

2025

KHK ALL PRODUCT GUIDE



KHK 2025

KHK STOCK GEARS

KHK **KHK CO., LTD.**

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JQA-QMA14416
JQA-EM6717

KOHARA GEAR INDUSTRY CO., LTD.

Your ideal partner in gear selection

Greetings

Thank you for using KHK gear products.

We appreciate your patronage.

We have issued the Stock Gear Master Catalog "KHK2025".

Our latest products include laser-hardened racks, hardened spur gears and bevel gears, as well as an even wider range of semi-custom gears.

Make use of our new catalog for easy selection.

KHK's mission is to offer quality products that build Customer Trust and Satisfaction.

We look forward to serving you.

Kohara Gear Industry Co.,Ltd.

Toshiharu Kohara, President



SRAF-HL/SRAFD-HL/SRAFK-HL
Laser Hardened Square Racks



KWGDLS/AGDL
Semi-Custom Duplex Worm Gears



SW/CG
Semi-Custom Worms/Worm Wheels



SSY-H/SSAY-H
Hardened Spur Gears



SH-H
Hardened Helical Gears



SM-H
Hardened Miter Gears



SB-H
Hardened Bevel Gears



JQA-QMA14416
JQA-EM6717

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Dimensional Table Pages

Dimensional tables show the product specifications and performance for each gear type at a glance. Compare the accuracy and strength, and select the appropriate gears while looking at the product photographs.

PRODUCT GROUP ICON

Series

PRODUCT PHOTO

Representative photographs of the series. Actual shape may be different with regards to a particular item. Please confirm the drawing and shape as specified in the table.

DIMENSIONAL TABLE

<Catalog Numbers>
Please order for KHK gears by specifying their catalog numbers.

<Bore>
The bore tolerances are indicated in the column headings.

<Backlash>
Indicates the circular linear backlash when the gears are set to the center distance.

Common Specifications

Series Specifications.

DRAWINGS, SHAPES

Similar to the data shown in the small table on the right, there are several types of configurations in series. Please be sure to check the required shape in the table.

J Series

Products having the letter "J" in their Catalog No. (F series and E series are also available.)

PRODUCT NAME

J Series dimensional table

Hole diameter, key groove, and tap are listed.

INDEX

Indexed by type and sorted by colored tags.

TECHNICAL REFERENCES

Technical information will be introduced at various sections in the catalog.

STRENGTH CALCULATION

The allowable torques shown in the table are calculated values according to formulas such as JGMA. The calculations assume certain operating conditions. Therefore, the values should be used as a reference. The assumed conditions are shown on the first page of each product group (for example, Page 48 for spur gears).

NOTES

Contains additional information on precautions for product characteristics and technical hints for secondary operations. Technical hints for J Series are also provided in the J Series section. Please be sure to read first before selecting products.

Selection Hints

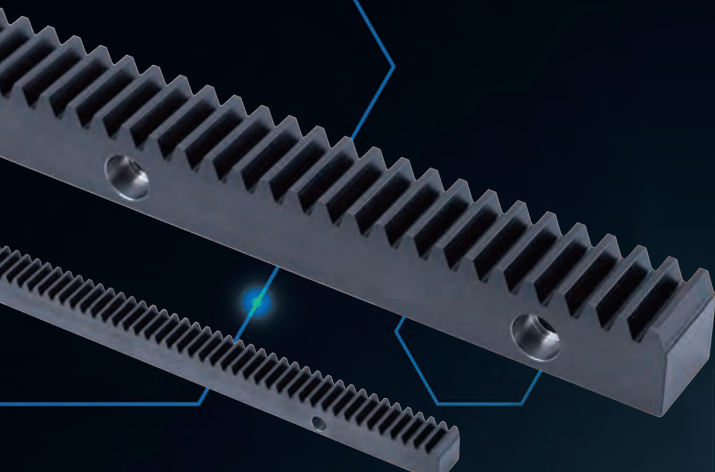
When selecting KHK standard gears, glance over the Cautions on Product Characteristics and Cautions on Performing Secondary Operations in the product technical information and respective dimensional tables.

- 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 26 for more details about custom-made orders.
- 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. Because black oxide is formed through a chemical reaction, it may appear reddish-black in some cases.

- The details (specifications, dimensions, etc.) listed in the catalog may be changed without prior notice.
- All details recorded in this catalog are copyrighted. Replication without permission is strictly prohibited.
- Changes and corrections to the contents of the catalog are announced on the KHK website.

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New Product Information *New Products*



*J*Series

Laser Hardened Square Racks

SRAF-HL/SRAFD-HL/
SRAFK-HL



Laser Hardened Helical Racks

SRHEF-HL



*J*Series

Semi-Custom Ground Helical Gears

KHG

Semi-Custom Duplex
Worm Gears

KWGDLS/AGDL



Semi-Custom Worms/
Worm Wheels

SW/CG

Hardened Spur Gears

SSY-H/SSAY-H



Hardened Helical Gears

SH-H



Hardened Helical Gears

SHE-H



Hardened Miter Gears

SM-H



Hardened Angular Miter Gears

SAM-H



Hardened Bevel Gears

SB-H



Hardened Bevel Gears

SBY-H




































Hardened Bevel Pinion Shafts

SB-H



Product Index - LINEUP -

Spur Gears

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SSAG Ground Spur Gears  Material: S45C m1-6 Page 100	KS Thermal Refined Spur Gears  Material: SCM440 m1.5-5 Page 104	SSS Spur Pinion Shafts  Material: S45C m1, 1.5 Page 106	SS-H Hardened Spur Gears <i>Additional</i>  Material: S45C m1-10 Page 110	SS Spur Gears  Material: S45C m0.5-10 Page 108	SS F Series Spur Gears  Material: S45C m1.5-3 Page 134	SSA-H Hardened Spur Gears  Material: S45C m1-5 Page 142	SSA Spur Gears  Material: S45C m1-5 Page 142
SSA F Series Spur Gears  Material: S45C m2-3 Page 148	SSY-H Hardened Spur Gears <i>NEW</i>  Material: S45C m0.8, 1 Page 152	SSY Spur Gears  Material: S45C m0.8, 1 Page 152	SSAY-H Hardened Spur Gears <i>NEW</i>  Material: S45C m1 Page 154	SSAY Spur Gears  Material: S45C m1 Page 154	SUS/SUSA Stainless Steel Spur Gears  Material: SUS303 m1-4 Page 156	SUSF F-Loc Gears  Material: SUS303 m0.5, 1 Page 162	DSF F-Loc Gears  Material: Polyacetal (SUS303) m0.5, 1 Page 164
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Product Photo

Icon Mark

Catalog Number
Product Name



SSG
Ground Spur Gears
J S M

Size

Material

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NEW New Products **Additional** Additional Products

M Includes Made to Order **H** Hardened Plus **S** Semi-Custom

J J Series **F** F Series **R** R Series **E** E Series



Racks

MRGF/MRGFD Hardened Ground Racks	KRGF-H/KRGFD-H Hardened Ground Racks	KRG/KRGF/KRGFD Thermal Refined Ground Racks	SRG/SRGF/SRGFD/SRGFK Hardened Ground Racks	KRF-H/KRFD-H Hardened Racks	SRF-H/SRFD-H Hardened Racks	SRF-HL/SRFD-HL Laser Hardened Racks	SRAF-HU/SRAFD-HL/SRAFK-HL Laser Hardened Square Racks
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CP Racks & Pinions

KTSCP [CP] Tapered Pinions	STRCPF/STRCPFD [CP] Tapered Racks	MSCPG [CP] Ground Spur Gears	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 Rack	SSCPGS [CP] Ground Spur Pinion Shafts
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SSCPG [CP] Ground Spur Gears	SRGCP/SRGCPF/SRGCPFD [CP] Hardened Ground Racks	KRCPF-H/KRCPFD-H [CP] Hardened Racks	KSSCP-H [CP] Hardened Thermal Refined Spur Gears	KSSCP [CP] Thermal Refined Spur Gears	KRCPF/KRCPFD [CP] Thermal Refined Racks	SSCP-H [CP] Hardened Spur Gears	SSCP [CP] Spur Gears
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 J	 J	 J			 J		 J	
Material: SCM415 m2-4 Page 314	Material: SCM415 m2-4 Page 316	Material: S45C m1-4 Page 318	Material: SCM415 m1-10 Page 320	Material: SCM415 m2-5 Page 322	Material: S45C m1-8 Page 324	Material: S45C m1-5 Page 326	Material: SCM415 m2-5 Page 328	
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	NEW  H	 J	NEW  H					
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Bevel Gears

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NEW New Products **Additional** Additional Products **M** Includes Made to Order **H** Hardened Plus
S Semi-Custom **J** J Series **F** F Series **R** R Series **E** E Series















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Worm Gears

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Gearboxes

KBX Bevel Gearboxes	CBX Bevel Gearboxes
	
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NEW New Product

Additional Additional Products

M Includes Made to Order

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	<i>SRAF-HL NEW</i>	Laser Hardened Square Racks	238-239	
	<i>SRAFD-HL NEW</i>	Laser Hardened Square Racks	238-239	J
	<i>SRAFK-HL NEW</i>	Laser Hardened Square Racks	238-239	J
	SRCP	CP Racks	300	
	SRCPF	CP Racks	300	
	SRCPFD	CP Racks	300-301	J
	SRCPFK	CP Racks	300-301	J
	SRCPF-H	CP Hardened Racks	296-297	
	SRCPF-HL	CP Laser Hardened Racks	298-299	
	SRCPFD-H	CP Hardened Racks	296-297	J
	SRCPFD-HL	CP Laser Hardened Racks	298-299	J
	SRF	Steel Racks with Machined Ends	245	
	SRFD	Steel Racks with Bolt Holes	246-247	J
	SRFK	Steel Racks with Bolt Holes	246-247	J
	SRF-H	Hardened Racks	234-235	
	SRFD-H	Hardened Racks	234-235	J
	SRF-HL	Laser Hardened Racks	236	
	SRFD-HL	Laser Hardened Racks	236-237	J
	SRG	Hardened Ground Racks	230	M
	SRGCP	CP Hardened Ground Racks	288-289	
	SRGCPF	CP Hardened Ground Racks	288-289	
	SRGCPFD	CP Hardened Ground Racks	288-289	J
	SRGF	Hardened Ground Racks	230	M
	SRGFD	Hardened Ground Racks	230-231	J
	SRGFK	Hardened Ground Racks	230-231	J
	SRH	Helical Racks	262	
	SRHEF	Helical Racks	264-265	
	<i>SRHEF-HL NEW</i>	Laser Hardened Helical Racks	260-261	
	SRHF	Helical Racks	262-263	
	SRHFD	Helical Racks	262-263	
	SRO	Round Racks	254	
	SROCP	CP Round Racks	304	
	SROS	Round Racks	254	

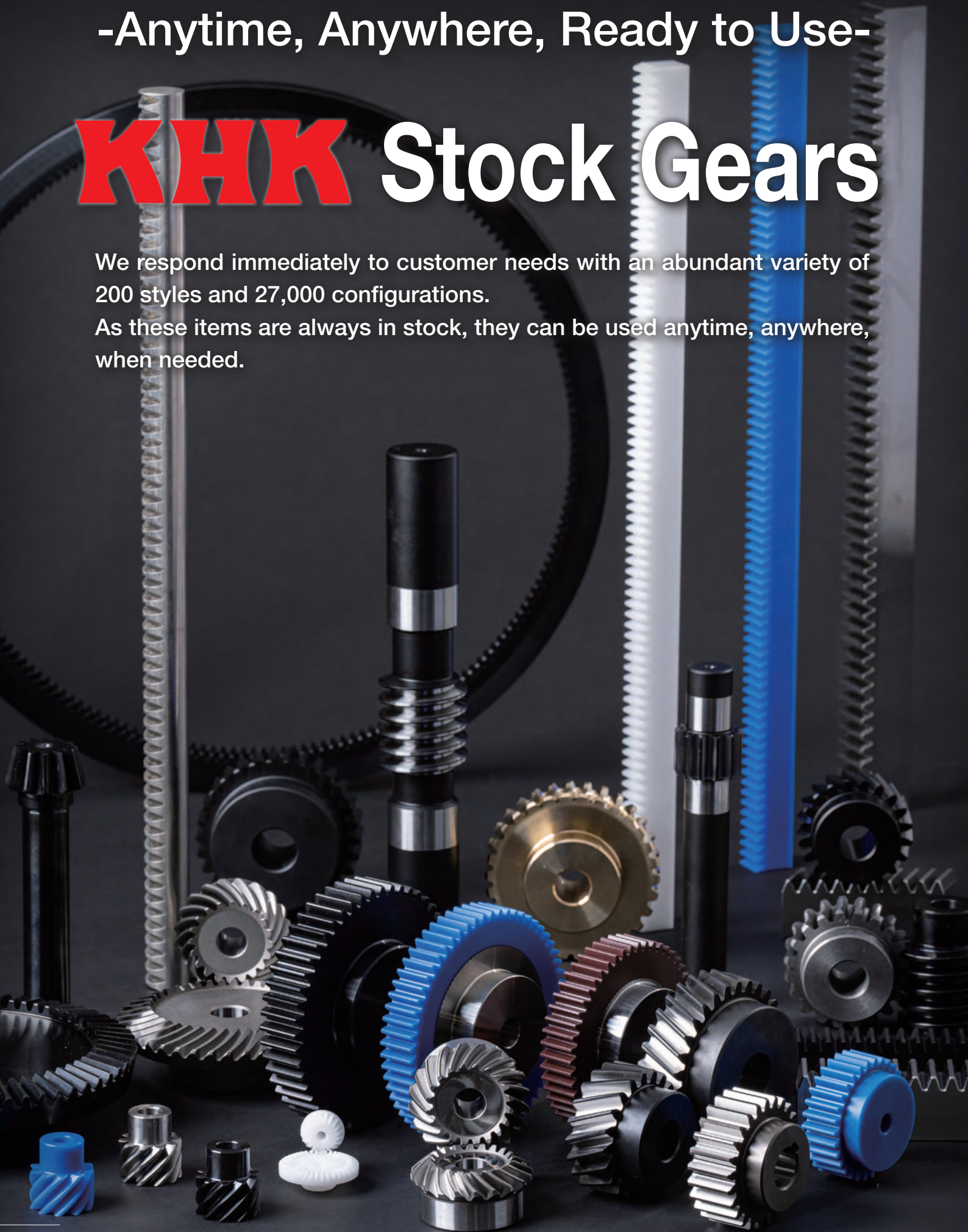
	Series	Gear Type	Page	Features	
S	SRS	DR Rack Clamps	256		
	SRT	Ratchets	474-475	J	
	SRTB	Ratchets	476-477	M	
	SRT-C	Ratchet Pawls	474-477		
	<i>SS Additional</i>	Spur Gears	108-141	J F R S	
	SSA	Spur Gears	142-151	J F H	
	SSAG	Ground Spur Gears	100-103	J	
	<i>SSAY NEW</i>	Spur Gears	154-155	H	
	SSCP	CP Spur Gears	294-295	J H	
	SSCPG	CP Ground Spur Gears	286-287	J	
	SSCPGS	CP Ground Spur Pinion Shafts	286-287		
	SSDR	DR Pinions	256-257		
	SSG	Ground Spur Gears	62-99	J F R S E M	
	SSGS	Ground Spur Pinion Shafts	60-61		
	SSR	Steel Ring Gears (Spur Gears)	190		
	SSS	Spur Pinion Shafts	106-107		
	<i>SSY NEW</i>	Spur Gears	152-153	H	
	STRCPF	CP Tapered Racks	278-279		
	STRCPFD	CP Tapered Racks	278-279		
	SUB	Stainless Steel Bevel Gears	368-369		
	SUKB	Stainless Steel Hubs	182		
	SUM	Stainless Steel Miter Gears	334-335		
	SUMA	Finished Bore Stainless Steel Miter Gears	334-335		
	SUN	Stainless Steel Screw Gears	388-389	J	
	SUR	Stainless Steel Racks	248-249		
	SURCPF	CP Stainless Steel Racks	302-303		
	SURCPFD	CP Stainless Steel Racks	302-303	J	
	SURF	Stainless Steel Racks	248-249		
	SURFD	Stainless Steel Racks	248-249		
	SURO	Stainless Steel Round Racks	255		
	SUS	Stainless Steel Spur Gears	156-161	J	
	SUSA	Stainless Steel Spur Gears	158-161	J	
	SUSF	F-Loc Gears	162-163		
	SUSCP	CP Stainless Steel Spur Gears	302-303	J	
	SUW	Stainless Steel Worms	454-459	J	
	SV	Involute Spline Shafts	480-481		
	SVI	Involute Spline Bushings	480-481		
	<i>SW NEW</i>	Worms	434-453	J S M	
	SWG	Ground Worms	426-433	J M	
	T	T-6x4-5	Tube	492-493	
		T-6x4-10	Tube	492-493	
		<i>TCR Additional</i>	Tube connector	492-493	
		<i>TCS Additional</i>	Tube connector	492-493	
	Z	ZST	Hardened Ground Helical Racks	266	
		ZSTD	Hardened Ground Helical Racks	266-267	J
		ZSTP	Ground Helical Gears	266-267	J
		ZST-GL	Assembly Gauges	268	
		Racks & Pinions Transport Device			30-31

