



Class	ATLANTA Quality	Module	Total Pitch Error ¹⁾ (± μm/m)	Tooth Thickness Tolerance (μm)	Max. Length (mm)	Max. Feed Force per Pinion Contact ²⁾ (kN)	Applications (Examples)	
UHPR Ultra High Precision Rack	3	5	12	-13	1000	76.5	High Precision Machine Tools with Electrical Preload	
		6	12	-13	1000	109.0		
		8	12	-13	960	191.0		
		10	12	-13	1000	287.5		
		12	12	-13	1000	409.0		
HPR High Precision Rack	5	3	26	-15	1000	31.0	Machine Tools, Lifting Axis, Multiple Pinion Contact	
		4	26	-15	1000	60.0		
		5	26	-15	1000	92.0		
	6	2	36	-37	2000	19.5	Wood, Plastic, Composite, Aluminium Working Machines	
		3	36	-37	2000	31.0		
		4	36	-37	2000	60.0		
		1.5	2	36	-37	1000	9.0	Machine Tools, Integratable Racks, Water Cutting Machines, Tube Bending Systems, Plasma Cutting Machines
			3	36	-37	2000	15.5	
			4	36	-37	2000	28.5	
			5	36	-22	2000	51.5	
			6	36	-22	2000	76.0	
			8	36	-22	1920	109.0	
7	2	52	-51	2000	15.5	Woodworking Machines, Linear Axis with High Requirement for a Smooth Running		
	3	52	-51	2000	28.5			
	4	52	-51	2000	51.5			
	5	52	-37	2000	76.0			
	6	52	-37	2000	109.0			
8	2	60	-59	1000	13.5	Portals, Handling Linear Axis		
	3	60	-59	1000	24.5			
	4	60	-59	1000	44.0			
	5	60	-59	1000	64.5			
	8	2	100	-110	2000		8.0	Linear Axis
3		100	-110	2000	14.0			
4		100	-110	2000	27.0			
BR Basic Rack	9	1.5	150	-110	2000	1.5	Linear Axis with Low Load Feed Units for Adjustment	
		2	150	-110	2000	4.0		
		3	150	-110	2000	7.0		
		4	150	-110	2000	13.5		
		5	150	-110	2000	16.0		
	10	1.5	200	-110	1000	3.5	Lifting Axis, Handling, Welding Robots	
		2	200	-110	2000	9.5		
		3	200	-110	2000	17.5		
		4	200	-110	2000	32.0		
		5	200	-110	2000	49.0		
6	200	-110	2000	67.5				
	8	200	-110	1920	118.5			
	10	200	-110	1000	178.5			
12	200	-110	1000	252.5				







¹⁾ Values available for 1000 mm. Other total pitch errors for other length, see detailed description.

²⁾ Values are only valid for special steel according to ATLANTA-Standard.

When using the maximum capacity of the teeth, or multiple pinions in contact, the mounting screw loads must be checked separately! Please ask ATLANTA for advice!

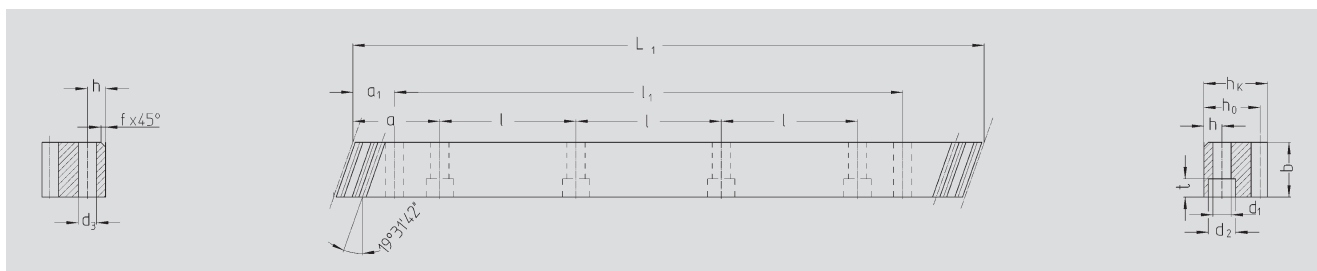



Class	Series	Module	ATLANTA-Quality	Page
UHPR	48	5, 6, 8, 10, 12	3	ZA-4
	29	3, 4, 5, 6	5	ZA-5
HPR	29	2, 3, 4	6	ZA-6
	29	1.5, 2, 3, 4, 5, 6, 8, 10, 12	6	ZA-7
	29	2, 3, 4, 5, 6, 8, 10	7	ZA-8
PR	39	2, 3, 4, 5	8	ZA-9
	38	2, 3, 4	8	ZA-10
BR	47	1.5, 2, 3, 4, 5, 6, 8, 10	9	ZA-11
	39	1.5, 2, 3, 4, 5, 6, 8, 10, 12	10	ZA-12-13
	Selection and Load Tables			ZA-30-38
	Electronically Controlled Lubricators, Sliding-Type Lubricating Brushes and Hose-Connection Sets			ZE-2-6
	Felt Gear and Mounting Shaft			ZE-7-8
	Mounting			ZF-9

¹⁾ All our helical racks are right hand, except the companion racks, which are left hand!



ATLANTA-Quality 3



Order Code	Module	L ₁	N° of teeth	b ^{+0.4}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	
48 50 105	5	1000.00	60	49	39	34	2.5	62.5	125	8	12	13.5	20	13	37.5	925	11.7	12.15
48 60 105	6	1000.00	50	59	49	43	2.5	62.5	125	8	16	17.5	26	17	37.5	925	15.7	18.10
48 80 105	8	960.00	36	79	79	71	2.5	60.0	120	8	25	22.0	33	21	120.0	720	19.7	42.50
48 10 105	10	1000.00	30	99	99	89	2.5	62.5	125	8	32	33.0	48	32	125.0	750	19.7	68.70
48 12 105	12	1000.00	25	120	120	108	2.5	40.0	125	8	40	39.0	58	38	102.5	750	19.7	111.00

Total pitch error $GT_f/1000 \leq 0.012 \text{ mm}$

- Teeth hardened with the ATLANTA high performance hardening process and ground
- Heat-treatable steel according to ATLANTA-Standard
- Ground on all sides after hardening
- Signed with effective total pitch error (20°C)

Inspection measurement data available as an option.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

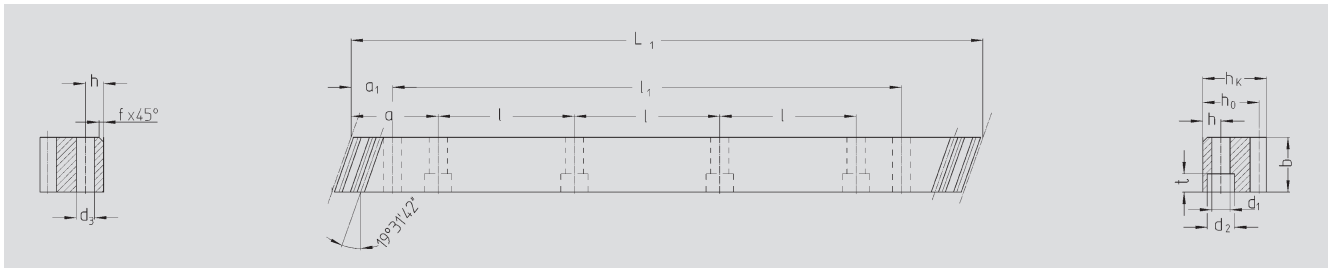
Screws for rack mounting, see page ZF-3.






ATLANTA-Quality 5

StrongLine



Order Code	Module	L ₁	N° of teeth	b ^{+0.4}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	
29 35 100	3	1000.00	100	29	29	26	2.0	62.5	125	8	10	12	17.5	11	27.5	945	11.7	5.9
29 45 100	4	1000.00	75	39	39	35	2.0	62.5	125	8	13	16	23.0	15	30.0	940	15.7	10.7
29 55 100	5	1000.00	60	49	49	44	2.5	62.5	125	8	15	18	26.0	17	34.5	931	15.7	16.3
29 65 100	6	1000.00	50	59	59	53	2.5	62.5	125	8	20	22	33.0	21	97.5	805	19.7	24.5

Total pitch error $GT_T/1000 \leq 0.026 \text{ mm}$

- Teeth case hardened and ground
- Case hardening steel according to ATLANTA-Standard
- Ground on all sides after hardening
- Signed with effective total pitch error (20°C)

Inspection measurement data available as an option.

Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.



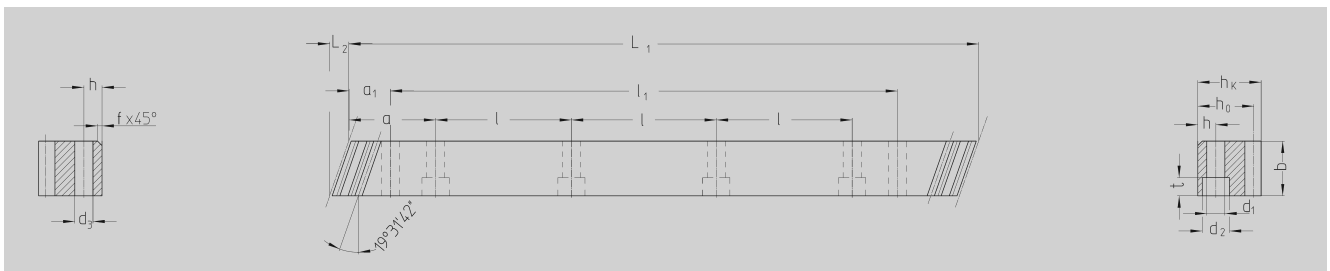
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



Quality 6



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
29 20 050 ²⁾	2	500.00	8.5	75	24	24	22	2	62.5	125	4	8	7	11	7	31.7	436.6	5.7	2.10
29 21 050	2	500.00	8.5	75	24	24	22	2	62.5	125	4	without Mounting Holes							2.10
29 20 100	2	1000.00	8.5	150	24	24	22	2	62.5	125	8	8	7	11	7	31.7	936.6	5.7	4.10
29 21 100	2	1000.00	8.5	150	24	24	22	2	62.5	125	8	without Mounting Holes							4.10
29 20 150	2	1500.00	8.5	225	24	24	22	2	62.5	125	12	8	7	11	7	31.7	1436.6	5.7	6.15
29 21 150	2	1500.00	8.5	225	24	24	22	2	62.5	125	12	without Mounting Holes							6.15
29 20 200	2	2000.00	8.5	300	24	24	22	2	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	8.20
29 21 200	2	2000.00	8.5	300	24	24	22	2	62.5	125	16	without Mounting Holes							8.20
29 30 050 ²⁾	3	500.00	10.3	50	29	29	26	2	62.5	125	4	9	10	15	9	35.0	430.0	7.7	2.90
29 31 050	3	500.00	10.3	50	29	29	26	2	62.5	125	4	without Mounting Holes							2.90
29 30 100	3	1000.00	10.3	100	29	29	26	2	62.5	125	8	9	10	15	9	35.0	930.0	7.7	5.90
29 31 100	3	1000.00	10.3	100	29	29	26	2	62.5	125	8	without Mounting Holes							5.90
29 30 150	3	1500.00	10.3	150	29	29	26	2	62.5	125	12	9	10	15	9	35.0	1430.0	7.7	8.85
29 31 150	3	1500.00	10.3	150	29	29	26	2	62.5	125	12	without Mounting Holes							8.85
29 30 200	3	2000.00	10.3	200	29	29	26	2	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	11.80
29 31 200	3	2000.00	10.3	200	29	29	26	2	62.5	125	16	without Mounting Holes							11.80
29 40 050 ¹⁾²⁾	4	506.67	13.8	38	39	39	35	2	62.5	125	4	12	10	15	9	33.3	433.0	7.7	5.40
29 41 050	4	506.67	13.8	38	39	39	35	2	62.5	125	4	without Mounting Holes							5.40
29 40 100 ²⁾	4	1000.00	13.8	75	39	39	35	2	62.5	125	8	12	10	15	9	33.3	933.4	7.7	10.70
29 41 100	4	1000.00	13.8	75	39	39	35	2	62.5	125	8	without Mounting Holes							10.70
29 42 100	4	1000.00	13.8	75	39	39	35	2	62.5	125	8	12	14	20	13	33.3	933.4	11.7	10.70
29 41 150	4	1506.67	13.8	113	39	39	35	2	62.5	125	12	without Mounting Holes							16.00
29 42 150 ¹⁾	4	1506.67	13.8	113	39	39	35	2	62.5	125	12	12	14	20	13	33.3	1433.4	11.7	16.00
29 41 200	4	2000.00	13.8	150	39	39	35	2	62.5	125	16	without Mounting Holes							21.40
29 42 200	4	2000.00	13.8	150	39	39	35	2	62.5	125	16	12	14	20	13	33.3	1933.4	11.7	21.40

- 1) This racks should be used for continuous linking only with the left side (see sketch).
- 2) The screw joint limits the feed force.

