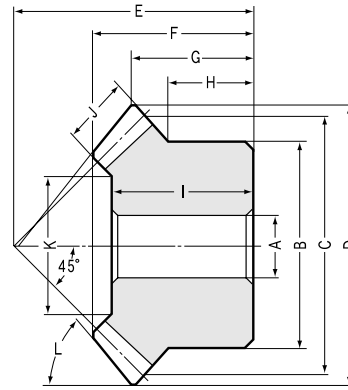




# SMS Spiral Miter Gears Modules 1~8



B3 Shape

## 20 Tooth Miter Gears Modules 1~8

Catalog No.	Direction of Spiral	Module	No. of teeth	Bore NOTE 1	Hub dia.	Pitch dia.	Outside dia.	Mounting distance	Total length	Crown to back length	Hub width	Length of bore	Face width
		<i>m</i>	<i>z</i>	A	B	C	D	E	F	G	H	I	J
SMS1 -20R SMS1 -20L	R L	1	20	6	16	20	21.3	20	13.84	10.65	8	12	5
SMS1.5 -20R SMS1.5 -20L	R L	1.5	20	8	26	30	31.74	30	21.18	15.87	13	19	8
SMS2 -20R SMS2 -20L	R L	2	20	12	34	40	42.4	37	24.75	18.2	14	22	10
SMS2.5 -20R SMS2.5 -20L	R L	2.5	20	14	42	50	52.94	48	32.42	24.47	19	29	12
SMS3 -20R SMS3 -20L	R L	3	20	16	50	60	63.72	58	39.6	29.86	23	35	15
SMS3.5 -20R SMS3.5 -20L	R L	3.5	20	20	60	70	74.47	65	43.81	32.23	25	40	18
SMS4 -20R SMS4 -20L	R L	4	20	20	64	80	84.88	75	50.51	37.44	27	45	20
SMS5 -20R SMS5 -20L	R L	5	20	25	80	100	105.9	90	60.16	42.95	30	54	26
SMS6 -20R SMS6 -20L	R L	6	20	28	100	120	127.16	104	67.35	47.58	34	60	30
SMS8 -20R SMS8 -20L	R L	8	20	30	130	160	169.94	125	72.6	49.97	30	62	35

**CAUTION:** A set of miter gears must be identical in module and number of teeth, but opposite in spiral hands.

**CAUTION:** Dimensions of the outside diameter, the overall length and crown to back length are all theoretical values, and some differences will occur due to the corner chamfering of the gear tips.

**NOTE 1:** Due to heat treating, some deformation of the bore may occur. It may be necessary to ream the bore to bring it to the stated dimensions.



## Specifications

Precision grade	JIS B 1704 grade 4	Tooth hardness	48~53HRC
Gear teeth	Gleason	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Helix angle	35°	Datum reference surface for gear cutting	Bore
Material	S45C	Secondary Operations	Possible except tooth areas
Heat treatment	Teeth induction hardened		

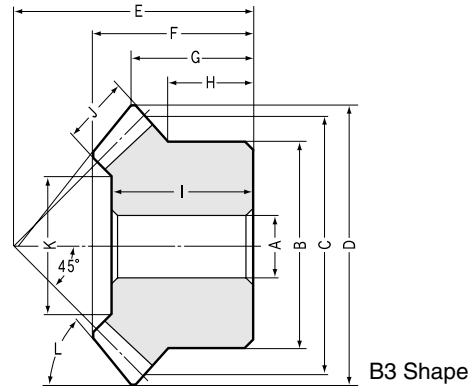
Holding surface dia.	Tip angle	Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
			Bending strength	Surface durability	Bending strength	Surface durability			
K	L								
9.86	50°39'	B3	1.067	0.6531	( 0.1088 )	( 0.0666 )	0.03 ~ 0.13	0.02	SMS1 -20R SMS1 -20L
15.37	48°29'	B3	3.733	2.326	( 0.3807 )	( 0.2372 )	0.05 ~ 0.15	0.07	SMS1.5 -20R SMS1.5 -20L
21.72	49°12'	B3	8.539	5.398	( 0.8707 )	( 0.5504 )	0.06 ~ 0.16	0.15	SMS2 -20R SMS2 -20L
28.06	48°38'	B3	16.29	10.45	( 1.661 )	( 1.066 )	0.07 ~ 0.17	0.3	SMS2.5 -20R SMS2.5 -20L
31.57	49°38'	B3	28.81	18.69	( 2.938 )	( 1.906 )	0.08 ~ 0.18	0.5	SMS3 -20R SMS3 -20L
39.09	50°10'	B3	46.49	30.41	( 4.741 )	( 3.101 )	0.1 ~ 0.25	0.8	SMS3.5 -20R SMS3.5 -20L
43.43	49°20'	B3	68.3	45.02	( 6.965 )	( 4.591 )	0.12 ~ 0.27	1.1	SMS4 -20R SMS4 -20L
54.46	48°39'	B3	136.4	90.88	(13.91 )	( 9.267 )	0.14 ~ 0.34	2.1	SMS5 -20R SMS5 -20L
67.15	48°53'	B3	225.9	155	(23.04 )	(15.81 )	0.16 ~ 0.36	3.6	SMS6 -20R SMS6 -20L
95	49°53'	B3	484	343.7	(49.35 )	(35.05 )	0.2 ~ 0.45	7.1	SMS8 -20R SMS8 -20L

