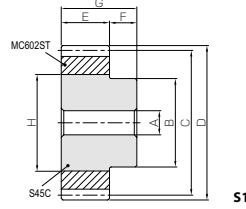




Specifications	
Precision grade	JIS grade N9 (JIS B1702-1:1998) * JIS grade S (JIS B1702:1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat treatment	—
Tooth hardness	(115 ~ 120HRR)
Face width (E)	10
Hub width (F)	10
Total length (G)	20
Screw offset (J)	5



S1

\* The precision grade of J Series products is equivalent to the value shown in the table.

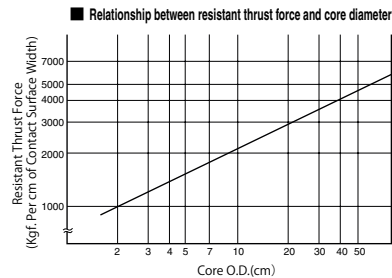
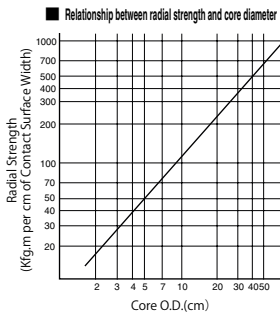
Catalog No.	No. of teeth	Shape	Bore		Pitch dia.	Outside dia.		Metal core dia.	Allowable torque (N·m)	Allowable torque (kg·m)	Backlash	Weight						
			A <sub>H7</sub>	H <sub>7</sub>		B	C						D	H				
NSU1-30	30	S1	8	20	30	32	20	1.23	0.13	0.046	0~0.34							
NSU1-32	32											22	32	34	22	1.34	0.14	0.057
NSU1-34	34											25	34	36	25	1.44	0.15	0.074
NSU1-35	35											25	35	37	25	1.50	0.15	0.075
NSU1-36	36											25	36	38	25	1.56	0.16	0.076
NSU1-40	40											25	40	42	28	1.78	0.18	0.082
NSU1-45	45		30	45	47	34	2.06	0.21	0.12									
NSU1-48	48		30	48	50	34	2.23	0.23	0.13									
NSU1-50	50		30	50	52	34	2.35	0.24	0.13									
NSU1-60	60		40	60	62	45	2.93	0.30	0.23									
NSU1-70	70	10	40	70	72	45	3.46	0.35	0.24	0.32	0~0.36							
NSU1-80	80											80	82	45	4.00	0.41	0.25	
NSU1-90	90											90	92	55	4.56	0.46	0.30	
NSU1-100	100											100	102	65	5.12	0.52	0.40	

[Caution on Product Characteristics] ① Significant variations in temperature or humidity can cause dimensional changes in plastic gears (MC Nylon gears), teeth diameter and backlash. Please see the section "Design of Plastic Gears" in separate technical reference book.  
 ② The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 31 for more details.  
 ③ 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.  
 ④ Without lubrication, using plastic gears in pairs may generate heat and dilation. It is recommended to mate them with steel gears.  
 ⑤ 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.

[Caution on Secondary Operations] ① Please read "Caution on Performing Secondary Operations" (Page 32) when performing modifications and/or secondary operations for safety concerns. KHK Quick-Mod Gears, the KHK's system for quick modification of KHK stock gears is also available.  
 ② 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.  
 ③ Plastic gears are susceptible to the effects of temperature and moisture. Dimensional changes may occur while performing secondary operations and during post-machining operations.

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.

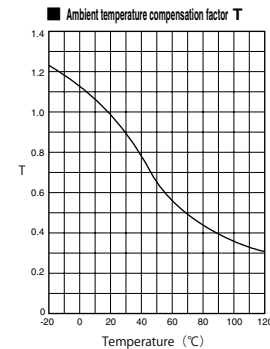


② When the ambient temperature rises, obtain the temperature compensation factor, T, from the chart on the right. Also, use a safety factor of 4 to 5 in the calculation.

