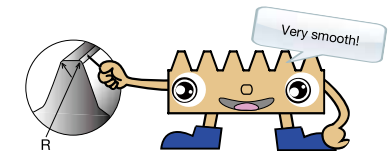




CP Racks & Pinions



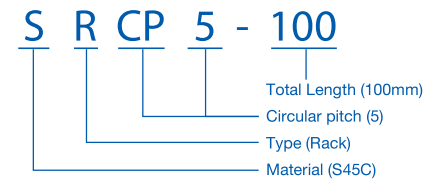
KTSCP [CP] Tapered Pinions	STRCPF/STRCPFD [CP] Tapered Racks	MSCPG [CP] Ground Spur Gears Made to Order	MRGCPF/MRGCPFD [CP] Hardened Ground Racks	KSCPG [CP] Ground Spur Gears	KRGCPF-H/KRGCPFD-H [CP] Hardened Ground Racks	KRGCP/KRGCPF/KRGCPFD [CP] Thermal Refined Ground Racks
Material: SCM440 CP5, 10 Page 272	Material: S45C CP5, 10 Page 272	Material: SCM415 CP5, 10 Page 274	Material: SCM415 CP5, 10 Page 274	Material: SCM440 CP5, 10 Page 276	Material: SCM440 CP5, 10 Page 276	Material: SCM440 CP5, 10 Page 278
SSCPGS [CP] Ground Spur Pinion Shafts	SSCPG [CP] Ground Spur Gears	SRGCP/SRGCPF/SRGCPFD [CP] Hardened Ground Racks	KRCPPF-H/KRCPPFD-H [CP] Hardened Racks	KSSCP [CP] Thermal Refined Spur Gears	KRCPPF/KRCPPFD [CP] Thermal Refined Racks	SSCP [CP] Spur Gears
Material: S45C CP5, 10 Page 280	Material: S45C CP5-20 Page 280	Material: S45C CP5-20 Page 282	Material: SCM440 CP5, 10 Page 284	Material: SCM440 CP5, 10 Page 286	Material: SCM440 CP5, 10 Page 286	Material: S45C CP2.5-20 Page 288
SRCPF-H/SRCPFD-H [CP] Hardened Racks	SRCPF-HL/SRCPFD-HL [CP] Laser hardened	SRCP/SRCPF/SRCPFD/SRCPFH [CP] Racks	SUSCP [CP] Stainless Steel Spur Gears	SURCPF/SURCPFD [CP] Stainless Steel Racks	SROCP [CP] Round Racks	FRCP [CP] Metal Flexible Racks
Material: S45C CP5-20 Page 290	Material: S45C CP5-20 Page 292	Material: S45C CP2.5-20 Page 294	Material: SUS303 CP5, 10 Page 296	Material: SUS304 CP5, 10 Page 296	Material: S45C CP2.5-10 Page 298	Material: SS400 CP5 Page 298



Catalog Number of KHK Stock Gears

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

(Example) Racks



Material

M	SCM415
S	S45C
K	SCM440
SU	Stainless Steel
F	SS400

Type

R	Racks
RO	Round Racks
S	Spur Gears
TR(TS)	Tapered Racks (Spur Gears)

Other Information

F	Racks with Machined Ends
D	Racks with Bolt Holes
K	Racks with Drill Holes
G	Ground Gears
H	Gear teeth induction hardened
S	Pinion Shafts
HL	Laser hardened

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gears

Gearboxes

Other Products



Features



The KHK stock CP racks & pinions are easy-to-use racks with clear pitch.

For your convenience, we offer circular pitches of 2.5 to 20 mm and in lengths of up to 2000 mm. (FRCP is available to 4000 mm)

Racks

Catalog Number <small>Note 1</small>	Pitch mm	Total Length mm <small>Parentheses show no. of teeth</small>	Material	Heat Treatment	Tooth Surface Finish	Gear accuracy <small>KHK R 001 Parentheses show JIS B 1702-1</small>	Features
STRCPF STRCPFD	5, 10	1000	S45C	—	Cut	4	Racks with tapered helix with adjustable backlash.
MRGCPF MRGCPFD	5, 10	500	SCM415	Tooth area carburized	Ground	1	CP racks that have been carburized and ground that have excellent accuracy, strength and wear resistance. Secondary operations are possible except for teeth.
KRGCPF-H KRGCPFD-H	5, 10	500, 1000	SCM440	Thermal refined, gear teeth induction hardened	Ground	1	CP racks that have been tempered, hardened and ground that have excellent accuracy, strength and wear resistance. Secondary operations are possible except for teeth.
KRGCP/KRGCPF	5, 10	100, 500, 1000	SCM440	Thermal refined	Ground	1	CP racks that have been tempered and ground that have excellent accuracy and strength.
SRGCP/SRGCPF SRGCPFD	5, 10, 15, 20	100, 500, 1000	S45C	Gear teeth induction hardened	Ground	3	Racks that have been hardened and ground with a good balance of accuracy, wear resistance and cost. Secondary operations are possible except for teeth.
KRCPF-H KRCPFD-H	5, 10	1000	SCM440	Thermal refined, gear teeth induction hardened	Cut	5	CP racks that have been tempered and hardened that have excellent strength and wear resistance. Secondary operations are possible except for teeth.
SRCPF-H SRCPFD-H	5, 10, 15, 20	1000	S45C	Gear teeth induction hardened	Cut	5	CP racks that have been hardened with excellent wear resistance. Secondary operations are possible except for teeth.
SRCPF-HL SRCPFD-HL	5, 10, 15, 20	1000, 1500, 2000	S45C	Gear teeth laser hardened	Cut	4	CP racks that have been laser hardened with a good balance of wear resistance and cost. Secondary operations are possible except for teeth.
KRCPF/KRCPFD	5, 10	500, 1000	SCM440	Thermal refined	Cut	4	CP racks that have been tempered with excellent strength.
SRCP/SRCPF SRCPFD/SRCPF	2.5, 5, 10, 15, 20	100, 500, 1000, 1500, 2000	S45C	—	Cut	4	Many lineups are available at a low price and excellent usability.
SURCPF SURCPFD	5, 10	500, 1000	SUS304	Solution treated	Cut	5	Stainless steel CP racks with rust resistance.
SROCP	2.5, 5, 10	500	S45C	—	Cut	4	CP round racks that are suitable when the rack side moves.
FRCP	5	2000, 3000, 4000	SS400	—	Cut	8	Thin CP racks that can be bent.

Pinion

KTSCP	5, 10	(20~40)	SCM440	Thermal refined	Cut	(N8)	STRCPF pinion with adjustable backlash.
KSCPG	5, 10	(20~40)	SCM440	Thermal refined, gear teeth induction hardened	Ground	(N6)	CP gears that have been tempered, hardened and ground that has excellent accuracy, strength and abrasion resistance. Recommended for pinions of ground CP racks. Secondary operations are possible except for teeth.
SSCPGS	5, 10	(10~25)	S45C	Thermal refined, gear teeth induction hardened	Ground	(N7)	CP gears with shafts that have been tempered, hardened and ground. Secondary operations can be given except for the teeth. This product is ideal for the pinion of the SRGCPF rack.
SSCPG	5, 10, 15, 20	(20~40)	S45C	Gear teeth induction hardened	Ground	(N7)	CP gears that have been hardened and ground. Secondary operations can be given except for the teeth. This product is ideal for the pinion of the SRGCPF rack.
KSSCP	5, 10	(20~40)	SCM440	Thermal refined	Cut	(N8)	Tempered gears with excellent bending strength that can be given secondary operations. The teeth can be additionally hardened. This product is ideal for the pinion of the KRCPF rack.
SSCP	2.5, 5, 10, 15, 20	(20~40)	S45C	—	Cut	(N8)	Available at a low price. The teeth can be additionally hardened. This product is ideal for the pinion of the SRCP and SROCP racks.
SUSCP	5, 10	(20~30)	SUS303	—	Cut	(N8)	Stainless steel CP gears with rust resistance. This product is ideal for the pinion of the SURCPF rack.

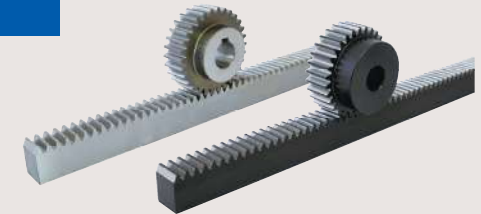
[NOTE 1] The catalog numbers of the above racks with (F) suffix have both ends machined so that they can be butted against each other. The items with (D) have mounting screw holes for immediate assembly.

- KHK stock CP racks have round semi-topping at the corners of the top land of the gear tooth.
- Black products are KHK stock CP gears that have an applied black oxide coating for rust resistance.

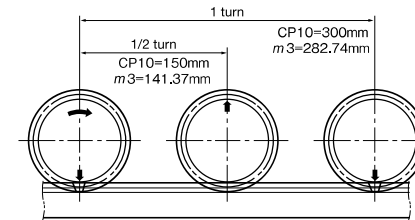
CP racks & pinions are ideal for linear positioning.

CP Racks & Pinions

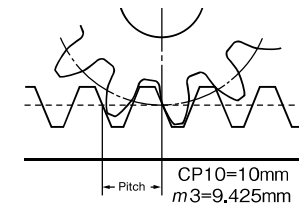
The design can be made easier by setting the moving length of one rotation of a pinion to an integer (mm). Circular pitch racks solve these problems. This problem is solved by CP racks and pinions where one rotation of a pinion moves it precisely 50, 100, 150, ... 600 mm, etc. The following table lists the main features.



Movement of one cycle of the CP10-30 pinion vs SS3-30.



Difference between CP10 and m3



STRCPF/STRCPFD & KTSCP

Taper Racks & Pinions



Easy to adjust the backlash

Normally, the backlash is adjusted by the mounting distance (height of pinion shaft), but for KHK Tapered Racks & Pinions, it can simply be adjusted by moving the pinion mounting position in the axial direction.

Backlash within 0.05 mm

The backlash of the conventional stock racks & pinions (SRCP5-1000 & SSCP 5-30) is 0.09 to 0.25 mm, but KHK Tapered Racks & Pinions (STRCPF5-1000 & KTSCP5-30) are manufactured within 0.05 mm.

