

Module 1

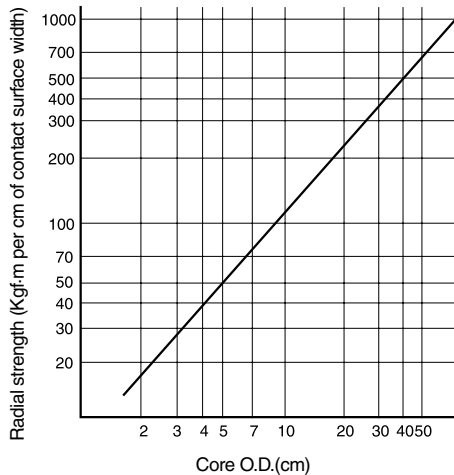
Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Metal core dia. <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	A _{H7}	B	C	D	E	F	G	H
NSU1- 30	1	30	8	20	30	32	10	10	20	20
NSU1- 32	1	32	8	22	32	34	10	10	20	22
NSU1- 34	1	34	8	25	34	36	10	10	20	25
NSU1- 35	1	35	8	25	35	37	10	10	20	25
NSU1- 36	1	36	8	25	36	38	10	10	20	25
NSU1- 40	1	40	10	25	40	42	10	10	20	28
NSU1- 45	1	45	10	30	45	47	10	10	20	34
NSU1- 48	1	48	10	30	48	50	10	10	20	34
NSU1- 50	1	50	10	30	50	52	10	10	20	34
NSU1- 60	1	60	10	40	60	62	10	10	20	45
NSU1- 70	1	70	10	40	70	72	10	10	20	45
NSU1- 80	1	80	10	40	80	82	10	10	20	45
NSU1- 90	1	90	10	40	90	92	10	10	20	55
NSU1-100	1	100	10	40	100	102	10	10	20	65

NOTE 1: Even though the holding strength at the material interface is designed to be stronger than the teeth, any secondary operation may weaken the holding strength. When the core O.D. is the same as the hub diameter, you may see some serration on the hub. There is no effect on the strength of the gear.

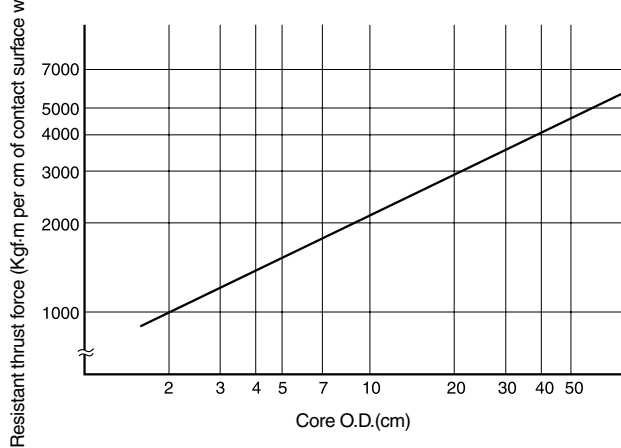
Definition of holding strength and safety factor

① The holding strength between the metal core and the molded material is a function of the contact area. The relationship between the core outside diameter and the radial strength (torque) is shown on the left, while the relationship between the core diameter and the resistant thrust force is shown on the right.

