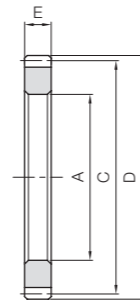




Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)



S5

Catalog Number	Module	No. of teeth	Shape	Bore		Pitch dia.	Outside dia.	Face width	Allowable torque (N·m)		Allowable torque (kgf·m)	
				A _{H8}	C				D	E	Bending strength	Surface durability
SSR2-120 SSR2-200	m2	120	S5	194	240	244	20	366	44.0	37.4	4.49	
		200		354	400							630
SSR2.5-120 SSR2.5-200	m2.5	120	S5	245	300	305	25	715	88.5	72.9	9.02	
		200		445	500							1230
SSR3-120 SSR3-160	m3	120	S5	296	360	366	30	1240	157	126	16.0	
		160		416	480							1680

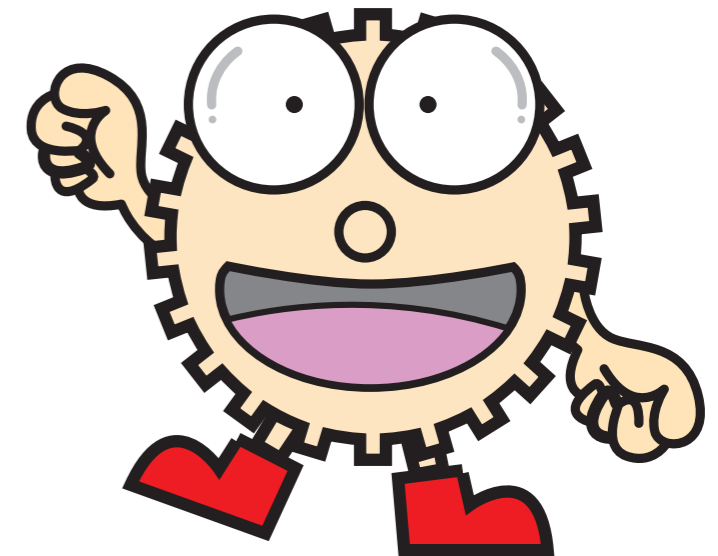
[Caution on Product Characteristics] ① The backlash values shown in the table are the theoretical values for the normal direction for the internal ring in mesh with an SS spur gear.

② The bore tolerance is modified at H8, but there may be some errors as the ring shape deforms easily.

Backlash (mm)	Weight (kg)	Catalog Number
0.12~0.26	2.46 4.28	SSR2-120 SSR2-200
0.14~0.28	4.62 8.01	SSR2.5-120 SSR2.5-200
0.14~0.32	7.77 10.6	SSR3-120 SSR3-160



Helical Gears



Catalog Number of KHK Stock Gears

The Catalog Number for KHK stock gears is based on the simple formula listed below. Please order KHK gears by specifying the Catalog Numbers.

(Example) Helical Gears

K H G 1 - 20 R

Direction of Helix (Right)

No. of Teeth (20)

Module (1)

Other Products (Ground Gears)

Type (Helical Gears)

Material (SCM440)

Material

S S45C

K SCM440

Type

H Helical Gears

Other Information

G Ground Gears

Features



KHK stock helical gears are quiet, high-strength and easy to use. They are suitable wherever you require high-speed rotation including in machine tools, speed reducers, etc. The following table lists the main features.

Catalog Number	KHG	SH
Module	1~6	2~3
Reference section of gear	Rotating plane	Normal plane
Material	SCM440	S45C
Heat Treatment	Thermal refined, gear teeth induction hardened	—
Tooth Surface Finish	Ground	Cut
Precision JIS B 1702-1:1998	N6	N8
Secondary Operations	Possible except for tooth	Possible
Features	It has excellent accuracy, strength, wear resistance and quietness, and allows secondary operations. Usable in the same center distance of the spur gear.	It has higher strength and quietness than the SS spur gears.

Selection Hints

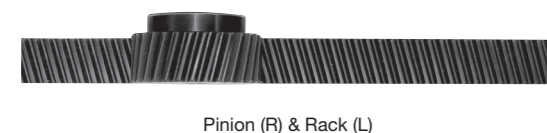


It is important to thoroughly understand the contents of the product tables as well as "CAUTION" notes before making the selection. You must specify the right or left hand by including the letter R or L in the catalog number when ordering.

1. Caution in Selecting the Mating Gears

The KHK stock helical gears KHG series (transverse module) and SH series (normal module) are not interchangeable. Please keep this in mind when making your selection. Also, right hand and left hand helical mating gears operate as a set. See the photos below for reference and for help in making a proper selection.

Direction of Helix



Mating Helical Gear Selection Chart (○ Allowable × Not allowable)

Catalog Number and Direction of Helix	KHG		SH		KRHG KRHGF		SRH	
	RH	LH	RH	LH	RH	LH	RH	LH
KHG	RH	×	○	×	×	×	×	×
	LH	○	×	×	×	○	×	×
SH	RH	×	×	×	○	×	×	○
	LH	×	×	○	×	×	○	×

2. Caution in Selecting Gears Based on Gear Strength

The gear strength values shown in the product pages were computed by assuming the application environment in the table below. Therefore, they should be used as reference only. We recommend that each user computes their own values by applying the actual usage conditions.

Calculation of Bending Strength of Gears

Item	Catalog Number	KHG	SH
Formula NOTE 1		Formula of spur and helical gears on bending strength (JGMA401-01)	
No. of teeth of mating gears		Same no. of teeth	
Rotational Speed		600rpm NOTE 2	100rpm
Design Life (Durability)		Over 10 ⁷ cycles	
Impact from motor		Uniform load	
Impact from load		Uniform load	
Direction of load		Bidirectional load (calculated with allowable bending stress of 2/3)	
Allowable bending stress at root σ_{Fim} (kgf/mm ²)		30	19
Safety factor S_F		1.2	

Calculation of Surface Durability (Except where it is common with bending strength)

Item	Catalog Number	KHG	SH
Formula NOTE 1		Formula of spur and helical gears on surface durability (JGMA402-01)	
Kinematic viscosity of lubricant		100cSt(50°C)	
Gear support		Symmetric support by bearings	
Allowable Hertz stress σ_{Hlim} (kgf/mm ²)		112	49
Safety factor S_H		1.15	

[NOTE 1] The gear strength formula is based on JGMA (Japanese Gear Manufacturers Association) specifications. The units for the rotational speed (rpm) and the stress (kgf/mm²) are adjusted to the units needed in the formula.

