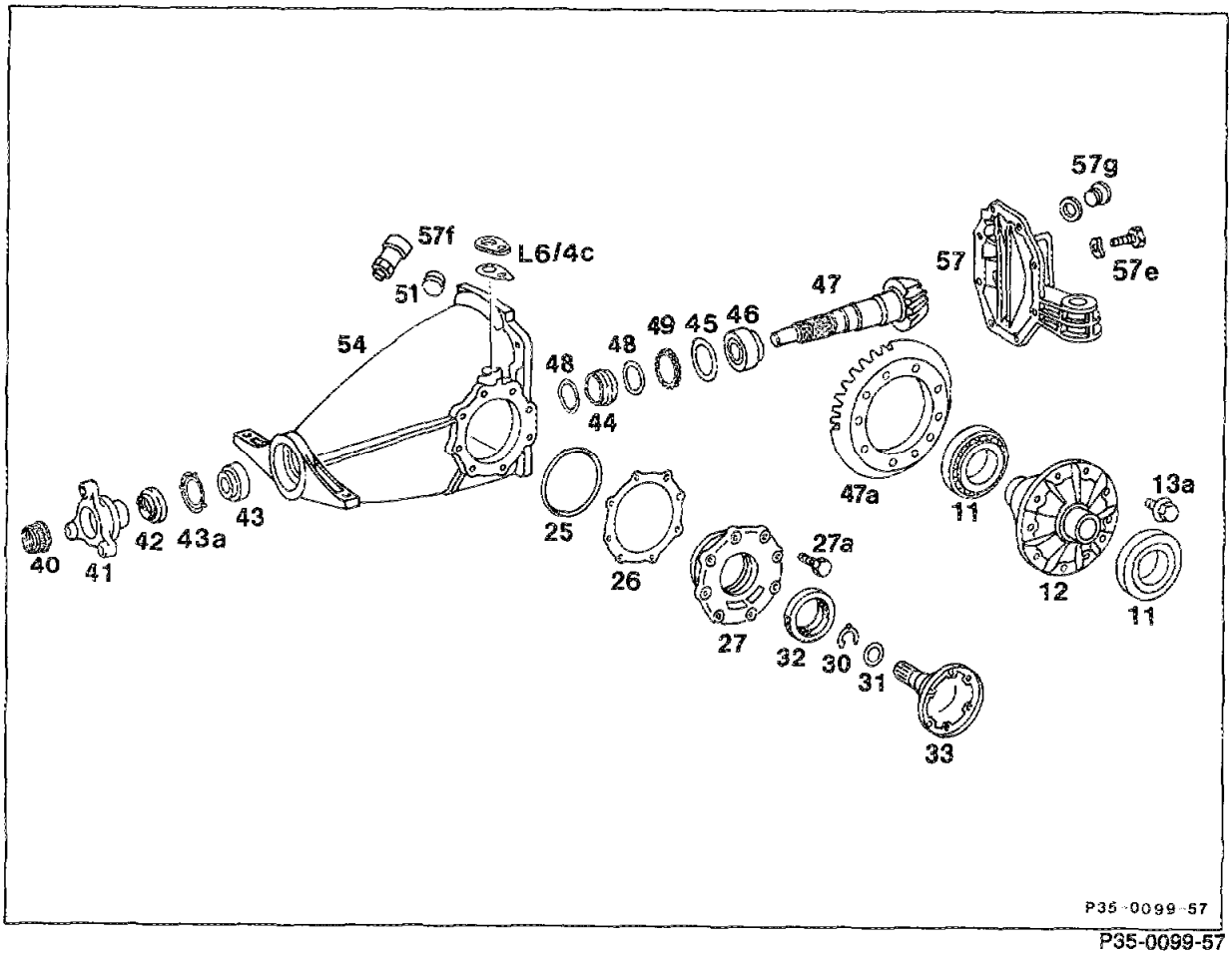
Preliminary work:
R and R rear axle differential housing (35-520).

A. Rear axle differential housing with lateral bearing caps



P35-0099-57

Hypoid gear oil	drain, fill up to bottom of oil fill bore.
Rear axle differential housing	clamp onto assembly jig 129 589 00 31 00, unclamp.
Cover (57)	remove, install. Tightening torque for hex. head bolts, strength class 8.8 = 45 Nm and 10.9 = 50 Nm. Torque wrench 001 589 66 21 00 (steps 71 and 72).
Vent (57f)	replace.

Retaining rings (30)	remove, install, replace.
Connection flanges (33) with shims (31)	pull out, install (steps 69 and 70).
Lateral bearing caps (27)	remove, install; for this purpose screw out hex. head bolts (27a). Remove shims from rear axle housing (54). **Adjust backlash and spread.** Tightening torque 25 Nm. Torque wrench 001 589 66 21 00 (steps 62-68).
Sealing rings (25)	remove, install, replace.
Shims (26)	remove, install and mark together with bearing caps (27) for left and right sides.
Radial shaft seals (32)	press out, press in, replace. Installation punch 116 589 11 61 00 (step 56, observe Note).
Tapered roller bearing inner races (11)	pull off, press on and mark, use puller 123 589 08 33 00. To press on use installation punch 116 589 08 61 00 and attachment 126 589 00 15 00 (step 61).
Tapered roller bearing outer races (11)	press out, press in, with removal tool 116 589 00 35 00 (step 9). Installation tool 116 589 11 61 00 (step 55).
Ring gear (47a)	remove, install. Mark position of ring gear in relation to differential housing (12), press off carefully. Heat ring gear to 80 °C before installation (steps 59 and 60). Replace ring gear bolts. Tightening torque for hex. head bolts 120 Nm, and retaining bolts with locking tooth 140 Nm. Torque wrench 001 589 67 21 00.
Joint flange (41)	remove, install. For this purpose loosen 12-point collar nut (40), tighten and secure.

Note

Mark position of joint flange in relation to drive pinion if required.

Retaining wrench	129 589 01 07 00
Socket wrench socket	126 589 02 09 00
Puller	129 589 01 33 00
Torque wrench	001 589 74 21 00
Torque measuring instrument	001 589 49 21 00

Adjust frictional torque (steps 48-54).

Drive pinion (47)	press out, install, use commercially available two-claw puller. Support drive pinion with installation tool 201 589 02 43 00 when installing (steps 16, 46 and 47).
Radial shaft seal (42)	press out, press in, replace. Remove tapered roller bearing inner race (43) and thrust washer (43a), when present, install. Replace thrust washer and assure that it is seated properly (steps 17 and 46-47). Thrust attachment 124 589 02 15 00.
Tapered roller bearing outer races (43, 46)	remove, install, use removal tool 201 589 02 43 00 and thrust attachment 201 589 02 43 15 or 201 589 02 43 16 installation tool 116 589 11 61 00 (steps 18-19 and 43).
Spacer sleeve (44) with thrust washers (48)	remove, install. Replace spacer sleeve and thrust washers (steps 20 and 44).
Gear (49)	pull off with commercially available puller. Use self-made installation sleeve (011) to press on (steps 21 and 29).
Tapered roller bearing inner race (46)	pull off, press on. Puller basic unit 001 589 36 33 00 extension 000 589 35 34 00 clamping attachment 000 589 34 34 00 Use self-made installation sleeve (010) to press on (steps 22-23 and 28).
Check	all parts (steps 25-27).
Gears	adjust (steps 30-42).

Oil types and capacities

Standard differential	Hypoid gear oil SAE 90 refer to Factory Approved Service products list 1)
Limited slip differential (indicator plate on rear axle housing)	Special hypoid gear oil refer to Factory Approved Service products list 1)
Capacity	1.3 liters

1) Refer to factory approved service products list supplied with owner's literature or available through your local authorized Mercedes-Benz Dealer.

Gear (rotor) for ABS vehicle speed signal sensor

Ratio	Number of teeth
2.82	34
2.65	36
2.47	39
2.24	43

Shims for adjusting backlash and spread dimension

Thickness	0.9 to 2.6 mm
Increments	0.05 to 0.05

Note
Grind shim down to required thickness if necessary.

Gear adjustment values

Backlash	0.08–0.14 mm
Adjustment of tapered roller bearing for differential: The tapered roller bearings are adjusted to their required pretension by spreading (widening) the rear axle housing by	0.15–0.20 mm
Permissible tolerance for adjustment dimension "A" of drive pinion	+ 0.01 mm – 0.02 mm
Permissible vertical runout at tapered roller bearing seats and centering pin of drive shaft	0.02 mm

Shims for adjustment of drive pinion

Thickness	1.5 to 2.4 mm
Increments	0.05 to 0.05

Note
Grind shim down to required thickness if necessary.

Frictional torque of drive pinion bearing[1])

Bearing matching from tapered roller bearing manufacturer		Frictional torque
Large tapered roller bearing	Small tapered roller bearing	
SKF	SKF	155–175 Ncm
FAG	FAG	235–255 Ncm
FAG	Koyo	
SKF	FAG	185–205 Ncm
FAG	SKF	
SKF	Koyo	
Tapered roller bearings after operation		50–100 Ncm

[1]) For correct adjustment of the tapered roller bearings tighten the 12-point collar nut on the joint flange until the prescribed frictional torque is reached when the drive pinion is turned. The differential with ring gear must not be installed when checking the frictional torque by turning the pinion gear.

Mounting bolts for ring gear

Flange thickness of differential housing	Length of hex. head bolts
10	22
8	20 standard or self-locking

Joint flange on drive pinion

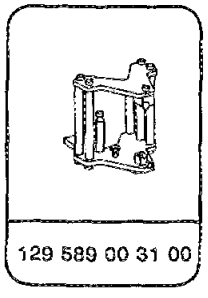
Diameter of running surface for radial shaft seal on joint flange	new	40.00 39.84
	min. dia. for repair [1])	39.6
Running surface of joint flange		without twist
Permissible vertical runout of sealing surface of joint flange		0.06

[1]) Remachine running surface for seal in emergencies only.

Shims between inner constant velocity joint and differential housing

Shim	Thickness	from 2.6 to 3.4
	Increments	0.1 to 0.1

Special tools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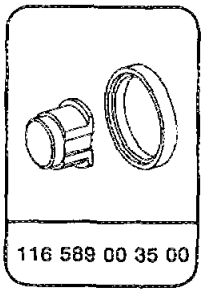
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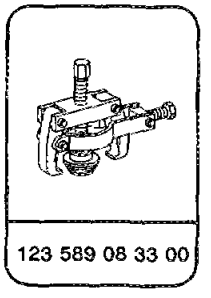
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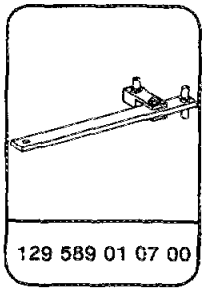
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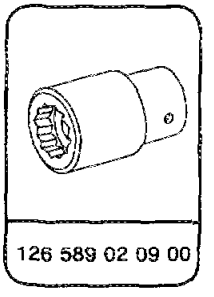
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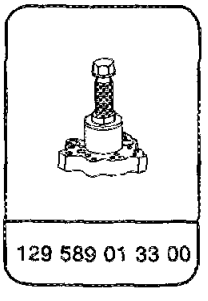
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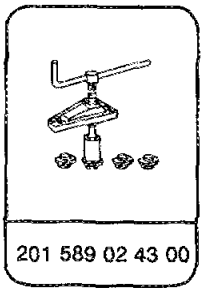
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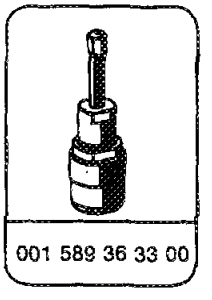
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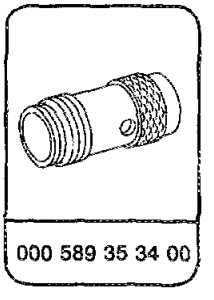
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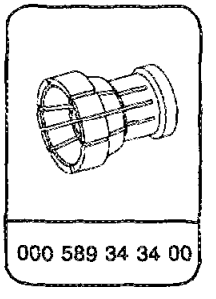
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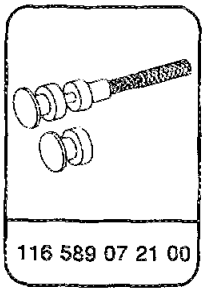
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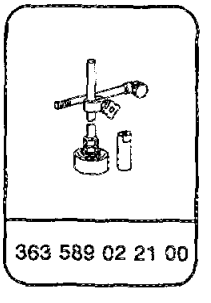
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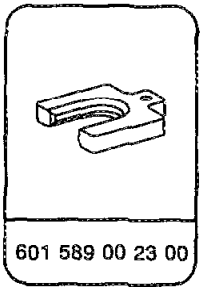
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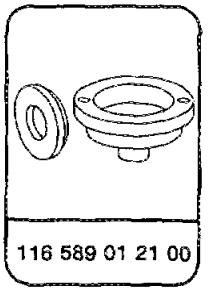
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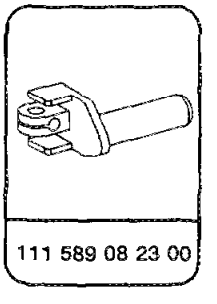
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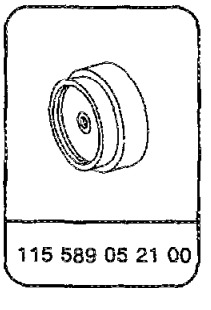
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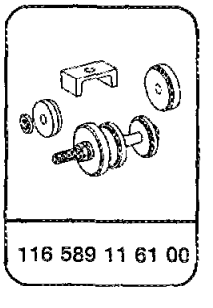
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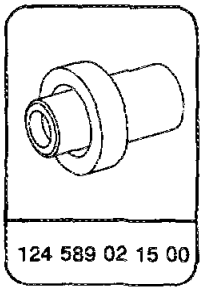
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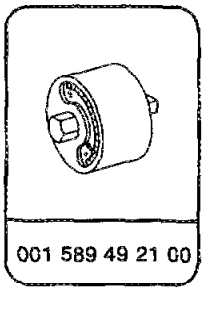
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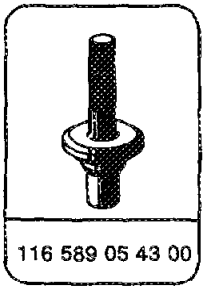
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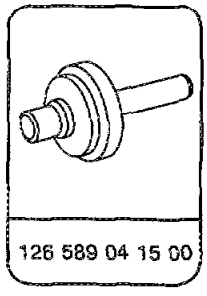
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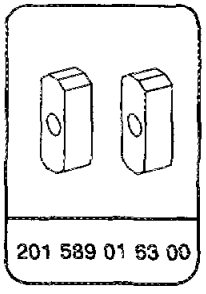
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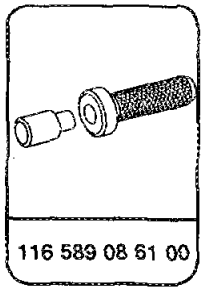
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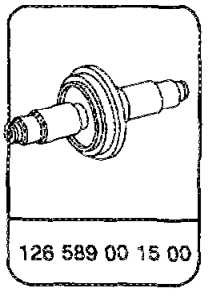
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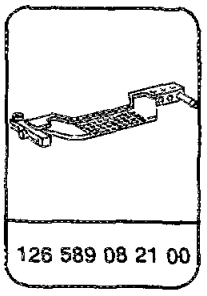
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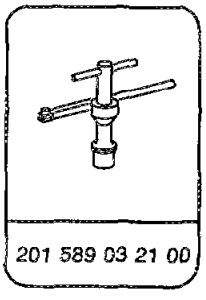
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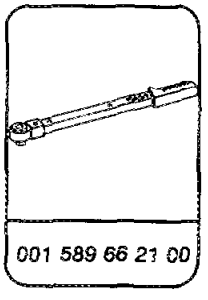
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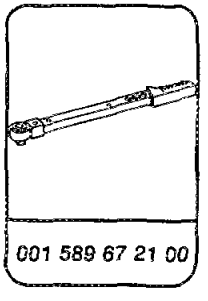
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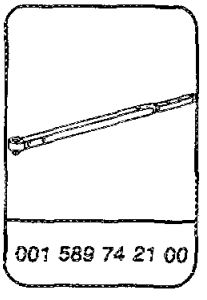
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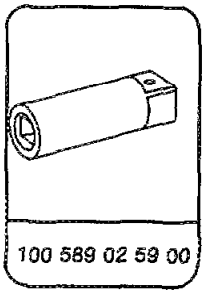
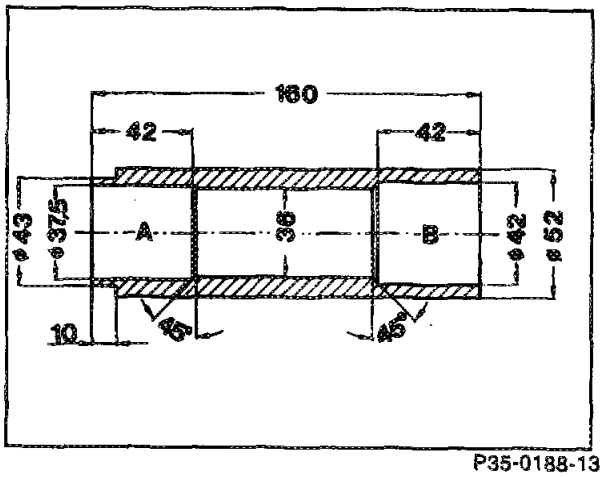

100 589 02 59 00

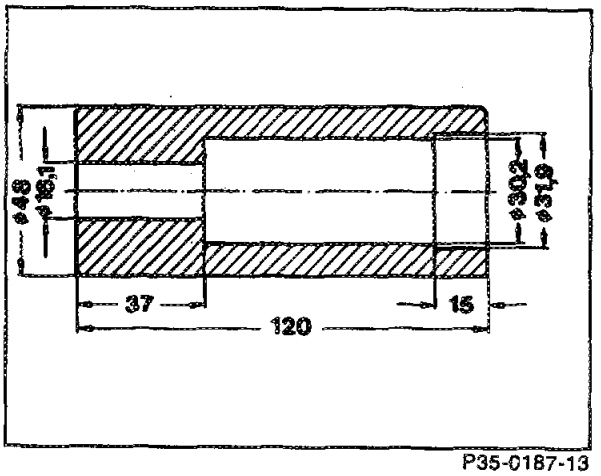
Self-made tools

Installation sleeve (010) for installing tapered roller bearing inner race on drive pinion.

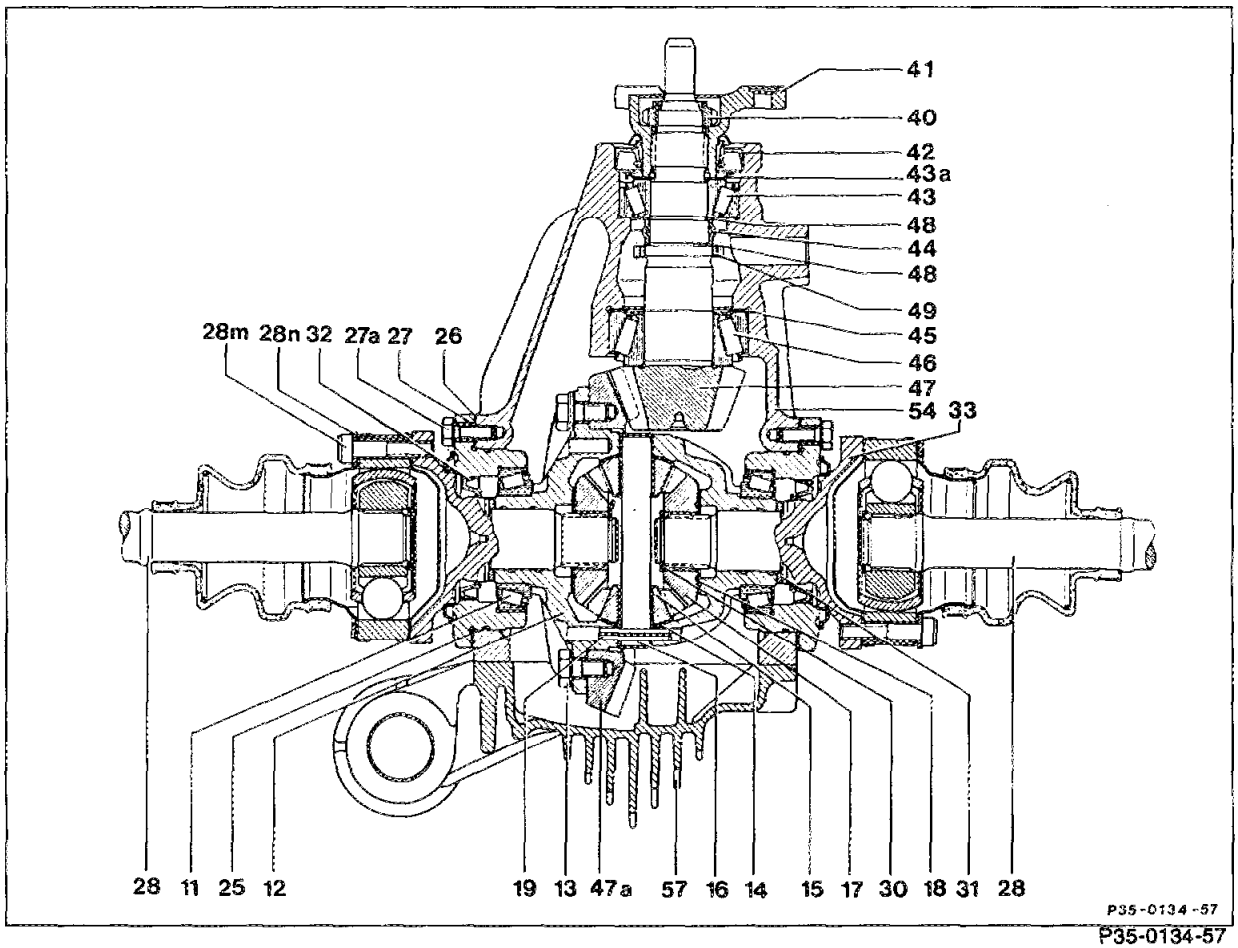


P35-0188-13

Installation sleeve (011) for installing gear on drive pinion with ABS.



