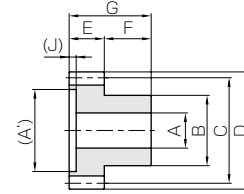




Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998) * JIS grade 8 (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon acetal (M90-44)
Heat treatment	—
Tooth hardness	110 ~ 120HRR

* The precision grade of this product is equivalent to the value shown in the table.



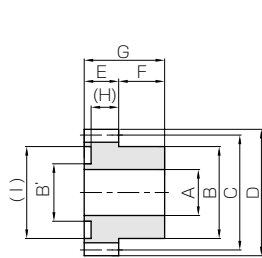
S8

Catalog No.	Module	No. of teeth	Shape	Bore 1	Bore 2	Hub dia. 1	Hub dia. 2	Pitch dia.	Outside dia.	Face width	Hub width
				A	(A')	B	B'	C	D	E	F
DS0.5-12	m0.5	12	S8	2	(4)	4.5	—	6	7	3	4
DS0.5-15		15	S8	2	(5.5)	4.5	—	7.5	8.5	3	4
DS0.5-16		16	S8	3	(6)	6	—	8	9	3	4
DS0.5-18		18	S8	3	(7)	6	—	9	10	3	4
DS0.5-20		20	S8B	4	—	8	5	10	11	3	4
DS0.5-24		24	S9	4	—	8	5	12	13	3	4
DS0.5-25		25	S9	4	—	8	6	12.5	13.5	3	4
DS0.5-28		28	S9	4	—	8	6	14	15	3	4
DS0.5-30		30	S9	5	—	10	7	15	16	3	4
DS0.5-32		32	S9	5	—	10	7	16	17	3	4
DS0.5-35		35	S9	5	—	10	7	17.5	18.5	3	4
DS0.5-36		36	S9	5	—	10	7	18	19	3	4
DS0.5-40		40	S9	5	—	12	8	20	21	3	4
DS0.5-45		45	S9	5	—	12	8	22.5	23.5	3	4
DS0.5-48		48	S9	5	—	12	8	24	25	3	4
DS0.5-50		50	S9	5	—	12	8	25	26	3	4
DS0.5-56		56	S9	6	—	14	10	28	29	3	5
DS0.5-60		60	S9	6	—	14	10	30	31	3	5
DS0.5-64		64	S9	6	—	14	10	32	33	3	5
DS0.5-70		70	S9	6	—	14	10	35	36	3	5
DS0.5-72	72	S9	6	—	14	10	36	37	3	5	
DS0.5-80	80	S9	6	—	14	10	40	41	3	5	
DS0.8-12	m0.8	12	S9	3	—	6	4	9.6	11.2	4	5
DS0.8-15		15	S9	3	—	6	4.5	12	13.6	4	5
DS0.8-16		16	S9	4	—	8	6	12.8	14.4	4	5
DS0.8-18		18	S9	4	—	8	6	14.4	16	4	5
DS0.8-20		20	S9	5	—	10	8	16	17.6	4	5
DS0.8-24		24	S9	5	—	10	8	19.2	20.8	4	5
DS0.8-25		25	S9	5	—	10	8	20	21.6	4	5
DS0.8-28		28	S9	5	—	10	8	22.4	24	4	5
DS0.8-30		30	S9	6	—	12	10	24	25.6	4	5
DS0.8-32		32	S9	6	—	12	10	25.6	27.2	4	5
DS0.8-35		35	S9	6	—	12	10	28	29.6	4	5
DS0.8-36		36	S9	6	—	12	10	28.8	30.4	4	5
DS0.8-40		40	S9	6	—	12	10	32	33.6	4	5
DS0.8-45		45	S9	6	—	12	10	36	37.6	4	5
DS0.8-48		48	S9	6	—	14.5	11.7	38.4	40	4	6
DS0.8-50		50	S9	6	—	14.5	11.7	40	41.6	4	6
DS0.8-56		56	S9	6	—	14.5	11.7	44.8	46.4	4	6
DS0.8-60		60	S9	6	—	14.5	11.7	48	49.6	4	6
DS0.8-64		64	S9	6	—	15.5	11.7	51.2	52.8	4	6
DS0.8-70		70	S9	6	—	15.5	11.7	56	57.6	4	6
DS0.8-72	72	S9	6	—	15.5	11.7	57.6	59.2	4	6	
DS0.8-80	80	S9	6	—	15.5	11.7	64	65.6	4	6	

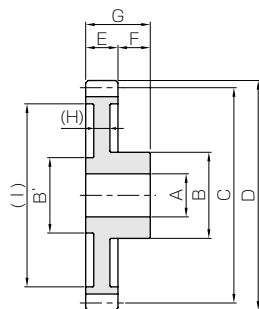
[Caution on Product Characteristics]

- ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 35 for more details.
- ② The backlash values shown in the table are the theoretical values for the backlash in the normal direction of a pair of identical gears in mesh.
- ③ The bore tolerance is generally -0.05 to -0.30 but may be + value at the central portion of the hole.
- ④ To find dimensional precision, see the table "Tolerance of Injection Molded Products".

