



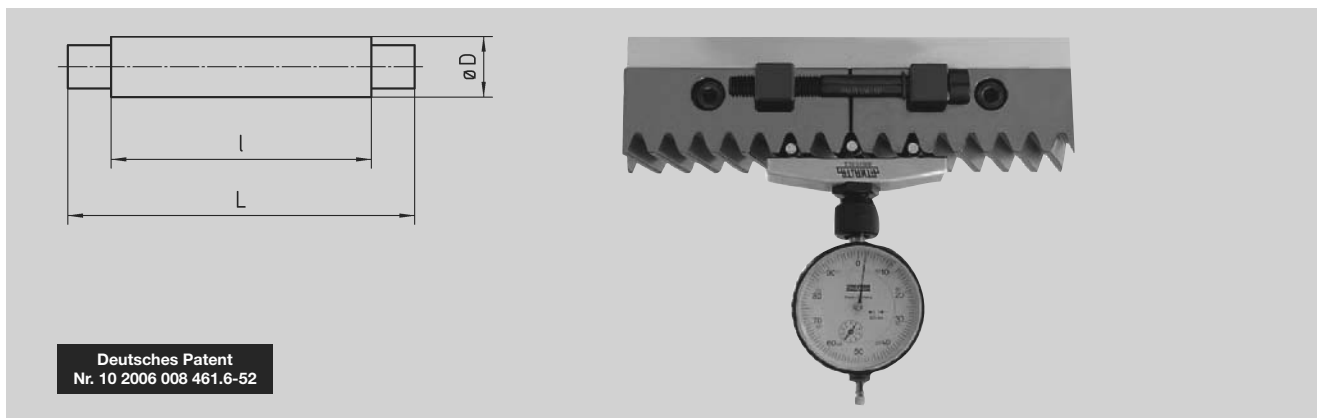
Order Code	Description	Module	Relative Item No.		kg
			Helical	Straight	
29.01.002	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	2	29.20.xxx 38.21.xxx 39.20.xxx 47.20.xxx	28.20.xxx 33.21.xxx 34.20.xxx 49.29.xxx	0.40
29.01.003	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	3	29.30.xxx 38.31.xxx 39.30.xxx 47.30.xxx	28.30.xxx 33.31.xxx 34.30.xxx 49.39.xxx	0.44
29.01.004	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	4	29.40.xxx 38.41.xxx 39.40.xxx 47.40.xxx	28.40.xxx 33.41.xxx 34.40.xxx 49.49.xxx	0.55
29.01.005	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	5	29.50.xxx 38.51.xxx 39.50.xxx 47.50.xxx	28.50.xxx 33.51.xxx 34.50.xxx	0.8
29.01.006	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	6	29.60.xxx 39.60.xxx 47.60.xxx	28.60.xxx 34.60.xxx	0.90
29.01.008	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	8 helical	29.80.xxx 47.80.xxx		1.35
28.01.008	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	8 straight		28.80.xxx	1.15
29.01.010	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	10	29.10.xxx 47.10.xxx	28.10.xxx	1.40
29.01.012	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	12	29.12.xxx	29.13.xxx	1.50





Order Code	Description	Module	Relative Item No.		kg
			Helical	Straight	
29.01.102	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	2	29.25.xxx	28.25.xxx	0.40
29.01.103	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	3	29.35.xxx	28.35.xxx	0.44
29.01.104	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	4	29.45.xxx	28.45.xxx	0.55
29.01.105	Assembly kit, comprising: 1 x Adjusting device 3 x Gauging roller with magnet 1 x Measuring bridge with dial gauge	5	29.55.xxx	28.55.xxx	0.8





