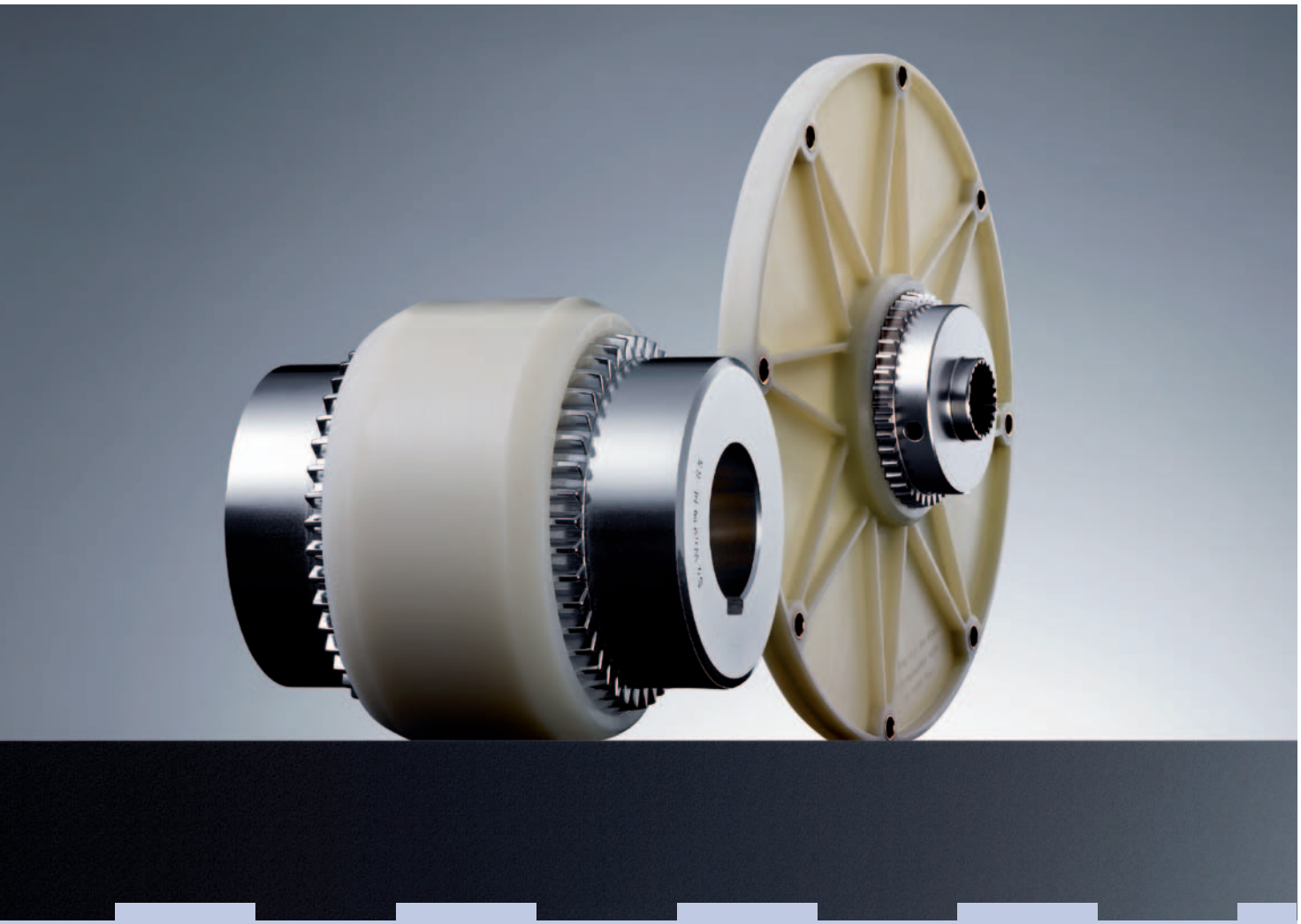


BoWex®

Curved-tooth gear coupling, shaft coupling

BoWex® FLE-PA

U.S. Patent 5,586,938

Torsionally rigid flange coupling

BoWex-ELASTIC®

Highly flexible flange coupling

EP 0853203 U.S. Patent 6,117,017

MONOLASTIC®

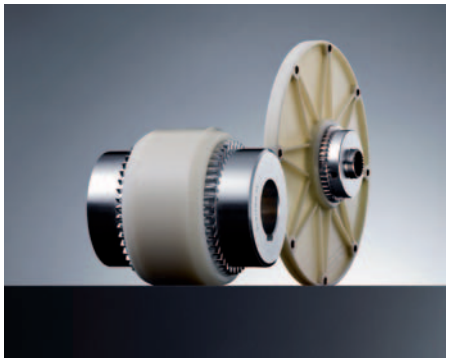
Single-part, flexible flange coupling

Pump mounting flanges

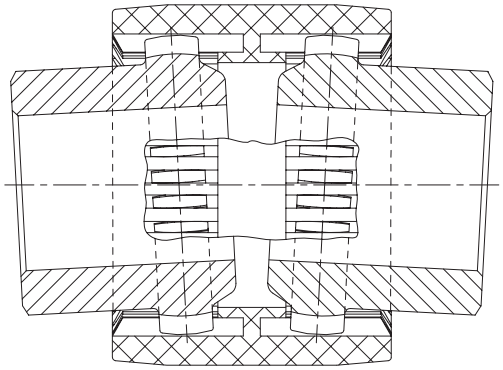
according to SAE and special dimensions

Made for Motion KTR

Table of contents

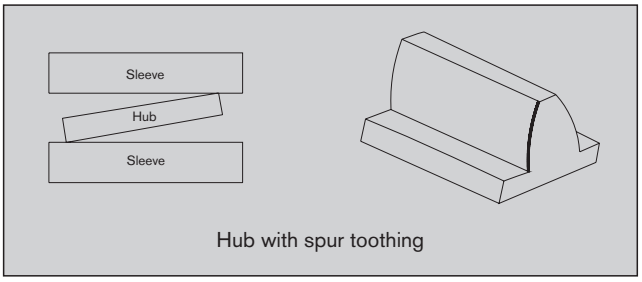


Operational description



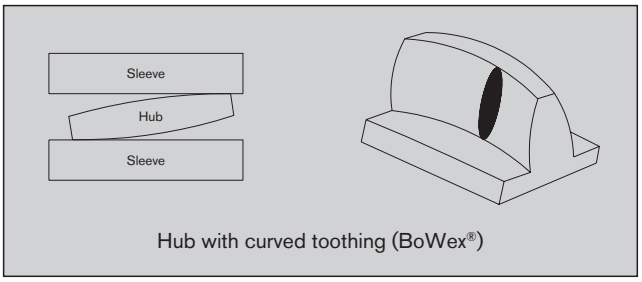
BoWex® curved-tooth gear couplings are flexible shaft connections for a positive torque transmission and specifically suitable to compensate for axial, radial and angular shaft misalignment.

According to the well-known effect of curved-tooth gear couplings any edge pressure in the spline in case of angular and radial displacements is avoided so that BoWex® couplings are almost free from wear during the operation.



Hub with spur toothing

On coupling hubs with spur toothing high edge pressure along with considerable wear arises on the contact surfaces in case of misalignment.



Hub with curved toothing (BoWex®)

The curved teeth avoid any edge pressure on the coupling in case of angular and radial misalignment.

The material combination of steel hubs and polyamide sleeves allows for maintenance-free continuous operation with very low friction on the teeth.

Due to the double cardanic operation of BoWex® couplings restoring forces may be neglected in case of angular and radial displacements and periodic fluctuations in angular velocity do not arise.

BoWex® couplings can be assembled both vertically or horizontally with no need for any special assembly tools.

The standard polyamide material is characterized by the following positive features:

- high mechanical consistency
- high stiffness
- high thermal stability (+ 100 °C)
- good viscosity even in case of low temperatures
- favourable slide-friction behaviour
- very good electrical insulating property
- good resistance to chemicals
- good dimensional accuracy

Behaviour of friction and wear of the BoWex® sleeve

The smooth and hard surface (crystalline structure) and the high thermal stability and resistance to lubricants, fuels, hydraulic fluids, dissolvents, etc. make polyamide an ideal material for components stressed by sliding, particularly for the coupling production. While any metallic materials tend to „corrode“ in case of dry running, slide combinations with polyamide and steel are operative without any lubrication and maintenance.

Explosion-proof use

BoWex® couplings type M until size 65 including an electroconductive nylon sleeve (PA-CF) are suitable for power transmission in drives in hazardous areas. The couplings are certified and confirmed according to EC standard 94/9/EC (ATEX 95) as units of category 2G/2D and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read through our information included in the respective Type Examination Certificate and the operating and mounting instructions at www.ktr.com.

Technical data

Power, Torque and Speed								
Type and size			Power P [kW] / n [rpm]		Torque T_K [Nm]			max. speed [rpm]
			Rated	Max.	T_{KN}	$T_{K\,max.}$	T_{KW}	
Type plug-in coupling / junior M	junior 14 / M-14		0,0005	0,010	5	10	2,5	6000
	junior 19 / M-19		0,0008	0,0017	8	16	4	6000
	junior 24 / M-24		0,0013	0,0025	12	24	6	6000
Type M I AS Spec.-I SG SSR	14		0,0010	0,003	10	30	5	14000
	19		0,0017	0,005	16	48	8	11800
	24		0,0021	0,006	20	60	10	10600
	28		0,0047	0,014	45	135	23	8500
	32		0,0063	0,019	60	180	30	7500
	38		0,0084	0,025	80	240	40	6700
	42		0,010	0,031	100	300	50	6000
	45 / 48		0,015	0,044	140	420	70	5600
	65		0,040	0,119	380	1140	190	4000
	80		0,073	0,22	700	2100	350	3150
	100		0,13	0,38	1200	3600	600	3000
	125		0,26	0,78	2500	7500	1250	2120
Type M...C	14		0,0015	0,0047	15	45	7,5	14000
	19		0,0025	0,0075	24	72	12	11800
	24		0,003	0,009	30	90	15	10600
	28		0,007	0,022	70	210	35	8500
	32		0,009	0,028	90	270	45	7500
	38		0,013	0,038	120	360	60	6700
	48		0,021	0,063	200	600	100	5600
	65		0,058	0,18	560	1680	280	4000
Type FLE-PA FLE-PAC	28		0,0078	0,014	75	185	37,5	6000
	48		0,025	0,050	240	600	120	5000
	T 48		0,030	0,078	300	750	150	5000
	T 55		0,047	0,012	450	1125	225	4500
	65		0,068	0,140	650	1600	325	3600
	T 65		0,084	0,210	800	2000	400	3600
	T 70		0,105	0,262	1000	2500	500	3400
	80		0,13	0,250	1200	3000	600	3000
	T 80		0,16	0,039	1500	3750	750	3000
	100		0,21	0,43	2050	5150	1025	2500
	T 100		0,26	0,65	2500	6250	1250	2500
	125		0,44	0,89	4250	10700	2125	2500
	T 125		0,55	1,39	5300	13250	2650	2500
Type ELASTIC HE HEW HEW-ZS HE-ZS HEG		40Sh	0,014	0,041	130	390	39	
	42 HE	50Sh	0,016	0,047	150	450	45	6200
		65Sh	0,019	0,057	180	540	54	
		40Sh	0,021	0,063	200	600	60	
	48 HE	50Sh	0,024	0,072	230	690	69	5600
		65Sh	0,029	0,088	280	840	84	
		40Sh	0,037	0,110	350	1050	105	
	65 HE	50Sh	0,042	0,126	400	1200	120	4500
		65Sh	0,052	0,157	500	1500	150	
		40Sh	0,045	0,135	430	1290	129	
	G 65 HE	50Sh	0,052	0,157	500	1500	150	4300
		65Sh	0,065	0,195	620	1860	186	
		40Sh	0,089	0,267	750	2250	225	
	80 HE	50Sh	0,096	0,298	950	2850	285	3600
		65Sh	0,126	0,372	1200	3600	360	
		40Sh	0,130	0,39	1250	3750	375	
	G 80 HE	50Sh	0,16	0,50	1600	4800	480	3000
		65Sh	0,21	0,62	2000	6000	600	
		40Sh	0,21	0,62	2000	6000	600	
	100 HE	50Sh	0,26	0,78	2500	7500	750	2700
		65Sh	0,36	1,00	3200	9600	960	
		40Sh	0,31	0,942	3000	9000	900	
	125 HE	50Sh	0,41	1,256	4000	12000	1200	2300
		70Sh	0,52	1,570	5000	15000	1500	
		40Sh	0,42	1,26	4000	12000	1200	
	G 125 HE	50Sh	0,54	1,63	5200	16000	1600	2250
		70Sh	0,68	2,04	6500	20000	2000	
		T 42 Sh	0,58	1,73	5500	16500	1650	1950
	150 HE	T 52 Sh	0,73	2,20	7000	21000	2100	2050
		T 68 Sh	0,94	2,83	9000	27000	2700	2200
		T 42 Sh	0,73	2,20	7000	21000	2100	1900
	G 150 HE	T 52 Sh	0,96	2,89	9200	27600	2760	2000
		T 68 Sh	1,20	3,60	11500	34500	3450	2100
		T 42 Sh	0,99	2,97	9500	28500	2850	1700
	200 HE	T 52 Sh	1,31	3,93	12500	37500	3750	1800
		T 68 Sh	1,68	5,04	16000	48000	4800	1900
		T 42 Sh	1,21	3,63	11500	34500	3450	1600
	G 200 HE	T 52 Sh	1,57	4,71	15000	45000	4500	1700
		T 68 Sh	2,04	6,12	19500	58500	5850	1800

Coupling selection

The BoWex® coupling is selected in accordance with DIN 740 part 2. The coupling has to be dimensioned in a way that the permissible coupling load is not exceeded during any operating condition. For this purpose the actual loads have to be compared to the permissible parameters of the coupling.

1 Drives without periodical load

The coupling has been selected by checking the rated torque T_{KN} and maximum torque $T_{K\,max}$.

2 Load produced by rated torque

$$T_{KN} \geq T_N \bullet S_t$$

$$T_N\,[Nm] = 9550 \bullet (P_{AN}\,/_{LN}\,[kW] / n\,[rpm])$$

Taking into consideration the ambient temperature, the permissible rated torque T_{KN} of the coupling has to correspond at least to the rated torque T_N of the machine.

3 Load produced by torque shocks

$$T_{K\,max} \geq T_S \bullet S_Z \bullet S_t + T_N \bullet S_t$$

Drive-sided shock
$T_S = T_{AS} \bullet M_A \bullet S_A$

Load-sided shock
$T_S = T_{LS} \bullet M_L \bullet S_L$

$M_A = J_L / (J_A + J_L)$ $\quad M_L = J_A / (J_A + J_L)$

The permissible maximum torque of the coupling has to correspond at least to the total of peak torque T_S and the rated torque T_N of the machine, taking into account the shock frequency Z and the ambient temperature.
This applies in case if the rated torque T_N of the machine is at the same time subject to shocks.
Knowing the mass distribution, shock direction and shock mode, the peak torque T_S can be calculated.
For drives with A. C.-motors with high masses on the load side we would recommend to calculate the peak driving torque with the help of our simulation programme.

Service factor S_t for temperature

Material of sleeve	-40 °C +60 °C	+70 °C	+80 °C	+90 °C	+100 °C	+110 °C	+120 °C
PA 6.6	1,0	1,2	1,4	1,6	1,8	-	-
PA-CF	1,0	1,1	1,2	1,4	1,6	1,9	2,2

Service factor S_Z for starting frequency

starting frequency/h	100	200	400	800
S_Z	1,0	1,2	1,4	1,6

Service factor S_A/S_L for shocks

	S_A/S_L
gentle shocks	1,5
average shocks	1,8
heavy shocks	2,5

Permissible load on feather key of the coupling hub

The shaft-hub-connection has to be verified by the customer.
Permissible surface pressure according to DIN 6892 (method C).

Polyamide	30 N/mm2 (bis + 40 °C)
Powder metal steel	180 N/mm²
Steel S355J2G3 (St 52.3)	250 N/mm²
for other steel materials $p_{perm.}$ =	0,9 • R_e ($R_{p0.2}$)

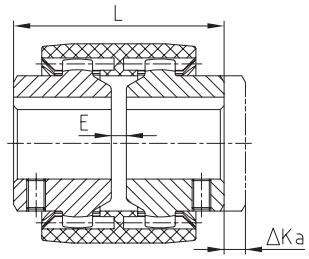
Description	Symbol	Definition or explanation
Rated torque of coupling	T_{KN}	Torque that can be continuously transmitted over the entire permissible speed range.
Maximum torque of coupling	$T_{K\,max.}$	Torque that can be transmitted as dynamic load ≥ 10^5 times or 5 x 10^4 as vibratory load, respectively, during the entire service life of the coupling.
Vibratory torque of coupling	T_{KW}	Torque amplitude of the permissible periodical torque fluctuation with a frequency of 10 Hz and a basic load of T_{KN} or dynamic load up to T_{KN}, respectively.
Damping power of coupling	P_{KW}	Permissible damping power with an ambient temperature of + 30 °C.
Rated torque of machine	T_N	Stationary rated torque on the coupling
Peak torque of machine	T_S	Peak torque on the coupling
Peak torque on the driving side	T_{AS}	Peak torque with torque shock on the driving side, e. g. breakdown torque of the electric motor.

Description	Symbol	Definition or explanation
Peak torque of load side	T_{LS}	Peak torque with torque shock on load side, e. g. braking.
Vibratory torque of machine	T_W	Amplitude of the vibratory torque effective on the coupling.
Damping power of the machine	P_W	Damping power which is effective on the coupling due to the load produced by the vibratory torque.
Moment of inertia of driving side	J_A	Total of moments of inertia existing on the driving or load side referring to the coupling speed.
Moment of inertia of load side	J_L	
Rotational inertia coefficient of driving side	M_A	Factor taking into account the mass distribution with shocks and vibrations produced on the driving or load side.
Rotational inertia coefficient of load side	M_L	$M_A = J_L / (J_A + J_L)$ $\quad M_L = J_A / (J_A + J_L)$

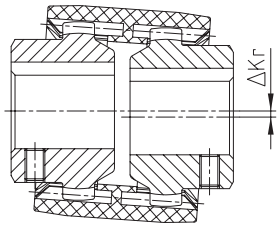
Displacements and threads for setscrews

Displacements

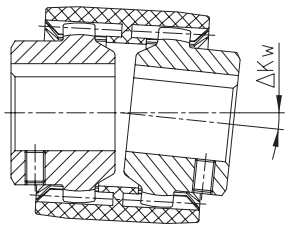
BoWex® couplings are double- cardanic and in addition to transmitting the power compensate for axial, radial and angular shaft displacements in a way to prevent damages from the driving or driven machine, respectively.



