

Model 460 Rear Axle HL 0/5 -1.8 35.61

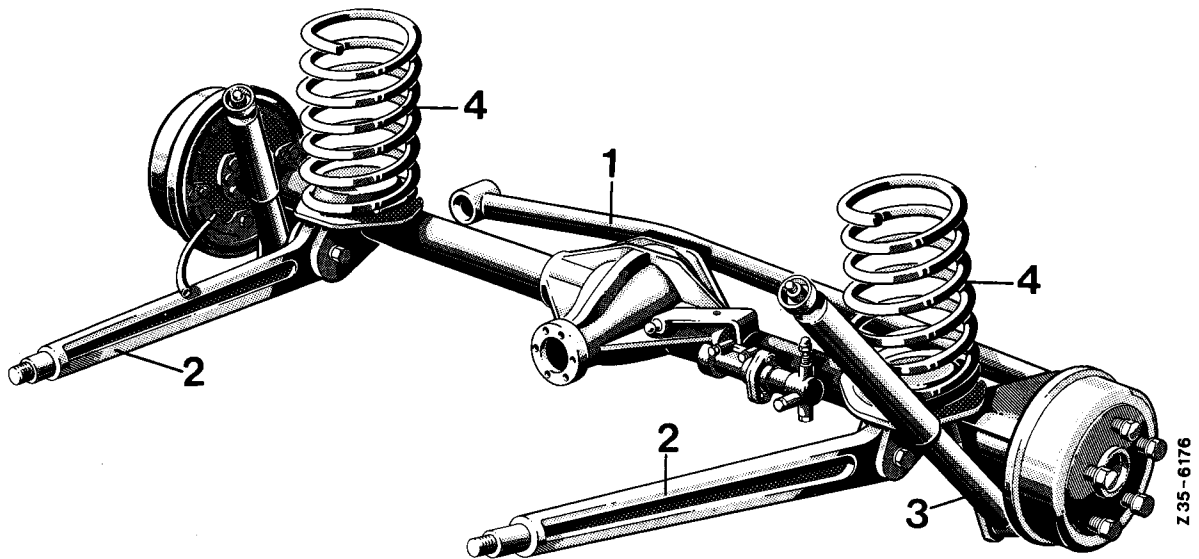
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Installation Survey Rear Axles 35.61

741.5

Designation	Unit reduction	Model	Installed in vehicle	
			Sales designation	Model
HL 0/5-1,8	44:9	741.502	300 GD / 4x4	460.312
				460.322
				460.323
				460.332
				460.333
	48:9	741.503	230 G / 4x4	460.343
				460.210
				460.220
				460.221
				460.230
			240 GD / 4x4	460.231
				460.242
				460.310
				460.320
				460.321
	44:9	741.519	280 GE / 4x4	460.330
				460.331
				460.341
				460.212
				460.222
				460.223
				460.232
				460.233
				460.243

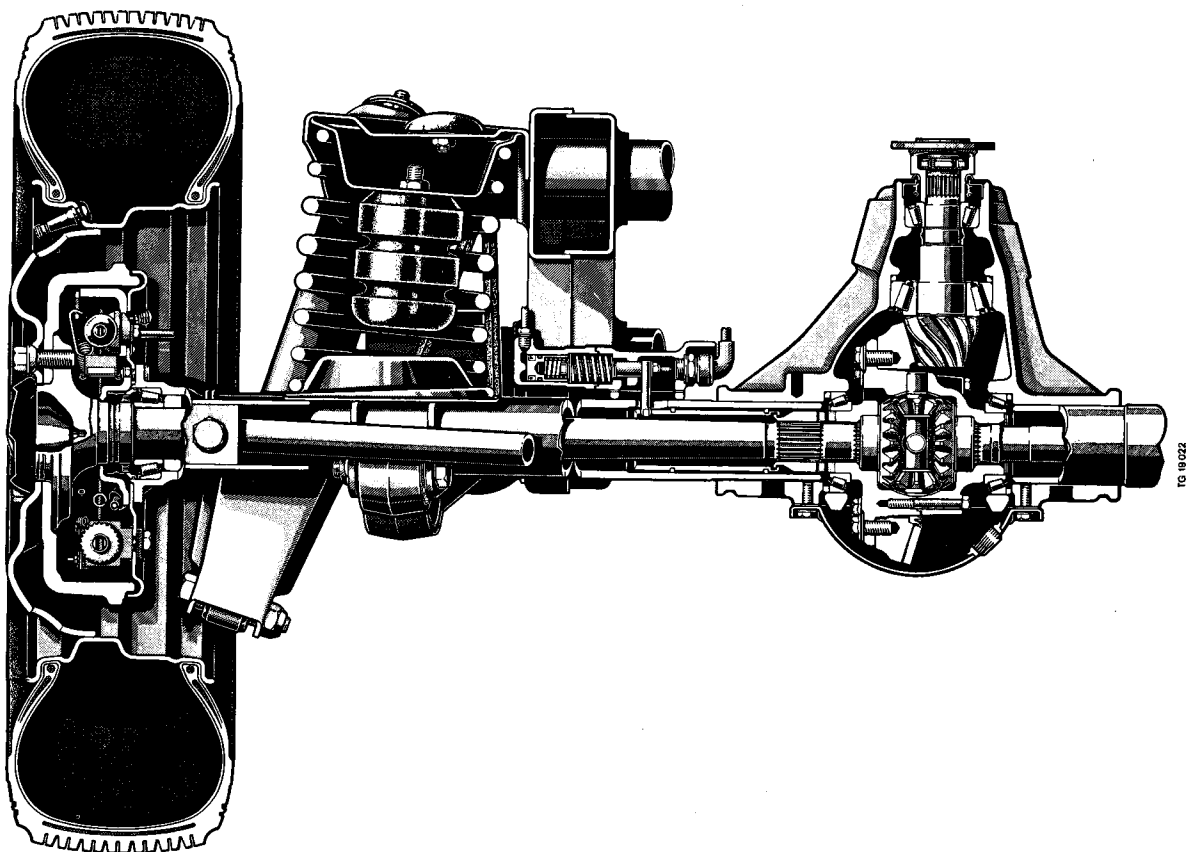




735-6176

Layout of rear axle

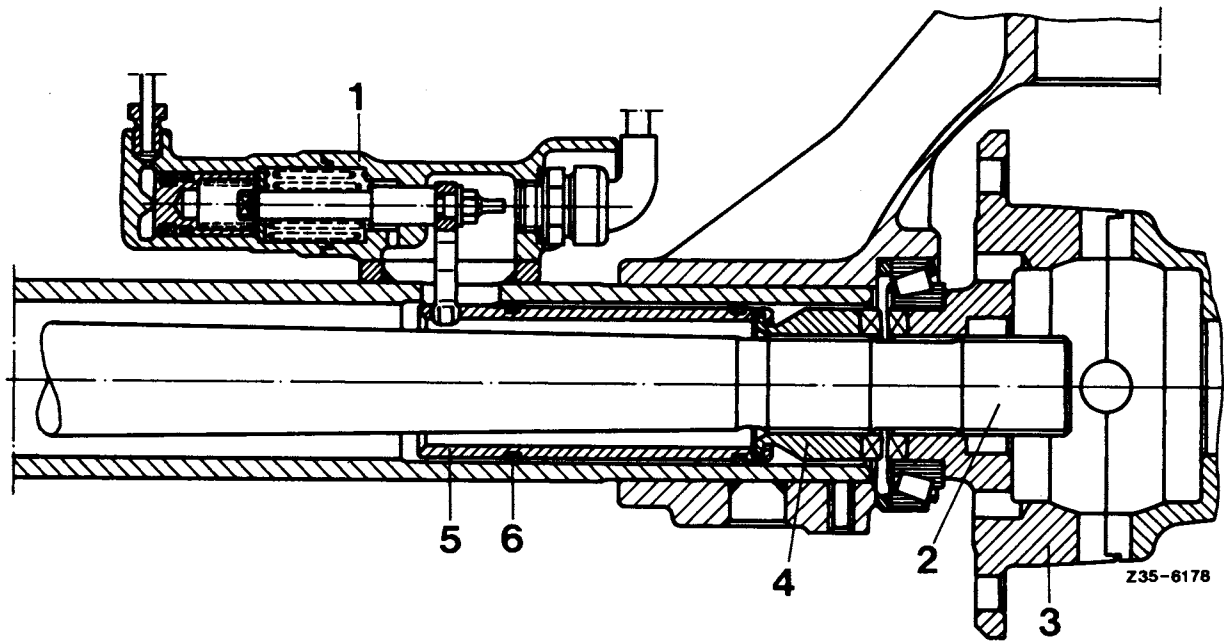
- 1 Transverse link
- 2 Trailing arm
- 3 Shock absorber
- 4 Coil spring



TC 19022

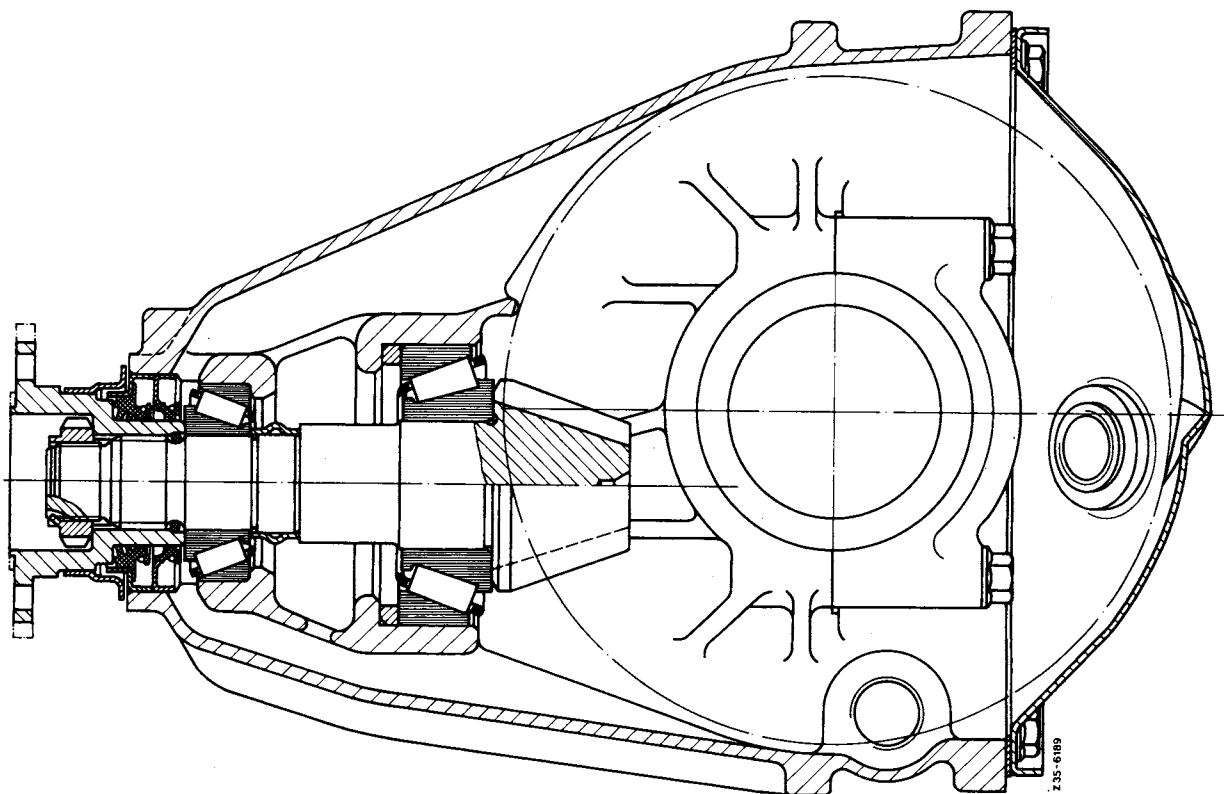
Rear axle

35.61 Sectional Views, Exploded Views

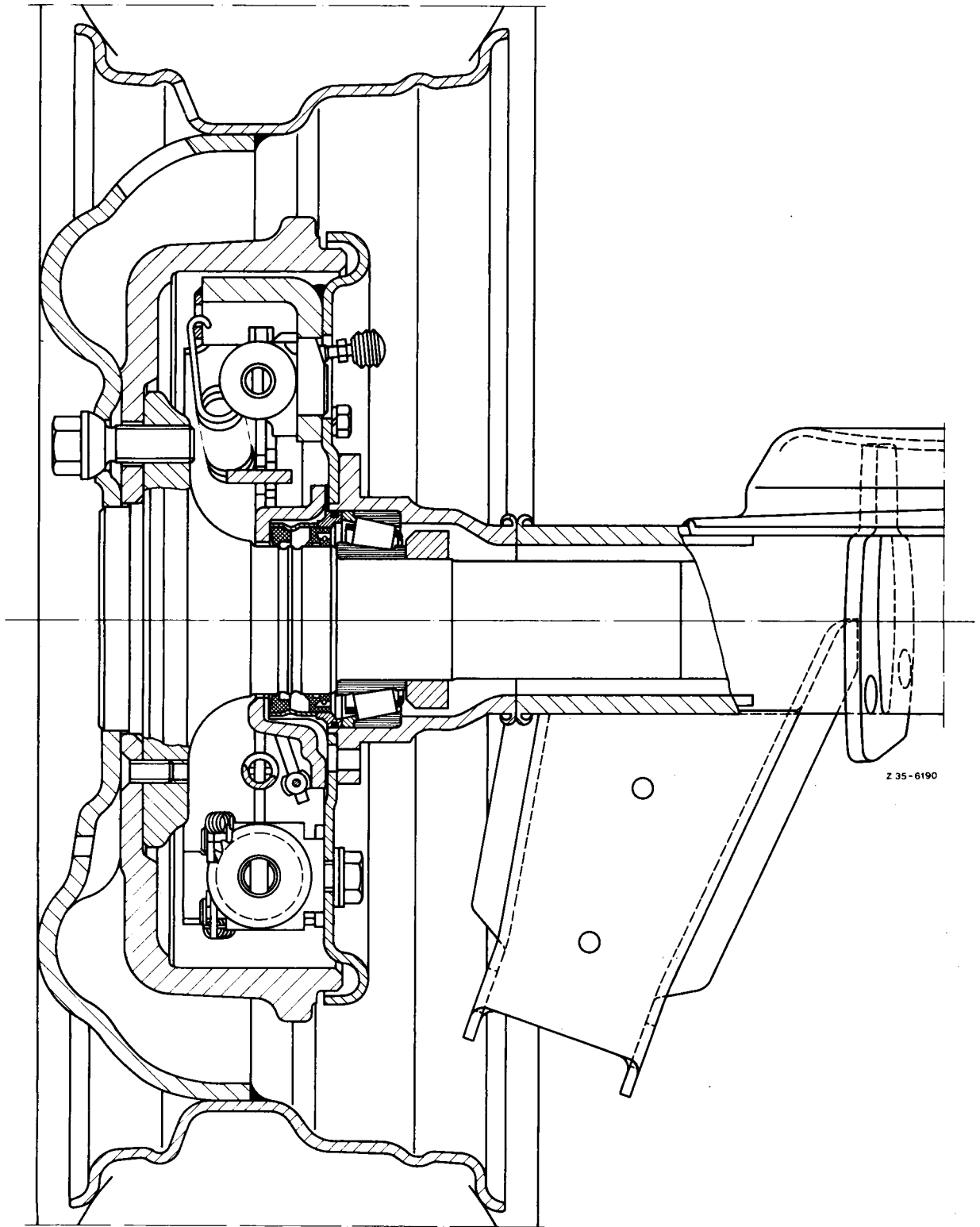


Differential lock, rear axle

- | | |
|------------------------|-------------------|
| 1 Selector cylinder | 4 Selector sleeve |
| 2 Drive shaft | 5 Selector tube |
| 3 Differential housing | 6 Sealing ring |