Total pitch error:

$GT_f/1000 \leq 0.036 \text{ mm}$

$GT_f/1500 \leq 0.043 \text{ mm } (\leq 0.029/1000 \text{ mm})$

$GT_f/2000 \leq 0.047 \text{ mm } (\leq 0.024/1000 \text{ mm})$

- Teeth induction-hardened and ground
- Material 16MnCr5, carburized
- Ground on all sides after hardening

Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

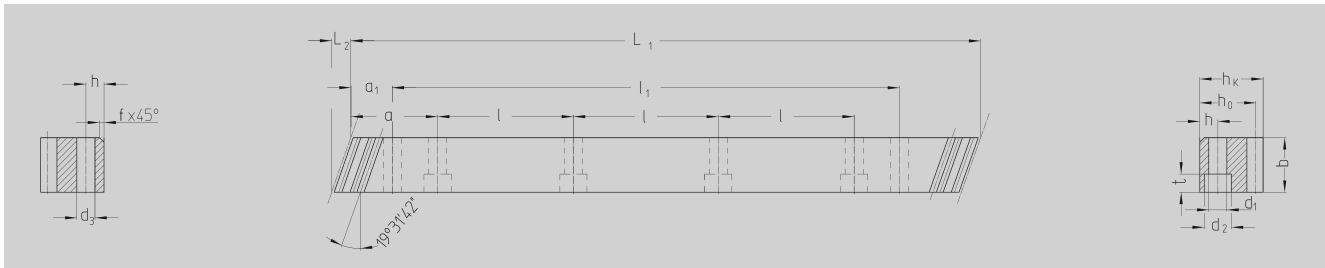
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



Quality 6



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg	
29 15 055 ²⁾	1.5	500.00	6.74	100	19	19	17.5	2	62.5	125	4	8	7	11	7	31.7	436.6	5.7	1.30	
29 16 055	1.5	500.00	6.74	100	19	19	17.5	2	62.5	125	4	without Mounting Holes								1.30
29 15 105	1.5	1000.00	6.74	200	19	19	17.5	2	62.5	125	8	8	7	11	7	31.7	936.6	5.7	2.60	
29 16 105	1.5	1000.00	6.74	200	19	19	17.5	2	without Mounting Holes											2.60
29 20 105	2	1000.00	8.50	150	24	24	22	2	62.5	125	8	8	7	11	7	31.7	936.6	5.7	4.10	
29 21 105	2	1000.00	8.50	150	24	24	22	2	without Mounting Holes											4.10
29 20 155	2	1500.00	8.50	225	24	24	22	2	62.5	125	12	8	7	11	7	31.7	1436.6	5.7	6.15	
29 21 155	2	1500.00	8.50	225	24	24	22	2	without Mounting Holes											6.15
29 20 205	2	2000.00	8.50	300	24	24	22	2	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	8.20	
29 21 205	2	2000.00	8.50	300	24	24	22	2	without Mounting Holes											8.20
29 30 105	3	1000.00	10.30	100	29	29	26	2	62.5	125	8	9	10	15	9	35.0	930.0	7.7	5.90	
29 31 105	3	1000.00	10.30	100	29	29	26	2	without Mounting Holes											5.90
29 30 155	3	1500.00	10.30	150	29	29	26	2	62.5	125	12	9	10	15	9	35.0	1430.0	7.7	8.85	
29 31 155	3	1500.00	10.30	150	29	29	26	2	without Mounting Holes											8.85
29 30 205	3	2000.00	10.30	200	29	29	26	2	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	11.80	
29 31 205	3	2000.00	10.30	200	29	29	26	2	without Mounting Holes											11.80
29 40 105 ²⁾	4	1000.00	13.80	75	39	39	35	2	62.5	125	8	12	10	15	9	33.3	933.4	7.7	10.70	
29 41 105	4	1000.00	13.80	75	39	39	35	2	without Mounting Holes											10.70
29 42 105	4	1000.00	13.80	75	39	39	35	2	62.5	125	8	12	14	20	13	33.3	939.4	11.7	13.00	
29 42 155 ¹⁾	4	1506.67	13.80	113	39	39	35	2	62.5	125	12	12	14	20	13	33.3	1433.4	11.7	19.50	
29 40 205	4	2000.00	13.80	150	39	39	35	2	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	21.40	
29 41 205	4	2000.00	13.80	150	39	39	35	2	without Mounting Holes											21.40
29 42 205	4	2000.00	13.80	150	39	39	35	2	62.5	125	16	12	14	20	13	33.3	1933.4	11.7	21.40	
29 50 055 ²⁾	5	500.00	17.40	30	49	49	34	2.5	62.5	125	4	12	14	20	13	37.5	425.0	11.7	6.50	
29 51 055	5	500.00	17.40	30	49	49	34	2.5	without Mounting Holes											6.50
29 50 105	5	1000.00	17.40	60	49	49	34	2.5	62.5	125	8	12	14	20	13	37.5	925.0	11.7	13.00	
29 51 105	5	1000.00	17.40	60	49	49	34	2.5	without Mounting Holes											13.00
29 50 155	5	1500.00	17.40	90	49	49	34	2.5	62.5	125	12	12	14	20	13	37.5	1425.0	11.7	19.50	
29 51 155	5	1500.00	17.40	90	49	49	34	2.5	without Mounting Holes											19.50
29 50 205	5	2000.00	17.40	120	49	49	34	2.5	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	26.00	
29 51 205	5	2000.00	17.40	120	49	49	34	2.5	without Mounting Holes											26.00
29 60 055 ²⁾	6	500.00	20.90	25	59	59	43	2.5	62.5	125	4	16	18	26	17	37.5	425.0	15.7	9.90	
29 61 055	6	500.00	20.90	25	59	59	43	2.5	without Mounting Holes											9.90
29 60 105	6	1000.00	20.90	50	59	59	43	2.5	62.5	125	8	16	18	26	17	37.5	925.0	15.7	18.10	
29 61 105	6	1000.00	20.90	50	59	59	43	2.5	without Mounting Holes											18.10
29 60 155	6	1500.00	20.90	75	59	59	43	2.5	62.5	125	12	16	18	26	17	37.5	1425.0	15.7	27.10	
29 61 155	6	1500.00	20.90	75	59	59	43	2.5	without Mounting Holes											27.10
29 60 205	6	2000.00	20.90	100	59	59	43	2.5	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	36.20	
29 61 205	6	2000.00	20.90	100	59	59	43	2.5	without Mounting Holes											36.20
29 80 055 ²⁾	8	480.00	28.00	18	79	79	71	2.5	60.0	120	4	25	22	33	21	120.0	240.0	19.7	21.00	
29 81 055	8	480.00	28.00	18	79	79	71	2.5	without Mounting Holes											21.00
29 80 105	8	960.00	28.00	36	79	79	71	2.5	60.0	120	8	25	22	33	21	120.0	720.0	19.7	42.50	
29 81 105	8	960.00	28.00	36	79	79	71	2.5	without Mounting Holes											42.50
29 80 205	8	1920.00	28.00	72	79	79	71	2.5	60.0	120	16	25	22	33	21	120.0	1680.0	19.7	85.00	
29 81 205	8	1920.00	28.00	72	79	79	71	2.5	without Mounting Holes											85.00
29 10 105	10	1000.00	35.11	30	99	99	89	2.5	62.5	125	8	32	33	48	32	125.0	750.0	19.7	68.72	
29 11 105	10	1000.00	35.11	30	99	99	89	2.5	without Mounting Holes											68.72
29 10 155	10	1500.00	35.11	45	99	99	89	2.5	62.5	125	12	32	33	48	32	125	1250.0	19.7	103.00	
29 11 155	10	1500.00	35.11	45	99	99	89	2.5	without Mounting Holes											103.00
29 12 105	12	1000.00	42.56	25	120	120	108	2.5	40.0	125	8	40	39	58	38	125.0	750.0	19.7	111.00	
29 13 105	12	1000.00	42.56	25	120	120	108	2.5	without Mounting Holes											111.00



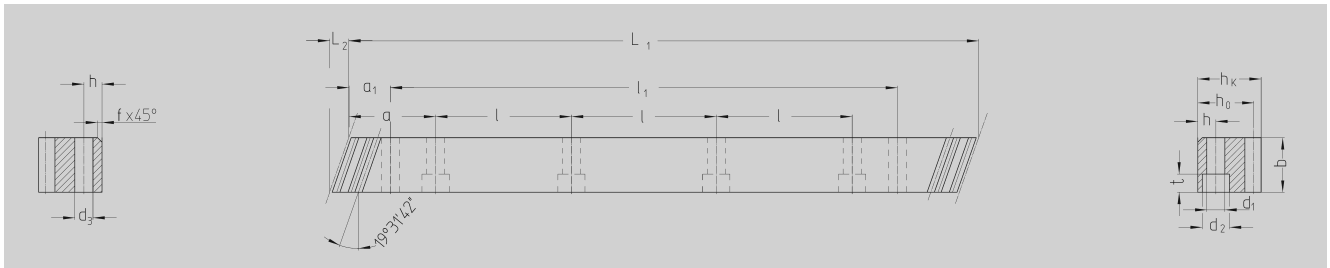
1) These racks should be used for continuous linking only with the left side (see sketch).
 2) The screw joint limits the feed force.

Total pitch error: $GT_f/1000 \leq 0.036 \text{ mm}$, $GT_f/1500 \leq 0.043 \text{ mm}$ ($\leq 0.029/1000 \text{ mm}$)
 $GT_f/2000 \leq 0.047 \text{ mm}$ ($\leq 0.024/1000 \text{ mm}$)

• Further information see next page.



Quality 7



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
29 20 107	2	1000.00	8.5	150	24	24	22	2	62.5	125	8	8	7	11	7	31.7	936.6	5.7	4.10
29 20 157	2	1500.00	8.5	225	24	24	22	2	62.5	125	12	8	7	11	7	31.7	1436.6	5.7	6.15
29 20 207	2	2000.00	8.5	300	24	24	22	2	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	8.20
29 30 107	3	1000.00	10.3	100	29	29	26	2	62.5	125	8	9	10	15	9	35.0	930.0	7.7	5.90
29 30 157	3	1500.00	10.3	150	29	29	26	2	62.5	125	12	9	10	15	9	35.0	1430.0	7.7	8.85
29 30 207	3	2000.00	10.3	200	29	29	26	2	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	11.80
29 40 107	4	1000.00	13.8	75	39	39	35	2	62.5	125	8	12	14	20	13	33.3	933.4	11.7	10.70
29 40 157 ¹⁾	4	1506.67	13.8	113	39	39	35	2	62.5	125	12	12	14	20	13	33.3	1433.4	11.7	16.00
29 40 207	4	2000.00	13.8	150	39	39	35	2	62.5	125	16	12	14	20	13	33.3	1933.4	11.7	21.40
29 50 107	5	1000.00	17.4	60	49	39	34	2.5	62.5	125	8	12	14	20	13	37.5	925.0	11.7	13.00
29 50 157	5	1500.00	17.4	90	49	39	34	2.5	62.5	125	12	12	14	20	13	37.5	1425.0	11.7	19.50
29 50 207	5	2000.00	17.4	120	49	39	34	2.5	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	26.00
29 60 107	6	1000.00	20.9	50	59	49	43	2.5	62.5	125	8	16	18	26	17	37.5	925.0	15.7	18.10
29 60 157	6	1500.00	20.9	75	59	49	43	2.5	62.5	125	12	16	18	26	17	37.5	1425.0	15.7	27.10
29 60 207	6	2000.00	20.9	100	59	49	43	2.5	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	36.20
29 80 107	8	960.00	28.0	36	79	79	71	2.5	60.0	120	8	25	22	33	21	120.0	720.0	19.7	42.50
29 80 157	8	1440.00	28.0	54	79	79	71	2.5	60.0	120	12	25	22	33	21	120.0	1200.0	19.7	65.00
29 80 207	8	1920.00	28.0	72	79	79	71	2.5	60.0	120	16	25	22	33	21	120.0	1680.0	19.7	85.00
29 10 107	10	1000.00	35.11	30	99	99	89	2.5	62.5	125	8	32	33	48	32	125.0	750.0	19.7	68.72
29 10 157	10	1500.00	35.11	45	99	99	89	2.5	62.5	125	12	32	33	48	32	125.0	1425.0	19.7	104.00

1) These racks should be used for continuous linking only with the left side (see sketch).

Total pitch error:

$$GT_f/1000 \leq 0.052 \text{ mm}$$

$$GT_f/1500 \leq 0.062 \text{ mm } (\leq 0.041/1000 \text{ mm})$$

$$GT_f/2000 \leq 0.068 \text{ mm } (\leq 0.034/1000 \text{ mm})$$

- Teeth induction-hardened and ground
- Material C45
- Ground on all sides after hardening

Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

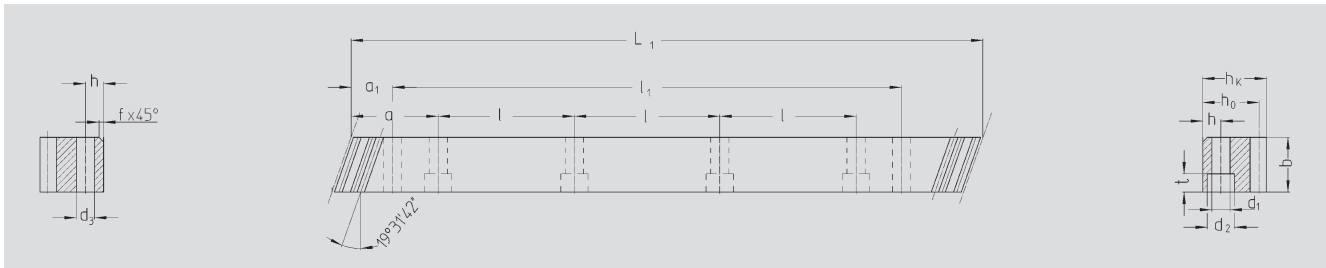
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.


For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



ATLANTA-Quality 8



Order Code	Module	L ₁	N° of teeth	b ^{+0,4}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	
39 20 108	2	1000.00	150	25	24	22	2	62.5	125	8	8	7	11	7	31.7	936.6	5.7	4.10
39 20 208	2	2000.00	300	25	24	22	2	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	8.40
39 30 108	3	1000.00	100	30	29	26	2	62.5	125	8	9	10	15	9	35.0	930.0	7.7	5.90
39 30 208	3	2000.00	200	30	29	26	2	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	12.00
39 40 108	4	1000.00	75	40	39	35	2	62.5	125	8	12	14	20	13	33.3	933.4	11.7	10.70
39 40 208	4	2000.00	150	40	39	35	2	62.5	125	16	12	14	20	13	33.3	1933.4	11.7	21.00
39 50 108	5	1000.00	60	50	39	34	2.5	62.5	125	8	12	14	20	13	37.5	925.0	11.7	13.00
39 50 208	5	2000.00	120	50	39	34	2.5	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	26.00

**500 mm and other length on request.
Without bores on request.**

Total pitch error $GT_f/1000 \leq 0.060 \text{ mm}$

- Teeth hardened with the ATLANTA high performance hardening process and ground
- Heat-treatable, bright steel according to ATLANTA-Standard

Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

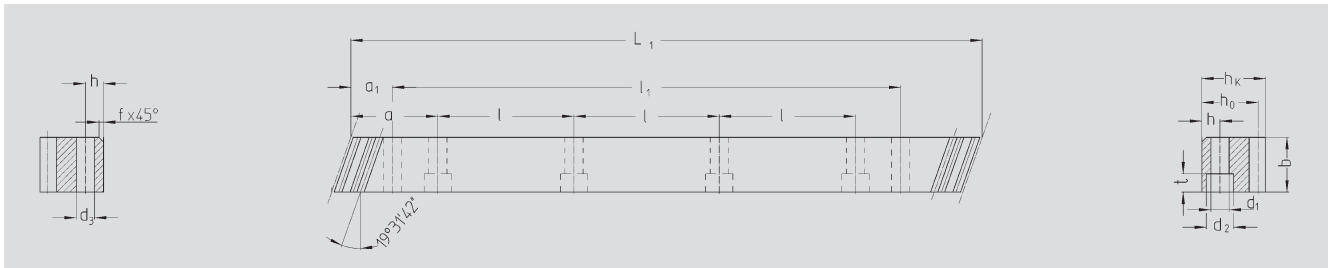
For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.





