

PICTORIAL INDEX OF RACKS AND CP RACKS

RACKS

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



Racks

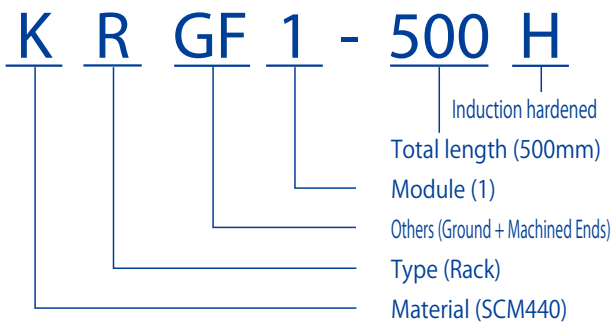
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- Spur Gears
- Helical Gears
- Internal Gears
- Racks
- CP Racks & Pinions
- Miter Gears
- Bevel Gears
- Screw Gears
- Worm Gear Pair
- Bevel Gearboxes
- Other Products

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 their Catalog Numbers.

(Example) Racks



Material

- S S45C
- K SCM440
- SU SUS304
- BS Free Cutting brass C3604
- P MC901
- D DURACON

Type

- R Racks
- RH Helical Racks
- RO Round Racks

Other Information

- F Racks with Machined Ends
- D Racks with Bolt Holes
- K Racks with Drill Holes
- G Ground Racks
- H Induction hardened tooth surface

Feature Icons

- RoHS Compliant Product
- Finished Product
- Ground Gear
- Resin Product
- Re-machinable Product
- Heat Treated Product
- Stainless Product
- Copper Alloy Product
- Injection Molded Product
- Black Oxide coated Product

Characteristics



KHK stock racks are made for high precision linear motion applications. We offer a large selection of racks ranging from module 0.5 to 10 and lengths from 100 to 2000 mm. The following table lists the main features.

Catalog No. <small>Note 1</small>	Module	Total Length (mm)	Material	Heat Treatment	Tooth Surface Finish	Precision <small>KHK R 001 Note 3</small>	Features
MRGF · MRGFD	1.5 ~ 3	500	SCM415	Tooth area Carburized	Ground	1	Has the highest strength and precision in the KHK standard rack series. Bolt holes can be remachined as carburizing is applied only within the tooth area. J Series products are also available.
KRGF-H KRGFD-H	1.5 ~ 3	500,1000	SCM440	Thermal re-fined, induction hardened	Ground	1	Heat treated ground gears with high precision and strength has excellent cost-performance ratio. J Series products are also available.
KRG · KRGF · KRGD	1 ~ 3	100,500, 1000	SCM440	Thermal refined	Ground	1	High strength and abrasion-resistant for precision linear motion.
SRG · SRGF · SRGFD · SRGFK	0.5 ~ 6	100,300, 500,1000	S45C	Gear teeth induction hardened <small>Note 2</small>	Ground	3	Reasonably priced ground racks with abrasion-resistant characteristics. J Series products are also available.
KRF-H KRFD-H	1.5 ~ 5	1000	SCM440	Thermal refining and teeth induction hardened	Ground	5	This is a strong rack made of Chromoly steel, treated by carburizing. Has high-strength, high wear resistance, and enables downsizing of SR racks. J Series products are also available.
SRF-H SRFD-H	1.5 ~ 4	1000	S45C	Gear teeth induction hardened	Cut	4	Stable Hardened racks with high strength, long life span are reasonably priced. J Series products are also available.
KRF · KRFD	1.5 ~ 5	1000	SCM440	Thermal refined	Cut	4	Increased strength with SCM440 material which is thermal refined.
SRAF · SRAFD · SRAFK	1.5 ~ 4	1000	S45C	—	Cut	4	This gear rack has the same tooth height and face width sizes, more compact and reasonably priced in comparison to SRF Racks
SR · SRF · SRFD · SRFK	0.5 ~ 10	100,300,500, 1000,1500,2000	S45C	Straightened & annealed	Cut	4	Low cost, large selections of modules and number of teeth. J Series products are also available.
SUR · SURF · SURFD	1 ~ 4	500,1000	SUS304	Solution treated	Cut	5	Suitable for food machinery due to SUS304 material's rust-resistant quality.
DRF · DRFD · DRFK	1 ~ 3	500, 1000	Polyacetal	—	Hobbed	5	Plastic racks with little dimensional change, absorb lesser water than MC Nylon racks. J Series products are also available.
PR · PRF	1 ~ 3	500,1000	MC901	—	Cut	5	Made form MC nylon, can be used without lubrication.
BSR	0.5 ~ 1	300	C3604	—	Cut	4	Small pitch racks made of free-cutting brass, excellent workability and high rust resistance.
DR	0.8 ~ 2	2000	Duracon (M25-44)	—	Injection Molded	8	Used in applications due to its flexibility, where metal racks do not have this attribute. Pinions and accessories are also available.
SRO · SROS	1 ~ 6	500,1000	S45C	Straightened & annealed	Cut	4	Convenient in applications where the rack has the reciprocal motion. S Type is easy to install.
SURO	1 ~ 3	500,1000	SUS303	—	Cut	5	Same dimensions as SRO racks, except in stainless steel. Use where rust-resistance is required.
KRHG · KRHGF	1 ~ 3	100,500, 1000	SCM440	Thermal refined	Ground	1	Excellent products with high precision and strength, and low noise and abrasion characteristics.
SRH · SRHF · SRHFD	2 ~ 3	100,500, 1000	S45C	Straightened & annealed	Cut	5	Effective in reducing noise and vibration due to larger contact ratio of helical gears.

(NOTE 1) The catalog numbers in the above table with (F) suffix have both ends machined so that they can be butted against each other to make any desired length. The items with (D) have mounting screw holes for easier assembly.

(NOTE 2) Products with module less than 0.8 are thermal refined, without their gear teeth being induction hardened.

(NOTE 3) Precision grade standard of racks are set by KHK. Please see "Precision of Racks" in Selection Hints section for details.

- For safe handling and to prevent damage such as deformation, KHK stock racks have round chamfering at the corners of the top land of the gear tooth. This rounded chamfered shape is patented by KHK. Because it is effective for reducing noise, all of KHK products, except for BSR and PR racks, have this chamfering treatment.
- Black colored products are KHK stock gears that have an applied black oxide coating for rust resistance; this 'blackness' is a product characteristic of KHK stock gears.

Selection Hints



Please select the most suitable products by carefully considering the characteristics of items and contents of the product tables. It is also important to read all applicable notes before the final selection.

1. Caution in selecting the mating Gears

- ① With the exception of helical racks, KHK stock racks can mate with any spur gears of the same module. Products with different tooth width can also be mated as a pinion.
- ② There are limited choices for of mating gears for KRHG · KRHGF Ground Helical Racks and Helical Racks. There are limited choices for of mating gears for KRHG(F) Ground Helical Racks and SH Helical Racks. Be sure to check the helix hand (right or left) when selecting.

2. Caution in Selecting Gears Based on Gear Strength

Allowable bending strength and surface durability values shown in product tables were computed by assuming a certain application environment. They should be used as reference only. We recommend that each user computes his own values by applying the actual usage conditions. The table below contains the assumptions established for various products in order to compute gear strengths.

Mating Gear Selection Chart (○ Allowable × Not allowable)

Catalog No. & Helix Hand		KRHG KRHGF		SRH · SRHF SRHFD	
		RH	LH	RH	LH
KHG	LH	○	×	×	×
	RH	×	○	×	×
SH	LH	×	×	○	×
	RH	×	×	×	○



Pinion Left (L) & Rack Right (R)



Pinion Right (R) & Rack Left (L)

Calculation assumptions for Bending Strength of Gears

Item	Catalog No.											
	MRGF MRGFD	KRGF-H KRGFD-H	KRG · KRHG KRGF · KRHGF KRGD · KRF	SRG SRGF	SRGF · SRGFK SRF-H · SRFD-H	SRAF · SR · SRF SRFD · SRFK SRO · SROS SRH · SRHF · SRHFD	SUR SURF	SURF SURFD SURO	BSR	DRF DRFD DRFK	PR PRF	DR
Formula <small>NOTE 1</small>	Formula of spur and helical gears on bending strength (JGMA401-01)								The Lewis formula			
No. of teeth of mating gear	30								(30)			
Rotation	100rpm								(100rpm)			
Durability	Over 10 ⁷ cycles								Allowable Bending Stress (kgf/mm ²)			
Impact from motor	Uniform load								1.0 (40°C with No Lubrica- tion)	1.15 (40°C with No Lubrica- tion)	<small>NOTE 4</small> m 0.8 4.0 m 1.0 3.5 m 1.5 1.8 m 2.0 1.2 (Grease lubri- cation 40°C)	
Impact from load	Uniform load											
Direction of load	Bidirectional											
Allowable bending stress at root σ_{Fim} (kgf/mm ²) <small>NOTE 2</small>	47	32	32	20 (24.5) <small>NOTE 3</small>		20	10.5	4				
Safety factor S_F	1.2											

Calculation assumptions for Surface Durability (Except where it is common with Bending Strength)

Formula <small>NOTE 1</small>	Formula of spur and helical gears on surface durability (JGMA402-01)					
Kinematic viscosity of lubricant	100cSt (50°C)					
Gear support	Supported on one end.					
Allowable Hertz stress σ_{Hlim} (kgf/mm ²)	166	112	79	90 (62.5)	52.5	41.3
Safety factor S_{Ht}	1.15					

(NOTE 1) JGMA (Japanese Manufacturers' Association), "MC Nylon Technical Data" of Nippon Polypenco Limited and "Duracon Gear" of Polyplastic Co. The units for rotational speed (rpm) and the load (kgf/mm²) were matched to the units needed in the equation.

(NOTE 2) The allowable bending stress at root σ_{Fim} is calculated from JGMA401-01, and set to 2/3 of the value in the consideration of the use of planetary-, idler-, or other gear systems, loaded in both directions.

(NOTE 3) For SRG, or SRGF Ground Racks, with a module less than 0.8, the rack teeth are not induction hardened. Allowable bending stress and allowable hertz stress are referred to the value shown in the parentheses.

(NOTE 4) The values for DR m 1.5 racks were assumed by KHK. Usage conditions for SSCR (DR Rack Pinion) are the same for the SSCP Pinion, shown on page 227.

Definition of bending strength by JGMA 401-01 (1974)

The allowable bending strength of a gear is defined as the allowable tangential force at the pitch circle based on the mutually allowable root stress of two meshing gears under load.



Example of the failure due to insufficient bending strength.

Definition of surface durability by JGMA 402-01 (1975)

The surface durability of a gear is defined as the allowable tangential force at the pitch circle, which permits the force to be transmitted safely without incurring surface failure.



Example of the defacement due to insufficient surface durability.

3. Selecting Racks By Precision

The precision standards of KHK stock racks are established by us. The table below indicates the tolerance ranges of our racks.

① Pitch Errors of Racks (KHK R 001)

Our precision grades for pitch errors are established by referring to JIS Standards. The precision grades are set from 1 to 8, in accordance with the tolerance of a single pitch error (S.P.E.), adjacent tooth-to-tooth error (T.T.E.), and the total composite error (T.C.E.) for each module and length.

■ Precision Grades of Racks (KHK R 001)

Unit : μm

Grade	Pitch Error	over m0.4 up to 1		over m1 up to 1.6		over m1.6 up to 2.5		over m2.5 up to 4		over m4 up to 6		over m6 up to 10	
		Rack Length (nominal)											
		1000 or less	1500 up to 2000	1000 or less	1500 up to 2000	1000 or less	1500 up to 2000	1000 or less	1500 up to 2000	1000 or less	1500 up to 2000	1000 or less	1500 up to 2000
1	SPE	10	—	10	12	11	12	11	13	13	14	14	16
	TTE	10	—	11	13	12	14	13	15	14	16	16	18
	TCE	28	—	29	33	30	35	32	37	35	40	40	45
2	SPE	14	—	14	17	15	17	16	18	18	20	20	23
	TTE	16	—	16	19	17	19	18	21	20	24	24	27
	TCE	39	—	41	48	43	49	46	53	50	57	58	64
3	SPE	20	—	20	24	21	25	23	26	25	29	29	32
	TTE	22	—	24	28	25	29	27	31	30	34	34	40
	TCE	56	—	57	67	60	70	64	74	71	80	81	91
4	SPE	28	—	29	33	30	35	32	37	35	40	40	45
	TTE	33	—	34	42	38	43	40	46	44	50	51	57
	TCE	79	—	81	95	85	99	91	105	100	115	115	130
5	SPE	39	—	41	48	43	49	46	53	50	57	58	64
	TTE	49	—	51	59	53	62	57	69	66	75	76	85
	TCE	110	—	115	135	120	140	130	145	140	160	160	180
8	SPE	206	206	212	212	219	219	—	—	—	—	—	—
	TTE	330	330	339	339	350	350	—	—	—	—	—	—
	TCE	—	—	—	—	—	—	—	—	—	—	—	—

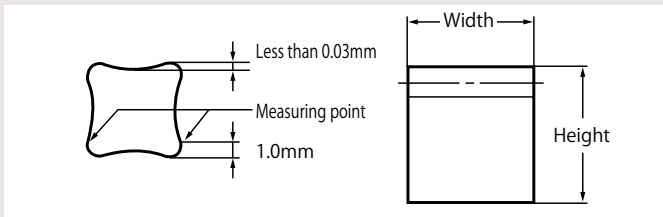
(NOTE) Since the pitch accuracy of racks may vary due to humidity, the precision grades are evaluated at the bottom surface of the product, at the temperature of 20°C. The dimensions of the KHK PR Plastic Racks may vary widely due to humidity. Therefore, the total composite error is assumed to be excluded from this accuracy standard. Please refer separate technical reference book to "Design of Plastic Gears" (Page 107) for change in dimensions.

■ Pitch inspection and a sample report using Karl Zeiss UMC-550 Coordinate Measuring Machine. (KHK R 001 Grade 1)



② Precision of Rack Blanks

■ Tolerance on Face Width and Height

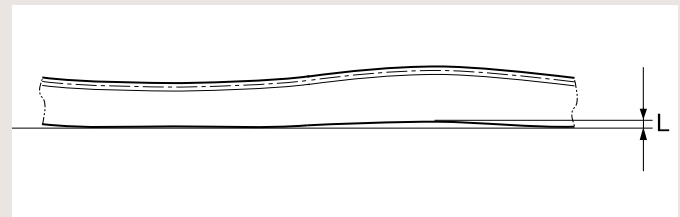


Unit: mm

Precision grade (KHK R 001) Face width & height	Grade 1	Grades 3 to 4 (Excludes thermal refined racks)	Grades 5 (Includes thermal refined racks)	Grade 8
	Below 6	—	0 - 0.09	—
6 up to 10	0 - 0.05	0 - 0.09	0 - 0.22	± 0.30
10 up to 18	0 - 0.05	0 - 0.11	0 - 0.27	± 0.35
18 up to 30	0 - 0.05	0 - 0.13	0 - 0.33	± 0.40
30 up to 50	0 - 0.05	0 - 0.16	0 - 0.39	—
50 up to 90	0 - 0.05	0 - 0.19	0 - 0.46	—

[CAUTION] The width and height tolerances of KHK R 001 grades 3 to 5 products are measured at 1mm inside from each corner. Dimensional tolerance for plastic racks is the value obtained when machining is performed, and the maximum tolerance value is +0.2 x Module (+0.40 for m2 products.), with consideration for aging.

■ Maximum Curvature Values (Flatness Tolerance L)



Unit: mm

Precision grade (KHK R 001) Length (nominal)	Grade 1	Grade 3	Grades 4 & 5
	500	0.05	0.1
1000	0.05	0.2	0.3
1500	—	—	0.3
2000	—	—	0.4

[CAUTION] The straightness tolerances of round racks are 0.15/500 mm and 0.2/1000 mm.

■ Tolerance on Overall Length

Unit: mm

Type of product	Module	Allowable error
Type F racks with machined ends	0.5	(- 0.1) (- 0.3)
	0.8 (CP2.5)	(- 0.1) (- 0.5)
	1 up to 2.5	(- 0.2) (- 0.6)
	Over 2.5	(- 0.2) (- 0.8)
FRCP, DR flexible racks	Uniform	± 10
Other racks	Uniform	+ 3 - 2

[CAUTION] For Type-F racks with machined ends, the dimensional tolerance is a calculated value according to assumed usage conditions, without consideration of pitch errors and aged deterioration.

③ Backlash of Rack Tooth

■ Backlash of Rack Tooth (Amount of Tooth Thinning)

Unit: mm

Precision grade (KHK R 001) Module (m) or Pitch (CP)	Grade 1, 2	Grade 3	Grade 4		Grade 5		
			Excludes thermal refined racks	Includes thermal refined racks	Hardened racks	Stainless steel/Helical racks	Plastic racks
			m0.5	—	0 ~ 0.07	0 ~ 0.08	—
m0.8, CP2.5	0 ~ 0.06	0 ~ 0.08	0 ~ 0.09	—	—	—	
m1	0 ~ 0.06	0 ~ 0.10	0 ~ 0.11	—	—	0 ~ 0.20	
m1.5, CP5	0 ~ 0.06	0 ~ 0.10	0.04 ~ 0.13	0.04 ~ 0.15	0.02 ~ 0.17	0.04 ~ 0.15	0 ~ 0.21
m2	0 ~ 0.06	0 ~ 0.10	0.05 ~ 0.14	0.05 ~ 0.16	0.03 ~ 0.18	0.05 ~ 0.16	0 ~ 0.22
m2.5	0 ~ 0.06	0 ~ 0.10	0.06 ~ 0.16	0.06 ~ 0.18	0.04 ~ 0.20	0.06 ~ 0.18	0 ~ 0.24
m3, CP10	0 ~ 0.06	0 ~ 0.10	0.07 ~ 0.18	0.07 ~ 0.20	0.05 ~ 0.22	0.07 ~ 0.20	0 ~ 0.27
m4	—	0 ~ 0.10	0.08 ~ 0.22	0.08 ~ 0.24	0.06 ~ 0.26	0.08 ~ 0.24	—
m5, CP15	—	0 ~ 0.10	0.09 ~ 0.24	0.09 ~ 0.26	0.07 ~ 0.28	0.09 ~ 0.26	—
m6, CP20	—	0 ~ 0.10	0.10 ~ 0.28	—	0.08 ~ 0.32	—	—
m8	—	—	0.13 ~ 0.32	—	—	—	—
m10	—	—	0.15 ~ 0.34	—	—	—	—

[NOTE] The values shown in the table are amount of tooth thinning. The theoretical backlash of assembled rack and pinion is given by:

$$\text{Rack \& pinion backlash} = \text{Amount of tooth thinning of the rack} + \text{Amount of tooth thinning of the pinion}$$

Amount of tooth thinning of the rack : See above table.

Amount of tooth thinning of the pinion : Take 1/2 of backlash given in the product table.

Application Hints



In order to use KHK stock gears safely, carefully read the Application Hints before proceeding.

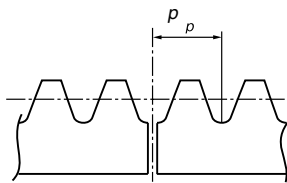
If there are questions or if you require clarifications, please contact our technical department or your nearest distributor.

KHK CO., LTD.
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 E-mail export@khkgears.co.jp

1. Caution on Performing Secondary Operations

- ① Secondary operations can be performed on all KHK stock racks except for the racks with their gear teeth induction hardened. To avoid problems of gear precision, do not reduce the face width. The precision of ground racks and racks with mounting holes may drop if you do not exercise extreme caution during installation or while modifying.
- ② Pitch lines of racks are controlled by using the bottom surface as the reference datum and over-pin measurements on tooth thickness. If you machine the bottom surfaces, the precision of the racks may be affected.
- ③ When connecting two racks, the machining of the mating ends requires careful consideration. The meshing will be poor if the pitch straddling the connection has a positive tolerance. We recommend a minus tolerance on pitch at the connection. The below is an indication of pitch tolerance for each module.

Unit : mm



$p = \pi \cdot m$
 p : Reference pitch
 π : Pi
 m : Module

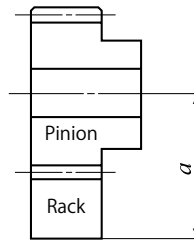
Module	Pitch (p)	Tolerance
m0.5	1.57	-0.05 -0.15
m0.8	2.51	-0.05 -0.25
m1	3.14	-0.1 -0.3
m1.5	4.71	
m2	6.28	
m2.5	7.85	
m3	9.42	-0.1 -0.4
m4	12.57	
m5	15.71	
m6	18.85	
m8	25.13	
m10	31.42	

- ④ To use dowel pins to secure racks, attach the racks to the base and drill both simultaneously.
- ⑤ KHK stock racks made of S45C and SCM440 (except for ground racks) can be induction hardened. However, the precision of pitch is decreased.
- ⑥ To be able to handle parts safely, all burrs and sharp corners should be removed after the secondary operations are done.
- ⑦ If you are going to modify the gear by gripping the teeth, please exercise caution not to crush the teeth by applying too much pressure. Any scarring will cause noise during operation.

2. Points of Caution in Assembling

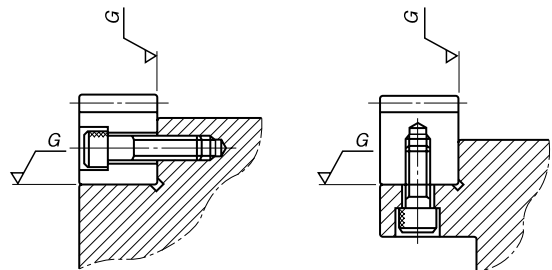
- ① KHK stock racks are designed to give the proper backlash when assembled using the mounting distance given by the formula below (mounting distance tolerance of H7 to H8 required). The backlash values are given in the table on Page 191. Make sure that the mounting distance stays constant for the length of the rack.

Mounting distance a = Height of pitch line of rack + Pitch radius of pinion



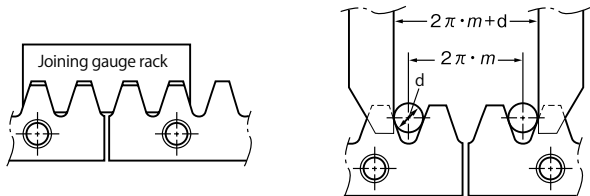
(CAUTION)
 Pinions are assumed to be standard stock spur gears ($x=0$).

- ② KRG type of KHK stock ground racks have four surfaces ground parallel to within 10~15 μ m. To maintain true angle, they should be mounted on high precision bases as shown below. It is even possible to correct for the angular errors of racks by compensating the mounting base. With recent increases in the requirement for zero backlash linear drives, such accurate assembly as shown is becoming more important.



- ③ If the racks are not secured properly to the base, they could shift during operation and cause unexpected problems. It is very important to insure firm mounting by the use of dowel pins or similar devices.
- ④ Machined end type racks such as SRF and SRFD series have the pitch tolerance of -0.05 to -0.4mm at the end face. If you try to connect the racks without any space, the pitch at the connection will be too small and will cause problems. Please follow the following diagrams for assembly.

An example of Rack Joining, we recommend the following method.

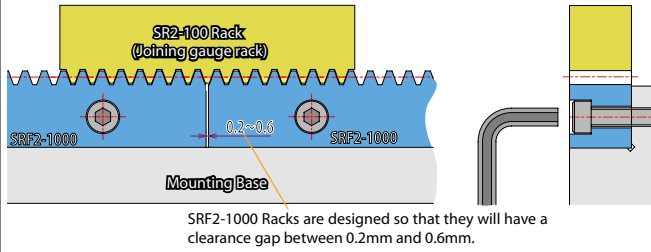


(CAUTION) Joining gauge racks for helical racks must have the opposite hand from the racks. Please use Module 1, 10 100 racks as a joining gauge rack, or alternatively the rack of the same specifications on hand.

How to mount racks on a mounting base (In case of SRF2-1000)

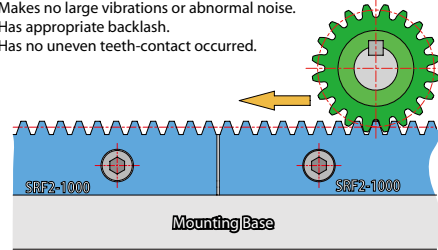
1. Adjusting the pitches.

Mount the SRF2-1000 Rack on the mounting base and connect with the SR2-100 Rack, then, fix with bolts temporarily.



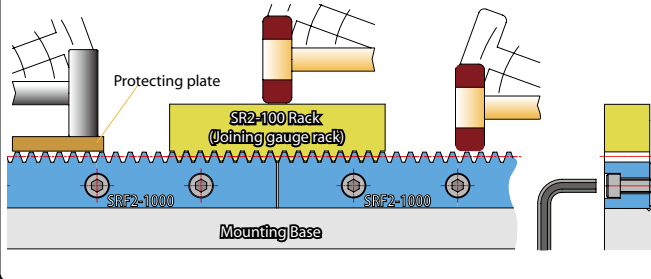
3. Test and run the pinion on the rack to confirm the following;

- (1) Makes no large vibrations or abnormal noise.
- (2) Has appropriate backlash.
- (3) Has no uneven teeth-contact occurred.



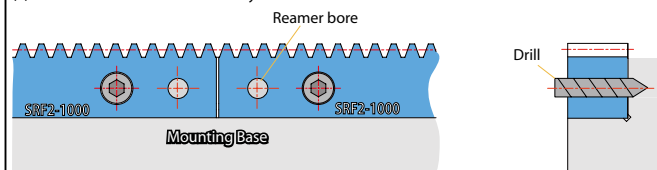
2. Fixing the rack on the mountain base.