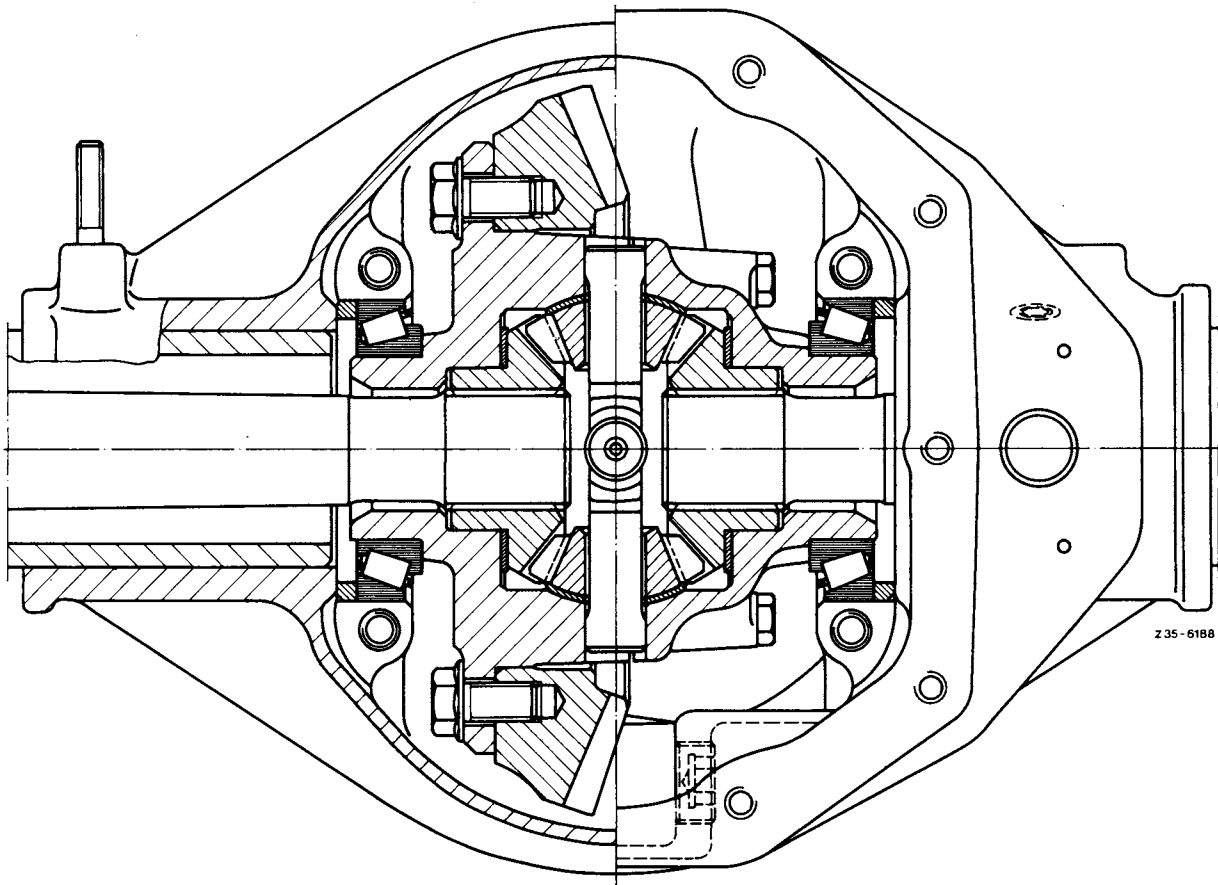
Rear axle HL 0/5 – 1.8 drive pinion



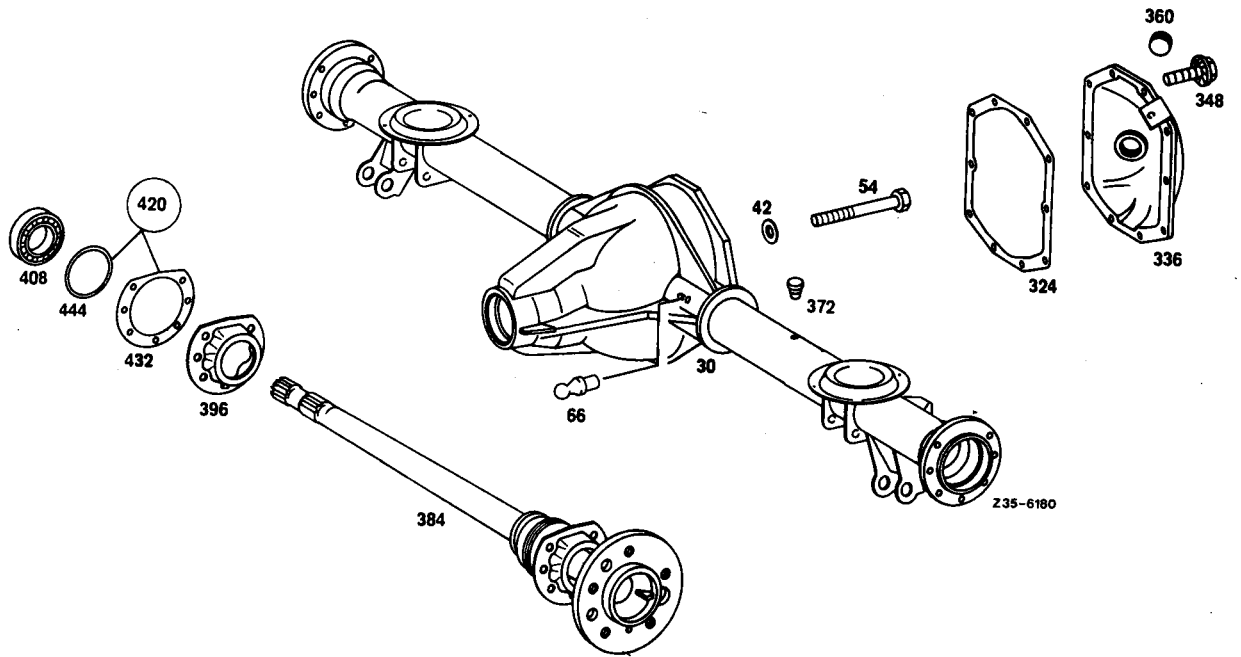
Rear axle HL 0/5 - 1.8 brake components



35.61 Sectional Views, Exploded Views



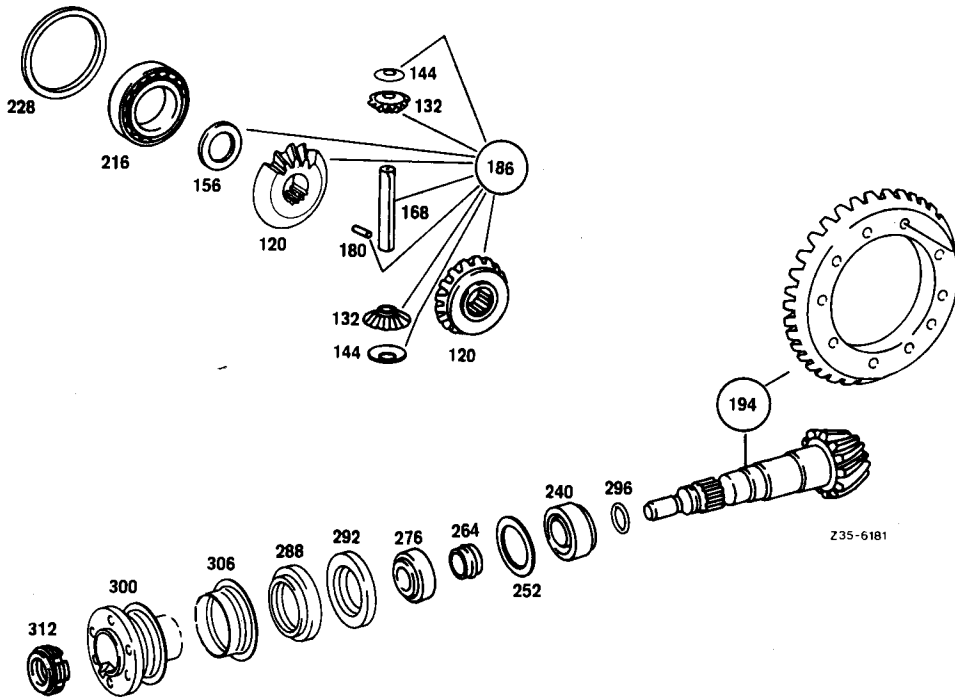
Rear axle HL 0/5 – 1.8 differential



Axle components

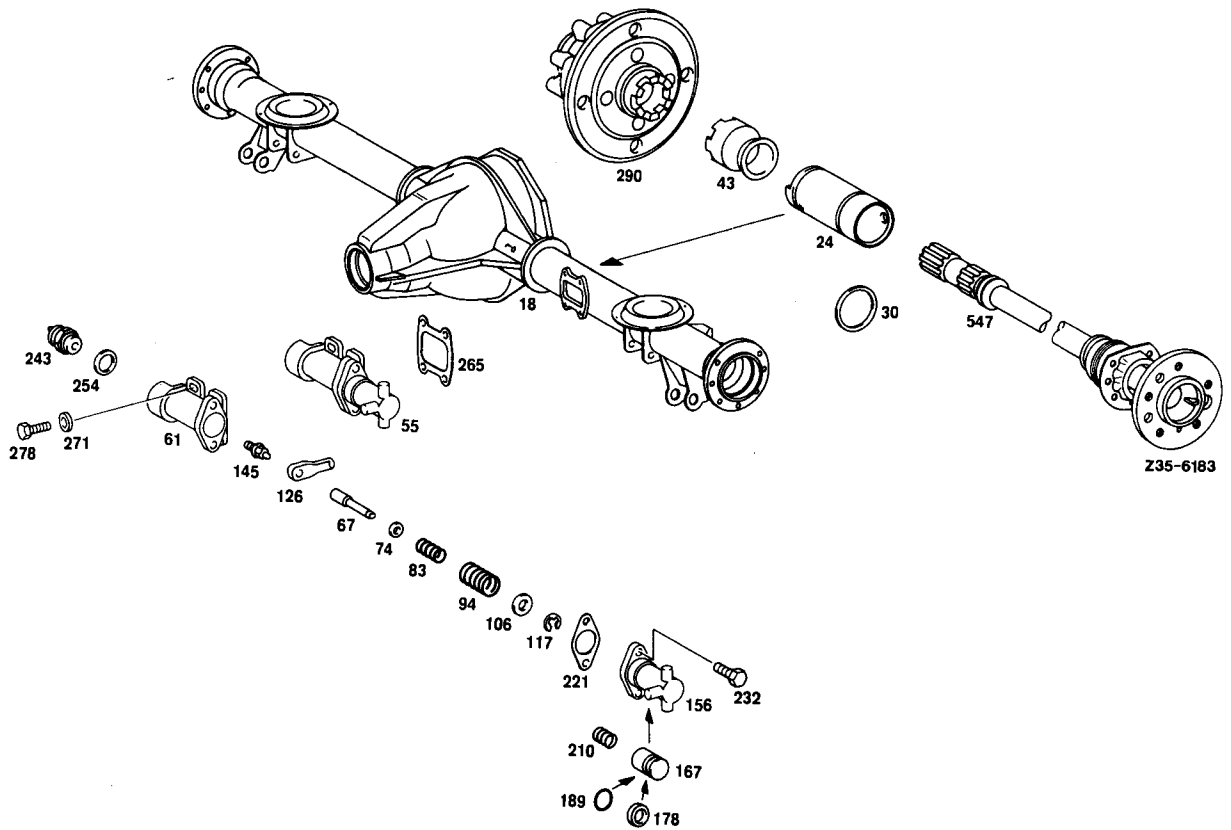
- | | |
|-----------------------|--------------------------|
| 30 Axle housing | 372 Breather |
| 42 Washer | 384 Axle shaft |
| 54 Bolt | 396 Bearing cover |
| 66 Knuckle ball pivot | 408 Taper roller bearing |
| 324 Gasket | 420 Repair set |
| 336 Cover | 432 Gasket |
| 348 Bolt | 444 Sealing ring |
| 360 Screw plug | |

35.61 Sectional Views, Exploded Views



Drive components

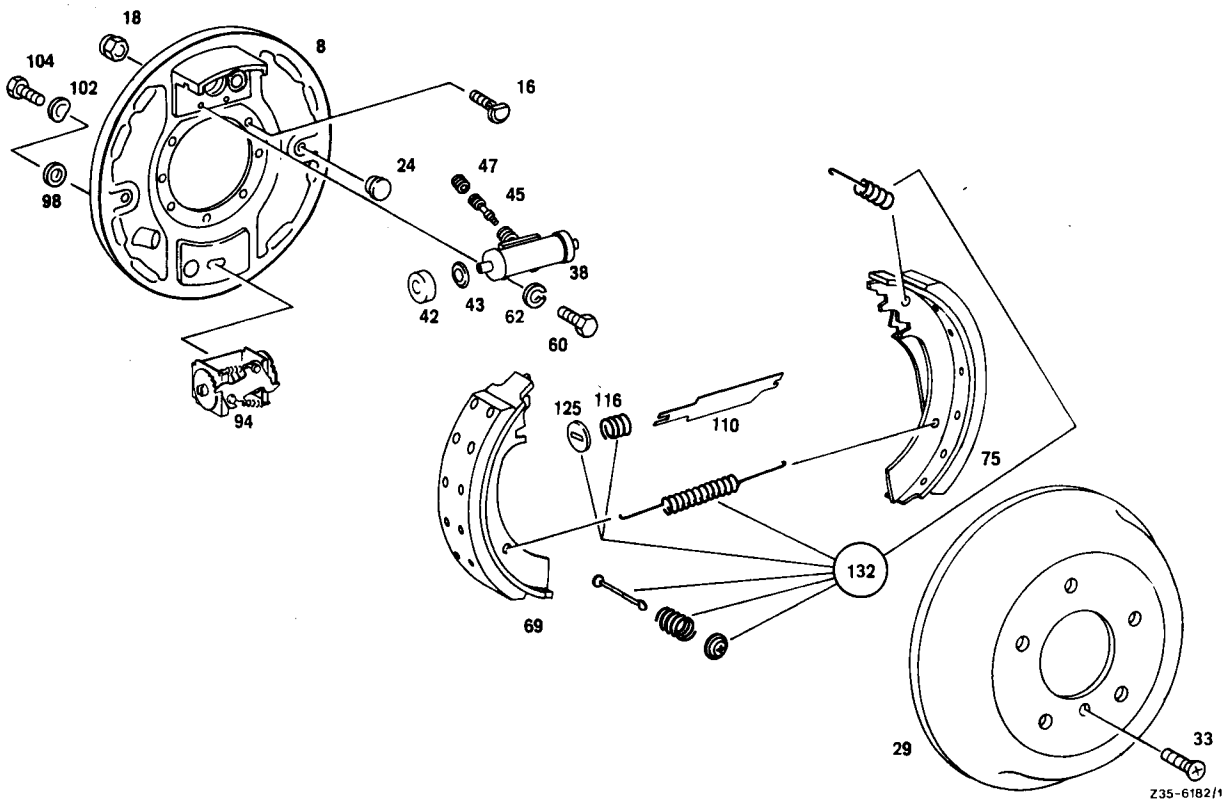
- | | |
|--------------------------|--------------------------|
| 120 Side gear | 240 Taper roller bearing |
| 132 Differential pinion | 252 Shim |
| 144 Thrust ring | 264 Spacing bush |
| 156 Thrust washer | 276 Taper roller bearing |
| 168 Bolt | 288 Sealing ring |
| 180 Clamping sleeve | 292 Sealing ring |
| 186 Repair set | 296 Sealing ring |
| 194 Gear set | 300 Flange |
| 216 Taper roller bearing | 306 Guard plate |
| 228 Shim | 312 Nut |



Differential lock components

- | | |
|-----------------|------------------|
| 18 Axle housing | 156 Cylinder |
| 24 Tube | 167 Piston |
| 30 Slide piece | 178 Sleeve |
| 43 Driver | 189 Sealing ring |
| 55 Cylinder | 210 Spring |
| 61 Housing | 221 Gasket |
| 67 Shaft | 232 Bolt |
| 74 Shim | 243 Switch |
| 83 Spring | 254 Sealing ring |
| 94 Spring | 265 Gasket |
| 106 Washer | 271 Washer |
| 117 Circlip | 278 Bolt |
| 126 Lever | 290 Differential |
| 145 Bolt | 547 Axle shaft |

35.61 Sectional Views, Exploded Views



Brake components

- | | |
|----------------------|-----------------------|
| 8 Brake anchor plate | 62 Spring lock washer |
| 16 Bolt | 69 Brake shoe |
| 18 Nut | 75 Brake shoe |
| 24 Plug | 94 Adjuster |
| 29 Brake drum | 98 Disk |
| 33 Bolt | 102 Spring washer |
| 38 Wheel cylinder | 104 Bolt |
| 42 Dust cap | 110 Thrust piece |
| 43 Sealing ring | 116 Spring |
| 45 Bleeder valve | 125 Washer |
| 47 Dust cap | 132 Repair set |
| 60 Bolt | |

Special Tools 35.61

741.5

Designation	Part No.
Claw wrench	460 589 00 07 00
Hexagon socket	001 589 61 09 10
Sleeve	601 589 01 14 00
Mandrel	312 589 05 15 00
Mandrel	343 589 03 15 00
Mandrel	385 589 03 15 00
Torque wrench	000 589 27 21 00
Torque wrench 20 – 100 Nm	000 589 64 21 00
Torquemeter	001 589 49 21 00
Dial gauge	001 589 53 21 00
Measuring instrument	363 589 02 21 00
Adjusting device	601 589 00 21 00
Measuring plate	601 589 00 23 00
Measuring piece	601 589 01 23 00
Spring tensioner	381 589 00 31 00
Retaining wrench	460 589 01 31 00
Spring tensioner	601 589 00 31 00
Internal puller	000 589 31 33 00
Counter support	000 589 34 33 00
Puller	000 589 45 33 00
Puller	000 589 89 33 00
Puller	001 589 19 33 00



35.61 Special

Designation	Part No.
Puller	123 589 08 33 00
Retaining device	601 589 01 40 00
Mandrel	116 589 08 61 00
Installation tool	606 589 00 61 00
Drawhook	116 589 01 62 00
Intermediate ring	460 589 00 63 00
Insert	601 589 01 63 00
Supporting bridge	601 589 02 63 00
Thrust piece	601 589 10 63 00
Tester	601 589 12 63 00
Reducer	601 589 13 63 00
Spring balance	000 589 03 65 00
Torque wrench 80 – 400 Nm	000 589 10 99 00

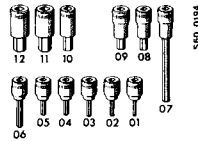
Oil filling capacity

Hypoid transmission fluid SAE 90
Sheet 235 of POL Specifications

1.6 l

Special tools

Hexagon socket SW 14

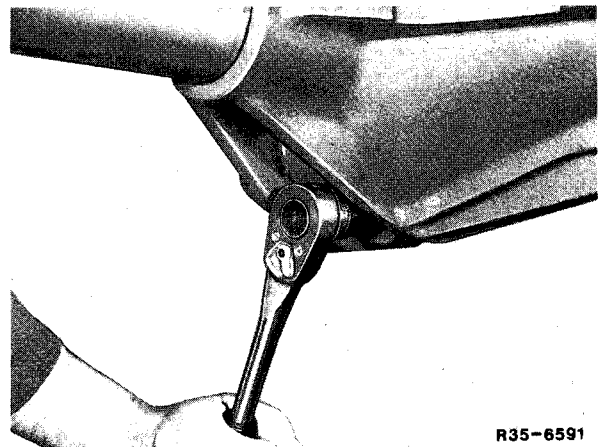


001 589 61 09 10

Drain oil

1 Unscrew oil drain plug on bottom of rear axle housing using special tool.

Note: Drain oil when warm if possible.



Hexagon socket 001 589 61 09 10

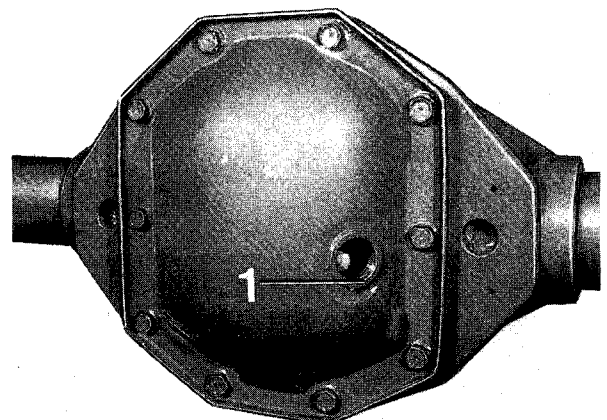
R35-6591

Filling in oil

1 Screw in drain plug to rear axle housing using special tool.

2 Fill in oil at oil filler opening on cover. The oil level should be at the lower edge of the oil filler opening (1).

3 Screw in plug of oil filler opening using special tool.



R35-6592

Tightening torques in Nm (kpm)

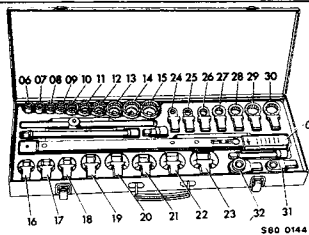
Wheel mounting bolts	180 (18)
Shock absorber at rear axle	120 (12)
Transverse link at frame	186 (18.6)
Trailing arm at frame	120 (12)
Trailing arm at rear axle	186 (18.6)

Filling capacity

Hypoid transmission fluid SAE 90 Sheet 235 of POL Specifications	1.6 l
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Special tools

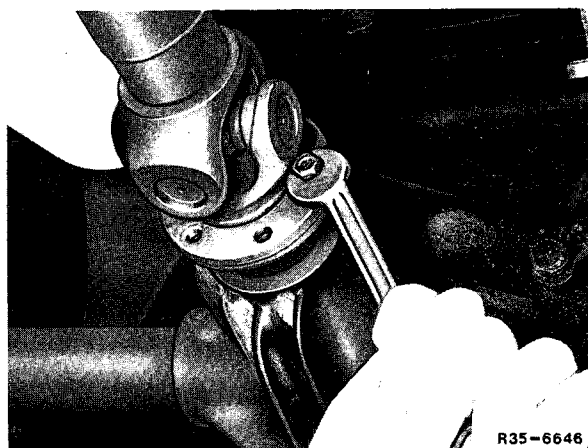
Torque wrench 80 – 400 Nm



000 589 10 99 01

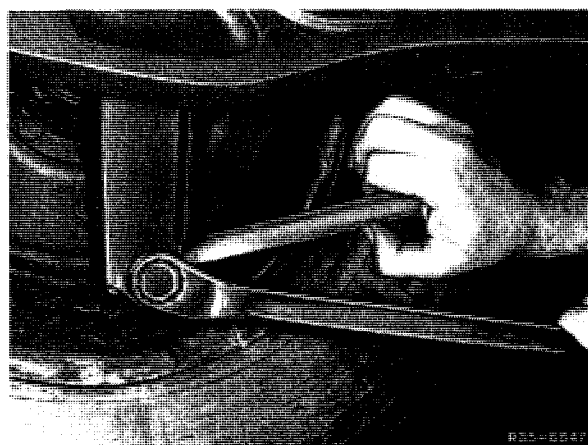
Removing rear axle

- 1 Place chocks in front of and behind the front wheels to secure vehicle.
- 2 Unscrew propeller shaft from clutch flange and secure propeller shaft to vehicle.



R35-6646

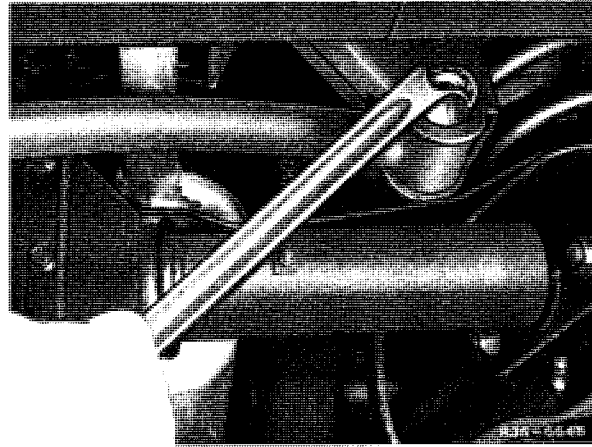
- 3 Unscrew both shock absorbers from rear axle.



