Table of contents

POLY
Torsionally flexible, shear type coupling

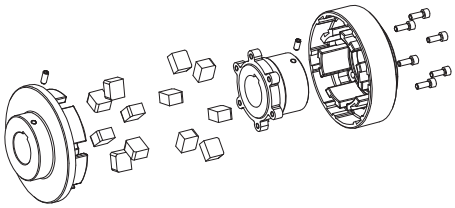
Made for Motion KTR

Coupling description

General description:

The POLY coupling is a torsionally flexible, not failsafe coupling for general machinery. It is assembled by axially pluging the hubs into each other and has excellent dampening characteristics. Its unique features are the flexible elastomeric elements that are located in both coupling halves.

The POLY advantage – A much greater number of flexible elements and thus a larger effective mass of the elastomer to accept vibration and to dissipate the heat caused by torsional vibrations when compared to similar competitive couplings with elements only in one half.



Coupling selection

The coupling selection must be done on the base POLY-NORM® or ROTEX®.

Function/Design

The coupling consists of 2 hubs with fingers that are separated by elastomeric elements which are assembled by axial blind plug-in to each other. Elastomer elements are placed into the slots of both coupling hubs. Torque is transmitted in a compact design. Shaft misalignments, vibrations and shock loads are effectively absorbed by the POLY coupling.

The coupling is maintenance-free and used in general machinery, the pump industry and in compressors. The Poly coupling handles torque ranges of up to 14300 Nm and is stocked in 16 different sizes and 3 designs for immediate availability. In addition to our standard coupling models, a variety of flange, drop out center and spacer options are available.

Explosion-proof use

POLY couplings are suitable for the use in drives in hazardous areas. The couplings are certified according to EC Standard 94/9/EC (ATEX 95) and belong to category 2G/2D, are confirmed and thus suitable for the use in hazardous areas of zone 1, 2, 21 and 22. Please read our information in the respective Type Examination Certificate and the operating and mounting instructions under www.ktr.com.

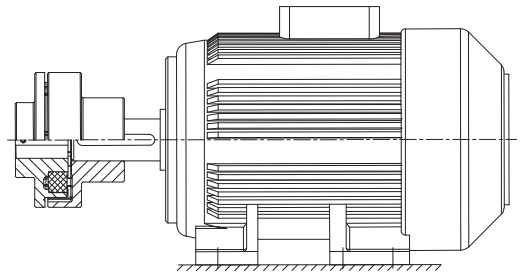
Variation of components

The coupling can be adapted to many applications due to the many options that are possible with the building block arrangement. The POLY components of a given model can be mixed and matched with each other to obtain different shaft distances using the same basic component.

General information about the elastomer packing

Standard Material/Hardness	Perbunan [NBR] / 92 Shore A
Permanent temperature range [°C]	- 30 to + 80
Max. temperature (short time) [°C]	- 50 to + 120
Applications	ATEX applications Chemical industry Mining General machine construction Applications of average elasticity
Resistant to	Gasoline, diesel Acids, bases Tropics (Salt-) Water (hot/cold) Oils, greases Propane, butane Natural gas, city gas