ATLANTA-Quality 8



Order Code	Module	L ₁	N° of teeth	b _{0.5}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
38 21 100	2	1000.00	150	25	24	22	2	62.5	125	8	8	7	11	7	31.7	936.6	5.7	4.30
38 20 100	2	1000.00	150	25	24	22	2	without mounting holes										4.30
38 21 200	2	2000.00	300	25	24	22	2	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	8.60
38 20 200	2	2000.00	300	25	24	22	2	without mounting holes										8.60
38 31 100	3	1000.00	100	30	29	26	2	62.5	125	8	9	10	15	9	35.0	930.0	7.7	6.10
38 30 100	3	1000.00	100	30	29	26	2	without mounting holes										6.10
38 31 200	3	2000.00	200	30	29	26	2	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	12.20
38 30 200	3	2000.00	200	30	29	26	2	without mounting holes										12.20
38 41 100	4	1000.00	75	40	39	35	2	62.5	125	8	12	10	15	9	33.3	933.4	7.7	10.90
38 40 100	4	1000.00	75	40	39	35	2	without mounting holes										10.90
38 41 200	4	2000.00	150	40	39	35	2	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	21.80
38 40 200	4	2000.00	150	40	39	35	2	without mounting holes										21.80

500 mm and other length on request.

Total pitch error

$$GT_f/1000 \leq 0.100 \text{ mm}$$

$$GT_f/2000 \leq 0.200 \text{ mm}$$

- Milled teeth, quenched and tempered
- Heat-treatable steel according to ATLANTA-Standard
- Bright steel, backside machined



Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

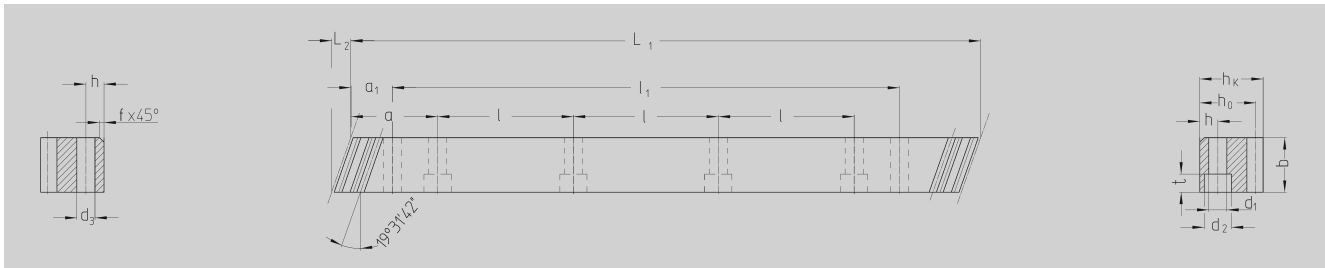
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



Quality 9



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
47 15 100	1.5	1000.00	6.0	200	17	17	15.5		62.5	125	8	6	6	10	6	31.7	936.6	5.7	1.30
47 16 100	1.5	1000.00	6.0	200	17	17	15.5		62.5	125	12	6	6	10	6	31.7	1436.6	5.7	1.30
47 15 150	1.5	1500.00	6.0	300	17	17	15.5		62.5	125	12	6	6	10	6	31.7	1436.6	5.7	1.95
47 16 150	1.5	1500.00	6.0	300	17	17	15.5												1.95
47 15 200	1.5	2000.00	6.0	400	17	17	15.5		62.5	125	16	6	6	10	6	31.7	1936.6	5.7	2.60
47 16 200	1.5	2000.00	6.0	400	17	17	15.5												2.60
47 20 050	2	500.00	9.2	75	26	24	22		62.5	125	4	8	7	11	7	31.7	436.6	5.7	2.20
47 21 050	2	500.00	9.2	75	26	24	22												2.20
47 20 100	2	1000.00	9.2	150	26	24	22		62.5	125	8	8	7	11	7	31.7	936.6	5.7	4.40
47 21 100	2	1000.00	9.2	150	26	24	22												4.40
47 20 200	2	2000.00	9.2	300	26	24	22		62.5	125	16	8	7	11	7	31.7	1936.6	5.7	8.80
47 21 200	2	2000.00	9.2	300	26	24	22												8.80
47 30 050	3	500.00	11.0	50	31	29	26		62.5	125	4	9	10	15	9	35.0	430.0	7.7	3.10
47 31 050	3	500.00	11.0	50	31	29	26												3.10
47 30 100	3	1000.00	11.0	100	31	29	26		62.5	125	8	9	10	15	9	35.0	930.0	7.7	6.20
47 31 100	3	1000.00	11.0	100	31	29	26												6.20
47 30 200	3	2000.00	11.0	200	31	29	26		62.5	125	16	9	10	15	9	35.0	1930.0	7.7	12.50
47 31 200	3	2000.00	11.0	200	31	29	26												12.50
47 30 300	3	3000.00	11.0	300	31	29	26		62.5	125	24	9	10	15	9	35.0	2930.0	7.7	18.60
47 31 300	3	3000.00	11.0	300	31	29	26												18.60
47 40 050 ¹⁾	4	506.67	14.5	38	41	39	35		62.5	125	4	12	10	15	9	33.3	433.0	7.7	5.60
47 41 050	4	506.67	14.5	38	41	39	35												5.60
47 40 100	4	1000.00	14.5	75	41	39	35		62.5	125	8	12	10	15	9	33.3	933.4	7.7	11.10
47 41 100	4	1000.00	14.5	75	41	39	35												11.10
47 40 200	4	2000.00	14.5	150	41	39	35		62.5	125	16	12	10	15	9	33.3	1933.4	7.7	22.20
47 41 200	4	2000.00	14.5	150	41	39	35												22.20
47 50 100	5	1000.00	17.7	60	50	39	34		62.5	125	8	12	14	20	13	37.5	925.0	11.7	13.26
47 51 100	5	1000.00	17.7	60	50	39	34												13.26
47 50 200	5	2000.00	17.7	120	50	39	34		62.5	125	16	12	14	20	13	37.5	1925.0	11.7	26.52
47 51 200	5	2000.00	17.7	120	50	39	34												26.52
47 60 100	6	1000.00	21.3	50	60	49	43		62.5	125	8	16	18	26	17	37.5	925.0	15.7	20.12
47 61 100	6	1000.00	21.3	50	60	49	43												20.12
47 60 200	6	2000.00	21.3	100	60	49	43		62.5	125	16	16	18	26	17	37.5	1925.0	15.7	40.24
47 61 200	6	2000.00	21.3	100	60	49	43												40.24
47 80 100	8	960.00	28.7	36	81	79	71		60.0	120	8	25	22	33	21	120.0	720.0	19.7	44.85
47 81 100	8	960.00	28.7	36	81	79	71												44.85
47 80 200	8	1920.00	28.7	72	81	79	71		60.0	120	16	25	22	33	21	120.0	1680.0	19.7	89.71
47 81 200	8	1920.00	28.7	72	81	79	71												89.71
47 10 100	10	1000.00	35.5	30	100	99	89		62.5	125	8	32	33	48	32	125	750	19.7	69.80
47 11 100	10	1000.00	35.5	30	100	99	89												69.80



1) These racks should be used for continuous linking only with the left side (see sketch).

Total pitch error $GT_f/1000 \leq 0.150$ mm.

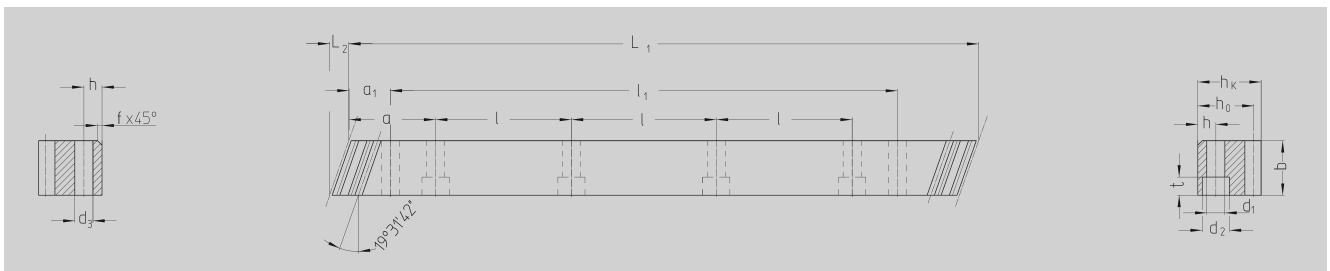
- Milled teeth
- Material C45
- Bright Steel

Mounting racks, see page ZF-2.

Further information see page ZA-10.



Quality 10



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg	
39 15 050 ²⁾	1.5	500.00	6.02	100	17	17	15.5	2	62.5	125	4	6	6	10	6	31.7	436.6	5.7	1.30	
39 16 050	1.5	500.00	6.02	100	17	17	15.5	2				without Mounting Holes								1.30
39 15 100	1.5	1000.00	6.02	200	17	17	15.5	2	62.5	125	8	6	6	10	6	31.7	936.6	5.7	2.60	
39 16 100	1.5	1000.00	6.02	200	17	17	15.5	2				without Mounting Holes								2.60
39 20 050 ²⁾	2	500.00	8.87	75	25	24	22	2	62.5	125	4	8	7	11	7	31.7	436.6	5.7	2.10	
39 21 050	2	500.00	8.87	75	25	24	22	2				without Mounting Holes								2.10
39 20 100	2	1000.00	8.87	150	25	24	22	2	62.5	125	8	8	7	11	7	31.7	936.6	5.7	4.20	
39 21 100	2	1000.00	8.87	150	25	24	22	2				without Mounting Holes								4.20
39 20 200	2	2000.00	8.87	300	25	24	22	2	62.5	125	16	8	7	11	7	31.7	1936.6	5.7	8.40	
39 21 200	2	2000.00	8.87	300	25	24	22	2				without Mounting Holes								8.40
39 30 050 ²⁾	3	500.00	10.64	50	30	29	26	2	62.5	125	4	9	10	15	9	35.0	430.0	7.7	3.00	
39 31 050	3	500.00	10.64	50	30	29	26	2				without Mounting Holes								3.00
39 30 100	3	1000.00	10.64	100	30	29	26	2	62.5	125	8	9	10	15	9	35.0	930.0	7.7	6.00	
39 31 100	3	1000.00	10.64	100	30	29	26	2				without Mounting Holes								6.00
39 30 200	3	2000.00	10.64	200	30	29	26	2	62.5	125	16	9	10	15	9	35.0	1930.0	7.7	12.00	
39 31 200	3	2000.00	10.64	200	30	29	26	2				without Mounting Holes								12.00
39 40 050 ¹⁾²⁾	4	506.67	14.2	38	40	39	35	2	62.5	125	4	12	10	15	9	33.3	433.0	7.7	5.30	
39 41 050	4	506.67	14.2	38	40	39	35	2				without Mounting Holes								5.30
39 40 100 ²⁾	4	1000.00	14.2	75	40	39	35	2	62.5	125	8	12	10	15	9	33.3	933.4	7.7	10.50	
39 41 100	4	1000.00	14.2	75	40	39	35	2				without Mounting Holes								10.50
39 42 100	4	1000.00	14.2	75	40	39	35	2	62.5	125	8	12	14	20	13	33.3	933.4	11.7	10.50	
39 42 150 ¹⁾	4	1506.67	14.2	113	40	39	35	2	62.5	125	12	12	14	20	13	33.3	1433.4	11.7	15.75	
39 40 200	4	2000.00	14.2	150	40	39	35	2	62.5	125	16	12	10	15	9	33.3	1933.4	7.7	21.00	
39 41 200	4	2000.00	14.2	150	40	39	35	2				without Mounting Holes								21.00
39 42 200	4	2000.00	14.2	150	40	39	35	2	62.5	125	16	12	14	20	13	33.3	1933.4	11.7	21.00	
39 50 050 ²⁾	5	500.00	17.7	30	50	39	34	2.5	62.5	125	4	12	14	20	13	37.5	425.0	11.7	6.50	
39 51 050	5	500.00	17.7	30	50	39	34	2.5				without Mounting Holes								6.50
39 50 100	5	1000.00	17.7	60	50	39	34	2.5	62.5	125	8	12	14	20	13	37.5	925.0	11.7	13.00	
39 51 100	5	1000.00	17.7	60	50	39	34	2.5				without Mounting Holes								13.00
39 50 200	5	2000.00	17.7	120	50	39	34	2.5	62.5	125	16	12	14	20	13	37.5	1925.0	11.7	26.00	
39 51 200	5	2000.00	17.7	120	50	39	34	2.5				without Mounting Holes								26.00
39 60 050 ²⁾	6	500.00	21.4	25	60	49	43	2.5	62.5	125	4	16	18	26	17	37.5	425.0	15.7	9.90	
39 61 050	6	500.00	21.4	25	60	49	43	2.5				without Mounting Holes								9.90
39 60 100	6	1000.00	21.4	50	60	49	43	2.5	62.5	125	8	16	18	26	17	37.5	925.0	15.7	19.80	
39 61 100	6	1000.00	21.4	50	60	49	43	2.5				without Mounting Holes								19.80
39 60 200	6	2000.00	21.4	100	60	49	43	2.5	62.5	125	16	16	18	26	17	37.5	1925.0	15.7	39.60	
39 61 200	6	2000.00	21.4	100	60	49	43	2.5				without Mounting Holes								39.60

- 1) These racks should be used for continuous linking only with the left side (see sketch).
- 2) The screw joint limits the feed force.

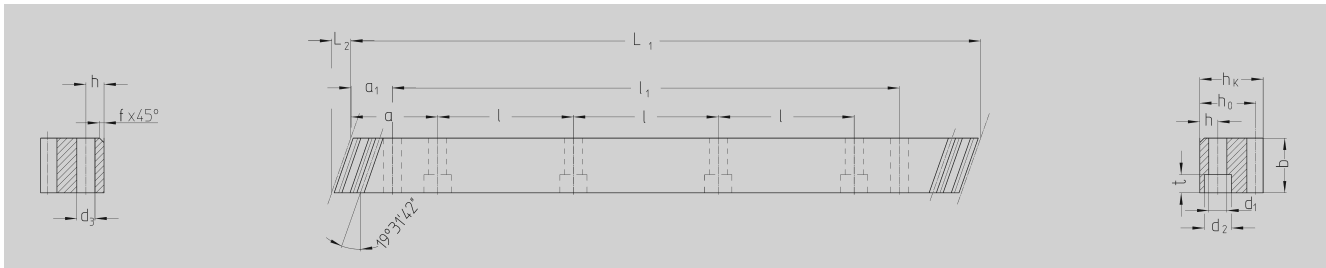
Total pitch error $GT_f/1000 \leq 0.200$ mm.

- Milled teeth and induction hardened
- Material C45
- Backside machined, profile blasted

Further information see page ZA-13.



