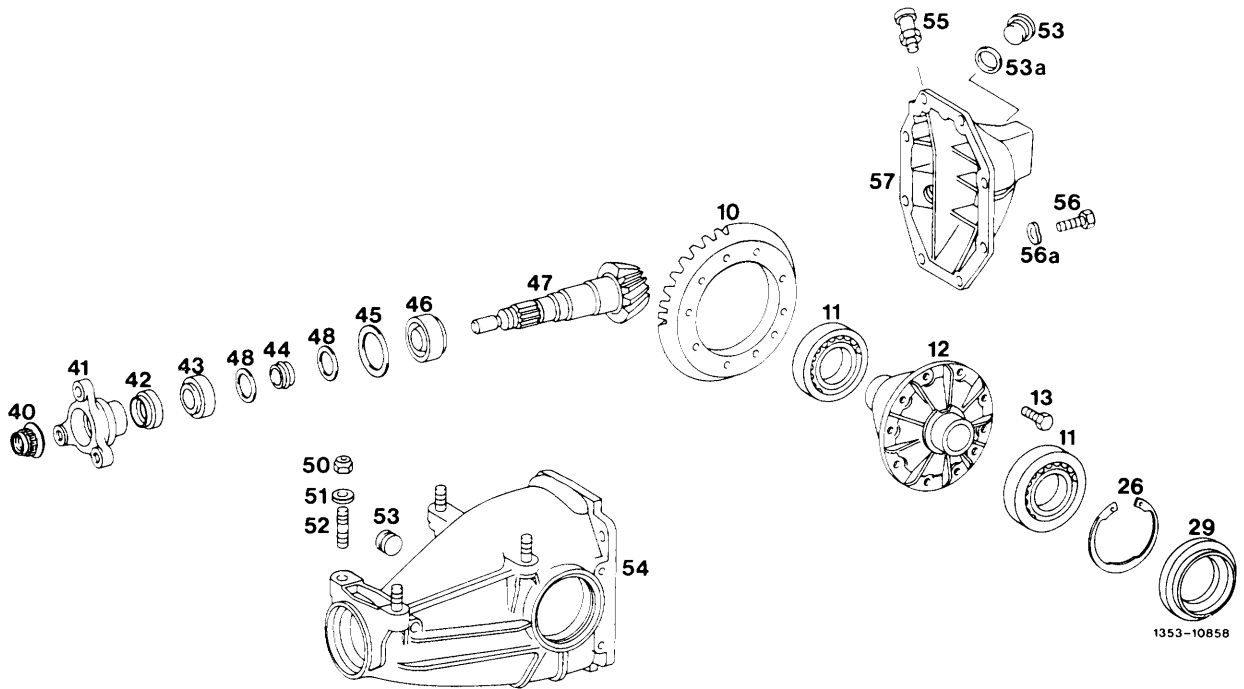


## B. Rear axle center piece without lateral bearing cap



10	Ring gear . . . . .	Check for damage and wear, heat to 60–70 °C and mount
11	Tapered roller bearing (differential) . . . . .	Check for damage and wear
12	Differential housing . . . . .	Check for wear
13	Hex. head screw normal of self-locking. . . . .	Renew, pay attention to tightening torque and length, refer to table
26	Locking ring . . . . .	Check for perfect seat
29	Radial sealing ring . . . . .	Renew
40	Slot nut or double hex. collar nut . . . . .	Renew, secure by peening collar
41	Universal flange . . . . .	Check, renew, if vertical runout exceeds 0.06 after resetting several times
42	Radial sealing ring . . . . .	Renew
43	Small tapered roller bearing (drive pinion). . . . .	Check for damage and wear
44	Spacing sleeve . . . . .	Renew
45	Compensating washer	
46	Large tapered roller bearing (drive pinion) . . . . .	Check for damage and wear
47	Drive pinion . . . . .	Pay attention to mating no., check for damage and wear. Refer to note: at item 32
48	Washer . . . . .	Renew
50	Self-locking hex. nut. . . . .	Renew, tightening torque 100 Nm
51	Washer	
52	Stud . . . . .	Check for damage, tightening torque 50 Nm
53	Closing plug	
53a	Sealing ring. . . . .	Renew
54	Rear axle housing. . . . .	Check for damage
55	Breather. . . . .	Renew
56	Hex. head screw. . . . .	Tightening torque 45 Nm
56a	Corrugated washer . . . . .	Renew
57	End cover. . . . .	Check for damage, clean parting surface and coat with sealing compound