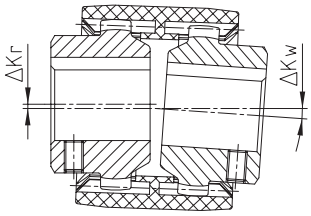
Axial displacement



Radial displacement



Angular displacement



Radial- and angular displacement

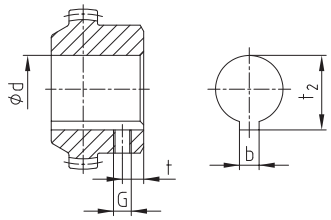
Displacements – type junior couplings						
BoWex® size	Type junior plug-in coupling			Type junior M		
	14	19	24	14	19	24
Max. axial displacement ΔKa [mm]	± 1	± 1	± 1	± 1	± 1	± 1
Max. radial displacement with n=1500 rpm ΔKr [mm]	± 0,1	± 0,1	± 0,1	± 0,3	± 0,3	± 0,4
Max. radial displacement with n=3000 rpm ΔKr [mm]	± 0,1	± 0,1	± 0,1	± 0,3	± 0,3	± 0,4
Max. angular displacement with n=3000 rpm. ΔKw [degree]	± 1,0	± 1,0	± 0,9	± 1,0	± 1,0	± 0,9
Max. angular displacement with n=3000 rpm. ΔKw [degree]	± 0,7	± 0,7	± 0,6	± 0,7	± 0,7	± 0,6

Displacements – type M, I, AS, Spec.-I, SG and SSR												
BoWex® size	14	19	24	28	32	38	42	48	65	80	100	125
Max. axial displacement ΔKa [mm]	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1	± 1
Max. radial displacement with n=1500 rpm ΔKr [mm]	± 0,30	± 0,30	± 0,35	± 0,35	± 0,35	± 0,40	± 0,40	± 0,40	± 0,45	± 0,45	± 0,45	± 0,45
Max. radial displacement with n=3000 rpm ΔKr [mm]	± 0,20	± 0,20	± 0,23	± 0,23	± 0,23	± 0,25	± 0,25	± 0,25	± 0,28	± 0,28	± 0,28	± 0,28
Max. angular displacement with n=1500 rpm. ΔKw [degree]	± 1,0	± 1,0	± 0,9	± 0,9	± 0,9	± 0,9	± 0,9	± 0,9	± 0,7	± 0,6	± 0,6	± 0,4
Max. angular displacement with n=3000 rpm. ΔKw [degree]	± 0,7	± 0,7	± 0,6	± 0,6	± 0,6	± 0,6	± 0,6	± 0,6	± 0,5	± 0,4	± 0,4	± 0,3

The above-mentioned figures of displacement of BoWex® couplings are standard values taking into account the load of the coupling up to the rated torque T_{KN}. With different operating conditions please order our data sheet KTR-N 20140 regarding displacements for BoWex®. The displacement figures may only be used one by one - if they appear simultaneously, they must be limited in proportion. Care should be taken to maintain the distance dimension E accurately in order to allow for axial clearance of the coupling while in operation. Detailed mounting instructions are shown on our homepage (www.ktr.com).

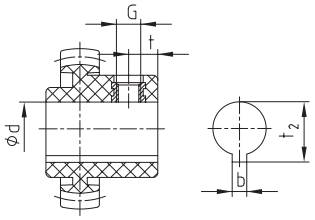
Thread for setscrew

(Thread dimensions for setscrews. BoWex® coupling hubs with cylindrical bore.)



Position of the thread for setscrews
BoWex® M-14 to M-24 opposite to the keyway

BoWex® M-28 to I-125 on the keyway



Position of the thread with BoWex®

junior plug-in coupling and junior M-coupling

BoWex® – coupling hubs							
Size Dimensions	14 19 24	28 32 38	42 45 48	65	80	100	125
Thread G	M5	M8		M10	M10	M12	M16
Distance t	6	10		15 [1] 20	20	30	40
Tightening torque T_A [Nm]	2	10		17	17	40	80

BoWex® junior – coupling hubs			
Size Dimensions	14	19	24
Thread G	M5	M5	M5
Hub 1b - Distance t	6	6	6
Plug-in sleeve 2b - Distance t	8	10	10
Tightening torque T_A [Nm]	1,4	1,4	1,4

[1] Hub length 55 mm t = 15 mm, 70 mm t = 20 mm

Cylindrical bores, taper/inch bores see assignment of IEC standard motors

Stock programme cylindrical finish bores [mm] H7 keyway to DIN 6885 sheet 1 [JS9] with thread for setscrew

BoWex® Size	Un-/pilot bored	Ø8	Ø10	Ø11	Ø12	Ø14	Ø15	Ø16	Ø17	Ø18	Ø19	Ø20	Ø22	Ø24	Ø25	Ø28	Ø30	Ø32	Ø35	Ø38	Ø40	Ø42	Ø45	Ø48	Ø50	Ø55	Ø60	Ø65	Ø70	Ø75
14	●■	●	●	●	●	●	●																							
19	●■		●	●	●	●	●	●	●	●	●■	●																		
24	●■		●	●	●	●■	●	●	●	●	●■	●■	●	●■	●															
28	●■				●	●	●	●	●	●	●	●	●	●	●	●■														
32	●■							●		●	●	●	●	●	●	●	●	●												
38	●■							●		●	●	●	●	●	●	●	●	●	●	●■										
42	●■									●	●	●	●	●	●	●	●	●	●	●	●	●								
48	●■											●			●	●	●	●	●	●	●	●■	●	●■						
65	●■																●■	●	●■	●	●■	●■	●■	●■	●■	●■	●■	●■		
80	●																						●		●	●	●	●	●	●

● standard length ■ standard lengthened

Stock programme taper and inch bores

	Taper 1:5					Taper 1:8					Inch bores								
Code d +0,05 b JS9 t +0,2	**A-10** 9,85 2	**B-17** 16,85 3	**C-20** 19,85 4	**D-25** 24,85 5	**E-30** 29,85 6	**N/1** 9,7 2,4	**N1d** 14 3	**N/2** 17,28 3,2	**N/2a** 17,28 4	**N/3** 22 3,99	**Ta** 12,7 3,17 14,3	**DNC** 13,45 3,17 14,9	**Ed** 15,87 4,75 18,1	**A** 19,05 4,78 21,3	**G** 22,22 4,75 24,7	**F** 22,22 6,38 25,2	**Bs** 25,38 6,37 28,3	**Hs** 25,4 6,35 28,7	**K** 31,75 7,93 35,4
14	●					●							●						
19		●				●							●						
24	●	●				●		●	●		●			●	●				
28	●	●				●	●	●	●	●				●					
32		●																●	
38		●						●	●					●					
42		●		●				●	●	●				●		●	●		
48																			
65																			●

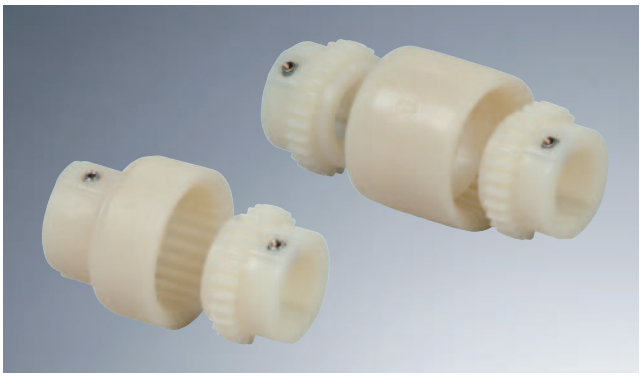
Further dimensions on request.

BoWex®-couplings for standard IEC-motors, protection class IP 54/IP 55

A. C. motor size	Motor output with 50 Hz n = 3000 [rpm]			Motor output with 50 Hz n = 1500 [rpm]			Motor output with 50 Hz n = 1000 [rpm]			Cylindrical shaft end d x l [mm]	
	kW	T [Nm]	BoWex® coupling	kW	T [Nm]	BoWex® coupling	kW	T [Nm]	BoWex® coupling	3000 ≤ 1500	
56	0,09	0,32		0,06	0,43		0,037	0,43		9 x 20	
	0,12	0,41		0,09	0,64		0,045	0,52			
63	0,18	0,62	14	0,12	0,88	14	0,06	0,72	14	11 x 23	
	0,25	0,86		0,18	1,3		0,09	1,1			
71	0,37	1,3		0,25	1,8		0,18	2,0		14 x 30	
	0,55	1,9		0,37	2,5		0,25	2,7			
80	0,75	2,5	19	0,55	3,7	19	0,37	3,9	19	19 x 40	
	1,1	3,7		0,75	5,1		0,55	5,8			
90 S	1,5	5,0	24	1,1	7,5	24	0,75	8,0	24	24 x 50	
90 L	2,2	7,4		1,5	10		1,1	12			
100 L	3	9,8	28	2,2	15	28	1,5	15	28	28 x 60	
				3	20						
112 M	4	13		4	27		2,2	22			
132 S	5,5	18	38	5,5	36	38	3	30	38	38 x 80	
	7,5	25									
132 M				7,5	49		4	40			
							5,5	55			
160 M	11	36	42	11	72	42	7,5	75	42	42 x 110	
	15	49									
160 L	18,5	60		15	98		11	108			
180 M	22	71	48	18,5	121	48			48	48 x 110	
180 L				22	144		15	148			
200 L	30	97	65	30	196	65	18,5	181	65	55 x 110	
	37	120					22	215			
225 S				37	240					55 x 110	60 x 140
225 M	45	145		45	292		30	293			
250 M	55	177		55	356		37	361		60 x 140	65 x 140
280 S	75	241		75	484	80	45	438	80		75 x 140
280 M	90	289		90	581		55	535			
315 S	110	353		110	707		75	727			
315 M	132	423		132	849		90	873			80 x 170
315 L	160	513	80	160	1030	100	110	1070	100	65 x 140	
	200	641		200	1290		132	1280			
							160	1550			
315	250	801		250	1610	125	200	1930	125		85 x 170
	315	1010	100	315	2020		250	2420			
355	355	1140		355	2280		315	3040	-	75 x 140	95 x 170
	400	1280	125	400	2560						

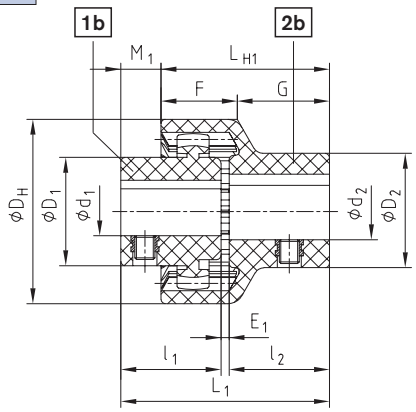
Torque T ≙ rated torque according to Siemens catalogue.

Type junior plug-in coupling and type junior M made of nylon

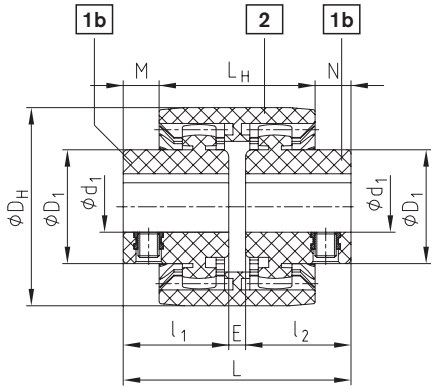


- Curved-tooth gear coupling plug-in type (2 parts) made of nylon
- Double-cardanic curved-tooth gear coupling type M (3 parts) made of nylon
- Maintenance-free due to material combination nylon
- Compensating for shaft misalignment axial – radial – angular
- Low proper weight and small flywheel effect
- Axial plug-in – easy assembly
- Operating range - 25 °C to + 100 °C
- Available from stock with finish bore for standard shafts including keyway to DIN 6885 sheet 1 and thread for setscrews, bore tolerance + 0,05 - 0,1 keyway tolerance ± 0,08, H7 fit with steel hubs only

Components



Type junior plug-in coupling (2 parts)



Type junior M coupling (3 parts)

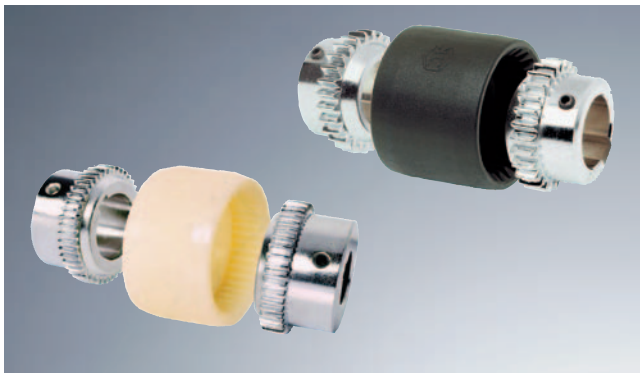
BoWex® junior plug-in coupling (2 parts) and BoWex® junior M (3 parts)

Size	Torque T_K [Nm]		Finish bore				Dimensions [mm]												Max. speed [rpm]
			Hub part 1b		Plug-in-sleeve part 2b		D_H	l_1, l_2	E_1	L_1	L_{H1}	M_1	F	G	E	L	L_H	M, N	
	T_{KN}	$T_{K\,max.}$	d_1	D_1	d_2	D_2													
14 M-14	5	10	Ø6, Ø7, Ø8, Ø9	22	Ø8	22	40	23	2	48	40	8	18,5	21,5	4	50	37	6,5	6000
			Ø10, Ø11	25	Ø10, Ø11	25													
			Ø12, Ø14	26	Ø12, Ø14	26													
19 M-19	8	16	Ø12, Ø14	27	Ø14, Ø15	29	47	25	2	52	42	10	19,0	23,0	4	54	37	8,5	6000
			Ø16	30															
			Ø19	32	Ø19	35													
24 M-24	12	24	Ø10, Ø11, Ø12	26	Ø14, Ø16	32	53	26	2	54	45	9	21,5	23,5	4	56	41	7,5	6000
			Ø14, Ø15, Ø16	32															
			Ø18, Ø19, Ø20	36	Ø19, Ø20	36													
			Ø24	38	Ø24	40													

Ordering example:

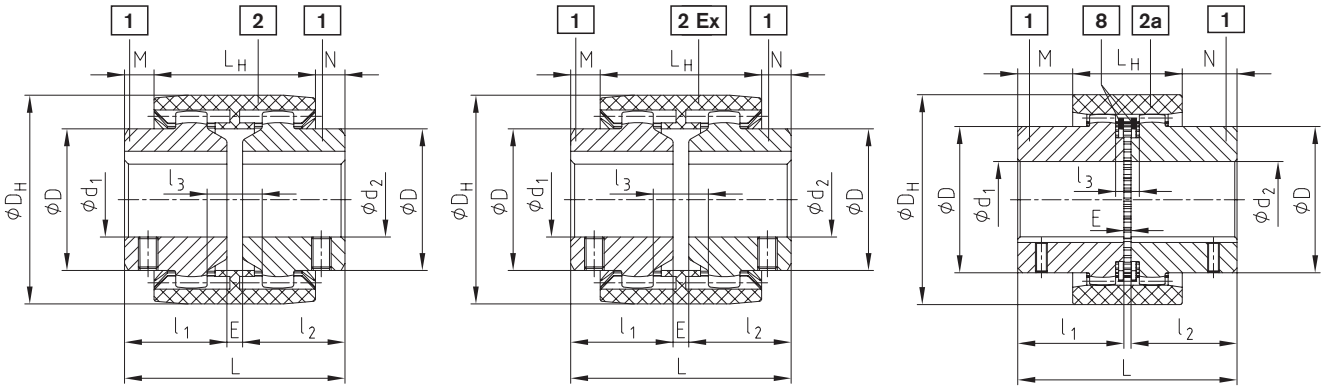
BoWex® junior 19	d_1 Ø19	d_2 Ø14
Coupling size 2-parted type or BoWex® junior M-19 3-parted type	Finish bore	Finish bore

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



- For all applications in the range of general engineering and hydraulics
- Maintenance-free due to the material combination nylon/steel
- Compensating for shaft misalignment axial – radial – angular
- Axial plug-in - easy assembly
- Available with finish bore to ISO fit H7, keyway to DIN 6885 sheet 1 - JS9 as well as taper and inch bores
- Ex Type M...C with carbon fibre reinforced PA, low backlash, higher torques and approved according to EC Standard 94/9/EC
- For finish bores see stock programme on page 83
- For performance data see page 80

Components



Type M

Type M...C Ex

Type I

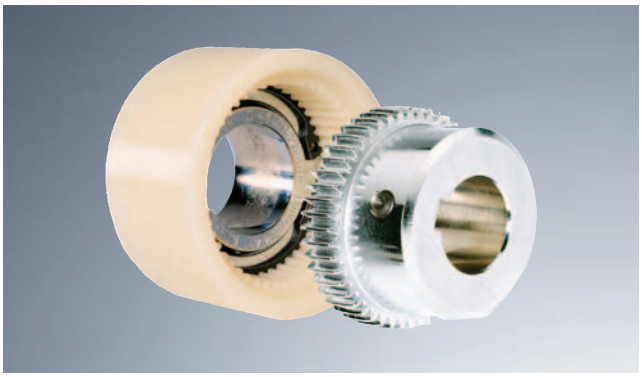
BoWex® type M, type I and type M...C Ex

Size		Finish bore d_1, d_2			Dimensions [mm]										Weight with max. bore-Ø			Mass moment of inertia J with max. bore-Ø		
	Ex	Pilot bored		max.	l_1, l_2	E	L	L_H	M, N	l_3	D	D_H	Tip circle ØDZ of hub	Lengthened hub l_1, l_2 max.	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm²]	Hub [kgcm²]	Total [kgcm²]
M-14	M-14C	-	For finish bores see stock programme	15	23	4	50	37	6,5	10	25	40	33	40	0,03	0,07	0,10	0,08	0,09	0,26
M-19	M-19C	-		20	25	4	54	37	8,5	10	32	47	39	40	0,03	0,10	0,23	0,15	0,16	0,47
M-24	M-24C	-		24	26	4	56	41	7,5	14	36	53	45	50	0,04	0,14	0,32	0,21	0,36	0,93
M-28	M-28C	-		28	40	4	84	46	19	13	44	65	54	55	0,08	0,33	0,74	0,65	1,22	3,09
M-32	M-32C	-		32	40	4	84	48	18	13	50	75	63	55	0,09	0,43	0,95	1,14	2,17	5,48
M-38	M-38C	-		38	40	4	84	48	18	13	58	83	69	60	0,13	0,55	1,23	1,58	3,55	8,68
M-42		-		42	42	4	88	50	19	13	65	92	78	60	0,14	0,68	1,50	2,32	5,98	14,28
M-48	M-48C	-		48	50	4	104	50	27	13	68	95	78	60	0,23	0,79	1,81	3,90	7,22	18,34
M-65	M-65C	21		65	55	4	114	68	23	16	96	132	110	70	0,55	1,90	4,35	21,2	31,8	84,8
I-80		31		80	90	6	186	93	46,5	20	124	178	145	-	1,13	5,20	11,53	68,9	150,8	370,5
I-100		38		100	110	8	228	102	63	22	152	210	176	-	1,78	9,37	20,52	158,6	401,3	961,2
I-125		45		125	140	10	290	134	78	30	192	270	225	-	3,88	19,44	42,76	562,9	1362,3	3287,5

Ordering example:

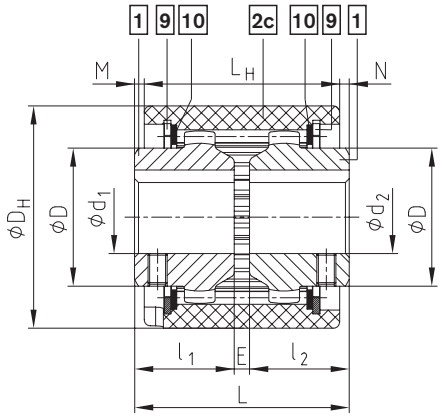
BoWex® M-28	d_1 Ø20	d_2 Ø28
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

Type AS and type Spec.-I

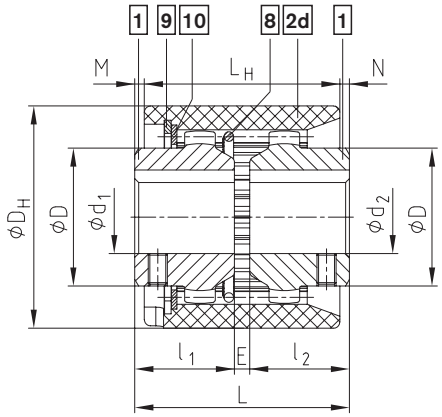


- Double-cardanic curved-tooth gear coupling
- Maintenance-free due to the material combination nylon/steel
- Compensating for shaft misalignment axial – radial – angular
- Type AS – separable coupling design - axially movable sleeve when assembled
- Type Spec.-I – axial plug-in for blind assembly
- Application range from - 25 °C to + 100 °C
- Available with finish bore acc. to ISO fit H7, keyway to DIN 6885, sheet 1 - JS9 and thread for setscrews (page 83)
- For finish bores see stock programme on page 83
- For performance data see page 80

