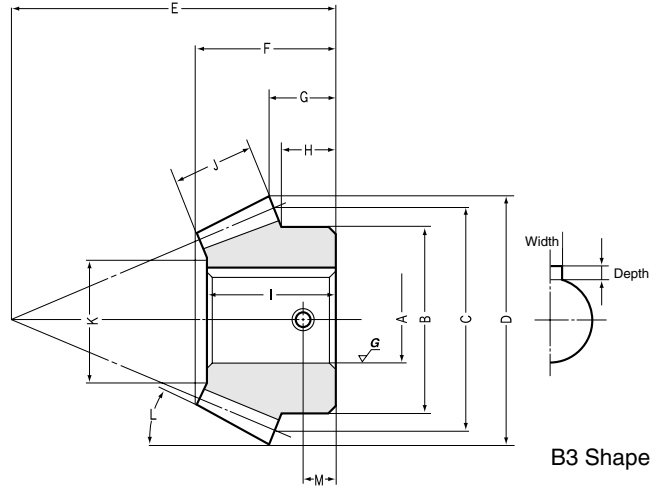




# MBSA(B) Finished Bore Spiral Bevel Gears

Modules 2~6



B3 Shape

Gear Ratio 1.5 ■ Modules 2~6

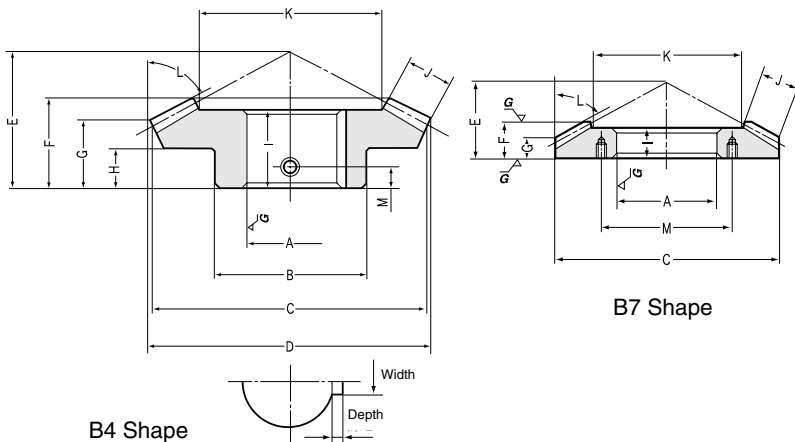
Catalog No.	Direction of Spiral	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Mounting distance	Total length	Crown to back length	Hub width	Length of bore	Face width	Holding surface dia.	Tip angle
		<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J	K	L
MBSA2 -3020R	R	2	30	20	40	60	61.36	40	26.8	21.02	14	23	11	37.56	58°20'
MBSB2 -3020R	R	2	30	22	40	60	61.36	40	26.8	21.02	14	23	11	37.56	58°20'
MBSA2 -2030L	L	2	20	15	35	40	43.49	45	24.96	16.16	13.33	23	11	24.34	37°05'
MBSB2 -2030L	L	2	20	18	35	40	43.49	45	24.96	16.16	13.33	23	11	24.34	37°05'
MBSA2.5-3020R	R	2.5	30	22	48	75	76.74	50	33.60	26.31	18	30	14	48.01	58°39'
MBSB2.5-3020R	R	2.5	30	25	48	75	76.74	50	33.60	26.31	18	30	14	48.01	58°39'
MBSA2.5-2030L	L	2.5	20	18	43	50	54.43	55	30.08	18.98	15.17	28	14	31.02	37°40'
MBSB2.5-2030L	L	2.5	20	20	43	50	54.43	55	30.08	18.98	15.17	28	14	31.02	37°40'
MBSA3 -3020R	R	3	30	25	60	90	92.21	60	40.34	31.66	21	36	17	57.14	59°20'
MBSB3 -3020R	R	3	30	30	60	90	92.21	60	40.34	31.66	21	36	17	57.14	59°20'
MBSA3 -2030L	L	3	20	22	53	60	65.58	65	35.17	21.86	17.67	32.5	17	36.2	38°45'
MBSB3 -2030L	L	3	20	25	53	60	65.58	65	35.17	21.86	17.67	32.5	17	36.2	38°45'
MBSA4 -3020R	R	4	30	35	75	120	122.91	70	43.99	32.18	21	39	23	76.72	59°08'
MBSB4 -3020R	R	4	30	40	75	120	122.91	70	43.99	32.18	21	39	23	76.72	59°08'
MBSA4 -2030L	L	4	20	30	70	80	87.34	85	45.53	27.45	21.67	42	23	48.07	38°25'
MBSB4 -2030L	L	4	20	35	70	80	87.34	85	45.53	27.45	21.67	42	23	48.07	38°25'
MBSA5 -3020R	R	5	30	80	—	150	—	70	35.53	23.8	—	31	28	97.36	59°10'
MBSA5 -2030L	L	5	20	35	87	100	109.2	105	55.05	33.07	25.67	51	28	62.04	38°31'
MBSB5 -2030L	L	5	20	40	87	100	109.2	105	55.05	33.07	25.67	51	28	62.04	38°31'
MBSA6 -3020R	R	6	30	90	—	180	—	80	38.86	24.37	—	33	34	115.61	58°28'
MBSA6 -2030L	L	6	20	45	105	120	130.48	125	65.57	38.49	30	60	34	72.41	37°22'
MBSB6 -2030L	L	6	20	50	105	120	130.48	125	65.57	38.49	30	60	34	72.41	37°22'

