

# Stainless Steel Hollow Tubes with Bending Alteration

# Resin Rods - Exterior Surface Unfinished

### SPLM (Semi-Seamless)

<Base Material Specification>

Seams (Weld bead removed)

Ends are deburred only (Both SPLM and PIPM). Material: SUS304 (Annealed)

### PIPM (Seamless Ornamental Hollow Tube #400)

Material: SUS304

t=1.0(D=10, 15)  
t=2.0(D=22, 25, 32, 45)  
t=3.0(D=38, 50)

#### Specifying Angle 1 / Angle 2

Specify Bending Angle ①  
Upward Bend LU°  
Downward Bend LL°

#### Specifying Angle 3

Bend the Angle ③ portion as specified for Angle ③.  
• When Angle ② begins with UU upward  
• When Angle ② begins with LL downward

Bend to Left LT°  
Bend to Right RT°

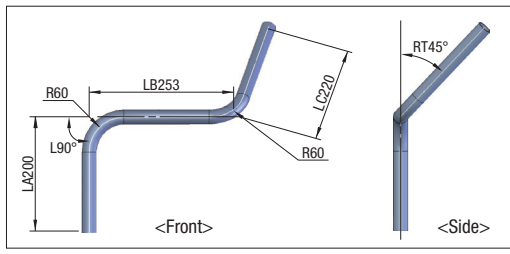
⚠ Bending process may cause scratches on the surface.

Part Number	Bending Type	Hollow Tube Length	Bending Angle			Obtain the sum of the material price (LA+LB+LC)							Bending Charge (B)														
			Specify: ①	Specify: ②	Specify: ③	LA, LB, LC							B1	B2	B3												
Type	D	B	LA	LB	LC	U	UU	LL	RT	LT	80	101	201	301	401	501	601	801	100	200	300						
SPLM (Semi-Seamless)	2	40	80-600 (1mm Increment)	40	30-90 (1° Increment ±0.5°)																						
	3																										
	4																										
	5																										
	6																										
	8																										
	10					1 (1st Bending)	50	LA, LC>R+ℓ LB>R+ℓ	50																		
	12					2 (2nd Bending)	100	LB>2R+ℓ (2nd Bending)	80																		
	15					3 (2nd Bending + 3rd Bending)	130																				
	16						150																				
20	180																										
PIPM (Ornamental Hollow Tube)	10	100	80-1000 (1mm Increment)	50	30-90 (1° Increment ±0.5°)																						
	15																										
	22																										
	25																										
	32																										
	38																										
	45																										
	50																										

Ordering Example: Part Number - B - LA - LB - LC - U/L - UU/LL - RT/LT

Three Dimensional Bending Example  
For PIPM25-B3-200-253-220-L90-UU75-RT45

SPLM10 - B1 - 100 - 100 - L50  
PIPM25 - B3 - 200 - 253 - 220 - L90 - UU75 - LT45



Price Calculation Method: Obtain the sum of the material price (LA+LB+LC) and the bending charge (B1+B2+B3).  
(Ex.) PIPM25-B3-200-253-220-L90-UU75-RT45

Base Material Price (LA+LB+LC) + Bending Charge (B1, B2, B3) = Price

#### Alterations

Part Number	B	LA	LB	LC	U/L	UU/LL	RT/LT	(AUT, CUT, CUA, CUC)
PIPM22	B3	100	240	320	U50	UU35	LT49	AUT70
PIPM22	B3	200	253	361	U60	UU35	LT49	CUA

Alterations	LA / LC Cut	Parallel Cut
Code	AUT (LA Cut) CUT (LC Cut)	CUA (LA Side) CUC (LC Side)
Spec.	Cuts LA and LC. Ordering Code AUT100 AUT(CUT) ≥ R+D	Cuts in parallel with LB. Ordering Code CUA

These Polyacetal and MC Nylon rod materials are used for various industrial purposes. Available from Ø10 to Ø200.

Part Number	Material	Grade	Color
RDJJS	Polyacetal	Standard	White
RDJKS			Black
RDJMS	MC Nylon	Standard	Blue
RDJFS	Fluororesin	Standard	White

Exterior surfaces are unfinished. For Exterior Surface Finished Type, see P.319  
Characteristic Values P.953, 954

Type	Part Number	L
RDJMS	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100, 120	1mm increment
RDJJS	150, 180, 200	20-800
RDJKS		20-500

Ordering Example: Part Number - L  
RDJJS15 - 500

Part Number	Type	D	Unit Price							
			Dimension Fixed			Dimension Configurable				
RDJJS	10	100	200,300	500	20-99	101-299	301-499	501-600	601-700	701-800
	15									
	20									
	25									
	30									
	40									
	50									
	60									
	70									
	80									
RDJMS	100									
	120									
	150									
	180									
	200									