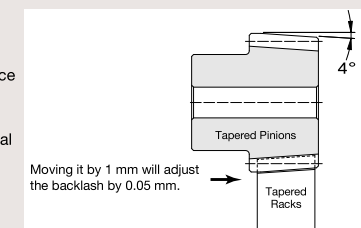
Thrust load is not applied

As with ordinary racks & pinions, KHK Tapered Racks and Pinions can be used without worrying about the thrust load. Pinions are CP spur gears that are continuously shifted in the helix direction.

* For product details, please see Page 272.

Assembly and backlash adjustment method

- Assemble at the mounting distance of the theoretical value at the reference tooth position of the racks & pinions. For the mounting distance and backlash, see the dimension table of the tapered spur gear.
- The backlash can be adjusted by moving the tapered spur gear in the axial direction. Moving it by 1 mm will adjust the backlash by 0.05 mm.
- When the tapered spur gear is pushed to the large end of the rack, the backlash is reduced. Conversely, retracting it will increase the backlash.



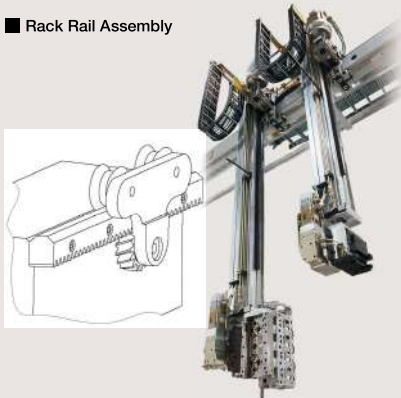


Application Examples

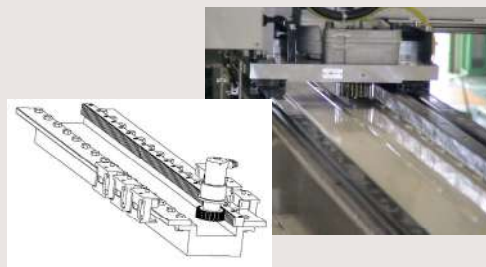


KHK stock CP racks & pinions are adopted in driving devices for all kinds of linear systems, including transport devices.

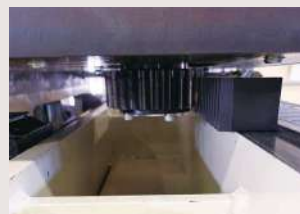
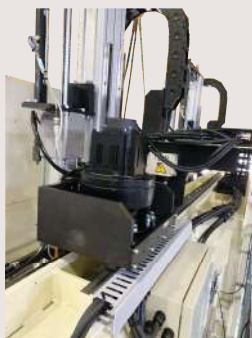
Rack Rail Assembly



Rack Drive Linear Guide



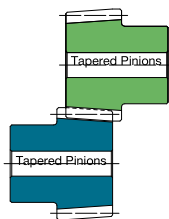
Cleaning machine manufactured by Kan Manufactory Co., Ltd.



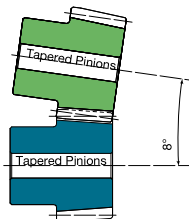
SRCPF-H racks and SSCP spur gears used in cleaning device with automatic transport for automobile parts

Examples of using tapered spur gears

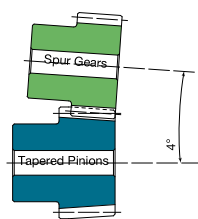
Changing the assembly direction of the tapered spur gear or assembling it with a general spur gear will allow it to be used at the axial angle shown below.



When the boss is set in the opposite direction, the axial angle is 0° (parallel shaft).



When the boss is set in the same direction, the axial angle is 8°.



When the taper spur gear and general spur gear are set, the axial angle is 4°.

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 shown below 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, 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 CP Racks are mated with KTSCP Tapered CP Spur Gears having the same pitch.

2. Caution in Selecting Gears Based on Gear Strength

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

Calculation of Bending Strength of Gears

Calculation of Bending Strength of Gears																	
Item	Racks						Pinion										
	MRGCPF MRGCPFD	KRGCPF-H KRGCPFD-H	KRGCPF KRGCPFD	SRGCPF SRGCPFD	SRCPF-HL SRCPFD-HL	SRCP/SRCPF SRCPFD SRCPF SRCP STRCPF	SURCPF SURCPFD	FRCPF	MSCPG	KSCPG	SSCPG	SSCPG	KTSCP	KSSCP	SSSCP	SUSCP	
Formula <small>NOTE 1</small>	Formula of spur and helical gears on bending strength (JGMA401-01)																
No. of teeth of mating gears	30							Racks									
Rotational Speed of Pinion	100rpm																
Design Life (Durability)	Over 10 ⁷ cycles																
Impact from motor	Uniform load																
Impact from load	Uniform load																
Direction of load	Bidirectional load (calculated with allowable bending stress of 2/3)																
Allowable bending stress at root σ_{lim} (kgf/mm ²)	47	32	32	20	20	20	10.5	47	30	24.5	19	28.5	32	19	10.5		
Safety factor S_F	1.2																

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

Formula NOTE 1	Formula of spur and helical gears on surface durability (JGMA402-01)																
Kinematic viscosity of lubricant	100cSt (50°C)																
How to support pinions	Supported on one end.																
Allowable Hertz stress σ_{Hlim} (kgf/mm ²)	166	112	79	90	80	52.5	41.3	-	166	112	99	90	74.5	79	49	41.3	
Safety factor S_H	1.15																

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

3. Cautions on 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 Error of Racks (KHK R 001) → Page 218
- ② Precision of Rack Blanks → Page 219
- ③ Backlash of Rack Teeth → Page 219

When selecting KHK standard gears, glance over the Cautions on Product Characteristics and Cautions on Performing Secondary Operations in the respective dimension tables.

- ① Products not listed in this catalog or materials, modules, number of teeth and the like not listed in the dimensional tables can be manufactured as custom items. Please see Page 24 for more details about custom-made orders.
- ② The color and shape of the product images listed on the dimension table page of each product may differ from the actual product. Be sure to confirm the shape in the dimension table before selection.
- ③ The details (specifications, dimensions, etc.) listed in the catalog may be changed without prior notice. Changes are announced on the KHK website.
Website URL: <https://khkgears.net/new/>
Overseas Sales Department: Phone: +81-48-254-1744 Fax: +81-48-254-1765 E-mail: info@khkgears.net

Application Hints

In order to use KHK stock CP racks safely, carefully read the Application Hints before proceeding. If there are questions or you require clarifications, please contact our technical department or your nearest distributor.

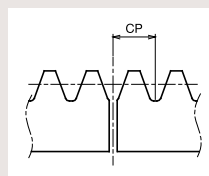
E-mail: info@khkgears.net

1. Cautions on Handling

- KHK products are packaged one by one to prevent scratches and dents, but if you find issues such as rust, scratches, or dents when the product is removed from the box after purchase, please contact the supplier.
- Depending on the handling method, the product may become deformed or damaged. Long racks and round racks deform particularly easily, so please handle with care.

2. Caution on Performing Secondary Operations

- Secondary operations can be performed on all KHK stock CP racks except for the racks with their gear teeth induction hardened. To avoid problems of gear precision, do not reduce the face width.
- Height of pitch lines of racks are controlled by 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.
- When connecting two racks, the machining of the mating end pitch (CP) 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 of at the connection. The below is an indication of pitch tolerance for each module.



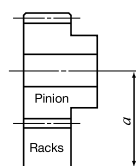
CP	Tolerance
CP2.5	-0.05 -0.25
CP5	-0.1 -0.3
CP10	-0.1 -0.4
CP15	-0.1 -0.4
CP20	-0.1 -0.4

- To use dowel pins to secure racks, attach the racks to the base and drill both simultaneously.
- KHK stock CP racks made of S45C and SCM440 (except for ground racks) can be induction hardened. However, the precision of pitch is decreased.
- To be able to handle parts safely, all burrs and sharp corners should be removed after the secondary operations are done.
- 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.
- There is a decarburized layer (about 0.5 mm) on the surface of the extruded products. The hardness of the decarburized layer does not increase even if it is quenched.

3. Points of Caution during Assembly

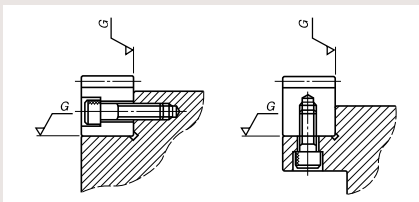
- The recommended assembly distance tolerance of KHK stock CP racks is H7 for ground racks and H8 for cut racks. The backlash values are given in the table on Page 219. Make sure that the mounting distance stays constant for the length of the rack.

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



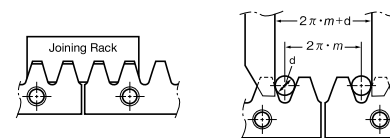
[NOTE] Pinions are assumed to be standard stock spur gears ($x=0$).

- The recommended flatness and squareness of the mounting surface of KHK stock CP racks is 0.01 mm for ground racks and 0.05 mm for cut racks.



- 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.
- Machined end type racks such as SRCPF and SRCPFD series have smaller pitch tolerance 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.
- With SRCPFD etc., if using more than 10 racks connected together to form a rack with mounting holes machined along a length of 1 meter, the pitch precision and machining precision may cause the rack and base mounting holes to deviate, leading to set screw interference with the counterbored hole and preventing mounting. When using a rack for long lengths such as 10 meters or 20 meters, have the mounting holes additionally machined into long holes.

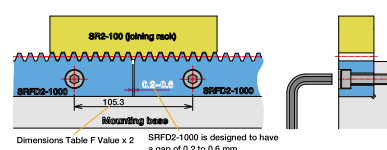
As an example of Rack Joining, we recommend the following method.



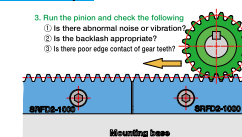
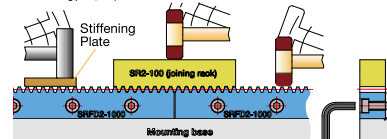
[NOTE] Joining gauge racks for helical racks must have the opposite hand from the racks. Please use 100 mm short racks as a joining gauge rack, or alternatively the rack of the same specifications on hand.

