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Order No. TP 12154/2
Supersedes previous edition TP 12154/1

We reserve the right to make alterations

GROUP 50 GENERAL

TIGHTENING TORQUES

In this manual two kinds of tightening torque are shown:

I. Tighten to **40 Nm** (4.0 kgm) indicates that a torque wrench **must** be used when tightening.

II. Tightening torque 40 Nm (4.0 kgm) indicates a guide value.
Tightening **need not** be done with a torque wrench.

Specifications

FRONT WHEEL BRAKES

		Up to model year 1980	From model year 1980
Type		Disc brakes	Disc brakes
Make		Girling	Girling
Brake calipers			
Type		Fixed caliper	Sliding caliper
Number of pistons		2	1
Diameter of pistons	mm	48	48
Brake discs			
Diameter	mm	232.7	239
Thickness, new	mm	10.0	12.85
Reconditioned thickness, minimum	mm	9.1	11.8
Thickness, minimum	mm	8.5	11.2
Max. lateral throw	mm	0.15	0.15
(measured with disc removed)	mm	0.05	0.05
Max. permissible thickness variation over entire swept surface of any single disc	mm	0.02	0.02
Brake pads			
Thickness, new	mm	9.7	14.3
Thickness, minimum	mm	2	2

REAR WHEEL BRAKES

		B14	B19
Type		Drum brakes HASC 3, self-adjusting	Drum brakes HASF, self-adjusting
Diameter		8″	9″
Brake drum			
Diameter	mm	203.2	228.6
Reconditioned diameter, maximum	mm	204.2	229.6
Diameter, maximum	mm	204.7	230.1

Wheel cylinder			
Number per wheel		1	1
Diameter	mm	19.05	20.64
Brake shoes			
Number per wheel		2	2
Lining thickness, new	mm	4.5	4.5
Lining thickness, minimum	mm	2	1
Lining width	mm	36.5	40

MASTER CYLINDER

Type ..... Tandem type with bake fluid level control. Up to chassis No. 321597: equipped with hydraulic brake light switch; later chassis Nos: mechanical brake light switch on the footwell.
Cars with automatic transmission from model year 1978: provided with high-pressure switch for gear ratio control

		Up to chassis No. 451743	**From chassis No. 451743**
Make		Girling	Bendix
Bore x stroke	mm	19.05x34.5	20.64x36
Cylinder stroke, front/rear	mm	17.2/17.2	19/17
Brake fluid		DOT 4	

BRAKE SERVO

	B14 Up to chassis No. 451743	**B14 From chassis No. 451743**	**B19**
Make	Girling	Bendix	Bendix
Type	38SV	7.5" Mastervac	9" Mastervac
	All types operating on the front and rear circuits and provided with an integrated non-return vacuum valve		
Boost factor	2.2	2.8	3.1

HIGH-PRESSURE SWITCH

(Only for automatic transmissions)

Make		Messmer
Cut-in pressure	kPa (kg/cm²)	1800-2200 (18-22)

PRESSURE-CONSCIOUS REDUCING VALVE

Up to chassis No. 377183

Make	Girling
Type	Equipped with 'by-pass'
Operating pressure kPa (kg/cm²)	3500 (35)
Reducing factor	0.435

Chassis Nos. 377183-458000

Make	ATE
Type	Equipped with 'by-pass'
Operating pressure kPa (kg/cm²)	2500 (25)
Reducing factor	0.45

Chassis Nos. 458000-545500

Make	ATE
Type	Equipped with 'by-pass'
Operating pressure kPa (kg/cm²)	3000 (30)
Reducing factor	0.45

From chassis No. 545500

Make	ATE
Type	Equipped with 'by-pass'
Operating pressure, AT kPa (kg/cm²)	2500 (25)
MT kPa (kg/cm²)	3000 (30)
Reducing factor, AT	0.45
MT	0.30

TIGHTENING TORQUES

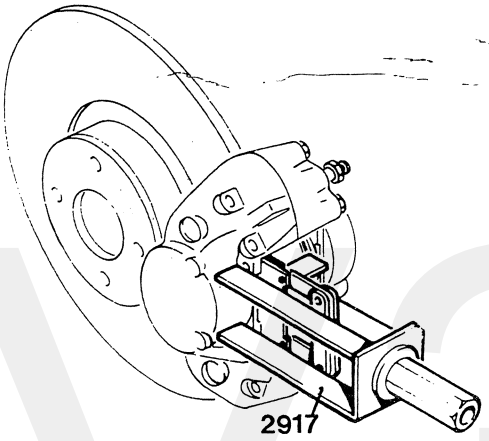
	Nm	kgm
Retaining bolts, backplate	50	5.0
brake caliper (-1980)	68	6.8
brake caliper body (1980-)	123	12.3
retaining pins (1980-)	33	3.3
brake disc	47	4.7
brake disc guard plate	15.5	1.55
Retaining nuts, master cylinder (-1980)	24	2.4
master cylinder (1980-)	14	1.4
Girling brake servo	13	1.3
Bendix brake servo	22	2.2
wheel cylinder (B14 model)	6	0.6
wheel cylinder (B19 model)	8	0.8
High-pressure switch (only with AT)	19	1.9
Brake line couplings - brake hoses	14	1.4
Bleedscrews, front wheel	6	0.6
rear wheel	8	0.8
Wheel nuts	115	11.5

HANDBRAKE

Type	Mechanical, working on the rear wheels
Maximum rack free travel	3 or 4 notches (B14) 5 to 7 notches (B19)

Special tools

999 **2917** Puller for brake pad removal
2901 Brake hose clamp
2809 Piston retraction tool (disc brakes)
5856 Mandrel for plunger seals



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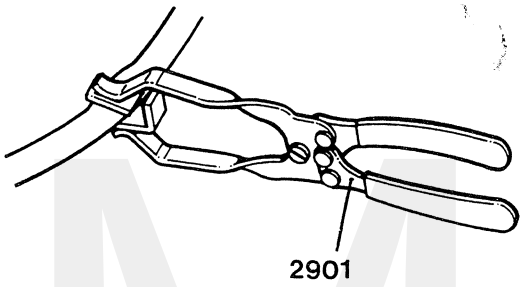

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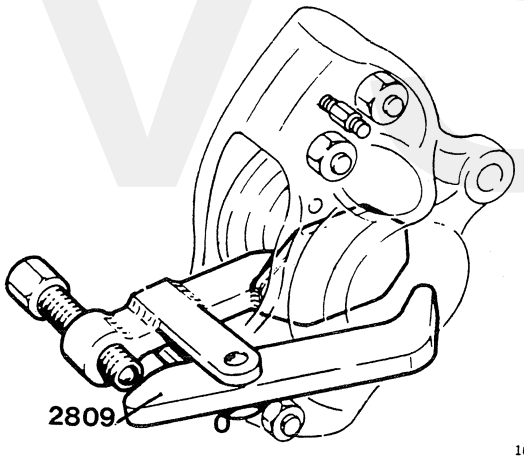

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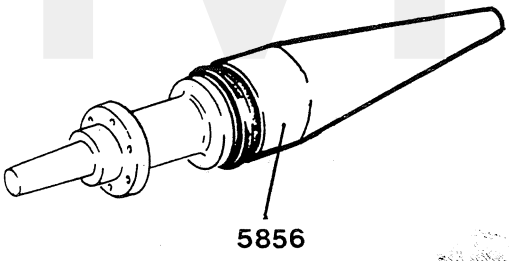

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GROUP 51 FRONT AND REAR WHEEL BRAKES

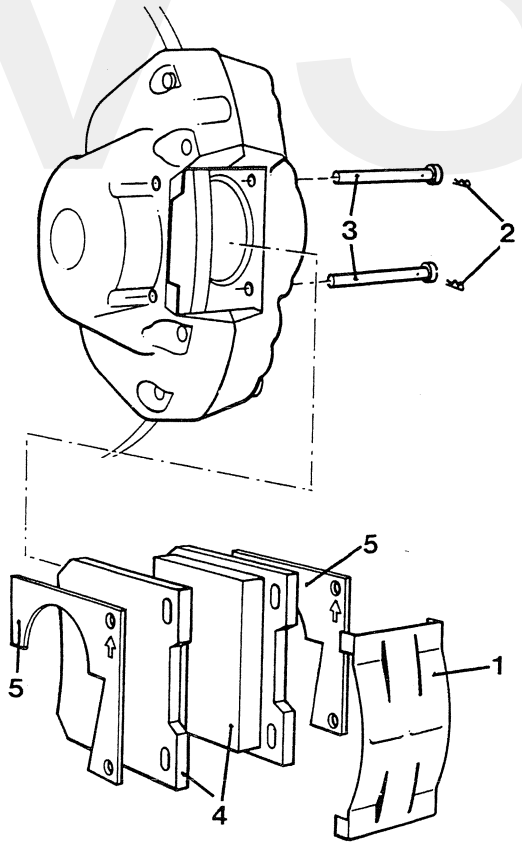
Localizing and rectifying vibrations observed when braking

Note that vibrations during braking can also be caused by factors other than the brakes themselves.
First check:
— that the steering gear is free of play
— that the shock absorbers are in good condition
— that the front wheel bearings are properly adjusted.

Check whether the rear wheel brakes are causing the vibrations by applying the handbrake during a test drive.
If this is the case then the brake drums must be reconditioned or renewed.
If the front wheel brakes are causing the vibrations:
— Check whether the correct brake pads are fitted. If not, remove and fit the specified type.
— Check the brake disc for warp (max. warp: 0.15 mm, measured on the car).
— Fit special brake pads, the so-called 'grinding pads'.
These are faced with a wearing layer which is completely worn away after approximately 500 km. It is not impossible for the vibrations to increase initially and for noise to be heard, but these phenomena must disappear after approximately 500 km.
Note: for cars from model year 1980 these special brake pads are not available.
— If necessary, recondition or renew the brake discs. (See Specifications for minimum disc thickness and minimum reconditioned thickness.)

