Front final drive ring gear and pinion shaft, adjusting

Notes:

- *Careful adjustment of the pinion shaft and ring gear is essential for the service life and smooth running of the final drive. For this reason, the pinion shaft and ring gear are matched together during manufacturing, 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 pinion shaft 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 objective of the adjustment is to reproduce the setting for quietest possible running, as obtained on the test machine during production.*

- *The deviation, or tolerance "r", which is based on 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 (pinion shaft and ring gear) must only be replaced together as a matched pair.*

- *Observe the general repair instructions for*

tapered roller bearings and shims.

- *The friction torque measurement only serves to give a final check of the adjustment.*

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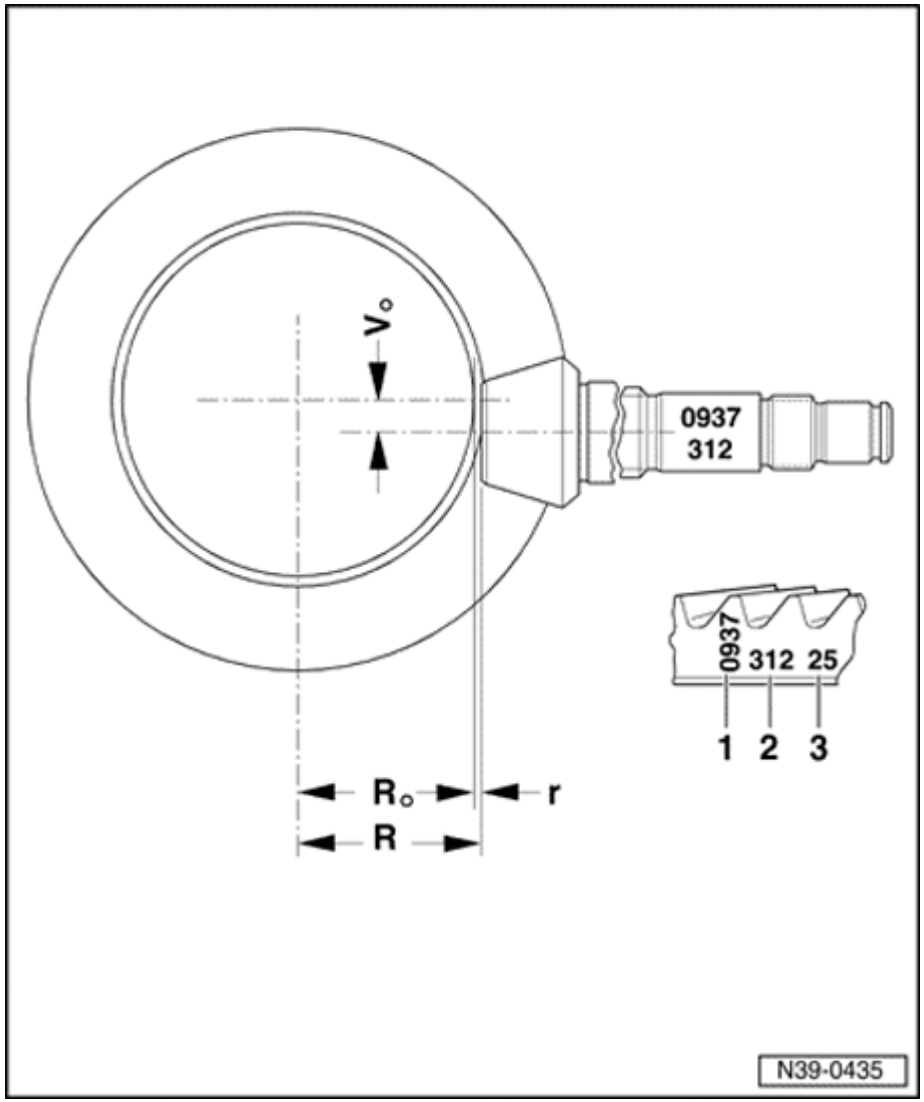


