

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.

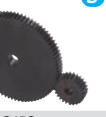
Out of Stock

[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



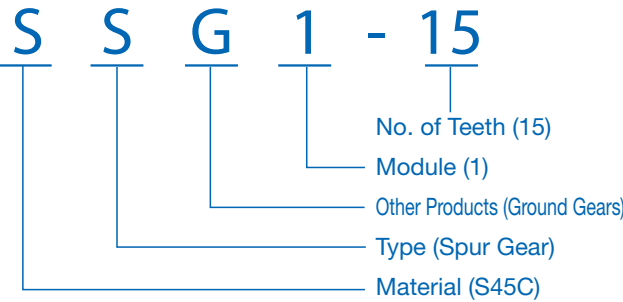
Spur Gears

MSGA/MSGB Ground Spur Gears  Material: SCM415 m1-4 Page 54	KSG Ground Spur Gears  Material: SCM440 m1-3 Page 58	SSGS Ground Spur Pinion Shafts  Material: S45C m1.5-3 Page 60	SSG Ground Spur Gears  Material: S45C m0.5-10 Page 62	SSG F Series Ground Spur Gears  Material: S45C m2-3 Page 80	SSG E Series Ground Spur Gears  Material: S45C m1.5-6 Page 86	SSG R Series Ground Spur Gears  Material: S45C m1.5-6 Page 96	Pinion Gears for Nabtesco GH Series  Material: S45C/SCM440 m3-6 (CP10-20) Page 98
SSAG Ground Spur Gears  Material: S45C m1-6 Page 100	KS Thermal Refined Spur Gears  Material: SCM440 m1.5-5 Page 104	SSS Spur Pinion Shafts  Material: S45C m1, 1.5 Page 106	SS-H Hardened Spur Gears  Material: S45C m1-10 Page 110	SS Spur Gears  Material: S45C m0.5-10 Page 108	SS F Series Spur Gears  Material: S45C m1.5-3 Page 134	SSA-H Hardened Spur Gears  Material: S45C m1-5 Page 142	SSA Spur Gears  Material: S45C m1-5 Page 142
SSA F Series Spur Gears  Material: S45C m2-3 Page 148	SSY-H Hardened Spur Gears  Material: S45C m0.8, 1 Page 152	SSY Spur Gears  Material: S45C m0.8, 1 Page 152	SSAY-H Hardened Spur Gears  Material: S45C m1 Page 154	SSAY Spur Gears  Material: S45C m1 Page 154	SUS/SUSA Stainless Steel Spur Gears  Material: SUS303 m1-4 Page 156	SUSF F-Loc Gears  Material: SUS303 m0.5, 1 Page 162	DSF F-Loc Gears  Material: Polyacetal (SUS303) m0.5, 1 Page 164
NSU Plastic Spur Gears with Steel Core  Material: MC602ST (S45C) m1-3 Page 166	PU Plastic Spur Gears with Steel Core  Material: MC901(SUS303) m1-2 Page 170	PS/PSA Plastic Spur Gears  Material: MC901 m1-3 Page 172	SUKB Stainless Steel Hubs  Material: SUS303 ø 30-100 Page 182	PSUKB SUKB Assembled PSA Spur Gear  Material: MC901/SUS303 m2-3 Page 183	DS Injection Molded Spur Gears  Material: Duracon (R)(M90-44) m0.5-1 Page 184	BB Sintered Metal Bushings  Material: Oil-free copper alloy ø 5-8 Page 186	BSS Spur Gears  Material: Free cutting brass (C3604) m0.5-1 Page 188
SSR Steel Ring Gears (Spur Gears)  Material: S45C m2-3 Page 190							

 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



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

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

Spur Gears

Helical Gears

Internal Gears

Racks

CP Racks & Pinions

Miter Gears

Bevel Gears

Screw Gears

Worm Gears

Gearboxes

Other Products

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.

[NOTE 1] Products with module under 1 are thermal refined. Gear teeth are not hardened. ○ Possible △ Partly possible × Not possible

[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.

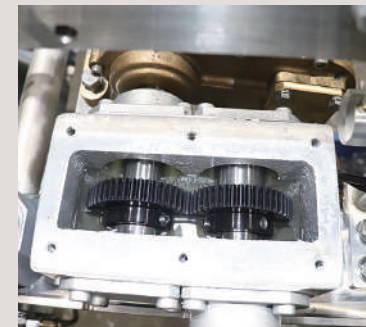
● Black products are KHK stock gears that have an applied black oxide coating for rust resistance.

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 SUI SAN KIKAI CO., LTD.



SS spur gears used for filleting fish

■ Carton former



SS spur gears used in automatic carton formers



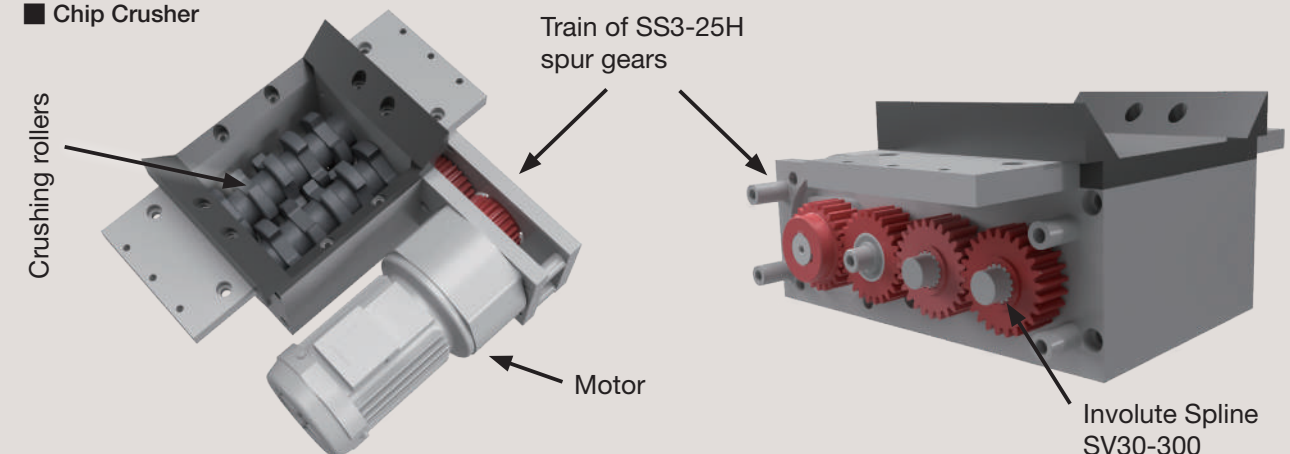
■ High-speed automatic wire straightening/cutting machine manufactured by Takashima Sangyo Co.



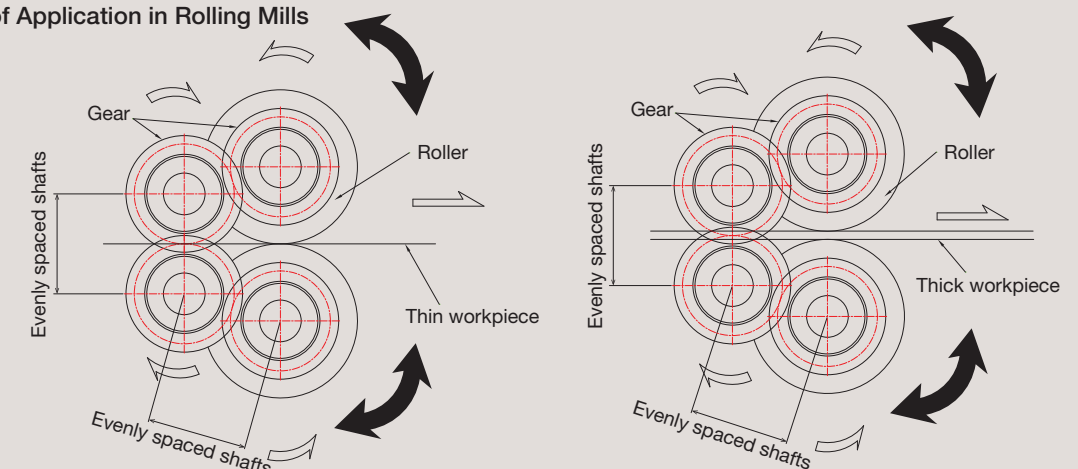
SS spur gears used for wire feeder



■ 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

Catalog Number Item	MSG MSGB	SSG	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/mm ²)		
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_{rim} (kgf/mm ²)	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)

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/mm ²)	166	99	90 (62.5) Note 3	49 (62.5) Note 4	90	41.3	—	112	76	112
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

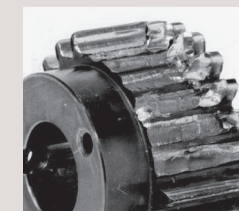
Calculate the strength under the actual usage conditions.

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 $\phi 4$ or below, the bore tolerance is H8. As well, the tolerance is H8 for $\phi 5$ or $\phi 6$ 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.

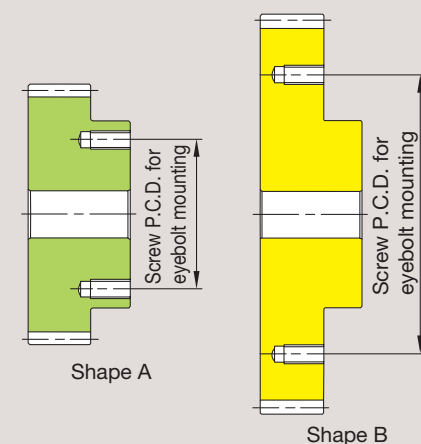
As to the effective case depth, it is specified by JIS, as "The distance from the surface of the case to the area with hardness HV450." The case depth differs from area to area of a tooth, so the depth cannot be specified.

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 $\phi 50$, 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

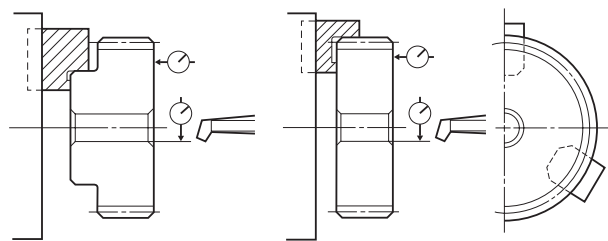
Please read "Cautions on Performing Secondary Operations" below when performing modifications and/or secondary operations for safety concerns.

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

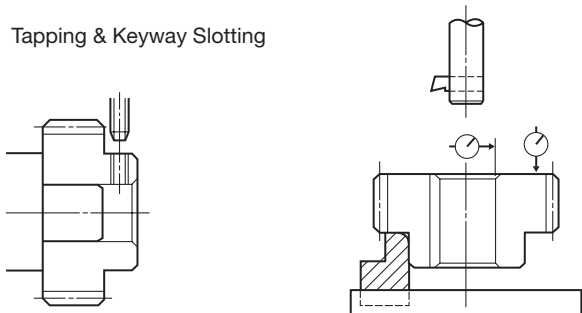
- ① If reboring, it is important to pay special attention to locating the center in order to avoid runout.
- ② The reference datum for gear machining is the bore. Therefore, use the bore for locating the center. If it is too difficult to do for small bores, the alternative is to use one spot on the bore 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

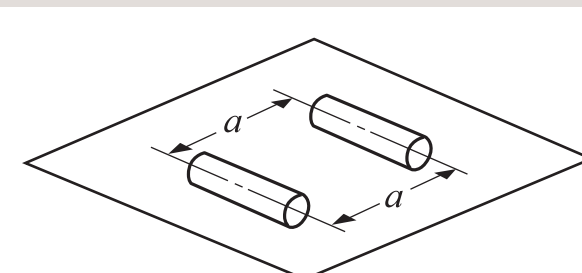
If you apply induction hardening to the gear teeth of S45C products, you need to designate the hardness and where to apply the heat treatment. Below is an example of common specifications and KHK's specifications for hardening:

- 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.



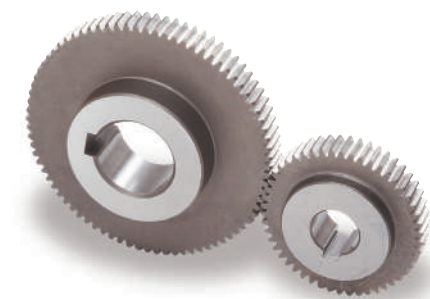
Warning: Precautions for preventing physical and property damage

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.



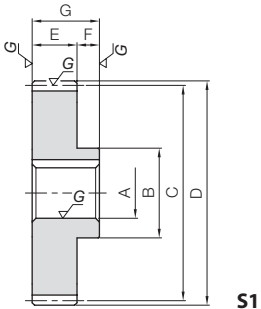
Caution: Cautions in preventing accidents

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
MSG1-18	m1	18	S1	8	15	18	20	10	5	15
MSG1-20		20		8	17	20	22			
MSGB1-20**				10	17	20	22			
MSGB1-24		24		12	20	24	26			
MSG1-25		25		10	20	25	27			
MSGB1-25				12	20	25	27			
MSG1-30		30		10	25	30	32			
MSGB1-30				12	25	30	32			
MSGB1-40		40		15	30	40	42			
MSG1-48		48		12	30	48	50			
MSGB1-48				15	30	48	50			
MSG1-50		50		12	35	50	52			
MSGB1-60		60		20	40	60	62			
MSG1-70		70		20	45	70	72			
MSG1-80	80	20	45	80	82					
MSG1-100	100	20	45	100	102					
MSG1.5-15**	m1.5	15	S1	10	18	22.5	25.5	15	10	25
MSG1.5-18		18		10	22	27	30			
MSGB1.5-18				12	22	27	30			
MSG1.5-20		20		12	25	30	33			
MSGB1.5-20				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			
MSG1.5-40		40		16	35	60	63			
MSG1.5-50		50		18	40	75	78			
MSGB1.5-50				22	40	75	78			
MSGB1.5-60		60		25	45	90	93			
MSG1.5-70		70		20	45	105	108			
MSG1.5-80		80		20	45	120	123			
MSGB1.5-80				25	45	120	123			
MSG1.5-100	100	25	50	150	153					
MSGB2-15**	m2	15	S1	15	24	30	34	20	10	30
MSG2-18		18		12	30	36	40			
MSGB2-18				15	30	36	40			
MSG2-20		20		15	32	40	44			
MSGB2-20				18	32	40	44			
MSGB2-24		24		18	35	48	52			
MSG2-25		25		16	35	50	54			
MSGB2-25				20	35	50	54			
MSGB2-30		30		22	40	60	64			
MSG2-35		35		18	40	70	74			
MSG2-40		40		20	45	80	84			
MSGB2-40	25		45	80	84					
MSG2-60	60	25	55	120	124					

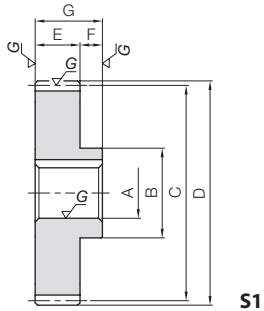
[Caution on Product Characteristics] ① The keyway tolerance is the value before hardening.
② Products marked with "**" have a thin wall section between the keyway and the tooth, so please consider the strength of the thick part when using them. For details, please refer to the web catalog.

Keyway	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number	
Width × Depth	Bending strength	Surface durability	Bending strength	Surface durability				
3 x 1.4	12.1	6.37	1.24	0.65	0.08~0.16	0.020	MSG1A-18	
3 x 1.4 4 x 1.8	14.2	8.04	1.45	0.82		0.027 0.023	MSG1A-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	MSG1A-25 MSGB1-25	
4 x 1.8 4 x 1.8	25.1	19.0	2.56	1.94		0.065 0.061	MSG1A-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	MSG1A-48 MSGB1-48	
4 x 1.8	48.1	55.1	4.91	5.62		0.18	MSG1A-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	MSG1A-70	
6 x 2.8	83.9	147	8.55	15.0		0.47	MSG1A-80	
6 x 2.8	103	224	10.5	22.8		0.69	MSG1A-100	
4 x 1.8	30.8	14.8	3.15	1.51		0.08~0.16	0.050	MSG1A.1.5-15**
4 x 1.8 4 x 1.8	41.0	22.1	4.18	2.26			0.080 0.074	MSG1A.1.5-18 MSGB1.5-18
4 x 1.8 5 x 2.3	48.0	27.9	4.89	2.84	0.098 0.085		MSG1A.1.5-20 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		MSG1A.1.5-40	
6 x 2.8 6 x 2.8	162	193	16.6	19.7	0.57 0.54		MSG1A.1.5-50 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		MSG1A.1.5-70	
6 x 2.8 8 x 3.3	270	494	27.5	50.3	1.39 1.36		MSG1A.1.5-80 MSGB1.5-80	
8 x 3.3	347	787	35.4	80.2	2.13		MSG1A.1.5-100	
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	MSG2A-18 MSGB2-18	
5 x 2.3 6 x 2.8	114	67.6	11.6	6.89		0.22 0.20	MSG2A-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	MSG2A-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	MSG2A-35	
6 x 2.8 8 x 3.3	292	294	29.7	30.0		0.84 0.79	MSG2A-40 MSGB2-40	
8 x 3.3	457	658	46.6	67.1		1.84	MSG2A-60	

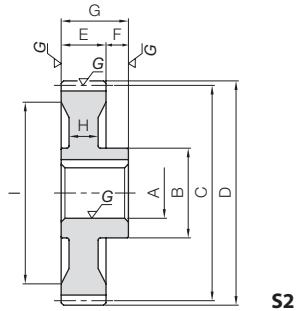


Specifications	
Precision grade	JIS grade N5 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM415
Heat treatment	Carburized*
Tooth hardness	55 to 60HRC

* 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**	m2.5	15	S1	15	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	S2	30	70	137.5	142.5	—	—	—	17	150
MSGB2.5-60		60		40	70	150	155					
MSGA2.5-70		70		40	85	175	180					
MSGA3-15 MSGB3-15**	m3	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	40	20	60	—	—
MSGB4-15**	m4	15	S1	30	48	60	68					
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	S2	45	80	180	188					
MSGB4-50		50		50	85	200	208				26	168

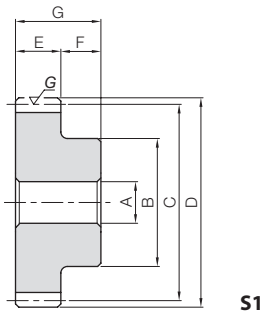
[Caution on Product Characteristics] ① The keyway tolerance is the value before hardening.
② Products marked with "*" have a thin wall section between the keyway and the tooth, so please consider the strength of the thick part when using them. For details, please refer to the web catalog.

Keyway Width x Depth	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
	Bending strength	Surface durability	Bending strength	Surface durability			
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



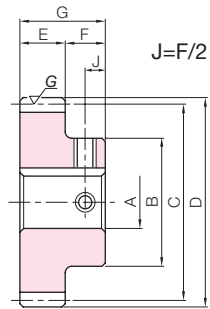
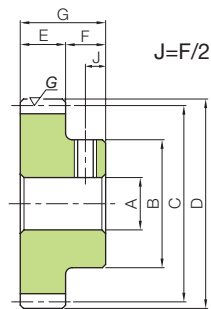
Specifications	
Precision grade	JIS grade N6 (JIS B1702-1: 1999)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	SCM440
Heat treatment	Thermal refined, gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

* 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).



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 KSG1-40	m1	30 40	S1	8 10	25 35	30 40	32 42	10	10	20	17.6 25.1	14.0 27.0	1.80 2.56	1.43 2.75	0.08~0.16	0.086 0.16
KSG1.5-25 KSG1.5-30 KSG1.5-32 KSG1.5-40	m1.5	25 30 32 40	S1	10 15 15 15	30 35 40 50	37.5 45 48 60	40.5 48 51 63	15	14	29	47.0 59.5 64.5 84.7	31.0 47.4 55.0 91.3	4.80 6.06 6.57 8.64	3.16 4.83 5.60 9.31	0.08~0.16	0.19 0.25 0.31 0.51
KSG2-30 KSG2-40	m2	30 40	S1	15 18	50 70	60 80	64 84	20	16	36	141 201	112 217	14.4 20.5	11.5 22.1	0.10~0.20	0.64 1.20
KSG2.5-20 KSG2.5-25 KSG2.5-30 KSG2.5-40	m2.5	20 25 30 40	S1	15 20 20 20	40 50 65 90	50 62.5 75 100	55 67.5 80 105	25	18	43	161 218 275 392	86.0 144 220 425	16.5 22.2 28.1 40.0	8.77 14.7 22.4 43.3	0.10~0.20	0.50 0.77 1.23 2.33
KSG3-25 KSG3-30 KSG3-40	m3	25 30 40	S1	20 20 25	65 80 110	75 90 120	81 96 126	30	20	50	376 476 678	249 381 736	38.4 48.5 69.1	25.4 38.9 75.0	0.10~0.20	1.44 2.16 3.96

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	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



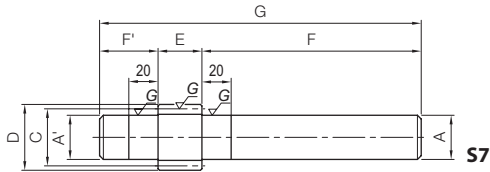
KRGF-H/KRGFD-H
Hardened Ground Racks

Please see Page 226 for more details.



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).



Catalog Number	Module	No. of teeth	Profile shift coefficient	Shape	Shaft diameter (L)		Pitch dia.	Outside dia.	Face width	Shaft diameter (R)		Total Length
					A'	F'				A	F	
SSGS1.5-10 SSGS1.5-12 SSGS1.5-13	m1.5	10	+0.5	S7	12.2		15	19.35		12.2		140
		12	0		13.7	25	18	21	15	13.7	100	
		13	0		15.2		19.5	22.5		15.2		
SSGS2-10 SSGS2-12 SSGS2-13	m2	10	+0.5	S7	16.2		20	25.8		16.2		170
		12	0		18.2	30	24	28	20	18.2	120	
		13	0		20.2		26	30		20.2		
SSGS2.5-10 SSGS2.5-12 SSGS2.5-13	m2.5	10	+0.5	S7	20.2		25	32.25		20.2		195
		12	0		22.7	35	30	35	25	22.7	135	
		13	0		25.2		32.5	37.5		25.2		
SSGS3-10 SSGS3-12 SSGS3-13	m3	10	+0.5	S7	24.2		30	38.7		24.2		220
		12	0		27.2	40	36	42	30	27.2	150	
		13	0		30.2		39	45		30.2		

- [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.

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

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 ($x = 0$)	Number of teeth ($x = +0.5$)	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

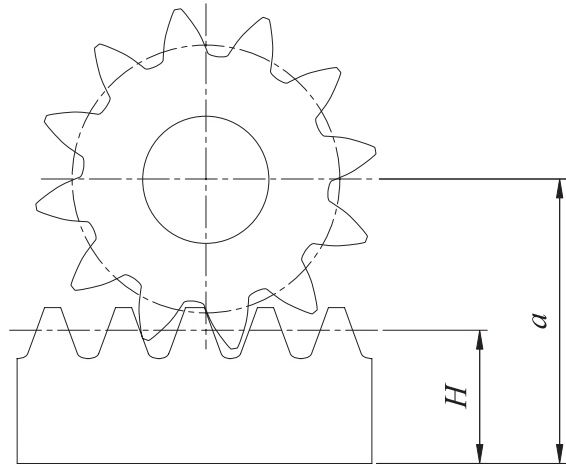
Center distance where number of teeth is 32 to 62 (unit: mm)

Number of teeth ($x = 0$)	Number of teeth ($x = +0.5$)	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 ($x = 0$)	Number of teeth ($x = +0.5$)	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



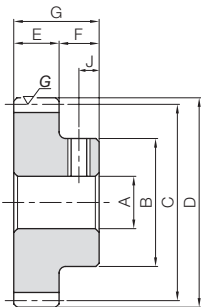
$$a = \frac{zm}{2} + H + xm$$

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



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.



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)	m0.5	30	S1T	5	13	15	16	5	7	12	M4	3.5
SSG0.5-30B (Made to Order)				6								
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)		60		6	28	30	31				M4	
SSG0.5-60B (Made to Order)				8							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)	m0.8	20	S1T	5	13	16	17.6	8	8	16	M4	4
SSG0.8-20B (Made to Order)				6							M4	
SSG0.8-25A (Made to Order)		25		6	16	20	21.6				M4	
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)		60		6	28	48	49.6				M4	
SSG0.8-60B (Made to Order)				8							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	

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

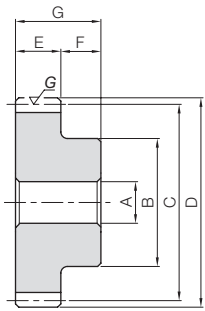
Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
Bending strength	Surface durability	Bending strength	Surface durability			
1.63	0.29	0.17	0.030	0~0.08	0.012	SSG0.5-30A (Made to Order)
					0.011	SSG0.5-30B (Made to Order)
1.78	0.34	0.18	0.035		0.014	SSG0.5-32A (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	SSG0.5-60A (Made to Order)
					0.056	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	SSG0.8-20A (Made to Order)
					0.017	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	SSG0.8-60A (Made to Order)
					0.14	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)





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

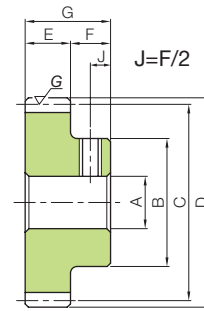
* The precision grade of J Series products is equivalent to the value shown in the table.
** Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).



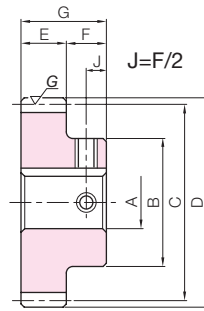
S1

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			
SSG1-15	15	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	8	10	18	4.94	2.14	0.50	0.22	0.08~0.16	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			25	30	32				8.11	4.48	0.83	0.46			0.072
SSG1-32	32	10		25	32	34	8	10	18	7.37	4.27	0.75	0.43	0.08~0.16	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			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	12		35	56	58	8	10	18	14.9	13.7	1.52	1.40	0.08~0.16	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			50	80	82				22.6	28.8	2.30	2.94		0.44	
SSG1-90	90	15		50	90	92	8	10	18	25.8	36.9	2.64	3.77	0.08~0.16	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



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	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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SSG1-80 J BORE																
SSG1-90 J BORE																
SSG1-100 J BORE																
SSG1-120 J BORE																

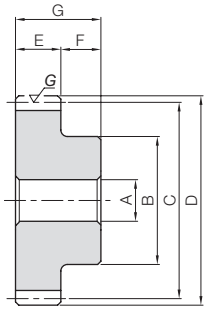
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.





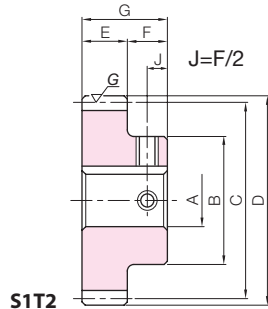
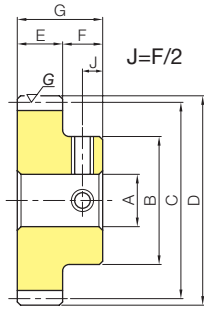
Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

* 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).



S1

J Series



S1T2

S1K



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

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		
SSG1.5-15	15	10		18	22.5	25.5	15	14	29	12.5	4.35	1.27	0.44	0.08~0.16	0.057
SSG1.5-16	16			20	24	27				13.8	5.02	1.41	0.51		0.070
SSG1.5-18	18			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	12		26	33	36	15	14	29	18.6	8.41	1.89	0.86	0.08~0.16	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			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		15	34	40.5	43.5	15	14	29	24.7	13.1	2.52	1.33	0.08~0.16	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	S1	15	42	52.5	55.5	15	14	29	34.9	22.4	3.56	2.29	0.08~0.16	0.37
SSG1.5-36	36			45	54	57				36.2	23.8	3.70	2.43		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		18	50	66	69	15	14	29	46.7	36.2	4.77	3.69	0.08~0.16	0.58
SSG1.5-45	45			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		20	60	84	87	15	14	29	62.8	59.9	6.40	6.11	0.08~0.16	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			60	112.5	115.5				81.7	102	8.33	10.4		1.41
SSG1.5-80	80			70	120	123	15	14	29	88.0	117	8.97	12.0	0.08~0.16	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

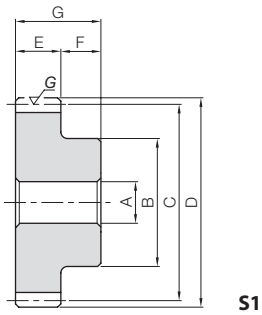
Bore H7		* The product shapes of J Series items are identified by background color.															
Keyway Js9	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	
Screw size	4x1.8		5x2.3				6x2.8				8x3.3			10x3.3		12x3.3	
Catalog Number	M4						M5				M6			M8			
SSG1.5-15 J BORE																	
SSG1.5-16 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																	
SSG1.5-25 J BORE																	
SSG1.5-26 J BORE																	
SSG1.5-27 J BORE																	
SSG1.5-28 J BORE																	
SSG1.5-30 J BORE																	
SSG1.5-32 J BORE																	
SSG1.5-34 J BORE																	
SSG1.5-35 J BORE																	
SSG1.5-36 J BORE																	
SSG1.5-38 J BORE																	
SSG1.5-40 J BORE																	
SSG1.5-42 J BORE																	
SSG1.5-44 J BORE																	
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SSG1.5-48 J BORE																	
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SSG1.5-55 J BORE																	
SSG1.5-56 J BORE																	
SSG1.5-60 J BORE																	
SSG1.5-64 J BORE																	
SSG1.5-70 J BORE																	
SSG1.5-75 J BORE																	
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.



