Spider

The gear ring is made of a particular polyurethane resin which shows great advantages in comparison to the standard polyurethans on the market.
In fact it is very resistant to aging and hydrolysis (therefore, also suitable for tropical climates) as well as fatigue proof and abrasion proof. It is self-dampening and shows a great resistance to the main chemical agents, acids, oils, and ozone.
Special types of gear rings are available in order to provide the right solution for each specific application covering a large range of temperatures and resisting specific chemical agents.

Standard spiders					
(Shore)	Colour	Compound	Admissible Temperature [°C]		Applications
			on work	peaks	
92 Sh A	Yellow	Polyurethane	from - 40 to + 90	from - 50 to + 120	• the most of industrial application (low-mid power)
98 Sh A	Red	Polyurethane	from - 30 to + 90	from - 40 to + 120	• high torque – narrow angular misalignment – torsion rigidity
64 Sh D	Green	Polyurethane	from - 30 to + 110	from - 30 to + 130	• dampened areas – internal combustion engines

Spiders for special applications					
(Shore)	Colour	Compound	Admissible Temperature [°C]		Applications
			on work	peaks	
94 Sh A-T	Orange	Polyurethane	from - 50 to + 110	from - 60 to + 130	• internal combustion engines / high dynamic solicitations / highly dampened areas
64 Sh D-H	Green	Hytrel	from - 50 to + 110	from - 60 to + 150	• high solicitation applications / high torsion rigidity / high temperature areas
PA	White	Polyurethane	from - 20 to + 110	from - 30 to + 150	• high torsion rigidity / high temperature areas / high resistance

TRASCO® coupling sizing as per DIN 740/2

TRASCO® coupling sizing is made according to DIN 740/2. Couplings must be selected to ensure that the max feasible torque is never exceeded during operation.
It is necessary to have correct sizing, so that all conditions hereunder are respected.

1) Verify the nominal torque
The nominal torque of the coupling must be higher or equal to the nominal torque of the drive multiplied by the temperature safety factor.

$$T_{KN} \geq T_N \cdot S_\theta \quad [Nm]$$

Note that:

$$T_N = 9550 \frac{P_N}{n} \quad [Nm]$$

Where P_N is the motor nominal power in kW.

2) Verify the maximum torque
The max torque of the coupling must be higher or equal to the starting torque Ts multiplied by the safety factors S_θ, S_z, S_u where S_u is the higher value between driver and driven units.

$$T_{Kmax} \geq T_S \cdot S_\theta \cdot S_Z \cdot S_u \quad [Nm]$$

3) Verify torque with reversal
In case of torque with reversals it must be verified that:

$$T_{KW} \geq T_W \cdot S_\theta \quad [Nm]$$

where *Tkw* = torque with reversal, which the coupling can bear, and *Tw* = torque variation of the drive.

In case of drives with high torsional vibrations (eg. piston compressors, combustion engine) it is recommended to make a torsional vibration calculations in order to guarantee the correct functioning of the coupling. Please consult our technical office.

Shock load safety factor

Shock load type	S_U
Light	1,4
Medium	1,5
Hard	1,8

Temperature safety factor

T (°C)	–30°C / +30°C	+40°C	+60°C	+80°C
S_θ	1	1,2	1,4	1,8

Safety factor for frequency of starting

Starting/h	0÷100	101÷200	201÷400	401÷800
S_Z	1	1,2	1,4	1,6

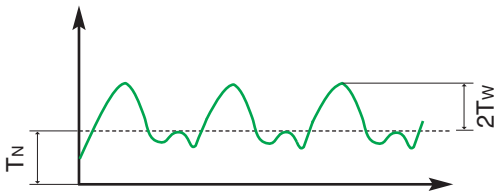
Hub shaft connection check
Hub shaft connection must always be checked by the user. It is important to verify the maximum torque in the drive is lower than the torque which the hub shaft connection can bear. In case of keyway connection, it is important to verify the tensile strength of the hub material with the load which the keyway seat must transmit.

color	Coupling nominal torque	Nm
T_{Kmax}	Coupling maximum torque	Nm
T_{KW}	Torque with reversal transmissible by the coupling	Nm
T_N	Motor nominal torque	Nm
T_S	Motor peak torque	Nm
T_W	Torque with reversal of the machine	Nm