Quality 10



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
39 80 050 ²⁾	8	480.00	28.4	18	80	79	71	2.5	60.0	120	4	25	22	33	21	120.0	240	19.7	21.00
39 81 050	8	480.00	28.4	18	80	79	71	2.5	without Mounting Holes										21.00
39 80 100	8	960.00	28.4	36	80	79	71	2.5	60.0	120	8	25	22	33	21	120.0	720	19.7	42.50
39 81 100	8	960.00	28.4	36	80	79	71	2.5	without Mounting Holes										42.50
39 80 200	8	1920.00	28.4	72	80	79	71	2.5	60.0	120	16	25	22	33	21	120.0	1680	19.7	85.00
39 81 200	8	1920.00	28.4	72	80	79	71	2.5	without Mounting Holes										85.00
39 10 100	10	1000.00	35.46	30	100	99	89	2.5	62.5	125	8	32	33	48	32	125.0	750	19.7	68.72
39 11 100	10	1000.00	35.46	30	100	99	89	2.5	without Mounting Holes										68.72
39 12 100	12	1000.00	42.56	25	120	120	108	2.5	40.0	125	8	40	39	58	38	102.5	750	19.7	120.00
39 13 100	12	1000.00	42.56	25	120	120	108	2.5	without Mounting Holes										120.00

- 1) These racks should be used for continuous linking only with the left side (see sketch).
- 2) The screw joint limits the feed force.

Total pitch error $GT_f / 1000 \leq 0.200$ mm.

- Milled teeth and induction hardened
- Material C45
- Backside machined, profile blasted

Mounting racks, see page ZF-2.



To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



Class	ATLANTA Quality	Module	Total Pitch Error ¹⁾ (± μm/m)	Tooth Thickness Tolerance (μm)	Max. Length (mm)	Max. Feed Force per Pinion Contact ²⁾ (kN)	Applications (Examples)
UHPR Ultra High Precision Rack	3	5	12	-13	1005	62.0	High Precision Machine Tools with Electrical Preload
		6	12	-13	1018	89.0	
		8	12	-13	1005	156.0	
		10	12	-13	1005	234.0	
		12	12	-13	1018	333.5	
HPR High Precision Rack	5	3	26	-15	1018	25.5	Backlash Free Drives with Electrical Preload Machine Tools, Lifting Axis, Multiple Pinion Contact
		4	26	-15	1005	49.0	
		5	26	-15	1005	75.0	
		6	26	-15	1018	107.0	
HPR High Precision Rack	6	2	36	-37	1005	15.5	Wood, Plastic, Composite, Aluminium Working Machines
		3	36	-37	1018	25.5	
		4	36	-37	1005	49.0	
	6	2	36	-37	2011	12.5	Machine Tools, Integratable Racks, Water Cutting Machines, Tube Bending Systems, Plasma Cutting Machines
		3	36	-37	2036	23.5	
		4	36	-37	2011	42.0	
		5	36	-22	2011	62.0	
		6	36	-22	2036	89.0	
		8	36	-22	2011	155.5	
	7	2	52	-51	1005	12.5	Woodworking Machines, Linear Axis with High Requirement for a Smooth Running
		3	52	-51	1018	23.0	
		4	52	-51	1005	42.0	
		5	52	-37	1005	62.0	
6		52	-37	1018	89.0		
8	2	60	-59	1005	12.0	Portals, Handling Linear Axis	
	3	60	-59	1018	22.0		
	4	60	-59	1005	39.0		
	5	60	-59	1005	57.5		
PR Precision Rack	8	2	100	-110	2011	7.0	Linear Axis
		3	100	-110	2036	12.0	
		4	100	-110	2011	23.0	
BR Basic Rack	9	1	150	-110	999	0.7	Linear Axis with Low Load Feed Units for Adjustment
		1.5	150	-110	1998	1.0	
		2	150	-110	3016	3.0	
		2.5	150	-110	2003	3.0	
		3	150	-110	3054	6.5	
		4	150	-110	3016	12.5	
		5	150	-110	2011	14.5	
		6	150	-110	2036	21.5	
		8	150	-110	2011	38.5	
	10	150	-110	1005	49.5		
	10	1	200	-110	999	2.0	Driving and Lifting Axes for Higher Loads but Without Special Accuracy
		1.5	200	-110	1998	3.5	
		2	200	-110	3016	7.0	
3		200	-110	3054	16.5		
4		200	-110	3016	29.5		
5		200	-110	2011	45.5		
6		200	-110	2036	63.0		
8	200	-110	2011	110.0			
10	200	-110	1005	166.0			



¹⁾ Values available for 1000 mm. Other total pitch errors for other length, see detailed description (Kap. ZB).

²⁾ Values are only valid for special steel according ATLANTA-Standard.

When using the maximum capacity of the teeth, or multiple pinions in contact, the mounting screw loads must be checked separately! Please ask ATLANTA for advice!



Class	Series	Module	ATLANTA-Quality	Page
UHPR	46	5, 6, 8, 10, 12	3	ZB-4
	28	3, 4, 5, 6	5	ZB-5
HPR	28	2, 3, 4	6	ZB-6
	28	2, 3, 4, 5, 6, 8, 10, 12	6	ZB-7
	28	2, 3, 4, 5, 6, 8	7	ZB-8
PR	34	2, 3, 4, 5	8	ZB-9
	33	2, 3, 4	8	ZB-10
BR	25	1, 1.5, 2, 2.5, 3, 4, 5, 6, 8, 10	9	ZB-11–12
	34	1, 1.5, 2, 3, 4, 5, 6, 8, 10	10	ZB-15



Selection and Load Tables

ZB-36–46



Electrically Controlled Lubricators, Sliding-Type Lubricating Brushes and Hose-Connection Sets

ZE-2–6



Felt Gear and Mounting Shaft

ZE-7–8



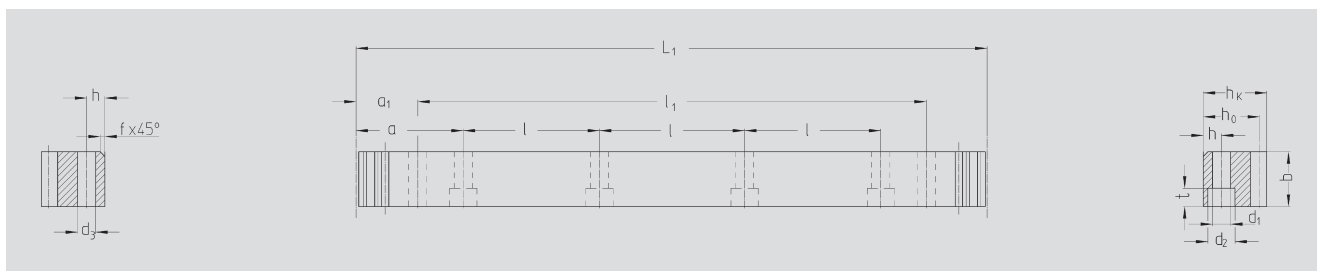
Mounting

ZF-9





ATLANTA-Quality 3



Order Code	Module	L ₁	N° of teeth	b ^{+0,4}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
46 50 105	5	1005.3	64	49	39	34	2.5	62.8	125.66	8	12	13.5	20	13	30.10	945.0	11.7	12.2
46 60 105	6	1017.9	54	59	49	43	2.5	63.6	127.23	8	16	17.5	26	17	31.40	955.0	15.7	18.5
46 80 105	8	1005.3	40	79	79	71	2.5	62.8	125.66	8	25	22.0	33	21	26.60	952.0	19.7	22.0
46 10 105	10	1005.3	32	99	99	89	2.5	62.8	125.66	8	32	33.0	48	32	125.66	753.9	19.7	68.0
46 12 105	12	1017.9	27	120	120	108	2.5	63.6	127.23	8	40	39.0	58	38	127.23	763.4	19.7	111.0

Total pitch error

$GT_f/1000 \leq 0.012 \text{ mm}$

- Teeth hardened with the ATLANTA high performance hardening process and ground
- Heat-treatable steel according to ATLANTA-Standard
- Ground on all sides after hardening
- Signed with effective total pitch error (20°C)

Inspection measurement data available as an option.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

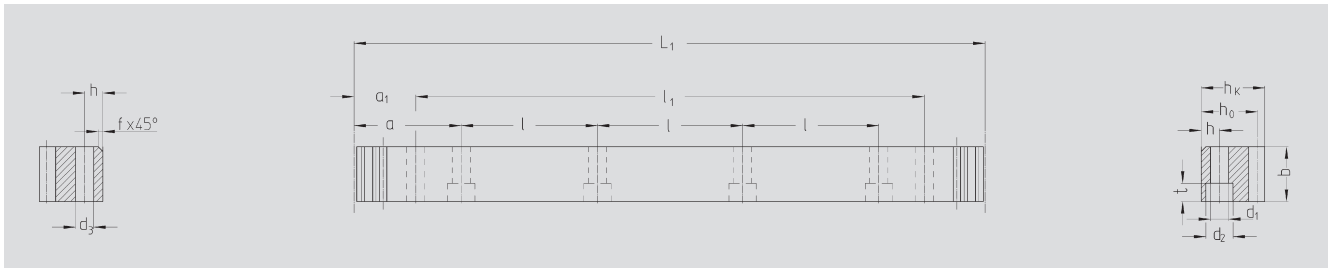
Screws for rack mounting, see page ZF-3.





ATLANTA-Quality 5

StrongLine



Order Code	Module	L ₁	N° of teeth	b ^{+0,4}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
28 35 100	3	1017.88	108	29	29	26	2.0	63.61	127.23	8	10	12	17.5	11	28.6	960.6	11.7	5.9
28 45 100	4	1005.31	80	39	39	35	2.0	62.83	125.66	8	13	16	23.0	15	30.3	944.7	15.7	10.7
28 55 100	5	1005.31	64	49	49	44	2.5	62.83	125.66	8	15	18	26.0	17	34.8	935.7	15.7	16.3
28 65 100	6	1017.88	54	59	59	53	2.5	63.62	127.23	8	20	22	33.0	21	98.6	820.6	19.7	24.5

Total pitch error

$$GT_f/1000 \leq 0.026 \text{ mm}$$

- Teeth case hardened and ground
- Case hardening steel according to ATLANTA-Standard
- Ground on all sides after hardening
- Signed with effective total pitch error (20°C)

Inspection measurement data available as an option.

Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

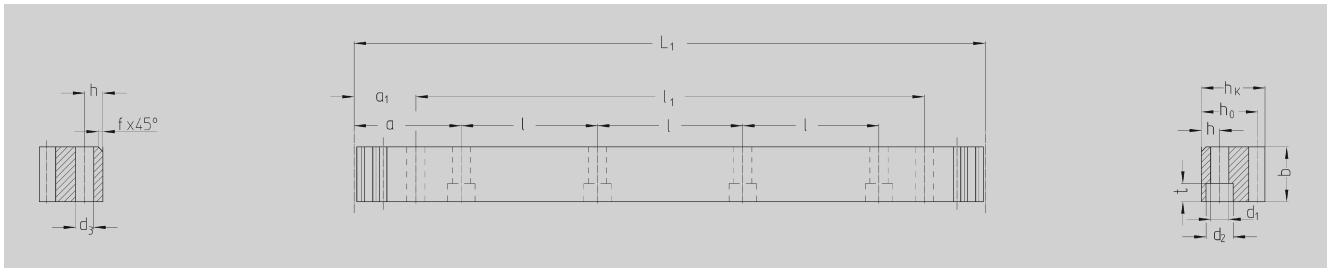
For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.





Quality 6



Order Code	Module	L ₁	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
28 20 025 ¹⁾	2	251.3	40	24	24	22.0	2	62.8	125.66	2	8	7	11	7	31.3	188.7	5.7	1.00
28 21 025	2	251.3	40	24	24	22.0	2	62.8	125.66	2	8	7	11	7	31.3	188.7	5.7	1.00
28 20 050 ¹⁾	2	502.7	80	24	24	22.0	2	62.8	125.66	4	8	7	11	7	31.3	440.1	5.7	2.10
28 21 050	2	502.7	80	24	24	22.0	2	62.8	125.66	4	8	7	11	7	31.3	440.1	5.7	2.10
28 20 100	2	1005.3	160	24	24	22.0	2	62.8	125.66	8	8	7	11	7	31.3	942.7	5.7	4.20
28 21 100	2	1005.3	160	24	24	22.0	2	62.8	125.66	8	8	7	11	7	31.3	942.7	5.7	4.20
28 30 025 ¹⁾	3	254.5	27	29	29	26.0	2	63.6	127.23	2	9	10	15	9	34.4	185.7	7.7	1.50
28 31 025	3	254.5	27	29	29	26.0	2	63.6	127.23	2	9	10	15	9	34.4	185.7	7.7	1.50
28 30 050 ¹⁾	3	508.9	54	29	29	26.0	2	63.6	127.23	4	9	10	15	9	34.4	440.1	7.7	3.00
28 31 050	3	508.9	54	29	29	26.0	2	63.6	127.23	4	9	10	15	9	34.4	440.1	7.7	3.00
28 30 100	3	1017.9	108	29	29	26.0	2	63.6	127.23	8	9	10	15	9	34.4	949.1	7.7	6.00
28 31 100	3	1017.9	108	29	29	26.0	2	63.6	127.23	8	9	10	15	9	34.4	949.1	7.7	6.00
28 40 025 ¹⁾	4	251.3	20	39	39	35.0	2	62.8	125.66	2	12	10	15	9	37.5	176.3	7.7	2.60
28 41 025	4	251.3	20	39	39	35.0	2	62.8	125.66	2	12	10	15	9	37.5	176.3	7.7	2.60
28 40 050 ¹⁾	4	502.7	40	39	39	35.0	2	62.8	125.66	4	12	10	15	9	37.5	427.7	7.7	5.30
28 41 050	4	502.7	40	39	39	35.0	2	62.8	125.66	4	12	10	15	9	37.5	427.7	7.7	5.30
28 40 100 ¹⁾	4	1005.3	80	39	39	35.0	2	62.8	125.66	8	12	10	15	9	37.5	930.3	7.7	10.50
28 41 100	4	1005.3	80	39	39	35.0	2	62.8	125.66	8	12	10	15	9	37.5	930.3	7.7	10.50
28 42 100	4	1005.3	80	39	39	35.0	2	62.8	125.66	8	12	14	20	13	37.5	930.3	11.7	10.50
28 42 150	4	1507.9	120	39	39	35.0	2	62.8	125.66	12	12	14	20	13	37.5	1432.9	11.7	16.00
28 42 200	4	2010.62	160	39	39	35.0	2	62.8	125.66	16	12	14	20	13	37.5	1935.6	11.7	21.00

1) The screw joint limits the feed force.

