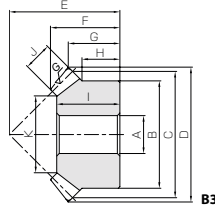




Specifications	
Precision grade	JIS B 1704 : 1978 grade 2
Gear teeth	Gleason
Pressure angle	20°
Material	S45C
Heat treatment	Teeth induction hardened
Tooth hardness	50 ~ 60HRC

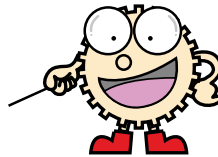


Catalog No.	Gear ratio	Module	No. of teeth	Helix angle	Direction of spiral	Shape	Bore A	Hub B	Pitch dia. C	Outside dia. D	Mounting distance E	Total length F	Crown to back length G
SMZG2-20R SMZG2-20L	1	m2	20	5°	R L	B3	12	34	40	43.32	37	24.69	18.66
SMZG2.5-20R SMZG2.5-20L		m2.5	20	5°	R L	B3	14	42	50	54.16	48	32.34	25.08
SMZG3-20R SMZG3-20L		m3	20	5°	R L	B3	16	50	60	64.89	58	39.52	30.45

- [Caution on Product Characteristics]
- A set of miter gears must be identical in module and number of teeth, but opposite in spiral hands.
  - Allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 253 for more details.
  - Dimensions of the outside diameter, the overall length and crown to back length are all theoretical values, and some differences will occur due to the corner chamfering of the gear tips.
  - It produces an axial thrust force, which has the same direction as straight bevel gears. For details, see separate technical reference book (Page 108).

### ■ Features of Zerol Miter Gears

- Zerol Miter Gears are spiral miter gears with a helix angle of less than 10 degree. Balanced, and superior performance as they combine the features of straight / spiral bevel gears.
- Allows compact design as no inward thrust force ( \* Reference to the figure ) is produced, which causes problems when using spiral miter gears.
  - Unlike straight miter gears, Zerol Miter Gears can be ground finished, allowing higher precision, wear-resistance and are quieter, compared with straight miter gears.
  - Drop in replacement for SM Miter Gears can easily be made due to the gears have similar dimensions for the mounting distance. When replacing, please use a set of zerol miter gears with opposite spiral hands, one right-hand and the other left-hand.



### ■ Performance Comparison

Gear Type	Bearing Design *	Interchangeability Mounting Distance	Precision JIS B 1704	Strength Bending Strength	Durability Surface Durability	Noise/Vibration Surface Roughness/Total Contact Ratio	Price for single item
Miter Gears SM2-20	No thrust force produced inward	Many SUM, PM, SMZG	Normal grade 3	Normal 7.13N · m	Bad 0.72N · m	Normal 3.2a/1.62	Low
Ground Zerol Miter Gears SMZG2-20R/L	No thrust force produced inward	Many SM, SUM, PM	Good grade 2	Normal 7.76N · m	Good 4.40N · m	Low 0.4a/1.74	Normal
Ground Spiral Miter Gears MMSG2-20R/L	Thrust force produced inward	None -	Good grade 2	Strong 15.6N · m	Good 21.7N · m	Low 0.4a/2.49	Normal

NOTE: The above evaluations were based on a comparison of 3 products.

Hub width H	Length of bore I	Face width J	Holding surface dia. K	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog No.
				Bending strength	Surface durability	Bending strength	Surface durability			
14	22	10	21.72	7.76	4.10	0.79	0.42	0.05~0.11	0.15	SMZG2-20R SMZG2-20L
19	29	12	28.06	14.8	7.92	1.51	0.81	0.06~0.12	0.30	SMZG2.5-20R SMZG2.5-20L
23	35	15	31.57	26.2	14.3	2.67	1.45	0.07~0.13	0.53	SMZG3-20R SMZG3-20L

- [Caution on Secondary Operations]
- Care must be exercised when performing modification and/or secondary operations of miter gears. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
  - Due to gear teeth induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2to 3 mm).

\* For products not categorized in our KHK Stock Gear series, custom gear production services with **short lead times** is available. For details see page 8.

### GCU-M Miter Gear Kit



Installation : Intersecting axes gears  
Gear Type : Miter Gears  
Gears : SM2-25  
PM2-25  
Gear Ratio : 1  
Weight : Approx. 1kg

Use of bevel gears allows the changing of the shaft angle by 90 degrees. Applications include the changing of the direction of power.