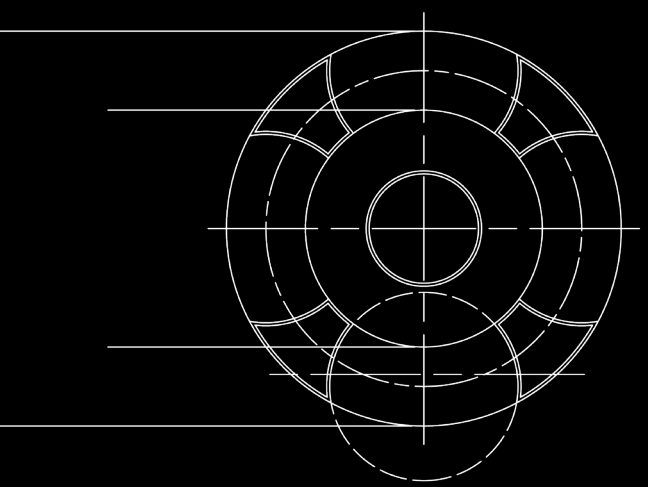
CHIARAVALLI® GROUP SpA

GIUNTI
SERIE GIFLEX GE-T

Appendice Tecnica



INTRODUCTION

Flexible torsion couplings, which are connecting devicesbetween rotating shafts, are designed to ensure shock-free torque transmission and to compensate minor alignment deviations in operation between the shafts in industrial use.
The GE-T range of flexible couplings ensures this level of performance and also provides excellent quality thanks to the machining accuracy and the choice of materials.

The general level of reliability provided by the GE-T couplings results in a long life operation.

GENERAL

The GE-T range of flexible couplings represents torsionally flexible mechanical couplings capable of transmitting a twisting moment proportional to the flexible yield of the intermediate component. The couplings must be capable of effectively absorbing possible torsional vibrations due to the load or self-induced, to attenuate impacts and torque peaks during the start-up phase and to compensate minor angular and parallel misalignments between the shafts, however ensuring an acceptable useful working life.
These features and more in general the performance required from the coupling depend almost exclusively on the quality intermediate component.
The choice of the material used to manufacture the coupling is therefore fundamental. The curve that expresses the flexible characteristic of the intermediate component must have a progressive trend (yielding at low torque values and remaining rigid at higher torque values) to ensure operation without jerks at start-up and with a limited torsional yield at steady state conditions.
It is essential for the intermediate component to have a certain flexible hysteresis, proportional to the requiredabsorbing effect that ensures the coupling can efficiently absorb possible torsional oscillations.
Furthermore, the useful working life of the coupling depends on the flexible yield of the material comprising the intermediary component. The physical characteristics has described above are frequently in contrast with each other and compared with other basic mechanical and technological parameters. The performance of the intermediary component therefore cannot be adapted to the variety of operating conditions when only one type of material is used and therefore the materials adopted for the flexible ring gear must be differentiated.
A selected thermoplastic elastomer is selected to meet medium level needs in the basic execution. This refers to an elastomer with medium rigidity, characterised by an optimum internal dampening effect, resistant to ageing, to fatigue, to abrasion, as well as hydrolysis and to the principle chemical agents with special reference to oils and ozone. Operating temperatures lying between -40 °C and + 125 °C with brief peaks of up to 150 ° C are permitted in the case of couplings in the base execution. Alternative mixes capable of meeting every practical need have been designed and are available on request for use in extremely demanding operating conditions , or for needs that exceed average requirements.

OPERATING AND ASSEMBLY CONDITIONS

Operation of the flexible torsion couplings, such as the GE-T type or similar couplings is characterized by a proportional feature between the twisting torque and the torsion angle and by the ability to compensate limited angular and radial misalignments.
Key features of equal importance, but which are more difficult to interpret are represented by the absorbing factor and natural frequency or resonance.
To qualify its couplings, Chiaravalli Trasmissioni SpA declares permitted twisting torque values correlated to well defined torsion angle values, which has the limiting value of 5 ° C corresponding to the maximum torque value. This provides a valid guide for the progressive characteristic of the flexible curve. The maximum permitted values are shown in the case of the angular and radial misalignments, with the warning that these refer to extreme values that cannot be added together (only angular compensation or only radial compensation) and apply to standard operating conditions characterised by the following: operating torquenot exceeding the nominal torque, a rotating speed of less than 1,450 r.p.m and coupling temperature not exceeding 40° C.
The maximum rotating speed expressed in r.p.m that corresponds to maximum peripheral speed of 30 m/sec. is indicated for each coupling of the GE-T range.
This speed can be achieved with a sufficient safety margin compared to the danger of failure due to centrifugal force stress thanks to the characteristics of the material used.
Class G 2.5 dynamic balancing in compliance with ISO 1940 is recommended despite the fact that the half-couplings are fully machined on both external surfaces, if the actual operating speed exceeds 2.800 r.p.m.

Pieces available with E-coating.

Scan the QR Code to gather more information regarding e-coating

COUPLING SELECTION AND SIZING CRITERION

Couplings are sized on the basis of the physical laws of mechanics and the resistance of the materials and also complies on the provisions established in the DIN 740 standards.
the coupling is selected on the basis of the criterion, which establishes that the maximum permitted stress is never exceeded even in the most demanding operating conditions. It follows that the nominal torque declared for the coupling must be compared with a reference torque that takes into account the overloads due to the way the load is exerted and the operating conditions. The reference torque is obtained by multiplying the operating torque by a series of multiplying factors depending on the nature of the load or on the ambient temperature conditions.