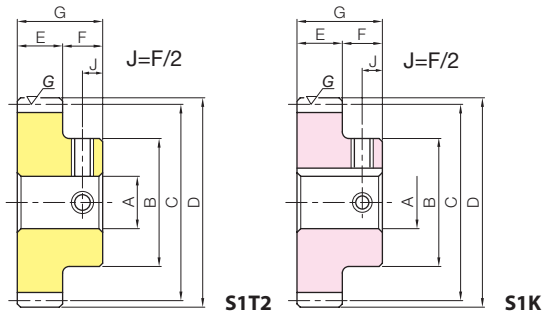
Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

* 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).



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)
			AH7	B	C	D	E	F	G	Bending strength	Surface durability	Bending strength	Surface durability		
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			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	S1	15	38	48	52	20	16	36	49.8	24.7	5.08	2.52	0.10~0.20	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			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	S1	18	50	72	76	20	16	36	85.9	57.8	8.76	5.90	0.10~0.20	0.81
SSG2-38	38			50	76	80				92.1	64.8	9.39	6.60		0.89
SSG2-40	40			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	S1	25	65	120	124	20	16	36	149	156	15.2	15.9	0.10~0.20	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



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

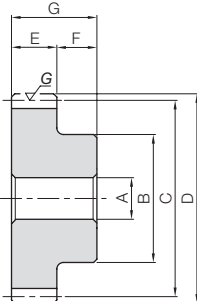
Bore H7		* The product shapes of J Series items are identified by background color.															
Keyway Js9		12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45
Screw size		4x1.8	5x2.3				6x2.8				8x3.3			10x3.3		12x3.3	14x3.8
Catalog Number		M4					M5				M6			M8			M10
SSG2-14 J BORE																	
SSG2-15 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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SSG2-40 J BORE																	
SSG2-42 J BORE																	
SSG2-44 J BORE																	
SSG2-45 J BORE																	
SSG2-48 J BORE																	
SSG2-50 J BORE																	
SSG2-55 J BORE																	
SSG2-56 J BORE																	
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.



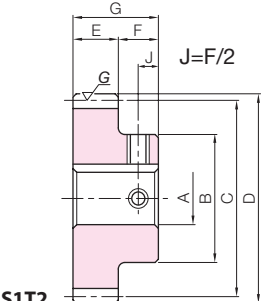
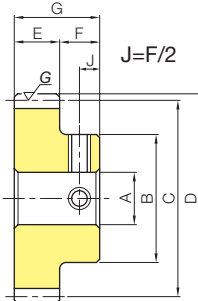
Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

* 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).



S1

J Series



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

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		
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			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	S1	18	48	60	65	25	18	43	97.3	49.2	9.92	5.02	0.10~0.20	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	S1	20	70	95	100	25	18	43	180	129	18.3	13.2	0.10~0.20	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	S1	25	80	175	180	25	18	43	324	399	33.1	40.7	0.10~0.20	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

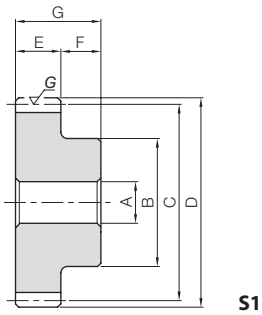
Bore H7		* The product shapes of J Series items are identified by background color.															
Keyway J _{s9}		15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Screw size		5×2.3				6×2.8				8×3.3				10×3.3		12×3.3	14×3.8
Catalog Number		M4				M5				M6				M8		M10	
SSG2.5-14 J BORE																	
SSG2.5-15 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																	
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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																	
SSG2.5-35 J BORE																	
SSG2.5-36 J BORE																	
SSG2.5-38 J BORE																	
SSG2.5-40 J BORE																	
SSG2.5-42 J BORE																	
SSG2.5-44 J BORE																	
SSG2.5-45 J BORE																	
SSG2.5-48 J BORE																	
SSG2.5-50 J BORE																	
SSG2.5-55 J BORE																	
SSG2.5-56 J BORE																	
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.



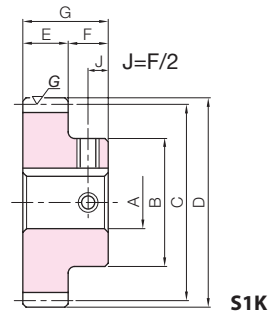
Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

* 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).



S1

J Series



S1K



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

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		
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			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	S1	20	60	75	81	30	20	50		178	94.5	18.1	9.64	0.10~0.20	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			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	S1	25	80	114	120	30	20	50		287	210	29.2	21.4	0.10~0.20	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			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	S1	30	100	210	216	30	20	50		560	699	57.1	71.3	0.10~0.20	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

Bore H7	* The product shapes of J Series items are identified by background color.															
	16	17	18	19	20	22	25	28	30	32	35	40	45	50		
Keyway J _{S9}	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																
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																
SSG3-21 J BORE																
SSG3-22 J BORE																
SSG3-24 J BORE																
SSG3-25 J BORE																
SSG3-26 J BORE																
SSG3-27 J BORE																
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SSG3-38 J BORE																
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SSG3-55 J BORE																
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SSG3-80 J BORE																

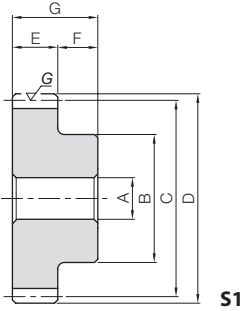
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.





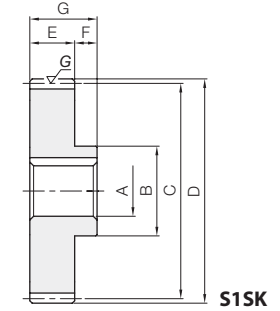
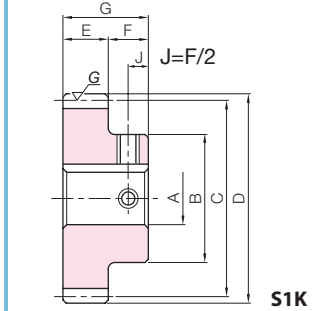
Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth (excludes semi-custom products)

* 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).



Catalog Number	No. of teeth	Shape	Bore		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						Bending strength	Surface durability	Bending strength	Surface durability		
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			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	S1	25	90	128	136	40	25	65	544	358	55.5	36.5	0.10~0.20	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	S1	30	90	176	184	40	25	65	760	646	77.5	65.8	0.10~0.20	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	S1	40	110	224	232	40	25	65	1020	1060	104	109	0.10~0.20	13.9
SSG4-60	60			110	240	248				1110	1230	113	125		15.7
SSG4-62S	62			120	248	256				1240	1360	127	138		16.8
SSG4-64S	64			130	256	264				1290	1450	131	148		18.1
SSG4-65S	65			130	260	268				1310	1500	134	153		18.6
SSG4-66S	66	S1	40	130	264	272	40	25	65	1340	1550	136	158	0.10~0.20	19.2
SSG4-68S	68			140	272	280				1380	1650	141	168		20.6
SSG4-70S	70			140	280	288				1430	1750	146	178		21.7
SSG4-80S	80			160	320	328				1550	2150	158	219		28.6
SSG4-90S	90			180	360	368				1770	2750	181	281		36.3
SSG4-100S	100	S1	40	200	400	408	40	25	65	2000	3440	204	351	0.10~0.20	45.0
SSG4-110S	110			220	440	448				2220	4190	226	427		54.6
SSG4-120S	120			240	480	488				2450	5010	249	511		65.1

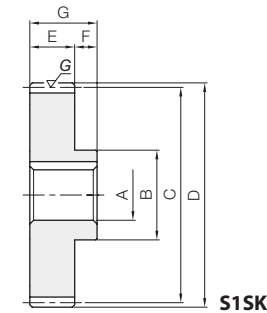
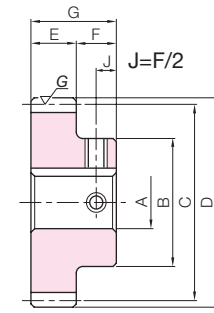
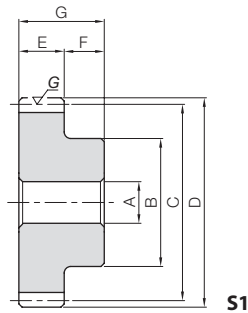
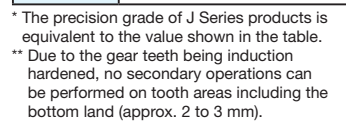
[Caution on Product Characteristics] ① Products with S at the end of the catalog number are semi-custom stock products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② For S semi-custom standard products weighing 15 kg or more, eyebolt screw threads (2-M12 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.



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

Bore H7		* The product shapes of J Series items are identified by background color.																						
Keyway J ₅₉		20	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	
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		25×5.4		28×6.4				
Catalog Number		M5	M6			M8		M10		M12		M16		—										
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.



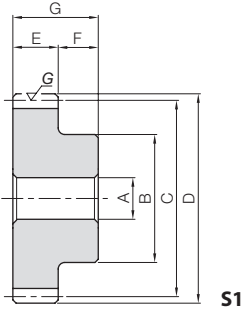
Bore H7	* The product shapes of J Series items are identified by background color.																											
Keyway .js9	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	120	130	140					
Screw size	8×3.3			10×3.3		12×3.3	14×3.8		16×4.3	18×4.4		20×4.9		22×5.4			28×6.4			32×7.4		36×8.4						
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																									
SSG5-62 SJ BORE						Ask for Quote																						
SSG5-64 SJ BORE						Ask for Quote																						
SSG5-65 SJ BORE						Ask for Quote																						
SSG5-66 SJ BORE						Ask for Quote																						
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																									
SSG6-45 SJ BORE			Ask for Quote																									
SSG6-48 SJ BORE			Ask for Quote																									
SSG6-50 SJ BORE			Ask for Quote																									
SSG6-55 SJ BORE			Ask for Quote																									
SSG6-56 SJ BORE			Ask for Quote																									
SSG6-60 SJ BORE			Ask for Quote																									
SSG6-62 SJ BORE						Ask for Quote																						
SSG6-64 SJ BORE						Ask for Quote																						
SSG6-65 SJ BORE						Ask for Quote																						
SSG6-66 SJ BORE						Ask for Quote																						
SSG6-68 SJ BORE						Ask for Quote																						
SSG6-70 SJ BORE						Ask for Quote																						
SSG6-80 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.



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	—

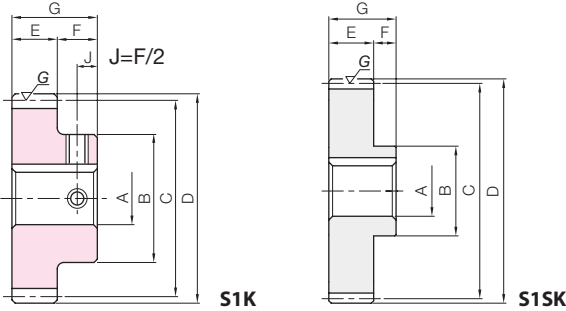
* The precision grade of J Series products is equivalent to the value shown in the table.
** Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).



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
SSG8-20S	20	S1	30	130	160	176	75	35	110	2300	1080	235	110
SSG8-25S	25			160	200	216				2920	1620	298	165
SSG8-30S	30			190	240	256				3750	2370	382	242
SSG8-32S	32			200	256	272				4080	2720	416	277
SSG8-35S	35			210	280	296				4590	3280	468	335
SSG8-36S	36		40	210	288	304				4760	3480	486	355
SSG8-40S	40			220	320	336				5060	4030	516	411
SSG8-42S	42			230	336	352				5380	4470	548	456
SSG8-44S	44			230	352	368				5700	4930	581	502
SSG8-45S	45			230	360	376				5860	5170	598	527
SSG8-48S	48	S1	40	240	384	400	90	40	130	6350	5920	647	603
SSG8-50S	50			240	400	416				6670	6450	680	657
SSG8-55S	55			240	440	456				7490	7850	764	801
SSG8-56S	56			240	448	464				7650	8150	780	831
SSG8-60S	60			240	480	496				8310	9390	848	958
SSG10-20S	20		40	160	200	220				3980	1920	406	196
SSG10-25S	25			200	250	270				5480	3100	559	317
SSG10-30S	30			240	300	320				7030	4550	717	464
SSG10-32S	32			250	320	340				7110	4840	725	493
SSG10-35S	35			260	350	370				7990	5840	815	596
SSG10-36S	36	S1	50	270	360	380				8290	6200	845	632
SSG10-40S	40			280	400	420				9480	7740	967	789

[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.

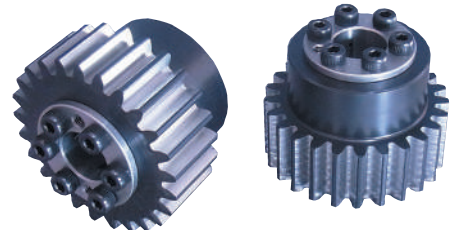
J Series



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

Bore H7	* The product shapes of J Series items are identified by background color.																											
Keyway J _{S9}	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.



Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1999)*
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

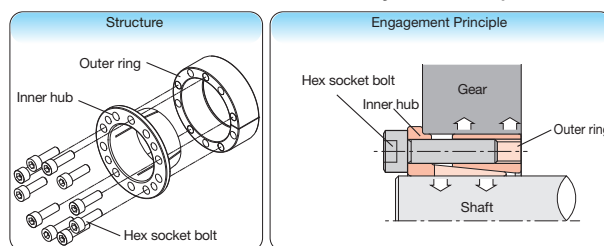
Features of F Series

- 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.

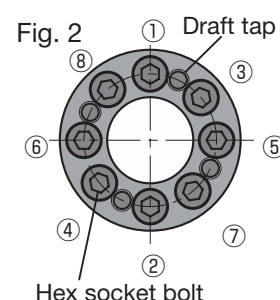
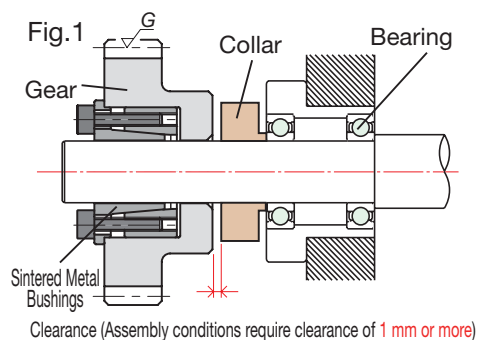


Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Allowable torque (N·m)	Surface durability
SSG2-25	25	40	50	54	20	16	52.7	27.0
SSG2-26	26	42	52	56			55.7	29.3
SSG2-27	27	44	54	58			58.6	31.7
SSG2-28	28	45	56	60			61.6	34.2
SSG2-29	29	48	58	62			64.6	36.8
SSG2-30	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.

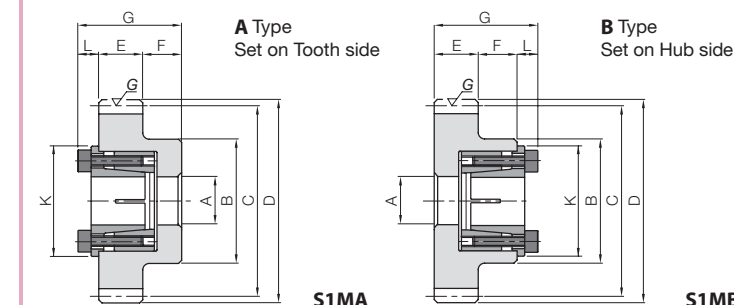
Mounting Method and Precautions

- 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%.



Removal Method and Precautions

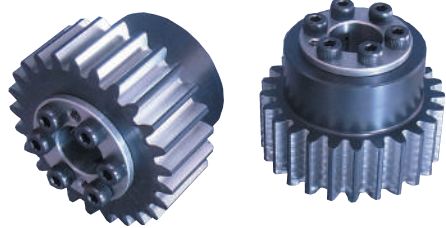
- ① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
- ② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
- ③ The washer and thread surfaces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



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	
	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	
	Size				M4×15					M5×18				M6×20		
	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

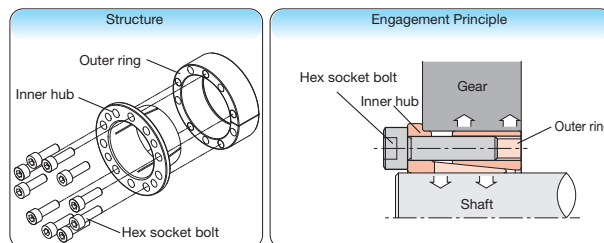
Features of F Series

- 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

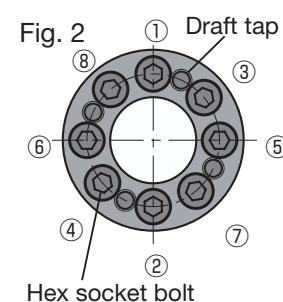
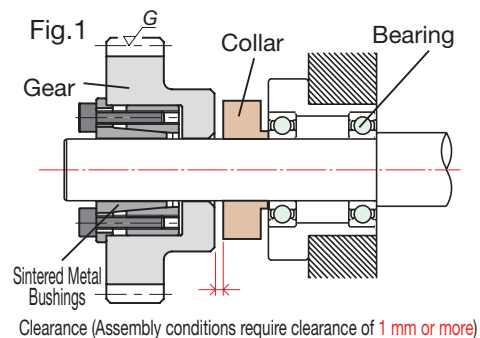
The structure consists of an outer ring and inner ring with split grooves in the tapered part, and hexagon socket head cap screws that convert the force into tightening strength.

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.



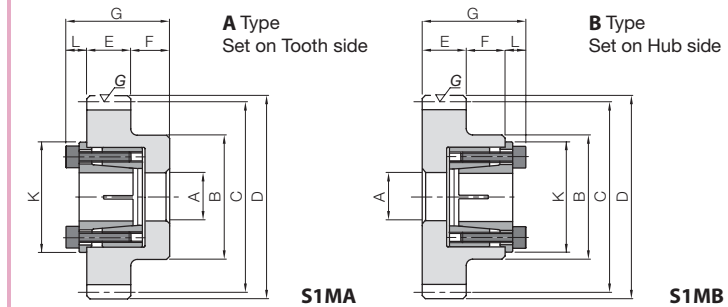
Mounting Method and Precautions

- 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%.



Removal Method and Precautions

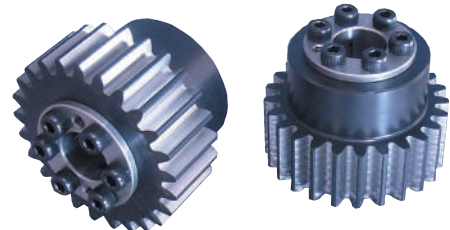
- ① Turn off the power source (supply), check that no load is applied to the gear, and confirm that there is no danger due to falling, etc.
- ② Insert removed bolts into all draft taps, and gradually and evenly tighten each bolt in diagonal order until removal is complete.
- ③ The washer and thread surfaces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



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
	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
	Size		M5×18					M6×20			
	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

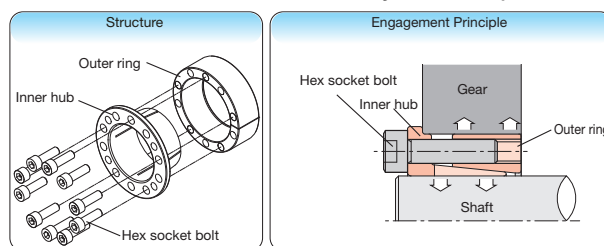
Features of F Series

- 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.

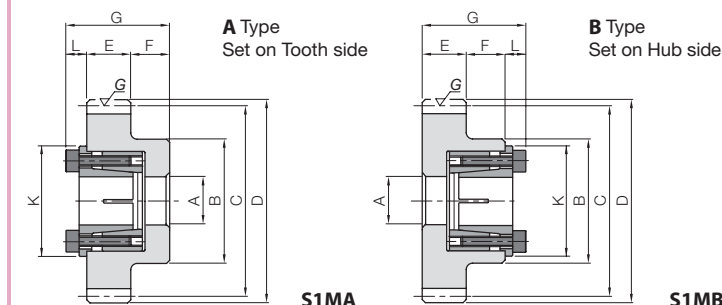
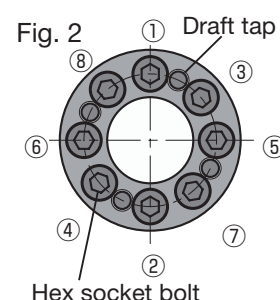
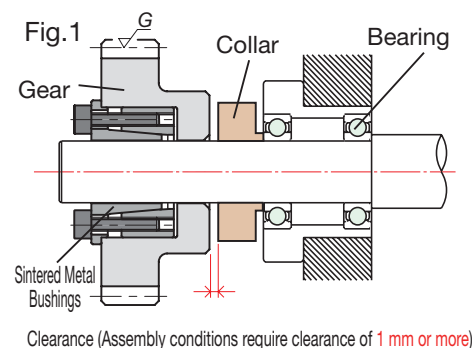


Mounting Method and Precautions

- 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%.

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.



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
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		10.5	
	K	42	44	47	50	52	54	62	67	72	77
Total Length	G	58		58.5		60		60.5		60.5	
Hex socket bolt	Qty	8		10		8		10		14	
	Size	M5×18		M5×18		M6×20		M6×20		M6×20	
	Tightening torque N·m	8.8		8.8		15.7		15.7		15.7	
Bushing weight (g)		144	165	188	195	208	219	325	380	435	485



Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1999)*
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.

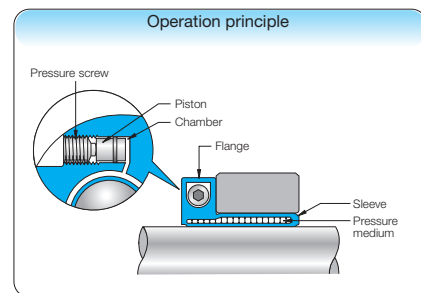
Please see Page 16 for more details.

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.



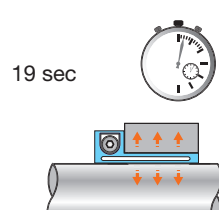
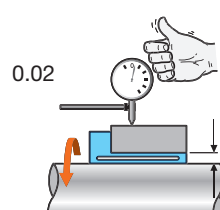
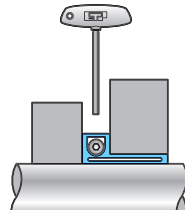
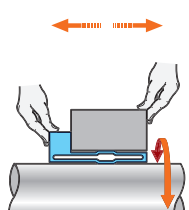
Effects of ETP-E Plus

Easy and accurate positioning

Helps save space

High concentricity

Secure and speedy installation



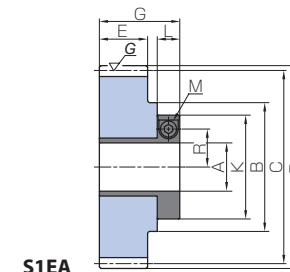
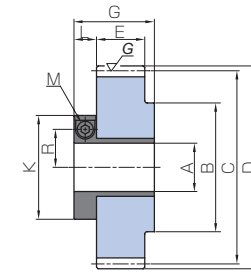
Product Precautions

Page 50

Precautions for Standard Machined Products

Pages 42-44

E Series



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
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



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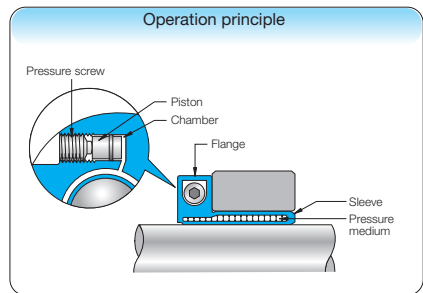
Please see Page 16 for more details.

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.



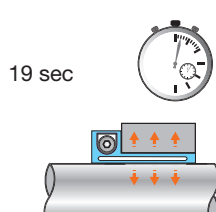
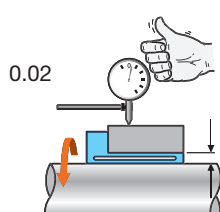
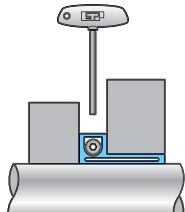
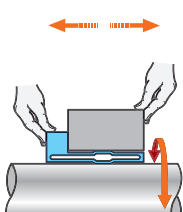
Effects of ETP-E Plus

Easy and accurate positioning

Helps save space

High concentricity

Secure and speedy installation



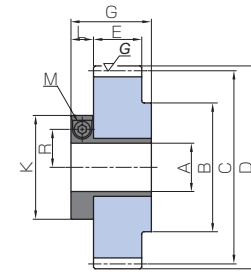
Product Precautions

Page 50

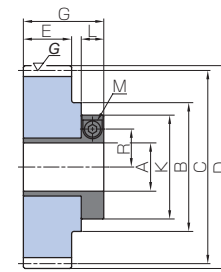
Precautions for Standard Machined Products

Pages 42~44

E Series



S1EA



S1EB



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

Bore A	* The product shapes of E Series items are identified by background color.							
Catalog Number	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).



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.

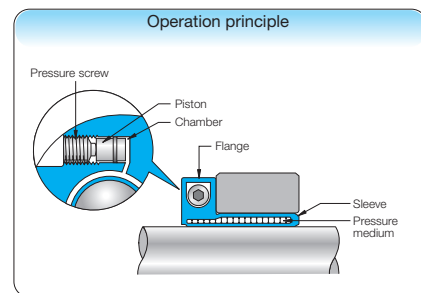
Please see Page 16 for more details.

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.



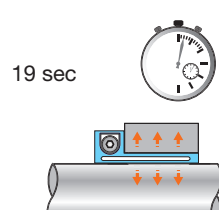
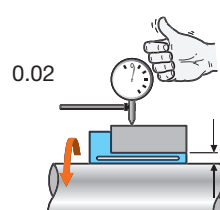
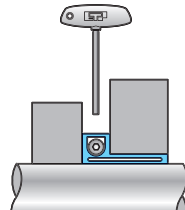
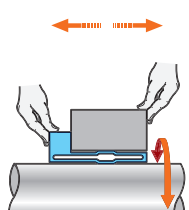
Effects of ETP-E Plus

Easy and accurate positioning

Helps save space

High concentricity

Secure and speedy installation



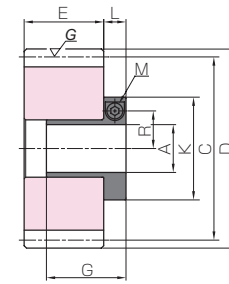
Product Precautions

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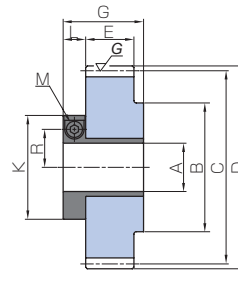
Precautions for Standard Machined Products

Pages 42-44

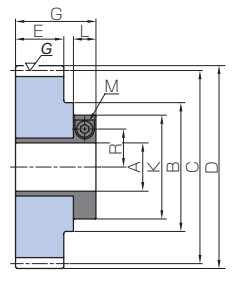
E Series



SSE



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.



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.

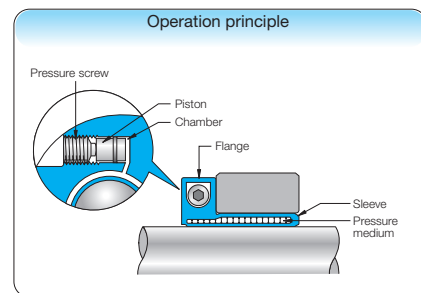
Please see Page 16 for more details.

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.



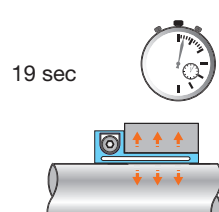
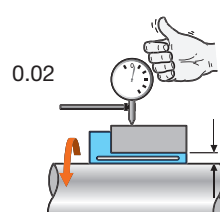
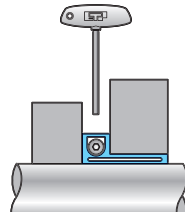
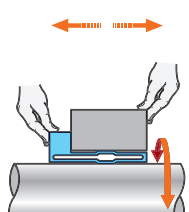
Effects of ETP-E Plus

Easy and accurate positioning

Helps save space

High concentricity

Secure and speedy installation



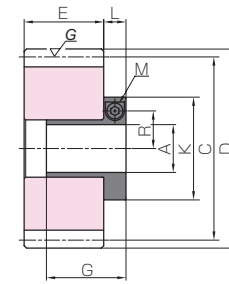
Product Precautions

Page 50

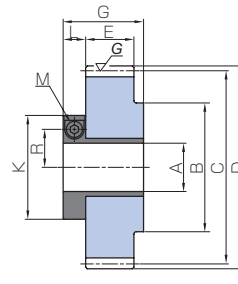
Precautions for Standard Machined Products

Pages 42~44

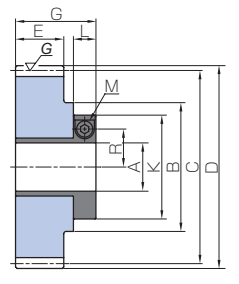
E Series



SSE



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	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.



