

24 Automatic Transmission

4 HP-24/EH

24 00 008	Shift lever – adjust	24-00/1
014	Hydraulic pressure values – check	24-00/2
024	Transmission – remove and install	24-00/6
044	Transmission – exchange	24-00/6
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054	Transmission extension – remove and install / seal	24-11/2
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504	Radial oil seal for torque converter – replace	24-12/2
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24 40 004	Torque converter – remove and install / replace	24-40/1
24 61 500	EH control unit – remove and install / replace	24-61/1

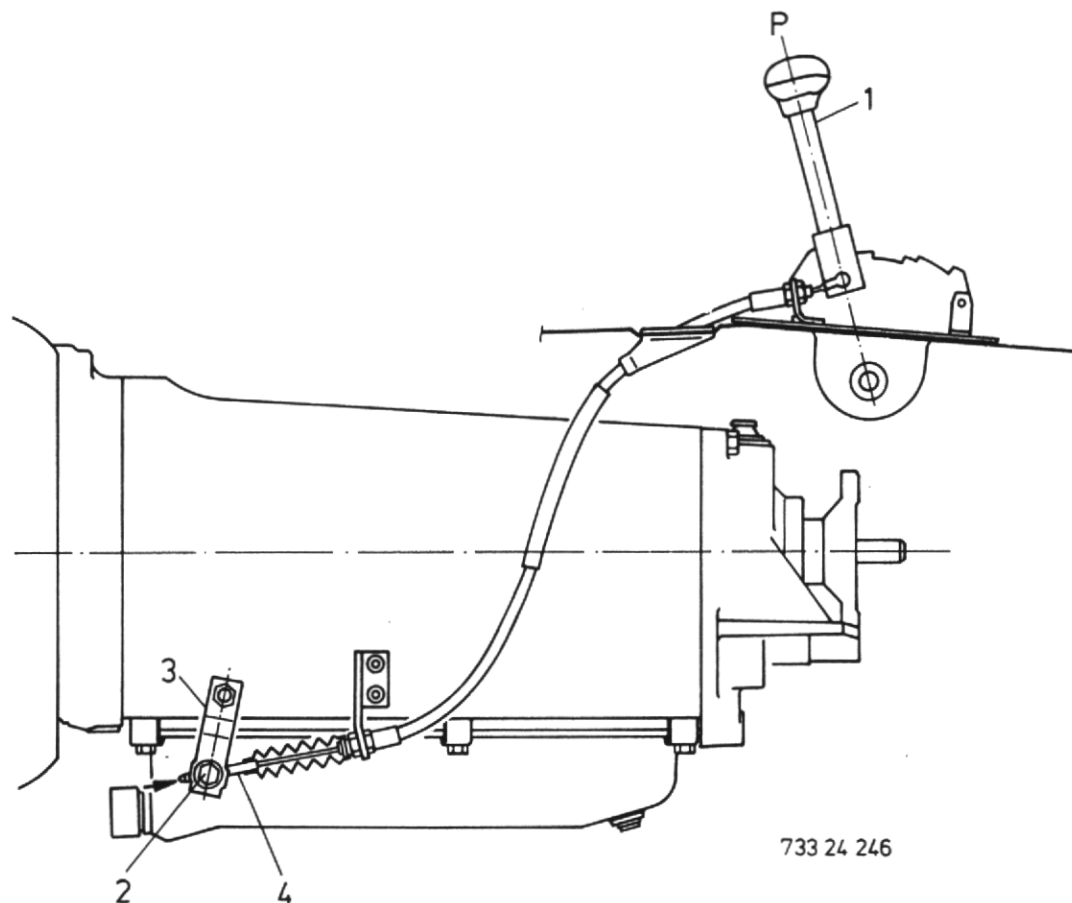
24 Automatic Transmission

Troubleshooting automatic transmission 4 HP 24/EH 24-90/1

Refer to Group 24 on Construction Group Repair Manual microfiche for other jobs.

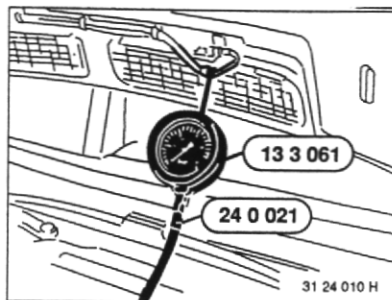
24-00/1

24 00 006 ADJUSTING SELECTOR
LEVER



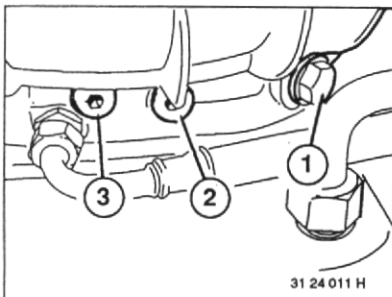
Move selector lever (1) to "P".
Loosen nut (2) — counterhold.
Push lever (3) forward (park position).
Press cable rod (4) opposite forward
direction.
Clamp cable rod (4) with nut (2) —
counterhold.
Tightening torque = 10 ... 12 Nm
(7 ... 9 ft. lbs.).

24-00/2



24 00 014 CHECKING HYDRAULIC PRESSURE VALUES

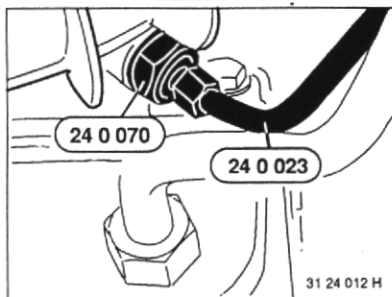
Connect hose 24 0 021 with pressure tester 13 3 061.



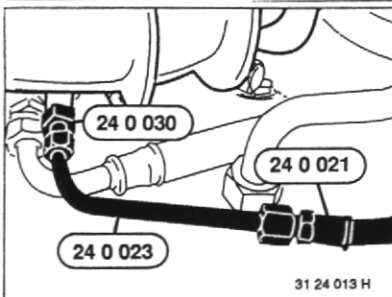
Remove concerned plugs for testing.

- 1 Pump pressure
- 2 Clutch A
- 3 Converter pressure

Installation:
Tightening torque*.



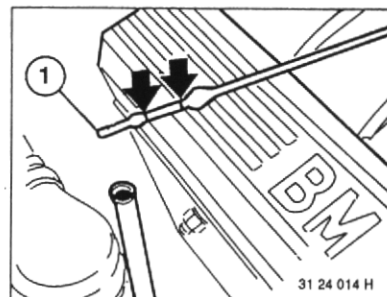
A) Pump Pressure:
Mount Special Tool 24 0 070 with seal on transmission.
Connect Special Tool 24 0 023 in conjunction with hose 24 0 021.



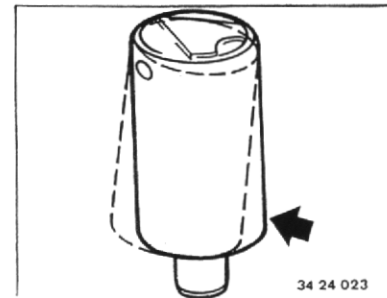
B) Converter Pressure:
Mount Special Tool 24 0 030 on the transmission.
Connect Special Tool 24 0 023 in conjunction with hose 24 0 021.

* See Specifications

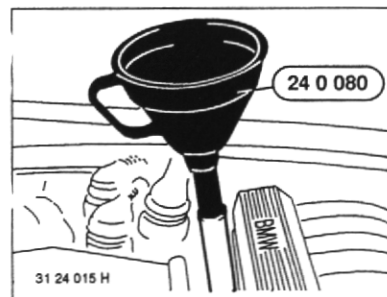
Test:	Pos.	Gear	Speed (rpm)	Pressure in bar (psi)
Pump pressure	D	1st	700 ... 1000	6.0 ... 7.5 (85 ... 107)
	D	2nd/3rd/4th	approx. 4000	4.6 ... 5.8 (65 ... 82)
	R	R	700 ... 1000	11 ... 13 (156 ... 185)
Conv. pressure	D	4th	Converter locked	max. 0.7 (10)



Check/correct oil level with selector lever at P, engine running at idle speed and car parked on level floor. Oil level should not be below ball (1) after a test drive and an oil temperature of approx. 40° C (105° F). Oil level should be between min. and max. marks at an oil temperature of approx. 80° C (175° F). Amount of oil between min. and max. marks = approx. 0.3 ltr. (0.6 pint). Never wipe off oil dipstick with a cloth losing lint.



Important!
Oil Dipstick with Lock:
Oil dipstick can be pulled out only after tilting the grip.

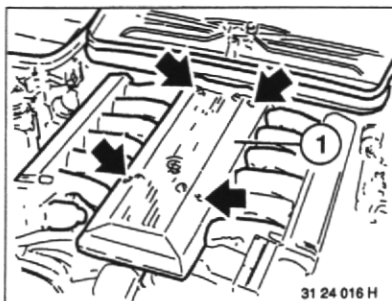


Important!
Oil Level Too High:
Strong foaming, splash loss, high temperature when driving fast, oil lost via vent.

Oil Level Too Low:
Valves rattling, foaming, engine slipping when driving in curves, general operating disturbances.

Only pour in ATF with Special Tool 24 0 080 (funnel).

