

TRASCO® ES backlash coupling

The main design function of the TRASCO® ES coupling is to transmit motion while absorbing misalignments and vibrations with absolute precision and without any backlash whatsoever. The very compact design makes it a very rational and functional device.

Description

The TRASCO® ES coupling consists of two hubs which are either made of high-strength aluminium (up to size 38/45) that are connected with an elastic element. The hubs are obtained by an accurate machining in order to achieve extremely precise dimensional characteristics. The elastic element which is made of special polyurethane that was developed after considerable research and laboratory testing, is press-formed by a process which guarantees a high degree of dimensional accuracy.

The elastic elements are available in 4 different hardnesses:

80 Sh. A (blue), 92 Sh. A (yellow), 98 Sh. A (red), 64 Sh. D (green).

Coupling performance depends on the type of element selected (see "Technical Characteristics")

Standard type

The hubs of standard coupling type can be either solid or have a finished bore, the diameter of which corresponds to any one of the standard shaft diameters. The grub screw(s) is (are) located 180° from the key seat - ex. 02 (120° each other - ex. 01). Both the solid hub and bored hub coupling are generally available from stock for quick delivery.

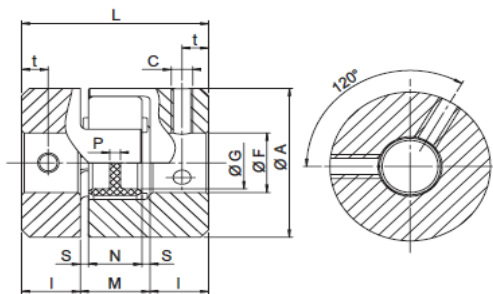


Fig. 1

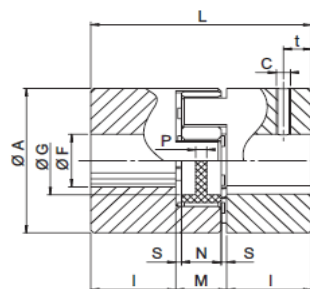


Fig. 2

Type	F min	F max	Hub		n _{max} [min ⁻¹]
			W [kg]	J [kgm ²]	
Aluminium Hubs					
7	3	7	0,003	0,085 x10 ⁻⁶	40.000
9	4	9	0,009	0,49 x10 ⁻⁶	28.000
14	4	15	0,020	2,8 x10 ⁻⁶	19.000
19/24	6	24	0,066	20,4 x10 ⁻⁶	14.000
24/28	8	28	0,132	50,8 x10 ⁻⁶	10.600
28/38	10	38	0,253	200,3 x10 ⁻⁶	8.500
38/45	12	45	0,455	400,6 x10 ⁻⁶	7.100

A [mm]	G [mm]	L [mm]	I [mm]	M [mm]	N [mm]	S [mm]	P [mm]	c	t [mm]	Fig.
Aluminium Hubs										
14	-	22	7	8	6	01	6	M3	3,5	1
20	7,2	30	10	10	8	01	2	M3	5	1
30	10,5	35	11	13	10	1,5	2	M4	5	2
40	18	66	25	16	12	02	3,5	M5	10	2
55	27	78	30	18	14	02	4	M5	10	2
65	30	90	35	20	15	2,5	5,2	M6	15	2
80	38	114	45	24	18	03	5,6	M8	15	2

Bore tolerance: H7 - JS9 (DIN 6985/1) keyway

W	Weight	kg
J	Moment of torque	kgm ²
n _{max}	max. rpm	min ⁻¹

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“M” execution with clamp hubs

This type of coupling enables quick, sure fixing without any shaft-hub backlash. With the keyless coupling type the torque applied for tightening down the screws (Ms) must be as given in the table.

The M coupling type is available with or without keyway.

