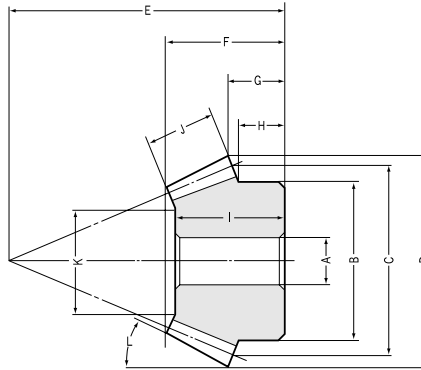
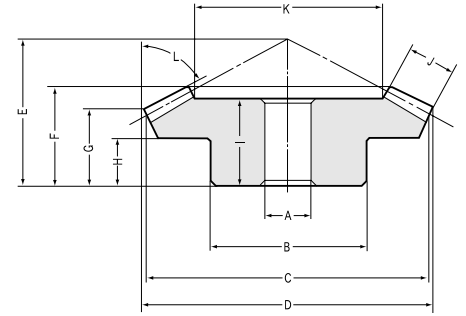




SBS Spiral Bevel Gears Modules 1~5



B3 Shape



B4 Shape

Gear Ratio 1.5 ■ Modules 2~5

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 _{H7}	B	C	D	E	F	G	H	I	J
SBS2 -3020R	R	2	30	12	35	60	61.36	40	26.8	21.02	15	23	11
SBS2 -2030L	L		20	10	30	40	43.49	45	24.96	16.16	11.67	22	
SBS2.5-3020R	R	2.5	30	15	45	75	77.09	50	33.86	26.56	18	30	15
SBS2.5-2030L	L		20	12	40	50	54.43	55	30.88	18.98	14.17	28	
SBS3 -3020R	R	3	30	16	50	90	92.21	55	35.34	26.66	17	31	17
SBS3 -2030L	L		20	16	45	60	65.58	70	40.17	26.86	20	37	
SBS4 -3020R	R	4	30	20	70	120	122.85	75	47.49	37.14	25	40	20
SBS4 -2030L	L		20	20	60	80	87.34	90	48.17	32.45	23.33	43	
SBS5 -3020R	R	5	30	25	90	150	153.67	90	58.08	42.75	24	50	30
SBS5 -2030L	L		20	22	80	100	109.2	110	61.62	38.07	28.33	56	

Gear Ratio 2 ■ Modules 1~5

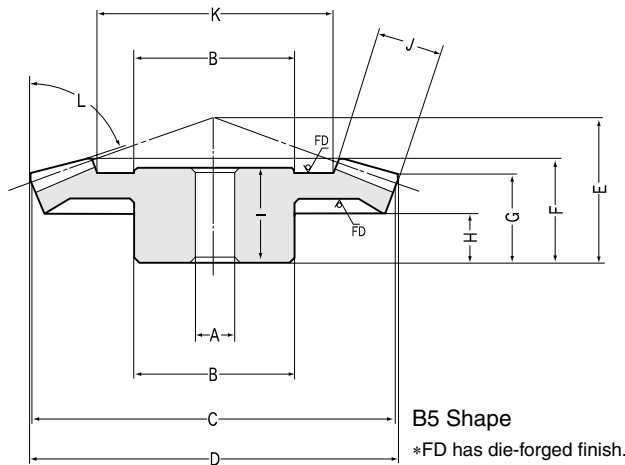
SBS1 -4020R	R	1	40	8	25	40	40.52	22	15.02	12.52	8	12	6
SBS1 -2040L	L		20	6	16	20	22.08	28	13.73	8.52	7	12	
SBS1.5-4020R	R	1.5	40	10	38	60	60.75	35	24.93	20.75	15	22	10
SBS1.5-2040L	L		20	8	25	30	33.08	46	25.45	16.77	14.75	24	
SBS2 -4020R	R	2	40	12	40	80	81	45	32.27	26	18	27	15
SBS2 -2040L	L		20	12	32	40	44.1	60	34.04	21.02	18	32	
SBS2.5-4020R	R	2.5	40	15	50	100	101.27	55	39.65	31.27	20	34	20
SBS2.5-2040L	L		20	12	40	50	55.2	75	43.61	26.3	22.5	40	
SBS3 -4020R	R	3	40	20	60	120	121.48	65	45.76	36.47	24	38	22
SBS3 -2040L	L		20	16	50	60	66.07	90	50.63	31.52	27.5	47	
SBS4 -4020R	R	4	40	20	70	160	162.07	80	53.69	42.07	28	45	28
SBS4 -2040L	L		20	20	60	80	88.5	120	66.24	42.12	35	62	
SBS5 -4020R	R	5	40	25	100	200	202.54	90	55.02	42.54	26	50	30
SBS5 -2040L	L		20	22	80	100	110.45	140	68.48	42.61	35	63	

