

Spur  
GearsHelical  
GearsInternal  
Gears

Racks

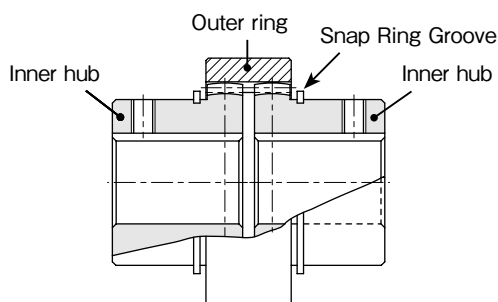
CP Racks  
& PinionsMiter  
GearsBevel  
GearsScrew  
GearsWorm  
Gear PairBevel  
GearboxesOther  
Products

## ■ 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 (Unichromic plating).
- 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. 1 to 2 mm).

### ■ Bending 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

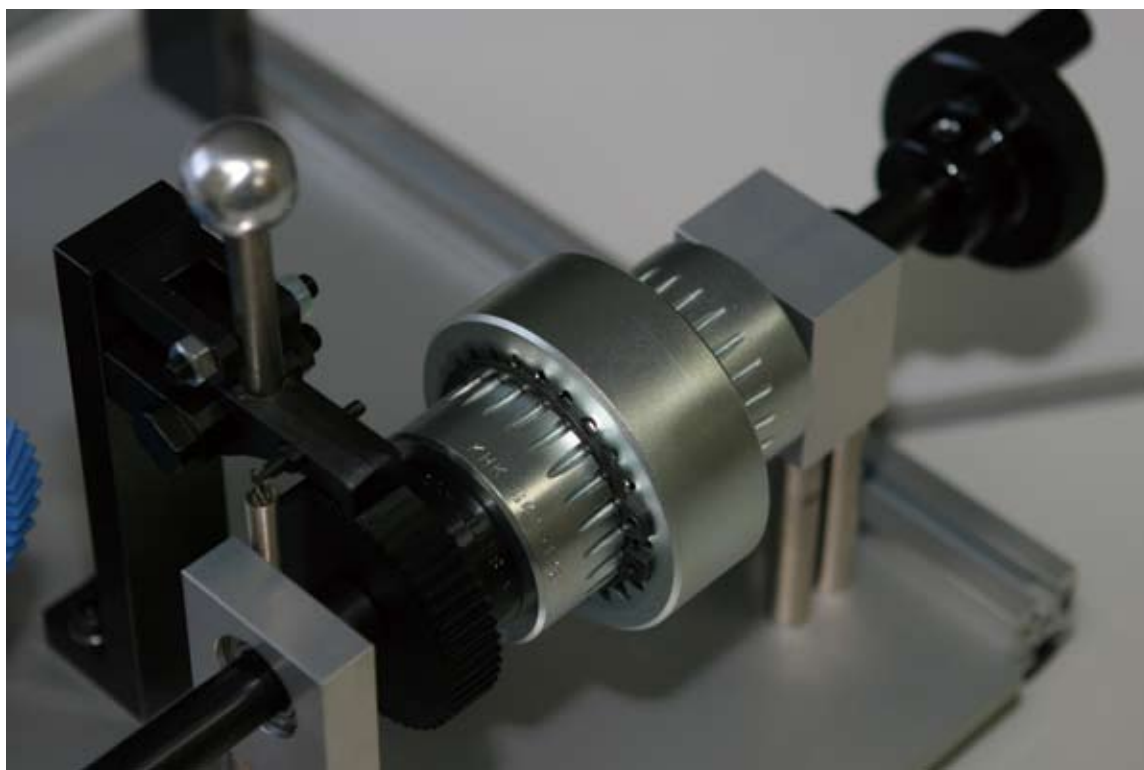
$\sigma$  : Allowable Shear Force of keys → Set at 49MPa (5kgf/mm<sup>2</sup>)