Components



Type AS



Type Spec. - I

BoWex® type AS and type Spec.-I

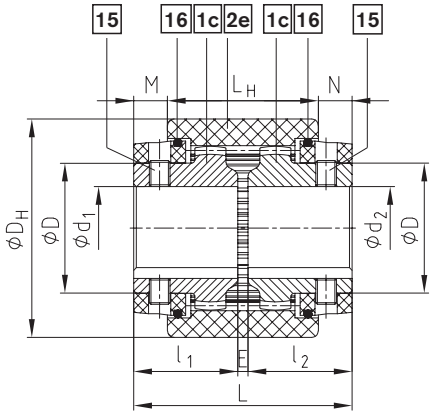
Size	Pilot bore		Finish bore d_1, d_2		Dimensions [mm]								Weight with max. bore-Ø			Mass moment of inertia J with max. bore-Ø		
	Unbored	Pilot bored		max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Lengthened hub l_1, l_2 max.	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm²]	Hub [kgcm²]	Total [kgcm²]
24	x	-	For finish bores see stock programme	24	26	4	56	51	2,5	36	58	50	0,11	0,14	0,39	0,38	0,36	1,10
28	x	-		28	40	4	84	56	14	44	70	55	0,16	0,33	0,82	1,54	1,22	3,98
32	x	-		32	40	4	84	58	13	50	84	55	0,21	0,43	1,07	2,75	2,17	7,09
45	x	-		45	42	4	88	60	14	65	100	60	0,27	0,63	1,53	5,49	5,66	16,81
65	-	21		65	55	4	114	84	15	96	140	70	0,84	2,10	5,00	29,83	43,96	117,8
80	-	31		80	90	6	186	93	46,5	124	178	-	1,30	5,20	11,70	83,20	150,8	384,8
100	-	38		100	110	8	228	102	63	152	210	-	2,05	9,40	20,80	184,4	401,3	987,0
125	-	45		125	140	10	290	134	78	192	270	-	4,32	19,44	43,10	620,0	1362,3	3344,6

Ordering example:

BoWex® 32 AS	d_1 Ø32	d_2 Ø32
Size and type of coupling AS or Spec.-I	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

Type SG, type SSR and type Spec.-I/CD

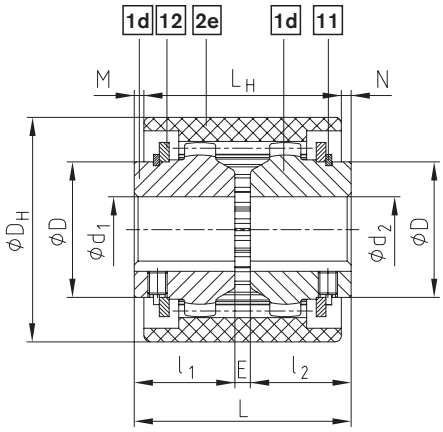
Type SG with dust protection circlips



BoWex® type SG												
Size	Pilot bore		Finish bore		Dimensions [mm]							
	Unbored	Pilot bored	min.	max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Lengthened hub l_1, l_2 max.
24 SG	x	-	10	24	36	4	76	51	12,5	36	58	50
28 SG	x	-	10	28	40	4	84	56	14	44	70	55
32 SG	x	-	12	32	40	4	84	58	13	50	84	55
45 SG	x	-	20	45	42	4	88	60	14	65	100	60
65 SG	-	21	30	65	70	4	144	84	30	96	140	-
80 SG	-	31	35	80	90	6	186	93	46,5	122	175	-
100 SG	-	38	40	100	110	8	228	102	63	150	210	-
125 SG	-	45	50	125	140	10	290	134	78	190	270	-

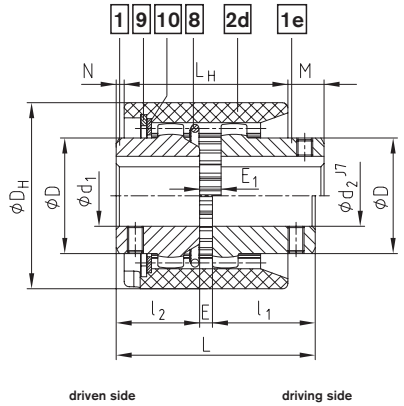
Thread for setscrews for finish bored hubs only.

Type SSR with supporting circlips



BoWex® type SSR												
Size	Pilot bore		Finish bore		Dimensions [mm]							
	Unbored	Pilot bored	min.	max.	l_1, l_2	E	L	L_H	M, N	D	D_H	Lengthened hub l_1, l_2 max.
24 SSR	x	-	10	22	26	4	56	51	2,5	35	58	50
28 SSR	x	-	10	26	40	4	84	56	14	42	70	55
32 SSR	x	-	12	30	40	4	84	58	13	48	84	55
45 SSR	x	-	20	42	42	4	88	60	14	63	100	60
65 SSR	-	21	30	65	55	4	114	84	15	95	140	70
80 SSR	-	31	35	80	90	6	186	93	46,5	120	175	-
100 SSR	-	38	40	100	110	8	228	102	63	150	210	-
125 SSR	-	45	50	125	140	10	290	134	78	190	270	-

Type Spec.-I/CD



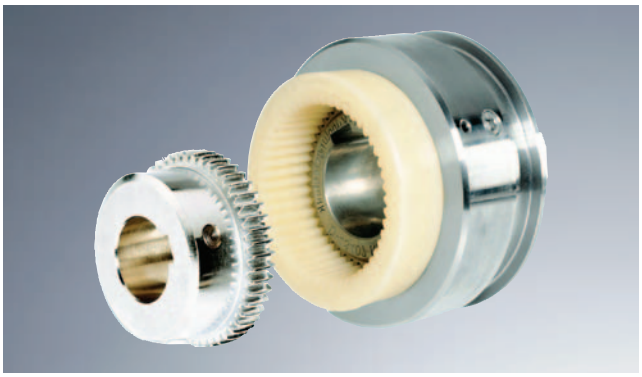
BoWex® type Spec.-I/CD															
Size	Pilot bore		Finish bore		Dimensions [mm]										
	Unbored	Pilot bored	min.	max.	L	L_1	L_H	E	E_1	l_2	l_1	D_H	D	M	N
24 CD	x	-	10	24	70	73,5	51	4	7,5	26	40	58	36	20	2,5
28 CD	x	-	10	28	94,5	98	56	4	8,5	40	50,5	70	44	28	14
32 CD	x	-	12	32	94,5	-	58	4	8,5	40	50,5	84	50	27	13
45 CD	x	-	20	45	101,5	-	60	4	8,5	42	55,5	100	65	32	14
65 CD	-	21	30	65	123	-	84	4	10	55	64	140	96	28,5	15
80 CD	-	31	35	80	179	-	93	6	13	90	83	178	124	44	46,5

For type Spec.-I/CDB with safety pins please order dimension sheet.

Ordering example:

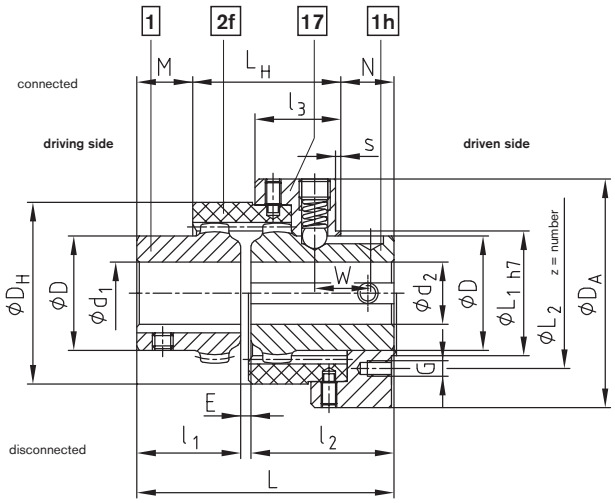
BoWex® 45 SG	d_1 Ø22	d_2 Ø40
Size and type of coupling SG, SSR or Spec.-I/CD	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

Type SD



- For all applications in the range of general engineering to quickly connect or disconnect power packs at standstill
- Maintenance-free due to the material combination nylon/steel
- Application range from - 25 °C to + 100 °C
- Available with finish bore according to ISO fit H7, keyway to DIN 6885 sheet 1 - JS9, thread for setscrews see on page 83
- For performance data please see page 80, compare to design M/I
- Max. circumferential speed v = 20 m/s, referring to ØD$_A$

Components



BoWex® type SD

Size	Pilot bore		Finish bore d_1, d_2			Dimensions [mm]												Weight with max. bore-Ø		Mass moment of inertia J with max. bore Ø		Shifting force [N]
	Un-bored	Pilot bored	d_1	d_1 max.	d_2 max.	E	l_1	l_2	L	L_H	l_3	M	W	N	D	D_H	D_A	Shifting hub with sleeve [kg]	Driving hub [kg]	Shifting hub with sleeve [kgcm²]	Driving hub [kgcm²]	
24 SD	x	-	For finish bore see stock programme 83	24	24	4	26	50	80	52	31	10	19	18	36	58	78	1,08	0,14	8,23	0,36	140
28 SD	x	-		28	28	4	40	55	99	57	33	21,5	21,5	20,5	44	70	88	1,50	0,33	15,62	1,22	180
32 SD	x	-		32	32	4	40	55	99	58	33	20,5	21,5	20,5	50	84	100	1,85	0,43	22,87	2,17	180
45 SD	x	-		45	45	4	42	60	106	63	37	21,5	22,5	21,5	65	100	125	2,56	0,68	46,07	5,66	250
				48			50		114			29,5							0,79			
65 SD	-	21		65	65	4	55	70	129	77	37	28	25	24	95	140	156	5,07	2,30	158,99	43,96	350
80 SD	-	31		80	80	6	90	90	186	96	47	56	35	34	124	175	195	10,60	5,20	523,7	150,8	350
100 SD	-	38		100	100	8	110	110	228	113	55	72	43	43	152	210	235	18,87	9,37	1350	401,3	400
125 SD	-	45		125	125	10	140	140	290	149	70	89	52	52	192	270	298	40,40	9,44	4919	1362,3	450

Connection dimensions of BoWex® SD shifting ring (part 17) for mounting of: slip ring SD1 (s. catalogue page 87), shifting disk etc.

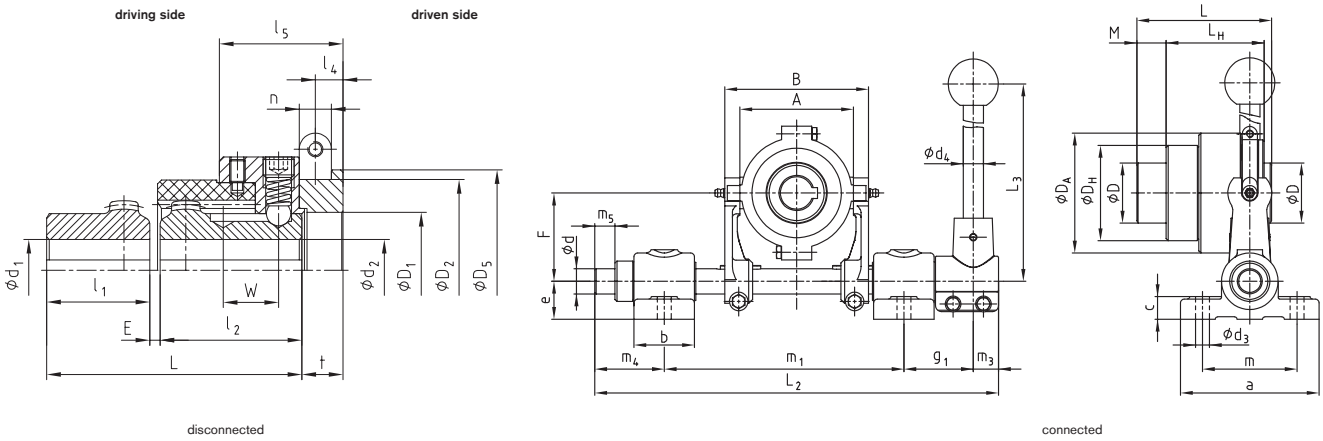
Size	Dimensions [mm]			
	L_1	L_2	z x G	s
24 SD	48	58	4 x M6	2
28 SD	48	58	4 x M6	2
32 SD	64	75	4 x M6	2
45 SD	75	90	4 x M8	2
65 SD	100	114	4 x M8	2
80 SD	130	145	4 x M8	3
100 SD	180	196	6 x M10	4
125 SD	220	236	6 x M10	4

Ordering example:

BoWex® 32 SD	d_1 Ø32	d_2 Ø32
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

Type SD1 with slip ring and shiftable linkage

- For all applications in the range of general engineering to quickly connect or disconnect power packs at standstill
- Maintenance-free due to the material combination nylon/steel
- Application range from - 25 °C to + 100 °C
- Available with finish bore according to ISO fit H7, keyway to DIN 6885 sheet 1 - JS9, thread for setscrews see on page 80
- Available with slip ring and shiftable linkage for manual operation
- For performance data please see page 80, compare to design M/I
- Max. circumferential speed v = 20 m/s, referring to $\varnothing D_A$



BoWex® type SD1 and slip ring																						
Size	Finish bore			Dimensions [mm]																		Shifting force [N]
	d_1	d_1 max.	d_2 max.	E	l_1	l_2	L	L_G	l_4	l_5	M	W	t	D	D_H	D_A	D_1	D_2±0,1 (keyway)	D_5	n±0,1 (keyway)	
24 SD1	For finish bore see stock programme on page 83	24	24	4	26	50	80	67	11	46	10	19	16	36	58	78	45	70,5	78	12,5	140
28 SD1		28	28	4	40	55	99	72	11	48	21,5	21,5	16	44	70	88	45	70,5	78	12,5	180
32 SD1		32	32	4	40	55	99	78	13,5	53	20,5	21,5	21	50	84	100	60	89,5	100	17,5	180
45 SD1		45	45	4	42	60	106	84	14	58	21,5	22,5	22	65	100	125	70	112,5	125	18	250
		48			50		114				29,5										
65 SD1		65	65	4	55	70	129	103	16	61	26	25	25	96	140	156	96	130,5	145	20,5	350
80 SD1		80	80	6	90	90	186	124	18,5	75	56	35	29	124	175	195	125	164,5	182	25,5	350
100 SD1		100	100	8	110	110	228	152	28	94	72	43	39	152	210	235	174	210,5	230	30,5	400
125 SD1		125	125	10	140	140	290	193	30,5	114	89	52	44	192	270	298	214	250,5	275	35,5	450

BoWex® type SD1 - shiftable linkage																				
Size	Shiftable linkage size	Slip ring size	Dimensions [mm]																Dimensions with m_1 max.		
			a	b	c	d	d_3	d_4	e	F	g_1	L_2	L_3	m	m_1 min.	m_1 max.	A	B	m_3	m_4	m_5
24 SD1	1	1,1	110	50	18	20	11	16	30	70	55	320	400	75	180	190	90	114		55	16
28 SD1	1	1,1																			
32 SD1	2	2,2				25				97,5	60	430	450		240	270	111	151	20	80	34
45 SD1	3	3,3	140			30		20	40	120		490	600	100	280	310	140	180		90	44
65 SD1	3	4,4		60	25		13,5				70						170	210			
80 SD1	4	5,5				35			50	147,5		565	750		321	365	200	244		100	54
100 SD1	5	6,6	160			40		30	50[1)]	190	80	630	1085	120	365	410	250	300	30	110	62
125 SD1	5	7,7													-		300	350			

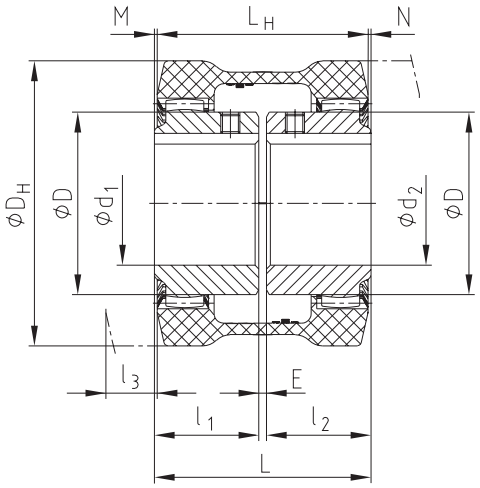
[1)] = With a continuous base plate the dimension „e“ has to be increased by at least 10 mm. The brackets have to be adapted to the driving and driven sides accordingly.

Ordering example:

BoWex® 65 SD1	d_1 Ø32	d_2 Ø32	4,4	3
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)		Slip ring size	Shiftable linkage size

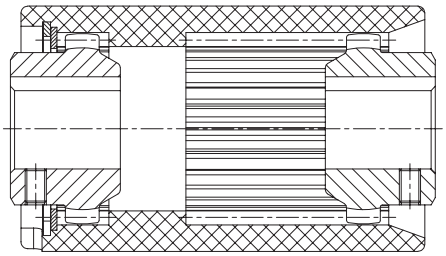
Type GT

- Double-cardanic operating principle
- Sleeve split horizontally for easier assembly/disassembly
- Very compact design
- Ex Atex approval || 2GD c || BTx
- CFK sleeve for high power density
- Performance data: see page 80, type Bauart M…C
- Axial plug-in
- Ability to compensate for high radial displacements
- Finish bore acc. to ISO fit H7, feather keyway acc. to DIN 6885 sheet 1 (JS9), – inch bores – taper bores – spline clamping hubs



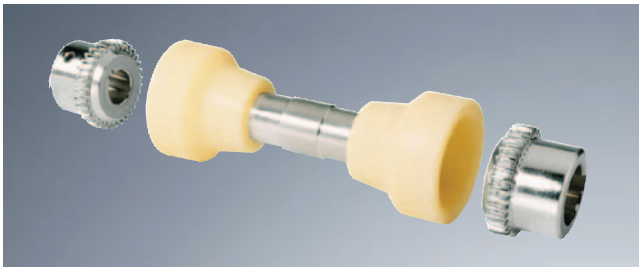
BoWex® type GT with split sleeve

Size	Finish bore d_{max}		Dimensions [mm]									Weight with max. bore Ø			Mass moment of inertia J with max. bore Ø		
	d_1	d_2	D	D_H	L_H	l_1	l_2	l_3	E	L	M, N	Sleeve [kg]	Hub [kg]	Total [kg]	Sleeve [kgcm²]	Hub [kgcm²]	Total [kgcm²]
28	28	28	44	80	80	40	40	15	4	84	2	0,158	0,27	0,77	1,77	1,22	3,915
38	38	38	58	98	83	40	40	18	4	84	0,5	0,254	0,455	1,168	4,43	3,55	10,37
65	65	65	96	150	111	55	55	27	4	114	1,5	0,69	1,533	3,766	28,9	31,8	83,48



Type Spec.-I with a long PA-sleeve

- Lengthened special sleeves available on request
- Connecting larger shaft distances
- Axial shifting of driving and driven shaft at standstill
- Maintenance-free
- Compensating for larger displacements
- Axial plug-in
- Application range from - 25 °C to + 100 °C

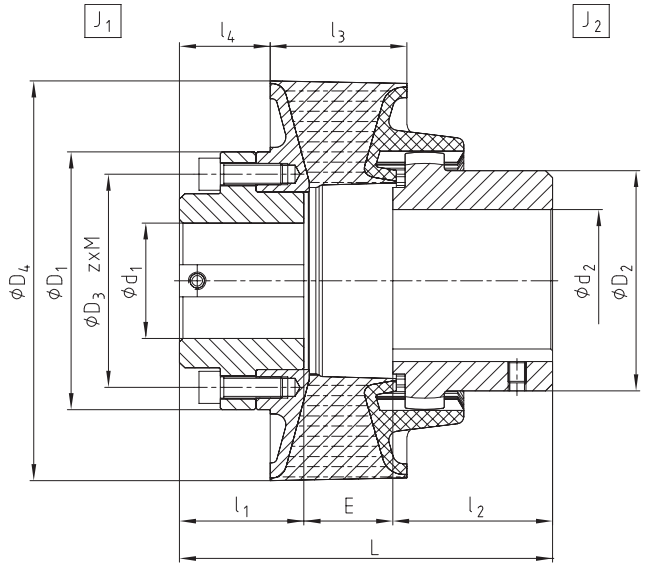


Type ZR

- Double-cardanic curved-tooth gear coupling
- For all applications to connect larger shaft distances
- Low-cost with serial production
- Compensating for larger shaft displacements
- Axial plug-in
- Intermediate pipe with variable lengthes (max. 2000 mm) (on consultation with KTR)
- Hubs available with finish bores acc. to ISO fit H7 as well as taper and inch bores
- Application range from - 25 °C to + 100 °C

