

CONDITIONS

Vehicle on a hoist at kerb weight - that is, unladen, with tool kit and with full complement of coolant, oil and fuel.

CHECKING Fig. I

Remove the retaining collar from the protective boot (1).

Pull back the boot (1).

Remove the grease and clean between the piston (2) and the torsion bar (3).

Check Fig. II that there is a clearance X between the piston (2) and the bar (3), using a set of narrow-ended (approximately 4 mm) feelers :

	SHORT	LONG
Vans	0.5 mm	0.2 mm(*)
Bare chassis/cab.	2.3 mm	2.1 mm
Chassis/cab. + shell	0.5 mm	0.2 mm
(*) + Combi and combiluxe		

ADJUSTMENT

If the clearance X appropriate to the vehicle is not correct :

- loosen the bolts (4) and (5),
- lever the compensator into contact with the feelers and tighten the bolts to 2.4 m.daN in the order :
4 - at the slot,
5 - at the pivot.

Check that the feelers slide freely - if not, re-adjust.

Replace the grease, the boot (1) and its collar.

Road test.

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Brake system identification - data	A1.005 to 009
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DATA

Braking system : Fig. I

Each front brake caliper has two pistons supplied by independent circuits.

The rear circuit from the master cylinder feeds the front brake upper pistons and the rear brakes.

The front circuit from the master cylinder feeds the front brake lower pistons.

MAIN SERVICE BRAKE

Disc brakes at the front :

GIRLING brakes of the floating caliper type with a wear take-up system (2 pistons per caliper).

Drum brakes at the rear :

GIRLING brakes with floating shoes and an automatic wear take-up system.

Hydraulically operated by a twin circuit master cylinder (I and H circuit pattern).

- Vacuum assistance system (brake servo)
- Brake pressure distributor on the rear brakes.

EMERGENCY BRAKE

Lever operated acting on the rear brakes through cables.

The vehicle must be immobilised at a brake lever travel of 4 to 5 notches.

MASTER-VAC type servo.

Vacuum source for servo :

On Diesel engines : exhauster connected to the brake servo by a pipe.

On petrol engines : a pipe passing from the inlet manifold to the brake servo.

Braking system (key) :

- 1 - Front brake
- 2 - Rear brake
- 3 - Brake compensator
- 4 - Vacuum servo
- 5 - Master cylinder

Master cylinder

- Twin circuit type without a residual pressure valve.

1000 → 1500	1800 TURBO
22.2 mm → 2/83 : 19 + 17 mm ↔ 2/83 : 21.5 + 12.5 mm	25.4 mm 21.5 + 11.5 mm —

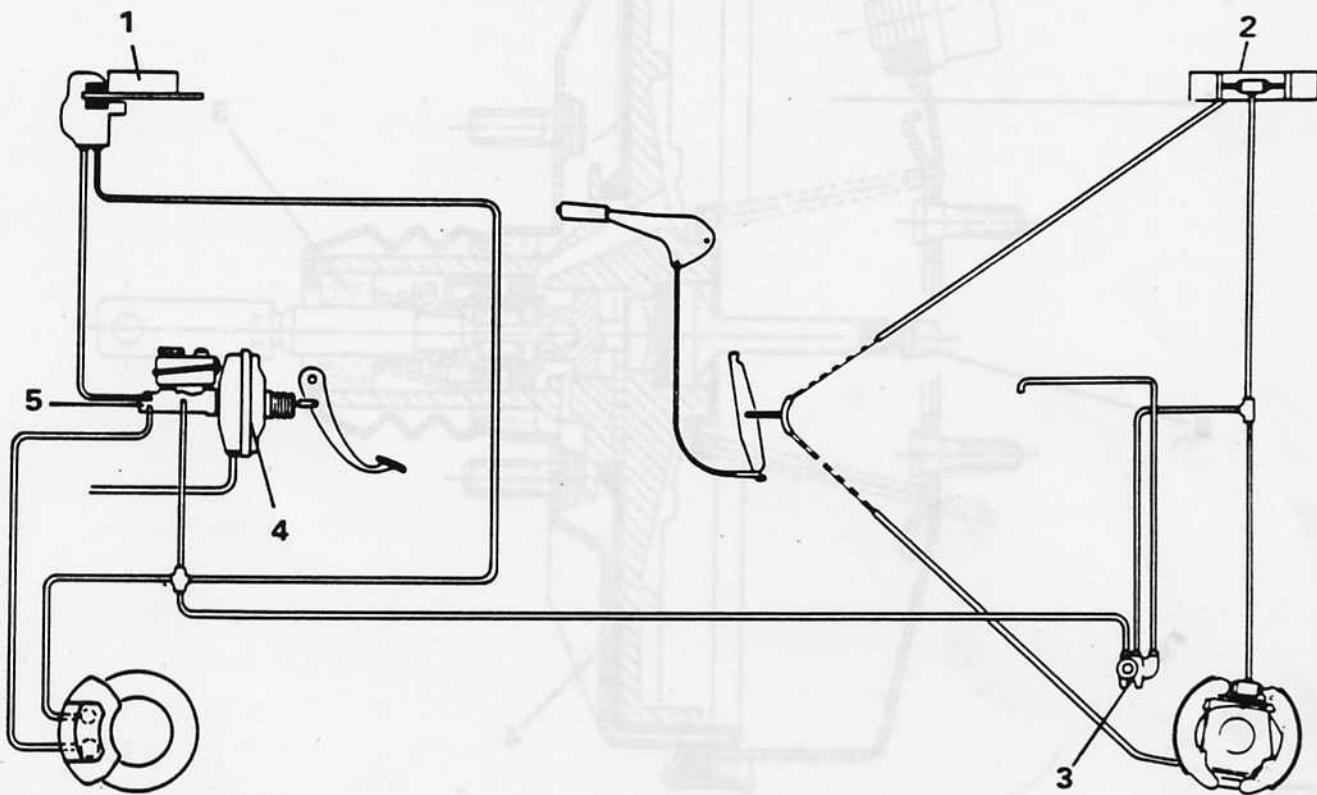
Front braking system : master cylinder ø :

Master cylinder piston travels

NEVER unscrew screw 1 on the master cylinder body, Fig. II
 This screw acts as a piston stop and any loosening and retightening of the screw could jam the piston cup washer if the spigot on the screw does not re-enter the groove (2) in the piston, Fig. III.

The brake fluid must fulfil the standard : N.F.R. 12640 S or ISO 4925 or SAE J1703 or FMV SS 116 DOT 3.