Gear Ratio 2 ■ Modules 2.5~4

SBS2.5-3618R	R	2.5	36	15	55	90	91.29	43	28.38	21.79	13	24	16
SBS2.5-1836L	L		18	12	38	45	50.3	64	34.06	20.32	17.25	32	
SBS3 -3618R	R	3	36	20	60	108	109.53	52	34.82	26.53	17	30	20
SBS3 -1836L	L		18	16	46	54	60.28	75	39.78	22.57	19	37	
SBS4 -3618R	R	4	36	20	70	144	145.99	72	48.84	37.99	25	42	26
SBS4 -1836L	L		18	20	60	72	80.19	100	52.51	30.05	25	49	

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.



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. K	Tip angle L	Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
			Bending strength	Surface durability	Bending strength	Surface durability			
37.56 21.34	58°20' 37°05'	B4 B3	15.37 10.48	11.28 7.522	(1.567) (1.069)	(1.15) (0.767)	0.06 ~ 0.16	0.25 0.12	SBS2 -3020R SBS2 -2030L
45.61 27.42	61°01' 37°41'	B4 B3	31.68 21.6	23.55 15.7	(3.23) (2.203)	(2.401) (1.601)	0.07 ~ 0.17	0.55 0.23	SBS2.5-3020R SBS2.5-2030L
57.14 34.71	59°20' 38°45'	B4 B3	52.85 36.05	39.72 26.48	(5.389) (3.676)	(4.05) (2.7)	0.08 ~ 0.18	0.8 0.5	SBS3 -3020R SBS3 -2030L
78.59 46.89	58°52' 38°25'	B4 B3	115.4 78.74	88.14 58.76	(11.77) (8.029)	(8.988) (5.992)	0.12 ~ 0.27	1.8 1.1	SBS4 -3020R SBS4 -2030L
91.22 54.83	59°19' 38°3 1'	B4 B3	253.4 172.9	195.2 130.1	(25.84) (17.63)	(19.91) (13.27)	0.14 ~ 0.34	4.4 2.5	SBS5 -3020R SBS5 -2030L

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

26.58 9.17	65°20' 29°53'	B4 B3	3,008 1,507	2,222 1,111	(0.3067) (0.1537)	(0.2266) (0.1133)	0.03 ~ 0.13	0.07 0.02	SBS1 -4020R SBS1 -2040L
39.64 17.28	65°20' 29°58'	B4 B3	10.9 5.458	8.22 4.11	(1.111) (0.5566)	(0.8382) (0.4191)	0.05 ~ 0.15	0.23 0.09	SBS1.5-4020R SBS1.5-2040L
48.46 20.92	65°20' 29°58'	B4 B3	27.79 13.93	21.32 10.66	(2.834) (1.42)	(2.174) (1.087)	0.06 ~ 0.16	0.5 0.19	SBS2 -4020R SBS2 -2040L
59.26 20.53	65°15' 30°18'	B4 B3	56.36 28.23	43.74 21.87	(5.747) (2.879)	(4.46) (2.23)	0.07 ~ 0.17	1.1 0.4	SBS2.5-4020R SBS2.5-2040L
73.78 29.63	65°03' 29°50'	B4 B3	92.54 46.37	72.59 36.29	(9.437) (4.728)	(7.402) (3.701)	0.08 ~ 0.18	1.6 0.7	SBS3 -4020R SBS3 -2040L
102.39 42.8	65°30' 30°48'	B4 B3	213.2 106.8	169.6 84.8	(21.74) (10.89)	(17.29) (8.647)	0.12 ~ 0.27	3.3 1.5	SBS4 -4020R SBS4 -2040L
138.94 57.84	65°26' 30°40'	B5 B3	376 188.4	302.4 151.2	(38.34) (19.21)	(30.84) (15.42)	0.14 ~ 0.34	6 2.9	SBS5 -4020R SBS5 -2040L