Type HEW Compact

- Highly flexible shaft-to-shaft coupling
- Compensating for high misalignment
- Very compact design
- Axial plug-in
- Low restoring forces
- Available in different kinds of hardness
- Finish bore acc. to ISO fit H7, feather keyway acc. to DIN 6885 sheet 1 (JS9), – inch bores – taper bores – spline clamping hubs



BoWex® type HEW Compact

Size	Max. finish bore d		Dimensions [mm]												Weight with pilot bored coupl. [kg]	Mass moment of inertia with pilot bored coupling J_1 [kgm²]	Mass moment of inertia with pilot bored coupling J_2 [kgm²]
	d_1	d_2	D_1	D_2	D_4	l_1	l_2	l_3	l_4	E	L	D_3	z	M			
42-130	42	42	90	65	131	42	42	45	37	34	118	78	6	M6	3,4	0,003	0,001
65-180	65	65	130	96	180	60	55	55	47	30	145	110	8	M10	9	0,014	0,006
80-225	75	80	145	124	225	70	90	77	51	50	210	120	10	M12	18,9	0,035	0,029
100-305	100	100	200	152	305	90	110	90	73	58	258	175	16	M12	40,2	0,152	0,087

BoWex® type HEW Compact

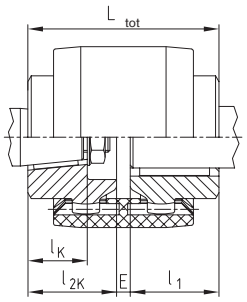
Size	Elastomer hardness [Shore A]	Torque [Nm]			Cdyn. with 60°C [Nm/rad]	Perm. damping power P_{KW} [W]				Perm. operating speed n_{max} [1/min]	Twisting angle with T_{KN} ϕ T_{KN} [°]	Relative damping ψ	Resonance factor VR≈2*Π/ψ	Radial spring stiffness Cr [N/mm]
		T_{KN}	$T_{K\,max.}$	T_{KW}										
42-130	65	180	540	54	1450	26	20	13	6,5	7300	7	1,2	5,2	570
	70	210	630	63	1750						6,5			725
65-180	65	500	1500	160	7800	72	54	36	18	5500	6	1,2	5,2	1635
	70	575	1725	172	9500						5,5			1990
80-225	65	1100	3300	330	13000	128	96	64	32	4400	8	1,2	5,2	1815
	70	1300	3900	390	16500						7,5			2300
100-305	65	2600	7800	780	40000	200	150	100	50	3200	6	1,2	5,2	3030
	70	3000	9000	900	50000						5,5			3785

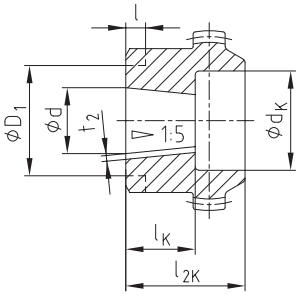
Ordering example:

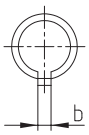
BoWex® 65 HEW Compact	40	d_1 Ø40	d_2 Ø65
Coupling size and type	Elastomer hardness	Finish bore H7 keyway to DIN 6885 sheet 1 (JSG)	Finish bore H7 keyway to DIN 6885 sheet 1 (JSG)

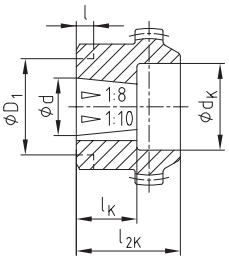
Taper bores

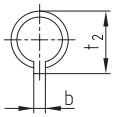
BoWex® with taper bore











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

Fose see page 83

Taper bores 1:5

Code	Dimensions [mm]				Counterbore d_K and hub length l_{2K} [mm] Recess on hub collar D_1 x l [mm]																	
	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{JS9}	$t_2{}^{+0,1}$	lK	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
A-10	9,85	2	1,0	11,5	18	23	18	25	25	26	25	26	25	26	25	26						
					-		30 x 7		30 x 7		30 x 5		-		30 x 5							
B-17	16,85	3	1,8	18,5			25	30	28	30	36	40	36	40	36	40	45	42	45	42	45	50
C-20	19,85	4	2,2	21,5					28	36	36	40	36	40	36	40	45	42	45	42	45	50
Cs-22	21,95	3	1,8	21,5					28	36	36	40	36	40	36	40	45	42	45	42		
D-25	24,85	5	2,9	26,5							36	40	36	40	36	40	45	42	45	42	45	50
E-30	29,85	6	2,6	31,5											45	55	45	55	45	55	45	55
F-35	34,85	6	2,6	36,5															52	60	55	60
G-40	39,85	6	2,6	41,5															52	60	65	70

Taper bores 1:8

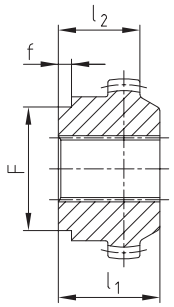
Code	Dimensions [mm]				Counterbore d_K and hub length l_{2K} [mm] Recess on hub collar D_1 x l [mm]																	
	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{JS9}	$t_2{}^{+0,1}$	lK	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
N/1	9,7 ±0,015	$2,4^{+0,05}$	10,85	17	18	26	18	25	25	26	25	30	25	30	25	30						
					23 x 8		23 x 8		23 x 8		23 x 8		-		23 x 8							
N/1c	11,6	3^{JS9}	12,90	16,5	18	23			25	26	25	30										
N/1e	13	$2,4^{+0,05}$	13,80	21					25	30	25	30			25	30						
N/1d	14	3^{JS9}	15,50	17,5	20	23	25	30	28	30	28	30	28	40								
					-		-		-		28 x 10		-									
N/2	17,287	$3,2^{+0,05}$	18,24	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
									-		35 x 12		-		-		-		-		-	
N/2a	17,287	4^{JS9}	18,94	24					28	35	36	40	36	40	36	40	45	42	45	42	45	50
									-		35 x 12		-		-		-		-		-	
N/2b	17,287	3^{JS9}	18,34	24					28	35					36	40	45	42	45	42		
									-						-		-		-			
N/3	22,002	4^{JS9}	23,40	28							36	40	36	40	36	40	45	42	45	42	45	50
											-		-		-		-		-		48 x 14	
N/4	25,463	$4,78^{+0,05}$	27,83	36							36	50	36	50	36	50	45	50	45	50	45	62
											-		-		-		58 x 10		58 x 10		-	
N/4b	25,463	5^{JS9}	28,23	36							36	50					45	50	45	50	45	62
N/4a	27	$4,78^{+0,05}$	28,80	32,5											36	50						
N/4g	28,45	6^{JS9}	29,32	38,5											36	60	45	60	45	60		
N/5	33,176	$6,38^{+0,05}$	35,39	44											45	60	45	60	45	60	45	62
N/5a	33,176	7^{JS9}	35,39	44													45	60	45	60	45	62

Taper bores 1:10

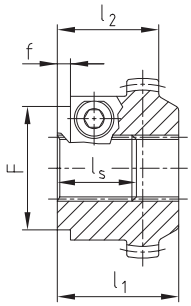
Code	Dimensions [mm]				Counterbore d_K and hub length l_{2K} [mm]																	
	Details of bores				14		19		24		28		32		38		42		48		65	
	$d^{+0,05}$	b^{JS9}	$t_2{}^{+0,1}$	lK	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}	d_K	l_{2K}
CX-20	19,85	5	22,08	32							36	50			36	50	45	50	45	50		
DX-25	24,95	6	26,68	45									36	50			45	60	45	60	45	60
EX-30	29,75	8	31,88	50													45	60	45	60	45	70

Spline hubs and inch bores

BoWex® spline hubs – basic programme



Spline hub (N)



Clamping hub (K)

If it is not possible to secure the hubs of pump shafts with involute spline by means of an end plate and a screw, we recommend to use our spline clamping hub.
The radial clamping ensures a backlash-free tight fit on the pump shaft.

Spline and clamping hubs to DIN 5480

Size	Dimensions [mm]							Order designation Indicate coupling size
	Type	Spline size	l_1	l_2	l_S	F	f	
	N	25x1,25x18	42	-	-	-	-	P000205
42	K	25x1,25x18	42	-	-	-	-	P500202
	K	30x2x14	42	-	-	60	6	P500203
48	N	30x2x14	50	-	-	60	6	P000206
	K	30x2x14	50	-	-	60	6	P500203
	N	35x2x16	55	-	-	60	6	P000303
	K	35x2x16	60	-	-	60	6	P500301
65	N	40x2x18	55	-	-	78	6	P000304
	K	40x2x18	60	-	-	78	6	P500302
	K	45x2x21	55	-	-	78	6	P500401

Spline and clamping hubs to SAE J498

Size	Dimensions [mm]							Order designation Indicate coupling size
	Type	Spline size	l_1	l_2	l_S	F	f	
	K	PH-S 5/8" 16/32DP, z=9	42	-	-	-	-	P558101
42	K	PI-S 3/4" 16/32DP, z=11	-	35	-	-	-	P559101
	K	PB-S 7/8" 16/32DP, z=13	42	-	-	60	3	P567101
	K	PB-BS 1" 16/32DP, z=15	42	-	27	50	6	P660201
48	K	PA-S 3/8" 16/32DP, z=21	50	-	45	52	7	P663301
	K	PA-S 3/8" 16/32DP, z=21	55	-	48	52	5	P663301
65	K	PC-S 1 1/4" 12/24DP, z=14	55	-	44	52	5	P656201

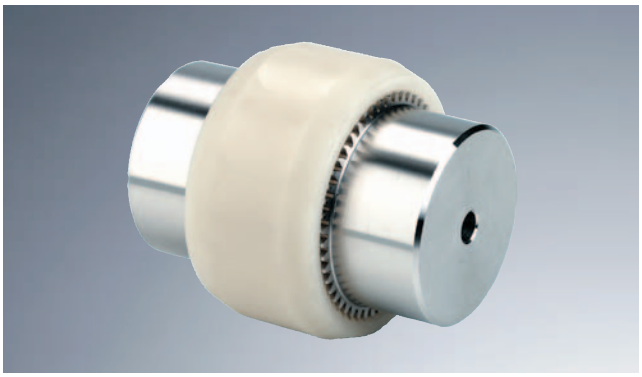
Inch bores – For stock parts please see the stock programme on page 83

Code	Dimensions [mm]			
	Ød	Ød [inch]	$b^{+0,05}$	$t_2{}^{+0,2}$
Tb	$9,5^{+0,03}$	3/8	3,17	11,1
DNB	$11,11^{M7}$	7/16	2,4	12,5
T	$12,69^{H7}$	1/2	4,75	14,6
Ta	$12,7^{+0,03}$	1/2	3,17	14,3
DNC	$13,45^{M7}$	17/32	3,17	14,9
E	$15,87^{+0,03}$	5/8	3,17	17,5
S	$15,87^{+0,03}$	5/8	3,97	17,9
Es	$15,88^{+0,03}$	5/8	4,0	17,7
DND	$15,852^{H7}$	5/8	4,75	18,1
Ed	$15,87^{+0,03}$	5/8	4,75	18,1
DNH	$17,465^{H7}$	11/16	4,75	19,6
Ad	$19,02^{+0,03}$	3/4	3,17	20,7
As	$19,02^{+0,03}$	3/4	4,78	21,3
A	$19,05^{+0,03}$	3/4	4,78	21,3
Fa	$22,20^{+0,03}$	7/8	6,35	25,2
Ga	$22,21^{H7}$	7/8	4,75	24,8
DNI	$22,228^{H7}$	7/8	6,35	25,0
Gs	$22,22^{+0,03}$	7/8	4,78	24,4
G	$22,22^{+0,03}$	7/8	4,75	24,7

Code	Dimensions [mm]			
	Ød	Ød [inch]	$b^{+0,05}$	$t_2{}^{+0,2}$
F	$22,22^{+0,03}$	7/8	6,38	25,2
Gd	$22,225^{M7}$	7/8	4,76	24,7
Gf	$23,80^{+0,03}$	15/16	6,35	26,8
B	$25,37^{+0,03}$	1	4,78	27,8
Ba	$25,37^{+0,03}$	1	6,35	27,6
Bs	$25,38^{+0,03}$	1	6,37	28,3
H	$25,40^{+0,03}$	1	4,78	27,8
DNF	$25,38^{H7}$	1	6,35	28,4
Hs	$25,40^{+0,03}$	1	6,35	28,7
Sa	$28,575^{M7}$	1 1/8	6,35	31,7
Sb	$28,58^{+0,03}$	1 1/8	6,35	31,5
Sd	$28,58^{+0,03}$	1 1/8	7,93	32,1
Ja	$31,70^{H7}$	1 1/4	7,93	34,4
Jc	$31,71^{+0,03}$	1 1/4	7,93	35,3
Js	$31,75^{+0,03}$	1 1/4	6,35	34,6
J	$31,75^{+0,03}$	1 1/4	7,93	34,4
K	$31,75^{K7}$	1 1/4	7,93	35,5
DNK	$31,755^{H7}$	1 1/4	7,93	35,3
Ma	$34,925^{M7}$	1 3/8	7,93	38,7

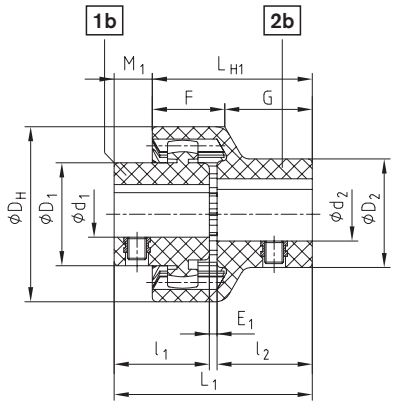
Code	Dimensions [mm]			
	Ød	Ød [inch]	$b^{+0,05}$	$t_2{}^{+0,2}$
M	$34,92^{+0,03}$	1 3/8	7,93	38,6
RH1	$34,93^{M7}$	1 3/8	9,55	37,8
Cb	$36,50^{+0,03}$	1 7/16	9,55	40,9
Ca	$38,07^{+0,03}$	1 1/2	7,93	42,0
C	$38,07^{+0,03}$	1 1/2	9,55	42,5
N	$41,25^{+0,03}$	1 5/8	9,55	45,6
Nb	$41,275^{M7}$	1 5/8	9,55	45,8
Ls	$44,42^{+0,03}$	1 3/4	9,55	48,8
L	$44,45^{K7}$	1 3/4	11,11	49,4
Lu	$47,625^{M7}$	1 7/8	12,7	53,5
Da	$49,20^{+0,03}$	1 15/16	12,7	55,0
Ds	$50,77^{+0,03}$	2	12,7	56,4
D	$50,80^{+0,03}$	2	12,7	55,1
P	$53,95^{+0,03}$	2 1/8	12,7	59,6
Pa	$53,975^{M7}$	2 1/8	12,7	60,0
Ub	$60,325^{M7}$	2 3/8	15,875	67,6
Wa	$73,025^{M7}$	2 7/8	19,05	81,7
Wd	$85,725^{M7}$	3 3/8	22,225	95,8
Wf	$92,075^{M7}$	3 5/8	22,225	101,9

Made of corrosion-proof material

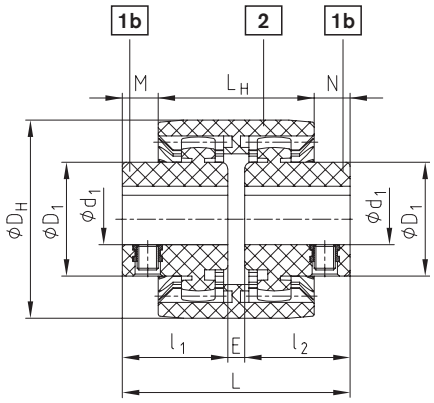


- BoWex® shaft coupling made of polyamide or stainless steel (material No. 1.4571 or V4A, respectively)
- BoWex® junior plug-in coupling (2 parts)
- BoWex® junior M (3 parts) made of polyamide
- BoWex® M with sleeve made of polyamide and hubs made of stainless steel (1.4571), available with finish bore acc. to ISO fit H7, feather keyway acc. to DIN 6885 sheet 1 - JS9 and thread for setscrews (page 83)
- Performance data see page 80

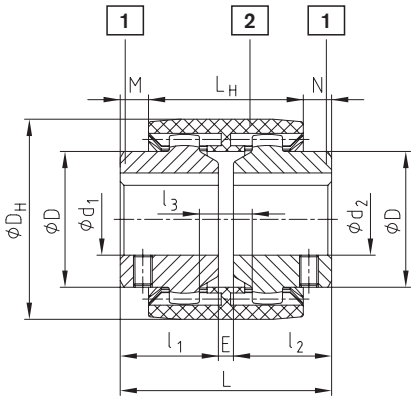
Components



Type junior plug-in coupling (2 parts)



Type junior M coupling (3 parts)



Type M

BoWex® junior plug-in coupling (2 parts) and BoWex® junior M (3 parts)														
Size	Finish bore				Dimensions [mm]									
	hub part 1b		plug-in sleeve partl 2b		D_H	l_1, l_2	E_1	E	L_{H1}	L_H	L_1	L	M_1	M, N
	d_1	D_1	d_2	D_2										
14	Ø6, Ø7, Ø8, Ø9	22	Ø8	22										
M-14	Ø10, Ø11	25	Ø10, Ø11	25	40	23	2	4	40	37	48	50	8	6,5
	Ø12, Ø14	26	Ø12, Ø14	26										
19	Ø12, Ø14	27	Ø14, Ø15	29										
M-19	Ø16	30			48	25	2	4	42	37	52	54	10	8,5
	Ø19	32	Ø19	35										
	Ø10, Ø11, Ø12	26	Ø14, Ø16	32										
24	Ø14, Ø15, Ø16	32			53	26	2	4	45	41	54	56	9	7,5
M-24	Ø18, Ø19, Ø20	36	Ø19, Ø20	36										
	Ø24	38	Ø24	40										

BoWex® type M								
Size	Finish bore d_1 max., d_2 max.	Dimensions [mm]						
		D_H	D	l_1, l_2	E	L_H	L	M, N
M-24	24	53	36	26	4	41	56	7,5
M-38	38	83	58	40	4	48	84	18
M-48	48	95	68	50	4	50	104	27

Further coupling sizes on request.

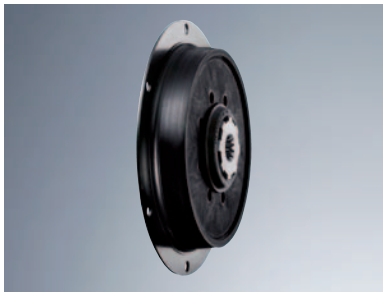
Applications:
Food processing industry, print and paper industry, textile industry, sewage technology, wash-mobiles, chemical and pharmaceutical industry, offshore units, etc.
For applications in aggressive atmospheres (air, water, chemicals, etc.).

Ordering example:

BoWex® M-24 V4A	d_1 Ø20	d_2 Ø24
Size and type of coupling	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)	Finish bore H7 keyway to DIN 6885 sheet 1 (JS9)

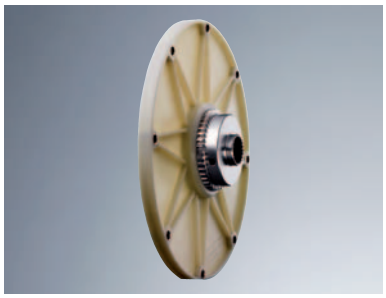
Operating description

MONOLASTIC®



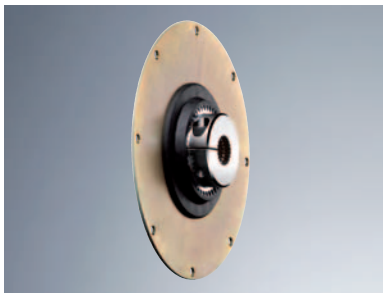
MONOLASTIC® is a single-piece, flexible coupling with torque-to-bore volume ratio made of natural rubber. The hub made of steel with a hardened internal spline already assembled by the manufacturer allows for an axial plug-in connection of the hydraulic pump. These couplings are available with all usual involute splines to SAE or DIN.

