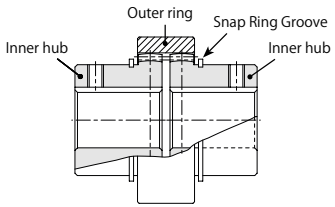
■ Features

Characteristics of Gear Couplings

- There are many ways to couple shafts to transmit power. We have developed these standardized gear couplings of our own design. They are easier to connect or disconnect than chain couplings.
- The gear teeth of the inner hubs are crowned to allow for up to 5° of shaft angle offset.
- Due to induction hardened gear teeth, these couplings have excellent durability. All surfaces are plated (Trivalent-chromate).
- The units are machined complete with keyways, set screw holes and finished bores and are ready for immediate installation. We also offer minimum bore models for users who want to perform their own secondary operations.

■ Points to observe during use



- If you require one set of GC2-30, you will need one GC2-I (outer ring) and two GC2-30 (inner hubs). These components may also be purchased separately. Therefore, please specify set or each when ordering.
- Inner hubs come with snap rings, S type products have prepared minimum bores and finished products come with set screws.
- Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).

■ Strength of Gear Couplings

Tolerance torques of the gear couplings are determined in accordance with the shear strength of the keys. Allowable shear force of keys F (N) are calculated from the following formula.

$$F = b \cdot L \cdot \sigma \cdot \frac{1}{s}$$

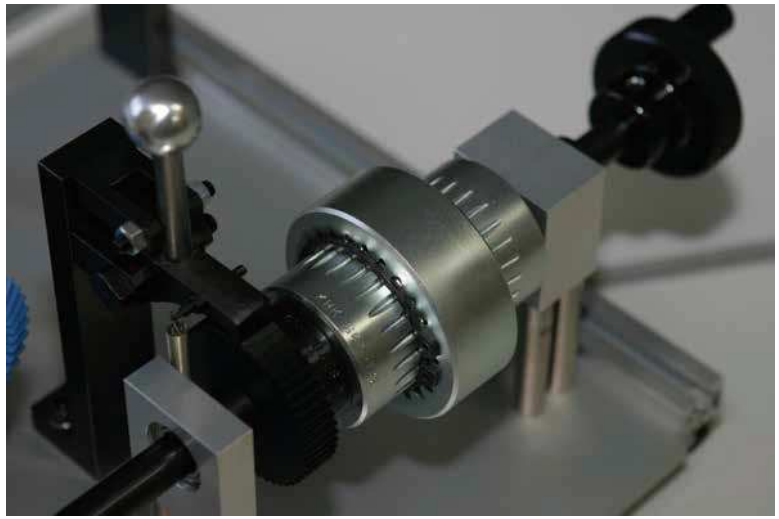
Additionally, allowable torques (T) of the inner hubs of the gear coupling, versus shear force of keys, can be calculated from the formula below.

$$T = \frac{F \cdot d}{2000}$$

b : Key Width (mm) → Keyway width of inner hubs of the GC Gear Coupling
L : Key Length (mm) → Set at –2 mm from the total length of the inner hub of the GC Gear Coupling
σ : Allowable Shear Force of keys → Set at 49MPa (5kgf/mm^2)
s : Safety Factor → Optionally set
d : Bore size (mm) → Bore size A of the inner hub of the GC Gear Coupling

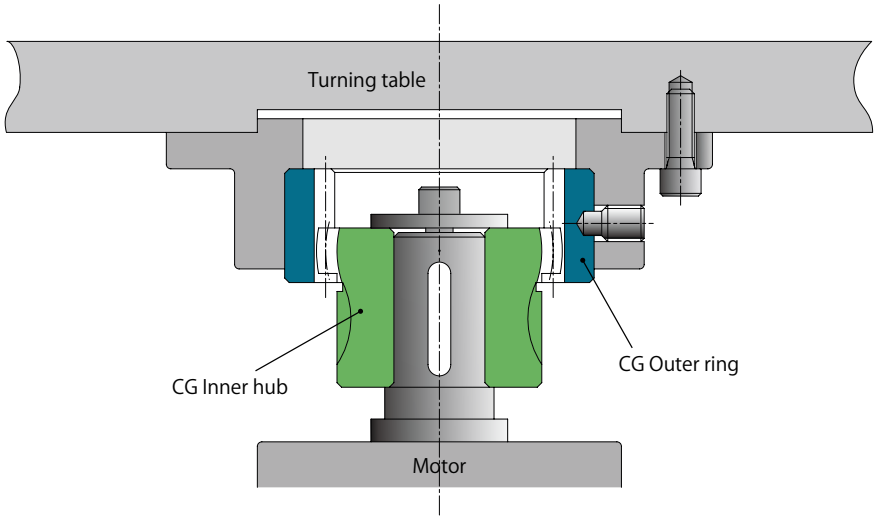
Caution: Safety Factor (S) must be set at a value between 1 to 3, depending on the load types or the coupling displacement.

