

Rear Axle for Type 220a

The rear axle of Type 220a is of the single-joint type and has a lowered fulcrum. This axle gives the car, which develops an exceptionally high propulsive force, excellent road holding and cornering qualities.

In the case of the conventional oscillating axle the two halves of the axle have different fulcrums, which are on the same level with the inner joints on the rear axle shafts (Fig. H 3a/01).

In the case of the single-joint axle the two axle halves have a common fulcrum which is lower than the single inner joint (Fig. H 3a/02).

One of the many advantages of the single-joint axle over the conventional oscillating axle is the reduced alteration of wheel tread and camber.

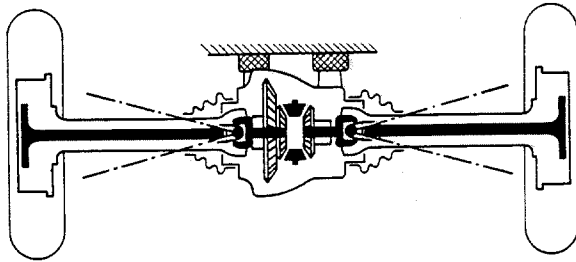


Fig. H 3a/01

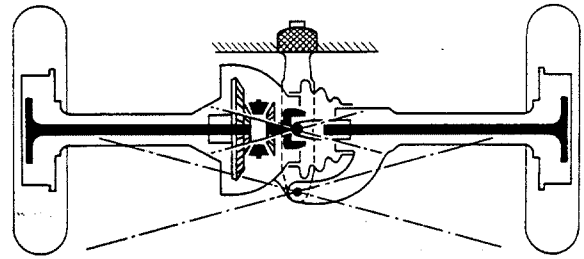


Fig. H 3a/02

Rear Axle Overhaul

Type 220a

Operation No.
H 3a

Special Tools:

Three brake drum removing screws M 8 (with chain)	191 589 00 35	Milling cutter 33 mm (1.30") for eyelet on rear axle shaft	180 589 00 66
Puller for rear axle shaft	136 589 18 33	End milling cutter for 180 589 00 66	180 589 01 51
Puller for torque arm	120 589 05 33	Punch with paint ring for eyelet on rear axle tube	180 589 04 21
Mounting punch for connecting pin	180 589 08 39	Milling arbor 28 mm (1.10") for eyelet on rear axle housing	180 589 01 66
Pin wrench (short) for threaded ring in left-hand rear axle tube for adjusting the ring gear	180 589 01 07	End milling cutter for 180 589 01 66	180 589 02 51
Pin wrench (long) for threaded ring in left-hand rear axle tube for adjusting the ring gear	180 589 02 07	Punch with paint ring for eyelet on rear axle housing	180 589 07 21
Puller for bevel roller bearing	180 589 01 33	Mounting punch for differential bevel gears and ball washers	136 589 13 61
Nose wrench for slotted nut of rear axle shaft	136 589 09 07	Pressing-in punch for bevel roller bearing on differential housing	180 589 01 39
Puller for bearing of rear axle shaft	136 589 20 33	Insertion plates for cylinder rollers on sliding sleeve	180 589 03 63
Reamer for bushings in rear axle tube (make Hunger)	000 589 06 53		