Deutsches Patent  
Nr. 10 2006 008 461.6-52

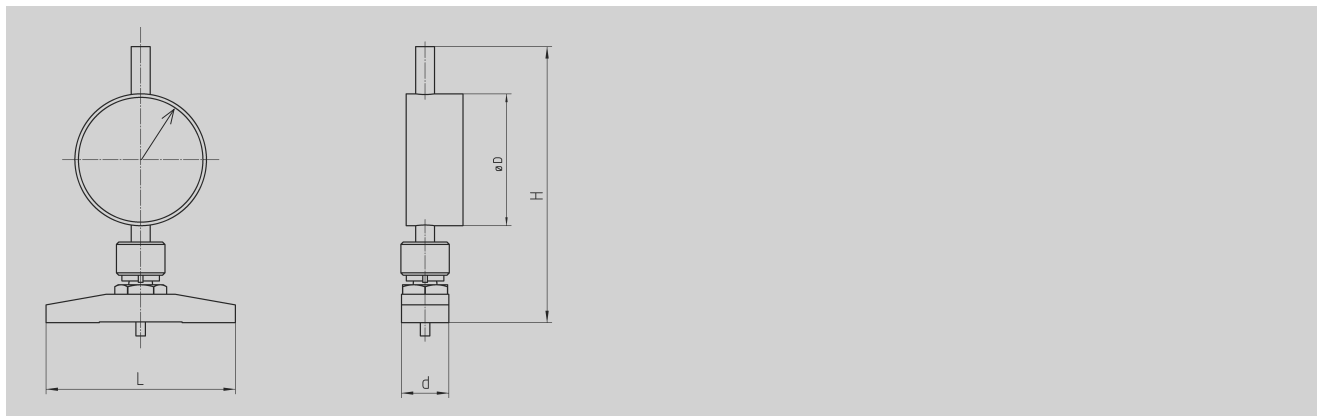
Order Code	Description	Module	L	I	D	
1.29.00.042	3 x Gauging roller with magnet	2	28	20	4.2	2
1.29.00.050	3 x Gauging roller with magnet	3	33	25	5	5
1.29.00.070	3 x Gauging roller with magnet	4	40	30	7	15
1.29.00.090	3 x Gauging roller with magnet	5	42	34	9	20
1.29.00.100	3 x Gauging roller with magnet	6	43	35	10	25
1.29.00.140	3 x Gauging roller with magnet	8	45	35	14	45
1.29.00.180	3 x Gauging roller with magnet	10	42	35	18	75
1.29.00.200	3 x Gauging roller with magnet	12	50	43	20	75

Material: hardened steel.

### Description:

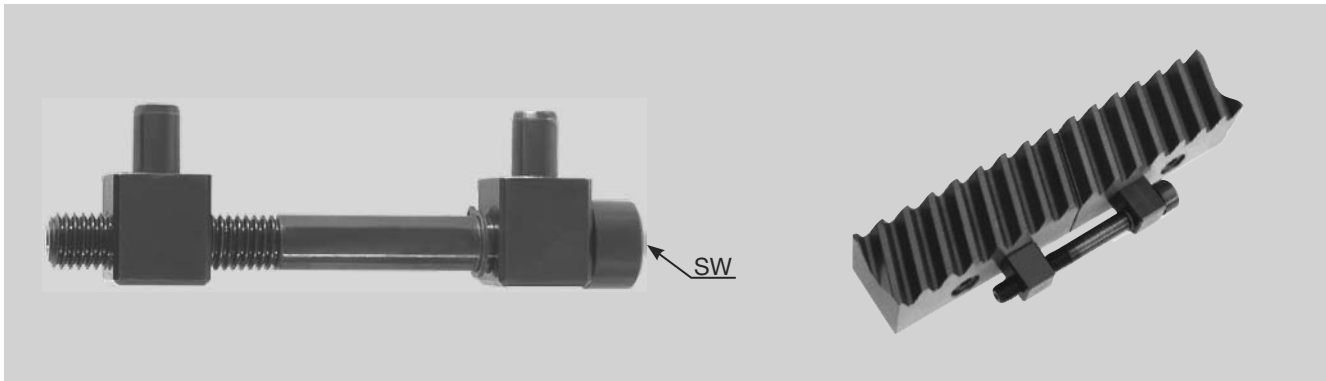
The gauging rollers (patent) are placed in the tooth gaps of the already mounted rack, of the rack to be mounted, and in the gap at the joint. Adjust the measuring bridge on a measuring plate or other level surface to zero. Mount the adjusting device. By means of the measuring bridge and the adjusting device it is now possible to adjust the optimal pitch by moving the racks to be assembled. The pointer of the dial gauge should, if possible, reach the pre-set zero value.