Hit the rack with a plastic hammer to combine closely with the mountain base, then, re-tighten the bolts. (If a metal hammer is being used, be sure not to deform the gear teeth and use a pressure equalizing plate to protect them.)

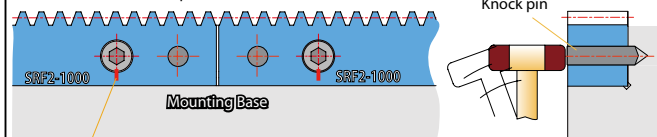


4. Secure the fixing to the mountain base.

It is recommended to use knock pins to prevent slippage due to vibration etc.
(1) Drill reamer bores simultaneously.

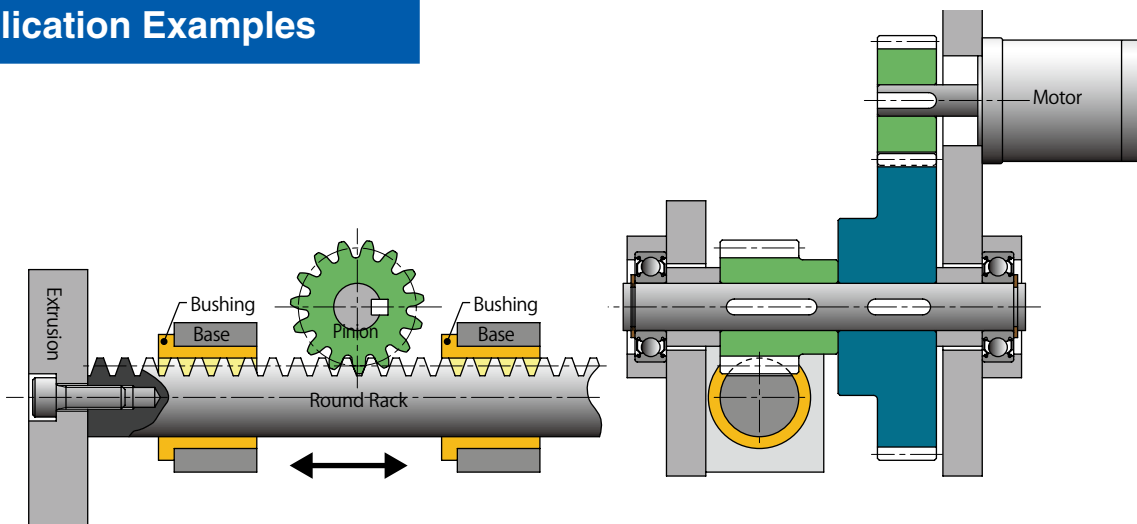


(2) Hammer in the knock pins.



"After installing the knock pins, re-tighten them. Making a mark with a pen beforehand will be of help to find looseness if it occurs."

Application Examples



Extrusion device with a round rack* (It can also be a lifting/lowering device by setting up vertically.)



KRG Ground Rack and SSG Ground Spur Gear used as a work conveying device of the auto loader.

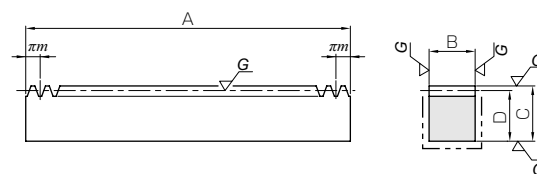


SRO Round Rack used as a work storage device (fluctuating table) of the auto loader.

**New! Best Ever Carburized Racks!**

Specifications	
Precision grade	KHK R 001 grade 1 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM415
Heat treatment	Gear tooth carburized
Tooth hardness	55 ~ 60HRC

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



RF

* Carburized Ground Racks, the highest performance ever in the KHK Rack Series!

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
MRGF1.5-500	m1.5	106	RF	499.51	15	20	18.5	5070	4620	517	472	1.09
MRGF2-500	m2	80		502.65	20	25	23	9010	8240	918	840	1.82
MRGF2.5-500	m2.5	64		502.65	25	30	27.5	14100	12900	1440	1310	2.71
MRGF3-500	m3	53		499.51	30	35	32	20300	18600	2070	1900	3.76

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● MRGFD1.5-500J	m 1.5	106	RD	499.51	15	20	18.5	8	24.76	150	4	M5
● MRGFD2-500J	m 2	80		502.65	20	25	23	10	26.33			
● MRGFD2.5-500J	m 2.5	64		502.65	25	30	27.5	12	26.33			
● MRGFD3-500J	m 3	53		499.51	30	35	32	14	24.76			

[Caution on Product Characteristics]

- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.

[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② In the illustration, the area surrounded with - - - line is masked during the carburization process and can be modified. However, the end faces on both sides do not have an anti-carburization coating on the taped holes, otherwise they could not be machined.

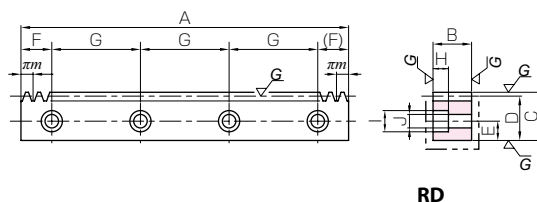
Surface durability;
4 times higher than the SRG Hardened Ground Racks, 2 times higher than the KRG-H Hardened Ground Racks.

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

J Series



Ground Racks



Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

Bevel Gearboxes

Other Products

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	5070	4620	517	472	1.07	● MRGFD1.5-500J
7	11	7	9010	8240	918	840	1.78	● MRGFD2-500J
8.6	14	9	14100	12900	1440	1310	2.64	● MRGFD2.5-500J
10.8	17.5	11	20300	18600	2070	1900	3.63	● MRGFD3-500J

[Caution on J series]

- ① As available-on-request products, requires a lead-time for shipping within 2 working-days (excludes the day ordered), after placing an order. Please allow additional shipping time to get to your local distributor.
- ② Number of products we can process for one order is 1 to 20 units. For quantities of 21 or more pieces, we need to quote price and lead time.

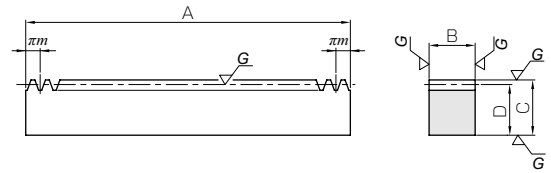


New! KHK Stock Gears best ever Ground Racks!



Specifications	
Precision grade	KHK R 001 grade 1 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined, teeth induction hardened
Tooth hardness	50 ~ 60HRC

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



RF

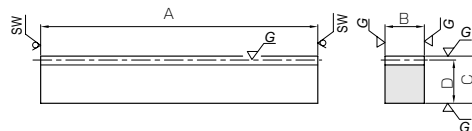
* Standard tooth surface induction hardening is applied resulting in reasonably priced racks which have their surface durability increased by 50% than KRGC PF !

Catalog No.	Module	Effective no. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRGF1.5-500H KRGF1.5-1000H	m1.5	106 212	RF	499.51 999.03	15	20	18.5	3450	2110	352	215	1.09 2.18
KRGF2-500H KRGF2-1000H	m2	80 160	RF	502.65 1005.31	20	25	23	6130	3750	625	382	1.82 3.63
KRGF2.5-500H KRGF2.5-1000H	m2.5	64 128	RF	502.65 1005.31	25	30	27.5	9580	5870	977	598	2.71 5.43
KRGF3-500H KRGF3-1000H	m3	53 106	RF	499.51 999.03	30	35	32	13800	8470	1410	863	3.76 7.53

Catalog No.	Module	Effective no. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● KRGFD1.5-500HJ ● KRGFD1.5-1000HJ	m1.5	106 212	RD	499.51 999.03	15	20	18.5	8	24.76 49.51	150 180	4 6	M5
● KRGFD2-500HJ ● KRGFD2-1000HJ	m2	80 160	RD	502.65 1005.31	20	25	23	10	26.33 52.65	150 180	4 6	M6
● KRGFD2.5-500HJ ● KRGFD2.5-1000HJ	m2.5	64 128	RD	502.65 1005.31	25	30	27.5	12	26.33 52.65	150 180	4 6	M8
● KRGFD3-500HJ ● KRGFD3-1000HJ	m3	53 106	RD	499.51 999.03	30	35	32	14	24.76 49.51	150 180	4 6	M10



Specifications	
Precision grade	KHK R 001 grade 1
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 ~ 285HB



* SW Saw Blade Finished

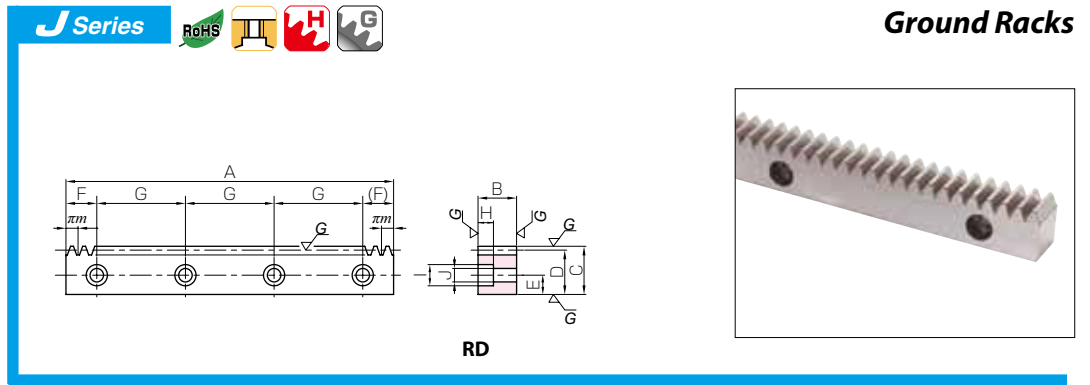
R1

* From improvements in our manufacturing processes, pricing is reduced by 20%. C-chamfering is widened for more convenience in installment.

Catalog No.	Module	Effective no. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRG1-100 KRG1-500	m1	29 159	R1	98 505	10	15	14	1530	641	156	65.3	0.11 0.55
KRG1.5-100 KRG1.5-500	m1.5	20 105	R1	101 505	15	20	18.5	3450	1440	352	147	0.22 1.10
KRG2-100 KRG2-500	m2	14 79	R1	98 505	20	25	23	6130	2560	625	261	0.35 1.82
KRG2.5-100 KRG2.5-500	m2.5	11 63	R1	100 505	25	30	27.5	9580	4010	977	408	0.54 2.73
KRG3-100 KRG3-500	m3	9 52	R1	101 505	30	35	32	13800	5770	1410	588	0.76 3.81

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRGF1-1000 KRGF1.5-1000	m1 m1.5	318 212	RF	999.03 999.03	10 15	15 20	18.5	1530 3450	641 1440	156 352	65.3 147	1.49 2.18
KRGF2-1000 KRGF2.5-1000	m2 m2.5	160 128	RF	1005.31 1005.31	20 25	25 30	27.5	6130 9580	2560 4010	625 977	261 408	3.63 5.43
KRGF3-1000	m3	106	RF	999.03	30	35	32	13800	5770	1410	588	7.53

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
KRGD1-500 KRGD1.5-500	m1 m1.5	159 106	RD	499.51 499.51	10 15	15 20	14 18.5	6 8	39.75 39.75	140 140	4 4	M4 M5
KRGD2-500 KRGD2.5-500	m2 m2.5	80 64	RD	502.65 502.65	20 25	25 30	23 27.5	10 12	41.32 41.32	140 140	4 4	M6 M8
KRGD3-500	m3	53	RD	499.51	30	35	32	14	39.75	140	4	M10



Ground Racks

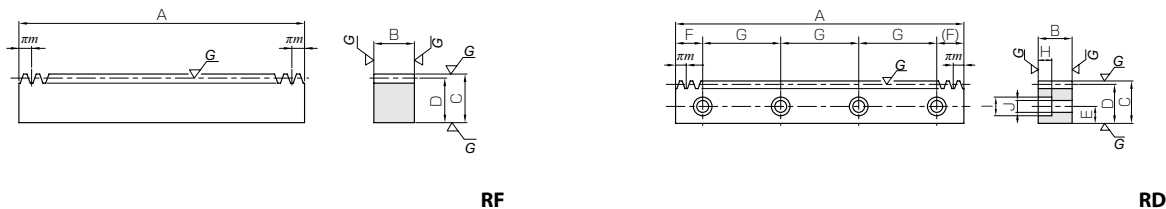
- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 mm to 3 mm). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order**. Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	3450	2110	352	215	1.07 2.14	● KRGFD1.5-500HJ ● KRGFD1.5-1000HJ
7	11	7	6130	3750	625	382	1.78 3.58	● KRGFD2-500HJ ● KRGFD2-1000HJ
8.6	14	9	9580	5870	977	598	2.64 5.31	● KRGFD2.5-500HJ ● KRGFD2.5-1000HJ
10.8	17.5	11	13800	8470	1410	863	3.63 7.32	● KRGFD3-500HJ ● KRGFD3-1000HJ

KRG • KRGF • KRGD



Ground Racks



* **Ground racks with these specifications: Module 10, Total length (A) 1500 mm, Height (C) 120 mm or less, are also available by request as custom-made products.**

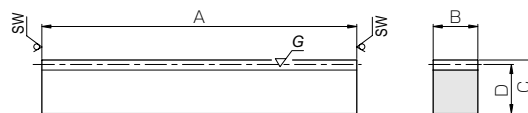
- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
 - ③ After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to a heavy load.
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
5	8	4.5	1530	641	156	65.3	0.54	KRGD1-500 KRGD1.5-500 KRGD2-500 KRGD2.5-500 KRGD3-500
6	10	6	3450	1440	352	147	1.06	
7	11	7	6130	2560	625	261	1.77	
8.6	14	9	9580	4010	977	408	2.62	
10.8	17.5	11	13800	5770	1410	588	3.59	

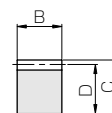
Spur Gears
Helical Gears
Internal Gears
Racks
CP Racks & Pinions
Miter Gears
Bevel Gears
Screw Gears
Worm Gear Pair
Bevel Gearboxes
Other Products



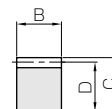
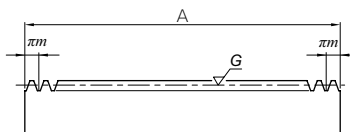
Specifications	
Precision grade	KHK R 001 grade 3 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Tooth surface induction hardened *
Tooth hardness	50 ~ 60HRC *



* SW Saw Blade Finished



R1



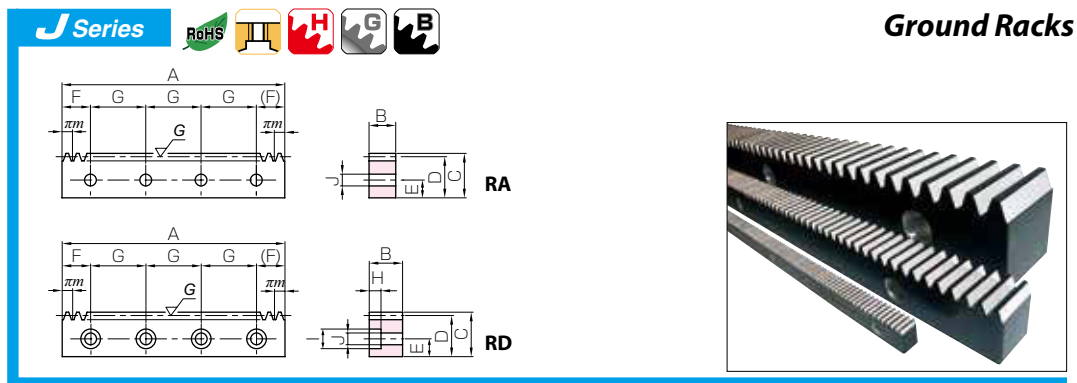
RF

* The precision grade of J Series products is equivalent to the value shown in the table.
 * Tooth surfaces, where the pitch is less than module 0.8, hardness range is 200HB ~ 270HB.
 * Due to the decarburization layer of about 0.5 mm thickness, the rectangular surface have (less than HB187) hardness.

Catalog No.	Module	Effective no. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRG0.5-100	m0.5	61	R1	101	5	12	11.5	293	80.5	29.9	8.21	0.046
SRG0.8-100	m0.8	38	R1	101	8	12.3	11.5	751	206	76.6	21.0	0.073
SRG1-100	m1	29	R1	98	10	12	11	862	514	87.9	52.4	0.085
SRG1.5-100	m1.5	20	R1	101	15	20	18.5	2160	1360	220	138	0.22
SRG2-100	m2	14	R1	98	20	25	23	3830	2410	391	246	0.35
SRG2.5-100	m2.5	11	R1	100	25	30	27.5	5990	3770	611	384	0.54
SRG3-100	m3	9	R1	101	30	35	32	8620	5420	879	553	0.76
SRG4-100	m4	6	R1	98	40	45	41	15300	9640	1560	983	1.26
SRG5-110	m5	5	R1	108	50	50	45	24000	15100	2440	1540	1.91
SRG6-110	m6	4	R1	111	60	60	54	34500	21700	3520	2210	2.82

Catalog No.	Module	No. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRGF0.5-300	m0.5	191	RF	300.02	5	12	11.5	293	80.5	29.9	8.21	0.14
SRGF0.8-300	m0.8	119	RF	299.08	8	12.3	11.5	751	206	76.6	21.0	0.22
SRGF1-300	m1	96	RF	301.59	10	12	11	862	514	87.9	52.4	0.26
SRGF1-500		159		499.51								
SRGF1.5-500	m1.5	106	RF	499.51	15	20	18.5	2160	1360	220	138	1.09
SRGF1.5-1000		212		999.03								
SRGF2-500	m2	80	RF	502.65	20	25	23	3830	2410	391	246	1.82
SRGF2-1000		160		1005.31								
SRGF2.5-500	m2.5	64	RF	502.65	25	30	27.5	5990	3770	611	384	2.71
SRGF2.5-1000		128		1005.31								
SRGF3-500	m3	53	RF	499.51	30	35	32	8620	5420	879	553	3.76
SRGF3-1000		106		999.03								
SRGF4-500	m4	40	RF	502.65	40	45	41	15300	9640	1560	983	6.47
SRGF4-1000		80		1005.31								
SRGF5-500	m5	32	RF	502.65	50	50	45	24000	15100	2440	1540	8.88
SRGF5-1000		64		1005.31								
SRGF6-500	m6	26	RF	490.09	60	60	54	34500	21700	3520	2210	12.5
SRGF6-1000		53		999.03								

Catalog No.	Module	No. of teeth	Shape	Total length				Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● SRGFK0.5-300J	m0.5	191	RA	300.02	5	12	11.5	5.5	15.01	90	4	M3
● SRGFK0.8-300J	m0.8	119	RA	299.08	8	12.3	11.5	5.5	14.54	90	4	M4
● SRGFK1-300J	m1	96	RA	301.59	10	12	11	5	20.80	130	3	M4
● SRGFK1-500J		159		499.51					24.76	150	4	
● SRGFD1.5-500J	m1.5	106	RD	499.51	15	20	18.5	8	24.76	150	4	M5
● SRGFD1.5-1000J		212		999.03					49.51	180	6	
● SRGFD2-500J	m2	80	RD	502.65	20	25	23	10	26.33	150	4	M6
● SRGFD2-1000J		160		1005.31					52.65	180	6	
● SRGFD2.5-500J	m2.5	64	RD	502.65	25	30	27.5	12	26.33	150	4	M8
● SRGFD2.5-1000J		128		1005.31					52.65	180	6	
● SRGFD3-500J	m3	53	RD	499.51	30	35	32	14	24.76	150	4	M10
● SRGFD3-1000J		106		999.03					49.51	180	6	
● SRGFD4-500J	m4	40	RD	502.65	40	45	41	18	26.33	150	4	M12
● SRGFD4-1000J		80		1005.31					52.65	180	6	
● SRGFD5-500J	m5	32	RD	502.65	50	50	45	20	31.33	220	3	M14
● SRGFD5-1000J		64		1005.31					62.65	220	5	
● SRGFD6-500J	m6	26	RD	490.09	60	60	54	23	25.04	220	3	M16
● SRGFD6-1000J		53		999.03					59.51	220	5	



* Ground racks with these specifications: Module 10, Total length (A) 1500 mm, Height (C) 120 mm or less, are also available by request as custom-made products.

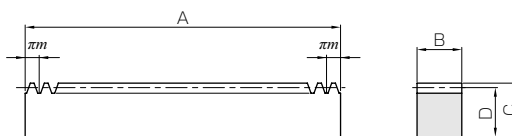
- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 mm to 3 mm). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units.** For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
—	—	3.4	293	80.5	29.9	8.21	0.13	● SRGFK0.5-300J
—	—	4.5	751	206	76.6	21.0	0.21	● SRGFK0.8-300J
—	—	4.5	862	514	87.9	52.4	0.26 0.43	● SRGFK1-300J ● SRGFK1-500J
6	10	6	2160	1360	220	138	1.07 2.14	● SRGFD1.5-500J ● SRGFD1.5-1000J
7	11	7	3830	2410	391	246	1.78 3.58	● SRGFD2-500J ● SRGFD2-1000J
8.6	14	9	5990	3770	611	384	2.64 5.31	● SRGFD2.5-500J ● SRGFD2.5-1000J
10.8	17.5	11	8620	5420	879	553	3.63 7.32	● SRGFD3-500J ● SRGFD3-1000J
13	20	14	15300	9640	1560	983	6.21 12.6	● SRGFD4-500J ● SRGFD4-1000J
15.2	23	16	24000	15100	2440	1540	8.56 17.2	● SRGFD5-500J ● SRGFD5-1000J
17.5	26	18	34500	21700	3520	2210	12.0 24.6	● SRGFD6-500J ● SRGFD6-1000J



New! Hardened Racks to be widely used!

Specifications	
Precision grade	KHK R 001 grade 5 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined, teeth induction hardened
Tooth hardness	50 ~ 60HRC



RF

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

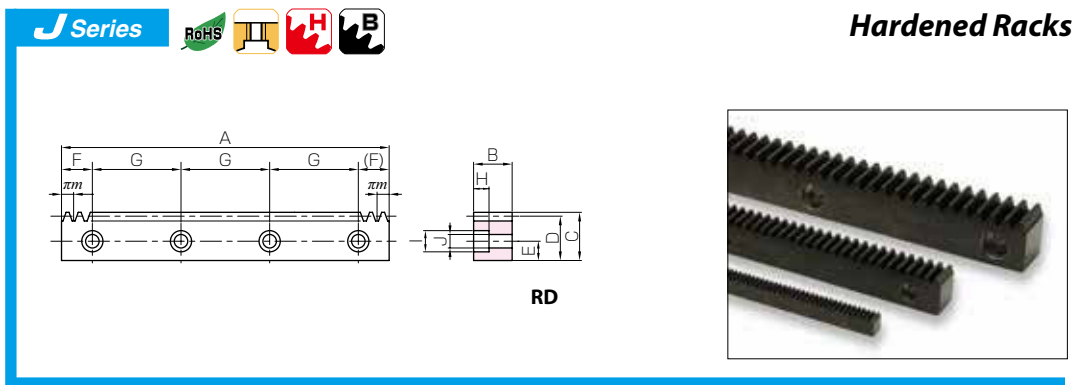
*** Increased the surface durability by 50% than KRF Racks! For compact design with high strength.**

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRF1.5-1000H	m1.5	212	RF	999.03	15	20	18.5	3140	1710	320	175	2.18
KRF2-1000H	m2	160		1005.31	20	25	23	5570	3090	568	315	3.63
KRF2.5-1000H	m2.5	128		1005.31	25	30	27.5	8710	4890	888	499	5.43
KRF3-1000H	m3	106		999.03	30	35	32	12500	7110	1280	725	7.53
KRF4-1000H	m4	80		1005.31	40	45	41	22300	12900	2270	1310	12.9
KRF5-1000H	m5	64		1005.31	50	50	45	34800	20400	3550	2080	17.8

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● KRFD1.5-1000HJ	m1.5	212	RD	999.03	15	20	18.5	8	49.51	180	6	M5
● KRFD2-1000HJ	m2	160		1005.31	20	25	23	10	52.65	180	6	M6
● KRFD2.5-1000HJ	m2.5	128		1005.31	25	30	27.5	12	52.65	180	6	M8
● KRFD3-1000HJ	m3	106		999.03	30	35	32	14	49.51	180	6	M10
● KRFD4-1000HJ	m4	80		1005.31	40	45	41	18	52.65	180	6	M12
● KRFD5-1000HJ	m5	64		1005.31	50	50	45	20	62.65	220	5	M14

● : J Series (Available-on-request)

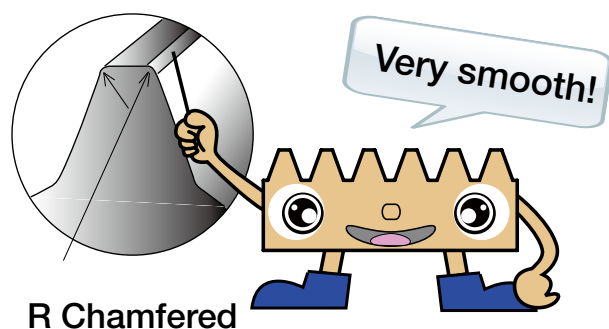
- Spur Gears
- Helical Gears
- Internal Gears
- Racks
- CP Racks & Pinions
- Miter Gears
- Bevel Gears
- Screw Gears
- Worm Gear Pair
- Bevel Gearboxes
- Other Products



Hardened Racks

- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 mm to 3 mm). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order**. Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	3140	1710	320	175	2.14	● KRFD1.5-1000HJ
7	11	7	5570	3090	568	315	3.58	● KRFD2-1000HJ
8.6	14	9	8710	4890	888	499	5.31	● KRFD2.5-1000HJ
10.8	17.5	11	12500	7110	1280	725	7.32	● KRFD3-1000HJ
13	20	14	22300	12900	2270	1310	12.6	● KRFD4-1000HJ
15.2	23	16	34800	20400	3550	2080	17.2	● KRFD5-1000HJ



GCU-R Rack Kit

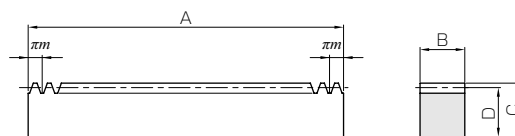
Installment : Parallel axes gears
 Gear Type : Racks & Pinions
 Gears : SRO1.5-500
 PS1.5-20
 Weight : Approx. 1kg

Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.