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.

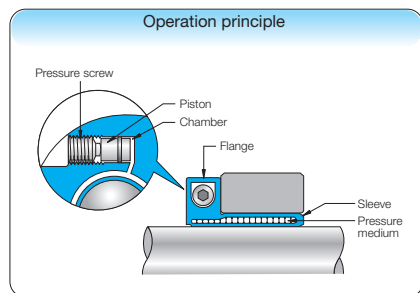
Please see Page 16 for more details.

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.



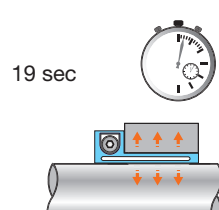
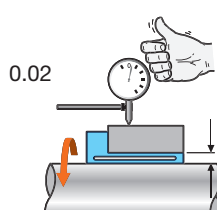
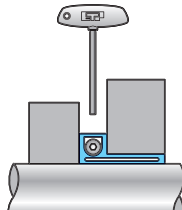
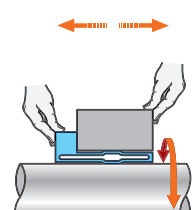
Effects of ETP-E Plus

Easy and accurate positioning

Helps save space

High concentricity

Secure and speedy installation



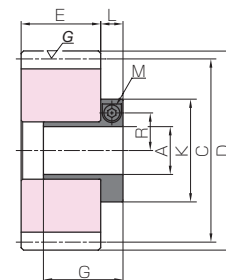
Product Precautions

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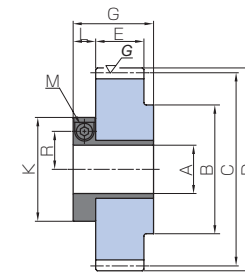
Precautions for Standard Machined Products

Pages 42~44

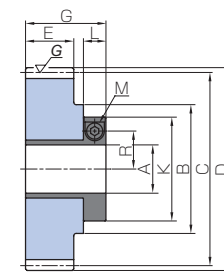
E Series



S5E



S1EA



S1EB

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

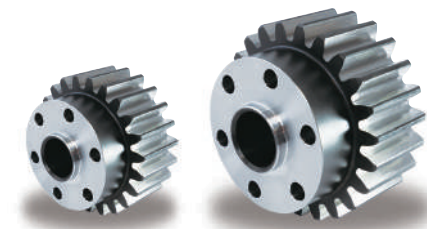
Bore A		* The product shapes of E Series items are identified by background color.																	
Catalog Number		20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	70	80
SSG4-15 E BORE		*	*																
SSG4-16 E BORE		*	*																
SSG4-18 E BORE		*	*	*	*	*	*	*											
SSG4-20 E BORE		*	*	*	*	*	*	*											
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				24				24	
Screw M		1-M10				1-M16				1-M20				1-M20				1-M20	
Recommended fastening torque of screw M (N·m)		7				24				40				40				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.

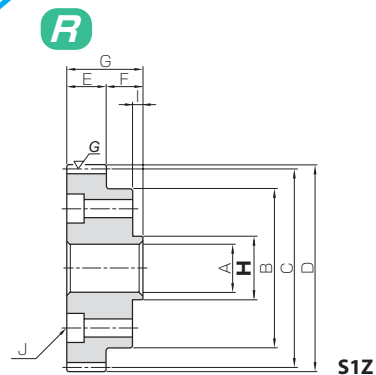
* Tolerance of the target shaft diameter is h7 (g6, h6).

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

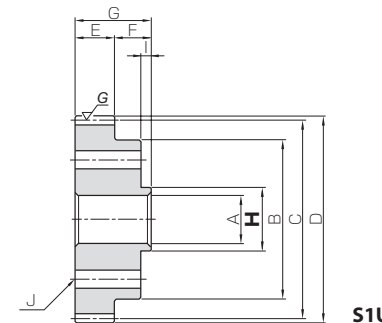


Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth and portions given secondary operation

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



S1Z



S1U

Recommended mating rack

SRGF/SRGFD
Hardened Ground Racks

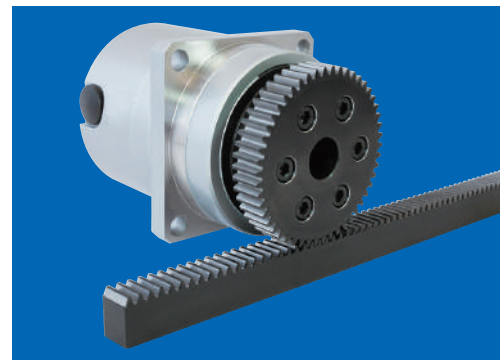
Please see Page 230 for more details.

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	m1.5	50	S1Z	18	60	75	78	15	14	29	24	4
SSG2-40R24	m2	40	S1Z	20	60	80	84	20	16	36	24	4
SSG2.5-27R24	m2.5	27	S1U	20	56	67.5	72.5	25	18	43	24	4
SSG2.5-28R24		S1Z	60		70	75						
SSG2.5-30R24			65		75	80						
SSG2.5-42R32			75		105	110	32					
SSG3-24R24	m3	24	S1Z	20	58	72	78	30	20	50	24	4
SSG3-25R24		60			75	81						
SSG3-26R24		62			78	84						
SSG3-30R32		25		75	90	96	32					
SSG3-32R32				75	96	102						
SSG3-34R32				75	102	108						
SSG3-35R32				80	105	111						
SSG3-36R32				80	108	114						
SSG4-24R32	m4	24	S1Z	20	75	96	104	40	25	65	32	4
SSG4-25R32		25			80	100	108					
SSG5-20R32	m5	20	S1Z	25	82	100	110	50	25	75	32	4
SSG5-30R47		30			120	150	160				47	6
SSG6-25R47	m6	25	S1Z	30	125	150	162	60	28	88	47	6
SSG6-30R60		30			150	180	192				60	

Mounting hole specification						Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
J												
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	6	60	M8×35	228	138	23.3	14.1	0.10~0.20	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
						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

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	

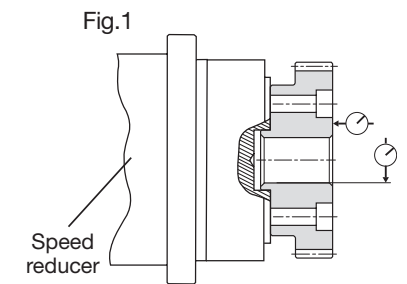
(R Series Catalog Numbers)

R series catalog numbers are composed as follows:

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

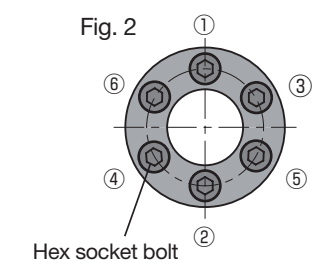
Mounting Method and Precautions

- 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)



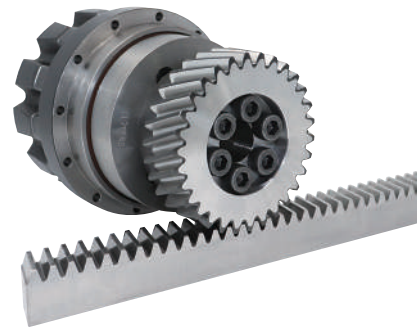
Removal Method and Precautions

- 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.

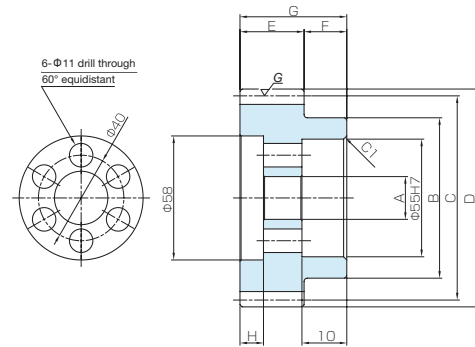


We recommend ideal pinions for speed reducers

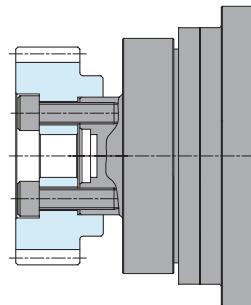
- ① CP type and helical type stock gears can be given secondary operations according to the customer's specifications at "KHK Quick-Mod Gears". See Page 24 for more details
- ② High-precision gears for reduction gears are also available with a short delivery time. Estimates are available upon the submission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



Speed reducer model number GH7 pinion

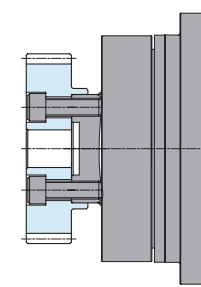
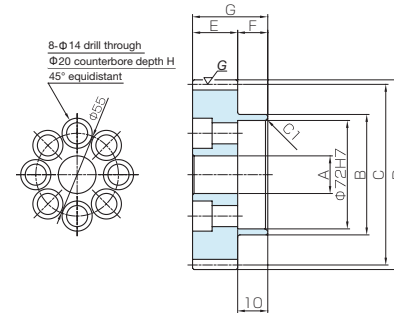


S1GH7



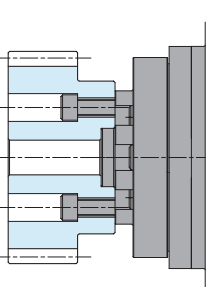
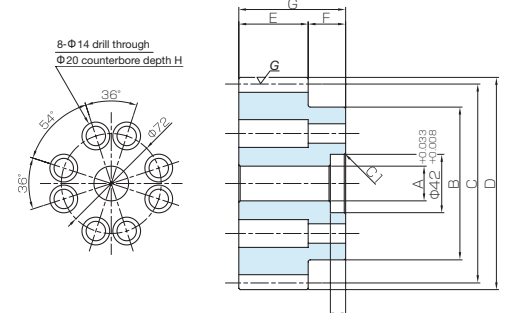
Speed reducer model number GH17 pinion

S1GH17



Speed reducer model number GH24 pinion

S1GH24



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
					AH7	B	C	D	E	F	G
GH7	SSG3-30RGH7	m3	30	S1GH7	25	75	90	96	30	20	50
	SSCPG10-30RGH7	CP10 (m3.1831)	30	S1GH7	20	75	95.49	101.86	30	20	50
	ZSTP3-30LRGH7	m3(CP10)	30	S1GH7	25	85	95.49	104	30	20	50

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
					AH7	B	C	D	E	F	G
GH17	SSG3-40RGH17	m3	40	S1GH17	25	80	120	126	30	20	50
	SSCPG10-40RGH17	CP10 (m3.1831)	40	S1GH17	25	80	127.32	133.69	30	20	50
	ZSTP3-30LRGH17	m3(CP10)	30	S1GH17	25	85	95.49	104	30	20	50

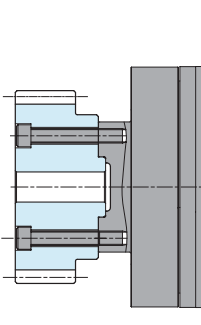
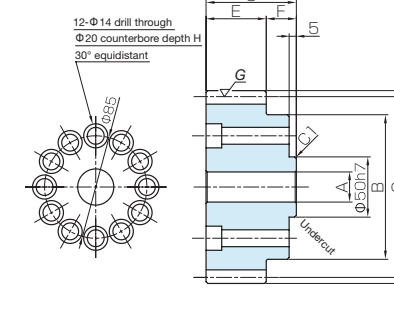
Speed reducer model number	Catalog Number	Module/pitch	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length
					AH7	B	C	D	E	F	G
GH24	SSG4-30RGH24	m4	30	S1GH24	20	90	120	128	40	25	65
	SSCPG15-30RGH24	CP15 (m4.7746)	30	S1GH24	25	110	143.24	152.79	50	27	77
	ZSTP4-30LRGH24	m4(CP13.333)	30	S1GH24	25	110	127.32	138	40	25	65

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
					AH7	B	C	D	E	F	G
GH40	SSG5-30RGH40	m5	30	S1GH40	25	120	150	160	50	25	75
	SSCPG15-30RGH40	CP15 (m4.7746)	30	S1GH40	25	110	143.24	152.79	50	27	77
	ZSTP5-24LRGH40	m5(CP16.667)	24	S1GH40	25	110	127.32	142	50	25	75

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
					AH7	B	C	D	E	F	G
GH100	SSG6-30RGH100	m6	30	S1GH100	30	150	180	192	60	28	88
	SSCPG20-30RGH100	CP20 (m6.3662)	30	S1GH100	30	150	190.99	203.72	60	30	90

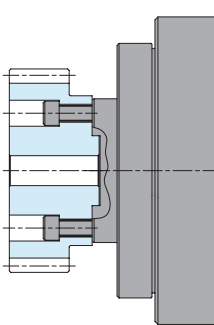
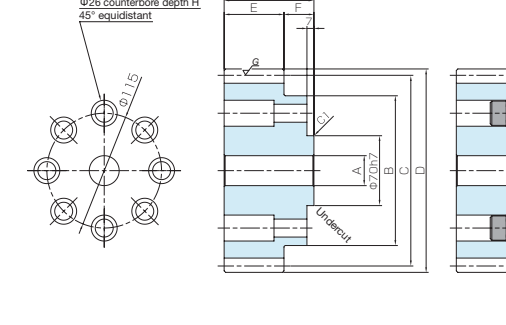
Speed reducer model number GH40 pinion

S1GH40



Speed reducer model number GH100 pinion

S1GH100



Counterbore depth	Included screws	Allowable torque (N·m)	Weight (kg)	Mating rack	Catalog Number	Speed reducer model number
H		Bending strength Surface durability				
11	M10×45	251 209	1.422	SRGF3-1000	SSG3-30RGH7	GH7
11	M10×45	283 240	1.635	SRGCPF10-1000	SSCPG10-30RGH7	
11	M10×45	551 676	1.808	ZST3-1000R	ZSTP3-30LRGH7	

Counterbore depth	Included screws	Allowable torque (N·m)	Weight (kg)	Mating rack	Catalog Number	Speed reducer model number
H		Bending strength Surface durability				
13	M12×45	358 407	2.281	SRGF3-1000	SSG3-40RGH17	GH17
13	M12×45	403 466	2.616	SRGCPF10-1000	SSCPG10-40RGH17	
13	M12×45	551 676	1.406	ZST3-1000R	ZSTP3-30LRGH17	

Counterbore depth	Included screws	Allowable torque (N·m)	Weight (kg)	Mating rack	Catalog Number	Speed reducer model number
H		Bending strength Surface durability				
29	M12×55	595 501	3.627	SRGF4-1000	SSG4-30RGH24	GH24
41	M12×55	978 821	6.808	SRGCPF15-1000	SSCPG15-30RGH24	
29	M12×55	986 972	4.615	ZST4-1000R	ZSTP4-30LRGH24	

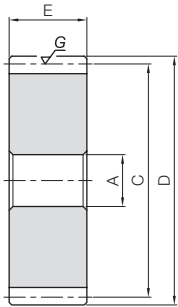
Counterbore depth	Included screws	Allowable torque (N·m)	Weight (kg)	Mating rack	Catalog Number	Speed reducer model number
H		Bending strength Surface durability				
13	M12×75	1070 916	7.230	SRGF5-1000	SSG5-30RGH40	GH40
15	M12×75	978 821	6.431	SRGCPF15-1000	SSCPG15-30RGH40	
13	M12×75	1980 1850	5.022	ZST5-1000R	ZSTP5-24LRGH40	

Counterbore depth	Included screws	Allowable torque (N·m)	Weight (kg)	Mating rack	Catalog Number	Speed reducer model number
H		Bending strength Surface durability				
33	M16×75	1850 1600	12.754	SRGF6-1000	SSG6-30RGH100	GH100
35	M16×75	2090 1850	14.462	SRGCPF20-1000	SSCPG20-30RGH100	

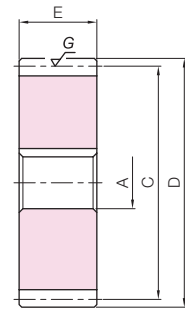


Specifications	
Precision grade	JIS grade N7 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	Gear teeth induction hardened**
Tooth hardness	50 to 60HRC
Surface treatment	Black oxide coated except for teeth

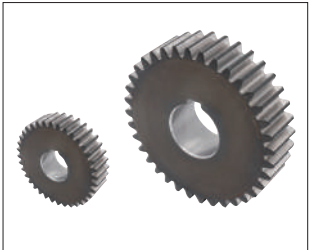
* The precision grade of J Series products is equivalent to the value shown in the table.
** Due to the gear teeth being induction hardened, no secondary operations can be performed on tooth areas including the bottom land (approx. 2 to 3 mm).



S5



S5K



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

Catalog Number	Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
				A _{H7}	C	D	E	Bending strength	Surface durability	Bending strength	Surface durability		
SSAG1-25	m1	25	S5	8	25	27	10	7.92	3.82	0.81	0.39	0.08~0.16	0.035
SSAG1-30		30			30	32		10.2	5.57	1.04	0.57		0.052
SSAG1-36		36			36	38		10.7	6.77	1.10	0.69		0.074
SSAG1.5-16	m1.5	16	S5	10	24	27	15	13.8	5.02	1.41	0.51	0.08~0.16	0.044
SSAG1.5-18		18			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		30	15	15	45	48		28.5	16.3	2.91	1.66		0.17
SSAG1.5-32		32			48	51		31.1	18.6	3.17	1.90		0.19
SSAG1.5-36		36			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	m2	15	S5	10	30	34	20	29.6	10.5	3.01	1.07	0.10~0.20	0.099
SSAG2-16		16			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			40	44		38.3	16.6	3.91	1.69		0.17
SSAG2-25		25	18	15	50	54		52.7	27.0	5.38	2.75		0.28
SSAG2-30		30			60	64		67.6	39.5	6.89	4.03		0.42
SSAG2-32		32			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	m2.5	15	S5	15	37.5	42.5	25	48.1	17.4	4.91	1.77	0.10~0.20	0.18
SSAG2.5-18		18			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		30	20	20	75	80		132	78.7	13.5	8.03		0.81
SSAG2.5-32		32			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.

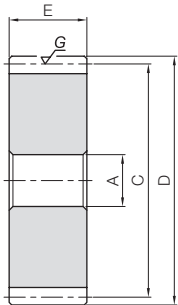
Bore H7	* The product shapes of J Series items are identified by background color.																			
	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Keyway J9	3×1.4	4×1.8																		
Screw size																				
Catalog Number	—																			
SSAG1-25J BORE																				
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																				
SSAG2.5-18J BORE																				
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.



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).

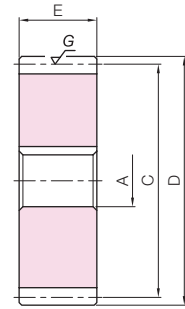


S5

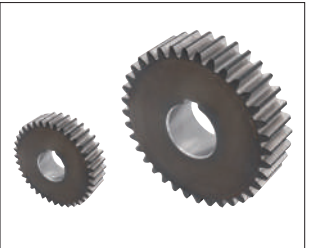
Catalog Number	Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
				A _{H7}	C	D	E	Bending strength	Surface durability	Bending strength	Surface durability		
SSAG3-15	m3	15	S5	15	45	51	30	83.1	30.5	8.48	3.11	0.10~0.20	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			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	25	20	96	102	30	229	146	23.4	14.9	0.10~0.20	1.59
SSAG3-36		36			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

Catalog Number	Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)
				A _{H7}	C	D	E	Bending strength	Surface durability	Bending strength	Surface durability		
SSAG4-15	m4	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	20	144	152	50	634	458	64.7	46.7	0.10~0.22	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	m5	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	m6	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.



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		5x2.3			6x2.8				8x3.3			10x3.3		12x3.3	14x3.8	
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																

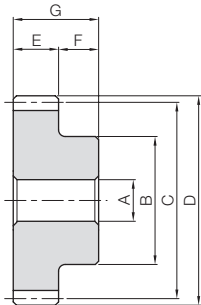
To order J Series products, please specify: **Catalog No. + J + BORE.**

Bore H7	* The product shapes of J Series items are identified by background color.															
Keyway J _{s9}	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.



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



S1

Catalog Number	Module	No. of teeth	Shape	Bore		Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque			
				AH7	B							Bending strength		Surface durability	
KS1.5-20 (made to order)	m1.5	20	S1	8	24	30	33	15	14	29	34.3	3.49	6.83	0.70	KS1.5-20 (made to order)
KS1.5-25 (made to order)		25			30	37.5	40.5								
KS1.5-30 (made to order)		30			38	45	48								
KS2-20 (made to order)	m2	20		12	32	40	44	20	16	36	81.2	8.28	16.7	1.70	KS2-20 (made to order)
KS2-25 (made to order)		25			40	50	54								
KS2-30 (made to order)		30			50	60	64								
KS2.5-20 (made to order)	m2.5	20		15	40	50	55	25	18	43	159	16.2	33.5	3.41	KS2.5-20 (made to order)
KS2.5-25 (made to order)		25			50	62.5	67.5								
KS2.5-30 (made to order)		30			65	75	80								
KS3-20 (made to order)	m3	20		20	50	60	66	30	20	50	274	28.0	59.1	6.02	KS3-20 (made to order)
KS3-25 (made to order)		25			60	75	81								
KS3-30 (made to order)		30			75	90	96								
KS4-20 (made to order)	m4	20		20	65	80	88	40	25	65	650	66.3	145	14.8	KS4-20 (made to order)
KS4-25 (made to order)		25			80	100	108								
KS4-30 (made to order)		30			90	120	128								
KS5-20 (made to order)	m5	20		25	82	100	110	50	25	75	1270	129	290	29.6	KS5-20 (made to order)
KS5-25 (made to order)		25			105	125	135								
KS5-30 (made to order)		30			120	150	160								

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

Backlash (mm)	Weight (kg)	Catalog Number
0.10~0.22	0.12	KS1.5-20 (made to order)
	0.20	KS1.5-25 (made to order)
	0.29	KS1.5-30 (made to order)
0.12~0.26	0.27	KS2-20 (made to order)
	0.43	KS2-25 (made to order)
	0.66	KS2-30 (made to order)
0.14~0.28	0.50	KS2.5-20 (made to order)
	0.82	KS2.5-25 (made to order)
	1.28	KS2.5-30 (made to order)
0.14~0.32	0.90	KS3-20 (made to order)
	1.36	KS3-25 (made to order)
	2.07	KS3-30 (made to order)
0.18~0.38	2.07	KS4-20 (made to order)
	3.29	KS4-25 (made to order)
	4.64	KS4-30 (made to order)
0.20~0.44	3.90	KS5-20 (made to order)
	6.23	KS5-25 (made to order)
	8.87	KS5-30 (made to order)

KS Thermal Refined Spur Gear recommended mating racks



KRF/KRFD Thermal Refined Racks

Please see Page 240 for more details.



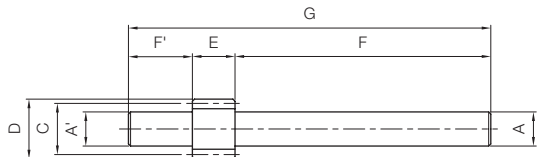


Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—*
Tooth hardness	less than 194HB*
Surface treatment	Black oxide coating

* 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
SSS1-10	m1	10	0	SA	—	—	10	12	12	12	78	90
SSS1-12		12					12	14	12			
SSS1-13		13					13	15	12			
SSS1.5-10	m1.5	10	+0.5	SB	12.2	25	15	19.35	15	12.2	100	140
SSS1.5-12		12	0		13.7		18	21	15	13.7		
SSS1.5-13		13	0		15.2		19.5	22.5	15	15.2		

- [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.

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	0.08~0.18	0.077	SSS1-10
2.52	0.092	0.26	0.0094		0.10	SSS1-12
3.05	0.11	0.31	0.011		0.12	SSS1-13
12.7	0.71	1.30	0.073	0.10~0.22	0.14	SSS1.5-10
9.97	0.89	1.02	0.091		0.17	SSS1.5-12
12.1	1.05	1.23	0.11		0.21	SSS1.5-13

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 ($x = 0$)	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

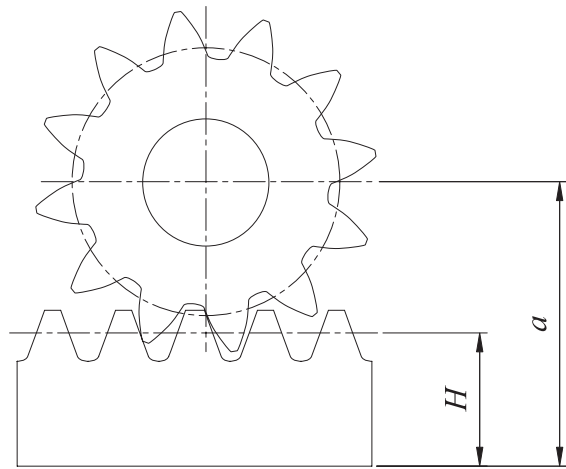
Center distance where number of teeth is 32 to 62 (unit: mm)

Number of teeth ($x = 0$)	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 ($x = 0$)	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

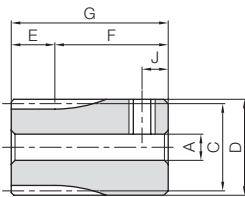


$$a = \frac{zm}{2} + H + xm$$

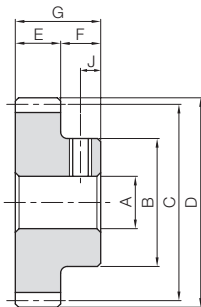
Where
 a : Mounting distance
 H : Pitch line height
 m : Module
 z : No. of teeth
 x : Profile shift coefficient



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



S3T



S1T

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

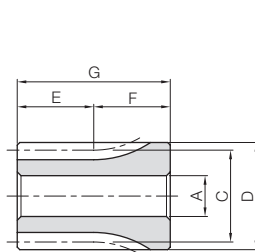
Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Socket head screw		
				A _{H7(H8)}	B	C	D	E	F	G	Size	J	
SS0.5-15A	m0.5	15	S3T	3 _{H8}	8.5	7.5	8.5	5	11	16	M3	2.5	
SS0.5-18A		18		4 _{H8}	10	9	10				M3		
SS0.5-20A		20		3 _{H8}	11	10	11				M3		
SS0.5-20B				4 _{H8}							M3		
SS0.5-22A		22		4 _{H8}	12	11	12				M3		
SS0.5-24A		24	4 _{H8}	13	12	13	M3				2.5		
SS0.5-24B			5 _{H8}				M4				3		
SS0.5-25B		25	5 _{H8}	13.5	12.5	13.5	M4	3					
SS0.5-28A		28	4 _{H8}	12	14	15	M3	3.5					
SS0.5-30B		30	5	13	15	16	M4						
SS0.5-50B		50	6	22	25	26	M4						
SS0.5-54A		54	5	25	27	28	M4						
SS0.5-60A		60	6	28	30	31	M4						
SS0.5-80A		80	6	28	40	41	M4						
SS0.5-80B			8				M5						
SS0.5-96A		96	8	28	48	49	M5						
SS0.5-120A		120	8	28	60	61	M5						
SS0.8-15A	m0.8	15	S3T	5 _{H8}	13.6	12	13.6	8	14	22	M4	3.5	
SS0.8-20A		20	S1T	5 _{H8}	13	16	17.6		8	8	16	M4	4
SS0.8-20B				6								M4	
SS0.8-25A		25		5 _{H8}	16	20	21.6					M4	
SS0.8-28A		28		6	18	22.4	24					M4	
SS0.8-30A		30		5 _{H8}	20	24	25.6					M4	
SS0.8-30C				8								M5	
SS0.8-40A		40		6	28	32	33.6					M4	
SS0.8-45A	45	6		28	36	37.6	M4						

Allowable torque (N·m)		Allowable torque (kgf·m)		Backlash (mm)	Weight (kg)	Catalog Number
Bending strength	Surface durability	Bending strength	Surface durability			
0.46	0.022	0.047	0.0022	0~0.10	0.0056	SS0.5-15A
0.61	0.032	0.063	0.0033		0.0076	SS0.5-18A
0.72	0.040	0.073	0.0041		0.010	SS0.5-20A
0.83	0.049	0.084	0.0050		0.0095	SS0.5-20B
0.93	0.059	0.095	0.0060		0.012	SS0.5-22A
0.99	0.064	0.10	0.0065		0.014	SS0.5-24A
1.16	0.081	0.12	0.0082		0.013	SS0.5-24B
1.27	0.093	0.13	0.0095		0.014	SS0.5-25B
2.43	0.27	0.25	0.027		0.011	SS0.5-28A
2.67	0.32	0.27	0.032		0.012	SS0.5-30B
3.03	0.39	0.31	0.040		0.037	SS0.5-50B
4.24	0.72	0.43	0.074		0.047	SS0.5-54A
5.21	1.06	0.53	0.11		0.058	SS0.5-60A
6.68	1.70	0.68	0.17		0.079	SS0.5-80A
1.89	0.088	0.19	0.0090	0~0.10	0.077	SS0.5-80B
2.94	0.17	0.30	0.017		0.099	SS0.5-96A
4.05	0.27	0.41	0.027		0.14	SS0.5-120A
4.73	0.34	0.48	0.035		0.019	SS0.8-15A
5.19	0.39	0.53	0.040		0.018	SS0.8-20A
7.55	0.72	0.77	0.074		0.017	SS0.8-20B
8.75	0.93	0.89	0.095		0.029	SS0.8-25A
					0.037	SS0.8-28A
					0.045	SS0.8-30A
					0.041	SS0.8-30C
					0.085	SS0.8-40A
					0.098	SS0.8-45A