A. BRAKE PAD RENEWAL (UP TO MODEL YEAR 1980)

A1

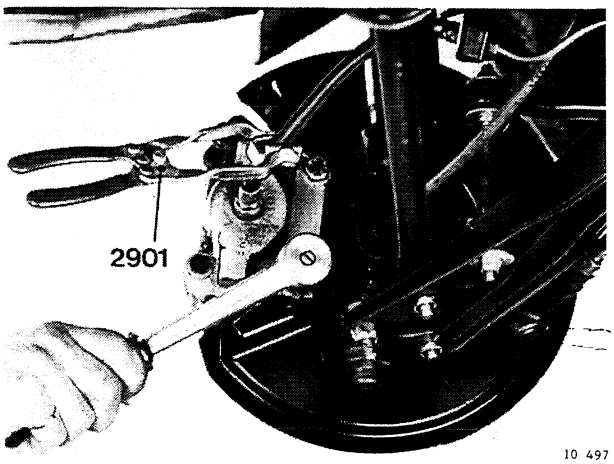


30 033

Renew brake pads

Remove the wheel.
Remove the anti-rattle spring (1).
Remove the pin retaining clips (2).
Remove the pad retaining pins (3).
Take the brake pads (4) out of the caliper (if necessary, with puller **2917**).
Check the brake pad thickness and check for scoring (min. lining thickness 2 mm).
Press the pistons back fully into the caliper (make sure that no brake fluid overflows from the master cylinder and that the rubber piston dust-covers are not damaged).
Clean the pad apertures ~~with~~ the ~~aid~~ of compressed air or a wire brush.
Fit the new brake pads together with new anti-squeal shims (5) (the arrow on the anti-squeal shims must be pointing upwards).
Fit new pad retaining pins.
Secure the pad retaining pins with new hairpin clips.
Fit a new anti-rattle spring.
Fit the wheel.
Tightening torque: 115 Nm (11.5 kgm).

B. CALIPER OVERHAUL



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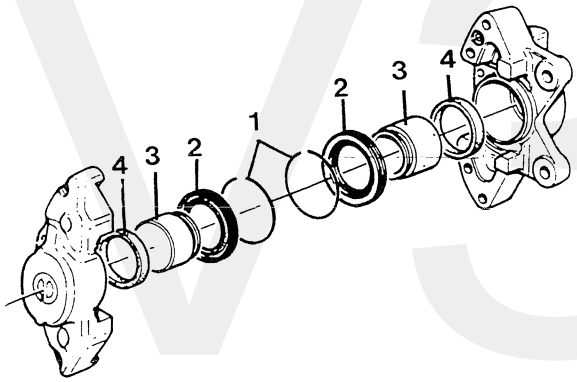
B1

Remove caliper

Remove the brake pads (see page 6, A1).
Pinch off the brake hose with clamp **2901.** Unscrew the brake hose one turn at the caliper. Straighten the lock plate (if fitted).
Remove the retaining bolts.
Detach the caliper from the stub axle.
Unscrew the caliper from the brake hose and remove.



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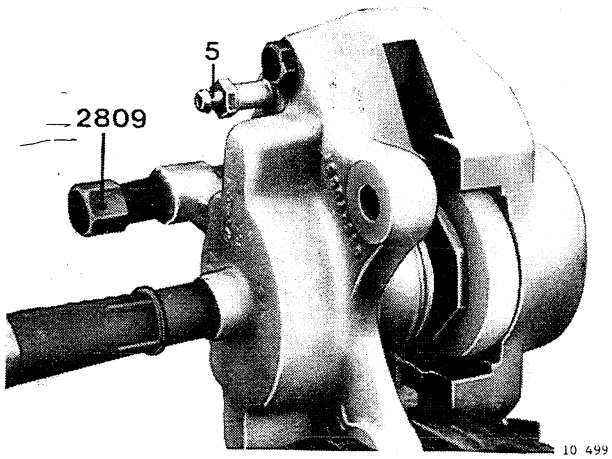
B2

Disassemble and check caliper

Remove both retaining rings (1) and dust covers (2).
Locate the clamp at the bleedscrew side of the caliper and press out the first piston (3) with compressed air.
Transfer **2809** to the other side of the caliper together with a nylon blanking plug and press the other piston (3) out of the caliper.
Remove **2809** and the blanking plug.
Note: watch out for splashing brake fluid.
Remove the sealing rings (4) with a nylon pin. Clean the parts with methylated spirit and check them for wear, damage and rust; renew if necessary.
Check the working of the bleedscrew (5).



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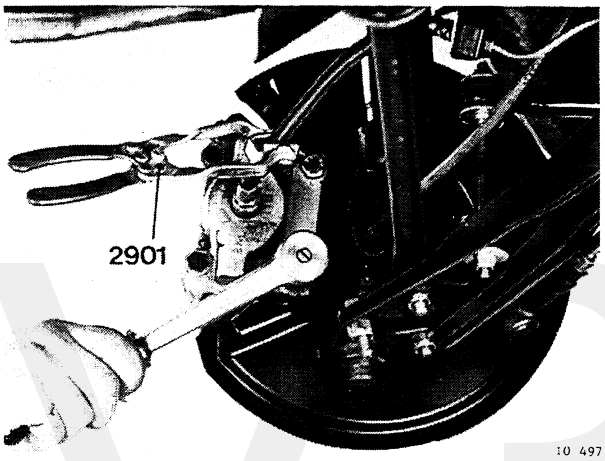
B3

Assemble caliper

Coat the inside of the cylinders and the sealing rings with the special grease from the service kit.
Locate the sealing rings in the cylinders.
Coat the pistons with the special grease and insert them in the cylinders.
Pack the inside of the dust caps with the special grease, fit the caps and locate the retaining rings.



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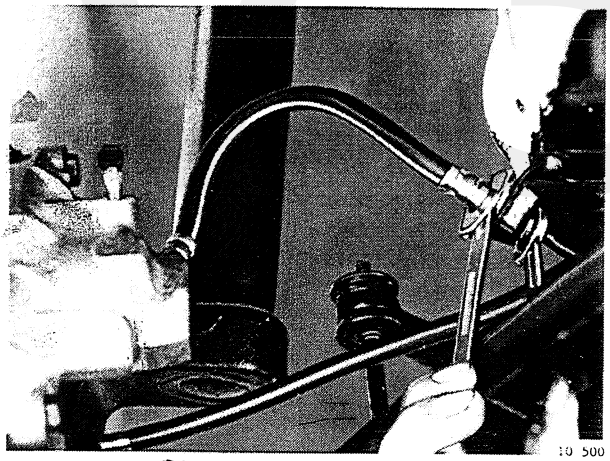
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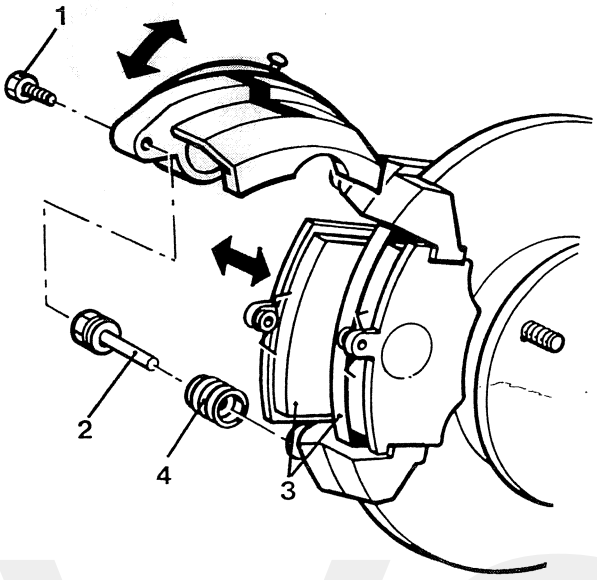
B4

Fit caliper

Screw the caliper finger-tight to the brake hose.
Fit the caliper on the stub axle.
Tighten to **68 Nm** (6.8 kgm).
Note: the caliper can be tightened by means of either two bolts with lock plate, or two self-locking bolts **without** lock plate.
On assembly, a new lock plate or new self-locking bolts must always be used.
Lock the bolts with the lock plate (if used).
Secure the brake hose to the caliper.
Tightening torque: 14 Nm (1.4 kgm).
When doing this make sure that the brake hose is not twisted. The brake hose is provided with a white line which serves for a visual check for correct fitting.
If necessary, correct the position at the other end of the brake hose.
Remove the hose clamp **2901.**

Fit the brake pads (see page 6, A1).
Bleed the brake system (see page 24, O1 and O2) and check for leakage and proper working.
Fit the wheel.
Tightening torque: 115 Nm (11.5 kgm).

C. BRAKE PAD RENEWAL (FROM MODEL YEAR 1980)



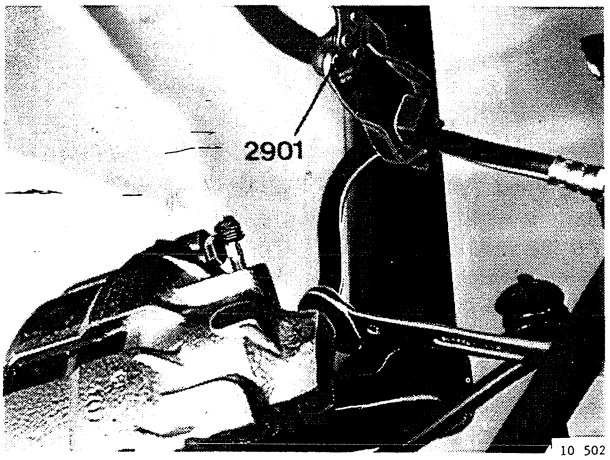
10 501

C1

Renew brake pads

Remove the wheel.
Remove the bolt (1) from the bottom caliper retaining pin (2).
Swing the caliper upwards and remove the pads.
Check the thickness of the pads and check for scoring (min. lining thickness **2 mm**).
Check that the retaining pins move easily and grease if necessary with Wolfrakote Top Paste (Part No. 3277830-0).
Check the retaining pin dust caps (4) for cracks and renew if necessary.
Press the piston back fully into the caliper. (Make sure that no brake fluid overflows from the master cylinder and that the rubber piston dust covers are not damaged.)
Fit the brake pads and swing down the caliper. Secure the lower caliper retaining pin to the caliper with a new self-locking bolt.
Tighten to **33 Nm** (3.3 kgm).
Check that all dust covers are properly seated.
Fit the wheel.
Tightening torque: 115 Nm (11.5 kgm).