### Oil type and filling capacity

Standard differential	Hypoid gear oil SAE 90 refer to Specifications for service products page no. 235
Filling capacity	1 liter

### Gear wheel (rotor) for rpm sensor on vehicles with ABS

Part number	Ratio	Number of teeth
123 353 01 85	4.08	23
123 353 02 85	3.92	24
123 353 03 85	3.69	26
123 353 04 85	3.58	27
123 353 05 85	3.46	28
126 353 01 85	3.07	31

### Adjusting values of gear assembly

Backlash of gear assembly		0.08–0.14 mm
Adjustment of tapered roller bearing for differential: Tapered roller bearings are given the required preload by widening (spread dimension) rear axle housing by		0.10–0.15 mm
Permissible tolerance of adjusting dimension "A" of drive pinion		+ 0.01 –0.02
Adjustment of tapered roller bearings for drive pinion by measuring friction torque when rotating drive pinion by means of friction torque wrench <sup>1)</sup>	new tapered roller bearing	120–140 Ncm
	used tapered roller bearing	50–100 Ncm

<sup>1)</sup> For correct adjustment of tapered roller bearing tighten slot nut or double hex. collar nut on universal flange until the specified friction torque is attained when rotating drive pinion. For checking friction torque when rotating drive pinion, the differential with ring gear should not be installed.



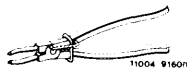
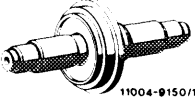

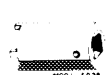
### Compensating washers for adjusting drive pinion

Thickness	from 1.5 to 1.8 mm
Steps	from 0.05 to 0.05

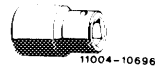
**Note:** If required, grind one compensating washer to required thickness.

### Locking ring for adjusting backlash and spread dimension

Thickness	from 3.60 to 4.40 mm
Steps	0.05 to 0.05

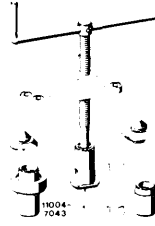
<b>Fastening screws for ring gear</b>		Part no.
Hex. screws (length 18 mm)	standard	123 990 16 01
	self-locking	123 990 30 01
<b>Universal flange on drive pinion</b>		
Dia. of running surface for radial sealing ring on universal flange	new	40.00
	minimum dia. for repairs <sup>1)</sup>	39.6
Running surface of universal flange		without thread
Permissible radial runout of universal flange sealing surface		0.06
<sup>1)</sup> Refinish (machine) running surface for sealing in an emergency only.		
<b>Compensating washer between inner synchromesh joint and differential housing</b>		
Spacing ring	thickness	from 0.7 to 1.5
	steps	from 0.1 to 0.1
<b>Tightening torques</b>		Nm
Hex. screws for fastening rear axle end cover to rear axle housing		45
Fastening screws for ring gear	standard	80
	self-locking	100
Studs in rear axle housing		50
<b>Special tools</b>		
Assembly stand for rear axle center piece		116 589 00 59 00
Spreading (widening) device		126 589 00 31 00
Pliers for locking rings		126 589 00 37 00
Mandrel for radial sealing ring		126 589 00 15 00
Holding wrench for universal flange		116 589 10 07 00
Socket 3/4" square for slot nut on universal flange		115 589 01 07 00

Socket 30 mm  
double hex. 3/4" square  
for double hex. collar nut on universal flange



126 589 02 09 00

Installer and remover for bevel gear



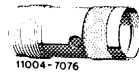
116 589 12 61 00

Puller for tapered roller bearing  
inner races (basic unit)



001 589 36 33 00

Extension for  
puller 001 589 36 33 00



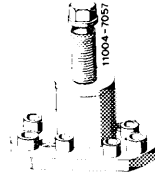
000 589 35 34 00

Collet for puller 001 589 36 33 00  
for tapered roller bearing inner race



000 589 33 34 00

Puller for universal flange on  
drive pinion



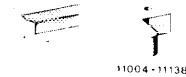
116 589 19 33 00

Support for differential  
housing



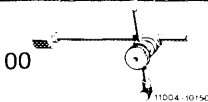
126 589 06 31 00

Measuring plate for bevel gear height  
with bearing



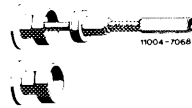
601 589 00 23 00

Dial gauge holder for measuring plate 601 589 00 23 00



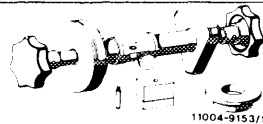
363 589 02 21 00

Measuring device for bevel gear bearing



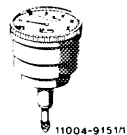
116 589 07 21 00

Measuring device for height of bevel gear  
in rear axle housing



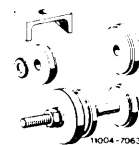
126 589 00 21 00

Dial gauge (measuring range 3 mm)