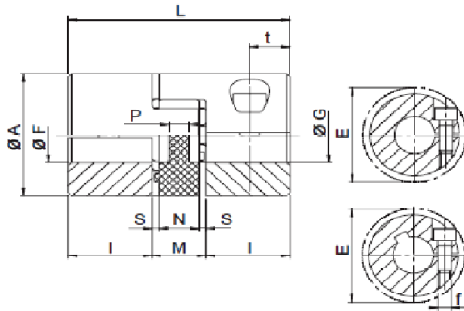


Fig. 1

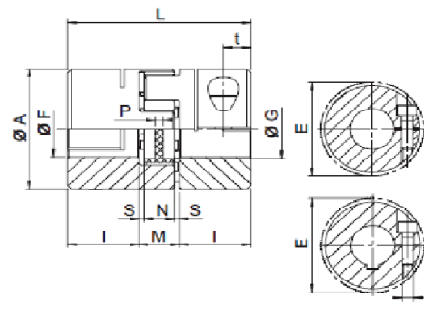


Fig. 2

Type	F min [mm]	F max [mm]	f	MS [Nm]	Hub		n _{max} [min ⁻¹]
					W [kg]	J [kgm ²]	
Aluminium Hubs							
7	3	7	M2	000	0,003	0,085 x10 ⁻⁶	40.000
9	4	9	M2,5	001	0,007	0,42 x10 ⁻⁶	28.000
14	6	15	M3	1,4	0,018	2,6 x10 ⁻⁶	19.000
19/24	10	20	M6	11	0,071	18,1 x10 ⁻⁶	14.000
24/28	10	28	M6	11	0,156	74,9 x10 ⁻⁶	10.600
28/38	14	35	M8	25	0,240	163,9 x10 ⁻⁶	8.500
38/45	19	45	M8	25	0,440	465,5 x10 ⁻⁶	7.100

Pos. cava	A [mm]	G [mm]	L [mm]	I [mm]	M [mm]	N [mm]	S [mm]	P [mm]	t [mm]	E [mm]	Fig.
-	14	-	22	7	8	6	01	6	4	015	1
-	20	7,2	30	10	10	8	01	2	5	23,4	1
180°	30	10,5	35	11	13	10	1,5	2	5,5	32,2	1
120°	40	18	66	25	16	12	02	3,5	12	45,7	1
90°	55	27	78	30	18	14	02	4	12	56,4	2
90°	65	30	90	35	20	15	2,5	5,2	13,5	72,6	2
90°	80	38	114	45	24	18	03	5,6	16	83,3	2

From size 7 to 19/24: single slot execution, from size 24/28 to 38/45: double slot execution

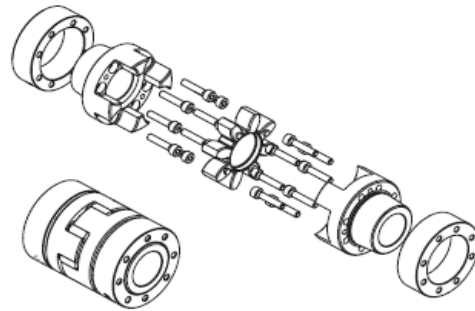
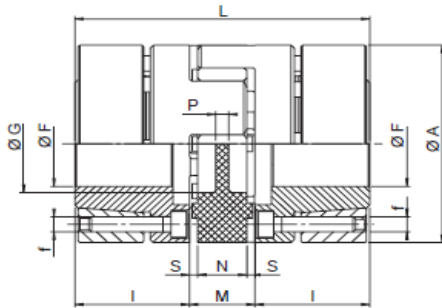
M _S	Screw tightening torque		Nm
W	Weight	kg	kg
J	Moment of torque	kgm ²	kgm ²
n _{max}	max. rpm	min ⁻¹	min ⁻¹

TRASCO[®] ES backlash coupling

“A” type - shrink disc execution

This type of coupling provides excellent kinetic uniformity. Furthermore, the absence of keys or grub screws makes it a very well balanced coupling and greatly facilitates installation and removal.

An exact axial and radial positioning is very easy. The absence of keyways also avoids fretting corrosion and backlash between the shaft and the hub. This is the ideal type of coupling for applications requiring precision and / or high rotational speeds.



Type	F min [mm]	F max [mm]	f	screws/locking-element	MS [Nm]	Hub		n _{max} [min ⁻¹]
						W [kg]	J [kgm ²]	
Aluminium Hubs and Steel Locking Element								
14	6	14	M3	4	1,3	0,049	7 x10 ⁻⁶	28.000
19/24	10	20	M4	6	3,0	0,120	30 x10 ⁻⁶	21.000
24/28	15	28	M5	4	6,0	0,280	135 x10 ⁻⁶	15.500
28/38	19	38	M5	8	6,0	0,450	315 x10 ⁻⁶	13.200
38/45	20	45	M6	8	10,0	0,950	960 x10 ⁻⁶	10.500

A [mm]	G [mm]	L [mm]	I [mm]	M [mm]	N [mm]	S [mm]	P [mm]
Aluminium Hubs and Steel Locking Element							
30	10,5	50	18,5	13	10	1,5	2,0
40	18,0	66	25,0	16	12	2,0	3,5
55	27,0	78	30,0	18	14	2,0	4,0
65	30,0	90	35,0	20	15	2,5	5,2
80	38,0	114	45,0	24	18	3,0	5,6

M _s	Screw tightening torque	Nm
W	Weight	kg
J	Moment of torque	kgm ²
n _{max}	max. rpm	min ⁻¹

Technical characteristics

The following technical characteristics apply to all types of TRASCO® ES couplings.

