

CAE® SHIFTING TECHNOLOGY

ULTRA SHIFTER

Installation instructions

📍 10045HD AU MQ500 / VW MQ500
also 10045HD VW MQ500

"RACE VERSION"

Audi RS3-TTRS / VW Golf 4-5-6 / R models

6-speed transmission
MQ500



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 which 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 without interior equipment.

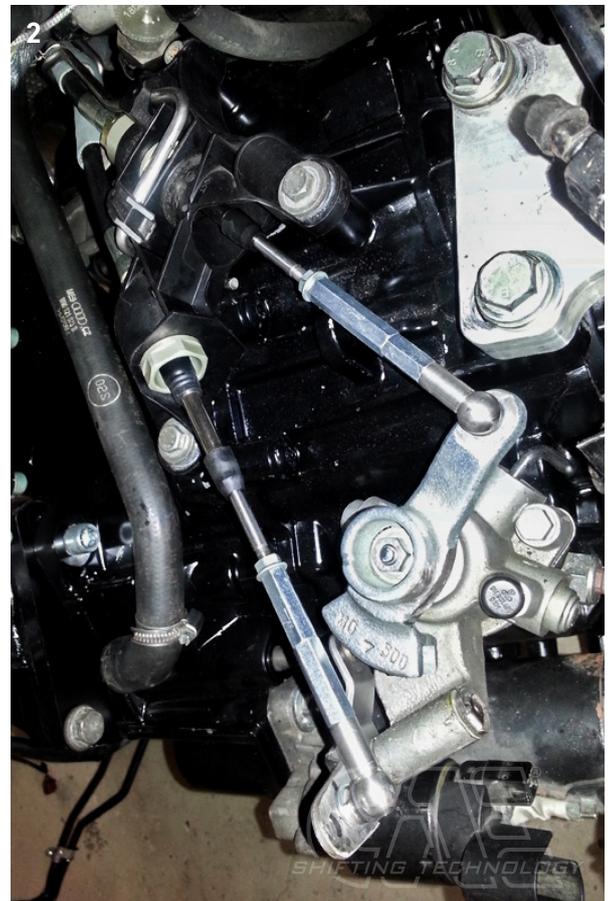
The removal

- ▶ Lift the vehicle safely on a car lift. Disconnect battery and remove incl. battery carrier. Remove the ends of the original shift cables. Remove cable abutment on transmission and transmission lever.
- ▶ Remove underbody panelling and heat shields. Unhook/loosen exhaust and let hang approx. 60 cm, secure with rope or wire. Make sure that the flex pipe is not overstretched. (Picture 1)
- ▶ Remove the cover frame of the center console. Also remove the side skirts to access the screws of the console holder behind them, loosen the holder, it can remain in the center console.
- ▶ From the top, loosen the nuts of the original shift lever and remove it downwards. Completely remove the original shift lever and shift cables.



