

Flat Springs

Straight / 1 Point Bend Type / 2 Point Bend Type

Straight

1 Point Bend Type

2 Point Bend Type

IBN (Stainless Steel)

IBNW

IBNS (Stainless Steel)

(Side View of Development)

Due to low temperature annealing, surface color is golden brown.

Hole Machining Selection

A No Hole

B

C

D

Machining Limits:

Due to low temperature annealing, surface color is golden brown.

Material SUS304-CSP

T	Tolerance
0.2	±0.02
0.3	±0.025
0.4	±0.025
0.5	±0.035
0.6	±0.035
0.7	±0.040
0.8	±0.040

Due to low temperature annealing, surface color is golden brown.

Material SUS304-CSP

IBN Straight

Part Number Type	Shape	T Selection				H	L 1mm Increment				A Selection	0.5mm Increment		Unit Price					
		0.2	0.3	0.4	0.5		6	8	10	12		X	P	Hole Machining A	Hole Machining B	Hole Machining C/D			
IBN	A	0.2	0.3	0.4	0.5	6					2.0								
	B	0.2	0.3	0.4	0.5	8					2.5								
		0.3	0.4	0.5	0.6	10					3.0								
		0.3	0.4	0.5	0.6	12					3.5								
		0.4	0.5	0.6	0.7	15					4.5								
	C	0.4	0.5	0.6	0.7	18					5.5								
		0.4	0.5	0.6	0.7	18					6.5								
		0.5	0.6	0.7	0.8	21					9.0								
		0.5	0.6	0.7	0.8	21													
		0.5	0.6	0.7	0.8	25													

Ordering Example: Part Number - T - H - L - A - X - P

IBN A - T0.2 - H8 - L20

IBN C - T0.2 - H8 - L20 - A3.5 - X5 - P10

IBNS 1 Point Bend Type

Part Number Type	Shape	T Selection				H	L 1mm Increment				B, C, D only Selection	0.5mm Increment		F	Q	Unit Price			
		0.2	0.3	0.4	0.5		6	8	10	12		X	P			Hole Machining A	Hole Machining B	Hole Machining C/D	
IBNS	A	0.2	0.3	0.4	0.5	6					2.0								
	B	0.2	0.3	0.4	0.5	8					2.5								
		0.3	0.4	0.5	0.6	10					3.0								
		0.3	0.4	0.5	0.6	12					3.5								
		0.4	0.5	0.6	0.7	15					4.5								
	C	0.4	0.5	0.6	0.7	18					5.5								
		0.4	0.5	0.6	0.7	18					6.5								
		0.5	0.6	0.7	0.8	21					9.0								
		0.5	0.6	0.7	0.8	21													
		0.5	0.6	0.7	0.8	25													

Ordering Example: Part Number - T - H - L - A - X - P - F - Q

IBNS B - T0.6 - H15 - L200 - A3.5 - X20 - F50 - Q30

IBNS C - T0.3 - H12 - L40 - A3.5 - X5 - P10 - F20 - Q45

IBNW 2 Point Bend Type

Part Number Type	Shape	T Selection				H	L 1mm Increment				B, C, D only Selection	0.5mm Increment		R	A Selection	Unit Price			
		0.2	0.3	0.4	0.5		6	8	10	12		X	P			Hole Machining A	Hole Machining B	Hole Machining C/D	
IBNW	A	0.2	0.3	0.4	0.5	6					2.0								
	B	0.2	0.3	0.4	0.5	8					2.5								
		0.3	0.4	0.5	0.6	10					3.0								
		0.3	0.4	0.5	0.6	12					3.5								
		0.4	0.5	0.6	0.7	15					4.5								
	C	0.4	0.5	0.6	0.7	18					5.5								
		0.4	0.5	0.6	0.7	18					6.5								
		0.5	0.6	0.7	0.8	21					9.0								
		0.5	0.6	0.7	0.8	21													
		0.5	0.6	0.7	0.8	25													

Ordering Example: Part Number - T - H - F - E - G - Q - R - A - X - P

IBNW B - T0.6 - H10 - F35 - E10 - G15 - Q10 - R90 - A3.0 - X5

IBNW C - T0.5 - H15 - F50 - E20 - G40 - Q90 - R85 - A3.5 - X7 - P15

Torsion Springs

Right Winding 90°

Left Winding 180°

Arm Angle 90°

UA90R (Right Winding)

UA90L (Left Winding)

Arm Angle 135°

UA135R (Right Winding)

UA135L (Left Winding)

Arm Angle 180°

UA180R (Right Winding)

UA180L (Left Winding)

* The above drawing is Right Winding Type. Torsion springs should be used in the winding direction.