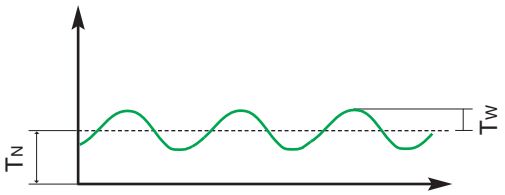
S_θ	Temperature factor	
S_Z	Start frequency factor	
S_u	Motor or driven-side shock factor	
P_N	Motor nominal torque	kW
n	rpm	min^{-1}

Type of stress

Periodic



Harmonic



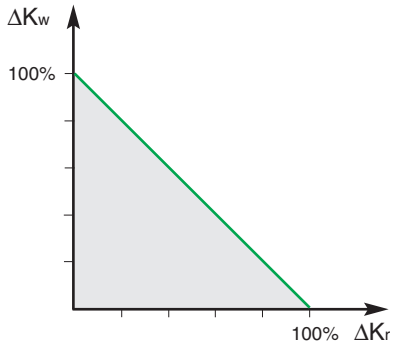
Misalignment

Type	ΔK_{aP} [mm]	ΔK_{aS} [mm]	ΔK_r [mm]	ΔK_w [°]
19/24	1,2	-	0,20	1,30
24/32	1,4	1,1	0,22	1,30
28/38	1,5	1,2	0,25	1,30
38/45	1,8	1,4	0,28	1,30
42/55	2,0	1,6	0,32	1,30
48/60	2,1	1,7	0,36	1,30
55/70	2,2	1,8	0,38	1,30
65/75	2,6	2,0	0,42	1,30
75/90	3,0	2,4	0,48	1,30
90/100	3,4	2,8	0,50	1,30
100/110	3,8	3,0	0,52	1,30
110/125	4,2	3,2	0,55	1,30
125/145	4,6	3,4	0,60	1,30

n=1500 min^{-1}

The values shown in the table for radial and angular misalignment, must be corrected in case they are simultaneously acting on the coupling.

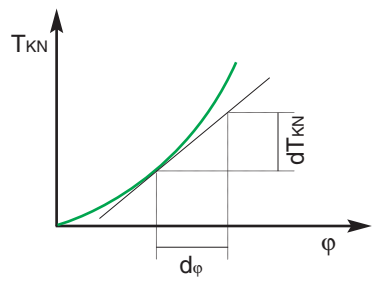
The sum of the admissible value (A) and the respective values shown in the table must be lower or equal to 1.



$$\frac{\Delta K_{rA}}{\Delta K_r} + \frac{\Delta K_{wA}}{\Delta K_w} \leq 1$$

ΔK_{aP}	Maximum axial misalignment - "P" execution	mm
ΔK_{aS}	Maximum axial misalignment - "S" execution	mm
ΔK_r	Maximum radial misalignment	mm
ΔK_w	Maximum angular misalignment	°

Dynamic torsional rigidity



Dynamic torsional rigidity C_{Tdin} is the first derivate of the nominal torque of half coupling in respect to the torsion angle. φ is the torsion angle of half coupling in respect to the second half.

As a general rule, C_{Tdin} is greater than C_T and depends on the stress acting on the coupling.

Technical performances

The technical performances below refer to all types of TRASCO® executions and are valid for the indicated spiders when couplings are correctly selected.

For particular applications needed, such as very high chemical resistance, spiders made of special material are available. Contact our Technical Department.

