



Rack Type		HPR	BR
ATLANTA Quality		6	10
Rack	Material	ATLANTA Standard Heat-Treatable Steel	
	Heat Treatment	High-Performance Hardening Process	
Pinion	Material	16MnCr5	
	Heat Treatment	Case-Hardened	Induction Hardened
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)	
12	19.10 mm	3.0 kN	1.5 kN
13	20.69 mm	3.0 kN	2.0 kN
14	22.28 mm	4.0 kN	2.5 kN
15	23.87 mm	4.5 kN	2.5 kN
16	25.46 mm	4.5 kN	2.5 kN
17	27.06 mm	5.0 kN	3.0 kN
18	28.65 mm	5.0 kN	3.0 kN
19	30.24 mm	5.5 kN	3.5 kN
20	31.83 mm	6.0 kN	3.5 kN
21	33.42 mm	6.0 kN	3.5 kN
22	35.01 mm	6.5 kN	4.0 kN
23	36.61 mm	7.0 kN	4.0 kN
24	38.20 mm	7.0 kN	4.5 kN
25	39.79 mm	7.5 kN	4.5 kN
26	41.38 mm	8.0 kN	4.5 kN
27	42.97 mm	8.0 kN	4.5 kN
28	44.56 mm	8.5 kN	4.5 kN
29	46.16 mm	9.0 kN	4.5 kN
30	47.75 mm	9.0 kN	4.5 kN
31	49.34 mm	9.0 kN	4.5 kN
32	50.93 mm	9.0 kN	4.5 kN
33	52.52 mm	9.0 kN	4.5 kN
34	54.11 mm	9.0 kN	4.5 kN
35	55.70 mm	9.0 kN	4.5 kN
36	57.30 mm	9.0 kN	4.5 kN
37	58.89 mm	9.0 kN	4.5 kN
38	60.48 mm	9.0 kN	4.5 kN
39	62.07 mm	9.0 kN	4.5 kN
40	63.66 mm	9.0 kN	4.5 kN

Maximum Permissible Feed Forces ¹⁾ in kN

These ratings are maximum values under perfect conditions, with proper mounting & alignment of the rack & pinion, using only ATLANTA materials with adequate grease lubrication (i.e. the using our electronic lubrication systems in Chapter D or manual lubrication at least once a day).

The ratings are based on a speed of $v = 1.5$ m/s, with safety coefficient $S_b = 1.0$, lifetime factor $f_n = 1.0$ and linear load distribution factor $K_Hb = 1.0$.

Calculation of the maximum forces of an application design is always necessary, please see pages C-53 to C-55.

1) For keyway transmission, please make a separate calculation, for torques with compression couplings, please see page C-76

When using the maximum capacity of the teeth, or multiple pinions in contact, the mounting screw holding forces must be checked separately!