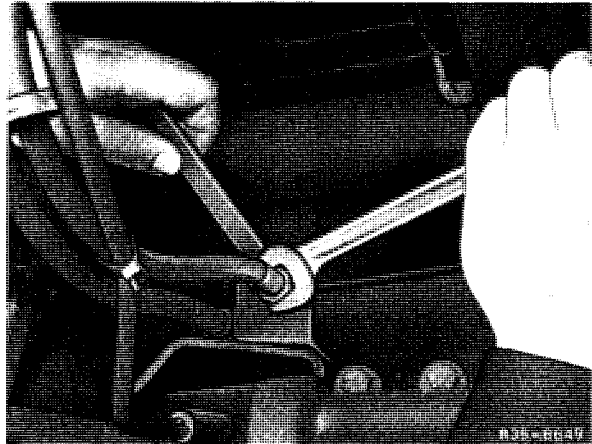
R35-6647

35.61 Removal and installation of rear axle

4 Loosen fastening bolt of transverse link from frame.

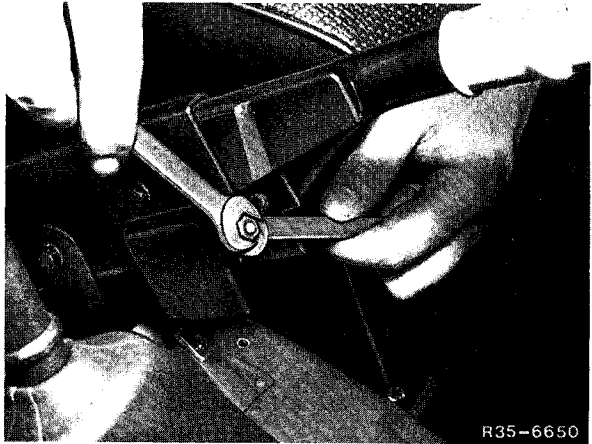


5 Unscrew brake lines and connecting lines to differential lock. Plug lines with rubber caps.



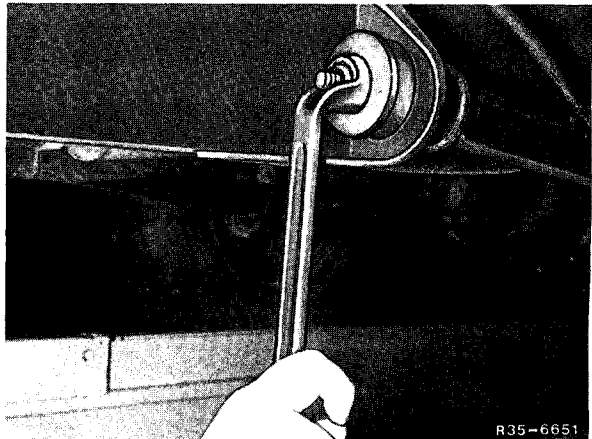
6 Unscrew push button switch for indicator lamp of differential lock and remove.

7 Unscrew both handbrake Bowden cables on handbrake lever and pull out downward through the floor panel.

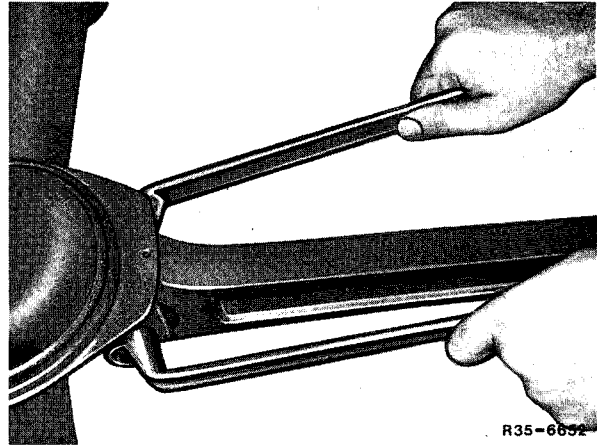


8 Disconnect linkage for ALB.

9 Unscrew both trailing arms from frame, remove washers and rubber bearings. Jack up vehicle until the spiral springs can be removed, remove the bolt on the transverse link completely and draw out rear axle to the rear.

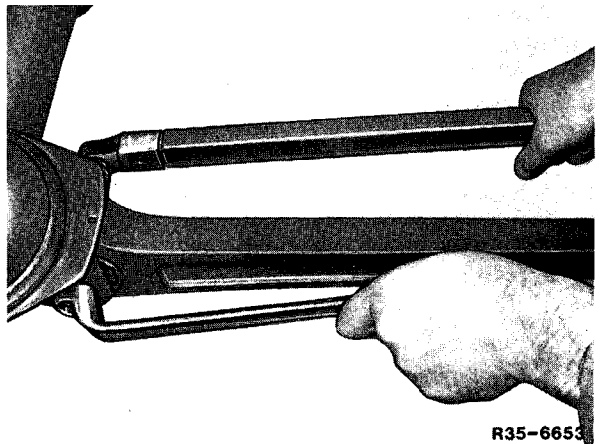


- 10 Unscrew both trailing arms at rear axle.

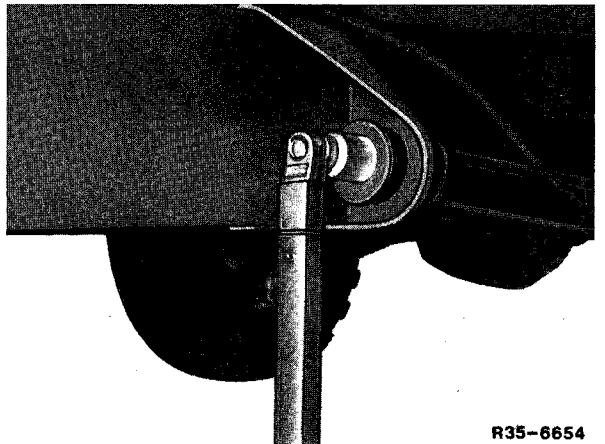


Installing rear axle

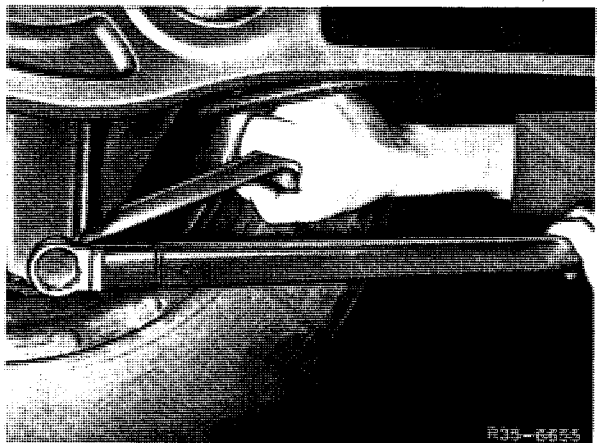
- 1 Fasten both trailing arms to rear axle with 186 Nm.



- 2 Place rear axle below vehicle in installation position. Fit spiral springs so that the end of the spring is resting on the stop of the spring plate of the axle. Screw in the bolt at the transverse link. Lower the vehicle until the trailing arms can be introduced into the frame. Insert rubber bearings and washers and torque nuts to 200 Nm.

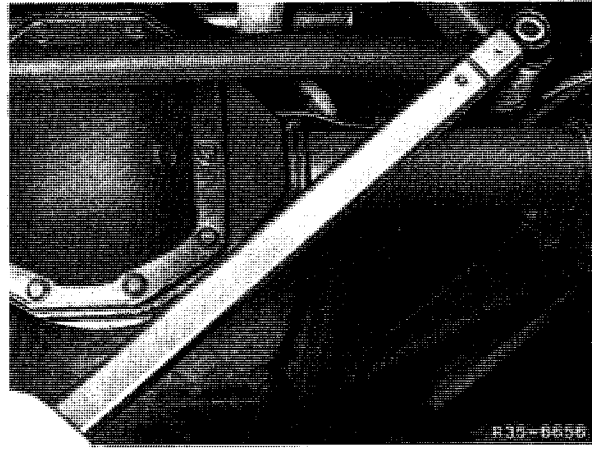


- 3 Tighten shock absorbers at rear axle to 120 Nm.



35.61 Removal and installation of rear axle

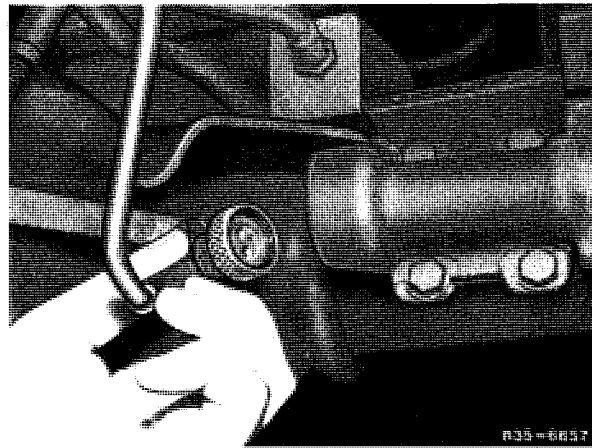
4 Tighten transverse link on frame to 200 Nm.



5 Bolt brake lines and connecting line to differential lock.

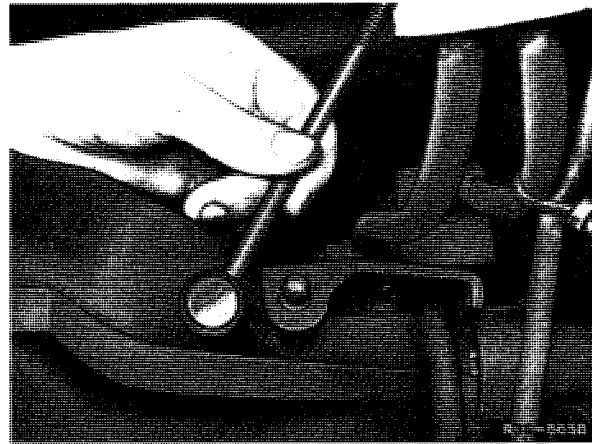
6 Fit push button switch for indicator lamp of differential lock and screw tight.

7 Bolt clutch flange to propeller shaft.



8 Connect linkage for ALB.

9 After installing the rear axle, bleed the brake.



Removal and installation of trailing arm 35.61

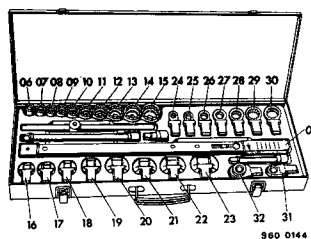
741.5

Tightening torques in Nm (kpm)

Trailing arm at rear axle	186 (18.6)
Trailing arm at frame	120 (12)

Special tools

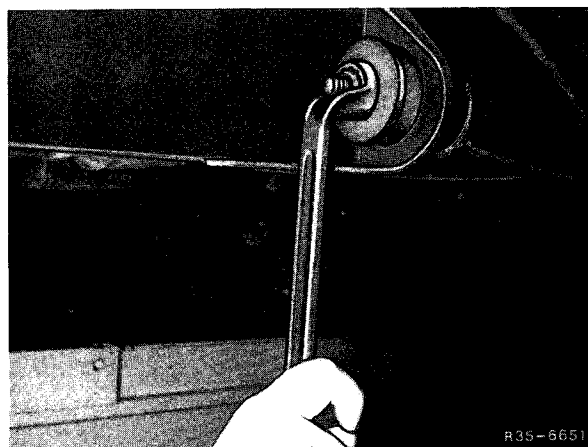
Torque wrench 80 – 400 Nm



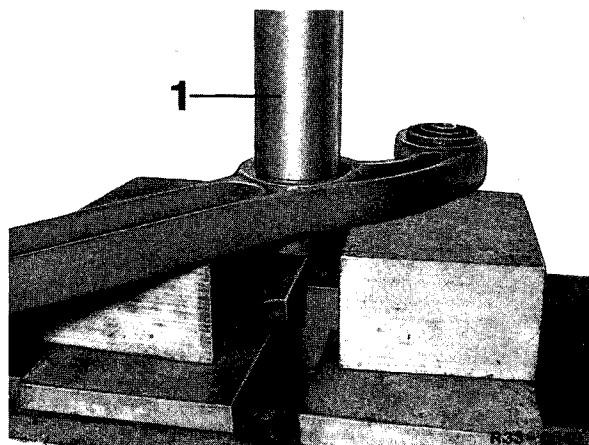
000 589 10 99 01

Removing trailing arm

1 Unscrew trailing arm at frame and axle and remove.



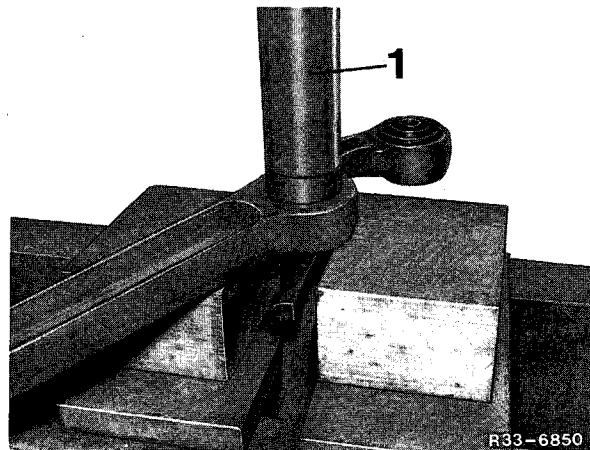
2 Drive out bearing in a press with a suitable tube.



35.61 Removal and installation of trailing arm

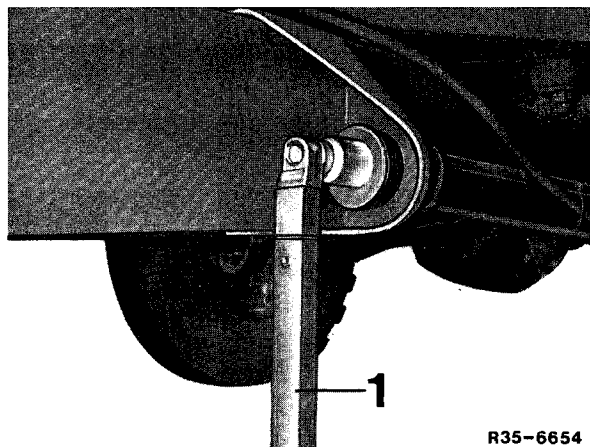
Installing trailing arm

1 Drive bearing into trailing arm in a press so that it projects equally on both sides.



2 Introduce trailing arm into frame and axle. Torque fastening bolts on frame to 120 Nm.

3 Torque fastening bolts of trailing arm on axle to 186 Nm.



Renewing radial sealing ring on drive pinion 35.61

741.5

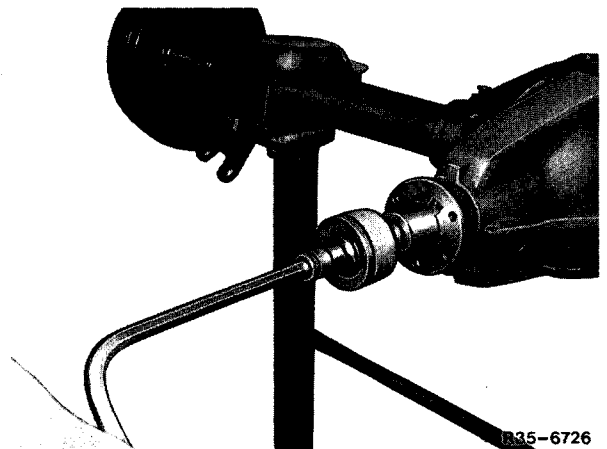
Special tools

Claw wrench	460 589 00 07 00
Torquemeter	001 589 49 21 00
Retaining wrench	460 589 01 31 00
Puller	000 589 89 33 00
Intermediate piece	460 589 00 63 00
Thrust piece	601 589 10 63 00

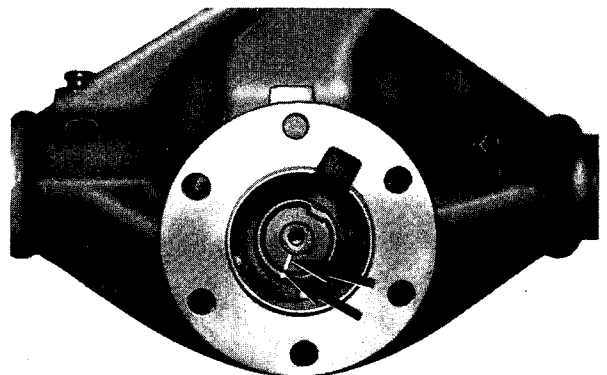
Renewing radial sealing ring

1 Before disassembling the clutch flange and the sealing ring, it is mandatory to measure the friction moment of the entire axle using a special tool at the clutch flange with wheels removed. Record the friction moment determined.

Claw wrench 460 589 00 07 00
Torquemeter 001 589 49 21 00



2 Apply mark and thus position of slotted nut and drive pinion by means of a marking tool.

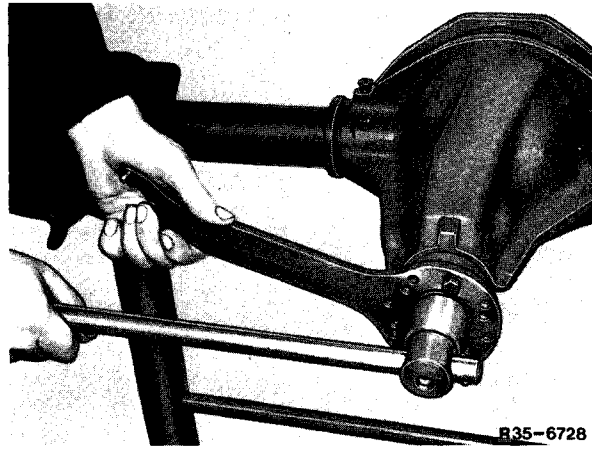


R35-6727



35.61 Renewing radial sealing ring on drive pinion

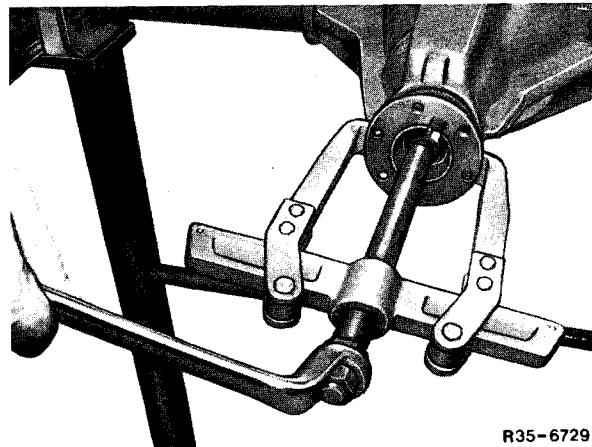
3 Fit special tool to clutch flange and unscrew slotted nut using special tool.



Claw wrench 460 589 00 07 00
Retaining wrench 460 589 01 31 00

4 Remove clutch flange with special tool and check for damage and score marks, renewing clutch flange if necessary.

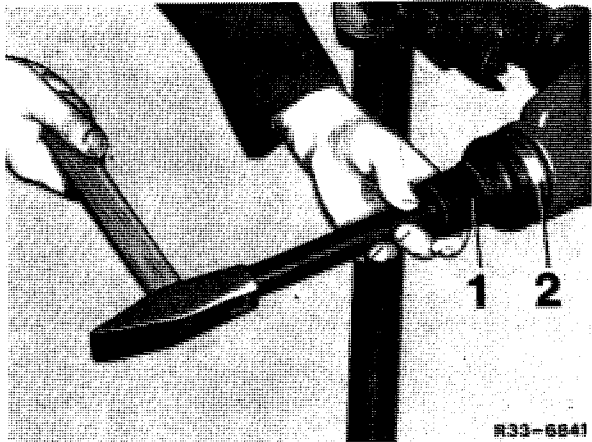
Note: On no account may the clutch flange be removed by hard blows with a hammer since the bearings will be damaged in this case.



Puller 000 589 89 33 00

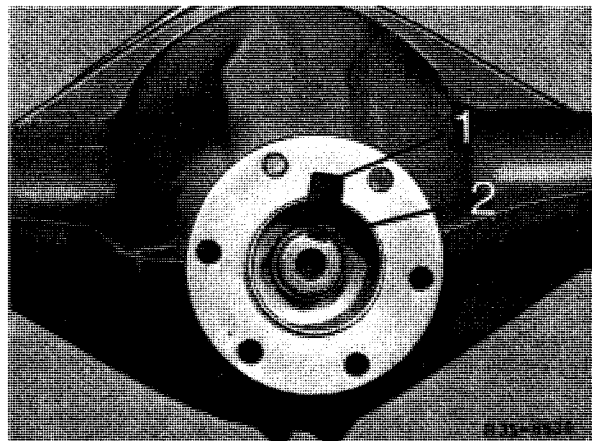
5 Remove damaged radial sealing rings and drive in new radial sealing rings with special tool until the insert rests on the axle housing.

Note: Before installing the radial sealing rings, pack space between dust and sealing lip with grease, lightly oil lips. Apply a coat of Teroson Fluid T 307 or Dichtin 51 sealing compound to the outer circumference of the radial sealing rings. Only one radial sealing ring is fitted up to axle No. 7 501 979. Older axles cannot be converted to 2 radial sealing rings.