24-00/3

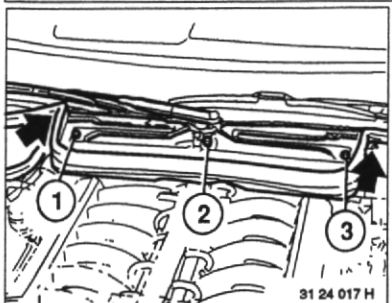


24 00 024 REMOVING AND INSTALLING TRANSMISSION

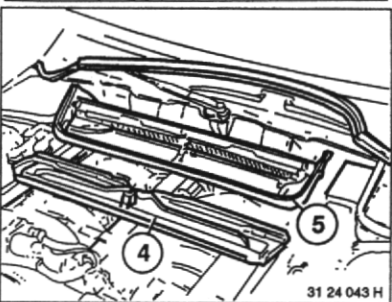
Disconnect ground lead.

Important!
Disconnection erases the fault memories of control units, so that they must first be read with a tester and faults printed if applicable.

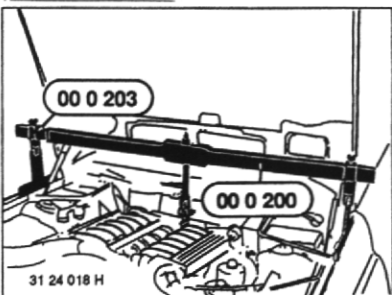
Unscrew cover (1).



Pull off rubber seal partially.
Turn retainers (1 ... 3).
Unscrew left and right bolts.



Lift out panel (4) and microfilter (5).

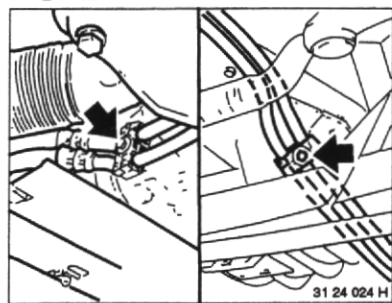


Important!
Support engine with Special Tool 00 0 200 before lowering the transmission to avoid damaging (danger of leaks) heater pipe connections on the engine compartment wall.
Set up Special Tool 00 0 200 in conjunction with 00 0 203 and attach on the rear eye.
Tension the chain.

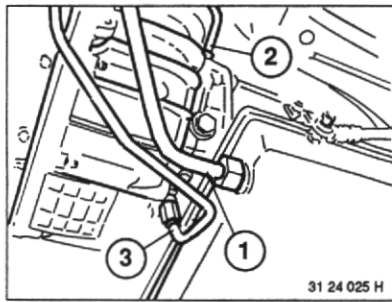


Remove exhaust assembly – see 18 00 020.

Remove heat shield (1).



Unscrew mounting straps of oil cooler pipes on the engine.



Drain oil.

Important!
Never reuse drained oil.

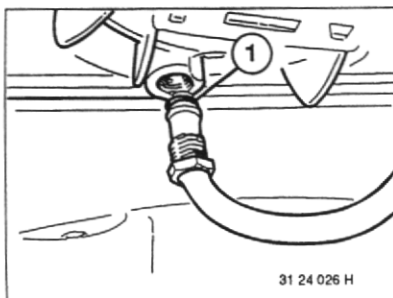
Installation:
Transmission will have to be disassembled if the oil smells burnt and is black.

Important!
Oil cooler and pipes must be cleaned with compressed air and flushed twice with ATF if the transmission was faulty.

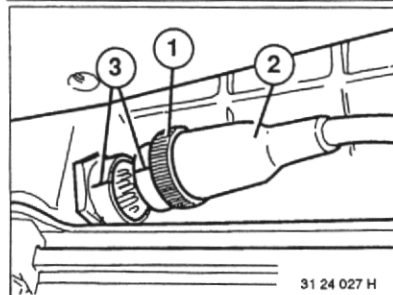
Remove oil filler pipe (1).
Unscrew oil cooler pipes (2 and 3) on transmission.
Tightening torque*.

* See Specifications

24-00/4

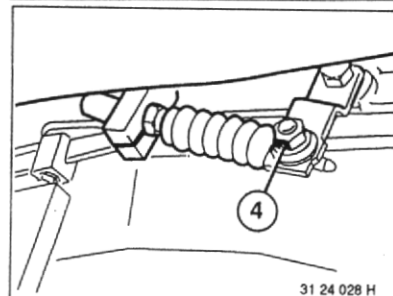


Installation:
Check O-rings (1).
Check condition of O-rings, replacing if necessary.



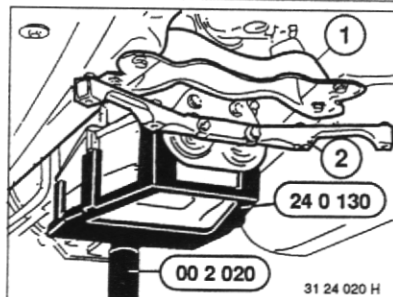
Turn bayonet fastener (1) anticlockwise.
Pull off plug (2).
Lift wire harness out of holder.

Installation:
Connect plug (2) that marking lines (3) are aligned.



Unscrew nut (4) — counterhold.
Disconnect cable on holder.
Pull out cable.
Tightening torque*.

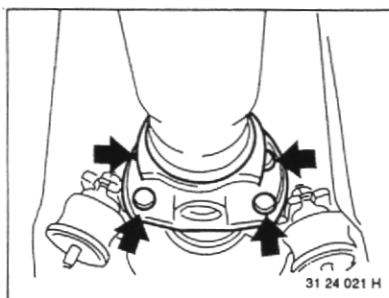
Installation:
Adjust selector lever — see 24 00 006.



Support transmission with Special Tools 24 0 130 and 00 2 020.
Unscrew cross member (1) and exhaust suspension (2).
Lower lifting fixture.

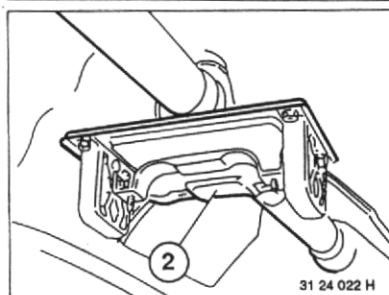
Installation:
Center transmission — see Group 26.
Tightening torque*.

* See Specifications



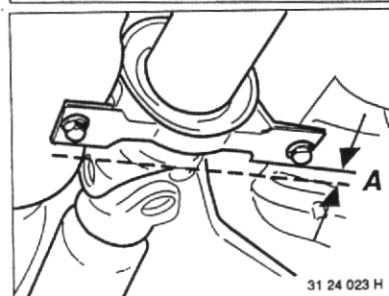
Unscrew propeller shaft on transmission.

Installation:
Tightening torque*.



Unscrew exhaust holder (2).

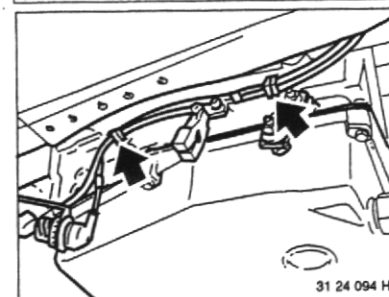
Installation:
Tightening torque*.



Unscrew center mount.

Installation:
Preload center mount forward by distance A = 2 ... 4 mm (0.079 ... 0.157'').

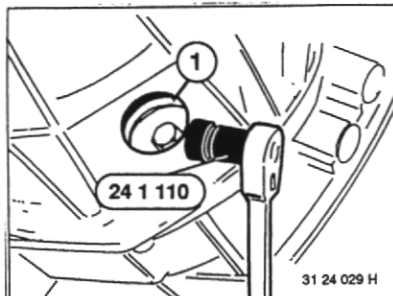
Important!
Never let propeller shaft fall into the joints — suspend it from car on a piece of wire.
Tightening torque*.



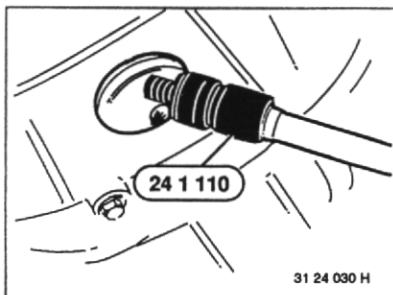
Take electric leads for oxygen sensors out of holders on transmission.

* See Specifications

24-00/5

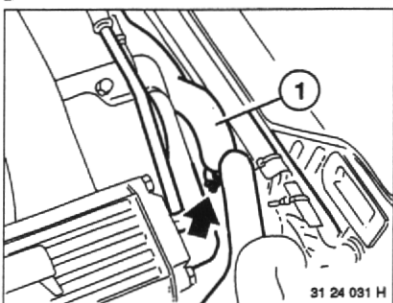


Lift cap off of opening (1) in the engine oil pan.
Unscrew torque converter from the drive plate at three points with Special Tool 24 1 110.
Turn flywheel for this step.

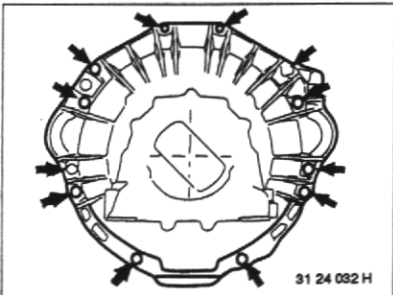


Installation:
Install bolt with Special Tool 24 1 110 and tighten with a torque wrench.
Tightening torque*.