000 589 38 19 00

Installer for tapered roller bearing  
outer races



116 589 11 61 00

Torque measuring instrument 30–600 Ncm  
1/2" square



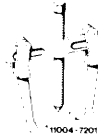
001 589 49 21 00

Measuring instrument for  
measuring spread dimension



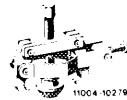
126 589 08 21 00

Puller for pulling gear wheel on drive  
pinion on vehicles with ABS



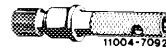
000 589 88 33 00

Puller for tapered roller bearing



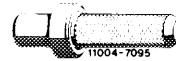
123 589 08 33 00

Assembly mandrel for differential side gears



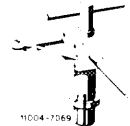
116 589 18 61 00

Assembly mandrel for inner race of  
tapered roller bearing



115 589 04 61 00

Backlash measuring instrument



115 589 03 23 00

### Conventional tools

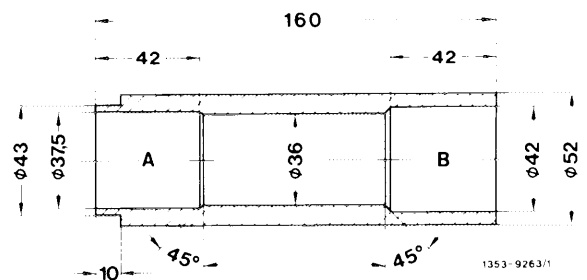
Two-arm puller

e. g. made by Nexus, D-5630 Remscheid  
order no. 100 size 2

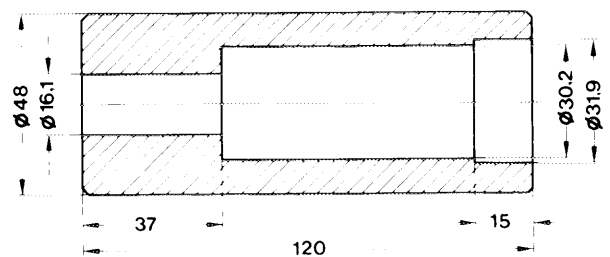
### Self-made tools

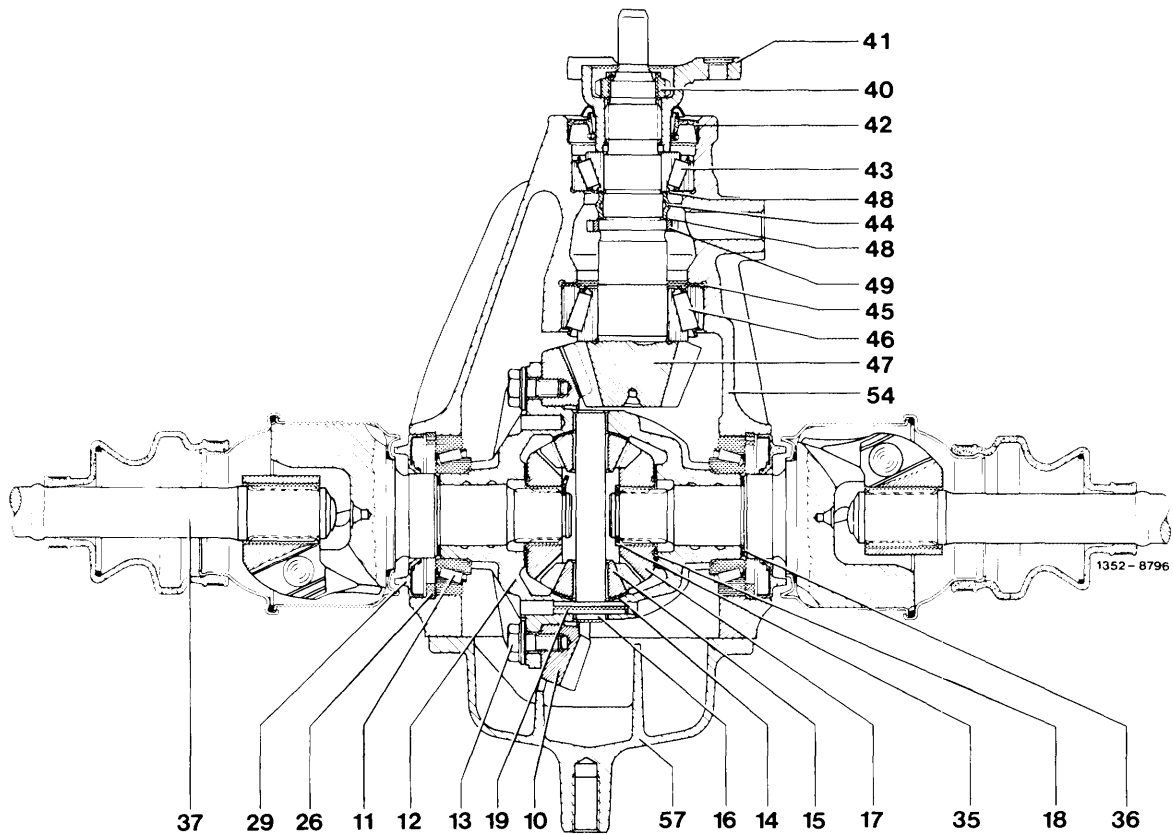
Sleeve for pressing tapered  
roller bearing on drive pinion