LOAD DUE TO NOMINAL TORQUE

The permitted nominal coupling torque TKN nust apply for any operating temperature value equal to or greater than the driven side operating torque TLN.

$$\mathbf{TLN = 9549 \frac{(PLn)\ [Nm]}{nLn}}$$

The following condition must be satisfied , where St represents the temperature factor, to take into account overloads due to the operating temperature for the coupling.

Tk n = > TLN * St

START - UP LOAD

The drive motor delivers a drive torque during the start-up transient period which is a multiple of the nominal torque and depends on the way the masses are distributed. A similar situation occurs in the braking phase therefore, this two phases are characterised by torque impacts that have an intensitive which depends on the distribution of the masses on the drive side MA and on the driven side ML, as well as the frequency of the number of start – ups on which the start – up factor Sz depends.
The static torques for the drive side and the driven side are expressed by the following relationships:

- drive side TS = TAS *MA *SA

- driven side TS = TLS * ML * SL

MA and ML are assumed to be equal to 1, to first approximation, and if the distribution of the masses is unknown. The SA factor can be assumed as being equal to the relationship between the start – up torque and the nominal torque in the case of drives based on an electric motor.

LOAD CAUSED BY TORQUE IMPACTS

The permitted nominal coupling torque TKN max must be equal to or greater than the start-up torque increased by the temperature factor and by St and by the start-up factor Sz for any operating temperature value.

Tk n max > TS * St * Sz

Consult the CHIARAVALLI Trasmissioni Technical Department for operating conditions that foresee periodic variation or torque inversions, as well as alternate tortional stresses.

SYMBOLS

Tk n	= coupling maximum torque (Nm)
Tk max	= coupling maximum torque (Nm)
Tk w	= torque with coupling inversion (Nm)
TLN	= driven side operating torque (Nm)
TLs	= driven side static torque (Nm)
TAs	= motor side static torque (Nm)
Ts	= plant static torque (Nm)
PLn	= driven side operating power (Nm)
nLn	= driven side rotating speed (r.p.m)
St	= temperature factor
JA	= inertia moment drive site
JL	= exit side
SA	= motor side impact factor
SL	= driven side impact factor
Sz	= start-up factor
MA	= control side mass factor $\frac{JL}{JA + JL}$
ML	= driven side mass factor $\frac{JA}{JA + JL}$

INDICATIVE VALUES FOR ADJUSTMENT FACTORS:

Name	Symbol	Definition				
Temperature factor	St.	St.	1	1	1,4	1,8
		C°	-30°	+40°	+80°	+120°
			+30°			
Start-up factor	Sz.	Number of start-ups per hour				
		Start-up/hr	100	200	400	800
		Sz.	1	1,2	1,4	1,6
Impact factor	S_A/S_L					S_A/S_L
		minor start-up impacts				1,5
		medium start-up impacts				1,8
		major start-up impacts				2,2

SERVICE FACTORS:

Load condition	Operating conditins	Type of Drive	
		Electric motor	Diesel engine
UNIFORM	Regular operation without impacts or overloads	1,25	1,50
LIGHT	Regular operations with minor and infrequent impacts and overloads	1,50	2,00
MEDIUM	Irregular operation with medium overloads for a short duration and frequent but moderate impacts	2,00	2,50
HEAVY	Markedly irregular operation with very frequent impacts and overloads and of major intensity	2,50	3,00

INTRODUCTION

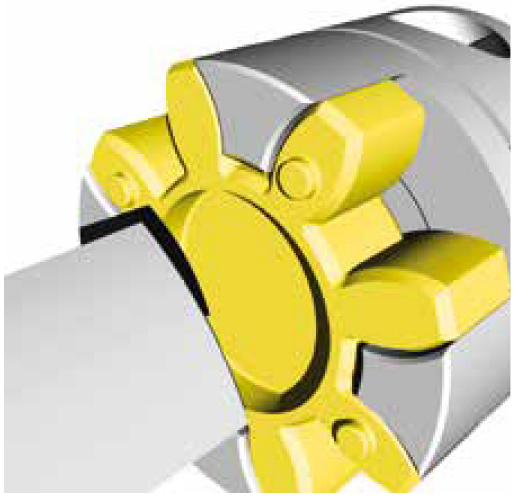
The aluminium flexible couplings GE-T SG are made of three pre-tensioned elements in backlash-free execution. They are meant for the coupling mounting and they are designed to fit low torque working units and industrial processing, where they must satisfy certain requirements.