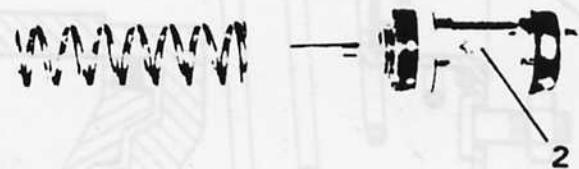
Braking system capacity 0.7 litres



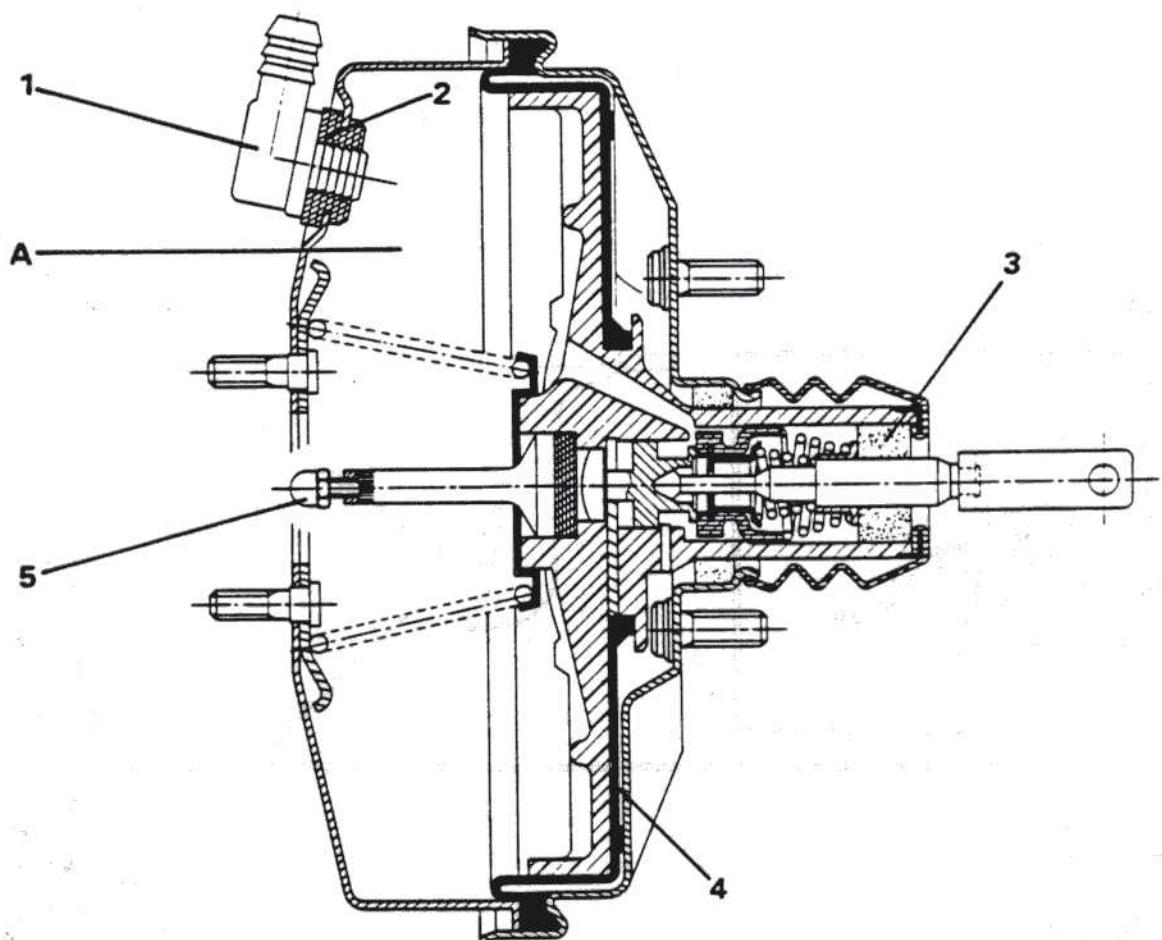
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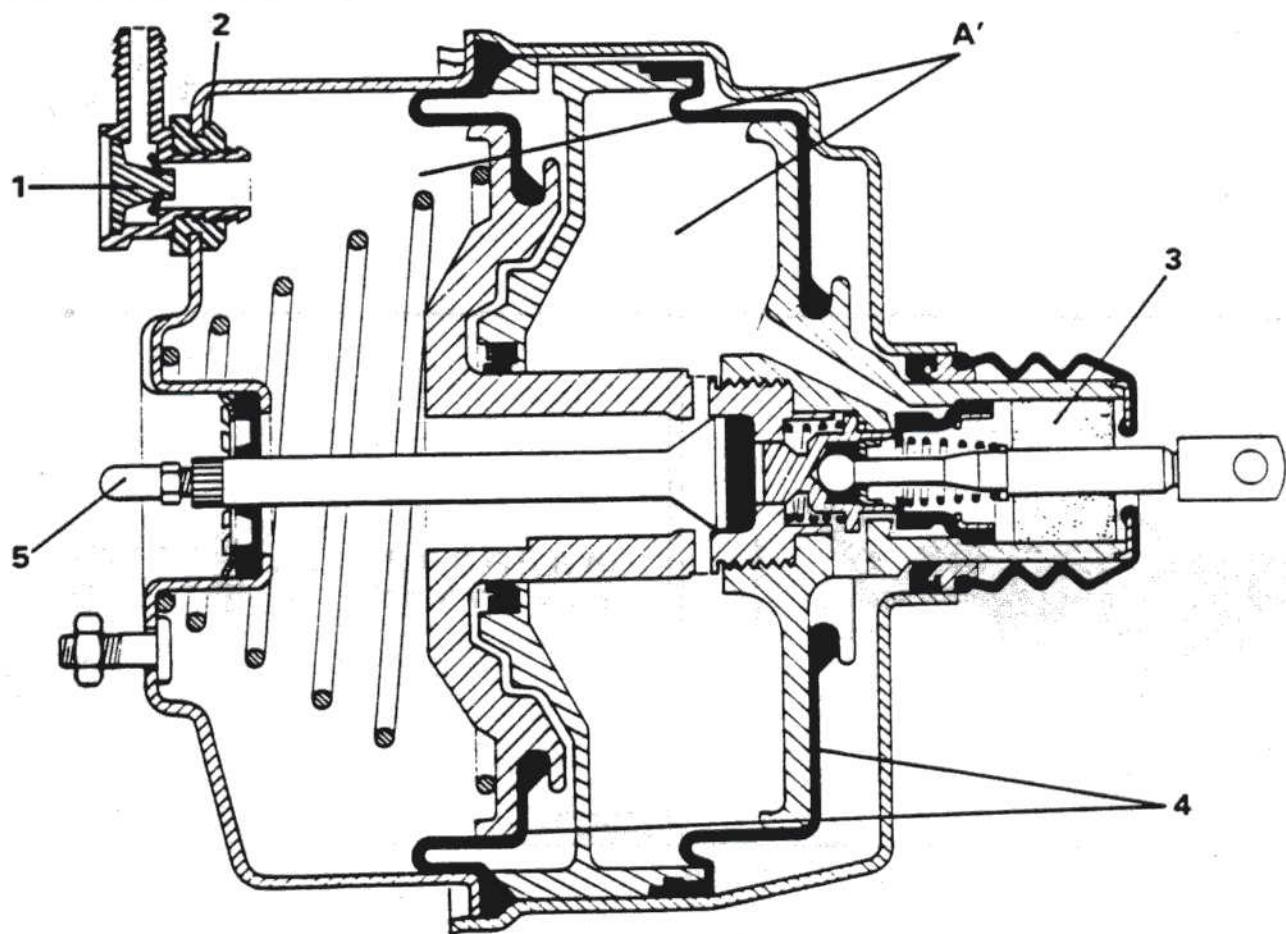
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UT 45-12

MASTER-VAC brake servo for 1000 - 1500 naturally aspirated engines Fig. I

Conventional brake servo (with one compartment A)

The thrust rod is set back with reference to the master cylinder mounting face by . 0.3 to 0.5 mm

Diameter 8" (203.2 mm)

MASTER-VAC brake servo for 1800 - TURBO vehicles Fig. II

Tandem (two compartments A')

This unit operates on exactly the same principles as those of the conventional MASTER-VAC
brake servo.

**WARNING : The thrust rod (5) is adjusted at the factory.
It is forbidden to re-adjust it under repair conditions**

Diameter 8" (203.2 mm)

Servo braking system defects - Causes :

- Leakage into the vacuum pipe between the inlet manifold (Petrol engines) and the valve (1) or between it and the exhauster (Diesel Engine).
- Leakage at valve (1) or seal (2).
- Fouling up of the filter (3) on the atmospheric pressure input.
- Leaks in the diaphragm or diaphragms (4).

On the J5 Diesel, a PIERBURG exhauster provides vacuum for the brake servo.

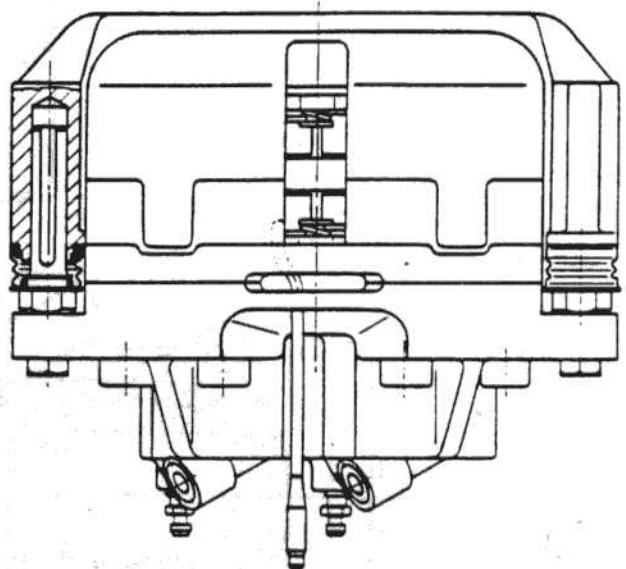
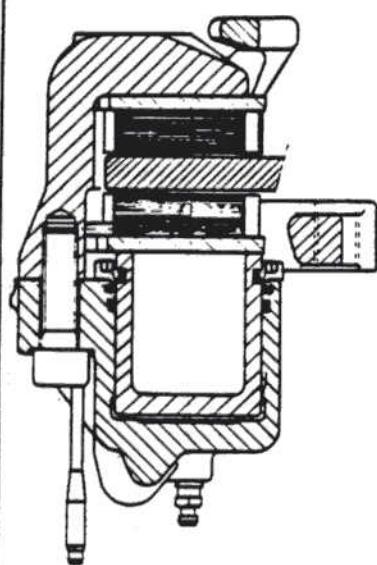
Exhauster oil capacity 40 cm³
Oil grade SAE 10 W 30

Front brakes Fig. I**Caliper type****Diameters of pistons upper
lower****Brake pads made by****Type****Total braking area****Min. thickness of pads****Wear warning sensor
on inner brake pad****Diameter of disc****Thickness of disc****Min. thickness of disc****Max. disc run-out****Point at which run-out is measured**

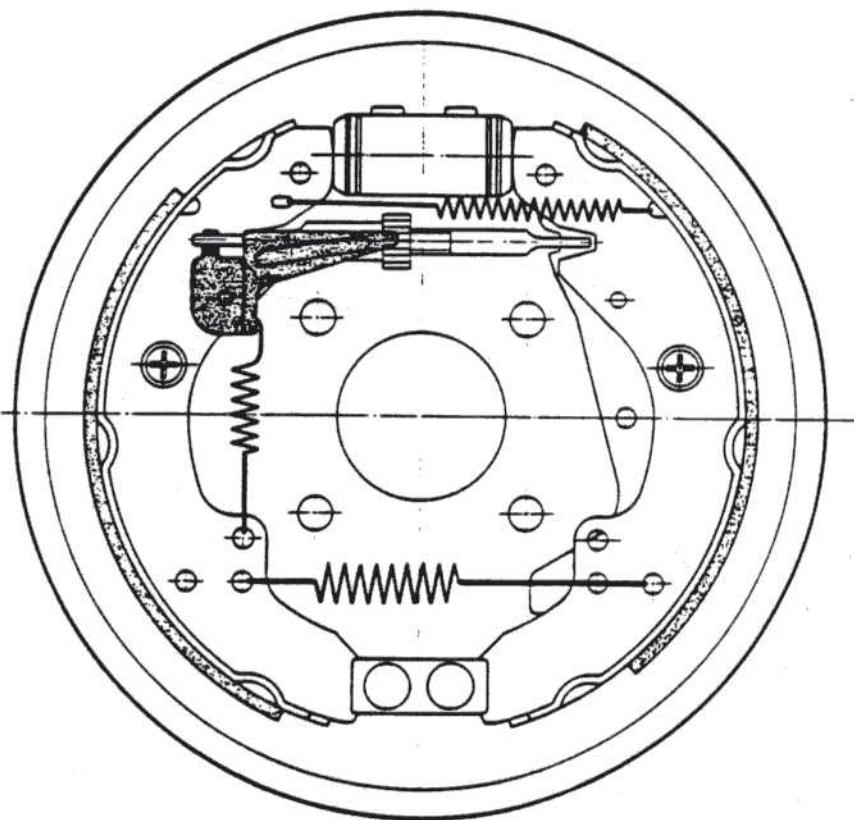
		1000 → 1500	1800-TURBO
GIRLING			
TEXTAR	38 mm 48 mm	42.8 mm 48 mm	
T252	→ 1/85 → 1/85	ENERGIT	ENERGIT
		394	394
	194.8 cm ³	269.6 cm ³	
		2 mm	
	255 mm	290 mm	
	13 mm → 4/84 → 4/84 16 mm	16 mm	
	11.8 mm → 4/84 → 4/84 13.5 mm	14.8 mm	
		0.15 mm	
	approx. 2 mm from the outside diameter		

