

# Renewed for greater ease of selection

## Greetings

Thank you for using KHK gear products.

We appreciate your patronage.

We have issued the Stock Gear Master Catalog "KHK2023".

Most recently, we have introduced new products with fastening modification. The J Series, offering ground spiral miter gears and miters, is available for immediate use.

Make use of our new catalog for easy selection.

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

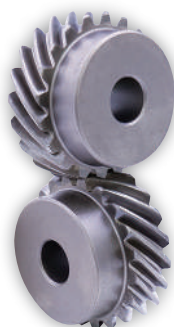
We look forward to serving you.

Kohara Gear Industry Co.,Ltd.

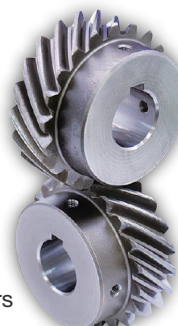
Toshiharu Kohara, President



MMSGQ J Series  
Ground Spiral Miter Gears



SN H Series  
Hardened Screw Gears



SN HJ Series  
Hardened Screw Gears



MM J Series  
Miter Gears



SM J Series  
Miter Gears



SMS J Series  
Spiral Miter Gears

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 <b>Spur Gears</b>												
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Material: SCM15H m1-4 Page 50	Material: SCM440 m1-5 Page 54	Material: S45C m1.5-3 Page 56	Material: S45C m0.5-5 Page 58	Material: S45C m2-3 Page 78	Material: S45C m1.5-4 Page 82	Material: S45C m1.5-6 Page 92						
Pinion gear for Nabtesco GH Series	SBA0 Ground Spur Gears	KS-H Hardened Spur Gears	KS Thermal Refused Spur Gears	SSS Spur Pinion Shafts	SS-H Hardened Spur Gears	SS Spur Gears						
												
Material: S45C/SCM440 m1-5 (DIN-520) Page 54	Material: S45C m1-5 Page 96	Material: SCM440 m1.5-5 Page 100	Material: SCM440 m1-5 Page 100	Material: S45C m0.5, 1.5 Page 102	Material: S45C m1-4 Page 106	Material: S45C m0.5-6 Page 104						
SS F Series Spur Gears	SSA-H Hardened Spur Gears	SSA Spur Gears	SSA F Series Spur Gears	SSY Spur Gears	SSAY Spur Gears	SSUS/SSA Stainless Steel Spur Gears						
												
Material: S45C m1.5-3 Page 130	Material: S45C Page 138	Material: S45C m1-5 Page 138	Material: S45C m2-3 Page 144	Material: S45C m0.5, 1 Page 148	Material: S45C Page 152	Material: SUS303 m1-4 Page 154						
SUSF F-Loc Gears	DSF F-Loc Gears	NSU Plastic Spur Gears with Steel Core	PU Plastic Spur Gears with Steel Core	HP/PSA Plastic Spur Gears	SLBK Stainless Steel Hubs PSA Dedicated	PLBK SLBK Assembled PSA Spur Gear						
												
Material: SUS303 m0.5, 1 Page 160	Material: Polyoxol (SU303) m0.5, 1 Page 162	Material: MC602ST (S45C) m1-3 Page 164	Material: MC901 (SU303) m1-2 Page 168	Material: MC901 m1-3 Page 170	Material: SUS303 #30-100 Page 180	Material: MC901/SUS303 m2-3 Page 181						
DS Injection Moulded Spur Gears	BB Stainless Metal Bushings	BSS Spur Gears	SSR Steel Ring Gears (Spur Gears)									
												

Racks							
 <p>MR/GF/MR/GF Hardened Ground Racks</p> <p>Material: SCM415 m1.5-3 Page 224</p>	 <p>KRGF-H/KRGF-H Hardened Ground Racks</p> <p>Material: SCM440 m1.5-8 Page 228</p>	 <p>KRG/GK/KRG/GK Thermal Refrined Ground Racks</p> <p>Material: SCM440 m1-3 Page 228</p>	 <p>SRQ/SRG/SRG/GD/SRG/GD Hardened Ground Racks</p> <p>Material: S45C m1.5-6 Page 230</p>	 <p>KRF-H/KRF/H Hardened Racks</p> <p>Material: SCM440 m1.5-8 Page 232</p>	 <p>SRF-H/SRF/H Hardened Racks</p> <p>Material: S45C m1.5-6 Page 234</p>	 <p>SRF-H/SRF/H Laser Hardened Racks</p> <p>Material: S45C m1.5-6 Page 236</p>	
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 <p>PP/PF Plastic Racks</p> <p>Material: MC901 m1-3 Page 250</p>	 <p>BSR Racks</p> <p>Material: S45C m1.5-8 Page 252</p>	 <p>SRQ/SRQ Round Racks</p> <p>Material: S45C m1.5-8 Page 252</p>	 <p>SRQ Stainless Steel Round Racks</p> <p>Material: SUS303 m1.5-8 Page 254</p>	 <p>DR Molded Flexible Racks</p> <p>Material: Durcon (P) R33-4 m1.5-2 Page 254</p>	 <p>SSD/SR/LR/SR Rax Gears/Plexiglass Racks For Molded Flexible Racks</p> <p>Material: S45C, etc. m1.5-4 Page 254</p>	 <p>KRG/KRG/KRG/GD Ground Racks</p> <p>Material: SCM440 m1-3 Page 256</p>	
 <p>SRH/SRH/SRH Helical Racks</p> <p>Material: S45C m1.5-8 Page 258</p>	 <p>SRH Helical Racks</p> <p>Material: S45C m1.5-8 Page 260</p>	 <p>SHE Helical Gears</p> <p>Material: S45C m1.5-8 Page 260</p>	 <p>ZST/ZST Hardened Ground Helical Racks</p> <p>Material: SRQ (SRQ) Duplex m1.5-8 Page 262</p>	 <p>ZSTP Ground Helical Gears</p> <p>Material: SCM440 m1.5-8 Page 262</p>	 <p>ZST-LG Assembly Gauges</p> <p>Material: S45C m1.5-4 Page 264</p>		

This documentation is essential for using the gears properly, including features of various products, examples of use and precautions on selection.

Catalog Number	Module	Material	Heat Treatment	Booth Surface Finish	Precision (mm)	Grades	Features
<b>MSGA/MSGB</b>	1-4	SCM415	Carburized	Ground	N6	△	Fully hardened, ground and lewyse machined gears with excellent accuracy, strength and abrasion resistance.
<b>K3G</b>	1-3	Thermal refined, gear tooth induction hardened		Ground	N6	△	Gears that have been tempered, hardened and ground to excellent accuracy, strength and abrasion resistance. Secondary operations can be performed for the teeth. This product is ideal for the growth of the K3RG rack.
<b>SSGS</b>	1-3	S45C	Thermal refined, gear tooth induction hardened	Ground	N7	△	Gears with shafts that have been tempered, hardened and ground. Secondary operations can be performed except for the teeth.
<b>SSG</b>	0.5-10	S45C	Gear tooth induction hardened	W0	N7	△	Gears that have been hardened and ground with a good balance of accuracy, wear resistance and cost. Secondary operations are possible except for the teeth.
<b>KS</b>	1.5-5	SCM440	Thermal refined	Cut	N8	○	Tempered gears with excellent bending strength. The teeth can be additively treated. This product is ideal for the growth of the K3F rack.
<b>SSS</b>	1.1, S45C		Thermal refined	W0	N8	○	Gears with a tempered shaft.
<b>SS</b>	0.5-10						Many lineups are available at a low price. The teeth can be additively treated.
<b>SSA</b>	1-5	S45C			N8	○	Gears with narrow teeth. Suitable for light loads.
<b>SSY/SSAY</b>	0.8-1	S45C			N8	○	Gears with narrow teeth. Suitable for light loads.
<b>SUS/SUSA</b>	1-4	SUS303			N8	○	Stainless steel gears with rust resistance.
<b>SUSF</b>	0.5-1	SUS303			N8	○	Stainless steel gears with rust resistance. Locking Hub allows easy attachment.
<b>SSP</b>		Polyacetal					Gears made of polyacetal. Locking Hub allows easy attachment.

[illegible]

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.

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## Expansion of Miter J Series

### JIS Grade 0 *J Series* Ground Spiral Miter Gears MMSGQ-J

MMSGQ Highest-grade Ground Spiral Miter Gears are now part of the J Series

Please see Page 310 for more details.



### Spiral Miter Gears *J Series* SMS-J

SMS Hardened Spiral Miter Gears are now part of the J Series

Please see Page 320 for more details.



### Miter Gears *J Series* MM-J

MM Hardened Miters are now part of the J Series

Please see Page 324 for more details.



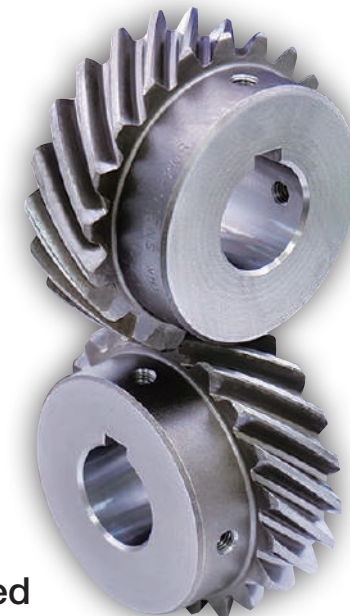
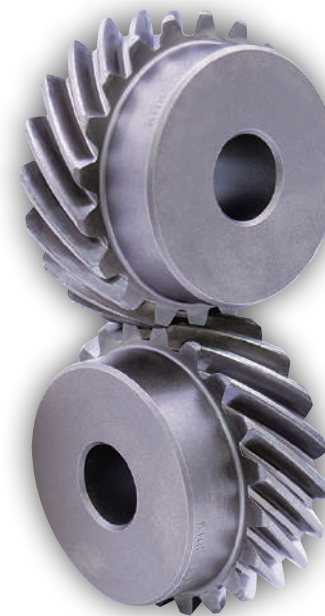
### Miter Gears *J Series* SM-J

SM Miters are now part of the J Series

Please see Page 326 for more details.



## Hardened Screw Gears *J Series* SN-H/SN-HJ



SN Screw Gears added to the Hardened Plus and Hardened Plus J Series

Please see Pages 380 to 383 for more details.

## Worm Wheels PG



Smaller module type PG Nylon Worm Wheels added to the lineup

Please see Page 444 for more details.

## CP Ground Spur Gears SSCPG *J Series*








Large CP size SSCPG Ground Spur Gears added to the lineup

Please see Page 282 for more details.



Spur Gears

<b>MSGA/MSGB</b> Ground Spur Gears	<b>KSG</b> Ground Spur Gears	<b>SSGS</b> Ground Spur Pinion Shafts	<b>SSG</b> Ground Spur Gears	<b>SSG F Series</b> Ground Spur Gears	<b>SSG E Series</b> Ground Spur Gears	<b>SSG R Series</b> Ground Spur Gears
						
Material: SCM415 <b>m1~4</b> Page 50	Material: SCM440 <b>m1~3</b> Page 54	Material: S45C <b>m1.5~3</b> Page 56	Material: S45C <b>m0.5~10</b> Page 58	Material: S45C <b>m2~3</b> Page 76	Material: S45C <b>m1.5~6</b> Page 82	Material: S45C <b>m1.5~6</b> Page 92
<b>Pinion gear for Nabtesco GH Series</b>	<b>SSAG</b> Ground Spur Gears	<b>KS-H</b> Hardened Spur Gears	<b>KS</b> Thermal Refined Spur Gears	<b>SSS</b> Spur Pinion Shafts	<b>SS-H</b> Hardened Spur Gears	<b>SS</b> Spur Gears
						
Material: S45C/SCM440 <b>m3~6 (CP10~20)</b> Page 94	Material: S45C <b>m1~6</b> Page 96	Material: SCM440 <b>m1.5~5</b> Page 100	Material: SCM440 <b>m1.5~5</b> Page 100	Material: S45C <b>m1, 1.5</b> Page 102	Material: S45C <b>m1~6</b> Page 106	Material: S45C <b>m0.5~10</b> Page 104
<b>SS F Series</b> Spur Gears	<b>SSA-H</b> Hardened Spur Gears	<b>SSA</b> Spur Gears	<b>SSA F Series</b> Spur Gears	<b>SSY</b> Spur Gears	<b>SSAY</b> Spur Gears	<b>SUS/SUSA</b> Stainless Steel Spur Gears
						
Material: S45C <b>m1.5~3</b> Page 130	Material: S45C <b>m1~5</b> Page 138	Material: S45C <b>m1~5</b> Page 138	Material: S45C <b>m2~3</b> Page 144	Material: S45C <b>m0.8, 1</b> Page 148	Material: S45C <b>m1</b> Page 152	Material: SUS303 <b>m1~4</b> Page 154
<b>SUSF</b> F-Loc Gears	<b>DSF</b> F-Loc Gears	<b>NSU</b> Plastic Spur Gears with Steel Core	<b>PU</b> Plastic Spur Gears with Steel Core	<b>PS/PSA</b> Plastic Spur Gears	<b>SUKB</b> Stainless Steel Hubs PSA Dedicated	<b>PSUKB</b> SUKB Assembled PSA Spur Gear
						
Material: SUS303 <b>m0.5, 1</b> Page 160	Material: Polyacetal (SUS303) <b>m0.5, 1</b> Page 162	Material: MC602ST (S45C) <b>m1~3</b> Page 164	Material: MC901 (SUS303) <b>m1~2</b> Page 168	Material: MC901 <b>m1~3</b> Page 170	Material: SUS303 <b>φ30~100</b> Page 180	Material: MC901/SUS303 <b>m2~3</b> Page 181
<b>DS</b> Injection Molded Spur Gears	<b>BB</b> Sintered Metal Bushings	<b>BSS</b> Spur Gears	<b>SSR</b> Steel Ring Gears (Spur Gears)			
						