Adjustment and marking of final drive gear sets

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

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

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

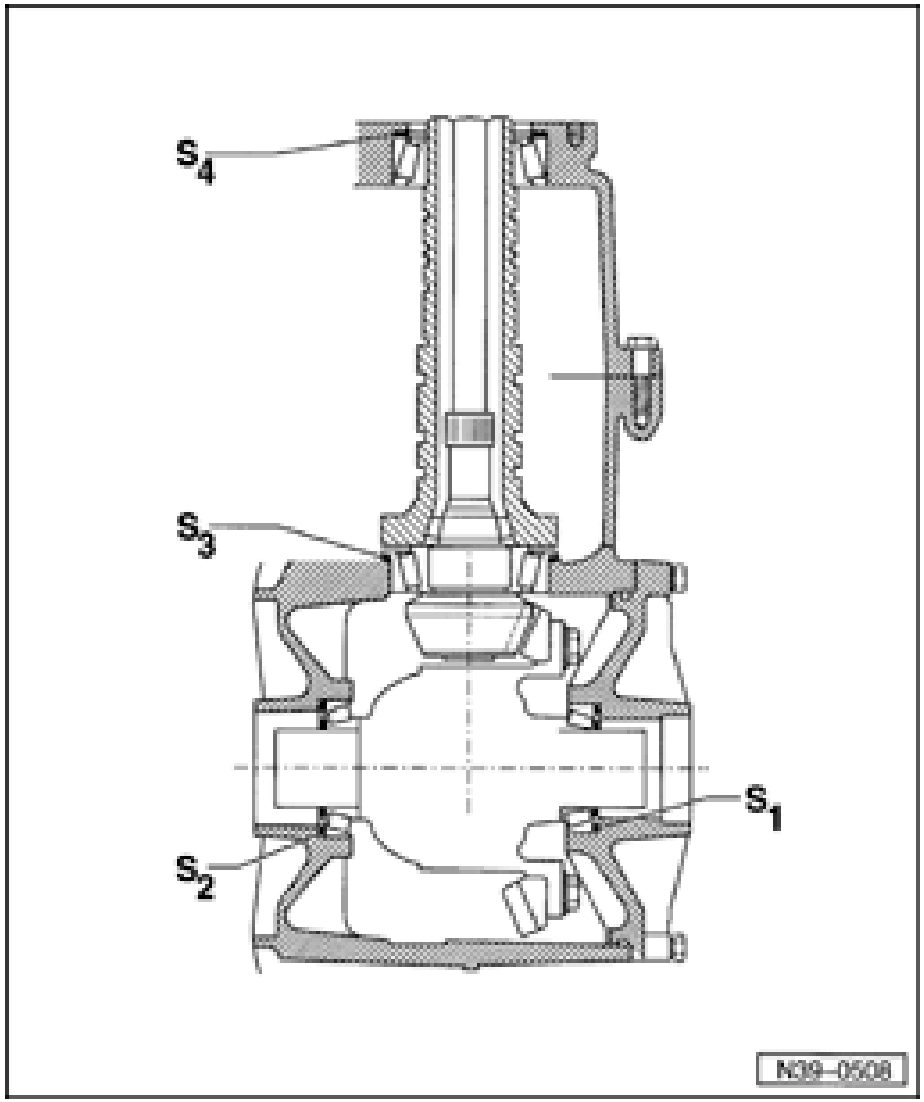
Ro - Length of test machine master gauge used

Ro - For 170 mm (6.69 in.) diameter ring gear = 54.95 mm (2.16 in.)

R - Actual dimension between ring gear axis and face of pinion shaft in position of quietest running for this gear set.

Vo - Hypoid offset

39-36



Installation position of shims

Note:

List of adjustments when replacing individual components of transmission ⇒ Page 39-37 .