1 Thrust piece 601 589 10 63 00
2 Intermediate ring 460 589 01 31 00

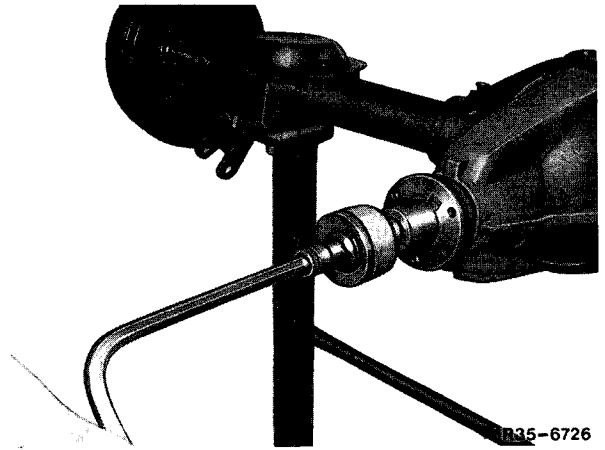
6 Mount clutch flange on drive pinion so that the slot on the drive pinion coincides with the slot of the clutch flange.



1 Slot on clutch flange
2 Slot on drive pinion

Renewing radial sealing ring on drive pinion 35.61

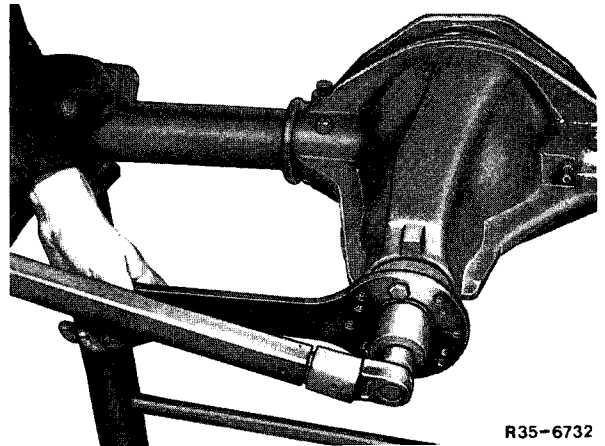
7 Screw on old slotted nut as far as the mark and measure the friction moment with the special tool.



Claw wrench 460 589 00 07 00
Torquemeter 001 589 49 21 00

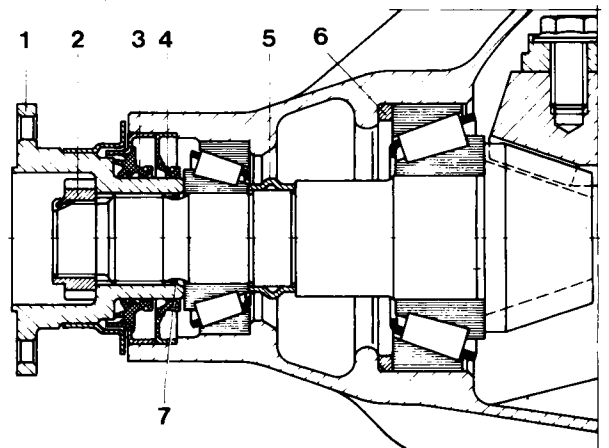
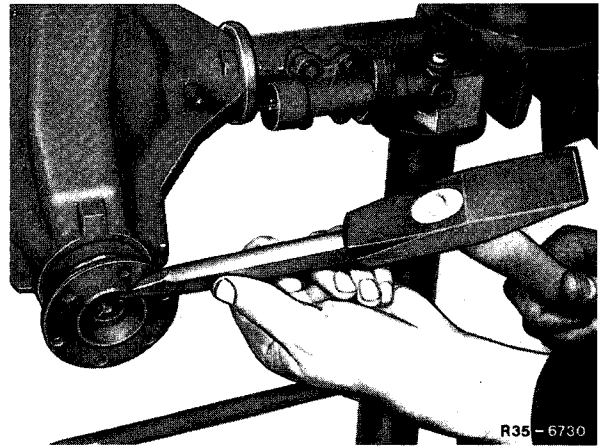
8 Remove the old slotted nut. Screw on a new slotted nut then slowly bring to the specified friction moment by alternate tightening and measuring (turning the drive with torquemeter). The friction moment should exceed the value measured in 7 by 50 Ncm (5 kpcm).

Note: Check clutch flange with dial gauge at pilot for propeller shaft for vertical and lateral runout.
Permissible vertical runout: 0.1 mm
Permissible lateral runout: 0.1 mm



9 Secure slotted nut.

Note: If the slotted nut is inadvertently over-tightened and the friction moment increased beyond the permissible tolerance, the gear set must always be completely disassembled since the compression ring has been compressed during incorrect installation, has lost its effect and cannot be removed without disassembling the axle. In addition, it is not permissible for repairs to re-install a slotted nut which has been used once since this causes premature failure of the drive bearing.



- 1 Clutch flange
- 2 Slotted nut
- 3 Radial sealing ring
- 4 Radial sealing ring
- 5 Compression ring
- 6 Shim
- 7 O-ring



Removal and installation of rear axle shaft 35.61

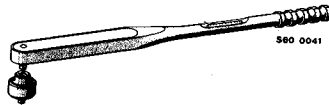
741.5

Tightening torques in Nm (kpm)

Bearing cover on axle tube M 10 63 – 75 (6.3 – 7.5)

Special tools

Torque wrench 20 – 100 Nm



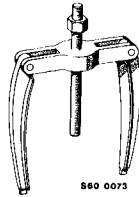
000 589 64 21 00

Internal puller



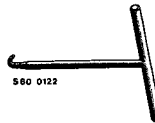
000 589 31 33 00

Counter support



000 589 34 33 00

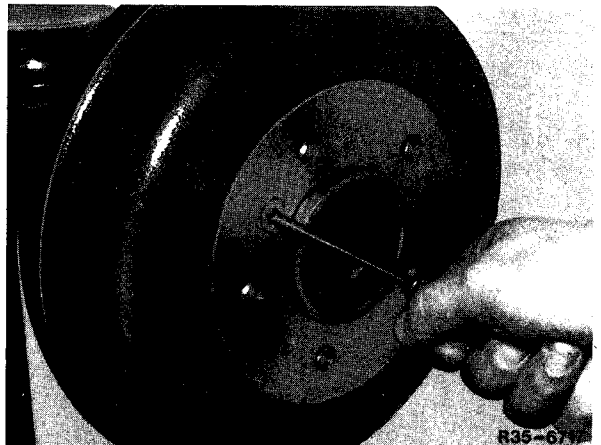
Drawhook



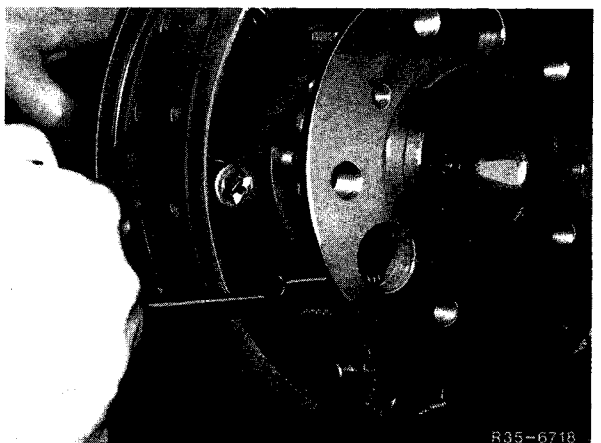
116 589 01 62 00

Removal

1 Unscrew bolt on brake drum, remove brake drum.



2 Disconnect return spring on brake adjustment using special tool and remove.



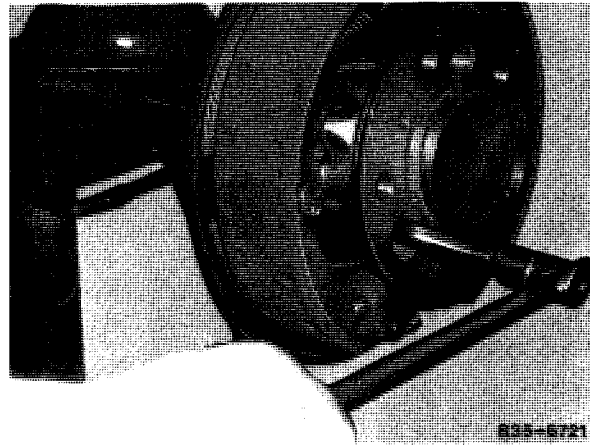
Drawhook 116 589 01 62 00



35.61 Removal and installation of rear axle shaft

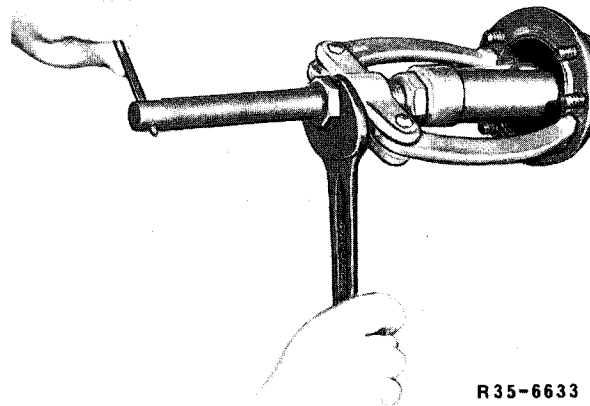
3 Unscrew fastening nuts of bearing cover, pull out rear axle shaft.

Note: Mark rear axle shafts before removing since they must be refitted in the same position due to the compression ring installed.



4 Remove gasket and brake anchor plate.

Note: If the taper roller bearing outer race is tightly seated in the suspension tube, it can be pulled out with a special tool.

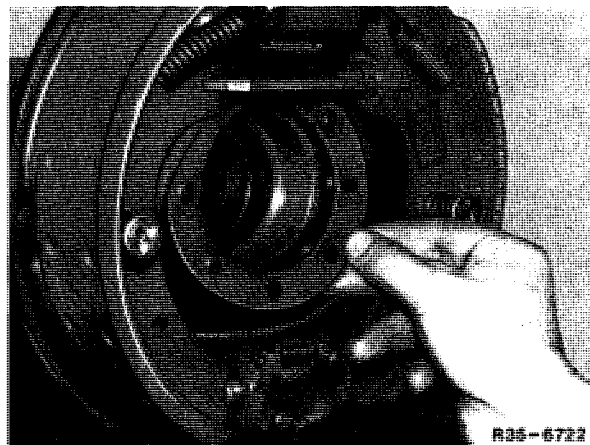


Internal puller 000 589 31 33 00
Counter support 000 589 34 33 00

Installation

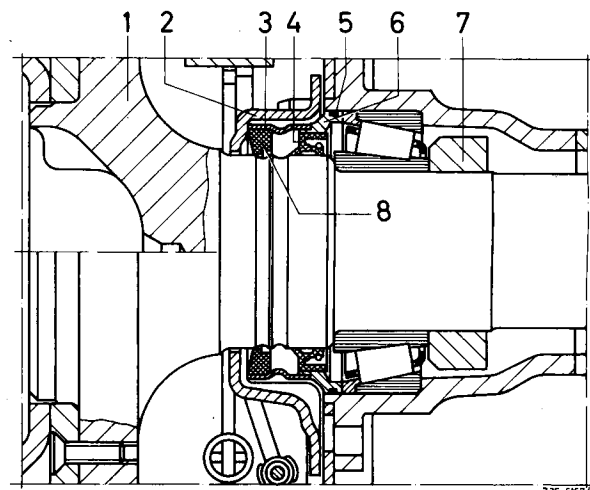
1 Fit brake anchor plate to rear axle.

2 Insert gasket between bearing cover and brake anchor plate.



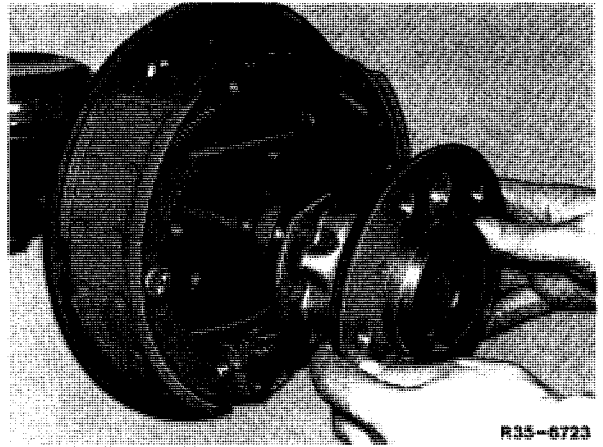
Note: Before installing the rear axle shaft, ensure that the O-ring is fitted on the support ring of the rear axle shaft.

- 1 Rear axle shaft
- 2 Bearing cover
- 3 Compression ring
- 4 Radial sealing ring
- 5 O-ring
- 6 Support ring
- 7 Shrink ring
- 8 Cellulose polyurethane ring



Removal and installation of rear axle shaft 35.61

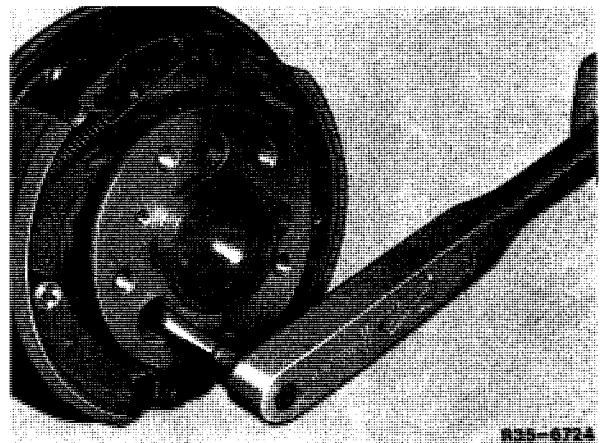
3 Insert rear axle shaft, paying attention to the marking made during removal to avoid confusing the right and left rear axle shaft.



4 Screw on nuts for mounting rear axle shaft and torque to 63–75 Nm.

Note 1: The fastening nuts of the rear axle shaft must be evenly tightened crosswise, i.e. screw in the fastening bolts until they make contact with the bearing cover then tighten each crosswise by $\frac{1}{2}$ turn until the specified tightening torque is reached to prevent the compression ring being unilaterally compressed.

Note 2: The nuts for mounting the rear axle shaft are self-locking and should be screwed on so that the compressed end and the slightly more rounded side of the nut point outward. Self-locking nuts should only be used once.



Disassembly and reassembly of rear axle shaft 35.61

741.5

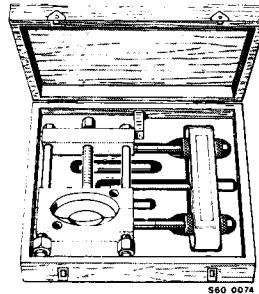
Special tools

Sleeve



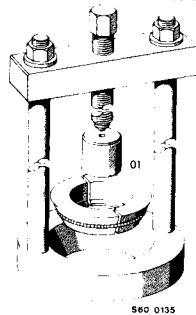
601 589 01 14 00

Puller



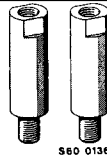
000 589 45 33 00

Tester



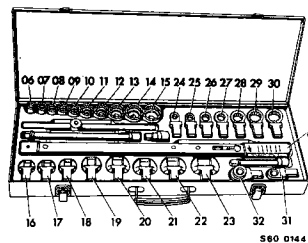
601 589 12 63 00

Reducer



601 589 13 63 00

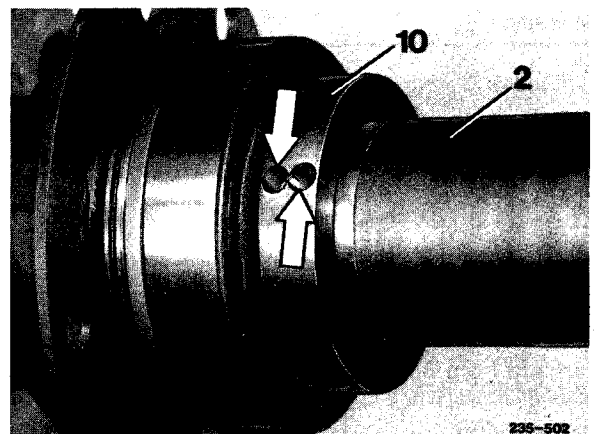
Torque wrench 80 – 400 Nm



000 589 10 99 01

Disassembly

1 Make 2 bores of 5.5 mm \varnothing on the shrink ring in an axial direction.

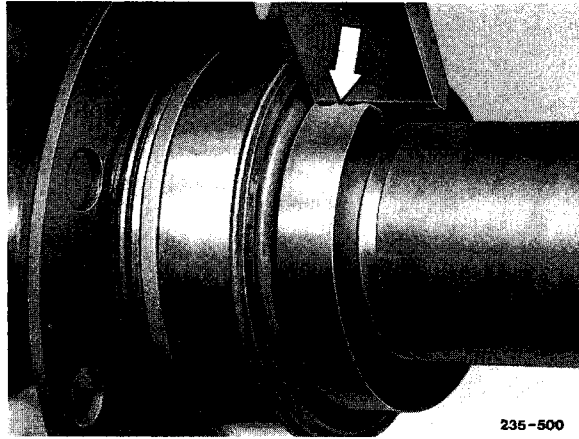


2 Rear axle shaft
10 Shrink ring

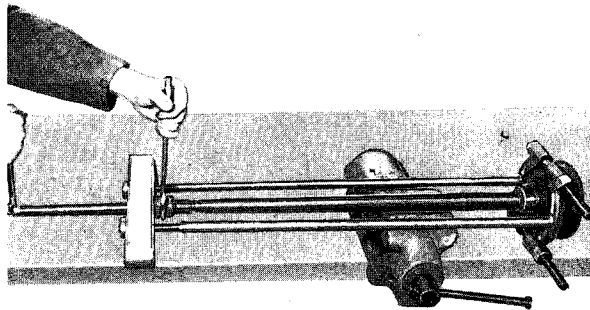


35.61 Disassembly and reassembly of rear axle shaft

2 Release the shrink ring with a flat chisel and remove.



3 Pull taper roller bearing, bearing cover, radial sealing ring, compression ring and support ring off rear axle shaft with special tool.



Puller 000 589 45 33 00
Reducer 601 589 13 63 00
Spindle of 601 589 12 63 00

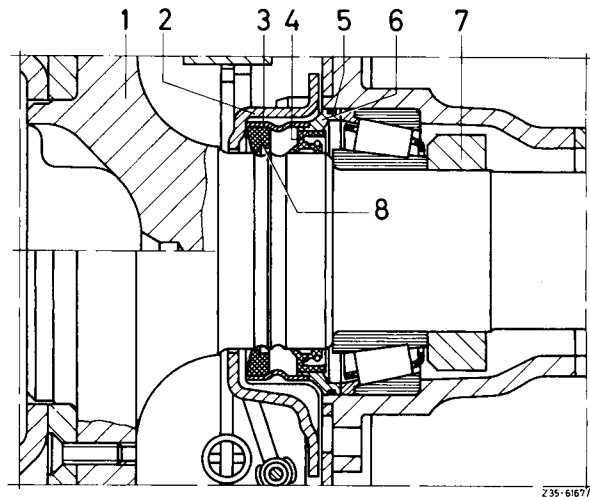
R35-6644

4 Remove O-ring from support ring.

5 Clean all parts and check for wear.

Important note: Always renew compression ring and shrink ring.

- 1 Rear axle shaft
- 2 Bearing cover
- 3 Compression ring
- 4 Radial sealing ring
- 5 O-ring
- 6 Support ring
- 7 Shrink ring
- 8 Cellulose polyurethane ring



Reassembly

1 Grease O-ring and insert in groove on support ring.

2 Apply a light coat of grease to radial sealing ring between sealing and dust lip.

3 Fit bearing cover to rear axle shaft with new compression ring, support ring and cellulose polyurethane ring.

Note: The cellulose polyurethane ring is fitted as standard from October 1980.

- 1 Cellulose polyurethane ring
- 2 Compression ring

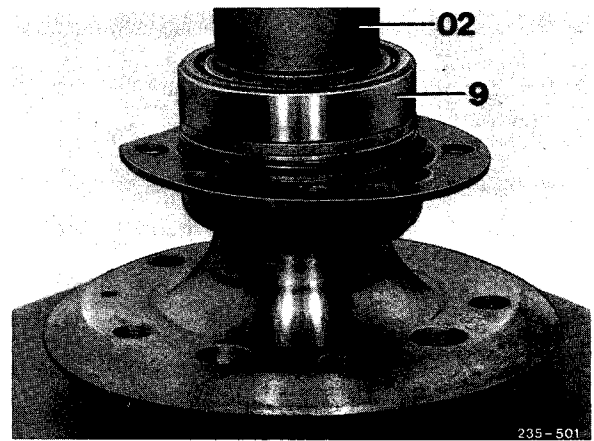


R35-6731

Disassembly and reassembly of rear axle shaft 35.61

4 Drive the well-greased taper roller bearing onto rear axle shaft with special tool.

Note: Heat taper roller bearing to approx. 80° C before installing.



