Prices/Changes/Cancellations/Out of Stock

Prices

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

Changes and Cancellations

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

[KHK Quick-Mod Products, Custom Gears]
Because production begins upon ordering, cancellations and changes are difficult.
Changes may be possible in some cases, depending on modification status, but a further estimate will be required. Contact your dealer for details.
As the product is manufactured to customer-specified dimensions, it cannot be used elsewhere; therefore, returns are not possible.

Out of Stock

[Standard Gears (gears in stock), Standard Machined Products *Note 1, KHK Quick-Mod Gears]
Production takes place according to stock status, so there may not be sufficient quantities available as ordered.
Some time may be required for production after orders.
Lead times may be longer depending on material acquisition status and modification processes.

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

Spur Gears

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

- 15: No. of Teeth (15)
- 1: Module (1)
- G: Other Products (Ground Gears)
- S: Type (Spur Gear)
- S: Material (S45C)

Material		Type	
M	SCM415	S	Spur Gears
K	SCM440		
S	S45C	**Other Information**	
SU	Stainless Steel	A	Without Hub
P	MC901	G	Ground Gears
N	MC602ST	F	F-loc Hub Gears
D	Polyacetal	R	Ring Gears
BS	Brass	S	Pinion Shafts
L	Sintered Metal Alloy	U	Plastic Gears with Steel Core
		Y	Thin Face Gears
		H	Gear Teeth Induction Hardened

Features

To meet your applications, KHK stock gears are made in a variety of types, materials, configurations, modules and numbers of teeth. We also provide finished gears that are ready to use. Secondary operations can be performed to many of the products, allowing for a wider range of designs. The following table lists the main features.

Catalog Number	Module	Material	Heat Treatment	Tooth Surface Finish	Precision JIS B 1702-1:1998	Secondary Operations	Features
MSGA/MSGB	1~4	SCM415	Carburized	Ground	N5	×	Fully hardened, ground and keyway machined gears with excellent accuracy, strength and abrasion resistance.
KSG	1~3	SCM440	Thermal refined, gear teeth induction hardened	Ground	N6	△	Gears that have been tempered, hardened and ground that have excellent accuracy, strength and abrasion resistance. Secondary operations can be performed except for the teeth. This product is ideal for the pinion of the KRGF rack.
SSGS	1.5~3	S45C	Thermal refined, gear teeth induction hardened	Ground	N7	△	Gears with shafts that have been tempered, hardened and ground. Secondary operations can be performed except for the teeth.
SSG	0.5~10	S45C	Gear teeth induction hardened NOTE 1	Ground	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.
SSAG	1~6						
KS	1.5~5	SCM440	Thermal refined	Cut	N8	○	Tempered gears with excellent bending strength. The teeth can be additionally hardened. This product is ideal for the pinion of the KRF rack.
SSS	1, 1.5	S45C	Thermal refined NOTE 2	Cut	N8 NOTE 3	○	Gears with a tempered shaft.
SS	0.5~10	S45C	—	Cut	N8 NOTE 3	○	Many lineups are available at a low price. The teeth can be additionally hardened.
SSA	1~5						
SSY/SSAY	0.8, 1	S45C	—	Cut	N8 NOTE 3	○	Gears with narrow teeth. Suitable for light loads.
SUS/SUSA	1~4	SUS303	—	Cut	N8	○	Stainless steel gears with rust resistance.
SUSF	0.5, 1	SUS303	—	Cut	N8 NOTE 3	×	Stainless steel gears with rust resistance. Locking Hub allows easy attachment.
DSF	0.5, 1	Polyacetal (SUS303)	—	Cut	N10 NOTE 3	×	Gears made of polyacetal. Locking Hub allows easy attachment.
NSU	1~3	MC602ST (S45C)	—	Cut	N9	○	Steel hubs are fused and fixed to reinforced nylon gears for secure fastening.
PU	1~2	MC901 (SUS303)	—	Cut	N9	○	Stainless steel hubs are fused and fixed to nylon gears for secure fastening.
PS/PSA	1~3	MC901	—	Cut	N9	○	Nylon gears can be used with no lubrication.
DS	0.5~1	Duracon (R) (M90-44) NOTE 4	—	Injection Molded	N12 equivalent	△	Low-priced gears made through injection molding. Suitable for light loads.
BSS	0.5~1	Free-cutting Brass (C3604)	—	Cut	N8 NOTE 3	○	Brass gears with excellent machinability.
SSR	2~3	S45C	—	Cut	N9	○	They have a ring shape with a large number of teeth.

○ Possible △ Partly possible × Not possible

[NOTE 1] Products with module under 1 are thermal refined. Gear teeth are not hardened.
[NOTE 2] SA-shaped products with module 1 have no material thermal refinement treatment.
[NOTE 3] The product accuracy class having a module under 1 corresponds to 'equivalent' as shown in the table.
[NOTE 4] "Duracon (R)" is a registered trademark of Polyplastics Co., Ltd. in Japan as well as other countries.

● **KHK stock spur gears (m1.5 and higher) have semi-topping on the tooth tips.**
● **Black products are KHK stock gears that have an applied black oxide coating for rust resistance.**

Application Examples

Spur gears are widely used in a diverse range of equipment such as food machinery and industrial machines.

■ **Fish processing machine manufactured by TOYO SUISAN KIKAI CO.,LTD.**

SS spur gears used for filleting fish

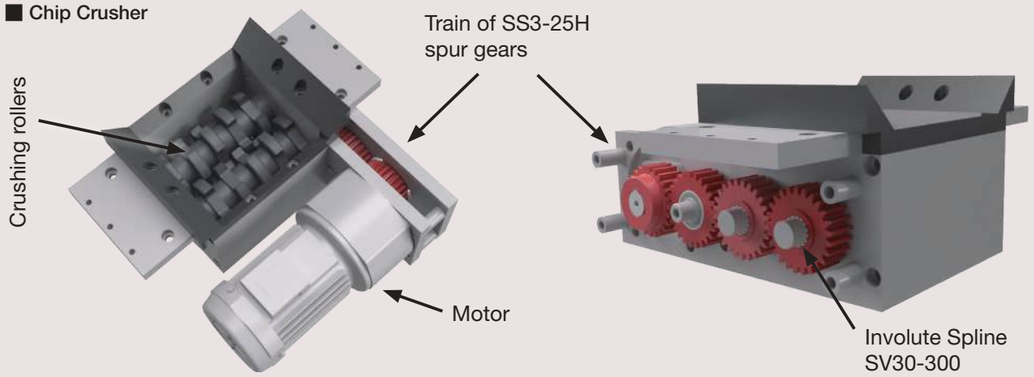
■ **Carton former**

SS spur gears used in automatic carton formers

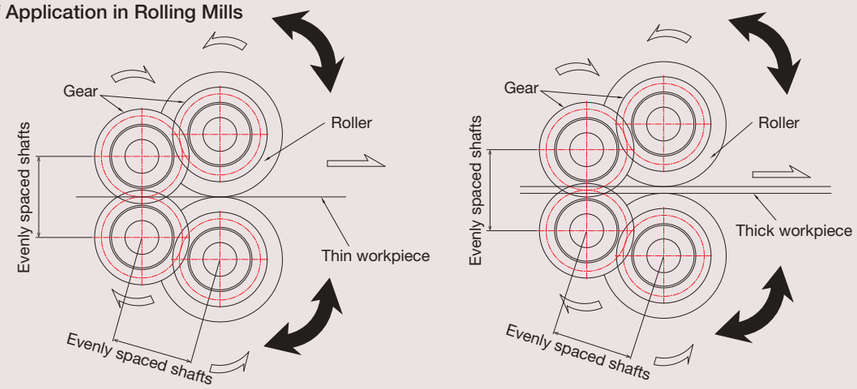
■ **High-speed automatic wire straightening/cutting machine manufactured by Takashima Sangyo Co.**

SS spur gears used for wire feeder

■ **Chip Crusher**



■ **Example of Application in Rolling Mills**



Selection Hints

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

1. Caution in Selecting the Mating Gears

① Basically, all spur gears, internal gears and racks can be paired as long as the module and pressure angle match. Products with different materials, tooth widths or accuracy can be mated.

2. Caution in Selecting Gears Based on Gear Strength

The gear strength values shown in the product pages were computed by assuming the application environment in the table below. Therefore, they should be used as reference only. We recommend that each user computes their own values by applying the actual usage conditions. Also, F-loc hub spur gears and various F series that use the friction coupling method to fasten the gear shaft need additional consideration for starting torque.

■ Calculation of Bending Strength of Gears

Item \ Catalog Number	MSGA MSGB	SSGS	SSG SSAG	SSS,SS SSA,SSY SSAY,SSR	SS-H SSY-H SSAY-H	SUS SUSA SUSF	BSS	KSG	KS	KS-H	ZSTP Note 6	SSG SSCPG Note 6	NSU	PU PS PSA	DSF DS
Formula NOTE 1	Formula of spur and helical gears on bending strength (JGMA401-01)												The Lewis formula		
No. of teeth of mating gears	Same number of teeth (30 for SSGS, SSS, SSR)							Racks					—		
Rotational Speed	600rpm NOTE 2			100rpm							400rpm		100rpm		
Design Life (Durability)	Over 10^7 cycles												—		
Impact from motor	Uniform load												Allowable bending stress (kgf/mm²)		
Impact from load	Uniform load												1.38 (40°C with no lubrication)	1.15 (40°C with no lubrication)	*m* 0.5 4.0 *m* 0.8 4.0 *m* 1.0 3.5 (40°C with grease lubrication)
Direction of load	Bidirectional load (calculated with allowable bending stress of 2/3)														
Allowable bending stress at root σ_{Flim} (kgf/mm²)	47	24.5	19 (24.5) Note 3	19 (24.5) Note 4	19	10.5	4	30	29.5	30	30	19			
Safety factor S_F	1.2														

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

Item													
Formula NOTE 1	Formula of spur and helical gears on surface durability (JGMA402-01)												
Kinematic viscosity of lubricant	100cSt (50°C)												
Gear support	Symmetric support by bearings Note 5							Supported on one end.					
Allowable Hertz stress σ_{Hlim} (kgf/mm²)	166	99	90 (62.5) Note 3	49 (62.5) Note 4	90	41.3	—	112	76	112	112	90	
Safety factor S_H	1.15												

[NOTE 1] The gear strength formula is based on JGMA (Japanese Gear Manufacturers Association) specifications, "MC Nylon Technical Data" by Mitsubishi Chemical Advanced Materials and "Duracon (R) Gear" by Polyplastics Co. The units for the rotational speed (rpm) and the stress (kgf/mm²) are adjusted to the units needed in the formula.
[NOTE 2] For semi-custom gears, the rotation speed is based on 300rpm.
[NOTE 3] For SSG Ground Spur Gears, with module under 1, thermal refining is applied. Allowable bending stress and allowable hertz stress values are shown in parentheses.
[NOTE 4] For SSS Spur Pinion Shafts, with module over 1.5, tooth induction hardening is not applied. Allowable bending stress and allowable hertz stress values are shown in parentheses.
[NOTE 5] SSS Spur Pinion Shafts with module 1 or less (SA configuration) are set to cantilever support as they are single shaft types.
[NOTE 6] For Nabtesco GH Series.

When selecting KHK standard gears, glance over the Product Precautions on Page 50 and Cautions on Performing Secondary Operations on each page.

① Products not listed in this catalog or materials, modules, number of teeth and the like not listed in the dimensional tables can be manufactured as custom items. Please see Page 26 for more details.
② The color and shape of the product images listed on the dimension table page of each product may differ from the actual product.
Be sure to confirm the shape in the dimension table before selection.
③ The details (specifications, dimensions, etc.) listed in the catalog may be changed without prior notice. Changes are announced on the KHK website.

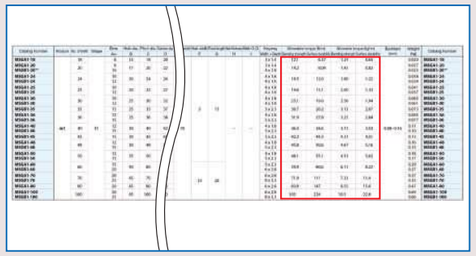
Website URL: https://khkgears.net/new/
Overseas Sales Department: Phone: +81-48-254-1744 Fax: +81-48-254-1765
E-mail: info@khkgears.net

Selecting the Gears

Step 1 Determine the calculated load torque applied to the gear and the gear type suitable for the purpose.

Step 2 Select provisionally from the allowable torque table in this catalog based on the load torque.

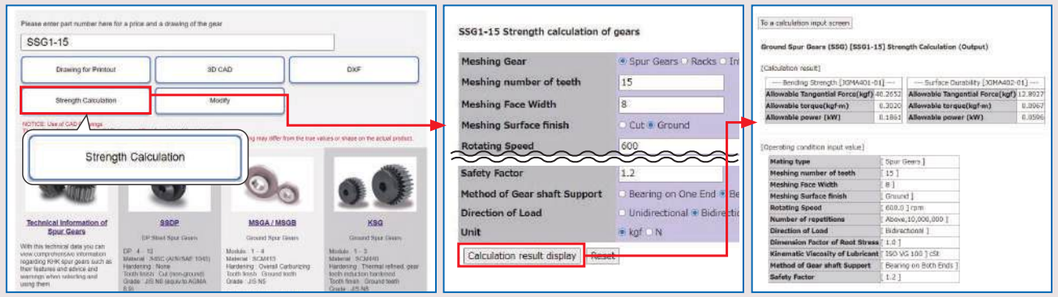
■ For provisional selection from this catalog



Step 3 Calculate the strength under the actual usage conditions.

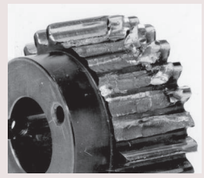
Calculate the strength formally using the various gear strength formulas. We recommend using the simple strength calculation available on our website.

■ Use the strength calculation function on our website.



■ Bending strength

Calculated values of the strength at which the gear teeth do not break due to fatigue.



Example of failure due to insufficient bending strength

■ Surface durability

Calculated values of the strength at which the gear teeth do not wear due to surface fatigue damage.

Example of wear due to insufficient surface durability

Product Precautions

Common Notes

[Caution on Product Characteristics]

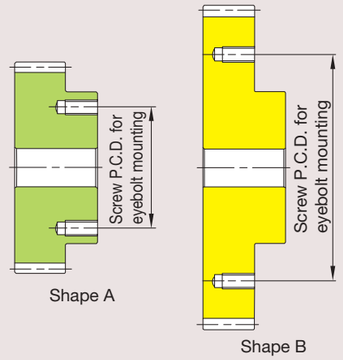
(1) The allowable torque shown in the table are calculated values according to the assumed usage conditions. Please see page 48 for more details.
(2) The backlash values shown in the table are the theoretical values for the backlash in the normal direction of a pair of identical gears in mesh.
(3) For hole lengths 3.5x the bore or more, the hole center is out of H7 tolerance.
(4) For bores of ϕ4 or below, the bore tolerance is H8. As well, the tolerance is H8 for ϕ5 or ϕ6 bores with hole length (total length) 3x the bore or more.
(5) Keyways are made according to JIS B1301 standards, Js9 tolerance. Also note that keyway tooth position alignment is not performed.
(6) For products having a tapped hole, a set screw is included.
(7) Variations in temperature or humidity can cause dimensional changes in plastic gears, including tooth diameter, bore, and backlash.
The accuracy and tolerances shown in the catalog are values obtained when machining is performed.
(8) To reduce heat generation, it is recommended to mate plastic gears with steel gears.
(9) See page 22 for more details on Hardened Plus (H Series and HJ Series).

● KHK's Specifications for Heat Treatment
Hardened location: Tooth surface, or Tooth surface and Tooth root
Hardness: 50 to 60 HRC
* Hardness and Depth of Gear-teeth Induction Hardening
The hardening method and the state of the hardened teeth area vary depending on the size of gears.
Since different hardening treatment is applied in accordance with the module and number of teeth, the hardness level is referred to as the hardness of the reference diameter.
For some of our products, the hardness at tooth tip / root may not be equal to the hardness you designated.
As to the effective case depth, it is specified by JIS, as "The distance from the surface of the case to the area with hardness HV450." The case depth differs from area to area of a tooth, so the depth cannot be specified.
Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).

[J Series]

(1) Certain products which would otherwise have a very long tapped hole are counterbored. For details, please see the KHK website.
(2) Black oxide is not re-applied to parts undergoing secondary operations.
(3) For bores over ϕ50, the bore tolerance is H8.

Tapped Holes in Semi-Custom Standard Products



Catalog Number	Shape	Screw P.C.D. for eyebolt mounting
SSG4-62S	B	180
SSG4-64S	B	190
SSG4-65S	B	190
SSG4-66S	B	190
SSG4-68S	B	200
SSG4-70S	B	200
SSG4-80S	B	220
SSG4-90S	B	240
SSG4-100S	B	260
SSG4-110S	B	280
SSG4-120S	B	300
SSG5-32S	A	95
SSG5-35S	A	105
SSG5-36S	A	105
SSG5-40S	A	115
SSG5-42S	A	115
SSG5-44S	A	125
SSG5-45S	A	125
SSG5-48S	A	125
SSG5-50S	A	125
SSG5-55S	B	210
SSG5-56S	B	210
SSG5-60S	B	210
SSG5-62S	B	220
SSG5-64S	B	220
SSG5-65S	B	220
SSG5-66S	B	230
SSG5-68S	B	230
SSG5-70S	B	240
SSG5-80S	B	260
SSG5-90S	B	290
SSG6-32S	A	125
SSG6-35S	A	135
SSG6-36S	A	135
SSG6-40S	A	145
SSG6-42S	A	145
SSG6-44S	A	145
SSG6-45S	A	155
SSG6-48S	A	155
SSG6-50S	A	155
SSG6-55S	B	240
SSG6-56S	B	240
SSG6-60S	B	240
SSG6-62S	B	250
SSG6-64S	B	250
SSG6-65S	B	260
SSG6-66S	B	260

Catalog Number	Shape	Screw P.C.D. for eyebolt mounting
SSG6-68S	B	260
SSG6-70S	B	270
SSG6-80S	B	300
SSG8-20S	A	105
SSG8-25S	A	135
SSG8-30S	A	165
SSG8-32S	A	175
SSG8-35S	A	185
SSG8-36S	A	185
SSG8-40S	A	195
SSG8-42S	A	205
SSG8-44S	A	205
SSG8-45S	B	290
SSG8-48S	B	300
SSG8-50S	B	300
SSG8-55S	B	300
SSG8-56S	B	300
SSG8-60S	B	300
SSG10-20S	A	135
SSG10-25S	A	175
SSG10-30S	A	215
SSG10-32S	A	225
SSG10-35S	A	235
SSG10-36S	A	245
SSG10-40S	A	255

Catalog Number	Shape	Screw P.C.D. for eyebolt mounting
SS4-90S	B	240
SS4-100S	B	260
SS4-110S	B	280
SS4-120S	B	300
SS5-62S	B	220
SS5-64S	B	220
SS5-65S	B	220
SS5-66S	B	230
SS5-68S	B	230
SS5-70S	B	240
SS5-80S	B	260
SS5-90S	B	290
SS5-100S	B	310
SS5-110S	B	340
SS5-120S	B	360
SS6-52S	B	240
SS6-54S	B	240
SS6-55S	B	240
SS6-56S	B	240
SS6-58S	B	240
SS6-60S	B	240
SS6-62S	B	250
SS6-64S	B	250
SS6-65S	B	260
SS6-66S	B	260
SS6-68S	B	260
SS6-70S	B	270
SS6-80S	B	300
SS6-90S	B	330
SS6-100S	B	360
SS8-32S	A	175
SS8-34S	A	185
SS8-35S	A	185
SS8-36S	A	185
SS8-38S	A	195
SS8-40S	A	195
SS8-42S	A	205
SS8-44S	A	205
SS8-45S	B	290
SS8-46S	B	215
SS8-48S	B	300
SS8-50S	B	300
SS8-52S	B	300
SS8-54S	B	300
SS8-55S	B	300
SS8-56S	B	300
SS8-58S	B	300

Catalog Number	Shape	Screw P.C.D. for eyebolt mounting
SS8-59S	B	300
SS8-60S	B	300
SS10-26S	A	185
SS10-27S	A	195
SS10-28S	A	195
SS10-29S	A	205
SS10-30S	A	215
SS10-32S	A	225
SS10-34S	A	235
SS10-35S	A	235
SS10-36S	A	245
SS10-38S	A	245
SS10-40S	A	255
SS10-42S	A	265
SS10-44S	B	350
SS10-45S	B	350
SS10-46S	B	350
SS10-48S	B	360
SS10-50S	B	360

Application Hints

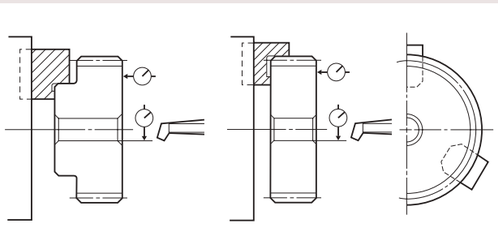
In order to use KHK stock gears safely, carefully read the Application Hints before proceeding.
If there are questions or you require clarifications, please contact your nearest distributor. E-mail: info@khkgears.net
Please read "Cautions on Performing Secondary Operations" below when performing modifications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

1. Cautions on Handling

① KHK products are packaged one by one to prevent scratches and dents, but if you find issues such as rust, scratches, or dents when the product is removed from the box after purchase, please contact the supplier.
② Depending on the handling method, the product may become deformed or damaged. Plastic gears and ring gears deform particularly easily, so please handle with care.

2. Caution on Performing Secondary Operations

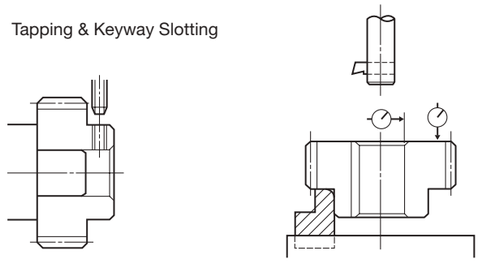
① If reboring, it is important to pay special attention to locating the center in order to avoid runout.
② The reference datum for gear machining is the bore. Therefore, use the bore for locating the center. If it is too difficult to do for small bores, the alternative is to use one spot on the bore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



Lathe Operations

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

Tapping & Keyway Slotting



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

Induction Hardening

If you apply induction hardening to the gear teeth of S45C products, you need to designate the hardness and where to apply the heat treatment. Below is an example of common specifications and KHK's specifications for hardening:

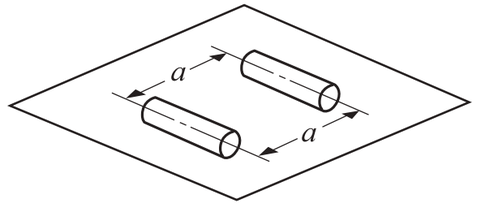
● Common Specifications for Heat Treatment
Hardened location: Tooth surface, or Tooth surface and Tooth root
Hardness: Within 10 HRC in the range from 45 to 60 HRC
(Example: 48 to 58 HRC)

● KHK's Specifications for Heat Treatment
Hardened location: Tooth surface, or Tooth surface and Tooth root
Hardness: 50 to 60 HRC

* Hardness and Depth of Gear-teeth Induction Hardening
The hardening method and the state of the hardened teeth area vary depending on the size of gears.
Since different hardening treatment is applied in accordance with the module and number of teeth, the hardness level you designate is referred to as the hardness of the reference diameter. For some of our products, the hardness at tooth tip / root may not be equal to the hardness you designated.
As to the effective case depth for S45C, it is specified by JIS, as "The distance from the surface of the case to the area with hardness HV450." The case depth differs from area to area of a tooth, so the depth cannot be specified.

3. Points of Caution during Assembly

① The recommended center distance tolerance of KHK stock spur gears is H7 for ground gears and H8 for cut gears. Backlash may be adjusted by changing the center distance of mating gears. For the connection between center distance change amount and peripheral direction backlash amount, use the gear calculation software.



$a=m(Z_1+Z_2)/2$

Where
a : Center distance
m : Module
Z_1 : No. of teeth of pinion
Z_2 : No. of teeth of gear

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

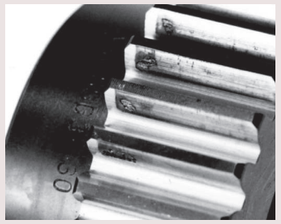
■ Total Length Tolerance for Spur and Helical Gears

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

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

③ Spur gears produce no thrust forces; however, be sure to fasten them firmly with stepped shafts, or collars, to prevent shifting toward the shaft.
Keyways are generally used in fastening gears to a shaft, and they should be fastened by applying drilled holes for set screws, or applying flats to the shaft, in case of fastening only with set screws.
There are also methods of secure settings using parts for engaging the hole and the axis.
④ Verify that the two shafts are parallel. Incorrect assembly will lead to uneven teeth contact which will cause noise and wear. (After assembly, check the tooth contact by painting a thin layer of red lead primer or the like on the gear teeth, meshing them together and rotating them.)

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



Poor tooth contact and pitting

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

4. Cautions on Starting

① Check the following items before starting.
- Are the gears fastened securely?
- Is there uneven tooth contact?
- Is there adequate backlash? (Be sure to avoid zero-backlash.)
- Has proper lubrication been supplied?

② If gears are exposed, be sure to attach a safety cover to ensure safety. Also, be careful not to touch rotating gears.
③ If there is any abnormality such as noise or vibration during startup, stop the operation immediately and check the assembly condition such as tooth contact, eccentricity and looseness.

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

Warning: Precautions for preventing physical and property damage

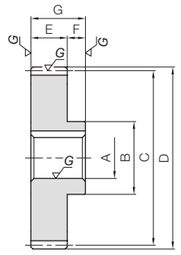
1. When using KHK products, follow relevant safety regulations (Occupational Safety and Health Regulations, etc.).
2. Pay attention to the following items when installing, removing, or performing maintenance and inspection of the product.
   ① Turn off the power switch.
   ② Do not reach or crawl under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

Caution: Cautions in preventing accidents

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

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

* No secondary operations can be performed on these finished gears due to the applied carburizing process.



S1

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length
				A_{H7}	B	C	D	E	F	G
MSGA1-18	***m*1**	18	S1	8	15	18	20	10	5	15
MSGA1-20 **MSGB1-20****		20		8 10	17	20	22			
MSGB1-24		24		12	20	24	26			
MSGA1-25 **MSGB1-25**		25		10 12	20	25	27			
MSGA1-30 **MSGB1-30**		30		10 12	25	30	32			
MSGB1-40		40		15	30	40	42			
MSGA1-48 **MSGB1-48**		48		12 15	30	48	50			
MSGA1-50		50		12	35	50	52			
MSGB1-60		60		20	40	60	62		10	20
MSGA1-70		70		20	45	70	72			
MSGA1-80		80		20	45	80	82			
MSGA1-100		100		20	45	100	102			
MSGA1.5-15**	***m*1.5**	15	S1	10	18	22.5	25.5	15	10	25
MSGA1.5-18 **MSGB1.5-18**		18		10 12	22	27	30			
MSGA1.5-20 **MSGB1.5-20**		20		12 15	25	30	33			
MSGB1.5-24		24		15	28	36	39			
MSGB1.5-25		25		16	30	37.5	40.5			
MSGB1.5-30		30		18	30	45	48			
MSGB1.5-36		36		18	32	54	57			
MSGA1.5-40		40		16	35	60	63			
MSGA1.5-50 **MSGB1.5-50**		50		18 22	40	75	78			
MSGB1.5-60		60		25	45	90	93			
MSGA1.5-70		70		20	45	105	108			
MSGA1.5-80 **MSGB1.5-80**		80		20 25	45	120	123			
MSGA1.5-100		100		25	50	150	153			
MSGB2-15**	***m*2**	15	S1	15	24	30	34	20	10	30
MSGA2-18 **MSGB2-18**		18		12 15	30	36	40			
MSGA2-20 **MSGB2-20**		20		15 18	32	40	44			
MSGB2-24		24		18	35	48	52			
MSGA2-25 **MSGB2-25**		25		16 20	35	50	54			
MSGB2-30		30		22	40	60	64			
MSGA2-35		35		18	40	70	74			
MSGA2-40 **MSGB2-40**		40		20 25	45	80	84			
MSGA2-60		60		25	55	120	124			

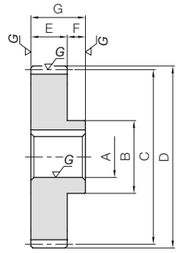
Keyway	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash	Weight	Catalog Number
Width × Depth	Bending strength	Surface durability	Bending strength	Surface durability	(mm)	(kg)	
3 x 1.4	12.1	6.37	1.24	0.65	0.08~0.16	0.020	**MSGA1-18**
3 x 1.4 4 x 1.8	14.2	8.04	1.45	0.82		0.027 0.023	**MSGA1-20** **MSGB1-20****
4 x 1.8	18.5	12.0	1.88	1.22		0.034	**MSGB1-24**
4 x 1.8 4 x 1.8	19.6	13.1	2.00	1.33		0.041 0.037	**MSGA1-25** **MSGB1-25**
4 x 1.8 4 x 1.8	25.1	19.0	2.56	1.94		0.065 0.061	**MSGA1-30** **MSGB1-30**
5 x 2.3	36.5	34.6	3.72	3.53		0.10	**MSGB1-40**
4 x 1.8 5 x 2.3	45.8	50.6	4.67	5.16		0.16 0.15	**MSGA1-48** **MSGB1-48**
4 x 1.8	48.1	55.1	4.91	5.62		0.18	**MSGA1-50**
6 x 2.8	59.9	80.6	6.11	8.22		0.27	**MSGB1-60**
6 x 2.8	71.9	111	7.33	11.4		0.37	**MSGA1-70**
6 x 2.8	83.9	147	8.55	15.0		0.47	**MSGA1-80**
6 x 2.8	103	224	10.5	22.8		0.69	**MSGA1-100**
4 x 1.8	30.8	14.8	3.15	1.51	0.08~0.16	0.050	**MSGA1.5-15****
4 x 1.8 4 x 1.8	41.0	22.1	4.18	2.26		0.080 0.074	**MSGA1.5-18** **MSGB1.5-18**
4 x 1.8 5 x 2.3	48.0	27.9	4.89	2.84		0.098 0.085	**MSGA1.5-20** **MSGB1.5-20**
5 x 2.3	62.4	41.5	6.36	4.24		0.13	**MSGB1.5-24**
5 x 2.3	66.0	45.4	6.73	4.63		0.14	**MSGB1.5-25**
6 x 2.8	84.7	66.4	8.63	6.77		0.19	**MSGB1.5-30**
6 x 2.8	108	97.1	11.0	9.90		0.28	**MSGB1.5-36**
5 x 2.3	123	121	12.6	12.3		0.37	**MSGA1.5-40**
6 x 2.8 6 x 2.8	162	193	16.6	19.7		0.57 0.54	**MSGA1.5-50** **MSGB1.5-50**
8 x 3.3	202	283	20.6	28.8		0.77	**MSGB1.5-60**
6 x 2.8	231	372	23.6	38.0		1.08	**MSGA1.5-70**
6 x 2.8 8 x 3.3	270	494	27.5	50.3		1.39 1.36	**MSGA1.5-80** **MSGB1.5-80**
8 x 3.3	347	787	35.4	80.2		2.13	**MSGA1.5-100**
5 x 2.3	73.1	35.7	7.46	3.64	0.10~0.20	0.10	**MSGB2-15****
4 x 1.8 5 x 2.3	97.2	53.5	9.91	5.46		0.19 0.17	**MSGA2-18** **MSGB2-18**
5 x 2.3 6 x 2.8	114	67.6	11.6	6.89		0.22 0.20	**MSGA2-20** **MSGB2-20**
6 x 2.8	148	101	15.1	10.3		0.30	**MSGB2-24**
5 x 2.3 6 x 2.8	157	110	16.0	11.2		0.33 0.31	**MSGA2-25** **MSGB2-25**
6 x 2.8	201	161	20.5	16.5		0.45	**MSGB2-30**
6 x 2.8	246	223	25.1	22.7		0.64	**MSGA2-35**
6 x 2.8 8 x 3.3	292	294	29.7	30.0		0.84 0.79	**MSGA2-40** **MSGB2-40**
8 x 3.3	457	658	46.6	67.1		1.84	**MSGA2-60**

[Caution on Product Characteristics] ① The keyway tolerance is the value before hardening.
② Products marked with "**" have a thin wall section between the keyway and the tooth, so please consider the strength of the thick part when using them. For details, please refer to the web catalog.

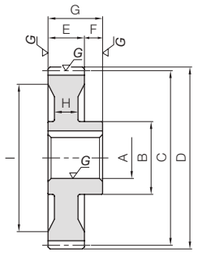
Product Precautions → Page 50

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

* No secondary operations can be performed on these finished gears due to the applied carburizing process.



S1



S2

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
				A_{H7}	B	C	D	E	F	G	H	I
MSGA2.5-15 **MSGB2.5-15****	***m*2.5**	15	S1	15 18	30	37.5	42.5	25	12	37	—	—
MSGB2.5-20		20		22	40	50	55					
MSGB2.5-24		24		22	40	60	65					
MSGB2.5-25		25		25	45	62.5	67.5					
MSGB2.5-36		36		30	55	90	95					
MSGA2.5-40 **MSGB2.5-40**		40		25 32	55	100	105					
MSGA2.5-55		55		30	70	137.5	142.5					
MSGB2.5-60		60		40	70	150	155					
MSGA2.5-70		70	S2	40	85	175	180				17	150
MSGA3-15 **MSGB3-15****	***m*3**	15	S1	18 22	36	45	51	30	15	45	—	—
MSGB3-20		20		25	45	60	66					
MSGB3-25		25		30	55	75	81					
MSGA3-30 **MSGB3-30**		30		28 35	60	90	96					
MSGA3-40 **MSGB3-40**		40		30 40	70	120	126					
MSGA3-45		45		30	70	135	141					
MSGA3-60		60	S2	35	80	180	186				20	156
MSGB4-15**	***m*4**	15	S1	30	48	60	68	40	20	60	—	—
MSGA4-20 **MSGB4-20**		20		28 32	60	80	88					
MSGA4-24		24		28	60	96	104					
MSGA4-25 **MSGB4-25**		25		30 35	60	100	108					
MSGA4-30 **MSGB4-30**		30		35 40	70	120	128					
MSGA4-40 **MSGB4-40**		40		40 45	80	160	168					
MSGB4-45		45		45	80	180	188					
MSGB4-50		50	S2	50	85	200	208				26	168

Keyway	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash	Weight	Catalog Number
Width × Depth	Bending strength	Surface durability	Bending strength	Surface durability	(mm)	(kg)	
5 x 2.3 6 x 2.8	143	71.0	14.6	7.24	0.10~0.20	0.23 0.20	**MSGA2.5-15** **MSGB2.5-15****
6 x 2.8	222	134	22.7	13.7		0.39	**MSGB2.5-20**
6 x 2.8	289	201	29.4	20.5		0.56	**MSGB2.5-24**
8 x 3.3	306	220	31.2	22.4		0.60	**MSGB2.5-25**
8 x 3.3	498	471	50.8	48.0		1.26	**MSGB2.5-36**
8 x 3.3 10 x 3.3	543	560	55.3	57.1		1.61 1.52	**MSGA2.5-40** **MSGB2.5-40**
8 x 3.3	804	1090	82.0	112		3.06	**MSGA2.5-55**
12 x 3.3	892	1310	90.9	134		3.45	**MSGB2.5-60**
12 x 3.3	1020	1730	104	176		4.24	**MSGA2.5-70**
6 x 2.8 6 x 2.8	247	124	25.2	12.7	0.10~0.20	0.40 0.35	**MSGA3-15** **MSGB3-15****
8 x 3.3	384	236	39.1	24.1		0.67	**MSGB3-20**
10 x 3.3	528	386	53.9	39.3		1.06	**MSGB3-25**
8 x 3.3 10 x 3.3	677	565	69.1	57.7		1.60 1.48	**MSGA3-30** **MSGB3-30**
8 x 3.3 12 x 3.3	938	988	95.6	101		2.86 2.66	**MSGA3-40** **MSGB3-40**
8 x 3.3	1090	1260	111	129		3.57	**MSGA3-45**
10 x 3.3	1470	2200	150	224		5.31	**MSGA3-60**
8 x 3.3	585	302	59.7	30.8	0.10~0.20	0.83	**MSGB4-15****
8 x 3.3 10 x 3.3	910	574	92.8	58.6		1.72 1.63	**MSGA4-20** **MSGB4-20**
8 x 3.3	1130	819	115	83.5		2.41	**MSGA4-24**
8 x 3.3 10 x 3.3	1190	896	122	91.4		2.56 2.44	**MSGA4-25** **MSGB4-25**
10 x 3.3 12 x 3.3	1530	1320	156	134		3.69 3.54	**MSGA4-30** **MSGB4-30**
12 x 3.3 14 x 3.8	2120	2290	216	234		6.49 6.33	**MSGA4-40** **MSGB4-40**
14 x 3.8	2460	2930	251	299		8.01	**MSGB4-45**
14 x 3.8	2800	3650	285	372		8.37	**MSGB4-50**

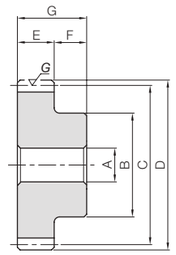
[Caution on Product Characteristics] ① The keyway tolerance is the value before hardening.
② Products marked with "**" have a thin wall section between the keyway and the tooth, so please consider the strength of the thick part when using them. For details, please refer to the web catalog.

Product Precautions → Page 50

Specifications	
Precision grade	JIS grade N6 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

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

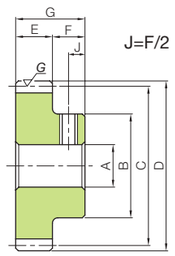
J



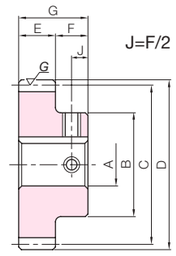
S1

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
				A_{H7}	B	C	D	E	F	G	Bending strength	Surface durability	Bending strength	Surface durability		
KSG1-30	***m*1**	30	S1	8	25	30	32	10	10	20	17.6	14.0	1.80	1.43	0.08~0.16	0.086
KSG1-40		40		10	35	40	42				25.1	27.0	2.56	2.75		0.16
KSG1.5-25	***m*1.5**	25	S1	10	30	37.5	40.5	15	14	29	47.0	31.0	4.80	3.16	0.08~0.16	0.19
KSG1.5-30		30		15	35	45	48				59.5	47.4	6.06	4.83		0.25
KSG1.5-32		32		15	40	48	51				64.5	55.0	6.57	5.60		0.31
KSG1.5-40		40		15	50	60	63				84.7	91.3	8.64	9.31		0.51
KSG2-30	***m*2**	30	S1	15	50	60	64	20	16	36	141	112	14.4	11.5	0.10~0.20	0.64
KSG2-40		40		18	70	80	84				201	217	20.5	22.1		1.20
KSG2.5-20	***m*2.5**	20	S1	15	40	50	55	25	18	43	161	86.0	16.5	8.77	0.10~0.20	0.50
KSG2.5-25		25		20	50	62.5	67.5				218	144	22.2	14.7		0.77
KSG2.5-30		30		20	65	75	80				275	220	28.1	22.4		1.23
KSG2.5-40		40		20	90	100	105				392	425	40.0	43.3		2.33
KSG3-25	***m*3**	25	S1	20	65	75	81	30	20	50	376	249	38.4	25.4	0.10~0.20	1.44
KSG3-30		30		20	80	90	96				476	381	48.5	38.9		2.16
KSG3-40		40		25	110	120	126				678	736	69.1	75.0		3.96

J Series



S1T



S1K

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

Bore $_{H7}$	* The product shapes of J Series items are identified by background color.																		
Keyway $_{Js9}$	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	—	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M5	M4						M5				M6			M8			M10	
KSG1-30J BORE																			
KSG1-40J BORE																			
KSG1.5-25J BORE																			
KSG1.5-30J BORE																			
KSG1.5-32J BORE																			
KSG1.5-40J BORE																			
KSG2-30 J BORE																			
KSG2-40 J BORE																			
KSG2.5-20J BORE																			
KSG2.5-25J BORE																			
KSG2.5-30J BORE																			
KSG2.5-40J BORE																			
KSG3-25J BORE																			
KSG3-30J BORE																			
KSG3-40J BORE																			

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

Recommended mating rack

KRGF-H/KRGFD-H
Hardened Ground Racks

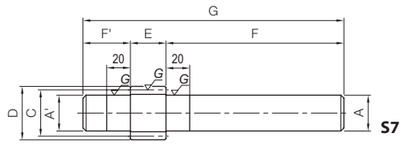
Please see Page 226 for more details.

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Pinion Shafts

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

* Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).



S7

Catalog Number	Module	No. of teeth	Profile shift coefficient	Shape	Shaft diameter (L)	Shaft length (L)	Pitch dia.	Outside dia.	Face width	Shaft diameter (R)	Shaft length (R)	Total Length
					A'	F'	C	D	E	A	F	G
SSGS1.5-10	***m*1.5**	10	+0.5	S7	12.2	25	15	19.35	15	12.2	100	140
SSGS1.5-12		12	0		13.7		18	21		13.7		
SSGS1.5-13		13	0		15.2		19.5	22.5		15.2		
SSGS2-10	***m*2**	10	+0.5	S7	16.2	30	20	25.8	20	16.2	120	170
SSGS2-12		12	0		18.2		24	28		18.2		
SSGS2-13		13	0		20.2		26	30		20.2		
SSGS2.5-10	***m*2.5**	10	+0.5	S7	20.2	35	25	32.25	25	20.2	135	195
SSGS2.5-12		12	0		22.7		30	35		22.7		
SSGS2.5-13		13	0		25.2		32.5	37.5		25.2		
SSGS3-10	***m*3**	10	+0.5	S7	24.2	40	30	38.7	30	24.2	150	220
SSGS3-12		12	0		27.2		36	42		27.2		
SSGS3-13		13	0		30.2		39	45		30.2		

Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
Bending strength	Surface durability	Bending strength	Surface durability			
12.7	3.76	1.30	0.38	0.08~0.16	0.14	**SSGS1.5-10**
9.97	4.70	1.02	0.48		0.17	**SSGS1.5-12**
12.1	5.51	1.23	0.56		0.21	**SSGS1.5-13**
30.2	9.07	3.08	0.93	0.10~0.20	0.30	**SSGS2-10**
23.6	11.3	2.41	1.15		0.38	**SSGS2-12**
28.6	13.3	2.92	1.35		0.46	**SSGS2-13**
58.9	17.9	6.01	1.83	0.10~0.20	0.54	**SSGS2.5-10**
46.2	22.4	4.71	2.28		0.68	**SSGS2.5-12**
46.6	21.9	4.75	2.23		0.83	**SSGS2.5-13**
102	31.3	10.4	3.19	0.10~0.20	0.89	**SSGS3-10**
66.5	32.6	6.78	3.32		1.11	**SSGS3-12**
80.4	38.3	8.20	3.91		1.35	**SSGS3-13**

[Caution on Product Characteristics] ① For the center distance of the profile shifted gear, please refer to "Center distance of stock spur gear meshing with profile shifted gear" below.
② The backlash values shown in the table are the theoretical values for the normal direction for the internal ring in mesh with an SSG spur gear.

■ Center distance of stock spur gear meshing with profile shifted gear

The center distance of the stock gear (x = 0) that meshes with profile shifted gear (x = +0.5) of m = 1 is shown in the table at right. Please multiply by the module of the gear to be used.

■ Center distance where number of teeth is 12 to 30 (unit: mm)

Number of teeth (x = +0.5) / Number of teeth (x = 0)	10
12	11.4410
13	11.9428
14	12.4446
15	12.9462
16	13.4477
17	13.9492
18	14.4505
19	14.9518
20	15.4530
21	15.9542
22	16.4553
23	16.9564
24	17.4574
25	17.9583
26	18.4592
27	18.9601
28	19.4610
29	19.9618
30	20.4625

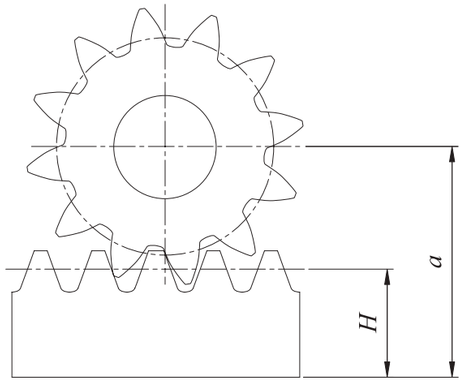
■ Center distance where number of teeth is 32 to 62 (unit: mm)

Number of teeth (x = +0.5) / Number of teeth (x = 0)	10
32	21.4640
34	22.4653
35	22.9660
36	23.4666
38	24.4677
40	25.4688
42	26.4698
44	27.4707
45	27.9712
46	28.4716
48	29.4725
50	30.4733
52	31.4740
54	32.4747
55	32.9750
56	33.4754
58	34.4760
60	35.4766
62	36.4772

■ Center distance where number of teeth is 64 to 200 (unit: mm)

Number of teeth (x = +0.5) / Number of teeth (x = 0)	10
64	37.4777
65	37.9780
66	38.4782
68	39.4787
70	40.4792
72	41.4796
75	42.9803
76	43.4805
80	45.4813
84	47.4820
85	47.9822
88	49.4826
90	50.4830
95	52.9837
100	55.4844
120	65.4866
150	80.4890
200	105.4915

■ Mounting distance of a profile shifted gear and the meshing rack



$$a = \frac{zm}{2} + H + xm$$

Where
a : Mounting distance
H : Pitch line height
m : Module
z : No. of teeth
x : Profile shift coefficient

Product Precautions → Page 50

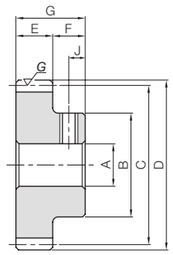
SSG Module 0.5, 0.8
Ground Spur Gears

Made to Order

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C*
Heat treatment	—*
Tooth hardness	200 to 270HB
Surface treatment	Black oxide coated except for teeth

* Products with modules of 0.8 or under use S45C thermal refined materials, so the surface hardness is 200~270 HB.

M



S1T

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Socket head screw	
				A_{H7}	B	C	D	E	F	G	Size	J
SSG0.5-30A (Made to Order) **SSG0.5-30B** (Made to Order)	***m*0.5**	30	S1T	5 6	13	15	16	5	7	12	M4	3.5
SSG0.5-32A (Made to Order)		32		5	14	16	17					
SSG0.5-40B (Made to Order)		40		6	18	20	21					
SSG0.5-50B (Made to Order)		50		6	22	25	26					
SSG0.5-60A (Made to Order) **SSG0.5-60B** (Made to Order)		60		6 8	28	30	31				M4 M5	
SSG0.5-70B (Made to Order)		70		8	28	35	36				M5	
SSG0.5-80A (Made to Order)		80		8	28	40	41				M4	
SSG0.8-20A (Made to Order) **SSG0.8-20B** (Made to Order)	***m*0.8**	20	S1T	5 6	13	16	17.6	8	8	16	M4	4
SSG0.8-25A (Made to Order)		25		6	16	20	21.6					
SSG0.8-30A (Made to Order)		30		5	20	24	25.6				M4	
SSG0.8-34A (Made to Order)		34		6	22	27.2	28.8				M4	
SSG0.8-40B (Made to Order)		40		8	28	32	33.6				M5	
SSG0.8-50A (Made to Order)		50		6	28	40	41.6				M4	
SSG0.8-60A (Made to Order) **SSG0.8-60B** (Made to Order)		60		6 8	28	48	49.6				M4 M5	
SSG0.8-70A (Made to Order)		70		6	28	56	57.6				M4	
SSG0.8-80A (Made to Order)		80		6	28	64	65.6				M4	

Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
Bending strength	Surface durability	Bending strength	Surface durability			
1.63	0.29	0.17	0.030	0~0.08	0.012 0.011	**SSG0.5-30A** (Made to Order) **SSG0.5-30B** (Made to Order)
1.78	0.34	0.18	0.035		0.014	**SSG0.5-32A** (Made to Order)
2.38	0.55	0.24	0.056		0.023	**SSG0.5-40B** (Made to Order)
3.14	0.89	0.32	0.091		0.037	**SSG0.5-50B** (Made to Order)
3.91	1.32	0.40	0.13		0.058 0.056	**SSG0.5-60A** (Made to Order) **SSG0.5-60B** (Made to Order)
3.90	1.53	0.40	0.16		0.066	**SSG0.5-70B** (Made to Order)
4.55	2.04	0.46	0.21		0.080	**SSG0.5-80A** (Made to Order)
3.79	0.53	0.39	0.054	0~0.08	0.018 0.017	**SSG0.8-20A** (Made to Order) **SSG0.8-20B** (Made to Order)
5.22	0.88	0.53	0.090		0.029	**SSG0.8-25A** (Made to Order)
6.70	1.30	0.68	0.13		0.045	**SSG0.8-30A** (Made to Order)
7.90	1.71	0.81	0.17		0.056	**SSG0.8-34A** (Made to Order)
8.11	2.02	0.83	0.21		0.082	**SSG0.8-40B** (Made to Order)
10.7	3.26	1.09	0.33		0.11	**SSG0.8-50A** (Made to Order)
13.3	4.83	1.36	0.49		0.15 0.14	**SSG0.8-60A** (Made to Order) **SSG0.8-60B** (Made to Order)
16.0	6.73	1.63	0.69		0.19	**SSG0.8-70A** (Made to Order)
18.7	8.97	1.90	0.91		0.24	**SSG0.8-80A** (Made to Order)

[Precautions for Made to Order Products] ① Prices and lead times for Made to Order products require separate estimates. Contact your dealer.

