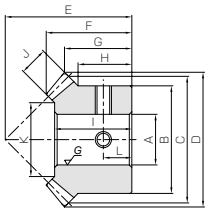
Finished Bore Spiral Miter Gears

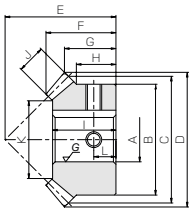
Specifications	
Precision grade	JIS B 1704 : 1978 grade 4
Gear teeth	Gleason
Pressure angle	20°
Helix angle	35°
Material	SCM415
Heat treatment	Overall carburizing
Tooth hardness	55 ～ 60HRC



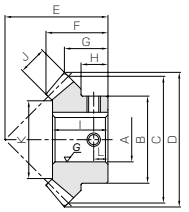
BT

Catalog No.	Gear ratio	Module	No. of teeth	Direction of spiral	Shape	Bore A_{H7}	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
MMSA1-20R MMSB1-20R	1	***m*1**	20	R	BT	8 10	17	20	21.29	20	13.53	10.64	8.5	12.2
MMSA1-20L MMSB1-20L				L	BT	8 10								
MMSA1.5-20R MMSB1.5-20R		***m*1.5**	20	R	BT BK	10 12	25	30	31.9	28	18.48	13.95	10.5	16.5
MMSA1.5-20L MMSB1.5-20L				L	BT BK	10 12								
MMSA2-20R MMSB2-20R		***m*2**	20	R	BK	14 16	35	40	42.52	35	22.09	16.26	12.5	20
MMSA2-20L MMSB2-20L				L	BK	14 16								
MMSA2.5-20R MMSB2.5-20R		***m*2.5**	20	R	BK	18 20	42	50	53.2	45	28.63	21.6	16	26
MMSA2.5-20L MMSB2.5-20L				L	BK	18 20								
MMSA3-20R MMSB3-20R		***m*3**	20	R	BK	20 22	52	60	63.99	50	30.78	21.99	16	27
MMSA3-20L MMSB3-20L				L	BK	20 22								
MMSA3.5-20R MMSB3.5-20R		***m*3.5**	20	R	B4	25 28	50	70	74.53	55	32.45	22.26	14	29
MMSA3.5-20L MMSB3.5-20L				L	B4	25 28								
MMSA4-20R MMSB4-20R		***m*4**	20	R	B4	28 30	55	80	84.99	65	39.13	27.5	17	35
MMSA4-20L MMSB4-20L				L	B4	28 30								
MMSA5-20R MMSB5-20R		***m*5**	20	R	B4	30 35	70	100	106.25	75	42.99	28.13	17	38
MMSA5-20L MMSB5-20L				L	B4	30 35								
MMSA6-20R MMSB6-20R		***m*6**	20	R	B4	40 45	80	120	127.59	90	51.13	33.8	20	45
MMSA6-20L MMSB6-20L				L	B4	40 45								
MMSA8-20R MMSA8-20L		***m*8**	20	R L	B7	80 80	—	160	—	100	45	29.16	—	40
MMSA10-20R MMSA10-20L		***m*10**	20	R L	B7	100 100	—	200	—	125	58	36.48	—	50

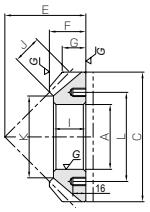
[Caution on Product Characteristics]
① A sets of miter gears must be identical in module and number of teeth, but opposite in spiral hands.
② The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 253 for more details.
③ Dimensions 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.
④ These gears produce axial thrust forces. See page 254 for more details.
⑤ Although the dimensions of the keyway are made to the JIS (Js9) tolerance, there may be some deviations due to the effects of heat treatment.
⑥ For products having a tapped hole (Except for B7-shaped products), a tapping screw is attached as an accessory.



