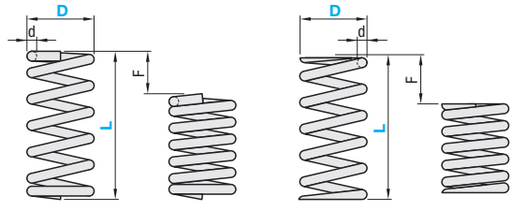
Round Coil Springs
O.D. Referenced Stainless Steel

RoHS10

Material EN 1.4301 (WPB) Equiv.

UBB



Closed Ends (Both Ends Not Ground*) | Closed Ends (Both Ends Ground)

Spring Constant±10% | O.D. D Ø10 or Less $^{0}_{-0.5mm}$ Ø12 or More $^{0}_{-0.8mm}$ | Free Length L 50 or Less ±1.5mm 55 or More ±2.5mm

■UBB: Fmax. (Allowable Deflection)=LxFa%

Part Number Type D-L	d	Solid Length	F max.	N{kgf} max.	Fa%	Unit Price
UBB4-5*	0.55	3.3	1.25	6.1 {0.63}	25	
10	0.65	7.0	2.5	12.3 {1.3}		
15	0.7	10.3	3.75	18.4 {1.9}		
20	0.75	14.4	5	24.5 {2.5}		
25	0.8	19.4	5	24.5 {2.5}	20	
UBB5-5	0.6	2.9	1.25	6.1 {0.63}	25	
10	0.75	6.9	2.5	12.3 {1.3}		
15	0.8	9.8	3.75	18.4 {1.9}		
20	0.85	13.4	5	24.5 {2.5}		
25	0.9	17.8	6.25	30.6 {3.1}		
30	0.9	21.8	7.5	36.8 {3.8}		
UBB6-5	0.8	3.6	1.25	12.3 {1.3}	25	
10	0.9	6.8	2.5	24.5 {2.5}		
15	1	10.5	3.75	36.8 {3.8}		
20	1.1	14.6	5	49.0 {5.0}		
25	1.1	17.9	6.25	61.3 {6.3}		
30	1.2	23.1	6	58.8 {6.0}	20	
35	1.2	27.3	7	68.6 {7.0}		
40	1.2	31.2	8	78.5 {8.0}		
45	1.3	34.8	9	88.3 {9.0}		
50	1.3	38.4	10	98.1 {10.0}		
60	1.3	44.2	9	88.3 {9.0}	15	
70	1.4	58.5	10.5	103 {10.5}		
UBB8-10	1.1	6.9	2.5	24.5 {2.5}	25	
15	1.2	9.9	3.75	36.8 {3.8}		
20	1.3	14.0	5	49.0 {5.0}		
25	1.3	14.5	6.25	61.3 {6.3}		
30	1.4	21.4	7.5	73.5 {7.5}		
35	1.4	22.0	8.75	85.8 {8.8}		
40	1.5	28.9	10	98.1 {10.0}		
45	1.5	32.6	11.25	110 {11.3}		
UBB10-10	1.3	7.2	2.5	24.5 {2.5}	25	
15	1.4	10.2	3.75	36.8 {3.8}		
20	1.5	13.9	5	49.0 {5.0}		
25	1.5	16.1	6.25	61.3 {6.3}		
30	1.6	20.4	7.5	73.5 {7.5}		
35	1.6	22.8	8.75	85.8 {8.8}		
40	1.7	27.2	10	98.1 {10.0}		
45	1.7	30.6	11.25	110 {11.3}		
50	1.8	36.5	12.5	123 {12.5}		
60	1.8	41.4	15	147 {15.0}		
70	1.9	50.8	17.5	172 {17.5}		
UBB12-15	1.5	9.4	3.75	36.8 {3.8}	25	
20	1.6	12.4	5	49.0 {5.0}		
25	1.7	16.2	6.25	61.3 {6.3}		
30	1.8	20.3	7.5	73.5 {7.5}		
40	1.9	28.0	10	98.1 {10.0}		
50	2	35.5	12.5	123 {12.5}		
60	2.1	43.6	15	147 {15.0}		
70	2.1	48.8	17.5	172 {17.5}		
80	2.2	58.5	20	196 {20.0}		