$s$  : Safety Factor → Optionally set

$d$  : Bore size (mm) → Bore size A of the inner hub of the GC Gear Coupling

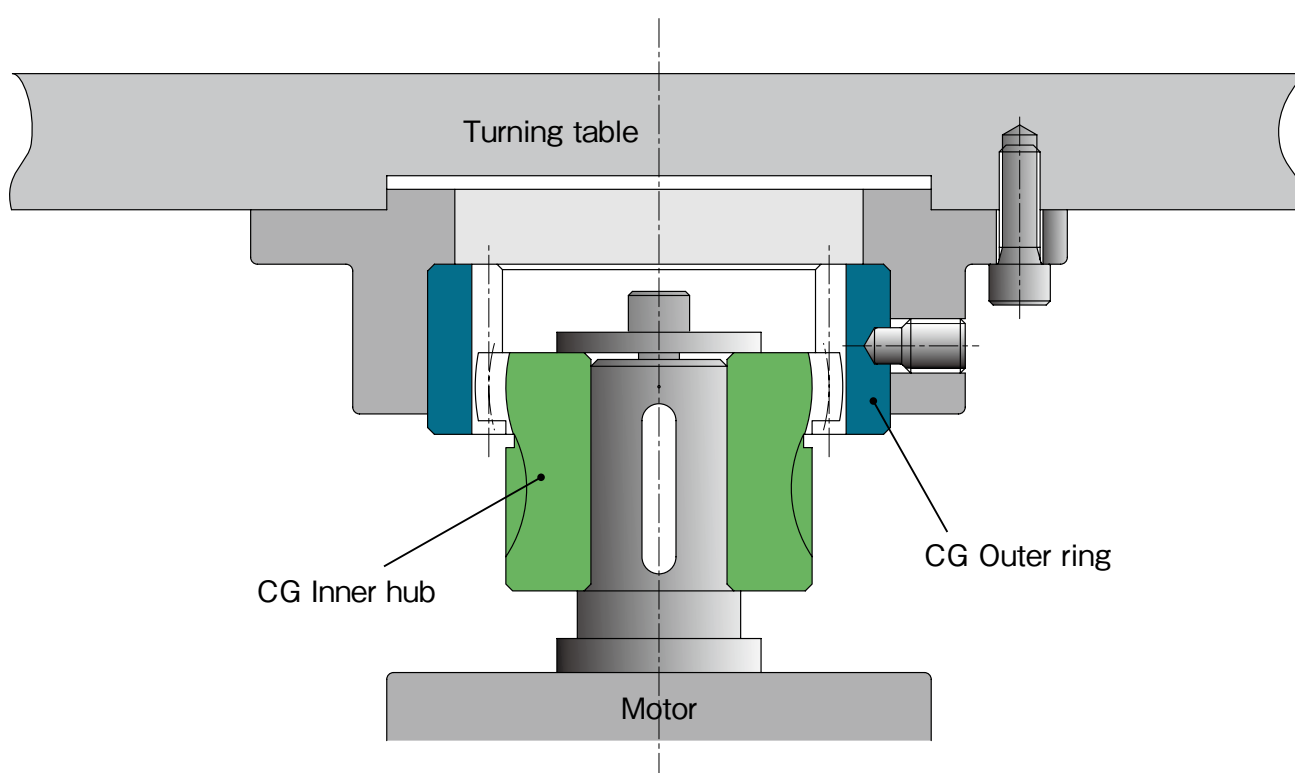
Caution: Safety Factor ( $S$ ) must be set at a value between 1 to 3, depending on the load types or the coupling displacement.

## Application



Assembly Example: KHK Stock Gears Sample Unit

**Module 2 to 2.5**



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

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# GC Gear Couplings (Inner hub)

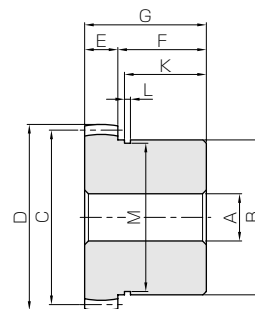
Module 2 ~ 2.5



Spur Gears  
Helical Gears  
Internal Gears  
Racks  
CP Racks & Pinions  
Miter Gears  
Bevel Gears  
Screw Gears  
Worm Gear Pair  
Bevel Gearboxes  
Other Products



Specifications	
Gear teeth	Standard full depth
Pressure angle	20° (Crowning)
Material	S45C
Heat treatment	Tooth surface induction hardened
Tooth hardness	45 ~ 55HRC



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 <sub>H7</sub>	C	D	E	F	G	Size	L
<b>GC1-12S</b> <b>GC1-20</b> <b>GC1-22</b> <b>GC1-25</b>	<b>m2</b>	25	T2 TK TK TK	12	45	50	54	10	25	35	—	—
20				M5							10	
22				M6							10	
25				M6							10	
<b>GC2-20S</b> <b>GC2-30</b> <b>GC2-32</b> <b>GC2-35</b> <b>GC2-40</b>	<b>m2</b>	40	T2 TK TK TK TK	20	70	80	84	15	40	55	—	—
30				M6							13	
32				M10							13	
35				M10							13	
40				M10							13	
<b>GC3-20S</b> <b>GC3-45</b> <b>GC3-50</b>	<b>m2.5</b>	42	T2 TK TK	20	90	105	110	20	45	65	—	—
45				M10							20	
50				M10							20	

- [Caution on Product Characteristics] ① "S" denotes minimum bore products. Inner hubs come with snap rings and set screw.  
 ② 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<sup>2</sup>).
- [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. 1 to 2 mm).

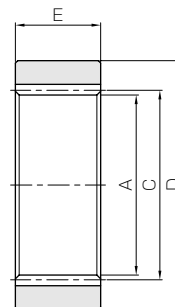


# GC-I Gear Couplings (Outer ring)

Module 2 ~ 2.5



Specifications	
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Tooth surface induction hardened
Tooth hardness	45 ~ 55HRC

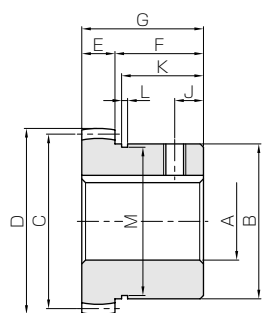


T1

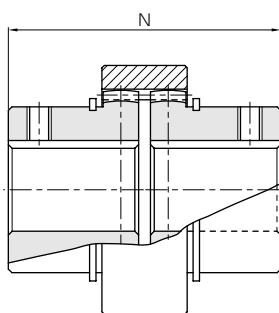
Catalog No.	Module	No. of teeth	Shape	Internal dia.	Pitch dia.	Outside dia.	Face width	Backlash (mm)	Weight (kg)
				A	C	D	E		
<b>GC1-I</b>	<b>m2</b>	25	T1	46	50	68	25	0.40~0.60	0.33
<b>GC2-I</b>	<b>m2</b>	40		76	80	105	36		1.03
<b>GC3-I</b>	<b>m2.5</b>	42		100	105	145	48		2.96

- [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. 1 to 2 mm).

### Gear Couplings (Inner hub)



TK



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

GC-I

### Gear Couplings (Outer ring)

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