BK



B4

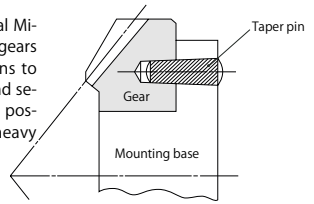


B7

Face width J	Holding surface dia. K	Keyway Width×Depth	Set Screw Size	Set Screw L	Allowable torque (N·m) Bending strength	Allowable torque (N·m) Surface durability	Allowable torque (kgf·m) Bending strength	Allowable torque (kgf·m) Surface durability	Backlash (mm)	Weight (kg)	Catalog No.
4.5	11.67	— —	2–M4 2–M4	4.5	2.24	2.09	0.23	0.21	0.03~0.13	0.018 0.015	**MMSA1-20R MMSB1-20R**
		— —	2–M4 2–M4	4.5						0.018 0.015	**MMSA1-20L MMSB1-20L**
7	17.2	— 4 x 1.8	2–M4 2–M4	6	7.74	7.34	0.79	0.75	0.05~0.15	0.057 0.052	**MMSA1.5-20R MMSB1.5-20R**
		— 4 x 1.8	2–M4 2–M4	6						0.057 0.052	**MMSA1.5-20L MMSB1.5-20L**
9	24.54	5 x 2.3 5 x 2.3	2–M4 2–M4	7	18.0	17.3	1.83	1.76	0.06~0.16	0.13 0.12	**MMSA2-20R MMSB2-20R**
		5 x 2.3 5 x 2.3	2–M4 2–M4	7						0.13 0.12	**MMSA2-20L MMSB2-20L**
11	30.89	6 x 2.8 6 x 2.8	2–M5 2–M5	8	34.6	33.7	3.52	3.44	0.07~0.17	0.24 0.23	**MMSA2.5-20R MMSB2.5-20R**
		6 x 2.8 6 x 2.8	2–M5 2–M5	8						0.24 0.23	**MMSA2.5-20L MMSB2.5-20L**
14	34.4	6 x 2.8 6 x 2.8	2–M5 2–M5	8	61.9	61.1	6.32	6.23	0.08~0.18	0.40 0.39	**MMSA3-20R MMSB3-20R**
		6 x 2.8 6 x 2.8	2–M5 2–M5	8						0.40 0.39	**MMSA3-20L MMSB3-20L**
16	42.75	8 x 3.3 8 x 3.3	2–M6 2–M6	8	97.1	96.7	9.90	9.86	0.10~0.25	0.46 0.43	**MMSA3.5-20R MMSB3.5-20R**
		8 x 3.3 8 x 3.3	2–M6 2–M6	8						0.46 0.43	**MMSA3.5-20L MMSB3.5-20L**
18	49.08	8 x 3.3 8 x 3.3	2–M6 2–M6	9	144	144	14.6	14.7	0.12~0.27	0.70 0.68	**MMSA4-20R MMSB4-20R**
		8 x 3.3 8 x 3.3	2–M6 2–M6	9						0.70 0.68	**MMSA4-20L MMSB4-20L**
23	60.95	8 x 3.3 10 x 3.3	2–M6 2–M8	9	284	288	29.0	29.4	0.14~0.34	1.32 1.25	**MMSA5-20R MMSB5-20R**
		8 x 3.3 10 x 3.3	2–M6 2–M8	9						1.32 1.25	**MMSA5-20L MMSB5-20L**
27	73.63	12 x 3.3 14 x 3.8	2–M8 2-M10	10	475	496	48.4	50.6	0.16~0.36	2.11 1.99	**MMSA6-20R MMSB6-20R**
		12 x 3.3 14 x 3.8	2–M8 2-M10	10						2.11 1.99	**MMSA6-20L MMSB6-20L**
35	101	— —	6-M10 6-M10	110	1080	1170	111	119	0.20~0.45	3.98 3.98	**MMSA8-20R MMSA8-20L**
45	122.72	— —	6-M10 6-M10	130	1660	1840	169	188	0.25~0.50	7.88 7.88	**MMSA10-20R MMSA10-20L**

[Caution on Secondary Operations]
①These products which are hardened by carburizing allow no secondary machining. However, for B7 type gear, the area surrounded with – – – – line (in the illustration) is masked during the carburization process and can be modified. Care should be exercised since the hardness is high (approx. HRC40, maximum).

When installing B7 type (ring type) Spiral Miter Gears to the base, always secure the gears onto the mounting base with taper pins to absorb the rotational loads. Fastening and securing with only mounting screws could possibly cause the screws to snap due to heavy loads.



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