D. CALIPER OVERHAUL

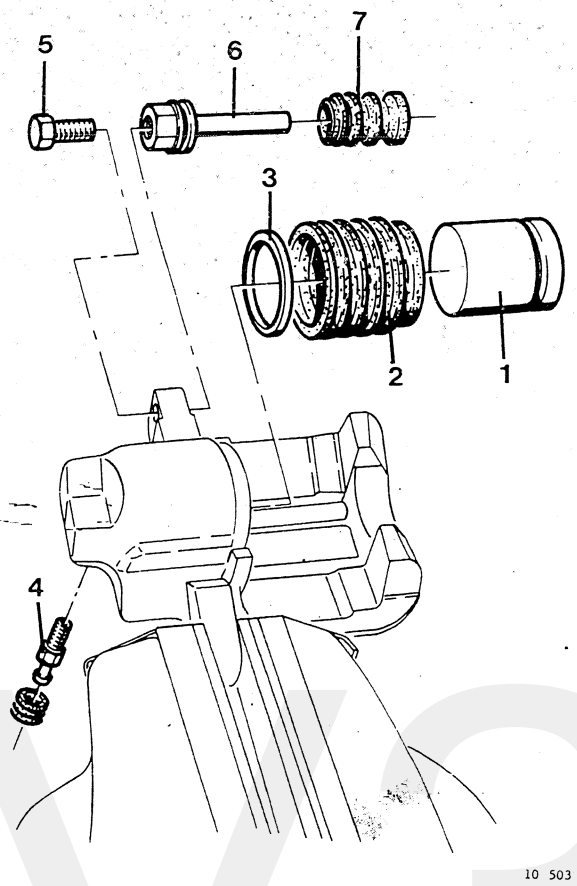


10 502

D1

Remove caliper

Remove the brake pads (see page 9. C1).
Pinch off the brake hose with hose clamp **2901.**
Unscrew the brake hose at the caliper one turn. Pull the caliper sideways out of the caliper body.
Unscrew the caliper from the brake hose.
Drain the brake fluid from the caliper.
Remove the bottom retaining pin from the caliper body.



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D2

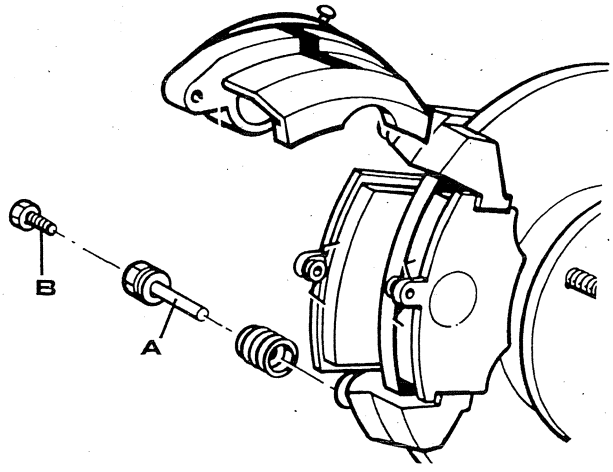
Disassemble and check caliper

Remove the piston (1) with compressed air.
Remove the dust cover (2).
Check the dust cover for cracks; renew if necessary.
Remove the sealing ring (3) with a nylon pin.
Remove the bleedscrew (4).
Remove the bolt (5) from the top retaining pin (6) and withdraw the retaining pin with dust cover (7) from the caliper.
Clean the parts with methylated spirit and check them for wear, damage and rust; renew if necessary.

D3

Assemble caliper

Coat the inside of the cylinder, the piston and the new sealing ring with the special grease from the service kit.
Fit the bleedscrew (4).
Fit the sealing ring (3).
Pack the inside of the dust cover (2) with the special grease and fit it together with the piston (1).
Press the piston into the caliper and locate the dust cover in the piston groove.
Secure the top retaining pin in the caliper with a new self-locking bolt (5).
Tighten to **33 Nm** (3.3 kgm).
Locate the dust cover (7) over the retaining pin (6) and smear the retaining pin with Wolfrakote Top Paste (Part No. 3277830-0).

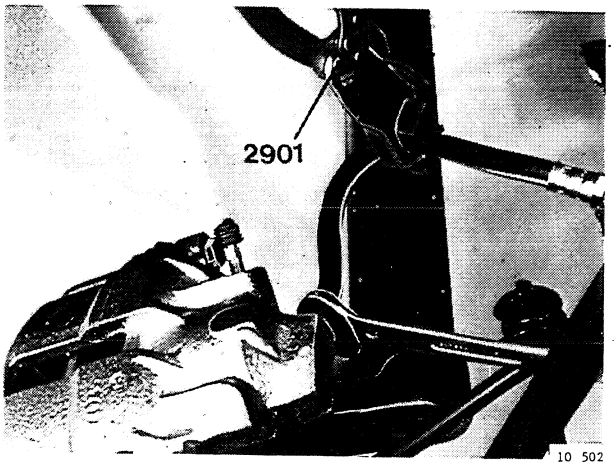


10 504

D4

Fit caliper

Smear the bottom retaining pin (1) with Wolfrakote Top Paste (Part No. 3277830-0) and insert it in the caliper body.
Fit the dust cover.
Screw the caliper finger-tight to the brake hose and fit the caliper.
Locate the dust cover in the caliper body groove.
Fit the brake pads.
Secure the bottom retaining pin in the caliper with a new self-locking bolt (2).
Tighten to **33 Nm** (3.3 kgm).



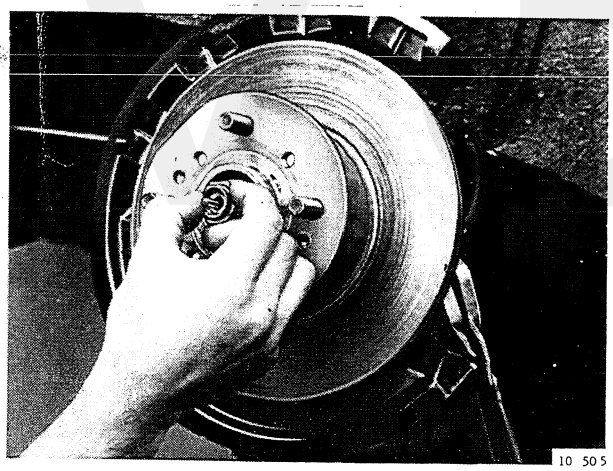
Secure the brake hose to the caliper.
Tightening torque: 14 Nm (1.4 kgm).
When doing this make sure that the brake hose is not twisted. The brake hose is provided with a white line which serves as a visual check for correct fitting.
If necessary, correct the position at the other end of the brake hose.
Remove the hose clamp **2901.**
Bleed the brake system (see page 24, O1 and O2) and check for leakage and proper working.
Check that all dust covers are properly seated.
Fit the wheel.
Tightening torque: 115 Nm (11.5 kgm).

E. CHECKING AND OVERHAULING OR RENEWING THE BRAKE DISC

E1

Check brake disc

Check the thickness of the brake disc and check for warp and scoring (see Specifications for the applicable minimum and maximum values).
If any one of these conditions is not satisfied, the brake disc must be reconditioned or renewed.



E2

Remove brake disc and hub assembly

Unscrew the caliper retaining bolts.
Remove the caliper.
Note: never leave the caliper suspended from the brake hose.
Remove the grease cap and lock nut.
Remove the hub with disc from the stub axle end.
When doing this watch out for the washer and the front bearing, which can fall out of the hub.
Clean the stub axle end, washer and bearing.

E3

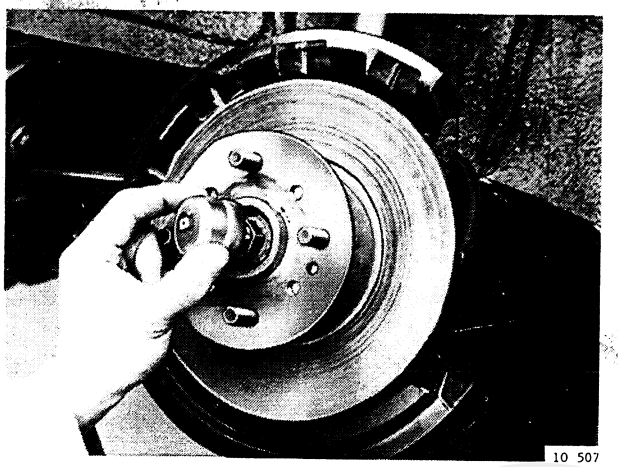
Renew brake disc

Remove the retaining bolts and tap the hub off the disc with a plastic-tip hammer.
Clean the mating edge.
Locate the new disc on the hub.
Tighten to **47 Nm** (4.7 kgm).

E4

Fit brake disc and hub assembly

Locate the hub with disc over the stub axle end.
Pack the front bearing with wheel bearing grease (Part No. 1212388-1).
Fit the bearing.
Locate the washer and fit a new lock nut.
Fit the caliper (see page 8, B4 up to model year 1980, or page 10, D4 for cars from model year 1980).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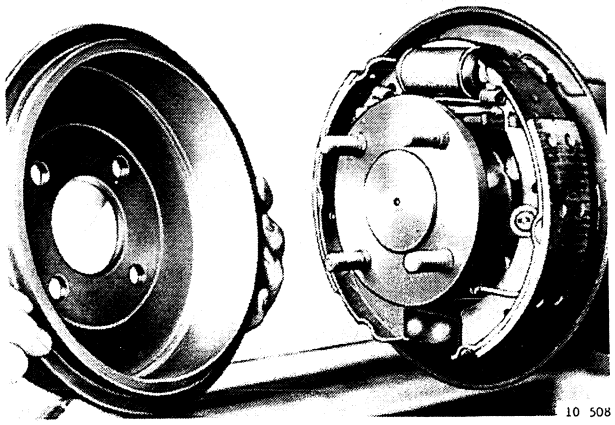
E5

Adjust front wheel bearings

Fit the lock nut.
Tightening torque: 52 Nm (5.2 kgm).
Slacken the lock nut 90°.
Stake the nut.
Fit the grease cap.

F. DRUM BRAKE OVERHAUL (B14)


10 508

F1

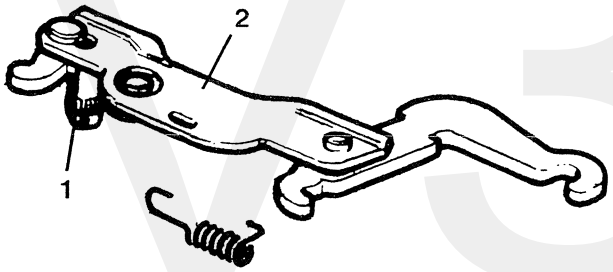
Remove brake drum

Remove the wheel.
Jerk the brake drum free from the mating edge.
If necessary: slacken the handbrake and - again if necessary - remove the nylon stop.

F2

Check and overhaul brake drum

Clean the brake drum.
Check the brake drum for scoring; recondition if necessary (see Specifications for max. drum diameter and max. reconditioned diameter).



