



Carga Pesada

Referência	Diam. Externo	Diam. Interno	Compr. Total (mm)	Constante Elástica		19.2% do compr. total 1Milhão de ciclos		21.6% do compr. total 500mil ciclos		24% do compr. total 300mil ciclos	
				(N / mm)	(Kgf /mm)	Deflexão	Carga	Deflexão	Carga	Deflexão	Carga
TH 8 x 10	8	4	10	86.25	{ 8.80 }	1.9	166.7 { 17.0 }	2.2	186.3 { 19.0 }	2.4	206 { 21.0 }
15			15	57.50	{ 5.86 }	2.9		3.2		3.6	
20			20	43.13	{ 4.40 }	3.8		4.3		4.8	
25			25	34.50	{ 3.52 }	4.8		5.4		6.0	
30			30	28.75	{ 2.93 }	5.8		6.5		7.2	
35			35	24.64	{ 2.51 }	6.7		7.6		8.4	
40			40	21.56	{ 2.20 }	7.7		8.6		9.6	
45			45	19.17	{ 1.95 }	8.6		9.7		10.8	
50			50	17.25	{ 1.76 }	9.6		10.8		12.0	
55			55	15.68	{ 1.60 }	10.6		11.9		13.2	
60			60	14.38	{ 1.47 }	11.5		13.0		14.4	
65			65	13.27	{ 1.35 }	12.5		14.0		15.6	
70			70	12.32	{ 1.26 }	13.4		15.1		16.8	
75			75	11.50	{ 1.17 }	14.4		16.2		18.0	
80			80	10.78	{ 1.10 }	15.4		17.3		19.2	
TH 10 x 20			10	5	20	61.34		{ 6.26 }		3.8	
25	25	49.07			{ 5.00 }	4.8	5.4	6.0			
30	30	40.90			{ 4.17 }	5.8	6.5	7.2			
35	35	35.05			{ 3.57 }	6.7	7.6	8.4			
40	40	30.67			{ 3.13 }	7.7	8.6	9.6			
45	45	27.26			{ 2.78 }	8.6	9.7	10.8			
50	50	24.54			{ 2.50 }	9.6	10.8	12.0			
55	55	22.31			{ 2.27 }	10.6	11.9	13.2			
60	60	20.45			{ 2.09 }	11.5	13.0	14.4			
65	65	18.87			{ 1.92 }	12.5	14.0	15.6			
70	70	17.53			{ 1.79 }	13.4	15.1	16.8			
75	75	16.36			{ 1.67 }	14.4	16.2	18.0			
80	80	15.34			{ 1.56 }	15.4	17.3	19.2			
90	90	13.63			{ 1.39 }	17.3	19.4	21.6			
TH 12 x 20	12	6	20	86.34	{ 8.80 }	3.8	333 { 34.0 }	4.3	373 { 38.0 }	4.8	422 { 43.0 }
25			25	69.07	{ 7.04 }	4.8		5.4		6.0	
30			30	57.56	{ 5.87 }	5.8		6.5		7.2	
35			35	49.34	{ 5.03 }	6.7		7.6		8.4	
40			40	43.17	{ 4.40 }	7.7		8.6		9.6	
45			45	38.37	{ 3.91 }	8.6		9.7		10.8	
50			50	34.54	{ 3.52 }	9.6		10.8		12.0	
55			55	31.40	{ 3.20 }	10.6		11.9		13.2	
60			60	28.78	{ 2.93 }	11.5		13.0		14.4	
65			65	26.57	{ 2.71 }	12.5		14.0		15.6	
70			70	24.67	{ 2.52 }	13.4		15.1		16.8	
75			75	23.02	{ 2.35 }	14.4		16.2		18.0	
80			80	21.59	{ 2.20 }	15.4		17.3		19.2	
90			90	19.19	{ 1.96 }	17.3		19.4		21.6	