Important!
Only use size M 10 x 16 mm bolts together with spring washers.
Non-conformance would lead to transmission damage.



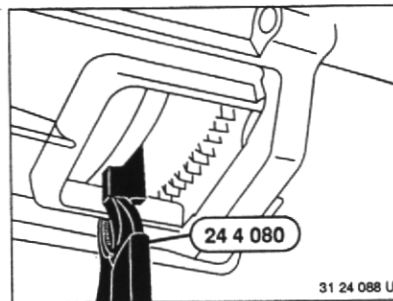
Lower engine with the spindle from Special Tool 00 0 200 until there is a gap of approx. 1 mm (0.039") between the engine and rear heater pipe connection (1) (check visually).



Unscrew Torx bolts with a Torx socket. Use an approx. 100 cm (39") long extension.

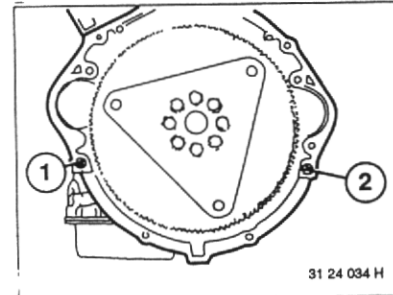
Important!
Washers must be used to avoid increasing the breaking-loose torque.
Tightening torque*.

* See Specifications

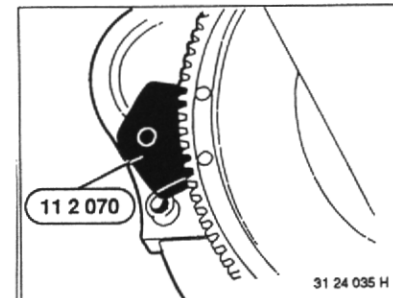


Apply Special Tool 00 2 020 on the transmission with help of Special Tool 24 0 130.
Prevent the torque converter from sliding out by mounting and clamping Special Tool 24 4 080 on the transmission case and torque converter.
Pull transmission off of engine.

Important!
The lifting fixture with mounted transmission may only be moved in completely lowered position.



Important!
Make sure that guide sleeves (1 and 2) are not missing prior to attachment of the transmission.
If applicable, transfer guide sleeves from the transmission or install new guide sleeves.

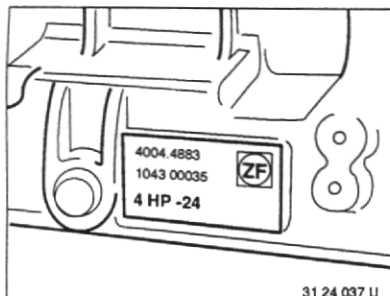


Installation:
Check drive plate for ruptures or cracks, replacing if necessary.
Hold flywheel with Special Tool 11 2 070.

Important!
Replace expansion bolts and install new bolts with a bolt cement**. Only coat the threads.
Clean tapped bores thoroughly.
Tightening torque*.

See Specifications

24-00/6



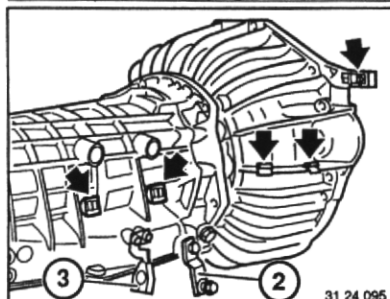
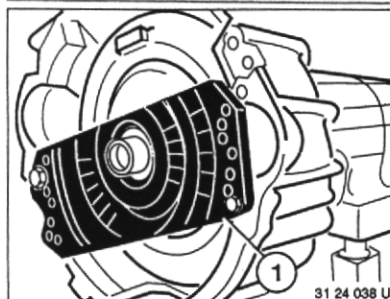
24 00 044 INSTALLING EXCHANGE TRANSMISSION

Remove transmission – see 24 00 022.

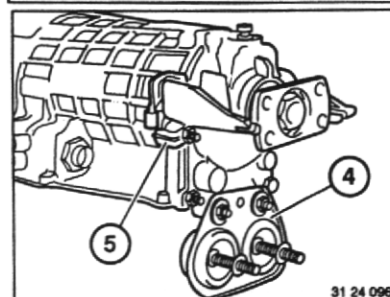
Important!
Always clean oil cooler and pipes with compressed air and flush twice with ATF prior to installing an exchange transmission.

Transmission Identification:
Code* on data plate or label.

Transfer transport holder (1).

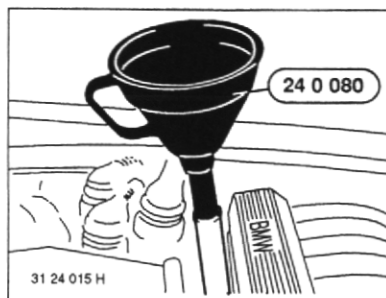


Transfer lever (2) and bracket (3) as well as electric lead holders for oxygen sensors.

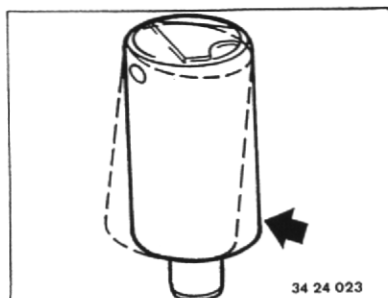


Transfer exhaust holder (4) and bracket (5).

* See Parts Catalog



Important!
Automatic transmissions are supplied filled with ATF.
Remove plug from oil sump prior to installation of the oil filler pipe.
Catch escaping ATF in a clean container.
Pour in escaped ATF with help of Special Tool 24 0 080 (funnel) after installation of the transmission.
Check ATF level – see 00 11 239.

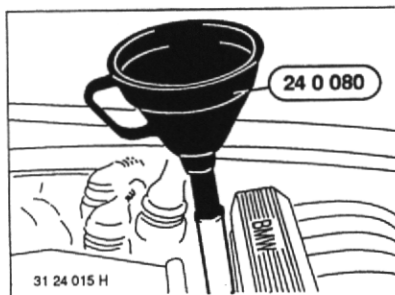


00 11 239 REPLACING AUTOMATIC TRANSMISSION FLUID

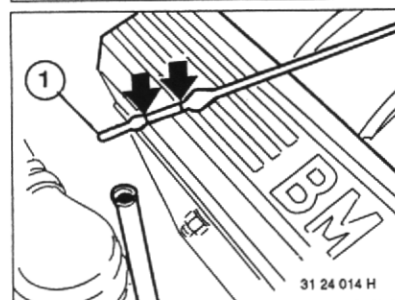
ATF should only be replaced at operating temperature.
Pull out oil dipstick.

Important!

Oil Dipstick with Lock:
Oil dipstick can be pulled out only after tilting the grip.



Unscrew drain plug.
Drain ATF.
Replace seal.
Screw in drain plug.
Tightening torque*.
Pour in ATF with help of Special Tool 24 0 080 (funnel).
Amount of ATF*.



Check/correct oil level with selector lever at P, engine running at idle speed and car parked on level floor.
Oil level should not be below ball (1) after a test drive and at oil temperature of approx. 40° C (105° F).
Oil level should be between min. and max. marks at oil temperature of approx. 80° C (175° F).
Amount of oil between min. and max. marks = approx. 0.3 ltr. (0.6 pint).
Never wipe off the oil dipstick with a cloth losing lint.

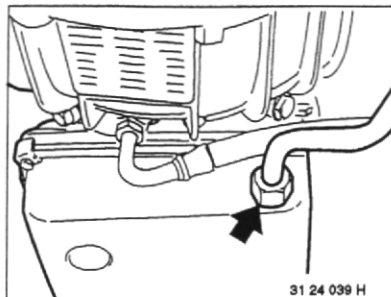
Important!

Oil Level Too High:
Strong foaming, splash loss, high temperature while driving fast, oil lost via vent.

Oil Level Too Low:
Valves rattling, foaming, engine slips when driving in curves, general operating disturbances.

* See Specifications

24-11/1



31 24 039 H

24 11 004 REMOVING AND INSTALLING OIL SUMP

Drain oil.

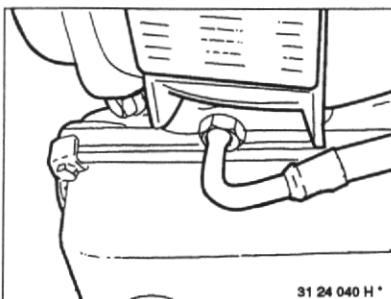
Important!

Never reuse drained oil.

Installation:

Transmission will have to be disassembled if the oil smells burnt and is black.

Unscrew oil filler pipe on oil sump.
Unscrew oil sump.



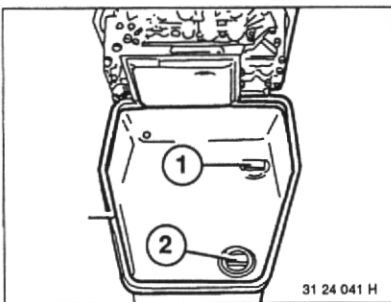
31 24 040 H *

Installation:

Mount oil sump with brackets that the short legs press on the oil sump. Tightening torque*.