How to mount racks on a mounting base (For SRFD2-1000)

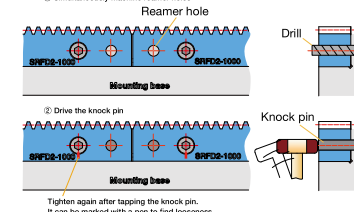
- Pitch alignment**
Place SRFD2-1000 on the mounting base, align SR2-100 and temporarily tighten the bolt.



- Securing to the mounting base**
Tap with a plastic hammer, bring it into close contact with the mounting base, and further tighten the bolt. (When using a metal hammer, be careful not to damage the gear teeth by using a stiffening plate, etc.)



- Secure fixation to the mounting base**
We recommend that you tap the knock pin so that the rack does not shift due to vibration, etc.
① Simultaneously machine reamer holes



4. Cautions on Starting

- Check the following items before starting.
 - Are the gears installed securely?
 - Is there uneven tooth contact?
 - Is there adequate backlash?
 - Has proper lubrication been supplied?
- If gears are exposed, be sure to attach a safety cover to ensure safety. Also, be careful not to touch rotating gears.
- For more technical information on lubricating gears, please see the section "Gear Lubrication" in our separate technical reference book.

- If there is any abnormality such as noise or vibration during startup, stop the operation immediately and check the assembly condition such as tooth contact, eccentricity and looseness. For more technical information, please see the section "Gear Noise and Countermeasures" in our separate technical reference book.

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

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

Warning: Precautions for preventing physical and property damage

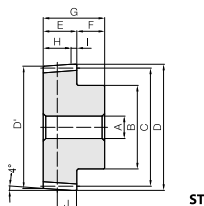
- When using KHK products, follow relevant safety regulations (Occupational Safety and Health Regulations, etc.).
- Pay attention to the following items when installing, removing, or performing maintenance and inspection of the product.
 - Turn off the power switch.
 - Do not reach or crawl under the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

Caution: Cautions in Preventing Accidents

- Before using a KHK product, read the precautions in the catalog carefully in order to use it correctly.
- Avoid use in environments that may adversely affect the product.
- Our products are manufactured under a superior quality control system based on the ISO9000 quality management system; if you notice any malfunctions upon purchasing a product, please contact the supplier.



Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 to 352HB
Surface treatment	Black oxide coating



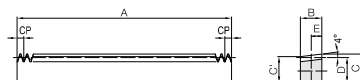
ST

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

[Caution on Product Characteristics] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 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.



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than HB210)
Surface treatment	Black oxide coating

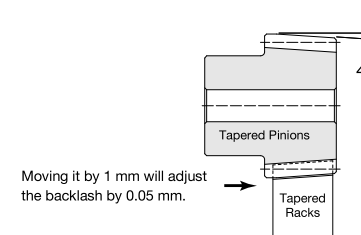


RF

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

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

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
② The backlash of the CP Tapered Racks equates to the value of the KTSCP Pinions of the same pitch.
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. For details, please see the assembly method to the mounting base on Page 271.
④ When connecting the racks for use, correctly adjust the joint pitch with identical products at hand or with an SRCP-100 rack product of the same pitch. Please read 2. Points of Caution in Assembling (Page 270) for details.

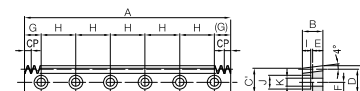


Moving it by 1 mm will adjust the backlash by 0.05 mm.



Reference face width H	Adjustable width I	Pinion reference tooth J	Distance traveled in one turn (mm)	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Mounting distance (mm)	Backlash (mm)	Weight (kg)	Catalog Number
15	3	10.5	100	41.2	8.13	4.20	0.83	33.30	0~0.11	0.16	KTSCP5-20
			125	55.6	14.0	5.67	1.43	37.28		0.25	KTSCP5-25
			150	70.3	21.9	7.16	2.23	41.26		0.37	KTSCP5-30
			200	100	43.3	10.2	4.41	49.21		0.61	KTSCP5-40
30	6	21	200	329	71.2	33.6	7.26	62.10	0~0.12	1.13	KTSCP10-20
			250	445	122	45.3	12.4	70.06		1.71	KTSCP10-25
			300	562	189	57.3	19.2	78.02		2.58	KTSCP10-30
			400	801	371	81.7	37.8	93.93		4.25	KTSCP10-40

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 40) when performing modifications and/or secondary operations for safety concerns.
KHK Quick-Mod Gears, the KHK 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.



RD

Allowable force (N) Bending strength	Allowable force (N) Surface durability	Allowable force (kgf) Bending strength	Allowable force (kgf) Surface durability	Backlash (mm)	Weight (kg)	Catalog Number
2290	468	233	47.7	0~0.11	2.05	STRCPF5-1000
9150	1870	933	191	0~0.12	7.13	STRCPF10-1000

Counterbore dimensions I	Counterbore dimensions J	Counterbore dimensions K	Allowable force (N) Bending strength	Allowable force (N) Surface durability	Allowable force (kgf) Bending strength	Allowable force (kgf) Surface durability	Backlash (mm)	Weight (kg)	Catalog Number
6	10	6	2290	468	233	47.7	0~0.11	2.01	STRCPFD5-1000
10.8	17.5	11	9150	1870	933	191	0~0.12	6.92	STRCPFD10-1000

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.
KHK Quick-Mod Gears, the KHK 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.



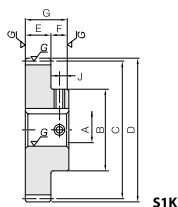
MSCPG Circular pitch 5, 10

CP Ground Spur Gears

Made to Order



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



S1K

Catalog Number	Pitch mm (Module)	No. of teeth	Profile shift coefficient	Mounting distance	Shape	Bore A _{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length 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	S1K	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] ① Although the dimensions of the keyway are made to the JIS B1301 (Jis9) tolerance, there may be some deviations due to the effects of the heat treatment.
- ② The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
- ③ The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of MRGCPF Racks with the same pitch.



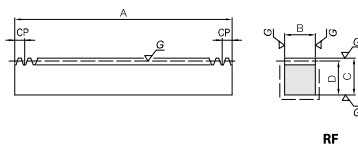
MRGCPF/MRGCPFD Circular pitch 5, 10

CP Hardened Ground Racks



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

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



RF

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)	Allowable force (kgf)	Backlash (mm)	Weight (kg)
MRGCPF5-500	CP5 (1.5915)	100	RF	500	15	20	18.41	5380	5000	0.04~0.14	1.08
MRGCPF10-500	CP10 (3.1831)	50			30	35	31.82	21500	20100	0.05~0.16	3.75

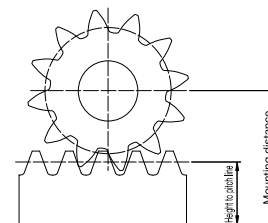
Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Mounting hole dimensions			
● J Series (Available on request)				A	B	C	D	E	F	G	No. of holes
● MRGCPFD5-500J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4
● MRGCPFD10-500J	CP10 (3.1831)	50			30	35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

- [Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

- ② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of MSCPG pinions with the same pitch.

- [Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK 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.

CP Ground Spur Gears

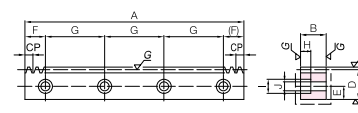


Mounting distance of a profile shifted gear and the meshing rack

Keyway	Socket head screw		Distance traveled in one turn (mm)	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
Width × Depth	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	0.04~0.14	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		200	514	375	52.4	38.2		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	10	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 the applied carburizing process.
- For products which are different in specifications, such as bore size, we provide a price quote.

CP Ground Racks



RD



Surface durability is 4 times higher than SRGCP Hardened Ground Racks, 2 times higher than KRGCP-H Hardened Ground Racks.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	5380	5000	548	509	0.04~0.14	1.06	● MRGCPFD5-500J
10.8	17.5	11	21500	20100	2190	2050	0.05~0.16	3.61	● MRGCPFD10-500J

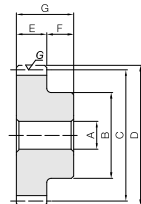
- [Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details. Also, please allow additional shipping time to get to your local distributor.
- ② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.

You can download CAD data (DXF format) of KHK Products from the Web Catalog.



Specifications	
Precision grade	JIS grade N6 (JIS B 1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth
Shape	S1

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



S1

Catalog Number	Pitch mm (Module)	No. of teeth	Profile shift coefficient	Mounting distance	Bore A _{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Distance traveled in one turn (mm)	Allowable torque (N·m) Bearing strength	Allowable torque (kgf·m) Bearing strength	Backlash (mm)	Weight (kg)			
KSCPG5-20	CP5 (1.5915)	20	+0.425	35	10	25	31.83	36.37	15	15	30	100	44.7	21.3	4.55	2.17	0.04~0.14	0.14	
KSCPG5-25		25	+0.438	39	10	35	39.79	44.37				125	58.6	35.6	5.98	3.63			0.25
KSCPG5-30		30	+0.451	43	15	40	47.75	52.37				150	72.8	54.3	7.42	5.54			0.33
KSCPG5-40		40	+0.478	51	15	55	63.66	68.37				200	101	104	10.3	10.6			0.63
KSCPG10-20	CP10 (3.1831)	20	+0.111	64	15	50	63.66	70.73	30	20	50	200	328	171	33.4	17.4	0.05~0.16	1.01	
KSCPG10-25		25	+0.124	72	20	70	79.58	86.73				250	440	286	44.9	29.2			1.68
KSCPG10-30		30	+0.137	80	20	85	95.49	102.73				300	554	437	56.5	44.5			2.49
KSCPG10-40		40	+0.164	96	25	110	127.32	134.73				400	786	841	80.1	85.8			4.35

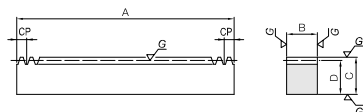
[Caution on Product Characteristics] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
② The backlash values shown in the table are the theoretical values in the circumferential direction of KRGCPF-H Racks with the same pitch.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 40) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK 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).