Relationship between radial strength and core diameter



Relationship between resistant thrust force and core diameter





Specifications

Precision grade	JIS N9 grade (JIS B1702-1: 1998) OLD JIS 5 grade (JIS B1702: 1976)	Tooth hardness	115~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	MC601ST with S45C core	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N·m) <small>NOTE 2</small>	Allowable torque (kgf·m)	Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Bending strength			
S1	1.415	(0.1443)	0.12 ~ 0.26	0.05	NSU1- 30 NSU1- 32 NSU1- 34 NSU1- 35 NSU1- 36
S1	1.537	(0.1567)	0.12 ~ 0.26	0.06	
S1	1.661	(0.1694)	0.12 ~ 0.26	0.08	
S1	1.726	(0.176)	0.12 ~ 0.26	0.08	
S1	1.792	(0.1827)	0.12 ~ 0.26	0.08	
S1	2.045	(0.2085)	0.12 ~ 0.26	0.08	NSU1- 40 NSU1- 45 NSU1- 48 NSU1- 50 NSU1- 60
S1	2.365	(0.2412)	0.12 ~ 0.26	0.12	
S1	2.564	(0.2615)	0.12 ~ 0.26	0.13	
S1	2.7	(0.2753)	0.12 ~ 0.26	0.13	
S1	3.329	(0.3395)	0.14 ~ 0.28	0.23	
S1	3.964	(0.4042)	0.14 ~ 0.28	0.24	NSU1- 70 NSU1- 80 NSU1- 90 NSU1-100
S1	4.603	(0.4694)	0.14 ~ 0.28	0.25	
S1	5.24	(0.5343)	0.14 ~ 0.28	0.32	
S1	5.891	(0.6007)	0.14 ~ 0.28	0.4	

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.

- ② When the ambient temperature rises, obtain the temperature compensation factor, T, from the chart on the right. Also, use a safety factor of 4 or 5 in the calculation.

$$T_{al} = T_{max} \times \frac{1}{\text{Safety factor}} \times T$$

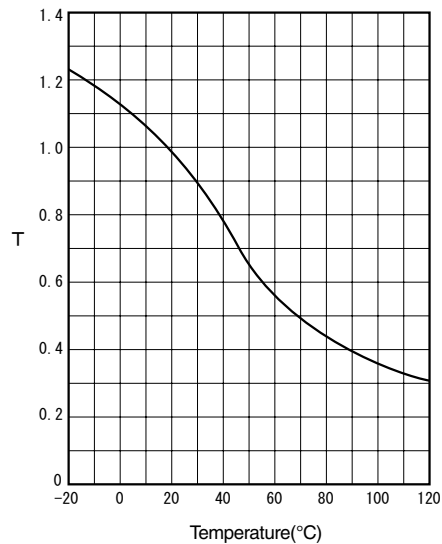
where

T_{al} = Allowable holding strength at the contact surface

T_{max} = Radial strength - Find from the charts on the left

T = Temperature compensation factor from the chart on the right

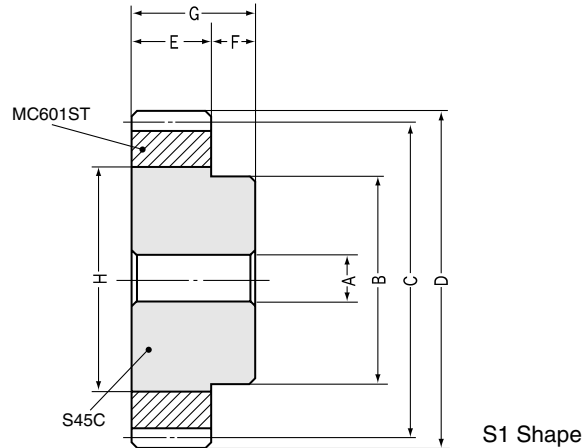
■ Ambient temperature compensation factor T



* Data supplied by Japan Polypenco Limited.