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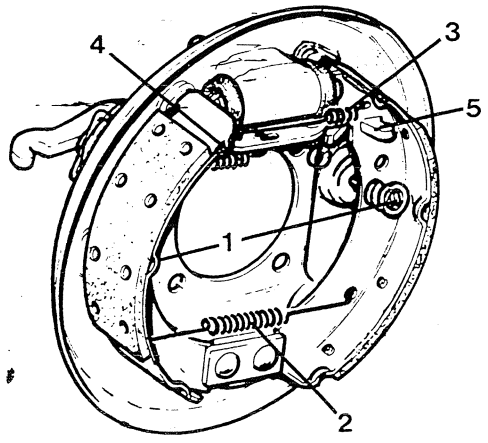
F3

Check brake linings, wheel cylinder and auto-adjust mechanism

Clean the brake shoes and backplate with a brush.
Check the thickness of the linings and check for scoring and glazing.
Check the wheel cylinder for leakage (also look under the dust caps) and for seized pistons.
Press the brake shoes outwards and check that the quadrant lever (1) of the auto-adjust mechanism moves easily.



10 510

F4

Remove brake shoes

Remove the shoe hold-down spring assembly (1).
Prise both shoes from the lower abutment plate and remove the lower spring (2).
Lift the leading shoe out of the piston groove and over the tip of the quadrant lever.
Remove the upper spring (3).
Remove the short spring (4) between the handbrake lever (5) and the brake shoe.
Remove the trailing shoe.
Clean the backplate with a brush.

F5

Overhaul or renew wheel cylinder

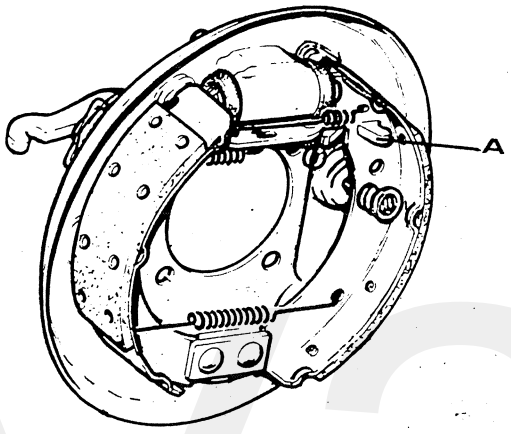
(See page 18, H1-H3)

F6

Lubricate auto-adjust mechanism for ease of movement, or renew

On assembly, lubricate the self-adjusting mechanism with Molykote BR 25 grease (Part No. 1161079-7).

F7



10 510

Fit brake shoes

Smear the contact surfaces of the brake shoes on the backplate (6x) with Wolfrakote Top Paste (Part No. 3277830-0).
Locate the trailing shoe over the handbrake pawl with the top end engaging the piston groove, and in the lower fulcrum point.
Secure the brake shoe with the hold-down spring assembly.
Fit the short spring.
Fit the leading shoe and hook the upper spring into both shoes.
Locate the leading shoe over the handbrake pawl (A) with the top edge engaging the piston groove.
Fit the lower spring.
Locate the leading shoe in the lower fulcrum point.
Insert the pin in the leading shoe web and secure the shoe with the remainder of the hold-down spring assembly.

F8

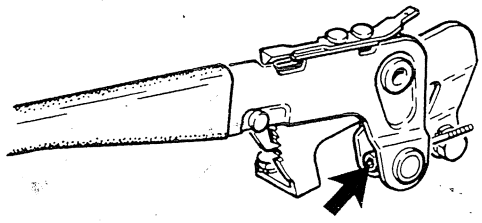
Fit brake drum

Turn the auto-adjust mechanism to its lowest position.
Centre the brake shoes and fit the drum.
If necessary press the handbrake lever away from the backplate.
Insert the nylon stop (if removed).

F9

Bleed brake system (see page 24, O1 and O2)

After bleeding the system pump the brake pedal a few times so that the auto-adjust mechanism assumes the starting position.
Fit the wheel.
Tightening torque: 115 Nm (11.5 kgm).



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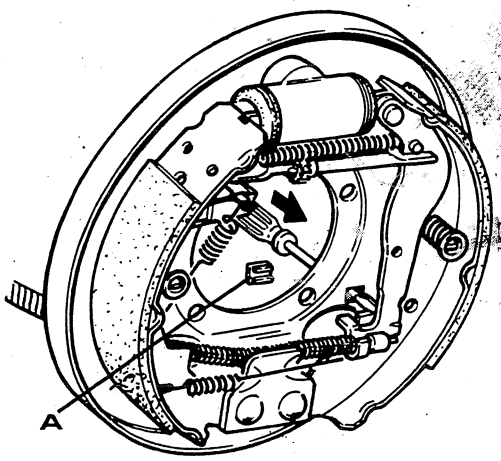
F10

Adjust handbrake

Adjust the handbrake with the adjusting nut on the handbrake lever inside the car (free travel is 3 or 4 notches on the rack).
Check the proper working of the handbrake.

G. DRUM BRAKE OVERHAUL (B19)



10 512

G1

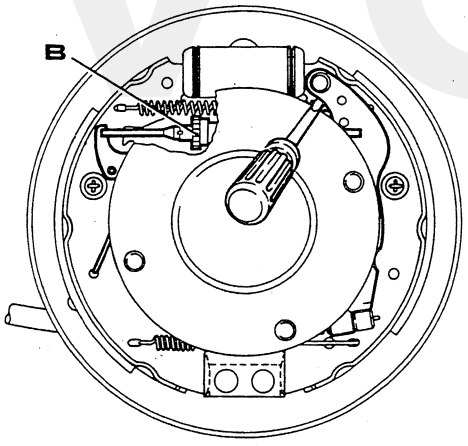
Remove brake drum

Remove the wheel.
Remove the brake drum.
If the brake drum will not release: slacken the handbrake and remove the plastic plug (A) from the rear of the backplate.
Insert a screwdriver in the hole now uncovered and press firmly against the rear of the handbrake lever until it slips over the brake shoe.
The brake drum can now be removed.

G2

Check and overhaul brake drum

Clean the brake drum.
Check the brake drum for scoring; recondition if necessary. (See Specifications for max. drum diameter and max. reconditioned diameter).

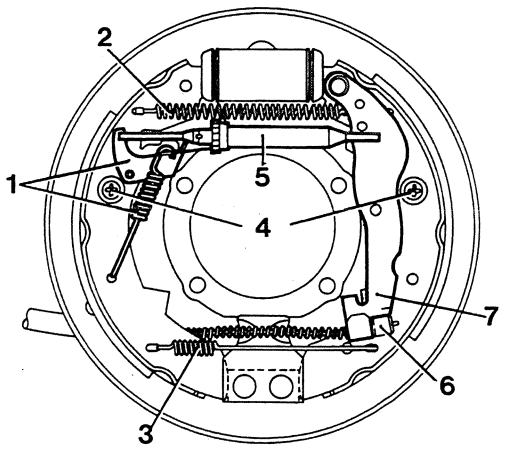


10 513

G3

Check brake linings, wheel cylinder and auto-adjust mechanism

Clean the brake shoes and backplate with a brush.
Check the thickness of the linings and check for scoring and glazing.
Check the wheel cylinder for leakage (also look under the dust caps) and seized pistons.
Check the auto-adjust mechanism for ease of movement: support a screwdriver on the axle shaft and press the trailing shoe outwards; the adjuster assembly gear (B) on the push rod **must** then change its position.



10 514

G4

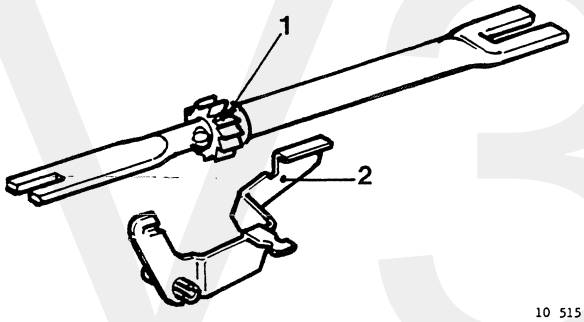
Remove brake shoes

Remove the spring and carrier (1) from the auto-adjust mechanism and reset the mechanism.
Remove the top and bottom spring (2 and 3).
Remove the hold-down spring assembly (4) from the leading shoe.
Remove the leading shoe together with the push rod (5) from the backplate.
Remove the hold-down spring assembly from the trailing shoe and remove the shoe from the backplate.
Lift the handbrake cable (6) out of the handbrake lever (7) of the trailing shoe.
Clean the backplate with a brush.

G5

Overhaul or renew wheel cylinder

(See page 18, H1-H3)

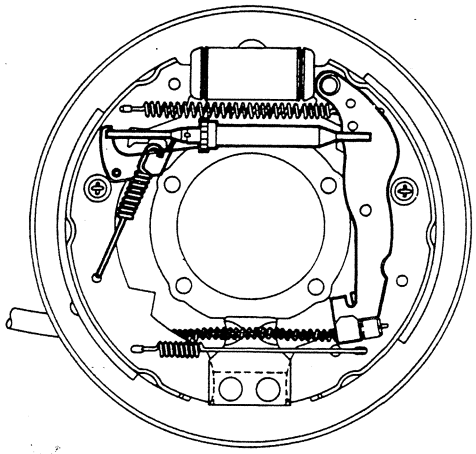


10 515

G6

Overhaul or renew auto-adjust mechanism

Check the gear (1) of the auto-adjust mechanism; if necessary, lubricate for ease of movement or renew.
Check the adjuster carrier (2); renew if necessary. On assembly, lubricate the auto-adjust mechanism with Molykote BR 25 grease (Part No. 1161079-7).


10 516

G7

Fit brake shoes

Smear the contact surfaces of the brake shoes on the backplate (6x) with Wolfrakote Top Paste (Part No. 3277830-0).
Slide the handbrake cable spring part-way back and fit the cable in the handbrake lever on the trailing shoe.
Fit the trailing shoe.
Secure the shoe with the hold-down spring assembly.
Fit the leading shoe and, at the same time, the push rod (the gear on the push rod must be screwed back as far as the stop).
Insert the pin in the leading shoe web and secure the shoe with the remainder of the hold-down spring assembly.
Fit the upper and lower springs.
Fit the carrier and the spring of the auto-adjust mechanism.

G8

Fit brake drum

Centre the brake shoes and fit the brake drum.
Insert the plastic plug in the rear of the backplate (if removed).

