

General repair instructions

The maximum possible care, cleanliness and proper tools are essential to ensure satisfactory and successful transmission repairs. The usual basic safety precautions also 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 and equipment

For a complete list of special tools and equipment used in this repair manual ⇒ "Special tools catalog."

Transmission

- ◆ Using parts catalog microfiche, match bolts and other components according to transmission codes ⇒ [Page 00-3](#) .
- ◆ After replacing the manual transmission , check oil level and top-up if necessary ⇒ [Page 34-36](#) .
- ◆ Capacities and specifications ⇒ [Page 00-3](#) .

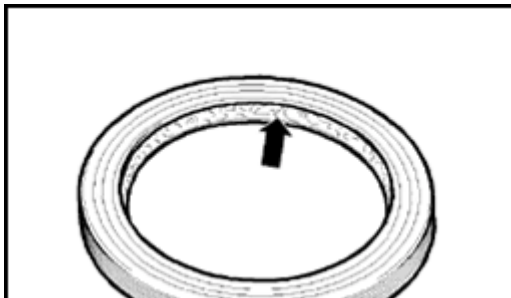
- ◆ Thoroughly clean all connections and the surrounding area before disconnecting.
- ◆ When installing transmission, make sure centering sleeves for aligning engine and transmission are correctly seated.

Sealants

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

O-rings, gaskets, seals

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



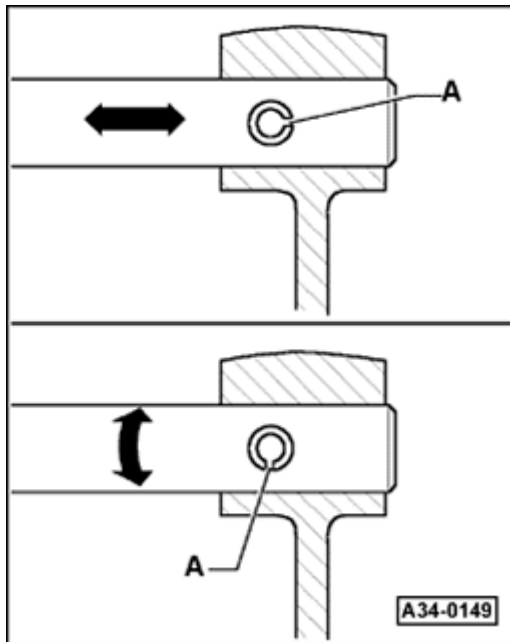
A

- ◆ Before installing radial shaft seals, lightly oil outer edge and fill space between sealing lip and dust lip (arrow) with oil.
- ◆ Open side of the seal faces toward the side containing the oil.
- ◆ When replacing seals, always vary the point at which the sealing lips make contact (use insertion depth tolerances).

- ◆ Lightly lubricate O-rings before installing. This prevents the rings from being pinched while being inserted.
- ◆ Check transmission oil level after replacing gaskets and seals ⇒ [Page 34-36](#) .

Circlips

- ◆ Do not over-stretch circlips.
- ◆ Always replace.
- ◆ Circlips must be fully seated in groove.



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- ◆ Always replace roll pins.
- ◆ Installed position: slot -A- is longitudinal to line of force (arrow).

Nuts, bolts

- ◆ Always replace self-locking nuts and bolts.
- ◆ Loosen nuts or bolts opposite to torque sequence.
- ◆ Tighten and loosen bolts or nuts for securing covers and housings in a diagonal sequence.
- ◆ The tightening torques stated apply to non-oiled nuts and bolts.
- ◆ The threads of bolts which are secured by a locking compound should be cleaned using a wire brush. Then apply AMV 185 101 A1 when installing.
- ◆ Threaded holes for self-locking bolts or bolts coated with locking fluid must be cleaned with 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 the drift.
- ◆ Mark needle bearings of drive gears for first through fifth sliding gears when removing to ensure the same installed position when installing.
- ◆ Grease needle bearing for input shaft in flywheel.
- ◆ Lubricate all bearings in transmission with transmission fluid before installing.
- ◆ Heat tapered roller bearing inner races to approx. 100 ° C (212 ° F) before installing. Press in to stop so that there is no axial play.
- ◆ Do not interchange inner and outer bearing races with those from other bearings of the same size.
- ◆ Always replace tapered roller bearings on one shaft together and use new bearings from the same manufacturer.

- ◆ The tapered roller bearings for the output shaft and the differential in the manual 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 signs of damage.

Sliding Gears

- ◆ After assembling, check axial play of 1st to 5th sliding gears (0.15-0.35 mm) and check for free movement.

Synchronizer rings

- ◆ Do not interchange. When re-using, install synchronizer rings with the same gear with which they were matched.
- ◆ Check for signs of wear; replace if necessary.
- ◆ Lubricate with transmission fluid before installing.

Gears, synchro-hubs, inner races for sliding gears

- ◆ Heat gears and synchro-hubs to approx. 100 °C (212 °F) before installing. Press into stop so there is no axial play.
- ◆ Heat inner races for sliding gears to approx. 100 °C (212 °F) before installing.
- ◆ The temperature can be checked using VAG1558 temperature tester.
- ◆ Note installation position.

Clutch mechanism

- ◆ When removing transmission, remove clutch slave cylinder without disconnecting lines.
- ◆ Do not depress the clutch pedal after removing the slave cylinder if the hydraulic line is still connected. Otherwise the piston will be pressed out of the slave cylinder.
- ◆ Do not cant clutch pressure plate; loosen and tighten in a diagonal sequence and in stages.
- ◆ If the clutch has burnt out, thoroughly clean the bellhousing, flywheel and parts of the engine facing the transmission in order to reduce the smell of burnt linings.