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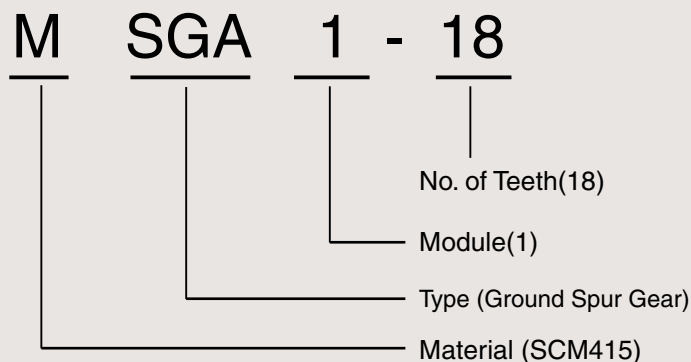
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Catalog Number of KHK Stock Gears

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	Type
S S45C	S Spur Gears
M SCM415	SA Hubless Spur Gears
SU SUS303	SY Thin Face Spur Gears
P MC901	SAY Hubless Thin Face Spur Gears
N MC601-ST	SGA(B) Ground Spur Gears
D DURACON	SG Ground Spur Gears
BS Free-Cutting Brass C3604BD	SL Fairloc Hub Gears
L SMF5040	SR Ring Gears
	U Plastic Spur Gears with Steel Core

1 Spur Gears





With Our Large Selection, You Can Find Suitable Gears for Almost Any Application!



Characteristics

To meet your requirements, KHK stock gears are made in a variety of types, materials, configurations, modules and numbers of teeth. We also offer products that allow secondary operations to be performed on the bores, shafts, outside diameters, keyways and set screws.

Main Features of Types of Spur Gears Offered

The following table lists the main features

Catalog No.	Module	Material	Heat Treatment	Tooth Surface Finish	Precision JIS B1702-1 () denotes JIS B1702-2	Secondary Operations	Main Characteristics
MSG(A)B	1~4	SCM415	Carburized	Ground	N5	×	High strength, abrasion-resistant and compact.
SSG	1~4	S45C	Gear teeth induction hardened	Ground	N7	△	Allows users to perform secondary operations.
SSGS	1.5~3	S45C	Gear teeth induction hardened	Ground	N7	△	Ground shaft pinions that allow modification of shafts to fit your bearings.
SS	1~10	S45C	—	Cut	N8	○	Low cost with large selections of modules and numbers of teeth.
SSA	1~5	S45C	—	Cut	N8	○	Hubless gears for lighter and more compact applications.
SSY	0.8~1.25	S45C	—	Cut	N8	○	Narrower face gears for light-duty applications.
SSAY	1~1.25	S45C	—	Cut	N8	○	Hubless and narrow faces for even lighter and more compact gears.
LS	0.5~0.8	SMF5040 (Equiv. to S45C)	—	Sintered	(N8)	○	Low cost due to elimination of machining and reduction in wasted material.
SUS·SUSA	1~4	SUS303	—	Cut	N8	○	Stainless steel gears for more rust-resistant gears.
SUSL	0.5~1	SUS303	—	Cut	(N8)	△	Smaller module gears which clamp to the shafts without any keys or set screws.
DSL	0.5~1	Acetal (SUS303)	—	Cut	(N10)	△	These rust-resistant gears can be clamped to the shafts without any keys or set screws.
NSU	1~3	MC601ST (S45C)	—	Cut	N9	○	Nylon teeth with steel hubs that can have keyways and set screws added.
PU	1~3	MC901 (SUS303)	—	Cut	N9	○	Nylon teeth with stainless steel hubs for rust-resistance.
PS·PSA	1~3	MC901	—	Cut	N9	○	Possible to operate without lubrication. Suitable for food processing machines.
DS	0.5~1	M90-44	—	Injection Molded	(N12)	△	Low cost, mass-produced products suitable for light duty office machines.
BSS	0.5~0.8	C3604BD-F	—	Cut	N8	○	Small module brass spur gears suitable for mating with DS gears.
SSR	2~3	S45C	—	Cut	N9	○	Allows large gear ratios. Can also be used as segment gears and corner racks.

○ Possible △ Partly possible X Not possible

- By chamfering the corners of the top land, gear noise is reduced, and the chances of damage due to handling and transportation are decreased. All KHK gears larger than m1.5 have their teeth chamfered.
- Black oxide coating is a film of triferotetraoxide (Fe₃O₄), a kind of rust, which is applied to the gear surface to help resist rusting.



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 before the final selection.

Use of catalog numbers when ordering will simplify and expedite the processing of your order.

1. Caution in selecting the mating Gears

- ① Basically, all spur gears, internal gears and racks can be paired as long as the module matches. The product with different materials, tooth widths, or methods of cutting the teeth can be mated.
- ② When using a pinion with an internal gear with a small difference in the numbers of teeth, there are possibilities for involute interference, trochoid interference and trimming interference. See the internal gear interference portion of the technical section to avoid problems in assembling these items.

2. Caution in Selecting Gears Based on Gear Strength

The gear strength values shown in the product pages were computed by assuming a certain application environment. Therefore, they should be used as reference only. We recommend that each user computes his own values by applying the actual usage conditions.

NSU spur gears with steel core and PU plastic gears with stainless steel core require additional considerations of holding strength between plastic and metal. Also, SUSL Fairloc hub spur gears, DSL Fairloc hub spur gears and SSAY/K spur gears with built-in clamps need additional considerations of the starting torque. The table below contains the assumptions established for various products in order to compute gear strengths.

Calculation of Bending Strength of Gears

Catalog No. Item	MSG(A)(B)	SSG (SSGS)	SS, SSA SSY, SSAY SSAY/K SSR	SUS SUSA SUSL LS	BSS	NSU	PU PS	DSL DS
Formula <small>NOTE 1</small>	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 SSR)					—		
Rotation	600min ⁻¹		100min ⁻¹			100min ⁻¹		
Durability	Over 10 ⁷ cycles					Allowable bending stress		
Impact from motor	Uniform load					1.59kgf/mm ² (40°C with no lubricant)	1.59kgf/mm ² (40°C with no lubricant)	<small>NOTE 3</small> m0.5 4.5 m0.8 4.0 m1.0 3.5 kgf/mm ²
Impact from load	Uniform load							
Direction of load	Bidirectional							
Allowable bending stress at root σ_{Flim} <small>NOTE 2</small>	31.33kgf/mm ²	14(16.67)kgf/mm ²	12.67kgf/mm ²	7kgf/mm ²	2.67kgf/mm ²			
Safety factor S_F	1.2							

Calculation of Surface Durability (Except where it is common with Bending Strength)

Formula <small>NOTE 1</small>	Formula of spur and helical gears on surface durability (JGMA402-01)				
Kinematic viscosity of lubricant	100cSt(50°C)				
Gear support	Symmetric support by bearings				
Allowable Hertz stress σ_{Hlim}	166kgf/mm ²	90(99)kgf/mm ²	49kgf/mm ²	41.3kgf/mm ²	—
Safety factor S_H	1.15				

NOTE 1: JGMA (Japanese Manufacturers' Association), “MC Nylon Technical Data” of Nippon Polypenco Limited and “Duracon Gear” of Polyplastic Co. The units for rotational speed (rpm) and the load (kgf/mm²) were matched to the units needed in the equation.

NOTE 2: Since the load is bidirectional, the allowable bending stress at root σ_{Flim} , calculated from JGMA 401-01, is set to 2/3 of the value.

NOTE 3: The values for DS m 0.5 gears were assumed by KHK.

Definition of bending strength

The allowable bending strength of a gear is defined as the allowable tangential force at the pitch circle based on the mutually allowable root stress of two meshing gears under load.



Example of the failure due to insufficient bending strength.

Definition of surface durability

The surface durability of a gear is defined as the allowable tangential force at the pitch circle, which permits the force to be transmitted safely without incurring surface failure.



Example of the defacement due to insufficient surface durability.



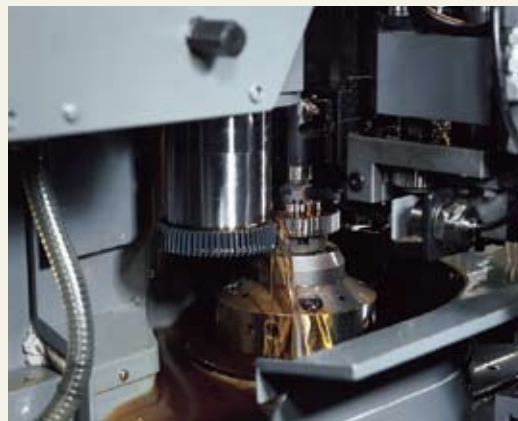
3. Caution with Regard to the Special Characteristics of Various Products

- ① MSGA (B) series of ground gears are carburized and therefore no secondary operations can be performed. Also, even though the keyways are made according to JIS B1301 standard, Js 9 tolerance, the heat treating process may produce some deformations.
- ② SSGS ground pinion shafts with 10 and 11 teeth are profile shifted gears ($x=+0.5$) and therefore cannot be assembled to the center distance of gears that are not profile shifted gears ($x=0$).
- ③ The black oxide finish is somewhat effective in preventing rust but is not rustproof.
- ④ SUS stainless steel gears have high degrees of antirust property, but are not totally rustproof.
- ⑤ When selecting SUSL Fairloc hub spur gears, it is possible in some cases for the gears to slip on the shaft before the gear teeth fail due to loads.
- ⑥ When selecting NSU plastic spur gears with steel core, it is possible in some cases for the holding strength between the metal core and the molded plastic to be less than the gear strength. As for details of the holding strength please refer to pages 108~109.
- ⑦ Due to their material, the quality of PS plastic spur gears may be affected by significant variations in temperature or humidity. As for details please refer to pages 32~33.
- ⑧ Due to a large coefficient of heat expansion of nylon, if these gears are to be used without lubrication, we recommend that the mating gears be metal gears, which can transmit heat, preventing temperature build-up.
- ⑨ SSR ring gears are easily deformable and may develop changes in dimensions.
- ⑩ SSAY, SSY spur gears and DS injection molded spur gears have narrow face widths. However, it is possible to mesh them with other gears (SS, SSA...) with wide face widths.



4. Other Points to Consider in Selection Process

- ① There are various footnotes to the product pages under the headings of “CAUTION”. Please consider them carefully when selecting these products.
- ② There may be slight differences in color or shape of products shown in the photograph from the actual products.
- ③ KHK reserves the right to make changes in specifications and dimensions without notice.
- ④ KHK is ready to produce and supply custom order products. When you require specific gears different from KHK Stock Gears please contact our distributor for quotation. Also, please refer to page 16 “KHK Custom Order Products”.





Application Hints

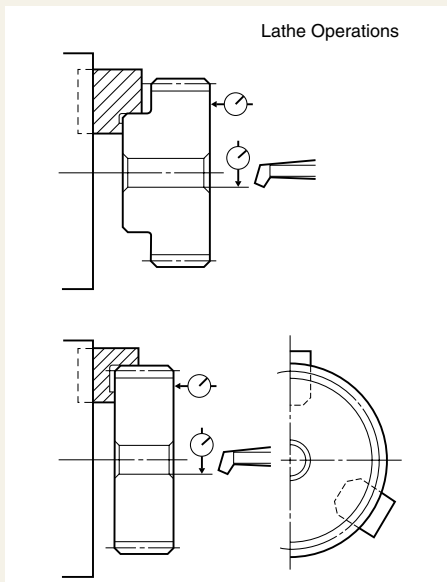
In order to use KHK stock gears safely, carefully read the Application Hints before proceeding. If there are questions or if you require clarifications, please contact our technical department or your nearest distributor.

KHK CO., LTD. TECHNICAL DEPARTMENT
 PHONE: 81-48-254-1744 FAX: 81-48-254-1765
 E-mail export@khkgears.co.jp

1. Caution on Performing Secondary Operations

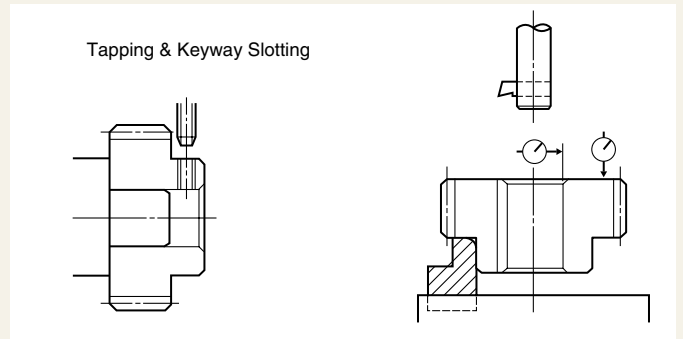
Most KHK gears can be modified by the user. Please note the following points.

- ① If you are re boring, it is important to pay special attention to locating the center in order to avoid runout.
- ② The reference datum for gear cutting 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 the rework requires using scroll chucks, we recommend the use of new or rebored jaws for improved precision. If chucking by the teeth, please apply the pressure carefully to avoid crushing the teeth which will lead to noisy gears.



- 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.
- ⑤ MSGA (B) ground spur gears (material SCM415) are wholly carburized so that no secondary operations can be performed.
- ⑥ SSG ground spur gear teeth are induction hardened past the tooth root (approximately 1mm deep). Therefore, care must be exercised when performing secondary operations on the bores or adding keyways.

- ⑦ Nylon is susceptible to change due to temperature and humidity. Dimensions may change during remachining operations and afterwards.
- ⑧ In order to avoid stress concentration, leave radii on the keyway corners.



- ⑨ To avoid problems of reduced gear precision and other manufacturing difficulties, do not attempt to machine the gears to reduce face widths.
- ⑩ The bore tolerance of DS injection molded spur gears is generally -0.10 to -0.05, but may be +values at the central portion of the hole. Remachining the bore is not recommended since reworking may expose voids in the plastic.
- ⑪ SUSL Fairloc gears cannot be rebored. They may be pinned provided caution is exercised not to deform the slots in the hubs.
- ⑫ When heat-treating S45C products, it is possible to get thermal stress cracks. It is best to subject them to penetrant inspection afterwards. If tooth strength is not sufficient, it can be increased approximately four times by heat-treating. On the other hand, the precision of the gear will drop about one grade.

Heat Treatment

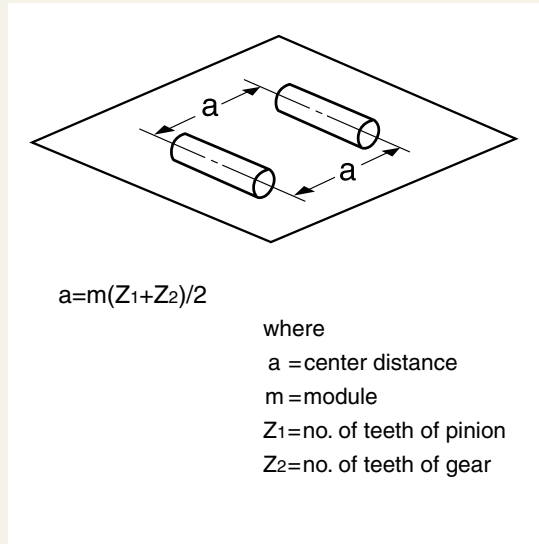
- 1) Induction heat treatment of S45C products should conform with the reference data below;
 - Heat treatment temperature - 800~900°C
 - Tempering temperature - 200~250°C
 - Hardness - 48~53HRC
- 2) In general, gears made from S45C have not been heat-treated. The user can heat-treat as required, but some deformation will be introduced. Ordinarily, a grinding process is needed after heat-treatment. Otherwise, the precision grade will drop about one grade.
- 3) SUS303 and 304 belong to austenite family and cannot be hardened. To harden stainless, there are martensitic series, such as SUS420J2.
- 4) The induction hardened depth is approximately 1mm. However, the hardening process does not completely reach the root of the gear tooth at the center portion of the face width.



Spur Gears

2. Points of Caution in Assembling

① KHK stock spur gears are designed to give the proper backlash when assembled using the center distance given by the formula below. The amount of backlash is given in the product table for each gear. For SSGS ground gears with 10 or 11 teeth, however, the profile is shifted ($x = +0.5$) so that the center distances are given in tables below the product table.



Center Distance Tolerance

Old standard JGMA113-01, Center Distance Tolerance, specified plus side tolerance of H7 - H8. In the new standard, JGMA1101-01:2000, it was decided that it is more desirable to specify +/- tolerance especially in gear train applications.

Method for Adjusting Backlash

Backlash may be adjusted by changing the center distance of mating gears. For more information, please consult the technical section on gear backlash.

Overall Length Tolerance for Spur and Helical Gears

Overall Length (mm)		Tolerance
Over	Under	
	30	0 - 0.10
30	100	0 - 0.15
100		0 - 0.20

Following products are excluded from this table:
 DS Injection Molded Spur Gears, LS Sintered Metal Spur Gears, DSL Fairloc Hub Spur Gears, SUSL Fairloc Hub Spur Gears

② Verify that the two shafts are parallel. Incorrect assembly will lead to uneven teeth contact which will cause noise and wear. (After assembly, the gear mesh can be checked by applying a contact pattern compound and rotating the gears.)



Poor tooth contact and pitting

This picture is an example of poor tooth contact of an SSG3-30 gear which had only 30% of the gear tooth in proper contact. In this example the gear oil used is equivalent to JIS gear oil category 2, No.3, and the design conditions were 417N.m load torque at 278 min⁻¹ (12 kW) which was 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.

- ③ A gear may slip on the shaft or move axially while in motion if it is not firmly fastened to the shaft. Step shafts, collars and set screws are some of the ways to secure the gears.
- ④ Keyways are generally used as the method of engaging the gears with the axis. There is also a method of the setting with a MACHALOCK, Posi-Lock, and Shupanring, etc. which are parts for engaging the hole and the axis.
- ⑤ Assembly should be performed cautiously to avoid damage to the gears or injuries to the worker.

3. Notes on Starting Operations

- ① Before operating, check the following:
 - Are the gears firmly mounted on the shafts?
 - Have you eliminated uneven tooth contact?
 - Does the gear mesh have a proper amount of backlash?
(Please avoid the condition of no backlash.)
 - Is there sufficient lubrication?
- ② If the gears are exposed, install a safety cover for protection. Never touch gears while they are in motion.

③ If there is unusual noise or vibration at the start up or insufficient lubrication after the start up, please recheck the gears and correctness of the assembly. Some of the methods for achieving noise reduction are:

- (a) High Precision
- (b) Fine Tooth Surface Finish
- (c) Accurate Tooth Contact

④ The followings are the gear lubrication methods in general use:

- (a) Grease Lubrication
- (b) Splash Lubrication (Oil Bath Method)
- (c) Forced Oil Circulation Lubrication

Check lubrication after start up. Sometimes, when the unit is initially being operated, lubricating oil deteriorates rapidly.

4. Other Points to Consider in Applications

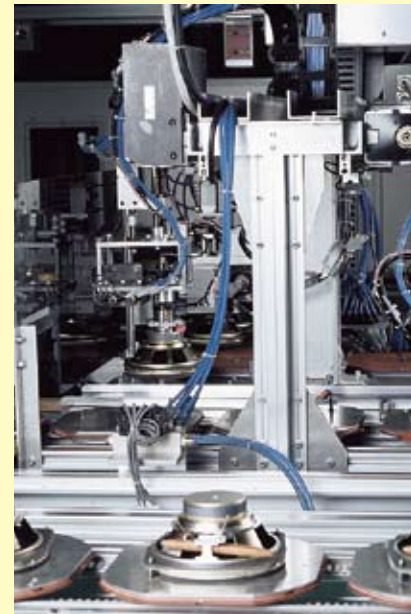
- ① KHK products are individually packaged to avoid damage. Depending on how they are handled, it is still possible to deform or break them. It is important to exercise care in handling these parts.
- ② Check the products as they are being taken out of the boxes. If any of them are rusted, scratched or dented, please return to the dealer where they were bought, for exchange.
- ③ KHK cannot guarantee the precision of gears once the customer performs a secondary operation on them.

Examples of KHK Gear Applications



Automatic packing machine (Spur Gears)

Food handling machine
(Plastic Spur gear)



Electric Component Assembly Line
(SS Spur Gears)



Spur Gears

Characteristics of Plastic Gears

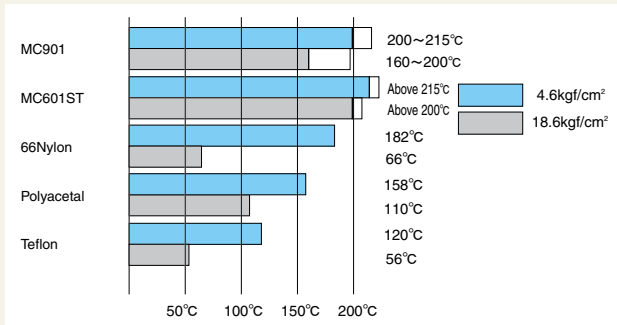
The quality of plastic gears (MC) may change due to variations of ambient temperature and humidity. The following useful data is provided to help the user with correct selection.

Thermal Properties

Dimensions of MC nylon gears change with temperature. KHK MC nylon gears are cut in the ambient temperature of 20° to 30°C (68°~86°F). Some dimensional changes could be expected in summer and winter.

We present the thermal deflection property of several plastics under load.

Thermal deflection temperature under load of certain plastic materials (ASTM-D648)



For plastic materials, it is difficult to determine the operating temperature below which there is no harmful effect from long term, continuous operation. In general, it is set by actual usage experience, though it is said to be 20°C to 30°C below the thermal deflection temperature.

There is not much data on low temperature limits. Users should rely on their own experience taking the brittleness properties into consideration.

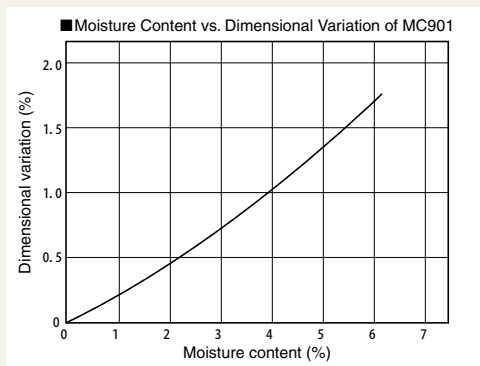
If you were to use NSU, PU or PS Plastic gears without lubricants, the meshing two nylon gears generates heat and they expand. We recommend metal gears for mating gears.

Water Absorption Properties

Dimensions of MC nylon gears change with moisture content. This may cause the sizes to vary from the time of purchase to the time of usage. The following table and the chart show the moisture content and its effect on the dimensions of MC901 nylon.

Moisture Absorption Rate of MC901 (ASTM D-570, etc.)

Moisture Absorption Rate (24 hrs., in water at room temperature)	0.5~1.0%
Water Saturation Value (in water)	5.5~7.0%
Water Saturation Value (room temperature in air)	2.5~3.5%



Thermal Properties of Plastic Materials

Properties	Test method ASTM	Unit	MC			66 Nylon	Polyacetal	Teflon
			901, 900NC	601ST				
Heat conductivity	C-177	10 ⁻¹ kcal/mhr.°C	2		2.11		2.16	
Coefficient of linear thermal expansion	D-696	10 ⁻⁶ /°C	9	6.5	10 15	9	10	
Specific heat	—	cal/°C.g	0.4		0.4		0.25	
Temperature of thermal deflection under certain load (18.6kgf/cm²)	D-648	°C	160 200	Above 200	66	110	56	
(4.6kgf/cm²)	D-648	°C	200 215	Above 215	182	158	120	
Continuous working temperature	—	°C	120	150	120	95	260	
Deflection rate under certain load (140kgf/cm², 50°C)	D-621	%	0.65					
Melting point		°C	220 223	220 223		165		

Chemical Resistance Properties

MC nylon products are mainly used in food and chemical machinery. However, there are limitations depending on the environment. Generally, MC nylon is resistant against organic agents but weak against acids. We list the chemical resistance properties of MC nylon against various substances. Since the reaction may vary depending on the applications, it is important to test it before processing. The MC Nylon that is approved for food contact by the US FDA is MC907. Gears can be custom made from this material.

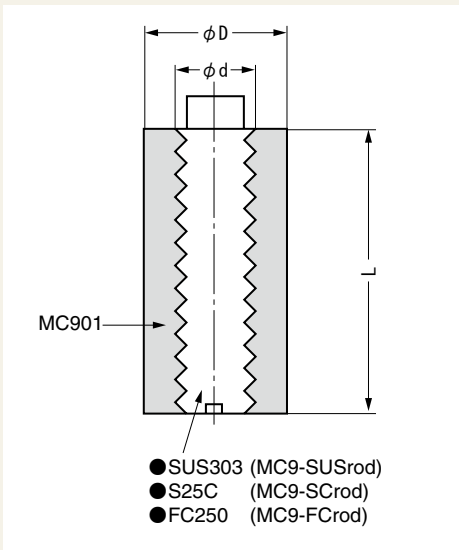
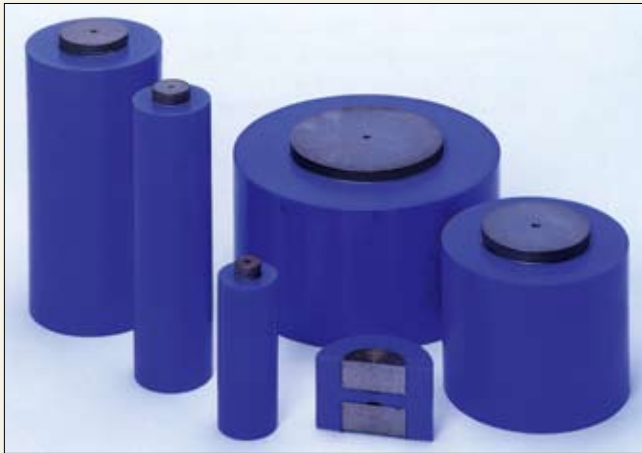
Chemical Resistance Properties of MC Nylon

(○) Hardly affected (△) Possible to use under certain conditions (×) Not suitable for use

Diluted hydrochloric acid	△	Methyl acetate	○	Nitrobenzene	○
Concentrated hydrochloric acid	×	Ethyl acetate	○	Salicylic acid	○
Diluted sulfuric acid	△	Sodium acetate	○	Diduthylphthalate	○
Concentrated sulfuric acid	×	Aceton	○	Synchrohexane	○
Diluted nitric acid	△	Methyl acetate	○	Synchrohexanol	○
Concentrated nitric acid	×	Formaldehyde	○	Tetrahydrofuran	○
Diluted phosphoric acid	△	Acetaldehyde	○	(Epsilon)-caprolactam	○
Sodium hydroxide(50%)	○	Ether family	○	Petroleum ether	○
Ammonia water(10%)	○	Acetamide	○	Gasoline	○
Ammonia gas	○	Ethylenediamine	○	Diesel oil	○
Saline solution(10%)	○	Acrylnitrile	○	Lubricant oil	○
Potassium chloride	○	Carbon tetrachloride	○	Mineral oil	○
Calcium chloride	○	Ethylene chloride	○	Castor oil	○
Ammonium chloride	○	Ethylene chlorohydrin	○	Linseed oil	○
Sodium hypochlorite	×	Trichlorethylene(Tri-clene)	○	Silicon oil	○
Sodium sulfate	○	Benzene	○	Edible fat	○
Sodium thiosulfate	○	Toluene	○	Tallow	○
Sodium bisulfate	○	Phenol	△	Butter	○
Cupric sulfate	○	Aniline	△	Milk	○
Potassium dichromate (5%)	○	Benzaldehyde	△	Grape wine	○
Potassium permanganate	△	Benzoic acid	△	Fruit juice	○
Sodium carbonate	○	Chlorobenzene	○	Carbonate drink	○



Round bar-MC cast nylon with metal core



If you require other sized gears than those listed in our NSU or PU series, we can design and quote custom gears made from the following round bars. Since we stock them, we can deliver fast and reduce your cost.

■ Dimensions of MC nylon round bars (Unit: mm)

Outside dia.	Metal core dia.	Total length	MC thickness	Weight (kgf/pcs.)
D	d	L		
40	20	105	10	0.4
50	25	105	12.5	0.7
55	30	105	12.5	0.9
65	40	105	12.5	1.4
80	45	105	17.5	1.9
90	50	105	20	2.3
100	55	105	22.5	2.8
110	60	105	25	3.4
120	70	105	25	4.4
130	80	105	25	5.5
150	90	105	30	7.0
180	110	105	35	10.4
200	120	105	40	12.5

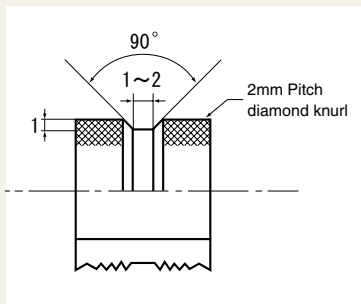
*Dimensions are based on technical date of NIPPON POLYPENCO LIMITED.

How is MC nylon fused to the metal core

This method is superior to other conventional methods such as bolting, shrink fitting and bonding.

1. Outline of the procedure

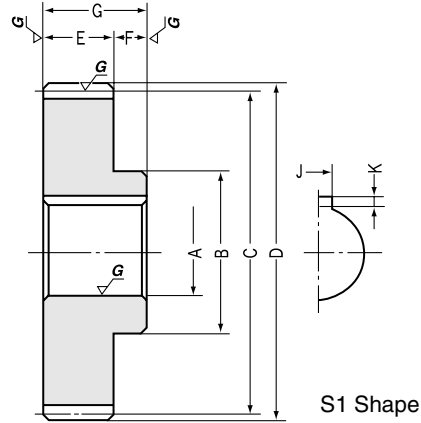
The surface of the core material is rolled with a 2mm pitch diamond knurl. Then one or more grooves (1~2mm wide and 1mm deep) are cut as shown on the right. The metal surface is treated prior to casting nylon in a mold.



2. Advantage of MC nylon with metal core

- (1) Wide temperature range
There are examples of wheel use in furnaces at 130 to 140°C
- (2) Good dimensional stability
Since nylon is fused to the whole outer surface of the metal hub, dimensional change is very small even under temperature variations.
- (3) Metal-hub rim may be thin
Even if there is not sufficient material to pass a bolt into the rim, the hub can be fixed by means of a bonding method.
- (4) Good appearance
Elimination of bolts and nuts provides a cleaner physical appearance .
- (5) Cost savings
In general, it is more economical than attaching with bolts, especially in large quantities.

Data related to the properties of MC nylon are extracted from the MC nylon technical data issued by NIPPON POLYPENCO LIMITED.



Module 1

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Keyway NOTE 1
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J x K
MSGA1- 18	1	18	8	15	18	20	10	5	15	—	—	3 x 1.4
MSGA1- 20 MSGB1- 20	1	20	8 10	17	20	22	10	5	15	—	—	3 x 1.4 4 x 1.8
MSGA1- 24 MSGB1- 24	1	24	10 12	20	24	26	10	5	15	—	—	4 x 1.8 4 x 1.8
MSGA1- 25 MSGB1- 25	1	25	10 12	20	25	27	10	5	15	—	—	4 x 1.8 4 x 1.8
MSGA1- 30 MSGB1- 30	1	30	10 12	25	30	32	10	5	15	—	—	4 x 1.8 4 x 1.8
MSGA1- 35 MSGB1- 35	1	35	10 15	25	35	37	10	5	15	—	—	4 x 1.8 5 x 2.3
MSGA1- 36 MSGB1- 36	1	36	12 15	25	36	38	10	5	15	—	—	4 x 1.8 5 x 2.3
MSGA1- 40 MSGB1- 40	1	40	12 15	30	40	42	10	5	15	—	—	4 x 1.8 5 x 2.3
MSGA1- 45 MSGB1- 45	1	45	12 15	30	45	47	10	5	15	—	—	4 x 1.8 5 x 2.3
MSGA1- 48 MSGB1- 48	1	48	12 15	30	48	50	10	5	15	—	—	4 x 1.8 5 x 2.3
MSGA1- 50 MSGB1- 50	1	50	12 15	35	50	52	10	5	15	—	—	4 x 1.8 5 x 2.3
MSGA1- 55 MSGB1- 55	1	55	15 20	40	55	57	10	10	20	—	—	5 x 2.3 6 x 2.8
MSGA1- 60 MSGB1- 60	1	60	15 20	40	60	62	10	10	20	—	—	5 x 2.3 6 x 2.8
MSGA1- 70 MSGB1- 70	1	70	20 25	45	70	72	10	10	20	—	—	6 x 2.8 8 x 3.3
MSGA1- 80 MSGB1- 80	1	80	20 25	45	80	82	10	10	20	—	—	6 x 2.8 8 x 3.3
MSGA1-100 MSGB1-100	1	100	20 25	45	100	102	10	10	20	—	—	6 x 2.8 8 x 3.3

CAUTION: No secondary operation can be performed due to the carburizing process.

NOTE 1: Although the dimensions of the keyway are made to the JIS(Js9) tolerance, there may be some deviations due to the effects of the heat treatment.



Specifications

Precision grade	JIS N5 grade (JIS B1702-1: 1998) OLD JIS 1 grade (JIS B1702: 1976)	Tooth hardness	55~60HRC
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Ground
Material	SCM415	Datum reference surface for gear grinding	Bore
Heat treatment	Overall carburizing	Secondary Operations	Not possible (We can supply different configuration as custom made gears)

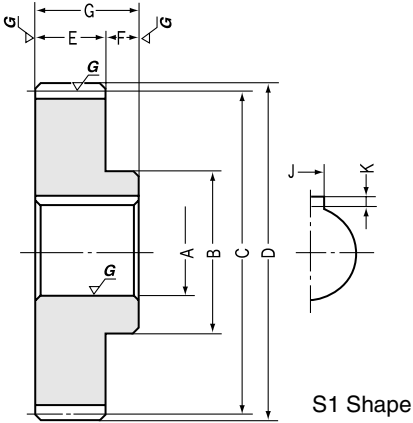
Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	12.14	6.374	(1.238)	(0.65)	0.08 ~ 0.16	0.02	MSGA1- 18
S1	14.22	8.038	(1.45)	(0.8197)	0.08 ~ 0.16	0.03 0.03	MSGA1- 20 MSGB1- 20
S1	18.48	11.96	(1.884)	(1.22)	0.08 ~ 0.16	0.04 0.04	MSGA1- 24 MSGB1- 24
S1	19.56	13.07	(1.995)	(1.333)	0.08 ~ 0.16	0.04 0.04	MSGA1- 25 MSGB1- 25
S1	25.09	19.04	(2.558)	(1.942)	0.08 ~ 0.16	0.07 0.07	MSGA1- 30 MSGB1- 30
S1	30.72	26.22	(3.133)	(2.674)	0.08 ~ 0.16	0.09 0.09	MSGA1- 35 MSGB1- 35
S1	31.87	27.81	(3.25)	(2.836)	0.08 ~ 0.16	0.1 0.1	MSGA1- 36 MSGB1- 36
S1	36.46	34.63	(3.718)	(3.531)	0.08 ~ 0.16	0.12 0.11	MSGA1- 40 MSGB1- 40
S1	42.26	44.26	(4.309)	(4.513)	0.08 ~ 0.16	0.15 0.14	MSGA1- 45 MSGB1- 45
S1	45.77	50.63	(4.667)	(5.163)	0.08 ~ 0.16	0.17 0.16	MSGA1- 48 MSGB1- 48
S1	48.11	55.12	(4.906)	(5.621)	0.08 ~ 0.16	0.19 0.18	MSGA1- 50 MSGB1- 50
S1	54	67.25	(5.507)	(6.858)	0.1 ~ 0.18	0.27 0.25	MSGA1- 55 MSGB1- 55
S1	59.93	80.64	(6.111)	(8.223)	0.1 ~ 0.18	0.3 0.28	MSGA1- 60 MSGB1- 60
S1	71.85	111.3	(7.327)	(11.35)	0.1 ~ 0.18	0.39 0.36	MSGA1- 70 MSGB1- 70
S1	83.85	147.2	(8.55)	(15.01)	0.1 ~ 0.18	0.48 0.46	MSGA1- 80 MSGB1- 80
S1	102.9	224	(10.49)	(22.84)	0.1 ~ 0.18	0.71 0.68	MSGA1-100 MSGB1-100

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



MSG(A)B Ground Spur Gears Module 1.5



Module 1.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Keyway NOTE 1
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J x K
MSGA1.5- 15	1.5	15	10	18	22.5	25.5	15	10	25	—	—	4 x 1.8
MSGA1.5- 18 MSGB1.5- 18	1.5	18	10 12	22	27	30	15	10	25	—	—	4 x 1.8 4 x 1.8
MSGA1.5- 20 MSGB1.5- 20	1.5	20	12 15	25	30	33	15	10	25	—	—	4 x 1.8 5 x 2.3
MSGA1.5- 24 MSGB1.5- 24	1.5	24	12 15	28	36	39	15	10	25	—	—	4 x 1.8 5 x 2.3
MSGA1.5- 25 MSGB1.5- 25	1.5	25	14 16	30	37.5	40.5	15	10	25	—	—	5 x 2.3 5 x 2.3
MSGA1.5- 30 MSGB1.5- 30	1.5	30	15 18	30	45	48	15	10	25	—	—	5 x 2.3 6 x 2.8
MSGA1.5- 35 MSGB1.5- 35	1.5	35	15 18	32	52.5	55.5	15	10	25	—	—	5 x 2.3 6 x 2.8
MSGA1.5- 36 MSGB1.5- 36	1.5	36	15 18	32	54	57	15	10	25	—	—	5 x 2.3 6 x 2.8
MSGA1.5- 40 MSGB1.5- 40	1.5	40	16 20	35	60	63	15	10	25	—	—	5 x 2.3 6 x 2.8
MSGA1.5- 45 MSGB1.5- 45	1.5	45	16 20	40	67.5	70.5	15	10	25	—	—	5 x 2.3 6 x 2.8
MSGA1.5- 48 MSGB1.5- 48	1.5	48	16 20	40	72	75	15	10	25	—	—	5 x 2.3 6 x 2.8
MSGA1.5- 50 MSGB1.5- 50	1.5	50	18 22	40	75	78	15	10	25	—	—	6 x 2.8 6 x 2.8
MSGA1.5- 55 MSGB1.5- 55	1.5	55	20 25	45	82.5	85.5	15	10	25	—	—	6 x 2.8 8 x 3.3
MSGA1.5- 60 MSGB1.5- 60	1.5	60	20 25	45	90	93	15	10	25	—	—	6 x 2.8 8 x 3.3
MSGA1.5- 70 MSGB1.5- 70	1.5	70	20 25	45	105	108	15	10	25	—	—	6 x 2.8 8 x 3.3
MSGA1.5- 80 MSGB1.5- 80	1.5	80	20 25	45	120	123	15	10	25	—	—	6 x 2.8 8 x 3.3
MSGA1.5-100 MSGB1.5-100	1.5	100	25 30	50	150	153	15	10	25	—	—	8 x 3.3 8 x 3.3

CAUTION: No secondary operation can be performed due to the carburizing process.

NOTE 1: Although the dimensions of the keyway are made to the JIS (Js9) tolerance, there may be some deviations due to the effects of the heat treatment.



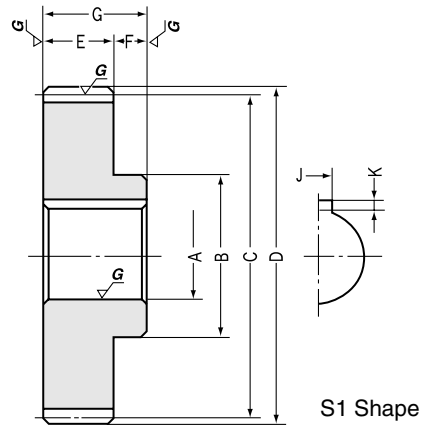
Specifications

Precision grade	JIS N5 grade (JIS B1702-1: 1998) OLD JIS 1 grade (JIS B1702: 1976)	Tooth hardness	55~60HRC
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Ground
Material	SCM415	Datum reference surface for gear grinding	Bore
Heat treatment	Overall carburizing	Secondary Operations	Not possible (We can supply different configuration as custom made gears)

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kg)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	30.84	14.79	(3.145)	(1.508)	0.08 ~ 0.16	0.05	MSG1.5- 15
S1	40.99	22.13	(4.18)	(2.257)	0.08 ~ 0.16	0.08 0.08	MSG1.5- 18 MSGB1.5- 18
S1	47.97	27.88	(4.892)	(2.843)	0.08 ~ 0.16	0.09 0.1	MSG1.5- 20 MSGB1.5- 20
S1	62.36	41.54	(6.359)	(4.236)	0.08 ~ 0.16	0.14 0.14	MSG1.5- 24 MSGB1.5- 24
S1	66.02	45.41	(6.732)	(4.631)	0.08 ~ 0.16	0.15 0.14	MSG1.5- 25 MSGB1.5- 25
S1	84.66	66.39	(8.633)	(6.77)	0.08 ~ 0.16	0.2 0.19	MSG1.5- 30 MSGB1.5- 30
S1	103.8	91.54	(10.58)	(9.335)	0.1 ~ 0.18	0.31 0.3	MSG1.5- 35 MSGB1.5- 35
S1	107.6	97.08	(10.97)	(9.9)	0.1 ~ 0.18	0.32 0.31	MSG1.5- 36 MSGB1.5- 36
S1	123.1	120.9	(12.55)	(12.33)	0.1 ~ 0.18	0.36 0.34	MSG1.5- 40 MSGB1.5- 40
S1	142.6	154.7	(14.54)	(15.78)	0.1 ~ 0.18	0.51 0.49	MSG1.5- 45 MSGB1.5- 45
S1	154.5	177.1	(15.75)	(18.06)	0.1 ~ 0.18	0.54 0.53	MSG1.5- 48 MSGB1.5- 48
S1	162.4	192.9	(16.56)	(19.67)	0.1 ~ 0.18	0.55 0.53	MSG1.5- 50 MSGB1.5- 50
S1	182.3	235.5	(18.59)	(24.01)	0.1 ~ 0.18	0.73 0.7	MSG1.5- 55 MSGB1.5- 55
S1	202.2	282.6	(20.62)	(28.82)	0.1 ~ 0.18	0.8 0.76	MSG1.5- 60 MSGB1.5- 60
S1	230.9	372.4	(23.55)	(37.97)	0.12 ~ 0.2	1.14 1.11	MSG1.5- 70 MSGB1.5- 70
S1	269.5	493.6	(27.48)	(50.33)	0.12 ~ 0.2	1.4 1.3	MSG1.5- 80 MSGB1.5- 80
S1	347.2	786.9	(35.4)	(80.24)	0.12 ~ 0.2	2.2 2.1	MSG1.5-100 MSGB1.5-100

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

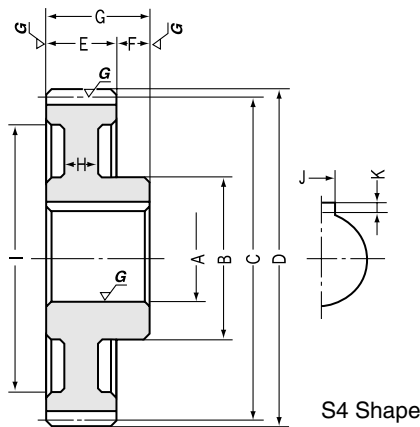


Module 2

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Keyway <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J x K
MSG A2- 15 MSG B2- 15	2	15	12 15	24	30	34	20	10	30	—	—	4 x 1.8 5 x 2.3
MSG A2- 18 MSG B2- 18	2	18	12 15	30	36	40	20	10	30	—	—	4 x 1.8 5 x 2.3
MSG A2- 20 MSG B2- 20	2	20	15 18	32	40	44	20	10	30	—	—	5 x 2.3 6 x 2.8
MSG A2- 24 MSG B2- 24	2	24	15 18	35	48	52	20	10	30	—	—	5 x 2.3 6 x 2.8
MSG A2- 25 MSG B2- 25	2	25	16 20	35	50	54	20	10	30	—	—	5 x 2.3 6 x 2.8
MSG A2- 30 MSG B2- 30	2	30	18 22	40	60	64	20	10	30	—	—	6 x 2.8 6 x 2.8
MSG A2- 35 MSG B2- 35	2	35	18 22	40	70	74	20	10	30	—	—	6 x 2.8 6 x 2.8
MSG A2- 36 MSG B2- 36	2	36	18 22	40	72	76	20	10	30	—	—	6 x 2.8 6 x 2.8
MSG A2- 40 MSG B2- 40	2	40	20 25	45	80	84	20	10	30	—	—	6 x 2.8 8 x 3.3
MSG A2- 45 MSG B2- 45	2	45	20 25	45	90	94	20	10	30	—	—	6 x 2.8 8 x 3.3
MSG A2- 48 MSG B2- 48	2	48	22 28	50	96	100	20	10	30	—	—	6 x 2.8 8 x 3.3
MSG A2- 50 MSG B2- 50	2	50	22 28	50	100	104	20	10	30	13	84	6 x 2.8 8 x 3.3
MSG A2- 55 MSG B2- 55	2	55	25 30	55	110	114	20	10	30	13	90	8 x 3.3 8 x 3.3
MSG A2- 60 MSG B2- 60	2	60	25 30	55	120	124	20	10	30	13	104	8 x 3.3 8 x 3.3
MSG A2- 70 MSG B2- 70	2	70	25 30	55	140	144	20	10	30	13	114	8 x 3.3 8 x 3.3
MSG A2- 80 MSG B2- 80	2	80	30 35	60	160	164	20	10	30	13	144	8 x 3.3 10 x 3.3
MSG A2-100 MSG B2-100	2	100	35 40	80	200	204	20	10	30	13	174	10 x 3.3 12 x 3.3

CAUTION: No secondary operation can be performed due to the carburizing process.

NOTE 1: Although the dimensions of the keyway are made to the JIS (Js9) tolerance, there may be some deviations due to the effects of the heat treatment.