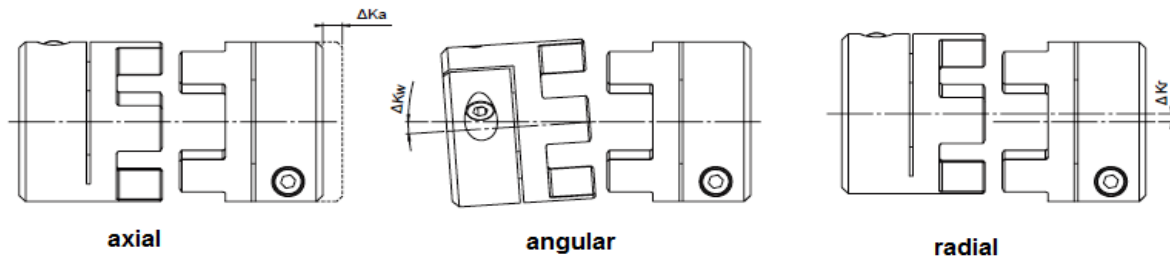
TRASCO® ES couplings withstand axial, radial and angular misalignment. Even after operating for an extended period with a misalignment there is still zero backlash because the elastic element is only stressed by pressure loads.

When an application causes a high degree of misalignment a double flexing type can be provided which avoids the formation of reaction forces. Please contact our engineering office.

Type	Shore Härte	T _{KN} [Nm]	T _{Kmax} [Nm]	CT stat. [Nm/rad]	CT dyn. [Nm/rad]	Cr [Nm/rad]	ΔKa [mm]	ΔKr [mm]	ΔKw [°]
7	92 Sh.A (gelb)	1,2	2,4	14,3	43,0	219,0	0,6	0,10	1,0
	98 Sh.A (rot)	2,0	4,0	22,9	69,0	421,0	0,6	0,06	0,9
	64 Sh.D (grün)	2,4	4,8	34,8	103,0	630,0	0,6	0,04	0,8
9	92 Sh.A (gelb)	3,0	6,0	31,5	95,0	262,0	0,8	0,13	1,0
	98 Sh.A (rot)	5,0	10,0	51,6	155,0	518,0	0,8	0,08	0,9
	64 Sh.D (grün)	6,0	12,0	74,6	224,0	739,0	0,8	0,05	0,8
14	92 Sh.A (gelb)	7,5	15,0	114,6	344,0	336,0	1,0	0,15	1,0
	98 Sh.A (rot)	12,5	25,0	171,9	513,0	604,0	1,0	0,09	0,9
	64 Sh.D (grün)	16,0	32,0	234,2	702,0	856,0	1,0	0,06	0,8
19/24	80 Sh.A (blau)	5,0	10,0	370,0	1120,0	740,0	1,2	0,15	1,1
	92 Sh.A (gelb)	10,0	20,0	820,0	1920,0	1260,0	1,2	0,10	1,0
	98 Sh.A (rot)	17,0	34,0	990,0	2350,0	2210,0	1,2	0,06	0,9
	64 Sh.D (grün)	21,0	42,0	1470,0	4470,0	2970,0	1,2	0,04	0,8
24/28	80 Sh.A (blau)	17,0	34,0	860,0	1390,0	840,0	1,4	0,18	1,1
	92 Sh.A (gelb)	35,0	70,0	2300,0	5130,0	1900,0	1,4	0,14	1,0
	98 Sh.A (rot)	60,0	120,0	3700,0	8130,0	2940,0	1,4	0,10	0,9
	64 Sh.D (grün)	75,0	150,0	4500,0	11500,0	4200,0	1,4	0,07	0,8
28/38	80 Sh.A (blau)	46,0	92,0	1370,0	2350,0	990,0	1,5	0,20	1,3
	92 Sh.A (gelb)	95,0	190,0	3800,0	7270,0	2100,0	1,5	0,15	1,0
	98 Sh.A (rot)	160,0	320,0	4200,0	10800,0	3680,0	1,5	0,11	0,9
	64 Sh.D (grün)	200,0	400,0	7350,0	18400,0	4900,0	1,5	0,08	0,8
38/45	92 Sh.A (gelb)	190,0	380,0	5600,0	12000,0	2900,0	1,8	0,17	1,0
	98 Sh.A (rot)	325,0	650,0	8140,0	21850,0	5040,0	1,8	0,12	0,9
	64 Sh.D (grün)	405,0	810,0	9900,0	33500,0	6160,0	1,8	0,09	0,8

All technical data are valid for rotation speed of 1500 rpm and a working temperature of 30° C.
 For linear speed over 30 m/s, it is recommended to balance dynamically the couplings.

Misalignments



Operating Temperature Range

The operating temperature range for the TRASCO® ES couplings depends on the type of elastic element.

For the 92 Sh. A (yellow) the range is between -40 and +90°C, and for 98 Sh.A (red) between -30 bis +90°C.

Peak temperatures as high as 120°C can be tolerated for brief instances.

High operating temperatures can cause the elastic element to lose a considerable amount of elasticity, thus substantially lowering the capacity as regards torque.