-Anytime, Anywhere, Ready to Use-

KHK Stock Gears

We respond immediately to customer needs with an abundant variety of 200 styles and 27,000 configurations.

As these items are always in stock, they can be used anytime, anywhere, when needed.



Abundant variety of gears



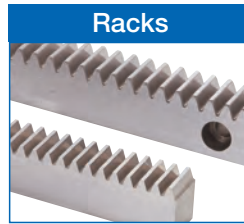
P45 ~



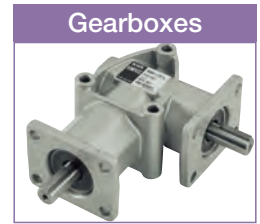
P191 ~



P207 ~



P213 ~



P461 ~



P305 ~



P339 ~



P379 ~



P395 ~

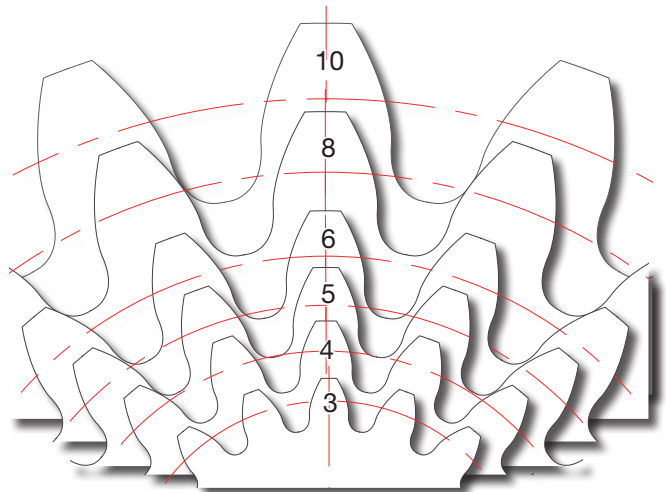
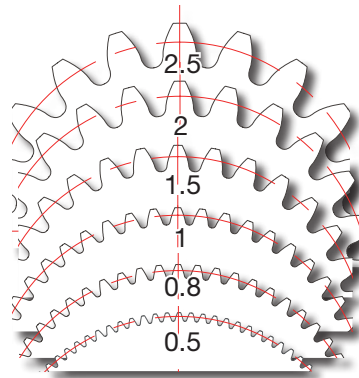


P473 ~

Large variety of sizes and numbers of teeth

Lineup from m0.5 to m10 (spur gears)

m	Minimum No. of teeth	Maximum No. of teeth
0.5	12	120
0.8	12	56
1	10	200
1.5	10	200
2	10	200
2.5	10	200
3	10	160
4	12	120
5	12	120
6	12	100
8	12	60
10	15	50



Full-scale drawing of teeth (spur gear)

Available in many materials

Choose based on your application.

We have a wide variety of standardized stainless steel and plastic products that can be used in places where rust and oil must be avoided, as well as metal products with increased gear strength.



SCM415



S45C



SUS303



MC602ST



MC901



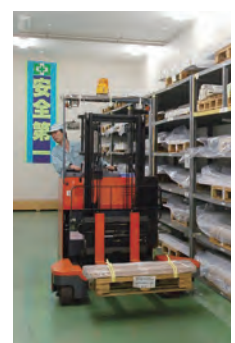
Polyacetal



Free-cutting Brass

Abundant inventory

We stock 3,700 configurations of product at all times in order to deliver them to you quickly.



Key and screw fastening have been standardized.

J Series



If you require finished bore gears with keyways and tapped holes, please order the J Series products. Product bore size, keyway dimensions and tap sizes have all been standardized.



Gears can be installed in flexible positions. Gear teeth can be easily aligned.

F Series



To install using locking hub parts, select from the F and E series to place your order. Locking Hub and bore sizes have been standardized.



Fits perfectly as the speed reducer pinion for servomotor.

R Series



If you require a flange type reducer pinion, please order R Series. These products have standardized mounting hole specifications for flange.



Can be easily installed in 19 seconds using a single bolt

E Series



To install using locking hub parts, select from the F and E series to place your order. These products are standardized high-precision ground spur gears with hydro-fastening.



The J Series have keyways, the F & E Series have locking hubs, and the R Series have holes for Speed reducers. These 74 styles contain 15,600 configurations of gears that can be used immediately due to their standardized bore and keyway sizes.

Fastening Series / Semi-custom Lineup

Series	Type	Catalog Number	m0.5 (CP2.5)	m0.8	m1 (m1.25)	m1.5 (CP5)	m2	m2.5	m3 (CP10)	m4 (m3.5)	m5 (CP15)	m6 (CP20)	m8	m10		
J Series	Spur Gears	KSG														
		SSG														
		SSAG														
		SS														
		SSA														
		SUS														
		SUSA														
		NSU														
		PU														
		PS														
		PSA														
	PSUKB															
	Helical Gears	KHG														
		MRGFD														
	Racks & Pinions	KRGFD-H														
		KRGFD														
		SRGFD(K)														
		KRFD-H														
		SRFD-H														
		SRFD-HL														
		SRAFD(K)-HL														
		KRFD														
		SRAFD(K)														
		SRFD(K)														
		DRFD(K)														
		KRHGFD														
		ZSTP														
		ZSTD														
		CP Racks & Pinions	MRGCPFD													
	KSCPG															
	KRGCPFD-H															
	KRGCPFD															
	SSCPG															
	SRGCPFD															
	KRCFPD-H															
	KSSCP															
	KRCFPD															
	SSCP															
	SRCPFD-H															
	SRCPFD-HL															
	SRCPFD(K)															
	SUSCP															
	SURCPFD															
	Miter Gears	MMSGQ														
		MMSG														
		SMSG														
		SMS														
MM																
SM																
Screw Gears	SN															
	SUN															
	AN															
	PN															
Worm Gears	SWG															
	SW															
	SUW															
	AG															
	BG															
	CG															
	PG															
Other Products	SRT															
	GC															
F Series	Spur Gears	SSG														
		SS														
		SSA														
R Series	Spur Gears	SSG														
	Helical Gears	SSCPG														
E Series	Spur Gears	ZSTP														
Semi-Custom	Spur Gears	SSG														
		SS														
	Helical Gears	KHG														

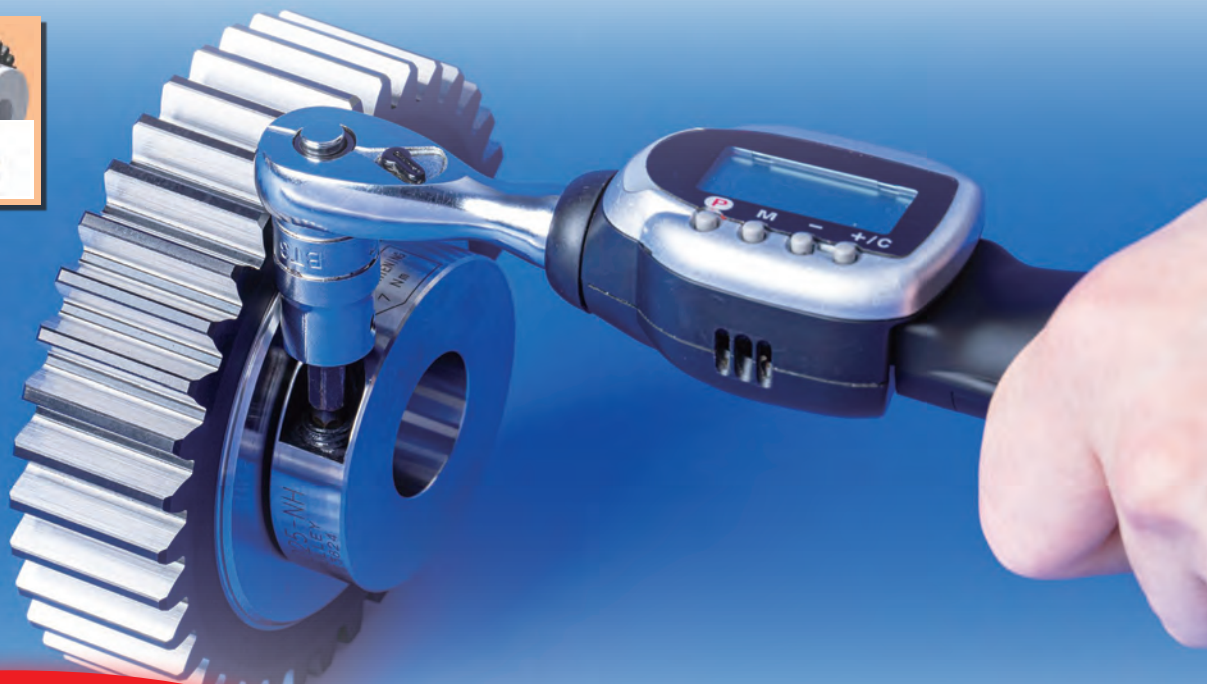
Definitively shortens the installation time

Bushing Fastening.
E Series



Can be easily installed in 19 seconds using a single bolt

Time to mount a gear is reduced to 1/15
.....



**Concentricity:
0.02 mm**

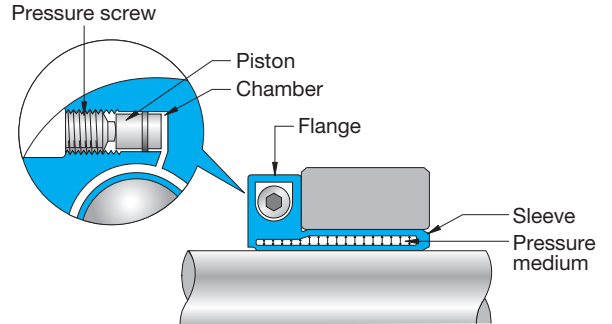
Solves the problems of gear fastening.

- Desire to reduce the time to mount gears.
When using the conventional wedge method, mounting a gear takes about 5 minutes (according to research by KHK), whereas these products can be easily mounted using one bolt in 19 seconds.
- Desire to reduce the assembly runout of the gears.
- Desire to reduce the backlash between the gear and shaft.
- Desire to lower the decrease in shaft strength due to fretting wear (worn or seized shaft).
- Desire to simplify the phase matching and positioning.

● How the ETP-E Plus works

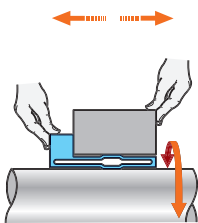
The pressure medium in the chamber is compressed as a result of tightening the screw.

The resulting pressure causes the hub side to expand into the hub and the bore side to expand onto the shaft. Thus allowing the shaft and the hub to be securely fastened.

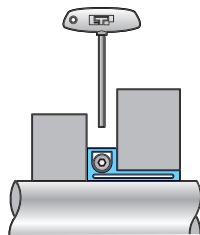


● Effects of ETP-E Plus

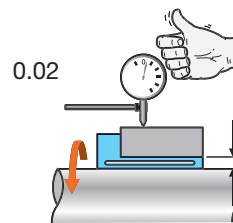
Easy and accurate positioning



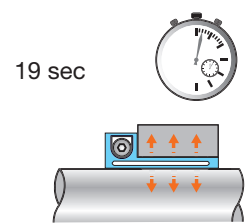
Helps save space



High concentricity



Secure and speedy installation



● KHK Lineup

See Page 86

6 styles, 2,000 configurations

Limited release on the Japanese website

SSG Ground Spur Gears Series

Precision: N7
Material: S45C
Heat Treatment: Gear teeth induction hardened

1000 configurations



m1.5 to 6

KHG Ground Helical Series

Precision: N6
Material: SCM440
Heat Treatment: Thermal refined / gear teeth induction hardened

290 configurations



m1.5 to 3

AGF Worms & Wheels Series

Precision: KHK 2
Material: CAC702 (A & BC2)

150 configurations



m2 to 6

- ZSTP 2 to 6, 110 configurations
- AGDL 1.5 to 4, 130 configurations
- AG 1.5 to 6, 280 configurations

● Allowable Order Sizes

1 to 20 units for module 3 (CP10) or under and 1 to 4 units for module 4 (CP15) or higher. For orders exceeding the supported quantities, please request a price and delivery quote.

