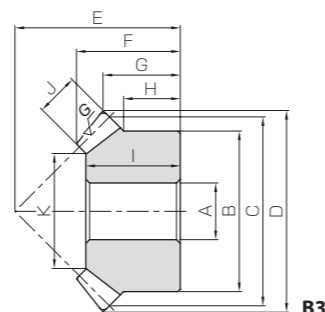




Specifications	
Precision grade	JIS B 1704: 1978 grade 2
Gear teeth	Gleason
Pressure angle	20°
Material	S45C
Heat treatment	Teeth induction hardened
Tooth hardness	50 ~ 60HRC
Surface treatment	Black oxide coated except for ground part



Catalog No.	Gear ratio	Module	No. of teeth	Helix angle	Direction of spiral	Shape	Bore		Pitch dia.	Outside dia.	Mounting distance	Total length	Crown to back length
							A	B					
KSMZG2-20R KSMZG2-20L	1	m2	20	5°	R L	B3	12	34	40	43.32	37	24.69	18.66
KSMZG2.5-20R KSMZG2.5-20L		m2.5	20	5°	R L	B3	14	42	50	54.16	48	32.34	25.08
KSMZG3-20R KSMZG3-20L		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 272 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.
 - These gears produce an axial thrust force, which is the same as straight bevel gears. For details, see our technical reference book (Page 108).

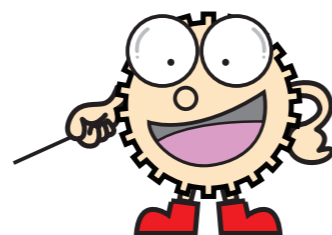
Hub width	Length of bore	Face width	Holding surface dia.	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog No.
				Bending strength	Surface durability	Bending strength	Surface durability			
H	I	J	K							
14	22	10	21.72	7.76	4.10	0.79	0.42	0.05~0.11	0.15	KSMZG2-20R KSMZG2-20L
19	29	12	28.06	14.8	7.92	1.51	0.81	0.06~0.12	0.30	KSMZG2.5-20R KSMZG2.5-20L
23	35	15	31.57	26.2	14.3	2.67	1.45	0.07~0.13	0.53	KSMZG3-20R KSMZG3-20L

- [Caution on Secondary Operations]
- Please read "Caution on Performing Secondary Operations" (Page 274) when performing modification and/or secondary operations for safety concerns.
 - Due to gear teeth induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2to 3 mm).

Features of Zerol Miter Gears

Zerol Miter Gears are spiral miter gears with a helix angle of less than 10 degrees. Balanced, and superior performance as they combine the features of straight and 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, when compared with straight miter gears.
- Drop-in replacement for KSM Miter Gears is easy, as these gears have similar dimensions including 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 KSM2-20	 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 KSMZG2-20R/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 KMMSG2-20R/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.

Zerol Miter Gear Set Example

