



Model	Outer Dia D (mm)	Inner Dia d (mm)	Free Length L (mm)	Spring Const (kgf/mm)	0.3 million		0.5 million		1 million	
					Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)
TF 8 × 10	8	4	10	1.56	5.0	8	4.5	7	4.0	6
			15	1.04	7.5		6.8		6.0	
			20	0.78	10.0		9.0		8.0	
			25	0.62	12.5		11.2		10.0	
			30	0.52	15.0		13.5		12.0	
			35	0.44	17.5		15.7		14.0	
			40	0.39	20.0		18.0		16.0	
			45	0.35	22.5		20.2		18.0	
			50	0.31	25.0		22.5		20.0	
			55	0.28	27.5		24.7		22.0	
			60	0.26	30.0		27.0		24.0	
			65	0.24	32.5		29.2		26.0	
			70	0.22	35.0		31.5		28.0	
			75	0.21	37.5		33.7		30.0	
			80	0.20	40.0		36.0		32.0	
90	0.17	45.0	40.5	36.0						
TF 10 × 10	10	5	10	2.00	5.0	10	4.5	9	4.0	8
			15	1.32	7.5		6.8		6.0	
			20	1.00	10.0		9.0		8.0	
			25	0.80	12.5		11.2		10.0	
			30	0.67	15.0		13.5		12.0	
			35	0.57	17.5		15.7		14.0	
			40	0.50	20.0		18.0		16.0	
			45	0.44	22.5		20.2		18.0	
			50	0.40	25.0		22.5		20.0	
			55	0.36	27.5		24.7		22.0	
			60	0.33	30.0		27.0		24.0	
			65	0.31	32.5		29.2		26.0	
			70	0.29	35.0		31.5		28.0	
			75	0.27	37.5		33.7		30.0	
			80	0.25	40.0		36.0		32.0	
90	0.22	45.0	40.5	36.0						
100	0.20	50.0	45.0	40.0						

Model	Outer Dia D (mm)	Inner Dia d (mm)	Free Length L (mm)	Spring Const (kgf/mm)	0.3 million		0.5 million		1 million	
					Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)
TF 12 × 20	12	6	20	1.40	10.0	14	9.0	12.5	8.0	11
			25	1.12	12.5		11.2		10.0	
			30	0.93	15.0		13.5		12.0	
			35	0.80	17.5		15.7		14.0	
			40	0.70	20.0		18.0		16.0	
			45	0.62	22.5		20.2		18.0	
			50	0.56	25.0		22.5		20.0	
			55	0.51	27.5		24.7		22.0	
			60	0.47	30.0		27.0		24.0	
			65	0.43	32.5		29.2		26.0	
			70	0.40	35.0		31.5		28.0	
			75	0.37	37.5		33.7		30.0	
			80	0.35	40.0		36.0		32.0	
			90	0.31	45.0		40.5		36.0	
100	0.28	50.0	45.0	40.0						
TF 14 × 20	14	7	20	1.78	10.0	18	9.0	16	8.0	14.5
			25	1.44	12.5		11.2		10.0	
			30	1.20	15.0		13.5		12.0	
			35	1.03	17.5		15.7		14.0	
			40	0.90	20.0		18.0		16.0	
			45	0.80	22.5		20.2		18.0	
			50	0.72	25.0		22.5		20.0	
			55	0.65	27.5		24.7		22.0	
			60	0.60	30.0		27.0		24.0	
			65	0.55	32.5		29.2		26.0	
			70	0.51	35.0		31.5		28.0	
			75	0.48	37.5		33.7		30.0	
			80	0.45	40.0		36.0		32.0	
			90	0.40	45.0		40.5		36.0	
100	0.36	50.0	45.0	40.0						
125	0.29	62.5	56.2	50.0						
TF 16 × 20	16	8	20	2.11	10.0	21	9.0	19	8.0	17
			25	1.68	12.5		11.2		10.0	
			30	1.40	15.0		13.5		12.0	
			35	1.20	17.5		15.7		14.0	
			40	1.05	20.0		18.0		16.0	
			45	0.94	22.5		20.2		18.0	
			50	0.84	25.0		22.5		20.0	
			55	0.77	27.5		24.7		22.0	
			60	0.70	30.0		27.0		24.0	
			65	0.65	32.5		29.2		26.0	
			70	0.60	35.0		31.5		28.0	
			75	0.56	37.5		33.7		30.0	
			80	0.53	40.0		36.0		32.0	
			90	0.47	45.0		40.5		36.0	
100	0.42	50.0	45.0	40.0						
125	0.34	62.5	56.2	50.0						