1) Check availability



Rack Type		UHPR		HPR		PR		BR
ATLANTA Quality		5	6	7	8	10		
Rack	Material	Heat-Treatable Steel ²⁾	Case-Hardened ²⁾	ATLANTA Standard Heat-Treatable Steel				
	Heat Treatment	Case-Hardened	High-Performance Hardening Process			Quenched & Tempered	High Perf. Hardening	
Pinion	Material	16MnCr5						
	Heat Treatment	Case-Hardened						
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)						
12	25.46 mm	6.0 kN	8.0 kN	6.0 kN	6.0 kN	5.0 kN	2.0 kN	3.5 kN
13	27.59 mm	6.0 kN	8.5 kN	6.0 kN	6.0 kN	5.5 kN	2.0 kN	4.0 kN
14	29.71 mm	7.5 kN	10.0 kN	7.5 kN	7.5 kN	6.5 kN	2.5 kN	4.5 kN
15	31.83 mm	8.0 kN	11.0 kN	8.0 kN	8.0 kN	7.0 kN	2.5 kN	5.0 kN
16	33.95 mm	9.0 kN	12.0 kN	9.0 kN	9.0 kN	7.5 kN	3.0 kN	5.5 kN
17	36.08 mm	9.5 kN	13.0 kN	9.5 kN	9.5 kN	8.0 kN	3.0 kN	6.0 kN
18	38.20 mm	10.0 kN	13.5 kN	10.0 kN	10.0 kN	8.5 kN	3.5 kN	6.5 kN
19	40.32 mm	10.5 kN	14.5 kN	10.5 kN	10.5 kN	9.0 kN	3.5 kN	7.0 kN
20	42.44 mm	11.5 kN	15.5 kN	11.5 kN	11.5 kN	9.5 kN	4.0 kN	7.0 kN
21	44.56 mm	12.0 kN	16.0 kN	12.0 kN	12.0 kN	10.5 kN	4.0 kN	7.5 kN
22	46.69 mm	12.5 kN	17.0 kN	12.5 kN	12.5 kN	11.0 kN	4.0 kN	8.0 kN
23	48.81 mm	13.0 kN	17.5 kN	13.0 kN	13.0 kN	11.5 kN	4.5 kN	8.5 kN
24	50.93 mm	13.5 kN	18.0 kN	13.5 kN	13.5 kN	12.0 kN	4.5 kN	8.5 kN
25	53.05 mm	14.5 kN	18.5 kN	14.5 kN	14.5 kN	12.5 kN	5.0 kN	9.0 kN
26	55.17 mm	15.0 kN	18.5 kN	15.0 kN	15.0 kN	13.0 kN	5.0 kN	9.0 kN
27	57.30 mm	15.0 kN	18.5 kN	15.0 kN	15.0 kN	13.0 kN	5.5 kN	9.0 kN
28	59.42 mm	15.0 kN	18.5 kN	15.0 kN	15.0 kN	13.0 kN	5.5 kN	9.5 kN
29	61.54 mm	15.0 kN	18.5 kN	15.0 kN	15.0 kN	13.0 kN	6.0 kN	9.5 kN
30	63.66 mm	15.0 kN	18.5 kN	15.0 kN	15.0 kN	13.0 kN	6.0 kN	9.5 kN
31	65.78 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.0 kN	6.0 kN	9.5 kN
32	67.91 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.0 kN	6.5 kN	9.5 kN
33	70.03 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.5 kN	6.5 kN	9.5 kN
34	72.15 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.5 kN	7.0 kN	9.5 kN
35	74.27 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.5 kN	7.0 kN	9.5 kN
36	76.39 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.5 kN	7.5 kN	9.5 kN
37	78.52 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.5 kN	7.5 kN	9.5 kN
38	80.64 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.5 kN	7.5 kN	9.5 kN
39	82.76 mm	15.5 kN	19.0 kN	15.5 kN	15.5 kN	13.5 kN	8.0 kN	9.5 kN
40	84.88 mm	15.5 kN	19.5 kN	15.5 kN	15.5 kN	13.5 kN	8.0 kN	9.5 kN

All dimensions are in mm

1) Check availability

2) According to ATLANTA-Standard

Maximum permissible feed forces – See page C-44 for more information.