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

Where  
 T<sub>al</sub> : Allowable Holding Strength at the contact surface  
 T<sub>max</sub> : Maximum Holding Strength - Find from the charts on the left.  
 T : Temperature Compensation Factor

\* Data supplied by Japan Polypenco Limited.



**How is MC nylon fused to the metal core**  
 This method is superior to other conventional methods such as bolting, shrink fitting and bonding.

① Outline of the procedure  
 The surface of the core material is rolled with a 2mm pitch diamond knurl. Then one or more grooves (1 to 2mm wide and 1mm deep) are cut as shown below. The metal surface is treated prior to casting nylon in a mold.

② Advantage of MC nylon with metal core  
 1. Wide temperature range.  
 There are examples of wheel use in furnaces at 130 to 140° C.  
 2. Good dimensional stability  
 Since nylon is fused to the whole outer surface of the metal hub, dimensional change is very small even under temperature variations.  
 3. Good appearance  
 Elimination of bolts and nuts provides a cleaner physical appearance.

To order J Series products, please specify; Catalog No. + J + BORE

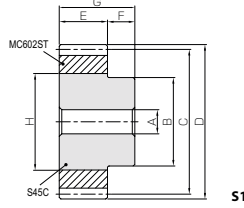
Bore H7	* The product shapes of J Series items are identified by background color.														
	8	10	12	14	15	16	17	18	19	20	22	25	28	30	
Keyway Js9	8			10			12			15			20		
Screw size	M5			M4			M5			M6			M6		
Catalog No.	M5			M4			M5			M6			M6		
NSU1-30 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-32 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-34 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-35 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-36 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-40 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-45 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-48 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-50 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-60 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-70 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-80 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-90 J BORE	Green			Pink			Pink			Pink			Pink		
NSU1-100 J BORE	Green			Pink			Pink			Pink			Pink		

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 ② Number of products we can process for one order is 1 to 20 units. For quantities of 21 or more pieces, we need to quote price and lead time.  
 ③ Keyways are made according to JIS B1301 standards, Js9 tolerance.  
 ④ Certain products which would otherwise have a very long tapped hole are counterbored to reduce the length of the tap.  
 ⑤ For products having a tapped hole, a set screw is included.



Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998) * JIS grade S (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat treatment	—
Tooth hardness	(115 ~ 120HRR)
Face width (E)	15
Hub width (F)	12
Total length (G)	27
Screw offset (J)	6

\* The precision grade of J Series products is equivalent to the value shown in the table.



S1

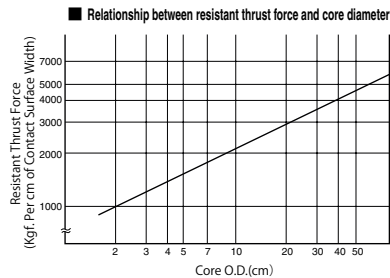
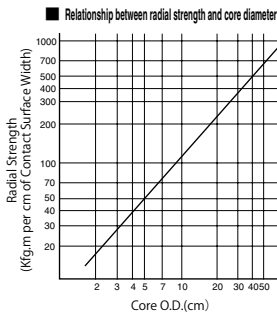
Catalog No.	No. of teeth	Shape	Bore A <sub>H7</sub>	Hub dia. B	Pitch dia. C		Outside dia. D		Metal core dia. H	Allowable torque (N·m) Bending strength	Allowable torque (kg·m) Bending strength	Backlash (mm)	Weight (kg)
					C	D	D	H					
NSU1.5-28	28	S1		30	42	45	30	3.82	0.39	0~0.38		0.15	
NSU1.5-30	30				45	48	30	4.15	0.42				
NSU1.5-32	32				48	51	33	4.51	0.46				
NSU1.5-34	34				51	54	33	4.88	0.50				
NSU1.5-35	35				52.5	55.5	36	5.07	0.52				
NSU1.5-36	36			54	57	36	5.26	0.54	0~0.40	0.21			
NSU1.5-40	40			60	63	45	6.00	0.61					
NSU1.5-45	45			67.5	70.5	45	6.94	0.71					
NSU1.5-48	48			72	75	45	7.53	0.77					
NSU1.5-50	50			75	78	45	7.92	0.81					
NSU1.5-56	56	12		50	84	87	55	9.09	0.93	0~0.42		0.50	
NSU1.5-60	60				90	93	55	9.89	1.01				
NSU1.5-68	68				102	105	67	11.3	1.15				
NSU1.5-70	70				105	108	70	11.7	1.19				
NSU1.5-80	80				120	123	85	13.5	1.38				
NSU1.5-90	90	135	138	100	15.4	1.57							