Model	Outer Dia D (mm)	Inner Dia d (mm)	Free Length L (mm)	Spring Const (kgf/mm)	0.3 million		0.5 million		1 million	
					Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)
TF 18 × 20	18	9	20	2.56	10.0	26	9.0	23	8.0	21
25			25	2.08	12.5		11.2		10.0	
30			30	1.74	15.0		13.5		12.0	
35			35	1.49	17.5		15.7		14.0	
40			40	1.30	20.0		18.0		16.0	
45			45	1.16	22.5		20.2		18.0	
50			50	1.04	25.0		22.5		20.0	
55			55	0.95	27.5		24.7		22.0	
60			60	0.87	30.0		27.0		24.0	
65			65	0.80	32.5		29.2		26.0	
70			70	0.74	35.0		31.5		28.0	
75			75	0.70	37.5		33.7		30.0	
80			80	0.65	40.0		36.0		32.0	
90			90	0.58	45.0		40.5		36.0	
100			100	0.52	50.0		45.0		40.0	
125	125	0.42	62.5	56.2	50.0					
TF 20 × 20	20	11	20	3.22	10.0	32	9.0	29	8.0	26
25			25	2.56	12.5		11.2		10.0	
30			30	2.13	15.0		13.5		12.0	
35			35	1.83	17.5		15.7		14.0	
40			40	1.60	20.0		18.0		16.0	
45			45	1.42	22.5		20.2		18.0	
50			50	1.28	25.0		22.5		20.0	
55			55	1.16	27.5		24.7		22.0	
60			60	1.07	30.0		27.0		24.0	
65			65	0.98	32.5		29.2		26.0	
70			70	0.91	35.0		31.5		28.0	
75			75	0.85	37.5		33.7		30.0	
80			80	0.80	40.0		36.0		32.0	
90			90	0.71	45.0		40.5		36.0	
100			100	0.64	50.0		45.0		40.0	
125	125	0.51	62.5	56.2	50.0					
150	150	0.43	75.0	67.5	60.0					
175	175	0.37	87.5	78.7	70.0					
TF 22 × 25	22	11	25	3.20	12.5	40	11.2	36	10.0	32
30			30	2.67	15.0		13.5		12.0	
35			35	2.29	17.5		15.7		14.0	
40			40	2.00	20.0		18.0		16.0	
45			45	1.78	22.5		20.2		18.0	
50			50	1.60	25.0		22.5		20.0	
55			55	1.46	27.5		24.7		22.0	
60			60	1.33	30.0		27.0		24.0	
65			65	1.23	32.5		29.2		26.0	
70			70	1.14	35.0		31.5		28.0	
75			75	1.07	37.5		33.7		30.0	
80			80	1.00	40.0		36.0		32.0	
90			90	0.89	45.0		40.5		36.0	
100			100	0.80	50.0		45.0		40.0	
125			125	0.64	62.5		56.2		50.0	
150	150	0.53	75.0	67.5	60.0					
175	175	0.46	87.5	78.7	70.0					