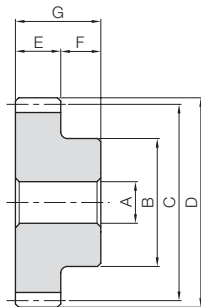




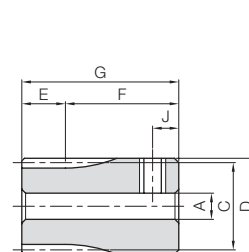
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating



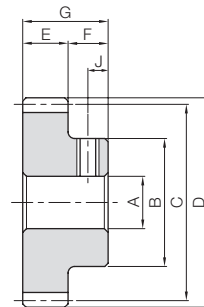
S3



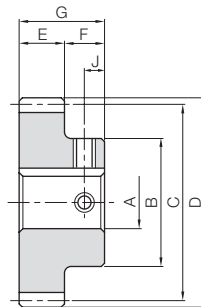
S1



S3T



S1T



S1K

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

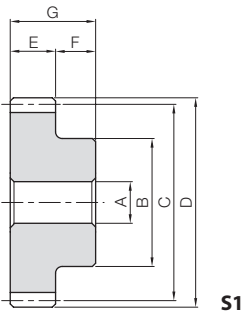
Catalog Number		Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Keyway	Socket head screw	
					A _{H7}	B	C	D	E	F	G	Width × Depth	Size	J
SS1-15 SS1-15A SS1-15B	H	m1	15	S3	8	17	15	17	10	20	30	—	—	—
				S3T	5								M4	4
				S3T	6								M4	4
SS1-16 SS1-16B	H		16	S3	8	18	16	18					—	—
				S3T	6								M4	4
SS1-17	H		17	S3	8	19	17	19					—	—
SS1-18	H		18	S3	8	20	18	20					—	—
SS1-19	H		19	S3	8	21	19	21					—	—
SS1-20 SS1-20A SS1-20B SS1-20C	H		20	S1 S1T S1T S1T	8	16	20	22					—	—
					5								M4	5
					6								M4	5
					8								M5	5
SS1-21	H		21	S1	8	17	21	23					—	—
SS1-22	H		22	S1	8	18	22	24					—	—
SS1-23	H		23	S1	8	18	23	25					—	—
SS1-24 SS1-24A SS1-24C	H		24	S1 S1T S1K	8	20	24	26					—	—
					6								M4	5
					10					M4	5			
SS1-25 SS1-25B SS1-25C	H		25	S1 S1T S1K	8	20	25	27		—	—			
					8					M5	5			
					10					M4	5			
SS1-26	H		26	S1	8	22	26	28		—	—			
SS1-27	H		27	S1	8	22	27	29		—	—			
SS1-28	H		28	S1	8	22	28	30		—	—			
SS1-29	H		29	S1	8	24	29	31		—	—			
SS1-30 SS1-30A SS1-30B	H		30	S1 S1T S1T	10	25	30	32		—	—			
					6					M4	5			
					8					M5	5			
SS1-32 SS1-32A	H		32	S1 S1T	10	26	32	34		—	—			
					8					M5	5			
SS1-34	H		34	S1	10	26	34	36		—	—			
SS1-35	H		35	S1	10	26	35	37		—	—			
SS1-36	H		36	S1	10	28	36	38		—	—			
SS1-38	H		38	S1	10	32	38	40		—	—			
SS1-40 SS1-40B	H		40	S1 S1K	10	35	40	42		—	—			
					10					4 x 1.8	M4	5		
SS1-42	H		42	S1	10	35	42	44		—	—			
SS1-44	H		44	S1	10	35	44	46		—	—			
SS1-45 SS1-45A SS1-45B	H		45	S1 S1T S1K	10	35	45	47		—	—			
					8					M5	5			
					10					M4	5			
SS1-46	H		46	S1	10	35	46	48		—	—			
SS1-48	H		48	S1	10	35	48	50		—	—			

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

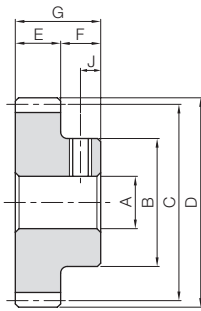
Allowable torque						Backlash (mm)	Weight (kg)	Catalog Number
Bending strength		Surface durability		Surface durability 				
N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
3.69	0.38	0.17	0.018	0.85	0.086	0.08~0.18	0.038 0.044 0.042	SS1-15 SS1-15A SS1-15B
4.09	0.42	0.2	0.021	0.98	0.10		0.044 0.049	SS1-16 SS1-16B
4.5	0.46	0.23	0.023	1.12	0.11		0.050	SS1-17
4.91	0.5	0.26	0.027	1.26	0.13		0.057	SS1-18
5.33	0.54	0.29	0.030	1.42	0.14		0.065	SS1-19
5.75	0.59	0.33	0.033	1.59	0.16		0.033 0.037 0.036 0.032	SS1-20 SS1-20A SS1-20B SS1-20C
6.17	0.63	0.36	0.037	1.77	0.18		0.037	SS1-21
6.6	0.67	0.4	0.041	1.95	0.20		0.042	SS1-22
7.03	0.72	0.45	0.045	2.15	0.22		0.045	SS1-23
7.47	0.76	0.49	0.050	2.36	0.24		0.052 0.055 0.046	SS1-24 SS1-24A SS1-24C
7.91	0.81	0.54	0.055	2.57	0.26		0.055 0.054 0.049	SS1-25 SS1-25B SS1-25C
8.35	0.85	0.58	0.059	2.79	0.28		0.064	SS1-26
8.79	0.9	0.63	0.064	3.01	0.31		0.067	SS1-27
9.24	0.94	0.68	0.070	3.25	0.33		0.070	SS1-28
9.69	0.99	0.73	0.075	3.49	0.36		0.079	SS1-29
10.1	1.03	0.79	0.081	3.74	0.38		0.082 0.089 0.085	SS1-30 SS1-30A SS1-30B
11.1	1.13	0.90	0.092	4.27	0.44		0.092 0.096	SS1-32 SS1-32A
12.0	1.22	1.03	0.10	4.83	0.49		0.10	SS1-34
12.4	1.27	1.09	0.11	5.13	0.52		0.10	SS1-35
12.9	1.31	1.16	0.12	5.44	0.55		0.12	SS1-36
13.8	1.41	1.30	0.13	6.08	0.62		0.14	SS1-38
14.7	1.50	1.45	0.15	6.76	0.69		0.16 0.16	SS1-40 SS1-40B
15.7	1.60	1.61	0.16	7.47	0.76		0.17	SS1-42
16.6	1.69	1.77	0.18	8.23	0.84		0.18	SS1-44
17.1	1.74	1.86	0.19	8.62	0.88		0.19 0.19 0.19	SS1-45 SS1-45A SS1-45B
17.6	1.79	1.95	0.20	9.02	0.92		0.19	SS1-46
18.5	1.89	2.13	0.22	9.84	1.00		0.21	SS1-48



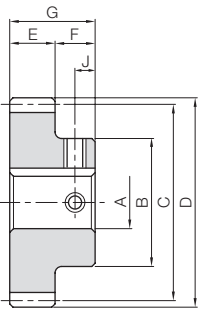
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating



S1



S1T



S1K

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

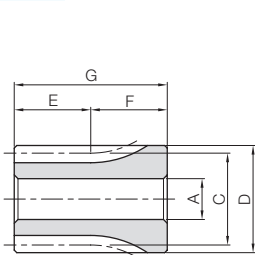
Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Keyway	Socket head screw	
				AH7	B	C	D	E	F	G	Width x Depth	Size	J
SS1-50	m1	50	S1	10	35	50	52	10	10	20	—	—	—
SS1-50A			S1T	8							—	M5	5
SS1-52		52	S1	10		52	54				—	—	—
SS1-54		54	S1	10		54	56				—	—	—
SS1-55		55	S1	10		55	57				—	—	—
SS1-56		56	S1	10		56	58				—	—	—
SS1-60		60	S1	10	40	60	62				—	—	—
SS1-60C			S1K	15							5 x 2.3	M4	5
SS1-62		62	S1	10		62	64				—	—	—
SS1-64		64	S1	10		64	66				—	—	—
SS1-65		65	S1	10		65	67				—	—	—
SS1-68		68	S1	10		68	70				—	—	—
SS1-70		70	S1	10		70	72				—	—	—
SS1-72		72	S1	10		72	74				—	—	—
SS1-75		75	S1	10		75	77				—	—	—
SS1-76		76	S1	10		76	78				—	—	—
SS1-80		80	S1	10		80	82				—	—	—
SS1-84		84	S1	10		84	86				—	—	—
SS1-85		85	S1	10		85	87				—	—	—
SS1-88		88	S1	10		88	90				—	—	—
SS1-90		90	S1	10		90	92				—	—	—
SS1-96		96	S1	10		96	98				—	—	—
SS1-100		100	S1	10		100	102				—	—	—
SS1-110		110	S1	15	50	110	112				—	—	—
SS1-120		120	S1	15	50	120	122				—	—	—
SS1-150		150	S1	20	120	150	152				—	—	—
SS1-200		200	S1	20	160	200	202				—	—	—

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

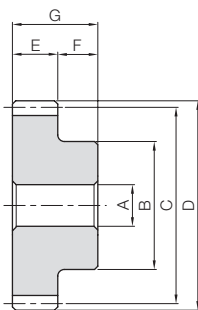
Allowable torque						Backlash (mm)	Weight (kg)	Catalog Number
Bending strength		Surface durability		Surface durability 				
N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
19.5	1.98	2.32	0.24	10.7	1.09	0.08~0.18	0.22	SS1-50
							0.22	SS1-50A
20.4	2.08	2.52	0.26	11.6	1.18		0.23	SS1-52
21.4	2.18	2.73	0.28	12.5	1.28		0.24	SS1-54
21.8	2.23	2.83	0.29	13.0	1.33		0.25	SS1-55
22.3	2.28	2.94	0.30	13.5	1.38		0.26	SS1-56
24.2	2.47	3.40	0.35	15.6	1.59		0.29	SS1-60
							0.27	SS1-60C
25.2	2.57	3.64	0.37	16.7	1.70		0.32	SS1-62
26.2	2.67	3.89	0.40	17.8	1.81		0.34	SS1-64
26.6	2.72	4.02	0.41	18.4	1.87		0.35	SS1-65
28.1	2.86	4.42	0.45	20.1	2.05		0.37	SS1-68
29.1	2.96	4.70	0.48	21.4	2.18		0.39	SS1-70
30.0	3.06	4.98	0.51	22.6	2.31		0.41	SS1-72
31.5	3.21	5.43	0.55	24.6	2.51		0.43	SS1-75
32.0	3.26	5.59	0.57	25.3	2.58		0.44	SS1-76
33.9	3.46	6.23	0.63	28.1	2.87		0.48	SS1-80
35.8	3.66	6.90	0.7	31.1	3.17		0.52	SS1-84
36.3	3.71	7.08	0.72	31.8	3.25		0.53	SS1-85
37.8	3.85	7.62	0.78	34.2	3.48		0.56	SS1-88
38.8	3.95	7.98	0.81	35.8	3.65		0.59	SS1-90
41.7	4.25	9.15	0.93	40.8	4.16	0.65	SS1-96	
43.7	4.45	9.97	1.02	44.4	4.53	0.70	SS1-100	
48.6	4.95	12.2	1.24	53.9	5.50	0.87	SS1-110	
53.5	5.45	14.7	1.50	64.4	6.57	1.01	SS1-120	
68.2	6.96	23.6	2.41	102	10.4	2.23	SS1-150	
71.5	7.29	33.6	3.42	144	14.7	4.00	SS1-200	



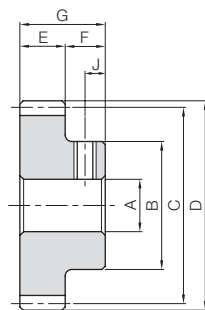
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating



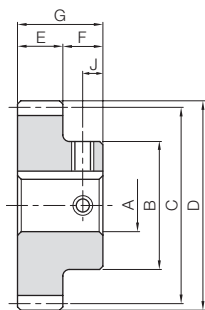
S3



S1



S1T



S1K

H 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	
					A _{H7}	B	C	D	E	F	G	Width × Depth	Size	J
SS1.5-12		m1.5	12	S3	8	21	18	21	15	15	30	—	—	—
SS1.5-13			13	S3	8	22.5	19.5	22.5				—	—	—
SS1.5-14			14	S1	8	16	21	24				—	—	—
SS1.5-14B	S1T			8	—							M5	5	
SS1.5-15			15	S1	8	18	22.5	25.5		—	—	—		
SS1.5-16			16	S1	8	20	24	27		—	—	—		
SS1.5-16B	S1T			8	—					M5	5			
SS1.5-17			17	S1	8	21	25.5	28.5		—	—	—		
SS1.5-18			18	S1	8	22	27	30		—	—	—		
SS1.5-19			19	S1	8	23	28.5	31.5		—	—	—		
SS1.5-20			20	S1	8	24	30	33		—	—	—		
SS1.5-21			21	S1	8	25	31.5	34.5		—	—	—		
SS1.5-22			22	S1	8	26	33	36		—	—	—		
SS1.5-23			23	S1	8	27	34.5	37.5		—	—	—		
SS1.5-24			24	S1	8	28	36	39		—	—	—		
SS1.5-25			25	S1	8	30	37.5	40.5		—	—	—		
SS1.5-26			26	S1	10	32	39	42		10	25	—	—	—
SS1.5-26A	S1K			12	4 x 1.8							M4	5	
SS1.5-27			27	S1	10	34	40.5	43.5				—	—	—
SS1.5-28			28	S1	10	36	42	45				—	—	—
SS1.5-28A	S1K	12		4 x 1.8	M4				5					
SS1.5-29		29	S1	10	37	43.5	46.5	—	—			—		
SS1.5-30		30	S1	10	38	45	48	—	—			—		
SS1.5-30C	S1K		15	5 x 2.3				M4	5					
SS1.5-32		32	S1	10	40	48	51	—	—			—		
SS1.5-32B	S1K		12	4 x 1.8				M4	5					
SS1.5-34		34	S1	10	40	51	54	—	—			—		
SS1.5-35		35	S1	10	42	52.5	55.5	—	—			—		
SS1.5-36		36	S1	10	45	54	57	—	—			—		
SS1.5-38		38	S1	12	45	57	60	—	—			—		
SS1.5-40		40	S1	12	45	60	63	—	—			—		

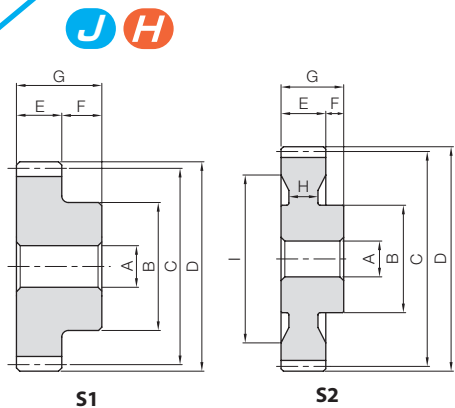
[Caution on Secondary Operations] ① See Page 22 for more details on Hardened Plus (H Series and HJ Series).

Allowable torque						Backlash (mm)	Weight (kg)	Catalog Number
Bending strength		Surface durability		Surface durability 				
N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
6.86	0.70	0.36	0.037	1.76	0.18	0.10~0.22	0.059	SS1.5-12
8.84	0.90	0.44	0.045	2.12	0.22		0.070	SS1.5-13
11.1	1.13	0.52	0.053	2.50	0.26		0.047 0.046	SS1.5-14 SS1.5-14B
12.5	1.27	0.60	0.062	2.91	0.30		0.057	SS1.5-15
13.8	1.41	0.70	0.071	3.36	0.34		0.068 0.067	SS1.5-16 SS1.5-16B
15.2	1.55	0.80	0.082	3.84	0.39		0.077	SS1.5-17
16.6	1.69	0.91	0.093	4.35	0.44		0.087	SS1.5-18
18.0	1.83	1.03	0.11	4.89	0.50		0.098	SS1.5-19
19.4	1.98	1.15	0.12	5.47	0.56		0.11	SS1.5-20
20.8	2.12	1.29	0.13	6.08	0.62		0.12	SS1.5-21
22.3	2.27	1.43	0.15	6.72	0.69		0.13	SS1.5-22
23.7	2.42	1.58	0.16	7.40	0.75		0.15	SS1.5-23
25.2	2.57	1.73	0.18	8.12	0.83		0.16	SS1.5-24
26.7	2.72	1.90	0.19	8.87	0.90		0.18	SS1.5-25
28.2	2.87	2.06	0.21	9.62	0.98		0.19 0.18	SS1.5-26 SS1.5-26A
29.7	3.03	2.23	0.23	10.4	1.06		0.21	SS1.5-27
31.2	3.18	2.41	0.25	11.2	1.14		0.23 0.22	SS1.5-28 SS1.5-28A
32.7	3.34	2.60	0.26	12.1	1.23		0.24	SS1.5-29
34.2	3.49	2.79	0.28	12.9	1.32		0.26 0.24	SS1.5-30 SS1.5-30C
37.3	3.80	3.19	0.33	14.8	1.51		0.30 0.28	SS1.5-32 SS1.5-32B
40.4	4.12	3.63	0.37	16.7	1.71		0.32	SS1.5-34
41.9	4.28	3.85	0.39	17.8	1.81		0.35	SS1.5-35
43.5	4.43	4.09	0.42	18.8	1.92		0.38	SS1.5-36
46.6	4.75	4.58	0.47	21.0	2.14		0.40	SS1.5-38
49.8	5.07	5.10	0.52	23.4	2.38		0.44	SS1.5-40

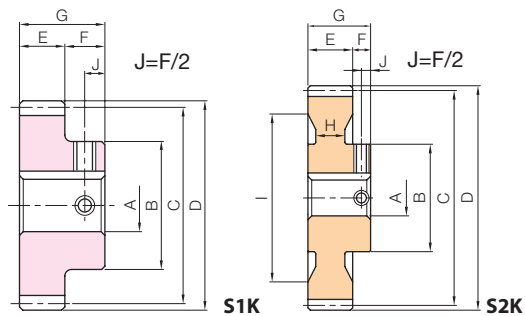


Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating
Backlash	0.10 to 0.22

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



J Series



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						Weight (kg)
													Bending strength		Surface durability		Surface durability 		
				AH7	B	C	D	E	F	G	H	I	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS1.5-42		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		44				66	69						56.1	5.72	6.23	0.64	28.4	2.90	0.51
SS1.5-45		45				67.5	70.5						57.7	5.88	6.53	0.67	29.8	3.03	0.52
SS1.5-46		46				69	72						59.3	6.04	6.83	0.70	31.1	3.17	0.54
SS1.5-48		48				72	75						62.4	6.37	7.47	0.76	34.0	3.46	0.58
SS1.5-50		50				75	78						65.7	6.69	8.15	0.83	36.9	3.77	0.62
SS1.5-52		52				78	81						68.9	7.02	8.85	0.90	40.0	4.08	0.68
SS1.5-54		54				81	84						72.1	7.35	9.59	0.98	43.3	4.41	0.73
SS1.5-55		55				82.5	85.5						73.7	7.51	9.96	1.02	44.9	4.58	0.75
SS1.5-56		56				84	87						75.3	7.68	10.4	1.06	46.6	4.75	0.77
SS1.5-58		58	S1	50	87	90	15	10	25	—	—	78.5	8.01	11.2	1.14	50.1	5.11	0.82	
SS1.5-60		60			90	93						81.8	8.34	12.0	1.22	53.7	5.47	0.87	
SS1.5-62		62			93	96						85.0	8.67	12.8	1.31	57.4	5.85	0.95	
SS1.5-64		64			96	99						88.3	9.00	13.7	1.40	61.3	6.25	1.00	
SS1.5-68		68			102	105						94.8	9.66	15.6	1.59	69.3	7.07	1.11	
SS1.5-70		70			105	108						98.0	10.0	16.6	1.69	73.6	7.50	1.17	
SS1.5-72		72			108	111						101	10.3	17.6	1.79	77.9	7.95	1.23	
SS1.5-75		75			112.5	115.5						106	10.8	19.2	1.95	84.7	8.64	1.36	
SS1.5-76		76			114	117						108	11.0	19.7	2.01	87.0	8.88	1.39	
SS1.5-80		80			120	123						114	11.7	22.0	2.24	96.7	9.86	1.52	
SS1.5-84		84	S1	60	126	129	15	10	25	—	—	121	12.3	24.4	2.49	107	10.9	1.66	
SS1.5-88		88			132	135						128	13.0	27.0	2.75	117	12.0	1.80	
SS1.5-90		90			135	138						131	13.3	28.3	2.89	123	12.5	1.87	
SS1.5-95		95			142.5	145.5						139	14.2	31.8	3.24	137	14.0	2.07	
SS1.5-100		100			150	153						147	15.0	35.5	3.62	152	15.5	2.25	
SS1.5-120		120			180	183						180	18.4	52.3	5.33	221	22.5	2.74	
SS1.5-150		150	S1	20	180	225	15	10	153	192	19.6	70.3	7.17	276	28.1	6.62			
SS1.5-200		200			240	300				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**

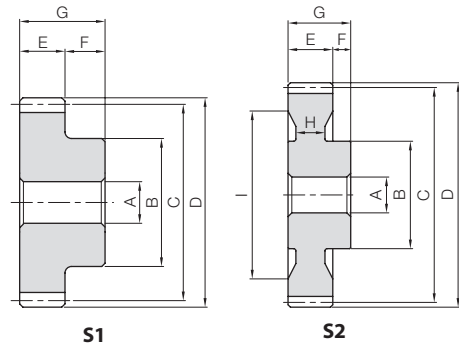
Catalog Number	Bore H7	* The product shapes of J Series items are identified by background color.															
		10		12		14		15		16		17		18		19	
		4×1.8		5×2.3		6×2.8		8×3.3		10×3.3		12×3.3		14×3.3		16×3.3	
SS1.5-42 J BORE			*														
SS1.5-44 J BORE			*														
SS1.5-45 J BORE			*														
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																	

[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
Backlash	0.12 to 0.26

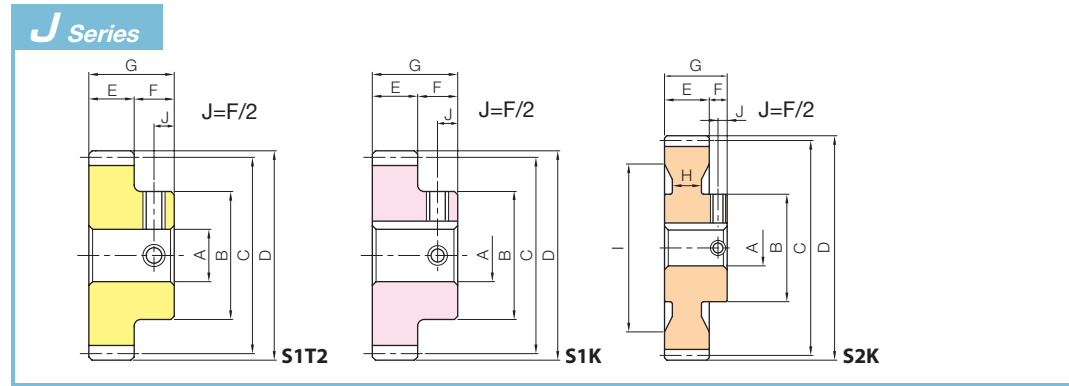
* The precision grade of J Series products is equivalent to the value shown in the table.



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						Weight (kg)		
												Bending strength		Surface durability		Surface durability 				
												N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
SS2-12		12	10	A _{H7}	18	24	28	20	10	30	—	—	16.3	1.66	0.88	0.090	4.24	0.43	0.073	
SS2-13		13			20	26	30						21.0	2.14	1.07	0.11	5.11	0.52	0.090	
SS2-14		14			20	28	32						26.3	2.69	1.26	0.13	6.02	0.61	0.10	
SS2-15		15			24	30	34						29.6	3.01	1.48	0.15	7.01	0.71	0.12	
SS2-16		16			26	32	36						32.7	3.34	1.71	0.17	8.08	0.82	0.14	
SS2-17		17	12	12	28	34	38						36.0	3.67	1.96	0.20	9.23	0.94	0.16	
SS2-18		18			30	36	40						39.3	4.01	2.23	0.23	10.5	1.07	0.19	
SS2-19		19			31	38	42						42.6	4.35	2.52	0.26	11.8	1.20	0.21	
SS2-20		20			32	40	44						46.0	4.69	2.83	0.29	13.2	1.34	0.23	
SS2-21		21			34	42	46						49.4	5.04	3.15	0.32	14.7	1.50	0.26	
SS2-22		22			36	44	48						52.8	5.39	3.50	0.36	16.2	1.66	0.29	
SS2-23		23			37	46	50						56.3	5.74	3.86	0.39	17.9	1.82	0.32	
SS2-24		24			38	48	52						59.8	6.09	4.24	0.43	19.6	2.00	0.35	
SS2-25		25			40	50	54						63.3	6.45	4.64	0.47	21.4	2.18	0.38	
SS2-26		26			42	52	56						66.8	6.81	5.04	0.51	23.2	2.37	0.42	
SS2-27		27	S1	12	45	54	58						70.4	7.17	5.45	0.56	25.1	2.56	0.46	
SS2-28		28			45	56	60						73.9	7.54	5.89	0.60	27.0	2.76	0.48	
SS2-29		29			47	58	62						77.5	7.91	6.33	0.65	29.1	2.96	0.52	
SS2-30		30			50	60	64						81.1	8.27	6.80	0.69	31.2	3.18	0.57	
SS2-32		32			50	64	68						88.4	9.01	7.78	0.79	35.6	3.63	0.63	
SS2-34		34		15	50	68	72						95.7	9.76	8.84	0.90	40.3	4.11	0.70	
SS2-35		35			52	70	74						99.3	10.1	9.39	0.96	42.8	4.36	0.74	
SS2-36		36			55	72	76						103	10.5	9.96	1.02	45.3	4.62	0.80	
SS2-38		38			55	76	80						111	11.3	11.2	1.14	50.6	5.16	0.87	
SS2-40		40			55	80	84						118	12.0	12.5	1.27	56.2	5.73	0.93	
SS2-42		42	S2	20	84	88	125						12.8	13.8	1.41	62.1	6.34	1.01		
SS2-44		44			88	92	96						133	13.6	15.2	1.55	68.3	6.97	1.10	
SS2-45		45			90	94	98						137	13.9	16.0	1.63	71.6	7.30	1.14	
SS2-46		46			92	96	100						140	14.3	16.7	1.71	74.9	7.63	1.19	
SS2-48		48			96	100	104						148	15.1	18.3	1.87	81.7	8.33	1.28	
SS2-50		50			15	100	104						108	156	15.9	19.9	2.03	88.8	9.05	1.38
SS2-52		52				104	108						112	163	16.6	21.7	2.21	96.2	9.81	1.48
SS2-54		54				108	112						116	171	17.4	23.4	2.39	104	10.6	1.58
SS2-55		55				110	114						118	175	17.8	24.4	2.48	108	11.0	1.64
SS2-56		56				112	116						120	179	18.2	25.3	2.58	112	11.4	1.69
SS2-58		58	15	116	120	124	186						19.0	27.3	2.78	120	12.3	1.84		
SS2-60		60		120	124	128	194						19.8	29.3	2.99	129	13.1	1.96		
SS2-62		62		124	128	132	202						20.6	31.5	3.21	138	14.1	2.08		
SS2-64		64		128	132	136	209						21.3	33.7	3.44	147	15.0	2.20		
SS2-65		65		130	134	138	213						21.7	34.8	3.55	152	15.5	2.26		
SS2-66		66	15	132	136	140	217						22.1	36.0	3.67	157	16.0	2.33		
SS2-68		68		136	140	144	225						22.9	38.4	3.91	166	17.0	2.46		
SS2-70		70		140	144	148	232						23.7	40.8	4.16	177	18.0	2.60		
SS2-72		72		144	148	152	240						24.5	43.3	4.42	187	19.1	2.74		
SS2-75		75		150	154	158	252						25.7	47.3	4.82	203	20.7	2.92		
SS2-76		76	S2	20	60	152	156						256	26.1	48.6	4.96	209	21.3	3.00	
SS2-80		80			60	160	164						271	27.7	54.3	5.53	232	23.6	3.27	
SS2-84		84			70	168	172						287	29.2	60.2	6.14	256	26.1	3.09	
SS2-85		85			70	170	174						291	29.6	61.7	6.30	262	26.8	3.09	
SS2-90		90			70	180	184						310	31.6	69.7	7.11	295	30.1	3.38	
SS2-100		100	S1	25	70	200	204						176	291	29.7	72.7	7.42	288	29.3	4.01
SS2-120		120			90	240	244						210	357	36.4	108	11.0	421	43.0	5.91
SS2-150		150			240	300	304						—	—	455	46.4	174	17.7	672	68.5

[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 J9	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35		
Screw size	4x1.8		5x2.3				6x2.8				8x3.3			10x3.3			
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				*													
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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									*								

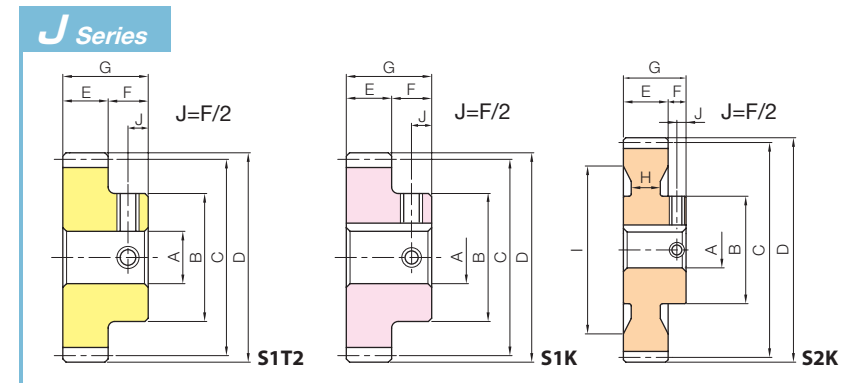
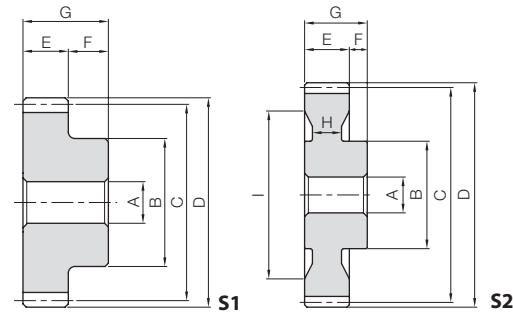
To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SS2-16HJ14





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.



