

20
YEARS EXPERIENCE

CAE[®]
SHIFTING TECHNOLOGY

Installation instructions

📍 10047HD VW
"UNDERFLOOR"

Golf 7

6-speed gearbox
02M/Q, MQ350



WWW.CAE-RACING.DE

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.

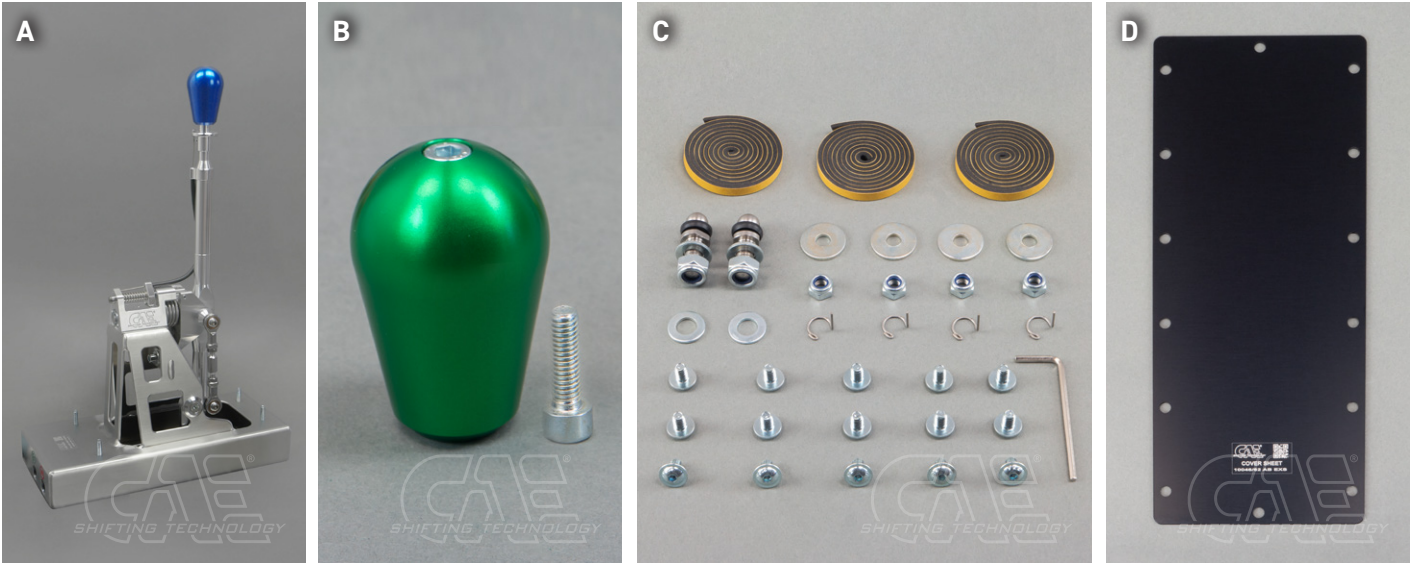
TIPS FOR GEAR SHIFTING

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!

Included in delivery

- ▶ 1x shifter completely assembled, design depending on ordered variant (Picture A)
- ▶ 1x Shift knob incl. counter screw M6x20 V2A, design depending on ordered variant (Picture B)
- ▶ Accessories package (Picture C)
- ▶ Cover plate (Picture D)
- ▶ 1x shift cable (S), 1x selector cable (W) (Picture D)



- i** The shifter is intended for vehicles with interior equipment. The center console does not have to be removed for installation.

The cover frames of the shift bag must be cut out until appropriate clearance for the shifter is ensured. Lubricate all moving parts occasionally with good spray grease, e.g. by tapping the rubber caps on the ball heads. For cleaning the aluminum parts we recommend commercial spirit



The removal

- ▶ Lift the vehicle safely on a vehicle lift. Disconnect the battery and remove it including the battery carrier. Remove the cable ends of the original gearshift cables. Remove the cable abutment on the transmission and the transmission lever.
- ▶ Remove underbody panelling and heat shields. Unhook/loosen 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.**

Pull up the shift bag. (Picture 1, A)
Loosen the storage compartment and remove it. (Picture 1, B)

Remove the climate control panel. (Picture 1, C)

Pull off the side panels of the center console. (Picture 2)