Model	Outer Dia D (mm)	Inner Dia d (mm)	Free Length L (mm)	Spring Const (kgf/mm)	0.3 million		0.5 million		1 million	
					Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)
TF 25 × 25	25	13.5	25	4.00	12.5	50	11.2	45	10.0	40
			30	3.33	15.0		13.5			
			35	2.85	17.5		15.7			
			40	2.50	20.0		18.0			
			45	2.22	22.5		20.2			
			50	2.00	25.0		22.5			
			55	1.82	27.5		24.7			
			60	1.67	30.0		27.0			
			65	1.54	32.5		29.2			
			70	1.43	35.0		31.5			
			75	1.33	37.5		33.7			
			80	1.25	40.0		36.0			
			90	1.11	45.0		40.5			
			100	1.00	50.0		45.0			
			125	0.80	62.5		56.2			
			150	0.67	75.0		67.5			
			175	0.57	87.5		78.7			
200	0.50	100.0	90.0							
TF 27 × 25	27	13.5	25	4.80	12.5	60	11.2	54	10.0	48
			30	4.00	15.0		13.5			
			35	3.43	17.5		15.7			
			40	3.00	20.0		18.0			
			45	2.67	22.5		20.2			
			50	2.40	25.0		22.5			
			55	2.18	27.5		24.7			
			60	2.00	30.0		27.0			
			65	1.85	32.5		29.2			
			70	1.71	35.0		31.5			
			75	1.60	37.5		33.7			
			80	1.50	40.0		36.0			
			90	1.33	45.0		40.5			
			100	1.20	50.0		45.0			
			125	0.96	62.5		56.2			
			150	0.80	75.0		67.5			
			175	0.69	87.5		78.7			
200	0.60	100.0	90.0							
TF 30 × 25	30	16	25	5.80	12.5	72	11.2	65	10.0	58
			30	4.83	15.0		13.5			
			35	4.13	17.5		15.7			
			40	3.60	20.0		18.0			
			45	3.21	22.5		20.2			
			50	2.88	25.0		22.5			
			55	2.63	27.5		24.7			
			60	2.40	30.0		27.0			
			65	2.22	32.5		29.2			
			70	2.05	35.0		31.5			

Model	Outer Dia D (mm)	Inner Dia d (mm)	Free Length L (mm)	Spring Const (kgf/mm)	0.3 million		0.5 million		1 million		
					Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)	
TF 30 × 75	30	16	75	1.93	72	72	65	33.7	58	30.0	
			80	1.80				40.0		36.0	32.0
			90	1.60				45.0		40.5	36.0
			100	1.44				50.0		45.0	40.0
			125	1.15				62.5		56.2	50.0
			150	0.96				75.0		67.5	60.0
			175	0.82				87.5		78.7	70.0
			200	0.72				100.0		90.0	80.0
TF 35 × 35	35	19	35	5.60	98	88	15.7	78	14.0		
			40	4.90			20.0		18.0	16.0	
			45	4.36			22.5		20.2	18.0	
			50	3.92			25.0		22.5	20.0	
			55	3.56			27.5		24.7	22.0	
			60	3.26			30.0		27.0	24.0	
			65	3.02			32.5		29.2	26.0	
			70	2.80			35.0		31.5	28.0	
			75	2.61			37.5		33.7	30.0	
			80	2.45			40.0		36.0	32.0	
			90	2.17			45.0		40.5	36.0	
			100	1.96			50.0		45.0	40.0	
			125	1.57			62.5		56.2	50.0	
			150	1.30			75.0		67.5	60.0	
			175	1.12			87.5		78.7	70.0	
			200	0.98			100.0		90.0	80.0	
TF 40 × 40	40	22	40	6.38	128	115	18.0	102	16.0		
			45	5.67			22.5		20.2	18.0	
			50	5.12			25.0		22.5	20.0	
			55	4.64			27.5		24.7	22.0	
			60	4.26			30.0		27.0	24.0	
			65	3.93			32.5		29.2	26.0	
			70	3.65			35.0		31.5	28.0	
			75	3.40			37.5		33.7	30.0	
			80	3.20			40.0		36.0	32.0	
			90	2.84			45.0		40.5	36.0	
			100	2.56			50.0		45.0	40.0	
			125	2.04			62.5		56.2	50.0	
			150	1.70			75.0		67.5	60.0	
			175	1.46			87.5		78.7	70.0	
			200	1.28			100.0		90.0	80.0	
			225	1.13			112.5		101.2	90.0	
250	1.02	125.0	112.5	100.0							
275	0.93	137.5	123.7	110.0							
300	0.85	150.0	135.0	120.0							
TF 50 × 50	50	27.5	50	8.00	200	180	22.5	160	20.0		
			55	7.27			27.5		24.7	22.0	
			60	6.66			30.0		27.0	24.0	
			65	6.15			32.5		29.2	26.0	