Material: Duracon (R) (M90-44) <b>m0.5~1</b> Page 182	Material: Oil-free copper alloy <b>φ5~8</b> Page 184	Material: Free cutting brass (C3604) <b>m0.5~1</b> Page 186	Material: S45C <b>m2~3</b> Page 188			

Helical Gears

<b>KHG</b> Ground Helical Gears	<b>SH</b> Helical Gears
	
Material: SCM440 <b>m1~3</b> Page 194	Material: S45C <b>m2, 3</b> Page 202

Internal Gears

<b>SI</b> Steel Internal Gears	<b>SIR</b> Steel Ring Gears (Spur Gears)
	
Material: S45C <b>m0.5~3</b> Page 208	Material: S45C <b>m2~3</b> Page 210

Index Information

Catalog Number		Product Name	
Product Photo		Icon Mark	
Size		Material	
		Page	
		Material: S45C	
		<b>m0.5~10</b> Page 58	

**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

<b>MRGF/MRGFD</b> Hardened Ground Racks	<b>KRGF-H/KRGFD-H</b> Hardened Ground Racks	<b>KRG/KRGF/KRGFD</b> Thermal Refined Ground Racks	<b>SRG/SRGF/SRGFD/SRGFK</b> Hardened Ground Racks	<b>KRF-H/KRFD-H</b> Hardened Racks	<b>SRF-H/SRFD-H</b> Hardened Racks	<b>SRF-HL/SRFD-HL</b> Laser Hardened Racks
						
Material: SCM415 <b>m1.5~3</b> Page 224	Material: SCM440 <b>m1.5~3</b> Page 226	Material: SCM440 <b>m1~3</b> Page 228	Material: S45C <b>m0.5~6</b> Page 230	Material: SCM440 <b>m1.5~5</b> Page 232	Material: S45C <b>m1.5~6</b> Page 234	Material: S45C <b>m1.5~6</b> Page 236
<b>KRF/KRFD</b> Thermal Refined Racks	<b>SRAF/SRAFD/SRAFK</b> Square Racks	<b>SR</b> Racks	<b>SRF</b> Steel Racks with Machined Ends	<b>SRFD/SRFK</b> Steel Racks with Bolt Holes	<b>SUR/SURF/SURFD</b> Stainless Steel Racks	<b>DRF/DRFD/DRFK</b> Plastic Racks
						
Material: SCM440 <b>m1.5~5</b> Page 238	Material: S45C <b>m1.5~4</b> Page 240	Material: S45C <b>m0.5~10</b> Page 242	Material: S45C <b>m0.5~10</b> Page 243	Material: S45C <b>m0.5~6</b> Page 244	Material: SUS304 <b>m1~4</b> Page 246	Material: Polyacetal <b>m1~3</b> Page 248
<b>PR/PRF</b> Plastic Racks	<b>BSR</b> Racks	<b>SRO/SROS</b> Round Racks	<b>SURO</b> Stainless Steel Round Racks	<b>DR</b> Molded Flexible Racks	<b>SSDR/ARL/SRS</b> Rack Clamps for Pinions/Rack Guide Rails	<b>KRHG/KRHGF/KRHGFD</b> Ground Helical Racks
						
Material: MC901 <b>m1~3</b> Page 250	Material: Free cutting brass (C3604) <b>m0.5~1</b> Page 251	Material: S45C <b>m1~5</b> Page 252	Material: SUS303 <b>m1~3</b> Page 253	Material: Duracon (R) (M25-44) <b>m0.8~2</b> Page 254	Material: S45C, etc. <b>Page 254</b>	Material: SCM440 <b>m1~3</b> Page 256
<b>SRH/SRHF/SRHFH</b> Helical Racks	<b>SRHEF</b> Helical Racks	<b>SHE</b> Helical Gears	<b>ZST/ZSTD</b> Hardened Ground Helical Racks	<b>ZSTP</b> Ground Helical Gears	<b>ZST-GL</b> Assembly Gauges	
						
Material: S45C <b>m2, 3</b> Page 258	Material: S45C <b>m1.5~6</b> Page 260	Material: S45C <b>m1.5~6</b> Page 260	Material: DIN C45 (S45C equivalent) <b>m2~6</b> Page 262	Material: SCM440 <b>m2~6</b> Page 262	Material: S45C <b>m1.5~6</b> Page 264	

CP Racks & Pinions














<b>KTSCP</b> [CP] Tapered Pinions	<b>STRCPF/STRCPFD</b> [CP] Tapered Racks	<b>MSCPG</b> [CP] Ground Spur Gears	<b>MRGCPF/MRGCPFD</b> [CP] Hardened Ground Racks	<b>KSCPG</b> [CP] Ground Spur Gears	<b>KRGCPF-H/KRGCPFD-H</b> [CP] Hardened Ground Racks	<b>KRGCP/KRGCPF/KRGCPFD</b> [CP] Thermal Refined Ground Racks
						
Material: SCM440 <b>CP5, 10</b> Page 274	Material: S45C <b>CP5, 10</b> Page 274	Material: SCM415 <b>CP5, 10</b> Page 276	Material: SCM415 <b>CP5, 10</b> Page 276	Material: SCM440 <b>CP5, 10</b> Page 278	Material: SCM440 <b>CP5, 10</b> Page 278	Material: SCM440 <b>CP5, 10</b> Page 280
<b>SSCPGS</b> [CP] Ground Spur Pinion Shafts	<b>SSCPG</b> [CP] Ground Spur Gears	<b>SRGCP/SRGCPF/SRGCPFD</b> [CP] Hardened Ground Racks	<b>KRCPF-H/KRCPFD-H</b> [CP] Hardened Racks	<b>KSSCP</b> [CP] Thermal Refined Spur Gears	<b>KRCPF/KRCPFD</b> [CP] Thermal Refined Racks	<b>SSCP</b> [CP] Spur Gears
						
Material: S45C <b>CP5, 10</b> Page 282	Material: S45C <b>CP5~20</b> Page 282	Material: S45C <b>CP5~20</b> Page 284	Material: SCM440 <b>CP5, 10</b> Page 286	Material: SCM440 <b>CP5, 10</b> Page 288	Material: SCM440 <b>CP5, 10</b> Page 288	Material: S45C <b>CP2.5~20</b> Page 290
<b>SRCPF-H/SRCPFD-H</b> [CP] Hardened Racks	<b>SRCPF-HL/SRCPFD-HL</b> [CP] Laser hardened	<b>SRCP/SRCPF/SRCPFD/SRCPFK</b> [CP] Racks	<b>SUSCP</b> [CP] Stainless Steel Spur Gears	<b>SURCPF/SURCPFD</b> [CP] Stainless Steel Racks	<b>SROCP</b> [CP] Round Racks	<b>FRCP</b> [CP] Metal Flexible Racks
						
Material: S45C <b>CP5~20</b> Page 292	Material: S45C <b>CP5~20</b> Page 294	Material: S45C <b>CP2.5~20</b> Page 296	Material: SUS303 <b>CP5, 10</b> Page 298	Material: SUS304 <b>CP5, 10</b> Page 298	Material: S45C <b>CP2.5~10</b> Page 300	Material: SS400 <b>CP5</b> Page 300



Miter Gears

MMSGQ Ground Spiral Miter Gears	MMSG Ground Spiral Miter Gears	SMSG Ground Spiral Miter Gears	MMSA/MMSB Finished Bore Spiral Miter Gears	MMS Spiral Miter Gears	SMS Spiral Miter Gears	SMA/SMB/SMC Finished Bore Miter Gears
<i>NEW</i>					<i>NEW</i>	
						
Material: SCM415 <i>m2~4</i> Page 310	Material: SCM415 <i>m2~4</i> Page 312	Material: S45C <i>m1~5</i> Page 314	Material: SCM415 <i>m1~10</i> Page 316	Material: SCM415 <i>m2~5</i> Page 318	Material: S45C <i>m1~8</i> Page 320	Material: S45C <i>m1~8</i> Page 322
MM Miter Gears	LM Sintered Metal Miter Gears	SM Miter Gears	SAM Angular Miter Gears	SUM Stainless Steel Miter Gears	SUMA Finished Bore Stainless Steel Miter Gears	PM Plastic Miter Gears
<i>NEW</i>		<i>NEW</i>				
						
Material: SCM415 <i>m2~5</i> Page 324	Material: SMF5040 <i>m0.8~1.5</i> Page 324	Material: S45C <i>m1~8</i> Page 326	Material: S45C <i>m1.5~3</i> Page 328	Material: SUS303 <i>m1~4</i> Page 330	Material: SUS303 <i>m1~4</i> Page 330	Material: MC901 <i>m1~4</i> Page 332
DM Injection Molded Miter Gears	BB Sintered Metal Bushings	Nissei KSP Ground Spiral Miter				
						
Material: Duracon (R) (M90-44) <i>m0.5~1.5</i> Page 332	Material: Oil-free copper alloy <i>φ5~8</i> Page 334	Material: SCM415 <i>m1.5~6</i> Page 370				

Bevel Gears

MHP High-Ratio Hypoid Gears	MBSG Ground Spiral Bevel Gears	SBSG Ground Spiral Bevel Gears	MBSA/MBSB Finished Bore Spiral Bevel Gears	SBS Spiral Bevel Gears	SB Bevel Gears	SBY Bevel Gears
Gear Ratio 15~60	Gear Ratio 2	Gear Ratio 1.5~3	Gear Ratio 1.5~3	Gear Ratio 1.5~4	Gear Ratio 1.5~4	Gear Ratio 2~4
						
Material: SCM415 <i>m1, 1.5</i> Page 342	Material: SCM415 <i>m2~4</i> Page 346	Material: S45C <i>m2~4</i> Page 348	Material: SCM415 <i>m2~6</i> Page 350	Material: S45C <i>m1~5</i> Page 354	Material: S45C <i>m1~6</i> Page 358	Material: S45C <i>m5~8</i> Page 358
SB Steel Bevel Gears & Pinion Shafts	SUB Stainless Steel Bevel Gears	PB Plastic Bevel Gears	DB Injection Molded Bevel Gears	BB Sintered Metal Bushings	Nissei KSP Ground Spiral Bevel Gears	
Gear Ratio 5	Gear Ratio 1.5~3	Gear Ratio 1.5~3	Gear Ratio 2		Gear Ratio 1~2	
						
Material: S45C <i>m1.5~3</i> Page 362	Material: SUS303 <i>m1.5~3</i> Page 364	Material: MC901 <i>m1~3</i> Page 366	Material: Duracon (R) (M90-44) <i>m0.5~1</i> Page 368	Material: Oil-free copper alloy <i>φ5~6</i> Page 368	Material: SCM415 <i>m1.5~6</i> Page 370	



Screw Gears

SN-H Hardened Screw Gears	SN Screw Gears	SUN Stainless Steel Screw Gears	AN Screw Gears	PN Plastic Screw Gears
<i>NEW</i>				
				
Material: S45C <i>m1~4</i> Page 380	Material: S45C <i>m1~4</i> Page 372	Material: SUS303 <i>m1~3</i> Page 384	Material: CAC702 (AIBC2) <i>m1~3</i> Page 386	Material: MC901 <i>m1~3</i> Page 388

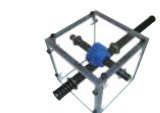
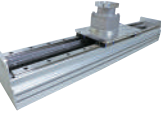
Worm Gears

KWGDL/KWGDLS Duplex Worms	AGDL Duplex Worm Wheels	KWG Ground Worm Shafts	AG Worm Wheels	AGF Worm Wheels	SWG Ground Worms	AG Worm Wheels
	Reduction Ratio 20~60 <i>M</i>		Reduction Ratio 10~60 <i>J</i>	Reduction Ratio 10~60		Reduction Ratio 10~60 <i>J</i>
Material: SCM440 <i>m1.5~4</i> Page 402	Material: CAC702 (AIBC2) <i>m1.5~4</i> Page 402	Material: SCM440 <i>m0.5~6</i> Page 410	Material: CAC702 (AIBC2) <i>m0.5~1.5</i> Page 410	Material: CAC702 (AIBC2) <i>m2~6</i> Page 414	Material: S45C <i>m1~6</i> Page 420	Material: CAC702 (AIBC2) <i>m1~6</i> Page 420
SW Worms	BG Worm Wheels	CG Worm Wheels	SUW Stainless Steel Worms	PG Worm Wheels		
	Reduction Ratio 10~60 <i>J</i>	Reduction Ratio 10~120 <i>J</i>		Reduction Ratio 10~50 <i>Additional J</i>		
Material: S45C <i>m0.5~6</i> Page 428	Material: CAC502 (PBC2) <i>m0.5~6</i> Page 428	Material: FC200 <i>m1~6</i> Page 430	Material: SUS303 <i>m0.5~3</i> Page 444	Material: MC901 <i>m1~3</i> Page 444		

Gearboxes

KBX Bevel Gearboxes	CBX Bevel Gearboxes
	
Material: - Model L/T Page 452	Material: - Model L/T Page 456

Other Products

SRT/SRT-C Ratchets & Pawls	SRTB/SRT-C Ratchets & Pawls	GC/GC-I Gear Couplings	SV/SVI Involute Spline Shafts, Spline Bushings	GCU Gear Assembly Kit	DLS Rack & Pinion Lubrication System	Racks & Pinions Aluminum Frame Transport Device
						