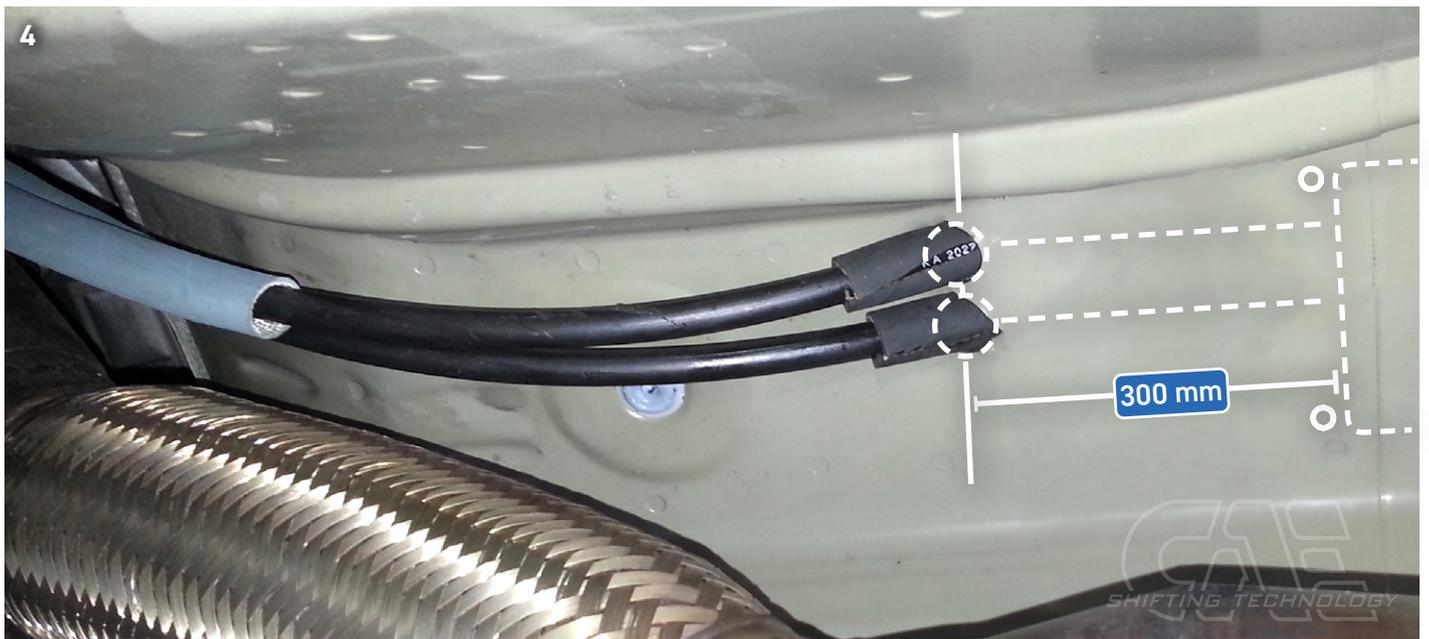
Machining the gearbox levers

- ▶ Rework the existing levers as described below, rework.
 - ▶ **ATTENTION!** The plastic selector lever can only be reworked with considerable effort!
- ▶ The absorber weight from the gearshift must be cut off.
- ▶ Drill out the original bolts for the cable fastening on both (\varnothing 8 mm), mount the supplied ball heads.
- ▶ Reattach gearshift lever and selector lever to the gearbox. grease the bearing bolts of the selector lever well. (Picture 2)



Sheet metal work

- ▶ Two \varnothing 20 mm holes are drilled in the tunnel to feed through the switching cables. The dimensions in the photo refer to the front edge of the tunnel cutout. Remove the heat protection shield and bitumen mat in the interior. Insert a suitable tube or solid material into the holes from below and fold it over to the front. This creates the rope bushings shown. (Picture 3, 4)



Mounting holes for shifter

- ▶ Place the shifter on the center tunnel and mark the two rear fastening holes. Drill holes \varnothing 6.5 mm and deburr. (Only necessary if the holes are not present, this varies with the vehicle types and over the years of manufacture).
- ▶ Stick foam rubber strips under the tunnel as shown. Then screw the shifter incl. cover plate as shown and make sure that all holes in the floor panel are covered. (Picture 5, 6, 7, 8)



Mounting shift cables

- ▶ Dismantle all attachments to the shift cables. Attach the longer cable **S** to the center of the shifter and the shorter selector cable **W** to the left.
- ▶ Guide the shift cables from below through the 20 mm holes into the engine compartment, installing the black hose pieces in the grommet to protect the shift cables.
- ▶ Immediately move the shift cables in the direction above the gearbox. The cables cross each other on their way to the gearbox.
- ▶ The shift cables must protrude as far as possible from the shifter, inside, no thread is visible in the shifter housing. (Picture 10, 11, 12) Placement of the ropes, see page 5.



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).