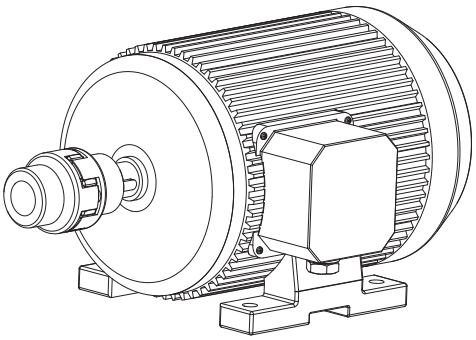
Spider - 92 Sh A - YELLOW														
Technical features			Type											
			19/24	24/32	28/38	38/45	42/55	48/60	55/70	65/75	75/90	90/100	100*	110*	125*
Torque	T_{KN}	[Nm]	10	35	95	190	265	310	410	625	1280	2400	3300	4800	6650
	T_{Kmax}	[Nm]	20	70	190	380	530	620	820	1250	2560	4800	6600	9600	13300
	T_{KW}	[Nm]	2,7	9	25	49	69	81	107	163	333	624	858	1248	1729
Max. speed	n (v=30m/s)	[min^{-1}]	14000	10600	8500	7100	6000	5600	4750	4250	3550	2800	2500	2240	2000
	n (v=40m/s)	[min^{-1}]	19000	14000	11800	9500	8000	7100	6300	5600	4750	3750	3350	3000	2650
Dynamic torsional rigidity	C_{Tdin} (1 T_{KN})	[Nm/rad]	1280	4860	10900	21050	23740	36700	50720	97130	113320	190090	253080	311610	474960
	C_{Tdin} (0,75 T_{KN})	[Nm/rad]	1050	3980	8940	17260	19470	30090	41590	79650	92920	155870	207530	255520	389390
	C_{Tdin} (0,5 T_{KN})	[Nm/rad]	800	3010	6760	13050	14720	22750	31450	60220	70260	117860	156910	193200	294410
	C_{Tdin} (0,25 T_{KN})	[Nm/rad]	470	1790	4010	7740	8730	13490	18640	35700	41650	69860	93010	114520	174510
Torsion angle	φ (T_{KN})	(°)	3,2°												
	φ (T_{Kmax})	(°)	5°												
Dampening factor	Ψ	(-)	0,80												
Resonance factor	V_R	(-)	7,90												

*= 95 Sh A

Spider - 98 Sh A - RED											
Technical features			Type								
			19/24	24/32	28/38	38/45	42/55	48/60	55/70	65/75	75/90	90/100
Torque	T_{KN}	[Nm]	17	60	160	325	450	525	680	950	1950	3600
	T_{Kmax}	[Nm]	34	120	320	650	900	1050	1250	1900	3900	7200
	T_{KW}	[Nm]	4,4	16	42	85	117	137	178	245	500	936
Max. speed	n (v=30m/s)	[min^{-1}]	14000	10600	8500	7100	6000	5600	4750	4250	3550	2800
	n (v=40m/s)	[min^{-1}]	19000	14000	11800	9500	8000	7100	6300	5600	4750	3750
Dynamic torsional rigidity	C_{Tdin} (1 T_{KN})	[Nm/rad]	2920	9930	26770	48570	54500	65290	94970	129510	197500	312200
	C_{Tdin} (0,75 T_{KN})	[Nm/rad]	2390	8140	21950	39830	44690	53540	77880	106200	161950	256000
	C_{Tdin} (0,5 T_{KN})	[Nm/rad]	1810	6160	16600	30110	33790	40480	58880	80300	122450	193560
	C_{Tdin} (0,25 T_{KN})	[Nm/rad]	1070	3650	9840	17850	20030	24000	34900	47600	72580	114730
Torsion angle	φ (T_{KN})	(°)	3,2°									
	φ (T_{Kmax})	(°)	5°									
Dampening factor	Ψ	(-)	0,80									
Resonance factor	V_R	(-)	7,90									

Spider - 64 Sh D - GREEN											
Technical features			Type								
			19/24	24/32	28/38	38/45	42/55	48/60	55/70	65/75	75/90	90/100
Torque	T_{KN}	[Nm]	21	75	200	405	560	655	825	1175	2410	4500
	T_{Kmax}	[Nm]	42	150	400	810	1120	1310	1650	2350	4820	9000
	T_{KW}	[Nm]	5,5	19,5	52	105	145	170	215	305	625	1170
Max. speed	n (v=30m/s)	[min^{-1}]	14000	10600	8500	7100	6000	5600	4750	4250	3550	2800
	n (v=40m/s)	[min^{-1}]	19000	14000	11800	9500	8000	7100	6300	5600	4750	3750
Dynamic torsional rigidity	C_{Tdin} (1 T_{KN})	[Nm/rad]	5350	15110	27520	70150	79860	95510	107920	151090	248220	674520
	C_{Tdin} (0,75 T_{KN})	[Nm/rad]	4390	12390	22570	57520	65490	78320	88500	123900	203540	553110
	C_{Tdin} (0,5 T_{KN})	[Nm/rad]	3320	9370	17060	43490	49520	59220	66910	93680	153900	418200
	C_{Tdin} (0,25 T_{KN})	[Nm/rad]	1970	5550	10120	25780	29350	35100	39660	55530	91220	247890
Torsion angle	φ (T_{KN})	(°)	2,5°									
	φ (T_{Kmax})	(°)	3,6°									
Dampening factor	Ψ	(-)	0,75									
Resonance factor	V_R	(-)	8,50									