Part Number Type D-L	d	Solid Length	F max.	N{kgf} max.	Fa%	Unit Price
UBB13-15	1.8	9.5	3.75	73.5 {7.5}	25	
20	1.9	12.9	5	98.1 {10.0}		
25	2	17.0	6.25	123 {12.5}		
30	2.1	20.5	7.5	147 {15.0}		
40	2.3	28.2	10	196 {20.0}		
45	2.3	32.2	11.25	221 {22.5}		
50	2.4	36.0	12.5	245 {25.0}		
60	2.5	44.4	12	235 {24.0}	20	
70	2.6	54.0	14	275 {28.0}		
UBB14-15	1.9	10.0	3.75	73.5 {7.5}	25	
20	2	13.5	5	98.1 {10.0}		
25	2.1	16.3	6.25	123 {12.5}		
30	2.3	21.3	7.5	147 {15.0}		
35	2.3	24.7	8.75	172 {17.5}		
40	2.4	28.2	10	196 {20.0}		
60	2.6	43.6	15	294 {30.0}		
80	2.7	61.4	16	314 {32.0}	20	

Part Number Type D-L	d	Solid Length	F max.	N{kgf} max.	Fa%	Unit Price
UBB16-15	2	10.0	3.75	73.5 {7.5}	25	
20	2.1	12.1	5	98.1 {10.0}		
25	2.3	17.3	6.25	123 {12.5}		
30	2.4	21.0	7.5	147 {15.0}		
35	2.5	24.4	8.75	172 {17.5}		
40	2.6	28.0	10	196 {20.0}		
45	2.7	31.7	11.25	221 {22.5}		
50	2.7	35.8	12.5	245 {25.0}		
60	2.9	43.5	15	294 {30.0}		
70	2.9	49.4	17.5	343 {35.0}		
80	3	59.3	16	314 {32.0}	20	
UBB20-25	2.9	16.7	6.25	184 {18.8}	25	
30	3	20.3	7.5	221 {22.5}		
35	3	22.7	8.75	257 {26.3}		
40	3.2	27.2	10	294 {30.0}		
45	3.2	29.6	9	265 {27.0}	20	
50	3.4	38.3	10	294 {30.0}		
60	3.5	44.6	12	353 {36.0}		

kgf (Load)=N/mm (Spring Constant) x0.101972xF (Deflection)

{kgf}=N×0.101972

- For Types marked with *, both ends are not ground.
- The values of solid length are for reference only. There may be some variations depending on the lot.
- Usage Count: 1 Million Times

■ Spring Constant

D12 is applicable to UY, UR, UF, UL and UBB Types only. D14 is applicable to UBB Type only.

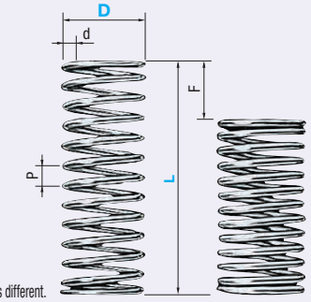
D \ Type	UV	UY	UR	UF	UL	UTT	UM	UH	UBB
2		0.05{0.005}	0.2{0.02}	0.3{0.03}	0.5{0.05}				
3						N/mm 1.5 {kgf/mm} {0.15}			
4	N/mm 0.05 {kgf/mm} {0.005}	N/mm 0.098 {kgf/mm} {0.01}					2.0{0.2}	2.9{0.3}	4.9{0.5}
5									
6			N/mm 0.29 {kgf/mm} {0.03}	N/mm 0.49 {kgf/mm} {0.05}	N/mm 0.98 {kgf/mm} {0.1}	N/mm 2.0 {kgf/mm} {0.2}	N/mm 2.9 {kgf/mm} {0.3}	N/mm 5.9 {kgf/mm} {0.6}	N/mm 9.8 {kgf/mm} {1.0}
8									
10									
12		N/mm 0.2 {kgf/mm} {0.02}							
13								N/mm 9.8 {kgf/mm} {1.0}	N/mm 19.6 {kgf/mm} {2.0}
14									
16									
20		0.3{0.03}	0.5{0.05}	0.98{0.1}	2.9{0.3}	3.9{0.4}	4.9{0.5}	14.7{1.5}	29.4{3.0}
Fmax.	F=Lx70%	F=LxFa%	F=LxFa%	F=Lx45%	F=Lx40%	F=LxFa%	F=LxFa%	F=LxFa%	F=LxFa%

Ordering Example: Part Number **UBB16-80**

Round Coil Springs
L Dimension Configurable / O.D. Referenced Stainless Steel

■Compression Springs

Type	Allowable Deflection	Material
FWR	F=Lx60%	JIS-SWP-A
FWF	F=Lx50%	
FWT	F=Lx40%	
FUR	F=Lx60%	EN 1.4301 (WPB) Equiv.
FUF	F=Lx50%	
FUT	F=Lx40%	



<How to Calculate Spring Constant>

$$\text{Spring Constant} = \frac{\text{Max. Load (N(kgf))}}{\text{Lx Allowable Deflection (\%)}}$$

D Tolerance	Ø5~14	±0.3
	Ø15~27	±0.4
L Tolerance	~ 50	±1
	51~100	±2
	101~250	±4

- Use within the range of allowable deflection %.
- No grinding on both ends for d less than 0.9.
- P is for reference only.
- Load types A and B have a different number of coils, so the P dimension is different.