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

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



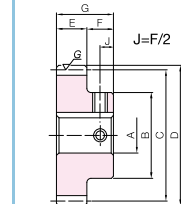
RF

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability		
KRGCPF5-500H	CP5 (1.5915)	100	RF	500	15	20	18.41	3660	2270	373	232	0.04~0.14	1.08
KRGCPF5-1000H		1000											
KRGCPF10-500H	CP10 (3.1831)	50		500	30	35	31.82	14600	9150	1490	933	0.05~0.16	3.75
KRGCPF10-1000H		100		1000									

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Mounting hole dimensions				
● J Series (Available on request)				A	B	C	D	E	F	G	No. of holes	Screw size
● 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		500	30	35	31.82	14	25	150	4	M10
		100		1000					50	180	6	

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of KSCPG pinions with the same pitch.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.
KHK Quick-Mod Gears, the KHK 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.



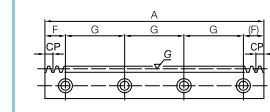
S1K



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 J99	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50		
Screw size	4x1.8				5x2.3				6x2.8				8x3.3				10x3.3			
Catalog Number	M4				M5				M6				M8				M10			
KSCPG5-20 J BORE	S1K	S1K																		
KSCPG5-25 J BORE	S1K	S1K	S1K		S1K	S1K	S1K	S1K	S1K											
KSCPG5-30 J BORE					S1K	S1K	S1K	S1K	S1K	S1K										
KSCPG5-40 J BORE						S1K	S1K	S1K	S1K	S1K	S1K									
KSCPG10-20 J BORE						S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K						
KSCPG10-25 J BORE							S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K					
KSCPG10-30 J BORE								S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K		
KSCPG10-40 J BORE									S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K

[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.
② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.
③ Keyways are made according to JIS B1301 standards, Js9 tolerance.
④ Certain products which would otherwise have a very long tapped hole are counterbored to reduce the length of the tap. For details, please see the KHK Web Catalog.
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 When using S1T set screws for fastening gears to a shaft, only use this method for applications with light load usage. For secure fastening, please use dowel pins in combination.



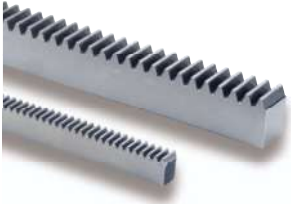
RD



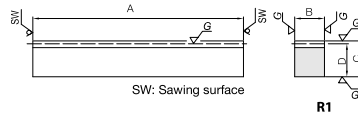
* CP30 and ground racks with total lengths up to (A) 1500mm and heights up to (C) 120mm are also available by request as custom-made products.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	3660	2270	373	232	0.04~0.14	1.06 2.13	● KRGCPFD5-500HJ ● KRGCPFD5-1000HJ
10.8	17.5	11	14600	9150	1490	933	0.05~0.16	3.61 7.28	● KRGCPFD10-500HJ ● KRGCPFD10-1000HJ

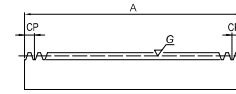
[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details. Also, please allow additional shipping time to get to your local distributor.
② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.



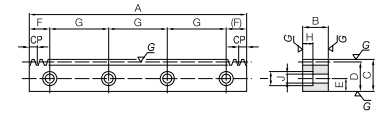
Specifications	
Precision grade	KHK R 001 grade 1
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 to 352HB



R1



RF



RD

Catalog Number	Pitch mm (Module)	Effective number of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability
KRGCP5-100	CP5 (1.5915)	18	R1	98	15	20	18.41	3660	1560	373	159
KRGCP10-100	CP10 (3.1831)	8		98	30	35	31.82	14600	6230	1490	635

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability
KRGCPF5-500	CP5 (1.5915)	100	RF	500	15	20	18.41	3660	1560	373	159
KRGCPF5-1000		200		1000							
KRGCPF10-500	CP10 (3.1831)	50		500	30	35	31.82	14600	6230	1490	635
KRGCPF10-1000		100		1000							

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Mounting hole dimensions			
				A	B	C	D	E	F	G	No. of holes Screw size
● KRGCPFD5-500J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25.00	150	4 M5
● KRGCPFD5-1000J		200		1000					50.00	180	6
● KRGCPFD10-500J	CP10 (3.1831)	50		500	30	35	31.82	14	25.00	150	4 M10
● KRGCPFD10-1000J		100		1000					50.00	180	6

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of SSCPG pinions with the same pitch.

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. For details, please see the assembly method to the mounting base on Page 271.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.
KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.

[Caution on J series] ① As available-on-request products, these require a **lead-time for shipping of 2 working days (excludes the day ordered), after placing an order**. Because the machining starts immediately, **we cannot accept cancellations**. Please see Page 34 for more details. Also, please allow additional shipping time to get to your local distributor.
② **Number of pieces we can process for one order is 1 to 20 units**. For larger quantities, please request price and delivery quotes.

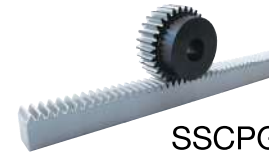
* CP30 and ground racks with total lengths up to (A) 1500mm and heights up to (C) 120mm are also available by request as custom-made products.

Backlash (mm)	Weight (kg)	Catalog Number
0.04~0.14	0.21	KRGCP5-100
0.05~0.16	0.73	KRGCP10-100

Backlash (mm)	Weight (kg)	Catalog Number
0.04~0.14	1.08	KRGCPF5-500
	2.17	KRGCPF5-1000
0.05~0.16	3.75	KRGCPF10-500
	7.49	KRGCPF10-1000

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	3660	1560	373	159	0.04~0.14	1.06 2.13	● KRGCPFD5-500J ● KRGCPFD5-1000J
10.8	17.5	11	14600	6230	1490	635	0.05~0.16	3.61 7.28	● KRGCPFD10-500J ● KRGCPFD10-1000J

Recommended Mating Pinions



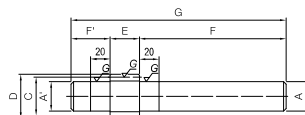
SSCPG

Please see Page 280 for more details.



Page 468

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1:1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Thermal refined, gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for ground part

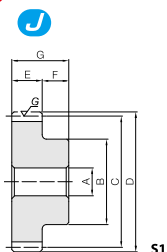


S7

Catalog Number	Pitch mm (Module)	No. of teeth	Profile shift coefficient	Shape	Shaft diameter (L)	Shaft length (L)	Pitch dia.	Outside dia.	Face width	Shaft diameter (R)	Shaft length (R)
SSCPGS5-15	CP5 (1.5915)	15	0	S7	19.2		23.87	27.06		19.2	
SSCPGS5-20		20	0		27.2		31.83	35.01	15	27.2	
SSCPGS5-25		25	0		30.2	25	39.79	42.97		30.2	100
SSCPGS10-10	CP10 (3.1831)	10	+0.5	S7	25.2		31.83	41.38		25.2	
SSCPGS10-15		15	0		35.2	40	47.75	54.11	30	35.2	150
SSCPGS10-20		20	0		40.2		63.66	70.03		40.2	

[Caution on Product Characteristics] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of SRGCP Racks with the same pitch.
③ For the center distance of the profile shifted gear, please refer to "Center distance of stock spur gear meshing with profile shifted gear" on Pages 54 to 55.

Specifications	
Precision grade	JIS grade N7 (JIS B 1702-1:1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth



S1

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

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Distance traveled in one turn (mm)	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (kg)
SSCPG5-20	CP5 (1.5915)	20	S1	A _{H7}	B	C	D	E	F	G		24.8	13.7	2.53	1.40
SSCPG5-25		25		8	25	31.83	35.01				100	33.5	23.0	3.41	2.34
SSCPG5-30		30		10	32	39.79	42.97	15	15	30	125	42.3	35.0	4.32	3.57
SSCPG5-40		40		12	50	63.66	66.85				200	60.4	66.9	6.16	6.82
SSCPG10-20	CP10 (3.1831)	20	S1	15	50	63.66	70.03				200	198	110	20.2	11.2
SSCPG10-25		25		20	60	79.58	85.94	30	20	50	250	268	184	27.3	18.7
SSCPG10-30		30		20	75	95.49	101.86				300	339	280	34.5	28.5
SSCPG10-40		40		25	80	127.32	133.69				400	483	535	49.3	54.6
SSCPG15-20	CP15 (4.7746)	20	S1	25	75	95.49	105.04				300	744	399	75.9	40.7
SSCPG15-25		25		25	100	119.37	128.92	50	27	77	375	1005	667	102	68.0
SSCPG15-30		30		25	110	143.24	152.79				450	1270	1020	130	104
SSCPG20-20	CP20 (6.3662)	20	S1	25	100	127.32	140.06				400	1590	880	162	89.7
SSCPG20-25		25		30	130	159.15	171.89	60	30	90	500	2140	1470	219	150
SSCPG20-30		30		30	150	190.99	203.72				600	2710	2240	276	228

[Caution on Product Characteristics] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of SRGCP Racks with the same pitch.
[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 40) when performing modifications and/or secondary operations for safety concerns.
KHK Quick-Mod Gears, the KHK 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).

Recommended mating rack



SRGCP

Please see Page 282 for more details.

Total Length	Distance traveled in one turn (mm)	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (kg)	Catalog Number
G		Bending strength	Surface durability	Bending strength	Surface durability	
140	75	21.2	8.49	2.16	0.87	SSCPGS5-15
	100	32.0	16.6	3.26	1.70	SSCPGS5-20
	125	43.2	27.8	4.40	2.83	SSCPGS5-25
220	100	121	25.9	12.4	2.64	SSCPGS10-10
	150	169	67.9	17.3	6.93	SSCPGS10-15
	200	256	133	26.1	13.6	SSCPGS10-20

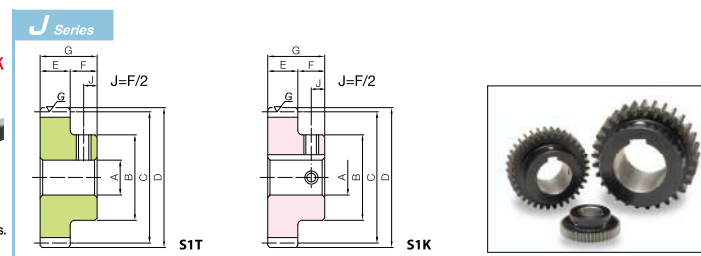
[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 40) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.
② Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm). Please use a carbide tool or the like when machining shafts that are close to the tooth root.

Recommended mating rack



SRGCP

Please see Page 282 for more details.