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

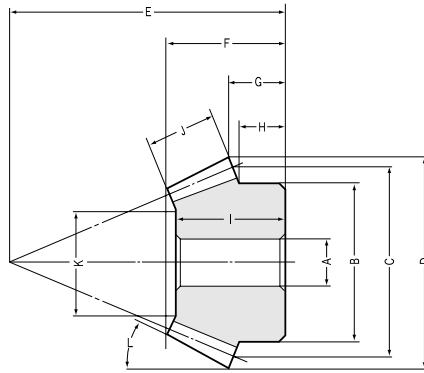
57.74 25.43	65°41' 31°11'	B4 B3	41.74 20.9	29.3 14.65	(4.256) (2.131)	(2.988) (1.494)	0.07 ~ 0.17	0.75 0.3	SBS2.5-3618R SBS2.5-1836L
68.27 28.59	65°32' 30°52'	B4 B3	73.95 37.03	52.42 26.2	(7.541) (3.776)	(5.345) (2.672)	0.08 ~ 0.18	1.75 0.5	SBS3 -3618R SBS3 -1836L
91.87 39.74	65°21' 30°37'	B4 B3	172.6 86.43	124.2 62.08	(17.6) (8.814)	(12.66) (6.33)	0.12 ~ 0.27	2.7 1.5	SBS4 -3618R SBS4 -1836L

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

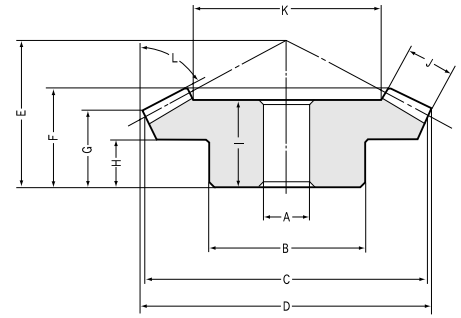
NOTE 2: The allowable torques shown in the table are the calculated values according to the assumed usage conditions. Please see page 229 for more details.



SBS Spiral Bevel Gears Modules 1.5~5



B3 Shape



B4 Shape

Gear Ratio 2.5 ■ Modules 2~5

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
SBS2 -4518R SBS2 -1845L	R L	2	45 18	12 10	48 32	90 36	90.79 40.42	40 60	27.67 28.54	22.98 15.88	15 14.2	25 27.5	14
SBS2.5-4518R SBS2.5-1845L	R L	2.5	45 18	15 12	55 40	112.5 45	113.49 50.35	50 72	34.94 33.19	28.74 16.82	18 14.75	31 31.5	18
SBS3 -4518R SBS3 -1845L	R L	3	45 18	20 16	65 48	135 54	136.24 60.69	60 85	41.65 37.82	34.55 18.84	22 16.3	37 36	21
SBS4 -4518R SBS4 -1845L	R L	4	45 18	25 20	80 62	180 72	181.57 80.86	75 110	50.98 48.03	40.96 21.77	24 18	45 46	29
SBS5 -4518R SBS5 -1845L	R L	5	45 18	30 22	100 80	225 90	225.81 103.87	90 135	57.9 56.02	46.01 25.27	28 20.5	51 52.5	34

Gear Ratio 3 ■ Modules 2~5

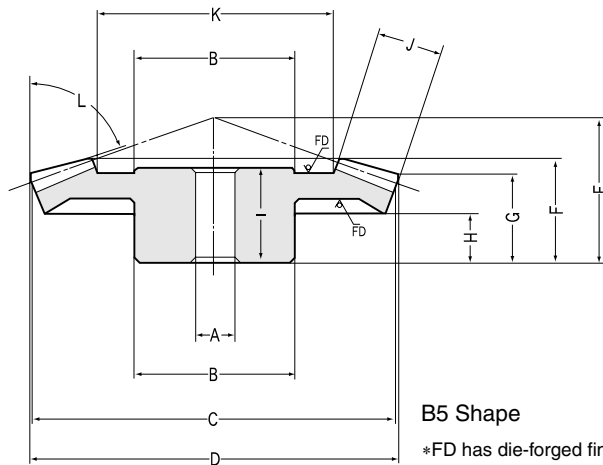
SBS2 -4515R SBS2 -1545L	R L	2	45 15	12 10	40 24	90 30	90.67 34.78	40 60	30.29 29.66	26.01 15.8	17 14	26 29	15
SBS2.5-4515R SBS2.5-1545L	R L	2.5	45 15	15 12	50 30	112.5 37.5	113.32 43.36	50 75	38.25 38.27	32.47 19.73	22 17.5	35 37	20
SBS3 -4515R SBS3 -1545L	R L	3	45 15	20 15	60 38	135 45	135.99 52.08	55 90	40.59 44.98	33.98 23.68	20 21.33	35 44	23
SBS4 -4515R SBS4 -1545L	R L	4	45 15	20 16	80 50	180 60	181.3 69.3	70 115	50.62 54.37	41.95 26.55	24 23.33	45 52	30
SBS5 -4515R SBS5 -1545L	R L	5	45 15	30 20	90 60	225 75	226.61 86.55	75 145	50.05 66.89	39.92 34.43	20 30	44 65	35