Material: S45C P2.09~12.57 Page 464	Material: S45C P2.09~12.57 Page 466	Material: S45C Page 468	Material: S45C Page 470	Material: - Page 472	Material: - Page 474	Material: - Page 30

Index Information

	MMSGQ Ground Spiral Miter Gears	Catalog Number Product Name
	<i>NEW</i>	Icon Mark
Product Photo		
	Material: SCM415	Material
Size/Page	<i>m2~4</i> Page 310	

*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



# Product Series Index

**NEW** New Product

**Additional** Additional Products

**M** Includes Made to Order



Hardened Plus



Semi-Custom



J Series



F Series



R Series



E Series

	Series	Gear Type	Page	Features
A	AG	Worm Wheels	410-413, 420-427	
	AGDL	Duplex Worm Wheels	404-409	
	AGF	Worm Wheels	414-419	
	AN	Screw Gears	386-387	
	ARL	DR Rack Guide Rails	255	
B	BB	Sintered Metal Bushings	184, 334, 368	
	BG	Worm Wheels	428-443	
	BSR	Racks	251	
	BSS	Spur Gears	186-187	
C	CBX	Bevel Gearboxes	456-459	
	CG	Worm Wheels	430-443	
D	DB	Injection Molded Bevel Gears	368-369	
	DLS	Racks & Pinions Lubricators	474-477	
	DM	Injection Molded Miter Gears	332-333	
	DR	Molded Flexible Racks	254-255	
	DRF	Plastic Racks	248	
	DRFD	Plastic Racks	248-249	
	DRFK	Plastic Racks	248-249	
	DS	Injection Molded Spur Gears	182-185	
	DSF	F-Loc Gears	162-163	
F	FRCP	Metal Flexible Racks	300	
G	GC	Gear Couplings (Inner Hubs)	468-469	
	GC-I	Gear Couplings (Outer Rings)	468	
	GCU	Gear Assembly Kit	472-473	
K	KBX	Bevel Gearboxes	452-455	
	KHG	Ground Helical Gears	194-201	
	KRCPF	Thermal Refined Racks	288-289	
	KRCPF-H	Hardened Racks	286-287	
	KRCPFD	Thermal Refined Racks	288-289	
	KRCPFD-H	Hardened Racks	286-287	
	KRF	Thermal Refined Racks	238-239	
	KRF-H	Hardened Racks	232-233	
	KRFD	Thermal Refined Racks	238-239	
	KRFD-H	Hardened Racks	232-233	
	KRG	Thermal Refined Ground Racks	228-229	
	KRGCP	Thermal Refined Ground Racks	280-281	
	KRGCPF	Thermal Refined Ground Racks	280-281	
	KRGCPFD	Thermal Refined Ground Racks	280-281	
	KRGCPF-H	Hardened Ground Racks	278	
	KRGCPFD-H	Hardened Ground Racks	278-279	
	KRGF	Thermal Refined Ground Racks	228-229	
	KRGFD	Thermal Refined Ground Racks	228-229	
	KRGF-H	Hardened Ground Racks	226-227	
	KRGFD-H	Hardened Ground Racks	226-227	
	KRHG	Ground Helical Racks	256-257	
	KRHGF	Ground Helical Racks	256-257	

	Series	Gear Type	Page	Features
K	KRHGFD	Ground Helical Racks	256-257	
	KS	Thermal Refined Spur Gears	100-101	
	KSCPG	Ground Spur Gears	278-279	
	KSG	Ground Spur Gears	54-55	
	KSP	Nissei Ground Spiral Bevel Gears	370-374	
	KSSCP	Thermal Refined Spur Gears	288-289	
	KTSCP	Tapered Pinions	274-275	
	KWG	Ground Worm Shafts	410-419	
	KWGD	Duplex Worms	402-409	
	KWGDLS	Duplex Worms	402-409	
L	LM	Sintered Metal Miter Gears	324-325	
M	MBSA	Finished Bore Spiral Bevel Gears	350-353	
	MBSB	Finished Bore Spiral Bevel Gears	350-353	
	MBSG	Ground Spiral Bevel Gears	346-347	
	MHP	High-Ratio Hypoid Gears	342-345	
	MM <b>NEW</b>	Miter Gears	324-325	
	MMS	Spiral Miter Gears	318-319	
	MMSA	Finished Bore Spiral Miter Gears	316-317	
	MMSB	Finished Bore Spiral Miter Gears	316-317	
	MMSG	Ground Spiral Miter Gears	312-313	
	MMSGQ <b>NEW</b>	Ground Spiral Miter Gears	310-311	
	MRGCPF	Hardened Ground Racks	276	
	MRGCPFD	Hardened Ground Racks	276-277	
	MRGF	Hardened Ground Racks	224-225	
	MRGFD	Hardened Ground Racks	224-225	
	MSCPG	Ground Spur Gears	276-277	
N	MSGA	Ground Spur Gears	50-53	
	MSGB	Ground Spur Gears	50-53	
N	NSU	Plastic Spur Gears with Steel Core	164-167	
P	PB	Plastic Bevel Gears	366-367	
	PG <b>Additional</b>	Worm Wheels	444-449	
	PM	Plastic Miter Gears	332-333	
	PN	Plastic Screw Gears	388-389	
	PR	Plastic Racks	250	
	PRF	Plastic Racks	250	
	PS	Plastic Spur Gears	170-179	
	PSA	Plastic Spur Gears	174-179	
	PSUKB	SUKB Assembled PSA Spur Gear	181	
	PU	Plastic Spur Gears with Steel Core	168-169	
S	SAM	Angular Miter Gears	328-329	
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	SB	Steel Bevel Gears & Pinion Shafts	362-363	
	SBS	Spiral Bevel Gears	354-357	
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	SH	Helical Gears	202-203	
	SHE	Helical Gears	260-261	
	SI	Steel Internal Gears	208	
	SIR	Steel Ring Gears (Spur Gears)	210	
	SM <b>NEW</b>	Miter Gears	326-327	
	SMA	Finished Bore Miter Gears	322-323	
	SMB	Finished Bore Miter Gears	322-323	
	SMC	Finished Bore Miter Gears	322-323	
	SMS <b>NEW</b>	Spiral Miter Gears	320-321	
	SMSG	Ground Spiral Miter Gears	314-315	
	SN <b>NEW</b>	Screw Gears	380-383	
	SR	Racks	242	
	SRAF	Racks	240-241	
	SRAFD	Racks	240-241	
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	SRCPF	Racks	296	
	SRCPFD	Racks	296-297	
	SRCPFK	Racks	296-297	
	SRCPF-H	Hardened Racks	292-293	
	SRCPF-HL	Laser Hardened Racks	294-295	
	SRCPFD-H	Hardened Racks	292-293	
	SRCPFD-HL	Laser Hardened Racks	294-295	
	SRF	Steel Racks with Machined Ends	243	
	SRFD	Steel Racks with Bolt Holes	244-245	
	SRFK	Steel Racks with Bolt Holes	244-245	
	SRF-H	Hardened Racks	234-235	
	SRFD-H	Hardened Racks	234-235	
	SRF-HL	Hardened Racks	236	
	SRFD-HL	Hardened Racks	236-237	
	SRG	Hardened Ground Racks	230	
	SRGCP	Hardened Ground Racks	284-285	
	SRGCPF	Hardened Ground Racks	284-285	
	SRGCPFD	Hardened Ground Racks	284-285	
	SRGF	Hardened Ground Racks	230	
	SRGFD	Hardened Ground Racks	230-231	
	SRGFK	Hardened Ground Racks	230-231	
	SRH	Helical Racks	258-259	
	SRHEF	Helical Racks	260-261	
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	SRO	Round Racks	252	
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	SROS	Round Racks	252	
	SRS	DR Rack Clamps	254	
	SRT	Ratchets	464-465	
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	Series	Gear Type	Page	Features
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	SS	Spur Gears	104-137	
	SSA	Spur Gears	138-147	
	SSAG	Ground Spur Gears	96-99	
	SSAY	Spur Gears	152-153	
	SSCP	Spur Gears	290-291	
	SSCPG <b>Additional</b>	Ground Spur Gears	282-283	
	SSCPGS	Ground Spur Pinion Shafts	282-283	
	SSDR	DR Pinions	254-255	
	SSG	Ground Spur Gears	58-95	
	SSGS	Ground Spur Pinion Shafts	56-57	
	SSR	Steel Ring Gears (Spur Gears)	188	
	SSS	Spur Pinion Shafts	102-103	
	SSY	Spur Gears	148-151	
	STRCPF	Tapered Racks	274-275	
	STRCPFD	Tapered Racks	274-275	
	SUB	Stainless Steel Bevel Gears	364-365	
	SUKB	Stainless Steel Hubs	180	
	SUM	Stainless Steel Miter Gears	330-331	
	SUMA	Finished Bore Stainless Steel Miter Gears	330-331	
	SUN	Stainless Steel Screw Gears	384-385	
	SUR	Stainless Steel Racks	246-247	
	SURCPF	Stainless Steel Racks	298-299	
	SURCPFD	Stainless Steel Racks	298-299	
Z	SURF	Stainless Steel Racks	246-247	
	SURFD	Stainless Steel Racks	246-247	
	SURO	Stainless Steel Round Racks	253	
	SUS	Stainless Steel Spur Gears	154-159	
	SUSA	Stainless Steel Spur Gears	156-159	
	SUSF	F-Loc Gears	160-161	
	SUSCP	Stainless Steel Spur Gears	298-299	
	SUW	Stainless Steel Worms	444-449	
	SV	Involute Spline Shafts	470-471	
	SVI	Involute Spline Bushings	470	
SW	SW	Worms	428-443	
	SWG	Ground Worms	420-427	
	ZST	Hardened Ground Helical Racks	262	
	ZSTD	Hardened Ground Helical Racks	262-263	
	ZSTP	Ground Helical Gears	262-263	
Z	ZST-GL	Assembly Gauges	264	
	Racks & Pinions Transport Device		30-31	

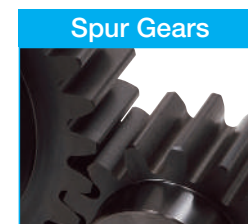


# KHK Stock Gears

-Anytime, Anywhere, Ready to Use-

We respond immediately to customer needs with an abundant variety of 200 styles and 30,000 configurations. As these items are always in stock, they can be used anytime, anywhere, when needed.

## Abundant variety of gears



P35 to



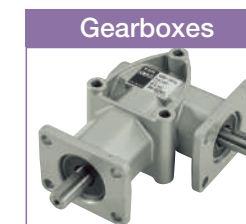
P189 to



P207 to



P213 to



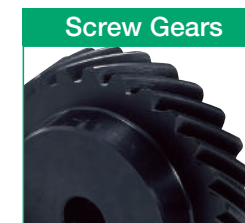
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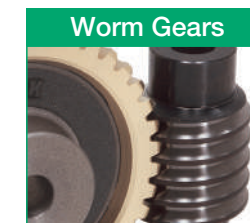
P299 to



P331 to



P369 to



P383 to

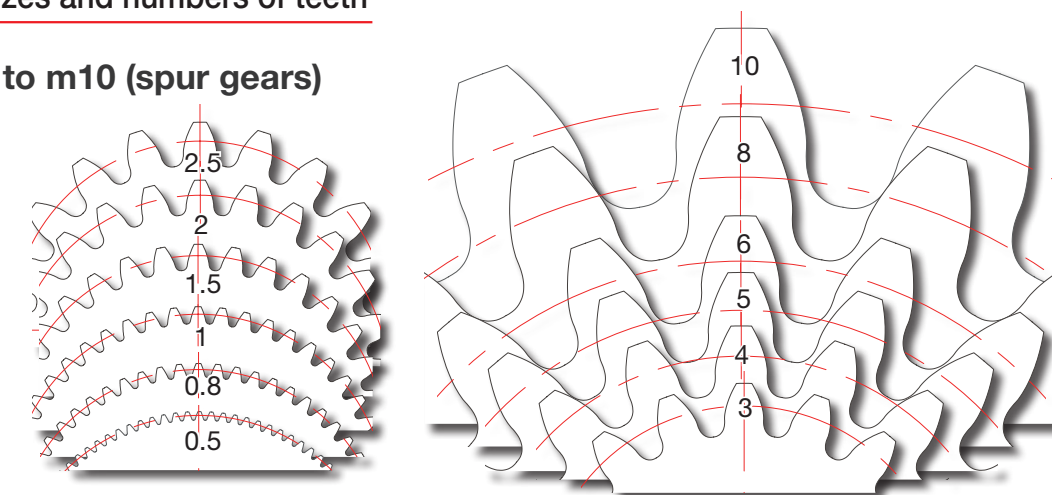


P457 to

## 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



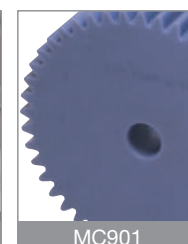
S45C



SUS303



MC602ST



MC901



Polyacetal



Free-cutting Brass

## Abundant inventory

We stock 5,000 configurations of product at all times in order to deliver them to you quickly.





# KHK<sup>®</sup> Stock Gear Fastening Series

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.

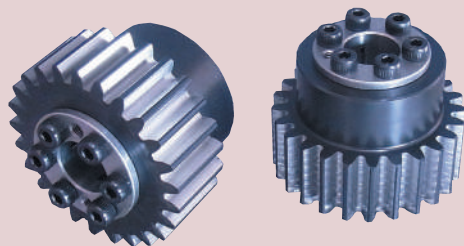


Gears can be installed in flexible positions. Gear teeth can be easily aligned.