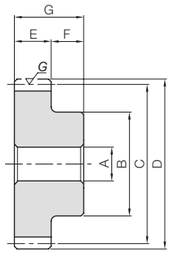
Product Precautions → Page 50

Ground Spur Gears

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

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

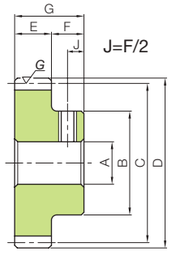
J



S1

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG1-15	15	S1	6	12	15	17	8	10	18	2.96	1.03	0.30	0.11	0.08~0.16	0.016
SSG1-16	16			13	16	18				3.28	1.19	0.33	0.12		0.019
SSG1-17	17			14	17	19				3.60	1.36	0.37	0.14		0.022
SSG1-18	18			15	18	20				3.93	1.54	0.40	0.16		0.026
SSG1-20	20			17	20	22				4.60	1.94	0.47	0.20		0.034
SSG1-21	21		8	18	21	23				4.94	2.14	0.50	0.22		0.035
SSG1-22	22			18	22	24				5.28	2.36	0.54	0.24		0.037
SSG1-23	23			20	23	25				5.63	2.59	0.57	0.26		0.044
SSG1-24	24			20	24	26				5.98	2.83	0.61	0.29		0.046
SSG1-25	25			20	25	27				6.33	3.07	0.65	0.31		0.048
SSG1-26	26			20	26	28				6.68	3.33	0.68	0.34		0.051
SSG1-27	27			20	27	29				7.04	3.60	0.72	0.37		0.054
SSG1-28	28			20	28	30				7.39	3.89	0.75	0.40		0.056
SSG1-29	29			25	29	31				7.75	4.18	0.79	0.43		0.073
SSG1-30	30		10	25	30	32				8.11	4.48	0.83	0.46		0.072
SSG1-32	32			25	32	34				7.37	4.27	0.75	0.43		0.078
SSG1-34	34			25	34	36				7.98	4.84	0.81	0.49		0.084
SSG1-35	35			25	35	37				8.28	5.14	0.84	0.52		0.088
SSG1-36	36			25	36	38				8.59	5.45	0.88	0.56		0.091
SSG1-38	38			30	38	40				9.21	6.10	0.94	0.62		0.12
SSG1-40	40			30	40	42				9.83	6.79	1.00	0.69		0.12
SSG1-45	45			30	45	47				11.4	8.67	1.16	0.88		0.14
SSG1-48	48			30	48	50				12.3	9.92	1.26	1.01		0.16
SSG1-50	50		12	35	50	52				13.0	10.8	1.32	1.10		0.18
SSG1-55	55			35	55	57				14.6	13.2	1.48	1.34		0.21
SSG1-56	56			35	56	58				14.9	13.7	1.52	1.40		0.21
SSG1-60	60			40	60	62				16.2	15.8	1.65	1.61		0.26
SSG1-70	70			40	70	72				19.4	21.8	1.97	2.22		0.32
SSG1-75	75			40	75	77				21.0	25.2	2.14	2.57		0.36
SSG1-80	80		15	50	80	82				22.6	28.8	2.30	2.94		0.44
SSG1-90	90			50	90	92				25.8	36.9	2.64	3.77		0.53
SSG1-100	100			50	100	102				26.9	42.5	2.74	4.34		0.62
SSG1-120	120			50	120	122				32.9	62.5	3.36	6.37		0.84

J Series



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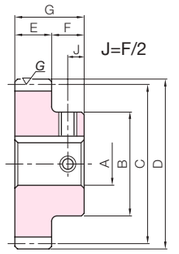

S1K

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

Bore H7	* The product shapes of J Series items are identified by background color.														
Keyway Js9	6	8	10	12	14	15	16	17	18	19	20	22	25	28	30
Screw size	—		4×1.8		5×2.3				6×2.8				8×3.3		
Catalog Number	M4	M5	M4						M5				M6		
SSG1-15 J BORE															
SSG1-16 J BORE															
SSG1-17 J BORE															
SSG1-18 J BORE															
SSG1-20 J BORE															
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SSG1-56 J BORE															
SSG1-60 J BORE															
SSG1-70 J BORE															
SSG1-75 J BORE															
SSG1-80 J BORE															
SSG1-90 J BORE															
SSG1-100 J BORE															
SSG1-120 J BORE															

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

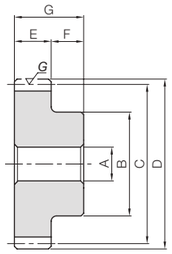
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Gears

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

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

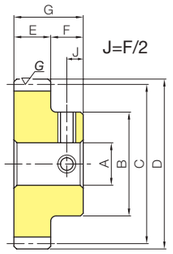
J



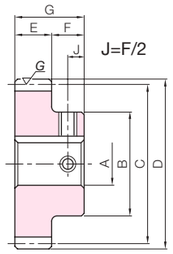
S1

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG1.5-15	15			18	22.5	25.5				12.5	4.35	1.27	0.44		0.057
SSG1.5-16	16			20	24	27				13.8	5.02	1.41	0.51		0.070
SSG1.5-18	18		10	22	27	30				16.6	6.51	1.69	0.66		0.091
SSG1.5-20	20			24	30	33				19.4	8.20	1.98	0.84		0.12
SSG1.5-21	21			25	31.5	34.5				20.8	9.12	2.12	0.93		0.13
SSG1.5-22	22			26	33	36				18.6	8.41	1.89	0.86		0.13
SSG1.5-23	23			27	34.5	37.5				19.8	9.27	2.02	0.95		0.15
SSG1.5-24	24		12	28	36	39				21.0	10.2	2.14	1.04		0.16
SSG1.5-25	25			30	37.5	40.5				22.2	11.1	2.27	1.13		0.18
SSG1.5-26	26			32	39	42				23.5	12.1	2.39	1.23		0.20
SSG1.5-27	27			34	40.5	43.5				24.7	13.1	2.52	1.33		0.21
SSG1.5-28	28			36	42	45				26.0	14.1	2.65	1.44		0.23
SSG1.5-30	30			38	45	48				28.5	16.3	2.91	1.66		0.27
SSG1.5-32	32			40	48	51				31.1	18.6	3.17	1.90		0.31
SSG1.5-34	34			42	51	54				33.6	21.1	3.43	2.15		0.35
SSG1.5-35	35		15	42	52.5	55.5				34.9	22.4	3.56	2.29		0.37
SSG1.5-36	36	S1		45	54	57	15	14	29	36.2	23.8	3.70	2.43	0.08~0.16	0.40
SSG1.5-38	38			45	57	60				38.8	26.6	3.96	2.71		0.44
SSG1.5-40	40			50	60	63				41.5	29.6	4.23	3.02		0.51
SSG1.5-42	42			50	63	66				44.1	32.8	4.50	3.35		0.54
SSG1.5-44	44			50	66	69				46.7	36.2	4.77	3.69		0.58
SSG1.5-45	45		18	50	67.5	70.5				48.1	37.9	4.90	3.86		0.58
SSG1.5-48	48			50	72	75				52.0	43.4	5.31	4.42		0.64
SSG1.5-50	50			60	75	78				54.7	47.2	5.58	4.82		0.77
SSG1.5-55	55			60	82.5	85.5				61.4	57.7	6.26	5.88		0.88
SSG1.5-56	56			60	84	87				62.8	59.9	6.40	6.11		0.91
SSG1.5-60	60			60	90	93				68.1	69.2	6.95	7.06		0.99
SSG1.5-64	64			60	96	99				67.9	73.2	6.92	7.46		1.09
SSG1.5-70	70			60	105	108				75.4	88.4	7.69	9.01		1.26
SSG1.5-75	75		20	60	112.5	115.5				81.7	102	8.33	10.4		1.41
SSG1.5-80	80			70	120	123				88.0	117	8.97	12.0		1.68
SSG1.5-90	90			70	135	138				101	150	10.3	15.3		2.04
SSG1.5-100	100			70	150	153				113	187	11.6	19.1		2.43

J Series



S1T2



S1K

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

Bore H7	* The product shapes of J Series items are identified by background color.															
Keyway Js9	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40
Screw size	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3
Catalog Number	M4						M5				M6			M8		
SSG1.5-15 J BORE																
SSG1.5-16 J BORE																
SSG1.5-18 J BORE																
SSG1.5-20 J BORE																
SSG1.5-21 J BORE																
SSG1.5-22 J BORE																
SSG1.5-23 J BORE																
SSG1.5-24 J BORE																
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SSG1.5-80 J BORE																
SSG1.5-90 J BORE																
SSG1.5-100 J BORE																

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

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

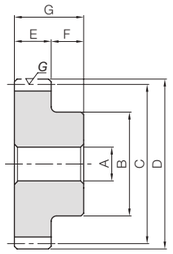
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Gears

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

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

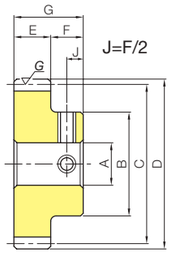
J



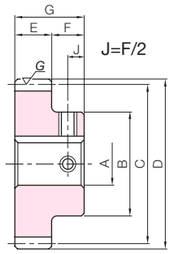
S1

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG2-14	14	S1	12	22	28	32	20	16	36	26.3	9.01	2.69	0.92	0.10~0.20	0.11
SSG2-15	15			24	30	34				29.6	10.5	3.01	1.07		0.14
SSG2-16	16			26	32	36				27.3	10.1	2.78	1.03		0.16
SSG2-17	17			28	34	38				30.0	11.6	3.06	1.18		0.19
SSG2-18	18			30	36	40				32.7	13.1	3.34	1.34		0.22
SSG2-19	19		15	31	38	42				35.5	14.8	3.62	1.51		0.24
SSG2-20	20			32	40	44				38.3	16.6	3.91	1.69		0.25
SSG2-21	21			34	42	46				41.1	18.4	4.20	1.88		0.28
SSG2-22	22			36	44	48				44.0	20.4	4.49	2.08		0.32
SSG2-23	23			37	46	50				46.9	22.5	4.78	2.30		0.35
SSG2-24	24		18	38	48	52				49.8	24.7	5.08	2.52		0.38
SSG2-25	25			40	50	54				52.7	27.0	5.38	2.75		0.42
SSG2-26	26			42	52	56				55.7	29.3	5.68	2.99		0.46
SSG2-27	27			44	54	58				58.6	31.7	5.98	3.23		0.50
SSG2-28	28			45	56	60				61.6	34.2	6.28	3.49		0.54
SSG2-29	29		20	48	58	62				64.6	36.8	6.59	3.75		0.59
SSG2-30	30			50	60	64				67.6	39.5	6.89	4.03		0.62
SSG2-32	32			50	64	68				73.7	45.2	7.51	4.61		0.68
SSG2-34	34			50	68	72				79.8	51.3	8.13	5.23		0.74
SSG2-35	35			50	70	74				82.8	54.5	8.45	5.56		0.78
SSG2-36	36			50	72	76				85.9	57.8	8.76	5.90		0.81
SSG2-38	38			50	76	80				92.1	64.8	9.39	6.60		0.89
SSG2-40	40		25	60	80	84				98.3	72.1	10.0	7.35		1.06
SSG2-42	42			60	84	88				105	79.9	10.7	8.15		1.14
SSG2-44	44			60	88	92				111	88.1	11.3	8.98		1.22
SSG2-45	45			60	90	94				114	92.3	11.6	9.41		1.27
SSG2-48	48			60	96	100				114	97.6	11.6	9.95		1.40
SSG2-50	50			60	100	104				120	106	12.2	10.8		1.45
SSG2-55	55			60	110	114				134	130	13.7	13.3		1.71
SSG2-56	56			60	112	116				137	135	14.0	13.8		1.76
SSG2-60	60			65	120	124				149	156	15.2	15.9		2.05
SSG2-64	64			65	128	132				161	179	16.4	18.3		2.30
SSG2-70	70			70	140	144				179	216	18.2	22.0		2.76
SSG2-75	75			70	150	154				194	249	19.7	25.4		3.12
SSG2-80	80			80	160	164				194	265	19.8	27.0		3.65
SSG2-90	90			80	180	184				222	338	22.6	34.5		4.49
SSG2-100	100			80	200	204				250	421	25.4	43.0		5.42

J Series



S1T2



S1K

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

Bore H7	* The product shapes of J Series items are identified by background color.																
Keyway Js9	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	
Screw size	4×1.8	5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M4					M5				M6			M8			M10	
SSG2-14 J BORE																	
SSG2-15 J BORE																	
SSG2-16 J BORE																	
SSG2-17 J BORE																	
SSG2-18 J BORE																	
SSG2-19 J BORE																	
SSG2-20 J BORE																	
SSG2-21 J BORE																	
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SSG2-32 J BORE																	
SSG2-34 J BORE																	
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SSG2-36 J BORE																	
SSG2-38 J BORE																	
SSG2-40 J BORE																	
SSG2-42 J BORE																	
SSG2-44 J BORE																	
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SSG2-60 J BORE																	
SSG2-64 J BORE																	
SSG2-70 J BORE																	
SSG2-75 J BORE																	
SSG2-80 J BORE																	
SSG2-90 J BORE																	
SSG2-100 J BORE																	

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

Product Precautions → Page 50

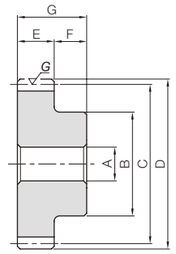
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Gears

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

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

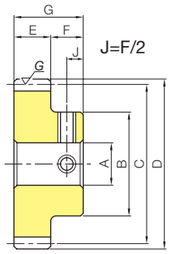
J



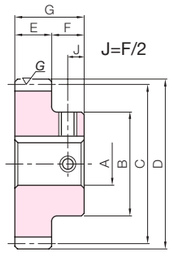
S1

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG2.5-14	14	S1	15	28	35	40	25	18	43	42.9	14.9	4.37	1.52	0.10~0.20	0.22
SSG2.5-15	15			30	37.5	42.5				48.1	17.4	4.91	1.77		0.26
SSG2.5-16	16			32	40	45				53.3	20.1	5.44	2.05		0.30
SSG2.5-17	17			35	42.5	47.5				58.6	23.0	5.97	2.34		0.35
SSG2.5-18	18			38	45	50				63.9	26.1	6.52	2.66		0.41
SSG2.5-19	19		18	39	47.5	52.5				69.4	29.4	7.07	3.00		0.46
SSG2.5-20	20			40	50	55				74.8	32.9	7.63	3.36		0.48
SSG2.5-21	21			42	52.5	57.5				80.4	36.7	8.20	3.74		0.53
SSG2.5-22	22			44	55	60				86.0	40.6	8.77	4.14		0.60
SSG2.5-23	23			46	57.5	62.5				91.6	44.8	9.34	4.57		0.66
SSG2.5-24	24		20	48	60	65				97.3	49.2	9.92	5.02		0.72
SSG2.5-25	25			50	62.5	67.5				103	53.8	10.5	5.48		0.77
SSG2.5-26	26			54	65	70				109	58.4	11.1	5.95		0.87
SSG2.5-27	27			56	67.5	72.5				115	63.2	11.7	6.44		0.94
SSG2.5-28	28			60	70	75				120	68.2	12.3	6.95		1.05
SSG2.5-30	30			65	75	80				132	78.7	13.5	8.03		1.23
SSG2.5-32	32			70	80	85				144	90.1	14.7	9.19		1.42
SSG2.5-34	34			70	85	90				156	102	15.9	10.4		1.55
SSG2.5-35	35			70	87.5	92.5				162	109	16.5	11.1		1.62
SSG2.5-36	36			70	90	95				168	115	17.1	11.8		1.69
SSG2.5-38	38		25	70	95	100				180	129	18.3	13.2		1.83
SSG2.5-40	40			70	100	105				177	133	18.1	13.6		1.92
SSG2.5-42	42			75	105	110				188	147	19.2	15.0		2.16
SSG2.5-44	44			75	110	115				200	163	20.4	16.6		2.32
SSG2.5-45	45			75	112.5	117.5				205	170	20.9	17.4		2.41
SSG2.5-48	48			75	120	125				222	195	22.7	19.9		2.68
SSG2.5-50	50			80	125	130				234	213	23.8	21.7		2.95
SSG2.5-55	55			80	137.5	142.5				262	260	26.8	26.5		3.46
SSG2.5-56	56			80	140	145				268	270	27.3	27.5		3.57
SSG2.5-60	60			80	150	155				291	311	29.7	31.8		4.01
SSG2.5-70	70			80	175	180				324	399	33.1	40.7		5.26
SSG2.5-75	75			90	187.5	192.5				351	461	35.8	47.0		6.15
SSG2.5-80	80			90	200	205				378	527	38.6	53.7		6.90

J Series



S1T2



S1K

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

Bore H7	* The product shapes of J Series items are identified by background color.														
Keyway Js9	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	5×2.3			6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M4			M5				M6			M8			M10	
SSG2.5-14 J BORE															
SSG2.5-15 J BORE															
SSG2.5-16 J BORE															
SSG2.5-17 J BORE															
SSG2.5-18 J BORE															
SSG2.5-19 J BORE															
SSG2.5-20 J BORE															
SSG2.5-21 J BORE															
SSG2.5-22 J BORE															
SSG2.5-23 J BORE															
SSG2.5-24 J BORE															
SSG2.5-25 J BORE															
SSG2.5-26 J BORE															
SSG2.5-27 J BORE															
SSG2.5-28 J BORE															
SSG2.5-30 J BORE															
SSG2.5-32 J BORE															
SSG2.5-34 J BORE															
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SSG2.5-60 J BORE															
SSG2.5-70 J BORE															
SSG2.5-75 J BORE															
SSG2.5-80 J BORE															

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

Product Precautions → Page 50

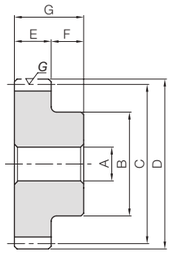
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Gears

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

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

J



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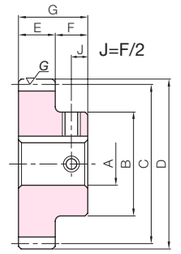
Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG3-14	14	S1	16	34	42	48	30	20	50	74.1	26.1	7.55	2.66	0.10~0.20	0.39
SSG3-15	15			36	45	51				83.1	30.5	8.48	3.11		0.46
SSG3-16	16			38	48	54				92.1	35.2	9.39	3.59		0.53
SSG3-17	17			37	51	57				101	40.3	10.3	4.11		0.57
SSG3-18	18			40	54	60				110	45.8	11.3	4.67		0.66
SSG3-19	19		20	45	57	63				120	51.6	12.2	5.26		0.77
SSG3-20	20			50	60	66				129	57.8	13.2	5.90		0.85
SSG3-21	21			52	63	69				139	64.4	14.2	6.57		0.94
SSG3-22	22			54	66	72				149	71.3	15.1	7.28		1.04
SSG3-24	24			58	72	78				168	86.4	17.1	8.81		1.25
SSG3-25	25			60	75	81				178	94.5	18.1	9.64		1.36
SSG3-26	26			62	78	84				188	103	19.2	10.5		1.48
SSG3-27	27			65	81	87				198	111	20.2	11.3		1.61
SSG3-28	28			70	84	90				208	120	21.2	12.2		1.79
SSG3-29	29			70	87	93				218	129	22.2	13.2		1.88
SSG3-30	30		25	75	90	96				228	138	23.3	14.1		2.00
SSG3-32	32			75	96	102				229	146	23.4	14.9		2.21
SSG3-34	34			75	102	108				248	166	25.3	17.0		2.43
SSG3-35	35			80	105	111				258	177	26.3	18.0		2.64
SSG3-36	36			80	108	114				268	188	27.3	19.1		2.75
SSG3-38	38			80	114	120				287	210	29.2	21.4		3.00
SSG3-40	40			80	120	126				306	234	31.2	23.9		3.26
SSG3-42	42			80	126	132				326	260	33.2	26.5		3.53
SSG3-44	44			80	132	138				345	286	35.2	29.2		3.82
SSG3-45	45			80	135	141				355	300	36.2	30.6		3.97
SSG3-48	48		30	85	144	150				384	343	39.2	35.0		4.53
SSG3-50	50			85	150	156				404	374	41.2	38.1		4.78
SSG3-55	55			90	165	171				421	423	42.9	43.2		5.76
SSG3-56	56			90	168	174				430	439	43.9	44.8		5.94
SSG3-60	60			100	180	186				467	508	47.6	51.8		6.95
SSG3-70	70			100	210	216				560	699	57.1	71.3		9.11
SSG3-75	75			100	225	231				607	806	61.9	82.2		10.3
SSG3-80	80			100	240	246				654	921	66.7	93.9		11.6

J Series



S1K

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

Bore $_{H7}$	* The product shapes of J Series items are identified by background color.													
Keyway $_{Js9}$	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	5×2.3		6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M4		M5				M6			M8			M10	
SSG3-14 J BORE														
SSG3-15 J BORE														
SSG3-16 J BORE														
SSG3-17 J BORE														
SSG3-18 J BORE														
SSG3-19 J BORE														
SSG3-20 J BORE														
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SSG3-56 J BORE														
SSG3-60 J BORE														
SSG3-70 J BORE														
SSG3-75 J BORE														
SSG3-80 J BORE														

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

Product Precautions → Page 50

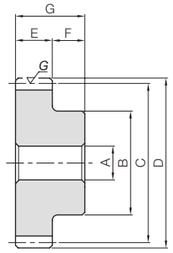
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Gears

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth (excludes semi-custom products)

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

J S

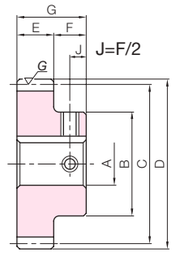


S1

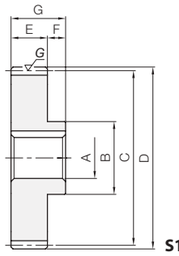
Catalog Number		No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG4-14		14	S1	20	40	56	64	40	25	65	176	63.4	17.9	6.47	0.10~0.20	0.86
SSG4-15		15			45	60	68				197	74.1	20.1	7.55		1.04
SSG4-16		16			50	64	72				218	85.6	22.3	8.73		1.24
SSG4-18		18			60	72	80				262	111	26.7	11.4		1.67
SSG4-20		20			65	80	88				307	141	31.3	14.3		2.07
SSG4-22		22		25	70	88	96				352	174	35.9	17.7		2.50
SSG4-24		24			75	96	104				368	194	37.5	19.8		2.98
SSG4-25		25			80	100	108				389	213	39.7	21.7		3.29
SSG4-28		28			85	112	120				455	270	46.4	27.5		4.05
SSG4-30		30			90	120	128				499	313	50.9	31.9		4.64
SSG4-32		32			90	128	136				544	358	55.5	36.5		5.04
SSG4-35		35			90	140	148				612	432	62.4	44.0		5.83
SSG4-36		36			90	144	152				634	458	64.7	46.7		6.11
SSG4-40		40			90	160	168				674	529	68.7	54.0		7.31
SSG4-42		42			90	168	176				717	586	73.1	59.7		7.96
SSG4-44		44		30	90	176	184				760	646	77.5	65.8		8.53
SSG4-45		45			90	180	188				781	677	79.6	69.0		8.88
SSG4-48		48			100	192	200				846	774	86.3	79.0		10.3
SSG4-50		50			100	200	208				889	842	90.7	85.9		11.0
SSG4-55		55			100	220	228				998	1030	102	105		13.1
SSG4-56		56			110	224	232				1020	1060	104	109		13.9
SSG4-60		60			110	240	248				1110	1230	113	125		15.7
SSG4-62S	S	62	S1	40	120	248	256	40	25	65	1240	1360	127	138	0.10~0.20	16.8
SSG4-64S	S	64			130	256	264				1290	1450	131	148		18.1
SSG4-65S	S	65			130	260	268				1310	1500	134	153		18.6
SSG4-66S	S	66			130	264	272				1340	1550	136	158		19.2
SSG4-68S	S	68			140	272	280				1380	1650	141	168		20.6
SSG4-70S	S	70			140	280	288				1430	1750	146	178		21.7
SSG4-80S	S	80			160	320	328				1550	2150	158	219		28.6
SSG4-90S	S	90			180	360	368				1770	2750	181	281		36.3
SSG4-100S	S	100			200	400	408				2000	3440	204	351		45.0
SSG4-110S	S	110			220	440	448				2220	4190	226	427		54.6
SSG4-120S	S	120			240	480	488				2450	5010	249	511		65.1

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

J Series



S1K



S1SK

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

* The product shapes of J Series items are identified by background color.

Bore H7	20	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
Keyway Js9	6×2.8		8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4		25×5.4		28×6.4		
Screw size	M5		M6			M8			M10		M12			M16		—						
Catalog Number																						
SSG4-14 J BORE																						
SSG4-15 J BORE																						
SSG4-16 J BORE																						
SSG4-18 J BORE																						
SSG4-20 J BORE																						
SSG4-22 J BORE																						
SSG4-24 J BORE																						
SSG4-25 J BORE																						
SSG4-28 J BORE																						
SSG4-30 J BORE																						
SSG4-32 J BORE																						
SSG4-35 J BORE																						
SSG4-36 J BORE																						
SSG4-40 J BORE																						
SSG4-42 J BORE																						
SSG4-44 J BORE																						
SSG4-45 J BORE																						
SSG4-48 J BORE																						
SSG4-50 J BORE																						
SSG4-55 J BORE																						
SSG4-56 J BORE																						
SSG4-60 J BORE																						
SSG4-62SJ BORE							Ask for Quote															
SSG4-64SJ BORE							Ask for Quote															
SSG4-65SJ BORE							Ask for Quote															
SSG4-66SJ BORE							Ask for Quote															
SSG4-68SJ BORE							Ask for Quote															
SSG4-70SJ BORE							Ask for Quote															
SSG4-80SJ BORE							Ask for Quote															
SSG4-90SJ BORE							Ask for Quote															
SSG4-100SJ BORE							Ask for Quote															
SSG4-110SJ BORE							Ask for Quote															
SSG4-120SJ BORE							Ask for Quote															

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

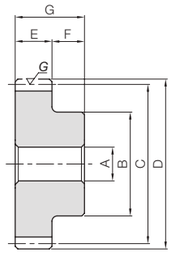
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Gears

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth (excludes semi-custom products)

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

J S

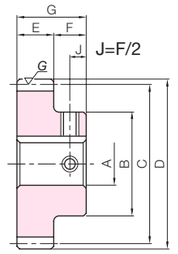


S1

Catalog Number		No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG5-20		20	S1	25	82	100	110	50	25	75	553	259	56.4	26.5	0.10~0.22	3.83
SSG5-25		25			105	125	135				760	426	77.5	43.4		6.23
SSG5-30		30			120	150	160				975	623	99.4	63.5		8.87
SSG5-32S	S	32	S1	30	120	160	170	50	25	75	1150	735	117	74.9	0.10~0.22	9.70
SSG5-35S	S	35			130	175	185				1300	886	132	90.3		11.6
SSG5-36S	S	36			130	180	190				1340	939	137	95.8		12.1
SSG5-40S	S	40			140	200	210				1420	1080	145	110		14.9
SSG5-42S	S	42			140	210	220				1510	1200	154	122		16.2
SSG5-44S	S	44			150	220	230				1600	1320	163	135		18.0
SSG5-45S	S	45			150	225	235				1640	1380	168	141		18.7
SSG5-48S	S	48			150	240	250				1780	1580	182	161		20.8
SSG5-50S	S	50			150	250	260				1870	1720	191	176		22.3
SSG5-55S	S	55			150	275	285				2100	2110	214	215		26.4
SSG5-56S	S	56			150	280	290				2150	2190	219	223		27.2
SSG5-60S	S	60			150	300	310				2330	2530	238	258		30.8
SSG5-62S	S	62		40	160	310	320				2420	2710	247	276		32.8
SSG5-64S	S	64			160	320	330				2340	2690	238	274		34.8
SSG5-65S	S	65			160	325	335				2380	2780	243	283		35.8
SSG5-66S	S	66			170	330	340				2420	2870	247	292		37.3
SSG5-68S	S	68			170	340	350				2510	3050	256	311		39.4
SSG5-70S	S	70			180	350	360				2590	3250	265	331		42.0
SSG5-80S	S	80			200	400	410				3030	4300	309	438		54.8
SSG5-90S	S	90			230	450	460				3460	5480	353	559		69.8
SSG6-20		20	S1	25	100	120	132	60	28	88	955	457	97.4	46.6	0.10~0.22	6.71
SSG6-25		25		30	125	150	162				1310	747	134	76.2		10.5
SSG6-30		30		30	150	180	192				1560	1020	160	104		15.4
SSG6-32S	S	32	S1	30	150	192	204	60	28	88	1840	1190	187	121	0.10~0.22	17.0
SSG6-35S	S	35			160	210	222				2070	1440	211	146		20.2
SSG6-36S	S	36			160	216	228				2140	1520	218	155		21.2
SSG6-40S	S	40			170	240	252				2450	1900	250	194		25.8
SSG6-42S	S	42			170	252	264				2610	2100	266	215		27.6
SSG6-44S	S	44			170	264	276				2760	2320	282	237		29.9
SSG6-45S	S	45			180	270	282				2840	2430	290	248		31.7
SSG6-48S	S	48			180	288	300				3080	2780	314	284		35.4
SSG6-50S	S	50			180	300	312				3230	3030	330	309		38.0
SSG6-55S	S	55			180	330	342				3370	3440	344	351		45.0
SSG6-56S	S	56			180	336	348				3440	3570	351	364		46.5
SSG6-60S	S	60			180	360	372				3740	4130	381	421		52.7
SSG6-62S	S	62		40	190	372	384				3890	4430	397	451		56.6
SSG6-64S	S	64			190	384	396				4040	4730	412	483		59.9
SSG6-65S	S	65			200	390	402				4110	4890	419	499		62.3
SSG6-66S	S	66			200	396	408				4190	5050	427	515		64.1
SSG6-68S	S	68			200	408	420				4330	5380	442	548		67.6
SSG6-70S	S	70			210	420	432				4480	5710	457	582		72.0
SSG6-80S	S	80			240	480	492				5230	7520	534	766		94.3

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

J Series



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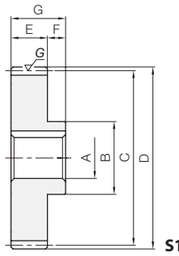

S1SK

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

Bore H7	* The product shapes of J Series items are identified by background color.																								
Keyway Js9	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	120	130	140
Screw size	8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4				28×6.4			32×7.4		36×8.4
Catalog Number	M6			M8			M10		M12			M16				M20		—						
SSG5-20 J BORE																								
SSG5-25 J BORE																								
SSG5-30 J BORE																								
SSG5-32 SJ BORE			Ask for Quote																					
SSG5-35 SJ BORE			Ask for Quote																					
SSG5-36 SJ BORE			Ask for Quote																					
SSG5-40 SJ BORE			Ask for Quote																					
SSG5-42 SJ BORE			Ask for Quote																					
SSG5-44 SJ BORE			Ask for Quote																					
SSG5-45 SJ BORE			Ask for Quote																					
SSG5-48 SJ BORE			Ask for Quote																					
SSG5-50 SJ BORE			Ask for Quote																					
SSG5-55 SJ BORE			Ask for Quote																					
SSG5-56 SJ BORE			Ask for Quote																					
SSG5-60 SJ BORE			Ask for Quote																					
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SSG5-68 SJ BORE						Ask for Quote																		
SSG5-70 SJ BORE						Ask for Quote																		
SSG5-80 SJ BORE						Ask for Quote																		
SSG5-90 SJ BORE						Ask for Quote																		
SSG6-20 J BORE																								
SSG6-25 J BORE																								
SSG6-30 J BORE																								
SSG6-32 SJ BORE			Ask for Quote																					
SSG6-35 SJ BORE			Ask for Quote																					
SSG6-36 SJ BORE			Ask for Quote																					
SSG6-40 SJ BORE			Ask for Quote																					
SSG6-42 SJ BORE						Ask for Quote																		
SSG6-44 SJ BORE						Ask for Quote																		
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SSG6-68 SJ BORE																								
SSG6-70 SJ BORE																								
SSG6-80 SJ BORE																								

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

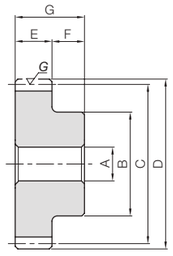
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Ground Spur Gears

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	—

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

JS



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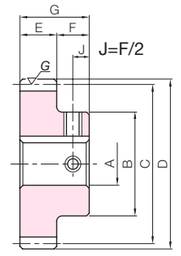
J Series



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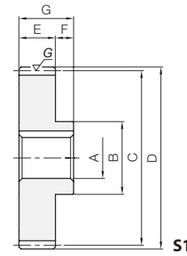


S1SK

Catalog Number		No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSG8-20S	S	20	S1	30	130	160	176	75	35	110	2300	1080	235	110	0.10~0.22	14.9
SSG8-25S	S	25			160	200	216				2920	1620	298	165		23.4
SSG8-30S	S	30			190	240	256				3750	2370	382	242		33.8
SSG8-32S	S	32		40	200	256	272				4080	2720	416	277		37.9
SSG8-35S	S	35			210	280	296				4590	3280	468	335		44.7
SSG8-36S	S	36			210	288	304				4760	3480	486	355		46.8
SSG8-40S	S	40			220	320	336				5060	4030	516	411		56.7
SSG8-42S	S	42			230	336	352				5380	4470	548	456		62.5
SSG8-44S	S	44			230	352	368				5700	4930	581	502		67.6
SSG8-45S	S	45			230	360	376				5860	5170	598	527		70.3
SSG8-48S	S	48			240	384	400				6350	5920	647	603		79.5
SSG8-50S	S	50			240	400	416				6670	6450	680	657		85.3
SSG8-55S	S	55			240	440	456				7490	7850	764	801		101
SSG8-56S	S	56			240	448	464				7650	8150	780	831		104
SSG8-60S	S	60			240	480	496				8310	9390	848	958		118
SSG10-20S	S	20	S1	40	160	200	220	90	40	130	3980	1920	406	196	0.10~0.22	27.2
SSG10-25S	S	25			200	250	270				5480	3100	559	317		43.3
SSG10-30S	S	30			240	300	320				7030	4550	717	464		62.1
SSG10-32S	S	32		50	250	320	340				7110	4840	725	493		70.2
SSG10-35S	S	35			260	350	370				7990	5840	815	596		82.6
SSG10-36S	S	36			270	360	380				8290	6200	845	632		87.9
SSG10-40S	S	40			280	400	420				9480	7740	967	789		106

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

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

Bore H7	* The product shapes of J Series items are identified by background color.																						
Keyway Js9	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	120	130	140	150	160	170	180
Screw size	8×3.3	10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4		25×5.4		28×6.4			32×7.4		36×8.4		40×9.4		45×10.4
Catalog Number	M6	M8			M10		M12			M16				M20					—						
SSG8-20 SJ BORE	Ask for Quote																								
SSG8-25 SJ BORE	Ask for Quote																								
SSG8-30 SJ BORE	Ask for Quote																								
SSG8-32 SJ BORE				Ask for Quote																					
SSG8-35 SJ BORE				Ask for Quote																					
SSG8-36 SJ BORE				Ask for Quote																					
SSG8-40SJ BORE				Ask for Quote																					
SSG8-42 SJ BORE				Ask for Quote																					
SSG8-44 SJ BORE				Ask for Quote																					
SSG8-45 SJ BORE				Ask for Quote																					
SSG8-48 SJ BORE				Ask for Quote																					
SSG8-50 SJ BORE				Ask for Quote																					
SSG8-55 SJ BORE				Ask for Quote																					
SSG8-56 SJ BORE				Ask for Quote																					
SSG8-60 SJ BORE				Ask for Quote																					
SSG10-20 SJ BORE				Ask for Quote																					
SSG10-25 SJ BORE				Ask for Quote																					
SSG10-30 SJ BORE					Ask for Quote																				
SSG10-32 SJ BORE					Ask for Quote																				
SSG10-35 SJ BORE					Ask for Quote																				
SSG10-36 SJ BORE					Ask for Quote																				
SSG10-40 SJ BORE					Ask for Quote																				

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

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

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

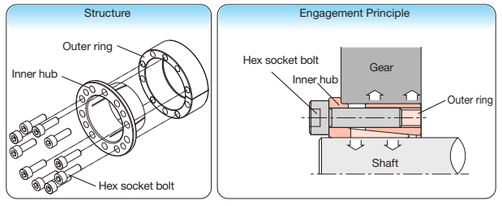
* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

■ Structure and Engagement Principles

The structure consists of an outer ring and inner ring with split grooves in the tapered part, and hexagon socket head cap screws that convert the force into tightening strength.
In principle, the tightening strength of hexagon socket head cap screws spreads the outer and inner rings by taper engagement, and the gear and shaft become fastened by surface pressure.



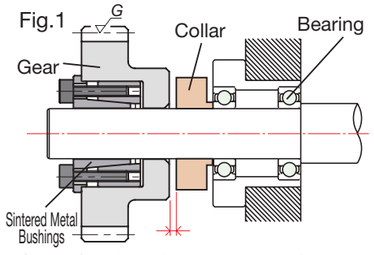
Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Allowable torque (N·m) Bending strength	Surface durability
SSG2-25	25	40	50	54	20	16	52.7	27.0
SSG2-26	26	42	52	56			55.7	29.3
SSG2-27	27	44	54	58			58.6	31.7
SSG2-28	28	45	56	60			61.6	34.2
SSG2-29	29	48	58	62			64.6	36.8
SSG2-30	30	50	60	64			67.6	39.5
SSG2-32	32	50	64	68			73.7	45.2
SSG2-34	34	50	68	72			79.8	51.3
SSG2-35	35	50	70	74			82.8	54.5
SSG2-36	36	50	72	76			85.9	57.8
SSG2-38	38	50	76	80			92.1	64.8
SSG2-40	40	60	80	84			98.3	72.1
SSG2-42	42	60	84	88			105	79.9
SSG2-44	44	60	88	92			111	88.1
SSG2-45	45	60	90	94			114	92.3
SSG2-48	48	60	96	100			114	97.6
SSG2-50	50	60	100	104			120	106
SSG2-55	55	60	110	114			134	130
SSG2-56	56	60	112	116			137	135
SSG2-60	60	65	120	124			149	156
SSG2-64	64	65	128	132			161	179
SSG2-70	70	70	140	144			179	216
SSG2-75	75	70	150	154			194	249
SSG2-80	80	80	160	164			194	265
SSG2-90	90	80	180	184			222	338
SSG2-100	100	80	200	204			250	421

* For the backlash of each product, please refer to the dimension table of the original product.

■ Mounting Method and Precautions

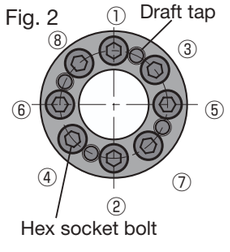
① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout.
Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening.
First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Fig.1



Clearance (Assembly conditions require clearance of 1 mm or more)

Fig. 2

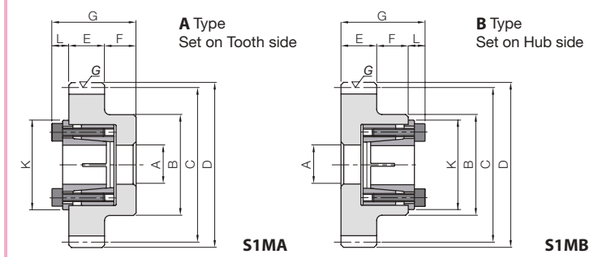


■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

F Series



To order F Series products, please specify: **Catalog Number + F + BORE + Type.**

A Type Only
A/B Types

Bore A	* The product shapes of F Series items are identified by background color.														
Catalog Number	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
SSG2-25 F Bore Type															
SSG2-26 F Bore Type															
SSG2-27 F Bore Type															
SSG2-28 F Bore Type															
SSG2-29 F Bore Type															
SSG2-30 F Bore Type															
SSG2-32 F Bore Type															
SSG2-34 F Bore Type															
SSG2-35 F Bore Type															
SSG2-36 F Bore Type															
SSG2-38 F Bore Type															
SSG2-40 F Bore Type															
SSG2-42 F Bore Type															
SSG2-44 F Bore Type															
SSG2-45 F Bore Type															
SSG2-48 F Bore Type															
SSG2-50 F Bore Type															
SSG2-55 F Bore Type															
SSG2-56 F Bore Type															
SSG2-60 F Bore Type															
SSG2-64 F Bore Type															
SSG2-70 F Bore Type															
SSG2-75 F Bore Type															
SSG2-80 F Bore Type															
SSG2-90 F Bore Type															
SSG2-100 F Bore Type															
Bore A	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Ref. slipping torque N·m	70	75	110	115	120	220	290	350	380	410	440	720	810	1200	1500
Ref. thrust load kN	9.46	9.46	12.6	12.6	12.6	21.6	26	27.2	27	27	27	41.1	40.2	52.9	56.3
Sintered Metal Bushings L	6.5					8			8.5			10			10.5
Sintered Metal Bushings K	31.5	33	33.5	34.5	35.5	42	44	47	50	52	54	62	67	72	77
Total Length G	42.5					44			44.5			46			46.5
Hex socket bolt Qty	6		8						10			8	10		14
Hex socket bolt Size	M4×15					M5×18						M6×20			
Hex socket bolt Tightening torque N·m	3.9					8.8						15.7			
Bushing weight (g)	66	75	75	80	81	144	165	188	195	208	219	325	380	435	485

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

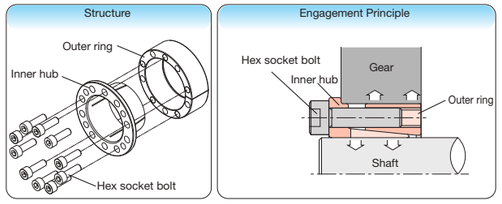
* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

■ Structure and Engagement Principles

The structure consists of an outer ring and inner ring with split grooves in the tapered part, and hexagon socket head cap screws that convert the force into tightening strength.
In principle, the tightening strength of hexagon socket head cap screws spreads the outer and inner rings by taper engagement, and the gear and shaft become fastened by surface pressure.



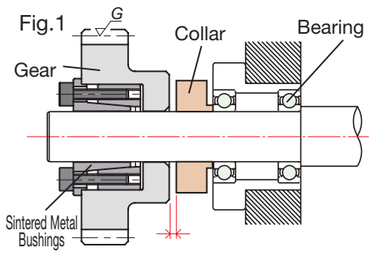
Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Allowable torque (N·m) Bending strength	Surface durability
SSG2.5-30	30	65	75	80	25	18	132	78.7
SSG2.5-32	32	70	80	85			144	90.1
SSG2.5-34	34	70	85	90			156	102
SSG2.5-35	35	70	87.5	92.5			162	109
SSG2.5-36	36	70	90	95			168	115
SSG2.5-38	38	70	95	100			180	129
SSG2.5-40	40	70	100	105			177	133
SSG2.5-42	42	75	105	110			188	147
SSG2.5-44	44	75	110	115			200	163
SSG2.5-45	45	75	112.5	117.5			205	170
SSG2.5-48	48	75	120	125			222	195
SSG2.5-50	50	80	125	130			234	213
SSG2.5-55	55	80	137.5	142.5			262	260
SSG2.5-56	56	80	140	145			268	270
SSG2.5-60	60	80	150	155			291	311
SSG2.5-70	70	80	175	180			324	399
SSG2.5-75	75	90	187.5	192.5			351	461
SSG2.5-80	80	90	200	205			378	527

* For the backlash of each product, please refer to the dimension table of the original product.

■ Mounting Method and Precautions

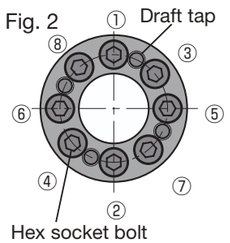
① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout.
Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening.
First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Fig.1



Clearance (Assembly conditions require clearance of 1 mm or more)

Fig. 2



■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

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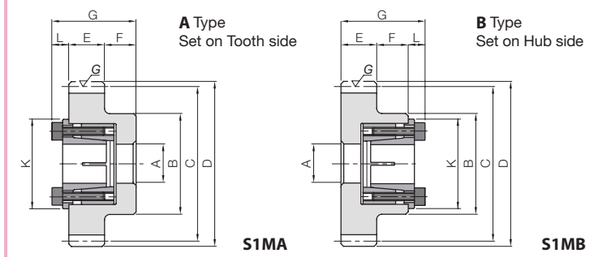
Precautions for Standard Machined Products → Pages 42~44

F Series



To order F Series products, please specify: **Catalog Number + F + BORE + Type.**

A Type Only
A/B Types

Bore A	* The product shapes of F Series items are identified by background color.									
Catalog Number	20	22	25	28	30	32	35	40	45	50
SSG2.5-30 F Bore Type										
SSG2.5-32 F Bore Type										
SSG2.5-34 F Bore Type										
SSG2.5-35 F Bore Type										
SSG2.5-36 F Bore Type										
SSG2.5-38 F Bore Type										
SSG2.5-40 F Bore Type										
SSG2.5-42 F Bore Type										
SSG2.5-44 F Bore Type										
SSG2.5-45 F Bore Type										
SSG2.5-48 F Bore Type										
SSG2.5-50 F Bore Type										
SSG2.5-55 F Bore Type										
SSG2.5-56 F Bore Type										
SSG2.5-60 F Bore Type										
SSG2.5-70 F Bore Type										
SSG2.5-75 F Bore Type										
SSG2.5-80 F Bore Type										
Bore A	20	22	25	28	30	32	35	40	45	50
Ref. slipping torque N·m	220	290	350	380	410	440	720	810	1200	1500
Ref. thrust load kN	21.6	26	27.2	27	27	27	41.1	40.2	52.9	56.3
Sintered Metal Bushings L		8			8.5			10		10.5
Sintered Metal Bushings K	42	44	47	50	52	54	62	67	72	77
Total Length G		51			51.5			53		53.5
Hex socket bolt Qty		8			10		8	10		14
Hex socket bolt Size		M5×18						M6×20		
Hex socket bolt Tightening torque N·m		8.8						15.7		
Bushing weight (g)	144	165	188	195	208	219	325	380	435	485

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

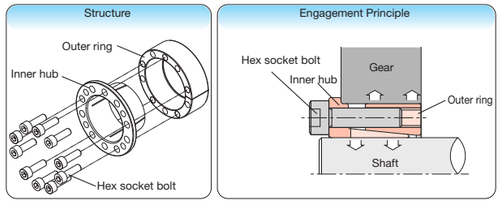
* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

■ Structure and Engagement Principles

The structure consists of an outer ring and inner ring with split grooves in the tapered part, and hexagon socket head cap screws that convert the force into tightening strength.
In principle, the tightening strength of hexagon socket head cap screws spreads the outer and inner rings by taper engagement, and the gear and shaft become fastened by surface pressure.



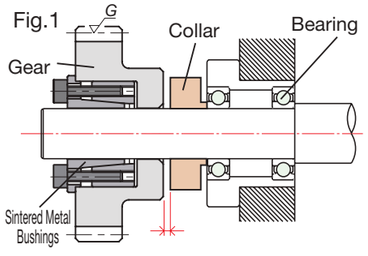
Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Allowable torque (N·m) Bending strength	Surface durability
SSG3-25	25	60	75	81			178	94.5
SSG3-26	26	62	78	84			188	103
SSG3-27	27	65	81	87			198	111
SSG3-28	28	70	84	90			208	120
SSG3-29	29	70	87	93			218	129
SSG3-30	30	75	90	96			228	138
SSG3-32	32	75	96	102			229	146
SSG3-34	34	75	102	108			248	166
SSG3-35	35	80	105	111			258	177
SSG3-36	36	80	108	114			268	188
SSG3-38	38	80	114	120			287	210
SSG3-40	40	80	120	126	30	20	306	234
SSG3-42	42	80	126	132			326	260
SSG3-44	44	80	132	138			345	286
SSG3-45	45	80	135	141			355	300
SSG3-48	48	85	144	150			384	343
SSG3-50	50	85	150	156			404	374
SSG3-55	55	90	165	171			421	423
SSG3-56	56	90	168	174			430	439
SSG3-60	60	100	180	186			467	508
SSG3-70	70	100	210	216			560	699
SSG3-75	75	100	225	231			607	806
SSG3-80	80	100	240	246			654	921

* For the backlash of each product, please refer to the dimension table of the original product.