- [Caution on Product Characteristics]
- Significant variations in temperature or humidity can cause dimensional changes in plastic gears (MC Nylon gears), teeth diameter and backlash. Please see the section "Design of Plastic Gears" in separate technical reference book.
  - The allowable torques shown in the table are calculated values according to the assumed usage conditions. Please see Page 31 for more details.
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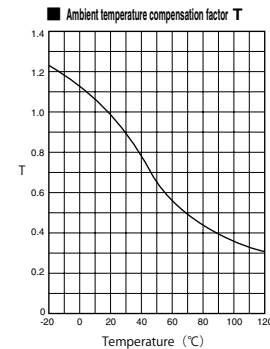


- When the ambient temperature rises, obtain the temperature compensation factor, T, from the chart on the right. Also, use a safety factor of 4 to 5 in the calculation.

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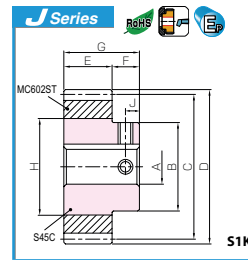


**How is MC nylon fused to the metal core**

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S1K

To order J Series products, please specify; Catalog No. + J + BORE

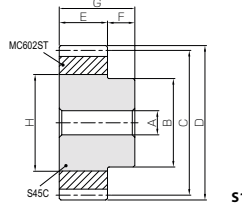
Bore H7	* The product shapes of J Series items are identified by background color.														
	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Keyway Js9	5 x 2.3			6 x 2.8			8 x 3.3			10 x 3.3					
Screw size	M4			M5			M6			M8					
Catalog No.															
NSU1.5-28 J BORE															
NSU1.5-30 J BORE															
NSU1.5-32 J BORE															
NSU1.5-34 J BORE															
NSU1.5-35 J BORE															
NSU1.5-36 J BORE															
NSU1.5-40 J BORE															
NSU1.5-45 J BORE															
NSU1.5-48 J BORE															
NSU1.5-50 J BORE															
NSU1.5-56 J BORE															
NSU1.5-60 J BORE															
NSU1.5-68 J BORE															
NSU1.5-70 J BORE															
NSU1.5-80 J BORE															
NSU1.5-90 J BORE															

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Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998) * JIS grade S (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat treatment	—
Tooth hardness	(115 ~ 120HRR)
Face width (E)	20
Hub width (F)	14
Total length (G)	34
Screw offset (J)	7