### Measuring Bridge



Order Code	Description	Module	L	b	H	D	
2.28.01.008	Measuring bridge	2 – 4	80	20	115	58	310
2.28.01.015	Measuring bridge	5 – 12	150	20	120	58	420





Order Code	Description	SW	Module	Relative Item No.		kg
				Helical	Straight	
2.29.00.002	Adjusting device	5	2	29.20.xxx 38.21.xxx 39.20.xxx 47.20.xxx	28.20.xxx 33.21.xxx 34.20.xxx 49.29.xxx	0.12
<b>StrongLine</b> 2.29.00.102	Adjusting device	5	2	29.25.xxx	28.25.xxx	0.12
2.29.00.003	Adjusting device	6	3 + 4	29.30.xxx 38.31.xxx 39.30.xxx 47.30.xxx 29.40.xxx 38.41.xxx 39.40.xxx 47.40.xxx	28.30.xxx 33.31.xxx 34.30.xxx 49.39.xxx 28.40.xxx 33.41.xxx 34.40.xxx 49.49.xxx	0.14
<b>StrongLine</b> 2.29.00.103	Adjusting device	6	3	29.35.xxx	28.35.xxx	0.14
<b>StrongLine</b> 2.29.00.104	Adjusting device	6	4 + 5	29.45.xxx 29.55.xxx	28.45.xxx 28.55.xxx	0.03
2.29.00.005	Adjusting device	10	5	29.50.xxx 38.51.xxx 39.50.xxx 47.50.xxx	28.50.xxx 33.51.xxx 34.50.xxx	0.3
2.29.00.006	Adjusting device	14	6	29.60.xxx 39.60.xxx 47.60.xxx	28.60.xxx 34.60.xxx	0.44
2.29.00.008	Adjusting device	14	8 – 12	29.80.xxx 47.80.xxx 29.10.xxx 47.10.xxx	28.10.xxx	0.82
2.28.00.008	Adjusting device	14	8 straight		28.80.xxx	0.46

By fitting the adjusting device (patent pending) in the pinholes of the rack it is possible to move the rack to be assembled axially in both directions by turning the screw. This permits to adjust the correct dimension over rollers and the accurate pitch at the rack joint. The adjusting device is held in place on the rack by means of magnetic force and can be used in any mounting position. Up to module 6 the wrench sizes correspond to the rack mounting screws.

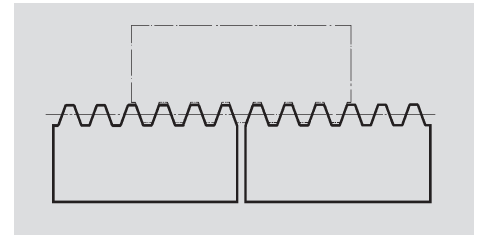




### Mounting Instructions

#### Racks

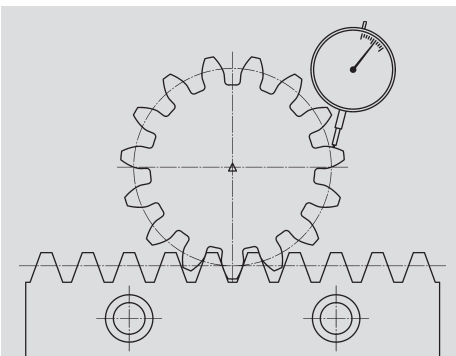
To make it possible to link our standard racks to form any desired length, the teeth are cut so that there is half a tooth gap at each end of the rack. The opposite diagram shows how rack 1 and rack 2 can be brought into the correct pitch position. Fitting aids with teeth cut in the opposite direction are available for linking helical-tooth systems. See page ZF-2. The best mounting results can be achieved with the Rack Assembly Kits. Description see page ZF 10.



The mounting screws are to be tightened to the torque of socket head cap screws 12.9 using a torque wrench and table. For the 0.5 m long racks it is absolute necessary to use the pin holes.