**CAUTION:** With the exception of B7 type gears, 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.

**CAUTION:** The 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.



# Finished Bore Spiral Bevel Gears



## 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 NOTE 4		

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

Keyway NOTE 1	Threaded hole NOTE 2		Shape	Allowable torque (N·m) NOTE 3		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
	Width×Depth	M		Thread Size	Bending strength	Surface durability	Bending strength			
6 × 2.8 6 × 2.8	7	M6	B4	34.39	38.38	( 3.507 )	( 3.914 )	0.06 ~ 0.16	0.27 0.26	MBSA2 -3020R MBSB2 -3020R
		M6								
6 × 2.8 8 × 3.3	9	M6	B4	67.95	76.83	( 6.929 )	( 7.835 )	0.07 ~ 0.17	0.55 0.52	MBSA2.5-3020R MBSB2.5-3020R
		M8								
8 × 3.3 8 × 3.3	11	M8	B4	118.3	135.1	(12.06 )	( 13.78 )	0.08 ~ 0.18	1.1 1	MBSA3 -3020R MBSB3 -3020R
		M8								
10 × 3.3 12 × 3.3	10	M8	B4	282.9	328	(28.85 )	( 33.45 )	0.12 ~ 0.27	2 1.9	MBSA4 -3020R MBSB4 -3020R
		M8								
—	110	6-M10	B7	543.6	636.8	(55.43 )	( 64.94 )	0.14 ~ 0.34	3	MBSA5 -3020R
10 × 3.3 12 × 3.3	13	M8	B3	370.8	424.6	(37.81 )	( 43.3 )	0.14 ~ 0.34	2.1 2	MBSA5 -2030L MBSB5 -2030L
		M8								
—	120	6-M10	B7	927.4	1118	(94.57 )	(114 )	0.16 ~ 0.36	4.8	MBSA6 -3020R
14 × 3.8 14 × 3.8	15	M8	B3	632.5	745	(64.5 )	( 75.97 )	0.16 ~ 0.36	3.4 3.2	MBSA6 -2030L MBSB6 -2030L
		M8								

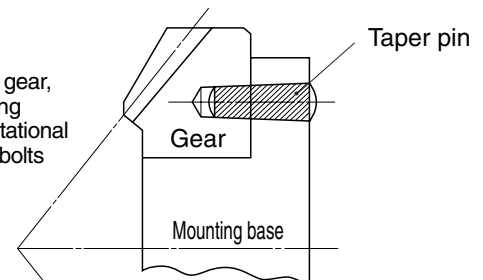
NOTE 1: Although the dimensions of the keyway are made to the JIS (Js9) tolerance, there may be some deviations due to the effects of the heat treatment.

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 229 for more details.