P35-0187-13



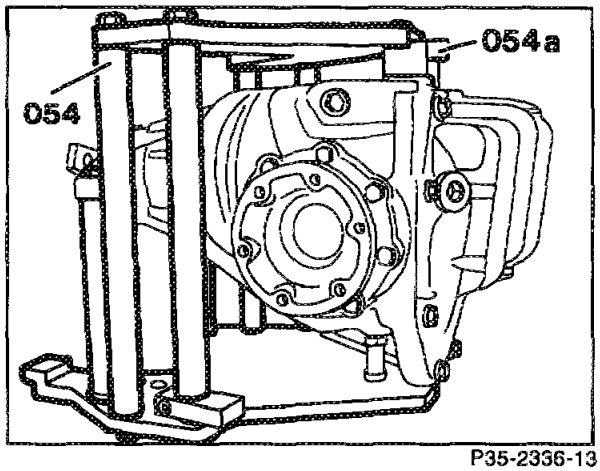
P35-0134-57

11	Tapered roller bearing	31	Shim
12	Differential housing	32	Radial shaft seal
13	Hex. head bolt	33	Connection flange
14	Ball washer	40	12-point collar nut
15	Differential pinion	41	Joint flange
16	Differential pinion shaft	42	Radial shaft seal
17	Rear axle shaft gear	43	Tapered roller bearing
18	Thrust washer	43a	Thrust washer
19	Clamping sleeve	44	Spacer sleeve
25	Sealing ring	45	Shim
26	Shims	46	Tapered roller bearing
27	Lateral bearing caps	47	Drive pinion
27a	Hex. head bolts	47a	Ring gear
28	Rear axle shaft, complete	48	Thrust washers
28m	Allen bolt	49	ABS gear
28n	Spacer plates	54	Rear axle housing
30	Retaining ring	57	End cover

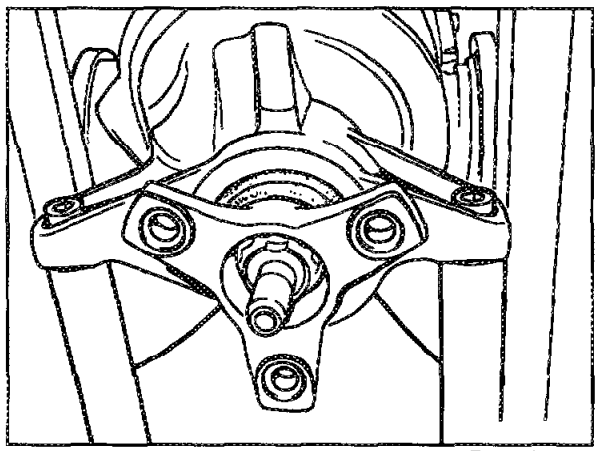
Disassembly

1 Drain oil.

2 Clamp rear axle differential housing into assembly jig (054) 129 589 00 31 00 with attachment part (054a) 129 589 00 31 15.



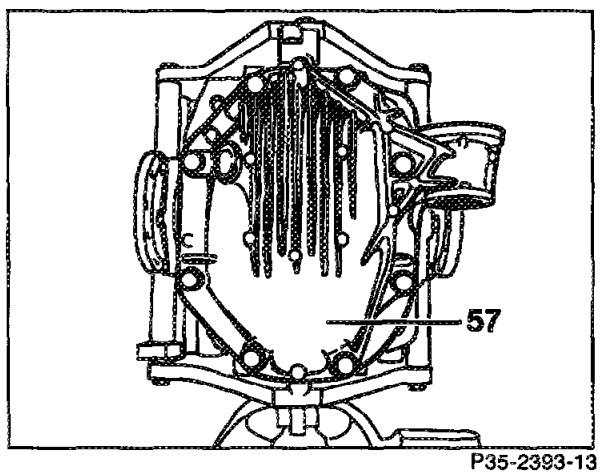
P35-2336-13



Arrangement from front

P35-2394-13

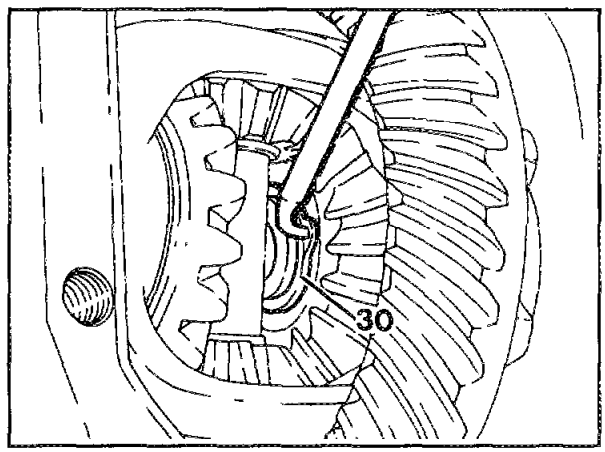
3 Screw end cover (57) off of rear axle differential housing.



P35-2393-13

4 Remove retaining rings (30) from both connection flanges with pliers or hook.

5 Pull connection flanges together with shims out of rear axle shaft gears.

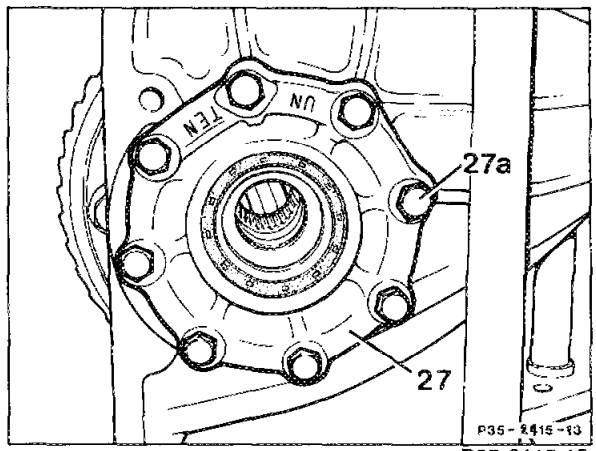


P35-2382-13

6 Screw out hex. head bolts (27a), pull lateral bearing caps (27) out of rear axle housing and remove together with shims.

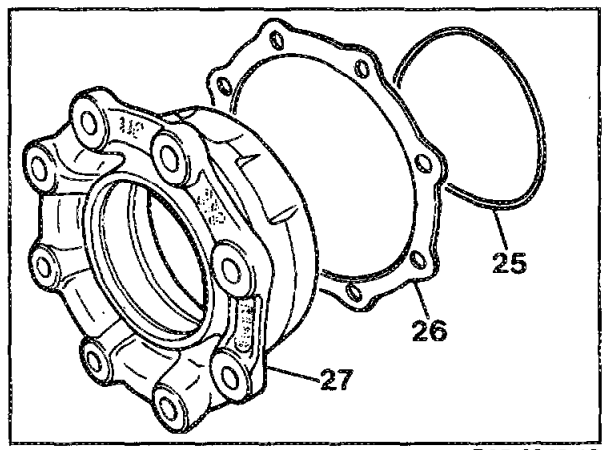
⚠ **CAUTION!**
Assure that the differential gear does not fall out of the housing.

7 Remove differential gear from rear axle housing.



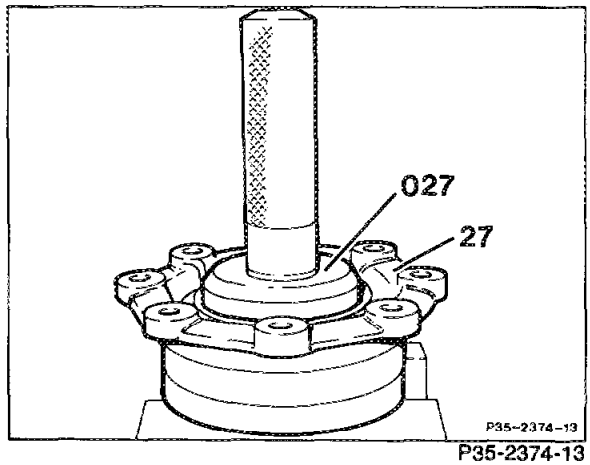
P35-2415-13

8 Remove sealing rings (25). Remove shims (26) for adjusting backlash and spread dimension and mark together with bearing caps (27, for left and right sides).



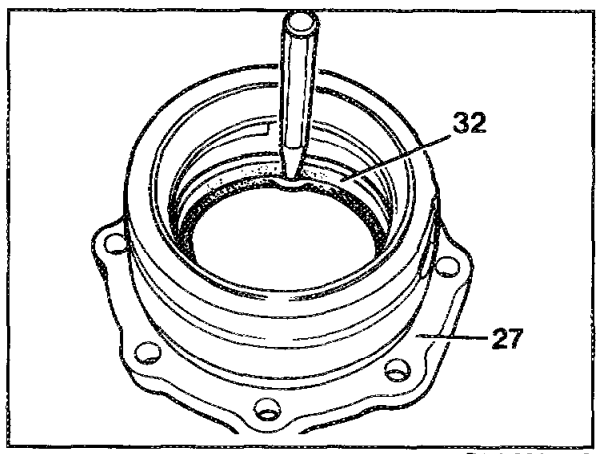
P35-2376-13

9 Press radial shaft seals out of lateral bearing caps (27) with removal punch (027) 116 589 05 43 00.



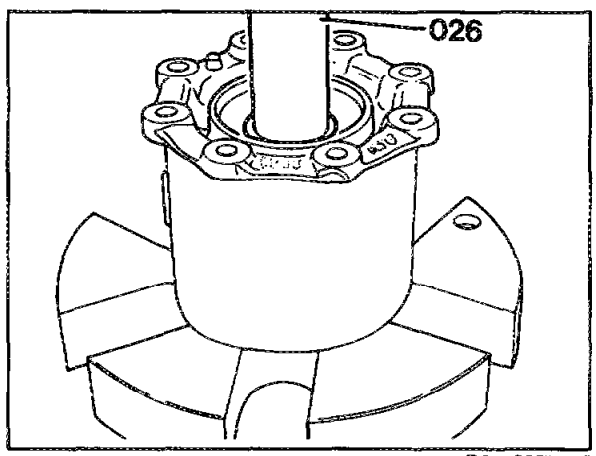
P35-2374-13

Note
On vehicles with ASR, knock radial shaft seals (32) out of lateral bearing caps (27) with punch.



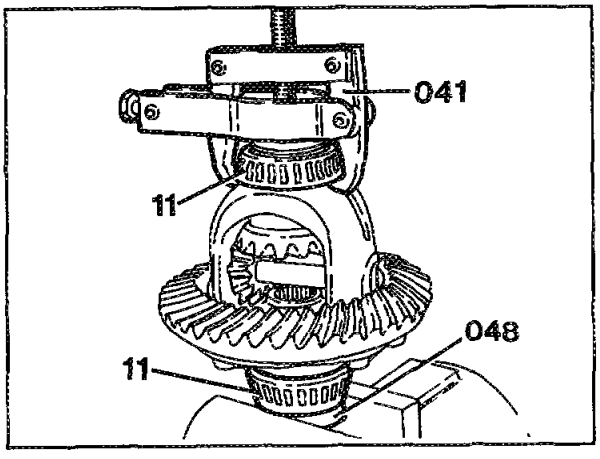
P35-2335-13

10 Press out tapered roller bearing outer races with removal tool (026) 116 589 00 35 00 and mark for left and right sides.



P35-2377-13

11 Pull both tapered roller bearing inner races (11) out of differential housing with puller (041) 123 589 08 33 00, and mark to prevent mixing up during reassembly.

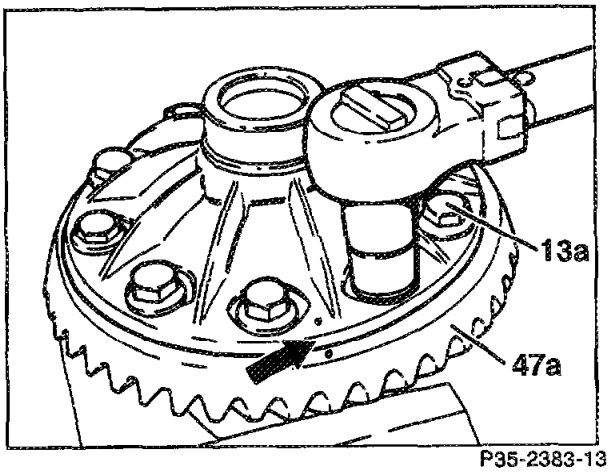


P35-2391-13

12 Loosen hex. head bolts (13a) and carefully press off ring gear (47a).

Note

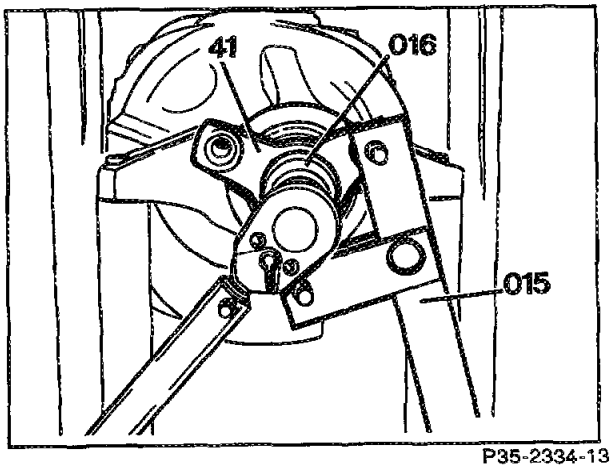
If the gear assembly is used again the position of the ring gear in relation to the differential housing must be marked so that the ring gear can be reinstalled at the same point (arrow).



P35-2383-13

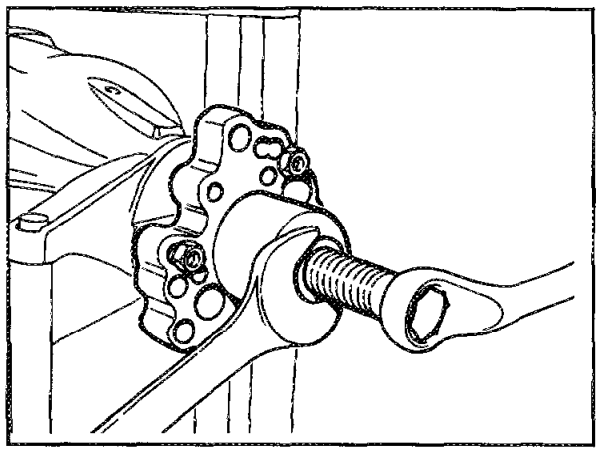
13 Attach holding wrench (015) 129 589 01 07 00 to joint flange (41) and loosen 12-point collar nut with socket (016) 126 589 02 09 00.

14 Mark position of joint flange in relation to drive pinion.



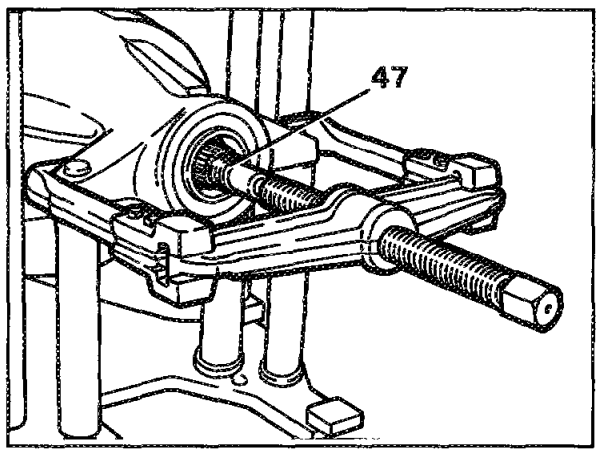
P35-2334-13

15 Pull joint flange off of drive pinion with puller 129 589 01 33 00 if required.



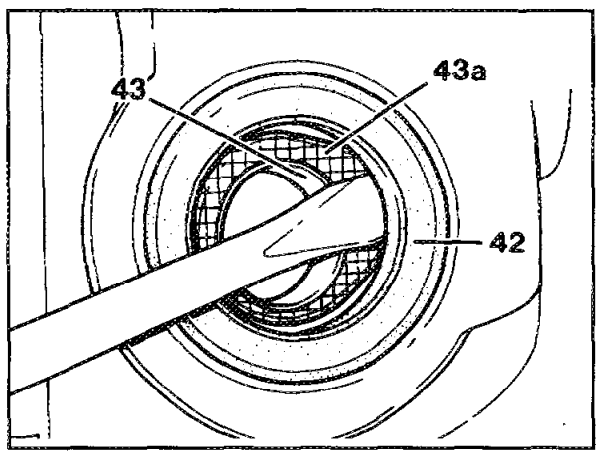
P35-2333-13

16 Press drive pinion (47) out of rear axle housing with commercially available puller.



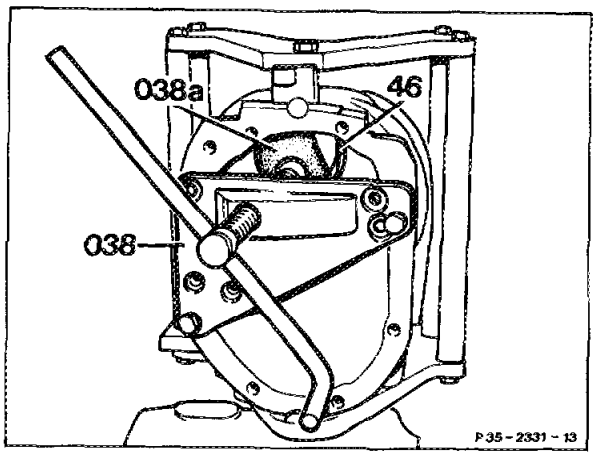
P35-2332-13

17 Press out radial shaft seal (42) and remove tapered roller bearing inner race (43) with thrust washer (43a), if present.



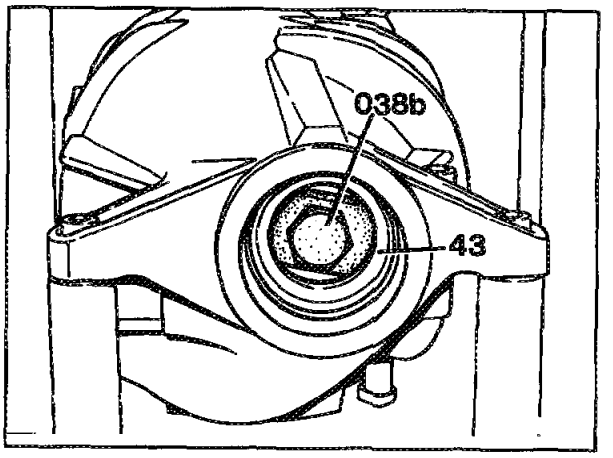
P35-2372-13

18 Pull inner tapered roller bearing outer race (46) out of rear axle housing with removal and installation tool (038) 201 589 02 43 00 and thrust attachment (038a) 201 589 02 43 15. Remove shim.



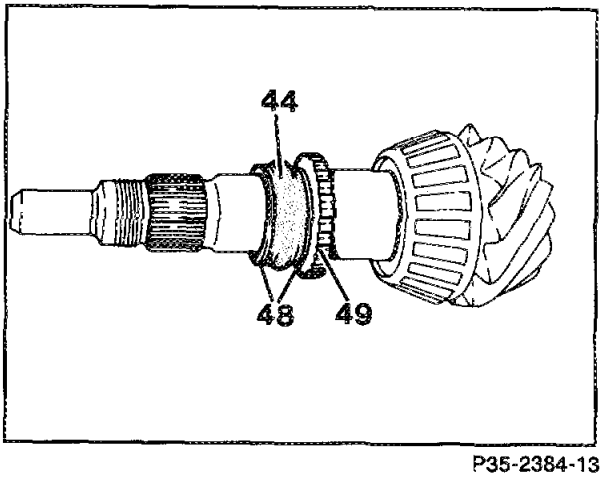
P35-2331-13

19 Press out outer tapered roller bearing outer race (43) with thrust attachment (038b) 201 589 02 43 16.



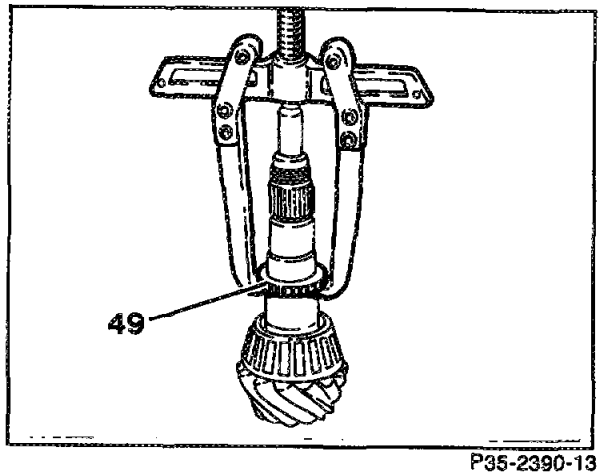
P35-2330-13

20 Remove spacer sleeve (44) together with thrust washer (48) from drive pinion.



P35-2384-13

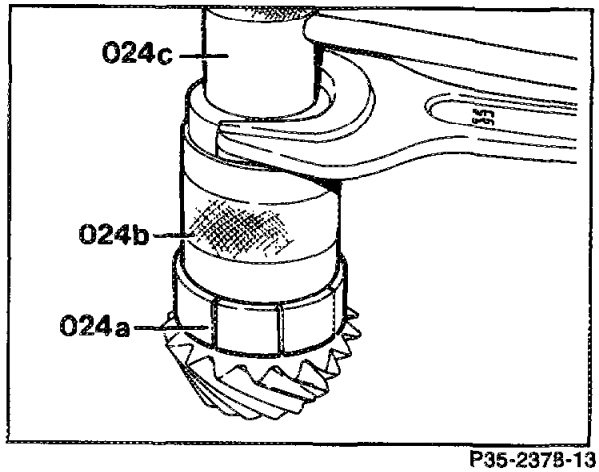
21 Pull ABS gear (49) off of drive pinion with commercially available puller.



P35-2390-13

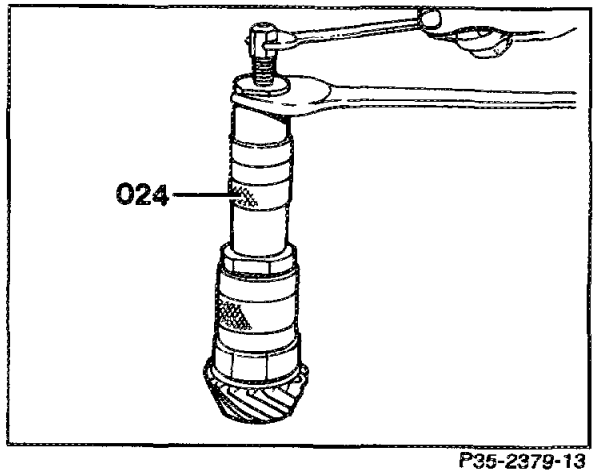
22 Assemble basic puller unit 001 589 36 33 00 with extension (024c) 000 589 35 34 00 and clamping attachment (024a) 000 589 34 34 00.

23 Slide puller with clamping attachment (024a) over tapered roller bearing and clamp behind rollers of tapered roller bearing with clamping sleeve (024b).



P35-2378-13

24 Pull off tapered roller bearing inner race.



P35-2379-13

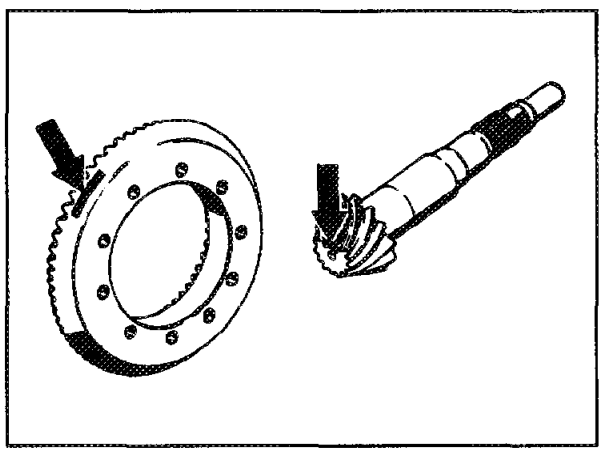
Checking

25 Check all parts for reusability. Check bearing seats on drive pinion and centering pin of drive shaft for vertical runout. Maximum vertical runout **0.02 mm.**

26 Check running surface for radial shaft seal on joint flange. If running surface is worn, replace joint flange.

27 Slide joint flange onto drive pinion observing marking, if applicable. Check vertical runout of joint flange on running surface of radial shaft seal. If the vertical runout is greater than *0.06 mm even when the joint flange is positioned* at different positions a number of times on the wedge profile, replace joint flange.