Gear Ratio 4 ■ Modules 1.5~3

SBS1.5-6015R SBS1.5-1560L	R L	1.5	60 15	12 8	60 18	90 22.5	90.36 26.09	32 56	24.08 22.95	21.48 11.45	12 10.43	21 22.5	12
SBS2 -6015R SBS2 -1560L	R L	2	60 15	15 10	80 24	120 30	120.46 34.68	42 75	31.5 30.94	27.91 15.58	16 14.25	27 30	16
SBS2.5-6015R SBS2.5-1560L	R L	2.5	60 15	20 12	100 30	150 37.5	150.5 44.16	53 94	39.68 38.9	35.24 19.83	20 18.06	34 37.5	20
SBS3 -6015R SBS3 -1560L	R L	3	60 15	20 15	120 38	180 45	180.57 52.64	64 112	47.61 44.01	42.64 22.96	25 21.12	41 43	22

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.



B5 Shape

*FD has die-forged finish.

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. K	Tip angle L	Shape	Allowable torque (N·m) NOTE 2		Allowable torque (kgf·m)		Backlash (mm)	Weight (kgf)	Catalog No.
			Bending strength	Surface durability	Bending strength	Surface durability			
62.24 23.11	70°29' 25°38'	B4 B3	30.95 12.16	21.85 8.741	(3.156) (1.24)	(2.228) (0.8913)	0.06 ~ 0.16	0.66 0.16	SBS2 -4518R SBS2 -1845L
76.53 26.82	69°50' 24°43'	B4 B3	61.57 24.18	44 17.6	(6.278) (2.466)	(4.487) (1.795)	0.07 ~ 0.17	1.27 0.29	SBS2.5-4518R SBS2.5-1845L
92.96 33.41	70°15' 25°33'	B4 B3	104.4 41.03	75.36 30.15	(10.65) (4.184)	(7.685) (3.074)	0.08 ~ 0.18	2.05 0.45	SBS3 -4518R SBS3 -1845L
122.33 45.83	69°47' 25°22'	B4 B3	253.3 99.54	185.2 74.1	(25.83) (10.15)	(18.89) (7.556)	0.12 ~ 0.27	4.8 1	SBS4 -4518R SBS4 -1845L
156.56 56.90	69°33' 25°23'	B4 B3	474.2 186.3	350.3 140.1	(48.36) (19)	(35.72) (14.29)	0.14 ~ 0.34	8.7 2	SBS5 -4518R SBS5 -1845L

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

59.07 19.14	73°25' 22°50'	B4 B3	31.66 10.14	18.81 6.268	(3.228) (1.034)	(1.918) (0.6392)	0.06 ~ 0.16	0.7 0.1	SBS2 -4515R SBS2 -1545L
72.82 20.48	73°13' 22°22'	B4 B3	64.32 20.6	38.66 12.89	(6.559) (2.101)	(3.942) (1.314)	0.07 ~ 0.17	1 0.17	SBS2.5-4515R SBS2.5-1545L
88.2 28.52	73°18' 22°32'	B4 B3	108.4 34.71	65.76 21.92	(11.05) (3.539)	(6.706) (2.235)	0.08 ~ 0.18	1.8 0.35	SBS3 -4515R SBS3 -1545L
118.08 32.24	73°13' 22°19'	B5 B3	253.3 81.14	155.9 51.98	(25.83) (8.274)	(15.9) (5.301)	0.12 ~ 0.27	4 0.7	SBS4 -4515R SBS4 -1545L
152.88 48.64	73°11' 22°15'	B5 B3	473.4 151.6	294.5 98.16	(48.27) (15.46)	(30.03) (10.01)	0.14 ~ 0.34	6 1.4	SBS5 -4515R SBS5 -1545L

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

65.39 15.55	77°28' 16°54'	B4 B3	20.74 4.89	12.27 3.067	(2.115) (0.4986)	(1.251) (0.3128)	0.05 ~ 0.15	0.7 0.04	SBS1.5-6015R SBS1.5-1560L
87.02 18.06	77°02' 16°27'	B4 B3	49.17 11.59	29.56 7.389	(5.014) (1.182)	(3.014) (0.7535)	0.06 ~ 0.16	1.6 0.1	SBS2 -6015R SBS2 -1560L
108.64 20.58	77°10' 17°56'	B4 B3	96.05 22.63	58.39 14.6	(9.794) (2.308)	(5.954) (1.489)	0.07 ~ 0.17	3.24 0.2	SBS2.5-6015R SBS2.5-1560L
134.4 31.58	76°56' 17°09'	B4 B3	155.9 36.75	95.68 23.92	(15.9) (3.748)	(9.757) (2.439)	0.08 ~ 0.18	5.44 0.35	SBS3 -6015R SBS3 -1560L

NOTE 2: 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: 75°58' Pinion: 14°02'