Total pitch error:

$$GT_f/1000 \leq 0.036 \text{ mm}$$

$$GT_f/1500 \leq 0.043 \text{ mm } (\leq 0.029/1000 \text{ mm})$$

$$GT_f/2000 \leq 0.047 \text{ mm } (\leq 0.024/1000 \text{ mm})$$

- Teeth induction-hardened and ground
- Material 16MnCr5, carburized
- Ground on all sides after hardening

Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

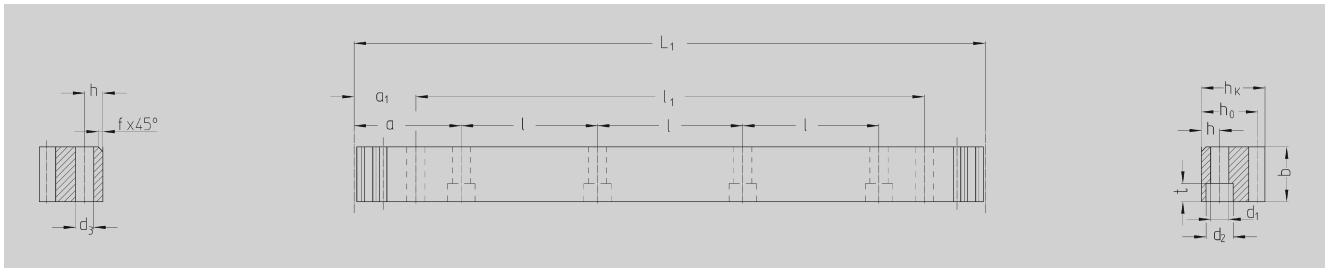
For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



Quality 6



Order Code	Module	L ₁	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg	
28 20 105	2	1005.30	160	24	24	22.0	2	62.8	125.66	8	8	7	11	7	31.3	942.70	5.7	4.20	
28 21 105	2	1005.30	160	24	24	22.0	2			without Mounting Holes									4.20
28 20 205	2	2010.62	320	24	24	22.0	2	62.8	125.66	16	8	7	11	7	31.3	1948.00	5.7	8.40	
28 21 205	2	2010.62	320	24	24	22.0	2			without Mounting Holes									8.40
28 30 105	3	1017.90	108	29	29	26.0	2	63.6	127.23	8	9	10	15	9	34.4	949.10	7.7	6.00	
28 31 105	3	1017.90	108	29	29	26.0	2			without Mounting Holes									6.00
28 30 205	3	2035.75	216	29	29	26.0	2	63.6	127.23	16	9	10	15	9	34.4	1967.00	7.7	12.00	
28 31 205	3	2035.75	216	29	29	26.0	2			without Mounting Holes									12.00
28 40 105 ¹⁾	4	1005.30	80	39	39	35.0	2	62.8	125.66	8	12	10	15	9	37.5	930.30	7.7	10.50	
28 41 105	4	1005.30	80	39	39	35.0	2			without Mounting Holes									10.50
28 40 205	4	2010.62	160	39	39	35.0	2	62.8	125.66	16	12	10	15	9	37.5	1935.60	7.7	21.00	
28 41 205	4	2010.62	160	39	39	35.0	2			without Mounting Holes									21.00
28 42 105	4	1005.30	80	39	39	35.0	2	62.8	125.66	8	12	14	20	13	37.5	930.3	11.7	10.50	
28 42 155	4	1507.96	120	39	39	35.0	2	62.8	125.66	12	12	14	20	13	37.5	1432.9	11.7	16.00	
28 42 205	4	2010.62	160	39	39	35.0	2	62.8	125.66	16	12	14	20	13	37.5	1935.6	11.7	21.00	
28 50 055 ¹⁾	5	502.60	32	49	39	34	2.5	62.8	125.66	4	12	14	20	13	30.1	442.40	11.7	6.70	
28 51 055	5	502.60	32	49	39	34	2.5			without Mounting Holes									6.70
28 50 105	5	1005.30	64	49	39	34	2.5	62.8	125.66	8	12	14	20	13	30.1	945.00	11.7	13.40	
28 51 105	5	1005.30	64	49	39	34	2.5			without Mounting Holes									13.40
28 50 155	5	1507.96	96	49	39	34	2.5	62.8	125.66	12	12	14	20	13	30.1	1447.70	11.7	20.10	
28 51 155	5	1507.96	96	49	39	34	2.5			without Mounting Holes									20.10
28 50 205	5	2010.62	128	49	39	34	2.5	62.8	125.66	16	12	14	20	13	30.1	1950.40	11.7	26.80	
28 51 205	5	2010.62	128	49	39	34	2.5			without Mounting Holes									26.80
28 60 055 ¹⁾	6	508.90	27	59	49	43	2.5	63.6	127.23	4	16	18	26	17	31.4	446.10	15.7	10.40	
28 61 055	6	508.90	27	59	49	43	2.5			without Mounting Holes									10.40
28 60 105	6	1017.88	54	59	49	43	2.5	63.6	127.23	8	16	18	26	17	31.4	955.00	15.7	20.20	
28 61 105	6	1017.88	54	59	49	43	2.5			without Mounting Holes									20.20
28 60 155	6	1526.81	81	59	49	43	2.5	63.6	127.23	12	16	18	26	17	31.4	1464.00	15.7	30.30	
28 61 155	6	1526.81	81	59	49	43	2.5			without Mounting Holes									30.30
28 60 205	6	2035.75	108	59	49	43	2.5	63.6	127.23	16	16	18	26	17	31.4	1973.00	15.7	40.40	
28 61 205	6	2035.75	108	59	49	43	2.5			without Mounting Holes									40.40
28 80 055 ¹⁾	8	502.65	20	79	79	71	2.5	62.8	125.66	4	25	22	33	21	26.6	449.45	19.7	22.38	
28 81 055	8	502.65	20	79	79	71	2.5			without Mounting Holes									22.38
28 80 105	8	1005.30	40	79	79	71	2.5	62.8	125.66	8	25	22	33	21	26.6	952.00	19.7	44.76	
28 81 105	8	1005.30	40	79	79	71	2.5			without Mounting Holes									44.76
28 80 205	8	2010.61	80	79	79	71	2.5	62.8	125.66	16	25	22	33	21	26.6	1957.30	19.7	89.50	
28 81 205	8	2010.61	80	79	79	71	2.5			without Mounting Holes									89.50
28 10 105	10	1005.30	32	99	99	89	2.5	62.83	125.66	8	32	33	48	32	125.66	753.96	19.7	68.72	
28 11 105	10	1005.30	32	99	99	89	2.5			without Mounting Holes									68.72
28 12 105	12	1017.90	27	120	120	108	2.5	63.60	127.23	8	40	39	58	38	127.23	763.40	19.7	111.00	
28 13 105	12	1017.90	27	120	120	108	2.5			without Mounting Holes									20.00

1) The screw joint limits the feed force.

Total pitch error: $GT_f/1000 \leq 0.036 \text{ mm}$, $GT_f/1500 \leq 0.043 \text{ mm}$ ($\leq 0.029/1000 \text{ mm}$)
 $GT_f/2000 \leq 0.047 \text{ mm}$ ($\leq 0.024/1000 \text{ mm}$)

- Teeth induction-hardened and ground
- Material C45
- Ground on all sides after hardening

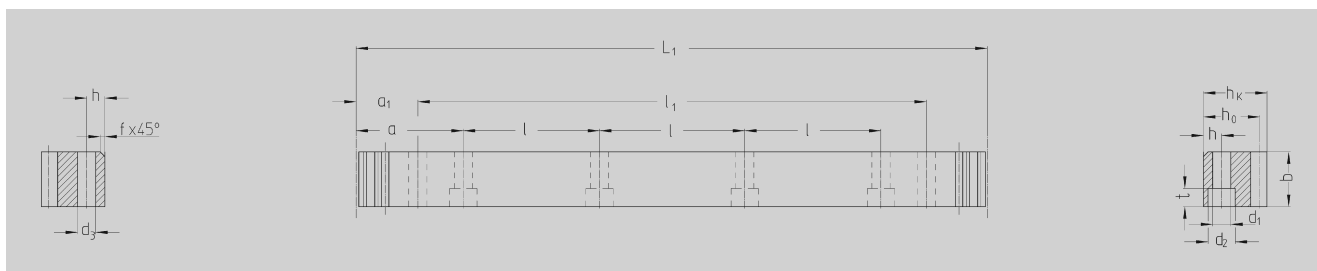
Mounting racks, see page ZF-2.

Further information see page ZB-4.





Quality 7



Order Code	Module	L ₁	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
28 20 107	2	1005.3	160	24	24	22	2	62.8	125.66	8	8	7	11	7	31.3	942.7	5.7	4.2
28 30 107	3	1017.9	108	29	29	26	2	63.6	127.23	8	9	10	15	9	34.4	949.1	7.7	6.0
28 40 107	4	1005.3	80	39	39	35	2	62.8	125.66	8	12	14	20	13	37.5	930.3	7.7	10.5
28 50 107	5	1005.3	64	49	39	34	2.5	62.8	125.66	8	12	14	20	13	30.1	945.0	11.7	13.4
28 60 107	6	1017.88	54	59	49	43	2.5	63.6	127.23	8	16	18	26	17	31.4	955.00	15.7	20.20
28 80 107	8	1005.30	40	79	79	71	2.5	62.8	125.66	8	25	22	33	21	26.6	952.00	19.7	44.76

Total pitch error: $GT_f/1000 \leq 0.052$ mm

- Teeth induction-hardened and ground
- Material C45
- Ground on all sides after hardening

Mounting racks see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

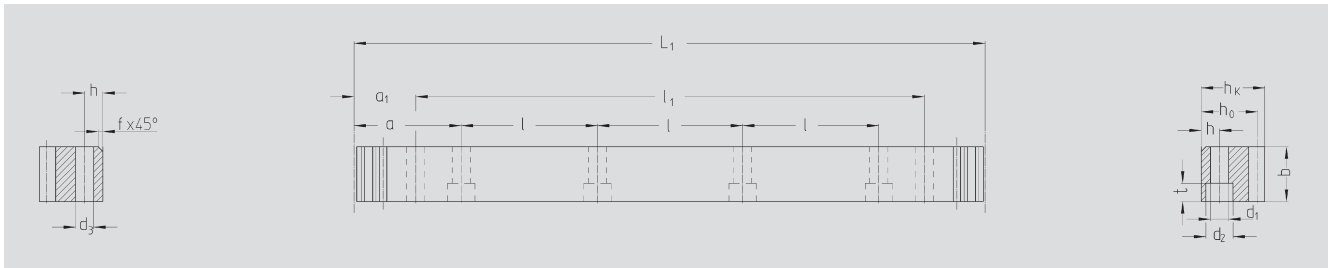


For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



ATLANTA-Quality 8



Order Code	Module	L ₁	N° of teeth	b ^{+0,4}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
34 20 108	2	1005.30	160	25	24	22	2	62.80	125.66	8	8	7	11	7	31.4	942.7	5.7	4.2
34 20 208	2	2010.62	320	25	24	22	2	62.83	125.66	16	8	7	44	7	31.3	1948.0	5.7	8.4
34 30 108	3	1017.90	108	30	29	26	2	63.60	127.23	8	9	10	15	9	34.4	949.1	7.7	6.0
34 30 208	3	2035.75	216	30	29	26	2	63.62	127.23	16	9	10	15	9	34.4	1967.0	7.7	12.0
34 40 108	4	1005.30	80	40	39	35	2	62.80	125.66	8	12	14	20	13	37.5	930.3	11.7	10.5
34 40 208	4	2010.62	160	40	39	35	2	62.83	125.66	16	12	14	20	13	37.5	1935.6	11.7	20.4
34 50 108	5	1005.30	64	50	39	34	2.5	62.80	125.66	8	12	14	20	13	30.2	945.0	11.7	13.4
34 50 208	5	2010.62	128	50	39	34	2.5	62.83	125.66	16	12	14	20	13	30.2	1950.4	11.7	27.6

Without bores on request.

Total pitch error

$$GT_f/1000 \leq 0.060 \text{ mm.}$$

- Teeth hardened with the ATLANTA high performance hardening process and ground
- Heat-treatable steel according to ATLANTA-Standard
- Bright steel, profile blasted

Mounting racks see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

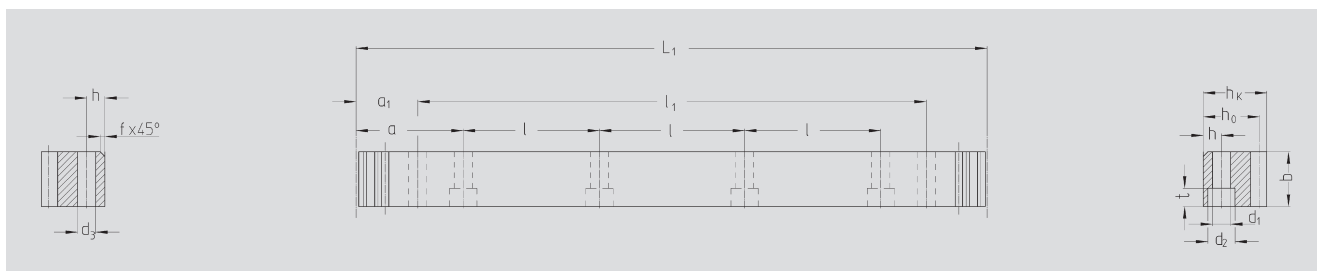
For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.





ATLANTA-Quality 8



Order Code	Module	L ₁	N° of teeth	b _{-0,5}	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
33 21 100	2	1005.31	160	25	24	22	2	62.83	125.66	8	8	7	11	7	31.3	942.7	5.7	4.30
33 20 100	2	1005.31	160	25	24	22	2	without mounting holes										4.30
33 21 200	2	2010.62	320	25	24	22	2	62.83	125.66	16	8	7	11	7	31.3	1948.0	5.7	8.60
33 20 200	2	2010.62	320	25	24	22	2	without mounting holes										8.60
33 31 100	3	1017.88	108	30	29	26	2	63.62	127.23	8	9	10	15	9	34.4	949.1	7.7	6.20
33 30 100	3	1017.88	108	30	29	26	2	without mounting holes										6.20
33 31 200	3	2035.75	216	30	29	26	2	63.62	127.23	16	9	10	15	9	34.4	1967.0	7.7	12.40
33 30 200	3	2035.75	216	30	29	26	2	without mounting holes										12.40
33 41 100	4	1005.31	80	40	39	35	2	62.83	125.66	8	12	10	15	9	37.5	930.3	7.7	11.00
33 40 100	4	1005.31	80	40	39	35	2	without mounting holes										11.00
33 41 200	4	2010.62	160	40	39	35	2	62.83	125.66	16	12	10	15	9	37.5	1935.6	7.7	22.00
33 40 200	4	2010.62	160	40	39	35	2	without mounting holes										22.00

500 mm and other length on request.

Total pitch error

$$GT_f / 1000 \leq 0.100 \text{ mm,}$$

$$GT_f / 2000 \leq 0.200 \text{ mm.}$$

- Milled teeth, quenched and tempered
- Heat-treatable steel according to ATLANTA-Standard
- Bright steel, backside machined

Mounting racks see page ZF-2.