Carga Pesada

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				(N / mm)	(Kgf /mm)	Deflexão	Carga	Deflexão	Carga	Deflexão	Carga
TH 14 × 25	14	7	25	96.30	{ 9.82 }	4.8	461	5.4	520	6.0	579
30			80.25	{ 8.18 }	5.8	6.5		7.2			
35			68.78	{ 7.01 }	6.7	7.6		8.4			
40			60.19	{ 6.14 }	7.7	8.6		9.6			
45			53.50	{ 5.46 }	8.6	9.7		10.8			
50			48.15	{ 4.91 }	9.6	10.8		12.0			
55			43.77	{ 4.46 }	10.6	11.9		13.2			
60			40.12	{ 4.09 }	11.5	13.0		14.4			
65			37.04	{ 3.78 }	12.5	14.0		15.6			
70			34.39	{ 3.51 }	13.4	15.1		16.8			
75			32.10	{ 3.27 }	14.4	16.2		18.0			
80			30.09	{ 3.07 }	15.4	17.3		19.2			
90			26.75	{ 2.73 }	17.3	19.4		21.6			
100			24.07	{ 2.45 }	19.2	21.6		24.0			
TH 16 × 25	16	8	25	125.37	{ 12.78 }	4.8	608	5.4	677	6.0	755
30			104.48	{ 10.65 }	5.8	6.5		7.2			
35			89.55	{ 9.13 }	6.7	7.6		8.4			
40			78.36	{ 7.99 }	7.7	8.6		9.6			
45			69.65	{ 7.10 }	8.6	9.7		10.8			
50			62.69	{ 6.39 }	9.6	10.8		12.0			
55			56.99	{ 5.81 }	10.6	11.9		13.2			
60			52.24	{ 5.33 }	11.5	13.0		14.4			
65			48.22	{ 4.92 }	12.5	14.0		15.6			
70			44.78	{ 4.57 }	13.4	15.1		16.8			
75			41.79	{ 4.26 }	14.4	16.2		18.0			
80			39.18	{ 4.00 }	15.4	17.3		19.2			
90			34.83	{ 3.55 }	17.3	19.4		21.6			
100			31.34	{ 3.20 }	19.2	21.6		24.0			
125	25.07	{ 2.56 }	24.0	27.0	30.0						
TH 18 × 25	18	9	25	157.96	{ 16.11 }	4.8	765	5.4	853	6.0	951
30			131.64	{ 13.42 }	5.8	6.5		7.2			
35			112.83	{ 11.51 }	6.7	7.6		8.4			
40			98.73	{ 10.07 }	7.7	8.6		9.6			
45			87.76	{ 8.95 }	8.6	9.7		10.8			
50			78.98	{ 8.05 }	9.6	10.8		12.0			
55			71.80	{ 7.32 }	10.6	11.9		13.2			
60			65.82	{ 6.71 }	11.5	13.0		14.4			
65			60.75	{ 6.20 }	12.5	14.0		15.6			
70			56.42	{ 5.75 }	13.4	15.1		16.8			
75			52.65	{ 5.37 }	14.4	16.2		18.0			
80			49.36	{ 5.03 }	15.4	17.3		19.2			
90			43.88	{ 4.47 }	17.3	19.4		21.6			
100			39.49	{ 4.03 }	19.2	21.6		24.0			
125	31.59	{ 3.22 }	24.0	27.0	30.0						



Carga Pesada

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				(N / mm)	(Kgf /mm)	Deflexão	Carga	Deflexão	Carga	Deflexão	Carga
TH 20 × 25	20	10	25	196.11	{ 20.00 }	4.8	941 {96.0}	5.4	1,059 {108.0}	6.0	1,177 {120.0}
30			30	163.43	{ 16.66 }	5.8		6.5		7.2	
35			35	140.08	{ 14.28 }	6.7		7.6		8.4	
40			40	122.57	{ 12.50 }	7.7		8.6		9.6	
45			45	108.95	{ 11.11 }	8.6		9.7		10.8	
50			50	98.06	{ 10.00 }	9.6		10.8		12.0	
55			55	89.14	{ 9.09 }	10.6		11.9		13.2	
60			60	81.71	{ 8.33 }	11.5		13.0		14.4	
65			65	75.43	{ 7.69 }	12.5		14.0		15.6	
70			70	70.04	{ 7.14 }	13.4		15.1		16.8	
75			75	65.37	{ 6.67 }	14.4		16.2		18.0	
80			80	61.28	{ 6.25 }	15.4		17.3		19.2	
90			90	54.48	{ 5.55 }	17.3		19.4		21.6	
100			100	49.03	{ 5.00 }	19.2		21.6		24.0	
125			125	39.22	{ 4.00 }	24.0		27.0		30.0	
150	150	32.69	{ 3.33 }	28.8	32.4	36.0					
TH 22 × 25	22	11	25	236.11	{ 24.08 }	4.8	1,138 {116.0}	5.4	1,275 {130.0}	6.0	1,422 {145.0}
30			30	196.76	{ 20.06 }	5.8		6.5		7.2	
35			35	168.65	{ 17.20 }	6.7		7.6		8.4	
40			40	147.57	{ 15.05 }	7.7		8.6		9.6	
45			45	131.17	{ 13.38 }	8.6		9.7		10.8	
50			50	118.06	{ 12.04 }	9.6		10.8		12.0	
55			55	107.32	{ 10.94 }	10.6		11.9		13.2	
60			60	98.38	{ 10.03 }	11.5		13.0		14.4	
65			65	90.81	{ 9.26 }	12.5		14.0		15.6	
70			70	84.33	{ 8.60 }	13.4		15.1		16.8	
75			75	78.70	{ 8.03 }	14.4		16.2		18.0	
80			80	73.78	{ 7.52 }	15.4		17.3		19.2	
90			90	65.59	{ 6.69 }	17.3		19.4		21.6	
100			100	59.03	{ 6.02 }	19.2		21.6		24.0	
125			125	47.22	{ 4.82 }	24.0		27.0		30.0	
150	150	39.35	{ 4.01 }	28.8	32.4	36.0					
TH 25 × 25	25	12.5	25	306.85	{ 31.29 }	4.8	1,471 {150.0}	5.4	1,657 {169.0}	6.0	1,834 {187.0}
30			30	255.71	{ 26.08 }	5.8		6.5		7.2	
35			35	219.18	{ 22.35 }	6.7		7.6		8.4	
40			40	191.78	{ 19.56 }	7.7		8.6		9.6	
45			45	170.47	{ 17.38 }	8.6		9.7		10.8	
50			50	153.43	{ 15.65 }	9.6		10.8		12.0	
55			55	139.48	{ 14.22 }	10.6		11.9		13.2	
60			60	127.85	{ 13.04 }	11.5		13.0		14.4	
65			65	118.02	{ 12.03 }	12.5		14.0		15.6	
70			70	109.59	{ 11.18 }	13.4		15.1		16.8	
75			75	102.28	{ 10.43 }	14.4		16.2		18.0	
80			80	95.89	{ 9.78 }	15.4		17.3		19.2	
90			90	85.24	{ 8.69 }	17.3		19.4		21.6	
100			100	76.71	{ 7.82 }	19.2		21.6		24.0	
125			125	61.37	{ 6.26 }	24.0		27.0		30.0	
150	150	51.14	{ 5.22 }	28.8	32.4	36.0					
175	175	43.84	{ 4.47 }	33.6	37.8	42.0					
200	200	38.36	{ 3.91 }	38.4	43.2	48.0					