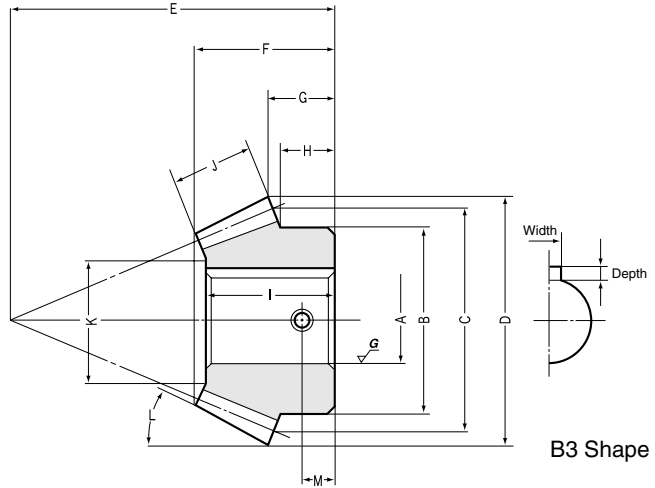
Pitch Angle Gear: 56°19' Pinion: 33°41'

When installing B7 shape (ring type) gear, always secure them onto the mounting base with taper pins to absorb the rotational loads. It is dangerous to secure with bolts only.





# MBSA(B) Finished Bore Spiral Bevel Gears Modules 2~6



B3 Shape

## Gear Ratio 2 ■ Modules 2~6

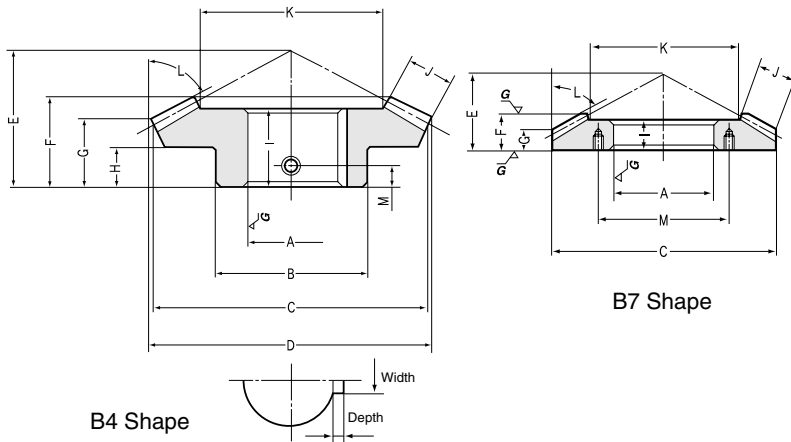
Catalog No.	Direction of Spiral	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Mounting distance	Total length	Crown to back length	Hub width	Length of bore	Face width	Holding surface dia.	Tip angle
		<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J	K	L
<b>MBSA2 -4020R</b> <b>MBSB2 -4020R</b>	R	2	40	20 22	45	80	81.06	45	31.83	26.06	18	29	14	52.7	65°40'
<b>MBSA2 -2040L</b> <b>MBSB2 -2040L</b>	L	2	20	15 18	35	40	44.2	55	28.16	16.05	13.75	27	14	25.39	30°20'
<b>MBSA2.5-4020R</b> <b>MBSB2.5-4020R</b>	R	2.5	40	25 28	55	100	101.29	50	33.35	26.29	16	30	17	66.99	65°28'
<b>MBSA2.5-2040L</b> <b>MBSB2.5-2040L</b>	L	2.5	20	20 22	43	50	55.12	65	31.01	16.28	13.25	29	17	29.97	30°07'
<b>MBSA3 -4020R</b> <b>MBSB3 -4020R</b>	R	3	40	30 35	65	120	121.57	60	39.81	31.57	21	35	20	80.28	65°42'
<b>MBSA3 -2040L</b> <b>MBSB3 -2040L</b>	L	3	20	22 25	53	60	66.03	80	38.9	21.51	18.25	36.5	20	36.56	29°44'
<b>MBSA4 -4020R</b> <b>MBSA4 -2040L</b> <b>MBSB4 -2040L</b>	R L	4 20	40 20	80 30 35	— 70	160 80	— 88.46	60 100	32.08 45.38	22.53 22.12	— 17.5	28 43	27 27	107.63 51.25	65°29' 30°45'
<b>MBSA5 -4020R</b> <b>MBSA5 -2040L</b> <b>MBSB5 -2040L</b>	R L	5 20	40 20	90 40 45	— 87	200 100	— 109.91	70 125	35.2 57.11	22.98 27.48	— 21.75	30 53.5	34 34	133.97 61.95	64°52' 29°30'
<b>MBSA6 -4020R</b> <b>MBSA6 -2040L</b> <b>MBSB6 -2040L</b>	R L	6 20	40 20	110 50 55	— 105	240 120	— 132.04	80 150	37.89 67.8	23.62 33.01	— 26.25	32 64	40 40	162.56 77.11	64°58' 29°44'