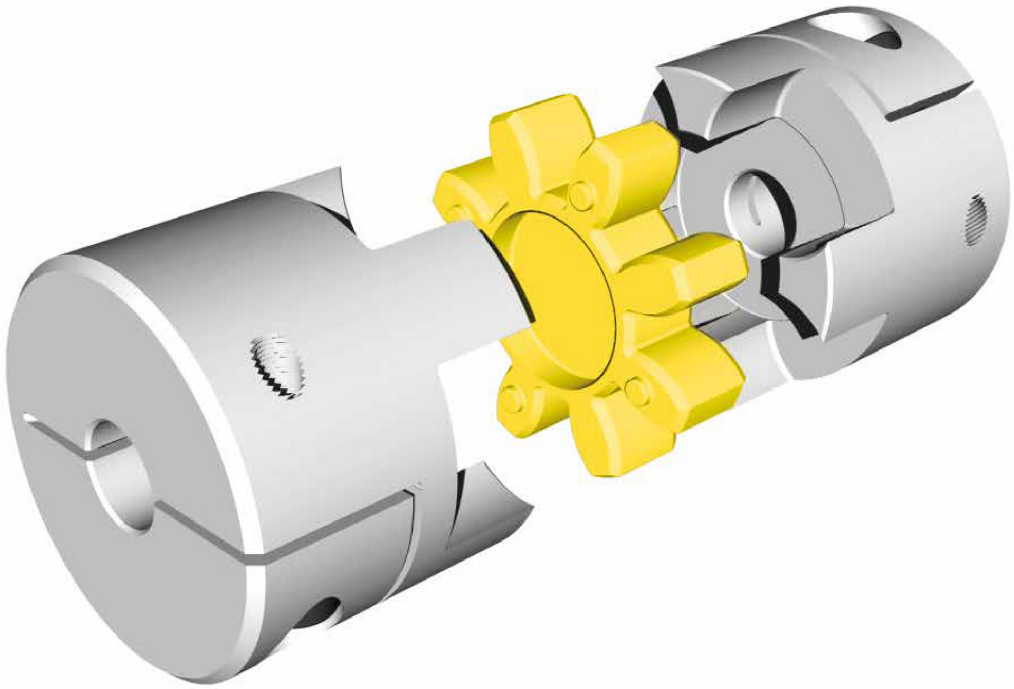
Thanks to their limited dimensions and their easy mounting, they can operate in little space and any project can take big advantages of it.

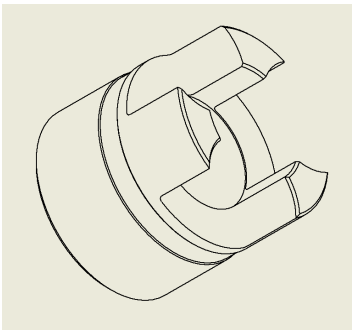
FEATURES

The buckle tightening guarantees a quick and sure fixing without extension between shaft and hub. It is however important to keep the screw tightening torque (MS) shown in the table.
Besides testing the size of the coupling given in the table, it is suggested to test the maximum torque of buckle to diameter (F).

The elastomeric element, that has a star shape, is set into the hubs' hollow seats with a light pre-tensioning , ensuring the needed transmission torque backlash-free execution.

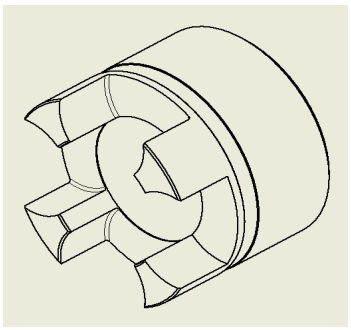






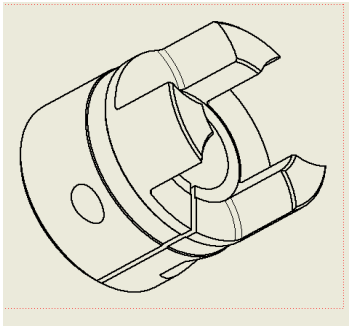
DESIGN A

Solid hub size 9 and 14 for 4-spikes elastomer, size 19 for 6-spikes elastomer



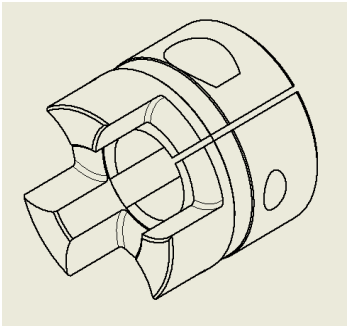
DESIGN B

Solid hub from size 24 to 38 for 8-spikes elastomer



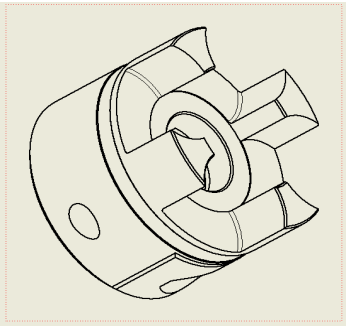
DESIGN C

With single-cut clamp from size 9 to size 19, torques suitable according to hole-diameter.
Also available with the compact version from size 9 to size 38



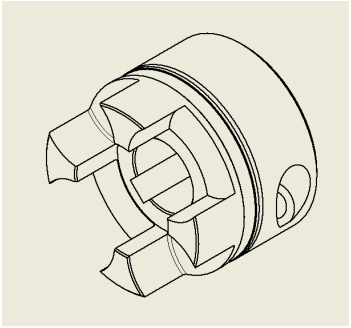
DESIGN CK

With single-cut clamp and keyway acc.to DIN 6885 - JS9 , from size 14 to size 19. Also available with the compact version from size 9 to size 38