Helical Rack & Pinion Drive Calculations & Selection - Module 3

Rack Type		UHPR	HPR			PR	BR	
ATLANTA Quality		5	6	7	8	10		
Rack	Material	Heat-Treatable Steel ²⁾	Case-Hardened ²⁾	ATLANTA Standard Heat-Treatable Steel				
	Heat Treatment	Case-Hardened	High-Performance Hardening Process			Quenched & Tempered	High Perf. Hardening	
Pinion	Material	16MnCr5						
	Heat Treatment	Case-Hardened						
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)						
12	38.20 mm	9.5 kN	13.0 kN	9.5 kN	9.5 kN	8.0 kN	3.0 kN	5.5 kN
13	41.38 mm	11.0 kN	15.0 kN	11.0 kN	11.0 kN	9.0 kN	3.5 kN	6.5 kN
14	44.56 mm	13.0 kN	18.0 kN	13.0 kN	13.0 kN	11.0 kN	4.5 kN	8.0 kN
15	47.75 mm	14.5 kN	19.5 kN	14.5 kN	14.5 kN	12.0 kN	5.0 kN	9.0 kN
16	50.93 mm	15.5 kN	21.0 kN	15.5 kN	15.5 kN	13.0 kN	5.0 kN	9.5 kN
17	54.11 mm	16.5 kN	22.5 kN	16.5 kN	16.5 kN	14.0 kN	5.5 kN	10.0 kN
18	57.30 mm	18.0 kN	24.0 kN	17.5 kN	17.5 kN	14.5 kN	6.0 kN	11.0 kN
19	60.48 mm	19.0 kN	25.5 kN	19.0 kN	19.0 kN	15.5 kN	6.0 kN	11.5 kN
20	63.66 mm	20.0 kN	27.0 kN	20.0 kN	20.0 kN	16.5 kN	6.5 kN	12.0 kN
21	66.85 mm	21.0 kN	28.5 kN	21.0 kN	21.0 kN	17.5 kN	7.0 kN	13.0 kN
22	70.03 mm	22.0 kN	29.5 kN	22.0 kN	22.0 kN	18.5 kN	7.5 kN	13.5 kN
23	73.21 mm	23.0 kN	29.5 kN	23.0 kN	23.0 kN	19.0 kN	7.5 kN	14.0 kN
24	76.39 mm	24.0 kN	29.5 kN	24.0 kN	24.0 kN	20.0 kN	8.0 kN	15.0 kN
25	79.58 mm	25.5 kN	30.0 kN	25.5 kN	25.0 kN	21.0 kN	8.5 kN	15.5 kN
26	82.76 mm	26.5 kN	30.0 kN	26.5 kN	26.5 kN	22.0 kN	8.5 kN	16.0 kN
27	85.94 mm	27.5 kN	30.0 kN	27.5 kN	27.5 kN	22.5 kN	9.0 kN	17.0 kN
28	89.13 mm	27.5 kN	30.5 kN	27.5 kN	27.5 kN	23.5 kN	9.5 kN	17.0 kN
29	92.31 mm	27.5 kN	30.5 kN	27.5 kN	27.5 kN	23.5 kN	10.0 kN	17.0 kN
30	95.49 mm	28.0 kN	30.5 kN	27.5 kN	27.5 kN	24.0 kN	10.0 kN	17.5 kN
31	98.68 mm	28.0 kN	30.5 kN	28.0 kN	28.0 kN	24.0 kN	10.5 kN	17.5 kN
32	101.86 mm	28.0 kN	30.5 kN	28.0 kN	28.0 kN	24.0 kN	11.0 kN	17.5 kN
33	105.04 mm	28.0 kN	31.0 kN	28.0 kN	28.0 kN	24.0 kN	11.5 kN	17.5 kN
34	108.23 mm	28.0 kN	31.0 kN	28.0 kN	28.0 kN	24.0 kN	11.5 kN	17.5 kN
35	111.41 mm	28.0 kN	31.0 kN	28.0 kN	28.0 kN	24.0 kN	12.0 kN	17.5 kN
36	114.59 mm	28.5 kN	31.0 kN	28.5 kN	28.5 kN	24.5 kN	12.5 kN	17.5 kN
37	117.77 mm	28.5 kN	31.0 kN	28.5 kN	28.5 kN	24.5 kN	13.0 kN	17.5 kN
38	120.96 mm	28.5 kN	31.0 kN	28.5 kN	28.5 kN	24.5 kN	13.0 kN	17.5 kN
39	124.14 mm	28.5 kN	31.0 kN	28.5 kN	28.5 kN	24.5 kN	13.5 kN	17.5 kN
40	127.32 mm	28.5 kN	31.0 kN	28.5 kN	28.5 kN	24.5 kN	14.0 kN	17.5 kN

1) Check availability

2) According to ATLANTA-Standard

Maximum permissible feed forces – See page C-44 for more information.