Connection shifter



Connection gearbox



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



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

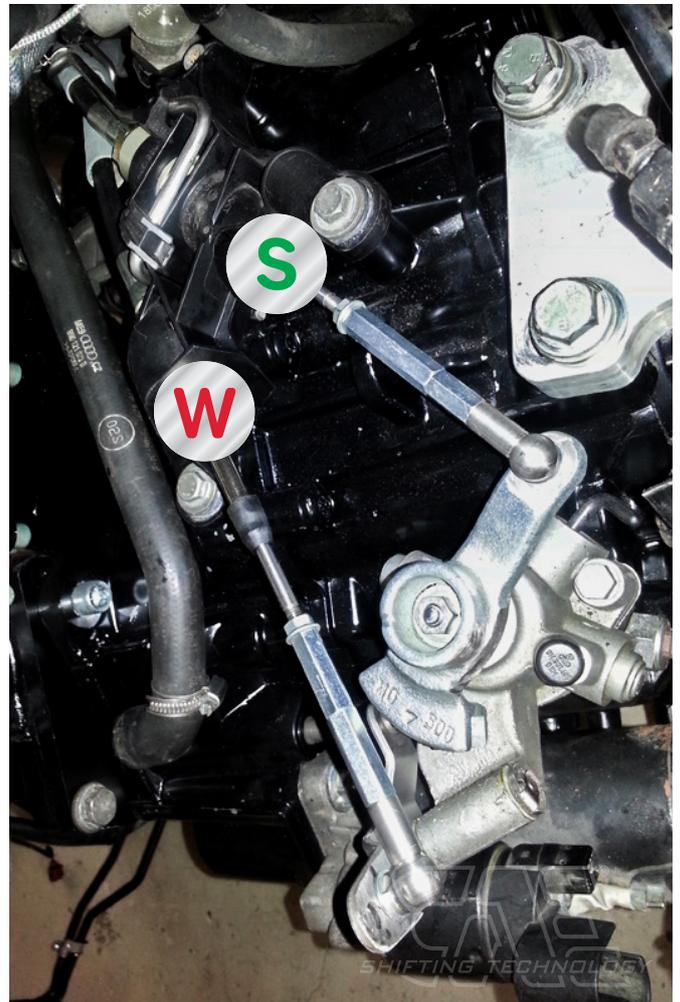
Exhaust systems generate incredible temperatures, which can be several 100 degrees, especially under full load! Therefore, the shift cables must be absolutely protected with the blue-gray protective hoses against the strong heat effect!

Also the protected shift cables must not be in contact with the exhaust. For turbo engines please take additional measures should be taken, e.g. aluminum honeycomb sheets, heat protection tape or foils.



**EXCESSIVELY HIGH TEMPERATURES PERMANENTLY DAMAGE THE SHIFT CABLES!
ESPECIALLY IN MOTORSPORTS, THE HEAT DEVELOPMENT IS ENORMOUS!**

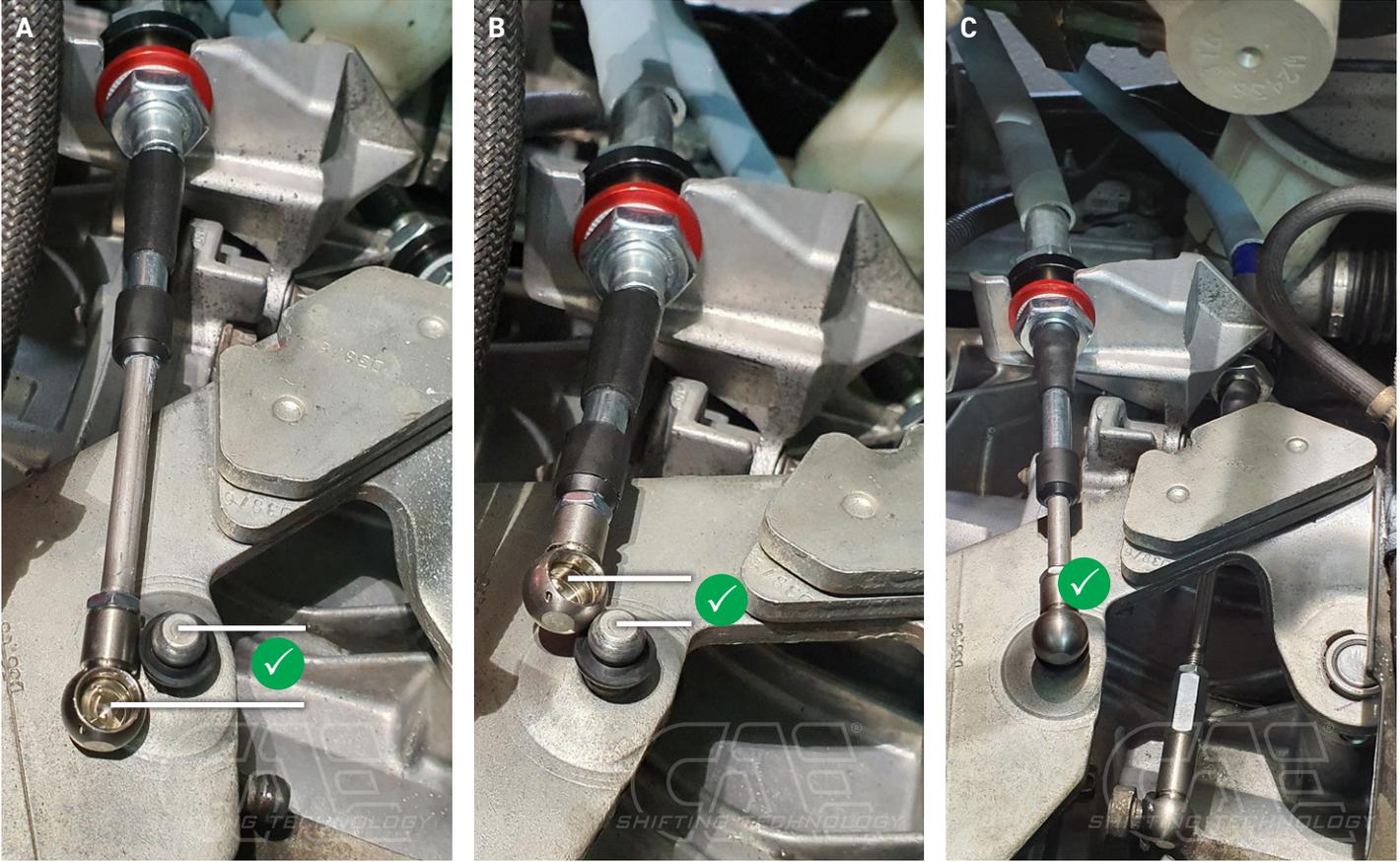
- ▶ From the engine compartment, slide a heat protection hose onto each of the ropes and secure it with the clamp still on the metal bushing behind the thread.
- ▶ Mount M6 nuts and ball cups as shown in the picture and press them onto the ball heads.
- ▶ Tighten the M16 nuts and make sure that there is no tension on the cables.
- ▶ See the sample photo for the placement of the shift cables.



