

CAE Ultra Shifter

Installation instructions

📍 10046 UP
"UNDERFLOOR"

VW UP GTI

6-speed transmission
02J, MQ200



PLEASE NOTE

SAFETY FIRST!

- 📍 Raise the vehicle safely with a vehicle lift for installation. Improper lifting can cause damage to the vehicle and/or personal injury or even death!
- 📍 Please only do the installation if you have appropriate experience in the automotive sector and have the right tools! An incorrectly installed Shifter can seriously damage the transmission or make the vehicle undriveable or not shiftable and lead to serious accidents!
- 📍 If work on the electrical system is necessary, please follow the manufacturer's specifications.
- 📍 Carry out all work with care and cleanliness! For the professional assembly of a shifter is no force required. All parts are designed to fit your vehicle.
- 📍 If you are unsure, please contact your trusted workshop about the installation!

BASICALLY

- 📍 Use ethyl alcohol/brake cleaner to clean all aluminum parts.
- 📍 Occasionally lubricate all moving parts with spray grease, which has good creeping properties. Our recommendation: Würth HHS 2000 (WD-40 or similar is unsuitable because it is too thin)
- 📍 Generally attach a sealing sleeve to all ball heads (if available on the model). Lift sealing sleeve very slightly to lubricate.
- 📍 All screws and nuts that are not self-locking or are fitted with tooth lock washers glue in during assembly!
- 📍 After installing the shifter, secure all ball heads (if available on the model) with the cotter pins provided!
- 📍 If CAE shift cables are included in the scope of delivery, please never kink them!

i SURFACES AND THEIR CARE

Please note that an untreated aluminum surface (ALU) is sensitive to aggressive Liquids to which i.a. Hand sweat also counts. Especially the high-strength 7075 aluminum we use has a tendency to form black spots of corrosion due to its high copper content. Under special circumstances, very salty air near the sea and coast can lead to corrosion. The surfaces should therefore be cleaned regularly and treated with care to prevent this. For this purpose, e.g. ethyl alcohol or brake cleaner. Only spray these onto a cloth and wipe the shifter with it, NEVER spray the shifter directly. If stains have already formed, they can be removed with commercially available aluminum polish, but that is also not allowed get into the movable parts of the shifter. The anodized versions of our shifters (EXS, EXGR) are more resistant to corrosion. The steel parts have to be also cared in all variants.

TIPS FOR GEAR SHIFTING

i FORCE DOESN'T MAKES YOU FASTER – IT ONLY HARMS THE TRANSMISSION

The question arises again and again: "Does a CAE shifter puts more strain on a gearbox than a standard gear lever?" The answer is clear: "No!" The things that are most stressful for a synchronizer ring in a transmission are excessive shifting forces or a wrong shift in gear. Basically, the shift travel with a CAE Shifter is significantly shorter than with the standard lever. We achieve 30 - 55 % reduction depending on the vehicle and transmission type. This can only be achieved by using the appropriate gear ratio on the shift lever. You can feel it through the precision of a CAE shifter engaging the gears is much better than with a standard gear lever designed for comfort. The force for this decreases in the same proportion - we put in the gears with significantly less load for the synchronizer rings. In addition, with a correctly adjusted CAE shifter put in the gears is very precise and shifting into the wrong gear is extremely rare. Even in motorsport, fast, precise, but still sensitive shifting leads to the goal! Everything else is pure tugging and tearing (often seen on various YT channels), which looks "important", but in no way makes it faster - but it puts a disproportionately high strain on a transmission and in the worst case causes a fatal wrong shift in gear!

i The shifter is designed for vehicles with interior equipment. The upper part of the center console can be remounted in the vehicle after the shifter has been installed. However, some modifications are necessary.

The cover frame of the shift bag and the center console must be cut out to ensure the required clearance for the shifter (details on design on page 5).

E.g. an air saw or a small angle grinder with small, thin cut-off wheels are suitable for this purpose.