BoWex® FLE-PA



BoWex® FLE-PA couplings are torsionally rigid curved-tooth flange couplings, made of a combination of nylon and steel, for diesel engine drives in combination with hydraulic pumps.
The FLE-PA mounting flange is made of glass fibre reinforced polyamide with high mechanical stability and thermal strength.
The coupling hub with external curved teeth is made of steel.
The BoWex® FLE-PA allows for an extremely short installation space. Apart from that it is easy to assemble without any additional tools for alignment.

BoWex® FLE-PAC

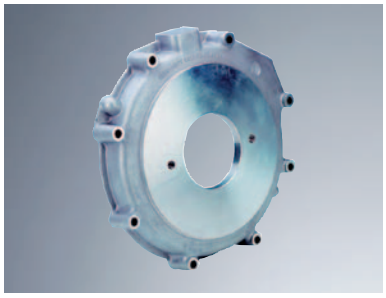


The coupling type BoWex® FLE-PAC is a further development of BoWex® FLE-PA for the use on I. C.-engines and hydraulic pumps.
The FLE-PAC consists of a high-quality carbon fibre material resulting in excellent resistance to wear and a long service life of the coupling.
In addition, the coupling's components have a high mechanical stiffness and dimensional stability under heat.
The coupling dimensions may vary, i. e. connection dimensions as per the SAE standard or special dimensions.

BoWex-ELASTIC®

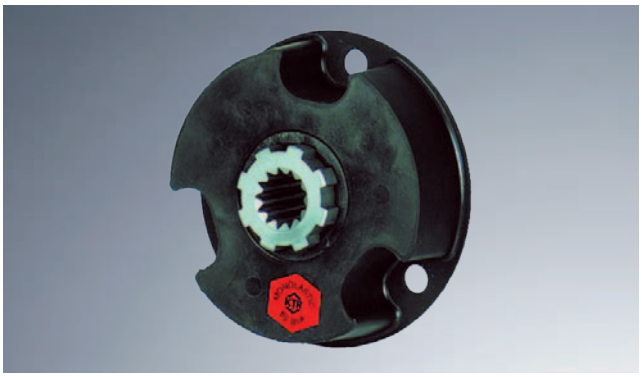
BoWex-ELASTIC® is highly flexible, combining the benefits of the approved BoWex® system with the suppleness of a highly flexible coupling in compact design. Torsional vibrations and shock loads that may occur are dampened and reduced.
The BoWex-ELASTIC® consists of a highly flexible, annular rubber element made of temperature-resistant natural caoutchouc, stressed for torque-to-bore ratio, and a BoWex® coupling hub to be plugged in axially.

Pump mounting flanges

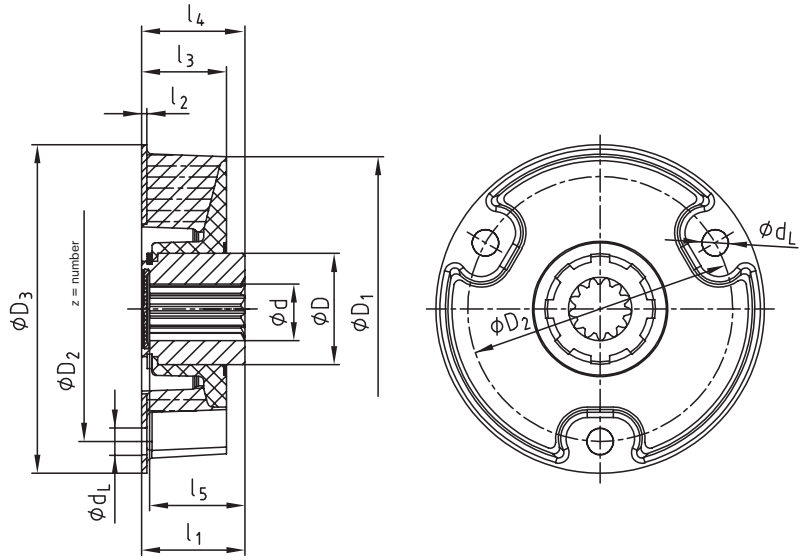


For connecting hydraulic pumps to the diesel engine KTR supplies mounting flanges sizes SAE 6 to SAE 1 in accordance with the SAE mounting dimensions. The flanges are made of steel for hydraulic pumps with flange connections to SAE-A, B, C, D and E both in a 2-hole or 4-hole design.
Pump connection housings made of EN-GJL-250 (GG 25) to be mounted directly to the back plate of the engine.

Type with 3 holes (EP 0853203/U.S. Patent 6,117,017)



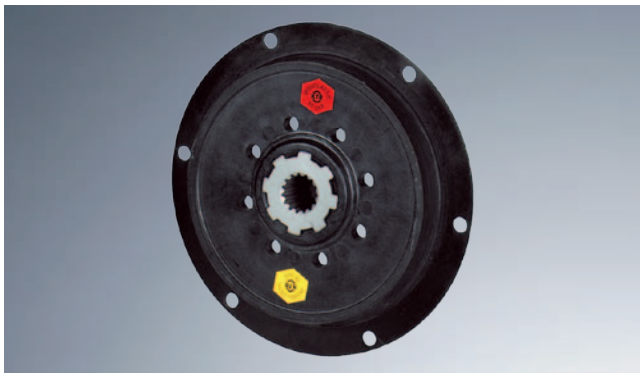
- MONOLASTIC® – for the drive of diesel engine/hydraulic pump up to 100 kW
- Single-part design with flange fastening by three bolts
- Easy assembly of coupling
- Axial plug-in in combination with the pump shaft
- Compensating for high radial and angular displacements
- Available for pump gear shafts according to SAE and DIN



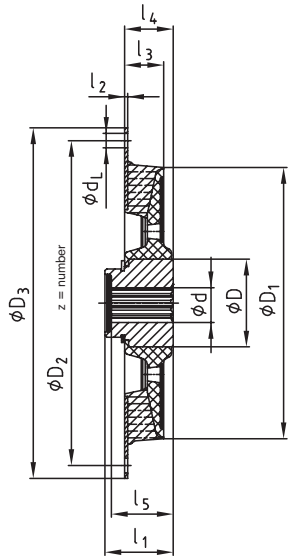
MONOLASTIC®																	
Size	Elastomer hardness [Shore A]	Torque [Nm]			Dimensions [mm]												
		T_{KN}	$T_{K\,max.}$	T_{KW}	d	D	D_1	D_2	z	d_L	D_3	l_1	l_2	l_3	l_4	l_5
22	65	40	100	20	20	34	93	80	3	8,10	100	33	1,5	32	34	30
28	65	70	175	35	25	42	115	100	3	10,10	124	40	2	32	40	38
	70	100	300	50												
32	65	160	400	80	32	50	140	125	3	12,10	150	42	2	42	43	38
	70	225	675	112												
50-140	70	260	650	130	32	50	167	140	3	14,10	175	46	3	35	46	43
50-165	70	300	750	150	32	50	175	165	3	16,15	200	46	3	35	46	43
50-170	70	300	750	150	32	50	175	170	3	16,15	200	46	3	35	46	43
60-165	70	400	1000	200	48	68	191	165	3	16,15	205	50	3	40	55	46

Technical data									
Size	Elastomer hardness [Shore A]	$C_{dyn.}$ with 60 °C [Nm/rad]	Perm. damping power with 60 °C P_{KW} [W]	Permissible radial displacement with 2200 1/min ΔK_r [mm]	Permissible angular displacement with 2200 1/min ΔK_w [°]	Radial spring stiffness C_r [N/mm]	Mass moment of inertia [kgm²]		Max.permissible operating speed $n_{max.}$ [rpm]
							J_A	J_L	
22	65	600	10	0,6		200	0,00017	0,00010	6000
28	65	900	15	0,6		300	0,00054	0,00033	6000
	70	1300		0,5		400			
32	65	1800	25	0,6		400	0,00120	0,00081	6000
	70	2400		0,5	1	500			
50-140	70	4200	35	0,5		1365	0,00210	0,00130	6000
50-165		5600	40	0,5		1550	0,00250	0,00130	6000
50-170									
60-165	70	7800	40	0,5		1500	0,00599	0,00358	6000

Type SAE (EP 0853203/U.S. Patent 6,117,017)



- MONOLASTIC® – for the drive of diesel engine/hydraulic pump up to 100 kW
- Flange connection according to SAE 6 ½“ to 11 ½”
- Easy assembly of coupling
- Axial plug-in in combination with the pump shaft
- Compensating for high radial and angular displacements
- Available for pump shafts according to SAE and DIN
- Size 65 and 75 also available as an axial plug-in type



Flange dimensions according SAE J 620 [mm]

Size	D_3	D_2	z	d_L
6 ½"	215,9	200,02	6	9
7 ½"	241,3	222,25	8	9
8"	263,52	244,47	6	11
10"	314,32	295,27	8	11
11 ½"	352,42	333,37	8	11

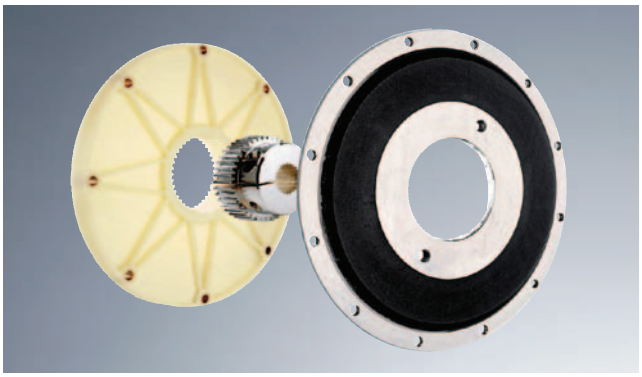
MONOLASTIC®

Size	Elastomer hardness [Shore A]	Torque [Nm]			Dimensions [mm]								MONOLASTIC® flanges according to SAE				
		T_{KN}	$T_{K\,max.}$	T_{KW}	d	D	D_1	l_1	l_2	l_3	l_4	l_5	6 ½"	7 ½"	8"	10"	11 ½"
30	65	160	400	80	25	42	120	39	2	21	30	36	X	X			
	70	200	500	100													
50	65	300	750	150	32	50	167	42	2	24	30	38	X	X	X	X	
	70	400	1000	200													
65	65	600	1500	300	48	68	200	45	3	32	45	42				X	X
	70	800	2000	400													
75	65	1200	3000	600	60	90	265	58	3	35	50	54				X	X
	70	1500	3750	750													

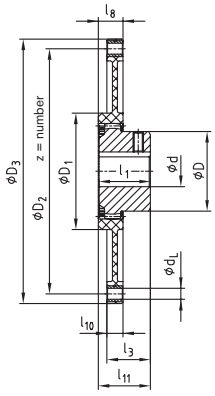
Technical data

Size	Elastomer hardness [Shore A]	$C_{dyn.}$ with 60 °C [Nm/rad]	Perm. damping power with 60 °C P_{KW} [W]	Permissible radial displacement with 2200 rpm ΔK_r [mm]	Perm. angular misalignment with 2200 rpm ΔK_w [°]	Radial spring stiffness C_r [N/mm]	Mass moment of inertia [kgm²]			Max. permissible operating speed $n_{max.}$ [rpm]
								J_A	J_L	
30	65	3750	25	0,5	1	1150	6,5"	0,0038	0,00030	6000
	70	4875				1500	7,5"	0,0057		
50	65	9000	35	0,5	1	1300	8"	0,0078	0,00120	6000
	70	12000				1700	10"	0,0153		
65	65	14000	45	0,5	1	1900	10"	0,0238	0,00380	6000
	70	18000				2450	11,5"	0,0368		
75	65	34000	80	0,5	1	1850	10"	0,0272	0,01450	6000
	70	42000				2400	11,5"	0,0402		

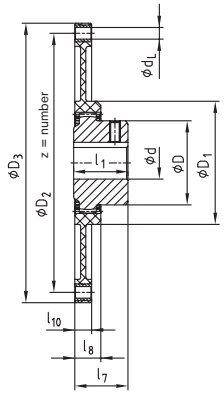
Type FLE-PA



- Flange coupling for connection to I. C.-engines and hydraulic pumps
- Applicable to all hydrostatic drives of construction machines, harvesting machines, etc.
- High torsional stiffness – operation free from resonance
- Maintenance-free due to the material combination nylon/steel
- Nylon flange with high mechanical resistance and thermal strength (+ 130 °C)
- Extremely short assembly
- Easy assembly by axial mounting
- Special mounting flanges available



Short mounting

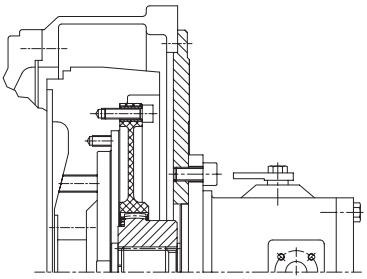


Long mounting

Flange dimensions according SAE J 620 [mm]

Size	D_3	D_2	z	d_L
6 ½"	215,9	200,02	6	9
7 ½"	241,3	222,25	8	9
8"	263,52	244,47	6	11
10"	314,32	295,27	8	11
11 ½"	352,42	333,37	8	11
14"	466,72	438,15	8	13

Example of installation



BoWex® FLE-PA
for diesel engines with SAE connection; axial fixing of hub by
means of end plate and screw.

BoWex® FLE-PA – Dimensions/nominal dimension to SAE

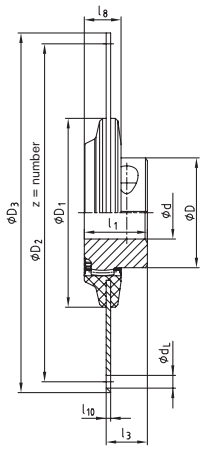
Size	Pilot bore	Finish bore d		Dimensions [mm]								Special length l_1 max.	Nominal dimension to SAE (D_3)						Max. axial displacement [mm]
		min.	max.	D	D_1	l_1	l_3	l_7	l_8	l_{10}	l_{11}		6 ½"	7 ½"	8"	10"	11 ½"	14"	
48	-	20	48	68	100	50	41	50	20	13	48	bis 60	●	●	●	●			± 2
T 48	13	20	48	68	100	50	38	45	20	13	46	-	●	●	●	●			± 1
T 55	17	20	55	85	115	50	37	48	24	13	48	-	●	●	●	●			± 2
65 / T 65	21	30	65	96	132	55	45	54	27	21	51	bis 70			●	●	●		± 2
T 70	26	30	70	100	153	60	48	56	30	21	57	-				●			± 2
80 / T 80	31	35	80	124	170	90	78	87	30	21	87	-				●	●		± 2
100 / T 100	38	40	100	152	265	110	78	108	35	21	110	-					●	●	± 2
125	45	50	125	192	250	140	37	133	50	28	97	-					●	●	± 2

Technical data of BoWex® FLE-PA – Torques/Weights/Mass moments of inertia/Torsion spring stiffness

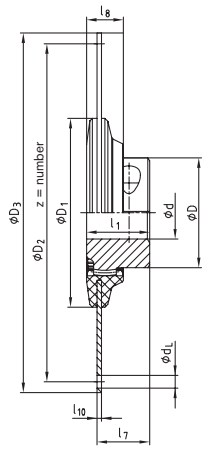
Size	Torque T_K [Nm]			Weight / Mass moment of inertia J	Hub with max. bore Ø	FLE-PA flanges according to SAE						Dynamic torsion spring stiffness with + 60 °C / ψ = 0,4 [Nm/rad]			
	T_{KN}	$T_{K\,max.}$	T_{KW}			6 ½"	7 ½"	8"	10"	11 ½"	14"	0,30 T_{KN}	0,50 T_{KN}	0,75 T_{KN}	1,00 T_{KN}
48	240	600	120	[kg]	0,79	0,32	0,43	0,51	0,64	–	–	35 x 10^3	75 x 10^3	105 x 10^3	125 x 10^3
				[kgm²]	0,0007	0,0021	0,0035	0,0049	0,0085						
T 48	300	750	150	[kg]	0,79	0,32	0,43	0,51	0,64	–	–	40 x 10^3	86 x 10^3	120 x 10^3	143 x 10^3
				[kgm²]	0,0007	0,0021	0,0035	0,0049	0,0085						
T 55	450	1125	225	[kg]	1,12	0,34	0,62	0,45	0,646	–	–	90 x 10^3	140 x 10^3	170 x 10^3	195 x 10^3
				[kgm²]	0,0016	0,0022	0,0053	0,0044	0,0086						
65	650	1600	325	[kg]	2,30	–	–	0,63	0,64	0,89	–	110 x 10^3	160 x 10^3	200 x 10^3	230 x 10^3
				[kgm²]	0,0044			0,0064	0,0065	0,012					
T 65	800	2000	400	[kg]	2,40	–	–	0,63	0,64	0,89	–	130 x 10^3	190 x 10^3	240 x 10^3	280 x 10^3
				[kgm²]	0,0044			0,0064	0,0065	0,012					
T 70	1000	2500	500	[kg]	2,60	–	–	–	0,941	–	–	230 x 10^3	345 x 10^3	440 x 10^3	517 x 10^3
				[kgm²]	0,0059				0,0132						
80	1200	3000	600	[kg]	5,20	–	–	–	1,05	1,12	–	200 x 10^3	410 x 10^3	580 x 10^3	700 x 10^3
				[kgm²]	0,0151				0,015	0,022					
T 80	1500	3750	750	[kg]	5,20	–	–	–	1,05	1,12	–	240 x 10^3	450 x 10^3	638 x 10^3	770 x 10^3
				[kgm²]	0,0151				0,015	0,022					
100	2050	5150	1025	[kg]	9,37	–	–	–	–	1,16	8,45	500 x 10^3	700 x 10^3	856 x 10^3	950 x 10^3
				[kgm²]	0,0401					0,021	0,234				
T 100	2500	6250	1250	[kg]	9,37	–	–	–	–	1,16	8,45	600 x 10^3	830 x 10^3	960 x 10^3	1070 x 10^3
				[kgm²]	0,0401					0,021	0,234				
125	4250	10700	2125	[kg]	19,73	–	–	–	–	2,09	9,85	1280 x 10^3	1885 x 10^3	2280 x 10^3	2665 x 10^3
				[kgm²]	0,1359					0,043	0,306				

Type FLE-PAC

- High-quality flange coupling to connect flywheels to I. C.-engines and hydraulic pumps
- Composite design of steel flange/polyamide with carbon fibre reinforcement
- High mechanical stiffness and thermal stability
- Maintenance-free with high resistance to wear due to the use of carbon fibre reinforcement
- Extremely short dimensions subject to composite design
- Easy assembly by axial joining
- Special flange dimensions as a single-part design



Short mounting



Long mounting

Flange dimensions according SAE J 620 [mm]

Size	D_3	D_2	z	d_L
6 ½"	215,9	200,02	6	9
7 ½"	241,3	222,25	8	9
8"	263,52	244,47	6	11
10"	314,32	295,27	8	11
11 ½"	352,42	333,37	8	11
14"	466,72	438,15	8	14

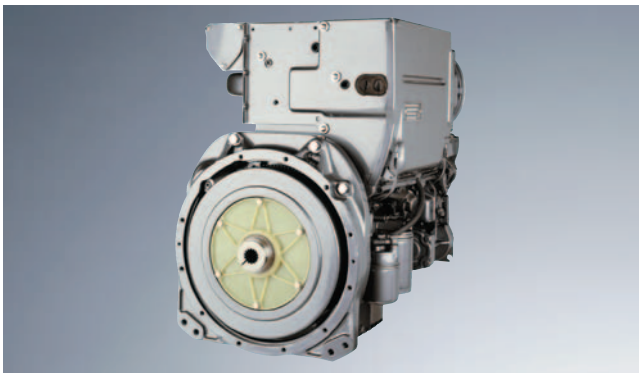
BoWex® FLE-PAC – Dimensions/nominal dimension to SAE

