Drive pinion and ring gear, adjusting

Note:

- *Careful adjustment of the drive pinion and ring gear is important for the service life and smooth running of the final drive. For this reason, the drive pinion and ring gear are matched together during manufacture, and checked to ensure a good mesh pattern and quiet running in both directions of rotation. The position of quietest running is found by moving the drive pinion in an axial direction and at the same time lifting the ring gear out of the zero-play mesh position by the amount necessary to maintain the backlash within the specified tolerance.*

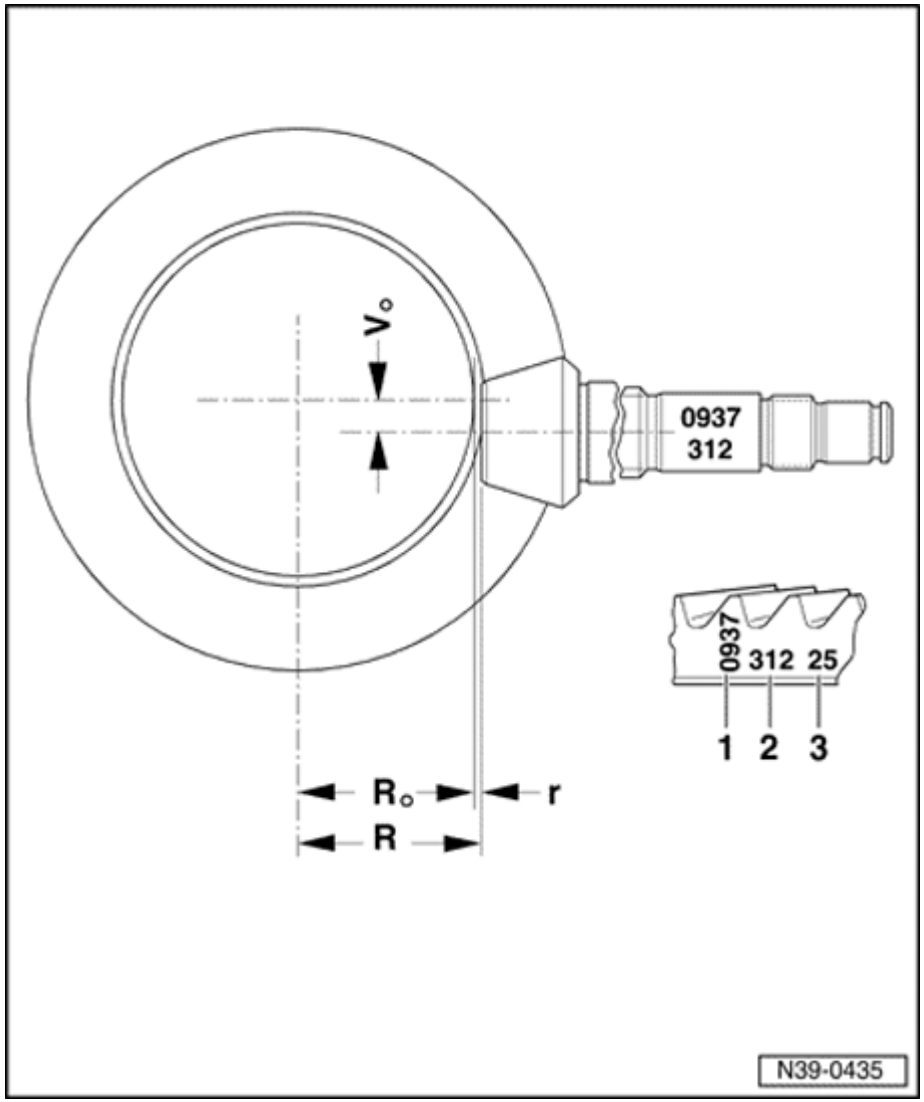
- *The object of the adjustment is to reproduce the setting for quietest possible running, as obtained on the test machine in production.*

- *The deviation (tolerance) "r," which is related to the master gauge "Ro," is measured for the final drive sets supplied as replacement parts and marked on the outer circumference of the ring gear. The final drive set (drive pinion and ring gear) may only be replaced together as a matched pair.*

- *Observe the general repair instructions for*

tapered roller bearings and shims.