**NOTE 2:** The allowable torques shown in the table are the calculated values according to the assumed usage conditions.  
Please see page 196 for more details.

Pitch Angle 45°



# SMS Spiral Miter Gears Modules 1~6



## 25 Tooth Miter Gears Modules 1~6

Catalog No.	Direction of Spiral	Module	No. of teeth	Bore NOTE 1	Hub dia.	Pitch dia.	Outside dia.	Mounting distance	Total length	Crown to back length	Hub width	Length of bore	Face width
		<i>m</i>	<i>z</i>	A	B	C	D	E	F	G	H	I	J
SMS1 -25R SMS1 -25L	R L	1	25	6	20	25	26.22	23	15.08	11.11	8	14	6
SMS1.5 -25R SMS1.5 -25L	R L	1.5	25	10	30	37	39.3	34	22.14	16.15	11.5	19	9
SMS2 -25R SMS2 -25L	R L	2	25	12	40	50	52.38	40	24.2	16.19	10	20	12
SMS2.5 -25R SMS2.5 -25L	R L	2.5	25	16	50	62.5	65.54	50	30.24	20.27	12.5	26	15
SMS3 -25R SMS3 -25L	R L	3	25	20	60	75	78.77	60	37.57	24.39	15	32	20
SMS3.5 -25R SMS3.5 -25L	R L	3.5	25	25	70	87.5	91.81	70	42.98	28.41	17.5	37	22
SMS4 -25R SMS4 -25L	R L	4	25	28	80	100	104.7	80	49.14	32.35	20	43	25
SMS5 -25R SMS5 -25L	R L	5	25	28	100	125	130.86	100	60.59	40.43	25	50	30
SMS6 -25R SMS6 -25L	R L	6	25	28	120	150	157.17	120	71.97	48.54	30	61	35

## 30 Tooth Miter Gears Modules 1~5

SMS1 -30R SMS1 -30L	R L	1	30	8	24	30	31.26	28	17.61	13.63	10	16	6
SMS1.5 -30R SMS1.5 -30L	R L	1.5	30	10	36	45	46.84	43	28.11	21.42	16	25	10
SMS2 -30R SMS2 -30L	R L	2	30	12	45	60	62.42	50	29.27	21.21	12.5	25	12
SMS2.5 -30R SMS2.5 -30L	R L	2.5	30	16	60	75	78.04	62	36.08	26.02	17	32	15
SMS3 -30R SMS3 -30L	R L	3	30	20	70	90	93.61	75	45.25	31.8	20	40	20
SMS3.5 -30R SMS3.5 -30L	R L	3.5	30	25	90	105	109.21	85	49.4	34.6	25	45	22
SMS4 -30R SMS4 -30L	R L	4	30	28	100	120	124.71	95	54.28	37.35	25	50	25
SMS5 -30R SMS5 -30L	R L	5	30	28	130	150	155.89	120	68.2	47.95	35	62	30

**CAUTION:** A set of miter gears must be identical in module and number of teeth, but opposite in spiral hands.

**CAUTION:** Dimensions of the outside diameter, the overall length and crown to back length are all theoretical values, and some differences will occur due to the corner chamfering of the gear tips.

**NOTE1:** Due to heat treating, some deformation of the bore may occur. It may be necessary to ream the bore to bring it to the stated dimensions.