TRASCO® couplings for motors according to IEC standards (spider hardness 92 shore)

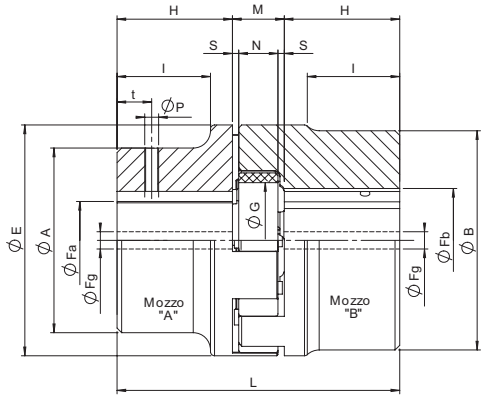


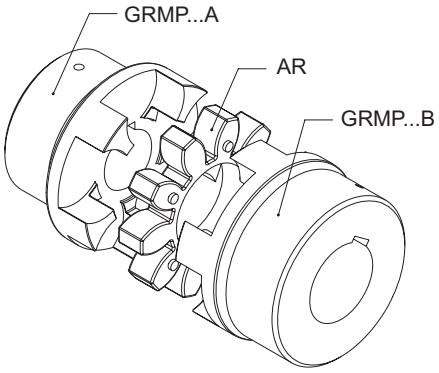
Type	3000 [1/min]				1500 [1/min]				1000 [1/min]				750 [1/min]				d x l [mm]	
	P_N [kW]	T_N [Nm]	Type	K	P_N [kW]	T_N [Nm]	Type	K	P_N [kW]	T_N [Nm]	Type	K	P_N [kW]	T_N [Nm]	Type	K	2 poles	4 - 6 - 8 poles
80	0,75	2,5	**19/24**	9,2	0,55	3,7	**19/24**	6,2	0,37	3,9	**19/24**	5,8	0,18	2,5	**19/24**	9,2	19x40	
	1,1	3,7		6,2	0,75	5,1		4,5	0,55	5,8		3,9	0,25	3,5		6,5		
90 S	1,5	5		4,6	1,1	7,5		3	0,75	8		2,8	0,37	5,3		4,3	24x50	
90 L	2,2	7,4		3,1	1,5	10		2,3	1,1	12	**24/32**	6,6	0,55	7,9		2,9		
100 L	3	9,8	**24/32**	8,1	2,2	15	**24/32**	5,3	1,5	15		5,3	0,75	11	**24/32**	7,2	28x60	
					3	20		4					1,1	16		5		
112 M	4	13		6,1	4	27		2,9	2,2	22		3,6	1,5	21		3,8		
132 S	5,5	18	**28/38**	12,7	5,5	36	**28/38**	6,3	3	30	**28/38**	7,6	2,2	30	**28/38**	7,6	38x80	
	7,5	25		9,2														
132 M					7,5	49		4,6	4	40		5,7	3	40		5,7		
									5,5	55		4,1						
160 M	11	36	**38/45**	12,5	11	72	**38/45**	6,2	7,5	74	**38/45**	6	4	54	**38/45**	8,3	42x110	
	15	49		9,1									5,5	74		6		
160 L	18,5	60		7,5	15	98		4,5	11	108		4,1	7,5	100		4,5		
180 M	22	71	**42/55**	8,7	18,5	121	**42/55**	5,1			**42/55**				**42/55**		48x110	
180 L					22	144		4,3	15	148		4,1	11	145		4,2		
200 L	30	97		6,3	30	196		3,1	18,5	181		3,4	15	198		3,1	55x110	
	37	120		5,1					22	215		2,8						
225 S					37	240	**48/60**	3			**48/60**		18,5	244	**48/60**	2,9	55x110	60x140
225 M	45	145		4,2	45	292		2,4	30	293		2,4	22	290		2,4		
250 M	55	177	**48/60**	4	55	356	**55/70**	2,4	37	361	**55/70**	2,3	30	392	**65**	2,6	60x140	65x140
280 S	75	241	**55/70**	3,5	75	484	**75/90**	5,1	45	438	**75**	5,7	37	483	**75**	5,1	65x140	75x140
280 M	90	289		2,9	90	581		4,3	55	535		4,6	45	587		4,2		
315 S	110	353		2,4	110	707	**75/90**	3,5	75	727	**75/90**	3,4	55	712	**75/90**	3,5		80x170
315 M	132	423	**75/90**	5,9	132	849		2,9	90	873		2,8	75	971		6,2		
315 L	160	513		4,8	160	1030	**90/100**	5,9	110	1070	**90**	5,7	90	1170	**90**	5,2		
	200	641		3,9	200	1290		4,7	132	1280		4,7	110	1420		4,2		
355 L	250	801		3,1	250	1610	**90/100**	3,7	160	1550	**90/100**	3,9	132	1710	**90/100**	3,5	75x140	95x170
									200	1930		3,1	160	2070	**100**	2,9		
	315	1010	**90/100**	6	315	2020		3	250	2420	**100**	2,5	200	2580		2,3		
400 L	355	1140		5,3	355	2280	**100**	2,6	315	3040	**100**	2	250	3220	**100**	1,8	80x170	110x210
	400	1280		4,7	400	2560		2,3										