RoHS10

Part Number Type	D	1mm Increment L	Load Type Selection	Max. Load N{kgf} JIS-SWP-A FWR60%	FWF50%	FWT40%	Max. Load N{kgf} EN 1.4301 (WPB) Equiv. FUR60%	FUF50%	FUT40%	d FWR FUR	d FWF FUF	d FWT FUT	P (Reference) FWR FUR	P (Reference) FWF FUF	P (Reference) FWT FUT
FWR FWF FWT (JIS-SWP-A)	5	15~65	A	2.8{0.29}	5.2{0.53}	8.1{0.83}	2.5{0.25}	4.5{0.46}	7.1{0.73}	0.4	0.5	0.6	1.8	1.5	1.3
			B	3.7{0.38}	6.7{0.69}	10.6{1.08}	3.3{0.33}	5.9{0.60}	9.3{0.95}				2.3	1.9	1.7
	6	15~80	A	2.9{0.30}	7.3{0.75}	9.9{1.01}	2.5{0.26}	6.4{0.65}	8.7{0.89}	0.45	0.6	0.7	2.0	1.7	1.5
			B	3.8{0.38}	9.6{0.97}	12.9{1.32}	3.3{0.34}	8.4{0.85}	11.3{1.15}				2.6	2.3	1.9
	7	15~90	A	3.1{0.32}	10.1{1.03}	11.5{1.17}	2.7{0.28}	8.8{0.90}	10.0{1.02}	0.5	0.7	0.8	2.2	2.0	1.7
			B	4.0{0.41}	13.1{1.34}	14.9{1.52}	3.5{0.36}	11.5{1.17}	13.0{1.33}				2.9	2.7	2.2
	8	20~100	A	5.2{0.53}	12.2{1.24}	13.8{1.41}	4.6{0.47}	10.7{1.09}	12.1{1.23}	0.6	0.8	0.9	2.7	2.2	1.9
			B	6.8{0.70}	15.9{1.62}	17.9{1.83}	6.0{0.61}	13.9{1.42}	15.7{1.60}				3.5	2.9	2.4
	9	19~110	A	8.1{0.83}	17.4{1.78}	22.1{2.25}	7.1{0.72}	15.2{1.56}	19.3{1.97}	0.7	0.9	1.0	2.9	2.5	2.6
			B	10.0{1.02}	20.6{2.09}	27.5{2.80}	8.7{0.89}	17.9{1.83}	24.0{2.45}				3.5	2.9	3.3
	10	20~120	A	10.6{1.08}	19.2{1.96}	30.5{3.11}	9.3{0.95}	16.9{1.72}	26.7{2.72}	0.8	1.0	1.2	3.4	2.8	2.5
			B	13.7{1.40}	24.9{2.54}	39.5{4.03}	12.1{1.23}	21.8{2.22}	34.6{3.53}				4.4	3.6	3.2
	11	21~130	A	9.0{0.92}	17.2{1.75}	27.9{2.85}	7.9{0.80}	15.0{1.53}	24.4{2.49}	0.8	1.0	1.2	3.5	3.3	2.9
			B	12.6{1.28}	22.9{2.33}	36.3{3.70}	11.0{1.12}	20.0{2.04}	31.7{3.24}				4.9	4.3	3.8
	12	25~140	A	11.0{1.12}	27.6{2.81}	37.7{3.84}	9.6{0.98}	24.1{2.46}	33.0{3.34}	0.9	1.2	1.4	3.8	3.3	2.9
			B	14.2{1.45}	35.8{3.65}	48.9{4.99}	12.5{1.27}	31.3{3.19}	42.9{4.37}				4.9	4.3	3.8
	13	24~150	A	10.5{1.07}	26.5{2.70}	35.7{3.63}	9.1{0.93}	23.2{2.37}	31.1{3.18}	0.9	1.2	1.4	4.2	3.9	3.3
			B	13.4{1.37}	34.6{3.52}	46.4{4.73}	11.7{1.20}	30.2{3.08}	40.5{4.13}				5.5	5.1	4.3
FUR FUF FUT (EN 1.4301 (WPB) Equiv.)	14	30~160	A	11.6{1.18}	37.7{3.84}	45.9{4.68}	10.1{1.03}	33.0{3.36}	40.2{4.10}	1.0	1.4	1.6	4.2	3.9	3.3
			B	15.1{1.54}	48.9{4.99}	59.6{6.08}	13.1{1.34}	42.8{4.36}	52.2{5.32}				5.5	5.1	4.3