■ Mounting Method and Precautions

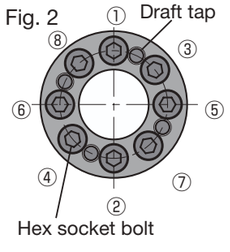
① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout.
Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening.
First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Fig.1



Clearance (Assembly conditions require clearance of 1 mm or more)

Fig. 2



■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

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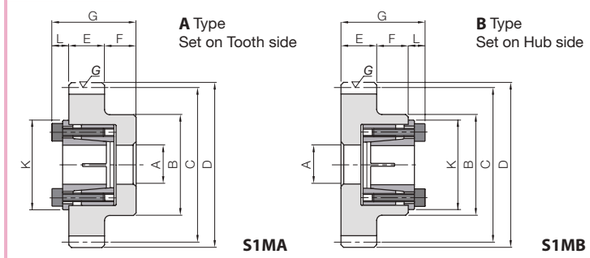
Precautions for Standard Machined Products → Pages 42~44

F Series



To order F Series products, please specify: **Catalog Number + F + BORE + Type.**

A Type Only
A/B Types

Bore A / Catalog Number	20	22	25	28	30	32	35	40	45	50
SSG3-25 F Bore Type										
SSG3-26 F Bore Type										
SSG3-27 F Bore Type										
SSG3-28 F Bore Type										
SSG3-29 F Bore Type										
SSG3-30 F Bore Type										
SSG3-32 F Bore Type										
SSG3-34 F Bore Type										
SSG3-35 F Bore Type										
SSG3-36 F Bore Type										
SSG3-38 F Bore Type										
SSG3-40 F Bore Type										
SSG3-42 F Bore Type										
SSG3-44 F Bore Type										
SSG3-45 F Bore Type										
SSG3-48 F Bore Type										
SSG3-50 F Bore Type										
SSG3-55 F Bore Type										
SSG3-56 F Bore Type										
SSG3-60 F Bore Type										
SSG3-70 F Bore Type										
SSG3-75 F Bore Type										
SSG3-80 F Bore Type										
Bore A	20	22	25	28	30	32	35	40	45	50
Ref. slipping torque N·m	220	290	350	380	410	440	720	810	1200	1500
Ref. thrust load kN	21.6	26	27.2	27	27	27	41.1	40.2	52.9	56.3
Sintered Metal Bushings L		8			8.5			10		10.5
Sintered Metal Bushings K	42	44	47	50	52	54	62	67	72	77
Total Length G		58			58.5			60		60.5
Hex socket bolt Qty		8			10		8	10		14
Hex socket bolt Size				M5×18				M6×20		
Hex socket bolt Tightening torque N·m				8.8				15.7		
Bushing weight (g)	144	165	188	195	208	219	325	380	435	485

* The product shapes of F Series items are identified by background color.

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

* The precision grade of E Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

Delivered with this marking.

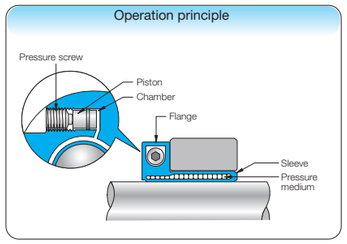
Please see Page 16 for more details.

■ Features of E Series

- Can be easily installed with one bolt (shortens work time)
- Concentricity 0. 02mm
- Zero backlash between the gear and shaft
- No decrease in shaft strength due to fretting wear (worn or seized shaft)
- No need to machine keyways on the shaft, reducing the number of parts such as keyway materials and set screws
- Does not take up mounting space and easy to position and match the phase
- Finished by the manufacturer in 2 working days (excluding the day ordered)
  For products with a pitch of module 4 or higher, manufacture is completed in 7 working days (excluding the day ordered)

■ Operation principle of ETP-E Plus

The pressure medium enclosed in the chamber is pressurized due to the tightening of the pressure screw and moves into the sleeve. The pressure of this pressure medium causes the sleeve to receive pressure from the inside, which causes the shaft side sleeve to contract, the hub side sleeve to expand, allowing the shaft and hub to be fastened via the sleeve.

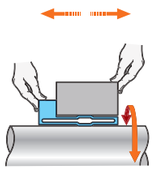


Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Allowable torque (N·m) Bending strength	Surface durability
SSG1.5-22	22	26	33	36	15	18.6	8.41
SSG1.5-23	23	27	34.5	37.5		19.8	9.27
SSG1.5-24	24	28	36	39		21.0	10.2
SSG1.5-25	25	30	37.5	40.5		22.2	11.1
SSG1.5-26	26	32	39	42		23.5	12.1
SSG1.5-27	27	34	40.5	43.5		24.7	13.1
SSG1.5-28	28	36	42	45		26.0	14.1
SSG1.5-30	30	38	45	48		28.5	16.3
SSG1.5-32	32	40	48	51		31.1	18.6
SSG1.5-34	34	42	51	54		33.6	21.1
SSG1.5-35	35	42	52.5	55.5		34.9	22.4
SSG1.5-36	36	45	54	57		36.2	23.8
SSG1.5-38	38	45	57	60		38.8	26.6
SSG1.5-40	40	50	60	63		41.5	29.6
SSG1.5-42	42	50	63	66		44.1	32.8
SSG1.5-44	44	50	66	69		46.7	36.2
SSG1.5-45	45	50	67.5	70.5		48.1	37.9
SSG1.5-48	48	50	72	75		52.0	43.4
SSG1.5-50	50	60	75	78		54.7	47.2
SSG1.5-55	55	60	82.5	85.5		61.4	57.7
SSG1.5-56	56	60	84	87		62.8	59.9
SSG1.5-60	60	60	90	93		68.1	69.2
SSG1.5-64	64	60	96	99		67.9	73.2
SSG1.5-70	70	60	105	108		75.4	88.4
SSG1.5-75	75	60	112.5	115.5		81.7	102
SSG1.5-80	80	70	120	123		88.0	117
SSG1.5-90	90	70	135	138		101	150
SSG1.5-100	100	70	150	153		113	187

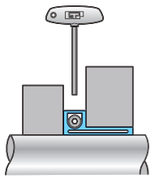
* For the backlash of each product, please refer to the dimension table of the original product.

■ Effects of ETP-E Plus

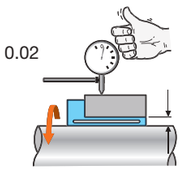
Easy and accurate positioning



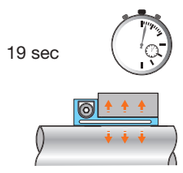
Helps save space



High concentricity



Secure and speedy installation



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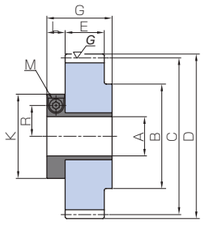
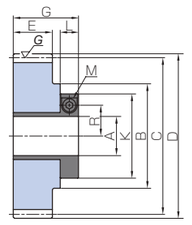
E Series



S1EA



S1EB

To order E Series products, please specify: **Catalog Number + E + BORE.**

Bore A / Catalog Number	* The product shapes of E Series items are identified by background color. 15	19	20	22
SSG1.5-22 E Bore				
SSG1.5-23 E Bore				
SSG1.5-24 E Bore				
SSG1.5-25 E Bore				
SSG1.5-26 E Bore				
SSG1.5-27 E Bore				
SSG1.5-28 E Bore				
SSG1.5-30 E Bore				
SSG1.5-32 E Bore				
SSG1.5-34 E Bore				
SSG1.5-35 E Bore				
SSG1.5-36 E Bore				
SSG1.5-38 E Bore				
SSG1.5-40 E Bore				
SSG1.5-42 E Bore				
SSG1.5-44 E Bore				
SSG1.5-45 E Bore				
SSG1.5-48 E Bore				
SSG1.5-50 E Bore				
SSG1.5-55 E Bore				
SSG1.5-56 E Bore				
SSG1.5-60 E Bore				
SSG1.5-64 E Bore				
SSG1.5-70 E Bore				
SSG1.5-75 E Bore				
SSG1.5-80 E Bore				
SSG1.5-90 E Bore				
SSG1.5-100 E Bore				
Bore A	15	19	20	22
K	50	55	56	61
G	37	39	41	43
R	15.1	17.4	18	19.3
L	14			
Screw M	1-M10			
Recommended fastening torque of screw M (N·m)	7			
ETP allowable fastening torque (N·m)	46	85	110	130
ETP allowable thrust force N	5100	7300	9100	9600
ETP allowable radial load N	500	1000	1000	1200
Bushing weight (kg)	0.16	0.2	0.21	0.25

* Allowable torque is the value when the thrust force is 0, and allowable thrust force is when the torque is 0.
* Allowable torque and allowable thrust force are the values at 20°C.
* Tolerance of the target shaft diameter is h7 (g6, h6).

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

* The precision grade of E Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

Delivered with this marking.

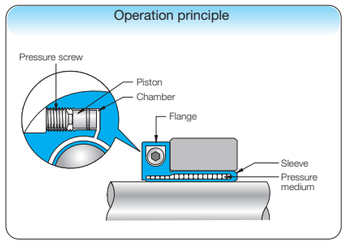
Please see Page 16 for more details.

■ Features of E Series

- Can be easily installed with one bolt (shortens work time)
- Concentricity 0. 02mm
- Zero backlash between the gear and shaft
- No decrease in shaft strength due to fretting wear (worn or seized shaft)
- No need to machine keyways on the shaft, reducing the number of parts such as keyway materials and set screws
- Does not take up mounting space and easy to position and match the phase
- Finished by the manufacturer in 2 working days (excluding the day ordered)
  For products with a pitch of module 4 or higher, manufacture is completed in 7 working days (excluding the day ordered)

■ Operation principle of ETP-E Plus

The pressure medium enclosed in the chamber is pressurized due to the tightening of the pressure screw and moves into the sleeve. The pressure of this pressure medium causes the sleeve to receive pressure from the inside, which causes the shaft side sleeve to contract, the hub side sleeve to expand, allowing the shaft and hub to be fastened via the sleeve.

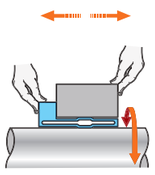


Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Allowable torque (N·m) Bending strength	Surface durability
SSG2-18	18	30	36	40		32.7	13.1
SSG2-19	19	31	38	42		35.5	14.8
SSG2-20	20	32	40	44		38.3	16.6
SSG2-21	21	34	42	46		41.1	18.4
SSG2-22	22	36	44	48		44.0	20.4
SSG2-23	23	37	46	50		46.9	22.5
SSG2-24	24	38	48	52		49.8	24.7
SSG2-25	25	40	50	54		52.7	27.0
SSG2-26	26	42	52	56		55.7	29.3
SSG2-27	27	44	54	58		58.6	31.7
SSG2-28	28	45	56	60		61.6	34.2
SSG2-29	29	48	58	62		64.6	36.8
SSG2-30	30	50	60	64		67.6	39.5
SSG2-32	32	50	64	68		73.7	45.2
SSG2-34	34	50	68	72		79.8	51.3
SSG2-35	35	50	70	74		82.8	54.5
SSG2-36	36	50	72	76	20	85.9	57.8
SSG2-38	38	50	76	80		92.1	64.8
SSG2-40	40	60	80	84		98.3	72.1
SSG2-42	42	60	84	88		105	79.9
SSG2-44	44	60	88	92		111	88.1
SSG2-45	45	60	90	94		114	92.3
SSG2-48	48	60	96	100		114	97.6
SSG2-50	50	60	100	104		120	106
SSG2-55	55	60	110	114		134	130
SSG2-56	56	60	112	116		137	135
SSG2-60	60	65	120	124		149	156
SSG2-64	64	65	128	132		161	179
SSG2-70	70	70	140	144		179	216
SSG2-75	75	70	150	154		194	249
SSG2-80	80	80	160	164		194	265
SSG2-90	90	80	180	184		222	338
SSG2-100	100	80	200	204		250	421

* For the backlash of each product, please refer to the dimension table of the original product.

■ Effects of ETP-E Plus

Easy and accurate positioning



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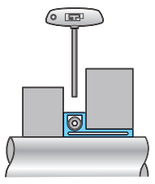
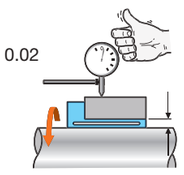
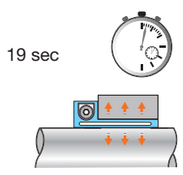


High concentricity



Secure and speedy installation



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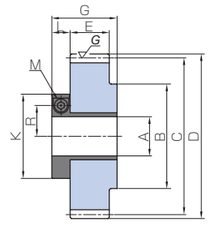
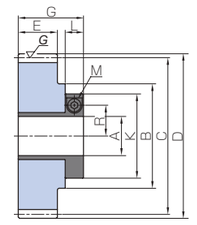
Precautions for Standard Machined Products → Pages 42~44

E Series



S1EA



S1EB

To order E Series products, please specify: Catalog Number + E + BORE.

Bore A / Catalog Number	* The product shapes of E Series items are identified by background color. 15	19	20	22	24	25	28	30
SSG2-18 E BORE	■							
SSG2-19 E BORE	■							
SSG2-20 E BORE	■							
SSG2-21 E BORE	■	■						
SSG2-22 E BORE	■	■	■					
SSG2-23 E BORE	■	■	■					
SSG2-24 E BORE	■	■	■	■				
SSG2-25 E BORE	■	■	■	■	■			
SSG2-26 E BORE	■	■	■	■	■	■		
SSG2-27 E BORE	■	■	■	■	■	■		
SSG2-28 E BORE	■	■	■	■	■	■	■	
SSG2-29 E BORE	■	■	■	■	■	■	■	
SSG2-30 E BORE	■	■	■	■	■	■	■	■
SSG2-32 E BORE	■	■	■	■	■	■	■	■
SSG2-34 E BORE	■	■	■	■	■	■	■	■
SSG2-35 E BORE	■	■	■	■	■	■	■	■
SSG2-36 E BORE	■	■	■	■	■	■	■	■
SSG2-38 E BORE	■	■	■	■	■	■	■	■
SSG2-40 E BORE		■	■	■	■	■	■	■
SSG2-42 E BORE		■	■	■	■	■	■	■
SSG2-44 E BORE		■	■	■	■	■	■	■
SSG2-45 E BORE		■	■	■	■	■	■	■
SSG2-48 E BORE		■	■	■	■	■	■	■
SSG2-50 E BORE				■	■	■	■	■
SSG2-55 E BORE				■	■	■	■	■
SSG2-56 E BORE				■	■	■	■	■
SSG2-60 E BORE				■	■	■	■	■
SSG2-64 E BORE				■	■	■	■	■
SSG2-70 E BORE				■	■	■	■	■
SSG2-75 E BORE				■	■	■	■	■
SSG2-80 E BORE				■	■	■	■	■
SSG2-90 E BORE				■	■	■	■	■
SSG2-100 E BORE				■	■	■	■	■
Bore A	15	19	20	22	24	25	28	30
K	50	55	56	61	63	63	70	71
G	37	39	41	43	44	46	48	50
R	15.1	17.4	18	19.3	20.3	20.8	22.6	23.6
L	14							
Screw M	1-M10							
Recommended fastening torque of screw M (N·m)	7							
ETP allowable fastening torque (N·m)	46	85	110	130	190	230	280	380
ETP allowable thrust force N	5100	7300	9100	9600	13000	15000	16000	21000
ETP allowable radial load N	500	1000	1000	1200	1400	1500	1800	2000
Bushing weight (kg)	0.16	0.2	0.21	0.25	0.26	0.27	0.33	0.35

* Allowable torque is the value when the thrust force is 0, and allowable thrust force is when the torque is 0.
* Allowable torque and allowable thrust force are the values at 20°C.
* Tolerance of the target shaft diameter is h7 (g6, h6).

For updated data, please see the KHK Website.

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

* The precision grade of E Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

KHK E Series

Delivered with this marking.

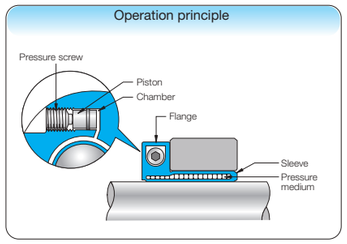
Please see Page 16 for more details.

■ Features of E Series

- Can be easily installed with one bolt (shortens work time)
- Concentricity 0. 02mm
- Zero backlash between the gear and shaft
- No decrease in shaft strength due to fretting wear (worn or seized shaft)
- No need to machine keyways on the shaft, reducing the number of parts such as keyway materials and set screws
- Does not take up mounting space and easy to position and match the phase
- Finished by the manufacturer in 2 working days (excluding the day ordered)
  For products with a pitch of module 4 or higher, manufacture is completed in 7 working days (excluding the day ordered)

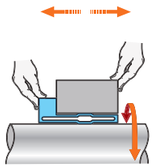
■ Operation principle of ETP-E Plus

The pressure medium enclosed in the chamber is pressurized due to the tightening of the pressure screw and moves into the sleeve. The pressure of this pressure medium causes the sleeve to receive pressure from the inside, which causes the shaft side sleeve to contract, the hub side sleeve to expand, allowing the shaft and hub to be fastened via the sleeve.



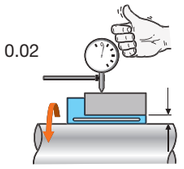
■ Effects of ETP-E Plus

Easy and accurate positioning

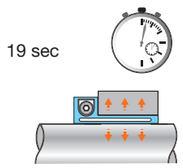


Helps save space

High concentricity



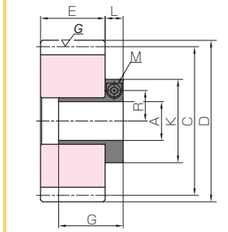
Secure and speedy installation



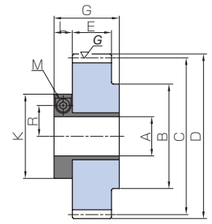
Catalog Number	No. of teeth	Hub dia.	Pitch dia.	Outside dia.	Face width	Allowable torque (N·m)	
		B	C	D	E	Bending strength	Surface durability
SSG2.5-16	16	32	40	45		53.3	20.1
SSG2.5-17	17	35	42.5	47.5		58.6	23.0
SSG2.5-18	18	38	45	50		63.9	26.1
SSG2.5-19	19	39	47.5	52.5		69.4	29.4
SSG2.5-20	20	40	50	55		74.8	32.9
SSG2.5-21	21	42	52.5	57.5		80.4	36.7
SSG2.5-22	22	44	55	60		86.0	40.6
SSG2.5-23	23	46	57.5	62.5		91.6	44.8
SSG2.5-24	24	48	60	65		97.3	49.2
SSG2.5-25	25	50	62.5	67.5		103	53.8
SSG2.5-26	26	54	65	70		109	58.4
SSG2.5-27	27	56	67.5	72.5		115	63.2
SSG2.5-28	28	60	70	75		120	68.2
SSG2.5-30	30	65	75	80		132	78.7
SSG2.5-32	32	70	80	85		144	90.1
SSG2.5-34	34	70	85	90	25	156	102
SSG2.5-35	35	70	87.5	92.5		162	109
SSG2.5-36	36	70	90	95		168	115
SSG2.5-38	38	70	95	100		180	129
SSG2.5-40	40	70	100	105		177	133
SSG2.5-42	42	75	105	110		188	147
SSG2.5-44	44	75	110	115		200	163
SSG2.5-45	45	75	112.5	117.5		205	170
SSG2.5-48	48	75	120	125		222	195
SSG2.5-50	50	80	125	130		234	213
SSG2.5-55	55	80	137.5	142.5		262	260
SSG2.5-56	56	80	140	145		268	270
SSG2.5-60	60	80	150	155		291	311
SSG2.5-70	70	80	175	180		324	399
SSG2.5-75	75	90	187.5	192.5		351	461
SSG2.5-80	80	90	200	205		378	527

* For the backlash of each product, please refer to the dimension table of the original product.

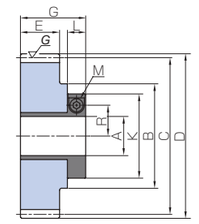
E Series



S5E



S1EA



S1EB

To order E Series products, please specify: Catalog Number + E + BORE.

Bore A	* The product shapes of E Series items are identified by background color.									
Catalog Number	15	19	20	22	24	25	28	30	32	35
SSG2.5-16 E Bore										
SSG2.5-17 E Bore										
SSG2.5-18 E Bore	*									
SSG2.5-19 E Bore										
SSG2.5-20 E Bore	*	*								
SSG2.5-21 E Bore										
SSG2.5-22 E Bore										
SSG2.5-23 E Bore										
SSG2.5-24 E Bore										
SSG2.5-25 E Bore		*								
SSG2.5-26 E Bore										
SSG2.5-27 E Bore										
SSG2.5-28 E Bore										
SSG2.5-30 E Bore		*								
SSG2.5-32 E Bore		*								
SSG2.5-34 E Bore										
SSG2.5-35 E Bore										
SSG2.5-36 E Bore		*								
SSG2.5-38 E Bore										
SSG2.5-40 E Bore										
SSG2.5-42 E Bore										
SSG2.5-44 E Bore										
SSG2.5-45 E Bore										
SSG2.5-48 E Bore										
SSG2.5-50 E Bore										
SSG2.5-55 E Bore										
SSG2.5-56 E Bore										
SSG2.5-60 E Bore										
SSG2.5-70 E Bore										
SSG2.5-75 E Bore										
SSG2.5-80 E Bore										
Bore A	15	19	20	22	24	25	28	30	32	35
K	50	55	56	61	63	63	70	71	78	86
G	37	39	41	43	44	46	48	50	52	55
R	15.1	17.4	18	19.3	20.3	20.8	22.6	23.6	24.8	26.4
L	14									
Screw M	1-M10									
Recommended fastening torque of screw M (N·m)	7									
ETP allowable fastening torque (N·m)	46	85	110	130	190	230	280	380	440	640
ETP allowable thrust force N	5100	7300	9100	9600	13000	15000	16000	21000	22000	30000
ETP allowable radial load N	500	1000	1000	1200	1400	1500	1800	2000	2200	2500
Bushing weight (kg)	0.16	0.2	0.21	0.25	0.26	0.27	0.33	0.35	0.41	0.47

* Allowable torque is the value when the thrust force is 0, and allowable thrust force is when the torque is 0.
* Allowable torque and allowable thrust force are the values at 20°C.
* Tolerance of the target shaft diameter is h7 (g6, h6).
"*" is an SSAG product that's given secondary operations.

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Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

* The precision grade of E Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

KHK E Series

Delivered with this marking.

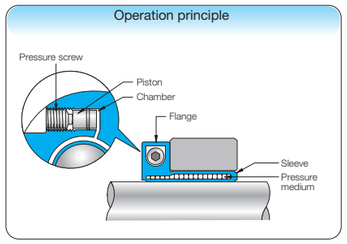
Please see Page 16 for more details.

■ Features of E Series

- Can be easily installed with one bolt (shortens work time)
- Concentricity 0. 02mm
- Zero backlash between the gear and shaft
- No decrease in shaft strength due to fretting wear (worn or seized shaft)
- No need to machine keyways on the shaft, reducing the number of parts such as keyway materials and set screws
- Does not take up mounting space and easy to position and match the phase
- Finished by the manufacturer in 2 working days (excluding the day ordered)
  For products with a pitch of module 4 or higher, manufacture is completed in 7 working days (excluding the day ordered)

■ Operation principle of ETP-E Plus

The pressure medium enclosed in the chamber is pressurized due to the tightening of the pressure screw and moves into the sleeve. The pressure of this pressure medium causes the sleeve to receive pressure from the inside, which causes the shaft side sleeve to contract, the hub side sleeve to expand, allowing the shaft and hub to be fastened via the sleeve.

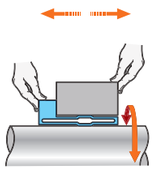


Catalog Number	No. of teeth	Hub dia.	Pitch dia.	Outside dia.	Face width	Allowable torque (N·m)	
		B	C	D	E	Bending strength	Surface durability
SSG3-15	15	36	45	51	30	83.1	30.5
SSG3-16	16	38	48	54		92.1	35.2
SSG3-17	17	37	51	57		101	40.3
SSG3-18	18	40	54	60		110	45.8
SSG3-19	19	45	57	63		120	51.6
SSG3-20	20	50	60	66		129	57.8
SSG3-21	21	52	63	69		139	64.4
SSG3-22	22	54	66	72		149	71.3
SSG3-24	24	58	72	78		168	86.4
SSG3-25	25	60	75	81		178	94.5
SSG3-26	26	62	78	84		188	103
SSG3-27	27	65	81	87		198	111
SSG3-28	28	70	84	90		208	120
SSG3-29	29	70	87	93		218	129
SSG3-30	30	75	90	96		228	138
SSG3-32	32	75	96	102		229	146
SSG3-34	34	75	102	108		248	166
SSG3-35	35	80	105	111		258	177
SSG3-36	36	80	108	114		268	188
SSG3-38	38	80	114	120		287	210
SSG3-40	40	80	120	126		306	234
SSG3-42	42	80	126	132		326	260
SSG3-44	44	80	132	138		345	286
SSG3-45	45	80	135	141		355	300
SSG3-48	48	85	144	150		384	343
SSG3-50	50	85	150	156		404	374
SSG3-55	55	90	165	171		421	423
SSG3-56	56	90	168	174		430	439
SSG3-60	60	100	180	186		467	508
SSG3-70	70	100	210	216		560	699
SSG3-75	75	100	225	231		607	806
SSG3-80	80	100	240	246		654	921

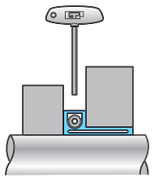
* For the backlash of each product, please refer to the dimension table of the original product.

■ Effects of ETP-E Plus

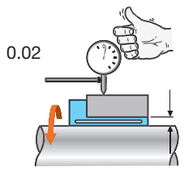
Easy and accurate positioning



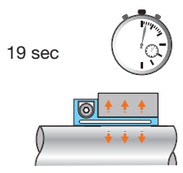
Helps save space



High concentricity



Secure and speedy installation



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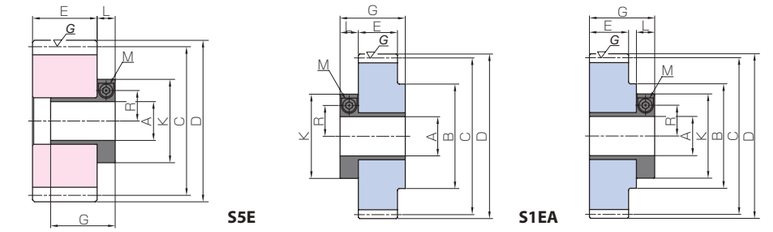
E Series



To order E Series products, please specify: **Catalog Number + E + BORE.**

* The product shapes of E Series items are identified by background color.

Bore A / Catalog Number	15	19	20	22	24	25	28	30	32	35	38	40	42
SSG3-15 E BORE	*												
SSG3-16 E BORE													
SSG3-17 E BORE													
SSG3-18 E BORE	*	*	*	*									
SSG3-19 E BORE													
SSG3-20 E BORE		*	*	*	*								
SSG3-21 E BORE													
SSG3-22 E BORE													
SSG3-24 E BORE													
SSG3-25 E BORE		*	*	*	*								
SSG3-26 E BORE													
SSG3-27 E BORE													
SSG3-28 E BORE													
SSG3-29 E BORE													
SSG3-30 E BORE				*	*								
SSG3-32 E BORE				*	*								
SSG3-34 E BORE													
SSG3-35 E BORE													
SSG3-36 E BORE				*	*								
SSG3-38 E BORE													
SSG3-40 E BORE				*	*								
SSG3-42 E BORE													
SSG3-44 E BORE													
SSG3-45 E BORE													
SSG3-48 E BORE													
SSG3-50 E BORE													
SSG3-55 E BORE													
SSG3-56 E BORE													
SSG3-60 E BORE													
SSG3-70 E BORE													
SSG3-75 E BORE													
SSG3-80 E BORE													
Bore A	15	19	20	22	24	25	28	30	32	35	38	40	42
K	50	55	56	61	63	63	70	71	78	86	92.5	94	96.5
G	37	39	41	43	44	46	48	50	52	55	67	70	70
R	15.1	17.4	18	19.3	20.3	20.8	22.6	23.6	24.8	26.4	31	32	33.2
L	14										20		
Screw M	1-M10										1-M16		
Recommended fastening torque of screw M (N·m)	7										24		
ETP allowable fastening torque (N·m)	46	85	110	130	190	230	280	380	440	640	890	1100	1100
ETP allowable thrust force N	5100	7300	9100	9600	13000	15000	16000	21000	22000	30000	38000	45000	43000
ETP allowable radial load N	500	1000	1000	1200	1400	1500	1800	2000	2200	2500	2800	3000	3200
Bushing weight (kg)	0.16	0.2	0.21	0.25	0.26	0.27	0.33	0.35	0.41	0.47	0.83	0.88	0.95

* Allowable torque is the value when the thrust force is 0, and allowable thrust force is when the torque is 0.
* Allowable torque and allowable thrust force are the values at 20°C.
* Tolerance of the target shaft diameter is h7 (g6, h6).

"✻" is an SSAG product that's given secondary operations.

For updated data, please see the KHK Website.

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

* The precision grade of E Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

KHK E Series

Delivered with this marking.

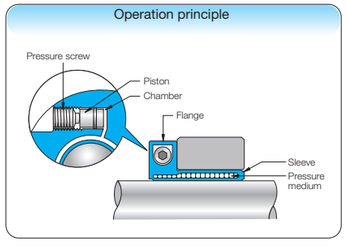
Please see Page 16 for more details.

■ Features of E Series

- Can be easily installed with one bolt (shortens work time)
- Concentricity 0. 02mm
- Zero backlash between the gear and shaft
- No decrease in shaft strength due to fretting wear (worn or seized shaft)
- No need to machine keyways on the shaft, reducing the number of parts such as keyway materials and set screws
- Does not take up mounting space and easy to position and match the phase
- Finished by the manufacturer in 2 working days (excluding the day ordered) For products with a pitch of module 4 or higher, manufacture is completed in 7 working days (excluding the day ordered)

■ Operation principle of ETP-E Plus

The pressure medium enclosed in the chamber is pressurized due to the tightening of the pressure screw and moves into the sleeve. The pressure of this pressure medium causes the sleeve to receive pressure from the inside, which causes the shaft side sleeve to contract, the hub side sleeve to expand, allowing the shaft and hub to be fastened via the sleeve.

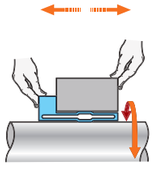


Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Allowable torque (N·m) Bending strength	Surface durability
SSG4-15	15	45	60	68		197	74.1
SSG4-16	16	50	64	72		218	85.6
SSG4-18	18	60	72	80		262	111
SSG4-20	20	65	80	88		307	141
SSG4-22	22	70	88	96		352	174
SSG4-24	24	75	96	104		368	194
SSG4-25	25	80	100	108		389	213
SSG4-28	28	85	112	120		455	270
SSG4-30	30	90	120	128		499	313
SSG4-32	32	90	128	136		544	358
SSG4-35	35	90	140	148	40	612	432
SSG4-36	36	90	144	152		634	458
SSG4-40	40	90	160	168		674	529
SSG4-42	42	90	168	176		717	586
SSG4-44	44	90	176	184		760	646
SSG4-45	45	90	180	188		781	677
SSG4-48	48	100	192	200		846	774
SSG4-50	50	100	200	208		889	842
SSG4-55	55	100	220	228		998	1030
SSG4-56	56	110	224	232		1020	1060
SSG4-60	60	110	240	248		1110	1230
SSG5-20	20	82	100	110		553	259
SSG5-25	25	105	125	135	50	760	426
SSG5-30	30	120	150	160		975	623
SSG6-20	20	100	120	132		955	457
SSG6-25	25	125	150	162	60	1310	747
SSG6-30	30	150	180	192		1560	1020

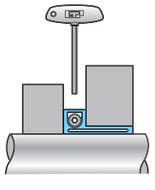
* For the backlash of each product, please refer to the dimension table of the original product.

■ Effects of ETP-E Plus

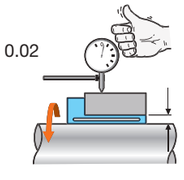
Easy and accurate positioning



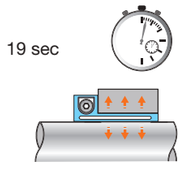
Helps save space



High concentricity



Secure and speedy installation



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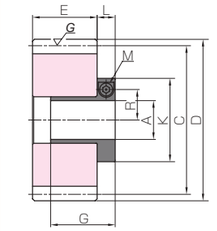
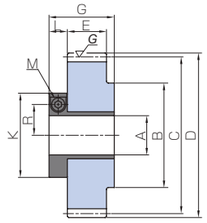
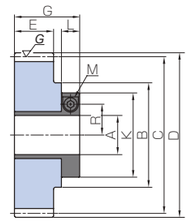
E Series



S5E



S1EA



S1EB

To order E Series products, please specify: **Catalog Number + E + BORE.**

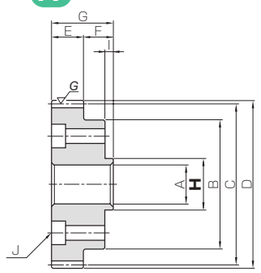
* The product shapes of E Series items are identified by background color.

Bore A / Catalog Number	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	70	80
SSG4-15 E BORE	*	*																
SSG4-16 E BORE																		
SSG4-18 E BORE	*	*	*	*	*	*												
SSG4-20 E BORE	*	*	*	*	*	*	*											
SSG4-22 E BORE																		
SSG4-24 E BORE																		
SSG4-25 E BORE	*	*	*	*	*	*	*											
SSG4-28 E BORE																		
SSG4-30 E BORE	*	*	*	*	*	*	*											
SSG4-32 E BORE																		
SSG4-35 E BORE																		
SSG4-36 E BORE		*	*	*	*	*	*											
SSG4-40 E BORE		*	*	*	*	*	*											
SSG4-42 E BORE																		
SSG4-44 E BORE																		
SSG4-45 E BORE																		
SSG4-48 E BORE																		
SSG4-50 E BORE				*	*	*	*											
SSG4-55 E BORE																		
SSG4-56 E BORE																		
SSG4-60 E BORE																		
SSG5-20 E BORE					*	*	*	*	*	*	*							
SSG5-25 E BORE					*	*	*	*	*	*	*							
SSG5-30 E BORE					*	*	*	*	*	*	*							
SSG6-20 E BORE								*	*	*	*	*	*	*				
SSG6-25 E BORE								*	*	*	*	*	*	*	*			
SSG6-30 E BORE								*	*	*	*	*	*	*	*			
Bore A	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	70	80
K	56	61	63	63	70	71	78	86	92.5	94	96.5	101	104	106	116	123.5	150	160
G	41	43	44	46	48	50	52	55	67	70	70	72	73	74	79	83	101	110
R	18	19.3	20.3	20.8	22.6	23.6	24.8	26.4	31	32	33.2	34.8	36.8	37.5	40.5	43.3	50.8	56.3
L	14								20								24	
Screw M	1-M10								1-M16								1-M20	
Recommended fastening torque of screw M (N·m)	7								24								40	
ETP allowable fastening torque (N·m)	110	130	190	230	280	380	440	640	890	1100	1100	1400	1700	1900	2400	3300	5600	8700
ETP allowable thrust force N	9100	9600	13000	15000	16000	21000	22000	30000	38000	45000	43000	51000	57000	63000	71000	90000	130000	180000
ETP allowable radial load N	1000	1200	1400	1500	1800	2000	2200	2500	2800	3000	3200	3500	4000	4500	5000	5300	6400	7500
Bushing weight (kg)	0.21	0.25	0.26	0.27	0.33	0.35	0.41	0.47	0.83	0.88	0.95	1.03	1.09	1.18	1.46	1.79	2.93	3.58

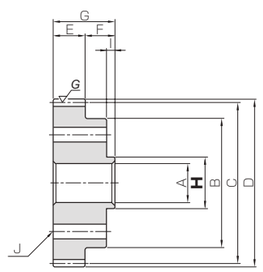
* Allowable torque is the value when the thrust force is 0, and allowable thrust force is when the torque is 0.
* Allowable torque and allowable thrust force are the values at 20°C.
* Tolerance of the target shaft diameter is h7 (g6, h6).
"*" is an SSAG product that's given secondary operations.

Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

* The R Series is given secondary operations and has accuracy grades "equivalent" to the original products.



S1Z



S1U

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Mounting hub dia.	Mounting hub width
				A	B	C	D	E	F	G	H_{h7}	I
SSG1.5-50R24	***m*1.5**	50	S1Z	18	60	75	78	15	14	29	24	4
SSG2-40R24	***m*2**	40	S1Z	20	60	80	84	20	16	36	24	4
SSG2.5-27R24	***m*2.5**	27	S1U	20	56	67.5	72.5	25	18	43	24	4
SSG2.5-28R24		28	S1Z		60	70	75					
SSG2.5-30R24		30			65	75	80					
SSG2.5-42R32		42		25	75	105	110				32	
SSG3-24R24	***m*3**	24	S1Z	20	58	72	78	30	20	50	24	4
SSG3-25R24		25			60	75	81					
SSG3-26R24		26			62	78	84					
SSG3-30R32		30		25	75	90	96				32	
SSG3-32R32		32			75	96	102					
SSG3-34R32		34			75	102	108					
SSG3-35R32		35			80	105	111					
SSG3-36R32		36			80	108	114					
SSG4-24R32	***m*4**	24	S1Z	20	75	96	104	40	25	65	32	4
SSG4-25R32		25			80	100	108					
SSG5-20R32	***m*5**	20	S1Z	25	82	100	110	50	25	75	32	4
SSG5-30R47		30			120	150	160				47	6
SSG6-25R47	***m*6**	25	S1Z	30	125	150	162	60	28	88	47	6
SSG6-30R60		30			150	180	192				60	

Mounting hole specification J						Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
Drilled hole dia.	Counterbore dia.	Counterbore depth	Quantity	P.C.D.	Included screws	Bending strength	Surface durability	Bending strength	Surface durability			
6.6	11	9	6	45	M6×20	54.7	47.2	5.58	4.82	0.08~0.16	0.63	**SSG1.5-50R24**
6.6	11	14	6	45	M6×25	98.3	72.1	10.0	7.35	0.10~0.20	0.89	**SSG2-40R24**
6.6	-	-	6	45	M6×45	115	63.2	11.7	6.44	0.10~0.20	0.82	**SSG2.5-27R24**
	11	19			M6×25	120	68.2	12.3	6.95		0.86	**SSG2.5-28R24**
						132	78.7	13.5	8.03		1.02	**SSG2.5-30R24**
9	14	17		60	M8×30	188	147	19.2	15.0		1.86	**SSG2.5-42R32**
6.6	11	24	6	45	M6×30	168	86.4	17.1	8.81	0.10~0.20	1.04	**SSG3-24R24**
						178	94.5	18.1	9.64		1.14	**SSG3-25R24**
						188	103	19.2	10.5		1.25	**SSG3-26R24**
9	14	22		60	M8×35	228	138	23.3	14.1		1.65	**SSG3-30R32**
						229	146	23.4	14.9		1.86	**SSG3-32R32**
						248	166	25.3	17.0		2.08	**SSG3-34R32**
						258	177	26.3	18.0		2.27	**SSG3-35R32**
						268	188	27.3	19.1		2.39	**SSG3-36R32**
9	14	32	6	60	M8×40	368	194	37.5	19.8	0.10~0.20	2.55	**SSG4-24R32**
						389	213	39.7	21.7		2.84	**SSG4-25R32**
9	14	42	6	60	M8×40	553	259	56.4	26.5	0.10~0.22	3.30	**SSG5-20R32**
			14	100	M8×35	975	623	99.4	63.5		7.52	**SSG5-30R47**
9	14	52	14	100	M8×40	1310	747	134	76.2	0.10~0.22	8.95	**SSG6-25R47**
18	26	44	6	120	M16×60	1560	1020	160	104		13.1	**SSG6-30R60**

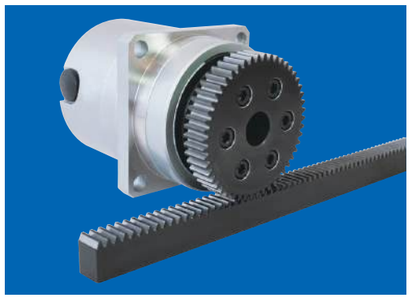
Recommended mating rack

SRGF/SRGFD
Hardened Ground Racks

Please see Page 230 for more details.

■ Features of R Series

- Products matching the mounting holes of the corresponding speed reducer series.
- They come with set bolts and can be used immediately.
- As flange mounting types, they have high rigidity and the gear does not bend.
- Ideal for the mating pinion of racks.



■ Rack and pinion for corresponding flange output speed reducers

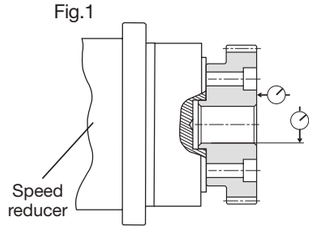
Mounting hub dia. H (Common to all speed reducers)	NIDEC DRIVE TECHNOLOGY VRG Series	Sumitomo Heavy Industries IB Series	Harmonic Drive Systems HPG Series	R Series Catalog Numbers		KHK recommended mating rack
24	C90	P120	20	SSG Module - No. of teeth	R24	KRGF Series SRGF Series SRF Series See Page 213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

(R Series Catalog Numbers)
R series catalog numbers are composed as follows:
(Base SSG ground spur gear catalog number) + R + (mounting hub diameter)

■ Mounting Method and Precautions

① Clean the gear mounting surface and flange surface of the speed reducer and make sure that there are no scratches or dents.
② Set the mounting hub of the gear in the hole at the rotational center of the flange, and temporarily tighten the hexagon socket head cap screws.
③ Tighten the hexagon socket head cap screws on the diagonals while checking the runout of the gear reference face (Fig. 1). (Fig.2)

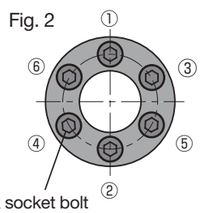
Fig.1



■ Removal Method and Precautions

① Turn off the power source (supply) and check that no load is applied to the gear.
② Loosen the hexagon socket head cap screws and make sure that the gear moves freely.
③ Remove the hexagon socket head cap screws while making sure that there is no danger of falling, etc.

Fig. 2

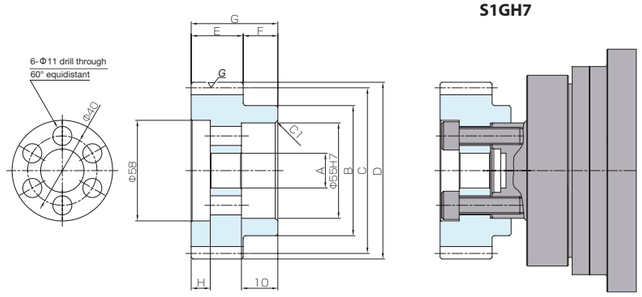


■ We recommend ideal pinions for speed reducers

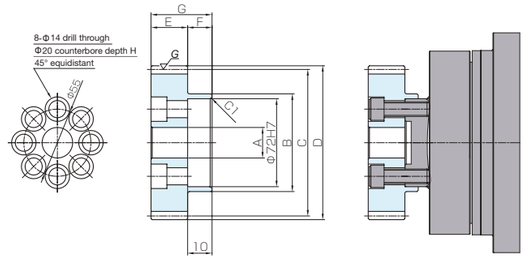
① CP type and helical type stock gears can be given secondary operations according to the customer's specifications at "KHK Quick-Mod Gears". See Page 24 for more details
② High-precision gears for reduction gears are also available with a short delivery time. Estimates are available upon the submission of production drawings.
③ Feel free to contact us about selecting racks and pinions.

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

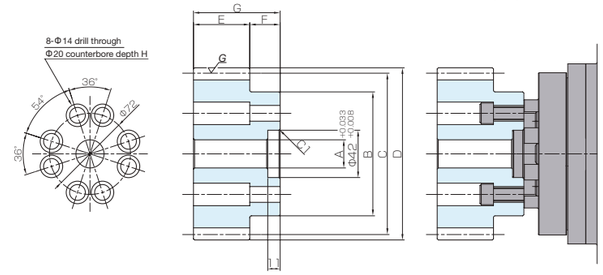
Speed reducer model number GH7 pinion **S1GH7**



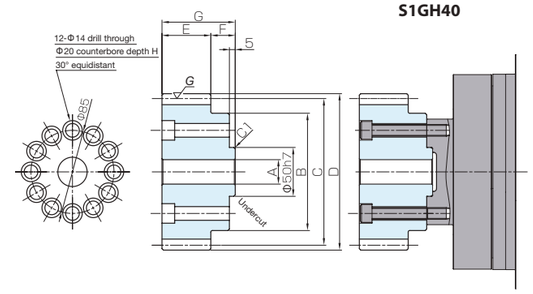
Speed reducer model number GH17 pinion **S1GH17**



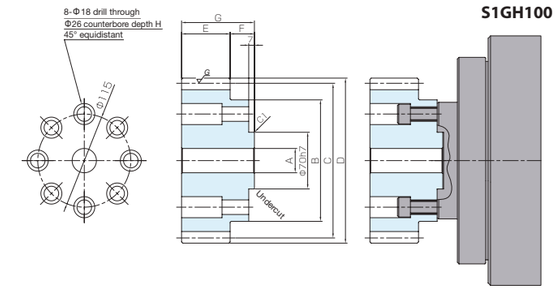
Speed reducer model number GH24 pinion **S1GH24**



Speed reducer model number GH40 pinion **S1GH40**



Speed reducer model number GH100 pinion **S1GH100**



SSG Series

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

SSCPG Series

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

ZSTP Series

Common Specifications	
Precision grade	JIS B 1702-1:1998 N6 grade
Reference section of gear	Normal plane
Gear teeth	Standard full depth
Pressure angle	20°
Helix angle/direction	19° 31' 41" left helix
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened
Tooth hardness	HRC50 to 60
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

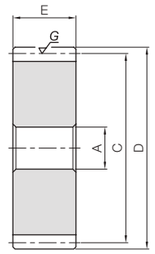
Speed reducer model number	Catalog Number	Module/pitch	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Counterbore depth	Included screws	Allowable torque (N·m)		Weight (kg)	Mating rack	Catalog Number	Speed reducer model number
					A_{H7}	B	C	D	E	F	G	H		Bending strength	Surface durability				
GH7	**SSG3-30RGH7**	***m*3**	30	S1GH7	25	75	90	96	30	20	50	11	M10×45	251	209	1.422	SRGF3-1000	**SSG3-30RGH7**	GH7
	SSCPG10-30RGH7	**CP10 (*m*3.1831)**	30	S1GH7	20	75	95.49	101.86	30	20	50	11	M10×45	283	240	1.635	SRGCPF10-1000	**SSCPG10-30RGH7**	
	ZSTP3-30LRGH7	***m*3(CP10)**	30	S1GH7	25	85	95.49	104	30	20	50	11	M10×45	551	676	1.808	ZST3-1000R	**ZSTP3-30LRGH7**	
GH17	**SSG3-40RGH17**	***m*3**	40	S1GH17	25	80	120	126	30	20	50	13	M12×45	358	407	2.281	SRGF3-1000	**SSG3-40RGH17**	GH17
	SSCPG10-40RGH17	**CP10 (*m*3.1831)**	40	S1GH17	25	80	127.32	133.69	30	20	50	13	M12×45	403	466	2.616	SRGCPF10-1000	**SSCPG10-40RGH17**	
	ZSTP3-30LRGH17	***m*3(CP10)**	30	S1GH17	25	85	95.49	104	30	20	50	13	M12×45	551	676	1.406	ZST3-1000R	**ZSTP3-30LRGH17**	
GH24	**SSG4-30RGH24**	***m*4**	30	S1GH24	20	90	120	128	40	25	65	29	M12×55	595	501	3.627	SRGF4-1000	**SSG4-30RGH24**	GH24
	SSCPG15-30RGH24	**CP15 (*m*4.7746)**	30	S1GH24	25	110	143.24	152.79	50	27	77	41	M12×55	978	821	6.808	SRGCPF15-1000	**SSCPG15-30RGH24**	
	ZSTP4-30LRGH24	***m*4(CP13.333)**	30	S1GH24	25	110	127.32	138	40	25	65	29	M12×55	986	972	4.615	ZST4-1000R	**ZSTP4-30LRGH24**	
GH40	**SSG5-30RGH40**	***m*5**	30	S1GH40	25	120	150	160	50	25	75	13	M12×75	1070	916	7.230	SRGF5-1000	**SSG5-30RGH40**	GH40
	SSCPG15-30RGH40	**CP15 (*m*4.7746)**	30	S1GH40	25	110	143.24	152.79	50	27	77	15	M12×75	978	821	6.431	SRGCPF15-1000	**SSCPG15-30RGH40**	
	ZSTP5-24LRGH40	***m*5(CP16.667)**	24	S1GH40	25	110	127.32	142	50	25	75	13	M12×75	1980	1850	5.022	ZST5-1000R	**ZSTP5-24LRGH40**	
GH100	**SSG6-30RGH100**	***m*6**	30	S1GH100	30	150	180	192	60	28	88	33	M16×75	1850	1600	12.754	SRGF6-1000	**SSG6-30RGH100**	GH100
	SSCPG20-30RGH100	**CP20 (*m*6.3662)**	30	S1GH100	30	150	190.99	203.72	60	30	90	35	M16×75	2090	1850	14.462	SRGCPF20-1000	**SSCPG20-30RGH100**	

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

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

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

J

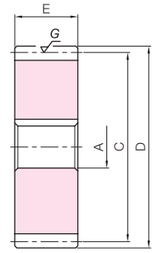


S5

Catalog Number	Module	No. of teeth	Shape	Bore A_{H7}	Pitch dia. C	Outside dia. D	Face width E	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSAG1-25		25		8	25	27		7.92	3.82	0.81	0.39		0.035
SSAG1-30	***m*1**	30	S5		30	32	10	10.2	5.57	1.04	0.57	0.08~0.16	0.052
SSAG1-36		36		10	36	38		10.7	6.77	1.10	0.69		0.074
SSAG1.5-16		16			24	27		13.8	5.02	1.41	0.51		0.044
SSAG1.5-18		18		10	27	30		16.6	6.51	1.69	0.66		0.058
SSAG1.5-20		20			30	33		19.4	8.20	1.98	0.84		0.074
SSAG1.5-25		25			37.5	40.5		22.2	11.1	2.27	1.13		0.12
SSAG1.5-30	***m*1.5**	30	S5		45	48	15	28.5	16.3	2.91	1.66	0.08~0.16	0.17
SSAG1.5-32		32			48	51		31.1	18.6	3.17	1.90		0.19
SSAG1.5-36		36		15	54	57		36.2	23.8	3.70	2.43		0.25
SSAG1.5-40		40			60	63		41.5	29.6	4.23	3.02		0.31
SSAG1.5-50		50			75	78		54.7	47.2	5.58	4.82		0.50
SSAG2-15		15			30	34		29.6	10.5	3.01	1.07		0.099
SSAG2-16		16		10	32	36		27.3	10.1	2.78	1.03		0.11
SSAG2-18		18			36	40		32.7	13.1	3.34	1.34		0.15
SSAG2-20		20		15	40	44		38.3	16.6	3.91	1.69		0.17
SSAG2-25	***m*2**	25	S5		50	54	20	52.7	27.0	5.38	2.75	0.10~0.20	0.28
SSAG2-30		30			60	64		67.6	39.5	6.89	4.03		0.42
SSAG2-32		32		18	64	68		73.7	45.2	7.51	4.61		0.47
SSAG2-36		36			72	76		85.9	57.8	8.76	5.90		0.60
SSAG2-40		40			80	84		98.3	72.1	10.0	7.35		0.75
SSAG2-50		50			100	104		120	106	12.2	10.8		1.19
SSAG2.5-15		15			37.5	42.5		48.1	17.4	4.91	1.77		0.18
SSAG2.5-18		18		15	45	50		63.9	26.1	6.52	2.66		0.28
SSAG2.5-20		20			50	55		74.8	32.9	7.63	3.36		0.35
SSAG2.5-25		25			62.5	67.5		103	53.8	10.5	5.48		0.54
SSAG2.5-30	***m*2.5**	30	S5		75	80	25	132	78.7	13.5	8.03	0.10~0.20	0.81
SSAG2.5-32		32		20	80	85		144	90.1	14.7	9.19		0.92
SSAG2.5-36		36			90	95		168	115	17.1	11.8		1.19
SSAG2.5-40		40			100	105		177	133	18.1	13.6		1.48

[Caution on Secondary Operations] ① A reference surface is set for gear grinding. Use the surface opposite from the markings as the reference surface for secondary operation.