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					Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)	Deflection F (mm)	Load kgf(N)
TF 50 × 70	50	27.5	70	5.71	35.0	200	31.5	180	28.0	160
75			75	5.33	37.5		33.7		30.0	
80			80	5.00	40.0		36.0		32.0	
90			90	4.44	45.0		40.5		36.0	
100			100	4.00	50.0		45.0		40.0	
125			125	3.20	62.5		56.2		50.0	
150			150	2.66	75.0		67.5		60.0	
175			175	2.28	87.5		78.7		70.0	
200			200	2.00	100.0		90.0		80.0	
225			225	1.78	112.5		101.2		90.0	
250			250	1.60	125.0		112.5		100.0	
275			275	1.45	137.5		123.7		110.0	
300			300	1.33	150.0		135.0		120.0	
350			350	1.14	175.0		157.5		140.0	
400			400	1.00	200.0		180.0		160.0	
450			450	0.89	225.0		202.5		180.0	
500	500	0.80	250.0	225.0	200.0					
TF 60 × 60	60	33	60	9.59	30.0	288	27.0	259	24.0	230
70			70	8.22	35.0		31.5		28.0	
80			80	7.19	40.0		36.0		32.0	
90			90	6.40	45.0		40.5		36.0	
100			100	5.76	50.0		45.0		40.0	
125			125	4.60	62.5		56.2		50.0	
150			150	3.84	75.0		67.5		60.0	
175			175	3.29	87.5		78.7		70.0	
200			200	2.88	100.0		90.0		80.0	
225			225	2.56	112.5		101.2		90.0	
250			250	2.30	125.0		112.5		100.0	
275			275	2.09	137.5		123.8		110.0	
300			300	1.92	150.0		135.0		120.0	
350			350	1.65	175.0		157.5		140.0	
400			400	1.44	200.0		180.0		160.0	
450			450	1.28	225.0		202.5		180.0	
500	500	1.15	250.0	225.0	200.0					
TFR 35 × 40	35	21	40	4.60	20.0	92	18.0	83	16.0	74
45			45	4.09	22.5		20.3		18.0	
50			50	3.68	25.0		22.5		20.0	
55			55	3.35	27.5		24.8		22.0	
60			60	3.07	30.0		27.0		24.0	
65			65	2.83	32.5		29.3		26.0	
70			70	2.63	35.0		31.5		28.0	
75			75	2.45	37.5		33.8		30.0	
80			80	2.30	40.0		36.0		32.0	
90			90	2.04	45.0		40.5		36.0	
100			100	1.84	50.0		45.0		40.0	
125			125	1.47	62.5		56.3		50.0	
150			150	1.23	75.0		67.5		60.0	
175			175	1.05	87.5		78.8		70.0	
200			200	0.92	100.0		90.0		80.0	

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TFR 40 × 50	40	26	50	4.20	25.0	105	22.5	95	20.0	84
60			60	3.50	30.0		27.0		24.0	
70			70	3.00	35.0		31.5		28.0	
80			80	2.63	40.0		36.0		32.0	
90			90	2.33	45.0		40.5		36.0	
100			100	2.10	50.0		45.0		40.0	
125			125	1.68	62.5		56.3		50.0	
150			150	1.40	75.0		67.5		60.0	
175			175	1.20	87.5		78.8		70.0	
200			200	1.05	100.0		90.0		80.0	
250			250	0.84	125.0		112.5		100.0	
TFR 50 × 60			50	31	60		6.67		30.0	
70	70	5.71			35.0	31.5	28.0			
80	80	5.00			40.0	36.0	32.0			
90	90	4.44			45.0	40.5	36.0			
100	100	4.00			50.0	45.0	40.0			
125	125	3.20			62.5	56.3	50.0			
150	150	2.67			75.0	67.5	60.0			
175	175	2.29			87.5	78.8	70.0			
200	200	2.00			100.0	90.0	80.0			
250	250	1.60			125.0	112.5	100.0			
300	300	1.33			150.0	135.0	120.0			
TFR 60 × 90	60	37			90	6.40	45.0	288	40.5	259
100			100	5.76	50.0	45.0	40.0			
125			125	4.61	62.5	56.3	50.0			
150			150	3.84	75.0	67.5	60.0			
175			175	3.29	87.5	78.8	70.0			
200			200	2.88	100.0	90.0	80.0			
250			250	2.30	125.0	112.5	100.0			
300			300	1.92	150.0	135.0	120.0			



Order Example

TYPE	D	L
TF	- D40	- L100