33	141.49	188.65	235.81	282.98	> 300	> 300	> 300
50	19.25	38.50	57.75	77.00	96.25	144.38	192.50	240.63	288.75	> 300	> 300	> 300





BELLHOUSINGS AND ACCESSORIES

**BELLHOUSINGS
AND ACCESSORIES**

BELLHOUSINGS AND ACCESSORIES



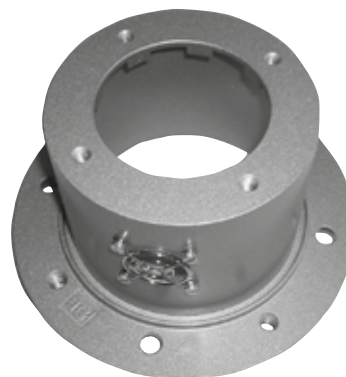
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ROUND BELLHOUSINGS AND ACCESSORIES

PRODUCT DESCRIPTION

- Connection elements for centring between electric motor and hydraulic pump
- For all hydraulic pumps available at short notice
- Both mounting sides are finished
- Horizontal and vertical application possible
- Material: aluminium
- Other materials on request; please also see page 92



RIGID BELLHOUSINGS

ACC. TO VDMA 24561 FORM A

- Space saving storage due to stackability

Order code rigid bell housings					
Type	Size		Length		Boring
PR	250	/	124	/	433/1

BELLHOUSINGS WITH DAMPING FLANGE

ACC. TO VDMA 24561 FORM B

- Reduction of noise level of the pump / motor unit up to 8 dB (A) possible, depending on pump construction
- Standard bellhousing made of aluminium, damping flanges made of aluminium / perbunan vulcanised
- No metallic connection
- Resistance: mineral oil max. 80°C



Order code bell housings with damping flange						
Type	Size		Length		Size DF	Boring
PR	450	/	234	/	DF 300	...

BELLHOUSINGS FOR RECTANGULAR PUMP CONNECTIONS

- For all common external gear pumps
- Also available with damping flange, please see page 88

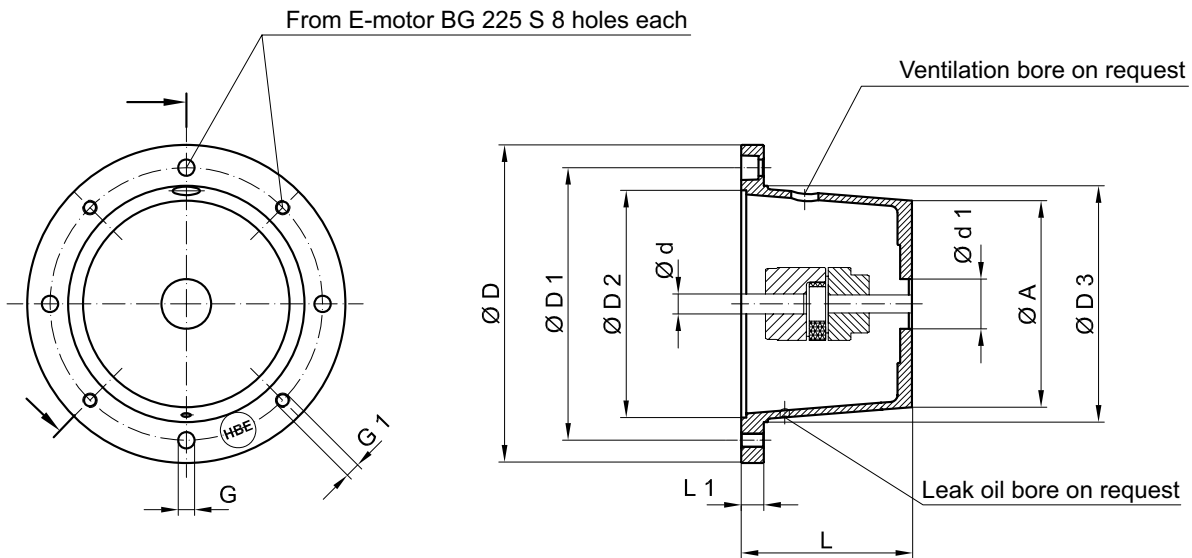


Order code bell housings for rectangular pump connections					
Type	Size		Length		Boring
PE (PRE)	250	/	115	/	20

Our selection software for a precise bellhousing design is available free of charge here:
<https://login.hbe-hydraulics.com>.

RIGID BELLHOUSINGS ACC. TO VDMA 24561 FORM A

FOR ELECTRIC MOTORS FRAME IMB 5-IMB 35-IM V1



IEC motor size shaft (d x L)	kW at n=1500 min ⁻¹	Bellhousing	Foot flange	Gasket	Dimensions [mm]									
		Type	Type	Type	Motor side								Pump side	
					Ø D	Ø D1	Ø D2	Ø D3	L	L1	G	G1	Ø A	d1 _{min}
63 (11 x 23)	0.12-0.18	PR 140/95/...	-	D 140 GK	140	115	95	95	95	15	9	M8	90	25
		PR 140/105/...							105	25				
		PR 140/115/...							115	35				
71 (14 x 30)	0.25-0.37	PR 160/70/...*	PTFL 160	D 160 GK	160	130	110	110	70	13	9	M8	107	20
		PR 160/80/...*							80	13			106	20
		PR 160/90/...*							90	13			105	20
		PR 160/100/...							100	19			104	39
		PR 160/115/...							115	34			104	39
		PR 163/ 80-95/...**							80- 95	19- 34			164	60
		PR 163/ 100-115/...**							100- 115	19- 34			164	60
80 (19 x 40) 90 S + L (24 x 50)	0.55-0.75	PR 200/80/...	PTFL 200 PTFS 200	D 200 GK	200	165	130	145	80	16	11	M10	128	21
		PR 200/90/...							90				127	25
		PR 200/100/...*							100				127	25
		PR 200/110/...*							110				126	25
		PR 200/118/...*							118				126	25
		PR 200/124/...*							124				125	25
		PR 200/135/...							135				125	25
	1.1-1.5	PR 200/140/...*							140				125	25
		PR 203/105/...**							105				170	96
		PR 203/115/...**							115				170	96
		PR 203/124/ ... VDMA**							124				170	96
		PR 203/140/ ... VDMA**							140				170	96
		PR 203/148/...**							148				170	96

*Design acc. to VDMA

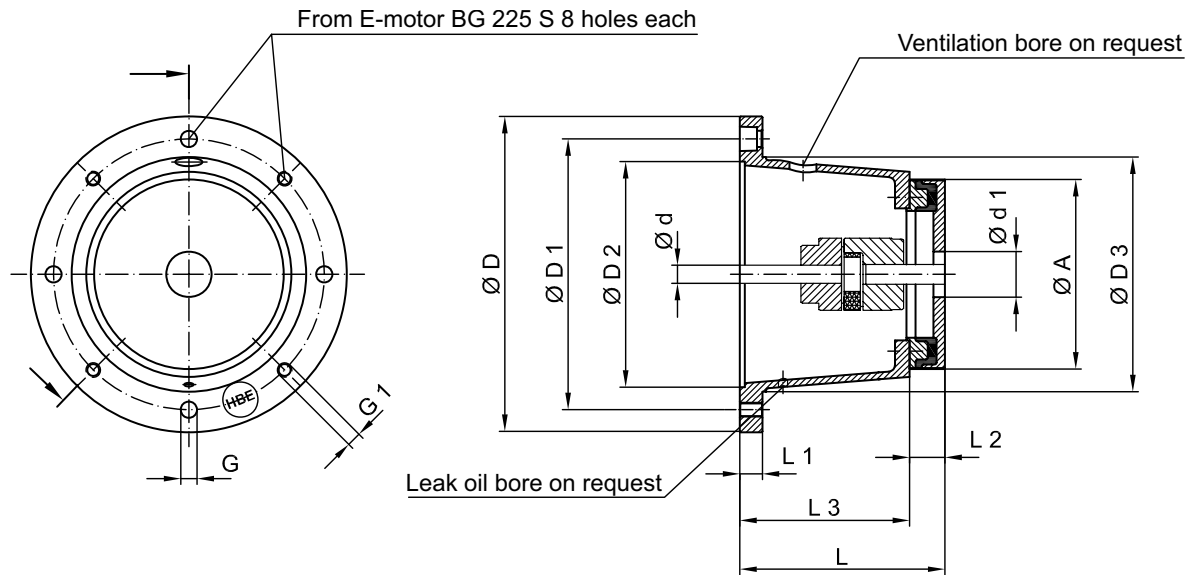
**for horizontal installation only

IEC motor size shaft (d x L)	kW at n = 1500 min ⁻¹	Bellhousing	Foot flange	Gasket	Dimensions [mm]									
		Type	Type	Type	Motor side								Pump side	
					ø D	ø D1	ø D2	ø D3	L	L1	G	G1	ø A	d1 _{min}
100 L 112 M (28 x 60)	2.2-4	PR 250/115/...	PTFL 250 PTFS 250	D 250 GK	250	215	180	190	115	19	14	M12	178	24
		PR 250/120/...*							120				178	24
		PR 250/124/...*							124				177	42
		PR 250/128/...*							128				177	42
		PR 250/135/...*							135				177	42
		PR 250/148/...*							148				176	58
		PR 250/175/...*							175				175	58
132 S+M (38 x 80)	5.5-7.5	PR 300/144/...*	PTFL 300 PTFS 300	D 300 GK	300	265	230	234	144	20	14	M12	224	35
		PR 300/150/...*							150				223	43
		PR 300/155/...*							155				223	50
		PR 300/168/...*							168				222	60
		PR 300/196/...*							196				220	77
		PR 300/210/...							210	34			220	77
160 M+L (42 x 110) 180 M+L (48 x 110)	11-15	PR 350/173/...	PTFL 350 PTFS 350	D 350 GK	350	300	250	260	173	25	18	M16	241	35
		PR 350/188/...*							188				238	50
		PR 350/204/...*							204				237	56
	18.5-22	PR 350/228/...*							228				240	77
		PR 350/256/...*							256				240	97
200 L (55 x 110)	30	PR 400/188/...*	PTFS 400	D 400 GK	400	350	300	300	188	25	18	M16	270	35
		PR 400/204/...*							204				267	60
		PR 400/228/...*							228				263	77
		PR 400/256/...*							256				258	97
		PR 400/271/...							271	40			258	97
225 S+M (60 x 140)	37-45	PR 450/217/...	PTFS 450	D 450 GK	450	400	350	350	217	25	18	M16	300	47
		PR 450/222/...							222				299	50
		PR 450/234/...*							234				296	50
		PR 450/240/...							240				295	80
		PR 450/262/...*							262				290	100
		PR 450/285/...*							285				286	100
		PR 450/315/...*							315				280	100
250 M (65 x 140) 280 S+M (75 x 140)	55	PR 550/230/...	PTFS 550	D 550 GK	550	500	450	450	230	25	18	M16	362	50
		PR 550/248/...*							248				359	100
		PR 550/265/...*							265				356	100
	75-90	PR 550/275/...*							275				354	120
		PR 550/295/...*							295				350	120
		PR 550/315/...*							315				347	120
315 S+M 315 L (80 x 170)	110-200	PR 660/310/...*	PTFS 660	D 660 GK	660	600	550	550	310	32	22	M20	425	120
		PR 660/330/...*							330				416	120
		PR 660/345/...*							345				410	120
355 L/ 400 L (100 x 210)	250-400	PR 800/315/...	-	-	800	740	680	660	315	50	22	M20	443	145
		PR 800/360/...							360				425	120
		PR 800/380/...							380				416	120
		PR 800/395/...							395				410	120

*Design acc. to VDMA

BELLOUSINGS WITH DAMPING FLANGE ACC. TO VDMA 24561 FORM B

FOR ELECTRIC MOTORS FRAME IMB 5-IMB 35-IM V1



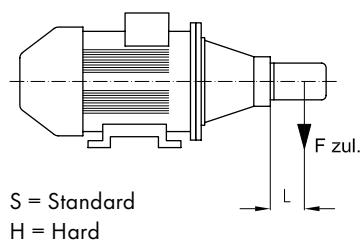
IEC motor size shaft (d x L)	kW at n= 1500 min ⁻¹	Bellhousing and damping flange	Foot flange	Gasket	Dimensions [mm]												Pump side	
					Motor side													
		Type	Type	Type	ø D	ø D1	ø D2	ø D3	L	L3	L2	L1	G	G1	ø A	d1 _{min}		
80 (19 x 40) 90 S + L (24 x 50)	0.55 – 0.75	PR 200/100 DF 200/…*	PTFL 200 PTFS 200	D 200 GK	200	165	130	145	100	70		16	9	M8	139	31		
		PR 200/110 DF 200/…*							110	80		16						
	1.1 – 1.5	PR 200/118 DF 200/…*							118	88	30	14						
		PR 200/124 DF 200/…*							124	94		30						
		PR 200/140 DF 200/…*							140	110		16						
100 L 112 M (28 x 60)	2.2 – 4	PR 250/120 DF 250/…*	PTFL 250 PTFS 250	D 250 GK	250	215	180	190	120	85	35	25	14	M12	186	32		
		PR 250/124 DF 200/…*							124	94	30	18			139	31		
		PR 250/128 DF 250/…*							128	93	35	19			186	32		
		PR 250/135 DF 250/…*							135	100	35	19			186	32		
		PR 250/148 DF 200/…*							148	120	28	19			139	31		
		PR 250/148 DF 250/…*							148	115	33	19			186	32		
		PR 250/175 DF 250/…*							175	140	35	18			186	32		
132 S+M (38 x 80)	5.5 – 7.5	PR 300/144 DF 250/…*	PTFL 300 PTFS 300	D 300 GK	300	265	230	234	144	109	35	20	14	M12	186	32		
		PR 300/150 DF 200/…*							150	120	30				139	31		
		PR 300/150 DF 250/…*							150	115	35				186	32		
		PR 300/155 DF 250/…*							155	120	35				186	32		
		PR 300/155 DF 300/…*							155	115	40				222	32		
		PR 300/168 DF 250/…*							168	133	35				186	32		
		PR 300/195 DF 300/…*							195	155	40				222	32		

*Design acc. to VDMA

IEC motor size shaft (d x L)	kW at n=1500 min ⁻¹	Bellhousing and damping flange	Foot flange	Gasket	Dimensions[mm]												
					Motor side											Pump side	
		Type	Type	Type	ø D	ø D1	ø D2	ø D3	L	L3	L2	L1	G	G1	ø A	d1 _{min}	
160 M+L (42 x110)	11–15	PR 350/188 DF 250/*	PTFL 350 PTFS 350	D 350 GK	350	300	250	260	188	153	35	25	18	M16	186	32	
		PR 350/204 DF 300/*							204	164	40				222	32	
		PR 350/228 DF 300/*							228	188	40				222	32	
		PR 350/256 DF 350/*							256	211	45				258	46	
200 L (55 x110)	30	PR 400/204 DF 300/*	PTFS 400	D 400 GK	400	350	300	300	204	164	40	25	18	M16	222	32	
		PR 400/228 DF 300/*							228	188	40				222	32	
		PR 400/256 DF 350/*							256	211	45				258	46	
225 S+M (60 x140)	37–45	PR 450/234 DF 300/*	PTFS 450	D 450 GK	450	400	350	350	234	194	40	25	18	M16	222	32	
		PR 450/262 DF 300/*							262	222	40				222	32	
		PR 450/262 DF 350/*							262	217	45				258	46	
		PR 450/285 DF 350/*							285	240	45				258	46	
		PR 450/315 DF 350/*							315	270	45				258	46	
250 M (65 x140) 280 S (75 x140)	55	PR 550/248 DF 350/*	PTFS 550	D 550 GK	550	500	450	450	248	203	45	25	18	M16	258	46	
		PR 550/265DF 250/*							265	230	35				186	32	
		PR 550/265 DF 350/*							265	220	45				258	46	
		PR 550/275 DF 350/*							275	230	45				258	46	
	75–90	PR 550/275 DF 400/*							275	215	60				365	120	
		PR 550/293 DF 350/*							293	248	45				258	46	
		PR 550/315 DF 300/*							315	275	40				222	32	
		PR 550/315 DF 350/*							315	270	45				258	46	
315 S+M 315 L (80 x170)	110–200	PR 660/310 DF 350/*	PTFS 660	D 660 GK	660	600	550	550	310	265	45	32	22	M20	258	46	
		PR 660/330 DF 350/*							330	285	45				258	46	
		PR 660/345 DF 350/*							345	300	45				258	46	
		PR 660/345 DF 400/*							345	285	60				365	120	
355 L/400 L (100 x 210)	250–400	PR 800/360 DF 350/*	–	–	800	740	680	680	360	315	45	50	22	M20	258	46	
		PR 800/375 DF 400/*							375	315	60				365	120	
		PR 800/380 DF 350/*							380	335	45				258	46	
		PR 800/395 DF 400/*							395	335	60				365	120	
		PR 800/410 DF 400/*							410	350	60				365	120	

*Design acc. to VDMA

RADIAL WEIGHT LOAD



$$F_{zul.} = \frac{(F[N] \times L)}{\text{effective SPA}^{**}}$$

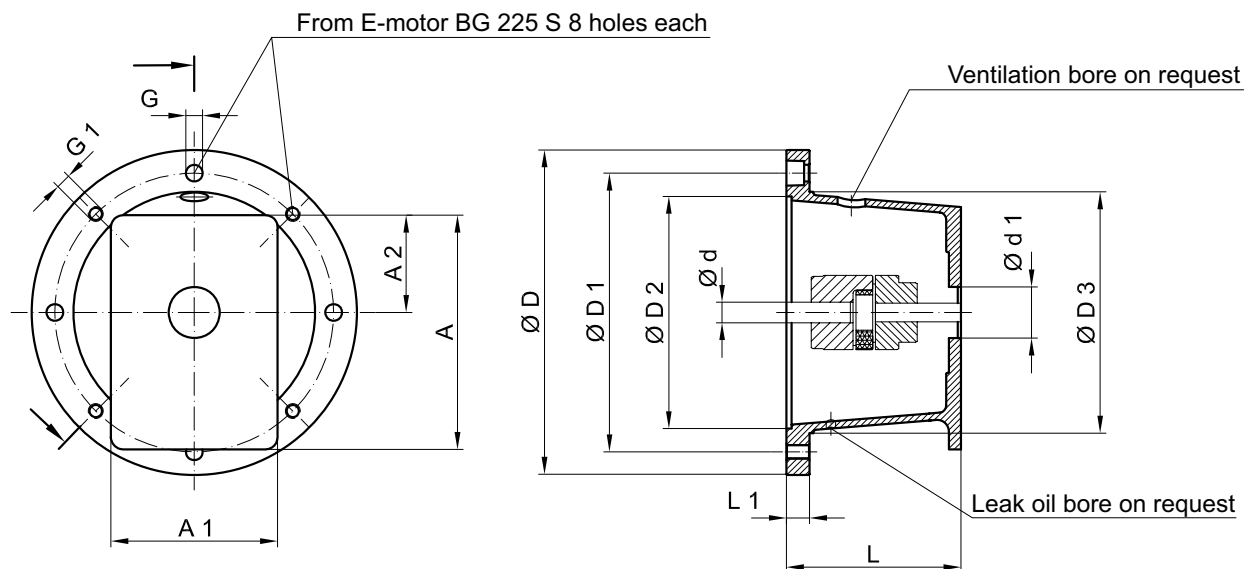
Damping flange	DF 200/...		DF 250/16		DF 300/32		DF 350/63		DF 400/84	
	S	H	S	H	S	H	S	H	S	H
Centroidal distance for radial load L [mm]	70		100		100		200		200	
Permittable weight load $F_{zul.}$ [N] ***	300	400	1100	1300	1600	1900	1400	2000	3000	4000

** Centroidal distance

*** for operating temperature up to 60°C

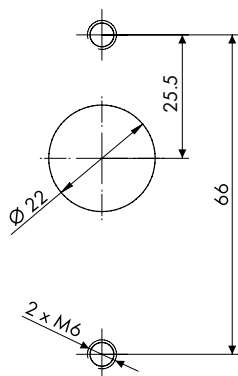
BELLHOUSINGS FOR RECTANGULAR PUMP CONNECTIONS

IEC motor size shaft (d x L)	kW at n= 1500 min ⁻¹	Frame	Bellhousing	Foot flange	Gasket	Dimensions [mm]													
						Motor side								Pump side					
			Type	Type	Type	øD	øD1	øD2	øD3	L	L1	G	G1	ø A	ø A1	ø A2	d1 _{min}		
63 (11 x 23)	0.12-0.18	IMB 14	PE 90/60/...	-	-	90	75	60	62	60	10	-	7	90	69	34	22		
			PE 120/85/...			120	100	80	80	85	12	-		87	67	32	22		
			IMB 5			PE 140/60/...	140	115	95	100	60	11		9	M8	90	69	34	22
71 (14 x 30)	0.25-0.37	IMB 14	PE 105/70/...	-	D 140	105	85	70	70	70	10	9	7	90	69	34	22		
			PE 140/95/...			140	115	95	100	95	12		9	9	90	69	34	22	
		IMB 5	PTFL 160	D 160	160	130	110	110	70	13	9	M8	90	66	34	20			
									PE 160/95/...	95			14	120	90	45	21		
80 (19 x 40)	0.55-0.75	IMB 14	PE 120/85/...	-	-	120	100	80	80	85	12	-	7	120	67	32	22		
			PRE 160/80/...							80	13			90	66	34	20		
			PE 160/95/...							160	130			110	110	95	14	9	9
		IMB 5	PTFL 200 PTFS 200	D 200	200	165	130	145	80	16	11	M10	Ø 128			21			
									PE 200/95/...	95			15	118	86	43	36.5		
									PE 200/126/...	126			16	11	180	158	65	50.8	
90 S+L (24 x 50)	1.1-1.5	IMB 14	PE 140/95/...	-	D 140	140	115	95	100	95	12	9	9	120	90	45	25.4		
			PRE 160/90/...							90	13			9	9	90	66	34	20
			PE 160/105/...							105	24			120	90	45	21		
		IMB 5	PTFL 200 PTFS 200	D 200	200	165	130	145	90	16	11	M10	Ø 127			25			
									PE 200/126/...	126			16	M11	180	158	65	50.8	
100 L 112 M (28 x 60)	2.2-4	IMB 14	PE 160/108/...	PTFL 160	D 160	160	130	110	110	108	27	9	9	120	90	45	21		
		IMB 5	PRE 250/115/...	PTFL 250 PTFS 250	D 250	250	215	180	190	115	19	14	M12	Ø 178			24		
132 S+M (38 x 80)	5.5-7.5	IMB 5	PRE 300/144/...	PTFL 300 PTFS 300	D 300	300	265	230	234	144	20		M12	Ø 224			36.5		
			PE 300/2/143							143	21	180		158	62	50.8			
160 M+L (42 x 110) 180 M+L (48 x 110)	11-15	IMB 5	PRE 350/173/...	PTFL 350 PTFS 350	D 350	350	300	250	260	173	25	18	M16	Ø 241			35		
	18.5-22		PRE 350/197/...							197				230	175	77	60		
200 L (55 x 110)	30	IMB 5	PRE 400/188/...	PTFS 400	D 400	400	350	300	300	188	25	18	M16	Ø 270			35		
225 S+M (60 x 140)	37-45	IMB 5	PRE 450/217/...	PTFS 450	D 450	450	400	350	350	217	25	18	M16	Ø 300			47		
			PRE 450/234/...							234				Ø 296			50		
250 M (65 x 140) 280 S+M (75 x 140)	55 75-90	IMB 5	PRE 550/230/...	PTFS 550	D 550	550	500	450	450	230	26	18	M 16	Ø 362			50		

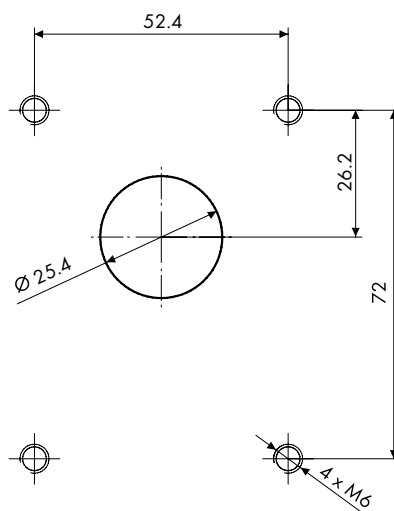


DIMENSIONS PUMP FACE CODE FOR GEAR PUMPS

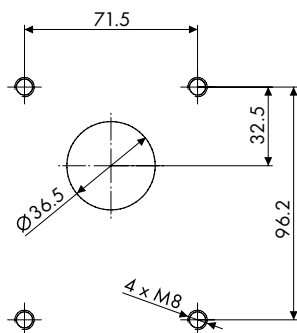
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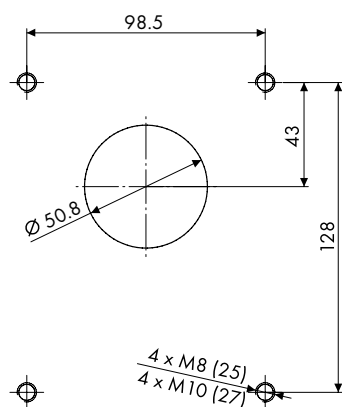
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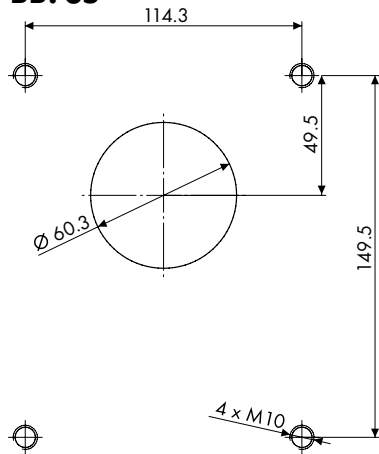
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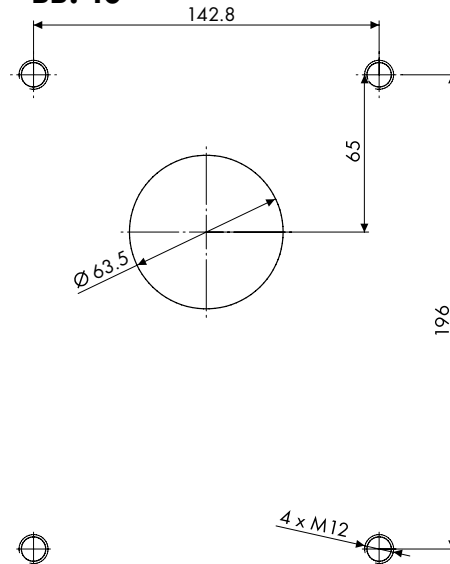
BELLHOUSINGS FOR RECTANGULAR PUMP CONNECTIONS

DIMENSIONS PUMP FACE CODE FOR GEAR PUMPS

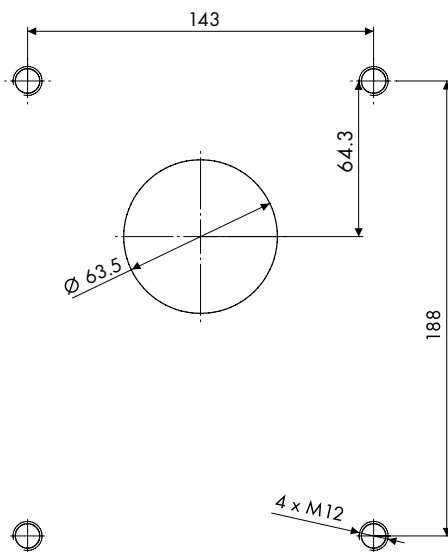
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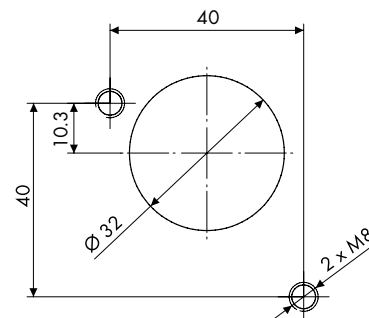
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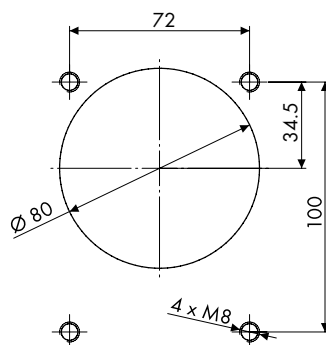
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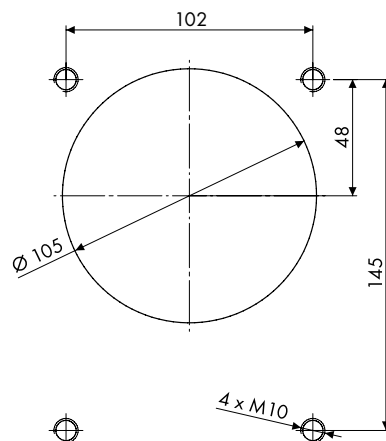
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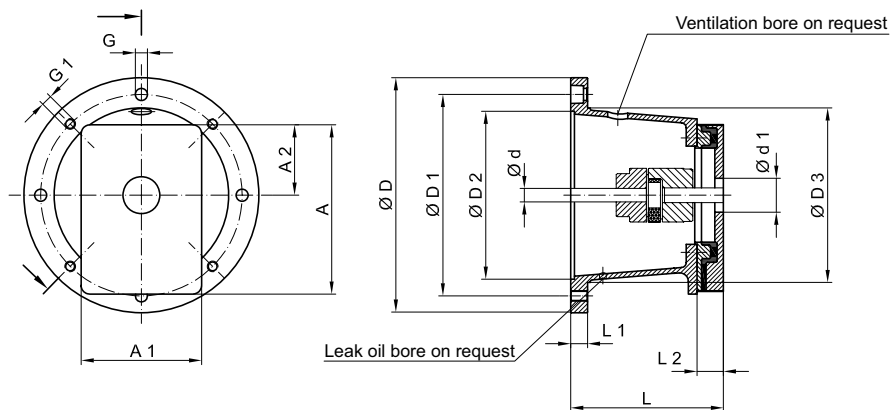
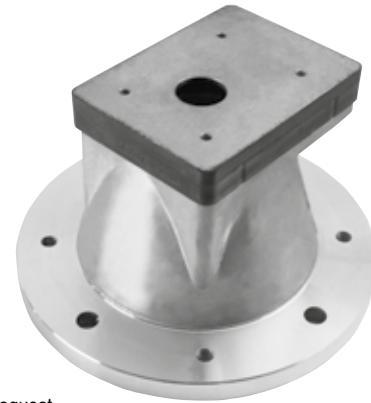
BASIC PROGRAMME BELLHOUSINGS FOR GEAR PUMPS

Type	Possible rectangular pump face code									
	5	10	20	25/27	35	40	45	60	70	80
PE 90/60/...	•	•						•		
PE 105/70/...	•	•						•		
PE 120/85/...	•	•	•					•		
PE 140/60/...	•	•						•		
PE 140/95/...	•	•	•					•	•	
PRE 160/70/...	•	•						•		
PRE 160/80/...	•	•						•		
PRE 160/90/...		•						•		
PE 160/95/...			•						•	
PRE 200/80/...	•	•						•		
PRE 200/90/...		•						•		
PE 200/95/...									•	
PE 200/100/...			•						•	
PRE 200/100/...		•								
PE 200/126/...				•						•
PRE 250/110/...		•	•					•		
PRE 250/115/...		•	•	•				•	•	
PRE 300/144/...			•	•					•	
PRE 350/173/...			•	•	•				•	•
PRE 350/197/...					•	•	•			•
PRE 400/188/...					•					•
PRE 450/217/...					•					•
PRE 450/234/...										•
PRE 550/230/...					•	•	•			•

RECTANGULAR BELLHOUSINGS WITH DAMPING FLANGE DF-ZRP

PRODUCT DESCRIPTION

- Reduction of noise level of the pump / motor unit up to 5 dB (A) possible, depending on pump construction
- Standard bellhousing made of aluminium, damping flange made of aluminium / perbunan vulcanised
- No metallic connection
- Horizontal and vertical application possible
- Resistance: mineral oil max. 80°C

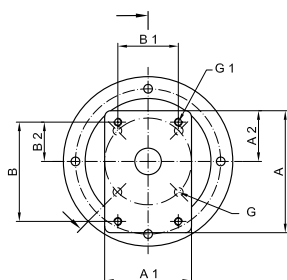


Order code							
Type	Size		Total length		DF type		Pump face code
PE	250	/	124	/	DFZRP	/	433/1

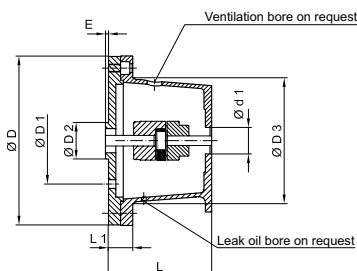
IEC motor size shaft (d x L)	kW at n=1500 min ⁻¹	Frame	Bell-housing and damping flange	Foot flange	Gasket	Dimensions [mm]												
						Motor side										Pump side		
			Type	Type	Type	ØD	ØD1	ØD2	ØD3	L	L1	L2	G	G1	ØA	ØA1	ØA2	d1 _{min}
71 (14 x 30)	0.25-0.37	IMB 5 IMV 1	PRE 160/90 DFZRP/...	PTFL 160	D 160GK	160	130	110	110	90	13	20	9	M8	121	92	46	22
80 (19 x 40)	0.55-0.75	IMB 14	PRE 160/90 DFZRP/...	PTFL 160	D 160 GK	160	130	110	110	90	14		9	9				
		IMB 5 IMV 1	PRE 200/100 DFZRP/...	PTFL 200	D 200 GK	200	165	130	145	100	16	20			121	92	46	22
			PRE 200/118 DFZRP/...	PTFS 200	D 200 GK					118	15		11	M10				
90 S+L (24 x 50)	1.1-1.5	IMB 14	PRE 160/90 DFZRP/...	PTFL 160	D 160 GK	160	130	110	110	90	13		9	9				
		IMB 5 IMV 1	PRE 200/ 100 DFZRP/...	PTFL 200	D 200 GK	200	165	130	145	100	16	20			121	92	46	22
			PRE 200/ 118 DFZRP/...	PTFS 200						118	15		11	M10				
100 L 112 M (28 x 60)	2.2-4	IMB 14	PRE 160/110 DFZRP/...	PTFL 160	D 160 GK	160	130	110	110	110	34		9	9				
		IMB 5 IMV 1	PRE 250/114 DFZRP/...	PTFL 250	D 250 GK	250	215	180	190	114	19	20			121	92	46	22
				PTFS 250									14	M12				
132 S+M (38 x 80)	5.5-7.5	IMB 5 IMV 1	PRE 300/153 DFZRP/...	PTFL 300 PTFS 300	D 300 GK	300	265	230	234	153	20	20	14	M12	121	92	46	22

For higher driving power of motor sizes 160 – 280 please see dimension sheet "round bellhousing with damping flange" on page 82 f.