Rear brakes Fig. II**Type****Diameter of wheel cylinder****Brake linings : Make****Type****Total braking area****Min. thickness of linings****Diameter of drum****Max. diameter after reworking****Max. diameter due to wear**

		1000 → 1500 - TURBO	1800
GIRLING			
	22.2 mm → 2/83 → 2/83 25.4 mm	25.4 mm	27 mm
			FERODO
	AM 14 FF	IL 339	
	537 cm ²	554 cm ²	
		1 mm	
		254 mm	
		254.8 mm	
		255.6 mm	



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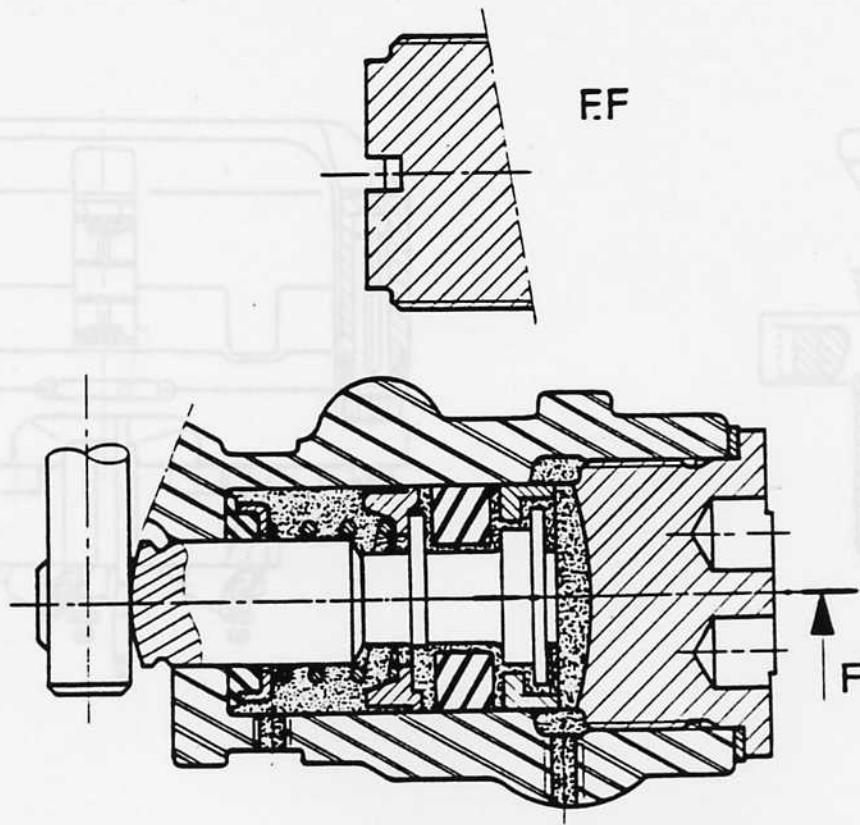


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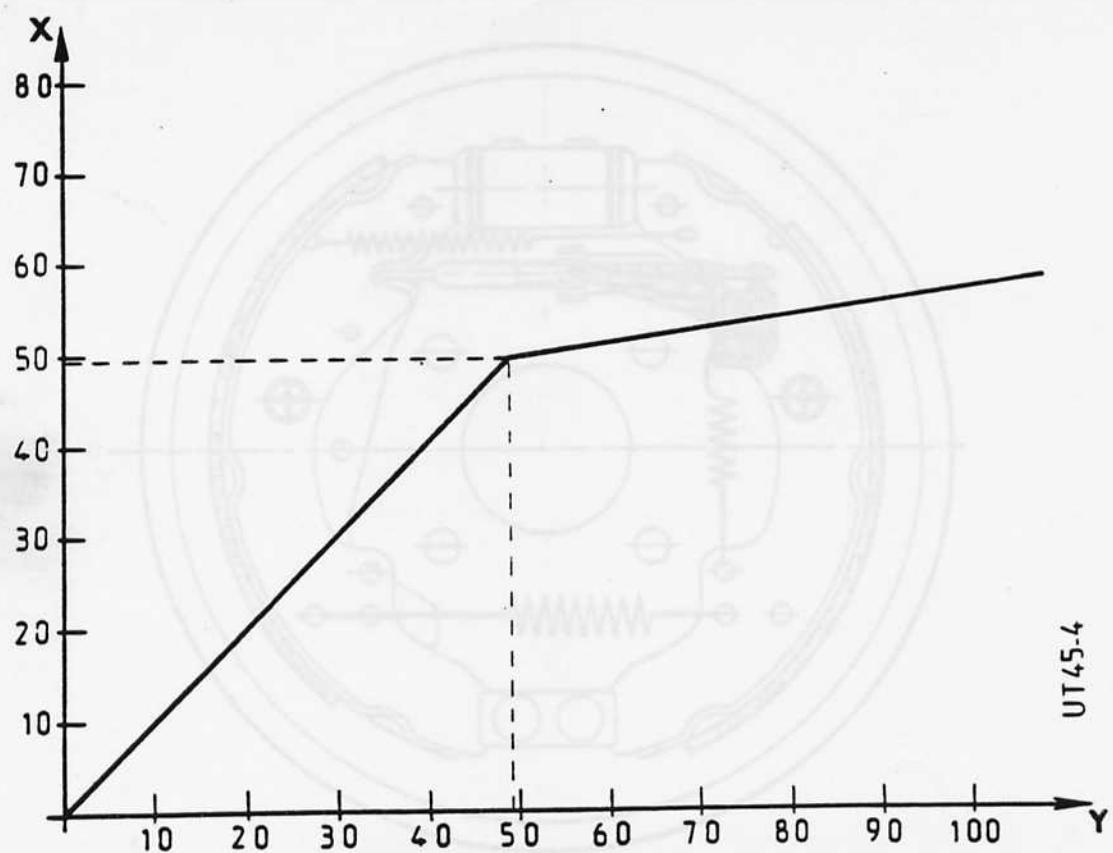
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UT. 45-4

Brake pressure distributor :

The function of this unit is to adjust the ratio between the pressure in the front braking system and the pressure in the rear braking system, to suit the vehicle load.

The brake compensator ratio is 0.34.

Fig. I - Section through brake compensator

Fig. II - Graph showing relationship between pressure in front system and pressure in rear system.

X - pressure acting on front brakes

Y - pressure acting on rear brakes.

I - BLEEDING THE BRAKING SYSTEMS

Ensure that the level in the brake fluid reservoir is maintained during the bleed operations.
Use brake fluid Lockheed 55, Nafic FN3, Stop HD 88 or Peugeot.

Engine stopped, without any servo effect.

Bleed each wheel cylinder, starting at the rear of the vehicle and then moving to the front Fig. I, bleeding first the upper cylinders (2) and finishing with the lower cylinders (1).

- Place a transparent tube, on each bleed screw, the other end of which is to be immersed in a clean container.
- Press down the brake pedal.
- Open the bleed screw.
- Hold the brake pedal fully depressed.
- Close the bleed screw.
- Slowly release the pedal against its stop.
- Repeat this operation until there are no more air bubbles in the brake fluid.
- Carry out these same operations on the other wheels.

Bleeding the brakes can be made easier by using equipment designed for this purpose (For example : ARC 50, PRESTOP)

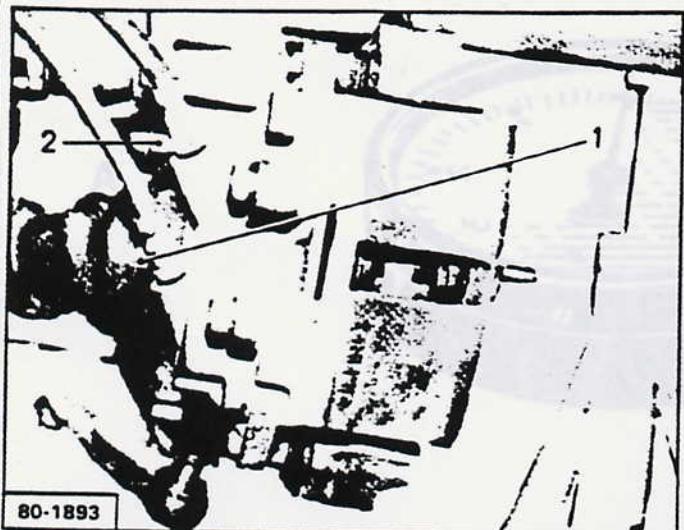
II - ADJUSTING THE EMERGENCY BRAKE

- Press the brake pedal two or three times to operate the hydraulic system.
- Set the hand brake lever on the third notch of its travel.
- Tighten the nut (3), Fig. II, until the rear brakes start to engage.
- Check that when the hand brake lever is on the fifth notch of its travel, the rear wheels are locked.
- Tighten the lock nut.