CHECK THE END POSITIONS OF THE SWITCHING CABLES

PLEASE NOTE: ! Check cables for "end position free travel". When a gear is engaged, there must still be a residual travel available on the rope! (Picture A, B, C)

Sample pictures:



CHECK: With the gear engaged, pull the ball cup off the gearshift lever and check whether the shift cable can still be moved at least 3 mm. This applies to the "front" gears R-1-3-5 (Picture A) with the cable retracted and to the "rear" gears 2-4 (6) (Picture B) with the cable extended. The end position can be corrected by screwing the ball cups on the M6 thread of the cables in or out.

► After checking and adjusting, reassemble the ball cups from the shift cable. (Picture C)

ATTENTION: THIS CONTROL IS VERY IMPORTANT FOR THE FUNCTION OF THE SHIFTER !!!
If the remaining travel on the shift cable is missing, there is an immediate risk of damage to the gearbox. !!!!!

Einstellung der Schaltwege 6 Gang Getriebe

- ▶ On the left of the shifter, pull the coupling rod off one of the balls. Shift the transmission to 3rd or 4th gear by hand.
- ▶ The 3rd and 4th gears are in neutral zero position. To engage them, simply move shift lever forward or backward without load.
- ▶ Now determine desired center position of shift lever (in center position, shift lever should be slightly tilted to the right) (Picture 13) and tighten lower spring stop under shift bracket with 5mm Allen wrench. (Picture 14)
- ▶ Now press the coupling rod back onto the ball on the L lever. Adjust the R/L spindle between the L lever and the side arm so that the shift lever does not move sideways when the ball socket is pressed on. It must now be possible to engage 3rd/4th gear correctly.
- ▶ Shift the gearbox to level 1/2 using the shift lever and screw in the stop screw until the gears can be changed cleanly in level 1/2. (Picture 15)
- ▶ Now shift gearbox to 5/6 gear level using shift lever and screw in stop screw until 6th gear can be engaged cleanly. (Picture 15)
- ▶ Actuate reverse gear locking pin via cable and shift transmission to reverse gear level. Screw in stop screw until reverse gear can be engaged cleanly. (Picture 15)
- ▶ Lock all ball cups and install retaining clips.



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!

If you have any questions or problems, please be sure to contact us, we look forward to your feedback to improve our products.

CAE wishes you a good trip.

RACE THE ORIGINAL



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