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				(N / mm)	(Kgf /mm)	Deflexão	Carga	Deflexão	Carga	Deflexão	Carga
TH 27 × 25	27	13.5	25	357.78	36.48	4.8	1,716 {175.0}	5.4	1,932 {197.0}	6.0	2,150 {219.2}
30			298.15	30.40	5.8	6.5					
35			255.56	26.06	6.7	7.6					
40			223.61	22.80	7.7	8.6					
45			198.77	20.27	8.6	9.7					
50			178.89	18.24	9.6	10.8					
55			162.63	16.58	10.6	11.9					
60			149.07	15.20	11.5	13.0					
65			137.61	14.03	12.5	14.0					
70			127.78	13.03	13.4	15.1					
75			119.26	12.16	14.4	16.2					
80			111.81	11.40	15.4	17.3					
90			99.38	10.13	17.3	19.4					
100			89.44	9.12	19.2	21.6					
125			71.56	7.30	24.0	27.0					
150			59.63	6.08	28.8	32.4					
175			51.11	5.21	33.6	37.8					
200	44.72	4.56	38.4	43.2							
TH 30 × 25	30	15	25	440.74	44.94	4.8	2,120 {216.2}	5.4	2,380 {242.7}	6.0	2,648 {270.0}
30			367.28	37.45	5.8	6.5					
35			314.81	32.10	6.7	7.6					
40			275.46	28.09	7.7	8.6					
45			244.86	24.97	8.6	9.7					
50			220.37	22.47	9.6	10.8					
55			200.34	20.43	10.6	11.9					
60			183.64	18.73	11.5	13.0					
65			169.52	17.29	12.5	14.0					
70			157.41	16.05	13.4	15.1					
75			146.91	14.98	14.4	16.2					
80			137.73	14.04	15.4	17.3					
90			122.43	12.48	17.3	19.4					
100			110.19	11.24	19.2	21.6					
125			88.15	8.99	24.0	27.0					
150			73.46	7.49	28.8	32.4					
175			62.96	6.42	33.6	37.8					
200	55.09	5.62	38.4	43.2							
TH 35 × 40	35	17.5	40	375.00	38.24	7.7	2,870 {292.7}	8.6	3,240 {330.4}	9.6	3,600 {367.1}
45			333.33	33.99	8.6	9.7					
50			300.00	30.59	9.6	10.8					
55			272.73	27.81	10.6	11.9					
60			250.00	25.49	11.5	13.0					
65			230.77	23.53	12.5	14.0					
70			214.29	21.85	13.4	15.1					
75			200.00	20.39	14.4	16.2					
80			187.50	19.12	15.4	17.3					
90			166.67	17.00	17.3	19.4					
100			150.00	15.30	19.2	21.6					
125			120.00	12.24	24.0	27.0					
150			100.00	10.20	28.8	32.4					
175			85.71	8.74	33.6	37.8					
200			75.00	7.65	38.4	43.2					