Important!

The two brackets with straight legs must be mounted on the sides.



31 24 041 H

Clean oil sump.

Important!

Place magnets (1 and 2) in oil sump. Install gasket (3).

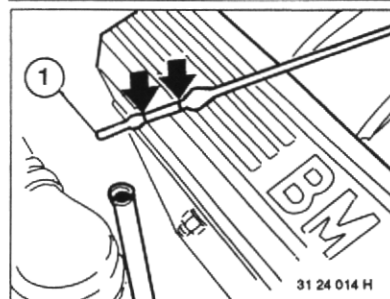


31 24 015 H

Pour in oil*.

Important!

Only pour in transmission oil with help of Special Tool 24 0 080 (funnel).



31 24 014 H

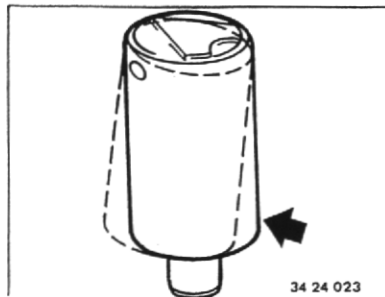
Check/correct oil level with selector lever at P, engine running at idle speed and car parked on level floor. Oil level should not be below ball (1) after a test drive and with the oil temperature at approx. 40° C (105° F). Oil level should be between min. and max. marks at oil temperature of approx. 80° C (175° F). Amount of oil between min. and max. marks = 0.3 ltr. (0.6 pint). Never wipe off the oil dipstick with a cloth losing lint.

Oil Level Too High:

Strong foaming, splash loss, high temperature when driving fast, oil lost via vent.

Oil Level Too Low:

Valves rattling, foaming, engine slipping, general operating disturbances.



34 24 023

Important!

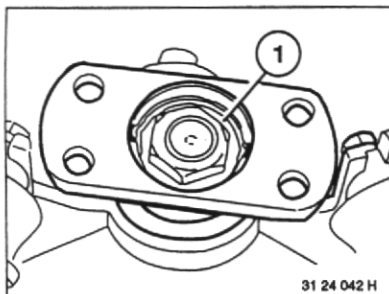
Oil Dipstick with Lock:

The oil dipstick can be pulled out only after tilting the grip.

See Specifications

* See Specifications

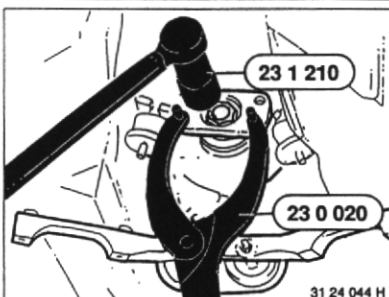
24-11/2



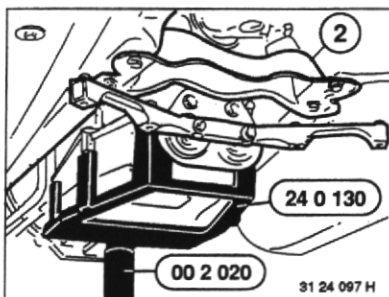
24 11 054 REMOVING AND INSTALLING OR SEALING TRANSMISSION EXTENSION

Unscrew propeller shaft – see
24 00 024.
Lift out lockplate (1).

Installation:
Replace lockplate.

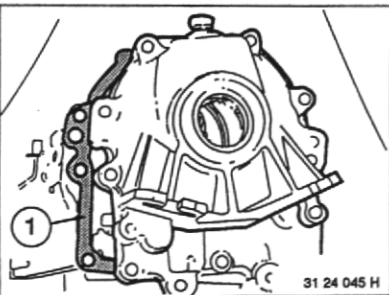


Hold output flange with Special Tool
23 0 020.
Unscrew collar nut with Special Tool
23 1 210.
Tightening torque*.
Pull off output flange.



Support transmission with Special
Tools 24 0 130 and 00 2 020.
Remove cross member (2).

Installation:
Center transmission – see Group 26.
Tightening torque*.

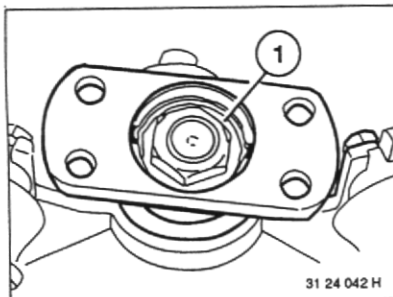


Unscrew transmission extension.

Installation:
Replace gasket (1).
Tightening torque*.

* See Specifications

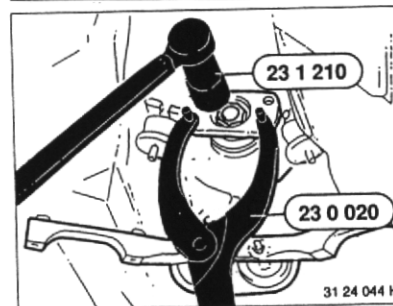
24-12/1



24 12 014 REPLACING RADIAL OIL SEAL FOR OUTPUT FLANGE

Unscrew propeller shaft – see 24 00 024.
Lift out lockplate (1).

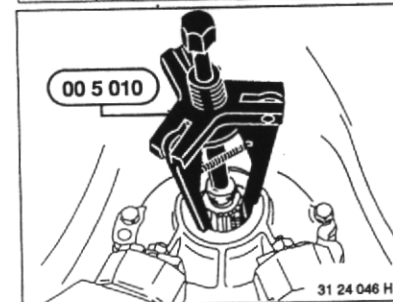
Installation:
Replace lockplate.



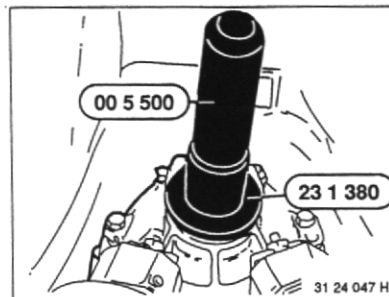
Hold output flange with Special Tool 23 0 020.
Unscrew collar nut with Special Tool 23 1 210.

Installation:
Tightening torque*.

Pull off output flange.



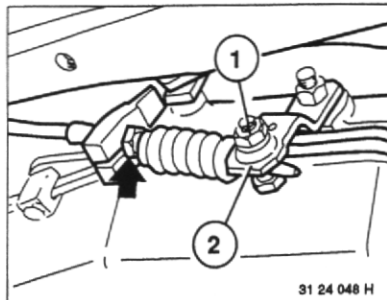
Pull out radial oil seal with Special Tool 00 5 010.



Lubricate sealing lip with ATF.
Drive in radial oil seal with Special Tools 23 1 380 and 00 5 500.

* See Specifications

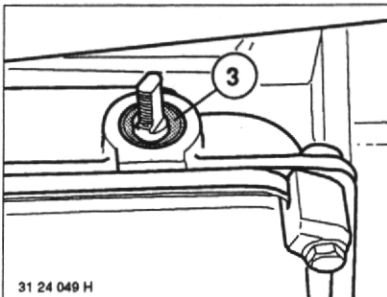
24-12/2



24 12 104 REPLACING RADIAL OIL SEAL FOR MANUAL SHIFT VALVE SHAFT

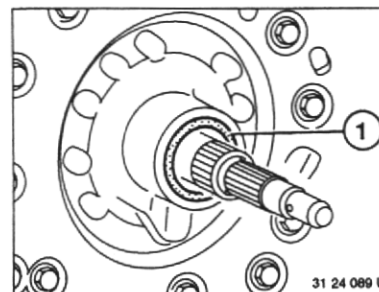
Unscrew nut (1) — counterhold.
Disconnect cable on holder.
Unscrew selector lever (2) on transmission.

Installation:
Adjust selector lever — see 24 00 006.



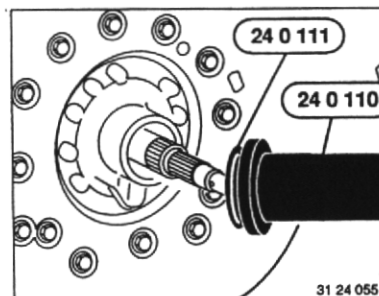
Lift out radial oil seal (3).

Installation:
Lubricate sealing lip with ATF.
Drive in radial oil seal.



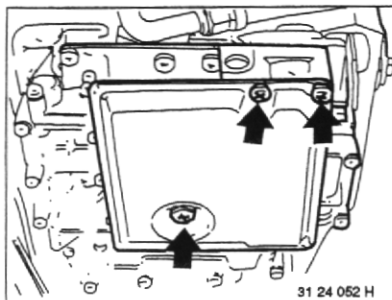
24 12 504 REPLACING RADIAL OIL SEAL FOR TORQUE CONVERTER — Transmission Removed —

Remove torque converter — see
24 40 004.
Lift out radial oil seal (1).



Installation:
Lubricate sealing lip with ATF.
Drive in radial oil seal to fit tight with
Special Tools 24 0 110 and 24 0 111.
Installed depth = approx. 1 mm (0.039").