NSU Plastic Spur Gears with Steel Core Modules 1.5~2



Module 1.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Metal core dia. <small>NOTE 1</small>
	<i>m</i>	<i>z</i>	A _{H7}	B	C	D	E	F	G	H
NSU1.5-28	1.5	28	10	30	42	45	15	12	27	30
NSU1.5-30	1.5	30	10	30	45	48	15	12	27	30
NSU1.5-32	1.5	32	10	33	48	51	15	12	27	33
NSU1.5-34	1.5	34	10	33	51	54	15	12	27	33
NSU1.5-35	1.5	35	10	33	52.5	55.5	15	12	27	36
NSU1.5-36	1.5	36	10	33	54	57	15	12	27	36
NSU1.5-40	1.5	40	10	40	60	63	15	12	27	45
NSU1.5-45	1.5	45	10	40	67.5	70.5	15	12	27	45
NSU1.5-48	1.5	48	10	40	72	75	15	12	27	45
NSU1.5-50	1.5	50	12	40	75	78	15	12	27	45
NSU1.5-56	1.5	56	12	50	84	87	15	12	27	55
NSU1.5-60	1.5	60	12	50	90	93	15	12	27	55
NSU1.5-68	1.5	68	12	50	102	105	15	12	27	67
NSU1.5-70	1.5	70	12	50	105	108	15	12	27	70
NSU1.5-80	1.5	80	12	60	120	123	15	12	27	85
NSU1.5-90	1.5	90	12	60	135	138	15	12	27	100

Module 2

NSU2-20	2	20	10	22	40	44	20	14	34	22
NSU2-22	2	22	10	30	44	48	20	14	34	30
NSU2-24	2	24	10	30	48	52	20	14	34	30
NSU2-25	2	25	10	30	50	54	20	14	34	30
NSU2-28	2	28	10	35	56	60	20	14	34	35
NSU2-30	2	30	10	35	60	64	20	14	34	35
NSU2-32	2	32	12	40	64	68	20	14	34	40
NSU2-34	2	34	12	40	68	72	20	14	34	45
NSU2-35	2	35	12	40	70	74	20	14	34	45
NSU2-36	2	36	12	40	72	76	20	14	34	45
NSU2-40	2	40	15	55	80	84	20	14	34	60
NSU2-44	2	44	15	55	88	92	20	14	34	60
NSU2-45	2	45	15	55	90	94	20	14	34	60
NSU2-48	2	48	15	60	96	100	20	14	34	65
NSU2-50	2	50	15	60	100	104	20	14	34	65
NSU2-56	2	56	15	60	112	116	20	14	34	65
NSU2-60	2	60	15	60	120	124	20	14	34	85
NSU2-68	2	68	15	60	136	140	20	14	34	100
NSU2-70	2	70	15	60	140	144	20	14	34	105
NSU2-80	2	80	15	60	160	164	20	14	34	125

NOTE 1: Even though the holding strength at the material interface is designed to be stronger than the teeth, a secondary operation may weaken the holding strength. When the core O.D. is the same as the hub diameter, you may see some serration on the hub. There is no effect on the strength of the gear.



Specifications

Precision grade	JIS N9 grade (JIS B1702-1: 1998) OLD JIS 5 grade (JIS B1702: 1976)	Tooth hardness	115~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	MC601ST with S45C core	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N-m) <small>NOTE 2</small>	Allowable torque (kgf-m)	Backlash (mm) <small>NOTE 3</small>	Weight (kgf)	Catalog No.
	Bending strength	Bending strength			
S1	4.39	(0.4477)	0.14 ~ 0.3	0.15	NSU1.5-28 NSU1.5-30 NSU1.5-32 NSU1.5-34 NSU1.5-35
S1	4.775	(0.4869)	0.14 ~ 0.3	0.15	
S1	5.186	(0.5288)	0.14 ~ 0.3	0.18	
S1	5.607	(0.5718)	0.16 ~ 0.32	0.19	
S1	5.825	(0.594)	0.16 ~ 0.32	0.21	
S1	6.046	(0.6165)	0.16 ~ 0.32	0.21	NSU1.5-36 NSU1.5-40 NSU1.5-45 NSU1.5-48 NSU1.5-50
S1	6.902	(0.7038)	0.16 ~ 0.32	0.31	
S1	7.984	(0.8141)	0.16 ~ 0.32	0.33	
S1	8.655	(0.8826)	0.16 ~ 0.32	0.34	
S1	9.113	(0.9293)	0.16 ~ 0.32	0.34	
S1	10.38	(1.058)	0.16 ~ 0.32	0.5	NSU1.5-56 NSU1.5-60 NSU1.5-68 NSU1.5-70 NSU1.5-80
S1	11.24	(1.146)	0.16 ~ 0.32	0.52	
S1	12.94	(1.32)	0.18 ~ 0.36	0.66	
S1	13.38	(1.364)	0.18 ~ 0.36	0.69	
S1	15.53	(1.584)	0.18 ~ 0.36	1	
S1	17.68	(1.803)	0.18 ~ 0.36	1.28	NSU1.5-90

