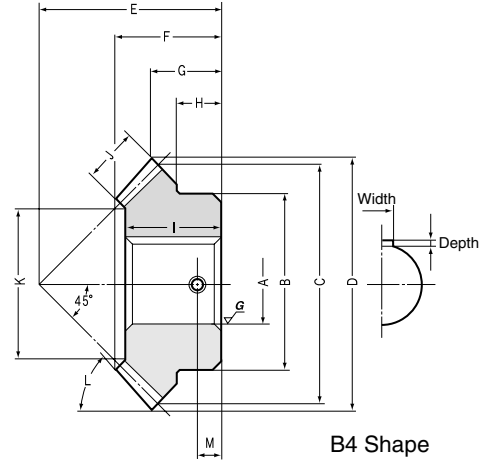
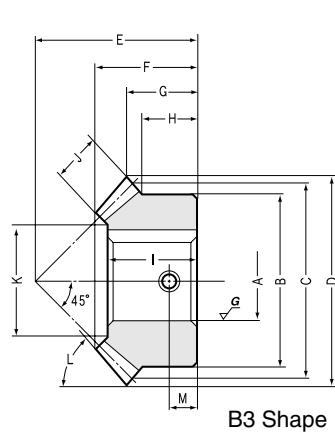




MMSA(B) Finished Bore Spiral Miter Gears Modules 1~10



20 Tooth Miter Gears Modules 1~10

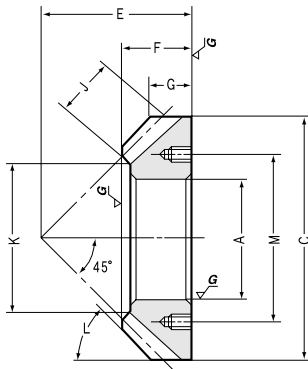
Catalog No.	Direction of Spiral	Module <i>m</i>	No. of teeth <i>z</i>	Bore AH7	Hub dia. B	Pitch dia. C	Outside dia. D	Mounting distance E	Total length F	Crown to back length G	Hub width H	Length of bore I	Face width J	Holding surface dia. K	Tip angle L
MMSA1 -20R MMSB1 -20R	R	1	20	8 10	17	20	21.29	20	13.53	10.64	8.5	12.2	4.5	11.67	50°21'
MMSA1 -20L MMSB1 -20L	L	1	20	8 10	17	20	21.29	20	13.53	10.64	8.5	12.2	4.5	11.67	50°21'
MMSA1.5-20R MMSB1.5-20R	R	1.5	20	10 12	25	30	31.9	28	18.48	13.95	10.5	16.5	7	17.2	49°52'
MMSA1.5-20L MMSB1.5-20L	L	1.5	20	10 12	25	30	31.9	28	18.48	13.95	10.5	16.5	7	17.2	49°52'
MMSA2 -20R MMSB2 -20R	R	2	20	14 16	35	40	42.52	35	22.09	16.26	12.5	20	9	24.54	49°49'
MMSA2 -20L MMSB2 -20L	L	2	20	14 16	35	40	42.52	35	22.09	16.26	12.5	20	9	24.54	49°49'
MMSA2.5-20R MMSB2.5-20R	R	2.5	20	18 20	42	50	53.2	45	28.63	21.6	16	26	11	30.89	50°28'
MMSA2.5-20L MMSB2.5-20L	L	2.5	20	18 20	42	50	53.2	45	28.63	21.6	16	26	11	30.89	50°28'
MMSA3 -20R MMSB3 -20R	R	3	20	20 22	52	60	63.99	50	30.78	21.99	16	27	14	34.4	51°24'
MMSA3 -20L MMSB3 -20L	L	3	20	20 22	52	60	63.99	50	30.78	21.99	16	27	14	34.4	51°24'
MMSA3.5-20R MMSB3.5-20R	R	3.5	20	25 28	50	70	74.53	55	32.45	22.26	14	29	16	42.7	50°40'
MMSA3.5-20L MMSB3.5-20L	L	3.5	20	25 28	50	70	74.53	55	32.45	22.26	14	29	16	42.75	50°40'
MMSA4 -20R MMSB4 -20R	R	4	20	28 30	55	80	84.99	65	39.13	27.5	17	35	18	49.08	49°54'
MMSA4 -20L MMSB4 -20L	L	4	20	28 30	55	80	84.99	65	39.13	27.5	17	35	18	49.08	49°54'
MMSA5 -20R MMSB5 -20R	R	5	20	30 35	70	100	106.25	75	42.99	28.13	17	38	23	60.95	49°56'
MMSA5 -20L MMSB5 -20L	L	5	20	30 35	70	100	106.25	75	42.99	28.13	17	38	23	60.95	49°56'
MMSA6 -20R MMSB6 -20R	R	6	20	40 45	80	120	127.59	90	51.13	33.8	20	45	27	73.63	50°16'
MMSA6 -20L MMSB6 -20L	L	6	20	40 45	80	120	127.59	90	51.13	33.8	20	45	27	73.63	50°16'
MMSA8 -20R MMSA8 -20L	R L	8	20	80	—	160	—	100	45	29.16	—	40	35	101	49°53'
MMSA10 -20R MMSA10 -20L	R L	10	20	100	—	200	—	125	58	36.48	—	50	45	122.72	49°57'

CAUTION: These products which are hardened by carburizing allow no secondary machining. However, the back surface of B7 type gears is masked during the process so that it is possible to drill and pin on this surface.