Injection Molded Spur Gears



S8B



S9

Total length	Web thickness	Web O.D.	Depth of counterbore	Allowable torque (N-m)	Allowable torque (kgf-m)	Backlash (mm)	Weight (g)	Catalog No.
G	(H)	(I)	(J)	Bending strength	Bending strength			
7	—	—	(0.6)	0.063	0.0064	0~0.30	0.17	DS0.5-12
7	—	—	(0.6)	0.092	0.0094		0.23	DS0.5-15
7	—	—	(0.6)	0.10	0.010		0.28	DS0.5-16
7	—	—	(0.6)	0.12	0.012		0.33	DS0.5-18
7	(2.4)	(8)	—	0.14	0.014		0.47	DS0.5-20
7	(1.8)	(9.5)	—	0.17	0.018		0.58	DS0.5-24
7	(1.8)	(10)	—	0.18	0.019		0.61	DS0.5-25
7	(1.8)	(11.5)	—	0.21	0.022		0.69	DS0.5-28
7	(1.8)	(12)	—	0.23	0.023		0.90	DS0.5-30
7	(1.8)	(13)	—	0.25	0.025		0.97	DS0.5-32
7	(1.8)	(14.5)	—	0.28	0.029		1.09	DS0.5-35
7	(1.8)	(15)	—	0.29	0.030		1.13	DS0.5-36
7	(1.8)	(16.5)	—	0.33	0.034		1.53	DS0.5-40
7	(1.8)	(19)	—	0.38	0.039		1.78	DS0.5-45
7	(1.8)	(21)	—	0.42	0.043		1.91	DS0.5-48
7	(1.8)	(21.5)	—	0.44	0.045		2.02	DS0.5-50
8	(1.8)	(24.5)	—	0.50	0.051		2.77	DS0.5-56
8	(1.8)	(26.5)	—	0.54	0.055		3.02	DS0.5-60
8	(1.8)	(28.5)	—	0.58	0.059		3.29	DS0.5-64
8	(1.8)	(31.5)	—	0.64	0.066		3.71	DS0.5-70
8	(1.8)	(32)	—	0.67	0.068	3.86	DS0.5-72	
8	(1.8)	(36.5)	—	0.75	0.076	4.51	DS0.5-80	
9	(2)	(6.7)	—	0.22	0.022	0.48	DS0.8-12	
9	(2)	(8.8)	—	0.31	0.032	0.64	DS0.8-15	
9	(2)	(9.2)	—	0.35	0.035	0.84	DS0.8-16	
9	(2)	(10.7)	—	0.41	0.041	0.97	DS0.8-18	
9	(2)	(12.7)	—	0.47	0.048	1.26	DS0.8-20	
9	(2)	(15)	—	0.59	0.060	1.59	DS0.8-24	
9	(2)	(16.5)	—	0.63	0.064	1.73	DS0.8-25	
9	(2)	(18.5)	—	0.72	0.074	1.91	DS0.8-28	
9	(2)	(19.5)	—	0.79	0.080	2.37	DS0.8-30	
9	(2)	(21)	—	0.85	0.087	2.57	DS0.8-32	
9	(2)	(23.5)	—	0.96	0.098	2.91	DS0.8-35	
9	(2)	(24.5)	—	0.99	0.10	3.00	DS0.8-36	
9	(2)	(27.5)	—	1.13	0.12	3.47	DS0.8-40	
9	(2)	(31)	—	1.31	0.13	4.18	DS0.8-45	
10	(2)	(33.5)	—	1.42	0.15	5.31	DS0.8-48	
10	(2)	(35)	—	1.50	0.15	5.60	DS0.8-50	
10	(2)	(39.5)	—	1.70	0.17	6.55	DS0.8-56	
10	(2)	(42.5)	—	1.85	0.19	7.30	DS0.8-60	
10	(2)	(46)	—	1.98	0.20	8.64	DS0.8-64	
10	(2)	(50.5)	—	2.20	0.22	9.52	DS0.8-70	
10	(2)	(51.5)	—	2.27	0.23	9.85	DS0.8-72	
10	(2)	(55.5)	—	2.55	0.26	11.8	DS0.8-80	

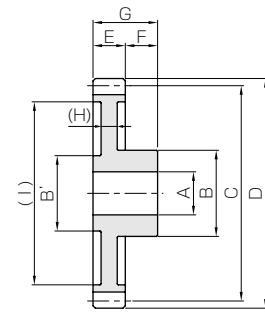
[Caution on Secondary Operations]

① Injection molded products may have air bubbles inside of the material; please avoid performing secondary operations.



Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998) * JIS grade 8 (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon acetal (M90-44)
Heat treatment	—
Tooth hardness	110 ~ 120HRR

* The precision grade of this product is equivalent to the value shown in the table.