J Series



S5K

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

* The product shapes of J Series items are identified by background color.

Bore H7	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Keyway Js9	3×1.4	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Screw size																			
Catalog Number	—																		
SSAG1-25J BORE																			
SSAG1-30J BORE																			
SSAG1-36J BORE																			
SSAG1.5-16J BORE																			
SSAG1.5-18J BORE																			
SSAG1.5-20J BORE																			
SSAG1.5-25J BORE																			
SSAG1.5-30J BORE																			
SSAG1.5-32J BORE																			
SSAG1.5-36J BORE																			
SSAG1.5-40J BORE																			
SSAG1.5-50J BORE																			
SSAG2-15J BORE																			
SSAG2-16J BORE																			
SSAG2-18J BORE																			
SSAG2-20J BORE																			
SSAG2-25J BORE																			
SSAG2-30J BORE																			
SSAG2-32J BORE																			
SSAG2-36J BORE																			
SSAG2-40J BORE																			
SSAG2-50J BORE																			
SSAG2.5-15J BORE																			
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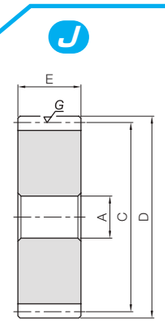
SSAG2.5-20J BORE																			
SSAG2.5-25J BORE																			
SSAG2.5-30J BORE																			
SSAG2.5-32J BORE																			
SSAG2.5-36J BORE																			
SSAG2.5-40J BORE																			

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

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

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

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

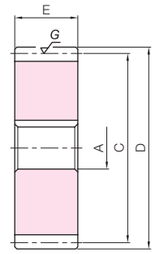


S5

Catalog Number	Module	No. of teeth	Shape	Bore A_{H7}	Pitch dia. C	Outside dia. D	Face width E	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SSAG3-15	***m*3**	15	S5	15	45	51	30	83.1	30.5	8.48	3.11	0.10~0.20	0.33
SSAG3-18		18			54	60		110	45.8	11.3	4.67		0.50
SSAG3-20		20			60	66		129	57.8	13.2	5.90		0.62
SSAG3-25		25		20	75	81		178	94.5	18.1	9.64		0.97
SSAG3-30		30			90	96		228	138	23.3	14.1		1.42
SSAG3-32		32			96	102		229	146	23.4	14.9		1.59
SSAG3-36		36		25	108	114		268	188	27.3	19.1		2.04
SSAG3-40		40			120	126		306	234	31.2	23.9		2.55
SSAG3-50		50			150	156		404	374	41.2	38.1		4.05
SSAG4-15	***m*4**	15	S5	20	60	68	40	197	74.1	20.1	7.55	0.10~0.20	0.79
SSAG4-18		18			72	80		262	111	26.7	11.4		1.18
SSAG4-20		20			80	88		307	141	31.3	14.3		1.48
SSAG4-25		25			100	108		389	213	39.7	21.7		2.37
SSAG4-30		30			120	128		499	313	50.9	31.9		3.45
SSAG4-36		36		25	144	152		634	458	64.7	46.7		4.96
SSAG4-40		40			160	168		674	529	68.7	54.0		6.16
SSAG4-50		50			200	208		889	842	90.7	85.9		9.71
SSAG5-20	***m*5**	20	S5	25	100	110	50	553	259	56.4	26.5	0.10~0.22	2.89
SSAG5-25		25			125	135		760	426	77.5	43.4		4.62
SSAG5-30		30			150	160		975	623	99.4	63.5		6.74
SSAG6-20	***m*6**	20	S5	25	120	132	60	955	457	97.4	46.6	0.10~0.22	5.10
SSAG6-25		25			150	162		1310	747	134	76.2		8.09
SSAG6-30		30			180	192		1560	1020	160	104		11.8

[Caution on Secondary Operations] ① A reference surface is set for gear grinding. Use the surface opposite from the markings as the reference surface for secondary operation.

J Series



S5K

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

Bore H7	* The product shapes of J Series items are identified by background color.														
Keyway Js9	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	5×2.3			6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	—														
SSAG3-15J BORE															
SSAG3-18J BORE															
SSAG3-20J BORE															
SSAG3-25J BORE															
SSAG3-30J BORE															
SSAG3-32J BORE															
SSAG3-36J BORE															
SSAG3-40J BORE															
SSAG3-50J BORE															

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

Bore H7	* The product shapes of J Series items are identified by background color.														
Keyway Js9	20	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80
Screw size	6×2.8		8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4
Catalog Number	—															
SSAG4-15J BORE																
SSAG4-18J BORE																
SSAG4-20J BORE																
SSAG4-25J BORE																
SSAG4-30J BORE																
SSAG4-36J BORE																
SSAG4-40J BORE																
SSAG4-50J BORE																
SSAG5-20J BORE																
SSAG5-25J BORE																
SSAG5-30J BORE																
SSAG6-20J BORE																
SSAG6-25J BORE																
SSAG6-30J BORE																

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

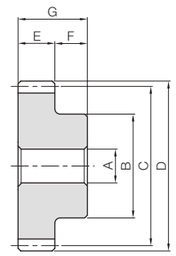
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Thermal Refined Spur Gears

Made to Order

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

M



S1

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque				Backlash (mm)	Weight (kg)	Catalog Number
											Bending strength		Surface durability				
				A_{H7}	B	C	D	E	F	G	N·m	kgf·m	N·m	kgf·m			
KS1.5-20 (made to order)		20		8	24	30	33				34.3	3.49	6.83	0.70		0.12	**KS1.5-20** (made to order)
KS1.5-25 (made to order)	***m*1.5**	25			30	37.5	40.5	15	14	29	46.2	4.72	11.7	1.19	0.10~0.22	0.20	**KS1.5-25** (made to order)
KS1.5-30 (made to order)		30		10	38	45	48				58.5	5.96	18.2	1.86		0.29	**KS1.5-30** (made to order)
KS2-20 (made to order)		20			32	40	44				81.2	8.28	16.7	1.70		0.27	**KS2-20** (made to order)
KS2-25 (made to order)	***m*2**	25		12	40	50	54	20	16	36	110	11.2	28.6	2.92	0.12~0.26	0.43	**KS2-25** (made to order)
KS2-30 (made to order)		30			50	60	64				139	14.1	44.7	4.55		0.66	**KS2-30** (made to order)
KS2.5-20 (made to order)		20			40	50	55				159	16.2	33.5	3.41		0.50	**KS2.5-20** (made to order)
KS2.5-25 (made to order)	***m*2.5**	25		15	50	62.5	67.5	25	18	43	214	21.8	57.4	5.85	0.14~0.28	0.82	**KS2.5-25** (made to order)
KS2.5-30 (made to order)		30			65	75	80				271	27.6	89.5	9.13		1.28	**KS2.5-30** (made to order)
KS3-20 (made to order)		20	S1	15	50	60	66				274	28.0	59.1	6.02		0.90	**KS3-20** (made to order)
KS3-25 (made to order)	***m*3**	25		20	60	75	81	30	20	50	370	37.7	101	10.3	0.14~0.32	1.36	**KS3-25** (made to order)
KS3-30 (made to order)		30			75	90	96				468	47.7	158	16.1		2.07	**KS3-30** (made to order)
KS4-20 (made to order)		20			65	80	88				650	66.3	145	14.8		2.07	**KS4-20** (made to order)
KS4-25 (made to order)	***m*4**	25		20	80	100	108	40	25	65	877	89.4	248	25.3	0.18~0.38	3.29	**KS4-25** (made to order)
KS4-30 (made to order)		30			90	120	128				1110	113	388	39.5		4.64	**KS4-30** (made to order)
KS5-20 (made to order)		20		22	82	100	110				1270	129	290	29.6		3.90	**KS5-20** (made to order)
KS5-25 (made to order)	***m*5**	25		25	105	125	135	50	25	75	1710	175	498	50.8	0.20~0.44	6.23	**KS5-25** (made to order)
KS5-30 (made to order)		30			120	150	160				2170	221	779	79.4		8.87	**KS5-30** (made to order)

[Precautions for Made to Order Products] ① Prices and lead times for Made to Order products require separate estimates. Contact your dealer.

KS Thermal Refined Spur Gear recommended mating racks

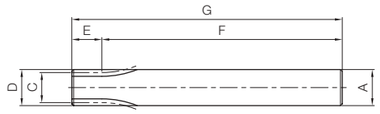
KRF/KRFD Thermal Refined Racks

Please see Page 240 for more details.

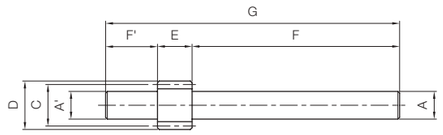
Product Precautions → Page 50

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

* Products with module 1.5 use S45C thermal refined materials, so the surface hardness is 200~270 HB.



SA



SB

Catalog Number	Module	No. of teeth	Profile shift coefficient	Shape	Shaft diameter (L)	Shaft length (L)	Pitch dia.	Outside dia.	Face width	Shaft diameter (R)	Shaft length (R)	Total Length
					A'	F'	C	D	E	A	F	G
SSS1-10		10					10	12		12		
SSS1-12	***m*1**	12	0	SA	—	—	12	14	12	14	78	90
SSS1-13		13					13	15		15		
SSS1.5-10		10	+0.5		12.2		15	19.35		12.2		
SSS1.5-12	***m*1.5**	12	0	SB	13.7	25	18	21	15	13.7	100	140
SSS1.5-13		13	0		15.2		19.5	22.5		15.2		

Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
Bending strength	Surface durability	Bending strength	Surface durability			
1.62	0.063	0.16	0.0064		0.077	**SSS1-10**
2.52	0.092	0.26	0.0094	0.08~0.18	0.10	**SSS1-12**
3.05	0.11	0.31	0.011		0.12	**SSS1-13**
12.7	0.71	1.30	0.073		0.14	**SSS1.5-10**
9.97	0.89	1.02	0.091	0.10~0.22	0.17	**SSS1.5-12**
12.1	1.05	1.23	0.11		0.21	**SSS1.5-13**

[Caution on Product Characteristics] ① For the center distance of the profile shifted gear, please refer to "Center distance of stock spur gear meshing with profile shifted gear" below.
② The backlash values shown in the table are the theoretical values for the normal direction for the internal ring in mesh with an SS spur gear.

■ Center distance of stock spur gear meshing with profile shifted gear

The center distance of the stock gear (x = 0) that meshes with profile shifted gear (x = +0.5) of m = 1 is shown in the table at right. Please multiply by the module of the gear to be used.

■ Center distance where number of teeth is 12 to 30 (unit: mm)

Number of teeth (x = +0.5) / Number of teeth (x = 0)	10
12	11.4410
13	11.9428
14	12.4446
15	12.9462
16	13.4477
17	13.9492
18	14.4505
19	14.9518
20	15.4530
21	15.9542
22	16.4553
23	16.9564
24	17.4574
25	17.9583
26	18.4592
27	18.9601
28	19.4610
29	19.9618
30	20.4625

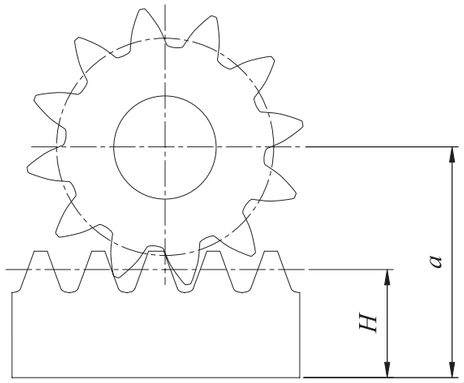
■ Center distance where number of teeth is 32 to 62 (unit: mm)

Number of teeth (x = +0.5) / Number of teeth (x = 0)	10
32	21.4640
34	22.4653
35	22.9660
36	23.4666
38	24.4677
40	25.4688
42	26.4698
44	27.4707
45	27.9712
46	28.4716
48	29.4725
50	30.4733
52	31.4740
54	32.4747
55	32.9750
56	33.4754
58	34.4760
60	35.4766
62	36.4772

■ Center distance where number of teeth is 64 to 200 (unit: mm)

Number of teeth (x = +0.5) / Number of teeth (x = 0)	10
64	37.4777
65	37.9780
66	38.4782
68	39.4787
70	40.4792
72	41.4796
75	42.9803
76	43.4805
80	45.4813
84	47.4820
85	47.9822
88	49.4826
90	50.4830
95	52.9837
100	55.4844
120	65.4866
150	80.4890
200	105.4915

■ Mounting distance of a profile shifted gear and the meshing rack



$$a = \frac{zm}{2} + H + xm$$

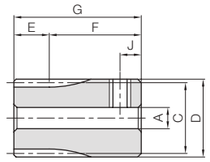
Where
a : Mounting distance
H : Pitch line height
m : Module
z : No. of teeth
x : Profile shift coefficient

Product Precautions → Page 50

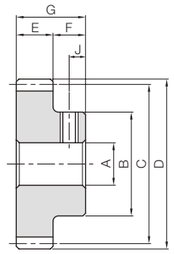
Please make use of GCSW for Web (gear calculation software).

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

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



S3T

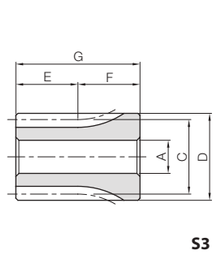


S1T

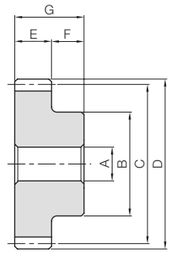
Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Socket head screw		Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
				$A_{H7(H8)}$	B	C	D	E	F	G	Size	J	Bending strength	Surface durability	Bending strength	Surface durability			
SS0.5-15A	***m*0.5**	15	S3T	3_{H8}	8.5	7.5	8.5	5	11	16	M3	2.5	0.46	0.022	0.047	0.0022	0~0.10	0.0056	**SS0.5-15A**
SS0.5-18A		18		4_{H8}	10	9	10				M3		0.61	0.032	0.063	0.0033		0.0076	**SS0.5-18A**
SS0.5-20A		20		3_{H8}	11	10	11				M3		0.72	0.040	0.073	0.0041		0.010	**SS0.5-20A**
SS0.5-20B				4_{H8}							M3							0.0095	**SS0.5-20B**
SS0.5-22A		22		4_{H8}	12	11	12				M3		0.83	0.049	0.084	0.0050		0.012	**SS0.5-22A**
SS0.5-24A		24		4_{H8}	13	12	13				M3	2.5	0.93	0.059	0.095	0.0060		0.014	**SS0.5-24A**
SS0.5-24B				5_{H8}							M4	3						0.013	**SS0.5-24B**
SS0.5-25B		25		5_{H8}	13.5	12.5	13.5				M4	3	0.99	0.064	0.10	0.0065		0.014	**SS0.5-25B**
SS0.5-28A		28	S1T	4_{H8}	12	14	15		7	12	M3	3.5	1.16	0.081	0.12	0.0082		0.011	**SS0.5-28A**
SS0.5-30B		30		5	13	15	16				M4		1.27	0.093	0.13	0.0095		0.012	**SS0.5-30B**
SS0.5-50B		50		6	22	25	26				M4		2.43	0.27	0.25	0.027		0.037	**SS0.5-50B**
SS0.5-54A		54		5	25	27	28				M4		2.67	0.32	0.27	0.032		0.047	**SS0.5-54A**
SS0.5-60A		60		6	28	30	31				M4		3.03	0.39	0.31	0.040		0.058	**SS0.5-60A**
SS0.5-80A		80		6	28	40	41				M4		4.24	0.72	0.43	0.074		0.079	**SS0.5-80A**
SS0.5-80B				8							M5							0.077	**SS0.5-80B**
SS0.5-96A		96		8	28	48	49				M5		5.21	1.06	0.53	0.11		0.099	**SS0.5-96A**
SS0.5-120A		120		8	28	60	61				M5		6.68	1.70	0.68	0.17		0.14	**SS0.5-120A**
SS0.8-15A	***m*0.8**	15	S3T	5_{H8}	13.6	12	13.6	8	14	22	M4	3.5	1.89	0.088	0.19	0.0090	0~0.10	0.019	**SS0.8-15A**
SS0.8-20A		20	S1T	5_{H8}	13	16	17.6		8	16	M4	4	2.94	0.17	0.30	0.017		0.018	**SS0.8-20A**
SS0.8-20B				6							M4							0.017	**SS0.8-20B**
SS0.8-25A		25		5_{H8}	16	20	21.6				M4		4.05	0.27	0.41	0.027		0.029	**SS0.8-25A**
SS0.8-28A		28		6	18	22.4	24				M4		4.73	0.34	0.48	0.035		0.037	**SS0.8-28A**
SS0.8-30A		30		5_{H8}	20	24	25.6				M4		5.19	0.39	0.53	0.040		0.045	**SS0.8-30A**
SS0.8-30C				8							M5							0.041	**SS0.8-30C**
SS0.8-40A		40		6	28	32	33.6				M4		7.55	0.72	0.77	0.074		0.085	**SS0.8-40A**
SS0.8-45A		45		6	28	36	37.6				M4		8.75	0.93	0.89	0.095		0.098	**SS0.8-45A**

Product Precautions → Page 50

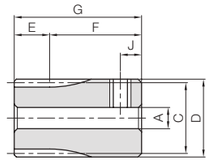
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating



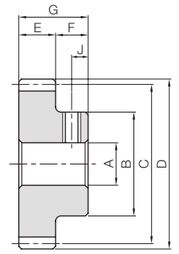
S3



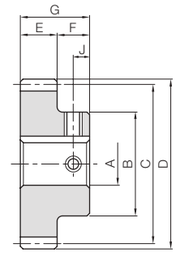
S1



S3T



S1T



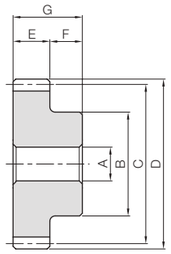
S1K

To order Hardened Plus, please specify Catalog No. + H. **Example: SS1-15H**

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Keyway	Socket head screw		Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Backlash (mm)	Weight (kg)	Catalog Number
				A_{H7}	B	C	D	E	F	G	Width × Depth	Size	J	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
SS1-15 (H)		15	S3	8	17	15	17		20	30	—	—	—	3.69	0.38	0.17	0.018	0.85	0.086		0.038	**SS1-15**
SS1-15A			S3T	5								M4	4								0.044	**SS1-15A**
SS1-15B			S3T	6								M4	4								0.042	**SS1-15B**
SS1-16 (H)		16	S3	8	18	16	18					—	—	4.09	0.42	0.2	0.021	0.98	0.10		0.044	**SS1-16**
SS1-16B			S3T	6								M4	4								0.049	**SS1-16B**
SS1-17 (H)		17	S3	8	19	17	19					—	—	4.5	0.46	0.23	0.023	1.12	0.11		0.050	**SS1-17**
SS1-18 (H)		18	S3	8	20	18	20					—	—	4.91	0.5	0.26	0.027	1.26	0.13		0.057	**SS1-18**
SS1-19 (H)		19	S3	8	21	19	21					—	—	5.33	0.54	0.29	0.030	1.42	0.14		0.065	**SS1-19**
SS1-20 (H)		20	S1	8	16	20	22		10	20		—	—	5.75	0.59	0.33	0.033	1.59	0.16		0.033	**SS1-20**
SS1-20A			S1T	5								M4	5								0.037	**SS1-20A**
SS1-20B			S1T	6								M4	5								0.036	**SS1-20B**
SS1-20C			S1T	8								M5	5								0.032	**SS1-20C**
SS1-21 (H)		21	S1	8	17	21	23					—	—	6.17	0.63	0.36	0.037	1.77	0.18		0.037	**SS1-21**
SS1-22 (H)		22	S1	8	18	22	24					—	—	6.6	0.67	0.4	0.041	1.95	0.20		0.042	**SS1-22**
SS1-23 (H)		23	S1	8	18	23	25					—	—	7.03	0.72	0.45	0.045	2.15	0.22		0.045	**SS1-23**
SS1-24 (H)		24	S1	8	20	24	26				—	—	—	7.47	0.76	0.49	0.050	2.36	0.24		0.052	**SS1-24**
SS1-24A			S1T	6							—	M4	5								0.055	**SS1-24A**
SS1-24C			S1K	10							4 x 1.8	M4	5								0.046	**SS1-24C**
SS1-25 (H)		25	S1	8	20	25	27				—	—	—	7.91	0.81	0.54	0.055	2.57	0.26		0.055	**SS1-25**
SS1-25B			S1T	8							—	M5	5								0.054	**SS1-25B**
SS1-25C			S1K	10							4 x 1.8	M4	5								0.049	**SS1-25C**
SS1-26 (H)	***m*1**	26	S1	8	22	26	28	10			—	—	—	8.35	0.85	0.58	0.059	2.79	0.28	0.08~0.18	0.064	**SS1-26**
SS1-27 (H)		27	S1	8	22	27	29				—	—	—	8.79	0.9	0.63	0.064	3.01	0.31		0.067	**SS1-27**
SS1-28 (H)		28	S1	8	22	28	30				—	—	—	9.24	0.94	0.68	0.070	3.25	0.33		0.070	**SS1-28**
SS1-29 (H)		29	S1	8	24	29	31				—	—	—	9.69	0.99	0.73	0.075	3.49	0.36		0.079	**SS1-29**
SS1-30 (H)		30	S1	10	25	30	32		10		—	—	—	10.1	1.03	0.79	0.081	3.74	0.38		0.082	**SS1-30**
SS1-30A			S1T	6							—	M4	5								0.089	**SS1-30A**
SS1-30B			S1T	8							—	M5	5								0.085	**SS1-30B**
SS1-32 (H)		32	S1	10	26	32	34				—	—	—	11.1	1.13	0.90	0.092	4.27	0.44		0.092	**SS1-32**
SS1-32A			S1T	8								M5	5								0.096	**SS1-32A**
SS1-34 (H)		34	S1	10	26	34	36				—	—	—	12.0	1.22	1.03	0.10	4.83	0.49		0.10	**SS1-34**
SS1-35 (H)		35	S1	10	26	35	37				—	—	—	12.4	1.27	1.09	0.11	5.13	0.52		0.10	**SS1-35**
SS1-36 (H)		36	S1	10	28	36	38				—	—	—	12.9	1.31	1.16	0.12	5.44	0.55		0.12	**SS1-36**
SS1-38 (H)		38	S1	10	32	38	40				—	—	—	13.8	1.41	1.30	0.13	6.08	0.62		0.14	**SS1-38**
SS1-40 (H)		40	S1	10	35	40	42				—	—	—	14.7	1.50	1.45	0.15	6.76	0.69		0.16	**SS1-40**
SS1-40B			S1K	10							4 x 1.8	M4	5								0.16	**SS1-40B**
SS1-42 (H)		42	S1	10	35	42	44				—	—	—	15.7	1.60	1.61	0.16	7.47	0.76		0.17	**SS1-42**
SS1-44 (H)		44	S1	10	35	44	46				—	—	—	16.6	1.69	1.77	0.18	8.23	0.84		0.18	**SS1-44**
SS1-45 (H)		45	S1	10	35	45	47				—	—	—	17.1	1.74	1.86	0.19	8.62	0.88		0.19	**SS1-45**
SS1-45A			S1T	8							—	M5	5								0.19	**SS1-45A**
SS1-45B			S1K	10							4 x 1.8	M4	5								0.19	**SS1-45B**
SS1-46 (H)		46	S1	10	35	46	48				—	—	—	17.6	1.79	1.95	0.20	9.02	0.92		0.19	**SS1-46**
SS1-48 (H)		48	S1	10	35	48	50				—	—	—	18.5	1.89	2.13	0.22	9.84	1.00		0.21	**SS1-48**

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

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



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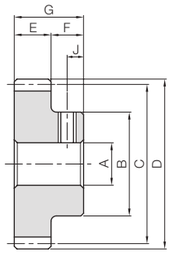

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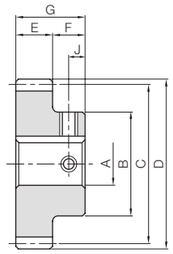


S1K

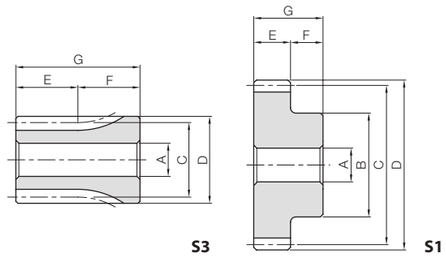
To order Hardened Plus, please specify Catalog No. + H. **Example: SS1-50H**

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Keyway	Socket head screw		Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Backlash (mm)	Weight (kg)	Catalog Number
				A_{H7}	B	C	D	E	F	G	Width × Depth	Size	J	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
SS1-50 (H)		50	S1	10		50	52				—	—	—	19.5	1.98	2.32	0.24	10.7	1.09		0.22	**SS1-50**
SS1-50A (H)			S1T	8							—	M5	5								0.22	**SS1-50A**
SS1-52 (H)		52	S1	10		52	54				—	—	—	20.4	2.08	2.52	0.26	11.6	1.18		0.23	**SS1-52**
SS1-54 (H)		54	S1	10	35	54	56				—	—	—	21.4	2.18	2.73	0.28	12.5	1.28		0.24	**SS1-54**
SS1-55 (H)		55	S1	10		55	57				—	—	—	21.8	2.23	2.83	0.29	13.0	1.33		0.25	**SS1-55**
SS1-56 (H)		56	S1	10		56	58				—	—	—	22.3	2.28	2.94	0.30	13.5	1.38		0.26	**SS1-56**
SS1-60 (H)		60	S1	10		60	62				—	—	—	24.2	2.47	3.40	0.35	15.6	1.59		0.29	**SS1-60**
SS1-60C (H)			S1K	15							5 x 2.3	M4	5								0.27	**SS1-60C**
SS1-62 (H)		62	S1	10	40	62	64				—	—	—	25.2	2.57	3.64	0.37	16.7	1.70		0.32	**SS1-62**
SS1-64 (H)		64	S1	10		64	66				—	—	—	26.2	2.67	3.89	0.40	17.8	1.81		0.34	**SS1-64**
SS1-65 (H)		65	S1	10		65	67				—	—	—	26.6	2.72	4.02	0.41	18.4	1.87		0.35	**SS1-65**
SS1-68 (H)		68	S1	10		68	70				—	—	—	28.1	2.86	4.42	0.45	20.1	2.05		0.37	**SS1-68**
SS1-70 (H)		70	S1	10		70	72				—	—	—	29.1	2.96	4.70	0.48	21.4	2.18		0.39	**SS1-70**
SS1-72 (H)	***m*1**	72	S1	10		72	74	10	10	20	—	—	—	30.0	3.06	4.98	0.51	22.6	2.31	0.08~0.18	0.41	**SS1-72**
SS1-75 (H)		75	S1	10		75	77				—	—	—	31.5	3.21	5.43	0.55	24.6	2.51		0.43	**SS1-75**
SS1-76 (H)		76	S1	10		76	78				—	—	—	32.0	3.26	5.59	0.57	25.3	2.58		0.44	**SS1-76**
SS1-80 (H)		80	S1	10	40	80	82				—	—	—	33.9	3.46	6.23	0.63	28.1	2.87		0.48	**SS1-80**
SS1-84 (H)		84	S1	10		84	86				—	—	—	35.8	3.66	6.90	0.7	31.1	3.17		0.52	**SS1-84**
SS1-85 (H)		85	S1	10		85	87				—	—	—	36.3	3.71	7.08	0.72	31.8	3.25		0.53	**SS1-85**
SS1-88 (H)		88	S1	10		88	90				—	—	—	37.8	3.85	7.62	0.78	34.2	3.48		0.56	**SS1-88**
SS1-90 (H)		90	S1	10		90	92				—	—	—	38.8	3.95	7.98	0.81	35.8	3.65		0.59	**SS1-90**
SS1-96 (H)		96	S1	10		96	98				—	—	—	41.7	4.25	9.15	0.93	40.8	4.16		0.65	**SS1-96**
SS1-100 (H)		100	S1	10		100	102				—	—	—	43.7	4.45	9.97	1.02	44.4	4.53		0.70	**SS1-100**
SS1-110 (H)		110	S1	15	50	110	112				—	—	—	48.6	4.95	12.2	1.24	53.9	5.50		0.87	**SS1-110**
SS1-120 (H)		120	S1	15	50	120	122				—	—	—	53.5	5.45	14.7	1.50	64.4	6.57		1.01	**SS1-120**
SS1-150 (H)		150	S1	20	120	150	152				—	—	—	68.2	6.96	23.6	2.41	102	10.4		2.23	**SS1-150**
SS1-200 (H)		200	S1	20	160	200	202				—	—	—	71.5	7.29	33.6	3.42	144	14.7		4.00	**SS1-200**

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

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

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



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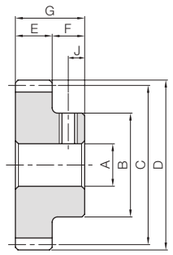

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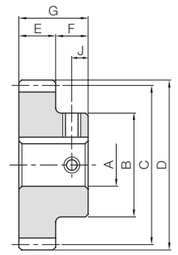


S1K

To order Hardened Plus, please specify Catalog No. + H. **Example: SS1.5-12H**

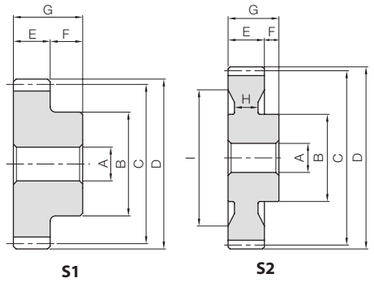
Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Keyway	Socket head screw		Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Backlash (mm)	Weight (kg)	Catalog Number
				A_{H7}	B	C	D	E	F	G	Width × Depth	Size	J	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
SS1.5-12 (H)		12	S3	8	21	18	21		15	30	—	—	—	6.86	0.70	0.36	0.037	1.76	0.18		0.059	**SS1.5-12**
SS1.5-13 (H)		13	S3	8	22.5	19.5	22.5				—	—	—	8.84	0.90	0.44	0.045	2.12	0.22		0.070	**SS1.5-13**
SS1.5-14 (H) **SS1.5-14B**		14	S1 S1T	8 8	16	21	24				— —	— M5	— 5	11.1	1.13	0.52	0.053	2.50	0.26		0.047 0.046	**SS1.5-14** **SS1.5-14B**
SS1.5-15 (H)		15	S1	8	18	22.5	25.5				—	—	—	12.5	1.27	0.60	0.062	2.91	0.30		0.057	**SS1.5-15**
SS1.5-16 (H) **SS1.5-16B**		16	S1 S1T	8 8	20	24	27				— —	— M5	— 5	13.8	1.41	0.70	0.071	3.36	0.34		0.068 0.067	**SS1.5-16** **SS1.5-16B**
SS1.5-17 (H)		17	S1	8	21	25.5	28.5				—	—	—	15.2	1.55	0.80	0.082	3.84	0.39		0.077	**SS1.5-17**
SS1.5-18 (H)		18	S1	8	22	27	30				—	—	—	16.6	1.69	0.91	0.093	4.35	0.44		0.087	**SS1.5-18**
SS1.5-19 (H)		19	S1	8	23	28.5	31.5				—	—	—	18.0	1.83	1.03	0.11	4.89	0.50		0.098	**SS1.5-19**
SS1.5-20 (H)		20	S1	8	24	30	33				—	—	—	19.4	1.98	1.15	0.12	5.47	0.56		0.11	**SS1.5-20**
SS1.5-21 (H)		21	S1	8	25	31.5	34.5				—	—	—	20.8	2.12	1.29	0.13	6.08	0.62		0.12	**SS1.5-21**
SS1.5-22 (H)		22	S1	8	26	33	36				—	—	—	22.3	2.27	1.43	0.15	6.72	0.69		0.13	**SS1.5-22**
SS1.5-23 (H)		23	S1	8	27	34.5	37.5				—	—	—	23.7	2.42	1.58	0.16	7.40	0.75		0.15	**SS1.5-23**
SS1.5-24 (H)		24	S1	8	28	36	39				—	—	—	25.2	2.57	1.73	0.18	8.12	0.83		0.16	**SS1.5-24**
SS1.5-25 (H)		25	S1	8	30	37.5	40.5				—	—	—	26.7	2.72	1.90	0.19	8.87	0.90		0.18	**SS1.5-25**
SS1.5-26 (H) **SS1.5-26A**		26	S1 S1K	10 12	32	39	42				— 4 x 1.8	— M4	— 5	28.2	2.87	2.06	0.21	9.62	0.98		0.19 0.18	**SS1.5-26** **SS1.5-26A**
SS1.5-27 (H)		27	S1	10	34	40.5	43.5				—	—	—	29.7	3.03	2.23	0.23	10.4	1.06		0.21	**SS1.5-27**
SS1.5-28 (H) **SS1.5-28A**		28	S1 S1K	10 12	36	42	45				— 4 x 1.8	— M4	— 5	31.2	3.18	2.41	0.25	11.2	1.14		0.23 0.22	**SS1.5-28** **SS1.5-28A**
SS1.5-29 (H)		29	S1	10	37	43.5	46.5				—	—	—	32.7	3.34	2.60	0.26	12.1	1.23		0.24	**SS1.5-29**
SS1.5-30 (H) **SS1.5-30C**		30	S1 S1K	10 15	38	45	48				— 5 x 2.3	— M4	— 5	34.2	3.49	2.79	0.28	12.9	1.32		0.26 0.24	**SS1.5-30** **SS1.5-30C**
SS1.5-32 (H) **SS1.5-32B**		32	S1 S1K	10 12	40 38	48	51				— 4 x 1.8	— M4	— 5	37.3	3.80	3.19	0.33	14.8	1.51		0.30 0.28	**SS1.5-32** **SS1.5-32B**
SS1.5-34 (H)		34	S1	10	40	51	54				—	—	—	40.4	4.12	3.63	0.37	16.7	1.71		0.32	**SS1.5-34**
SS1.5-35 (H)		35	S1	10	42	52.5	55.5				—	—	—	41.9	4.28	3.85	0.39	17.8	1.81		0.35	**SS1.5-35**
SS1.5-36 (H)		36	S1	10	45	54	57				—	—	—	43.5	4.43	4.09	0.42	18.8	1.92		0.38	**SS1.5-36**
SS1.5-38 (H)		38	S1	12	45	57	60				—	—	—	46.6	4.75	4.58	0.47	21.0	2.14		0.40	**SS1.5-38**
SS1.5-40 (H)		40	S1	12	45	60	63				—	—	—	49.8	5.07	5.10	0.52	23.4	2.38		0.44	**SS1.5-40**
	***m*1.5**							15	10	25										0.10~0.22		

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

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating
Backlash	0.10 to 0.22

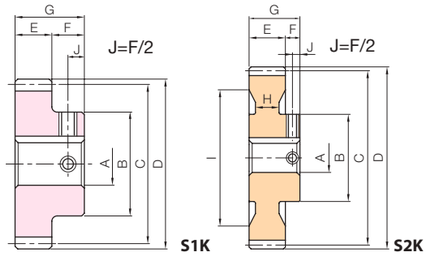
* The precision grade of J Series products is equivalent to the value shown in the table.

J H



S1 S2

J Series



S1K S2K

H To order Hardened Plus, please specify Catalog No. + H. **Example: SS1.5-42H**

Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Allowable torque: Bending strength N·m	Bending strength kgf·m	Surface durability N·m	Surface durability kgf·m	Surface durability (H) N·m	Surface durability (H) kgf·m	Weight (kg)
			A_{H7}	B	C	D	E	F	G	H	I							
SS1.5-42 H	42	S1	12	45	63	66	15	10	25	—	—	52.9	5.40	5.65	0.58	25.8	2.63	0.47
SS1.5-44 H	44				66	69						56.1	5.72	6.23	0.64	28.4	2.90	0.51
SS1.5-45 H	45				67.5	70.5						57.7	5.88	6.53	0.67	29.8	3.03	0.52
SS1.5-46 H	46				69	72						59.3	6.04	6.83	0.70	31.1	3.17	0.54
SS1.5-48 H	48				72	75						62.4	6.37	7.47	0.76	34.0	3.46	0.58
SS1.5-50 H	50				75	78						65.7	6.69	8.15	0.83	36.9	3.77	0.62
SS1.5-52 H	52		15	50	78	81						68.9	7.02	8.85	0.90	40.0	4.08	0.68
SS1.5-54 H	54				81	84						72.1	7.35	9.59	0.98	43.3	4.41	0.73
SS1.5-55 H	55				82.5	85.5						73.7	7.51	9.96	1.02	44.9	4.58	0.75
SS1.5-56 H	56				84	87						75.3	7.68	10.4	1.06	46.6	4.75	0.77
SS1.5-58 H	58				87	90						78.5	8.01	11.2	1.14	50.1	5.11	0.82
SS1.5-60 H	60				90	93						81.8	8.34	12.0	1.22	53.7	5.47	0.87
SS1.5-62 H	62			55	93	96						85.0	8.67	12.8	1.31	57.4	5.85	0.95
SS1.5-64 H	64				96	99						88.3	9.00	13.7	1.40	61.3	6.25	1.00
SS1.5-68 H	68				102	105						94.8	9.66	15.6	1.59	69.3	7.07	1.11
SS1.5-70 H	70				105	108						98.0	10.0	16.6	1.69	73.6	7.50	1.17
SS1.5-72 H	72				108	111						101	10.3	17.6	1.79	77.9	7.95	1.23
SS1.5-75 H	75			60	112.5	115.5						106	10.8	19.2	1.95	84.7	8.64	1.36
SS1.5-76 H	76				114	117						108	11.0	19.7	2.01	87.0	8.88	1.39
SS1.5-80 H	80				120	123						114	11.7	22.0	2.24	96.7	9.86	1.52
SS1.5-84 H	84				126	129						121	12.3	24.4	2.49	107	10.9	1.66
SS1.5-88 H	88				132	135						128	13.0	27.0	2.75	117	12.0	1.80
SS1.5-90 H	90				135	138						131	13.3	28.3	2.89	123	12.5	1.87
SS1.5-95 H	95				142.5	145.5						139	14.2	31.8	3.24	137	14.0	2.07
SS1.5-100 H	100	S2			150	153				9	125	147	15.0	35.5	3.62	152	15.5	1.88
SS1.5-120 H	120			70	180	183				10	153	180	18.4	52.3	5.33	221	22.5	2.74
SS1.5-150 H	150	S1	20	180	225	228				—	—	192	19.6	70.3	7.17	276	28.1	6.62
SS1.5-200 H	200		25	240	300	303						261	26.7	131	13.3	504	51.4	11.8

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SS1.5-42J12**

Bore H7	* The product shapes of J Series items are identified by background color.															
Keyway Js9	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Screw size	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3	
Catalog Number	M4						M5				M6			M8	
SS1.5-42 J BORE		✻													
SS1.5-44 J BORE		✻													
SS1.5-45 J BORE		✻													
SS1.5-46 J BORE		✻													
SS1.5-48 J BORE		✻													
SS1.5-50 J BORE		✻													
SS1.5-52 J BORE				✻									✻		
SS1.5-54 J BORE				✻									✻		
SS1.5-55 J BORE				✻									✻		
SS1.5-56 J BORE				✻									✻		
SS1.5-58 J BORE				✻									✻		
SS1.5-60 J BORE				✻									✻		
SS1.5-62 J BORE				✻									✻	✻	
SS1.5-64 J BORE				✻									✻	✻	
SS1.5-68 J BORE				✻									✻	✻	
SS1.5-70 J BORE				✻									✻	✻	
SS1.5-72 J BORE				✻									✻	✻	
SS1.5-75 J BORE				✻									✻	✻	✻
SS1.5-76 J BORE				✻									✻	✻	✻
SS1.5-80 J BORE				✻									✻	✻	✻
SS1.5-84 J BORE				✻									✻	✻	✻
SS1.5-88 J BORE				✻									✻	✻	✻
SS1.5-90 J BORE				✻									✻	✻	✻
SS1.5-95 J BORE				✻									✻	✻	✻
SS1.5-100 J BORE				✻									✻	✻	
SS1.5-120 J BORE				✻									✻	✻	
SS1.5-150															
SS1.5-200															

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS1.5-42HJ14

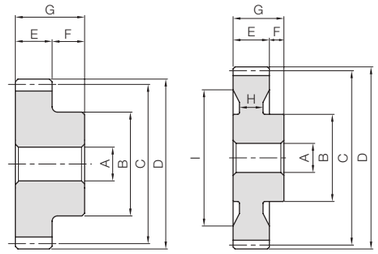
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "✻" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

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

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating
Backlash	0.12 to 0.26

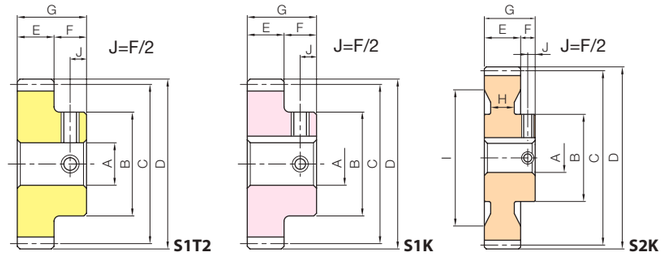
* The precision grade of J Series products is equivalent to the value shown in the table.