 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						Weight (kg)		
													Bending strength		Surface durability		Surface durability ^H				
				A _{H7}	B	C	D	E	F	G	H	I	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m			
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			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		15		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	S1				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	70			100	105	230	23.5	24.9	2.54	111	11.3	1.81							
SS2.5-42		42				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				70	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	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	20		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			70	150	155	379	38.6	59.1	6.03	254	25.9	3.69							
SS2.5-64		64			80	160	165	409	41.7	67.8	6.92	290	29.6	3.76							
SS2.5-66		66				165	170	424	43.2	72.4	7.39	309	31.5	3.87							
SS2.5-68		68			S2	25	80	170	175	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	180	185				151	469	47.8	87.1	8.89	368	37.6	4.49						
SS2.5-76		76	190	195				499	50.9	97.7	9.97	411	41.9	4.90							
SS2.5-80		80				200	205	160	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 Jsb9	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**

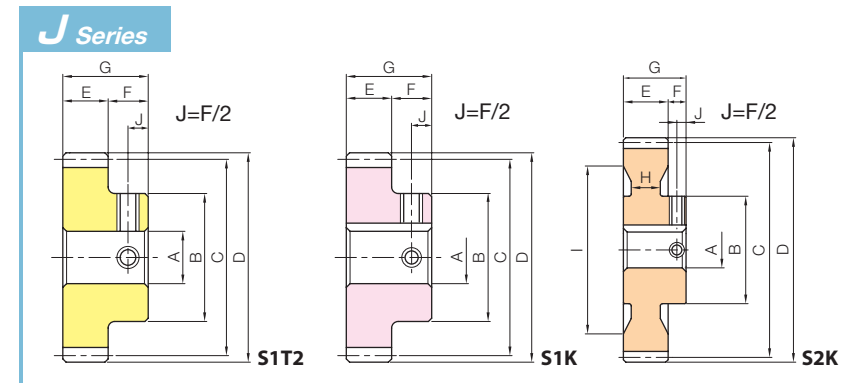
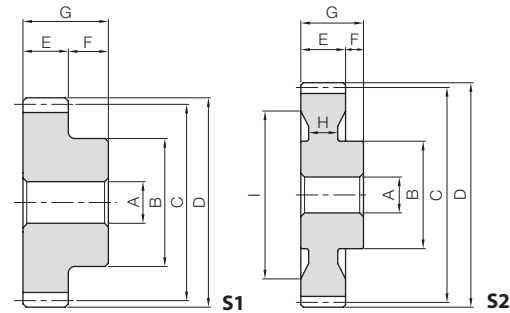
[Caution on J series] ① **Cancellation is not possible** for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.

② * is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.



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.



 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						Weight (kg)			
													Bending strength		Surface durability		Surface durability ^H					
													N-m	kgf-m	N-m	kgf-m	N-m	kgf-m				
SS3-12		12	S1	15	28	36	42	30	15	45	—	—	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			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			20	80	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	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		25	80						156	162	16	126	551	56.2	77.1	7.86	330	33.7
SS3-54		54			162								168	132	577	58.8	83.6	8.52	357	36.4	4.61	
SS3-55		55	165		171			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		25			80	180	186	—	—	654	66.7	105	10.7	442	45.1	6.41			
SS3-64		64							180	192	158	588	60.0	99.9	10.2	396	40.4	5.99				
SS3-65		65							180	195	161	599	61.1	103	10.5	409	41.7	6.13				
SS3-66		66		190		198	160		610	62.2	107	10.9	422	43.1	6.67							
SS3-68		68		190		204	170		632	64.4	114	11.6	450	45.8	6.86							
SS3-70		70		S2		90	210		216	176	654	66.6	121	12.4	478	48.7	7.15					
SS3-72		72							216	222	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	240		246			200	763	77.8	162	16.5	632	64.4	8.85							
SS3-90		90	30		100			270	276	240	872	89.0	208	21.2	809	82.4	10.6					
SS3-100		100							300	306	270	983	100	261	26.6	1010	103	12.5				
SS3-120		120							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								*								
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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

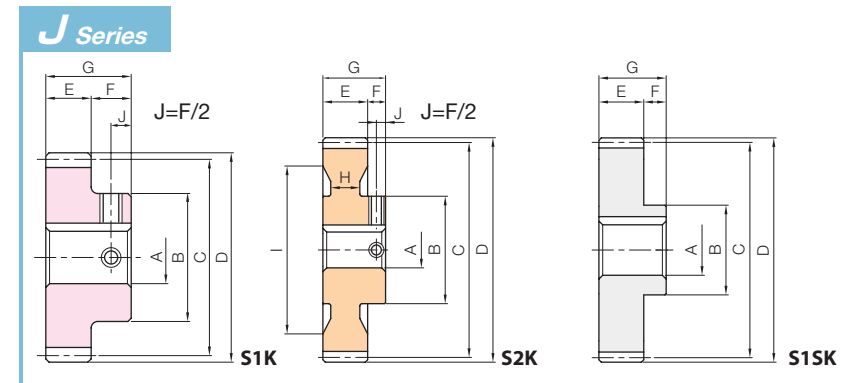
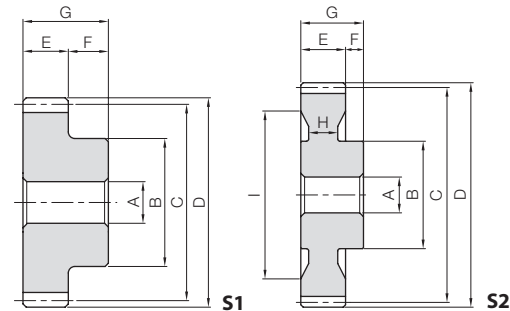
[Caution on J series] ① **Cancellation is not possible** for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.

② *** *** is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.



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.



 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						Weight (kg)
													Bending strength		Surface durability		Surface durability 		
													N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS4-12		12	S1	20	35	48	56	20	60	—	—	130	13.3	7.62	0.78	35.3	3.59	0.57	
SS4-14		14			40	56	64					211	21.5	10.9	1.11	50.1	5.11	0.82	
SS4-15		15			45	60	68					236	24.1	12.8	1.30	58.4	5.96	0.99	
SS4-16		16			50	64	72					262	26.7	14.7	1.50	67.3	6.87	1.17	
SS4-17		17			53	68	76					288	29.4	16.9	1.72	76.9	7.85	1.34	
SS4-18		18			55	72	80					314	32.0	19.2	1.96	87.2	8.89	1.50	
SS4-19		19			60	76	84					341	34.8	21.7	2.21	98.1	10.0	1.72	
SS4-20		20			65	80	88					368	37.5	24.3	2.48	110	11.2	1.95	
SS4-21		21			69	84	92					395	40.3	27.1	2.76	122	12.4	2.18	
SS4-22		22			73	88	96					423	43.1	30.1	3.06	135	13.8	2.42	
SS4-23		23			77	92	100					450	45.9	33.2	3.38	148	15.1	2.67	
SS4-24		24			80	96	104					478	48.8	36.4	3.72	163	16.6	2.91	
SS4-25		25			84	100	108					506	51.6	39.9	4.07	178	18.1	3.19	
SS4-26		26			87	104	112					534	54.5	43.3	4.42	192	19.6	3.45	
SS4-27		27			90	108	116					563	57.4	46.9	4.78	208	21.2	3.73	
SS4-28		28		95	112	120	591	60.3	50.6	5.16	224	22.8	4.06						
SS4-29		29		95	116	124	620	63.2	54.5	5.56	241	24.5	4.28						
SS4-30		30		100	120	128	649	66.2	58.7	5.98	258	26.3	4.64						
SS4-32		32		100	128	136	707	72.1	67.4	6.87	294	30.0	4.86						
SS4-34		34		100	136	144	766	78.1	76.7	7.82	333	33.9	5.38						
SS4-35		35		22	100	140	148	795	81.1	81.6	8.32	353	36.0	5.65					
SS4-36		36				144	152	825	84.1	86.7	8.84	374	38.1	5.93					
SS4-38		38				152	160	884	90.1	97.3	9.92	418	42.6	6.52					
SS4-40		40				160	168	943	96.2	109	11.1	464	47.3	7.08					
SS4-42		42				168	176	1000	102	120	12.3	512	52.2	7.73					
SS4-44		44		25	100	176	184	1060	108	133	13.6	563	57.4	8.41					
SS4-45		45				180	188	1090	112	139	14.2	590	60.1	8.76					
SS4-46		46				184	192	1120	115	146	14.9	617	62.9	9.12					
SS4-48		48				192	200	1150	118	150	15.2	646	66.0	9.50					
SS4-50		50				200	208	1180	121	153	15.5	676	69.1	9.88					
SS4-52		52	S2	30	110	208	216	16	56	26	150	158	1040	106	146	14.8	575	58.6	9.60
SS4-54		54				216	224				165	1090	111	158	16.1	624	63.7	10.2	
SS4-55		55				220	228				175	1140	116	172	17.5	676	68.9	10.8	
SS4-56		56				224	232				178	1160	119	179	18.2	702	71.6	11.1	
SS4-58		58				232	240				182	1190	121	186	18.9	729	74.3	11.5	
SS4-60		60		120	110	240	248	190	1240	127	200	20.4	785	80.0	12.5				
SS4-62		62				248	256	198	1290	132	215	22	842	85.9	13.2				
SS4-64		64				256	264	210	1340	137	231	23.6	902	92.0	13.1				
SS4-65		65				260	268	214	1390	142	248	25.2	964	98.3	13.4				
SS4-66		66				264	272	218	1420	145	256	26.1	996	102	13.7				
SS4-68		68	120	120	272	280	220	1450	148	265	27	1030	105	14.7					
SS4-70		70			280	288	225	1500	153	282	28.8	1090	112	15.5					
SS4-80		80			320	328	233	1550	158	300	30.6	1160	119	16.1					
SS4-90S		90	S1	40	180	360	368	40	16	56	—	—	1910	195	467	47.6	—	—	34.6
SS4-100S		100			200	400	408						2150	219	586	59.7	—	—	42.9
SS4-110S		110			220	440	448						2390	244	720	73.4	—	—	52.0
SS4-120S		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 J59	20	22	25	28	30	32	35	40	45	50	55	60	65
Screw size	6x2.8		8x3.3			10x3.3		12x3.3	14x3.8		16x4.3	18x4.4	
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													
SS4-100SJ BORE													
SS4-110SJ BORE													
SS4-120SJ BORE													

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

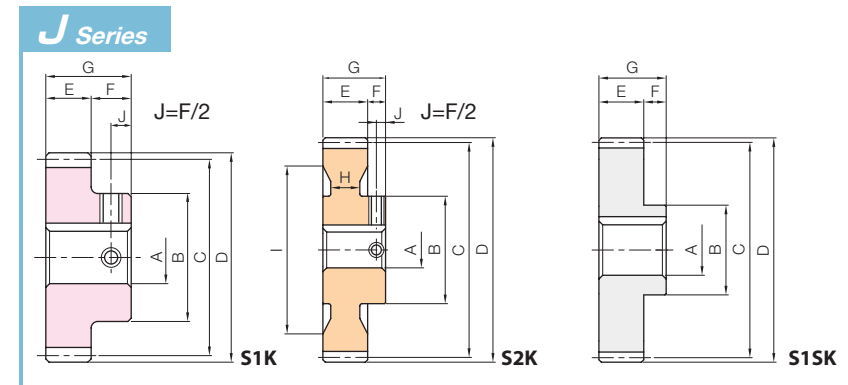
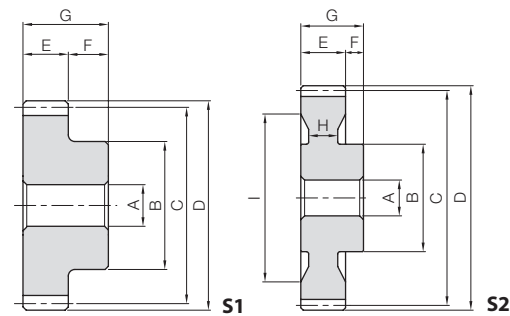
[Caution on J series] ① **Cancellation is not possible** for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.

② "*" is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.



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.



 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						Weight (kg)
													Bending strength		Surface durability		Surface durability ^H		
													N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS5-12		12	S1	22	46	60	70	50	25	75	—	—	254	25.9	15.2	1.55	69.7	7.11	1.21
SS5-13		13			50	65	75						327	33.4	18.4	1.88	84.0	8.57	1.46
SS5-14		14			52	70	80						412	42.0	21.8	2.22	99.1	10.1	1.70
SS5-15		15			60	75	85						462	47.1	25.5	2.60	115	11.8	2.07
SS5-16		16			65	80	90						512	52.2	29.5	3.01	133	13.6	2.40
SS5-17		17			68	85	95						562	57.3	33.8	3.45	152	15.5	2.72
SS5-18		18		70	90	100	614		62.6	38.4			3.92	172	17.6	3.03			
SS5-19		19		76	95	105	666		67.9	43.4			4.42	194	19.8	3.45			
SS5-20		20		82	100	110	718		73.3	48.6			4.96	217	22.1	3.90			
SS5-21		21		90	105	115	772		78.7	54.2			5.53	241	24.5	4.36			
SS5-22		22		25	30	95	110		120	825			84.1	60.1	6.13	266	27.1	4.83	
SS5-23		23				100	115		125	879			89.7	66.3	6.77	293	29.9	5.33	
SS5-24		24	100			120	130	934	95.2	73.0	7.45	321	32.7	5.69					
SS5-25		25	105			125	135	989	101	80.0	8.16	350	35.7	6.23					
SS5-26		26	110			130	140	1040	106	87.1	8.88	379	38.7	6.79					
SS5-27		27	110			135	145	1100	112	94.4	9.62	410	41.8	7.19					
SS5-28		28	110	140	150	1160	118	102	10.4	441	45.0	7.62							
SS5-29		29	115	145	155	1210	124	110	11.2	474	48.4	8.23							
SS5-30		30	120	150	160	1270	129	118	12.1	508	51.8	8.87							
SS5-32		32	120	160	170	1380	141	136	13.8	580	59.1	9.36							
SS5-34		34	S2	30	120	170	180	1500	153	154	15.7	656	66.9	10.4					
SS5-35		35			120	175	185	1550	158	164	16.7	696	71.0	10.9					
SS5-36		36			120	180	190	1610	164	174	17.8	737	75.1	11.5					
SS5-38		38			120	190	200	1730	176	195	19.9	823	83.9	12.6					
SS5-40		40			120	200	210	1730	176	195	19.9	823	83.9	12.6					
SS5-42		42			120	210	220	1540	157	182	18.5	719	73.3	13.2					
SS5-44		44	S2	30	120	210	220	170	1630	167	202	20.6	796	81.2	14.2				
SS5-44		44			120	220	230	175	1730	177	223	22.8	878	89.5	15.4				
SS5-45		45			120	225	235	185	1780	182	234	23.9	920	93.8	15.8				
SS5-46		46			120	230	240	185	1830	187	246	25.1	963	98.2	16.2				
SS5-48		48	120	240	250	200	1930	197	269	27.5	1050	107	17.0						
SS5-50		50	S1	30	120	250	260	—	2030	207	294	30.0	1150	117	20.7				
SS5-52		52			130	260	270	220	2130	217	320	32.6	1250	127	19.8				
SS5-54		54	S2	30	130	270	280	230	2220	227	347	35.4	1350	137	20.9				
SS5-56		56			130	280	290	240	2320	237	375	38.3	1450	148	22.0				
SS5-58		58			130	290	300	240	2420	247	405	41.3	1570	160	23.8				
SS5-60		60			130	300	310	250	2520	257	435	44.4	1680	171	25.1				
SS5-62S		62	S1	40	160	310	320	50	21	71	—	—	2420	247	423	43.1	—	—	32.2
SS5-64S		64			160	320	330						2520	257	453	46.2			34.2
SS5-65S		65			160	325	335						2560	261	468	47.7			35.2
SS5-66S		66			170	330	340						2610	266	484	49.3			36.6
SS5-68S		68			170	340	350						2700	275	516	52.6			38.7
SS5-70S		70	S1	40	180	350	360	50	21	71	—	—	2790	285	549	56.0	—	—	41.3
SS5-80S		80			200	400	410						3260	333	732	74.7			53.8
SS5-90S		90			230	450	460						3730	380	944	96.3			68.6
SS5-100S		100			250	500	510						4200	428	1190	121			84.5
SS5-110S		110			280	550	560						4670	476	1460	149			103
SS5-120S		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		* The product shapes of J Series items are identified by background color.															
Keyway Js9	22	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	
Screw size	6x2.8	8x3.3			10x3.3		12x3.3	14x3.8		16x4.3	18x4.4		20x4.9		22x5.4		
Catalog Number	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		*															
SS5-23 J BORE		*															
SS5-24 J BORE		*															
SS5-25 J BORE		*															
SS5-26 J BORE		*															
SS5-27 J BORE		*															
SS5-28 J BORE		*															
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

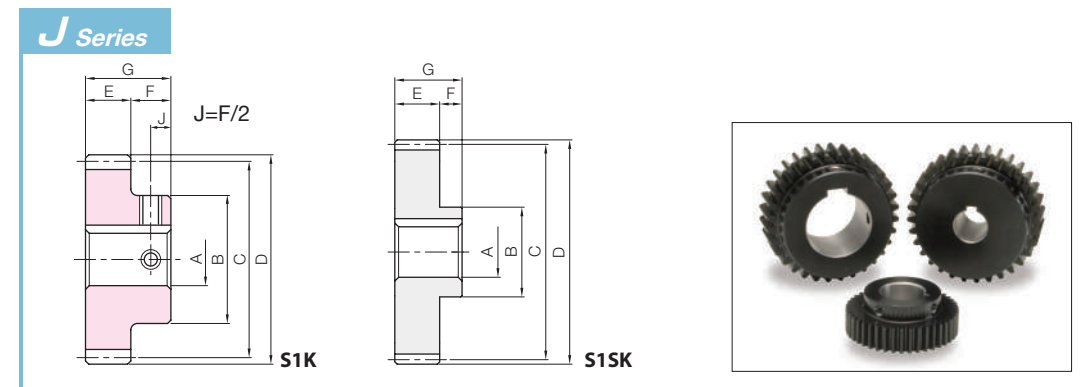
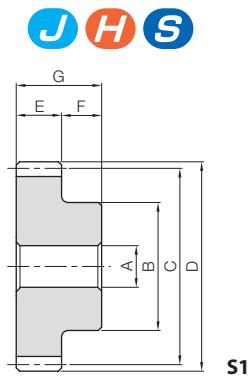
[Caution on J series] ① **Cancellation is not possible** for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.

② **"*"** is a product with the original bore diameter, so Hardened Plus is not available. See Page 22 for more details on Hardened Plus.



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.



 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						Weight (kg)	
										Bending strength		Surface durability		Surface durability ^H			
										N·m	kgf·m	N·m	kgf·m	N·m	kgf·m		
SS6-12		12	S1	25	55	72	84	60	28	88	439	44.8	26.8	2.73	122	12.4	2.10
SS6-14		14			60	84	96				711	72.5	38.4	3.92	173	17.6	2.89
SS6-15		15			70	90	102				798	81.4	44.9	4.58	201	20.5	3.50
SS6-16		16			75	96	108				884	90.2	52.0	5.30	232	23.7	4.04
SS6-17		17			78	102	114				972	99.1	59.6	6.07	265	27.0	4.56
SS6-18		18		80	108	120	1060				108	67.7	6.90	300	30.6	5.08	
SS6-19		19		90	114	126	1150				117	76.4	7.79	338	34.4	5.87	
SS6-20		20		100	120	132	1240				127	85.9	8.75	377	38.5	6.71	
SS6-21		21		105	126	138	1330				136	95.9	9.78	419	42.7	7.35	
SS6-22		22		110	132	144	1430				145	107	10.9	463	47.3	8.11	
SS6-23		23		115	138	150	1520		155	118	12.0	510	52.0	8.90			
SS6-24		24		120	144	156	1610		165	129	13.2	559	57.0	9.73			
SS6-25		25		125	150	162	1710		174	142	14.5	610	62.2	10.6			
SS6-26		26		130	156	168	1800		184	154	15.7	661	67.4	11.5			
SS6-27		27		135	162	174	1900		194	167	17.0	713	72.7	12.4			
SS6-28		28		140	168	180	2000		204	181	18.4	768	78.3	13.4			
SS6-30		30		150	180	192	2190		223	209	21.3	884	90.2	15.4			
SS6-32		32		150	192	204	1990		203	200	20.4	792	80.8	16.4			
SS6-34		34		150	204	216	2150		220	228	23.2	899	91.7	18.1			
SS6-35		35		150	210	222	2240		228	242	24.7	955	97.4	19.0			
SS6-36		36		150	216	228	2320		237	258	26.3	1010	103	20.0			
SS6-38		38		150	228	240	2490		254	289	29.5	1130	116	22.0			
SS6-40		40		150	240	252	2650		271	323	33.0	1260	129	24.0			
SS6-42		42		150	252	264	2820		288	359	36.6	1400	143	25.9			
SS6-44		44		150	264	276	2990		305	397	40.5	1540	157	28.2			
SS6-45		45	180	270	282	3080	314	416	42.5	1620	165	30.7					
SS6-46		46	180	276	288	3160	322	436	44.5	1690	173	32.0					
SS6-48		48	180	288	300	3330	340	478	48.8	1850	189	34.5					
SS6-50		50	180	300	312	3500	357	522	53.2	2020	206	37.1					
SS6-52S		52	S1	40	180	312	324	60	23	83	3390	346	515	52.5	—	—	39.8
SS6-54S		54			180	324	336				3550	362	558	56.9			42.6
SS6-55S		55			180	330	342				3630	370	581	59.2			44.1
SS6-56S		56			180	336	348				3710	378	603	61.5			45.5
SS6-58S		58			180	348	360				3870	394	651	66.4			48.6
SS6-60S		60		180	360	372	4030				411	700	71.4	51.7			
SS6-62S		62		190	372	384	4190				427	751	76.6	55.5			
SS6-64S		64		190	384	396	4350				443	804	82.0	58.9			
SS6-65S		65		200	390	402	4430				451	832	84.8	61.1			
SS6-66S		66		200	396	408	4510				460	860	87.7	62.9			
SS6-68S		68		200	408	420	4670		476	917	93.5	66.4					
SS6-70S		70		210	420	432	4830		492	976	99.5	70.7					
SS6-80S		80		240	480	492	5630		575	1300	133	92.6					
SS6-90S		90		270	540	552	6440		657	1680	172	117					
SS6-100S		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).

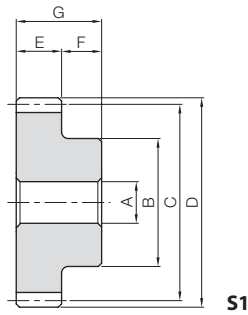
To order J Series products, please specify: **Catalog No. + J + BORE.** Example: SS6-12J25

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	8x3.3			10x3.3		12x3.3	14x3.8		16x4.3	18x4.4		20x4.9		22x5.4		
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.



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)

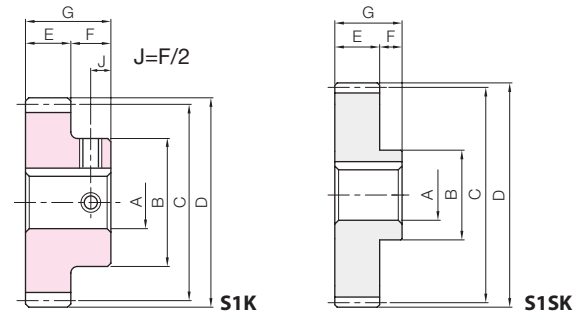
* The precision grade of J Series products is equivalent to the value shown in the table.

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						Weight (kg)
											Bending strength		Surface durability		Surface durability 		
											N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS8-12		12	S1	28	75	96	112	75	35	110	975	99.5	62.6	6.39	280	28.5	4.94
SS8-13		13			80	104	120				1260	128	75.2	7.66	334	34.1	5.85
SS8-14		14			85	112	128				1580	161	88.9	9.06	393	40.1	6.83
SS8-15		15			90	120	136				1770	181	104	10.6	458	46.7	7.87
SS8-16		16			100	128	144				1970	200	121	12.3	527	53.7	9.20
SS8-17		17			105	136	152				2160	220	139	14.1	601	61.3	10.4
SS8-18		18			110	144	160				2360	240	158	16.1	681	69.4	11.7
SS8-19		19			120	152	168				2560	261	178	18.2	765	78.0	13.3
SS8-20		20			130	160	176				2760	281	200	20.4	855	87.2	15.0
SS8-21		21			140	168	184				2960	302	223	22.8	949	96.8	16.7
SS8-22		22	30	30	150	176	192	75	35	110	3170	323	248	25.3	1050	107	18.6
SS8-23		23			155	184	200				3380	344	273	27.9	1150	118	20.2
SS8-24		24			160	192	208				2990	305	250	25.5	991	101	22.0
SS8-25		25			170	200	216				3160	323	273	27.8	1080	110	24.1
SS8-26		26			170	208	224				3340	341	297	30.3	1170	119	25.6
SS8-27		27			170	216	232				3520	359	322	32.8	1270	129	27.2
SS8-28		28			180	224	240				3700	377	348	35.5	1370	139	29.6
SS8-30		30			180	240	256				4060	414	404	41.2	1580	161	33.0
SS8-32S		32	S1	40	200	256	272	75	35	110	4080	416	421	42.9	—	—	37.9
SS8-34S		34			210	272	288				4420	451	479	48.9			42.6
SS8-35S		35			210	280	296				4590	468	510	52.0			44.7
SS8-36S		36			210	288	304				4760	486	542	55.3			46.8
SS8-38S		38			220	304	320				5100	520	608	62.0			52.1
SS8-40S		40			220	320	336				5450	555	679	69.3			56.7
SS8-42S		42			230	336	352				5790	591	754	76.9			62.5
SS8-44S		44			230	352	368				6140	626	834	85.0			67.6
SS8-45S		45			230	360	376				6310	644	875	89.2			70.3
SS8-46S		46			240	368	384				6490	662	917	93.6			74.0
SS8-48S		48	40	40	240	384	400	75	35	110	6840	697	1010	103	—	—	79.5
SS8-50S		50			240	400	416				7190	733	1100	112			85.3
SS8-52S		52			240	416	432				7540	769	1200	122			91.4
SS8-54S		54			240	432	448				7890	805	1300	132			97.6
SS8-55S		55			240	440	456				8070	823	1350	138			101
SS8-56S		56			240	448	464				8240	841	1400	143			104
SS8-58S		58			240	464	480				8600	877	1510	154			111
SS8-59S		59			240	472	488				8770	895	1570	160			114
SS8-60S		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).