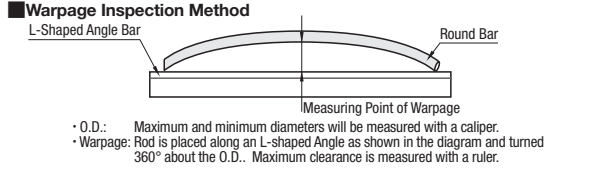
Part Number	Type	D	Unit Price							
			Dimension Fixed			Dimension Configurable				
RDJKS	10	100	200,300	500	20-99	101-299	301-499	501-600	601-700	701-800
	15									
	20									
	25									
	30									
	40									
	50									
	60									
	70									
	80									
RDJFS	90									
	100									
	120									
	150									
	180									
	200									

Part Number	Type	D	Unit Price							
			Dimension Fixed			Dimension Configurable				
RDJMS	20	100	200,300	500	20-99	101-299	301-499	501-600	601-700	701-800
	25									
	30									
	40									
	50									
	60									
	70									
	80									
	90									
	100									
RDJFS	120									
	150									
	180									
	200									

For O.D. dimensions other than indicated above, order can be placed from Material Shop 24.  
Examples of Available O.D. Dimensions >>http://misumi.jp/fa24

Examples of Available O.D. Dimensions

Material	Grade	Color	O.D. (D)
MC Nylon	Standard	Blue	10, 15, 35, 55, 65, 75, 85, 110, 130, 140, 160
Polyacetal	Standard	Black, White	35, 55, 65, 75, 85, 110, 130, 140, 160
Fluororesin	Standard	White	35, 55, 65



# Resin Rods - Exterior Surface Finished

Standard, O.D. Configurable

14 types of exterior surface finished engineered plastics are added to our lineup. O.D. is configurable in 1mm increment.

Standard, Large Dia. O.D. Configurable	Material	Grade	Color
RDJJ FRDJJ	Polyacetal	Standard	White
RDJK		Standard	Black
RDJM FRDJM	MC Nylon	Standard	Blue
RDJW		Standard	Ivory
RDJG		Conductive CDR2	Black
RDJT		Conductive CDR6	Black
RDJB	Bakelite	Paper Base	Brown
RDJN		Cloth Base	Light Brown
RDJF	Fluororesin	Standard	White
RDJP	PEEK	Standard	Gray
RDJS	PPS	Standard	Brown
RDJX	ABS	Standard	Beige
RDJE	Epoxy Glass	Standard	Green
RDJU	Ultra-High-Molecular-Weight-Polyethylene	Standard	Milky White

For characteristic values, see P953, 954.  
 For Large Diameter Type (D60 ~ 200), see P318.  
 Use alteration LKC for L dimension tolerance precision grade.

Part Number	D	L
Type		1mm Increment
RDJJ (Polyacetal - Standard, White)	3	10-250
RDJK (Polyacetal - Standard, Black)	4	
RDJM (MC Nylon - Standard, Blue)	5	
RDJW (MC Nylon - Standard, Ivory)	6	
RDJG (MC Nylon - Conductive CDR2)	8	
RDJT (MC Nylon - Conductive CDR6)	10	10-500
RDJB (Bakelite - Paper Base)	12	
RDJN (Bakelite - Cloth Base)	13	
RDJF (Fluororesin - Standard)	15	
RDJP (PEEK - Standard)	16	
RDJE (Epoxy Glass - Standard)	18	
RDJU (UHMWPE - Standard)	20	
RDJS (PPS - Standard)	25	
RDJX (ABS - Standard)	30	
RDJJ (Polyacetal - Standard, White)	40	
RDJM (MC Nylon - Standard, Blue)	50	
RDJF (Fluororesin - Standard)	3	
RDJK (Polyacetal - Standard, Black)	4	
RDJM (MC Nylon - Standard, Blue)	5	
RDJG (MC Nylon - Conductive CDR2)	6	
RDJT (MC Nylon - Conductive CDR6)	8	
RDJB (Bakelite - Paper Base)	10	
RDJN (Bakelite - Cloth Base)	12	
RDJF (Fluororesin - Standard)	13	
RDJP (PEEK - Standard)	15	
RDJE (Epoxy Glass - Standard)	16	
RDJU (UHMWPE - Standard)	18	
RDJS (PPS - Standard)	20	
RDJX (ABS - Standard)	25	
RDJJ (Polyacetal - Standard, White)	30	
RDJM (MC Nylon - Standard, Blue)	40	
RDJF (Fluororesin - Standard)	50	