**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.

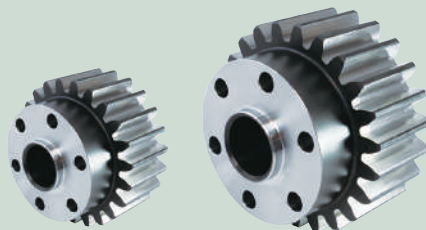


Fits perfectly as the speed reducer pinion for servomotor.

**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 81 styles contain 19,000 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												
		KS												
		SS												
		SSA												
		SUS												
		SUSA												
		NSU												
		PU												
		PS												
		PSA												
		SUKB												
	Helical Gears	KHG												
		MRGFD												
	Racks & Pinions	KRGFD-H												
		KRGFD												
		SRGFD(K)												
		KRFD-H												
		SRFD-H												
		SRFD-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)												
	Miter Gears	SUSCP												
		SURCPFD												
		MMSGQ												
		MMSG												
		SMSG												
		SMS												
F Series	Screw Gears	MM												
		SM												
		SN												
		SUN												
		AN												
		PN												
	Worm Gears	SWG												
		SW												
		SUW												
		AG												
		BG												
		CG												
		PG												
	Other Products	SRT												
		GC												
R Series	Spur Gears	SSG												
		SS												
		SSA												
E Series	Spur Gears	SSG												
		SSCPG												
Semi-Custom	Spur Gears	ZSTP												
		SSG												



Definitively shortens the installation time

**Bushing Fastening.**  
**E Series**

The lead time is  
**2**  
business days

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**



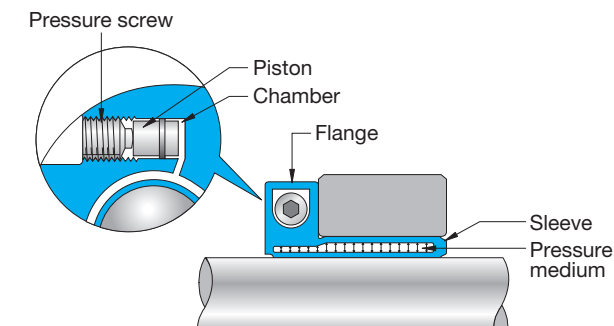
### Solves the problems of gear fastening.

- 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.



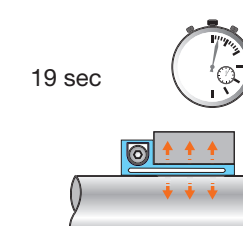
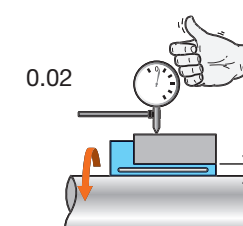
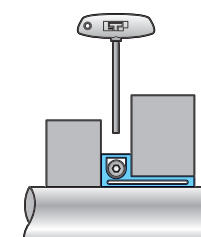
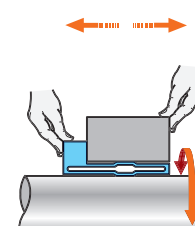
### Effects of ETP-E Plus

Easy and accurate positioning

Helps save space

High concentricity

Secure and speedy installation



### KHK Lineup

See Page 82

#### SSG Ground Spur Gears Series

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

**1000 configurations**



m1.5 to 6

### 6 styles, 2,400 configurations

Limited release on the Japanese website

#### KHG Ground Helical Series

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

**500 configurations**



m1.5 to 3

#### AGF Worms & Wheels Series

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

**230 configurations**



m2 to 6

- ZSTP 2 to 6, 110 configurations
- AGDL 1.5 to 4, 180 configurations
- AG 1.5 to 6, 330 configurations

#### Allowable Order Sizes

1 to 20 units. For quantities over 20, please request price and delivery quotes.

#### 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).

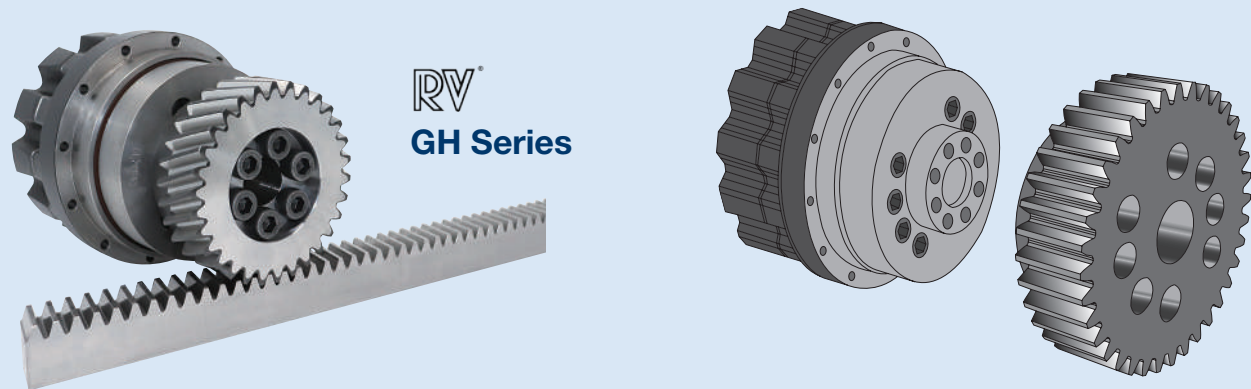


Positive lock is also available at KHK Quick-Mod Gears.

# Superior compatibility with servos for speed reducers

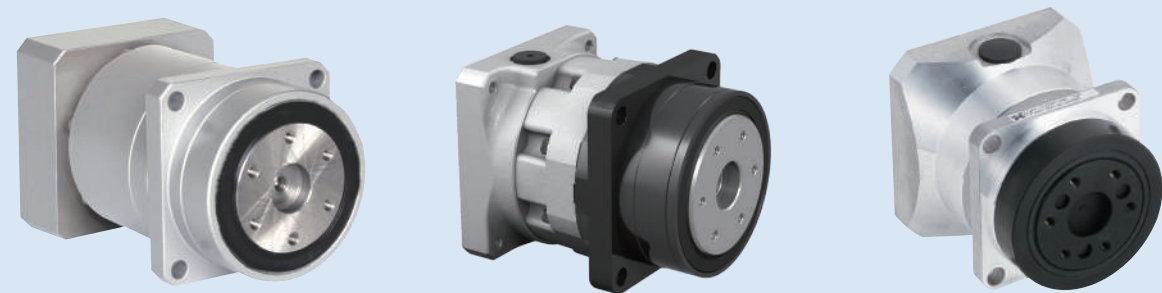


## Perfect for Nabtesco Corporation's GH Series **Nabtesco** + **R**



## Flange attaching speed reducer pinions **R Series**

**Nidec Shimpo Corporation**



**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 94 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 92 for more details

Mounting hub dia. H (Common to all speed reducers)	Nidec Shimpo VRG Series	Sumitomo Heavy Industries IB Series	Harmonic Drive Systems HPG Series	R Series Catalog Numbers		KHK recommended mating rack
24	C90	P120	20	SSG Module - No. of teeth	R24	KRGFSeries SRGFSeries SRFSeries  See Page 211
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 64 for more details See Page 54 for more details

Nissei APG・AFC Series		KHK target products	
Capacity	Frame No.	Catalog Number	
100W	12	SSG2-19J12	
	15	SSG2.5-19J15	
	18	SSG2.5-24J18	
200W	12	SSG2-19J12	
	15	SSG2.5-19J15	
	18	KSG2-32J18	
	22	KSG3-25J22	
400W	12	SSG2-19J12	
	15	SSG2.5-19J15	
	18	KSG2-32J18	
	22	KSG3-25J22	
	28	KSG3-32J28	

Nissei APG・AFC Series		KHK target products	
Capacity	Frame No.	Catalog Number	
750W	18	KSG2-32J18	
	22	KSG3-25J22	
	28	KSG3-32J28	
1000W	22	KSG3-25J22	
	28	KSG3-32J28	
1500W	22	KSG3-25J22	
	28	KSG3-32J28	
2000W	22	KSG3-25J22	
	28	KSG3-32J28	
3000W	28	KSG3-32J28	

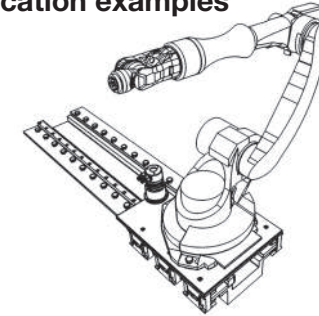
When a key is not needed, try the locking hub series!

**KHK**

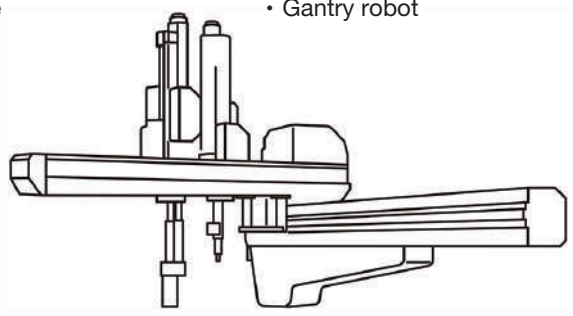
**KHK**

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			
Fastening Method	Key	Friction	Friction
Price*	◎	○	△
Work Time	○	△	◎
Concentricity	○	○	◎
Phase Matching	×	◎	◎
Allowable torque	◎	○	△
Installation Freedom	○	◎	△
Type	◎	△	○
Hardening + available	○	×	×

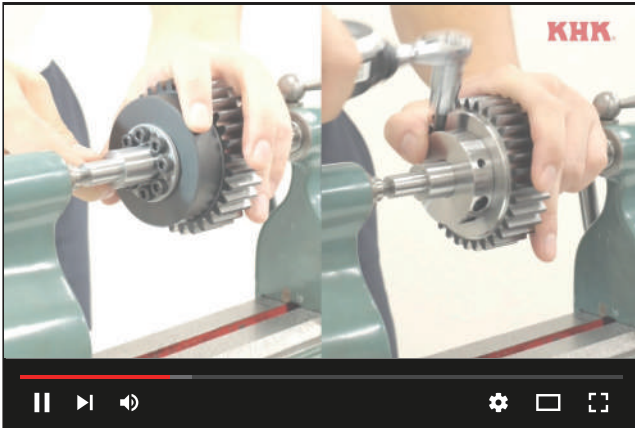
\*Note on price issues: Prices change according to processes (work time).  
Find details here ↓

## F series and E series comparison video



For details,  
see here

[https://www.khkgears.co.jp/movie/movie\\_conclusion\\_e\\_f.mp4](https://www.khkgears.co.jp/movie/movie_conclusion_e_f.mp4)



## Mounting image of Fastening Series





# Induction Hardening Service

## SN Hardened Screw Gears added to the lineup



### 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**

### 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 bore dimension tolerance H7 will also be degraded.

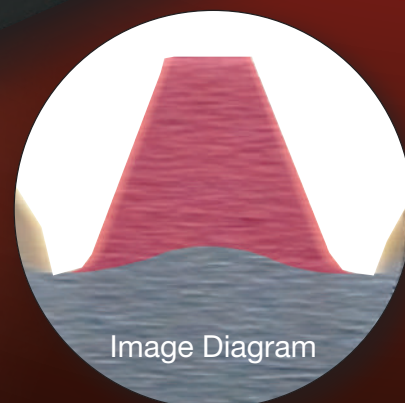


Image Diagram

For Hardened Plus, the hardening unit price below is added to the product unit price.

#### ■ Hardening unit price of SS, SSA and SSCP spur gears (S45C products)

No. of teeth	Module (Circular Pitch)							
	1	1.5	2	2.5	3	4	5	6
	(CP2.5)	(CP5)	-	-	(CP10)	-	(CP15)	(CP20)
20 or less								
21 to 30								
31 to 40								
41 to 50								
51 to 60								
61 to 80								
81 to 100								
101 to 120								
121 to 160								
161 to 200								

For prices, contact your dealer.

#### ■ Hardening unit price of KS and KSSCP thermal refined spur gears (SCM440 products)

No. of teeth	Module (Circular Pitch)					
	1.5	2	2.5	3	4	5
	(CP5)	-	-	(CP10)	-	(CP15)
20 or less						
21 to 30						
31 to 40						

For prices, contact your dealer.

#### ■ **NEW** Hardening unit price of SN screw gears (S45C products)

No. of teeth	Module (Circular Pitch)					
	1	1.5	2	2.5	3	4
15 or less						
16 to 20						
21 to 30						

For prices, contact your dealer.



### Target Products

Various Standard Product / J Series

SS/SSA/SSCP Spur Gears

KS/KSSCP Thermal Refined Spur Gears

**NEW** SN Screw Gears

• Standard Product

• J Series

### Ordering Method and Delivery Date

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

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.
- 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 in the KHK website.



# KHK Quick-Mod Gears

**KHK**  
歯車工房  
信頼の追加工

↑ Delivered with this marking

## 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.

## 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.



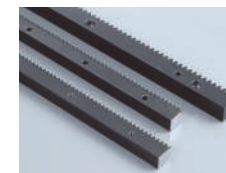
Helisert Processing



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, solid lubrication for wear resistance 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  $\mu\text{m}$ . Trivalent chromate is RoHS compliant.

#### ■ Black chromate



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

#### ■ Black oxide



Chemical change due to a strongly alkaline treatment. liquid forms a ferrosferric oxide film (3  $\mu\text{m}$  or less).