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



Specifications	
Precision grade	KHK R 001 grade 5 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Tooth surface induction hardened
Tooth hardness	50 ~ 60HRC



RF

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

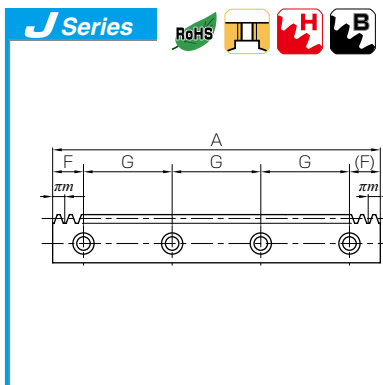
*** Standard tooth surface induction hardening is applied resulting in reasonably priced rack which have their surface durability 2 times stronger than SRF racks!**

Catalog No.	Module	No. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRF1.5-1000H	m1.5	212	RF	999.03	15	20	18.5	1960	1110	200	113	2.18
SRF2-1000H	m2	160		1005.31	20	25	23	3480	2000	355	204	3.63
SRF2.5-1000H	m2.5	128		1005.31	25	30	27.5	5440	3160	555	322	5.43
SRF3-1000H	m3	106		999.03	30	35	32	7840	4590	799	468	7.53
SRF4-1000H	m4	80		1005.31	40	45	41	13900	8310	1420	847	12.9
SRF5-1000H	m5	64		1005.31	50	50	45	21800	13200	2220	1340	17.8
SRF6-1000H	m6	53	999.03	60	60	54	31400	19200	3200	1960	25.4	

Catalog No.	Module	No. of teeth	Shape	Total length				Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● SRFD1.5-1000HJ	m1.5	212	RD	999.03	15	20	18.5	8	49.51	180	6	M5
● SRFD2-1000HJ	m2	160		1005.31	20	25	23	10	52.65	180	6	M6
● SRFD2.5-1000HJ	m2.5	128		1005.31	25	30	27.5	12	52.65	180	6	M8
● SRFD3-1000HJ	m3	106		999.03	30	35	32	14	49.51	180	6	M10
● SRFD4-1000HJ	m4	80		1005.31	40	45	41	18	52.65	180	6	M12
● SRFD5-1000HJ	m5	64		1005.31	50	50	45	20	62.65	220	5	M14
● SRFD6-1000HJ	m6		999.03	60	60	54	23	59.51	220	5	M16	

● : J Series (Available-on-request)

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

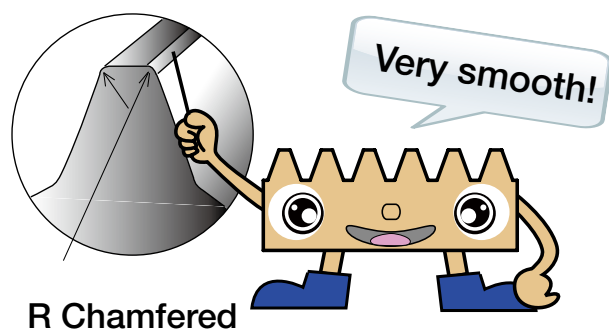


Hardened Racks



- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 mm to 3 mm). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order**. Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			2220 Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	1960	1110	200	113	2.14	● SRFD1.5-1000HJ
7	11	7	3480	2000	355	204	3.58	● SRFD2-1000HJ
8.6	14	9	5440	3160	555	322	5.31	● SRFD2.5-1000HJ
10.8	17.5	11	7840	4590	799	468	7.32	● SRFD3-1000HJ
13	20	14	13900	8310	1420	847	12.6	● SRFD4-1000HJ
15.2	23	16	21800	13200	2220	1340	17.2	● SRFD5-1000HJ
17.5	26	18	31400	19200	3200	1960	24.6	● SRFD6-1000HJ



R Chamfered

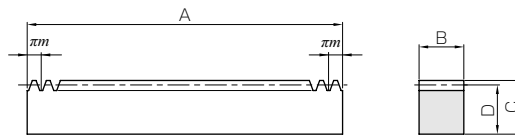
GCU-R Rack Kit

Installment : Parallel axes gears
 Gear Type : Racks & Pinions
 Gears : SRO1.5-500 PS1.5-20
 Weight : Approx. 1kg

Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.



Specifications	
Precision grade	KHK R 001 grade 4 *2
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 ~ 285HB *1



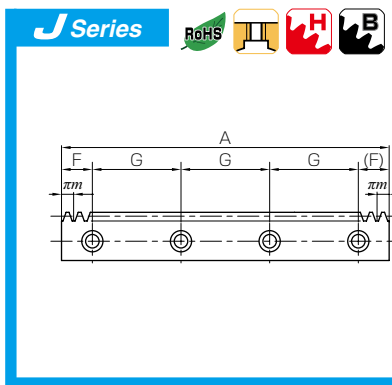
RF

*1 Due to the decarburization layer of about 0.5 mm thickness, the rectangular surface have (less than HB187) hardness.
*2 The precision grade of J Series products is equivalent to the value shown in the table.

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRF1.5-500 KRF1.5-1000	m1.5	106 212	RF	499.51 999.03	15	20	18.5	3450	953	352	97.2	1.09 2.18
KRF2-500 KRF2-1000	m2	80 160	RF	502.65 1005.31	20	25	23	6130	1760	625	179	1.82 3.63
KRF2.5-500 KRF2.5-1000	m2.5	64 128	RF	502.65 1005.31	25	30	27.5	9580	2810	977	287	2.71 5.43
KRF3-500 KRF3-1000	m3	53 106	RF	499.51 999.03	30	35	32	13800	4120	1410	421	3.76 7.53
KRF4-500 KRF4-1000	m4	40 80	RF	502.65 1005.31	40	45	41	24500	7530	2500	768	6.47 12.9
KRF5-500 KRF5-1000	m5	32 64	RF	502.65 1005.31	50	50	45	38300	12000	3910	1220	8.88 17.8

Catalog No. ● : J Series (Available-on-request)	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● KRFD1.5-500J ● KRFD1.5-1000J	m1.5	106 212	RD	499.51 999.03	15	20	18.5	8	24.76 49.51	150 180	4 6	M5
● KRFD2-500J ● KRFD2-1000J	m2	80 160		502.65 1005.31	20	25	23	10	26.33 52.65	150 180	4 6	M6
● KRFD2.5-500J ● KRFD2.5-1000J	m2.5	64 128		502.65 1005.31	25	30	27.5	12	26.33 52.65	150 180	4 6	M8
● KRFD3-500J ● KRFD3-1000J	m3	53 106		499.51 999.03	30	35	32	14	24.76 49.51	150 180	4 6	M10
● KRFD4-500J ● KRFD4-1000J	m4	40 80		502.65 1005.31	40	45	41	18	26.33 52.65	150 180	4 6	M12
● KRFD5-500J ● KRFD5-1000J	m5	32 64		502.65 1005.31	50	50	45	20	31.33 62.65	220	3 5	M14

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



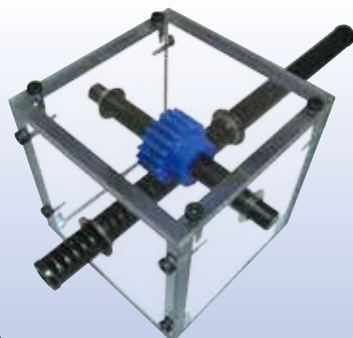
Thermal Refined Racks



- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.
- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units.** For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	3450	953	352	97.2	1.07 2.14	● KRFD1.5-500J ● KRFD1.5-1000J
7	11	7	6130	1760	625	179	1.78 3.58	● KRFD2-500J ● KRFD2-1000J
8.6	14	9	9580	2810	977	287	2.64 5.31	● KRFD2.5-500J ● KRFD2.5-1000J
10.8	17.5	11	13800	4120	1410	421	3.63 7.32	● KRFD3-500J ● KRFD3-1000J
13	20	14	24500	7530	2500	768	6.21 12.6	● KRFD4-500J ● KRFD4-1000J
15.2	23	16	38300	12000	3910	1220	8.56 17.2	● KRFD5-500J ● KRFD5-1000J

GCU-R Rack Kit



Installment : Parallel axes gears
 Gear Type : Racks & Pinions
 Gears : SRO1.5-500
 PS1.5-20
 Weight : Approx. 1kg

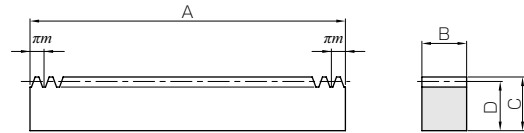
Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.



New! Square Racks are now available at low prices!



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)



RF

* Reasonably priced and have similar precision grade as SRF, allowing compact design.

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
								Bending strength	Surface durability	Bending strength	Surface durability	
SRAF1.5-1000	m1.5	212	RF	999.03	15	15	13.5	2160	421	220	42.9	1.59
SRAF2-1000	m2	160		1005.31	20	20	18	3830	775	391	79.0	2.84
SRAF2.5-1000	m2.5	128		1005.31	25	25	22.5	5990	1240	611	127	4.44
SRAF3-1000	m3	106		999.03	30	30	27	8620	1820	879	186	6.35
SRAF4-1000	m4	80		1005.31	40	40	36	15300	3330	1560	339	11.4
SRAF1.5-2000	m1.5	435		2049.88	17	17	15.5	2443	421	249	43	4.24
SRAF2-2000	m2	326		2048.31	20	20	18	3833	775	391	79	5.79
SRAF2.5-2000	m2.5	261		2049.88	25	25	22.5	5989	1241	611	127	9.05
SRAF3-2000	m3	217	2045.17	30	30	27	8624	1821	879	186	13.0	

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
								A	B	C		
● SRAFK1.5-1000J	m1.5	212	RA	999.03	15	15	13.5	5	49.51		6	M5
● SRAFD2-1000J	m2	160	RD	1005.31	20	20	18	7	52.65			M6
● SRAFD2.5-1000J	m2.5	128	RD	1005.31	25	25	22.5	9	52.65	180		M8
● SRAFD3-1000J	m3	106	RD	999.03	30	30	27	11	49.51			M10
● SRAFD4-1000J	m4	80	RD	1005.31	40	40	36	15	52.65			M12

[Caution on Product Characteristics]

- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.

[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.

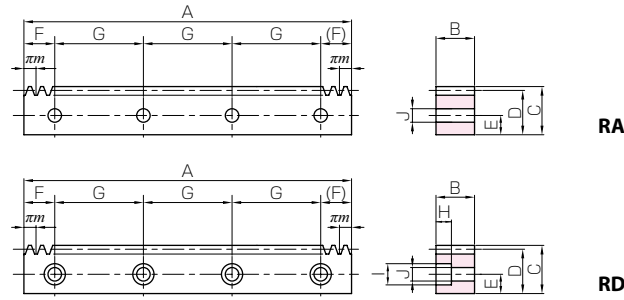
* For products not categorized in our KHK Stock Gear series, custom gear production services with **short lead times** is available. For details see Page 8.

J Series



Racks with Machined Ends

New

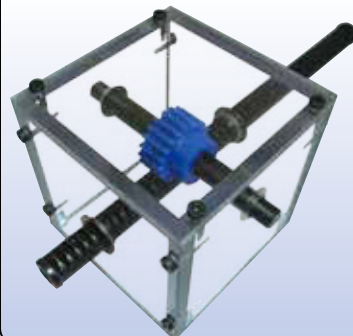


Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
—	—	6	2160	421	220	42.9	1.57	● SRAFK1.5-1000J ● SRAFD2-1000J ● SRAFD2.5-1000J ● SRAFD3-1000J ● SRAFD4-1000J
7	11	7	3830	775	391	79.0	2.79	
8.6	14	9	5990	1240	611	127	4.33	
10.8	17.5	11	8620	1820	879	186	6.14	
13	20	14	15300	3330	1560	339	11.0	

[Caution on J series]

- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order**. Please allow additional shipping time to get to your local distributor.
- ② Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.
- ③ No black oxide is re-applied after adding secondary operation of mounting holes.

GCU-R Rack Kit



Installment : Parallel axes gears
 Gear Type : Racks & Pinions
 Gears : SRO1.5-500
 PS1.5-20
 Weight : Approx. 1kg

Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

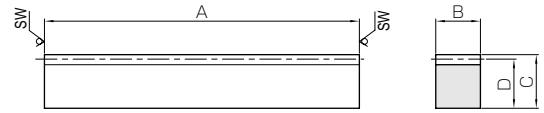
Worm Gear Pair

Bevel Gearboxes

Other Products



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)



* SW Saw Blade Finished

R1

Catalog No.	Module	Effective no. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SR0.5-100	m0.5	62	R1	101	5	12	11.5	240	39.6	24.4	4.04	0.046
SR0.8-100	m0.8	38	R1	101	8	12.3	11.5	613	108	62.5	11.0	0.073
SR1-100	m1	29	R1	98	10	12	11	958	177	97.7	18.0	0.085
SR1-300		94		303								0.26
SR1-500		159		505								0.44
SR1.5-100	m1.5	20	R1	101	15	20	18.5	2160	421	220	42.9	0.22
SR1.5-300		62		303								0.66
SR1.5-500		105		505								1.10
SR2-100	m2	14	R1	98	20	25	23	3830	775	391	79.0	0.35
SR2-300		46		303								1.09
SR2-500		79		505								1.82
SR2.5-100	m2.5	11	R1	100	25	30	27.5	5990	1240	611	127	0.54
SR2.5-300		37		303								1.64
SR2.5-500		63		505								2.73
SR3-100	m3	9	R1	101	30	35	32	8620	1820	879	186	0.76
SR3-300		30		303								2.28
SR3-500		52		505								3.81
SR4-100	m4	6	R1	98	40	45	41	15300	3330	1560	339	1.26
SR4-500		39		505								6.50
SR5-110	m5	5	R1	108	50	50	45	24000	5300	2440	540	1.91
SR5-500		31		505								8.92
SR6-110	m6	4	R1	111	60	60	54	34500	7740	3520	789	2.82
SR6-500		25		505								12.8
SR8-130	m8	3	R1	123	75	75	67	44200	10400	4510	1060	4.85
SR10-160	m10	3	R1	155	90	80	70	66300	16100	6770	1640	7.67

[Caution on Product Characteristics]

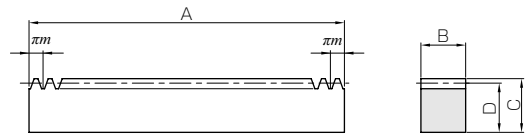
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.

[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)



RF

Catalog No.	Module	No. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRF0.5-300	m0.5	191	RF	300.02	5	12	11.5	240	39.6	24.4	4.04	0.14
SRF0.8-300	m0.8	119	RF	299.08	8	12.3	11.5	613	108	62.5	11.0	0.22
SRF1-300	m1	96	RF	301.59	10	12	11	958	177	97.7	18.0	0.26
SRF1-500		159		499.51								0.43
SRF1-1000		318		999.03								0.86
SRF1.5-300	m1.5	64	RF	301.59	15	20	18.5	2160	421	220	42.9	0.66
SRF1.5-500		106		499.51								1.09
SRF1.5-1000		212		999.03								2.18
SRF1.5-1500		320		1507.96								3.28
SRF1.5-2000		435		2049.88								4.47
SRF2-300	m2	48	RF	301.59	20	25	23	3830	775	391	79.0	1.09
SRF2-500		80		502.65								1.82
SRF2-1000		160		1005.31								3.63
SRF2-1500		240		1507.96								5.45
SRF2-2000		326		2048.31								7.40
SRF2.5-300	m2.5	38	RF	298.45	25	30	27.5	5990	1240	611	127	1.61
SRF2.5-500		64		502.65								2.71
SRF2.5-1000		128		1005.31								5.43
SRF2.5-1500		192		1507.96								8.14
SRF2.5-2000		261		2049.88								11.1
SRF3-300	m3	32	RF	301.59	30	35	32	8620	1820	879	186	2.27
SRF3-500		53		499.51								3.76
SRF3-1000		106		999.03								7.53
SRF3-1500		160		1507.96								11.4
SRF3-2000		217		2045.17								15.4
SRF4-500	m4	40	RF	502.65	40	45	41	15300	3330	1560	339	6.47
SRF4-1000		80		1005.31								12.9
SRF4-1500		120		1507.96								19.4
SRF4-2000		163		2048.31								26.4
SRF5-500	m5	32	RF	502.65	50	50	45	24000	5300	2440	540	8.88
SRF5-1000		64		1005.31								17.8
SRF5-1500		96		1507.96								26.6
SRF5-2000		130		2042.04								36.1
SRF6-500	m6	26	RF	490.09	60	60	54	34500	7740	3520	789	12.5
SRF6-1000		53		999.03								25.4
SRF6-1500		80		1507.96								38.4
SRF6-2000		108		2035.75								51.8
SRF8-500	m8	20	RF	502.66	75	75	67	44200	10400	4510	1060	19.8
SRF8-1000		40		1005.31								39.7
SRF10-1000	m10	32	RF	1005.31	90	80	70	66300	16100	6770	1640	49.7

[Caution on Product Characteristics]

- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.

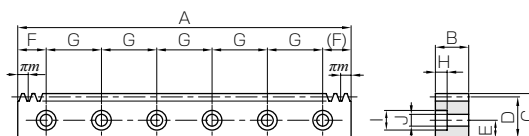
[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.



Specifications	
Precision grade	KHK R 001 grade 4 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)

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



RD

Catalog No. ● : J Series (Available-on-request)	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size		
				A	B	C	D	E	F	G				
●SRFK0.5-300J	m0.5	191	RA	300.02	5	12	11.5	5.5	15.01	90	4	M3		
●SRFK0.8-300J	m0.8	119	RA	299.08	8	12.3	11.5	5.5	14.54	90	4	M4		
●SRFK1-300J	m1	96	RA	301.59	10	12	11	5	20.80	130	3	M4		
●SRFK1-500J		159		499.51									150	4
●SRFD1.5-300J	m1.5	64	RD	301.59	15	20	18.5	8	20.80	130	3	M5		
●SRFD1.5-500J		106	RD	499.51									150	4
SRFD1.5-1000		212	RD	999.03									180	6
SRFD1.5-1500		320	RD	1507.96									180	9
SRFD1.5-2000		435	RD	2049.88									180	12
●SRFD2-300J	m2	48	RD	301.59	20	25	23	10	20.80	130	3	M6		
●SRFD2-500J		80	RD	502.65									150	4
SRFD2-1000		160	RD	1005.31									180	6
SRFD2-1500		240	RD	1507.96									180	9
SRFD2-2000		326	RD	2048.31									180	12
●SRFD2.5-300J	m2.5	38	RD	298.45	25	30	27.5	12	19.23	130	3	M8		
●SRFD2.5-500J		64	RD	502.65									150	4
SRFD2.5-1000		128	RD	1005.31									180	6
SRFD2.5-1500		192	RD	1507.96									180	9
SRFD2.5-2000		261	RD	2049.88									180	12
●SRFD3-300J	m3	32	RD	301.59	30	35	32	14	20.80	130	3	M10		
●SRFD3-500J		53	RD	499.51									150	4
SRFD3-1000		106	RD	999.03									180	6
SRFD3-1500		160	RD	1507.96									180	9
SRFD3-2000		217	RD	2045.17									180	12
●SRFD4-500J	m4	40	RD	502.65	40	45	41	18	26.33	150	4	M12		
SRFD4-1000		80	RD	1005.31									180	6
SRFD4-1500		120	RD	1507.96									180	9
SRFD4-2000		163	RD	2048.31									180	12
●SRFD5-500J	m5	32	RD	502.65	50	50	45	20	31.33	220	3	M14		
SRFD5-1000		64	RD	1005.31									220	5
SRFD5-1500		96	RD	1507.96									220	7
SRFD5-2000		130	RD	2042.04									220	10
●SRFD6-500J	m6	26	RD	490.09	60	60	54	23	25.04	220	3	M16		
SRFD6-1000		53	RD	999.03									220	5
SRFD6-1500		80	RD	1507.96									220	7
SRFD6-2000		108	RD	2035.75									220	10

[Caution on Product Characteristics]

- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- ③ After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to the heavy load.

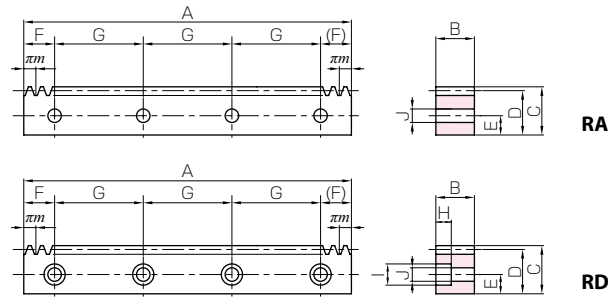
[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② Avoid hardening Racks with bolt holes, due to deformation occurring at the mounting hole and the difficulty of straightening the rack after hardening.

J Series



Steel Racks with Bolts Holes



Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
—	—	3.4	240	39.6	24.4	4.04	0.13	● SRFK0.5-300J
—	—	4.5	613	108	62.5	11.0	0.21	● SRFK0.8-300J
—	—	4.5	958	177	97.7	18.0	0.26 0.43	● SRFK1-300J ● SRFK1-500J
6	10	6	2160	421	220	42.9	0.64 1.07 2.14 3.23 4.40	● SRFD1.5-300J ● SRFD1.5-500J SRFD1.5-1000 SRFD1.5-1500 SRFD1.5-2000
7	11	7	3830	775	391	79.0	1.06 1.78 3.58 5.36 7.29	● SRFD2-300J ● SRFD2-500J SRFD2-1000 SRFD2-1500 SRFD2-2000
8.6	14	9	5990	1240	611	127	1.55 2.64 5.31 7.97 10.8	● SRFD2.5-300J ● SRFD2.5-500J SRFD2.5-1000 SRFD2.5-1500 SRFD2.5-2000
10.8	17.5	11	8620	1820	879	186	2.17 3.63 7.32 11.1 15.0	● SRFD3-300J ● SRFD3-500J SRFD3-1000 SRFD3-1500 SRFD3-2000
13	20	14	15300	3330	1560	339	6.21 12.6 18.8 25.6	● SRFD4-500J SRFD4-1000 SRFD4-1500 SRFD4-2000
15.2	23	16	24000	5300	2440	540	8.56 17.2 25.9 35.0	● SRFD5-500J SRFD5-1000 SRFD5-1500 SRFD5-2000
17.5	26	18	34500	7740	3520	789	12.0 24.6 37.2 50.2	● SRFD6-500J SRFD6-1000 SRFD6-1500 SRFD6-2000

[Caution on J series]

- ① As available-on-request products, requires a lead-time for shipping within **2 working-days** (excludes the day ordered), **after placing an order**. Please allow additional shipping time to get to your local distributor.
- ② Number of products we handle for one order is **1 to 20 pieces**. For quantities of 21 pieces or more, we need to quote price and lead time.
- ③ No black oxide is re-applied after adding secondary operation of mounting holes.