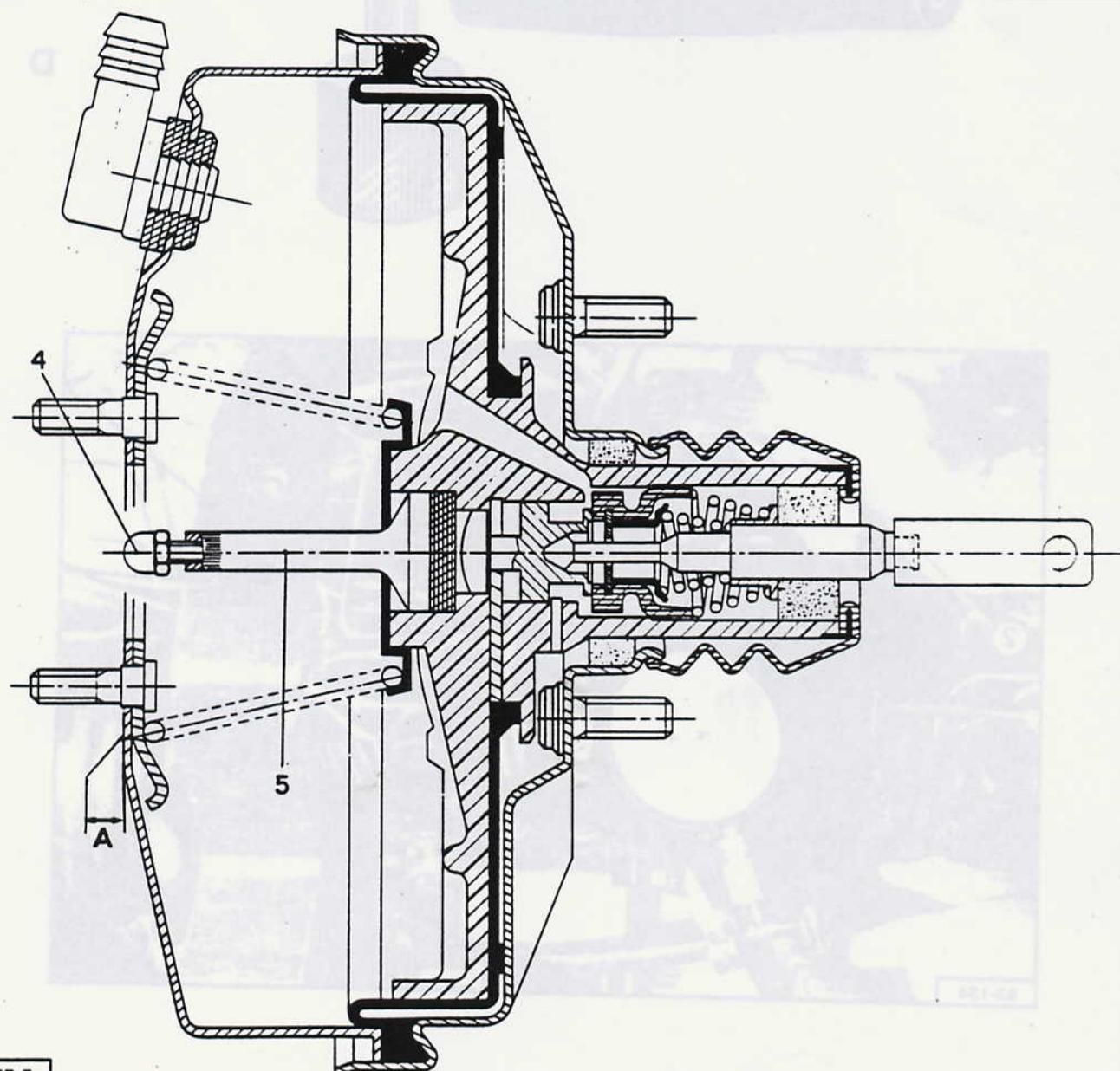
III - ADJUSTING THE BRAKE SERVO THRUST ROD

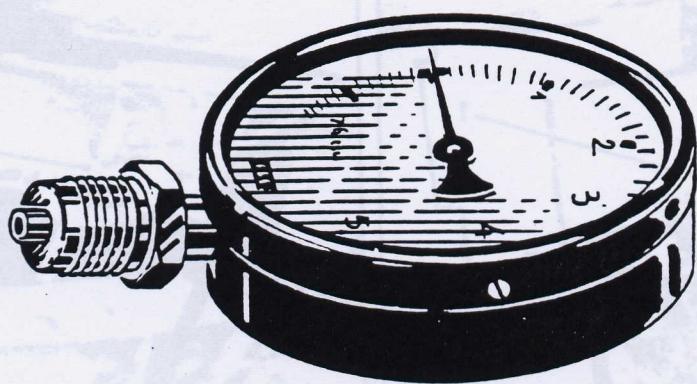
Only on the conventional MASTER-VAC brake servo (1 compartment) fitted to naturally aspirated engines

The end of the thrust rod (5) should be recessed below the master cylinder mounting face, in the released position, by $A = 0.3$ to 0.5 mm. To obtain the recessed depth $A = 0.3$ to 0.5 mm, turn screw (4).

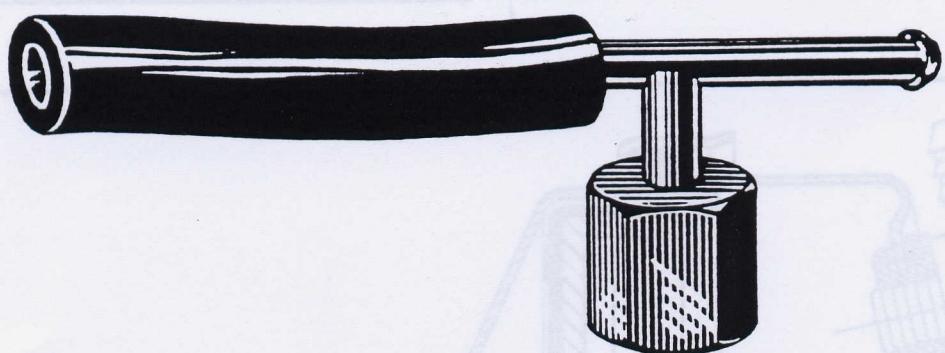


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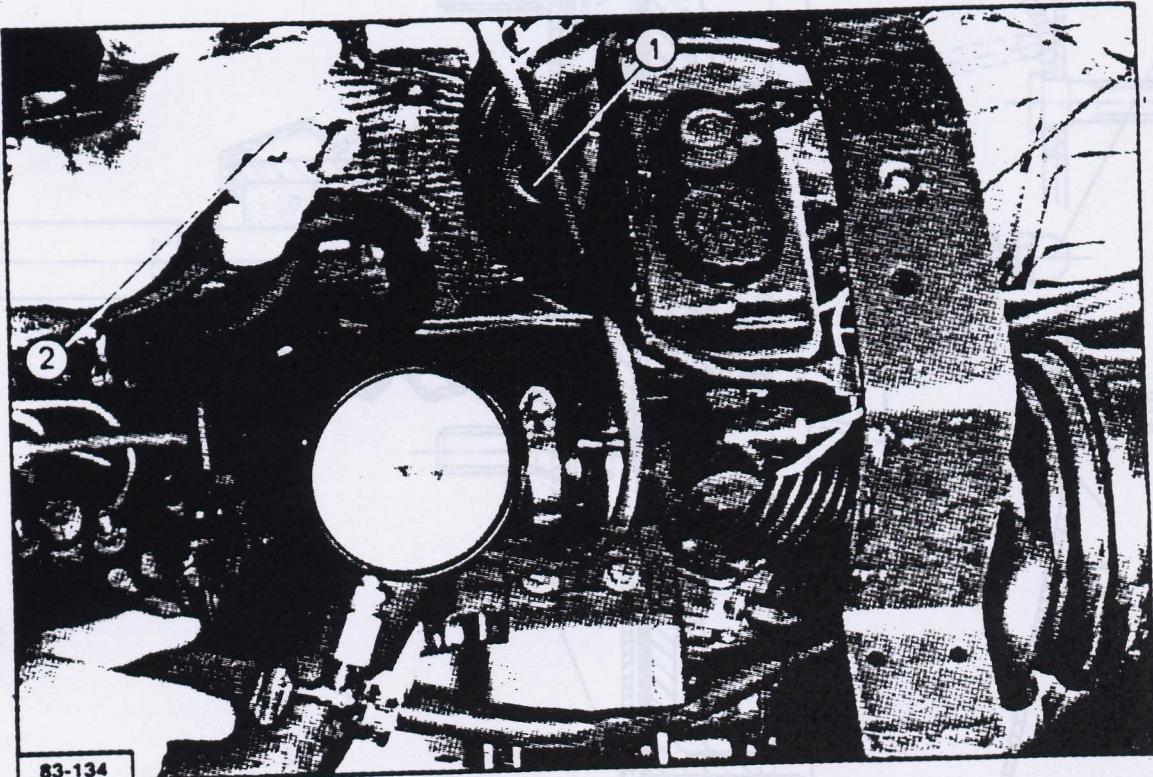




A



D



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SPECIAL TOOL

A : Pressure gauge - Vacuum gauge
Reference : 8.1503 A + D

Defect	Cause	Remedy
Heavy pressure required at the pedal	Defect in the vacuum source	Check the vacuum pipes, valves and vacuum source
Heavy pressure required at the pedal and engine speed changes when the brakes are applied	Brake servo diaphragm perforated	Replace the MASTER-VAC brake servo
Heavy pedal pressure from time to time	Non-return valve sticking on its seat	Lubricate the non-return valve with silicone

IV - CHECKING THE SERVO BRAKING SYSTEM

With the engine stopped, depress the brake pedal a number of times to « use up » all the vacuum in the brake servo.