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				(N / mm)	(Kgf /mm)	Deflexão	Carga	Deflexão	Carga	Deflexão	Carga
TH 40 × 40	40	20	40	490.74	50.04	7.7	3,770 {384.4}	8.6	4,240 {432.4}	9.6	4,710 {480.3}
45			436.21	44.48	8.6	9.7		10.8			
50			392.59	40.03	9.6	10.8		12.0			
55			356.90	36.39	10.6	11.9		13.2			
60			327.16	33.36	11.5	13.0		14.4			
65			301.99	30.79	12.5	14.0		15.6			
70			280.42	28.60	13.4	15.1		16.8			
75			261.73	26.69	14.4	16.2		18.0			
80			245.37	25.02	15.4	17.3		19.2			
90			218.11	22.24	17.3	19.4		21.6			
100			196.30	20.02	19.2	21.6		24.0			
125			157.04	16.01	24.0	27.0		30.0			
150			130.86	13.34	28.8	32.4		36.0			
175			112.17	11.44	33.6	37.8		42.0			
200			98.15	10.01	38.4	43.2		48.0			
225			87.24	8.90	43.2	48.6		54.0			
250			78.52	8.01	48.0	54.0		60.0			
275			71.38	7.28	52.8	59.4		66.0			
300			65.43	6.67	57.6	64.8		72.0			
TH 50 × 50			50	25	50	612.96		62.50		9.6	
55	557.24	56.82			10.6	11.9	13.2				
60	510.80	52.09			11.5	13.0	14.4				
65	471.51	48.08			12.5	14.0	15.6				
70	437.83	44.65			13.4	15.1	16.8				
75	408.64	41.67			14.4	16.2	18.0				
80	383.10	39.07			15.4	17.3	19.2				
90	340.53	34.72			17.3	19.4	21.6				
100	306.48	31.25			19.2	21.6	24.0				
125	245.19	25.00			24.0	27.0	30.0				
150	204.32	20.83			28.8	32.4	36.0				
175	175.13	17.86			33.6	37.8	42.0				
200	153.24	15.63			38.4	43.2	48.0				
225	136.21	13.89			43.2	48.6	54.0				
250	122.59	12.50			48.0	54.0	60.0				
275	111.45	11.36			52.8	59.4	66.0				
300	102.16	10.42			57.6	64.8	72.0				
350	87.57	8.93	67.2	75.6	84.0						
TH 60 × 60	60	30	60	736.11	75.06	11.5	8,470 {863.7}	13.0	9,540 {972.8}	14.4	10,590 {1080}
70			630.95	64.34	13.4	15.1		16.8			
80			552.08	56.30	15.4	17.3		19.2			
90			490.74	50.04	17.3	19.4		21.6			
100			441.67	45.04	19.2	21.6		24.0			
125			353.33	36.03	24.0	27.0		30.0			
150			294.44	30.02	28.8	32.4		36.0			
175			252.38	25.74	33.6	37.8		42.0			
200			220.83	22.52	38.4	43.2		48.0			
225			196.30	20.02	43.2	48.6		54.0			
250			176.67	18.01	48.0	54.0		60.0			
275			160.61	16.38	52.8	59.4		66.0			
300			147.22	15.01	57.6	64.8		72.0			
350			126.19	12.87	67.2	75.6		84.0			



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				(N / mm)	(Kgf /mm)	Deflexão	Carga	Deflexão	Carga	Deflexão	Carga
TH 70 x 70	70	38.5	70	773.81	78.91	13.4	10,400 {1061}	15.1	11,700 {1193}	16.8	13,000 {1326}
80			80	677.08	69.04	15.4		17.3		19.2	
90			90	601.85	61.37	17.3		19.4		21.6	
100			100	541.67	55.23	19.2		21.6		24.0	
125			125	433.33	44.19	24.0		27.0		30.0	
150			150	361.11	36.82	28.8		32.4		36.0	
175			175	309.52	31.56	33.6		37.8		42.0	
200			200	270.83	27.62	38.4		43.2		48.0	
225			225	240.74	24.55	43.2		48.6		54.0	
250			250	216.67	22.09	48.0		54.0		60.0	
275			275	196.97	20.09	52.8		59.4		66.0	
300			300	180.56	18.41	57.6		64.8		72.0	
350			350	154.76	15.78	67.2		75.6		84.0	