Selection of standard IEC motors



POLY couplings for standard IEC motors, protection IP 54/IP 55

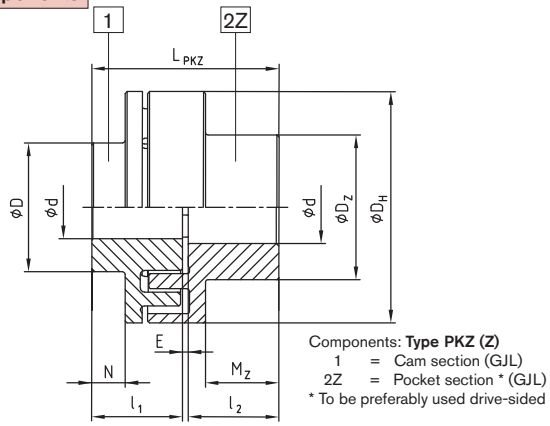
A. C. motor 50 Hz			Motor output n = 3000 rpm 2-pole		POLY coupling size	Motor output n = 1500 rpm 4-pole		POLY coupling size	Motor output n = 1000 rpm 6-pole		POLY coupling size	Motor output n = 750 rpm 8-pole		POLY coupling size
Size	Shaft end dxl [mm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]		Output P [kW]	Torque T [Nm]	
	2-pole	4,6,8 pole												
56	9 x 20		0,09	0,32		0,06	0,43		0,037	0,43				
			0,12	0,41		0,09	0,64		0,045	0,52				
63	11 x 23		0,18	0,62		0,12	0,88		0,06	0,7				
			0,25	0,86	8	0,18	1,3	8	0,09	1,1	8			8
71	14 x 30		0,37	1,3		0,25	1,8		0,18	2		0,09	1,4	
			0,55	1,9		0,37	2,5		0,25	2,8		0,12	1,8	
80	19 x 40		0,75	2,5		0,55	3,7		0,37	3,9		0,18	2,5	
			1,1	3,7		0,75	5,1		0,55	5,8		0,25	3,5	
90S	24 x 50		1,5	5		1,1	7,5		0,75	8		0,37	5,3	
90L			2,2	7,4		1,5	10		1,1	12		0,55	7,9	
100L	28 x 60		3	9,8	9	2,2	15	9	1,5	15	9	0,75	11	9
						3	20					1,1	16	
112M			4	13		4	27		2,2	22		1,5	21	
132S	38 x 80		5,5	18		5,5	36		3	30		2,2	30	
			7,5	25	10			10			10			10
132M						7,5	49		4	40		3	40	
									5,5	55				
160M	42 x 110		11	36		11	72		7,5	75		4	54	
			15	49	12			12				5,5	74	
160L			18,5	60		15	98		11	109	14	7,5	100	14
180M	48 x 110		22	71		18,5	121	14						
180L						22	144		15	148		11	145	
200L	55 x 110		30	97		30	196	15	18,5	181	15	15	198	15
			37	120	15				22	215				
225S	55 x 110	60 x 140				37	240	17				18,5	244	17
225M			45	145		45	292	19	30	293	19	22	290	19
250M	60 x 140	65 x 140	55	177	17	55	356		37	361		30	392	
280S	65 x 140	75 x 140	75	241		75	484	20	45	438	20	37	483	20
280M			90	289	19*	90	581		55	535		45	587	
315S		80 x 170	110	353		110	707	22	75	727	22	55	712	22
315M			132	423	20*	132	849	25	90	873	25	75	971	25
			160	513		160	1030		110	1070		90	1170	
315L			200	641		200	1290		132	1280	28	110	1420	28
		85 x 170			22*			28	160	1550		132	1710	
315			250	802		250	1600		200	1930		160	2070	30
			315	1010		315	2020		250	2410	30	200	2580	
			355	1140		355	2280	30						35
355	75 x 140	95 x 170	400	1280		400	2570		315	3040		250	3220	
			500	1600		500	3210		400	3850	35	315	4060	
			560	1790		560	3580	35	450	4330		355	4570	
400	80 x 170	110 x 210	630	2020		630	4030		500	4810		400	5150	40
			710	2270		710	4540		560	5390	40	450	5790	
			800	2560		800	5120	40	630	6060		500	6420	
450	90 x 170	120 x 210	900	2880		900	5760		710	6830	45	560	7190	45
			1000	3200		1000	6400		800	7690		630	8090	

The coupling is selected for an ambient temperature of up to + 30 °C. The coupling was selected for the normal operation. The respective couplings have a minimum operating factor of f min. = 1,35. Drives with periodical torque courses must be selected according to DIN 740 part 2. On request the selection is made by KTR.
Torque T = nominal torque according to Siemens catalogue M 11 · 1994/95.
* dynamical balancing is necessary

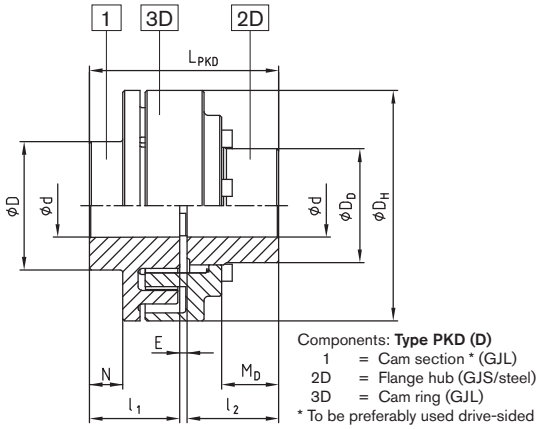
Type PKZ (2-part design) and PKD (3-part design)