The pedal will become stiff and will remain in the « upper » position. Keep the foot on the brake pedal and start the engine. The pedal should move slowly down.

As, on diesel engined vehicles, the exhaust does not provide sufficient vacuum at idling speed, press down on the brake pedal and accelerate the engine at the same time. The pedal should move slowly down.

Note : If the brake servo is in good condition, there should be no change in the engine speed when the pedal is depressed.

CHECKING THE VACUUM

On petrol engined vehicles :

Connect, to the engine :

- a pressure-vacuum gauge 8.1503A+D
- a tachometer.

Warm up the engine until the fan cuts in.

Accelerate to 4500 rpm.

Cease accelerating the engine.

The maximum pressure indicated during the time that the engine speed is falling should be equal to or greater than 500 mm/Hg or 700 mbars.

On Diesel engined vehicles :

Connect a pressure-vacuum gauge into the system.

Run the engine for at least one minute at fast idling speed. The vacuum shown should be equal to or greater than 500 mm/Hg or 700 mbars.

If a vacuum of 500 mm/Hg is obtained, the servo braking system is not responsible for the defect. Look for the cause in the hydraulic system.

IF A VACUUM OF 500 mm/Hg IS NOT REACHED :

Disconnect the valve (2).

Repeat the test whilst blocking the valve end fitting with the thumb.

1st Case : If the vacuum is less than 500 mm/Hg : Look for the cause on the output side of the valve, that is to say :

On Petrol engined vehicles :

Air leaking into the system : because one of the following is loose or damaged :

- the valve (2).
- the pipes.
- the carburettor securing flange.

The condition of the engine : check the compression pressure or pressures.

On Diesel engined vehicles :

Air leaking into the system : because the valve or the pipes are loose or damaged.

A defect in the exhaust :

Check, initially

- the belt tension
- the exhaust oil lever (too high an oil level reduces the output).

2nd Case : If the vacuum is 500 mm/Hg or more :

Reconnect the valve (2) after fitting a new seal (1).

Repeat the test.

If the vacuum is, again, lower than 500 mm/Hg the brake servo is the cause of the trouble. Check the air filter on the brake servo and clean it.

Repeat the test.

If the vacuum is too low, the brake servo diaphragm is leaking. Replace the brake servo.

REMOVING

Disconnect the earth cable from the battery.

LH drive vehicles, remove the spare wheel carrier.

Disconnect, Fig. I and II, the vacuum pipe (1) from the brake servo.

Disconnect, Fig. I and II, the wires (2) from the brake fluid level sensor.

Remove, Fig. III, the nuts (3) from the master cylinder.

Free, Fig. IV, the master cylinder from the brake servo, and support the servo.

Unclip and remove, Fig. V and VI, the pin (4) that connects the thrust rod to the pedal.

Remove, Fig. V and VI

RH drive : Fig. V, the four bolts (→) that secure the brake servo in place.

LH drive : Fig. VI, the three bolts (→) that secure the brake servo in place.

Remove the brake servo.

RH drive : disconnect the spacer from the brake servo.

REFITTING

LH drive : Fig. VI, place the brake servo in place and tighten the three bolts.

Tightening torque 20 N.m (14.7 lbf.ft.).

RH drive : Fig. V, connect the spacer to the brake servo, fit this assembly in place and tighten the four bolts.

Tightening torque 20 N.m (14.7 lbf.ft.).

Fit, Fig. V and VI, the pin (4) and its clip.

Note : Before refitting the master cylinder, adjust the depth by which the thrust rod is recessed below the master cylinder mounting face. It should be 0.3 to 0.5 mm.

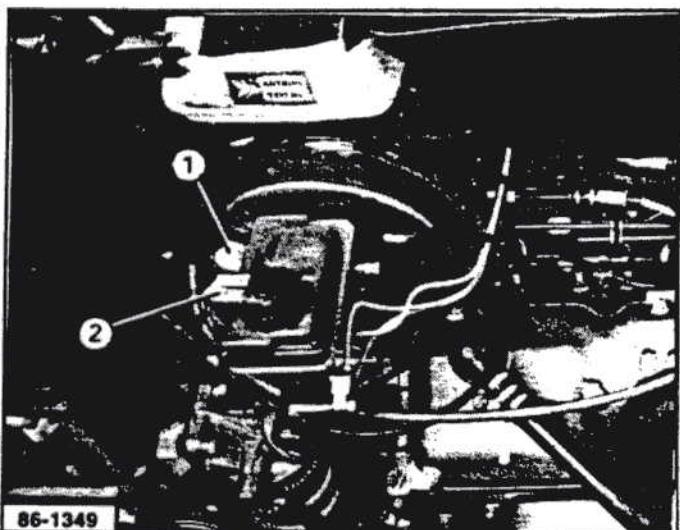
Fit, Fig. III, the master cylinder and the nuts (3).

Tightening torque 20 N.m (14.7 lbf.ft.).

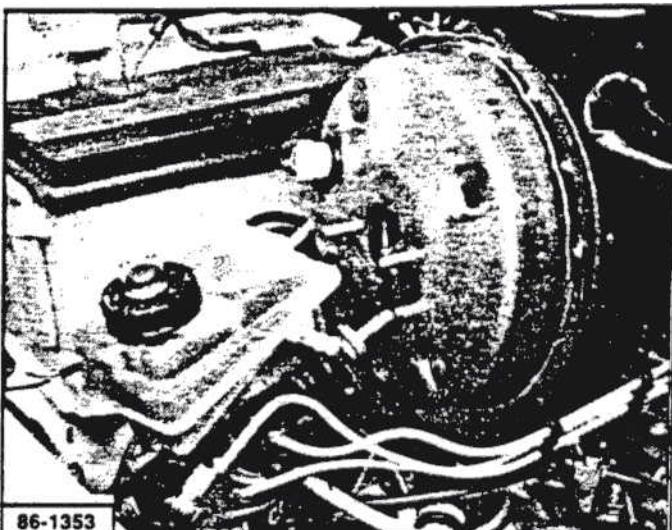
Connect, Fig. I and II, the vacuum pipe (1) to the brake servo.

Connect, Fig. I and II, the wires (2) to the brake fluid level sensor.

LH drive : refit the spare wheel carrier.

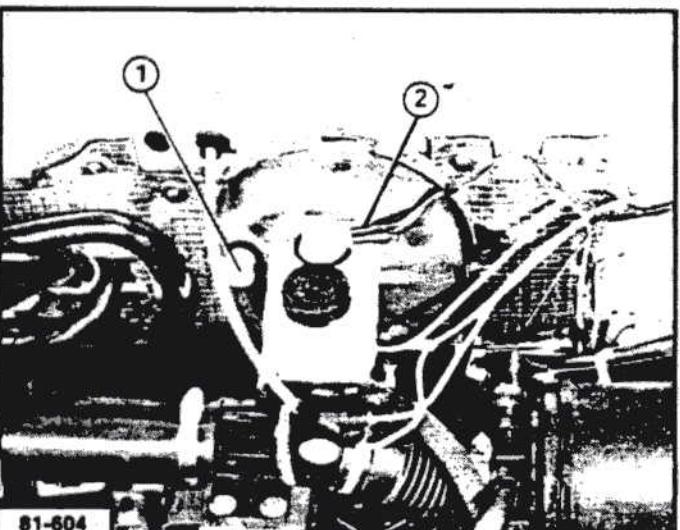


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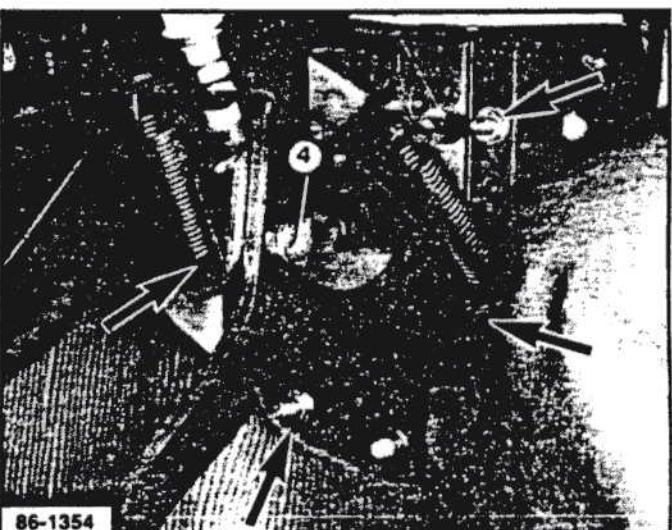


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IV



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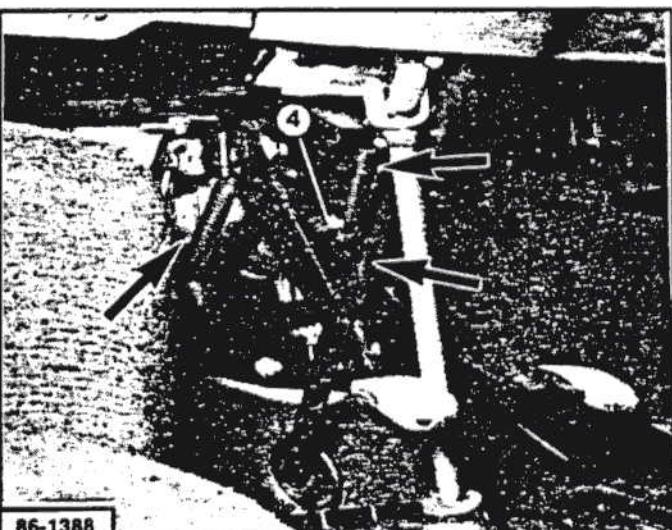


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V



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III

VI

REPLACING THE FRONT BRAKE PADS

NEVER SEPARATE THE TWO FRONT BRAKE CALIPER SECTIONS.