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 J ₉	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 Number	M5				M4			M5			M6			M8			M10				
SSCPG5-20 J BORE	S1T	S1K	S1K																		
SSCPG5-25 J BORE		S1K	S1K	S1K	S1K	S1K	S1K														
SSCPG5-30 J BORE			S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K										
SSCPG5-40 J BORE				S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K							
SSCPG10-20 J BORE						S1K	S1K	S1K	S1K	S1K		S1K	S1K	S1K	S1K						
SSCPG10-25 J BORE												S1K	S1K	S1K	S1K		S1K	S1K			
SSCPG10-30 J BORE												S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K		
SSCPG10-40 J BORE													S1K	S1K	S1K	S1K	S1K	S1K	S1K		

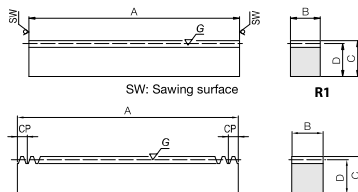
[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.
② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.
③ Keyways are made according to JIS B1301 standards, J₉ tolerance.
④ Certain products which would otherwise have a very long tapped hole are counterbored to reduce the length of the tap. For details, please see the KHK Web Catalog.
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 When using S1T set screws for fastening gears to a shaft, only use this method for applications with light load usage. For secure fastening, please use dowel pins in combination.

You can download CAD data (DXF format) of KHK Products from the Web Catalog.



Specifications	
Precision grade	KHK R 001 Grade 3+
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

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



RF

Catalog Number	Pitch mm (Module)	Effective number of teeth	Shape	Total Length		Face width	Height	Height to pitch line		Allowable force (N)		Allowable force (kgf)	
				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		
SRGCP10-100	CP10 (3.1831)	8		98	30	35	31.82	9150	5860	933	597		
SRGCP15-100	CP15 (4.7746)	5		103	50	50	45.23	22900	14200	2330	1450		
SRGCP20-100	CP20 (6.3662)	3		98	60	60	53.63	36600	23400	3730	2390		

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length		Face width	Height	Height to pitch line		Allowable force (N)		Allowable force (kgf)	
				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		
SRGCPF5-1000		200		1000	15	20	18.41	2290	1460	233	149		
SRGCPF10-500	CP10 (3.1831)	50		500	30	35	31.82	9150	5860	933	597		
SRGCPF10-1000		100		1000	30	35	31.82	9150	5860	933	597		
SRGCPF15-500	CP15 (4.7746)	33		495	50	50	45.23	22900	14200	2330	1450		
SRGCPF15-1000		67		1005	50	50	45.23	22900	14200	2330	1450		
SRGCPF20-500	CP20 (6.3662)	25		500	60	60	53.63	36600	23400	3730	2390		
SRGCPF20-1000		50		1000	60	60	53.63	36600	23400	3730	2390		

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length		Face width	Height	Height to pitch line		Mounting hole dimensions			
				A	B			C	D	E	F	G	No. of holes
SRGCPFD5-500J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4	M5	
SRGCPFD5-1000J		200		1000	15	20	18.41	8	25	150	4	M5	
SRGCPFD10-500J	CP10 (3.1831)	50		500	30	35	31.82	14	25	150	4	M10	
SRGCPFD10-1000J		100		1000	30	35	31.82	14	25	150	4	M10	
SRGCPFD15-500J	CP15 (4.7746)	33		495	50	50	45.23	20	27.5	220	3	M14	
SRGCPFD15-1000J		67		1005	50	50	45.23	20	27.5	220	3	M14	
SRGCPFD20-500J	CP20 (6.3662)	25		500	60	60	53.63	23	30	220	3	M16	
SRGCPFD20-1000J		50		1000	60	60	53.63	23	30	220	3	M16	

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of recommended pinions with the same pitch.

③ There is a decarburized layer (about 0.5 mm) on the surface of the extruded products. The hardness of the decarburized layer, excluding the tooth surface, is (187 HB or less).

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.

KHK Quick-Mod Gears, the KHK 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, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.

② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.

③ Black oxide is NOT re-applied after the secondary operation of adding mounting holes.

Recommended Mating Pinions



SSCP GS

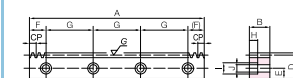
Please see Page 280 for more details.



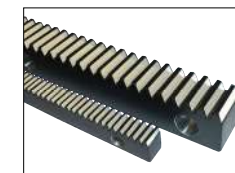
SSCP G

Please see Page 280 for more details.

J Series



RD



Backlash (mm)	Weight (kg)	Catalog Number
0.04~0.19	0.21	SRGCP5-100
0.05~0.21	0.73	SRGCP10-100
0.05~0.22	1.83	SRGCP15-100
0.05~0.22	2.48	SRGCP20-100

Backlash (mm)	Weight (kg)	Catalog Number
0.04~0.19	1.08	SRGCPF5-500
	2.17	SRGCPF5-1000
0.05~0.21	3.75	SRGCPF10-500
	7.49	SRGCPF10-1000
0.05~0.22	8.79	SRGCPF15-500
	17.8	SRGCPF15-1000
0.05~0.22	12.6	SRGCPF20-500
	25.3	SRGCPF20-1000

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	2290	1460	233	149	0.04~0.19	1.06	SRGCPFD5-500J
								2.13	SRGCPFD5-1000J
10.8	17.5	11	9150	5860	933	597	0.05~0.21	3.61	SRGCPFD10-500J
								7.29	SRGCPFD10-1000J
15.2	23	16	22900	14200	2330	1450	0.05~0.22	8.47	SRGCPFD15-500J
								17.3	SRGCPFD15-1000J
17.5	26	18	36600	23400	3730	2390	0.05~0.22	12.2	SRGCPFD20-500J
								24.5	SRGCPFD20-1000J

* CP30 and ground racks with total lengths up to (A) 1500mm and heights up to (C) 120mm are also available by request as custom-made products.

DLS Schmiersysteme
New Products

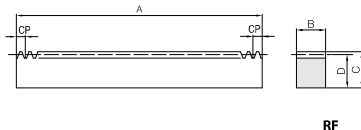
Rack & Pinion Lubrication System

PUSCP Lubricated spur gear

Page 468



Specifications	
Precision grade	KHK R 001 grade 5
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coating

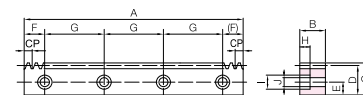


Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability
KRCPF5-1000H	CP5 (1.5915)	200	RF	1000	15	20	18.41	3330	1850	339	189
KRCPF10-1000H	CP10 (3.1831)	100			30	35	31.82	13300	7710	1360	786

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Mounting hole dimensions				
				A	B	C	D	E	F	G	No. of holes	Screw size
● KRCFPD5-1000HJ	CP5 (1.5915)	200	RD	1000	15	20	18.41	8	50	180	6	M5
● KRCFPD10-1000HJ	CP10 (3.1831)	100			30	35	31.82	14				M10

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
 ② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of recommended pinions with the same pitch.
 ③ The dimensions may vary widely due to hardening. Therefore, the total composite error is assumed to be excluded from this accuracy standard.
 ④ There is a decarburized layer (about 0.5 mm) on the surface of the extruded products. The hardness of the decarburized layer, excluding the tooth surface, is (187 HB or less).

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.
 KHK Quick-Mod Gears, the KHK 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.



Backlash (mm)	Weight (kg)	Catalog Number
0.05~0.31	2.17	KRCPF5-1000H
0.10~0.41	7.49	KRCPF10-1000H

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	3330	1850	339	189	0.05~0.31	2.13	● KRCFPD5-1000HJ
10.8	17.5	11	13300	7710	1360	786	0.10~0.41	7.29	● KRCFPD10-1000HJ

[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.
 ② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.
 ③ Black oxide is NOT re-applied after the secondary operation of adding mounting holes.

* CP30 and ground racks with total lengths up to (A) 1500mm and heights up to (C) 120mm are also available by request as custom-made products.

Recommended Mating Pinions



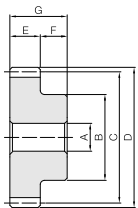
KSSCP-H

Please see Page 286 for more details.



Specifications	
Precision grade	JIS grade N8 (JIS B 1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined
Tooth hardness	225 to 352HB
Surface treatment	Black oxide coating
Shape	S1

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



S1

H To order Hardened Plus, please specify **Catalog No. + H**. Example: **KSSCP5-20H**

Catalog Number		Pitch mm (Module)	No. of teeth	Bore A _{H7}	Hub dia. B	Pitch dia.		Outside dia. C	Face width D	Hub width E	Total length F	Distance traveled in one turn (mm)	Allowable torque				Backlash (mm)	Weight (kg)		
						G	Bending strength						Surface durability							
							N-m						kgf-m	N-m	kgf-m					
KSSCP5-20	⚙️	CP5 (1.5915)	20	8	25	31.83	35.01					100	41.8	4.27	12.7	1.30	17.0	1.73	0.09~0.27	0.14 0.22 0.33 0.58
KSSCP5-25	⚙️		25	10	32	39.79	42.97					125	56.5	5.76	20.8	2.12	28.8	2.93		
KSSCP5-30	⚙️		30	10	38	47.75	50.93					150	71.4	7.28	30.5	3.11	44.3	4.52		
KSSCP5-40	⚙️		40	12	50	63.66	66.85					200	102	10.4	56.1	5.72	86.2	8.79		
KSSCP10-20	⚙️	CP10 (3.1831)	20	15	50	63.66	70.03					200	335	34.1	110	11.2	141	14.4	0.14~0.37	0.99 1.49 2.26 3.66
KSSCP10-25	⚙️		25	20	60	79.58	85.94					250	452	46.1	180	18.3	239	24.4		
KSSCP10-30	⚙️		30	20	75	95.49	101.86					300	571	58.2	265	27.0	368	37.5		
KSSCP10-40	⚙️		40	20	80	127.32	133.69					400	814	83.0	487	49.7	718	73.2		

[Caution on Product Characteristics] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
② The backlash values shown in the table are the theoretical values for the backlash in the normal direction of KRCPFD Racks with the same pitch.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 40) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK 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.

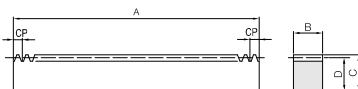
[Caution on Hardened Plus] ① See Page 6 for more details on Hardened Plus.