S1	6.773	(0.6907)	0.18 ~ 0.34	0.1	NSU2-20 NSU2-22 NSU2-24 NSU2-25 NSU2-28
S1	7.656	(0.7807)	0.18 ~ 0.34	0.19	
S1	8.546	(0.8715)	0.18 ~ 0.34	0.2	
S1	9.027	(0.9205)	0.18 ~ 0.34	0.2	
S1	10.4	(1.061)	0.2 ~ 0.36	0.27	
S1	11.32	(1.154)	0.2 ~ 0.36	0.28	NSU2-30 NSU2-32 NSU2-34 NSU2-35 NSU2-36
S1	12.29	(1.253)	0.2 ~ 0.36	0.36	
S1	13.29	(1.355)	0.2 ~ 0.36	0.41	
S1	13.81	(1.408)	0.2 ~ 0.36	0.41	
S1	14.33	(1.461)	0.2 ~ 0.36	0.42	
S1	16.36	(1.668)	0.2 ~ 0.36	0.71	NSU2-40 NSU2-44 NSU2-45 NSU2-48 NSU2-50
S1	18.4	(1.876)	0.2 ~ 0.36	0.73	
S1	18.93	(1.93)	0.2 ~ 0.36	0.75	
S1	20.52	(2.092)	0.2 ~ 0.36	0.88	
S1	21.6	(2.203)	0.2 ~ 0.36	0.9	
S1	24.59	(2.508)	0.22 ~ 0.38	0.94	NSU2-56 NSU2-60 NSU2-68 NSU2-70 NSU2-80
S1	26.63	(2.716)	0.22 ~ 0.38	1.3	
S1	30.67	(3.128)	0.22 ~ 0.38	1.65	
S1	31.7	(3.233)	0.22 ~ 0.38	1.78	
S1	36.82	(3.755)	0.22 ~ 0.38	2.37	

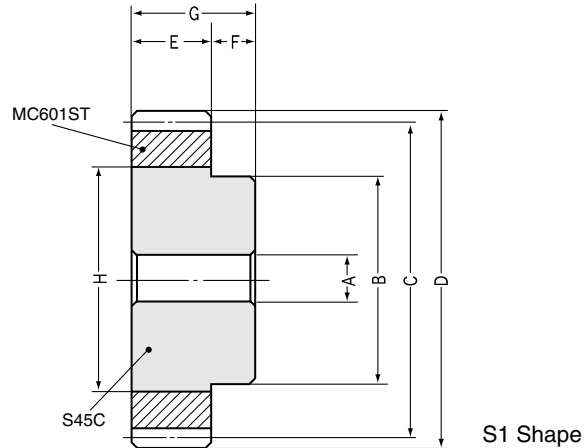
NOTE 2: The allowable torques shown in the table are calculated values using the Lewis formula.

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.