Rack Type		HPR			PR		BR
ATLANTA Quality		6	7	8	10		
Rack	Material	Case-Hardened ²⁾	ATLANTA Standard Heat-Treatable Steel				
	Heat Treatment	High-Performance Hardening Process			Quenched & Tempered	High Perf. Hardening	
Pinion	Material	16MnCr5					
	Heat Treatment	Case-Hardened					
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)					
12	50.93 mm	24.0 kN	18.0 kN	17.5 kN	15.0 kN	6.0 kN	11.0 kN
13	55.17 mm	28.0 kN	20.5 kN	20.5 kN	17.5 kN	7.0 kN	13.0 kN
14	59.42 mm	32.5 kN	24.0 kN	24.0 kN	20.5 kN	8.0 kN	15.0 kN
15	63.66 mm	37.0 kN	27.5 kN	27.5 kN	23.5 kN	9.5 kN	17.0 kN
16	67.91 mm	39.5 kN	29.5 kN	29.5 kN	25.0 kN	10.0 kN	18.5 kN
17	72.15 mm	42.0 kN	31.5 kN	31.0 kN	26.5 kN	10.5 kN	19.5 kN
18	76.39 mm	45.0 kN	33.5 kN	33.0 kN	28.5 kN	11.5 kN	21.0 kN
19	80.64 mm	47.5 kN	35.5 kN	35.0 kN	30.0 kN	12.0 kN	22.5 kN
20	84.88 mm	50.0 kN	37.0 kN	37.0 kN	31.5 kN	13.0 kN	23.5 kN
21	89.13 mm	53.0 kN	39.0 kN	39.0 kN	33.5 kN	13.5 kN	25.0 kN
22	93.37 mm	55.5 kN	41.0 kN	41.0 kN	35.0 kN	14.0 kN	26.0 kN
23	97.62 mm	56.5 kN	43.0 kN	43.0 kN	37.0 kN	15.0 kN	27.5 kN
24	101.86 mm	57.0 kN	45.0 kN	45.0 kN	38.5 kN	15.5 kN	28.5 kN
25	106.10 mm	57.5 kN	47.0 kN	47.0 kN	40.0 kN	16.0 kN	30.0 kN
26	110.35 mm	57.5 kN	49.0 kN	49.0 kN	42.0 kN	17.0 kN	30.5 kN
27	114.59 mm	58.0 kN	49.5 kN	49.5 kN	42.0 kN	17.5 kN	31.0 kN
28	118.84 mm	58.5 kN	49.5 kN	49.5 kN	42.0 kN	18.5 kN	31.0 kN
29	123.08 mm	58.5 kN	50.0 kN	50.0 kN	42.5 kN	19.0 kN	31.0 kN
30	127.32 mm	58.5 kN	50.0 kN	50.0 kN	42.5 kN	19.5 kN	31.0 kN
31	131.57 mm	59.0 kN	50.0 kN	50.0 kN	42.5 kN	20.5 kN	31.0 kN
32	135.81 mm	59.0 kN	50.5 kN	50.5 kN	43.0 kN	21.0 kN	31.5 kN
33	140.06 mm	59.0 kN	50.5 kN	50.5 kN	43.0 kN	22.0 kN	31.5 kN
34	144.30 mm	59.5 kN	50.5 kN	50.5 kN	43.0 kN	22.5 kN	31.5 kN
35	148.54 mm	59.5 kN	51.0 kN	51.0 kN	43.5 kN	23.0 kN	31.5 kN
36	152.79 mm	59.5 kN	51.0 kN	51.0 kN	43.5 kN	24.0 kN	31.5 kN
37	157.03 mm	59.5 kN	51.0 kN	51.0 kN	43.5 kN	24.5 kN	31.5 kN
38	161.28 mm	59.5 kN	51.5 kN	51.5 kN	43.5 kN	25.5 kN	32.0 kN
39	165.52 mm	59.5 kN	51.5 kN	51.5 kN	43.5 kN	26.0 kN	32.0 kN
40	169.77 mm	60.0 kN	51.5 kN	51.5 kN	44.0 kN	27.0 kN	32.0 kN

All dimensions are in mm

1) Check availability

2) According to ATLANTA-Standard

Maximum permissible feed forces – See page C-44 for more information.