Note
Matching drive pinions and ring gears in each gear assembly are marked with the same sequential number on both parts. In addition the interval of the gears to one another to be adjusted for the gear assembly in question is always indicated on the drive pinion with a sign + or –.

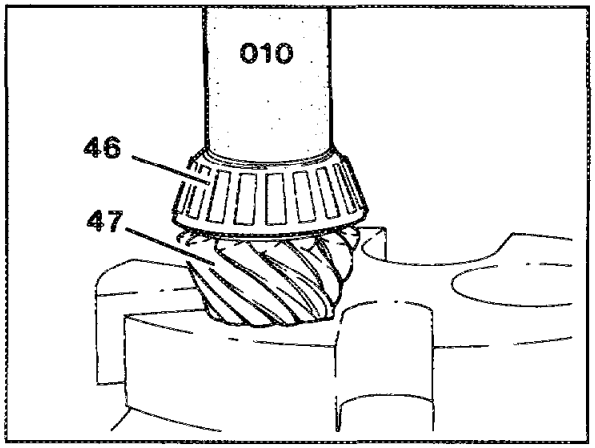


P35-0193-13

Use a data sheet to calculate the thickness of the shim required for adjustment of the drive pinion. **A sample data sheet is located at the end of this operation number.** The measurement and calculation procedure used in the example is described in detail in the following steps.

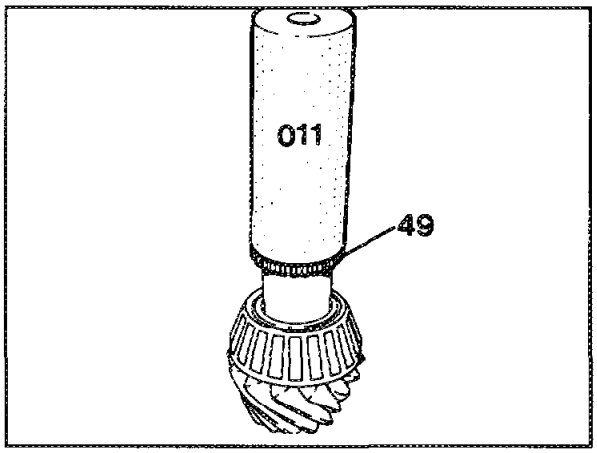
Assemble and adjust gear assembly

28 Press rear tapered roller bearing (46) onto drive pinion (47) with self-made installation sleeve (010). For this purpose use the side of the sleeve marked with "B".



P35-2371-13

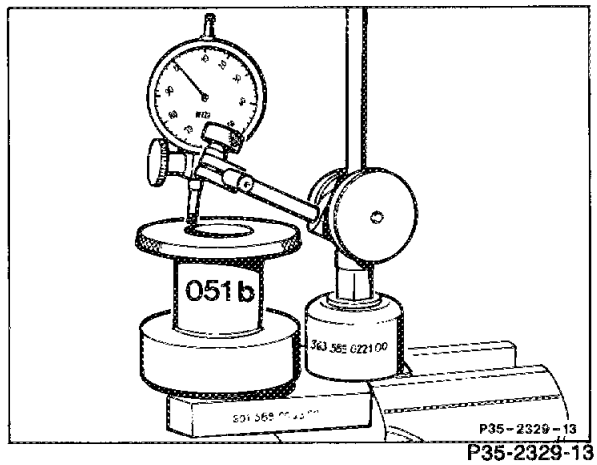
29 Press on ABS gear (49) with self-made installation sleeve (010).



P35-2385-13

30 Clamp dial gauge into dial gauge holder 363 589 02 21 00 and position on measuring plate 601 589 00 23 00.

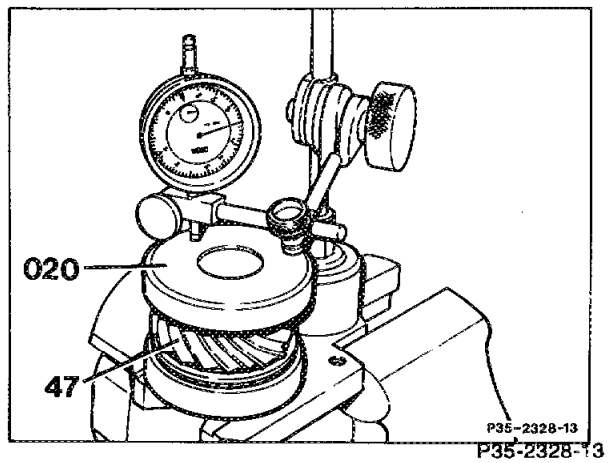
31 Set dial gauge with approx. 3 mm pre-load on measuring body (051b) 116 589 07 21 09 initially to "0".



P35-2329-13

32 Place outer bearing race on roller cage of drive pinion (47) and attach magnetic plate (020) 116 589 01 21 00. Insert drive pinion (47) into measuring device and measure drive pinion height with bearing and magnetic plate.

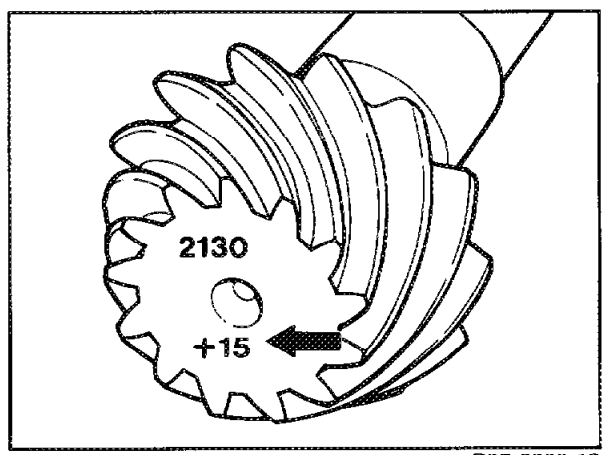
33 Read off difference between measuring body height "B1" and drive pinion height "B", add 1.5 mm and enter in data sheet under step 1.



P35-2328-13

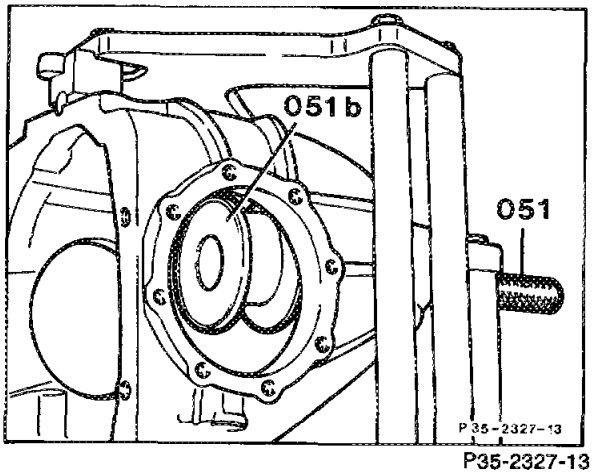
34 Enter basic deviation "a" of drive pinion (see arrow, + or -) under step 2 in data sheet.

35 Add (+) or subtract (-) the values of steps 1 and 2 depending on the sign of the value.



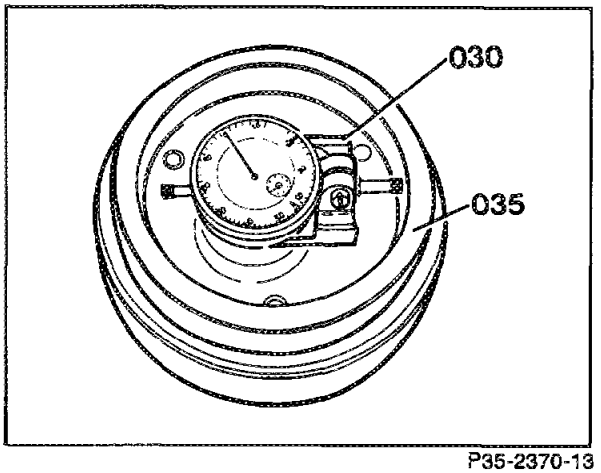
P35-2380-13

36 Insert measuring device (051) 116 589 07 21 00 into rear axle housing and screw on measuring body 116 589 07 21 09 (051b).



P35-2327-13

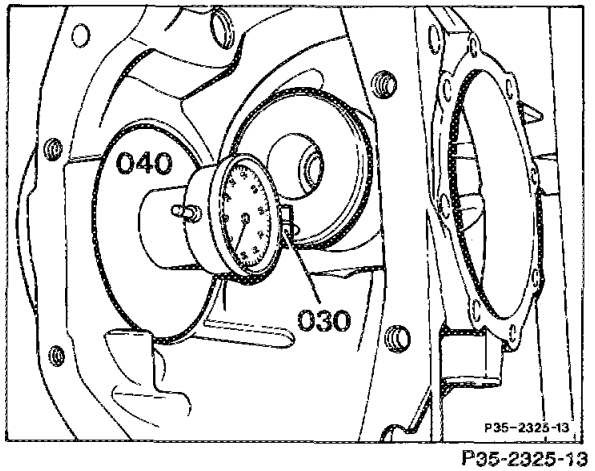
37 Insert dial gauge with dial gauge holder (030) 111 589 08 23 00 into adjustment gauge (035) 115 589 05 21 00 and set to 0 under pre-load of 3 mm.



P35-2370-13

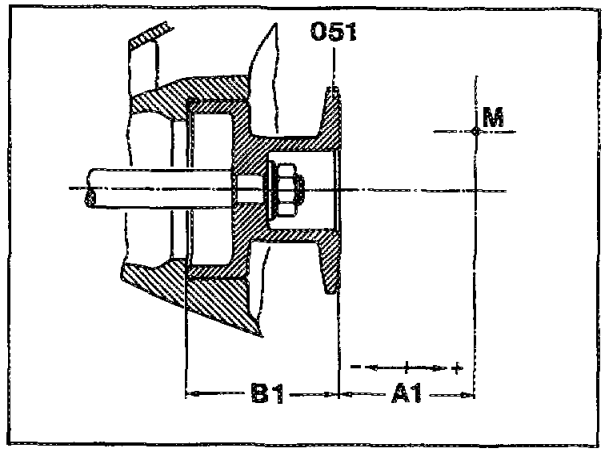
38 Insert measuring attachment (040) 116 589 01 21 00 together with dial gauge holder (030) and dial gauge into left bore of rear axle housing and screw down tight.

39 Read off difference between set gauge dimension and measured body front end and enter in step 3 in data sheet in plus or minus direction.



P35-2325-13

Note
The direction plus (+) or minus (-) depends on the direction in which the pointer on the dial gauge rotates. A deviation from the zero position in the counterclockwise direction is the minus direction, in the clockwise direction the plus direction.



P35-0199-13

40 Add (+) or subtract (–) the subtotal of the values from steps 1 and 2 as well as the value in step 3. This calculated value is the thickness of the shim.

Example:

Step 1		=	1.60
Step 2		=	+ 0.15
		=	–
Subtotal		=	1.75
Step 3	Minus direction	=	+ 0.06
	Plus direction	=	–
Thickness of shim "S"		=	1.81

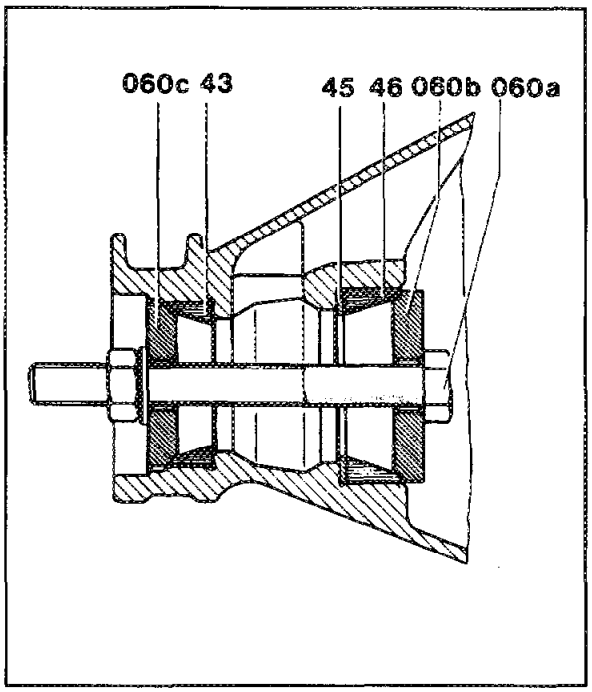
41 Remove measuring attachment and measuring body from rear axle housing.

42 Insert shim with thickness "S" calculated into rear axle housing (see example).

Note
Use only hardened shims. These are available in various thicknesses. Grind down shim accordingly if required.

43 Install outer races of front (43) and rear (46) tapered roller bearings into rear axle housing with installation tool (060a-c) 116 589 11 61 00.

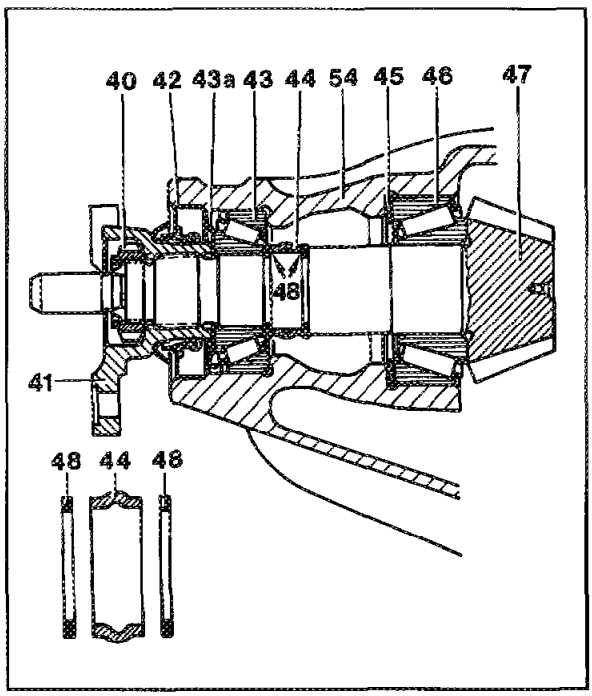
⚠ **CAUTION!**
Assure that the outer races are not canted during installation.



P35-0197-15

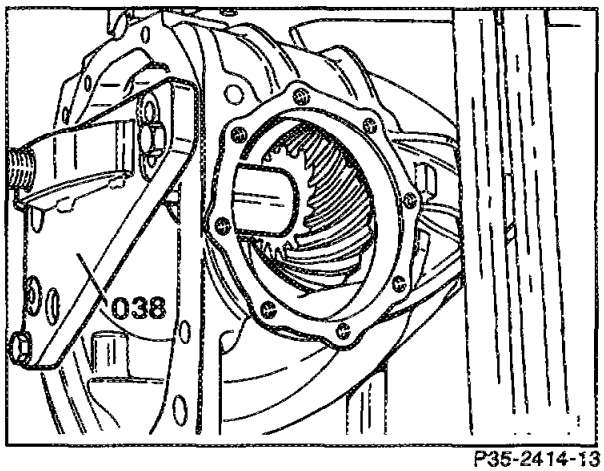
060b 82 mm dia. disk
060c 63 mm dia. disk

44 Insert one thrust washer (48) on each side of the **new** spacer sleeve (44) and install on drive pinion (47).



P35-0178-15

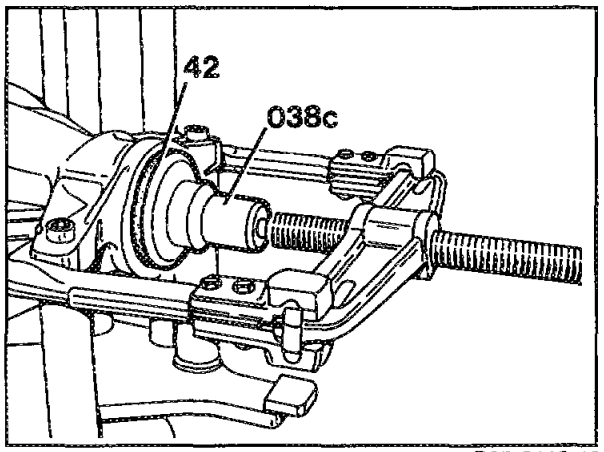
45 Insert drive pinion into rear axle housing and support with removal and installation tool (038) 201 589 02 43 00.



P35-2414-13

46 Coat radial shaft seal (rubberized jacket) with hypoid gear oil or rubber lubricant "naphtalene H" and position on thrust piece (038c) 124 589 02 15 00.

47 Insert inner race of front tapered roller bearing with new thrust washer (if thrust washer was installed previously) and press in together with radial shaft seal (42).



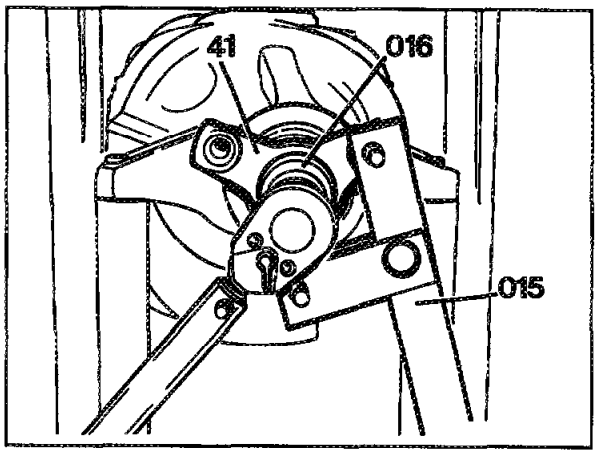
P35-2416-13

48 Coat running surface for radial shaft seal on joint flange with hypoid gear oil and slide joint flange onto drive pinion while paying attention to any markings made on the joint flange and drive pinion.

49 Remove removal and installation tool from rear axle housing.

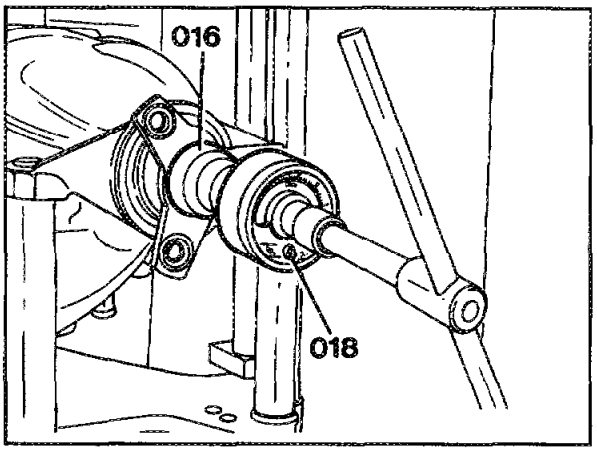
50 Screw on new 12-point collar nut. Attach holding wrench (015) 129 589 01 07 00 and socket (016) 126 589 02 09 00 to joint flange (41) and **carefully** tighten 12-point collar nut until the prescribed frictional torque is reached (see table "Frictional torque for drive pinion bearing ").

⚠ **CAUTION!**
While tightening the 12-point collar nut turn the drive pinion a number of times and assure that the tapered rollers are positioned properly in the races by tapping lightly against the rear axle housing.



P35-2334-13

51 Attach torque measuring instrument (018) 001 589 49 21 00 with connection attachment 100 589 02 59 00 to socket (016) 126 589 02 09 00 and turn drive pinion to check.

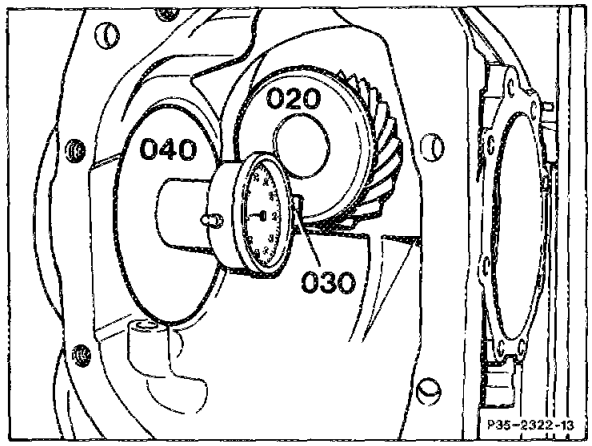


P35-2324-13

Note
The tapered roller bearings for the drive pinion must be installed with a certain initial tension. This initial tension can be reached by pressing together the spacer sleeve between the bearing inner race of the front tapered roller bearing and the drive pinion when tightening the 12-point collar nut.

If the frictional torque when the drive pinion is turned is too low, i.e. the initial tension of the tapered roller bearing is too low, tighten the 12-point collar nut slightly. If the prescribed frictional torque is exceeded, remove the drive pinion again and insert a **new** spacer sleeve. **Never attempt to reduce the frictional torque by loosening the 12-point collar nut,** otherwise the initial tension on the tapered roller bearing would be too low. This would result in play in the drive pinion when driving resulting in possible noises in the rear axle.

52 Reinstall measuring attachment (040) 116 589 01 21 00 together with dial gauge holder (030) and dial gauge in left bore of rear axle housing to check adjustment again. To measure adjustment dimension "A" attach magnetic plate (020) 116 589 01 21 00 to front of drive pinion.

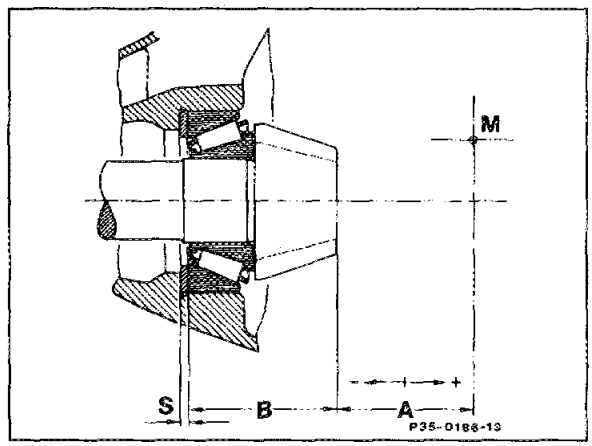


P35-2322-13

Note
With the gear assembly in the example given the dial gauge should indicate a deviation of + 0.15 mm from the basic dimension in the plus direction; the same dimension which is marked on the front of the drive pinion.

The permissible basic deviation in the adjustment dimension "A" must not exceed 0.01 in the plus direction or 0.02 in the minus direction.

If the deviation is greater regrind the shim installed or install a new shim of correct thickness. In either case a **new spacer sleeve** for the tapered roller bearing must be used under all circumstances.