[NOTE 2] For semi-custom gears, the rotation speed is based on 300rpm.

Product Precautions



Common Notes

[Caution on Product Characteristics]

- The allowable torque shown in the table are calculated values according to the assumed usage conditions. Please see page 192 for more details.
- The backlash values shown in the table are the theoretical values for the backlash in the normal direction of gears of the same series in mesh.
- A set of helical gears must be identical in module, but opposite in spiral hands.
- These gears produce axial thrust forces. Please see page 195 for more details.
- For the helical gear series combinations, see the Mating Gear Selection Chart on page 192.
- Keyways are made according to JIS B1301 standards, Js9 tolerance. Also note that keyway tooth position alignment is not performed.
- For products having a tapped hole, a set screw is included.
- See page 22 for more details on Hardened Plus (H Series and HJ Series).

● KHK's Specifications for Heat Treatment

Hardened location: Tooth surface, or Tooth surface and Tooth root
Hardness: 50 to 60 HRC

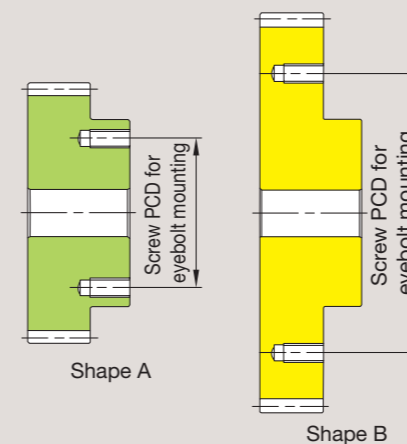
* Hardness and Depth of Gear-teeth Induction Hardening

The hardening method and the state of the hardened teeth area vary depending on the size of gears. Since different hardening treatment is applied in accordance with the module and number of teeth, the hardness level is referred to as the hardness of the reference diameter. For some of our products, the hardness at tooth tip / root may not be equal to the hardness you designated. As to the effective case depth, it is specified by JIS, as "The distance from the surface of the case to the area with hardness HV450." The case depth differs from area to area of a tooth, so the depth cannot be specified. 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).

[J Series]

- Certain products which would otherwise have a very long tapped hole are counterbored. For details, please see the KHK website.
- Black oxide is not re-applied to parts undergoing secondary operations.
- For bores over $\phi 50$, the bore tolerance is H8.

Tapped Holes in Semi-Custom Standard Products



Catalog Number	Shape	Screw P.C.D. for eyebolt mounting
KHG5-50RS	A	125
KHG5-50LS	A	125
KHG5-60RS	B	215
KHG5-60LS	B	215
KHG6-36RS	A	135
KHG6-36LS	A	135
KHG6-40RS	A	145
KHG6-40LS	A	145
KHG6-50RS	A	155
KHG6-50LS	A	155
KHG6-60RS	B	245
KHG6-60LS	B	245

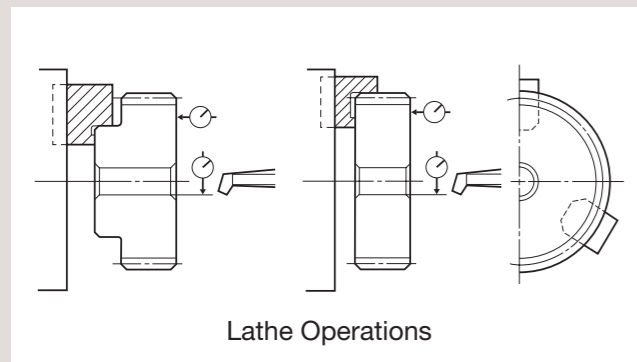
Application Hints



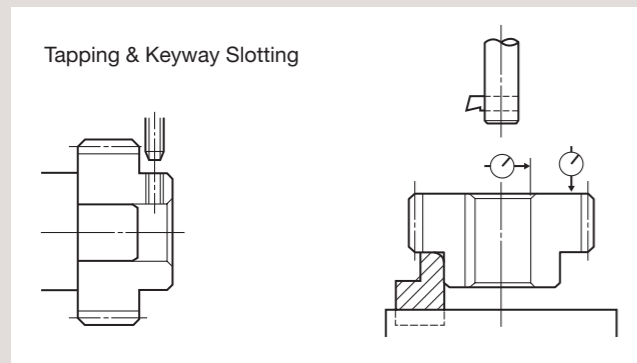
In order to use KHK stock gears safely, carefully read the Application Hints before proceeding. If there are questions or you require clarifications, please contact our technical department or your nearest distributor. E-mail: info@khkgears.net
Please read "Cautions on Performing Secondary Operations" below when performing modifications and/or secondary operations for safety concerns.

1. Caution on Performing Secondary Operations

- ① If re boring, it is important to pay special attention to locating the center in order to avoid runout.
- ② The reference datum for gear machining is the bore. Therefore, use the bore for locating the center. If it is too difficult to do for small bores, the alternative is to use one spot on the bore and the runout of the side surface.
- ③ If reworking using scroll chucks, we recommend the use of new or rebored jaws for improved precision. Please exercise caution not to crush the teeth.



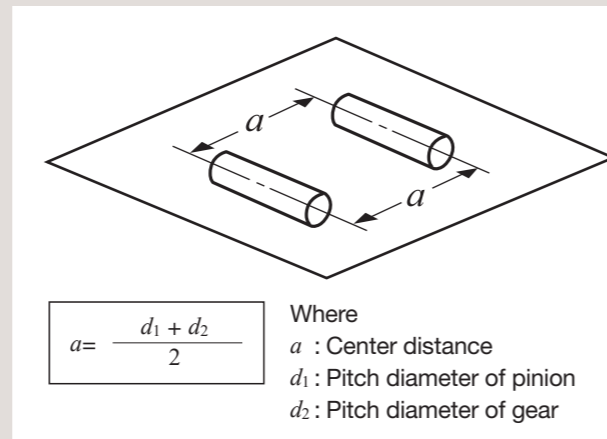
- ④ The maximum bore size is dictated by the requirement that the strength of the hub is to be higher than that of the gear teeth. The maximum bore size should be 60% to 70% of the hub diameter (or tooth root diameter), and 50% to 60% for keyway applied modifications.
- ⑤ In order to avoid stress concentration, round the keyway corners.