A = Small drive pinion  
B = Large drive pinion



Sleeve for pressing gear wheel on  
drive pinion on vehicles with ABS



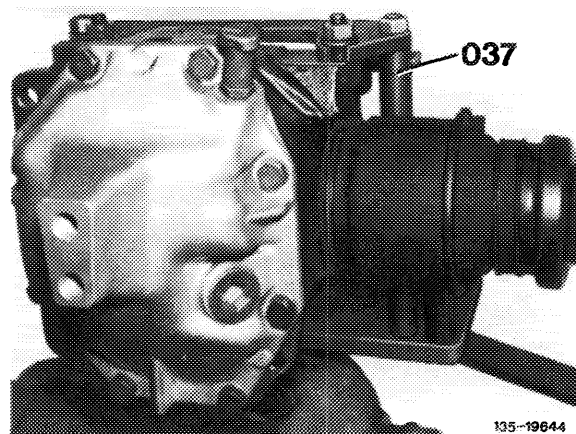


- |                              |  |  |                                 |
|------------------------------|--|--|---------------------------------|
| 10 Ring gear                 | 17 Differential side gear              | 36 Compensating washer                     | 45 Compensating washer          |
| 11 Tapered roller bearing    | 18 Thrust washer                       | 37 Rear axle shaft, complete               | 46 Large tapered roller bearing |
| 12 Differential housing      | 19 Clamping sleeve                     | 40 Crush slot nut or double hex collar nut | 47 Drive pinion                 |
| 13 Hex. screw self-locking   | 26 Locking ring for bearing outer race | 41 Universal flange                        | 48 Thrust washer                |
| 14 Spherical washer          | 29 Radial sealing ring                 | 42 Radial sealing ring                     | 49 Gear wheel for ABS           |
| 15 Differential pinion       | 35 Locking ring for rear axle shaft    | 43 Small tapered roller bearing            | 54 Rear axle housing            |
| 16 Differential pinion shaft |  | 44 Spacing sleeve                          | 57 Rear axle end cover          |

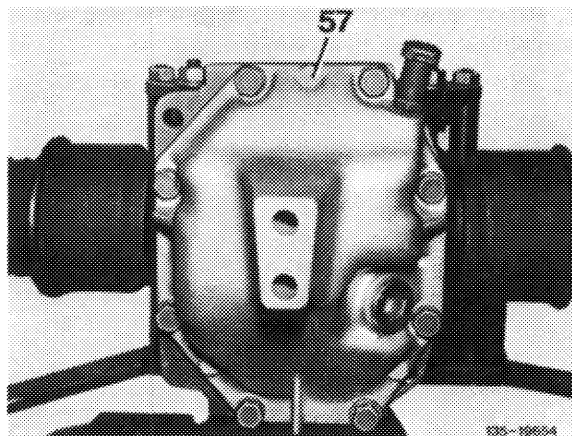
## Disassembly

1 Remove rear axle center piece with rear axle shafts (35–520).

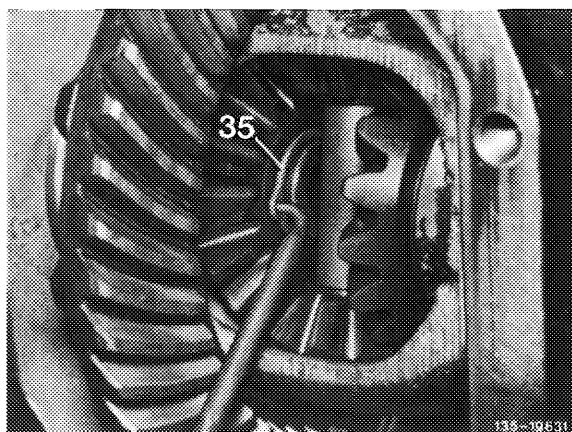
2 Clamp rear axle center piece with rear axle shafts on assembly stand (037) and support rear axle shaft. Drain oil from rear axle housing.