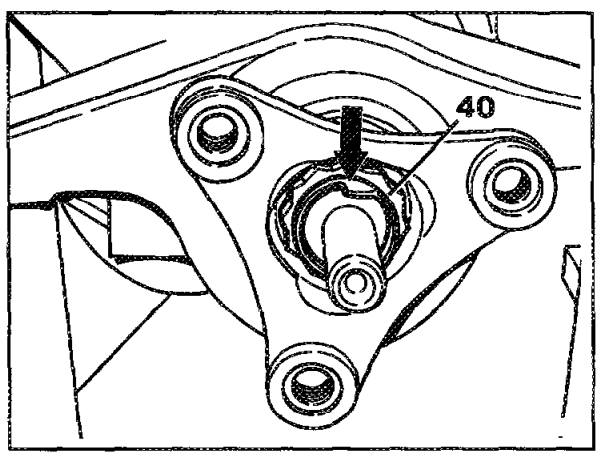


P35-0186-13

53 Remove measuring attachment with dial gauge and holder from rear axle housing.

54 Peen 12-point collar nut (40) with peening tool in one of the two grooves in the drive pinion so that there is no gap between the groove and retaining tab (arrow).

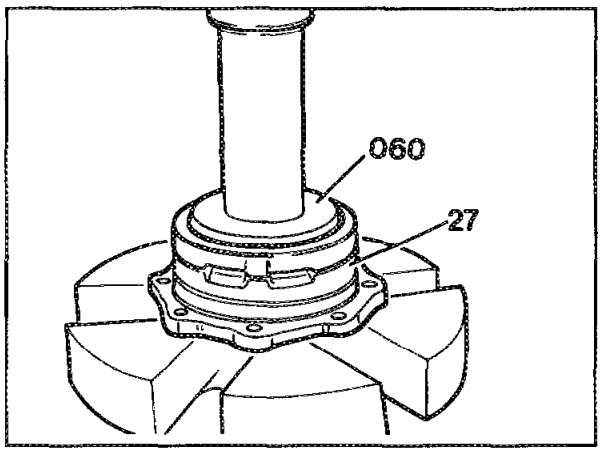
⚠ **CAUTION!**
Do not hit hard in axial direction.



P35-2323-13

Press radial shaft seal and tapered roller bearing outer race into lateral bearing cap

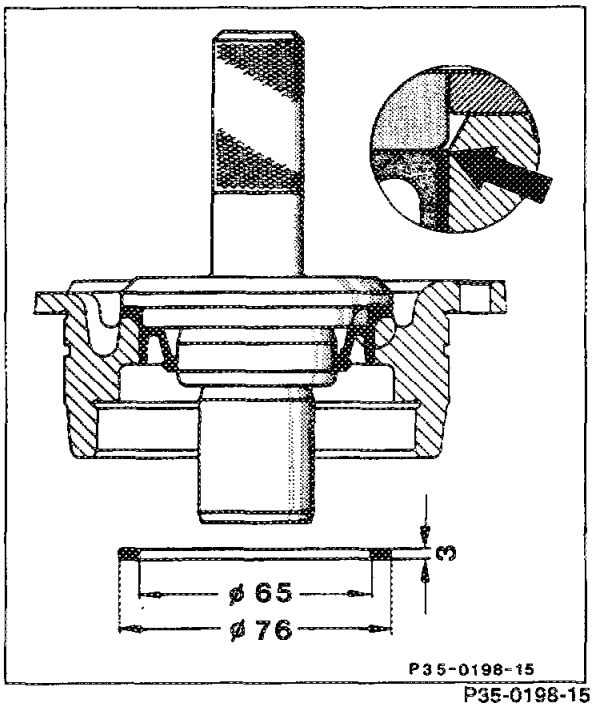
55 Press new tapered roller bearing outer race into bearing cap (27) with disk (060) 88 mm dia. for installation tool 116 589 11 61 00.



P35-2375-13

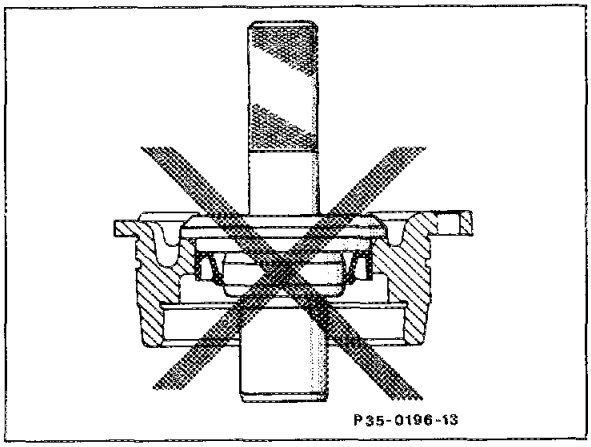
56 Coat new radial shaft seal with hypoid gear oil or rubber lubricant "naphtalene H" and press into lateral bearing cap against stop with installation punch 116 589 05 43 00.

Note
Make and use spacer ring according to drawing to avoid excessive pressure on radial shaft seal.



P35-0198-15

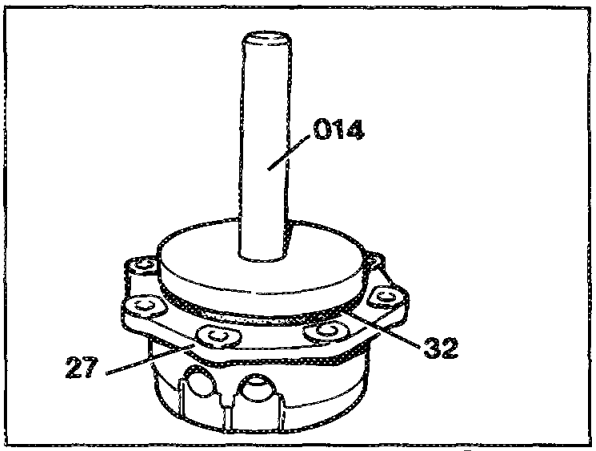
Radial shaft seal pressed in correctly



P35-0196-13

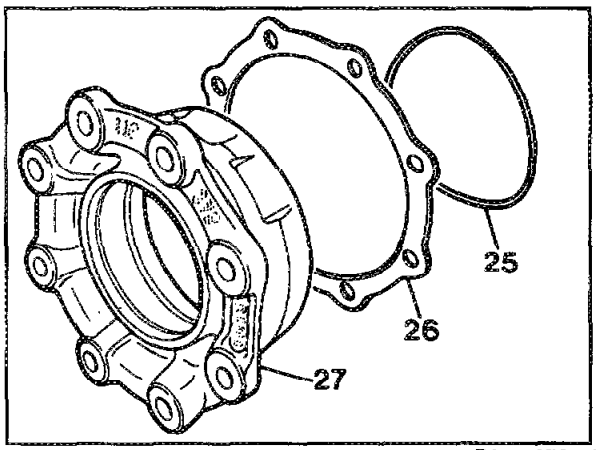
Radial shaft seal pressed in incorrectly

On vehicles with ASR, press radial shaft seal (32) into lateral bearing cap (27) with installation punch (014) 126 589 04 15 00.



P35-2321-13

57 Position shims (26) removed previously on bearing caps (27) and install new sealing rings (25) in grooves of bearing caps.



P35-2376-13

Adjusting backlash

Note

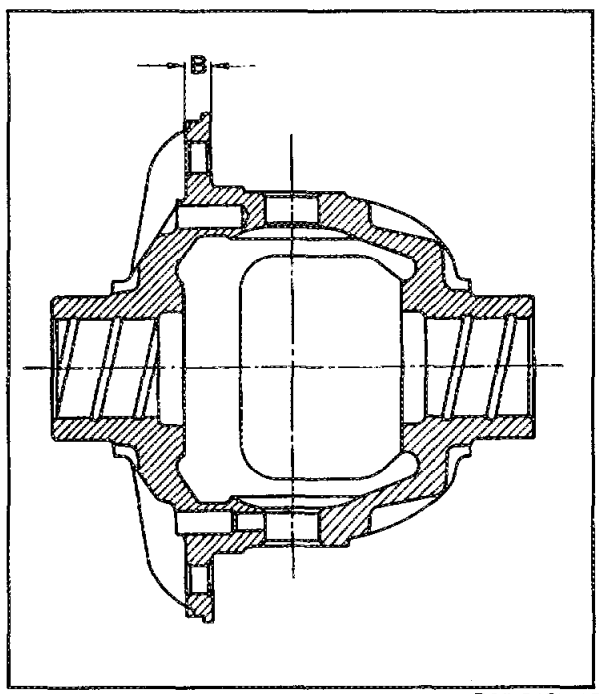
The gear assembly backlash and the required initial tension on the tapered roller bearing for the differential can be adjusted with shims (26) between the bearing caps and rear axle housing. The shims are available in various thicknesses. For assembly it is most practical to reinstall the bearing caps and shims removed previously on the corresponding side to obtain an initial basic adjustment.

58 Disassemble differential and reassemble (35-560).

59 Thoroughly clean bore in ring gear and seat on differential housing. Heat ring gear to 80 °C and attach to differential housing. Pay attention to markings made previously on ring gear and differential housing, if applicable.

If the ring gear cannot be positioned on the differential housing, tap lightly with rubber hammer.

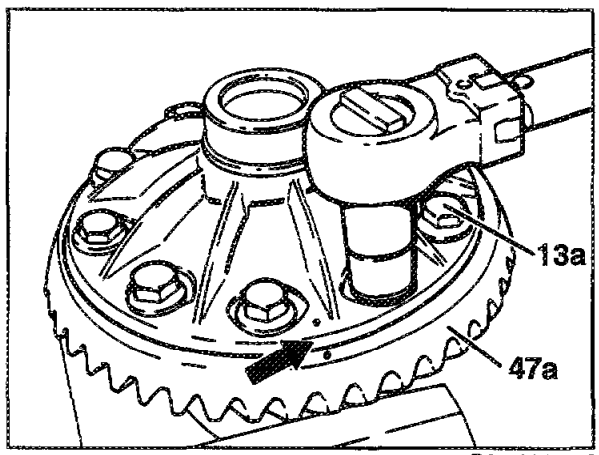
⚠ **CAUTION!**
When installing a new differential housing or new ring gear bolts, pay attention to length of ring gear bolts. Use **20 mm long** ring gear bolts only for differential housing with only **8 mm thick** contact flange dimension "B".



P35-0185-15

60 Tighten standard hex. head bolts (13a) to 120 Nm and retaining bolts with locking tooth to 140 Nm. Torque wrench 001 589 67 21 00.

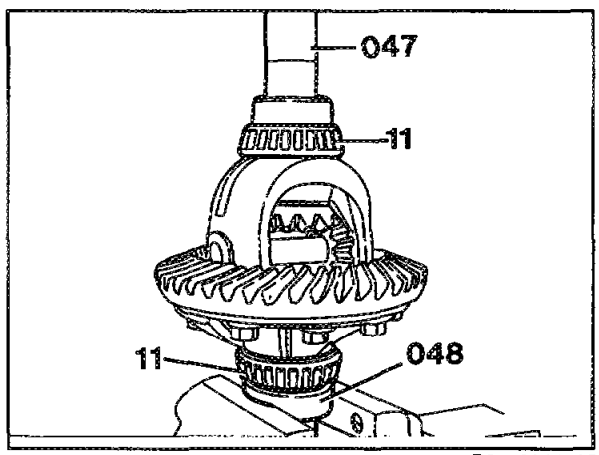
⚠ CAUTION!
Always replace ring gear bolts after using once. Standard mounting bolts can be replaced by retaining bolts with locking teeth, but not vice versa.



P35-2383-13

61 Press inner races of tapered roller bearing (11) onto differential housing with installation punch (047) 116 589 08 61 00.

⚠ CAUTION!
Use attachment (048) 126 589 00 15 00 to prevent damage to roller cage when pressing on second inner race.

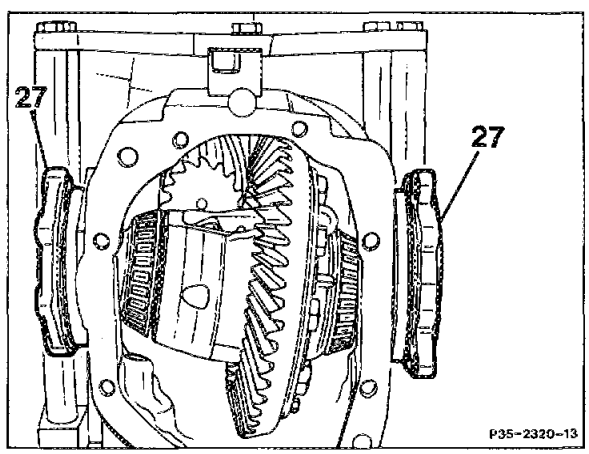


P35-2389-13

62 Press both lateral bearing caps (27) together with shims into rear axle housing until they are flush with the inner edge of the housing.

63 Insert differential and slide in both lateral bearing caps (27) against stop.

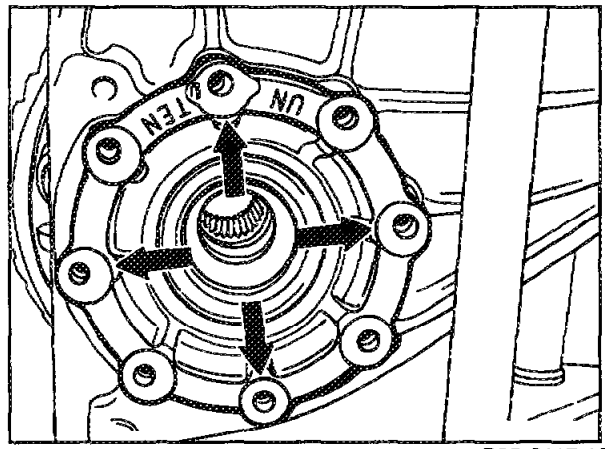
Note
Assure that the rubber rings on the bearing caps are not damaged during assembly.



P35-2320-13

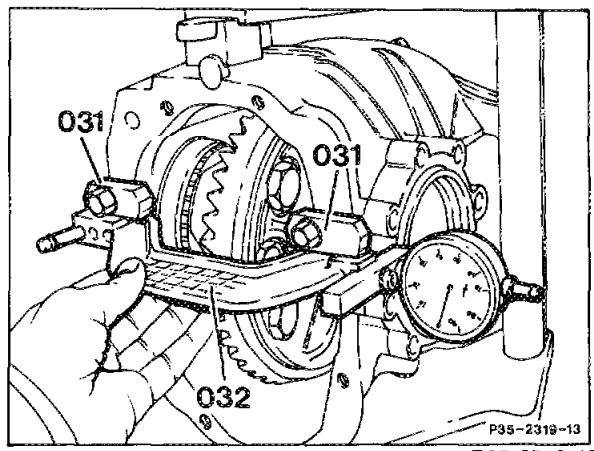
⚠
Pay attention to installation position of lateral bearing caps (see lettering **UNTEN - BOTTOM**).

Note
If the lateral bearing caps stick in the bore in the rear axle housing, tap lightly with rubber hammer (arrows).



P35-2417-13

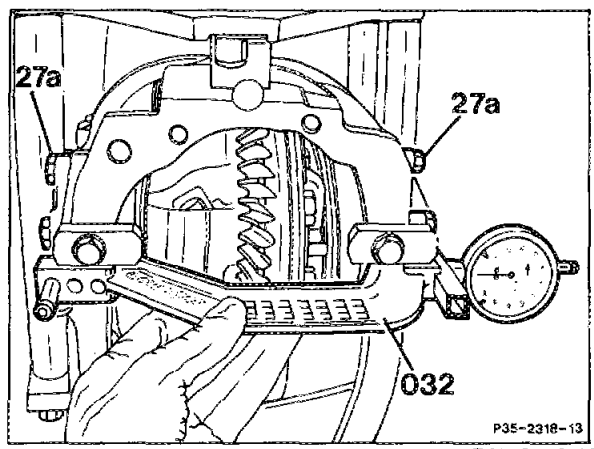
64 Screw support pads (031) 126 589 14 63 00 for measuring bow (032) 126 589 08 21 00 right and left onto sealing surface of rear axle housing. Position measuring bow for spread dimension measurement with dial gauge against support pad from **below** and set dial gauge to "0" with pre-load of approx. 3 mm.



P35-2319-13

65 Screw all hex. head bolts (27a) into lateral bearing caps and tighten to 20 Nm. Torque wrench 001 589 66 21 00.

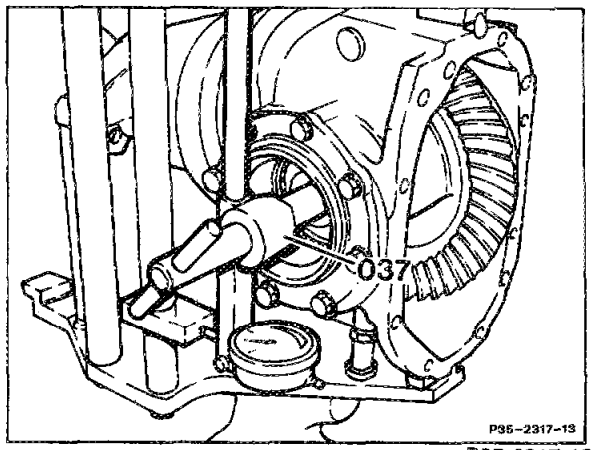
66 Reposition measuring bow (032). The required spread dimension (widening) of the rear axle housing and therefore the correct initial tension for the tapered roller bearing on the differential is achieved when the spread dimension is in the range of **0.15 – 0.20 mm.**



P35-2318-13

67 Insert backlash measuring instrument (037) 201 589 03 21 00 into left bore of differential housing and clamp in place.

68 Measure backlash at four points based on circumference of ring gear by moving dial gauge holder or ring gear. The smallest play applies. **The backlash must be between 0.08 and 0.14 mm.** Hold drive pinion at joint flange for each measurement.



P35-2317-13

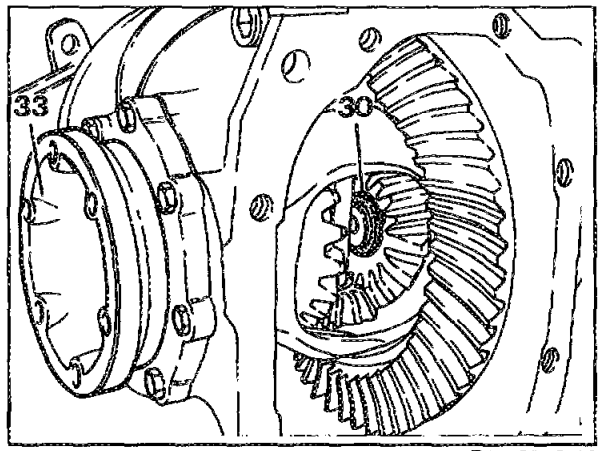
Note
The adjustment of the tapered roller bearing and gear assembly is okay when the spread dimension (widening) of the rear axle housing and the backlash is within the nominal range. If these values are not achieved, repeat adjustment with correspondingly thicker or thinner shims.

Example 1: If the backlash is okay, however the spread dimension of the rear axle housing is too low, use shims for both bearing caps which are each thinner by a uniform amount.

Example 2: If the spread is okay, but the backlash is too high, remove shims of the appropriate thickness on the right side and install on the left side. If the backlash is too low, proceed in opposite order.

69 Install left and right connection flanges (33) with new retaining rings (30).

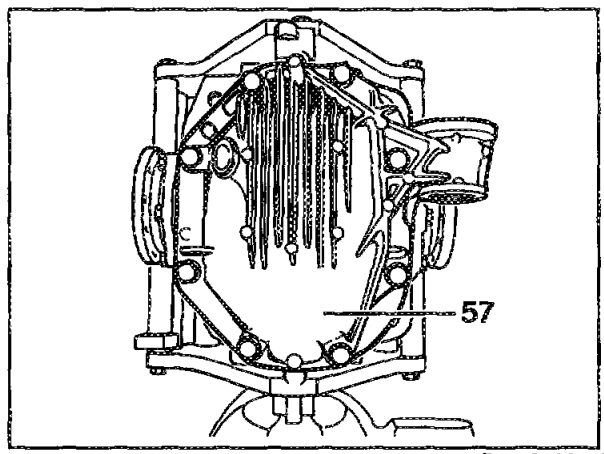
70 See 35-540 for adjustment of connection flanges.



P35-2316-13

71 Clean sealing surfaces on end cover (57) and on rear axle housing and coat with sealant.

72 Install end cover. Tightening torque for hex. head bolts, strength class 8.8 = 45 Nm and 10.9 = 50 Nm. Torque wrench 001 589 66 21 00.



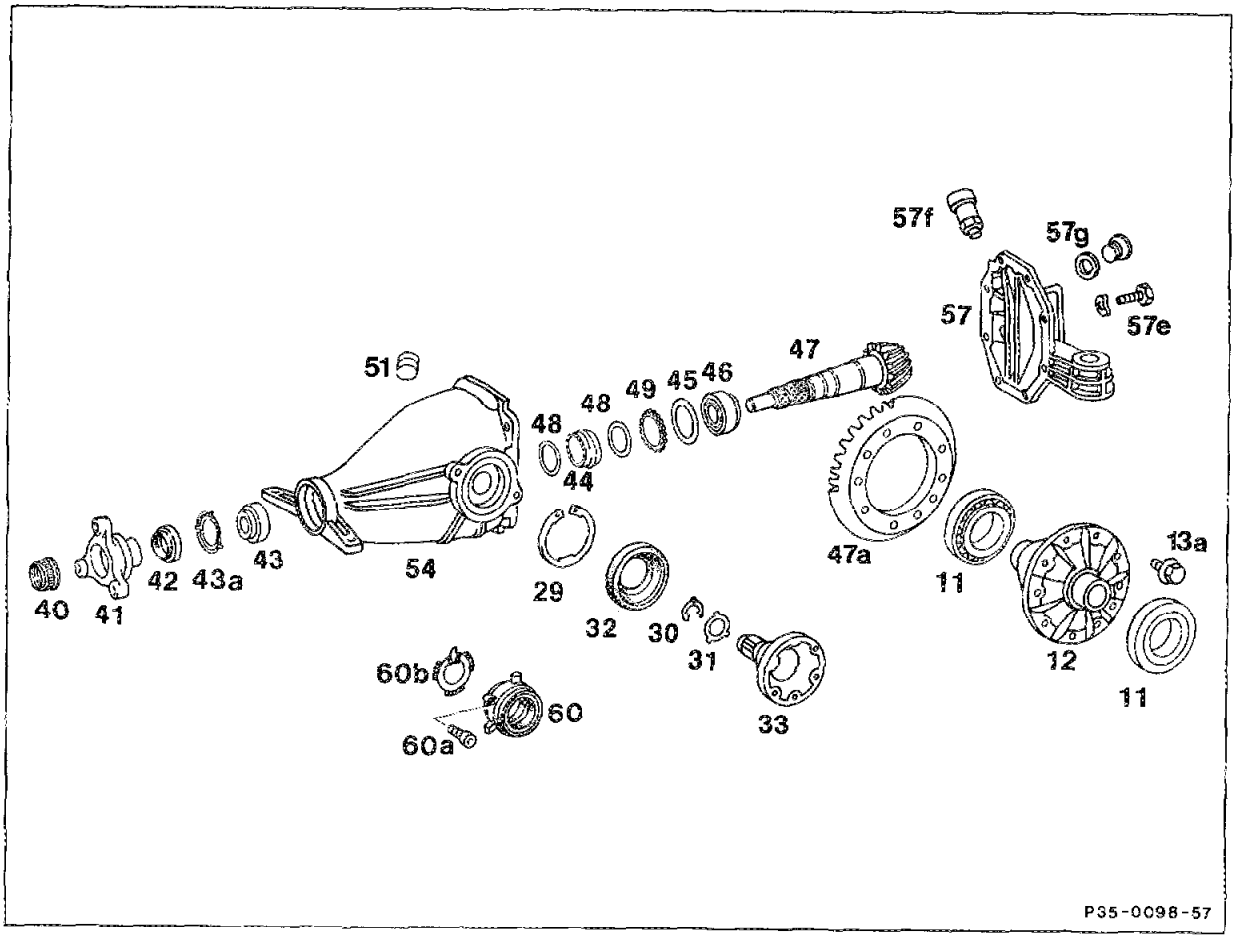
P35-2393-13

73 Remove rear axle differential housing from assembly jig.

74 Fill with hypoid gear oil up to bottom edge of oil fill hole.

75 Replace vent on rear axle housing.

B. Rear axle differential housing without lateral bearing caps



P35-0098-57

Hypoid gear oil	drain, fill up to bottom of oil fill bore.
Rear axle differential housing	clamp onto assembly jig 129 589 00 31 00, unclamp.
Cover (57)	remove, install. Tightening torque for hex. head bolts, strength class 8.8 = 45 Nm and 10.9 = 50 Nm. Torque wrench 001 589 66 21 00 (steps 87 and 88).
Vent (57f)	replace.
Retaining rings (30)	remove, install, replace.
Connection flanges (33) with shims (31)	pull out, install (steps 4–5 and 85–86).