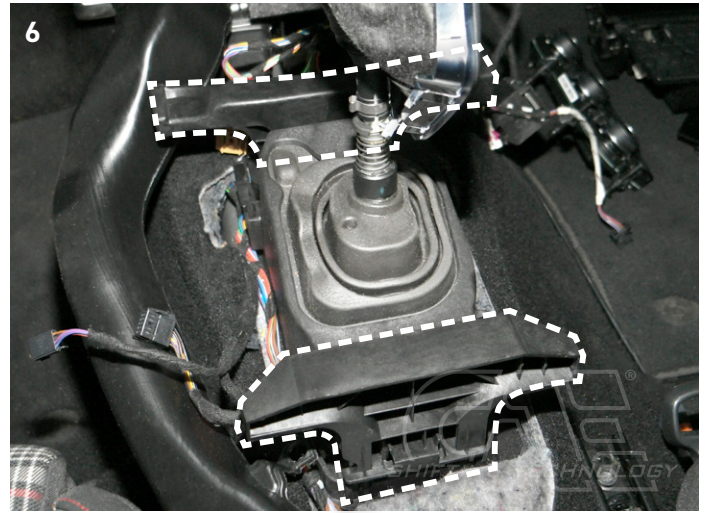
The front screws are located behind the cover. (Picture. 3)

Remove the rear part of the center console, loosen side screws near the belt attachment. (Picture 4)

Remove the complete center console.

Unclip or unscrew the two supports of the center console. (Picture 5, 6), then the fastening screws of the shifter are accessible. (Picture 7, 8)



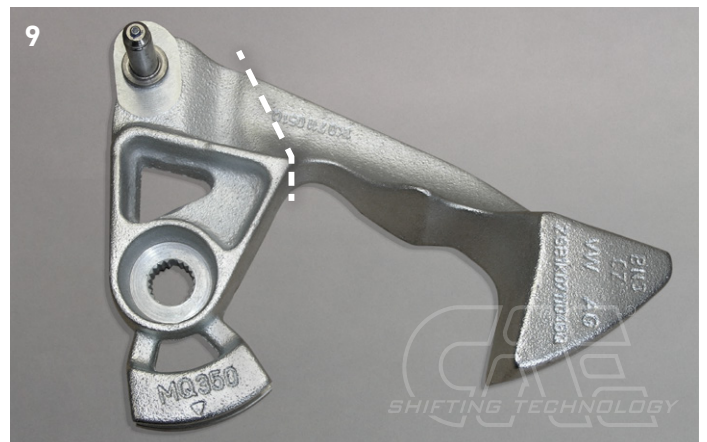


Editing the gearbox levers

▶ If our modified lever set **10145 KIT** was not ordered, the existing levers must be reworked.

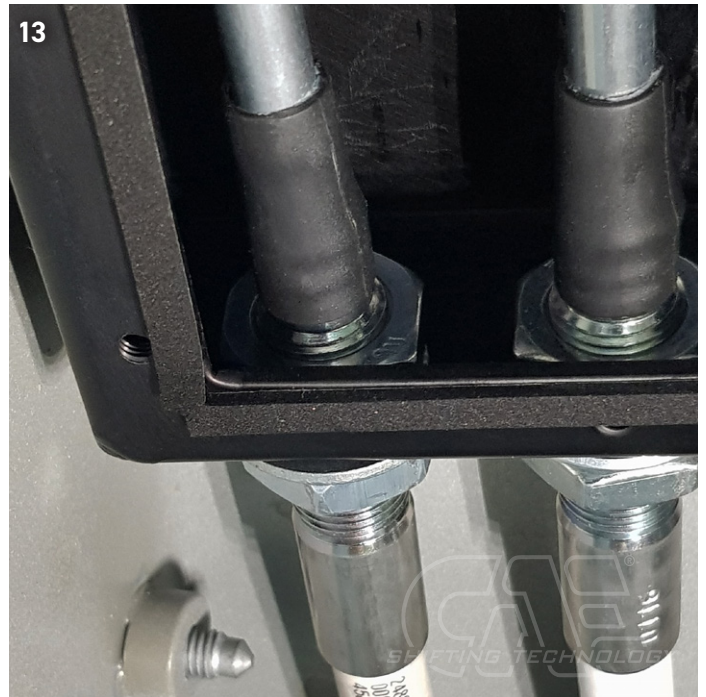
ⓘ ATTENTION: The plastic selector lever can only be reworked with considerable effort!