NSU Plastic Spur Gears with Steel Core Modules 2.5~3



Module 2.5

Catalog No.	Module	No. of teeth	Bore	Hub dia.	Pitch dia.	Outside dia.	Face width	Hub width	Total length	Metal core dia. NOTE 1
	m	z	AH7	B	C	D	E	F	G	H
NSU2.5-18	2.5	18	12	25	45	50	25	15	40	25
NSU2.5-20	2.5	20	12	28	50	55	25	15	40	28
NSU2.5-22	2.5	22	12	35	55	60	25	15	40	35
NSU2.5-24	2.5	24	12	35	60	65	25	15	40	35
NSU2.5-25	2.5	25	12	35	62.5	67.5	25	15	40	35
NSU2.5-28	2.5	28	12	40	70	75	25	15	40	40
NSU2.5-30	2.5	30	12	45	75	80	25	15	40	50
NSU2.5-32	2.5	32	12	45	80	85	25	15	40	50
NSU2.5-34	2.5	34	12	50	85	90	25	15	40	55
NSU2.5-35	2.5	35	12	55	87.5	92.5	25	15	40	60
NSU2.5-36	2.5	36	12	55	90	95	25	15	40	60
NSU2.5-40	2.5	40	15	65	100	105	25	15	40	70
NSU2.5-44	2.5	44	15	65	110	115	25	15	40	75
NSU2.5-45	2.5	45	15	65	112.5	117.5	25	15	40	75
NSU2.5-48	2.5	48	15	65	120	125	25	15	40	85
NSU2.5-50	2.5	50	15	65	125	130	25	15	40	95
NSU2.5-56	2.5	56	15	65	140	145	25	15	40	105
NSU2.5-60	2.5	60	20	70	150	155	25	15	40	115
NSU2.5-68	2.5	68	20	70	170	175	25	15	40	135
NSU2.5-70	2.5	70	20	70	175	180	25	15	40	140

Module 3

NSU3-16	3	16	12	24	48	54	30	17	47	24
NSU3-18	3	18	12	30	54	60	30	17	47	30
NSU3-20	3	20	12	33	60	66	30	17	47	33
NSU3-22	3	22	12	38	66	72	30	17	47	38
NSU3-24	3	24	12	43	72	78	30	17	47	43
NSU3-25	3	25	12	45	75	81	30	17	47	45
NSU3-28	3	28	15	50	84	90	30	17	47	50
NSU3-30	3	30	15	55	90	96	30	17	47	60
NSU3-32	3	32	15	60	96	102	30	17	47	65
NSU3-34	3	34	15	60	102	108	30	17	47	65
NSU3-35	3	35	15	60	105	111	30	17	47	75
NSU3-36	3	36	15	60	108	114	30	17	47	80
NSU3-40	3	40	20	70	120	126	30	17	47	85
NSU3-44	3	44	20	70	132	138	30	17	47	95
NSU3-45	3	45	20	70	135	141	30	17	47	105
NSU3-48	3	48	20	70	144	150	30	17	47	105
NSU3-50	3	50	20	70	150	156	30	17	47	105
NSU3-56	3	56	20	70	168	174	30	17	47	130
NSU3-60	3	60	20	70	180	186	30	17	47	145
NSU3-68	3	68	20	70	204	210	30	17	47	165
NSU3-70	3	70	20	70	210	216	30	17	47	175

NOTE 1: Even though the holding strength at the material interface is designed to be stronger than the teeth, a secondary operation may weaken the holding strength. When the core O.D. is the same as the hub diameter, you may see some serration on the hub. There is no effect on the strength of the gear.



Plastic Spur Gears with Steel Core

Specifications

Precision grade	JIS N9 grade (JIS B1702-1: 1998) OLD JIS 5 grade (JIS B1702: 1976)	Tooth hardness	115~120HRR
Gear teeth	Standard full depth	Surface treatment	—
Pressure angle	20°	Tooth surface finish	Cut
Material	MC601ST with S45C core	Datum reference surface for gear cutting	Bore
Heat treatment	—	Secondary Operations	Possible