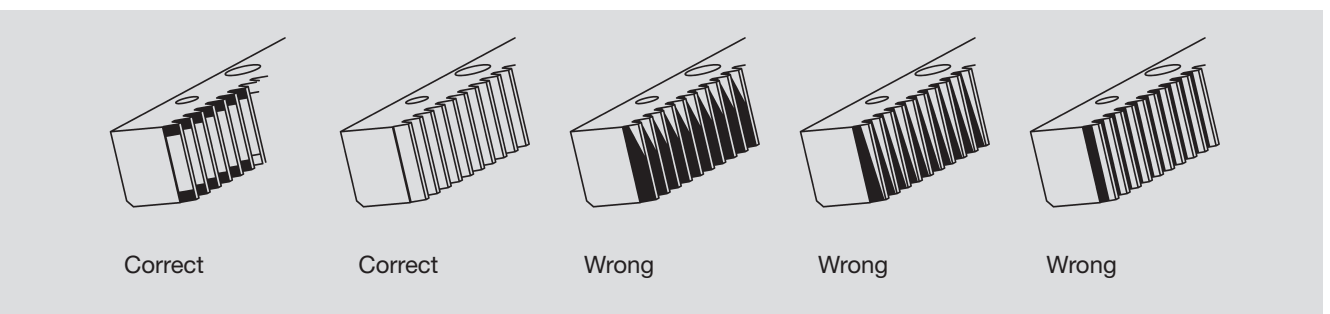
At rack and pinion drives, the pitch lines of pinion and rack has to be parallel. To check this, we recommend using a bluing compound and check the gear mesh contact pattern under load conditions. The backlash in between rack and pinion has to be adjusted at the high point. The backlash should be according to the table.

Thread	M5	M6	M8	M10	M12	M14	M16	M20	M30	M36
Tighten torque	9 Nm	16 Nm	40 Nm	76 Nm	135 Nm	210 Nm	340 Nm	660 Nm	2300 Nm	4100 Nm



Recommended Backlash for Rack Quality Used:

- Q3: min. 0.010
- Q5: min. 0.011
- Q6: min. 0.027 (m= 1,5 - 4) / min.0.020 (m= 5 - 6)
- Q7: min. 0.037 (m= 1,5 - 4) / min.0.028 (m= 5 - 6)
- Q8: min. 0.043 (xx.xx.xx8) / 0.080 (xx.xx.xx0)
- Q9: min. 0.080
- Q10: min. 0.080
- Max: Module 2-12
- Max: Module 1.5

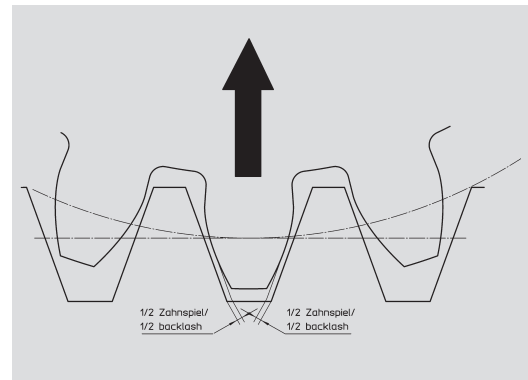
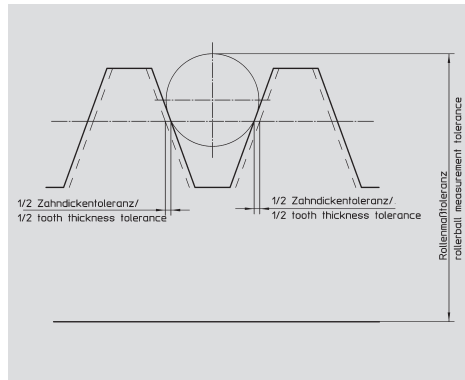
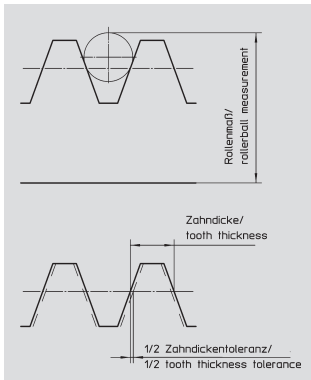




### Relationship between tooth thickness and roller ball measurement:

The tooth thickness of racks is usually measured via the roller ball measurement as the tooth thickness could not be measured directly. A measuring roller is put into the teeth and measured to the back of the rack.