**CAUTION:** With the exception of B7 type gears, 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.

**CAUTION:** The 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.



# Finished Bore Spiral Bevel Gears



## 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>NOTE 4</small>		

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

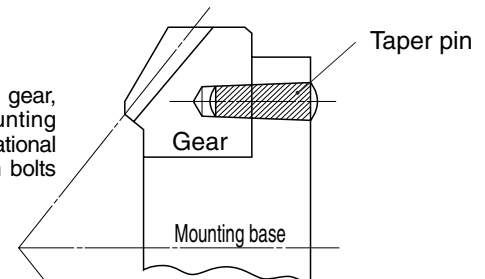
Keyway <small>NOTE 1</small>	Threaded hole <small>NOTE 2</small>		Shape	Allowable torque (N·m) <small>NOTE 3</small>		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
	Width×Depth	M		Thread Size	Bending strength	Surface durability	Bending strength			
6 × 2.8 6 × 2.8	9	M6 M6	B4	59.63	69.57	( 6.081 )	( 7.094 )	0.06 ~ 0.16	0.55 0.53	<b>MBSA2 -4020R</b> <b>MBSB2 -4020R</b>
5 × 2.3 6 × 2.8	7	M5 M6	B3	29.87	34.78	( 3.046 )	( 3.547 )	0.06 ~ 0.16	0.17 0.16	<b>MBSA2 -2040L</b> <b>MBSB2 -2040L</b>
8 × 3.3 8 × 3.3	8	M8 M8	B4	114.3	135.1	( 11.66 )	( 13.78 )	0.07 ~ 0.17	0.96 0.93	<b>MBSA2.5-4020R</b> <b>MBSB2.5-4020R</b>
6 × 2.8 6 × 2.8	7	M6 M6	B3	57.28	67.56	( 5.841 )	( 6.889 )	0.07 ~ 0.17	0.27 0.25	<b>MBSA2.5-2040L</b> <b>MBSB2.5-2040L</b>
8 × 3.3 10 × 3.3	11	M8 M8	B4	195.1	232.8	( 19.89 )	( 23.74 )	0.08 ~ 0.18	1.52 1.45	<b>MBSA3 -4020R</b> <b>MBSB3 -4020R</b>
6 × 2.8 8 × 3.3	9.5	M6 M8	B3	97.72	116.4	( 9.965 )	( 11.87 )	0.08 ~ 0.18	0.55 0.51	<b>MBSA3 -2040L</b> <b>MBSB3 -2040L</b>
—	110	6-M10	B7	466.1	563.9	( 47.53 )	( 57.5 )	0.12 ~ 0.27	3.2	<b>MBSA4 -4020R</b>
8 × 3.3 10 × 3.3	9	M8 M8	B3	233.5	281.9	( 23.81 )	( 28.75 )	0.12 ~ 0.27	1.1 1	<b>MBSA4 -2040L</b> <b>MBSB4 -2040L</b>
—	120	6-M10	B7	914.8	1117	( 93.28 )	(113.9 )	0.14 ~ 0.34	5.7	<b>MBSA5 -4020R</b>
12 × 3.3 14 × 3.8	11	M8 M8	B3	458.3	558.7	( 46.73 )	( 56.97 )	0.14 ~ 0.34	2.1 2	<b>MBSA5 -2040L</b> <b>MBSB5 -2040L</b>
—	140	6-M10	B7	1530	1921	(156 )	(195.9 )	0.16 ~ 0.36	8.6	<b>MBSA6 -4020R</b>
14 × 3.8 16 × 4.3	14	M 8 M10	B3	766.2	960.5	( 78.13 )	( 97.94 )	0.16 ~ 0.36	3.5 3.3	<b>MBSA6 -2040L</b> <b>MBSB6 -2040L</b>