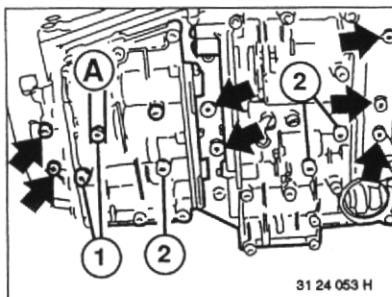
24-30/1



24 30 004 REMOVING AND INSTALLING VALVE BODY

Remove oil sump – see 24 11 004.
Unscrew oil filter screen.

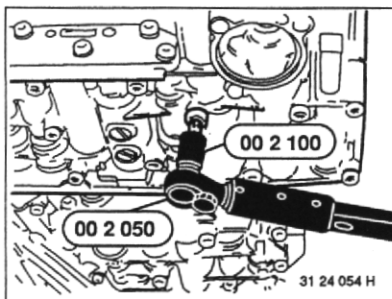
Installation:
Check that length of bolts is 65 mm.
Tightening torque*.



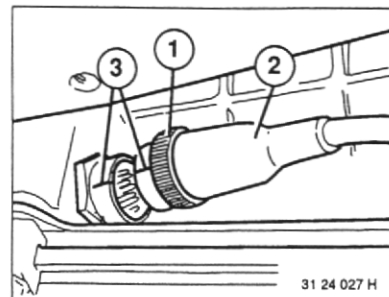
Remove valve body.
Unscrew Torx bolts with Special Tool 00 2 100.

Important!
Only unscrew bolts with head size A = 12 mm (0.472").

Installation:
Length of bolts is different.
Bolts (1) are 65 mm long.
Bolts (2) are 60 mm long.

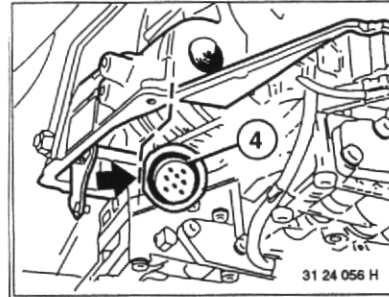


Installation:
Tighten Torx bolts with Special Tools 00 2 100 and 00 2 050.
Tightening torque*.



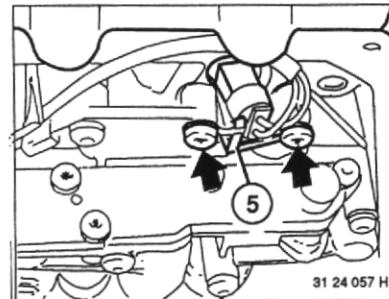
Turn bayonet retainer (1) anticlockwise.
Pull off plug (2).
Unscrew nut.

Installation:
Connect plug (2) that marking lines (3) are aligned.



Pull out socket toward inside.

Installation:
Check O-ring (4), replacing if necessary.
Insert socket that its flat side faces out toward the housing.
Tightening torque*.

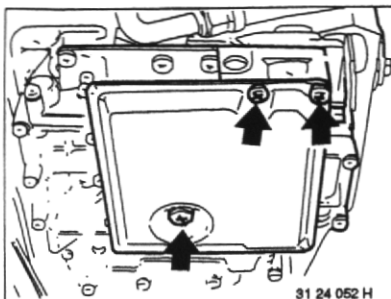


Note:
Also mount pulse sender on the valve body.
Have tabs of holder (5) engage in the grooves on the plug.

* See Specifications

* See Specifications

24-31/1

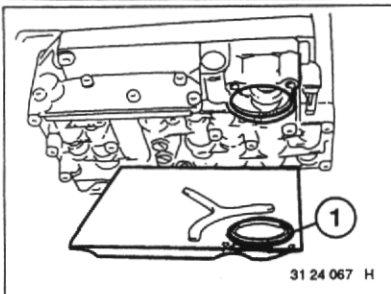


24 31 154 REMOVING AND INSTALLING OR REPLACING TRANSMISSION OIL FILTER SCREEN

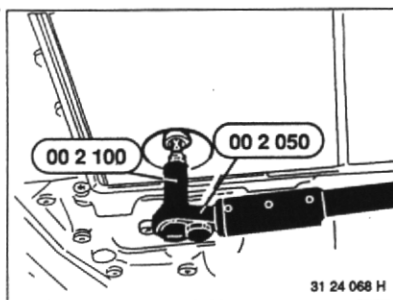
Remove oil sump – see 24 11 004.
Unscrew oil filter screen.

Installation:

Clean oil filter screen.
Replace an oil filter screen which is
starting to gum up with a burnt brown
residue.
Check that length of bolts is 65 mm.
Tightening torque*.



Check rubber ring (1), replacing if nec-
essary.

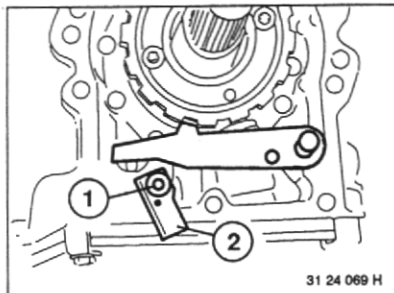


Installation:

Tighten Torx bolts with Special Tools
00 2 100 and 00 2 050.
Tightening torque*.

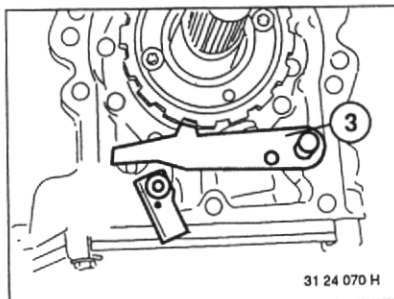
* See Specifications

24-34/1



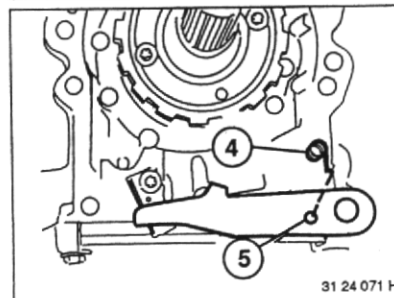
24 34 004 REMOVING AND INSTALLING OR REPLACING PARKING LOCK (PAWL / SPRING)

Unscrew transmission extension – see
24 11 054.
Loosen bolt (1).
Swing holder (2) down.

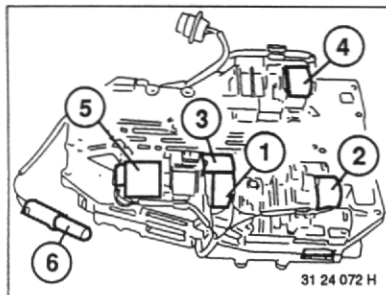


Pull off pawl (3).

Caution!
Spring force.



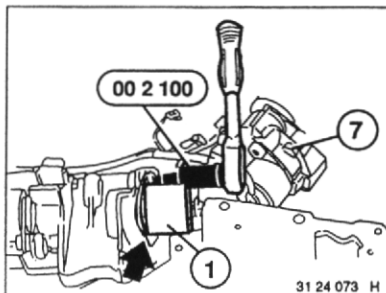
Installation:
Check installed position of spring (4).
End of spring (4) must be attached on
bore (5) on the pawl.



24 34 851 REPLACING ALL SOLENOID VALVES - Valve Body Removed -

Arrangement:

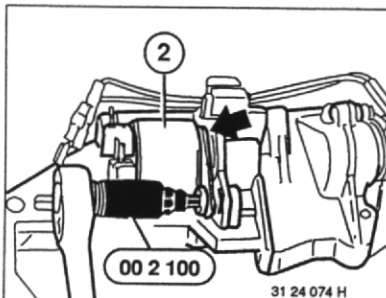
- 1 Solenoid - 1st/2nd + 3rd/4th gears
- 2 Solenoid - 2nd/3rd gears
- 3 Solenoid - converter lockup clutch
- 4 Solenoid - reverse gear lock
- 5 Pressure regulator
- 6 Pulse sender



a) Solenoid (1) - 1st/2nd + 3rd/4th Gears
Unscrew governor housing (7).
Pull off wire plug.
Unscrew Torx bolt with Special Tool 00 2 100.
Take off holder.
Pull out solenoid valve.

Installation:

Install holder with tabs facing collar on solenoid valve.
Plug jacks must have sufficient spacing to the housing or arrow on housing must be between plug jacks.
Tightening torque*.

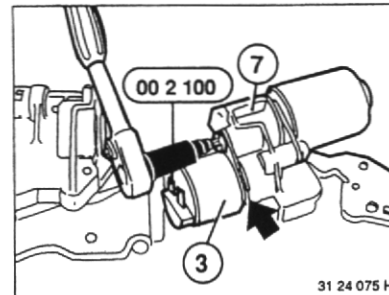


b) Solenoid (2) - 2nd/3rd Gears

Pull off wire plug.
Unscrew Torx bolt with Special Tool 00 2 100.
Take off holder.
Pull out solenoid valve.