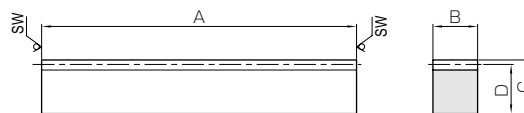
Spur
GearsHelical
GearsInternal
Gears

Racks

CP Racks
& PinionsMiter
GearsBevel
GearsScrew
GearsWorm
Gear PairBevel
GearboxesOther
Products



Specifications	
Precision grade	KHK R 001 grade 5
Gear teeth	Standard full depth
Pressure angle	20°
Material	SUS304
Heat treatment	Solution heat treatment
Tooth hardness	(less than 187HB)



* SW Saw Blade Finished

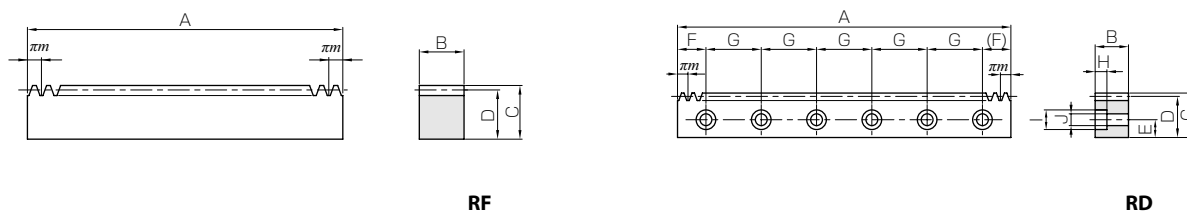
R1

Catalog No.	Module	Effective no. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SUR1-500	m1	159	R1	505	10	12	11	457	99.4	46.6	10.1	0.43
SUR1.5-500 SUR1.5-1000	m1.5	105 212	R1	505 1010	15	20	18.5	1030	237	105	24.2	1.09 2.19
SUR2-500 SUR2-1000	m2	79 159	R1	505 1010	20	25	23	1830	436	187	44.5	1.81 3.63
SUR2.5-500 SUR2.5-1000	m2.5	63 127	R1	505 1010	25	30	27.5	2860	698	292	71.2	2.71 5.42
SUR3-500 SUR3-1000	m3	52 105	R1	505 1010	30	35	32	4120	1030	420	105	3.79 7.57
SUR4-500 SUR4-1000	m4	39 79	R1	505 1010	40	45	41	7320	1870	746	191	6.47 12.9

Catalog No.	Module	No. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SURF1.5-1000	m1.5	212	RF	999.03	15	20	18.5	1030	237	105	24.2	2.17
SURF2-1000	m2	160	RF	1005.31	20	25	23	1830	436	187	44.5	3.61
SURF2.5-1000	m2.5	128	RF	1005.31	25	30	27.5	2860	698	292	71.2	5.40
SURF3-1000	m3	106	RF	999.03	30	35	32	4120	1030	420	105	7.49
SURF4-1000	m4	80	RF	1005.31	40	45	41	7320	1870	746	191	12.9

Catalog No.	Module	No. of teeth	Shape	Total length				Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
SURFD1.5-1000	m1.5	212	RD	999.03	15	20	18.5	8	49.52	180	6	M5
SURFD2-1000	m2	160	RD	1005.31	20	25	23	10	52.66	180	6	M6
SURFD2.5-1000	m2.5	128	RD	1005.31	25	30	27.5	12	52.66	180	6	M8
SURFD3-1000	m3	106	RD	999.03	30	35	32	14	49.52	180	6	M10
SURFD4-1000	m4	80	RD	1005.31	40	45	41	18	52.66	180	6	M12

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



[Caution on Product Characteristics]

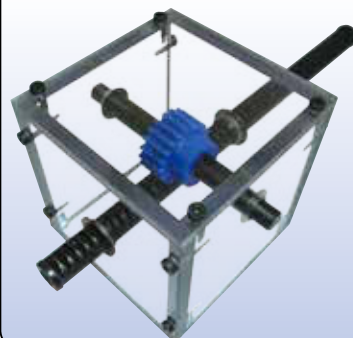
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- ③ For products made of stainless steel, heat treatment* and passivation** solutions are applied. Passivation is a rust-resistance treatment, but it is not effective on the machined surface and not a totally rustproof solution.
 - * Heat Treatment Solution
Heat treatment by the carbon formed on the surface during blank manufacturing is made to infiltrate the material interior.
 - ** Passivation
Immersion of the metal in a nitric acid solution to make it more rust-resistant.
- ④ After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to a heavy load.

[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	1030	237	105	24.2	2.13	SURFD1.5-1000
7	11	7	1830	436	187	44.5	3.56	
8.6	14	9	2860	698	292	71.2	5.29	SURFD2.5-1000
10.8	17.5	11	4120	1030	420	105	7.28	SURFD3-1000
13	20	14	7320	1870	746	191	12.5	SURFD4-1000

GCU-R Rack Kit



Installment : Parallel axes gears
 Gear Type : Racks & Pinions
 Gears : SRO1.5-500
 PS1.5-20
 Weight : Approx. 1kg

Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

Bevel Gearboxes

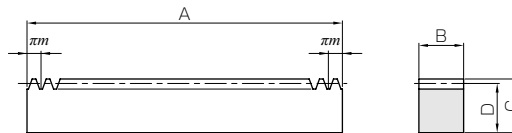
Other Products



Now Comes in White!



Specifications	
Precision grade	KHK R 001 grade 5 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	Polyacetal
Heat treatment	—
Tooth hardness	(115 ~ 120HRR)



RF

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

* Plastic racks with little dimensional change, absorb less water than MC Nylon racks.

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)	Allowable force (kgf)	Weight (kg)
				A	B	C	D	Bending strength	Bending strength	
DRF1-500	m1	159	RF	499.51	10	12	11	80.7	8.23	0.077
DRF1.5-500 DRF1.5-1000	m1.5	106 212		499.51 999.03	15	20	18.5	182	18.5	0.20 0.39
DRF2-500 DRF2-1000	m2	80 160		502.65 1005.31	20	25	23	323	32.9	0.33 0.65
DRF2.5-500 DRF2.5-1000	m2.5	64 128		502.65 1005.31	25	30	27.5	504	51.4	0.49 0.98
DRF3-500 DRF3-1000	m3	53 106		499.51 999.03	30	35	32	726	74.1	0.68 1.35

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● DRFK1-500J	m1	159	RA	499.51	10	12	11	5	24.76	150	4	M4
● DRFD1.5-500J ● DRFD1.5-1000J	m1.5	106 212	RD	499.51 999.03	15	20	18.5	8	24.76 49.51	150 180	4 6	M5
● DRFD2-500J ● DRFD2-1000J	m2	80 160		502.65 1005.31	20	25	23	10	26.33 52.65	150 180	4 6	M6
● DRFD2.5-500J ● DRFD2.5-1000J	m2.5	64 128		502.65 1005.31	25	30	27.5	12	26.33 52.65	150 180	4 6	M8
● DRFD3-500J ● DRFD3-1000J	m3	53 106		499.51 999.03	30	35	32	14	24.76 49.51	150 180	4 6	M10

[Caution on Product Characteristics]

- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- When using this product for food machines, sterilization is not necessary. POM resin meets the standards of Food and Drug Administration (FDA) under the food sanitation laws in USA. Care should be taken as it may be destroyed by boiling or steaming

[Caution on Secondary Operations]

- Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- Plastic gears are susceptible to the effects of temperature and moisture. Dimensional changes may occur while performing secondary operations and during post-machining operations. It is recommended to modify mounting holes and the attaching portions at the same time when stringing together racks for use.

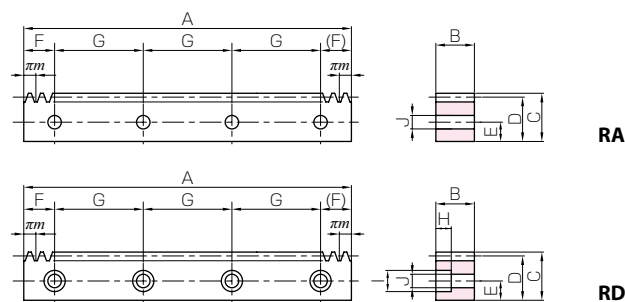
[Caution on J series]

- As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
- Number of products we handle for one order is **1 to 20 pieces.** For quantities of 21 pieces or more, we need to quote price and lead time.

J Series



Plastic Racks

New

RA

RD

Counterbore dimensions			Allowable force (N)	Allowable force (kgf)	Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Bending strength		
—	—	4.5	80.7	8.23	0.077	● DRFK1-500J
6	10	6	182	18.5	0.19 0.39	● DRFD1.5-500J ● DRFD1.5-1000J
7	11	7	323	32.9	0.32 0.64	● DRFD2-500J ● DRFD2-1000J
8.6	14	9	504	51.4	0.47 0.95	● DRFD2.5-500J ● DRFD2.5-1000J
10.8	17.5	11	726	74.1	0.65 1.32	● DRFD3-500J ● DRFD3-1000J

Spur
GearsHelical
GearsInternal
Gears

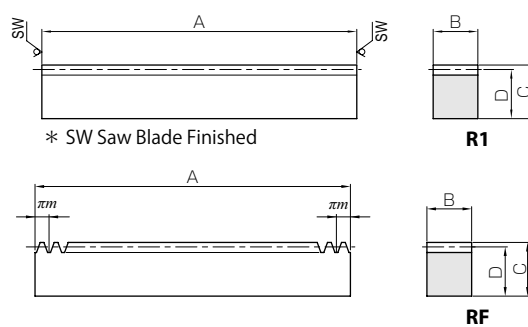
Racks

CP Racks
& PinionsMiter
GearsBevel
GearsScrew
GearsWorm
Gear PairBevel
GearboxesOther
Products



Specifications	
Precision grade	KHK R 001 grade 5 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 ~ 120HRR)

* The precision grade of this product is equivalent to the value shown in the table.



Spur Gears

Helical Gears

Internal Gears

Racks

Catalog No.	Module	Effective no. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Bending strength	Bending strength	Bending strength	
PR1-500	m1	159	R1	505	10	12	11	92.8		9.46		0.064
PR1.5-500 PR1.5-1000	m1.5	105 212	R1	505 1010	15	20	18.5	209		21.3		0.16 0.33
PR2-500 PR2-1000	m2	79 159	R1	505 1010	20	25	23	371		37.9		0.27 0.54
PR2.5-500 PR2.5-1000	m2.5	63 127	R1	505 1010	25	30	27.5	580		59.2		0.40 0.81
PR3-500 PR3-1000	m3	52 105	R1	505 1010	30	35	32	835		85.2		0.56 1.12

Catalog No.	Module	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Bending strength	Bending strength	Bending strength	
PRF1.5-1000	m1.5	212	RF	999.03	15	20	18.5	209		21.3		0.32
PRF2-1000	m2	160	RF	1005.31	20	25	23	371		37.9		0.54
PRF2.5-1000	m2.5	128	RF	1005.31	25	30	27.5	580		59.2		0.80
PRF3-1000	m3	106	RF	999.03	30	35	32	835		85.2		1.11

[Caution on Product Characteristics]

- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- Dimensions of Plastic Racks vary due to temperature and humidity. A 10° C rise in the ambient temperature will cause 0.45 mm increase in the length per 1000 mm. A 2% moisture absorption will cause approx. 5 mm increase in the length per 1000 mm. Please see the section "Design of Plastic Gears" in separate technical reference book. (Page 101).
- The straightness deviation of Plastic Racks is less than 5mm per meter. However, for Plastic Racks with the total length of 1000 mm, the value may exceed 5 mm due to age deterioration. You may correct this error by using the bottom surface as the reference when attaching the racks.

[Caution on Secondary Operations]

- Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- Plastic gears are susceptible to the effects of temperature and moisture. Dimensional changes may occur while performing secondary operations and during post-machining operations. It is recommended to modify mounting holes and the attaching portions at the same time when stringing together racks for use.

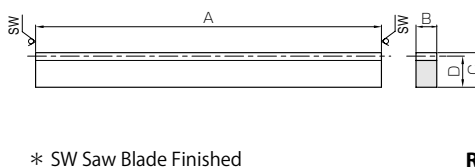
Miter Gears

Bevel Gears

Screw Gears



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	Free cutting brass (C3604)
Heat treatment	—
Tooth hardness	(more than 80HV)



* SW Saw Blade Finished

R1

Catalog No.	Module	Effective no. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
BSR0.5-300	m0.5	190	R1	303	3	9	8.5	28.7	—	2.93	—	0.066
BSR0.8-300	m0.8	118	R1	303	4	10	9.2	61.3	—	6.25	—	0.095
BSR1-300	m1	94	R1	303	6	10	9	115	—	11.7	—	0.14

[Caution on Product Characteristics]

- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.

[Caution on Secondary Operations]

- Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.

Worm Gear Pair

Bevel Gearboxes

Other Products



SRO · SROS Steel Round Racks

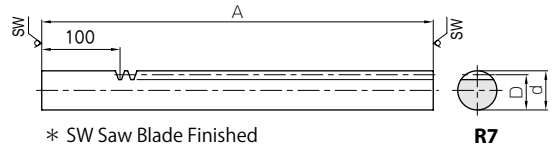
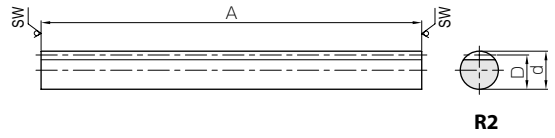


Module 1 ~ 6

Round Racks



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)



* SW Saw Blade Finished

Catalog No.	Module	Effective no. of teeth	Shape	Total length			Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	Outside dia. d_{h9}	Height to pitch line D	Bending strength	Surface durability	Bending strength	Surface durability	
SRO1-500	m1	159	R2	505	10	9	800	121	81.6	12.3	0.29
SRO1.5-500	m1.5	105	R2	505	15	13.5	1800	288	184	29.3	0.65
SRO2-500 SRO2-1000	m2	79 159	R2	505 1010	20	18	3200	530	326	54.0	1.16 2.31
SRO2.5-500 SRO2.5-1000	m2.5	63 127	R2	505 1010	25	22.5	5000	848	510	86.5	1.81 3.61
SRO3-500 SRO3-1000	m3	52 105	R2	505 1010	30	27	7200	1240	735	127	2.60 5.20
SRO4-500 SRO4-1000	m4	39 79	R2	505 1010	40	36	12800	2270	1310	232	4.62 9.24
SRO5-1000	m5	63	R2	1010	50	45	20000	3620	2040	369	14.4
SRO6-1000	m6	52	R2	1010	60	54	28800	5290	2940	539	20.8

Catalog No.	Module	Effective no. of teeth	Shape	Total length			Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	Outside dia. d_{h9}	Height to pitch line D	Bending strength	Surface durability	Bending strength	Surface durability	
SROS1-500	m1	128	R7	505	10	9	800	121	81.6	12.3	0.29
SROS1.5-500	m1.5	85	R7	505	15	13.5	1800	288	184	29.3	0.66
SROS2-500	m2	64	R7	505	20	18	3200	530	326	54.0	1.17
SROS2.5-500	m2.5	51	R7	505	25	22.5	5000	848	510	86.5	1.83
SROS3-500	m3	42	R7	505	30	27	7200	1240	735	127	2.64

- [Caution on Product Characteristics]
- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
 - Tolerance of "d" dimension of SRO6-1000 is h10.
- [Caution on Secondary Operations]
- Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - Please avoid hardening of Round Racks. It causes contortion and deformation, and straightening processes can hardly be applied.



SURO Stainless Steel Round Racks

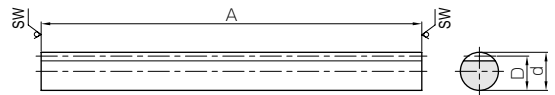


Module 1 ~ 3

Stainless Steel Round Racks



Specifications	
Precision grade	KHK R 001 grade 5
Gear teeth	Standard full depth
Pressure angle	20°
Material	SUS303
Heat treatment	—
Tooth hardness	(less than 187HB)



* SW Saw Blade Finished

R2

Catalog No.	Module	Effective no. of teeth	Shape	Total length			Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	Outside dia. d_{h9}	Height to pitch line D	Bending strength	Surface durability	Bending strength	Surface durability	
SURO1-500	m1	159	R2	505	10	9	382	67.9	39.0	6.93	0.29
SURO1.5-500	m1.5	105	R2	505	15	13.5	859	162	87.6	16.5	0.65
SURO2-500 SURO2-1000	m2	79 159	R2	505 1010	20	18	1530	298	156	30.4	1.15 2.30
SURO2.5-500 SURO2.5-1000	m2.5	63 127	R2	505 1010	25	22.5	2390	477	243	48.7	1.79 3.59
SURO3-500 SURO3-1000	m3	52 105	R2	505 1010	30	27	3440	700	351	71.4	2.58 5.17

- [Caution on Product Characteristics]
- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- [Caution on Secondary Operations]
- Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

Bevel Gearboxes

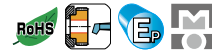
Other Products



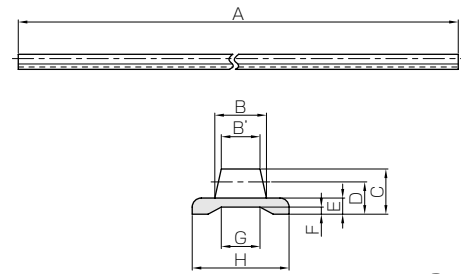
DR Molded Flexible Racks



Module 0.8, 1, 1.5, 2



Specifications	
Precision grade	KHK R 001 grade 8
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon (M25-44)
Heat treatment	—
Tooth hardness	(110 ~ 120HRR)



R4

Catalog No.	Module	Shape	Total length	Face width	Face width	Height	Height to pitch line	Thickness of base	Depth of groove	Width of groove	Width of base
			A	B	B'	C	D	E	F	G	H
DR0.8-2000	m0.8	R4	2000	3.8	3	3.3	2.5	1.5	0.7	3.7	8
DR1-2000	m1	R4	2000	5	4	4.3	3.3	2	0.9	4.9	10
DR1.5-2000	m1.5	R4	2000	6.5	5	5.7	4.2	2.3	1	8	12
DR2-2000	m2	R4	2000	8	6	7	5	2.5	1.1	10.1	15

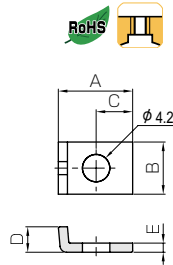
- [Caution on Product Characteristics]
- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - In cases of using a molded flexible rack in an arc shape, proper meshing cannot be obtained as the pitch error and the tooth profile error increases. Be sure and adjust the center distance so that the pinion turns without any problem.
 - Molded Flexible Racks are not suitable for use when positioning accuracy is required.
 - To find the dimensional tolerance of these racks, please see the Dimensional Tolerance Table. The overall length tolerance is ± 10 mm.

Products for DR SRS

Rack Clamps



When fixed



T7

■ Rack Clamps Material: SPCC, finished with trivalent-chromate

Catalog No.	Shape	A	B	C	D	E	F	Weight (g)
SRS-1	T7	10.2	8	4.5	2.7	1.2	—	2.24
SRS-2	T7	11.4	8	5.6	3.9	1.4	—	2.52

- [Caution on Product Characteristics]
- Cross-ressed machine head screw (M4 × 12) is included as an accessory.

■ Dimensional Tolerance Table (unit: mm)

Range	Tolerance
below 3 mm	± 0.20
3 up to 6 mm	± 0.25
6 up to 10 mm	± 0.30
10 up to 18 mm	± 0.35
18 up to 30 mm	± 0.40
30 mm up	± 0.50

■ Normal Bending and Dimensional Tolerance Table (unit: mm)

Range	Tolerance
below 6 mm	± 0.30
6 up to 30 mm	± 0.50
30 up to 120 mm	± 0.80
120 up to 400 mm	± 1.20
400 up to 1000 mm	± 2.00
1000 up to 2000 mm	± 3.00



SSDR DR Rack Pinions

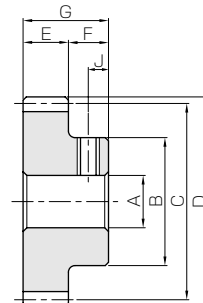


Module 0.8, 1, 1.5, 2



Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998) * JIS grade 4 (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)

* The precision grade of products with a module of less than 0.8 is equivalent to the value shown in the table.



S1T

Catalog No.	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Set Screw	
				A _{H7}	B	C	D	E	F	G	Size	J
SSDR0.8-35	m0.8	35	S1T	5	16	28	29.6	3	7	10	M4	3.5
SSDR1-30	m1	30	S1T	6	20	30	32	4	8	12	M4	4
SSDR1.5-20	m1.5	20	S1T	6	20	30	33	5	10	15	M4	5
SSDR2-15	m2	15	S1T	8	22	30	34	6	10	16	M5	5

- [Caution on Product Characteristics]
- For products with a tapped hole, a set screw is included.
 - The allowable torque shown in the table are calculated values according to the assumed usage conditions. Please see Page 189 (NOTE 4) for more details.

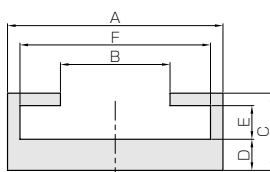
Products for DR Molded Flexible Racks

Molded Flexible Racks	Rack Clamps	Rack Guide Rails	DR Rack Pinions
DR0.8-2000	SRS-1	ARL-0.8	SSDR0.8-35
DR1-2000	SRS-1	ARL-1	SSDR1-30
DR1.5-2000	SRS-2	ARL-1.5	SSDR1.5-20
DR2-2000	SRS-2	ARL-2	SSDR2-15

* We also accept special orders for longer racks over 2 m.

Allowable force (N)	Allowable force (kgf)	Weight (kg)	Catalog No.
Bending strength	Bending strength		
112	11.4	0.036	DR0.8-2000
161	16.4	0.060	DR1-2000
161	16.5	0.085	DR1.5-2000
265	27.0	0.12	DR2-2000

Products for DR ARL Rack Guide Rails



T6

■ Rack Guide Rails Material: Aluminum (A6063S-T5) Total Length : 1000 mm

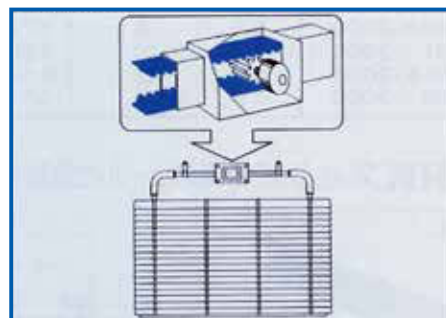
Catalog No.	Shape	A	B	C	D	E	F	Weight (kg)
ARL-0.8	T6	10.3	4.4	4.7	2	1.7	8.3	0.081
ARL-1	T6	12.3	5.6	5.2	2	2.2	10.3	0.096
ARL-1.5	T6	14.3	7.2	5.5	2	2.5	12.3	0.11
ARL-2	T6	17.3	8.8	6.2	2.5	2.7	15.3	0.15

DR Molded Flexible Rack Applications

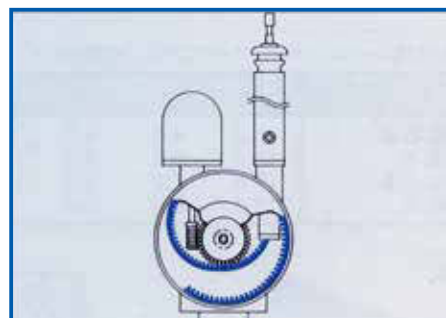
By fastening the positions of the pinions and adjusting the shape freely, DR Molded Flexible Racks can be used for various uses.



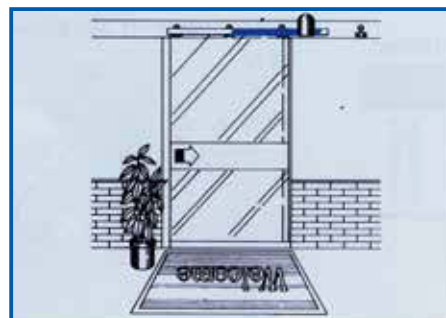
Motor Drive Curtain



Double Window with a built-in Blind



Motor Drive Antenna



Automatic Door

Steel Spur Gears

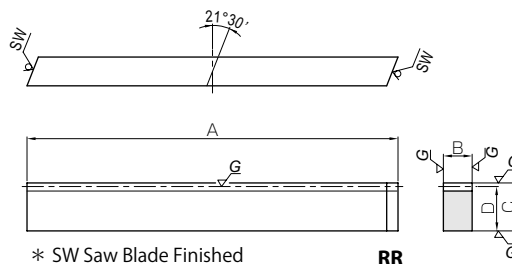
Allowable torque (N-m)	Allowable torque (kgf-m)	Weight (g)	Catalog No.
Bending strength	Bending strength		
2.59	0.26	23.5	SSDR0.8-35
4.46	0.45	38.6	SSDR1-30
7.35	0.75	48.4	SSDR1.5-20
10.4	1.06	56.1	SSDR2-15

[Caution on Secondary Operations]

① Please read "Caution on Performing Secondary Operations" (Page 32) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.