- Torsionally flexible / maintenance-free
- Reduced vibrations
- Shear type
- Axial plug-in assembly
- Short overall length / minimum distance between shafts
- In PKD the elastomer elements can be changed without moving driver or driven
- Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components



Type PKZ (Z) – (Size 8 to 30)

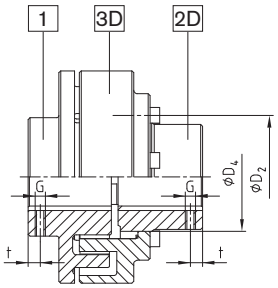


Type PKD (D) – (Size 15 to 45)

POLY PKZ and PKD

Size	Nominal torque [1] T_{KN} [Nm]	Max. speed [2] n [rpm]	Max. Finish bore $Ød_{max.}$ [mm]			Dimensions [mm]												Thread of setscrew			Weight [3] [kg]
			part 1	part 2Z	part 2D	D_H	D	D_Z	D_D	L_1; l_2	M_Z	M_D	N	E	D_2	D_4(H7/h7)	$L_{PKZ/PKD}$	G	t	T_A [Nm]	
8 (Z)	42	5000	20	28	—	86	43	50	—	35	25	—	3	3	—	—	73	M5	18	2	1,7
9 (Z)	72	5000	28	38	—	97	55	65	—	41	30	—	7	3	—	—	85	M8	23	10	2,7
10 (Z)	100	5000	32	42	—	107	60	70	—	45	35	—	10	4	—	—	94	M8	27	10	3,5
12 (Z)	170	5000	38	48	—	131	70	80	—	55	43	—	12	4	—	—	114	M8	30	10	5,4
14 (Z)	210	4800	45	55	—	142	80	93	—	60	46	—	17	4	—	—	124	M8	10	10	7,6
15 (Z;D)	320	4300	50	60	50	157	90	100	74,5	65	52	35	22	4	92	75	134	M8	15	10	8,6
17 (Z;D)	400	3800	60	65	60	176	100	110	87	70	56	40	25	4	106	90	144	M8	15	10	12
19 (Z;D)	660	3500	75	75	70	195	125	125	106	75	64	45	30	4	126	107	154	M8	15	10	18
20 (Z;D)	820	3300	65	75	70	205	115	127	98	80	65	45	23	4	123	105	164	M8	15	10	20
22 (Z)	1100	3000	85	85	90	224	140	140	129	90	75	59	39	4	150	130	184	M10	20	17	25
25 (Z;D)	1600	2700	90	90	95	257	150	150	138	100	84	60	44	5	162	140	205	M12	20	40	35
28 (Z;D)	2500	2350	100	100	100	288	165	165	154	110	90	65	45	5	178	160	225	M12	20	40	53
30 (Z;D)	3950	2200	110	110	110	308	180	180	165	130	108	75	58,5	5	202	170	265	M16	20	80	66
35 (D)	6100	1850	130	—	140	373	210	—	209	160	—	95	69	5	240	210	325	M16	25	80	125
40 (D)	9000	1600	145	—	160	423	240	—	238	180	—	115	85	5	275	240	365	M16	25	80	180
45 (D)	14300	1400	160	—	180	473	270	—	268	180	—	110	74	6	308	270	366	M16	30	80	220

[1] Maximal torque $T_{Kmax} = T_{KN} \times 2$; Standard material Perbunan (NBR) 92 Shore-A; Standard hub material: GJL
[2] For v = 30 m/sec. For peripheral speeds exceeding v = 30 m/sec. we recommend a dynamical balancing;
[3] Refer to medium bore