**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. Pitch Angle Gear: 63°26' Pinion: 26°34'

**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 229 for more details.

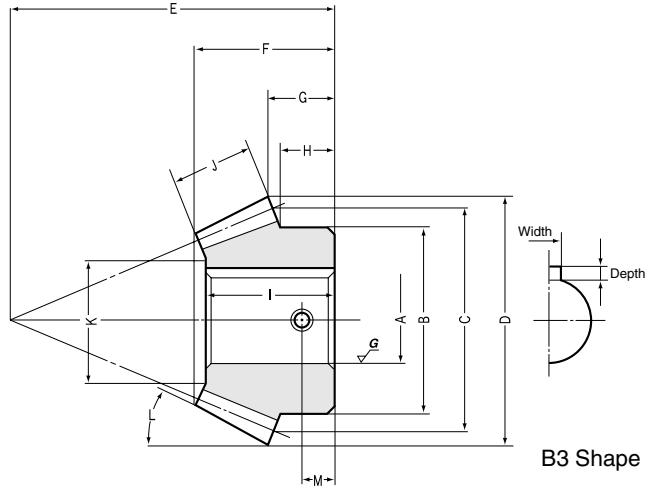
When installing B7 shape (ring type) gear, always secure them onto the mounting base with taper pins to absorb the rotational loads. It is dangerous to secure with bolts only.





# MBSA(B) Finished Bore Spiral Bevel Gears

Modules 2~6



B3 Shape

**Gear Ratio 1.5 ■ Modules 2~6**

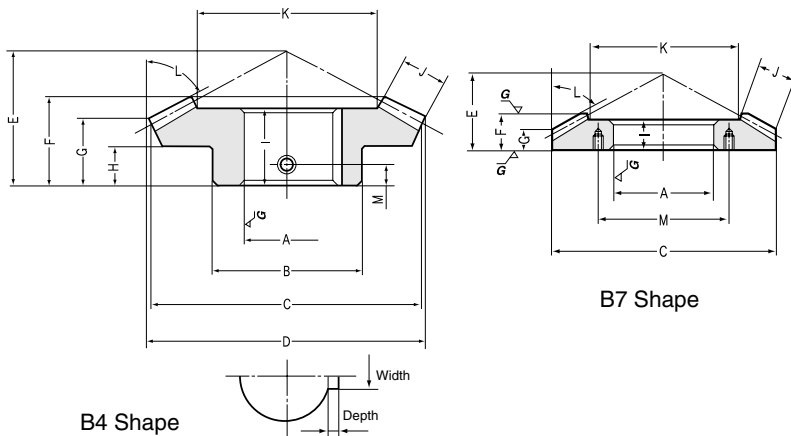
Catalog No.	Direction of Spiral	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Mounting distance	Total length	Crown to back length	Hub width	Length of bore	Face width	Holding surface dia.	Tip angle
		<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J	K	L
<b>MBSA2 -4518R</b>	R	2	45	20	48	90	90.79	40	27.67	22.98	15	25	14	62.24	70°29'
<b>MBSB2 -4518R</b>	R	2	45	25	48	90	90.79	40	27.67	22.98	15	25	14	62.24	70°29'
<b>MBSA2 -1845L</b>	L	2	18	12	32	36	40.42	60	28.54	15.88	14.2	27.5	14	23.11	25°38'
<b>MBSB2 -1845L</b>	L	2	18	16	32	36	40.42	60	28.54	15.88	14.2	27.5	14	23.11	25°38'
<b>MBSA2.5-4518R</b>	R	2.5	45	25	55	112.5	113.49	50	34.94	28.74	19	31	18	76.53	69°50'
<b>MBSB2.5-4518R</b>	R	2.5	45	30	55	112.5	113.49	50	34.94	28.74	19	31	18	76.53	69°50'
<b>MBSA2.5-1845L</b>	L	2.5	18	15	40	45	50.35	72	33.19	16.82	14.75	31.5	18	26.82	24°43'
<b>MBSB2.5-1845L</b>	L	2.5	18	20	40	45	50.35	72	33.19	16.82	14.75	31.5	18	26.82	24°43'
<b>MBSA3 -4518R</b>	R	3	45	30	65	135	136.24	60	41.65	34.55	22	37	21	92.96	70°15'
<b>MBSB3 -4518R</b>	R	3	45	35	65	135	136.24	60	41.65	34.55	22	37	21	92.96	70°15'
<b>MBSA3 -1845L</b>	L	3	18	20	48	54	60.69	85	37.82	18.84	16.3	36	21	33.41	25°33'
<b>MBSB3 -1845L</b>	L	3	18	25	48	54	60.69	85	37.82	18.84	16.3	36	21	33.41	25°33'
<b>MBSA4 -4518R</b>	R	4	45	80	—	180	—	55	29.77	21.25	—	25	29	122.33	69°47'
<b>MBSA4 -1845L</b>	L	4	18	28	63	72	80.86	110	48.03	21.77	18.2	46	29	45.83	25°22'
<b>MBSB4 -1845L</b>	L	4	18	32	63	72	80.86	110	48.03	21.77	18.2	46	29	45.83	25°22'
<b>MBSA5 -4518R</b>	R	5	45	100	—	225	—	65	33.37	22.82	—	28	36	153.85	69°48'
<b>MBSA5 -1845L</b>	L	5	18	35	80	90	101.07	135	57.3	24.71	20.5	54.5	36	56.13	25°22'
<b>MBSB5 -1845L</b>	L	5	18	42	80	90	101.07	135	57.3	24.71	20.5	54.5	36	56.13	25°22'
<b>MBSA6 -4518R</b>	R	6	45	110	—	270	—	75	36.97	24.19	—	30	43	184.57	69°19'
<b>MBSA6 -1845L</b>	L	6	18	45	95	108	120.55	160	66.73	27.51	22.4	63	43	66.44	24°20'
<b>MBSB6 -1845L</b>	L	6	18	50	95	108	120.55	160	66.73	27.51	22.4	63	43	66.44	24°20'