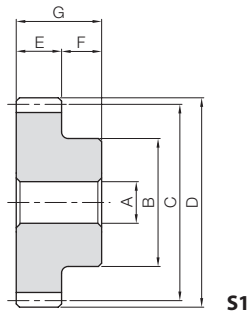
J Series



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.																			
	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	120
Keyway Js9	8x3.3	10x3.3	12x3.3	14x3.8	16x4.3	18x4.4	20x4.9	22x5.4	25x5.4	28x6.4	32x7.4	36x8.4								
Screw size	M6	M8	M10	M12	M16	M20	M24													
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																				
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SS8-25 J BORE																				
SS8-26 J BORE																				
SS8-27 J BORE																				
SS8-28 J BORE																				
SS8-30 J BORE																				
SS8-32SJ BORE																				
SS8-34SJ BORE																				
SS8-35SJ BORE																				
SS8-36SJ BORE																				
SS8-38SJ BORE																				
SS8-40SJ BORE																				
SS8-42SJ BORE																				
SS8-44SJ BORE																				
SS8-45SJ BORE																				
SS8-46SJ BORE																				
SS8-48SJ BORE																				
SS8-50SJ BORE																				
SS8-52SJ BORE																				
SS8-54SJ BORE																				
SS8-55SJ BORE																				
SS8-56SJ BORE																				
SS8-58SJ BORE																				
SS8-59SJ BORE																				
SS8-60SJ 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 **Hardened Plus is not available** for products listed in the J Series lineup.



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.

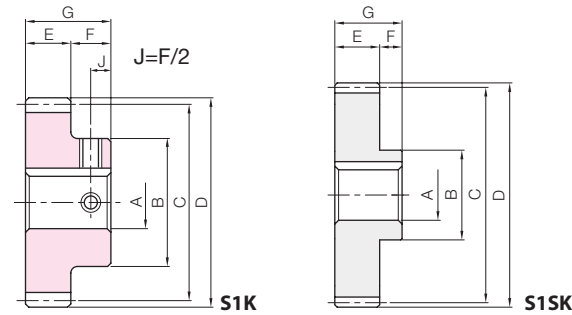
H To order Hardened Plus, please specify **Catalog No. + H**. **Example: SS10-15H**

Catalog Number		No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque						Weight (kg)
				A _{H7}	B	C	D	E	F	G	Bending strength		Surface durability		Surface durability 		
											N·m	kgf·m	N·m	kgf·m	N·m	kgf·m	
SS10-15		15	S1	30	115	150	170	90	40	130	3330	203	339	20.7	871	88.8	15.0
SS10-20		20		30	165	200	220				4310	323	440	33.0	1280	130	28.2
SS10-25		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	㊦	26	S1	50	210	260	280	90	40	130	5790	522	590	53.3	0.34~0.68	46.4
SS10-27S	㊦	27			220	270	290				6100	566	622	57.7		50.4
SS10-28S	㊦	28			220	280	300				6400	612	653	62.4		53.4
SS10-29S	㊦	29			230	290	310				6720	660	685	67.3		57.7
SS10-30S	㊦	30			240	300	320				7030	710	717	72.4		62.1
SS10-32S	㊦	32			250	320	340				7660	815	781	83.1		70.2
SS10-34S	㊦	34			260	340	360				8290	929	845	94.7		78.8
SS10-35S	㊦	35			260	350	370				8610	988	878	101		82.6
SS10-36S	㊦	36			270	360	380				8930	1050	910	107		87.9
SS10-38S	㊦	38			270	380	400				9570	1180	976	120		96.1
SS10-40S	㊦	40			280	400	420				10200	1320	1040	134		106
SS10-42S	㊦	42			290	420	440				10900	1460	1110	149		117
SS10-44S	㊦	44			290	440	460				11500	1620	1170	165		126
SS10-45S	㊦	45			290	450	470				11800	1700	1210	173		131
SS10-46S	㊦	46			290	460	480				12200	1780	1240	182		136
SS10-48S	㊦	48			300	480	500				12800	1950	1310	199		148
SS10-50S	㊦	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).

J 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 J _{S9}	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	14x3.8	16x4.3	18x4.4		20x4.9		22x5.4		25x5.4		28x6.4			32x7.4		36x8.4		40x9.4		45x10.4			
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.**



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

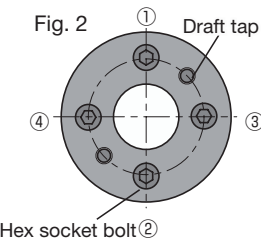
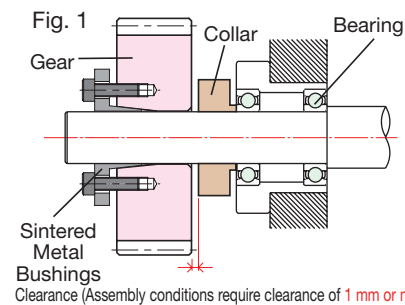
* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

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%.



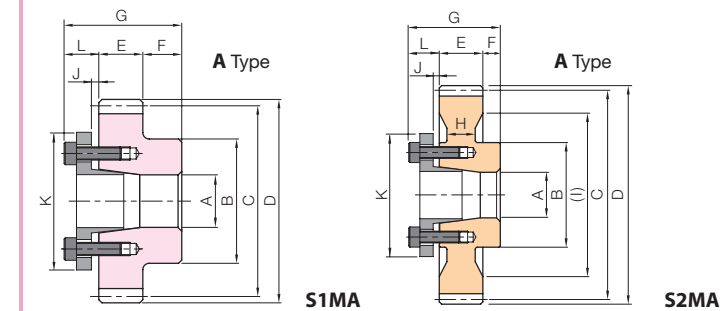
Catalog Number	No. of teeth	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Web thickness	Web O.D.	Allowable torque (N·m)	
		B	C	D	E	F	H	I	Bending strength	Surface durability
SS1.5-26	26	32	39	42	15	10	—	—	28.2	2.06
SS1.5-27	27	34	40.5	43.5					29.7	2.23
SS1.5-28	28	36	42	45					31.2	2.41
SS1.5-29	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	15	10	—	—	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					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	15	10	—	—	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	15	10	—	—	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
SS1.5-120	120	70	180	183					10	153
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.

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.

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		10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
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														
	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						
	Size	M4x12					M4x15							M5x18		
	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

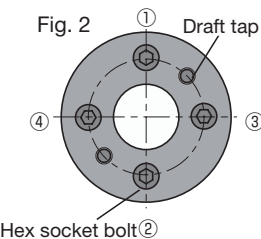
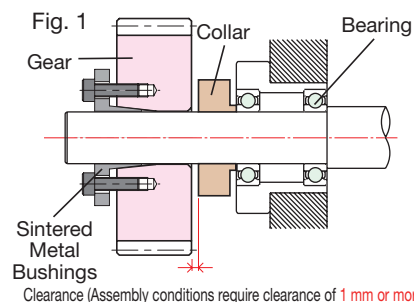
* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

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%.



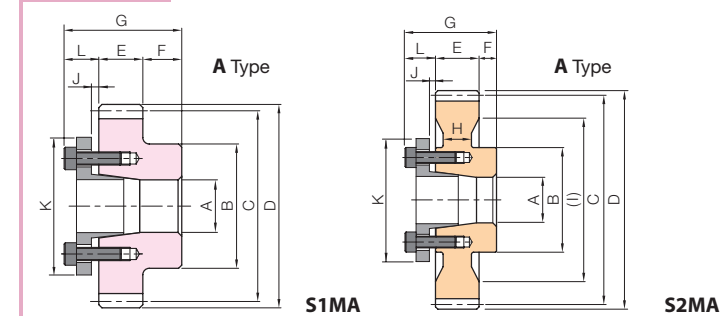
Catalog Number	No. of teeth	Hub dia.		Pitch dia.	Outside dia.	Face width		Hub width	Web thickness	Web O.D.	Allowable torque (N·m)	
		B	C			E	F					
SS2-23	23	37	46	50							56.3	3.86
SS2-24	24	38	48	52							59.8	4.24
SS2-25	25	40	50	54							63.3	4.64
SS2-26	26	42	52	56							66.8	5.04
SS2-27	27	45	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				12		136	271	54.3
SS2-84	84	70	168	172						140	287	60.2
SS2-85	85	70	170	174						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.

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.

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		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											19	
	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	
	Size	M4×12			M4×15						M5×18					M6×25	
	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

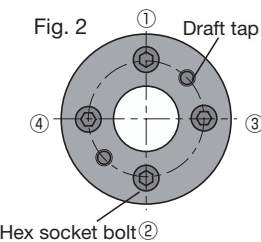
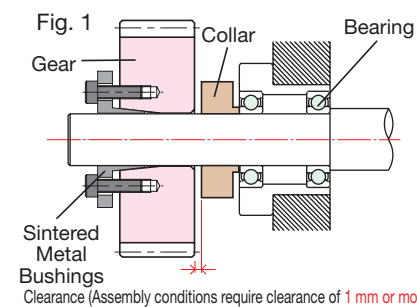
* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

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%.

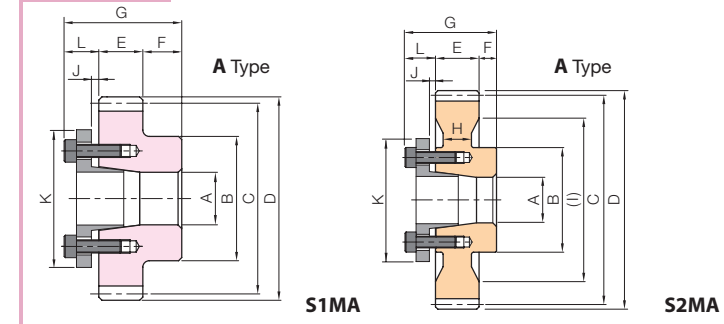


Catalog Number	No. of teeth	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Web thickness	Web O.D.	Allowable torque (N·m)	
		B	C	D	E	F	H	I	Bending strength	Surface durability
SS2.5-22	22	44	55	60	25	12	—	—	103	6.99
SS2.5-23	23	46	57.5	62.5					110	7.71
SS2.5-24	24	48	60	65					117	8.47
SS2.5-25	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	25	12	—	—	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					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	15	—	15	131	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					409	67.8
SS2.5-66	66	80	165	170					424	72.4
SS2.5-68	68	80	170	175					439	77.2
SS2.5-70	70	80	175	180					454	82.1
SS2.5-72	72	80	180	185					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.

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.



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
	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
	Size	M4×15					M5×18							M6×25
	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

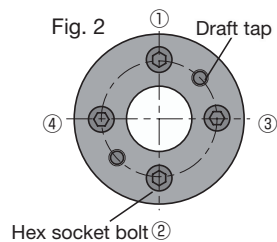
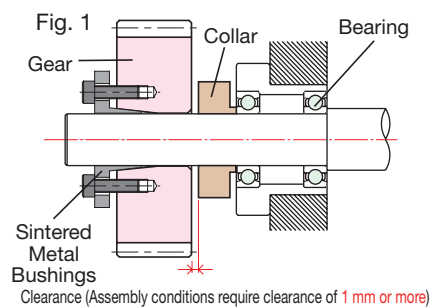
- No rattling of shaft and gear when fastening
- Freely positionable mounting for easy meshing of teeth
- Easily mounted and removed for repeated use
- The bushing slips when overloaded to reduce damage to the gears

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%.

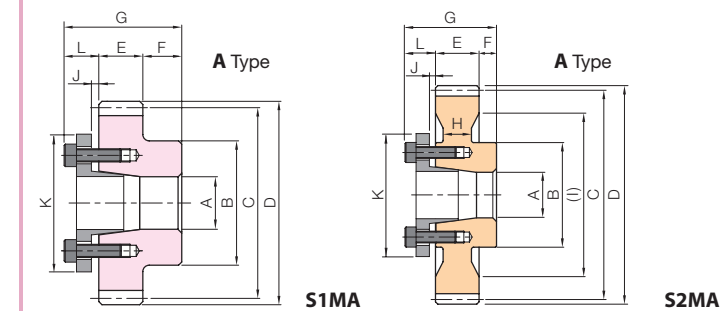
Catalog Number	No. of teeth	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Web thickness H	Web O.D. I	Allowable torque (N·m)	Bending strength Surface durability
SS3-19	19	45	57	63					144	8.88
SS3-20	20	50	60	66					155	9.95
SS3-21	21	52	63	69					167	11.1
SS3-22	22	54	66	72					178	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.



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.



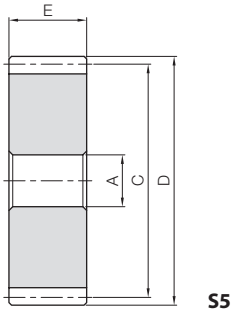
To order F Series products, please specify: **Catalog Number + F + BORE + A.**

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
	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
	Size	M4×15					M5×18								M6×25
	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	



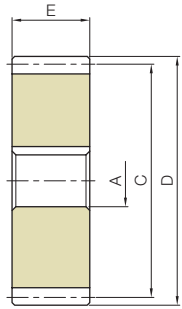
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating

* 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						Backlash (mm)	Weight (kg)
									Bending strength		Surface durability		Surface durability 			
									N·m	kgf·m	N·m	kgf·m	N·m	kgf·m		
SSA1-20		m1	20	S5	8	20	22	10	5.75	0.59	0.33	0.033	1.59	0.16	0.08~0.18	0.021
SSA1-24			24			26	7.47		0.76	0.49	0.050	2.36	0.24	0.032		
SSA1-25			25			27	7.91		0.81	0.54	0.055	2.57	0.26	0.035		
SSA1-28			28			30	9.24		0.94	0.68	0.070	3.25	0.33	0.044		
SSA1-30			30			32	10.1		1.03	0.79	0.081	3.74	0.38	0.052		
SSA1-32			32			34	11.1		1.13	0.90	0.092	4.27	0.44	0.059		
SSA1-35			35		37	12.4	1.27		1.09	0.11	5.13	0.52	0.072			
SSA1-36			36		38	12.9	1.31		1.16	0.12	5.44	0.55	0.076			
SSA1-40			40		42	14.7	1.50		1.45	0.15	6.76	0.69	0.095			
SSA1-45			45		47	17.1	1.74		1.86	0.19	8.62	0.88	0.12			
SSA1-48			48		50	18.5	1.89		2.13	0.22	9.84	1.00	0.14			
SSA1-50			50		52	19.5	1.98		2.32	0.24	10.7	1.09	0.15			
SSA1-55		55	57	21.8	2.23	2.83	0.29	13.0	1.33	0.18						
SSA1-56		56	58	22.3	2.28	2.94	0.30	13.5	1.38	0.19						
SSA1-60		60	62	24.2	2.47	3.40	0.35	15.6	1.59	0.22						
SSA1-70		70	72	29.1	2.96	4.70	0.48	21.4	2.18	0.30						
SSA1-80		80	82	33.9	3.46	6.23	0.63	28.1	2.87	0.39						
SSA1-100		100	102	43.7	4.45	9.97	1.02	44.4	4.53	0.61						
SSA1-120		120	122	53.5	5.45	14.7	1.50	64.4	6.57	0.88						
SSA1.5-20		m1.5	20	S5	10	30	33	15	19.4	1.98	1.15	0.12	5.47	0.56	0.10~0.22	0.074
SSA1.5-24			24			36	39		25.2	2.57	1.73	0.18	8.12	0.83		0.11
SSA1.5-25			25			37.5	40.5		26.7	2.72	1.90	0.19	8.87	0.90		0.12
SSA1.5-28			28			42	45		31.2	3.18	2.41	0.25	11.2	1.14		0.15
SSA1.5-30			30			45	48		34.2	3.49	2.79	0.28	12.9	1.32		0.18
SSA1.5-32			32			48	51		37.3	3.80	3.19	0.33	14.8	1.51		0.20
SSA1.5-35			35		52.5	55.5	41.9		4.28	3.85	0.39	17.8	1.81	0.25		
SSA1.5-36			36		54	57	43.5		4.43	4.09	0.42	18.8	1.92	0.26		
SSA1.5-40			40		60	63	49.8		5.07	5.10	0.52	23.4	2.38	0.31		
SSA1.5-45			45		67.5	70.5	57.7		5.88	6.53	0.67	29.8	3.03	0.40		
SSA1.5-48			48		72	75	62.4		6.37	7.47	0.76	34.0	3.46	0.46		
SSA1.5-50			50		75	78	65.7		6.69	8.15	0.83	36.9	3.77	0.50		
SSA1.5-56		56	84	87	75.3	7.68	10.4	1.06	46.6	4.75	0.63					
SSA1.5-60		60	90	93	81.8	8.34	12.0	1.22	53.7	5.47	0.73					
SSA1.5-70		70	105	108	98.0	10.0	16.6	1.69	73.6	7.50	1.00					
SSA1.5-80		80	120	123	114	11.7	22.0	2.24	96.7	9.86	1.31					
SSA1.5-100		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						*															

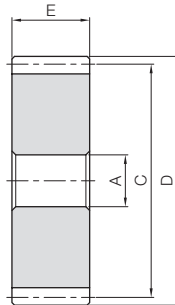
To order J Series Hardened Plus products, please specify: Catalog No. + H + J + BORE.
Example: SSA1-24HJ10

[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.



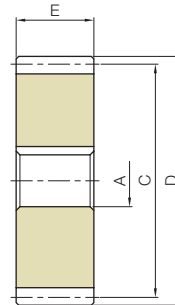
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating

* 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: **SSA2-15H**

Catalog Number		Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque						Backlash (mm)	Weight (kg)
									Bending strength		Surface durability		Surface durability 			
									N·m	kgf·m	N·m	kgf·m	N·m	kgf·m		
SSA2-15		m2	15	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		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	25	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	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		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	20	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		* 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		—																		
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

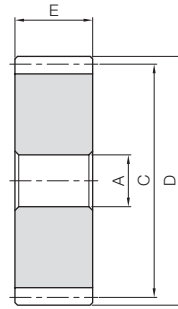
To order J Series Hardened Plus products, please specify: **Catalog No. + H + J + BORE**. Example: **SSA2-15HJ12**

[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.



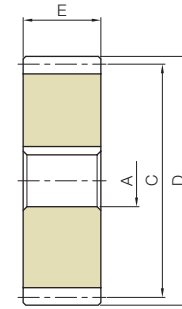
Specifications	
Precision grade	JIS grade N8 (JIS B1702-1:1998)
Gear teeth	Standard full depth
Pressure angle	20°
Material	S45C
Heat treatment	—
Tooth hardness	(less than 194HB)
Surface treatment	Black oxide coating

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



S5

J Series



S5K



 To order Hardened Plus, please specify **Catalog No. + H.**

Example: SSA3-15H

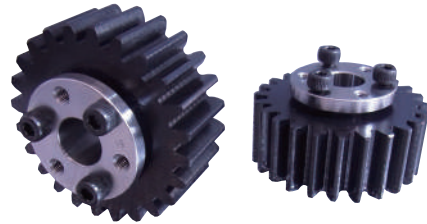
Catalog Number		Module	No. of teeth	Shape	Bore	Pitch dia.	Outside dia.	Face width	Allowable torque						Backlash (mm)	Weight (kg)					
					A _{H7}	C	D	E	Bending strength		Surface durability		Surface durability 								
									N·m	kgf·m	N·m	kgf·m	N·m	kgf·m							
SSA3-15		m3	15	S5	12	45	51	30	99.7	10.2	5.22	0.53	24.2	2.47	0.14~0.32	0.35					
SSA3-18			18			54	60		133	13.5	7.87	0.80	36.2	3.69		0.51					
SSA3-20			20			60	66		155	15.8	9.95	1.02	45.6	4.65		0.62					
SSA3-24			24			72	78		202	20.6	14.9	1.52	67.7	6.90		0.92					
SSA3-25			25	75	81	214	21.8	16.3	1.66	73.9	7.53	1.00									
SSA3-28			28	20	20	84	90	30	250	25.4	20.7	2.11	93.2	9.50		0.14~0.32	1.23				
SSA3-30			30			90	96		274	27.9	24.0	2.44	107	10.9			1.42				
SSA3-32			32			96	102		298	30.4	27.4	2.80	123	12.5			1.63				
SSA3-35			35			105	111		335	34.2	33.1	3.38	147	15.0			1.97				
SSA3-36			36	108	114	348	35.5	35.2	3.59	156	15.9	2.08									
SSA3-40			40	25	25	120	126	30	398	40.6	44.0	4.49	193	19.1			0.14~0.32	2.55			
SSA3-45			45			135	141		461	47.0	56.6	5.78	246	25.1				3.26			
SSA3-48			48			144	150		500	50.9	65.0	6.63	281	28.6				3.72			
SSA3-50			50			150	156		525	53.6	70.9	7.23	305	31.1				4.05			
SSA3-55			55	165	171	590	60.1	86.9	8.86	370	37.8	4.92									
SSA3-56			56	25	25	168	174	30	602	61.4	90.3	9.21	384	39.2				0.14~0.32	5.10		
SSA3-60		60	180			186	654		66.7	105	10.7	442	45.1	5.88							
SSA3-70		70	210			216	654		66.6	121	12.4	478	48.7	8.04							
SSA3-80		80	240			246	763		77.8	162	16.5	632	64.4	10.5							
SSA4-15		m4	15	S5	20	60	68	40	236	24.1	12.8	1.30	58.4	5.96	0.18~0.38				0.79		
SSA4-18			18			72	80		314	32.0	19.2	1.96	87.2	8.89					1.18		
SSA4-20			20			80	88		368	37.5	24.3	2.48	110	11.2		1.48					
SSA4-24			24			96	104		478	48.8	36.4	3.72	163	16.6		2.17					
SSA4-25			25	100	108	506	51.6	39.9	4.07	178	18.1	2.37									
SSA4-28			28	25	25	112	120	40	591	60.3	50.6	5.16	224	22.8		0.18~0.38			2.94		
SSA4-30			30			120	128		649	66.2	58.7	5.98	258	26.3					3.40		
SSA4-32			32			128	136		707	72.1	67.4	6.87	294	30.0			3.89				
SSA4-35			35			140	148		795	81.1	81.6	8.32	353	36.0			4.68				
SSA4-36			36	144	152	825	84.1	86.7	8.84	374	38.1	4.96									
SSA4-40			40	30	30	160	168	40	943	96.2	109	11.1	464	47.3			0.18~0.38		6.09		
SSA4-45			45			180	188		1090	112	139	14.2	590	60.1					7.77		
SSA4-48			48			192	200		987	101	133	13.6	528	53.9				8.87			
SSA4-50			50			200	208		1040	106	146	14.8	575	58.6				9.64			
SSA4-55			55	220	228	1160	119	179	18.2	702	71.6	11.7									
SSA4-56			56	30	30	224	232	50	1190	121	186	18.9	729	74.3				0.20~0.44	12.2		
SSA4-60		60	240			248	1290		132	215	22.0	842	85.9	14.0							
SSA5-15		15	20			20	75		85	50	462	47.1	25.5	2.60	115				11.8	0.20~0.44	1.61
SSA5-18		18					90		100		614	62.6	38.4	3.92	172				17.6		2.37
SSA5-20		20		100	110		718	73.3	48.6		4.96	217	22.1	2.93							
SSA5-24		24		120	130		934	95.2	73.0		7.45	321	32.7	4.29							
SSA5-25		25	125	135	989	101	80.0	8.16	350	35.7	4.67										
SSA5-28		28	25	25	140	150	50	1160	118	102	10.4	441	45.0	0.20~0.44	5.85						
SSA5-30		30			150	160		1270	129	118	12.1	508	51.8		6.74						
SSA5-32		32			160	170		1380	141	136	13.8	580	59.1		7.70						
SSA5-35		35			175	185		1550	158	164	16.7	696	71.0		9.25						
SSA5-36		36	180	190	1610	164	174	17.8	737	75.1	9.80										
SSA5-40		40	30	30	200	210	50	1540	157	182	18.5	719	73.3		0.20~0.44	12.1					
SSA5-45		45			225	235		1780	182	234	23.9	920	93.8			15.3					
SSA5-48		48			240	250		1930	197	269	27.5	1050	107			17.5					
SSA5-50		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

[illegible]

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

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

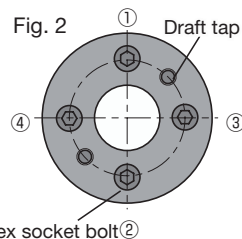
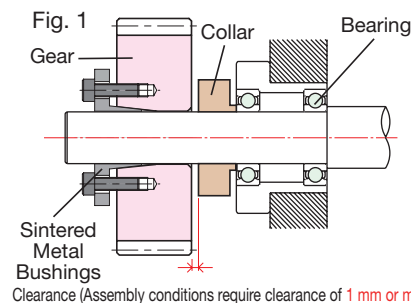
* The precision grade of F Series products is equivalent to the value shown in the table.
* Bushing material: S45C, screw material: SCM435

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%.

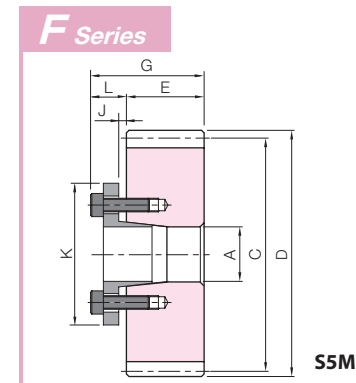


Catalog Number	Module	No. of teeth	Pitch dia.		Outside dia.	Face width	Allowable torque (N·m)	
			C	D		E	Bending strength	Surface durability
SSA2-24	m2	24	48	52	20		59.8	4.24
SSA2-25		25	50	54			63.3	4.64
SSA2-28		28	56	60			73.9	5.89
SSA2-30		30	60	64			81.1	6.80
SSA2-32		32	64	68			88.4	7.78
SSA2-35		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		45	90	94			137	16.0
SSA2-48		48	96	100			148	18.3
SSA2-50	m2.5	50	100	104	25		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	m2.5	30	75	80	25		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		40	100	105			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	m2.5	70	175	180	25		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.

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.



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	L	10	12							14							
Bushings	K	31	36	37	38	39	40	42	46	47	51	53	56	58	61		
Clearance	J	2	3							3							
Total Length	G	m2	30	32							34						
		m2.5	35	37							39						
Hex socket bolt	Qty	3	4							4							
	Size	M4×12	M4×15							M5×18							
	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%.

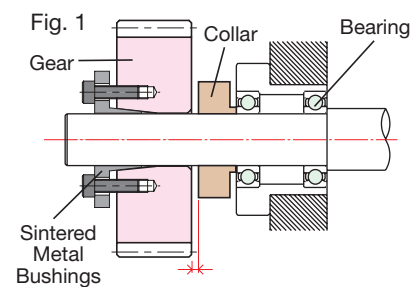


Fig. 1
Clearance (Assembly conditions require clearance of 1 mm or more)

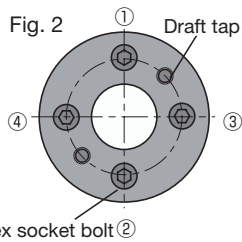


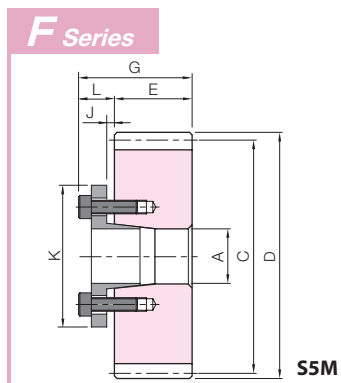
Fig. 2
Hex socket bolt ②

Catalog Number	Module	No. of teeth	Pitch dia.	Outside dia.	Face width	Allowable torque (N·m)	
			C	D	E	Bending strength	Surface durability
SSA3-20	m3	20	60	66	30	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		40	120	126		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.

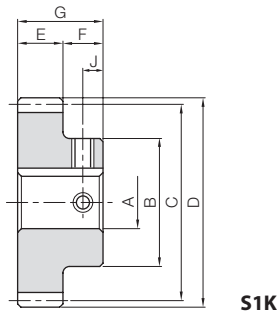
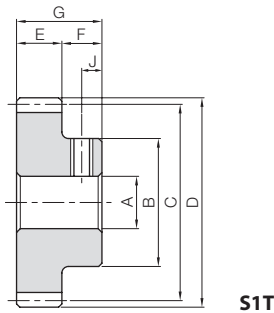
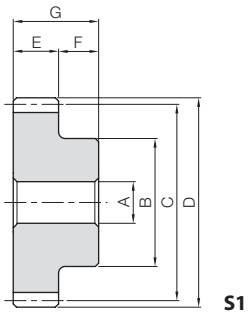
Removal Method and Precautions

- 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.



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
	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						6
	Size	M4×15						M5×18						M6×25
	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

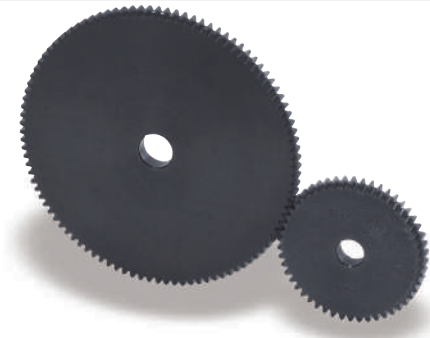
* The precision grade of products with a module of less than 0.8 is equivalent to the value shown in the table.