#### ■ 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  $\mu\text{m}$  with uniform film thickness.

#### ■ Low-temperature black chrome plating



A black chromium film (1 to 2  $\mu\text{m}$ ) unlikely to peel away.

Note: Keep in mind that the product size of surface treatment with thick plating is the size before plating.

### When Placing Orders

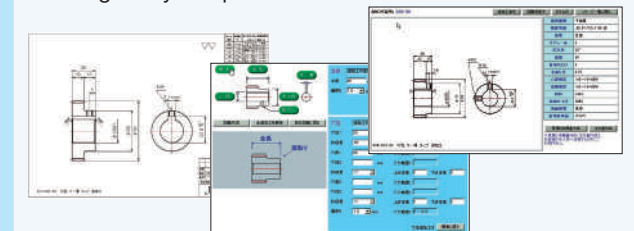
For quotation of secondary operations on standard products (KHK Quick-Mod Gears), please prepare a drawing with desired specifications. We will manufacture to the drawing after discussing prices and lead times.

#### <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.

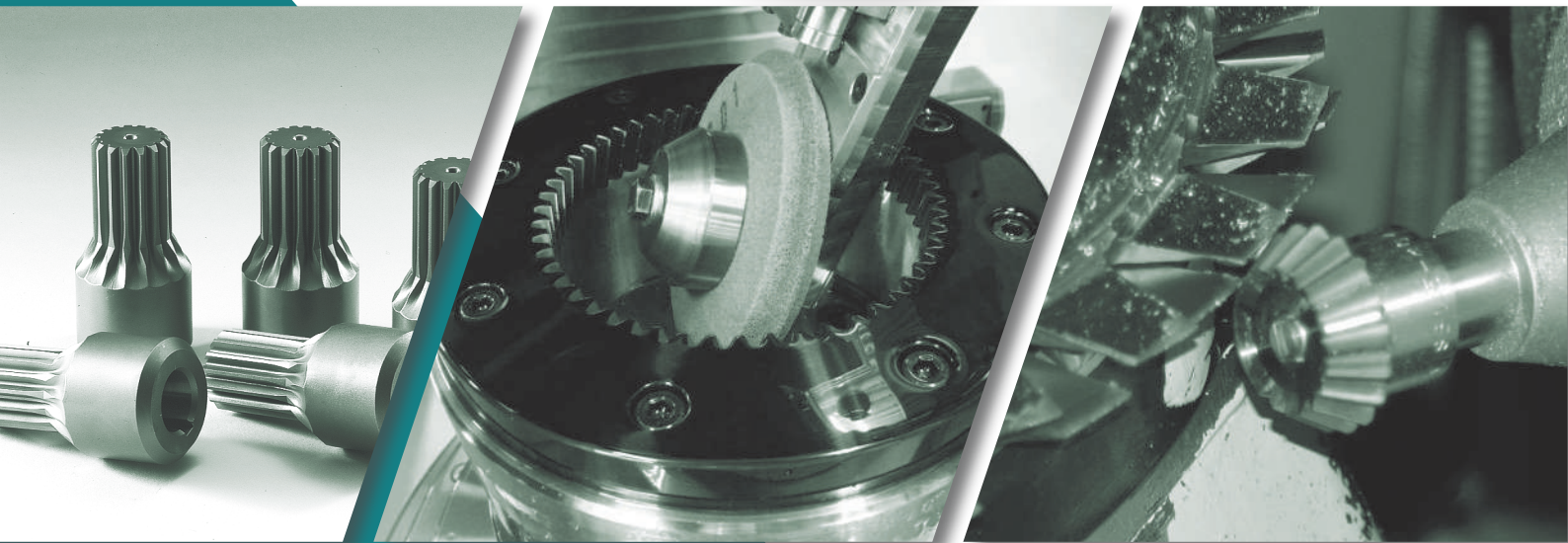


URL <https://khkgears.net/new/>



# Custom Gears

KHK has perfected its reception system for made-to-order gears, through unique know-how developed over many years regarding non-standard gear products, modifying technology, and the latest production system.

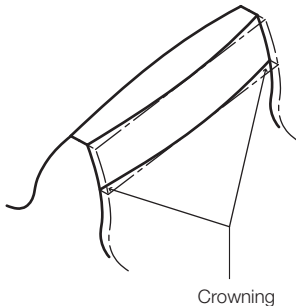
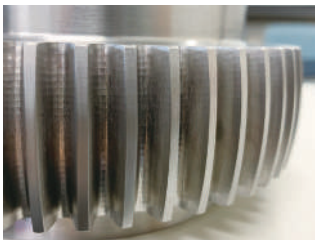


## Machining Range

Spur/Helical Gears	Racks	Internal Gears	Screw Gears	Miter/Bevel Gears	Worm Gears
					
Module 0.5~10 Outer diameter $\phi$ 500 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 $\phi$ 150mm or more Outer diameter $\phi$ 500 mm or less Weight 40kg or less	Module 1~4 Outer diameter $\phi$ 600 mm or less Weight 200 kg or less	Module 1~10 Outer diameter $\phi$ 250 mm or less Mounting distance 170 mm or less Weight 50kg or less	Module 0.5~10 Worm outer diameter: $\phi$ 100 mm or less Wheel outer diameter: $\phi$ 600 mm or less Mounting distance 350mm or less

## Machining Example

### Crowning



### Chamfering



### Wire Cutting



Gear Specifications	
Shape	Spur Gears
Pitch	m2
No. of teeth	59
Material	S45C
Outside dia.	$\phi$ 122
Remarks	Teeth Wire Cut

## When Placing Orders

### Please prepare your own drawings.

Quotations for made-to-print gears are limited to the "production 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, will be manufactured based on the ISO9001 quality system.
- 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
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 standard products

### ● 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.

#### ◆ Supported Products ◆

##### SSG Ground Spur Gears J

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

##### SS Spur Gears J

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



#### ◆ Ordering Method ◆

##### • Semi-Custom Standard Product

Example: SS5-80S

##### • Semi-Custom Standard Product J Series:

Catalog No. + J + BORE

Example: SS5-80SJ40

#### ◆ Delivery Date ◆

##### • Semi-Custom Standard Product

SS Spur Gears:

About 15 business days after the order is received

SSG Ground Spur Gears:

About 30 business days after the order is received

##### • Semi-Custom Standard Product J Series

SS Spur Gears:

About 25 business days after the order is received

SSG Ground Spur Gears:

About 40 business days after the order is received

### ● 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.

\*Semi-custom standard products are made to order based on catalog products. The price and delivery date will be discussed separately.



# Racks & Pinions Aluminum Frame Transport Device

SUS × KHK<sup>®</sup>

With design support. Easy installation. Labor-saving.

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

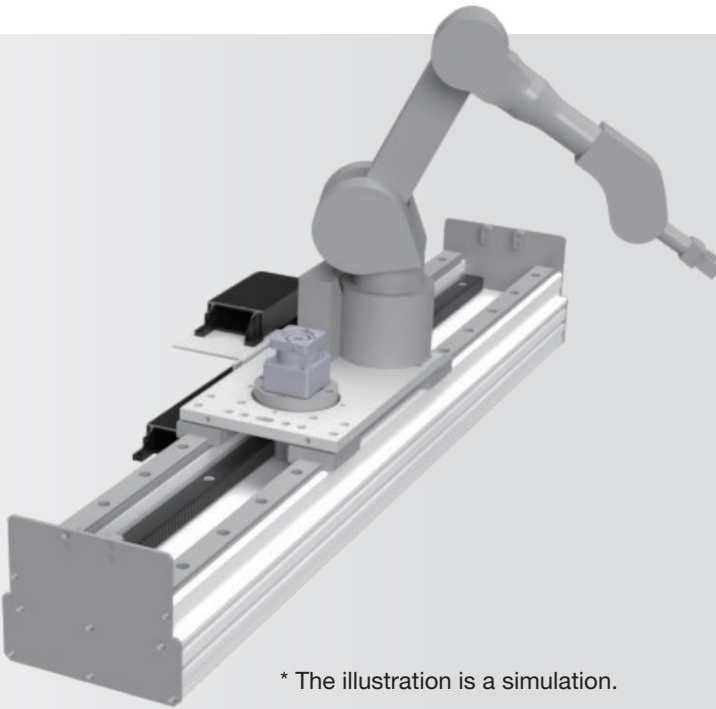
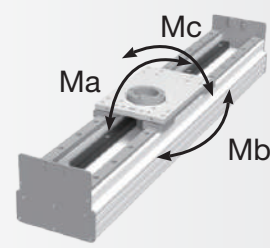
## Transport Device Example

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

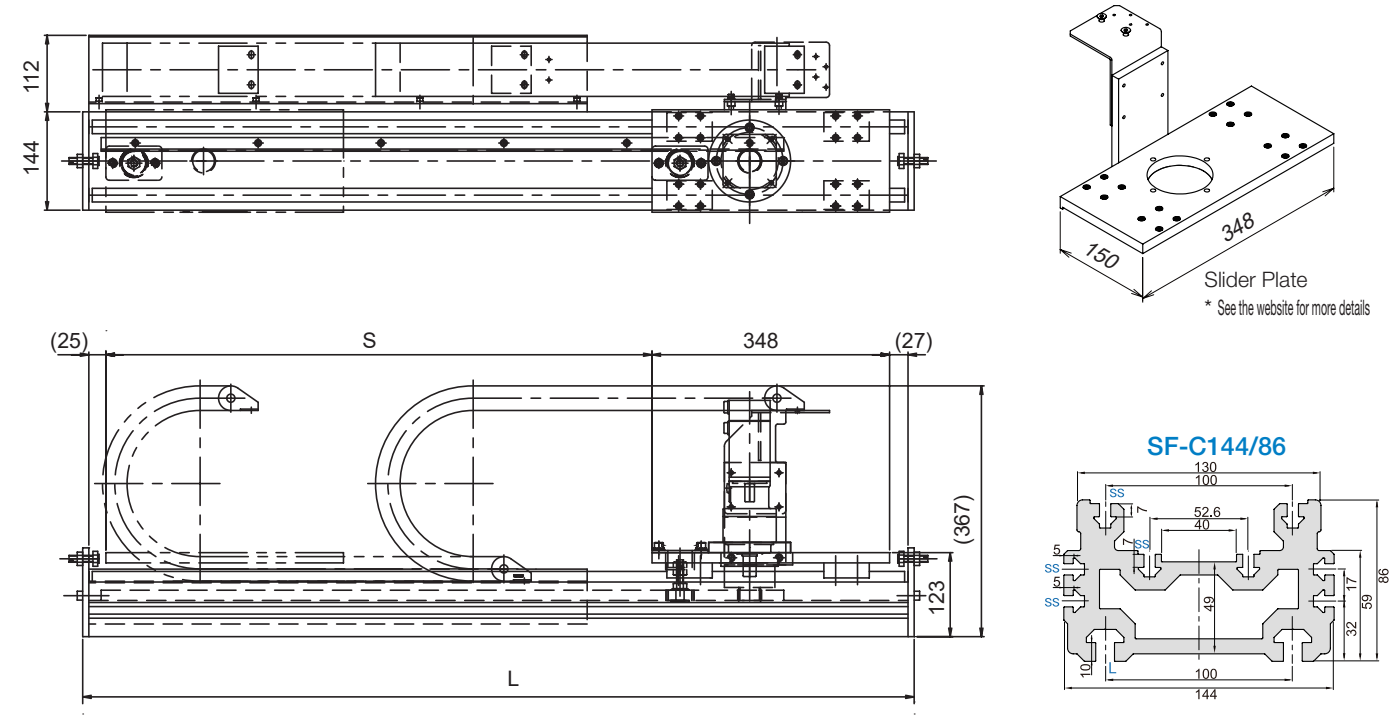
Static Allowable Moment Ma	2107Nm
Static Allowable Moment Mb	2107Nm
Static Allowable Moment Mc	2340Nm
Total Length	1218mm
Frame Length	1200mm



\* The illustration is a simulation.

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

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



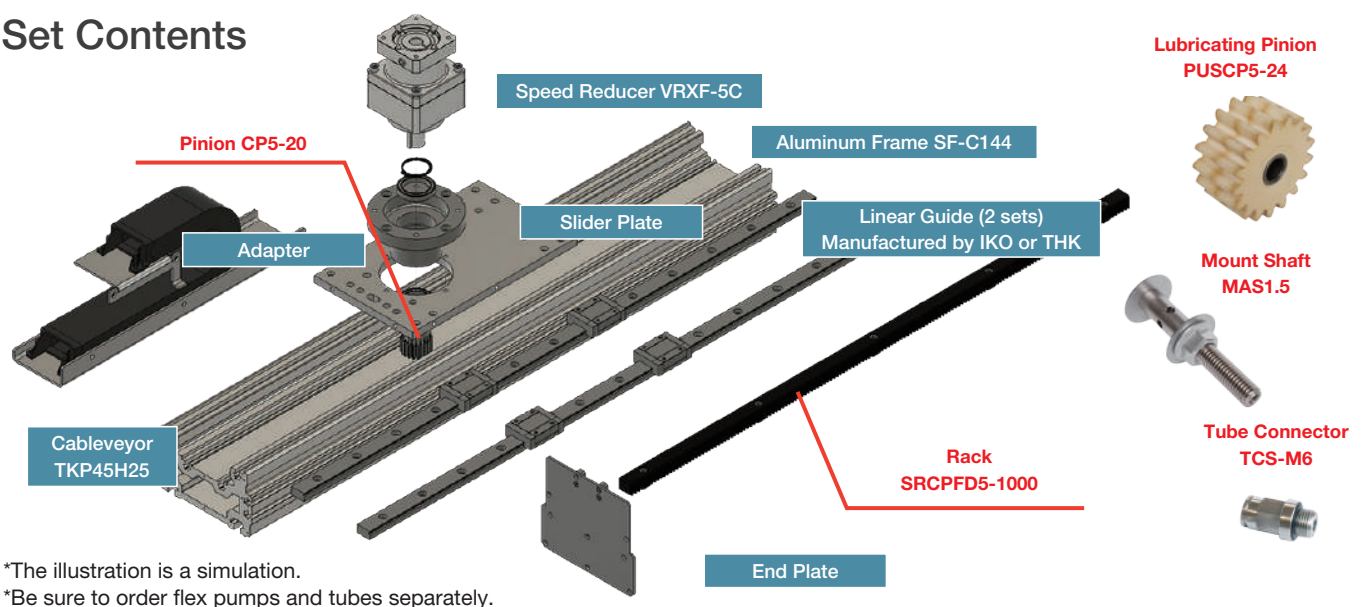
### Standard specifications

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.