Specifications

Precision grade	JIS N5 grade (JIS B1702-1: 1998) OLD JIS 1 grade (JIS B1702: 1976)	Tooth hardness	55~60HRC
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Ground
Material	SCM415	Datum reference surface for gear grinding	Bore
Heat treatment	Overall carburizing	Secondary Operations	Not possible (We can supply different configuration as custom made gears)

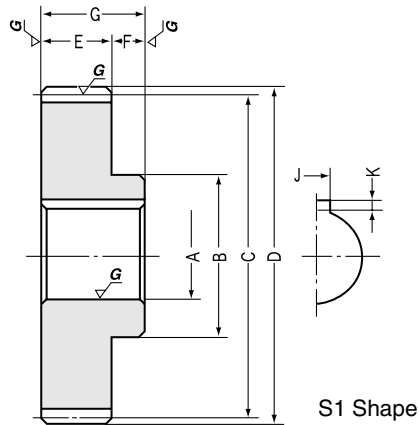
Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	73.12	35.72	(7.456)	(3.642)	0.1 ~ 0.2	0.11 0.1	MSGA2- 15 MSGB2- 15
S1	97.16	53.53	(9.908)	(5.459)	0.1 ~ 0.2	0.2 0.19	MSGA2- 18 MSGB2- 18
S1	113.8	67.58	(11.6)	(6.891)	0.1 ~ 0.2	0.29 0.2	MSGA2- 20 MSGB2- 20
S1	147.8	100.8	(15.07)	(10.28)	0.1 ~ 0.2	0.35 0.34	MSGA2- 24 MSGB2- 24
S1	156.5	110.2	(15.96)	(11.24)	0.1 ~ 0.2	0.36 0.35	MSGA2- 25 MSGB2- 25
S1	200.6	161.3	(20.46)	(16.45)	0.12 ~ 0.22	0.47 0.44	MSGA2- 30 MSGB2- 30
S1	245.9	222.6	(25.07)	(22.7)	0.12 ~ 0.22	0.71 0.68	MSGA2- 35 MSGB2- 35
S1	255	236	(26)	(24.07)	0.12 ~ 0.22	0.76 0.73	MSGA2- 36 MSGB2- 36
S1	291.6	294.4	(29.74)	(30.02)	0.12 ~ 0.22	0.82 0.79	MSGA2- 40 MSGB2- 40
S1	338.1	376.9	(34.48)	(38.43)	0.12 ~ 0.22	1 1.1	MSGA2- 45 MSGB2- 45
S1	348.7	411.1	(35.56)	(41.92)	0.12 ~ 0.22	1.3 1.2	MSGA2- 48 MSGB2- 48
S4	366.6	448	(37.38)	(45.68)	0.12 ~ 0.22	1.1 1	MSGA2- 50 MSGB2- 50
S4	411.5	547.6	(41.96)	(55.84)	0.14 ~ 0.24	1.4 1.3	MSGA2- 55 MSGB2- 55
S4	456.6	658.1	(46.56)	(67.11)	0.14 ~ 0.24	1.5 1.4	MSGA2- 60 MSGB2- 60
S4	547.4	908.8	(55.82)	(92.67)	0.14 ~ 0.24	2.4 2.3	MSGA2- 70 MSGB2- 70
S4	609.9	1145	(62.19)	(116.8)	0.14 ~ 0.24	2.5 2.4	MSGA2- 80 MSGB2- 80
S4	785.4	1824	(80.09)	(186)	0.14 ~ 0.24	5 4.9	MSGA2-100 MSGB2-100

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



MSG A (B) Ground Spur Gears Module 2.5

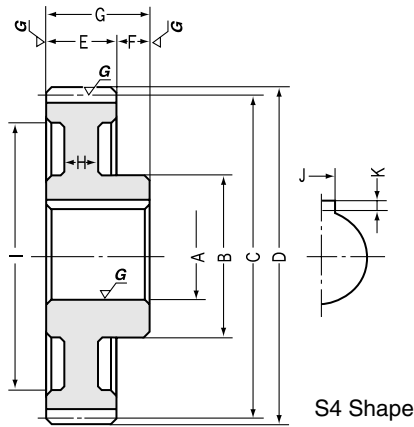


Module 2.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Keyway <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J x K
MSG A2.5-15 MSG B2.5-15	2.5	15	15 18	30	37.5	42.5	25	12	37	—	—	5 x 2.3 6 x 2.8
MSG A2.5-18 MSG B2.5-18	2.5	18	18 20	38	45	50	25	12	37	—	—	6 x 2.8 6 x 2.8
MSG A2.5-20 MSG B2.5-20	2.5	20	18 22	40	50	55	25	12	37	—	—	6 x 2.8 6 x 2.8
MSG A2.5-24 MSG B2.5-24	2.5	24	18 22	40	60	65	25	12	37	—	—	6 x 2.8 6 x 2.8
MSG A2.5-25 MSG B2.5-25	2.5	25	20 25	45	62.5	67.5	25	12	37	—	—	6 x 2.8 8 x 3.3
MSG A2.5-30 MSG B2.5-30	2.5	30	22 28	50	75	80	25	12	37	—	—	6 x 2.8 8 x 3.3
MSG A2.5-35 MSG B2.5-35	2.5	35	25 30	55	87.5	92.5	25	12	37	—	—	8 x 3.3 8 x 3.3
MSG A2.5-36 MSG B2.5-36	2.5	36	25 30	55	90	95	25	12	37	—	—	8 x 3.3 8 x 3.3
MSG A2.5-40 MSG B2.5-40	2.5	40	25 32	55	100	105	25	12	37	—	—	8 x 3.3 10 x 3.3
MSG A2.5-45 MSG B2.5-45	2.5	45	30 35	60	112.5	117.5	25	12	37	—	—	8 x 3.3 10 x 3.3
MSG A2.5-48 MSG B2.5-48	2.5	48	30 35	60	120	125	25	12	37	—	—	8 x 3.3 10 x 3.3
MSG A2.5-50 MSG B2.5-50	2.5	50	30 35	60	125	130	25	12	37	17	105	8 x 3.3 10 x 3.3
MSG A2.5-55 MSG B2.5-55	2.5	55	30 40	70	137.5	142.5	25	12	37	17	115	8 x 3.3 12 x 3.3
MSG A2.5-60 MSG B2.5-60	2.5	60	30 40	70	150	155	25	12	37	17	130	8 x 3.3 12 x 3.3
MSG A2.5-70 MSG B2.5-70	2.5	70	40 50	85	175	180	25	12	37	17	150	12 x 3.3 14 x 3.8

CAUTION: No secondary operation can be performed due to the carburizing process.

NOTE 1: Although the dimensions of the keyway are made to the JIS (Js9) tolerance, there may be some deviations due to the effects of the heat treatment.



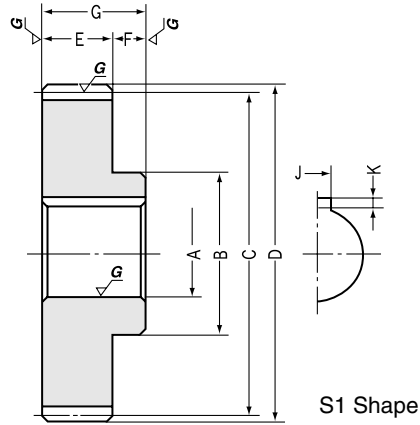
Specifications

Precision grade	JIS NS grade (JIS B1702-1: 1998) OLD JIS 1 grade (JIS B1702: 1976)	Tooth hardness	55~60HRC
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Ground
Material	SCM415	Datum reference surface for gear grinding	Bore
Heat treatment	Overall carburizing	Secondary Operations	Not possible (We can supply different configuration as custom made gears)

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	142.8	70.96	(14.56)	(7.236)	0.1 ~ 0.2	0.22 0.2	MSGA2.5-15 MSGB2.5-15
S1	189.8	106.5	(19.35)	(10.86)	0.1 ~ 0.2	0.4 0.37	MSGA2.5-18 MSGB2.5-18
S1	222.1	134.4	(22.65)	(13.71)	0.1 ~ 0.2	0.42 0.38	MSGA2.5-20 MSGB2.5-20
S1	288.7	200.7	(29.44)	(20.47)	0.12 ~ 0.22	0.85 0.82	MSGA2.5-24 MSGB2.5-24
S1	305.7	219.6	(31.17)	(22.39)	0.12 ~ 0.22	0.65 0.6	MSGA2.5-25 MSGB2.5-25
S1	392	321.5	(39.97)	(32.78)	0.12 ~ 0.22	0.93 0.85	MSGA2.5-30 MSGB2.5-30
S1	480.1	444	(48.96)	(45.28)	0.12 ~ 0.22	1.4 1.3	MSGA2.5-35 MSGB2.5-35
S1	498	471.1	(50.78)	(48.04)	0.12 ~ 0.22	1.5 1.4	MSGA2.5-36 MSGB2.5-36
S1	542.6	560	(55.33)	(57.1)	0.12 ~ 0.22	1.6 1.5	MSGA2.5-40 MSGB2.5-40
S1	628.9	717.7	(64.13)	(73.19)	0.14 ~ 0.24	2.2 2.1	MSGA2.5-45 MSGB2.5-45
S1	681.1	822.6	(69.45)	(83.88)	0.14 ~ 0.24	2.4 2.3	MSGA2.5-48 MSGB2.5-48
S4	716	896.8	(73.01)	(91.45)	0.14 ~ 0.24	2.1 2	MSGA2.5-50 MSGB2.5-50
S4	803.6	1094	(81.95)	(111.6)	0.14 ~ 0.24	3.2 3.1	MSGA2.5-55 MSGB2.5-55
S4	891.8	1311	(90.94)	(133.7)	0.14 ~ 0.24	3 2.8	MSGA2.5-60 MSGB2.5-60
S4	1021	1727	(104.1)	(176.1)	0.14 ~ 0.24	5.4 5.2	MSGA2.5-70 MSGB2.5-70

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

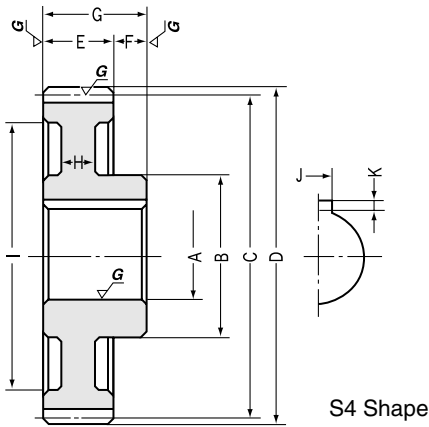


Module 3

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Keyway <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J x K
MSGA3-15 MSGB3-15	3	15	18 22	36	45	51	30	15	45	—	—	6 x 2.8 6 x 2.8
MSGA3-18 MSGB3-18	3	18	20 25	45	54	60	30	15	45	—	—	6 x 2.8 8 x 3.3
MSGA3-20 MSGB3-20	3	20	20 25	45	60	66	30	15	45	—	—	6 x 2.8 8 x 3.3
MSGA3-24 MSGB3-24	3	24	20 25	45	72	78	30	15	45	—	—	6 x 2.8 8 x 3.3
MSGA3-25 MSGB3-25	3	25	25 30	55	75	81	30	15	45	—	—	8 x 3.3 10 x 3.3
MSGA3-30 MSGB3-30	3	30	28 35	60	90	96	30	15	45	—	—	8 x 3.3 10 x 3.3
MSGA3-35 MSGB3-35	3	35	30 35	60	105	111	30	15	45	—	—	8 x 3.3 10 x 3.3
MSGA3-36 MSGB3-36	3	36	30 35	60	108	114	30	15	45	—	—	8 x 3.3 10 x 3.3
MSGA3-40 MSGB3-40	3	40	30 40	70	120	126	30	15	45	—	—	8 x 3.3 12 x 3.3
MSGA3-45 MSGB3-45	3	45	30 40	70	135	141	30	15	45	—	—	8 x 3.3 12 x 3.3
MSGA3-48 MSGB3-48	3	48	35 40	70	144	150	30	15	45	—	—	10 x 3.3 12 x 3.3
MSGA3-50 MSGB3-50	3	50	32 40	70	150	156	30	15	45	20	126	10 x 3.3 12 x 3.3
MSGA3-55 MSGB3-55	3	55	35 40	70	165	171	30	15	45	20	140	10 x 3.3 12 x 3.3
MSGA3-60 MSGB3-60	3	60	35 45	80	180	186	30	15	45	20	156	10 x 3.3 14 x 3.8

CAUTION: No secondary operation can be performed due to the carburizing process.

NOTE 1: Although the dimensions of the keyway are made to the JIS (Js9) tolerance, there may be some deviations due to the effects of the heat treatment.

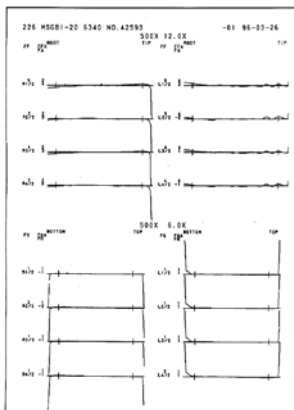


Specifications			
Precision grade	JIS N5 grade (JIS B1702-1: 1998) OLD JIS 1 grade (JIS B1702: 1976)	Tooth hardness	55~60HRC
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Ground
Material	SCM415	Datum reference surface for gear grinding	Bore
Heat treatment	Overall carburizing	Secondary Operations	Not possible (We can supply different configuration as custom made gears)

Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	246.7	124.4	(25.16)	(12.69)	0.1 ~ 0.2	0.4 0.35	MSGA3-15 MSGB3-15
S1	327.9	186.9	(33.44)	(19.06)	0.12 ~ 0.22	0.7 0.64	MSGA3-18 MSGB3-18
S1	383.8	236	(39.14)	(24.07)	0.12 ~ 0.22	0.73 0.66	MSGA3-20 MSGB3-20
S1	498.9	352.6	(50.87)	(35.96)	0.12 ~ 0.22	1 0.9	MSGA3-24 MSGB3-24
S1	528.2	385.7	(53.86)	(39.33)	0.12 ~ 0.22	1.1 1	MSGA3-25 MSGB3-25
S1	677.2	565.3	(69.06)	(57.65)	0.12 ~ 0.22	1.6 1.5	MSGA3-30 MSGB3-30
S1	790.2	744.6	(80.58)	(75.93)	0.14 ~ 0.24	2.3 2.2	MSGA3-35 MSGB3-35
S1	819.5	790.2	(83.57)	(80.58)	0.14 ~ 0.24	2.4 2.3	MSGA3-36 MSGB3-36
S1	937.6	987.5	(95.61)	(100.7)	0.14 ~ 0.24	2.8 2.6	MSGA3-40 MSGB3-40
S1	1087	1264	(110.8)	(128.9)	0.14 ~ 0.24	3.8 3.7	MSGA3-45 MSGB3-45
S1	1177	1445	(120)	(147.4)	0.14 ~ 0.24	4.2 4.1	MSGA3-48 MSGB3-48
S4	1238	1574	(126.2)	(160.5)	0.14 ~ 0.24	3.6 3.5	MSGA3-50 MSGB3-50
S4	1326	1832	(135.2)	(186.8)	0.14 ~ 0.24	5.1 4.8	MSGA3-55 MSGB3-55
S4	1471	2198	(150)	(224.1)	0.14 ~ 0.24	5.1 4.9	MSGA3-60 MSGB3-60

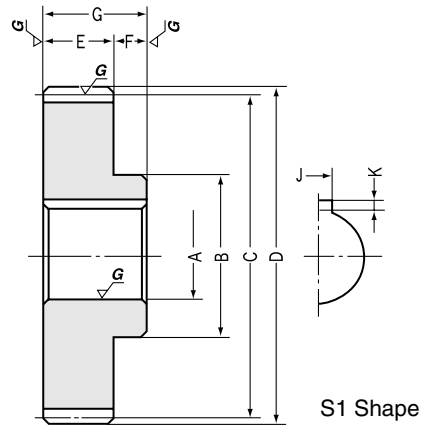
NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



An example of KHK's inspection report on tooth profile and lead errors.

The precision of a spur gear (JIS B 1702-1) is determined by factors such as single pitch error, pitch variation error, accumulated pitch error, tooth profile error, run out error, lead error etc.

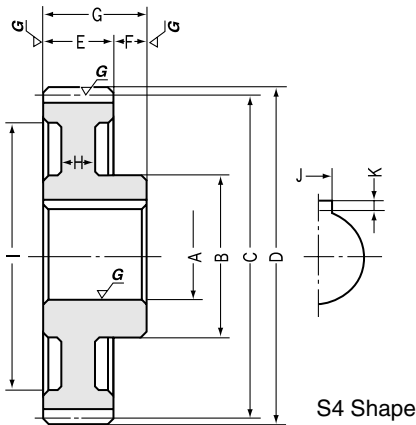


Module 4

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.	Keyway <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J x K
MSG A4-15 MSG B4-15	4	15	25 30	48	60	68	40	20	60	—	—	8 x 3.3 8 x 3.3
MSG A4-18 MSG B4-18	4	18	25 30	50	72	80	40	20	60	—	—	8 x 3.3 8 x 3.3
MSG A4-20 MSG B4-20	4	20	28 32	60	80	88	40	20	60	—	—	8 x 3.3 10 x 3.3
MSG A4-24 MSG B4-24	4	24	28 32	60	96	104	40	20	60	—	—	8 x 3.3 10 x 3.3
MSG A4-25 MSG B4-25	4	25	30 35	60	100	108	40	20	60	—	—	8 x 3.3 10 x 3.3
MSG A4-30 MSG B4-30	4	30	35 40	70	120	128	40	20	60	—	—	10 x 3.3 12 x 3.3
MSG A4-35 MSG B4-35	4	35	35 40	70	140	148	40	20	60	—	—	10 x 3.3 12 x 3.3
MSG A4-36 MSG B4-36	4	36	35 40	70	144	152	40	20	60	—	—	10 x 3.3 12 x 3.3
MSG A4-40 MSG B4-40	4	40	40 45	80	160	168	40	20	60	—	—	12 x 3.3 14 x 3.8
MSG A4-45 MSG B4-45	4	45	40 45	80	180	188	40	20	60	—	—	12 x 3.3 14 x 3.8
MSG A4-48 MSG B4-48	4	48	40 45	80	192	200	40	20	60	26	160	12 x 3.3 14 x 3.8
MSG A4-50 MSG B4-50	4	50	40 50	85	200	208	40	20	60	26	168	12 x 3.3 14 x 3.8

CAUTION: No secondary operation can be performed due to the carburizing process.

NOTE 1: Although the dimensions of the keyway are made to the JIS (Js9) tolerance, there may be some deviations due to the effects of the heat treatment.



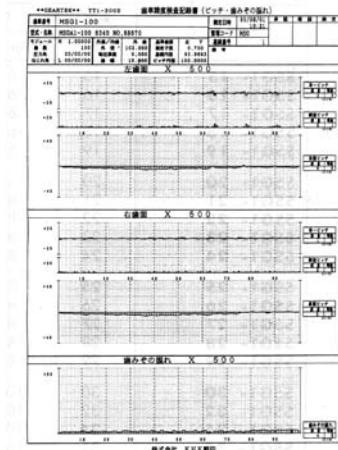
Specifications

Precision grade	JIS N5 grade (JIS B1702-1: 1998) OLD JIS 1 grade (JIS B1702: 1976)	Tooth hardness	55~60HRC
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Ground
Material	SCM415	Datum reference surface for gear grinding	Bore
Heat treatment	Overall carburizing	Secondary Operations	Not possible (We can supply different configuration as custom made gears)

Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	585	302.4	(59.65)	(30.84)	0.14 ~ 0.24	0.92 0.8	MSG4-15 MSGB4-15
S1	777.3	454.5	(79.26)	(46.35)	0.14 ~ 0.24	1.5 1.4	MSG4-18 MSGB4-18
S1	909.8	574.4	(92.77)	(58.57)	0.14 ~ 0.24	1.7 1.3	MSG4-20 MSGB4-20
S1	1126	818.7	(114.8)	(83.49)	0.14 ~ 0.24	2.4 2.3	MSG4-24 MSGB4-24
S1	1192	895.8	(121.6)	(91.35)	0.14 ~ 0.24	2.5 2.4	MSG4-25 MSGB4-25
S1	1529	1316	(155.9)	(134.2)	0.16 ~ 0.26	3.6 3.5	MSG4-30 MSGB4-30
S1	1873	1817	(191)	(185.3)	0.16 ~ 0.26	5.5 5.3	MSG4-35 MSGB4-35
S1	1943	1927	(198.1)	(196.5)	0.16 ~ 0.26	5.8 5.6	MSG4-36 MSGB4-36
S1	2121	2291	(216.3)	(233.6)	0.16 ~ 0.26	6.5 6.3	MSG4-40 MSGB4-40
S1	2459	2930	(250.7)	(298.8)	0.16 ~ 0.26	8.8 8.6	MSG4-45 MSGB4-45
S4	2662	3353	(271.5)	(341.9)	0.16 ~ 0.26	6.5 6.3	MSG4-48 MSGB4-48
S4	2799	3647	(285.4)	(371.9)	0.16 ~ 0.26	8.3 7.9	MSG4-50 MSGB4-50

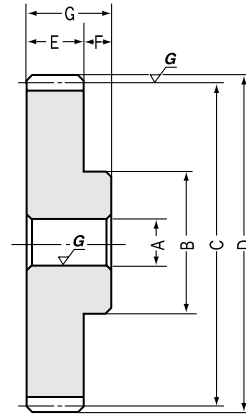
NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



An example of KHK's inspection report on various pitch errors.

The precision of spur gear (JIS B 1702-1) is determined by factors such as single pitch error, pitch variation error, accumulated pitch error, tooth profile error, run out error, lead error etc.



S1 Shape

Module 1

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I
SSG1- 15	1	15	6	12	15	17	8	10	18	—	—
SSG1- 16	1	16	6	13	16	18	8	10	18	—	—
SSG1- 17	1	17	6	14	17	19	8	10	18	—	—
SSG1- 18	1	18	6	15	18	20	8	10	18	—	—
SSG1- 19	1	19	6	16	19	21	8	10	18	—	—
SSG1- 20	1	20	6	17	20	22	8	10	18	—	—
SSG1- 21	1	21	8	18	21	23	8	10	18	—	—
SSG1- 22	1	22	8	18	22	24	8	10	18	—	—
SSG1- 23	1	23	8	20	23	25	8	10	18	—	—
SSG1- 24	1	24	8	20	24	26	8	10	18	—	—
SSG1- 25	1	25	8	20	25	27	8	10	18	—	—
SSG1- 26	1	26	8	20	26	28	8	10	18	—	—
SSG1- 27	1	27	8	20	27	29	8	10	18	—	—
SSG1- 28	1	28	8	20	28	30	8	10	18	—	—
SSG1- 29	1	29	8	25	29	31	8	10	18	—	—
SSG1- 30	1	30	10	25	30	32	8	10	18	—	—
SSG1- 32	1	32	10	25	32	34	8	10	18	—	—
SSG1- 34	1	34	10	25	34	36	8	10	18	—	—
SSG1- 35	1	35	10	25	35	37	8	10	18	—	—
SSG1- 36	1	36	10	25	36	38	8	10	18	—	—
SSG1- 38	1	38	10	30	38	40	8	10	18	—	—
SSG1- 40	1	40	10	30	40	42	8	10	18	—	—
SSG1- 42	1	42	10	30	42	44	8	10	18	—	—
SSG1- 44	1	44	10	30	44	46	8	10	18	—	—
SSG1- 45	1	45	10	30	45	47	8	10	18	—	—
SSG1- 48	1	48	10	30	48	50	8	10	18	—	—
SSG1- 50	1	50	12	35	50	52	8	10	18	—	—
SSG1- 55	1	55	12	35	55	57	8	10	18	—	—
SSG1- 56	1	56	12	35	56	58	8	10	18	—	—
SSG1- 60	1	60	12	40	60	62	8	10	18	—	—
SSG1- 64	1	64	12	40	64	66	8	10	18	—	—
SSG1- 70	1	70	12	40	70	72	8	10	18	—	—
SSG1- 75	1	75	12	40	75	77	8	10	18	—	—
SSG1- 80	1	80	15	50	80	82	8	10	18	—	—
SSG1- 90	1	90	15	50	90	92	8	10	18	—	—
SSG1-100	1	100	15	50	100	102	8	10	18	—	—
SSG1-120	1	120	15	50	120	122	8	10	18	—	—

NOTE 1: Secondary operations may be performed on these gears except for modification of the gear face width.



Specifications

Precision grade	JIS N7 grade (JIS B1702-1: 1996) OLD JIS 3 grade (JIS B1702: 1976)	Tooth hardness	48~53HRC
Gear teeth	Standard full depth	Surface treatment	Black oxide except ground surfaces
Pressure angle	20°	Tooth surface finish	Ground
Material	S45C	Datum reference surface for gear grinding	Bore
Heat treatment	Tooth surface Induction hardened	Secondary Operations	Possible except tooth area

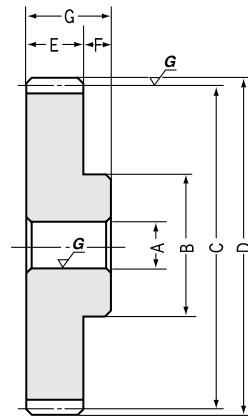
Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	3.267	1.033	(0.3331)	(0.1053)	0.08 ~ 0.16	0.02	SSG1- 15
S1	3.62	1.19	(0.3691)	(0.1213)	0.08 ~ 0.16	0.02	SSG1- 16
S1	3.978	1.359	(0.4056)	(0.1386)	0.08 ~ 0.16	0.02	SSG1- 17
S1	4.341	1.54	(0.4427)	(0.157)	0.08 ~ 0.16	0.03	SSG1- 18
S1	4.709	1.733	(0.4802)	(0.1767)	0.08 ~ 0.16	0.03	SSG1- 19
S1	5.081	1.938	(0.5181)	(0.1976)	0.08 ~ 0.16	0.03	SSG1- 20
S1	5.457	2.144	(0.5565)	(0.2186)	0.08 ~ 0.16	0.04	SSG1- 21
S1	5.837	2.36	(0.5952)	(0.2407)	0.08 ~ 0.16	0.04	SSG1- 22
S1	6.219	2.588	(0.6342)	(0.2639)	0.08 ~ 0.16	0.04	SSG1- 23
S1	6.605	2.825	(0.6735)	(0.2881)	0.08 ~ 0.16	0.05	SSG1- 24
S1	6.992	3.074	(0.713)	(0.3135)	0.08 ~ 0.16	0.05	SSG1- 25
S1	7.383	3.334	(0.7529)	(0.34)	0.08 ~ 0.16	0.05	SSG1- 26
S1	7.776	3.604	(0.7929)	(0.3675)	0.08 ~ 0.16	0.05	SSG1- 27
S1	8.171	3.885	(0.8332)	(0.3962)	0.08 ~ 0.16	0.06	SSG1- 28
S1	8.568	4.177	(0.8737)	(0.4259)	0.08 ~ 0.16	0.07	SSG1- 29
S1	8.966	4.48	(0.9143)	(0.4568)	0.08 ~ 0.16	0.07	SSG1- 30
S1	8.14	4.265	(0.8301)	(0.4349)	0.08 ~ 0.16	0.08	SSG1- 32
S1	8.814	4.839	(0.8988)	(0.4934)	0.08 ~ 0.16	0.08	SSG1- 34
S1	9.153	5.14	(0.9334)	(0.5241)	0.08 ~ 0.16	0.09	SSG1- 35
S1	9.493	5.449	(0.968)	(0.5557)	0.08 ~ 0.16	0.09	SSG1- 36
S1	10.18	6.099	(1.038)	(0.6219)	0.08 ~ 0.16	0.12	SSG1- 38
S1	10.87	6.786	(1.108)	(0.692)	0.08 ~ 0.16	0.12	SSG1- 40
S1	11.55	7.513	(1.178)	(0.7661)	0.08 ~ 0.16	0.13	SSG1- 42
S1	12.24	8.277	(1.248)	(0.844)	0.08 ~ 0.16	0.14	SSG1- 44
S1	12.59	8.673	(1.284)	(0.8844)	0.08 ~ 0.16	0.15	SSG1- 45
S1	13.63	9.924	(1.39)	(1.012)	0.08 ~ 0.16	0.16	SSG1- 48
S1	14.33	10.81	(1.461)	(1.102)	0.08 ~ 0.16	0.18	SSG1- 50
S1	16.08	13.18	(1.64)	(1.344)	0.1 ~ 0.18	0.21	SSG1- 55
S1	16.44	13.68	(1.676)	(1.395)	0.1 ~ 0.18	0.21	SSG1- 56
S1	17.85	15.8	(1.82)	(1.611)	0.1 ~ 0.18	0.26	SSG1- 60
S1	19.27	18.08	(1.965)	(1.844)	0.1 ~ 0.18	0.29	SSG1- 64
S1	21.4	21.81	(2.182)	(2.224)	0.1 ~ 0.18	0.33	SSG1- 70
S1	23.18	25.19	(2.364)	(2.569)	0.1 ~ 0.18	0.36	SSG1- 75
S1	24.98	28.84	(2.547)	(2.941)	0.1 ~ 0.18	0.45	SSG1- 80
S1	28.57	36.93	(2.913)	(3.766)	0.1 ~ 0.18	0.53	SSG1- 90
S1	29.69	42.54	(3.028)	(4.338)	0.10 ~ 0.18	0.62	SSG1-100
S1	36.37	62.5	(3.709)	(6.373)	0.12 ~ 0.2	0.84	SSG1-120

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SSG Ground Spur Gears Module 1.5



S1 Shape

Module 1.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I
SSG1.5- 14	1.5	14	10	17	21	24	15	14	29	—	—
SSG1.5- 15	1.5	15	10	18	22.5	25.5	15	14	29	—	—
SSG1.5- 16	1.5	16	10	20	24	27	15	14	29	—	—
SSG1.5- 17	1.5	17	10	21	25.5	28.5	15	14	29	—	—
SSG1.5- 18	1.5	18	10	22	27	30	15	14	29	—	—
SSG1.5- 19	1.5	19	10	23	28.5	31.5	15	14	29	—	—
SSG1.5- 20	1.5	20	10	24	30	33	15	14	29	—	—
SSG1.5- 21	1.5	21	10	25	31.5	34.5	15	14	29	—	—
SSG1.5- 22	1.5	22	12	26	33	36	15	14	29	—	—
SSG1.5- 23	1.5	23	12	27	34.5	37.5	15	14	29	—	—
SSG1.5- 24	1.5	24	12	28	36	39	15	14	29	—	—
SSG1.5- 25	1.5	25	12	30	37.5	40.5	15	14	29	—	—
SSG1.5- 26	1.5	26	12	32	39	42	15	14	29	—	—
SSG1.5- 27	1.5	27	15	34	40.5	43.5	15	14	29	—	—
SSG1.5- 28	1.5	28	15	36	42	45	15	14	29	—	—
SSG1.5- 29	1.5	29	15	37	43.5	46.5	15	14	29	—	—
SSG1.5- 30	1.5	30	15	38	45	48	15	14	29	—	—
SSG1.5- 32	1.5	32	15	40	48	51	15	14	29	—	—
SSG1.5- 34	1.5	34	15	42	51	54	15	14	29	—	—
SSG1.5- 35	1.5	35	15	42	52.5	55.5	15	14	29	—	—
SSG1.5- 36	1.5	36	15	45	54	57	15	14	29	—	—
SSG1.5- 38	1.5	38	15	45	57	60	15	14	29	—	—
SSG1.5- 40	1.5	40	15	50	60	63	15	14	29	—	—
SSG1.5- 42	1.5	42	15	50	63	66	15	14	29	—	—
SSG1.5- 44	1.5	44	15	50	66	69	15	14	29	—	—
SSG1.5- 45	1.5	45	18	50	67.5	70.5	15	14	29	—	—
SSG1.5- 48	1.5	48	18	50	72	75	15	14	29	—	—
SSG1.5- 50	1.5	50	18	60	75	78	15	14	29	—	—
SSG1.5- 55	1.5	55	18	60	82.5	85.5	15	14	29	—	—
SSG1.5- 56	1.5	56	18	60	84	87	15	14	29	—	—
SSG1.5- 60	1.5	60	20	60	90	93	15	14	29	—	—
SSG1.5- 64	1.5	64	20	60	96	99	15	14	29	—	—
SSG1.5- 70	1.5	70	20	60	105	108	15	14	29	—	—
SSG1.5- 75	1.5	75	20	60	112.5	115.5	15	14	29	—	—
SSG1.5- 80	1.5	80	20	70	120	123	15	14	29	—	—
SSG1.5- 90	1.5	90	20	70	135	138	15	14	29	—	—
SSG1.5-100	1.5	100	20	70	150	153	15	14	29	—	—

NOTE 1: Secondary operations may be performed on these gears except for modification of the gear face width.



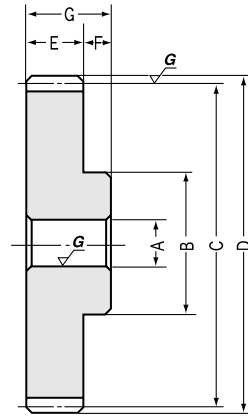
Specifications

Precision grade	JIS N7 grade (JIS B1702-1: 1996) OLD JIS 3 grade (JIS B1702: 1976)	Tooth hardness	48~53HRC
Gear teeth	Standard full depth	Surface treatment	Black oxide except ground surfaces
Pressure angle	20°	Tooth surface finish	Ground
Material	S45C	Datum reference surface for gear grinding	Bore
Heat treatment	Tooth surface Induction hardened	Secondary Operations	Possible except tooth area

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	12.32	3.726	(1.256)	(0.38)	0.08 ~ 0.16	0.05	SSG1.5- 14
S1	13.78	4.346	(1.405)	(0.4432)	0.08 ~ 0.16	0.06	SSG1.5- 15
S1	15.27	5.016	(1.557)	(0.5115)	0.08 ~ 0.16	0.07	SSG1.5- 16
S1	16.78	5.736	(1.711)	(0.5849)	0.08 ~ 0.16	0.08	SSG1.5- 17
S1	18.32	6.505	(1.868)	(0.6633)	0.08 ~ 0.16	0.09	SSG1.5- 18
S1	19.87	7.325	(2.026)	(0.7469)	0.08 ~ 0.16	0.1	SSG1.5- 19
S1	21.44	8.194	(2.186)	(0.8356)	0.08 ~ 0.16	0.12	SSG1.5- 20
S1	23.03	9.114	(2.348)	(0.9294)	0.08 ~ 0.16	0.13	SSG1.5- 21
S1	20.52	8.41	(2.092)	(0.8576)	0.08 ~ 0.16	0.14	SSG1.5- 22
S1	21.86	9.271	(2.229)	(0.9454)	0.08 ~ 0.16	0.15	SSG1.5- 23
S1	23.22	10.18	(2.368)	(1.038)	0.08 ~ 0.16	0.16	SSG1.5- 24
S1	24.59	11.12	(2.507)	(1.134)	0.08 ~ 0.16	0.18	SSG1.5- 25
S1	25.96	12.07	(2.647)	(1.231)	0.08 ~ 0.16	0.2	SSG1.5- 26
S1	27.34	13.06	(2.788)	(1.332)	0.08 ~ 0.16	0.21	SSG1.5- 27
S1	28.72	14.08	(2.929)	(1.436)	0.08 ~ 0.16	0.24	SSG1.5- 28
S1	30.12	15.15	(3.071)	(1.545)	0.08 ~ 0.16	0.25	SSG1.5- 29
S1	31.52	16.26	(3.214)	(1.658)	0.08 ~ 0.16	0.27	SSG1.5- 30
S1	34.34	18.6	(3.502)	(1.897)	0.08 ~ 0.16	0.31	SSG1.5- 32
S1	37.19	21.11	(3.792)	(2.153)	0.1 ~ 0.18	0.35	SSG1.5- 34
S1	38.62	22.43	(3.938)	(2.287)	0.1 ~ 0.18	0.37	SSG1.5- 35
S1	40.05	23.78	(4.084)	(2.425)	0.1 ~ 0.18	0.41	SSG1.5- 36
S1	42.92	26.62	(4.377)	(2.715)	0.1 ~ 0.18	0.44	SSG1.5- 38
S1	45.82	29.63	(4.672)	(3.021)	0.1 ~ 0.18	0.51	SSG1.5- 40
S1	48.73	32.8	(4.969)	(3.345)	0.1 ~ 0.18	0.54	SSG1.5- 42
S1	51.64	36.16	(5.266)	(3.687)	0.1 ~ 0.18	0.58	SSG1.5- 44
S1	53.11	37.89	(5.416)	(3.864)	0.1 ~ 0.18	0.58	SSG1.5- 45
S1	57.52	43.37	(5.865)	(4.423)	0.1 ~ 0.18	0.64	SSG1.5- 48
S1	60.46	47.24	(6.165)	(4.817)	0.1 ~ 0.18	0.77	SSG1.5- 50
S1	67.86	57.68	(6.92)	(5.882)	0.1 ~ 0.18	0.91	SSG1.5- 55
S1	69.35	59.91	(7.072)	(6.109)	0.1 ~ 0.18	0.91	SSG1.5- 56
S1	75.3	69.23	(7.679)	(7.06)	0.1 ~ 0.18	0.99	SSG1.5- 60
S1	75.04	73.2	(7.652)	(7.464)	0.1 ~ 0.18	1.1	SSG1.5- 64
S1	83.35	88.4	(8.499)	(9.014)	0.12 ~ 0.2	1.3	SSG1.5- 70
S1	90.3	102.3	(9.208)	(10.43)	0.12 ~ 0.2	1.4	SSG1.5- 75
S1	97.26	117.2	(9.918)	(11.95)	0.12 ~ 0.2	1.7	SSG1.5- 80
S1	111.2	150	(11.34)	(15.3)	0.12 ~ 0.2	2	SSG1.5- 90
S1	125.2	186.8	(12.77)	(19.05)	0.12 ~ 0.2	2.4	SSG1.5-100

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



S1 Shape

Module 2

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	m	z	A _{H7}	B	C	D	E	F	G	H	I
SSG2- 14	2	14	12	22	28	32	20	16	36	—	—
SSG2- 15	2	15	12	24	30	34	20	16	36	—	—
SSG2- 16	2	16	12	26	32	36	20	16	36	—	—
SSG2- 17	2	17	12	28	34	38	20	16	36	—	—
SSG2- 18	2	18	12	30	36	40	20	16	36	—	—
SSG2- 19	2	19	12	31	38	42	20	16	36	—	—
SSG2- 20	2	20	15	32	40	44	20	16	36	—	—
SSG2- 21	2	21	15	34	42	46	20	16	36	—	—
SSG2- 22	2	22	15	36	44	48	20	16	36	—	—
SSG2- 23	2	23	15	37	46	50	20	16	36	—	—
SSG2- 24	2	24	15	38	48	52	20	16	36	—	—
SSG2- 25	2	25	15	40	50	54	20	16	36	—	—
SSG2- 26	2	26	15	42	52	56	20	16	36	—	—
SSG2- 27	2	27	15	44	54	58	20	16	36	—	—
SSG2- 28	2	28	15	45	56	60	20	16	36	—	—
SSG2- 29	2	29	15	48	58	62	20	16	36	—	—
SSG2- 30	2	30	18	50	60	64	20	16	36	—	—
SSG2- 32	2	32	18	50	64	68	20	16	36	—	—
SSG2- 34	2	34	18	50	68	72	20	16	36	—	—
SSG2- 35	2	35	18	50	70	74	20	16	36	—	—
SSG2- 36	2	36	18	50	72	76	20	16	36	—	—
SSG2- 38	2	38	18	50	76	80	20	16	36	—	—
SSG2- 40	2	40	20	60	80	84	20	16	36	—	—
SSG2- 42	2	42	20	60	84	88	20	16	36	—	—
SSG2- 44	2	44	20	60	88	92	20	16	36	—	—
SSG2- 45	2	45	20	60	90	94	20	16	36	—	—
SSG2- 48	2	48	20	60	96	100	20	16	36	—	—
SSG2- 50	2	50	25	60	100	104	20	16	36	—	—
SSG2- 55	2	55	25	60	110	114	20	16	36	—	—
SSG2- 56	2	56	25	60	112	116	20	16	36	—	—
SSG2- 60	2	60	25	65	120	124	20	16	36	—	—
SSG2- 64	2	64	25	65	128	132	20	16	36	—	—
SSG2- 70	2	70	25	70	140	144	20	16	36	—	—
SSG2- 75	2	75	25	70	150	154	20	16	36	—	—
SSG2- 80	2	80	25	80	160	164	20	16	36	—	—
SSG2- 90	2	90	25	80	180	184	20	16	36	—	—
SSG2-100	2	100	25	80	200	204	20	16	36	—	—

NOTE 1: Secondary operations may be performed on these gears except for modification of the gear face width.



Specifications

Precision grade	JIS N7 grade (JIS B1702-1: 1998) OLD JIS 3 grade (JIS B1702: 1976)	Tooth hardness	48~53HRC
Gear teeth	Standard full depth	Surface treatment	Black oxide except ground surfaces
Pressure angle	20°	Tooth surface finish	Ground
Material	S45C	Datum reference surface for gear grinding	Bore
Heat treatment	Tooth surface Induction hardened	Secondary Operations	Possible except tooth area

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	29.2	9.005	(2.978)	(0.9183)	0.1 ~ 0.2	0.11	SSG2- 14
S1	32.67	10.5	(3.331)	(1.071)	0.1 ~ 0.2	0.14	SSG2- 15
S1	30.16	10.09	(3.076)	(1.029)	0.1 ~ 0.2	0.16	SSG2- 16
S1	33.15	11.55	(3.38)	(1.178)	0.1 ~ 0.2	0.19	SSG2- 17
S1	36.18	13.11	(3.689)	(1.337)	0.1 ~ 0.2	0.22	SSG2- 18
S1	39.25	14.78	(4.002)	(1.507)	0.1 ~ 0.2	0.24	SSG2- 19
S1	42.34	16.55	(4.318)	(1.688)	0.1 ~ 0.2	0.25	SSG2- 20
S1	45.47	18.43	(4.637)	(1.879)	0.1 ~ 0.2	0.28	SSG2- 21
S1	48.64	20.42	(4.96)	(2.082)	0.1 ~ 0.2	0.32	SSG2- 22
S1	51.83	22.51	(5.285)	(2.295)	0.1 ~ 0.2	0.35	SSG2- 23
S1	55.03	24.7	(5.612)	(2.519)	0.1 ~ 0.2	0.38	SSG2- 24
S1	58.27	27.01	(5.942)	(2.754)	0.1 ~ 0.2	0.42	SSG2- 25
S1	61.53	29.31	(6.274)	(2.989)	0.12 ~ 0.22	0.46	SSG2- 26
S1	64.8	31.7	(6.608)	(3.233)	0.12 ~ 0.22	0.5	SSG2- 27
S1	68.09	34.21	(6.943)	(3.488)	0.12 ~ 0.22	0.54	SSG2- 28
S1	71.39	36.8	(7.28)	(3.753)	0.12 ~ 0.22	0.59	SSG2- 29
S1	74.72	39.51	(7.619)	(4.029)	0.12 ~ 0.22	0.62	SSG2- 30
S1	81.4	45.21	(8.301)	(4.61)	0.12 ~ 0.22	0.68	SSG2- 32
S1	88.14	51.32	(8.988)	(5.233)	0.12 ~ 0.22	0.75	SSG2- 34
S1	91.53	54.52	(9.334)	(5.56)	0.12 ~ 0.22	0.78	SSG2- 35
S1	94.93	57.83	(9.68)	(5.897)	0.12 ~ 0.22	0.82	SSG2- 36
S1	101.8	64.76	(10.38)	(6.604)	0.12 ~ 0.22	0.89	SSG2- 38
S1	108.7	72.11	(11.08)	(7.353)	0.12 ~ 0.22	1.1	SSG2- 40
S1	115.5	79.87	(11.78)	(8.145)	0.12 ~ 0.22	1.1	SSG2- 42
S1	122.4	88.06	(12.48)	(8.98)	0.12 ~ 0.22	1.2	SSG2- 44
S1	125.9	92.32	(12.84)	(9.414)	0.12 ~ 0.22	1.3	SSG2- 45
S1	125.8	97.59	(12.83)	(9.952)	0.12 ~ 0.22	1.4	SSG2- 48
S1	132.3	106.3	(13.49)	(10.84)	0.12 ~ 0.22	1.5	SSG2- 50
S1	148.5	130	(15.14)	(13.26)	0.14 ~ 0.24	1.7	SSG2- 55
S1	151.7	135	(15.47)	(13.77)	0.14 ~ 0.24	1.8	SSG2- 56
S1	164.8	156.2	(16.8)	(15.93)	0.14 ~ 0.24	2.1	SSG2- 60
S1	177.9	179.1	(18.14)	(18.26)	0.14 ~ 0.24	2.3	SSG2- 64
S1	197.6	215.7	(20.15)	(22)	0.14 ~ 0.24	2.8	SSG2- 70
S1	214.1	249.1	(21.83)	(25.4)	0.14 ~ 0.24	3.1	SSG2- 75
S1	214.1	264.6	(21.83)	(26.98)	0.14 ~ 0.24	3.7	SSG2- 80
S1	244.9	338.3	(24.97)	(34.5)	0.14 ~ 0.24	4.5	SSG2- 90
S1	275.8	421.2	(28.12)	(42.95)	0.14 ~ 0.24	5.4	SSG2-100

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

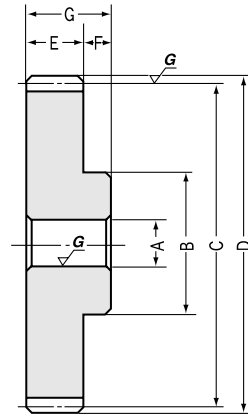
NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SSG Ground Spur Gears Module 2.5

Spur Gears

GWS



S1 Shape

Module 2.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SSG2.5-14	2.5	14	15	28	35	40	25	18	43	—	—
SSG2.5-15	2.5	15	15	30	37.5	42.5	25	18	43	—	—
SSG2.5-16	2.5	16	15	32	40	45	25	18	43	—	—
SSG2.5-17	2.5	17	15	35	42.5	47.5	25	18	43	—	—
SSG2.5-18	2.5	18	15	38	45	50	25	18	43	—	—
SSG2.5-19	2.5	19	15	39	47.5	52.5	25	18	43	—	—
SSG2.5-20	2.5	20	18	40	50	55	25	18	43	—	—
SSG2.5-21	2.5	21	18	42	52.5	57.5	25	18	43	—	—
SSG2.5-22	2.5	22	18	44	55	60	25	18	43	—	—
SSG2.5-23	2.5	23	18	46	57.5	62.5	25	18	43	—	—
SSG2.5-24	2.5	24	18	48	60	65	25	18	43	—	—
SSG2.5-25	2.5	25	20	50	62.5	67.5	25	18	43	—	—
SSG2.5-26	2.5	26	20	54	65	70	25	18	43	—	—
SSG2.5-27	2.5	27	20	56	67.5	72.5	25	18	43	—	—
SSG2.5-28	2.5	28	20	60	70	75	25	18	43	—	—
SSG2.5-29	2.5	29	20	60	72.5	77.5	25	18	43	—	—
SSG2.5-30	2.5	30	20	65	75	80	25	18	43	—	—
SSG2.5-32	2.5	32	20	70	80	85	25	18	43	—	—
SSG2.5-34	2.5	34	20	70	85	90	25	18	43	—	—
SSG2.5-35	2.5	35	20	70	87.5	92.5	25	18	43	—	—
SSG2.5-36	2.5	36	20	70	90	95	25	18	43	—	—
SSG2.5-38	2.5	38	20	70	95	100	25	18	43	—	—
SSG2.5-40	2.5	40	25	70	100	105	25	18	43	—	—
SSG2.5-42	2.5	42	25	75	105	110	25	18	43	—	—
SSG2.5-44	2.5	44	25	75	110	115	25	18	43	—	—
SSG2.5-45	2.5	45	25	75	112.5	117.5	25	18	43	—	—
SSG2.5-48	2.5	48	25	75	120	125	25	18	43	—	—
SSG2.5-50	2.5	50	25	80	125	130	25	18	43	—	—
SSG2.5-55	2.5	55	25	80	137.5	142.5	25	18	43	—	—
SSG2.5-56	2.5	56	25	80	140	145	25	18	43	—	—
SSG2.5-60	2.5	60	25	80	150	155	25	18	43	—	—
SSG2.5-70	2.5	70	25	80	175	180	25	18	43	—	—
SSG2.5-75	2.5	75	25	90	187.5	192.5	25	18	43	—	—
SSG2.5-80	2.5	80	25	90	200	205	25	18	43	—	—

NOTE 1: Secondary operations may be performed on these gears except for modification of the gear face width.