P_N	Motor nominal torque	kW
T_N	Motor nominal torque	Nm
K	Safety factor	
d x l	Motor shaft's end	mm

“GR” base program

TRASCO® couplings are dimensionally manufactured to hub types “A” and “B”, the difference being the maximum shaft diameter which hubs can accept (corresponding respectively to the first and second code number).
The long hub execution “L” (allows full cover of the motor shaft) is available in both “A” and “B” executions.
Materials used for manufacture are:
- cast iron grade GG25 (all sizes);
- aluminum, diecasting
- cast iron grade GGG40 and steel upon request.





Dimensional specification hubs in GG25

Type	Fa max [mm]	Fb max [mm]	Fg [mm] execution A	Fg [mm] execution B	E [mm]	A [mm]	B [mm]	A H [mm]	A L [mm]	A I [mm]	B execution H [mm]	B execution L [mm]	B execution I [mm]	AL execution H [mm]	AL execution L [mm]	AL execution I [mm]	BL execution H [mm]	BL execution L [mm]	BL execution I [mm]	M [mm]	S [mm]	N [mm]	G [mm]
19/24*	-	24	-	-	40	-	40	25	66	-	25	66	-	-	-	-	50	-	-	16	2	12	18
24/32	24	32	8	10	55	40	55	30	78	24	30	78	-	50	128	44	60	128	-	18	2	14	27
28/38	28	38	8	10	65	48	65	35	90	28	35	90	-	60	160	53	80	160	-	20	2,5	15	30
38/45	38	45	10	12	80	66	80	45	114	37	45	114	-	80	214	72	110	214	-	24	3	18	38
42/55	42	55	10	12	95	75	95	50	126	40	50	126	-	110	246	100	110	246	-	26	3	20	46
48/60	48	60	12	12	105	85	105	56	140	45	56	140	-	110	278	99	140	278	-	28	3,5	21	51
55/70	55	70	15	15	120	98	120	65	160	52	65	160	-	110	280	97	140	280	-	30	4	22	60
65/75	65	75	15	15	135	115	135	75	185	61	75	185	-	140	315	126	140	315	-	35	4,5	26	68
75/90	75	90	15	15	160	135	160	85	210	69	85	210	-	140	350	124	170	350	-	40	5	30	80
90/100	90	100	20	20	200	160	180	100	245	81	100	245	81	170	425	151	210	425	191	45	5,5	34	100
100/110	115	-	45	-	225	180	-	110	270	89	110	270	-	-	-	-	-	-	-	50	6	38	113
110/125	125	-	55	-	255	200	-	120	295	96	120	295	-	-	-	-	-	-	-	55	6,5	42	127
125/145	145	-	55	-	290	230	-	140	340	112	140	340	-	-	-	-	-	-	-	60	7	46	147