- ⑥ To avoid problems of reduced gear precision and other manufacturing difficulties, do not attempt to machine the gears to reduce face widths.
- ⑦ When induction-hardening S45C products, thermal stress cracks may appear. Also, note that the precision grade of the product declines by 1 or 2 grades, as deformation on material may occur. If you require tolerance for bore or other parts, machining is necessary after heat treatment.

2. Points of Caution during Assembly

- ① The recommended center distance tolerance of KHK stock helical gears is H7 for ground gears and H8 for cut gears. The amount of backlash is given in the product table for each gear. For the center distance of SH, refer to the dimensional table page.



- ② The table below indicates the tolerance on the total length of KHK stock spur gears. Please refer to this data when designing gearboxes or other components.

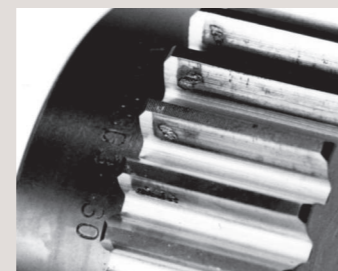
■ Total Length Tolerance for Spur and Helical Gears

Total Length (mm)	Tolerance
30 or less	0 -0.10
31 to 100	0 -0.15
Over 100	0 -0.20

[Note] The following products are excluded from this table: Hardened Plus, Spur pinion shafts, Injection molded spur gears, F-loc hub spur gears, and MC nylon products.

- ③ Verify that the two shafts are parallel. Incorrect assembly will lead to uneven teeth contact which will cause noise and wear. (After assembly, check the tooth contact by painting a thin layer of red lead primer or the like on the gear teeth, meshing them together and rotating them.)

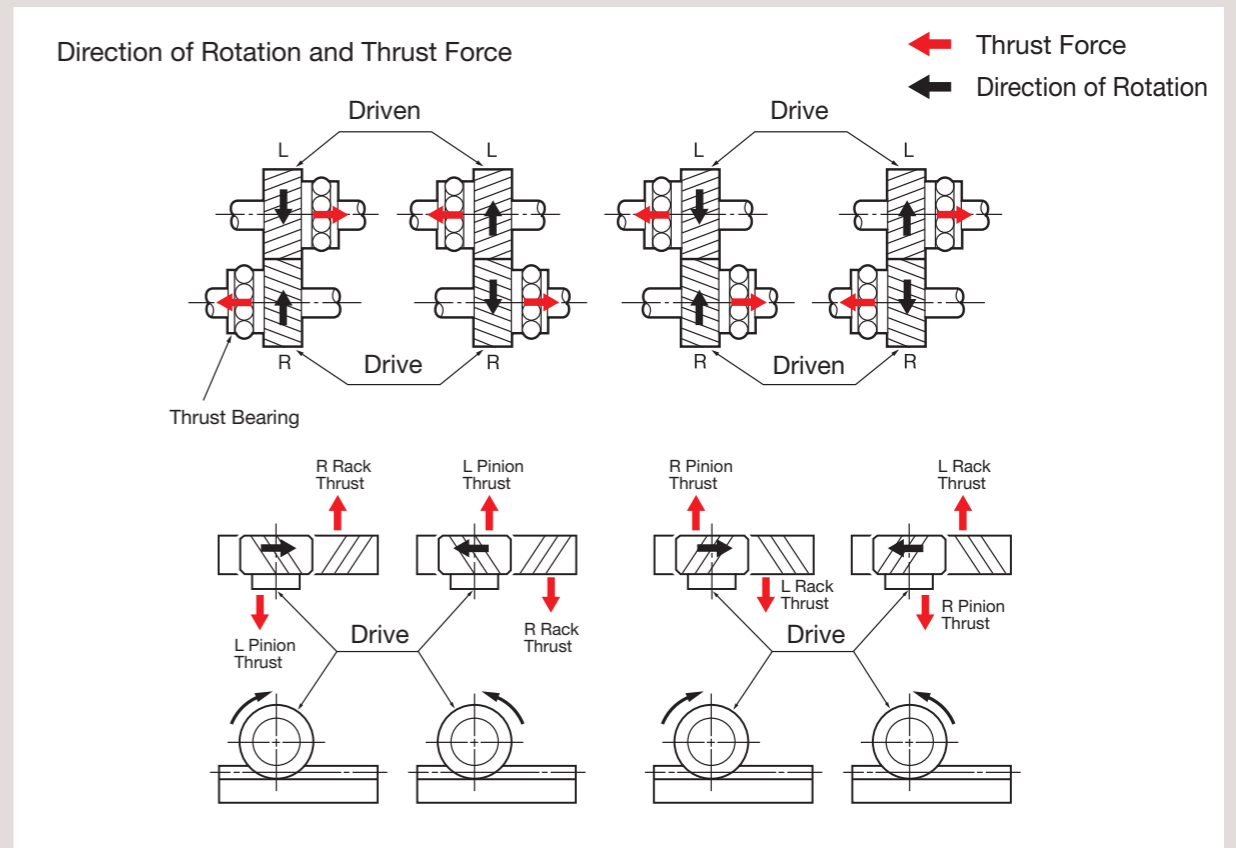
■ Test example: Abrasion occurred on SSG3-30 due to poor edge contact (only 30% with proper contact).



Poor tooth contact and pitting

Gear oil (equivalent to JIS gear oil category 2 No. 3)
 The design conditions were load torque at 278 rpm, 42.5 kg/m (12 kW), 1.5 times the allowable bending strength, and 3 times the allowable surface durability torque.
 The pitting occurred on the poor tooth contact area after 60 hours of continuous operation.

- ④ Due to the helix of helical gears, they produce thrust force (axial). The bearings must be selected properly to be able to handle these thrust forces. The direction of the thrust forces depend on the helix direction and the direction of rotation as shown below.
For details, use gear calculation software GCSW.