Rack Type		HPR		PR	BR
ATLANTA Quality		6	7	8	10
Rack	Material	ATLANTA Standard Heat-Treatable Steel			
	Heat Treatment	High Performance Hardening			
Pinion	Material	16MnCr5			
	Heat Treatment	Case-Hardened			
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)			
12	63.66 mm	28.0 kN	28.0 kN	23.5 kN	17.5 kN
13	68.97 mm	32.5 kN	32.5 kN	27.5 kN	20.5 kN
14	74.27 mm	37.5 kN	37.5 kN	32.0 kN	23.5 kN
15	79.58 mm	43.0 kN	43.0 kN	36.5 kN	27.0 kN
16	84.88 mm	46.0 kN	46.0 kN	39.0 kN	29.0 kN
17	90.19 mm	49.5 kN	49.5 kN	42.0 kN	31.0 kN
18	95.49 mm	52.5 kN	52.5 kN	44.5 kN	33.0 kN
19	100.80 mm	55.5 kN	55.5 kN	47.0 kN	35.0 kN
20	106.10 mm	58.5 kN	58.5 kN	49.5 kN	37.0 kN
21	111.41 mm	61.5 kN	61.5 kN	52.5 kN	39.0 kN
22	116.71 mm	65.0 kN	65.0 kN	55.0 kN	41.0 kN
23	122.02 mm	68.0 kN	68.0 kN	57.5 kN	43.0 kN
24	127.32 mm	71.0 kN	71.0 kN	60.5 kN	45.0 kN
25	132.63 mm	74.5 kN	74.5 kN	63.0 kN	47.0 kN
26	137.93 mm	75.0 kN	75.0 kN	63.5 kN	48.0 kN
27	143.24 mm	75.5 kN	75.5 kN	64.0 kN	48.0 kN
28	148.54 mm	75.5 kN	75.5 kN	64.0 kN	48.5 kN
29	153.85 mm	76.0 kN	76.0 kN	64.5 kN	48.5 kN
30	159.16 mm	76.0 kN	76.0 kN	64.5 kN	49.0 kN

1) Check availability

Maximum permissible feed forces – See page C-44 for more information.

Rack Type		HPR		BR
ATLANTA Quality		6	7	10
Rack	Material	ATLANTA Standard Heat-Treatable Steel		
	Heat Treatment	High Performance Hardening		
Pinion	Material	16MnCr5		
	Heat Treatment	Case-Hardened		
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)		
12	76.39 mm	40.5 kN	40.5 kN	25.5 kN
13	82.76 mm	47.0 kN	47.0 kN	29.5 kN
14	89.13 mm	54.5 kN	54.5 kN	34.5 kN
15	95.49 mm	62.5 kN	62.5 kN	39.0 kN
16	101.86 mm	67.0 kN	67.0 kN	42.0 kN
17	108.23 mm	71.5 kN	71.5 kN	45.0 kN
18	114.59 mm	76.0 kN	76.0 kN	47.5 kN
19	120.96 mm	80.5 kN	80.5 kN	50.5 kN
20	127.32 mm	85.0 kN	85.0 kN	53.5 kN
21	133.69 mm	89.5 kN	89.5 kN	56.5 kN
22	140.06 mm	94.0 kN	94.0 kN	59.0 kN
23	146.42 mm	98.5 kN	98.5 kN	62.0 kN
24	152.79 mm	103.0 kN	103.0 kN	65.0 kN
25	159.16 mm	107.0 kN	107.0 kN	66.5 kN
26	165.52 mm	107.5 kN	107.5 kN	66.5 kN
27	171.89 mm	108.0 kN	108.0 kN	67.0 kN
28	178.25 mm	108.0 kN	108.0 kN	67.0 kN
29	184.62 mm	108.5 kN	108.5 kN	67.5 kN
30	190.99 mm	109.0 kN	109.0 kN	67.5 kN

1) Check availability

Maximum permissible feed forces – See page C-44 for more information.