CP KRCPFD/KRCPFD Circular pitch 5, 10 CP Thermal Refined Racks



Specifications	
Precision grade	KHK R 001 Grade 4 *
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refining only
Tooth hardness	225 to 352HB
Surface treatment	Black oxide coating

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



RF

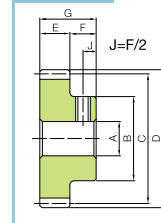
Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length			Height to pitch line	Allowable force (N)		Allowable force (kgf)
				A	B	C		Bending strength	Surface durability	
KRCPFD5-500 KRCPFD5-1000	CP5 (1.5915)	100	RF	500	15	20	18.41	3660	1040	373
		200		1000						106
KRCPFD10-500 KRCPFD10-1000	CP10 (3.1831)	50	RF	500	30	35	31.82	14600	4480	1490
		100		1000						457

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length			Height to pitch line	Mounting hole dimensions			
				A	B	C		E	F	G	No. of holes
● KRCPFD5-500J ● KRCPFD5-1000J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4
		200		1000				50	180		6
● KRCPFD10-500J ● KRCPFD10-1000J	CP10 (3.1831)	50	RD	500	30	35	31.82	14	25	150	4
		100		1000				50	180		6

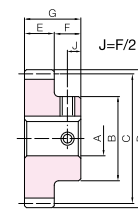
[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of KSSCP pinions with the same pitch.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK 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.

J Series



S1T



S1K



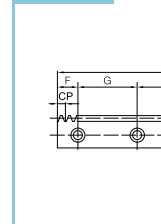
To order J Series products, please specify: **Catalog No. + J + BORE**. Example: **KSSCP5-20J10**

Bore H7	* The product shapes of J Series items are identified by background color.																			
Keyway J ₉₉	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 Number	M5				M4					M5			M6		M8		M10			
KSSCP5-20 J BORE	S1T	S1K	S1K																	
KSSCP5-25 J BORE		* S1K	S1K	S1K	S1K	S1K	S1K													
KSSCP5-30 J BORE		* S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K									
KSSCP5-40 J BORE			* S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K					
KSSCP10-20 J BORE					* S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K
KSSCP10-25 J BORE													* S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K
KSSCP10-30 J BORE													* S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K
KSSCP10-40 J BORE													* S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K

To order J Series Hardened Plus products, please specify: **Catalog No. + H + J + BORE**. Example: **KSSCP5-20HJ10**

[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered) after placing an order, and 6 working days for Hardened Plus products. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.
② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.
③ Keyways are made according to JIS B1301 standards, J₉₉ tolerance.
④ Certain products which would otherwise have a very long tapped hole are counterbored to reduce the length of the tap. For details, please see the KHK Web Catalog.
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 When using S1T set screws for fastening gears to a shaft, only use this method for applications with light load usage. For secure fastening, please use dowel pins in combination.
⑧ * is a product with the original bore diameter, so Hardened Plus is not available. See Page 6 for more details on Hardened Plus.

J Series



RD

CP Thermal Refined Racks



Backlash (mm)	Weight (kg)	Catalog Number
0.09~0.27	1.08 2.17	KRCPFD5-500 KRCPFD5-1000
0.14~0.37	3.75 7.49	KRCPFD10-500 KRCPFD10-1000

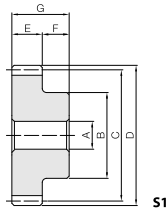
Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	3660	1040	373	106	0.09~0.27	1.06 2.13	● J Series (Available-on-request) ● KRCPFD5-500J ● KRCPFD5-1000J
10.8	17.5	11	14600	4480	1490	457	0.14~0.37	3.61 7.29	● KRCPFD10-500J ● KRCPFD10-1000J

[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.
② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.
③ Black oxide is NOT re-applied after the secondary operation of adding mounting holes.



Specifications	
Precision grade	JIS grade N8 (JIS B1702-1:1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating
Shape	S1

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



S1

To order Hardened Plus, please specify **Catalog No. + H**. Example: **SSCP2.5-20H**

Catalog Number	Pitch mm (Module)	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Distance traveled in one turn (mm)	Allowable torque						Backlash (mm)	Weight (kg)
											Bending strength		Surface durability		Surface durability			
											N-m	kgf-m	N-m	kgf-m	N-m	kgf-m		
SSCP2.5-20	CP2.5 (0.7958)	20	6	13	15.92	17.51				50	4.14	0.42	0.48	0.049	1.60	0.16	0.022	
SSCP2.5-25		25	8	17	19.89	21.49				62.5	5.58	0.57	0.83	0.085	2.74	0.28	0.034	
SSCP2.5-30		30	8	21	23.87	25.46		10	10	20	75	7.06	0.72	1.30	0.13	4.20	0.43	0.054
SSCP2.5-40		40	10	28	31.83	33.42				100	10.1	1.03	2.64	0.27	8.30	0.85	0.098	
SSCP5-20	CP5 (1.5915)	20	8	25	31.83	35.01				100	24.8	2.53	3.52	0.36	11.0	1.12	0.14	
SSCP5-25		25	10	32	39.79	42.97				125	33.5	3.42	6.06	0.62	18.6	1.89	0.22	
SSCP5-30		30	10	38	47.75	50.93		15	15	30	150	42.3	4.32	9.45	0.96	28.6	2.92	0.33
SSCP5-40		40	12	45	63.66	66.85				200	60.4	6.16	18.7	1.91	55.7	5.68	0.54	
SSCP10-20	CP10 (3.1831)	20	15	50	63.66	70.03				200	198	20.2	30.8	3.14	91.1	9.29	0.99	
SSCP10-25		25	20	60	79.58	85.94				250	268	27.3	52.7	5.37	154	15.7	1.49	
SSCP10-30		30	20	75	95.49	101.86		30	20	50	300	339	34.5	81.7	8.33	238	24.2	2.26
SSCP10-40		40	20	80	127.32	133.69				400	483	49.3	160	16.4	464	47.3	3.66	
SSCP15-20	CP15 (4.7746)	20	22	75	95.49	105.04				300	744	75.9	116	11.9	338	34.5	3.52	
SSCP15-25		25	25	100	119.37	128.92		50	27	77	375	1000	102	199	20.3	573	58.5	5.76
SSCP15-30		30	25	110	143.24	152.79				450	1270	130	308	31.4	885	90.2	8.04	
SSCP20-20		CP20 (6.3662)	20	25	100	127.32	140.06				400	1590	162	264	26.9	759	77.4	7.50
SSCP20-25	25		30	130	159.15	171.89		60	30	90	500	2140	219	449	45.8	1290	131	12.0
SSCP20-30	30		30	150	190.99	203.72				600	2710	276	693	70.7	1990	202	17.2	

[Caution on Product Characteristics] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of SRCP Racks with the same pitch.

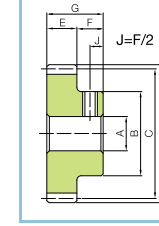
③ If the bore diameter is less than $\phi 4$, the bore tolerance class is H8. If the bore diameter is $\phi 5$ or $\phi 6$, and the hole length (total length) exceeds 3 times the diameter, then the class is also H8.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 40) when performing modifications and/or secondary operations for safety concerns.

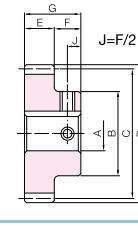
KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.

② Avoid performing secondary operations that narrow the tooth width, as it affects precision and strength.

[Caution on Hardened Plus] ① See Page 6 for more details on Hardened Plus.



S1T



S1K



To order J Series products, please specify: **Catalog No. + J + BORE**. Example: **SSCP2.5-20J6**

Bore H7		* The product shapes of J Series items are identified by background color.																														
Keyway Jis9	6	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80						
Screw size	—		4x1.8		5x2.3			6x2.8			8x3.3			10x3.3		12x3.3		14x3.8		16x4.3		18x4.4		20x4.9		22x5.4						
Catalog Number	M4	M5	M4				M5				M6				M8				M10				M12				M14				M16	
SSCP2.5-20 J BORE	S1T																															
SSCP2.5-25 J BORE	S1T																															
SSCP2.5-30 J BORE	S1T																															
SSCP2.5-40 J BORE		S1K	S1K	S1K	S1K																											
SSCP5-20 J BORE	S1T	S1K	S1K																													
SSCP5-25 J BORE		S1K	S1K	S1K	S1K	S1K	S1K																									
SSCP5-30 J BORE		S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K																						
SSCP5-40 J BORE			S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K																				
SSCP10-20 J BORE					S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K																	
SSCP10-25 J BORE						S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K															
SSCP10-30 J BORE							S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K													
SSCP10-40 J BORE								S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K												
SSCP15-20 J BORE									S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K												
SSCP15-25 J BORE										S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K				
SSCP15-30 J BORE											S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K				
SSCP20-20 J BORE												S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K				
SSCP20-25 J BORE													S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K				
SSCP20-30 J BORE														S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K				

To order J Series Hardened Plus products, please specify Catalog No. + H + J + BORE

Example: SSCP2.5-40HJ12

[Caution on J series] ① Production is completed by the manufacturer in 2 working days (6 working days for Hardened Plus) excluding the day ordered for products with CP10 or under, and 7 working days (11 working days for Hardened Plus) for products with CP15 or higher. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.

② Number of products is 1 to 20 units for products with pitch of CP10 or under, and up to 5 units for products with pitch of CP15 or higher.

③ Keyways are made according to JIS B1301 standards, Jis9 tolerance.

④ Certain products which would otherwise have a very long tapped hole are counterbored to reduce the length of the tap. For details, please see the KHK Web Catalog.

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 When using S1T set screws for fastening gears to a shaft, only use this method for applications with light load usage. For secure fastening, please use dowel pins in combination.

⑧ * is a product with the original bore diameter, so Hardened Plus is not available. See Page 6 for more details on Hardened Plus.

SSCP-CP hardened spur gear recommended mating rack

SSCP-CP spur gear recommended mating rack



SRCPF-H/SRCPFD-H
CP Hardened Racks

Please see Page 290 for more details.



SRCP/SRCPF/SRCPFD(K)
CP Racks

Please see Page 294 for more details.