Radial shaft seals (32)	press out, press in, replace. Installation punch 116 589 11 61 00 (steps 6 and 84).
Retaining rings (29)	remove, install (steps 7-14) **adjust backlash and spread** (steps 67-83).
Tapered roller bearing outer races (11)	remove, first press differential to right with installation punch 116 589 18 61 00. During installation locate differential with installation punch 126 589 00 15 00 (steps 15 and 68).
Tapered roller bearing inner races (11)	pull off and mark, use puller 123 589 08 33 00. To press on use installation punch 115 589 04 61 00 and attachment 126 589 00 15 00 (steps 17 and 65).
Differential	remove, install. Pivot differential to left to install (steps 16, 66 and 67).
Ring gear (47a)	remove, install. Mark position of ring gear in relation to differential housing (12), press off carefully. Before installation heat ring gear to 80 °C. Replace ring gear bolts. Tightening torque 85 Nm. Torque wrench 001 589 66 21 00 (steps 18, 62-64).
Joint flange (41)	remove, install. For this purpose loosen 12-point collar nut (40), tighten and secure.

Note

Mark position of joint flange in relation to drive pinion if required.

Holding wrench	129 589 01 07 00
Socket wrench socket	126 589 02 09 00
Puller	129 589 01 33 00
Torque wrench	001 589 74 21 00
Torque measuring instrument	001 589 49 21 00

Adjust frictional torque (steps 54–61).

Drive pinion (47)	remove, install, use standard two-claw puller. Support drive pinion with installation tool 201 589 02 43 00 when installing (steps 22, 50 and 51).
Radial shaft seal (42)	press out, press in, replace. Remove tapered roller bearing inner race (43) and thrust washer (43a), when present, install. Replace thrust washer and assure that it is seated properly (steps 23, 51 and 52). Thrust attachment 124 589 02 15 00.
Tapered roller bearing outer races (43, 46)	remove, install, use removal tool 201 589 02 43 00 and thrust attachment 201 589 02 43 15 or 201 589 02 43 16 installation tool 116 589 11 61 00 (steps 24, 25 and 49).
Spacer sleeve (44) with thrust washers (48)	remove, install. Replace spacer sleeve and thrust washers (steps 26 and 50).
Gear ABS (49)	pull off with standard puller. Use self-made installation sleeve (011) to press on (steps 27 and 35).
Tapered roller bearing inner race (46)	pull off, press on. Puller basic unit 001 589 36 33 00 extension 000 589 35 34 00 clamping attachment 000 589 34 34 00 Use self-made installation sleeve (010) to press on (steps 28-30 and 34).
Check	all parts (step 31).
Gears	adjust (steps 36-59).

Oil types and capacities

Standard differential	Hypoid gear oil SAE 90 refer to Factory Approved Service Products list [1]
Differential with ASD	*Special hypoid gear oil SAE 90* refer to Factory Approved Service Products list [1]
Capacity	1.0 liters

[1] Refer to factory approved service products list supplied with owner's literature or available through your local authorized Mercedes-Benz Dealer.

Gear adjustment values

Backlash	0.08–0.14 mm
Adjustment of tapered roller bearing for differential: The tapered roller bearings are adjusted to their required pretension by spreading (widening) the rear axle housing by	0.10–0.15 mm
Permissible tolerance for adjustment dimension "A" of drive pinion	+ 0.01 mm – 0.02 mm
Permissible vertical runout at tapered roller bearing seats and centering pin of propeller shaft	0.02 mm

Shims for adjustment of drive pinion

Thickness	1.5 to 2.4 mm
Increments	0.05 to 0.05

Note
Grind shim down to required thickness if necessary.

Gear (rotor) for ABS and ASD speed sensor

Ratio	Number of teeth
3.46	28
3.07	31

Frictional torque of drive pinion bearing[1])

Bearing matching from tapered roller bearing manufacturer		Frictional torque
Large tapered roller bearing	Small tapered roller bearing	
SKF	SKF	155–175 Ncm
FAG	FAG	235–255 Ncm
FAG	Koyo	
SKF	FAG	185–205 Ncm
FAG	SKF	
SKF	Koyo	
Tapered roller bearings after operation		50–100 Ncm

[1]) For correct adjustment of the tapered roller bearings tighten the 12-point collar nut on the joint flange until the prescribed frictional torque is reached when the drive pinion is turned. The differential with ring gear must not be installed when checking the frictional torque by turning the pinion gear.

Retaining ring for adjusting backlash and spread dimension

Thickness	3.60 to 4.40 mm
Increments	0.05 to 0.05

Mounting bolts for ring gear

Hex. head bolts (length 18 mm)	Part no. see parts microfilm

Joint flange on drive pinion

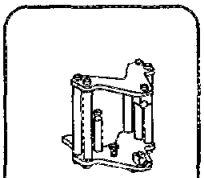
Diameter of running surface for radial shaft seal on joint flange	new	40.00 39.84
	min. dia. for repair [1])	39.6
Running surface of joint flange		without twist
Permissible vertical runout of sealing surface of joint flange		0.06

[1]) Remachine running surface for seal in emergencies only.

Shims between connection flange and differential housing

Shim	Thickness	from 0.7 to 1.5
	Increments	0.1 to 0.1

Special tools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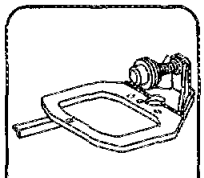
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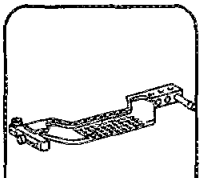
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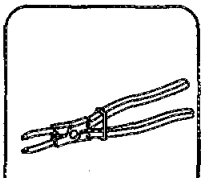
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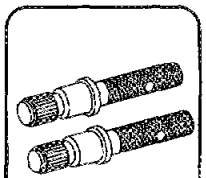
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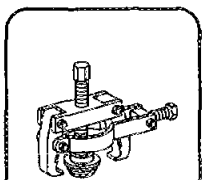
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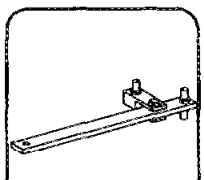
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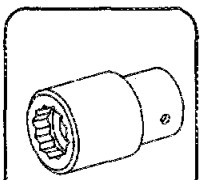
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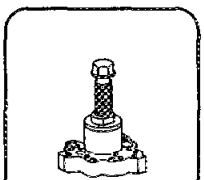
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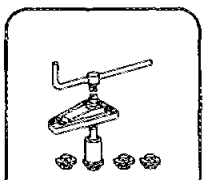
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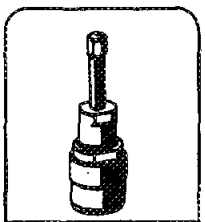
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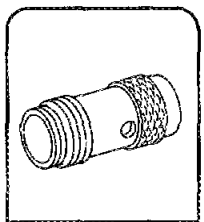
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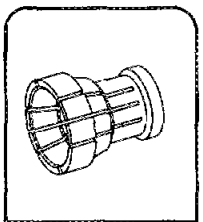
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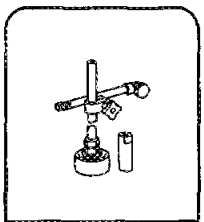
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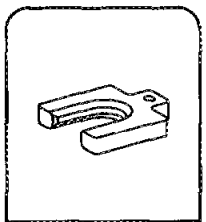
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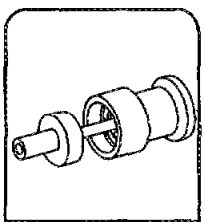
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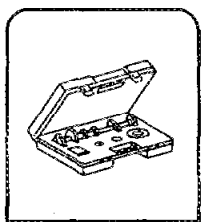
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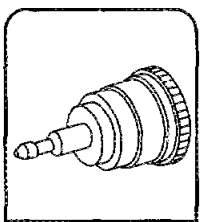
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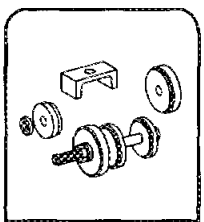
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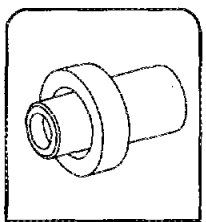
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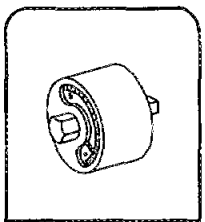
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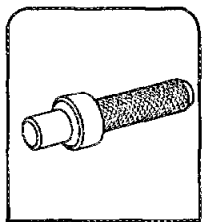
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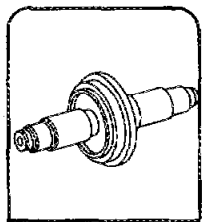
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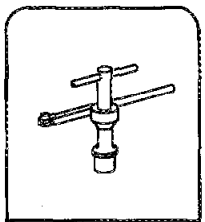
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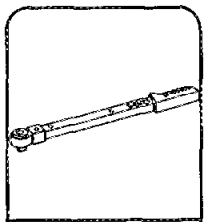
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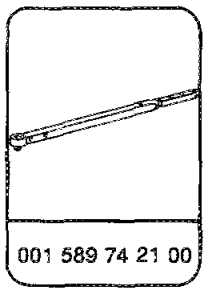
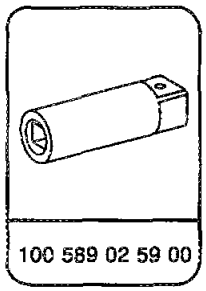
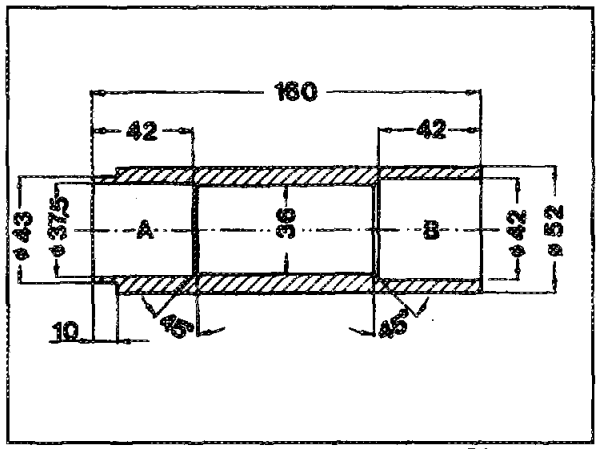
Special tools





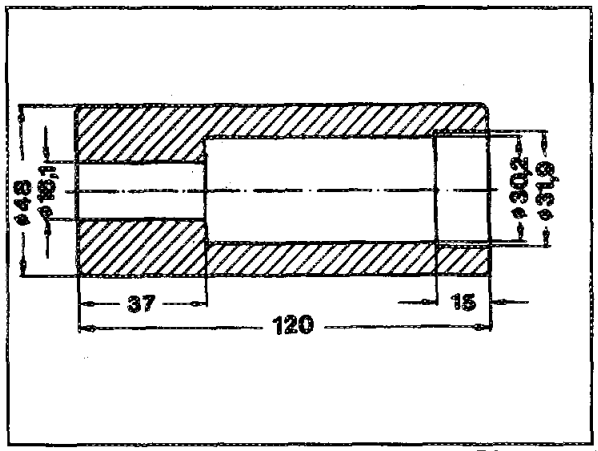
Self-made tools

Installation sleeve (010) for installing tapered roller bearing inner race on drive pinion.

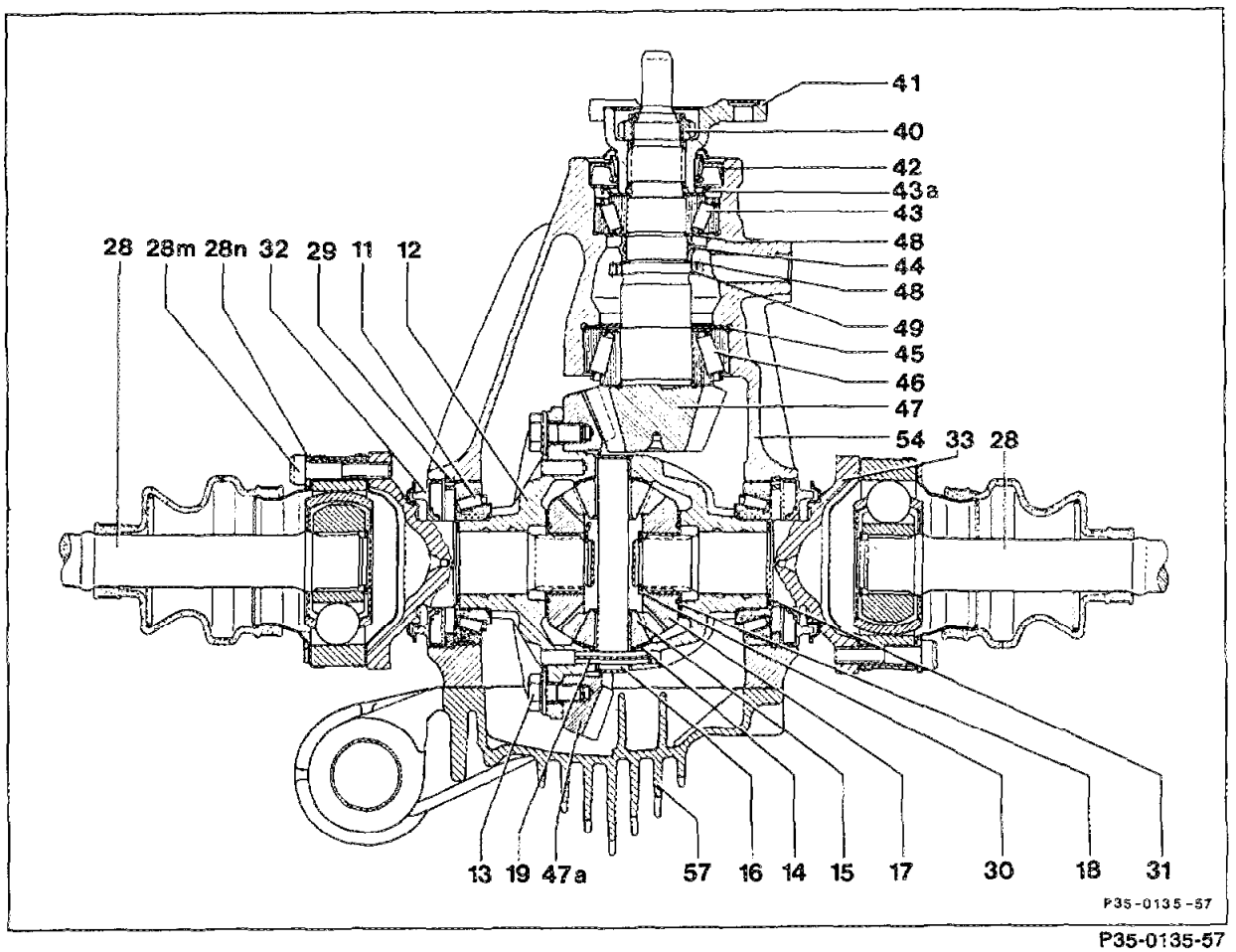


P35-0188-13

Installation sleeve (011) for ABS gear on drive pinion.



P35-0187-13



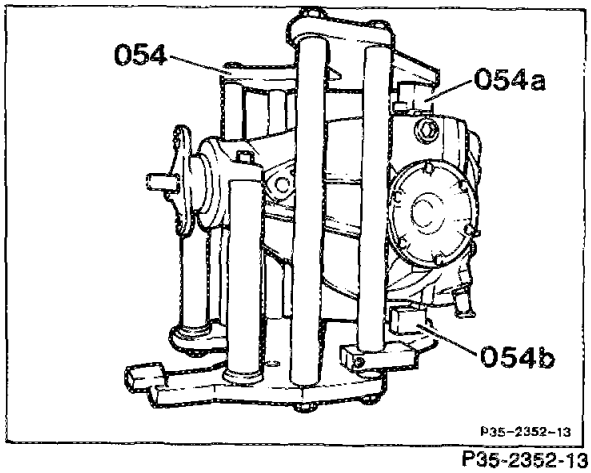
P35-0135-57

11	Tapered roller bearing
12	Differential housing
13	Hex. head bolt
14	Ball washer
15	Differential pinion
16	Differential pinion shaft
17	Rear axle shaft gear
18	Thrust washer
19	Clamping sleeve
28	Rear axle shaft, complete
28m	Allen bolts
28n	Spacer plates
29	Retaining ring
30	Retaining ring
31	Shim
32	Radial shaft seal
33	Connection flange
40	12-point collar nut
41	Joint flange
42	Radial shaft seal
43	Tapered roller bearing
43a	Thrust washer
44	Spacer sleeve
45	Shim
46	Tapered roller bearing
47	Drive pinion
47a	Ring gear
48	Thrust washers
49	ABS gear
54	Rear axle housing
57	End cover

Disassembly

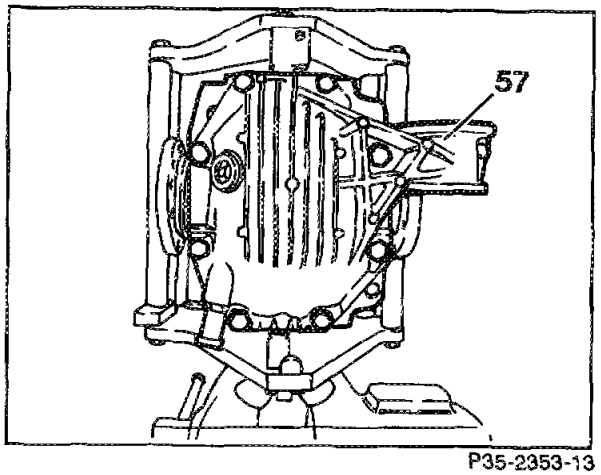
1 Drain oil.

2 Clamp rear axle differential housing into assembly jig (054) 129 589 00 31 00 with attachment part (054a) 129 589 00 31 15, (054b) 129 589 00 31 09.



P35-2352-13

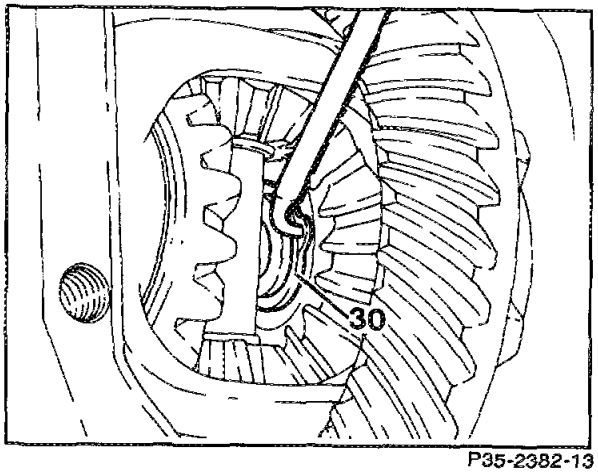
3 Remove retaining rings (30) from both connection flanges with pliers or hook.



P35-2353-13

4 Remove retaining rings (30) from both connection flanges with pliers or hook.

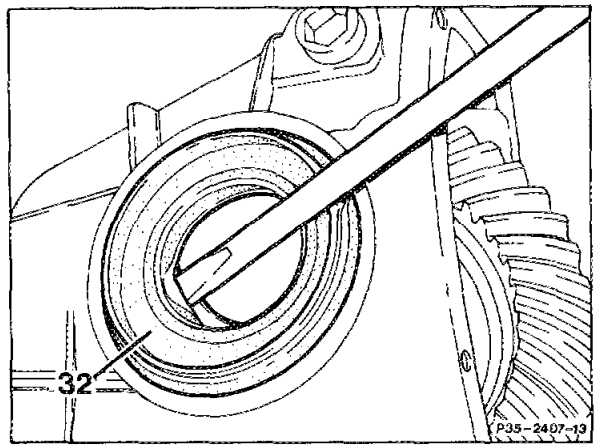
5 Pull connection flanges together with shims out of rear axle shaft gears.



P35-2382-13

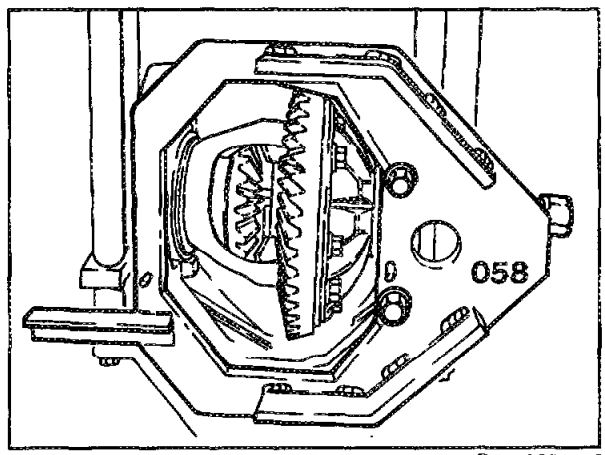
6 Press both radial shaft seals (32) out of rear axle housing.

Note
On vehicles with ASD see (35-545) Repair of ASD ring cylinder.