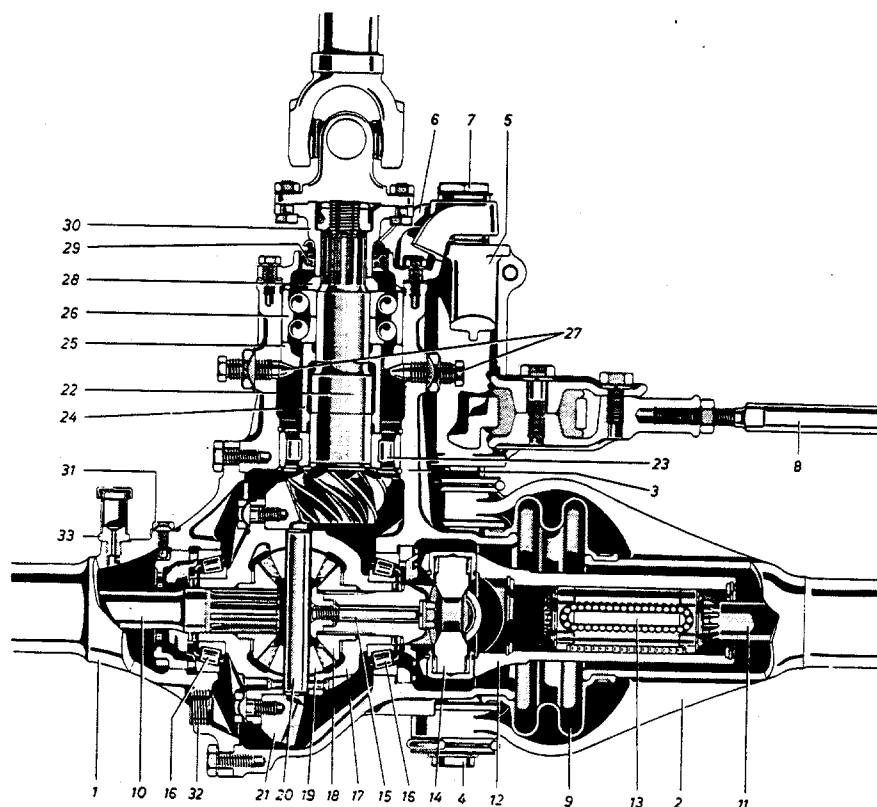


Fig. H 3a/03

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|--|--------------------------------|----------------------------|------------------------------------|
| 1 Rear axle tube, left-hand | 8 Side strut with strap | 18 Rear axle shaft gear | 27 Adjusting screw for thrust ring |
| 2 Rear axle tube, right-hand | 9 Rubber boot | 19 Differential bevel gear | 28 Shoulder ring |
| 3 Rear axle housing | 10 Rear axle shaft, left-hand | 20 Differential pin | 29 Grease retainer |
| 4 Connecting pin | 11 Rear axle shaft, right-hand | 21 Ring gear | 30 Universal joint flange |
| 5 Support of rear axle suspension | 12 Joint | 22 Bevel drive gear | 31 Lock screw for threaded ring |
| 6 Cover with eyelet for connecting pin | 13 Sliding sleeve | 23 Cylinder bearing | 32 Oil filler plug |
| 7 Hexagonal screw for connecting pin | 14 Spider star | 24 Spacer sleeve | 33 Rear axle tube bleeder |
| | 15 Tightening screw | 25 Thrust ring | |
| | 16 Bevel roller bearing | 26 Inclined bearing | |
| | 17 Differential housing | | |

Pressing-in punch for outer race of bevel roller bearing in rear axle housing	180 589 00 39	Tooth play gauge	180 589 01 21
Holding wrench for universal joint flange	180 589 09 07	Pressing-in punch for grease retainer in rear axle tube	180 589 03 39
Pressing-in punch for outer race of cylinder bearing in rear axle housing	120 589 00 39	Pressing-in punch for grease retainer in sealing holder and brake anchor plate	120 589 05 39
Measuring stand for bevel and ring gear	180 589 00 23	Insertion sleeve, diameter 50 mm (1.97"), for grease retainer of rear axle shaft	120 589 00 61
Bracket with dial gauge holder	180 589 01 23	Gauge for rear axle suspension	180 589 04 23
Dial gauge with travel 10 mm (0.4")	000 589 14 21	Test instrument for checking true run of universal joint flange on rear axle	136 589 04 21
Pressing-in punch for outer race of bevel roller bearing in left-hand rear axle tube	180 589 04 39	Equipment:	
Pin wrench (short) for threaded ring in rear axle housing for adjusting the ring gear	180 589 00 07	Assembly stand	BE 10 494
		Assembly plate	BE 10 243
		Assembly support	BE 11 181

I. Disassembly

Procedure:

1. Fasten rear axle on assembly stand BE 10 494 and drain the oil.
2. Press brake drum off with screws 191 589 00 35 and dismount brake shoes. Unscrew cable roller housing from rear axle tube and brake anchor plate.
3. Turn out brake anchor plate fastening screws and pull rear axle shaft out with tool 136 589 18 33.
4. Pull torque arm with puller 120 589 05 33 (Fig. H 3a/4).
5. Loosen nut of wedge-type screw and drive the screw out (Fig. H 3a/5).
6. Loosen rubber boot on rear axle housing and pull it off the housing.
7. Turn out hexagonal screw for connecting pin, screw in punch 180 589 08 39 and drive connecting pin towards the rear until the rear axle suspension support can be removed. Then drive pin completely out and remove right-hand rear axle tube with adjusting washers, shims and rubber rings.
8. Loosen the sliding joint which is fastened with a tightening screw on rear axle shaft gear in differential housing by means of a socket wrench SW 14 and take out together with the adjusting washer (Fig. H 3a/8).

