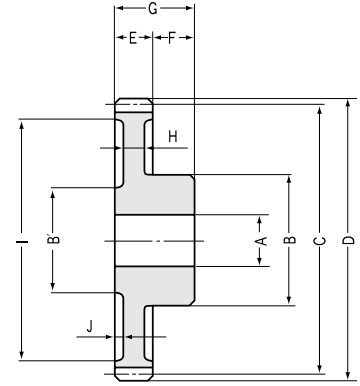
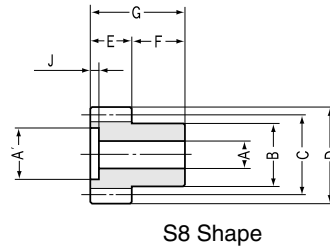




DS Injection Molded Spur Gears Modules 0.5~0.8



Module 0.5

Catalog No.	Module	No. of teeth	Bore NOTE 1	Bore 2	Hub dia.	Hub dia.2	Pitch dia.	Outside dia.	Face width	Hub width	Total length
	m	z	A	A'	B	B'	C	D	E	F	G
DS0.5-12	0.5	12	2	4	4.5	—	6	7	3	4	7
DS0.5-15	0.5	15	2	5	4.5	—	7.5	8.5	3	4	7
DS0.5-16	0.5	16	3	6	6	—	8	9	3	4	7
DS0.5-18	0.5	18	3	7	6	—	9	10	3	4	7
DS0.5-20	0.5	20	4	—	8	5	10	11	3	4	7
DS0.5-24	0.5	24	4	—	8	5	12	13	3	4	7
DS0.5-25	0.5	25	4	—	8	6	12.5	13.5	3	4	7
DS0.5-28	0.5	28	4	—	8	6	14	15	3	4	7
DS0.5-30	0.5	30	5	—	10	7	15	16	3	4	7
DS0.5-32	0.5	32	5	—	10	7	16	17	3	4	7
DS0.5-35	0.5	35	5	—	10	7	17.5	18.5	3	4	7
DS0.5-36	0.5	36	5	—	10	7	18	19	3	4	7
DS0.5-40	0.5	40	5	—	12	8	20	21	3	4	7
DS0.5-45	0.5	45	5	—	12	8	22.5	23.5	3	4	7
DS0.5-48	0.5	48	5	—	12	8	24	25	3	4	7
DS0.5-50	0.5	50	5	—	12	8	25	26	3	4	7
DS0.5-56	0.5	56	6	—	14	10	28	29	3	5	8
DS0.5-60	0.5	60	6	—	14	10	30	31	3	5	8
DS0.5-64	0.5	64	6	—	14	10	32	33	3	5	8
DS0.5-70	0.5	70	6	—	14	10	35	36	3	5	8
DS0.5-72	0.5	72	6	—	14	10	36	37	3	5	8
DS0.5-80	0.5	80	6	—	14	10	40	41	3	5	8

Module 0.8

DS0.8-12	0.8	12	3	—	6	4	9.6	11.2	4	5	9
DS0.8-15	0.8	15	3	—	6	5	12	13.6	4	5	9
DS0.8-16	0.8	16	4	—	8	6	12.8	14.4	4	5	9
DS0.8-18	0.8	18	4	—	8	6	14.4	16	4	5	9
DS0.8-20	0.8	20	5	—	10	8	16	17.6	4	5	9
DS0.8-24	0.8	24	5	—	10	8	19.2	20.8	4	5	9
DS0.8-25	0.8	25	5	—	10	8	20	21.6	4	5	9
DS0.8-28	0.8	28	5	—	10	8	22.4	24	4	5	9
DS0.8-30	0.8	30	6	—	12	10	24	25.6	4	5	9
DS0.8-32	0.8	32	6	—	12	10	25.6	27.2	4	5	9
DS0.8-35	0.8	35	6	—	12	10	28	29.6	4	5	9
DS0.8-36	0.8	36	6	—	12	10	28.8	30.4	4	5	9
DS0.8-40	0.8	40	6	—	12	10	32	33.6	4	5	9
DS0.8-45	0.8	45	6	—	12	10	36	37.6	4	5	9
DS0.8-48	0.8	48	6	—	14.5	11.7	38.4	40	4	6	10
DS0.8-50	0.8	50	6	—	14.5	11.7	40	41.6	4	6	10
DS0.8-56	0.8	56	6	—	14.5	11.7	44.8	46.4	4	6	10
DS0.8-60	0.8	60	6	—	14.5	11.7	48	49.6	4	6	10
DS0.8-64	0.8	64	6	—	15.5	11.7	51.2	52.8	4	6	10
DS0.8-70	0.8	70	6	—	15.5	11.7	56	57.6	4	6	10
DS0.8-72	0.8	72	6	—	15.5	11.7	57.6	59.2	4	6	10
DS0.8-80	0.8	80	6	—	15.5	11.7	64	65.6	4	6	10