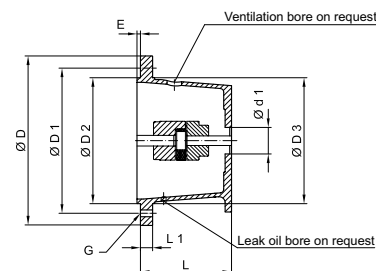
RECTANGULAR BELLHOUSINGS FOR HONDA INDUSTRY MOTORS



GX 100 - 160



GX 240 - 390

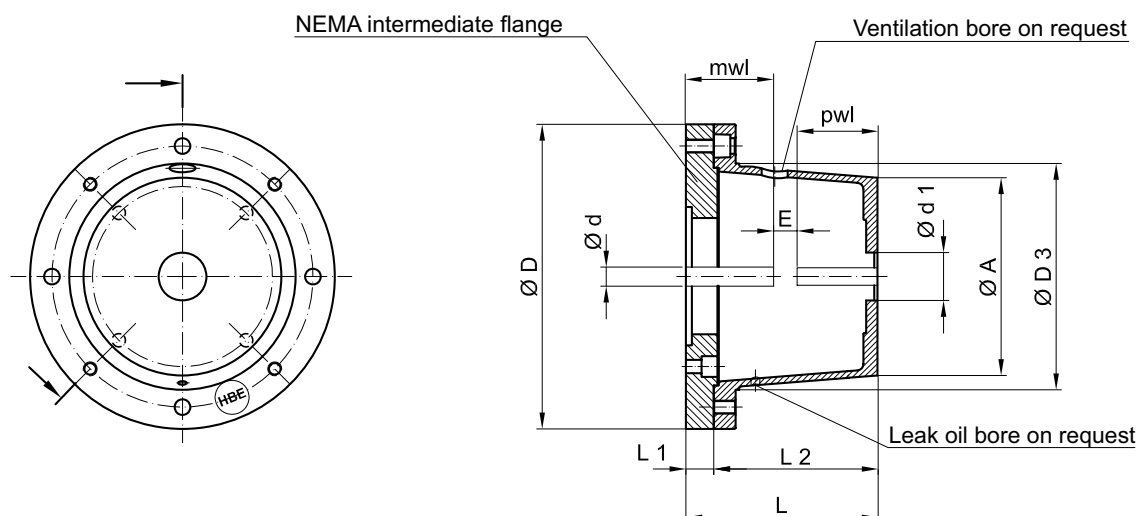


Motor type	Shaft	Bellhousing	Pump side cone	Coupling	Dimensions [mm]															
					Motor side								Pump side							
		Type	Type	Type	øD	øD1	øD2	øD3	L	L1	E	G	øA	øA1	øA2	d1	B	B1	B2	G1
GX 100	S	PE 160/95/10 HO	1:8	24/30 N1-15	160	92	41.2	110	95	39	2.5	9	90	69	34	25.4	72	52.4	26.2	M6
	Q	PE 160/105/10 HO		24/30 N1-ED					105	49										
GX 110 GX 120/120 K1	S + L	PE 160/95/10 HO	1:8	24/30 N1-18 N5	160	92	41.2	110	95	39	2.5	9	90	69	34	25.4	72	52.4	26.2	M6
	H	PE 160/95/10 HO		24/30 N1-A					95	39										
	Q	PE 160/105/10 HO		24/30 N1-A					105	49										
GX 140 GX 160/160 K1	S + L	PE 160/95/10 HO	1:8	24/30 N1-20N5	160	92	41.2	110	95	39	2.5	9	90	69	34	25.4	72	52.4	26.2	M6
		PE 160/110/20 HO	1:8	24/30 N2[a]-20N5					110	29			120	90	45	36.5	96	71.5	32.5	M8
		PE 160/110/70 HO	1:5	24/30 B17-20N5					110	29			120	90	45	80	100	72	34.5	M8
	H	PE 160/95/10 HO	1:8	24/30 N1-A					95	39			90	69	34	25.4	72	52.4	26.2	M6
	Q	PE 160/105/10 HO	1:8	24/30 N1-A					105	49										
GX 240/240 K1 GX 270 GX 340/340 K1 GX 390/390 K1	S + L	PE 160/108,5/10 HO	1:8	24/30 N1-25 N7	160	127	110	110	108.5	27.5	2.5	9	120	90	45	25.4	72	52.4	26.2	M6
		PE 160/108,5/20 HO	1:8	28/38 N2 [a] K-25N7												36.5	96	71.5	32.5	M8
		PE 160/108,5/70 HO	1:5	28/38 B17-25 N7												80	100	72	34.5	M8

RECTANGULAR BELLHOUSINGS FOR KUBOTA INDUSTRY MOTORS

Motor type	Shaft	Bellhousing	Pump side cone	Coupling	Dimensions [mm]																
					Motor side								Pump side								
		Type	Type	Type	øD	øD1	øD2	øD3	L	L1	E	G	øA	øA1	øA2	d1	B	B1	B2	G1	
OC 60 OC 80 OC 95	Q	PE 160/130/10 KU	1:8	24/30 N1-BS 98°	160	113.1	146.1	110	130	49	2	9	120	90	45	25.4	72	52.4	26.2	M6	
		PE 160/133/20 KU		MB 28 N2 (a)-BS					133	56						36.5	96	71.5	32.5	M8	
		PE 160/133/70 KU	1:5	24/30 B17-BS 98°					133	56						80	100	72	34.5	M8	
GH 120 GH 170	Q	PE 160/105/10 KU	1:8	24/30 N1-A 98°	160	92	41.2	110	105	49	2.5	9	90	69	34	25.4	72	52.4	26.2	M6	
		PE 160/115/20 KU		24/30 N1-(a)-A 98°					115	34			120	90	45	36.5	96	71.5	32.5	M8	
		PE 160/115/70 KU	1:5	24/30 B17-A 98°					115	34			120	90	45	80	100	72	34.5	M8	

BELLHOUSINGS FOR NEMA MOTORS, RIGID TYPE TD (US STANDARD)



NEMA motor 60 Hz 1800 min ⁻¹	HP	mwL	ø d code	Bellhousing	NEMA intermediate flange	Dimensions [mm]							Softex® coupling	E
						L	L1	L2	øD	ød1	øD3	øA		
143-145 TD	0.5-2	57.2	G	PR 250/115	ZF 295/25 PR 250/NEMA (5454)	140	25	115	295	250	190	178	19/24	16
				PR 250/120		145		120				178		
182-184 TD	3-5	70.0	SB	PR 250/124		149		124				177	24/30	18
				PR 250/128		153		128				177		
213-215 TD	7.5-10	85.7	M	PR 250/135		160		135				177	28/38	20
				PR 250/148		173		148				176		
254-256 TD	15-20	101.6	N	PR 300/144	ZF 350/26 PR 300/NEMA (5451)	171	26	144	350	300	234	223	38/45	24
				PR 300/150		176		150				223		
284-286 TD	25-30	117.5	NM	PR 300/155		181		155				223	42/55	26
				PR 300/168		194		168				222		
				PR 300/196		222		196				220		
324-326 TD	40-50	133.3	P	PR 450/217*	ZF 450/25 PR 450/NEMA (5477)	242	25	217	450	450	350	300	48/60	28
				PR 450/222		247		222				299		
364-365 TD	60-75	149.2	UB	PR 450/234*		259		234				296	55/70	30
				PR 450/240		265		240				295		
				PR 450/262		287		262				290		
				PR 450/285		310		285				286		
404-405 TD	100	184.2	WA	PR 550/230	ZF 550/25 PR 550/NEMA (5478)	255	25	230	550	550	450	362	75/90	40
				PR 550/248		273		248				359		
444-445 TD	125-150	215.9	WD	PR 550/265		290		265				356		
				PR 550/275		300		275				354		
				PR 550/295*		320		295				350		
				PR 550/315		340		315				347		

*one piece version

ORDERING EXAMPLE: DETERMINATION OF THE TOTAL LENGTH OF THE BELLHOUSING MOTOR 213-215 TC

pwL = Total length of the pump shaft incl. centring collar + possible difference, if coupling hub is longer than the carrying length of the pump shaft.

pwL (length of pump shaft) e.g.	= 50 mm
mwL (total length of motor shaft) e.g.	= 79.4 mm
E (distance between motor and pump shaft type 28/38)	= 20 mm
Total length theoretical L	= 149.4 mm
Total length available L	= 153 mm

BELLOUSINGS FOR NEMA MOTORS, RIGID TYPE C-TC (US STANDARD)

NEMA motor 60 Hz 1800 min ⁻¹	HP	mwL	ø d code	Bellhousing	NEMA intermediate flange	Dimensions [mm]							Softex® coupling	E
						L	L1	L2	øD	ød1	øD3	øA		
56 C	0.25-0.75	54.2	ED	PR 200/80	ZF 200/18 PR 200 56-145 TC (5476)	98	18	80	200	200	145	128	19/24	16
				PR 200/90		108		90				127		
				PR 200/100		118		100				127		
				PR 200/110		128		110				126		
				PR 200/118		136		118				126		
143-145 TC	0.5-2	54	G	PR 250/115	ZF 250/23 PR 250 56-145 TC (5467)	138	23	115	250	250	190	178		
				PR 250/120		143		120				178		
				PR 250/124		147		124				177		
				PR 250/128		151		128				177		
				PR 250/135		158		135				177		
				PR 250/148		171		148				176		
182-184 TC	3-5	66.7	SB	PR 250/115	ZF 250/18 PR 250 182-256 TC (5453)	133	18	115	250	250	190	178	24/30	18
				PR 250/120		138		120				178		
213-215 TC	7.5-10	79.4	M	PR 250/124		142		124				177	28/38	20
				PR 250/128		146		128				177		
				PR 250/135		153		135				177		
254-256 TC	15-20	95.3	N	PR 250/148		166		148				176	38/45	24
				PR 250/175		193		175				175		
182-184 TC	3.5	66.7	SB	PR 300/144	ZF 300/20 PR 300 182-256 TC (5480)	164	20	144	300	300	234	224	24/30	18
				PR 300/150		170		150				223		
213-215 TC	7.5-10	79.4	M	PR 300/155		175		155				223	28/38	20
				PR 300/168		188		168				222		
254-256 TC	15-20	95.3	N	PR 300/196		216		196				220	38/45	24
284-286 TC	25-30	111.1	NM	PR 300/133	ZF 300/20 PR 300 284-286 TC (5475)	153	20	133	300	300	234	224	42/55	26
				PR 300/144		164		144				224		
				PR 300/150		170		150				223		
				PR 300/155		175		155				223		
				PR 300/168		188		168				222		
				PR 300/196		216		196				220		
				PR 300/210		230		210				218		
324-326 TC	40-50	127.0	P	PR 350/188	ZF 350/25 PR 350 324-405 TC (5449)	213	25	188	350	350	260	238	48/60	28
				PR 350/204		229		204				237		
364-365 TC	60-75	142.9	UB	PR 350/228		253		228				235	55/70	30
404-405 TC	100	184.2	WA	PR 350/256		281		256				232	75/90	40
444-445 TC	125-150	215.9	WD	PR 550/248	ZF 550/34 PR 550 444-445 TC (5479)	282	34	248	550	550	450	359	75/90	40
				PR 550/265		299		265				356		
				PR 550/275		309		275				354		
				PR 550/295		329		295				350		
				PR 550/315		349		315				347		

BELLHOUSINGS IN CAST IRON OR STEEL

PRODUCT DESCRIPTION

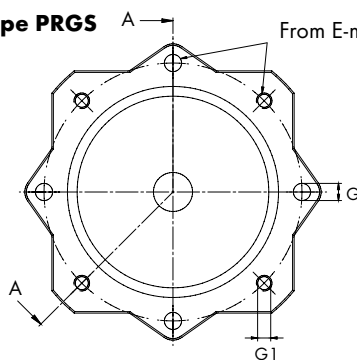
- Bell housings made of cast iron, steel or stainless steel according to VDMA standard 24561
- Motor and pump side fully finished
- Types PRG and PRGS primed, machined surfaces preserved
- Use for mining, offshore, mobile and most of heavy duty applications
- Type PRGS particularly adapted to servo motors with square flange suitable for highly dynamic drives
- Good damping features due to large mass
- High corrosion protection also against salt water
- Type PRST also available in stainless steel and in almost all special lengths



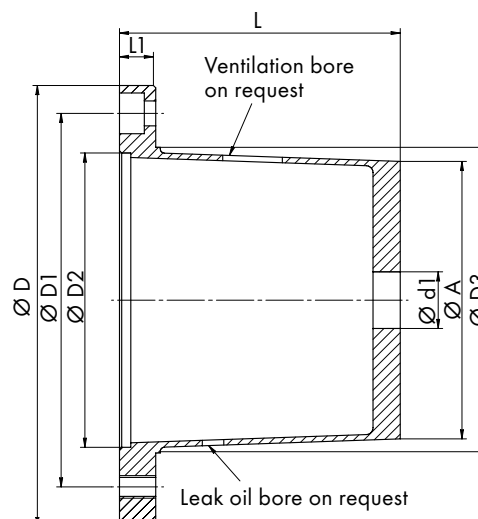
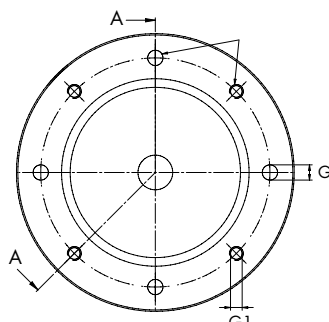
Order code					
Type	Size		Length		Pump face code
PRG	250	/	175	/	433/1
PRG	Cast iron				
PRGS	Cast iron for servo motors				
PRST	Steel				
PRVA	Stainless steel				

DIMENSIONS

Type PRGS From E-motor size 225S 8 holes each



Type PRG/PRST



IEC motor size Shaft (d x L)	kW at n=1500 min ⁻¹	Bell- housing Type	Foot flange	Gasket Type	Dimensions [mm]									
					Motor side								Pump side	
					ø D	ø D1	ø D2	ø D3	L * *	L1	G	G1	ø A	d1 _{min}
80 (19 x 40) 90 S + L (24 x 50)	0.55 - 0.75 1.1 - 1.5	PRST 200/100	PTFS 200 GG	D 200 GK	200	165	130	-	100	16	11	M10	*	*
		PRST 200/110						-	110				*	*
		PRST 200/118						-	118				*	*
		PRGS 200/124						145	124				142	25
		PRST 200/140						-	140				*	*
100 L 112 M (28 x 60)	2.2 - 4	PRST 250/120	PTFS 250 GG	D 250 GK	250	215	180	-	120	19	14	M12	*	*
		PRGS 250/124						190	124				185	25
		PRST 250/128						-	128				*	*
		PRST 250/135						-	135				*	*
		PRGS 250/148						190	148				185	40
		PRGS 250/175						190	175				225	70
132 S+M (38 x 80)	5.5 - 7.5	PRGS 300/144	PTFS 300 GG	D 300 GK	300	265	230	234	144	19	14	M12	225	30
		PRST 300/150						-	150				*	*
		PRST 300/155						-	155				*	*
		PRGS 300/168						234	168				225	60
		PRG 300/196						234	196				225	60
160 M+L (42 x 110) 180 M+L (48 x 110)	11 - 15 18.5 - 22	PRST 350/188	PTFS 350 GG	D 350 GK	350	300	250	-	188	25	18	M16	*	*
		PRST 350/204						-	204				*	*
		PRGS 350/228						260	228				255	77
		PRST 350/256						-	256				*	*
200 L (55 x 110)	30	PRST 400/204	PTFS 400 ST	D 400 GK	400	350	300	-	204	25	18	M16	*	*
		PRGS 400/228						300	228				280	77
		PRST 400/256						-	256				*	*
225 S+M (60 x 140)	37-45	PRST 450/234	PTFS 450 ST	D 450 GK	450	400	350	-	234	25	18	M16	*	*
		PRGS 450/262						260	262				258	90
		PRST 450/285						-	285				*	*
		PRST 450/315						-	315				*	*
250 M (65 x 140) 280 S+M (75 x 140)	55 75-90	PRST 550/248	PTFS 550 ST	D 550 GK	550	500	450	-	248	25	18	M16	*	*
		PRG 550/265						450	265				360	98
		PRST 550/275						-	275				*	*
		PRST 550/295						-	295				*	*
		PRST 550/315						-	315				*	*
315 S+M 315L (80 x 170)	110-200	PRST 660/310	PTFS 660 ST	D 660 GK	660	600	550	-	310	32	22	M20	*	*
		PRST 660/330						-	330				*	*
		PRST 660/345						-	345				*	*

*depending on the pump type **for type PRST variable lengths available on request

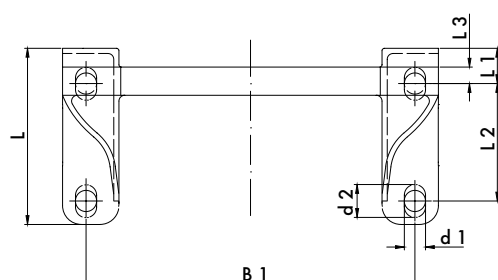
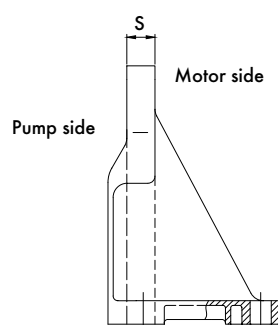
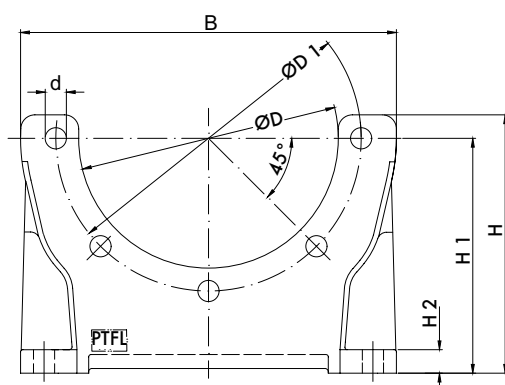
FOOT FLANGES ACC. TO VDMA 24561



LIGHT TYPE PTFL

PRODUCT DESCRIPTION

- PTFL: light and space saving type design
- Reduce the storage of E-motors to only one version in case of horizontal and vertical construction
- Use with horizontal installation of B5 motors
- Material: aluminium (D)
- Suitable damping rods on page 99
- All types available from stock



Art. No.	Type	Dimensions [mm]															Weight [kg]	Material
		ØD	ØD1	B	B1	L	L1	L2	L3	H	H1	H2	d	d1	d2	S		
4307	PTFL 160	110	130	160	140	75	15	50	7	110	100	10	9	9	-	12	0.25	Alu
4308-1	PTFL 200	145	165	200	180	88	15	60	4	124	112	12	11	11	-	14	0.41	Alu
4309-1	PTFL 250	190	215	250	220	110	21	60	-	145	132	15	14	14	22	14	0.55	Alu
4310-1	PTFL 300	235	265	300	260	120	22	80	-	172	160	18	14	14	22	18	0.90	Alu
4311-1	PTFL 350	260	300	348	300	148	20	110	-	195	180	18	18	18	24	18	1.50	Alu

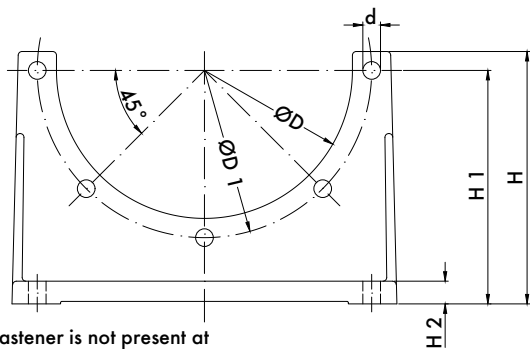
FOOT FLANGES ACC. TO VDMA 24561



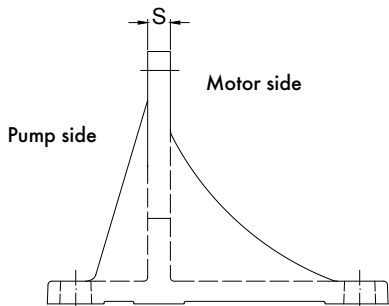
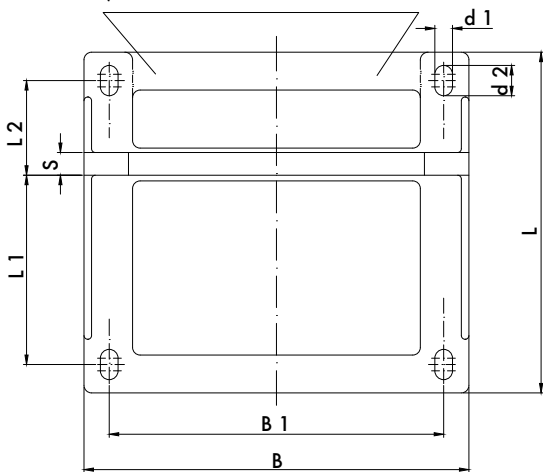
HEAVY TYPE PTFS

PRODUCT DESCRIPTION

- PTFS: heavy type especially suitable for multiple pumps
- Reduce the storage of E-motors to only one version in case of horizontal and vertical construction
- Use with horizontal installation of B5 motors
- Material: aluminium (D)
- Suitable damping rods on page 99
- All types available from stock



The fastener is not present at PTFS200, PTFS250 and PTFS300



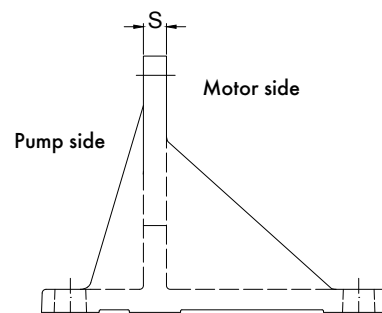
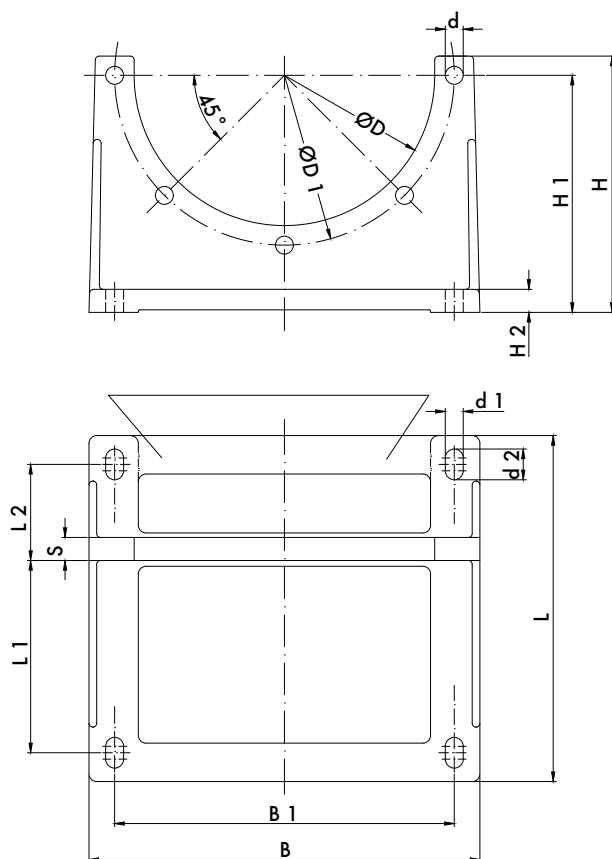
Art. No.	Type	Dimensions [mm]														Weight [kg]	Material
		$\varnothing D$	$\varnothing D1$	B	B1	L	L1	L2	H	H1	H2	d	d1	d2	s		
4316-2	PTFS 200	145	165	204	165	185	100	50	138	125	12	11	11	19	14	0.85	Alu
4317-2	PTFS 250	190	215	252	215	230	125	60	167	155	15	14	14	24	17	1.65	Alu
4318	PTFS 300	235	265	305	265	270	150	75	200	185	18	14	14	24	18	2.30	Alu
4319	PTFS 350	260	300	356	300	310	175	90	252	235	18	18	18	30	18	5.60	Alu
4320	PTFS 400	300	350	407	350	350	200	100	277	260	20	18	18	30	20	7.80	Alu
4321	PTFS 450	350	400	458	400	385	225	110	312	295	20	18	18	30	22	10.80	Alu
4322	PTFS 550	450	500	560	500	465	275	140	367	350	25	18	18	30	25	16.40	Alu
4323	PTFS 660	550	600	670	600	555	330	165	412	380	30	22	22	37	30	26.70	Alu

FOOT FLANGES IN STEEL ACC. TO VDMA 24561



PRODUCT DESCRIPTION

- PTFS heavy type
- Suitable for highly dynamic drives
- Suitable for mining, offshore, mobile and most of heavy duty applications
- Reduce the stocking of E-motors to only one version in case of horizontal and vertical construction
- Use with horizontal installation of B5 motors
- All types primed



Art. No.	Type	Dimensions [mm]														Weight [kg]	Material
		ØD	ØD1	B	B1	L	L1	L2	H	H1	H2	d	d1	d2	S		
4316-3	PTFS 200	145	165	204	165	185	100	50	138	125	12	11	11	19	14	7.50	ST
4317-3	PTFS 250	190	215	252	215	230	125	60	167	155	13	14	14	24	15	8.00	ST
4318-1	PTFS 300	235	265	300	265	270	150	75	200	185	13	14	14	24	15	9.30	ST
4319-2	PTFS 350	260	300	350	300	310	175	90	252	235	13	18	18	30	15	13.20	ST
4320-2	PTFS 400	300	350	400	350	350	200	100	275	260	13	18	18	30	15	16.50	ST
4321-1	PTFS 450	350	400	458	400	385	225	110	312	295	20	18	18	30	22	20.00	ST
4322-1	PTFS 550	450	500	560	500	465	275	140	367	350	25	18	18	30	25	38.00	ST
4323-1	PTFS 660	550	600	670	600	555	330	165	415	380	30	22	22	37	30	50.00	ST

DAMPING ELEMENTS

DAMPING RODS

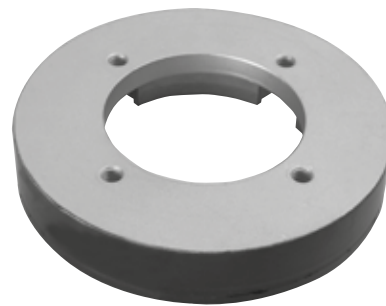
- Reduce the sound level and dampen vibrations
- Finished for IEC motors IMB 35 (MDS), NEMA motors, PTFL foot brackets (PTFL-DS) and PTFS foot brackets (PTFS-DS)
- Available from stock
- Special lengths and designs possible on request
- Material: Rubber (NR) / steel



Order code damping rods	
Type	Size
MDS	225 M

DAMPING FLANGES

- HBE damping flanges are applied in connection with HBE bellhousings or pump brackets between hydraulic pumps and E-motors
- They consist of two aluminium components, which are connected to each other by a moulded-on rubber coating (perbunan-NBR) without metallic contact
- The materials applied are resistant to mineral oils and are suitable for working temperatures up to + 80°C, temporary +100°C
- For optimisation, two different shore hardnesses are available: S = standard H = hard



Order code damping flanges		
Type	Size	Pump face code
DF	250	586/1

DAMPING RINGS

- For application between bellhousing and tank vertically or horizontally
- Damping rings consist of two vulcanised perbunan coated combined aluminium rings
- Application: mineral oil up to max. +80°C
- Noise reduction: approx. 3 – 5 dB (A)
- Sealing lips moulded-on, no additional sealing necessary

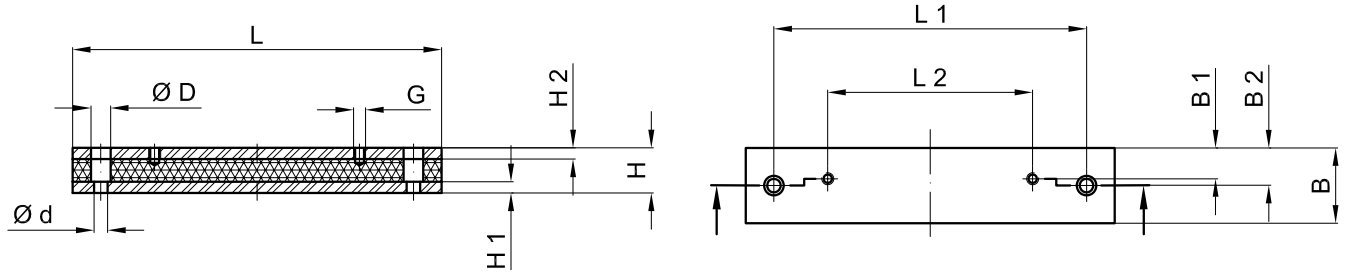


Exemplary illustration of a breakaway quick-closing device

Order code damping rings		
Type	Size	Option
DA	400	/2

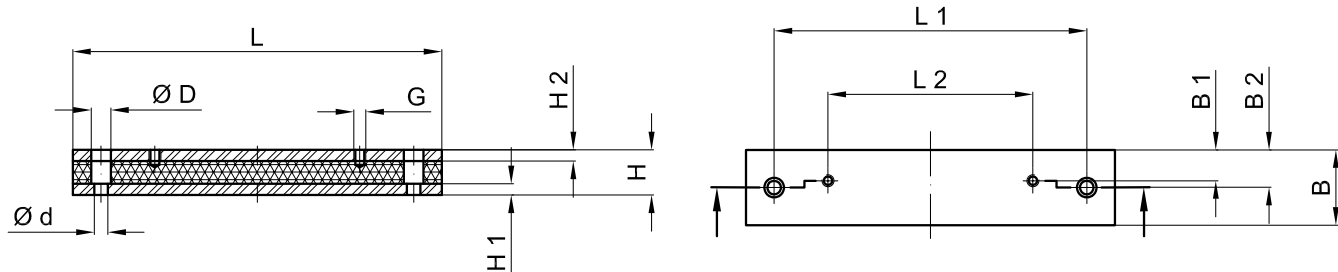
DAMPING RODS

TYPE MDS FOR ELECTRIC MOTORS FRAME IM B 35



Art. No.	Type	IEC motor size	Dimensions [mm]												
			L	L1	L2	H	H1	H2	B	B1	B2	Ø d	Ø D	G	Shore° A
4420	MDS 71	71	196	156	90	40	10	10	50	21	25	14	20	M6	55°
4421	MDS 80	80	180	156	100	40	10	10	50	22	25	14	20	M8	
4447	DSM 80 SO	80	176	146	100	40	10	10	50	22	25	14	20	M8	
4421	MDS 90 S	90 S	180	156	100	40	10	10	50	22	25	14	20	M8	
4423	MDS 90 L	90 L	240	205	125	40	10	10	50	24	25	14	20	M8	
4424	MDS 100 L	100 L	240	205	140	40	10	10	50	24	25	14	20	M10	
4425	MDS 112 M	112 M	240	205	140	40	10	10	50	20	25	14	20	M10	
4427	MDS 132 S	132 S	285	245	140	45	10	10	50	20	25	14	20	M10	
4427	MDS 132 M	132 M	285	245	178	45	10	10	50	20	25	14	20	M10	
4428	MDS 160 M	160 M	340	300	210	60	15	15	70	28	35	18	26	M12	
4429	MDS 160 L	160 L	416	370	254	60	15	15	70	28	35	18	26	M12	
4430	MDS 180 M	180 M	416	370	241	60	15	15	70	35	35	18	26	M12	
4431	MDS 180 L	180 L	446	400	279	60	15	15	70	35	35	18	26	M12	
4432	MDS 200 L	200 L	496	430	305	60	15	15	70	35	35	22	33	M16	
4433	MDS 225 S	225 S	496	430	286	60	15	15	70	35	35	22	33	M16	
4434	MDS 225 M	225 M	496	445	311	60	15	15	70	35	35	22	33	M16	
4435	MDS 250 M	250 M	496	445	349	60	15	15	100	50	50	22	33	M20	70°
4436	MDS 280 S	280 S	580	530	368	60	15	15	100	50	50	22	33	M20	
4436	MDS 280 M	280 M	580	530	419	60	15	15	100	50	50	22	33	M20	
4441	DSM 280 S-SO	280 S	614	570	368	60	15	15	100	50	50	22	33	M20	
4437	DSM 280 M-SO	280 M	614	570	419	60	15	15	100	50	50	22	33	M20	
4438	MDS 315 S	315 S	614	570	406	60	15	15	100	60	60	22	33	M24	
4443	MDS 315 M	315 M	614	570	457	60	15	15	100	60	60	22	33	M24	
4389	DSM 315 S	315 S	614	570	406	60	15	15	120	60	60	22	33	M24	
4389	DSM 315 M	315 M	614	570	457	60	15	15	120	60	60	22	33	M24	
4446	MDS 315 L	315 L	704	660	508	60	15	15	100	60	60	22	33	M24	
4446-1	DSM 315 L	315 L	704	660	508	60	15	15	120	60	60	22	33	M24	
4449	MDS 355 M	355 M	826	782	630	60	15	15	100	60	60	22	33	M24	

TYPE MDS FOR ELECTRIC MOTORS FRAME NEMA TC + TD

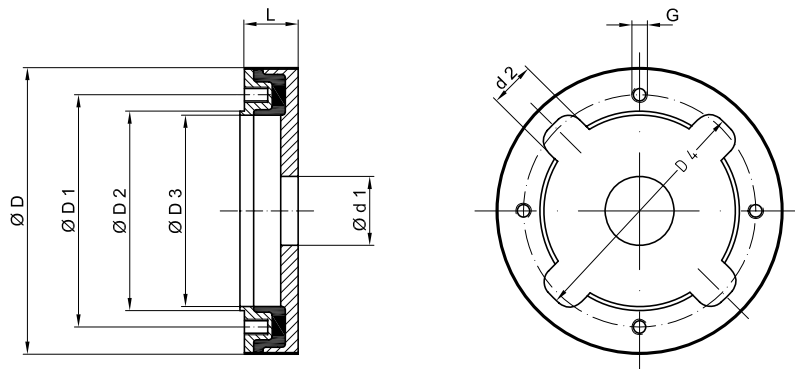


Art. No.	Type	Motor size	Dimensions [mm]													Shore° A
			L	L1	L2	H	H1	H2	B	B1	B2	ø d	ø D	G		
4422	MDS 143 TC/TD NEMA	143 TC/TD	190	160	101.6	40	10	10	50	20	25	14	20	M8	55°	
5692	MDS 145 TC/TD NEMA	145 TC/TD	225	185	127.0	40	10	10	50	20	25	14	20	M8		
5693	MDS 182 TC/TD NEMA	182 TC/TD	225	185	114.3	40	10	10	50	20	25	14	20	M10		
5695	MDS 184+213 TC/TD NEMA	184+213 TC/TD	254	216	139.7	45	10	10	50	20	25	14	20	M10		
4455	MDS 215 TC/TD NEMA	215 TC/TD	285	245	177.8	45	10	10	50	20	25	14	20	M10		
4392	MDS 254 TC/TD NEMA	254 TC/TD	330	295	209.5	45	10	10	50	20	25	14	20	M12		
4444	MDS 256 TC/TD NEMA	256 TC/TD	375	340	254.0	45	15	15	50	20	25	14	20	M12		
5691	MDS 284 TC/TSC/TD NEMA	284 TC/TSC/TD	406	362	241.3	60	15	15	70	30	35	18	26	M12		
5691	MDS 286 TC/TSC/TD NEMA	286 TC/TSC/TD	406	362	279.4	60	15	15	70	30	35	18	26	M12		
4452	MDS 324 TC/TSC/TD NEMA	324 TC/TSC/TD	416	370	267.0	60	15	15	70	35	35	18	26	M12		
4453	MDS 326 TC/TSC/TD NEMA	326 TC/TSC/TD	458	410	305.0	60	15	15	70	35	35	18	26	M16		
4440	MDS 364 TC/TSC/TD NEMA	364 TC/TSC/TD	446	400	285.8	60	15	15	70	30	35	18	26	M16		
5690	MDS 365 TC/TSC/TD NEMA	365 TC/TSC/TD	458	410	311.1	60	15	15	70	35	35	18	26	M16		
5689	MDS 404 TC/TSC/TD NEMA	404 TC/TSC/TD	500	445	311.1	60	15	15	100	50	50	27	40	M16	70°	
5703	MDS 405 TC/TSC/TD NEMA	405 TC/TSC/TD	533	476	349.0	60	15	15	100	50	50	27	40	M16		
4448	MDS 444 TC/TSC/TD NEMA	444 TC/TSC/TD	580	530	368.3	60	15	15	100	50	50	25	40	M16		
5688	MDS 445 TC/TSC/TD NEMA	445 TC/TSC/TD	660	605	419.1	60	15	15	100	50	50	25	40	M16		

TYPE PTFL-DS / PTFS-DS FOR FOOT FLANGES

Art. No.	Type	Foot flange size	Dimensions [mm]												
			L	L1	L2	H	H1	H2	B	B1	B2	ø d	ø D	G	Shore° A
4498	PTFL-DS 160	PTFL 160	176	130	50	40	10	10	50	10	25	14	20	M8	55°
4483	PTFL-DS 200	PTFL 200	176	130	60	40	10	10	50	15	25	14	20	M10	
4484	PTFL-DS 250	PTFL 250	230	140	60	40	10	10	50	15	25	14	20	M12	
4485	PTFL-DS 300	PTFL 300	270	170	80	40	10	10	50	15	25	14	20	M12	
4486	PTFL-DS 350	PTFL 350	305	200	110	60	10	10	70	25	35	18	26	M16	
4490	PTFS-DS 200	PTFS 200	245	205	150	40	10	10	50	19	25	14	20	M10	55°
4491	PTFS-DS 250	PTFS 250	300	260	185	40	10	10	50	21	25	14	20	M12	
4492	PTFS-DS 300	PTFS 300	340	300	225	45	10	10	50	21	25	14	20	M12	
4493	PTFS-DS 350	PTFS 350	390	345	265	60	15	15	70	29	35	18	26	M16	
4494	PTFS-DS 400	PTFS 400	425	380	300	60	15	15	70	29	35	18	26	M16	
4495	PTFS-DS 450	PTFS 450	470	425	335	60	15	15	70	35	35	18	26	M16	
4496	PTFS-DS 550	PTFS 550	565	515	415	60	15	15	70	35	35	18	26	M16	
4497	PTFS-DS 660	PTFS 660	655	605	495	60	15	15	100	50	50	22	33	M20	70°

DAMPING FLANGES

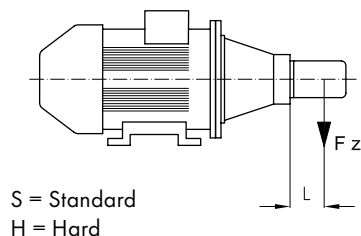


DF 200-400

Art. No.*	Type	Dimensions [mm]								
		Ø D	Ø D1	Ø D2	Ø D3	Ø D4	Ø d1 _{min}	d2	L	G
5410	DF 200/.. /30/.. /1	142	102	90	85	120	32	25	30	M8 x 10
5412	DF 250/16/35/.. /1	186	150	130	125	156	32	28	35	M10 x 15
5415	DF 300/32/40/.. /1	222	175	147	140	190	33	55	40	M12 x 16
5420	DF 350/63/45/.. /1	258	195	172	165	230	48	60	45	M12 x 16
5425	DF 400/84/60/.. /1	365	248	212	200	335	120	45	60	M20 x 23

* standard version "S"

RADIAL WEIGHT LOAD



S = Standard
H = Hard

$$F_{zul.} = \frac{(F[N] \times L)}{\text{effective SPA}^{**}}$$

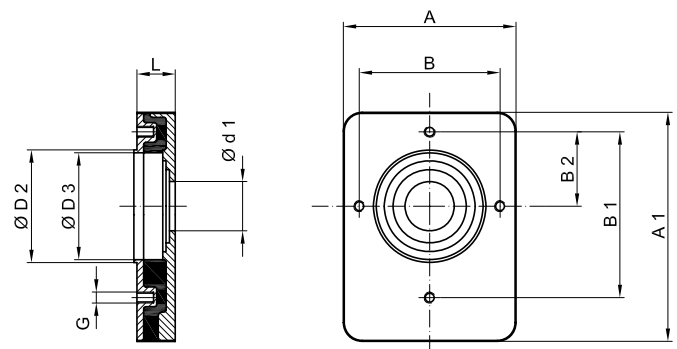
** Centroidal distance

*** for operating temperature up to 60°C

Damping flange	DF 200/...		DF 250/16		DF 300/32		DF 350/63		DF 400/84	
	S	H	S	H	S	H	S	H	S	H
Centroidal distance for radial load L [mm]	70		100		100		200		200	
Permittable weight load $F_{zul.}$ [N]***	300	400	1100	1300	1600	1900	1400	2000	3000	4000

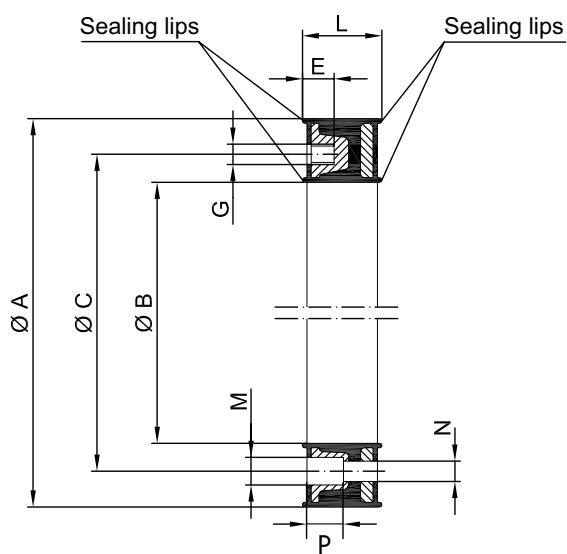
DF-ZRP/1-2

Rectangular damping flange for external gear pumps of types 1 and 2 for application in connection with bell housings or pump brackets for steady or mobile applications



Dimensions [mm]										
Typ	A	A1	B	B1	B2	Ø D2	Ø D3	Ø d1 _{min}	G	L
DF ZRP/1-2	92	122	75	87.5	37.5	60	57	25	M8	20

DAMPING RINGS



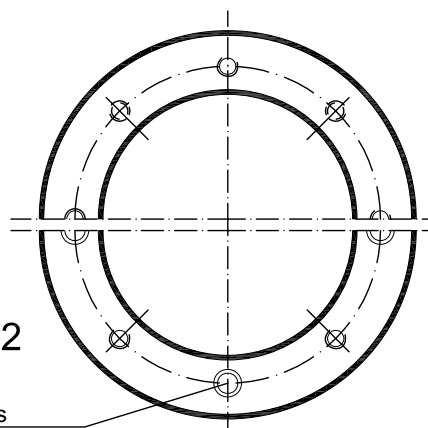
Type

DA ...