Specifications	
Precision grade	KHK R 001 grade 5
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coating

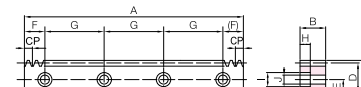


RF

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
				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
SRCPF10-1000H	CP10 (3.1831)	100		1000	30	35	31.82	8320	4980	848	508
SRCPF15-1000H	CP15 (4.7746)	67		1005	50	50	45.23	20800	12400	2120	1260
SRCPF20-1000H	CP20 (6.3662)	50		1000	60	60	53.63	33300	20800	3390	2120

Catalog Number		Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Mounting hole dimensions					
● J Series (Available-on-request)					A	B	C	D	E	F	G	No. of holes	Screw size	
● SRCPFD5-1000HJ		CP5 (1.5915)	200	RD	1000	15	20	18.41	8	50	180	6	M5	
● SRCPFD10-1000HJ		CP10 (3.1831)	100		1000	30	35	31.82	14	50	180	6	M10	
● SRCPFD15-1000HJ		CP15 (4.7746)	67		1005	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	M16	

- [Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
- ② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of recommended pinions with the same pitch.
- ③ The dimensions may vary widely due to hardening. Therefore, the total composite error is assumed to be excluded from this accuracy standard.
- ④ There is a decarburized layer (about 0.5 mm) on the surface of the extruded products. The hardness of the decarburized layer, excluding the tooth surface, is (187 HB or less).
- [Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.
- KHK Quick-Mod Gears, the KHK 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, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.
- ② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.
- ③ Black oxide is NOT re-applied after the secondary operation of adding mounting holes.



RD



Backlash (mm)	Weight (kg)	Catalog Number
0.05~0.29	2.17	SRCPF5-1000H
0.10~0.39	7.49	SRCPF10-1000H
0.16~0.51	17.8	SRCPF15-1000H
0.18~0.58	25.3	SRCPF20-1000H

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	2080	1200	212	122	0.05~0.29	2.13	SRCPFD5-1000HJ
10.8	17.5	11	8320	4980	848	508	0.10~0.39	7.29	SRCPFD10-1000HJ
15.2	23	16	20800	12400	2120	1260	0.16~0.51	17.3	SRCPFD15-1000HJ
17.5	26	18	33300	20800	3390	2120	0.18~0.58	24.5	SRCPFD20-1000HJ

* CP30 and ground racks with total lengths up to (A) 1500mm and heights up to (C) 120mm are also available by request as custom-made products.

Recommended Mating Pinions



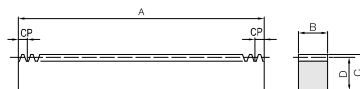
SSCP-H

Please see Page 288 for more details.



Specifications	
Precision grade	KHK R 001 Grade 4-
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth laser hardened
Tooth hardness	55 to 65HRC
Surface treatment	Black oxide coating

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



RF

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
				A	B	C	D	Bending strength	Surface durability	Bending strength	Surface durability
SRCPF5-1000HL	CP5 (1.5915)	200	RF	1000	15	20	18.41	2290	1040	232	106
SRCPF5-1500HL		300		1500							
SRCPF5-2000HL		410		2050							
SRCPF10-1000HL	CP10 (3.1831)	100		1000	30	35	31.82	9150	4330	933	441
SRCPF10-1500HL		150		1500							
SRCPF10-2000HL		205		2050							
SRCPF15-1000HL	CP15 (4.7746)	67		1005	50	50	45.23	22900	10700	2333	1095
SRCPF15-1500HL		100		1500							
SRCPF15-2000HL		136		2040							
SRCPF20-1000HL	CP20 (6.3662)	50		1000	60	60	53.63	36600	18100	3732	1843
SRCPF20-1500HL		75		1500							
SRCPF20-2000HL		102		2040							

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Mounting hole dimensions				
				A	B	C	D	E	F	G	No. of holes	Screw size
SRCPFD5-1000HLJ	CP5 (1.5915)	200	RD	1000	15	20	18.41	8	50	180	6	M5
SRCPFD5-1500HLJ		300		1500					30	180	9	M5
SRCPFD5-2000HLJ		410		2050					35	180	12	M5
SRCPFD10-1000HLJ	CP10 (3.1831)	100		1000	30	35	31.82	14	50	180	6	M10
SRCPFD10-1500HLJ		150		1500					30	180	9	M10
SRCPFD10-2000HLJ		205		2050					35	180	12	M10
SRCPFD15-1000HLJ	CP15 (4.7746)	67		1005	50	50	45.23	20	62.5	220	5	M14
SRCPFD15-1500HLJ		100		1500					90	220	7	M14
SRCPFD15-2000HLJ		136		2040					30	220	10	M14
SRCPFD20-1000HLJ	CP20 (6.3662)	50		1000	60	60	53.63	23	60	220	5	M16
SRCPFD20-1500HLJ		75		1500					90	220	7	M16
SRCPFD20-2000HLJ		102		2040					30	220	10	M16

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

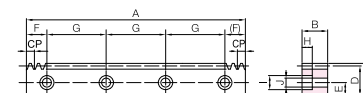
② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of recommended pinions with the same pitch.

③ There is a decarburized layer (about 0.5 mm) on the surface of the extruded products. The hardness of the decarburized layer, excluding the tooth surface, is (187 HB or less).

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.

KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.

② Due to the gear teeth being laser hardened, no secondary operations can be performed on tooth areas. Please use wire EDM or other carbide tools to modify the length.



RD



Backlash (mm)	Weight (kg)	Catalog Number
0.09~0.25	2.17	SRCPF5-1000HL
	3.25	SRCPF5-1500HL
	4.44	SRCPF5-2000HL
0.14~0.35	7.49	SRCPF10-1000HL
	11.2	SRCPF10-1500HL
	15.4	SRCPF10-2000HL
0.20~0.47	17.8	SRCPF15-1000HL
	26.6	SRCPF15-1500HL
	36.2	SRCPF15-2000HL
0.22~0.54	25.3	SRCPF20-1000HL
	37.9	SRCPF20-1500HL
	51.5	SRCPF20-2000HL

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	2290	1040	232	106	0.09~0.25	2.13	SRCPFD5-1000HLJ
								3.20	SRCPFD5-1500HLJ
								4.38	SRCPFD5-2000HLJ
10.8	17.5	11	9150	4330	933	441	0.14~0.35	7.29	SRCPFD10-1000HLJ
								10.9	SRCPFD10-1500HLJ
								14.9	SRCPFD10-2000HLJ
15.2	23	16	22900	10700	2333	1095	0.20~0.47	17.3	SRCPFD15-1000HLJ
								25.9	SRCPFD15-1500HLJ
								35.2	SRCPFD15-2000HLJ
17.5	26	18	36600	18100	3732	1843	0.22~0.54	24.5	SRCPFD20-1000HLJ
								36.8	SRCPFD20-1500HLJ
								50.0	SRCPFD20-2000HLJ

[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.

② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.

③ Black oxide is NOT re-applied after the secondary operation of adding mounting holes.

Recommended Mating Pinions



SSCP-H

Please see Page 288 for more details.

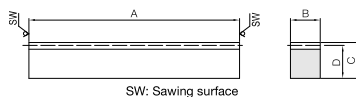
You can download CAD data (DXF format) of KHK Products from the Web Catalog.

* CP30 and ground racks with total lengths up to (A) 1500mm and heights up to (C) 120mm are also available by request as custom-made 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 HB210)
Surface treatment	Black oxide coating

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



R1

Catalog Number	Pitch mm (Module)	Effective number of teeth	Shape	Total Length		Face width	Height	Height to pitch line		Allowable force (N)		Allowable force (kgf)		Backlash (mm)	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	0.00~0.14	0.086		
SRCP5-100	CP5 (1.5915)	18		98	15	20	18.41	2290	468	233	47.7	0.09~0.25	0.21		
SRCP10-100	CP10 (3.1831)	8		98	30	35	31.82	9150	1870	933	191	0.14~0.35	0.73		
SRCP15-100	CP15 (4.7746)	5		103	50	50	45.23	22900	4530	2330	462	0.20~0.47	1.83		
SRCP20-100	CP20 (6.3662)	3		98	60	60	53.63	36600	7480	3730	763	0.22~0.54	2.48		

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length				Height to pitch line		Allowable force (N)		Allowable force (kgf)		Backlash (mm)	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	0.00~0.14	0.44 0.88		
SRCPF5-500 SRCPF5-1000 SRCPF5-1500 SRCPF5-2000	CP5 (1.5915)	100 200 300 410		500 1000 1500 2050	15	20	18.41	2290	468	233	47.7	0.09~0.25	1.08 2.17 3.25 4.44		
SRCPF10-500 SRCPF10-1000 SRCPF10-1500 SRCPF10-2000	CP10 (3.1831)	50 100 150 205		500 1000 1500 2050	30	35	31.82	9150	1870	933	191	0.14~0.35	3.75 7.49 11.2 15.4		
SRCPF15-500 SRCPF15-1000 SRCPF15-1500 SRCPF15-2000	CP15 (4.7746)	33 67 100 136		495 1005 1500 2040	50	50	45.23	22900	4530	2330	462	0.20~0.47	8.79 17.8 26.6 36.2		
SRCPF20-500 SRCPF20-1000 SRCPF20-1500 SRCPF20-2000	CP20 (6.3662)	25 50 75 102		500 1000 1500 2040	60	60	53.63	36600	7480	3730	763	0.22~0.54	12.6 25.3 37.9 51.5		

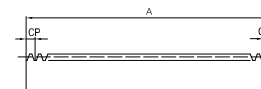
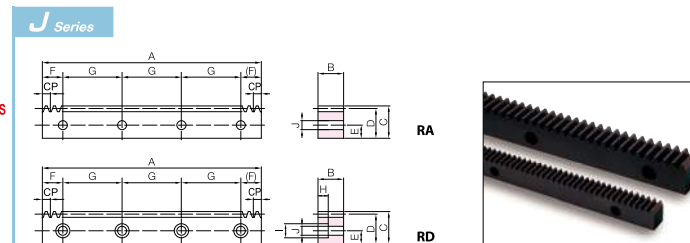
Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length				Height	Height to pitch line	Mounting hole dimensions					
				A	B	C	D			E	F	G	No. of holes	Screw size	
● SRCPFK2.5-500J	CP2.5 (0.7958)	200	RA	500	10	12	11.2	5	25	150	4	M4			
● SRCPFD5-500J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4	M5			
SRCPFD5-1000		200		1000					50	180	6				
SRCPFD5-1500		300		1500					30	180	9				
SRCPFD5-2000		410		2050					35	180	12				
● SRCPFD10-500J	CP10 (3.1831)	50	RD	500	30	35	31.82	14	25	150	4	M10			
SRCPFD10-1000		100		1000					50	180	6				
SRCPFD10-1500		150		1500					30	180	9				
SRCPFD10-2000		205		2050					35	180	12				
● SRCPFD15-500J	CP15 (4.7746)	33	RD	495	50	50	45.23	20	27.5	220	5	M14			
SRCPFD15-1000		67		1005					62.5		7				
SRCPFD15-1500		100		1500					90		10				
SRCPFD15-2000		136		2040					30						
● SRCPFD20-500J	CP20 (6.3662)	25	RD	500	60	60	53.63	23	30	220	5	M16			
SRCPFD20-1000		50		1000					60		7				
SRCPFD20-1500		75		1500					90		10				
SRCPFD20-2000		102		2040					30						

Recommended Mating Pinions

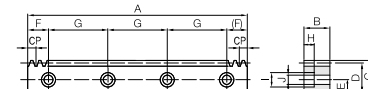


SSCP

Please see Page 268 for more details.