Specifications	
Precision grade	KHK R 001 grade 1 *
Reference section of gear	Rotating plane
Gear teeth	Standard full depth
Transverse pressure angle	20°
Helix angle	21°30'
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 ~ 285HB



* SW Saw Blade Finished

RR

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

Catalog No.	Module	Effective no. of teeth	Direction of helix	Shape	Total length		Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
					A	B				C	D	Bending strength	Surface durability
KRHG1-100R KRHG1-100L	m1	28	R L	RR RL	98	8	15	14	1290	955	131	97.4	
KRHG1.5-100R KRHG1.5-100L	m1.5	19	R L	RR RL	101	12	20	18.5	2890	2380	295	243	
KRHG2-100R KRHG2-100L	m2	13	R L	RR RL	98	16	25	23	5140	4230	524	432	
KRHG2.5-100R KRHG2.5-100L	m2.5	10	R L	RR RL	100	20	30	27.5	8030	6610	819	674	
KRHG3-100R KRHG3-100L	m3	8	R L	RR RL	102	25	35	32	12000	9810	1230	1000	

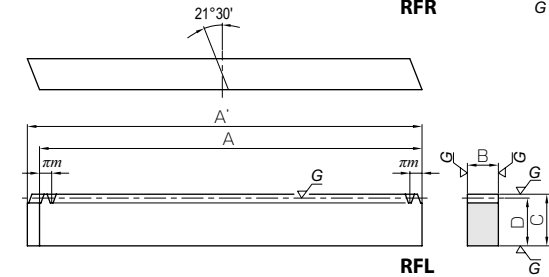
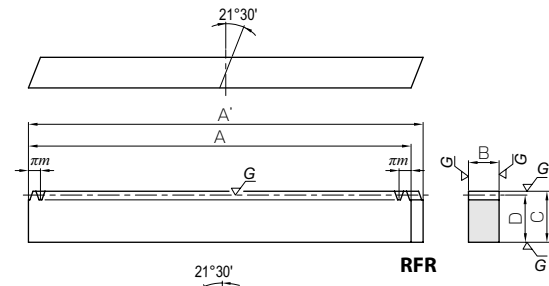
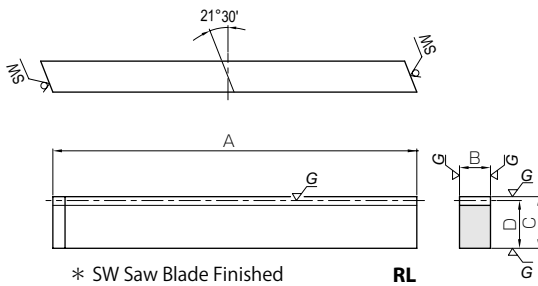
Catalog No.	Module	No. of teeth	Direction of helix	Shape	Total length		Face width	Height	Height to pitch line	Allowable force (N)	
					A	A'				B	C
KRHGF1-500R KRHGF1-500L	m1	159	R L	RFR RFL	499.51	502.66	8	15	14	1290	955
KRHGF1.5-500R KRHGF1.5-500L	m1.5	106	R L	RFR RFL	499.51	504.23	12	20	18.5	2890	2380
KRHGF2-1000R KRHGF2-1000L	m2	160	R L	RFR RFL	1005.31	1011.61	16	25	23	5140	4230
KRHGF2.5-1000R KRHGF2.5-1000L	m2.5	128	R L	RFR RFL	1005.31	1013.19	20	30	27.5	8030	6610
KRHGF3-1000R KRHGF3-1000L	m3	106	R L	RFR RFL	999.03	1008.88	25	35	32	12000	9810

Catalog No. ● : J Series (Available-on-request)	Module	No. of teeth	Direction of helix	Shape	Total length		Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes
					A	A'				B	C	D	
● KRHGFD1-500RJ ● KRHGFD1-500LJ	m1	159	R L	RDR RDL	499.51	502.66	8	15	14	6	24.76	150	4
● KRHGFD1.5-500RJ ● KRHGFD1.5-500LJ	m1.5	106	R L	RDR RDL	499.51	504.23	12	20	18.5	8	24.76	150	4
● KRHGFD2-1000RJ ● KRHGFD2-1000LJ	m2	160	R L	RDR RDL	1005.31	1011.61	16	25	23	10	52.65	180	6
● KRHGFD2.5-1000RJ ● KRHGFD2.5-1000LJ	m2.5	128	R L	RDR RDL	1005.31	1013.19	20	30	27.5	12	52.65	180	6
● KRHGFD3-1000RJ ● KRHGFD3-1000LJ	m3	106	R L	RDR RDL	999.03	1008.88	25	35	32	14	49.51	180	6

- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
 - ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
 - ③ Please use KHG Ground Helical Gears as the mating pinion.
 - ④ These racks produce axial thrust forces. See page 167 for more details.

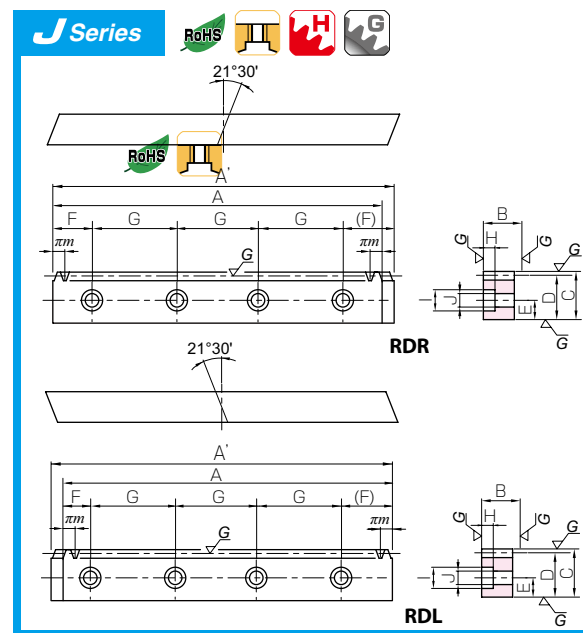
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.

Ground Helical Racks



Weight (kg)	Catalog No.
0.086	KRHG1-100R KRHG1-100L
0.18	KRHG1.5-100R KRHG1.5-100L
0.28	KRHG2-100R KRHG2-100L
0.43	KRHG2.5-100R KRHG2.5-100L
0.64	KRHG3-100R KRHG3-100L

Allowable force (kgf)		Weight (kg)	Catalog No.
Bending strength	Surface durability		
131	97.4	0.44	KRHGF1-500R KRHGF1-500L
295	243	0.87	KRHGF1.5-500R KRHGF1.5-500L
524	432	2.90	KRHGF2-1000R KRHGF2-1000L
819	674	4.34	KRHGF2.5-1000R KRHGF2.5-1000L
1230	1000	6.27	KRHGF3-1000R KRHGF3-1000L



Mounting screw size	Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
	H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
M4	4.4	8	4.5	1290	955	131	97.4	0.43	● KRHGFD1-500RJ ● KRHGFD1-500LJ
M5	6	10	6	2890	2380	295	243	0.85	● KRHGFD1.5-500RJ ● KRHGFD1.5-500LJ
M6	7	11	7	5140	4230	524	432	2.86	● KRHGFD2-1000RJ ● KRHGFD2-1000LJ
M8	8.6	14	9	8030	6610	819	674	4.24	● KRHGFD2.5-1000RJ ● KRHGFD2.5-1000LJ
M10	10.8	17.5	11	12000	9810	1230	1000	6.09	● KRHGFD3-1000RJ ● KRHGFD3-1000LJ

- [Caution on J series] ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered)**, after placing an order. Please allow additional shipping time to get to your local distributor.
 ② Number of products we handle for one order is **1 to 20 pieces**. For quantities of 21 pieces or more, we need to quote price and lead time.

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

Bevel Gearboxes

Other Products

Other Products



Specifications	
Precision grade	KHK R 001 grade 5
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 95HRB)



* SW Saw Blade Finished

R1

Catalog No.	Module	Effective no. of teeth	Direction of helix	Shape	Total length		Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
					A	B				C	D	Bending strength	Surface durability
SRH2-100R SRH2-100L	m2	12	R L	RR RL	95	25	25	23	4710	1570	481	160	
SRH2-500R SRH2-500L		75	R L	R1	505								
SRH2-1000R SRH2-1000L		152	R L		1010								
SRH3-100R SRH3-100L	m3	7	R L	RR RL	95	35	35	32	9910	3520	1010	359	
SRH3-500R SRH3-500L		49	R L	R1	505								
SRH3-1000R SRH3-1000L		101	R L		1010								

Catalog No.	Module	No. of teeth	Direction of helix	Shape	Total length		Face width	Height	Height to pitch line	Allowable force (N)	
					A	A'				B	C
SRHF2-1000R SRHF2-1000L	m2	153	R L	RFR RFL	995.24	1001.94	25	25	23	4710	1570
SRHF3-1000R SRHF3-1000L	m3	102	R L	RFR RFL	995.24	1004.62	35	35	32	9910	3520

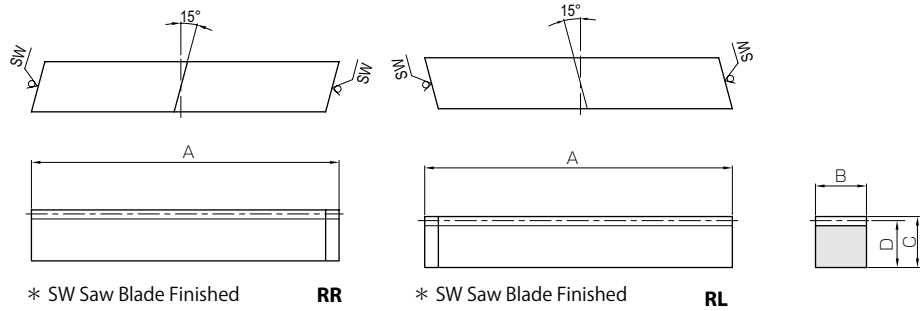
Catalog No.	Module	No. of teeth	Direction of helix	Shape	Total length		Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
					A	A'				B	C	D		
SRHFD2-1000R SRHFD2-1000L	m2	153	R L	RDR RDL	995.24	1001.94	25	25	23	10	47.62	180	6	M6
SRHFD3-1000R SRHFD3-1000L	m3	102	R L	RDR RDL	995.24	1004.62	35	35	32	14	47.62	180	6	M10

[Caution on Product Characteristics]

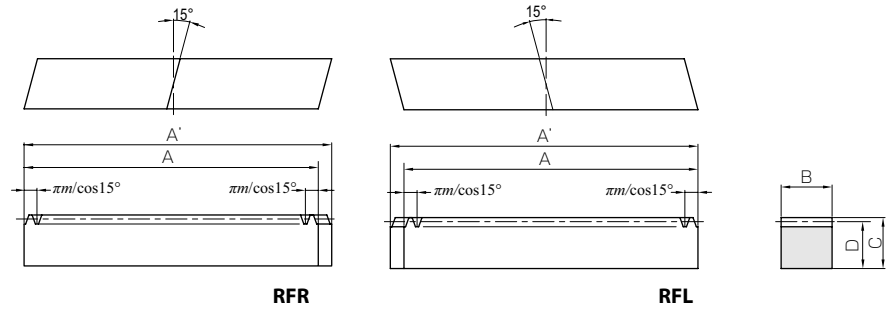
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 189 for more details.
- ② The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.
- ③ Please use SH Helical Gears as the mating pinion.
- ④ These racks produce axial thrust forces. See page 167 for more details.
- ⑤ After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to a heavy load.

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

SRHFD



Weight (kg)	Catalog No.
0.43	SRH2-100R SRH2-100L
2.28	SRH2-500R SRH2-500L
4.56	SRH2-1000R SRH2-1000L
0.84	SRH3-100R SRH3-100L
4.44	SRH3-500R SRH3-500L
8.88	SRH3-1000R SRH3-1000L

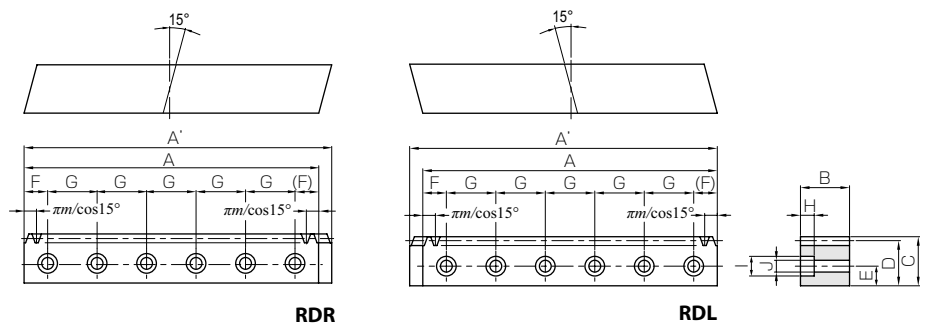


Allowable force (kgf)		Weight (kg)	Catalog No.
Bending strength	Surface durability		
481	160	4.49	SRHF2-1000R SRHF2-1000L
1010	359	8.75	SRHF3-1000R SRHF3-1000L

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
7	11	7	4710	1570	481	160	4.43	SRHFD2-1000R SRHFD2-1000L
10.8	17.5	11	9910	3520	1010	359	8.52	SRHFD3-1000R SRHFD3-1000L

[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 192) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.
- ③ Avoid hardening Racks with bolt holes, due to deformation occurring at the mounting hole and the difficulty of straightening after hardening.



Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

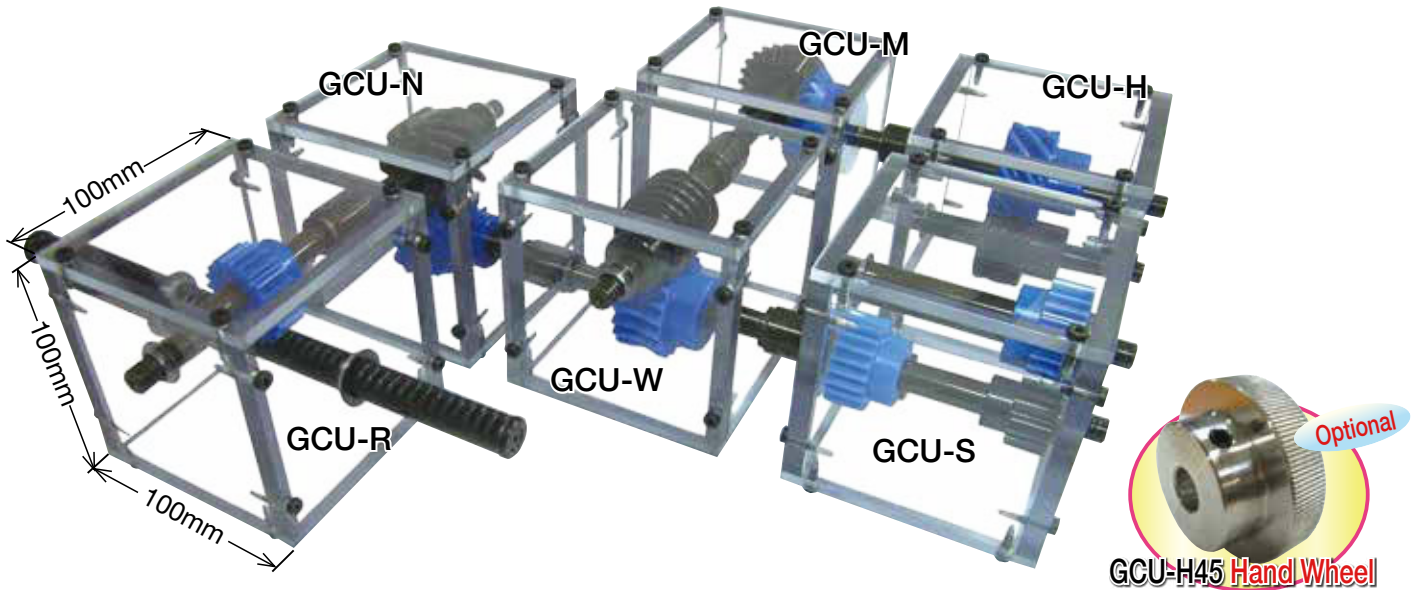
Bevel Gearboxes

Other Products

GCU
Gear Assembly Kit (For use in learning about gears)

Knockdown style

RoHS Compliant



GCU-R Rack Kit

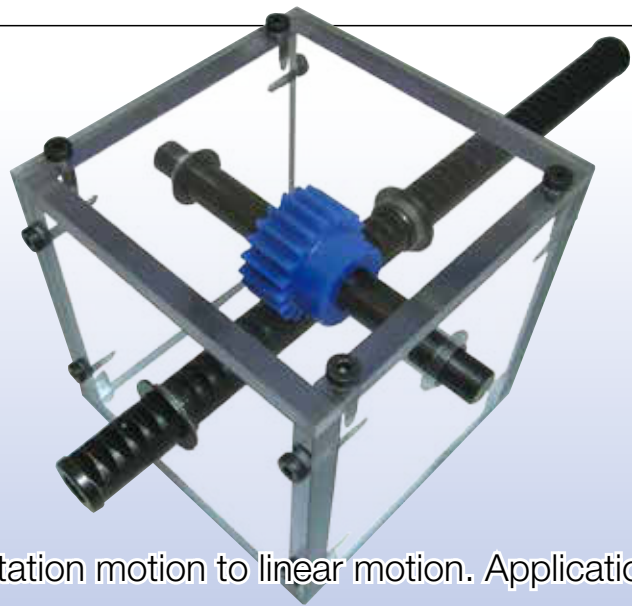
Installment : Parallel axes gears

Gear Type : Racks & Pinions

Gears : SRO1.5-500

PS1.5-20

Weight : Approx. 1kg



Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.

Six items available in total

GCU-S Spur Gear Kit



Installment : Parallel axes gears
(Two-stage)
Gear Type : Spur Gears
Gears : 2 units of SS1.5-16
2 units of PS1.5-22
Gear Ratio : 1.89
Weight : Approx. 1kg

The Gear Kit contains two-stage spur gears and allows speed increases / reductions, and includes the most commonly used combinations of gears.

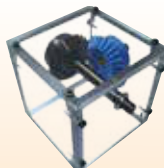
GCU-H Helical Gear Kit



Installment : Parallel axes gears
Gear Type : Helical Gears
(Screw Gears)
Gears : SN2.5-10L
PN2.5-10R
Gear Ratio : 1
Weight : Approx. 1kg

Helical gears have more strength than spur gears of the same dimensions and have the advantage of being less noisy.

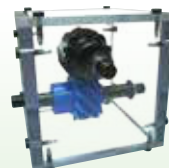
GCU-M Miter Gear Kit



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

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

GCU-N Screw Gear Kit



Installment : Nonparallel and
nonintersecting gears
Gear Type : Screw Gears
Gears : SN2.5-10R
PN2.5-10R
Gear Ratio : 1
Weight : Approx. 1kg

Screw Gears are helical gears used in nonparallel and nonintersecting situations. Applications include devices like conveyers with light loads.

GCU-W Worm Gear Pair Kit



Installment : Nonparallel and
nonintersecting gears
Gear Type : Worm Gear Pair
Gears : SW2-R1
PG2-20R1
Gear Ratio : 20
Weight : Approx. 1kg

Worm Gear Pairs can be used to make large reductions in speed in a single phase. The Worm gear cannot be driven by the worm wheel due to inherent self-locking.

* These kits are not for actual use to transmit power and please use only as representations of gear systems.



CP Racks & Pinions

KTSCP [CP] Tapered Pinions  CP5, 10 Page 230 	STRCPF · STRCPFD [CP] Tapered Racks  CP5, 10 Page 230 	MSCPG [CP] Ground Spur Gears  New CP5, 10 Page 232 	MRGCPF · MRGCPFD [CP] Hardened Ground Racks  J Series CP5, 10 Page 232 	KRGCPF-H · KRGCPFD-H [CP] Hardened Ground Racks  J Series CP5, 10 Page 234 	KRGCP · KRGCPF · KRGCPD [CP] Ground Racks  CP5, 10 Page 234 	SSCPGS [CP] Ground Spur Pinion Shafts  CP5, 10 Page 236 
SSCPG [CP] Ground Spur Gears  Newly added CP5 ~ 20 Page 236 	SRGCP · SRGCPF · SRGCPD [CP] Ground Racks  J Series CP5 ~ 20 Page 238 	KRCPF-H · KRCPFD-H [CP] Hardened Racks  J Series CP5, 10 Page 240 	SRCPF-H · SRCPFD-H [CP] Hardened Racks  J Series CP5 ~ 20 Page 240 	KSCP [CP] Hardened Spur Gears  New CP5, 10 Page 242 	KRCPF [CP] Thermal Refined Racks  J Series CP5, 10 Page 242 	SSCP [CP] Steel Spur Gears  Newly added CP2.5 ~ 20 Page 244 
SRCP · SRCPF · SRCPFD [CP] Racks  J Series CP2.5 ~ 20 Page 246 	SUSCP [CP] Stainless Steel Spur Gears  Newly added CP5, 10 Page 248 	SURCPF · SURCPFD [CP] Stainless Steel Racks  J Series CP5, 10 Page 248 	SROCP [CP] Round Racks  CP2.5 ~ 10 Page 250 	FRCP [CP] Metal Flexible Racks  CP5 Page 250 		

Catalog Number of KHK Stock Gears

Catalog Numbers of KHK stock gears are based on simple principles as follows. Please order KHK gears by specifying their Catalog Numbers.

(Example) CP Racks

S R CP 5 - 100



Material

- S S45C
- K SCM440
- SU SUS304
- F SS400

Other Information

- F Racks with Machined Ends
- D Racks with Bolt Holes
- K Racks with Drill Holes
- G Ground Racks
- H Racks with induction hardened teeth

Type

- R Racks
- RO Round Racks
- TR Tapered Racks

Feature Icons

- RoHS Compliant Product
- Finished Product
- Ground Gear
- Resin Product
- Re-machinable Product
- Heat Treated Product
- Stainless Product
- Copper Alloy Product
- Injection Molded Product
- Black Oxide coated Product

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

Bevel Gearboxes

Other Products

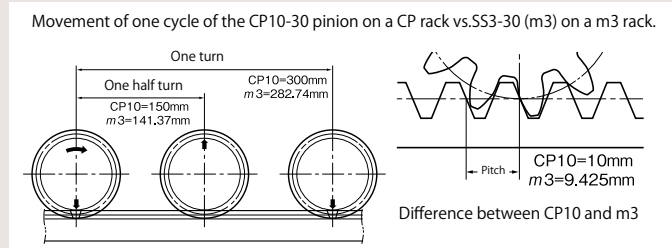
Characteristics



KHK stock CP racks and pinions are suitable in applications where very accurate positioning in linear motion is required. For your convenience, we offer circular pitches of 2.5 to 20 mm and in lengths of 100 to 2000 mm. (FRCP is available to 4000 mm)

About CP Racks & Pinions

The reference pitch of a metric module is computed by multiplying the number of module by π (3.14159). For example, the reference pitch of $m\beta$ rack is 9.425 mm ($3 \times \pi$). When using a rack and a pinion in a linear motion application, the fact that the pitch is not an integral number presents a difficulty in accurate positioning. This problem is solved by CP racks and pinions where one rotation of a pinion moves it precisely 50, 100, 150, ... or 600 mm. The following table lists the main features. The following table lists the main features.



Racks

Catalog No. Note 1	Pitch (mm)	Total Length (mm) () No. of teeth	Material	Heat Treatment	Tooth Surface Finish	Precision KHK R 001 () denotes JIS B 1702-1	Features
STRCPF · STRCPFD	5, 10	1000	S45C	—	Cut	4	By pairing with KTSCP pinion, the backlash may be adjusted.
MRGCPF MRGCPFD	1.5 ~ 3	500	SCM415	Tooth area Carburized	Ground	1	Has the highest strength and precision in the KHK standard rack series. Bolt holes can be remachined as carburizing is applied only within the tooth area. J Series products are also available.
KRGCPF - H KRGCPFD - H	5, 10	500, 1000	SCM440	Thermal refined, teeth induction hardened	Ground	1	Heat treated ground gears with high precision and strength has excellent cost-performance ratio. J Series products are also available.
KRGCP · KRGCPF KRGCPD	5, 10	100, 500, 1000	SCM440	Thermal Refined	Ground	1	High strength and abrasion-resistant for precision linear motion.
SRGCP · SRGCPF SRGCPFD	5, 10, 15, 20	100, 500, 1000	S45C	Gear teeth induction hardened	Ground	3	Reasonably priced ground racks with abrasion-resistant characteristics. J Series products are also available.
KRCPF-H KRCPFD-H	5, 10	1000	SCM440	Thermal refined, teeth induction hardened	Cut	5	This is a strong rack made of Chromoly steel, treated by carburizing. Has high-strength, high wear resistance, and enables downsizing of SR racks. J Series products are also available.
SRCPF-H SRCPFD-H	5, 10, 15, 20	1000	S45C	—	Cut	5	Stable Hardened racks with high strength, long life span are reasonably priced. J Series products are also available.
KRCPF · KRCPFD	5, 10	1000	SCM440	Thermal Refined	Cut	4	Increased strength with SCM440 material which is thermal refined.
SRCP · SRCPF SRCPFD · SRCPFK	2.5, 5, 10, 15, 20	100, 500, 1000, 1500, 2000	S45C	—	Cut	4	Widely applicable due to low cost and large selection of pitches and lengths.
SURCPF SURCPFD	5, 10	500, 1000	SUS304	Solution treated	Cut	5	Suitable for food machinery due to SUS304 material's rust-resistant quality.
SROCP	2.5, 5, 10	500	S45C	—	Cut	4	Convenient in applications where the rack has reciprocal motion.
FRCP	5	2000, 3000, 4000	SS400	—	Cut	8	Cut continuously. Long length and bendable to a contour.

Pinions

KTSCP	5, 10	(20 ~ 40)	SCM440	Thermal refined	Cut	(N8)	By pairing with STRCPF rack, the backlash may be adjusted.
MSCPG	5, 10	(20 ~ 40)	SCM415	Overall carburizing	Ground	(N5)	Designed with positive partial transposition and to have an integral value (mm) for the mounting distance, so both strength and usability are enhanced.
SSCPGS	5, 10	(10 ~ 25)	S45C	Thermal refined, teeth induction hardened	Ground	(N7)	Ground Spur Gears with Pinions, can be directly assembled with the shaft bearing, by modifying the pinion.
SSCPG	5, 10, 15, 20	(20 ~ 40)	S45C	Gear teeth induction hardened	Ground	(N7)	Perform secondary operations to suit your requirement on these ground CP spur gears.
KSCP	5, 10	(20 ~ 40)	SCM440	Thermal refined, teeth induction hardened	Cut	(N9)	Thermal refined and tooth-hardened chromoly racks, excellent in abrasion resistance. Use as mating pinions for KRCPF(-H) Racks.
SSCP	2.5, 5, 10, 15, 20	(20 ~ 40)	S45C	—	Cut	(N8)	Low cost and widely applicable, with a large selection of pitches and numbers of teeth.
SUSCP	5, 10	(20 ~ 30)	SUS303	—	Cut	(N8)	Suitable for food machinery due to SUS303 material's rust-resistant quality.

(NOTE 1) The catalog numbers in the above tables with a suffix of F have both ends machined so that they can be butted against each other to make any desired length. The items with (D) have mounting screw holes for easier assembly.