Part Number	D	L
	1mm Increment	1mm Increment
FRDJJ (Polyacetal - White)	6-10	10-500
FRDJM (MC Nylon - Standard, Blue)	11-15	10-750
	16-18	10-800
	19-30	20-800

**Standard**  
 Part Number - L  
 RDJJ15 - 500

**O.D. Configurable**  
 Part Number - D - L  
 FRDJJ - D14 - L530

RDJS (PPS) generates an oxide film on the surface and the color turns brown when exposed to light and heat (direct sunlight, fluorescent light, mercury lamp and high-temperature atmosphere) for extended duration, however its mechanical and physical properties change little.  
 For D60~D200, see P318.

Alterations Part Number - L - (LKC, MC, WMC, MH, WMH)  
 RDJJ20 - 535 - MC8

L dimension tolerance after alterations: ±0.3 for 400mm or less; ±0.8 for greater than 400 to 800mm.  
 No alteration is applicable to RDJB, RDJN, RDJF and RDJE.  
 Express service is not available.

Alterations	L Dimension Tolerance	One End Tapped	Both Ends Tapped	One End Tapped with a Threaded Insert	Both Ends Tapped with Threaded Inserts
Code	LKC	MC	WMC	MH	WMH
Spec.	Changes L dimension tolerance as follows. 10 ~400mm ±0.3 401~800mm ±0.8 Ordering Code LKC 8<D<=30	Adds a tap on one end. Ordering Code MC10 8<D<=50 When L<MCx2, the tap goes through. D MC (Selection Range) 8,9 4 10,11 4,5 12-14 4,5,6 15-19 4,5,6,8 20-24 4,5,6,8,10,12 25-30,40,50 4,5,6,8,10,12,16	Adds taps on both ends. Ordering Code WMC12 8<D<=50 When L<WMCx4, the tap goes through. D WMC (Selection Range) 8,9 4 10,11 4,5 12-14 4,5,6 15-19 4,5,6,8 20-24 4,5,6,8,10,12 25-30,40,50 4,5,6,8,10,12,16	Adds a tap on one end. (with Threaded Inserts) Ordering Code MH12 8<D<=50 When L<MHx2, the tap goes through. D MH (Selection Range) 8,9 4 10,11 4,5 12-14 4,5,6 15-19 4,5,6,8 20-24 4,5,6,8,10,12 25-30,40,50 4,5,6,8,10,12,16	Adds taps on both ends. (with Threaded Inserts) Ordering Code WMH10 8<D<=50 When L<WMHx4, the tap goes through. D WMH (Selection Range) 8,9 4 10,11 4,5 12-14 4,5,6 15-19 4,5,6,8 20-24 4,5,6,8,10,12 25-30,40,50 4,5,6,8,10,12,16

Standard For maximum L dimension in each D dimension, refer to the specification table shown on the left-hand page.

Part Number	D	Min. L - 100	L101-200	L201-400	L401-600	L601-800
RDJJ	3					
RDJJ	4					
RDJJ	5					
RDJJ	6					
RDJJ	8					
RDJJ	10					
RDJJ	12					
RDJJ	13					
RDJJ	15					
RDJJ	16					
RDJJ	18					
RDJJ	20					
RDJJ	25					
RDJJ	30					
RDJM	40					
RDJM	50					
RDJM	3					
RDJM	4					
RDJM	5					
RDJM	6					
RDJM	8					
RDJM	10					
RDJM	12					
RDJM	13					
RDJM	15					
RDJM	16					
RDJM	18					
RDJM	20					
RDJM	25					
RDJM	30					
RDJM	3					
RDJM	4					
RDJM	5					
RDJM	6					
RDJM	8					
RDJM	10					
RDJM	12					
RDJM	13					
RDJM	15					
RDJM	16					
RDJM	18					
RDJM	20					
RDJM	25					
RDJM	30					
RDJM	3					
RDJM	4					
RDJM	5					
RDJM	6					
RDJM	8					
RDJM	10					
RDJM	12					
RDJM	13					
RDJM	15					
RDJM	16					
RDJM	18					
RDJM	20					
RDJM	25					
RDJM	30					
RDJM	3					
RDJM	4					
RDJM	5					
RDJM	6					
RDJM	8					
RDJM	10					
RDJM	12					
RDJM	13					
RDJM	15					
RDJM	16					
RDJM	18					
RDJM	20					
RDJM	25					
RDJM	30					
RDJM	3					
RDJM	4					
RDJM	5					
RDJM	6					
RDJM	8					
RDJM	10					
RDJM	12					
RDJM	13					
RDJM	15					
RDJM	16					
RDJM	18					
RDJM	20					
RDJM	25					
RDJM	30					