Specifications

Precision grade	JIS N7 grade (JIS B1702-1: 1998) OLD JIS 3 grade (JIS B1702: 1976)	Tooth hardness	48~53HRC
Gear teeth	Standard full depth	Surface treatment	Black oxide except ground surfaces
Pressure angle	20°	Tooth surface finish	Ground
Material	S45C	Datum reference surface for gear grinding	Bore
Heat treatment	Tooth surface Induction hardened	Secondary Operations	Possible except tooth area

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	47.53	14.89	(4.847)	(1.518)	0.1 ~ 0.2	0.22	SSG2.5-14 SSG2.5-15 SSG2.5-16 SSG2.5-17 SSG2.5-18
S1	53.17	17.39	(5.422)	(1.773)	0.1 ~ 0.2	0.26	
S1	58.91	20.07	(6.007)	(2.047)	0.1 ~ 0.2	0.3	
S1	64.74	22.98	(6.602)	(2.343)	0.1 ~ 0.2	0.36	
S1	70.66	26.09	(7.205)	(2.66)	0.1 ~ 0.2	0.41	
S1	76.65	29.41	(7.816)	(2.999)	0.1 ~ 0.2	0.46	SSG2.5-19 SSG2.5-20 SSG2.5-21 SSG2.5-22 SSG2.5-23
S1	82.7	32.94	(8.433)	(3.359)	0.1 ~ 0.2	0.48	
S1	88.82	36.68	(9.057)	(3.74)	0.12 ~ 0.22	0.54	
S1	95	40.63	(9.687)	(4.143)	0.12 ~ 0.22	0.6	
S1	101.2	44.8	(10.32)	(4.568)	0.12 ~ 0.22	0.66	
S1	107.5	49.18	(10.96)	(5.015)	0.12 ~ 0.22	0.73	SSG2.5-24 SSG2.5-25 SSG2.5-26 SSG2.5-27 SSG2.5-28
S1	113.9	53.78	(11.61)	(5.484)	0.12 ~ 0.22	0.78	
S1	120.1	58.37	(12.25)	(5.952)	0.12 ~ 0.22	0.87	
S1	126.6	63.15	(12.91)	(6.44)	0.12 ~ 0.22	0.95	
S1	133	68.15	(13.56)	(6.949)	0.12 ~ 0.22	1.1	
S1	139.4	73.34	(14.22)	(7.479)	0.12 ~ 0.22	1.1	SSG2.5-29 SSG2.5-30 SSG2.5-32 SSG2.5-34 SSG2.5-35
S1	145.9	78.74	(14.88)	(8.029)	0.12 ~ 0.22	1.2	
S1	159	90.13	(16.21)	(9.191)	0.12 ~ 0.22	1.4	
S1	172.2	102.4	(17.56)	(10.44)	0.12 ~ 0.22	1.6	
S1	178.8	108.8	(18.23)	(10.9)	0.12 ~ 0.22	1.7	
S1	185.4	115.4	(18.91)	(11.7)	0.12 ~ 0.22	1.7	SSG2.5-36 SSG2.5-38 SSG2.5-40 SSG2.5-42 SSG2.5-44
S1	198.8	129.3	(20.27)	(13.18)	0.12 ~ 0.22	1.8	
S1	195.8	133	(19.97)	(13.56)	0.14 ~ 0.24	1.9	
S1	208.2	147.3	(21.23)	(15.02)	0.14 ~ 0.24	2.2	
S1	220.7	162.5	(22.51)	(16.57)	0.14 ~ 0.24	2.3	
S1	226.9	170.4	(23.14)	(17.38)	0.14 ~ 0.24	2.4	SSG2.5-45 SSG2.5-48 SSG2.5-50 SSG2.5-55 SSG2.5-56
S1	245.8	195.3	(25.06)	(19.92)	0.14 ~ 0.24	2.7	
S1	258.4	212.9	(26.35)	(21.71)	0.14 ~ 0.24	3.0	
S1	290	259.8	(29.57)	(26.49)	0.14 ~ 0.24	3.5	
S1	296.4	269.7	(30.22)	(27.5)	0.14 ~ 0.24	3.6	
S1	321.9	311.4	(32.82)	(31.75)	0.14 ~ 0.24	4.0	SSG2.5-60 SSG2.5-70 SSG2.5-75 SSG2.5-80
S1	358.3	398.7	(36.54)	(40.66)	0.14 ~ 0.24	5.3	
S1	388.1	460.6	(39.58)	(46.97)	0.14 ~ 0.24	6.2	
S1	418.2	526.5	(42.64)	(53.69)	0.14 ~ 0.24	6.9	

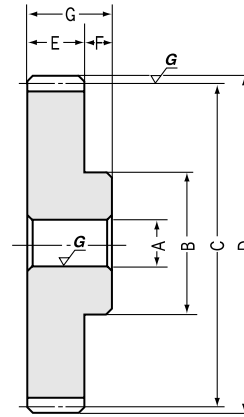
NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SSG Ground Spur Gears **Module 3**

Spur Gears



S1 Shape

Module 3

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	<i>m</i>	<i>z</i>	A _{H7}	B	C	D	E	F	G	H	I
SSG3-14	3	14	16	34	42	48	30	20	50	—	—
SSG3-15	3	15	16	36	45	51	30	20	50	—	—
SSG3-16	3	16	16	38	48	54	30	20	50	—	—
SSG3-17	3	17	16	37	51	57	30	20	50	—	—
SSG3-18	3	18	16	40	54	60	30	20	50	—	—
SSG3-19	3	19	16	45	57	63	30	20	50	—	—
SSG3-20	3	20	20	50	60	66	30	20	50	—	—
SSG3-21	3	21	20	52	63	69	30	20	50	—	—
SSG3-22	3	22	20	54	66	72	30	20	50	—	—
SSG3-23	3	23	20	56	69	75	30	20	50	—	—
SSG3-24	3	24	20	58	72	78	30	20	50	—	—
SSG3-25	3	25	20	60	75	81	30	20	50	—	—
SSG3-26	3	26	20	62	78	84	30	20	50	—	—
SSG3-27	3	27	20	65	81	87	30	20	50	—	—
SSG3-28	3	28	20	70	84	90	30	20	50	—	—
SSG3-29	3	29	20	70	87	93	30	20	50	—	—
SSG3-30	3	30	25	75	90	96	30	20	50	—	—
SSG3-32	3	32	25	75	96	102	30	20	50	—	—
SSG3-34	3	34	25	75	102	108	30	20	50	—	—
SSG3-35	3	35	25	80	105	111	30	20	50	—	—
SSG3-36	3	36	25	80	108	114	30	20	50	—	—
SSG3-38	3	38	25	80	114	120	30	20	50	—	—
SSG3-40	3	40	25	80	120	126	30	20	50	—	—
SSG3-42	3	42	25	80	126	132	30	20	50	—	—
SSG3-44	3	44	25	80	132	138	30	20	50	—	—
SSG3-45	3	45	25	80	135	141	30	20	50	—	—
SSG3-48	3	48	25	85	144	150	30	20	50	—	—
SSG3-50	3	50	30	85	150	156	30	20	50	—	—
SSG3-55	3	55	30	90	165	171	30	20	50	—	—
SSG3-56	3	56	30	90	168	174	30	20	50	—	—
SSG3-60	3	60	30	100	180	186	30	20	50	—	—
SSG3-70	3	70	30	100	210	216	30	20	50	—	—
SSG3-75	3	75	30	100	225	231	30	20	50	—	—
SSG3-80	3	80	30	100	240	246	30	20	50	—	—

NOTE 1: Secondary operations may be performed on these gears except for modification of the gear face width.



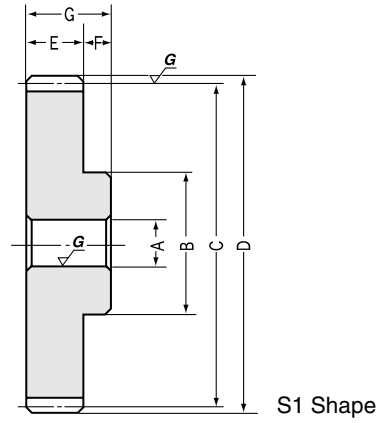
Specifications

Precision grade	JIS N7 grade (JIS B1702-1: 1998) OLD JIS 3 grade (JIS B1702: 1976)	Tooth hardness	48~53HRC
Gear teeth	Standard full depth	Surface treatment	Black oxide except ground surfaces
Pressure angle	20°	Tooth surface finish	Ground
Material	S45C	Datum reference surface for gear grinding	Bore
Heat treatment	Tooth surface Induction hardened	Secondary Operations	Possible except tooth area

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	82.14	26.11	(8.376)	(2.663)	0.1 ~ 0.2	0.39	SSG3-14 SSG3-15 SSG3-16 SSG3-17 SSG3-18
S1	91.88	30.49	(9.369)	(3.109)	0.1 ~ 0.2	0.46	
S1	101.8	35.23	(10.38)	(3.592)	0.1 ~ 0.2	0.53	
S1	111.9	40.32	(11.41)	(4.112)	0.12 ~ 0.22	0.57	
S1	122.1	45.79	(12.45)	(4.669)	0.12 ~ 0.22	0.66	
S1	132.5	51.61	(13.51)	(5.263)	0.12 ~ 0.22	0.77	SSG3-19 SSG3-20 SSG3-21 SSG3-22 SSG3-23
S1	142.9	57.81	(14.57)	(5.895)	0.12 ~ 0.22	0.85	
S1	153.5	64.39	(15.65)	(6.566)	0.12 ~ 0.22	0.95	
S1	164.2	71.34	(16.74)	(7.275)	0.12 ~ 0.22	1.0	
S1	174.9	78.67	(17.84)	(8.022)	0.12 ~ 0.22	1.2	
S1	185.7	86.39	(18.94)	(8.809)	0.12 ~ 0.22	1.3	SSG3-24 SSG3-25 SSG3-26 SSG3-27 SSG3-28
S1	196.6	94.48	(20.05)	(9.634)	0.12 ~ 0.22	1.4	
S1	207.6	102.6	(21.17)	(10.46)	0.12 ~ 0.22	1.5	
S1	218.7	111	(22.3)	(11.32)	0.12 ~ 0.22	1.6	
S1	229.8	119.8	(23.43)	(12.22)	0.12 ~ 0.22	1.8	
S1	240.9	129	(24.57)	(13.15)	0.12 ~ 0.22	1.9	SSG3-29 SSG3-30 SSG3-32 SSG3-34 SSG3-35
S1	252.2	138.5	(25.72)	(14.12)	0.12 ~ 0.22	2.0	
S1	253.6	146.4	(25.86)	(14.93)	0.12 ~ 0.22	2.2	
S1	274.6	166.3	(28)	(16.96)	0.14 ~ 0.24	2.4	
S1	285.2	176.8	(29.08)	(18.03)	0.14 ~ 0.24	2.6	
S1	295.8	187.6	(30.16)	(19.13)	0.14 ~ 0.24	2.8	SSG3-36 SSG3-38 SSG3-40 SSG3-42 SSG3-44
S1	316.9	210.3	(32.32)	(21.44)	0.14 ~ 0.24	3	
S1	338.3	234.4	(34.5)	(23.9)	0.14 ~ 0.24	3.3	
S1	359.8	259.9	(36.69)	(26.5)	0.14 ~ 0.24	3.5	
S1	381.4	286.4	(38.89)	(29.2)	0.14 ~ 0.24	3.8	
S1	392.2	300.1	(39.99)	(30.6)	0.14 ~ 0.24	4.0	SSG3-45 SSG3-48 SSG3-50 SSG3-55 SSG3-56
S1	424.7	343.1	(43.31)	(34.99)	0.14 ~ 0.24	4.5	
S1	446.5	373.6	(45.53)	(38.1)	0.14 ~ 0.24	4.8	
S1	465.3	423.2	(47.45)	(43.15)	0.14 ~ 0.24	5.8	
S1	475.5	439.4	(48.49)	(44.81)	0.14 ~ 0.24	6	
S1	516.4	507.5	(52.66)	(51.75)	0.14 ~ 0.24	7.0	SSG3-60 SSG3-70 SSG3-75 SSG3-80
S1	619.2	698.7	(63.14)	(71.25)	0.14 ~ 0.24	9.1	
S1	670.8	805.7	(68.4)	(82.16)	0.14 ~ 0.24	10.3	
S1	722.5	920.7	(73.68)	(93.89)	0.14 ~ 0.24	11.6	

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



Module 4

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SSG4-14	4	14	20	40	56	64	40	25	65	—	—
SSG4-15	4	15	20	45	60	68	40	25	65	—	—
SSG4-16	4	16	20	50	64	72	40	25	65	—	—
SSG4-18	4	18	20	60	72	80	40	25	65	—	—
SSG4-20	4	20	20	65	80	88	40	25	65	—	—
SSG4-22	4	22	20	70	88	96	40	25	65	—	—
SSG4-24	4	24	20	75	96	104	40	25	65	—	—
SSG4-25	4	25	20	80	100	108	40	25	65	—	—
SSG4-28	4	28	20	85	112	120	40	25	65	—	—
SSG4-30	4	30	20	90	120	128	40	25	65	—	—
SSG4-32	4	32	25	90	128	136	40	25	65	—	—
SSG4-35	4	35	25	90	140	148	40	25	65	—	—
SSG4-36	4	36	25	90	144	152	40	25	65	—	—
SSG4-40	4	40	25	90	160	168	40	25	65	—	—
SSG4-42	4	42	25	90	168	176	40	25	65	—	—
SSG4-44	4	44	30	90	176	184	40	25	65	—	—
SSG4-45	4	45	30	90	180	188	40	25	65	—	—
SSG4-48	4	48	30	100	192	200	40	25	65	—	—
SSG4-50	4	50	30	100	200	208	40	25	65	—	—
SSG4-55	4	55	30	100	220	228	40	25	65	—	—
SSG4-56	4	56	30	110	224	232	40	25	65	—	—
SSG4-60	4	60	30	110	240	248	40	25	65	—	—

NOTE 1: Secondary operations may be performed on these gears except for modification of the gear face width.



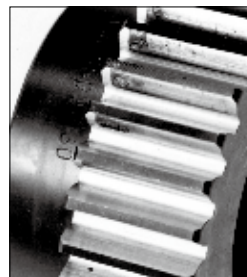
Specifications

Precision grade	JIS N7 grade (JIS B1702-1: 1998) OLD JIS 3 grade (JIS B1702: 1976)	Tooth hardness	48~53HRC
Gear teeth	Standard full depth	Surface treatment	Black oxide except ground surfaces
Pressure angle	20°	Tooth surface finish	Ground
Material	S45C	Datum reference surface for gear grinding	Bore
Heat treatment	Tooth surface Induction hardened	Secondary Operations	Possible except tooth area

Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	194.7	63.43	(19.85)	(6.468)	0.14 ~ 0.24	0.86	SSG4-14 SSG4-15 SSG4-16 SSG4-18 SSG4-20
S1	217.8	74.07	(22.21)	(7.553)	0.14 ~ 0.24	1	
S1	241.3	85.6	(24.61)	(8.729)	0.14 ~ 0.24	1.2	
S1	289.4	111.3	(29.51)	(11.35)	0.14 ~ 0.24	1.7	
S1	338.7	140.7	(34.54)	(14.35)	0.14 ~ 0.24	2.1	
S1	389.1	173.8	(39.68)	(17.72)	0.14 ~ 0.24	2.5	SSG4-22 SSG4-24 SSG4-25 SSG4-28 SSG4-30
S1	406.4	194.4	(41.44)	(19.82)	0.14 ~ 0.24	3	
S1	430.3	212.7	(43.88)	(21.69)	0.14 ~ 0.24	3.3	
S1	502.8	270.1	(51.27)	(27.54)	0.16 ~ 0.26	4.1	
S1	551.8	312.4	(56.27)	(31.86)	0.16 ~ 0.26	4.7	
S1	601.1	358.1	(61.3)	(36.52)	0.16 ~ 0.26	5.1	SSG4-32 SSG4-35 SSG4-36 SSG4-40 SSG4-42
S1	676	431.5	(68.93)	(44)	0.16 ~ 0.26	5.8	
S1	701	457.2	(71.48)	(46.66)	0.16 ~ 0.26	6.1	
S1	744.7	529.2	(75.94)	(53.96)	0.16 ~ 0.26	7.3	
S1	792	585.8	(80.76)	(59.74)	0.16 ~ 0.26	8	
S1	839.4	645.7	(85.6)	(65.84)	0.16 ~ 0.26	8.5	SSG4-44 SSG4-45 SSG4-48 SSG4-50 SSG4-55
S1	863.2	676.7	(88.02)	(69)	0.16 ~ 0.26	8.9	
S1	934.8	774.3	(95.32)	(78.96)	0.16 ~ 0.26	10.3	
S1	982.6	842.4	(100.2)	(85.9)	0.16 ~ 0.26	11.1	
S1	1103	1026	(112.5)	(104.6)	0.16 ~ 0.26	13.2	
S1	1127	1064	(114.9)	(108.5)	0.16 ~ 0.26	13.9	SSG4-56 SSG4-60
S1	1224	1228	(124.8)	(125.2)	0.16 ~ 0.26	15.7	

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

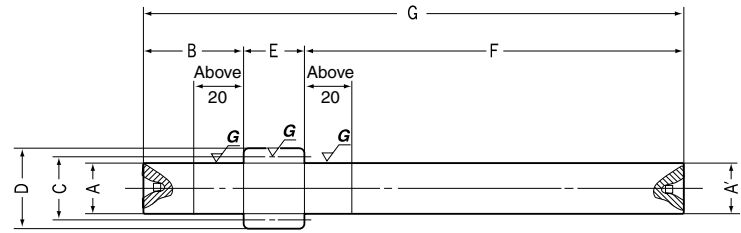


■ This picture is an example of poor tooth contact of an SSG3-30 gear which had only 30% of the gear tooth in proper contact. In this example the gear oil used is equivalent to JIS gear oil category 2, No.3, and the design conditions were 417 N·m load torque at 278 min⁻¹ (12 kW) which was 1.5 times the allowable bending strength and 3 times the allowable surface durability torque. The pitting occurred due to poor tooth contact area after 60 hours of continuous operation.



SSGS Ground Spur Pinion Shafts Modules 1.5~3

Spur Gears



S7 Shape

Module 1.5

Catalog No.	Module	No. of teeth <small>NOTE 1</small>	Profile shift coefficient	Shaft dia.(L)	Shaft Length(L)	Pitch dia.	Outside dia.	Face width <small>NOTE 2</small>	Shaft dia.(R)	Shaft length (R)	Total length
	<i>m</i>	<i>z</i>	<i>x</i>	A	B	C	D	E	A'	F	G
SSGS1.5-10	1.5	10	+ 0.5	12.2	25	15	19.35	15	12.2	100	140
SSGS1.5-11	1.5	11	+ 0.5	13.7	25	16.5	20.85	15	13.7	100	140
SSGS1.5-12	1.5	12	0	13.7	25	18	21	15	13.7	100	140
SSGS1.5-13	1.5	13	0	15.2	25	19.5	22.5	15	15.2	100	140

Module 2

SSGS2-10	2	10	+ 0.5	16.2	30	20	25.8	20	16.2	120	170
SSGS2-11	2	11	+ 0.5	18.2	30	22	27.8	20	18.2	120	170
SSGS2-12	2	12	0	18.2	30	24	28	20	18.2	120	170
SSGS2-13	2	13	0	20.2	30	26	30	20	20.2	120	170

Module 2.5

SSGS2.5-10	2.5	10	+ 0.5	20.2	35	25	32.25	25	20.2	135	195
SSGS2.5-11	2.5	11	+ 0.5	22.7	35	27.5	34.75	25	22.7	135	195
SSGS2.5-12	2.5	12	0	22.7	35	30	35	25	22.7	135	195
SSGS2.5-13	2.5	13	0	25.2	35	32.5	37.5	25	25.2	135	195

Module 3

SSGS3-10	3	10	+ 0.5	24.2	40	30	38.7	30	24.2	150	220
SSGS3-11	3	11	+ 0.5	27.2	40	33	41.7	30	27.2	150	220
SSGS3-12	3	12	0	27.2	40	36	42	30	27.2	150	220
SSGS3-13	3	13	0	30.2	40	39	45	30	30.2	150	220

NOTE 1: Since 10- and 11-tooth gears are profile shifted gears ($x=+0.5$), please note that the center distance must be obtained by using the formulas for profile shifted gears.

NOTE 2: Secondary operations may be performed on these gears except for modification of the gear face width.

Center distance when gear has 12 to 30 teeth (unit:mm)

Number(x=0)	10	11
12	11.4410	11.9428
13	11.9428	12.4446
14	12.4446	12.9462
15	12.9462	13.4477
16	13.4477	13.9492
17	13.9492	14.4505
18	14.4505	14.9518
19	14.9518	15.4530
20	15.4530	15.9542
21	15.9542	16.4553
22	16.4553	16.9564
23	16.9564	17.4574
24	17.4574	17.9583
25	17.9583	18.4592
26	18.4592	18.9601
27	18.9601	19.4610
28	19.4610	19.9618
29	19.9618	20.4625
30	20.4625	20.9633

Center distance when gear has 32 to 62 teeth (unit:mm)

Number(x=0)	10	11
32	21.4640	21.9647
34	22.4653	22.9660
35	22.9660	23.4666
36	23.4666	23.9671
38	24.4677	24.9683
40	25.4688	25.9693
42	26.4698	26.9703
44	27.4707	27.9712
45	27.9712	28.4716
46	28.4716	28.9721
48	29.4725	29.9729
50	30.4733	30.9736
52	31.4740	31.9744
54	32.4747	32.9750
55	32.9750	33.4754
56	33.4754	33.9757
58	34.4760	34.9763
60	35.4766	35.9769
62	36.4772	36.9774

The following tables present the center distances when a profile shifted module 1 spur gears ($x=+0.5$) with 10 or 11 teeth meshes with standard stock spur gear ($x=0$). Multiply the values with the module of gears for other than module 1 gears.



Specifications

Precision grade	JIS N7 grade (JIS B1702-1: 1998) OLD JIS 3 grade (JIS B1702: 1976)	Tooth hardness	48~53HRC
Gear teeth	Standard full depth	Surface treatment	Black oxide except ground surfaces
Pressure angle	20°	Tooth surface finish	Ground
Material	S45C	Datum reference surface for gear grinding	Shaft (ground portion)
Heat treatment	Thermal refining, tooth surfaces induction hardened	Secondary Operations	Possible except tooth area

Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Backlash (mm) NOTE 4	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S7	12.07	3.162	(1.231)	(0.3224)	0.08 ~ 0.16	0.14	SSGS1.5-10
S7	13.77	3.906	(1.404)	(0.3983)	0.08 ~ 0.16	0.17	SSGS1.5-11
S7	11.3	3.164	(1.152)	(0.3226)	0.08 ~ 0.16	0.17	SSGS1.5-12
S7	12.96	3.819	(1.322)	(0.3894)	0.08 ~ 0.16	0.21	SSGS1.5-13

S7	28.61	7.656	(2.917)	(0.7807)	0.08 ~ 0.16	0.3	SSGS2-10
S7	32.65	9.452	(3.329)	(0.9638)	0.08 ~ 0.16	0.38	SSGS2-11
S7	26.79	7.655	(2.732)	(0.7806)	0.08 ~ 0.16	0.38	SSGS2-12
S7	30.73	9.233	(3.134)	(0.9415)	0.08 ~ 0.16	0.46	SSGS2-13

S7	55.87	15.18	(5.697)	(1.548)	0.08 ~ 0.16	0.54	SSGS2.5-10
S7	63.76	18.73	(6.502)	(1.91)	0.08 ~ 0.16	0.68	SSGS2.5-11
S7	52.32	15.17	(5.335)	(1.547)	0.08 ~ 0.16	0.68	SSGS2.5-12
S7	50.01	15.25	(5.1)	(1.555)	0.08 ~ 0.16	0.83	SSGS2.5-13

S7	80.45	22.11	(8.204)	(2.255)	0.08 ~ 0.16	0.89	SSGS3-10
S7	91.82	27.34	(9.363)	(2.788)	0.08 ~ 0.16	1.1	SSGS3-11
S7	75.34	22.14	(7.683)	(2.258)	0.08 ~ 0.16	1.1	SSGS3-12
S7	86.43	26.74	(8.813)	(2.727)	0.08 ~ 0.16	1.4	SSGS3-13

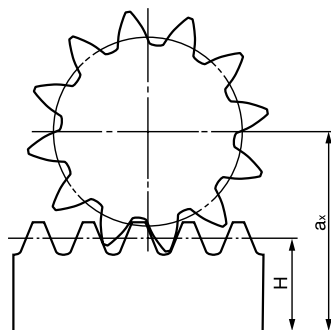
NOTE 3: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 4: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

■ Center distance when gear has 64 to 200 teeth (unit: mm)

Number(x=+0.5)	10	11
64	37.4777	37.9780
65	37.9780	38.4782
66	38.4782	38.9785
68	39.4787	39.9790
70	40.4792	40.9794
72	41.4796	41.9799
75	42.9803	43.4805
76	43.4805	43.9807
80	45.4813	45.9814
84	47.4820	47.9822
85	47.9822	48.4823
88	49.4826	49.9828
90	50.4830	50.9831
95	52.9837	53.4838
100	55.4844	55.9845
120	65.4866	65.9867
150	80.4890	80.9890
200	105.4915	105.9915

■ Assembly distance of profile shifted gear and meshing rack



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

where

a_x : Assembly distance

H: Height of pitch line of rack

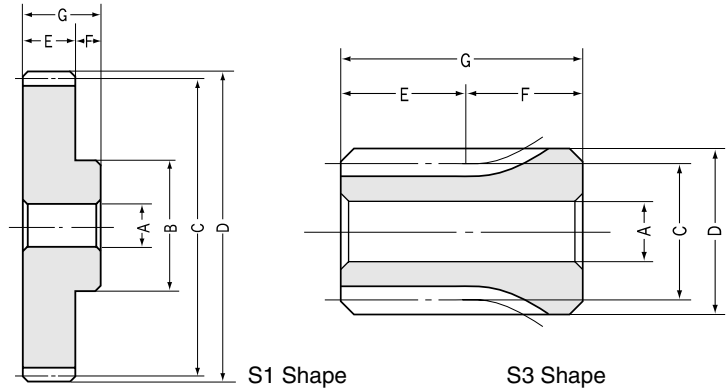
m: Module

z: No. of teeth

x: Coefficient of profile shift



SS Steel Spur Gears Module 1



Module 1

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SS1- 15	1	15	8	17	15	17	10	20	30	—	—
SS1- 16	1	16	8	18	16	18	10	20	30	—	—
SS1- 17	1	17	8	19	17	19	10	20	30	—	—
SS1- 18	1	18	8	20	18	20	10	20	30	—	—
SS1- 19	1	19	8	21	19	21	10	20	30	—	—
SS1- 20	1	20	8	16	20	22	10	10	20	—	—
SS1- 21	1	21	8	17	21	23	10	10	20	—	—
SS1- 22	1	22	8	18	22	24	10	10	20	—	—
SS1- 23	1	23	8	18	23	25	10	10	20	—	—
SS1- 24	1	24	8	20	24	26	10	10	20	—	—
SS1- 25	1	25	8	20	25	27	10	10	20	—	—
SS1- 26	1	26	8	22	26	28	10	10	20	—	—
SS1- 27	1	27	8	22	27	29	10	10	20	—	—
SS1- 28	1	28	8	22	28	30	10	10	20	—	—
SS1- 29	1	29	8	24	29	31	10	10	20	—	—
SS1- 30	1	30	10	25	30	32	10	10	20	—	—
SS1- 32	1	32	10	26	32	34	10	10	20	—	—
SS1- 34	1	34	10	26	34	36	10	10	20	—	—
SS1- 35	1	35	10	26	35	37	10	10	20	—	—
SS1- 36	1	36	10	28	36	38	10	10	20	—	—
SS1- 38	1	38	10	32	38	40	10	10	20	—	—
SS1- 40	1	40	10	35	40	42	10	10	20	—	—
SS1- 42	1	42	10	35	42	44	10	10	20	—	—
SS1- 44	1	44	10	35	44	46	10	10	20	—	—
SS1- 45	1	45	10	35	45	47	10	10	20	—	—
SS1- 46	1	46	10	35	46	48	10	10	20	—	—
SS1- 48	1	48	10	35	48	50	10	10	20	—	—
SS1- 50	1	50	10	35	50	52	10	10	20	—	—
SS1- 52	1	52	10	35	52	54	10	10	20	—	—
SS1- 54	1	54	10	35	54	56	10	10	20	—	—
SS1- 55	1	55	10	35	55	57	10	10	20	—	—
SS1- 56	1	56	10	35	56	58	10	10	20	—	—
SS1- 58	1	58	10	35	58	60	10	10	20	—	—
SS1- 60	1	60	10	35	60	62	10	10	20	—	—
SS1- 62	1	62	10	40	62	64	10	10	20	—	—
SS1- 64	1	64	10	40	64	66	10	10	20	—	—
SS1- 65	1	65	10	40	65	67	10	10	20	—	—
SS1- 66	1	66	10	40	66	68	10	10	20	—	—
SS1- 68	1	68	10	40	68	70	10	10	20	—	—
SS1- 70	1	70	10	40	70	72	10	10	20	—	—
SS1- 72	1	72	10	40	72	74	10	10	20	—	—
SS1- 75	1	75	10	40	75	77	10	10	20	—	—
SS1- 76	1	76	10	40	76	78	10	10	20	—	—
SS1- 80	1	80	10	40	80	82	10	10	20	—	—
SS1- 84	1	84	10	40	84	86	10	10	20	—	—
SS1- 85	1	85	10	40	85	87	10	10	20	—	—
SS1- 88	1	88	10	40	88	90	10	10	20	—	—
SS1- 90	1	90	10	40	90	92	10	10	20	—	—
SS1- 95	1	95	10	40	95	97	10	10	20	—	—
SS1- 96	1	96	10	40	96	98	10	10	20	—	—
SS1-100	1	100	10	40	100	102	10	10	20	—	—
SS1-110	1	110	15	50	110	112	10	10	20	—	—
SS1-120	1	120	15	50	120	122	10	10	20	—	—
SS1-150	1	150	20	120	150	152	10	10	20	—	—
SS1-200	1	200	20	160	200	202	10	10	20	—	—



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S3	3.694	0.1746	(0.3767)	(0.0178)	0.08 ~ 0.18	0.03	SS1- 15
S3	4.093	0.201	(0.4174)	(0.0205)	0.08 ~ 0.18	0.04	SS1- 16
S3	4.498	0.2295	(0.4587)	(0.0234)	0.08 ~ 0.18	0.05	SS1- 17
S3	4.909	0.2599	(0.5006)	(0.0265)	0.08 ~ 0.18	0.05	SS1- 18
S3	5.326	0.2922	(0.5431)	(0.0298)	0.08 ~ 0.18	0.06	SS1- 19
S1	5.747	0.3275	(0.586)	(0.0334)	0.08 ~ 0.18	0.03	SS1- 20
S1	6.171	0.3638	(0.6293)	(0.0371)	0.1 ~ 0.22	0.03	SS1- 21
S1	6.601	0.403	(0.6731)	(0.0411)	0.1 ~ 0.22	0.04	SS1- 22
S1	7.033	0.4452	(0.7172)	(0.0454)	0.1 ~ 0.22	0.04	SS1- 23
S1	7.469	0.4903	(0.7616)	(0.05)	0.1 ~ 0.22	0.05	SS1- 24
S1	7.908	0.5364	(0.8064)	(0.0547)	0.1 ~ 0.22	0.05	SS1- 25
S1	8.349	0.5825	(0.8514)	(0.0594)	0.1 ~ 0.22	0.06	SS1- 26
S1	8.794	0.6315	(0.8967)	(0.0644)	0.1 ~ 0.22	0.06	SS1- 27
S1	9.241	0.6816	(0.9423)	(0.0695)	0.1 ~ 0.22	0.07	SS1- 28
S1	9.69	0.7345	(0.9881)	(0.0749)	0.1 ~ 0.22	0.08	SS1- 29
S1	10.14	0.7894	(1.034)	(0.0805)	0.1 ~ 0.22	0.08	SS1- 30
S1	11.05	0.9042	(1.127)	(0.0922)	0.1 ~ 0.22	0.1	SS1- 32
S1	11.96	1.028	(1.22)	(0.1048)	0.1 ~ 0.22	0.11	SS1- 34
S1	12.42	1.092	(1.267)	(0.1114)	0.1 ~ 0.22	0.11	SS1- 35
S1	12.89	1.16	(1.314)	(0.1183)	0.1 ~ 0.22	0.12	SS1- 36
S1	13.81	1.3	(1.408)	(0.1326)	0.1 ~ 0.22	0.14	SS1- 38
S1	14.74	1.449	(1.503)	(0.1478)	0.1 ~ 0.22	0.16	SS1- 40
S1	15.67	1.606	(1.598)	(0.1638)	0.12 ~ 0.26	0.17	SS1- 42
S1	16.61	1.772	(1.694)	(0.1807)	0.12 ~ 0.26	0.18	SS1- 44
S1	17.08	1.857	(1.742)	(0.1894)	0.12 ~ 0.26	0.18	SS1- 45
S1	17.55	1.946	(1.79)	(0.1984)	0.12 ~ 0.26	0.19	SS1- 46
S1	18.5	2.128	(1.887)	(0.217)	0.12 ~ 0.26	0.2	SS1- 48
S1	19.45	2.319	(1.983)	(0.2365)	0.12 ~ 0.26	0.22	SS1- 50
S1	20.4	2.518	(2.08)	(0.2568)	0.12 ~ 0.26	0.23	SS1- 52
S1	21.36	2.726	(2.178)	(0.278)	0.12 ~ 0.26	0.24	SS1- 54
S1	21.83	2.833	(2.226)	(0.2889)	0.12 ~ 0.26	0.25	SS1- 55
S1	22.31	2.942	(2.275)	(0.3)	0.12 ~ 0.26	0.26	SS1- 56
S1	23.27	3.167	(2.373)	(0.3229)	0.12 ~ 0.26	0.27	SS1- 58
S1	24.22	3.4	(2.47)	(0.3467)	0.12 ~ 0.26	0.28	SS1- 60
S1	25.18	3.642	(2.568)	(0.3714)	0.12 ~ 0.26	0.3	SS1- 62
S1	26.15	3.892	(2.667)	(0.3969)	0.12 ~ 0.26	0.34	SS1- 64
S1	26.63	4.021	(2.716)	(0.41)	0.12 ~ 0.26	0.35	SS1- 65
S1	27.12	4.151	(2.765)	(0.4233)	0.12 ~ 0.26	0.36	SS1- 66
S1	28.08	4.419	(2.863)	(0.4506)	0.12 ~ 0.26	0.38	SS1- 68
S1	29.05	4.695	(2.962)	(0.4788)	0.12 ~ 0.26	0.4	SS1- 70
S1	30.02	4.982	(3.061)	(0.508)	0.12 ~ 0.26	0.41	SS1- 72
S1	31.47	5.431	(3.209)	(0.5538)	0.12 ~ 0.26	0.43	SS1- 75
S1	31.95	5.586	(3.258)	(0.5696)	0.12 ~ 0.26	0.45	SS1- 76
S1	33.9	6.226	(3.457)	(0.6349)	0.12 ~ 0.26	0.49	SS1- 80
S1	35.84	6.902	(3.655)	(0.7038)	0.16 ~ 0.32	0.53	SS1- 84
S1	36.33	7.076	(3.705)	(0.7216)	0.16 ~ 0.32	0.55	SS1- 85
S1	37.79	7.615	(3.854)	(0.7765)	0.16 ~ 0.32	0.57	SS1- 88
S1	38.77	7.984	(3.953)	(0.8142)	0.16 ~ 0.32	0.59	SS1- 90
S1	41.21	8.948	(4.202)	(0.9125)	0.16 ~ 0.32	0.66	SS1- 95
S1	41.7	9.148	(4.252)	(0.9328)	0.16 ~ 0.32	0.67	SS1- 96
S1	43.66	9.973	(4.452)	(1.017)	0.16 ~ 0.32	0.7	SS1-100
S1	48.56	12.18	(4.952)	(1.242)	0.16 ~ 0.32	0.87	SS1-110
S1	53.47	14.66	(5.452)	(1.495)	0.16 ~ 0.32	1	SS1-120
S1	68.24	23.64	(6.959)	(2.411)	0.16 ~ 0.32	2.23	SS1-150
S1	71.5	33.58	(7.291)	(3.424)	0.2 ~ 0.4	4	SS1-200

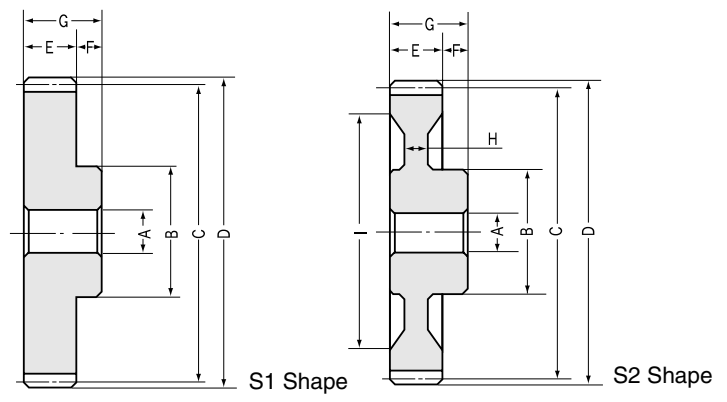
NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



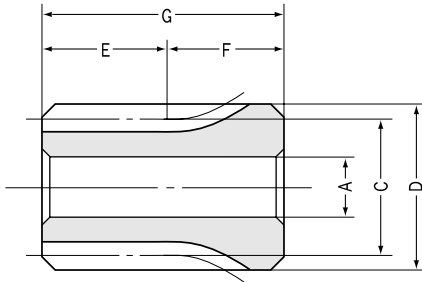
SS Steel Spur Gears Module 1.5

Spur Gears



Module 1.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SS1.5- 12	1.5	12	8	21	18	21	15	15	30	—	—
SS1.5- 13	1.5	13	8	22.5	19.5	22.5	15	15	30	—	—
SS1.5- 14	1.5	14	8	16	21	24	15	10	25	—	—
SS1.5- 15	1.5	15	8	18	22.5	25.5	15	10	25	—	—
SS1.5- 16	1.5	16	8	20	24	27	15	10	25	—	—
SS1.5- 17	1.5	17	8	21	25.5	28.5	15	10	25	—	—
SS1.5- 18	1.5	18	8	22	27	30	15	10	25	—	—
SS1.5- 19	1.5	19	8	23	28.5	31.5	15	10	25	—	—
SS1.5- 20	1.5	20	8	24	30	33	15	10	25	—	—
SS1.5- 21	1.5	21	8	25	31.5	34.5	15	10	25	—	—
SS1.5- 22	1.5	22	8	26	33	36	15	10	25	—	—
SS1.5- 23	1.5	23	8	27	34.5	37.5	15	10	25	—	—
SS1.5- 24	1.5	24	8	28	36	39	15	10	25	—	—
SS1.5- 25	1.5	25	8	30	37.5	40.5	15	10	25	—	—
SS1.5- 26	1.5	26	10	32	39	42	15	10	25	—	—
SS1.5- 27	1.5	27	10	34	40.5	43.5	15	10	25	—	—
SS1.5- 28	1.5	28	10	36	42	45	15	10	25	—	—
SS1.5- 29	1.5	29	10	37	43.5	46.5	15	10	25	—	—
SS1.5- 30	1.5	30	10	38	45	48	15	10	25	—	—
SS1.5- 32	1.5	32	10	40	48	51	15	10	25	—	—
SS1.5- 34	1.5	34	10	40	51	54	15	10	25	—	—
SS1.5- 35	1.5	35	10	42	52.5	55.5	15	10	25	—	—
SS1.5- 36	1.5	36	10	45	54	57	15	10	25	—	—
SS1.5- 38	1.5	38	12	45	57	60	15	10	25	—	—
SS1.5- 40	1.5	40	12	45	60	63	15	10	25	—	—
SS1.5- 42	1.5	42	12	45	63	66	15	10	25	—	—
SS1.5- 44	1.5	44	12	45	66	69	15	10	25	—	—
SS1.5- 45	1.5	45	12	45	67.5	70.5	15	10	25	—	—
SS1.5- 46	1.5	46	12	45	69	72	15	10	25	—	—
SS1.5- 48	1.5	48	12	45	72	75	15	10	25	—	—
SS1.5- 50	1.5	50	12	45	75	78	15	10	25	—	—
SS1.5- 52	1.5	52	15	50	78	81	15	10	25	—	—
SS1.5- 54	1.5	54	15	50	81	84	15	10	25	—	—
SS1.5- 55	1.5	55	15	50	82.5	85.5	15	10	25	—	—
SS1.5- 56	1.5	56	15	50	84	87	15	10	25	—	—
SS1.5- 58	1.5	58	15	50	87	90	15	10	25	—	—
SS1.5- 60	1.5	60	15	50	90	93	15	10	25	—	—
SS1.5- 62	1.5	62	15	55	93	96	15	10	25	—	—
SS1.5- 64	1.5	64	15	55	96	99	15	10	25	—	—
SS1.5- 65	1.5	65	15	55	97.5	100.5	15	10	25	—	—
SS1.5- 66	1.5	66	15	55	99	102	15	10	25	—	—
SS1.5- 68	1.5	68	15	55	102	105	15	10	25	—	—
SS1.5- 70	1.5	70	15	55	105	108	15	10	25	—	—
SS1.5- 72	1.5	72	15	55	108	111	15	10	25	—	—
SS1.5- 75	1.5	75	15	60	112.5	115.5	15	10	25	—	—
SS1.5- 76	1.5	76	15	60	114	117	15	10	25	—	—
SS1.5- 80	1.5	80	15	60	120	123	15	10	25	—	—
SS1.5- 84	1.5	84	15	60	126	129	15	10	25	—	—
SS1.5- 85	1.5	85	15	60	127.5	130.5	15	10	25	—	—
SS1.5- 88	1.5	88	15	60	132	135	15	10	25	—	—
SS1.5- 90	1.5	90	15	60	135	138	15	10	25	—	—
SS1.5- 95	1.5	95	15	60	142.5	145.5	15	10	25	—	—
SS1.5-100	1.5	100	15	60	150	153	15	10	25	9	133
SS1.5-120	1.5	120	15	70	180	183	15	10	25	10	153
SS1.5-150	1.5	150	20	180	225	228	15	10	25	—	—
SS1.5-200	1.5	200	25	240	300	303	15	10	25	—	—