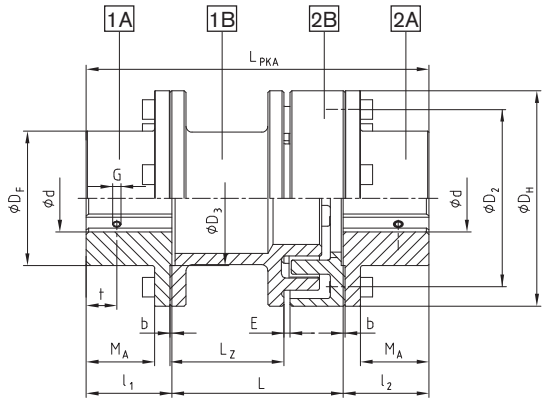
Order form:

POLY	PKD	28	d_1 ∅90	d_2 ∅80
Coupling	Type	Size	Finish bore part 1	Finish bore part 2

Type PKA (dismountable coupling)

- Torsionally flexible, maintenance-free
- Vibration-reducing
- Not failsafe
- Axial plug-in
- Short design / low shaft distance dimension
- In the PKD the elastomer packages can be exchanged in exembled state
- Ⓔx Approved according to EC Standard 94/9/EC (Explosion Certificate ATEX 95)
- Detailed mounting instructions and further information available at www.ktr.com

Components



Components: **Type PKA**
1A/2A = Coupling flange (steel)
1B = Spacer (GJL)
2B = Driving flange (GJL)
1A and 1B to be preferably used drive-sided

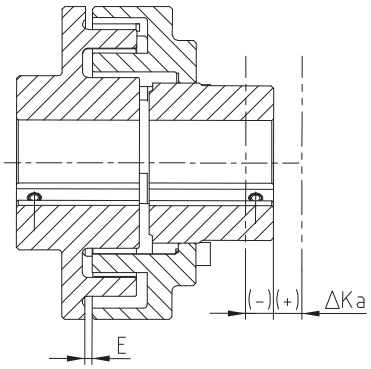
POLY Type PKA

Size	Nominal-torque T_{KN} [Nm]	Max. speed n [rpm]	Finish bore $d_{max.}$ [mm] part 1A/2A	Dimensions [mm]											Thread of setscrew			Weight [kg]
				D_H	D_F	D_2	D_3	l_1, l_2	b	M_A	E	L	L_{PKA}	L_Z	G	t	T_A [Nm]	
8	42	5000	38	86	55	70	60	35	1,5	25,5	3	100	170	66	M5	15	2	3,04
9	72	5000	45	97	70	85	70	41	1,5	30,5	3	100	182	63	M8	15	10	4,26
												140	222	103				4,66
10	100	5000	50	107	78	93	80	46	1,5	35,5	4	100	192	61	M8	20	10	5,42
												140	232	101				5,88
												100	210	55				9,49
12	170	5000	60	131	95	113	90	55	1,5	43,0	4	140	250	95	M8	20	10	10,15
												180	290	135				10,86
												100	220	54				11,46
14	210	4800	70	142	105	125	100	60	1,5	48,0	4	140	260	94	M8	25	10	12,23
												180	300	134				13,01
												140	270	93				15,63
15	320	4300	70	157	110	135	110	65	1,5	49,5	4	180	310	133	M8	25	10	16,50
												250	380	203				18,01
												100	240	53				18,79
17	400	3800	80	176	125	150	110	70	1,5	54,5	4	140	280	93	M8	25	10	19,60
												180	320	133				20,41
												250	390	203				21,83
												140	290	91				24,62
19	660	3500	90	195	135	160	120	75	1,5	59,5	4	180	330	131	M8	30	10	25,91
												250	400	201				28,15
												140	300	81				30,96
20	820	3300	100	205	150	175	130	80	2,0	61,0	4	180	340	121	M8	30	10	32,18
												250	410	191				34,79
22	1100	3000	105	224	160	190	140	90	2,0	71,0	4	180	360	127	M10	35	17	37,79
												250	430	197				39,94
												140	340	81				54,73
25	1600	2700	125	257	195	225	150	100	2,0	81,0	5	180	380	121	M12	40	40	56,50
												250	450	191				59,60
28	2500	2350	140	288	215	250	170	110	2,0	91,0	5	180	400	114	M12	45	40	77,84
												250	470	184				82,41