Shape	Allowable torque (N-m) NOTE 2	Allowable torque (kgf-m)	Backlash (mm) NOTE 3	Weight (kgf)	Catalog No.
	Bending strength	Bending strength			
S1	11.42	(1.165)	0.2 ~ 0.36	0.15	NSU2.5-18 NSU2.5-20 NSU2.5-22 NSU2.5-24 NSU2.5-25
S1	13.23	(1.349)	0.2 ~ 0.36	0.2	
S1	14.95	(1.525)	0.22 ~ 0.38	0.31	
S1	16.69	(1.702)	0.22 ~ 0.38	0.33	
S1	17.63	(1.798)	0.22 ~ 0.38	0.33	
S1	20.33	(2.073)	0.22 ~ 0.38	0.44	NSU2.5-28 NSU2.5-30 NSU2.5-32 NSU2.5-34 NSU2.5-35
S1	22.1	(2.254)	0.22 ~ 0.38	0.62	
S1	24.01	(2.448)	0.22 ~ 0.38	0.63	
S1	25.96	(2.647)	0.22 ~ 0.38	0.76	
S1	26.97	(2.75)	0.22 ~ 0.38	0.9	
S1	27.99	(2.854)	0.22 ~ 0.38	0.91	NSU2.5-36 NSU2.5-40 NSU2.5-44 NSU2.5-45 NSU2.5-48
S1	31.95	(3.258)	0.22 ~ 0.38	1.2	
S1	35.94	(3.665)	0.24 ~ 0.4	1.35	
S1	36.96	(3.769)	0.24 ~ 0.4	1.4	
S1	40.07	(4.086)	0.24 ~ 0.4	1.6	
S1	42.19	(4.302)	0.24 ~ 0.4	1.9	NSU2.5-50 NSU2.5-56 NSU2.5-60 NSU2.5-68 NSU2.5-70
S1	48.03	(4.898)	0.24 ~ 0.4	2.23	
S1	52.01	(5.304)	0.24 ~ 0.4	2.6	
S1	59.92	(6.11)	0.24 ~ 0.4	3.41	
S1	61.93	(6.315)	0.24 ~ 0.4	3.63	

S1	16.91	(1.724)	0.28 ~ 0.44	0.17	NSU3-16 NSU3-18 NSU3-20 NSU3-22 NSU3-24
S1	19.74	(2.013)	0.3 ~ 0.46	0.28	
S1	22.86	(2.331)	0.3 ~ 0.46	0.35	
S1	25.84	(2.635)	0.3 ~ 0.46	0.46	
S1	28.84	(2.941)	0.3 ~ 0.46	0.59	
S1	30.47	(3.107)	0.3 ~ 0.46	0.65	NSU3-25 NSU3-28 NSU3-30 NSU3-32 NSU3-34
S1	35.12	(3.581)	0.3 ~ 0.46	0.78	
S1	38.2	(3.895)	0.3 ~ 0.46	1.1	
S1	41.48	(4.23)	0.3 ~ 0.46	1.2	
S1	44.86	(4.575)	0.32 ~ 0.48	1.3	
S1	46.6	(4.752)	0.32 ~ 0.48	1.5	NSU3-35 NSU3-36 NSU3-40 NSU3-44 NSU3-45
S1	48.37	(4.932)	0.32 ~ 0.48	1.7	
S1	55.21	(5.63)	0.32 ~ 0.48	1.9	
S1	62.1	(6.333)	0.32 ~ 0.48	2.3	
S1	63.87	(6.513)	0.32 ~ 0.48	2.7	
S1	69.24	(7.061)	0.32 ~ 0.48	2.7	NSU3-48 NSU3-50 NSU3-56 NSU3-60 NSU3-68
S1	72.9	(7.434)	0.32 ~ 0.48	2.8	
S1	82.99	(8.463)	0.32 ~ 0.48	3.8	
S1	89.88	(9.165)	0.32 ~ 0.48	4.6	
S1	103.6	(10.56)	0.32 ~ 0.48	5.8	
S1	107	(10.91)	0.32 ~ 0.48	6.4	NSU3-70

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.