- *The frictional torque measurement is only used as a final check to make sure that the adjustment is correct.*



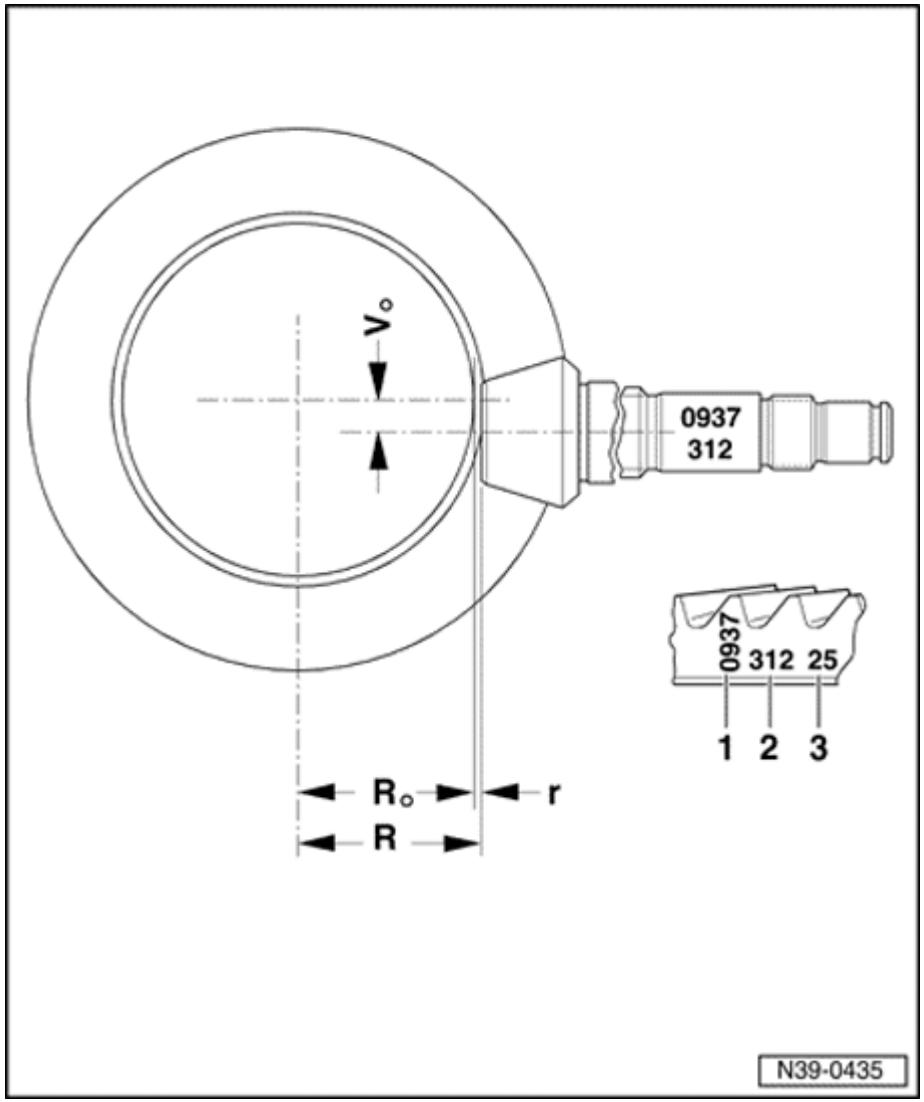
Gear sets, adjusting and marking

1 - Identification "0937" signifies Oerlikon gear set with a ratio of 37:9.

2 - Pairing number (312) of final drive set.

3 - Deviation (tolerance) "r" is based on the test machine master gauge used in the production. The deviation "r" is always given in 1/100 mm. Example: "25" signifies r = 0.25 mm

Ro - Length of master gauge used on test machine Ro = 59.65 mm



R - Actual distance between ring gear axis and face of drive pinion at point with quietest running for this gear set R = Ro + r

Vo - Hypoid offset

Final drive set readjusting, recommended sequence

The following sequence of work is recommended to save time when the drive pinion and ring gear have to be adjusted:

1.) Determine total shim thickness "S_{total}" for "S1" +"S2" (sets preload for tapered roller bearings for differential) ⇒ from Page 39-54 .

2.) Determine total shim thickness "S_{total}" for "S3" + "S4" (sets preload for tapered roller bearings for drive pinion) ⇒ from Page 39-41 .

3.) Distribute total shim thickness "S_{total}" for "S3" + "S4" so that the distance from center of ring gear to face of drive pinion is the same as distance "R" which was determined during production ⇒ from Page 39-47 .

4.) Distribute total shim thickness "S_{total}" for "S1" + "S2" so that the specified backlash between ring gear and drive pinion is maintained ⇒ from Page 39-61 .

Note:

Overview of components and shims ⇒ Page 39-38 .