## Set Contents

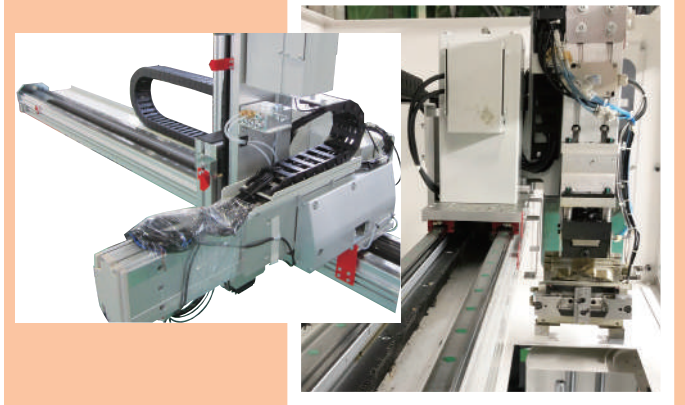


\*The illustration is a simulation.  
\*Be sure to order flex pumps and tubes separately.

### Product Features

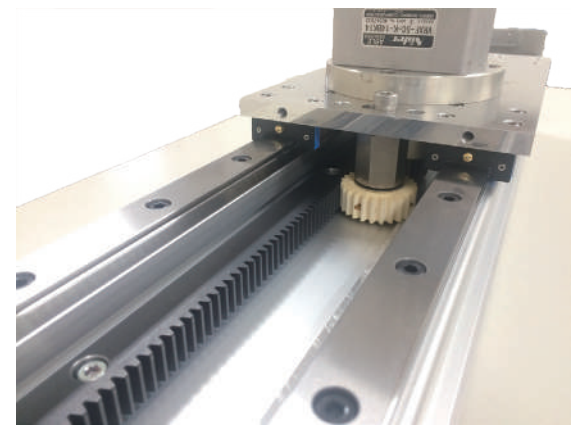
- ① The maximum stroke can be freely set within 3800 mm.
- ② Capable of transporting a wide range of light to heavy objects
- ③ Delivery time for the transport device in the example is 30 business days (discussion required when changing specifications)

## Application Examples



\* Image courtesy of Hasegawa Machine Works, Ltd.

Standard equipment includes lubricating pinion

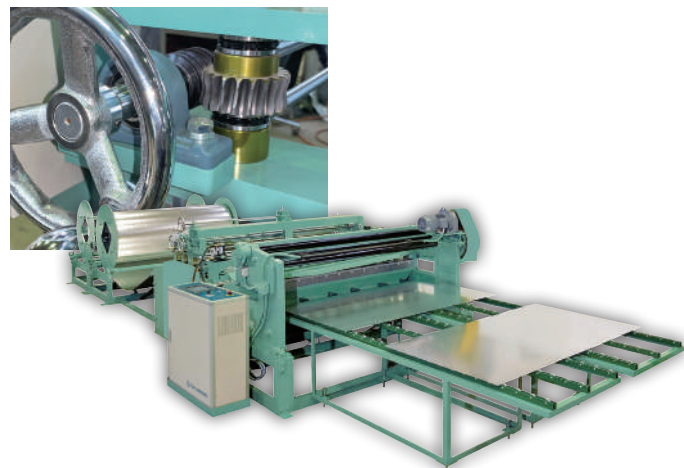




# Case Study 1

**FUKAGAWA** 株式会社深川製作所様

Automatic Size Cutting Device **NAHC-F10**

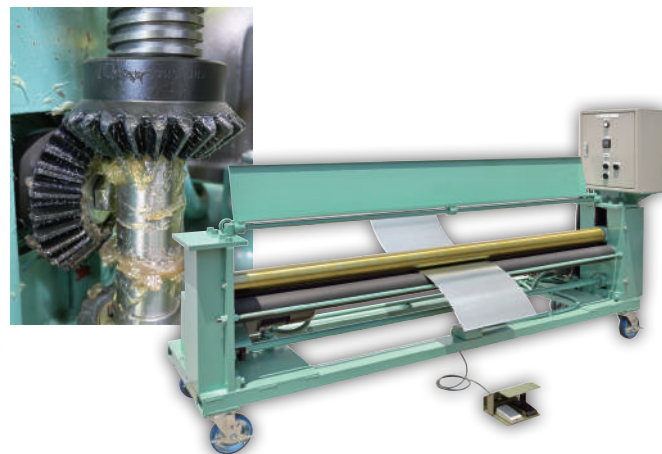


**Gears Used**  
Uses SW worms and CG worm wheels for rib roll feeding

**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

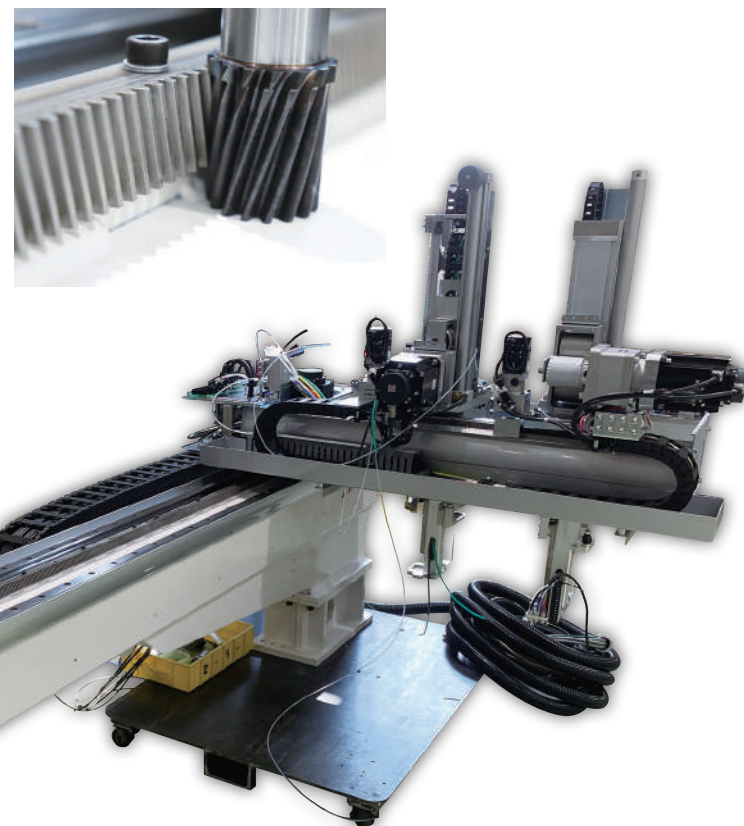
**SAILOR** セーラー万年筆株式会社様

Injection Molded Product Automatic Extractor **sigma5**

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

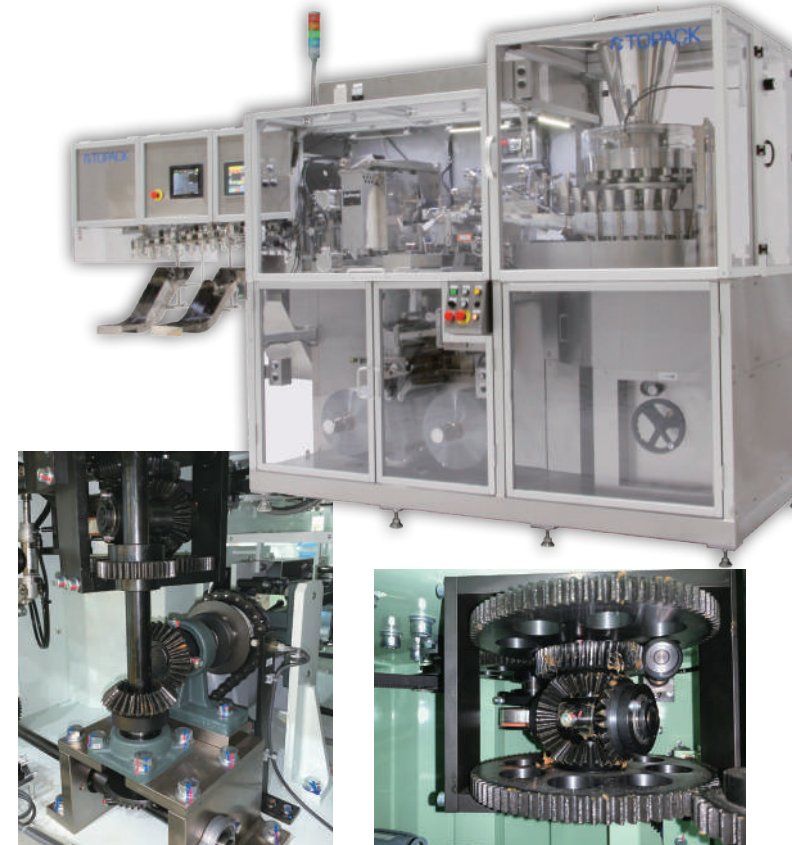
**Machine Application**  
A device used in plastic injection molding that extracts molded products from the molding machine and delivers them to a post-process such as a conveyor or machining machine installed next to the molding machine

**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.



**株式会社 トパック** 様

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 800 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.

**MARUHIDE** 株式会社丸秀工機様

Pipe Coaster **HID-400MA,600MA, 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

**Hataly** 株式会社 ハタリー 様

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**



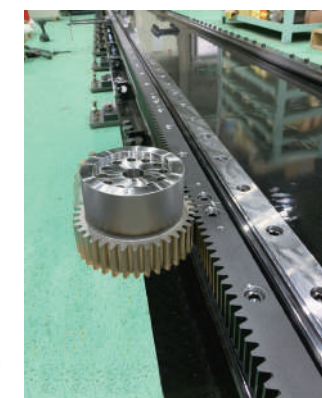
- Gears Used**  
Uses SWG worms and AG worm wheels in machining drive gearboxes
- Machine Application**  
Secondary operations of H-section steel grooves, scallops and driving
- Features**
- Supports non-scallop machining
  - Automated 3 shafts
  - High-rigidity frame
  - Reliable long-run model

**株式会社 トーキン** 様 (広島県呉市)

Robot Slider **RS1S**

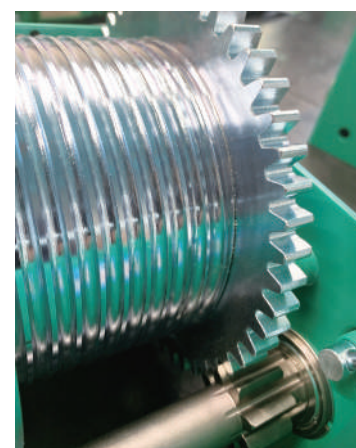
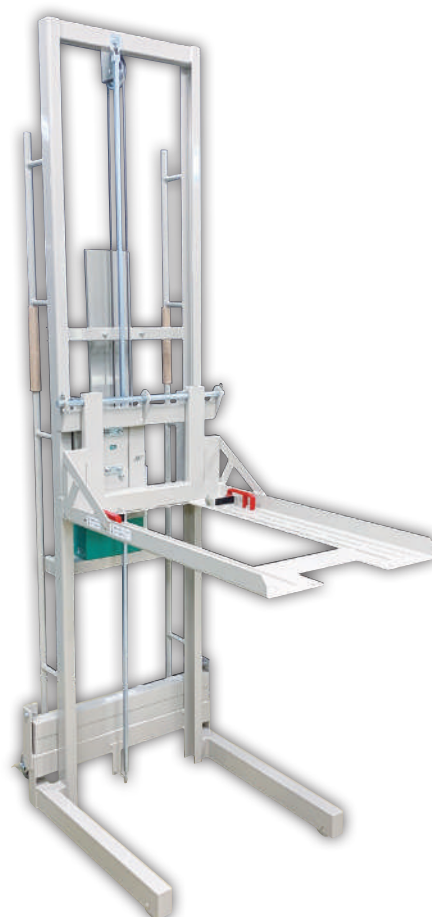


- Gears Used**  
SRCPF racks and custom-order CP spur gears are used for the traveling shaft
- Machine Application**  
As a traveling device for various robots
- Features**
- Can be extended by 1.2m by combining 3 types of frames
  - Allows additional extension to be made to existing devices
  - Achieved the maximum track record of 40.8 m