J H



S1 S2

J Series



H To order Hardened Plus, please specify Catalog No. + H. **Example: SS2-12H**

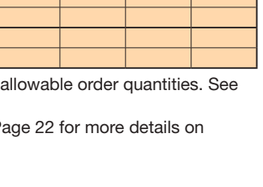
Catalog Number		No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Weight (kg)
				A_{H7}	B	C	D	E	F	G	H	I	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS2-12	H	12			18	24	28						16.3	1.66	0.88	0.090	4.24	0.43	0.073
SS2-13	H	13		10	20	26	30						21.0	2.14	1.07	0.11	5.11	0.52	0.090
SS2-14	H	14			20	28	32						26.3	2.69	1.26	0.13	6.02	0.61	0.10
SS2-15	H	15			24	30	34						29.6	3.01	1.48	0.15	7.01	0.71	0.12
SS2-16	H	16			26	32	36						32.7	3.34	1.71	0.17	8.08	0.82	0.14
SS2-17	H	17			28	34	38						36.0	3.67	1.96	0.20	9.23	0.94	0.16
SS2-18	H	18			30	36	40						39.3	4.01	2.23	0.23	10.5	1.07	0.19
SS2-19	H	19			31	38	42						42.6	4.35	2.52	0.26	11.8	1.20	0.21
SS2-20	H	20			32	40	44						46.0	4.69	2.83	0.29	13.2	1.34	0.23
SS2-21	H	21			34	42	46						49.4	5.04	3.15	0.32	14.7	1.50	0.26
SS2-22	H	22			36	44	48						52.8	5.39	3.50	0.36	16.2	1.66	0.29
SS2-23	H	23			37	46	50						56.3	5.74	3.86	0.39	17.9	1.82	0.32
SS2-24	H	24			38	48	52						59.8	6.09	4.24	0.43	19.6	2.00	0.35
SS2-25	H	25		12	40	50	54						63.3	6.45	4.64	0.47	21.4	2.18	0.38
SS2-26	H	26			42	52	56						66.8	6.81	5.04	0.51	23.2	2.37	0.42
SS2-27	H	27			45	54	58						70.4	7.17	5.45	0.56	25.1	2.56	0.46
SS2-28	H	28			45	56	60						73.9	7.54	5.89	0.60	27.0	2.76	0.48
SS2-29	H	29			47	58	62						77.5	7.91	6.33	0.65	29.1	2.96	0.52
SS2-30	H	30			50	60	64						81.1	8.27	6.80	0.69	31.2	3.18	0.57
SS2-32	H	32			50	64	68						88.4	9.01	7.78	0.79	35.6	3.63	0.63
SS2-34	H	34			50	68	72						95.7	9.76	8.84	0.90	40.3	4.11	0.70
SS2-35	H	35			52	70	74						99.3	10.1	9.39	0.96	42.8	4.36	0.74
SS2-36	H	36	S1		55	72	76						103	10.5	9.96	1.02	45.3	4.62	0.80
SS2-38	H	38			55	76	80				—	—	111	11.3	11.2	1.14	50.6	5.16	0.87
SS2-40	H	40			55	80	84						118	12.0	12.5	1.27	56.2	5.73	0.93
SS2-42	H	42				84	88						125	12.8	13.8	1.41	62.1	6.34	1.01
SS2-44	H	44				88	92	20	10	30			133	13.6	15.2	1.55	68.3	6.97	1.10
SS2-45	H	45			55	90	94						137	13.9	16.0	1.63	71.6	7.30	1.14
SS2-46	H	46				92	96						140	14.3	16.7	1.71	74.9	7.63	1.19
SS2-48	H	48				96	100						148	15.1	18.3	1.87	81.7	8.33	1.28
SS2-50	H	50				100	104						156	15.9	19.9	2.03	88.8	9.05	1.38
SS2-52	H	52				104	108						163	16.6	21.7	2.21	96.2	9.81	1.48
SS2-54	H	54			55	108	112						171	17.4	23.4	2.39	104	10.6	1.58
SS2-55	H	55		15		110	114						175	17.8	24.4	2.48	108	11.0	1.64
SS2-56	H	56				112	116						179	18.2	25.3	2.58	112	11.4	1.69
SS2-58	H	58				116	120						186	19.0	27.3	2.78	120	12.3	1.84
SS2-60	H	60				120	124						194	19.8	29.3	2.99	129	13.1	1.96
SS2-62	H	62			60	124	128						202	20.6	31.5	3.21	138	14.1	2.08
SS2-64	H	64				128	132						209	21.3	33.7	3.44	147	15.0	2.20
SS2-65	H	65				130	134						213	21.7	34.8	3.55	152	15.5	2.26
SS2-66	H	66				132	136						217	22.1	36.0	3.67	157	16.0	2.33
SS2-68	H	68				136	140						225	22.9	38.4	3.91	166	17.0	2.46
SS2-70	H	70			60	140	144						232	23.7	40.8	4.16	177	18.0	2.60
SS2-72	H	72				144	148						240	24.5	43.3	4.42	187	19.1	2.74
SS2-75	H	75		20		150	154						252	25.7	47.3	4.82	203	20.7	2.92
SS2-76	H	76			60	152	156						256	26.1	48.6	4.96	209	21.3	3.00
SS2-80	H	80	S2		60	160	164					136	271	27.7	54.3	5.53	232	23.6	2.67
SS2-84	H	84			70	168	172					140	287	29.2	60.2	6.14	256	26.1	3.09
SS2-85	H	85			70	170	174				12	146	291	29.6	61.7	6.30	262	26.8	3.09
SS2-90	H	90			70	180	184					156	310	31.6	69.7	7.11	295	30.1	3.38
SS2-100	H	100			70	200	204					176	291	29.7	72.7	7.42	288	29.3	4.01
SS2-120	H	120			90	240	244					210	357	36.4	108	11.0	421	43.0	5.91
SS2-150	H	150	S1	25	240	300	304				—	—	455	46.4	174	17.7	672	68.5	14.5

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SS2-12J10**

Bore H7	* The product shapes of J Series items are identified by background color.																
Keyway Js9	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35		
Screw size	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3			
Catalog Number	M4						M5				M6			M8			
SS2-12 J BORE	*																
SS2-13 J BORE	*																
SS2-14 J BORE	*																
SS2-15 J BORE		*															
SS2-16 J BORE		*															
SS2-17 J BORE		*															
SS2-18 J BORE		*															
SS2-19 J BORE		*															
SS2-20 J BORE		*															
SS2-21 J BORE		*															
SS2-22 J BORE		*															
SS2-23 J BORE		*															
SS2-24 J BORE		*															
SS2-25 J BORE		*															
SS2-26 J BORE		*															
SS2-27 J BORE		*															
SS2-28 J BORE		*															
SS2-29 J BORE		*															
SS2-30 J BORE		*															
SS2-32 J BORE		*															
SS2-34 J BORE		*															
SS2-35 J BORE		*															
SS2-36 J BORE		*															
SS2-38 J BORE		*															
SS2-40 J BORE				*													
SS2-42 J BORE				*													
SS2-44 J BORE				*													
SS2-45 J BORE				*													
SS2-46 J BORE				*													
SS2-48 J BORE				*													
SS2-50 J BORE				*													
SS2-52 J BORE				*													
SS2-54 J BORE				*													
SS2-55 J BORE				*													
SS2-56 J BORE				*													
SS2-58 J BORE				*													
SS2-60 J BORE				*													
SS2-62 J BORE				*													
SS2-64 J BORE				*													
SS2-65 J BORE				*													
SS2-66 J BORE				*													
SS2-68 J BORE				*													
SS2-70 J BORE				*													
SS2-72 J BORE				*													
SS2-75 J BORE									*								
SS2-76 J BORE									*								
SS2-80 J BORE									*								
SS2-84 J BORE									*								
SS2-85 J BORE									*								
SS2-90 J BORE									*								
SS2-100 J BORE									*								
SS2-120 J BORE									*								

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS2-16HJ14

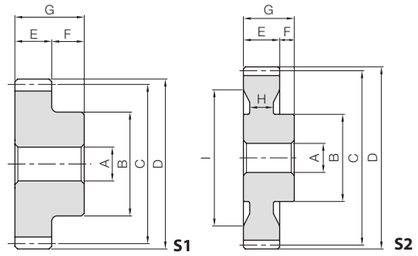


[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "*" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

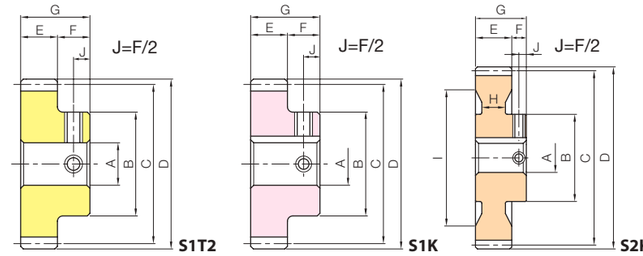
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating
Backlash	0.14 to 0.28

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



J Series



To order Hardened Plus, please specify Catalog No. + H. Example: SS2.5-12H

Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Allowable torque: Bending strength N·m	Bending strength kgf·m	Surface durability N·m	Surface durability kgf·m	Surface durability (H) N·m	Surface durability (H) kgf·m	Weight (kg)
			A_{H7}	B	C	D	E	F	G	H	I							
SS2.5-12	12	S1	12	23	30	35	25	12	37	—	—	31.8	3.24	1.77	0.18	8.37	0.85	0.15
SS2.5-13	13			25	32.5	37.5						40.9	4.17	2.14	0.22	10.1	1.03	0.18
SS2.5-14	14			25	35	40						51.5	5.25	2.53	0.26	11.9	1.21	0.20
SS2.5-15	15		15	30	37.5	42.5						57.7	5.89	2.96	0.30	13.9	1.41	0.23
SS2.5-16	16			32	40	45						64.0	6.52	3.43	0.35	16.0	1.63	0.27
SS2.5-17	17			35	42.5	47.5						70.3	7.17	3.93	0.40	18.3	1.86	0.32
SS2.5-18	18			38	45	50						76.7	7.82	4.47	0.46	20.7	2.11	0.37
SS2.5-20	20			40	50	55						89.8	9.16	5.66	0.58	26.1	2.66	0.45
SS2.5-22	22			44	55	60						103	10.5	6.99	0.71	32.1	3.28	0.56
SS2.5-23	23			46	57.5	62.5						110	11.2	7.71	0.79	35.4	3.61	0.61
SS2.5-24	24			48	60	65						117	11.9	8.47	0.86	38.8	3.95	0.67
SS2.5-25	25			50	62.5	67.5						124	12.6	9.26	0.94	42.3	4.32	0.74
SS2.5-26	26			55	65	70						130	13.3	10.1	1.03	45.9	4.68	0.82
SS2.5-27	27			60	67.5	72.5						137	14.0	10.9	1.11	49.6	5.06	0.92
SS2.5-28	28			60	70	75						144	14.7	11.7	1.20	53.4	5.45	0.97
SS2.5-30	30			65	75	80						159	16.2	13.6	1.39	61.6	6.28	1.13
SS2.5-32	32			70	80	85						173	17.6	15.6	1.59	70.3	7.17	1.30
SS2.5-34	34			70	85	90						187	19.1	17.7	1.80	79.6	8.11	1.42
SS2.5-35	35			70	87.5	92.5						194	19.8	18.8	1.92	84.4	8.61	1.49
SS2.5-36	36			70	90	95						201	20.5	20.0	2.04	89.5	9.12	1.56
SS2.5-38	38		20		95	100						216	22.0	22.4	2.28	99.9	10.2	1.66
SS2.5-40	40				100	105						230	23.5	24.9	2.54	111	11.3	1.81
SS2.5-42	42			70	105	110						245	25.0	27.6	2.82	123	12.5	1.97
SS2.5-44	44				110	115						260	26.5	30.5	3.11	135	13.8	2.14
SS2.5-45	45				112.5	117.5						267	27.2	31.9	3.26	141	14.4	2.22
SS2.5-46	46				115	120						274	28.0	33.5	3.41	148	15.1	2.31
SS2.5-48	48				120	125						289	29.5	36.7	3.74	161	16.4	2.49
SS2.5-50	50			70	125	130						304	31.0	40.0	4.08	175	17.9	2.68
SS2.5-52	52				130	135						319	32.5	43.5	4.44	190	19.3	2.88
SS2.5-54	54				135	140						334	34.0	47.2	4.81	205	20.9	3.08
SS2.5-56	56			70	140	145						349	35.6	51.0	5.20	221	22.5	3.29
SS2.5-58	58			70	145	150						364	37.1	55.0	5.61	237	24.2	3.51
SS2.5-60	60		25	70	150	155						379	38.6	59.1	6.03	254	25.9	3.69
SS2.5-64	64	S2		80	160	165					131	409	41.7	67.8	6.92	290	29.6	3.76
SS2.5-66	66			80	165	170					140	424	43.2	72.4	7.39	309	31.5	3.87
SS2.5-68	68				170	175				15	140	439	44.7	77.2	7.87	328	33.4	4.13
SS2.5-70	70				175	180					146	454	46.3	82.1	8.37	348	35.5	4.30
SS2.5-72	72			80	180	185					151	469	47.8	87.1	8.89	368	37.6	4.49
SS2.5-76	76				190	195					160	499	50.9	97.7	9.97	411	41.9	4.90
SS2.5-80	80				200	205						441	45.0	90.9	9.27	359	36.7	6.50
SS2.5-90	90	S1	30	90	225	230				—	—	505	51.5	117	12.0	460	46.9	8.20
SS2.5-100	100			90	250	255						569	58.0	147	15.0	573	58.5	10.0
SS2.5-120	120	S2		100	300	305				15	272	696	71.0	218	22.2	840	85.7	10.8

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

To order J Series products, please specify: Catalog No. + J + BORE. Example: SS2.5-12J12

Bore H7	* The product shapes of J Series items are identified by background color.															
Keyway Js9	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	
Screw size	4×1.8	5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	
Catalog Number	M4					M5				M6			M8			
SS2.5-12 J BORE	*															
SS2.5-13 J BORE	*															
SS2.5-14 J BORE	*															
SS2.5-15 J BORE			*													
SS2.5-16 J BORE			*													
SS2.5-17 J BORE			*													
SS2.5-18 J BORE			*													
SS2.5-20 J BORE			*													
SS2.5-22 J BORE			*													
SS2.5-23 J BORE			*													
SS2.5-24 J BORE			*													
SS2.5-25 J BORE			*													
SS2.5-26 J BORE			*													
SS2.5-27 J BORE			*													
SS2.5-28 J BORE			*													
SS2.5-30 J BORE			*													
SS2.5-32 J BORE			*													
SS2.5-34 J BORE			*													
SS2.5-35 J BORE			*													
SS2.5-36 J BORE			*													
SS2.5-38 J BORE								*								
SS2.5-40 J BORE								*								
SS2.5-42 J BORE								*								
SS2.5-44 J BORE								*								
SS2.5-45 J BORE								*								
SS2.5-46 J BORE								*								
SS2.5-48 J BORE								*								
SS2.5-50 J BORE								*								
SS2.5-52 J BORE								*								
SS2.5-54 J BORE								*								
SS2.5-56 J BORE								*								
SS2.5-58 J BORE								*								
SS2.5-60 J BORE										*						
SS2.5-64 J BORE										*						
SS2.5-66 J BORE										*						
SS2.5-68 J BORE										*						
SS2.5-70 J BORE										*						
SS2.5-72 J BORE										*						
SS2.5-76 J BORE										*						
SS2.5-80 J BORE										*						
SS2.5-90 J BORE													*			
SS2.5-100 J BORE													*			
SS2.5-120 J BORE													*			

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS2.5-14HJ14

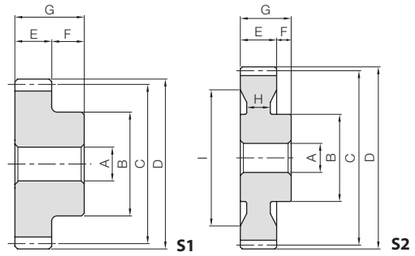
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "*" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

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

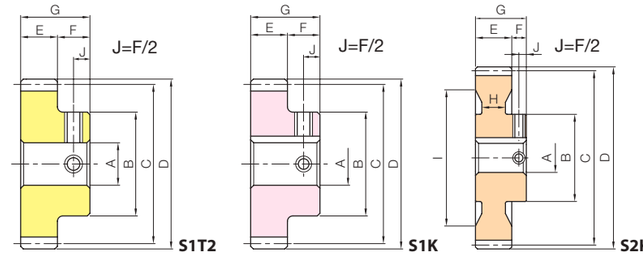
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating
Backlash	0.14 to 0.32

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

J H



J Series



To order Hardened Plus, please specify Catalog No. + H. Example: SS3-12H

Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Allowable torque: Bending strength		Surface durability		Surface durability (H)		Weight (kg)
												N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
			A_{H7}	B	C	D	E	F	G	H	I							
SS3-12	12	S1	15	28	36	42						54.9	5.59	3.12	0.32	14.6	1.49	0.25
SS3-14	14			32	42	48						88.9	9.07	4.47	0.46	20.8	2.12	0.36
SS3-15	15			36	45	51						99.7	10.2	5.23	0.53	24.2	2.47	0.43
SS3-16	16			38	48	54						111	11.3	6.05	0.62	28.0	2.85	0.50
SS3-17	17			39	51	57						122	12.4	6.93	0.71	31.9	3.26	0.56
SS3-18	18			40	54	60						133	13.5	7.87	0.80	36.2	3.69	0.62
SS3-19	19			45	57	63						144	14.7	8.88	0.91	40.8	4.16	0.73
SS3-20	20			50	60	66						155	15.8	9.95	1.02	45.6	4.65	0.83
SS3-21	21			52	63	69						167	17.0	11.1	1.13	50.7	5.17	0.92
SS3-22	22			54	66	72						178	18.2	12.3	1.25	56.1	5.72	1.01
SS3-23	23			56	69	75						190	19.4	13.6	1.38	61.7	6.29	1.11
SS3-24	24			58	72	78						202	20.6	14.9	1.52	67.7	6.90	1.21
SS3-25	25		20	60	75	81						214	21.8	16.3	1.66	73.9	7.53	1.26
SS3-26	26			65	78	84						226	23.0	17.7	1.81	80.1	8.16	1.41
SS3-27	27			65	81	87				—	—	237	24.2	19.2	1.96	86.5	8.82	1.49
SS3-28	28			70	84	90						250	25.4	20.7	2.11	93.2	9.50	1.65
SS3-29	29			70	87	93						262	26.7	22.3	2.27	100	10.2	1.74
SS3-30	30			75	90	96						274	27.9	24.0	2.44	107	10.9	1.91
SS3-32	32			75	96	102						298	30.4	27.4	2.80	123	12.5	2.11
SS3-34	34			80	102	108						323	32.9	31.2	3.18	139	14.1	2.41
SS3-35	35		25	80	105	111	30	15	45			335	34.2	33.1	3.38	147	15.0	2.52
SS3-36	36				108	114						348	35.5	35.2	3.59	156	15.9	2.64
SS3-38	38				114	120						373	38.0	39.4	4.02	174	17.8	2.82
SS3-40	40				120	126						398	40.6	44.0	4.49	193	19.1	3.08
SS3-42	42				126	132						423	43.2	48.9	4.98	214	21.8	3.35
SS3-44	44			80	132	138						449	45.7	54.0	5.50	235	24.0	3.64
SS3-45	45				135	141						461	47.0	56.6	5.78	246	25.1	3.79
SS3-46	46				138	144						474	48.3	59.4	6.05	257	26.2	3.94
SS3-48	48				144	150						500	50.9	65.0	6.63	281	28.6	4.25
SS3-50	50				150	156						525	53.6	70.9	7.23	305	31.1	4.58
SS3-52	52	S2		80	156	162					126	551	56.2	77.1	7.86	330	33.7	4.38
SS3-54	54				162	168					132	577	58.8	83.6	8.52	357	36.4	4.61
SS3-55	55				165	171				16	131	590	60.1	86.9	8.86	370	37.8	4.81
SS3-56	56				168	174					134	602	61.4	90.3	9.21	384	39.2	4.94
SS3-58	58				174	180					144	628	64.1	97.3	9.92	413	42.1	5.10
SS3-60	60	S1		80	180	186				—	—	654	66.7	105	10.7	442	45.1	6.41
SS3-64	64	S2		80	192	198					158	588	60.0	99.9	10.2	396	40.4	5.99
SS3-65	65			80	195	201					161	599	61.1	103	10.5	409	41.7	6.13
SS3-66	66			90	198	204					160	610	62.2	107	10.9	422	43.1	6.67
SS3-68	68			90	204	210					170	632	64.4	114	11.6	450	45.8	6.86
SS3-70	70		25	90	210	216					176	654	66.6	121	12.4	478	48.7	7.15
SS3-72	72				216	222				16	182	675	68.9	129	13.1	507	51.7	7.46
SS3-75	75				225	231					190	708	72.2	141	14.3	552	56.3	7.95
SS3-76	76				228	234					190	719	73.3	145	14.8	567	57.9	8.20
SS3-80	80		30		240	246					200	763	77.8	162	16.5	632	64.4	8.85
SS3-90	90			100	270	276					240	872	89.0	208	21.2	809	82.4	10.6
SS3-100	100			100	300	306					270	983	100	261	26.6	1010	103	12.5
SS3-120	120			130	360	366					330	1200	123	386	39.4	1480	151	18.1

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

To order J Series products, please specify: Catalog No. + J + BORE. Example: SS3-12J15

Bore H7	* The product shapes of J Series items are identified by background color.															
Keyway Js9	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Screw size	5×2.3			6×2.8				8×3.3			10×3.3		12×3.3	14×3.8		
Catalog Number	M4			M5				M6			M8			M10		
SS3-12 J BORE	✻															
SS3-14 J BORE	✻															
SS3-15 J BORE	✻															
SS3-16 J BORE	✻															
SS3-17 J BORE	✻															
SS3-18 J BORE	✻															
SS3-19 J BORE	✻															
SS3-20 J BORE	✻															
SS3-21 J BORE	✻															
SS3-22 J BORE	✻															
SS3-23 J BORE	✻															
SS3-24 J BORE	✻															
SS3-25 J BORE						✻										
SS3-26 J BORE						✻										
SS3-27 J BORE						✻										
SS3-28 J BORE						✻										
SS3-29 J BORE						✻										
SS3-30 J BORE						✻										
SS3-32 J BORE						✻										
SS3-34 J BORE						✻										
SS3-35 J BORE						✻										
SS3-36 J BORE						✻										
SS3-38 J BORE								✻								
SS3-40 J BORE								✻								
SS3-42 J BORE								✻								
SS3-44 J BORE								✻								
SS3-45 J BORE								✻								
SS3-46 J BORE								✻								
SS3-48 J BORE								✻								
SS3-50 J BORE								✻								
SS3-52 J BORE								✻								
SS3-54 J BORE								✻								
SS3-55 J BORE								✻								
SS3-56 J BORE								✻								
SS3-58 J BORE								✻								
SS3-60 J BORE								✻								
SS3-64 J BORE								✻								
SS3-65 J BORE								✻								
SS3-66 J BORE								✻								
SS3-68 J BORE								✻								
SS3-70 J BORE								✻								
SS3-72 J BORE								✻								
SS3-75 J BORE								✻								
SS3-76 J BORE								✻								
SS3-80 J BORE										✻						
SS3-90 J BORE										✻						
SS3-100 J BORE										✻						
SS3-120 J BORE										✻						

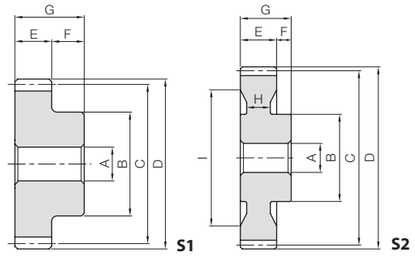
To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS3-14HJ16

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "✻" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

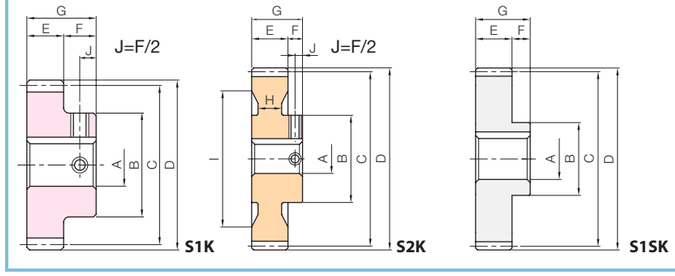
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated (excludes semi-custom products)
Backlash	0.18 to 0.38

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



J Series



To order Hardened Plus, please specify Catalog No. + H. **Example: SS4-12H**

Catalog Number		No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Allowable torque: Bending strength N·m	Bending strength kgf·m	Surface durability N·m	Surface durability kgf·m	Surface durability (H) N·m	Surface durability (H) kgf·m	Weight (kg)
				A_{H7}	B	C	D	E	F	G	H	I							
SS4-12	H	12	S1	20	35	48	56	40	20	60	—	—	130	13.3	7.62	0.78	35.3	3.59	0.57
SS4-14	H	14			40	56	64						211	21.5	10.9	1.11	50.1	5.11	0.82
SS4-15	H	15			45	60	68						236	24.1	12.8	1.30	58.4	5.96	0.99
SS4-16	H	16			50	64	72						262	26.7	14.7	1.50	67.3	6.87	1.17
SS4-17	H	17			53	68	76						288	29.4	16.9	1.72	76.9	7.85	1.34
SS4-18	H	18			55	72	80						314	32.0	19.2	1.96	87.2	8.89	1.50
SS4-19	H	19			60	76	84						341	34.8	21.7	2.21	98.1	10.0	1.72
SS4-20	H	20			65	80	88						368	37.5	24.3	2.48	110	11.2	1.95
SS4-21	H	21			69	84	92						395	40.3	27.1	2.76	122	12.4	2.18
SS4-22	H	22			73	88	96						423	43.1	30.1	3.06	135	13.8	2.42
SS4-23	H	23			77	92	100						450	45.9	33.2	3.38	148	15.1	2.67
SS4-24	H	24			80	96	104						478	48.8	36.4	3.72	163	16.6	2.91
SS4-25	H	25			84	100	108						506	51.6	39.9	4.07	178	18.1	3.19
SS4-26	H	26			87	104	112						534	54.5	43.3	4.42	192	19.6	3.45
SS4-27	H	27			90	108	116						563	57.4	46.9	4.78	208	21.2	3.73
SS4-28	H	28			95	112	120						591	60.3	50.6	5.16	224	22.8	4.06
SS4-29	H	29			95	116	124						620	63.2	54.5	5.56	241	24.5	4.28
SS4-30	H	30			100	120	128						649	66.2	58.7	5.98	258	26.3	4.64
SS4-32	H	32		22	100	128	136	40	16	56	26	150	707	72.1	67.4	6.87	294	30.0	4.86
SS4-34	H	34			100	136	144						766	78.1	76.7	7.82	333	33.9	5.38
SS4-35	H	35			140	148							795	81.1	81.6	8.32	353	36.0	5.65
SS4-36	H	36			144	152							825	84.1	86.7	8.84	374	38.1	5.93
SS4-38	H	38			152	160							884	90.1	97.3	9.92	418	42.6	6.52
SS4-40	H	40		25	160	168							943	96.2	109	11.1	464	47.3	7.08
SS4-42	H	42			168	176							1000	102	120	12.3	512	52.2	7.73
SS4-44	H	44			176	184							1060	108	133	13.6	563	57.4	8.41
SS4-45	H	45			180	188							1090	112	139	14.2	590	60.1	8.76
SS4-46	H	46			184	192							1120	115	146	14.9	617	62.9	9.12
SS4-48	H	48	S2	30	192	200							987	101	133	13.6	528	53.9	9.12
SS4-50	H	50			200	208						158	1040	106	146	14.8	575	58.6	9.60
SS4-52	H	52			208	216						165	1090	111	158	16.1	624	63.7	10.2
SS4-54	H	54			216	224						175	1140	116	172	17.5	676	68.9	10.8
SS4-55	H	55			220	228						178	1160	119	179	18.2	702	71.6	11.1
SS4-56	H	56			224	232						182	1190	121	186	18.9	729	74.3	11.5
SS4-58	H	58			232	240						190	1240	127	200	20.4	785	80.0	12.5
SS4-60	H	60			240	248						198	1290	132	215	22	842	85.9	13.2
SS4-62	H	62			248	256						210	1340	137	231	23.6	902	92.0	13.1
SS4-64	H	64			256	264						214	1390	142	248	25.2	964	98.3	13.4
SS4-65	H	65			260	268						218	1420	145	256	26.1	996	102	13.7
SS4-66	H	66			264	272						220	1450	148	265	27	1030	105	14.7
SS4-68	H	68			272	280						225	1500	153	282	28.8	1090	112	15.5
SS4-70	H	70			280	288						233	1550	158	300	30.6	1160	119	16.1
SS4-80	H	80			320	328						273	1810	184	400	40.8	1540	157	19.3
SS4-90S	S	90	S1	40	180	360	368	40	16	56	—	—	1910	195	467	47.6	—	—	34.6
SS4-100S	S	100			200	400	408						2150	219	586	59.7			42.9
SS4-110S	S	110			220	440	448						2390	244	720	73.4			52.0
SS4-120S	S	120			240	480	488						2630	269	869	88.6			62.0

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SS4-14J20**

Bore H7	* The product shapes of J Series items are identified by background color.												
Keyway Js9	20	22	25	28	30	32	35	40	45	50	55	60	65
Screw size	6×2.8		8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4	
Catalog Number	M5		M6			M8			M10		M12		
SS4-12													
SS4-14 J BORE	*												
SS4-15 J BORE	*												
SS4-16 J BORE	*												
SS4-17 J BORE	*												
SS4-18 J BORE	*												
SS4-19 J BORE	*												
SS4-20 J BORE	*												
SS4-21 J BORE	*												
SS4-22 J BORE	*												
SS4-23 J BORE	*												
SS4-24 J BORE	*												
SS4-25 J BORE	*												
SS4-26 J BORE	*												
SS4-27 J BORE	*												
SS4-28 J BORE	*												
SS4-29 J BORE	*												
SS4-30 J BORE	*												
SS4-32 J BORE		*											
SS4-34 J BORE		*											
SS4-35 J BORE		*											
SS4-36 J BORE		*											
SS4-38 J BORE		*											
SS4-40 J BORE			*										
SS4-42 J BORE			*										
SS4-44 J BORE			*										
SS4-45 J BORE			*										
SS4-46 J BORE			*										
SS4-48 J BORE			*										
SS4-50 J BORE					*								
SS4-52 J BORE					*								
SS4-54 J BORE					*								
SS4-55 J BORE					*								
SS4-56 J BORE					*								
SS4-58 J BORE					*								
SS4-60 J BORE					*								
SS4-62 J BORE					*								
SS4-64 J BORE					*								
SS4-65 J BORE					*								
SS4-66 J BORE					*								
SS4-68 J BORE					*								
SS4-70 J BORE					*								
SS4-80 J BORE					*								
SS4-90SJ BORE								Ask for Quote					
SS4-100SJ BORE								Ask for Quote					
SS4-110SJ BORE								Ask for Quote					
SS4-120SJ BORE								Ask for Quote					

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS4-14HJ22

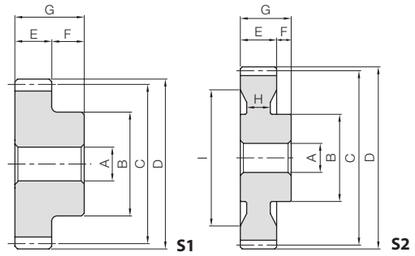
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "*" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

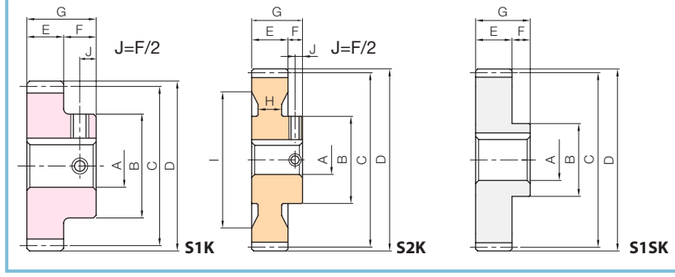
Please make use of GCSW for Web (gear calculation software).

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated (excludes semi-custom products)
Backlash	0.20 to 0.44

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



J Series



To order Hardened Plus, please specify Catalog No. + H. **Example: SS5-12H**

Catalog Number		No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Allowable torque: Bending strength N·m	Bending strength kgf·m	Surface durability N·m	Surface durability kgf·m	Surface durability (H) N·m	Surface durability (H) kgf·m	Weight (kg)
				A_{H7}	B	C	D	E	F	G	H	I							
SS5-12	H	12	S1	22	46	60	70		25	75	—	—	254	25.9	15.2	1.55	69.7	7.11	1.21
SS5-13	H	13			50	65	75						327	33.4	18.4	1.88	84.0	8.57	1.46
SS5-14	H	14			52	70	80						412	42.0	21.8	2.22	99.1	10.1	1.70
SS5-15	H	15			60	75	85						462	47.1	25.5	2.60	115	11.8	2.07
SS5-16	H	16			65	80	90						512	52.2	29.5	3.01	133	13.6	2.40
SS5-17	H	17			68	85	95						562	57.3	33.8	3.45	152	15.5	2.72
SS5-18	H	18			70	90	100						614	62.6	38.4	3.92	172	17.6	3.03
SS5-19	H	19			76	95	105						666	67.9	43.4	4.42	194	19.8	3.45
SS5-20	H	20			82	100	110						718	73.3	48.6	4.96	217	22.1	3.90
SS5-21	H	21		25	90	105	115						772	78.7	54.2	5.53	241	24.5	4.36
SS5-22	H	22			95	110	120						825	84.1	60.1	6.13	266	27.1	4.83
SS5-23	H	23			100	115	125						879	89.7	66.3	6.77	293	29.9	5.33
SS5-24	H	24			100	120	130						934	95.2	73.0	7.45	321	32.7	5.69
SS5-25	H	25			105	125	135						989	101	80.0	8.16	350	35.7	6.23
SS5-26	H	26			110	130	140						1040	106	87.1	8.88	379	38.7	6.79
SS5-27	H	27			110	135	145						1100	112	94.4	9.62	410	41.8	7.19
SS5-28	H	28			110	140	150						1160	118	102	10.4	441	45.0	7.62
SS5-29	H	29			115	145	155						1210	124	110	11.2	474	48.4	8.23
SS5-30	H	30			120	150	160	50					1270	129	118	12.1	508	51.8	8.87
SS5-32	H	32		30	120	160	170		21	71			1380	141	136	13.8	580	59.1	9.36
SS5-34	H	34			120	170	180						1500	153	154	15.7	656	66.9	10.4
SS5-35	H	35			120	175	185						1550	158	164	16.7	696	71.0	10.9
SS5-36	H	36			120	180	190						1610	164	174	17.8	737	75.1	11.5
SS5-38	H	38			120	190	200						1730	176	195	19.9	823	83.9	12.6
SS5-40	H	40	S2		120	200	210				36	160	1540	157	182	18.5	719	73.3	13.2
SS5-42	H	42			120	210	220					170	1630	167	202	20.6	796	81.2	14.2
SS5-44	H	44			120	220	230					175	1730	177	223	22.8	878	89.5	15.4
SS5-45	H	45			120	225	235					185	1780	182	234	23.9	920	93.8	15.8
SS5-46	H	46			120	230	240				30	185	1830	187	246	25.1	963	98.2	16.2
SS5-48	H	48			120	240	250					200	1930	197	269	27.5	1050	107	17.0
SS5-50	H	50	S1		120	250	260				—	—	2030	207	294	30.0	1150	117	20.7
SS5-52	H	52	S2		130	260	270				30	220	2130	217	320	32.6	1250	127	19.8
SS5-54	H	54			130	270	280					230	2220	227	347	35.4	1350	137	20.9
SS5-56	H	56			130	280	290					240	2320	237	375	38.3	1450	148	22.0
SS5-58	H	58			130	290	300					240	2420	247	405	41.3	1570	160	23.8
SS5-60	H	60			130	300	310					250	2520	257	435	44.4	1680	171	25.1
SS5-62S	S	62	S1	40	160	310	320	50	21	71	—	—	2420	247	423	43.1	—	—	32.2
SS5-64S	S	64			160	320	330						2520	257	453	46.2			34.2
SS5-65S	S	65			160	325	335						2560	261	468	47.7			35.2
SS5-66S	S	66			170	330	340						2610	266	484	49.3			36.6
SS5-68S	S	68			170	340	350						2700	275	516	52.6			38.7
SS5-70S	S	70			180	350	360						2790	285	549	56.0			41.3
SS5-80S	S	80			200	400	410						3260	333	732	74.7			53.8
SS5-90S	S	90			230	450	460						3730	380	944	96.3			68.6
SS5-100S	S	100			250	500	510						4200	428	1190	121			84.5
SS5-110S	S	110			280	550	560						4670	476	1460	149			103
SS5-120S	S	120			300	600	610						4780	487	1640	167			122

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SS5-13J22**

Bore H7 / Keyway Js9 / Screw size / Catalog Number	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85
	6×2.8	8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4	
	M5	M6			M8			M10		M12			M16			
SS5-12																
SS5-13 J BORE	*															
SS5-14 J BORE	*															
SS5-15 J BORE	*															
SS5-16 J BORE	*															
SS5-17 J BORE	*															
SS5-18 J BORE	*															
SS5-19 J BORE	*															
SS5-20 J BORE	*															
SS5-21 J BORE		*														
SS5-22 J BORE		*														
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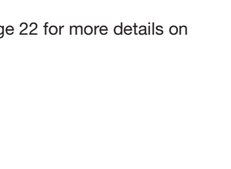
SS5-29 J BORE		*														
SS5-30 J BORE		*														
SS5-32 J BORE				*												
SS5-34 J BORE				*												
SS5-35 J BORE				*												
SS5-36 J BORE				*												
SS5-38 J BORE				*												
SS5-40 J BORE				*												
SS5-42 J BORE				*												
SS5-44 J BORE				*												
SS5-45 J BORE				*												
SS5-46 J BORE				*												
SS5-48 J BORE				*												
SS5-50 J BORE				*												
SS5-52 J BORE				*												
SS5-54 J BORE				*												
SS5-56 J BORE				*												
SS5-58 J BORE				*												
SS5-60 J BORE				*												
SS5-62SJ BORE							Ask for Quote									
SS5-64SJ BORE							Ask for Quote									
SS5-65SJ BORE							Ask for Quote									
SS5-66SJ BORE							Ask for Quote									
SS5-68SJ BORE							Ask for Quote									
SS5-70SJ BORE							Ask for Quote									
SS5-80SJ BORE							Ask for Quote									
SS5-90SJ BORE							Ask for Quote									
SS5-100SJ BORE							Ask for Quote									
SS5-110SJ BORE							Ask for Quote									
SS5-120SJ BORE							Ask for Quote									

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS5-14HJ25



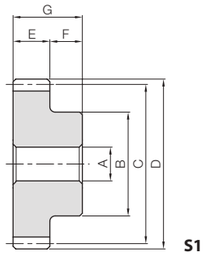
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "*" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated (excludes semi-custom products)
Backlash	0.22 to 0.48

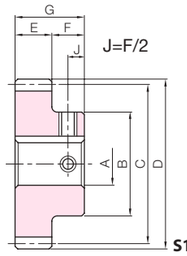
* The precision grade of J Series products is equivalent to the value shown in the table.

J H S



S1

J Series



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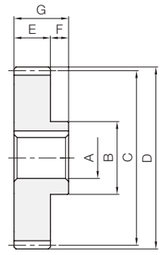


S1SK

To order Hardened Plus, please specify Catalog No. + H. **Example: SS6-12H**

Catalog Number		No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Weight (kg)
				A_{H7}	B	C	D	E	F	G	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS6-12	H	12	S1	25	55	72	84	60	28	88	439	44.8	26.8	2.73	122	12.4	2.10
SS6-14	H	14			60	84	96				711	72.5	38.4	3.92	173	17.6	2.89
SS6-15	H	15			70	90	102				798	81.4	44.9	4.58	201	20.5	3.50
SS6-16	H	16			75	96	108				884	90.2	52.0	5.30	232	23.7	4.04
SS6-17	H	17			78	102	114				972	99.1	59.6	6.07	265	27.0	4.56
SS6-18	H	18			80	108	120				1060	108	67.7	6.90	300	30.6	5.08
SS6-19	H	19			90	114	126				1150	117	76.4	7.79	338	34.4	5.87
SS6-20	H	20			100	120	132				1240	127	85.9	8.75	377	38.5	6.71
SS6-21	H	21		28	105	126	138				1330	136	95.9	9.78	419	42.7	7.35
SS6-22	H	22			110	132	144				1430	145	107	10.9	463	47.3	8.11
SS6-23	H	23			115	138	150				1520	155	118	12.0	510	52.0	8.90
SS6-24	H	24			120	144	156				1610	165	129	13.2	559	57.0	9.73
SS6-25	H	25			125	150	162				1710	174	142	14.5	610	62.2	10.6
SS6-26	H	26			130	156	168				1800	184	154	15.7	661	67.4	11.5
SS6-27	H	27			135	162	174				1900	194	167	17.0	713	72.7	12.4
SS6-28	H	28			140	168	180				2000	204	181	18.4	768	78.3	13.4
SS6-30	H	30		30	150	180	192				2190	223	209	21.3	884	90.2	15.4
SS6-32	H	32			150	192	204				1990	203	200	20.4	792	80.8	16.4
SS6-34	H	34			150	204	216				2150	220	228	23.2	899	91.7	18.1
SS6-35	H	35			150	210	222				2240	228	242	24.7	955	97.4	19.0
SS6-36	H	36			150	216	228				2320	237	258	26.3	1010	103	20.0
SS6-38	H	38			150	228	240				2490	254	289	29.5	1130	116	22.0
SS6-40	H	40			150	240	252		23	83	2650	271	323	33.0	1260	129	24.0
SS6-42	H	42		40	150	252	264				2820	288	359	36.6	1400	143	25.9
SS6-44	H	44			150	264	276				2990	305	397	40.5	1540	157	28.2
SS6-45	H	45			180	270	282				3080	314	416	42.5	1620	165	30.7
SS6-46	H	46			180	276	288				3160	322	436	44.5	1690	173	32.0
SS6-48	H	48			180	288	300				3330	340	478	48.8	1850	189	34.5
SS6-50	H	50			180	300	312				3500	357	522	53.2	2020	206	37.1
SS6-52S	S	52	S1	40	180	312	324	60	23	83	3390	346	515	52.5	—	—	39.8
SS6-54S	S	54			180	324	336				3550	362	558	56.9			42.6
SS6-55S	S	55			180	330	342				3630	370	581	59.2			44.1
SS6-56S	S	56			180	336	348				3710	378	603	61.5			45.5
SS6-58S	S	58			180	348	360				3870	394	651	66.4			48.6
SS6-60S	S	60			180	360	372				4030	411	700	71.4			51.7
SS6-62S	S	62			190	372	384				4190	427	751	76.6			55.5
SS6-64S	S	64			190	384	396				4350	443	804	82.0			58.9
SS6-65S	S	65			200	390	402				4430	451	832	84.8			61.1
SS6-66S	S	66			200	396	408				4510	460	860	87.7			62.9
SS6-68S	S	68			200	408	420				4670	476	917	93.5			66.4
SS6-70S	S	70			210	420	432				4830	492	976	99.5			70.7
SS6-80S	S	80			240	480	492				5630	575	1300	133			92.6
SS6-90S	S	90			270	540	552				6440	657	1680	172			117
SS6-100S	S	100			300	600	612				6740	687	1970	200			145

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SS6-12J25**

Bore H7	* The product shapes of J Series items are identified by background color.															
Keyway Js9	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	
Screw size	8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4		
Catalog Number	M6			M8			M10		M12			M16				
SS6-12 J BORE	✻															
SS6-14 J BORE	✻															
SS6-15 J BORE	✻															
SS6-16 J BORE	✻															
SS6-17 J BORE	✻															
SS6-18 J BORE	✻															
SS6-19 J BORE	✻															
SS6-20 J BORE	✻															
SS6-21 J BORE		✻														
SS6-22 J BORE		✻														
SS6-23 J BORE		✻														
SS6-24 J BORE		✻														
SS6-25 J BORE		✻														
SS6-26 J BORE		✻														
SS6-27 J BORE		✻														
SS6-28 J BORE		✻														
SS6-30 J BORE			✻													
SS6-32 J BORE			✻													
SS6-34 J BORE			✻													
SS6-35 J BORE			✻													
SS6-36 J BORE			✻													
SS6-38 J BORE			✻													
SS6-40 J BORE			✻													
SS6-42 J BORE						✻										
SS6-44 J BORE						✻										
SS6-45 J BORE						✻										
SS6-46 J BORE						✻										
SS6-48 J BORE						✻										
SS6-50 J BORE						✻										
SS6-52SJ BORE	Ask for Quote															
SS6-54SJ BORE	Ask for Quote															
SS6-55SJ BORE	Ask for Quote															
SS6-56SJ BORE	Ask for Quote															
SS6-58SJ BORE	Ask for Quote															
SS6-60SJ BORE	Ask for Quote															
SS6-62SJ BORE	Ask for Quote															
SS6-64SJ BORE	Ask for Quote															
SS6-65SJ BORE	Ask for Quote															
SS6-66SJ BORE	Ask for Quote															
SS6-68SJ BORE	Ask for Quote															
SS6-70SJ BORE	Ask for Quote															
SS6-80SJ BORE	Ask for Quote															
SS6-90SJ BORE	Ask for Quote															
SS6-100SJ BORE	Ask for Quote															

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS6-14HJ28

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "✻" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

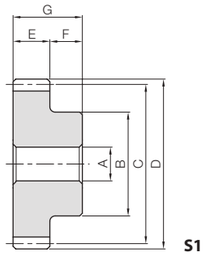
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Please make use of GCSW for Web (gear calculation software).

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated (excludes semi-custom products)

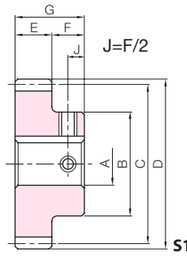
* The precision grade of J Series products is equivalent to the value shown in the table.

J H S



S1

J Series



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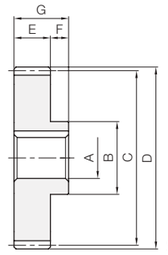

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H To order Hardened Plus, please specify Catalog No. + H. **Example: SS8-12H**

Catalog Number		No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque: Bending strength N·m	Bending strength kgf·m	Surface durability N·m	Surface durability kgf·m	Surface durability (H) N·m	Surface durability (H) kgf·m	Weight (kg)
				A_{H7}	B	C	D	E	F	G							
SS8-12	H	12	S1	28	75	96	112	75	35	110	975	99.5	62.6	6.39	280	28.5	4.94
SS8-13	H	13			80	104	120				1260	128	75.2	7.66	334	34.1	5.85
SS8-14	H	14			85	112	128				1580	161	88.9	9.06	393	40.1	6.83
SS8-15	H	15			90	120	136				1770	181	104	10.6	458	46.7	7.87
SS8-16	H	16			100	128	144				1970	200	121	12.3	527	53.7	9.20
SS8-17	H	17			105	136	152				2160	220	139	14.1	601	61.3	10.4
SS8-18	H	18			110	144	160				2360	240	158	16.1	681	69.4	11.7
SS8-19	H	19			120	152	168				2560	261	178	18.2	765	78.0	13.3
SS8-20	H	20			130	160	176				2760	281	200	20.4	855	87.2	15.0
SS8-21	H	21			140	168	184				2960	302	223	22.8	949	96.8	16.7
SS8-22	H	22		30	150	176	192				3170	323	248	25.3	1050	107	18.6
SS8-23	H	23			155	184	200				3380	344	273	27.9	1150	118	20.2
SS8-24	H	24			160	192	208				2990	305	250	25.5	991	101	22.0
SS8-25	H	25			170	200	216				3160	323	273	27.8	1080	110	24.1
SS8-26	H	26			170	208	224				3340	341	297	30.3	1170	119	25.6
SS8-27	H	27			170	216	232				3520	359	322	32.8	1270	129	27.2
SS8-28	H	28			180	224	240				3700	377	348	35.5	1370	139	29.6
SS8-30	H	30			180	240	256				4060	414	404	41.2	1580	161	33.0
SS8-32S	S	32			200	256	272				4080	416	421	42.9			37.9
SS8-34S	S	34			210	272	288				4420	451	479	48.9			42.6
SS8-35S	S	35			210	280	296				4590	468	510	52.0			44.7
SS8-36S	S	36			210	288	304				4760	486	542	55.3			46.8
SS8-38S	S	38			220	304	320				5100	520	608	62.0			52.1
SS8-40S	S	40			220	320	336				5450	555	679	69.3			56.7
SS8-42S	S	42			230	336	352				5790	591	754	76.9			62.5
SS8-44S	S	44			230	352	368				6140	626	834	85.0			67.6
SS8-45S	S	45			230	360	376				6310	644	875	89.2			70.3
SS8-46S	S	46			240	368	384				6490	662	917	93.6			74.0
SS8-48S	S	48			240	384	400				6840	697	1010	103			79.5
SS8-50S	S	50			240	400	416				7190	733	1100	112			85.3
SS8-52S	S	52			240	416	432				7540	769	1200	122			91.4
SS8-54S	S	54			240	432	448				7890	805	1300	132			97.6
SS8-55S	S	55			240	440	456				8070	823	1350	138			101
SS8-56S	S	56			240	448	464				8240	841	1400	143			104
SS8-58S	S	58			240	464	480				8600	877	1510	154			111
SS8-59S	S	59			240	472	488				8770	895	1570	160			114
SS8-60S	S	60			240	480	496				8950	913	1630	166			118

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SS8-12J28**

Bore H7	* The product shapes of J Series items are identified by background color.																							
Keyway Js9	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	120	130	140		
Screw size	8×3.3		10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4		25×5.4		28×6.4			32×7.4			36×8.4	
Catalog Number	M6		M8			M10		M12			M16				M20					M24				
SS8-12 J BORE																								
SS8-13 J BORE																								
SS8-14 J BORE																								
SS8-15 J BORE																								
SS8-16 J BORE																								
SS8-17 J BORE																								
SS8-18 J BORE																								
SS8-19 J BORE																								
SS8-20 J BORE																								
SS8-21 J BORE																								
SS8-22 J BORE																								
SS8-23 J BORE																								
SS8-24 J BORE																								
SS8-25 J BORE																								
SS8-26 J BORE																								
SS8-27 J BORE																								
SS8-28 J BORE																								
SS8-30 J BORE																								
SS8-32SJ BORE	Ask for Quote																							
SS8-34SJ BORE	Ask for Quote																							
SS8-35SJ BORE	Ask for Quote																							
SS8-36SJ BORE	Ask for Quote																							
SS8-38SJ BORE	Ask for Quote																							
SS8-40SJ BORE	Ask for Quote																							
SS8-42SJ BORE	Ask for Quote																							
SS8-44SJ BORE	Ask for Quote																							
SS8-45SJ BORE	Ask for Quote																							
SS8-46SJ BORE	Ask for Quote																							
SS8-48SJ BORE	Ask for Quote																							
SS8-50SJ BORE	Ask for Quote																							
SS8-52SJ BORE	Ask for Quote																							
SS8-54SJ BORE	Ask for Quote																							
SS8-55SJ BORE	Ask for Quote																							
SS8-56SJ BORE	Ask for Quote																							
SS8-58SJ BORE	Ask for Quote																							
SS8-59SJ BORE	Ask for Quote																							
SS8-60SJ BORE	Ask for Quote																							

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Hardened Plus is not available for products listed in the J Series lineup.

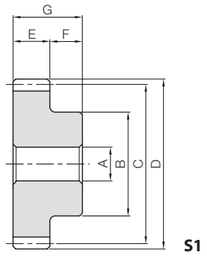
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Please make use of GCSW for Web (gear calculation software).

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated (excludes semi-custom products)

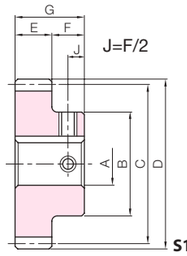
* The precision grade of J Series products is equivalent to the value shown in the table.

J H S

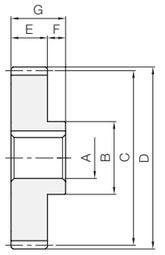


S1

J Series



S1K



S1SK

H To order Hardened Plus, please specify Catalog No. + H. **Example: SS10-15H**

Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque						Weight (kg)
										Bending strength		Surface durability		Surface durability (H)		
			A_{H7}	B	C	D	E	F	G	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS10-15 (H)	15	S1	30	115	150	170	90	40	130	3330	323	339	20.7	871	88.8	15.0
SS10-20 (H)	20		30	165	200	220				4310	323	440	33.0	1280	130	28.2
SS10-25 (H)	25		40	200	250	270				5930	529	605	54.0	2060	211	43.3

Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
			A_{H7}	B	C	D	E	F	G	Bending strength	Surface durability	Bending strength	Surface durability		
SS10-26S (S)	26	S1	50	210	260	280	90	40	130	5790	522	590	53.3	0.34~0.68	46.4
SS10-27S (S)	27			220	270	290				6100	566	622	57.7		50.4
SS10-28S (S)	28			220	280	300				6400	612	653	62.4		53.4
SS10-29S (S)	29			230	290	310				6720	660	685	67.3		57.7
SS10-30S (S)	30			240	300	320				7030	710	717	72.4		62.1
SS10-32S (S)	32			250	320	340				7660	815	781	83.1		70.2
SS10-34S (S)	34			260	340	360				8290	929	845	94.7		78.8
SS10-35S (S)	35			260	350	370				8610	988	878	101		82.6
SS10-36S (S)	36			270	360	380				8930	1050	910	107		87.9
SS10-38S (S)	38			270	380	400				9570	1180	976	120		96.1
SS10-40S (S)	40			280	400	420				10200	1320	1040	134		106
SS10-42S (S)	42			290	420	440				10900	1460	1110	149		117
SS10-44S (S)	44			290	440	460				11500	1620	1170	165		126
SS10-45S (S)	45			290	450	470				11800	1700	1210	173		131
SS10-46S (S)	46			290	460	480				12200	1780	1240	182		136
SS10-48S (S)	48			300	480	500				12800	1950	1310	199		148
SS10-50S (S)	50			300	500	520				13500	2140	1370	218		159

[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 depth 25 mm) are machined around the outside of the hub side surface. Details of the PCD of the screw threads are located on page 51.