S3 Shape

Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

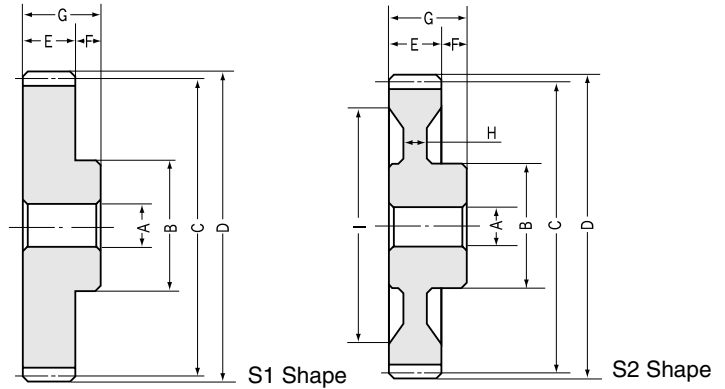
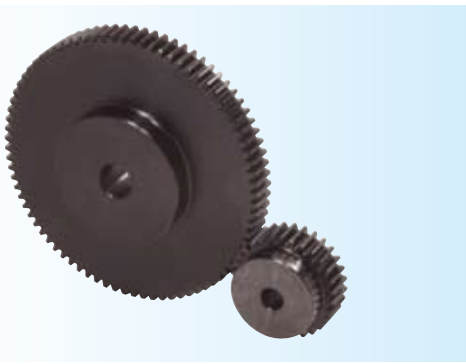
Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S3	8.59	0.3628 (0.8759)	(0.037)	0.1 ~ 0.22	0.05	SS1.5-12	
S3	9.856	0.4374 (1.005)	(0.0446)	0.1 ~ 0.22	0.07	SS1.5-13	
S1	11.15	0.5158 (1.137)	(0.0526)	0.1 ~ 0.22	0.06	SS1.5-14	
S1	12.47	0.6031 (1.272)	(0.0615)	0.1 ~ 0.22	0.06	SS1.5-15	
S1	13.82	0.6982 (1.409)	(0.0712)	0.1 ~ 0.22	0.07	SS1.5-16	
S1	15.18	0.8012 (1.548)	(0.0817)	0.1 ~ 0.22	0.09	SS1.5-17	
S1	16.57	0.912 (1.69)	(0.093)	0.1 ~ 0.22	0.09	SS1.5-18	
S1	17.98	1.03 (1.833)	(0.105)	0.1 ~ 0.22	0.11	SS1.5-19	
S1	19.4	1.154 (1.978)	(0.1177)	0.1 ~ 0.22	0.12	SS1.5-20	
S1	20.83	1.288 (2.124)	(0.1313)	0.12 ~ 0.26	0.13	SS1.5-21	
S1	22.28	1.428 (2.272)	(0.1456)	0.12 ~ 0.26	0.15	SS1.5-22	
S1	23.74	1.576 (2.421)	(0.1607)	0.12 ~ 0.26	0.18	SS1.5-23	
S1	25.21	1.732 (2.571)	(0.1766)	0.12 ~ 0.26	0.19	SS1.5-24	
S1	26.69	1.897 (2.722)	(0.1934)	0.12 ~ 0.26	0.2	SS1.5-25	
S1	28.18	2.06 (2.874)	(0.2101)	0.12 ~ 0.26	0.21	SS1.5-26	
S1	29.67	2.231 (3.026)	(0.2275)	0.12 ~ 0.26	0.23	SS1.5-27	
S1	31.18	2.409 (3.18)	(0.2457)	0.12 ~ 0.26	0.24	SS1.5-28	
S1	32.7	2.595 (3.335)	(0.2646)	0.12 ~ 0.26	0.25	SS1.5-29	
S1	34.22	2.787 (3.49)	(0.2842)	0.12 ~ 0.26	0.26	SS1.5-30	
S1	37.28	3.192 (3.802)	(0.3255)	0.12 ~ 0.26	0.3	SS1.5-32	
S1	40.37	3.626 (4.117)	(0.3698)	0.12 ~ 0.26	0.33	SS1.5-34	
S1	41.92	3.854 (4.275)	(0.393)	0.12 ~ 0.26	0.34	SS1.5-35	
S1	43.48	4.089 (4.434)	(0.417)	0.12 ~ 0.26	0.39	SS1.5-36	
S1	46.61	4.581 (4.753)	(0.4671)	0.12 ~ 0.26	0.43	SS1.5-38	
S1	49.75	5.1 (5.073)	(0.5201)	0.12 ~ 0.26	0.44	SS1.5-40	
S1	52.91	5.65 (5.395)	(0.5761)	0.14 ~ 0.32	0.47	SS1.5-42	
S1	56.07	6.227 (5.718)	(0.635)	0.14 ~ 0.32	0.51	SS1.5-44	
S1	57.66	6.527 (5.88)	(0.6656)	0.14 ~ 0.32	0.52	SS1.5-45	
S1	59.25	6.834 (6.042)	(0.6969)	0.14 ~ 0.32	0.57	SS1.5-46	
S1	62.44	7.473 (6.367)	(0.762)	0.14 ~ 0.32	0.58	SS1.5-48	
S1	65.65	8.147 (6.694)	(0.8308)	0.14 ~ 0.32	0.62	SS1.5-50	
S1	68.85	8.852 (7.021)	(0.9027)	0.14 ~ 0.32	0.7	SS1.5-52	
S1	72.07	9.588 (7.349)	(0.9777)	0.14 ~ 0.32	0.74	SS1.5-54	
S1	73.68	9.963 (7.513)	(1.016)	0.14 ~ 0.32	0.75	SS1.5-55	
S1	75.29	10.36 (7.678)	(1.056)	0.14 ~ 0.32	0.77	SS1.5-56	
S1	78.52	11.15 (8.007)	(1.137)	0.14 ~ 0.32	0.86	SS1.5-58	
S1	81.77	11.97 (8.338)	(1.221)	0.14 ~ 0.32	0.87	SS1.5-60	
S1	85	12.84 (8.668)	(1.309)	0.14 ~ 0.32	0.99	SS1.5-62	
S1	88.26	13.72 (9)	(1.399)	0.14 ~ 0.32	1	SS1.5-64	
S1	89.89	14.18 (9.166)	(1.446)	0.14 ~ 0.32	1	SS1.5-65	
S1	91.51	14.64 (9.332)	(1.493)	0.14 ~ 0.32	1.1	SS1.5-66	
S1	94.77	15.59 (9.664)	(1.59)	0.14 ~ 0.32	1.1	SS1.5-68	
S1	98.04	16.57 (9.997)	(1.69)	0.14 ~ 0.32	1.2	SS1.5-70	
S1	101.3	17.58 (10.33)	(1.793)	0.14 ~ 0.32	1.2	SS1.5-72	
S1	106.2	19.15 (10.83)	(1.953)	0.14 ~ 0.32	1.4	SS1.5-75	
S1	107.9	19.7 (11)	(2.009)	0.14 ~ 0.32	1.5	SS1.5-76	
S1	114.4	22 (11.67)	(2.243)	0.14 ~ 0.32	1.5	SS1.5-80	
S1	121	24.43 (12.34)	(2.491)	0.18 ~ 0.38	1.7	SS1.5-84	
S1	122.6	25.06 (12.5)	(2.555)	0.18 ~ 0.38	1.7	SS1.5-85	
S1	127.6	26.99 (13.01)	(2.752)	0.18 ~ 0.38	1.9	SS1.5-88	
S1	130.8	28.31 (13.34)	(2.887)	0.18 ~ 0.38	1.9	SS1.5-90	
S1	139.1	31.78 (14.18)	(3.241)	0.18 ~ 0.38	2.1	SS1.5-95	
S2	147.4	35.46 (15.03)	(3.616)	0.18 ~ 0.38	1.8	SS1.5-100	
S2	180.4	52.28 (18.4)	(5.331)	0.18 ~ 0.38	2.8	SS1.5-120	
S1	191.9	70.31 (19.57)	(7.17)	0.18 ~ 0.38	6.62	SS1.5-150	
S1	261.4	130.5 (26.66)	(13.31)	0.22 ~ 0.46	11.8	SS1.5-200	

NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

SS Steel Spur Gears **Module 2**

Spur Gears



Module 2

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SS2- 12	2	12	10	18	24	28	20	10	30	—	—
SS2- 13	2	13	10	20	26	30	20	10	30	—	—
SS2- 14	2	14	10	20	28	32	20	10	30	—	—
SS2- 15	2	15	12	24	30	34	20	10	30	—	—
SS2- 16	2	16	12	26	32	36	20	10	30	—	—
SS2- 17	2	17	12	28	34	38	20	10	30	—	—
SS2- 18	2	18	12	30	36	40	20	10	30	—	—
SS2- 19	2	19	12	31	38	42	20	10	30	—	—
SS2- 20	2	20	12	32	40	44	20	10	30	—	—
SS2- 21	2	21	12	34	42	46	20	10	30	—	—
SS2- 22	2	22	12	36	44	48	20	10	30	—	—
SS2- 23	2	23	12	37	46	50	20	10	30	—	—
SS2- 24	2	24	12	38	48	52	20	10	30	—	—
SS2- 25	2	25	12	40	50	54	20	10	30	—	—
SS2- 26	2	26	12	42	52	56	20	10	30	—	—
SS2- 27	2	27	12	45	54	58	20	10	30	—	—
SS2- 28	2	28	12	45	56	60	20	10	30	—	—
SS2- 29	2	29	12	47	58	62	20	10	30	—	—
SS2- 30	2	30	12	50	60	64	20	10	30	—	—
SS2- 32	2	32	12	50	64	68	20	10	30	—	—
SS2- 34	2	34	12	50	68	72	20	10	30	—	—
SS2- 35	2	35	12	52	70	74	20	10	30	—	—
SS2- 36	2	36	12	55	72	76	20	10	30	—	—
SS2- 38	2	38	12	55	76	80	20	10	30	—	—
SS2- 40	2	40	15	55	80	84	20	10	30	—	—
SS2- 42	2	42	15	55	84	88	20	10	30	—	—
SS2- 44	2	44	15	55	88	92	20	10	30	—	—
SS2- 45	2	45	15	55	90	94	20	10	30	—	—
SS2- 46	2	46	15	55	92	96	20	10	30	—	—
SS2- 48	2	48	15	55	96	100	20	10	30	—	—
SS2- 50	2	50	15	55	100	104	20	10	30	—	—
SS2- 52	2	52	15	55	104	108	20	10	30	—	—
SS2- 54	2	54	15	55	108	112	20	10	30	—	—
SS2- 55	2	55	15	55	110	114	20	10	30	—	—
SS2- 56	2	56	15	55	112	116	20	10	30	—	—
SS2- 58	2	58	15	60	116	120	20	10	30	—	—
SS2- 60	2	60	15	60	120	124	20	10	30	—	—
SS2- 62	2	62	15	60	124	128	20	10	30	—	—
SS2- 64	2	64	15	60	128	132	20	10	30	—	—
SS2- 65	2	65	15	60	130	134	20	10	30	—	—
SS2- 66	2	66	15	60	132	136	20	10	30	—	—
SS2- 68	2	68	15	60	136	140	20	10	30	—	—
SS2- 70	2	70	15	60	140	144	20	10	30	—	—
SS2- 72	2	72	15	60	144	148	20	10	30	—	—
SS2- 75	2	75	20	60	150	154	20	10	30	—	—
SS2- 76	2	76	20	60	152	156	20	10	30	—	—
SS2- 80	2	80	20	60	160	164	20	10	30	12	136
SS2- 84	2	84	20	70	168	172	20	10	30	12	140
SS2- 85	2	85	20	70	170	174	20	10	30	12	146
SS2- 88	2	88	20	70	176	180	20	10	30	12	150
SS2- 90	2	90	20	70	180	184	20	10	30	12	156
SS2- 95	2	95	20	70	190	194	20	10	30	12	166
SS2-100	2	100	20	70	200	204	20	10	30	12	176
SS2-120	2	120	20	90	240	244	20	10	30	12	210
SS2-150	2	150	25	240	300	304	20	10	30	—	—



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	20.36	0.8816	(2.076)	(0.0899)	0.12 ~ 0.26	0.09	SS2- 12
S1	23.36	1.067	(2.382)	(0.1088)	0.12 ~ 0.26	0.1	SS2- 13
S1	26.42	1.264	(2.694)	(0.1289)	0.12 ~ 0.26	0.1	SS2- 14
S1	29.56	1.479	(3.014)	(0.1508)	0.12 ~ 0.26	0.11	SS2- 15
S1	32.74	1.712	(3.339)	(0.1746)	0.12 ~ 0.26	0.15	SS2- 16
S1	35.99	1.962	(3.67)	(0.2001)	0.12 ~ 0.26	0.18	SS2- 17
S1	39.28	2.233	(4.005)	(0.2277)	0.12 ~ 0.26	0.2	SS2- 18
S1	42.61	2.521	(4.345)	(0.2571)	0.12 ~ 0.26	0.22	SS2- 19
S1	45.97	2.827	(4.688)	(0.2883)	0.12 ~ 0.26	0.22	SS2- 20
S1	49.38	3.153	(5.035)	(0.3215)	0.14 ~ 0.3	0.28	SS2- 21
S1	52.81	3.496	(5.385)	(0.3565)	0.14 ~ 0.3	0.3	SS2- 22
S1	56.27	3.858	(5.738)	(0.3934)	0.14 ~ 0.3	0.32	SS2- 23
S1	59.75	4.238	(6.093)	(0.4322)	0.14 ~ 0.3	0.35	SS2- 24
S1	63.26	4.638	(6.451)	(0.4729)	0.14 ~ 0.3	0.4	SS2- 25
S1	66.8	5.037	(6.812)	(0.5136)	0.14 ~ 0.3	0.42	SS2- 26
S1	70.35	5.452	(7.174)	(0.556)	0.14 ~ 0.3	0.47	SS2- 27
S1	73.92	5.885	(7.538)	(0.6001)	0.14 ~ 0.3	0.5	SS2- 28
S1	77.52	6.334	(7.905)	(0.6459)	0.14 ~ 0.3	0.58	SS2- 29
S1	81.12	6.801	(8.272)	(0.6935)	0.14 ~ 0.3	0.58	SS2- 30
S1	88.39	7.784	(9.013)	(0.7938)	0.14 ~ 0.3	0.64	SS2- 32
S1	95.7	8.838	(9.759)	(0.9012)	0.14 ~ 0.3	0.74	SS2- 34
S1	99.34	9.39	(10.13)	(0.9575)	0.14 ~ 0.3	0.75	SS2- 35
S1	103.1	9.963	(10.51)	(1.016)	0.14 ~ 0.3	0.8	SS2- 36
S1	110.5	11.17	(11.27)	(1.139)	0.14 ~ 0.3	0.9	SS2- 38
S1	117.9	12.45	(12.02)	(1.27)	0.14 ~ 0.3	0.93	SS2- 40
S1	125.4	13.81	(12.79)	(1.408)	0.18 ~ 0.36	1	SS2- 42
S1	132.9	15.23	(13.55)	(1.553)	0.18 ~ 0.36	1.1	SS2- 44
S1	136.7	15.97	(13.94)	(1.628)	0.18 ~ 0.36	1.1	SS2- 45
S1	140.4	16.73	(14.32)	(1.706)	0.18 ~ 0.36	1.2	SS2- 46
S1	148	18.3	(15.09)	(1.866)	0.18 ~ 0.36	1.3	SS2- 48
S1	155.6	19.94	(15.87)	(2.033)	0.18 ~ 0.36	1.4	SS2- 50
S1	163.2	21.65	(16.64)	(2.208)	0.18 ~ 0.36	1.5	SS2- 52
S1	170.8	23.44	(17.42)	(2.39)	0.18 ~ 0.36	1.6	SS2- 54
S1	174.7	24.36	(17.81)	(2.484)	0.18 ~ 0.36	1.6	SS2- 55
S1	178.5	25.3	(18.2)	(2.58)	0.18 ~ 0.36	1.7	SS2- 56
S1	186.1	27.27	(18.98)	(2.781)	0.18 ~ 0.36	1.8	SS2- 58
S1	193.8	29.33	(19.76)	(2.991)	0.18 ~ 0.36	1.9	SS2- 60
S1	201.5	31.47	(20.55)	(3.209)	0.18 ~ 0.36	2	SS2- 62
S1	209.2	33.69	(21.33)	(3.435)	0.18 ~ 0.36	2.1	SS2- 64
S1	213.1	34.82	(21.73)	(3.551)	0.18 ~ 0.36	2.3	SS2- 65
S1	216.9	35.98	(22.12)	(3.669)	0.18 ~ 0.36	2.4	SS2- 66
S1	224.7	38.35	(22.91)	(3.911)	0.18 ~ 0.36	2.6	SS2- 68
S1	232.4	40.81	(23.7)	(4.161)	0.18 ~ 0.36	2.6	SS2- 70
S1	240.2	43.34	(24.49)	(4.419)	0.18 ~ 0.36	2.7	SS2- 72
S1	251.7	47.29	(25.67)	(4.822)	0.18 ~ 0.36	2.9	SS2- 75
S1	255.7	48.64	(26.07)	(4.96)	0.18 ~ 0.36	3.1	SS2- 76
S2	271.2	54.26	(27.65)	(5.533)	0.18 ~ 0.36	2.6	SS2- 80
S2	286.7	60.2	(29.24)	(6.139)	0.2 ~ 0.44	3	SS2- 84
S2	290.7	61.73	(29.64)	(6.295)	0.2 ~ 0.44	3	SS2- 85
S2	302.3	66.46	(30.83)	(6.777)	0.2 ~ 0.44	3.4	SS2- 88
S2	310.2	69.7	(31.63)	(7.108)	0.2 ~ 0.44	3.4	SS2- 90
S2	329.7	78.19	(33.62)	(7.973)	0.2 ~ 0.44	3.7	SS2- 95
S2	291.1	72.74	(29.68)	(7.418)	0.2 ~ 0.44	3.8	SS2-100
S2	356.5	107.7	(36.35)	(10.98)	0.2 ~ 0.44	6.2	SS2-120
S1	454.9	174	(46.39)	(17.74)	0.2 ~ 0.44	14.5	SS2-150

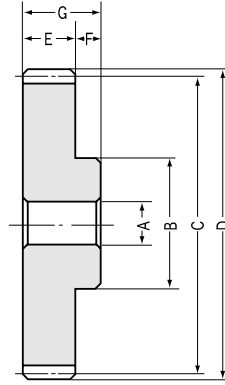
NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

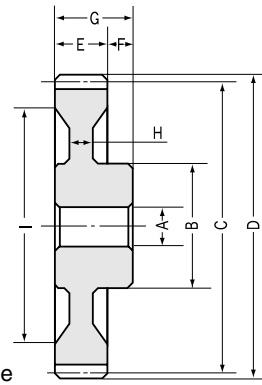


SS Steel Spur Gears Module 2.5

Spur Gears



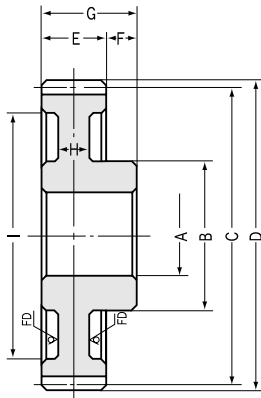
S1 Shape



S2 Shape

Module 2.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I
SS2.5-12	2.5	12	12	23	30	35	25	12	37	—	—
SS2.5-13	2.5	13	12	25	32.5	37.5	25	12	37	—	—
SS2.5-14	2.5	14	12	25	35	40	25	12	37	—	—
SS2.5-15	2.5	15	15	30	37.5	42.5	25	12	37	—	—
SS2.5-16	2.5	16	15	32	40	45	25	12	37	—	—
SS2.5-17	2.5	17	15	35	42.5	47.5	25	12	37	—	—
SS2.5-18	2.5	18	15	38	45	50	25	12	37	—	—
SS2.5-19	2.5	19	15	39	47.5	52.5	25	12	37	—	—
SS2.5-20	2.5	20	15	40	50	55	25	12	37	—	—
SS2.5-21	2.5	21	15	42	52.5	57.5	25	12	37	—	—
SS2.5-22	2.5	22	15	44	55	60	25	12	37	—	—
SS2.5-23	2.5	23	15	46	57.5	62.5	25	12	37	—	—
SS2.5-24	2.5	24	15	48	60	65	25	12	37	—	—
SS2.5-25	2.5	25	15	50	62.5	67.5	25	12	37	—	—
SS2.5-26	2.5	26	15	55	65	70	25	12	37	—	—
SS2.5-27	2.5	27	15	60	67.5	72.5	25	12	37	—	—
SS2.5-28	2.5	28	15	60	70	75	25	12	37	—	—
SS2.5-29	2.5	29	15	62	72.5	77.5	25	12	37	—	—
SS2.5-30	2.5	30	15	65	75	80	25	12	37	—	—
SS2.5-32	2.5	32	15	70	80	85	25	12	37	—	—
SS2.5-34	2.5	34	15	70	85	90	25	12	37	—	—
SS2.5-35	2.5	35	15	70	87.5	92.5	25	12	37	—	—
SS2.5-36	2.5	36	15	70	90	95	25	12	37	—	—
SS2.5-38	2.5	38	20	70	95	100	25	12	37	—	—
SS2.5-40	2.5	40	20	70	100	105	25	12	37	—	—
SS2.5-42	2.5	42	20	70	105	110	25	12	37	—	—
SS2.5-44	2.5	44	20	70	110	115	25	12	37	—	—
SS2.5-45	2.5	45	20	70	112.5	117.5	25	12	37	—	—
SS2.5-46	2.5	46	20	70	115	120	25	12	37	—	—
SS2.5-48	2.5	48	20	70	120	125	25	12	37	—	—
SS2.5-50	2.5	50	20	70	125	130	25	12	37	—	—
SS2.5-52	2.5	52	20	70	130	135	25	12	37	—	—
SS2.5-54	2.5	54	20	70	135	140	25	12	37	—	—
SS2.5-55	2.5	55	20	70	137.5	142.5	25	12	37	—	—
SS2.5-56	2.5	56	20	70	140	145	25	12	37	—	—
SS2.5-58	2.5	58	20	70	145	150	25	12	37	—	—
SS2.5-60	2.5	60	25	70	150	155	25	12	37	10	127
SS2.5-62	2.5	62	25	80	155	160	25	12	37	15	130
SS2.5-64	2.5	64	25	80	160	165	25	12	37	15	131
SS2.5-65	2.5	65	25	80	162.5	167.5	25	12	37	15	134
SS2.5-66	2.5	66	25	80	165	170	25	12	37	15	140
SS2.5-68	2.5	68	25	80	170	175	25	12	37	15	140
SS2.5-70	2.5	70	25	80	175	180	25	12	37	15	146
SS2.5-72	2.5	72	25	80	180	185	25	12	37	15	151
SS2.5-75	2.5	75	25	80	187.5	192.5	25	12	37	15	159
SS2.5-76	2.5	76	25	80	190	195	25	12	37	15	160
SS2.5-80	2.5	80	25	80	200	205	25	12	37	10	177
SS2.5-90	2.5	90	30	90	225	230	25	12	37	10	202
SS2.5-100	2.5	100	30	90	250	255	25	12	37	10	227
SS2.5-120	2.5	120	30	100	300	305	25	12	37	10	277



S4 Shape

* FD has the die-forged finish.

Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	39.77	1.766	(4.055)	(0.1801)	0.14 ~ 0.28	0.14	SS2.5- 12
S1	45.61	2.138	(4.651)	(0.218)	0.14 ~ 0.28	0.17	SS2.5- 13
S1	51.61	2.532	(5.263)	(0.2582)	0.14 ~ 0.28	0.2	SS2.5- 14
S1	57.73	2.964	(5.887)	(0.3022)	0.14 ~ 0.28	0.23	SS2.5- 15
S1	63.96	3.429	(6.522)	(0.3497)	0.14 ~ 0.28	0.25	SS2.5- 16
S1	70.29	3.932	(7.168)	(0.401)	0.14 ~ 0.28	0.28	SS2.5- 17
S1	76.72	4.471	(7.823)	(0.4559)	0.14 ~ 0.28	0.35	SS2.5- 18
S1	83.22	5.045	(8.486)	(0.5145)	0.14 ~ 0.28	0.4	SS2.5- 19
S1	89.79	5.656	(9.156)	(0.5768)	0.14 ~ 0.28	0.44	SS2.5- 20
S1	96.44	6.304	(9.834)	(0.6428)	0.16 ~ 0.34	0.49	SS2.5- 21
S1	103.2	6.987	(10.52)	(0.7125)	0.16 ~ 0.34	0.53	SS2.5- 22
S1	109.9	7.708	(11.21)	(0.786)	0.16 ~ 0.34	0.58	SS2.5- 23
S1	116.7	8.465	(11.9)	(0.8632)	0.16 ~ 0.34	0.65	SS2.5- 24
S1	123.6	9.259	(12.6)	(0.9442)	0.16 ~ 0.34	0.7	SS2.5- 25
S1	130.4	10.05	(13.3)	(1.025)	0.16 ~ 0.34	0.83	SS2.5- 26
S1	137.4	10.88	(14.01)	(1.109)	0.16 ~ 0.34	0.92	SS2.5- 27
S1	144.4	11.74	(14.72)	(1.197)	0.16 ~ 0.34	1	SS2.5- 28
S1	151.4	12.64	(15.44)	(1.289)	0.16 ~ 0.34	1.1	SS2.5- 29
S1	158.5	13.58	(16.16)	(1.385)	0.16 ~ 0.34	1.2	SS2.5- 30
S1	172.6	15.56	(17.6)	(1.587)	0.16 ~ 0.34	1.3	SS2.5- 32
S1	186.9	17.69	(19.06)	(1.804)	0.16 ~ 0.34	1.4	SS2.5- 34
S1	194.1	18.81	(19.79)	(1.918)	0.16 ~ 0.34	1.5	SS2.5- 35
S1	201.3	19.96	(20.53)	(2.035)	0.16 ~ 0.34	1.6	SS2.5- 36
S1	215.7	22.37	(22)	(2.281)	0.16 ~ 0.34	1.7	SS2.5- 38
S1	230.4	24.92	(23.49)	(2.541)	0.16 ~ 0.34	1.8	SS2.5- 40
S1	244.9	27.62	(24.97)	(2.816)	0.18 ~ 0.4	2	SS2.5- 42
S1	259.6	30.45	(26.47)	(3.105)	0.18 ~ 0.4	2.1	SS2.5- 44
S1	266.9	31.92	(27.22)	(3.255)	0.18 ~ 0.4	2.2	SS2.5- 45
S1	274.3	33.46	(27.97)	(3.412)	0.18 ~ 0.4	2.3	SS2.5- 46
S1	289.1	36.67	(29.48)	(3.739)	0.18 ~ 0.4	2.5	SS2.5- 48
S1	303.9	40.02	(30.99)	(4.081)	0.18 ~ 0.4	2.7	SS2.5- 50
S1	318.7	43.53	(32.5)	(4.439)	0.18 ~ 0.4	3	SS2.5- 52
S1	333.6	47.19	(34.02)	(4.812)	0.18 ~ 0.4	3.1	SS2.5- 54
S1	341.1	49.08	(34.78)	(5.005)	0.18 ~ 0.4	3.2	SS2.5- 55
S1	348.6	51	(35.55)	(5.201)	0.18 ~ 0.4	3.3	SS2.5- 56
S1	363.5	54.98	(37.07)	(5.606)	0.18 ~ 0.4	3.7	SS2.5- 58
S4	378.5	59.1	(38.6)	(6.027)	0.18 ~ 0.4	2.7	SS2.5- 60
S2	393.5	63.39	(40.13)	(6.464)	0.18 ~ 0.4	3.1	SS2.5- 62
S2	408.6	67.82	(41.67)	(6.916)	0.18 ~ 0.4	3.5	SS2.5- 64
S2	416.1	70.1	(42.43)	(7.148)	0.18 ~ 0.4	3.7	SS2.5- 65
S2	423.6	72.42	(43.2)	(7.385)	0.18 ~ 0.4	3.9	SS2.5- 66
S2	438.7	77.17	(44.74)	(7.869)	0.18 ~ 0.4	4.1	SS2.5- 68
S2	453.8	82.07	(46.28)	(8.369)	0.18 ~ 0.4	4.2	SS2.5- 70
S2	468.9	87.14	(47.82)	(8.886)	0.18 ~ 0.4	4.4	SS2.5- 72
S2	491.7	95.03	(50.14)	(9.69)	0.18 ~ 0.4	4.7	SS2.5- 75
S2	499.3	97.73	(50.91)	(9.966)	0.18 ~ 0.4	5	SS2.5- 76
S4	441.4	90.93	(45.01)	(9.272)	0.18 ~ 0.4	4.1	SS2.5- 80
S4	504.8	117.2	(51.48)	(11.95)	0.22 ~ 0.48	7.6	SS2.5- 90
S4	568.5	147	(57.97)	(14.99)	0.22 ~ 0.48	7.8	SS2.5-100
S4	696.3	217.5	(71)	(22.18)	0.22 ~ 0.48	11	SS2.5-120

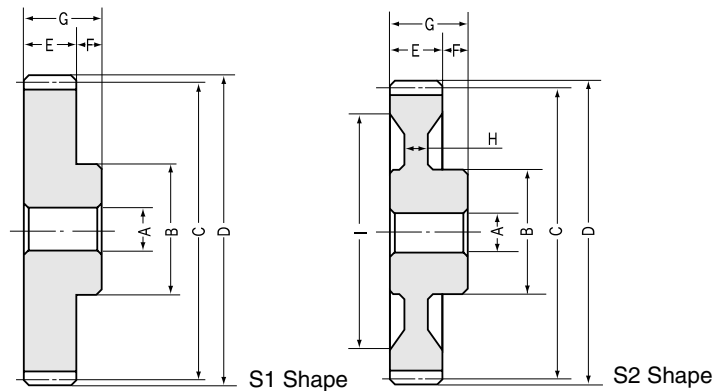
NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



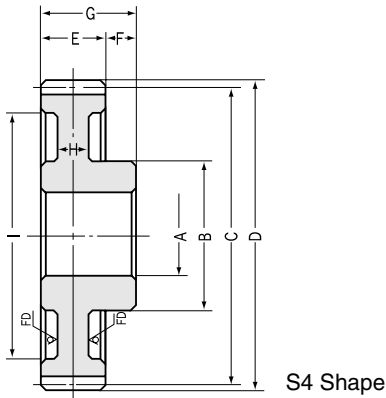
SS Steel Spur Gears **Module 3**

Spur Gears



Module 3

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I
SS3- 12	3	12	15	28	36	42	30	15	45	—	—
SS3- 13	3	13	15	30	39	45	30	15	45	—	—
SS3- 14	3	14	15	32	42	48	30	15	45	—	—
SS3- 15	3	15	15	36	45	51	30	15	45	—	—
SS3- 16	3	16	15	38	48	54	30	15	45	—	—
SS3- 17	3	17	15	39	51	57	30	15	45	—	—
SS3- 18	3	18	15	40	54	60	30	15	45	—	—
SS3- 19	3	19	15	45	57	63	30	15	45	—	—
SS3- 20	3	20	15	50	60	66	30	15	45	—	—
SS3- 21	3	21	15	52	63	69	30	15	45	—	—
SS3- 22	3	22	15	54	66	72	30	15	45	—	—
SS3- 23	3	23	15	56	69	75	30	15	45	—	—
SS3- 24	3	24	15	58	72	78	30	15	45	—	—
SS3- 25	3	25	20	60	75	81	30	15	45	—	—
SS3- 26	3	26	20	65	78	84	30	15	45	—	—
SS3- 27	3	27	20	65	81	87	30	15	45	—	—
SS3- 28	3	28	20	70	84	90	30	15	45	—	—
SS3- 29	3	29	20	70	87	93	30	15	45	—	—
SS3- 30	3	30	20	75	90	96	30	15	45	—	—
SS3- 32	3	32	20	75	96	102	30	15	45	—	—
SS3- 34	3	34	20	80	102	108	30	15	45	—	—
SS3- 35	3	35	20	80	105	111	30	15	45	—	—
SS3- 36	3	36	20	80	108	114	30	15	45	—	—
SS3- 38	3	38	25	80	114	120	30	15	45	—	—
SS3- 40	3	40	25	80	120	126	30	15	45	—	—
SS3- 42	3	42	25	80	126	132	30	15	45	—	—
SS3- 44	3	44	25	80	132	138	30	15	45	—	—
SS3- 45	3	45	25	80	135	141	30	15	45	—	—
SS3- 46	3	46	25	80	138	144	30	15	45	—	—
SS3- 48	3	48	25	80	144	150	30	15	45	—	—
SS3- 50	3	50	25	80	150	156	30	15	45	10	123
SS3- 52	3	52	25	80	156	162	30	15	45	16	126
SS3- 54	3	54	25	80	162	168	30	15	45	16	132
SS3- 55	3	55	25	80	165	171	30	15	45	16	131
SS3- 56	3	56	25	80	168	174	30	15	45	16	134
SS3- 58	3	58	25	80	174	180	30	15	45	16	144
SS3- 60	3	60	25	80	180	186	30	15	45	10	153
SS3- 62	3	62	25	80	186	192	30	15	45	16	150
SS3- 64	3	64	25	80	192	198	30	15	45	16	158
SS3- 65	3	65	25	80	195	201	30	15	45	16	161
SS3- 66	3	66	25	90	198	204	30	15	45	16	160
SS3- 68	3	68	25	90	204	210	30	15	45	16	170
SS3- 70	3	70	25	90	210	216	30	15	45	16	176
SS3- 72	3	72	25	90	216	222	30	15	45	16	182
SS3- 75	3	75	25	90	225	231	30	15	45	16	190
SS3- 76	3	76	25	90	228	234	30	15	45	16	190
SS3- 80	3	80	30	90	240	246	30	15	45	10	213
SS3- 90	3	90	30	100	270	276	30	15	45	16	240
SS3-100	3	100	30	100	300	306	30	15	45	10	273
SS3-120	3	120	30	130	360	366	30	15	45	10	333



* FD has the die-forged finish.

Specifications			
Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

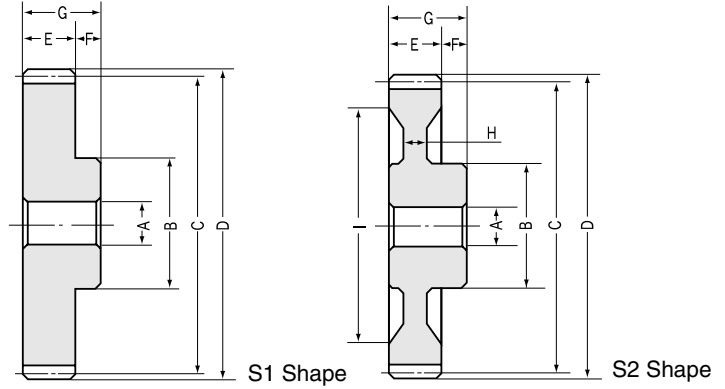
Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	68.71	3.116 (7.007)	(0.3177)	0.14 ~ 0.32	0.25	SS3- 12	
S1	78.83	3.773 (8.038)	(0.3847)	0.14 ~ 0.32	0.3	SS3- 13	
S1	89.18	4.468 (9.094)	(0.4556)	0.14 ~ 0.32	0.35	SS3- 14	
S1	99.73	5.225 (10.17)	(0.5328)	0.14 ~ 0.32	0.4	SS3- 15	
S1	110.5	6.045 (11.27)	(0.6164)	0.14 ~ 0.32	0.5	SS3- 16	
S1	121.5	6.926 (12.39)	(0.7063)	0.14 ~ 0.32	0.65	SS3- 17	
S1	132.6	7.872 (13.52)	(0.8027)	0.14 ~ 0.32	0.67	SS3- 18	
S1	143.8	8.88 (14.66)	(0.9055)	0.14 ~ 0.32	0.73	SS3- 19	
S1	155.1	9.954 (15.82)	(1.015)	0.14 ~ 0.32	0.8	SS3- 20	
S1	166.6	11.09 (16.99)	(1.131)	0.18 ~ 0.38	1	SS3- 21	
S1	178.2	12.29 (18.17)	(1.253)	0.18 ~ 0.38	1.1	SS3- 22	
S1	189.9	13.55 (19.36)	(1.382)	0.18 ~ 0.38	1.1	SS3- 23	
S1	201.6	14.89 (20.56)	(1.518)	0.18 ~ 0.38	1.2	SS3- 24	
S1	213.5	16.3 (21.77)	(1.662)	0.18 ~ 0.38	1.3	SS3- 25	
S1	225.5	17.7 (22.99)	(1.805)	0.18 ~ 0.38	1.5	SS3- 26	
S1	237.4	19.17 (24.21)	(1.955)	0.18 ~ 0.38	1.6	SS3- 27	
S1	249.5	20.7 (25.44)	(2.111)	0.18 ~ 0.38	1.7	SS3- 28	
S1	261.6	22.3 (26.68)	(2.274)	0.18 ~ 0.38	1.7	SS3- 29	
S1	273.8	23.95 (27.92)	(2.442)	0.18 ~ 0.38	1.8	SS3- 30	
S1	298.3	27.44 (30.42)	(2.798)	0.18 ~ 0.38	2.1	SS3- 32	
S1	323	31.18 (32.94)	(3.179)	0.18 ~ 0.38	2.4	SS3- 34	
S1	335.4	33.14 (34.2)	(3.379)	0.18 ~ 0.38	2.5	SS3- 35	
S1	347.8	35.16 (35.47)	(3.585)	0.18 ~ 0.38	2.6	SS3- 36	
S1	372.8	39.4 (38.02)	(4.018)	0.18 ~ 0.38	3	SS3- 38	
S1	397.9	43.99 (40.58)	(4.486)	0.18 ~ 0.38	3.1	SS3- 40	
S1	423.3	48.85 (43.16)	(4.981)	0.2 ~ 0.44	3.4	SS3- 42	
S1	448.6	53.97 (45.74)	(5.503)	0.2 ~ 0.44	3.7	SS3- 44	
S1	461.3	56.63 (47.04)	(5.775)	0.2 ~ 0.44	3.8	SS3- 45	
S1	474	59.36 (48.34)	(6.053)	0.2 ~ 0.44	4.2	SS3- 46	
S1	499.5	65.01 (50.94)	(6.629)	0.2 ~ 0.44	4.3	SS3- 48	
S4	525.1	70.92 (53.55)	(7.232)	0.2 ~ 0.44	3.6	SS3- 50	
S2	550.8	77.11 (56.17)	(7.863)	0.2 ~ 0.44	4.5	SS3- 52	
S2	576.5	83.57 (58.79)	(8.522)	0.2 ~ 0.44	4.6	SS3- 54	
S2	589.5	86.9 (60.11)	(8.861)	0.2 ~ 0.44	4.8	SS3- 55	
S2	602.3	90.3 (61.42)	(9.208)	0.2 ~ 0.44	4.8	SS3- 56	
S2	628.2	97.29 (64.06)	(9.921)	0.2 ~ 0.44	5.5	SS3- 58	
S4	654.1	104.5 (66.7)	(10.66)	0.2 ~ 0.44	4.5	SS3- 60	
S2	680.1	112.1 (69.35)	(11.43)	0.2 ~ 0.44	6	SS3- 62	
S2	588.4	99.93 (60)	(10.19)	0.2 ~ 0.44	6.2	SS3- 64	
S2	599.2	103.4 (61.1)	(10.54)	0.2 ~ 0.44	6.3	SS3- 65	
S2	610.1	106.8 (62.21)	(10.89)	0.2 ~ 0.44	6.5	SS3- 66	
S2	631.8	113.9 (64.43)	(11.61)	0.2 ~ 0.44	6.8	SS3- 68	
S2	653.5	121.2 (66.64)	(12.36)	0.2 ~ 0.44	7.4	SS3- 70	
S2	675.3	128.8 (68.86)	(13.13)	0.2 ~ 0.44	7.6	SS3- 72	
S2	708	140.6 (72.2)	(14.34)	0.2 ~ 0.44	8	SS3- 75	
S2	718.9	144.7 (73.31)	(14.76)	0.2 ~ 0.44	8.7	SS3- 76	
S4	762.7	161.6 (77.77)	(16.48)	0.2 ~ 0.44	7.2	SS3- 80	
S2	872.3	208.2 (88.95)	(21.23)	0.26 ~ 0.52	10.5	SS3- 90	
S4	982.6	261.1 (100.2)	(26.62)	0.26 ~ 0.52	10.2	SS3-100	
S4	1203	386.1 (122.7)	(39.37)	0.26 ~ 0.52	14.9	SS3-120	

NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

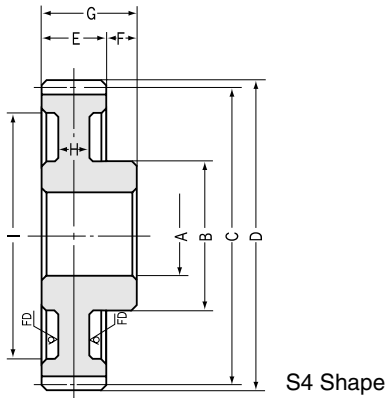


SS Steel Spur Gears **Module 4**



Module 4

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SS4-12	4	12	20	35	48	56	40	20	60	—	—
SS4-13	4	13	20	38	52	60	40	20	60	—	—
SS4-14	4	14	20	40	56	64	40	20	60	—	—
SS4-15	4	15	20	45	60	68	40	20	60	—	—
SS4-16	4	16	20	50	64	72	40	20	60	—	—
SS4-17	4	17	20	53	68	76	40	20	60	—	—
SS4-18	4	18	20	55	72	80	40	20	60	—	—
SS4-19	4	19	20	60	76	84	40	20	60	—	—
SS4-20	4	20	20	65	80	88	40	20	60	—	—
SS4-21	4	21	20	69	84	92	40	20	60	—	—
SS4-22	4	22	20	73	88	96	40	20	60	—	—
SS4-23	4	23	20	77	92	100	40	20	60	—	—
SS4-24	4	24	20	80	96	104	40	20	60	—	—
SS4-25	4	25	20	84	100	108	40	20	60	—	—
SS4-26	4	26	20	87	104	112	40	20	60	—	—
SS4-27	4	27	20	90	108	116	40	20	60	—	—
SS4-28	4	28	20	95	112	120	40	20	60	—	—
SS4-29	4	29	20	95	116	124	40	20	60	—	—
SS4-30	4	30	20	100	120	128	40	20	60	—	—
SS4-32	4	32	22	100	128	136	40	16	56	—	—
SS4-34	4	34	22	100	136	144	40	16	56	—	—
SS4-35	4	35	22	100	140	148	40	16	56	—	—
SS4-36	4	36	22	100	144	152	40	16	56	—	—
SS4-38	4	38	22	100	152	160	40	16	56	—	—
SS4-40	4	40	25	100	160	168	40	16	56	—	—
SS4-42	4	42	25	100	168	176	40	16	56	—	—
SS4-44	4	44	25	100	176	184	40	16	56	—	—
SS4-45	4	45	25	100	180	188	40	16	56	—	—
SS4-46	4	46	25	100	184	192	40	16	56	—	—
SS4-48	4	48	25	100	192	200	40	16	56	26	150
SS4-50	4	50	30	100	200	208	40	16	56	12	168
SS4-52	4	52	30	100	208	216	40	16	56	26	165
SS4-54	4	54	30	100	216	224	40	16	56	26	175
SS4-55	4	55	30	100	220	228	40	16	56	26	178
SS4-56	4	56	30	100	224	232	40	16	56	26	182
SS4-58	4	58	30	110	232	240	40	16	56	26	190
SS4-60	4	60	30	110	240	248	40	16	56	12	208
SS4-62	4	62	30	110	248	256	40	16	56	20	210
SS4-64	4	64	30	110	256	264	40	16	56	16	214
SS4-65	4	65	30	110	260	268	40	16	56	16	218
SS4-66	4	66	30	120	264	272	40	16	56	16	220
SS4-68	4	68	30	120	272	280	40	16	56	16	225
SS4-70	4	70	30	120	280	288	40	16	56	12	248
SS4-80	4	80	30	120	320	328	40	16	56	12	288



* FD has the die-forged finish.