NOTE 1: The bore tolerance is generally -0.05 to -0.1 but may be + values at the central portion of the hole. Re-machining the bore is not recommended since reworking material may expose voids.



Injection Molded Spur Gears

Specifications

Precision grade	JIS N12 grade (JIS B1702-2: 1998) OLD JIS 8 grade (JIS B1702: 1976)	Tooth hardness	110~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Injection molded
Material	DURACON acetal (M90-44)	Datum reference surface for tooth forming	Bore
Heat treatment	—	Secondary Operations	Please avoid reworking material as this may expose voids.

Web thickness	Web O.D.	Depth of counterbore	Shape	Allowable torque (N·m) <small>NOTE 2</small>	Allowable torque (kgf·m)	Backlash (mm) <small>NOTE 3</small>	Weight (gf)	Catalog No.
				Bending strength	Bending strength			
—	—	0.6	S8	0.0941	(0.0096)	0.06 ~ 0.18	1	DS0.5-12
—	—	0.6	S8	0.1373	(0.014)	0.06 ~ 0.18	1	DS0.5-15
—	—	0.6	S8	0.152	(0.0155)	0.06 ~ 0.18	1	DS0.5-16
—	—	0.6	S8	0.1775	(0.0181)	0.06 ~ 0.18	1	DS0.5-18
2.4	8	0.6	S9	0.205	(0.0209)	0.06 ~ 0.18	1	DS0.5-20
1.8	9.5	0.6	S9	0.2589	(0.0264)	0.06 ~ 0.18	1	DS0.5-24
1.8	10	0.6	S9	0.2726	(0.0278)	0.06 ~ 0.18	1	DS0.5-25
1.8	12	0.6	S9	0.3148	(0.0321)	0.06 ~ 0.18	1	DS0.5-28
1.8	12	0.6	S9	0.3422	(0.0349)	0.06 ~ 0.18	1	DS0.5-30
1.8	13	0.6	S9	0.3717	(0.0379)	0.06 ~ 0.18	1	DS0.5-32
1.8	14.5	0.6	S9	0.4178	(0.0426)	0.06 ~ 0.18	1	DS0.5-35
1.8	15	0.6	S9	0.4334	(0.0442)	0.06 ~ 0.18	1	DS0.5-36
1.8	17	0.6	S9	0.4943	(0.0504)	0.06 ~ 0.18	2	DS0.5-40
1.8	19	0.6	S9	0.5717	(0.0583)	0.08 ~ 0.22	2	DS0.5-45
1.8	21	0.6	S9	0.6198	(0.0632)	0.08 ~ 0.22	2	DS0.5-48
1.8	22	0.6	S9	0.6531	(0.0666)	0.08 ~ 0.22	2	DS0.5-50
1.8	24.5	0.6	S9	0.7424	(0.0757)	0.08 ~ 0.22	3	DS0.5-56
1.8	26.5	0.6	S9	0.8041	(0.082)	0.08 ~ 0.22	3	DS0.5-60
1.8	28.5	0.6	S9	0.8649	(0.0882)	0.08 ~ 0.22	3	DS0.5-64
1.8	31.5	0.6	S9	0.9571	(0.0976)	0.08 ~ 0.22	4	DS0.5-70
1.8	32.5	0.6	S9	0.9885	(0.1008)	0.08 ~ 0.22	4	DS0.5-72
1.8	36.5	0.6	S9	1.111	(0.1133)	0.08 ~ 0.22	5	DS0.5-80