Type

DA ... / 2

4 through bores



Only for vertical assembly

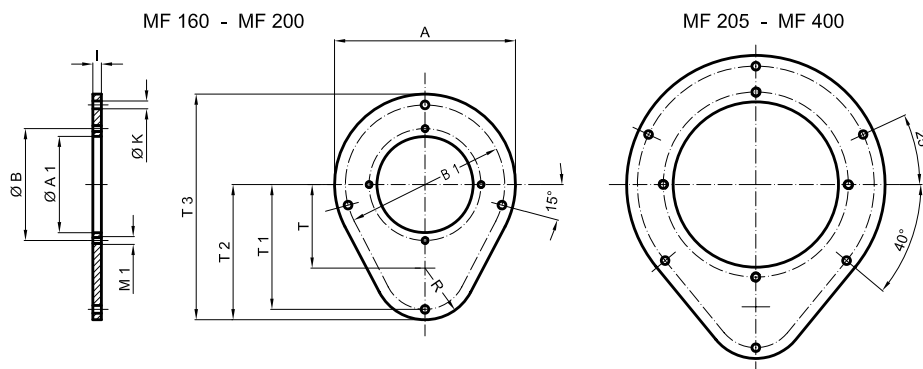
Art. No.	IEC motor size	Type	Dimensions [mm]								
			Ø A	Ø B	Ø C	G	E	L	M	N	P
4324	71	DA 160	160	111	130	M8	16	38	-	-	-
4325	80/90	DA 200	200	146	165	M10	20	43	-	-	-
4326	100/112	DA 250*	250	191	215	M12	20	48	-	-	-
4327	132	DA 300*	300	235	265	M12	20	53	-	-	-
4328	160/180	DA 350*	350	261	300	M16	24	64	-	-	-
4329	200	DA 400*	400	308	350	M16	24	62	-	-	-
4330	225S/225M	DA 450*	450	352	400	M16	32	69	-	-	-
4331	250M/280S/280M	DA 550*	550	452	500	M16	32	72	-	-	-
4332	315S/315M	DA 660*	660	552	600	M20	32	72	-	-	-
4341	71	DA 160/2	160	111	130	M8	16	38	14.5	9	15
4340	80/90	DA 200/2	200	146	165	M10	20	43	16.5	11	20
4333	100/112	DA 250/2*	250	191	215	M12	26	48	18.5	14	20
4334	132	DA 300/2*	300	235	265	M12	26	53	18.5	14	20
4335	160/180	DA 350/2*	350	261	300	M16	24	64	24.5	18	20
4336	200	DA 400/2*	400	308	350	M16	24	62	24.5	18	20
4337	225S/225M	DA 450/2*	450	352	400	M16	32	69	26	18	20
4338	250M/280S/280M	DA 550/2*	550	452	500	M16	32	72	26	18	20
4339	315S/315M	DA 660/2*	660	552	600	M20	32	72	33	22	30

*incl. breakaway quick-closing device

MOUNTING FLANGES

PRODUCT DESCRIPTION

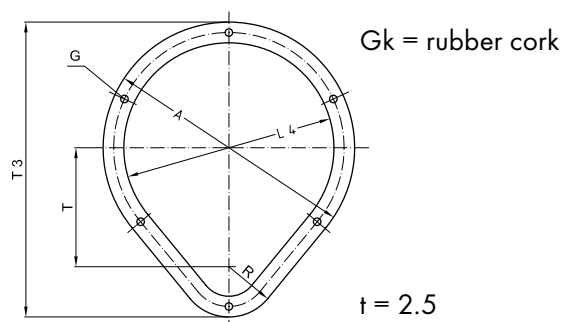
- Mounting flanges enable the assembly / disassembly of the power unit including pressure line without dismounting of the cleaning cover
- Pressure lines are led through the mounting flange
- Material: ST 37
- Suitable for bellhousings $\varnothing 160 - 400$ mm
- Gaskets made of GK (rubber cork) available as accessory



Art. No.	Type	Dimensions [mm]												Gasket between oil tank and mounting flange (2.5 mm thick)	Gasket between bellhousing and mounting flange (2.5 mm thick)
		A	øA1	øB	B1	K	M1	R	T	T1	T2	T3	I		
4499	MF 160	210	112	130	185	9	M8	60	97	145	157	262	8	DMF 160 GK	D 160 GK
4500	MF 200	250	147	165	225	9	M10	60	142	190	202	327	8	DMF 200 GK	D 200 GK
4501	MF 250	300	192	215	275	9	M12	60	142	190	202	352	8	DMF 250 GK	D 250 GK
4502	MF 300	360	236	265	330	14	M12	90	150	225	240	420	8	DMF 300 GK	D 300 GK
4503	MF 350	410	262	300	380	14	M16	110	160	255	270	475	10	DMF 350 GK	D 350 GK
4504	MF 400	480	304	350	440	18	M16	150	175	305	325	565	10	DMF 400 GK	D 400 GK

GASKET MOUNTING FLANGE

- Material: rubber cork (GK)
- DMF gaskets are applied between MF mounting flange and cleaning cover
- Available from stock

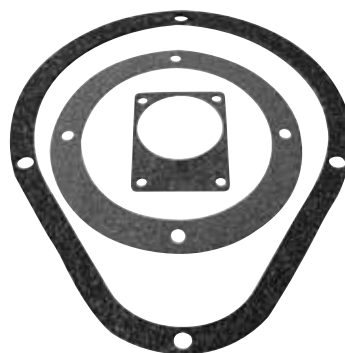


Art. No.	Type	Dimensions [mm]					
		T3	T	R	A	L4	G
4509	DMF 160 GK	262	97	60	210	160	10 (4x)
4510	DMF 200 GK	325	140	60	250	200	10 (4x)
4511	DMF 250 GK	350	140	60	300	250	10 (6x)
4512	DMF 300 GK	420	150	90	360	300	14 (6x)
4513	DMF 350 GK	475	160	110	410	350	19 (6x)
4514	DMF 400 GK	565	175	150	480	400	19 (6x)

GASKETS FOR BELLHOUSINGS AND GEAR PUMPS

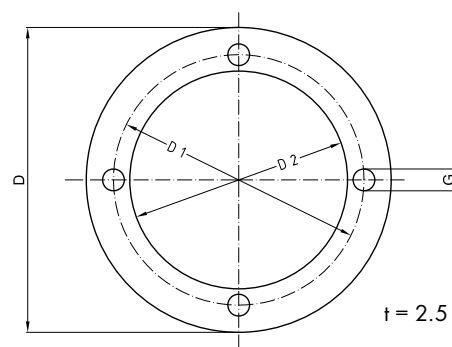
PRODUCT DESCRIPTION

- D gaskets are applied between bellhousing and cleaning cover and also between bellhousing and MF mounting flange
- D gaskets made of rubber cork (GK)
- PD gaskets are applied between pump and bellhousing
- PD gaskets made of paperboard (P)
- All gaskets are available from stock



TYPE "D"

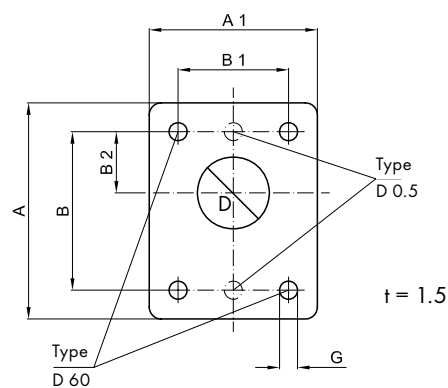
Art. No.	Type	Dimensions [mm]			
		D	D1	D2	G
4359	D 140 GK	140	115	100	10 (4x)
4360	D 160 GK	160	130	112	10 (4x)
4361	D 200 GK	200	165	147	12 (4x)
4362	D 250 GK	250	215	193	14 (4x)
4363	D 300 GK	300	265	245	14 (4x)
4364	D 350 GK	350	300	270	19 (4x)
4365	D 400 GK	400	350	303	19 (4x)
4366	D 450 GK	450	400	353	19 (8x)
4367	D 500 GK	550	500	453	19 (8x)
4368	D 660 GK	660	600	554	24 (8x)



Gk = rubber cork

TYPE "PD"

Art. No.	Type	Dimensions [mm]						
		A	A1	B	B1	B2	D	G
4370	PD 0,5 P	90	69	66	-	25.5	24	7.5 (2x)
4371	PD 10 P	90	69	72	52.4	26.2	27	7.5 (4x)
4371	PD 11 P	90	69	73	56	24.5	32	7.5 (4x)
4373	PD 20 P	118	88	96	71.5	32.5	38	9.5 (4x)
4374	PD 25 P	170	120	128	98.5	43	ø 52	9.5 (4x)
4374	PD 28 P	170	120	137	98.4	45	ø 52	12 (4x)
4376	PD 35 P	180	158	149.5	114.3	49.5	62	12 (4x)
4377	PD 40 P	230	175	196	142.8	65	65	15 (4x)
4377	PD 45 P	230	175	188	143	64.3	65	15 (4x)
4379	PD 60 P	75	60	40	40	10.3	34	9.5 (4x)
4380	PD 70 P	121	91	100	72	34.5	82	9.5 (4x)
4381	PD 80 P	165	122	145	102	48	107	12 (4x)



P = paperboard

BELLHOUSING WITH INTEGRATED OIL COOLER

PRODUCT DESCRIPTION

- Series PTÖK: bellhousing with oil air cooler
- Model series for electric motors 0.55 – 22 kW (IMB 5/IMB 35/IMV 1)
- Noise reduced design, form B
- Cooling capacity 0.95 – 5.15 kW
- 4 model series available (ø200 – ø350)
- All bellhousing lengths comply with VDMA 24561
- The standard bellhousing can be replaced easily with a bellhousing with oil cooler at any time due to identical installation lengths
- Horizontal – IMB 5/IMB 35 – and vertical – IMV 1 – use possible
- Foot flanges type PTFL and PTFS mountable acc. to VDMA 24561



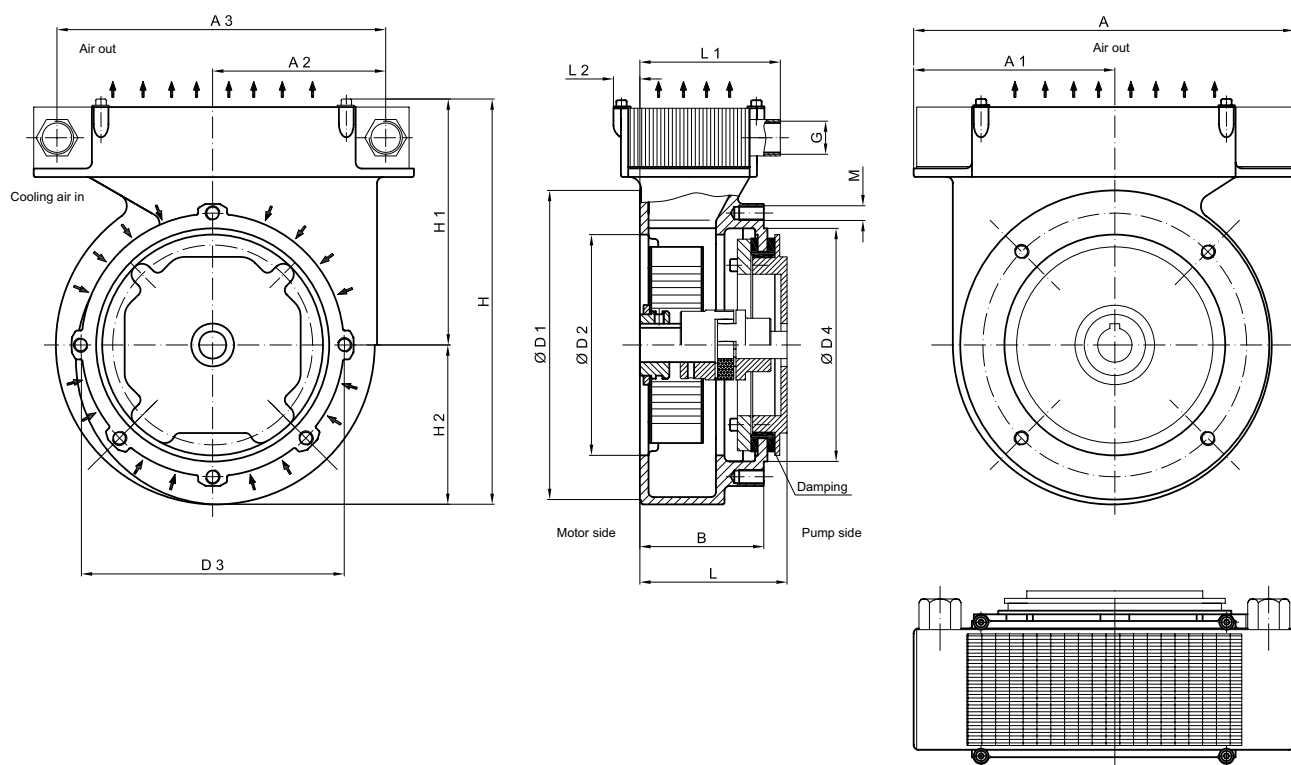
Order code							
Type	Size		Length		Ø Fan wheel		Pump face code
PTÖK	250	/	120	/	LR28	/	20

TECHNICAL ADVANTAGES

- High cooling capacity with low noise output on the smallest installation space
- Suitable as reflux or leak oil cooler
- Requires no electrical installation
- Easy to maintain due to simple installation and removal of the cooling element
- Due to standard damping, reduction of noise level up to 6 dB (A) possible

TECHNICAL DATA

Operating pressure:	16 bar
Load change:	1×10^6 , $f = 2$ Hz
Max. static pressure:	10 bar



Type	E-motor size	Power [kW]	Shaft	Foot flanges type	Dimensions [mm]																
					A	A1	A2	A3	B	øD1	øD2	D3	øD4	G	H	H1	H2	L	L1	L2	M
PTÖK 200	80	0.55	19 x 24	PTFL 200	242	139	101.5	203	70	200	130	165	145	G 1/2	285	180	100	100	88	10,3	M10
		110																			
	90 S + L	1.1	24 x 50															118			
		1.5																124			
																		140			
PTÖK 250	100 L	2.2	28 x 60	PTFL 250 PTFS 250	310	164	144.5	267	102	252	180	215	190	G 3/4	329	199	130	120	101.5	22	M12
		3.0																124			
	112 M	4																128			
																		135			
																		148			
																		175			
																		144			
150																					
155																					
168																					
196																					
PTÖK 300	132 S +M	5.5	38 x 80	PTFL 300 PTFS 300	310	191	168.5	267	126	300	230	265	234	G 3/4	384	234	150	188	155	6	M16
		7.5																204			
PTÖK 350	160 M + L	11 15	42 x 110	PTFL 350 PTFS 350	355	230	210.5	316	152	350	250	300	260	G 3/4	426	251	175	228	155	6	M16
																		256			
	180 M + L	18.5 22	48 x 110															228			
																		256			

BELLHOUSING WITH INTEGRATED OIL COOLER

COOLING CAPACITY

Type	Cooling capacity ⁽¹⁾ P [kW] $\Delta t = 40 \text{ K}$	Power E-motor ⁽³⁾ [kW]	Air flow [m³ / h]	Input power [W]	Noise level ⁽²⁾ [dB (A)]	Correlation cooling and motor power %
PTÖK 200	0.95	0.55 - 1.5	72	20	52	63 - 100
PTÖK 250	2.1	2.2 - 4	260	30	58	53 - 95
PTÖK 300	3.22	5.5 - 7.5	430	90	69	43 - 59
PTÖK 350	5.15	11 - 22	780	140	70	23 - 46

⁽¹⁾ The indicated capacity relates to the nominal rotation for the driven machine and is 1,500 min⁻¹. In case of different speeds, please contact HBE.

⁽²⁾ Noise levels of damped version with bellhousing and electric motor are measured with 1 m distance to the tested objects. The stated values of noise level will be various depending on the electric motor.

⁽³⁾ Direction of pump rotation always clockwise (looking on pump shaft)

Should no additional heat sources have an effect on the hydraulic aggregate between 30 and 40 percent of the engine output is lost as heat energy when the engine is operated at an average efficiency. A part of this heat is released outwards from the individual components. Above all, the surface area of the tank plays an important role here. However, some heat energy remains which may lead to overheating of the oil. In order to avoid this, the usage of an additional cooler is required. In the vast majority of cases, a cooling capacity of between 20 to 30 percent of the engine output is sufficient – also with aggregates with a smaller tank surface area.

Meanwhile, it is hard to imagine oil hydraulics without bellhousing coolers. They are simple to install, they require very little space – particularly due to the ventilation system no longer being required – and, in most applications, achieve the complete required cooling capacity. See figure 1.

The values from figure 1 apply for an optimal amount of oil flow and applies to one Δt from 40 K. Should the oil flow be notably low or not sufficiently continual, the installation of a separate cooling circuit could be necessary – even this is effortlessly convertible with PTÖK bellhousing coolers. Figure 1 shows the dependency of the cooling capacity with the amount of oil flow. You will achieve the actual cooling capacity by multiplying the values for 1K Δt with the relevant Δt .

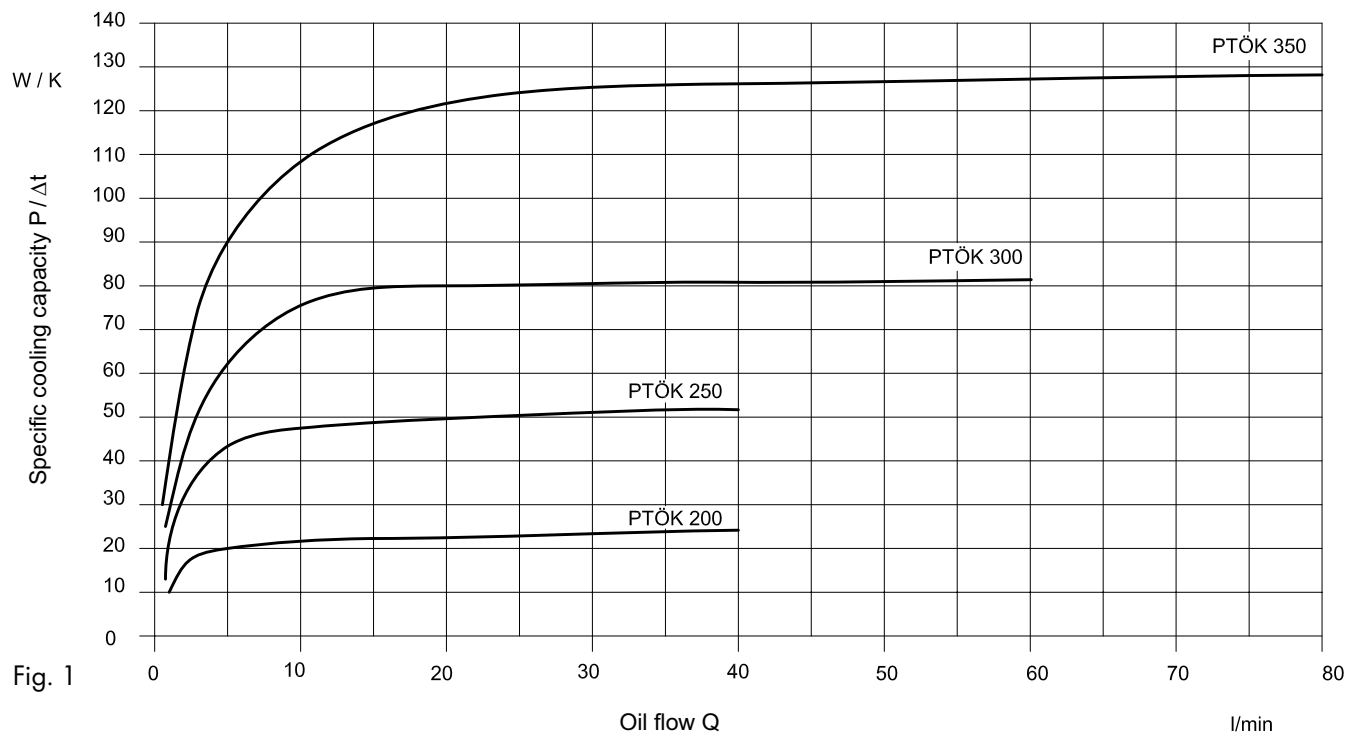


Fig. 1

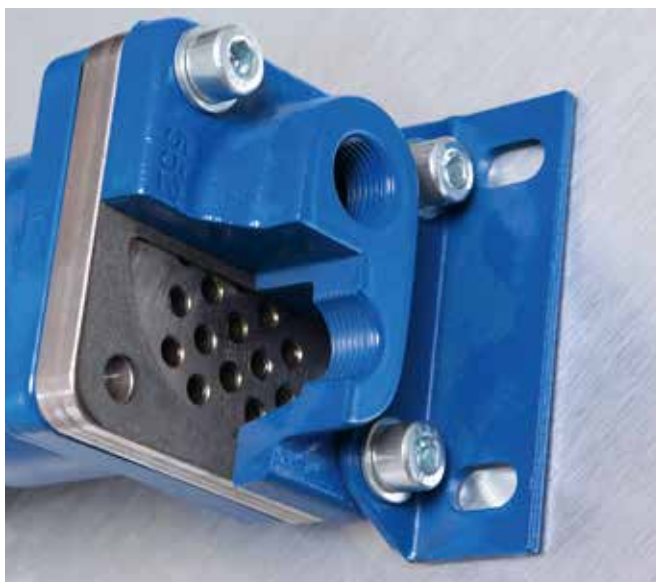
Specific cooling capacity $P / \Delta t$ depending on oil flow Q and temperature difference $\Delta t = 1$ K (oil inlet to air inlet).





OIL COOLERS

OIL COOLERS



CONTENT

LKI	111
TFS/A	123
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EKM / SKM	131
UKC	144

OIL / AIR COOLERS FOR INDUSTRIAL USE

SERIES LKI

PRODUCT DESCRIPTION

- Reduction of noise level
- Especially suitable for steady installations (for cooling of hydraulic or lubricating oil)
- Housings have been optimised
- Smaller models available as single or dual version (thus covering oilcooling requirements for both low and high oil flow rates)



PRODUCT FEATURES

- Testing pressure: 25 bar static according to DIN 50104
- Operating pressure: 16 bar (min. 2 million cycles from 0 – 16 bar at 2 Hz and 60°C)
- Compact oil cooler
- High cooling capacity
- Low pressure loss
- Max. operating temperature: 120°C
- High flexibility
- 2" SAE flange from LKI 700 upward
- Cooling of: oil, HFA, HFB, HFC, HFD fluids up to $v = 100 \times 10^{-6} \text{ m}^2/\text{s}$, Wasser/Glykol mind. 65:35 – under no circumstances water without corrosion prevention
- Coolant: air
- Variable motor; hydro/12/24 V

MATERIALS

	Standard	Sea water
Cooling block	Aluminium, RAL 9006	2 component paint
Housing	Steel, RAL 5009	Electroplated
Fan	PPG	
Safety barrier	Steel with blue-chrome finish	
Feet	Galvanised	

CALCULATION EXAMPLE LKI

Example 1: (if cooling capacity is known)

Cooling capacity	= 65 kW
Max. oil temperature	= 70 °C
Ambient temperature	= 30 °C
Oil flow rate	= 250 l/min

Specific cooling capacity:

$$\frac{Q}{T_{\text{öl}} - T_{\text{umg}}} = \frac{65}{70 - 30} = 1.63 \text{ kW/}^{\circ}\text{C}$$

Selection:

LKI-710-400-6 or LKI-810-400-8. The selection depends on possible noise restrictions.

Example 2: (if cooling capacity is not known)

Normally, there is a heat transfer to the oil of 25 - 30% of the motor power (diesel motor or E-motor)

Motor power	= 30 kW
Cooling capacity (0.3 x 30 kW)	= 9.0 kW
Max. oil temperature	= 60 °C
Ambient temperature	= 30 °C
Oil flow rate	= 35 l/min

Specific cooling capacity:

$$\frac{Q}{T_{\text{öl}} - T_{\text{umg}}} = \frac{9}{60 - 30} = 0.3 \text{ kW/}^{\circ}\text{C}$$

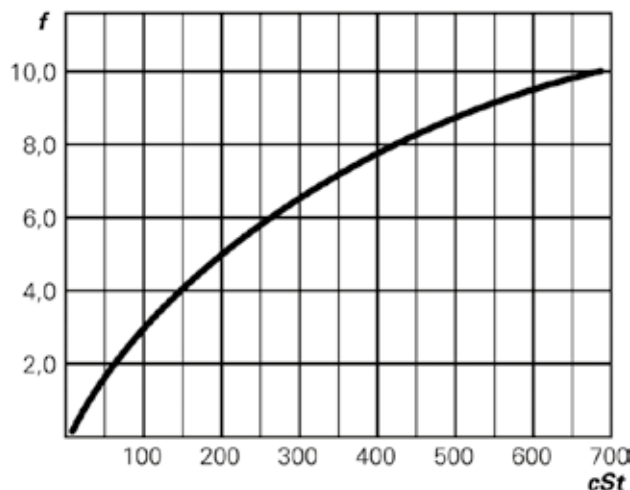
Selection:

LKI-210-400-2 or LKI-310-400-6. The selection depends on possible noise restrictions.

Oil cooling:

$$\Delta T_{\text{öl}} = \frac{36 \times Q}{V_{\text{öl}}} = \frac{36 \times 9}{35} = 9.26 \text{ }^{\circ}\text{C}$$

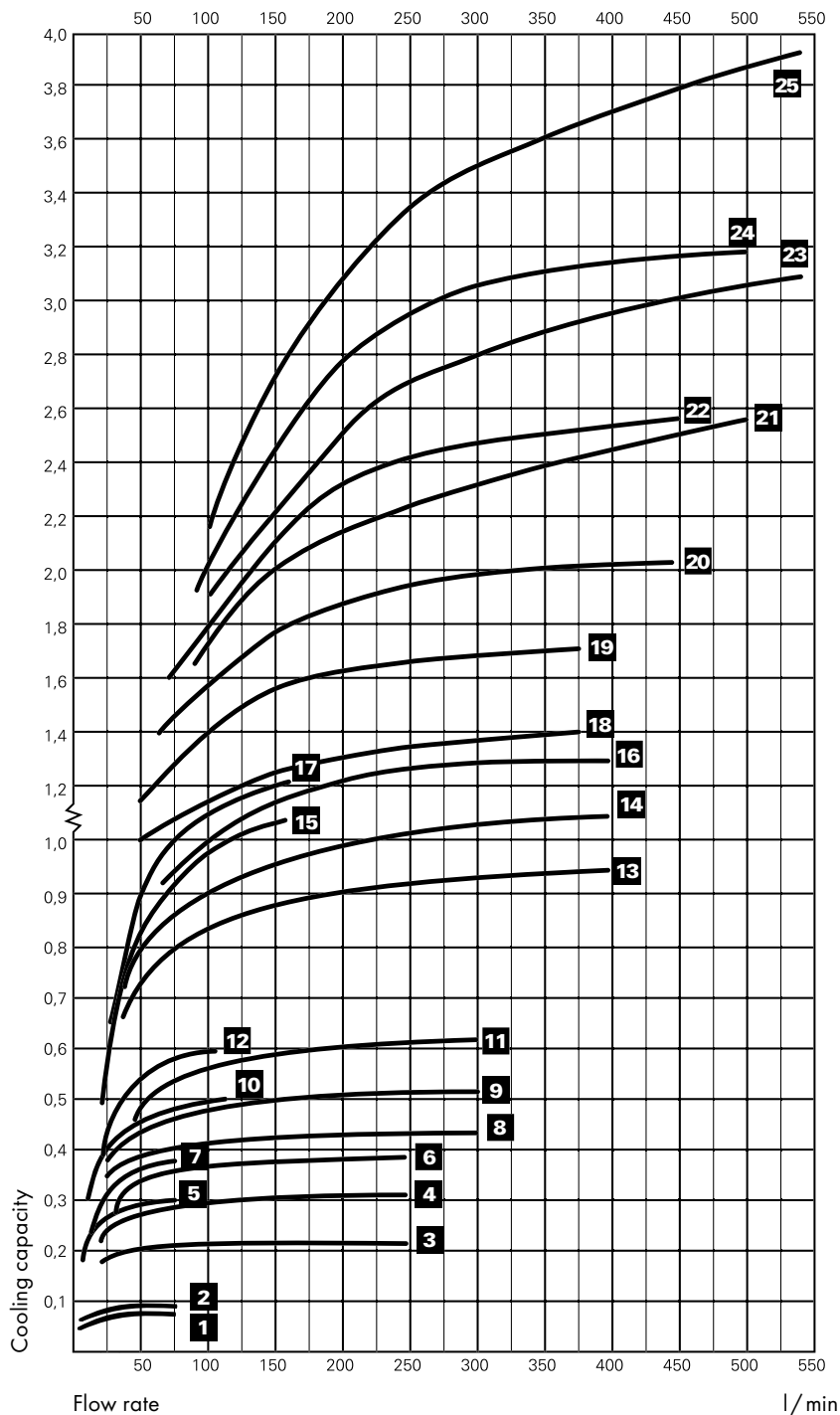
Q	= Cooling capacity [kW]
$T_{\text{öl}}$	= Max. oil temperature [°C]
T_{umg}	= Ambient temperature [°C]
$V_{\text{öl}}$	= Oil flow rate [l/min]



CORRECTION FACTOR FOR THE PRESSURE LOSS WITH OTHER VISCOSITIES

$$\Delta p_{\text{öl}} = \Delta p_{30\text{cSt}} \times f$$

PERFORMANCE DATA LKI 110-1010



25. LKI-1010-400V-6

24. LKI-1010-400V-8

23. LKI-910-400V-6

22. LKI-910-400V-8

21. LKI-810-400V-6

20. LKI-810-400V-8

19. LKI-710-400V-6

18. LKI-710-400V-8

17. LKI-620-400V-4

16. LKI-610-400V-4

15. LKI-520-400V-4

14. LKI-510-400V-4

13. LKI-510-400V-6

12. LKI-420-400V-4

11. LKI-410-400V-4

10. LKI-320-400V-4

9. LKI-310-400V-4

8. LKI-310-400V-6

7. LKI-220-400V-2

6. LKI-210-400V-2

5. LKI-120-400V-2

4. LKI-110-400V-2

3. LKI-110-400V-4

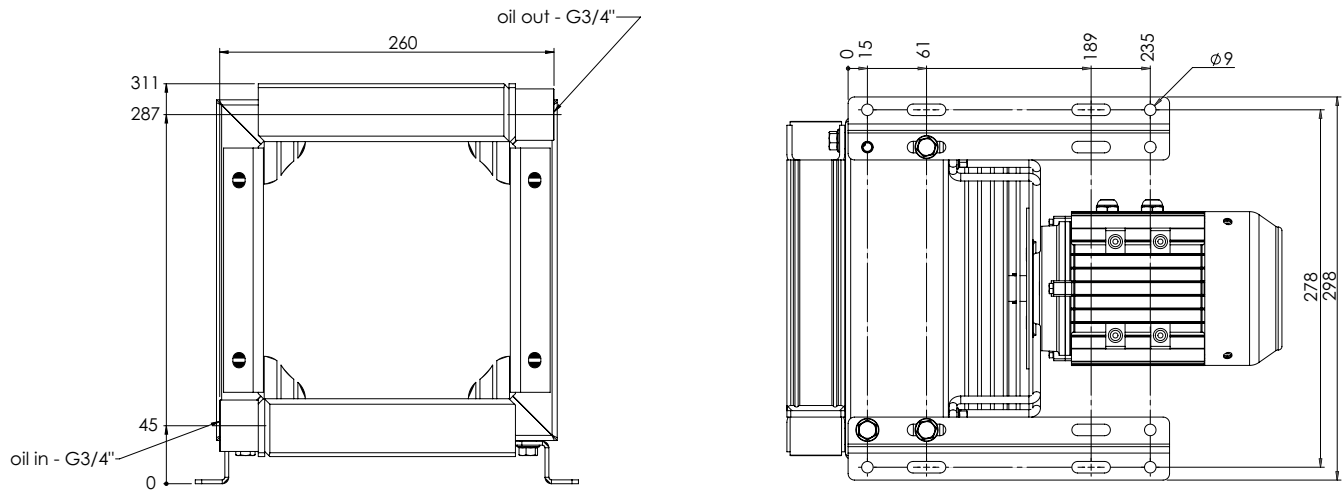
2. LKI-61-400V-4

1. LKI-51-400V-4

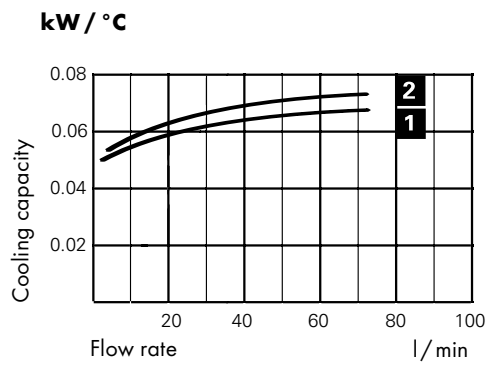
The calculation of the specific cooling capacities is based on an oil temperature of 60°C, an ambient temperature of 20°C – thus a temperature difference of 40°C. The figures apply to ISO VG32 hydraulic oil with 30 cSt. For variances, Δp is multiplied by the correction factor f from the diagram on page 112.

LKI-51/61

DIMENSIONS

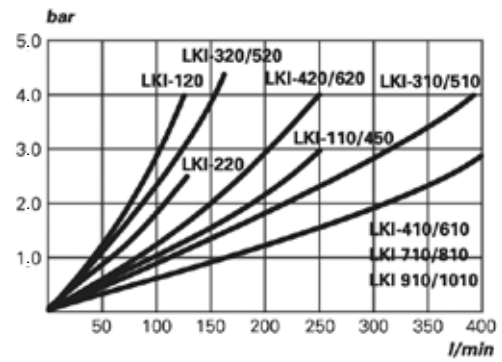


COOLING CAPACITY



1. LKI-51-400V-4
2. LKI-61-400V-4

PRESSURE DROP



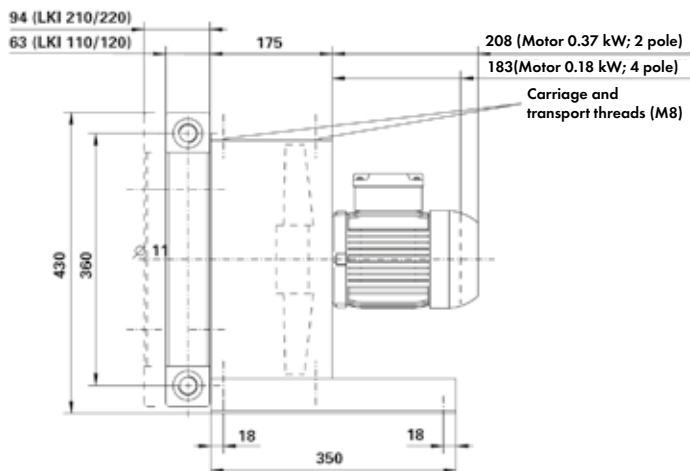
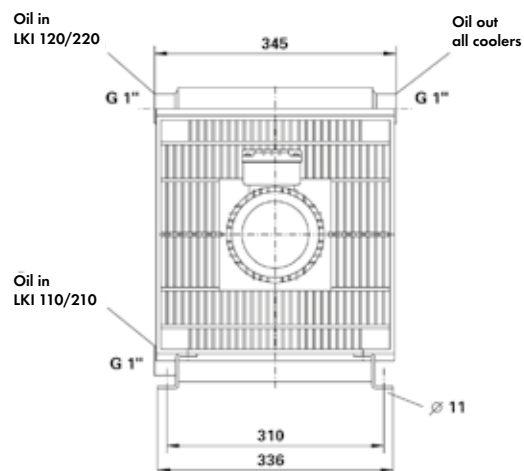
TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ /s]	Noise level* 1m/7m [dB(A)]	Weight [kg]
LKI-51-400 V-4	0.12	0.7	1360	0.09	63/49	16
LKI-61-400 V-4	0.12	0.7	1360	0.09	63/49	16

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

LKI-100/200

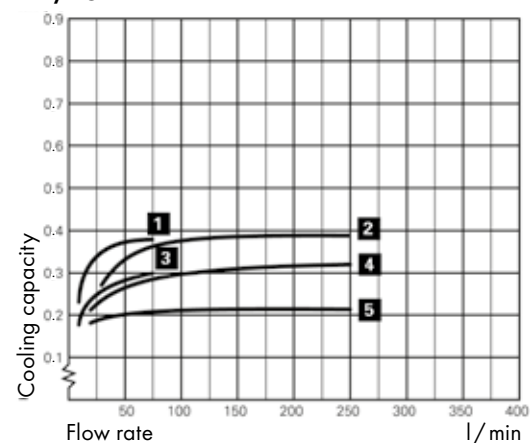
DIMENSIONS



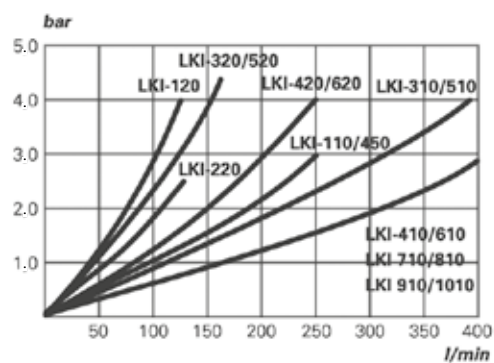
LKI 100-600: Lateral internal thread oil connections

COOLING CAPACITY

kW / °C



PRESSURE DROP



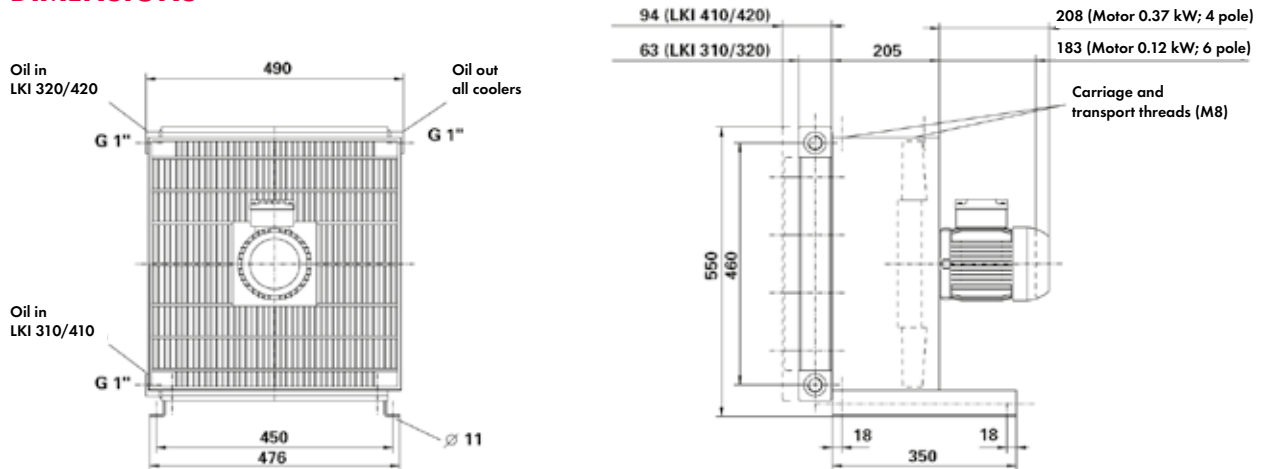
TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ / s]	Noise level* 1m/7m [dB(A)]	Weight [kg]
LKI-110-400 V-2	0.37	0.88	3000	1.29	77/62	17
LKI-120-400 V-2	0.37	0.88	3000	1.29	77/62	17
LKI-110-400 V-4	0.18	0.58	1500	0.49	64/50	17
LKI-120-400 V-4	0.18	0.58	1500	0.49	64/50	17
LKI-210-400 V-2	0.37	0.88	3000	1.18	79/64	20
LKI-220-400 V-2	0.37	0.88	3000	1.18	79/64	20
LKI-210-400 V-4	0.18	0.58	1500	0.50	64/50	20
LKI-220-400 V-4	0.18	0.58	1500	0.50	64/50	20