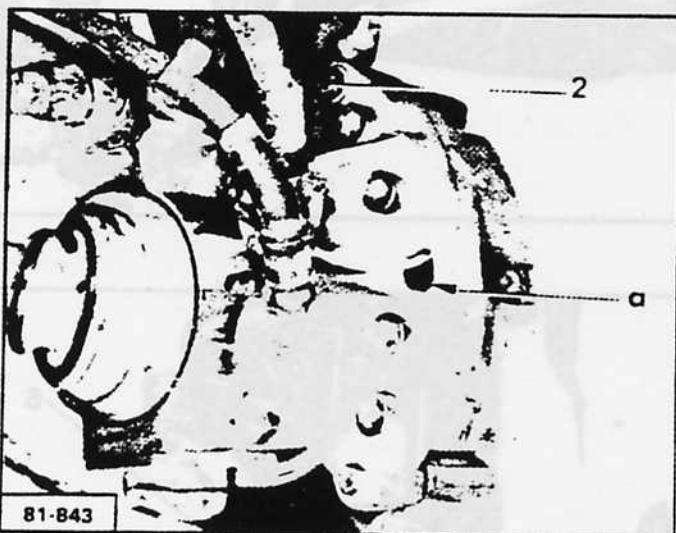
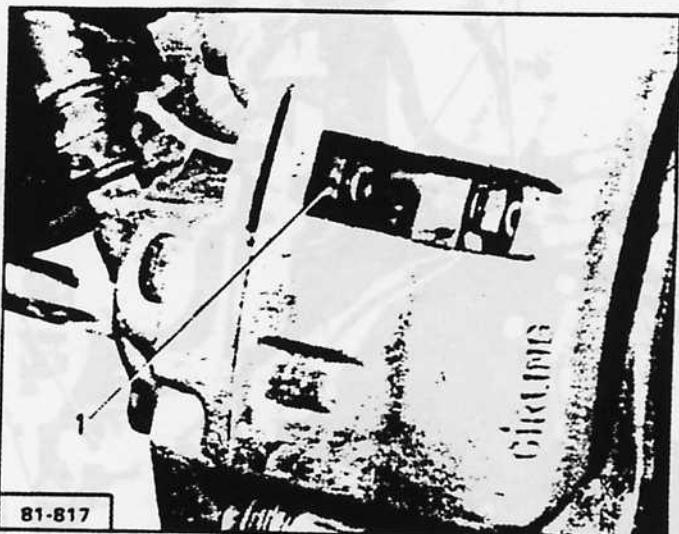
REMOVING

- Loosen the front wheel bolts.
- Raise the front of vehicle and place it on stands with the wheels hanging free.
- Remove the wheels.
- Push back the pistons, fig. I, by applying pressure to them with a pair of grip across the inner pad (1) and the caliper.
- Remove the bolt (2), fig. II. and III, using a second spanner to prevent the guide (3) rotating.
- Swing the caliper yoke downwards, fig. III.
- Remove the brake pads (1) and (5), fig. III.
- Check :
 - the condition of the dust seals (4) on the guides (3), fig. III,
 - the condition and positions of the piston dust seals (6).

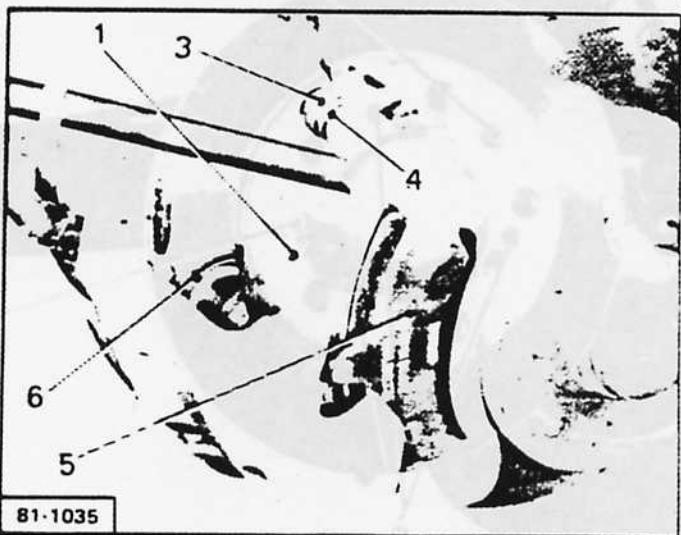
REFITTING

- Push the pistons to the bottoms of their bores.
- Fit the new brakes pads, fig. III.
- Pad (1), with the wear warning light wire is fitted on the INSIDE. The wear warning light wire passes through hole "a", fig. II.
- Swing the caliper yoke back into place, fig. II, and press it down to be able to fit the new bolt (2) supplied with the new brake pads.
- Tighten bolt (2) to a torque of 3.4 m.daN (34 Nm, 25 lbf ft), fig. II, whilst preventing the guide (3) turning with a second spanner.

If the dust seals (4) require replacing, remove the guides (3), clean and lubricate them with the special grease supplied by the Parts Department with the new dust seals.