3. Cautions on Starting

- ① Check the following items before starting.
 - Are the gears installed securely?
 - Is there uneven tooth contact?
 - Is there adequate backlash?
(Be sure to avoid zero-backlash.)
 - Has proper lubrication been supplied?
- ② If gears are exposed, be sure to attach a safety cover to ensure safety. Also, be careful not to touch rotating gears.
- ③ If there is any abnormality such as noise or vibration during startup, stop the operation immediately and check the assembly condition such as tooth contact, eccentricity and looseness.

KHK considers safety a priority in the use of our products.

When handling, adding secondary operations, assembling, and operating KHK products, please be aware of the following issues in order to prevent accidents.



Warning: Precautions for preventing physical and property damage

1. When using KHK products, follow relevant safety regulations (Occupational Safety and Health Regulations, etc.).
2. Pay attention to the following items when installing, removing, or performing maintenance and inspection of the product.
 - ① Turn off the power switch.
 - ② Do not reach or crawl under the product.
 - ③ Wear appropriate clothing and protective equipment for the work.



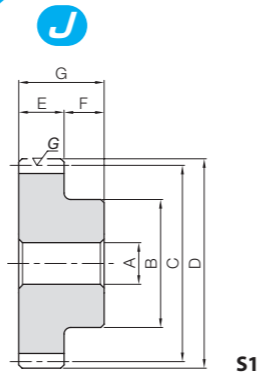
Caution Cautions in Preventing Accidents

1. Before using a KHK product, read the precautions in the catalog carefully in order to use it correctly.
2. Avoid use in environments that may adversely affect the product.
3. Our products are manufactured under a superior quality control system based on the ISO9001 quality management system; if you notice any malfunctions upon purchasing a product, please contact the supplier.



Specifications	
Precision grade	JIS grade N6 (JIS B1702-1: 1998)*
Reference section of gear	Rotating plane
Gear teeth	Standard full depth
Transverse pressure angle	20°
Helix angle	21°30'
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

* The precision grade of J Series products is equivalent to the value shown in the table.
 ** 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).

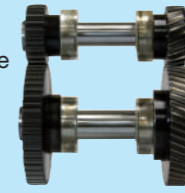


Catalog Number	Module	No. of teeth	Direction of helix	Shape	Bore		Pitch dia.		Outside dia.		Face width	Hub width	Total length	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)					
					A _{H7}	B	C	D	E	F				G	Bending strength	Surface durability	Bending strength			Surface durability				
KHG1-20R KHG1-20L	m1	20	R L	S1	6	17	20	22						7.80	4.96	0.80	0.51	0.08~0.16	0.034					
KHG1-24R KHG1-24L		24	R L		8	20	24	26							10.1	7.43	1.03			0.76				
KHG1-30R KHG1-30L		30	R L		10	25	30	32							13.6	12.2	1.39			1.24				
KHG1-40R KHG1-40L		40	R L			30	40	42	8	10	18	17.9	20.8	1.83	2.12	23.6	33.8			2.41	3.45			
KHG1-50R KHG1-50L		50	R L		12	35	50	52							29.4	50.2	2.99			5.12	0.26			
KHG1-60R KHG1-60L		60	R L			40	60	62				35.2	70.1	3.59	7.15							0.32		
KHG1-70R KHG1-70L		70	R L		40	70	72																	
KHG1.5-20R KHG1.5-20L		m1.5	20		R L	S1	12	24	30	33						26.3	17.2			2.68	1.75	0.08~0.16	0.088	
KHG1.5-24R KHG1.5-24L			24		R L			28	36	39				30.9	23.4	3.16	2.39							
KHG1.5-30R KHG1.5-30L			30		R L		15	38	45	48							41.8			38.4	4.26			3.92
KHG1.5-32R KHG1.5-32L	32		R L	40	48			51				45.5	44.3	4.64	4.52					0.26				
KHG1.5-36R KHG1.5-36L	36		R L	40	45		54	57							53.0	57.4	5.40	5.85	0.33					
KHG1.5-40R KHG1.5-40L	40		R L		50		60	63	12	12	24	60.5	72.3	6.17	7.38					0.42				
KHG1.5-50R KHG1.5-50L	50		R L	18	60		75	78							79.7	118	8.13	12.0	0.63					
KHG1.5-60R KHG1.5-60L	60		R L		60		90	93				99.1	175	10.1	17.9					0.81				
KHG1.5-80R KHG1.5-80L	80		R L	20	70		120	123							132	313	13.5	32.0	1.37					
KHG1.5-90R KHG1.5-90L	90		R L		70		135	138				151	404	15.4	41.2					1.65				
KHG1.5-100R KHG1.5-100L	100	R L	70	150	153				170	508	17.4	51.8						1.97						

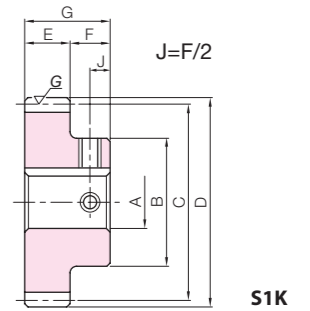
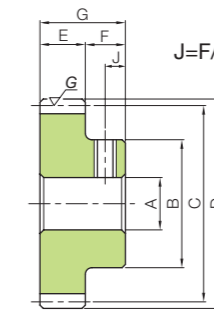
[Caution on Secondary Operations] ① Because of the influence of hardening residual stress, avoid removing the entire boss, as it may cause the gears to deform.

Usable in the assembly distance of the spur gear.

KHG ground helical gears use a "transverse" module. The assembly distance is the same as spur gear pairs with the same module and number of teeth. Improved strength and low noise: Take the next step up from spur gears.