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S1

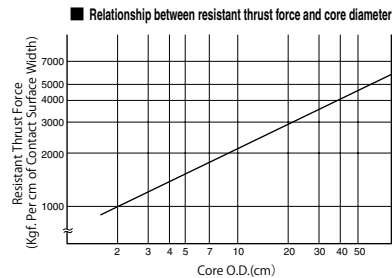
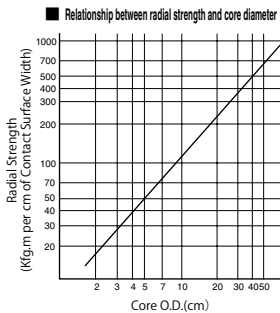
Catalog No.	No. of teeth	Shape	Bore A <sub>H7</sub>	Hub dia.	Pitch dia.	Outside dia.	Metal core dia.	Allowable torque (N·m) Bending strength	Allowable torque (kg·m) Bending strength	Backlash (mm)	Weight (kg)
				B	C	D	H				
NSU2-20	20	S1	10	22	40	44	22	5.89	0.60	0~0.42	0.10
NSU2-22	22				44	48	30	6.66	0.68		0.19
NSU2-24	24			48	52	30	7.43	0.76	0.19		
NSU2-25	25			50	54	30	7.85	0.80	0.20		
NSU2-28	28			56	60	35	9.05	0.92	0.27		
NSU2-30	30			60	64	35	9.84	1.00	0.28		
NSU2-32	32			64	68	40	10.7	1.09	0.35		
NSU2-34	34			68	72	45	11.6	1.18	0.41		
NSU2-35	35			70	74	45	12.0	1.22	0.41		
NSU2-36	36			72	76	45	12.5	1.27	0.42		
NSU2-40	40	S1	12	40	80	84	60	14.2	1.45	0~0.44	0.71
NSU2-44	44				88	92	60	16.0	1.63		0.74
NSU2-45	45			90	94	60	16.5	1.68	0.74		
NSU2-48	48			96	100	65	17.8	1.82	0.88		
NSU2-50	50			100	104	65	18.8	1.92	0.90		
NSU2-56	56			112	116	65	21.5	2.20	0.95		
NSU2-60	60			120	124	85	23.5	2.39	1.29		
NSU2-68	68			136	140	100	26.8	2.74	1.66		
NSU2-70	70			140	144	105	27.7	2.82	1.79		
NSU2-80	80			160	164	125	32.0	3.27	2.38		

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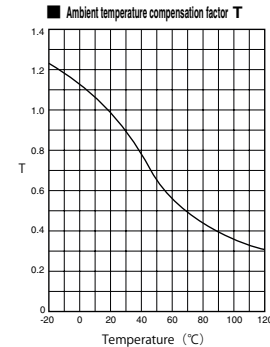


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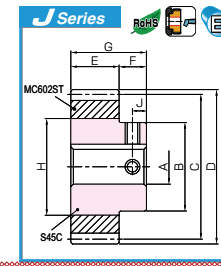


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Newly added



S1K



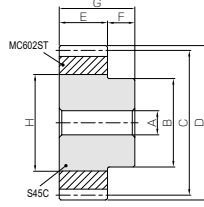
To order J Series products, please specify; Catalog No. + J + BORE

Bore H7	* The product shapes of J Series items are identified by background color.														
	10	12	14	15	16	17	18	19	20	22	25	28	30	32	35
Keyway Js9	5 x 2.3						6 x 2.8			8 x 3.3			10 x 3.3		
Screw size	M4						M5			M6			M8		
Catalog No.															
NSU2-20 J BORE															
NSU2-22 J BORE															
NSU2-24 J BORE															
NSU2-25 J BORE															
NSU2-28 J BORE															
NSU2-30 J BORE															
NSU2-32 J BORE															
NSU2-34 J BORE															
NSU2-35 J BORE															
NSU2-36 J BORE															
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NSU2-70 J BORE															
NSU2-80 J BORE															

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Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat treatment	—
Tooth hardness	(115 ~ 120HRR)
Face width (E)	25
Hub width (F)	15
Total length (G)	40
Screw offset (J)	7.5