S1 - Shim for ring gear in differential cover

S2 - Shim for ring gear in transmission housing

S3 - Shim for pinion shaft in transmission housing

S4 - Shim for pinion shaft in transmission cover

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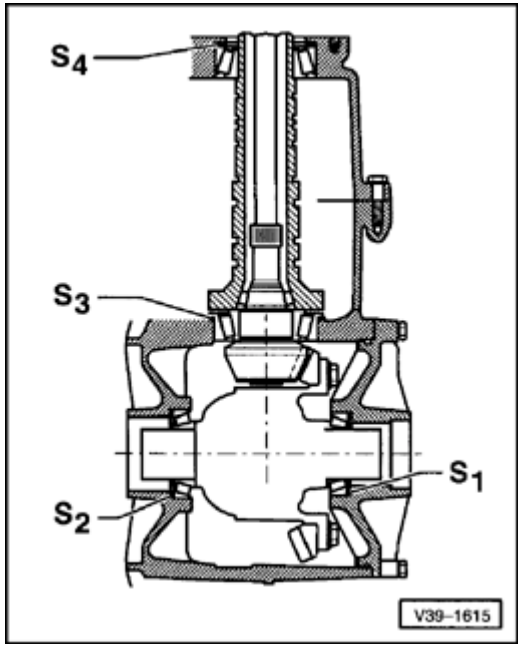
List of adjustments

Note:

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

Component to be adjusted: **Component to be adjusted:**	Ring gear (S1 + S2)1) ⇒ Page 39-57	Pinion shaft (S3 + S4)1) via deviation "r" ⇒ Page 39-39	Pinion shaft (Shim S4)1) ⇒ Page 39-54	Backlash measurement ⇒ Page 39-63
Transmission housing3)	X	X		X
Transmission cover			X	
Differential housing	X			X
Double tapered roller bearing for pinion shaft and hollow shaft		X		X
Tapered roller bearing for differential	X			X
Final drive set2)	**X**	X		X
Differential cover	X			X

1) Shims, installation position ⇒ Page 39-36 .
2) Pinion shaft and ring gear, only replace together.
3) If the transmission housing is replaced, the input shaft must also be adjusted ⇒ input shaft, adjusting, ⇒ Page 35-17 .



Final drive gear set, recommended sequence for re-adjusting

If the pinion shaft and ring gear have to be readjusted, the following sequence is recommended for maximum efficiency:

1.) Determine total shim thickness Stotal for S1 + S2 (adjusting preload for tapered roller bearings for differential) ⇒ Page 39-58 .

2.) Determine total shim thickness Stotal for S3 + S4 (preload for tapered roller bearings for pinion shaft) ⇒ Page 39-41 .

3.) Distribute total shim thickness Stotal for S3 + S4 so that the dimension from center of ring gear to face of pinion shaft is the same as dimension "r" which was determined during production ⇒ Page 39-49 .

4.) Distribute total shim thickness Stotal for S1 + S2 so that the specified backlash between ring gear and pinion shaft is maintained ⇒ Page 39-65 .

Note:

Overview of components and shims ⇒ Page 39-36 .

Pinion shaft, adjusting

(Adjusting pinion shaft and hollow shaft)

Adjustment of the pinion shaft is only necessary if the gear set, tapered roller bearing for the pinion shaft, or the transmission housing has been replaced ⇒ table, ⇒ Page 39-37 .

Special tools and equipment

- VW296 removal tool
- VW385/1 measuring bar
- VW385/3 centering disc (2x)
- VW385/14 measuring rod
- VW385/17 magnetic plate
- VW385/30 master gauge-adjustable
- VW385/33 end gauge
- VW387 dial indicator holder

- VW401 thrust plate
- VW407 punch
- VW519 sleeve

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- VW792 installation arbor
- 3062 thrust pad
- 3182 sleeve
- Torque gauge 0-600 Ncm (53 in. lb)
- Dial indicator
- Dial indicator extension 6.5 mm
- Dial indicator extension 30 mm