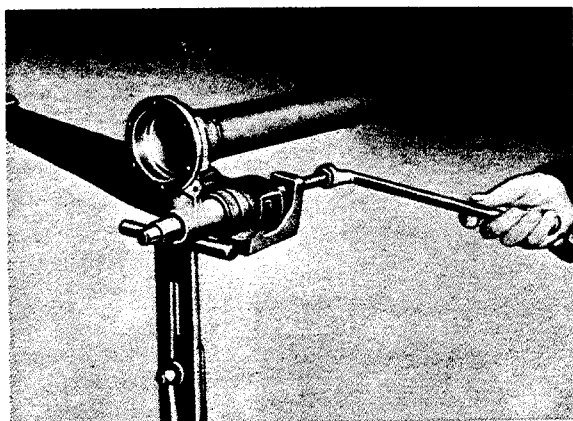


Fig. H 3a/4

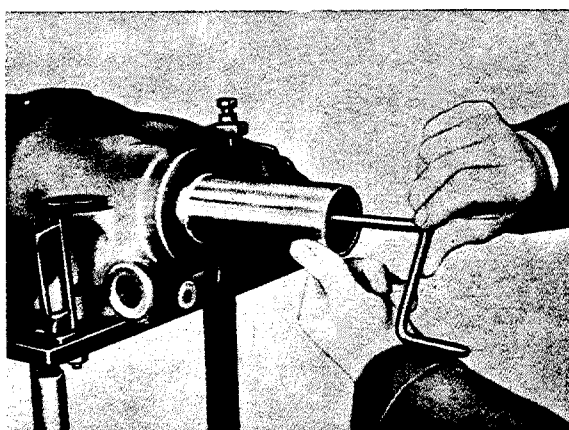


Fig. H 3a/8

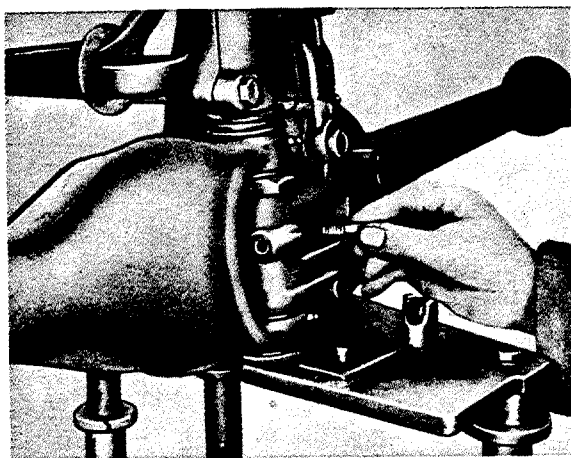


Fig. H 3a/5

9. Screw left-hand rear axle tube off rear axle housing. Now the differential housing with ring gear can be removed.
10. Free the two adjusting screws for thrust ring of inclined bearing and turn them out. Loosen screws on cover of rear axle housing and pull the entire drive assembly out. When using mounting levers, proceed with due care!

Rear Axle Tubes:

11. Pull grease retainer out of left-hand rear axle tube, turn out bleeder and lock screw for threaded ring and press bearing ring of bevel roller bearing out with the threaded ring and wrench 180 589 02 07. If supporting tube of torque arm is damaged, force it out on a press (Fig. H 3a/11).