G9

Bleed brake system

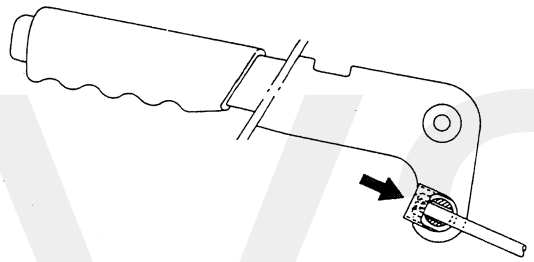
(See page 24, O1 and O2)

After bleeding the brake system pump the brake pedal a few times so that the auto-adjust mechanism assumes its starting position.
Fit the wheel.
Tightening torque: 115 Nm (11.5 kgm).

G10

Adjust handbrake

Adjust the handbrake with the adjusting bolt on the handbrake lever inside the car (free travel is 5 to 7 notches on the rack).
Check the proper working of the handbrake.



10 518

H. WHEEL CYLINDER OVERHAUL OR RENEWAL

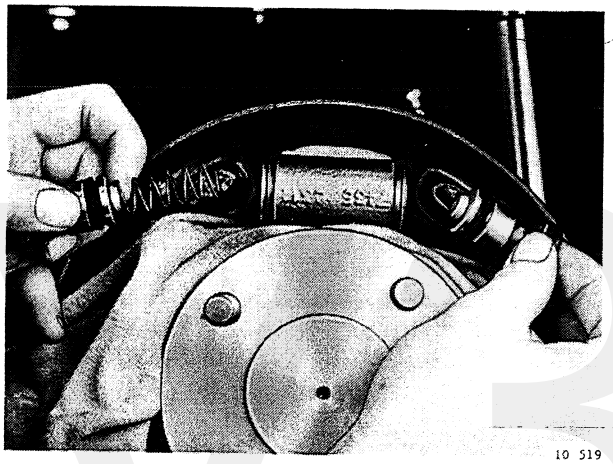
Note: the jobs described here are identical both for the B14 and the B19.

H1

Remove brake shoes

See page 13, F4 for B14, and page 16, G4 for B19.

H2

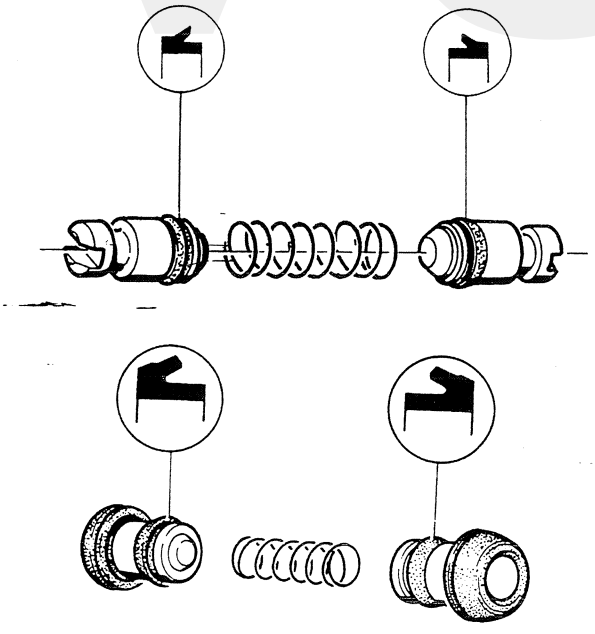


10 519

Disassemble and check wheel cylinder

Pinch off the brake hose at the right-hand rear wheel with hose clamp **2901.**
Take the pistons out of the cylinder and remove the spring.
Clean the inside walls of the cylinder and check for scoring and rust.
Open the bleedscrew and check it for ease of movement (at left-hand rear wheel).
Remove the retaining clips, dust covers and seals from both pistons.
Clean the pistons and check for scoring and rust.

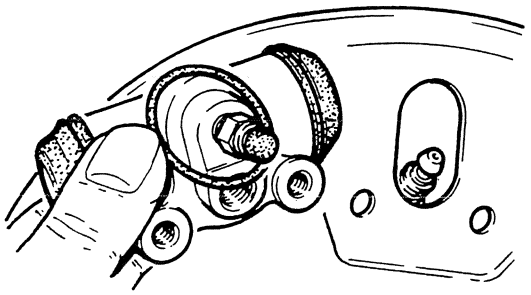
H3



10 520

Assemble wheel cylinder

Note: when assembling the wheel cylinder new piston seals must always be fitted.
Coat the inside walls of the wheel cylinder, the new piston seals, the pistons and the inside of the dust covers with the special grease from the service kit.
Fit the new piston seals and the dust covers on the pistons as shown in the drawings.
Insert one piston in the wheel cylinder with a twisting motion.
Fit the spring in the wheel cylinder.
Insert the second piston in the wheel cylinder with a twisting motion.
Close the bleedscrew.
Fit the dust covers and retaining clips on the wheel cylinder.



10 521

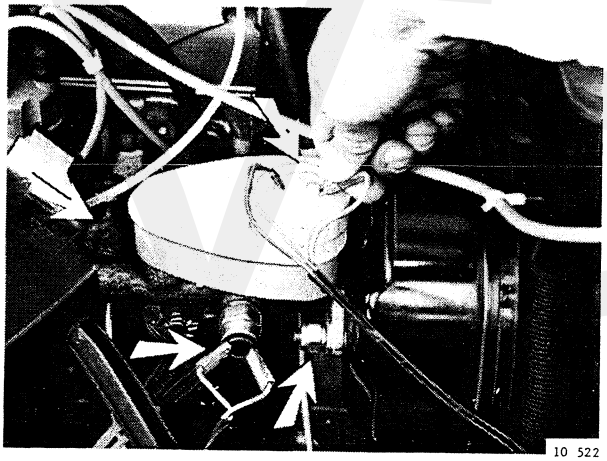
H4

Renew wheel cylinder

Disconnect the brake line(s) from the cylinder.
Remove the two retaining bolts and separate the wheel cylinder from the backplate.
Remove the sealing ring.
Fit a new sealing ring.
Fit the cylinder and tighten the brake line(s) finger-tight.
Tighten both retaining bolts.
Tightening torque: B14 - 6 Nm (0.6 kgm)
B19 - 8 Nm (0.8 kgm)
Tighten the brake line(s).
Tightening torque: 14 Nm (1.4 kgm).

GROUP 52 HYDRAULIC SYSTEM

J. MASTER CYLINDER REMOVAL/INSTALLATION

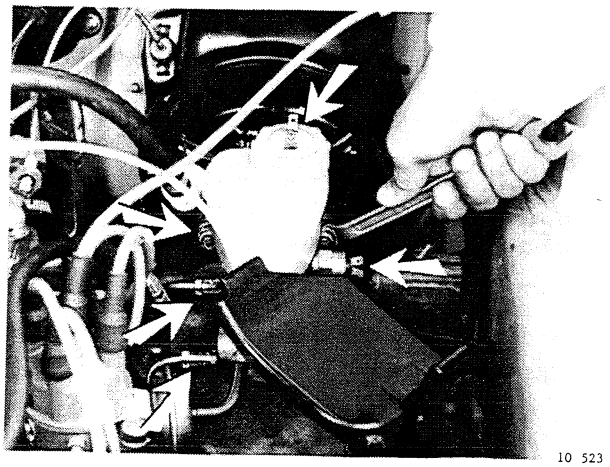


10 522

J1

Remove master cylinder

Take out the spare wheel.
Unplug the electrical connections from the high-pressure switch (only on AT cars after model year 1978), from the brake light switch (only up to chassis number 321597) and from the brake fluid level switch.
Release both brake lines and collect the fluid.
Remove both retaining nuts and take out the master cylinder.



10 523

J2

Install master cylinder

Locate the master cylinder on the brake servo and tighten the retaining nuts.
Tightening torque: 24 Nm (2.4 kgm).
Reconnect both brake lines.
Tightening torque: 14 Nm (1.4 kgm).
Connect up the wiring for the high-pressure switch, the brake light switch (if fitted) and the brake fluid level switch.
Bleed the brake system (see page 24, O1 and O2) and check for leakage and proper working.
Replace the spare wheel (B14 only).

K. MASTER CYLINDER OVERHAUL (UP TO CHASSIS NO. 451743)

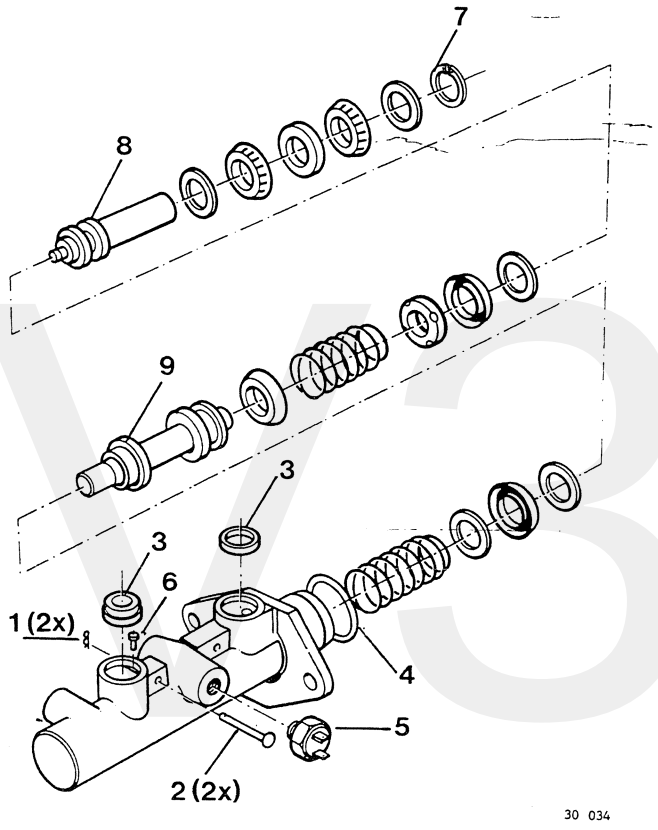
K1

Remove master cylinder

(See page 19, J1)

K2

Disassemble master cylinder

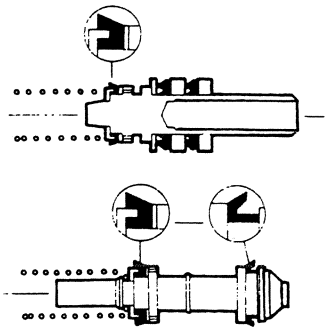


Remove the hairpin springs (1) and the two pins (2).
Separate the brake fluid reservoir from the master cylinder.
Remove the rubber baffle and seal (3) for the brake fluid reservoir.
Remove the sealing ring (4) from the mating surface for the brake servo.
Remove the high-pressure switch (5) and the brake light switch (if fitted).
Press in the plunger and remove the stop pin (6).
Remove the circlip (7).
Take the primary plunger (8) out of the master cylinder.
Remove the secondary plunger (9) by tapping the master cylinder on a block of wood.