So tooth thickness tolerances could be measured by recalculating of the roller ball measurement.

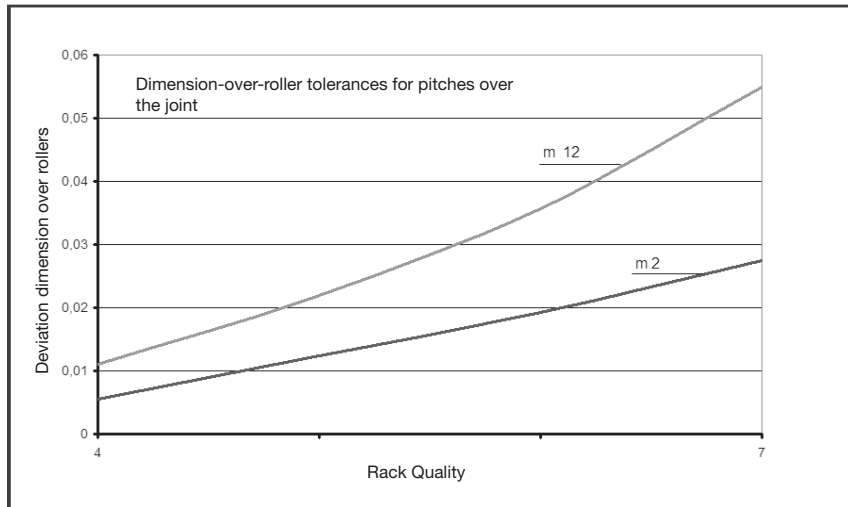


Tooth Thickness Tolerance	Roller Ball Measurement Tolerance	Desired Backlash	Change In Center Distance
0.01	0.014	0.01	0.014
0.02	0.027	0.02	0.027
0.03	0.041	0.03	0.041
0.04	0.055	0.04	0.055
0.05	0.069	0.05	0.069
0.06	0.082	0.06	0.082
0.07	0.096	0.07	0.096
0.08	0.110	0.08	0.110
0.09	0.124	0.09	0.124
0.10	0.137	0.10	0.137
0.11	0.151	0.11	0.151





### Description



ATLANTA gear racks can be mounted end-to-end with the correct gap pitch by means of a companion rack or rack assembly kit. After positioning the racks for assembly insert the fixing screws of the rack and slightly turn them in by hand.

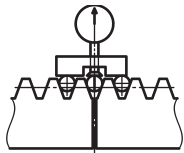


Fig. 1

Arrange the rack adjusting device in the existing pinholes of the racks. The device is held in position on the racks by magnetic force. Any mounting position is possible.

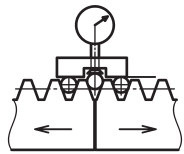


Fig. 2

The gauging rollers are inserted in the two adjacent racks and in the gap at the joint. They, too, are held in place in the tooth space by magnetic force and can therefore be used in any mounting position of the racks. It is thus ensured that they are always accurately positioned on the tooth flanks. The tooth gaps must be free from residues or any other foreign matter.

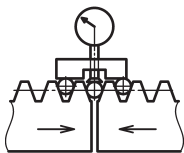


Fig. 3

With the measuring bridge set to zero on a measuring plate or another level surface it is now possible to measure the variation of the dimension over the roller. The exact pitch at the joint can then be adjusted by moving the rack with utmost precision in either direction. The sketch shows the excellent toothing quality obtained based on the variation of the dimension over rollers at the joint of the racks.

It is therefore no longer necessary to adjust the rack by tapping with a hammer. The slightly pre-stressed rack is put in the correct position and held in this position until it is screwed together.

