Dismantling and assembling gearbox

Dismantling and assembling cover for gearbox housing, gearbox housing, shift mechanism, input shaft, output shaft (pinion shaft), differential and selector forks

Special tools and workshop equipment required

- 2004 Gearbox holder VW 771
- Multi-purpose tool VW 771/38
- Adapter VW 771/40
- Adapter 40-105 Thrust plate
- VW 681 Release tool
- VW 519 Tubular section
- VW 420 Tubular section
- 30-23 Attachment
- V.A.G 1416 Hot-air blower
- V.A.G 1331 Torque wrench
- V.A.G 1669 Socket attachment
- 2054 Pressing-out tool
- 3435 Counterhold
Kukko 18/1 Puller

Kukko 20/10 Two-arm puller

With puller attachment Matra V170
Matra V/146.6 Ball bearing extractor
Matra V/146.7 Hook (3x)
Matra 6305 Support ring
DISMANTLING SEQUENCE

Clamp gearbox in repair stand.
Drain off gear oil.

Detach clutch release lever -A- with release bearing -B-.
Unscrew guide sleeve -C-.

Remove both flange shafts for triple roller joints.
Take out flange shafts with springs, thrust washers and tapered rings.
Unscrew cover for gearbox housing and detach with gasket.
Screw selector finger onto selector shaft.
→ 5th gear must be engaged (arrows 1 and 2).

→ Unfasten lock nut (arrow A) (beneath 5th gear selector fork.)

Screw out screw (arrow B) and remove selector fork together with 5th gear locking collar.
Slide 5th gear locking collar over synchro-hub again.

→ Unscrew bolt -A- for 5th gear wheel; to do so, engage 5th gear (arrow 1) and 2nd gear (arrows 2 and 3).

Input and output shafts are blocked once both gears have been engaged. Synchro-hub and gear wheel cannot turn. Bolt can then be slackened off.

Detach 5th gear locking collar and disengage 2nd gear

→ Detach circlip (arrow) for synchro-hub.
→ Detach synchro-hub with 5th speed sliding gear.

A - Two-arm puller, e.g. Kukko 20/10

→ Detach needle bearing (arrow).
Detach 5th gear wheel.

1 - Matra V/146.6 Ball bearing extractor
2 - Matra V/146.7 Hook (3x)
3 - Matra 6305 Support ring

Position support ring -3- on gear wheel with chamfer facing upwards.
Then insert extractor with hook -2- in gear wheel recesses.
Then press down support ring -3-.
Tension hooks -2- with nut (arrow).

Squeeze clip (arrow) and detach.
Unscrew bolts for clutch housing.
Detach clutch housing.
Detach differential from gearbox housing
→ Pull out sealing plug.

→ Pull out shift shaft (drive out with mandrel, if necessary).

→ Remove spring (arrow) between selector finger -A- and shift console -B-. Take out selector finger -A-. 
→ Remove bolt (arrow) and take out shift console with bushing.

→ Screw out reversing light switch (item 1) and reverse gear bolts (items 2, 3 and 4).

→ Remove 5th gear selector rod (item 1) and reverse gear selector rod (item 2) with reverse lever (item 3).
Pressing out output shaft:
Unscrew gearbox from repair stand
→ Then press output shaft -A- out of mounting in gearbox housing.
Screw gearbox into repair stand

→ Drive out reverse idler gear shaft (item 1).
Take input shaft (item 5), output shaft (item 4), 1st and 2nd gear selector rod (item 3), 3rd and 4th gear selector rod (item 6), reverse idler gear (item 2) and shaft (item 1) out of gearbox housing.
Press outer race/taper roller bearing for output shaft into gearbox housing

→ Insert output shaft -3- with 1st + 2nd gear selector rod -4-.

Slip reverse idler gear -1- over shaft -2- and insert shaft -2-.

→ Lift reverse idler gear to permit subsequent insertion of reverse lever for reverse gear

→ Raise output shaft -1- with 1st + 2nd gear selector rod -2- slightly and insert again together with input shaft -3- and 3rd + 4th gear selector rod -4-.