● Ordering Method

Catalog Number + E + Bore Size (Example: SSG2-25E + BORE)

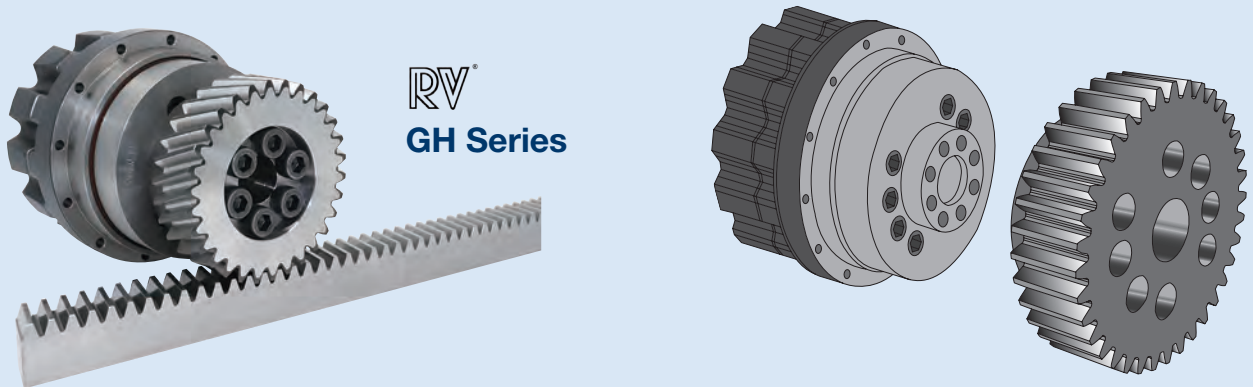
● Production is completed in 2 working days excluding the day ordered.

As available-on-request products, these require a lead-time for shipping of 2 working days (excludes the day ordered), after placing an order. Products with module 4 (CP15) or higher require a lead-time for shipping within 7 working days from the order (excludes the day ordered).



Positive lock is also available at KHK Quick-Mod Gears.

Perfect for Nabtesco Corporation's GH Series **Nabtesco + R**



Flange attaching speed reducer pinions **R Series**

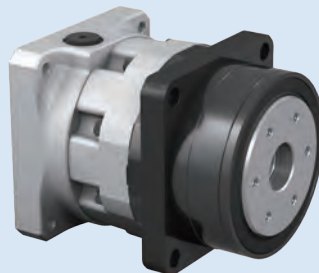
ニデックドライブテクノロジー株式会社

Sumitomo Heavy Industries, Ltd.

株式会社 ハーモニックドライブシステムズ



VRG Series



IB Series



HPG Series

Also perfect for shaft type speed reducers

J Series

nissei
株式会社 ニッセイ

Inline

APG Series



Right Angle

AFC Series



Pinion gear applicability table for Nabtesco GH Series **Nabtesco + R**

Corresponding speed reducer size and pinion gears

See Page 98 for more details

Nabtesco GH Series	KHK target products		
	Module Type	CP Type	Helical Type
7	SSG3-30RGH7	SSCPG10-30RGH7	ZSTP3-30LRGH7
17	SSG3-40RGH17	SSCPG10-40RGH17	ZSTP3-30LRGH17
24	SSG4-30RGH24	SSCPG15-30RGH24	ZSTP4-30LRGH24
40	SSG5-30RGH40	SSCPG15-30RGH40	ZSTP5-24LRGH40
100	SSG6-30RGH100	SSCPG20-30RGH100	

Series for flange output speed reducers **R Series**

Rack and pinion for corresponding flange output speed reducers

See Page 96 for more details

Mounting hub dia. H (Common to all speed reducers)	NIDEC DRIVE TECHNOLOGY VRG Series	Sumitomo Heavy Industries IB Series	Harmonic Drive Systems HPG Series	R Series Catalog Numbers		KHK recommended mating rack KRGFSeries SRGFSeries SRFSeries See Page 213
				SSG Module - No. of teeth		
24	C90	P120	20	SSG Module - No. of teeth	R24	
32	D120	P130	32		R32	
47	E170	—	50		R47	
60	—	—	65		R60	

R series catalog numbers are composed as follows :

(Base SSG ground spur gear catalog number) + R + (mounting hub diameter)

Series for shaft output speed reducers (with key) **J Series**

Pinion gears corresponding to speed reducer sizes

See Page 68 for more details

See Page 58 for more details

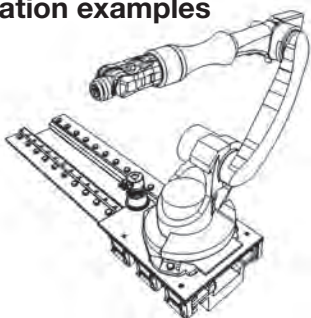
Nissei APG · AFC Series		KHK target products	Nissei APG · AFC Series		KHK target products
Capacity	Frame No.	Catalog Number	Capacity	Frame No.	Catalog Number
100W	12	SSG2-19J12	750W	22	KSG3-25J22
	15	SSG2.5-19J15	1000W	22	KSG3-25J22
	18	SSG2.5-24J18	1500W	22	KSG3-25J22
200W	12	SSG2-19J12	2000W	22	KSG3-25J22
	15	SSG2.5-19J15			
	22	KSG3-25J22			
400W	12	SSG2-19J12			
	15	SSG2.5-19J15			
	22	KSG3-25J22			

When a key is not needed, try the locking hub series!

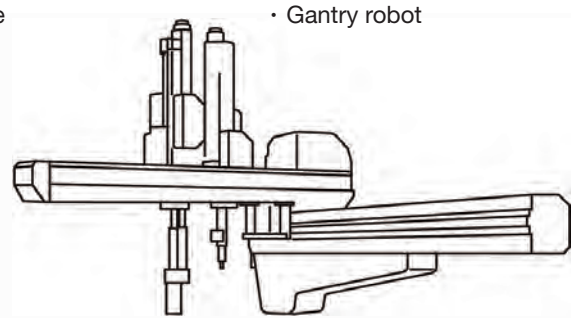


Be sure to calculate the strength under actual usage conditions before use.

Application examples






• Robot transport device



• Gantry robot

Fastening Series Comparison

[Comparison of Features]

Series	<i>J Series</i> 	<i>F Series</i> 	<i>E Series</i> 
Fastening Method	Key	Friction	Friction
Price*	◎	○	△
Work Time	○	△	◎
Concentricity	○	○	◎
Phase Matching	×	◎	◎
Allowable torque	◎	○	△
Installation Freedom	○	◎	△
Type	◎	△	○
Hardening + available	○	×	×

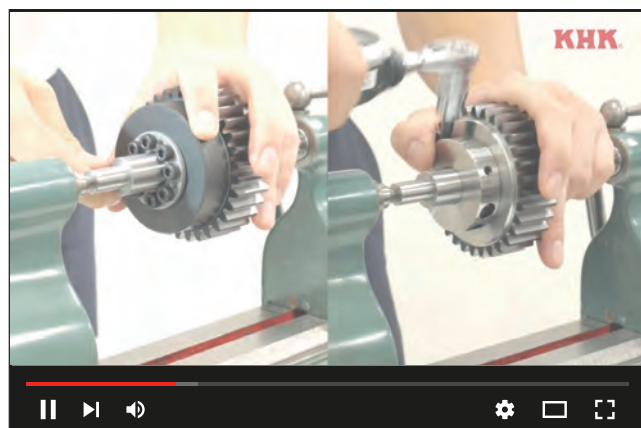
*Note on price issues: Prices change according to processes (work time).
Find details here ↓

F series and E series comparison video



For details,
see here

https://www.khkgears.co.jp/movie/movie_conclusion_e_f.mp4



Mounting image of Fastening Series

Stock Gears



SSG2.5-32



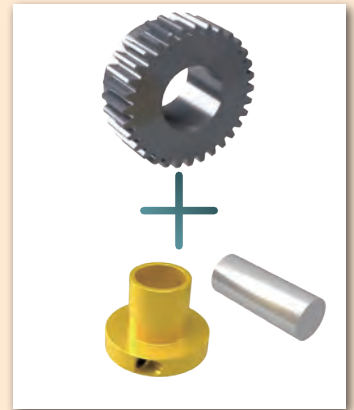
J Series

F Series

E Series

Modification shape/parts

Modified to shapes enabling product mounting



Mounting shape/cross-section

Mount product and modified standard gears on shaft



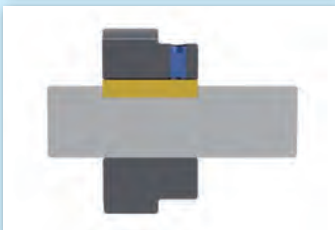
SSG2.5-32J32



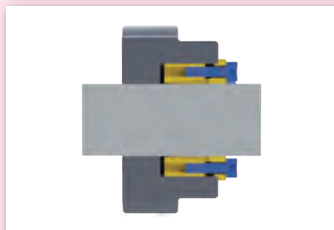
SSG2.5-32F32B



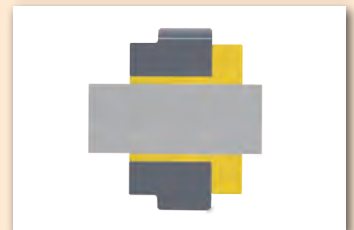
SSG2.5-32E32



Mounting with key fastening



Mounting with wedge friction fastener



Mounting with hydraulic friction fastener

Induction Hardening Service



Hardened Plus

Hardening is provided as an additional service to standard products when ordered. Products with **H** at the end of the Catalog No. support Hardened Plus.

Quick delivery, hardening completed in 4 working days

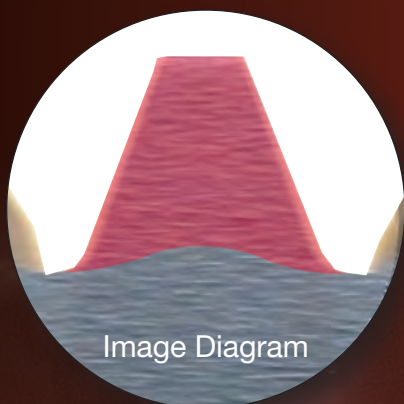


Image Diagram

Induction hardening specification

Area: Tooth surface hardened

Hardness: HRC50 to 60

● Hardness and depth of gear-teeth induction hardening

The hardening method and the state of the hardened teeth area vary depending on the size of gears.

Note that hardening specifications of Hardening Plus above will be near the standard pitch diameter of the gear.

Note: The gear precision decreases after hardening. The original bore dimension tolerance H7 will also be degraded.



What does Hardened Plus mean?

- Induction hardening improves wear resistance.
 - Secondary operations are possible in locations unaffected by heat.
 - Coils supporting the entire lineup of products are available.
- Stable supply is enabled by our extensive track record of treatment.

J Series Supported

Delivered with bores, keyways, and tapping provided.

New Product Lineup

SSY-H
Hardened Spur Gears
NEW **H**




Material: S45C
m0.8, 1 Page 152

SSAY-H
Hardened Spur Gears
NEW **H**



Material: S45C
m1 Page 154

SH-H
Hardened Helical Gears
NEW **H**



Material: S45C
m2, 3 Page 204

SHE-H
Hardened Helical Gears
NEW **H**



Material: S45C
m1.5~6 Page 264

SM-H
Hardened Miter Gears
NEW **H**



Material: S45C
m1~8 Page 330

SAM-H
Hardened Angular Miter Gears
NEW **H**



Material: S45C
m1.5~3 Page 332

SB-H
Hardened Bevel Gears
Gear Ratio 1.5~4 **NEW** **H**



Material: S45C
m1~6 Page 362

SBY-H
Hardened Bevel Gears
Gear Ratio 2~4 **NEW** **H**



Material: S45C
m5~8 Page 362

SB-H
Hardened Bevel Pinion Shafts
Gear Ratio 5 **NEW** **H**



Material: S45C
m1.5~3 Page 366

Target Products

Various Standard Product / J Series

Additional **SS/SSA/SSCP/NEW SSY/NEW SSAY** Spur Gears

KS/KSSCP Thermal Refined Spur Gears

NEW SB/NEW SBY Bevel Gears

NEW SH/NEW SHE Helical Gears

NEW SM/NEW SAM Miter Gears

SN Screw Gears

Ordering Method and Delivery Date

• Standard Product

Please specify: **Catalog No. + H.**

Example: Catalog No.: SS3-30, when hardening is added ⇒ SS3-30H

Production is completed by the manufacturer in **4 working days** excluding the day ordered

• J Series

Please specify: **Catalog No. + H + J + BORE.**

Example: Catalog No.: SS4-15, when hardening is added ⇒ SS4-15HJ25

m1 to 3 Production is completed by the manufacturer in **6 working days** excluding the day ordered

m4 up Production is completed by the manufacturer in **11 working days** excluding the day ordered

Precautions

- ① Because machining starts immediately, we cannot accept cancellations.
- ② The bore diameter distorts due to hardening. (H Series only)
- ③ Black oxide treatment cannot be performed after hardening.
- ④ The surface durability values shown in the table are calculated values according to the assumed usage conditions. Please calculate the actual surface durability on the KHK website.

KHK Quick-Mod Gears

Trusted secondary operations guaranteed by KHK

KHK Quick-Mod Gears is a KHK original custom system which modifies standard gears according to customers' requirements and delivers them as finished products.



↑ Delivered with this marking



Three benefits of using the KHK Quick-Mod Gears

Wide range of secondary operations

We accept various machining including bore and mounting hole machining, Helisert machining, stepped hole machining and hub removal.



Helisert Processing



Stepped Hole Machining



Holes, Hubs, Keyway Machining



Various Mounting Hole Machining

Fast delivery available

We use high-precision machines to quickly machine in-stock "stock gears" on the JIT production line and deliver them with a short turnaround.