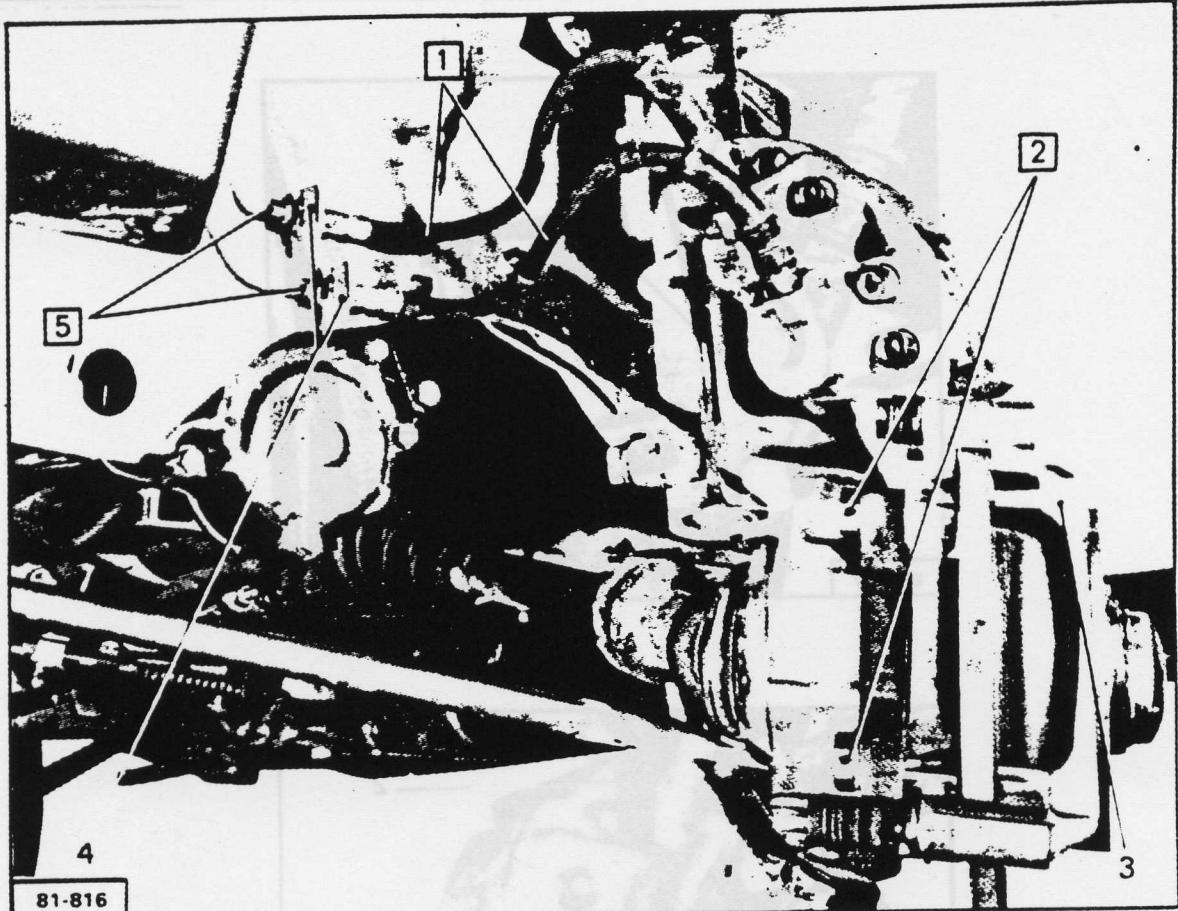
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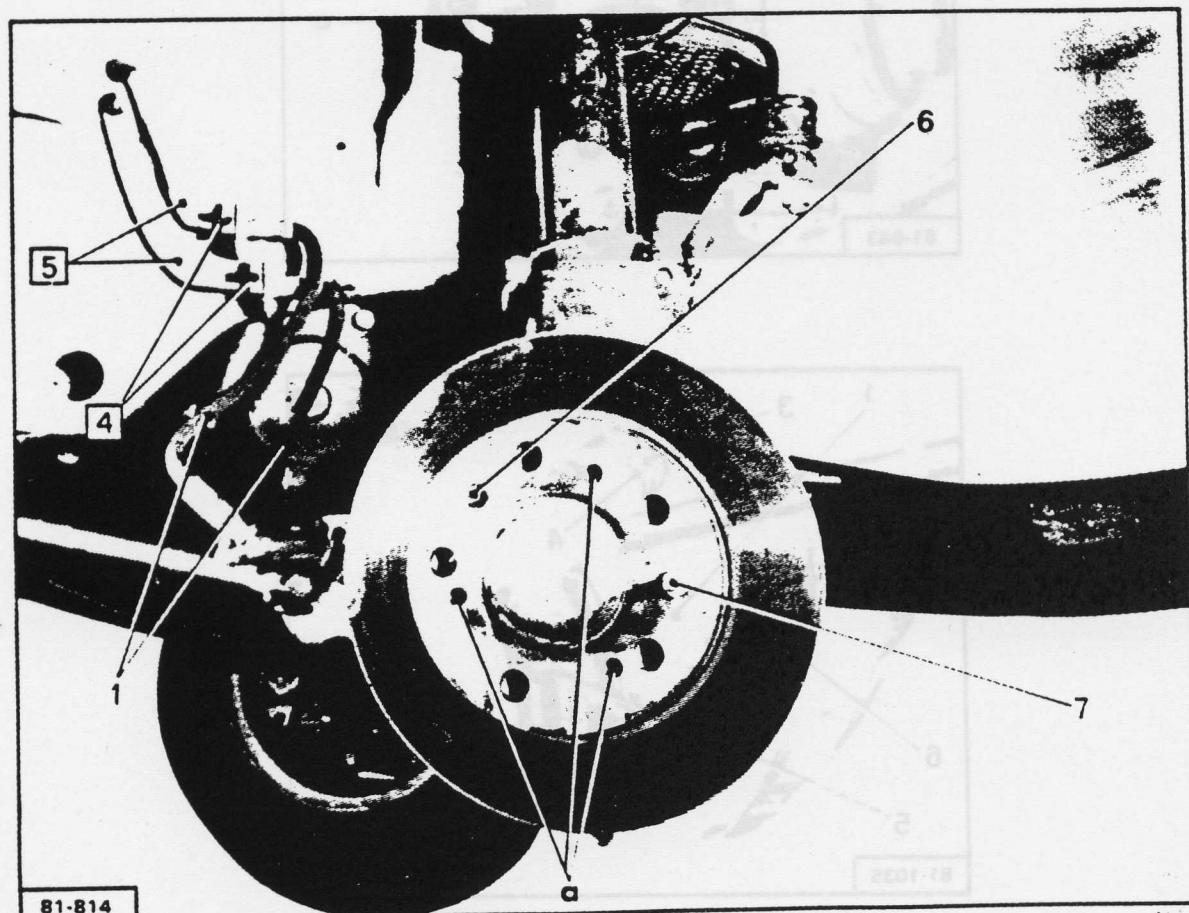
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II

FRONT DISC BRAKES

REMOVING AND REFITTING A FRONT BRAKE CALIPER OR DISC

NEVER SEPARATE THE TWO FRONT CALIPER SECTIONS

REMOVING

- Side yoke the caliper from the caliper bracket (see the preceding section : replacing the front brake pads).
- Disconnect, fig. I, the rigid brake pipes (5) from the hoses (1) after having first marked them.
- Remove, fig. I, the clips that secure the hoses to their support brackets.
- Remove, fig. I, the two bolts (2) that secure the caliper bracket (3) to the stub axle carrier.
- Remove, fig. II, the bolt (6) and the wheel locating dowel (7).
- Remove the brake disc, using three extractor bolts (\varnothing 10 mm, pitch 1.25), screwed into the holes "a", fig. III.

REFITTING

- Fit, fig. I and fig. II :
 - the brake disc,
 - the bolt (6) and the wheel dowel (7),
 - the caliper bracket (3) to the stub axle carrier.
- Tighten the bolts (2) to a torque of 1.42 m.daN (142 Nm, 105 lbf ft).
- Fit the pads and the caliper to the caliper bracket (see preceding operation : replacing the front brake pads).
- Reconnect, fig. I :
 - the hoses (1) to the pipes (5) by following the locating marks made during dismantling.
- Fit, fig. I :
 - the clips (4) that secure the hoses (1) to their support brackets.
- Bleed the brakes (see relevant section).
- Refit the wheels and lower the vehicle to the ground.
- Tighten the wheel bolts to a torque of 16 m.daN (160 Nm, 118 lbf ft).

**BRAKES
REAR DRUM BRAKES
REMOVING AND REFITTING THE SHOES**

SPECIAL TOOLS

A - Pliers for removing and refitting the rear brake shoe springs.

62291 227

B - Spanner for removing and refitting the rear brake shoe steady spring cups.

3 27703 1 124003 240 921

TIGHTENING TORQUES

	m.daN	Nm	lbf ft
Rear brake drum securing bolts and wheel and wheel guide dowels	1,5	15	11
Front caliper bracket to stub axle carrier securing bolts	14,2	142	



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A



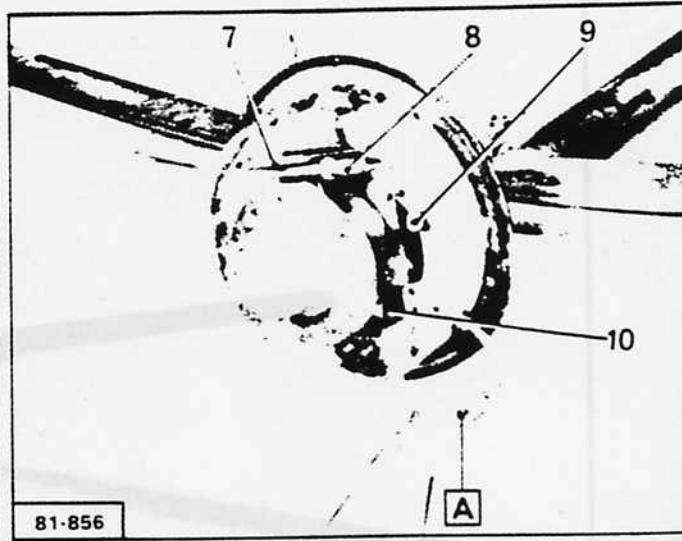
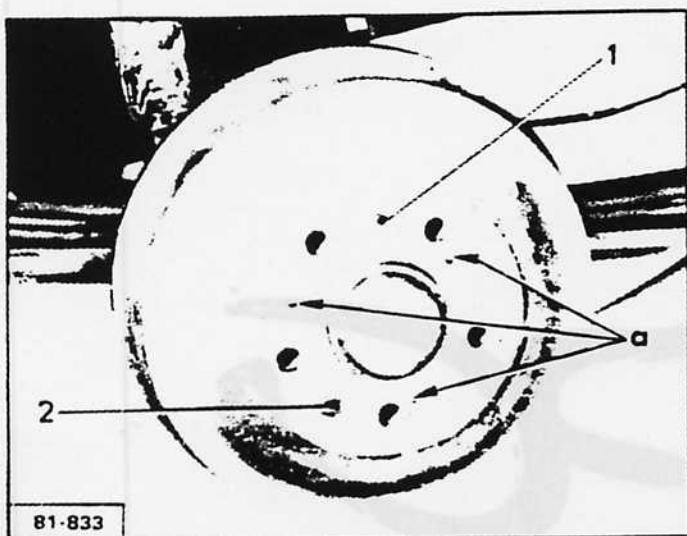
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B