Specifications			
Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

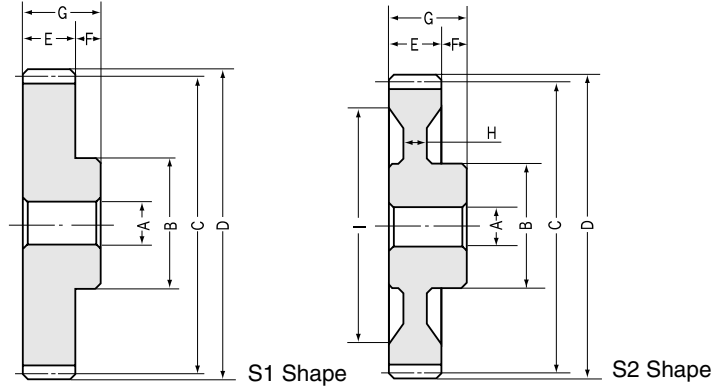
Shape	Allowable torque (N·m) ^{NOTE 1}		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 2</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	162.9	7.624	(16.61)	(0.7774)	0.18 ~ 0.38	0.55	SS4-12
S1	186.8	9.222	(19.05)	(0.9404)	0.18 ~ 0.38	0.67	SS4-13
S1	211.4	10.91	(21.56)	(1.113)	0.18 ~ 0.38	0.8	SS4-14
S1	236.4	12.75	(24.11)	(1.3)	0.18 ~ 0.38	0.95	SS4-15
S1	261.9	14.74	(26.71)	(1.503)	0.18 ~ 0.38	1.1	SS4-16
S1	287.9	16.88	(29.36)	(1.721)	0.18 ~ 0.38	1.3	SS4-17
S1	314.2	19.18	(32.04)	(1.956)	0.18 ~ 0.38	1.5	SS4-18
S1	340.9	21.66	(34.76)	(2.209)	0.18 ~ 0.38	1.7	SS4-19
S1	367.7	24.3	(37.5)	(2.478)	0.18 ~ 0.38	1.9	SS4-20
S1	395	27.1	(40.28)	(2.763)	0.2 ~ 0.44	2.2	SS4-21
S1	422.5	30.05	(43.08)	(3.064)	0.2 ~ 0.44	2.4	SS4-22
S1	450.1	33.17	(45.9)	(3.382)	0.2 ~ 0.44	2.6	SS4-23
S1	478.1	36.44	(48.75)	(3.716)	0.2 ~ 0.44	2.9	SS4-24
S1	506.1	39.87	(51.61)	(4.066)	0.2 ~ 0.44	3.2	SS4-25
S1	534.4	43.31	(54.49)	(4.416)	0.2 ~ 0.44	3.5	SS4-26
S1	562.8	46.89	(57.39)	(4.781)	0.2 ~ 0.44	3.8	SS4-27
S1	591.4	50.6	(60.31)	(5.16)	0.2 ~ 0.44	4.2	SS4-28
S1	620.2	54.54	(63.24)	(5.562)	0.2 ~ 0.44	4.4	SS4-29
S1	649	58.66	(66.18)	(5.982)	0.2 ~ 0.44	4.5	SS4-30
S1	707.1	67.37	(72.1)	(6.87)	0.2 ~ 0.44	4.8	SS4-32
S1	765.6	76.71	(78.07)	(7.822)	0.2 ~ 0.44	5.5	SS4-34
S1	795	81.61	(81.07)	(8.322)	0.2 ~ 0.44	5.6	SS4-35
S1	824.5	86.67	(84.08)	(8.838)	0.2 ~ 0.44	5.7	SS4-36
S1	883.8	97.28	(90.12)	(9.92)	0.2 ~ 0.44	7.1	SS4-38
S1	943.4	108.6	(96.2)	(11.07)	0.2 ~ 0.44	7.2	SS4-40
S1	1003	120.4	(102.3)	(12.28)	0.24 ~ 0.52	7.7	SS4-42
S1	1063	132.9	(108.4)	(13.55)	0.24 ~ 0.52	8.2	SS4-44
S1	1093	139.4	(111.5)	(14.22)	0.24 ~ 0.52	8.8	SS4-45
S1	1124	146.1	(114.6)	(14.9)	0.24 ~ 0.52	9.7	SS4-46
S2	986.5	133.3	(100.6)	(13.59)	0.24 ~ 0.52	9	SS4-48
S4	1038	145.5	(105.8)	(14.84)	0.24 ~ 0.52	7.8	SS4-50
S2	1088	158.3	(110.9)	(16.14)	0.24 ~ 0.52	10	SS4-52
S2	1139	171.7	(116.1)	(17.51)	0.24 ~ 0.52	10.5	SS4-54
S2	1164	178.7	(118.7)	(18.22)	0.24 ~ 0.52	11	SS4-55
S2	1190	185.7	(121.3)	(18.94)	0.24 ~ 0.52	11.5	SS4-56
S2	1241	200.2	(126.5)	(20.42)	0.24 ~ 0.52	12	SS4-58
S4	1293	215.4	(131.8)	(21.97)	0.24 ~ 0.52	10.5	SS4-60
S2	1343	231.1	(137)	(23.57)	0.24 ~ 0.52	12.5	SS4-62
S2	1394	247.5	(142.2)	(25.24)	0.24 ~ 0.52	12.5	SS4-64
S2	1420	256	(144.8)	(26.1)	0.24 ~ 0.52	12.8	SS4-65
S2	1446	264.5	(147.5)	(26.97)	0.24 ~ 0.52	13	SS4-66
S2	1497	281.9	(152.7)	(28.75)	0.24 ~ 0.52	14	SS4-68
S4	1549	300.1	(158)	(30.6)	0.24 ~ 0.52	14.4	SS4-70
S4	1808	399.7	(184.4)	(40.76)	0.24 ~ 0.52	19	SS4-80

NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

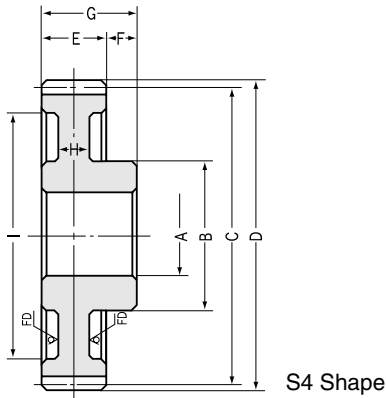


SS Steel Spur Gears **Module 5**



Module 5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SS5-12	5	12	22	46	60	70	50	25	75	—	—
SS5-13	5	13	22	50	65	75	50	25	75	—	—
SS5-14	5	14	22	52	70	80	50	25	75	—	—
SS5-15	5	15	22	60	75	85	50	25	75	—	—
SS5-16	5	16	22	65	80	90	50	25	75	—	—
SS5-17	5	17	22	68	85	95	50	25	75	—	—
SS5-18	5	18	22	70	90	100	50	25	75	—	—
SS5-19	5	19	22	76	95	105	50	25	75	—	—
SS5-20	5	20	22	82	100	110	50	25	75	—	—
SS5-21	5	21	25	90	105	115	50	25	75	—	—
SS5-22	5	22	25	95	110	120	50	25	75	—	—
SS5-23	5	23	25	100	115	125	50	25	75	—	—
SS5-24	5	24	25	100	120	130	50	25	75	—	—
SS5-25	5	25	25	105	125	135	50	25	75	—	—
SS5-26	5	26	25	110	130	140	50	25	75	—	—
SS5-27	5	27	25	110	135	145	50	25	75	—	—
SS5-28	5	28	25	110	140	150	50	25	75	—	—
SS5-29	5	29	25	115	145	155	50	25	75	—	—
SS5-30	5	30	25	120	150	160	50	25	75	—	—
SS5-32	5	32	30	120	160	170	50	21	71	—	—
SS5-34	5	34	30	120	170	180	50	21	71	—	—
SS5-35	5	35	30	120	175	185	50	21	71	—	—
SS5-36	5	36	30	120	180	190	50	21	71	—	—
SS5-38	5	38	30	120	190	200	50	21	71	—	—
SS5-40	5	40	30	120	200	210	50	21	71	36	160
SS5-42	5	42	30	120	210	220	50	21	71	36	170
SS5-44	5	44	30	120	220	230	50	21	71	36	175
SS5-45	5	45	30	120	225	235	50	21	71	36	185
SS5-46	5	46	30	120	230	240	50	21	71	30	185
SS5-48	5	48	30	120	240	250	50	21	71	30	200
SS5-50	5	50	30	120	250	260	50	21	71	16	212
SS5-52	5	52	30	130	260	270	50	21	71	30	220
SS5-54	5	54	30	130	270	280	50	21	71	30	230
SS5-55	5	55	30	130	275	285	50	21	71	30	235
SS5-56	5	56	30	130	280	290	50	21	71	30	240
SS5-58	5	58	30	130	290	300	50	21	71	30	240
SS5-60	5	60	30	130	300	310	50	21	71	20	260



* FD has the die-forged finish.

Specifications			
Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	318.1	15.23	(32.44)	(1.553)	0.2 ~ 0.44	1.2	SS5-12
S1	364.9	18.41	(37.21)	(1.877)	0.2 ~ 0.44	1.5	SS5-13
S1	412.9	21.76	(42.1)	(2.219)	0.2 ~ 0.44	1.7	SS5-14
S1	461.8	25.46	(47.09)	(2.596)	0.2 ~ 0.44	2	SS5-15
S1	511.7	29.47	(52.18)	(3.005)	0.2 ~ 0.44	2.3	SS5-16
S1	562.3	33.79	(57.34)	(3.446)	0.2 ~ 0.44	2.6	SS5-17
S1	613.7	38.42	(62.58)	(3.918)	0.2 ~ 0.44	2.9	SS5-18
S1	665.8	43.37	(67.89)	(4.423)	0.2 ~ 0.44	3.5	SS5-19
S1	718.3	48.63	(73.25)	(4.959)	0.2 ~ 0.44	3.8	SS5-20
S1	771.5	54.2	(78.67)	(5.527)	0.24 ~ 0.5	4.4	SS5-21
S1	825.1	60.08	(84.14)	(6.127)	0.24 ~ 0.5	4.8	SS5-22
S1	879.2	66.34	(89.65)	(6.765)	0.24 ~ 0.5	5.5	SS5-23
S1	933.7	73.02	(95.21)	(7.446)	0.24 ~ 0.5	5.7	SS5-24
S1	988.5	80.04	(100.8)	(8.162)	0.24 ~ 0.5	6.1	SS5-25
S1	1043	87.05	(106.4)	(8.877)	0.24 ~ 0.5	6.6	SS5-26
S1	1099	94.38	(112.1)	(9.624)	0.24 ~ 0.5	7.6	SS5-27
S1	1155	102	(117.8)	(10.4)	0.24 ~ 0.5	8	SS5-28
S1	1211	109.9	(123.5)	(11.21)	0.24 ~ 0.5	8.2	SS5-29
S1	1268	118.2	(129.3)	(12.05)	0.24 ~ 0.5	8.8	SS5-30
S1	1381	135.6	(140.8)	(13.83)	0.24 ~ 0.5	9.8	SS5-32
S1	1495	154.4	(152.5)	(15.74)	0.24 ~ 0.5	11.8	SS5-34
S1	1552	164.2	(158.3)	(16.74)	0.24 ~ 0.5	12	SS5-35
S1	1610	174.3	(164.2)	(17.77)	0.24 ~ 0.5	12	SS5-36
S1	1726	195.4	(176)	(19.93)	0.24 ~ 0.5	14	SS5-38
S2	1536	181.8	(156.6)	(18.54)	0.24 ~ 0.5	13	SS5-40
S2	1633	202	(166.5)	(20.6)	0.28 ~ 0.58	14	SS5-42
S2	1731	223.3	(176.5)	(22.77)	0.28 ~ 0.58	15	SS5-44
S2	1780	234.4	(181.5)	(23.9)	0.28 ~ 0.58	16	SS5-45
S2	1829	245.8	(186.5)	(25.06)	0.28 ~ 0.58	16	SS5-46
S2	1927	269.3	(196.5)	(27.46)	0.28 ~ 0.58	17	SS5-48
S4	2026	294	(206.6)	(29.98)	0.28 ~ 0.58	15	SS5-50
S2	2125	319.9	(216.7)	(32.62)	0.28 ~ 0.58	18	SS5-52
S2	2224	347	(226.8)	(35.38)	0.28 ~ 0.58	19	SS5-54
S2	2274	360.9	(231.9)	(36.8)	0.28 ~ 0.58	20	SS5-55
S2	2324	375.1	(237)	(38.25)	0.28 ~ 0.58	21	SS5-56
S2	2423	404.5	(247.1)	(41.25)	0.28 ~ 0.58	22	SS5-58
S4	2523	435	(257.3)	(44.36)	0.28 ~ 0.58	23	SS5-60

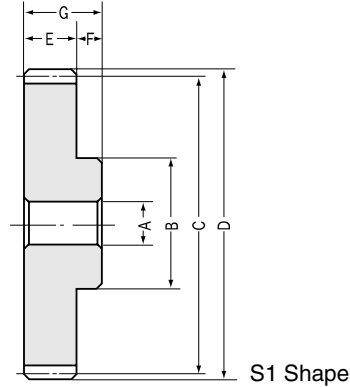
NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions.

Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SS Steel Spur Gears Modules 6 ~ 10



Module 6

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SS6-12	6	12	25	55	72	84	60	28	88	—	—
SS6-13	6	13	25	58	78	90	60	28	88	—	—
SS6-14	6	14	25	60	84	96	60	28	88	—	—
SS6-15	6	15	25	70	90	102	60	28	88	—	—
SS6-16	6	16	25	75	96	108	60	28	88	—	—
SS6-17	6	17	25	78	102	114	60	28	88	—	—
SS6-18	6	18	25	80	108	120	60	28	88	—	—
SS6-19	6	19	25	90	114	126	60	28	88	—	—
SS6-20	6	20	25	100	120	132	60	28	88	—	—
SS6-21	6	21	28	105	126	138	60	28	88	—	—
SS6-22	6	22	28	110	132	144	60	28	88	—	—
SS6-23	6	23	28	115	138	150	60	28	88	—	—
SS6-24	6	24	28	120	144	156	60	28	88	—	—
SS6-25	6	25	28	125	150	162	60	28	88	—	—
SS6-26	6	26	28	130	156	168	60	28	88	—	—
SS6-27	6	27	28	135	162	174	60	28	88	—	—
SS6-28	6	28	28	140	168	180	60	28	88	—	—
SS6-30	6	30	30	150	180	192	60	28	88	—	—
SS6-32	6	32	30	150	192	204	60	23	83	—	—
SS6-34	6	34	30	150	204	216	60	23	83	—	—
SS6-35	6	35	30	150	210	222	60	23	83	—	—
SS6-36	6	36	30	150	216	228	60	23	83	—	—
SS6-38	6	38	30	150	228	240	60	23	83	—	—
SS6-40	6	40	30	150	240	252	60	23	83	—	—
SS6-42	6	42	40	150	252	264	60	23	83	—	—
SS6-44	6	44	40	150	264	276	60	23	83	—	—
SS6-45	6	45	40	180	270	282	60	23	83	—	—
SS6-46	6	46	40	180	276	288	60	23	83	—	—
SS6-48	6	48	40	180	288	300	60	23	83	—	—
SS6-50	6	50	40	180	300	312	60	23	83	—	—

Module 8

SS8-12	8	12	28	75	96	112	75	35	110	—	—
SS8-13	8	13	28	80	104	120	75	35	110	—	—
SS8-14	8	14	28	85	112	128	75	35	110	—	—
SS8-15	8	15	28	90	120	136	75	35	110	—	—
SS8-16	8	16	28	100	128	144	75	35	110	—	—
SS8-17	8	17	28	105	136	152	75	35	110	—	—
SS8-18	8	18	28	110	144	160	75	35	110	—	—
SS8-19	8	19	28	120	152	168	75	35	110	—	—
SS8-20	8	20	28	130	160	176	75	35	110	—	—
SS8-21	8	21	30	140	168	184	75	35	110	—	—
SS8-22	8	22	30	150	176	192	75	35	110	—	—
SS8-23	8	23	30	155	184	200	75	35	110	—	—
SS8-24	8	24	30	160	192	208	75	35	110	—	—
SS8-25	8	25	30	170	200	216	75	35	110	—	—
SS8-26	8	26	30	170	208	224	75	35	110	—	—
SS8-27	8	27	30	170	216	232	75	35	110	—	—
SS8-28	8	28	30	180	224	240	75	35	110	—	—
SS8-30	8	30	30	180	240	256	75	35	110	—	—

Module 10

SS10-15	10	15	30	115	150	170	90	40	130	—	—
SS10-20	10	20	30	165	200	220	90	40	130	—	—
SS10-25	10	25	40	200	250	270	90	40	130	—	—



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) <small>NOTE 1</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 2</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	549.7	26.76	(56.05)	(2.729)	0.22 ~ 0.48	2	SS6-12 SS6-13 SS6-14 SS6-15 SS6-16
S1	630.6	32.42	(64.3)	(3.306)	0.22 ~ 0.48	2.5	
S1	713.4	38.39	(72.75)	(3.915)	0.22 ~ 0.48	2.8	
S1	798.1	44.91	(81.38)	(4.58)	0.22 ~ 0.48	3.4	
S1	884.2	51.96	(90.16)	(5.299)	0.22 ~ 0.48	3.9	
S1	971.7	59.56	(99.09)	(6.073)	0.22 ~ 0.48	4.4	SS6-17 SS6-18 SS6-19 SS6-20 SS6-21
S1	1060	67.68	(108.1)	(6.902)	0.22 ~ 0.48	5	
S1	1150	76.4	(117.3)	(7.791)	0.22 ~ 0.48	5.8	
S1	1242	85.85	(126.6)	(8.754)	0.22 ~ 0.48	6.5	
S1	1333	95.88	(135.9)	(9.777)	0.26 ~ 0.56	7.5	
S1	1426	106.5	(145.4)	(10.86)	0.26 ~ 0.56	8.1	SS6-22 SS6-23 SS6-24 SS6-25 SS6-26
S1	1519	117.7	(154.9)	(12)	0.26 ~ 0.56	8.9	
S1	1613	129.4	(164.5)	(13.2)	0.26 ~ 0.56	9.8	
S1	1708	141.8	(174.2)	(14.46)	0.26 ~ 0.56	10.5	
S1	1803	154.3	(183.9)	(15.73)	0.26 ~ 0.56	11.4	
S1	1900	167.1	(193.7)	(17.04)	0.26 ~ 0.56	12.1	SS6-27 SS6-28 SS6-30 SS6-32 SS6-34
S1	1996	180.6	(203.5)	(18.42)	0.26 ~ 0.56	12.7	
S1	2191	209.2	(223.4)	(21.33)	0.26 ~ 0.56	15.1	
S1	1989	199.9	(202.8)	(20.38)	0.26 ~ 0.56	18	
S1	2154	227.7	(219.6)	(23.22)	0.26 ~ 0.56	19	
S1	2236	242.4	(228)	(24.72)	0.26 ~ 0.56	19	SS6-35 SS6-36 SS6-38 SS6-40 SS6-42
S1	2319	257.6	(236.5)	(26.27)	0.26 ~ 0.56	22	
S1	2486	289.4	(253.5)	(29.51)	0.26 ~ 0.56	23	
S1	2654	323.1	(270.6)	(32.95)	0.26 ~ 0.56	24	
S1	2821	358.9	(287.7)	(36.6)	0.3 ~ 0.64	27	
S1	2990	396.7	(304.9)	(40.45)	0.3 ~ 0.64	30	SS6-44 SS6-45 SS6-46 SS6-48 SS6-50
S1	3075	416.3	(313.6)	(42.45)	0.3 ~ 0.64	31	
S1	3160	436.4	(322.2)	(44.5)	0.3 ~ 0.64	34	
S1	3330	478.3	(339.6)	(48.77)	0.3 ~ 0.64	35	
S1	3501	522	(357)	(53.23)	0.3 ~ 0.64	37	

S1	1222	62.63	(124.6)	(6.387)	0.28 ~ 0.58	4.8	SS8-12 SS8-13 SS8-14 SS8-15 SS8-16
S1	1401	75.16	(142.9)	(7.664)	0.28 ~ 0.58	4.8	
S1	1586	88.89	(161.7)	(9.064)	0.28 ~ 0.58	6.6	
S1	1773	104.1	(180.8)	(10.62)	0.28 ~ 0.58	7.6	
S1	1965	120.7	(200.4)	(12.31)	0.28 ~ 0.58	8.9	
S1	2159	138.6	(220.2)	(14.13)	0.28 ~ 0.58	10	SS8-17 SS8-18 SS8-19 SS8-20 SS8-21
S1	2357	157.8	(240.3)	(16.09)	0.28 ~ 0.58	12	
S1	2557	178.2	(260.7)	(18.17)	0.28 ~ 0.58	13	
S1	2759	200.1	(281.3)	(20.4)	0.28 ~ 0.58	15	
S1	2963	223.2	(302.1)	(22.76)	0.32 ~ 0.66	17	
S1	3168	247.6	(323.1)	(25.25)	0.32 ~ 0.66	19	SS8-22 SS8-23 SS8-24 SS8-25 SS8-26
S1	3376	273.4	(344.3)	(27.88)	0.32 ~ 0.66	20	
S1	2988	249.9	(304.7)	(25.48)	0.32 ~ 0.66	22	
S1	3164	272.8	(322.6)	(27.82)	0.32 ~ 0.66	24	
S1	3340	296.8	(340.6)	(30.27)	0.32 ~ 0.66	28	
S1	3518	321.9	(358.7)	(32.83)	0.32 ~ 0.66	30	SS8-27 SS8-28 SS8-30
S1	3696	348.2	(376.9)	(35.51)	0.32 ~ 0.66	33	
S1	4056	403.9	(413.6)	(41.19)	0.32 ~ 0.66	36	

S1	3325	202.6	(339.1)	(20.66)	0.34 ~ 0.68	15	SS10-15 SS10-20 SS10-25
S1	4310	323.3	(439.5)	(32.97)	0.34 ~ 0.68	28.2	
S1	5931	529.3	(604.8)	(53.97)	0.36 ~ 0.76	43.3	

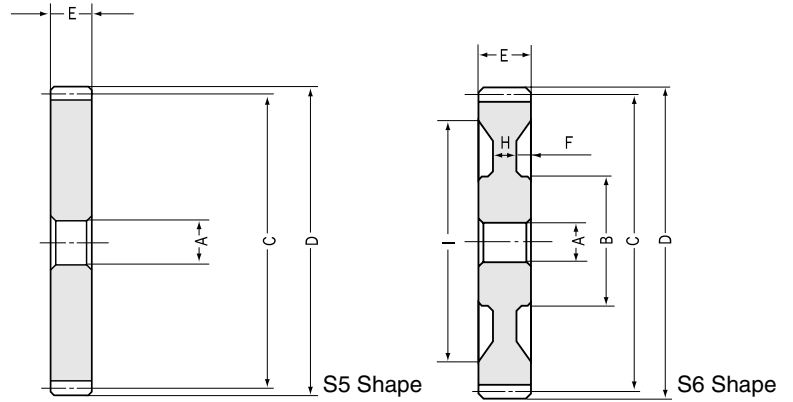
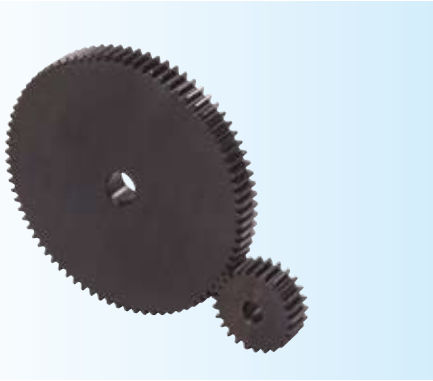
NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SSA Steel Hubless Spur Gears Module 1 ~ 1.5

Spur Gears



Module 1

Catalog No.	Module	No. of teeth	Bore NOTE 1	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Web thickness	Web O.D.
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	H	I
SSA1- 20	1	20	8	—	20	22	10	—	—	—
SSA1- 24	1	24	8	—	24	26	10	—	—	—
SSA1- 25	1	25	8	—	25	27	10	—	—	—
SSA1- 28	1	28	8	—	28	30	10	—	—	—
SSA1- 30	1	30	8	—	30	32	10	—	—	—
SSA1- 32	1	32	8	—	32	34	10	—	—	—
SSA1- 35	1	35	8	—	35	37	10	—	—	—
SSA1- 36	1	36	8	—	36	38	10	—	—	—
SSA1- 40	1	40	8	—	40	42	10	—	—	—
SSA1- 45	1	45	8	—	45	47	10	—	—	—
SSA1- 48	1	48	8	—	48	50	10	—	—	—
SSA1- 50	1	50	10	—	50	52	10	—	—	—
SSA1- 55	1	55	10	—	55	57	10	—	—	—
SSA1- 56	1	56	10	—	56	58	10	—	—	—
SSA1- 60	1	60	10	—	60	62	10	—	—	—
SSA1- 70	1	70	10	—	70	72	10	—	—	—
SSA1- 80	1	80	10	—	80	82	10	—	—	—
SSA1-100	1	100	10	—	100	102	10	—	—	—
SSA1-120	1	120	10	—	120	122	10	—	—	—

Module 1.5

SSA1.5- 20	1.5	20	10	—	30	33	15	—	—	—
SSA1.5- 24	1.5	24	10	—	36	39	15	—	—	—
SSA1.5- 25	1.5	25	10	—	37.5	40.5	15	—	—	—
SSA1.5- 28	1.5	28	10	—	42	45	15	—	—	—
SSA1.5- 30	1.5	30	10	—	45	48	15	—	—	—
SSA1.5- 32	1.5	32	10	—	48	51	15	—	—	—
SSA1.5- 35	1.5	35	10	—	52.5	55.5	15	—	—	—
SSA1.5- 36	1.5	36	10	—	54	57	15	—	—	—
SSA1.5- 40	1.5	40	15	—	60	63	15	—	—	—
SSA1.5- 45	1.5	45	15	—	67.5	70.5	15	—	—	—
SSA1.5- 48	1.5	48	15	—	72	75	15	—	—	—
SSA1.5- 50	1.5	50	15	—	75	78	15	—	—	—
SSA1.5- 55	1.5	55	15	—	82.5	85.5	15	—	—	—
SSA1.5- 56	1.5	56	15	—	84	87	15	—	—	—
SSA1.5- 60	1.5	60	15	—	90	93	15	—	—	—
SSA1.5- 70	1.5	70	15	—	105	108	15	—	—	—
SSA1.5- 80	1.5	80	15	—	120	123	15	—	—	—
SSA1.5-100	1.5	100	15	70	150	153	15	3	9	133

NOTE 1: Please design the maximum bore so that the tooth strength is less than the strength of remaining material.



Steel, Hubless Spur Gears

Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S5	5.747	0.3275	(0.586)	(0.0334)	0.08 ~ 0.18	0.02	SSA1- 20
S5	7.469	0.4903	(0.7616)	(0.05)	0.1 ~ 0.22	0.03	SSA1- 24
S5	7.908	0.5364	(0.8064)	(0.0547)	0.1 ~ 0.22	0.04	SSA1- 25
S5	9.241	0.6816	(0.9423)	(0.0695)	0.1 ~ 0.22	0.04	SSA1- 28
S5	10.14	0.7894	(1.034)	(0.0805)	0.1 ~ 0.22	0.05	SSA1- 30
S5	11.05	0.9042	(1.127)	(0.0922)	0.1 ~ 0.22	0.06	SSA1- 32
S5	12.42	1.092	(1.267)	(0.1114)	0.1 ~ 0.22	0.07	SSA1- 35
S5	12.89	1.16	(1.314)	(0.1183)	0.1 ~ 0.22	0.08	SSA1- 36
S5	14.74	1.449	(1.503)	(0.1478)	0.1 ~ 0.22	0.1	SSA1- 40
S5	17.08	1.857	(1.742)	(0.1894)	0.12 ~ 0.26	0.12	SSA1- 45
S5	18.5	2.128	(1.887)	(0.217)	0.12 ~ 0.26	0.14	SSA1- 48
S5	19.45	2.319	(1.983)	(0.2365)	0.12 ~ 0.26	0.15	SSA1- 50
S5	21.83	2.833	(2.226)	(0.2889)	0.12 ~ 0.26	0.18	SSA1- 55
S5	22.31	2.942	(2.275)	(0.3)	0.12 ~ 0.26	0.19	SSA1- 56
S5	24.22	3.4	(2.47)	(0.3467)	0.12 ~ 0.26	0.22	SSA1- 60
S5	29.05	4.695	(2.962)	(0.4788)	0.12 ~ 0.26	0.3	SSA1- 70
S5	33.9	6.226	(3.457)	(0.6349)	0.12 ~ 0.26	0.39	SSA1- 80
S5	43.66	9.973	(4.452)	(1.017)	0.16 ~ 0.32	0.61	SSA1-100
S5	53.47	14.66	(5.452)	(1.495)	0.16 ~ 0.32	0.88	SSA1-120

S5	19.4	1.154	(1.978)	(0.1177)	0.1 ~ 0.22	0.07	SSA1.5- 20
S5	25.21	1.732	(2.571)	(0.1766)	0.12 ~ 0.26	0.11	SSA1.5- 24
S5	26.69	1.897	(2.722)	(0.1934)	0.12 ~ 0.26	0.12	SSA1.5- 25
S5	31.18	2.409	(3.18)	(0.2457)	0.12 ~ 0.26	0.15	SSA1.5- 28
S5	34.22	2.787	(3.49)	(0.2842)	0.12 ~ 0.26	0.17	SSA1.5- 30
S5	37.28	3.192	(3.802)	(0.3255)	0.12 ~ 0.26	0.2	SSA1.5- 32
S5	41.92	3.854	(4.275)	(0.393)	0.12 ~ 0.26	0.24	SSA1.5- 35
S5	43.48	4.089	(4.434)	(0.417)	0.12 ~ 0.26	0.26	SSA1.5- 36
S5	49.75	5.1	(5.073)	(0.5201)	0.12 ~ 0.26	0.31	SSA1.5- 40
S5	57.66	6.527	(5.88)	(0.6656)	0.14 ~ 0.32	0.4	SSA1.5- 45
S5	62.44	7.473	(6.367)	(0.762)	0.14 ~ 0.32	0.46	SSA1.5- 48
S5	65.65	8.147	(6.694)	(0.8308)	0.14 ~ 0.32	0.5	SSA1.5- 50
S5	73.68	9.963	(7.513)	(1.016)	0.14 ~ 0.32	0.61	SSA1.5- 55
S5	75.29	10.36	(7.678)	(1.056)	0.14 ~ 0.32	0.63	SSA1.5- 56
S5	81.77	11.97	(8.338)	(1.221)	0.14 ~ 0.32	0.7	SSA1.5- 60
S5	98.04	16.57	(9.997)	(1.69)	0.14 ~ 0.32	1	SSA1.5- 70
S5	114.4	22	(11.67)	(2.243)	0.14 ~ 0.32	1.2	SSA1.5- 80
S6	147.4	35.46	(15.03)	(3.616)	0.18 ~ 0.38	1.6	SSA1.5-100

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

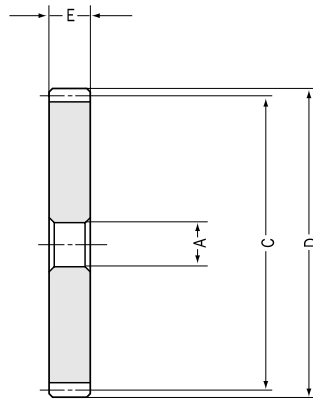
NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



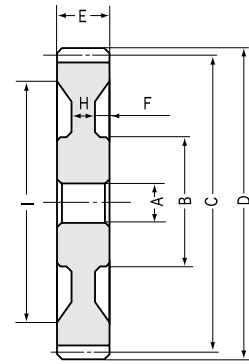
SSA Steel Hubless Spur Gears Modules 2~2.5

Spur Gears

A 6066



S5 Shape



S6 Shape

Module 2

Catalog No.	Module	No. of teeth	Bore NOTE 1	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	H	I
SSA2- 20	2	20	12	—	40	44	20	—	—	—
SSA2- 24	2	24	12	—	48	52	20	—	—	—
SSA2- 25	2	25	12	—	50	54	20	—	—	—
SSA2- 28	2	28	15	—	56	60	20	—	—	—
SSA2- 30	2	30	15	—	60	64	20	—	—	—
SSA2- 32	2	32	15	—	64	68	20	—	—	—
SSA2- 35	2	35	15	—	70	74	20	—	—	—
SSA2- 36	2	36	15	—	72	76	20	—	—	—
SSA2- 40	2	40	18	—	80	84	20	—	—	—
SSA2- 45	2	45	18	—	90	94	20	—	—	—
SSA2- 48	2	48	18	—	96	100	20	—	—	—
SSA2- 50	2	50	18	—	100	104	20	—	—	—
SSA2- 55	2	55	18	—	110	114	20	—	—	—
SSA2- 56	2	56	18	—	112	116	20	—	—	—
SSA2- 60	2	60	18	—	120	124	20	—	—	—
SSA2- 70	2	70	18	—	140	144	20	—	—	—
SSA2- 80	2	80	18	70	160	164	20	4	12	136
SSA2-100	2	100	18	90	200	204	20	4	12	176

Module 2.5

SSA2.5-20	2.5	20	15	—	50	55	25	—	—	—
SSA2.5-24	2.5	24	15	—	60	65	25	—	—	—
SSA2.5-25	2.5	25	15	—	62.5	67.5	25	—	—	—
SSA2.5-28	2.5	28	18	—	70	75	25	—	—	—
SSA2.5-30	2.5	30	18	—	75	80	25	—	—	—
SSA2.5-32	2.5	32	18	—	80	85	25	—	—	—
SSA2.5-35	2.5	35	18	—	87.5	92.5	25	—	—	—
SSA2.5-36	2.5	36	18	—	90	95	25	—	—	—
SSA2.5-40	2.5	40	22	—	100	105	25	—	—	—
SSA2.5-45	2.5	45	22	—	112.5	117.5	25	—	—	—
SSA2.5-48	2.5	48	22	—	120	125	25	—	—	—
SSA2.5-50	2.5	50	22	—	125	130	25	—	—	—
SSA2.5-55	2.5	55	22	—	137.5	142.5	25	—	—	—
SSA2.5-56	2.5	56	22	—	140	145	25	—	—	—
SSA2.5-60	2.5	60	22	70	150	155	25	5	15	121
SSA2.5-70	2.5	70	22	80	175	180	25	5	15	146
SSA2.5-80	2.5	80	22	90	200	205	25	5	15	171

NOTE 1: Please design the maximum bore so that the tooth strength is less than the strength of remaining material.



Specifications

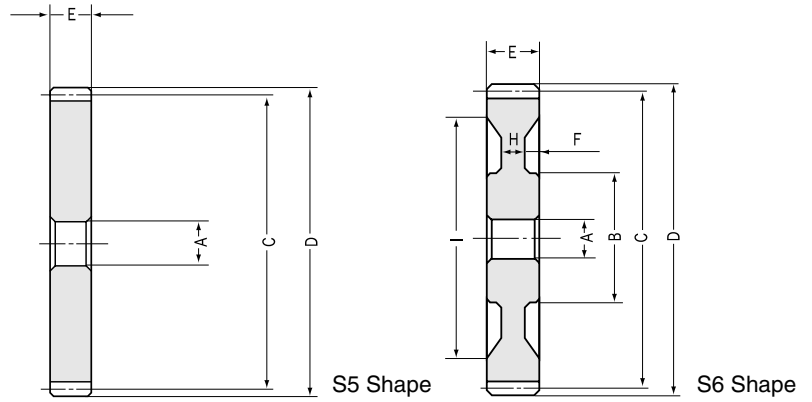
Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S5	45.97	2.827	(4.688)	(0.2883)	0.12 ~ 0.26	0.18	SSA2- 20
S5	59.75	4.238	(6.093)	(0.4322)	0.14 ~ 0.3	0.27	SSA2- 24
S5	63.26	4.638	(6.451)	(0.4729)	0.14 ~ 0.3	0.29	SSA2- 25
S5	73.92	5.885	(7.538)	(0.6001)	0.14 ~ 0.3	0.35	SSA2- 28
S5	81.12	6.801	(8.272)	(0.6935)	0.14 ~ 0.3	0.42	SSA2- 30
S5	88.39	7.784	(9.013)	(0.7938)	0.14 ~ 0.3	0.49	SSA2- 32
S5	99.34	9.39	(10.13)	(0.9575)	0.14 ~ 0.3	0.58	SSA2- 35
S5	103.1	9.963	(10.51)	(1.016)	0.14 ~ 0.3	0.6	SSA2- 36
S5	117.9	12.45	(12.02)	(1.27)	0.14 ~ 0.3	0.78	SSA2- 40
S5	136.7	15.97	(13.94)	(1.628)	0.18 ~ 0.36	0.96	SSA2- 45
S5	148	18.3	(15.09)	(1.866)	0.18 ~ 0.36	1.1	SSA2- 48
S5	155.6	19.94	(15.87)	(2.033)	0.18 ~ 0.36	1.2	SSA2- 50
S5	174.7	24.36	(17.81)	(2.484)	0.18 ~ 0.36	1.5	SSA2- 55
S5	178.5	25.3	(18.2)	(2.58)	0.18 ~ 0.36	1.6	SSA2- 56
S5	193.8	29.33	(19.76)	(2.991)	0.18 ~ 0.36	1.9	SSA2- 60
S5	232.4	40.81	(23.7)	(4.161)	0.18 ~ 0.36	2.6	SSA2- 70
S6	271.2	54.26	(27.65)	(5.533)	0.18 ~ 0.36	2.3	SSA2- 80
S6	291.1	72.74	(29.68)	(7.418)	0.2 ~ 0.44	3.5	SSA2-100

S5	89.79	5.656	(9.156)	(0.5768)	0.14 ~ 0.28	0.33	SSA2.5-20
S5	116.7	8.465	(11.9)	(0.8632)	0.16 ~ 0.34	0.52	SSA2.5-24
S5	123.6	9.259	(12.6)	(0.9442)	0.16 ~ 0.34	0.57	SSA2.5-25
S5	144.4	11.74	(14.72)	(1.197)	0.16 ~ 0.34	0.71	SSA2.5-28
S5	158.5	13.58	(16.16)	(1.385)	0.16 ~ 0.34	0.82	SSA2.5-30
S5	172.6	15.56	(17.6)	(1.587)	0.16 ~ 0.34	0.94	SSA2.5-32
S5	194.1	18.81	(19.79)	(1.918)	0.16 ~ 0.34	1.1	SSA2.5-35
S5	201.3	19.96	(20.53)	(2.035)	0.16 ~ 0.34	1.2	SSA2.5-36
S5	230.4	24.92	(23.49)	(2.541)	0.16 ~ 0.34	1.5	SSA2.5-40
S5	266.9	31.92	(27.22)	(3.255)	0.18 ~ 0.4	1.8	SSA2.5-45
S5	289.1	36.67	(29.48)	(3.739)	0.18 ~ 0.4	2.1	SSA2.5-48
S5	303.9	40.02	(30.99)	(4.081)	0.18 ~ 0.4	2.4	SSA2.5-50
S5	341.1	49.08	(34.78)	(5.005)	0.18 ~ 0.4	2.8	SSA2.5-55
S5	348.6	51	(35.55)	(5.201)	0.18 ~ 0.4	3	SSA2.5-56
S6	378.5	59.1	(38.6)	(6.027)	0.18 ~ 0.4	2.3	SSA2.5-60
S6	453.8	82.07	(46.28)	(8.369)	0.18 ~ 0.4	3.9	SSA2.5-70
S6	441.4	90.93	(45.01)	(9.272)	0.18 ~ 0.4	4.5	SSA2.5-80

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



Module 3

Catalog No.	Module	No. of teeth	Bore NOTE 1	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	H	I
SSA3-20	3	20	15	—	60	66	30	—	—	—
SSA3-24	3	24	15	—	72	78	30	—	—	—
SSA3-25	3	25	15	—	75	81	30	—	—	—
SSA3-28	3	28	20	—	84	90	30	—	—	—
SSA3-30	3	30	20	—	90	96	30	—	—	—
SSA3-32	3	32	20	—	96	102	30	—	—	—
SSA3-35	3	35	20	—	105	111	30	—	—	—
SSA3-36	3	36	20	—	108	114	30	—	—	—
SSA3-40	3	40	25	—	120	126	30	—	—	—
SSA3-45	3	45	25	—	135	141	30	—	—	—
SSA3-48	3	48	25	—	144	150	30	—	—	—
SSA3-50	3	50	25	70	150	156	30	6	18	116
SSA3-55	3	55	25	80	165	171	30	6	18	131
SSA3-56	3	56	25	80	168	174	30	6	18	134
SSA3-60	3	60	25	90	180	186	30	6	18	146
SSA3-70	3	70	25	90	210	216	30	6	18	176
SSA3-80	3	80	25	90	240	246	30	6	18	205

Module 4

SSA4-20	4	20	20	—	80	88	40	—	—	—
SSA4-24	4	24	20	—	96	104	40	—	—	—
SSA4-25	4	25	20	—	100	108	40	—	—	—
SSA4-28	4	28	25	—	112	120	40	—	—	—
SSA4-30	4	30	25	—	120	128	40	—	—	—
SSA4-32	4	32	25	—	128	136	40	—	—	—
SSA4-35	4	35	25	—	140	148	40	—	—	—
SSA4-36	4	36	25	—	144	152	40	—	—	—
SSA4-40	4	40	30	80	160	168	40	7	26	118
SSA4-45	4	45	30	100	180	188	40	7	26	138
SSA4-48	4	48	30	100	192	200	40	7	26	150
SSA4-50	4	50	30	100	200	208	40	7	26	158
SSA4-55	4	55	30	110	220	228	40	7	26	178
SSA4-56	4	56	30	110	224	232	40	7	26	182
SSA4-60	4	60	30	120	240	248	40	7	26	198

Module 5

SSA5-20	5	20	22	—	100	110	50	—	—	—
SSA5-24	5	24	22	—	120	130	50	—	—	—
SSA5-25	5	25	22	—	125	135	50	—	—	—
SSA5-28	5	28	25	—	140	150	50	—	—	—
SSA5-30	5	30	25	—	150	160	50	—	—	—
SSA5-32	5	32	25	90	160	170	50	7	36	120
SSA5-35	5	35	25	90	175	185	50	7	36	130
SSA5-36	5	36	25	90	180	190	50	7	36	140
SSA5-40	5	40	30	100	200	210	50	7	36	160
SSA5-45	5	45	30	120	225	235	50	7	36	185
SSA5-48	5	48	30	120	240	250	50	7	36	200
SSA5-50	5	50	30	130	250	260	50	7	36	210

NOTE 1: Please design the maximum bore so that the tooth strength is less than the strength of remaining material.



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S5	155.1	9.954	(15.82)	(1.015)	0.14 ~ 0.32	0.62	SSA3-20
S5	201.6	14.89	(20.56)	(1.518)	0.18 ~ 0.38	0.78	SSA3-24
S5	213.5	16.3	(21.77)	(1.662)	0.18 ~ 0.38	1	SSA3-25
S5	249.5	20.7	(25.44)	(2.111)	0.18 ~ 0.38	1.2	SSA3-28
S5	273.8	23.95	(27.92)	(2.442)	0.18 ~ 0.38	1.4	SSA3-30
S6	298.3	27.44	(30.42)	(2.798)	0.18 ~ 0.38	1.6	SSA3-32
S6	335.4	33.14	(34.2)	(3.379)	0.18 ~ 0.38	2	SSA3-35
S6	347.8	35.16	(35.47)	(3.585)	0.18 ~ 0.38	2.1	SSA3-36
S5	397.9	43.99	(40.58)	(4.486)	0.18 ~ 0.38	2.5	SSA3-40
S5	461.3	56.63	(47.04)	(5.775)	0.2 ~ 0.44	3.2	SSA3-45
S5	499.5	65.01	(50.94)	(6.629)	0.2 ~ 0.44	3.7	SSA3-48
S6	525.1	70.92	(53.55)	(7.232)	0.2 ~ 0.44	3.3	SSA3-50
S6	589.5	86.9	(60.11)	(8.861)	0.2 ~ 0.44	4.1	SSA3-55
S6	602.3	90.3	(61.42)	(9.208)	0.2 ~ 0.44	4.2	SSA3-56
S6	654.1	104.5	(66.7)	(10.66)	0.2 ~ 0.44	5.1	SSA3-60
S6	653.5	121.2	(66.64)	(12.36)	0.2 ~ 0.44	6.2	SSA3-70
S6	762.7	161.6	(77.77)	(16.48)	0.2 ~ 0.44	8.5	SSA3-80

S5	367.7	24.3	(37.5)	(2.478)	0.18 ~ 0.38	1.5	SSA4-20
S5	478.1	36.44	(48.75)	(3.716)	0.2 ~ 0.44	2.2	SSA4-24
S5	506.1	39.87	(51.61)	(4.066)	0.2 ~ 0.44	2.4	SSA4-25
S5	591.4	50.6	(60.31)	(5.16)	0.2 ~ 0.44	2.9	SSA4-28
S5	649	58.66	(66.18)	(5.982)	0.2 ~ 0.44	3.2	SSA4-30
S5	707.1	67.37	(72.1)	(6.87)	0.2 ~ 0.44	4.4	SSA4-32
S5	795	81.61	(81.07)	(8.322)	0.2 ~ 0.44	5.3	SSA4-35
S5	824.5	86.67	(84.08)	(8.838)	0.2 ~ 0.44	5.6	SSA4-36
S6	943.4	108.6	(96.2)	(11.07)	0.2 ~ 0.44	5.5	SSA4-40
S6	1093	139.4	(111.5)	(14.22)	0.24 ~ 0.52	7.3	SSA4-45
S6	986.5	133.3	(100.6)	(13.59)	0.24 ~ 0.52	8.2	SSA4-48
S6	1038	145.5	(105.8)	(14.84)	0.24 ~ 0.52	8.8	SSA4-50
S6	1164	178.7	(118.7)	(18.22)	0.24 ~ 0.52	10	SSA4-55
S6	1190	185.7	(121.3)	(18.94)	0.24 ~ 0.52	11	SSA4-56
S6	1293	215.4	(131.8)	(21.97)	0.24 ~ 0.52	13	SSA4-60

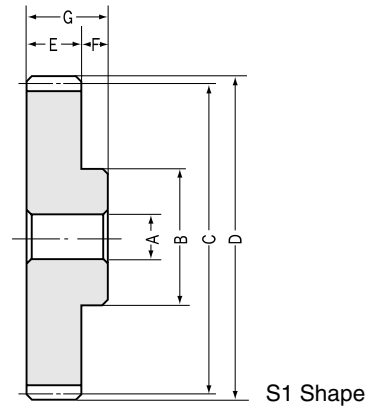
S5	718.3	48.63	(73.25)	(4.959)	0.2 ~ 0.44	2.9	SSA5-20
S5	933.7	73.02	(95.21)	(7.446)	0.24 ~ 0.5	4.2	SSA5-24
S5	988.5	80.04	(100.8)	(8.162)	0.24 ~ 0.5	4.6	SSA5-25
S5	1155	102	(117.8)	(10.4)	0.24 ~ 0.5	5.8	SSA5-28
S5	1268	118.2	(129.3)	(12.05)	0.24 ~ 0.5	6.6	SSA5-30
S6	1381	135.6	(140.8)	(13.83)	0.24 ~ 0.5	8.5	SSA5-32
S6	1552	164.2	(158.3)	(16.74)	0.24 ~ 0.5	10.2	SSA5-35
S6	1610	174.3	(164.2)	(17.77)	0.24 ~ 0.5	10.8	SSA5-36
S6	1536	181.8	(156.6)	(18.54)	0.24 ~ 0.5	11	SSA5-40
S6	1780	234.4	(181.5)	(23.9)	0.28 ~ 0.58	14	SSA5-45
S6	1927	269.3	(196.5)	(27.46)	0.28 ~ 0.58	15	SSA5-48
S6	2026	294	(206.6)	(29.98)	0.28 ~ 0.58	16	SSA5-50

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SSY Steel Thin Face Spur Gears Modules 0.8~1



Module 0.8

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I
SSY0.8-20	0.8	20	5	13.5	16	17.6	4	8	12	—	—
SSY0.8-25	0.8	25	5	17	20	21.6	4	8	12	—	—
SSY0.8-30	0.8	30	5	20	24	25.6	4	8	12	—	—
SSY0.8-40	0.8	40	5	25	32	33.6	4	8	12	—	—
SSY0.8-50	0.8	50	5	25	40	41.6	4	8	12	—	—

Module 1

SSY1- 12	1	12	5	9	12	14	6	8	14	—	—
SSY1- 14	1	14	5	11	14	16	6	8	14	—	—
SSY1- 15	1	15	6	12	15	17	6	8	14	—	—
SSY1- 16	1	16	6	13	16	18	6	8	14	—	—
SSY1- 18	1	18	6	14	18	20	6	8	14	—	—
SSY1- 20	1	20	6	16	20	22	6	8	14	—	—
SSY1- 24	1	24	6	16	24	26	6	8	14	—	—
SSY1- 25	1	25	6	16	25	27	6	8	14	—	—
SSY1- 28	1	28	6	16	28	30	6	8	14	—	—
SSY1- 30	1	30	6	25	30	32	6	8	14	—	—
SSY1- 32	1	32	6	25	32	34	6	8	14	—	—
SSY1- 35	1	35	6	25	35	37	6	8	14	—	—
SSY1- 36	1	36	6	25	36	38	6	8	14	—	—
SSY1- 40	1	40	8	28	40	42	6	8	14	—	—
SSY1- 45	1	45	8	28	45	47	6	8	14	—	—
SSY1- 48	1	48	8	28	48	50	6	8	14	—	—
SSY1- 50	1	50	8	28	50	52	6	8	14	—	—
SSY1- 55	1	55	8	28	55	57	6	8	14	—	—
SSY1- 56	1	56	8	28	56	58	6	8	14	—	—
SSY1- 60	1	60	8	35	60	62	6	8	14	—	—
SSY1- 64	1	64	8	35	64	66	6	8	14	—	—
SSY1- 65	1	65	8	35	65	67	6	8	14	—	—
SSY1- 70	1	70	8	35	70	72	6	8	14	—	—
SSY1- 72	1	72	8	35	72	74	6	8	14	—	—
SSY1- 75	1	75	8	35	75	77	6	8	14	—	—
SSY1- 80	1	80	10	40	80	82	6	8	14	—	—
SSY1- 85	1	85	10	40	85	87	6	8	14	—	—
SSY1- 90	1	90	10	40	90	92	6	8	14	—	—
SSY1- 95	1	95	10	40	95	97	6	8	14	—	—
SSY1- 96	1	96	10	40	96	98	6	8	14	—	—
SSY1-100	1	100	10	50	100	102	6	8	14	—	—
SSY1-110	1	110	10	50	110	112	6	8	14	—	—
SSY1-120	1	120	10	50	120	122	6	8	14	—	—

CAUTION: The gears with wider face widths such as SS and SSA series can be used as the mating gears to these.