S1

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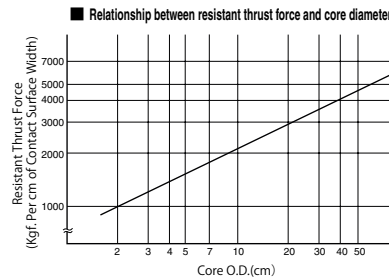
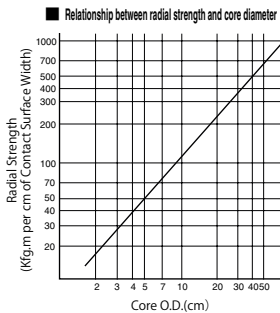
Catalog No.	No. of teeth	Shape	Bore		Pitch dia.	Outside dia.	Metal core dia.	Allowable torque (N·m)	Allowable torque (kg·m)	Backlash	Weight
			A <sub>H7</sub>	H7							
NSU2.5-18	18	S1	12	25	45	50	25	9.93	1.01	0~0.44	0.15
NSU2.5-20	20			28	50	55	28	11.5	1.17		0.20
NSU2.5-22	22			35	55	60	35	13.0	1.33		0.31
NSU2.5-24	24			35	60	65	35	14.5	1.48		0.32
NSU2.5-25	25			35	62.5	67.5	35	15.3	1.56		0.33
NSU2.5-28	28		40	70	75	40	17.7	1.80	0.44		
NSU2.5-30	30		45	75	80	50	19.2	1.96	0.61		
NSU2.5-32	32		45	80	85	50	20.9	2.13	0.63		
NSU2.5-34	34		50	85	90	55	22.6	2.30	0.76		
NSU2.5-35	35		55	87.5	92.5	60	23.5	2.39	0.90		
NSU2.5-36	36	55	90	95	60	24.3	2.48	0.91			
NSU2.5-40	40	65	100	105	70	27.8	2.83	1.21			
NSU2.5-44	44	65	110	115	75	31.3	3.19	1.36			
NSU2.5-45	45	65	112.5	117.5	75	32.1	3.28	1.37			
NSU2.5-48	48	65	120	125	85	34.8	3.55	1.62			
NSU2.5-50	50	65	125	130	95	36.7	3.74	1.89			
NSU2.5-56	56	65	140	145	105	42.1	4.29	2.24			
NSU2.5-60	60	70	150	155	115	45.8	4.67	2.62			
NSU2.5-68	68	70	170	175	135	52.4	5.34	3.42			
NSU2.5-70	70	70	175	180	140	54.1	5.51	3.64			

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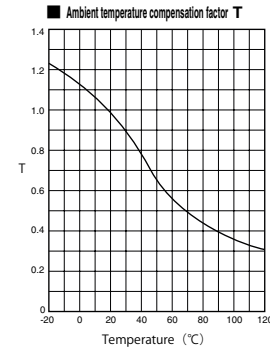


- When the ambient temperature rises, obtain the temperature compensation factor, T, from the chart on the right. Also, use a safety factor of 4 to 5 in the calculation.

$$T_{at} = T_{max} \times \frac{1}{\text{safety factor}} \times T$$

Where  
 T<sub>at</sub> : Allowable Holding Strength at the contact surface  
 T<sub>max</sub> : Maximum Holding Strength - Find from the charts on the left.  
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\* Data supplied by Japan Polypenco Limited.



**How is MC nylon fused to the metal core**

This method is superior to other conventional methods such as bolting, shrink fitting and bonding.

- Outline of the procedure**  
The surface of the core material is rolled with a 2mm pitch diamond knurl. Then one or more grooves (1 to 2mm wide and 1mm deep) are cut as shown below. The metal surface is treated prior to casting nylon in a mold.
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  - Wide temperature range.  
There are examples of wheel use in furnaces at 130 to 140° C.
  - Good dimensional stability  
Since nylon is fused to the whole outer surface of the metal hub, dimensional change is very small even under temperature variations.
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**To order J Series products, please specify; Catalog No. + J + BORE**