J Series



To order J Series products, please specify: **Catalog No. + J + BORE.**

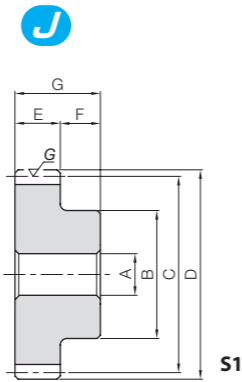
Bore H7	* The product shapes of J Series items are identified by background color.														
	6	8	10	12	14	15	16	17	18	19	20	22	25	28	30
Keyway J _{S9}	-		4x1.8		5x2.3			6x2.8			8x3.3				
Screw size	-		4x1.8		5x2.3			6x2.8			8x3.3				
Catalog Number	M4	M5	M4			M5			M6						
KHG1-20R J BORE															
KHG1-20L J BORE															
KHG1-24R J BORE															
KHG1-24L J BORE															
KHG1-30R J BORE															
KHG1-30L J BORE															
KHG1-40R J BORE															
KHG1-40L J BORE															
KHG1-50R J BORE															
KHG1-50L J BORE															
KHG1-60R J BORE															
KHG1-60L J BORE															
KHG1-70R J BORE															
KHG1-70L J BORE															
KHG1.5-20R J BORE															
KHG1.5-20L J BORE															
KHG1.5-24R J BORE															
KHG1.5-24L J BORE															
KHG1.5-30R J BORE															
KHG1.5-30L J BORE															
KHG1.5-32R J BORE															
KHG1.5-32L J BORE															
KHG1.5-36R J BORE															
KHG1.5-36L J BORE															
KHG1.5-40R J BORE															
KHG1.5-40L J BORE															
KHG1.5-50R J BORE															
KHG1.5-50L J BORE															
KHG1.5-60R J BORE															
KHG1.5-60L J BORE															
KHG1.5-80R J BORE															
KHG1.5-80L J BORE															
KHG1.5-90R J BORE															
KHG1.5-90L J BORE															
KHG1.5-100R J BORE															
KHG1.5-100L J BORE															

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.



Specifications	
Precision grade	JIS grade N6 (JIS B1702-1: 1998)
Reference section of gear	Rotating plane
Gear teeth	Standard full depth
Transverse pressure angle	20°
Helix angle	21°30'
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

* The precision grade of J Series products is equivalent to the value shown in the table.
 ** 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).

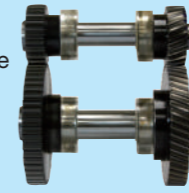


Catalog Number	Module	No. of teeth	Direction of helix	Shape	Bore		Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)		
					A _{H7}	H7							Bending strength	Surface durability	Bending strength	Surface durability				
KHG2-15R KHG2-15L	m2	15	R L	S1	12	A _{H7}	24	30	34	16	13	29	40.5	21.1	4.13	2.15	0.10~0.20	0.11		
KHG2-18R KHG2-18L		18	R L				30	36	40				48.6	29.5	4.96	3.01			0.17	
KHG2-20R KHG2-20L		20	R L				32	40	44				56.7	37.8	5.78	3.85			0.20	
KHG2-25R KHG2-25L		25	R L				15	40	50				54	77.6	62.1	7.91			6.33	0.33
KHG2-26R KHG2-26L		26	R L					42	52				56	81.8	67.8	8.35			6.91	0.37
KHG2-30R KHG2-30L		30	R L				18	50	60				64	99.1	93.1	10.1			9.49	0.50
KHG2-32R KHG2-32L		32	R L					50	64				68	108	107	11.0			10.9	0.55
KHG2-35R KHG2-35L		35	R L				50	70	74				121	131	12.4	13.3			0.63	
KHG2-36R KHG2-36L		36	R L				50	72	76				126	139	12.8	14.2			0.65	
KHG2-40R KHG2-40L		40	R L				20	60	80				84	143	176	14.6			17.9	0.85
KHG2-48R KHG2-48L		48	R L					60	96				100	172	251	17.5			25.6	1.13
KHG2-50R KHG2-50L		50	R L				25	60	100				104	181	274	18.4			28.0	1.16
KHG2-60R KHG2-60L		60	R L					65	120				124	225	408	22.9			41.7	1.65
KHG2-70R KHG2-70L		70	R L				70	140	144				269	572	27.4	58.3			2.21	
KHG2-80R KHG2-80L		80	R L				80	160	164				301	732	30.7	74.7			2.93	

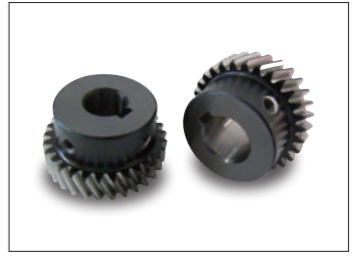
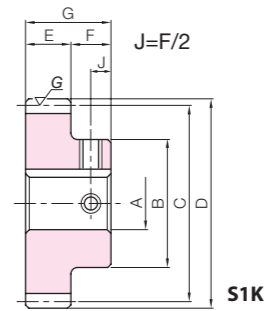
[Caution on Secondary Operations] ① Because of the influence of hardening residual stress, avoid removing the entire boss, as it may cause the gears to deform.

Usable in the assembly distance of the spur gear.

KHG ground helical gears use a "transverse" module. The assembly distance is the same as spur gear pairs with the same module and number of teeth. Improved strength and low noise: Take the next step up from spur gears.



J Series



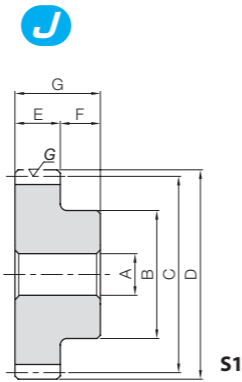
To order J Series products, please specify: **Catalog No. + J + BORE.**

Bore H7	* The product shapes of J Series items are identified by background color.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Keyway J _{s9}	4x1.8			5x2.3			6x2.8			8x3.3			10x3.3		12x3.3		14x3.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
Screw size	M4			M5			M6			M8			M10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Catalog Number	<table border="1"> <tr><td>KHG2-15R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-15L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-18R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-18L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-20R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-20L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-25R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-25L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-26R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-26L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-30R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-30L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-32R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-32L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-35R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-35L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-36R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-36L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-40R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-40L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-48R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-48L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-50R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-50L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-60R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-60L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-70R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-70L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-80R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>KHG2-80L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>																	KHG2-15R J BORE																		KHG2-15L J BORE																		KHG2-18R J BORE																		KHG2-18L J BORE																		KHG2-20R J BORE																		KHG2-20L J BORE																		KHG2-25R J BORE																		KHG2-25L J BORE																		KHG2-26R J BORE																		KHG2-26L J BORE																		KHG2-30R J BORE																		KHG2-30L J BORE																		KHG2-32R J BORE																		KHG2-32L J BORE																		KHG2-35R J BORE																		KHG2-35L J BORE																		KHG2-36R J BORE																		KHG2-36L J BORE																		KHG2-40R J BORE																		KHG2-40L J BORE																		KHG2-48R J BORE																		KHG2-48L J BORE																		KHG2-50R J BORE																		KHG2-50L J BORE																		KHG2-60R J BORE																		KHG2-60L J BORE																		KHG2-70R J BORE																		KHG2-70L J BORE																		KHG2-80R J BORE																		KHG2-80L J BORE																	
KHG2-15R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-15L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-18R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-18L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-20R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-20L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-25R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-25L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-26R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-26L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-30R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-30L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-32R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-32L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-35R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-35L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-36R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-36L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-40R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-40L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-48R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-48L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-50R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-50L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-60R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-60L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-70R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-70L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-80R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
KHG2-80L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.