NOTE 1: Due to the thin face width, if you wish to perform secondary operations on these gears, please use care to avoid side run out and deformation. If you heat treat them, there is the possibility of warping these gears.



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	1.471	0.085	(0.15)	(0.0087)	0.06 ~ 0.16	0.013	SSYO.8-20
S1	2.025	0.134	(0.207)	(0.0137)	0.1 ~ 0.2	0.022	SSYO.8-25
S1	2.596	0.197	(0.265)	(0.0201)	0.1 ~ 0.2	0.032	SSYO.8-30
S1	3.774	0.362	(0.385)	(0.0369)	0.1 ~ 0.2	0.054	SSYO.8-40
S1	4.98	0.58	(0.508)	(0.0591)	0.12 ~ 0.24	0.068	SSYO.8-50

S1	1.527	0.0686	(0.1557)	(0.007)	0.08 ~ 0.18	0.01	SSY1- 12
S1	1.982	0.0961	(0.2021)	(0.0098)	0.08 ~ 0.18	0.01	SSY1- 14
S1	2.216	0.1118	(0.226)	(0.0114)	0.08 ~ 0.18	0.01	SSY1- 15
S1	2.457	0.1275	(0.2505)	(0.013)	0.08 ~ 0.18	0.02	SSY1- 16
S1	2.946	0.1618	(0.3004)	(0.0165)	0.08 ~ 0.18	0.02	SSY1- 18
S1	3.448	0.201	(0.3516)	(0.0205)	0.08 ~ 0.18	0.02	SSY1- 20
S1	4.482	0.2952	(0.457)	(0.0301)	0.1 ~ 0.22	0.03	SSY1- 24
S1	4.744	0.3217	(0.4838)	(0.0328)	0.1 ~ 0.22	0.03	SSY1- 25
S1	5.545	0.4089	(0.5654)	(0.0417)	0.1 ~ 0.22	0.04	SSY1- 28
S1	6.084	0.4737	(0.6204)	(0.0483)	0.1 ~ 0.22	0.06	SSY1- 30
S1	6.629	0.5423	(0.676)	(0.0553)	0.1 ~ 0.22	0.06	SSY1- 32
S1	7.453	0.6551	(0.76)	(0.0668)	0.1 ~ 0.22	0.07	SSY1- 35
S1	7.73	0.6963	(0.7882)	(0.071)	0.1 ~ 0.22	0.08	SSY1- 36
S1	8.844	0.8698	(0.9018)	(0.0887)	0.1 ~ 0.22	0.09	SSY1- 40
S1	10.25	1.115	(1.045)	(0.1137)	0.12 ~ 0.26	0.11	SSY1- 45
S1	11.1	1.277	(1.132)	(0.1302)	0.12 ~ 0.26	0.12	SSY1- 48
S1	11.67	1.392	(1.19)	(0.1419)	0.12 ~ 0.26	0.13	SSY1- 50
S1	13.1	1.699	(1.336)	(0.1733)	0.12 ~ 0.26	0.14	SSY1- 55
S1	13.39	1.765	(1.365)	(0.18)	0.12 ~ 0.26	0.15	SSY1- 56
S1	14.53	2.04	(1.482)	(0.208)	0.12 ~ 0.26	0.19	SSY1- 60
S1	15.69	2.336	(1.6)	(0.2382)	0.12 ~ 0.26	0.21	SSY1- 64
S1	15.97	2.412	(1.629)	(0.246)	0.12 ~ 0.26	0.21	SSY1- 65
S1	17.43	2.817	(1.777)	(0.2873)	0.12 ~ 0.26	0.24	SSY1- 70
S1	18	2.989	(1.836)	(0.3048)	0.12 ~ 0.26	0.25	SSY1- 72
S1	18.88	3.259	(1.925)	(0.3323)	0.12 ~ 0.26	0.26	SSY1- 75
S1	20.34	3.735	(2.074)	(0.3809)	0.12 ~ 0.26	0.31	SSY1- 80
S1	21.8	4.246	(2.223)	(0.433)	0.16 ~ 0.32	0.34	SSY1- 85
S1	23.26	4.79	(2.372)	(0.4885)	0.16 ~ 0.32	0.37	SSY1- 90
S1	24.72	5.369	(2.521)	(0.5475)	0.16 ~ 0.32	0.4	SSY1- 95
S1	25.02	5.489	(2.551)	(0.5597)	0.16 ~ 0.32	0.41	SSY1- 96
S1	26.19	5.981	(2.671)	(0.6099)	0.16 ~ 0.32	0.48	SSY1-100
S1	29.14	7.309	(2.971)	(0.7453)	0.16 ~ 0.32	0.56	SSY1-110
S1	32.08	8.799	(3.271)	(0.8973)	0.16 ~ 0.32	0.65	SSY1-120

*The blue catalog numbers indicate the new products.

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

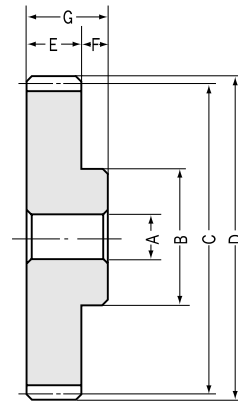
NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SSY Steel Thin Face Spur Gears Module 1.25

Module 1.25

Spur Gears



S1 Shape

Module 1.25

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width <small>NOTE 1</small>	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SSY1.25- 12	1.25	12	5	11	15	17.5	8	10	18	—	—
SSY1.25- 14	1.25	14	5	13	17.5	20	8	10	18	—	—
SSY1.25- 15	1.25	15	6	15	18.75	21.25	8	10	18	—	—
SSY1.25- 16	1.25	16	6	16	20	22.5	8	10	18	—	—
SSY1.25- 18	1.25	18	6	18	22.5	25	8	10	18	—	—
SSY1.25- 20	1.25	20	8	20	25	27.5	8	10	18	—	—
SSY1.25- 24	1.25	24	8	24	30	32.5	8	10	18	—	—
SSY1.25- 25	1.25	25	8	24	31.25	33.75	8	10	18	—	—
SSY1.25- 28	1.25	28	8	28	35	37.5	8	10	18	—	—
SSY1.25- 30	1.25	30	10	30	37.5	40	8	10	18	—	—
SSY1.25- 32	1.25	32	10	30	40	42.5	8	10	18	—	—
SSY1.25- 35	1.25	35	10	36	43.75	46.25	8	10	18	—	—
SSY1.25- 36	1.25	36	10	36	45	47.5	8	10	18	—	—
SSY1.25- 40	1.25	40	10	40	50	52.5	8	10	18	—	—
SSY1.25- 45	1.25	45	10	40	56.25	58.75	8	10	18	—	—
SSY1.25- 48	1.25	48	10	40	60	62.5	8	10	18	—	—
SSY1.25- 50	1.25	50	12	45	62.5	65	8	10	18	—	—
SSY1.25- 55	1.25	55	12	45	68.75	71.25	8	10	18	—	—
SSY1.25- 56	1.25	56	12	45	70	72.5	8	10	18	—	—
SSY1.25- 60	1.25	60	12	50	75	77.5	8	10	18	—	—
SSY1.25- 64	1.25	64	12	50	80	82.5	8	10	18	—	—
SSY1.25- 65	1.25	65	12	50	81.25	83.75	8	10	18	—	—
SSY1.25- 70	1.25	70	15	55	87.5	90	8	10	18	—	—
SSY1.25- 72	1.25	72	15	55	90	92.5	8	10	18	—	—
SSY1.25- 75	1.25	75	15	55	93.75	96.25	8	10	18	—	—
SSY1.25- 80	1.25	80	15	60	100	102.5	8	10	18	—	—
SSY1.25- 85	1.25	85	15	60	106.25	108.75	8	10	18	—	—
SSY1.25- 90	1.25	90	15	65	112.5	115	8	10	18	—	—
SSY1.25- 95	1.25	95	15	65	118.75	121.25	8	10	18	—	—
SSY1.25- 96	1.25	96	15	65	120	122.5	8	10	18	—	—
SSY1.25-100	1.25	100	15	65	125	127.5	8	10	18	—	—

NOTE 1: Due to the thin face width, if you wish to perform secondary operations on these gears, please use care to avoid side run out and deformation. If you heat treat them, there is the possibility of warping these gears.



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

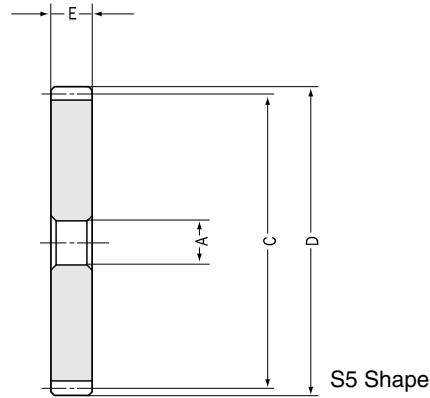
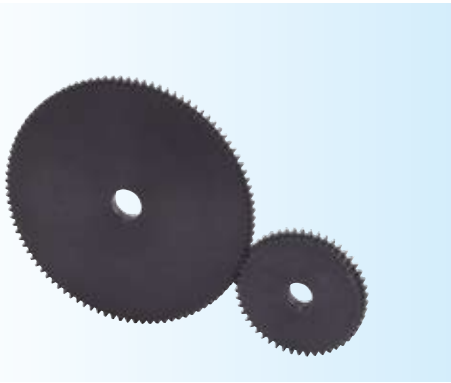
Shape	Allowable torque (N-m) <small>NOTE 2</small>		Allowable torque (kgf-m)		Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	3.181	0.1442	(0.3244)	(0.0147)	0.08 ~ 0.18	0.02	SSY1.25- 12
S1	4.129	0.201	(0.421)	(0.0205)	0.08 ~ 0.18	0.02	SSY1.25- 14
S1	4.618	0.2334	(0.4709)	(0.0238)	0.08 ~ 0.18	0.03	SSY1.25- 15
S1	5.117	0.2687	(0.5218)	(0.0274)	0.08 ~ 0.18	0.03	SSY1.25- 16
S1	6.137	0.3432	(0.6258)	(0.035)	0.08 ~ 0.18	0.04	SSY1.25- 18
S1	7.183	0.4295	(0.7325)	(0.0438)	0.08 ~ 0.18	0.05	SSY1.25- 20
S1	9.337	0.6315	(0.9521)	(0.0644)	0.1 ~ 0.22	0.07	SSY1.25- 24
S1	9.885	0.6884	(1.008)	(0.0702)	0.1 ~ 0.22	0.08	SSY1.25- 25
S1	11.55	0.8738	(1.178)	(0.0891)	0.1 ~ 0.22	0.1	SSY1.25- 28
S1	12.68	1.011	(1.293)	(0.1031)	0.1 ~ 0.22	0.11	SSY1.25- 30
S1	13.81	1.159	(1.408)	(0.1182)	0.1 ~ 0.22	0.12	SSY1.25- 32
S1	15.52	1.4	(1.583)	(0.1428)	0.1 ~ 0.22	0.16	SSY1.25- 35
S1	16.1	1.487	(1.642)	(0.1516)	0.1 ~ 0.22	0.17	SSY1.25- 36
S1	18.43	1.855	(1.879)	(0.1892)	0.1 ~ 0.22	0.21	SSY1.25- 40
S1	21.36	2.376	(2.178)	(0.2423)	0.12 ~ 0.26	0.24	SSY1.25- 45
S1	23.12	2.72	(2.358)	(0.2774)	0.12 ~ 0.26	0.26	SSY1.25- 48
S1	24.31	2.964	(2.479)	(0.3022)	0.12 ~ 0.26	0.3	SSY1.25- 50
S1	27.29	3.617	(2.783)	(0.3688)	0.12 ~ 0.26	0.34	SSY1.25- 55
S1	27.89	3.756	(2.844)	(0.383)	0.12 ~ 0.26	0.35	SSY1.25- 56
S1	30.28	4.345	(3.088)	(0.4431)	0.12 ~ 0.26	0.42	SSY1.25- 60
S1	32.69	4.981	(3.333)	(0.5079)	0.12 ~ 0.26	0.45	SSY1.25- 64
S1	33.29	5.146	(3.3395)	(0.5248)	0.12 ~ 0.26	0.46	SSY1.25- 65
S1	36.3	6.018	(3.702)	(0.6137)	0.12 ~ 0.26	0.54	SSY1.25- 70
S1	37.52	6.387	(3.826)	(0.6513)	0.12 ~ 0.26	0.56	SSY1.25- 72
S1	39.33	6.962	(4.011)	(0.7099)	0.12 ~ 0.26	0.59	SSY1.25- 75
S1	42.37	7.975	(4.321)	(0.8132)	0.12 ~ 0.26	0.69	SSY1.25- 80
S1	45.41	9.059	(4.631)	(0.9238)	0.16 ~ 0.32	0.75	SSY1.25- 85
S1	48.46	10.22	(4.942)	(1.042)	0.16 ~ 0.32	0.86	SSY1.25- 90
S1	51.51	11.47	(5.253)	(1.17)	0.16 ~ 0.32	0.93	SSY1.25- 95
S1	52.12	11.73	(5.315)	(1.196)	0.16 ~ 0.32	0.94	SSY1.25- 96
S1	54.57	12.81	(5.565)	(1.306)	0.16 ~ 0.32	1	SSY1.25-100

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions.
Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SSAY Steel, Hubless, Thin Face Spur Gears Module 1 ~ 1.25



Module 1

Catalog No.	Module m	No. of teeth z	Bore AH7	Pitch dia. C	Outside dia. D	Face width NOTE 1 E	Shape	Allowable torque (N-m) NOTE 2		Allowable torque (kgf-m)	
								Bending strength	Surface durability	Bending strength	Surface durability
SSAY1- 20	1	20	6	20	22	6	S5	3.448	0.201	(0.3516)	(0.0205)
SSAY1- 24	1	24	6	24	26	6	S5	4.482	0.2952	(0.457)	(0.0301)
SSAY1- 25	1	25	6	25	27	6	S5	4.744	0.3217	(0.4838)	(0.0328)
SSAY1- 28	1	28	6	28	30	6	S5	5.545	0.4089	(0.5654)	(0.0417)
SSAY1- 30	1	30	6	30	32	6	S5	6.084	0.4737	(0.6204)	(0.0483)
SSAY1- 32	1	32	6	32	34	6	S5	6.629	0.5423	(0.676)	(0.0553)
SSAY1- 35	1	35	6	35	37	6	S5	7.453	0.6551	(0.76)	(0.0668)
SSAY1- 36	1	36	6	36	38	6	S5	7.73	0.6963	(0.7882)	(0.071)
SSAY1- 40	1	40	6	40	42	6	S5	8.844	0.8698	(0.9018)	(0.0887)
SSAY1- 45	1	45	6	45	47	6	S5	10.25	1.115	(1.045)	(0.1137)
SSAY1- 48	1	48	6	48	50	6	S5	11.1	1.277	(1.132)	(0.1302)
SSAY1- 50	1	50	8	50	52	6	S5	11.67	1.392	(1.19)	(0.1419)
SSAY1- 55	1	55	8	55	57	6	S5	13.1	1.699	(1.336)	(0.1733)
SSAY1- 56	1	56	8	56	58	6	S5	13.39	1.765	(1.365)	(0.18)
SSAY1- 60	1	60	8	60	62	6	S5	14.53	2.04	(1.482)	(0.208)
SSAY1- 70	1	70	8	70	72	6	S5	17.43	2.817	(1.777)	(0.2873)
SSAY1- 80	1	80	10	80	82	6	S5	20.34	3.735	(2.074)	(0.3809)
SSAY1-100	1	100	10	100	102	6	S5	26.19	5.981	(2.671)	(0.6099)

Module 1.25

SSAY1.25- 20	1.25	20	8	25	27.5	8	S5	7.183	0.4295	(0.7325)	(0.0438)
SSAY1.25- 24	1.25	24	8	30	32.5	8	S5	9.337	0.6315	(0.9521)	(0.0644)
SSAY1.25- 25	1.25	25	8	31.25	33.75	8	S5	9.885	0.6884	(1.008)	(0.0702)
SSAY1.25- 28	1.25	28	8	35	37.5	8	S5	11.55	0.8738	(1.178)	(0.0891)
SSAY1.25- 30	1.25	30	10	37.5	40	8	S5	12.68	1.011	(1.293)	(0.1031)
SSAY1.25- 32	1.25	32	10	40	42.5	8	S5	13.81	1.159	(1.408)	(0.1182)
SSAY1.25- 35	1.25	35	10	43.75	46.25	8	S5	15.52	1.4	(1.583)	(0.1428)
SSAY1.25- 36	1.25	36	10	45	47.5	8	S5	16.1	1.487	(1.642)	(0.1516)
SSAY1.25- 40	1.25	40	10	50	52.5	8	S5	18.43	1.855	(1.879)	(0.1892)
SSAY1.25- 45	1.25	45	10	56.25	58.75	8	S5	21.36	2.376	(2.178)	(0.2423)
SSAY1.25- 48	1.25	48	10	60	62.5	8	S5	23.12	2.72	(2.358)	(0.2774)
SSAY1.25- 50	1.25	50	12	62.5	65	8	S5	24.31	2.964	(2.479)	(0.3022)
SSAY1.25- 55	1.25	55	12	68.75	71.25	8	S5	27.29	3.617	(2.783)	(0.3688)
SSAY1.25- 56	1.25	56	12	70	72.5	8	S5	27.89	3.756	(2.844)	(0.383)
SSAY1.25- 60	1.25	60	12	75	77.5	8	S5	30.28	4.345	(3.088)	(0.4431)
SSAY1.25- 70	1.25	70	15	87.5	90	8	S5	36.3	6.018	(3.702)	(0.6137)
SSAY1.25- 80	1.25	80	15	100	102.5	8	S5	42.37	7.975	(4.321)	(0.8132)
SSAY1.25-100	1.25	100	15	125	127.5	8	S5	54.57	12.81	(5.565)	(1.306)

NOTE 1: Due to the thin face width, if you wish to perform secondary operations on these gears, please use care to avoid side run out and deformation. If you heat treat them, there is the possibility of warping these gears.

NOTE 2: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.



Steel, Hubless, Thin Face Spur Gears

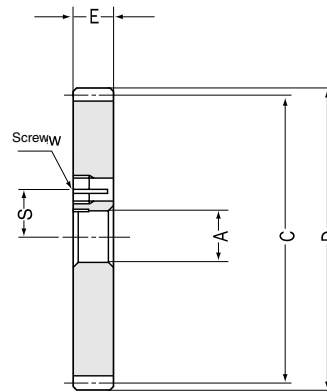
Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
0.08 ~ 0.18	0.01	SSAY1- 20
0.1 ~ 0.22	0.02	SSAY1- 24
0.1 ~ 0.22	0.02	SSAY1- 25
0.1 ~ 0.22	0.03	SSAY1- 28
0.1 ~ 0.22	0.03	SSAY1- 30
0.1 ~ 0.22	0.04	SSAY1- 32
0.1 ~ 0.22	0.04	SSAY1- 35
0.1 ~ 0.22	0.05	SSAY1- 36
0.1 ~ 0.22	0.06	SSAY1- 40
0.12 ~ 0.26	0.07	SSAY1- 45
0.12 ~ 0.26	0.08	SSAY1- 48
0.12 ~ 0.26	0.09	SSAY1- 50
0.12 ~ 0.26	0.11	SSAY1- 55
0.12 ~ 0.26	0.12	SSAY1- 56
0.12 ~ 0.26	0.13	SSAY1- 60
0.12 ~ 0.26	0.18	SSAY1- 70
0.12 ~ 0.26	0.23	SSAY1- 80
0.16 ~ 0.32	0.37	SSAY1-100

0.08 ~ 0.18	0.03	SSAY1.25- 20
0.1 ~ 0.22	0.04	SSAY1.25- 24
0.1 ~ 0.22	0.05	SSAY1.25- 25
0.1 ~ 0.22	0.06	SSAY1.25- 28
0.1 ~ 0.22	0.06	SSAY1.25- 30
0.1 ~ 0.22	0.07	SSAY1.25- 32
0.1 ~ 0.22	0.09	SSAY1.25- 35
0.1 ~ 0.22	0.1	SSAY1.25- 36
0.1 ~ 0.22	0.12	SSAY1.25- 40
0.12 ~ 0.26	0.15	SSAY1.25- 45
0.12 ~ 0.26	0.17	SSAY1.25- 48
0.12 ~ 0.26	0.19	SSAY1.25- 50
0.12 ~ 0.26	0.23	SSAY1.25- 55
0.12 ~ 0.26	0.23	SSAY1.25- 56
0.12 ~ 0.26	0.27	SSAY1.25- 60
0.12 ~ 0.26	0.37	SSAY1.25- 70
0.12 ~ 0.26	0.48	SSAY1.25- 80
0.16 ~ 0.32	0.76	SSAY1.25-100

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



S5 Shape

Module 0.8

Catalog No.	Module <i>m</i>	No. of teeth <i>z</i>	Bore AH7	Pitch dia. <i>C</i>	Outside dia. <i>D</i>	Face width <i>E</i>	Screw		Shape	Allowable torque (N·m) <small>NOTE 1</small>	
							Size	<i>S</i>		Bending strength	Surface durability
SSAY0.8-28/K6	0.8	28	6	22.4	24	6	M5	6.3	S5	3.549	0.255
SSAY0.8-30/K6 /K8	0.8	30	$\frac{6}{8}$	24	25.6	6	M5	$\frac{6.3}{7.3}$	S5	3.894	0.2952
SSAY0.8-32/K6 /K8	0.8	32	$\frac{6}{8}$	25.6	27.2	6	M5	$\frac{6.3}{7.3}$	S5	4.243	0.3383
SSAY0.8-35/K6 /K8	0.8	35	$\frac{6}{8}$	28	29.6	6	M5	$\frac{6.3}{7.3}$	S5	4.771	0.4089
SSAY0.8-36/K6 /K8	0.8	36	$\frac{6}{8}$	28.8	30.4	6	M5	$\frac{6.3}{7.3}$	S5	4.947	0.4344
SSAY0.8-40/K6 /K8 /K10	0.8	40	$\frac{6}{8}$ 10	32	33.6	6	M5	$\frac{6.3}{7.3}$ 8.3	S5	5.66	0.5423
SSAY0.8-45/K6 /K8 /K10	0.8	45	$\frac{6}{8}$ 10	36	37.6	6	M5	$\frac{6.3}{7.3}$ 8.3	S5	6.562	0.6963
SSAY0.8-48/K6 /K8 /K10	0.8	48	$\frac{6}{8}$ 10	38.4	40	6	M5	$\frac{6.3}{7.3}$ 8.3	S5	7.105	0.7973
SSAY0.8-50/K6 /K8 /K10	0.8	50	$\frac{6}{8}$ 10	40	41.6	6	M5	$\frac{6.3}{7.3}$ 8.3	S5	7.47	0.8698
SSAY0.8-55/K6 /K8 /K10	0.8	55	$\frac{6}{8}$ 10	44	45.6	6	M5	$\frac{6.3}{7.3}$ 8.3	S5	8.385	1.063
SSAY0.8-56/K6 /K8 /K10	0.8	56	$\frac{6}{8}$ 10	44.8	46.4	6	M5	$\frac{6.3}{7.3}$ 8.3	S5	8.568	1.104
SSAY0.8-60/K6 /K8 /K10	0.8	60	$\frac{6}{8}$ 10	48	49.6	6	M5	$\frac{6.3}{7.3}$ 8.3	S5	9.304	1.277

CAUTION: It is not possible to perform secondary operations on the bore or the area around the clamp.

NOTE 1: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 27 for more details.





Spur Gears with Built-In Clamps

Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Cannot modify bore or clamping area

*The gear grade listed is the value before clamping.

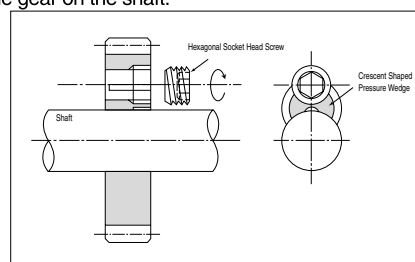
Reference slipping torque (N·m) NOTE 2		Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
Screw Fastening torque	Ref. slipping torque			
2.8	2.4	0.1 ~ 0.2	0.017	SSAY0.8-28/K6
2.8	2.4 3.7	0.1 ~ 0.2	0.02 0.019	SSAY0.8-30/K6 /K8
2.8	2.4 3.7	0.1 ~ 0.2	0.023 0.022	SSAY0.8-32/K6 /K8
2.8	2.4 3.7	0.1 ~ 0.2	0.028 0.027	SSAY0.8-35/K6 /K8
2.8	2.4 3.7	0.1 ~ 0.2	0.029 0.028	SSAY0.8-36/K6 /K8
2.8	2.4 3.7 3.9	0.1 ~ 0.2	0.036 0.035 0.034	SSAY0.8-40/K6 /K8 /K10
2.8	2.4 3.7 3.9	0.12 ~ 0.24	0.046 0.045 0.044	SSAY0.8-45/K6 /K8 /K10
2.8	2.4 3.7 3.9	0.12 ~ 0.24	0.053 0.052 0.051	SSAY0.8-48/K6 /K8 /K10
2.8	2.4 3.7 3.9	0.12 ~ 0.24	0.058 0.057 0.055	SSAY0.8-50/K6 /K8 /K10
2.8	2.4 3.7 3.9	0.12 ~ 0.24	0.07 0.069 0.068	SSAY0.8-55/K6 /K8 /K10
2.8	2.4 3.7 3.9	0.12 ~ 0.24	0.073 0.072 0.07	SSAY0.8-56/K6 /K8 /K10
2.8	2.4 3.7 3.9	0.12 ~ 0.24	0.084 0.083 0.081	SSAY0.8-60/K6 /K8 /K10

NOTE 2: The slipping torques shown was experimentally obtained by attaching the gears to shafts with g6 tolerance and 0.4a surface finish. The clamping area was wiped with a cloth to remove excess oil.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

How does it work?

K-Clamp uses a "crescent" shaped piece, optimum for the size of the shaft, as a pressure wedge to secure the gear on the shaft.

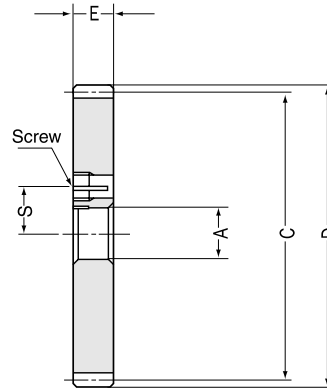


*The sizes and shapes of the K-clamps are standardized for various bore sizes.

Application Hints

1. The slipping torque is affected by the fits and clamping surface conditions. Remove as much lubricant as possible, and use the same size shaft as the bore with h7 or better tolerances.
2. K-clamp gears are suitable for relatively small gears in light loads with the bore size ranging between 6 and 12 mm. The gear will slip on the shaft when the actual load exceeds the slipping torque. The use of a key in addition to the K-clamp is recommended for heavier loads or large bore sizes. This modification must be done at the KHK factory.





S5 Shape

Module 1

Catalog No.	Module <i>m</i>	No. of teeth <i>z</i>	Bore AH7	Pitch dia. <i>C</i>	Outside dia. <i>D</i>	Face width <i>E</i>	Screw		Shape	Allowable torque (N·m) <small>NOTE 1</small>	
							Size	<i>S</i>		Bending strength	Surface durability
SSAY1-24/K6	1	24	6	24	26	6	M5	6.3	S5	4.482	0.2952
SSAY1-25/K6 /K8	1	25	6 8	25	27	6	M5	6.3 7.3	S5	4.744	0.3217
SSAY1-28/K6 /K8 /K10	1	28	6 8 10	28	30	6	M5	6.3 7.3 8.3	S5	5.545	0.4089
SSAY1-30/K6 /K8 /K10	1	30	6 8 10	30	32	6	M5	6.3 7.3 8.3	S5	6.084	0.4737
SSAY1-32/K6 /K8 /K10	1	32	6 8 10	32	34	6	M5	6.3 7.3 8.3	S5	6.629	0.5423
SSAY1-35/K6 /K8 /K10	1	35	6 8 10	35	37	6	M5	6.3 7.3 8.3	S5	7.453	0.6551
SSAY1-36/K6 /K8 /K10	1	36	6 8 10	36	38	6	M5	6.3 7.3 8.3	S5	7.73	0.6963
SSAY1-40/K6 /K8 /K10	1	40	6 8 10	40	42	6	M5	6.3 7.3 8.3	S5	8.844	0.8698
SSAY1-45/K6 /K8 /K10	1	45	6 8 10	45	47	6	M5	6.3 7.3 8.3	S5	10.25	1.115
SSAY1-48/K6 /K8 /K10	1	48	6 8 10	48	50	6	M5	6.3 7.3 8.3	S5	11.1	1.277
SSAY1-50/K8 /K10 /K12	1	50	8 10 12	50	52	6	M5 M5 M6	7.3 8.3 9.9	S5	11.67	1.392
SSAY1-55/K8 /K10 /K12	1	55	8 10 12	55	57	6	M5 M5 M6	7.3 8.3 9.9	S5	13.1	1.699
SSAY1-56/K8 /K10 /K12	1	56	8 10 12	56	58	6	M5 M5 M6	7.3 8.3 9.9	S5	13.39	1.765
SSAY1-60/K8 /K10 /K12	1	60	8 10 12	60	62	6	M5 M5 M6	7.3 8.3 9.9	S5	14.53	2.04

CAUTION: It is not possible to perform secondary operations on the bore or the area around the clamp.

NOTE 1: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 27 for more details.



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 194HB
Gear teeth	Standard full depth	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Material	S45C	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Cannot modify bore or clamping area

*The gear grade listed is the value before clamping.

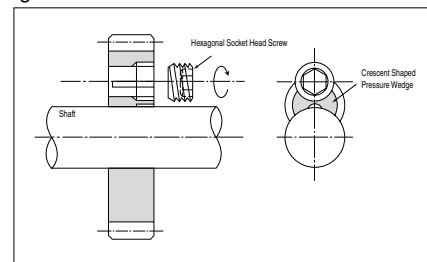
Reference slipping torque(N·m) NOTE 2		Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
Screw Fastening torque	Ref. slipping torque			
2.8	2.4	0.1 ~ 0.22	0.02	SSAY1-24/K6
2.8	2.4	0.1 ~ 0.22	0.022	SSAY1-25/K6
2.8	3.7		0.021	
2.8	2.4	0.1 ~ 0.22	0.028	SSAY1-28/K6
2.8	3.7		0.027	
2.8	3.9		0.025	
2.8	3.9		0.025	
2.8	2.4	0.1 ~ 0.22	0.032	SSAY1-30/K6
2.8	3.7		0.031	
2.8	3.9		0.029	
2.8	3.9		0.029	
2.8	2.4	0.1 ~ 0.22	0.036	SSAY1-32/K6
2.8	3.7		0.035	
2.8	3.9		0.034	
2.8	3.9		0.034	
2.8	2.4	0.1 ~ 0.22	0.044	SSAY1-35/K6
2.8	3.7		0.043	
2.8	3.9		0.041	
2.8	3.9		0.041	
2.8	2.4	0.1 ~ 0.22	0.046	SSAY1-36/K6
2.8	3.7		0.045	
2.8	3.9		0.044	
2.8	3.9		0.044	
2.8	2.4	0.1 ~ 0.22	0.058	SSAY1-40/K6
2.8	3.7		0.057	
2.8	3.9		0.055	
2.8	3.9		0.055	
2.8	2.4	0.12 ~ 0.26	0.073	SSAY1-45/K6
2.8	3.7		0.072	
2.8	3.9		0.071	
2.8	3.9		0.071	
2.8	2.4	0.12 ~ 0.26	0.084	SSAY1-48/K6
2.8	3.7		0.083	
2.8	3.9		0.081	
2.8	3.9		0.081	
2.8	3.7	0.12 ~ 0.26	0.09	SSAY1-50/K8
2.8	3.9		0.089	
4	6.6		0.087	
4	6.6		0.087	
2.8	3.7	0.12 ~ 0.26	0.109	SSAY1-55/K8
2.8	3.9		0.108	
4	6.6		0.106	
4	6.6		0.106	
2.8	3.7	0.12 ~ 0.26	0.113	SSAY1-56/K8
2.8	3.9		0.112	
4	6.6		0.11	
4	6.6		0.11	
2.8	3.7	0.12 ~ 0.26	0.131	SSAY1-60/K8
2.8	3.9		0.129	
4	6.6		0.127	
4	6.6		0.127	

NOTE 2: The slipping torques shown was experimentally obtained by attaching the gears to shafts with g6 tolerance and 0.4a surface finish. The clamping area was wiped with a cloth to remove excess oil.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

How does it work?

K-Clamp uses a “crescent” shaped piece, optimum for the size of the shaft, as a pressure wedge to secure the gear on the shaft.



*The sizes and shapes of the K-clamps are standardized for various bore sizes.

Application Hints

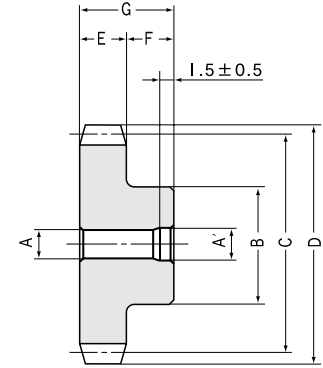
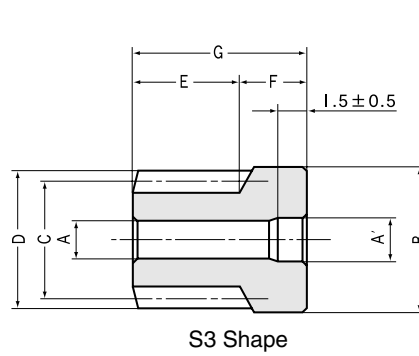
1. The slipping torque is affected by the fits and clamping surface conditions. Remove as much lubricant as possible, and use the same size shaft as the bore with h7 or better tolerances.
2. K-clamp gears are suitable for relatively small gears in light loads with the bore size ranging between 6 and 12 mm. The gear will slip on the shaft when the actual load exceeds the slipping torque. The use of a key in addition to the K-clamp is recommended for heavier loads or large bore sizes. This modification must be done at the KHK factory.





LS Sintered Metal Spur Gears Modules 0.5~0.8

Spur Gears



S1 Shape

Module 0.5

Catalog No.	Module	No. of teeth	Bore1 <small>NOTE 1</small>	Bore2	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness
	<i>m</i>	<i>z</i>	A <small>-0.005 -0.020</small>	A' ± 0.1	B	C	D	E	F	G	H
LS0.5-12	0.5	12	2	2.1	7.4	6	7	4	3	7	—
LS0.5-16	0.5	16	2	2.1	9.4	8	9	4	3	7	—
LS0.5-20	0.5	20	3	3.1	11.4	10	11	4	4	8	—
LS0.5-25	0.5	25	3	3.1	8.5	12.5	13.5	3	4	7	—
LS0.5-30	0.5	30	3	3.1	9	15	16	3	4	7	—
LS0.5-40	0.5	40	3	3.1	9	20	21	3	4	7	1.5
LS0.5-50	0.5	50	4	4.1	12	25	26	3	5	8	1.5
LS0.5-60	0.5	60	4	4.1	12	30	31	3	5	8	1.5
LS0.5-70	0.5	70	4	4.1	12	35	36	3	5	8	1.5
LS0.5-80	0.5	80	4	4.1	12	40	41	3	5	8	1.5

Module 0.8

LS0.8-12	0.8	12	3	3.1	11.6	9.6	11.2	5	4	9	—
LS0.8-16	0.8	16	3	3.1	8	12.8	14.4	4	4	8	—
LS0.8-20	0.8	20	3	3.1	9	16	17.6	4	4	8	—
LS0.8-25	0.8	25	3	3.1	9	20	21.6	4	4	8	—
LS0.8-30	0.8	30	4	4.1	12	24	25.6	4	5	9	—
LS0.8-40	0.8	40	4	4.1	12	32	33.6	4	5	9	2
LS0.8-50	0.8	50	4	4.1	12	40	41.6	4	5	9	2
LS0.8-60	0.8	60	4	4.1	12	48	49.6	4	5	9	2
LS0.8-70	0.8	70	5	5.1	15	56	57.6	4	6	10	2
LS0.8-80	0.8	80	5	5.1	15	64	65.6	4	6	10	2

CAUTION: Although the sintering process allows for the inclusion of oil to maintain lubricity, these gears have not been oil impregnated.

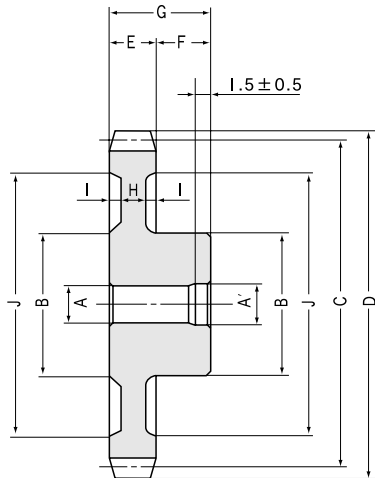
CAUTION: The rust prevention process involves treating the gears with steam (in effect, creating surface oxidation). A black oxide treatment cannot be done on these gears.

CAUTION: Gears with wider face widths such as SS and SSA series can be used as the mating gears to these.

NOTE 1: The bore1 is machined to minus tolerance so that the gear can simply be pressed onto the shaft. You can also open up the bore.

Characteristics of Sintered Steel Spur Gears

1. The cost is minimized due to the elimination of machining costs and a reduction in wasted material.
2. High precision for sintered products (JIS N8 Class). Has high reliability for maintaining its precision.
3. Oil-impregnated sintering creates interconnecting pores in which lubricating oil is stored for long, trouble-free operations.