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

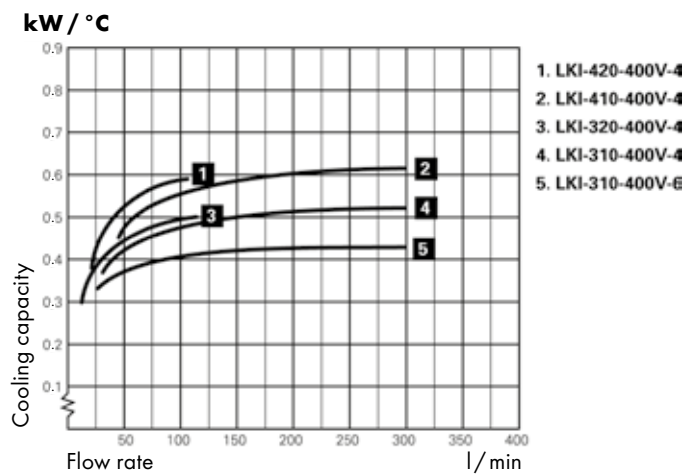
LKI-300 / 400

DIMENSIONS

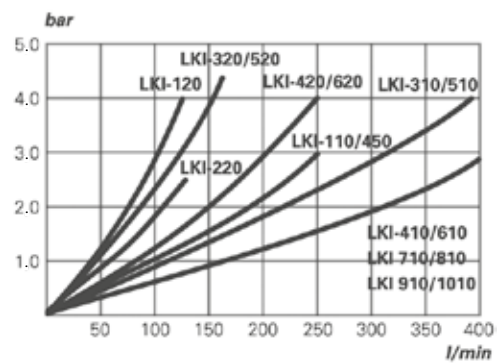


LKI 100 - 600: Lateral internal thread oil connections

COOLING CAPACITY



PRESSURE DROP



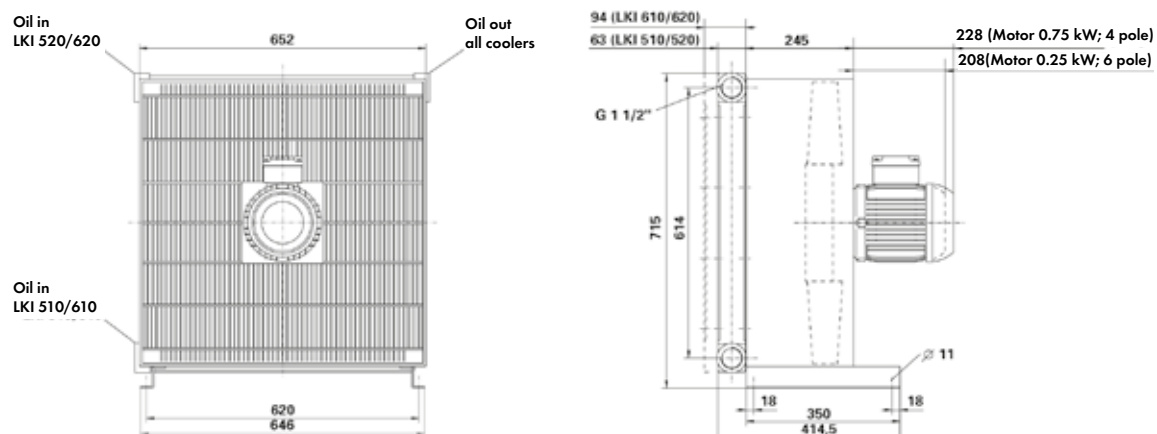
TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ / s]	Noise level* 1m/7m [dB (A)]	Weight [kg]
LKI-310-400 V-4	0.37	0.89	1500	0.74	73/58	25
LKI-320-400 V-4	0.37	0.89	1500	0.74	73/58	25
LKI-310-400 V-6	0.12	0.48	1000	0.59	65/51	26
LKI-320-400 V-6	0.12	0.48	1000	0.59	65/51	26
LKI-410-400 V-4	0.37	0.48	1500	0.76	75/63	32
LKI-420-400 V-4	0.37	0.48	1500	0.76	75/63	32
LKI-410-400 V-6	0.12	0.48	1000	0.55	67/53	33
LKI-420-400 V-6	0.12	0.48	1000	0.55	67/53	33

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

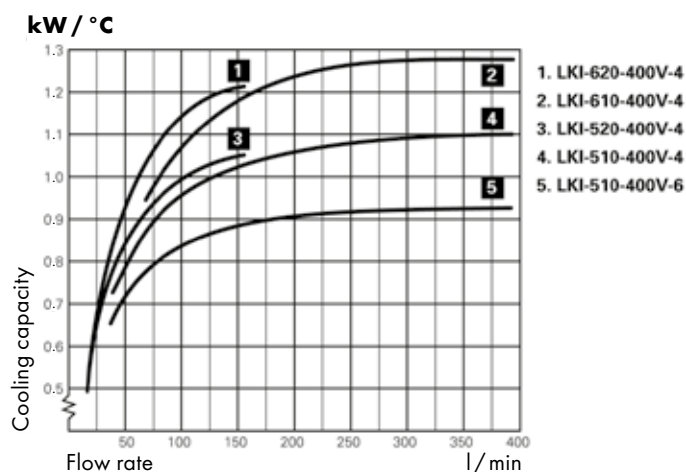
LKI-500 / 600

DIMENSIONS

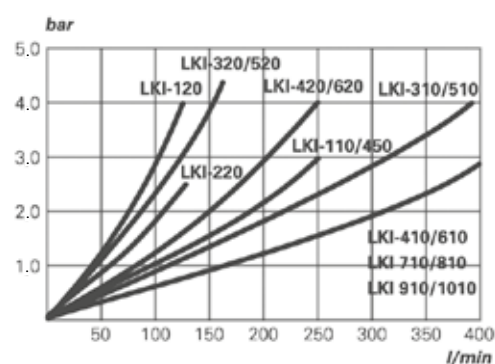


LKI 100 - 600: Lateral internal thread oil connections

COOLING CAPACITY



PRESSURE DROP



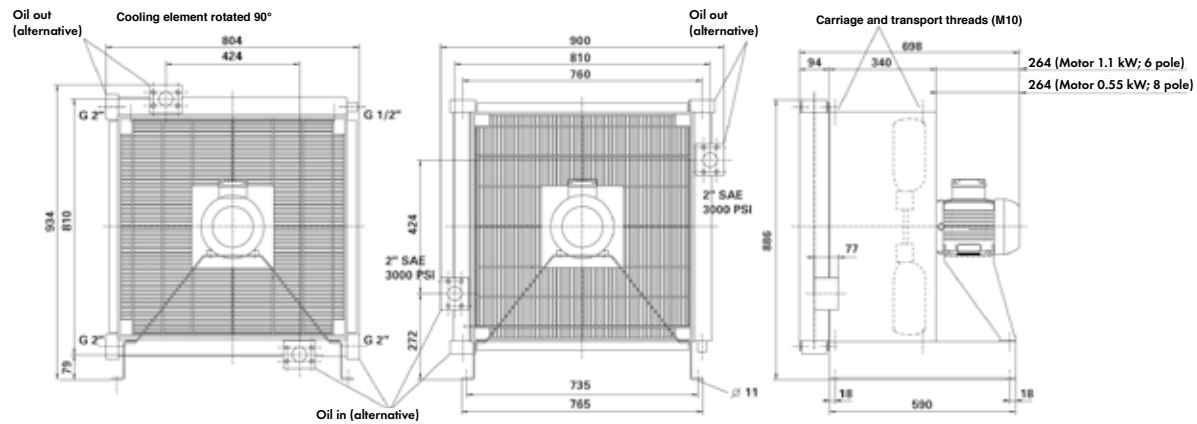
TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ / s]	Noise level* 1m/7m [dB(A)]	Weight [kg]
LKI-510-400 V-4	0.75	1.71	1500	1.70	80/70	40
LKI-520-400 V-4	0.75	1.71	1500	1.70	80/70	40
LKI-510-400 V-6	0.25	0.99	1000	1.06	70/57	37
LKI-520-400 V-6	0.25	0.99	1000	1.06	70/57	37
LKI-610-400 V-4	0.75	1.71	1500	1.50	80/70	49
LKI-620-400 V-4	0.75	1.71	1500	1.50	80/70	49
LKI-610-400 V-6	0.25	0.99	1000	0.95	70/57	49
LKI-620-400 V-6	0.25	0.99	1000	0.95	70/57	49

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

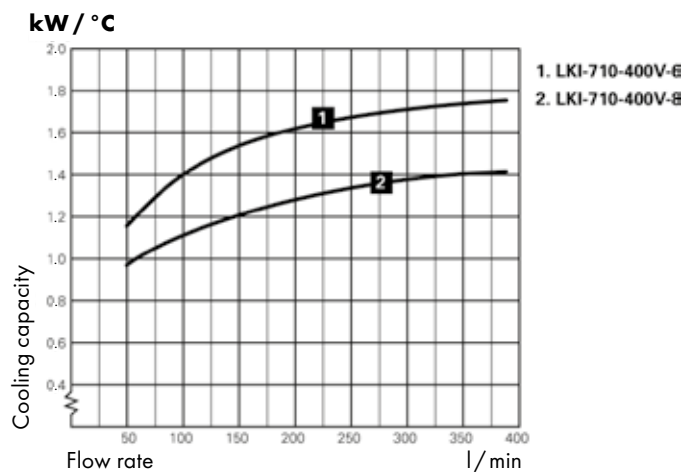
LKI-700

DIMENSIONS

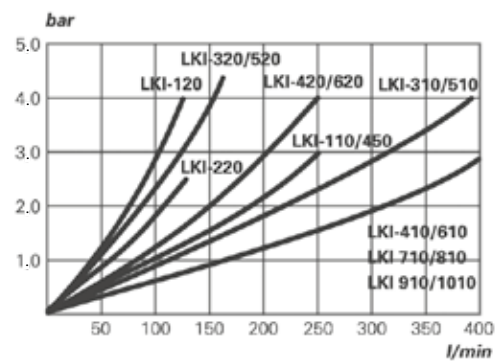


LKI 700-1000: Lateral internal thread
oil connections and SAE flange at front or rear

COOLING CAPACITY



PRESSURE DROP



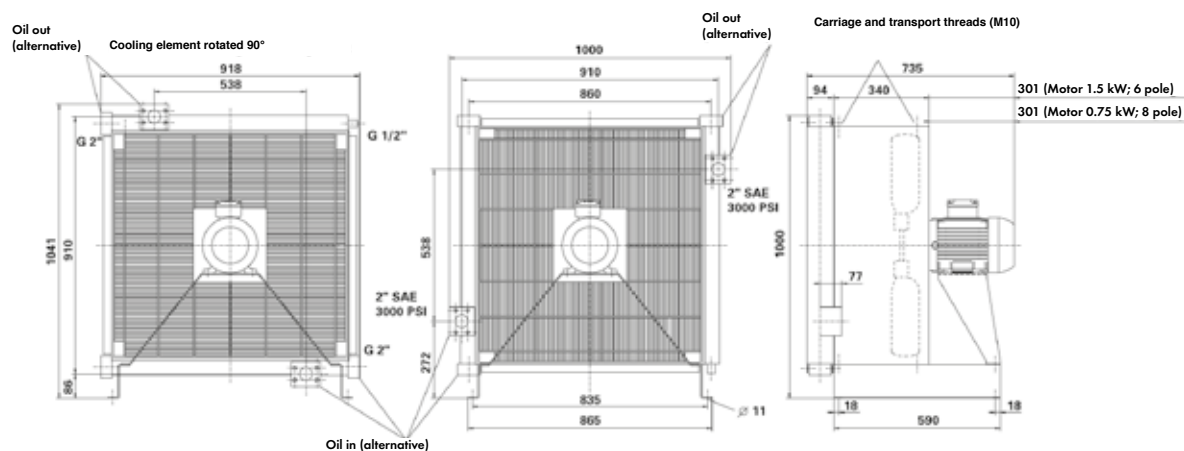
TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ / s]	Noise level* 1m/7m [dB(A)]	Weight [kg]
LKI-710-400 V-6	1.1	2.56	1000	2.14	77/64	91
LKI-710-400 V-8	0.55	2.56	750	1.56	69/56	91

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

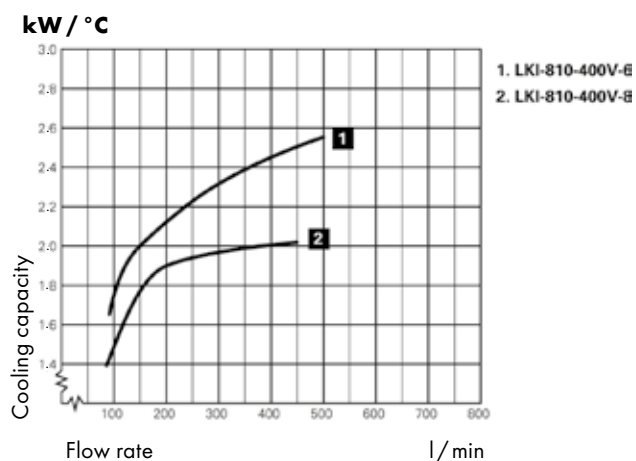
LKI-800

DIMENSIONS

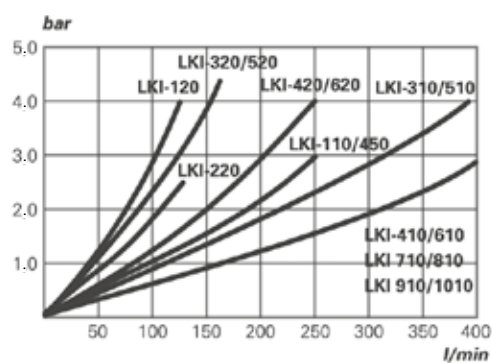


LKI 700-1000: Lateral internal thread oil connections and SAE flange at front or rear

COOLING CAPACITY



PRESSURE DROP



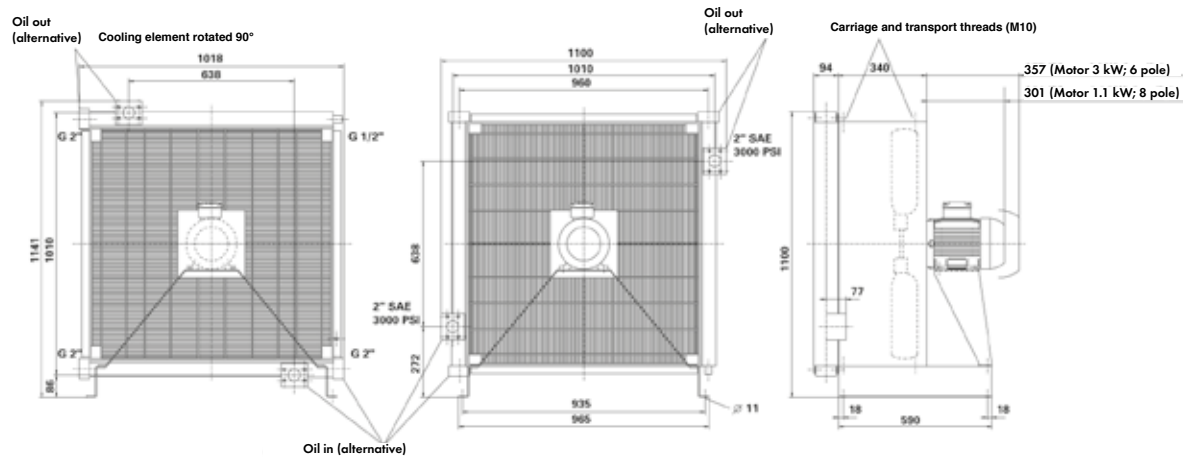
TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ /s]	Noise level* 1m/7m [dB(A)]	Weight [kg]
LKI-810-400 V-6	1.5	3.78	1000	3.38	79/68	111
LKI-810-400 V-8	0.75	2.42	750	2.64	72/60	111

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

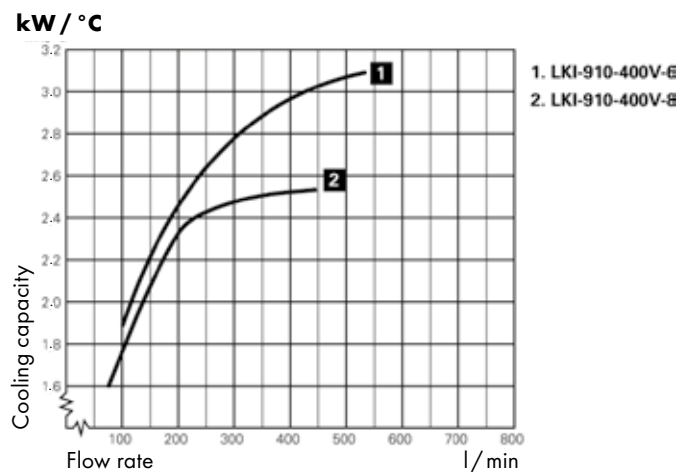
LKI-900

DIMENSIONS

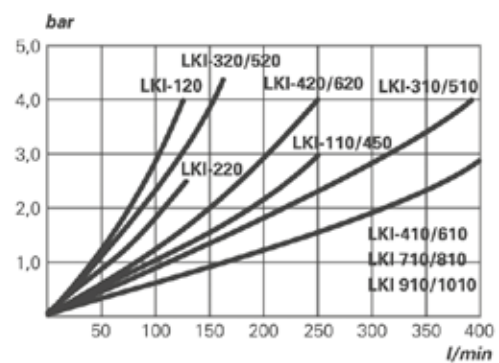


LKI 700 - 1000: Lateral internal thread oil connections and SAE flange at front or rear

COOLING CAPACITY



PRESSURE DROP



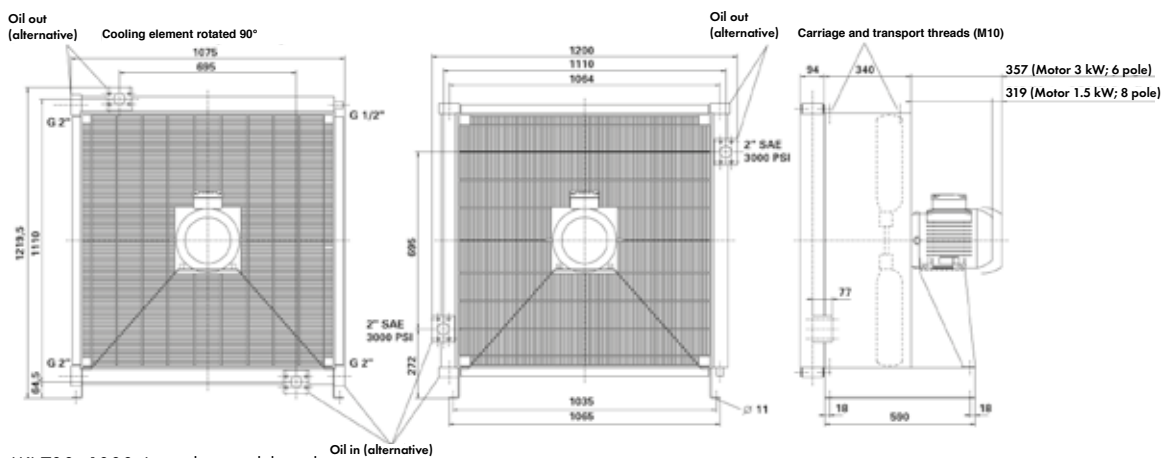
TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ / s]	Noise level* 1m/7m [dB (A)]	Weight [kg]
LKI-910-400 V-6	3	7.20	1000	4.32	85/72	137
LKI-910-400 V-8	1.1	3.78	750	3.07	76/64	131

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

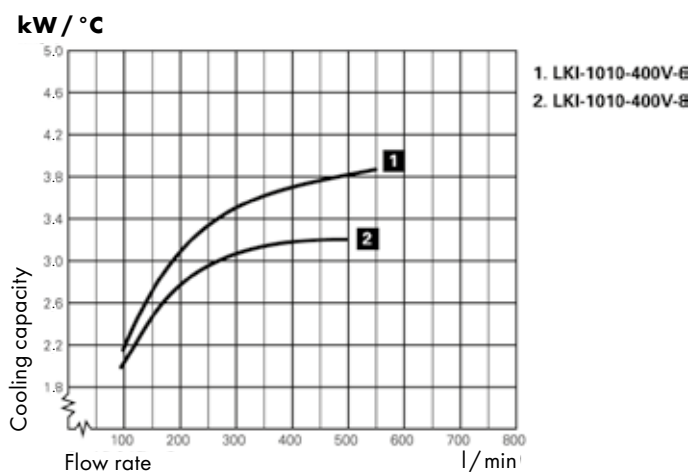
LKI-1000

DIMENSIONS

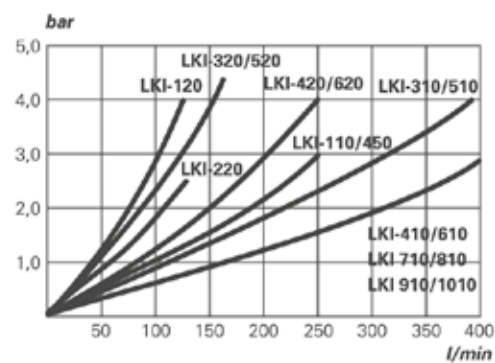


LKI 700 - 1000: Lateral internal thread oil connections and SAE flange at front or rear

COOLING CAPACITY



PRESSURE DROP



TECHNICAL DATA

Type	Motor power [kW]	Power consumption [A]	Speed [min ⁻¹]	Air flow rate [m ³ /s]	Noise level* 1m/7m [dB(A)]	Weight [kg]
LKI-1010-400 V-6	3	7.20	1000	5.38	84/71	157
LKI-1010-400 V-8	1.5	3.78	750	3.84	76/64	151

*May vary by ± 3 dB(A) due to room characteristics, natural frequencies, oil connections, viscosities etc.

LKI - 110 - 400V - 2 - G - L

*on request

- = standard
- G90** = cooling block turned 90°
- G180** = cooling block turned 180°

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

1 pass = 10
2 pass = 20

2 = 2 pole / 3.000 min⁻¹
4 = 4 pole / 1.500 min⁻¹
6 = 6 pole / 1.000 min⁻¹
8 = 8 pole / 750 min⁻¹

400 V = 400 V multi-stage motor

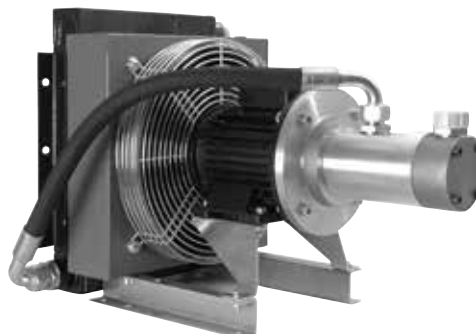
Motors with special voltages, hydraulic and with explosion protection available on request.

PARTIAL FLOW COOLING UNIT FOR INDUSTRIAL APPLICATION

SERIES TFS/A

PRODUCT DESCRIPTION

- Compact partial flow cooling unit
- Designed to improve the availability and reliability of hydraulic systems
- Motor pump station and oil air cooler in one device
- Autonomous unit which can be operated independently of the main system
- Thus, continuous cooling



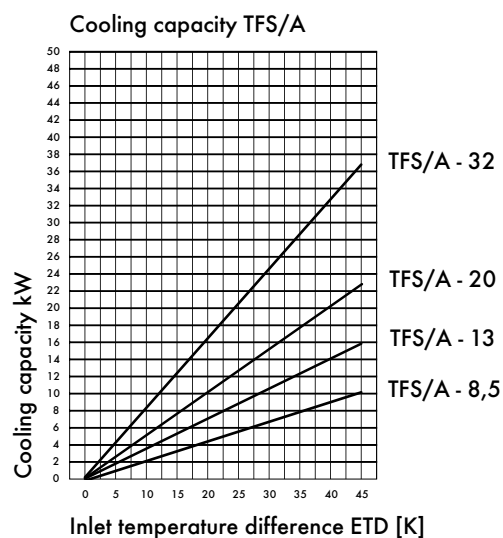
PRODUCT FEATURES

- Compact design
- Reduced noise operation
- Easy to maintain, since the number of wearing parts has been consistently reduced
- Equipped with multi-stage motors as standard
- Any mounting position is possible
- Option: low noise internal gear pump

ADVANTAGES

- Extension of the service life of the hydraulic components
- Enhancement of the application reliability
- Improvement of the positioning accuracy
- Easy retrofitting on existing systems possible

COOLING CAPACITY DIAGRAM



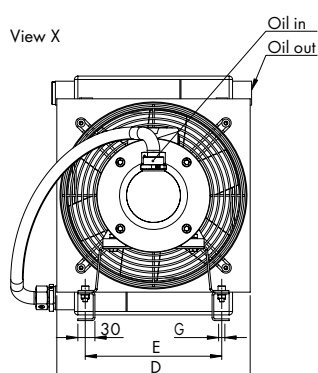
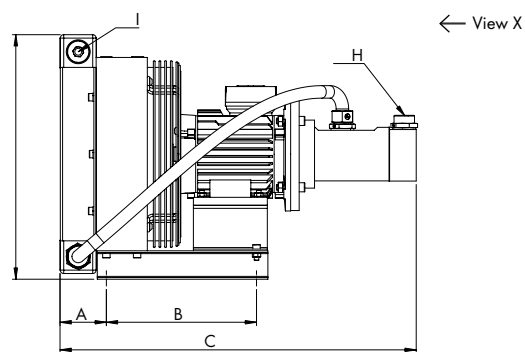
Type	ETD* [kW Δt 40°C]	Flow rate standard pump [l/min]
TFS / A - 8,5	8.5	30
TFS / A - 13	13	38
TFS / A - 20	20	50
TFS / A - 32	32	80

Cooling capacity of the oil air cooler (with feed pump) dependent on the inlet temperature difference oil to air.

*Inlet temperature difference oil to air

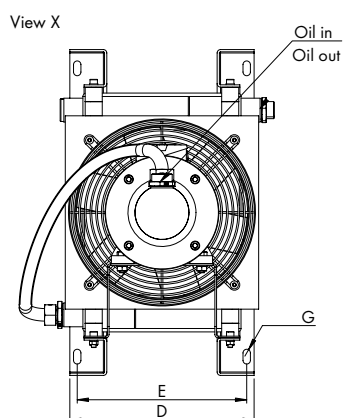
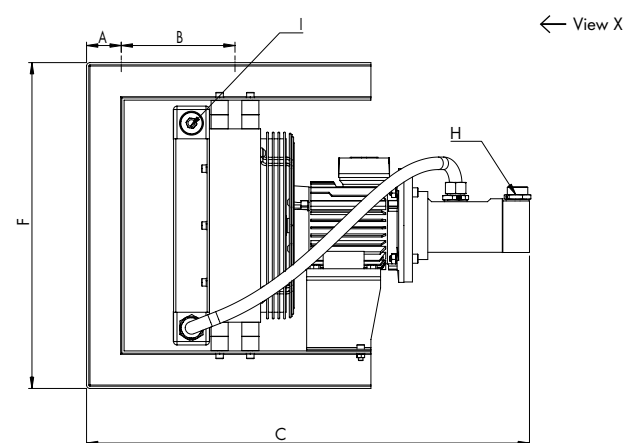
DIMENSIONS TFS / A

TFS / A - ... F



in mm	... -8,5	... -13	... -20	... -32
A	195	256	237	127
B	150	150	150	370
C	622	682	766	764
D	340	480	480	654
E	240	380	380	554
F	430	549	549	722
G	11	11	11	12
H	G 1"	G 1"	G 1"	1 1/2"
I	G 1"	G 1"	G 1"	1 1/2"

TFS / A - ... WH / DH



in mm	... -8,5	... -13	... -20	... -32
A	61	70	70	α.A.
B	200	263	263	α.A.
C	779	865	949	α.A.
D	342	480	480	α.A.
E	298	440	440	α.A.
F	573	714	714	α.A.
G	26 x 13	11 x 21	11 x 21	α.A.
H	G 1"	G 1"	G 1"	α.A.
I	G 1"	G 1"	G 1"	α.A.

ORDER CODE TFS / A

TFS/A - 8,5 - 400 - F - 05 - 19 - DBV - 10BY

Model

Low pressure filter (10 µ)

Cooling capacity

8.5 kW = **8,5**
13 kW = **13**
20 kW = **20**
32 kW = **32**
(bei EDT= 40°C)

DBV = internal pressure relief valve

Pump displacement

(other displacements on request)

Rated voltage of motor

Multistage motor = **400**
230/400 V 50 Hz
240/420 V 50 Hz
254/440 V 60 Hz
280/480 V 60 Hz

Series

Mounting

F = standard feet

WH/DH = combined wall/ceiling bracket

TECHNICAL DATA*

Size		... -8,5	... -13	... -20	... -32
Electrical connection power	kW	1.1	1.1	1.5	3
Rated current at 400 V - 50 Hz	A	2.6	2.6	3.6	6.5
Pump displacement	ccm	19	27	34	52
Speed at 50 Hz	U/min	1385	1410	1410	1410
Air flow rate	m³/h	1131	2565	2232	4500
Viscosity range	mm²/s	10 - 300	10 - 300	10 - 300	10 - 300
Permissible medium operating temperature	°C	100	100	100	100
Permissible medium operating pressure at 40 mm²/s	bar	10	10	5	5
Noise level	dB(A)	64	74	76	80
Maximum suction height	m	1	1	1	1
Maximum temperature difference	°C	60	60	60	60
Gearbox application incl. internal Bypass valve	bar	5	5	5	5

*All declarations refer to a voltage of 400 V - 50 Hz.

DOC® BRAZED PLATE HEAT EXCHANGER

PRODUCT FEATURES

- High operating pressures
- High operating temperatures
- Compact connection blocks, brazed on the plate heat exchanger
- Cooling capacity of 5 to 360 kW
- Suitable for most industrial hydraulic applications
- Sturdy design due to brazed contact points between the plates
- This allows best possible resistance against high operating pressures
- 32 bar for DOC® 16, 30 and 60, 16 bar for DOC® 20 and 110
- Brazed design allows temperatures of up to 225°C
- Sturdy connection blocks allow high fastening torques for assembling

OPERATING PRINCIPLE

The heating surface consists of thin corrugated brazed stainless steel plates. Channels are formed between the plates; which are connected in a way so that the two media flow through the channels in counter-current flow.

The media are kept in the unit by a brazed seal around the edge of the plates. The contact points of the plates are also brazed to withstand the pressure of the handled media.



STANDARD VERSION

The plate pack is covered by the cover plates. The connections are located in the front cover plate. The channel plates are corrugated to improve the heat transfer efficiency and to increase the mechanical strength.

STANDARD MATERIALS

Cover plates:	Stainless steel Alloy 304 (1.4301)
Connections:	Stainless steel Alloy 304 (1.4301)
Plates:	Stainless steel Alloy 316 (1.4401)
Solder:	Copper

REQUIRED DETAILS FOR QUOTATION

In order to provide you with a specific quotation, we need the following information:

- Required flow rates
- Temperature programme
- Physical characteristics of the media used
- Desired working pressure
- Maximum permitted pressure drop



For the calculation of a plate heat exchanger, you will find a questionnaire in the download section of our website.



HIGHEST COOLING CAPACITY AND LOW DEGREE OF CONTAMINATION

- Low pressure drop over the connectors
- Optimised plate design
- Compact dimensions, low water consumption and low Delta T
- Highly efficient heat transfer due to turbulent flow (high k value; $P=k \cdot A \cdot \Delta T$)
- Self cleaning effect inside the cooler due to equally distributed and highly turbulent flow

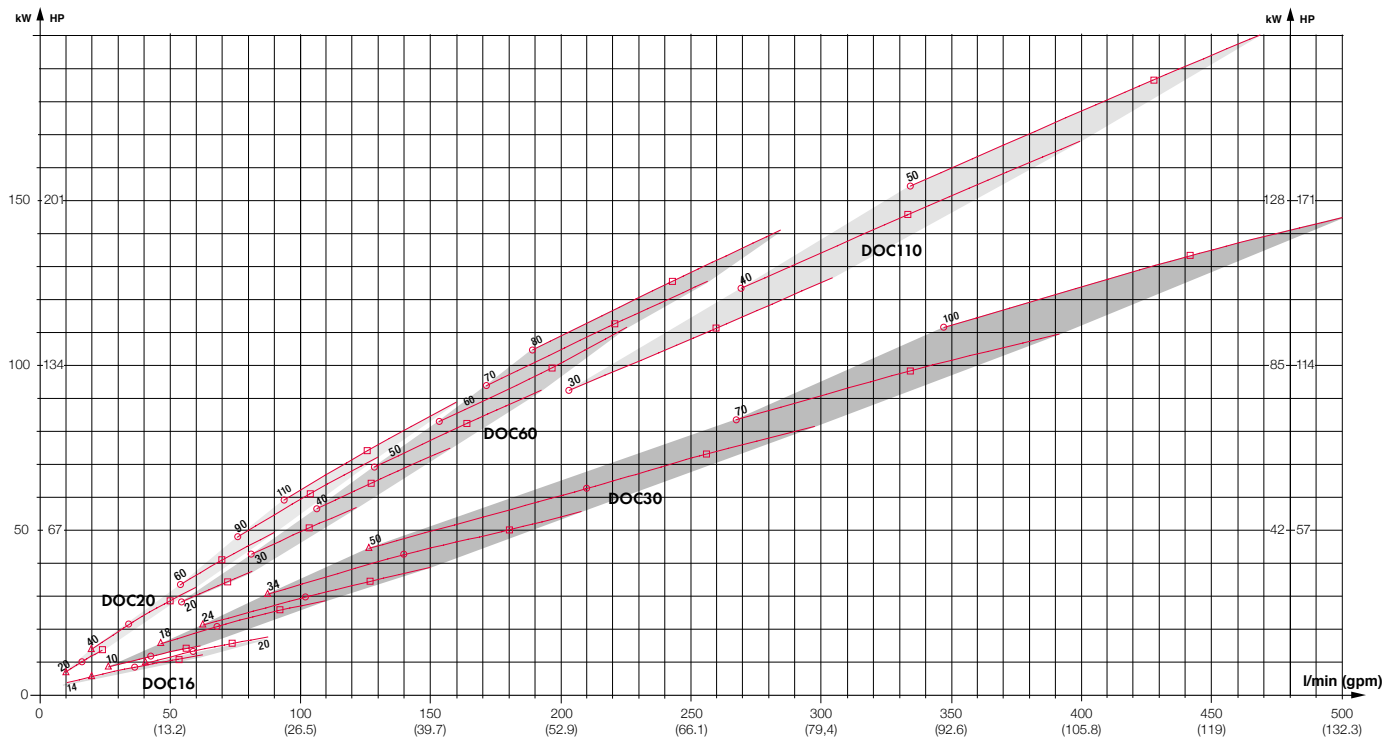
TECHNICAL DATA

	DOC®16	DOC®20	DOC®30	DOC®60	DOC®110
Max. operating temperature	225°C	225°C	225°C	225°C	225°C
Min. operating temperature	-196°C	-196°C	-196°C	-196°C	-196°C
Max. operating pressure S1-S2/S3-S4, [bar]	33/33	16/16	33/33	40/40	16/30
Min. operating pressure	Vacuum	Vacuum	Vacuum	Vacuum	Vacuum
Volume per channel, [litre]	0.02	0.028	0.05	0.103	0.25
Cooling capacity [kW]	< 16	6 - 75	10 - 100	20 - 140	40 - 170
Standard number of plates	14, 20	20, 40, 60, 90, 110	10, 18, 24, 34, 50, 70, 100	20, 30, 40, 50, 60, 70, 80	20, 30, 40, 50

Order code			
Type	Size		Number of plates
DOC®	30	-	70

DOC® BRAZED PLATE HEAT EXCHANGER

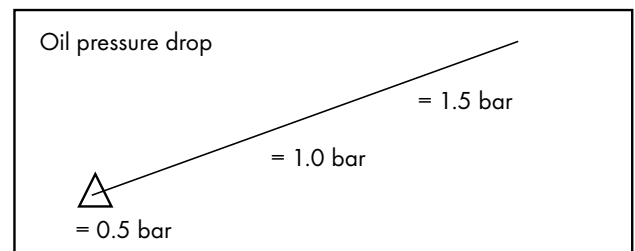
SELECTION DIAGRAM



THE DIAGRAM

- is based on an oil temperature of 60°C and water temperature of 20°C. For an oil temperature of 50°C, multiply with the correction factor of 0.7. For other water temperatures, please see the correction factors on the right side.
- is calculated for two different oil / water flow rates: 2:1 and 4:1. This means that for every litre of oil circulated through the oil cooler, a minimum of 0.5 litres (2:1) or 0.25 litres (4:1) of water must be circulated to agree with the data in the diagram.
- is based on oil (ISO VG 32). For other oils, correction factors must be used. Multiply the required cooling load by the cooling load correction factor. After selecting the oil cooler, multiply the pressure drop by the pressure drop correction factor.