**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.

**Masuko** 増幸産業株式会社 様

Super Mass-Colloider **MKZA10-15JIV**



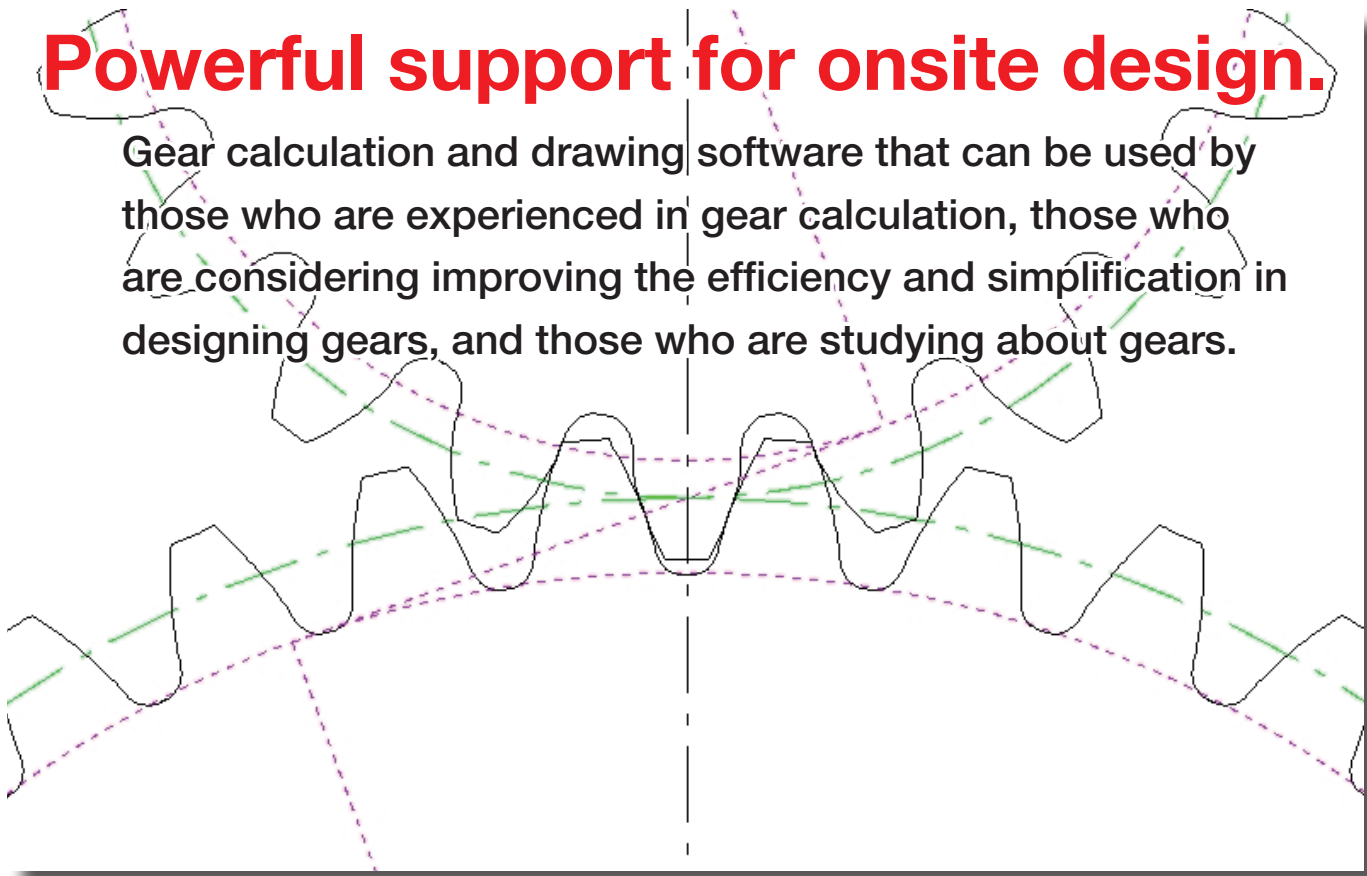
- Gears Used**  
Use custom-made spline shafts and spline hubs for the attrition shaft, and SB bevel gears for the manual grinding shaft
- Machine Application**  
Food, spices, industrial raw materials, pharmaceuticals, cosmetics, etc.
- Features**  
Ultra-fine grain grinder. A stone mill type grinder that's capable of ultra-fine granulation that feels like melting.



Gear calculation software **GCSW** Free  
& Gear drawing software **GDSW** for Web

Powerful support for onsite design.

Gear calculation and drawing software that can be used by those who are experienced in gear calculation, those who are considering improving the efficiency and simplification in designing gears, and those who are studying about gears.



Calculation Example

Calculation of dimensions and strength

Calculation of gear force

Backlash conversion

Drawing Example

Spur gears, ground helical gears

Racks

Bevel Gears

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)

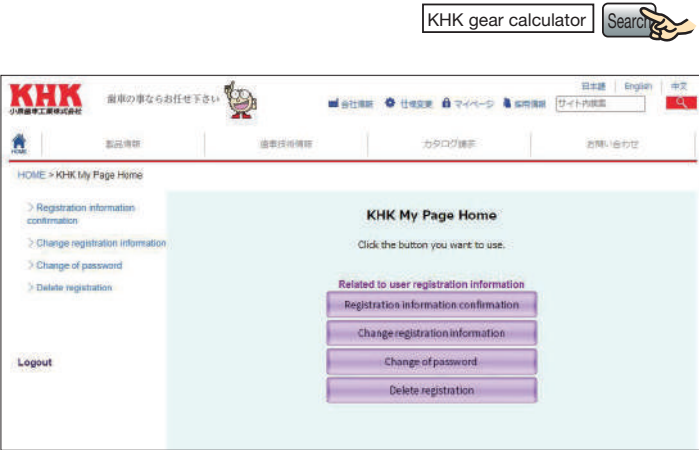
It can be used to make drawings with basic gear shapes without needing CAD software. Drawings of spur gears, bevel gears, worm gears and the like can be printed and CAD data can be created.

Usage

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






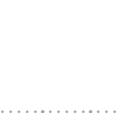







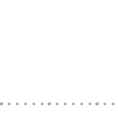






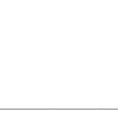



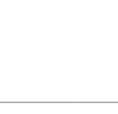
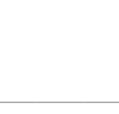
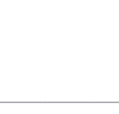
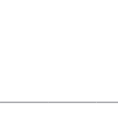




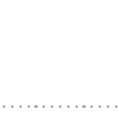



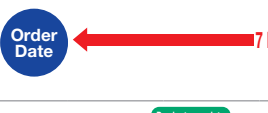




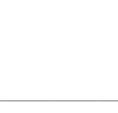



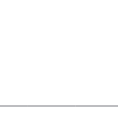

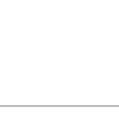














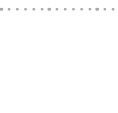



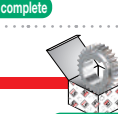










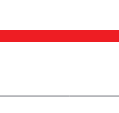








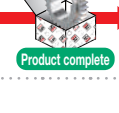

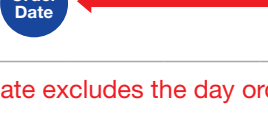
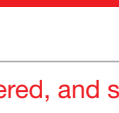
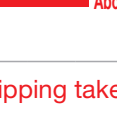
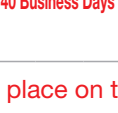

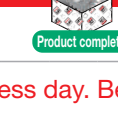


<Cautions regarding Manufacturing>

- 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.



Delivery Date Guide

Shipping Date	4 days later	6 days later	9 days later	17 days later	30 days later	40 days later
Product Name						
						
 Modules Over 4 (CP15) (except for racks) *Note 1						
 (MMSGQ)						
						
						
 Module Over 4						
						
						
						
 Modules Over 4 (CP15) (except for racks)						
Semi-Custom Standard Product SS						
Semi-Custom Standard Product SSG						
Semi-Custom J Series SS						
Semi-Custom J Series SSG						

\*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 5 units; for racks, SUS, SN, MMSG, SMSG, and MMSGQ products of module 4 or higher, up to 20 units.

Series Common

- (1) For allowable order sizes, see the Delivery Date Guide 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 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 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.
- [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 type semi-custom J series products take about 40 working days after the order is received.



Prices

- ① Made-to-order products, semi-custom orders, and semi-custom order J Series products are estimated separately. Contact your dealer.
- ② In addition, 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.



















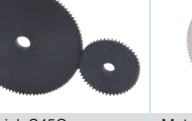












Out of Stock

[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



Spur Gears

<b>MSGA/MSGB</b> Ground Spur Gears	<b>KSG</b> Ground Spur Gears	<b>SSGS</b> Ground Spur Pinion Shafts	<b>SSG</b> Ground Spur Gears	<b>SSG F Series</b> Ground Spur Gears	<b>SSG E Series</b> Ground Spur Gears	<b>SSG R Series</b> Ground Spur Gears
						
Material: SCM415 <b>m1~4</b> <b>Page 50</b>	Material: SCM440 <b>m1~3</b> <b>Page 54</b>	Material: S45C <b>m1.5~3</b> <b>Page 56</b>	Material: S45C <b>m0.5~10</b> <b>Page 58</b>	Material: S45C <b>m2~3</b> <b>Page 76</b>	Material: S45C <b>m1.5~6</b> <b>Page 82</b>	Material: S45C <b>m1.5~6</b> <b>Page 92</b>
<b>Pinion Gears for Nabtesco GH Series</b>	<b>SSAG</b> Ground Spur Gears	<b>KS-H</b> Hardened Spur Gears	<b>KS</b> Thermal Refined Spur Gears	<b>SSS</b> Spur Pinion Shafts	<b>SS-H</b> Hardened Spur Gears	<b>SS</b> Spur Gears
						
Material: S45C/SCM440 <b>m3~6 (CP10~20)</b> <b>Page 94</b>	Material: S45C <b>m1~6</b> <b>Page 96</b>	Material: SCM440 <b>m1.5~5</b> <b>Page 100</b>	Material: SCM440 <b>m1.5~5</b> <b>Page 100</b>	Material: S45C <b>m1, 1.5</b> <b>Page 102</b>	Material: S45C <b>m1~6</b> <b>Page 106</b>	Material: S45C <b>m0.5~10</b> <b>Page 104</b>
<b>SS F Series</b> Spur Gears	<b>SSA-H</b> Hardened Spur Gears	<b>SSA</b> Spur Gears	<b>SSA F Series</b> Spur Gears	<b>SSY</b> Spur Gears	<b>SSAY</b> Spur Gears	<b>SUS/SUSA</b> Stainless Steel Spur Gears
						
Material: S45C <b>m1.5~3</b> <b>Page 130</b>	Material: S45C <b>m1~5</b> <b>Page 138</b>	Material: S45C <b>m1~5</b> <b>Page 138</b>	Material: S45C <b>m2~3</b> <b>Page 144</b>	Material: S45C <b>m0.8, 1</b> <b>Page 148</b>	Material: S45C <b>m1</b> <b>Page 152</b>	Material: SUS303 <b>m1~4</b> <b>Page 154</b>
<b>SUSF</b> F-Loc Gears	<b>DSF</b> F-Loc Gears	<b>NSU</b> Plastic Spur Gears with Steel Core	<b>PU</b> Plastic Spur Gears with Steel Core	<b>PS/PSA</b> Plastic Spur Gears	<b>SUKB</b> Stainless Steel Hubs	<b>PSUKB</b> SUKB Assembled PSA Spur Gear
						
Material: SUS303 <b>m0.5, 1</b> <b>Page 160</b>	Material: Polyacetal (SUS303) <b>m0.5, 1</b> <b>Page 162</b>	Material: MC602ST (S45C) <b>m1~3</b> <b>Page 164</b>	Material: MC901 (SUS303) <b>m1~2</b> <b>Page 168</b>	Material: MC901 <b>m1~3</b> <b>Page 170</b>	Material: SUS303 <b>φ 30~100</b> <b>Page 180</b>	Material: MC901/SUS303 <b>m2~3</b> <b>Page 181</b>
<b>DS</b> Injection Molded Spur Gears	<b>BB</b> Sintered Metal Bushings	<b>BSS</b> Spur Gears	<b>SSR</b> Steel Ring Gears (Spur Gears)			
						
Material: Duracon (R) (M90-44) <b>m0.5~1</b> <b>Page 182</b>	Material: Oil-free copper alloy <b>φ 5~8</b> <b>Page 184</b>	Material: Free cutting brass (C3604) <b>m0.5~1</b> <b>Page 186</b>	Material: S45C <b>m2~3</b> <b>Page 188</b>			

**M** Includes Made to Order

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) Spur Gears

S S G 1 - 15

No. of Teeth (15)

Module (1)

Other Products (Ground Gears)

Type (Spur Gear)

Material (S45C)

Material	
M	SCM415
K	SCM440
S	S45C
SU	Stainless Steel
P	MC901
N	MC602ST
D	Polyacetal
BS	Brass
L	Sintered Metal Alloy

Type	
S	Spur Gears

Other Information

A	Without Hub
G	Ground Gears
F	F-loc Hub Gears
R	Ring Gears
S	Pinion Shafts
U	Plastic Gears with Steel Core
Y	Thin Face Gears
H	Gear Teeth Induction Hardened

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gears

Gearboxes

Other Products



Kohara Gear Industry Co.,Ltd.