Warehouse of KHK Stock Gears



JIT Production Line



Inspection and Packaging



Shipping

Surface Treatments Offered

We accept requests for various types of plating. We offer platings that are suitable for rust prevention and various other surface treatments.

■ Electro-galvanizing



A typical plating method for the purpose of preventing rust on iron, with plating thickness of about 2 to 25 μm .

■ Black chromate



Black or slightly reddish plating. Black trivalent chromate is RoHS compliant.

■ Phosphate treatment



An iron phosphate chemical conversion treatment that forms a thin iron amorphous film.

■ Unichromate



A bluish silver-white plating. Trivalent chromate is RoHS compliant.

■ Electroless nickel plating



Plating with thickness of 3 to 10 μm with uniform film thickness.

■ Low-temperature black chrome plating



A black chromium film (1 to 2 μm) unlikely to peel away.

■ Black oxide



Chemical change due to a strongly alkaline treatment liquid forms a ferrosiferrous oxide film (3 μm or less).

Note: Dimensions change by the amount of the plating thickness. Machining dimensions are controlled pre-plating.

When Placing Orders

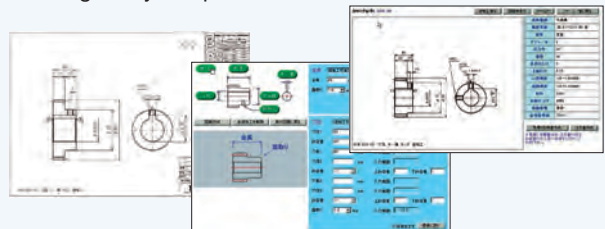
For quotation of secondary operations on standard products (KHK Quick-Mod Gears), please prepare a drawing with desired specifications. We will manufacture to the drawing after discussing prices and lead times.

<Cautions regarding Manufacturing>

- Please note that we do not perform black oxide processing after additional machining.
- Gear precision may be reduced, depending on the additional machining specifications. Please contact us when requesting a quote for information about post-machining gear precision.

Please include a drawing with your request.

Use the Drawing Creation Tool from the Website to create drawings for your quotation.



URL <https://khkgears.net/new/>

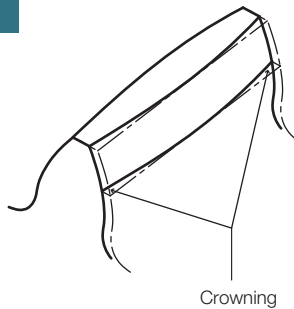
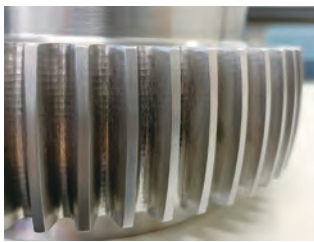
Available Machining Range

* CP/DP sizes are also supported. Inquire as needed.

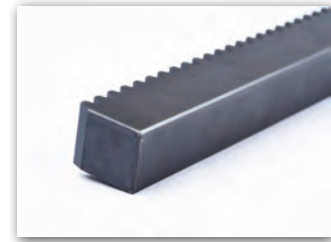
Spur/Helical Gears	Racks	Internal Gears	Screw Gears	Miter/Bevel Gears	Worm Gears
					
Module 0.5~10 Outer diameter ϕ 600 mm or less Weight 200 kg or less	Module 0.5~16 Total length 2,000mm or less Weight 60kg or less	Module 0.5~4 Tooth diameter ϕ 150mm or more Outer diameter ϕ 600 mm or less Weight 40kg or less	Module 1~4 Outer diameter ϕ 600 mm or less Weight 200 kg or less	Module 1~10 Outer diameter ϕ 300 mm or less Mounting distance 200 mm or less Weight 50kg or less	Module 0.5~10 Mounting distance 350mm or less Worm outer diameter: ϕ 100 mm or less Total length 600 mm or less Weight 25kg or less Wheel outer diameter: ϕ 600 mm or less Weight 200kg or less

Machining Example

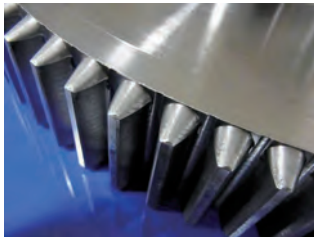
>> Crowning



>> Chamfering (2)



>> Chamfering (1)



>> Wire Cutting



Gear Specifications	
Shape	Spur Gears
Pitch	m2
Effective No. of teeth	21
Material	S45C
Outside dia.	ϕ 104
Remarks	Teeth Wire Cut

When Placing Orders

Please prepare your own drawings.

Quotations for made-to-print gears are limited to the "Available Machining Range" above. When ordering, please prepare a drawing with the details of the "Items described in the product specifications" clearly stated. We will manufacture to the drawing after quoting cost and lead time.

<Cautions regarding Manufacturing>

- Even if an order is within the manufacturing range, it may not be manufacturable depending on the specifications such as accuracy, shape and heat treatment.
- Gears for which we have the technological capacity may be unavailable due to the circumstances of our production processes and capabilities.
- We may provide a quotation with the customer's accuracy requirements changed according to our manufacturing capacity. Please check your quotation before placing an order.
- Designs with no product specifications listed on the drawing or details of quality requirements are manufactured in accordance with KHK stock gears.
- We do not conduct any design work for custom ordered gears. We manufacture only to customer drawings.

■ Items described in the product specifications ● Requirement ○ As required △ Contact us - Not required

Listed Details	Gear Type								
	Spur Gears	Helical Gears / Screw Gears	Internal Gears	Helical Inner Gears	Racks	Helical Racks	Bevel Gears	Spiral Bevel Gears	Worm Gears
Gear Accuracy	●	●	●	●	●	●	●	●	●
Pitch (m, CP, DP)	●	●	●	●	●	●	●	●	●
Pressure angle	●	●	●	●	●	●	●	●	●
Material	●	●	●	●	●	●	●	●	●
Shape dimensions / dimensional tolerance	●	●	●	●	●	●	●	●	●
Number of teeth / number of rows	●	●	●	●	●	●	●	●	●
Spiral angle / spiral direction	-	●	-	●	-	●	-	●	●
Teeth depth / backlash	○	○	○	○	○	○	○	○	○
Heat treatment / surface treatment	○	○	○	○	○	○	○	○	○
Surface roughness	△	△	△	△	△	△	△	△	△
Geometric tolerance	△	△	△	△	△	△	△	△	△
Number of teeth/rows of the partner, mounting distance	-	-	-	-	-	-	●	●	●

Note: Tooth thickness or backlash that is not specified will be produced in accordance with KHK stock gears.
If prior discussion is not possible, they will be detailed in the quotation.

J Series supported

Semi-Custom Stock Gears



**Standardized Coarse Pitch gears
now in the Catalog
Streamlining design and selection
to shorten lead times**

S Semi-custom stock gears

● No effort spent on design

Simply select the gears you need from the catalog, eliminating design costs.

● Fast delivery available

Products are delivered with short lead times via our consistent production system.

● Reliable quality

The mark of trust "KHK" guarantees the quality of products listed in the catalog.

◆ Target Products ◆

SSG Ground Spur Gears

m4/5/6/8/10 / No. of Teeth 20 to 120

SS Spur Gears

m4/5/6/8/10 / No. of Teeth 26 to 120

KHG Ground Spur Gears **NEW**

m4/5/6 / No. of Teeth 18 to 60

KWGDLS Duplex Worms **NEW**

m5/6

AGDL Duplex Worm Wheels **NEW**

m5/6 / No. of Teeth 20 to 60

SW Worms **NEW**

m4/5/6/8/10

CG Worm Wheels **NEW**

m4/5/6/8/10 / No. of Teeth 20 to 60

◆ Ordering Method ◆

Please specify the model number below

• Semi-Custom Stock Gears

Semi-Custom Stock Gears Catalog No.

Example of SS Spur Gears ⇒ SS5-80S

Example of KHG Ground Helical Gears ⇒ KHG5-30RS

• Semi-Custom Stock Gear J Series

Semi-Custom Stock Gears Catalog No. + J + Bore

Example of SS Spur Gears ⇒ SS5-80SJ40 ... Bore Φ 40

Example of KHG Ground Helical Gears ⇒ KHG5-30RSJ40 ... Bore Φ 40

*For dimensions, refer to the catalog listed page

Semi-custom stock gears are made to order based on catalog products.

The price and delivery date will be estimated separately. For details, please see Page 42~44.

● Non-standard secondary operations are available at "KHK Quick-Mod Gears"

If there are no standards for the semi-custom J Series, the order will be machined separately according to the specifications.

Racks & Pinions Aluminum Frame Transport Device

SUS × KHK[®]

With design support. Easy installation. Labor-saving.

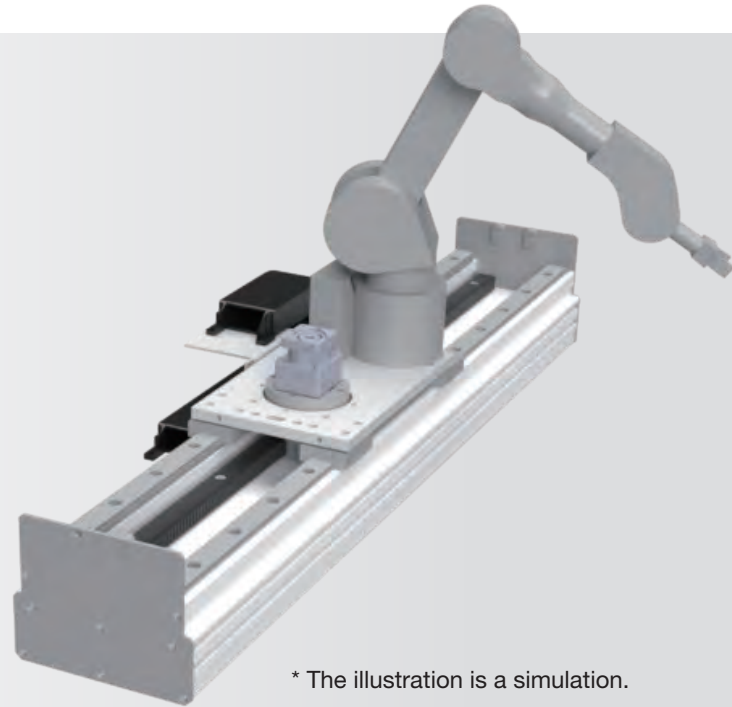
High-speed transfer up to the maximum stroke of 3800 mm.

Transport Device Example

RU-800-H

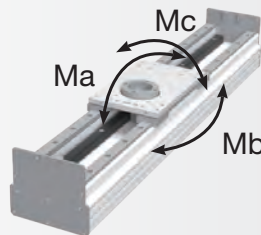
Maximum Payload (Horizontal)	60 kg (reduction ratio: 1/5*)
Stroke	800mm
Repeated Positioning Accuracy	±0.3mm
Max. Speed	1,000 mm/sec
Total Length	1218mm

* Mitsubishi HG-KR43 (400W), acceleration of 0.3G, during operation



* The illustration is a simulation.

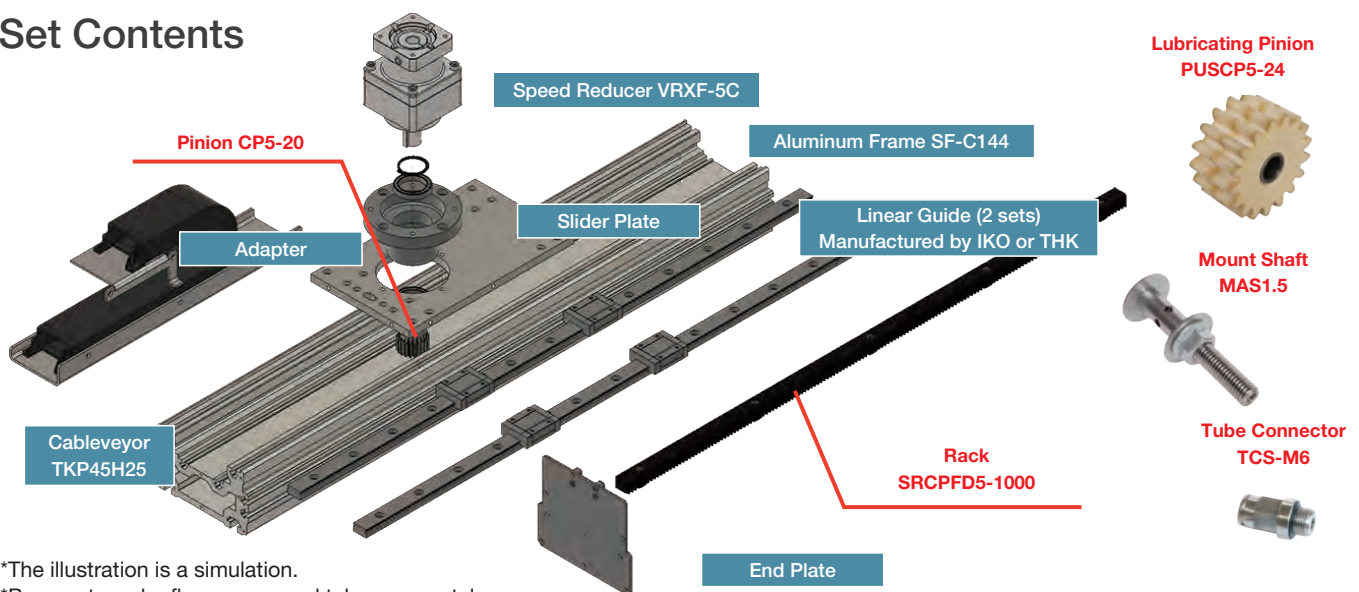
Static Allowable Moment Ma	2107Nm
Static Allowable Moment Mb	2107Nm
Static Allowable Moment Mc	2340Nm
Total Length	1218mm
Frame Length	1200mm



Reduction ratio	Max. Speed (mm/sec)	Max. Payload (kg)
1/3	1666	15
1/5	1000	60

* Robots, motors, controllers, etc. are not included.