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

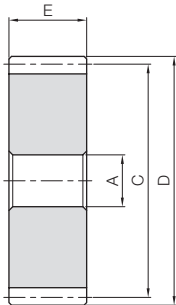
Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Keyway
				A _{H7}	B	C	D	E	F	G	Width x Depth
SSY0.8-20	m0.8	20	S1	5	13.5	16	17.6	4	8	12	—
SSY0.8-25		25	S1	5	17	20	21.6				
SSY0.8-30		30	S1	5	20	24	25.6				
SSY0.8-40		40	S1	5	25	32	33.6				
SSY0.8-50 SSY0.8-50A		50	S1 S1T	5 6	25	40	41.6				
SSY1-12 SSY1-12A	m1	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						Backlash (mm)	Weight (kg)	Catalog Number	
		Bending strength		Surface durability		Surface durability 					
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	
—	—	4.98	0.51	0.580	0.059	2.70	0.28		0.068	SSY0.8-50	
M4	4					—	—		0.067	SSY0.8-50A	
—	—	1.22	0.12	0.069	0.0070	0.34	0.034	0.08~0.18	0.0072	SSY1-12	
M4	4	1.98	0.20	0.096	0.010	—	—		0.0070	SSY1-12A	
M4	4					0.47	0.048		0.011	SSY1-14	
—	—	2.22	0.23	0.11	0.011	—	—		0.011	SSY1-14A	
M4	4					0.54	0.055		0.012	SSY1-15	
—	—	2.46	0.25	0.13	0.013	—	—		0.012	SSY1-15A	
M4	4					0.62	0.063		0.015	SSY1-16	
—	—	2.95	0.30	0.16	0.017	—	—		0.014	SSY1-16A	
M4	4					0.79	0.08		0.019	SSY1-18	
—	—	3.45	0.35	0.20	0.021	0.98	0.10		0.018	SSY1-18A	
M4	4					—	—		0.024	SSY1-20	
M5	4	4.48	0.46	0.30	0.030	—	—		0.024	SSY1-20A	
—	—					4.74	0.48		0.32	0.033	1.54
—	—	5.55	0.57	0.41	0.042	1.42	0.14		0.031	SSY1-24	
M4	4					—	—		0.030	SSY1-24A	
—	—	6.08	0.62	0.47	0.048	1.95	0.20		0.033	SSY1-25	
M4	4					—	—		0.039	SSY1-28	
—	—	6.63	0.68	0.54	0.055	2.24	0.23		0.038	SSY1-28A	
M4	4					—	—		0.061	SSY1-30	
M5	4	7.45	0.76	0.66	0.067	—	—		0.060	SSY1-30A	
—	—					7.73	0.79		0.70	0.071	3.26
—	—	8.84	0.90	0.87	0.089	4.05	0.41		0.066	SSY1-32	
M5	4					—	—		0.073	SSY1-35	
—	—	10.3	1.05	1.12	0.11	5.17	0.53		0.069	SSY1-35A	
—	—					11.1	1.13		1.28	0.13	3.08
—	—	11.7	1.19	1.39	0.14	—	—		0.092	SSY1-40	
—	—					13.1	1.34		1.70	0.17	4.05
—	—	13.4	1.37	1.77	0.18	8.11	0.83		0.11	SSY1-45	
—	—					14.5	1.48		2.04	0.21	9.34
—	—	15.7	1.60	2.34	0.24	10.7	1.09		0.13	SSY1-50	
—	—					17.4	1.78		2.82	0.29	12.8
—	—	18.0	1.84	2.99	0.30	13.6	1.39		0.15	SSY1-56	
—	—					18.9	1.93		3.26	0.33	14.8
—	—	20.3	2.07	3.74	0.38	16.9	1.72		0.21	SSY1-64	
—	—					23.3	2.37		4.79	0.49	21.5
—	—	26.2	2.67	5.98	0.61	26.6	2.72	0.25	SSY1-72		
—	—					29.1	2.97	7.31	0.75	32.4	3.30
—	—	32.1	3.27	8.80	0.90	38.7	3.94	0.31	SSY1-80		
M4	4					—	—	0.37	SSY1-90		
—	—	29.1	2.97	7.31	0.75	32.4	3.30	0.48	SSY1-100		
—	—					29.1	2.97	7.31	0.75	32.4	3.30
—	—	32.1	3.27	8.80	0.90	38.7	3.94	0.65	SSY1-120		
M4	4					—	—	0.58	SSY1-120A		

[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



S5

H 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		Surface durability		Surface durability 	
					A _{H7}	C	D	E	N·m	kgf·m	N·m	kgf·m	N·m	kgf·m
SSAY1-20 SSAY1-24 SSAY1-25 SSAY1-28 SSAY1-30	    	m1	20	S5	6	20	22	6	3.45	0.35	0.20	0.021	0.98	0.10
			24			24	26		4.48	0.46	0.30	0.030	1.42	0.14
			25			25	27		4.74	0.48	0.32	0.033	1.54	0.16
			28			28	30		5.55	0.57	0.41	0.042	1.95	0.20
			30			30	32		6.08	0.62	0.47	0.048	2.24	0.23
SSAY1-32 SSAY1-35 SSAY1-36 SSAY1-40 SSAY1-45	    		32	6	32	34	6.63		0.68	0.54	0.055	2.56	0.26	
			35		35	37	7.45		0.76	0.66	0.067	3.08	0.31	
			36		36	38	7.73		0.79	0.70	0.071	3.26	0.33	
			40		40	42	8.84		0.90	0.87	0.089	4.05	0.41	
			45		45	47	10.3		1.05	1.12	0.11	5.17	0.53	
SSAY1-48 SSAY1-50 SSAY1-55 SSAY1-56 SSAY1-60	    	48	8	48	50	11.1	1.13	1.28	0.13	5.90	0.60			
		50		50	52	11.7	1.19	1.39	0.14	6.42	0.65			
		55		55	57	13.1	1.34	1.70	0.17	7.81	0.80			
		56		56	58	13.4	1.37	1.77	0.18	8.11	0.83			
		60		60	62	14.5	1.48	2.04	0.21	9.34	0.95			
SSAY1-70 SSAY1-80 SSAY1-100	  	70	10	70	72	17.4	1.78	2.82	0.29	12.8	1.31			
		80		80	82	20.3	2.07	3.74	0.38	16.9	1.72			
		100		100	102	26.2	2.67	5.98	0.61	26.6	2.72			

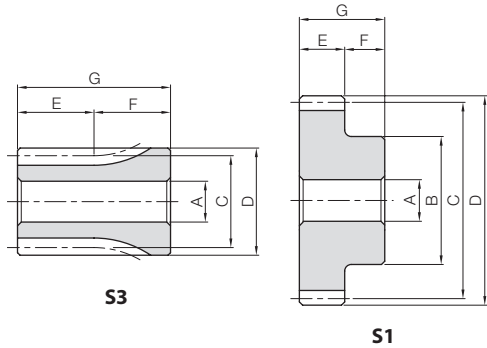
[Caution on Secondary Operations] ① See Page 22 for more details on Hardened Plus (H Series and HJ Series).

Backlash (mm)	Weight (kg)	Catalog Number	
0.08~0.18	0.013	SSAY1-20	H
	0.020	SSAY1-24	H
	0.022	SSAY1-25	H
	0.028	SSAY1-28	H
	0.032	SSAY1-30	H
	0.037	SSAY1-32	H
	0.044	SSAY1-35	H
	0.047	SSAY1-36	H
	0.058	SSAY1-40	H
	0.074	SSAY1-45	H
	0.084	SSAY1-48	H
	0.090	SSAY1-50	H
	0.11	SSAY1-55	H
	0.11	SSAY1-56	H
	0.13	SSAY1-60	H
	0.18	SSAY1-70	H
	0.23	SSAY1-80	H
	0.37	SSAY1-100	H

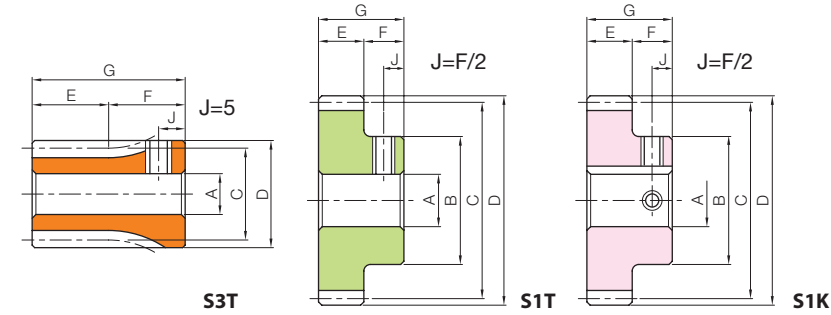


Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	SUS303
Heat treatment	—
Tooth hardness	(less than 187HB)

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



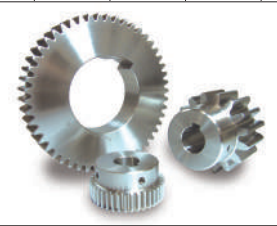
J Series



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

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			
SUS1-15	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			16	20	22		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	S1		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		10	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			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	12		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		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

Bore H7	* The product shapes of J Series items are identified by background color.																
	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	
Keyway J _{s9}	-	4×1.8															
Screw size	-	4×1.8				5×2.3				6×2.8				8×3.3		10×3.3	
Catalog Number	M5					M4				M5				M6		M8	
SUS1-15 J BORE																	
SUS1-16 J BORE																	
SUS1-18 J BORE																	
SUS1-20 J BORE																	
SUS1-22 J BORE																	
SUS1-24 J BORE																	
SUS1-25 J BORE																	
SUS1-28 J BORE																	
SUS1-30 J BORE																	
SUS1-32 J BORE																	
SUS1-35 J BORE																	
SUS1-36 J BORE																	
SUS1-40 J BORE																	
SUS1-45 J BORE																	
SUS1-48 J BORE																	
SUS1-50 J BORE																	
SUS1-55 J BORE																	
SUS1-56 J BORE																	
SUS1-60 J BORE																	
SUS1-64 J BORE																	
SUS1-70 J BORE																	
SUS1-80 J BORE																	
SUS1-90 J BORE																	
SUS1-100 J BORE																	
SUS1-120 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.

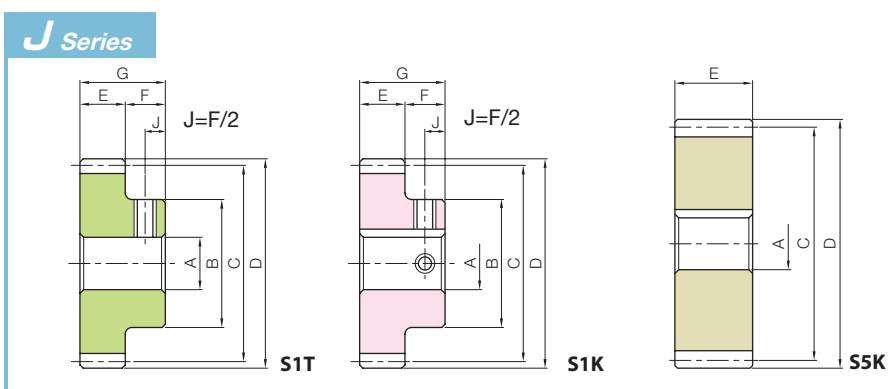
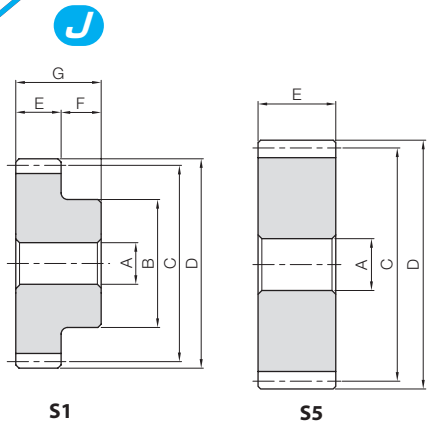


Stainless Steel Spur Gears



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.



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		10	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			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		12	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			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		15	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			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	15	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	20	—	—	48.9	5.53	4.98	0.56	0.12~0.26	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			

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

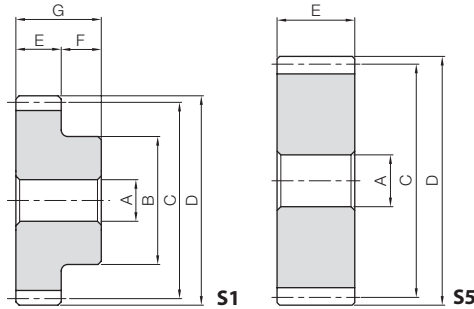
Bore h7		* The product shapes of J Series items are identified by background color.																		
Keyway Js9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Screw size	-	4x1.8		5x2.3				6x2.8				8x3.3			10x3.3		12x3.3	14x3.8		
Catalog Number	M5	M4						M5				M6			M8		M10	-		
SUS1.5-15 J 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																				
SUS1.5-25 J BORE																				
SUS1.5-28 J BORE																				
SUS1.5-30 J BORE																				
SUS1.5-32 J BORE																				
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SUS1.5-36 J BORE																				
SUS1.5-40 J BORE																				
SUS1.5-42 J BORE																				
SUS1.5-45 J BORE																				
SUS1.5-48 J BORE																				
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SUS1.5-55 J BORE																				
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																				
SUS1.5-100 J BORE																				
SUS2-15 J BORE																				
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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

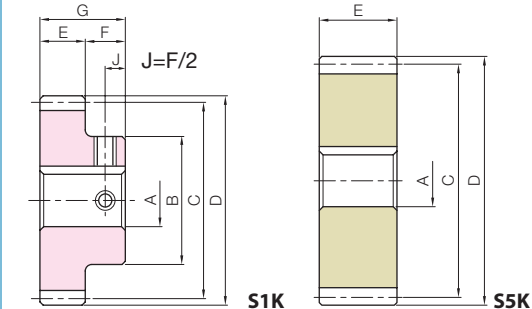


Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	SUS303
Heat treatment	—
Tooth hardness	(less than 187HB)

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



J Series



Catalog Number	No. of teeth	Shape	Bore AH7	Hub dia. B	Pitch dia. C	Outside dia. D	Face width E	Hub width F	Total length G	Allowable torque (N·m)	Allowable torque (kgf·m)	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
SUS2.5-16	16			32	40	45				35.3	2.44	3.60	0.30
SUS2.5-18	18			38	45	50				42.4	3.18	4.32	0.42
SUS2.5-20	20			40	50	55				49.6	4.02	5.06	0.51
SUS2.5-24	24			48	60	65				64.5	6.01	6.58	0.61
SUS2.5-25	25	S5	20	50	62.5	67.5		—	—	68.3	6.58	6.96	0.67
SUS2.5-28	28			60	70	75				79.8	8.34	8.14	0.85
SUS2.5-30	30			65	75	80				87.6	9.65	8.93	0.98
SUSA2.5-32	32			—	80	85				95.4	11.1	9.73	1.13
SUSA2.5-36	36				90	95				111	14.2	11.3	1.45
SUSA2.5-40	40				100	105				127	17.7	13.0	1.81
SUSA2.5-42	42				105	110				135	19.6	13.8	2.00
SUSA2.5-48	48				120	125				160	26.1	16.3	2.66
SUSA2.5-50	50	S1	15	125	130	30	20	50	—	168	28.4	17.1	2.90
SUSA2.5-60	60			150	155					209	42.0	21.3	4.28
SUSA2.5-64	64			160	165					226	48.2	23.0	4.91
SUS3-15	15			36	45	51				55.1	3.71	5.62	0.38
SUS3-18	18			40	54	60				73.3	5.59	7.47	0.57
SUS3-20	20	S1	20	50	60	66	30	20	50	85.8	7.07	8.74	0.72
SUS3-22	22			54	66	72				98.5	8.73	10.0	0.89
SUS3-24	24			58	72	78				111	10.6	11.4	1.08
SUS3-25	25			60	75	81				118	11.6	12.0	1.18
SUS3-28	28			70	84	90				138	14.7	14.1	1.50
SUS3-30	30	S5	25	75	90	96		—	—	151	17.0	15.4	1.74
SUSA3-32	32			—	96	102				165	19.5	16.8	1.99
SUSA3-35	35				105	111				185	23.6	18.9	2.40
SUSA3-36	36				108	114				192	25.0	19.6	2.55
SUSA3-40	40				120	126				220	31.3	22.4	3.19
SUSA3-45	45	S1	30	135	141	40	25	65	—	255	40.2	26.0	4.10
SUSA3-50	50			150	156					290	50.4	29.6	5.14
SUSA3-60	60			180	186					362	74.3	36.9	7.58
SUS4-15	15			45	60	68				131	9.06	13.3	0.92
SUS4-20	20	S1	20	65	80	88		25	65	203	17.3	20.7	1.76
SUS4-25	25			84	100	108				280	28.3	28.5	2.89
SUS4-30	30			100	120	128				359	41.7	36.6	4.25
SUSA4-40	40			—	160	168		—	—	521	77.1	53.2	7.86
SUSA4-50	50				200	208				573	103	58.5	10.5

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

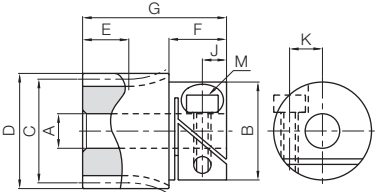
Bore H7		* The product shapes of J Series items are identified by background color.															
Keyway Js9		15	16	17	18	19	20	22	25	28	30	32	35	40	45	50	
Screw size		5×2.3			6×2.8				8×3.3			10×3.3		12×3.3	14×3.8		
Catalog Number		M4			M5				M6			M8			M10		
SUS2.5-15 J BORE																	
SUS2.5-16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

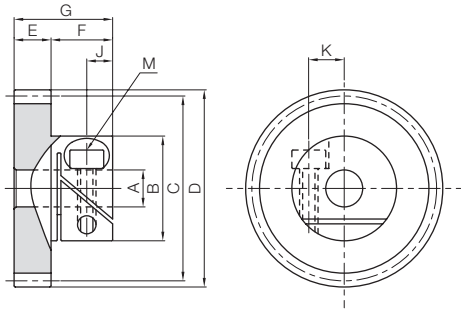


Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	SUS303
Heat treatment	—
Tooth hardness	(less than 187HB)

* 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				
				A _{H7}	B	C	D	E	F	G	M	J	K		
SUSF0.5-24 SUSF0.5-30 SUSF0.5-50 SUSF0.5-60 SUSF0.5-70 SUSF0.5-80	m0.5	24	S3	5	14	12	13	7	8	22	M2.5	3.3	4.4		
		30	S1	6	17	15	16	5	10	15	M3	4.5	5.7		
		50		8	19	25	26						6		
		60		10	24	30	31						7.7		
		70				35	36								
		80				40	41				M4	5.3			
SUSF1-14 SUSF1-15 SUSF1-18 SUSF1-20 SUSF1-24 SUSF1-25 SUSF1-30 SUSF1-35 SUSF1-36 SUSF1-40 SUSF1-50 SUSF1-60 SUSF1-64	m1	14	S3	6	17	14	16	8	10	25	M3	4.5	5.7		
		15	S1			15	17	6		16				20	22
		18				18	20								
		20				20	22								
		24				24	26								
		25	S1	8	19	25	27	6	14	20	M4	5.3	7.7		
		30				30	32								
		35				35	37								
		36				36	38								
		40				40	42								
		50	10	24	50	52									
		60			60	62									
64	64	66													

- [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.

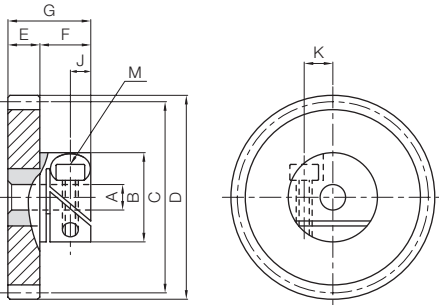
Allowable torque (N·m)		Allowable torque (kgf·m)		Ref. slipping torque	Standard screw tightening torque (N·m)	Backlash (mm)	Weight (g)	Catalog Number	
Bending strength	Surface durability	Bending strength	Surface durability						
0.72	0.056	0.074	0.0057	0.62	0.45	0~0.10	20.0	SUSF0.5-24	
0.98	0.091	0.10	0.0093				16.9	SUSF0.5-30	
1.34	0.19	0.14	0.019	1.79	0.80		34.1	SUSF0.5-50	
1.67	0.28	0.17	0.029				44.5	SUSF0.5-60	
2.01	0.39	0.20	0.040	2.22	2.00		54.7	SUSF0.5-70	
2.34	0.51	0.24	0.052				88.2	SUSF0.5-80	
1.46	0.088	0.15	0.0090	1.79	0.80	0~0.10	33.3	SUSF1-14	
1.63	0.10	0.17	0.010				36.2	SUSF1-15	
2.17	0.15	0.22	0.015				26.5	SUSF1-18	
1.91	0.14	0.19	0.015				29.4	SUSF1-20	
2.48	0.21	0.25	0.021				35.9	SUSF1-24	
2.62	0.23	0.27	0.023	2.22	0.80		37.8	SUSF1-25	
3.36	0.34	0.34	0.034				49.7	SUSF1-30	
4.12	0.47	0.42	0.047				61.9	SUSF1-35	
4.27	0.49	0.44	0.050				64.5	SUSF1-36	
4.89	0.62	0.50	0.063				75.9	SUSF1-40	
6.45	0.99	0.66	0.10	4.50	2.00		131	SUSF1-50	
8.03	1.45	0.82	0.15				172	SUSF1-60	
8.67	1.66	0.88	0.17				191	SUSF1-64	





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

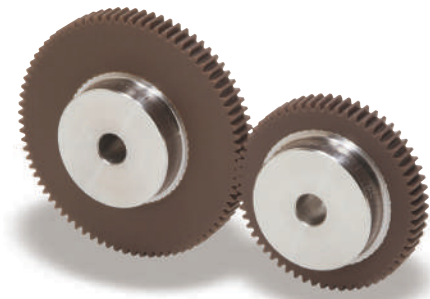
Catalog Number	Module	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Hex socket screw		
				A _{H7}	B	C	D	E	F	G	M	J	K
DSF0.5-36 DSF0.5-40 DSF0.5-50 DSF0.5-60 DSF0.5-80 DSF0.5-120	m0.5	36	S1	5	14	18	19	5	8.5	13.5	M2.5	3.3	4.4
		40				20	21						
		50				25	26						
		60				30	31						
		80		40	41								
		120		8	19	60	61		10	15	M3	4.5	6
DSF1-20 DSF1-24 DSF1-25 DSF1-30 DSF1-32	m1	20	S1	5	14	20	22	6	8.5	14.5	M2.5	3.3	4.4
		24				24	26						
		25				25	27						
		30				30	32						
		32		32	34								
		DSF1-36 DSF1-40 DSF1-50 DSF1-60 DSF1-80 DSF1-100		m1	36	S1	8		19	36	38	10	16
40	40		42										
50	50		52										
60	60		62										
80	80		82										
100	100		102										

- [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.

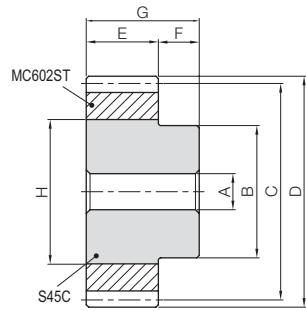
Allowable torque (N·m)	Allowable torque (kgf·m)	Ref. slipping torque	Standard screw tightening torque (N·m)	Backlash (mm)	Weight (g)	Catalog Number
Bending strength	Bending strength					
0.49	0.050	0.62	0.45	0~0.10	11.7	DSF0.5-36
0.55	0.057				12.1	DSF0.5-40
0.73	0.075				13.4	DSF0.5-50
0.90	0.092				14.9	DSF0.5-60
1.25	0.13				18.8	DSF0.5-80
1.93	0.20				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				26.5	DSF1-30
1.75	0.18				27.3	DSF1-32
2.04	0.21				29.1	DSF1-36
2.33	0.24	2.22	0.80	0~0.10	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





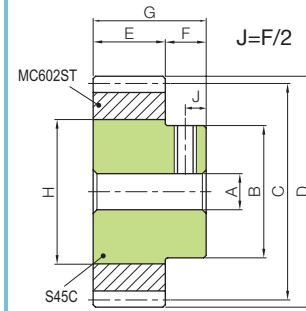
Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat Treatment	—
Tooth hardness	(115 to 120HRR)

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

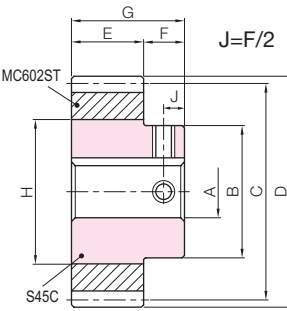


S1

J Series



S1T



S1K



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

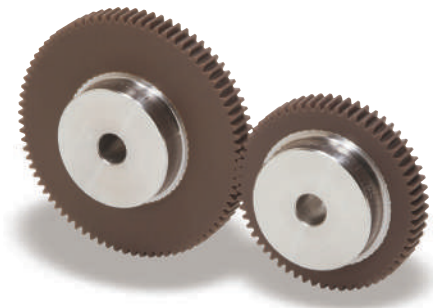
Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Core O.D.	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (kg)
			A _{H7}	B	C	D	E	F	G	H	Bending strength	Bending strength		
NSU1-30	30	S1	8	20	30	32	10	10	20	20	1.23	0.13	0~0.34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

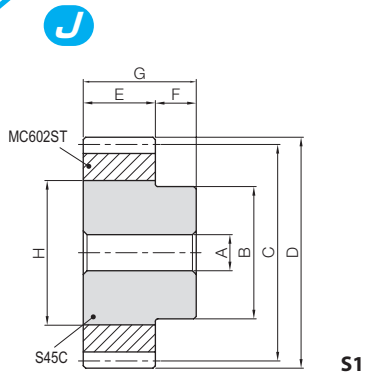
Bore H7		* The product shapes of J Series items are identified by background color.															
Keyway Js9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	
Screw size	—	4x1.8		5x2.3				6x2.8				8x3.3		10 X 3.3			
Catalog Number	M5	M4						M5				M6		M8			
NSU1-30 J BORE																	
NSU1-35 J BORE																	
NSU1-36 J BORE																	
NSU1-40 J BORE																	
NSU1-45 J BORE																	
NSU1-48 J BORE																	
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NSU1-60 J BORE																	
NSU1-70 J BORE																	
NSU1-80 J BORE																	
NSU1-90 J BORE																	
NSU1-100 J BORE																	
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NSU1.5-80 J BORE																	
NSU1.5-90 J BORE																	
NSU2-20 J BORE																	
NSU2-25 J BORE																	
NSU2-28 J BORE																	
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NSU2-32 J BORE																	
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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.

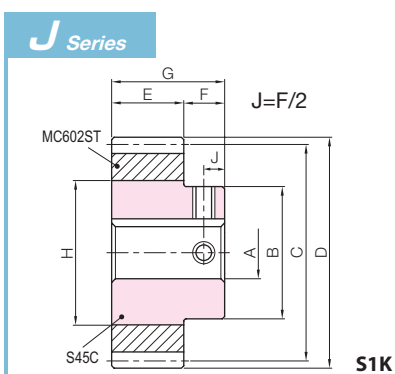


Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat Treatment	—
Tooth hardness	(115 to 120HRR)

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



S1



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		0.32
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		15	45	75	80				50	19.2	1.96	0~0.46	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			65	100	105				70	27.8	2.83		1.21
NSU2.5-50	50			65	125	130				95	36.7	3.74		1.89
NSU2.5-60	60	20	20	70	150	155	30	17	47	115	45.8	4.67	0~0.48	2.62
NSU2.5-70	70			70	175	180				140	54.1	5.51		3.64
NSU3-20	20	S1	12	33	60	66				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			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		15	60	96	102				65	36.1	3.68	0~0.56	1.24
NSU3-34	34			60	102	108				65	39.0	3.98		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			70	120	126				85	48.0	4.90		1.94
NSU3-44	44	20	20	70	132	138				95	54.0	5.51	0~0.56	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				180	186				145	79.1	8.07		4.62
NSU3-70	70				210	216				175	93.4	9.53		6.45

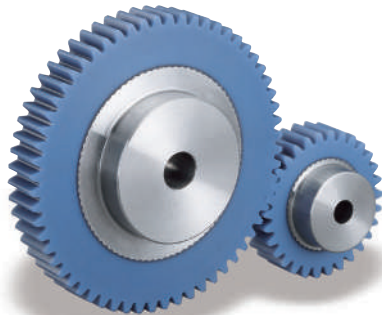
[Caution on Product Characteristics] ① When the core O.D. is the same as the hub diameter, you may see some serration on the hub. There is no effect on the strength of the gear.

[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.**

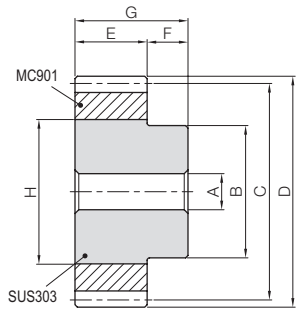
Bore H7		* The product shapes of J Series items are identified by background color.														
Keyway J _{s9}		12	14	15	16	17	18	19	20	22	25	28	30	32	35	40
Screw size		4×1.8	5×2.3				6×2.8				8×3.3			10×3.3		12×3.3
Catalog Number		M4					M5				M6			M8		
NSU2.5-18 J BORE																
NSU2.5-20 J 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.