S9 Shape

Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998)	Tooth hardness	70~95HRB
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Sintered
Material	SMF5040 (Equivalent to S45C)	Datum reference surface for tooth forming	Bore
Heat treatment	—	Secondary Operations	Possible

Web Depth I	Rim I.D. J	Shape	Allowable torque (N·m) ^{NOTE 2}		Allowable torque (kgf·m)		Backlash (mm) ^{NOTE 3}	Weight (gf)	Catalog No.
			Bending strength	Surface durability	Bending strength	Surface durability			
—	—	S3	0.1407	0.0078	(0.0143)	(0.0008)	0.06 ~ 0.16	2	LSO.5-12 LSO.5-16 LSO.5-20 LSO.5-25 LSO.5-30
—	—	S3	0.2262	0.0145	(0.0231)	(0.0015)	0.06 ~ 0.16	2	
—	—	S3	0.3176	0.0232	(0.0324)	(0.0024)	0.06 ~ 0.16	4	
—	—	S1	0.3278	0.0272	(0.0334)	(0.0028)	0.1 ~ 0.2	4	
—	—	S1	0.4203	0.0396	(0.0429)	(0.0040)	0.1 ~ 0.2	5	
0.75	16.5	S9	0.611	0.0715	(0.0623)	(0.0073)	0.1 ~ 0.2	6	LSO.5-40 LSO.5-50 LSO.5-60 LSO.5-70 LSO.5-80
0.75	21.5	S9	0.8062	0.1144	(0.0822)	(0.0117)	0.12 ~ 0.24	10	
0.75	26.5	S9	1.0042	0.1682	(0.1024)	(0.0172)	0.12 ~ 0.24	14	
0.75	31.5	S9	1.204	0.233	(0.1228)	(0.0237)	0.12 ~ 0.24	16	
0.75	36.5	S9	1.4051	0.309	(0.1433)	(0.0315)	0.12 ~ 0.24	20	

—	—	S3	0.45	0.026	(0.0459)	(0.0027)	0.06 ~ 0.16	4	LSO.8-12 LSO.8-16 LSO.8-20 LSO.8-25 LSO.8-30
—	—	S1	0.579	0.0381	(0.0591)	(0.0039)	0.06 ~ 0.16	4	
—	—	S1	0.813	0.0603	(0.0829)	(0.0061)	0.06 ~ 0.16	6	
—	—	S1	1.119	0.0953	(0.1141)	(0.0097)	0.1 ~ 0.2	10	
—	—	S1	1.435	0.1398	(0.1463)	(0.0143)	0.1 ~ 0.2	16	
1	26.4	S9	2.09	0.257	(0.213)	(0.0262)	0.1 ~ 0.2	20	LSO.8-40 LSO.8-50 LSO.8-60 LSO.8-70 LSO.8-80
1	34.4	S9	2.75	0.412	(0.281)	(0.0420)	0.12 ~ 0.24	26	
1	42.4	S9	3.43	0.605	(0.35)	(0.0617)	0.12 ~ 0.24	36	
1	50.4	S9	4.11	0.836	(0.419)	(0.0853)	0.12 ~ 0.24	48	
1	58.4	S9	4.8	1.106	(0.489)	(0.1128)	0.12 ~ 0.24	60	

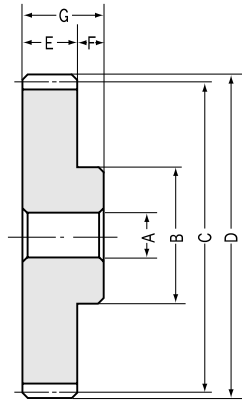
NOTE 2: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

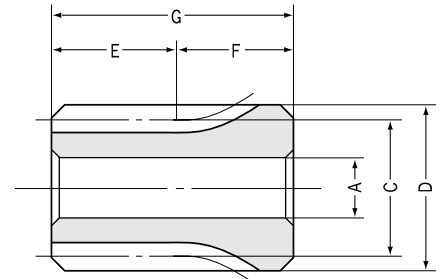


SUS Stainless Steel Spur Gears Modules 1 ~ 1.5

Spur Gears



S1 Shape



S3 Shape

Module 1

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G	H	I
SUS1-15	1	15	8	17	15	17	10	20	30	—	—
SUS1-16	1	16	8	18	16	18	10	20	30	—	—
SUS1-18	1	18	8	20	18	20	10	20	30	—	—
SUS1-20	1	20	8	16	20	22	10	10	20	—	—
SUS1-22	1	22	8	18	22	24	10	10	20	—	—
SUS1-24	1	24	8	20	24	26	10	10	20	—	—
SUS1-25	1	25	8	20	25	27	10	10	20	—	—
SUS1-28	1	28	8	23	28	30	10	10	20	—	—
SUS1-30	1	30	8	25	30	32	10	10	20	—	—
SUS1-32	1	32	8	26	32	34	10	10	20	—	—
SUS1-35	1	35	8	26	35	37	10	10	20	—	—
SUS1-36	1	36	8	28	36	38	10	10	20	—	—
SUS1-40	1	40	10	35	40	42	10	10	20	—	—
SUS1-42	1	42	10	35	42	44	10	10	20	—	—
SUS1-45	1	45	10	35	45	47	10	10	20	—	—
SUS1-48	1	48	10	35	48	50	10	10	20	—	—
SUS1-50	1	50	10	35	50	52	10	10	20	—	—
SUS1-55	1	55	10	40	55	57	10	10	20	—	—
SUS1-56	1	56	10	40	56	58	10	10	20	—	—
SUS1-60	1	60	10	40	60	62	10	10	20	—	—
SUS1-64	1	64	10	45	64	66	10	10	20	—	—
SUS1-70	1	70	10	50	70	72	10	10	20	—	—
SUS1-75	1	75	10	55	75	77	10	10	20	—	—
SUS1-80	1	80	10	60	80	82	10	10	20	—	—
SUS1-90	1	90	10	60	90	92	10	10	20	—	—
SUS1-100	1	100	12	60	100	102	10	10	20	—	—
SUS1-120	1	120	12	60	120	122	10	10	20	—	—

Module 1.5

SUS1.5-15	1.5	15	8	18	22.5	25.5	15	14	29	—	—
SUS1.5-16	1.5	16	8	20	24	27	15	14	29	—	—
SUS1.5-18	1.5	18	8	22	27	30	15	14	29	—	—
SUS1.5-20	1.5	20	8	24	30	33	15	14	29	—	—
SUS1.5-22	1.5	22	8	26	33	36	15	14	29	—	—
SUS1.5-24	1.5	24	8	28	36	39	15	14	29	—	—
SUS1.5-25	1.5	25	8	30	37.5	40.5	15	14	29	—	—
SUS1.5-28	1.5	28	10	36	42	45	15	14	29	—	—
SUS1.5-30	1.5	30	10	38	45	48	15	14	29	—	—
SUS1.5-32	1.5	32	10	40	48	51	15	14	29	—	—
SUS1.5-35	1.5	35	10	42	52.5	55.5	15	14	29	—	—
SUS1.5-36	1.5	36	10	45	54	57	15	14	29	—	—
SUS1.5-40	1.5	40	12	45	60	63	15	14	29	—	—
SUS1.5-42	1.5	42	12	45	63	66	15	14	29	—	—
SUS1.5-45	1.5	45	12	45	67.5	70.5	15	14	29	—	—
SUS1.5-48	1.5	48	12	45	72	75	15	14	29	—	—
SUS1.5-50	1.5	50	12	50	75	78	15	14	29	—	—
SUS1.5-55	1.5	55	12	55	82.5	85.5	15	14	29	—	—
SUS1.5-56	1.5	56	12	55	84	87	15	14	29	—	—
SUS1.5-60	1.5	60	15	60	90	93	15	14	29	—	—
SUS1.5-64	1.5	64	15	60	96	99	15	14	29	—	—
SUS1.5-70	1.5	70	15	70	105	108	15	14	29	—	—
SUS1.5-75	1.5	75	15	70	112.5	115.5	15	14	29	—	—
SUS1.5-80	1.5	80	15	80	120	123	15	14	29	—	—
SUS1.5-90	1.5	90	15	80	135	138	15	14	29	—	—
SUS1.5-100	1.5	100	15	80	150	153	15	14	29	—	—



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 187HB
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	SUS303	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

*Available on special order: Same gears made in SUS304

Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S3	2.042	0.1236	(0.2082)	(0.0126)	0.08 ~ 0.18	0.04	SUS1- 15
S3	2.262	0.1432	(0.2307)	(0.0146)	0.08 ~ 0.18	0.04	SUS1- 16
S3	2.713	0.1844	(0.2767)	(0.0188)	0.08 ~ 0.18	0.06	SUS1- 18
S1	3.175	0.2324	(0.3238)	(0.0237)	0.08 ~ 0.18	0.04	SUS1- 20
S1	3.648	0.2864	(0.372)	(0.0292)	0.1 ~ 0.22	0.04	SUS1- 22
S1	4.128	0.3481	(0.4209)	(0.0355)	0.1 ~ 0.22	0.06	SUS1- 24
S1	4.37	0.3815	(0.4456)	(0.0389)	0.1 ~ 0.22	0.06	SUS1- 25
S1	5.106	0.4844	(0.5207)	(0.0494)	0.1 ~ 0.22	0.07	SUS1- 28
S1	5.603	0.5609	(0.5714)	(0.0572)	0.1 ~ 0.22	0.09	SUS1- 30
S1	6.106	0.6423	(0.6226)	(0.0655)	0.1 ~ 0.22	0.1	SUS1- 32
S1	6.865	0.7757	(0.7)	(0.0791)	0.1 ~ 0.22	0.11	SUS1- 35
S1	7.12	0.8238	(0.726)	(0.084)	0.1 ~ 0.22	0.12	SUS1- 36
S1	8.145	1.03	(0.8306)	(0.105)	0.1 ~ 0.22	0.16	SUS1- 40
S1	8.662	1.141	(0.8833)	(0.1164)	0.12 ~ 0.26	0.17	SUS1- 42
S1	9.442	1.32	(0.9628)	(0.1346)	0.12 ~ 0.26	0.19	SUS1- 45
S1	10.23	1.512	(1.043)	(0.1542)	0.12 ~ 0.26	0.21	SUS1- 48
S1	10.75	1.648	(1.096)	(0.168)	0.12 ~ 0.26	0.22	SUS1- 50
S1	12.06	2.012	(1.23)	(0.2052)	0.12 ~ 0.26	0.28	SUS1- 55
S1	12.33	2.09	(1.257)	(0.2131)	0.12 ~ 0.26	0.28	SUS1- 56
S1	13.39	2.415	(1.365)	(0.2463)	0.12 ~ 0.26	0.31	SUS1- 60
S1	14.45	2.765	(1.474)	(0.282)	0.12 ~ 0.26	0.37	SUS1- 64
S1	16.05	3.335	(1.637)	(0.3401)	0.12 ~ 0.26	0.47	SUS1- 70
S1	17.39	3.859	(1.773)	(0.3935)	0.12 ~ 0.26	0.53	SUS1- 75
S1	18.73	4.423	(1.91)	(0.451)	0.12 ~ 0.26	0.6	SUS1- 80
S1	21.43	5.672	(2.185)	(0.5784)	0.16 ~ 0.32	0.72	SUS1- 90
S1	24.12	7.082	(2.46)	(0.7222)	0.16 ~ 0.32	0.82	SUS1-100
S1	29.55	10.41	(3.013)	(1.062)	0.16 ~ 0.32	1.1	SUS1-120

S1	6.891	0.4285	(0.7027)	(0.0437)	0.1 ~ 0.22	0.06	SUS1.5- 15
S1	7.634	0.4962	(0.7785)	(0.0506)	0.1 ~ 0.22	0.08	SUS1.5- 16
S1	9.157	0.6472	(0.9338)	(0.066)	0.1 ~ 0.22	0.1	SUS1.5- 18
S1	10.72	0.8198	(1.093)	(0.0836)	0.1 ~ 0.22	0.12	SUS1.5- 20
S1	12.31	1.014	(1.255)	(0.1034)	0.12 ~ 0.26	0.15	SUS1.5- 22
S1	13.94	1.231	(1.421)	(0.1255)	0.12 ~ 0.26	0.18	SUS1.5- 24
S1	14.75	1.347	(1.504)	(0.1374)	0.12 ~ 0.26	0.19	SUS1.5- 25
S1	17.23	1.711	(1.757)	(0.1745)	0.12 ~ 0.26	0.26	SUS1.5- 28
S1	18.92	1.98	(1.929)	(0.2019)	0.12 ~ 0.26	0.29	SUS1.5- 30
S1	20.6	2.268	(2.101)	(0.2313)	0.12 ~ 0.26	0.33	SUS1.5- 32
S1	23.17	2.738	(2.363)	(0.2792)	0.12 ~ 0.26	0.39	SUS1.5- 35
S1	24.03	2.905	(2.45)	(0.2962)	0.12 ~ 0.26	0.42	SUS1.5- 36
S1	27.49	3.624	(2.803)	(0.3695)	0.12 ~ 0.26	0.48	SUS1.5- 40
S1	29.23	4.013	(2.981)	(0.4092)	0.14 ~ 0.32	0.56	SUS1.5- 42
S1	31.86	4.637	(3.249)	(0.4728)	0.14 ~ 0.32	0.57	SUS1.5- 45
S1	34.51	5.308	(3.519)	(0.5413)	0.14 ~ 0.32	0.63	SUS1.5- 48
S1	36.27	5.788	(3.699)	(0.5902)	0.14 ~ 0.32	0.71	SUS1.5- 50
S1	40.72	7.08	(4.152)	(0.722)	0.14 ~ 0.32	0.87	SUS1.5- 55
S1	41.61	7.355	(4.243)	(0.75)	0.14 ~ 0.32	0.9	SUS1.5- 56
S1	45.19	8.508	(4.608)	(0.8676)	0.14 ~ 0.32	1	SUS1.5- 60
S1	48.78	9.748	(4.974)	(0.994)	0.14 ~ 0.32	1.1	SUS1.5- 64
S1	54.17	11.77	(5.524)	(1.2)	0.14 ~ 0.32	1.4	SUS1.5- 70
S1	58.69	13.61	(5.985)	(1.388)	0.14 ~ 0.32	1.6	SUS1.5- 75
S1	63.22	15.63	(6.447)	(1.594)	0.14 ~ 0.32	1.8	SUS1.5- 80
S1	72.31	20.11	(7.374)	(2.051)	0.18 ~ 0.38	2.2	SUS1.5- 90
S1	81.42	25.19	(8.303)	(2.569)	0.18 ~ 0.38	2.6	SUS1.5-100

NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

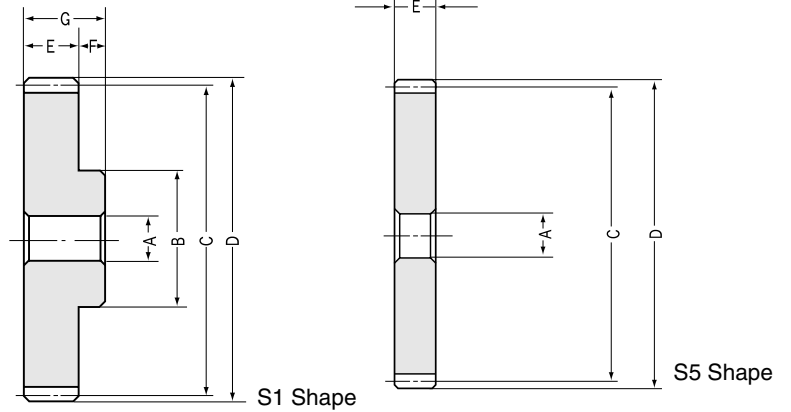
NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SUS·SUSA Stainless Steel Spur Gears Modules 2~2.5

Spur Gears

A S U S · S U S A



Module 2

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G(E)	H	I
SUS2-15	2	15	12	24	30	34	20	16	36	—	—
SUS2-16	2	16	12	26	32	36	20	16	36	—	—
SUS2-18	2	18	12	30	36	40	20	16	36	—	—
SUS2-20	2	20	12	32	40	44	20	16	36	—	—
SUS2-22	2	22	12	36	44	48	20	16	36	—	—
SUS2-24	2	24	12	38	48	52	20	16	36	—	—
SUS2-25	2	25	12	40	50	54	20	16	36	—	—
SUS2-28	2	28	12	45	56	60	20	16	36	—	—
SUS2-30	2	30	12	50	60	64	20	16	36	—	—

SUSA2-32	2	32	15	—	64	68	20	—	20	—	—
SUSA2-35	2	35	15	—	70	74	20	—	20	—	—
SUSA2-36	2	36	15	—	72	76	20	—	20	—	—
SUSA2-40	2	40	15	—	80	84	20	—	20	—	—
SUSA2-42	2	42	15	—	84	88	20	—	20	—	—
SUSA2-45	2	45	15	—	90	94	20	—	20	—	—
SUSA2-48	2	48	15	—	96	100	20	—	20	—	—
SUSA2-50	2	50	15	—	100	104	20	—	20	—	—
SUSA2-55	2	55	15	—	110	114	20	—	20	—	—
SUSA2-56	2	56	15	—	112	116	20	—	20	—	—
SUSA2-60	2	60	15	—	120	124	20	—	20	—	—
SUSA2-64	2	64	15	—	128	132	20	—	20	—	—
SUSA2-70	2	70	15	—	140	144	20	—	20	—	—

Module 2.5

SUS2.5-15	2.5	15	15	30	37.5	42.5	25	18	43	—	—
SUS2.5-16	2.5	16	15	32	40	45	25	18	43	—	—
SUS2.5-18	2.5	18	15	38	45	50	25	18	43	—	—
SUS2.5-20	2.5	20	15	40	50	55	25	18	43	—	—
SUS2.5-22	2.5	22	15	44	55	60	25	18	43	—	—
SUS2.5-24	2.5	24	15	48	60	65	25	18	43	—	—
SUS2.5-25	2.5	25	15	50	62.5	67.5	25	18	43	—	—
SUS2.5-28	2.5	28	15	60	70	75	25	18	43	—	—
SUS2.5-30	2.5	30	15	65	75	80	25	18	43	—	—

SUSA2.5-32	2.5	32	15	—	80	85	25	—	25	—	—
SUSA2.5-35	2.5	35	15	—	87.5	92.5	25	—	25	—	—
SUSA2.5-36	2.5	36	15	—	90	95	25	—	25	—	—
SUSA2.5-40	2.5	40	20	—	100	105	25	—	25	—	—
SUSA2.5-42	2.5	42	20	—	105	110	25	—	25	—	—
SUSA2.5-45	2.5	45	20	—	112.5	117.5	25	—	25	—	—
SUSA2.5-48	2.5	48	20	—	120	125	25	—	25	—	—
SUSA2.5-50	2.5	50	20	—	125	130	25	—	25	—	—
SUSA2.5-55	2.5	55	20	—	137.5	142.5	25	—	25	—	—
SUSA2.5-56	2.5	56	20	—	140	145	25	—	25	—	—
SUSA2.5-60	2.5	60	20	—	150	155	25	—	25	—	—
SUSA2.5-64	2.5	64	20	—	160	165	25	—	25	—	—



Stainless Steel Spur Gears

Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 187HB
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	SUS303	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

*Available on special order: Same gears made in SUS304

Shape	Allowable torque (N·m) NOTE 1		Allowable torque (kgf·m)		Backlash (mm) NOTE 2	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	16.34	1.051	(1.666)	(0.1072)	0.12 ~ 0.26	0.14	SUS2-15 SUS2-16 SUS2-18 SUS2-20 SUS2-22
S1	18.09	1.216	(1.845)	(0.124)	0.12 ~ 0.26	0.16	
S1	21.7	1.586	(2.213)	(0.1617)	0.12 ~ 0.26	0.22	
S1	25.41	2.008	(2.591)	(0.2048)	0.12 ~ 0.26	0.27	
S1	29.18	2.484	(2.976)	(0.2533)	0.14 ~ 0.3	0.34	
S1	33.02	3.012	(3.367)	(0.3071)	0.14 ~ 0.3	0.39	SUS2-24 SUS2-25 SUS2-28 SUS2-30
S1	34.96	3.295	(3.565)	(0.336)	0.14 ~ 0.3	0.43	
S1	40.85	4.181	(4.166)	(0.4263)	0.14 ~ 0.3	0.56	
S1	44.84	4.831	(4.572)	(0.4926)	0.14 ~ 0.3	0.66	

S5	48.85	5.531	(4.981)	(0.564)	0.14 ~ 0.3	0.48	SUSA2-32 SUSA2-35 SUSA2-36 SUSA2-40 SUSA2-42
S5	54.92	6.67	(5.6)	(0.6802)	0.14 ~ 0.3	0.58	
S5	56.96	7.077	(5.808)	(0.7217)	0.14 ~ 0.3	0.61	
S5	65.16	8.846	(6.645)	(0.902)	0.14 ~ 0.3	0.78	
S5	69.3	9.807	(7.067)	(1)	0.18 ~ 0.36	0.85	
S5	75.53	11.35	(7.702)	(1.157)	0.18 ~ 0.36	0.97	SUSA2-45 SUSA2-48 SUSA2-50 SUSA2-55 SUSA2-56
S5	81.8	12.99	(8.341)	(1.325)	0.18 ~ 0.36	1.1	
S5	85.98	14.16	(8.768)	(1.444)	0.18 ~ 0.36	1.2	
S5	96.52	17.31	(9.842)	(1.765)	0.18 ~ 0.36	1.5	
S5	98.65	17.98	(10.06)	(1.833)	0.18 ~ 0.36	1.5	
S5	107.1	20.84	(10.92)	(2.125)	0.18 ~ 0.36	1.7	SUSA2-60 SUSA2-64 SUSA2-70
S5	115.6	23.93	(11.79)	(2.44)	0.18 ~ 0.36	2	
S5	128.4	28.99	(13.09)	(2.956)	0.18 ~ 0.36	2.4	

S1	31.9	2.105	(3.253)	(0.2147)	0.14 ~ 0.28	0.26	SUS2.5-15 SUS2.5-16 SUS2.5-18 SUS2.5-20 SUS2.5-22
S1	35.34	2.437	(3.604)	(0.2485)	0.14 ~ 0.28	0.3	
S1	42.39	3.176	(4.323)	(0.3239)	0.14 ~ 0.28	0.41	
S1	49.62	4.018	(5.06)	(0.4097)	0.14 ~ 0.28	0.5	
S1	57	4.964	(5.812)	(0.5062)	0.16 ~ 0.34	0.63	
S1	64.5	6.014	(6.577)	(0.6133)	0.16 ~ 0.34	0.75	SUS2.5-24 SUS2.5-25 SUS2.5-28 SUS2.5-30
S1	68.28	6.578	(6.963)	(0.6708)	0.16 ~ 0.34	0.82	
S1	79.8	8.339	(8.137)	(0.8503)	0.16 ~ 0.34	1.1	
S1	87.56	9.646	(8.929)	(0.9836)	0.16 ~ 0.34	1.3	

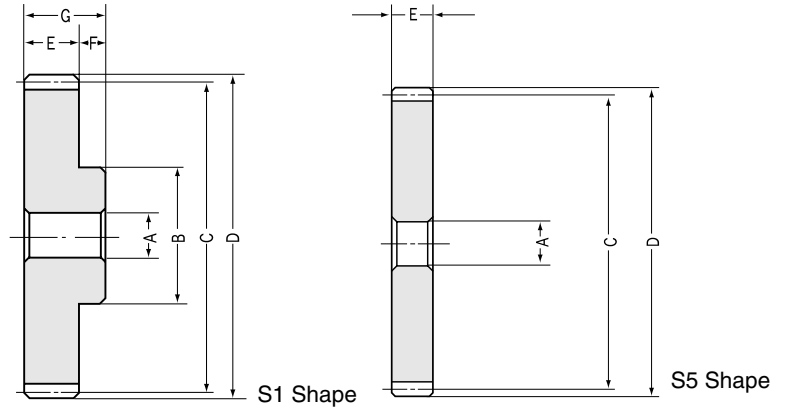
S5	95.4	11.06	(9.728)	(1.128)	0.16 ~ 0.34	0.95	SUSA2.5-32 SUSA2.5-35 SUSA2.5-36 SUSA2.5-40 SUSA2.5-42
S5	107.3	13.37	(10.94)	(1.363)	0.16 ~ 0.34	1.1	
S5	111.2	14.18	(11.34)	(1.446)	0.16 ~ 0.34	1.2	
S5	127.3	17.7	(12.98)	(1.805)	0.16 ~ 0.34	1.5	
S5	135.3	19.62	(13.8)	(2.001)	0.18 ~ 0.4	1.7	
S5	147.5	22.68	(15.04)	(2.313)	0.18 ~ 0.4	1.9	SUSA2.5-45 SUSA2.5-48 SUSA2.5-50 SUSA2.5-55 SUSA2.5-56
S5	159.7	26.05	(16.29)	(2.656)	0.18 ~ 0.4	2.2	
S5	168	28.43	(17.13)	(2.899)	0.18 ~ 0.4	2.3	
S5	188.5	34.86	(19.22)	(3.555)	0.18 ~ 0.4	2.9	
S5	192.6	36.24	(19.64)	(3.695)	0.18 ~ 0.4	3	
S5	209.2	41.99	(21.33)	(4.282)	0.18 ~ 0.4	3.4	SUSA2.5-60 SUSA2.5-64
S5	225.8	48.18	(23.03)	(4.913)	0.18 ~ 0.4	3.9	

NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SUS-SUSA Stainless Steel Spur Gears Modules 3~4



Module 3

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Web thickness	Web O.D.
	m	z	AH7	B	C	D	E	F	G(E)	H	I
SUS3-15	3	15	15	36	45	51	30	20	50	—	—
SUS3-16	3	16	15	38	48	54	30	20	50	—	—
SUS3-18	3	18	15	40	54	60	30	20	50	—	—
SUS3-20	3	20	15	50	60	66	30	20	50	—	—
SUS3-22	3	22	15	54	66	72	30	20	50	—	—
SUS3-24	3	24	15	58	72	78	30	20	50	—	—
SUS3-25	3	25	20	60	75	81	30	20	50	—	—
SUS3-28	3	28	20	70	84	90	30	20	50	—	—
SUS3-30	3	30	20	75	90	96	30	20	50	—	—

SUSA3-32	3	32	20	—	96	102	30	—	30	—	—
SUSA3-35	3	35	20	—	105	111	30	—	30	—	—
SUSA3-36	3	36	20	—	108	114	30	—	30	—	—
SUSA3-40	3	40	25	—	120	126	30	—	30	—	—
SUSA3-42	3	42	25	—	126	132	30	—	30	—	—
SUSA3-45	3	45	25	—	135	141	30	—	30	—	—
SUSA3-48	3	48	25	—	144	150	30	—	30	—	—
SUSA3-50	3	50	25	—	150	156	30	—	30	—	—
SUSA3-55	3	55	25	—	165	171	30	—	30	—	—
SUSA3-56	3	56	25	—	168	174	30	—	30	—	—
SUSA3-60	3	60	25	—	180	186	30	—	30	—	—

Module 4

SUS4-15	4	15	20	45	60	68	40	25	65	—	—
SUS4-20	4	20	20	65	80	88	40	25	65	—	—
SUS4-25	4	25	20	84	100	108	40	25	65	—	—
SUS4-30	4	30	20	100	120	128	40	25	65	—	—

SUSA4-40	4	40	30	—	160	168	40	—	40	—	—
SUSA4-50	4	50	30	—	200	208	40	—	40	—	—



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 187HB
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	SUS303	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

*Available on special order: Same gears made in SUS304

Shape	Allowable torque (N·m) <small>NOTE 1</small>		Allowable torque (kgf·m)		Backlash (mm) <small>NOTE 2</small>	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability			
S1	55.13	3.712	(5.622)	(0.3785)	0.14 ~ 0.32	0.47	SUS3-15
S1	61.08	4.294	(6.228)	(0.4379)	0.14 ~ 0.32	0.54	SUS3-16
S1	73.25	5.593	(7.47)	(0.5703)	0.14 ~ 0.32	0.67	SUS3-18
S1	85.75	7.07	(8.744)	(0.7209)	0.14 ~ 0.32	0.97	SUS3-20
S1	98.46	8.729	(10.04)	(0.8901)	0.18 ~ 0.38	1.1	SUS3-22
S1	111.4	10.57	(11.36)	(1.078)	0.18 ~ 0.38	1.3	SUS3-24
S1	118	11.57	(12.03)	(1.18)	0.18 ~ 0.38	1.4	SUS3-25
S1	137.9	14.71	(14.06)	(1.5)	0.18 ~ 0.38	1.8	SUS3-28
S1	151.3	17.01	(15.43)	(1.735)	0.18 ~ 0.38	2.1	SUS3-30

S5	164.8	19.5	(16.81)	(1.988)	0.18 ~ 0.38	1.6	SUSA3-32
S5	185.3	23.55	(18.9)	(2.401)	0.18 ~ 0.38	2	SUSA3-35
S5	192.2	24.98	(19.6)	(2.547)	0.18 ~ 0.38	2.1	SUSA3-36
S5	220	31.25	(22.43)	(3.187)	0.18 ~ 0.38	2.5	SUSA3-40
S5	233.9	34.71	(23.85)	(3.539)	0.2 ~ 0.44	2.9	SUSA3-42
S5	254.9	40.23	(25.99)	(4.102)	0.2 ~ 0.44	3.3	SUSA3-45
S5	276.1	46.18	(28.15)	(4.709)	0.2 ~ 0.44	3.8	SUSA3-48
S5	290.2	50.39	(29.59)	(5.138)	0.2 ~ 0.44	4	SUSA3-50
S5	325.8	61.73	(33.22)	(6.295)	0.2 ~ 0.44	5	SUSA3-55
S5	332.8	64.14	(33.94)	(6.541)	0.2 ~ 0.44	5.2	SUSA3-56
S5	361.5	74.28	(36.86)	(7.575)	0.2 ~ 0.44	5.9	SUSA3-60

S1	130.7	9.06	(13.33)	(0.924)	0.18 ~ 0.38	1.1	SUS4-15
S1	203	17.26	(20.7)	(1.76)	0.18 ~ 0.38	2.1	SUS4-20
S1	280	28.3	(28.5)	(2.89)	0.2 ~ 0.44	3.4	SUS4-25
S1	359	41.7	(36.6)	(4.25)	0.2 ~ 0.44	5	SUS4-30

S5	521	77.1	(53.2)	(7.86)	0.2 ~ 0.44	6.2	SUSA4-40
S5	573	103.4	(58.5)	(10.54)	0.24 ~ 0.52	9.7	SUSA4-50

*The blue catalog numbers indicate the new products.

NOTE 1: The allowable torques shown in the table are calculated values according to the assumed usage conditions.

Please see page 27 for more details.

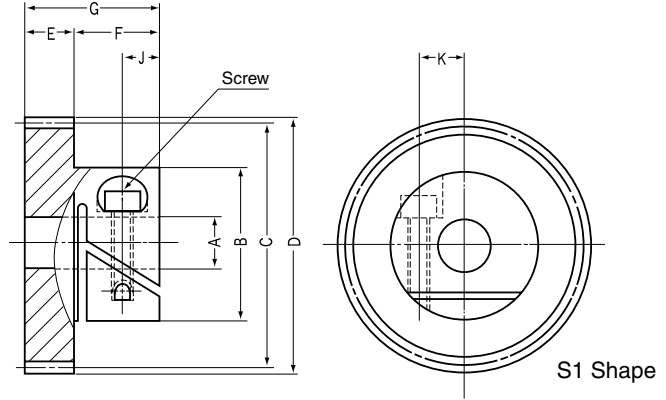
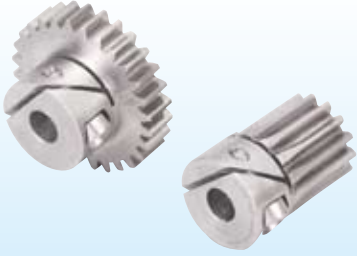
NOTE 2: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SUSL Stainless Steel Fairloc Hub Spur Gears Module 0.5

Module 0.5

Spur Gears



Module 0.5

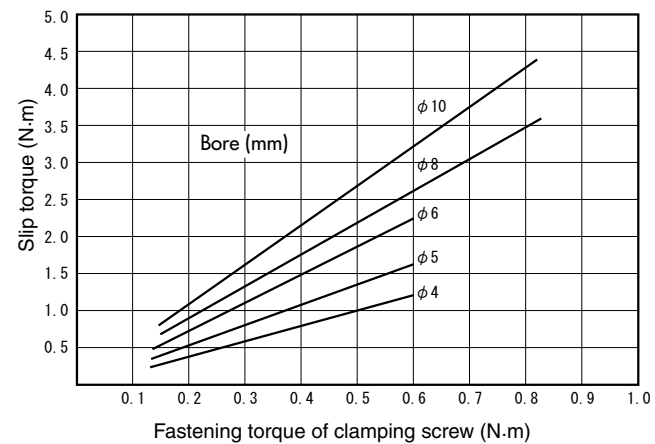
Catalog No.	Module	No. of teeth	Bore NOTE 1	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Cap Screw Dimensions		
	m	z	AH7	B	C	D	E	F	G	Size	J	K
SUSLO.5- 16	0.5	16	4	14	8	9	7	8	22	M2.5	3.3	4.4
SUSLO.5- 18	0.5	18	4	14	9	10	7	8	22	M2.5	3.3	4.4
SUSLO.5- 20	0.5	20	4	14	10	11	7	8	22	M2.5	3.3	4.4
SUSLO.5- 24	0.5	24	5	14	12	13	7	8	22	M2.5	3.3	4.4
SUSLO.5- 25	0.5	25	5	14	12.5	13.5	7	8	22	M2.5	3.3	4.4
SUSLO.5- 28	0.5	28	5	14	14	15	7	8	22	M2.5	3.3	4.4
SUSLO.5- 30	0.5	30	5	14	15	16	7	8	22	M2.5	3.3	4.4
SUSLO.5- 32	0.5	32	6	17	16	17	5	10	15	M3	4.5	5.3
SUSLO.5- 36	0.5	36	6	17	18	19	5	10	15	M3	4.5	5.3
SUSLO.5- 40	0.5	40	6	17	20	21	5	10	15	M3	4.5	5.3
SUSLO.5- 45	0.5	45	6	17	22.5	23.5	5	10	15	M3	4.5	5.3
SUSLO.5- 48	0.5	48	6	17	24	25	5	10	15	M3	4.5	5.3
SUSLO.5- 50	0.5	50	6	17	25	26	5	10	15	M3	4.5	5.3
SUSLO.5- 54	0.5	54	6	17	27	28	5	10	15	M3	4.5	5.3
SUSLO.5- 56	0.5	56	6	17	28	29	5	10	15	M3	4.5	5.3
SUSLO.5- 60	0.5	60	8	17	30	31	5	10	15	M3	4.5	6
SUSLO.5- 64	0.5	64	8	17	32	33	5	10	15	M3	4.5	6
SUSLO.5- 70	0.5	70	8	17	35	36	5	10	15	M3	4.5	6
SUSLO.5- 72	0.5	72	8	17	36	37	5	10	15	M3	4.5	6
SUSLO.5- 75	0.5	75	8	17	37.5	38.5	5	10	15	M3	4.5	6
SUSLO.5- 80	0.5	80	10	24	40	41	5	14	19	M4	5.3	7.7
SUSLO.5- 90	0.5	90	10	24	45	46	5	14	19	M4	5.3	7.7
SUSLO.5- 96	0.5	96	10	24	48	49	5	14	19	M4	4.9	8
SUSLO.5- 100	0.5	100	10	24	50	51	5	14	19	M4	4.9	8
SUSLO.5- 112	0.5	112	10	24	56	57	5	14	19	M4	4.9	8
SUSLO.5- 120	0.5	120	10	24	60	61	5	14	19	M4	4.9	8

NOTE 1: The bore cannot be modified. It is possible to pin the gear to the shaft to prevent slippage.

Fastening torque vs. Slip torque

The slip torque which is dependent on the fastening torque can sometimes be less than the gear strength. Please use caution in selecting. The chart on the right shows the relationship between the slip torque and the fastening torque.

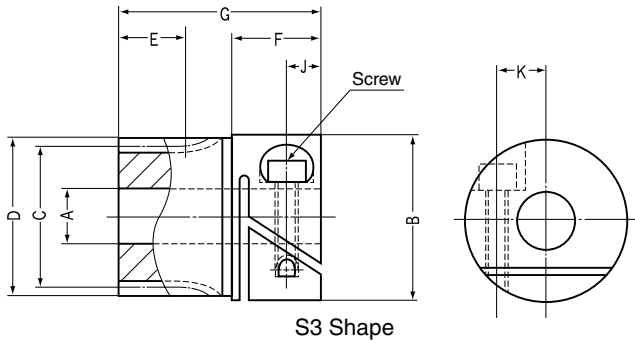
Fastening torque vs. Slip torque



*Data supplied by Designatronics Inc.



Stainless Steel Fairloc Hub Spur Gears



S3 Shape

Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 187HB
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	SUS303	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Not Possible

Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Recommended Fastening torque NOTE 3		Backlash (mm) NOTE 4	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability	(N·m)	(kgf·m)			
S3	0.3962	0.0226	(0.0404)	(0.0023)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 16
S3	0.4746	0.0304	(0.0484)	(0.0031)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 18
S3	0.556	0.0382	(0.0567)	(0.0039)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 20
S3	0.7227	0.0559	(0.0737)	(0.0057)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 24
S3	0.7649	0.0608	(0.078)	(0.0062)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 25
S3	0.8934	0.0785	(0.0911)	(0.008)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 28
S3	0.9807	0.0912	(0.1)	(0.0093)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 30
S3	0.7629	0.0755	(0.0778)	(0.0077)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 32
S3	0.8904	0.0961	(0.0908)	(0.0098)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 36
S1	1.018	0.1187	(0.1038)	(0.0121)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 40
S1	1.18	0.152	(0.1203)	(0.0155)	0.6	6.12	0 ~ 0.1	0.02	SUSL0.5- 45
S1	1.278	0.1746	(0.1303)	(0.0178)	0.6	6.12	0 ~ 0.1	0.04	SUSL0.5- 48
S1	1.343	0.1902	(0.137)	(0.0194)	0.6	6.12	0 ~ 0.1	0.04	SUSL0.5- 50
S1	1.475	0.2246	(0.1504)	(0.0229)	0.6	6.12	0 ~ 0.1	0.04	SUSL0.5- 54
S1	1.542	0.2422	(0.1572)	(0.0247)	0.6	6.12	0 ~ 0.1	0.04	SUSL0.5- 56
S1	1.674	0.2805	(0.1707)	(0.0286)	0.8	8.16	0 ~ 0.1	0.04	SUSL0.5- 60
S1	1.806	0.3207	(0.1842)	(0.0327)	0.8	8.16	0 ~ 0.1	0.04	SUSL0.5- 64
S1	2.006	0.3883	(0.2046)	(0.0396)	0.8	8.16	0 ~ 0.1	0.04	SUSL0.5- 70
S1	2.073	0.4119	(0.2114)	(0.042)	0.8	8.16	0 ~ 0.1	0.06	SUSL0.5- 72
S1	2.174	0.4491	(0.2217)	(0.0458)	0.8	8.16	0 ~ 0.1	0.06	SUSL0.5- 75
S1	2.342	0.5148	(0.2388)	(0.0525)	0.8	8.16	0 ~ 0.1	0.08	SUSL0.5- 80
S1	2.678	0.66	(0.2731)	(0.673)	0.8	8.16	0 ~ 0.1	0.08	SUSL0.5- 90
S1	2.88	0.7561	(0.2937)	(0.0771)	0.8	8.16	0 ~ 0.1	0.1	SUSL0.5- 96
S1	3.016	0.8238	(0.3075)	(0.084)	0.8	8.16	0 ~ 0.1	0.1	SUSL0.5-100
S1	3.422	1.045	(0.349)	(0.1066)	0.8	8.16	0 ~ 0.1	0.12	SUSL0.5-112
S1	3.693	1.208	(0.3766)	(0.1232)	0.8	8.16	0 ~ 0.1	0.14	SUSL0.5-120

NOTE 2: The allowable torques shown in the table are calculated values to the assumed usage conditions. Please see page 27 for more details.

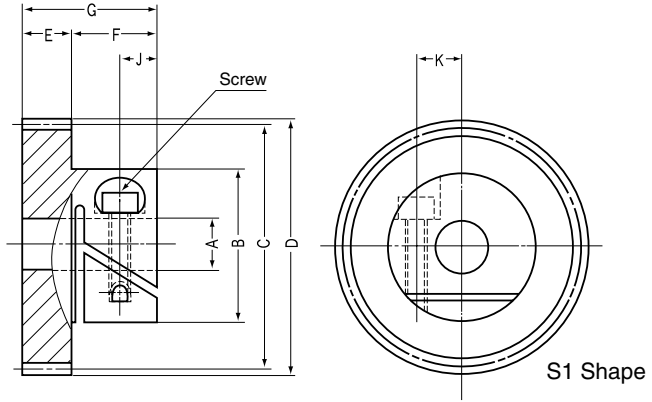
NOTE 3: Do not tighten the clamping screw without inserting a shaft, or the bore will be permanently deformed and will not accept a shaft.

NOTE 4: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



SUSL Stainless Steel Fairloc Hub Spur Gears Module 0.8~1

Spur Gears



Module 0.8

Catalog No.	Module	No. of teeth	Bore <small>NOTE 1</small>	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Cap Screw Dimensions		
	m	z	AH7	B	C	D	E	F	G	Size	J	K
SUSLO.8- 14	0.8	14	4	14	11.2	12.8	7	8	22	M2.5	3.3	4.4
SUSLO.8- 15	0.8	15	4	14	12	13.6	7	8	22	M2.5	3.3	4.4
SUSLO.8- 16	0.8	16	4	14	12.8	14.4	7	8	22	M2.5	3.3	4.4
SUSLO.8- 18	0.8	18	4	14	14.4	16	7	8	22	M2.5	3.3	4.4
SUSLO.8- 20	0.8	20	4	14	16	17.6	5	8	13	M2.5	3.3	4.4
SUSLO.8- 22	0.8	22	4	14	17.6	19.2	5	8	13	M2.5	3.3	4.4
SUSLO.8- 24	0.8	24	5	14	19.2	20.8	5	8	13	M2.5	3.3	4.4
SUSLO.8- 25	0.8	25	5	14	20	21.6	5	8	13	M2.5	3.3	4.4
SUSLO.8- 28	0.8	28	5	14	22.4	24	5	8	13	M2.5	3.3	4.4
SUSLO.8- 30	0.8	30	5	14	24	25.6	5	8	13	M2.5	3.3	4.4
SUSLO.8- 32	0.8	32	5	14	25.6	27.2	5	8	13	M2.5	3.3	4.4
SUSLO.8- 36	0.8	36	6	17	28.8	30.4	5	10	15	M3	4.5	5.3
SUSLO.8- 40	0.8	40	6	17	32	33.6	5	10	15	M3	4.5	5.3
SUSLO.8- 45	0.8	45	6	17	36	37.6	5	10	15	M3	4.5	5.3
SUSLO.8- 48	0.8	48	6	17	38.4	40	5	10	15	M3	4.5	5.3
SUSLO.8- 50	0.8	50	6	17	40	41.6	5	10	15	M3	4.5	5.3
SUSLO.8- 54	0.8	54	6	17	43.2	44.8	5	10	15	M3	4.5	5.3
SUSLO.8- 56	0.8	56	6	17	44.8	46.4	5	10	15	M3	4.5	5.3
SUSLO.8- 60 <small>NOTE 2</small>	0.8	60	8	17	48	49.6	5	10	15	M3	4.5	6
SUSLO.8- 64 <small>NOTE 2</small>	0.8	64	8	17	51.2	52.8	5	10	15	M3	4.5	6
SUSLO.8- 72 <small>NOTE 2</small>	0.8	72	8	17	57.6	59.2	5	10	15	M3	4.5	6
SUSLO.8- 80	0.8	80	10	24	64	65.6	5	14	19	M4	4.9	8
SUSLO.8- 90	0.8	90	10	24	72	73.6	5	14	19	M4	4.9	8
SUSLO.8-100	0.8	100	10	24	80	81.6	5	14	19	M4	4.9	8

Module 1

SUSL1- 14	1	14	6	17	14	16	8	10	25	M3	4.5	5.3
SUSL1- 15	1	15	6	17	15	17	8	10	25	M3	4.5	5.3
SUSL1- 16	1	16	6	17	16	18	8	10	25	M3	4.5	5.3
SUSL1- 18	1	18	6	17	18	20	8	10	25	M3	4.5	5.3
SUSL1- 20	1	20	6	17	20	22	6	10	16	M3	4.5	5.3
SUSL1- 24	1	24	6	17	24	26	6	10	16	M3	4.5	5.3
SUSL1- 25	1	25	6	17	25	27	6	10	16	M3	4.5	5.3
SUSL1- 28	1	28	6	17	28	30	6	10	16	M3	4.5	5.3
SUSL1- 30	1	30	8	17	30	32	6	10	16	M3	4.5	6
SUSL1- 32	1	32	8	17	32	34	6	10	16	M3	4.5	6
SUSL1- 35	1	35	8	17	35	37	6	10	16	M3	4.5	6
SUSL1- 36	1	36	8	17	36	38	6	10	16	M3	4.5	6
SUSL1- 40	1	40	8	17	40	42	6	10	16	M3	4.5	6
SUSL1- 45	1	45	8	17	45	47	6	10	16	M3	4.5	6
SUSL1- 48 <small>NOTE 2</small>	1	48	8	17	48	50	6	10	16	M3	4.5	6
SUSL1- 50	1	50	10	24	50	52	6	14	20	M4	4.9	8
SUSL1- 56	1	56	10	24	56	58	6	14	20	M4	4.9	8
SUSL1- 60	1	60	10	24	60	62	6	14	20	M4	4.9	8
SUSL1- 64	1	64	10	24	64	66	6	14	20	M4	4.9	8
SUSL1- 70	1	70	10	24	70	72	6	14	20	M4	4.9	8
SUSL1- 72	1	72	10	24	72	74	6	14	20	M4	4.9	8
SUSL1- 80	1	80	10	24	80	82	6	14	20	M4	4.9	8
SUSL1- 90	1	90	10	24	90	92	6	14	20	M4	4.9	8
SUSL1-100	1	100	10	24	100	102	6	14	20	M4	4.9	8

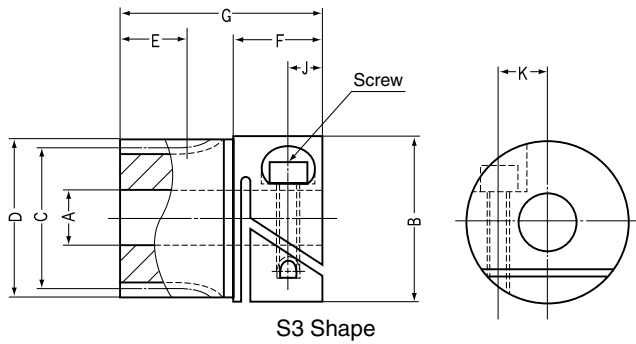
CAUTION: Gears with wider face widths such as SS and SSA series can be used as the mating gears to these.

NOTE 1: The bore cannot be modified. It is possible to pin the gear to the shaft to prevent slippage.

NOTE 2: The hub configurations are slightly different from the drawings shown above. But there is no difference in functionality.