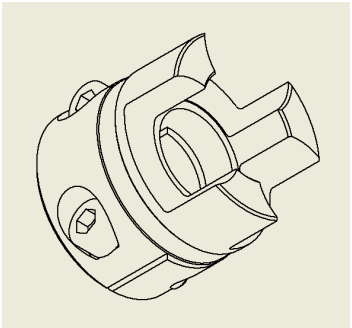
DESIGN D

With double-cut clamp from size 24 to size 38, torques suitable according to hole-diameter



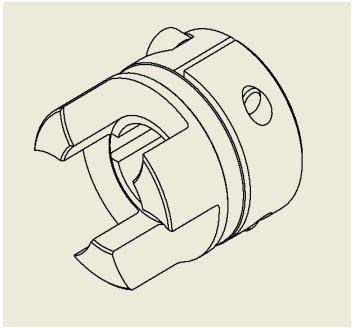
DESIGN DK

With double-cut clamp and keyway acc.to DIN 6885 - JS9 , from size 24 to size 38



DESIGN H

With 2x screws fixing clamp for radial mounting, torques suitable according to hole-diameter. Available from size 14 to size 42



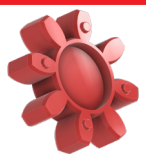
DESIGN HK

With 2x Screws fixing clamp for radial mounting and keyway acc.to DIN 6885-JS9. Available from size 14 to size 42

CHIARAVALLI GROUP BRAND GIFLEX ®
GE-T SERIES WITH ELASTIC ELEMENT – TRANSFERABLE PAIRS

BLUE 80 Sh A
POLYURETHAN

YELLOW 92/94 Sh A
POLYURETHAN



RED 96/98 Sh A
POLYURETHAN

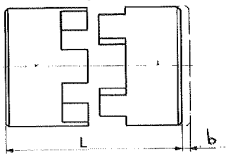
GREEN 64 Sh D
POLYURETHAN

TECHNICAL DATA

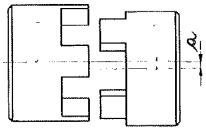
COUPLING TYPE	HARDNESS WITH SPIDER	MAX speed for type				Nm		Stiffness			Max inertia moment Kgm2 x 10^{-6}
		Design C	Design D	Design H	max	Tk n couple	Tk max couple	tors. static Nm/rad	tors. dynamic Nm/rad	radial Nm	
GE-T 9 SG	80 Sh A	19000			28000	1,8	3,6	17,02	52	125	0,57
	92/94 Sh A					3	6	31,5	95	262	
	96/98 Sh A					5	10	51,5	150	518	
GE-T 14 SG	80 Sh A	12700		12700	19000	4	8	60,2	180	153	3,25
	92/94 Sh A					7,5	15	114,6	344	336	
	96/98 Sh A					12,5	25	172	513	604	
	64 Sh D					16	32	238	702	856	
GE-T 19-24 SG	80 Sh A	9550		9550	14000	4,9	9,8	343,8	1030	740	21,9
	92/94 Sh A					10	20	573	1720	1260	
	96/98 Sh A					17	34	859	2580	2210	
	64 Sh D					21	42	2450	3820	2970	
GE-T 24-28 SG	80 Sh A		6950	6950	10600	17	34	850	1385	840	58,3
	92/94 Sh A					35	70	2280	4296	1900	
	96/98 Sh A					60	120	3700	8125	2940	
	64 Sh D					75	150	5000	11000	3700	
GE-T 28-38 SG	80 Sh A		5850	5850	8500	46	92	1360	2345	990	216,8
	92/94 Sh A					95	190	3820	7260	2100	
	96/98 Sh A					160	320	4190	10315	3680	
	64 Sh D					200	400	10010	20035	4400	
GE-T 38-45 SG	80 Sh A		4750	4750	7100	95	190	3000	6100	1400	445,2
	92/94 Sh A					190	380	4589	13752	2900	
	96/98 Sh A					325	650	7160	21485	5040	
	64 Sh D					405	810	25600	40250	6445	
GE-T 42 SG	80 Sh A		4000	4000	6000	46	92			990	2802
	92/94 Sh A					95	190	2292	6879	2100	
	96/98 Sh A					160	320	3438	10315	3680	
	64 Sh D									4400	

with radial speed more than v=30m/s dynamic balancing is needed

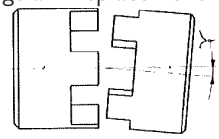
Axial Displacement



Radial Displacement



Angular Displacement



COUPLING TYPE	Displacement			
	spider GE-T SG	AXIAL b (mm)	RADIAL a (mm)	ANGULAR U(degree)
GE-T 9 SG	80 Sh A	+0,9 -0,9	0,19	1,1°
	92/94 Sh A		0,13	1,0°
	96/98 Sh A		0,08	0,9°
	64 Sh D		0,05	0,8°
GE-T 14 SG	80 Sh A	+1,0 -0,5	0,21	1,1°
	92/94 Sh A		0,15	1,0°
	96/98 Sh A		0,09	0,9°
	64 Sh D		0,08	0,8°
GE-T 19-24 SG	80 Sh A	+1,2 -0,5	0,15	1,1°
	92/94 Sh A		0,10	1,0°
	96/98 Sh A		0,08	0,9°
	64 Sh D		0,04	0,8°
GE-T 24-28 SG	80 Sh A	+1,4 -0,5	0,14	1,0°
	92/94 Sh A		0,10	0,9°
	96/98 Sh A		0,07	0,8°
	64 Sh D		0,04	0,7°
GE-T 28-38 SG	80 Sh A	+1,5 -0,5	0,15	1,0°
	92/94 Sh A		0,11	0,9°
	96/98 Sh A		0,08	0,8°
	64 Sh D		0,05	0,7°
GE-T 38-45 SG	80 Sh A	+1,8 -0,7	0,17	1,0°
	92/94 Sh A		0,12	0,9°
	96/98 Sh A		0,09	0,8°
	64 Sh D		0,06	0,7°
GE-T 42 SG	80 Sh A	+2,0 -1,0	0,19	1,0°
	92/94 Sh A		0,14	0,9°
	96/98 Sh A		0,10	0,8°
	64 Sh D		0,07	0,7°