- For safer handling and to prevent damage such as deformation, KHK stock CP racks have round chamfering on the corners of the top land of the gear tooth. This rounded chamfered shape is patented by KHK. Because it is effective for reducing noise, all of KHK CP racks have this chamfering treatment.
- Black colored products are KHK stock gears that have an applied black oxide coating for rust resistance; this 'blackness' is a product characteristic of KHK stock gears.

Selection Hints



Please select the most suitable products by carefully considering the characteristics of items and contents of the product tables. It is also important to read all applicable notes before the final selection.

1. Caution in Selecting the Mating Gears

- ① KHK stock CP racks are mated with CP spur gears having the same pitch. Since CP2.5 (m0.796), CP5 (m1.592) and CP10 (m3.183) are very close in size to m0.8, m1.5 and m3 respectively, the selecting the proper mating gear should be verified to make sure that the items are correct. Otherwise, complications could arise.
- ② STRCPF and STRCPFD Tapered Racks are mated with KTSCP Spur Gears having the same pitch. They can also be mated with other spur gears, however, they can not be used as parallel axis gears due to the setting angles.

2. Caution in Selecting Gears Based on Gear Strength

The gear strength values shown in the product pages were computed by assuming a certain application environment. Therefore, they should be used as reference only. We recommend that each user computes his own values by applying the actual usage conditions. The table below contains the assumptions established for these products in order to compute gear strengths.

■ Calculation assumptions for Bending Strength

Item	Racks						Pinions							
	MRGCPF MRGCPFD	KRGCPF-H KRGCPFD-H	KRGCP KRGCPF KRGCPD KRCPF	SRGCP SRGCPFD SRGCPFD	SRCP · SRCPF SRCPFD SRCOP STRCPF STRCPFD	SURCPF SURCPFD FRCP	MSCPG	SSCPGS	SSCPG	KTSCP	KSCP	SSCP	SUSCP	
Formula <small>NOTE 1</small>	Formula of spur and helical gears on bending strength (JGMA401-01)													
No. of teeth of mating gear	30						Racks							
Rotation	100rpm													
Durability	Over 10 ⁷ cycles													
Impact from motor	Uniform load													
Impact from load	Uniform load													
Direction of load	Bidirectional													
Allowable bending stress at root σ_{Flim} (kgf/mm ²) <small>NOTE 2</small>	47	32	32	20	20	10.5	47	24.5	19	28.5	30	19	10.5	
Safety factor S_F	1.2													

■ Calculation assumptions for Surface Durability (Except those in common with bending strength)

Formula <small>NOTE 1</small>	Formula of spur and helical gears on surface durability (JGMA402-01)												
Kinematic viscosity of lubricant	100cSt (50°C)												
Gear support	Support on one end												
Allowable Hertz stress σ_{Hlim} (kgf/mm ²)	106	112	79	90	52.5	41.3	166	99	90	74.5	112	49	41.3
Safety factor S_{H1}	1.15												

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

(NOTE 2) The allowable bending stress at the root σ_{Flim} is calculated from JGMA401-01, and set to 2/3 of the value in the consideration of the use of planetary-, idler-, or other gear systems, loaded in both directions.

■ Definition of bending strength by JGMA 401-01 (1974)

The allowable bending strength of a gear is defined as the allowable tangential force at the pitch circle based on the mutually allowable root stress of two meshing gears under load.



Example of the failure due to insufficient bending strength.

■ Definition of surface durability by JGMA 402-01 (1975)

The surface durability of a gear is defined as the allowable tangential force at the pitch circle, which permits the force to be transmitted safely without incurring surface failure.



Example of the defacement due to insufficient surface durability.

3. Selecting Racks By Precision

The precision standards of KHK stock racks are established by us. Please be sure to see the pages below when selecting.

- ① Pitch Error of Racks NOTE 2 (KHKR001) → Page 190
- ② Precision of Rack Blanks NOTE 2 → Page 191
- ③ Backlash of Rack Tooth → Page 191

(NOTE 2) Convert CP to m (module) when reference is made to the data in the table. ($m=CP/\pi$)

Application Hints



In order to use KHK stock gears safely, carefully read the Application Hints before proceeding.

If there are questions or if you require clarifications, please contact our technical department or your nearest distributor.

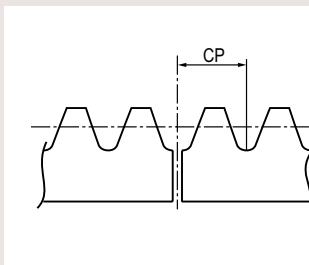
KHK CO., LTD.

PHONE: 81-48-254-1744 FAX: 81-48-254-1765

E-mail export@khkgears.co.jp

1. Caution on Performing Secondary Operations

- ① Secondary operations can be performed on all KHK stock CP racks except for the racks where the gear teeth are induction hardened. To avoid problems of gear precision, do not reduce the face width. The precision of ground racks and racks with mounting holes may drop if you do not exercise extreme caution during installation or while modifying.
- ② Pitch lines of racks are controlled by using the bottom surface as the reference datum and over-pin measurements on tooth thickness. If you machine the bottom surfaces, the precision of the racks may be affected.
- ③ When connecting two racks, the machining of the mating ends requires careful consideration. The meshing will be poor if the pitch (CP) straddling the connection has a positive tolerance. We recommend a minus tolerance on pitch of at the connection. The below is an indication of pitch tolerance for each module.



Unit : mm

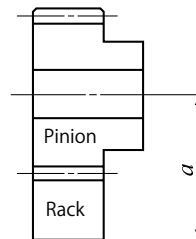
CP	Tolerance
CP2.5	-0.05 -0.25
CP5	-0.1 -0.3
CP10	-0.1 -0.4
CP15	-0.1 -0.4
CP20	-0.1 -0.4

- ④ To use dowel pins to secure racks, attach the racks to the base and drill both simultaneously.
- ⑤ KHK stock CP racks made of S45C and SCM440 (except for ground racks) can be induction hardened. However, the precision of pitch is decreased.
- ⑥ To be able to handle parts safely, all burrs and sharp corners should be removed after the secondary operations are done.
- ⑦ If you are going to modify the gear by gripping the teeth, please exercise caution not to crush the teeth by applying too much pressure. Any scarring will cause noise during operation.

2. Points of Caution in Assembling

- ① KHK stock CP racks are designed to give the proper backlash when assembled using the mounting distance given by the formula below (mounting distance tolerance of H7 to H8 required). The backlash values are given in the table on Page 191. Make sure that the mounting distance stays constant for the length of the rack.

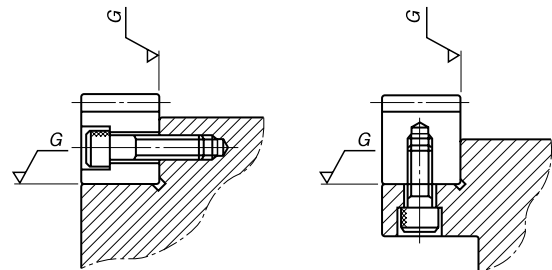
$$\text{Mounting distance } a = \text{Height of pitch line of rack} + \text{Pitch radius of pinion}$$



(CAUTION)

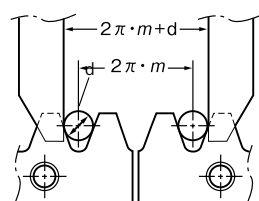
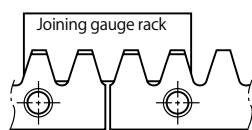
Pinions are assumed to be standard stock spur gears ($x=0$).

- ② KRGCP type of KHK stock ground racks have four surfaces ground parallel to within $10 \sim 15 \mu\text{m}$. To maintain true angle, they should be mounted on high precision bases as shown below. It is even possible to correct for the angular errors of racks by compensating the mounting base. With recent increases in the requirement for zero backlash linear drives, such accurate assembly as shown is becoming more important.



- ③ If the racks are not secured properly to the base, they could shift during operation and cause unexpected problems. It is very important to insure firm mounting by the use of dowel pins or similar devices.
- ④ Machined end type racks such as SRCPF and SRCPFD series have the pitch tolerance of $-0.1/-0.3$ for modules less than Module 2.5, and $-0.1/-0.4$ for larger modules. If you try to connect the racks without any space, the pitch at the connection will be too small and will cause problems. Please follow the following diagrams for assembly.

An example of Rack Joining, we recommend the following method.



(CAUTION) Joining gauge racks for helical racks must have the opposite hand from the racks. Please use Module 1~10 100 racks as a joining gauge rack, or alternatively the rack of the same specifications on hand.

■ Features of KHK Tapered Racks and Pinions

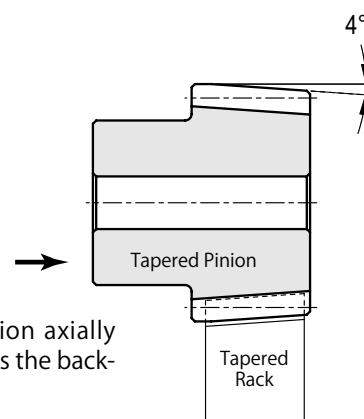
1. Easy adjustment of Backlash value
Generally, adjustment of backlash value is made by changing mounting distance (adjusting the height of the motor shaft). The backlash of KHK stock tapered racks and pinions are adjustable only by moving the pinion axially.
2. Reasonable Prices
The precision of KHK stock tapered racks and pinions are obtained by rationalization in the production process with our cutting-edge technologies. This enables us to offer quality tapered racks and pinions in the same price range as the CP racks and pinions. (SRCPF and SSC).



■ Example of Comparison

- SRCP5-1000 and SSCP5-30 combination produces a backlash value of 0.1 to 0.26.
- STRCPF5-1000 and KTSCP5-30 combination produces a backlash value of 0.05 or less. (Target value)

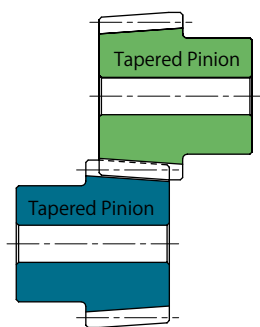
- ※ Note above backlash values are theoretical values when meshed under ideal conditions.
- ※ Tapered racks and pinions are not interchangeable with KHK stock CP racks and pinions.
- ※ Different modules, number of teeth, ground gear versions and custom-made items are available as special orders.



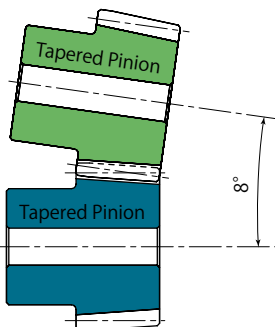
Moving the pinion axially by 1 mm changes the backlash by 0.05 mm.

■ Examples of special applications of Tapered Pinions

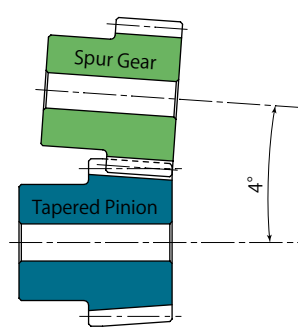
The shaft angle illustrated below can be obtained by changing the assembly orientation of the tapered spur gear or by mating with a regular spur gear.



When mating a tapered pinion and a tapered pinion, where each hub is set in opposite direction, a 0° shaft angle is obtained. (Axis Parallel)



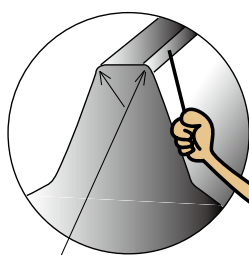
When mating a tapered pinion and a tapered pinion, where each hub is set in the same direction, an 8° shaft angle is obtained.



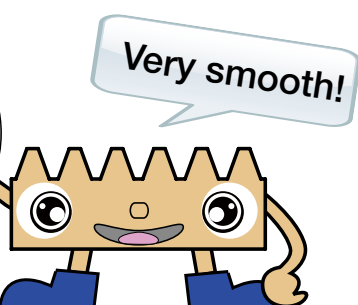
When mating a tapered pinion and a spur gear, a 4° shaft angle is obtained.



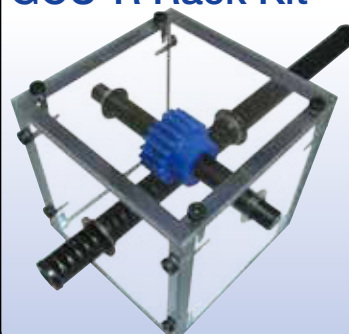
Information



R Chamfered



GCU-R Rack Kit



Installment : Parallel axes gears
Gear Type : Racks & Pinions
Gears : SRO1.5-500
PS1.5-20
Weight : Approx. 1kg

Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.



KTSCP

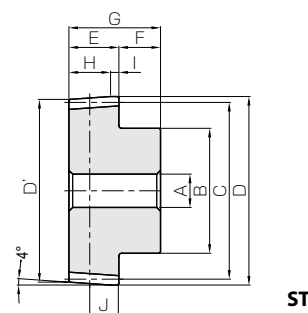
CP Tapered Pinions



Circular Pitch 5, 10



Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998) JIS grade 4 (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 ~ 285HB



ST

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia. (major)	Outside dia. (minor)	Face width	Hub width	Total length
				A _{H7}	B	C	D	D'	E	F	G
KTSCP5-20	CP5 (1.5915)	20	ST	8	25	31.83	36.06	33.97	18	15	33
KTSCP5-25		25		10	32	39.79	44.02	41.92			
KTSCP5-30		30		10	38	47.75	51.98	49.88			
KTSCP5-40		40		12	45	63.66	67.89	65.8			
KTSCP10-20	CP10 (3.1831)	20	ST	15	50	63.66	72.13	67.93	36	20	56
KTSCP10-25		25		20	60	79.58	88.04	83.85			
KTSCP10-30		30		20	75	95.49	103.96	99.76			
KTSCP10-40		40		20	80	127.32	135.79	131.59			

[Caution on Product Characteristics]

- ① The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- ② The backlash values shown in the table are the theoretical values when these gears and STRCP Tapered Racks are in mesh.

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



STRCPF · STRCPFD

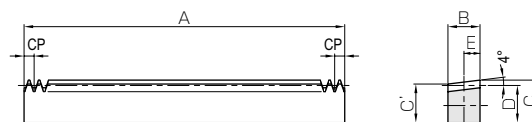
CP Tapered Racks



Circular Pitch 5, 10



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)



RF

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height (major)	Height (minor)	Height to pitch line	Reference position
				A	B	C	C'	D	E
STRCPF5-1000	CP5 (1.5915)	200	RF	1000	15	19.5	18.45	17.38	7.5
STRCPF10-1000	CP10 (3.1831)	100	RF	1000	30	34.5	32.4	30.27	15

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height (major)	Height (minor)	Height to pitch line	Reference position	Mounting hole dimensions				No. of mounting holes	Mounting screw size
				A	B	C	C'	D	E	F	G	H			
STRCPFD5-1000	CP5 (1.5915)	200	RD	1000	15	19.5	18.45	17.38	7.5	8	50	180	6	M5	
STRCPFD10-1000	CP10 (3.1831)	100	RD	1000	30	34.5	32.4	30.27	15	14	50	180	6	M10	

[Caution on Product Characteristics]

- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- ② The backlash of the CP Tapered Racks equates to the value of the mating gear shown in the table.
- ③ After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to a heavy load.

Tapered Spur Gears

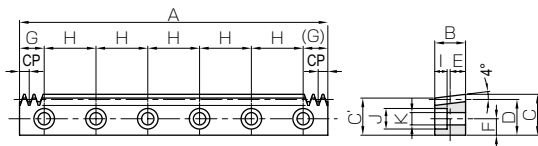


Reference face width H	Adjustable width I	Reference position J	Distance traveled in one turn (mm)	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog No.
				Bending strength	Surface durability	Bending strength	Surface durability			
15	3	10.5	100	41.2	8.13	4.20	0.83	0~0.11	0.16	KTSCP5-20
			125	55.6	14.0	5.67	1.43	0~0.11	0.25	KTSCP5-25
			150	70.3	21.9	7.16	2.23	0~0.11	0.37	KTSCP5-30
			200	100	43.3	10.2	4.41	0~0.11	0.61	KTSCP5-40
30	6	21	200	329	71.2	33.6	7.26	0~0.12	1.13	KTSCP10-20
			250	445	122	45.3	12.4	0~0.12	1.71	KTSCP10-25
			300	562	189	57.3	19.2	0~0.12	2.58	KTSCP10-30
			400	801	371	81.7	37.8	0~0.12	4.25	KTSCP10-40

[Caution on Secondary Operations] ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 ② Avoid performing secondary operations that narrow the tooth width as it affects precision and strength.

STRCPF · STRCPFD

Tapered Racks



RD

Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
Bending strength	Surface durability	Bending strength	Surface durability		
2290	468	233	47.7	2.05	STRCPF5-1000
9150	1870	933	191	7.13	STRCPF10-1000

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	2290	468	233	47.7	2.01	STRCPFD5-1000
10.8	17.5	11	9150	1870	933	191	6.92	STRCPFD10-1000

[Caution on Secondary Operations] ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.
 ③ Avoid hardening Racks with bolt holes, due to deformation occurring at the mounting hole and the difficulty of straightening the rack after hardening.



MSCPG

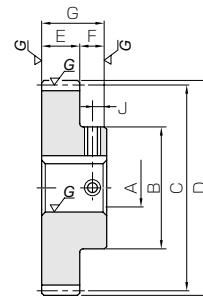
CP Hardened Ground Spur Gears



Circular Pitch 5, 10



Specifications	
Precision grade	JIS grade N5 (JIS B1702-1: 1998) JIS grade 1 (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM415
Heat treatment	Overall carburizing
Tooth hardness	55 ~ 60HRC



S1K

* Designed with positive partial transposition and to have an integral value (mm) for the mounting distance, so both strength and usability are enhanced.

Catalog No.	Pitch mm (Module)	No. of teeth	Profile shift coefficient	Mounting distance	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length
						A _{H7}	B	C	D	E	F	G
MSCPG5-20A MSCPG5-20B	CP5 (1.5915)	20	+0.425	35	S1K	12 15	28	31.83	36.37	15	15	30
MSCPG5-25A MSCPG5-25B		25	+0.438	39		12 15	35	39.79	44.37			
MSCPG5-30A MSCPG5-30B		30	+0.451	43		15 20	40	47.75	52.37			
MSCPG5-40A MSCPG5-40B MSCPG5-40C		40	+0.478	51		15 20 25	45	63.66	68.37			
MSCPG10-20A MSCPG10-20B	CP10 (3.1831)	20	+0.111	64		20 25	50	63.66	70.73	30	20	50
MSCPG10-25A MSCPG10-25B		25	+0.124	72		25 30	60	79.58	86.73			
MSCPG10-30A MSCPG10-30B		30	+0.137	80		30 40	70	95.49	102.73			
MSCPG10-40A MSCPG10-40B		40	+0.164	96		30 40	70	127.32	134.73			

[Caution on Product Characteristics]

- Although the dimensions of the keyway are made to the JIS (J9) tolerance, there may be some deviations due to the effects of heat treatment.
- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see page 31 for more details.
- The backlash values shown in the table are the theoretical values when these gears and the MRGCPF Racks are in mesh.



MRGCPF · MRGCPFD

CP Hardened Ground Racks

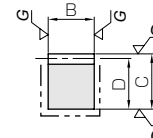
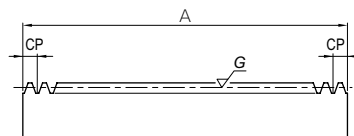


Circular Pitch 5, 10



Specifications	
Precision grade	KHK R 001 grade 1
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM415
Heat treatment	
Tooth hardness	55 ~ 60HRC

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



RF

* "The strongest in carburized racks! With the highest positioning accuracy in ground racks! Top quality from KHK's best technology."

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
MRGCPF5-500 MRGCPF10-500	CP5 (1.5915) CP10 (3.1831)	100 50	RF	500	15 30	20 35	18.41 31.82	5380 21500	5000 20100	548 2190	509 2050	1.08 3.75

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● MRGCPFD5-500J ● MRGCPFD10-500J	CP5 (1.5915) CP10 (3.1831)	100 50	RD	500	15 30	20 35	18.41 31.82	8 14	25 150	150	4	M5 M10

[Caution on Product Characteristics]

- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- The backlash of racks differ depending on the size of the mating pinion. Please calculate the backlash from the backlash value of the mating pinion. Also, please refer to the data in the section called 'Backlash of Rack Tooth (Amount of Tooth Thinning)' on Page 191.

[Caution on Secondary Operations]

- Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- In the illustration, the area surrounded with--- line is masked during the carburization process and can be modified. However, the end faces on both sides do not have an anti-carburization coating on the taped holes, otherwise they could not be machined.

Keyway Width×Depth	Set Screw		Distance traveled in one turn (mm)	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog No.
	Size	J		Bending strength	Surface durability	Bending strength	Surface durability			
4x 1.8 5x 2.3	M4	7.5	100	70.0	46.7	7.13	4.76	0.04-0.13	0.14 0.13	MSCPG5-20A MSCPG5-20B
4x 1.8 5x 2.3	M4		125	91.8	78.2	9.37	7.97		0.24 0.22	MSCPG5-25A MSCPG5-25B
5x 2.3 6x 2.8	M4 M5		150	114	119	11.6	12.2		0.32 0.29	MSCPG5-30A MSCPG5-30B
5x 2.3 6x 2.8 8x 3.3	M4 M5 M6		200	159	229	16.2	23.4		0.53 0.50 0.45	MSCPG5-40A MSCPG5-40B MSCPG5-40C
6x 2.8 8x 3.3	M5 M6	10	200	514	375	52.4	38.2	0.06-0.16	0.94 0.87	MSCPG10-20A MSCPG10-20B
8x 3.3	M6		250	689	628	70.3	64.1		1.43 1.34	MSCPG10-25A MSCPG10-25B
8x 3.3 12x 3.3	M6 M8		300	868	960	88.5	97.9		2.03 1.80	MSCPG10-30A MSCPG10-30B
8x 3.3 12x 3.3	M6 M8		400	1230	1850	126	188		3.36 3.13	MSCPG10-40A MSCPG10-40B

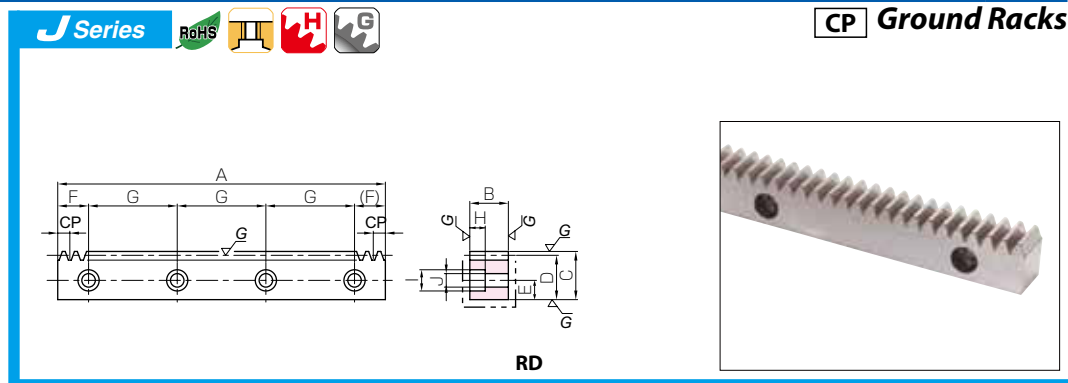
[Caution on Secondary Operations]

- ① No secondary operations can be performed on these precision finished gears due to applied carburizing process.
For products which are different in specifications, such as bore size, we accept custom-made gear orders and provide a price quote.

MRGCPF • MRGCPFD

CP **Ground Racks**

Surface durability;
4 times higher than the SRG
Hardened Ground Racks, 2
times higher than the KRG-H
Hardened Ground Racks.



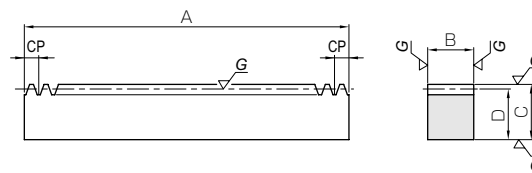
Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ●: J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	5380	5000	548	509	1.06	●MRGCPFD5-500J
10.8	17.5	11	21500	20100	2190	2050	3.61	●MRGCPFD10-500J

[Caution on J series]

- ① As available-on-request products, requires a lead-time for shipping within 2 working-days (excludes the day ordered), after placing an order. Please allow additional shipping time to get to your local distributor.
- ② Number of products we can process for one order is 1 to 20 units. For quantities of 21 or more pieces, we need to quote price and lead time.



Specifications	
Precision grade	KHK R 001 grade 1 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined, teeth induction hardened
Tooth hardness	50 ~ 60HRC



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

RF

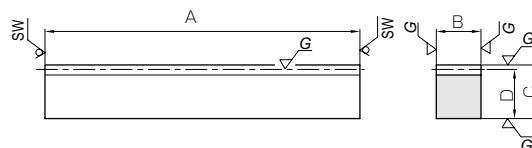
* Standard tooth surface induction hardening is applied resulting in reasonably priced racks which have their surface durability increased by 50% over KRGCPF !