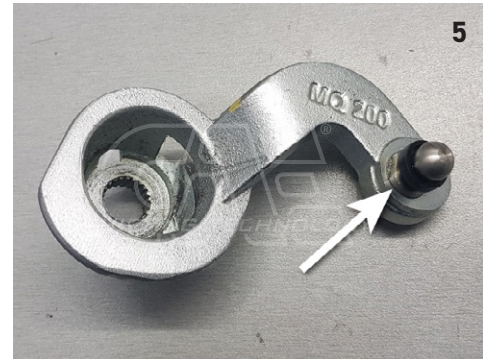
Disassembly

- ▶ Lift the vehicle safely on a vehicle lift. Disconnect battery and remove incl. battery carrier.
- ▶ Remove ends of original gearshift cables. Remove transmission lever, remove spring clips of cables from abutment.
- ▶ Remove underbody panelling and heat shields. To do this, unhook/release the exhaust and let it hang approx. 60 cm, secure with rope or wire. Make sure that the flex pipe is not overstretched.
- ▶ Unclip the shift boot frame upwards and pull off the dashboard trim below the radio – this is only clipped (Picture 1+2).
- ▶ Remove the upper part of the center console (2 screws each at the front and rear, the rest is only clipped). The lower part of the center console does not need to be removed.
- ▶ Now the 4 fastening nuts of the shift unit are accessible, loosen them to take out the shift lever with the shift cables downwards (Picture 3).



Editing the gearbox levers

- ▶ The transmission levers must be reworked (Picture 4+5) and the absorber weight cut off from the shift lever. Drill out the original bolt for the cable attachment (\varnothing 8 mm) and mount the supplied ball head.
- ▶ Saw off the cable fastening bolt on the selector lever, drill through the hole (\varnothing 6.8 mm) and cut the M8 thread. Screw in the ball head with 2 washers and glue in place with screw adhesive (Picture 6+7). Reattach the gearshift and selector lever to the transmission.



The installation

- ▶ Glue foam rubber strips to the shifter from above/below (Picture 8+9) to ensure gas tightness after assembly. Make sure that all holes in the base plate are covered.
- ▶ Insert the shifter into the tunnel from below according to the series part and fasten it with the 4 nuts.



Mounting the shift cables on the shifter

- ▶ Dismantle all attachments of the shift cables on the S and W gear unit side. On the shift lever side, remove all attachments except for 1 washer, toothed lock washer and nut.
- ▶ The longer cable S is attached to the center of the switch tower, correspondingly the shorter selector cable W to the left (Picture 10). The shifting cables must protrude as far as possible from the box, no thread is visible inside!
- ▶ When installing, immediately route the cables in the direction of the engine compartment above the gear unit. Secure the M16 nuts with the toothed lock washers supplied, do not glue them in!
- ▶ From the engine compartment, slide one heat protection hose onto each of the cables and secure it against slipping with the clamp still on the metal bushing behind the thread (Picture 11).
- ▶ Fit the cables with washers, toothed lock washers and nuts, installing the cable abutment at the same time. Tighten the cable fastening nuts; the cables must be laid without tension. Do not glue in the M16 nuts of the shift cables, but tighten the nuts until the toothed lock washers are noticeably blocked.
- ▶ Grease/press on the ball cups. **Do not** install the retaining clip of the ball cups yet.



SHIFT CABLES

i HEAT PROTECTION FOR SHIFT CABLES (FOR ALL VEHICLES WITH CAE SHIFT CABLES)

Exhaust systems generate unbelievable temperatures, which are several 100 degrees, especially under full load! Therefore, the shift cables must be protected against the extreme heat with the blue-gray protective hoses! Also the protected gearshift cables are not allowed to touch the exhaust. For turbo engines, please take additional measures, such as aluminum honeycomb sheets, heat protection tape or foils.

📍 EXCESSIVELY HIGH TEMPERATURES PERMANENTLY DAMAGE THE SHIFT CABLES! ESPECIALLY IN MOTORSPORT THE HEAT DEVELOPMENT IS ENORMOUS!

i ORIENTATION FOR INSTALLATION

Our shift cables are marked with different stickers at the ends. The connection to the shifter comes with a circular contour, the connection to the gearbox is made without a circular contour (S = Shift / W = Choose).



* With the underfloor shifter, this washer is omitted inside the shifter box!