Stainless Steel Fairloc Hub Spur Gears



Specifications

Precision grade	JIS N8 grade (JIS B1702-1: 1998) OLD JIS 4 grade (JIS B1702: 1976)	Tooth hardness	Less than 187HB
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	SUS303	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Not Possible

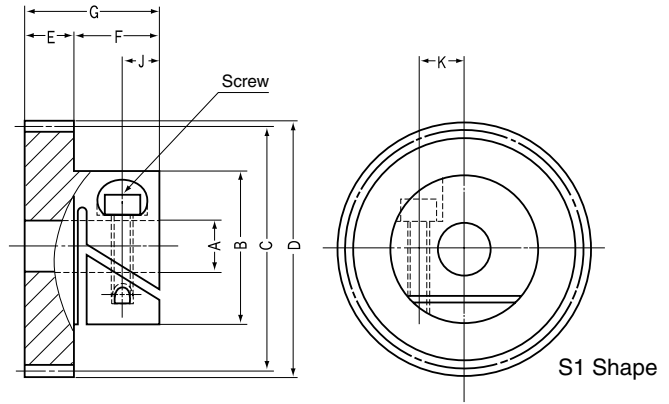
Shape	Allowable torque (N·m) NOTE 3		Allowable torque (kgf·m)		Recommended Fastening torque NOTE 4		Backlash (mm) NOTE 5	Weight (kgf)	Catalog No.
	Bending strength	Surface durability	Bending strength	Surface durability	(N·m)	(kgf·m)			
S3	0.8179	0.0481	(0.0834)	(0.0049)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 14
S3	0.915	0.0559	(0.0933)	(0.0057)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 15
S3	1.013	0.0647	(0.1033)	(0.0066)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 16
S3	1.216	0.0834	(0.124)	(0.0085)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 18
S1	1.016	0.0755	(0.1036)	(0.0077)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 20
S1	1.167	0.0912	(0.119)	(0.0093)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 22
S1	1.321	0.1098	(0.1347)	(0.0112)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 24
S1	1.398	0.1187	(0.1426)	(0.0121)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 25
S1	1.634	0.151	(0.1666)	(0.0154)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 28
S1	1.794	0.1746	(0.1829)	(0.0178)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 30
S1	1.953	0.2001	(0.1992)	(0.0204)	0.6	6.12	0 ~ 0.1	0.02	SUSLO.8- 32
S1	2.278	0.2569	(0.2323)	(0.0262)	0.6	6.12	0 ~ 0.1	0.04	SUSLO.8- 36
S1	2.607	0.3207	(0.2658)	(0.0327)	0.6	6.12	0 ~ 0.1	0.04	SUSLO.8- 40
S1	3.021	0.4119	(0.3081)	(0.042)	0.6	6.12	0 ~ 0.1	0.06	SUSLO.8- 45
S1	3.271	0.4717	(0.3336)	(0.0481)	0.6	6.12	0 ~ 0.1	0.06	SUSLO.8- 48
S1	3.439	0.5148	(0.3507)	(0.0525)	0.6	6.12	0 ~ 0.1	0.06	SUSLO.8- 50
S1	3.777	0.6051	(0.3851)	(0.0617)	0.6	6.12	0 ~ 0.1	0.06	SUSLO.8- 54
S1	3.945	0.6541	(0.4023)	(0.0667)	0.6	6.12	0 ~ 0.1	0.08	SUSLO.8- 56
S1	4.284	0.7561	(0.4369)	(0.0771)	0.8	8.16	0 ~ 0.1	0.08	SUSLO.8- 60
S1	4.625	0.8659	(0.4716)	(0.0883)	0.8	8.16	0 ~ 0.1	0.08	SUSLO.8- 64
S1	5.308	1.109	(0.5413)	(0.1131)	0.8	8.16	0 ~ 0.1	0.1	SUSLO.8- 72
S1	5.995	1.383	(0.6113)	(0.141)	0.8	8.16	0 ~ 0.1	0.16	SUSLO.8- 80
S1	6.856	1.769	(0.6991)	(0.1804)	0.8	8.16	0 ~ 0.1	0.2	SUSLO.8- 90
S1	7.721	2.211	(0.7873)	(0.2255)	0.8	8.16	0 ~ 0.1	0.22	SUSLO.8-100

S3	1.46	0.0883	(0.1489)	(0.009)	0.6	6.12	0 ~ 0.1	0.04	SUSL1- 14
S3	1.634	0.102	(0.1666)	(0.0104)	0.6	6.12	0 ~ 0.1	0.04	SUSL1- 15
S3	1.809	0.1177	(0.1845)	(0.012)	0.6	6.12	0 ~ 0.1	0.04	SUSL1- 16
S3	2.17	0.152	(0.2213)	(0.0155)	0.6	6.12	0 ~ 0.1	0.04	SUSL1- 18
S1	1.905	0.1432	(0.1943)	(0.0146)	0.6	6.12	0 ~ 0.1	0.02	SUSL1- 20
S1	2.476	0.2099	(0.2525)	(0.0214)	0.6	6.12	0 ~ 0.1	0.04	SUSL1- 24
S1	2.622	0.2285	(0.2674)	(0.0233)	0.6	6.12	0 ~ 0.1	0.04	SUSL1- 25
S1	3.064	0.2903	(0.3124)	(0.0296)	0.6	6.12	0 ~ 0.1	0.04	SUSL1- 28
S1	3.363	0.3364	(0.3429)	(0.0343)	0.8	8.16	0 ~ 0.1	0.04	SUSL1- 30
S1	3.664	0.3854	(0.3736)	(0.0393)	0.8	8.16	0 ~ 0.1	0.04	SUSL1- 32
S1	4.119	0.4658	(0.42)	(0.0475)	0.8	8.16	0 ~ 0.1	0.06	SUSL1- 35
S1	4.272	0.4943	(0.4356)	(0.0504)	0.8	8.16	0 ~ 0.1	0.06	SUSL1- 36
S1	4.888	0.6178	(0.4984)	(0.063)	0.8	8.16	0 ~ 0.1	0.06	SUSL1- 40
S1	5.665	0.7914	(0.5777)	(0.0807)	0.8	8.16	0 ~ 0.1	0.08	SUSL1- 45
S1	6.135	0.9071	(0.6256)	(0.0925)	0.8	8.16	0 ~ 0.1	0.1	SUSL1- 48
S1	6.449	0.9885	(0.6576)	(0.1008)	0.8	8.16	0 ~ 0.1	0.12	SUSL1- 50
S1	7.397	1.254	(0.7543)	(0.1279)	0.8	8.16	0 ~ 0.1	0.14	SUSL1- 56
S1	8.033	1.449	(0.8191)	(0.1478)	0.8	8.16	0 ~ 0.1	0.16	SUSL1- 60
S1	8.671	1.659	(0.8842)	(0.1692)	0.8	8.16	0 ~ 0.1	0.18	SUSL1- 64
S1	9.631	2.002	(0.9821)	(0.2041)	0.8	8.16	0 ~ 0.1	0.2	SUSL1- 70
S1	9.954	2.123	(1.015)	(0.2165)	0.8	8.16	0 ~ 0.1	0.22	SUSL1- 72
S1	11.24	2.654	(1.146)	(0.2706)	0.8	8.16	0 ~ 0.1	0.26	SUSL1- 80
S1	12.86	3.403	(1.311)	(0.347)	0.8	8.16	0 ~ 0.1	0.32	SUSL1- 90
S1	14.47	4.249	(1.476)	(0.4333)	0.8	8.16	0 ~ 0.1	0.38	SUSL1-100

NOTE 3: The allowable torques shown in the table are calculated values to the assumed usage conditions. Please see page 27 for more details.

NOTE 4: Do not tighten the clamping screw without inserting a shaft, or the bore will be permanently deformed and will not accept a shaft.

NOTE 5: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



Module 0.5

Catalog No.	Module	No. of teeth	Bore <small>NOTE 1</small>	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Cap Screw Dimensions <small>NOTE 2</small>		
	<i>m</i>		AH7							B	C	D
DSL0.5- 28	0.5	28	5	14	14	15	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 30	0.5	30	5	14	15	16	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 32	0.5	32	5	14	16	17	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 36	0.5	36	5	14	18	19	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 40	0.5	40	5	14	20	21	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 45	0.5	45	5	14	22.5	23.5	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 48	0.5	48	5	14	24	25	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 50	0.5	50	5	14	25	26	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 56	0.5	56	5	14	28	29	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 60	0.5	60	5	14	30	31	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 64	0.5	64	5	14	32	33	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 70	0.5	70	5	14	35	36	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 72	0.5	72	5	14	36	37	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 75	0.5	75	5	14	37.5	38.5	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 80	0.5	80	5	14	40	41	5	8.5	13.5	M2.5	3.3	4.4
DSL0.5- 90	0.5	90	8	17	45	46	5	9.8	14.8	M3	4.3	5.9
DSL0.5- 96	0.5	96	8	17	48	49	5	9.8	14.8	M3	4.3	5.9
DSL0.5-100	0.5	100	8	17	50	51	5	9.8	14.8	M3	4.3	5.9
DSL0.5-120	0.5	120	8	17	60	61	5	9.8	14.8	M3	4.3	5.9

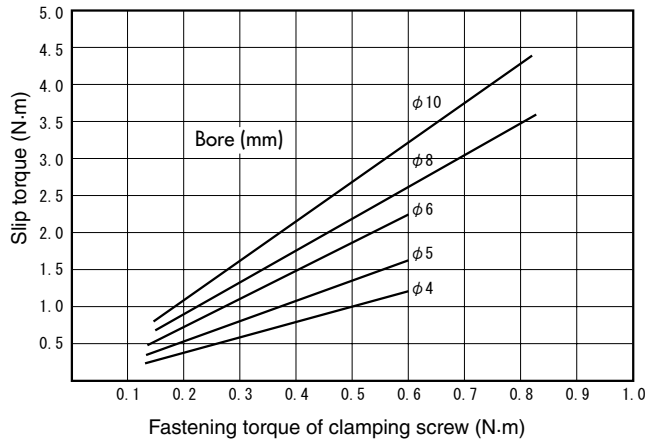
NOTE 1: The bore cannot be modified. It is possible to pin the gear to the shaft to prevent slippage.

NOTE 2: Do not tighten the clamping screw without inserting a shaft, or the bore will be permanently deformed and will not accept a shaft.

Fastening torque vs. Slip torque

The slip torque which is dependent on the fastening torque can sometimes be less than the gear strength. Please use caution in selecting. The chart on the right shows the relationship between the slip torque and the fastening torque.

Fastening torque vs. Slip torque



*Data supplied by Designatronics Inc.



Specifications

Precision grade	JIS N10 grade (JIS B1702-2: 1998)	Tooth hardness	110~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	Acetal with SUS303 Insert	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Not Possible

Shape	Allowable torque (N·m) NOTE 3	Allowable torque (kg·m)	Backlash (mm) NOTE 4	Weight (gf)	Catalog No.
	Bending strength	Bending strength			
S1	0.3935	(0.0401)	0 ~ 0.1	12	DSL0.5- 28
S1	0.4279	(0.0436)	0 ~ 0.1	12	
S1	0.4647	(0.0474)	0 ~ 0.1	12	
S1	0.5417	(0.0552)	0 ~ 0.1	12	
S1	0.6182	(0.063)	0 ~ 0.1	12	
S1	0.7149	(0.0729)	0 ~ 0.1	12	DSL0.5- 45
S1	0.775	(0.079)	0 ~ 0.1	13	
S1	0.8158	(0.0832)	0 ~ 0.1	13	
S1	0.9285	(0.0947)	0 ~ 0.1	14	
S1	1.0053	(0.1025)	0 ~ 0.1	14	
S1	1.081	(0.1102)	0 ~ 0.1	15	DSL0.5- 64
S1	1.1964	(0.122)	0 ~ 0.1	16	
S1	1.2354	(0.126)	0 ~ 0.1	16	
S1	1.2944	(0.132)	0 ~ 0.1	17	
S1	1.3886	(0.1416)	0 ~ 0.1	19	
S1	1.5799	(0.1611)	0 ~ 0.1	24	DSL0.5- 90
S1	1.6967	(0.173)	0 ~ 0.1	25	
S1	1.7752	(0.181)	0 ~ 0.1	25	
S1	2.1527	(0.2195)	0 ~ 0.1	32	

NOTE 3: The allowable torques shown in the table are calculated values using the Lewis formula. Please see page 27 for more details.

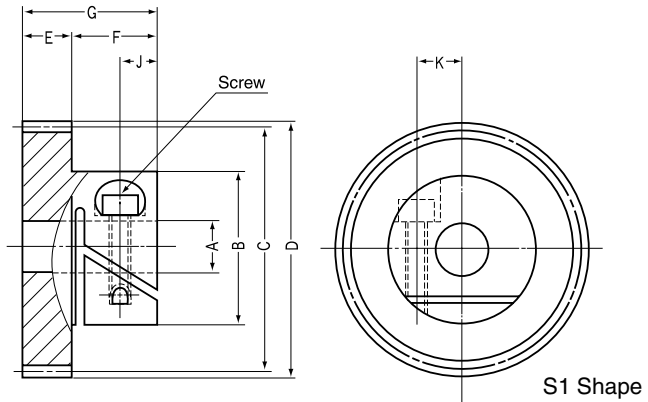
NOTE 4: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



DSL Acetal Fairloc Hub Spur Gears Module 0.8~1

Spur Gears

DSL



Module 0.8

Catalog No.	Module	No. of teeth	Bore NOTE 1	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Cap Screw Dimensions NOTE 2		
	m	z	AH7	B	C	D	E	F	G	Size	J	K
DSL0.8- 20	0.8	20	5	14	16	17.6	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 24	0.8	24	5	14	19.2	20.8	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 25	0.8	25	5	14	20	21.6	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 28	0.8	28	5	14	22.4	24	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 30	0.8	30	5	14	24	25.6	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 32	0.8	32	5	14	25.6	27.2	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 36	0.8	36	5	14	28.8	30.4	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 40	0.8	40	5	14	32	33.6	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 45	0.8	45	5	14	36	37.6	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 48	0.8	48	5	14	38.4	40	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 50	0.8	50	5	14	40	41.6	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 56	0.8	56	5	14	44.8	46.4	5	8.5	13.5	M2.5	3.3	4.4
DSL0.8- 60	0.8	60	8	17	48	49.6	5	9.8	14.8	M3	4.3	5.9
DSL0.8- 72	0.8	72	8	17	57.6	59.2	5	9.8	14.8	M3	4.3	5.9
DSL0.8- 80	0.8	80	8	17	64	65.6	5	9.8	14.8	M3	4.3	5.9
DSL0.8- 90	0.8	90	8	17	72	73.6	5	9.8	14.8	M3	4.3	5.9
DSL0.8-100	0.8	100	8	17	80	81.6	5	9.8	14.8	M3	4.3	5.9

Module 1

DSL1 - 15	1	15	5	14	15	17	5	8.5	13.5	M2.5	3.3	4.4
DSL1 - 16	1	16	5	14	16	18	5	8.5	13.5	M2.5	3.3	4.4
DSL1 - 18	1	18	5	14	18	20	5	8.5	13.5	M2.5	3.3	4.4
DSL1 - 20	1	20	5	14	20	22	5	8.5	13.5	M2.5	3.3	4.4
DSL1 - 24	1	24	5	14	24	26	5	8.5	13.5	M2.5	3.3	4.4
DSL1 - 25	1	25	5	14	25	27	5	8.5	13.5	M2.5	3.3	4.4
DSL1 - 28	1	28	5	14	28	30	5	8.5	13.5	M2.5	3.3	4.4
DSL1 - 30	1	30	8	17	30	32	5	9.8	14.8	M3	4.3	5.9
DSL1 - 32	1	32	8	17	32	34	5	9.8	14.8	M3	4.3	5.9
DSL1 - 35	1	35	8	17	35	37	5	9.8	14.8	M3	4.3	5.9
DSL1 - 36	1	36	8	17	36	38	5	9.8	14.8	M3	4.3	5.9
DSL1 - 40	1	40	8	17	40	42	5	9.8	14.8	M3	4.3	5.9
DSL1 - 45	1	45	8	17	45	47	5	9.8	14.8	M3	4.3	5.9
DSL1 - 48	1	48	8	17	48	50	5	9.8	14.8	M3	4.3	5.9
DSL1 - 50	1	50	8	17	50	52	5	9.8	14.8	M3	4.3	5.9
DSL1 - 56	1	56	8	17	56	58	5	9.8	14.8	M3	4.3	5.9
DSL1 - 60	1	60	8	17	60	62	5	9.8	14.8	M3	4.3	5.9
DSL1 - 64	1	64	8	17	64	66	5	9.8	14.8	M3	4.3	5.9
DSL1 - 70	1	70	8	17	70	72	5	9.8	14.8	M3	4.3	5.9
DSL1 - 72	1	72	8	17	72	74	5	9.8	14.8	M3	4.3	5.9
DSL1 - 80	1	80	8	17	80	82	5	9.8	14.8	M3	4.3	5.9
DSL1 - 90	1	90	8	17	90	92	5	9.8	14.8	M3	4.3	5.9
DSL1 -100	1	100	8	17	100	102	5	9.8	14.8	M3	4.3	5.9

CAUTION: Gears with wider face widths such as SS and SSA series can be used as the mating gears to these.

NOTE 1: The bore cannot be modified. It is possible to pin the gear to the shaft to prevent slippage.

NOTE 2: Do not tighten the clamping screw without inserting a shaft, or the bore will be permanently deformed and will not accept a shaft.



Acetal Fairloc Hub Spur Gears

Specifications

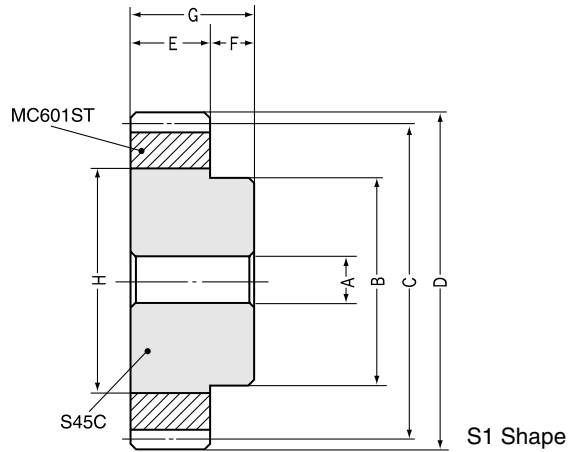
Precision grade	JIS N10 grade (JIS B1702-2: 1998)	Tooth hardness	110~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	Acetal with SUS303 Insert	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Not Possible

Shape	Allowable torque (N·m) NOTE 3	Allowable torque (kgf·m)	Backlash (mm) NOTE 4	Weight (gf)	Catalog No.
	Bending strength	Bending strength			
S1	0.5827	(0.0594)	0 ~ 0.1	11	DSL0.8- 20
S1	0.7349	(0.0749)	0 ~ 0.1	12	DSL0.8- 24
S1	0.7762	(0.0792)	0 ~ 0.1	12	DSL0.8- 25
S1	0.8946	(0.0912)	0 ~ 0.1	12	DSL0.8- 28
S1	0.9728	(0.0992)	0 ~ 0.1	13	DSL0.8- 30
S1	1.0563	(0.1077)	0 ~ 0.1	14	DSL0.8- 32
S1	1.2313	(0.1256)	0 ~ 0.1	15	DSL0.8- 36
S1	1.405	(0.1433)	0 ~ 0.1	15	DSL0.8- 40
S1	1.6244	(0.1656)	0 ~ 0.1	16	DSL0.8- 45
S1	1.7608	(0.1796)	0 ~ 0.1	18	DSL0.8- 48
S1	1.8536	(0.189)	0 ~ 0.1	19	DSL0.8- 50
S1	2.109	(0.2151)	0 ~ 0.1	20	DSL0.8- 56
S1	2.2834	(0.2328)	0 ~ 0.1	25	DSL0.8- 60
S1	2.8049	(0.286)	0 ~ 0.1	30	DSL0.8- 72
S1	3.1518	(0.3214)	0 ~ 0.1	35	DSL0.8- 80
S1	3.5849	(0.3656)	0 ~ 0.1	42	DSL0.8- 90
S1	4.0269	(0.4106)	0 ~ 0.1	48	DSL0.8-100

S1	0.5333	(0.0544)	0 ~ 0.1	10	DSL1 - 15
S1	0.5893	(0.0601)	0 ~ 0.1	10	DSL1 - 16
S1	0.6878	(0.0701)	0 ~ 0.1	11	DSL1 - 18
S1	0.7963	(0.0812)	0 ~ 0.1	11	DSL1 - 20
S1	1.0043	(0.1024)	0 ~ 0.1	12	DSL1 - 24
S1	1.0606	(0.1082)	0 ~ 0.1	12	DSL1 - 25
S1	1.2224	(0.1246)	0 ~ 0.1	14	DSL1 - 28
S1	1.3291	(0.1355)	0 ~ 0.1	17	DSL1 - 30
S1	1.4432	(0.1472)	0 ~ 0.1	19	DSL1 - 32
S1	1.621	(0.1653)	0 ~ 0.1	20	DSL1 - 35
S1	1.682	(0.1715)	0 ~ 0.1	20	DSL1 - 36
S1	1.9193	(0.1957)	0 ~ 0.1	22	DSL1 - 40
S1	2.2189	(0.2263)	0 ~ 0.1	25	DSL1 - 45
S1	2.405	(0.2452)	0 ~ 0.1	25	DSL1 - 48
S1	2.5316	(0.2582)	0 ~ 0.1	27	DSL1 - 50
S1	2.8801	(0.2937)	0 ~ 0.1	30	DSL1 - 56
S1	3.1178	(0.3179)	0 ~ 0.1	33	DSL1 - 60
S1	3.3517	(0.3418)	0 ~ 0.1	35	DSL1 - 64
S1	3.7084	(0.3782)	0 ~ 0.1	40	DSL1 - 70
S1	3.8287	(0.3904)	0 ~ 0.1	41	DSL1 - 72
S1	4.302	(0.4387)	0 ~ 0.1	48	DSL1 - 80
S1	4.892	(0.4988)	0 ~ 0.1	58	DSL1 - 90
S1	5.4936	(0.5602)	0 ~ 0.1	68	DSL1 -100

NOTE 3: The allowable torques shown in the table are calculated values using the Lewis formula. Please see page 27 for more details.

NOTE 4: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



Module 1

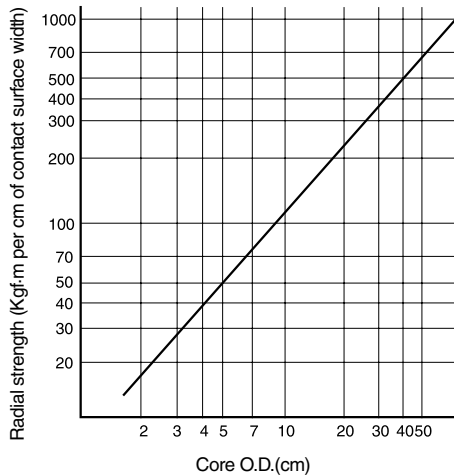
Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Metal core dia. <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	A _{H7}	B	C	D	E	F	G	H
NSU1- 30	1	30	8	20	30	32	10	10	20	20
NSU1- 32	1	32	8	22	32	34	10	10	20	22
NSU1- 34	1	34	8	25	34	36	10	10	20	25
NSU1- 35	1	35	8	25	35	37	10	10	20	25
NSU1- 36	1	36	8	25	36	38	10	10	20	25
NSU1- 40	1	40	10	25	40	42	10	10	20	28
NSU1- 45	1	45	10	30	45	47	10	10	20	34
NSU1- 48	1	48	10	30	48	50	10	10	20	34
NSU1- 50	1	50	10	30	50	52	10	10	20	34
NSU1- 60	1	60	10	40	60	62	10	10	20	45
NSU1- 70	1	70	10	40	70	72	10	10	20	45
NSU1- 80	1	80	10	40	80	82	10	10	20	45
NSU1- 90	1	90	10	40	90	92	10	10	20	55
NSU1-100	1	100	10	40	100	102	10	10	20	65

NOTE 1: Even though the holding strength at the material interface is designed to be stronger than the teeth, any secondary operation may weaken the holding strength. 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.

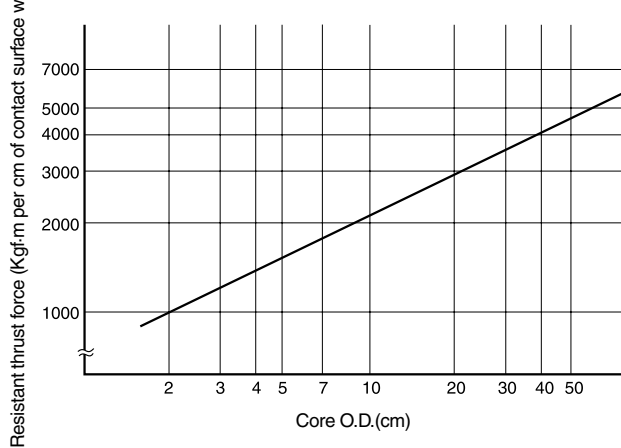
Definition of holding strength and safety factor

① The holding strength between the metal core and the molded material is a function of the contact area. The relationship between the core outside diameter and the radial strength (torque) is shown on the left, while the relationship between the core diameter and the resistant thrust force is shown on the right.

Relationship between radial strength and core diameter



Relationship between resistant thrust force and core diameter





Specifications

Precision grade	JIS N9 grade (JIS B1702-1: 1998) OLD JIS 5 grade (JIS B1702: 1976)	Tooth hardness	115~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	MC601ST with S45C core	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) <small>NOTE 2</small>	Allowable torque (kgf·m)	Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Bending strength			
S1	1.415	(0.1443)	0.12 ~ 0.26	0.05	NSU1- 30 NSU1- 32 NSU1- 34 NSU1- 35 NSU1- 36
S1	1.537	(0.1567)	0.12 ~ 0.26	0.06	
S1	1.661	(0.1694)	0.12 ~ 0.26	0.08	
S1	1.726	(0.176)	0.12 ~ 0.26	0.08	
S1	1.792	(0.1827)	0.12 ~ 0.26	0.08	
S1	2.045	(0.2085)	0.12 ~ 0.26	0.08	NSU1- 40 NSU1- 45 NSU1- 48 NSU1- 50 NSU1- 60
S1	2.365	(0.2412)	0.12 ~ 0.26	0.12	
S1	2.564	(0.2615)	0.12 ~ 0.26	0.13	
S1	2.7	(0.2753)	0.12 ~ 0.26	0.13	
S1	3.329	(0.3395)	0.14 ~ 0.28	0.23	
S1	3.964	(0.4042)	0.14 ~ 0.28	0.24	NSU1- 70 NSU1- 80 NSU1- 90 NSU1-100
S1	4.603	(0.4694)	0.14 ~ 0.28	0.25	
S1	5.24	(0.5343)	0.14 ~ 0.28	0.32	
S1	5.891	(0.6007)	0.14 ~ 0.28	0.4	

NOTE 2: The allowable torques shown in the table are calculated values using the Lewis formula.
Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

- ② When the ambient temperature rises, obtain the temperature compensation factor, T, from the chart on the right. Also, use a safety factor of 4 or 5 in the calculation.

$$T_{al} = T_{max} \times \frac{1}{\text{Safety factor}} \times T$$

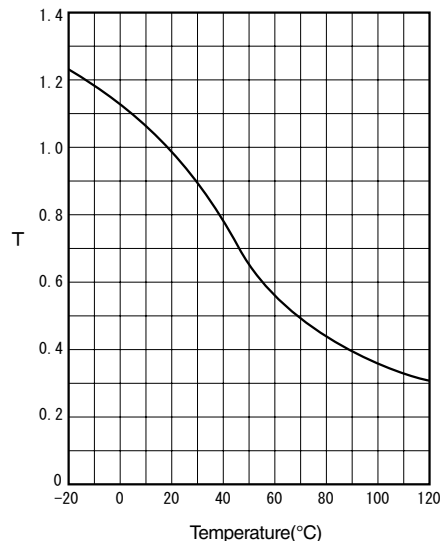
where

T_{al} = Allowable holding strength at the contact surface

T_{max} = Radial strength - Find from the charts on the left

T = Temperature compensation factor from the chart on the right

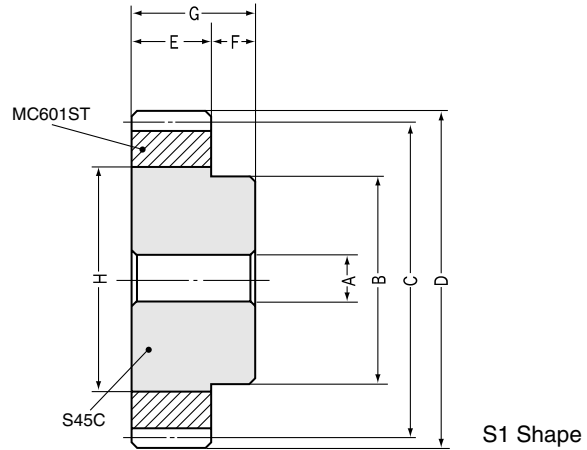
■ Ambient temperature compensation factor T



* Data supplied by Japan Polypenco Limited.



NSU Plastic Spur Gears with Steel Core Modules 1.5~2



Module 1.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Metal core dia. NOTE 1
	m	z	A _{H7}	B	C	D	E	F	G	H
NSU1.5-28	1.5	28	10	30	42	45	15	12	27	30
NSU1.5-30	1.5	30	10	30	45	48	15	12	27	30
NSU1.5-32	1.5	32	10	33	48	51	15	12	27	33
NSU1.5-34	1.5	34	10	33	51	54	15	12	27	33
NSU1.5-35	1.5	35	10	33	52.5	55.5	15	12	27	36
NSU1.5-36	1.5	36	10	33	54	57	15	12	27	36
NSU1.5-40	1.5	40	10	40	60	63	15	12	27	45
NSU1.5-45	1.5	45	10	40	67.5	70.5	15	12	27	45
NSU1.5-48	1.5	48	10	40	72	75	15	12	27	45
NSU1.5-50	1.5	50	12	40	75	78	15	12	27	45
NSU1.5-56	1.5	56	12	50	84	87	15	12	27	55
NSU1.5-60	1.5	60	12	50	90	93	15	12	27	55
NSU1.5-68	1.5	68	12	50	102	105	15	12	27	67
NSU1.5-70	1.5	70	12	50	105	108	15	12	27	70
NSU1.5-80	1.5	80	12	60	120	123	15	12	27	85
NSU1.5-90	1.5	90	12	60	135	138	15	12	27	100

Module 2

NSU2-20	2	20	10	22	40	44	20	14	34	22
NSU2-22	2	22	10	30	44	48	20	14	34	30
NSU2-24	2	24	10	30	48	52	20	14	34	30
NSU2-25	2	25	10	30	50	54	20	14	34	30
NSU2-28	2	28	10	35	56	60	20	14	34	35
NSU2-30	2	30	10	35	60	64	20	14	34	35
NSU2-32	2	32	12	40	64	68	20	14	34	40
NSU2-34	2	34	12	40	68	72	20	14	34	45
NSU2-35	2	35	12	40	70	74	20	14	34	45
NSU2-36	2	36	12	40	72	76	20	14	34	45
NSU2-40	2	40	15	55	80	84	20	14	34	60
NSU2-44	2	44	15	55	88	92	20	14	34	60
NSU2-45	2	45	15	55	90	94	20	14	34	60
NSU2-48	2	48	15	60	96	100	20	14	34	65
NSU2-50	2	50	15	60	100	104	20	14	34	65
NSU2-56	2	56	15	60	112	116	20	14	34	65
NSU2-60	2	60	15	60	120	124	20	14	34	85
NSU2-68	2	68	15	60	136	140	20	14	34	100
NSU2-70	2	70	15	60	140	144	20	14	34	105
NSU2-80	2	80	15	60	160	164	20	14	34	125

NOTE 1: Even though the holding strength at the material interface is designed to be stronger than the teeth, a secondary operation may weaken the holding strength. 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.



Specifications

Precision grade	JIS N9 grade (JIS B1702-1: 1998) OLD JIS 5 grade (JIS B1702: 1976)	Tooth hardness	115~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	MC601ST with S45C core	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N-m) <small>NOTE 2</small>	Allowable torque (kgf-m)	Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Bending strength			
S1	4.39	(0.4477)	0.14 ~ 0.3	0.15	NSU1.5-28 NSU1.5-30 NSU1.5-32 NSU1.5-34 NSU1.5-35
S1	4.775	(0.4869)	0.14 ~ 0.3	0.15	
S1	5.186	(0.5288)	0.14 ~ 0.3	0.18	
S1	5.607	(0.5718)	0.16 ~ 0.32	0.19	
S1	5.825	(0.594)	0.16 ~ 0.32	0.21	
S1	6.046	(0.6165)	0.16 ~ 0.32	0.21	NSU1.5-36 NSU1.5-40 NSU1.5-45 NSU1.5-48 NSU1.5-50
S1	6.902	(0.7038)	0.16 ~ 0.32	0.31	
S1	7.984	(0.8141)	0.16 ~ 0.32	0.33	
S1	8.655	(0.8826)	0.16 ~ 0.32	0.34	
S1	9.113	(0.9293)	0.16 ~ 0.32	0.34	
S1	10.38	(1.058)	0.16 ~ 0.32	0.5	NSU1.5-56 NSU1.5-60 NSU1.5-68 NSU1.5-70 NSU1.5-80
S1	11.24	(1.146)	0.16 ~ 0.32	0.52	
S1	12.94	(1.32)	0.18 ~ 0.36	0.66	
S1	13.38	(1.364)	0.18 ~ 0.36	0.69	
S1	15.53	(1.584)	0.18 ~ 0.36	1	
S1	17.68	(1.803)	0.18 ~ 0.36	1.28	NSU1.5-90

S1	6.773	(0.6907)	0.18 ~ 0.34	0.1	NSU2-20 NSU2-22 NSU2-24 NSU2-25 NSU2-28
S1	7.656	(0.7807)	0.18 ~ 0.34	0.19	
S1	8.546	(0.8715)	0.18 ~ 0.34	0.2	
S1	9.027	(0.9205)	0.18 ~ 0.34	0.2	
S1	10.4	(1.061)	0.2 ~ 0.36	0.27	
S1	11.32	(1.154)	0.2 ~ 0.36	0.28	NSU2-30 NSU2-32 NSU2-34 NSU2-35 NSU2-36
S1	12.29	(1.253)	0.2 ~ 0.36	0.36	
S1	13.29	(1.355)	0.2 ~ 0.36	0.41	
S1	13.81	(1.408)	0.2 ~ 0.36	0.41	
S1	14.33	(1.461)	0.2 ~ 0.36	0.42	
S1	16.36	(1.668)	0.2 ~ 0.36	0.71	NSU2-40 NSU2-44 NSU2-45 NSU2-48 NSU2-50
S1	18.4	(1.876)	0.2 ~ 0.36	0.73	
S1	18.93	(1.93)	0.2 ~ 0.36	0.75	
S1	20.52	(2.092)	0.2 ~ 0.36	0.88	
S1	21.6	(2.203)	0.2 ~ 0.36	0.9	
S1	24.59	(2.508)	0.22 ~ 0.38	0.94	NSU2-56 NSU2-60 NSU2-68 NSU2-70 NSU2-80
S1	26.63	(2.716)	0.22 ~ 0.38	1.3	
S1	30.67	(3.128)	0.22 ~ 0.38	1.65	
S1	31.7	(3.233)	0.22 ~ 0.38	1.78	
S1	36.82	(3.755)	0.22 ~ 0.38	2.37	

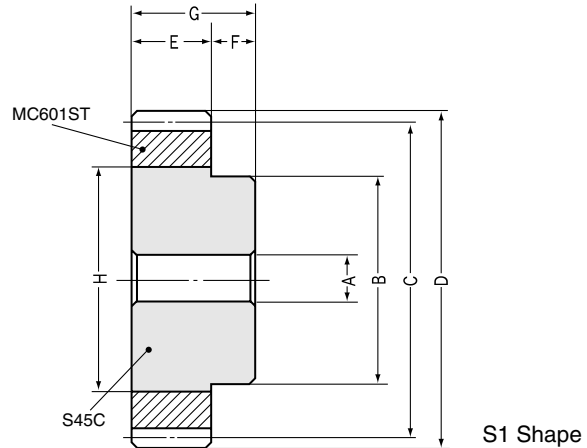
NOTE 2: The allowable torques shown in the table are calculated values using the Lewis formula.

Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



NSU Plastic Spur Gears with Steel Core Modules 2.5~3



Module 2.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Metal core dia. <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H
NSU2.5-18	2.5	18	12	25	45	50	25	15	40	25
NSU2.5-20	2.5	20	12	28	50	55	25	15	40	28
NSU2.5-22	2.5	22	12	35	55	60	25	15	40	35
NSU2.5-24	2.5	24	12	35	60	65	25	15	40	35
NSU2.5-25	2.5	25	12	35	62.5	67.5	25	15	40	35
NSU2.5-28	2.5	28	12	40	70	75	25	15	40	40
NSU2.5-30	2.5	30	12	45	75	80	25	15	40	50
NSU2.5-32	2.5	32	12	45	80	85	25	15	40	50
NSU2.5-34	2.5	34	12	50	85	90	25	15	40	55
NSU2.5-35	2.5	35	12	55	87.5	92.5	25	15	40	60
NSU2.5-36	2.5	36	12	55	90	95	25	15	40	60
NSU2.5-40	2.5	40	15	65	100	105	25	15	40	70
NSU2.5-44	2.5	44	15	65	110	115	25	15	40	75
NSU2.5-45	2.5	45	15	65	112.5	117.5	25	15	40	75
NSU2.5-48	2.5	48	15	65	120	125	25	15	40	85
NSU2.5-50	2.5	50	15	65	125	130	25	15	40	95
NSU2.5-56	2.5	56	15	65	140	145	25	15	40	105
NSU2.5-60	2.5	60	20	70	150	155	25	15	40	115
NSU2.5-68	2.5	68	20	70	170	175	25	15	40	135
NSU2.5-70	2.5	70	20	70	175	180	25	15	40	140

Module 3

NSU3-16	3	16	12	24	48	54	30	17	47	24
NSU3-18	3	18	12	30	54	60	30	17	47	30
NSU3-20	3	20	12	33	60	66	30	17	47	33
NSU3-22	3	22	12	38	66	72	30	17	47	38
NSU3-24	3	24	12	43	72	78	30	17	47	43
NSU3-25	3	25	12	45	75	81	30	17	47	45
NSU3-28	3	28	15	50	84	90	30	17	47	50
NSU3-30	3	30	15	55	90	96	30	17	47	60
NSU3-32	3	32	15	60	96	102	30	17	47	65
NSU3-34	3	34	15	60	102	108	30	17	47	65
NSU3-35	3	35	15	60	105	111	30	17	47	75
NSU3-36	3	36	15	60	108	114	30	17	47	80
NSU3-40	3	40	20	70	120	126	30	17	47	85
NSU3-44	3	44	20	70	132	138	30	17	47	95
NSU3-45	3	45	20	70	135	141	30	17	47	105
NSU3-48	3	48	20	70	144	150	30	17	47	105
NSU3-50	3	50	20	70	150	156	30	17	47	105
NSU3-56	3	56	20	70	168	174	30	17	47	130
NSU3-60	3	60	20	70	180	186	30	17	47	145
NSU3-68	3	68	20	70	204	210	30	17	47	165
NSU3-70	3	70	20	70	210	216	30	17	47	175

NOTE 1: Even though the holding strength at the material interface is designed to be stronger than the teeth, a secondary operation may weaken the holding strength. 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.



Plastic Spur Gears with Steel Core

Specifications

Precision grade	JIS N9 grade (JIS B1702-1: 1998) OLD JIS 5 grade (JIS B1702: 1976)	Tooth hardness	115~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	MC601ST with S45C core	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

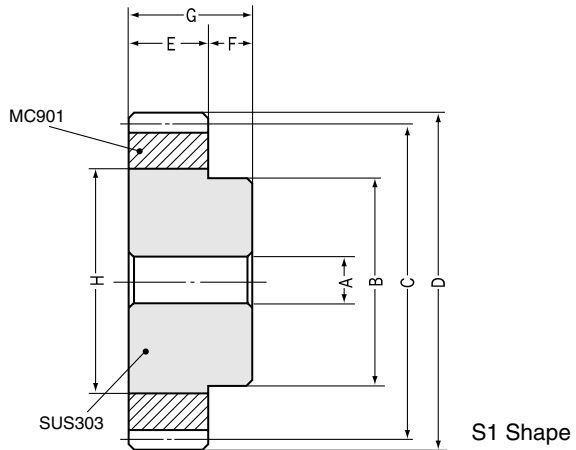
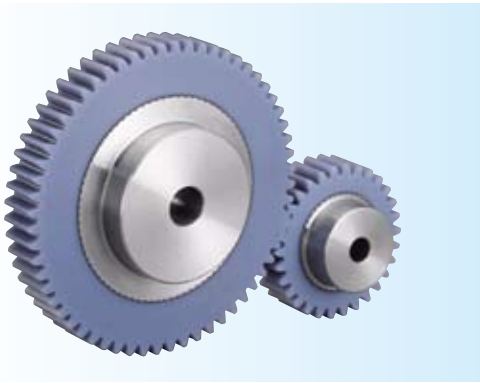
Shape	Allowable torque (N-m) NOTE 2	Allowable torque (kgf-m)	Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
	Bending strength	Bending strength			
S1	11.42	(1.165)	0.2 ~ 0.36	0.15	NSU2.5-18 NSU2.5-20 NSU2.5-22 NSU2.5-24 NSU2.5-25
S1	13.23	(1.349)	0.2 ~ 0.36	0.2	
S1	14.95	(1.525)	0.22 ~ 0.38	0.31	
S1	16.69	(1.702)	0.22 ~ 0.38	0.33	
S1	17.63	(1.798)	0.22 ~ 0.38	0.33	
S1	20.33	(2.073)	0.22 ~ 0.38	0.44	NSU2.5-28 NSU2.5-30 NSU2.5-32 NSU2.5-34 NSU2.5-35
S1	22.1	(2.254)	0.22 ~ 0.38	0.62	
S1	24.01	(2.448)	0.22 ~ 0.38	0.63	
S1	25.96	(2.647)	0.22 ~ 0.38	0.76	
S1	26.97	(2.75)	0.22 ~ 0.38	0.9	
S1	27.99	(2.854)	0.22 ~ 0.38	0.91	NSU2.5-36 NSU2.5-40 NSU2.5-44 NSU2.5-45 NSU2.5-48
S1	31.95	(3.258)	0.22 ~ 0.38	1.2	
S1	35.94	(3.665)	0.24 ~ 0.4	1.35	
S1	36.96	(3.769)	0.24 ~ 0.4	1.4	
S1	40.07	(4.086)	0.24 ~ 0.4	1.6	
S1	42.19	(4.302)	0.24 ~ 0.4	1.9	NSU2.5-50 NSU2.5-56 NSU2.5-60 NSU2.5-68 NSU2.5-70
S1	48.03	(4.898)	0.24 ~ 0.4	2.23	
S1	52.01	(5.304)	0.24 ~ 0.4	2.6	
S1	59.92	(6.11)	0.24 ~ 0.4	3.41	
S1	61.93	(6.315)	0.24 ~ 0.4	3.63	

S1	16.91	(1.724)	0.28 ~ 0.44	0.17	NSU3-16 NSU3-18 NSU3-20 NSU3-22 NSU3-24
S1	19.74	(2.013)	0.3 ~ 0.46	0.28	
S1	22.86	(2.331)	0.3 ~ 0.46	0.35	
S1	25.84	(2.635)	0.3 ~ 0.46	0.46	
S1	28.84	(2.941)	0.3 ~ 0.46	0.59	
S1	30.47	(3.107)	0.3 ~ 0.46	0.65	NSU3-25 NSU3-28 NSU3-30 NSU3-32 NSU3-34
S1	35.12	(3.581)	0.3 ~ 0.46	0.78	
S1	38.2	(3.895)	0.3 ~ 0.46	1.1	
S1	41.48	(4.23)	0.3 ~ 0.46	1.2	
S1	44.86	(4.575)	0.32 ~ 0.48	1.3	
S1	46.6	(4.752)	0.32 ~ 0.48	1.5	NSU3-35 NSU3-36 NSU3-40 NSU3-44 NSU3-45
S1	48.37	(4.932)	0.32 ~ 0.48	1.7	
S1	55.21	(5.63)	0.32 ~ 0.48	1.9	
S1	62.1	(6.333)	0.32 ~ 0.48	2.3	
S1	63.87	(6.513)	0.32 ~ 0.48	2.7	
S1	69.24	(7.061)	0.32 ~ 0.48	2.7	NSU3-48 NSU3-50 NSU3-56 NSU3-60 NSU3-68
S1	72.9	(7.434)	0.32 ~ 0.48	2.8	
S1	82.99	(8.463)	0.32 ~ 0.48	3.8	
S1	89.88	(9.165)	0.32 ~ 0.48	4.6	
S1	103.6	(10.56)	0.32 ~ 0.48	5.8	
S1	107	(10.91)	0.32 ~ 0.48	6.4	NSU3-70

NOTE 2: The allowable torques shown in the table are calculated values using the Lewis formula.

Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



Module 1

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Metal core dia. <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	A _{H7}	B	C	D	E	F	G	H
PU1-30	1	30	8	20	30	32	10	10	20	20
PU1-35	1	35	8	25	35	37	10	10	20	25
PU1-40	1	40	10	25	40	42	10	10	20	28
PU1-50	1	50	10	30	50	52	10	10	20	34
PU1-60	1	60	10	40	60	62	10	10	20	45
PU1-80	1	80	10	40	80	82	10	10	20	45

Module 1.5

PU1.5-30	1.5	30	10	30	45	48	15	12	27	30
PU1.5-35	1.5	35	10	33	52.5	55.5	15	12	27	36
PU1.5-40	1.5	40	10	40	60	63	15	12	27	45
PU1.5-50	1.5	50	12	40	75	78	15	12	27	45
PU1.5-60	1.5	60	12	50	90	93	15	12	27	55
PU1.5-80	1.5	80	12	60	120	123	15	12	27	85

Module 2

PU2-20	2	20	10	22	40	44	20	14	34	22
PU2-25	2	25	10	30	50	54	20	14	34	30
PU2-30	2	30	10	35	60	64	20	14	34	35
PU2-35	2	35	12	40	70	74	20	14	34	45
PU2-40	2	40	15	55	80	84	20	14	34	60
PU2-50	2	50	15	60	100	104	20	14	34	65
PU2-60	2	60	15	60	120	124	20	14	34	85

NOTE 1: Even though the holding strength at the material interface is designed to be stronger than the teeth, a secondary operation may weaken the holding strength. 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.



Plastic Spur Gears with Stainless Steel Core

Specifications

Precision grade	JIS N9 grade (JIS B1702-1: 1998) OLD JIS 5 grade (JIS B1702: 1976)	Tooth hardness	115~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	MC901 with SUS303 core	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N-m) <small>NOTE 2</small>	Allowable torque (kgf-m)	Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Bending strength			
S1	1.025	(0.1045)	0.12 ~ 0.26	0.05	PU1-30
S1	1.25	(0.1275)	0.12 ~ 0.26	0.08	PU1-35
S1	1.482	(0.1511)	0.12 ~ 0.26	0.08	PU1-40
S1	1.956	(0.1995)	0.12 ~ 0.26	0.13	PU1-50
S1	2.412	(0.246)	0.14 ~ 0.28	0.23	PU1-60
S1	3.335	(0.3401)	0.14 ~ 0.28	0.25	PU1-80

S1	3.46	(0.3528)	0.14 ~ 0.3	0.15	PU1.5-30
S1	4.222	(0.4305)	0.16 ~ 0.32	0.21	PU1.5-35
S1	5.001	(0.51)	0.16 ~ 0.32	0.31	PU1.5-40
S1	6.604	(0.6734)	0.16 ~ 0.32	0.34	PU1.5-50
S1	8.141	(0.8302)	0.16 ~ 0.32	0.52	PU1.5-60
S1	11.26	(1.148)	0.18 ~ 0.36	1	PU1.5-80

S1	4.908	(0.5005)	0.18 ~ 0.34	0.1	PU2-20
S1	6.541	(0.667)	0.18 ~ 0.34	0.2	PU2-25
S1	8.201	(0.8363)	0.2 ~ 0.36	0.28	PU2-30
S1	10	(1.02)	0.2 ~ 0.36	0.41	PU2-35
S1	11.86	(1.209)	0.2 ~ 0.36	0.71	PU2-40
S1	15.65	(1.596)	0.2 ~ 0.36	0.9	PU2-50
S1	19.3	(1.968)	0.22 ~ 0.38	1.3	PU2-60

NOTE 2: The allowable torques shown in the table are calculated values using the Lewis formula.
Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.