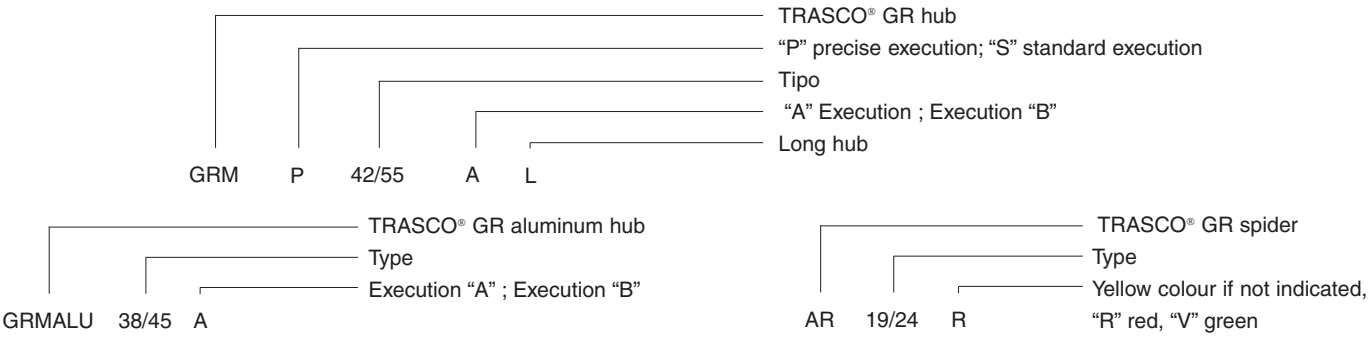
* Sintered steel

Valid bore for “P” execution

Dimensional specification hubs in aluminum

Type	Fa max [mm]	Fb max [mm]	Fg [mm] execution A	Fg [mm] execution B	E [mm]	A [mm]	B [mm]	L [mm]	H [mm]	M [mm]	S [mm]	N [mm]	I [mm]	G [mm]
19/24	-	24	-	4	40	40	40	66	25	16	2	12	-	18
24/32	24	32	6	22	55	40	55	78	30	18	2	14	24	27
28/38	28	38	8	26	65	48	65	90	35	20	2,5	15	28	30
38/45	38	45	10	36	80	66	77	114	45	24	3	18	37	38
42/55	-	55	-	15	95	-	95	126	50	26	3	20	-	46
48/60	-	60	-	24	105	-	105	140	56	28	3,5	21	-	51

Order form



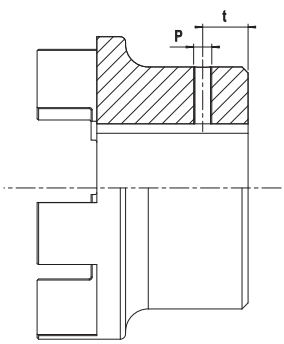
Stock range
Hubs with finished bore H7, keyway, stop screw

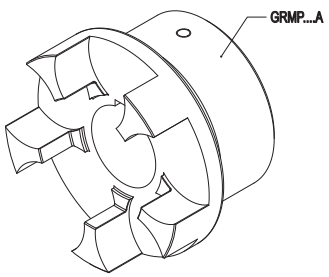
Type		19/24		24/32				28/38				38/45				42/55			48/60			55/70		65/75	75/90	90/100
Material*		ALU	AC	ALU		GG		ALU		GG		ALU		GG		ALU	GG		ALU	GG		GG		GG	GG	GG
Hub execution		B	B	A	B	A	B	A	B	A	B	A	B	A	B	B	A	B	B	A	B	A	B	A	A	A
Stock range bore [mm]	10	●	●																							
	11	●	●																							
	12	●	●																							
	14	●	●	●		●		●		●																
	15	●	●	●		●		●		●																
	16	●	●	●		●		●		●																
	18		●	●		●		●		●																
	19	●	●	●		●		●		●																
	20	●	●	●		●		●		●																
	22			●		●		●		●				●												
	24	●	●	●	●	●	●	●		●		●		●												
	25				●		●	●		●		●		●		●	●									
	28				●		●	●		●		●		●		●	●									
	30								●		●	●		●		●	●			●		●				
	32										●	●		●		●	●		●	●		●				
	35								●	●	●	●		●		●			●	●		●				
	38								●		●	●		●		●	●		●	●		●				
	40												●		●	●	●		●	●		●		●		
	42												●		●	●	●		●	●		●				
	45															●		●	●	●		●		●	●	
	48															●		●	●	●		●		●	●	
	50															●		●	●		●	●		●	●	●
	55															●		●	●		●	●		●	●	●
	60																		●		●		●	●	●	●
	65																						●	●	●	●
	70																						●		●	●
	75																								●	●
	80																									●
	85																									●
	90																									●

*ALU = Aluminum - AC = Steel - GG = Cast iron

Setscew specifics per hub dimension

Hub dimension	P [mm]	t [mm]
19	M5	10
24/32	M5	10
28/38	M6	15
38/45	M8	15
42/55	M8	20
48/60	M8	20
55/70	M10	20
65/75	M10	20
75/90	M10	25
90/100	M12	30
100/100	M12	30
110/125	M16	35
125/145	M16	40