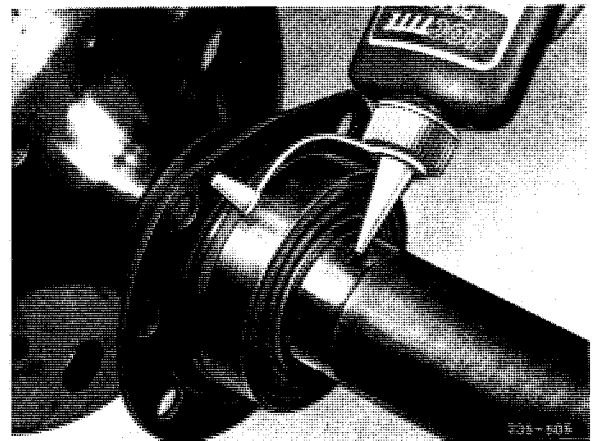
02 Sleeve 601 589 01 14 00
9 Taper roller bearing

5 Clean seating surface for shrink ring on rear axle shaft free of grease with activator, then apply a light coat of Loctite, Product Type 207 (MB Part No. 002 989 36 71) to the seating surface.

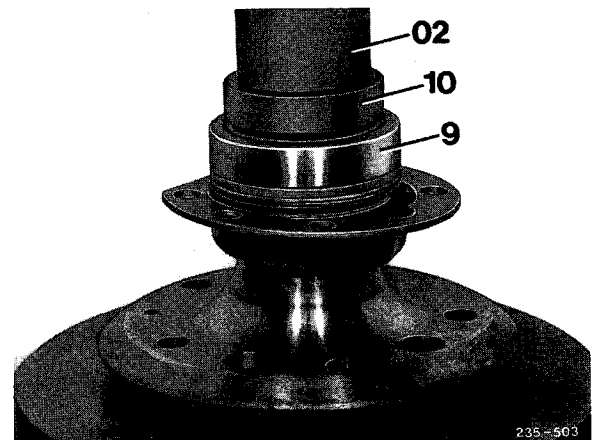
Note: Grease and oil should be removed from the seat for the shrink ring with particular care to ensure that the shrink ring is properly seated.

6 Heat shrink ring on an electric heating plate to 500–550° C.

Note: The temperature can be checked with Thermochrome chalk from Firma AF Farber-Castel, Stein bei Nürnberg.

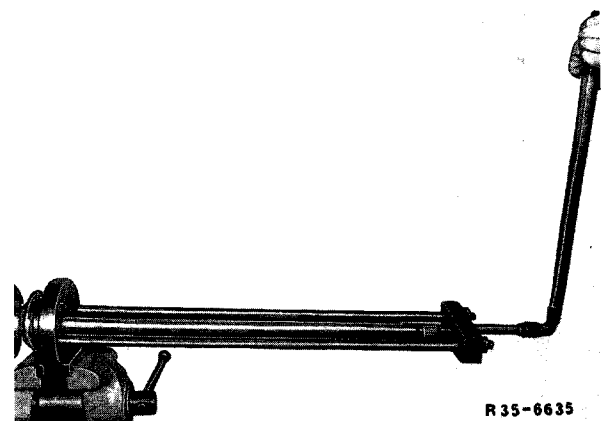


7 Push shrink ring onto rear axle shaft with chamfer pointing toward taper roller bearing and position with special tool so that it rests on the taper roller bearing before cooling.



02 Sleeve 601 589 01 14 00
9 Taper roller bearing
10 Taper roller bearing
10 Shrink ring

8 The shrink ring must withstand a pressing-off force of 8,000 kp. It must therefore be checked with the special tool. The check may only be performed after the shrink ring has cooled completely. If a force of 210 Nm (21 kpm) is applied to the tester and the shrink ring does not slacken, the seat is adequately tight.



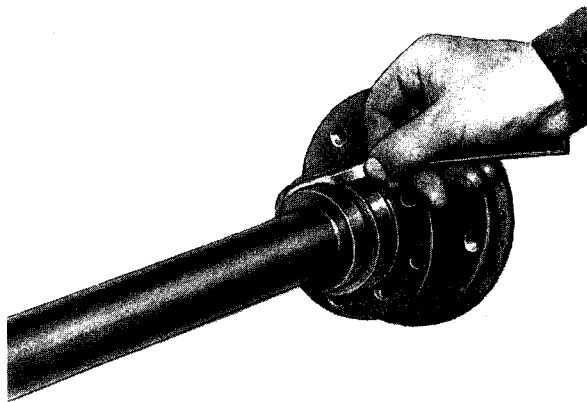
Tester 601 589 12 63 00



35.61 Disassembly and reassembly of rear axle shaft

9 Remove tester and check with a feeler gauge (0.05 mm) whether the shrink ring has slackened.

Note: If the shrink ring has slackened by 0.05 mm, it must be replaced.



R 35-6640

Removal and installation of ring gear with differential 35.61

741.5



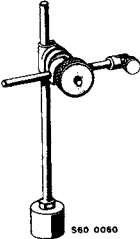
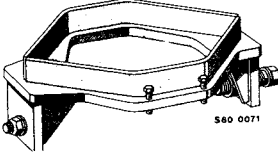
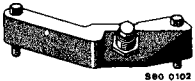

Adjustment values

Backlash	0.1 – 0.15
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Tightening torques in Nm (kpm)

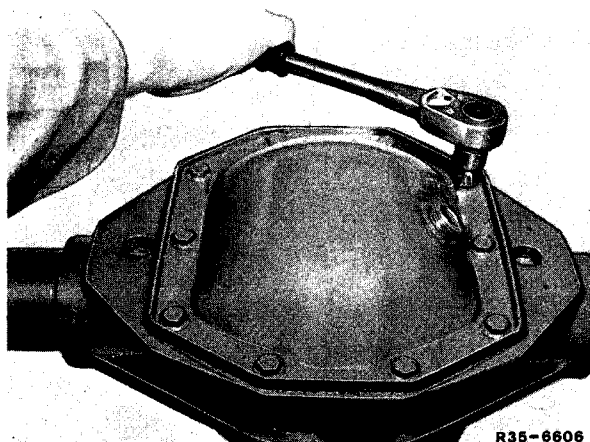
Bearing bracket on rear axle housing M 10	60 – 70 (6 – 7)
Cover on rear axle housing	M 8 10.9 40 – 50 (4 – 5)

Special tools

Torque wrench 20 – 100 Nm		000 589 64 21 00
Dial gauge		001 589 53 21 00
Measuring instrument		363 589 02 21 00
Expander		601 589 00 31 00
Retaining device		601 589 01 40 00
Spring balance		000 589 03 65 00

Removal

- 1 Drain oil (35.61 – 013).
- 2 Unscrew cover at the rear and remove with gasket.
- 3 Remove rear axle shafts (35.61 – 205).



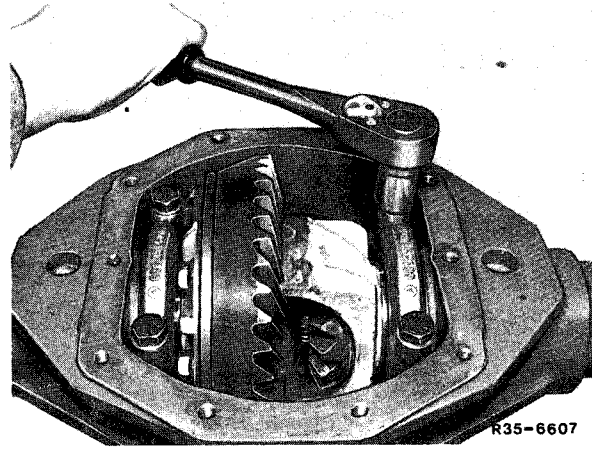
R35-6606



35.61 Removal and installation of ring gear with differential

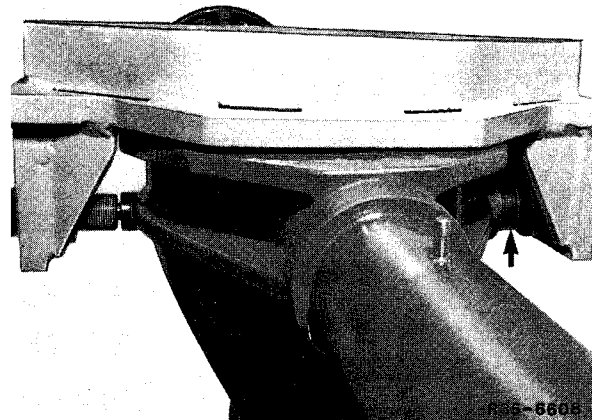
4 Unscrew bearing brackets and remove.

Note: Mark bearing brackets, shims and taper roller bearing outer races to enable them to be inserted in their original installation position.



5 Fit special tool to rear axle housing and tighten so that the differential can be removed.

Note: The clamping bolt on the expander must only be tightened enough so that the Belleville springs make full contact (see arrow).



Expander 601 589 00 31 00

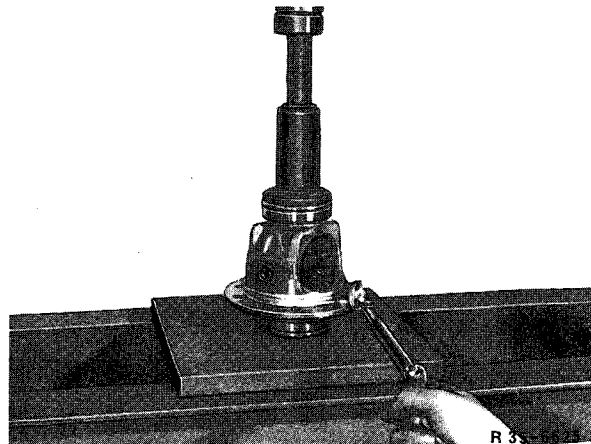
Installation

Note: If a new differential housing or different taper roller bearings are installed, the pretension of the differential housing bearings must be re-determined.

1 Load differential housing with taper roller bearings and taper roller bearing outer races in a press with 700 ± 50 kp.

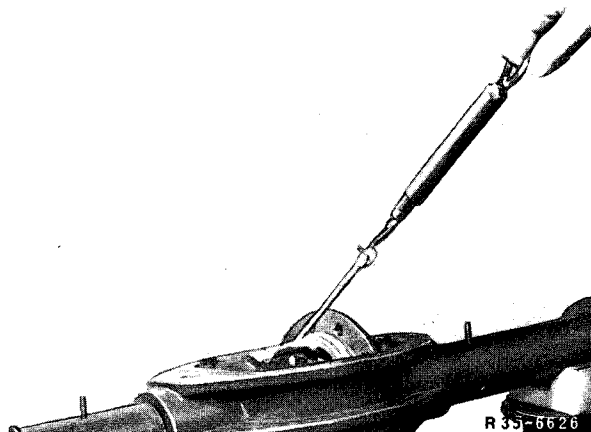
2 Wind a cord several times round the differential housing and determine the tensile force with the special tool.

Spring balance 000 589 03 65 00



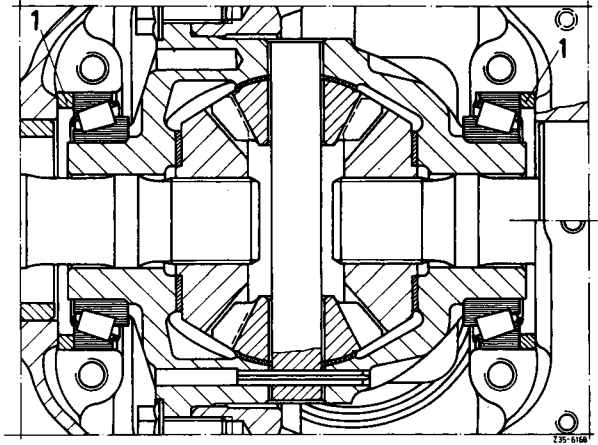
3 The spring force determined in the press at the spring balance must also be achieved in the rear axle housing. It can be altered by installing shims.

Shims are available in sizes from 4.90 to 6.08 mm in steps of 0.02 mm.



Removal and installation of ring gear with differential 35.61

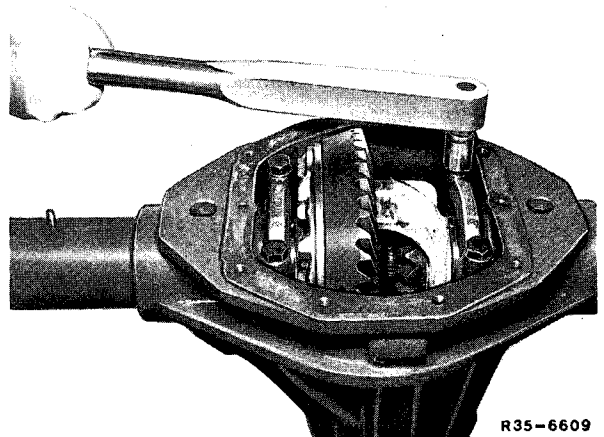
Note: The expander must not be tightened when determining the friction value in the rear axle housing.



1 Shim

4 If no parts are renewed in the differential housing, preload the rear axle housing with the special tool, re-install the differential housing with shims, taper roller bearing outer races and bearing brackets in their original position.

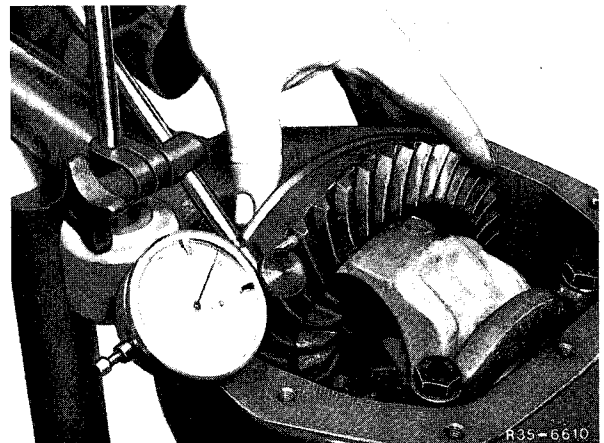
5 Torque fastening bolts of bearing brackets to 60–70 Nm.



Expander 601 589 00 31 00

R35-6609

6 Fit special tool to rear axle housing so that the feeler pin of the dial gauge is at right angles to the tooth face. Check the backlash by moving the ring gear backward and forward. Repeat this operation at at least 4 points around the circumference of the ring gear.



Measuring instrument 363 589 02 21 00
Dial gauge 001 589 53 21 00

R35-6610

Note: The backlash is altered by installing shims. If a thinner shim is installed on one side, a shim thicker by the same dimension must be fitted to the opposite side of the differential housing to maintain the preload on the differential housing bearings.

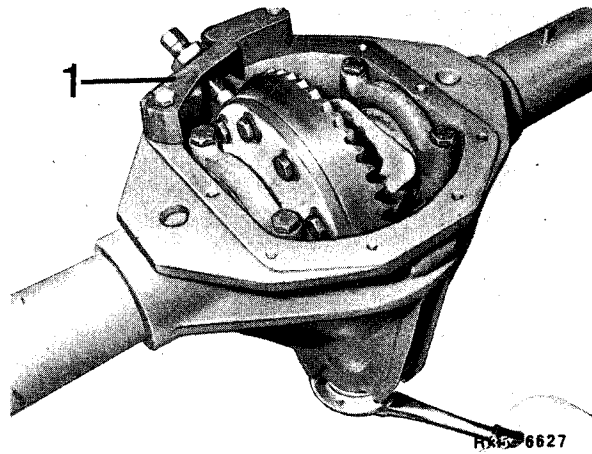
35.61 Removal and installation of ring gear with differential

Checking contact pattern

The manufacturing tolerances of the ring gear and drive pinion are such as to provide adequate adjustment of basic dimension and backlash for installation.

It is good practice, however, to check the contact pattern of the gear wheel. For this purpose, coat two teeth of the gear wheel offset by 180° with India ink. Fit the special tool to the rear axle housing and press against ring gear then turn forward and backward at drive pinion.

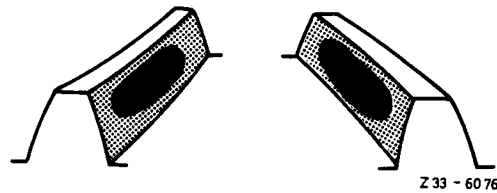
1 Retaining device 601 589 01 40 00



Contact pattern on ring gear under load (ring gear braked)

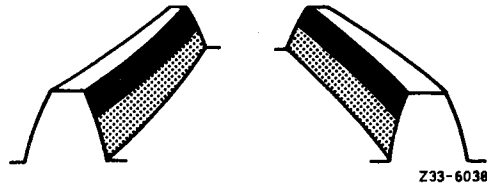
Correct contact pattern

Such an ideal contact pattern cannot generally be achieved in practice. The important element is, however, that the contact pattern does not touch the outer edge of the tooth face at any point.



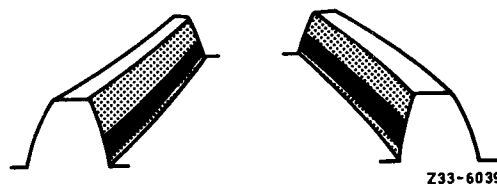
Contact at tip of tooth (incorrect)

Remedy: Slightly reduce the installation distance (basic dimension) of the drive pinion and at the same time increase the installation distance of the ring gear slightly, i.e. so that the teeth of the ring gear do not engage so deeply into the teeth of the drive pinion to maintain the correct backlash.



Contact at base of tooth (incorrect)

Remedy: Slightly increase the installation distance (basic dimension) of the drive pinion and at the same time reduce the installation distance of the ring gear slightly, i.e. so that the teeth of the ring gear engage more deeply into the teeth of the drive pinion to maintain the correct backlash.



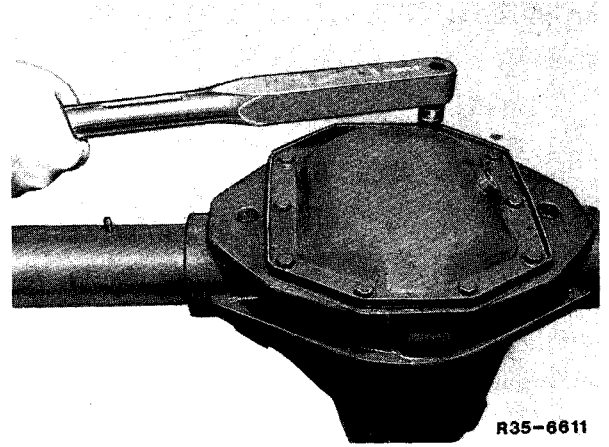
Removal and installation of ring gear with differential 35.61

7 Coat both sides of gasket Part No. 601 351 50 80 on rear of cover with Terolan 2105 or Curilin sealing compound and screw onto rear axle housing with cover. Torque fastening bolts to 40–50 Nm.

Note: From axle No. 6 597 807 a second gasket with the Part No. 601 351 51 80 was approved. This gasket, make Reinzoflex, must not be installed with sealing compound.

8 Install rear axle shafts (35 61–205).

9 Fill in oil (35 61 013).




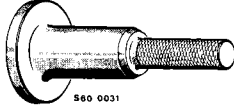
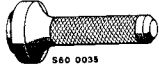

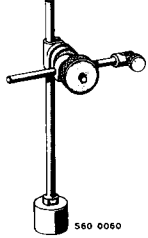

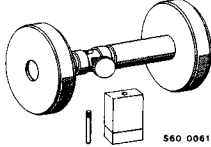
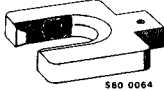
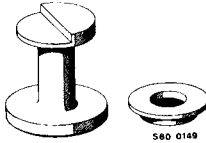

Removal, disassembly, reassembly and installation of drive pinion 35.61

741.5

Adjustment values

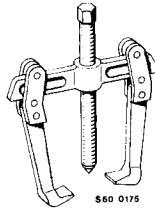
Friction value of drive pinion with radial sealing ring 2.5 – 3 Nm (25 – 30 kpcm)

Special tools

Claw wrench		460 589 00 07 00
Mandrel		312 589 05 15 00
Mandrel		343 589 03 15 00
Mandrel		385 589 03 15 00
Dial gauge		001 589 53 21 00
Measuring instrument		363 589 02 21 00
Torquemeter		001 589 49 21 00
Adjusting device		601 589 00 21 00
Measuring plate		601 589 00 23 00
Measuring piece		601 589 01 23 00
Retaining wrench		460 589 01 31 00

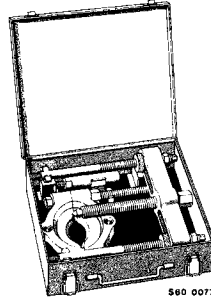
35.61 Removal, disassembly, reassembly and installation of drive pinion

Puller



000 589 89 33 00

Puller



001 589 19 33 00

Intermediate ring

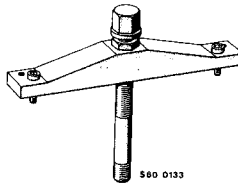
460 589 00 63 00

Insert



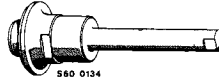
601 589 01 63 00

Supporting bridge



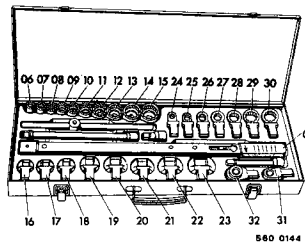
601 589 02 63 00

Thrust piece



601 589 10 63 00

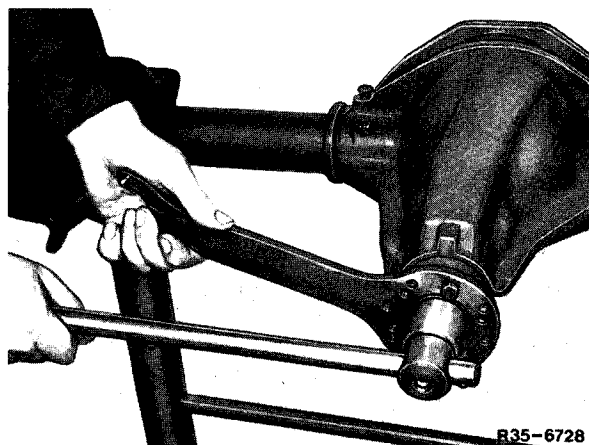
Torque wrench 80 – 400 Nm



000 589 10 99 01

Removal and disassembly

- 1 Remove differential (35.61 – 300).
- 2 Fit special tool to clutch flange and unscrew slotted nut with special tool.