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)



Plane / Inner Surface Combined Grinding Machine (NVG II -5T)



CNC Hobbing Machine (KN-152)



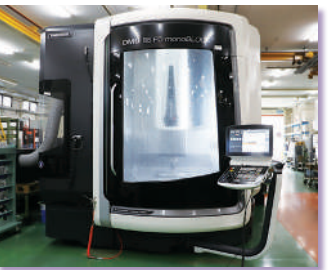
Hobbing Board (KL-451)



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)

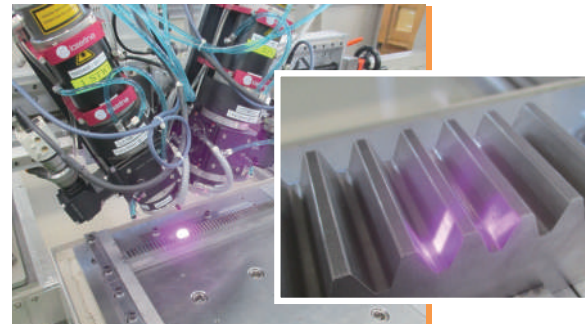


Gear Measuring System (350GMS)

## Hardening Equipment



Induction Hardener (MK16A STAT300-50)



Laser Hardener (LDF4000-40)

## Production Equipment



Rack Grinding Machine (ZSM Compact 2200)



CNC Lathe (MW120EXG)



CNC Hobbing Machine (KN-152)



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)

## All KHK stock gears conform to the RoHS2<sup>\*1</sup> Directive.

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

### RoHS2 Directive

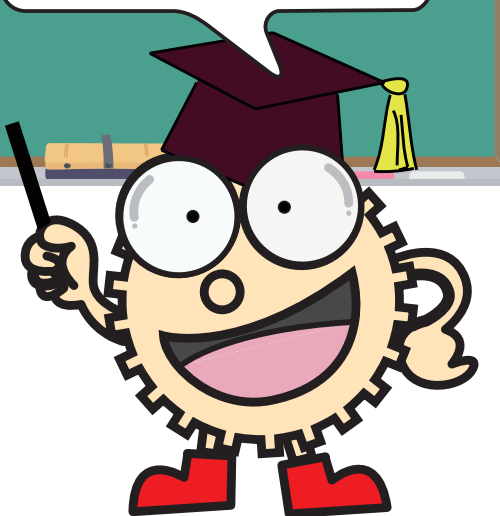
#### Restriction of Hazardous Substances

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)

Cadmium and hexavalent chromium: Environmentally damaging substances are not used.



## 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

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

### SDS Activities

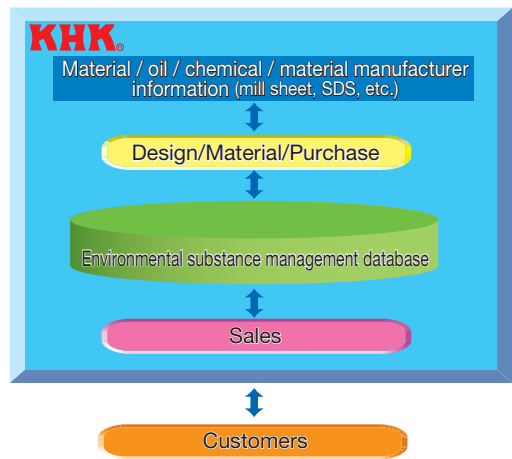
The materials and products used for KHK stock gears, the rust preventive oil and packaging materials, and the auxiliary materials used in the manufacturing process are managed in the safety data sheet for chemical substances, etc., in consideration of the global environment.

### 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.



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.

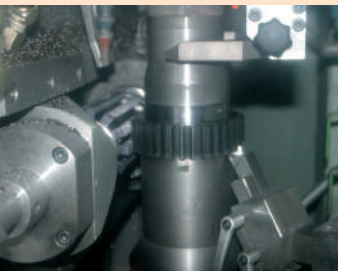
環境物質管理データベース

管理項目	管理内容	管理対象	管理範囲	管理期間	管理責任	管理状況	管理履歴
材料	材料名	材料規格	材料数量	材料単位	材料価格	材料品質	材料履歴
油	油名	油規格	油数量	油単位	油価格	油品質	油履歴
化学	化学名	化学規格	化学数量	化学単位	化学価格	化学品質	化学履歴
材料	材料名	材料規格	材料数量	材料単位	材料価格	材料品質	材料履歴
油	油名	油規格	油数量	油単位	油価格	油品質	油履歴
化学	化学名	化学規格	化学数量	化学単位	化学価格	化学品質	化学履歴

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

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.





Discontinued Stock Product Model Number History Table

Category	Discontinued Products		Specifications		Alternative	Sales Period
	Item	Range	Characteristics	Material	Item	
Spur Gears	<b>MSGA/MSGB</b>	Module 1, 1.5, 2, 2.5, 3, 4	Carburized	SCM415	Custom order	1978~2022
	<b>SSG</b>	Some products of module 0.5, 0.8	Finished	S45C	Custom/Made to Order	2008~2022
	<b>SSS</b>	Module 0.5, 0.8, 2, 2.5, 3	Shaft Type	S45C	Custom order	2008~2020
	<b>SS</b>	Some products of module 0.5, 0.8, 1, 1.5	Finished	S45C	Made to Order / Secondary Operations	2008~2020
	<b>SSY</b>	Some products of module 0.8, 1, 1.25	With Hub	S45C	Custom order	1984~2020
	<b>SSAY</b>	Module 1.25	Hubless	S45C	Custom order	1988~2008
	<b>SSAY/K</b>	All	K clamp (patented)	S45C	No production	2002~2017
	<b>SSH</b>	All	Honing treatment on Tooth Surface	S45C	<b>SSG</b>	1973~1975
	<b>LS</b>	m0.5-25,40 m0.8-25,40,60,70,80	Sintered item	SMF5040	<b>SS</b>	2000~2014
	<b>CS</b>	All	Molded	FC200	<b>SS</b>	1973~1984
	<b>SUSL</b>	All	F-loc	SUS303	<b>SUSF</b>	1996~2016
	<b>DSL</b>	All	F-loc	Acetal (SUS303)	<b>DSF</b>	2000~2016
	<b>SUSF</b>	Module 0.5, 1	F-loc	SUS303	Custom order	2016~2022
	<b>DSF</b>	Module 0.5, 1	F-loc	Polyacetal (SUS303)	Custom order	2016~2022
	<b>NSU</b>	Some products of module 1,1.5, 2, 2.5, 3	With core hub	MC602ST (S45C)	Custom order	1988~2022
	<b>PSU</b>	All	With core hub	MC901 (FC200)	<b>PU</b>	1988~1996
	<b>DS</b>	Some products of module 0.5, 0.8, 1	Molded item	Duracon (R) (M90-44)	Custom order	1988~2022
	<b>BSS</b>	Some products of module 0.5, 0.8, 1	Finished	C3604	Made to Order / Secondary Operations	2008~2020
	<b>MSCPG</b>	All	Carburized	SCM415	Made to Order	2014~2020
	<b>KSCP</b>	All	Thermal refined, gear teeth induction hardened	SCM440	<b>KSSCP Hardened Plus</b>	2014~2019
Helical Gears	<b>KHCPG</b>	All	CP, Ground	SCM440	Custom order	1992~1992
	<b>KHG</b>	Some products of module 1,1.5, 2, 2.5, 3	Transverse modules, ground gears	SCM440	Custom order	1989~2022
Internal Ring Gears	<b>CI</b>	All	Molded	FCD55	<b>SI</b>	1973~1978
Racks	<b>KRG</b>	All 500mm	Thermal Refined, Ground	SCM440	<b>KRGF</b>	1984~2020
	<b>KRGD</b>	All	Thermal Refined, Ground	SCM440	<b>KRGFD-HJ</b>	1984~2019
	<b>SR</b>	Lengths over 1000 mm	Common Type	S45C	<b>SRF</b>	1973~2008
	<b>SRG/SRGF</b>	Module 0.5, 0.8	Gear teeth induction hardened	S45C	Made to Order	2008~2022
	<b>SUR</b>	Lengths over 1000 mm	Stainless Steel	SUS304	<b>SURF</b>	2004~2020
	<b>PR</b>	Lengths over 1000 mm	Plastic	MC901	<b>PRF</b>	1984~2020
	<b>BSR</b>	Module 1.25	Contains Brass	C3604	Custom order	1984~2008
	<b>SRO</b>	SRO6-1000	Round Racks	S45C	Custom order	1989~2019
	<b>CR</b>	All	Molded	FC200	<b>SRF</b>	1973~1978
	<b>KRGCP</b>	All 500mm	Thermal Refined, Ground	SCM440	<b>KRGCPF</b>	1986~2020
	<b>KRGCPD</b>	All	CP, Thermal Refined, Ground	SCM440	<b>KRGCPFD-HJ</b>	1984~2019
	<b>SRCP</b>	Lengths over 1000 mm	CP	S45C	<b>SRCPF</b>	1978~2008
	<b>KRHG</b>	Some products of module 2, 2.5, 3	Thermal Refined, Ground	SCM440	Custom order	1992~2022
Helical Racks	<b>KRHGCPF</b>	All	CP, Ground	SCM440	Custom order	1992~1992
Spiral Miter Gears	<b>SMS</b>	Module 1.25	Common Type	S45C	Custom order	1978~2006
	<b>KSP</b>	F Type (Finished Products with Key Groove) All Products, Parts of m1.5 to 6	Finished	SCM415	Made to Order / Secondary Operations	2004~2022
Straight Miter Gears	<b>CM</b>	All	Molded	FC20	<b>SM</b>	1973~1978
	<b>FM</b>	All	Precision Molded	S45C	<b>SM</b>	1973~1978
	<b>SMA/B/C</b>	Some products of module 3.5, 6, 8	Finished	S45C	Custom order	1973~2022

Category	Discontinued Products		Specifications		Alternative	Sales Period
	Item	Range	Characteristics	Material	Item	
Ground Zerol Miter Gears	<b>SMZG</b>	All	Thermal refined, gear teeth induction hardened	S45C	Custom order	2010~2020
High-Ratio Hypoid Gears	<b>MHP</b>	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	<b>MBSA</b>	Some products of module 1.5 or less, 2, 2.5, 3, 4, 5, 6	Finished	SCM415	Custom order	1978~2020
	<b>MBSB</b>	Some products of module 1.5 or less, 2, 2.5, 3, 4, 5, 6	Finished	SCM415	Custom order	1978~2020
	<b>KSP</b>	F Type (Finished Products with Key Groove) All Products, Parts of m1.5 to 6	Finished	SCM415	Custom order	2004~2022
Straight Bevel Gears	<b>FB</b>	All	Precision Molded	S45C	<b>SB</b>	1973~1978
	<b>SB</b>	CB gear mating pinions with module over m5	Common Type	S45C	<b>SBY</b>	1973~2006
	<b>CB</b>	All items having SB	Molded	FC200	<b>SB, SBY</b>	1973~2000
	<b>CB</b>	SB mating gears with module over m5	Molded	FC200	<b>SB, SBY</b>	1973~2006
Ground Zerol Bevel Gears	<b>SBZG</b>	All	High reduction ratio with a pair of gears	S45C	Custom order	2010~2020
Screw Gears	<b>AN</b>	Module 2.5, 3,4	Contains Aluminum Bronze	CAC702 (AIBC2)	Made to Order	1979~2022
Worms	<b>KWGD</b>	Module Over 5	Duplex, Ground	SCM440	Custom order	1988~2002
	<b>KWGDLS</b>	Module Over 5	Duplex, Ground Shaft	SCM440	Custom order	1992~2002
	<b>KWG</b>	Right-hand helix with double threads with module over m5 (R2)	Ground Shaft	SCM440	Custom order	1978~2002
	<b>SW</b>	Left-hand helix with module over m4 (L1, L2)	Common Type	S45C	Custom order	1996-2002 m4 is 1996~2019
Worm Wheels	<b>AG</b>	Module 3, 4	Contains Aluminum Bronze	CAC702 (AIBC2)	Custom order	1973~2022
	<b>AGDL</b>	Module Over 3.5	Duplex	CAC702 (AIBC2)	Custom order	1988~2022
	<b>AGF</b>	Module Over 2	Contains Aluminum Bronze	CAC702 (AIBC2)	Custom order	1978~2022
	<b>BG</b>	Left-hand helix with module over m4 (L1, L2)	Contains Phosphor Bronze	CAC502 (PBC2)	Custom order	1996-2002 m4 is 1996~2019
	<b>CG</b>	Module Over 1.5	Molded	FC200	Custom order	1996-2020 m4 is 1996~2019
	<b>DG</b>	Module 0.5, 0.8	Polyacetal	Polyacetal	Custom order	2008~2022
Gearboxes	<b>PBX</b>	All	Bevel Gearboxes	—	No production	2004~2022
Other Products	<b>SRTB</b>	Some products of modules 2/3~4	Gear teeth induction hardened	S45C	Made to Order	1992~2022
	<b>GC</b>	All TK	Gear Couplings	S45C	<b>GC-J</b>	1975~2020
One-cycle-clutch type geared motor	<b>F</b>	All	Without motor		No production	1973~1980
	<b>IM</b>	All	With motor		No production	1973~1980
	<b>M</b>	All	With motor		No production	1973~1980
Gear calculation software	<b>GCSW</b>	All	General gear calculation		Online GCSW	1988~2009
Electronic catalog (Japanese version only)	<b>30XX</b>	All	Product information for KHK stock gears DXF, strength calculation, etc.		Web Catalog	1992~2011



# Customer Trust and Satisfaction



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### **KHK Catalog – Product Guide**

First Published 20.April. 1972  
2023 First Printing (EN) 1.Apr. 2023  
Publisher Toshiharu Kohara

Published by

KHK Co., Ltd.

13-15 Naka-cho, Kawaguchi-shi, Saitama-ken,  
332-0022 Japan