CAUTION: Dimensions of the 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.

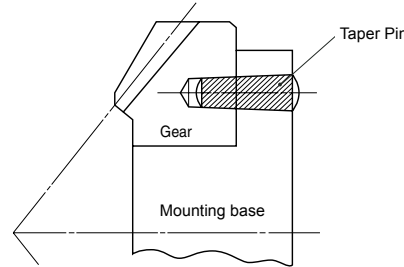


Finished Bore Spiral Miter Gears



B7 Shape

When installing MMSA(B) spiral miter gears in B7 style (ring type), always secure the gears onto the mounting base with taper pins to absorb the rotational loads. It is dangerous to secure with bolts only.



Specifications

Precision grade	JIS B 1704 grade 4	Tooth hardness	55~60HRC
Gear teeth	Gleason	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Helix angle	35°	Datum reference surface for gear cutting	Bore
Material	SCM415	Secondary Operations	Not Possible (Except the mounting surface on B7 shape)
Heat treatment	Overall Carburizing <small>NOTE4</small>		

NOTE 4: It is possible to perform secondary operations on the mounting surface of style B7 due to masking during carburizing.

Keyway <small>NOTE 1</small>	Threaded hole <small>NOTE 2</small>		Shape	Allowable torque (N·m) <small>NOTE 3</small>		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
	Width × Depth	M		Thread Size	Bending strength	Surface durability	Bending strength			
—	4.5	M4	B3	2.243	2.089	(0.2287)	(0.213)	0.03 ~ 0.13	0.02 0.02	MMSA1 -20R MMSB1 -20R
—	4.5	M4	B3	2.243	2.089	(0.2287)	(0.213)	0.03 ~ 0.13	0.02 0.02	MMSA1 -20L MMSB1 -20L
4 × 1.8	6	M4 M5	B3	7.741	7.342	(0.7894)	(0.7487)	0.05 ~ 0.15	0.06 0.05	MMSA1.5-20R MMSB1.5-20R
4 × 1.8	6	M4 M5	B3	7.741	7.342	(0.7894)	(0.7487)	0.05 ~ 0.15	0.06 0.05	MMSA1.5-20L MMSB1.5-20L
5 × 2.3 5 × 2.3	7	M5	B3	17.95	17.26	(1.83)	(1.76)	0.06 ~ 0.16	0.14 0.13	MMSA2 -20R MMSB2 -20R
5 × 2.3 5 × 2.3	7	M5	B3	17.95	17.26	(1.83)	(1.76)	0.06 ~ 0.16	0.14 0.13	MMSA2 -20L MMSB2 -20L
6 × 2.8 6 × 2.8	8	M6	B3	34.56	33.74	(3.524)	(3.441)	0.07 ~ 0.17	0.26 0.24	MMSA2.5-20R MMSB2.5-20R
6 × 2.8 6 × 2.8	8	M6	B3	34.56	33.74	(3.524)	(3.441)	0.07 ~ 0.17	0.26 0.24	MMSA2.5-20L MMSB2.5-20L
6 × 2.8 6 × 2.8	8	M6	B3	61.93	61.09	(6.315)	(6.23)	0.08 ~ 0.18	0.44 0.42	MMSA3 -20R MMSB3 -20R
6 × 2.8 6 × 2.8	8	M6	B3	61.93	61.09	(6.315)	(6.23)	0.08 ~ 0.18	0.44 0.42	MMSA3 -20L MMSB3 -20L
8 × 3.3 8 × 3.3	8	M8	B4	97.11	96.68	(9.903)	(9.859)	0.1 ~ 0.25	0.5 0.47	MMSA3.5-20R MMSB3.5-20R
8 × 3.3 8 × 3.3	8	M8	B4	97.11	96.68	(9.903)	(9.859)	0.1 ~ 0.25	0.5 0.47	MMSA3.5-20L MMSB3.5-20L
8 × 3.3 8 × 3.3	9	M8	B4	143.6	144	(14.64)	(14.68)	0.12 ~ 0.27	0.72 0.7	MMSA4 -20R MMSB4 -20R
8 × 3.3 8 × 3.3	9	M8	B4	143.6	144	(14.64)	(14.68)	0.12 ~ 0.27	0.72 0.7	MMSA4 -20L MMSB4 -20L
8 × 3.3 10 × 3.3	9	M8	B4	284.2	288.2	(28.98)	(29.39)	0.14 ~ 0.34	1.4 1.3	MMSA5 -20R MMSB5 -20R
8 × 3.3 10 × 3.3	9	M8	B4	284.2	288.2	(28.98)	(29.39)	0.14 ~ 0.34	1.4 1.3	MMSA5 -20L MMSB5 -20L
12 × 3.3 14 × 3.8	10	M8	B4	474.8	495.7	(48.42)	(50.55)	0.16 ~ 0.36	2.3 2.2	MMSA6 -20R MMSB6 -20R
12 × 3.3 14 × 3.8	10	M8	B4	474.8	495.7	(48.42)	(50.55)	0.16 ~ 0.36	2.3 2.2	MMSA6 -20L MMSB6 -20L
—	110	6-M10	B7	1084	1169	(110.5)	(119.2)	0.2 ~ 0.45	4 4	MMSA8 -20R MMSA8 -20L
—	130	6-M10	B7	1656	1844	(168.9)	(188)	0.25 ~ 0.50	8.1 8.1	MMSA10 -20R MMSA10 -20L

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

NOTE 2: A set screw comes with these products.

NOTE 3: 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°