S9

Catalog No.	Module	No. of teeth	Shape	Bore 1	Bore 2	Hub dia. 1	Hub dia. 2	Pitch dia.	Outside dia.	Face width	Hub width
				A	(A')	B	B'	C	D	E	F
DS1-12	m1	12	S9	4	—	8	6	12	14	6	6
DS1-15		15	S9	4	—	8	7	15	17	6	6
DS1-16		16	S9	5	—	10	8	16	18	6	6
DS1-18		18	S9	5	—	10	8	18	20	6	6
DS1-20		20	S9	5	—	11.7	9	20	22	6	6
DS1-24		24	S9	5	—	11.7	9	24	26	6	6
DS1-25		25	S9	5	—	11.7	9	25	27	6	6
DS1-28		28	S9	5	—	11.7	9	28	30	6	6
DS1-30		30	S9	6	—	14	12	30	32	6	6
DS1-32		32	S9	6	—	14	12	32	34	6	6
DS1-35		35	S9	6	—	14	12	35	37	6	6
DS1-36		36	S9	6	—	14	12	36	38	6	6
DS1-40		40	S9	8	—	16	14	40	42	6	6
DS1-45		45	S9	8	—	16	14	45	47	6	6
DS1-48		48	S9	8	—	16	14	48	50	6	8
DS1-50		50	S9	8	—	16	14	50	52	6	8
DS1-56		56	S9	8	—	18	15.6	56	58	6	8
DS1-60		60	S9	8	—	18	15.6	60	62	6	8
DS1-64		64	S9	8	—	18	15.6	64	66	6	8
DS1-70		70	S9	8	—	18	15.6	70	72	6	8
DS1-72	72	S9	8	—	18	15.6	72	74	6	8	
DS1-80	80	S9	8	—	18	15.6	80	82	6	8	

- [Caution on Product Characteristics]
- ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see page 35 for more details.
 - ② The backlash values shown in the table are the theoretical values for the backlash in the normal direction of a pair of identical gears in mesh.
 - ③ The bore tolerance is generally -0.05 to -0.30 but may be + value at the central portion of the hole.
 - ④ To find dimensional precision, see the table "Tolerance of Injection Molded Products".



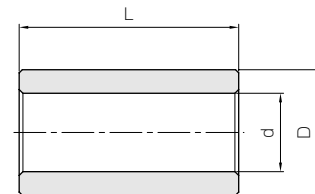
BB Sintered Metal Bushings



Sintered Metal Bushings



The table below shows a series of standard metal bushings that can be pressed into standard injection molded gears.



T8

Catalog No.	I.D. of bushing	O.D. of bushing	Length	Products that can use the bushing
	d ^{+0.02} ₀	D ^{+0.02} _{-0.01}	L ⁰ _{-0.3}	
BB30507	3	5	7	DS0.5
BB30608	3	6	8	DS0.5, DS0.8
BB40609	4	6	9	DS0.8
BB40612	4	6	12	DS1
BB50812	5	8	12	DS1
BB50814	5	8	14	DS1

Material : Oil impregnated sintered bronze



Injection Molded Spur Gears

Total length	Web thickness	Web O.D.	Depth of counterbore	Allowable torque (N-m)	Allowable torque (kgf-m)	Backlash (mm)	Weight (g)	Catalog No.
G	(H)	(I)	(J)	Bending strength	Bending strength			
12	(3)	(8.5)	—	0.44	0.045	0~0.60	1.10	DS1-12
12	(3)	(11)	—	0.65	0.066		1.49	DS1-15
12	(3)	(11.5)	—	0.71	0.073		1.87	DS1-16
12	(3)	(13.5)	—	0.83	0.085		2.15	DS1-18
12	(3)	(15)	—	0.96	0.098		2.85	DS1-20
12	(3)	(17)	—	1.22	0.12		3.81	DS1-24
12	(3)	(20)	—	1.28	0.13		3.76	DS1-25
12	(3)	(23)	—	1.48	0.15		4.39	DS1-28
12	(3)	(24)	—	1.61	0.16		5.46	DS1-30
12	(3)	(26.5)	—	1.75	0.18		5.86	DS1-32
12	(3)	(29)	—	1.96	0.20		6.73	DS1-35
12	(3)	(30)	—	2.04	0.21		7.01	DS1-36
12	(3)	(34)	—	2.33	0.24		8.39	DS1-40
12	(3)	(39.5)	—	2.69	0.27		9.87	DS1-45
14	(3)	(40)	—	2.92	0.30		12.0	DS1-48
14	(3)	(42.5)	—	3.07	0.31		12.6	DS1-50
14	(3)	(48.5)	—	3.49	0.36		15.8	DS1-56
14	(3)	(52.5)	—	3.78	0.39		17.6	DS1-60
14	(3)	(56.5)	—	4.07	0.41		19.4	DS1-64
14	(3)	(62.5)	—	4.50	0.46		22.4	DS1-70
14	(3)	(64)	—	4.65	0.47	23.7	DS1-72	
14	(3)	(72.5)	—	5.23	0.53	27.9	DS1-80	

[Caution on Secondary Operations] ① Injection molded products may have air bubbles inside of the material; please avoid performing secondary operations.

■ Tolerance of Injection Molded Products. (Unit : mm)

Range	Tolerance
below 3 mm	± 0.20
3 up to 6 mm	± 0.25
6 up to 10 mm	± 0.30
10 up to 18 mm	± 0.35
18 up to 30 mm	± 0.40
30 mm up	± 0.50