- ▶ The absorber weight from the gearshift must be cut off. (Picture 9)
- ▶ Drill out the original bolts for the cable attachment on both levers (\varnothing 8 mm) and install the ball heads supplied. (Picture 10, 11)
- ▶ Then reattach the gearshift and selector levers to the gearbox, 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 installation. Make sure that all holes in the base plate are covered. (Picture 12, 13)



- ▶ Cut off the sound insulation box as shown; it will be used later for mounting the center console support. (Picture 14, 15)



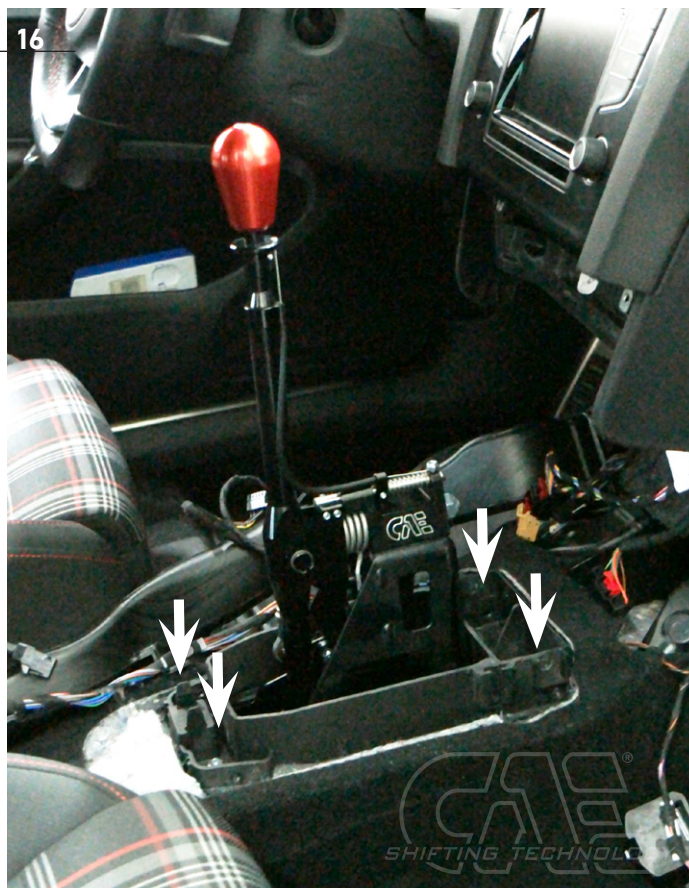
- ⓘ Generally, mount a sealing collar on each ball and grease ball cups and sealing caps. After complete assembly of the shifter, secure the ball heads with the cotter pin clips. Glue in all nuts / screws during assembly! Never kink the shift cables!

Shifter installation

- ▶ Insert the shifter into the tunnel from below in the same way as the standard part and fasten it with the 4 original nuts, while also retightening the muffler. (Picture 16)

Installing the shift cables on the shifter

- ▶ Dismantle all attachments of the shift cables on the S and W gearbox side. On the gearshift 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 shift tower, the shorter selector cable W to the left. The shift cables must protrude as far as possible from the box, no thread is visible inside! (Picture 17)
- ▶ When installing, route the cables immediately in the direction of the engine compartment above the gearbox. Secure the M16 nuts with the toothed lock washers supplied, do not glue them in!
- ▶ 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 to prevent slipping (Picture 19).
- ▶ 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.
- ▶ Grease the ball cups and press the "shift cable" cup on - "Dial" not yet. Locking clip of the ball cups yet.