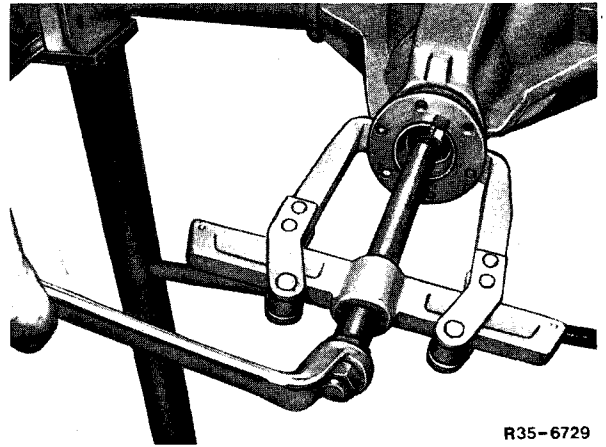
Retaining wrench 460 589 01 31 00
Claw wrench 460 589 00 07 00

R35-6728

Removal, Disassembly, Reassembly and Installation of Drive Pinion 35.61

3 Pull clutch flange off drive pinion with special tool, check for damage and score marks and renew clutch flange if necessary.

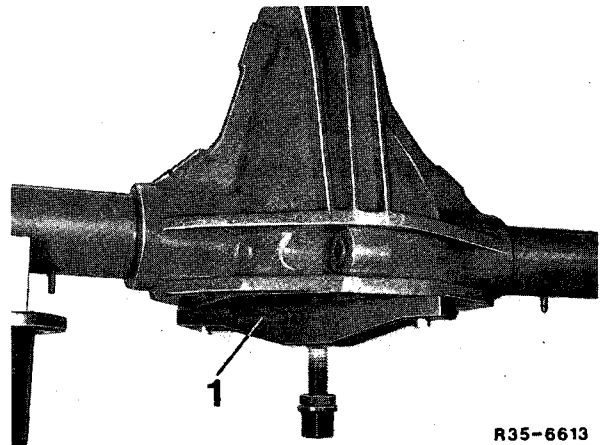
Note: On no account may clutch flange be removed by hard blows from a hammer since the bearings will be damaged in this case.



Puller 000 589 89 33 00

R35-6729

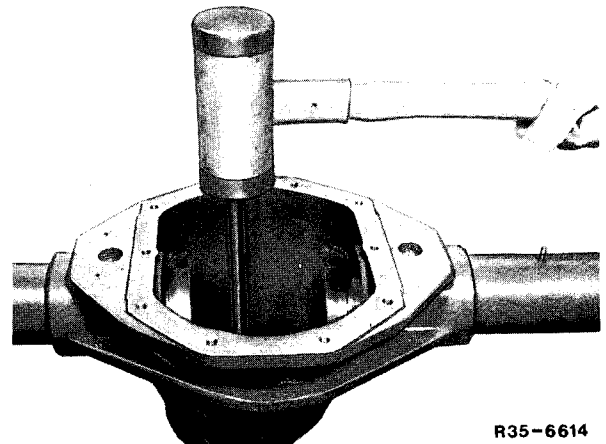
4 Fit special tool to rear axle housing, drive out drive pinion and remove with compression ring.



1 Support bridge 601 589 02 63 00

R35-6613

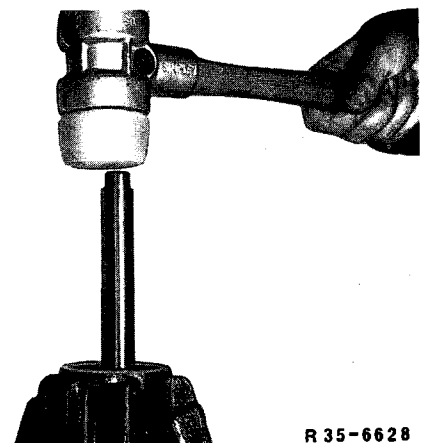
5 Drive the taper roller bearing on the flange end and the radial sealing ring out of the rear axle housing with special tool.



Mandrel 343 589 03 15 00

R35-6614

6 Drive the bearing outer race of the taper roller bearing on the pinion end out of rear axle housing with special tool and remove shim.



Handle 601 589 10 63 02
Insert 601 589 01 63 00

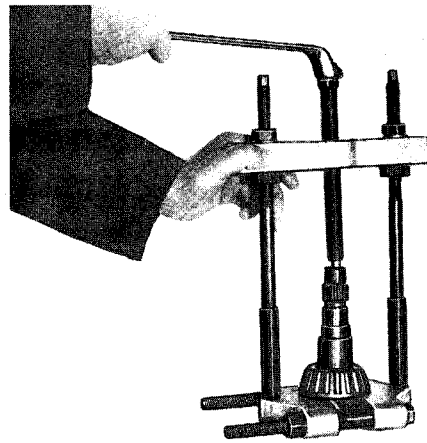
R 35-6628



35.61 Removal, disassembly, reassembly and installation of drive pinion

7 Pull taper roller bearing off drive pinion with special tool.

8 Clean all parts and check for wear.



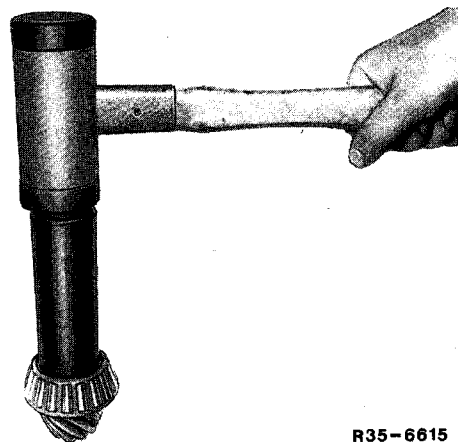
Puller 001 589 19 33 00

R 35-6629

Reassembly and installation

1 Drive taper roller bearing onto drive pinion with suitable sleeve.

Note: The following steps 2 to 6 must always be performed when installing a different gear set and when exchanging the taper roller bearing on the pinion end.

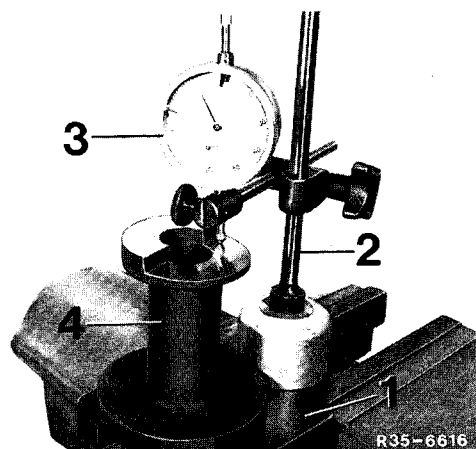


R35-6615

2 Clamp measuring plate (1) in vice and fit measuring instrument (2) with dial gauge attached (3). Fit measuring piece (4) to measuring plate, create a preload of 8 mm at the dial gauge and set to 0.

Note: Use the higher end of the measuring piece (4) for adjustment.

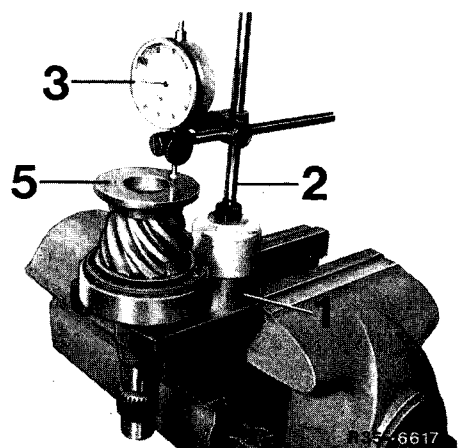
1	Measuring plate	601 589 00 23 00
2	Measuring instrument	363 589 02 21 00
3	Dial gauge	001 589 53 21 00
4	Measuring piece	601 589 01 23 00



R35-6616

3 Fit drive pinion with taper roller bearing and magnetic plate (5) (from special tool 601 589 01 23 00) to measuring plate and record the difference from the drive pinion with taper roller bearing to measuring piece (4).

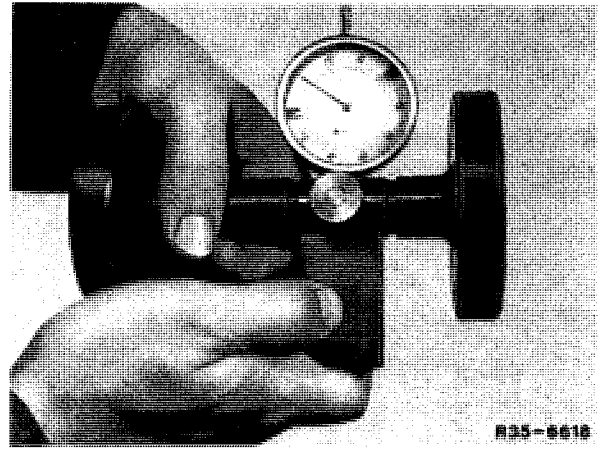
1	Measuring plate	601 589 00 23 00
2	Measuring instrument	363 589 02 21 00
3	Dial gauge	001 589 53 21 00
5	Magnetic plate	601 589 01 23 00



R35-6617

Removal, Disassembly, Reassembly and Installation of Drive Pinion 35.61

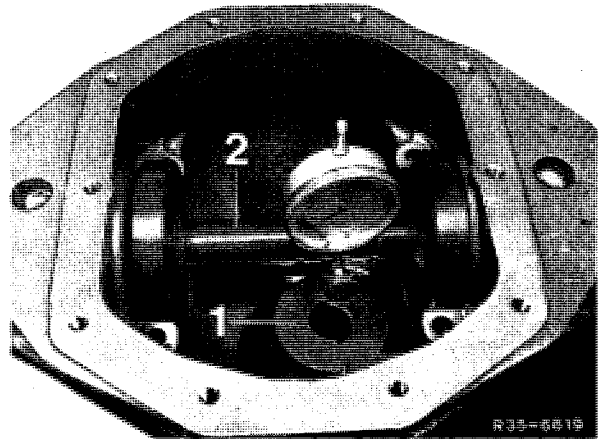
4 Set adjusting device to the **set inspection dimension of 66 mm**. For this purpose, screw the feeler pin (circumference of adjusting device) into dial gauge, firmly press the spacer against the adjusting device. Create 2 mm preload at the dial gauge and set the gauge to 0.



Adjusting device 601 589 00 21 00

5 Insert measuring piece (1) into rear axle housing, then introduce adjusting device (2) and measure the fabrication difference from the rear axle housing to the basic set dimension of 66 mm.

Note: If there is a deviation toward the center of the ring gear (dial gauge indicates more than 2 mm), deduct this difference from the difference recorded in 3; if there is a deviation toward the drive pinion (dial gauge indicates less than 2 mm), add the difference to the difference recorded in 3.



2 Measuring piece 601 589 01 23 00
2 Adjusting device 601 589 00 21 00

6 Determine difference from basic set dimension 66 mm to basic dimension for gear set to be installed (is recorded electrically on the drive pinion).

- A Basic dimension to be set
- B Center of ring gear

Note: If the deviation is toward the center of the ring gear (dimension less than 66 mm), likewise add the difference to the difference recorded in 3; if the deviation is toward the drive pinion (dimension greater than 66 mm), deduct the difference from the difference recorded in 3.

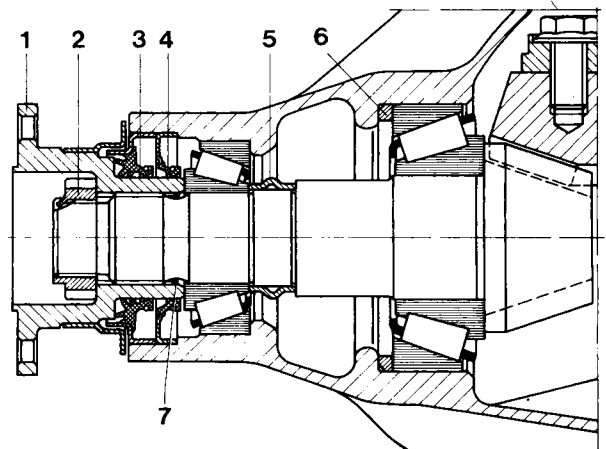
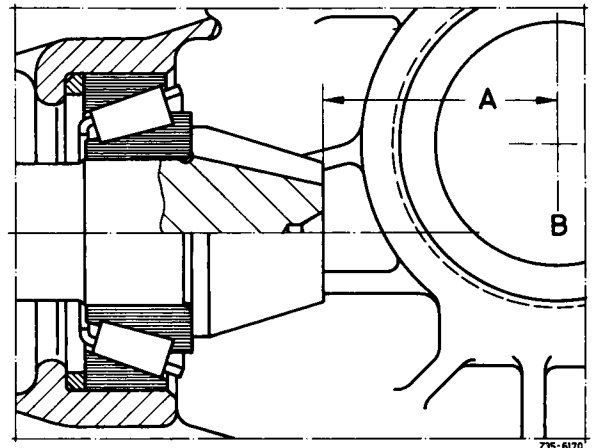
The dimension determined corresponds to the thickness of the shim.

Shims are available in sizes from 5.0 to 5.68 in steps of 0.02 mm.

Example: The measured difference from the measuring piece to the drive pinion with taper roller bearing and magnetic plate is 5.30 mm. The measured fabrication deviation of the rear axle housing to the basic set dimension of 66 mm is 0.12 mm toward the center of the ring gear. The recorded basic dimension is 65.84 mm.

$$5.30 - 0.12 + 0.16 = 5.34 \text{ mm}$$

In this case a shim 5.34 mm thick should be installed.



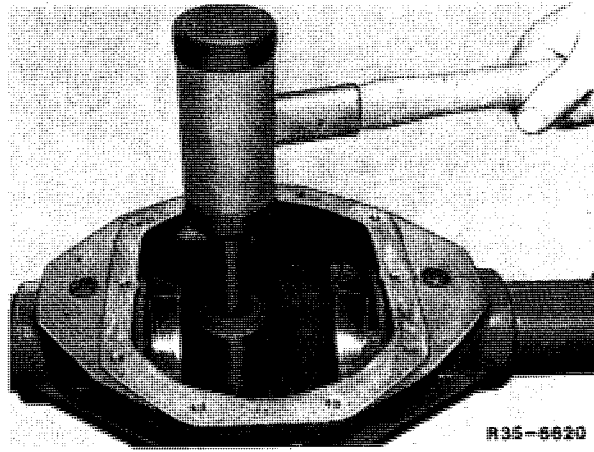
- 1 Clutch flange
- 2 Slotted nut
- 3 Radial sealing ring
- 4 Radial sealing ring
- 5 Compression ring
- 6 Shim
- 7 O-ring



35.61 Removal, disassembly, reassembly and installation of drive pinion

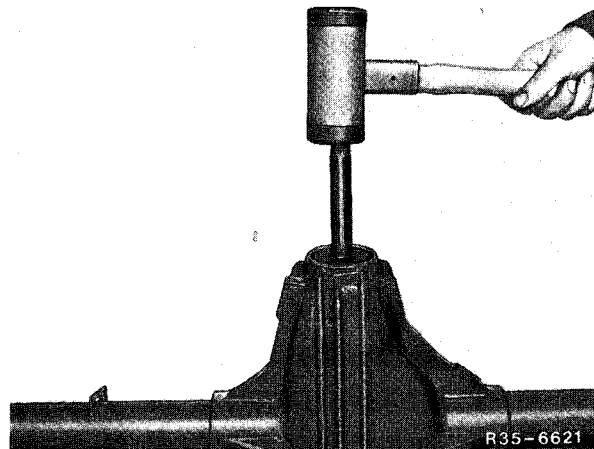
7 Insert the determined shim in the rear axle housing so that the chamfer is pointing toward the clutch flange.

8 Drive in taper roller bearing outer race of taper roller bearing on pinion end with special tool.



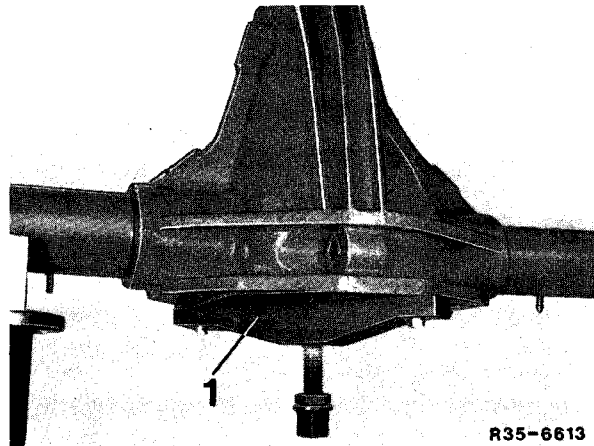
Mandrel 312 589 05 15 00

9 Drive in taper roller bearing outer race of taper roller bearing at flange end using special tool.



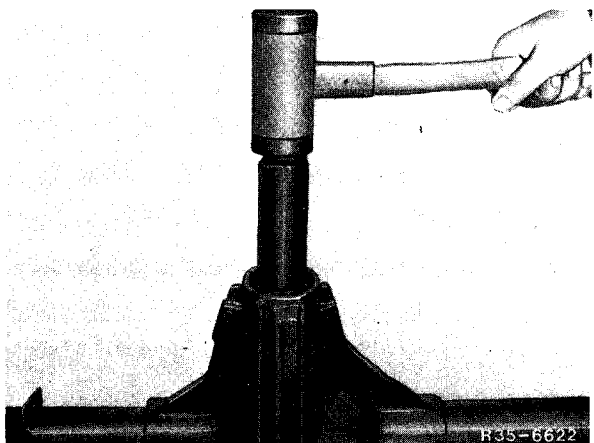
Mandrel 385 589 03 15 00

10 Fit drive pinion. Screw on special tool and place spindle on drive pinion.



1 Supporting bridge 601 589 02 63 00

11 Fit new compression ring to drive pinion and drive in outer taper roller bearing with special tool.

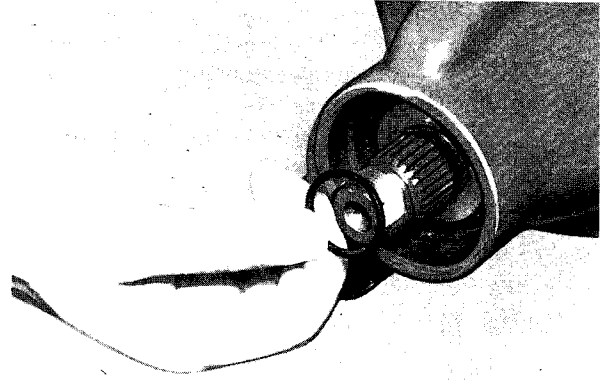


Sleeve 601 589 00 14 00

Removal, disassembly, reassembly and installation of drive pinion 35.61

12 Fit O-ring to drive pinion and push on as far as the taper roller bearing.

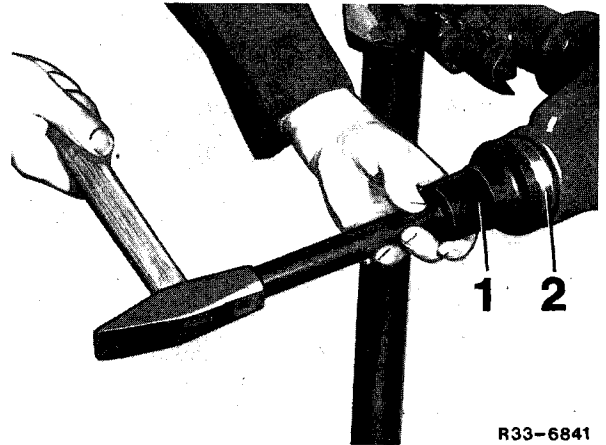
Note: The O-ring is fitted as standard as from axle No. 750 1979.