K3

Check and renew parts

Clean the master cylinder and the brake fluid reservoir with methylated spirit.
Check the master cylinder and plungers for scoring and rust.
Strip the parts from the plungers.
Clean both plungers with methylated spirit.
Reassemble both plungers with new parts from the service kit (see the cross-section drawing of the plungers).
Pay particular attention to the correct position of the plunger seals.



10 524

K4

Assemble master cylinder

Coat the inside walls of the master cylinder and both plungers with the special grease supplied with the service kit.
Insert the secondary plunger in the master cylinder with a twisting motion.
Insert the primary plunger in the master cylinder with a twisting motion.
Press back the primary plunger and fit the circlip.
Keep the primary plunger pressed back and insert the stop pin.
Fit the high-pressure switch and brake light switch (if fitted).
Tightening torque: 19 Nm (1.9 kgm).
Fit a new sealing ring for the brake servo.

K5

Install master cylinder

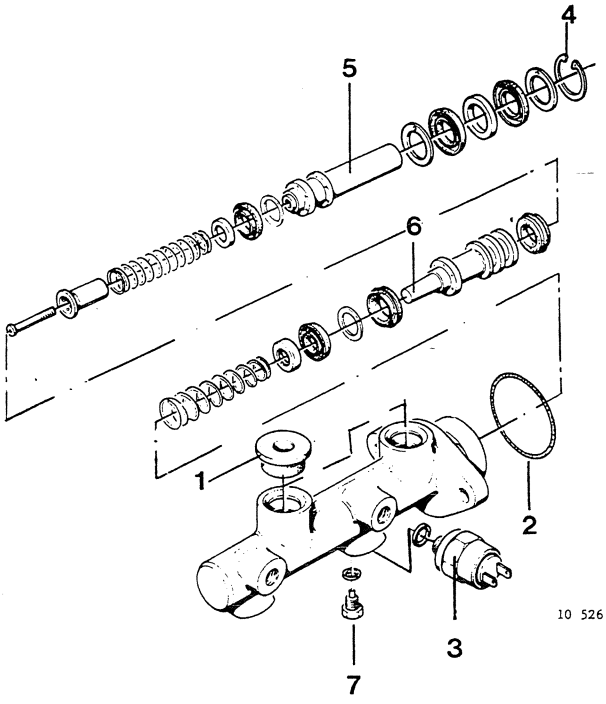
(See page 19, J2)

L. MASTER CYLINDER OVERHAUL (FROM CHASSIS NO. 451743)

L1

Remove master cylinder

(See page 19, J1)

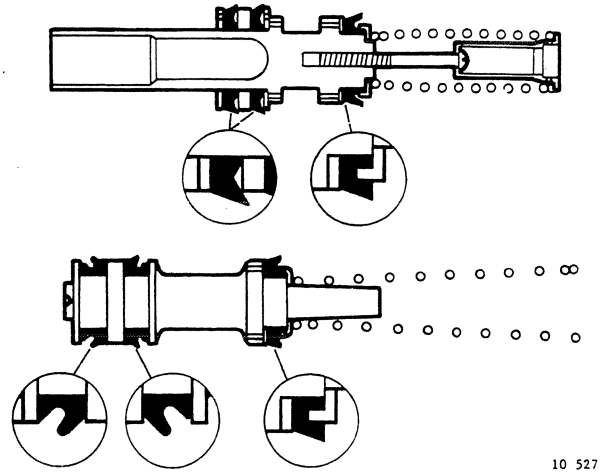


10 526

L2

Disassemble master cylinder

Pull the brake fluid reservoir out of the t[illegible] rubber baffles (1).
Remove the sealing ring (2) from th[illegible]nating surface for the brake servo.
Remove the high-pressure swi[illegible] (3) (only on cars with AT).
Remove the circlip (4). [illegible] out of the master cylinder.
Take the primary plunge[illegible]
Press back the seconda[illegible]unger (6), remove the stop screw (7) and then re[illegible]the secondary plunger by tapping the master [illegible]er on a block of wood.

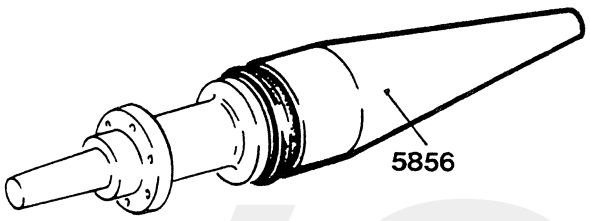


10 527

L3

Check and renew parts

Clean the master cylinder and the brake fluid reservoir with methylated spirit.
Check the master cylinder and plungers for scoring and rust.
Strip the parts from the plungers.
Clean both plungers with methylated spirit.
Reassemble both plungers with new parts from the service kit (see cross-section drawing of the plungers).
Use mandrel **5856** to locate the middle seal.
Pay particular attention to the correct position of the plunger seals.



10 496

L4

Assemble master cylinder

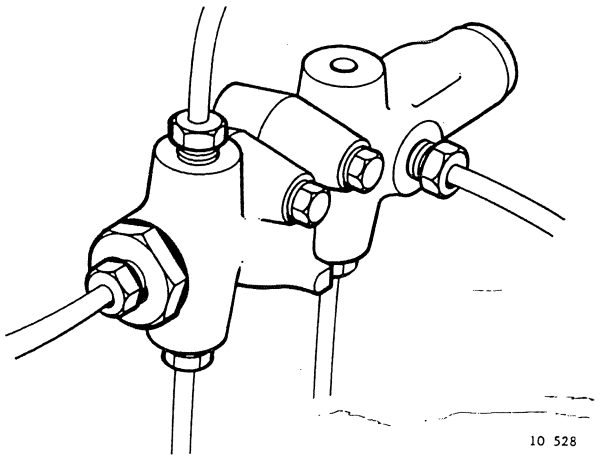
Coat the inside walls of the master cylinder and both plungers with the special grease supplied with the service kit.
Insert the secondary plunger in the master cylinder with a twisting motion.
Press back the plunger and insert the stop screw.
Insert the primary plunger in the master cylinder with a twisting motion.
Press back the plunger and fit the circlip.
Fit two new rubber baffles for the brake fluid reservoir and press the reservoir into the baffles.
Fit the hydraulic pressure switch (if fitted).
Tightening torque: 19 Nm (1.9 kgm).
Fit a new sealing ring for the brake servo.

L5

Install master cylinder

(See page 19, J2)

M. RENEWAL OF PRESSURE-CONSCIOUS REDUCING VALVE

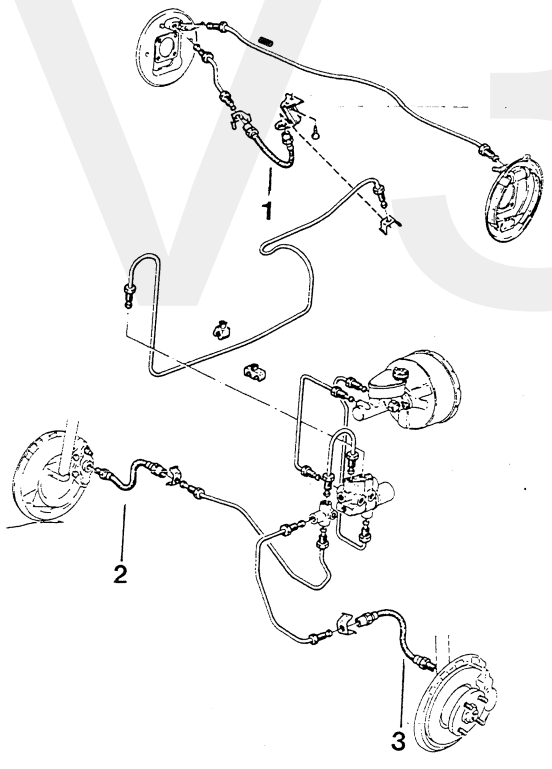


M1

Renew pressure-conscious reducing valve

Disconnect all lines from the reducing valve (collect the brake fluid).
Remove the two retaining bolts and take out the reducing valve.
Fit the new reducing valve and tighten the retaining bolts finger-tight.
Tighten all brake lines finger-tight.
Final-tighten the retaining bolts first and then the brake lines.
Brake line tightening torque: 14 Nm (1.4 kgm).
Bleed the brake system (see page 24, O1 and O2).

N. RENEWAL OF BRAKE HOSES AND BRAKE LINES



N1

Fit new brake hoses

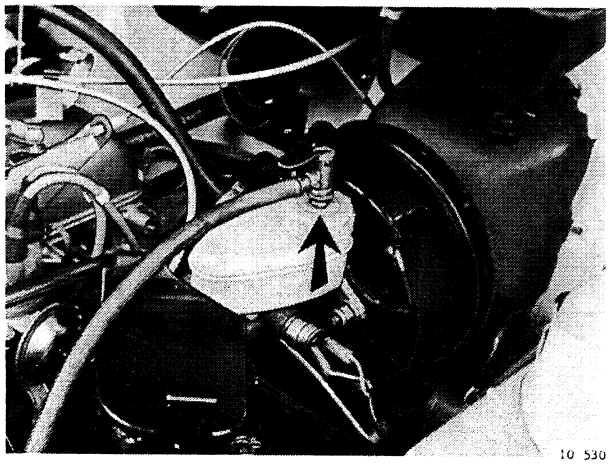
There are white lines on the brake hoses (1, 2 and 3). These lines serve for a visual check on the correct fitting of the brake hoses. If the brake hoses are incorrectly fitted then the white lines will be twisted.
The consequences of incorrect fitting are:
— the brake hoses describe an incorrect curve, causing the danger of fouling
— the brake hoses are twisted, which can result in brake hose fracture.
Brake hose tightening torque: 14 Nm (1.4 kgm).

N2

Fit new brake lines

When fitting new brake lines these must first be located (and possibly bent to shape) and then blown through with compressed air to remove any dirt.
Only then may the lines be connected up and tightened.
Brake line tightening torque: 14 Nm (1.4 kgm).
When new brake hoses and/or brake lines have been fitted the brake system must be bled (see page 24, O1 and O2).