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!**

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

Example photo for the assembly of the shift cables

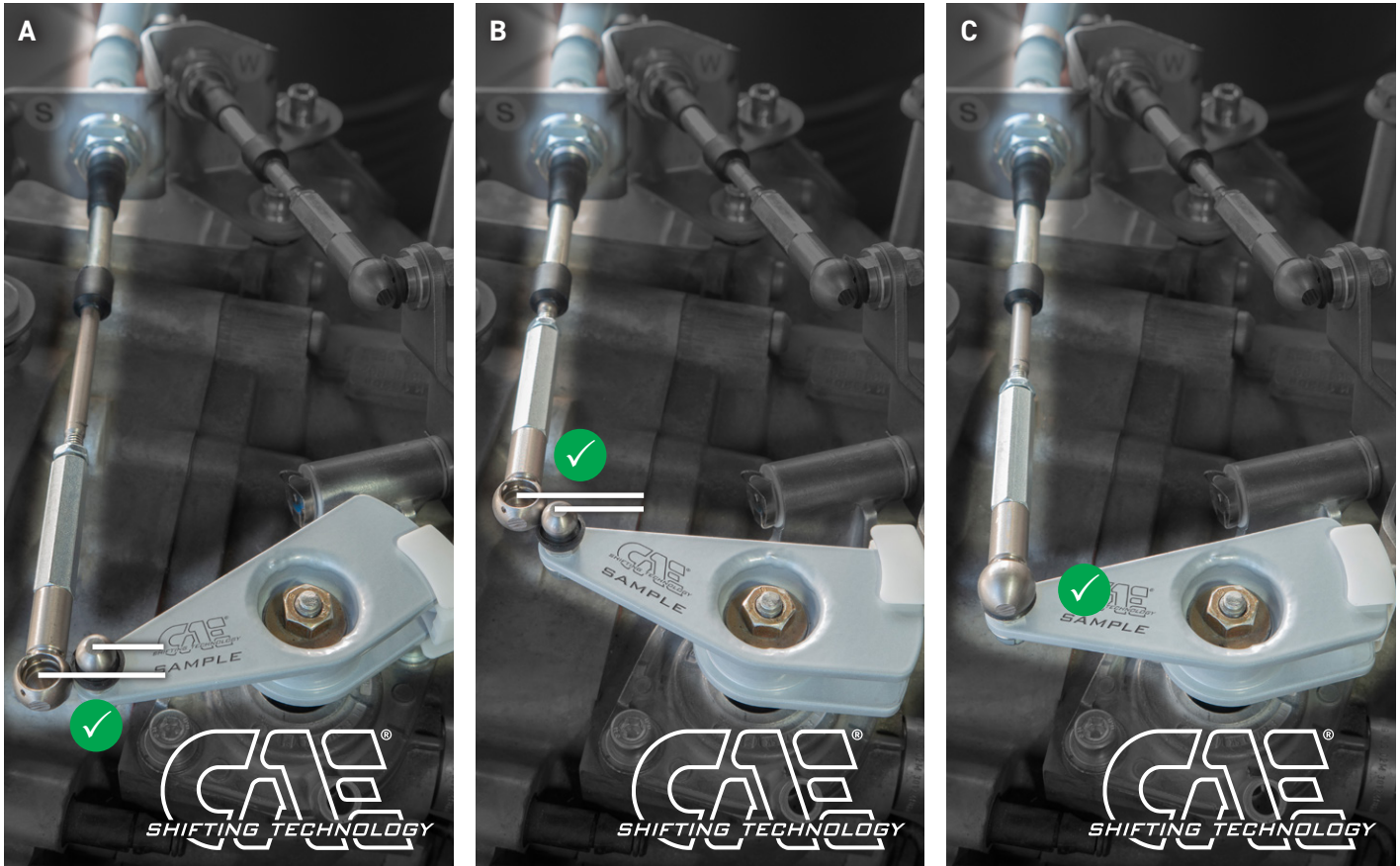


* With the underfloor shifter, this washer is omitted inside the shifter box!

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. !!!!!

Adjusting the shift travel of the 6-speed gearbox

- ▶ Adjust the spring stop (Picture 20) under the shift block so that the shift lever is exactly vertical.
- ▶ 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 "Select" ball socket on the gearbox so that it can be pressed onto the ball without changing the length of the cable.
- ▶ Tighten the M6 nuts on the ball socket(s) and coupling rod.