Material SUS304-WPB

Part Number Type	I.D. D	Number of Winding n	Wire Dia. d	Arm Length L/R	Spring Constant (Torque) N · mm/deg			Max. Angle Used Deg (deg)			Unit Price
					90°	135°	180°	90°	135°	180°	
Arm Angle 90° UA90R (Right Winding) UA90L (Left Winding)	2	2	0.2	20	0.0115	0.0119	0.0124	41	40	36	
		3	0.3		0.0563	0.0586	0.0611	26	25	23	
		4	0.3		0.0088	0.0090	0.0093	59	58	56	
		4	0.4		0.0428	0.0441	0.0455	38	36	35	
		5	0.3		0.0345	0.0354	0.0363	52	50	47	
	3	2	0.4	0.1054	0.1080	0.1108	38	36	34		
		3	0.3	0.0289	0.0295	0.0302	61	60	58		
		4	0.4	0.0882	0.0900	0.0920	46	45	43		
		4	0.5	0.0387	0.0403	0.0420	40	38	36		
		5	0.4	0.1199	0.1248	0.1301	30	27	25		
Arm Angle 135° UA135R (Right Winding) UA135L (Left Winding)	4	2	0.4	40	0.0295	0.0304	0.0314	56	54	52	
		3	0.3		0.0912	0.0940	0.0970	42	40	39	
		4	0.4		0.0736	0.0755	0.0774	55	53	51	
		4	0.5		0.1756	0.1799	0.1845	44	42	41	
		5	0.4		0.0617	0.0630	0.0643	71	68	66	
	5	2	0.5	0.1471	0.1501	0.1533	54	53	51		
		3	0.4	0.0918	0.0955	0.0996	39	37	34		
		4	0.5	0.2206	0.2296	0.2394	29	28	27		
		4	0.6	0.0700	0.0722	0.0744	56	54	52		
		5	0.5	0.1680	0.1732	0.1787	42	41	40		
Arm Angle 180° UA180R (Right Winding) UA180L (Left Winding)	5	2	0.5	50	0.1357	0.1390	0.1425	57	54	52	
		3	0.4		0.2763	0.2831	0.2903	48	47	45	
		4	0.5		0.1138	0.1161	0.1185	69	67	65	
		4	0.6		0.2315	0.2363	0.2413	60	59	58	
		5	0.5		0.1793	0.1866	0.1944	39	36	34	
	6	2	0.6	0.3672	0.3821	0.3983	31	30	27		
		3	0.5	0.1368	0.1409	0.1454	55	52	51		
		4	0.6	0.2797	0.2883	0.2974	47	44	42		
		4	0.8	0.2259	0.2314	0.2373	60	58	56		
		5	0.6	0.6936	0.7108	0.7289	42	41	40		

1N=0.101972kgf
1 deg = 1°(Angle)

Part Number - n - d

UA90R4 - 3 - 0.5

Alterations Part Number - n - d - (LC, RC, LBC, RBC)

UA90R4 - 3 - 0.5 - LC12-RC15-LBC90-LZ5

Alterations Code	Arm Cut		Bend Left Arm	Bend Right Arm
	LC	RC	LBC	RBC
Spec.			<p>(Right Winding)</p> <p>270°</p> <p>0° (Upper)</p> <p>180° (Lower)</p> <p>90°</p> <p>90°±10°</p> <p>LZ±0.5</p> <p>L (LC)</p>	<p>(Right Winding)</p> <p>90°</p> <p>0° (Upper)</p> <p>180° (Lower)</p> <p>90°±10°</p> <p>RZ±0.5</p> <p>R (RC)</p>
			<p>(Left Winding)</p> <p>270°</p> <p>0° (Upper)</p> <p>180° (Lower)</p> <p>90°</p> <p>90°±10°</p> <p>LZ±0.5</p> <p>L (LC)</p>	<p>(Left Winding)</p> <p>90°</p> <p>0° (Upper)</p> <p>180° (Lower)</p> <p>90°±10°</p> <p>RZ±0.5</p> <p>R (RC)</p>
	Cuts arm down to the length of LC or RC.		<ul style="list-style-type: none"> LBC: Specifies the angle (see the diagram above) Select from LBC0, LBC90, LBC180 and LBC270. LZ: Specifies the position (1mm increment) LZ≥3 L-LZ≥3 	<ul style="list-style-type: none"> RBC: Specifies the angle (see the diagram above) Select from RBC0, RBC90, RBC180 and RBC270. RZ: Specifies the position (1mm increment) RZ≥3 R-RZ≥3
	Ordering Code LC12		Ordering Code LBC90-LZ10	Ordering Code RBC90-RZ10