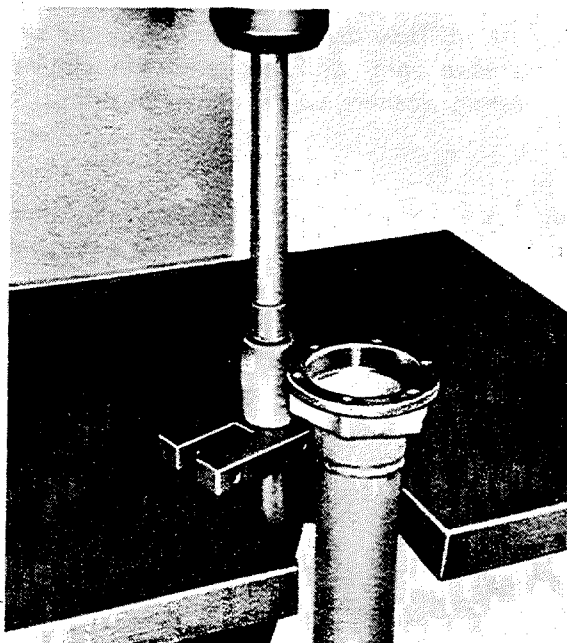


Fig. H 3a/11

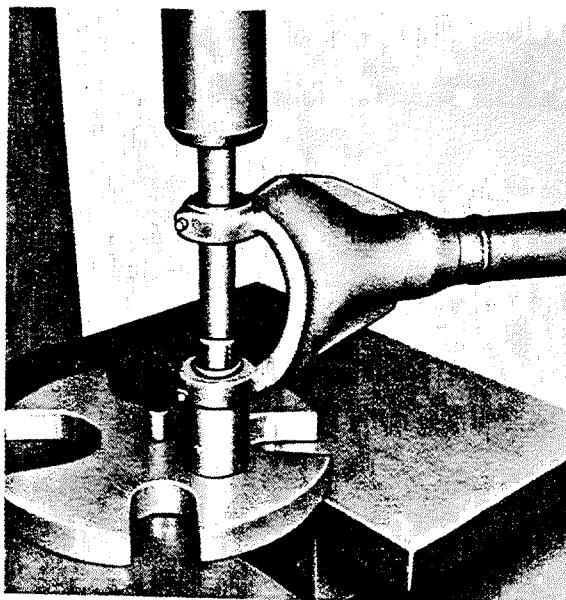


Fig. H 3a/12

12. Pull grease retainer on right-hand rear axle tube out and remove rubber boot. Press the two rear axle tube supporting bushings only out if they are worn or damaged (Fig. H 3a/12). The same applies to the supporting tube.

Rear Axle Housing:

13. Press bearing ring of bevel roller bearing out towards the inside. Before this is done, free threaded ring and screw it out.
14. Remove the two snap rings for bearing ring of cylinder bearing and drive bearing ring out.

Differential:

15. Pull both bevel roller bearings off differential housing with tool 180 589 01 33 (Fig. H 3a/15). If the ring gear or the differential housing are to be replaced, free ring gear screws and turn them out, then press the ring gear off.

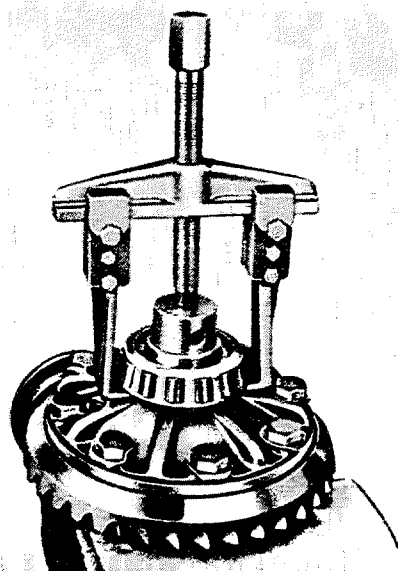


Fig. H 3a/15

16. Countersink chiseled side of retaining pin for differential bolt with an 8 mm (0.315") drill and drive the retaining pin out (Fig. H 3a/16).

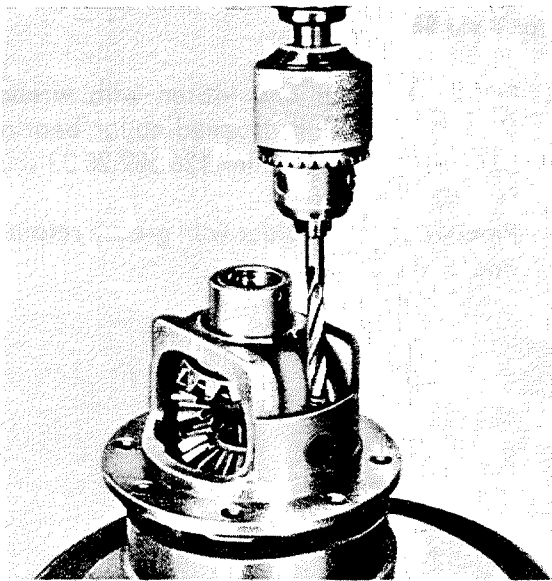


Fig. H 3a/16

Press differential pin out and remove differential bevel gears, rear axle shaft gears, contact washers and ball washers.

Bevel Drive Gear:

17. Free slotted nut and loosen it, pull universal joint flange and remove cover and shoulder ring. Press grease retainer out of cover.

Press differential pin out and remove differential bevel gears, rear axle shaft gears, (H 3a/18).