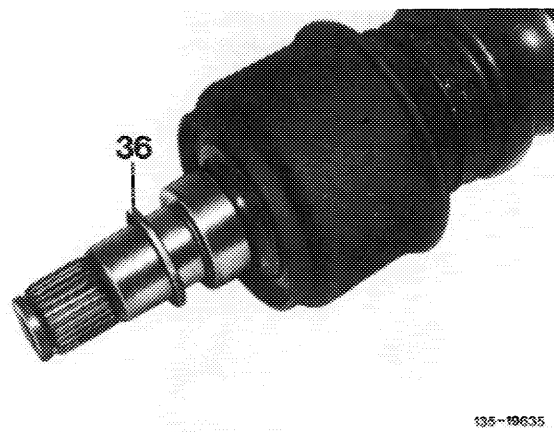
3 Unscrew end cover (57) from rear axle housing.



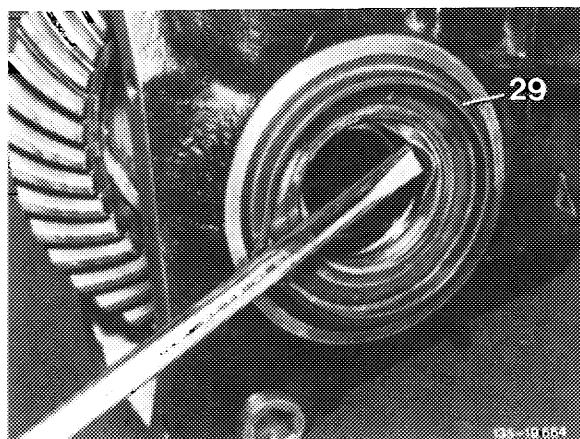
4 Pull off locking rings (35) between inner synchro-mesh joints and differential side gears with pliers or a hook and remove from housing.



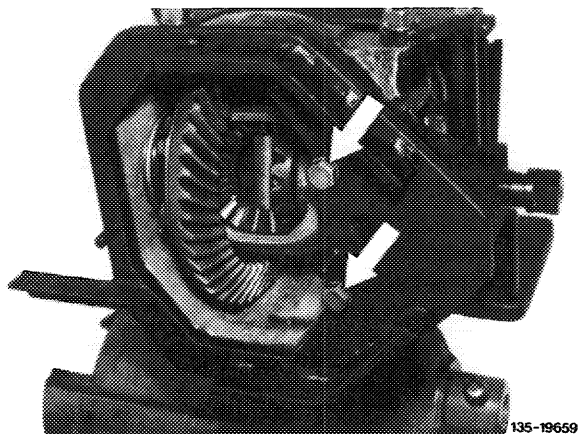
5 Pull rear axle shafts out of differential side gears and remove together with compensating washers (36).



6 Force both radial sealing rings (29) out of rear axle housing.



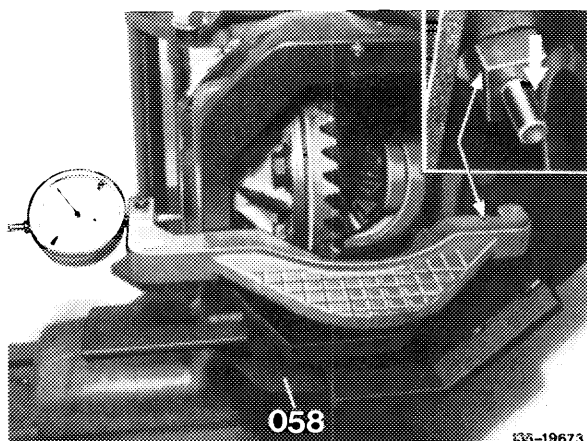
7 Attach spreading device to rear axle housing and tighten hex. screws to 40 Nm (arrows).