Specifications	
Precision grade	JIS grade N6 (JIS B1702-1: 1998)*
Reference section of gear	Rotating plane
Gear teeth	Standard full depth
Transverse pressure angle	20°
Helix angle	21°30'
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth



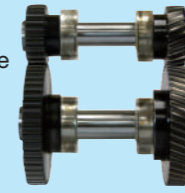
* The precision grade of J Series products is equivalent to the value shown in the table.
 ** Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).

Catalog Number	Module	No. of teeth	Direction of helix	Shape	Bore		Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)			
					A _{H7}	B						Bending strength	Surface durability	Bending strength	Surface durability					
KHG2.5-18R KHG2.5-18L	m2.5	18	R L	S1	15	38	45	50	20	14	34	94.9	58.6	9.68	5.97	0.10~0.20	0.33			
KHG2.5-20R KHG2.5-20L		20	R L		18	40	50	55				111	75.0	11.3	7.65			0.38		
KHG2.5-26R KHG2.5-26L		26	R L		20	50	65	70				160	135	16.3	13.7			0.65		
KHG2.5-40R KHG2.5-40L		40	R L		25	70	100	105				268	335	27.3	34.1			1.53		
KHG2.5-48R KHG2.5-48L		48	R L			75	120	125				336	500	34.2	51.0			2.13		
KHG2.5-60R KHG2.5-60L		60	R L			80	150	155				439	815	44.8	83.2			3.20		
KHG3-16R KHG3-16L		m3	16			R L	S1	18				38	48	54	143			80.5	14.6	8.21
KHG3-18R KHG3-18L			18		R L	40						54	60	171	106			17.4	10.8	0.53
KHG3-20R KHG3-20L			20		R L	20		50				60	66	199	136			20.3	13.9	0.70
KHG3-24R KHG3-24L			24		R L			58				72	78	258	206			26.3	21.0	1.03
KHG3-28R KHG3-28L	28		R L	70	84			90	318	290	32.4	29.6	1.47							
KHG3-30R KHG3-30L	30		R L	25	75			90	96	349	339	35.5	34.5	1.65						
KHG3-35R KHG3-35L	35		R L		80	105		111	407	456	41.5	46.5	2.17							
KHG3-36R KHG3-36L	36		R L		80	108		114	422	485	43.1	49.5	2.27							
KHG3-40R KHG3-40L	40		R L		80	120		126	483	613	49.2	62.5	2.69							
KHG3-45R KHG3-45L	45		R L		80	135		141	559	795	57.0	81.0	3.28							
KHG3-48R KHG3-48L	48	R L	85		144	150	604	916	61.6	93.4	3.75									
KHG3-50R KHG3-50L	60	50	R L	30	85	150	156	635	1000	64.8	102	3.95								
KHG3-60R KHG3-60L		60	R L		90	180	186	757	1430	77.2	146	5.57								

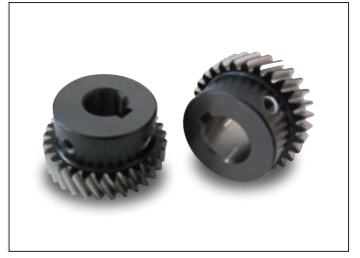
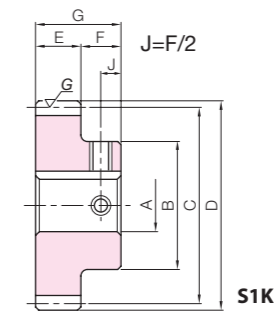
[Caution on Secondary Operations] ① Because of the influence of hardening residual stress, avoid removing the entire boss, as it may cause the gears to deform.

Usable in the assembly distance of the spur gear.

KHG ground helical gears use a "transverse" module. The assembly distance is the same as spur gear pairs with the same module and number of teeth. Improved strength and low noise: Take the next step up from spur gears.



J Series



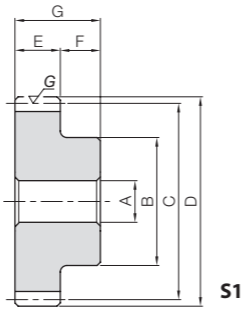
To order J Series products, please specify: **Catalog No. + J + BORE.**

Bore H7	* The product shapes of J Series items are identified by background color.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
Keyway J _{S9}	5x2.3			6x2.8			8x3.3			10x3.3		12x3.3		14x3.8																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
Screw size	M4			M5			M6			M8		M10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
Catalog Number	<table border="1"> <tr> <td>KHG2.5-18R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-18L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-20R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-20L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-26R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-26L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-40R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-40L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-48R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-48L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-60R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG2.5-60L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-16R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-16L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-18R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-18L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-20R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-20L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-24R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-24L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-28R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-28L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-30R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-30L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-35R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-35L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-36R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-36L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-40R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-40L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-45R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-45L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-48R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-48L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-50R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-50L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-60R J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>KHG3-60L J BORE</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>															KHG2.5-18R J BORE																KHG2.5-18L J BORE																KHG2.5-20R J BORE																KHG2.5-20L J BORE																KHG2.5-26R J BORE																KHG2.5-26L J BORE																KHG2.5-40R J BORE																KHG2.5-40L J BORE																KHG2.5-48R J BORE																KHG2.5-48L J BORE																KHG2.5-60R J BORE																KHG2.5-60L J BORE																KHG3-16R J BORE																KHG3-16L J BORE																KHG3-18R J BORE																KHG3-18L J BORE																KHG3-20R J BORE																KHG3-20L J BORE																KHG3-24R J BORE																KHG3-24L J BORE																KHG3-28R J BORE																KHG3-28L J BORE																KHG3-30R J BORE																KHG3-30L J BORE																KHG3-35R J BORE																KHG3-35L J BORE																KHG3-36R J BORE																KHG3-36L J BORE																KHG3-40R J BORE																KHG3-40L J BORE																KHG3-45R J BORE																KHG3-45L J BORE																KHG3-48R J BORE																KHG3-48L J BORE																KHG3-50R J BORE																KHG3-50L J BORE																KHG3-60R J BORE																KHG3-60L J BORE															
KHG2.5-18R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-18L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-20R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-20L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-26R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-26L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-40R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-40L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-48R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-48L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-60R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG2.5-60L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-16R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-16L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-18R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-18L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-20R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-20L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-24R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-24L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-28R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-28L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-30R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-30L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-35R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-35L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-36R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-36L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-40R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-40L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-45R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-45L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-48R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-48L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-50R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-50L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-60R J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
KHG3-60L J BORE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.