Set Contents

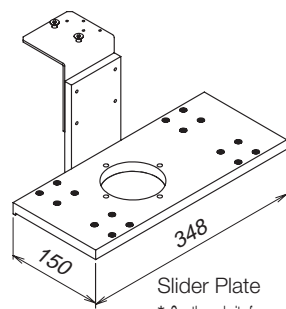
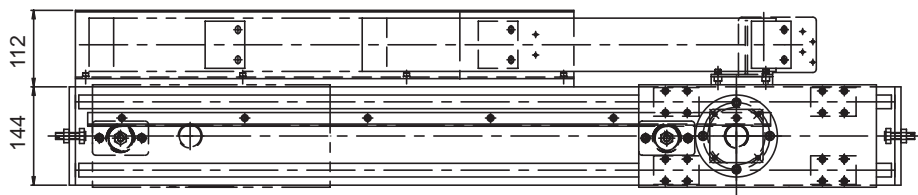


*The illustration is a simulation.

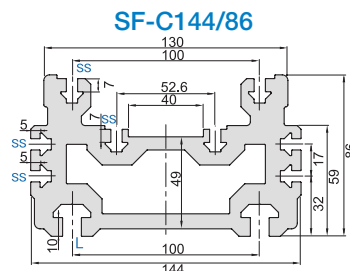
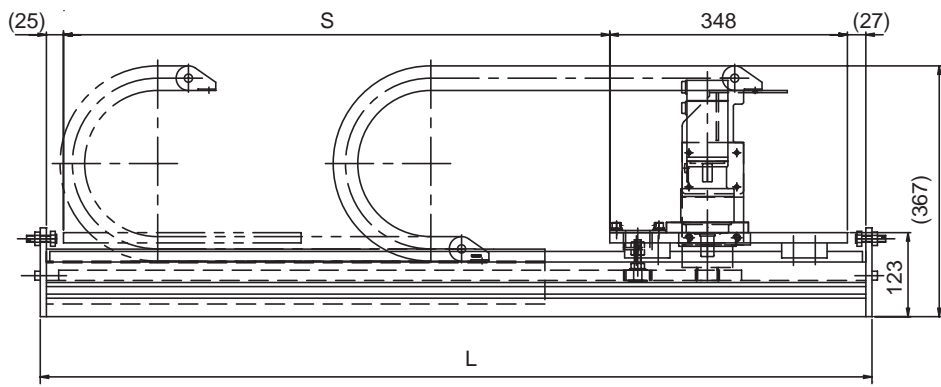
*Be sure to order flex pumps and tubes separately.

Product Features

- ① The maximum stroke can be freely set within 3800 mm.
- ② Capable of transporting a wide range of light to heavy objects
- ③ Delivery time for the transport device in the example is 30 business days (discussion required when changing specifications)



Slider Plate
* See the website for more details



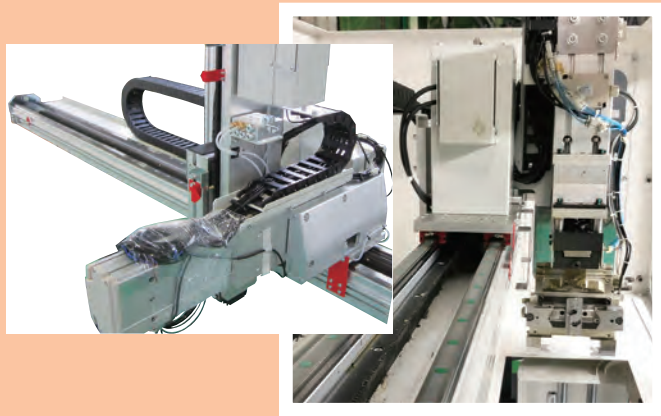
Standard specifications

Model	Stroke: S (mm)	Total length: L (mm)
RU-800-□	800	1218
RU-1300-□	1300	1718
RU-1800-□	1800	2218
RU-3800-□	3800	4218

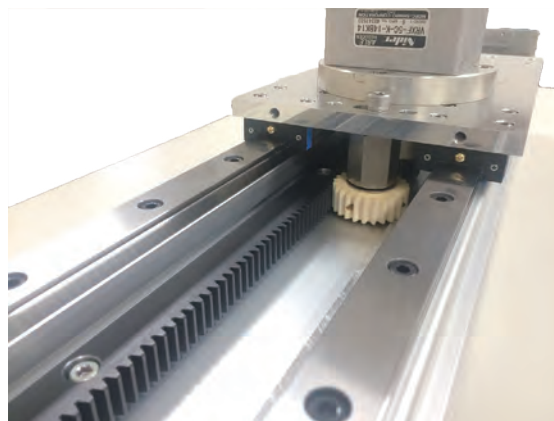
* Can be manufactured within the stroke range of 500 mm to 3,800 mm. The length is adjusted in 100 mm increments.

* □ contains "S" for reduction ratio of 1/3, and "H" for reduction ratio of 1/5.

Application Examples



Standard equipment includes lubricating pinion

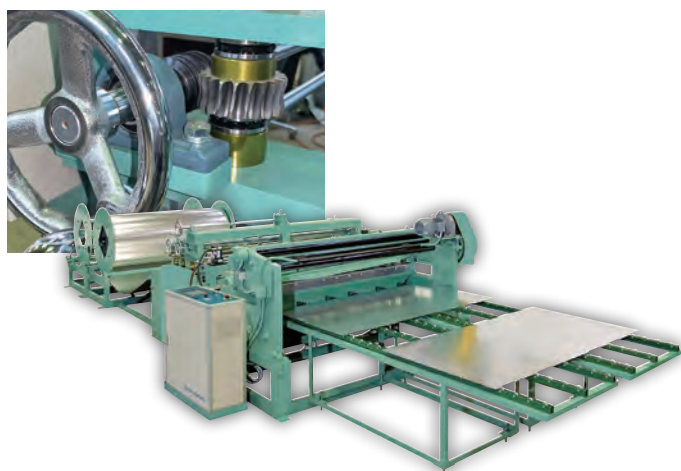


* Image courtesy of Hasegawa Machine Works, Ltd.

Case Study 1

FUKAGAWA 株式会社フカガワ様

Automatic Size Cutting Device **NAHC-F10**



Gears Used

Uses SW worms and CG worm wheels for rib roll feeding

Machine Application

This device provides materials while correcting the bending of coiled material.

Features

Can automatically perform standard-length straight pipes cutting, stain removal and ribbing simply by entering the duct size

3-Roll for Square Elbow **FBR-2000M**



Gears Used

Uses SMA miter gears for bending moving steel plates

Machine Application

A square elbow forming machine that rolls and bends three iron plates

Features

It has a repeat function that sets the forming roll in the same position

SAILOR セーラー万年筆株式会社様

Injection Molded Product Automatic Extractor **sigma5**

Gears Used

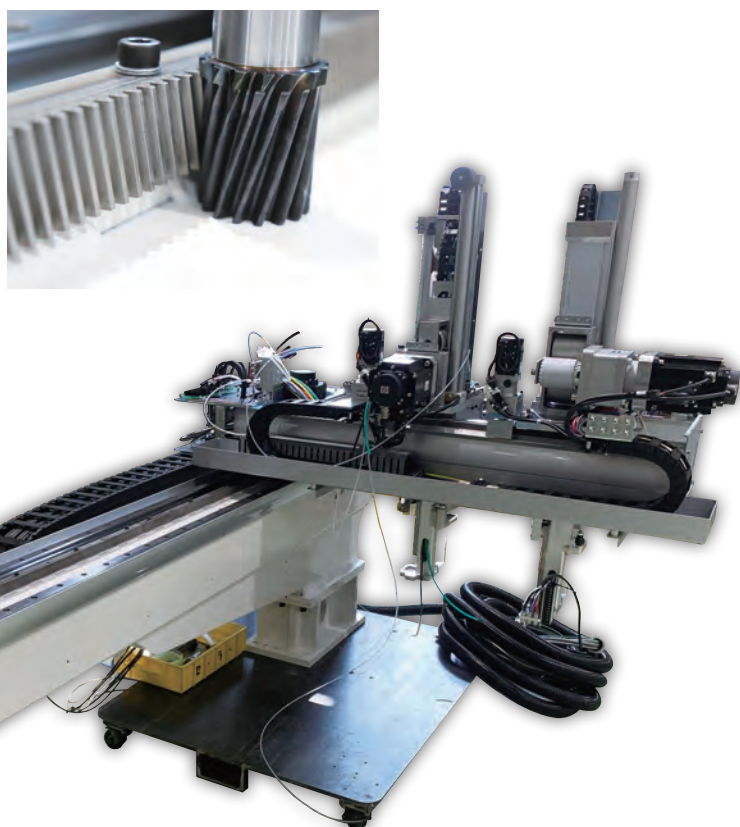
Used for the traveling shaft when extracting the ordered (custom-made) racks and pinions

Machine Application

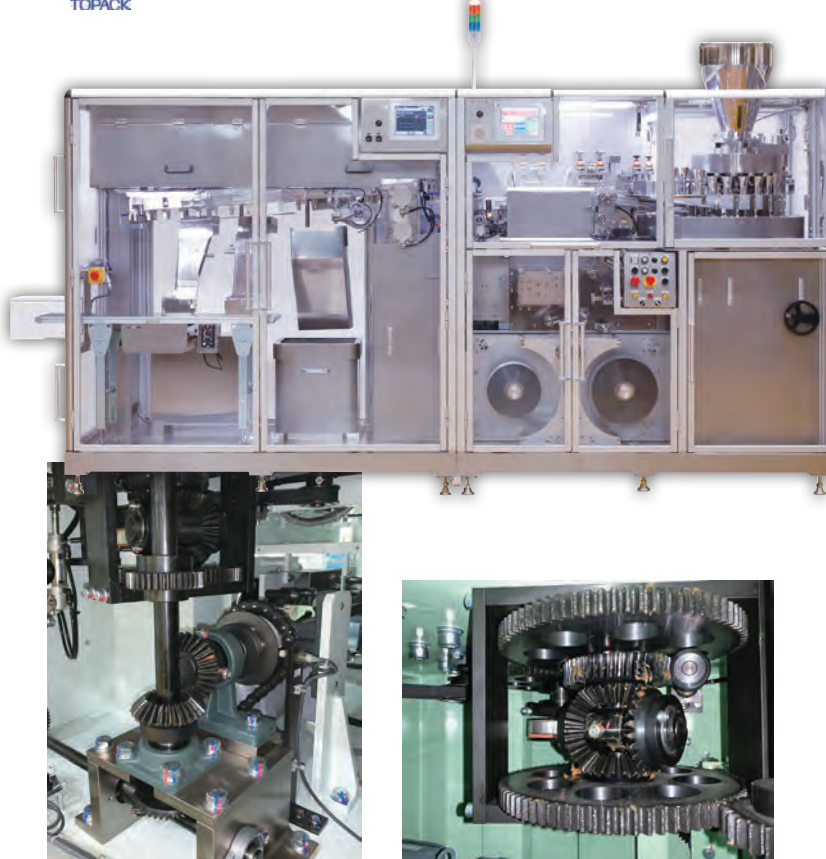
A device used in plastic injection molding that extracts molded products from the molding machine and delivers them to a post-process such as a conveyor or machining machine installed next to the molding machine

Features

A rack and pinion mechanism is adopted that extracts and delivers at high speed and high accuracy, enabling modifications such as changing the direction of extraction.



Ultra-high-speed Three-way Seal Bag Filling and Packaging Machine R



Gears Used

MM, SM and SMB miters change the motion from the horizontal-shaft drive to the vertical-shaft drive, which is then transmitted to the filling device, and combined with SW worms and CG worm wheels to be used for adjusting the timing of filling while operating the filling device

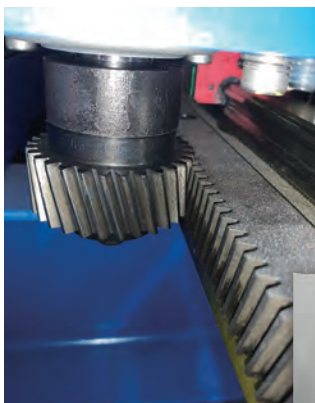
Machine Application

Makes and fills bags at ultra-high speeds of 300 to 1300 bags per minute
 · A top-level automatic filling and packaging machine

Features

Ultra-high-speed filling and packaging is achieved by the use of rotary methods that make, fill and seal bags in the horizontal direction. In addition, the filling time can be extended to reduce the occurrence of biting into the seal, and the sealing time can be extended to achieving stable seal strength. Also, by combining with an integration device, the unit can be connected to carton making machines, horizontal pillow machines, banding machines, bag-feeding packaging machines, etc.

Pipe Coaster **HID-400MA,650MA, 1000MA,1500MA**



Gears Used

Uses custom made-to-order racks and pinions made in the KHK Quick-Mod Gears (standard product given secondary operations) for the running shaft when cutting

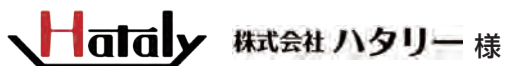
Machine Application

Dimensional cutting, shape cutting (branch cutting / hole cutting), groove cutting and marking of pipes and steel pipe members used in industries such as shipbuilding, pressure vessels, water supply and sewage, steel structures, construction machinery and heavy electric machinery

Features

· Supports small-diameter pipes down to 25A to large-diameter pipes up to 1500A. · Supports various cut shapes and has a groove which enables speedy and highly accurate cutting.
 · Can be used to cut not only steel pipes but also square steel pipes and other materials. · Facilitates data creation with the adoption of an interactive data input system.