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

To order J Series products, please specify: Catalog No. + J + BORE. Example: SS10-15J30

Bore H7	* The product shapes of J Series items are identified by background color.																		
Keyway Js9	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	
Screw size	8×3.3	10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4		25×5.4		28×6.4			
Catalog Number	M6	M8			M10		M12			M16				M20					
SS10-15 J BORE																			
SS10-20 J BORE																			
SS10-25 J BORE																			

Bore H7	* The product shapes of J Series items are identified by background color.																				
Keyway Js9	50	55	60	65	70	75	80	85	90	95	100	105	110	120	130	140	150	160	170	180	190	200
Catalog Number	14×3.8	16×4.3	18×4.4		20×4.9		22×5.4		25×5.4		28×6.4			32×7.4		36×8.4		40×9.4		45×10.4		
SS10-26SJ BORE	Ask for Quote																					
SS10-27SJ BORE	Ask for Quote																					
SS10-28SJ BORE	Ask for Quote																					
SS10-29SJ BORE	Ask for Quote																					
SS10-30SJ BORE	Ask for Quote																					
SS10-32SJ BORE	Ask for Quote																					
SS10-34SJ BORE	Ask for Quote																					
SS10-35SJ BORE	Ask for Quote																					
SS10-36SJ BORE	Ask for Quote																					
SS10-38SJ BORE	Ask for Quote																					
SS10-40SJ BORE	Ask for Quote																					
SS10-42SJ BORE	Ask for Quote																					
SS10-44SJ BORE	Ask for Quote																					
SS10-45SJ BORE	Ask for Quote																					
SS10-46SJ BORE	Ask for Quote																					
SS10-48SJ BORE	Ask for Quote																					
SS10-50SJ BORE	Ask for Quote																					

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Hardened Plus is not available for products listed in the J Series lineup.

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

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated except for portions given secondary operation

* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

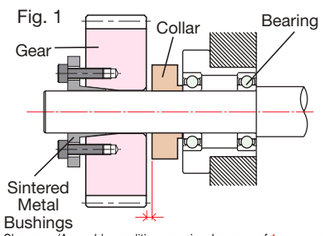
- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

■ Mounting Method and Precautions

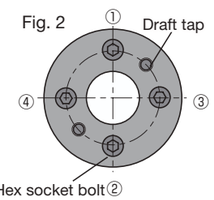
① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout. Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening.
First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Web thickness H	Web O.D. I	Allowable torque (N·m) Bending strength	Surface durability
SS1.5-26	26	32	39	42					28.2	2.06
SS1.5-27	27	34	40.5	43.5					29.7	2.23
SS1.5-28	28	36	42	45					31.2	2.41
SS1.5-29	29	37	43.5	46.5					32.7	2.60
SS1.5-30	30	38	45	48					34.2	2.79
SS1.5-32	32	40	48	51					37.3	3.19
SS1.5-34	34	40	51	54					40.4	3.63
SS1.5-35	35	42	52.5	55.5					41.9	3.85
SS1.5-36	36	45	54	57					43.5	4.09
SS1.5-38	38	45	57	60					46.6	4.58
SS1.5-40	40	45	60	63					49.8	5.10
SS1.5-42	42	45	63	66					52.9	5.40
SS1.5-44	44	45	66	69					56.1	5.72
SS1.5-45	45	45	67.5	70.5					57.7	5.88
SS1.5-46	46	45	69	72					59.3	6.04
SS1.5-48	48	45	72	75					62.4	6.37
SS1.5-50	50	45	75	78					65.7	6.69
SS1.5-52	52	50	78	81			—	—	68.9	7.02
SS1.5-54	54	50	81	84	15	10			72.1	7.35
SS1.5-55	55	50	82.5	85.5					73.7	7.51
SS1.5-56	56	50	84	87					75.3	7.68
SS1.5-58	58	50	87	90					78.5	8.01
SS1.5-60	60	50	90	93					81.8	8.34
SS1.5-62	62	55	93	96					85.0	8.67
SS1.5-64	64	55	96	99					88.3	9.00
SS1.5-68	68	55	102	105					94.8	9.66
SS1.5-70	70	55	105	108					98.0	10.0
SS1.5-72	72	55	108	111					101	10.3
SS1.5-75	75	60	112.5	115.5					106	10.8
SS1.5-76	76	60	114	117					108	11.0
SS1.5-80	80	60	120	123					114	11.7
SS1.5-84	84	60	126	129					121	12.3
SS1.5-88	88	60	132	135					128	13.0
SS1.5-90	90	60	135	138					131	13.3
SS1.5-95	95	60	142.5	145.5					139	14.2
SS1.5-100	100	60	150	153			9	125	147	15.0
SS1.5-120	120	70	180	183			10	153	180	18.4
SS1.5-150	150	180	225	228			—	—	192	19.6

* For the backlash of each product, please refer to the dimension table of the original product.

Fig. 1


Clearance (Assembly conditions require clearance of 1 mm or more)

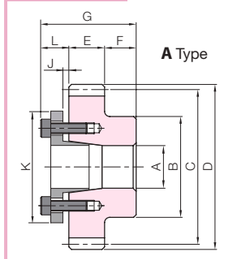
Fig. 2


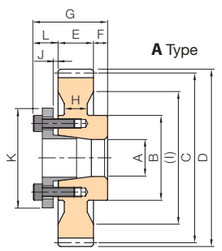
■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

F Series





To order F Series products, please specify: **Catalog Number + F + BORE + A.**

Bore A / Catalog Number	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
	* The product shapes of F Series items are identified by background color.														
SS1.5-26 F Bore A															
SS1.5-27 F Bore A															
SS1.5-28 F Bore A															
SS1.5-29 F Bore A															
SS1.5-30 F Bore A															
SS1.5-32 F Bore A															
SS1.5-34 F Bore A															
SS1.5-35 F Bore A															
SS1.5-36 F Bore A															
SS1.5-38 F Bore A															
SS1.5-40 F Bore A															
SS1.5-42 F Bore A															
SS1.5-44 F Bore A															
SS1.5-45 F Bore A															
SS1.5-46 F Bore A															
SS1.5-48 F Bore A															
SS1.5-50 F Bore A															
SS1.5-52 F Bore A															
SS1.5-54 F Bore A															
SS1.5-55 F Bore A															
SS1.5-56 F Bore A															
SS1.5-58 F Bore A															
SS1.5-60 F Bore A															
SS1.5-62 F Bore A															
SS1.5-64 F Bore A															
SS1.5-68 F Bore A															
SS1.5-70 F Bore A															
SS1.5-72 F Bore A															
SS1.5-75 F Bore A															
SS1.5-76 F Bore A															
SS1.5-80 F Bore A															
SS1.5-84 F Bore A															
SS1.5-88 F Bore A															
SS1.5-90 F Bore A															
SS1.5-95 F Bore A															
SS1.5-100 F Bore A															
SS1.5-120 F Bore A															
SS1.5-150 F Bore A															
Bore A	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Ref. slipping torque N·m	18	23	37	39	42	45	48	49	97	110	124	141	149	163	173
Ref. thrust load kN	3.59	3.76	5.21	5.1	5.17	5.23	5.28	5.12	9.68	9.98	9.90	10.0	9.89	10.1	9.88
Sintered Metal Bushings L	10		12						14						
Sintered Metal Bushings K	29	31	36	37	38	39	40	42	46	47	51	53	56	58	61
Clearance J	2		3												
Total Length G	35		37						39						
Hex socket bolt Qty	3		4												
Hex socket bolt Size	M4×12		M4×15						M5×18						
Hex socket bolt Tightening torque N·m	3.9								7.8						
Bushing weight (g)	20	22	38	40	41	43	45	49	71	71	81	84	93	97	106

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated except for portions given secondary operation

* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

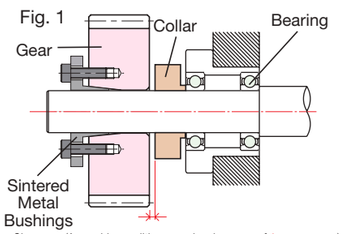
■ Mounting Method and Precautions

① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout. Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening.
First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Web thickness H	Web O.D. I	Allowable torque (N·m) Bending strength	Surface durability
SS2-23	23	37	46	50					56.3	3.86
SS2-24	24	38	48	52					59.8	4.24
SS2-25	25	40	50	54					63.3	4.64
SS2-26	26	42	52	56					66.8	5.04
SS2-27	27	45	54	58					70.4	5.45
SS2-28	28	45	56	60					73.9	5.89
SS2-29	29	47	58	62					77.5	6.33
SS2-30	30	50	60	64					81.1	6.80
SS2-32	32	50	64	68					88.4	7.78
SS2-34	34	50	68	72					95.7	8.84
SS2-35	35	52	70	74					99.3	9.39
SS2-36	36	55	72	76					103	9.96
SS2-38	38	55	76	80					111	11.2
SS2-40	40	55	80	84					118	12.5
SS2-42	42	55	84	88					125	13.8
SS2-44	44	55	88	92					133	15.2
SS2-45	45	55	90	94					137	16.0
SS2-46	46	55	92	96			—	—	140	16.7
SS2-48	48	55	96	100					148	18.3
SS2-50	50	55	100	104					156	19.9
SS2-52	52	55	104	108	20	10			163	21.7
SS2-54	54	55	108	112					171	23.4
SS2-55	55	55	110	114					175	24.4
SS2-56	56	55	112	116					179	25.3
SS2-58	58	60	116	120					186	27.3
SS2-60	60	60	120	124					194	29.3
SS2-62	62	60	124	128					202	31.5
SS2-64	64	60	128	132					209	33.7
SS2-65	65	60	130	134					213	34.8
SS2-66	66	60	132	136					217	36.0
SS2-68	68	60	136	140					225	38.4
SS2-70	70	60	140	144					232	40.8
SS2-72	72	60	144	148					240	43.3
SS2-75	75	60	150	154					252	47.3
SS2-76	76	60	152	156					256	48.6
SS2-80	80	60	160	164				136	271	54.3
SS2-84	84	70	168	172				140	287	60.2
SS2-85	85	70	170	174			12	146	291	61.7
SS2-90	90	70	180	184				156	310	69.7
SS2-100	100	70	200	204				176	291	72.7
SS2-120	120	90	240	244				210	357	108

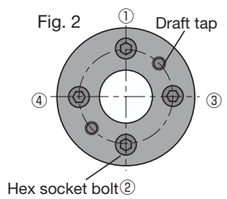
* For the backlash of each product, please refer to the dimension table of the original product.

Fig. 1



Clearance (Assembly conditions require clearance of 1 mm or more)

Fig. 2



■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

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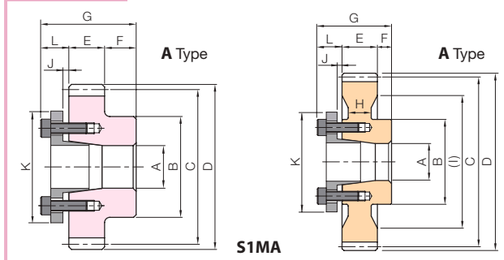
F Series



To order F Series products, please specify: **Catalog Number + F + BORE + A.**

* The product shapes of F Series items are identified by background color.

Catalog Number \ Bore A	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40
SS2-23 F Bore A															
SS2-24 F Bore A															
SS2-25 F Bore A															
SS2-26 F Bore A															
SS2-27 F Bore A															
SS2-28 F Bore A															
SS2-29 F Bore A															
SS2-30 F Bore A															
SS2-32 F Bore A															
SS2-34 F Bore A															
SS2-35 F Bore A															
SS2-36 F Bore A															
SS2-38 F Bore A															
SS2-40 F Bore A															
SS2-42 F Bore A															
SS2-44 F Bore A															
SS2-45 F Bore A															
SS2-46 F Bore A															
SS2-48 F Bore A															
SS2-50 F Bore A															
SS2-52 F Bore A															
SS2-54 F Bore A															
SS2-55 F Bore A															
SS2-56 F Bore A															
SS2-58 F Bore A															
SS2-60 F Bore A															
SS2-62 F Bore A															
SS2-64 F Bore A															
SS2-65 F Bore A															
SS2-66 F Bore A															
SS2-68 F Bore A															
SS2-70 F Bore A															
SS2-72 F Bore A															
SS2-75 F Bore A															
SS2-76 F Bore A															
SS2-80 F Bore A															
SS2-84 F Bore A															
SS2-85 F Bore A															
SS2-90 F Bore A															
SS2-100 F Bore A															
SS2-120 F Bore A															
Bore A	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40
Ref. slipping torque N·m	23	37	39	42	45	48	49	97	110	124	141	149	163	173	725
Ref. thrust load kN	3.76	5.21	5.10	5.17	5.23	5.28	5.12	9.68	9.98	9.90	10.0	9.89	10.1	9.88	12.3
Sintered Metal Bushings L	10	12						14							19
Sintered Metal Bushings K	31	36	37	38	39	40	42	46	47	51	53	56	58	61	71
Clearance J	2	3													
Total Length G	40	42						44							49
Hex socket bolt Qty	3	4													6
Hex socket bolt Size	M4×12	M4×15						M5×18							M6×25
Hex socket bolt Tightening torque N·m	3.9							7.8							13.7
Bushing weight (g)	22	38	40	41	43	45	49	71	71	81	84	93	97	106	237

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated except for portions given secondary operation

* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

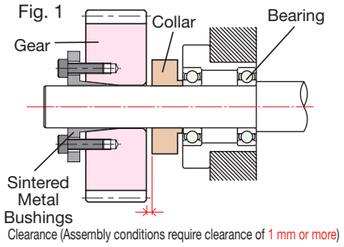
■ Mounting Method and Precautions

① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout. Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening. First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Web thickness H	Web O.D. I	Allowable torque (N·m) Bending strength	Surface durability
SS2.5-22	22	44	55	60					103	6.99
SS2.5-23	23	46	57.5	62.5					110	7.71
SS2.5-24	24	48	60	65					117	8.47
SS2.5-25	25	50	62.5	67.5					124	9.26
SS2.5-26	26	55	65	70					130	10.1
SS2.5-27	27	60	67.5	72.5					137	10.9
SS2.5-28	28	60	70	75					144	11.7
SS2.5-30	30	65	75	80					159	13.6
SS2.5-32	32	70	80	85					173	15.6
SS2.5-34	34	70	85	90					187	17.7
SS2.5-35	35	70	87.5	92.5					194	18.8
SS2.5-36	36	70	90	95					201	20.0
SS2.5-38	38	70	95	100			—	—	216	22.4
SS2.5-40	40	70	100	105					230	24.9
SS2.5-42	42	70	105	110					245	27.6
SS2.5-44	44	70	110	115					260	30.5
SS2.5-45	45	70	112.5	117.5	25	12			267	31.9
SS2.5-46	46	70	115	120					274	33.5
SS2.5-48	48	70	120	125					289	36.7
SS2.5-50	50	70	125	130					304	40.0
SS2.5-52	52	70	130	135					319	43.5
SS2.5-54	54	70	135	140					334	47.2
SS2.5-56	56	70	140	145					349	51.0
SS2.5-58	58	70	145	150					364	55.0
SS2.5-60	60	70	150	155					379	59.1
SS2.5-64	64	80	160	165			15	131	409	67.8
SS2.5-66	66	80	165	170				140	424	72.4
SS2.5-68	68	80	170	175				140	439	77.2
SS2.5-70	70	80	175	180				146	454	82.1
SS2.5-72	72	80	180	185				151	469	87.1
SS2.5-76	76	80	190	195				160	499	97.7
SS2.5-80	80	80	200	205			—	—	441	90.9
SS2.5-90	90	90	225	230					505	117

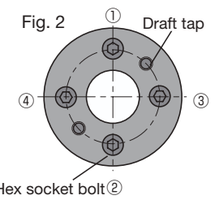
* For the backlash of each product, please refer to the dimension table of the original product.

Fig. 1



Clearance (Assembly conditions require clearance of 1 mm or more)

Fig. 2



■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

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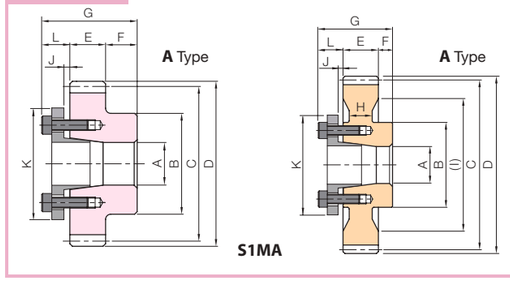
F Series



To order F Series products, please specify: **Catalog Number + F + BORE + A.**

Bore A	* The product shapes of F Series items are identified by background color.												
Catalog Number	15	16	17	18	19	20	22	25	28	30	32	35	40
SS2.5-22 F Bore A													
SS2.5-23 F Bore A													
SS2.5-24 F Bore A													
SS2.5-25 F Bore A													
SS2.5-26 F Bore A													
SS2.5-27 F Bore A													
SS2.5-28 F Bore A													
SS2.5-30 F Bore A													
SS2.5-32 F Bore A													
SS2.5-34 F Bore A													
SS2.5-35 F Bore A													
SS2.5-36 F Bore A													
SS2.5-38 F Bore A													
SS2.5-40 F Bore A													
SS2.5-42 F Bore A													
SS2.5-44 F Bore A													
SS2.5-45 F Bore A													
SS2.5-46 F Bore A													
SS2.5-48 F Bore A													
SS2.5-50 F Bore A													
SS2.5-52 F Bore A													
SS2.5-54 F Bore A													
SS2.5-56 F Bore A													
SS2.5-58 F Bore A													
SS2.5-60 F Bore A													
SS2.5-64 F Bore A													
SS2.5-66 F Bore A													
SS2.5-68 F Bore A													
SS2.5-70 F Bore A													
SS2.5-72 F Bore A													
SS2.5-76 F Bore A													
SS2.5-80 F Bore A													
SS2.5-90 F Bore A													
Bore A	15	16	17	18	19	20	22	25	28	30	32	35	40
Ref. slipping torque N·m	39	42	45	48	49	97	110	124	141	149	163	173	725
Ref. thrust load kN	5.10	5.17	5.23	5.28	5.12	9.68	9.98	9.90	10.0	9.89	10.1	9.88	12.3
Sintered Metal Bushings L			12						14				19
Sintered Metal Bushings K	37	38	39	40	42	46	47	51	53	56	58	61	71
Clearance J							3						
Total Length G			49					51					56
With hex socket Bolt Qty						4							6
With hex socket Bolt Size			M4×15				M5×18						M6×25
With hex socket Bolt Tightening torque N·m			3.9				7.8						13.7
Bushing weight (g)	40	41	43	45	49	71	71	81	84	93	97	106	237

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated except for portions given secondary operation

* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears

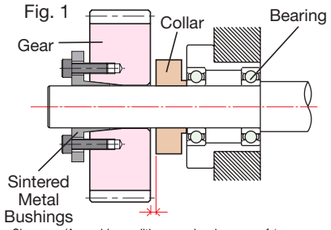
■ Mounting Method and Precautions

① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout. Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening. First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Web thickness H	Web O.D. I	Allowable torque (N·m) Bending strength	Surface durability
SS3-19	19	45	57	63					144	8.88
SS3-20	20	50	60	66					155	9.95
SS3-21	21	52	63	69					167	11.1
SS3-22	22	54	66	72					178	12.3
SS3-23	23	56	69	75					190	13.6
SS3-24	24	58	72	78					202	14.9
SS3-25	25	60	75	81					214	16.3
SS3-26	26	65	78	84					226	17.7
SS3-27	27	65	81	87					237	19.2
SS3-28	28	70	84	90					250	20.7
SS3-29	29	70	87	93					262	22.3
SS3-30	30	75	90	96					274	24.0
SS3-32	32	75	96	102			—	—	298	27.4
SS3-34	34	80	102	108					323	31.2
SS3-35	35	80	105	111					335	33.1
SS3-36	36	80	108	114					348	35.2
SS3-38	38	80	114	120					373	39.4
SS3-40	40	80	120	126					398	44.0
SS3-42	42	80	126	132					423	48.9
SS3-44	44	80	132	138	30	15			449	54.0
SS3-45	45	80	135	141					461	56.6
SS3-46	46	80	138	144					474	59.4
SS3-48	48	80	144	150					500	65.0
SS3-50	50	80	150	156					525	70.9
SS3-52	52	80	156	162				126	551	77.1
SS3-54	54	80	162	168				132	577	83.6
SS3-55	55	80	165	171			16	131	590	86.9
SS3-56	56	80	168	174				134	602	90.3
SS3-58	58	80	174	180				144	628	97.3
SS3-60	60	80	180	186			—	—	654	105
SS3-64	64	80	192	198				158	588	99.9
SS3-65	65	80	195	201				161	599	103
SS3-66	66	90	198	204				160	610	107
SS3-68	68	90	204	210				170	632	114
SS3-70	70	90	210	216			16	176	654	121
SS3-72	72	90	216	222				182	675	129
SS3-75	75	90	225	231				190	708	141
SS3-76	76	90	228	234				190	719	145
SS3-80	80	90	240	246				200	763	162

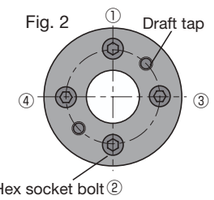
* For the backlash of each product, please refer to the dimension table of the original product.

Fig. 1



Clearance (Assembly conditions require clearance of 1 mm or more)

Fig. 2



■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

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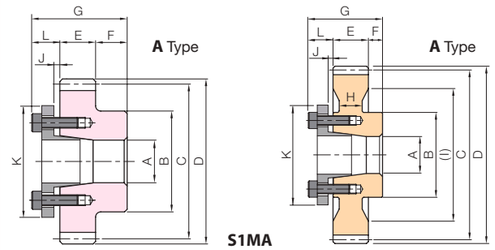
F Series

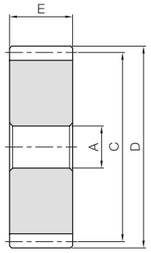


To order F Series products, please specify: **Catalog Number + F + BORE + A.**

Bore A	* The product shapes of F Series items are identified by background color.												
Catalog Number	15	16	17	18	19	20	22	25	28	30	32	35	40
SS3-19 F Bore A													
SS3-20 F Bore A													
SS3-21 F Bore A													
SS3-22 F Bore A													
SS3-23 F Bore A													
SS3-24 F Bore A													
SS3-25 F Bore A													
SS3-26 F Bore A													
SS3-27 F Bore A													
SS3-28 F Bore A													
SS3-29 F Bore A													
SS3-30 F Bore A													
SS3-32 F Bore A													
SS3-34 F Bore A													
SS3-35 F Bore A													
SS3-36 F Bore A													
SS3-38 F Bore A													
SS3-40 F Bore A													
SS3-42 F Bore A													
SS3-44 F Bore A													
SS3-45 F Bore A													
SS3-46 F Bore A													
SS3-48 F Bore A													
SS3-50 F Bore A													
SS3-52 F Bore A													
SS3-54 F Bore A													
SS3-55 F Bore A													
SS3-56 F Bore A													
SS3-58 F Bore A													
SS3-60 F Bore A													
SS3-64 F Bore A													
SS3-65 F Bore A													
SS3-66 F Bore A													
SS3-68 F Bore A													
SS3-70 F Bore A													
SS3-72 F Bore A													
SS3-75 F Bore A													
SS3-76 F Bore A													
SS3-80 F Bore A													
Bore A	15	16	17	18	19	20	22	25	28	30	32	35	40
Ref. slipping torque N·m	39	42	45	48	49	97	110	124	141	149	163	173	725
Ref. thrust load kN	5.10	5.17	5.23	5.28	5.12	9.68	9.98	9.90	10.0	9.89	10.1	9.88	12.3
Sintered Metal Bushings L	12								14				19
Sintered Metal Bushings K	37	38	39	40	42	46	47	51	53	56	58	61	71
Clearance J	3												
Total Length G	57					59							64
With hex socket Bolt Qty	4												6
With hex socket Bolt Size	M4×15					M5×18							M6×25
With hex socket Bolt Tightening torque N·m	3.9					7.8							13.7
Bushing weight (g)	40	41	43	45	49	71	71	81	84	93	97	106	237

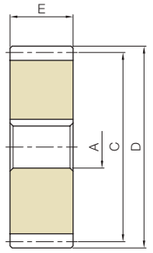
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating

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



S5

J Series



S5K

To order Hardened Plus, please specify Catalog No. + H. **Example: SSA1-20H**

Catalog Number		Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Backlash (mm)	Weight (kg)
					AH7	C	D	E	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m		
SSA1-20	H		20			20	22		5.75	0.59	0.33	0.033	1.59	0.16		0.021
SSA1-24	H		24			24	26		7.47	0.76	0.49	0.050	2.36	0.24		0.032
SSA1-25	H		25			25	27		7.91	0.81	0.54	0.055	2.57	0.26		0.035
SSA1-28	H		28			28	30		9.24	0.94	0.68	0.070	3.25	0.33		0.044
SSA1-30	H		30			30	32		10.1	1.03	0.79	0.081	3.74	0.38		0.052
SSA1-32	H		32		8	32	34		11.1	1.13	0.90	0.092	4.27	0.44		0.059
SSA1-35	H		35			35	37		12.4	1.27	1.09	0.11	5.13	0.52		0.072
SSA1-36	H		36			36	38		12.9	1.31	1.16	0.12	5.44	0.55		0.076
SSA1-40	H		40			40	42		14.7	1.50	1.45	0.15	6.76	0.69		0.095
SSA1-45	H	***m*1**	45	S5		45	47	10	17.1	1.74	1.86	0.19	8.62	0.88	0.08~0.18	0.12
SSA1-48	H		48			48	50		18.5	1.89	2.13	0.22	9.84	1.00		0.14
SSA1-50	H		50			50	52		19.5	1.98	2.32	0.24	10.7	1.09		0.15
SSA1-55	H		55			55	57		21.8	2.23	2.83	0.29	13.0	1.33		0.18
SSA1-56	H		56			56	58		22.3	2.28	2.94	0.30	13.5	1.38		0.19
SSA1-60	H		60		10	60	62		24.2	2.47	3.40	0.35	15.6	1.59		0.22
SSA1-70	H		70			70	72		29.1	2.96	4.70	0.48	21.4	2.18		0.30
SSA1-80	H		80			80	82		33.9	3.46	6.23	0.63	28.1	2.87		0.39
SSA1-100	H		100			100	102		43.7	4.45	9.97	1.02	44.4	4.53		0.61
SSA1-120	H		120			120	122		53.5	5.45	14.7	1.50	64.4	6.57		0.88
SSA1.5-20	H		20			30	33		19.4	1.98	1.15	0.12	5.47	0.56		0.074
SSA1.5-24	H		24			36	39		25.2	2.57	1.73	0.18	8.12	0.83		0.11
SSA1.5-25	H		25			37.5	40.5		26.7	2.72	1.90	0.19	8.87	0.90		0.12
SSA1.5-28	H		28		10	42	45		31.2	3.18	2.41	0.25	11.2	1.14		0.15
SSA1.5-30	H		30			45	48		34.2	3.49	2.79	0.28	12.9	1.32		0.18
SSA1.5-32	H		32			48	51		37.3	3.80	3.19	0.33	14.8	1.51		0.20
SSA1.5-35	H		35			52.5	55.5		41.9	4.28	3.85	0.39	17.8	1.81		0.25
SSA1.5-36	H		36			54	57		43.5	4.43	4.09	0.42	18.8	1.92		0.26
SSA1.5-40	H	***m*1.5**	40	S5		60	63	15	49.8	5.07	5.10	0.52	23.4	2.38	0.10~0.22	0.31
SSA1.5-45	H		45		15	67.5	70.5		57.7	5.88	6.53	0.67	29.8	3.03		0.40
SSA1.5-48	H		48			72	75		62.4	6.37	7.47	0.76	34.0	3.46		0.46
SSA1.5-50	H		50			75	78		65.7	6.69	8.15	0.83	36.9	3.77		0.50
SSA1.5-56	H		56			84	87		75.3	7.68	10.4	1.06	46.6	4.75		0.63
SSA1.5-60	H		60			90	93		81.8	8.34	12.0	1.22	53.7	5.47		0.73
SSA1.5-70	H		70			105	108		98.0	10.0	16.6	1.69	73.6	7.50		1.00
SSA1.5-80	H		80			120	123		114	11.7	22.0	2.24	96.7	9.86		1.31
SSA1.5-100	H		100			150	153		147	15.0	35.5	3.62	152	15.5		2.06

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SSA1-20J8**

Bore H7	* The product shapes of J Series items are identified by background color.																		
Keyway Js9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	3×1.4	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	—																		
SSA1-20 J BORE	✻																		
SSA1-24 J BORE	✻																		
SSA1-25 J BORE	✻																		
SSA1-28 J BORE	✻																		
SSA1-30 J BORE	✻																		
SSA1-32 J BORE	✻																		
SSA1-35 J BORE	✻																		
SSA1-36 J BORE	✻																		
SSA1-40 J BORE	✻																		
SSA1-45 J BORE	✻																		
SSA1-48 J BORE	✻																		
SSA1-50 J BORE		✻																	
SSA1-55 J BORE		✻																	
SSA1-56 J BORE		✻																	
SSA1-60 J BORE		✻																	
SSA1-70 J BORE		✻																	
SSA1-80 J BORE		✻																	
SSA1-100 J BORE		✻																	
SSA1-120 J BORE		✻																	
SSA1.5-20 J BORE		✻																	
SSA1.5-24 J BORE		✻																	
SSA1.5-25 J BORE		✻																	
SSA1.5-28 J BORE		✻																	
SSA1.5-30 J BORE		✻																	
SSA1.5-32 J BORE		✻																	
SSA1.5-35 J BORE		✻																	
SSA1.5-36 J BORE		✻																	
SSA1.5-40 J BORE					✻														
SSA1.5-45 J BORE					✻														
SSA1.5-48 J BORE					✻														
SSA1.5-50 J BORE					✻														
SSA1.5-56 J BORE					✻														
SSA1.5-60 J BORE					✻														
SSA1.5-70 J BORE					✻														
SSA1.5-80 J BORE					✻														
SSA1.5-100 J BORE					✻														

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SSA1-24HJ10

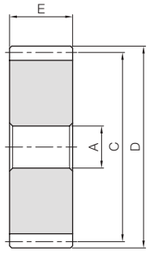
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "✻" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

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

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

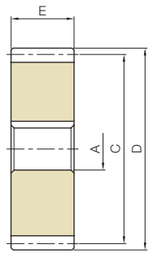
* The precision grade of J Series products is equivalent to the value shown in the table.

J H



S5

J Series



S5K

H To order Hardened Plus, please specify Catalog No. + H. **Example: SSA2-15H**

Catalog Number	Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque: Bending strength N·m	Bending strength kgf·m	Surface durability N·m	Surface durability kgf·m	Surface durability (H) N·m	Surface durability (H) kgf·m	Backlash (mm)	Weight (kg)
				A_{H7}	C	D	E								
SSA2-15	m2	15	S5	10	30	34	20	29.6	3.01	1.48	0.15	7.01	0.71	0.12~0.26	0.099
SSA2-18		18			36	40		39.3	4.01	2.23	0.23	10.5	1.07		0.15
SSA2-20		20		12	40	44		46.0	4.69	2.83	0.29	13.2	1.34		0.18
SSA2-24		24			48	52		59.8	6.09	4.24	0.43	19.6	2.00		0.27
SSA2-25		25			50	54		63.3	6.45	4.64	0.47	21.4	2.18		0.29
SSA2-28		28		15	56	60		73.9	7.54	5.89	0.60	27.0	2.76		0.36
SSA2-30		30			60	64		81.1	8.27	6.80	0.69	31.2	3.18		0.42
SSA2-32		32			64	68		88.4	9.01	7.78	0.79	35.6	3.63		0.48
SSA2-35		35			70	74		99.3	10.1	9.39	0.96	42.8	4.36		0.58
SSA2-36		36			72	76		103	10.5	9.96	1.02	45.3	4.62		0.61
SSA2-40		40		18	80	84		118	12.0	12.5	1.27	56.2	5.73		0.75
SSA2-45		45			90	94		137	13.9	16.0	1.63	71.6	7.30		0.96
SSA2-48		48			96	100		148	15.1	18.3	1.87	81.7	8.33		1.10
SSA2-50		50			100	104		156	15.9	19.9	2.03	88.8	9.05		1.19
SSA2-55		55			110	114		175	17.8	24.4	2.48	108	11.0		1.45
SSA2-56		56			112	116		179	18.2	25.3	2.58	112	11.4		1.51
SSA2-60		60			120	124		194	19.8	29.3	2.99	129	13.1		1.74
SSA2-70		70			140	144		232	23.7	40.8	4.16	177	18.0		2.38
SSA2-80		80			160	164		271	27.7	54.3	5.53	232	23.6		3.12
SSA2-100		100			200	204		291	29.7	72.7	7.42	288	29.3		4.89
SSA2.5-15	m2.5	15	S5	12	37.5	42.5	25	57.7	5.89	2.96	0.30	13.9	1.41	0.14~0.28	0.19
SSA2.5-18		18			45	50		76.7	7.82	4.47	0.46	20.7	2.11		0.29
SSA2.5-20		20		15	50	55		89.8	9.16	5.66	0.58	26.1	2.66		0.35
SSA2.5-24		24			60	65		117	11.9	8.47	0.86	38.8	3.95		0.52
SSA2.5-25		25			62.5	67.5		124	12.6	9.26	0.94	42.3	4.32		0.57
SSA2.5-28		28		18	70	75		144	14.7	11.7	1.20	53.4	5.45		0.71
SSA2.5-30		30			75	80		159	16.2	13.6	1.39	61.6	6.28		0.82
SSA2.5-32		32			80	85		173	17.6	15.6	1.59	70.3	7.17		0.94
SSA2.5-35		35			87.5	92.5		194	19.8	18.8	1.92	84.4	8.61		1.13
SSA2.5-36		36			90	95		201	20.5	20.0	2.04	89.5	9.12		1.20
SSA2.5-40		40		22	100	105		230	23.5	24.9	2.54	111	11.3		1.47
SSA2.5-45		45			112.5	117.5		267	27.2	31.9	3.26	141	14.4		1.88
SSA2.5-48		48			120	125		289	29.5	36.7	3.74	161	16.4		2.14
SSA2.5-50		50			125	130		304	31.0	40.0	4.08	175	17.9		2.33
SSA2.5-56		56			140	145		349	35.6	51.0	5.20	221	22.5		2.95
SSA2.5-60		60			150	155		379	38.6	59.1	6.03	254	25.9		3.39
SSA2.5-70		70			175	180		454	46.3	82.1	8.37	348	35.5		4.65
SSA2.5-80		80			200	205		441	45.0	90.9	9.27	359	36.7		6.09

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

To order J Series products, please specify: **Catalog No. + J + BORE.** **Example: SSA2-15J10**

Bore H7 / Keyway Js9 / Screw size / Catalog Number	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
	—																	
SSA2-15 J BORE	*																	
SSA2-18 J BORE	*																	
SSA2-20 J BORE		*																
SSA2-24 J BORE		*																
SSA2-25 J BORE		*																
SSA2-28 J BORE				*														
SSA2-30 J BORE				*														
SSA2-32 J BORE				*														
SSA2-35 J BORE				*														
SSA2-36 J BORE				*														
SSA2-40 J BORE							*											
SSA2-45 J BORE							*											
SSA2-48 J BORE							*											
SSA2-50 J BORE							*											
SSA2-55 J BORE							*											
SSA2-56 J BORE							*											
SSA2-60 J BORE							*											
SSA2-70 J BORE							*											
SSA2-80 J BORE							*											
SSA2-100 J BORE							*											
SSA2.5-15J BORE		*																
SSA2.5-18J BORE		*																
SSA2.5-20 J BORE				*														
SSA2.5-24 J BORE				*														
SSA2.5-25 J BORE				*														
SSA2.5-28 J BORE							*											
SSA2.5-30 J BORE							*											
SSA2.5-32 J BORE							*											
SSA2.5-35 J BORE							*											
SSA2.5-36 J BORE							*											
SSA2.5-40 J BORE										*								
SSA2.5-45 J BORE										*								
SSA2.5-48 J BORE										*								
SSA2.5-50 J BORE										*								
SSA2.5-56 J BORE										*								
SSA2.5-60 J BORE										*								
SSA2.5-70 J BORE										*								
SSA2.5-80 J BORE										*								

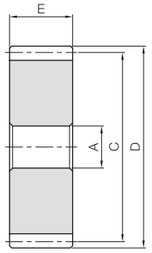
To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SSA2-15HJ12

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② "*" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.

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

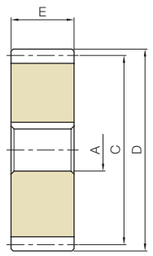
* The precision grade of J Series products is equivalent to the value shown in the table.

J H



S5

J Series



S5K

To order Hardened Plus, please specify Catalog No. + H. Example: SSA3-15H

Catalog Number	Module	No. of teeth	Shape	Bore A_{H7}	Pitch dia. C	Outside dia. D	Face width E	Allowable torque: Bending strength N·m	Bending strength kgf·m	Surface durability N·m	Surface durability kgf·m	Surface durability (H) N·m	Surface durability (H) kgf·m	Backlash (mm)	Weight (kg)
SSA3-15 (H)		15		12	45	51		99.7	10.2	5.22	0.53	24.2	2.47		0.35
SSA3-18 (H)		18			54	60		133	13.5	7.87	0.80	36.2	3.69		0.51
SSA3-20 (H)		20		15	60	66		155	15.8	9.95	1.02	45.6	4.65		0.62
SSA3-24 (H)		24			72	78		202	20.6	14.9	1.52	67.7	6.90		0.92
SSA3-25 (H)		25			75	81		214	21.8	16.3	1.66	73.9	7.53		1.00
SSA3-28 (H)		28			84	90		250	25.4	20.7	2.11	93.2	9.50		1.23
SSA3-30 (H)		30			90	96		274	27.9	24.0	2.44	107	10.9		1.42
SSA3-32 (H)		32		20	96	102		298	30.4	27.4	2.80	123	12.5		1.63
SSA3-35 (H)		35			105	111		335	34.2	33.1	3.38	147	15.0		1.97
SSA3-36 (H)	*m*3	36	S5		108	114	30	348	35.5	35.2	3.59	156	15.9	0.14~0.32	2.08
SSA3-40 (H)		40			120	126		398	40.6	44.0	4.49	193	19.1		2.55
SSA3-45 (H)		45			135	141		461	47.0	56.6	5.78	246	25.1		3.26
SSA3-48 (H)		48			144	150		500	50.9	65.0	6.63	281	28.6		3.72
SSA3-50 (H)		50			150	156		525	53.6	70.9	7.23	305	31.1		4.05
SSA3-55 (H)		55		25	165	171		590	60.1	86.9	8.86	370	37.8		4.92
SSA3-56 (H)		56			168	174		602	61.4	90.3	9.21	384	39.2		5.10
SSA3-60 (H)		60			180	186		654	66.7	105	10.7	442	45.1		5.88
SSA3-70 (H)		70			210	216		654	66.6	121	12.4	478	48.7		8.04
SSA3-80 (H)		80			240	246		763	77.8	162	16.5	632	64.4		10.5
SSA4-15 (H)		15			60	68		236	24.1	12.8	1.30	58.4	5.96		0.79
SSA4-18 (H)		18		20	72	80		314	32.0	19.2	1.96	87.2	8.89		1.18
SSA4-20 (H)		20			80	88		368	37.5	24.3	2.48	110	11.2		1.48
SSA4-24 (H)		24			96	104		478	48.8	36.4	3.72	163	16.6		2.17
SSA4-25 (H)		25			100	108		506	51.6	39.9	4.07	178	18.1		2.37
SSA4-28 (H)		28			112	120		591	60.3	50.6	5.16	224	22.8		2.94
SSA4-30 (H)		30			120	128		649	66.2	58.7	5.98	258	26.3		3.40
SSA4-32 (H)		32		25	128	136		707	72.1	67.4	6.87	294	30.0		3.89
SSA4-35 (H)	*m*4	35	S5		140	148	40	795	81.1	81.6	8.32	353	36.0	0.18~0.38	4.68
SSA4-36 (H)		36			144	152		825	84.1	86.7	8.84	374	38.1		4.96
SSA4-40 (H)		40			160	168		943	96.2	109	11.1	464	47.3		6.09
SSA4-45 (H)		45			180	188		1090	112	139	14.2	590	60.1		7.77
SSA4-48 (H)		48			192	200		987	101	133	13.6	528	53.9		8.87
SSA4-50 (H)		50		30	200	208		1040	106	146	14.8	575	58.6		9.64
SSA4-55 (H)		55			220	228		1160	119	179	18.2	702	71.6		11.7
SSA4-56 (H)		56			224	232		1190	121	186	18.9	729	74.3		12.2
SSA4-60 (H)		60			240	248		1290	132	215	22.0	842	85.9		14.0
SSA5-15 (H)		15		20	75	85		462	47.1	25.5	2.60	115	11.8		1.61
SSA5-18 (H)		18			90	100		614	62.6	38.4	3.92	172	17.6		2.37
SSA5-20 (H)		20			100	110		718	73.3	48.6	4.96	217	22.1		2.93
SSA5-24 (H)		24		22	120	130		934	95.2	73.0	7.45	321	32.7		4.29
SSA5-25 (H)		25			125	135		989	101	80.0	8.16	350	35.7		4.67
SSA5-28 (H)		28			140	150		1160	118	102	10.4	441	45.0		5.85
SSA5-30 (H)		30			150	160		1270	129	118	12.1	508	51.8		6.74
SSA5-32 (H)	*m*5	32	S5	25	160	170	50	1380	141	136	13.8	580	59.1	0.20~0.44	7.70
SSA5-35 (H)		35			175	185		1550	158	164	16.7	696	71.0		9.25
SSA5-36 (H)		36			180	190		1610	164	174	17.8	737	75.1		9.80
SSA5-40 (H)		40			200	210		1540	157	182	18.5	719	73.3		12.1
SSA5-45 (H)		45		30	225	235		1780	182	234	23.9	920	93.8		15.3
SSA5-48 (H)		48			240	250		1930	197	269	27.5	1050	107		17.5
SSA5-50 (H)		50			250	260		2030	207	294	30.0	1150	117		19.0

To order J Series products, please specify: Catalog No. + J + BORE. Example: SSA3-15J12

Bore H7 / Keyway Js9 / Screw size / Catalog Number	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80
	4×1.8		5×2.3				6×2.8			8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4
	—																						
SSA3-15 J BORE	*																						
SSA3-18 J BORE	*																						
SSA3-20 J BORE			*																				
SSA3-24 J BORE			*																				
SSA3-25 J BORE			*																				
SSA3-28 J BORE								*															
SSA3-30 J BORE								*															
SSA3-32 J BORE								*															
SSA3-35 J BORE								*															
SSA3-36 J BORE								*															
SSA3-40 J BORE										*													
SSA3-45 J BORE										*													
SSA3-48 J BORE										*													
SSA3-50 J BORE										*													
SSA3-55 J BORE										*													
SSA3-56 J BORE										*													
SSA3-60 J BORE										*													
SSA3-70 J BORE										*													
SSA3-80 J BORE										*													
SSA4-15J BORE								*															
SSA4-18J BORE								*															
SSA4-20J BORE								*															
SSA4-24J BORE								*															
SSA4-25J BORE								*															
SSA4-28J BORE										*													
SSA4-30J BORE										*													
SSA4-32J BORE										*													
SSA4-35J BORE										*													
SSA4-36J BORE										*													
SSA4-40J BORE											*												
SSA4-45J BORE											*												
SSA4-48J BORE											*												
SSA4-50J BORE											*												
SSA4-55J BORE											*												
SSA4-56J BORE											*												
SSA4-60J BORE											*												
SSA5-15J BORE								*															
SSA5-18J BORE								*															
SSA5-20J BORE									*														
SSA5-24J BORE									*														
SSA5-25J BORE									*														
SSA5-28J BORE										*													
SSA5-30J BORE										*													
SSA5-32J BORE										*													
SSA5-35J BORE										*													
SSA5-36J BORE										*													
SSA5-40J BORE											*												
SSA5-45J BORE											*												
SSA5-48J BORE											*												
SSA5-50J BORE											*												

To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SSA3-15HJ14

* Please see Page 144~145 for Caution on Secondary Operations and Caution on J Series.

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Precautions for Standard Machined Products → Pages 42~44

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

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated except for portions given secondary operation

* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

■ Mounting Method and Precautions

① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout. Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening. First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Catalog Number	Module	No. of teeth	Pitch dia. C	Outside dia. D	Face width E	Allowable torque (N·m) Bending strength	Surface durability
SSA2-24		24	48	52		59.8	4.24
SSA2-25		25	50	54		63.3	4.64
SSA2-28		28	56	60		73.9	5.89
SSA2-30		30	60	64		81.1	6.80
SSA2-32		32	64	68		88.4	7.78
SSA2-35		35	70	74		99.3	9.39
SSA2-36		36	72	76		103	9.96
SSA2-40		40	80	84		118	12.5
SSA2-45	***m*2**	45	90	94	20	137	16.0
SSA2-48		48	96	100		148	18.3
SSA2-50		50	100	104		156	19.9
SSA2-55		55	110	114		175	24.4
SSA2-56		56	112	116		179	25.3
SSA2-60		60	120	124		194	29.3
SSA2-70		70	140	144		232	40.8
SSA2-80		80	160	164		271	54.3
SSA2-100		100	200	204		291	72.7
SSA2.5-24		24	60	65		117	8.47
SSA2.5-25		25	62.5	67.5		124	9.26
SSA2.5-28		28	70	75		144	11.7
SSA2.5-30		30	75	80		159	13.6
SSA2.5-32		32	80	85		173	15.6
SSA2.5-35		35	87.5	92.5		194	18.8
SSA2.5-36		36	90	95		201	20.0
SSA2.5-40	***m*2.5**	40	100	105	25	230	24.9
SSA2.5-45		45	112.5	117.5		267	31.9
SSA2.5-48		48	120	125		289	36.7
SSA2.5-50		50	125	130		304	40.0
SSA2.5-56		56	140	145		349	51.0
SSA2.5-60		60	150	155		379	59.1
SSA2.5-70		70	175	180		454	82.1
SSA2.5-80		80	200	205		441	90.9

* For the backlash of each product, please refer to the dimension table of the original product.

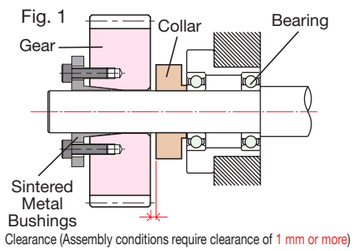

Fig. 1
Clearance (Assembly conditions require clearance of 1 mm or more)

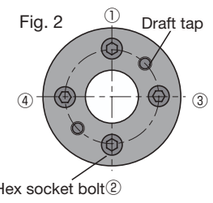

Fig. 2

■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

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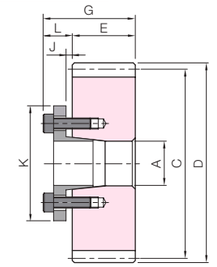
F Series



S5M

To order F Series products, please specify: Catalog Number + F + BORE.

Bore A	* The product shapes of F Series items are identified by background color.													
Catalog Number	12	14	15	16	17	18	19	20	22	25	28	30	32	35
SSA2-24 F Bore														
SSA2-25 F Bore														
SSA2-28 F Bore														
SSA2-30 F Bore														
SSA2-32 F Bore														
SSA2-35 F Bore														
SSA2-36 F Bore														
SSA2-40 F Bore														
SSA2-45 F Bore														
SSA2-48 F Bore														
SSA2-50 F Bore														
SSA2-55 F Bore														
SSA2-56 F Bore														
SSA2-60 F Bore														
SSA2-70 F Bore														
SSA2-80 F Bore														
SSA2-100 F Bore														
SSA2.5-24 F Bore														
SSA2.5-25 F Bore														
SSA2.5-28 F Bore														
SSA2.5-30 F Bore														
SSA2.5-32 F Bore														
SSA2.5-35 F Bore														
SSA2.5-36 F Bore														
SSA2.5-40 F Bore														
SSA2.5-45 F Bore														
SSA2.5-48 F Bore														
SSA2.5-50 F Bore														
SSA2.5-56 F Bore														
SSA2.5-60 F Bore														
SSA2.5-70 F Bore														
SSA2.5-80 F Bore														
Bore A	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Ref. slipping torque N·m	23	37	39	42	45	48	49	97	110	124	141	149	163	173
Ref. thrust load kN	3.76	5.21	5.1	5.17	5.23	5.28	5.12	9.68	9.98	9.9	10	9.89	10.1	9.88
Sintered Metal Bushings L	10	12						14						
Sintered Metal Bushings K	31	36	37	38	39	40	42	46	47	51	53	56	58	61
Clearance J	2	3												
Total Length G ***m*2**	30	32						34						
Total Length G ***m*2.5**	35	37						39						
Hex socket bolt Qty	3	4												
Hex socket bolt Size	M4×12	M4×15						M5×18						
Hex socket bolt Tightening torque N·m	3.9	7.8												
Bushing weight (g)	22	38	40	41	43	45	49	71	71	81	84	93	97	106

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coated except for portions given secondary operation

* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

■ Features of F Series

- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears.