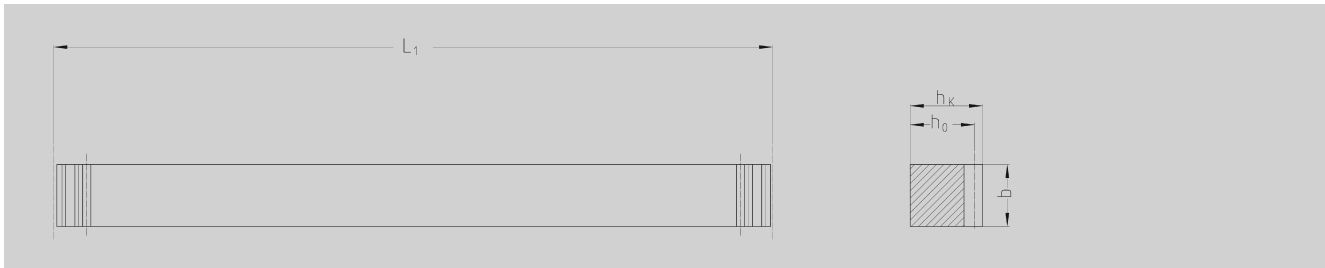
To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



**Quality 9**

Order Code	Module	L ₁	N° of Teeth	b	h _k	h ₀	Remarks	kg
25 10 025	1	251.33	80	15	15	14	Square Dimension	0.41
25 10 050	1	499.51	159	15	15	14	Square Dimension	0.82
25 10 100	1	999.03	318	15	15	14	Square Dimension	1.64
25 15 025	1.5	249.76	53	17	17	15.5	Square Dimension	0.51
25 15 050	1.5	499.51	106	17	17	15.5	Square Dimension	1.03
25 15 100	1.5	999.03	212	17	17	15.5	Square Dimension	2.06
25 15 200	1.5	1998.05	424	17	17	15.5	Square Dimension	4.11
25 20 025	2	251.33	40	20	20	18	Square Dimension	0.71
25 20 050	2	502.65	80	20	20	18	Square Dimension	1.41
25 20 100	2	999.03	159	20	20	18	Square Dimension	2.81
25 20 150	2	1507.96	240	20	20	18	Square Dimension	4.25
25 20 200	2	1998.05	318	20	20	18	Square Dimension	5.62
25 20 300	2	3015.93	480	20	20	18	Square Dimension	8.49
25 25 025	2.5	251.33	32	25	25	22.5	Square Dimension	1.10
25 25 050	2.5	502.65	64	25	25	22.5	Square Dimension	2.21
25 25 100	2.5	997.46	127	25	25	22.5	Square Dimension	4.38
25 25 200	2.5	2002.77	255	25	25	22.5	Square Dimension	8.80
25 30 025	3	254.47	27	30	30	27	Square Dimension	1.61
25 30 051	3	508.94	54	30	30	27	Square Dimension	3.22
25 30 101	3	1017.88	108	30	30	27	Square Dimension	6.44
25 30 150	3	1526.81	162	30	30	27	Square Dimension	9.66
25 30 201	3	2035.75	216	30	30	27	Square Dimension	12.88
25 30 300	3	3053.63	324	30	30	27	Square Dimension	19.32
25 40 025	4	251.33	20	40	40	36	Square Dimension	2.83
25 40 050	4	502.65	40	40	40	36	Square Dimension	5.65
25 40 100	4	1005.31	80	40	40	36	Square Dimension	11.31
25 40 150	4	1507.96	120	40	40	36	Square Dimension	19.97
25 40 201	4	2010.62	160	40	40	36	Square Dimension	22.61
25 40 300	4	3015.93	240	40	40	36	Square Dimension	33.93

Total pitch error $GT_f/1000 \leq 0.150$ mm.

- Milled teeth
- Material C45
- Bright steel

Mounting racks see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

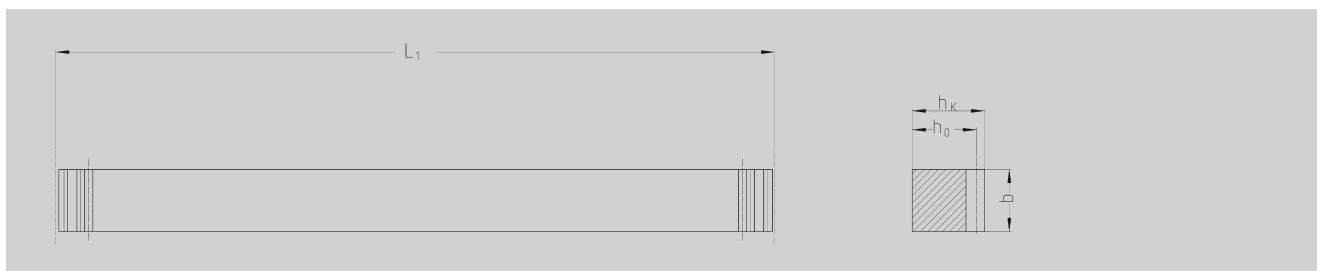
For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.





Quality 9



Order Code	Module	L ₁	N° of Teeth	b	h _k	h ₀	Remarks	kg
25 50 025	5	251.33	16	50	40	35	Not square dimension	3.44
25 50 050	5	502.65	32	50	40	35	Not square dimension	6.87
25 50 100	5	1005.31	64	50	40	35	Not square dimension	13.74
25 50 150	5	1507.96	96	50	40	35	Not square dimension	20.40
25 50 200	5	2010.62	128	50	40	35	Not square dimension	27.48
25 52 100	5	1005.31	64	50	50	45	Square dimension	17.10
25 52 200	5	2010.62	128	50	50	45	Square dimension	34.20
25 60 051	6	508.94	27	60	50	44	Not square dimension	10.49
25 60 101	6	1017.88	54	60	50	44	Not square dimension	20.99
25 60 201	6	2035.75	108	60	50	44	Not square dimension	41.97
25 62 101	6	1017.88	54	60	60	54	Square dimension	25.00
25 62 201	6	2035.75	108	60	60	54	Square dimension	50.00
25 80 100	8	1005.31	40	80	79.5	71.5	Square dimension	44.63
25 80 200	8	2010.62	80	80	79.5	71.5	Square dimension	89.26
25 11 100	10	1005.30	32	100	100	90	Square dimension	70.60

Total pitch error $GT_f/1000 \leq 0.150$ mm.

- Milled teeth
- Material C45
- Bright steel

Mounting racks see page ZF-2.

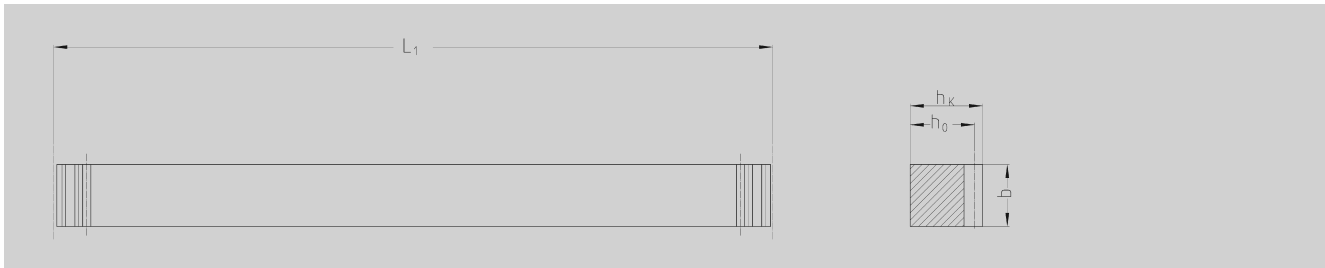


To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.

**Quality 10**

Order Code	Module	L ₁	N° of Teeth	b	h _k	h ₀	Remarks	kg
27 10 025	1	251.33	80	15	15	14	Square dimension	0.41
27 10 050	1	499.51	159	15	15	14	Square dimension	0.82
27 10 100	1	999.03	318	15	15	14	Square dimension	1.64
27 15 025	1.5	249.76	53	17	17	15.5	Square dimension	0.51
27 15 050	1.5	499.51	106	17	17	15.5	Square dimension	1.03
27 15 100	1.5	999.03	212	17	17	15.5	Square dimension	2.06
27 15 200	1.5	1998.05	424	17	17	15.5	Square dimension	4.11
27 20 025	2	251.33	40	20	20	18	Square dimension	0.71
27 20 050	2	502.65	80	20	20	18	Square dimension	1.41
27 20 100	2	999.03	159	20	20	18	Square dimension	2.81
27 20 150	2	1507.96	240	20	20	18	Square dimension	4.25
27 20 200	2	1998.05	318	20	20	18	Square dimension	5.62
27 20 300	2	3015.93	480	20	20	18	Square dimension	8.49
27 25 025	2.5	251.33	32	25	25	22.5	Square dimension	1.10
27 25 050	2.5	502.65	64	25	25	22.5	Square dimension	2.21
27 25 100	2.5	997.46	127	25	25	22.5	Square dimension	4.38
27 25 200	2.5	2002.77	255	25	25	22.5	Square dimension	8.80
27 30 025	3	254.47	27	30	30	27	Square dimension	1.61
27 30 051	3	508.94	54	30	30	27	Square dimension	3.22
27 30 101	3	1017.88	108	30	30	27	Square dimension	6.44
27 30 150	3	1526.81	162	30	30	27	Square dimension	9.66
27 30 201	3	2035.75	216	30	30	27	Square dimension	12.88
27 30 300	3	3053.63	324	30	30	27	Square dimension	19.32
27 40 025	4	251.33	20	40	40	36	Square dimension	2.83
27 40 050	4	502.65	40	40	40	36	Square dimension	5.65
27 40 100	4	1005.31	80	40	40	36	Square dimension	11.31
27 40 150	4	1507.96	120	40	40	36	Square dimension	19.97
27 40 201	4	2010.62	160	40	40	36	Square dimension	22.61
27 40 300	4	3015.93	240	40	40	36	Square dimension	33.93

Total pitch error $GT_f/1000 \leq 0.200$ mm.

- Milled teeth and induction hardened
- Material C45
- Bright steel

Mounting racks see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

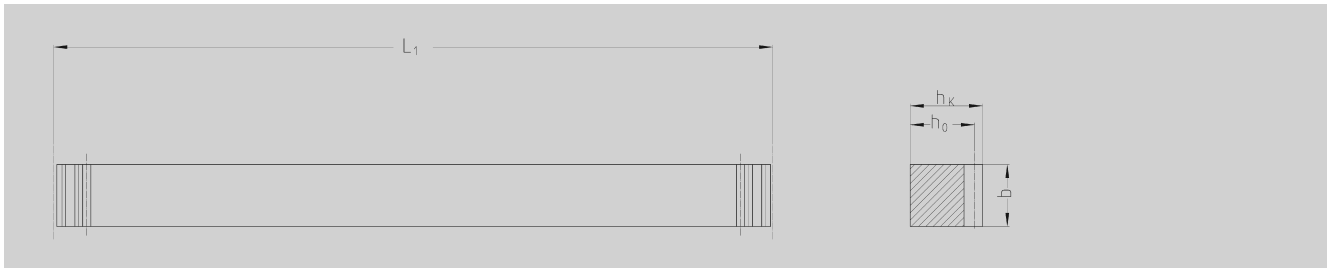
For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting see page ZF-3.





Quality 10



Order Code	Module	L ₁	N° of Teeth	b	h _k	h ₀	Remarks	kg
27 50 025	5	251.33	16	50	40	35	Not square dimension	3.44
27 50 050	5	502.65	32	50	40	35	Not square dimension	6.87
27 50 100	5	1005.31	64	50	40	35	Not square dimension	13.74
27 50 150	5	1507.96	96	50	40	35	Not square dimension	20.40
27 50 200	5	2010.62	128	50	40	35	Not square dimension	27.48
27 52 100	5	1005.31	64	50	50	45	Square dimension	17.10
27 52 200	5	2010.62	128	50	50	45	Square dimension	34.20
27 60 051	6	508.94	27	60	50	44	Not square dimension	10.49
27 60 101	6	1017.88	54	60	50	44	Not square dimension	20.99
27 60 201	6	2035.75	108	60	50	44	Not square dimension	41.97
27 62 101	6	1017.88	54	60	60	54	Square dimension	25.00
27 62 201	6	2035.75	108	60	60	54	Square dimension	50.00
27 80 100	8	1005.31	40	80	79.5	71.5	Square dimension	44.63
27 80 200	8	2010.62	80	80	79.5	71.5	Square dimension	89.26
27 11 100	10	1005.30	32	100	100	90	Square dimension	70.60

Total pitch error $GT_f/1000 \leq 0.200$ mm.

- Milled teeth and induction hardened
- Material C45
- Bright steel

Mounting racks see page ZF-2.



To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

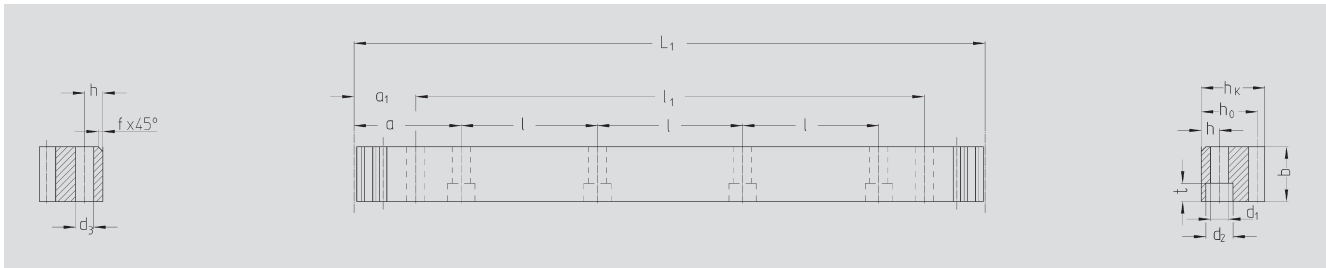
For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.