Case Study 2



Short Column Groove Machining Machine SCB-1000 II



Gears Used

Uses SS Series within machining drive

Machine Application

Short column material, groove machining on both ends

Features

- Machining speed is the fastest in the industry
- Significantly simplifies the setup
- Supports corners of 250 to 1000 mm and a maximum plate thickness of 50 mm

H-section Steel Groove Machining Machine HQB-1055NL



Gears Used

Uses SWG worms and AG worm wheels in machining drive gearboxes

Machine Application

Secondary operations of H-section steel grooves, scallops and driving

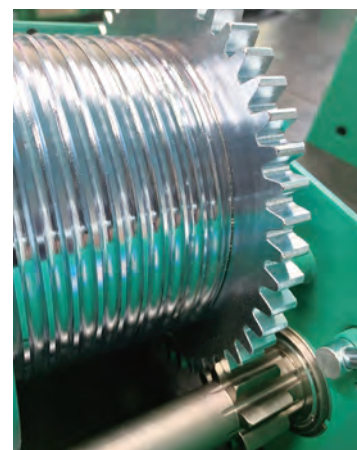
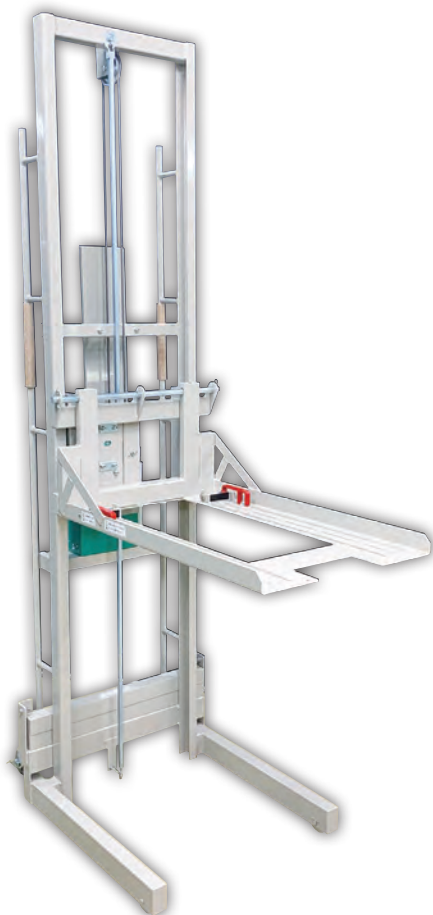
Features

- Supports non-scallop machining
- Automated 3 shafts
- High-rigidity frame
- Reliable long-run model



不二産業株式会社様

Lifter for switchboard



Gears Used

Use custom-made spur gears to raise and lower the lifter

Machine Application

Pulls out and stores devices such as circuit breakers and lightning arresters from the switchboard.

Features

Allows raising and lowering heavy luggage with human power.



株式会社 トーキョー (広島県呉市)

Robot Slider RS1S



Gears Used

SRCPF racks and custom-order CP spur gears are used for the traveling shaft

Machine Application

As a traveling device for various robots

Features

- Can be extended by 1.2m by combining 3 types of frames
- Allows additional extension to be made to existing devices
- Achieved the maximum track record of 40.8 m



増幸産業株式会社様

Super Mass-Colloider MKZA10-15JIV



Gears Used

Use custom-made spline shafts and spline hubs for the attrition shaft, and SB bevel gears for the manual grinding shaft

Machine Application

Food, spices, industrial raw materials, pharmaceuticals, cosmetics, etc.

Features

Ultra-fine grain grinder. A stone mill type grinder that's capable of ultra-fine granulation that feels like melting.

All KHK stock gears conform to the RoHS2^{*1} Directive.

^{*1} The RoHS2 Directive (2011/65/EU) was revised on July 22, 2019 to a total of 10 substances with 4 phthalates added.

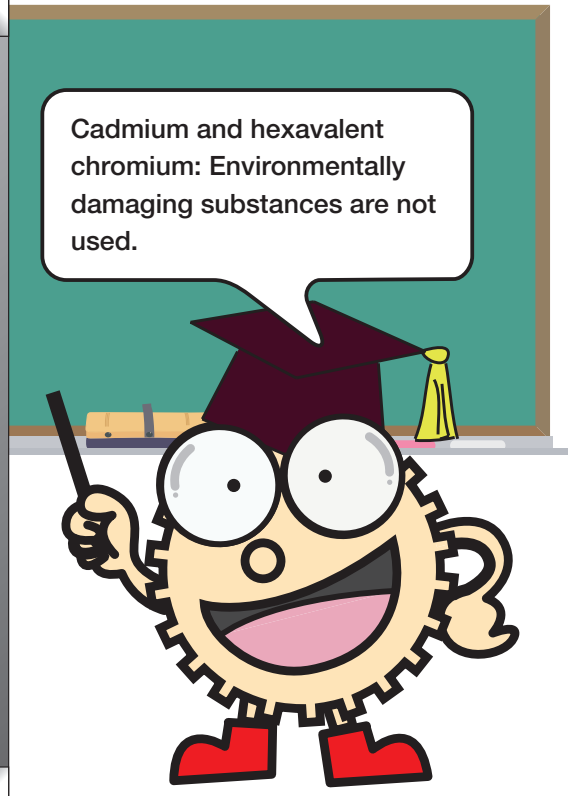
RoHS2 Directive

Restriction of Hazardous Substances

Restriction of Hazardous Substances
The RoHS Directive is a law established by the European Union (EU) that restricts the use of certain hazardous substances in electronic and electrical equipment. The use of the 10 environment-related substances specified below is restricted.

Maximum allowable concentration of 10 environment-related substances

- Cadmium:** 0.01wt% (100ppm)
- Lead:** 0.1 wt% (1000ppm)
*Exception depending on usage
Steel 0.35 wt%, Aluminum 0.4 wt%, Copper alloy 4 wt%
- Mercury:** 0.1 wt% (1000ppm)
- Hexavalent chromium:** 0.1 wt% (1000ppm)
- PBB (Polybrominated biphenyl):** 0.1 wt% (1000ppm)
- PBDE (Polybrominated diphenyl ether):** 0.1 wt% (1000ppm)
- DEHP (Di-2-EthylHexyl Phthalate):** 0.1 wt% (1000 ppm)
- BBP (Butyl Benzyl Phthalate):** 0.1 wt% (1000 ppm)
- DBP (DiButyl Phthalate):** 0.1 wt% (1000 ppm)
- DIBP (DiIsoButyl Phthalate):** 0.1 wt% (1000 ppm)








SDGs

SDGs Initiatives

KHK is working to contribute to the realization of the SDGs.

KHK Environmental Practices

Treatment after use of KHK stock gears and packaging materials

<p>■ Steel Products</p>  <p>Recycle metal products as scrap metal according to the material.</p>	<p>■ Nylon Gears</p>  <p>Nylon gears are plastic waste. Please dispose of as reusable industrial waste.</p>	<p>■ Cardboards</p>  <p>Treat the cardboard used in the packaging as recycled cardboard.</p>	<p>■ Paperboards</p>  <p>Treat the cardboard used in the packaging as recycled paper.</p>	<p>■ Plastics</p>  <p>Packing materials like foamed polyethylene sheets and plastic boxes are plastic waste. Please dispose of as reusable industrial waste.</p>
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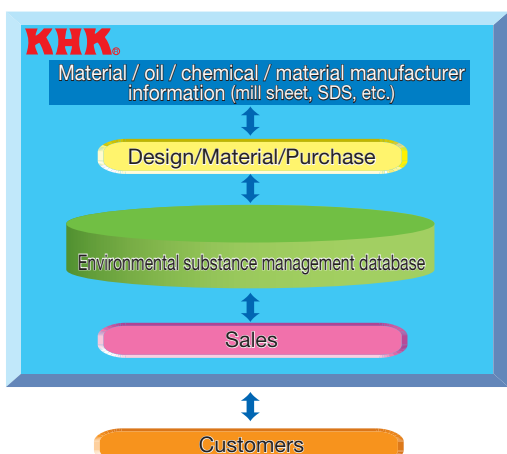
SDS Activities

The materials and products used for KHK stock gears, the rust preventive oil and packaging materials, and the auxiliary materials used in the manufacturing process are managed in the safety data sheet for chemical substances, etc., in consideration of the global environment.

Green Purchasing Activities

90 percent of office supplies we purchase are made of environmentally friendly materials.

The material components of KHK stock gears are managed in a database.



- * The mill sheet is an attached document that guarantees the steel material.
- * SDS refers to safety data sheets.

We have created a database of materials used in KHK stock gears, black dye, rust preventive oil used in products, mill sheets and SDS for packaging materials in effort to create environmentally friendly products.

Improving environmental (quality, safety, cost) aspects through design, manufacturing and sales activities of KHK stock gears

■ Press ahead with employing “dry-cut” gear cutting methods.



Results

Preventing air pollution due to oil smoke, not using cutting oil (resource-saving), shortening machining time by high-speed gear cutting (saves energy, shortens manufacturing lead time)

■ Adiabatic films covering windows and adiabatic paint applied on the roof of our building



Results

It blocks heat from the outside during summer and insulates heat inside during winter, reducing the amount of electricity used by the air conditioner.

■ The choice of hybrid cars and idling stop cars



Results

We are working to reduce the environmental burden by using hybrid and idling-stop vehicles.

■ Solar panels placed on the roof of our building (10kW-Rated)



Results

60 solar panels on the roof reduced 1.89 tons of CO2 emission per year. CO2 emissions are known to be contributors to global warming.

ISO14001 environmental management system certification acquired

KHK has established an integrated management system not only to provide quality assurance to our customers but also to conduct environmentally conscious corporate activities and continuous improvement activities that involve all our employees in order to increase stakeholder satisfaction, as well as to establish and promote a system that provides highly economic results.



JQA-QMA14416
JQA-EM6717

At KHK, we strive to fulfill our motto “to provide quality products that are trusted by customers,” acquiring the international standard quality management system ISO9001 certification and the environmental management system ISO14001 certification. Also, in order to increase customer satisfaction, we have established an integrated management system of “Vision, Plan, Do, Check and Action” cycles to continuously improve the work structure and offer safer and better products speedily and cheaply. We also work hard to further improve our service so that our customers can use KHK products with peace of mind.

Racks & Pinions Selection Software

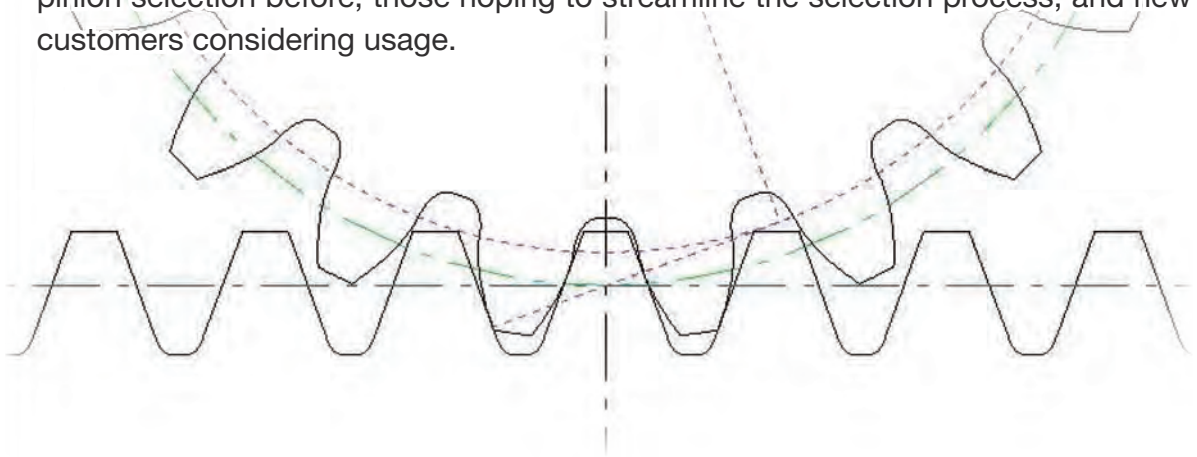
GRSW

Limited release on the Japanese website.

Supporting you through the complex rack & pinion selection process!

Just enter the usage conditions for simple, speedy selection.

This selection software is designed for customers who have struggled with rack & pinion selection before, those hoping to streamline the selection process, and new customers considering usage.



Select the desired rack & pinion from standard products

Enter conditions

入力条件 ※全て入力必須項目

ラックの種類 すべてのラック

図の大きさの単位 モジュール

優先事項 なし

衝撃荷重 なし

搬送距離 5m

搬送時間 10秒

搬送角度 水平 垂直 角度指定

移動物全体の重量 100kg

運動ガイドの摩擦係数 0.05

1日の往復回数 50回

年間稼働日数 240日

稼働年数 10年

安全率 1.5

選定条件 ※は入力必須項目

加速時間 1.0sec

減速時間 1.0sec

搬送速度 0.56m/s

ラックにかかる負荷 10.71kgf

出力 0.06kW

Automatic selection

自動選定結果

このソフトウェアはお客様の入力条件に基づいて、標準品の中から最適なラックとピニオンを自動選定しました。選定結果は、お客様の入力条件と一致する限り、必ずしも最適なものとは限りません。お客様の入力条件と一致しない場合は、お問い合わせください。

ラック	ピニオン	モジュール	圧入径	圧入長さ	圧入位置
ラック	ピニオン	2	φ10	10	10
ラック	ピニオン	2	φ10	10	10
ラック	ピニオン	2	φ10	10	10

ラック	ピニオン	モジュール	圧入径	圧入長さ	圧入位置
ラック	ピニオン	2	φ10	10	10
ラック	ピニオン	2	φ10	10	10
ラック	ピニオン	2	φ10	10	10

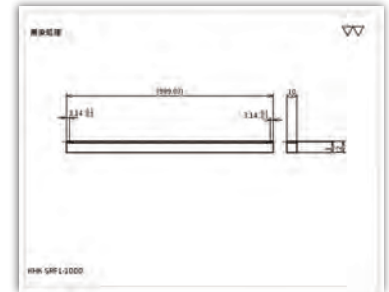
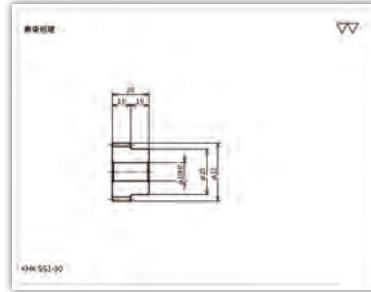
The software selects model numbers for you from the wide range of stock gears!

Drawings and strength calculations for the selected rack & pinion can be viewed immediately!

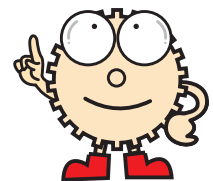
Calculation results

Stock gear drawings

The screenshot displays a complex interface with multiple tables containing technical data and a diagram of a gear tooth profile. The tables include parameters such as material properties, dimensions, and calculation results. A red button labeled 'PDFダウンロード' is visible at the bottom.