Miter Gears  
SMS



## Specifications

Precision grade	JIS B 1704 grade 4	Tooth hardness	48~53HRC
Gear teeth	Gleason	Surface treatment	Black oxide
Pressure angle	20°	Tooth surface finish	Cut
Helix angle	35°	Datum reference surface for gear cutting	Bore
Material	S45C	Secondary Operations	Possible except tooth areas
Heat treatment	Teeth induction hardened		

Holding surface dia.	Tip angle	Shape	Allowable torque (N·m) <small>NOTE 2</small>		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
			Bending strength	Surface durability	Bending strength	Surface durability			
K	L								
15.03	48°38'	B3	1.712	1.284	( 0.1746 )	( 0.1309 )	0.03 ~ 0.13	0.05	<b>SMS1 -25R</b> <b>SMS1 -25L</b>
19.54	48°22'	B3	5.78	4.42	( 0.5894 )	( 0.4507 )	0.05 ~ 0.15	0.12	<b>SMS1.5 -25R</b> <b>SMS1.5 -25L</b>
26.06	48°12'	B3	13.7	10.66	( 1.397 )	( 1.087 )	0.06 ~ 0.16	0.2	<b>SMS2 -25R</b> <b>SMS2 -25L</b>
34.57	48°26'	B3	26.76	21.1	( 2.729 )	( 2.152 )	0.07 ~ 0.17	0.4	<b>SMS2.5 -25R</b> <b>SMS2.5 -25L</b>
37.43	48°52'	B3	49.07	39.05	( 5.004 )	( 3.982 )	0.08 ~ 0.18	0.7	<b>SMS3 -25R</b> <b>SMS3 -25L</b>
46.77	48°37'	B3	75.43	60.58	( 7.692 )	( 6.177 )	0.1 ~ 0.25	1.1	<b>SMS3.5 -25R</b> <b>SMS3.5 -25L</b>
55.29	47°52'	B3	112.3	90.74	(11.45 )	( 9.253 )	0.12 ~ 0.27	1.7	<b>SMS4 -25R</b> <b>SMS4 -25L</b>
65.15	47°49'	B3	214.1	174.9	(21.83 )	(17.84 )	0.14 ~ 0.34	3.4	<b>SMS5 -25R</b> <b>SMS5 -25L</b>
83	48°09'	B3	356.5	299.8	(36.35 )	(30.57 )	0.16 ~ 0.36	5.4	<b>SMS6 -25R</b> <b>SMS6 -25L</b>

Pitch Angle 45°

19.03	48°29'	B3	2.275	2.027	( 0.232 )	( 0.2067 )	0.03 ~ 0.13	0.05	<b>SMS1 -30R</b> <b>SMS1 -30L</b>
25.72	48°03'	B3	8.222	7.479	( 0.8384 )	( 0.7627 )	0.05 ~ 0.15	0.2	<b>SMS1.5 -30R</b> <b>SMS1.5 -30L</b>
36.06	47°53'	B3	18.2	16.87	( 1.856 )	( 1.72 )	0.06 ~ 0.16	0.37	<b>SMS2 -30R</b> <b>SMS2 -30L</b>
47.57	47°58'	B3	35.55	33.36	( 3.625 )	( 3.402 )	0.07 ~ 0.17	0.77	<b>SMS2.5 -30R</b> <b>SMS2.5 -30L</b>
53.43	47°48'	B3	65.78	62.27	( 6.708 )	( 6.35 )	0.08 ~ 0.18	1.3	<b>SMS3 -30R</b> <b>SMS3 -30L</b>
67.77	47°48'	B3	100.6	96.01	(10.26 )	( 9.79 )	0.1 ~ 0.25	2.3	<b>SMS3.5 -30R</b> <b>SMS3.5 -30L</b>
79.29	47°26'	B3	149.5	143.7	(15.25 )	(14.65 )	0.12 ~ 0.27	3.2	<b>SMS4 -30R</b> <b>SMS4 -30L</b>
99.15	47°36'	B3	284.4	275.9	(29 )	(28.13 )	0.14 ~ 0.34	6	<b>SMS5 -30R</b> <b>SMS5 -30L</b>

**NOTE 2:** The allowable torques shown in the table are the calculated values according to the assumed usage conditions.  
Please see page 196 for more details.

Pitch Angle 45°