P35-2407-13

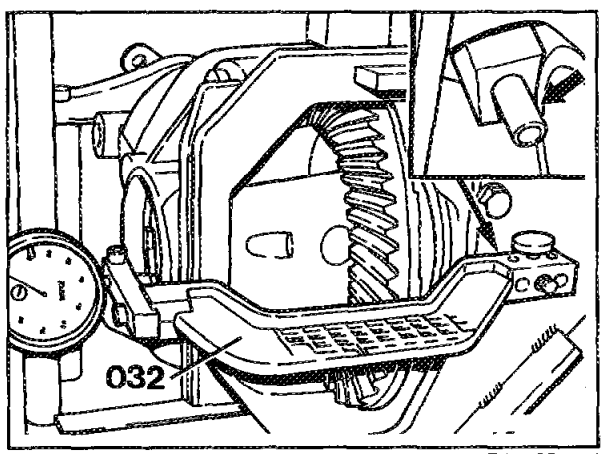
7 Mount spreading tool (058) 126 589 00 31 00 on rear axle housing, tighten hex. head bolts to 40 Nm. Torque wrench 001 589 66 21 00.



P35-2354-13

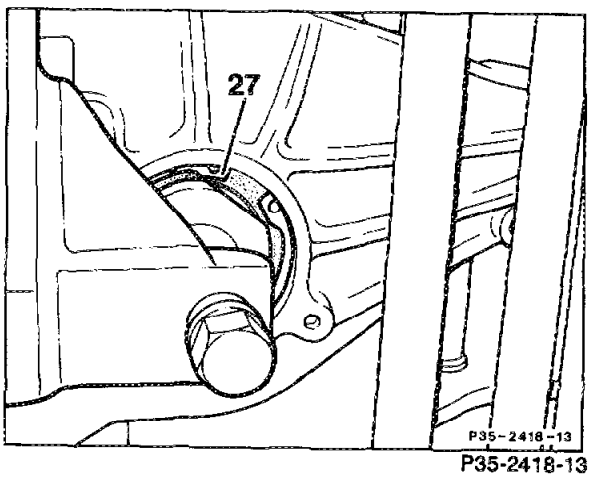
8 Position measuring bow for spread dimension measurement (032) 126 589 08 21 00 on spreading tool, preload dial gauge 3 mm and set to "0".

⚠ CAUTION!
Assure that the stop bolt on the measuring bow is against the contact surface of the rear axle housing (see cutout, arrow).



P35-2355-13

9 · Turn one surface of the thrust attachment toward the opening in the retaining ring (27) and screw in the threaded spindle by hand up to the bearing outer race.

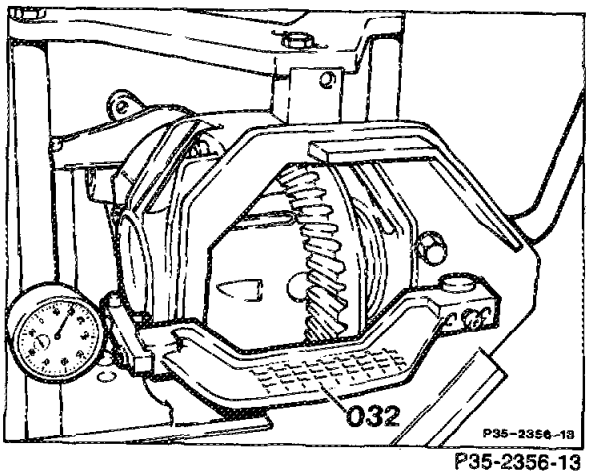


P35-2418-13

10 Pretension (spread) rear axle housing 0.20 mm by screwing in the threaded spindle on the spreading tool.

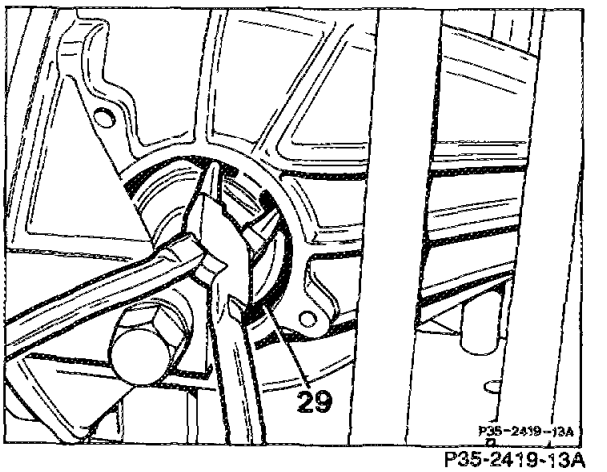
⚠ **CAUTION!**
When spreading do not exceed the value of **0.20 mm.**

11 Remove measuring bow (032).



P35-2356-13

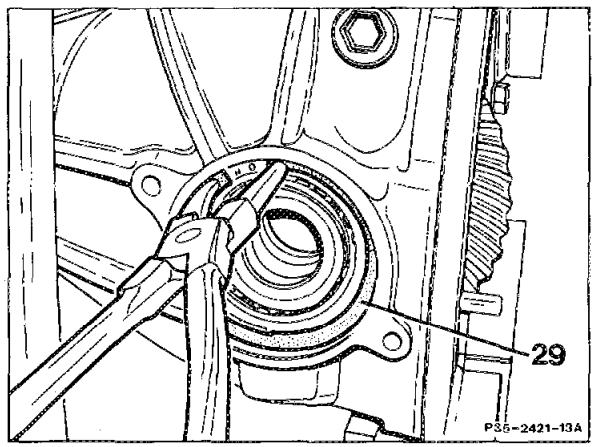
12 Remove right retaining ring (29) from rear axle housing with pliers 126 589 00 37 00 and mark.



P35-2419-13A

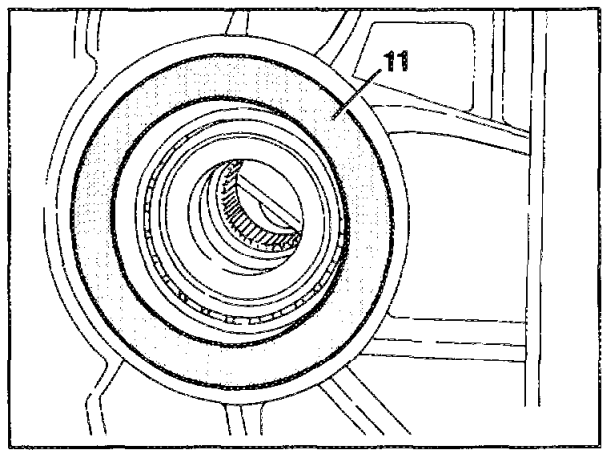
13 Release tension on rear axle housing and remove spreading tool.

14 Remove left retaining ring (29) from rear axle housing with pliers.



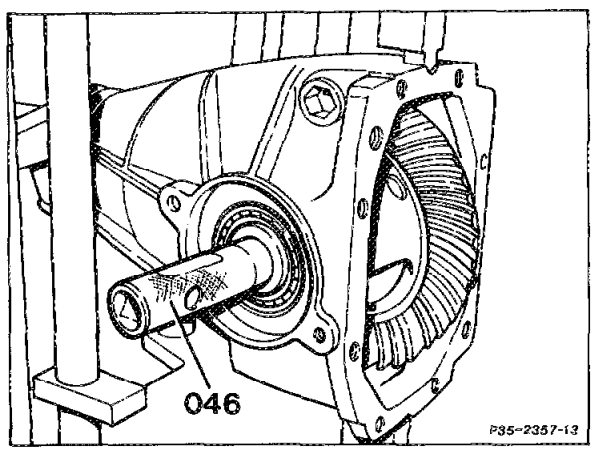
P35-2421-13A

15 Remove both bearing outer races for tapered roller bearings (11) from rear axle housing and mark to prevent mixing up during installation.



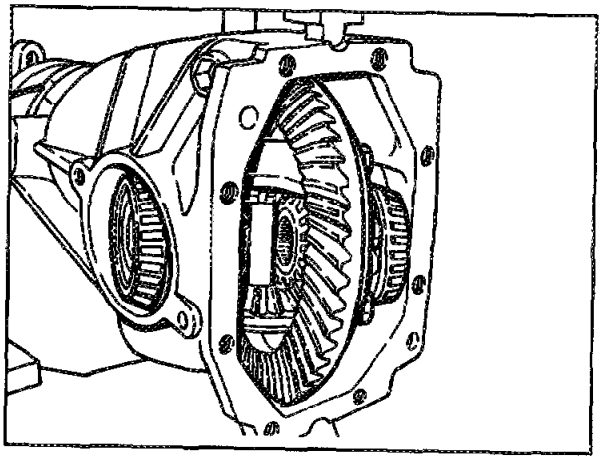
P35-2387-13

Note
To facilitate removal of the bearing outer rings, insert installation punch for differential gears (046) 116 589 18 61 00 into left side, press entire differential to right until it contacts the rear axle housing. Remove left and right bearing outer races.



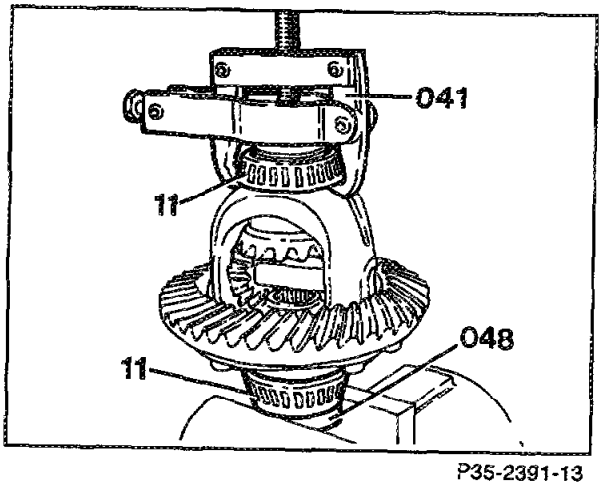
P35-2357-13

16 Move differential to position shown and remove from rear axle housing.



P35-2358-13

17 Pull both tapered roller bearing inner races (11) out of differential housing with puller (041) 123 589 08 33 00, and mark to prevent mixing up during reassembly.

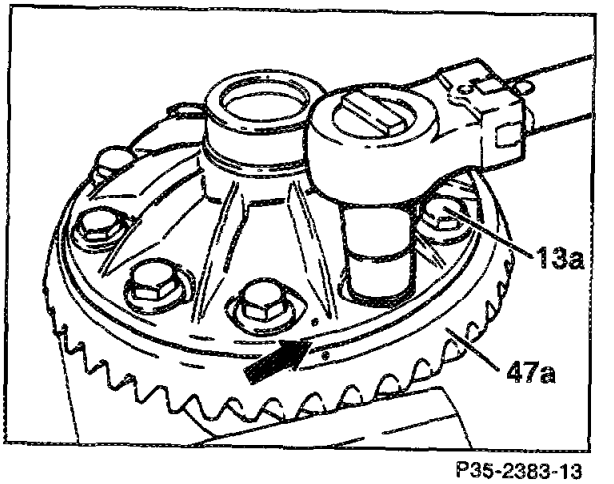


P35-2391-13

18 Loosen hex. head bolts (13a) and carefully press off ring gear (47a).

Note

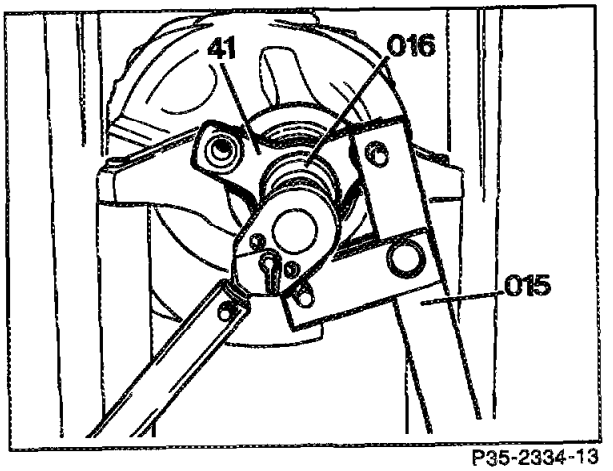
If the gear assembly is used again the position of the ring gear in relation to the differential housing must be marked so that the ring gear can be reinstalled at the same point (arrow).



P35-2383-13

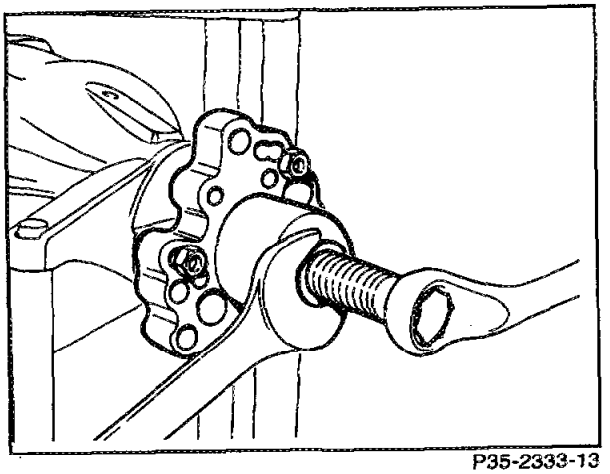
19 Attach holding wrench (015) 129 589 01 07 00 to joint flange and loosen 12-point collar nut with socket (016) 126 589 02 09 00.

20 Mark position of joint flange in relation to drive pinion.

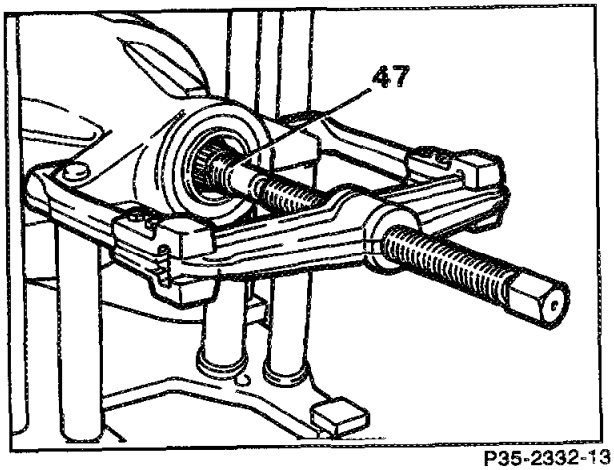


P35-2334-13

21 Pull joint flange off of drive pinion with puller 129 589 01 33 00 if required.

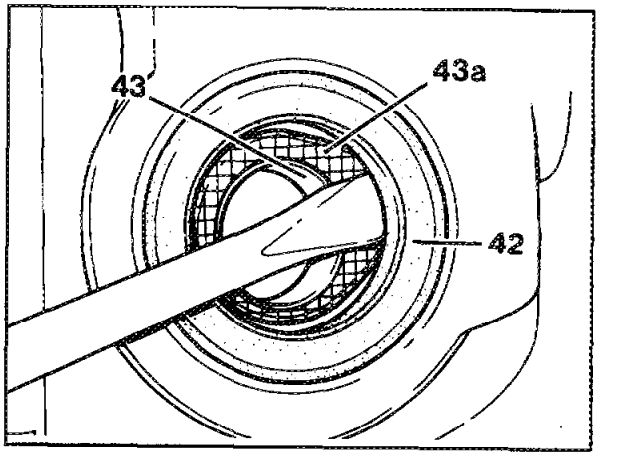

P35-2333-13

22 Press drive pinion (47) out of rear axle housing with commercially available puller.



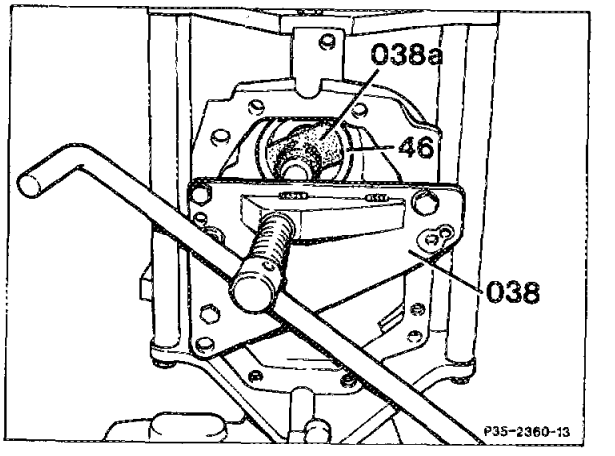
P35-2332-13

23 Press out radial shaft seal (42) and remove tapered roller bearing inner race (43) with thrust washer (43a), if present.



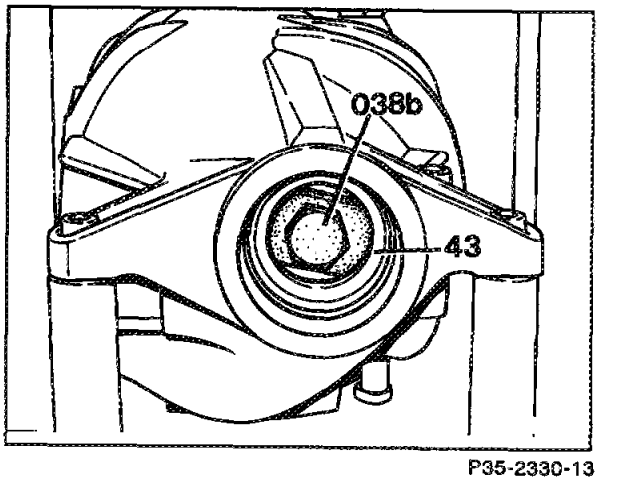
P35-2372-13

24 Pull inner tapered roller bearing outer race (46) out of rear axle housing with removal and installation tool (038) 201 589 02 43 00 and thrust attachment (038a) 201 589 02 43 15. Remove shim.



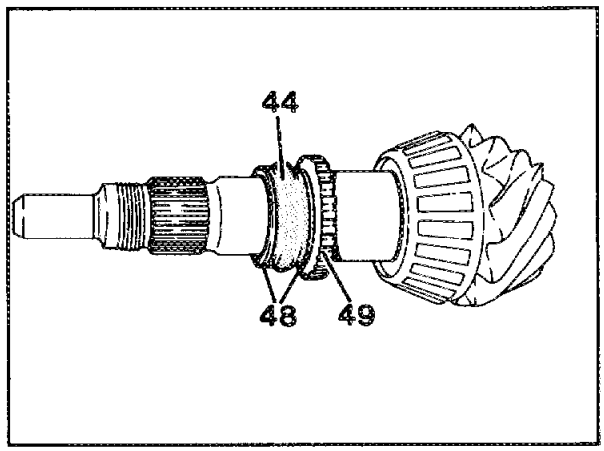
P35-2360-13

25 Press out outer tapered roller bearing outer race (43) with thrust attachment (038b) 201 589 02 43 16.



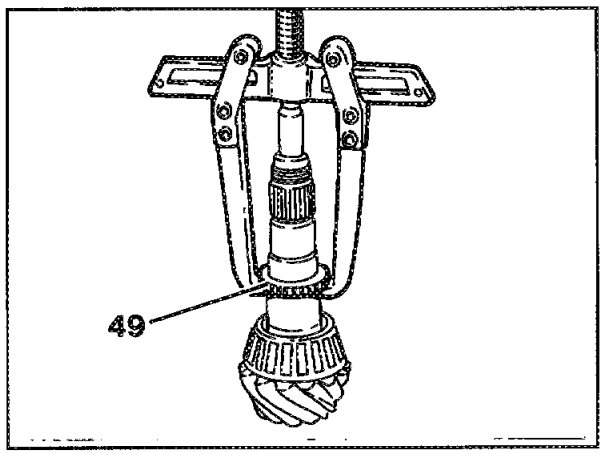
P35-2330-13

26 Remove spacer sleeve (44) together with thrust washer (48) from drive pinion.



P35-2384-13

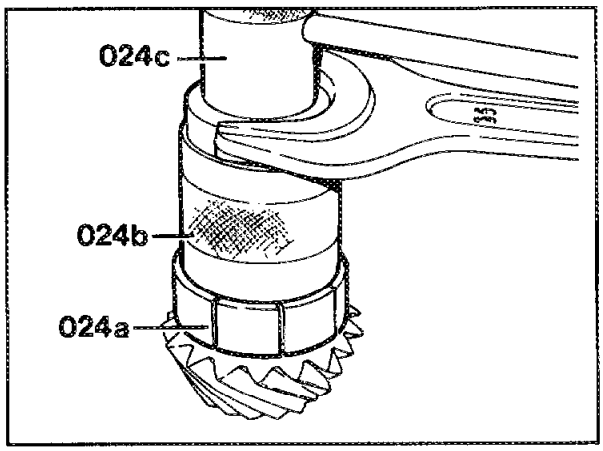
27 Pull ABS gear (49) off of drive pinion with commercially available puller.



P35-2390-13

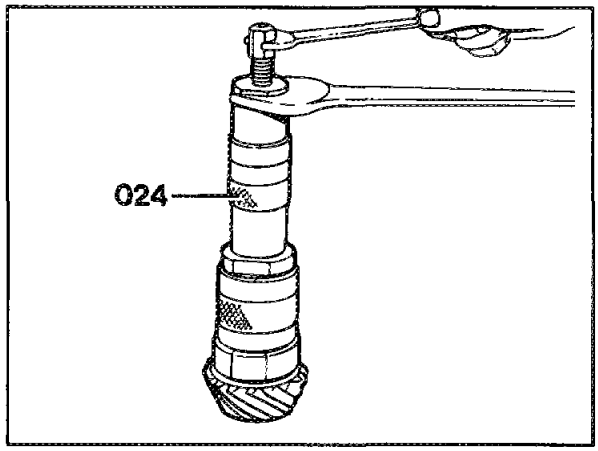
28 Assemble basic puller unit 001 589 36 33 00 with extension (024c) 000 589 35 34 00 and clamping attachment (024a) 000 589 34 34 00.

29 Slide puller with clamping attachment (024a) over tapered roller bearing and clamp behind rollers of tapered roller bearing with clamping sleeve (024b).



P35-2378-13

30 Pull off tapered roller bearing inner race.



P35-2379-13

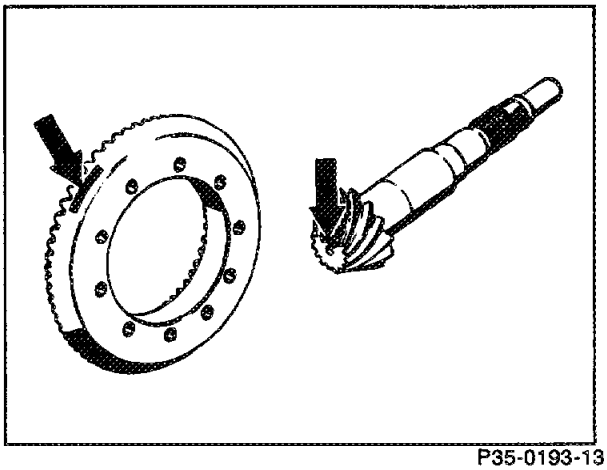
Checking

31 Check all parts for reusability. Check bearing seats on drive pinion and centering pin of propeller shaft for vertical runout. Maximum vertical runout **0.02 mm**.

32 Check running surface for radial shaft seal on joint flange. If running surface is worn, replace joint flange.

33 Slide joint flange onto drive pinion observing marking, if applicable. Check vertical runout of joint flange on running surface of radial shaft seal. If the vertical runout is greater than 0.06 mm even when the joint flange is positioned at different positions a number of times on the wedge profile, replace joint flange.