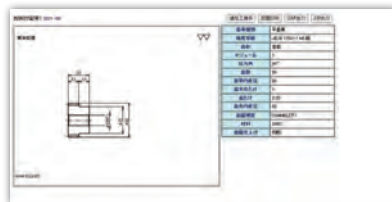
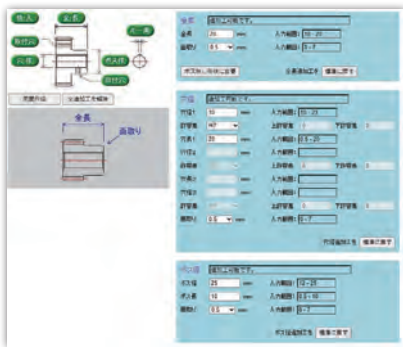


CAD data for standard products can be downloaded from the website

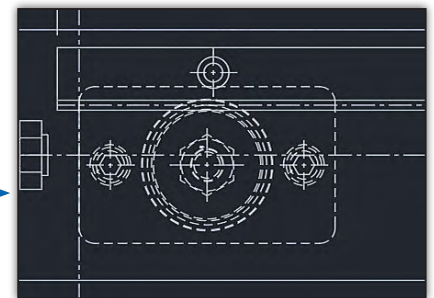


You can also create secondary operation drawings for the selected rack & pinion, incorporating them into the assembly drawings or requesting an estimate as is

Secondary operation drawings



Requesting an estimate



Output to DXF is possible

Usage

Please register as a user.

KHK software can be used for free, but registration is required. Log in with your GCSW/GDSW ID and password if you have one already.

* We carefully manage customer data based on our personal information protection policy

<Cautions regarding Manufacturing>

- Software contents and terms of use are subject to change without notice.
- No compensation will be provided for any loss which might be caused by bugs in the software.
- The gear strength formula is based on JGMA (Japanese Gear Manufacturers Association) specifications.
- Drawings drawn may not be manufacturable due to our production capacity.

Gear calculation software GCSW

Reduce the cost of designing gears with GCSW.



Calculation functions of GCSW	
Gear Type	Parallel axes: Spur/helical gears, internal gears, racks & pinions Intersecting axes: Mitters, bevel gears Skewed axes: Screw gears, worms & wheels
Calculation details	Various dimensional calculations (profile shift, tooth thickness, center distance) Strength calculation (bending strength, surface strength) Calculation of gear force (radial direction, thrust direction, radial direction) Gear tooth profile calculation (tooth profile drawing, creation drawing, meshing drawing) Backlash conversion, constraint meshing gear array calculation
Output Details	Printing various calculation results Printing tooth profile drawing, creation drawing and meshing drawing CAD data output of tooth profile drawing

Difficult calculations for gears such as gear shape, strength and tooth profile can be instantly made.

In addition, it can simulate the dimensions and strength of desired gears, allowing the designing cost to be drastically reduced.

Gear drawing software GDSW

Basic gear drawings can be easily made using GDSW.



GDSW drawing functions	
Gear Type	Parallel axes: Spur/helical gears, internal gears, racks & pinions Intersecting axes: Mitters, bevel gears Skewed axes: Screw gears, worms & wheels
Drawing contents	Gear specifications (pitch, pressure angle, number of teeth, gear accuracy, material, heat treatment, etc.) Basic shape of various gears Shapes with/without hubs (2-step hub supported) Hole shape (3-step hole supported) Key groove shape (JIS key, optional key supported) Mounting hole shape (tap, drilled hole, counterbored hole)
Output Details	Printing gear drawings CAD data output of drawn gears (ZIP supported)

It can be used to make drawings with basic gear shapes without needing CAD software.

Drawings of spur gears, bevel gears, worm gears and the like can be printed and CAD data can be created.

Usage

KHK gear calculator

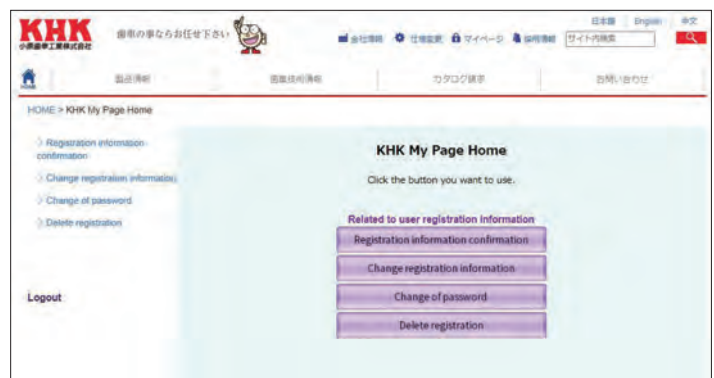
Please register as a user.

KHK software can be used for free, but registration is required.

When user registration is completed, "KHK My Page" is created and GCSW and GDSW become available.

For details, please see our web site.

* We carefully manage customer data based on our personal information protection policy



<Cautions regarding Manufacturing>

- Software contents and terms of use are subject to change without notice.
- No compensation will be provided for any loss which might be caused by bugs in the software.
- The gear strength formula of GCSW is based on JGMA (Japanese Gear Manufacturers Association) specifications.
- Drawings drawn by GDSW may not be manufacturable due to our production capacity.

Product Delivery

Shipping Date	4 days later	6 days later	9 days later	17 days later	30 days later	40 days later
J Series	Order Date → 2 Business Days → Product complete → Shipping Date	Number of products: 20 units				
J Series Modules Over 4 (CP15) (except for racks) *Note 1	Order Date → 7 Business Days → Product complete → Shipping Date	Number of products: 4 units				
J Series (MMSGQ)	Order Date → 7 Business Days → Product complete → Shipping Date	Number of products: 20 units				
J Series MMSGQ (Module Over 4)	Order Date → 7 Business Days → Product complete → Shipping Date	Number of products: 4 units				
F Series	Order Date → 2 Business Days → Product complete → Shipping Date	Number of products: 20 units				
E Series	Order Date → 2 Business Days → Product complete → Shipping Date	Number of products: 20 units				
E Series Module Over 4	Order Date → 7 Business Days → Product complete → Shipping Date	Number of products: 4 units				
F Series	Order Date → 2 Business Days → Product complete → Shipping Date	Number of products: 20 units				
F Series Modules Over 4 (CP15)	Order Date → 2 Business Days → Product complete → Shipping Date	Number of products: 4 units				
焼入+ プラス	Order Date → 4 Business Days → Product complete → Shipping Date	Number of products: -				
焼入+ プラス	Order Date → 6 Business Days → Product complete → Shipping Date	Number of products: 20 units				
J Series	Order Date → 11 Business Days → Product complete → Shipping Date	Number of products: 4 units				
焼入+ プラス	Order Date → 11 Business Days → Product complete → Shipping Date	Number of products: 4 units				
J Series Modules Over 4 (CP15) (except for racks)	Order Date → 11 Business Days → Product complete → Shipping Date	Number of products: 4 units				
Semi-Custom Standard Product SS/SW/CG	Order Date → About 15 Business Days → Product complete → Shipping Date	Number of products: 4 units				
Semi-Custom Standard Product SSG/KHG	Order Date → About 30 Business Days → Product complete → Shipping Date	Number of products: 4 units				
Semi-Custom Standard Product KWGDLS AGDL	Order Date → About 40 Business Days → Product complete → Shipping Date	Number of products: 4 units				
Semi-Custom J Series SS	Order Date → About 25 Business Days → Product complete → Shipping Date	Number of products: 4 units				
Semi-Custom J Series SSG/KHG	Order Date → About 40 Business Days → Product complete → Shipping Date	Number of products: 4 units				

*The delivery date excludes the day ordered, and shipping takes place on the next business day. Because machining starts immediately, we cannot accept cancellations for the products above.

*Note 1 Allowable order sizes for module 4 (CP15) or higher are up to 4 units; for racks of module 4 or higher, up to 20 units.

Series Common

- (1) For allowable order sizes, see the table on the lefthand page. Cancellation is not possible for made-to-order products. Please allow additional shipping time to get to your local distributor.

J Series

[J Series lead time]

- (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.
- (2) Products with module 4 (CP15) or higher require a lead-time for shipping within 7 working days (excludes the day ordered).
- (3) Racks, regardless of module, require a lead-time for shipping within 2 working days (excludes the day ordered).
- (4) MMSGQ J Series, regardless of module, require a lead-time for shipping within 7 working days (excludes the day ordered).

F Series

[F Series lead time]

- (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.

E Series

[E Series lead time]

- (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.
- (2) Products with module 4 or higher require a lead-time for shipping within 7 working days (excludes the day ordered).

R Series

[R Series lead time]

- (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.

Hardened Plus (H Series)/Hardened Plus J Series (HJ Series)

[Hardened Plus (H Series) lead time]

- (1) As available-on-request products, these require a lead-time for shipping of 4 working days (excludes the day ordered), after placing an order.

[Hardened Plus J Series (HJ Series) lead time]

- (1) As available-on-request products, these require a lead-time for shipping of 6 working days (excludes the day ordered), after placing an order.
- (2) Products with module 4 (CP15) or higher require a lead-time for shipping within 11 working days (excludes the day ordered).

Semi-custom order / Semi-custom order J series

[Semi-custom lead time]

- (1) In the SS/SW/CG Series, products with S at the end of the Catalog No. are semi-custom stock products. The delivery will take about 15 business days after the order is received.
- (2) In the SSG/KHG Series, products with S at the end of the Catalog No. are semi-custom stock products. The delivery will take about 30 business days after the order is received.
- (3) In the KWGDLS/AGDL Series, products with S at the end of the Catalog No. are semi-custom stock products. The delivery will take about 40 business days after the order is received.

[Semi-custom J Series lead time]

- (1) SS type semi-custom J series products take about 25 working days after the order is received.
- (2) SSG/KHG type semi-custom J series products take about 40 working days after the order is received.

Prices/Changes/Cancellations/Out of Stock

Prices

- ① Made-to-order products, semi-custom orders, and semi-custom order J Series products are estimated separately. Contact your dealer.
- ② Since the prices are per unit (excluding SRS), the total unit price of miters and the like is the set price.
- ③ Product prices may be changed without prior notice.

Changes and Cancellations

[Standard Machined Products ^{*Note 1}, Made to Order Products, Semi-custom Products, Semi-custom J Series Products]
Because production begins upon ordering, cancellations and changes cannot be made.

[KHK Quick-Mod Products, Custom Gears]

Because production begins upon ordering, cancellations and changes are difficult.

Changes may be possible in some cases, depending on modification status, but a further estimate will be required. Contact your dealer for details.

As the product is manufactured to customer-specified dimensions, it cannot be used elsewhere; therefore, returns are not possible.

Out of Stock

[Standard Gears (gears in stock), Standard Machined Products ^{*Note 1}, KHK Quick-Mod Gears]

Production takes place according to stock status, so there may not be sufficient quantities available as ordered.

Some time may be required for production after orders.

Lead times may be longer depending on material acquisition status and modification processes.

^{*Note 1} Standard machined products: J Series, F Series, R Series, E Series, Hardened Plus, Hardened Plus J Series



KHK Group

Kohara Gear Industry Co.,Ltd.
 Design, manufacture and sales of KHK stock gears
 Order and manufacture of various order-made gears

KHK Noda Co.,Ltd.
 Manufacture/sales of gears and stock gears

KHK CO., LTD.
 Purchase/sales of gears and variable speed reducers
 Trade in transmission items

Sales Overseas

KHK's global network is built throughout the world. See the website for details on each country and region.



Factory Introduction



JIT Line



Lathe



Tooth Cutting



Grinding Operations



Machining



Wire Cutting



Quality Assurance / Inspection



Warehouse of KHK Stock Gears

Production Equipment



Combined Machining Machine
(INTEGREX J-200)



Vertical Machining Center
(SVC2000)



Inner Surface Combined Grinding
Machine (IGH-2NT)



CNC Hobbing Machine
(KN-152)



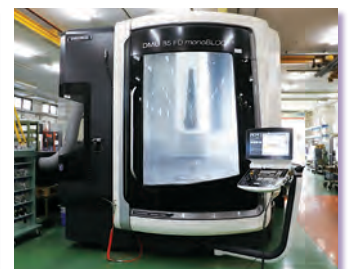
Hobbing Board
(KL-451)



Gear Grinding Machine
(VIPER500W)



Wire Electric Discharge Machine
(C-600iA)



Combined Machining Machine
(DMU 85 FD monoBLOCK)



KHK Noda Co., Ltd. 143 Nakazato, Noda-shi, Chiba, 270-0237

Quality Assurance



Carl Zeiss 3D Coordinate Measuring Machine (ACCUA)

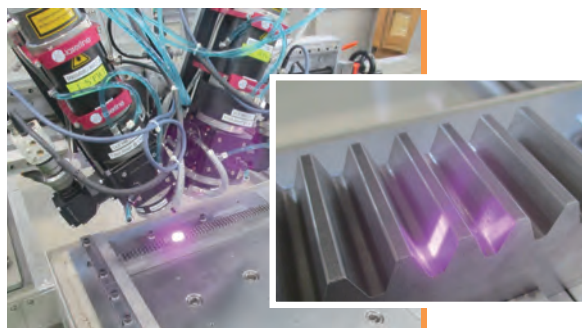


Gear Measuring System (350GMS)

Hardening Equipment



Induction Hardener (MK16A STAT300-50)



Laser Hardener (LDF4000-40)

Production Equipment



Rack Grinding Machine (ZSM Compact 2200)



CNC Lathe (MW120EXG)



Vertical Machining Center (PCV-31)



CNC Gear Grinding Machine (300TWG)



CNC Bevel Gear Grinding Machine (PH-280HG)