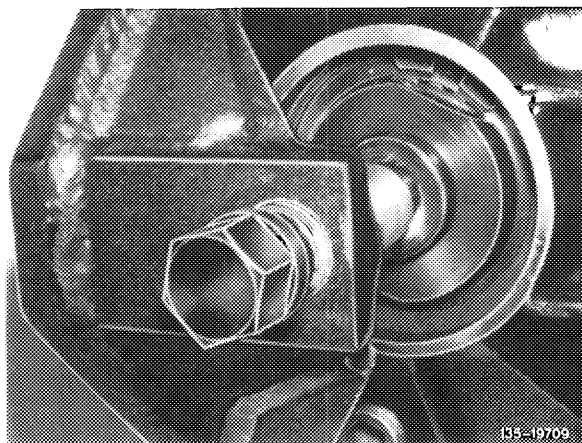
8 Place spread measuring instrument on spreading device (058) and adjust dial gauge to 0 at 3 mm preload.

**Attention!**

Make sure that stop pin of measuring instrument rests against contact surface on rear axle housing (refer to cutout, arrow).



9 Turn one face of thrust piece toward opening of locking ring and screw-in threaded spindle manually up to bearing outer race.

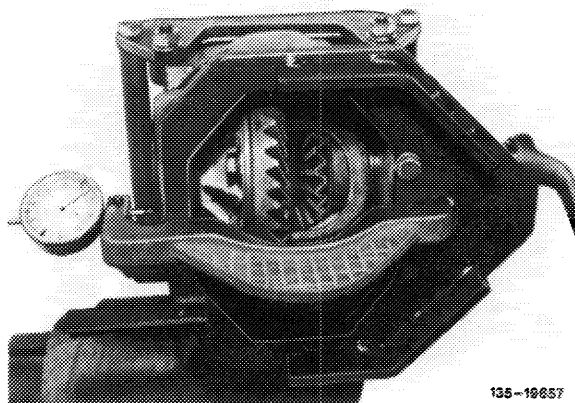


10 Preload (spread) rear axle housing to 0.20 mm by screwing-in threaded spindle of spreading device.

**Attention!**

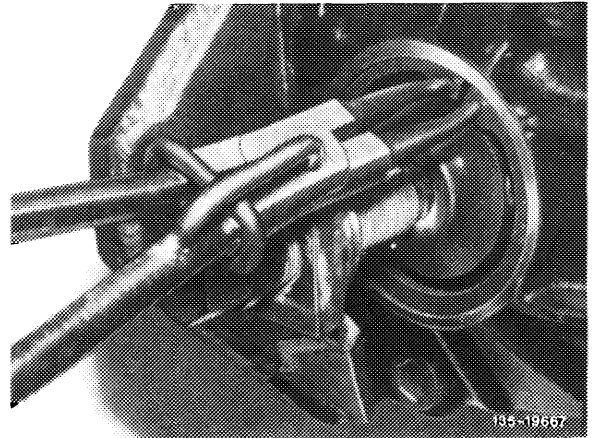
When spreading, do not exceed value of 0.20 mm.