2	6.7	1	S9	0.2844	(0.029)	0.08 ~ 0.22	1	DS0.8-12
2	8.8	1	S9	0.4158	(0.0424)	0.08 ~ 0.22	1	DS0.8-15
2	9.2	1	S9	0.4599	(0.0469)	0.08 ~ 0.22	1	DS0.8-16
2	10.7	1	S9	0.5364	(0.0547)	0.08 ~ 0.22	1	DS0.8-18
2	12.7	1	S9	0.6217	(0.0634)	0.08 ~ 0.22	2	DS0.8-20
2	15.5	1	S9	0.7835	(0.0799)	0.08 ~ 0.22	2	DS0.8-24
2	15.5	1	S9	0.8277	(0.0844)	0.08 ~ 0.22	2	DS0.8-25
2	19	1	S9	0.9542	(0.0973)	0.1 ~ 0.24	2	DS0.8-28
2	20	1	S9	1.038	(0.1058)	0.1 ~ 0.24	3	DS0.8-30
2	21.7	1	S9	1.127	(0.1149)	0.1 ~ 0.24	3	DS0.8-32
2	24	1	S9	1.265	(0.129)	0.1 ~ 0.24	3	DS0.8-35
2	25	1	S9	1.313	(0.1339)	0.1 ~ 0.24	3	DS0.8-36
2	28.3	1	S9	1.498	(0.1528)	0.1 ~ 0.24	4	DS0.8-40
2	32	1	S9	1.733	(0.1767)	0.1 ~ 0.24	4	DS0.8-45
2	34.3	1	S9	1.878	(0.1915)	0.1 ~ 0.24	5	DS0.8-48
2	36	1	S9	1.977	(0.2016)	0.1 ~ 0.24	6	DS0.8-50
2	41	1	S9	2.25	(0.2294)	0.1 ~ 0.24	7	DS0.8-56
2	44	1	S9	2.436	(0.2484)	0.1 ~ 0.24	8	DS0.8-60
2	45.5	1	S9	2.618	(0.267)	0.12 ~ 0.26	8	DS0.8-64
2	52	1	S9	2.898	(0.2955)	0.12 ~ 0.26	9	DS0.8-70
2	54	1	S9	2.992	(0.3051)	0.12 ~ 0.26	10	DS0.8-72
2	60	1	S9	3.362	(0.3428)	0.12 ~ 0.26	12	DS0.8-80

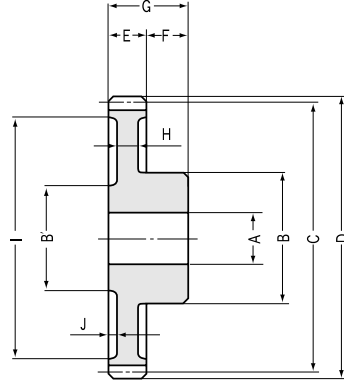
NOTE 2: The allowable torques shown in the table are calculated values using the Lewis formula. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.



DS Injection Molded Spur Gears Module 1

Module 1



S9 Shape

Module 1

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

CAUTION: Gears with wider face widths such as SS and SSA series can be used as the mating gears to these.

NOTE 1: The bore tolerance is generally -0.05 to -0.1 but may be + values at the central portion of the hole. Re-machining the bore is not recommended since reworking material may expose voids.