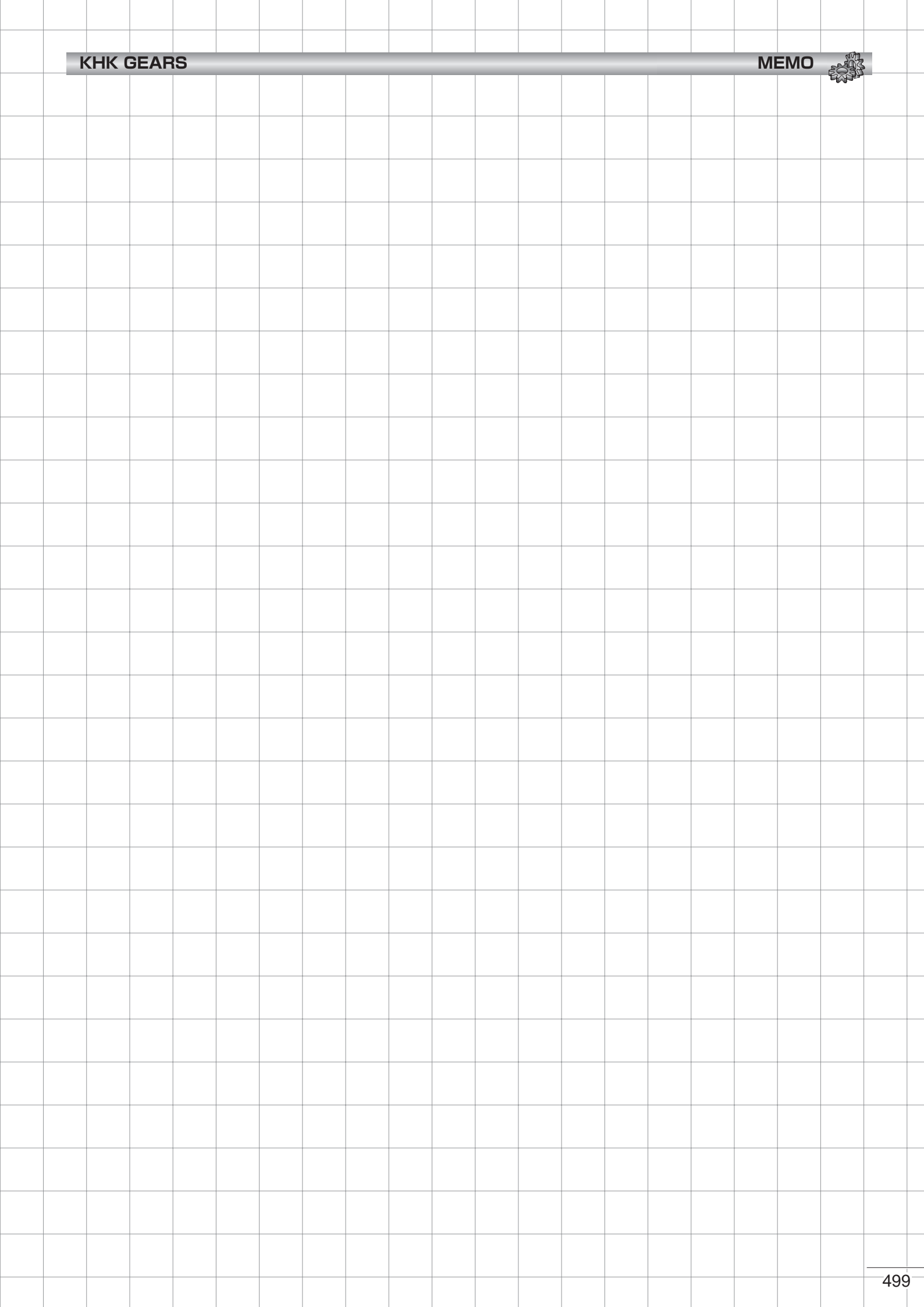
Vertical Machining Center (VCN-530C)



CNC Screw Grinding Machine (TE-LM200)



Packaging Machine (EPK-S)



Discontinued Stock Product Model Number History Table

Category	Discontinued Products		Specifications		Alternative	Sales Period
	Item	Range	Characteristics	Material	Item	
Spur Gears	MSGA/MSGB	Some products of module 1,1.5, 2, 2.5, 3, 4	Carburized	SCM415	Custom order	1978~2024
	KSG	Some products of module 1, 1.5, 2, 2.5, 3	Thermal refined, gear teeth induction hardened	SCM440	Custom order	2018~2024
	SSGS	Some products of module 1.5, 2, 2.5, 3	Thermal refined, gear teeth induction hardened	S45C	Custom order	1984~2024
	SSG	Some products of module 0.5, 0.8, 1, 1.5, 2.5, 3	Finished	S45C	Custom/Made to Order	2008~2024
	SSAG	Some products of module 1, 2.5, 3, 4	Finished	S45C	Custom order	2016~2024
	KS	All	Thermal refined	SCM440	Made to Order	2018~2024
	SSS	Some products of module 0.5, 0.8, 1, 1.5, 2, 2.5, 3	Shaft Type	S45C	Custom order	2008~2024
	SS	Some products of module 0.5~6	Finished	S45C	Made to Order / Secondary Operations	1974~2024
	SSA	Module 1.5, 2.5	Finished	S45C	Custom order	1974~2024
	SSY	Some products of module 0.8, 1, 1.25	With Hub	S45C	Custom order	1984~2024
	SSAY	Module 1.25	Hubless	S45C	Custom order	1988~2008
	SSAY/K	All	K clamp (patented)	S45C	No production	2002~2017
	SSH	All	Honing treatment on Tooth Surface	S45C	SSG	1973~1975
	LS	m0.5-25,40 m0.8-25,40,60,70,80	Sintered item	SMF5040	SS	2000~2014
	CS	All	Molded	FC200	SS	1973~1984
	SUSL	All	F-loc	SUS303	SUSF	1996~2016
	DSL	All	F-loc	Acetal (SUS303)	DSF	2000~2016
	SUS/SUSA	Some products of module 1, 1.5, 2.5, 3	Finished	SUS303	Custom order	1978~2024
	SUSF	Module 0.5, 1	F-loc	SUS303	Custom order	2016~2024
	DSF	Module 0.5, 1	F-loc	Polyacetal (SUS303)	Custom order	2016~2024
	NSU	Some products of module 1,1.5, 2, 2.5, 3	With core hub	MC602ST (S45C)	Custom order	1988~2024
	PSU	All	With core hub	MC901 (FC200)	PU	1988~1996
	PU	Some products of module 1.5	With core hub	MC901 (SUS303)	Custom order	1996~2024
	PS/PSA	Some products of module 1, 1.5, 2.5, 3	Finished	MC901	Custom order	1975~2024
	DS	Some products of module 0.5, 0.8, 1	Molded item	Duracon (R) (M90-44)	Custom order	1988~2024
	BSS	Some products of module 0.5, 0.8, 1	Finished	C3604	Made to Order / Secondary Operations	2008~2020
	MSCPG	All	Carburized	SCM415	Made to Order	2014~2020
	KSCPG	Some products of CP 5, 10	Thermal refined, gear teeth induction hardened	SCM440	Custom order	2018~2024
	SSCPGS	Some products of CP 5	Thermal refined, gear teeth induction hardened	S45C	Custom order	1992~2024
	SSCPG	Some products of CP 15.20	Gear teeth induction hardened	S45C	Custom order	1984~2024
	KSCP	All	Thermal refined, gear teeth induction hardened	SCM440	KSSCP Hardened Plus	2014~2019
	KTSCP	Some products of CP 5, 10	CP, Thermal Refined	SCM440	Custom order	2000~2024
	KSSCP	Some products of CP 5, 10	CP, Thermal Refined	SCM440	Custom order	2018~2024
SSCP	Some products of CP 2.5	CP	S45C	Custom order	1978~2024	
SUSCP	Some products of CP 10	CP	SUS303	Custom order	1989~2024	
Helical Gears	KHCPG	All	CP, Ground	SCM440	Custom order	1992~1992
	KHG	Some products of module 1,1.5, 2, 2.5, 3	Transverse modules, ground gears	SCM440	Custom order	1989~2024
	SH	Some products of module 2	Normal module	S45C	Custom order	1974~2024
Internal Ring Gears	CI	All	Molded	FCD55	SI	1973~1978
	SI	Some products of module 1.5, 2, 2.5, 3	Finished	S45C	Custom order	1978~2024
Racks	KRG	All 500mm	Thermal Refined, Ground	SCM440	KRGF	1984~2020
	KRGD	All	Thermal Refined, Ground	SCM440	KRGFD-HJ	1984~2019
	SR	Lengths over 1000 mm	Common Type	S45C	SRF	1973~2008
	SRG/SRGF	Module 0.5, 0.8	Gear teeth induction hardened	S45C	Made to Order	1996~2022
	SUR	Lengths over 1000 mm	Stainless Steel	SUS304	SURF	1978~2020
	DRF	Some products of module 1.5, 2, 2.5, 3	Polyacetal	Polyacetal	PRF	2014~2024
	PR	Lengths over 1000 mm	Plastic	MC901	PRF	1984~2020
	BSR	Module 1.25	Contains Brass	C3604	Custom order	1984~2008
	SRO	SRO6-1000	Round Racks	S45C	Custom order	1975~2019
	CR	All	Molded	FC200	SRF	1973~1978
	SRH	Some products of module 2.3	Common Type	S45C	Custom order	1974~2024
	KRGCP	All 500mm	Thermal Refined, Ground	SCM440	KRGCPF	1986~2020
	SRGCPF	Some products of CP 15.20	Gear teeth induction hardened	S45C	Made to Order / Secondary Operations	1996~2024
	KRGCPD	All	CP, Thermal Refined, Ground	SCM440	KRGCPFD-HJ	1984~2019

Category	Discontinued Products		Specifications		Alternative	Sales Period
	Item	Range	Characteristics	Material	Item	
Racks	SRCP	Lengths over 1000 mm	CP	S45C	SRCPF	1978~2008
	SRCPF	Some products of CP 15.20	CP	S45C	Made to Order / Secondary Operations	1978~2024
Helical Racks	KRHG	Some products of module 2, 2.5, 3	Thermal Refined, Ground	SCM440	Custom order	1992~2022
	KRHGCPF	All	CP, Ground	SCM440	Custom order	1992~1992
Spiral Miter Gears	SMS	Some products of module 1, 1.25, 1.5	Common Type	S45C	Custom order	1975~2024
	SMSG	Some products of module 1, 1.5, 2, 2.5, 3, 3.5, 4, 5	Gear teeth induction hardened	S45C	Custom order	1996~2024
	KSP	F Type (Finished Products with Key Groove) All Products, Parts of m1.5 to 6	Finished	SCM415	Made to Order / Secondary Operations	2004~2022
	MMS	Some products of module 2, 2.5, 3	Finished	SCM415	Custom order	1984~2024
Straight Miter Gears	CM	All	Molded	FC20	SM	1973~1978
	FM	All	Precision Molded	S45C	SM	1973~1978
	SMA/B/C	Some products of module 3.5, 6, 8	Finished	S45C	Custom order	1973~2022
	SM	Some products of module 4.5	Common Type	S45C	Custom order	1973~2024
	SUM	Some products of module 1, 1.5	Finished	SUS303	Custom order	1978~2024
	PM	Some products of module 1, 1.25, 1.5, 2, 2.5, 3	Plastic	MC901	Custom order	1975~2024
Ground Zerol Miter Gears	SMZG	All	Thermal refined, gear teeth induction hardened	S45C	Custom order	2010~2020
High-Ratio Hypoid Gears	MHP	Reduction ratios 90, 120, 180, 200, 20 (m1), 30 (m1.5)	High reduction ratio with a pair of gears	SCM415	No production	2000~2016
Spiral Bevel Gears	MBSA	Some products of module 1.5 or less, 2, 2.5, 3, 4, 5, 6	Finished	SCM415	Custom order	1978~2020
	MBSB	Some products of module 1.5 or less, 2, 2.5, 3, 4, 5, 6	Finished	SCM415	Custom order	1978~2020
	KSP	F Type (Finished Products with Key Groove) All Products, Parts of m1.5 to 6	Finished	SCM415	Custom order	2004~2022
	SBS	Some products of module 2.5	Common Type	S45C	Custom order	1973~2024
Straight Bevel Gears	FB	All	Precision Molded	S45C	SB	1973~1978
	SB	CB gear mating pinions with module over m5/some of m1.25	Common Type	S45C	SBY	1973~2024
	CB	All items having SB	Molded	FC200	SB, SBY	1973~2000
	CB	SB mating gears with module over m5	Molded	FC200	SB, SBY	1973~2006
	PB	Some products of module 2.5, 3	Plastic	MC901	Custom order	1978~2024
Ground Zerol Bevel Gears	SBZG	All	High reduction ratio with a pair of gears	S45C	Custom order	2010~2020
Screw Gears	SN	Some products of module 1, 4	Common Type	S45C	Custom order	1973~2024
	SUN	Some products of module 1, 2.5, 3	Stainless Steel	SUS303	Custom order	1989~2024
	AN	Module 2.5, 3, 4	Contains Aluminum Bronze	CAC702 (AIBC2)	Made to Order	1979~2022
	PN	Some products of module 2.5, 3	Plastic	MC901	Custom order	1984~2024
Worms	KWGD	Module Over 5	Duplex, Ground	SCM440	Custom order	1988~2002
	KWGDLS	Module Over 5	Duplex, Ground Shaft	SCM440	Custom order	1992~2002
	KWG	Right-hand helix with double threads with module over m5 (R2)	Ground Shaft	SCM440	Custom order	1978~2002
	SWG	Some products of module 3, 4, 6	Gear teeth induction hardened	S45C	Custom/Made to Order	1973~2024
	SW	Some products of module 4 or more	Common Type	S45C	Custom/Made to Order	1975~2024
	SUW	Module 2.5	Stainless Steel	SUS303	Custom order	1996~2024
Worm Wheels	AG	Some products of module 0.5, 3, 4, 6	Contains Aluminum Bronze	CAC702 (AIBC2)	Custom/Made to Order	1973~2024
	AGDL	Some products of module 1.5, 2, 2.5, 3, 3.5, 4	Duplex	CAC702 (AIBC2)	Custom order	1988~2024
	AGF	Some products of module 2, 2.5, 3	Contains Aluminum Bronze	CAC702 (AIBC2)	Custom order	1978~2024
	BG	Some products of module 1.25, 4, 5, 6	Contains Phosphor Bronze	CAC502 (PBC2)	Custom/Made to Order	1975~2024
	CG	Some products of module 1.5, 2.5, 3, 4, 5	Molded	FC200	Custom/Made to Order	1975~2024
	PG	Module 2.5	Plastic	MC901	Custom order	1975~2024
	DG	Module 0.5, 0.8	Polyacetal	Polyacetal	Custom order	2008~2022
Gearboxes	PBX	All	Bevel Gearboxes	—	No production	2004~2022
Other Products	SRT	Some products of module 2/3	Gear teeth induction hardened	S45C	Custom order	1973~2024
	SRTB	Some products of modules 2/3~4	Gear teeth induction hardened	S45C	Made to Order	1992~2022
	GC	All TK	Gear Couplings	S45C	GC-J	1975~2020
	HEPCO	Some RSJ, RLJ, BHJ, LB, and R products	HEPCO	—	Made to Order	2004~2022
One-cycle-clutch type geared motor	F	All	Without motor		No production	1973~1980
	IM	All	With motor		No production	1973~1980
	M	All	With motor		No production	1973~1980
Gear calculation software	GCSW	All	General gear calculation		Online GCSW	1988~2009
Electronic catalog (Japanese version only)	30XX	All	Product information for KHK stock gears DXF, strength calculation, etc.		Website	1992~2011

Customer Trust and Satisfaction



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