11 Remove spreading device.



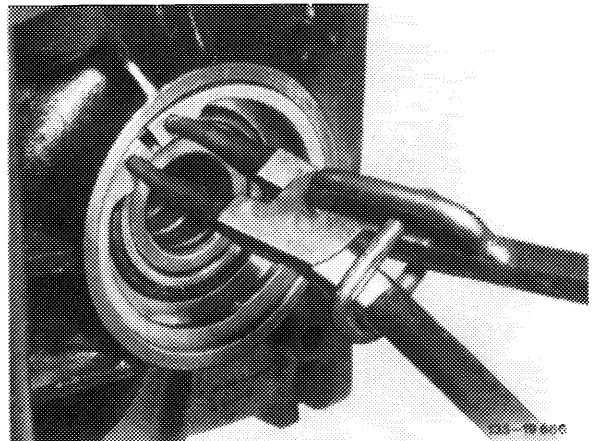


12 Remove righthand locking ring from rear axle housing by means of pliers and mark.

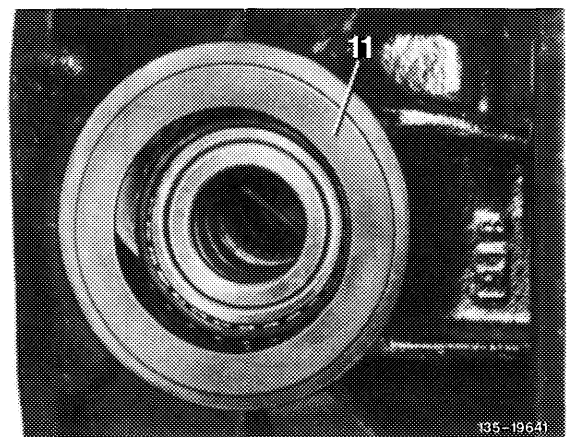


13 Relax rear axle housing and remove spreading device from housing.

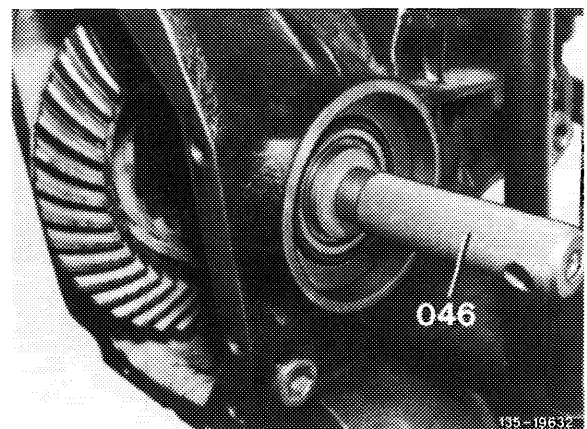
14 Remove lefthand locking ring from rear axle housing by means of pliers.



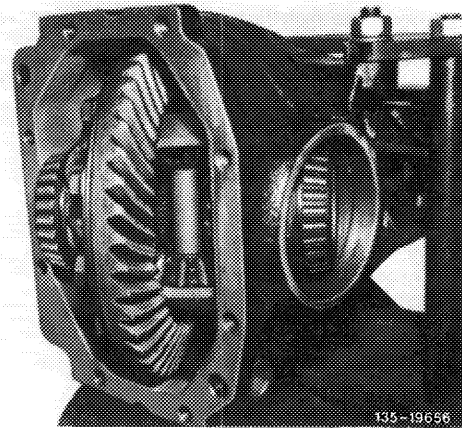
15 Take both bearing outer races of tapered roller bearings (11) from rear axle housing and mark to prevent mixups during reinstallation.



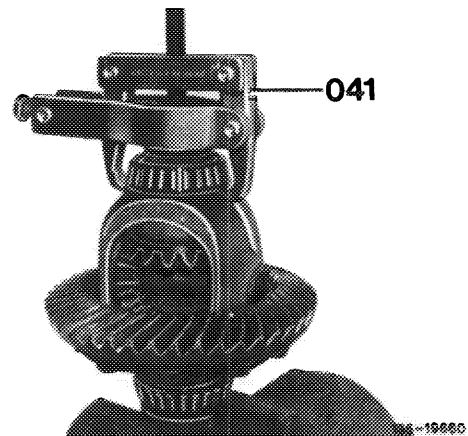
**Note:** For easier removal of bearing outer races, insert assembly mandrel for differential pinions (046) at the right and force complete differential toward the left until differential rests against rear axle housing. Remove lefthand and righthand bearing outer race.



16 Move differential into position shown and take out of rear axle housing.

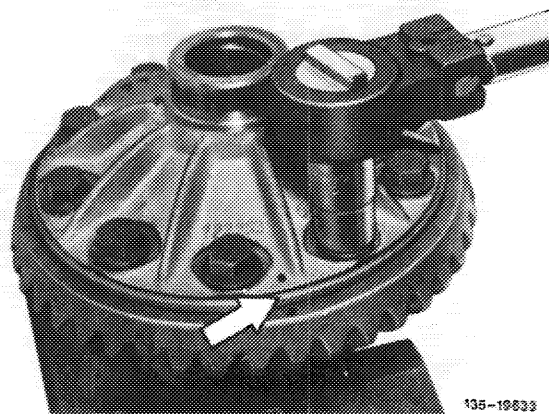


17 Pull both tapered roller bearings from differential housing by means of puller (041) and mark to prevent mixups during reinstallation.



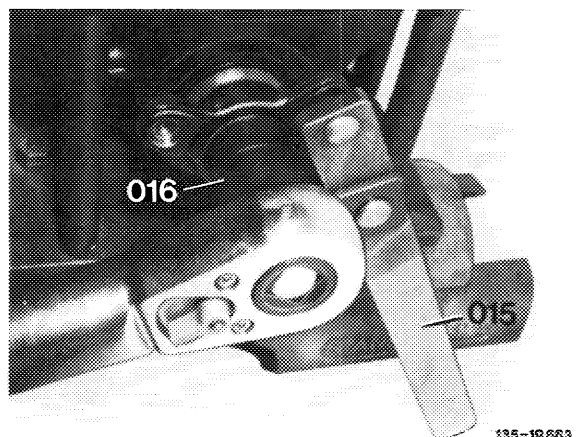
18 Unscrew ring gear from differential housing and carefully force off in relation to housing.