Specifications	
Precision grade	JIS grade N6 (JIS B 1702-1: 1999)*
Reference section of gear	Rotating plane
Gear teeth	Standard full depth
Transverse pressure angle	20°
Helix angle	21°30'
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	-

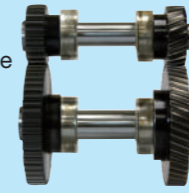


S1

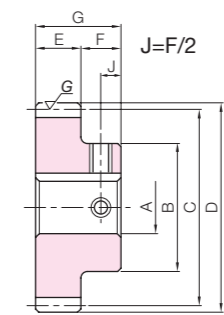
* The precision grade of J Series products is equivalent to the value shown in the table.
 ** Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).

Usable in the assembly distance of the spur gear.

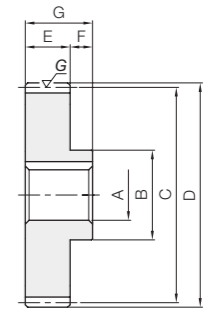
KHG ground helical gears use a "transverse" module. The assembly distance is the same as spur gear pairs with the same module and number of teeth. Improved strength and low noise: Take the next step up from spur gears.



J Series



S1K



S1SK

To order J Series products, please specify: **Catalog No. + J + BORE.**

Catalog Number	Module	No. of teeth	Direction of helix	Shape	Bore A _{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)				
												Bending strength	Surface durability	Bending strength	Surface durability						
KHG4-18RS KHG4-18LS	m4	18	R	S1	20	60	72	80	32	25	57	389	244	39.7	24.9	0.10~0.20	1.44				
KHG4-20RS KHG4-20LS			L															65	80	88	454
KHG4-25RS KHG4-25LS		R	80			100	108	621				513	63.3	52.3							
KHG4-30RS KHG4-30LS		L													120			128	793	769	80.9
KHG4-36RS KHG4-36LS		R	90			144	152	1000				1150	102	117							
KHG4-40RS KHG4-40LS		L													160			168	1150	1450	117
KHG4-50RS KHG4-50LS		R	100		200	208	1450	2270	147	231											
KHG4-60RS KHG4-60LS		L									110	240	248	1800	3380			183	344		
KHG5-18RS KHG5-18LS		m5	18		R	S1	25	70	90	100										40	25
KHG5-20RS KHG5-20LS					L						82	100	110	886	620			90.3	63.2		
KHG5-25RS KHG5-25LS			R		105			125	135	1210											
KHG5-30RS KHG5-30LS			L								120	150	160	1550	1530			158	156		
KHG5-36RS KHG5-36LS	R		130	180	190			1960	2290	200						234					
KHG5-40RS KHG5-40LS	L										140	200	210	2140	2770		219	282			
KHG5-50RS KHG5-50LS	R		250	260	2820		4520	288	461												
KHG5-60RS KHG5-60LS	L									300	310	3510	6740	358	687						
KHG6-18RS KHG6-18LS	m6		18	R	S1		25	80	108							120	48	28	76	1310	848
KHG6-20RS KHG6-20LS				L						100	120	132	1530	1090	156						
KHG6-25RS KHG6-25LS			R	125				150	162							2090				1790	214
KHG6-30RS KHG6-30LS			L							150	180	192	2680	2690	273						
KHG6-36RS KHG6-36LS		R	160	216		228		3240	3850							331				393	
KHG6-40RS KHG6-40LS		L								170	240	252	3710	4860	378						496
KHG6-50RS KHG6-50LS		R	300	312		4880	7950	497	811												
KHG6-60RS KHG6-60LS		L								360	372	5810	11400	593	1160						