ATLANTA-Quality 10



Order Code	Module	L ₁	N° of teeth	b	h _k	h ₀	f	a	l	N° of holes	h	d ₁	d ₂	t	a ₁	l ₁	d ₃	kg
34 93 100	1	999.06	318	15	15	14	2			without mounting holes								1.64
34 93 200	1	1998.05	636	15	15	14	2			without mounting holes								3.28
34 16 100	1.5	999.03	212	17	17	15.5	2			without mounting holes								2.06
34 16 200	1.5	1998.05	424	17	17	15.5	2			without mounting holes								4.12
34 20 100	2	1005.31	160	25	24	22	2	62.83	125.66	8	8	7	11	7	31.3	942.7	5.7	4.20
34 21 100	2	1005.31	160	25	24	22	2			without mounting holes								4.20
34 20 200	2	2010.62	320	25	24	22	2	62.83	125.66	16	8	7	11	7	31.3	1948.0	5.7	8.40
34 21 200	2	2010.62	320	25	24	22	2			without mounting holes								8.40
34 30 100	3	1017.88	108	30	29	26	2	63.62	127.23	8	9	10	15	9	34.4	949.1	7.7	6.00
34 31 100	3	1017.88	108	30	29	26	2			without mounting holes								6.00
34 30 200	3	2035.75	216	30	29	26	2	63.62	127.23	16	9	10	15	9	34.4	1967	7.7	12.00
34 31 200	3	2035.75	216	30	29	26	2			without mounting holes								12.00
34 40 100 ¹⁾	4	1005.31	80	40	39	35	2	62.83	125.66	8	12	10	15	9	37.5	930.3	7.7	10.20
34 41 100	4	1005.31	80	40	39	35	2			without mounting holes								10.20
34 42 100	4	1005.31	80	40	39	35	2	62.83	125.66	8	12	14	20	13	37.5	930.3	11.7	10.20
34 40 200 ¹⁾	4	2010.62	160	40	39	35	2	62.83	125.66	16	12	10	15	9	37.5	1935.6	7.7	20.50
34 41 200	4	2010.62	160	40	39	35	2			without mounting holes								20.50
34 42 200	4	2010.62	160	40	39	35	2	62.83	125.66	16	12	14	20	13	37.5	1935.6	11.7	20.50
34 50 100	5	1005.31	64	50	39	34	2.5	62.83	125.66	8	12	14	20	13	30.2	945.0	11.7	13.80
34 51 100	5	1005.31	64	50	39	34	2.5			without mounting holes								13.80
34 50 200	5	2010.62	128	50	39	34	2.5	62.83	125.66	16	12	14	20	13	30.2	1950.3	11.7	27.50
34 51 200	5	2010.62	128	50	39	34	2.5			without mounting holes								27.50
34 60 100	6	1017.88	54	60	49	43	2.5	63.62	127.23	8	16	18	26	17	31.4	955.0	15.7	21.00
34 61 100	6	1017.88	54	60	49	43	2.5			without mounting holes								21.00
34 60 200	6	2035.75	108	60	49	43	2.5	63.62	127.23	16	16	18	26	17	31.4	1972.9	15.7	42.00
34 61 200	6	2035.75	108	60	49	43	2.5			without mounting holes								42.00
34 81 100	8	1005.31	40	80	79	71	2.5			without mounting holes								44.63
34 81 200	8	2010.61	80	80	79	71	2.5			without mounting holes								82.26
34 11 100	10	1005.30	32	100	99	89	2.5			without mounting holes								70.60

1) The screw joint limits the feed force.

500 mm and other length on request.

Total pitch error

$$GT_f/1000 \leq 0.200 \text{ mm,}$$

$$GT_f/1500 \leq 0.300 \text{ mm,}$$

$$GT_f/2000 \leq 0.400 \text{ mm.}$$

- Teeth hardened with the ATLANTA high performance hardening process
- Heat-treatable steel according to ATLANTA-Standard
- Bright steel

Mounting racks see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of rack & pinions we recommend our automatic lubrication systems, see page ZE-1.

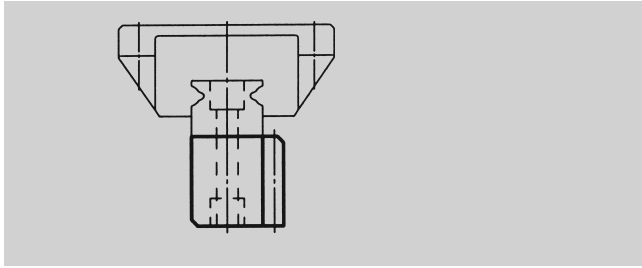
For the calculation and selection of the rack & pinion drive, see page ZD-1.

Screws for rack mounting, see page ZF-3.

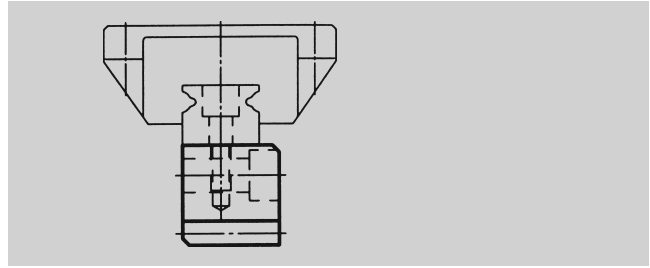




90° Arrangement



180° Arrangement



- Adjusting between rack and rail not necessary
- Space-saving and performance-optimized design can be realized
- Different types of integrated racks allows best price-performance-ratio
- Allows assembling of integrated rack and rail outside the machine
- On-site mounting of integrated rack and rail with corresponding device
- Continuous linking of the integrated rack with rails
- Additional requirement: threads in the rail for the 90° arrangement

Helical Integrated Rack





Class	Quality	Module	Total Pitch Error (µm/m)	Tooth Thickness Tolerance (µm)	Max. Length (mm)	Feed Force per Pinion Contact/ Tooth Wide (kN/width)	Applications (Examples)
HPIR High Precision Integrated Rack	6	2	36	-37	960	6.8/24	Machine Tools, Wood, Plastic Working Machines
		3	36	-37	960	12.0/29	
		4	36	-37	960	23.5/39	
BIR Basic Integrated Rack	9	2	150	-110	1920	1.8/25	Pick and Place Applications
		3	150	-110	1920	3.0/30	
		4	150	-110	1920	5.0/40	

Straight Integrated Rack

Class	Quality	Module	Total Pitch Error (µm/m)	Tooth Thickness Tolerance (µm)	Max. Length (mm)	Feed Force per Pinion Contact/ Tooth Wide (kN/width)	Applications (Examples)
HPIR High Precision Integrated Rack	6	5	36	-37	960	5/24	Machine Tools, Wood, Plastic Working Machines
		10	36	-37	960	12/29	
		13.33	36	-37	960	23/39	
BIR Basic Integrated Rack	9	5	150	-110	1920	1.5/25	Pick and Place Applications
		10	150	-110	1920	5.5/30	
		13.33	150	-110	1920	6.5/40	





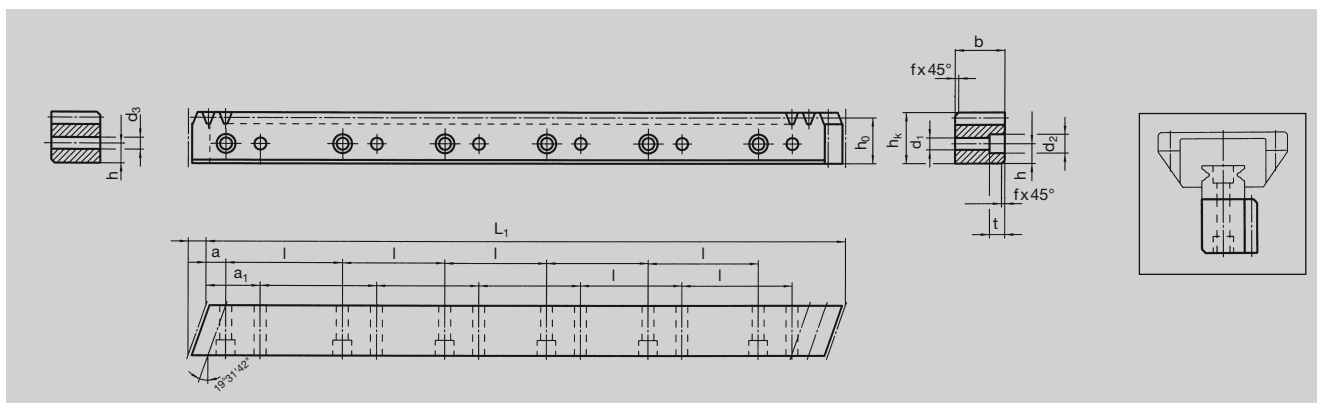
	Series	Straight/ Helical	Module	Heat-Treatment of Teeth		Page
HPIR	49	Helical ¹⁾	2, 3, 4	Induction-Hardened	6 h 25	ZC-4/5
	49	Straight	5, 10, 13.33 mm	Induction-Hardened	6 h 25	ZC-8/9
BIR	49	Helical ¹⁾	2, 3, 4	Soft	9 e 27	ZC-6/7
	49	Straight	5, 10, 13.33 mm	Soft	9 e 27	ZC-10/11
   	Mounting Guide for 90° Version					ZC-12
	Mounting Guide for 180° Version					ZC-13
	Selection and Load Tables					ZC-15-20
	Electronically Controlled Lubricators, Sliding-Type Lubricating Brushes and Hose-Connection Sets					ZE-2-6
	Felt Gear and Mounting Shaft					ZE-7-8
Mounting					ZF-9	

¹⁾ All our helical racks are right hand, except the companion racks, which are left hand!





Quality 6 – 90° Version



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h _o	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	d ₃	T kg
49 29 197	2	960	6.70	144	19	19.50	17.50	1	10	60	16	7.5	4.5	7.5	5.3	30	4.5	2.7
49 29 397	2	480	6.70	72	19	19.50	17.50	1	10	60	8	7.5	4.5	7.5	5.3	30	4.5	1.3
49 29 187	2	960	8.50	144	24	24.50	22.50	1	10	60	16	10.0	6.0	9.5	8.5	30	6.0	4.2
49 29 387	2	480	8.50	72	24	24.50	22.50	1	10	60	8	10.0	6.0	9.5	8.5	30	6.0	2.1
49 39 197	3	960	10.30	96	29	29.75	26.75	2	10	60	16	11.5	7.0	11.0	9.0	30	7.0	5.6
49 39 397	3	480	10.30	48	29	29.75	26.75	2	10	60	8	11.5	7.0	11.0	9.0	30	7.0	2.8
49 49 197	4	960	13.83	72	39	39.75	35.75	2	20	80	12	14.0	10.0	15.0	9.0	40	10.0	10.5
49 49 397	4	480	13.83	36	39	39.75	35.75	2	20	80	6	14.0	10.0	15.0	9.0	40	10.0	5.2
49 49 177	4	960	13.83	72	39	48.75	44.75	2	20	80	12	17.0	10.0	15.0	9.0	40	10.0	13.0
49 49 377	4	480	13.83	36	39	48.75	44.75	2	20	80	6	17.0	10.0	15.0	9.0	40	10.0	6.5
49 49 887	4	840	17.38	63	49	58.00	54.00	2	30	105	8	22.5	14.0	20.0	13.0	60	14.0	17.3

Total pitch error: $GT_f/1000 \leq 0.036$ mm

- Teeth induction-hardened and ground
- Material C45
- Ground on all sides after hardening

Mounting racks, see page ZF-2.

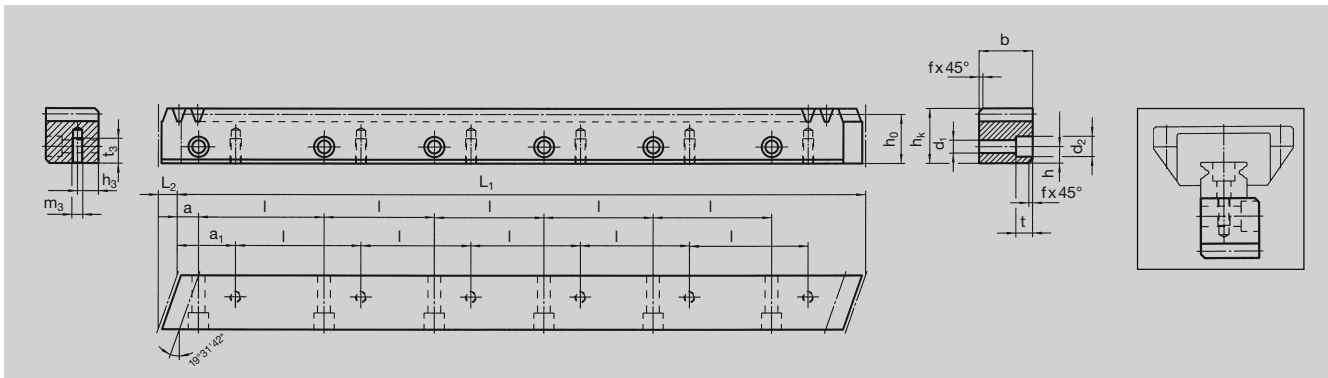
To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.



Quality 6 – 180° Version



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h ₀	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	m ₃	h ₃	t ₃	kg
49 29 107	2	960	6.70	144	19	19.50	17.50	1	10	60	16	7.5	5.8	10	6	30	M4	7.5	8.0	2.7
49 29 117	2	960	8.50	144	24	24.50	22.50	1	10	60	16	10.0	7.0	11	7	30	M5	10.0	11.0	4.2
49 39 107	3	960	10.30	96	29	29.75	26.75	2	10	60	16	11.5	10.0	15	9	30	M6	11.5	13.5	5.6
49 49 107	4	960	13.83	72	39	39.75	35.75	2	20	80	12	14.0	12.0	18	12	40	M8	14.0	16.0	10.5
49 49 127	4	960	13.83	72	39	48.75	44.75	2	20	80	12	17.0	12.0	18	12	40	M8	17.0	16.0	13.0
49 49 807	4	840	17.38	63	49	58.00	54.00	2	30	105	8	22.5	14.0	20	13	60	M12	22.5	25.0	17.3

Total pitch error: $GT_f/1000 \leq 0.036 \text{ mm}$

- Teeth induction-hardened and ground
- Material C45
- Ground on all sides after hardening

Mounting racks, see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

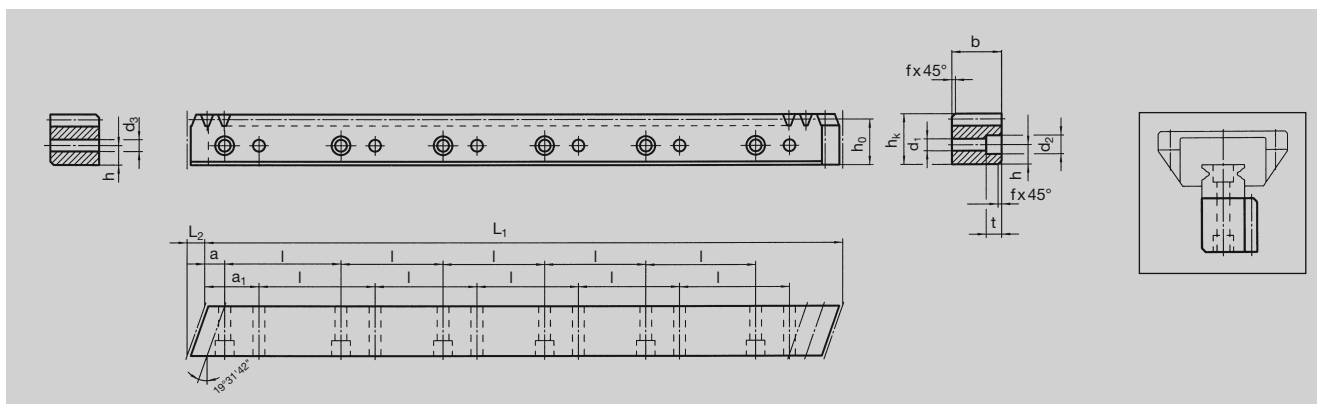
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.