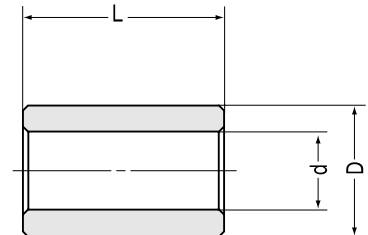
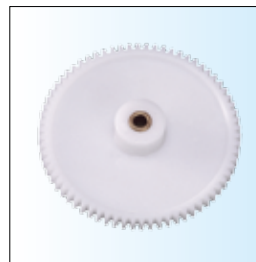


BB Sintered Metal Bushings

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

(unit: mm)

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, DM0.8, DB0.8
BB30608	3	6	8	DS0.5, DS0.8, DM1
BB40609	4	6	9	DS0.8, DM1
BB40612	4	6	12	DS1, DB1
BB50812	5	8	12	DS1
BB50814	5	8	14	DS1, DM1.5



Material: Oil impregnated sintered bronze.



Specifications

Precision grade	JIS N12 grade (JIS B1702-2: 1998) OLD JIS 8 grade (JIS B1702: 1976)	Tooth hardness	110~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Injection molded
Material	DURACON acetal (M90-44)	Datum reference surface for tooth forming	Bore
Heat treatment	—	Secondary Operations	Please avoid reworking material as this may expose voids.

Web thickness H	Web O.D. I	Depth of counterbore J	Shape	Allowable torque (N·m) <small>NOTE 2</small>	Allowable torque (kgf·m)	Backlash (mm) <small>NOTE 3</small>	Weight (gf)	Catalog No.
				Bending strength	Bending strength			
3	8.5	1.5	S9	0.5835	(0.0595)	0.1 ~ 0.24	1	DS1-12
3	11	1.5	S9	0.8532	(0.087)	0.1 ~ 0.24	2	DS1-15
3	11.5	1.5	S9	0.9424	(0.0961)	0.1 ~ 0.24	2	DS1-16
3	13.5	1.5	S9	1.1	(0.1122)	0.1 ~ 0.24	2	DS1-18
3	15	1.5	S9	1.274	(0.1299)	0.1 ~ 0.24	3	DS1-20
3	17	1.5	S9	1.607	(0.1639)	0.12 ~ 0.26	4	DS1-24
3	20	1.5	S9	1.697	(0.173)	0.12 ~ 0.26	4	DS1-25
3	23	1.5	S9	1.955	(0.1994)	0.12 ~ 0.26	4	DS1-28
3	24	1.5	S9	2.127	(0.2169)	0.12 ~ 0.26	5	DS1-30
3	26.5	1.5	S9	2.309	(0.2355)	0.12 ~ 0.26	6	DS1-32
3	29	1.5	S9	2.593	(0.2644)	0.12 ~ 0.26	6	DS1-35
3	30	1.5	S9	2.691	(0.2744)	0.12 ~ 0.26	6	DS1-36
3	34	1.5	S9	3.07	(0.3131)	0.12 ~ 0.26	8	DS1-40
3	39.5	1.5	S9	3.55	(0.362)	0.12 ~ 0.26	9	DS1-45
3	40	1.5	S9	3.848	(0.3924)	0.12 ~ 0.26	11	DS1-48
3	42.5	1.5	S9	4.05	(0.413)	0.12 ~ 0.26	12	DS1-50
3	48.5	1.5	S9	4.608	(0.4699)	0.14 ~ 0.28	15	DS1-56
3	52.5	1.5	S9	4.989	(0.5087)	0.14 ~ 0.28	16	DS1-60
3	56.5	1.5	S9	5.362	(0.5468)	0.14 ~ 0.28	18	DS1-64
3	62.5	1.5	S9	5.933	(0.605)	0.14 ~ 0.28	21	DS1-70
3	64	1.5	S9	6.126	(0.6247)	0.14 ~ 0.28	21	DS1-72
3	72.5	1.5	S9	6.883	(0.7019)	0.14 ~ 0.28	26	DS1-80

NOTE 2: The allowable torques shown in the table are calculated values using the Lewis formula. Please see page 27 for more details.

NOTE 3: The backlash values shown in the table are the theoretical values of a pair of identical gears in mesh.

■ Tolerance of Injection Molded Products (unit: mm)

Range	Tolerance
below 3	±0.2
3 up to 6	±0.25
6 up to 10	±0.3
10 up to 18	±0.35
18 up to 30	±0.4
30 up	±0.5