CORRECTION FACTORS



Water temperature [°C]	Correction factors
15	0.91
20	1.00
25	1.12
30	1.20
35	1.50

Viscosity class	Cooling capacity	Oil pressure drop
ISO VG 22	0.95	0.9
ISO VG 32	1.00	1.0
ISO VG 46	1.05	1.2
ISO VG 68	1.20	1.5
ISO VG 100	1.35	2.1

DIMENSIONS

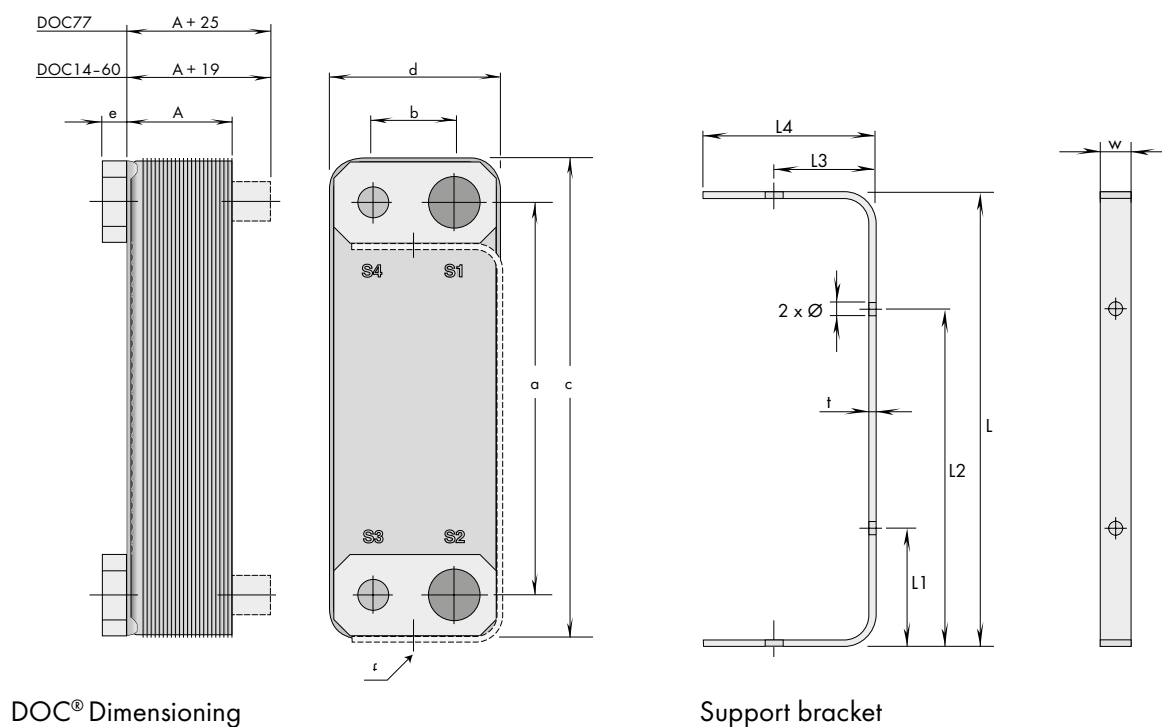


PLATE HEAT EXCHANGER DOC®

Type	Dimensions [mm]						Dry weight [kg]
	a	b	c	d	e	A	
DOC16	172	42	208	78	22	$8 + (n \times 2.25)$	$0.8 + (n \times 0.06)$
DOC20	270	46	324	94	26	$8 + (n \times 1.50)$	$1.5 + (n \times 0.08)$
DOC110	519	92	618	191	26	$10 + (n \times 2.85)$	$11.0 + (n \times 0.44)$

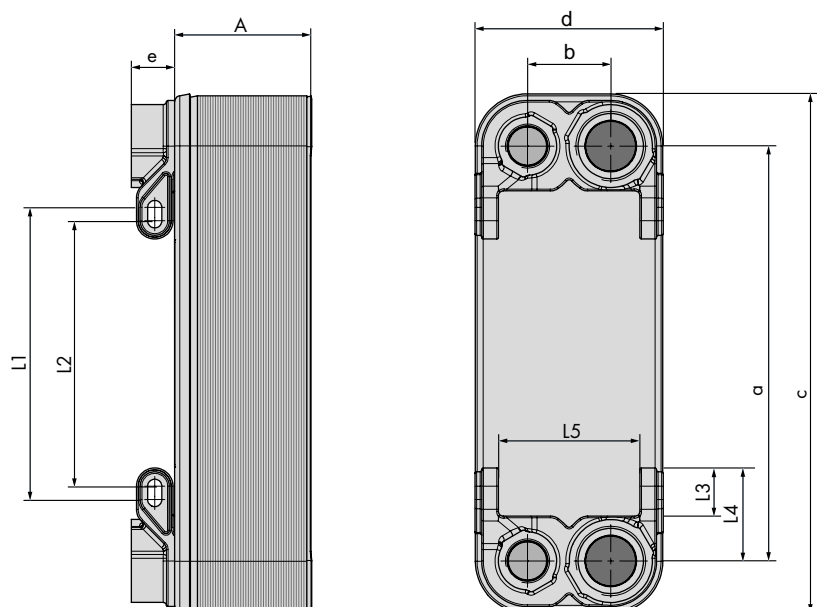
n = number of plates

SUPPORT BRACKETS

Type	Dimensions [mm]							
	L	L1	L2	L3	L4	w	t	Ø
DOC16	177	57	119	44	78	20	5	9
DOC20	275	85	189	51	94	25	6	9
DOC110	524	149	372	106	180	25	8	11

DOC® BRAZED PLATE HEAT EXCHANGER

DIMENSIONS



new mounting type

Type	Dimensions [mm]											Dry weight [kg]
	a	b	c	d	e	A	L1	L2	L3	L4	L5	
DOC30	250	50	313	113	26	$13 + (n \times 2.31)$	176	160	29	56	85	$1.2 + (n \times 0.18)$
DOC60	466	50	527	113	26	$13 + (n \times 2.32)$	392	376	29	56	85	$2.1 + (n \times 0.18)$

n = number of plates

CONNECTIONS

Type	S1-S2, oil	S3-S4, water	Spanner grip	F
DOC16	ISO-G 3/4"	ISO-G 3/4"	32	M8
DOC20	ISO-G 1"	ISO-G 3/4"	41	M8
DOC30	ISO-G 1 1/4"	ISO-G 3/4"	50	M8
DOC60	ISO-G 1 1/4"	ISO-G 3/4"	50	M8
DOC110	ISO-G 1 1/2"	ISO-G 1"	50	M8

OIL / WATER COOLER FOR INDUSTRIAL USE

SERIES EKM/SKM

PRODUCT DESCRIPTION

- Development of a tube bundle heat exchanger
- For a wide range of industrial applications
- Additional cooling surface due to aluminium fins for a heat exchange capacity of 1,000 kW
- EKM/SKM heat exchangers have a cooling surface of 0.43 m² to 56 m²
- Are constructed of 43 basic units, available as single, double or quadruple version



PRODUCT FEATURES

- Aluminium fins and copper nickel tubes (standard) ensure maximum level of heat exchange
- Large oil connectors for minimum flow resistance
- Heat dissipation up to 1,000 kW
- Oil flow rates of up to 1,200 l/min
- Removable end caps for easy cleaning of the tubes
- Flanges allow a 90° rotation of the heat exchanger
- Optionally available with internal bypass check valve (patented)
- High quality materials
- Max. pressure: oil 35 bar / water 16 bar

OPTION

- Sea water version
- Certification for marine applications
- Compressed air application
- Water-water application
- Stainless steel version or chemically nickel plated

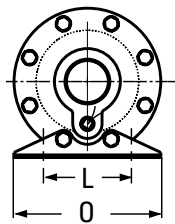
MATERIALS

- Shell, mounting bracket, baffles, tube sheet: steel
- End plates: steel
- Cooling fins, type plate: aluminium
- Tubes: copper, copper nickel
- End caps: cast iron
- Gaskets: nitrile rubber, cellulose fibre

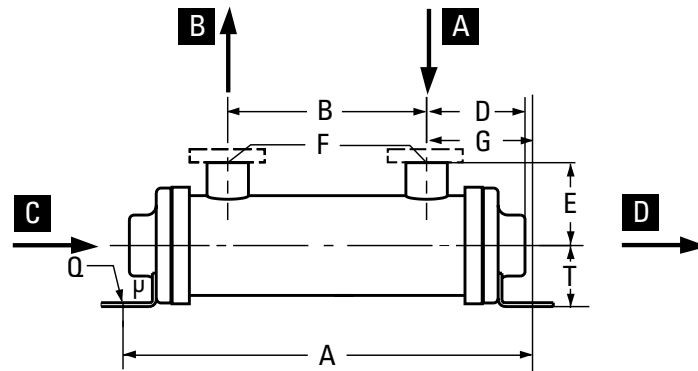
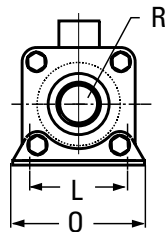
DIMENSIONS 500 – 1000

1 PASS, TYPE: "O"

EKM-700&1000

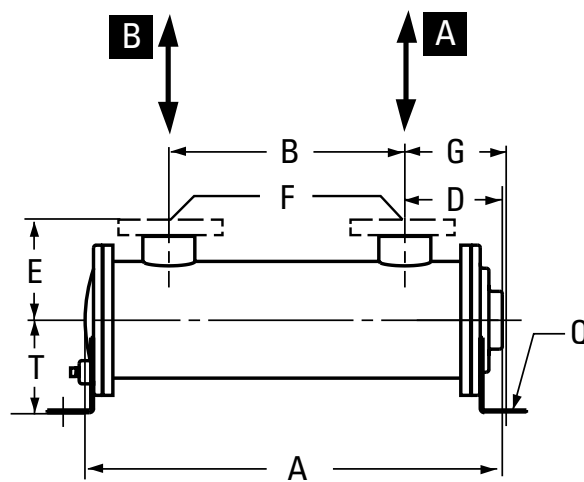
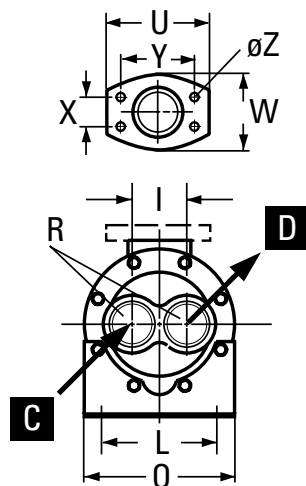


EKM-500



- A** - Medium to be cooled
- B** - Cooled medium
- C** - Cooling water "in"
- D** - Cooling water "out"

2 PASS, TYPE: "T"



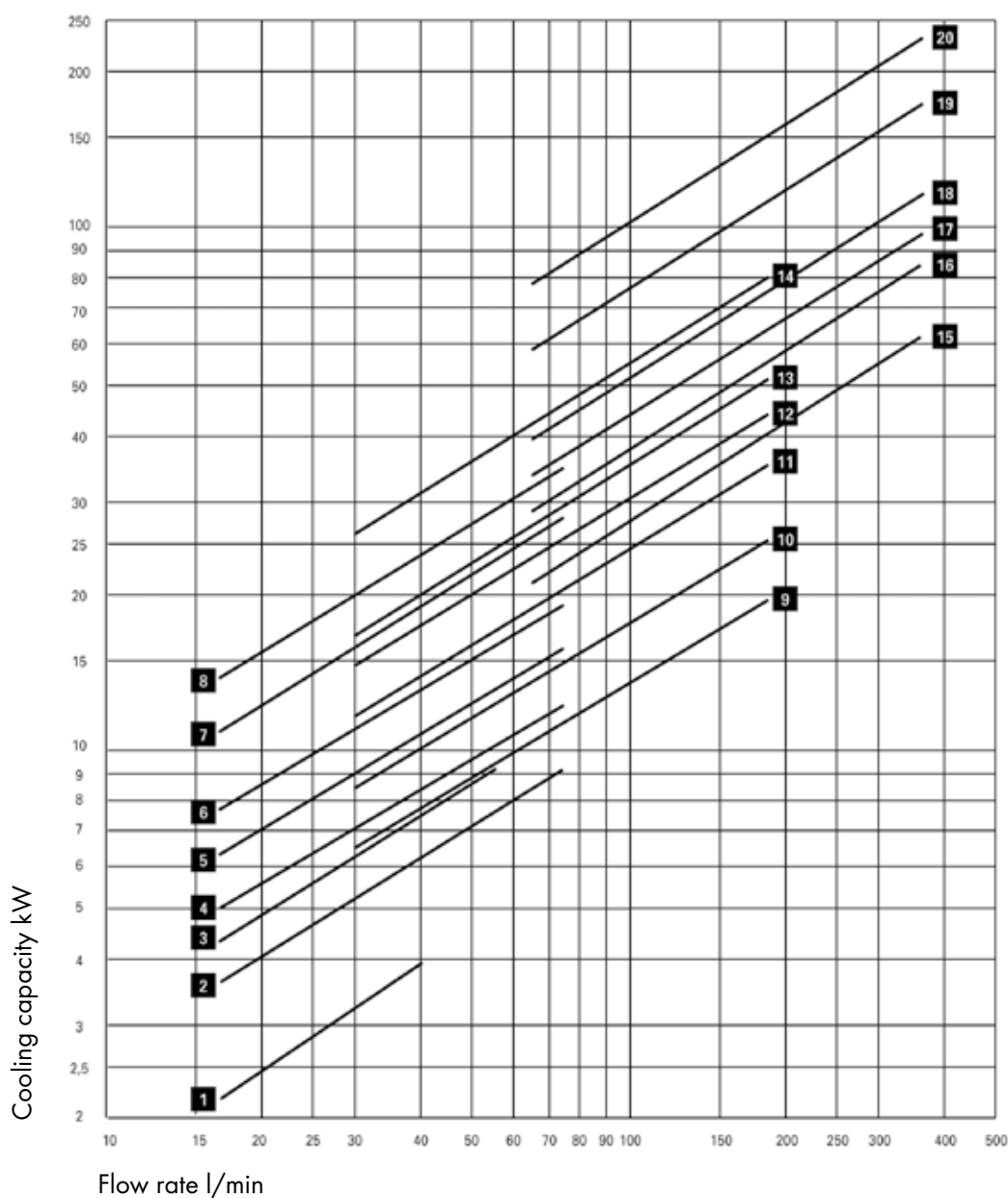
- A** - Medium to be cooled
- B** - Cooled medium
- C** - Cooling water "in"
- D** - Cooling water "out"

DIMENSIONS EKM 500 – 1000

Type	Dimensions [mm/BSPP]															Weight [kg]
	A	B	D	E	F	G	T	Q	X	Y	R	L	O	I	m²	
EKM-505-O	189	55	66	53	G 3/4"	66	41	Ø 9 x 16	-	-	G 3/4"	64	89	-	0.43	3.15
EKM-505-T			67			G 3/8"					28					
EKM-508-O	265	97	82	57		83					G 3/4"			-	0.73	3.60
EKM-508-T			83			G 3/8"					28					
EKM-510-O	316	148	82			83					G 3/4"			-	0.94	3.45
EKM-510-T			83			G 3/8"					28					
EKM-512-O	367	199	82			83					G 3/4"			-	1.13	4.05
EKM-512-T			83			G 3/8"					28					
EKM-514-O	418	250	82			83					G 3/4"			-	1.43	4.50
EKM-514-T			83			G 3/8"					28					
EKM-518-O	519	351	82			83					G 3/4"			-	1.74	5.10
EKM-518-T			83			G 3/8"					28					
EKM-524-O	672	504	82			83					G 3/4"			-	2.35	6.00
EKM-524-T			83			G 3/8"					28					
EKM-536-O	976	808	82			83					G 3/4"			-	3.57	7.80
EKM-536-T			83			G 3/8"					28					
EKM-708-O	283	76	103	73	G 1 1/2"	103	66	Ø 11 x 19	35.7	69.9	G 1 1/4"	76	127	-	1.38	7.30
EKM-708-T			91			95					G 1"			41		
EKM-712-O	385	178	103			103					G 1 1/4"			-	2.18	8.40
EKM-712-T			91			95					G 1"			41		
EKM-714-O	436	229	103			103					G 1 1/4"			-	2.53	8.80
EKM-714-T			91			95					G 1"			41		
EKM-718-O	537	330	103			103					G 1 1/4"			-	3.29	10.20
EKM-718-T			91			95					G 1"			41		
EKM-724-O	690	483	103			103					G 1 1/4"			-	4.44	11.60
EKM-724-T			91			95					G 1"			41		
EKM-736-O	976	787	103			103					G 1 1/4"			-	6.73	15.50
EKM-736-T			91			95					G 1"			41		
EKM-1012-O	397	157	116	92	G 1 1/2"	116	102	Ø 11 x 25	42.9	77.8	G 1 1/2"	102	165	-	4.38	15.40
EKM-1012-T			113			110					G 1 1/4"			60		
EKM-1014-O	448	208	116			116					G 1 1/2"			-	5.17	16.90
EKM-1014-T			113			110					G 1 1/4"			60		
EKM-1018-O	549	309	116			116					G 1 1/2"			-	6.73	19.80
EKM-1018-T			113			110					G 1 1/4"			60		
EKM-1024-O	702	462	116			116					G 1 1/2"			-	9.06	21.80
EKM-1024-T			113			110					G 1 1/4"			60		
EKM-1036-O	1006	766	116			116					G 1 1/2"			-	13.7	30.50
EKM-1036-T			113			110					G 1 1/4"			60		
EKM-1048-O	1307	1067	116			116					G 1 1/2"			-	18.4	39.80
EKM-1048-T			113			110					G 1 1/4"			60		

PERFORMANCE DATA EKM 500 – 1000

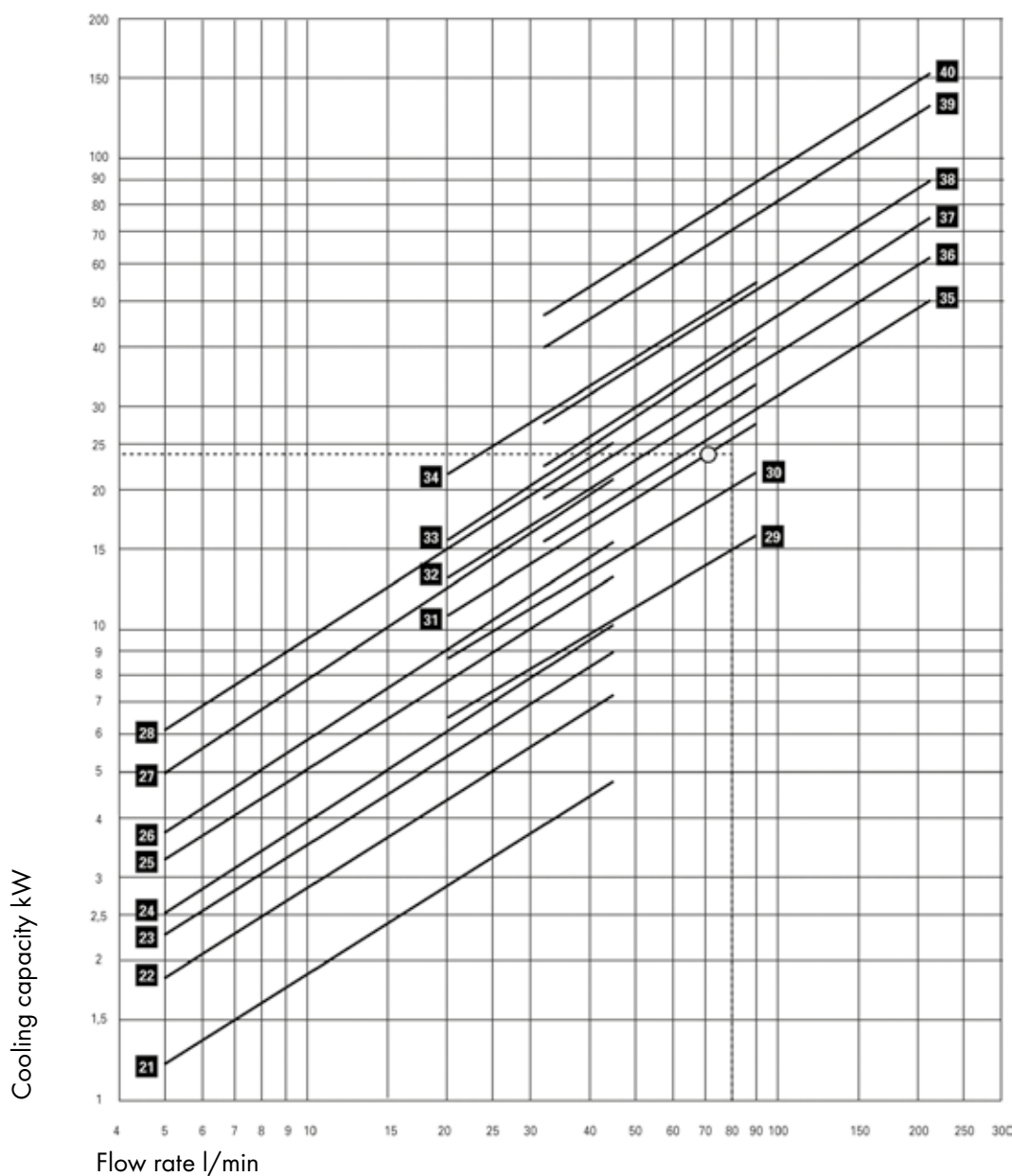
1 PASS, TYPE: "O"



The performance data shown in the diagram are limited by the flow rate and may be exceeded after consultation with the manufacturer. The performance data shown is based on a water inlet temperature of 25°C and an oil outlet temperature of 50°C, together with an oil viscosity of 20.6 cSt.

1	EKM-505-O	11	EKM-714-O
2	EKM-508-O	12	EKM-718-O
3	EKM-510-O	13	EKM-724-O
4	EKM-512-O	14	EKM-736-O
5	EKM-514-O	15	EKM-1012-O
6	EKM-518-O	16	EKM-1014-O
7	EKM-524-O	17	EKM-1018-O
8	EKM-536-O	18	EKM-1024-O
9	EKM-708-O	19	EKM-1036-O
10	EKM-712-O	20	EKM-1048-O

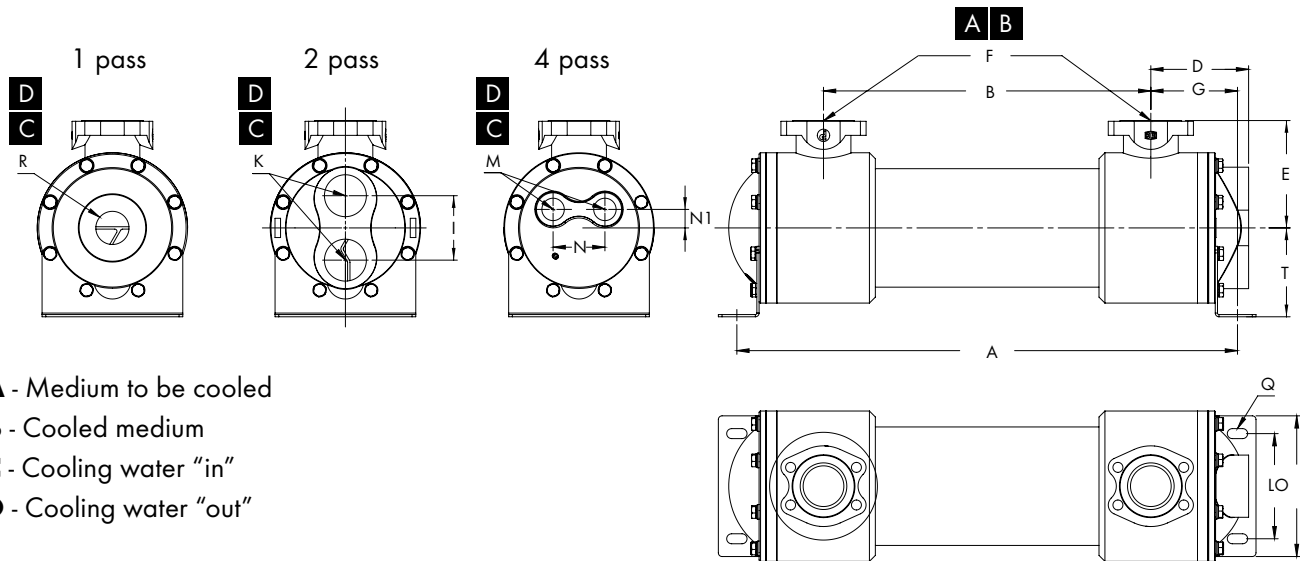
2 PASS, TYPE: "T"



The performance data shown in the diagram are limited by the flow rate and may be exceeded after consultation with the manufacturer. The performance data shown is based on a water inlet temperature of 25°C and an oil outlet temperature of 50°C, together with an oil viscosity of 20.6 cSt.

21	EKM-505-T	31	EKM-714-T
22	EKM-508-T	32	EKM-718-T
23	EKM-510-T	33	EKM-724-T
24	EKM-512-T	34	EKM-736-T
25	EKM-514-T	35	EKM-1012-T
26	EKM-518-T	36	EKM-1014-T
27	EKM-524-T	37	EKM-1018-T
28	EKM-536-T	38	EKM-1024-T
29	EKM-708-T	39	EKM-1036-T
30	EKM-712-T	40	EKM-1048-T

DIMENSIONS SKM 1200



A - Medium to be cooled

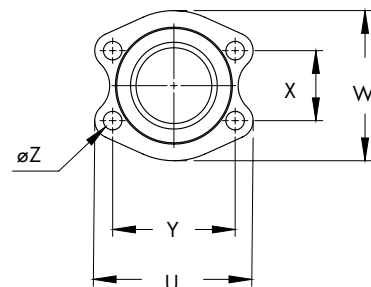
B - Cooled medium

C - Cooling water "in"

D - Cooling water "out"

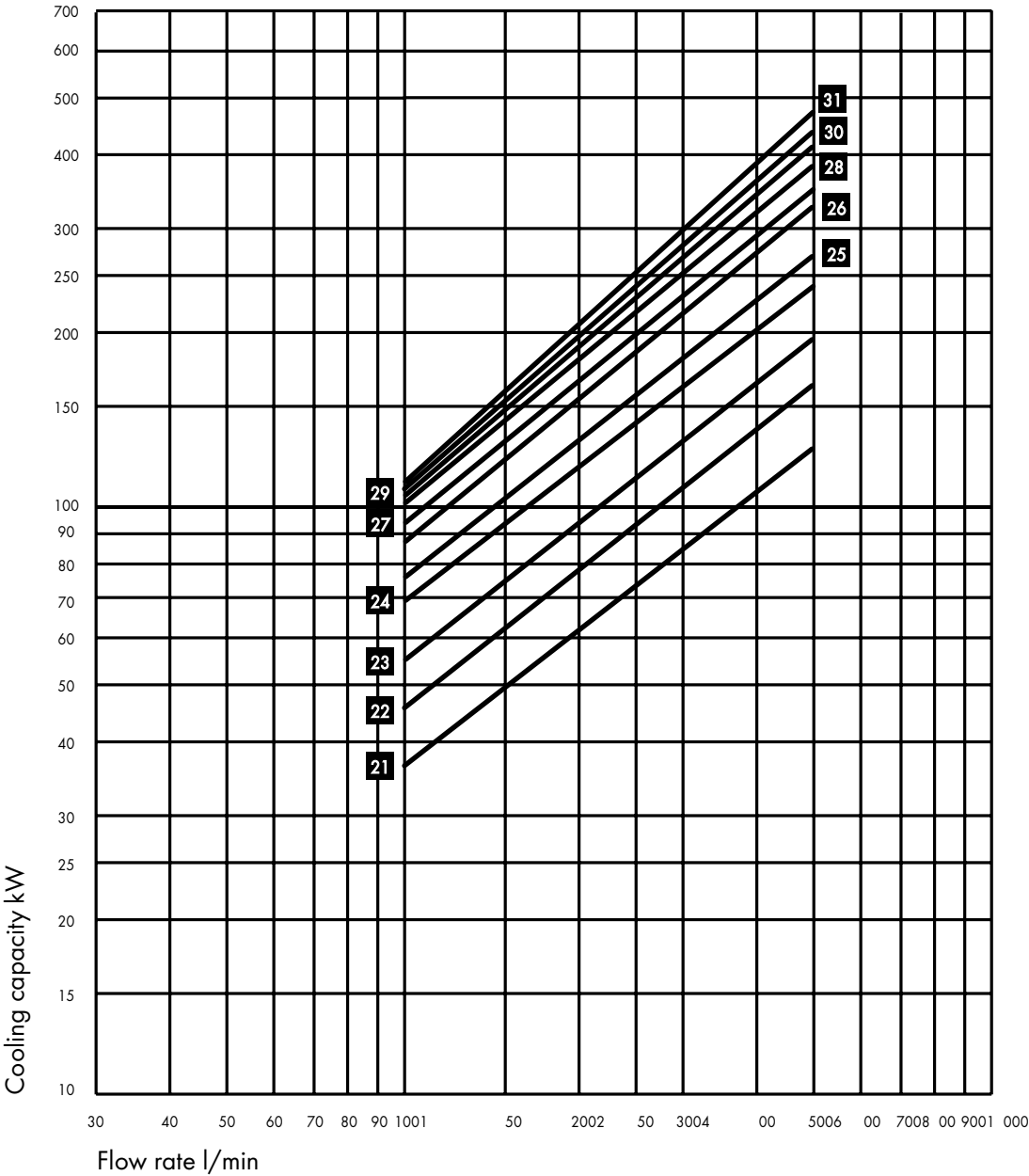
Type	Dimensions [mm/BSPP]																
	A	B	D	E	G	F	T	R	I	K	L	M	N	N1	O	Q	m ²
SKM-1218	524	290	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	6.00
SKM-1224	676	442	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	8.06
SKM-1230	829	595	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	10.19
SKM-1236	981	747	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	12.25
SKM-1242	1134	900	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	14.38
SKM-1248	1286	1052	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	16.35
SKM-1254	1438	1204	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	18.48
SKM-1260	1591	1357	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	20.52
SKM-1266	1743	1509	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	22.63
SKM-1272	1895	1661	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	24.74
SKM-1278	2048	1814	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	26.88
SKM-1284	2200	1966	132	145	117	SAE 2 1/2"	120	G 2"	87+80	G 2"	142	G 1"	70	25	190	ø 13 x 28	28.99

Type	Dimensions [mm]				
	U	Y	W	X	Z
SAE 1"	70	52.4	55.0	26.2	M10
SAE 1 1/4"	79	58.7	68.0	30.2	M10
SAE 1 1/2"	93	69.9	78.0	35.7	M12
SAE 2"	102	77.8	90.0	42.9	M12
SAE 2 1/2"	114	88.9	105.0	50.8	M12
SAE 3"	135	106.4	130.6	62.0	M16



PERFORMANCE DATA SKM 1200

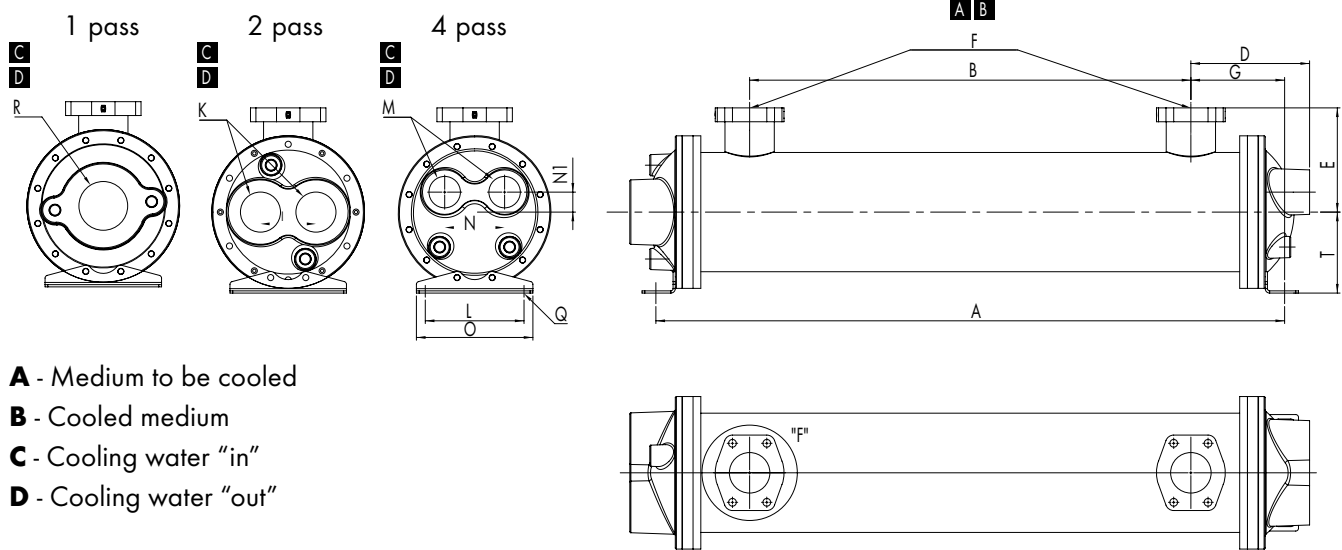
2 PASS



The performance data shown in the diagram are limited by the flow rate and may be exceeded after consultation with the manufacturer. The performance data shown is based on a water inlet temperature of 25°C and an oil outlet temperature of 50°C, together with an oil viscosity of 20.6 cSt.

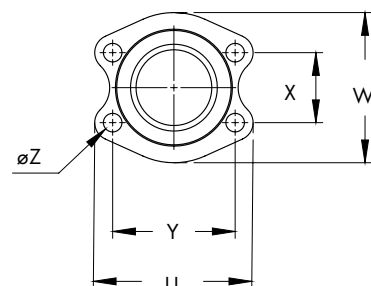
- 21 SKM-1218-T
- 22 SKM-1224-T
- 23 SKM-1230-T
- 24 SKM-1236-T
- 25 SKM-1242-T
- 26 SKM-1248-T
- 27 SKM-1254-T
- 28 SKM-1260-T
- 29 SKM-1266-T
- 30 SKM-1272-T
- 31 SKM-1278-T
- 32 SKM-1284-T

DIMENSIONS EKM 1400



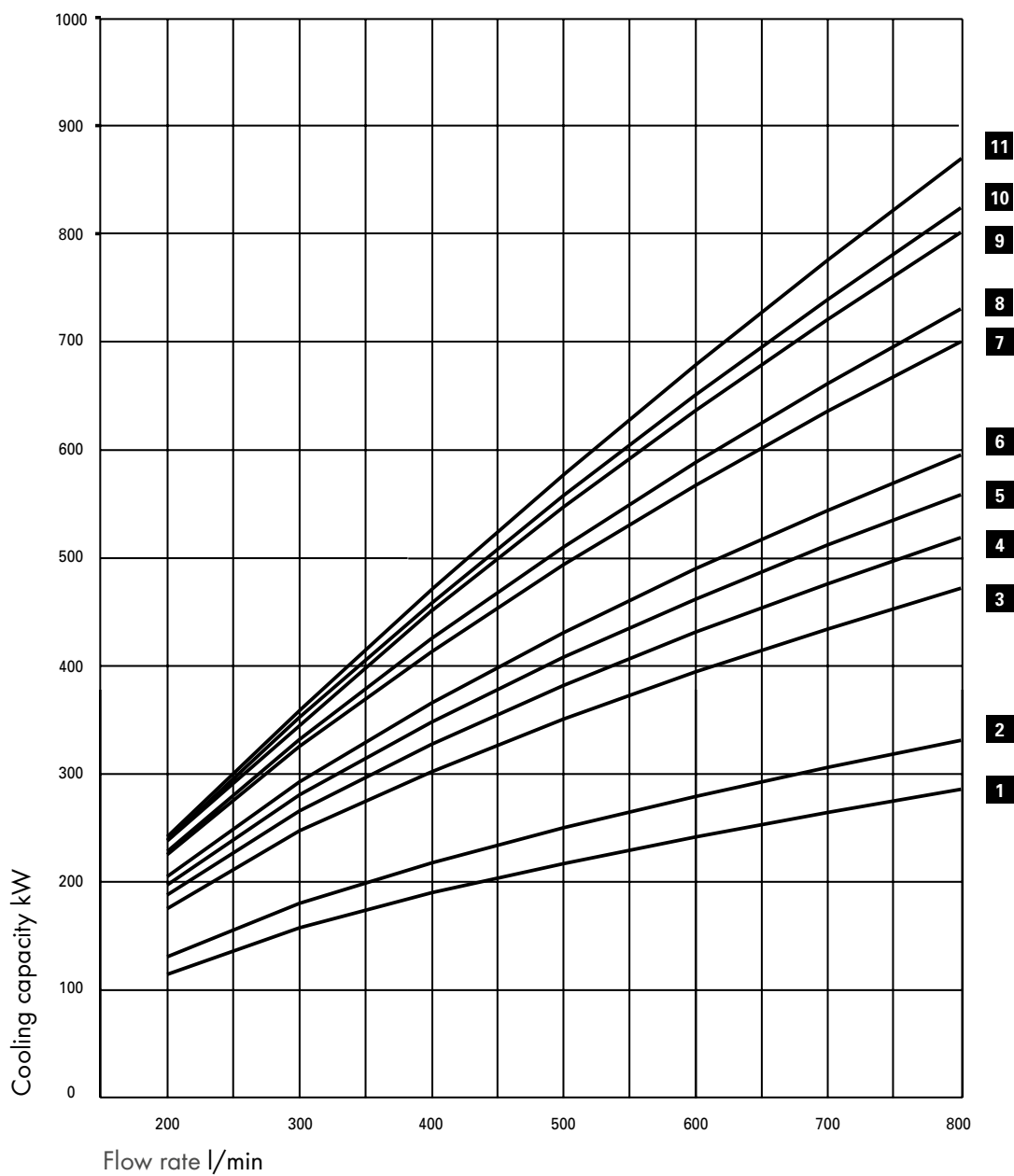
Type	Dimensions [mm/BSPP]																
	A	B	D	E	G	F	T	R	I	K	L	M	N	NI	O	Q	m ²
EKM-1424	701	410	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	15.8
EKM-1430	856	565	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	19.9
EKM-1436	1011	720	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	23.8
EKM-1442	1166	875	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	28.1
EKM-1448	1321	1030	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	31.9
EKM-1454	1476	1185	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	36.1
EKM-1460	1631	1340	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	40.1
EKM-1466	1786	1495	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	44.2
EKM-1472	1941	1650	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	48.1
EKM-1478	2096	1805	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	52.3
EKM-1484	2251	1960	157	159	146	SAE 2 1/2"	130	G 2"	94	G 2"	140	G 1 1/2"	80	36	210	ø 11 x 41	56.4

Type	Dimensions [mm]				
	U	Y	W	X	Z
SAE 1"	70	52.4	55.0	26.2	M10
SAE 1 1/4"	79	58.7	68.0	30.2	M10
SAE 1 1/2"	93	69.9	78.0	35.7	M12
SAE 2"	102	77.8	90.0	42.9	M12
SAE 2 1/2"	114	88.9	105.0	50.8	M12
SAE 3"	135	106.4	130.6	62.0	M16



PERFORMANCE DATA EKM 1400

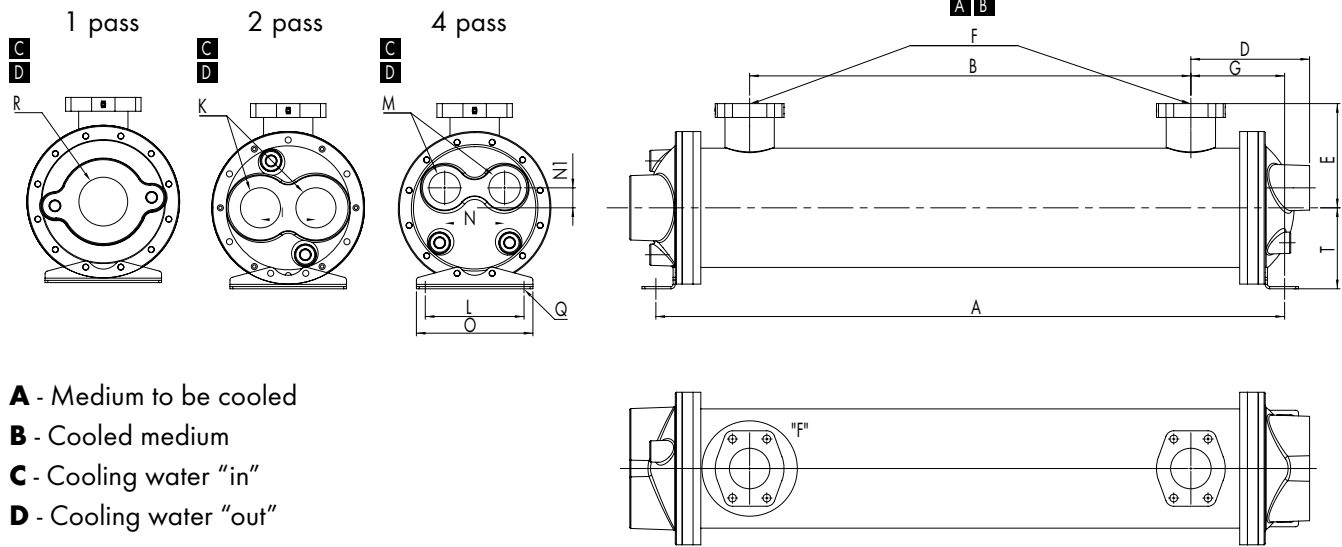
2 PASS



The performance data shown in the diagram are limited by the flow rate and may be exceeded after consultation with the manufacturer. The performance data shown is based on a water inlet temperature of 25°C and an oil outlet temperature of 50°C, together with an oil viscosity of 20.6 cSt.