Catalog No.	Pitch mm (Module)	Effective no. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRGCPF5-500H KRGCPF5-1000H	CP5 (1.5915)	100	RF	500	15	20	18.41	3660	2270	373	232	1.08
		200		1000								
KRGCPF10-500H KRGCPF10-1000H	CP10 (3.1831)	50	RF	500	30	35	31.82	14600	9150	1490	933	3.75
		100		1000								

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length				Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● KRGCPFD5-500HJ ● KRGCPFD5-1000HJ	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4	M5
		200		1000					50	180	6	
● KRGCPFD10-500HJ ● KRGCPFD10-1000HJ	CP10 (3.1831)	50	RD	500	30	35	31.82	14	25	150	4	M10
		100		1000					50	180	6	



Specifications	
Precision grade	KHK R 001 grade 1
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 ~ 285HB



* SW Saw Blade Finished

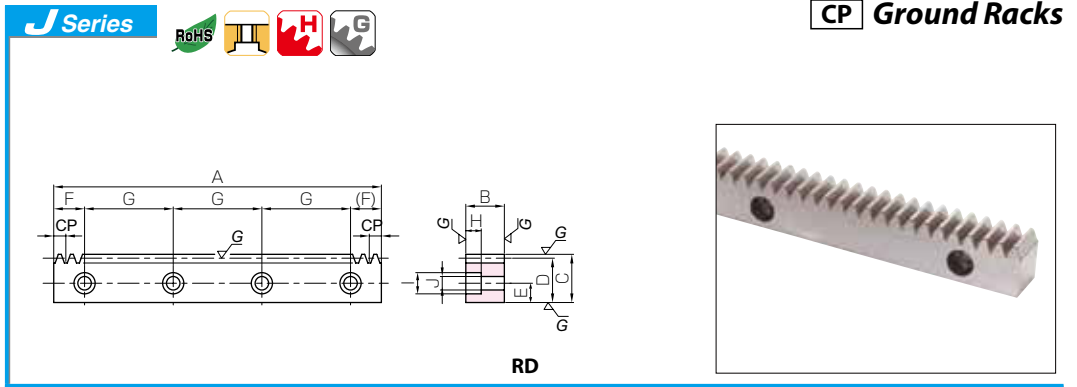
R1

* From improvements in our manufacturing processes, overall pricing is reduced by 20%! C-chamfering is widened for convenience in installation.

Catalog No.	Pitch mm (Module)	Effective no. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRGCP5-100 KRGCP5-500	CP5 (1.5915)	18	R1	98	15	20	18.41	3660	1560	373	159	0.21
		99		505								1.09
KRGCP10-100 KRGCP10-500	CP10 (3.1831)	8	R1	98	30	35	31.82	14600	6230	1490	635	0.73
		49		505								3.78

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRGCPF5-1000 KRGCPF10-1000	CP5 (1.5915) CP10 (3.1831)	200	RF	1000	15	20	18.41	3660	1560	373	159	2.17
		100	RF	1000	30	35	31.82	14600	6230	1490	635	7.49

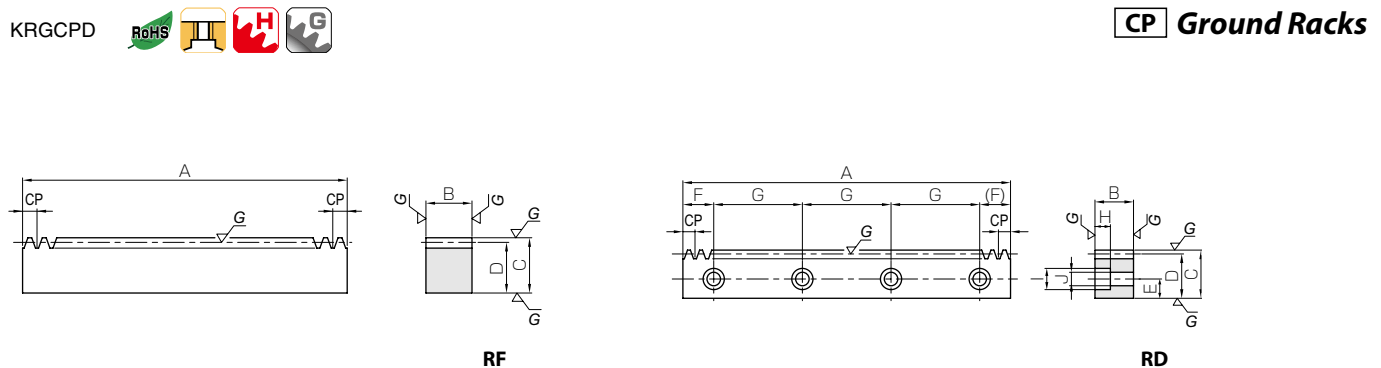
Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length				Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
KRGCPD5-500 KRGCPD10-500	CP5 (1.5915) CP10 (3.1831)	100	RD	500	15	20	18.41	8	40	140	4	M5
		50	RD	500	30	35	31.82	14	40	140	4	M10



- [Caution on Product Characteristics]**
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
 - ② Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).
- [Caution on Secondary Operations]**
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2mm to 3mm). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]**
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units.** For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	3660	2270	373	232	1.06 2.13	● KRGCPFD5-500HJ ● KRGCPFD5-1000HJ
10.8	17.5	11	14600	9150	1490	933	3.61 7.28	● KRGCPFD10-500HJ ● KRGCPFD10-1000HJ

KRGCP • KRGCPF • KRGCPD



- [Caution on Product Characteristics]**
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
 - ② Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).
 - ③ After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to a heavy load.
- [Caution on Secondary Operations]**
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No.
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	3660	1560	373	159	1.06	KRGCPD5-500
10.8	17.5	11	14600	6230	1490	635	3.61	KRGCPD10-500



SSCPGS

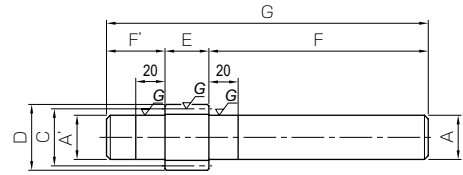
CP Ground Spur Pinion Shafts



Circular Pitch 5, 10



Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998) JIS grade 3 (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Thermal refined, tooth surface induction hardened
Tooth hardness	50 ~ 60HRC



S7

Catalog No.	Pitch mm (Module)	No. of teeth	Profile shift coefficient	Shape	Shaft dia. (L)		Pitch dia. C	Outside dia. D	Face width E	Shaft dia. (R)	
					A'	F'				A	F
SSCPGS5-15 SSCPGS5-20 SSCPGS5-25	CP5 (1.5915)	15	0	S7	19.2	25	23.87	27.06	15	19.2	100
		20	0		27.2		31.83	35.01		27.2	
		25	0		30.2		39.79	42.97		30.2	
SSCPGS10-10 SSCPGS10-15 SSCPGS10-20	CP10 (3.1831)	10	+0.5	S7	25.2	40	31.83	41.05	30	25.2	150
		15	0		35.2		47.75	54.11		35.2	
		20	0		40.2		63.66	70.03		40.2	

[Caution on Product Characteristics]

- The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- The backlash values shown in the table are the theoretical values when these gears and SRGCP Racks are in mesh.
- To find the center distance of profile shifted spur gears, please see the appropriate section on page 46 – 47.



SSCPG

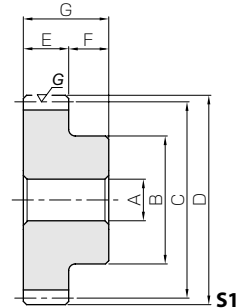
CP Ground Spur Gears



Circular Pitch 5, 10, 15, 20



Specifications				
Precision grade	JIS grade N7 (JIS B1702-1: 1998) * JIS grade 3 (JIS B1702: 1976)			
Gear teeth	Standard full depth			
Pressure angle	20°			
Material	S45C			
Heat treatment	Tooth surface induction hardened			
Tooth hardness	50 ~ 60HRC			
Pitch	CP5	CP10	CP15	CP20
Face width (E)	15	30	50	60
Hub width (F)	15	20	27	30
Total length (G)	30	50	77	90
Screw offset (J)	7.5	10	13.5	15



S1

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

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Bore A _{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Distance traveled in one turn (mm)	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
									Bending strength	Surface durability	Bending strength	Surface durability		
SSCPG5-20	CP5 (1.5915)	20	S1	8	25	31.83	35.01	100	24.8	13.7	2.53	1.40	0.04~0.18	0.14
SSCPG5-25		25		10	32	39.79	42.97	125	33.5	23.0	3.41	2.34		0.22
SSCPG5-30		30		10	38	47.75	50.93	150	42.3	35.0	4.32	3.57		0.33
SSCPG5-40		40		12	50	63.66	66.85	200	60.4	66.9	6.16	6.82		0.58
SSCPG10-20	CP10 (3.1831)	20	S1	15	50	63.66	70.03	200	198	110	20.2	11.2	0.06~0.21	0.99
SSCPG10-25		25		20	60	79.58	85.94	250	268	184	27.3	18.7		1.49
SSCPG10-30		30		20	75	95.49	101.86	300	339	280	34.5	28.5		2.26
SSCPG10-40		40		25	80	127.32	133.69	400	483	535	49.3	54.6		3.59
SSCPG15-20	CP15 (4.7746)	20	S1	25	75	95.49	105.04	300	744	399	75.9	40.7	0.07~0.23	3.45
SSCPG15-25		25		25	100	119.37	128.92	375	1005	667	102	68.0		5.76
SSCPG15-30		30		25	110	143.24	152.79	450	1270	1020	130	104		8.04
SSCPG20-20	CP20 (6.3662)	20	S1	25	100	127.32	140.06	400	1590	880	162	89.7	0.09~0.25	7.50
SSCPG20-25		25		30	130	159.15	171.89	500	2140	1470	219	150		12.0
SSCPG20-30		30		30	150	190.99	203.72	600	2710	2240	276	228		17.2

[Caution on Product Characteristics]

- The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- The backlash values shown in the table are the theoretical values when these gears and SRGCP Racks are in mesh.

[Caution on Secondary Operations]

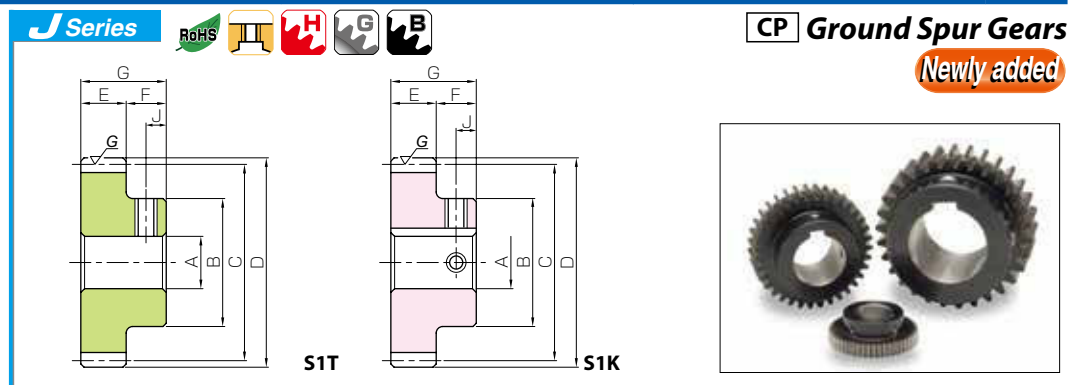
- Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).

Total length G	Distance traveled in one turn (mm)	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog No.
		Bending strength	Surface durability	Bending strength	Surface durability			
140	75	21.2	8.49	2.16	0.87	0.04~0.18	0.34	SSCPGS5-15 SSCPGS5-20 SSCPGS5-25
	100	32.0	16.6	3.26	1.70	0.04~0.18	0.66	
	125	43.2	27.8	4.40	2.83	0.04~0.18	0.85	
220	100	121	25.9	12.4	2.64	0.05~0.20	0.97	SSCPGS10-10 SSCPGS10-15 SSCPGS10-20
	150	169	67.9	17.3	6.93	0.05~0.20	1.87	
	200	256	133	26.1	13.6	0.06~0.21	2.64	

[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② 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). Use carbide tools for the modification of the shaft area near the bottom land.

SSCPG



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

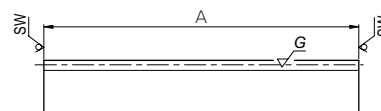
Bore H7	* The product shapes of J Series items are identified by background color.																			
Keyway Js9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Screw size	—	4 × 1.8			5 × 2.3				6 × 2.8				8 × 3.3			10 × 3.3	12 × 3.3	14 × 3.8		
Catalog No.	M5	M4				M5				M6			M8			M10				
SSCPG5-20 J BORE																				
SSCPG5-25 J BORE																				
SSCPG5-30 J BORE																				
SSCPG5-40 J BORE																				
SSCPG10-20 J BORE																				
SSCPG10-25 J BORE																				
SSCPG10-30 J BORE																				
SSCPG10-40 J BORE																				

[Caution on J series]

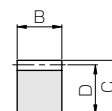
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered)**, after placing an order. Please allow additional shipping time to get to your local distributor.
- ② Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.
- ③ Keyways are made according to JIS B1301 standards, Js 9 tolerance.
- ④ Certain products which would otherwise have a very long tapped hole are concentered to reduce the length of the tap. (Products marked with "*" are tap size).
- ⑤ Areas of products which have been re-worked will not be black oxide coated.
- ⑥ For products having a tapped hole, a set screw is included.
- ⑦ The use of S1T shaped set screws for fastening gears to a shaft, is a method only applicable to light load usage. For secure fastening, please use dowel pins, in combination.



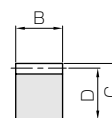
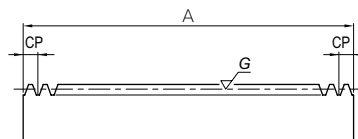
Specifications	
Precision grade	KHK R 001 grade 3 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Tooth surface induction hardened
Tooth hardness	50 ~ 60HRC *



* SW Saw Blade Finished



R1



RF

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

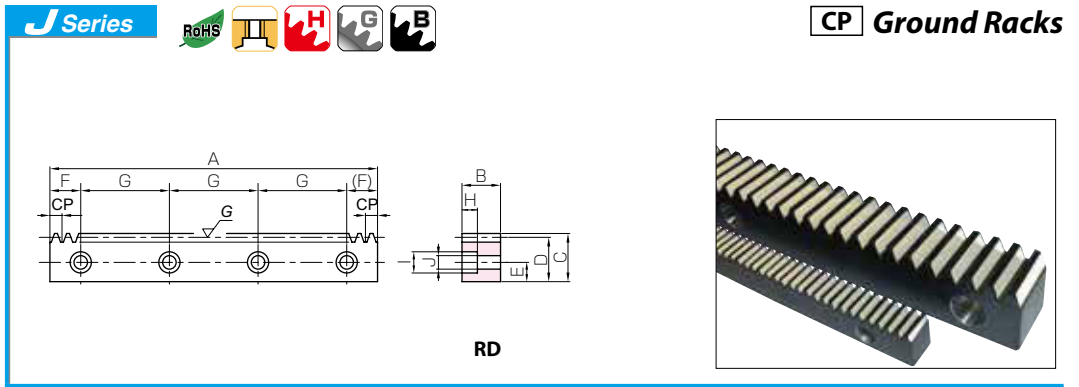
* Due to the decarburization layer of about 0.5 mm thickness, the rectangular surface have less than HB187 hardness.

Catalog No.	Pitch mm (Module)	Effective no. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRGCP5-100	CP5 (1.5915)	18	R1	98	15	20	18.41	2290	1460	233	149	0.21
SRGCP10-100	CP10 (3.1831)	8	R1	98	30	35	31.82	9150	5860	933	597	0.73
SRGCP15-100	CP15 (4.7746)	5	R1	103	50	50	45.23	22900	14200	2330	1450	1.83
SRGCP20-100	CP20 (6.3662)	3	R1	98	60	60	53.63	36600	23400	3730	2390	2.48

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRGCPF5-500	CP5 (1.5915)	100	RF	500	15	20	18.41	2290	1460	233	149	1.08
SRGCPF5-1000		200		1000								
SRGCPF10-500	CP10 (3.1831)	50	RF	500	30	35	31.82	9150	5860	933	597	3.75
SRGCPF10-1000		100		1000								
SRGCPF15-500	CP15 (4.7746)	33	RF	495	50	50	45.23	22900	14200	2330	1450	8.79
SRGCPF15-1000		67		1005								
SRGCPF20-500	CP20 (6.3662)	25	RF	500	60	60	53.63	36600	23400	3730	2390	12.6
SRGCPF20-1000		50		1000								

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
								A	B	C		
● SRGCPFD5-500J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4	M5
● SRGCPFD5-1000J												
● SRGCPFD10-500J	CP10 (3.1831)	50	RD	500	30	35	31.82	14	25	150	4	M10
● SRGCPFD10-1000J												
● SRGCPFD15-500J	CP15 (4.7746)	33	RD	495	50	50	45.23	20	27.5	220	3	M14
● SRGCPFD15-1000J												
● SRGCPFD20-500J	CP20 (6.3662)	25	RD	500	60	60	53.63	23	30	220	3	M16
● SRGCPFD20-1000J												

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



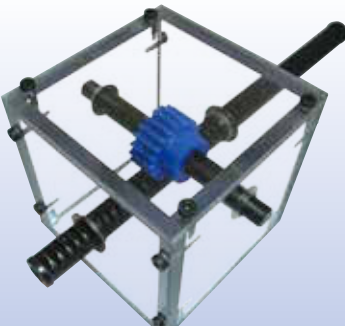
CP Ground Racks

- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
 - ② Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② 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). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units.** For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

* Orders for special, customized ground racks are accepted within the following specifications; CP32, Total length (A): Max.1500mm, Height (C): Max.120mm

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	2290	1460	233	149	1.06 2.13	● SRGCPFD5-500J ● SRGCPFD5-1000J
10.8	17.5	11	9150	5860	933	597	3.61 7.29	● SRGCPFD10-500J ● SRGCPFD10-1000J
15.2	23	16	22900	14200	2330	1450	8.47 17.3	● SRGCPFD15-500J ● SRGCPFD15-1000J
17.5	26	18	36600	23400	3730	2390	12.2 24.5	● SRGCPFD20-500J ● SRGCPFD20-1000J

GCU-R Rack Kit



Installment : Parallel axes gears
 Gear Type : Racks & Pinions
 Gears : SRO1.5-500
 PS1.5-20
 Weight : Approx. 1kg

Use of racks enables the conversion of rotation motion to linear motion. Applications include devices that provide lift.



KRCPF-H · KRCPFD-H CP Hardened Racks

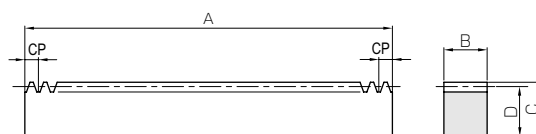


Circular Pitch 5, 10



Specifications	
Precision grade	KHK R 001 grade 5 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Normalizing, tooth surfaces induction hardened
Tooth hardness	50 ~ 60HRC

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



RF

*** Increased the surface durability by 50% over KRCPF Racks! For compact design with high strength.**

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width		Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
					A	B			C	D	Bending strength	Surface durability	
KRCPF5-1000H	CP5 (1.5915)	200	RF	1000	15	20	18.41	3330	1850	339	189	2.17	
KRCPF10-1000H	CP10 (3.1831)	100			30	35			31.82	13300	7710		1360

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
								A	B	C		
● KRCPFD5-1000HJ	CP5 (1.5915)	200	RD	1000	15	20	18.41	8	50	180	6	M5
● KRCPFD10-1000HJ	CP10 (3.1831)	100			30	35						



SRCPF-H · SRCPFD-H CP Hardened Racks

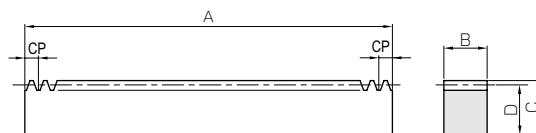


Circular Pitch 5, 10, 15, 20



Specifications	
Precision grade	KHK R 001 grade 5 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Tooth surfaces induction hardened
Tooth hardness	50 ~ 60HRC *

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

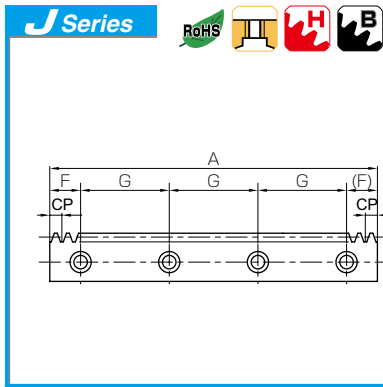


RF

*** Standard tooth surface induction hardening is applied resulting in reasonably priced rack which have their surface durability 2 times stronger than SRCPF racks!**

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width		Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)		
					A	B			C	D	Bending strength	Surface durability		Bending strength	Surface durability
SRCPF5-1000H	CP5 (1.5915)	200	RF	1000	15	20	18.41	2080	1200	212	122	2.17			
SRCPF10-1000H	CP10 (3.1831)	100			30	35			31.82	8320	4980		848	508	7.49
SRCPF15-1000H	CP15 (4.7746)	67			50	50			45.23	20800	12400		2120	1260	17.8
SRCPF20-1000H	CP20 (6.3662)	50			1000	60			60	53.63	33300		20800	3390	2120

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size						
								A	B	C			D	E	F	G		
● SRCPFD5-1000HJ	CP5 (1.5915)	200	RD	1000	15	20	18.41	8	50	180	6	M5						
● SRCPFD10-1000HJ	CP10 (3.1831)	100			30	35							31.82	14	50	180	6	M10
● SRCPFD15-1000HJ	CP15 (4.7746)	67			50	50							45.23	20	62.5	220	5	M14
● SRCPFD20-1000HJ	CP20 (6.3662)	50			1000	60							60	53.63	23	60	220	5



CP Hardened Racks



Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gear Pair

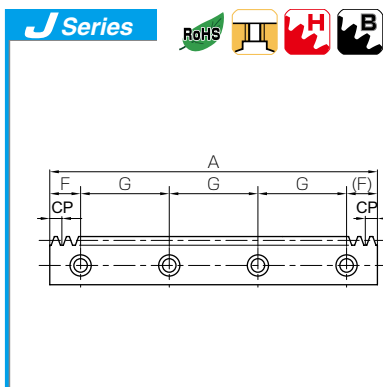
Bevel Gearboxes

Other Products

- [Caution on Product Characteristics]**
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
 - ② Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).
- [Caution on Secondary Operations]**
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 mm to 3 mm). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]**
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units.** For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	3330	1850	339	189	2.13	● KRCPFD5-1000HJ
10.8	17.5	11	13300	7710	1360	786	7.29	● KRCPFD10-1000HJ

SRCPF-H • SRCPFD-H



CP Hardened Racks



- [Caution on Product Characteristics]**
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
 - ② Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).
- [Caution on Secondary Operations]**
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2mm to 3 mm). Please use wire EDM or other carbide tools to modify the length.
- [Caution on J series]**
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units.** For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	2080	1200	212	122	2.13	● SRCPFD5-1000HJ
10.8	17.5	11	8320	4980	848	508	7.29	● SRCPFD10-1000HJ
15.2	23	16	20800	12400	2120	1260	17.3	● SRCPFD15-1000HJ
17.5	26	18	33300	20800	3390	2120	24.5	● SRCPFD20-1000HJ



KSCP

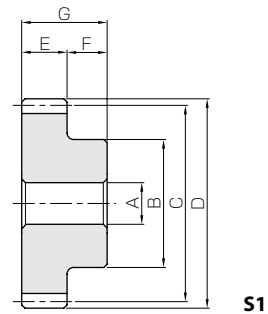
CP Hardened Spur Gears



Circular Pitch 5, 10



Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998) JIS grade 5 (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Normalizing, tooth surfaces induction hardened
Tooth hardness	50 ~ 60HRC



Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length
				A _{H7}	B	C	D	E	F	G
KSCP5-20 KSCP5-25 KSCP5-30 KSCP5-40	CP5 (1.5915)	20	S1	10	25	31.83	35.01	15	15	30
		25		12	32	39.79	42.97			
		30		15	40	47.75	50.93			
		40		15	55	63.66	66.85			
KSCP10-20 KSCP10-25 KSCP10-30 KSCP10-40	CP5 (3.1831)	20		20	50	63.66	70.03	30	20	50
		25		20	65	79.58	85.94			
		30		25	80	95.49	101.86			
		40		25	110	127.32	133.69			

[Caution on Product Characteristics]

- ① The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
② The backlash values shown in the table are the theoretical values when these gears and KRCR Racks are in mesh.



KRCPF · KRCPFD

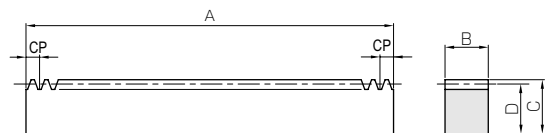
CP Thermal Refined Racks



Circular Pitch 5, 10



Specifications	
Precision grade	KHK R 001 grade 4 *2
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 ~ 285HB *1



- *1 Due to the decarburization layer of about 0.5 mm thickness, the rectangular surface have less than HB187 hardness.
*2 The precision grade of J Series products is equivalent to the value shown in the table.