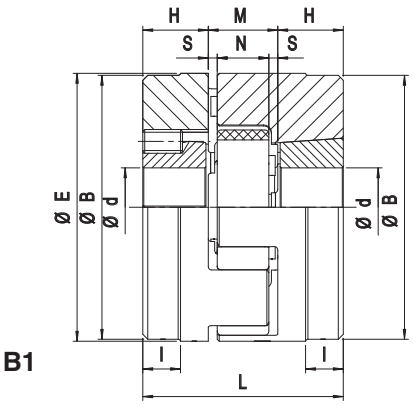


“GRB” taper bush series

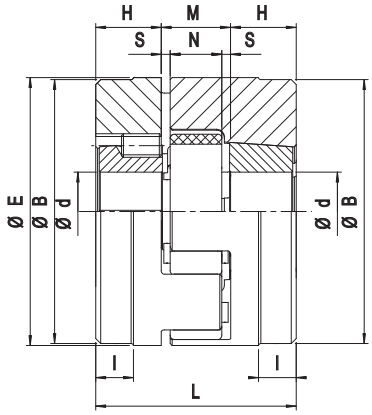
TRASCO® couplings type GRB are manufactured in cast iron GG25. They combine the typical high performances of standard couplings with the mounting and dismounting advantages offered by the SER-SIT® taper bush:
- they are ready to be mounted;
- they are manufactured in two different executions:

B1 and B2 (see picture);

- they solve the problem of fighting corrosion;
- hubs type B1 may be axially moved for spider replacement;
- they may be used in all types of machinery.



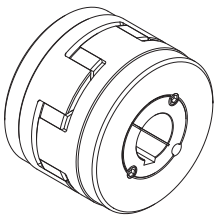
B1

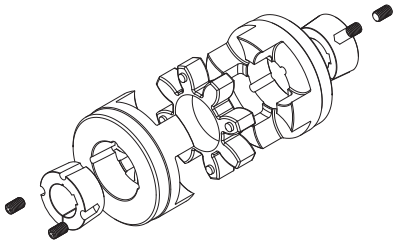


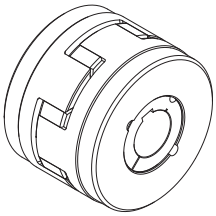
B2

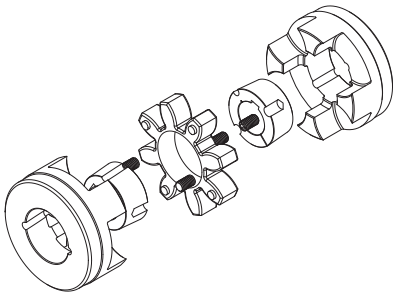
Type	Taper bush	E [mm]	B [mm]	L [mm]	H [mm]	M [mm]	S [mm]	N [mm]	I [mm]
28/38	1108 (2820)	65	65	66	23	20	2,5	15	-
38/45	1108 (2820)	80	78	70	23	24	3	18	15
42/55	1610 (4025)	95	94	78	26	26	3	20	16
48/60	1615 (4040)	105	104	106	39	28	3,5	21	28
55/70	2012 (5030)	120	118	96	33	30	4	22	20
65/75	2012 (5030)	135	133	101	33	35	4,5	26	19
75/90	2517 (6545)	160	158	130	45	40	5	30	36
90/100 *	3535 (9090)	200	180	223	89	45	5,5	34	70

* Only “B1” execution

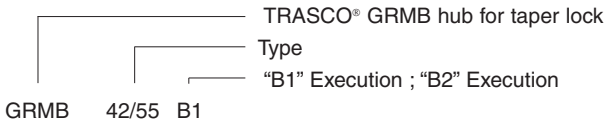


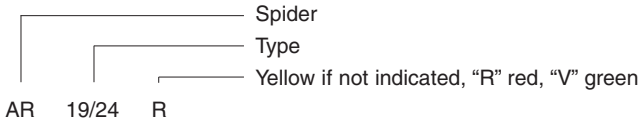






Order form





Taper lock type	Transmissible torque [Nm]
1108 (2820)	150
1610 (4025)	490
1615 (4040)	490
2012 (5030)	800
2517 (6545)	1300
3535 (9090)	5000