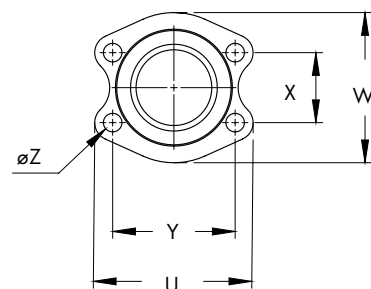
- 1 EKM-1424-T
- 2 EKM-1430-T
- 3 EKM-1436-T
- 4 EKM-1442-T
- 5 EKM-1448-T
- 6 EKM-1454-T
- 7 EKM-1460-T
- 8 EKM-1466-T
- 9 EKM-1472-T
- 10 EKM-1478-T
- 11 EKM-1484-T

DIMENSIONS EKM 1700



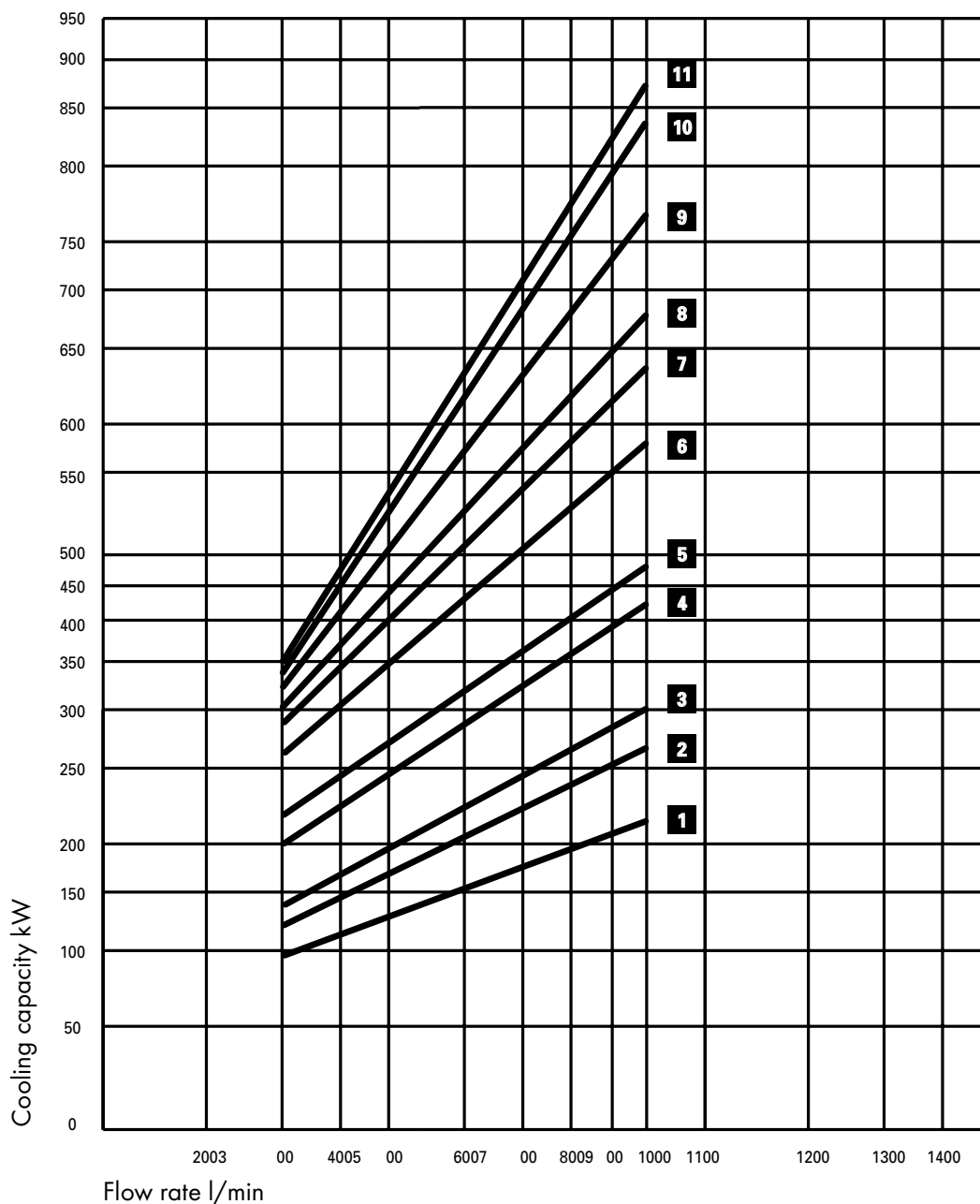
Type	Dimensions [mm/BSPP]																
	A	B	D	E	G	F	T	R	I	K	L	M	N	NI	O	Q	m ²
EKM-1724	706	368	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	14.77
EKM-1730	859	521	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	18.85
EKM-1736	1011	673	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	22.65
EKM-1742	1164	826	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	26.70
EKM-1748	1316	978	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	30.52
EKM-1754	1468	1130	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	34.55
EKM-1760	1621	1283	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	38.40
EKM-1766	1773	1435	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	42.25
EKM-1772	1936	1587	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	46.28
EKM-1778	2078	1740	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	50.12
EKM-1784	2230	1892	214	188	169	SAE 3"	146	G 3"	100	G 2 1/2"	178	G 2"	108	36	210	ø 16 x 38	54.15

Type	Dimensions [mm]				
	U	Y	W	X	Z
SAE 1"	70	52.4	55.0	26.2	M10
SAE 1 1/4"	79	58.7	68.0	30.2	M10
SAE 1 1/2"	93	69.9	78.0	35.7	M12
SAE 2"	102	77.8	90.0	42.9	M12
SAE 2 1/2"	114	88.9	105.0	50.8	M12
SAE 3"	135	106.4	130.6	62.0	M16



PERFORMANCE DATA SKM 1700

2 PASS



The performance data shown in the diagram are limited by the flow rate and may be exceeded after consultation with the manufacturer. The performance data shown is based on a water inlet temperature of 25°C and an oil outlet temperature of 50°C, together with an oil viscosity of 20.6 cSt.

- 1 EKM-1718-T-CN
- 2 EKM-1724-T-CN
- 3 EKM-1730-T-CN
- 4 EKM-1736-T-CN
- 5 EKM-1742-T-CN
- 6 EKM-1748-T-CN
- 7 EKM-1754-T-CN
- 8 EKM-1760-T-CN
- 9 EKM-1766-T-CN
- 10 EKM-1778-T-CN
- 11 EKM-1784-T-CN

CALCULATION EXAMPLE EKM/SKM

For deviating oil outlet temperatures, water inlet temperatures and viscosities, the calculation has to be made as follows:

GIVEN VALUES

Heat to be dissipated (AW)	= 17 kW
Oil flow (V)	= 80 l/min
Oil outlet temperature ($t_{\text{oil out}}$)	= 45°C
Water inlet temperature ($t_{\text{water in}}$)	= 25°C
Oil type	= ISO 68
Effective heat to be dissipated	= kW eff.

1. The viscosity correction factor is calculated as follows:

Temperature difference ΔT (°C) =

$$\frac{AW \text{ (kW)} \times 34.1}{Q \text{ (l/min)}} = 7.2$$

Average oil temperature (°C) =

$$\frac{t_{\text{oil out}} + \Delta t + t_{\text{oil out}}}{2} = 49^\circ \text{C}$$

2. From oil manufacturer's data for ISO 68:

Viscosity at 49°C = 38 cSt

3. From viscosity correction table "A":

38 cSt = 1.11

AW eff. =

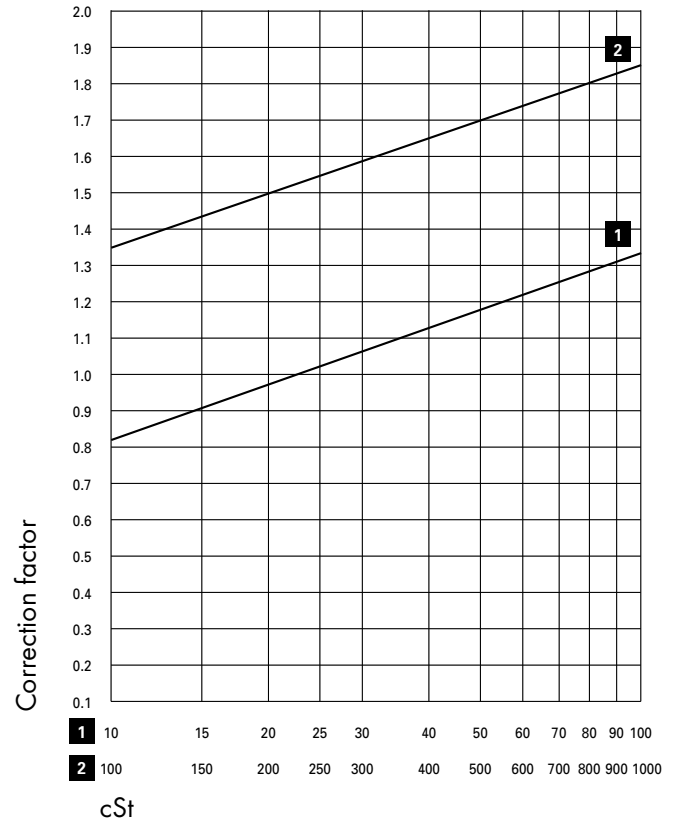
AW (kW) \times 25 \times viscosity (cSt) Tab. A

$$= \frac{t_{\text{oil out}} \text{ (°C)} - t_{\text{water in}} \text{ (°C)}}{20} = \frac{17 \times 25 \times 1.11}{20} = 23.6 \text{ kW}$$

From oil/water 2:1 performance diagram at an oil flow of 80 l/min and 23.6 kW, the outcome is:

Cooler no. 31 = EKM-714-T-CN

COOLER SELECTION



The performance data shown is based on a water inlet temperature of 25°C and an oil outlet temperature of 50°C, together with an oil viscosity of 20.6 cSt. For different viscosities, the correction factor "A" can be read in the diagram above.

ORDER CODE EKM/SKM

SS - EKM - 1036 - 6 - O - CN - R - W - SW - G1 1/2"									
Complete cooler stainless steel 1.4301 (+ alu fins)	Type 500, 700, 1000, 1400, 1700 = E 1200 = S	Connection type NPT = - SAE with O-ring, waterside NPT = S BSPF = M SAE flange = FM	Size	Baffle setting					G1 1/2" = Oil connections SW = Sea water SWBZ = Sea water End cap gunmetal + zinc anode SS = End cap stainless steel 1.4301 Tube sheet W = Brass SS = Stainless steel 1.4301 R = Bypass valve (partly opened) RS = Bypass valve (fully opened) Water tubes CN = Copper / nickel CU = Copper SS = Stainless steel
					Cooling water connection system				
					O = 1 pass T = 2 pass F = 4 pass 1200 + 1700 series only				

TECHNICAL DATA EKM/SKM

CAUTION: Incorrect installation may lead to damage of the cooler.

Maximum operating pressure:

Shell = 35 bar

Tubes = 16 bar

Operating temperature:

5 - 95 °C

MAXIMUM FLOW RATE

l/min	Oil / Shell	Water / Tubes		
		O	T	F
EKM - 500	75	60	30	-
EKM - 700	225	120	60	30
EKM - 1000	330	280	140	70
SKM - 1200	650	560	280	140
EKM - 1400	850	520	260	130
EKM - 1700	1200	980	490	245

OIL / WATER COOLERS

SERIES UKC-G

PRODUCT DESCRIPTION

- Efficient cooling capacity
- Cooling surface of 0.15 m² to 0.43 m²
- Especially compact



PRODUCT FEATURES

- Application for mounting in tank or gear box
- Easy installation in existing threaded connections for tank heaters
- Cost effective, space saving solution
- End cap: G 1/2" water connections
- Cooling capacity depending on circulation of cooling tubes in the tank or gear box

DELIVERY CONTENT

- Cooler with end cap, screws and O-ring

OPTION

- Special lengths on request

TECHNICAL DATA

Maximum operating pressure: = 10 bar

Maximum operating temperature: = 95 °C

Maximum flow rate tubeside:

Copper tubes = 15 l/min

Copper nickel tubes = 25 l/min

Stainless steel tubes = 25 l/min

MATERIALS

	Standard
Thread	Brass
Tubes	Copper, copper nickel or stainless steel
Baffles	Steel
End caps	Cast iron
Gaskets	Nitrile rubber

ORDER CODE

UKC - G1,5 - 550 - CU

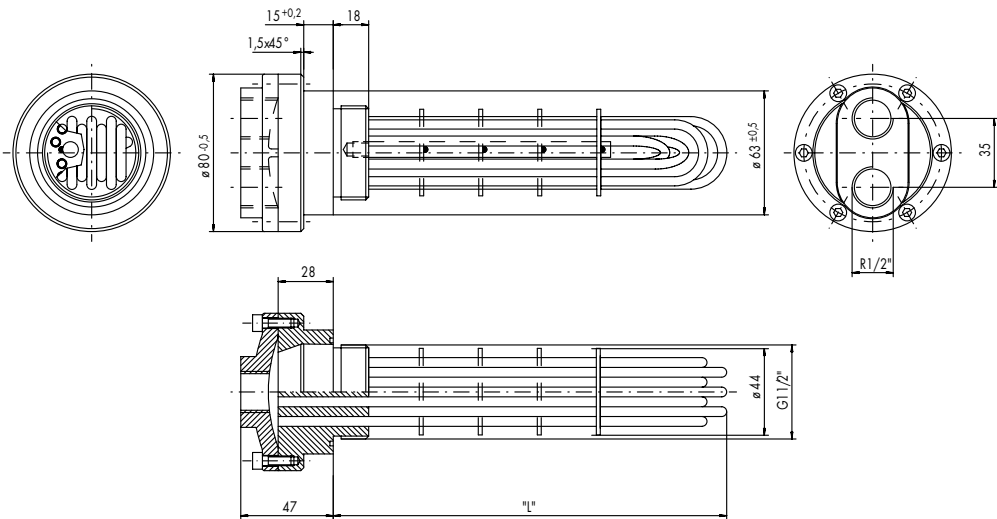
U-tube cooling device

Threaded connection size
G1,5" = 1.5
G 2" = 2

CU = Tubes Copper
CN = Tubes copper/nickel (90:10)
SS = Tubes stainless steel (1.4571)

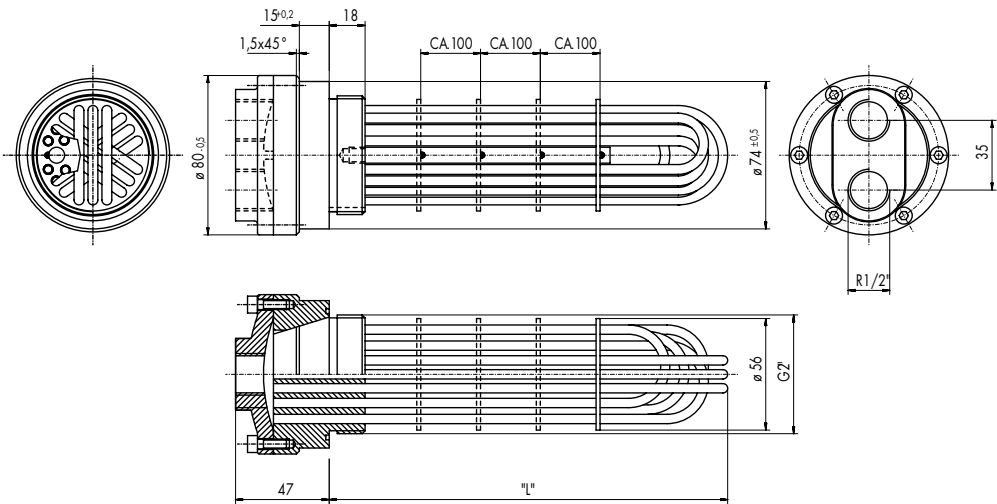
Lineardimension(see chart)

DIMENSIONS UKC-G1,5



Type	L
x 11	190
x 12	550
x 13	580
x 14	600
x 15	630
x 16	640
x 17	690
x 18	705
x 19	780
x 20	805
x 21	950
x 22	1400

DIMENSIONS UKC-G2



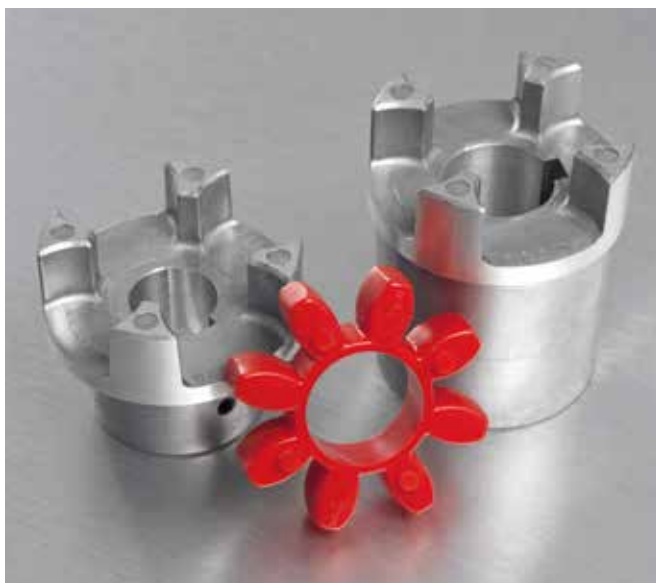
Type	L
xx 1	550
xx 2	840
xx 3	850
x 4	930
xx 5	940
xx 6	1030
xx 7	1070
xx 8	1085
xx 9	1170
xx10	1190





SOFTEx® COUPLINGS

SOFTEX® COUPLINGS



CONTENT

Product description / Order code	149
Dimensions	150
Bore codes / Basic programme	151
Softex® FA flange coupling	154
Softex® TL coupling with bush	155
Misalignment values	156
Technical data spiders	157
Softex® ES zero backlash couplings	159
Technical data ES spiders	164

SOFTEX® ELASTIC COUPLINGS

SOFTEX® COUPLINGS

- Torsionally flexible, maintenance free, good dynamic properties
- Vibration reducing
- Axially pluggable
- Compact design / low flywheel effects
- Different elastomer hardnesses of the spiders
- Finish bores with keyway, taper (1:5/1:8), and toothing
- Hub materials: aluminium, cast iron, spheroidal cast iron, sintered steel and steel
- ATEX certification
- Basic programme (please see page 152) available from stock
- Special machining on request



Order code SOFTEX® COUPLINGS							
Coupling type	Size	Hub	Bore	Hub	Bore	Hub material	Spider
SOFTEX®	38/45	B	Ø 38	A	N/2	Alu	92°

SOFTEX® FA COUPLINGS

- Flange hubs for heavy machinery
- All sizes are available unmachined or ready for assembly
- 2 flanges can be combined or FA flange with standard Softex® hub
- Material: cast iron



Order code SOFTEX® FA couplings		
Coupling type	Size	Hub
SOFTEX®	42/55	FA

SOFTEX® TL COUPLINGS

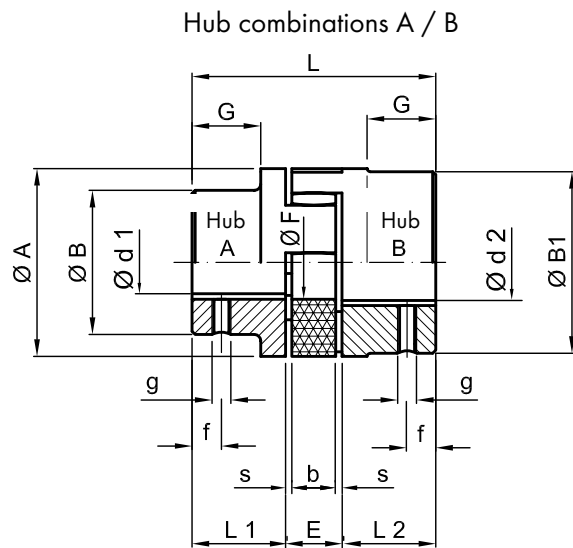
- For all driving applications in the mechanical engineering
- Friction-locked, detachable shafts / hub connections
- Coupling combination TL 1/1; TL 2/2 and TL 1/2 possible
- Coupling hubs TL 2 axially separable
- Application with all standard taper bushes



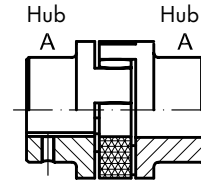
Order code SOFTEX® TL couplings						
Coupling type	Size	Hub	Bore	Hub	Bore	Spider
SOFTEX®	42/55	TL1	Ø 28	TL2	Ø 38	92°

SOFTEX® ELASTIC COUPLINGS

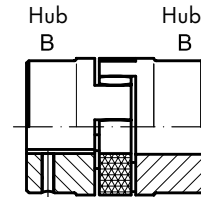
DIMENSIONS



Hub combinations A / A



Hub combinations B / B



SOFTEX® type	Finish bore [mm]				Dimensions [mm]												Extended hub B	Weight [kg]
	Hub A		Hub B														Combination hub A / hub B	
	ø d1		ø d2															
	min	max	min	max	ø A	ø B	ø B1	L	L1+L2	E	s	b	G	ø F	g	f		L2
Material: Aluminium die casting																		
19/24 Alu	6	19	20	24	40	31	38	66	25	16	2	12	20	18	M5	10	-	0.11
24/30 Alu	8	24	25	30	55	39	48	78	30	18	2	14	24	27	M5	10	50	0.24
28/38 Alu	10	28	30	38	65	46	61	90	35	20	2.5	15	28	30	M6	15	60	0.42
38/45 Alu	14	38	40	45	80	64	75	114	45	24	3	18	37	38	M8	15	-	0.86
Material: sintered steel "S", cast iron "GG", steel "ST"																		
14/16 S	-	-	4	16	30	-	30	35	11	13	1.5	10	-	8	M4	5	-	0.14
19/24 S	-	-	6	24	40	-	40	66	25	16	2	12	-	18	M5	10	40	0.34
24/30 S	-	-	8	32	55	-	55	78	30	18	2	14	-	27	M5	10	50	0.90
28/38 S	-	-	10	38	65	-	65	90	35	20	2.5	15	-	30	M6	15	60	1.5
38/45 GG*	14	38	40	45	80	66	78	114	45	24	3	18	37	38	M8	15	70	2.35
42/55 GG*	16	42	45	55	95	75	93	126	50	26	3	20	40	46	M8	20	75	3.55
48/60 GG*	19	48	50	60	105	85	103	140	56	28	3.5	21	45	51	M8	20	80	4.85
55/70 GG	22	55	60	70	120	98	118	160	65	30	4	22	52	60	M10	20	90	7.4
65/75 GG	25	65	70	75	135	115	133	185	75	35	4.5	26	61	68	M10	20	100	10.8
75/90 GG	30	75	80	90	160	135	158	210	85	40	5	30	69	80	M10	25	110	17.7
90/100 GG	-	-	45	100	200	-	170	245	100	45	5.5	34	81	100	M10	25	-	29.6
100/110 ST	-	-	45	110	225	-	180	270	110	50	6	38	89	113	M12	30	-	39.0
110/125 ST	-	-	60	125	255	-	200	295	120	55	6.5	42	96	127	M16	35	-	55.0
125/145 ST	-	-	60	145	290	-	230	340	140	60	7	46	112	147	M16	40	-	77.0

Finish bores acc. to ISO standard H 7, keyway acc. to DIN 6885, sheet 1 - JS9

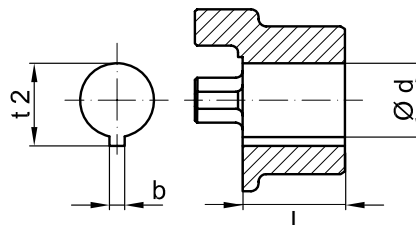
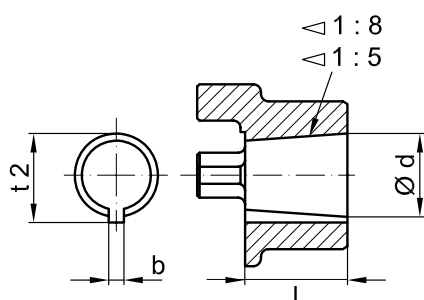
Weights refer to materials aluminium / GG with max d1 without keyway

*Sizes as A hub also available in GGG 40 (EN-GJ2-400-15)

Sizes 28/38 to 90/100 as B hubs also available in steel (S355J2)

Assembly instruction available in the download section of our webpage www.hbe-hydraulics.com

BORE CODES



CONICAL (TAPER) BORES

Code	Bore details taper 1:8 [mm]			
	Ød + 0.05	b + 0.05	t2 + 0.1	L
... N/1	9.7	2.4	10.7	16.5
... N/1c	11.6	3	12.9	16.5
... N/1e	13	2.4	13.8	21
... N/1d	14	3	15.5	17.5
... N/1b	14.3	3.2	15.7	19.5
... N/2	17.2	3.2	18.3	24
... N/2a	17.2	4	19.0	24
... N/2b	17.2	3	18.4	24
... N/3	22	4	23.5	28
... N/4	25.4	4.78	27.8	36
... N/4b	25.4	5	28.2	36
... N/4a	27	4.78	28.8	32.5
... N/4g	28.45	6	29.3	38.5
... N/5	33	6.35	35.5	44
... N/5a	33	7	35.5	44
... N/6	43.05	7.95	46.5	51
... N/6a	41.15	8	44.2	42.5

Code	Bore details taper 1:5 [mm]			
	Ød + 0.05	JS9	t2 + 0.1	L
... A 10	9.85	2	10.85	11.5
... B 17	16.85	3	18.65	18.5
... C 20	19.85	4	22.05	21.5
... Cs 22	21.95	3	23.75	21.5
... D 25	24.85	5	27.75	26.5
... E 30	29.85	6	32.45	31.5
... F 35	34.85	6	37.45	36.5
... G 40	39.85	6	42.45	41.5

INCH BORES

Code	Metric [mm]			Inch	
	Ød	b + 0.05	t2 + 0.1	Ød	b
DNB	11.11 M7	2.4	12.5	7/16	3/32
V	11.11 + 0.03	3.2	12.6	7/16	1/8
Ta	12.7 + 0.03	3.2	14.3	1/2	1/8
E	15.87 + 0.03	3.2	17.5	5/8	1/8
Ed	15.87 + 0.03	4.75	18.1	5/8	3/16
ES	15.88 + 0.03	4.0	17.7	5/8	5/32
Ad	19.02 + 0.03	3.2	20.7	3/4	1/8
A	19.05 + 0.03	4.78	21.3	3/4	3/16
Gs	22.22 + 0.03	4.78	24.4	7/8	3/16
G	22.22 + 0.03	4.75	24.7	7/8	3/16
F	22.22 + 0.03	6.35	25.2	7/8	1/4
B	25.37 + 0.03	4.78	27.8	1	3/16
Bs	25.38 + 0.03	6.37	28.3	1	1/4
HS	25.4 + 0.03	6.35	28.7	1	1/4
SB	28.58 + 0.03	6.35	31.5	1 1/8	1/4
Sd	28.58 + 0.03	7.93	32.1	1 1/8	5/16
Js	31.75 + 0.03	6.35	34.6	1 1/4	1/4
J	31.75 + 0.03	7.93	34.4	1 1/4	5/16
K	31.75 M7	7.93	35.5	1 1/4	5/16
KS	31.75 + 0.03	7.93	36.6	1 1/4	5/16
M	34.92 + 0.03	7.93	38.6	1 3/8	5/16
CB	36.5 + 0.03	9.55	38.6	1 7/16	3/8
C	38.07 + 0.03	9.55	42.5	1 1/2	3/8
N	41.25 + 0.03	9.55	45.6	1 5/8	3/8
L	44.45 K7	11.11	49.4	1 3/4	7/16
NM	47.625 + 0.03	12.73	53.5	1 7/8	1/2
DS	50.77 + 0.03	12.73	56.4	2	1/2
P	53.95 + 0.03	12.73	59.6	2 1/8	1/2
U	57.1 + 0.03	12.73	62.9	2 1/4	1/2
UB	60.3 + 0.03	15.87	67.6	2 3/8	5/8
W	69.85 M7	15.875	77.3	2 3/4	5/8
WA	73.0 + 0.03	19.05	82.9	2 7/8	3/4
WD	85.725 + 0.03	22.225	95.8	3 3/8	7/8
WE	88.9 + 0.03	22.225	98.6	3 5/8	7/8
WF	92.075 M7	22.225	101.9	3 5/8	7/8

SOFTEX® ELASTIC COUPLINGS

BASIC PROGRAMME INCH BORES

SOFTEX® type	Material	Inch bores															
		A	Bs	C	Ed	Es	F	G	K	L	M	N	NM	Sb	Ta	WA	WD
19/24	Al	•			•			•							•		
	S	•						•									
24/30	Al	•	•		•	•	•	•						•			
	S	•						•									
28/38	Al	•	•	•	•	•	•	•	•					•	•		
	S	•	•				•	•	•		•						
38/45	Al	•	•				•	•	•								
	GG	•		•			•	•	•		•	•					
42/55	GG		•	•			•	•	•	•		•					
48/60	GG			•			•		•		•	•	•				
55/70	GG			•					•	•			•				
65/75	GG			•					•	•						•	
75/90	GG															•	•

BASIC PROGRAMME TAPER BORES

SOFTEX® type	Material	Taper 1:5				Taper 1:8				
		A10	B17	C20	D25	N/1	N1d	N/2	N/2a	N/3
19/24	Al	•				•	•			
	S	•				•	•			
24/30	Al	•	•	•	•	•	•	•	•	•
	S		•	•	•			•	•	•
28/38	Al		•	•	•			•	•	•
	S		•	•	•			•	•	•
38/45	Al		•		•			•	•	•
	GG		•		•			•	•	•
42/55	GG		•		•			•	•	•

AVAILABLE INTERNAL TOOTHINGS

SAE profile	Profile DIN 5480	Profile DIN 5482	Profile DIN 5462
8/16 x 13Z*	N20 x 1,25	A17 x 14	B8 x 32 x 36*
8/16 x 15Z	N25 x 1,5	A22 x 19	
8/16 x 17Z	N30 x 2	A25 x 22	
12/24 x 14Z*	N35 x 2*	A28 x 25	
12/24 x 17Z*	N40 x 2	A30 x 27	
16/32 x 9Z*	N45 x 2	A35 x 31	
16/32 x 11Z	N50 x 2*	A40 x 36	
16/32 x 13Z*	N55 x 2	A45 x 41*	
16/32 x 15Z*	N60 x 2	A48 x 44	
16/32 x 21Z	N70 x 3	A50 x 45	
16/32 x 23Z	N80 x 3	A58 x 53	
16/32 x 27Z	N90 x 3		

*Basic programme

BASIC PROGRAMME METRIC BORES

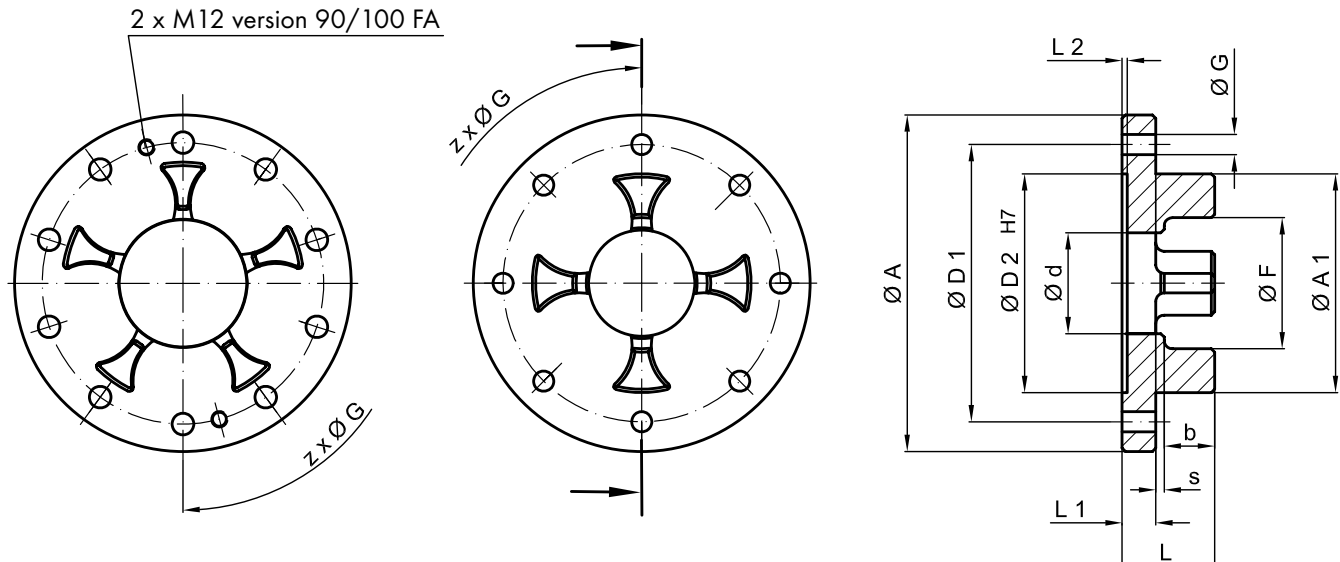
SOFTEX® type	Material	Hub	Finish bores acc. ISO standard H 7, keyway acc. to DIN 6885, sheet 1 [mm]																							
			6	8	9	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	
19/24	Al	A	•	•	•	•	•	•	•	•	•	•														
		B												•	•	•										
	S	B				•	•	•	•	•	•	•	•	•	•											
		B-verl.							■				■			■										
24/30	Al	A				•	•	•	•	•	•	•	•	•	•	•										
		B															•	•	•							
		B-verl.											■			■		■								
	S	B				•	•	•	•	•	•	•	•	•	•	•	•	•	•							
		B-verl.								■								■								
28/38	Al	A							•	•	•	•	•	•	•	•	•									
		B																	•	•	•	•				
		B-verl.																				■				
	S	B									•	•	•	•	•	•	•	•	•	•	•	•				
		B-verl.																					■			
38/45	Al	A											•	•	•	•	•	•	•	•	•					
		B																					•	•	•	
	GG	A											•	•	•	•	•	•	•	•	•					
		B																					•	•		
		B-verl.																							■	

SOFTEX® type	Material	Hub	Finish bores acc. to ISO standard H7, keyway acc. to DIN 6885, sheet 1 [mm]																							
			22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	70	75	80	85	90	100		
42/55	GG	A	•	•	•	•	•	•	•	•	•															
		B										•	•	•	•											
		B-verl.										■		■		■										
48/60	GG	A				•	•	•	•	•	•	•	•													
		B												•	•	•										
		B-verl.													■	■										
55/70	GG	A							•	•	•	•	•	•	•											
		B														•	•	•								
		B-verl.															■	■	■							
65/75	GG	A									•	•	•	•	•	•	•									
		B																	•	•						
75/90	GG	A									•	•	•	•	•	•	•	•	•							
		B																			•	•	•			
90/100	GG	A/B															•	•	•	•	•	•	•	•		

Al = Aluminium; S = sintered steel; GG = cast iron; B-verl. = Hub B extended

SOFTEX® FA ELASTIC FLANGE COUPLINGS

DIMENSIONS

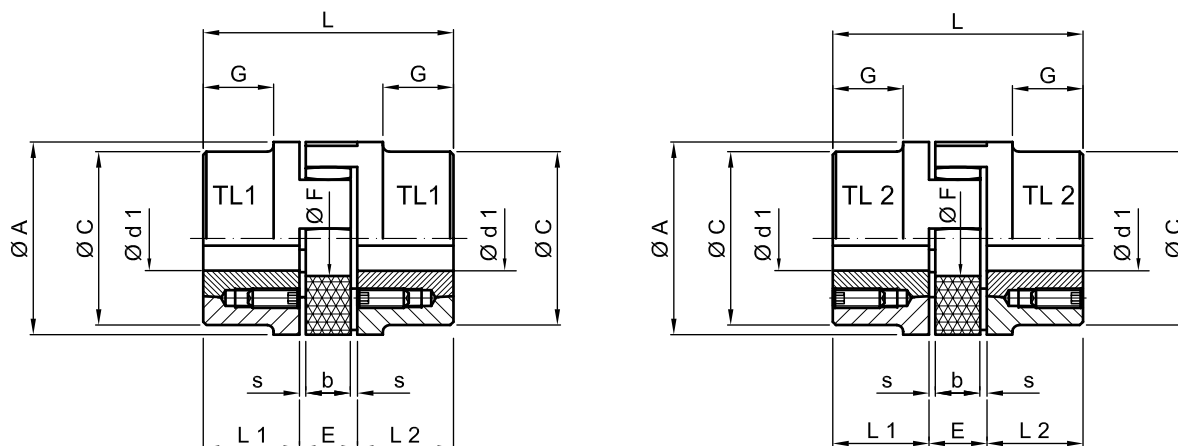


Art. No.	Type	Dimensions [mm]													Weight ¹⁾ [kg]
		Ø A	Ø A1	L	L1	s	b	Ø F	L2	Ø D1	Ø D2	Ø d	Ø G	Number of z	
6468	24/30 FA	80	55	24	8	1	15	35	1.5	65	55	27	4.5	5	0.33
6741	28/38 FA	100	65	27.5	10	1.5	16	39	1.5	80	65	30	7	6	0.55
6991	38/45 FA	115	80	31	10	2	19	48	1.5	95	80	38	7	6	0.75
7188	42/55 FA	140	95	35	12	2	21	57	2	115	95	46	9	6	1.35
7391	48/60 FA	150	105	36.5	12	2.5	22	63	2	125	105	51	9	8	1.55
7471	55/70 FA	175	120	42	16	2.5	23.5	74	2	145	120	60	11	8	2.70
7692	65/75 FA	190	135	46.5	16	3	27.5	83	2	160	135	68	11	10	3.30
7897	75/90 FA	215	160	54	19	3.5	31.5	98	2.5	185	160	80	14	10	4.90
8056	90/100 FA	260	200	59.5	20	4	35.5	122	3	225	200	100	14	12	6.70
8103	100/110 FA	285	225	69	25	6	38	137	4	250	225	113	14	12	9.5

¹⁾Weights refer to material GG.

For combinable standard hubs, please see chart on page 150 and for all technical data please see pages 156 to 158. All sizes are also available unmachined without dimensions D1-D2-L2-G.

SOFTEX® TL ELASTIC COUPLINGS WITH TAPER BUSH



SOFTEX® type	Taper bush	Dimensions [mm]									Weight [kg]
		ø A	ø C	L	L1 + L2	E	s	b	G	ø F	
28/38	1108	65	65	66	23	20	2,5	15	-	30	1.0
38/45	1108	80	78	70	23	24	3	18	15	38	2.7
42/55	1610	95	93	78	26	26	3	20	16	46	3.0
48/60	1615	105	103	106	39	28	3.5	21	28	51	4.8
55/70	2012	120	118	96	33	30	4	22	20	60	4.9
65/75	2012	135	115	101	33	35	4.5	26	19	68	6.9
75/90	2517 ¹	160	158	144	52	40	5	30	36	80	14.5
	3020 ²										

¹ only available for TL 1

² only available for TL 2

SOFTEX® type	Moment of inertia ³ [kg m ²]	Fixing screws for taper bush			
		Size [inch]	Length [mm]	Number	Tightening torque [Nm]
28/38	0.0007	1/4	13	2	5,6
38/45	0.0030	1/4	13	2	5,6
42/55	0.0036	3/8	16	2	20
48/60	0.0080	3/8	16	2	20
55/70	0.0120	7/16	22	2	31
65/75	0.0140	7/16	22	2	31
75/90	0.0650	1/2	25	2	50
		5/8	32		90

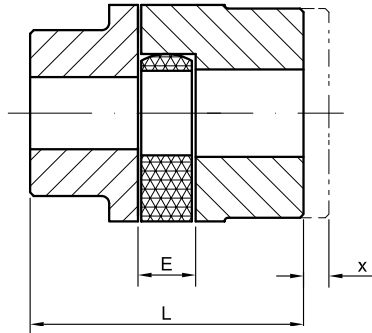
³ with max. bore diameter

Taper bush size	Available bore dimensions ø d1 [mm]																		
1108	9	10	11	12	14	16	18	19	20	22	24	25	28*						
1610	14	16	18	19	20	22	24	25	28	30	32	35	38	40	42*				
1615	14	16	18	19	20	22	24	25	28	30	32	35	38	40	42*				
2012	14	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	
2517	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60

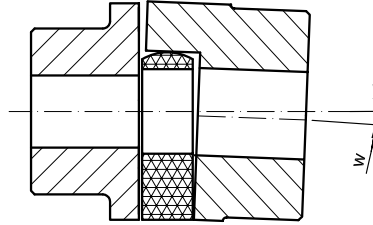
standard H7; keyway acc. to DIN 6885 sheet 1; *bore with keyway (flat version) DIN 6885 sheet 3

SOFTEX® ELASTIC COUPLINGS

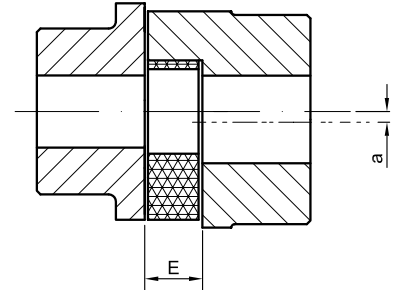
MISALIGNMENT VALUES



Axial displacement



Angular displacement or



Radial displacement

SOFTEX® type	Coupling dimensions		Max. misalignments		
	E [mm]	L [mm]	Axial x [mm]	Angular ¹ w [°]	Radial ¹ a [mm]
14/16	13	35	1.0	0.9	0.17
19/24	16	66	1.2	0.9	0.2
24/30	18	78	1.4	0.9	0.22
28/38	20	90	1.5	0.9	0.25
38/45	24	114	1.8	1	0.28
42/55	26	126	2.0	1	0.32
48/60	28	140	2.1	1.1	0.36
55/70	30	160	2.2	1.1	0.38
65/75	35	185	2.6	1.2	0.42
75/90	40	210	3.0	1.2	0.48
90/100	45	245	3.4	1.2	0.50
100/110	50	270	3.8	1.2	0.52
110/125	55	295	4.2	1.3	0.55
125/145	60	340	4.6	1.3	0.60

¹ at speed of 1,500 1/min

The specified values are guide values and are based on the nominal torque T_{KN} , the speed and the ambient temperature of +30°C.

In case of axial misalignments, the factors "E" and "L" are the max. values.

When mounting the coupling, dimension "E" must be set exactly in order to keep the coupling axially flexible.

In case of additional angular and radial displacement, the values should be used pro rata. The misalignment values are depending on speed and performance.

The stability of the coupling will be increased by careful alignment of the shafts.