R33-6836

13 Drive in radial sealing rings with special tool until the insert of the thrust piece is resting on the rear axle housing.

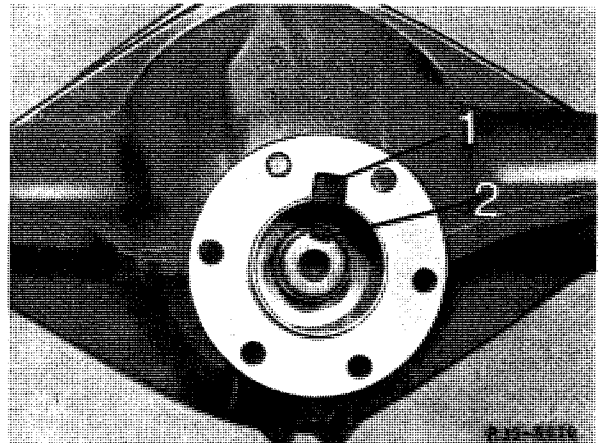
Note: Before installing radial sealing rings, apply a thin coat of Teroson Fluid T 307 or Dichtin 51 to the outer circumference. Pack space between dust and sealing lip with grease, lightly oil lips. Only 1 radial sealing ring is fitted up to axle No. 750 1979. Older axles cannot be converted to 2 radial sealing rings.



R33-6841

- | | | |
|---|-------------------|------------------|
| 1 | Thrust piece | 601 589 10 63 00 |
| 2 | Intermediate ring | 460 589 00 63 00 |

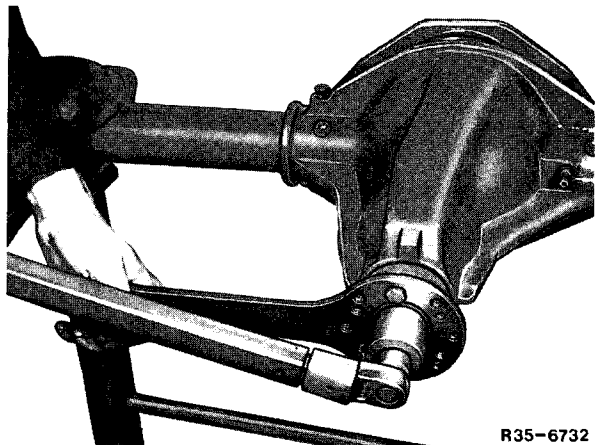
14 Fit clutch flange to drive pinion so that the slot on the drive pinion coincides with the slot of the clutch flange.



- | | |
|---|-----------------------|
| 1 | Slot on clutch flange |
| 2 | Slot on drive pinion |

15 Fit special tool to clutch flange. Screw on slotted nut and tighten with special tool until the specified friction value is reached.

Note 1: Check clutch flange at pilot for propeller shaft with dial gauge for vertical and lateral runout. Permissible vertical runout: 0.1 mm
Permissible lateral runout: 0.1 mm



R35-6732

Retaining wrench 460 589 01 31 00
Claw wrench 460 589 00 07 00

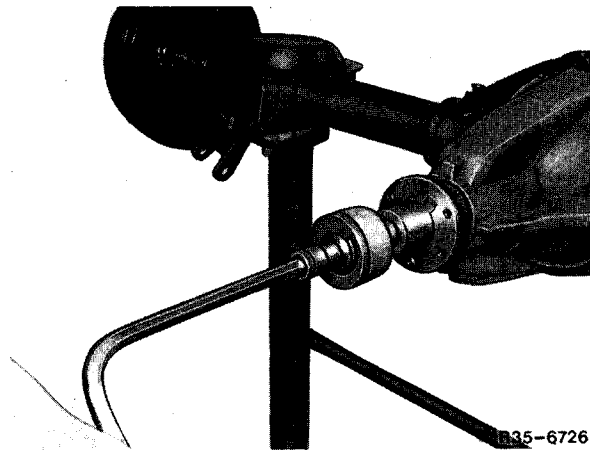


35.61 Removal, disassembly, reassembly and installation of drive pinion

Note 2: Check the friction value of the drive pinion with special tool. The friction value of the drive pinion must never be achieved by turning back the slotted nut. If the drive pinion has been overtightened, a new compression ring must always be fitted.

16 As a check, we recommend re-checking the basic dimension marked on the drive pinion as described in 4 and 5. For this purpose, the magnetic plate must be fitted to the drive pinion.

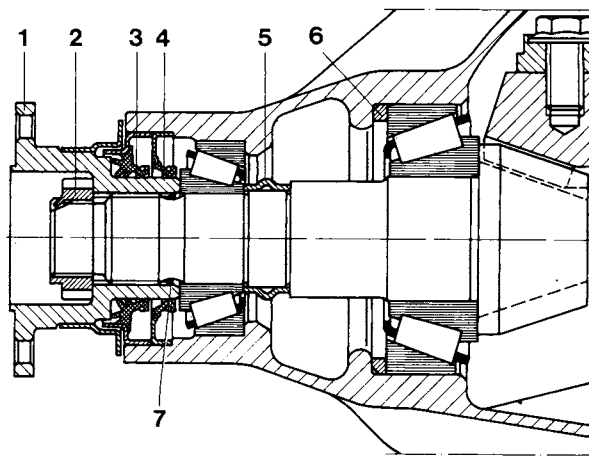
Torquemeter 001 589 49 21 00



17 Secure slotted nut by pushing the collar into the slot provided.

18 Install differential (35.61-300).

- 1 Clutch flange
- 2 Slotted nut
- 3 Radial sealing ring
- 4 Radial sealing ring
- 5 Compression ring
- 6 Shim
- 7 O-ring



Z33-6175

Disassembly and reassembly of differential 35.61

741.5

Adjustment values in Nm (kpm)

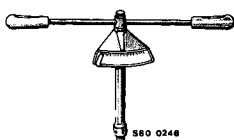
Friction moment when rotating complete differential 20 – 40 (2 – 4)


Tightening torques in Nm (kpm)

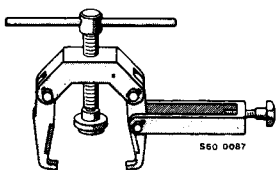
Ring gear at differential housing	M 12 x 1	10.9	130 – 145 (13 – 14.5)
Cover at differential housing	M 8		30 – 35 (3 – 3.5)

Special tools

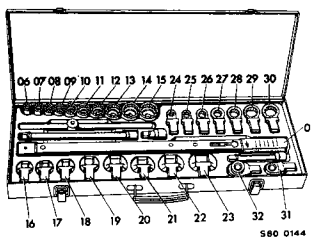
Mandrel  460 589 11 15 00

Torque wrench  000 589 27 21 00

Torque wrench 20 – 100 Nm  000 589 64 21 00

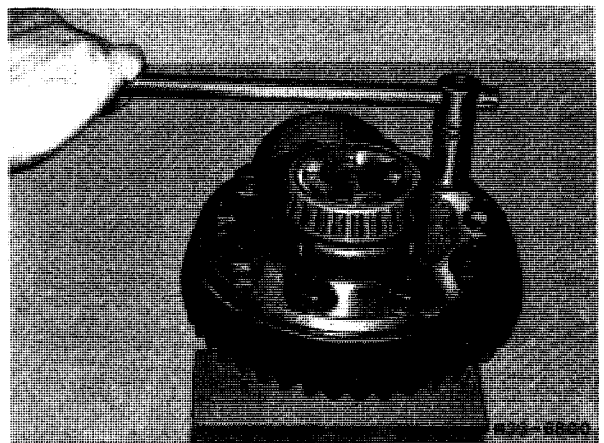
Puller  123 589 08 33 00

Mandrel  116 589 08 61 00

Torque wrench 80 – 400 Nm  000 589 10 99 01

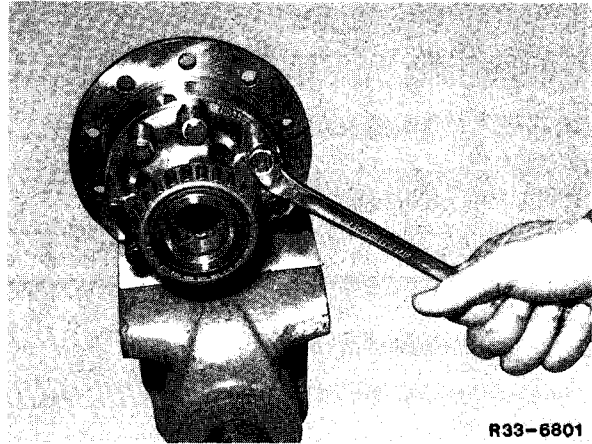
Disassembling

1 Unscrew ring gear fastening bolts and remove ring gear by knocking down around its circumference with a soft mandrel.

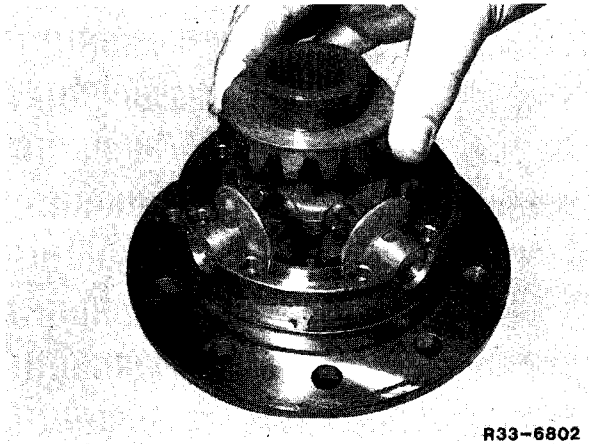


35.61 Disassembly and reassembly of differential

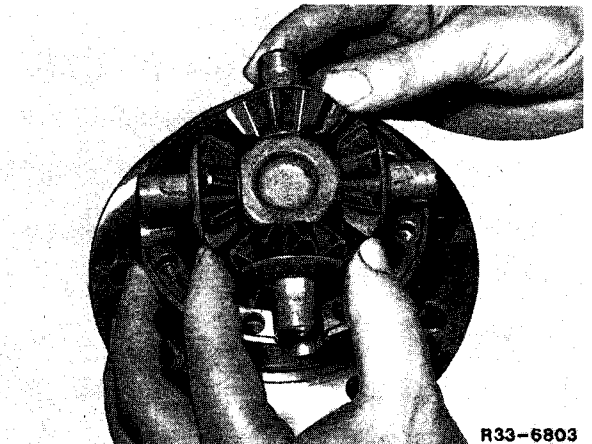
2 Unscrew fastening bolts of cover and remove cover.



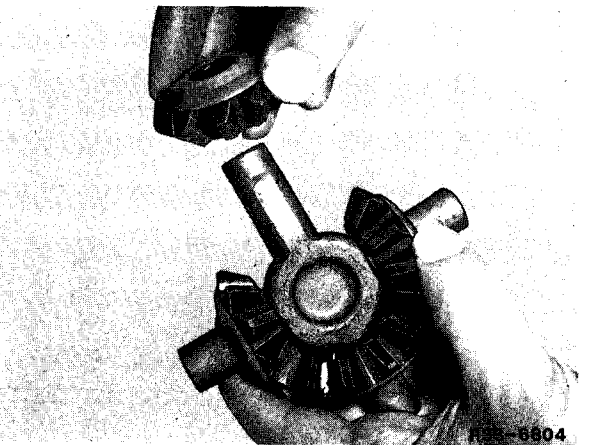
3 Remove side gear with shim from cover.



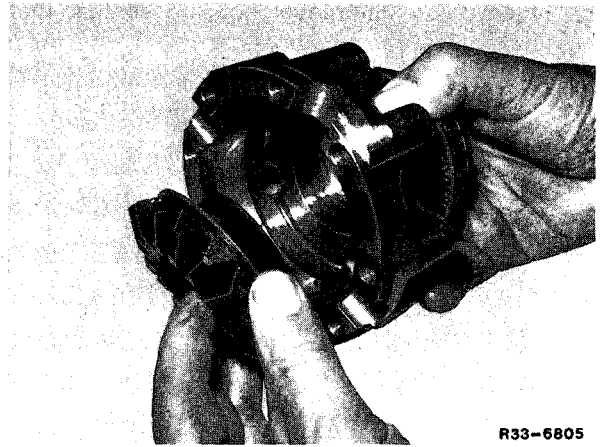
4 Remove differential spider with differential pinions.



5 Remove differential pinions with spherical washers from differential spider.



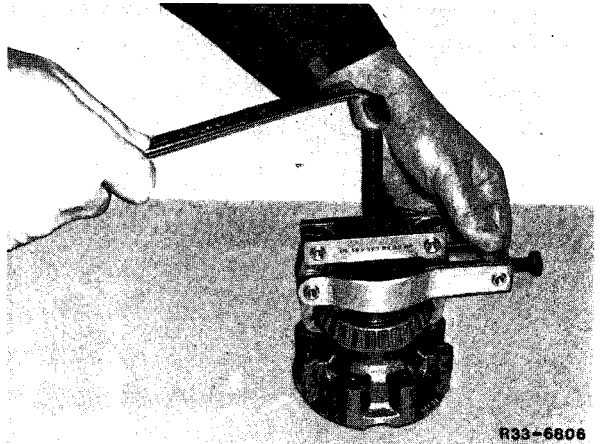
6 Remove side gear with washer from differential housing.



R33-6805

7 Pull both taper roller bearings off differential housing or cover using special tool.

8 Clean all parts and check for wear.

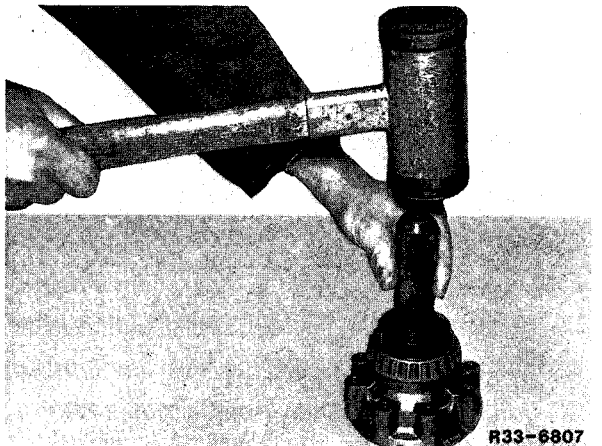


R33-6806

Puller 123 589 08 33 00

Reassembly

1 Drive both taper roller bearings onto differential housing or cover using special tool.



R33-6807

Mandrel 116 589 08 61 00

2 Fit shims to both side gears so that the groove is pointing toward the side gear and fit side gears into differential housing or cover.

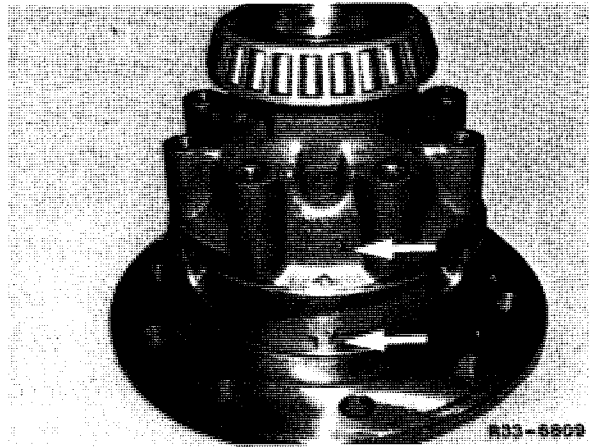
3 Fit differential pinions with spherical washers to differential spider and mount this on the differential housing.



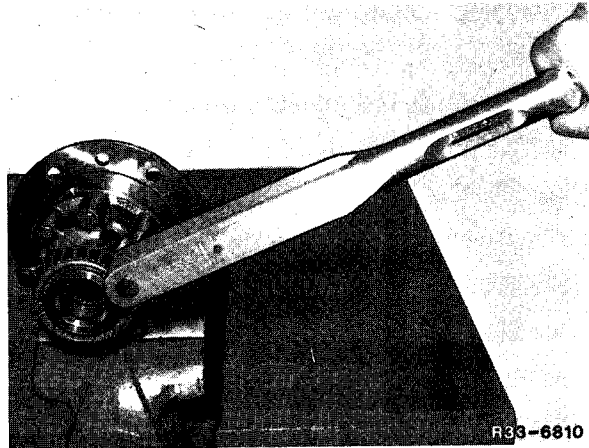
R33-6808

35.61 Disassembly and reassembly of differential

4 Fit cover on differential housing so that the marking agrees (same numbers).

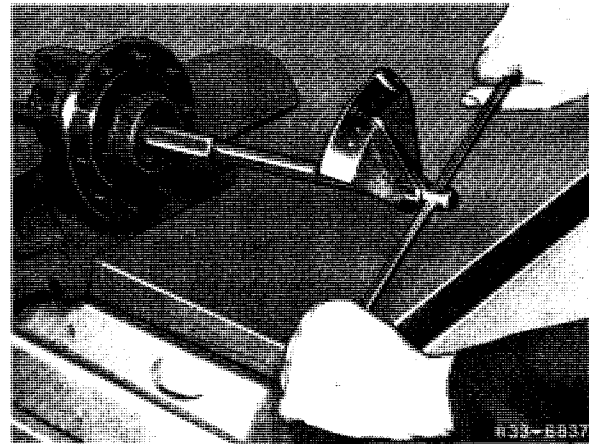


Torque fastening bolts of cover to 30–35 Nm.



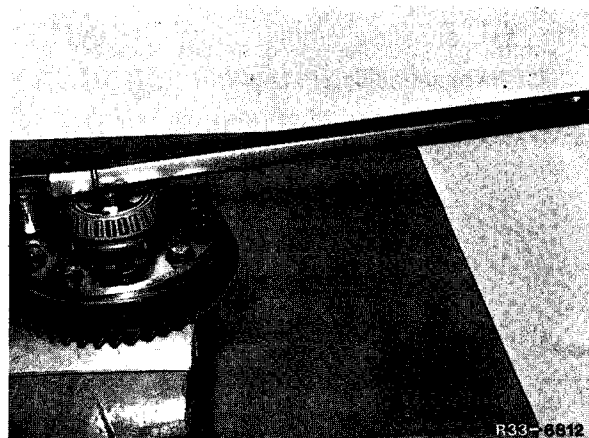
6 Check friction moment with special tool. Specified friction moment: 20–40 Nm.

Note: The friction moment can be altered by installing different sizes of thrust washers. Thrust washers are available in sizes from 1.3 – 1.8 mm in steps of 0.1 mm.



Torque wrench 000 589 27 21 00
Mandrel 460 589 11 15 00

7 Fit ring gear to differential housing and torque fastening bolts to 130–145 Nm.




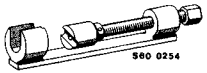
Removal, disassembly, reassembly and installation of differential lock 35.61

741.5

Tightening torques in Nm (kpm)

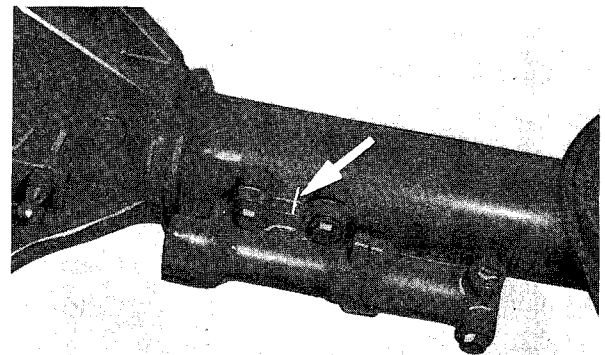
Lever at shaft	20 – 25 (2 – 2.5)
----------------	-------------------

Special tools

Torque wrench 20 – 100 Nm		000 589 64 21 00
Spring tensioner		381 589 00 31 00

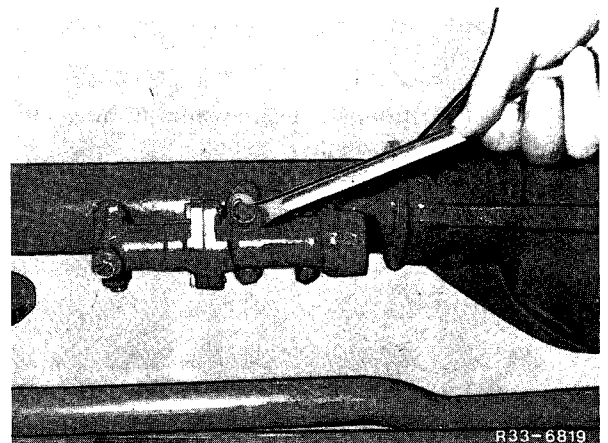
Removal and dismantling

Note: Mark the installation position of the selector cylinder relative to the axle housing before removing the cylinder.