Size	Pilot bore	Finish bore d		Dimensions [mm]							Special length	Dimension to SAE (D_3)						Max. axial displacement [mm]
		min.	max.	D	D_1	l_1	l_3	l_7	l_8	l_{10}	l_1 max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	
48 / T 48	13	20	48	68	110	50	35	46	25	3	up to 60	●	●	●	●			± 3
65 / T 65	21	30	65	96	165	55	36	46	32	4	up to 70			●	●	●		± 3
80 / T 80	31	35	80	124	220	90	72	76	35	4	-				●	●	●	± 3
100 / T 100	38	40	100	152	280	110	85	102	48	5	-					●	●	± 3

Technical data of BoWex® FLE-PAC – Torques/Weights/Mass moments of inertia/Torsion spring stiffness

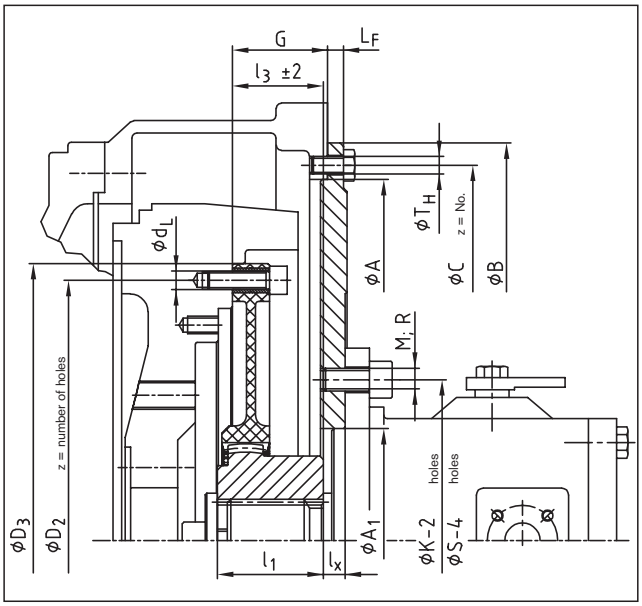
Size	Torque T_K [Nm]			Weight / Mass moment of inertia J	Hub with max. bore Ø	FLE-PAC flanges according to SAE						Dynamic torsion spring stiffness with + 60 °C / ψ = 0,45 [Nm/rad]			
	T_{KN}	$T_{K\,max.}$	T_{KW}			6 ½"	7 ½"	8"	10"	11 ½"	14"	0,30 T_{KN}	0,50 T_{KN}	0,75 T_{KN}	1,00 T_{KN}
48	240	600	120	[kg]	0,79	0,77	0,98	1,19	1,73			57 x 10^3	89 x 10^3	109 x 10^3	126 x 10^3
				[kgm²]	0,0007	0,0049	0,0077	0,0109	0,0221						
T 48	300	750	150	[kg]	0,79	0,77	0,98	1,19	1,73			74 x 10^3	115 x 10^3	141 x 10^3	164 x 10^3
				[kgm²]	0,0007	0,0049	0,0077	0,0109	0,0221						
65	650	1600	325	[kg]	2,30			1,48	2,20	2,83		164 x 10^3	286 x 10^3	365 x 10^3	411 x 10^3
				[kgm²]	0,0044			0,0145	0,0294	0,0467					
T 65	800	2000	400	[kg]	2,40			1,48	2,20	2,83		202 x 10^3	328 x 10^3	420 x 10^3	473 x 10^3
				[kgm²]	0,004			0,0145	0,0294	0,0467					
80	1200	3000	600	[kg]	5,20				2,27	2,90	5,20	378 x 10^3	620 x 10^3	790 x 10^3	985 x 10^3
				[kgm²]	0,0151				0,0312	0,0485	0,1462				
T 80	1500	3750	750	[kg]	5,20				2,27	2,90	5,20	430 x 10^3	700 x 10^3	900 x 10^3	1120 x 10^3
				[kgm²]	0,0151				0,0312	0,0485	0,1462				
100	2050	5150	1025	[kg]	9,37					3,35	6,22	600 x 10^3	810 x 10^3	1050 x 10^3	1280 x 10^3
				[kgm²]	0,0401					0,0606	0,1828				
T 100	2500	6250	1250	[kg]	9,37					3,35	6,22	700 x 10^3	900 x 10^3	1170 x 10^3	1400 x 10^3
				[kgm²]	0,0401					0,0606	0,1828				

Selection according to SAE standard



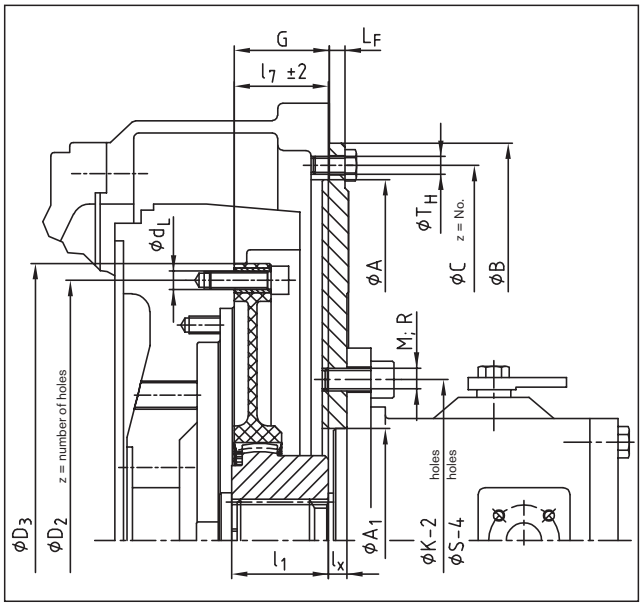
Determination of coupling size	
Determination of coupling size	Table 1
Connection dimension of coupling	Table 2
Hub design/Mounting length	Table 3

SAE pump mounting flange	
Flange size according to SAE 617	Table 4
Mounting flange of hydraulic pump	Table 5



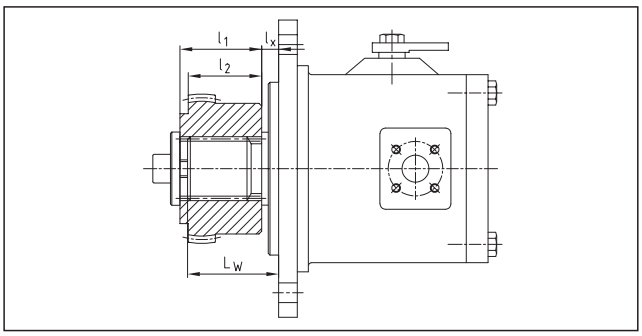
Short mounting of coupling (l_3)

Marking on PA flange: 1 mounted short side

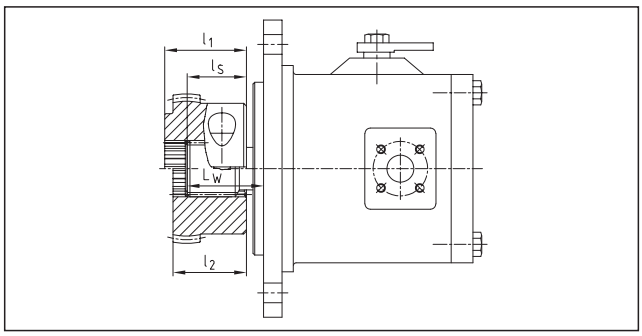


Long mounting of coupling (l_7)

Marking on PA flange: 2 mounted long side



Spline hub



Clamping hub

Determination of mounting length l_3 or l_7	
SAE shaft	$l_3 / l_7 = G + L_F - L_W + l_S$
DIN shaft	$l_3 / l_7 = G + L_F - l_X$

If axial fixing of the hub by means of an end plate and a screw is not possible for a pump shaft with involute spline, we would recommend to use our clamping hub.

Mounting instructions:

The flange can be fastened to the engine flywheel by means of socket head cap screws according to DIN EN ISO 4762 quality 8.8 or by hexagon head screws quality 8.8. We recommend screws are loctited in position.

Screw tightening torque of FLE-PA flange to flywheel	
M8	25 Nm
M10	49 Nm
M12	86 Nm

Screw tightening torque of spline clamping hubs DIN EN ISO 4762		
42/48	M10	49 Nm
65	M12	86 Nm
80/100	M16	210 Nm

Mounting dimensions according to SAE standard

1. Selection of coupling for diesel engine

Ⓧ	Diesel engine power		Coupling size	Flywheel to SAE			Pump mounting flange			Driving shaft of pump
	kW	HP			G			LF		
	up to 30 kW	up to 40 PS	48 FLE-PA	6 1/2"	30,15	1,19"	For dimensions to SAE see tables 3 and 4			See table 3 Hub design SAE J 498 / DIN 5480
				7 1/2"	30,15	1,19"				
				8"	62	2,44"		9,5	0,375"	
				10"	54	2,12"				
	up to 90 kW	up to 120 PS	65 FLE-PA	8"	62	2,44"				
				10"	54	2,12"		9,5	0,375"	
				11 1/2"	39,6	1,56"		12,7	0,5"	
	up to 180 kW	up to 240 PS	80 FLE-PA	11 1/2"	39,6	1,56"		12,7	0,5"	

2. Dimensions of coupling flange acc. to SAE J 620 [mm]

Ⓧ	Size	D_3	D_2	z=number	d_L
	6 1/2"	215,90	200,02	6	9
	7 1/2"	241,30	222,25	8	9
	8"	263,52	244,47	6	11
	10"	314,32	295,27	8	11
	11 1/2"	352,42	333,37	8	11

4. Housing dimensions according to SAE 617 [mm]

Ⓧ	SAE size	A	B	C	Z	TH	
	SAE-1	511,18	552	530,2	12	M10	3/8"
	SAE-2	447,68	489	466,7	12	M10	3/8"
	SAE-3	409,58	451	428,6	12	M10	3/8"
	SAE-4	361,95	403	381,0	12	M10	3/8"
	SAE-5	314,33	356	333,4	8	M10	3/8"

5. Mounting flange for hydraulic pump acc. to SAE [mm]

Ⓧ	SAE size	SAE – 2-hole-flange					SAE – 4-hole-flange				
		A_1	K-2	M		Z	A_1	S-4	R		Z
	A	82,55	106,4	M10		2	82,55	104,6	M10	3/8"	4
	B	101,6	146,0	M12	1/2"	2	101,6	127,0	M12	1/2"	4
	C	127,0	181,0	M16		2	127,0	162,0	M12	1/2"	4
	D	152,4	228,6	M16	5/8"	2	152,4	228,6	M16	5/8"	4
	E	-	-	-	-	-	165,1	317,5	M20	3/4"	4

3. Selection of coupling hub - Determination of mounting length l_3 or l_7

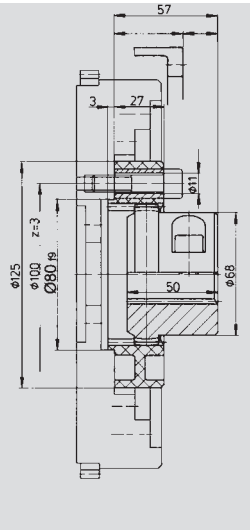
Please mention type Ⓧ	BoWex® coupling size	Pump shaft to SAE J 498 and DIN 5480	Spline hub	Clamping hub	Dimensions of coupling hub [mm]			Mounting lenght of coupling l_3 or l_7								Code to order coupling hub Please mention coupling size
								Flange size 6 1/2" and 7 1/2"		Flange size 8"		Flange size 10"		Flange size 11 1/2"		
								K	L	K	L	K	L	K	L	
					l_1	l_2	l_S	l_3	l_7	l_3	l_7	l_3	l_7	l_3	l_7	
	42	SAE-16/32 DP		x	42	-	33	33	42							P559101
		PI-S 3/4"														
		z=11														
	42	SAE-16/32 DP		x	42	-	-	33	42							P567101
		PB-S 7/8"														
		z=13														
	42	SAE-16/32 DP		x	42	-	27	33	42							P660201
		PB-BS 1"														
		z=15														
	48	SAE-16/32 DP		x	50	-	45	41	50		50	41	50			P663301
	65	PA-S 1 3/8"		x	50	-	48				54	45	54	41		P663301
		z=21														
	65	SAE-12/24 DP		x	55	-	44				54	45	54	41		P656201
		PC-S 1 1/4"														
		z=14														
	65	SAE-16/32 DP		x	-	49	45						53	41		P664301
		PD-S 1 1/2"														
		z=23														
	80	SAE-16/32 DP		x	55	-	-							44	33	P565402
		PE-S 1 3/4"														
		z=27														
	42	25 x 1,25 x 18 DIN 5480	x		42	-	-	33	42							P000205
	42			x	42	-	-	33	42							P500202
	42	30 x 2 x 14 DIN 5480		x	42	-	-	33	42							P500203
	48		x		50	-	-	41	50							P000206
	48			x	50	-	-	41	50		50		50			P500203
	48	35 x 2 x 16 DIN 5480	x		46	-	-	37	46							P000303
	65		x		55	-	-						54	39		P000303
	65			x	60	-	-			50	59	50	59	39		P500301
	65	40 x 2 x 18 DIN 5480	x		55	-	-						54	39		P000304
	65			x	55	-	-				54	45	54	39		P500302
	65	45 x 2 x 21 DIN 5480	x		-	64	-			60	69	60	69	39		P000403
	65			x	55	-	-				54	45	54	39		P500401
	80	50 x 2 x 24 DIN 5480		x	55	-	-							42	37	P500405

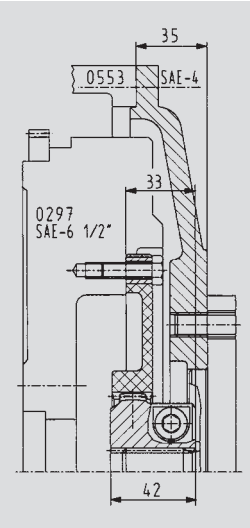
Please photocopy dimension sheet and mark the design required with a cross.

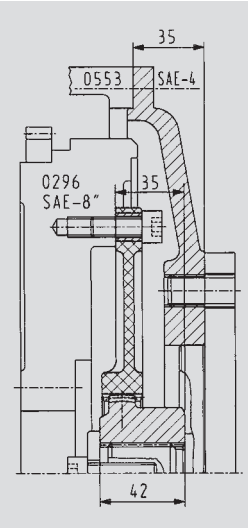
Ordering example: FLE-PA coupling			SAE pump mounting flange	
BoWex® 48 FLE-PA	7 1/2"	P663301	SAE-4	B-2L
Coupling size	SAE connection of coupling	Code of coupling hub	Pump mounting flange for engine housing	Pump flange to SAE 2 holes/4 holes standard - metric fastening thread
Table 1	Table 2	Table 3	Table 4	Table 5

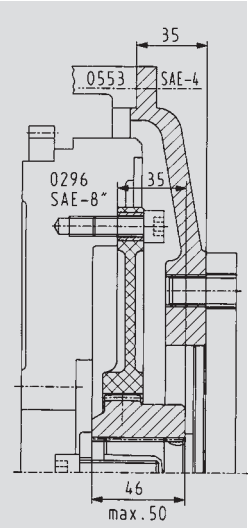
Special flange programme, deviations from the SAE standard

Fitting to Deutz 2011 diesel engines



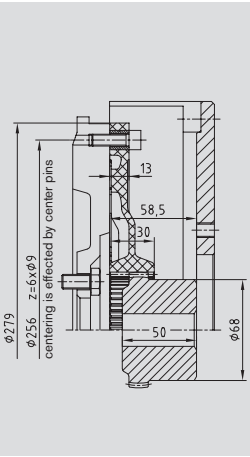


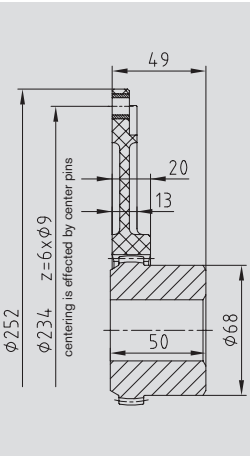


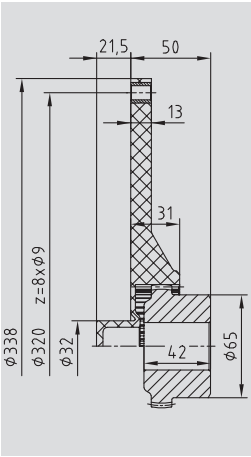


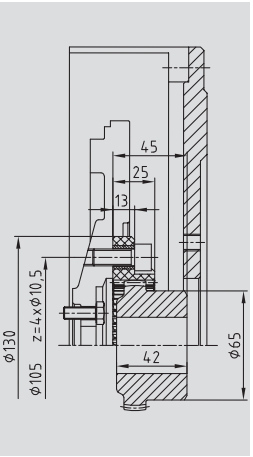
Coupling size	BoWex® 48 FLE-PA, Ø125	BoWex® 48 FLE-PA, Ø215,9	BoWex® 48 FLE-PA, Ø263,52	BoWex® T 48 FLE-PA, Ø263,52
Engine type	F2L511 – kit 1338	F2-4L 2011	F2-4L 2011	BF 4L 2011

Fitting to VW Mitsubishi diesel engines



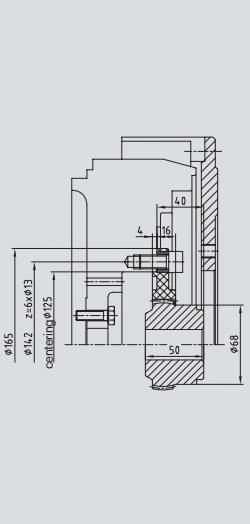


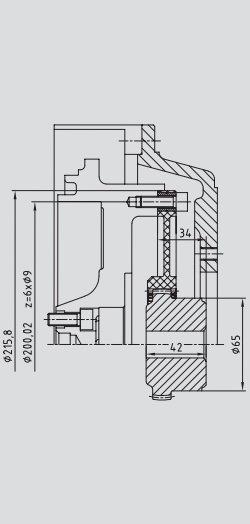


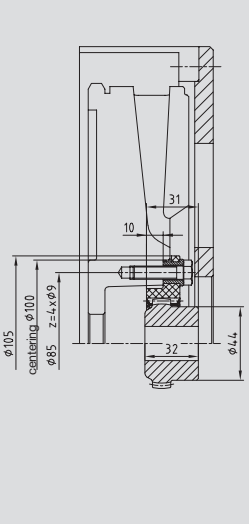


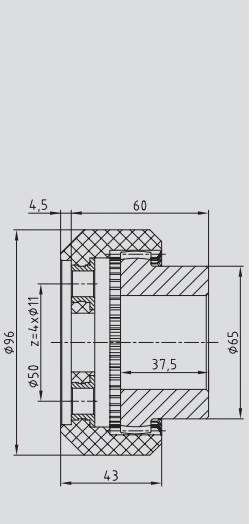
Coupling size	BoWex® 48 FLE-PA, Ø279	BoWex® 48 FLE-PA, Ø252	BoWex® 48 FLE-PA	BoWex® 48 FLE-PA, Ø130
	VW	VW	Mitsubishi	Mitsubishi
Engine type	028.B / M344	062.2 / 068.5 / 6 / A / D	Ø338-32	Series L / Series K