Setting of the center position

- ▶ Adjust the spring stop (Fig. 12) under the gearshift bracket so that the gearshift lever is slightly tilted to the right (approx. 5 degrees).
- ▶ Now shift the transmission to 3rd or 4th gear. To do this, move the shift lever forwards or backwards without moving it sideways.
- ▶ Adjust the ball socket "Dial" on the gearbox so that it can be pressed onto the ball without changing the length on the rope.
- ▶ Tighten the M6 nuts on the ball socket(s) and coupling rod.



TEST: With 3rd and 4th gear engaged, the lateral play at the shift lever must be equal.

Make the fine adjustment on the side coupling rod (Picture 13) on the shifter.



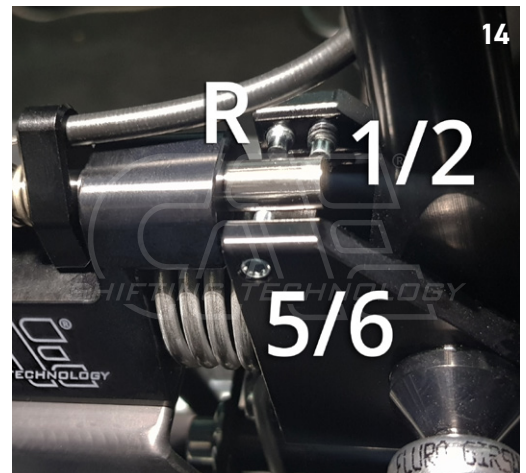
IMPORTANT! Check the cables for "end position free travel". When the gear is engaged, there must still be a residual travel available on the cable!

A hard metallic noise when engaging the gear is always a sign of missing remaining travel!

TEST: With the gear engaged, pull the ball socket off the gearbox and check whether the cable can still be moved at least 3 mm further. This applies to the "front" gears R-1-3-5 when the cable is retracted and to the "rear" gears 2-4 (6) when the cable is extended. The end position can be corrected by screwing the ball cups in or out on the M6 thread of the cables.

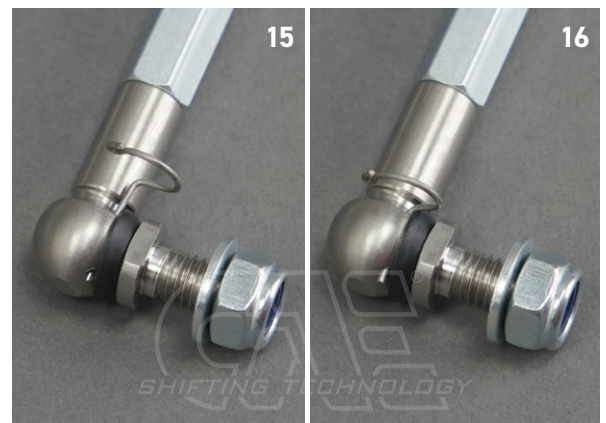
If necessary, install the hexagonal extension sleeves for this purpose!

- ▶ Now shift to level 1/2 using the shift lever. Screw in the stop screw until the gears can be changed cleanly in level 1/2.
- ▶ Now shift to 5/6 gear level and screw in the stop screw until 5th gear can be engaged cleanly.
- ▶ Actuate reverse gear lock pin via pull and shift transmission to reverse gear level. Screw in stop screw until reverse gear can be engaged cleanly.
- ▶ The stop screws (Picture 12) must never touch the bolt when the gear is engaged. A distance of approx. 0.5 mm is OK.
- ▶ Mount retaining clips (Picture 13+14) on all ball cups.
- ▶ Screw the cover plate under the shifter box.
- ▶ Reinstall heat shields, exhaust, underbody panels, battery tray and battery.



FINALLY check all functions and settings during the test drive and readjust if necessary!