Adjustment overview

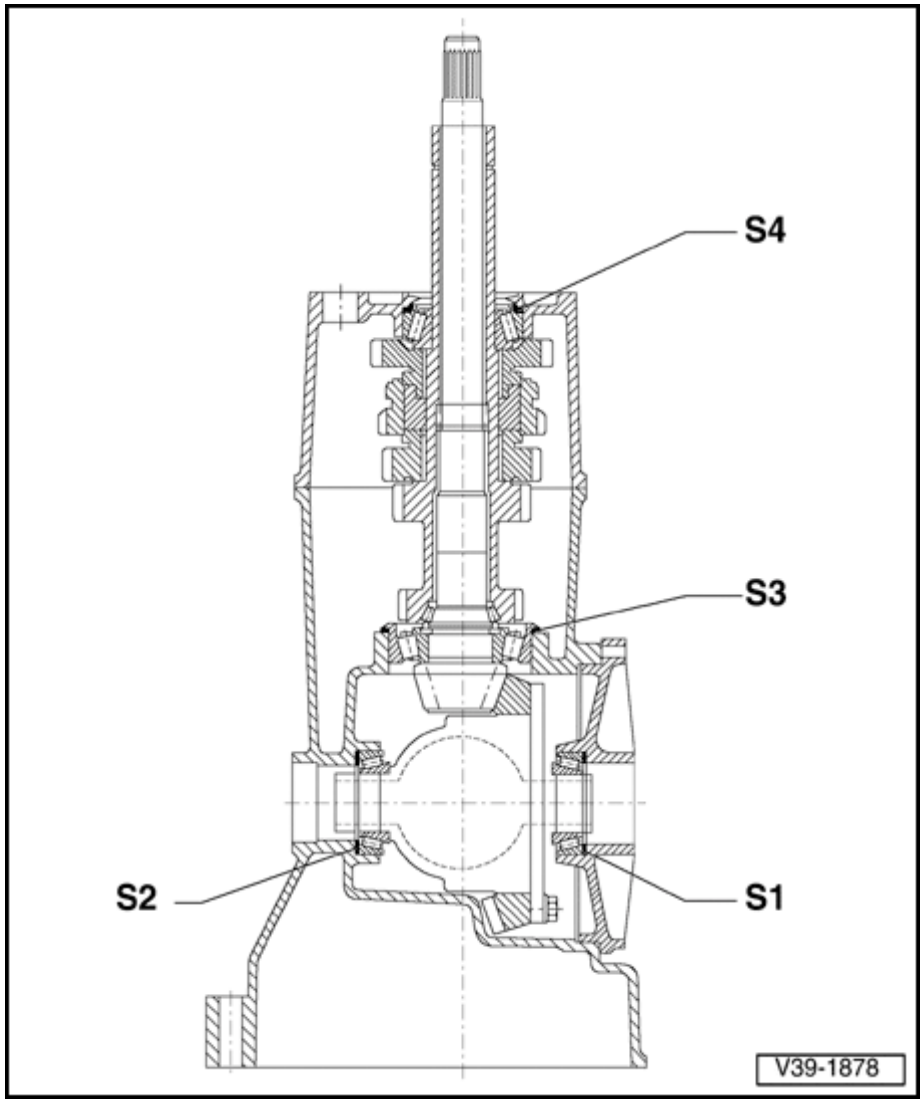
Note:

If repairs have been carried out to the transmission, it is only necessary to adjust the drive pinion, ring gear or final drive set if components have been replaced which have a direct effect on the adjustment of the final drive. Refer to the following table to avoid unnecessary adjustments:

Parts replaced: ▼	**adjustment required:**			
	Ring gear "S1"+"S2" 1) ⇒ Page 39-52	Drive pinion "S3"+"S4" 1) via deviation "r" ⇒ Page 39-39	Drive pinion "S4" 1) ⇒ Page 34-121	Backlash Check ⇒ Page ⇒ Page 39-59
Transmission housing	X	X		X
Bearing plate			X	X
Differential housing	X			X
Tapered roller bearing for drive pinion		X		X
Tapered roller bearing for differential	X			X
Final drive set 2)	**X**	X		X
Hollow shaft			X	X
Cover for differential	X			X

1) Shims; installation position ⇒ Page 39-38 .

2) Drive pinion and ring gear; only replace together.



Shims, position

Note:

Adjustment overview when replacing individual components of transmission ⇒ *Page 39-37* .

S1 - Adjustment shim for ring gear in cover for differential

S2 - Adjustment shim for ring gear in transmission housing

S3 - Adjustment shim for drive pinion in transmission housing

S4 - Adjustment shim for drive pinion in bearing plate