Fitting to Hatz diesel engines





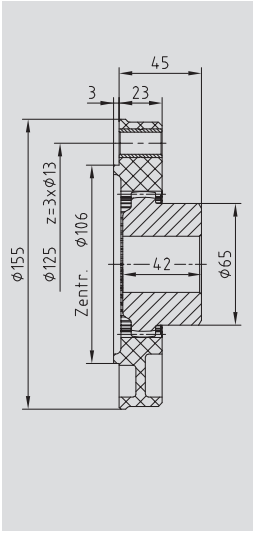


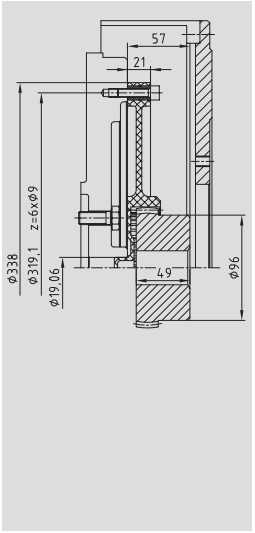


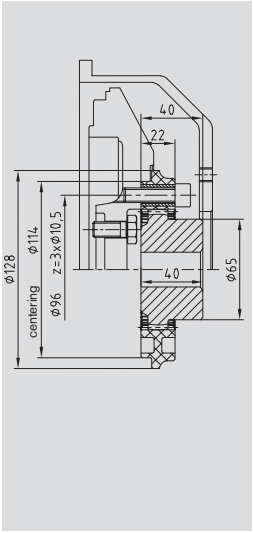
Coupling size	BoWex® 48 FLE-PA, Ø165	BoWex® 48 FLE-PA, 6.5	BoWex® 28 FLE-PA, Ø105	BoWex® 48 FLE-PA, Ø96
	Hatz	Hatz	Hatz	Hatz
Engine type	2L/3L/4L41C 2M/3M/4M41	W35	1D81 / 1D90	Z788 / Z789 / Z790

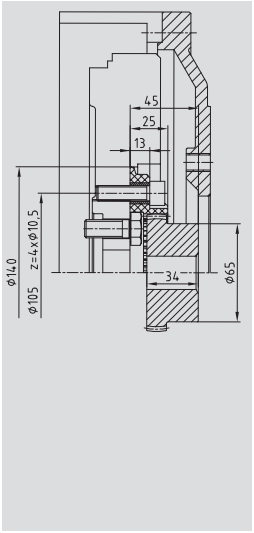
Special flange programme, deviations from the SAE standard

Fitting to Perkins Lombardini diesel engines



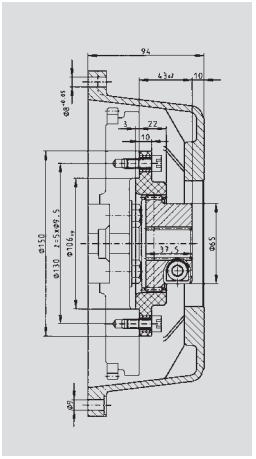


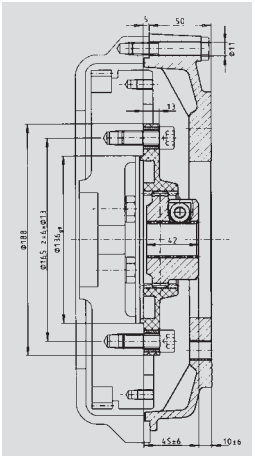


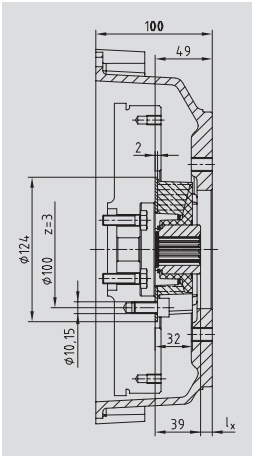


Coupling size	BoWex® 48 FLE-PA, Ø152/1	BoWex® 65 FLE-PA, Ø338	BoWex® 48 FLE-PA, Ø128	BoWex® 48 FLE-PA, Ø140
Engine type	Perkins 4.108	Perkins 1104C-44T Flywheel No. D0014	Lombardini FOCS series	Lombardini LDW 1303/1503/2004

Fitting to Kubota diesel engines

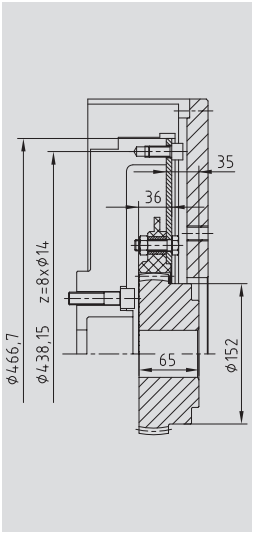


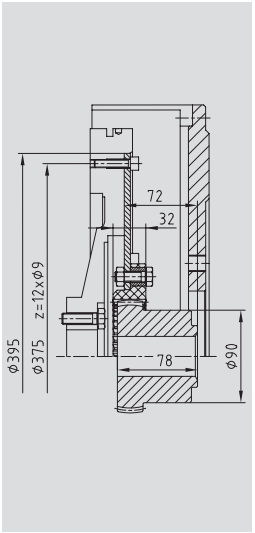


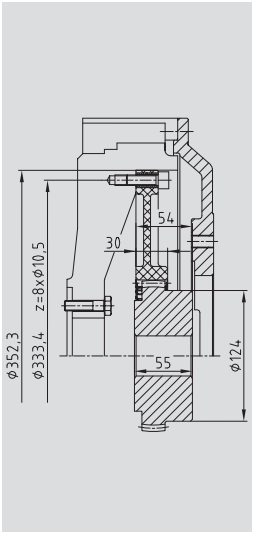


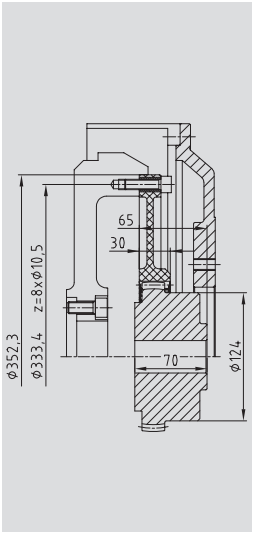
Coupling size	BoWex® 48 FLE-PA, Ø150	BoWex® 48 FLE-PA, Ø188	MONOLASTIC® 28, Ø 24
Engine type	Super mini series	Super 3 series	Super 5 series

Fitting to: Caterpillar Daimler-Chrysler Cummins John-Deere diesel engines







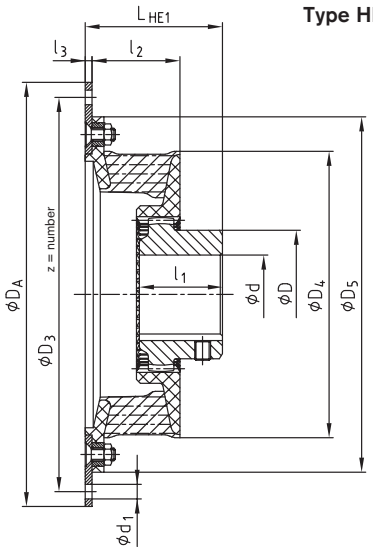


Coupling size	BoWex® T100 FLE-PA, 14"	BoWex® T65 FLE-PA, Ø395	BoWex® 80 FLE-PA, 11 1/2"	BoWex® 80 FLE-PA 11 1/2"
Engine type	Caterpillar C 10 / C 12	Daimler-Chrysler OM904	Cummins 6BTA5.9	John Deere 1010D / 1110D / 1400D

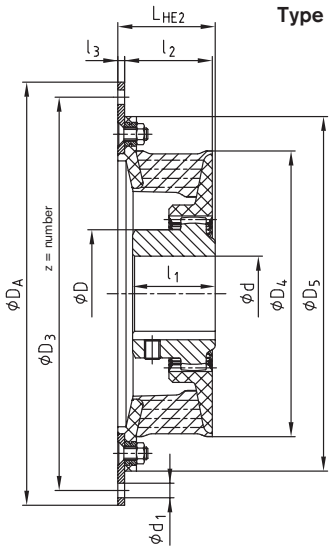
Type HE1 and HE2

- Flange coupling with flanges according to SAE and special dimensions for mounting to I. C.-engines
- Easy assembly by axial plug-in
- Compensating for misalignment on driving and driven side
- Use of coupling hubs from the BoWex® standard programme
- Finish bore according to ISO fit H7, keyway to DIN 6885, sheet 1 (JS9) - inch bores, taper bores, spline clamping hubs
- Available in the hardness 40, 50 and 65 Shore A
- Approved according to EC Standard 94/9/EC

Type HE1



Type HE2



Flange dimensions according SAE J 620 [mm]

Size	D_A	D_3	z	d_1
6 ½"	215,90	200,02	6	9
7 ½"	241,30	222,25	8	9
8"	263,52	244,47	6	11
10"	314,32	295,27	8	11
11 ½"	352,42	333,37	8	11
14"	466,72	438,15	8	13

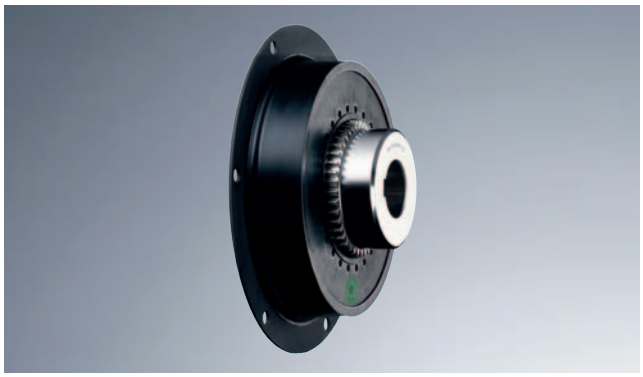
BoWex-ELASTIC® Type HE1 and HE2

Size	Bore d [mm]		Flange connection according to SAE - J 620						Dimensions [mm]								Weight with pilot bored coupling [kg]	Mass moment of inertia with pilot bored coupling	
	Pilot bored	max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	l_3	l_2	D_4	D_5	D	l_1	L_{HE1}	L_{HE2}		J_A [kgm²]	J_L [kgm²]
42 HE	-	42	●	●					4	45	146	180	65	42	70	50	2,7	0,0061	0,0014
					●												2,9	0,0083	0,0014
48 HE	-	48	●	●					4	45	164	198	68	50	78	50	2,9	0,0106	0,0019
					●												3,1	0,0148	0,0019
65 HE	21	65				●			5	55	205	244	96	55	85	62	3,9	0,0298	0,0019
							●										6,4	0,0377	0,0064
80 HE	31	80				●			-	70	266	-	124	90	126	74	7,2	0,0594	0,0064
							●		6			316			132	80	10,9	0,0211	0,0283
G 80 HE	31	80					●		-	80	302	-	124	90	136	84	13,0	0,0726	0,0283
								●	6			356			142	90	12,5	0,0402	0,0428
																	17,3	0,2251	0,0428

Ordering-example:

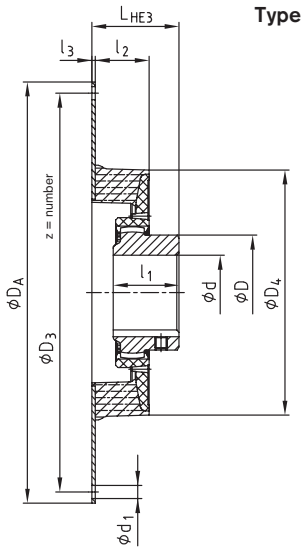
BoWex-ELASTIC® 42	HE1	40	8	70	U
Coupling size	Type	Elastomer hardness	Flange diameter D_A acc. to SAE or special	Mounting length L_{HE}	Unbored or with finish bore

Type HE3 and HE4

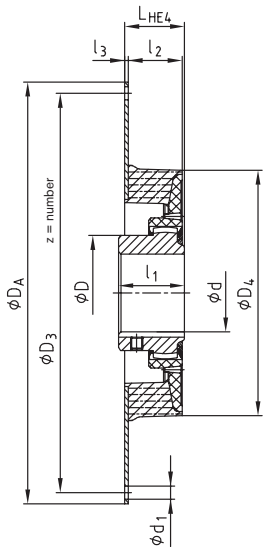


- Flange coupling with flanges according to SAE and special dimensions for mounting to I. C.-engines
- Easy assembly by axial plug-in
- Compensation of misalignment on driving and driven side
- Use of coupling hubs from the BoWex® standard programme
- Finish bore according to ISO fit H7, keyway to DIN 6885, sheet 1 (JS9) - inch bores, taper bores, spline clamping hubs
- Available in the hardness 40, 50 and 65 Shore A
- Approved according to EC Standard 94/9/EC

Type HE3



Type HE4



Flange dimension according SAE J 620 [mm]

Size	D_A	D_3	z	d_1
6 ½"	215,90	200,02	6	9
7 ½"	241,30	222,25	8	9
8"	263,52	244,47	6	11
10"	314,32	295,27	8	11
11 ½"	352,42	333,37	8	11
14"	466,72	438,15	8	13
16"	517,50	489,00	8	13
18"	571,50	542,90	6	17
21“	673,10	641,35	12	17
24“	733,42	692,15	12	21

BoWex-ELASTIC® Type HE3 and HE4

Size	Bore d [mm]		Flange connection according to SAE - J 620										Dimensions [mm]							Weight with pilot bored coupling [kg]	Mass moment of inertia with pilot bored coupling	
	Pilot bored	max.	6 ½"	7 ½"	8"	10"	11 ½"	14"	16"	18"	21“	24“	l_3	l_2	D_4	D	l_1	L_{HE3}	L_{HE4}		J_A [kgm²]	J_L [kgm²]
42 HE	-	42	●	●									2	33	145	65	42	55	40	1,7	0,0057	0,0014
				●																1,8	0,0060	0,0020
48 HE	-	48			●								2	37	163	68	50	68	42	2,0	0,0062	0,0020
						●														2,2	0,0065	0,0020
G 65 HE	21	65				●							3	45	205	96	55	73	50	5,3	0,0242	0,0076
							●													5,7	0,0372	0,0076
80 HE	31	80				●							4	56	265	124	90	112	60	11,4	0,0388	0,0305
G 80 HE	31	80					●						4	66	300	124	90	122	70	11,6	0,0702	0,0465
100 HE	38	100						●					4	80	350	152	110	150	82	24,1	0,1951	0,1019
125 HE	45	125						●					-	92	416	192	140	186	103	45,8	0,3013	0,2861
									●				6					192	109	47,7	0,4123	0,2861
G 125 HE	45	125							●				6	89	440	192	140	179	91	48,4	0,4781	0,2916
										●										50,5	0,6380	0,2916
150 HE	44	160								●			6	140	470	225	150	205	160	66,7	0,6918	0,5192
											●										1,1410	0,5192
G 150 HE	44	160								●			6	140	504	225	150	205	160	76	0,754	0,651
											●										1,246	0,651
200 HE	46	180									●		6	149	568	250	175	240	160	100	1,535	1,145
												●									1,514	1,145
G200 HE	46	180									●		6	149	600	250	175	240	160	105	1,727	1,347
												●									2,106	1,347

Ordering-example:

BoWex-ELASTIC® 80	HE3	40	10	112	U
Coupling size	Type	Elastomer hardness	Flange diameter D_A acc. to SAE or special	Mounting length L_{HE}	Unbored or with finish bore

Technical data and displacements

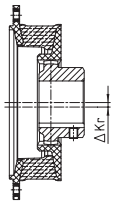
Technical data												
Size	Shore	Torque [Nm]			Perm. damping power P_{KW} [W]		Perm. operating speed $n_{max.}$ [rpm]	Twisting angle with T_{KN} ϕT_{KN} [°]	Dynamic torsion spring stiffness Cdyn. [Nm/rad]	Relative damping ψ	Resonance factor $V_R \approx 2 \cdot \pi / \psi$	Radial spring stiffness C_r [N/mm]
		T_{KN}	$T_{K\ max.}$	with 10 Hz T_{KW}	60 °C	80 °C						
	40 Sh	130	390	36				16	550	0,6	10,5	142
42 HE	50 Sh	150	450	45	20	6,5	6200	13	850	0,8	7,9	219
	65 Sh	180	540	54				8	2700	1,2	5,2	697
	40 Sh	200	600	60				16	850	0,6	10,5	176
48 HE	50 Sh	230	690	69	27	9,0	5600	13	1300	0,8	7,9	269
	65 Sh	280	840	84				8	3500	1,2	5,2	724
	40 Sh	350	1050	105				16	1600	0,6	10,5	209
65 HE	50 Sh	400	1200	120	45	15	4500	13	2200	0,8	7,9	288
	65 Sh	500	1500	150				8	6000	1,2	5,2	784
	40 Sh	430	1290	129				12	2350	0,6	10,5	259
G 65 HE	50 Sh	500	1500	150	51	17	4300	10	3000	0,8	7,9	346
	65 Sh	620	1860	186				6	8500	1,2	5,2	975
	40 Sh	750	2250	225				14	4500	0,6	10,5	351
80 HE	50 Sh	950	2850	285	90	30	3600	13	6500	0,8	7,9	507
	65 Sh	1200	3600	360				6	18000	1,2	5,2	1404
	40 Sh	1250	3750	375				12	7500	0,6	10,5	476
G 80 HE	50 Sh	1600	4800	480	135	45	3000	10	12000	0,8	7,9	762
	65 Sh	2000	6000	600				6	32000	1,2	5,2	2031
	40 Sh	2000	6000	600				12	12000	0,6	10,5	366
100 HE	50 Sh	2500	7500	750	160	53	2700	10	19000	0,8	7,9	570
	65 Sh	3200	9600	960				6	48000	1,2	5,2	1200
	40 Sh	3000	9000	900				12	19000	0,6	10,5	617
125 HE	50 Sh	4000	12000	1200	180	60	2300	10	30000	0,8	7,9	974
	70 Sh	5000	15000	1500				6	75000	1,2	5,2	2434
	40 Sh	4000	12000	1200				11	30000	0,6	10,5	560
G 125 HE	50 Sh	5200	16000	1600	200	67	2250	9	44000	0,8	7,9	920
	70 Sh	6500	20000	2000				5	110000	1,2	5,2	1915
	T 42 Sh	5500	16500	1650			1950	10	42000	0,6	10,5	714
150 HE	T 52 Sh	7000	21000	2100	270	180	2050	8	67000	0,8	7,9	1200
	T 68 Sh	9000	27000	2700			2200	5	166000	1,2	5,2	2500
	T 42 Sh	7000	21000	2100			1900	11	60000	0,6	10,5	1485
G 150 HE	T 52 Sh	9200	27600	2760	320	160	2000	8	95000	0,8	7,9	2372
	T 68 Sh	11500	34500	3450			2100	5	236000	1,2	5,2	5874
	T 42 Sh	9500	28500	2850			1700	11	85000	0,6	10,5	1720
200 HE	T 52 Sh	12500	37500	3750	392	196	1800	8	136000	0,8	7,9	2740
	T 68 Sh	16000	48000	4800			1900	5	335000	1,2	5,2	6769
	T 42 Sh	11500	34500	3450			1600	11	105000	0,6	10,5	1952
G 200 HE	T 52 Sh	15000	45000	4500	428	214	1700	8	167000	0,8	7,9	3114
	T 68 Sh	19500	58500	5850			1800	5	412000	1,2	5,2	7708

T = Temperature stable rubber compound. The technical data mentioned apply for an ambient temperature of T = 60 °C.