Application



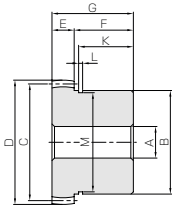
Assembly Example: KHK Stock Gears Sample Unit

Module 2 to 2.5



Specific usage for turning the work having no shafts or bores.

Specifications	
Gear teeth	Standard full depth (Inner hubs are Crouwning)
Pressure angle	20°
Material	S45C
Heat treatment	Tooth surface induction hardened
Tooth hardness	50 ～ 60HRC

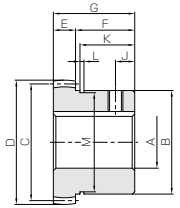


T2

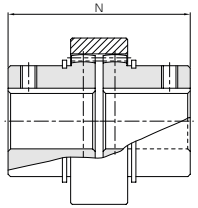
Catalog No.	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Set Screw	
				A	B_{H7}	C	D	E	F	G	Size	L
GC1-12S	***m*2**	25	T2	12	45	50	54	10	25	35	—	—
GC1-20			TK	20							M5	10
GC1-22			TK	22							M6	10
GC1-25			TK	25							M6	10
GC2-20S	***m*2**	40	T2	20	70	80	84	15	40	55	—	—
GC2-30			TK	30							M6	13
GC2-32			TK	32							M10	13
GC2-35			TK	35							M10	13
GC2-40			TK	40							M10	13
GC3-20S	***m*2.5**	42	T2	20	90	105	110	20	45	65	—	—
GC3-45			TK	45							M10	20
GC3-50			TK	50							M10	20

[Caution on Product Characteristics]
① S-type products are of minimum bore depth. Keyways are made according to JIS B1301 standards, Js 9 tolerance.
② For products with a snap ring and a tapped hole, a set screw is included as an accessory.
③ The allowable torques in the table are obtained from the shear strength of keyways. The shear strength of keyway is assumed to be 49MPa (5kgf/mm^2).
④ Since trivalent-chromate treatment is applied, changes may occur in the dimensions of the bore, keyway etc., decreasing by a few μm.

[Caution on Secondary Operations]
① Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).

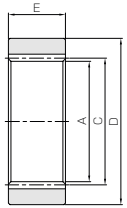


TK



C-Shaped Snap Ring Groove			Total Width of Gear Coupling	Keyway	Allowable torque (N・m)	Allowable torque (kgf・m)	Backlash	Weight	Catalog No.
K	L	M	N	Width×Depth	Shear strength of keyways	Shear strength of keyways	(mm)	(kg)	
23	1.95	42.5	73	—	—	—	0.40~0.60	0.43	**GC1-12S**
				5 x 2.3	68.7	7.00		0.37	**GC1-20**
				7 x 3	98.1	10.0		0.35	**GC1-22**
				7 x 3	137	14.0		0.32	**GC1-25**
37	2.7	67	115	—	—	—	0.40~0.60	1.66	**GC2-20S**
				7 x 3	245	25.0		1.48	**GC2-30**
				10 x 3.3	294	30.0		1.42	**GC2-32**
				10 x 3.3	392	40.0		1.36	**GC2-35**
				10 x 3.3	490	50.0		1.23	**GC2-40**
42	3.2	86.5	135	—	—	—	0.40~0.60	3.43	**GC3-20S**
				12 x 3.3	785	80.0		2.74	**GC3-45**
				12 x 3.3	883	90.0		2.56	**GC3-50**

Specifications	
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Tooth surface induction hardened
Tooth hardness	50 ～ 60HRC



T1

Catalog No.	Module	No. of teeth	Shape	Internal dia.	Pitch dia.	Outside dia.	Face width	Backlash	Weight
				A	C	D	E	(mm)	(kg)
GC1-I	***m*2**	25	T1	46	50	68	25	0.40~0.60	0.33
GC2-I	***m*2**	40		76	80	105	36		1.03
GC3-I	***m*2.5**	42		100	105	145	48		2.96

[Caution on Secondary Operations]
① Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).

＊ For products not categorized in our KHK Stock Gear series', custom gear production services is available. For details see page 8.