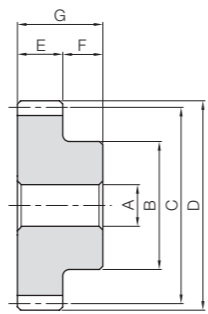
Bore H7	* The product shapes of J Series items are identified by background color.																					
	20	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
Keyway J _{S9}	6x2.8			8x3.3			10x3.3	12x3.3	14x3.8	16x4.3	18x4.4			20x4.9	22x5.4	25x5.4			28x6.4			
Screw size																						
Catalog Number	M5			M6			M8			M10			M12			M16			M20			
KHG4-18RS J BORE	Ask for Quote																					
KHG4-18LS J BORE	Ask for Quote																					
KHG4-20RS J BORE	Ask for Quote																					
KHG4-20LS J BORE	Ask for Quote																					
KHG4-25RS J BORE	Ask for Quote																					
KHG4-25LS J BORE	Ask for Quote																					
KHG4-30RS J BORE	Ask for Quote																					
KHG4-30LS J BORE	Ask for Quote																					
KHG4-36RS J BORE	Ask for Quote																					
KHG4-36LS J BORE	Ask for Quote																					
KHG4-40RS J BORE	Ask for Quote																					
KHG4-40LS J BORE	Ask for Quote																					
KHG4-50RS J BORE	Ask for Quote																					
KHG4-50LS J BORE	Ask for Quote																					
KHG4-60RS J BORE	Ask for Quote																					
KHG4-60LS J BORE	Ask for Quote																					
KHG5-18RS J BORE	Ask for Quote																					
KHG5-18LS J BORE	Ask for Quote																					
KHG5-20RS J BORE	Ask for Quote																					
KHG5-20LS J BORE	Ask for Quote																					
KHG5-25RS J BORE	Ask for Quote																					
KHG5-25LS J BORE	Ask for Quote																					
KHG5-30RS J BORE	Ask for Quote																					
KHG5-30LS J BORE	Ask for Quote																					
KHG5-36RS J BORE	Ask for Quote																					
KHG5-36LS J BORE	Ask for Quote																					
KHG5-40RS J BORE	Ask for Quote																					
KHG5-40LS J BORE	Ask for Quote																					
KHG5-50RS J BORE	Ask for Quote																					
KHG5-50LS J BORE	Ask for Quote																					
KHG5-60RS J BORE	Ask for Quote																					
KHG5-60LS J BORE	Ask for Quote																					
KHG6-18RS J BORE	Ask for Quote																					
KHG6-18LS J BORE	Ask for Quote																					
KHG6-20RS J BORE	Ask for Quote																					
KHG6-20LS J BORE	Ask for Quote																					
KHG6-25RS J BORE	Ask for Quote																					
KHG6-25LS J BORE	Ask for Quote																					
KHG6-30RS J BORE	Ask for Quote																					
KHG6-30LS J BORE	Ask for Quote																					
KHG6-36RS J BORE	Ask for Quote																					
KHG6-36LS J BORE	Ask for Quote																					
KHG6-40RS J BORE	Ask for Quote																					
KHG6-40LS J BORE	Ask for Quote																					
KHG6-50RS J BORE	Ask for Quote																					
KHG6-50LS J BORE	Ask for Quote																					
KHG6-60RS J BORE	Ask for Quote																					
KHG6-60LS J BORE	Ask for Quote																					

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
 ② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 193.
 [Caution on Secondary Operations] ① Because of the influence of hardening residual stress, avoid removing the entire boss, as it may cause the gears to deform.

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.



Specifications	
Precision grade	JIS grade N8 (JIS B1702-1:1998)
Reference section of gear	Normal plane
Gear teeth	Standard full depth
Normal pressure angle	20°
Helix angle	15°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating



S1

H To order Hardened Plus, please specify **Catalog No. + H**. Example: **SH2-15RH**

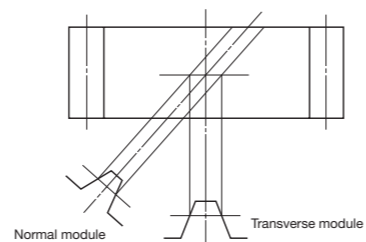
Catalog Number	Module	No. of teeth	Direction of helix	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length
					A _{H7}	B	C	D	E	F	G
SH2-15R SH2-15L	m2	15	R L	S1	12	24	31.06	35.06	25	10	35
SH2-20R SH2-20L		20	R L		12	32	41.41	45.41			
SH2-30R SH2-30L		30	R L		12	50	62.12	66.12			
SH2-40R SH2-40L		40	R L		18	60	82.82	86.82			
SH2-60R SH2-60L		60	R L		18	70	124.23	128.23			
SH3-15R SH3-15L		m3	15		R L	S1	15	36			
SH3-20R SH3-20L	20		R L	15	50		62.12	68.12			
SH3-30R SH3-30L	30		R L	20	70		93.17	99.17			
SH3-40R SH3-40L	40		R L	20	80		124.23	130.23			
SH3-60R SH3-60L	60		R L	20	140		186.35	192.35			

[Caution on Secondary Operations] ① See Page 22 for more details on Hardened Plus (H Series and HJ Series).

Allowable torque						Backlash (mm)	Weight (kg)	Catalog Number
Bending strength		Surface durability		Surface durability H				
N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
43.7	4.46	2.90	0.30	13.7	1.40	0.12~0.26	0.15	SH2-15R SH2-15L
67.1	6.84	5.85	0.60	27.2	2.78		0.30	SH2-20R SH2-20L
117	11.9	15.3	1.56	69.8	7.12		0.72	SH2-30R SH2-30L
169	17.2	28.9	2.95	130	13.3		1.21	SH2-40R SH2-40L
275	28.0	70.8	7.22	310	31.6		2.61	SH2-60R SH2-60L
138	14.0	9.67	0.99	44.8	4.57		0.14~0.32	0.52
211	21.6	19.4	1.98	88.7	9.05	0.99		SH3-20R SH3-20L
368	37.5	50.2	5.12	225	22.9	2.20		SH3-30R SH3-30L
531	54.1	95.5	9.73	418	42.6	3.80		SH3-40R SH3-40L
866	88.3	236	24.0	993	101	9.18		SH3-60R SH3-60L

Reference Section of Gears

Transverse module (SH helical gears) and normal module (KHG ground helical gears) are available for the gear teeth according to the gear reference cross section. Even if products have the same helix angle and module, transverse and normal module gears have different gear teeth and thus are not interchangeable.



* Above is for illustration purposes only and differs from actual tooth forms.

Center Distance Table of SH Helical Gears

Catalog Number	SH2-15 ^R _L	SH2-20 ^R _L	SH2-30 ^R _L	SH2-40 ^R _L	SH2-60 ^R _L
SH2-15 ^R _L	31.06	—	—	—	—
SH2-20 ^R _L	36.23	41.41	—	—	—
SH2-30 ^R _L	46.59	51.76	62.12	—	—
SH2-40 ^R _L	56.94	62.12	72.47	82.82	—
SH2-60 ^R _L	77.65	82.82	93.17	103.53	124.23

Center Distance Table of SH Helical Gears

Catalog Number	SH3-15 ^R _L	SH3-20 ^R _L	SH3-30 ^R _L	SH3-40 ^R _L	SH3-60 ^R _L
SH3-15 ^R _L	46.59	—	—	—	—
SH3-20 ^R _L	54.35	62.12	—	—	—
SH3-30 ^R _L	69.88	77.65	93.17	—	—
SH3-40 ^R _L	85.41	93.17	108.70	124.23	—
SH3-60 ^R _L	116.47	124.23	139.76	155.29	186.35