Assembly instruction available in the download section of our webpage www.hbe-hydraulics.com

TECHNICAL DATA SPIDERS

SOFTEX® type	80° Shore A [Nm]			92° Shore A [Nm]			98° Shore A [Nm]			64° Shore D [Nm]			Max. speed [1 / min]	
	Cont. T _{KN}	max. T _{Kmax.}	Alter- nating T _{KW}	Cont. T _{KN}	max. T _{Kmax.}	Alter- nating T _{KW}	Cont. T _{KN}	max. T _{Kmax.}	Alter- nating T _{KW}	Cont. T _{KN}	max. T _{Kmax.}	Alter- nating T _{KW}	v= 30 m/s	v= 40 m/s
14/16	4	8	1	7.5	15	2	12.5	25	3.3	-	-	-	19000	-
19/24	4.9	9.7	1.3	10	20	2.6	17	34	4.4	-	-	-	14000	19000
24/30	17	34	4.4	35	70	9	60	120	16	75	150	20	10600	14000
28/38	46	92	12	95	190	25	160	320	42	200	400	52	8500	11800
38/45	93	186	24	190	380	49	325	650	85	405	810	105	7100	9500
42/55	130	260	34	265	530	69	450	900	120	560	1120	145	6000	8000
48/60	150	300	39	310	620	81	525	1050	137	655	1310	170	5600	7100
55/70	180	360	47	410	820	93	685	1370	163	750	1500	195	4750	6300
65/75	205	410	53	625	1250	111	940	1880	169	800	1600	208	4250	5600
75/90	475	950	124	1280	2560	254	1920	3840	390	1830	3660	476	3550	4750
90/100	1175	2350	306	2400	4800	624	3600	7200	963	4500	9000	1170	2800	3750
100/110	-	-	-	-	-	-	4950	9900	1287	-	-	-	2500	3350
110/125	-	-	-	-	-	-	7200	14400	1560	-	-	-	2240	3000
125/145	-	-	-	-	-	-	7500	15000	1950	-	-	-	2000	2650

For peripheral speeds exceeding $V = 30$ m/s dynamically balanced hubs made of GGG or steel instead of GG hubs are required.

TECHNICAL FEATURES SPIDERS

Characteristics	80° Shore A	92° Shore A	98° Shore A	64° Shore D
Colour				
Material	Polyurethane			Hytrel
Permissible durable temperature range	-50°C up to +80°C	-40°C up to +90°C	-30°C up to +90°C	-50°C up to +120°C
Permissible short term temperature peaks	-60°C up to +80°C	-50°C up to +120°C	-40°C up to +120°C	-60°C up to +150°C
Damping	Very good	Good	Medium	Low
Elasticity	Soft	Medium	Hard	Very hard
Wear resistance	Very good	Very good	Good	Good
Durability	Excellent	Very good	Very good	Very good
Typical applications	Normal drives, also with resonance speed possibility	Normal drives	Normal drives with high performance	High performance with small torsional angle

SOFTEX® ELASTIC COUPLINGS

SERVICE FACTORS COUPLING SELECTION

Service factor K1						
Type	Driven machine / Example	Prime motor				
		E-motor	Diesel / petrol engines (cylinders)			
			≥ 4	3	2	1
a	Uniform operation with small masses to be accelerated Hydraulic and centrifugal pump, light generators, ventilators, transport systems	1.0 – 1.25	1.2 – 1.5	1.5 – 1.7	1.7 – 2.0	2.4 – 2.7
b	Uniform operation with medium masses to be accelerated Bending machines, wood processing machines, textile machines, tooling machines, conveyors, mixer, agitators	1.6 – 1.8	1.7 – 2.0	2.0 – 2.3	2.3 – 2.5	2.8 – 3.0
c	Irregular operation with medium masses to be accelerated Printing machines, dye machines, grinders, ring spinning machines, wood processing machines, conveyors, generators, centrifugal pumps and agitators for semifluid goods, freight elevators, mixers, shredders, lifts	1.8 – 1.9	2.0 – 2.0	2.3 – 2.5	2.5 – 2.7	2.9 – 3.1
d	Irregular operation with medium masses to be accelerated and shocks Concrete mixers, threshing machines, blowers, overhead tracks, planing machines, chain conveyor, cranes, millstones, mills, lifts, slat conveyors, press pumps, ship shafts, rope winches, road rollers, compressors, roller mills, looms, centrifuges	1.8 – 2.0	2.2 – 2.5	2.5 – 2.7	2.7 – 3.0	3.1 – 3.4
e	Irregular operation with large masses to be accelerated and heavy shocks xcavators, roll stands, wire drawing, hammer mills, wood grinder, piston pumps / compressors with light flywheel, presses, Rotary rigs, vibromachines, scissors, forge presses, punching machines	2.1 – 2.3	2.5 – 2.7	2.7 – 3.0	3.2 – 3.4	3.5 – 3.8
f	Irregular operation, very large masses to be accelerated and very heavy shocks Piston compressors / pumps without speed regulation, heavy roller conveyors, welding generators, stone crushers, rolling mills for metals, brick presses	2.5 – 3.1	3.0 – 3.3	3.3 – 3.6	3.7 – 4.0	4.1 – 4.5

Safety factor K2			
Operation period (hours / day)			
more than	–	2	12
up to	2	12	24
Factor K2	0.9	1	1.1

Safety factor K3					
Starts per hour					
more than	–	10	40	125	500
up to	10	40	125	500	–
Type a – c	1	1.05	1.3	1.45	1.6
Type d – f	1	1.05	1.1	1.15	1.5

Further factors					
Further factors	Definition				
Starting factor S_z	z	100	200	400	800
	S_z	1	1.2	1.4	1.6
Temperature factor S_t	T [°C]			S_t	
	–25°C		+30°C	1.0	
	+30°C		+40°C	1.2	
	+40°C		+60°C	1.4	
	+60°C		+80°C	1.6	
Shock factor S_A/S_L	Slight starting shock			1.5	
	Medium starting shock			1.8	
	Heavy starting shock			2.2	

Coupling selection*

$$T_N = T_{KN} \times K1 \times K2 \times K3$$

*The largest possible torque T_N should be used as a basis. The catalogue torque T_{KN} has to be multiplied with all safety factors. For drives with dangerous torsional vibrations, the critical speed must be considered.

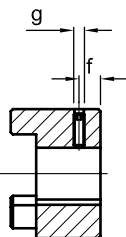
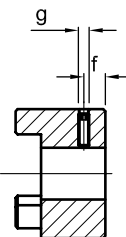
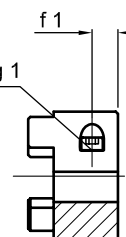
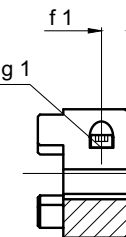
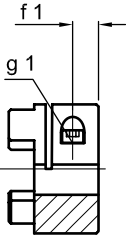
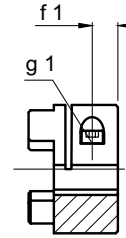
SOFTEX® ES NO BACKLASH COUPLINGS

PRODUCT DESCRIPTION

- Under initial tension no backlash shaft connection
- Triple axially pluggable version
- Simple blind mounting, no time-consuming screwings
- Small structural dimensions – low flywheel effects
- Maintenance free, simple optical test
- Different elastomer hardnesses of the spiders
- Available for all common shaft dimensions
- Finish bores with ISO standard H7, (clamping hub F7), keyway from $\varnothing 6$ acc. to DIN 6885 sheet 1-JS9
- Hub materials: aluminium up to size 38/45, steel for larger sizes



HUB TYPES

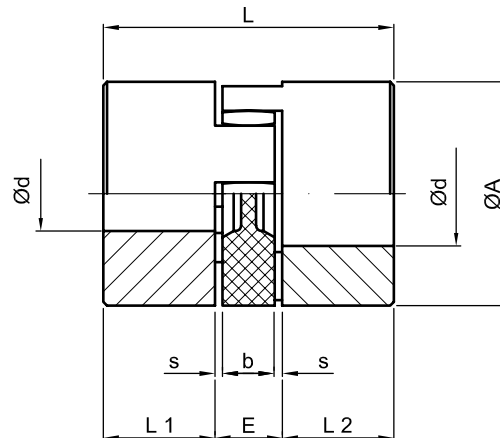
<p>1. 0</p>  <p>Type 1.0 with keyway and fixing screw</p> <ul style="list-style-type: none"> • Positive transmission • Permissible torque depending on permissible surface pressure • Not suitable for backlash-free power transmission for heavily reversing operation 	<p>1. 1</p>  <p>Type 1.1 without keyway with fixing screw</p> <ul style="list-style-type: none"> • Non-positive locking torque transmission • Suitable for a backlash transmission of very low torques
<p>2. 0</p>  <p>Type 2.0 slotted once without keyway</p> <ul style="list-style-type: none"> • Frictional, backlash shaft-hub-connection • Transmissible torques depending on bore diameter • Up to size 19/24 	<p>2. 1</p>  <p>Type 2.1 slotted once with keyway</p> <ul style="list-style-type: none"> • Positive transmission with additional frictional connection • Due to frictional connection a reverse backlash is prevented resp. reduced • Surface pressure of the keyway connection is reduced
<p>2. 5</p>  <p>Type 2.5 slotted twice without keyway</p> <ul style="list-style-type: none"> • Frictional, backlash shaft-hub-connection • Transmissible torques depending on bore diameter • From size 24/30 	<p>2. 6</p>  <p>Type 2.6 slotted twice with keyway</p> <ul style="list-style-type: none"> • Positive transmission with additional frictional connection • Due to frictional connection a reverse backlash is prevented resp. reduced • Surface pressure of the keyway connection is reduced

Order code SOFTEX® ES no backlash couplings

Coupling type	Size	Bore	Design	Bore	Design	Spider
SOFTEX® ES	19/24	24F7	2.0	19H7	1.0	98°

SOFTEX® ES NO BACKLASH COUPLINGS

DIMENSIONS



SOFTEX® ES type	Finish bores* [mm]			Dimensions [mm] 1.0/1.1								Clamping screw 2.0/2.5		
	Hub type													
	1.0	1.1	2.0/2.5	ø A	L	L1 + L2	E	b	s	g	f	g ₁	f ₁	T _A [Nm]
Material: aluminium														
9	9	11	11	20	30	10	10	8	1.0	M4	5	M2.5	5.0	0.76
14	15	16	16	30	35	11	13	10	1.5	M4	5	M3	5.0	1.34
19/24	24	24	20	40	66	25	16	12	2.0	M5	10	M6	12.0	10.5
24/30	30	30	28	55	78	30	18	14	2.0	M5	10	M6	10.5	10.5
28/38	38	38	38	65	90	35	20	15	2.5	M8	15	M8	11.5	25.0
38/45	45	45	45	80	114	45	24	18	3.0	M8	15	M8	15.5	25.0

*Special bores on request

BORE RANGE Ød AND CORRESPONDING TRANSFERABLE FRICTION TORQUES T_r [Nm] OF THE CLAMPING HUB

Type 2.0																			
SOFTEX® ES type	Finish bore [mm]																		
	8	9	10	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45
9	2.5	2.6	2.7	2.8															
14	5.1	5.3	5.5	5.6	8.1	6.3	6.5												
19/24	25	26	27	27	29	30	31	32	34										

Type 2.5																			
SOFTEX® ES type	Finish bore [mm]																		
	10	11	14	15	16	19	20	24	25	28	30	32	35	38	40	42	45	50	60
24/30	34	35	36	38	39	19	41	43	45	46									
28/38			80	81	81	85	87	91	92	97	99	102	105	109					
38/45				92	94	98	99	104	105	109	112	113	118	122	123	126	130		
42/55							232	244	246	255	260	266	274	283	288	294	301	309	315
48/60									393	405	413	421	434	445	454	462	473	486	494

Finish bores hub types 1.0 and 1.1 H7 fit,
types 2.0 and 2.5 F7 fit keyway acc. to DIN 6885, sheet 1 Tol. JS 9

SOFTEX® ES NO BACKLASH COUPLINGS (6.0 / 6.0P)

TYPE 6.0

- Zero backlash shaft connection under high friction torque
- For Servo motor applications such as main spindle drives of tooling machines and heavy load of presses
- No imbalances of keyways or slotted clamping elements
- Smooth running with good stability even at 40 m/s peripheral speed
- Also suitable for ATEX explosion protection applications (when considering the selection in accordance with the influence of high friction torques)
- Easy assembly by internal clamping screws
- ISO fit H7 up to \varnothing 50 mm and ISO fit G7 over \varnothing 50 mm
- Materials: Hub = aluminium / clamping ring = steel, both also available in steel S355J2



Order code type 6.0

Coupling type	Size	Bore	Type	Bore	Type	Spider
SOFTEX® ES	28	28H7	6.0	25H7	6.0	98°

TYPE 6.0P

- High precision, zero backlash shaft connection under high friction torque
- Developed for high speed short and multi spindles for tooling machines (DIN 69002)
- Smooth running with good stability even at 75 m/s peripheral speed
- Also suitable for ATEX explosion protection applications (when considering the selection in accordance with the influence of high friction torques)
- Easy assembly by internal clamping screws
- Spiders with 98° SH A or 64° SH D incl. bore required
- ISO fit H6
- Hub and clamping ring made of 42CrMo4

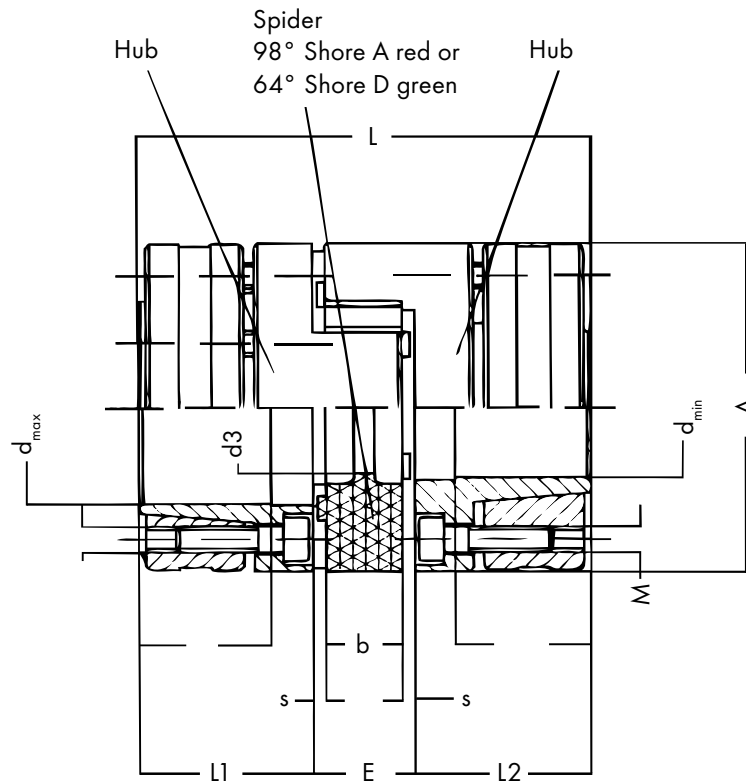


Order code type 6.0P

Coupling type	Size	Bore	Type	Bore	Type	Spider
SOFTEX® ES	28	28H6	6.0P	25H6	6.0P	64°

SOFTEX® ES NO BACKLASH COUPLINGS (6.0 / 6.0P)

DIMENSIONS



SOFTEX® ES type	Dimensions [mm]									
	A	L	L1 + L2	E	s	b	d _{min}	d _{max}	d3*	M
14P	30	50	18.5	13	1.5	10	8	14	8.5	M3
19P	40	66	25	16	2.0	12	10	20	9.5	M4
24P	55	78	30	18	2.0	14	14	28	12.5	M5
28P	65	90	35	20	2.5	15	18	38	14.5	M5
38P	80	114	45	24	3.0	18	20	40	16.5	M6
42P	95	126	50	26	3.0	20	28	50	18.5	M8
48P	105	140	56	28	3.5	21	32	48	20.5	M10

*only with type 6.0P

TECHNICAL DATA

SOFTEX® ES type	Material		Clamping screw 6.0			Hub 6.0		Clamping screw 6.0P			Hub 6.0P	
	Hub	Clam- ping ring	Size M	Number z	TA [Nm]	Weight [kg]	Moment of inertia J [kg cm²]	Size M	Number z	TA [Nm]	Weight [kg]	Moment of inertia J [kg cm²]
14	AL-H	ST	M3	4	1.34	0.049	0.07	-	-	-	-	-
19	AL-H	ST	M4	6	3	0.120	0.31	-	-	-	-	-
24	AL-H	ST	M5	4	6	0.280	1.35	-	-	-	-	-
28	AL-H	ST	M5	8	6	0.450	3.13	-	-	-	-	-
38	AL-H	ST	M6	8	10	0.950	9.60	-	-	-	-	-
42	ST	ST	M8	4	35	2.300	31.7	-	-	-	-	-
48	ST	ST	M10	4	69	3.080	52.0	-	-	-	-	-
14P	42CrMo		-	-	-	-	-	M3	4	2	0.08	0.1
19P	42CrMo		-	-	-	-	-	M4	6	3	0.19	0.37
24P	42CrMo		-	-	-	-	-	M5	4	8.5	0.44	2.0
28P	42CrMo		-	-	-	-	-	M5	8	8.5	0.64	4.4
38P	42CrMo		-	-	-	-	-	M6	8	14	1.32	13.3
42P	42CrMo		-	-	-	-	-	M8	4	35	2.30	30.0
48P	42CrMo		-	-	-	-	-	M10	4	69	3.09	50.0

Bore range d and corresponding transferable friction torques Tr [Nm] of the clamping ring hub													
Nm	ø 6	ø 10	ø 11	ø 14	ø 15	ø 16	ø 19	ø 20	ø 24	ø 25	ø 28	ø 30	ø 32
14	8.6	13.8	15	22.7									
19		31	37	62	68	70	83	90					
24				67	74	80	90	97	112	120	143		
28					142	154	189	190	237	250	280	307	310
38								269	337	356	396	436	442
42										399	445	506	470
48												650	685

Bore range d and corresponding transferable friction torques Tr [Nm] of the clamping ring hub								
Nm	ø 35	ø 38	ø 40	ø 42	ø 45	ø 48	ø 50	ø 55
14								
19								
24								
28	353	389						
38	501	533	572	615	644			
42	566	581	647	630	728	836	858	
48	809	841	926	916	1042	1181	1125	1311

SOFTEX® ES NO BACKLASH COUPLINGS

TECHNICAL DATA SPIDERS

SOFTEX® ES type	Spider	Torque [Nm]			Max. speed [1/min] V=30 m/s	Static torsional stiffness [Nm/rad]	Permissible misalignment at n=1500 1/min			Radial elongation per unit force Cr [N/mm]	Weight* [kg]	Moment of inertia* J [kgcm²]
		T _{sp}	Cont. T _{KN}	max. T _{Kmax}			Axial Δ ka [mm]	Radial Δ kr [mm]	Angular Δ kw [°]			
9	92A	0.45	3	6	28000	32	0.8	0.15	1.0	260	0.015	0.01
	98A		5	10		51		0.09	0.9	520		
	64D		6	12		74		0.05	0.9	739		
14	92A	1	7,5	15	13000	114	1.0	0.15	1.0	335	0.06	0.06
	98A		12,5	25		172		0.09	0.9	605		
	64D		16	32		234		0.06	0.8	856		
19/24	92A	2.5	10	20	10000	570	1.2	0.10	1.0	1120	0.13	0.37
	98A		17	34		855		0.07	0.9	2010		
	64D		21	42		1240		0.04	0.8	2830		
24/30	92A	-	35	70	7000	1430	1.4	0.14	1.0	1780	0.28	1.35
	98A		60	120		2060		0.10	0.9	2565		
	64D		75	150		2980		0.07	0.8	3696		
28/38	92A	-	95	190	6000	2292	1.5	0.15	1.0	1785	0.46	3.10
	98A		160	320		3440		0.11	0.9	3200		
	64D		200	400		4350		0.09	0.8	4348		
38/45	92A	-	190	380	5000	4.584	1.8	0.17	1.0	2350	0.90	9.62
	98A		325	650		7160		0.12	0.9	4400		
	64D		405	810		10540		0.09	0.8	6474		
42/55	92A	-	265	530	4000	9800	2.0	0.19	1.0	4100	2.70	57.40
	98A		450	900		15180		0.14	0.9	5940		
	64D		560	1120		16500		0.10	0.8	7590		
48/60	92A	-	310	620	3600	12000	2.1	0.23	1.0	4500	3.60	95.80
	98A		525	1050		16600		0.16	0.9	6820		
	64D		655	1310		31350		0.11	0.8	9000		

- In case of higher speeds a dynamic balancing of the hubs is required.
- The length dimension L is increased by the indicated Δ ka values.
- The specified misalignment values are general guide values.

- In case of current angular and radial misalignment the indicated values can only be utilised proportionately.
- In case of a temperature increase the permissible torques and the max. permissible radial and angular misalignment values must be multiplied by the temperature factor St.

*Complete coupling type 1.0 with medium bore on both sides

Temperature	-25°C < +30°C	+30°C < +40°C	+40°C < +60°C	+60°C < +80°C
Temperature factor St	1.0	1.2	1.4	1.8

Characteristics	92° Shore A		98° Shore A	64° Shore D
Colour				
Material	Polyurethane		Polyurethane	Hytrel
Permissible temperature range	-40°C up to +90°C		-30°C up to +90°C	-50°C up to +120°C
Permissible temperature peaks	-50°C up to +120°C		-40°C up to +120°C	-60°C up to +150°C
Applications	Servo drives, positioning drives, main spindle drives, planetary gears, no backlash gears			





STAREX® COUPLINGS

STAREX® COUPLINGS



CONTENT

Product description / Order code	169
Dimensions	170
Bore codes / Basic programme	171
Starex® FL-PA - flexible flange coupling	173

STAREX® FLEXIBLE COUPLINGS

- Double cardanic curved tooth gear coupling
- Application in mechanical engineering and hydraulics
- Compensation of misalignment of shaft axial-radial-angular
- Axially pluggable - simple mounting
- Hub material: steel
- Sleeve material: polyamide
- Finish bore with keyway, cone and tothing
- Basic programme available from stock, please see page 172



Order code STAREX® couplings			
Coupling type	Size	Bore	Bore
STAREX®	MB 38	Ø 38	N/2

STAREX® FL-PA FLEXIBLE FLANGE COUPLINGS

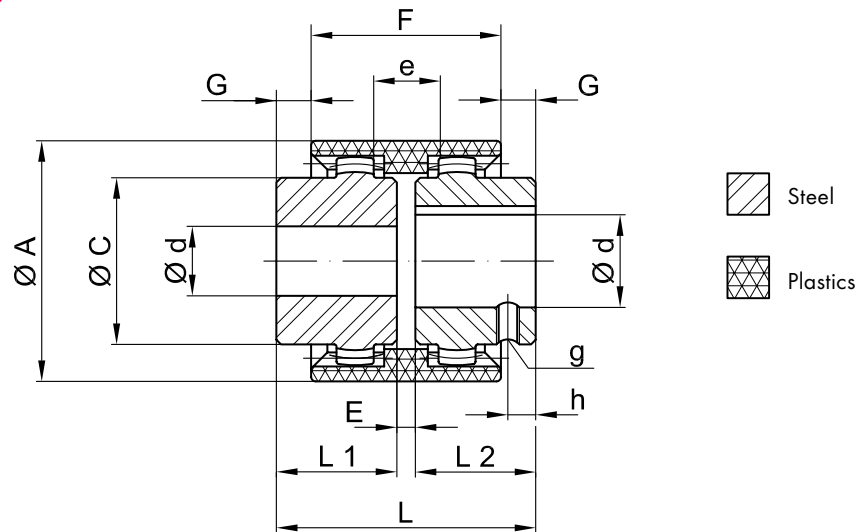
- Torsionally rigid, positive coupling for diesel engine drives of hydraulic pumps
- Short installation lengths
- Simple plug-in installation of hub and flange without aligning tools
- Maintenance free due to combination of materials plastics / steel
- High mechanical stability and temperature resistance up to +130°C due to fibre-glass reinforced polyamide flange
- For all hydrostatic drive of construction machines, harvesters and forest machineries



Order code STAREX® FL-PA couplings			
Coupling type	Size	Hub	Bore
STAREX® FL-PA	7 1/2"	48	SAE 16/32 x15Z

STAREX® FLEXIBLE COUPLINGS

DIMENSIONS



STAREX® type	Pre bore ø [mm]	Finish bore ¹⁾ [mm]		Dimensions [mm]										Extended hubs L1+ L2 [mm]	Weight ²⁾ [kg]
		min	max	ø A	ø C	L	L1 + L2	E	G	F	g	h	e		
MB 14	-	6	14	40	25	50	23	4	6.5	37	M5	6	10	30	0.18
MB 24	4	10	24	52	36	56	26	4	7.5	41	M5	6	14	50	0.32
MB 28	6	12	28	66	43	84	40	4	19	46	M8	10	13	60	0.75
MB 32	8	14	32	76	50	84	40	4	18	48	M8	10	13	60	0.95
MB 38	10	18	38	83	58	84	40	4	18	48	M8	10	13	80	1.25
MB 42	-	20	42	92	65	88	42	4	19	50	M8	10	13	110	1.50
MB 48	-	20	48	100	68	104	50	4	27	50	M8	10	13	110	1.80
MB 65	-	25	65	140	96	144	55	4	36	72	M10	20	16	70/140	4.20
MB 80	-	30	80	175	124	186	90	6	46.5	93	M10	20	20	-	11.50

¹⁾ Finish bores acc. to ISO standard H7, keyway acc. to DIN 6885, sheet 1-JS99

²⁾ Weights refer to max. $\varnothing d$ without keyway.

When mounting the coupling, dimension "E" must be set exactly.

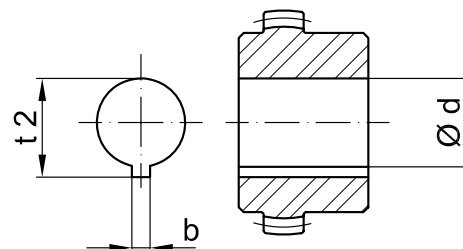
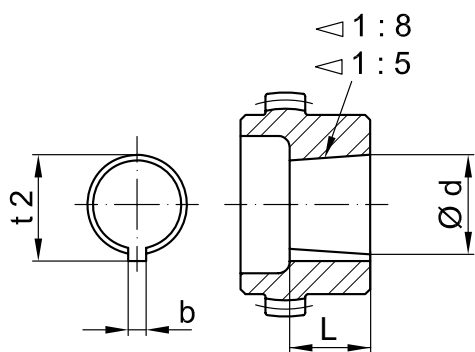
The stability of the coupling will be increased by careful alignment of the shafts.

TORQUE / MISALIGNMENT VALUES

STAREX® type	Torque [Nm]		Max. speed [1/min]	Max. misalignments		
	Nenn T_{KN}	max. $T_{Kmax.}$		Axial [mm]	Radial [mm]	Angular [°]
MB 14	10	20	14000	± 1	± 0.3	± 1° per hub
MB 24	21	42	10500		± 0.4	
MB 28	45	90	8500		± 0.4	
MB 32	60	120	7500		± 0.4	
MB 38	81	162	6700		± 0.4	
MB 42	100	200	6000		± 0.4	
MB 48	142	285	5500		± 0.4	
MB 65	380	760	4000		± 0.6	
MB 80	700	1400	3100		± 0.7	

Assembly instruction can be found in the download section of our webpage: www.hbe-hydraulics.com

BORE CODES



CONICAL (TAPER) BORES

Code	Bore details taper 1:8 [mm]			
	Ø d + 0.05	b + 0.05	t2 + 0.1	L
... N/1	9.7	2.4	10.7	16.5
... N/1c	11.6	3	12.9	16.5
... N/1e	13	2.4	13.8	21
... N/1d	14	3	15.5	17.5
... N/1b	14.3	3.2	15.7	19.5
... N/2	17.2	3.2	18.3	24
... N/2a	17.2	4	19.0	24
... N/2b	17.2	3	18.4	24
... N/3	22	4	23.5	28
... N/4	25.4	4.78	27.8	36
... N/4b	25.4	5	28.2	36
... N/4a	27	4.78	28.8	32.5
... N/4g	28.45	6	29.3	38.5
... N/5	33	6.35	35.5	44
... N/5a	33	7	35.5	44
... N/6	43.05	7.95	46.5	51
... N/6a	41.15	8	44.2	42.5

Code	Bore details taper 1:5 [mm]			
	Ø d + 0.05	JS9	t2 + 0.1	L
... A 10	9.85	2	10.85	11.5
... B 17	16.85	3	18.65	18.5
... C 20	19.85	4	22.05	21.5
... Cs 22	21.95	3	23.75	21.5
... D 25	24.85	5	27.75	26.5
... E 30	29.85	6	32.45	31.5
... F 35	34.85	6	37.45	36.5
... G 40	39.85	6	42.45	41.5

INCH BORES

Code	Metric [mm]			Inch	
	Ø d	b + 0.05	t2 + 0.1	Ø d	b
DNB	11.11 M7	2.4	12.5	7/16	3/32
V	11.11 + 0.03	3.2	12.6	7/16	1/8
Ta	12.7 + 0.03	3.2	14.3	1/2	1/8
E	15.87 + 0.03	3.2	17.5	5/8	1/8
Ed	15.87 + 0.03	4.75	18.1	5/8	3/16
ES	15.88 + 0.03	4.0	17.7	5/8	5/32
Ad	19.02 + 0.03	3.2	20.7	3/4	1/8
A	19.05 + 0.03	4.78	21.3	3/4	3/16
Gs	22.22 + 0.03	4.78	24.4	7/8	3/16
G	22.22 + 0.03	4.75	24.7	7/8	3/16
F	22.22 + 0.03	6.35	25.2	7/8	1/4
B	25.37 + 0.03	4.78	27.8	1	3/16
Bs	25.38 + 0.03	6.37	28.3	1	1/4
HS	25.4 + 0.03	6.35	28.7	1	1/4
SB	28.58 + 0.03	6.35	31.5	1 1/8	1/4
Sd	28.58 + 0.03	7.93	32.1	1 1/8	5/16
Js	31.75 + 0.03	6.35	34.6	1 1/4	1/4
J	31.75 + 0.03	7.93	34.4	1 1/4	5/16
K	31.75 M7	7.93	35.5	1 1/4	5/16
KS	31.75 + 0.03	7.93	36.6	1 1/4	5/16
M	34.92 + 0.03	7.93	38.6	1 3/8	5/16
CB	36.5 + 0.03	9.55	38.6	1 7/16	3/8
C	38.07 + 0.03	9.55	42.5	1 1/2	3/8
N	41.25 + 0.03	9.55	45.6	1 5/8	3/8
L	44.45 K7	11.11	49.4	1 3/4	7/16
NM	47.625 + 0.03	12.73	53.5	1 7/8	1/2
DS	50.77 + 0.03	12.73	56.4	2	1/2
P	53.95 + 0.03	12.73	59.6	2 1/8	1/2
U	57.1 + 0.03	12.73	62.9	2 1/4	1/2
UB	60.3 + 0.03	15.87	67.6	2 3/8	5/8
W	69.85 M7	15.875	77.3	2 3/4	5/8
WA	73.0 + 0.03	19.05	82.9	2 7/8	3/4
WD	85.725 + 0.03	22.225	95.8	3 3/8	7/8
WE	88.9 + 0.03	22.225	98.6	3 5/8	7/8
WF	92.075 M7	22.225	101.9	3 5/8	7/8

STAREX® FLEXIBLE COUPLINGS

BASIC PROGRAMME METRICAL BORES

STAREX® type	Finish bores acc. to ISO standard H7, keyway acc. to DIN 6885, sheet 1 [mm]																												
	8	10	11	12	14	15	16	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	70	75	80
MB 14	•	•	•	•	•																								
					■																								
MB 24		•		•	•	•	•	•	•	•	•	•																	
					■				■			■																	
MB 28				•	•	•		•	•	•	•	•	•	•															
MB 32		•	•			•	•	•	•		•																		
MB 38												•	•	•	•	•	•	•											
																		■											
MB 42											•	•	•	•	•	•	•	•	•	•									
																				■									
MB 48													•	•	•	•	•	•	•	•	•	•							
																				■		■							
MB 65																			•	•	•	•	•	•	•	•	•		
MB 80																								•	•	•	•	•	•

• Standard length

■ Standard extended

Basic programme available from stock at short notice

BASIC PROGRAMME INCH BORES

STAREX® type	Inch bores					
	Ed	A	G	F	Bs	K
MB 14	•					
MB 24		•	•	•		
MB 28		•	•	•	•	
MB 32						
MB 38						•
MB 42		•	•	•	•	•

BASIC PROGRAMME CONICAL (TAPER) BORES

STAREX® type	Taper 1:5		Taper 1:8				
	A10	B17	N/1	N1d	N/2	N/2α	N/3
MB 14	•		•				
MB 24	•	•	•	•	•	•	
MB 28	•	•	•	•	•	•	
MB 32						•	
MB 38		•			•	•	•
MB 42		•					•

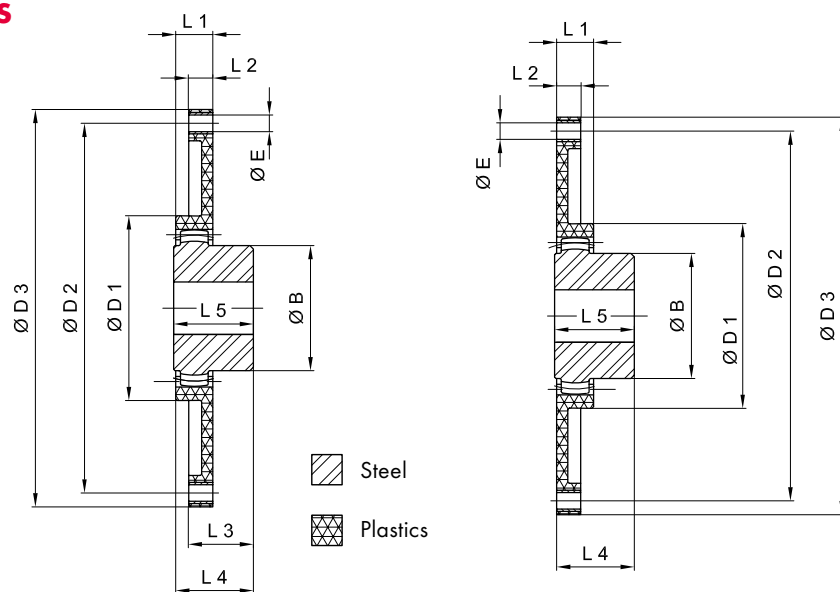
AVAILABLE INTERNAL TOOTHINGS

SAE-Profile	Profile DIN 5480	Profile DIN 5482	Profile DIN 5462
8/16 x 13Z*	N20 x 1.25	A17 x 14	B8 x 32 x 36*
8/16 x 15Z	N25 x 1.5	A22 x 19	
8/16 x 17Z	N30 x 2	A25 x 22	
12/24 x 14Z*	N35 x 2*	A28 x 25	
12/24 x 17Z*	N40 x 2	A30 x 27	
16/32 x 9Z*	N45 x 2	A35 x 31	
16/32 x 11Z	N50 x 2*	A40 x 36	
16/32 x 13Z*	N55 x 2	A45 x 41*	
16/32 x 15Z*	N60 x 2	A48 x 44	
16/32 x 21Z	N70 x 3	A50 x 45	
16/32 x 23Z	N80 x 3	A58 x 53	
16/32 x 27Z	N90 x 3		

*Basic programme

FLEXIBLE FLANGE COUPLINGS STAREX® FL-PA

DIMENSIONS



Assembly diagram 1
(short version)

Assembly diagram 2
(long version)

SAE FLANGES

FL-PA type	Dimensions [mm]			Number z	Torque [Nm]	
	Ø D2	Ø D3	Ø E		T _{KN}	T _{Kmax}
6 1/2"-48	200.02	215.90	9	6	237	599
7 1/2"-48	222.25	241.30	9	8	237	599
8"-48	244.47	263.52	11	6	237	599
10"-48	295.27	314.32	11	8	237	599
10"-65	295.27	314.32	11	8	644	1605
11 1/2"-65	333.37	352.42	11	8	644	1605
11 1/2"-80	333.37	352.42	11	8	1198	3006

METRIC FLANGES

FL-PA type	Dimensions [mm]			Number z
	Ø D2	Ø D3	Ø E	
96-48	50	96	9	4
125-48	100	125	9	3
135-48	100	135	9	3
130-48	105	130	11	4
150-48	130	150	9	5
152-48	122	152	12	3
152-48	125	152	12	3

HUB DIMENSIONS FOR SAE FLANGES

STAREX® type	Finish bore [mm]		Dimensions [mm]							Extended hub L5 [mm]	Nominal size acc. to SAE (d)				
	min.	max.	Ø B	Ø D1	L5	L3	L4	L1	L2		6 1/2"	7 1/2"	8"	10"	11 1/2"
MB 42	20	42	65	100	42	33	40	20	13	110	x	x	x	x	-
MB 48	20	48	68	100	50	41	48	20	13	110	x	x	x	x	-
MB 65	25	65	96	132	55	45	52	27	21	70/140	-	-	-	x	-
MB 65	25	65	96	170	55	45	52	31	21	70/140	-	-	-	-	x
MB 80	25	80	124	170	90	78	87	30	21	-	-	-	-	-	x

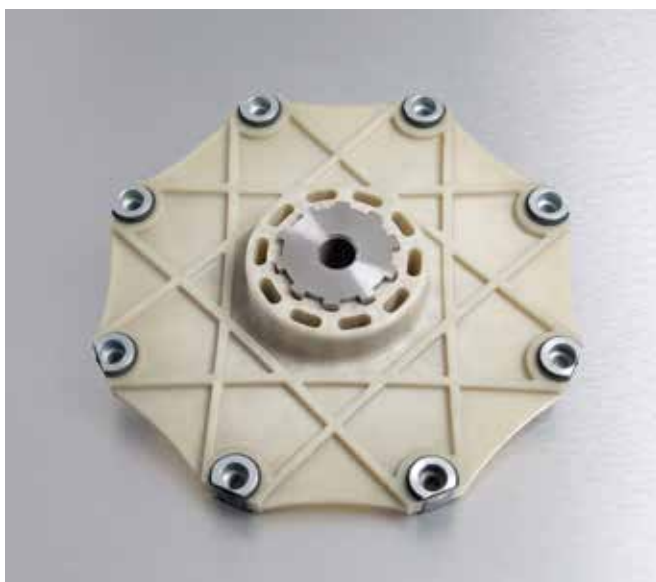
Corresponding pump mounting plates can be found in chapter "flange couplings", page 179



A high-contrast, black and white photograph showing a close-up of a metal flange coupling. The coupling is a circular metal ring with a central bore, mounted on a shaft. The background is a blurred, textured surface, possibly a metal plate or another part of the machinery. The lighting creates strong highlights and shadows, emphasizing the metallic texture and the circular geometry of the coupling.