Notes:
Leave reverse idler gear raised with release tool VW 681.
On insertion with 3rd + 4th gear, guide input shaft past 4th gear wheel of output shaft.
→ Screw on reverse idler gear shaft.

→ Insert reverse lever -1- in selector rod for reverse gear -2-.
Fit components; start by inserting reverse lever in reverse idler gear.

→ Screw on reverse lever (arrow).
Take release tool VW 681 out of gearbox housing.
→ Fit 5th gear selector rod -1- and screw on.

→ Move selector rods -A- to neutral position.
Fit shift console -B- with bushing and bolt.
Align shift console -B-. To do so, insert shift shaft -C- and tighten bolt -arrow-.
Take out shift shaft -C- again.

→ Insert selector finger -1- in shift console -2-.
→ Insert spring (arrow) between selector finger -1- and shift console -2-. Press shift shaft -3- into selector finger and shift console.

Drive in sealing plug -4- flush. If necessary, adjust selector finger and selector sleeve.

Installation position:
Shoulder points into gearbox housing. Insert differential. Mount clutch housing. Screw in reversing light switch. Install springs, thrust washers, tapered rings and flange shafts for triple roller joint. Heed distinguishing features of flange shafts.

→ Distinguishing features

<table>
<thead>
<tr>
<th>Item</th>
<th>Flange shaft for triple roller joint</th>
<th>Dimension &quot;a&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left, gearbox housing end</td>
<td>57 mm</td>
</tr>
<tr>
<td>2</td>
<td>Right, clutch housing end</td>
<td>48 mm</td>
</tr>
</tbody>
</table>

Installation position of 5th gear wheel
Shoulder at ID faces gearbox housing
→ Drive on 5th gear wheel
Screw in new bolt -1- with dished washer -2- for 5th gear wheel.

Installation position of dished washer for bolt of 5th gear wheel:

Outer diameter faces 5th gear.

Fit thrust washer -3- for 5th speed sliding gear.

Installation position:

**Shoulder at thrust washer ID faces taper roller bearing.**

Heat sleeve for 5th gear needle bearing to approx. 100 °C on heating plate and drive on.


→ Installation position of 5th gear synchro-hub

High collar of synchro-hub (dimension -a-) faces gearbox housing.

→ Drive on 5th gear synchro-hub -1- with attachment 30-23
Note:

Pay attention to freedom of movement of synchro-ring when driving on synchro-hub.

Locking pieces must be located in synchro-ring recesses.

Fit circlip -2-.

→ Squeeze clip -arrow- and attach to 5th gear selector rod.

→ Installation position of 5th gear locking collar

Install pointed teeth (arrow A) facing 5th speed sliding gear.

Insert such that marks (arrow B) made on toothing are positioned in recesses at synchro-hub.
→ Screw on bolt -A- for 5th gear wheel; to do so, engage 5th gear (arrow 1) and 2nd gear (arrows 2 and 3). Detach locking collar again

If necessary, use thread cutter M8x1 to clean tapped hole for screw in housing.
Fit locking collar together with 5th gear selector fork.

→ Screw back lock nut (arrow A) beneath 5th gear selector fork.
Screw in screw (arrow B).

5th gear adjustment

Basic setting

Coat thread of screw with locking fluid D 000 600.
Rotate gearbox into installation position.
All selector rods in neutral
Unfasten lock nut of screw.

→ Set locking collar flush with synchro-hub by turning screw (arrow).
Fine adjustment

5th gear must be engaged.

→ Screw in screw (arrow A) until there is no longer any 5th gear selector fork axial clearance in locking collar groove.

Then screw back screw (arrow A) just enough to create clearance between locking collar and selector fork (approx. 1/8 of a turn).

Secure screw (arrow A) with lock nut (arrow B) beneath 5th gear selector fork at gearbox housing. Screw must not be turned when doing so.

5th gear is to be disengaged. Locking collar must then be in neutral position. Synchro-ring must move freely.

Fit gasket.
Fit cover for gearbox housing