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
KRCPF5-500 KRCPF5-1000	CP5 (1.5915)	100	RF	500	15	20	18.41	3660	1040	373	106	1.08
		200	RF	1000	15	20	18.41	3660	1040	373	106	2.17
KRCPF10-500 KRCPF10-1000	CP10 (3.1831)	50	RF	500	30	35	31.82	14600	4480	1490	457	3.75
		100	RF	1000	30	35	31.82	14600	4480	1490	457	7.49

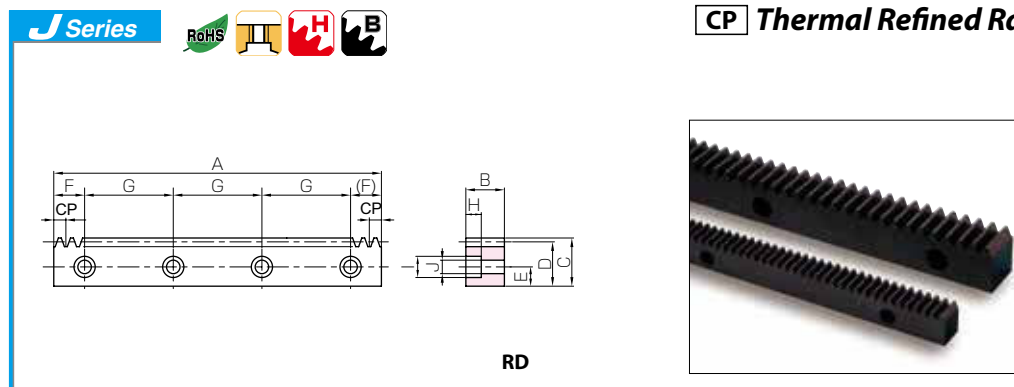
Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● KRCPFD5-500J ● KRCPFD5-1000J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4	M5
		200		1000								
● KRCPFD10-500J ● KRCPFD10-1000J	CP10 (3.1831)	50		500	30	35	31.82	14	25	150	4	M10
		100		1000								

Distance traveled in one turn (mm)	Allowable torque (N-m)		Allowable torque (kgf-m)		Backlash (mm)	Weight (kg)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
100	35.7	17.0	3.64	1.73	0.09-0.26	0.13	KSCP5-20 KSCP5-25 KSCP5-30 KSCP5-40
125	48.1	28.8	4.91	2.93			
150	60.8	44.3	6.20	4.52			
200	86.7	86.2	8.84	8.79			
200	285	141	29.1	14.4	0.14-0.36	0.93	KSCP10-20 KSCP10-25 KSCP10-30 KSCP10-40
250	385	239	39.3	24.4			
300	487	368	49.6	37.5			
400	694	718	70.8	73.2			

- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2mm to 3mm).

KRCPF · KRCPFD

CP Thermal Refined Racks



- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
 - ② Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).

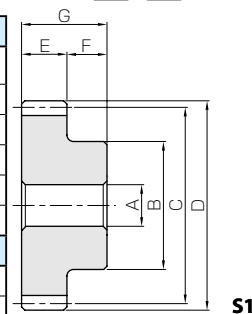
- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	3660	1040	373	106	1.06 2.13	● KRCPFD5-500J ● KRCPFD5-1000J
10.8	17.5	11	14600	4480	1490	457		

- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order**. Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.



Specifications					
Precision grade	JIS grade N8 (JIS B1702-1: 1998) * JIS grade 4 (JIS B1702: 1976)				
Gear teeth	Standard full depth				
Pressure angle	20°				
Material	S45C				
Heat treatment	—				
Tooth hardness	(less than 194HB)				
Pitch	CP2.5	CP5	CP10	CP15	CP20
Face width (E)	10	15	30	50	60
Hub width (F)	10	15	20	27	30
Total length (G)	20	30	50	77	90
Screw offset (J)	5	7.5	10	13.5	15



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

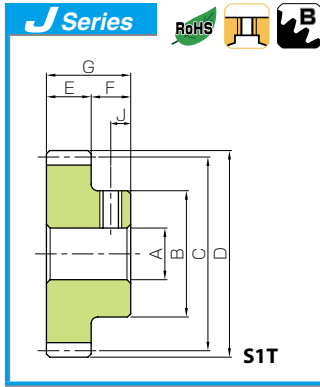
Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.		Outside dia.	Distance traveled in one turn (mm)	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
				A _{H7}	B	C	D	Bending strength		Surface durability	Bending strength	Surface durability			
SSCP2.5-20	CP2.5 (0.7958)	20	S1	6	13	15.92	17.51	50	50	4.14	0.48	0.42	0.049	0~0.14	0.022
SSCP2.5-25		25		8	17	19.89	21.49	62.5	62.5	5.58	0.83	0.57	0.085		0.034
SSCP2.5-30		30		8	21	23.87	25.46	75	75	7.06	1.30	0.72	0.13		0.054
SSCP2.5-40		40		10	28	31.83	33.42	100	100	10.1	2.64	1.03	0.27		0.098
SSCP5-20	CP5 (1.5915)	20		8	25	31.83	35.01	100	100	24.8	3.52	2.53	0.36	0.14	
SSCP5-25		25		10	32	39.79	42.97	125	125	33.5	6.06	3.42	0.62	0.22	
SSCP5-30		30		10	38	47.75	50.93	150	150	42.3	9.45	4.32	0.96	0.33	
SSCP5-40		40		12	45	63.66	66.85	200	200	60.4	18.7	6.16	1.91	0.54	
SSCP10-20	CP10 (3.1831)	20		15	50	63.66	70.03	200	200	198	30.8	20.2	3.14	0.99	
SSCP10-25		25		20	60	79.58	85.94	250	250	268	52.7	27.3	5.37	1.49	
SSCP10-30		30		20	75	95.49	101.86	300	300	339	81.7	34.5	8.33	2.26	
SSCP10-40		40		20	80	127.32	133.69	400	400	483	160	49.3	16.4	3.66	
SSCP15-20	CP15 (4.7746)	20		22	75	95.49	105.04	300	300	744	116	75.9	11.9	3.52	
SSCP15-25		25		25	100	119.37	128.92	375	375	1000	199	102	20.3	5.76	
SSCP15-30		30		25	110	143.24	152.79	450	450	1270	308	130	31.4	8.04	
SSCP20-20		CP20 (6.3662)		20	25	100	127.32	140.06	400	400	1590	264	162	26.9	7.50
SSCP20-25	25		30	130	159.15	171.89	500	500	2140	449	219	45.8	12.0		
SSCP20-30	30		30	150	190.99	203.72	600	600	2710	693	276	70.7	17.2		

[Caution on Product Characteristics]

- ① The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- ② The backlash values shown in the table are the theoretical values when these gears and the SRCP Racks are in mesh.
- ③ If the bore size is less than $\varnothing 4$, the tolerance class is H8. If the bore size is $\varnothing 5$ or $\varnothing 6$, and the hole length exceeds 3 times of the bore size, the class is also H8.

[Caution on Secondary Operations]

- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- ② Avoid performing secondary operations that narrow the tooth width, as it affects precision and strength.



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.																			
Keyway Js9	6	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	
Screw size	—		4 × 1.8			5 × 2.3				6 × 2.8				8 × 3.3			10 × 3.3		12 × 3.3	14 × 3.8
Catalog No.	M4	M5	M4				M5				M6			M8		M10				
SSCP2.5-20 J BORE																				
SSCP2.5-25 J BORE																				
SSCP2.5-30J BORE																				
SSCP2.5-40 J BORE																				
SSCP5-20 J BORE																				
SSCP5-25 J BORE																				
SSCP5-30J BORE																				
SSCP5-40 J BORE																				
SSCP10-20 J BORE																				
SSCP10-25 J BORE																				
SSCP10-30 J BORE																				
SSCP10-40 J BORE																				

[Caution on J series]

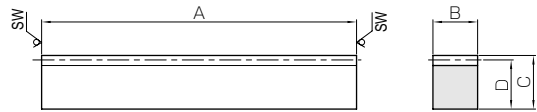
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order.** Please allow additional shipping time to get to your local distributor.
- ② Number of products we can process for one order is **1 to 20 units.** For quantities of 21 or more pieces, we need to quote price and lead time.
- ③ Keyways are made according to JIS B1301 standards, Js 9 tolerance.
- ④ Certain products which would otherwise have a very long tapped hole are conterbored to reduce the length of the tap. (Products marked with "*" are tap size).
- ⑤ Areas of products which have been re-worked will not be black oxide coated.
- ⑥ For products having a tapped hole, a set screw is included.
- ⑦ The use of S1T shaped set screws for fastening gears to a shaft, is a method only applicable to light load usage. For secure fastening, please use dowel pins, in combination.

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



Specifications	
Precision grade	KHK R 001 grade 4 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)

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



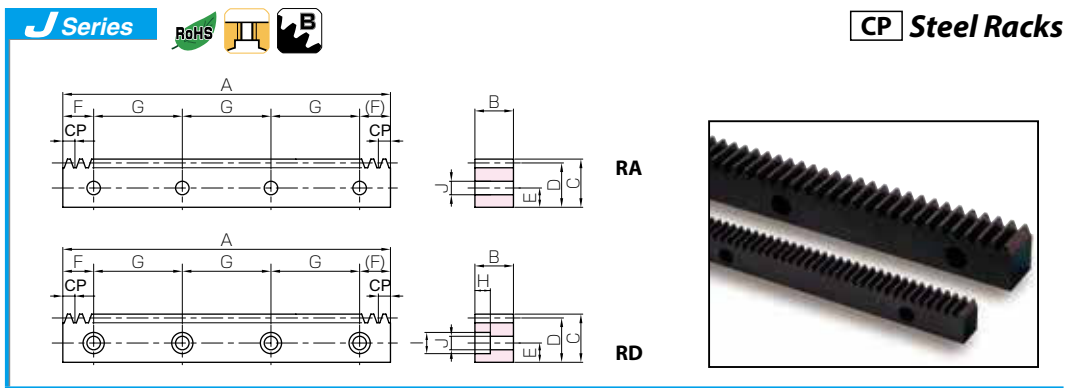
* SW Saw Blade Finished

R1

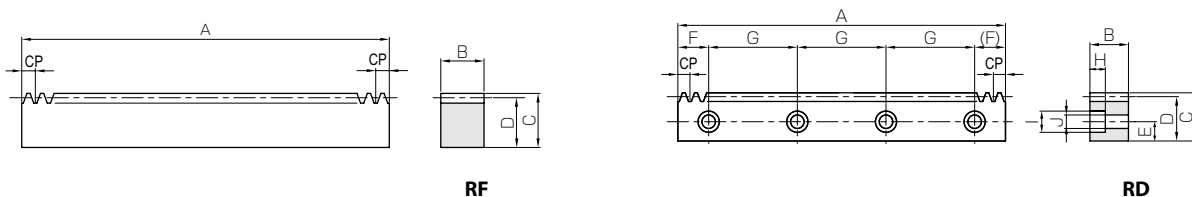
Catalog No.	Pitch mm (Module)	Effective no. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRCP2.5-100	CP2.5 (0.7958)	38	R1	98	10	12	11.2	763	143	77.8	14.5	0.086
SRCP5-100	CP5 (1.5915)	18	R1	98	15	20	18.41	2290	468	233	47.7	0.21
SRCP10-100	CP10 (3.1831)	8	R1	98	30	35	31.82	9150	1870	933	191	0.73
SRCP15-100	CP15 (4.7746)	5	R1	103	50	50	45.23	22900	4530	2330	462	1.83
SRCP20-100	CP20 (6.3662)	3	R1	98	60	60	53.63	36600	7480	3730	763	2.48

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length				Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SRCPF2.5-500 SRCPF2.5-1000	CP2.5 (0.7958)	200 400	RF	500 1000	10	12	11.2	763	143	77.8	14.5	0.44 0.88
SRCPF5-500 SRCPF5-1000 SRCPF5-1500 SRCPF5-2000	CP5 (1.5915)	100 200 300 410	RF	500 1000 1500 2050	15	20	18.41	2290	468	233	47.7	1.08 2.17 3.25 4.44
SRCPF10-500 SRCPF10-1000 SRCPF10-1500 SRCPF10-2000	CP10 (3.1831)	50 100 150 205	RF	500 1000 1500 2050	30	35	31.82	9150	1870	933	191	3.75 7.49 11.2 15.4
SRCPF15-500 SRCPF15-1000 SRCPF15-1500 SRCPF15-2000	CP15 (4.7746)	33 67 100 136	RF	495 1005 1500 2040	50	50	45.23	22900	4530	2330	462	8.79 17.8 26.6 36.2
SRCPF20-500 SRCPF20-1000 SRCPF20-1500 SRCPF20-2000	CP20 (6.3662)	25 50 75 102	RF	500 1000 1500 2040	60	60	53.63	36600	7480	3730	763	12.6 25.3 37.9 51.5

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length				Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● SRCPFk2.5-500J	CP2.5 (0.7958)	200	RA	500	10	12	11.2	5	25	150	4	M4
● SRCPFD5-500J SRCPFD5-1000 SRCPFD5-1500 SRCPFD5-2000	CP5 (1.5915)	100 200 300 410	RD	500 1000 1500 2050	15	20	18.41	8	25 50 30 35	150 180 180 180	4 6 9 12	M5
● SRCPFD10-500J SRCPFD10-1000 SRCPFD10-1500 SRCPFD10-2000	CP10 (3.1831)	50 100 150 205		500 1000 1500 2050	30	35	31.82	14	25 50 30 35	150 180 180 180	4 6 9 12	M10
● SRCPFD15-500J SRCPFD15-1000 SRCPFD15-1500 SRCPFD15-2000	CP15 (4.7746)	33 67 100 136		495 1005 1500 2040	50	50	45.23	20	27.5 62.5 90 30	220	3 5 7 10	M14
● SRCPFD20-500J SRCPFD20-1000 SRCPFD20-1500 SRCPFD20-2000	CP20 (6.3662)	25 50 75 102		500 1000 1500 2040	60	60	53.63	23	30 60 90 30	220	3 5 7 10	M16



SRCPFD



- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
 - ② Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).
 - ③ After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to a heavy load.

- [Caution on Secondary Operations]
- ① Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - ② If gear tooth hardening, or thermal refining, is applied, the decarburization layer (approx. 0.5 mm thickness) on the rectangular surfaces cannot have the hardness you designate.
 - ③ Avoid hardening Racks with bolt holes, due to deformation occurring at the mounting hole and the difficulty of straightening the rack after hardeneing.

- [Caution on J series]
- ① As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered), after placing an order**. Please allow additional shipping time to get to your local distributor.
 - ② Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.
 - ③ No black oxide is re-applied after adding secondary operation of mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
-	-	4.5	763	143	77.8	14.5	0.43	● SRCPFK2.5-500J
6	10	6	2290	468	233	47.7	1.06	● SRCPFD5-500J
							2.13	SRCPFD5-1000
							3.20	SRCPFD5-1500
							4.38	SRCPFD5-2000
10.8	17.5	11	9150	1870	933	191	3.61	● SRCPFD10-500J
							7.29	SRCPFD10-1000
							10.9	SRCPFD10-1500
							14.9	SRCPFD10-2000
15.2	23	16	22900	4530	2330	462	8.47	● SRCPFD15-500J
							17.3	SRCPFD15-1000
							25.9	SRCPFD15-1500
							35.2	SRCPFD15-2000
17.5	26	18	36600	7480	3730	763	12.2	● SRCPFD20-500J
							24.5	SRCPFD20-1000
							36.8	SRCPFD20-1500
							50.0	SRCPFD20-2000



SUSCP

CP

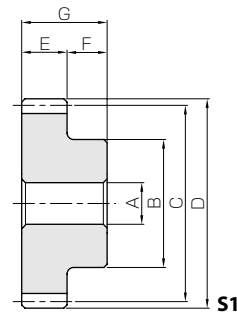
Stainless Steel Spur Gears



Circular Pitch 5, 10



Specifications		
Precision grade	JIS grade N8 (JIS B1702-1: 1998) * JIS grade 4 (JIS B1702: 1976)	
Gear teeth	Standard full depth	
Pressure angle	20°	
Material	SUS303	
Heat treatment	—	
Tooth hardness	(less than 187HB)	
Pitch	CP5	CP10
Face width (E)	15	30
Hub width (F)	15	20
Total length (G)	30	50
Screw offset (J)	7.5	10



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

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Distance traveled in one turn (mm)	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
				AH7	B	C	D		Bending strength	Surface durability	Bending strength	Surface durability		
SUSCP5-20	CP5 (1.5915)	20	S1	8	25	31.83	35.01	100	13.7	2.50	1.40	0.25	0.09~0.26	0.14
SUSCP5-25		25		10	32	39.78	42.97	125	18.5	4.31	1.89	0.44		0.22
SUSCP5-30		30		10	38	47.74	50.93	150	23.4	6.72	2.39	0.68		0.32
SUSCP10-20	CP10 (3.1831)	20		15	50	63.66	70.03	200	110	21.9	11.2	2.23	0.14~0.36	0.98
SUSCP10-25		25		20	60	79.57	85.94	250	148	37.4	15.1	3.82		1.48
SUSCP10-30		30		20	75	95.49	101.86	300	187	58.0	19.1	5.92		2.24

[Caution on Product Characteristics]

- The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- The backlash values shown in the table are the theoretical values when these gears and SURCPF Racks are in mesh.
 - Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
 - Avoid performing secondary operations that narrow the tooth width. as it affects precision and strength.

[Caution on Secondary Operations]



SURCPF · SURCPFD

CP

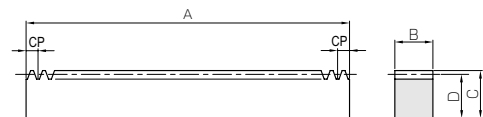
Stainless Steel Racks



Circular Pitch 5, 10



Specifications	
Precision grade	KHK R 001 grade 5
Gear teeth	Standard full depth
Pressure angle	20°
Material	SUS304
Heat treatment	Solution heat treatment
Tooth hardness	(less than 187HB)




RF

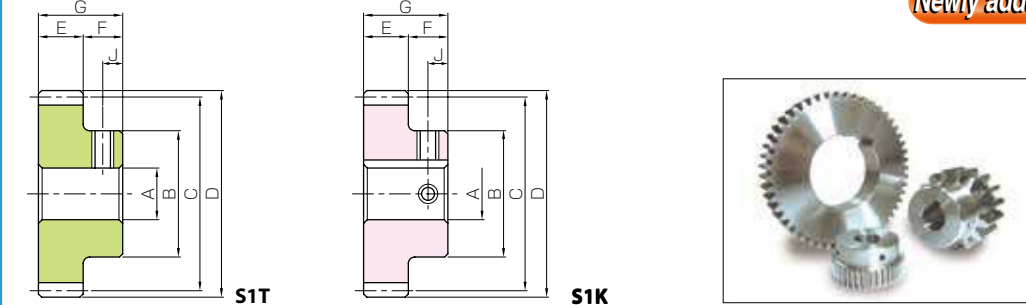
Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability	
SURCPF5-500	CP5 (1.5915)	100	RF	500	15	20	18.41	1090	263	111	26.8	1.08
SURCPF5-1000		200		1000								
SURCPF10-500	CP10 (3.1831)	50	RF	500	30	35	31.82	4370	1050	445	107	3.73
SURCPF10-1000		100		1000								

Catalog No.	Pitch mm (Module)	No. of teeth	Shape	Total length	Face width	Height	Height to pitch line	Mounting hole dimensions			No. of mounting holes	Mounting screw size
				A	B	C	D	E	F	G		
● SURCPFD5-500J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4	M5
● SURCPFD5-1000		200		1000								
● SURCPFD10-500J	CP10 (3.1831)	50	RD	500	30	35	31.82	14	25	150	4	M10
● SURCPFD10-1000		100		1000								

[Caution on Product Characteristics]

- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).
- For products made of stainless steel, heat treatment* and passivation** solutions are applied. Passivation is a rust-resistance treatment, but it is not effective on the machined surface and not a totally rustproof solution.
 - * Heat Treatment Solution
Heat treatment by the carbon formed on the surface during blank manufacturing is made to infiltrate the material interior.
 - ** Passivation
Immersion of the metal in a nitric acid solution to make it more rust-resistant.
- After attaching the racks to the base, please fasten with dowel pins. Clamping only with mounting screws could possibly cause the screws to be broken, due to a heavy load.

J Series  **CP Stainless Steel Spur Gears** Newly added




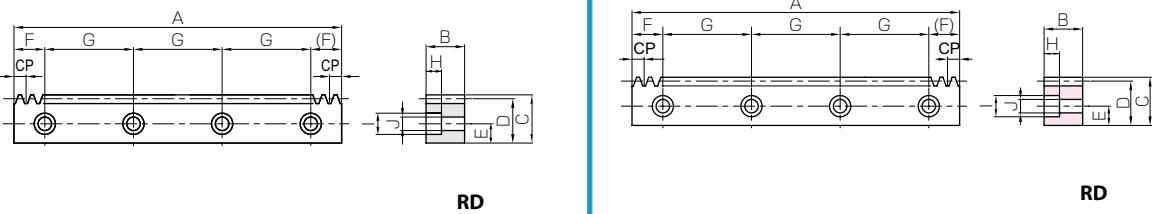
To order J Series products, please specify; Catalog No. + J + BORE

* The product shapes of J Series items are identified by background color.																		
Bore H7	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45
Keyway Js9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45
Screw size	—	4 × 1.8			5 × 2.3				6 × 2.8			8 × 3.3			10 × 3.3		12 × 3.3	14 × 3.8
Catalog No.	M5	M4				M5				M6			M8		M10			
SUSCP5-20 J BORE																		
SUSCP5-25 J BORE																		
SUSCP5-30J BORE																		
SUSCP10-20 J BORE																		
SUSCP10-25 J BORE																		
SUSCP10-30 J BORE																		

- [Caution on J series]**
- As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered)**, after placing an order. Please allow additional shipping time to get to your local distributor.
 - Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.
 - Keyways are made according to JIS B1301 standards, Js 9 tolerance.
 - Certain products which would otherwise have a very long tapped hole are conterbored to reduce the length of the tap. (Products marked with "*" are tap size).
 - For products having a tapped hole, a set screw is included.
 - The use of S1T shaped set screws for fastening gears to a shaft, is a method only applicable to light load usage. For secure fastening, please use dowel pins, in combination.

SURCPF • SURCPFD

SURCPFD  **CP Stainless Steel Racks**



Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Weight (kg)	Catalog No. ● : J Series (Available-on-request)
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability		
6	10	6	1090	263	111	26.8	1.06 2.12	● SURCPFD5-500J ● SURCPFD5-1000
10.8	17.5	11	4370	1050	445	107	3.59 7.25	● SURCPFD10-500J ● SURCPFD10-1000

- [Caution on Secondary Operations]**
- Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- [Caution on J series]**
- As available-on-request products, requires a lead-time for shipping within **2 working-days (excludes the day ordered)**, after placing an order. Please allow additional shipping time to get to your local distributor.
 - Number of products we can process for one order is **1 to 20 units**. For quantities of 21 or more pieces, we need to quote price and lead time.



SROCP CP Round Racks



Circular Pitch 2.5, 5, 10



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 95HRB)



* SW Saw Blade Finished

R2

Catalog No.	Pitch mm (Module)	Effective no. of teeth	Shape	Total length			Allowable force (N)		Allowable force (kgf)		Weight (kg)
				A	Outside dia. d_{hg}	Height to pitch line D	Bending strength	Surface durability	Bending strength	Surface durability	
SROCP2.5-500	CP2.5 (0.7958)	200	R2	505	10	9.2	474	91.8	48.3	9.36	0.30
SROCP5-500	CP5 (1.5915)	99	R2	505	15	13.41	1650	324	169	33.1	0.65
SROCP10-1000	CP10 (3.1831)	99	R2	1010	30	26.82	6610	1300	674	132	5.16

[Caution on Product Characteristics]

- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- Backlash of racks vary depending on mating pinions. Please calculate the backlash in accordance with the backlash of the mating pinion and values in the table "Backlash of Rack Tooth (Amount of Tooth-Thinning)" (Page 191).

[Caution on Secondary Operations]

- Please read "Caution on Performing Secondary Operations" (Page 228) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.
- Please avoid hardening Round Racks. It causes contortion and deformation, and straightening processes are difficult to apply.

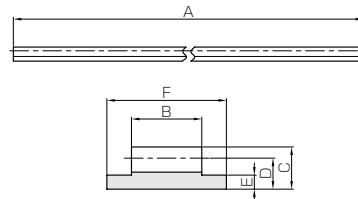


FRCP CP Metal Flexible Racks

Circular Pitch 5



Specifications	
Precision grade	KHK R 001 grade 8
Gear teeth	Standard full depth
Pressure angle	20°
Material	SS400
Heat treatment	—
Tooth hardness	(less than 187HB)



R3

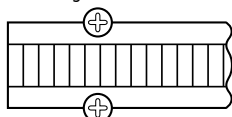
Catalog No.	Pitch mm (Module)	Shape	Total length				Thickness of base		Allowable force (N)		Allowable force (kgf)		Weight (kg)
			A	Face width B	Height C	Height to pitch line D	E	F	Bending strength	Bending strength			
FRCP5-2000	CP5 (1.5915)	R3	2000	10	6	4.41	2	17	801	81.7	81.7	0.91	
FRCP5-3000		R3	3000	10	6	4.41	2	17	801	81.7	81.7	1.37	
FRCP5-4000		R3	4000	10	6	4.41	2	17	801	81.7	81.7	1.83	

[Caution on Product Characteristics]

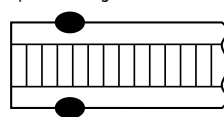
- The allowable forces shown in the table are the calculated values according to the assumed usage conditions. Please see Page 227 for more details.
- In cases of using a molded flexible rack in an arc shape, proper meshing cannot be obtained as the pitch error and the tooth profile error increases. Be sure and adjust the center distance so that the pinion turns without any problem.
- Metal Flexible racks are not suitable for use when positioning accuracy is required.

Example: Fastening of FRCP Metal Flexible Racks

Fastening with flat head screws



Spot welding



(Overhead view of Flexible Racks)

Autorisierter Händler | Distributeur autorisé | Distributore autorizzato | Authorized distributor



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