Installation:

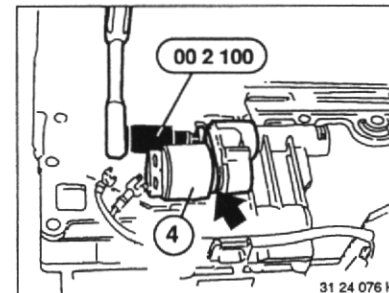
Install holder with tabs facing collar on solenoid valve.
Plug jacks must have sufficient spacing to the housing or arrow on housing must be between plug jacks.
Tightening torque*.



c) Solenoid (3) - Conv. Lockup Clutch
Unscrew governor housing (7).
Pull off wire plug.
Unscrew Torx bolt with Special Tool 00 2 100.
Take off holder.
Pull out solenoid valve.

Installation:

Install holder with tabs facing collar on solenoid valve.
Plug jacks must have sufficient spacing to the housing or arrow on housing must be between plug jacks.
Tightening torque*.



d) Solenoid (4) - Reverse Gear Lock
Pull off wire plug.
Unscrew Torx bolt with Special Tool 00 2 100.
Take off holder.
Pull out solenoid valve.

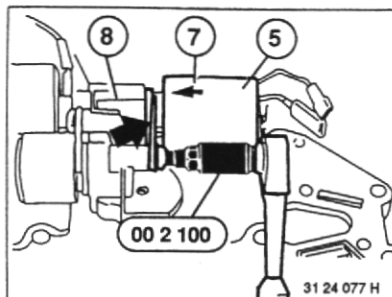
Installation:

Install holder with tabs facing collar on solenoid valve.
Plug jacks must have sufficient spacing to the housing or arrow on housing must be between plug jacks.
Tightening torque*.

* See Specifications

* See Specifications

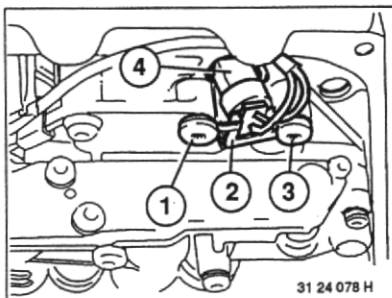
24-34/3



24 34 860 REPLACING PRESSURE REGULATOR – Valve Body Removed –

Pull off wire plug.
Unscrew Torx bolt with Special Tool
00 2 100.
Take off holder.
Pull out pressure regulator (5).

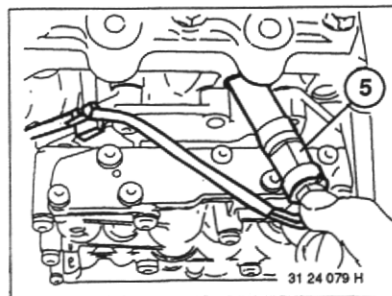
Installation:
Arrow (7) on pressure regulator must
be aligned with rib (8).
Install holder with tabs facing collar on
pressure regulator.
Tightening torque*.



24 34 870 REPLACING OUTPUT SPEED PULSE SENDER – Oil Sump Removed –

Unscrew Torx bolts (1 and 3) with
Special Tool 00 2 100.
Take off holder (2).

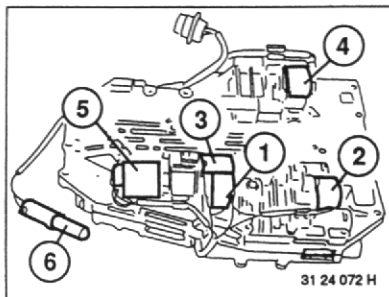
Installation:
Have tabs of holder (2) engage in
grooves of plug (4).



Pull out pulse sender.
Pull off plug (5).

Installation:
Tightening torque*.

* See Specifications



24 35 500 REPLACING WIRE HARNESS IN AUTOMATIC TRANSMIS- SION

Remove valve body – see 24 30 002.
Pull off wire harness plugs on sole-
noids (1 ... 4), pressure regulator (5)
and pulse sender (6).
Lift wire harness out of holders.

Installation:

Check colors of wires.

Solenoid (1) – gray / violet

Solenoid (2) – green / violet

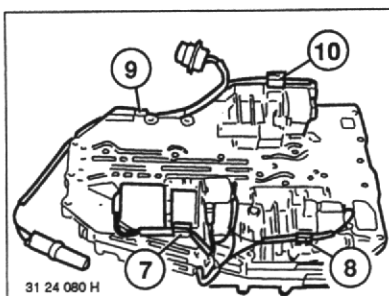
Solenoid (3) – red /violet

Solenoid (4) – orange / violet

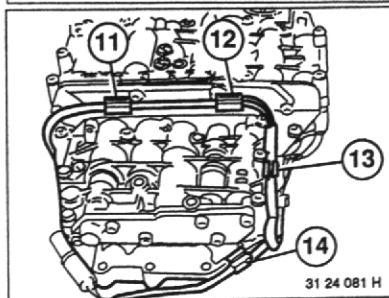
Pressure regulator (5) – blue / violet

Pulse sender (6) – brown / brown

Push on plugs against the stop and
check for tight fit.

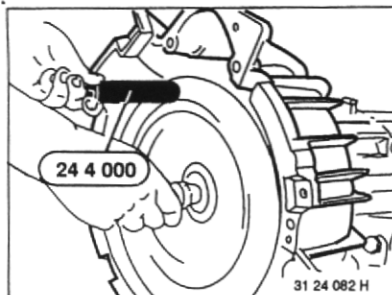


Route wire harness and clamp in hold-
ers (7 ... 10).



Turn valve body around.
Route wire harness and clamp in hold-
ers (11 ... 14).

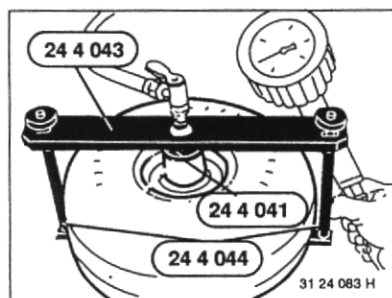
24-40/1



24 40 004 REMOVING AND INSTALLING TORQUE CONVERTER

Remove transmission – see 24 00 024.
Pull torque converter out of primary pump carefully with Special Tool 24 4 000.

Caution!
Escaping oil.

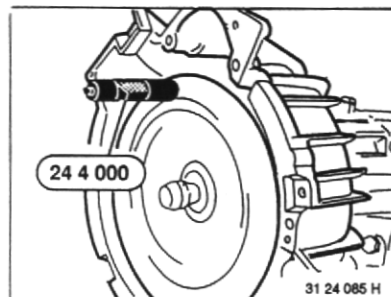
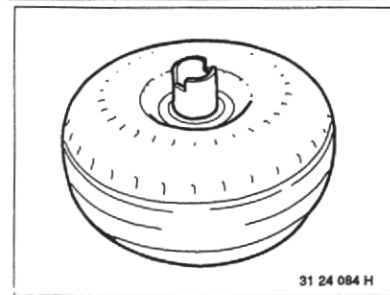


Installation:
Check torque converter for leaks with Special Tools 24 4 041, 24 4 043 and 24 4 044.

Test pressure: 0.5 bar (7 psi).

Caution!
Always use Special Tool 24 4 043 to prevent injury.

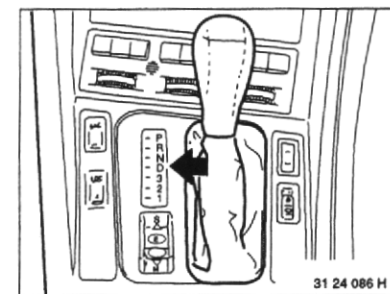
Torque converter must be replaced when bearing surface on converter shaft is damaged.



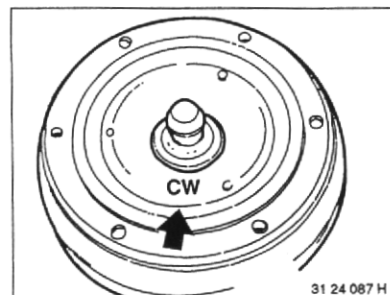
Turn slightly to guide openings on converter into primary pump carefully, using Special Tool 24 4 000.

Important!

Be careful not to damage converter bearings and seal while guiding in. Converter is in its correct installed position, if drive ring is below the case edge.



Checking Installed Torque Converter:
Engine and transmission oil must have operating temperature.
Engine must produce full rated power.
Start engine.
Pull on parking brake and operate brake pedal firmly.
Move selector lever to D and press accelerator pedal to full throttle.
Read stall speed* from tachometer.



Important!

Never test stall speed longer than 10 seconds to prevent damage from excessive heat.

Stall Speed Much Above Specified Value*:

- a) Converter oil volume insufficient – correct the oil level.
- b) Slip in clutches – check clutches.

Stall Speed Much Below Specified Value*:

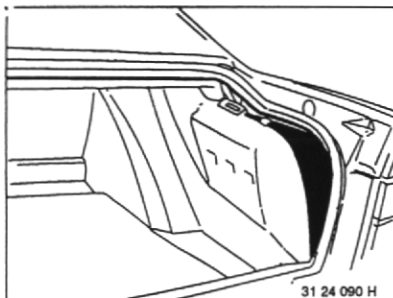
- a) Engine power insufficient – check engine.
- b) Converter or pump faulty – replace converter or check pump.

Torque converters cannot be cleaned with conventional workshop equipment and must be replaced when a transmission had been faulty or an oil filter screen was worn.