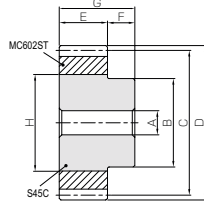
Bore H7	* The product shapes of J Series items are identified by background color.														
	12	14	15	16	17	18	19	20	22	25	28	30	32	35	40
Keyway Js9	5 x 2.3				6 x 2.8				8 x 3.3				10 x 3.3		12 x 3.3
Screw size	M4				M5				M6				M8		
Catalog No.															
NSU2.5-18 J BORE															
NSU2.5-20 J BORE															
NSU2.5-22 J BORE															
NSU2.5-24 J BORE															
NSU2.5-25 J BORE															
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  - Certain products which would otherwise have a very long tapped hole are contoured to reduce the length of the tap.
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Specifications	
Precision grade	JIS grade N9 (JIS B1702-1: 1998) * JIS grade S (JIS B1702: 1976)
Gear teeth	Standard full depth
Pressure angle	20°
Material	MC602ST with S45C core
Heat treatment	—
Tooth hardness	(115 ~ 120HRR)
Face width (E)	30
Hub width (F)	17
Total length (G)	47
Screw offset (J)	8.5

\* The precision grade of J Series products is equivalent to the value shown in the table.



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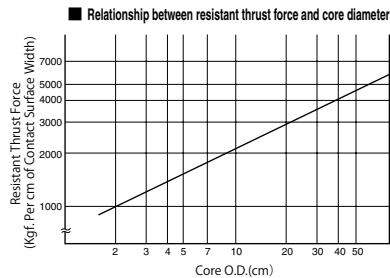
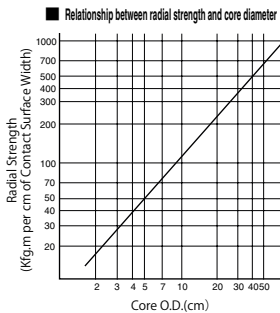
Catalog No.	No. of teeth	Shape	Bore		Pitch dia.	Outside dia.	Metal core dia.	Allowable torque (N·m)	Allowable torque (kgf·m)	Backlash	Weight
			A <sub>H7</sub>	H7							
NSU3-16	16	51	12	24	48	54	24	14.7	1.50	0~0.52	0.18
NSU3-18	18			30	54	60	30	17.2	1.75		0.28
NSU3-20	20			33	60	66	33	19.9	2.03		0.35
NSU3-22	22			38	66	72	38	22.5	2.29		0.46
NSU3-24	24			43	72	78	43	25.1	2.56		0.59
NSU3-25	25			45	75	81	45	26.5	2.70		0.65
NSU3-28	28		50	84	90	50	30.5	3.11	0.79		
NSU3-30	30		55	90	96	60	33.2	3.39	1.05		
NSU3-32	32		60	96	102	65	36.1	3.68	1.24		
NSU3-34	34		60	102	108	65	39.0	3.98	1.27		
NSU3-35	35		60	105	111	75	40.5	4.13	1.51		
NSU3-36	36		60	108	114	80	42.1	4.29	1.65		
NSU3-40	40	70	120	126	85	48.0	4.90	1.94			
NSU3-44	44	70	132	138	95	54.0	5.51	2.31			
NSU3-45	45	70	135	141	105	55.5	5.66	2.65			
NSU3-48	48	20	70	144	150	105	60.2	6.14	0~0.56	2.72	
NSU3-50	50			150	156	105	63.4	6.46		2.77	
NSU3-56	56			168	174	130	72.7	7.42		3.85	
NSU3-60	60			180	186	145	79.1	8.07		4.62	
NSU3-68	68			204	210	165	90.6	9.23		5.85	
NSU3-70	70			210	216	175	93.4	9.53		6.45	

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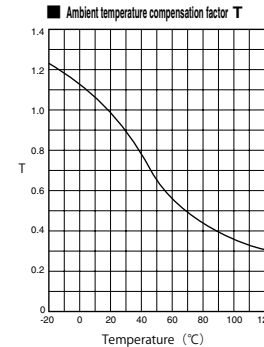


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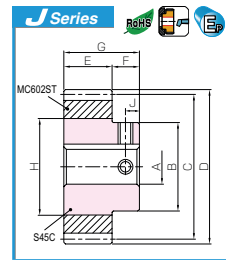


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