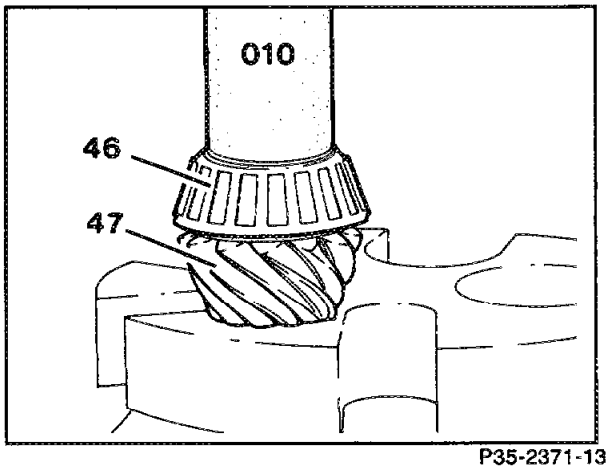
Note
Matching drive pinions and ring gears in each gear assembly are marked with the same sequential number on both parts. In addition the interval of the gears to one another to be adjusted for the gear assembly in question is always indicated on the drive pinion with a sign + or –.


P35-0193-13

Use a data sheet to calculate the thickness of the shim required for adjustment of the drive pinion. **A sample data sheet is located at the end of this operation number.** The measurement and calculation procedure used in the example is described in detail in the following steps.

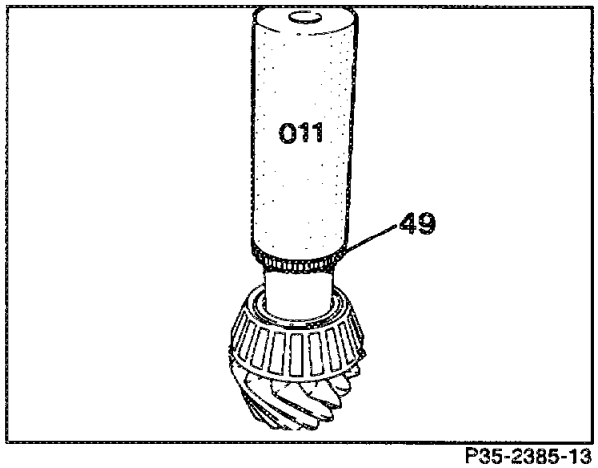
Assemble and adjust gear assembly

34 Press rear tapered roller bearing (46) onto drive pinion (47) with self-made installation sleeve (010). For this purpose use the side of the sleeve marked with "B".



P35-2371-13

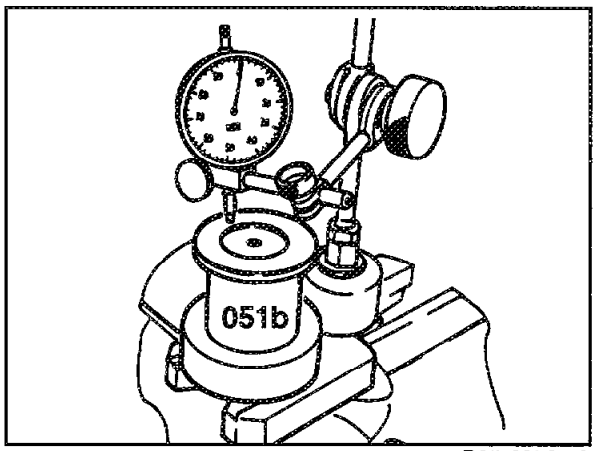
35 Press on ABS gear (49) with self-made installation sleeve (010).



P35-2385-13

36 Clamp dial gauge into dial gauge holder 363 589 02 21 00 and position on measuring plate 601 589 00 23 00.

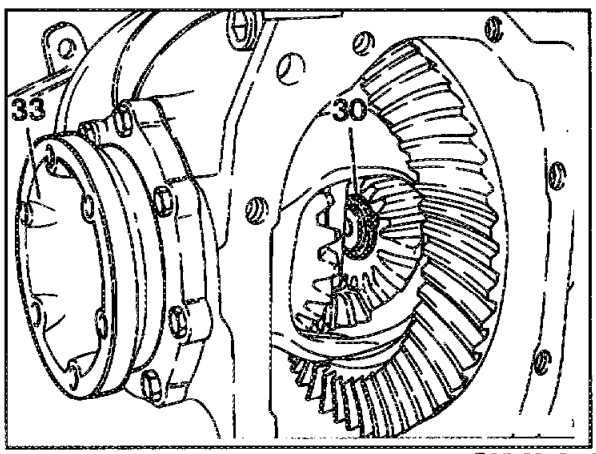
37 Set dial gauge with approx. 3 mm preload on measuring body (051b) 124 589 14 21 01 initially to "0".



P35-2359-13

38 Place outer bearing race on roller cage of drive pinion (47) and attach magnetic plate (052c) 126 589 00 21 16. Insert drive pinion into measuring device and measure drive pinion height with bearing and magnetic plate.

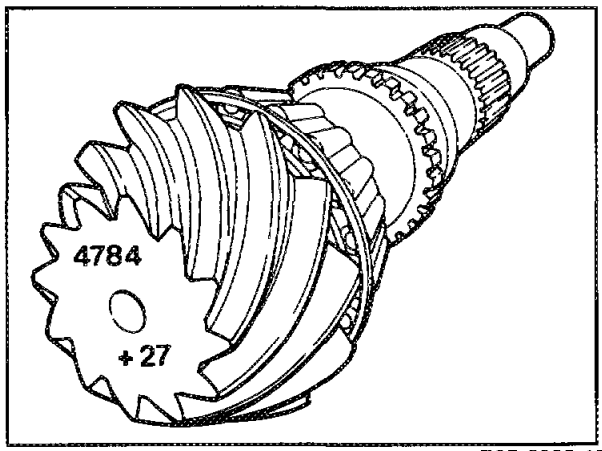
39 Read off difference between measuring body height "B1" and drive pinion height "B", and enter in data sheet under step 1.



P35-2316-13

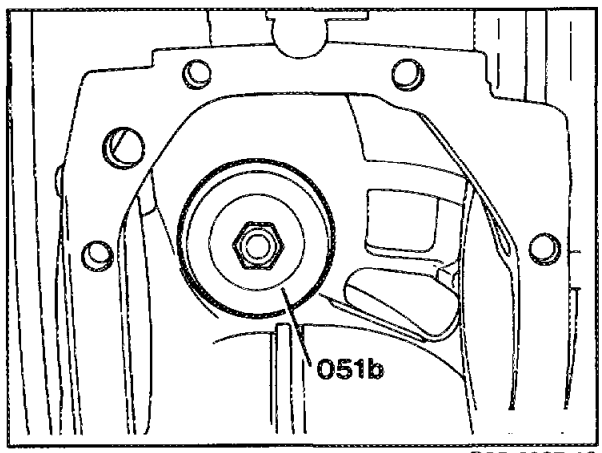
40 Enter basic deviation "a" of drive pinion (+ or -) under step 2 in data sheet.

41 Add (+) or subtract (-) the values of steps 1 and 2 depending on the sign of the value.



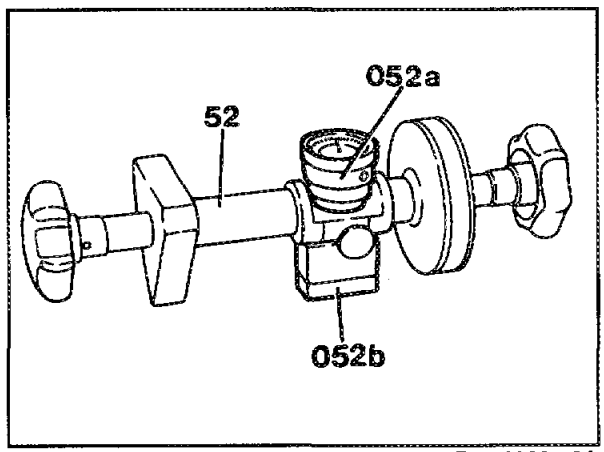
P35-2386-13

42 Insert measuring device 124 589 14 21 00 into rear axle housing and screw on measuring body (051b) 124 589 14 21 01.



P35-2367-13

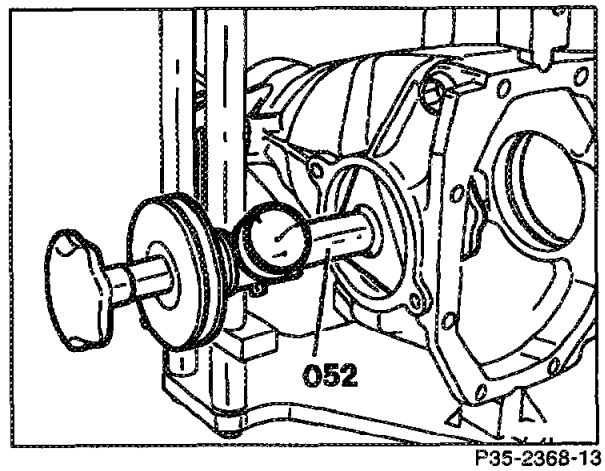
43 Insert dial gauge (052a) 000 589 38 19 00 into measuring tool (052) 126 589 00 21 00. Press adjustment attachment (052b) against measuring tool, preload dial gauge 2 mm and set to 0. Tighten clamping screw while assuring that dial gauge remains set to 0, correct if required.



P35-2388-13A

44 Insert measuring tool (052) into rear axle housing through left bore.

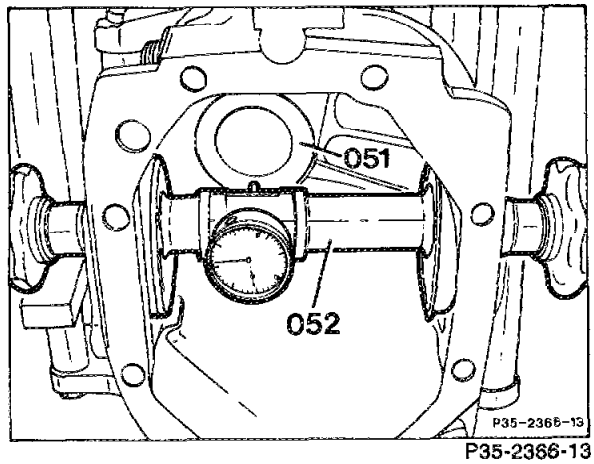
⚠ **CAUTION!**
When inserting measuring tool into rear axle housing assure that the measuring pin on the dial gauge is not damaged in the bore.



P35-2368-13

45 Read off difference between set gauge dimension and measured body front end and enter in step 3 in data sheet in plus or minus direction.

Note
The direction plus (+) or minus (-) depends on the direction in which the pointer on the dial gauge rotates. A deviation from the zero position in the counterclockwise direction is the minus direction, in the clockwise direction the plus direction.

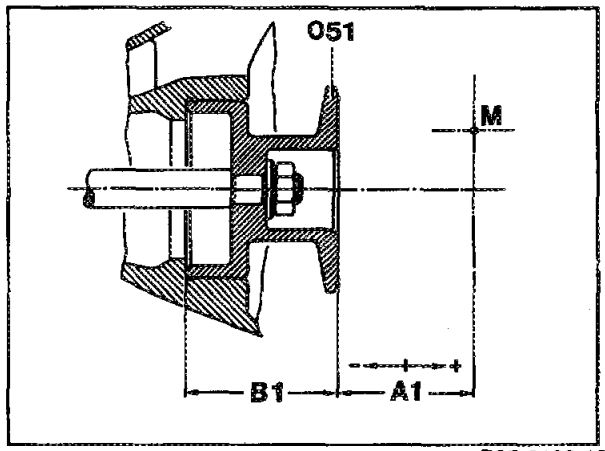


P35-2366-13

46 Add (+) or subtract (-) the subtotal of the values from steps 1 and 2 as well as the value in step 3. This calculated value is the thickness of the shim.

Example:

Step 1		=	1.30
Step 2		=	+ 0.27
		=	–
Subtotal		=	1.57
Step 3	Minus direction	=	+ 0.15
	Plus direction	=	–
Thickness of shim "S"		=	1.72



P35-0199-13

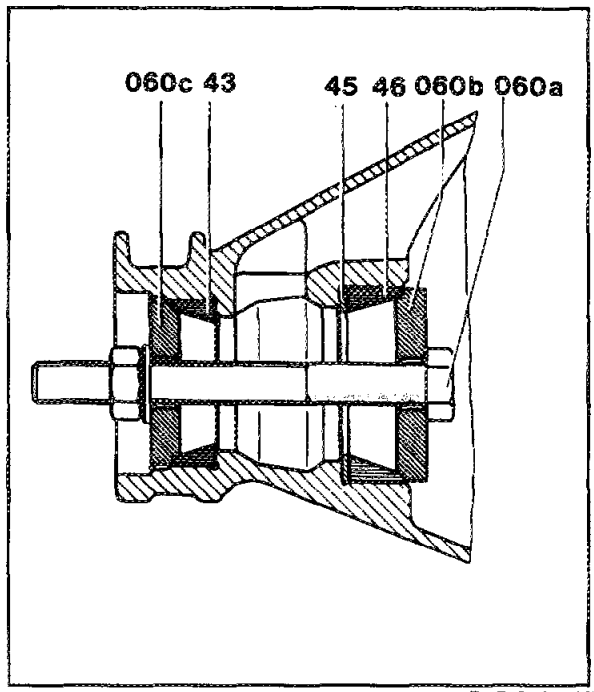
47 Remove measuring tools (051, 052) from rear axle housing.

48 Insert shim with thickness "S" calculated into rear axle housing (see example).

Note
Use only hardened shims. These are available in various thicknesses. Grind down shim accordingly if required.

49 Install outer races of front (43) and rear (46) tapered roller bearings into rear axle housing with installation tool (060a-c) 116 589 11 61 00.

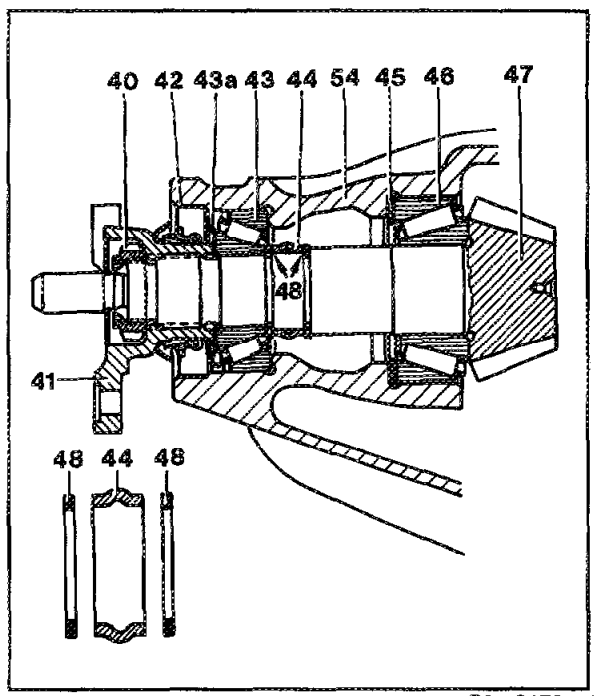
⚠ CAUTION!
Assure that the outer races are not canted during installation.



P35-0197-15

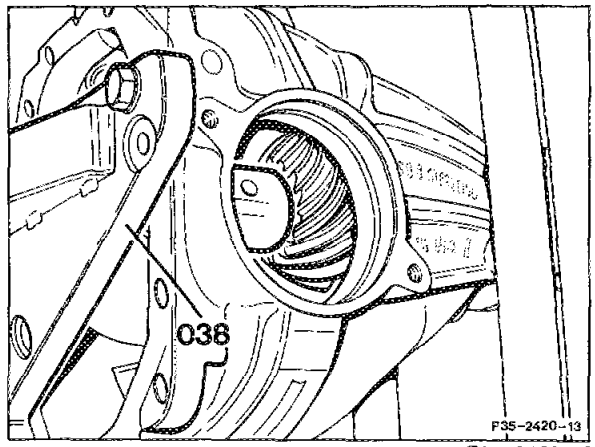
060b 82 mm dia. disk
060c 63 mm dia. disk

50 Insert one thrust washer (48) on each side of the new spacer sleeve (44) and install on drive pinion (47).



P35-0178-15

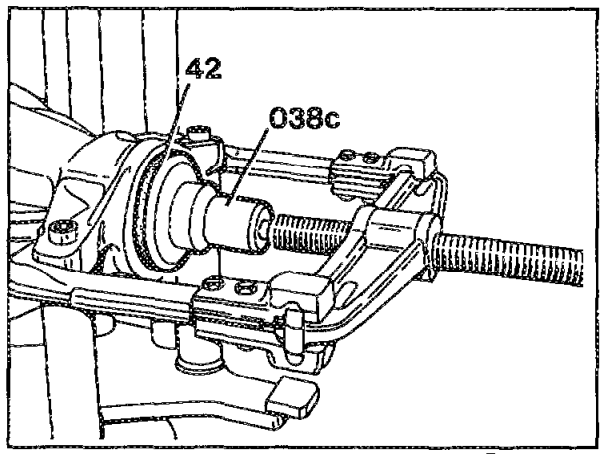
51 Insert drive pinion into rear axle housing and support with removal and installation tool (038) 201 589 02 43 00.



P35-2420-13

52 Coat radial shaft seal (rubberized jacket) with hypoid gear oil or rubber lubricant "naphtalene H" and position on thrust piece (038c) 124 589 02 15 00.

53 Insert inner race of front tapered roller bearing with new thrust washer (if thrust washer was installed previously) and press in together with radial shaft seal (42).

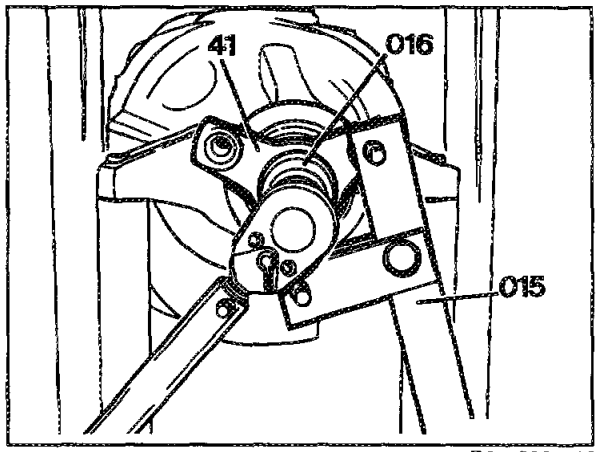


P35-2416-13

54 Coat running surface for radial shaft seal on joint flange with hypoid gear oil and slide joint flange onto drive pinion while paying attention to any markings made on the joint flange and drive pinion.

55 Remove removal and installation tool from rear axle housing.

56 Screw on new 12-point collar nut. Attach holding wrench (015) 129 589 01 07 00 and socket (016) 126 589 02 09 00 to joint flange (41) and **carefully** tighten 12-point collar nut until the prescribed frictional torque is reached (see table "Frictional torque for drive pinion bearing ").

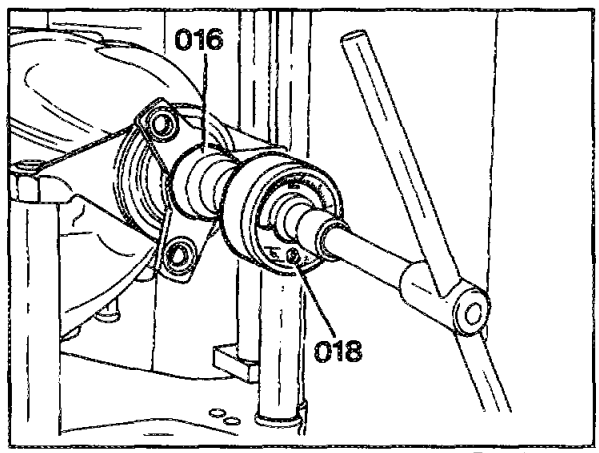


P35-2334-13

⚠ CAUTION!
While tightening the 12-point collar nut turn the drive pinion a number of times and assure that the tapered rollers are positioned properly in the races by tapping lightly against the rear axle housing.

57 Attach torque measuring instrument (018) 001 589 49 21 00 with connection attachment 100 589 02 59 00 to socket (016) 126 589 02 09 00 and turn drive pinion to check.

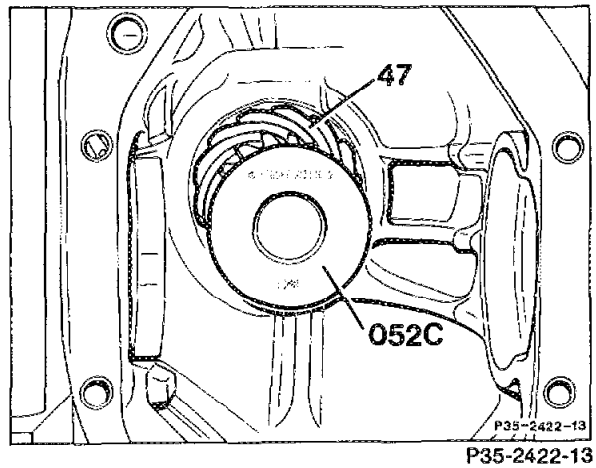
Note
The tapered roller bearings for the drive pinion must be installed with a certain initial tension. This initial tension can be reached by pressing together the spacer sleeve between the bearing inner race of the front tapered roller bearing and the drive pinion when tightening the 12-point collar nut.



P35-2324-13

If the frictional torque when the drive pinion is turned is too low, i.e. the initial tension of the tapered roller bearing is too low, tighten the 12-point collar nut slightly. If the prescribed frictional torque is exceeded, remove the drive pinion again and insert a **new** spacer sleeve. **Never attempt to reduce the frictional torque by loosening the 12-point collar nut,** otherwise the initial tension on the tapered roller bearing would be too low. This would result in play in the drive pinion when driving resulting in possible noises in the rear axle.

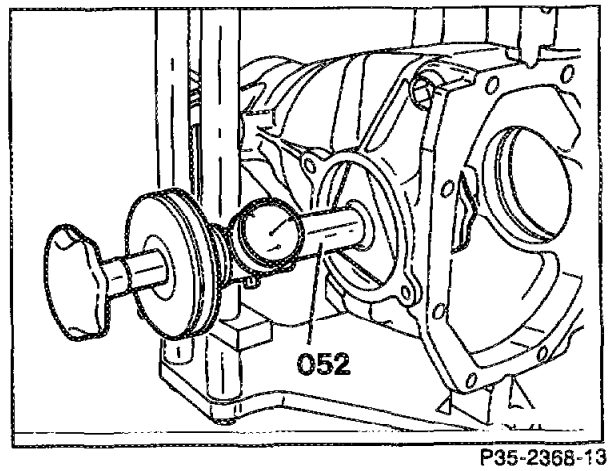
58 Attach magnetic measuring plate (052c) to front of drive pinion (47) for measuring adjustment dimension "A".