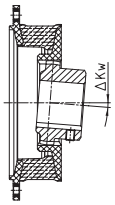
Displacements

For other operating speeds or higher operating temperatures the permissible radial displacement is calculated as follows:

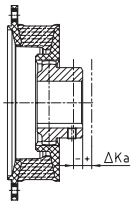
$$\Delta Kr_{perm.} = \Delta Kr \bullet St \bullet \sqrt{1500 / nx}$$



Radial displacement ΔKr



Angular displacement ΔKw



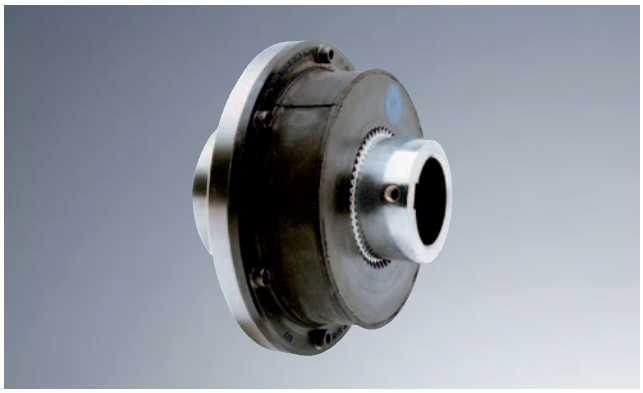
Axial displacement ΔKa

Displacements																										
Size		42 HE			48 HE			65 HE/G 65 HE			80 HE/G 80 HE			100 HE			125 HE/G 125 HE			150 HE/G 150 HE			200HE/G 200 HE		
Elastomer hardness [Shore A]		40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	65 Sh	40 Sh	50 Sh	70 Sh	42 Sh	52 Sh	68 Sh	42 Sh	52 Sh	68 Sh
Perm. radial displ. ΔKr [mm]	n=1500 1/min.	1,1	1,0	0,5	1,2	1,1	0,5	1,6	1,5	0,7	1,8	1,7	0,8	2,2	2,0	1,0	2,5	2,3	1,1	2,8	2,5	1,3	3,0	2,7	1,5
	max. [1]	3,6	3,3	1,5	3,8	3,5	1,7	5,1	4,7	2,2	5,7	5,3	2,4	6,5	6,0	3,0	7,5	6,9	3,3	8,0	7,5	4,0	8,5	8,0	4,5
Perm. angular displ. ΔKw [°]	n=1500 1/min.	1,0	0,75	0,5	1,0	0,75	0,5	1,0	0,75	0,5	1,0	0,75	0,5	1,0	0,75	0,5	1,0	0,75	0,5	1,0	0,75	0,5	1,0	0,75	0,5
	n=3000 1/min.	0,5	0,4	0,25	0,5	0,4	0,25	0,5	0,4	0,25	0,5	0,4	0,25	0,5	0,4	0,25	0,5	0,4	0,25						
Perm. angular displ. ΔKw [mm]	max. [1]	1,5			1,5			1,5			1,5			1,5			1,5			1,5			1,5		
Perm. axial displacement ΔKa [mm]		± 2			± 2			± 2			± 2			± 3			± 3			± 5			± 5		

[1] for short-term starting operation

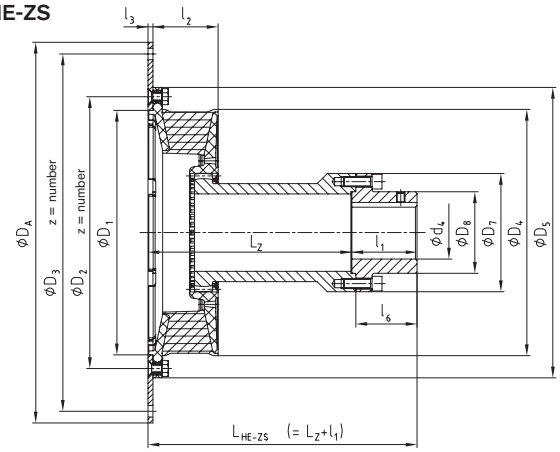
Process of assembly, screw type with quality, tightening torques according to KTR assembly instructions (see www.ktr.com).

Type HE-ZS and type HEW

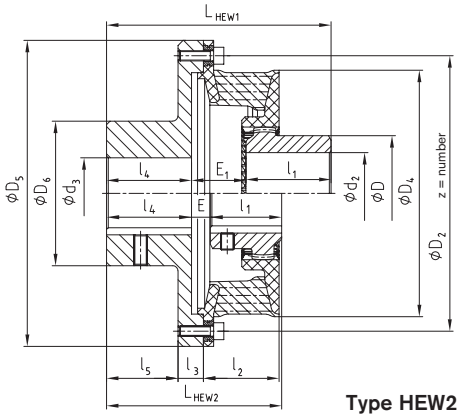


- Highly flexible coupling to be mounted to I. C.-engines and electric motors
- Elastomer parts available in the hardness 40, 50 and 65 Shore A
- High degree of compensating for misalignment
- Type HE-ZS with flange connection according to SAE-J 620 and dismountable part for pump drives
- Type HEW1/HEW2 highly flexible shaft coupling
- Finish bore acc. to ISO fit H7, feather keyway acc. to DIN 6885 sheet 1 - JS9
- Ex approved and confirmed acc. to EC standard 94/9/EG
- Type HE-ZS with flange hub also available as shaft connection with dismountable part

Type HE-ZS



Type HEW1



Type HEW2

BoWex-ELASTIC® Type HE-ZS

Size	Max. finish bore d4	Flange connection to SAE-J 620 DA for HE-ZS										Dimensions [mm]									Dismountable part HE-ZS LZ [mm]					Weight with max. bore [kg]	Mass moment of inertia [kgm²]	
		6 ½"	7 ½"	8"	10"	11 ½"	14"	16"	18"	21"	24"	D1	D4	D5	D7	D8	l1	l2	l3	l6	100	120	140	180	250		JA	JL
		●																48	10		●	●				2,9[1]	0,0026	0,0033
48	28		●									160	164	200	78	45	40			37	●	●				3,6[1]	0,0106	0,0033
				●														37	4		●	●				3,9[1]	0,0148	0,0033
					●																●	●				4,6[1]	0,0298	0,0033
G65	45				●								205		110	72	60	48	3	56		●	●			7,3[1]	0,0242	0,0129
						●																	●	●		8,9[2]	0,0372	0,0150
80	65				●							265	266	318	145	100	80	70	11	76			●	●		13,7[2]	0,0211	0,0497
						●													6				●	●		15,9[2]	0,0726	0,0497
G80	65					●						300	302	358	145	100	80	80	11	76			●	●		14,6[2]	0,0402	0,0634
							●												6					●	●	19,5[2]	0,2251	0,0634
100	95						●						350		202	148	110	80	4	106				●	●	29,8[2]	0,1951	0,1779
125	100						●						416		225	165	120	99	6	116				●	●	41,7[2]	0,3013	0,3363
								●																●	●	43,6[2]	0,4123	0,3363
G125	120							●					440		225	165	120	95	6	116				●	●	45,6[2]	0,4781	0,3700
									●																●	47,7[2]	0,6380	0,3700
150	135								●				470		245	185	140	140	6	136					●	63,2	0,6918	0,6647
										●															●	67,9	1,1410	0,6647
G150	135								●				504		245	185	140	140	6	136					●	68,3	0,7540	0,7677
										●															●	73,0	1,2460	0,7677
200	150									●			568		270	205	160	149	6	156					●	98,7	1,5348	1,4109
											●														●	101,7	1,9138	1,4109
G200	150									●			600		270	205	160	149	6	156					●	103,5	1,7270	1,6401
											●														●	106,6	2,1060	1,6401

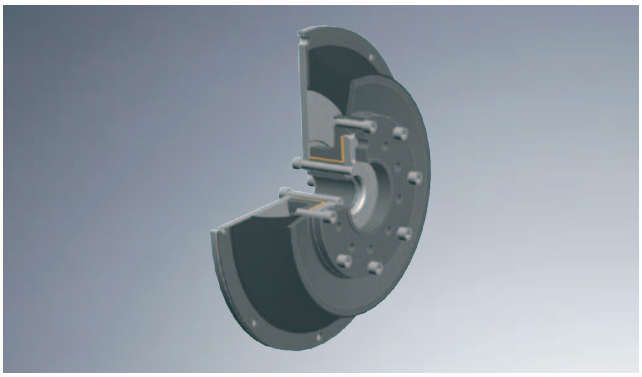
[1] with L_Z 120 [2] with L_Z 100

BoWex-ELASTIC® Type HEW

Size	Max. finish bore		Dimensions [mm]																Weight with max. bore [kg]	Mass moment of inertia [kgm²]	
	d2	d3	D	D2	z x M		D4	D5	D6	l1	l2	l3	l4	l5	E	E1	LHEW1	LHEW2		JA	JL
42	48	50	68	162	6	M6	146	180	85	50	45	15	50	42	4	32	132	104	4,3	0,0121	0,0015
48	48	55	68	180	8	M6	164	200	92	50	45	17	55	45	4	32	137	109	5,5	0,0204	0,0019
65	65	75	96	224	8	M8	205	245	125	70	55	28	75	63	5	42	187	150	13,2	0,0752	0,0071
80	80	80	124	295,27	8	M10	266	318	130	90	70	17	80	70	5	45	215	160	19,7	0,1449	0,0285
G 80	85	95	124	333,4	8	M10	302	358	145	90	80	22	90	78	5	55	235	185	25,9	0,2748	0,0422

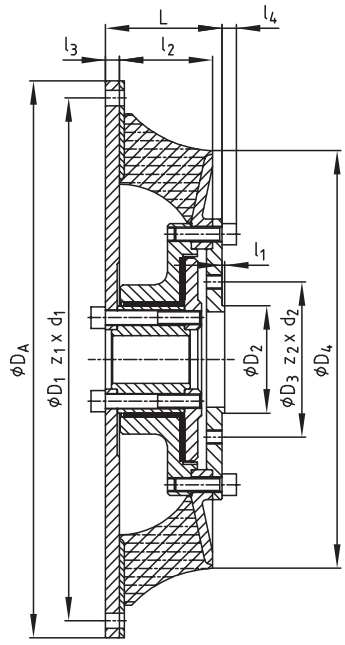
Other sizes available. Please send us your inquiry.

Type HEG for cardan shaft connection

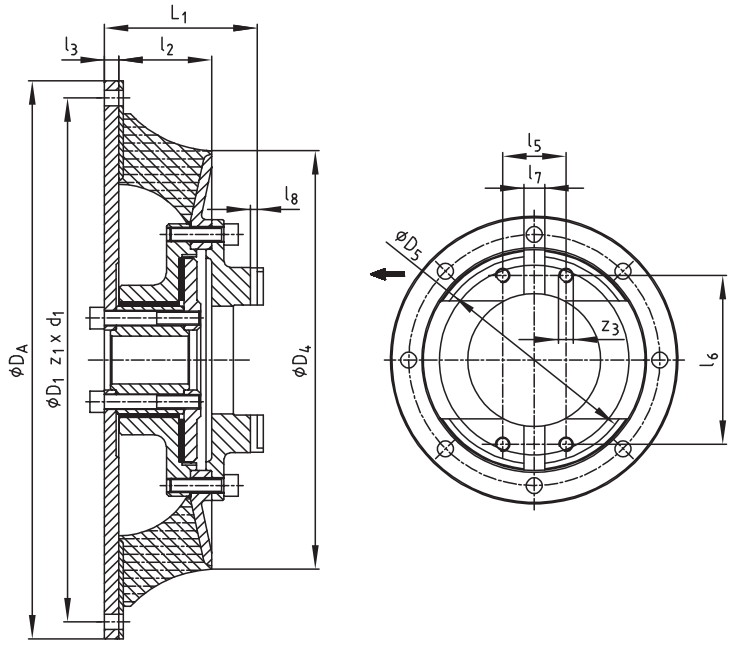


- Highly-flexible cardan shaft auxiliary coupling for I. C.-engines
- Available in different kinds of elastomer hardness
- High torsional flexibility
- Excellent damping properties due to additional friction damping
- Reduction of torque peaks in the elastomer part
- Radial plain bearing in maintenance-free design
- Cardan shaft connection for usual designs
- Other sizes on request

Type HEG1



Type HEG2



BoWex-ELASTIC® Type HEG1 and Type HEG2

Size	Flywheel connection to SAE-J 620					Metric flange connection HEG1 dimensions [mm]										MECHANICS cardan shaft connection HEG2 dimensions [mm]								Dimensions [mm]			Weight [kg]	Mass moment of inertia	
	8"	10"	11 ½"	14"	16"	58	65	75	90	100	120	150	180	l_4	L	2 C	4 C	5 C	6 C	7 C	8,5 C	8 C	L_1	D_4	l_2	l_3		JA [kgm²]	JL [kgm²]
48	●					●	●	●						8	58,5									163	43,5	8	7	0,03	0,006
		●				●	●	●																			8	0,06	0,006
G 65		●						●	●	●				8	66	●	●	●					71	205	48,0	10	12	0,07	0,02
			●					●	●	●						●	●	●									14	0,10	0,02
80		●						●	●	●	●			10	88,5		●	●	●				104	265	68,5	23	21	0,11	0,06
			●					●	●	●	●						●	●	●							12	23	0,17	0,06
G 80			●						●	●	●	●		10	96			●	●	●			110	302	74,0	23	26	0,18	0,09
				●					●	●	●	●						●	●	●						12	33	0,48	0,09
100				●						●	●	●	●	12	98					●	●		128	350	78,0	16	41	0,63	0,19
125				●						●	●	●	●	12	111						●	●	135	416	96,0	18	56	0,74	0,42
					●					●	●	●	●								●	●				12	59	0,97	0,42

Flywheel connection to SAE-J 620 [mm]

Size	D_A	D_1	z_1	d_1
8"	263,52	244,47	6	11
10"	314,32	295,27	8	11
11 ½"	352,42	333,37	8	11
14"	466,72	438,15	8	14
16"	517,50	489,00	8	14

Metric flange connection HEG1 [mm]

Size	D_2	l_1	D_3	z_2	d_2
58	30	1,0	47,0	4	M5
65	35	1,0	52,0	4	M6
75	42	1,5	62,0	6	M6
90	47	2,0	74,5	4	M8
100	57	2,0	84,0	6	M8
120	75	2,0	101,5	8	M10
150	90	2,5	130,0	8	M12
180	110	2,5	155,5	8	M14

MECHANICS cardan shaft connection HEG 2 [mm]

Size	D_5	l_5	l_6	l_7	l_8	z_3
2 C	79,35	33,3	59,5	9,50	3,8	M8
4 C	107,92	36,5	87,3	9,50	3,8	M8
5 C	115,06	42,9	88,9	14,26	5,1	M10
6 C	140,46	42,9	114,3	14,26	5,1	M10
7 C	148,39	49,2	117,5	15,85	6,0	M12
8,5 C	165,08	71,4	123,8	15,85	6,0	M12
8 C	206,32	49,2	174,6	15,85	6,0	M12

Coupling selection

1. BoWex-ELASTIC® couplings should be selected in accordance with DIN 740 part 2. The coupling must be sufficiently sized to ensure that the maximum permissible coupling load is not exceeded in any operating condition. It is therefore necessary to compare the actual loads with the permissible rated parameters of the coupling according to tables 1.1 - 1.4 listed below.

For drives subject to dangerous torsional vibrations it is necessary for a safe operation to review the drive by means of a torsional vibration calculation.

1.1 Load by rated torque

The permissible rated torque T_{KN} of the coupling must, at all operating temperatures, be at least as high as the rated torque T_N of the machine.

$$T_{KN} \geq T_N \bullet S_t$$

$$T_N\,[Nm] = 9550 \bullet (P_{AN/LN}\,[kW] / n\,[rpm])$$

1.2 Load by torque shocks

The maximum permissible torque of the coupling must, at all operating temperatures, be as high as the operational peak torque T_S, taking into account the shock factor S_Z.

With knowledge of mass distribution, direction and type of shock it is possible to calculate the peak torque T_S. If the moments of inertia are unknown, M_A or M_L = 1.

$$T_{K\,max} \geq T_S \bullet S_Z \bullet S_t$$

Shock on driving side
$T_S = T_{AS} \bullet M_A \bullet S_A$

Shock on driven side
$T_S = T_{LS} \bullet M_L \bullet S_L$

$$M_A = J_L / (J_A + J_L) \qquad M_L = J_A / (J_A + J_L)$$

1.3 Passing through resonance range

$$T_{K\,max} \geq T_S \bullet S_Z \bullet S_t$$

The peak torque T_S arising when the resonance range is passed through must not exceed the maximum torque $T_{K\,max}$ of the coupling, taking into account the temperature.

1.4 Load by vibratory torque shocks

$$T_{KW} \geq T_W \bullet S_t$$

The permissible vibratory torque T_{KW} of the coupling, at the operating speed and ambient temperature, must not be exceeded by the biggest periodical vibratory torque T_W.

$$P_{KW} \geq P_W$$

With operating frequencies f > 10 Hz the heat produced by damping in the elastomer is considered as damping power P_W. The permissible damping power P_{KW} of the coupling depends on the ambient temperature and must not be exceeded by the actual damping power produced.

Temperature factor St

Standard	-40°C up to +60°C	+70°C	+80°C	–
	1	1,2	1,6	–
Temperature stable compound*	-40°C up to +60°C	+70°C	+80°C	+90°C
	1	1	1,3	1,7

* Temperature stable compound is marked with „T“ in front of hardness (e. g. T 52 Sh)

Table No. 1

Starting factor SZ

Starting frequency/h	< 10	> 10 < 60	> 60 < 120	> 120
SZ	1,0	1,5	2,0	on request

Table No. 2

Shock factor SA/SL

	S_A/S_L
Moderate shocks	1,5
Average shocks	1,8
Heavy shocks	2,5

Table No. 3

Technical data for coupling selection / Torsional vibration calculation

Driving side

diesel ☐ gas ☐ engine type

straight-type engine ☐ V-engine/angle degrees stroke mm

2-cycles ☐ 4-cycles ☐ piston Ø mm no. of cylinders

rated torque T_{AN} Nm speed range n: idle speed rpm

peak torque T_{AS} Nm $n_{min.\ operational}$ $n_{max.\ operational}$ rpm

mass moment of inertia J_A or flywheel effect GD^2_A for

flywheel J_A kgm² or GD^2_A kpm²

driving gear J_A kgm² or GD^2_A kpm²

Driven side

hydraulic pump ☐ splitterbox ☐ generator ☐ screw compressor ☐

piston compressor ☐ no. of cylinders ☐ no. of cylinders ☐ tangential force diagramme

manufacturer/type

rated torque T_{LN} Nm peak torque Nm

mass moment of inertia J_L kgm² or flywheel effect GD^2_L kpm²

Applications - BoWex® FLE-PA, BoWex-ELASTIC® and MONOLASTIC®

Applications for BoWex® FLE-PA couplings and MONOLASTIC®

wheel loaders	K 1,6
compact loaders	K 1,6
hydraulic excavators	K 1,4
mobile cranes	K 1,6
graders	K 1,5
vibration rollers	K 1,4
fork lift trucks	K 1,6
concrete mixer trucks	K 1,3
concrete pumps	K 1,4
asphalt finishers	K 1,4
concrete cutters	K 1,4
road mortisers	K 1,4

For a selection according to the engine driving torque T_{AN} a service factor K = 1,3 – 1,6 should be considered, depending on the load.

$$T_{KN} \geq T_{AN} \cdot K$$

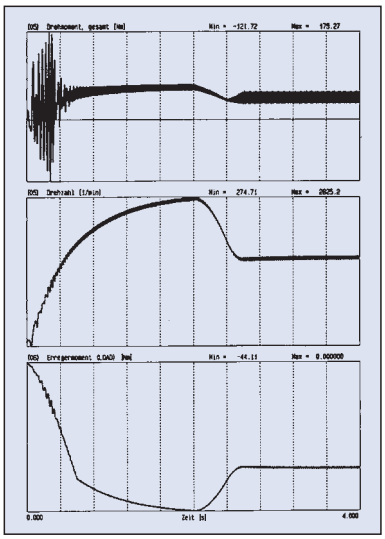
Applications for BoWex-ELASTIC® couplings

- screw compressors
- generators
- piston compressors
- splitterboxes
- suction pumps
- high-pressure pumps
- reversing gears
- shifting gears
- hydrodynamic converters

Coupling selection by means of torsional vibration calculation.

Further details

Use of PC with special software for coupling selection



Application:
3-cylinder diesel engine - screw compressor

Use:
BoWex-ELASTIC®
42 HE - 50 Shore A

Calculation:
Acceleration
from 300 rpm
to 2700 rpm

KTR makes use of special simulation calculation programs for the coupling selection and the torsional vibration determination of the drive system.

This ensures a resonance-free operation of the machine, along with a safe, long-lasting operation of the drive components.

This is part of the usual KTR standard service.