

CAE Ultra Shifter

Installation instructions

📍 10046 9NGTI / SEIB 6L
"UNDERFLOOR"

VW Polo GTI 9N3
Seat Ibiza Cupra 6L

5-speed transmission
02J R/RE



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 intended for vehicles with interior equipment. The center console can be remounted in the vehicle after the shifter is installed. However, small modifications are necessary.

The cover frame of the shift bag (Picture 1+2) must be cut out to ensure the required clearance for the shifter.

E.g. an air saw or a Mini-Flex with small, thin cutting discs are suitable for this purpose.



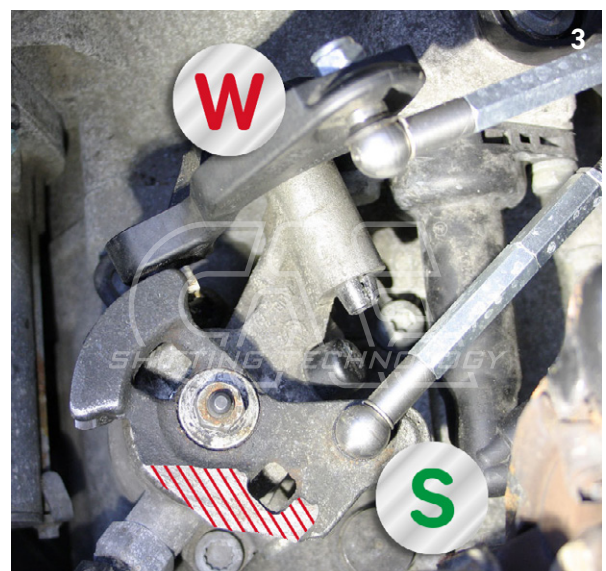
Disassembling

- ▶ Lift the vehicle safely on a vehicle lift. Disconnect battery and remove incl. battery carrier.
- ▶ Remove ends of original shift cables, remove transmission lever and cable 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.
- ▶ Remove the center console. The fastening nuts of the shift unit are now accessible. Loosen them to remove the shift lever downwards. Completely remove the original shift lever and shift cables.



Editing the gearbox levers

- ▶ The transmission levers must be reworked (Picture 4-6) and the absorber weight from the shift lever must be cut off (see hatched area in Picture 3).
- ▶ Drill out the original bolts for the rope attachment on both levers (Ø 8 mm) and mount the supplied ball heads.
- ▶ Depending on the design, the lever must be ground flatter so that the bolt thread is sufficient.
- ▶ Then reattach the shift lever and selector lever to the transmission, grease the bearing bolts of the selector lever well.
- ▶ Do **not** reattach the cable abutment **yet**.





The installation

- ▶ Stick foam rubber strips onto the shifter from above/below 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 M6 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 7+8). The switch 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 9).
- ▶ Fit the cables with washers, toothed lock washers and nuts, installing the rope abutment at the same time. Tighten the cable fastening nuts. The cables must be laid without tension.
- ▶ Grease the ball cups and press on the "shift cable" cup - "Dial" not yet. 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!

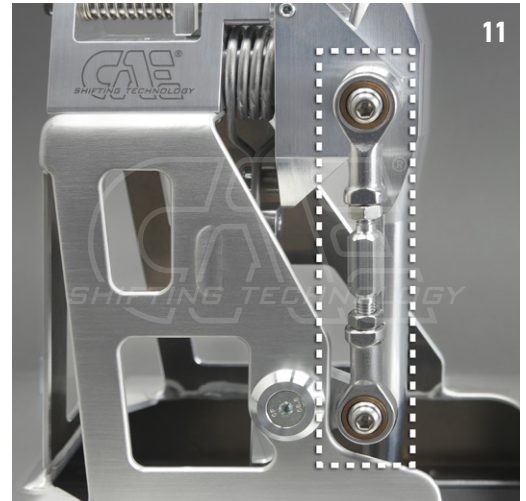
Setting of the center position

- ▶ Adjust the spring stop (Picture 10) 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 cable.
- ▶ 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 11) on the shifter.



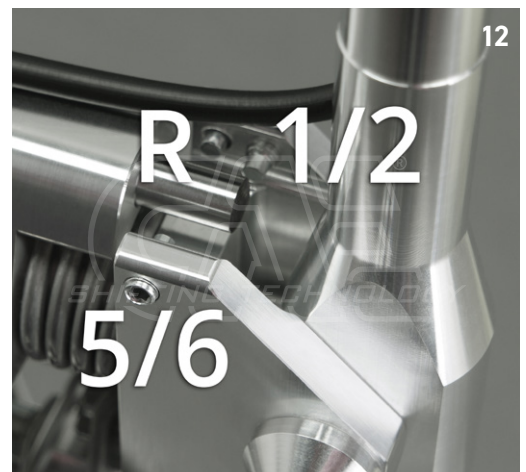
IMPORTANT! Check the cables for "end position free travel". When the gear is engaged, there must still be a residual travel available on the cable!

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.

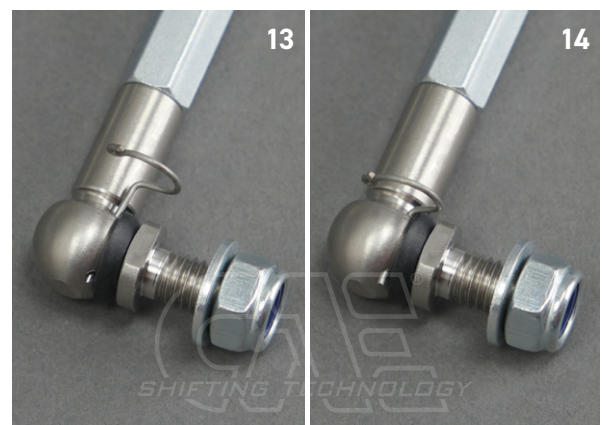
If necessary, install the hexagonal extension sleeves for this purpose!

- ▶ 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.

RACE THE ORIGINAL



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