EXAMPLE SPIDER CODE:

25 14 100 → COLOR:
100 YELLOW
102 BLUE
104 RED
106 GREEN

14 → TYPE

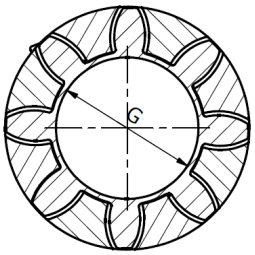
25 → 025 COUPLING GE-T SG

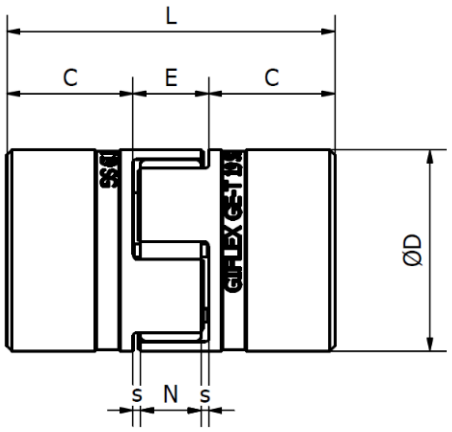
TECHNICAL DATA

HUB DESIGN A AND B - SOLID HUB
MAT ALUMINIUM

With spider
4 pointed **GE-T 09 SG**
GE-T 14 SG

6 pointed **GE-T 19-24 SG**
8 pointed **GE-T 24-28 SG**
GE-T 28-38 SG
GE-T 38-45 SG



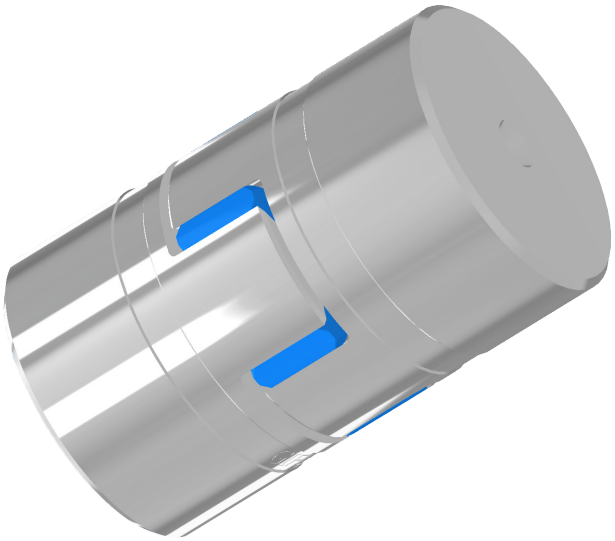


DIMENSIONS										
Coupling Type	achievable minumum bore Ø	achievable maximum bore Ø	Ø D	Ø G	L	C	E	N	S	Design
GE-T 09 SG	4	9	20	7,2	30	10	10	8	1	A
GE-T 14 SG	4	14	30	10,5	35	11	13	10	1,5	A
GE-T 19-24 SG	10	20	40	18	66	25	16	12	2	A
GE-T 24-28 SG	15	28	55	27	78	30	18	14	2	B
GE-T 28-38 SG	19	35	65	30	90	35	20	15	2,5	B
GE-T 38-45 SG	20	45	80	38	114	45	24	18	3	B

MAT: Aluminium 6082-T6 EN 573

EXAMPLE HUB CODE:

025 14 200 ⟶ 200 SOLID HUB
025 COUPLING GE-T SG
TYPE

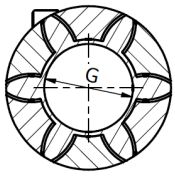


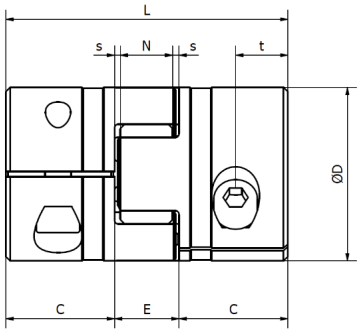
TECHNICAL DATA

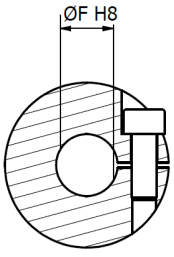
HUB DESIGN C
WITH SINGLE CUT

With spider
4 pointed **GE-T 09 SG**
GE-T 14 SG

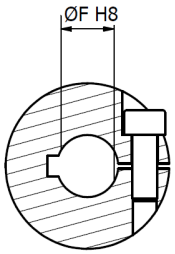
6 pointed **GE-T 19-24 SG**







DESIGN C

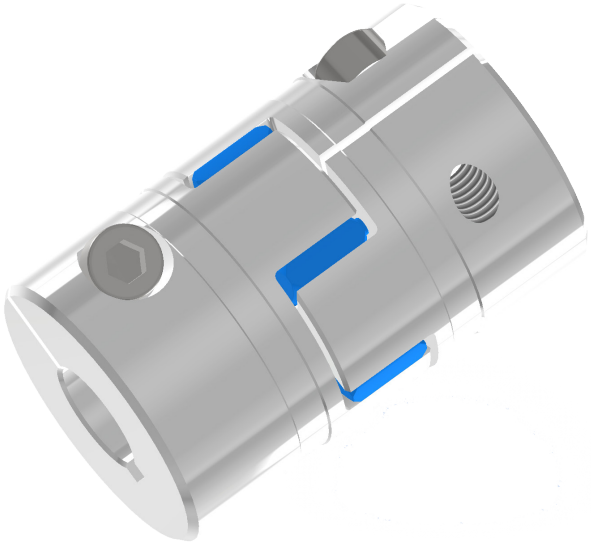


DESIGN CK
WITH KEY
DIN 6885

DIMENSIONS											
COUPLING TYPE	ØF H8 - friction torque for design C	Ø D	Ø G	L	C	E	N	s	f	Ms screw (Nm) clamping torque	t
GE-T 09 SG	5 - 6 - 8 - 10	20	7,2	30	10	10	8	1	M2,5	0,75	5
FRICTION TORQUE Nm	1,55 - 1,63 - 1,79 - 1,94										
GE-T 14 SG	5 - 6 - 8 - 10 - 12 - 14 - 15 - 16	30	10,5	35	11	13	10	1,5	M3	1,4	5
FRICTION TORQUE Nm	3,32 - 3,43 - 3,67 - 3,91 - 4,14 - 4,38 - 4,5 - 4,6										
GE-T 19-24 SG	8 - 10 - 12 - 14 - 15 - 16 - 18 - 19 - 20	40	18	66	25	16	12	2	M6	11	12
FRICTION TORQUE Nm	18 - 19 - 20 - 21 - 21,5 - 22 - 22,5 -23 - 24										

EXAMPLE HUB CODE:

025 14 200 → 200 SOLID HUB
↓ ↓
025 COUPLING GE-T SG TYPE

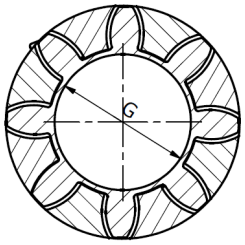


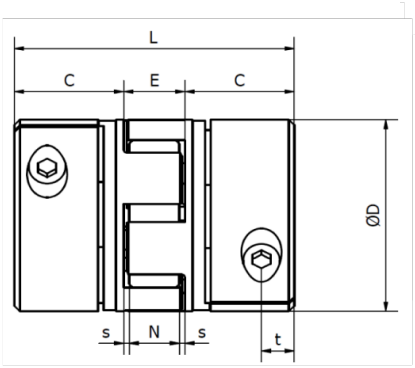
TECHNICAL DATA

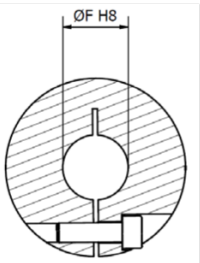
HUB DESIGN D WITH DOUBLE CUT

with spider

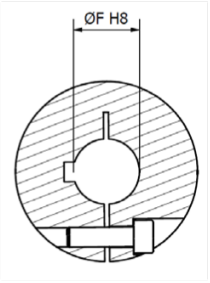
8 pointed







Design D



Design DK
with key
DIN 6885

DIMENSIONS											
COUPLING TYPE	ØF H8 - friction torque for design D	Ø D	Ø G	L	C	E	N	s	f	Ms screw (Nm) clamping torque	t
GE-T 24-28 SG	12 14 15 16 18 19 20 22 24 25 28	55	27	78	30	18	14	2	M6	11	14
FRICTION TORQUE Nm	25 - 26 - 27 - 27,5 - 28 - 28,5 - 29 - 30 - 31 - 32 - 33										
GE-T 28-38 SG	18 19 20 22 24 25 28 30 32 35	65	30	90	35	20	15	2,5	M8	25	15
FRICTION TORQUE Nm	60 - 61 - 62 - 63 - 65 - 66 - 69 - 71 - 73 - 75										
GE-T 38-45 SG	18 19 20 22 24 25 28 30 32 35 38 40	80	38	114	45	24	18	3	M8	25	20
FRICTION TORQUE Nm	69 - 70 - 71 - 73 - 74 - 78 - 78 - 80 - 81 - 84 - 87 - 88										

EXAMPLE HUB CODE:

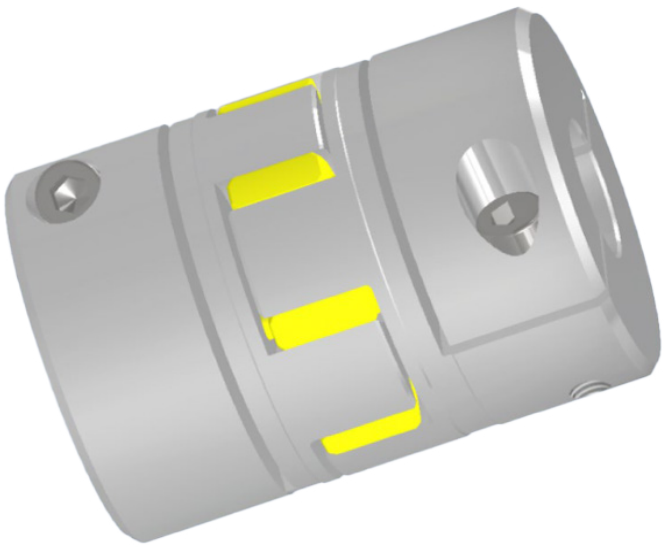
025 24 2 20 K → WITH KEYWAY

Ø BORE

MAT 2 - ALUMINIUM
3 - STEEL C45

TYPE

025 COUPLING GE-T SG



MAT: ALUMINIUM 6082 - T6 EN 573

MAT: STEEL C45 EN 10083

MAT: ALUMINIUM 6082 - T6 EN 573
MAT: STEEL C45 EN 10083

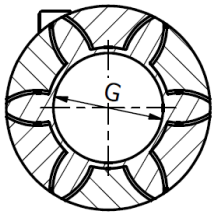
TECHNICAL DATA

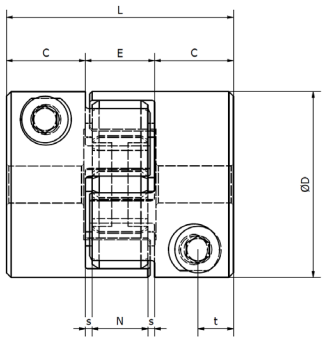
HUB EXECUTION C COMPACT VERSION WITH SINGLE CUT

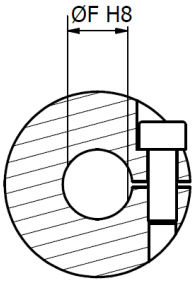
MAT ALUMINIUM

With spider
4 pointed — **GE-T 09 SG**, **GE-T 14 SG**

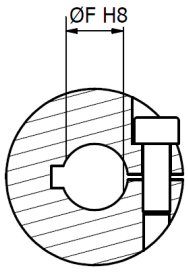
6 pointed — **GE-T 19-24 SG**
8 pointed — **GE-T 24-28 SG**, **GE-T 28-38 SG**, **GE-T 38-45 SG**







Design C



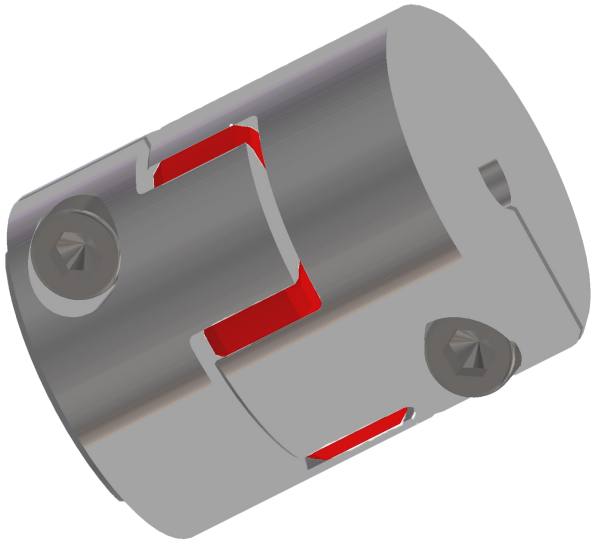
Design CK
with key
DIN 6885

DIMENSIONS											
COUPLING TYPE	ØF H8 - friction torque Nm for design C	Ø D	Ø G	L	C	E	N	S	SCREW	Ms screw (Nm) clamping torque	t
GE-T 09 SG C	5 - 6 - 8 - 10	20	7,2	24	7	10	8	1	M2,5	0,75	3,5
FRICTION TORQUE Nm	2 2.1 2.3 2,5										
GE-T 14 SG C	5 - 6 - 8 - 10 - 12 - 14 - 15 - 16	30	10,5	32	10,0	13	10	1,5	M4	3,1	5
FRICTION TORQUE Nm	7.1 7.4 8 8.5 9.1 10.2 10.5 11										
GE-T 19-24 SG C	8 - 10 - 12 - 14 - 15 - 16 - 18 - 19 - 20	40	18	50	17	16	12	2	M6	11	8,5
FRICTION TORQUE Nm	24.3 25.7 27 28.4 29 29.7 33.1 31.7 32,4										
GE-T 24-28 SG C	12 - 14 - 15 - 16 - 18 - 19 - 20 - 22 - 24 - 25 - 28	55	27	54	18	18	14	2	M6	11	9
FRICTION TORQUE Nm	36 37 38 39 40 41 41 42 44 44 46										
GE-T 28-38 SG C	18 - 19 - 20 - 22 - 24 - 25 - 28 - 30 - 32 - 35	65	30	62	21	20	15	2,5	M8	25	10,5
FRICTION TORQUE Nm	83 84 85 88 90 91 95 98 100 104										
GE-T 38-45 SG C	18 - 19 - 20 - 22 - 24 - 25 - 28 - 30 - 32 - 35 - 38 - 40	80	38	76	26	24	18	3	M10	45	13
FRICTION TORQUE Nm	105 108 112 120 125 129 135 143 150 160 172 181										