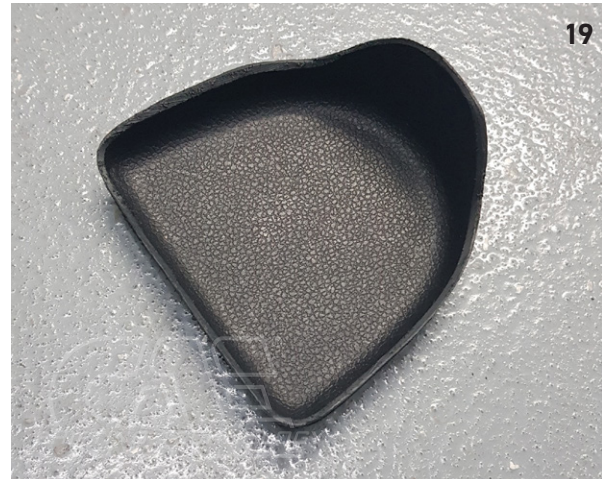
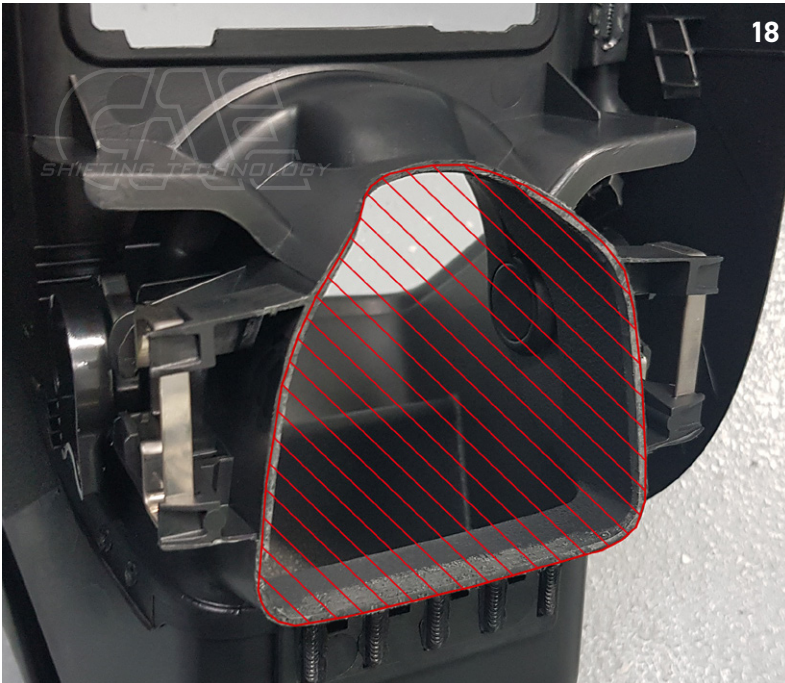
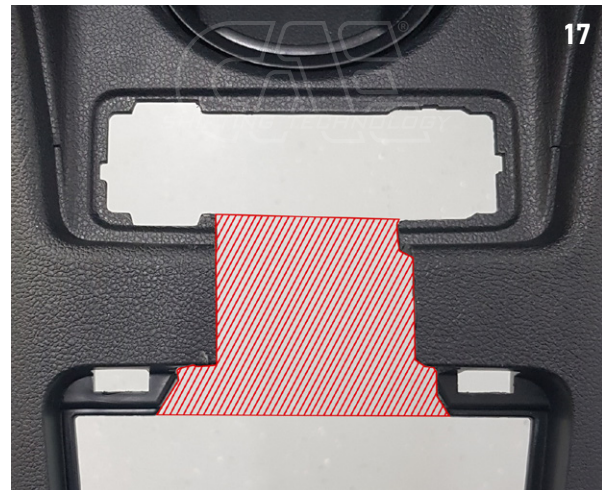
Incorrect or inaccurate settings can cause damage to the gear box and consequential damage!



CAE wishes you a good trip.

Editing center console and shift bag

- ▶ The red shaded areas must be cut out. On the upper part of the center console, the bar is removed as in Picture 17.
- ▶ Cut off the base of the cup holder (Picture 18+19) and deburr it. This will be glued back in place from above later.



- ▶ Cut off the shift bag from the original shift lever, cut out the frame corresponding to the center console (Picture 20) and cut the shift bag in as evenly as possible along the entire length at the front.
- ▶ Clip the shift bag into the center console and carefully route the bag along the right and left sides of the shifter.
- ▶ Finally, apply a little glue to the rim of the base of the cup holder (dose carefully so that no glue edges ooze out) and insert it into the hole from above (Picture 21).



RACE THE ORIGINAL



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