Converter Identification*.

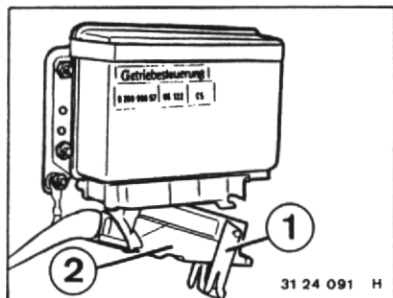
* See Specifications

24-61/1



24 61 500 REMOVING AND INSTALLING OR REPLACING CONTROL UNIT (EH)

Control unit is located in trunk at rear right.
Lift out cover.



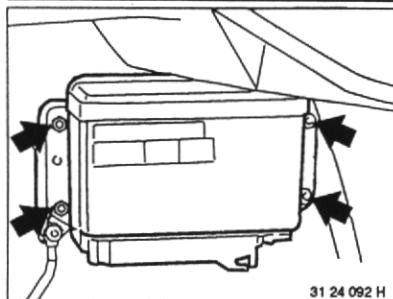
Swing down spring-loaded retainer (1).
Pull out plug (2) forward.

Installation:

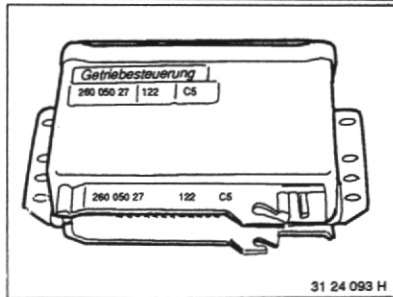
Spring-loaded retainer (1) must be engaged.

Note:

Plug (2) may only be disconnected or connected after switching off the Ignition.



Unscrew control unit on holder.



Check code* on data plate.
See Parts Catalog for cross reference
of types and models.

* See Parts Catalog

TROUBLESHOOTING AUTOMATIC TRANSMISSION 4 HP 24 / EH

Condition	Cause	Correction
Position P		
Park will not engage	a) Selector linkage between selector lever and transmission maladjusted. b) Excessive friction in parking lock mechanism.	a) Adjust selector lever – see 24 00 006. b) Replace parking lock parts (connecting rod, pawl) – see 24 34 004.
Park does not hold (slips out)	a) Selector linkage between selector lever and transmission maladjusted.	a) Adjust selector lever – see 24 00 006.
Engine cannot be started in N or P, or can be started in all positions	a) Selector linkage between selector lever and transmission maladjusted. b) Transmission switch faulty. Starter interlocking relay or supply lead faulty.	a) Adjust selector lever – see 24 00 006. b) Replace transmission switch – see 25 16 080. Replace / repair switch or supply lead.
Position R		
No reverse gear	a) Selector linkage between selector lever and transmission maladjusted. b) Oil filter screen dirty. c) Clutch B destroyed. Then also no 3rd gear. d) Clutch D destroyed. Then also no engine braking in position 1, 1st gear. e) Clutch E destroyed. Then also no engine braking in 2nd + 3rd gears as well as in pos. 1, 1st gear.	a) Adjust selector lever – see 24 00 006. b) Replace oil filter screen; exchange transmission if bits of liners are in oil sump. c) Disassemble clutches – see 24 23 022. d) Disassemble clutches – see 24 23 022. e) Disassemble clutches – see 24 23 022.
Slipping or shaking when moving off	a) Clutch B or E or brake D damaged.	a) Disassemble clutches – see 24 23 022.
Hard engaging jolt P–R or N–R or definite double knock in P–R or N–R shift (engine speed < 1500 rpm).	a) Damper B faulty. Then shift 2–3 also incorrect.	a) Exchange valve body – see 24 30 004. Check transmission electronics.
Backup lights do not light up (electrical system okay).	a) Transmission switch faulty.	a) Replace transmission switch – see 25 16 080.
Car moves or creeps	a) Selector linkage between selector lever and transmission maladjusted. b) Clutch A faulty (bonded).	a) Adjust selector lever – see 24 00 006. b) Replace clutch A – see 24 23 022.

Condition	Cause	Correction
Position D No power flow	a) Oil filter screen dirty. b) Clutch A faulty. c) 1st gear one-way clutch slips. d) Selector linkage between selector lever and transmission maladjusted.	a) Replace oil filter screen – see 24 31 154; replace transmission if bits of liners are in oil sump. b) Replace clutch A – see 24 23 022. c) Disassemble transmission – see 24 00 082. d) Adjust selector lever – see 24 00 006.
Slipping or shaking when moving off.	a) Clutch A damaged.	a) Replace clutch A – see 24 23 022.
Hard engaging jolt N–D (engine speed > 1500 rpm).	a) Clutch A damaged. b) Damper A faulty.	a) Replace clutch A – see 24 23 022. b) Replace valve body – see 24 30 004.
No shift (warm or cold state) — Shift 1–2 / 2–1	a) Kickdown switch faulty (only kickdown shifts). b) Transmission electronics faulty. c) Solenoid valve (1) faulty. d) Control valve 1-2 / 3-4 seized. e) Shift valve 1-2 seized.	a) Replace kickdown switch – see 35 41 480. b) Check transmission electronics. c) Replace solenoid valve – see 24 34 851. d) Replace valve body – see 24 30 004. e) Replace valve body – see 24 30 004.
— Shift 1–2	a) Brakes C' and/or C faulty.	a) Disassemble clutches – see 24 23 022.
— Shift 2–3 / 3–2	a) Solenoid valve (2) faulty. b) Shift valve 2-3 seized.	a) Replace solenoid valve – see 24 34 851. b) Replace valve body – see 24 30 004.
— Shift 2–3	a) Clutch B faulty.	a) Replace clutch B – see 24 23 022.
— Shift 3–4 / 4–3	a) Solenoid valve (1) faulty. b) Control valve 1-2 / 3-4 seized. c) Shift valve 3-4 seized.	a) Replace solenoid valve – see 24 34 851. b) Replace valve body – see 24 30 004. c) Replace valve body – see 24 30 004.

24-90/3

Condition	Cause	Correction
No shift (warm or cold state)		
— Shift 3-4	a) Brake F faulty. b) Program switch faulty.	a) Disassemble clutches – see 24 23 022. b) Replace program switch – see 61 31 265.
— Shift 1-2 Engine speed does not exceed stall speed in drive and full load.	a) Pulse sender faulty.	a) Replace pulse sender – see 24 34 870.
Car moves off in 2nd gear	a) Transmission electronics faulty. b) Solenoid valve (1) faulty. c) Shift valve 1-2 seized.	a) Check transmission electronics. b) Replace solenoid valve – see 24 34 851. c) Replace valve body – see 24 30 004.
Car moves off in 3rd gear	a) Transmission electronics faulty. b) Solenoid valve (1 or 2) faulty. c) Shift valves 1-2 and 2-3 seized.	a) Check transmission electronics. b) Replace solenoid valve – see 24 34 851. c) Replace valve body – see 24 34 004.
Car shifts 1-3	a) Shift valve 2-3 seized. b) Transmission electronics faulty. c) Solenoid valve (2) faulty.	a) Replace valve body – see 24 30 004. b) Check transmission electronics. c) Replace solenoid valve – see 24 34 851.
Shift Points*		
Zero load shift not okay	a) Control unit faulty.	a) Replace control unit – see 24 61 500.
No kickdown shift	a) Kickdown switch faulty.	a) Replace switch – see 35 41 480.
Only kickdown shifts.	a) Kickdown switch faulty.	a) Replace switch – see 35 41 480.

* See Specifications

24-90/4

Condition	Cause	Correction
<u>Shift Transitions</u> Zero load shifts too hard	a) Control unit faulty. b) Damper faulty. c) Modulation pressure too high. d) Plates damaged.	a) Replace control unit – see 24 61 500. b) Replace valve body – see 24 30 004. c) Replace valve body – see 24 30 004. d) Disassemble transmission – see 24 00 082.
Full load and kickdown shifts too long	a) Control unit faulty. b) Damper faulty. c) Modulation pressure too low. d) Plates damaged.	a) Replace control unit – see 24 61 500. b) Replace valve body – see 24 30 004. c) Replace valve body – see 24 30 004. d) Disassemble transmission – see 24 00 082.
Full load and kickdown shifts too hard	a) Modulation pressure not correct. b) Damper faulty. c) Control unit faulty.	a) Replace valve body – see 24 30 004. b) Replace valve body – see 24 30 004. c) Replace control unit – see 24 61 500.
<u>Position 3, 3rd Gear</u> No engine braking	a) Clutch E damaged.	a) Disassemble clutches – see 24 23 022.
<u>Position 2</u> Manual downshift 3–2 not okay	a) Locking valve 2 sticks. b) Governor sticks. c) Transmission electronics faulty. d) Solenoid valve (2) faulty.	a) Replace valve body – see 24 30 004. b) Replace governor – see 24 32 004. c) Check transmission electronics. d) Replace solenoid valve – see 24 34 851.
No engine braking	a) Brake C' or clutch E damaged.	a) Disassemble clutches – see 24 23 022.
<u>Position 1</u> Manual downshift 2–1 not okay	a) Locking valve 1 sticks. b) Transmission electronics faulty. c) Solenoid valve (1) faulty.	a) Replace valve body – see 24 30 004. b) Check transmission electronics. c) Replace solenoid valve – see 24 34 851.