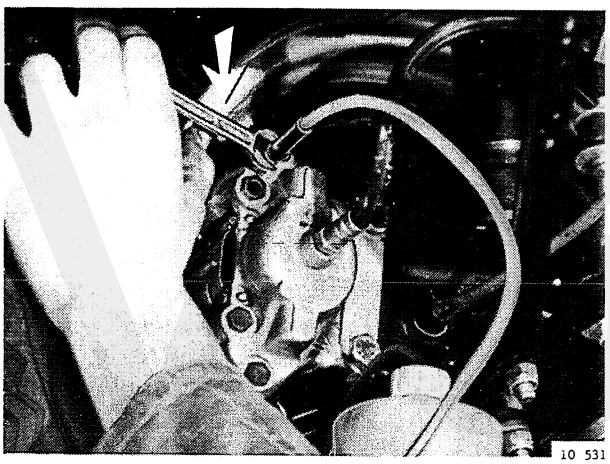
O. BLEEDING THE BRAKE SYSTEM


10 530

O1

Connect up bleed apparatus to brake fluid reservoir

Pump the brake pedal a few times to remove any depression which might be present in the brake fluid reservoir.
Fill the bleed apparatus and bring it up to pressure.


10 531

O2

Bleed the brakes

Work sequence:
1. Both rear wheels (bleed at left-hand rear wheel)
2. Right-hand front wheel
3. Left-hand front wheel.

Check the brake system for leakage and for proper braking action.

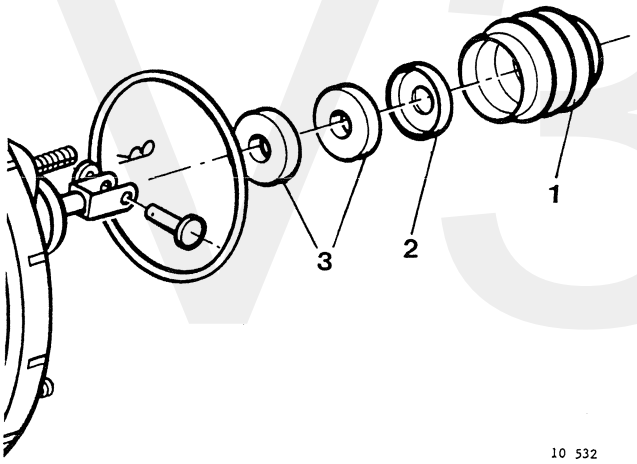
Note: under normal conditions the brake fluid should be changed every three years or every 80,000 km.
If the car is driven in tough conditions, however, such as in mountainous or dusty areas, or if a lot of driving is done with the car towing a caravan or trailer, the brake fluid must be changed each year.
This also applies to an extremely humid or warm climate.

P. CHECKING AND REPAIRING THE BRAKE SERVO

P1

Check brake servo

Pump the brake pedal a few times so that all depression is forced out of the brake servo.
Then keep the brake pedal pressed down and start the engine. If the brake pedal moves down a little more, the brake servo is working properly.
A slow-reacting brake servo, or one which doesn't work at all, can be the result of clogged air filter elements; in that case these must be renewed (this can also be done without removing the brake servo from the car, see P2 below).
If the brake servo doesn't work after the engine has been switched off, this can be the result of a badly working non-return valve.
In this case a new non-return valve must be fitted (see P3 below).

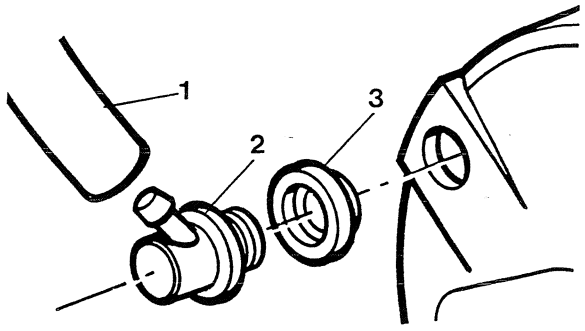


10 532

P2

Renew air filter elements (with brake servo in car)

Slide the dust cover (1), the cap (2) and the air filter elements (3) to the rear.
If necessary, cut through the air filter elements and then remove them.
Fit the new air filter elements (first make an incision in them) and slide them forwards.
Slide the cap and dust cover forwards.

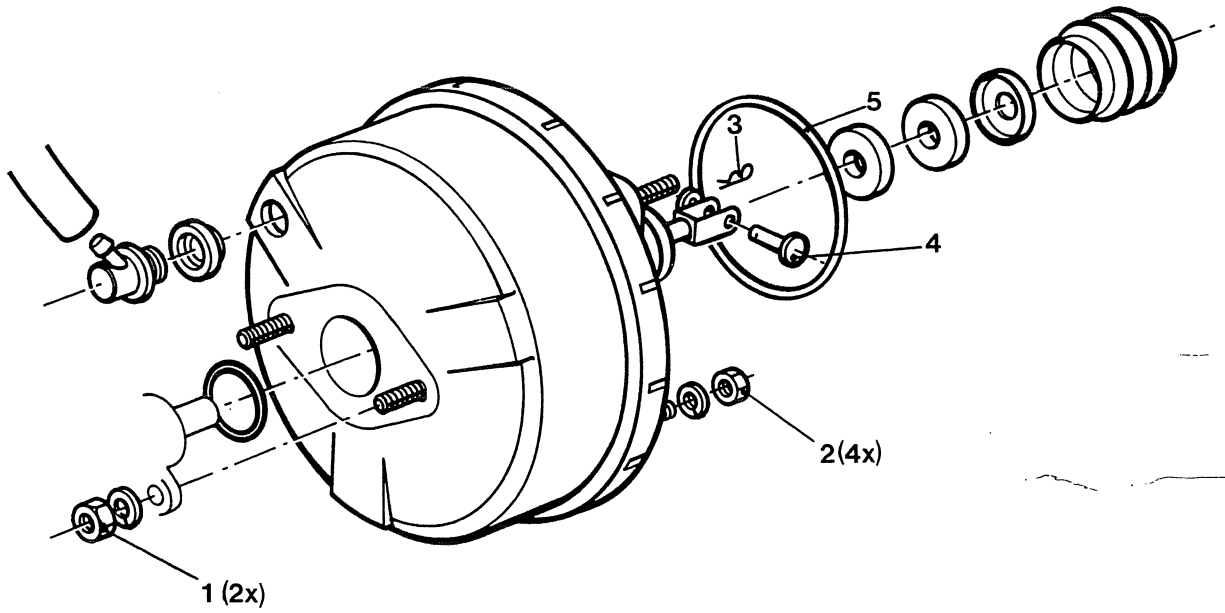


10 532

P3

Renew non-return valve (with brake servo in car)

Disconnect the vacuum hose (1).
Remove the non-return valve (2) with a screwdriver.
Remove the rubber seal (3) for the non-return valve.
Fit a new rubber seal.
Press the new non-return valve into the new seal.
Connect up the vacuum hose (the two hose clips, if present, need no longer be fitted).



10 532

P4

Remove brake servo

Disconnect the negative lead from the battery.
Remove the insulating panel from under the dashboard (B19 only).
Remove the two retaining nuts (1) from the master cylinder.
Pull the master cylinder forwards slightly, so that it is released from the brake servo.
Disconnect the vacuum hose.
Remove the four retaining nuts (2) on the inside of the engine bulkhead.
Remove the hairpin spring (3) and withdraw the clevis pin (4) from the brake pedal/yoke.
Lift out the brake servo.
Remove the dust cover, the cap and the sealing ring (5) (if fitted).

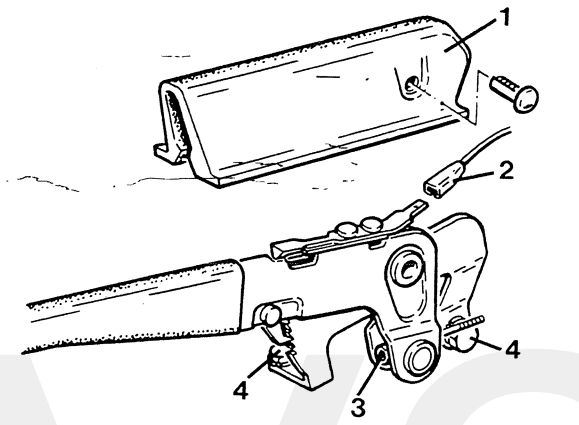
P5

Install brake servo

Fit a new cap, dust cover and sealing ring (if present).
Fit the brake servo.
Tighten the four retaining nuts.
Tightening torque: 13 Nm (1.3 kgm).
Connect up the vacuum hose (the two hose clips, if present, need no longer be fitted).
Insert the (new, if necessary) clevis pin through the yoke of the brake servo and the brake pedal.
Secure the clevis pin with the hairpin spring.
Locate the master cylinder on the brake servo and tighten both retaining nuts.
Fit the insulating panel under the dashboard (B19 only).
Connect the negative lead to the battery.
Check the brake servo for proper braking action.

GROUP 55 HANDBRAKE MECHANISM

Q. HANDBRAKE LEVER OVERHAUL

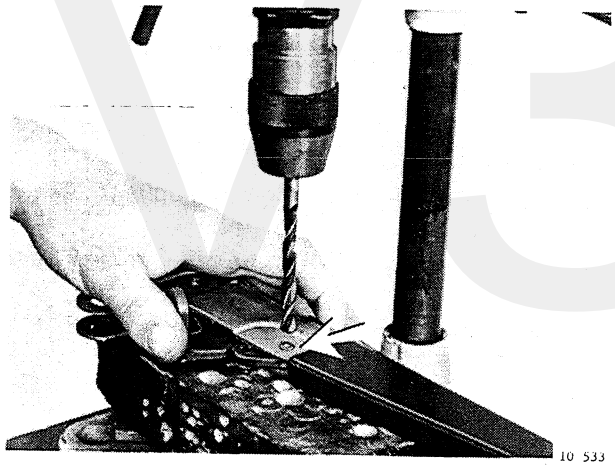


10 511

Q1

Remove handbrake lever

Remove the cover (1) and disconnect the wiring (2).
Remove the adjusting nut (B14) or adjusting bolt (B19) (3).
Remove the two retaining bolts (4).
Take out the handbrake lever assembly.

