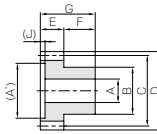


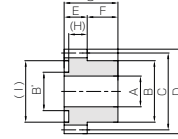


Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998) * JIS grade 8 (JIS B1702: 1978)
Gear teeth	Standard full depth
Pressure angle	20°
Material	Duracon acetal (M90-44)
Heat treatment	—
Tooth hardness	(110 ~ 120HRR)

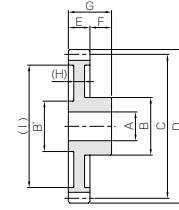
* The precision grade of this product is equivalent to the value shown in the table.



S8



S8B



S9

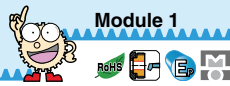
Catalog No.	Module	No. of teeth	Shape	Bore 1		Bore 2		Hub dia. 1	Hub dia. 2	Pitch dia.	Outside dia.	Face width	Hub width
				A	(A')	B	B'	C	D	E	F		
Module 0.5													
DS0.5-12	m0.5	12	S8	2	(4)	4.5	—	6	7	3	4	4	4
DS0.5-15		15	S8	2	(5.5)	4.5	—	7.5	8.5	3	4	4	4
DS0.5-16		16	S8	3	(6)	6	—	8	9	3	4	4	4
DS0.5-18		18	S8	3	(7)	6	—	9	10	3	4	4	4
DS0.5-20		20	S8B	4	—	8	5	10	11	3	4	4	4
DS0.5-24		24	S9	4	—	8	5	12	13.5	3	4	4	4
DS0.5-25		25	S9	4	—	8	6	12.5	13.5	3	4	4	4
DS0.5-28		28	S9	4	—	8	6	14	15	3	4	4	4
DS0.5-30		30	S9	5	—	10	7	15	16	3	4	4	4
DS0.5-32		32	S9	5	—	10	7	16	17	3	4	4	4
DS0.5-35		35	S9	5	—	10	7	17.5	18.5	3	4	4	4
DS0.5-36		36	S9	5	—	10	7	18	19	3	4	4	4
DS0.5-40		40	S9	5	—	12	8	20	21	3	4	4	4
DS0.5-45		45	S9	5	—	12	8	22.5	23.5	3	4	4	4
DS0.5-48		48	S9	5	—	12	8	24	25	3	4	4	4
DS0.5-50		50	S9	5	—	12	8	25	26	3	4	4	4
DS0.5-56		56	S9	6	—	14	10	28	29	3	5	5	5
DS0.5-60		60	S9	6	—	14	10	30	31	3	5	5	5
DS0.5-64		64	S9	6	—	14	10	32	33	3	5	5	5
DS0.5-70		70	S9	6	—	14	10	35	36	3	5	5	5
DS0.5-72	72	S9	6	—	14	10	36	37	3	5	5	5	
DS0.5-80	80	S9	6	—	14	10	40	41	3	5	5	5	
Module 0.8													
DS0.8-12	m0.8	12	S9	3	—	6	4	9.6	11.2	4	5	5	5
DS0.8-15		15	S9	3	—	6	4.5	12	13.6	4	5	5	5
DS0.8-16		16	S9	4	—	8	6	12.8	14.4	4	5	5	5
DS0.8-18		18	S9	4	—	8	6	14.4	16	4	5	5	5
DS0.8-20		20	S9	5	—	10	8	16	17.6	4	5	5	5
DS0.8-24		24	S9	5	—	10	8	19.2	20.8	4	5	5	5
DS0.8-25		25	S9	5	—	10	8	20	21.6	4	5	5	5
DS0.8-28		28	S9	5	—	10	8	22.4	24	4	5	5	5
DS0.8-30		30	S9	6	—	12	10	24	25.6	4	5	5	5
DS0.8-32		32	S9	6	—	12	10	25.6	27.2	4	5	5	5
DS0.8-35		35	S9	6	—	12	10	28	29.6	4	5	5	5
DS0.8-36		36	S9	6	—	12	10	28.8	30.4	4	5	5	5
DS0.8-40		40	S9	6	—	12	10	32	33.6	4	5	5	5
DS0.8-45		45	S9	6	—	12	10	36	37.6	4	5	5	5
DS0.8-48		48	S9	6	—	14.5	11.7	38.4	40	4	6	6	6
DS0.8-50		50	S9	6	—	14.5	11.7	40	41.6	4	6	6	6
DS0.8-56		56	S9	6	—	14.5	11.7	44.8	46.4	4	6	6	6
DS0.8-60		60	S9	6	—	14.5	11.7	48	49.6	4	6	6	6
DS0.8-64		64	S9	6	—	15.5	11.7	51.2	52.8	4	6	6	6
DS0.8-70		70	S9	6	—	15.5	11.7	56	57.6	4	6	6	6
DS0.8-72	72	S9	6	—	15.5	11.7	57.6	59.2	4	6	6	6	
DS0.8-80	80	S9	6	—	15.5	11.7	64	65.6	4	6	6	6	

Total length	Web thickness	Web O.D.	Depth of cambrone	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash (mm)	Weight (g)	Catalog No.
G	(H)	(I)	(J)	Bending strength	Bending strength			
Backlash 0~0.30								
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	
Backlash 0~0.48								
9	(2)	(6.7)	—	0.22	0.022	0~0.48	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 Product Characteristics] ① The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 31 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".

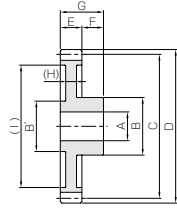
[Caution on Secondary Operations] ① Injection molded products may have air bubbles inside of the material; please avoid performing secondary operations.

DS Injection Molded Spur Gears



Specifications	
Precision grade	JIS grade N12 (JIS B1702-1: 1998) * JIS grade 8 (JIS B1702: 1978)
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.



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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	—	—	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]

- The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 31 for more details.
- 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.
- The bore tolerance is generally -0.05 to -0.30 but may be + value at the central portion of the hole.
- To find dimensional precision, see the table "Tolerance of Injection Molded Products".

Total length	Web thickness	Web O.D.	Depth of quarten	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]

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

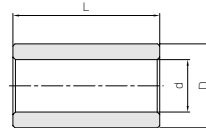
BB Sintered Metal Bushings



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
	$d_{-0.02}^0$	$D_{-0.02}^0$		
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

■ 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