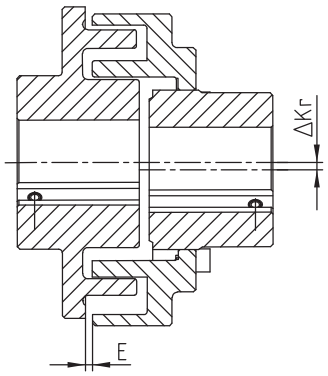
Order form:

POLY	PKA	28	140	∅38	∅40
Coupling	Type	Size	Dismountable L	Finish bore part 1A	Finish bore part 2A

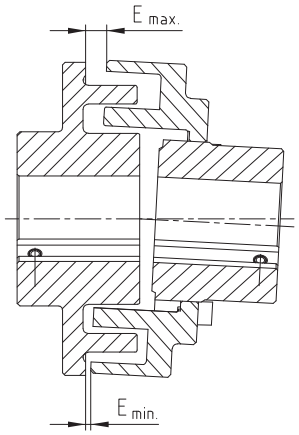
Displacements — Elastomer elements — Screws



Axial displacement



Radial displacement



Angular displacement

$\Delta K_W = E_{max.} - E_{min.}$ [mm]

Radial and angular displacements can occur simultaneously.
The combined sum $V = \Delta K_r + (E_{max.} - E_{min.})$ must not exceed the values listed in table .

Displacements [mm]																	
Couplingsize		8	9	10	12	14	15	17	19	20	22	25	28	30	35	40	45
Max. axial displacement ΔK_a [mm]		±1	±1	±1	±2	±2	±2	±2	±2	±2	±2	±2	±2	±2	±3	±3	±3
Max. radial displacement ΔK_r or	n = 750 rpm	0,8	0,8	0,8	0,8	0,8	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,2	1,2	1,2	1,2
max. angular displacement ΔK_W	n = 1000 rpm	0,7	0,7	0,7	0,7	0,7	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,1	1,1	1,1	1,1
or sum V	n = 1500 rpm	0,5	0,5	0,5	0,5	0,5	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,9	0,9	0,9

Elastomer elements NBR (cuboid)																	
Couplingsize		8	9	10	12	14	15	17	19	20	22	25	28	30	35	40	45
Element size		1			2		3		3a	4	3b	4	5	6Ü	7Ü	8	9
Number of elements		8	10	10	10	10	12	12	12	12	16	16	16	16	20	20	20
Dimensions of elastomer	b	18,4			24,9		27,2		27,7	34,9	26,9	34,9	40	43,3	45,7	52,1	58,1
elements	t	10			15,3		16,1		18,4	19,6	18,4	19,6	22,2	28,6	25,0	28,6	29,3
b x t x h [mm]	h	18,9			23,9		24,6		26,8	34,6	29,6	34,6	40,6	41,1	60,0	59,7	69

Type PKD — Dimension cyl. screw DIN EN ISO 4762																	
Couplingsize		8	9	10	12	14	15	17	19	20	22	25	28	30	35	40	45
Screw size	M	—	—	—	—	—	M8	M8	M8	M10	M8	M10	M10	M12	M12	M16	M16
	l	—	—	—	—	—	30	25	25	30	30	30	40	40	55	55	60
Number		—	—	—	—	—	6	6	6	6	8	8	8	8	10	10	10
Tigthening torque T_A [Nm]		—	—	—	—	—	25	25	25	25	25	49	49	86	86	295	210
Type PKA — Dimension cyl. screw DIN EN ISO 4762																	
Screw size	M	M6	M6	M6	M8	M8	M10	M10	M10	M10	M10	M10	M12	—	—	—	—
	l	16	18	18	20	20	25	25	25	30	30	30	30	—	—	—	—
Number		4	5	5	5	5	6	6	6	6	8	8	8	—	—	—	—
Tigthening torque T_A [Nm]		10	10	10	25	25	49	49	49	49	49	49	86	—	—	—	—

Standard bore H7 with keyway DIN 6885 sheet 1 [JS9] and threads for setscrews on the feather keyway.
Please see our detailed mounting instructions at our website www.ktr.com.