**CAUTION:** With the exception of B7 type gears, 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.

**CAUTION:** The 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.



# Finished Bore Spiral Bevel Gears



## 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>NOTE 4</small>		

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

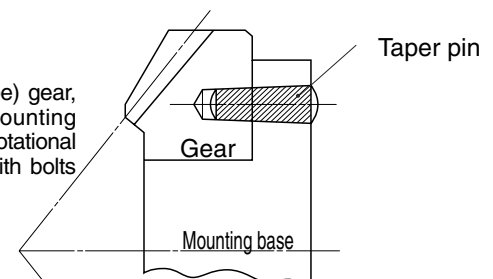
Keyway <small>NOTE 1</small>	Threaded hole <small>NOTE 2</small>		Shape	Allowable torque (N·m) <small>NOTE 3</small>		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
	Width×Depth	M		Thread Size	Bending strength	Surface durability	Bending strength			
6 × 2.8 8 × 3.3	8	M6 M8	B4	69.26	74.34	( 7.063 )	( 7.581 )	0.06 ~ 0.16	0.43 0.59	<b>MBSA2 -4518R</b> <b>MBSB2 -4518R</b>
4 × 1.8 5 × 2.3	7	M5 M5	B3	27.2	29.73	( 2.774 )	( 3.032 )	0.06 ~ 0.16	0.15 0.13	<b>MBSA2 -1845L</b> <b>MBSB2 -1845L</b>
8 × 3.3 8 × 3.3	10	M8 M8	B4	137.8	149.6	( 14.05 )	( 15.26 )	0.07 ~ 0.17	1.13 1.08	<b>MBSA2.5-4518R</b> <b>MBSB2.5-4518R</b>
5 × 2.3 6 × 2.8	8	M5 M6	B3	54.13	59.88	( 5.52 )	( 6.106 )	0.07 ~ 0.17	0.27 0.24	<b>MBSA2.5-1845L</b> <b>MBSB2.5-1845L</b>
8 × 3.3 10 × 3.3	11	M8 M8	B4	233.8	256.3	( 23.84 )	( 26.14 )	0.08 ~ 0.18	1.95 1.9	<b>MBSA3 -4518R</b> <b>MBSB3 -4518R</b>
6 × 2.8 8 × 3.3	9	M6 M8	B3	91.83	102.6	( 9.364 )	( 10.46 )	0.08 ~ 0.18	0.42 0.37	<b>MBSA3 -1845L</b> <b>MBSB3 -1845L</b>
—	110	6-M10	B7	567	630.2	( 57.82 )	( 64.26 )	0.12 ~ 0.27	4	<b>MBSA4 -4518R</b>
8 × 3.3 10 × 3.3	10	M8 M8	B3	222.7	252	( 22.71 )	( 25.7 )	0.12 ~ 0.27	0.92 0.85	<b>MBSA4 -1845L</b> <b>MBSB4 -1845L</b>
—	130	6-M10	B7	1102	1238	(112.4 )	(126.2 )	0.14 ~ 0.34	6.9	<b>MBSA5 -4518R</b>
10 × 3.3 12 × 3.3	11	M8 M8	B3	433.1	494.8	( 44.16 )	( 50.46 )	0.14 ~ 0.34	1.7 1.6	<b>MBSA5 -1845L</b> <b>MBSB5 -1845L</b>
—	140	6-M10	B7	1861	2147	(189.8 )	(218.9 )	0.16 ~ 0.36	11	<b>MBSA6 -4518R</b>
14 × 3.8 14 × 3.8	12	M8 M8	B3	731.2	858.9	( 74.56 )	( 87.58 )	0.16 ~ 0.36	2.7 2.5	<b>MBSA6 -1845L</b> <b>MBSB6 -1845L</b>