Rack Type		HPR		BR
ATLANTA Quality		6	7	10
Rack	Material	ATLANTA Standard Heat-Treatable Steel		
	Heat Treatment	High Performance Hardening		
Pinion	Material	16MnCr5		
	Heat Treatment	Case-Hardened		
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)		
12	101.86 mm	72.5 kN	72.5 kN	45.5 kN
13	110.35 mm	84.5 kN	84.5 kN	53.0 kN
14	118.84 mm	97.5 kN	97.5 kN	61.5 kN
15	127.32 mm	111.5 kN	111.5 kN	70.0 kN
16	135.81 mm	119.5 kN	119.5 kN	75.0 kN
17	144.30 mm	127.5 kN	127.5 kN	80.0 kN
18	152.79 mm	135.5 kN	135.5 kN	85.0 kN
19	161.28 mm	143.5 kN	143.5 kN	90.0 kN
20	169.77 mm	151.5 kN	151.5 kN	95.5 kN
21	178.25 mm	160.0 kN	159.5 kN	100.5 kN
22	186.74 mm	168.0 kN	167.5 kN	105.5 kN
23	195.23 mm	176.0 kN	176.0 kN	110.5 kN
24	203.72 mm	184.0 kN	184.0 kN	115.5 kN
25	212.21 mm	187.0 kN	187.0 kN	116.5 kN
26	220.70 mm	188.0 kN	188.0 kN	117.0 kN
27	229.18 mm	189.0 kN	188.5 kN	117.5 kN
28	237.67 mm	189.5 kN	189.5 kN	117.5 kN
29	246.16 mm	190.5 kN	190.5 kN	118.0 kN
30	254.65 mm	191.0 kN	191.0 kN	118.5 kN

1) Check availability

Maximum permissible feed forces – See page C-44 for more information.

Rack Type		HPR		BR
ATLANTA Quality		6	7	10
Rack	Material	ATLANTA Standard Heat-Treatable Steel		
	Heat Treatment	High Performance Hardening		
Pinion	Material	16MnCr5		
	Heat Treatment	Case-Hardened		
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)		
12	127.32 mm	114.0 kN	114.0 kN	71.5 kN
13	137.93 mm	132.5 kN	132.5 kN	83.0 kN
14	148.54 mm	153.5 kN	153.5 kN	96.0 kN
15	159.16 mm	175.0 kN	175.0 kN	109.5 kN
16	169.77 mm	187.5 kN	187.5 kN	117.5 kN
17	180.38 mm	200.0 kN	200.0 kN	125.5 kN
18	190.99 mm	212.5 kN	212.5 kN	133.5 kN
19	201.60 mm	225.5 kN	225.0 kN	141.5 kN
20	212.21 mm	238.0 kN	237.5 kN	149.5 kN
21	222.82 mm	250.5 kN	250.5 kN	157.0 kN
22	233.43 mm	263.0 kN	263.0 kN	165.0 kN
23	244.04 mm	276.0 kN	276.0 kN	173.0 kN
24	254.65 mm	285.5 kN	285.5 kN	178.0 kN
25	265.26 mm	287.0 kN	287.0 kN	178.5 kN

1) Check availability

Maximum permissible feed forces – See page C-44 for more information.



Rack Type		HPR	BR
ATLANTA Quality		6	10
Rack	Material	ATLANTA Standard Heat-Treatable Steel	
	Heat Treatment	High Performance Hardening	
Pinion	Material	16MnCr5	
	Heat Treatment	Case-Hardened	
No. of Pinion Teeth ¹⁾	Pitch Diameter	Maximum Feed Force (only valid for ATLANTA Standard Steels)	
12	152.79 mm	163.0 kN	101.0 kN
13	165.52 mm	189.5 kN	117.5 kN
14	178.25 mm	219.0 kN	136.0 kN
15	190.99 mm	249.5 kN	155.0 kN
16	203.72 mm	267.0 kN	166.0 kN
17	216.45 mm	285.5 kN	177.0 kN
18	229.18 mm	303.0 kN	188.5 kN
19	241.92 mm	321.0 kN	199.5 kN
20	254.65 mm	339.0 kN	210.5 kN
21	267.38 mm	357.0 kN	222.0 kN
22	280.11 mm	375.0 kN	233.0 kN
23	292.85 mm	393.5 kN	244.5 kN
24	305.58 mm	407.5 kN	251.0 kN
25	318.31 mm	409.0 kN	252.5 kN

1) Check availability

Maximum permissible feed forces – See page C-44 for more information.