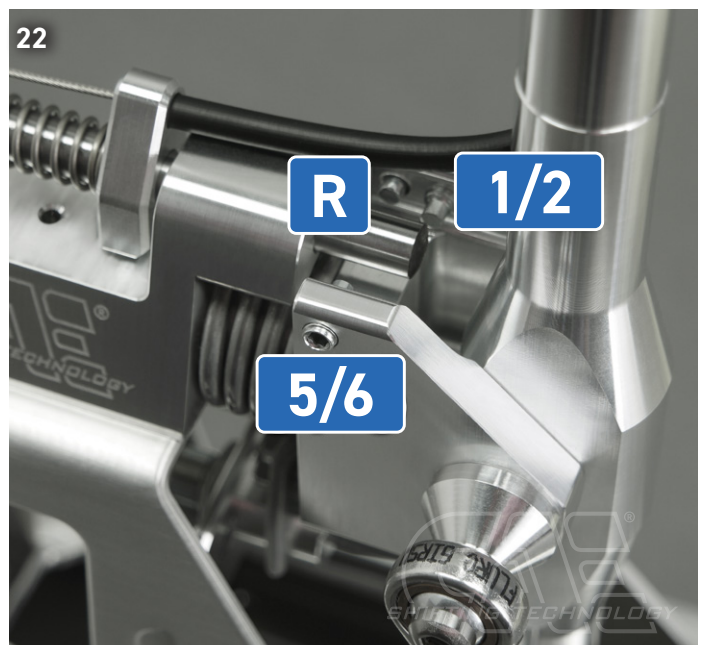
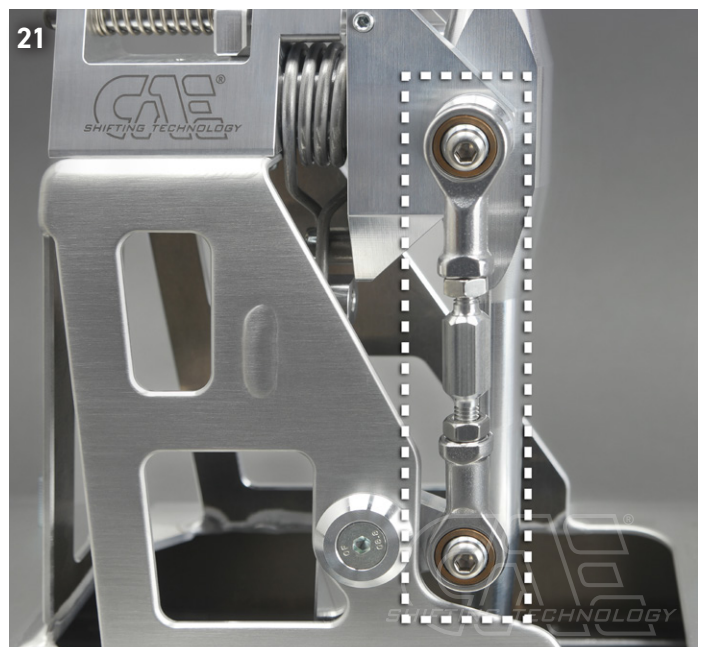
TEST: With 3rd and 4th gear engaged, the lateral clearance at the shift lever must be the same.

Carry out the fine adjustment on the lateral coupling rod (Picture 21) on the shifter.

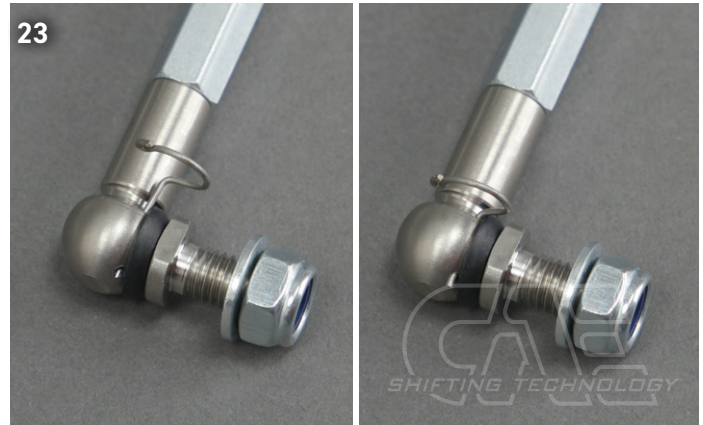
IMPORTANT! Check the cables for "end position free travel". When the gear is engaged, there must still be a residual travel available on the cable!

A hard metallic noise when engaging the gear is always a sign of missing remaining travel!
See page 4

- ▶ 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 22) must never touch the bolt when the gear is engaged. A distance of approx. 0.5 mm is OK.



- ▶ Mount retaining clips (Picture 23) 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!

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

Editing center console

- ▶ Edit trim parts according to the following pictures and reinstall the center console.



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