Part Number	D	Min. L - 100	L101-200	L201-400	L401-600	L601-800
FRDJJ	6-10					
FRDJJ	11-15					
FRDJJ	16-19					
FRDJJ	20-24					
FRDJJ	25-27					
FRDJJ	28-30					

Part Number	D	Min. L - 100	L101-200	L201-400	L401-600	L601-800
FRDJM	6-10					
FRDJM	11-15					
FRDJM	16-19					
FRDJM	20-24					
FRDJM	25-27					
FRDJM	28-30					

# Precision Resin Rods

# Ceramic Rods / Transparent Resin Rods

Tolerance is highly precise since the exterior surface is finished with centerless grinding.

Type	Material	Color
RDPJ	Polyacetal - Standard	White
RDPK	Polyacetal - Standard	Black
RDPP	PEEK - Standard	Gray
RDPE	Epoxy Glass - Standard	Green

Use alteration LKC for L dimension tolerance precision grade. For characteristic values, see P.953, 954.

Part Number Type	D	L 1mm increment
RDPJ (Polyacetal - Standard, White) RDPK (Polyacetal - Standard, Black)	3	10~250
	4	
	5	
	6	10~500
	8	
	10	
	12	
	15	10~750
	16	
	20	20~800

Part Number Type	D	L 1mm increment
RDPP (PEEK - Standard) RDPE (Epoxy Glass - Standard)	3	10~250
	4	
	5	
	6	10~500
	8	
	10	
12	10~750	

Ordering Example: Part Number RDPJ10 - L 300

Alterations: Part Number RDPJ10 - L 100 - (LKC)

Alteration	L Dimension Tolerance
Code	LKC
Spec.	Changes L dimension tolerance as follows. 10~400mm±0.3 401~800mm±0.8 Ordering Code LKC 8≤D≤20 Not applicable to RDPE.

Part Number Type	D	Min. L - 100	L101~200	L201~400	L401~600	L601~800
RDPJ (Polyacetal - Standard, White) RDPK (Polyacetal - Standard, Black)	3					
	4					
	5					
	6					
	8					
	10					
	12					
	15					
	16					
	20					

Part Number Type	D	Min. L - 100	L101~200	L201~400	L401~600	L601~750
RDPP (PEEK - Standard) RDPE (Epoxy Glass - Standard)	3					
	4					
	5					
	6					
	8					
	10					
	12					
	3					
	4					
	5					
	6					
	12					

Ceramic Rods excel in insulation, abrasion resistance and heat resistance; Transparent Resin Rods excel in transparency and insulation.

**Ceramic Rods CERAR**

Material: Alumina 99.5

Part Number Type	D	L 1mm increment	Unit Price		
			L30~100	L101~200	L201~300
CERAR	3	30~300			
	4				
	5				
	6				
	10				

**Physical Properties of Alumina 99.5**

Properties	Unit	Alumina 99.5
Water Absorption Ratio	%	0
Bulk Density	g/cm <sup>3</sup>	3.9
Heat Resistance	°C	1000~1200
Compression Strength	kN/cm <sup>2</sup>	363
Bending Strength	kN/cm <sup>2</sup>	49
Linear Thermal Expansion Coefficient	-	8.0x10 <sup>-6</sup> (25~700°C)
Thermal Conductivity	W/(m·°C)	31.4 (20°C) 16.0 (300°C)
Specific Volume Resistivity	Ω·cm	10 <sup>14</sup> < (20°C) 10 <sup>14</sup> < (300°C)
Dielectric Constant	1MHz	9.8
Insulation Resistance	kV/mm	10

Washers and Collars (P.153), Bushings for Locating Pins (P.1-1686) and Circular Plates (P.991) are also available.

Ordering Example: Part Number CERAR6 - L 200

**Transparent Resin Rods**

Type	Material	Color
RDJA	Acrylic - Standard	Transparent
RDJC	Polycarbonate - Standard	Transparent

The acrylic rod is made by machining the cast plate into a round rod and finished by centerless grinding.

For characteristic values, see P.949.

Part Number Type	D	L 1mm increment	Unit Price						
			RDJA			RDJC			
			L10~100	L101~200	L201~400	L401~600	L10~100	L101~200	L201~600
RDJA Acrylic - Standard RDJC Polycarbonate - Standard	3	10~250							
	4								
	5								
	6	10~500							
	8								
	10								
	12								
	13	10~600							
	15								
	16								
	18								
	20								
25									
30									

The end face is not transparent because tooling marks remain on the surface.

Ordering Example: Part Number RDJA3 - L 250