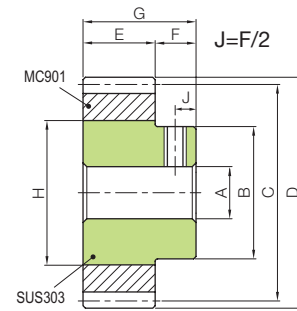
Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901 with SUS303 core
Heat Treatment	—
Tooth hardness	(115 to 120HRR)

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

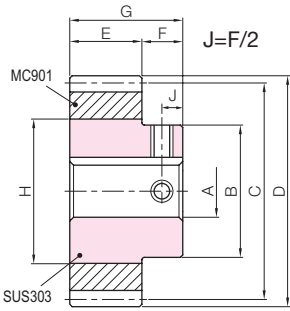


S1

J Series



S1T



S1K



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

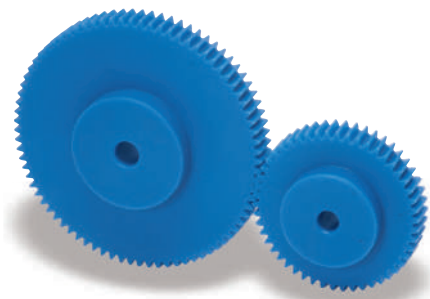
Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Core O.D.	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (kg)
			A _{H7}	B	C	D	E	F	G	H	Bending strength	Bending strength		
PU1-30	30	S1	8	20	30	32	10	10	20	20	1.03	0.10	0~0.34	0.046
PU1-35	35		10	25	35	37				25	1.25	0.13		0.075
PU1-40	40			25	40	42				28	1.48	0.15		0.083
PU1-50	50			30	50	52				34	1.96	0.20	0~0.36	0.13
PU1-60	60			40	60	62				45	2.41	0.25		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		12	40	60	63				45	5.00	0.51	0~0.40	0.31
PU1.5-50	50			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		12	30	50	54				30	6.54	0.67	0~0.44	0.20
PU2-30	30			35	60	64				35	8.20	0.84		0.28
PU2-35	35			40	70	74				45	10.0	1.02		0.41
PU2-40	40		15	55	80	84				60	11.9	1.21	0~0.46	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		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.

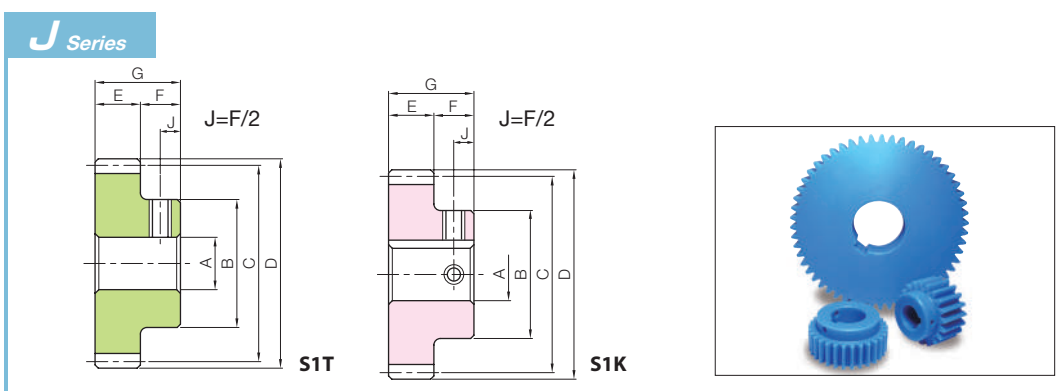
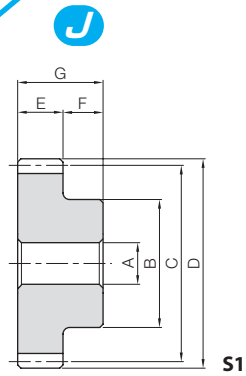
Bore H7		* The product shapes of J Series items are identified by background color.														
Keyway Js9	8	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Screw size	—	4×1.8		5×2.3				6×2.8				8×3.3			10×3.3	
Catalog Number	M5	M4						M5				M6			M8	
PU1-30 J BORE																
PU1-35 J BORE						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



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.



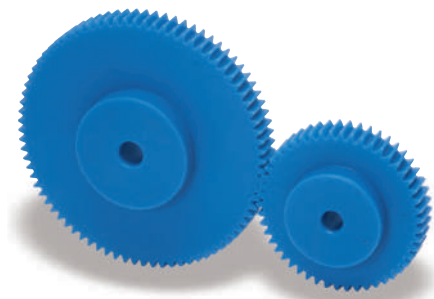
Catalog Number	No. of teeth	Shape	Bore		Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash	Weight
			A	B	C	D	E	F	G	Bending strength	Bending strength	(mm)	(kg)	
PS1-15	15	S1	6	12	15	17	10	10	20	0.41	0.042	0~0.32	0.0027	
PS1-16	16			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			18	22	24				0.69	0.071		0.0062	
PS1-24	24		8	20	24	26				0.77	0.079	0~0.34	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		0~0.36	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	35	48	50				1.86	0.19	0~0.36	0.030	
PS1-50	50				50	52				1.96	0.20		0.032	
PS1-55	55				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	0~0.36	0.057	
PS1-75	75				75	77				3.11	0.32		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	

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																	

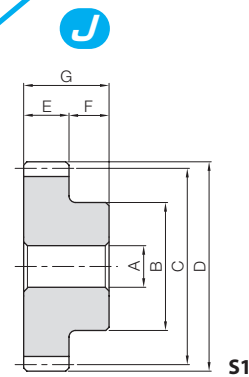
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Since tapped holes of plastic products are easily damaged, avoid overtightening when fastening screws. For products with a short 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.

* 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.

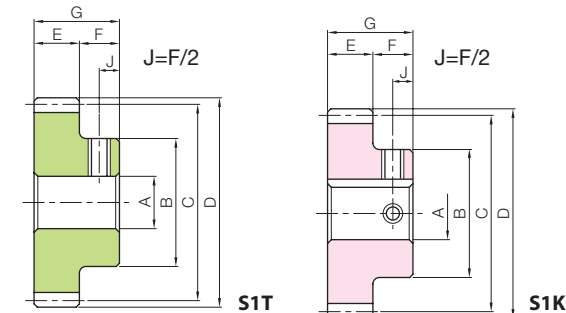


Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 to 120HRR)

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



J Series



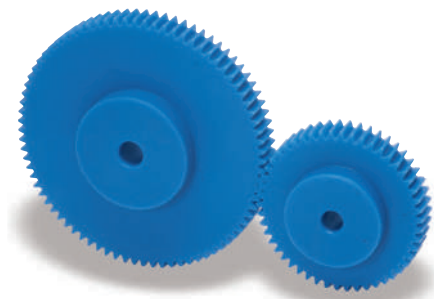
Catalog Number	No. of teeth	Shape	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Allowable torque (N·m)		Backlash (mm)	Weight (kg)
			A _{H8}	B	C	D	E	F	G	Bending strength	Bending strength		
PS1.5-15	15	S1	8	18	22.5	25.5	15	10	25	1.39	0.14	0~0.38	0.0084
PS1.5-16	16			20	24	27				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		10	30	37.5	40.5				2.76	0.28	0~0.40	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	0~0.42	0.052
PS1.5-36	36	12	10	45	54	57				4.38	0.45		0.057
PS1.5-40	40			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		0.087
PS1.5-50	50			45	75	78				6.60	0.67		0.093
PS1.5-55	55	12	10	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			50	97.5	100.5				8.91	0.91		0.15
PS1.5-70	70		12	50	105	108				9.69	0.99	0~0.42	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		0.22
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

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 J _{S9}	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															
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PS1.5-80 J BORE															
PS1.5-90 J BORE															
PS1.5-100 J BORE															

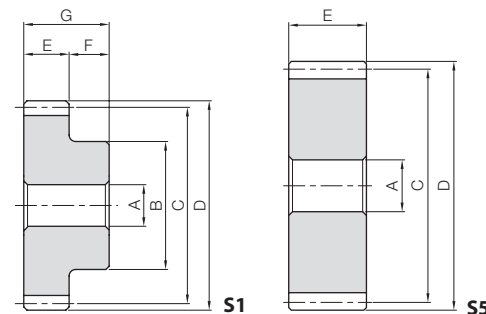
[Caution on J series] ① Cancellation is not possible for made-to-order products. See page 42 for lead times and allowable order quantities. See page 44 for other precautions.
② Since tapped holes of plastic products are easily damaged, avoid overtightening when fastening screws. For products with a short 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.

* 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.

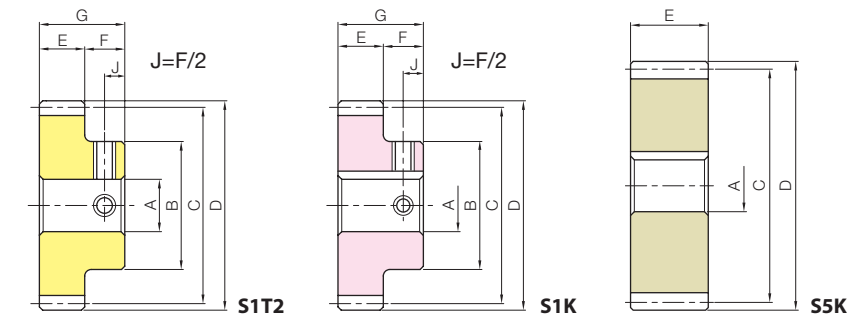


Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC901
Heat treatment	—
Tooth hardness	(115 to 120HRR)

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



J Series



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

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	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	S5	12	42	52	56	20			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			—	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			—	96	100				14.9	1.52	0~0.46	0.17
PSA2-50	50				100	104				15.7	1.60		0.18
PSA2-55	55				110	114				17.5	1.78		0.22
PSA2-60	60				120	124				19.3	1.97		0.26
PSA2-65	65				130	134				21.1	2.15		0.30
PSA2-70	70	S5	15	—	140	144	—	—		23.0	2.34	0~0.46	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

* 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.

Stainless Steel Hubs for PSA Now Available !
Standardized sectional stainless steel hubs. They create a secure method for fastening to the shaft.



Knockdown style

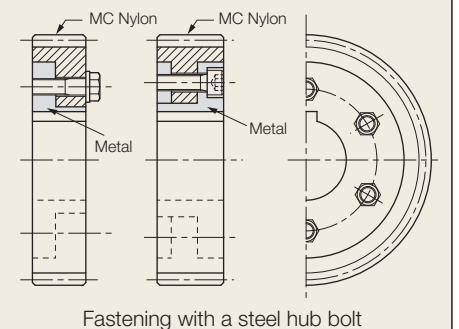
Please see Page 182 for more details.

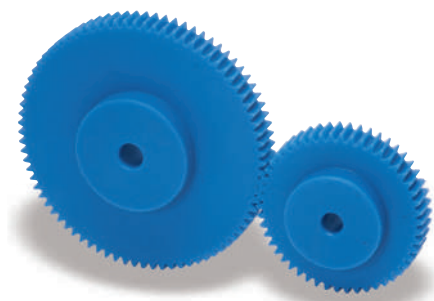
How to attach gears to shafts

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

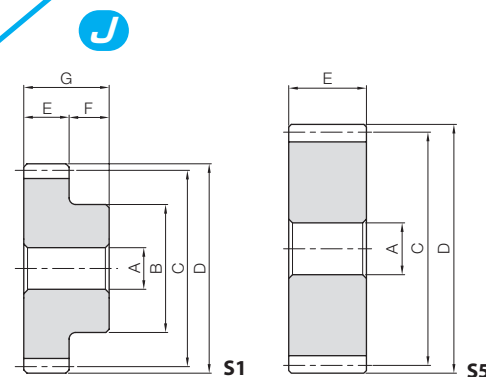
For fastening steel hubs into plastic gears with bolts, see right for various methods.





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)

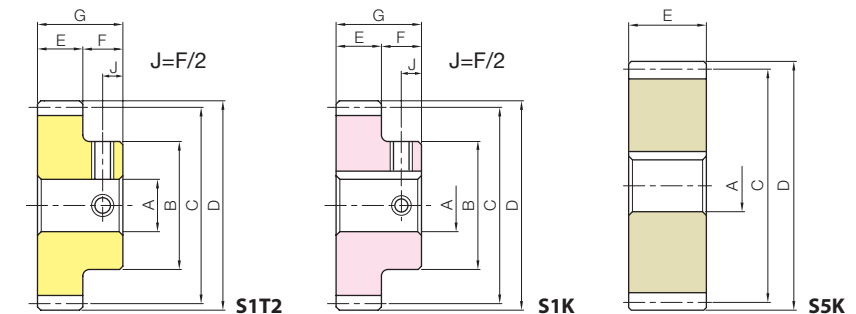
* The precision grade is equivalent to the value shown in the table.



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			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		12	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	S5	15	60	70	75		—	—	14.7	1.50	0~0.48	0.15
PS2.5-30	30			65	75	80				16.0	1.63		0.17
PSA2.5-32	32			—	80	85				17.4	1.77		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		15	—	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.

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 J _{S9}	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.



Knockdown style

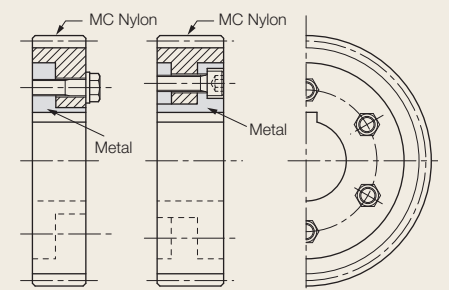
Please see Page 182 for more details.

How to attach gears to shafts

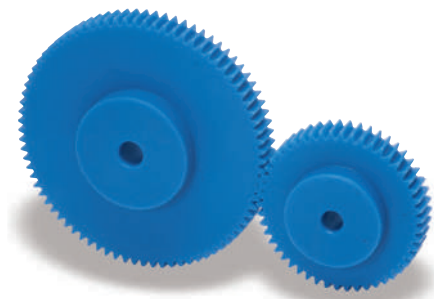
To attach gears to shafts, in case of light loads, methods include using keys, taper pins, spring pins, and press fitting after mounting the setscrews. Since loosening tends to occur in the conditions below, plastic gears are better fastened by using a steel hub.

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.

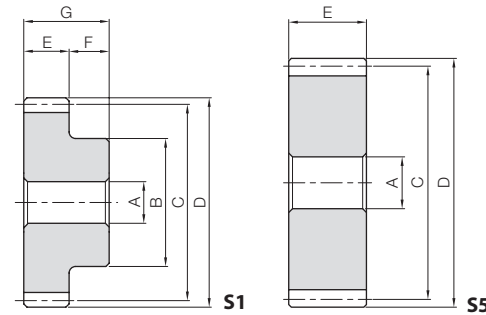


Fastening with a steel hub bolt



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)

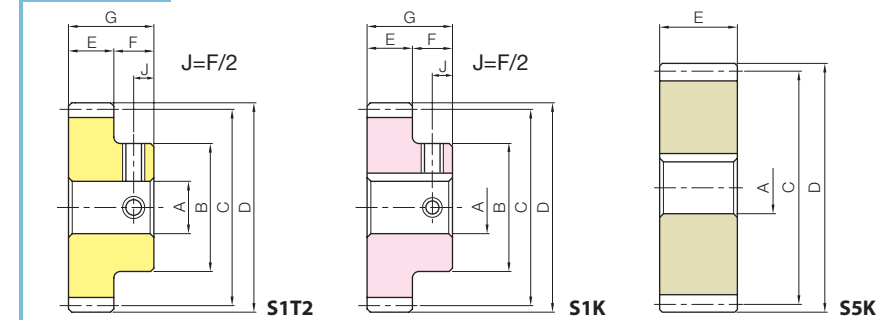
* The precision grade is equivalent to the value shown in the table.



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	Weight
			A _{H8}	B	C	D	E	F	G	Bending strength	Bending strength	(mm)	(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			38	48	54				12.3	1.25		0.075
PS3-18	18			40	54	60				14.3	1.46		0.094
PS3-20	20			14	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	—	—	30.1	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.

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																			
PS3-24 J BORE																			
PS3-25 J BORE																			
PS3-26 J BORE																			
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.



Knockdown style

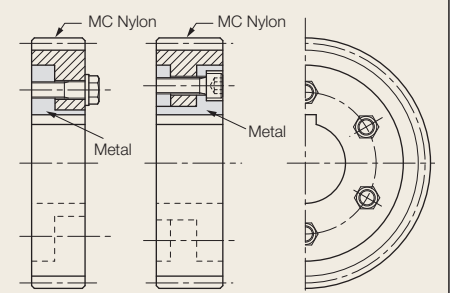
Please see Page 182 for more details.

How to attach gears to shafts

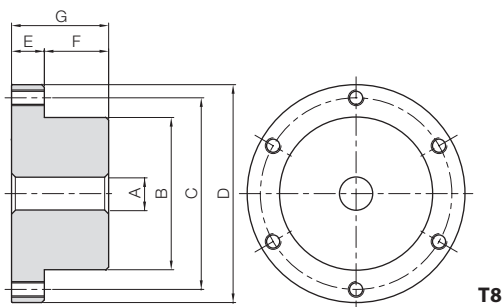
To attach gears to shafts, in case of light loads, methods include using keys, taper pins, spring pins, and press fitting after mounting the setscrews. Since loosening tends to occur in the conditions below, plastic gears are better fastened by using a steel hub.

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



Material: SUS303

Catalog Number	Shape	Bore A _{H7}	Hub dia. B	Socket head screw			Flange diameter D	Flange length E	Hub width F	Total length G	Recommended fastening torque		Coupling torque		Weight (kg)
				No.	Size	C					(N·m)	(kgf·m)	(N·m)	(kgf·m)	
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]
- The area where PSA Plastic Spur Gears are attached, with hub tolerance h7.
 - 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.
 - 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.
 - 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.
 - 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.
 - For secure positioning, it is recommended to use dowel pins.
- [Caution on Secondary Operations]
- 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.
 - 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.

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

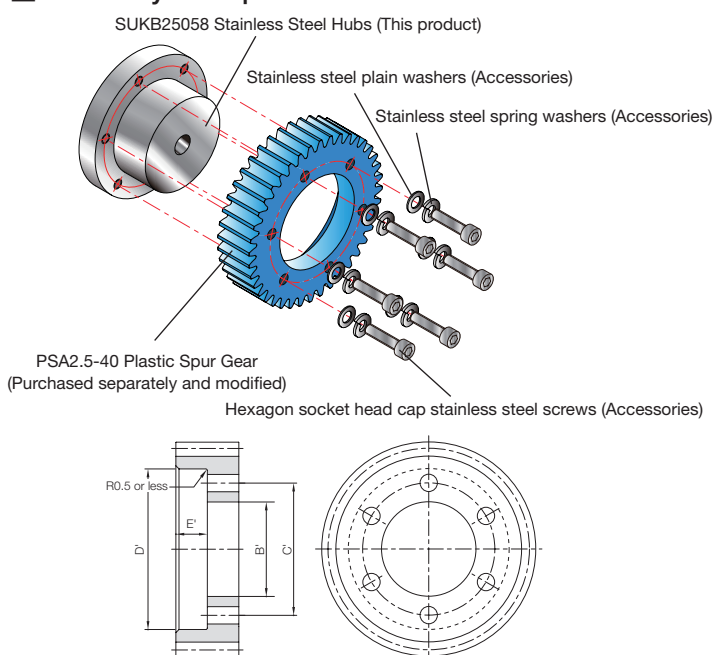
- n : Number → No. of threaded holes shown in the dimension table.
 T : Tightening torque (N·m) → Fastening torque shown in the dimension table.
 K : Torque coefficient → Set the value at 0.164
 d : Nominal diameter (mm) → Socket head screw size shown in the dimension table (M5 = 5mm)

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

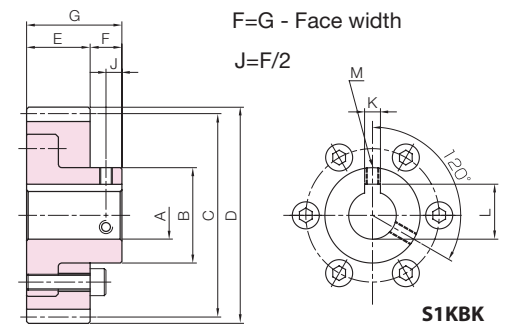
$$T_f = \frac{F \cdot \mu \cdot d_w}{2000}$$

- 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 B _{H8}	Drilled hole		Bore 2 D ^{+0.1} ₀	Hole length E'±0.1	Accessories	
			No.	Size	C'		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		



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

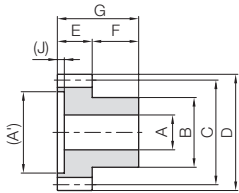
Bore H7	* The product shapes of J Series items are identified by background color.															
Keyway J _{s9}	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40
Screw size	4×1.8	5×2.3				6×2.8				8×3.3				10×3.3	12×3.3	14×3.8
Catalog Number	M4				M5				M6				M8		M10	
PSUKB2-32 J BORE																
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																
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PSUKB2.5-48 J BORE																
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PSUKB2.5-55 J BORE																
PSUKB2.5-60 J BORE																
PSUKB3-32 J BORE																
PSUKB3-35 J BORE																
PSUKB3-36 J BORE																
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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.

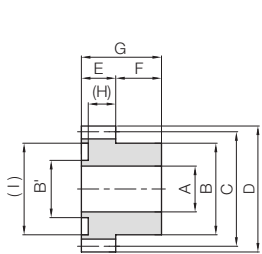


Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon (R) (M90-44) **
Heat treatment	—
Tooth hardness	(110 to 120HRR)

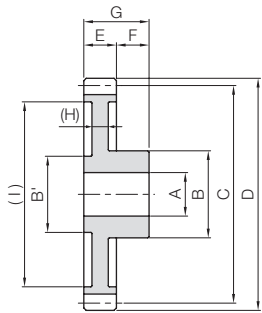
* The precision grade is equivalent to the value shown in the table.
** "Duracon (R)" is a registered trademark of Polyplastics Co., Ltd. in Japan as well as other countries.



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	m0.5	12	S8	2	(4)	4.5	—	6	7	3	4
DS0.5-15		15	S8	3	(5.5)	4.5	—	7.5	8.5		
DS0.5-16		16	S8		(6)	6	—	8	9		
DS0.5-20		20	S8B	—	8	5	10	11			
DS0.5-24		24	S9	4	—	8	5	12	13		
DS0.5-40		40 48 50 56 60	S9	5	—	12	8	20	21		
DS0.5-48						12	8	24	25		
DS0.5-50				12		8	25	26			
DS0.5-56				14		10	28	29			
DS0.5-60		6	14	10	30	31	5				
DS0.5-70								70			
DS0.5-80		80									
DS0.8-12	m0.8	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			

[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.

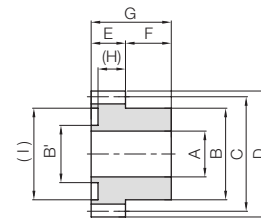
Total length	Web thickness	Web O.D.	Hole depth	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (g)	Catalog Number
G	(H)	(I)	(J)	Bending strength	Bending strength			
7	—	—	(0.6)	0.063	0.0064	0~0.30	0.17	DS0.5-12 DS0.5-15 DS0.5-16 DS0.5-20 DS0.5-24
	—	—	(0.6)	0.092	0.0094		0.23	
	—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



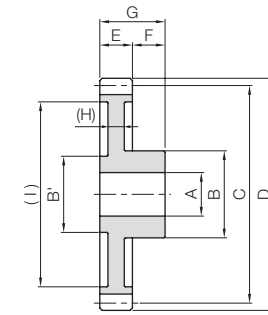
Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon (R) (M90-44) **
Heat treatment	—
Tooth hardness	(110 to 120HRR)

* 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	Bore 2	Hub dia. 1	Hub dia. 2	Pitch dia.	Outside dia.	Face width	Hub width
				A	(A')	B	B'	C	D	E	F
DS1-12	m1	12	S8B	4	—	8	6	12	14	6	6
DS1-16		16					10	8	16		
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	S9	6		11.7	9	28	30		
DS1-30		30				14	12	30	32		
DS1-32		32				14	12	32	34		
DS1-35		35				14	12	35	37		
DS1-36		36				14	12	36	38		
DS1-40		40	8	16		14	40	42	8		
DS1-48		48		16		14	48	50			
DS1-50		50		16		14	50	52			
DS1-60		60		18		15.6	60	62			
DS1-64		64		18		15.6	64	66			
DS1-70		70		18		15.6	70	72			
DS1-80	80		18	15.6	80	82					

[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.

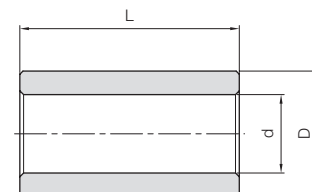
② For the dimensional accuracy of each part, see the dimensional tolerance of molded items in the table at right.

Total Length	Web thickness	Web O.D.	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (g)	Catalog Number
G	(H)	(I)	Bending strength	Bending strength			
12	(5.5)	(8.5)	0.44	0.045	0~0.60	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
		(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
		(29)	1.96	0.20		6.73	DS1-35
		(30)	2.04	0.21		7.01	DS1-36
14	(3)	(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
		(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 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.	Outside dia.	Length	Gear example
	d $\begin{smallmatrix} +0.02 \\ 0 \end{smallmatrix}$	D $\begin{smallmatrix} +0.02 \\ -0.01 \end{smallmatrix}$	L $\begin{smallmatrix} 0 \\ -0.3 \end{smallmatrix}$	
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



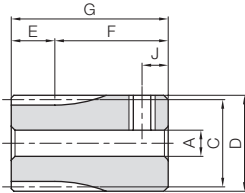
■ Dimensional tolerance of molded item (unit: mm)

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

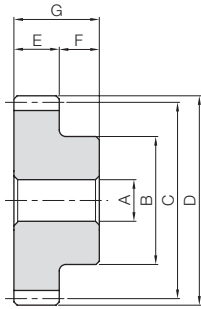


Specifications	
Precision grade	JIS grade N8 (JIS B1702-1: 1998)*
Gear teeth	Standard full depth
Pressure angle	20°
Material	Free cutting brass (C3604)
Heat Treatment	—
Tooth hardness	(80HV or more)

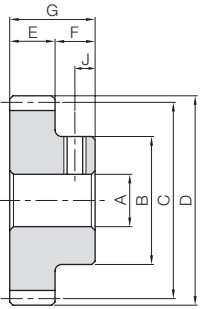
* The precision grade of products with a module of less than 0.8 is equivalent to the value shown in the table.



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	
				A _{H7}	B							Size	J
BSS0.5-15A	m0.5	15	S3T	3	8.5	7.5	8.5	3		11	14	M3	2.5
BSS0.5-16A		16			9	8	9						
BSS0.5-20		20	S1	4	8.5	10	11			7	10	—	—
BSS0.5-20A			S3T	3	11					11	14	M3	2.5
BSS0.5-22A		22	S1T	3	9	11	12			7	10	M3	3.5
BSS0.5-24B				4	10	12	13						
BSS0.5-25		25	S1	4	11	12.5	13.5					—	—
BSS0.5-30		30	S1	4	13							—	—
BSS0.5-30A			S1T	3	12	15	16					M3	3.5
BSS0.5-30B			S1T	4	12							M3	3.5
BSS0.5-30C			S1T	5	12							M4	3.5
BSS0.5-38A		38	S1T	4	16	19	20					M3	3.5
BSS0.5-40		40	S1	4	17	20	21					—	—
BSS0.5-50A		50	S1T	4	22	25	26					M3	3.5
BSS0.8-20	m0.8	20	S1	5	13.5	16	17.6	4	8	12		—	—
BSS0.8-24B		24			16	19.2	20.8					M4	4
BSS0.8-25		25			17	20	21.6					—	—
BSS0.8-30		30	S1	5								—	—
BSS0.8-30A			S1T	4	20	24	25.6					M3	4
BSS0.8-40		40	S1	5	20	32	33.6					—	—
BSS1-16B	m1	16	S1T	5	12	16	18	6	8	14		M4	4
BSS1-18B		18		6	15	18	20					M4	
BSS1-20C		20		6	16	20	22					M4	
BSS1-30B		30	S1T	6	25	30	32					M4	
BSS1-40A		40	S1T	6	28	40	42					M4	

Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (kg)	Catalog Number
Bending strength	Bending strength			
0.058	0.0059	0~0.10	0.0054	BSS0.5-15A
0.065	0.0066		0.0062	BSS0.5-16A
0.091	0.0093		0.0043	BSS0.5-20
			0.0098	BSS0.5-20A
0.10	0.011		0.0054	BSS0.5-22A
0.12	0.012		0.0063	BSS0.5-24B
0.12	0.013		0.0077	BSS0.5-25
0.16	0.016		0.011	BSS0.5-30
			0.010	BSS0.5-30A
			0.0099	BSS0.5-30B
			0.0092	BSS0.5-30C
0.22	0.022	0~0.10	0.018	BSS0.5-38A
0.23	0.024		0.020	BSS0.5-40
0.31	0.031		0.033	BSS0.5-50A
0.31	0.032		0.014	BSS0.8-20
0.40	0.041		0.021	BSS0.8-24B
0.43	0.043		0.024	BSS0.8-25
0.55	0.056	0.08~0.18	0.034	BSS0.8-30
			0.035	BSS0.8-30A
0.79	0.081		0.046	BSS0.8-40
0.52	0.053		0.015	BSS1-16B
0.62	0.063		0.021	BSS1-18B
0.73	0.074		0.026	BSS1-20C
1.28	0.13		0.065	BSS1-30B
1.86	0.19		0.10	BSS1-40A