24-90/5

Condition	Cause	Correction
No engine braking	a) Brake D or clutch E damaged.	a) Disassemble clutches – see 24 23 022.
<u>Converter Lockup Clutch</u>		
Shift speed not correct	a) Converter lockup hysteresis valve sticks. b) No 4th gear. c) Control unit faulty.	a) Replace valve body – see 24 30 004. b) Replace valve body – see 24 30 004. c) Replace control unit – see 24 61 500.
Shift transition too hard	a) Converter lockup damper faulty. b) Converter not okay.	a) Replace valve body – see 24 30 004. b) Replace torque converter – see 24 40 004.
No shift	a) Valve body not okay. b) Converter lockup clutch faulty. c) No 4th gear. d) Transmission electronics faulty. e) Solenoid valve (3) faulty. f) Torque converter faulty.	a) Replace valve body – see 24 30 004. b) Replace torque converter – see 24 40 004. c) Replace valve body – see 24 30 004. d) Check transmission electronics. e) Replace solenoid valve – see 24 34 851. f) Replace torque converter – see 24 40 004.
Converter lockup clutch always closed. (engine dies in driving position)	a) Transmission electronics faulty. b) Solenoid valve (3) faulty.	a) Check transmission electronics. b) Replace solenoid valve – see 24 34 851.
<u>General Information</u>		
Shifts only as position	a) Transmission electronics faulty. b) Program switch faulty.	a) Check transmission electronics. b) Replace program switch – see 61 31 265.
Fault indicator lights up	a) Transmission electronics faulty. b) Solenoid valve (2) faulty.	a) Check transmission electronics. b) Replace solenoid valve – see 24 34 851.
Fault indicator lights up while driving	a) Transmission electronics faulty. b) Plug on transmission has poor contact.	a) Check transmission electronics. b) Check plug connection.

Condition	Cause	Correction
Noise and then power flow interruption after long	a) Oil filter screen on valve body dirty.	a) If oil sump does not contain bits of burnt clutch liners, only replace oil filter screen. Otherwise exchange the transmission.
No power flow in forward or reverse, loud noise.	a) Drive plate between converter and engine torn off.	a) Replace drive plate or converter – see 11 22 051 or 24 40 004.
Noise Loud noise in all position, especially with cold oil. Oil pump suction noise.	a) Oil level too low. b) Valve body leaks.	a) Correct the oil level. b) Replace valve body – see 24 30 004.
Loud, screeching noise depending on speed in all positions, especially with warm oil, occurring after long drive; sometimes accompanied by power flow interruption.	a) Oil filter screen dirty.	a) If oil sump does not contain bits of liners, only replace oil filter screen. Otherwise exchange the transmission.
Loud noise with converter lockup clutch closed	a) Torsion damper faulty.	a) Replace torque converter – see 24 40 004.
Leakage Oil drips out of converter bell housing	a) Seal in pump housing damaged. b) Pump housing leaks. c) Converter leaking at welded seam. d) Radial oil seal for torque converter leaks.	a) Replace seal – see 24 31 004. b) Replace pump assembly – see 24 31 004. c) Replace converter – see 24 40 004. d) Replace radial oil seal – see 24 12 504.
Leak between transmission case and oil sump	a) Oil sump mounting bolts not tightened correctly. b) Oil sump gasket damaged.	a) Tighten bolts*. b) Replace gasket – see 24 11 004.
Leak between transfer plate and transmission case (especially in area of pump pressure bore)	a) Mounting bolts on converter bell housing loose. b) Gasket damaged.	a) Tighten bolts*. b) Replace gasket.
Oil loss on transmission plug	a) O-ring faulty.	a) Replace O-ring – see 24 30 004.
Oil loss on output	a) Radial oil seal on output damaged.	a) Replace radial oil seal – see 24 12 014.

* See Specifications for tightening torque

24-90/7

Condition	Cause	Correction
Oil loss through or on vent	a) Oil level too high. b) Wrong oil (strong foaming). c) Vent cap missing. d) O-ring on vent damaged. e) Preload of circlip insufficient.	a) Correct the oil level. b) Replace oil; if necessary remove transmission and drain complete oil including oil of torque converter. c) Mount cap or replace vent. d) Remove transmission extension and replace O-ring. e) Replace circlip.
Oil loss on cooler pipe	a) Connection loose. b) Cooler pipe damaged. c) Cooler leaks.	a) Tighten bolts*. b) Replace cooler pipe. c) Replace cooler – see 17 11 000.
Oil loss on transfer plate	a) Plug on transfer plate leaks.	a) Tighten plug*. b) Replace seal.
Leak between transmission case and transmission extension	a) Mounting bolts loose. b) Gasket damaged.	a) Tighten bolts*. b) Replace gasket – see 24 11 054.

* See Specifications for tightening torque

24-90/8

Condition	Cause	Correction
<u>Position R</u>		
No reverse gear	a) Solenoid valve (4) faulty. b) Wire to solenoid valve (4) grounded out. c) Reverse gear locking valve seized. d) Damper B malfunctions.	a) Replace solenoid valve – see 24 34 851. b) Replace wire harness – see 24 35 500. c) Replace valve body – see 24 30 004. d) Replace valve body – see 24 30 004.
No reverse or forward gear	a) Main pressure valve seized, spring broken.	a) Replace valve body – see 24 30 004.
Insufficient power transmission.	a) Pressure too low in clutch B or E, brake D	a) Replace valve body – see 24 30 004.
Hard jolt when moving into position R	a) Damper B malfunctions b) Modulation pressure too high.	a) Replace valve body – see 24 30 004.
<u>Position D</u>		
No forward gear	a) Main pressure valve seized, spring broken	a) Replace valve body – see 24 30 004.
Insufficient power transmission	a) Pressure too low in clutch A	a) Replace valve body – see 24 30 004.
No shift function	a) Pulse sender faulty. b) Wire to pulse sender grounded out.	a) Replace pulse sender – see 24 34 870. b) Replace wire harness – see 24 35 500.
No shift function 1–2 / 2–1	a) Solenoid valve (1) faulty. b) Wire to solenoid valve (1) grounded out. c) Shift valve 1-2, control valve 1-2 / 3-4, pressure reducing valve 1 seized.	a) Replace solenoid valve – see 24 34 851. b) Replace wire harness – see 24 35 500. c) Replace valve body – see 24 30 004.

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Condition	Cause	Correction
Position D		
No shift function 2-3 / 3-2	a) Solenoid valve (2) faulty. b) Wire to solenoid valve (2) grounded out. c) Shift valve 2-3 seized.	a) Replace solenoid valve – see 24 34 851. b) Replace wire harness – see 24 35 500. c) Replace valve body – see 24 30 004.
No shift function 3-4 / 4-3	a) Solenoid valve (1) faulty. b) Control valve 1-2 / 3-4 seized.	a) Replace solenoid valve – see 24 34 851. b) Replace valve body – see 24 30 004.
Upshifts 1-2 / 2-3 / 3-4 too long	a) Pressure regulator faulty. b) Wire to pressure regulator grounded out. c) Damper faulty. d) Modulation valve, pressure reducing valve 1 and 2 stick.	a) Replace pressure regulator – see 24 34 860. b) Replace wire harness – see 24 35 500. c) Replace valve body – see 24 30 004. d) Replace valve body – see 24 30 004.
Upshifts 1-2 / 2-3 / 3-4 too hard	a) Pressure regulator faulty. b) Modulation valve sticks. c) Damper faulty.	a) Replace pressure regulator – see 24 34 860. b) Replace valve body – see 24 30 004. c) Replace valve body – see 24 30 004.
Downshift 4-3 too hard	a) Plate F dirty.	a) Replace valve body – see 24 30 004.
Manual downshifts 4-3 / 3-2 too hard	a) Damper E or C' faulty.	a) Replace valve body – see 24 30 004.

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Condition	Cause	Correction
<u>Position 1</u>		
Manual downshift 2-1 not okay	a) Pressure regulator faulty. b) Damper D faulty. c) Modulation valve sticks.	a) Replace pressure regulator – see 24 34 860. b) Replace valve body – see 24 30 004. c) Replace valve body – see 24 30 004.
<u>Converter Lockup Clutch</u>		
No converter clutch locking	a) Solenoid valve (3) faulty. b) Converter clutch damper faulty. c) Converter pressure valve seized. d) Pressure reducing valve 1 seized.	a) Replace solenoid valve – see 24 34 851. b) Replace solenoid valve – see 24 34 851. c) Replace valve body – see 24 30 004. d) Replace valve body – see 24 30 004.
No converter clutch unlocking	a) Solenoid valve (3) faulty. b) Wire to solenoid valve (3) grounded out.	a) Replace solenoid valve – see 24 34 851. b) Replace wire harness – see 24 35 500.
Main pressure too high in all positions	a) Pressure regulator faulty. b) Main pressure valve seized. c) Modulation pressure too high.	a) Replace pressure regulator – see 24 34 860. b) Replace valve body – see 24 30 004. c) Replace valve body – see 24 30 004.