HOLE DIAMETER UPON REQUEST

EXAMPLE HUB CODE:

025 14 6 12 K → WITH KEYWAY
12 → Ø BORE
6 → MAT 6 - ALUMINIUM
14 → TYPE
025 → 025 COUPLING GE-T SG

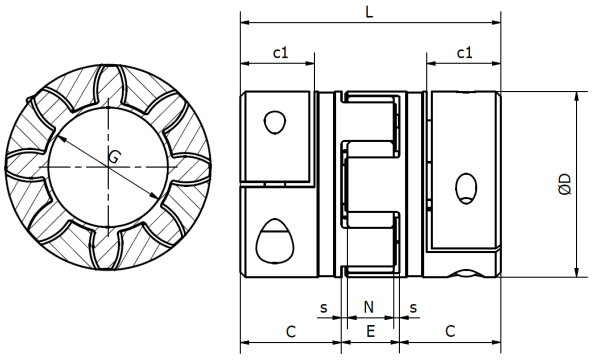


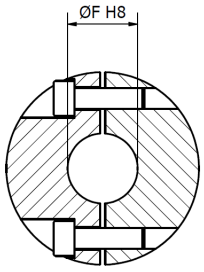
MAT: ALUMINIUM 6082 - T6 EN 573

TECHNICAL DATA

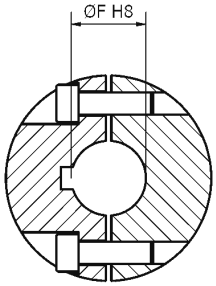
HUB DESIGN H
WITH HALFSHELL CLAMP

With spider
4 pointed **GE-T 14 SG**
6 pointed **GE-T 19-24 SG**
8 pointed **GE-T 24-28 SG**
GE-T 28-38 SG
GE-T 38-45 SG
GE-T 42-55 SG





Design H



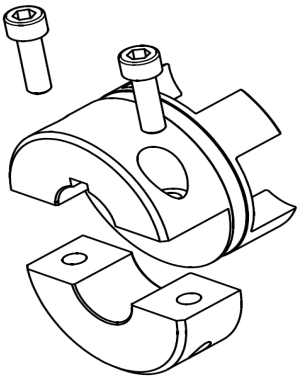
Design HK
with key
DIN 6885

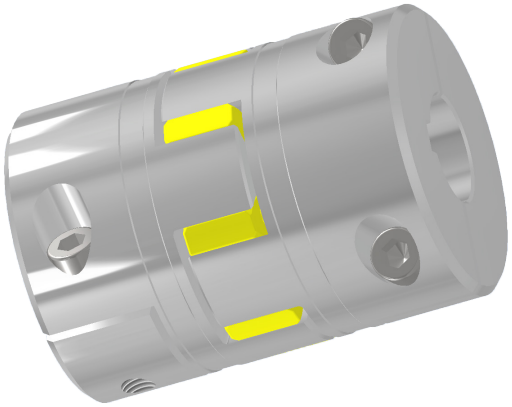
DIMENSIONS											
COUPLING TYPE	ØF H8 - friction torque Nm for design H	D	G	L	C	c1	E	N	s	SCREW	Ms screw (Nm) clamping torque
GE-T 14SG	5 - 6 - 8 - 10 - 12 - 14 - 15 - 16	30	10,5	50	18	13,3	13	10	1,5	M4	5
FRICTION TORQUE Nm	8 8.3 8.9 9.5 10.1 10.7 11 11,3										
GE-T 19-24SG	8 - 10 - 12 - 14 - 15 - 16 - 18 - 19 - 20	40	18	66	25	17,5	16	12	2	M6	10
FRICTION TORQUE Nm	17 21 24 30 32 34 38 40 42										
GE-T 24-28SG	12 - 14 - 15 - 16 - 18 - 19 - 20 - 22 - 24 - 25 - 28	55	27	78	30	20,5	18	14	2	M6	10
FRICTION TORQUE Nm	28 30 32 34 38 40 42 47 51 53 59										
GE-T 28-38SG	18 - 19 - 20 - 22 - 24 - 25 - 28 - 30 - 32 - 35	65	30	90	35	25	20	15	2,5	M8	25
FRICTION TORQUE Nm	70 74 78 88 93 97 109 117 124 136										
GE-T 38-45SG	18 - 19 - 20 - 22 - 24 - 25 - 28 - 30 - 32 - 35 - 38 - 40	80	38	114	45	33	24	18	3	M8	25
FRICTION TORQUE Nm	70 74 78 88 93 97 109 117 124 136 148 156										
GE-T 42-55SG	22 - 24 - 25 - 28 - 30 - 32 - 35 - 38 - 40 - 42 - 45 - 48 - 50	95	46	126	50	39	26	20	3	M10	45
FRICTION TORQUE Nm	136 149 155 174 188 198 217 235 248 260 279 297 310										

HOLE DIAMETER UPON REQUEST

EXAMPLE HUB CODE:

025 24 2 20 K → WITH KEYWAY
→ Ø BORE
→ MAT 4 - ALUMINIUM
5 - STEEL C45
→ TYPE
025 COUPLING GE-T SG





MAT: ALUMINIUM 6082 - T6 EN 573
MAT: STEEL C45 10083