**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. Pitch Angle Gear: 68°12' Pinion: 21°48'

**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 229 for more details.

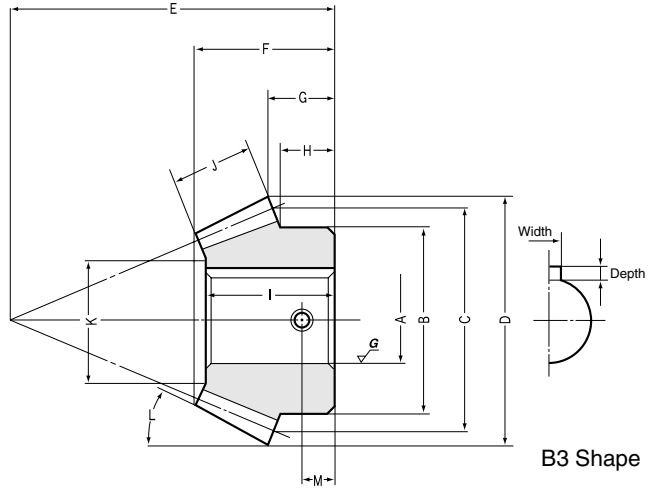
When installing B7 shape (ring type) gear, always secure them onto the mounting base with taper pins to absorb the rotational loads. It is dangerous to secure with bolts only.





# MBSA(B) Finished Bore Spiral Bevel Gears

Modules 2~6



B3 Shape

## Gear Ratio 3 ■ Modules 2~6

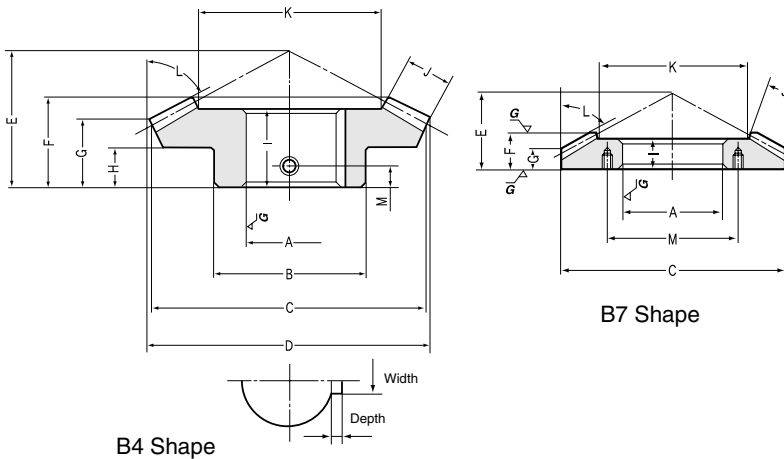
Catalog No.	Direction of Spiral	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Mounting distance	Total length	Crown to back length	Hub width	Length of bore	Face width	Holding surface dia.	Tip angle
		<i>m</i>	<i>z</i>	AH7	B	C	D	E	F	G	H	I	J	K	L
<b>MBSA2 -4515R</b> <b>MBSB2 -4515R</b>	R	2	45	20 22	48	90	90.66	40	30.01	25.99	18	27	14	61.82	73°18'
<b>MBSA2 -1545L</b> <b>MBSB2 -1545L</b>	L	2	15	10 12	26	30	34.59	55	23.78	10.77	9.33	22.5	14	16.46	21°51'
<b>MBSA2.5-4515R</b> <b>MBSB2.5-4515R</b>	R	2.5	45	22 25	55	112.5	113.28	45	32.43	27.42	18	28	17	77.83	72°51'
<b>MBSA2.5-1545L</b> <b>MBSB2.5-1545L</b>	L	2.5	15	12 15	32	37.5	43.06	70	30.51	14.68	12.84	29	17	21.48	21°33'
<b>MBSA3 -4515R</b> <b>MBSB3 -4515R</b>	R	3	45	30 32	65	135	136.03	55	39.94	34.05	22	35	21	92.39	73°43'
<b>MBSA3 -1545L</b> <b>MBSB3 -1545L</b>	L	3	15	18 20	38	45	52	85	38.12	18.67	16.33	36.5	21	26.18	22°27'
<b>MBSA4 -4515R</b> <b>MBSA4 -1545L</b> <b>MBSB4 -1545L</b>	R	4	45	80	—	180	—	50	28.85	22.14	—	25	28	124.3	73°11'
	L	4	15	22 25	52	60	69.24	110	47.51	21.54	18.67	45.5	28	35.91	22°15'
<b>MBSA5 -4515R</b> <b>MBSA5 -1545L</b> <b>MBSB5 -1545L</b>	R	5	45	90	—	225	—	60	33.57	25.16	—	28	35	154.8	73°11'
	L	5	15	28 32	65	75	86.55	135	56.89	24.43	20.83	54	35	42.64	22°15'
<b>MBSA6 -4515R</b> <b>MBSA6 -1545L</b> <b>MBSB6 -1545L</b>	R	6	45	110	—	270	—	70	38.28	28.05	—	32	42	186.12	72°45'
	L	6	15	35 40	78	90	103.13	160	66.39	27.19	23	63	42	52.37	21°12'