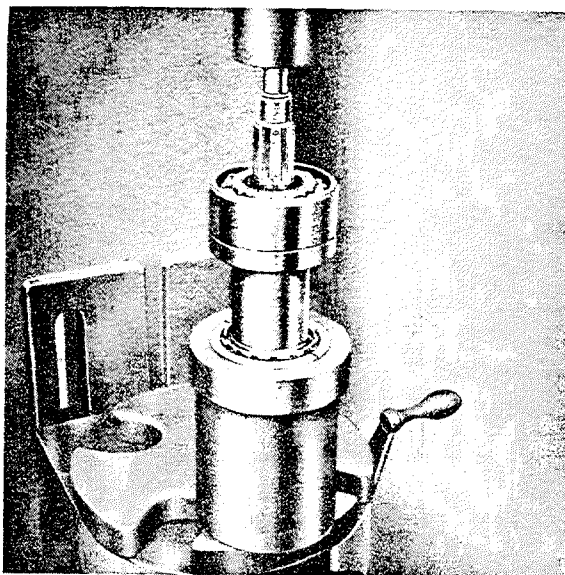


Fig. H 3a/18

Note: The inclined bearing must not be removed alone, otherwise it will be damaged.

Sliding Joint:

19. Remove retaining ring and washer of outer joint fork and take sliding sleeve out; be careful not to lose any of the cylinder rollers (132 pieces). Remove cylinder rollers and dismount deflection washers.
20. If the needle bearing bushings are worn out, they must be pressed off the spider star after the snap rings have been removed. Be careful to provide a good support so the fork will not be damaged (Figs. H 3a/20 and 20a).

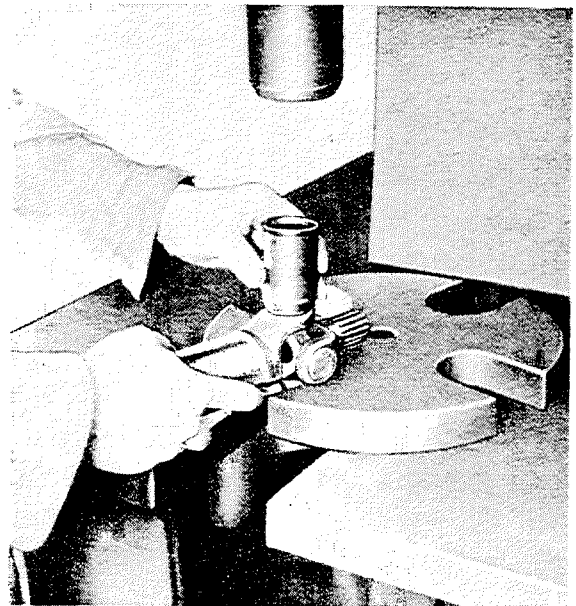


Fig. H 3a/20

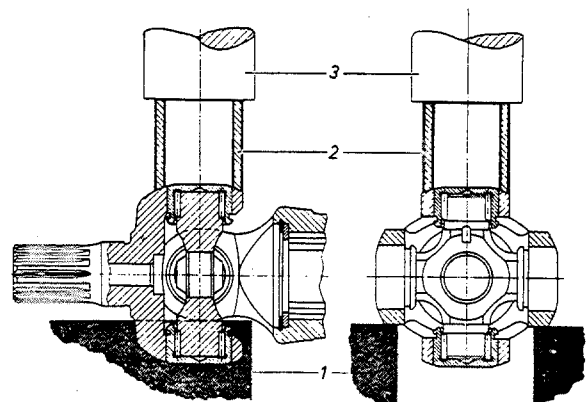


Fig. H 3a/20a

1 Support 2 Length of tube 3 Ram of press

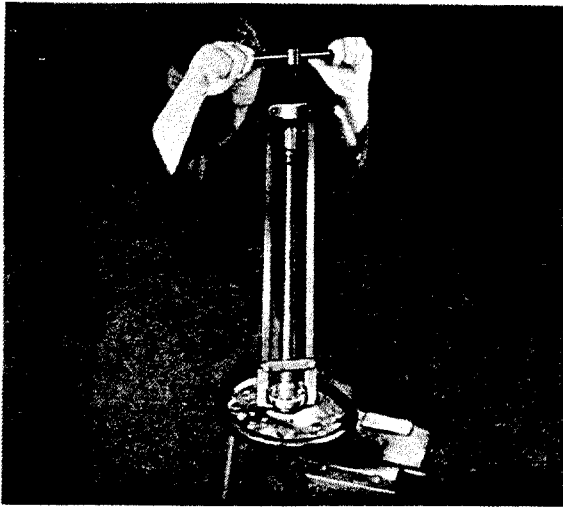


Fig. H 3a/21

Rear Axle Shafts:

21. Free slotted nut and loosen with wrench 136 589 09 07. Pull grooved collar bearing off the shaft with puller 136 589 20 33 (Fig. H 3a/21).

Remove sealing holder with grease retainer and brake anchor plate.