RF



RD

- [Caution on Product Characteristics]
- ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.
 - ② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of recommended pinions with the same pitch.
 - 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. For details, please see the assembly method to the mounting base on Page 271.

- [Caution on Secondary Operations]
- ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.
 - 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.

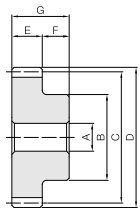
- [Caution on J series]
- ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.
 - ② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.
 - ③ Black oxide is NOT re-applied after the secondary operation of adding mounting holes.

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
-	-	4.5	763	143	77.8	14.5	0.00~0.14	0.43	● SRCPFK2.5-500J
6	10	6	2290	468	233	47.7	0.09~0.25	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	0.14~0.35	3.61	● SRCPFD10-500J
								7.29	SRCPFD10-1000
								10.9	SRCPFD10-1500
								14.9	SRCPFD10-2000
15.2	23	16	22900	4530	2330	462	0.20~0.47	8.47	● SRCPFD15-500J
								17.3	SRCPFD15-1000
								25.9	SRCPFD15-1500
								35.2	SRCPFD15-2000
17.5	26	18	36600	7480	3730	763	0.22~0.54	12.2	● SRCPFD20-500J
								24.5	SRCPFD20-1000
								36.8	SRCPFD20-1500
								50.0	SRCPFD20-2000



Specifications	
Precision grade	JIS grade N8 (JIS B1702-1:1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SUS303
Heat treatment	—
Tooth hardness	(less than 187HB)

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



S1

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Bore		Hub dia.		Pitch dia.		Outside dia.		Face width		Hub width		Total length		Distance traveled in one turn (mm)		Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
				A _{H7}	B	B	C	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q		
SUSCP5-20	CP5 (1.5915)	20	S1	8	25	31.83	35.01										100	13.7	2.50	1.40	0.25	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			15	15	30	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	0.98			
SUSCP10-25		25		20	60	79.57	85.94			30	20	50	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] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

② The backlash values shown in the table are the theoretical values for the backlash in the normal direction of SURCP Racks with the same pitch.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 40) when performing modifications and/or secondary operations for safety concerns.

KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.

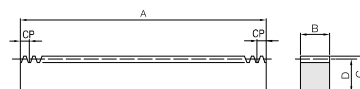
② Avoid performing secondary operations that narrow the tooth width, as it affects precision and strength.

CP SURCPF/SURCPFD Circular pitch 5, 10 CP Stainless Steel Racks



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

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



RF

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Allowable force (N)		Allowable force (kgf)	
				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
SURCPF5-1000		200		1000							
SURCPF10-500	CP10 (3.1831)	50		500	30	35	31.82	4370	1050	445	107
SURCPF10-1000		100		1000							

Catalog Number	Pitch mm (Module)	No. of teeth	Shape	Total Length	Face width	Height	Height to pitch line	Mounting hole dimensions			
				A	B	C	D	E	F	G	Screw size
● SURCPFD5-500J	CP5 (1.5915)	100	RD	500	15	20	18.41	8	25	150	4
● SURCPFD5-1000		200		1000					50	180	6
● SURCPFD10-500J	CP10 (3.1831)	50		500	30	35	31.82	14	25	150	4
● SURCPFD10-1000		100		1000					50	180	6

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of SUSCP pinions with the same pitch.

③ The stainless steel material is given "solution treatment" and "passivation". Passivation improves the anti-rust performance, but it is not effective on the processed surface of the product. Note that this product is not completely rustproof.

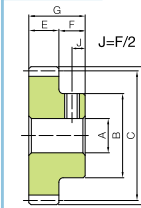
* Solution treatment

Heat treatment required to maintain the corrosion resistance of austenitic stainless steel

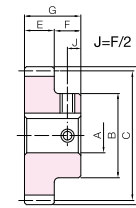
Passivation

Pickled (nitric hydrofluoric acid) 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.



S1T



S1K



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 Jis9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	
Screw size	—	4x1.8		5x2.3				6x2.8				8x3.3			10x3.3			12x3.3	14x3.3
Catalog Number	M5	M4						M5						M6			M8		M10
SUSCP5-20 J BORE	S1T	S1K	S1K																
SUSCP5-25 J BORE		S1K	S1K	S1K	S1K	S1K	S1K												
SUSCP5-30 J BORE		S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K								
SUSCP10-20 J BORE					S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K					
SUSCP10-25 J BORE										S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K		
SUSCP10-30 J BORE											S1K	S1K	S1K	S1K	S1K	S1K	S1K	S1K	

[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. However, as machining starts immediately after an order is received, orders cannot be canceled. Please see Page 34 for more details.

② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.

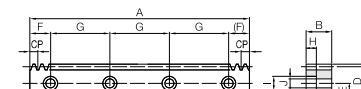
③ Keyways are made according to JIS B1301 standards, Jis9 tolerance.

④ Certain products which would otherwise have a very long tapped hole are counterbored to reduce the length of the tap. For details, please see the KHK Web Catalog.

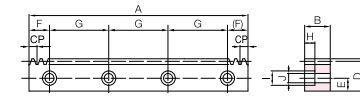
⑤ For products having a tapped hole, a set screw is included.

⑥ When using S1T set screws for fastening gears to a shaft, only use this method for applications with light load usage.

For secure fastening, please use dowel pins in combination.



RD



RD

Backlash (mm)	Weight (kg)	Catalog Number
0.09~0.27	1.08 2.16	SURCPF5-500 SURCPF5-1000
0.14~0.37	3.73 7.46	SURCPF10-500 SURCPF10-1000

Counterbore dimensions			Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)	Catalog Number
H	I	J	Bending strength	Surface durability	Bending strength	Surface durability			
6	10	6	1090	263	111	26.8	0.09~0.27	1.06 2.12	● SURCPFD5-500J SURCPFD5-1000
10.8	17.5	11	4370	1050	445	107	0.14~0.37	3.59 7.25	● SURCPFD10-500J SURCPFD10-1000

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.

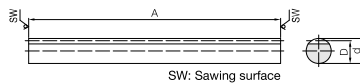
KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.

[Caution on J series] ① As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Because the machining starts immediately, we cannot accept cancellations. Please see Page 34 for more details.

② Number of pieces we can process for one order is 1 to 20 units. For larger quantities, please request price and delivery quotes.



Specifications	
Precision grade	KHK R 001 grade 4
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than HB210)
Surface treatment	Black oxide coating



R2

Catalog Number	Pitch mm (Module)	Effective number of teeth	Shape	Total Length	Outside dia	Height to pitch line	Allowable force (N)		Allowable force (kgf)		Backlash (mm)	Weight (kg)
				A	d _{he}	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	0.00~0.14	0.30
SROCP5-500	CP5 (1.5915)	99		505	15	13.41	1650	324	169	33.1	0.09~0.25	0.65
SROCP10-1000	CP10 (3.1831)	99		1010	30	26.82	6610	1300	674	132	0.14~0.35	5.16

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

② The backlash values shown in the table are the theoretical values for the backlash in the circumferential direction of SSCP pinions with the same pitch.

[Caution on Secondary Operations] ① Please read "Cautions on Performing Secondary Operations" (Page 270) when performing modifications and/or secondary operations for safety concerns.

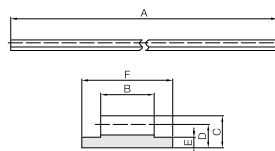
KHK Quick-Mod Gears, the KHK system for quick modification of KHK stock gears, is also available.

② Avoid hardening round racks, due to twisting and deformation occurring and the difficulty of straightening the rack after hardening.

FRCP Circular pitch 5 CP Metal Flexible Racks



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)
Surface treatment	Black oxide coating



R3

Catalog Number	Pitch mm (Module)	Shape	Total Length	Face width	Height	Height to pitch line	Base thickness	Base width	Allowable force (N)	Allowable force (kgf)	Weight (kg)
			A	B	C	D	E	F	Bending strength	Bending strength	
FRCP5-2000	CP5 (1.5915)	R3	2000	10	6	4.41	2	17	801	81.7	0.91
FRCP5-3000			3000								1.37
FRCP5-4000			4000								1.83

[Caution on Product Characteristics] ① The allowable forces shown in the table are calculated values according to the assumed usage conditions. Please see Page 269 for more details.

② When using the metal flexible rack in an arc, the minimum bending radius (R) is 150 mm for both the external and internal teeth. This increases the pitch errors and tooth profile errors which prevent the teeth from meshing at the normal center distance, so be sure to make adjustments before use.

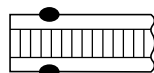
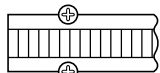
③ It cannot be used where positioning accuracy is required.

④ The tolerance of height (size C) is 0 to -0.15, and the tolerance of base width (size F) is 0 to -0.1.

Installation Example of FRCP Metal Flex Rack

Countersunk screw

Spot weld



(View of Flexible Rack from the top)

Recommended Mating Pinions



SSCP

Please see Page 288 for more details.