Quality 9 – 90° Version



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h _o	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	d ₃	kg
49 29 292	2	1920	7.10	288	20	19.50	17.50	1	10	60	32	7.5	4.5	7.5	5.3	30	4.5	5.4
49 29 282	2	1920	8.90	288	25	24.50	22.50	1	10	60	32	10.0	6.0	9.5	8.5	30	6.0	8.4
49 39 292	3	1920	10.60	192	30	29.75	26.75	2	10	60	32	11.5	7.0	11.0	9.0	30	7.0	11.2
49 49 292	4	1920	14.20	144	40	39.75	35.75	2	20	80	24	14.0	10.0	15.0	9.0	40	10.0	21.5
49 49 272	4	1920	14.54	144	41	48.75	44.75	2	20	80	24	17.0	10.0	15.0	9.0	40	10.0	29.9

Total pitch error $GT_f/1000 \leq 0.150$ mm.

- Milled teeth
- Material C45
- Bright steel

Mounting racks see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

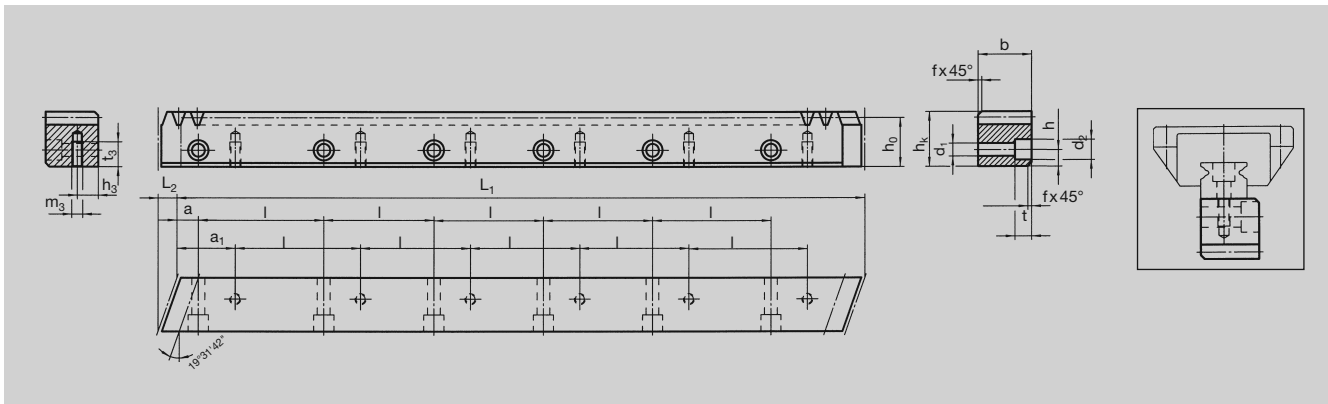
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.





Quality 9 – 180° Version



Order Code	Module	L ₁	L ₂	N° of Teeth	b	h _k	h _o	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	m ₃	h ₃	t ₃	kg
49 29 202	2	1920	7.1	288	20	19.50	17.50	1	10	60	32	7.5	5.8	10	6	30	M4	7.5	8.0	5.4
49 29 212	2	1920	8.9	288	25	24.50	22.50	1	10	60	32	10.0	7.0	11	7	30	M5	10.0	11.0	8.4
49 39 202	3	1920	10.6	192	30	29.75	26.75	2	10	60	32	11.5	10.0	15	9	30	M6	11.5	13.5	11.2
49 49 202	4	1920	14.2	144	40	39.75	35.75	2	20	80	24	14.0	12.0	18	12	40	M8	14.0	16.0	21.5

Total pitch error $GT_f/1000 \leq 0.150$ mm.

- Milled teeth
- Material C45
- Bright steel

Mounting racks see page ZF-2.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

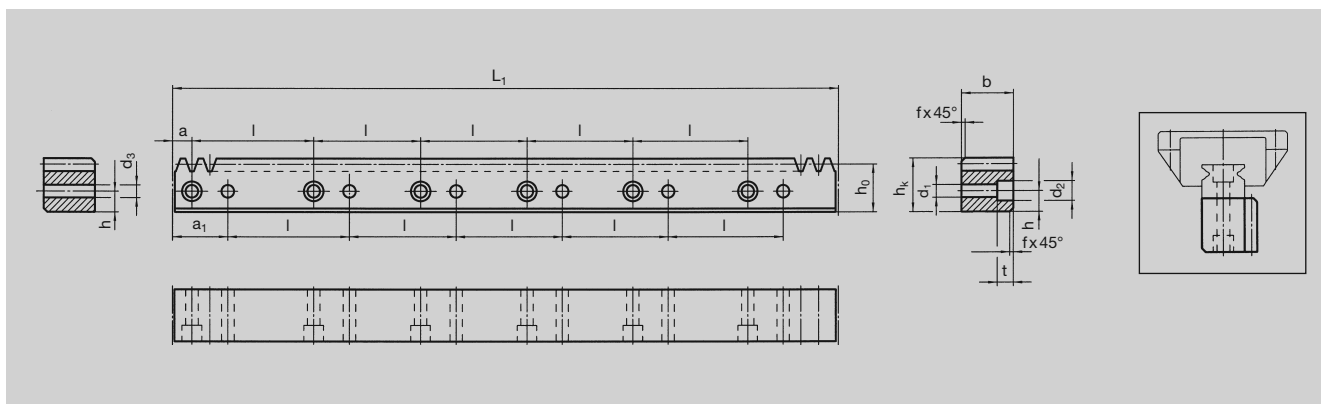
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.





Quality 6 – 90° Version



Order Code	Pitch	L ₁	N° of Teeth	b	h _k	h _o	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	d ₃	kg
49 77 197	5	960	192	19	19.50	17.91	1	10	60	16	7.5	4.5	7.5	5.3	30	4.5	2.7
49 77 187	5	960	192	24	24.50	22.91	1	10	60	16	10.0	6.0	9.5	8.5	30	6.0	4.2
49 97 197	10	960	96	29	29.75	26.57	2	10	60	16	11.5	7.0	11.0	9.0	30	7.0	5.6
49 47 197	13.33	960	72	39	39.75	35.50	2	20	80	12	14.0	10.0	15.0	9.0	40	10.0	10.5

Total pitch error: $GT_f/1000 \leq 0.036$ mm

- Teeth induction-hardened and ground
- Material C45
- Ground on all sides after hardening

Mounting racks see page ZF-2 and ZF-4-5.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

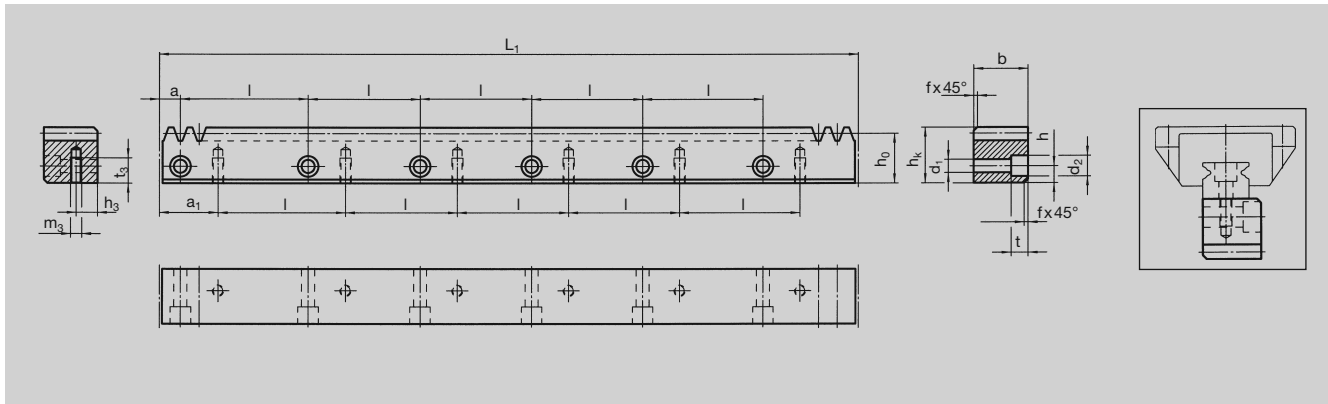
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.





Quality 6 – 180° Version



Order Code	Pitch	L ₁	N° of Teeth	b	h _k	h _o	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	m ₃	h ₃	t ₃	kg
49 77 107	5	960	192	19	19.50	17.91	1	10	60	16	7.5	5.8	10	6	30	M4	7.5	8.0	2.7
49 77 117	5	960	192	24	24.50	22.91	1	10	60	16	10.0	7.0	11	7	30	M5	10.0	11.0	4.2
49 97 107	10	960	96	29	29.75	26.57	2	10	60	16	11.5	10.0	15	9	30	M6	11.5	13.5	5.6
49 47 107	13.33	960	72	39	39.75	35.50	2	20	80	12	14.0	12.0	18	12	40	M8	14.0	16.0	10.5

Total Pitch Error: $GT_f/1000 \leq 0.036$ mm

- Teeth induction-hardened and ground
- Material C45
- Ground on all sides after hardening

Mounting racks see page ZF-2 and ZF-4-5.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

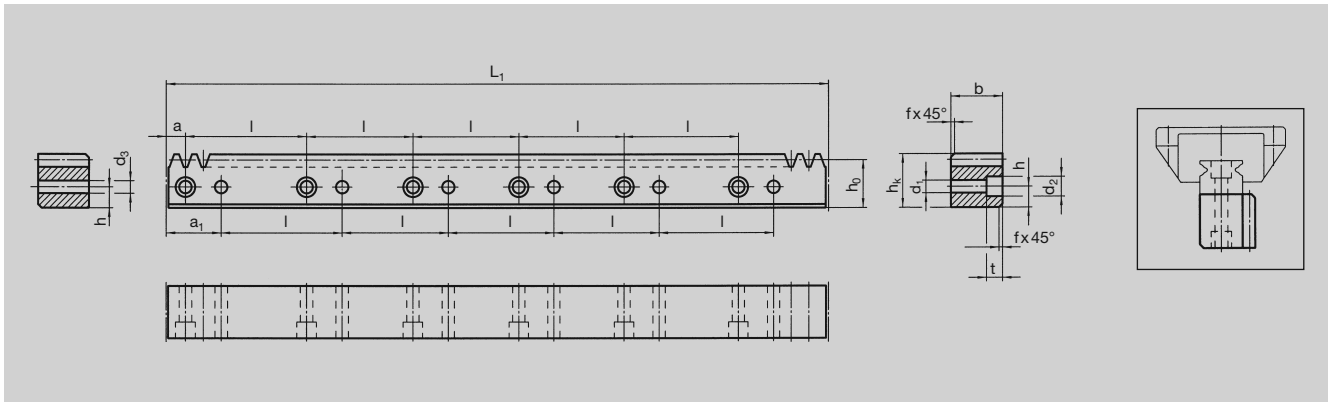
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.





Quality 9 – 90° Version



Order Code	Pitch	L ₁	N° of Teeth	b	h _k	h _o	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	d ₃	kg
49 77 292	5	1920	384	20	19.50	17.91	1	10	60	32	7.5	4.5	7.5	5.3	30	4.5	5.4
49 77 282	5	1920	384	25	24.50	22.91	1	10	60	32	10.0	6.0	9.5	8.5	30	6.0	8.4
49 97 292	10	1920	192	30	29.75	26.57	2	10	60	32	11.5	7.0	11.0	9.0	30	7.0	11.2
49 47 292	13.33	1920	144	40	39.75	35.50	2	20	80	24	14.0	10.0	15.0	9.0	40	10.0	21.5

Total pitch error $GT_f/1000 \leq 0.150$ mm.

- Milled teeth
- Material C45
- Bright steel

Mounting racks see page ZF-2 and ZF-4-5.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

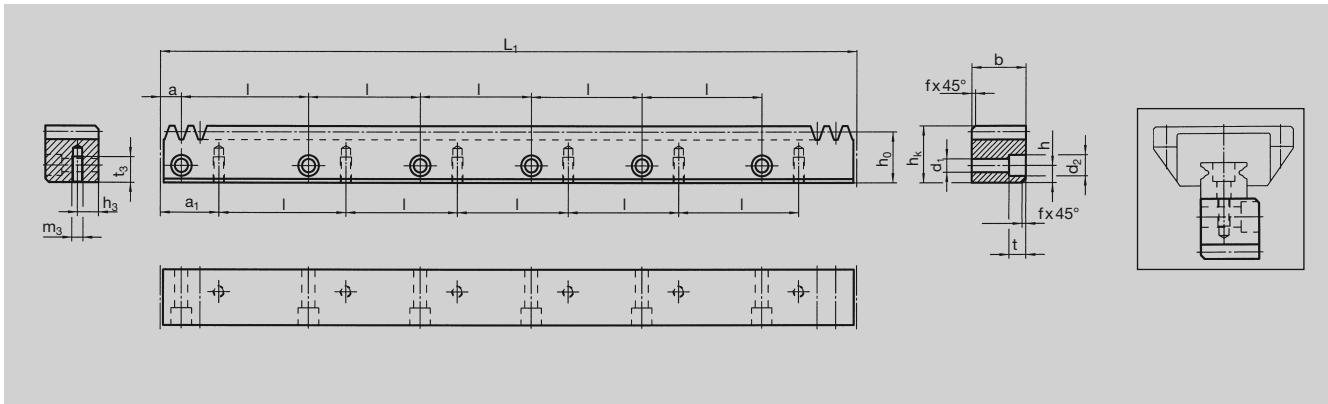
For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.



For the calculation and selection of the rack & pinion drive, see page ZD-1.



Quality 9 – 180° Version



Order Code	Pitch	L ₁	N° of Teeth	b	h _k	h _o	f	a	l	N° of Holes	h	d ₁	d ₂	t	a ₁	m ₃	h ₃	t ₃	kg
49 77 202	5	1920	384	20	19.50	17.91	1	10	60	32	7.5	5.8	10	6	30	M4	7.5	8.0	5.4
49 77 212	5	1920	384	25	24.50	22.91	1	10	60	32	10.0	7.0	11	7	30	M5	10.0	11.0	8.4
49 97 202	10	1920	192	30	29.75	26.57	2	10	60	32	11.5	10.0	15	9	30	M6	11.5	13.5	11.2
49 47 202	13.33	1920	144	40	39.75	35.50	2	20	80	24	14.0	12.0	18	12	40	M8	14.0	16.0	21.5

Total Pitch error $GT_f/1000 \leq 0.150$ mm.

- Milled teeth
- Material C45
- Bright steel

Mounting racks see page ZF-2 and ZF-4-5.

To achieve precision rack joints, we recommend our patented rack assembly kit, see page ZF-4.

For lubrication of racks & pinions, we recommend our automatic lubrication systems, see page ZE-1.

For the calculation and selection of the rack & pinion drive, see page ZD-1.