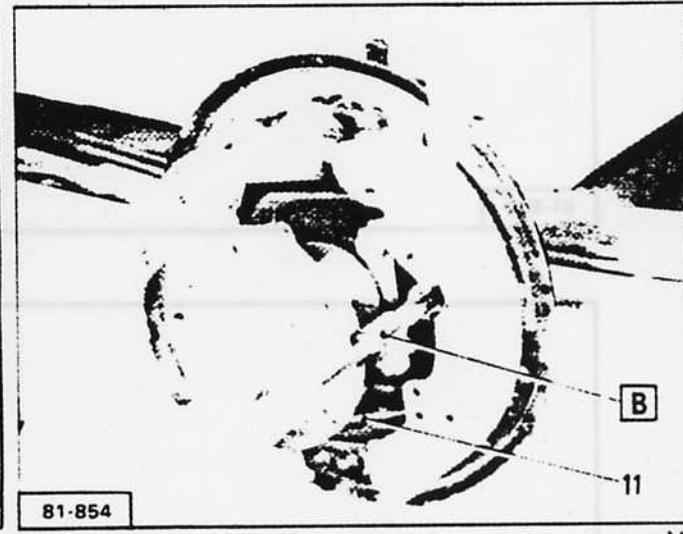
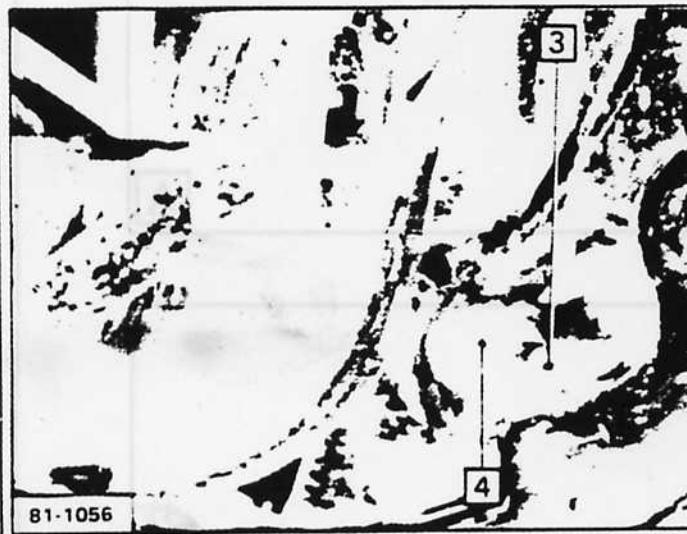
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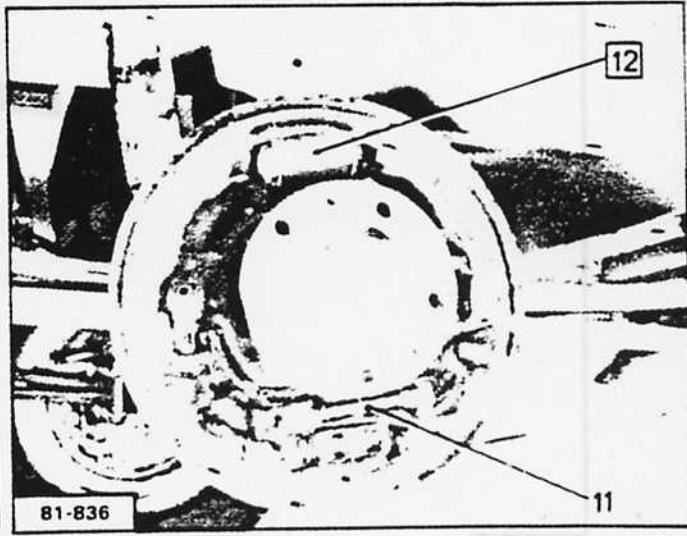
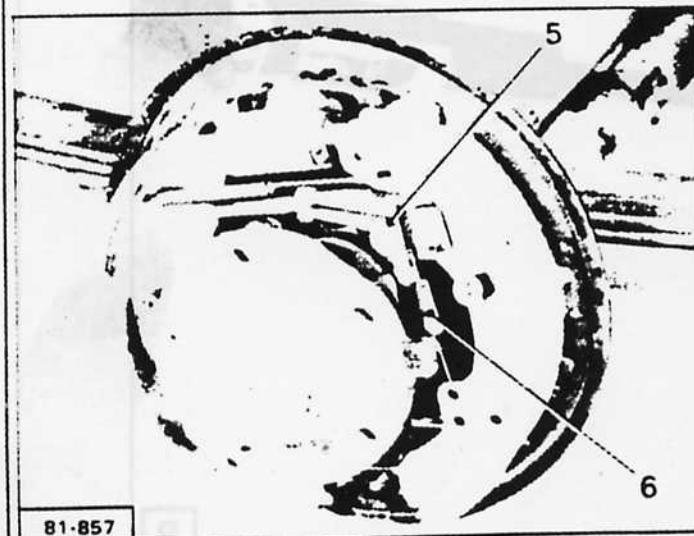
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IV



V



III

VI

REMOVING AND REFITTING THE REAR BRAKE SHOES

REMOVING

- Loosen the wheels.
- Raise the rear of the vehicle and support it with the wheels hanging free.
- Remove the wheels.
- Remove :
 - the wheel locating dowel (1) and bolt (2), fig. I,
 - the brake drum, using extractor bolts (\varnothing 10 mm, pitch 1.25) screwed into the holes "a", fig. I.

If wear has caused a ridge to form on the edge of the drum and it cannot be removed :

- Apply the hand brake.
- Remove the hand brake lever stop, to do this, fig. II.
- Push the centre part (3) towards the inside of the brake assembly,
- Remove the stop by pulling the plastic section (4).
- Release the hand brake.

- the steady spring retaining cups (9), figs. IV and V,
- the brake shoes, by unhooking the hand brake cable (11), fig. V, from the lever on the rear shoe,
- the wheel cylinder (12), if necessary, fig. VI.

REFITTING :

- Fit :
 - the wheel cylinder (12), if necessary, fig. VI,
 - the brake shoes, rehooking the hand brake cable (11), fig. V, to the lever on the rear shoe,
 - the guide rods, steady springs and spring cups (9), fig. IV and V,
 - the automatic adjuster link (8), fig. IV,
 - springs (7) and (10), using the special pliers, fig. IV.

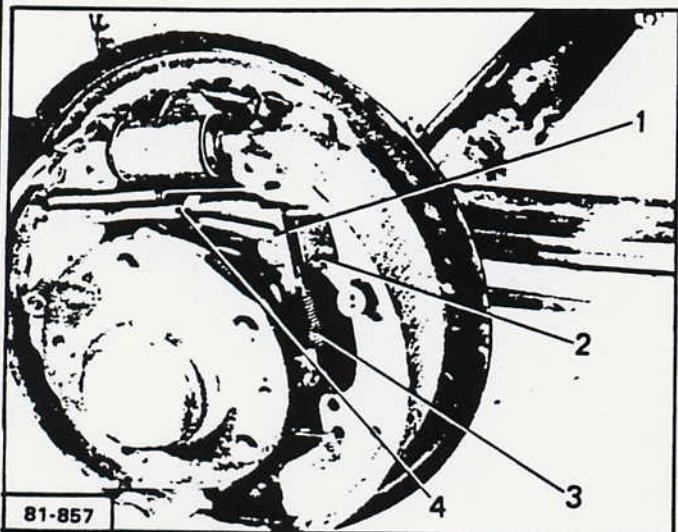
- the automatic adjuster lever (5) and spring (6), fig. III,
- springs (7) and (10) using pliers (A), fig. IV,
- automatic adjuster link (8), fig. IV.

**BRAKES
REAR DRUM BRAKES
REMOVING AND REFITTING THE SHOES**

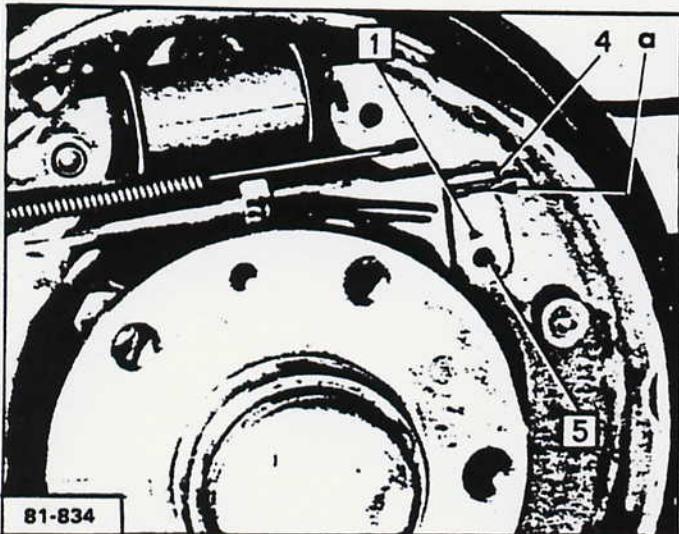
- Hook the spring (3) to the shoe support and to the lever (1), fig. I.
- Fit the automatic adjuster lever (1), engaging end "a" under the link (4), fig. II, and the lever (1) to the pin (5), fig. II.
- Fit, fig. III :
 - the brake drum,
 - the bolt (7),
 - the wheel dowel (6).

If necessary, apply the hand brake and fit a new stop (8), fig. IV.

- Bleed the brakes, if necessary (see section concerned).
- Fit the wheels.
- Lower the vehicle to the ground.
- Tighten the wheel bolts to a torque of 16 m.daN (160 Nm, 105 lbf ft).



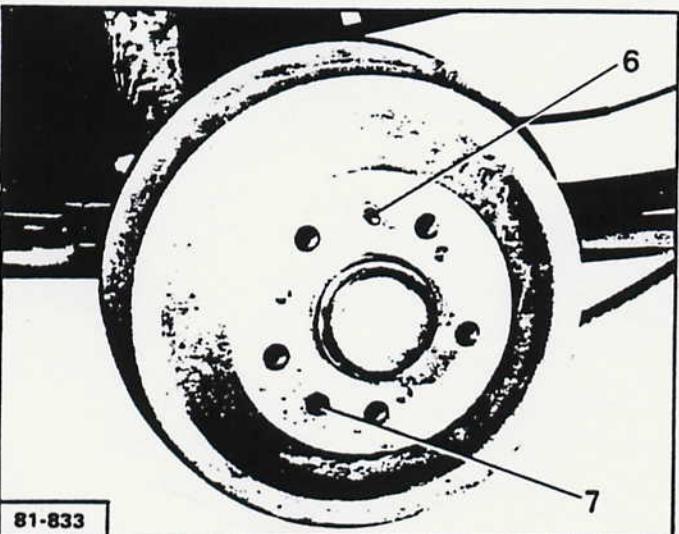
I



II



IV



III