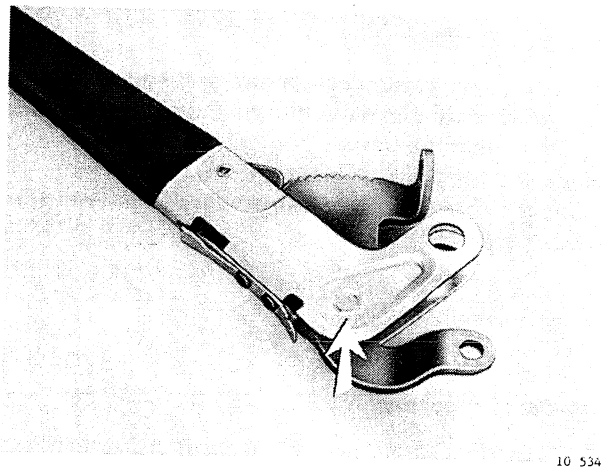


10 533

Q2

Renew push button, operating rod and spring

Drill out and remove the pivot pin.
Remove the push button with operating rod and spring, together with the handbrake pawl.
Fit the push button with operating rod and spring, together with the handbrake pawl, in the lever.
Insert a new pivot pin and secure by clinching with a hammer and a centrepunch.



10 534

Q3

Renew rack

Drill out and remove the pivot pin.
Remove the rack from the lever.
Fit the new rack.
Insert a new pivot pin and secure by clinching with a hammer and a centrepunch.

Q4

Install handbrake lever

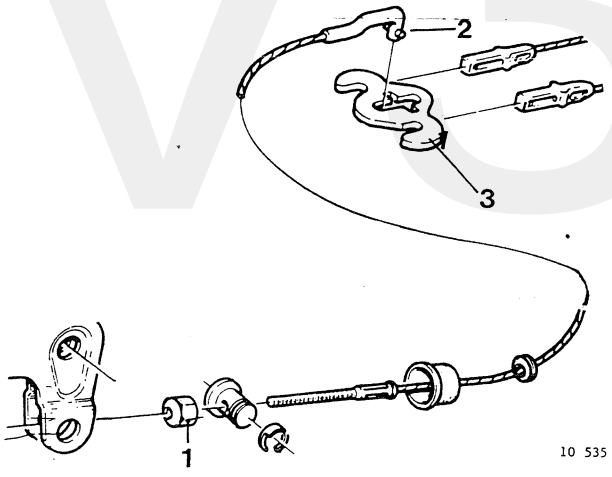
Secure the lever with the two retaining bolts.
Pass the cable end through the lever and fit the adjusting nut (B14).
Insert the adjusting bolt and tighten the S-shaped yoke under the car 2 turns (B19).
Connect up the wiring and fit the cover.

Q5

Adjust handbrake

Adjust the handbrake with the adjusting nut or bolt on the handbrake lever inside the car (free travel is 3 or 4 notches on the rack for the B14 and 5 to 7 notches for the B19).
Check the handbrake for proper working.

R. RENEWING HANDBRAKE CABLES (B14)



Renewing the central handbrake cable

R1

Remove cable

Remove the adjusting nut (1) from the handbrake lever.
Remove the splash guard from under the car (only cars with AT).
Release the cable (2) from the compensator (3).
Remove the cable from under the car.

R2

Fit new cable

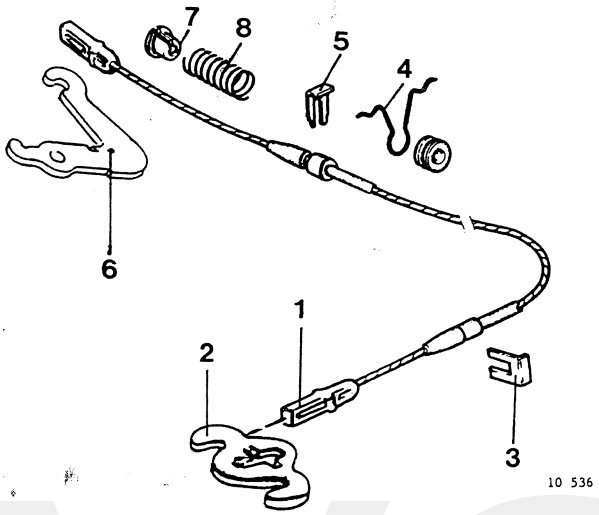
Fit the new cable under the car, grease the cable at the grommet and pass it through the grommet and up to the handbrake lever.
Hook the cable into the compensator.
Pass the cable end through the lever and fit the adjusting nut.

R3

Adjust handbrake

Adjust the handbrake at the handbrake lever inside the car (free travel is 3 or 4 notches on the rack).

S. RENEWING A REAR WHEEL HANDBRAKE CABLE



S1

Remove cable

Slacken the adjusting nut on the handbrake lever as much as possible.
Remove the splash guard from under the car (only cars with AT).
Unhook the cable (1) from the compensator (2).
Release the front retaining clip (3) for the cable jacket.
Pull the cable out of the support.
Release the mounting clip (4) from the rear suspension beam of the final drive and remove it from the cable.
Release the rear retaining clip (5) for the cable jacket.
Pull the cable out of the support on the rear axle.
Release the cable from the lever (6) on the brake backplate and remove the spring retainer (7) and spring (8) from the cable (the lever must be pushed away from the brake backplate).

S2

Fit new cable

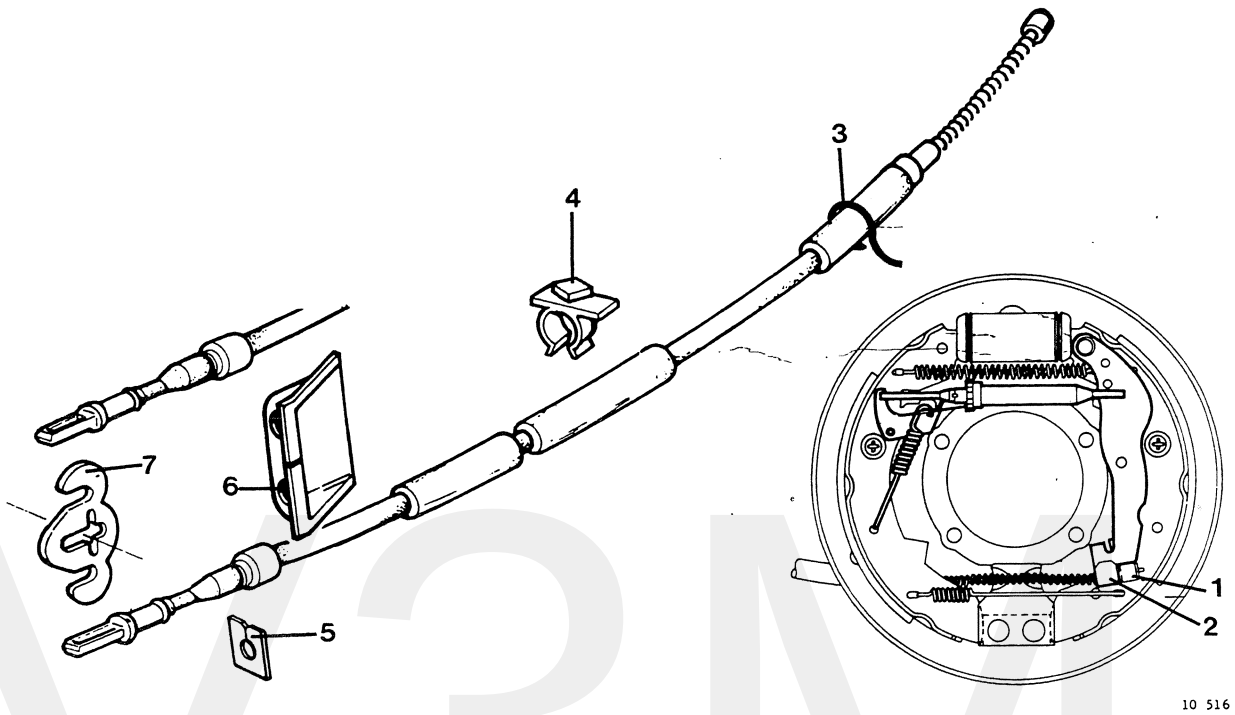
Fit the spring and spring retainer on the new cable and hook the cable into the lever on the brake backplate.
Locate the grommet on the cable.
Press the cable jacket into the support on the rear axle and fit the retaining clip. (Make sure that there is sufficient clearance between the spring and the brake line.)
Press the cable jacket into the front support and fit the retaining clip.
Locate the mounting clip on the cable jacket and hook it into the rear suspension beam.
Hook the cable into the compensator.
Fit the splash guard (only cars with AT).

S3

Adjust handbrake

Adjust the handbrake at the handbrake lever inside the car (free travel is 3 or 4 notches on the rack).

T. RENEWING THE HANDBRAKE CABLE (B19)

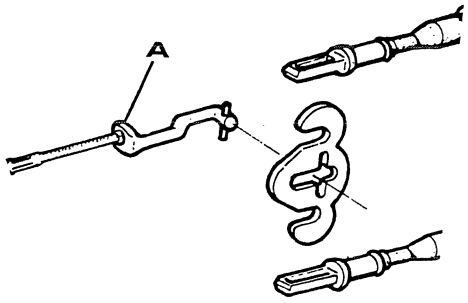


T1

Remove cable

Slacken the handbrake fully by unscrewing the adjusting bolt on the handbrake lever.
Remove the wheel.
Remove the brake drum (see page 15, G1).
Lift the cable (1) out of the lever (2) on the trailing shoe with a pair of adjustable pliers.
Pull the cable out of the backplate.
Release the cable from the support (3) on the rear axle and from the clip (4) on the fuel tank attachment strap.
Remove the retaining clip (5) from the cable jacket (near the body bracket (6)).
Pull the cable to the rear.
Slide the cable out of the groove in the body bracket.
Note: when renewing the left-hand cable the retaining clip must also be removed from the right-hand cable, and the right-hand cable must be removed from the body bracket.
Remove the cable from the compensator (7).

T2



10 516

Fit new cable

Fit the S-shaped yoke (A) and tighten it 2 turns on the adjusting bolt.
Hook the new cable into the compensator.
Slide the cable jacket into the groove in the body bracket.
Fit the retaining clip on the cable jacket (near the body bracket).
Locate the cable in the support on the rear axle and in the clip on the fuel tank attachment strap.
Pass the cable through the backplate.
Fit the cable on the lever.
Fit the brake drum.
Insert the plastic plug in the rear of the backplate (if removed earlier).
Fit the wheel.
Tightening torque: 115 Nm (11.5 kgm).

T3

Adjust handbrake

Adjust the handbrake with the adjusting bolt on the handbrake lever (free travel is 5 to 7 notches on the rack).
Check the handbrake for proper working.

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