R35-6725

1 Unscrew differential lock from axle tube and remove with gasket.

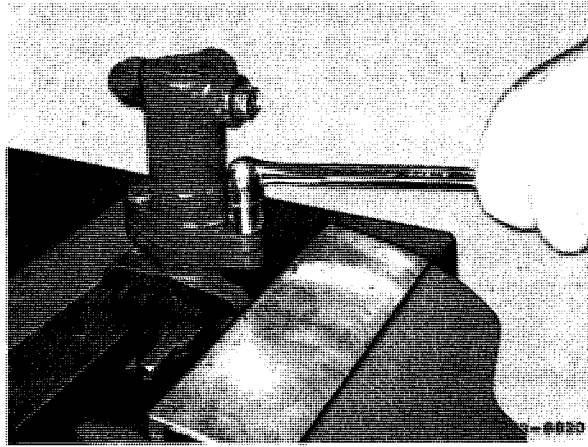


R33-6819

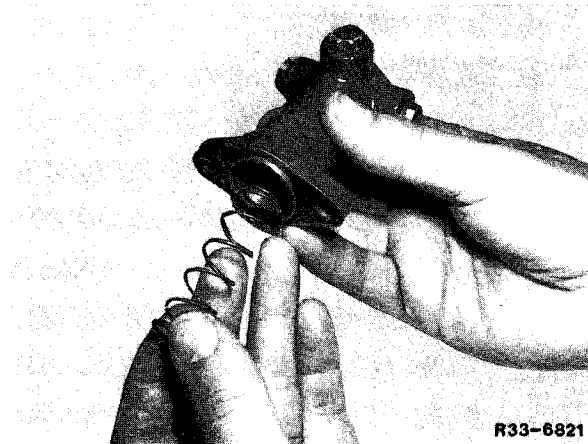


35.61 Removal, disassembly, reassembly and installation of differential lock

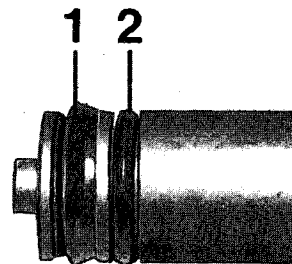
2 Unscrew cylinder from housing and remove with gasket.



3 Remove spiral spring and selector piston from cylinder.



4 Check sealing ring and sleeve on selector piston and renew if necessary.

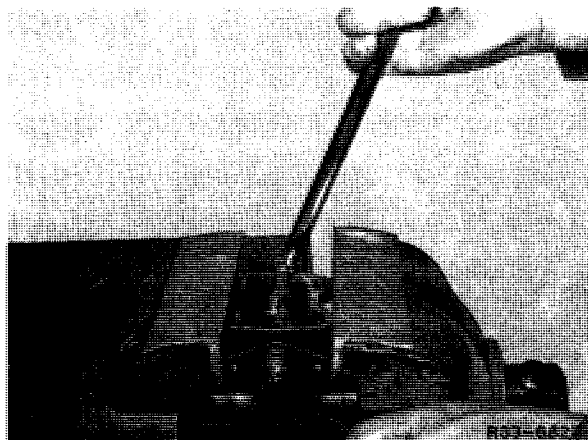


- 1 Sleeve
- 2 Sealing ring

R33-6822

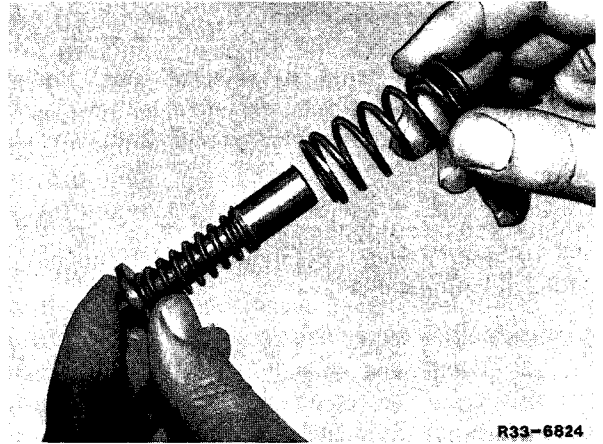
5 Unscrew push button switch for electric indicator lamp.

6 Pretension springs, unscrew nut from shaft, remove lever and springs with shaft.

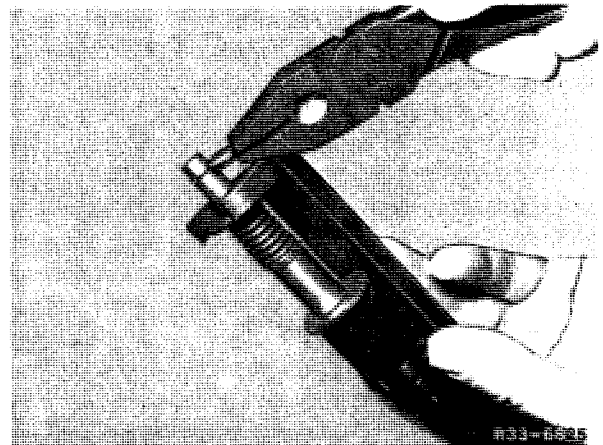


Removal, disassembly, reassembly and installation of differential lock 35.61

- 7 Remove large compression spring from shaft.

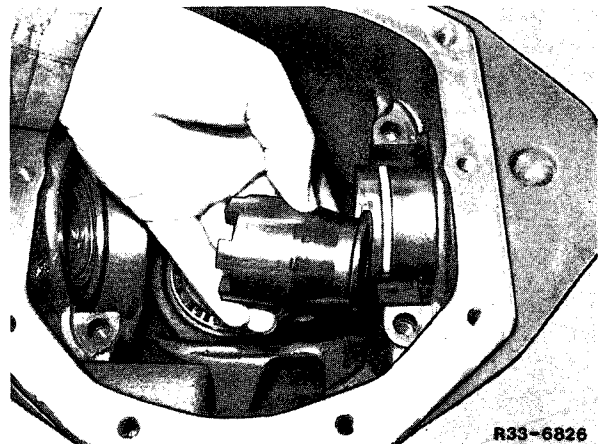


- 8 Pretension small compression spring on shaft with special tool and remove circlip.

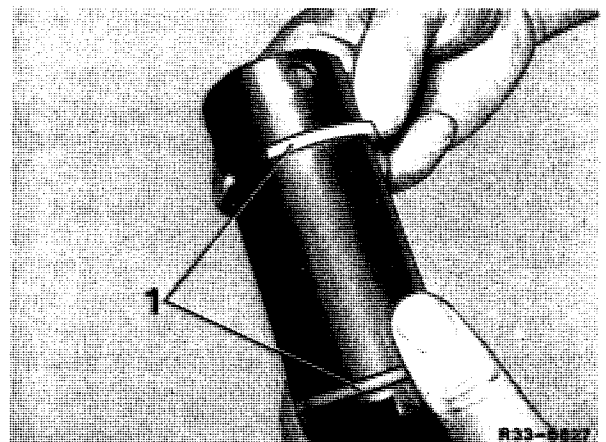


Spring tensioner 381 589 00 31 00

- 9 Remove rear axle shaft (35.61-205).
- 10 Remove ring gear with differential (35.61-300).
- 11 Pull selector sleeve and selector tube out of axle slightly. Remove selector sleeve to the side then pull tube out fully.



- 12 Remove polyamide rings (1) from tube.
- 13 Clean all parts and check for wear. Replace worn parts.



35.61 Removal, disassembly, reassembly and installation of differential lock

Reassembly and installation

1 Fit polyamide rings to selector tube, firstly introduce selector tube slightly into axle then insert selector sleeve from the side and push both parts in fully.

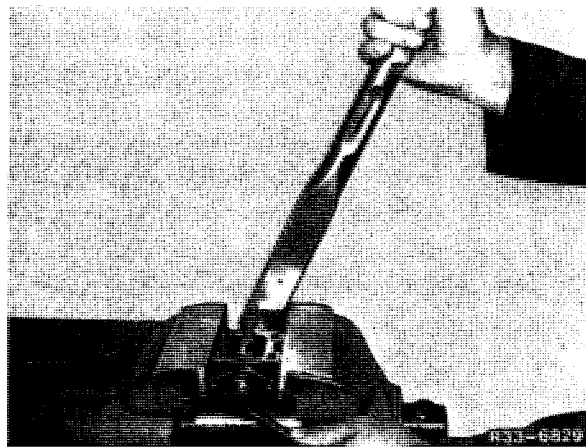
Note: When inserting the selector tube, ensure that the bore for the lever is pointing toward the opening of the differential lock.

2 Pretension small compression spring and washer on shaft with special tool and fit circlip.

Spring tensioner 381 589 00 31 00

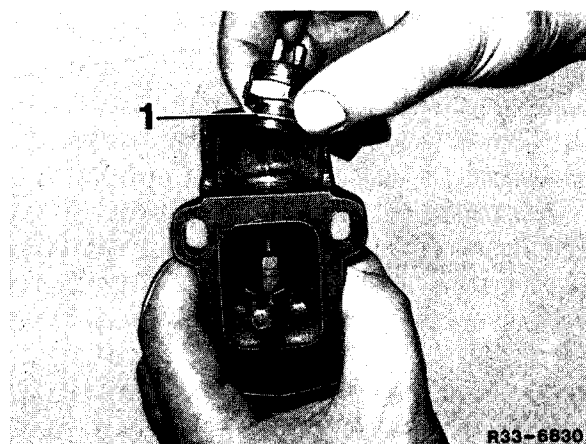


3 Fit large compression spring to shaft, push shaft with springs into housing and push together fully. Fit lever and torque nut to 20–25 Nm.



4 Screw in push button switch for electric indicator lamp with gasket.

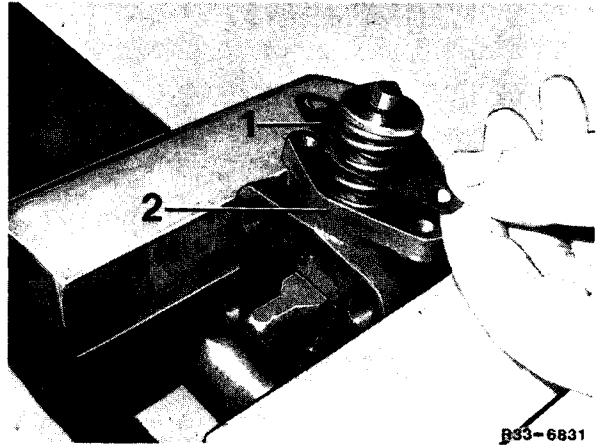
5 Introduce selector piston into cylinder, ensuring that the sleeve and sealing ring are fitted on the selector piston.



1 Sealing ring

Removal, disassembly, reassembly and installation of differential lock 35.61

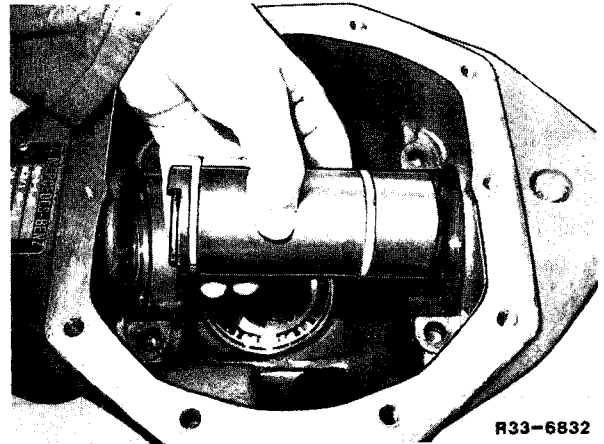
6 Insert compression spring into cylinder and bolt cylinder with gasket onto housing.



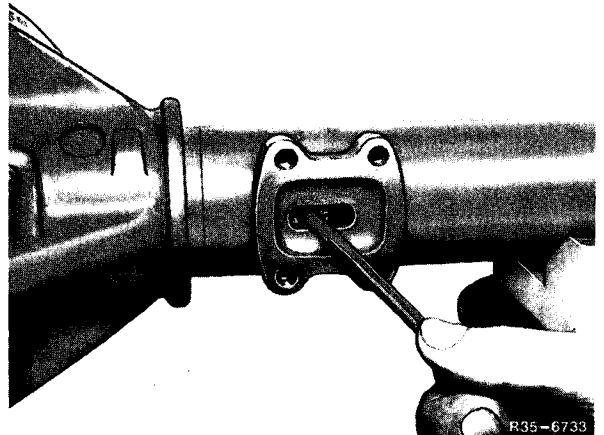
- 1 Gasket
- 2 Housing

7 Introduce selector tube with polyamide rings fitted into axle so that the bore for the lever is pointing toward the opening of the differential lock. Insert driver from the side and push selector tube in fully.

Note: Grease selector tube before installing.

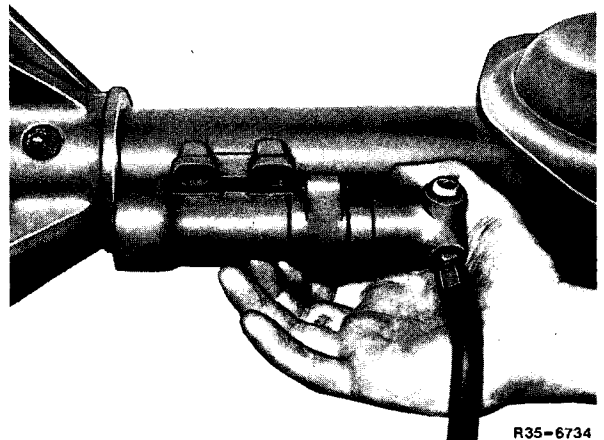


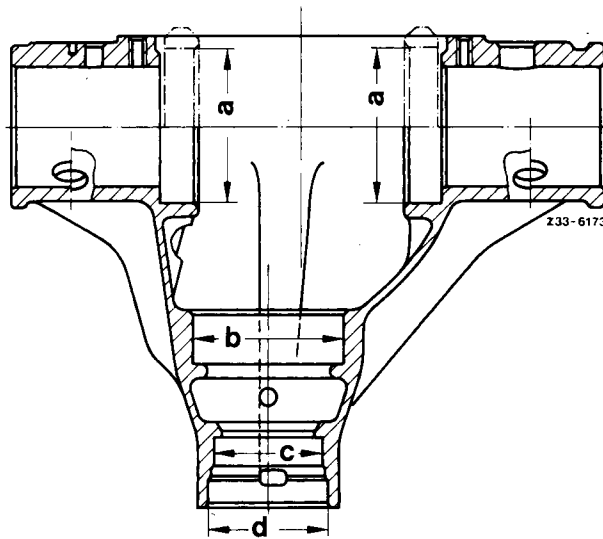
8 Press the selector tube fully toward shims with a screwdriver so that the teeth engage.



9 Introduce the compressed aircharged selector cylinder into the bore of the selector tube, at the same time fitting the gasket and likewise pressing the selector cylinder toward the differential and securing.

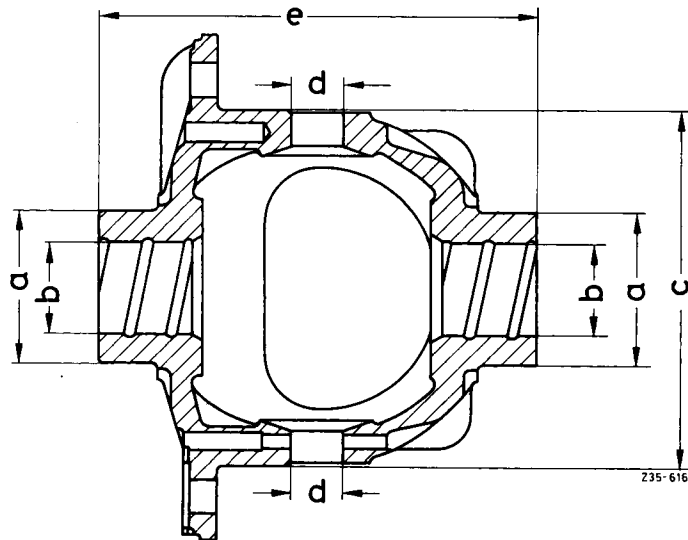
Note: During installation, ensure that no air escapes from the selector cylinder so that the differential lock is also fully engaged.





Rear axle housing with supporting tubes

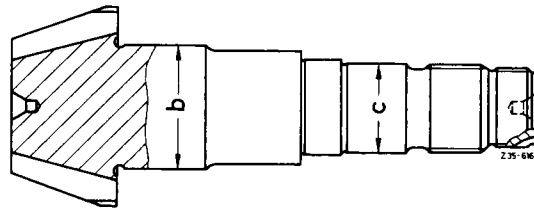
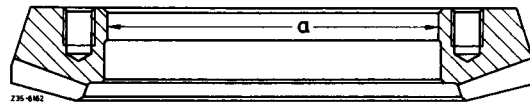
Part No.	a	b	c	d
460 351 00 05	$\frac{64.274}{64.255}$	$\frac{88.870}{88.848}$	$\frac{88.958}{88.936}$	$\frac{80.040}{80.010}$



Differential housing

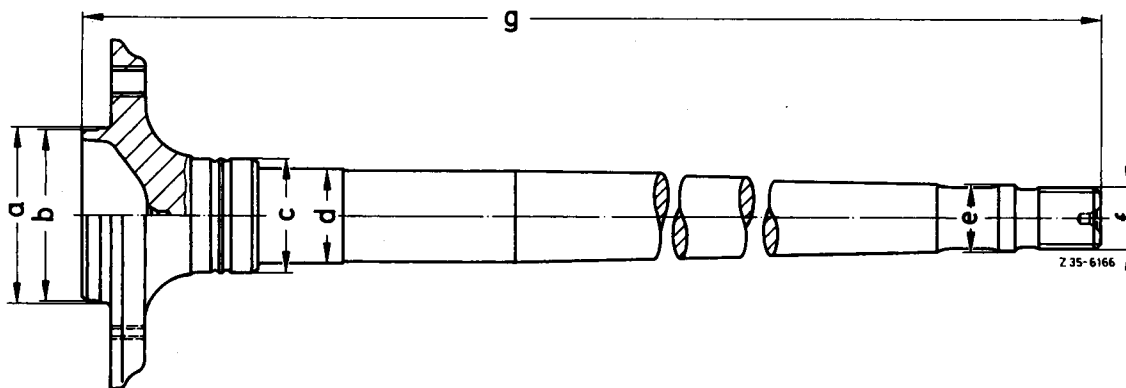
Part No.	a	b	c	d	e
460 353 01 01	$\frac{54.039}{54.013}$	$\frac{36.039}{36.000}$	$\frac{127.040}{127.015}$	$\frac{19.021}{19.000}$	157 \pm 0.1

35.61 Checking axle components



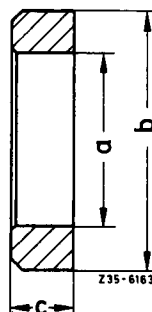
Gear set

Part No.	No. of teeth Z2 : Z1	a	b	c
602 350 51 39	48 : 9	$\frac{127.025}{}$	$\frac{41.312}{}$	$\frac{30.191}{}$
602 350 52 39	44 : 9	$\frac{127.000}{}$	$\frac{41.301}{}$	$\frac{30.180}{}$



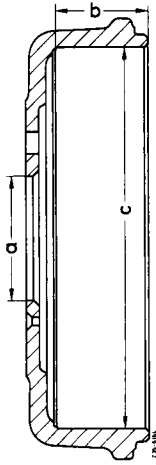
Rear axle shaft

Part No.	a	b	c	d	f	g
460 357 02 01	$\frac{84.988}{84.953}$	$\frac{83.880}{83.826}$	$\frac{55.000}{54.810}$	$\frac{45.042}{45.026}$	$\frac{34,750}{34.590}$	770 ⁺¹



Shrink ring

Part No.	a	b	c
601 357 51 51	$\frac{44.866}{44.852}$	66	16



Brake drum

Part No.	a	b	Standard	C	
				Rep. St. 1	Rep. St. 2
601 423 50 01	<u>85.054</u>	63.5	<u>260.210</u>	<u>261.210</u>	<u>262.210</u>
	85.000		260.000	261.000	262.000