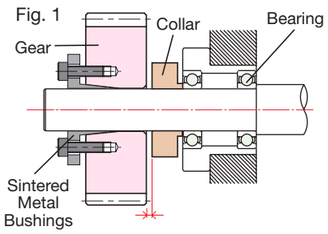
■ Mounting Method and Precautions

① Shaft diameter recommended tolerance is h7. The limit is h8, but we recommend h6 when minimizing runout. Use 1.6a as reference for the surface roughness of the shaft diameter.
② Wipe away any debris, dirt or oil on the shaft surface and hole of the fastened section with thinner or the like, and lightly apply hydraulic oil #68. Do not apply molybdenum-based oil or oil with additives, as this may cause reduced fastening torque or slippage.
③ Pass completely through the shaft while pressing the bushing flange against the gear before tightening. Removal will not be possible, so be sure to leave a clearance of 1mm or more on the gear rear surface side. (Fig.1)
④ Use a torque wrench to fasten bolts on opposite sides when tightening.
First tighten at 1/4 of the regulated torque, then at 1/2 of the regulated torque, before finally tightening up to the regulated torque. Do not tighten without passing through the shaft, or fasten the bolts after insertion on the draft tap side. (Fig.2)
⑤ If the shaft has a keyway, the fastened section contact area is reduced and the transmission rate is decreased by 15 to 20%.

Catalog Number	Module	No. of teeth	Pitch dia. C	Outside dia. D	Face width E	Allowable torque (N·m) Bending strength	Surface durability
SSA3-20		20	60	66		155	9.95
SSA3-24		24	72	78		202	14.9
SSA3-25		25	75	81		214	16.3
SSA3-28		28	84	90		250	20.7
SSA3-30		30	90	96		274	24.0
SSA3-32		32	96	102		298	27.4
SSA3-35		35	105	111		335	33.1
SSA3-36		36	108	114		348	35.2
SSA3-40	***m*3**	40	120	126	30	398	44.0
SSA3-45		45	135	141		461	56.6
SSA3-48		48	144	150		500	65.0
SSA3-50		50	150	156		525	70.9
SSA3-55		55	165	171		590	86.9
SSA3-56		56	168	174		602	90.3
SSA3-60		60	180	186		654	105
SSA3-70		70	210	216		654	121
SSA3-80		80	240	246		763	162

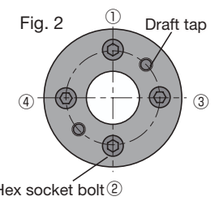
* For the backlash of each product, please refer to the dimension table of the original product.

Fig. 1



Clearance (Assembly conditions require clearance of 1 mm or more)

Fig. 2



■ Removal Method and Precautions

① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
③ The washer and thread surfaces will be roughened, compromising tightening strength, if the bolts are reused. Consequently, we recommend using new bolts of the same size.

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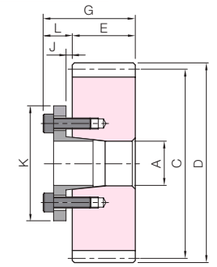
F Series



S5M

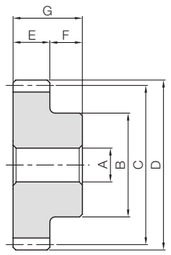
To order F Series products, please specify: **Catalog Number + F + BORE.**

Bore A	* The product shapes of F Series items are identified by background color.												
Catalog Number	15	16	17	18	19	20	22	25	28	30	32	35	40
SSA3-20 F Bore													
SSA3-24 F Bore													
SSA3-25 F Bore													
SSA3-28 F Bore													
SSA3-30 F Bore													
SSA3-32 F Bore													
SSA3-35 F Bore													
SSA3-36 F Bore													
SSA3-40 F Bore													
SSA3-45 F Bore													
SSA3-48 F Bore													
SSA3-50 F Bore													
SSA3-55 F Bore													
SSA3-56 F Bore													
SSA3-60 F Bore													
SSA3-70 F Bore													
SSA3-80 F Bore													
Bore A	15	16	17	18	19	20	22	25	28	30	32	35	40
Ref. slipping torque N·m	39	42	45	48	49	97	110	124	141	149	163	173	725
Ref. thrust load kN	5.10	5.17	5.23	5.28	5.12	9.68	9.98	9.90	10.0	9.89	10.1	9.88	12.3
Sintered Metal Bushings L	12					14							19
Sintered Metal Bushings K	37	38	39	40	42	46	47	51	53	56	58	61	71
Clearance J	3												
Total Length G	42					44							49
Hex socket bolt Qty	4												6
Hex socket bolt Size	M4×15					M5×18							M6×25
Hex socket bolt Tightening torque N·m	3.9					7.8							13.7
Bushing weight (g)	40	41	43	45	49	71	71	81	84	93	97	106	237

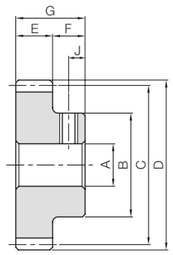
You can download CAD data (DXF format) of KHK Products from the Website.

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

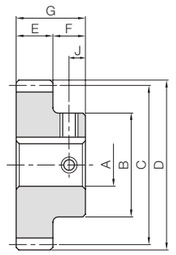
* The precision grade of products with a module of less than 0.8 is equivalent to the value shown in the table.



S1



S1T



S1K

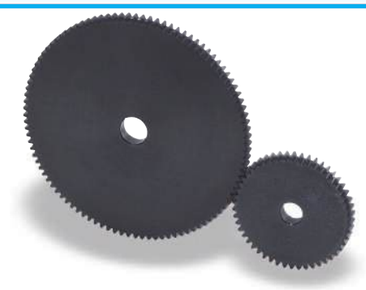
To order Hardened Plus, please specify Catalog No. + H. **Example: SSY0.8-20H**

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Keyway
				A_{H7}	B	C	D	E	F	G	Width × Depth
SSY0.8-20	***m*0.8**	20	S1	5	13.5	16	17.6	4	8	12	—
SSY0.8-25		25	S1	5	17	20	21.6				
SSY0.8-30		30	S1	5	20	24	25.6				
SSY0.8-40		40	S1	5	25	32	33.6				
SSY0.8-50 **SSY0.8-50A**		50	S1 S1T	5 6	25	40	41.6				
SSY1-12 **SSY1-12A**	***m*1**	12	S1 S1T	5	9	12	14	6	8	14	—
SSY1-14 **SSY1-14A**		14	S1 S1T	5	11	14	16				
SSY1-15 **SSY1-15A**		15	S1 S1T	6	12	15	17				
SSY1-16 **SSY1-16A**		16	S1 S1T	6	13	16	18				
SSY1-18 **SSY1-18A**		18	S1 S1T	6	14	18	20				
SSY1-20 **SSY1-20A** **SSY1-20B**		20	S1 S1T S1T	6 6 8	16	20	22				
SSY1-24 **SSY1-24A**		24	S1 S1T	6	16	24	26				
SSY1-25		25	S1	6	16	25	27				
SSY1-28 **SSY1-28A**		28	S1 S1T	6	16	28	30				
SSY1-30 **SSY1-30A** **SSY1-30B**		30	S1 S1T S1T	6 6 8	25	30	32				
SSY1-32		32	S1	6	25	32	34				
SSY1-35 **SSY1-35A**		35	S1 S1T	6 8	25	35	37				
SSY1-36		36	S1	6	25	36	38				
SSY1-40 **SSY1-40A**		40	S1 S1T	8	28	40	42				
SSY1-45		45	S1	8	28	45	47				
SSY1-48		48	S1	8	28	48	50				
SSY1-50		50	S1	8	28	50	52				
SSY1-55		55	S1	8	28	55	57				
SSY1-56		56	S1	8	28	56	58				
SSY1-60		60	S1	8	35	60	62				
SSY1-64		64	S1	8	35	64	66				
SSY1-70		70	S1	8	35	70	72				
SSY1-72		72	S1	8	35	72	74				
SSY1-75		75	S1	8	35	75	77				
SSY1-80		80	S1	10	40	80	82				
SSY1-90		90	S1	10	40	90	92				
SSY1-100		100	S1	10	50	100	102				
SSY1-110		110	S1	10	50	110	112				
SSY1-120 **SSY1-120A**		120	S1 S1K	10 12	50 35	120	122				— 4 x 1.8

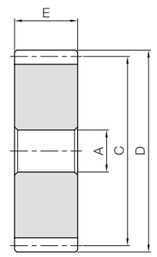
Socket head screw		Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Backlash (mm)	Weight (kg)	Catalog Number
Size	J	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
—	—	1.47	0.15	0.085	0.0087	0.41	0.042	0 ~0.10	0.013	**SSY0.8-20**
—	—	2.03	0.21	0.134	0.014	0.65	0.066		0.022	**SSY0.8-25**
—	—	2.60	0.27	0.197	0.020	0.95	0.097		0.032	**SSY0.8-30**
—	—	3.77	0.39	0.362	0.037	1.71	0.17		0.054	**SSY0.8-40**
— M4	— 4	4.98	0.51	0.580	0.059	2.70 —	0.28 —		0.068 0.067	**SSY0.8-50** **SSY0.8-50A**
— M4	— 4	1.22	0.12	0.069	0.0070	0.34 —	0.034 —		0.0072 0.0070	**SSY1-12** **SSY1-12A**
— M4	— 4	1.98	0.20	0.096	0.010	0.47 —	0.048 —		0.011 0.011	**SSY1-14** **SSY1-14A**
— M4	— 4	2.22	0.23	0.11	0.011	0.54 —	0.055 —		0.012 0.012	**SSY1-15** **SSY1-15A**
— M4	— 4	2.46	0.25	0.13	0.013	0.62 —	0.063 —		0.015 0.014	**SSY1-16** **SSY1-16A**
— M4	— 4	2.95	0.30	0.16	0.017	0.79 —	0.08 —		0.019 0.018	**SSY1-18** **SSY1-18A**
— M4 M5	— 4 4	3.45	0.35	0.20	0.021	0.98 — —	0.10 — —		0.024 0.024 0.021	**SSY1-20** **SSY1-20A** **SSY1-20B**
— M4	— 4	4.48	0.46	0.30	0.030	1.42 —	0.14 —		0.031 0.030	**SSY1-24** **SSY1-24A**
—	—	4.74	0.48	0.32	0.033	1.54	0.16		0.033	**SSY1-25**
— M4	— 4	5.55	0.57	0.41	0.042	1.95 —	0.20 —		0.039 0.038	**SSY1-28** **SSY1-28A**
— M4 M5	— 4 4	6.08	0.62	0.47	0.048	2.24 — —	0.23 — —	0.08~0.18	0.061 0.060 0.057	**SSY1-30** **SSY1-30A** **SSY1-30B**
—	—	6.63	0.68	0.54	0.055	2.56	0.26		0.066	**SSY1-32**
— M5	— 4	7.45	0.76	0.66	0.067	3.08 —	0.31 —		0.073 0.069	**SSY1-35** **SSY1-35A**
—	—	7.73	0.79	0.70	0.071	3.26	0.33		0.076	**SSY1-36**
— M5	— 4	8.84	0.90	0.87	0.089	4.05 —	0.41 —		0.092 0.091	**SSY1-40** **SSY1-40A**
—	—	10.3	1.05	1.12	0.11	5.17	0.53		0.11	**SSY1-45**
—	—	11.1	1.13	1.28	0.13	5.90	0.60		0.12	**SSY1-48**
—	—	11.7	1.19	1.39	0.14	6.42	0.65		0.13	**SSY1-50**
—	—	13.1	1.34	1.70	0.17	7.81	0.80		0.15	**SSY1-55**
—	—	13.4	1.37	1.77	0.18	8.11	0.83		0.15	**SSY1-56**
—	—	14.5	1.48	2.04	0.21	9.34	0.95		0.19	**SSY1-60**
—	—	15.7	1.60	2.34	0.24	10.7	1.09		0.21	**SSY1-64**
—	—	17.4	1.78	2.82	0.29	12.8	1.31		0.24	**SSY1-70**
—	—	18.0	1.84	2.99	0.30	13.6	1.39		0.25	**SSY1-72**
—	—	18.9	1.93	3.26	0.33	14.8	1.51		0.26	**SSY1-75**
—	—	20.3	2.07	3.74	0.38	16.9	1.72		0.31	**SSY1-80**
—	—	23.3	2.37	4.79	0.49	21.5	2.19		0.37	**SSY1-90**
—	—	26.2	2.67	5.98	0.61	26.6	2.72		0.48	**SSY1-100**
—	—	29.1	2.97	7.31	0.75	32.4	3.30		0.56	**SSY1-110**
— M4	— 4	32.1	3.27	8.80	0.90	38.7 —	3.94 —		0.65 0.58	**SSY1-120** **SSY1-120A**

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

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



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



S5

To order Hardened Plus, please specify Catalog No. + H. **Example: SSAY1-20H**

Catalog Number	Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque: Bending strength		Allowable torque: Surface durability		Allowable torque: Surface durability (H)		Backlash (mm)	Weight (kg)	Catalog Number
				A_{H7}	C	D	E	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
SSAY1-20 (H)		20			20	22		3.45	0.35	0.20	0.021	0.98	0.10		0.013	**SSAY1-20** (H)
SSAY1-24 (H)		24			24	26		4.48	0.46	0.30	0.030	1.42	0.14		0.020	**SSAY1-24** (H)
SSAY1-25 (H)		25		6	25	27		4.74	0.48	0.32	0.033	1.54	0.16		0.022	**SSAY1-25** (H)
SSAY1-28 (H)		28			28	30		5.55	0.57	0.41	0.042	1.95	0.20		0.028	**SSAY1-28** (H)
SSAY1-30 (H)		30			30	32		6.08	0.62	0.47	0.048	2.24	0.23		0.032	**SSAY1-30** (H)
SSAY1-32 (H)		32			32	34		6.63	0.68	0.54	0.055	2.56	0.26		0.037	**SSAY1-32** (H)
SSAY1-35 (H)		35			35	37		7.45	0.76	0.66	0.067	3.08	0.31		0.044	**SSAY1-35** (H)
SSAY1-36 (H)		36		6	36	38		7.73	0.79	0.70	0.071	3.26	0.33		0.047	**SSAY1-36** (H)
SSAY1-40 (H)		40			40	42		8.84	0.90	0.87	0.089	4.05	0.41		0.058	**SSAY1-40** (H)
SSAY1-45 (H)	***m*1**	45	S5		45	47	6	10.3	1.05	1.12	0.11	5.17	0.53	0.08~0.18	0.074	**SSAY1-45** (H)
SSAY1-48 (H)		48		6	48	50		11.1	1.13	1.28	0.13	5.90	0.60		0.084	**SSAY1-48** (H)
SSAY1-50 (H)		50		8	50	52		11.7	1.19	1.39	0.14	6.42	0.65		0.090	**SSAY1-50** (H)
SSAY1-55 (H)		55		8	55	57		13.1	1.34	1.70	0.17	7.81	0.80		0.11	**SSAY1-55** (H)
SSAY1-56 (H)		56		8	56	58		13.4	1.37	1.77	0.18	8.11	0.83		0.11	**SSAY1-56** (H)
SSAY1-60 (H)		60		8	60	62		14.5	1.48	2.04	0.21	9.34	0.95		0.13	**SSAY1-60** (H)
SSAY1-70 (H)		70		8	70	72		17.4	1.78	2.82	0.29	12.8	1.31		0.18	**SSAY1-70** (H)
SSAY1-80 (H)		80		10	80	82		20.3	2.07	3.74	0.38	16.9	1.72		0.23	**SSAY1-80** (H)
SSAY1-100 (H)		100		10	100	102		26.2	2.67	5.98	0.61	26.6	2.72		0.37	**SSAY1-100** (H)

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

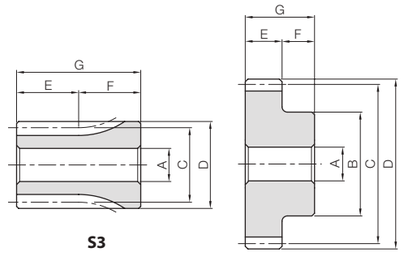
SUS Module 1

Stainless Steel Spur Gears

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

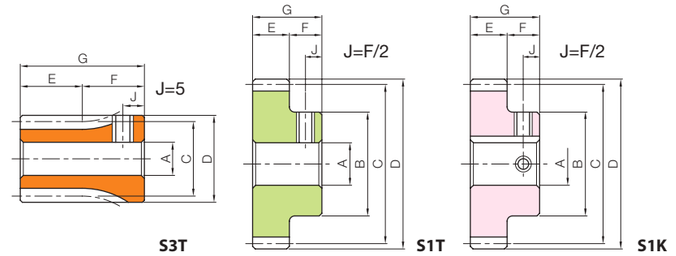
* The precision grade of J Series products is equivalent to the value shown in the table.

J



S3 S1

J Series



S3T S1T S1K

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SUS1-15	15	S3	8	17	15	17	10	20	30	2.04	0.12	0.21	0.013	0.08~0.18	0.038
SUS1-16	16			18	16	18				2.26	0.14	0.23	0.015		0.044
SUS1-18	18			20	18	20				2.71	0.18	0.28	0.019		0.058
SUS1-20	20	S1		16	20	22		10	20	3.18	0.23	0.32	0.024		0.033
SUS1-22	22			18	22	24				3.65	0.29	0.37	0.029		0.042
SUS1-24	24			20	24	26				4.13	0.35	0.42	0.036		0.053
SUS1-25	25			20	25	27				4.37	0.38	0.45	0.039		0.056
SUS1-28	28			23	28	30				5.11	0.48	0.52	0.049		0.074
SUS1-30	30			25	30	32				5.60	0.56	0.57	0.057		0.087
SUS1-32	32			26	32	34				6.11	0.64	0.62	0.066		0.098
SUS1-35	35			26	35	37				6.87	0.78	0.70	0.079		0.11
SUS1-36	36			28	36	38				7.12	0.82	0.73	0.084		0.12
SUS1-40	40			35	40	42				8.15	1.03	0.83	0.11		0.16
SUS1-45	45			35	45	47				9.44	1.32	0.96	0.13		0.19
SUS1-48	48			35	48	50				10.2	1.51	1.04	0.15		0.21
SUS1-50	50		10	35	50	52				10.8	1.65	1.10	0.17		0.22
SUS1-55	55			40	55	57				12.1	2.01	1.23	0.21		0.28
SUS1-56	56			40	56	58				12.3	2.09	1.26	0.21		0.28
SUS1-60	60			40	60	62				13.4	2.42	1.37	0.25		0.31
SUS1-64	64			45	64	66				14.5	2.77	1.47	0.28		0.37
SUS1-70	70			50	70	72				16.1	3.34	1.64	0.34		0.45
SUS1-80	80			60	80	82				18.7	4.42	1.91	0.45		0.61
SUS1-90	90			60	90	92				21.4	5.67	2.19	0.58		0.72
SUS1-100	100		12	60	100	102				24.1	7.08	2.46	0.72		0.83
SUS1-120	120			60	120	122				29.6	10.4	3.01	1.06		1.10

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

* The product shapes of J Series items are identified by background color.

Bore H7	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Keyway Js9																
Screw size	-	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3	
Catalog Number	M5	M4						M5				M6			M8	
SUS1-15J BORE																
SUS1-16J BORE																
SUS1-18J BORE																
SUS1-20J BORE																
SUS1-22J BORE																
SUS1-24J BORE																
SUS1-25J BORE																
SUS1-28J BORE																
SUS1-30J BORE																
SUS1-32J BORE																
SUS1-35J BORE																
SUS1-36J BORE																
SUS1-40J BORE																
SUS1-45J BORE																
SUS1-48J BORE																
SUS1-50J BORE																
SUS1-55J BORE																
SUS1-56J BORE																
SUS1-60J BORE																
SUS1-64J BORE																
SUS1-70J BORE																
SUS1-80J BORE																
SUS1-90J BORE																
SUS1-100J BORE																
SUS1-120J BORE																

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

Product Precautions → Page 50

Precautions for Standard Machined Products → Pages 42~44

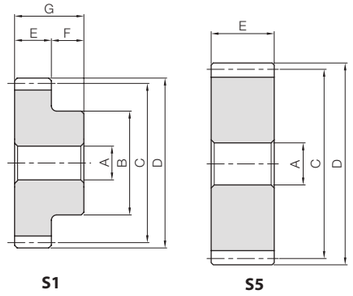
SUS/SUSA Module 1.5, 2

Stainless Steel Spur Gears

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

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

J

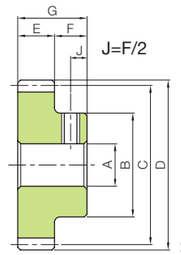


S1

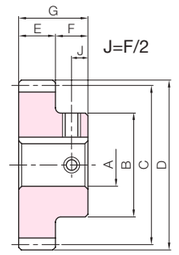
S5

Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
			A_{H7}	B	C	D	E	F	G	Bending strength	Surface durability	Bending strength	Surface durability		
SUS1.5-15	15	S1	8	18	22.5	25.5	15	14	29	6.89	0.43	0.70	0.044	0.10~0.22	0.064
SUS1.5-16	16			20	24	27				7.63	0.50	0.78	0.051		0.077
SUS1.5-18	18			22	27	30				9.16	0.65	0.93	0.066		0.099
SUS1.5-20	20			24	30	33				10.7	0.82	1.09	0.084		0.12
SUS1.5-22	22			26	33	36				12.3	1.01	1.26	0.10		0.15
SUS1.5-24	24			28	36	39				13.9	1.23	1.42	0.13		0.18
SUS1.5-25	25			30	37.5	40.5				14.8	1.35	1.50	0.14		0.20
SUS1.5-28	28		10	36	42	45				17.2	1.71	1.76	0.17		0.26
SUS1.5-30	30			38	45	48				18.9	1.98	1.93	0.20		0.30
SUS1.5-32	32			40	48	51				20.6	2.27	2.10	0.23		0.34
SUS1.5-35	35			42	52.5	55.5				23.2	2.74	2.36	0.28		0.39
SUS1.5-36	36			45	54	57				24.0	2.91	2.45	0.30		0.43
SUS1.5-40	40		12	45	60	63				27.5	3.62	2.80	0.37		0.49
SUS1.5-42	42			45	63	66				29.2	4.01	2.98	0.41		0.52
SUS1.5-45	45			45	67.5	70.5				31.9	4.64	3.25	0.47		0.58
SUS1.5-48	48			45	72	75				34.5	5.31	3.52	0.54		0.63
SUS1.5-50	50			50	75	78				36.3	5.79	3.70	0.59		0.72
SUS1.5-55	55			55	82.5	85.5				40.7	7.08	4.15	0.72		0.87
SUS1.5-56	56		15	55	84	87				41.6	7.36	4.24	0.75		0.90
SUS1.5-60	60			60	90	93				45.2	8.51	4.61	0.87		1.03
SUS1.5-64	64			60	96	99				48.8	9.75	4.97	0.99		1.13
SUS1.5-70	70			70	105	108				54.2	11.8	5.52	1.20		1.42
SUS1.5-80	80			80	120	123				63.2	15.6	6.45	1.59		1.86
SUS1.5-100	100			80	150	153				81.4	25.2	8.30	2.57		2.62
SUS2-15	15	S1	12	24	30	34	20	16	36	16.3	1.05	1.67	0.11	0.12~0.26	0.14
SUS2-16	16			26	32	36				18.1	1.22	1.85	0.12		0.16
SUS2-18	18			30	36	40				21.7	1.59	2.21	0.16		0.22
SUS2-20	20			32	40	44				25.4	2.01	2.59	0.20		0.27
SUS2-22	22			36	44	48				29.2	2.48	2.98	0.25		0.34
SUS2-24	24			38	48	52				33.0	3.01	3.37	0.31		0.40
SUS2-25	25			40	50	54				35.0	3.30	3.57	0.34		0.44
SUS2-28	28			45	56	60				40.9	4.18	4.17	0.43		0.56
SUS2-30	30			50	60	64				44.8	4.83	4.57	0.49		0.67
SUSA2-32	32	S5	15	—	64	68		—	—	48.9	5.53	4.98	0.56		0.48
SUSA2-35	35				70	74				54.9	6.67	5.60	0.68		0.58
SUSA2-36	36				72	76				57.0	7.08	5.81	0.72		0.62
SUSA2-40	40				80	84				65.2	8.85	6.65	0.90		0.77
SUSA2-42	42				84	88				69.3	9.81	7.07	1.00		0.85
SUSA2-45	45				90	94				75.5	11.4	7.70	1.16		0.98
SUSA2-48	48				96	100				81.8	13.0	8.34	1.33		1.12
SUSA2-50	50				100	104				86.0	14.2	8.77	1.44		1.22
SUSA2-55	55				110	114				96.5	17.3	9.84	1.77		1.48
SUSA2-60	60				120	124				107	20.8	10.9	2.13		1.77
SUSA2-70	70				140	144				128	29.0	13.1	2.96		2.41

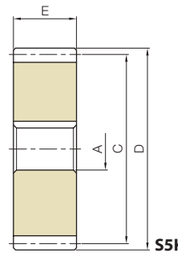
J Series



S1T



S1K



S5K

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

Bore $_{H7}$	* The product shapes of J Series items are identified by background color.																			
Keyway $_{Js9}$	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Screw size	-	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8		
Catalog Number	M5	M4						M5				M6			M8			M10	-	
SUS1.5-15 J BORE																				
SUS1.5-16 J BORE																				
SUS1.5-18 J BORE																				
SUS1.5-20 J BORE																				
SUS1.5-22 J BORE																				
SUS1.5-24 J BORE																				
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SUS1.5-56 J BORE																				
SUS1.5-60 J BORE																				
SUS1.5-64 J BORE																				
SUS1.5-70 J BORE																				
SUS1.5-80 J BORE																				
SUS1.5-100J BORE																				
SUS2-15 J BORE																				
SUS2-16 J BORE																				
SUS2-18 J BORE																				
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SUSA2-42 J BORE																				
SUSA2-45 J BORE																				
SUSA2-48 J BORE																				
SUSA2-50 J BORE																				
SUSA2-55 J BORE																				
SUSA2-60 J BORE																				
SUSA2-70 J BORE																				

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

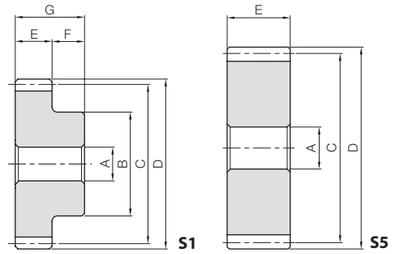
Product Precautions → Page 50

Precautions for Standard Machined Products → Pages 42~44

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

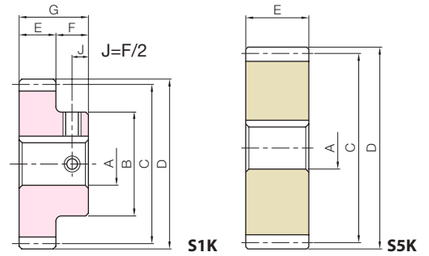
* The precision grade of J Series products is equivalent to the value shown in the table.

J



Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)
SUS2.5-15	15	S1	15	30	37.5	42.5	25	18	43	31.9	2.11	3.25	0.21	0.14~0.28	0.26
SUS2.5-16	16			32	40	45				35.3	2.44	3.60	0.25		0.30
SUS2.5-18	18			38	45	50				42.4	3.18	4.32	0.32		0.42
SUS2.5-20	20			40	50	55				49.6	4.02	5.06	0.41		0.51
SUS2.5-24	24			48	60	65				64.5	6.01	6.58	0.61		0.76
SUS2.5-25	25			50	62.5	67.5				68.3	6.58	6.96	0.67		0.83
SUS2.5-28	28			60	70	75				79.8	8.34	8.14	0.85		1.11
SUS2.5-30	30			65	75	80				87.6	9.65	8.93	0.98		1.29
SUSA2.5-32	32	S5	20	—	80	85		—	—	95.4	11.1	9.73	1.13		0.96
SUSA2.5-36	36				90	95				111	14.2	11.3	1.45		1.23
SUSA2.5-40	40				100	105				127	17.7	13.0	1.81		1.49
SUSA2.5-42	42				105	110				135	19.6	13.8	2.00		1.65
SUSA2.5-48	48				120	125				160	26.1	16.3	2.66		2.18
SUSA2.5-50	50				125	130				168	28.4	17.1	2.90		2.37
SUSA2.5-60	60				150	155				209	42.0	21.3	4.28		3.44
SUSA2.5-64	64				160	165				226	48.2	23.0	4.91		3.92
SUS3-15	15	S1	15	36	45	51	30	20	50	55.1	3.71	5.62	0.38	0.14~0.32	0.47
SUS3-18	18			40	54	60				73.3	5.59	7.47	0.57		0.67
SUS3-20	20			50	60	66				85.8	7.07	8.74	0.72		0.91
SUS3-22	22			54	66	72				98.5	8.73	10.0	0.89		1.11
SUS3-24	24			58	72	78				111	10.6	11.4	1.08		1.32
SUS3-25	25		20	60	75	81				118	11.6	12.0	1.18		1.37
SUS3-28	28			70	84	90				138	14.7	14.1	1.50		1.80
SUS3-30	30			75	90	96				151	17.0	15.4	1.74		2.09
SUSA3-32	32	S5	20	—	96	102		—	—	165	19.5	16.8	1.99		1.65
SUSA3-35	35				105	111				185	23.6	18.9	2.40		1.99
SUSA3-36	36				108	114				192	25.0	19.6	2.55		2.10
SUSA3-40	40		25		120	126				220	31.3	22.4	3.19		2.57
SUSA3-45	45				135	141				255	40.2	26.0	4.10		3.29
SUSA3-50	50				150	156				290	50.4	29.6	5.14		4.09
SUSA3-60	60				180	186				362	74.3	36.9	7.58		5.94
SUS4-15	15	S1	20	45	60	68	40	25	65	131	9.06	13.3	0.92	0.18~0.38	1.05
SUS4-20	20			65	80	88				203	17.3	20.7	1.76		2.09
SUS4-25	25			84	100	108				280	28.3	28.5	2.89		3.43
SUS4-30	30			100	120	128				359	41.7	36.6	4.25		4.98
SUSA4-40	40	S5	30	—	160	168		—	—	521	77.1	53.2	7.86		6.15
SUSA4-50	50				200	208				573	103	58.5	10.5		9.74

J Series



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

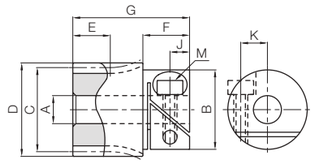
Bore H7	* The product shapes of J Series items are identified by background color.														
Keyway Js9	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	5×2.3			6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M4			M5				M6			M8			M10	
SUS2.5-15 J BORE															
SUS2.5-16 J BORE															
SUS2.5-18 J BORE															
SUS2.5-20 J BORE															
SUS2.5-24 J BORE															
SUS2.5-25 J BORE															
SUS2.5-28 J BORE															
SUS2.5-30 J BORE															
SUSA2.5-32 J BORE															
SUSA2.5-36 J BORE															
SUSA2.5-40 J BORE															
SUSA2.5-42 J BORE															
SUSA2.5-48 J BORE															
SUSA2.5-50 J BORE															
SUSA2.5-60 J BORE															
SUSA2.5-64 J BORE															
SUS3-15 J BORE															
SUS3-18 J BORE															
SUS3-20 J BORE															
SUS3-22 J BORE															
SUS3-24 J BORE															
SUS3-25 J BORE															
SUS3-28 J BORE															
SUS3-30 J BORE															
SUSA3-32 J BORE															
SUSA3-35 J BORE															
SUSA3-36 J BORE															
SUSA3-40 J BORE															
SUSA3-45 J BORE															
SUSA3-50 J BORE															
SUSA3-60 J BORE															
SUS4-15 J BORE															
SUS4-20 J BORE															
SUS4-25 J BORE															
SUS4-30 J BORE															
SUSA4-40 J BORE															
SUSA4-50 J BORE															

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

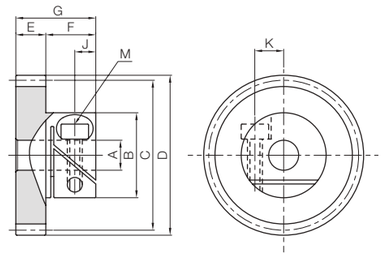
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

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

* The gear grade listed is the value before clamping. The precision grade of products with a module of 0.5 or less is equivalent to the value shown in the table.



S3



S1

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Hex socket screw			Allowable torque (N-m)		Allowable torque (kgf·m)		Ref. slipping torque	Standard screw tightening torque (N-m)	Backlash (mm)	Weight (g)	Catalog Number
				A_{H7}	B	C	D	E	F	G	M	J	K	Bending strength	Surface durability	Bending strength	Surface durability					
SUSF0.5-24	***m*0.5**	24	S3	5	14	12	13	7	8	22	M2.5	3.3	4.4	0.72	0.056	0.074	0.0057	0.62	0.45	0~0.10	20.0	**SUSF0.5-24**
SUSF0.5-30		30	S1			15	16	5	10	15				0.98	0.091	0.10	0.0093				16.9	**SUSF0.5-30**
SUSF0.5-50		50		6	17	25	26				M3	4.5	5.7	1.34	0.19	0.14	0.019	1.79	0.80		34.1	**SUSF0.5-50**
SUSF0.5-60		60		8	19	30	31						6	1.67	0.28	0.17	0.029	2.22			44.5	**SUSF0.5-60**
SUSF0.5-70		70				35	36							2.01	0.39	0.20	0.040				54.7	**SUSF0.5-70**
SUSF0.5-80		80		10	24	40	41		14	19	M4	5.3	7.7	2.34	0.51	0.24	0.052	4.50	2.00		88.2	**SUSF0.5-80**
SUSF1-14	***m*1**	14	S3	6	17	14	16	8	10	25	M3	4.5	5.7	1.46	0.088	0.15	0.0090	1.79	0.80	0~0.10	33.3	**SUSF1-14**
SUSF1-15		15	S1			15	17	6		16				1.63	0.10	0.17	0.010				36.2	**SUSF1-15**
SUSF1-18		18				18	20							2.17	0.15	0.22	0.015				26.5	**SUSF1-18**
SUSF1-20		20				20	22							1.91	0.14	0.19	0.015				29.4	**SUSF1-20**
SUSF1-24		24				24	26							2.48	0.21	0.25	0.021				35.9	**SUSF1-24**
SUSF1-25		25				25	27							2.62	0.23	0.27	0.023				37.8	**SUSF1-25**
SUSF1-30		30		8	19	30	32						6	3.36	0.34	0.34	0.034	2.22	0.80		49.7	**SUSF1-30**
SUSF1-35		35				35	37							4.12	0.47	0.42	0.047				61.9	**SUSF1-35**
SUSF1-36		36				36	38							4.27	0.49	0.44	0.050				64.5	**SUSF1-36**
SUSF1-40		40				40	42							4.89	0.62	0.50	0.063				75.9	**SUSF1-40**
SUSF1-50		50		10	24	50	52		14	20	M4	5.3	7.7	6.45	0.99	0.66	0.10	4.50	2.00		131	**SUSF1-50**
SUSF1-60		60				60	62							8.03	1.45	0.82	0.15				172	**SUSF1-60**
SUSF1-64		64				64	66							8.67	1.66	0.88	0.17				191	**SUSF1-64**

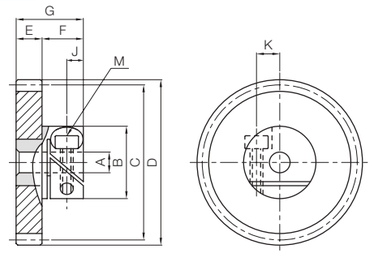
[Caution on Product Characteristics] ① F-Loc gears are attached to the shaft by a friction coupling. Recommended shaft tolerances are g6, h6, or h7. Torque slippage should be considered when making a selection.
② Do not tighten the clamping screw without inserting a shaft, or the bore will be permanently deformed and will not accept a shaft.
③ The tooth and hub mating section has a rotation-stop pin inserted.

[Caution on Secondary Operations] ① Secondary operations cannot be performed, as this is a complete product.

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

Specifications	
Precision grade	JIS grade N10 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	Polyacetal (Hub: SUS303)
Heat Treatment	—
Tooth hardness	(110 to 120HRR)

* The gear grade listed is the value before clamping. The precision grade of products with a module of 0.5 or less is equivalent to the value shown in the table.



S1

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Hex socket screw		
				A_{H7}	B	C	D	E	F	G	M	J	K
DSF0.5-36	***m*0.5**	36	S1	5	14	18	19	5	8.5	13.5	M2.5	3.3	4.4
DSF0.5-40		40				20	21						
DSF0.5-50		50				25	26						
DSF0.5-60		60				30	31						
DSF0.5-80		80				40	41						
DSF0.5-120		120		8	19	60	61		10	15	M3	4.5	6
DSF1-20	***m*1**	20	S1	5	14	20	22	6	8.5	14.5	M2.5	3.3	4.4
DSF1-24		24				24	26						
DSF1-25		25				25	27						
DSF1-30		30		8	19	30	32		10	16	M3	4.5	6
DSF1-32		32				32	34						
DSF1-36		36				36	38						
DSF1-40		40				40	42						
DSF1-50		50				50	52						
DSF1-60		60				60	62						
DSF1-80		80				80	82						
DSF1-100		100				100	102						

Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Ref. slipping torque	Standard screw tightening torque (N·m)	Backlash (mm)	Weight (g)	Catalog Number
0.49	0.050	0.62	0.45	0~0.10	11.7	**DSF0.5-36**
0.55	0.057				12.1	**DSF0.5-40**
0.73	0.075				13.4	**DSF0.5-50**
0.90	0.092				14.9	**DSF0.5-60**
1.25	0.13				18.8	**DSF0.5-80**
1.93	0.20	2.22	0.80		40.1	**DSF0.5-120**
0.96	0.098	0.62	0.45	0~0.10	12.7	**DSF1-20**
1.22	0.12				13.9	**DSF1-24**
1.28	0.13				14.2	**DSF1-25**
1.61	0.16	2.22	0.80		26.5	**DSF1-30**
1.75	0.18				27.3	**DSF1-32**
2.04	0.21				29.1	**DSF1-36**
2.33	0.24				31.2	**DSF1-40**
3.07	0.31				37.1	**DSF1-50**
3.78	0.39				44.5	**DSF1-60**
5.23	0.53				63.1	**DSF1-80**
6.68	0.68				87.0	**DSF1-100**

[Caution on Product Characteristics] ① F-Loc gears are attached to the shaft by a friction coupling. Recommended shaft tolerances are g6, h6, or h7. Torque slippage should be considered when making a selection.
② Do not tighten the clamping screw without inserting a shaft, or the bore will be permanently deformed and will not accept a shaft.
③ The tooth and hub mating section has a rotation-stop pin inserted.

[Caution on Secondary Operations] ① Secondary operations cannot be performed, as this is a complete product.

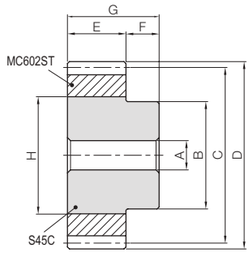
Spur Gears
Helical Gears
Internal Gears
Racks
CP Racks & Pinions
Miter Gears
Bevel Gears
Screw Gears
Worm Gears
Gearboxes
Other Products

NSU Module 1, 1.5, 2
Plastic Spur Gears with Steel Core

Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat Treatment	—
Tooth hardness	(115 to 120HRR)

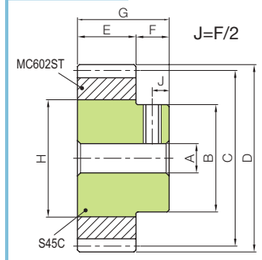
* The precision grade is equivalent to the value shown in the table.

J

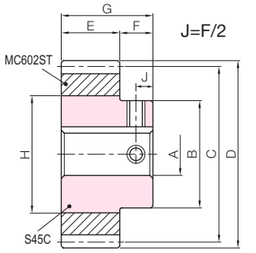


S1

J Series



S1T



S1K

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Core O.D. H	Allowable torque (N-m) Bending strength	Allowable torque (kgf-m) Bending strength	Backlash (mm)	Weight (kg)
NSU1-30	30	S1	8	20	30	32	10	10	20	20	1.23	0.13	0~0.34	0.046
NSU1-35	35			25	35	37				25	1.50	0.15		0.075
NSU1-36	36		10	25	36	38				25	1.56	0.16		0.076
NSU1-40	40			25	40	42				28	1.78	0.18		0.082
NSU1-45	45			30	45	47				34	2.06	0.21		0.12
NSU1-48	48			30	48	50				34	2.23	0.23		0.13
NSU1-50	50				50	52				34	2.35	0.24		0.13
NSU1-60	60			40	60	62				45	2.93	0.30	0~0.36	0.23
NSU1-70	70				70	72				45	3.46	0.35		0.24
NSU1-80	80				80	82				45	4.00	0.41		0.25
NSU1-90	90			40	90	92				55	4.56	0.46		0.32
NSU1-100	100				100	102				65	5.12	0.52		0.40
NSU1.5-30	30	S1	10	30	45	48	15	12	27	30	4.15	0.42	0~0.38	0.15
NSU1.5-32	32			33	48	51				33	4.51	0.46		0.18
NSU1.5-35	35				52.5	55.5				36	5.07	0.52	0~0.40	0.20
NSU1.5-36	36				54	57				36	5.26	0.54		0.21
NSU1.5-40	40			40	60	63				45	6.00	0.61		0.31
NSU1.5-45	45				67.5	70.5				45	6.94	0.71		0.33
NSU1.5-50	50		12		75	78				45	7.92	0.81		0.33
NSU1.5-60	60			50	90	93				55	9.89	1.01		0.51
NSU1.5-80	80			60	120	123				85	13.5	1.38	0~0.42	1.01
NSU1.5-90	90				135	138				100	15.4	1.57		1.29
NSU2-20	20	S1	10	22	40	44	20	14	34	22	5.89	0.60	0~0.42	0.10
NSU2-25	25			30	50	54				30	7.85	0.80		0.20
NSU2-28	28			35	56	60				35	9.05	0.92	0~0.44	0.27
NSU2-30	30				60	64				35	9.84	1.00		0.28
NSU2-32	32		12	40	64	68				40	10.7	1.09		0.35
NSU2-35	35				70	74				45	12.0	1.22		0.41
NSU2-36	36				72	76				45	12.5	1.27		0.42
NSU2-40	40			55	80	84				60	14.2	1.45		0.71
NSU2-45	45		15		90	94				60	16.5	1.68		0.74
NSU2-48	48			60	96	100				65	17.8	1.82		0.88
NSU2-50	50				100	104				65	18.8	1.92	0~0.46	0.90
NSU2-56	56				112	116				65	21.5	2.20		0.95
NSU2-60	60				120	124				85	23.5	2.39		1.29
NSU2-80	80				160	164				125	32.0	3.27		2.38

[Caution on Product Characteristics] ① When the core O.D is the same as the hub diameter, you may see some serration on the hub. There is no effect on the strength of the gear.

[Caution on Secondary Operations] ① Because it affects the welded portion, there is no additional modification other than to the boss part.

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

* The product shapes of J Series items are identified by background color.

Bore H7	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Keyway Js9																
Screw size	—	4×1.8		5×2.3				6×2.8				8×3.3			10 X 3.3	
Catalog Number	M5	M4						M5				M6			M8	
NSU1-30 J BORE																
NSU1-35 J BORE																
NSU1-36 J BORE																
NSU1-40 J BORE																
NSU1-45 J BORE																
NSU1-48 J BORE																
NSU1-50 J BORE																
NSU1-60 J BORE																
NSU1-70 J BORE																
NSU1-80 J BORE																
NSU1-90 J BORE																
NSU1-100 J BORE																
NSU1.5-30 J BORE																
NSU1.5-32 J BORE																
NSU1.5-35 J BORE																
NSU1.5-36 J BORE																
NSU1.5-40 J BORE																
NSU1.5-45 J BORE																
NSU1.5-50 J BORE																
NSU1.5-60 J BORE																
NSU1.5-80 J BORE																
NSU1.5-90 J BORE																
NSU2-20 J BORE																
NSU2-25 J BORE																
NSU2-28 J BORE																
NSU2-30 J BORE																
NSU2-32 J BORE																
NSU2-35 J BORE																
NSU2-36 J BORE																
NSU2-40 J BORE																
NSU2-45 J BORE																
NSU2-48 J BORE																
NSU2-50 J BORE																
NSU2-56 J BORE																
NSU2-60 J BORE																
NSU2-80 J BORE																

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

Product Precautions → Page 50

Precautions for Standard Machined Products → Pages 42~44

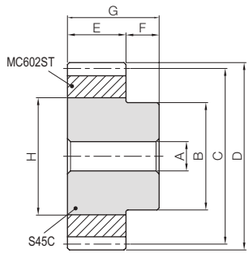
NSU Module 2.5, 3

Plastic Spur Gears with Steel Core

Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat Treatment	—
Tooth hardness	(115 to 120HRR)

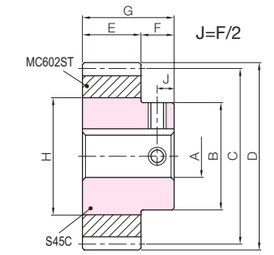
* The precision grade is equivalent to the value shown in the table.

J



S1

J Series



S1K

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Core O.D. H	Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (kg)
NSU2.5-18	18	S1	12	25	45	50	25	15	40	25	9.93	1.01	0~0.44	0.15
NSU2.5-20	20			28	50	55				28	11.5	1.17		0.20
NSU2.5-24	24			35	60	65				35	14.5	1.48	0~0.46	0.32
NSU2.5-25	25			35	62.5	67.5				35	15.3	1.56		0.33
NSU2.5-28	28			40	70	75				40	17.7	1.80		0.44
NSU2.5-30	30			45	75	80				50	19.2	1.96		0.61
NSU2.5-32	32			45	80	85				50	20.9	2.13		0.63
NSU2.5-36	36			55	90	95				60	24.3	2.48		0.91
NSU2.5-40	40		15	65	100	105				70	27.8	2.83		1.21
NSU2.5-50	50			65	125	130				95	36.7	3.74	0~0.48	1.89
NSU2.5-60	60		20	70	150	155				115	45.8	4.67		2.62
NSU2.5-70	70			70	175	180				140	54.1	5.51		3.64
NSU3-20	20	S1	12	33	60	66	30	17	47	33	19.9	2.03	0~0.54	0.35
NSU3-22	22			38	66	72				38	22.5	2.29		0.46
NSU3-25	25			45	75	81				45	26.5	2.70		0.65
NSU3-28	28		15	50	84	90				50	30.5	3.11		0.79
NSU3-30	30			55	90	96				60	33.2	3.39		1.05
NSU3-32	32			60	96	102				65	36.1	3.68		1.24
NSU3-34	34			60	102	108				65	39.0	3.98	0~0.56	1.27
NSU3-35	35			60	105	111				75	40.5	4.13		1.51
NSU3-36	36			60	108	114				80	42.1	4.29		1.65
NSU3-40	40		20	70	120	126				85	48.0	4.90		1.94
NSU3-44	44			70	132	138				95	54.0	5.51		2.31
NSU3-45	45				135	141				105	55.5	5.66		2.65
NSU3-48	48				144	150				105	60.2	6.14		2.72
NSU3-50	50				150	156				105	63.4	6.46		2.77
NSU3-56	56				168	174				130	72.7	7.42		3.85
NSU3-60	60			70	180	186				145	79.1	8.07		4.62
NSU3-70	70				210	216				175	93.4	9.53		6.45

[Caution on Product Characteristics] ① When the core O.D is the same as the hub diameter, you may see some serration on the hub. There is no effect on the strength of the gear.

[Caution on Secondary Operations] ① Because it affects the welded portion, there is no additional modification other than to the boss part.