	15	27~170	A	11.4{1.16}	36.8{3.75}	44.4{4.53}	9.9{1.01}	32.1{3.28}	38.8{3.96}	1.0	1.4	1.6	5.0	4.5	3.7
			B	14.9{1.51}	47.1{4.80}	56.6{5.77}	14.9{1.33}	41.1{4.20}	49.4{5.05}				6.5	5.8	4.8
	16	30~180	A	19.4{1.98}	49.7{5.07}	55.1{5.62}	17.0{1.73}	43.4{4.43}	48.2{4.91}	1.2	1.6	1.8	5.0	4.5	3.7
			B	25.1{2.56}	64.5{6.58}	71.2{7.26}	22.0{2.24}	56.5{5.76}	62.6{6.38}				6.5	5.8	4.8
	17	31~190	A	19.6{2.00}	47.9{4.88}	53.5{5.45}	17.1{1.75}	41.8{4.27}	46.7{4.77}	1.2	1.6	1.8	5.9	5.0	4.1
			B	25.3{2.57}	62.0{6.32}	69.9{7.13}	22.0{2.25}	54.1{5.53}	61.0{6.24}				7.7	6.5	5.4
	18	35~200	A	29.9{3.05}	62.1{6.33}	65.2{6.65}	26.2{2.67}	54.3{5.54}	57.1{5.82}	1.4	1.8	2.0	5.9	5.0	4.1
			B	38.9{3.97}	80.7{8.23}	84.6{8.63}	34.0{3.47}	70.6{7.2}	74.0{7.55}				7.7	6.5	5.4
	20	40~200	A	42.7{4.35}	76.9{7.84}	99.0{10.1}	37.4{3.81}	67.3{6.86}	86.6{8.83}	1.6	2.0	2.3	6.7	5.5	4.8
			B	55.2{5.63}	100 {10.2}	128 {13.1}	48.3{4.93}	87.2{8.89}	113 {11.5}				8.7	7.2	6.3
	23	45~200	A	51.9{5.29}	103.0{10.50}	121.0{12.34}	45.4{4.63}	90.2{9.20}	106.0{10.81}	1.8	2.3	2.6	7.8	6.4	5.5
			B	67.4{6.87}	133.0{13.56}	156.0{15.91}	58.9{6.01}	113.0{11.52}	137.0{13.97}				10.1	8.1	7.1
	25	50~250	A	64.5{6.58}	153.5{15.64}	178.6{18.20}	56.3{5.75}	133.9{13.68}	155.9{15.93}	2.0	2.6	2.9	7.8	7.1	6.3
			B	82.4{8.39}	172.0{17.53}	214.3{21.84}	71.9{7.34}	150.1{15.34}	187.0{19.11}				10.2	8.0	7.9
	27	70~250	A	86.0{8.77}	195.0{19.87}	220.3{22.45}	75.0{7.67}	170.2{17.39}	192.3{19.64}	2.3	2.9	3.2	7.5	7.4	6.7
			B	110.9{11.30}	214.2{21.83}	274.0{27.92}	96.8{9.89}	187.0{19.10}	239.1{24.43}				9.6	8.1	8.6

Load {kgf} = Load N x0.101972

Part Number Type	D	Unit Price L15~40	L41~80	L81~120	L121~160	L161~200
FWR FWF FWT (JIS-SWP-A)	5			-	-	-
	6			-	-	-
	7				-	-
	8				-	-
	9				-	-
	10				-	-
	11					-
	12					-
	13					-
	14					-
	15					
	16					
	17					
	18					
	20					
	23	-				
	25	-				
	27	-				

Part Number Type	D	Unit Price L15~40	L41~80	L81~120	L121~160	L161~200
FUR FUF FUT (EN 1.4301 (WPB) Equiv.)	5			-	-	-
	6			-	-	-
	7				-	-
	8				-	-
	9				-	-
	10				-	-
	11					-
	12					-
	13					-
	14					-
	15					
	16					
	17					
	18					
	20					
	23	-				
	25	-				
	27	-				

Usage Count: 1 Million Times

Ordering Example: Part Number **FWF10 - 119 - A** (Part Number - L - Load Type A, B)