P35-2422-13

59 Reinsert measuring tool (052) with dial gauge for checking adjustment into rear axle housing through left bore.

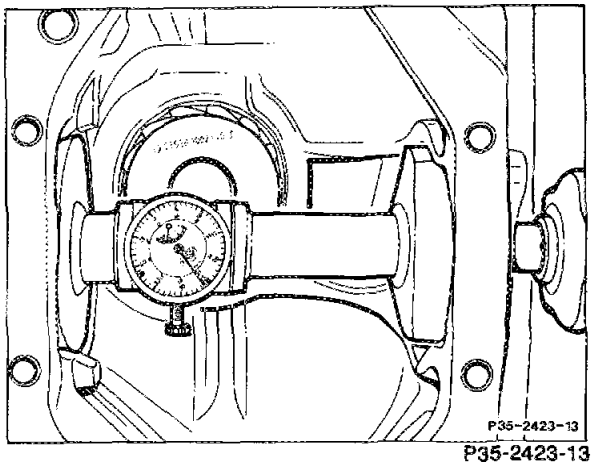
Note
With the gear assembly in the example given the dial gauge should indicate a deviation of + 0.27 mm from the basic dimension in the plus direction; the same dimension which is marked on the front of the drive pinion.



P35-2368-13

The permissible basic deviation in the adjustment dimension "A" must not exceed 0.01 in the plus direction or 0.02 in the minus direction.

If the deviation is greater regrind the shim installed or install a new shim of correct thickness. In either case a **new spacer sleeve** for the tapered roller bearing must be used under all circumstances.

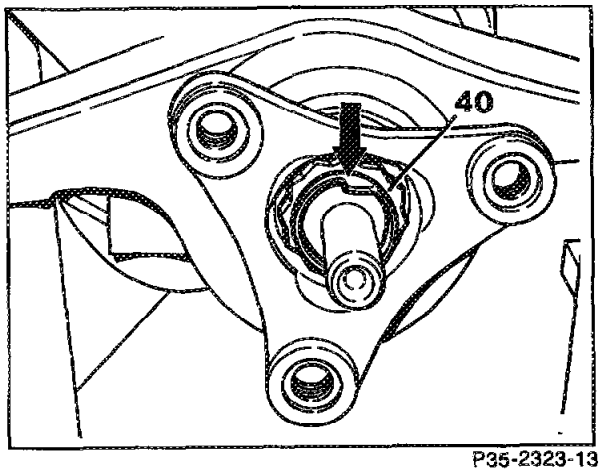


P35-2423-13

60 Remove measuring attachment with dial gauge and holder from rear axle housing.

61 Peen 12-point collar nut (40) with peening tool in one of the two grooves in the drive pinion so that there is no gap between the groove and retaining tab (arrow).

⚠ **CAUTION!**
Do not hit hard in axial direction.



P35-2323-13

Adjusting backlash

Note
The gear assembly backlash and the required initial tension on the tapered roller bearing for the differential can be adjusted with retaining rings inserted into the rear axle housing. The retaining rings are available in various thicknesses. For assembly it is most practical to reinstall the bearing caps and retaining rings removed previously on the corresponding side to obtain an initial basic adjustment.

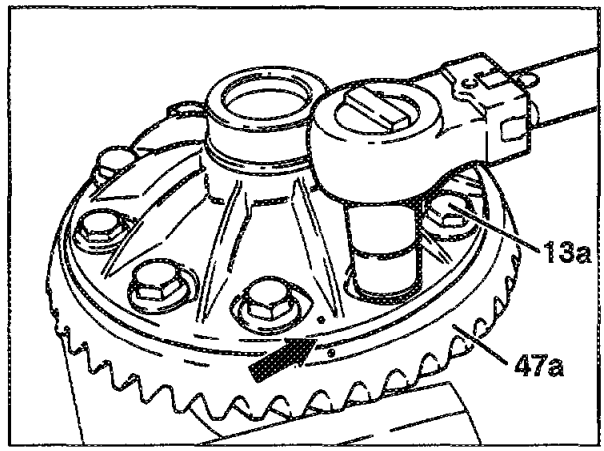
62 Disassemble differential and reassemble (35-560).

63 Thoroughly clean bore in ring gear and seat on differential housing. Heat ring gear (47a) to 80 °C and attach to differential housing. Pay attention to markings made previously on ring gear and differential housing, if applicable *(arrow)*.

Note
If the ring gear cannot be positioned on the differential housing, tap lightly with rubber hammer.

64 *Uniformly tighten retaining bolts with locking* tooth (13a) for mounting ring gear in criss-cross pattern to 85 Nm. Torque wrench 001 589 66 21 00.

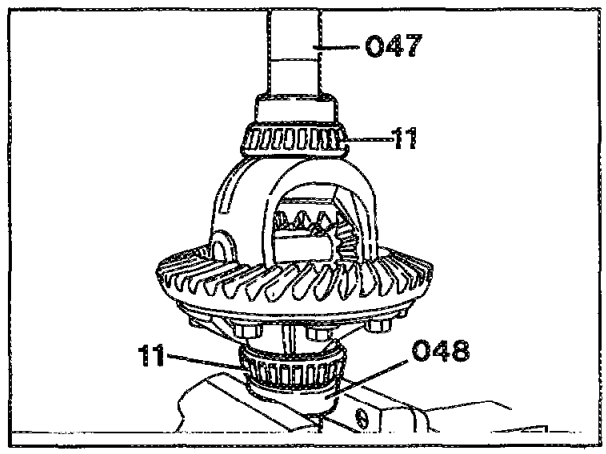
⚠ **CAUTION!**
Always replace ring gear bolts (13a) after using once.



P35-2383-13

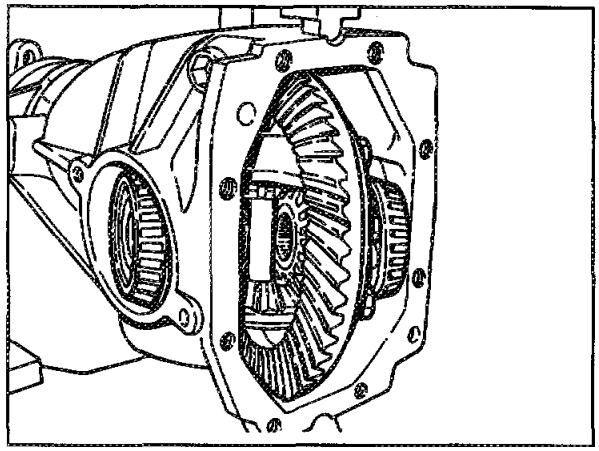
65 Press inner races of tapered roller bearing (11) onto differential housing with installation punch (047) 115 589 04 61 00.

⚠ **CAUTION!**
Use attachment (048) 126 589 00 15 00 to prevent damage to roller cage when pressing on second inner race.



P35-2389-13

66 Insert differential, left side first into bore in rear axle housing until right side of differential can also be inserted.

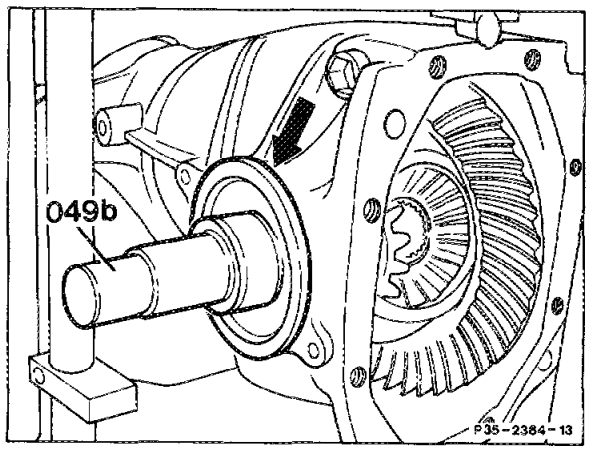


P35-2358-13

67 Fix differential in relation to rear axle housing with installation punch (049b) 126 589 00 15 00.

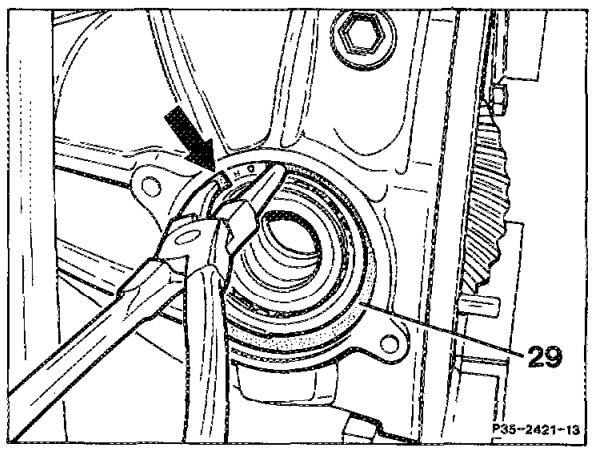
Note
To facilitate installation of bearing outer rings use two installation punches.

68 Remove left installation punch and insert again with bearing outer race into rear axle housing until installation punch contacts housing (arrow).



P35-2364-13

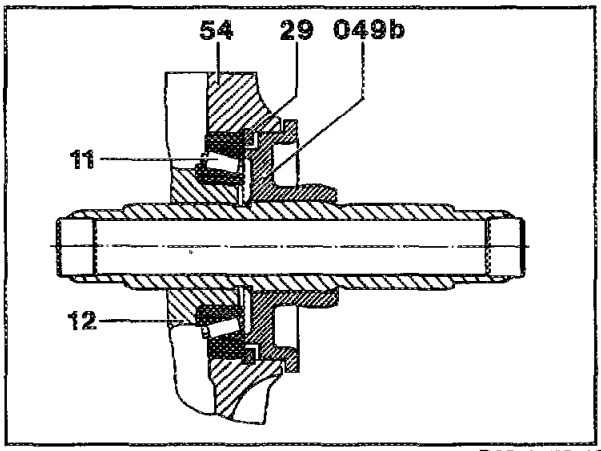
69 Remove left installation punch. Insert retaining ring (29) removed previously into groove so that eye of retaining ring coincides with rib of rear axle housing (arrow).



P35-2421-13

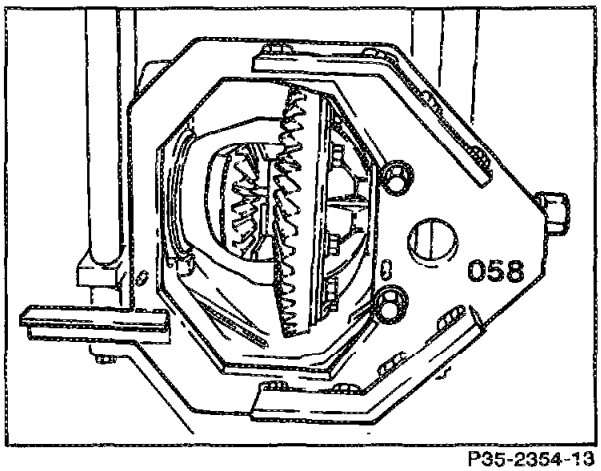
70 Check retaining ring (29) for proper seat with installation punch (049b).

71 Insert right bearing outer race into rear axle housing until it contacts the tapered roller bearing inner race (11).



P35-0179-13

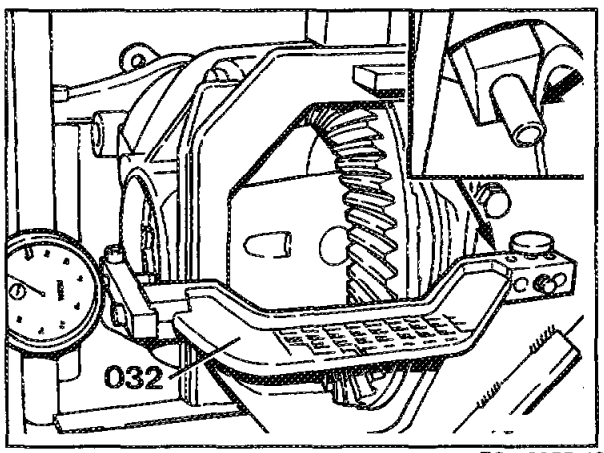
72 Mount spreading tool (058) on rear axle housing and tighten hex. head bolts to 40 Nm. Torque wrench 001 589 66 21 00.



P35-2354-13

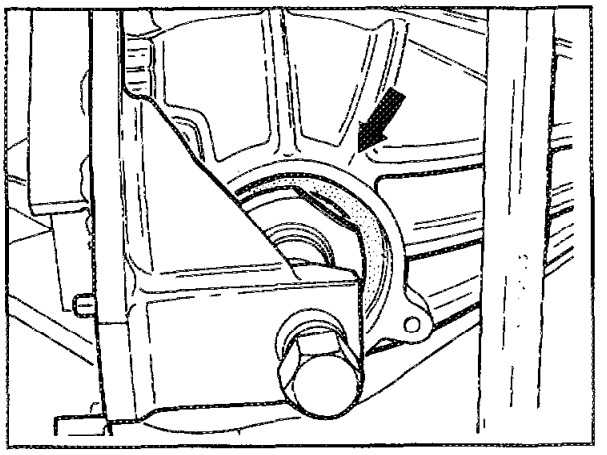
73 Position measuring bow (032) on spreading tool, preload dial gauge 3 mm and set to 0.

⚠ **CAUTION!**
Assure that the stop bolt on the measuring bow has good contact with the contact surface on the rear axle housing (see cutout, arrow).



P35-2355-13

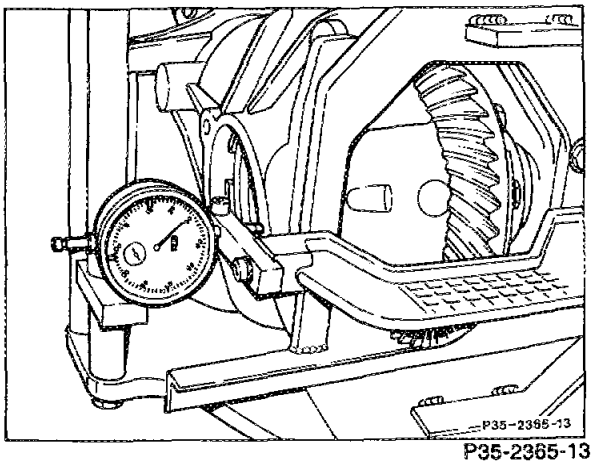
74 Turn one surface of the thrust attachment toward the rib on the rear axle housing (arrow) and screw in threaded spindle by hand up to bearing outer race.



P35-2424-13

75 Widen (spread) rear axle housing to 0.30 mm.

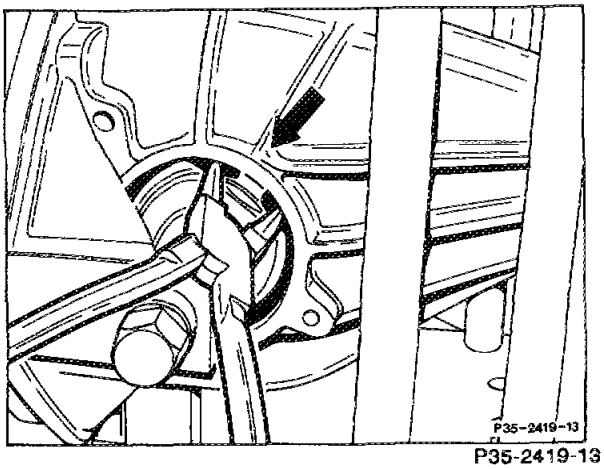
⚠ CAUTION!
When spreading do not exceed value of 0.30 mm!



P35-2365-13

76 Insert retaining ring installed previously into rear axle housing in area of rib (arrow).

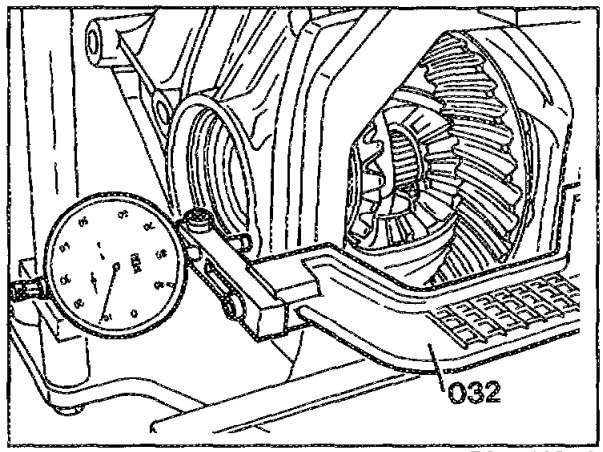
77 Relax tension on rear axle housing.



P35-2419-13

78 Measure spread dimension (widening) of rear axle housing again with measuring bow. The required spread dimension for the rear axle housing and therefore the correct initial tension on the tapered roller bearing on the differential is achieved when the spreading dimension is in the range between **0.11–0.17 mm.**

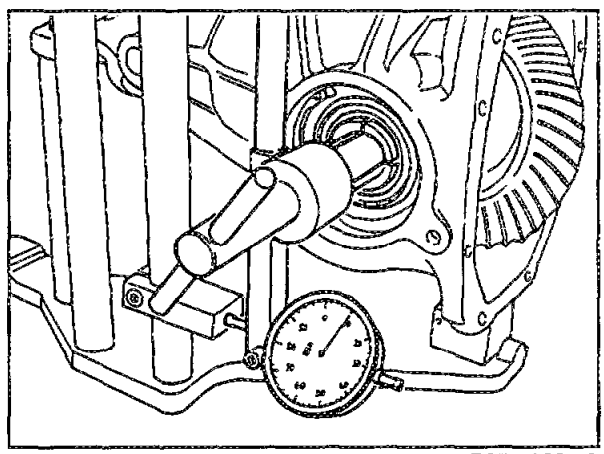
79 Remove measuring bow (032).



P35-2363-13

80 Insert backlash measuring instrument 201 589 03 21 00 into left bore of differential housing and clamp in place.

81 Measure backlash at four points based on circumference of ring gear by moving dial gauge holder. The smallest play applies. **The backlash must be between 0.08 and 0.14 mm.** Hold drive pinion at joint flange for each measurement.



P35-2362-13

Note
The adjustment of the tapered roller bearing and gear assembly is okay when the spread dimension (widening) of the rear axle housing and the backlash is within the nominal range. If these values are not achieved, repeat adjustment with correspondingly thicker or thinner shims.

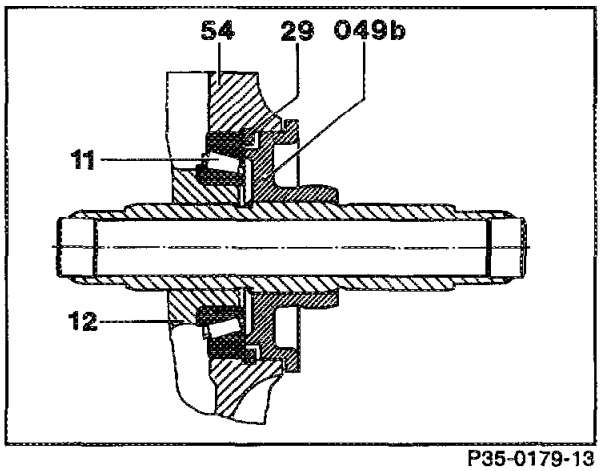
Example 1: If the backlash is okay, however the spread dimension of the rear axle housing is too low, use shims for both bearing caps which are each thinner by a uniform amount.

For example if measured value = **0.05**, increase the thickness of the retaining rings at the left and right by 0.05 mm. This can also change the backlash!

Example 2: If the spread is okay, but the backlash is too high, remove shims of the appropriate thickness on the right side and install on the left side. If the backlash is too low, proceed in opposite order.

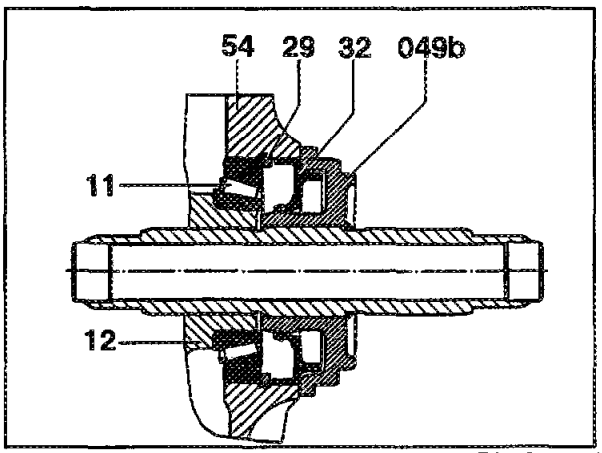
82 Remove backlash measuring instrument and spreading tool.

83 Check retaining ring (29) for proper seat with installation punch (049b) 126 589 00 15 00.



P35-0179-13

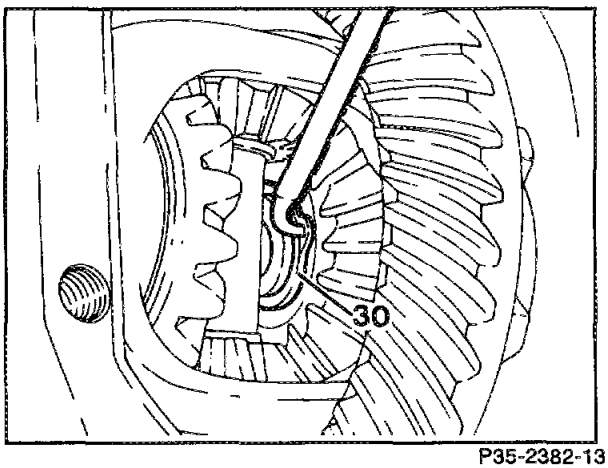
84 Coat outer diameter of rubberized radial shaft seal with hypoid gear oil or "naphtalene H" rubber lubricant and press into rear axle housing (54) with installation punch (049b) 126 589 00 15 00.



P35-0180-13

85 Install left and right connection flanges (33) with new retaining rings (30).

86 Adjust play of connection flanges (35-540).



P35-2382-13

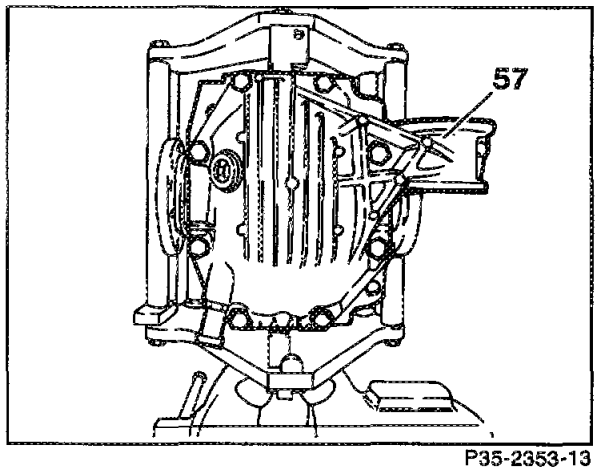
87 Clean sealing surfaces on end cover (57) and on rear axle housing and coat with sealant.

88 Install end cover. Tightening torque for hex. head bolts, strength class 8.8 = 45 Nm and 10.9 = 50 Nm. Torque wrench 001 589 66 21 00.

89 Remove rear axle differential housing from assembly jig.

90 Fill with hypoid gear oil up to bottom edge of oil fill hole.

91 Replace vent on rear axle housing.



P35-2353-13