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

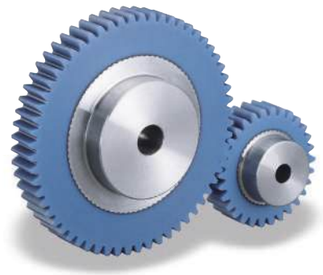
Bore $_{H7}$	* The product shapes of J Series items are identified by background color.														
Keyway $_{Js9}$	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40
Screw size	4×1.8	5×2.3				6×2.8				8×3.3			10×3.3		12×3.3
Catalog Number	M4					M5				M6			M8		
NSU2.5-18 J BORE															
NSU2.5-20 J BORE															
NSU2.5-24 J BORE															
NSU2.5-25 J BORE															
NSU2.5-28 J BORE															
NSU2.5-30 J BORE															
NSU2.5-32 J BORE															
NSU2.5-36 J BORE															
NSU2.5-40 J BORE															
NSU2.5-50 J BORE															
NSU2.5-60 J BORE															
NSU2.5-70 J BORE															
NSU3-20 J BORE															
NSU3-22 J BORE															
NSU3-25 J BORE															
NSU3-28 J BORE															
NSU3-30 J BORE															
NSU3-32 J BORE															
NSU3-34 J BORE															
NSU3-35 J BORE															
NSU3-36 J BORE															
NSU3-40 J BORE															
NSU3-44 J BORE															
NSU3-45 J BORE															
NSU3-48 J BORE															
NSU3-50 J BORE															
NSU3-56 J BORE															
NSU3-60 J BORE															
NSU3-70 J BORE															

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

Product Precautions → Page 50

Precautions for Standard Machined Products → Pages 42~44

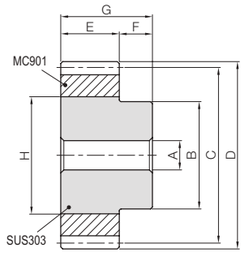
PU Module 1, 1.5, 2
Plastic Spur Gears with Steel Core



Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901 with SUS303 core
Heat Treatment	—
Tooth hardness	(115 to 120HRR)

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

J



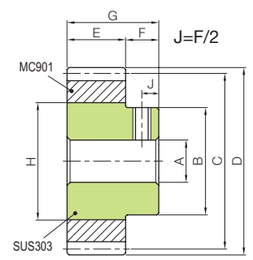
S1

Catalog Number	No. of teeth	Shape	Bore A_{H7}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Core O.D. H	Allowable torque (N-m) Bending strength	Allowable torque (kgf-m) Bending strength	Backlash (mm)	Weight (kg)
PU1-30	30	S1	8	20	30	32	10	10	20	20	1.03	0.10	0~0.34	0.046
PU1-35	35			25	35	37				25	1.25	0.13		0.075
PU1-40	40		10	25	40	42				28	1.48	0.15		0.083
PU1-50	50			30	50	52				34	1.96	0.20		0.13
PU1-60	60			40	60	62				45	2.41	0.25	0~0.36	0.23
PU1-80	80			40	80	82				45	3.34	0.34		0.25
PU1.5-30	30	S1	10	30	45	48	15	12	27	30	3.46	0.35	0~0.38	0.15
PU1.5-40	40			40	60	63				45	5.00	0.51	0~0.40	0.31
PU1.5-50	50		12	40	75	78				45	6.60	0.67		0.33
PU1.5-60	60			50	90	93				55	8.14	0.83		0.51
PU1.5-80	80			60	120	123				85	11.3	1.15	0~0.42	1.02
PU2-20	20	S1	10	22	40	44	20	14	34	22	4.91	0.50	0~0.42	0.10
PU2-25	25			30	50	54				30	6.54	0.67		0.20
PU2-30	30			35	60	64				35	8.20	0.84	0~0.44	0.28
PU2-35	35		12	40	70	74				45	10.0	1.02		0.41
PU2-40	40		15	55	80	84				60	11.9	1.21		0.72
PU2-50	50			60	100	104				65	15.7	1.60		0.90
PU2-60	60			60	120	124				85	19.3	1.97	0~0.46	1.30

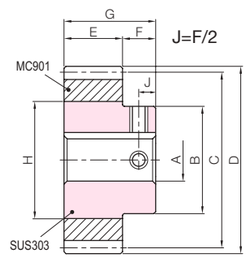
[Caution on Product Characteristics] ① When the core O.D is the same as the hub diameter, you may see some serration on the hub. There is no effect on the strength of the gear.

[Caution on Secondary Operations] ① Because it affects the welded portion, there is no additional modification other than to the boss part.

J Series



S1T



S1K

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

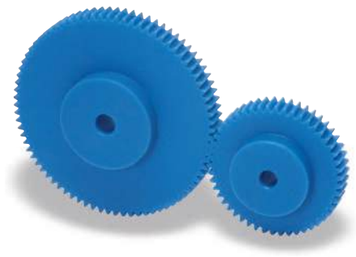
Bore H7	* The product shapes of J Series items are identified by background color.																
Keyway Js9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	
Screw size	—	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		
Catalog Number	M5	M4						M5				M6			M8		
PU1-30 J BORE																	
PU1-35 J BORE																	
PU1-40 J BORE																	
PU1-50 J BORE																	
PU1-60 J BORE																	
PU1-80 J BORE																	
PU1.5-30 J BORE																	
PU1.5-40 J BORE																	
PU1.5-50 J BORE																	
PU1.5-60 J BORE																	
PU1.5-80 J BORE																	
PU2-20 J BORE																	
PU2-25 J BORE																	
PU2-30 J BORE																	
PU2-35 J BORE																	
PU2-40 J BORE																	
PU2-50 J BORE																	
PU2-60 J BORE																	

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

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

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

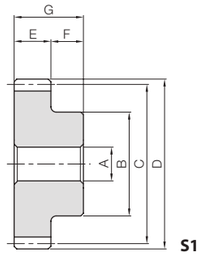
Plastic Spur Gears



Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 to 120HRR)

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

J



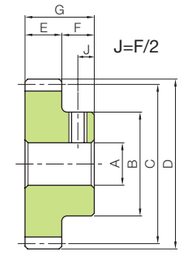
S1

Catalog Number	No. of teeth	Shape	Bore A	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (kg)
PS1-15	15	S1	6	12	15	17	10	10	20	0.41	0.042	0~0.32	0.0027
PS1-16	16			12	16	18				0.45	0.046		0.0030
PS1-18	18			14	18	20				0.53	0.054		0.0041
PS1-20	20			16	20	22				0.61	0.063		0.0053
PS1-22	22		8	18	22	24				0.69	0.071	0~0.34	0.0062
PS1-24	24			20	24	26				0.77	0.079		0.0077
PS1-25	25			20	25	27				0.82	0.083		0.0082
PS1-26	26			20	26	28				0.86	0.088		0.0086
PS1-28	28			22	28	30				0.94	0.096		0.010
PS1-30	30			25	30	32				1.03	0.10		0.013
PS1-32	32			26	32	34				1.11	0.11		0.014
PS1-35	35			26	35	37				1.25	0.13		0.016
PS1-36	36			28	36	38				1.30	0.13		0.018
PS1-40	40			35	40	42				1.48	0.15		0.024
PS1-45	45			35	45	47				1.71	0.17		0.028
PS1-48	48		10		48	50				1.86	0.19		0.030
PS1-50	50				50	52				1.96	0.20		0.032
PS1-55	55			35	55	57				2.18	0.22		0.037
PS1-60	60				60	62				2.41	0.25		0.042
PS1-65	65				65	67				2.64	0.27		0.048
PS1-70	70			40	70	72				2.87	0.29		0.057
PS1-75	75				75	77				3.11	0.32	0~0.36	0.064
PS1-80	80				80	82				3.34	0.34		0.071
PS1-90	90				90	92				3.80	0.39		0.087
PS1-95	95				95	97				4.03	0.41		0.095
PS1-100	100				100	102				4.27	0.44		0.10

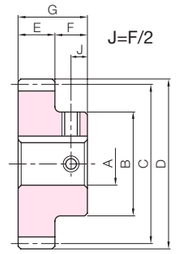
* In regard to MC Nylon gears, other materials are available for plastic gears, including Ultra High Molecular Weight Polyethylene (U-PE), which has excellent abrasion resistance and resin conforming to the Plastic Implementation Measure (PIM).
A single piece order is acceptable and will be produced as a custom-made gear.
Please see Page 26 for more details on quotations and orders.

Product Precautions → Page 50 Precautions for Standard Machined Products → Pages 42~44

J Series



S1T



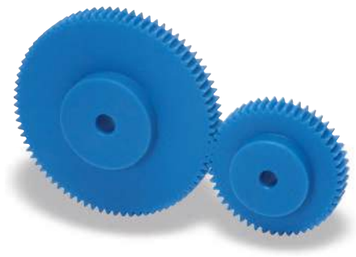
S1K

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

Bore H8	* The product shapes of J Series items are identified by background color.														
Keyway Js9	6	8	10	12	14	15	16	17	18	19	20	22	25	28	30
Screw size	—		4×1.8		5×2.3				6×2.8				8×3.3		
Catalog Number	M4	M5	M4						M5				M6		
PS1-15 J BORE															
PS1-16 J BORE															
PS1-18 J BORE															
PS1-20 J BORE															
PS1-22 J BORE															
PS1-24 J BORE															
PS1-25 J BORE															
PS1-26 J BORE															
PS1-28 J BORE															
PS1-30 J BORE															
PS1-32 J BORE															
PS1-35 J BORE															
PS1-36 J BORE															
PS1-40 J BORE															
PS1-45 J BORE															
PS1-48 J BORE															
PS1-50 J BORE															
PS1-55 J BORE															
PS1-60 J BORE															
PS1-65 J BORE															
PS1-70 J BORE															
PS1-75 J BORE															
PS1-80 J BORE															
PS1-90 J BORE															
PS1-95 J BORE															
PS1-100 J BORE															

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Since tapped holes of plastic products are easily damaged, avoid overtightening when fastening screws. For products with a short tapped hole, tighten screws to a torque of less than 0.12 N·m for M4 threads, and 0.38 N·m for M5 threads.

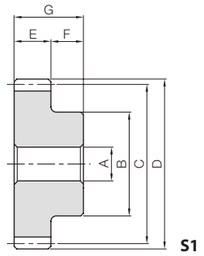
Plastic Spur Gears



Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 to 120HRR)

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

J

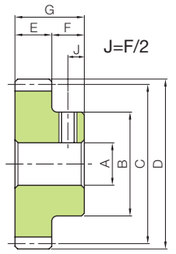


S1

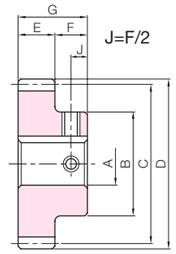
Catalog Number	No. of teeth	Shape	Bore A_{H8}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (kg)
PS1.5-15	15	S1	8	18	22.5	25.5	15	10	25	1.39	0.14	0~0.38	0.0084
PS1.5-16	16			20	24	27				1.53	0.16		0.010
PS1.5-18	18			22	27	30				1.79	0.18		0.013
PS1.5-20	20			24	30	33				2.07	0.21		0.016
PS1.5-22	22			26	33	36				2.34	0.24		0.020
PS1.5-24	24			28	36	39				2.61	0.27		0.023
PS1.5-25	25			30	37.5	40.5				2.76	0.28		0.026
PS1.5-26	26			32	39	42				2.91	0.3		0.029
PS1.5-28	28			36	42	45				3.18	0.32		0.034
PS1.5-30	30			38	45	48				3.46	0.35		0.039
PS1.5-32	32			40	48	51				3.76	0.38		0.045
PS1.5-35	35			42	52.5	55.5				4.22	0.43		0.052
PS1.5-36	36			45	54	57				4.38	0.45		0.057
PS1.5-40	40		10	45	60	63				5.00	0.51		0.065
PS1.5-45	45			45	67.5	70.5				5.79	0.59		0.078
PS1.5-48	48			45	72	75				6.27	0.64	0~0.40	0.087
PS1.5-50	50			45	75	78				6.60	0.67		0.093
PS1.5-55	55			45	82.5	85.5				7.36	0.75		0.11
PS1.5-60	60			50	90	93				8.14	0.83		0.13
PS1.5-65	65		12	50	97.5	100.5				8.91	0.91		0.15
PS1.5-70	70			50	105	108				9.69	0.99		0.17
PS1.5-75	75			50	112.5	115.5				10.5	1.07		0.19
PS1.5-80	80			55	120	123				11.3	1.15	0~0.42	0.22
PS1.5-90	90			55	135	138				12.8	1.31		0.27
PS1.5-100	100			60	150	153				14.4	1.47		0.34

* In regard to MC Nylon gears, other materials are available for plastic gears, including Ultra High Molecular Weight Polyethylene (U-PE), which has excellent abrasion resistance and resin conforming to the Plastic Implementation Measure (PIM).
A single piece order is acceptable and will be produced as a custom-made gear.
Please see Page 26 for more details on quotations and orders.

J Series



S1T



S1K

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

Bore $_{H8}$	* The product shapes of J Series items are identified by background color.														
Keyway $_{Js9}$	8	10	12	14	15	16	17	18	19	20	22	25	28	30	
Screw size	—	4×1.8		5×2.3				6×2.8				8×3.3			
Catalog Number	M5	M4						M5				M6			
PS1.5-15 J BORE															
PS1.5-16 J BORE															
PS1.5-18 J BORE															
PS1.5-20 J BORE															
PS1.5-22 J BORE															
PS1.5-24 J BORE															
PS1.5-25 J BORE															
PS1.5-26 J BORE															
PS1.5-28 J BORE															
PS1.5-30 J BORE															
PS1.5-32 J BORE															
PS1.5-35 J BORE															
PS1.5-36 J BORE															
PS1.5-40 J BORE															
PS1.5-45 J BORE															
PS1.5-48 J BORE															
PS1.5-50 J BORE															
PS1.5-55 J BORE															
PS1.5-60 J BORE															
PS1.5-65 J BORE															
PS1.5-70 J BORE															
PS1.5-75 J BORE															
PS1.5-80 J BORE															
PS1.5-90 J BORE															
PS1.5-100 J BORE															

[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Since tapped holes of plastic products are easily damaged, avoid overtightening when fastening screws. For products with a short tapped hole, tighten screws to a torque of less than 0.12 N·m for M4 threads, and 0.38 N·m for M5 threads.

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

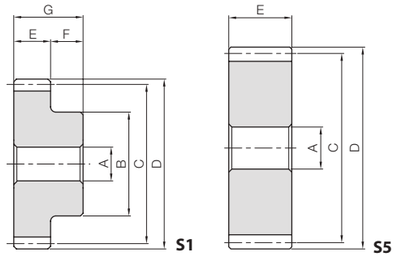
Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44

Plastic Spur Gears

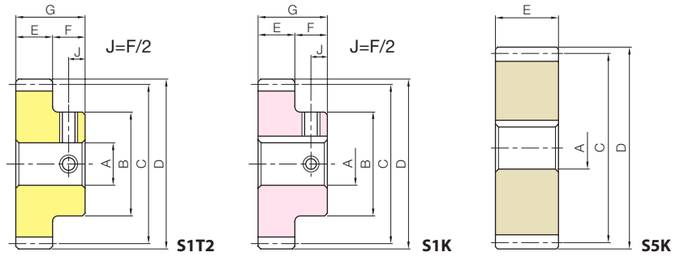
Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 to 120HRR)

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

J



J Series



Catalog Number	No. of teeth	Shape	Bore A_{H8}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (kg)
PS2-12	12	S1	10	18	24	28	20	10	30	2.25	0.23	0~0.42	0.011
PS2-13	13			20	26	30				2.59	0.26		0.013
PS2-14	14			20	28	32				2.96	0.30		0.015
PS2-15	15			24	30	34				3.29	0.34		0.019
PS2-16	16			26	32	36				3.63	0.37		0.022
PS2-18	18			30	36	40				4.24	0.43		0.029
PS2-20	20			32	40	44				4.91	0.50		0.036
PS2-22	22			35	44	48				5.55	0.57		0.044
PS2-24	24			38	48	52				6.19	0.63		0.052
PS2-25	25			40	50	54				6.54	0.67		0.057
PS2-26	26			42	52	56				6.90	0.70	0~0.44	0.063
PS2-28	28			45	56	60				7.54	0.77		0.073
PS2-30	30			50	60	64				8.20	0.84		0.086
PSA2-32	32		12	—	64	68				8.91	0.91		0.072
PSA2-35	35				70	74				10.0	1.02		0.087
PSA2-36	36				72	76				10.4	1.06		0.092
PSA2-40	40				80	84				11.9	1.21		0.11
PSA2-45	45				90	94				13.7	1.40		0.14
PSA2-48	48	S5			96	100				14.9	1.52		0.17
PSA2-50	50				100	104				15.7	1.60		0.18
PSA2-55	55				110	114				17.5	1.78	0~0.46	0.22
PSA2-60	60				120	124				19.3	1.97		0.26
PSA2-65	65		15		130	134				21.1	2.15		0.30
PSA2-70	70				140	144				23.0	2.34		0.35
PSA2-75	75				150	154				24.9	2.54		0.41
PSA2-80	80				160	164				26.7	2.72		0.46
PSA2-85	85				170	174				28.5	2.91		0.52
PSA2-90	90				180	184				30.4	3.10		0.59
PSA2-95	95				190	194				32.3	3.29		0.65
PSA2-100	100				200	204				34.2	3.48		0.72

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

* The product shapes of J Series items are identified by background color.

Bore H8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Keyway Js9	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Screw size	M4						M5				M6			M8		—		
Catalog Number																		
PS2-12 J BORE																		
PS2-13 J BORE																		
PS2-14 J BORE																		
PS2-15 J BORE																		
PS2-16 J BORE																		
PS2-18 J BORE																		
PS2-20 J BORE																		
PS2-22 J BORE																		
PS2-24 J BORE																		
PS2-25 J BORE																		
PS2-26 J BORE																		
PS2-28 J BORE																		
PS2-30 J BORE																		
PSA2-32 J BORE																		
PSA2-35 J BORE																		
PSA2-36 J BORE																		
PSA2-40 J BORE																		
PSA2-45 J BORE																		
PSA2-48 J BORE																		
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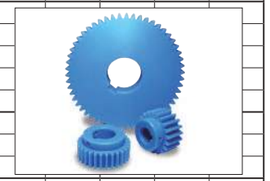
PSA2-55 J BORE																		
PSA2-60 J BORE																		
PSA2-65 J BORE																		
PSA2-70 J BORE																		
PSA2-75 J BORE																		
PSA2-80 J BORE																		
PSA2-85 J BORE																		
PSA2-90 J BORE																		
PSA2-95 J BORE																		
PSA2-100 J BORE																		



[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Since tapped holes of plastic products are easily damaged, avoid overtightening when fastening screws. For products with a short tapped hole, tighten screws to a torque of less than 0.12 N·m for M4 threads, and 0.38 N·m for M5 threads.

* In regard to MC Nylon gears, other materials are available for plastic gears, including Ultra High Molecular Weight Polyethylene (U-PE), which has excellent abrasion resistance and resin conforming to the Plastic Implementation Measure (PIM).
A single piece order is acceptable and will be produced as a custom-made gear.
Please see Page 26 for more details on quotations and orders.

Product Precautions → Page 50

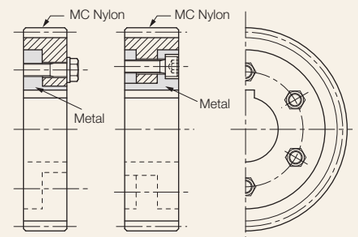
Precautions for Standard Machined Products → Pages 42~44

■ How to attach gears to shafts

To attach gears to shafts, in case of light loads, methods include using keys, taper pins, spring pins, and press fitting after mounting the setscrews. Since loosening tends to occur in the conditions below, plastic gears are better fastened by using a steel hub.

1. When the circumferential temperature is high
2. For large diameter gears
3. If forward-reverse motion impacts keys

For fastening steel hubs into plastic gears with bolts, see right for various methods.



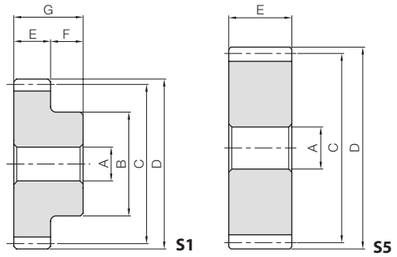
Fastening with a steel hub bolt

Plastic Spur Gears

Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 to 120HRR)

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

J



Catalog Number	No. of teeth	Shape	Bore A_{H8}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (kg)
PS2.5-12	12	S1	10	23	30	35	25	12	37	4.39	0.45	0~0.44	0.023
PS2.5-14	14			25	35	40				5.77	0.59		0.031
PS2.5-15	15		12	30	37.5	42.5				6.42	0.65		0.037
PS2.5-16	16			32	40	45				7.09	0.72		0.043
PS2.5-18	18			38	45	50				8.28	0.84		0.057
PS2.5-20	20			40	50	55				9.59	0.98	0~0.46	0.070
PS2.5-22	22			44	55	60				10.8	1.11		0.085
PS2.5-24	24			48	60	65				12.1	1.23		0.10
PS2.5-25	25			50	62.5	67.5				12.8	1.30		0.11
PS2.5-26	26			55	65	70				13.5	1.37		0.12
PS2.5-28	28			60	70	75				14.7	1.50		0.15
PS2.5-30	30			65	75	80				16.0	1.63		0.17
PSA2.5-32	32	S5	15	—	80	85	—	—	—	17.4	1.77	0~0.48	0.14
PSA2.5-36	36				90	95				20.3	2.07		0.18
PSA2.5-40	40				100	105				23.2	2.36		0.22
PSA2.5-45	45				112.5	117.5				26.8	2.73		0.28
PSA2.5-48	48				120	125				29.0	2.96		0.32
PSA2.5-50	50				125	130				30.6	3.12		0.35
PSA2.5-55	55				137.5	142.5				34.1	3.48		0.43
PSA2.5-60	60				150	155				37.7	3.84		0.51

* In regard to MC Nylon gears, other materials are available for plastic gears, including Ultra High Molecular Weight Polyethylene (U-PE), which has excellent abrasion resistance and resin conforming to the Plastic Implementation Measure (PIM). A single piece order is acceptable and will be produced as a custom-made gear. Please see Page 26 for more details on quotations and orders.

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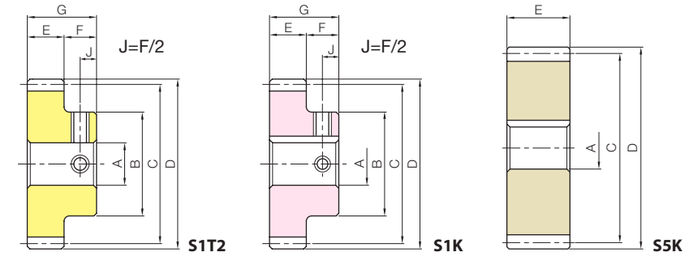
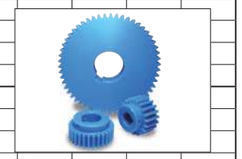
Precautions for Standard Machined Products → Pages 42~44

J Series



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

Bore H8	* The product shapes of J Series items are identified by background color.																	
Keyway Js9	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M4						M5				M6			M8		—		
PS2.5-12 J BORE																		
PS2.5-14 J BORE																		
PS2.5-15 J BORE																		
PS2.5-16 J BORE																		
PS2.5-18 J BORE																		
PS2.5-20 J BORE																		
PS2.5-22 J BORE																		
PS2.5-24 J BORE																		
PS2.5-25 J BORE																		
PS2.5-26 J BORE																		
PS2.5-28 J BORE																		
PS2.5-30 J BORE																		
PSA2.5-32 J BORE																		
PSA2.5-36 J BORE																		
PSA2.5-40 J BORE																		
PSA2.5-45 J BORE																		
PSA2.5-48 J BORE																		
PSA2.5-50 J BORE																		
PSA2.5-55 J BORE																		
PSA2.5-60 J BORE																		



[Caution on J series]
① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Since tapped holes of plastic products are easily damaged, avoid overtightening when fastening screws. For products with a short tapped hole, tighten screws to a torque of less than 0.12 N·m for M4 threads, and 0.38 N·m for M5 threads.

Stainless Steel Hubs for PSA Now Available !

Standardized sectional stainless steel hubs. They create a secure method for fastening to the shaft.

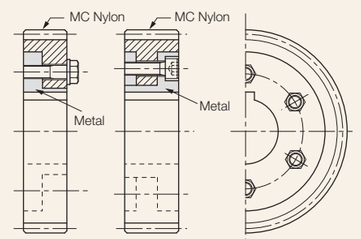
Please see Page 182 for more details.

■ How to attach gears to shafts

To attach gears to shafts, in case of light loads, methods include using keys, taper pins, spring pins, and press fitting after mounting the setscrews. Since loosening tends to occur in the conditions below, plastic gears are better fastened by using a steel hub.

1. When the circumferential temperature is high
2. For large diameter gears
3. If forward-reverse motion impacts keys

For fastening steel hubs into plastic gears with bolts, see right for various methods.

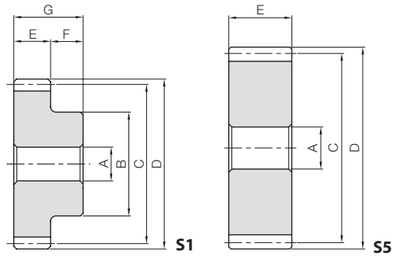


Fastening with a steel hub bolt

Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 to 120HRR)

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

J



Catalog Number	No. of teeth	Shape	Bore A_{H8}	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (kg)
PS3-13	13	S1	12	30	39	45	30	15	45	8.74	0.89	0~0.52	0.048
PS3-14	14			32	42	48				9.97	1.02		0.056
PS3-15	15			36	45	51				11.1	1.13		0.065
PS3-16	16		14	38	48	54				12.3	1.25		0.075
PS3-18	18			40	54	60				14.3	1.46	0~0.54	0.094
PS3-20	20			50	60	66				16.6	1.69		0.12
PS3-22	22			54	66	72				18.7	1.91		0.15
PS3-24	24			58	72	78				20.9	2.13		0.18
PS3-25	25			60	75	81				22.1	2.25		0.19
PS3-26	26			65	78	84				23.3	2.37		0.22
PS3-28	28			70	84	90				25.5	2.60		0.25
PS3-30	30			75	90	96				27.7	2.82		0.29
PSA3-32	32	S5	18	—	96	102	30	—	—	30.1	3.07	0~0.56	0.24
PSA3-35	35				105	111				33.8	3.44		0.29
PSA3-36	36				108	114				35.1	3.57		0.31
PSA3-40	40				120	126				40.0	4.08		0.38
PSA3-45	45				135	141				46.3	4.72		0.49
PSA3-48	48				144	150				50.2	5.12		0.56
PSA3-50	50				150	156				52.8	5.39		0.61
PSA3-55	55				165	171				58.9	6.01		0.74
PSA3-60	60				180	186				65.1	6.64		0.88

* In regard to MC Nylon gears, other materials are available for plastic gears, including Ultra High Molecular Weight Polyethylene (U-PE), which has excellent abrasion resistance Poly Ether Ether Ketone (PEEK) also has quality properties. A single piece order is acceptable and will be produced as a custom-made gear. Please see Page 26 for more details on quotations and orders.

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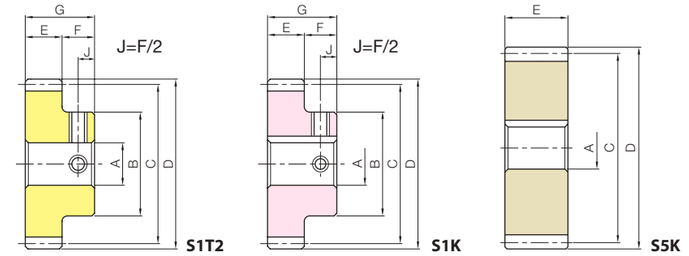
Precautions for Standard Machined Products → Pages 42~44

J Series



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

Bore H8	* The product shapes of J Series items are identified by background color.																
Keyway Js9	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	4×1.8	5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M4					M5				M6			M8		—		
PS3-13 J BORE																	
PS3-14 J BORE																	
PS3-15 J BORE																	
PS3-16 J BORE																	
PS3-18 J BORE																	
PS3-20 J BORE																	
PS3-22 J BORE																	
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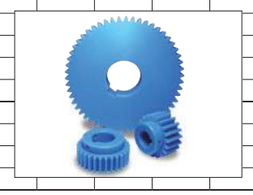
PS3-28 J BORE																	
PS3-30 J BORE																	
PSA3-32 J BORE																	
PSA3-35 J BORE																	
PSA3-36 J BORE																	
PSA3-40 J BORE																	
PSA3-45 J BORE																	
PSA3-48 J BORE																	
PSA3-50 J BORE																	
PSA3-55 J BORE																	
PSA3-60 J BORE																	



[Caution on J series]
① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Since tapped holes of plastic products are easily damaged, avoid overtightening when fastening screws. For products with a short tapped hole, tighten screws to a torque of less than 0.12 N·m for M4 threads, and 0.38 N·m for M5 threads.

Stainless Steel Hubs for PSA Now Available !

Standardized sectional stainless steel hubs. They create a secure method for fastening to the shaft.

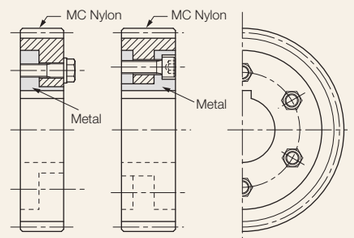
Please see Page 182 for more details.

■ How to attach gears to shafts

To attach gears to shafts, in case of light loads, methods include using keys, taper pins, spring pins, and press fitting after mounting the setscrews. Since loosening tends to occur in the conditions below, plastic gears are better fastened by using a steel hub.

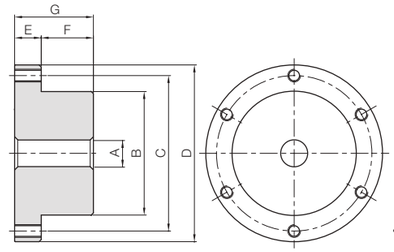
1. When the circumferential temperature is high
2. For large diameter gears
3. If forward-reverse motion impacts keys

For fastening steel hubs into plastic gears with bolts, see right for various methods.



Fastening with a steel hub bolt

Technical information on gears is available on KHK Web Site.



T8

■ Material: SUS303

Catalog Number	Shape	Bore	Hub dia.	Socket head screw			Flange diameter	Flange length	Hub width	Total length	Recommended fastening torque		Coupling torque		Weight
		A_{H7}	B	No.	Size	C	D	E	F	G	(N·m)	(kgf·m)	(N·m)	(kgf·m)	(kg)
SUKB20030	T8	10	30	6	M5	42	51	10	20	30	3.00	0.31	83	8.5	0.24
SUKB20046			46			58	67						115	11.7	0.51
SUKB20066			66			78	87						154	15.7	0.98
SUKB25038	T8	12	38	6	M6	53	63	12.5	24.5	37	5.20	0.53	151	15.4	0.48
SUKB25058			58			73	83						208	21.2	1.00
SUKB25083			83			98	108						280	28.5	1.91
SUKB30046	T8	15	46	6	M8	64	76	15	30	45	12.5	1.27	329	33.6	0.83
SUKB30070			70			88	100						453	46.2	1.75
SUKB30100			100			118	130						607	61.9	3.34

[Caution on Product Characteristics]
① The area where PSA Plastic Spur Gears are attached, with hub tolerance h7.
② The friction coupling torques shown in the table are reference values calculated according to these set values; friction factors and fastening torques of the tapping screw.
③ Please refer to the assembly example below, and then attach the hub to the gear with the accessories, plain washers, spring washers and hexagon socket head cap screws.
④ In accordance with the fastening torque values shown in the dimension table, use a torque wrench and fasten hexagon socket head cap screws firmly, to attach the hub.
⑤ If a fastened hexagon socket head cap screw comes loose, the friction tightening torque values shown in the table can not be maintained. It is recommended to check the fasteners regularly and retighten when required.
⑥ For secure positioning, it is recommended to use dowel pins.

[Caution on Secondary Operations]
① Datum plane for machining hubs is the outer circumference of the hub, where PSA Plastic Spur Gears are attached, and the flank of the flange is facing the hub.
② For modifying tapped holes at the outer circumference of the hub, apply machining at positions which will not interfere with the mounting bolt head, using the S1KBK figure as reference.

■ Features of Stainless Steel Hubs

- This is an attached stainless steel hub with excellent rust resistance.
- Perfectly matches with PSA Plastic Spur Gears, and suitable for food processing machinery.
- Efficient use of materials and superior cost performance for this product.

■ Coupling Torque for Stainless Steel Hubs

Coupling torque for Stainless Steel Hubs is calculated from the frictional force generated by the fastening torque at the contact face of the gear and the stainless steel hub.

Fastening Torque F(N) is calculated from the equation below.

$$F=\frac{n\cdot 1000\cdot T}{K\cdot d}$$

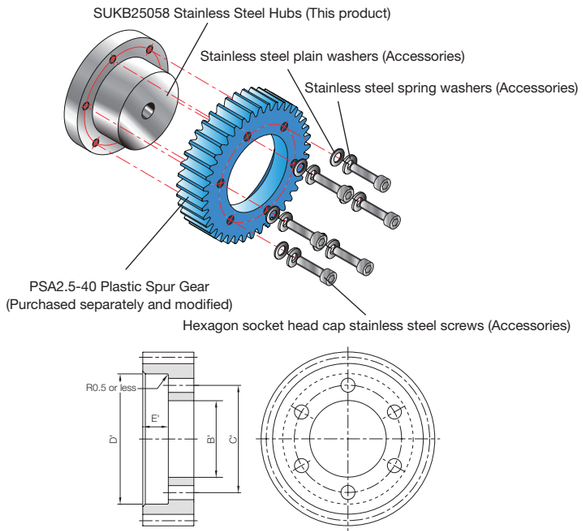
n : Number → No. of threaded holes shown in the dimension table.
T : Tightening torque (N·m) → Fastening torque shown in the dimension table.
K : Torque coefficient → Set the value at 0.164
d : Nominal diameter (mm) → Socket head screw size shown in the dimension table (M5 = 5mm)

Coupling torque T_f (N·m) is calculated from the equation below.

$$T_f=\frac{F\cdot \mu \cdot d_w}{2000}$$

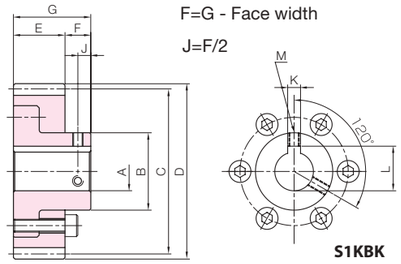
F : Fastening torque (N) → The value obtained from the calculation above.
μ : Friction factor at the contact face of the gear and the stainless steel hub → Set the value at 0.18
d_w : Pitch diameter of the threaded hole (mm) → Socket head screw size C shown in the dimension table

■ Assembly Example of Stainless Steel Hubs



Stainless Steel Hubs	Partner						
Catalog Number	Catalog Number	Bore	Drilled hole			Bore 2	Hole length	Accessories
		B'_{H8}	No.	Size	C'	$D'^{+0.1}_{0}$	$E'_{\pm 0.1}$	Bolt (size)
SUKB20030	**PSA2-32 ～ PSA2-36**	30	6	ϕ 5.5	42	51	10	M5×20
SUKB20046	**PSA2-40 ～ PSA2-48**	46			58	67		
SUKB20066	**PSA2-50 ～**	66			78	87		
SUKB25038	**PSA2.5-32 ～ PSA2.5-36**	38		ϕ 6.6	53	63	12.5	M6×25
SUKB25058	**PSA2.5-40 ～ PSA2.5-48**	58			73	83		
SUKB25083	**PSA2.5-50 ～**	83			98	108		
SUKB30046	**PSA3-32 ～ PSA3-36**	46		ϕ 9	64	76	15	M8×30
SUKB30070	**PSA3-40 ～ PSA3-48**	70			88	100		
SUKB30100	**PSA3-50 ～**	100			118	130		

Product Precautions → Page 50
Precautions for Standard Machined Products → Pages 42~44



F=G - Face width
J=F/2

S1KBK

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

Bore $_{H7}$	* The product shapes of J Series items are identified by background color.																	
Keyway $_{Js9}$	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50
Screw size	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3		12×3.3	14×3.8	
Catalog Number	M4						M5				M6			M8			M10	
PSUKB2-32 J BORE																		
PSUKB2-35 J BORE																		
PSUKB2-36 J BORE																		
PSUKB2-40 J BORE																		
PSUKB2-45 J BORE																		
PSUKB2-48 J BORE																		
PSUKB2-50 J BORE																		
PSUKB2-55 J BORE																		
PSUKB2-60 J BORE																		
PSUKB2-65 J BORE																		
PSUKB2-70 J BORE																		
PSUKB2-75 J BORE																		
PSUKB2-80 J BORE																		
PSUKB2-85 J BORE																		
PSUKB2-90 J BORE																		
PSUKB2-95 J BORE																		
PSUKB2-100 J BORE																		
PSUKB2.5-32 J BORE																		
PSUKB2.5-36 J BORE																		
PSUKB2.5-40 J BORE																		
PSUKB2.5-45 J BORE																		
PSUKB2.5-48 J BORE																		
PSUKB2.5-50 J BORE																		
PSUKB2.5-55 J BORE																		
PSUKB2.5-60 J BORE																		
PSUKB3-32 J BORE																		
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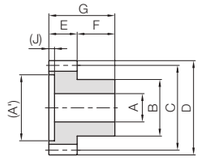
PSUKB3-48 J BORE																		
PSUKB3-50 J BORE																		
PSUKB3-55 J BORE																		
PSUKB3-60 J BORE																		

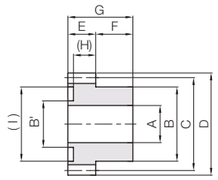
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.

Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon (R) (M90-44) **
Heat treatment	—
Tooth hardness	(110 to 120HRR)

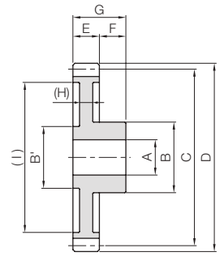
* The precision grade is equivalent to the value shown in the table.
** "Duracon (R)" is a registered trademark of Polyplastics Co., Ltd. in Japan as well as other countries.



S8



S8B



S9

Catalog Number	Module	No. of teeth	Shape	Bore 1	Bore 2	Hub dia. 1	Hub dia. 2	Pitch dia.	Outside dia.	Face width	Hub width
				A	(A')	B	B'	C	D	E	F
DS0.5-12	***m*0.5**	12	S8	2	(4)	4.5	—	6	7	3	4
DS0.5-15		15	S8		(5.5)	4.5	—	7.5	8.5		
DS0.5-16		16	S8	3	(6)	6	—	8	9		
DS0.5-20		20	S8B	4	—	8	5	10	11		
DS0.5-24		24	S9		—	8	5	12	13		
DS0.5-40		40	S9	5	—	12	8	20	21		5
DS0.5-48		48				12	8	24	25		
DS0.5-50		50				12	8	25	26		
DS0.5-56		56		6		14	10	28	29		
DS0.5-60		60				14	10	30	31		
DS0.5-70		70				14	10	35	36		
DS0.5-80		80				14	10	40	41		
DS0.8-12	***m*0.8**	12	S9	3	—	6	4	9.6	11.2	4	5
DS0.8-16		16		4		8	6	12.8	14.4		
DS0.8-20		20		5		10	8	16	17.6		
DS0.8-30		30		6		12	10	24	25.6		
DS0.8-45		45				12	10	36	37.6		
DS0.8-56		56				14.5	11.7	44.8	46.4		6

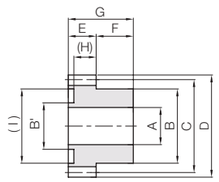
Total length	Web thickness	Web O.D.	Hole depth	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash	Weight	Catalog Number
G	(H)	(I)	(J)	Bending strength	Bending strength	(mm)	(g)	
7	—	—	(0.6)	0.063	0.0064	0~0.30	0.17	**DS0.5-12**
	—	—	(0.6)	0.092	0.0094		0.23	**DS0.5-15**
	—	—	(0.6)	0.10	0.010		0.28	**DS0.5-16**
	(2.4)	(8)	—	0.14	0.014		0.47	**DS0.5-20**
	(1.8)	(9.5)	—	0.17	0.018		0.58	**DS0.5-24**
	(1.8)	(16.5)	—	0.33	0.034		1.53	**DS0.5-40**
		(21)		0.42	0.043		1.91	**DS0.5-48**
		(21.5)		0.44	0.045		2.02	**DS0.5-50**
8		(24.5)		0.50	0.051		2.77	**DS0.5-56**
		(26.5)		0.54	0.055		3.02	**DS0.5-60**
		(31.5)		0.64	0.066		3.71	**DS0.5-70**
		(36.5)		0.75	0.076		4.51	**DS0.5-80**
9	(2)	(6.7)	—	0.22	0.022	0~0.48	0.48	**DS0.8-12**
		(9.2)		0.35	0.035		0.84	**DS0.8-16**
		(12.7)		0.47	0.048		1.26	**DS0.8-20**
		(19.5)		0.79	0.080		2.37	**DS0.8-30**
		(31)		1.31	0.13		4.18	**DS0.8-45**
10		(39.5)		1.70	0.17		6.55	**DS0.8-56**

[Caution on Product Characteristics] ① The bore tolerance is -0.05 to -0.30, but it may be slightly higher at the center of the hole.
② For the dimensional accuracy of each part, see the dimensional tolerance of molded items on Page 187.
[Caution on Secondary Operations] ① As it is a molded item, bubbles may form inside the material. Avoid performing secondary operations.

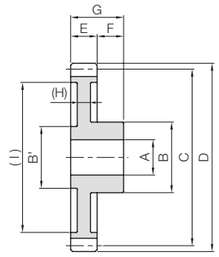
Product Precautions → Page 50

Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon (R) (M90-44) **
Heat treatment	—
Tooth hardness	(110 to 120HRR)

* The precision grade is equivalent to the value shown in the table.
** "Duracon (R)" is a registered trademark of Polyplastics Co., Ltd. in Japan as well as other countries.



S8B



S9

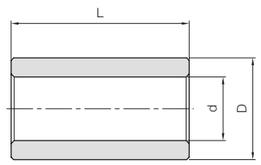
Catalog Number	Module	No. of teeth	Shape	Bore 1 A	Bore 2 (A')	Hub dia. 1 B	Hub dia. 2 B'	Pitch dia. C	Outside dia. D	Face width E	Hub width F
DS1-12		12	S8B	4		8	6	12	14		
DS1-16		16				10	8	16	18		
DS1-18		18		5		10	8	18	20		
DS1-20		20				11.7	9	20	22		
DS1-24		24				11.7	9	24	26		
DS1-28		28				11.7	9	28	30		6
DS1-30		30				14	12	30	32		
DS1-32		32		6		14	12	32	34		
DS1-35	***m*1**	35	S9		—	14	12	35	37	6	
DS1-36		36				14	12	36	38		
DS1-40		40				16	14	40	42		
DS1-48		48				16	14	48	50		
DS1-50		50				16	14	50	52		
DS1-60		60		8		18	15.6	60	62		8
DS1-64		64				18	15.6	64	66		
DS1-70		70				18	15.6	70	72		
DS1-80		80				18	15.6	80	82		

Total Length G	Web thickness (H)	Web O.D. (I)	Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (g)	Catalog Number
	(5.5)	(8.5)	0.44	0.045		1.10	**DS1-12**
		(11.5)	0.71	0.073		1.87	**DS1-16**
		(13.5)	0.83	0.085		2.15	**DS1-18**
		(15)	0.96	0.098		2.85	**DS1-20**
		(17)	1.22	0.12		3.81	**DS1-24**
12		(23)	1.48	0.15		4.39	**DS1-28**
		(24)	1.61	0.16		5.46	**DS1-30**
		(26.5)	1.75	0.18		5.86	**DS1-32**
	(3)	(29)	1.96	0.20	0~0.60	6.73	**DS1-35**
		(30)	2.04	0.21		7.01	**DS1-36**
		(34)	2.33	0.24		8.39	**DS1-40**
		(40)	2.92	0.30		12.0	**DS1-48**
		(42.5)	3.07	0.31		12.6	**DS1-50**
14		(52.5)	3.78	0.39		17.6	**DS1-60**
		(56.5)	4.07	0.41		19.4	**DS1-64**
		(62.5)	4.50	0.46		22.4	**DS1-70**
		(72.5)	5.23	0.53		27.9	**DS1-80**

[Caution on Product Characteristics] ① The bore tolerance is -0.05 to -0.30, but it may be slightly higher at the center of the hole.
② For the dimensional accuracy of each part, see the dimensional tolerance of molded items in the table at right.

[Caution on Secondary Operations] ① As it is a molded item, bubbles may form inside the material. Avoid performing secondary operations.

When using the injection molded spur gear with an idler gear (bearing metal press fitting) and diameter smaller than the inside diameter of the molded gear, please press fit the following standard bushing.



T8

Catalog Number	Inner dia. $d\ ^{+0.02}_{0}$	Outside dia. $D\ ^{-0.02}_{-0.01}$	Length $L\ ^{0}_{-0.3}$	Gear example
BB30507	3	5	7	DS0.5
BB30608	3	6	8	DS0.5,DS0.8
BB40609	4	6	9	DS0.8
BB40612	4	6	12	DS1
BB50812	5	8	12	DS1
BB50814	5	8	14	DS1

Material: Oil-free copper alloy

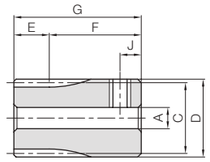
■ Dimensional tolerance of molded item (unit: mm)

Dimensional classification \ Grade	Rough grade
3 or less	±0.20
4 to 6	±0.25
7 to 10	±0.30
11 to 18	±0.35
19 to 30	±0.40
Over 30	±0.50

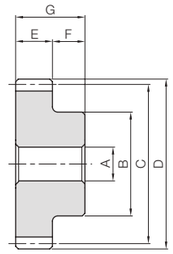
Product Precautions → Page 50

Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	Free cutting brass (C3604)
Heat Treatment	—
Tooth hardness	(80HV or more)

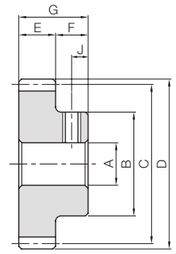
* The precision grade of products with a module of less than 0.8 is equivalent to the value shown in the table.



S3T



S1



S1T

Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Socket head screw		Allowable torque (N·m) Bending strength	Allowable torque (kgf·m) Bending strength	Backlash (mm)	Weight (kg)	Catalog Number
				A_{H7}	B	C	D	E	F	G	Size	J					
BSS0.5-15A	***m*0.5**	15	S3T	3	8.5	7.5	8.5	3	11	14	M3	2.5	0.058	0.0059	0~0.10	0.0054	**BSS0.5-15A**
BSS0.5-16A		16			9	8	9						0.065	0.0066		0.0062	**BSS0.5-16A**
BSS0.5-20		20	S1	4	8.5	10	11		7	10	—	—	0.091	0.0093		0.0043	**BSS0.5-20**
BSS0.5-20A			S3T	3	11				11	14	M3	2.5				0.0098	**BSS0.5-20A**
BSS0.5-22A		22	S1T	3	9	11	12		7	10	M3	3.5	0.10	0.011		0.0054	**BSS0.5-22A**
BSS0.5-24B		24		4	10	12	13						0.12	0.012		0.0063	**BSS0.5-24B**
BSS0.5-25		25	S1	4	11	12.5	13.5				—	—	0.12	0.013		0.0077	**BSS0.5-25**
BSS0.5-30		30	S1	4	13	15	16				—	—	0.16	0.016		0.011	**BSS0.5-30**
BSS0.5-30A			S1T	3	12						M3	3.5				0.010	**BSS0.5-30A**
BSS0.5-30B			S1T	4	12						M3	3.5				0.0099	**BSS0.5-30B**
BSS0.5-30C			S1T	5	12						M4	3.5				0.0092	**BSS0.5-30C**
BSS0.5-38A		38	S1T	4	16	19	20				M3	3.5	0.22	0.022		0.018	**BSS0.5-38A**
BSS0.5-40		40	S1	4	17	20	21				—	—	0.23	0.024		0.020	**BSS0.5-40**
BSS0.5-50A		50	S1T	4	22	25	26				M3	3.5	0.31	0.031		0.033	**BSS0.5-50A**
BSS0.8-20	***m*0.8**	20	S1	5	13.5	16	17.6	4	8	12	—	—	0.31	0.032	0~0.10	0.014	**BSS0.8-20**
BSS0.8-24B		24			16	19.2	20.8				M4	4	0.40	0.041		0.021	**BSS0.8-24B**
BSS0.8-25		25			17	20	21.6				—	—	0.43	0.043		0.024	**BSS0.8-25**
BSS0.8-30		30	S1	5	20	24	25.6				—	—	0.55	0.056		0.034	**BSS0.8-30**
BSS0.8-30A			S1T	4							M3	4				0.035	**BSS0.8-30A**
BSS0.8-40		40	S1	5	20	32	33.6				—	—	0.79	0.081		0.046	**BSS0.8-40**
BSS1-16B	***m*1**	16	S1T	5	12	16	18	6	8	14	M4	4	0.52	0.053	0.08~0.18	0.015	**BSS1-16B**
BSS1-18B		18		6	15	18	20				M4		0.62	0.063		0.021	**BSS1-18B**
BSS1-20C		20		6	16	20	22				M4		0.73	0.074		0.026	**BSS1-20C**
BSS1-30B		30	S1T	6	25	30	32				M4		1.28	0.13		0.065	**BSS1-30B**
BSS1-40A		40	S1T	6	28	40	42				M4		1.86	0.19		0.10	**BSS1-40A**

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