FLANGE COUPLINGS FOR COMBUSTION ENGINES

FLANGE COUPLINGS FOR COMBUSTION ENGINES



CONTENT

Product description / Order code	177
FL-PA flange coupling	178
Pump mounting plates	179
FBA flange coupling	181
NV flange coupling	183
Delta flange coupling	183
Pump mounting housings	187

STAREX® FL-PA FLEXIBLE FLANGE COUPLINGS

- Torsionally rigid, positive coupling for diesel engine drives of hydraulic pumps
- Short installation lengths
- Simple plug-in installation of hub and flange without aligning tools
- Maintenance free due to combination of materials plastics / steel
- High mechanical stability and temperature resistance up to +130°C due to fibre-glass reinforced polyamide flange
- For all hydrostatic drive of construction machines, harvesters and forest machineries



Order code STAREX® FL-PA couplings

Coupling type	Size	Hub	Pump face code
STAREX® FL-PA	7 1/2"	48	SAE 16/32 x15Z

PUMP MOUNTING PLATES

- Easy assembly of hydraulic pumps to the flywheel housing of combustion engines
- For all SAE housing #1 – #6
- Material steel S235JR, on request also with surface coating

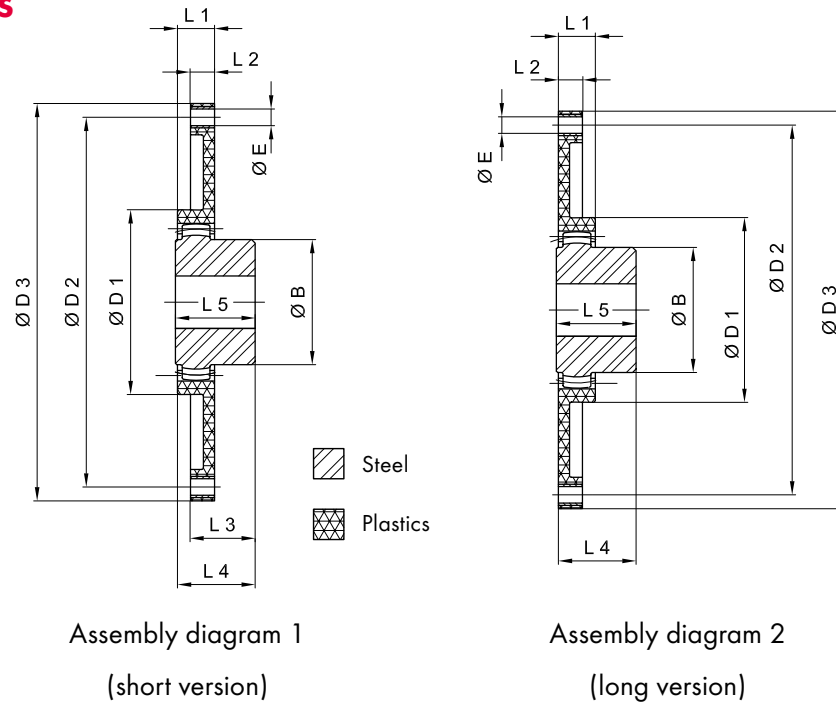


Order code pump mounting plates

Type	Size		Bore
PMP	SAE 3	-	747/1

FLEXIBLE FLANGE COUPLINGS STAREX® FL-PA

DIMENSIONS



SAE FLANGES

FL-PA type	Dimensions [mm]			Number z	Torque [Nm]	
	Ø D2	Ø D3	Ø E		T _{KN}	T _{Kmax}
6 1/2"-48	200.02	215.90	9	6	237	599
7 1/2"-48	222.25	241.30	9	8	237	599
8"-48	244.47	263.52	11	6	237	599
10"-48	295.27	314.32	11	8	237	599
10"-65	295.27	314.32	11	8	644	1605
11 1/2"-65	333.37	352.42	11	8	644	1605
11 1/2"-80	333.37	352.42	11	8	1198	3006

METRIC FLANGES

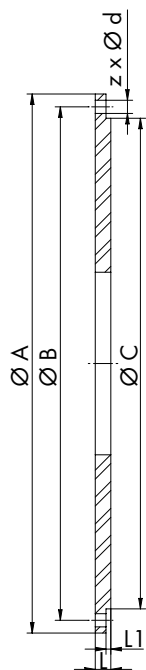
FL-PA type	Dimensions [mm]			Number z
	Ø D2	Ø D3	Ø E	
96-48	50	96	9	4
125-48	100	125	9	3
135-48	100	135	9	3
130-48	105	130	11	4
150-48	130	150	9	5
152-48	122	152	12	3
152-48	125	152	12	3

HUB DIMENSIONS FOR SAE FLANGES

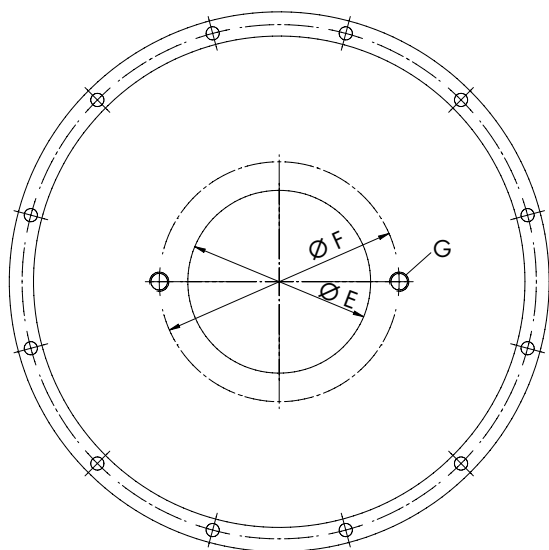
STAREX® type	Finish bore [mm]		Dimensions [mm]							Extended hub L5 [mm]	Nominal size acc. to SAE (d)				
	min.	max.	Ø B	Ø D1	L5	L3	L4	L1	L2		6 1/2"	7 1/2"	8"	10"	11 1/2"
MB 42	20	42	65	100	42	33	40	20	13	110	x	x	x	x	-
MB 48	20	48	68	100	50	41	48	20	13	110	x	x	x	x	-
MB 65	25	65	96	132	55	45	52	27	21	70/140	-	-	-	x	-
MB 65	25	65	96	170	55	45	52	31	21	70/140	-	-	-	-	x
MB 80	25	80	124	170	90	78	87	30	21	-	-	-	-	-	x

PUMP MOUNTING PLATES

DIMENSIONS

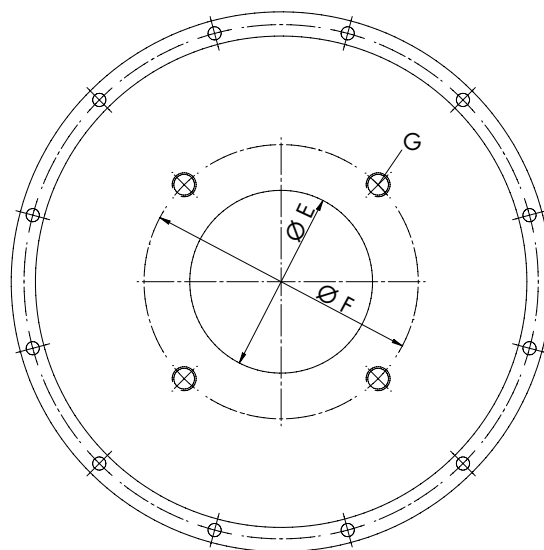


Housing size	Dimensions [mm]						
	ø A	ø B	ø C	z	ø d	L	L1
SAE 1	552.45	530.23	511.18	12	11	19.05	3.18
SAE 2	488.95	466.73	447.68	12	11	19.05	3.18
SAE 3	450.85	428.63	409.58	12	11	19.05/12.70	3.18
SAE 4	403.23	381.00	361.95	12	11	12.70	3.18
SAE 5	355.60	333.38	314.33	8	11	12.70	3.18
SAE 6	307.98	285.75	266.70	8	11	12.70	3.18



2 BOLT FLANGE

Flange size acc. to SAE	Dimensions [mm]		
	ø E	ø F	G
AA	50.80	82.55	5/16-18
AA	82.55	106.35	3/8-16
B	101.60	146.05	1/2-13
C	127.00	180.98	5/8-11
D	152.40	228.60	3/4-10
E	165.10	317.50	1-8
F	177.80	350.04	1-8



4 BOLT FLANGE

Flange size acc. to SAE	Dimensions [mm]		
	ø E	ø F	G
AA	45.24	72.09	5/16-18
AA	82.55	104.78	3/8-16
B	101.60	127.00	1/2-13
C	127.00	161.93	5/8-11
D	152.40	228.60	3/4-10
E	165.10	317.50	1-8
F	177.80	350.04	1-8

PUMP MOUNTING PLATES

DIMENSIONS

SAE housing size	Number of bores	Plate thickness		SAE centring pump Ø		
		mm	inch		mm	inch
#1	2-Bolt	19.05 mm	.75"	SAE "C"	127.0 mm	5.00"
#1	4-Bolt	19.05 mm	.75"	SAE "C"	127.0 mm	5.00"
#1	2 and 4 Bolt	19.05 mm	.75"	SAE "C"	127.0 mm	5.00"
#1	2-Bolt	19.05 mm	.75"	SAE "D"	152.4 mm	6.00"
#1	4-Bolt	19.05 mm	.75"	SAE "D"	152.4 mm	6.00"
#1	2 and 4 Bolt	19.05 mm	.75"	SAE "D"	152.4 mm	6.00"
#1	2-Bolt	19.05 mm	.75"	SAE "E"	165.1 mm	6.50"
#1	4-Bolt	19.05 mm	.75"	SAE "E"	165.1 mm	6.50"
#1	2-Bolt	19.05 mm	.75"	SAE "F"	177.8 mm	7.00"
#1	4-Bolt	19.05 mm	.75"	SAE "F"	177.8 mm	7.00"
#2	2-Bolt	19.05 mm	.75"	SAE "C"	127.0 mm	5.00"
#2	4-Bolt	19.05 mm	.75"	SAE "C"	127.0 mm	5.00"
#2	2 and 4 Bolt	19.05 mm	.75"	SAE "C"	127.0 mm	5.00"
#2	2-Bolt	19.05 mm	.75"	SAE "D"	152.4 mm	6.00"
#2	4-Bolt	19.05 mm	.75"	SAE "D"	152.4 mm	6.00"
#2	2 and 4 Bolt	19.05 mm	.75"	SAE "D"	152.4 mm	6.00"
#2	2-Bolt	19.05 mm	.75"	SAE "E"	165.1 mm	6.50"
#2	4-Bolt	19.05 mm	.75"	SAE "E"	165.1 mm	6.50"
#3	2-Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#3	4-Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#3	2 and 4 Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#3	2-Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#3	4-Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#3	2 and 4 Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#3	2-Bolt	12.7 mm	.50"	SAE "D"	152.4 mm	6.00"
#3	4-Bolt	12.7 mm	.50"	SAE "D"	152.4 mm	6.00"
#3	2 and 4 Bolt	12.7 mm	.50"	SAE "D"	152.4 mm	6.00"
#4	2-Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#4	4-Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#4	2 and 4 Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#4	2-Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#4	4-Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#4	2 and 4 Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#4	2-Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#4	4-Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#4	2 and 4 Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#5	2-Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#5	4-Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#5	2 and 4 Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#5	4-Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#5	2 and 4 Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#5	2 and 4 Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#5	4-Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#5	2 and 4 Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#6	2-Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#6	4-Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#6	2 and 4 Bolt	12.7 mm	.50"	SAE "A"	82.55 mm	3.25"
#6	2-Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#6	4-Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#6	2 and 4 Bolt	12.7 mm	.50"	SAE "B"	101.6 mm	4.00"
#6	2-Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#6	4-Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"
#6	2 and 4 Bolt	12.7 mm	.50"	SAE "C"	127.0 mm	5.00"

FBA FLANGE COUPLING

PRODUCT DESCRIPTION

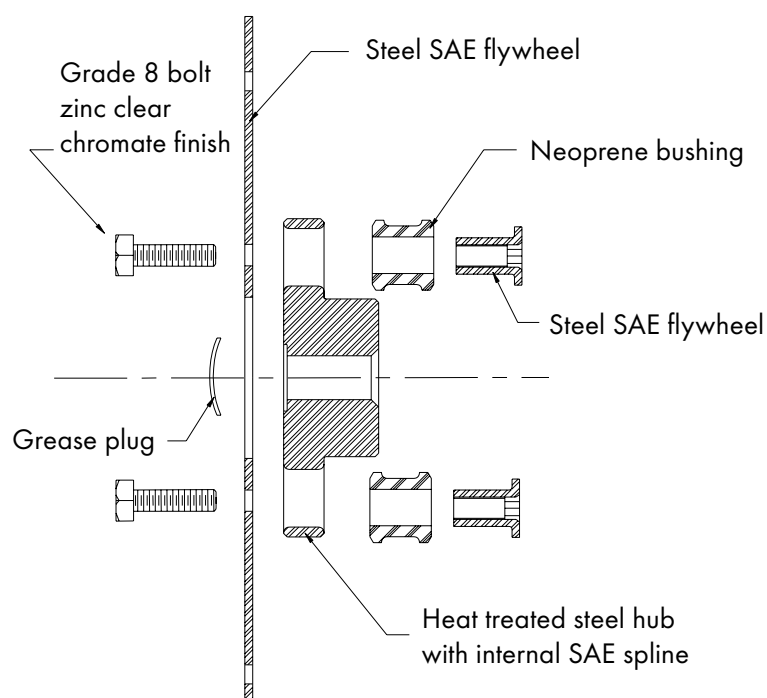
- Elastic coupling for the connection of gas or diesel motors and hydraulic pumps
- Steel flange with intergrated pump hub and neoprene mounted screw connections
- Simple blind mounting due to one piece design
- Damping and vibration absorbing characteristics
- Temperature resistance up to +100°C
- SAE flywheel sizes 6 1/2" up to 14" available
- Typical applications: aerial lifts, skid steer loader, excavators and low mass compressors



Order code FBA flange couplings

Coupling type	Size		Bore
FBA	14	-	SAE 16/32 x15Z

TECHNICAL DATA



Flywheel size	Nominal torque T_{KN}
	[Nm]
6 1/2	220
7 1/2	220
8	410
10	525
11 1/2	840
14	1370

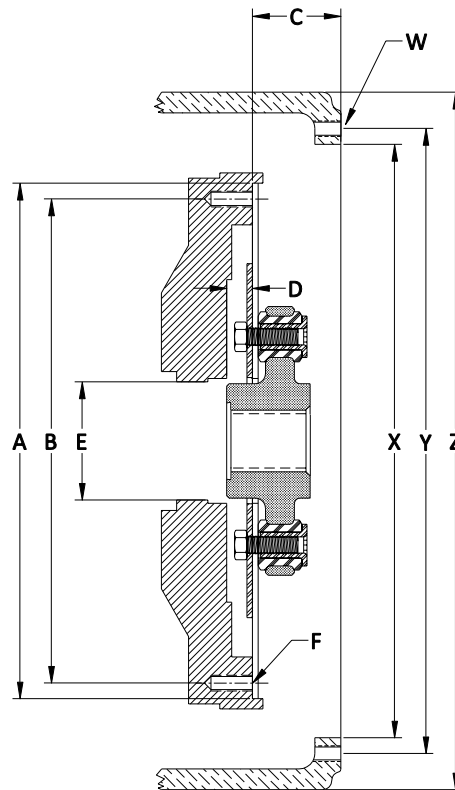
MISALIGNMENT VALUES

Angular misalignment = 1°

Parallel misalignment = 0.38 mm

FBA FLANGE COUPLING

DIMENSIONS



SAE FLANGES

Flywheel size	Dimensions [mm]						Number
	A	B	C	D	E	F	F
6 1/2	215.90	200.02	30.23	12.70	52.00	5/16" - 18	6
7 1/2	241.30	222.25	30.23	12.70	52.00	5/16" - 18	8
8	263.53	244.48	61.98	12.70	62.00	3/8" - 16	6
10	314.33	295.28	53.85	15.75	72.00	3/8" - 16	8
11 1/2	352.43	333.38	39.62	28.45	72.00	3/8" - 16	8
14	466.73	438.15	25.40	28.45	80.00	1/2" - 13	8

SAE HOUSING

Housing size	Dimensions [mm]				Number
	X	Y	Z	W	W
6	266.700	285.750	307.848	3/8" - 16	8
5	314.325	333.375	355.600	3/8" - 16	8
4	361.950	381.000	403.352	3/8" - 16	12
3	409.575	428.625	450.850	3/8" - 16	12
2	447.675	466.725	488.950	3/8" - 16	12
1	511.175	530.225	552.450	7/16" - 14	12

NV FLANGE COUPLING

PRODUCT DESCRIPTION

- Elastic torsional coupling for the connection of gas or diesel motors and hydraulic pumps
- Cast iron flange with elastomer and intergrated pump hub
- Simple blind mounting due to one piece design
- Damping and vibration absorbing characteristics
- No lubrication or clamping of the pump hub is required

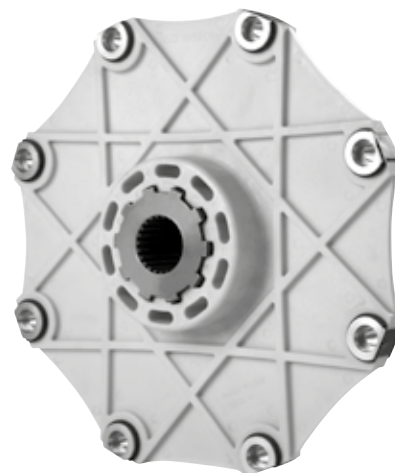


Flywheel size	Pitch circle	Outer diameter flange	Fixing bolts
Kubota Super Mini	130.00 mm	150.00 mm	5 x 8 mm
Kubota Super 5	100.00 mm	135.00 mm	3 x 10 mm

DELTA FLANGE COUPLING

PRODUCT DESCRIPTION

- Cost-effective flange coupling for drive of hydraulic pumps by combustion engines
- Glass fibre reinforced polyamide flange with intergrated hardened steel pump hub and rubber mounted screw connections
- Simple blind mounting due to one piece design
- Reduced wear of the shaft profile due to damping and vibration absorbing characteristics
- Temperature resistance -40°C up to +100°C
- For hydrostatic drives of construction machines, harvesters and forest machineries



SAE 10



SUPER 3



SUPER 5

DELTA FLANGE COUPLING

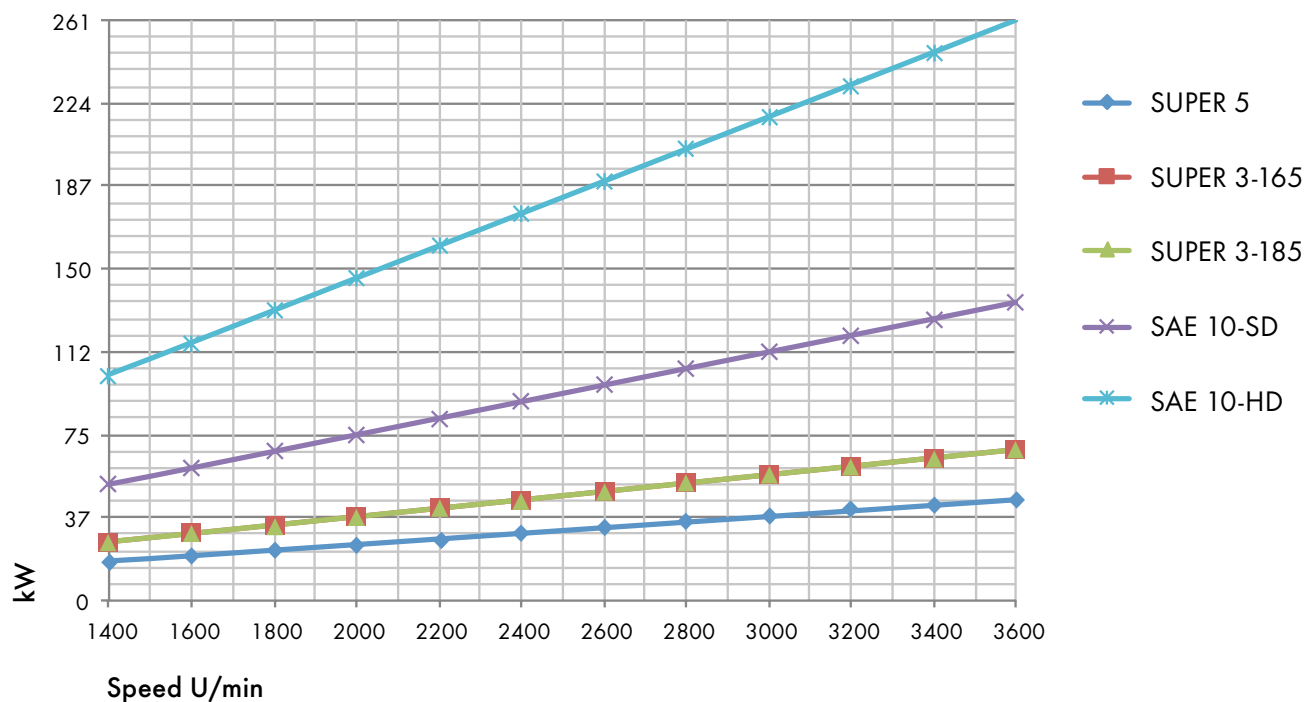
TECHNICAL DATA

Type	Nominal torque*	Maximum torque*	Power		Misalignment**				Temperature range
					Parallel		Axial		
	Nm	Nm	kW	HP	mm	inch	mm	inch	°C
SUPER 5	120.24	300.65	22.4	30	0.2	.008	7.62	+/- .030	-40°C up to +100°C
SUPER 3-165	180.08	450.13	33.6	45	0.2	.008	7.62	+/- .030	
SUPER 3-185	180.08	450.13	33.6	45	0.2	.008	7.62	+/- .030	
SAE 10-SD	355.64	889.09	67.1	90	0.2	.008	7.62	+/- .030	
SAE 10-HD	692.08	1730.19	130.5	175	0.2	.008	7.62	+/- .030	

*The torque values listed are for ambient temperatures. Torque capacities may be reduced at lower and higher temperatures. Please review the temperature service factors for the different temperature ranges.

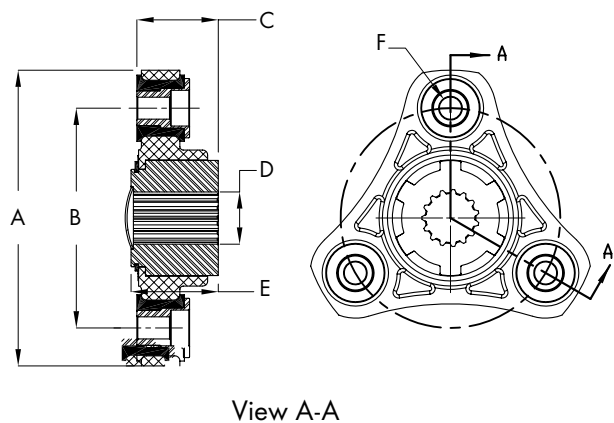
**The Delta series is able to accommodate small angular, parallel and axial misalignments that are typical to shaft / flange connections. The Delta series is not recommended for applications with excessive misalignments.

Service factors for temperature range					
-40°C	-18°C	+23°C	+52°C	+72°C	+100°C
1.50	1.30	1.00	1.30	1.50	1.95

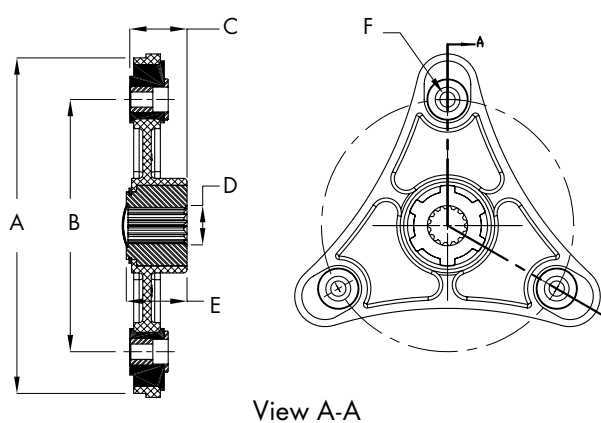


DIMENSIONS

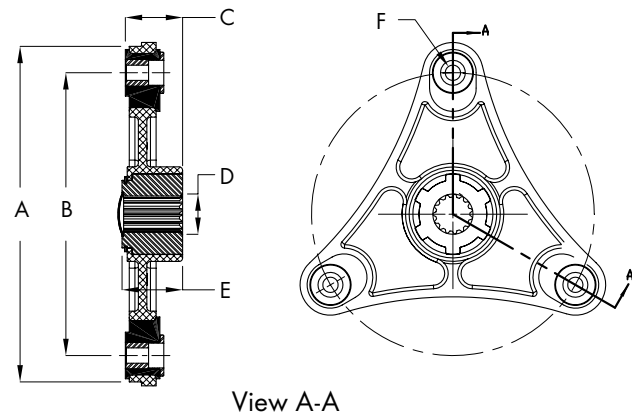
SUPER 5 DIAGRAM



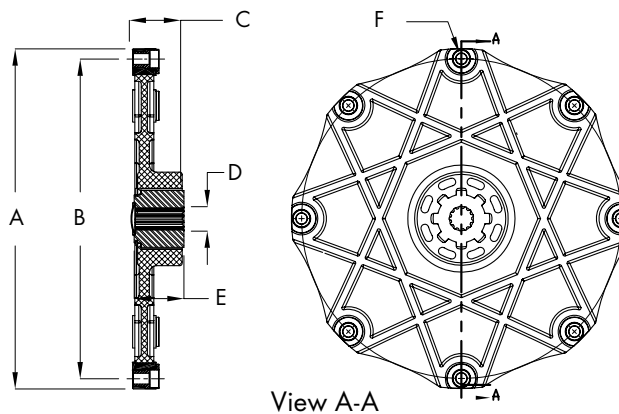
SUPER 3-165 DIAGRAM



SUPER 3-185 DIAGRAM



SAE 10 DIAGRAM

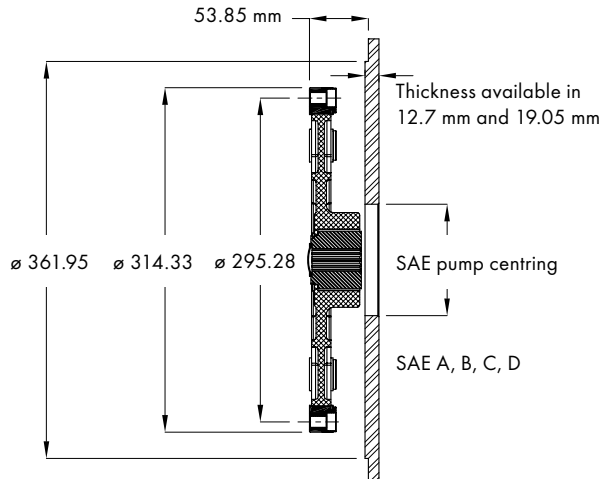


Type	A		B		C		D				E		F	No of hub teeth
	Outer diameter		Pitch circle		Total length		Diameter [Ø]				Hub overall length		Fixing bolts	
	mm	inch	mm	inch	mm	inch	min	max	mm	inch	mm	inch	mm	
SUPER 5	135	5.315"	100	3.937"	37	1.457"	12.7	.50"	31.75	1.250"	40	1.562"	3 x 10	6
SUPER 3-165	220	8.661"	165	6.496"	37	1.475"	12.7	.50"	31.75	1.250"	40	1.562"	3 x 12	6
SUPER 3-185	220	8.661"	185	7.283"	37	1.457"	12.7	.50"	31.75	1.250"	40	1.562"	3 x 10	6
SAE 10-SD	314.3	12.375"	295	11.625"	47.45	1.869"	19.15	.754"	31.75	1.250"	46	1.813"	8 x 10	8
SAE 10-HD	314.3	12.375"	295	11.625"	50.04	1.970"	22.28	.877"	31.75	1.250"	54	2.125"	8 x 10	10

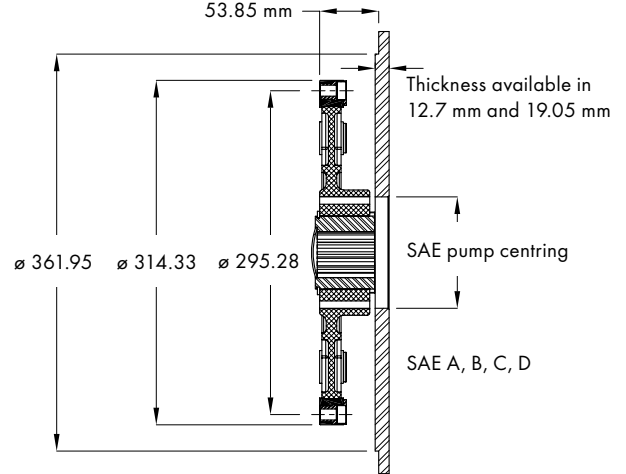
DELTA FLANGE COUPLING

ASSEMBLY CONFIGURATIONS

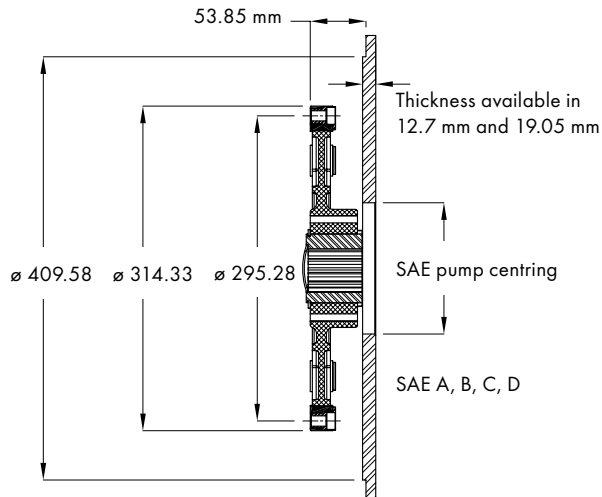
SAE 10 -SD / SAE #4



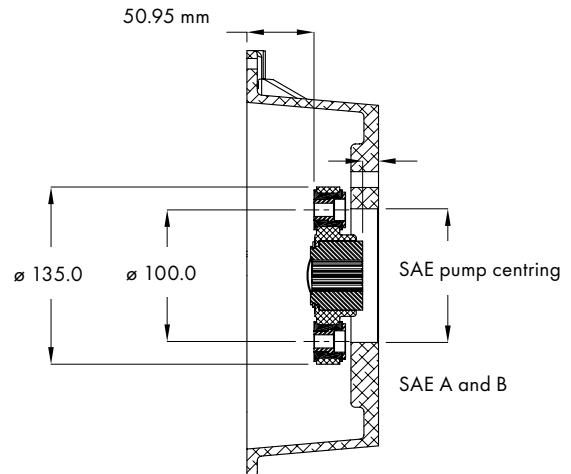
SAE 10 -HD / SAE #4



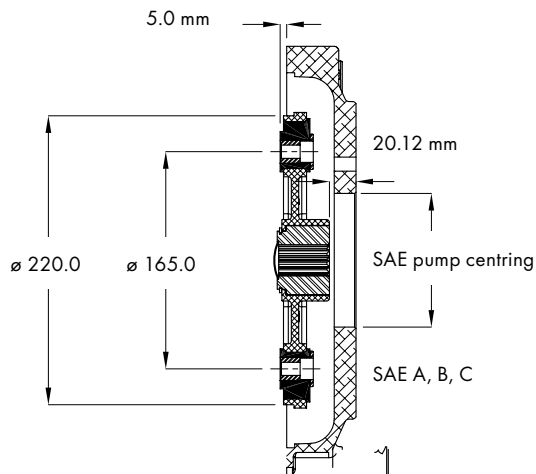
SAE 10 -HD / SAE #3



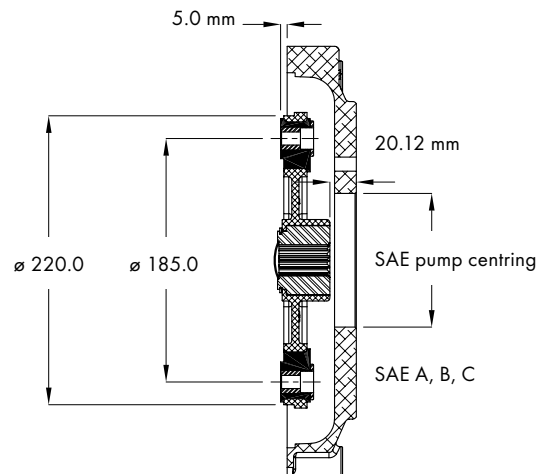
SUPER 5



SUPER 3-165



SUPER 3-185



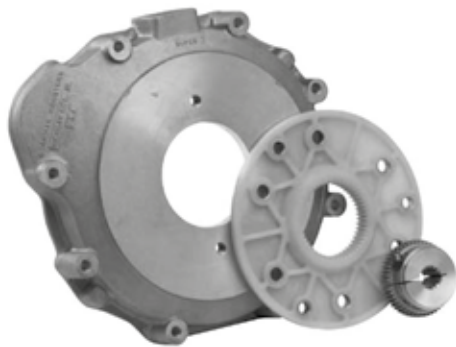
Note: Kubota Super 3 and Super 5 configurations are available in both aluminium and cast iron pump mount designs

PUMP MOUNTING HOUSINGS

PRODUCT DESCRIPTION

- To simplify the assembly of hydraulic pumps and diesel motors without SAE flywheel housing
- Exact positioning of motor and pump
- Available with all common pump connection configurations
- Combination with all flange couplings series FL-PA, FBA, Delta or NV possible
- Materials aluminium, EN-GJL-250 (GG25) or EN-GJS-400 (GGG40)

KUBOTA SUPER THREE FL



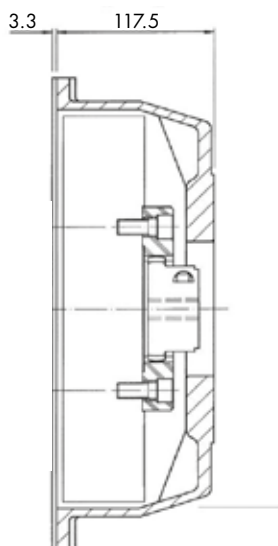
KUBOTA SUPER THREE FBA



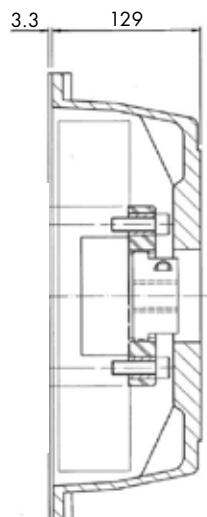
KUBOTA SUPER FIVE DELTA



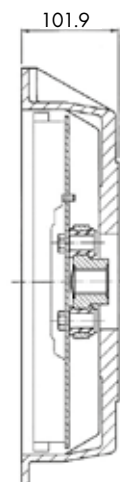
PERKINS 103-13/15 FL



PERKINS 404-22



GM 3.0/4.3



DEUTZ 1011/2 FL



+PCALCULATOR

SETTINGS
language: english
list price

MOTOR
Servo

MOTOR PRODUCER
Bosch Rexroth

- Bosch Rexroth
- HEIDrive
- LS Motion
- ETI Motion
- Panasonic
- Rexroth
- Siemens

MOTOR TYPE
Indradyn MS2N10E08H

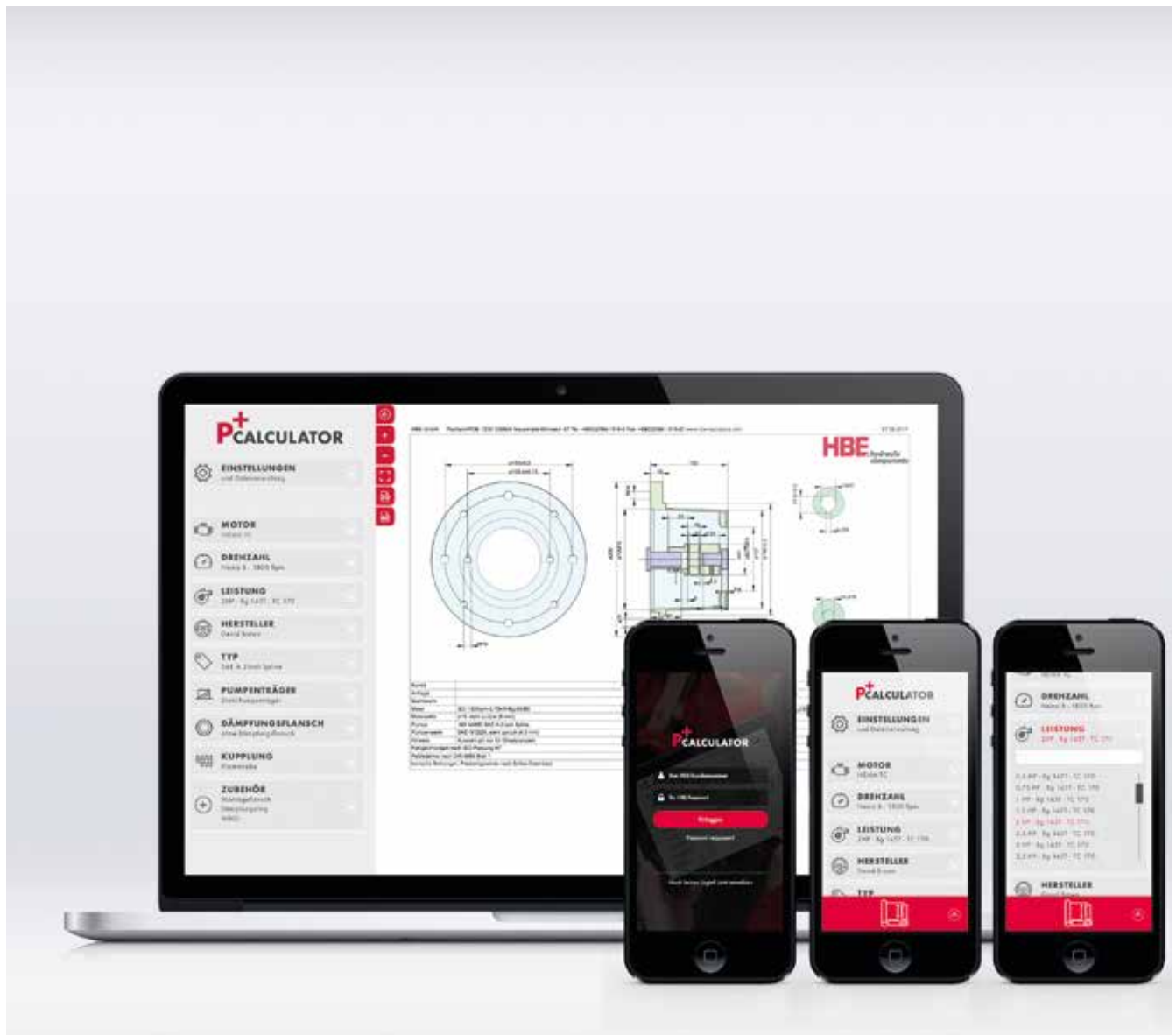
PUMP PRODUCER
NO NAME

PUMP TYPE
SAE A 2-bolt Spline



SELECTION SOFTWARE

SELECTION SOFTWARE



CONTENT

- P+Calculator
- HT Calculator

HIGHLIGHTS

- No installation of plugins required
- Runs in every web browser
- Flexible display for PC, tablet or smartphone
- Free of charge for HBE customers
- Login with your HBE customer number
- Guest access possible

P+ CALCULATOR

- Calculation of bell housings, couplings and accessories
- For more than 4,000 pumps from around 150 manufacturers
- For IEC, NEMA, combustion and servo motors
- ATEX approved products at just one click
- Specific data and prices already during project planning
- Product data as DXF, STP or PDF



HT CALCULATOR

- Calculation of heating performances
- Design of suitable tank heaters
- Simple user interface for fast value adjustments
- Approx. 100 different standard tank heaters on file

1725 – PTHK 90 – G1 1/2" 1200MM 2400 W 2×400V

PTHK Cartridge tank heater
without thermostat

Connecting thread: G1 1/2

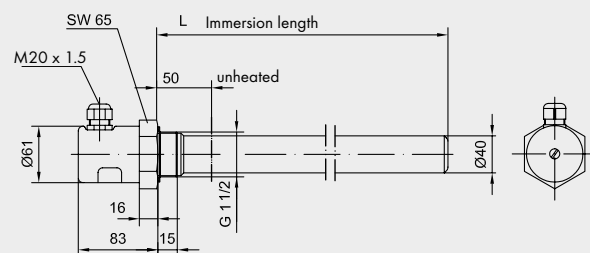
$U = 2 \times 400 \text{ V}$

HLP Hydraulic oil on mineral oil base

Protection class: IP 65

Surface charge: 1.5 W/cm^2

Type	Length	Power	Art. No.
PTHK 90	1200	2400 W	1725



To find under



<https://login.hbe-hydraulics.com/>

Example

Online catalogue



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