

Repair instructions

The maximum possible care and cleanliness and proper tools are essential to ensure satisfactory and successful transmission repairs. The usual basic safety precautions also, naturally apply when carrying out vehicle repairs.

A number of generally applicable instructions for individual repair operations, which are otherwise mentioned at various points in the Repair Manual, are summarized here. They apply to this Repair Manual.

Special tools

For a complete list of special tools used in this Repair Manual

⇒ *Special Tools Catalog*

Transmission

- ◆ When installing a replacement transmission or rear final drive, check oil level and top-up if necessary ⇒ [Page 34-39](#) and ⇒ [Page 39-80](#) .

- ◆ Vehicles with 2.7 ltr 195 kW engine:
replacement transmissions contain an additional 0.3 ltr of oil for the lines of the

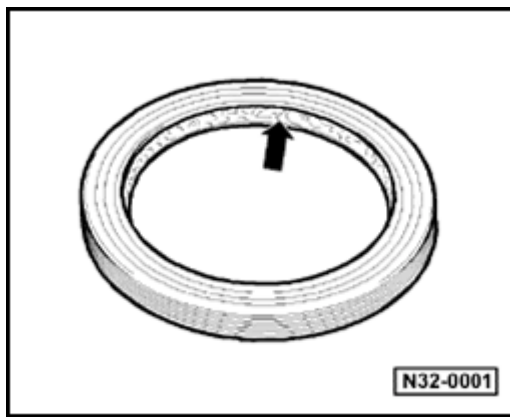
transmission oil cooling circuit. For this reason the transmission oil lines and oil cooler must be drained when fitting a replacement transmission.

- ◆ Capacities and specifications from ⇒ [Page 00-3](#) and ⇒ [Page 00-6](#) .

- ◆ Thoroughly clean all connections and the surrounding area before disconnecting.
- ◆ When installing transmission, ensure dowel sleeves are correctly seated.

O-rings, seals, gaskets

- ◆ Always replace O-rings, seals and gaskets.
- ◆ After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- ◆ Thoroughly clean housing joint surfaces before assembling.



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- ◆ Before installing radial shaft oil seals, lightly oil outer edge and fill space between sealing lips (arrow) with a thin coating of sealing grease G 052 128 A1.
- ◆ The open side of the oil seals faces toward the side with fluid filling.
- ◆ When replacing oil seals, always vary the point at which the sealing lips make contact (use insertion depth tolerances).
- ◆ Lightly oil O-rings before installing; this prevents the rings being crushed when inserting.
- ◆ Check oil level after replacing gaskets and oil seals ⇒ [Page 34-39](#)

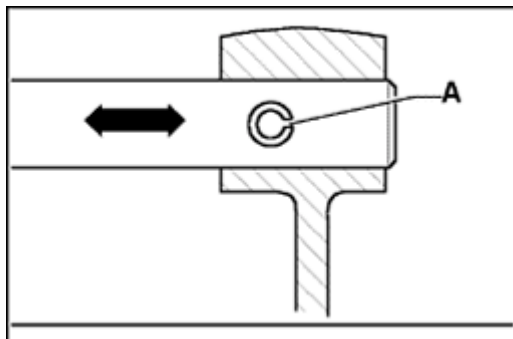
and ⇒ [Page 39-80](#) .

Sealants

- ◆ Thoroughly clean housing joint surfaces before applying sealing paste.
- ◆ Apply sealing paste AMV 188 000 02 or AMV 188 001 02 evenly and not too thick.
- ◆ Breather holes must remain free of sealing paste.

Locking elements

- ◆ Do not overstretch circlips.
- ◆ Always replace circlips which have been damaged or over-tensioned.
- ◆ Circlips must be properly seated in the base of the groove.
- ◆ Replace spring pins. Position: slit -A- should be in line with the line of force (arrow).



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Nuts, bolts

- ◆ Loosen nuts or bolts, opposite to tightening sequence.
- ◆ Tighten and loosen bolts and nuts for securing covers and housings in a diagonal sequence.
- ◆ Especially delicate parts, such as clutch pressure plates, must not be distorted. Loosen and tighten bolts and nuts in stages in a diagonal sequence.
- ◆ The tightening torques stated apply to non-oiled nuts and bolts.
- ◆ Replace self-locking bolts and nuts.
- ◆ The threads of bolts which are secured by a locking fluid should be cleaned with a wire brush. Then apply AMV 185 101 A1 when inserting.
- ◆ Threaded holes into which self-locking bolts or bolts coated with locking fluid are screwed, must be cleaned (e.g. tap). Otherwise there is a danger of bolts shearing when subsequently being removed.

Bearings

- ◆ Install needle bearings with the lettering on the bearing (the side with thicker metal) facing towards the drift or other tool used for installing.
- ◆ Mark needle bearings of 1st to 6th speed sliding gears when removing, this ensures that when installing, the same installation position can be guaranteed.
- ◆ Grease needle bearing for transmission input shaft in rear of flywheel.
- ◆ Lubricate all bearings in transmission housing with gear oil before installing.
- ◆ Heat inner races of tapered roller bearings to approx. 100 ° C before installing. Press in onto stop when installing so there is no axial clearance.
- ◆ Do not interchange the outer or inner races of bearings of the same size.
- ◆ Always replace the tapered roller bearings on one shaft together and use new bearings from a single manufacturer.

- ◆ The tapered roller bearings for the output shaft and the differential in the transmission are low-friction bearings. Do not additionally oil new tapered roller bearings when measuring friction torque. The bearings are pre-treated at the factory with a special type of oil for this purpose.

Shims

- ◆ Use a micrometer to measure the shims at several points. Different tolerances make it possible to obtain the exact shim thickness required.
- ◆ Check for burrs and damage.
- ◆ Only install perfect, undamaged shims.

Gears, synchro-hubs, inner races for sliding gears

- ◆ Heat gears and synchro-hubs to approx. 100 °C before installing. Press in onto stop when installing so there is no axial clearance.
- ◆ Heat inner races for sliding gears to approx. 100 °C when installing.
- ◆ The temperature can be checked with Temperature tester V.A.G 1558.
- ◆ Observe installation position.

Sliding gears

- ◆ After installing, check 1st to 6th speed sliding gears for axial clearance of 0.15-0.35 mm and check that they rotate freely.

Synchronizer rings

- ◆ Do not interchange synchronizer rings. When reusing always fit to the same gear.
- ◆ Check for wear, replace if necessary.
- ◆ Lubricate with gear oil before installing.

Clutch mechanism

- ◆ When removing transmission, remove clutch slave cylinder without disconnecting lines.
- ◆ If the slave cylinder is removed with the hydraulic line attached, do not depress clutch pedal. Otherwise the piston will be pressed out of the slave cylinder.
- ◆ Ensure that the pressure plate is kept straight: loosen and tighten bolts in a diagonal sequence and in several gradual stages.
- ◆ To reduce odor caused by a burnt clutch, thoroughly clean the clutch bellhousing, the flywheel and the parts of the engine facing the transmission.

- ◆ Vehicles with V6 2.7 ltr bi-turbo engine have an SAC pressure plate. On these vehicles an adjuster ring has to be reset (⇒ [Page 30-42](#)) when replacing the clutch plate on its own.