**Note:** If the gear assembly is used again, mark position of ring gear in relation to differential housing, so that ring gear is reinstalled in the same position (arrow).

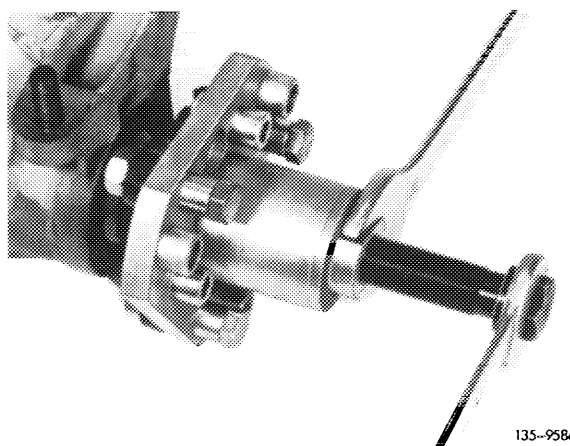


### Removing and checking drive pinion

19 Pull holding wrench (015) on universal flange and loosen crush slot nut or double hex. collar nut with slot nut socket or double hex. socket (016).

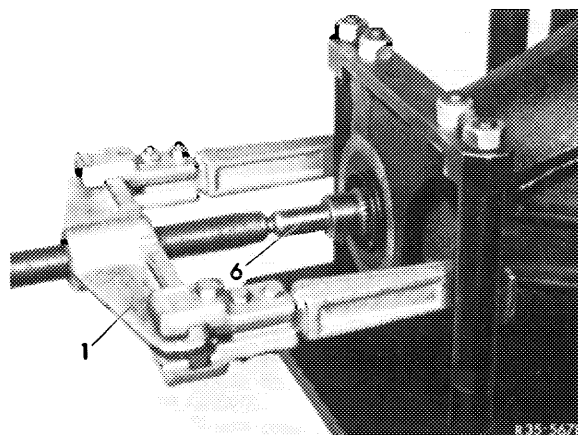


20 If required, pull universal flange from drive pinion by means of puller.



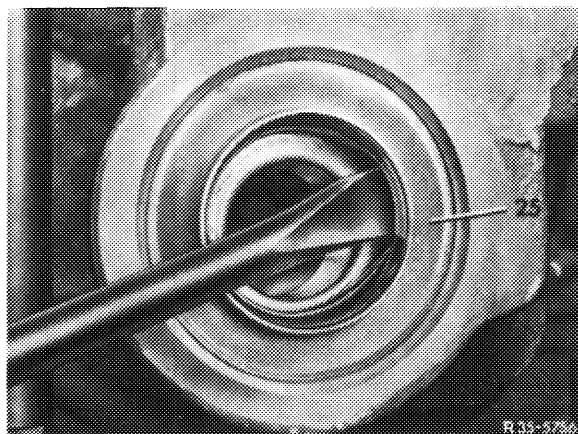
135-9586

21 Force drive pinion out of rear axle housing by means of a conventional puller.



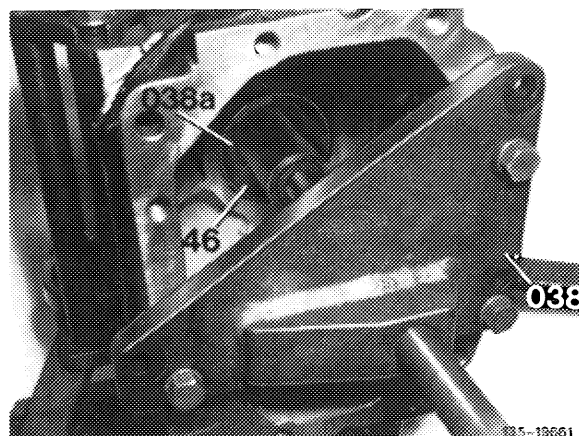
R35-5678

22 Force radial sealing ring (25) out of rear axle housing by means of a screwdriver and remove tapered roller bearing inner race.



R35-5750

23 Screw installer and remover (038) to rear axle housing and pull inner tapered roller bearing outer race (46) out of housing by means of pulling member (038a).



R35-19661