**CAUTION:** With the exception of B7 type gears, 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.

**CAUTION:** The 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.



# Finished Bore Spiral Bevel Gears



## 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>NOTE 4</small>		

**NOTE 4:** It is possible to perform secondary operations on the mounting surface of B7 shape 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			
6 × 2.8 6 × 2.8	9	M6 M6	B4	67.8	61.26	( 6.914 )	( 6.247 )	0.06 ~ 0.16	0.62 0.61	<b>MBSA2 -4515R</b> <b>MBSB2 -4515R</b>
— 4 × 1.8	5	M4 M5	B3	21.72	20.42	( 2.215 )	( 2.082 )	0.06 ~ 0.16	0.08 0.07	<b>MBSA2 -1545L</b> <b>MBSB2 -1545L</b>
6 × 2.8 8 × 3.3	9	M6 M8	B4	129.9	118.9	( 13.25 )	( 12.12 )	0.07 ~ 0.17	1 1	<b>MBSA2.5-4515R</b> <b>MBSB2.5-4515R</b>
4 × 1.8 5 × 2.3	7	M5 M5	B3	41.62	39.63	( 4.244 )	( 4.041 )	0.07 ~ 0.17	0.16 0.14	<b>MBSA2.5-1545L</b> <b>MBSB2.5-1545L</b>
8 × 3.3 10 × 3.3	11	M8 M8	B4	228.8	211.3	( 23.33 )	( 21.55 )	0.08 ~ 0.18	1.8 1.77	<b>MBSA3 -4515R</b> <b>MBSB3 -4515R</b>
6 × 2.8 6 × 2.8	9	M6 M6	B3	73.31	70.45	( 7.476 )	( 7.184 )	0.08 ~ 0.18	0.25 0.23	<b>MBSA3 -1545L</b> <b>MBSB3 -1545L</b>
—	110	6-M10	B7	542.4	508	( 55.31 )	( 51.8 )	0.12 ~ 0.27	4	<b>MBSA4 -4515R</b>
6 × 2.8 8 × 3.3	10	M6 M8	B3	173.8	169.4	( 17.72 )	( 17.27 )	0.12 ~ 0.27	0.64 0.6	<b>MBSA4 -1545L</b> <b>MBSB4 -1545L</b>
—	120	6-M10	B7	1059	1002	(108 )	(102.2 )	0.14 ~ 0.34	7.3	<b>MBSA5 -4515R</b>
8 × 3.3 10 × 3.3	11	M8 M8	B3	339.4	333.9	( 34.61 )	( 34.05 )	0.14 ~ 0.34	1.2 1.1	<b>MBSA5 -1545L</b> <b>MBSB5 -1545L</b>
—	140	6-M10	B7	1794	1744	(182.9 )	(177.8 )	0.16 ~ 0.36	12	<b>MBSA6 -4515R</b>
10 × 3.3 12 × 3.3	12	M8 M8	B3	574.8	581.3	( 58.61 )	( 59.28 )	0.16 ~ 0.36	1.9 1.8	<b>MBSA6 -1545L</b> <b>MBSB6 -1545L</b>

**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. Pitch Angle Gear: 71°34' Pinion: 18°26'

**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 229 for more details.

When installing B7 shape (ring type) gear, always secure them onto the mounting base with taper pins to absorb the rotational loads. It is dangerous to secure with bolts only.

