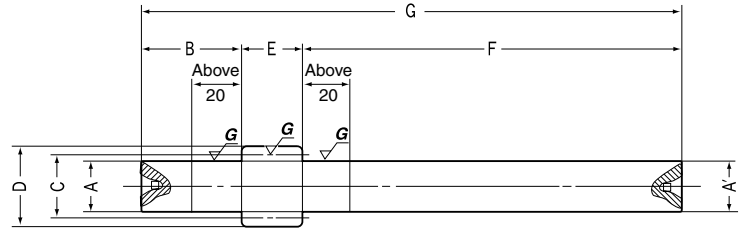




SSGS Ground Spur Pinion Shafts Modules 1.5~3

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)	Number(x=+0.5)	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)	Number(x=+0.5)	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

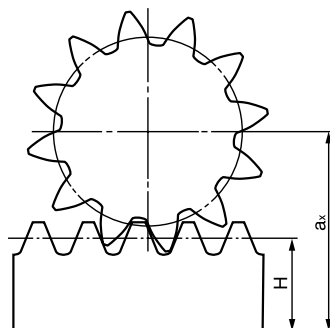
NOTE 3: The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 27 for more details.

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