



SILVER SPORT
Transmissions

1973 – 1987 GM C-10 Truck

TKO 5-SPEED INSTALLATION MANUAL

FOLLOW FACTORY SERVICE MANUAL (FSM) RECOMMENDED SAFETY PRECAUTIONS. TRANSMISSION REMOVAL AND INSTALLATION IS A LABOR INTENSIVE JOB, WHICH CAN RESULT IN SERIOUS INJURY OR DEATH IF CAUTION IS NOT TAKEN. PLEASE BE CAREFUL PERFORMING THIS JOB, OR HAVE A PROFESSIONAL PERFORM THE JOB FOR YOU. REFER TO FSM FOR ADDITIONAL DETAILS OF THE PROCEDURES BELOW, AS REQUIRED.

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Before you start:

Test drive the vehicle, if possible, before you begin. Pay attention to noise and vibration and record your observations. At the end of the installation, perform another test drive to compare.

In addition to this manual, you should have received instructions for checking your bellhousing runout. **The bellhousing runout must be checked (and corrected if necessary) for Tremec's warranty coverage.**

You should also verify the parts you received. Compare the received items to the detailed invoice provided in your shipment.

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION

In addition to these instructions, you should receive the following instructions based on your order, **if applicable**:

1. All kits – MAA-00101 Inspection and Correction of Bellhousing to Crankshaft Runout
2. Hydraulic throw out bearing kit – MAG-00402 Hydraulic Kit Instructions for GM

Your invoice lists the individual hardware packs and where they are used.

NOTE: Transmission **must** be test shifted before installation. Due to jostling during shipping, some transmissions will not shift properly when removed from the box. Please make sure that the gear selector will move into each of the (6) possible positions while rotating the input shaft and checking for output shaft rotation. The rubber sleeve may need to be removed from the output shaft to allow it to turn easier (see photo on page 5). If the input shaft will not turn, slide the clutch disc over the input shaft and jerk the clutch disc left and right to break it free. If this does not correct the issue, call Silver Sport Transmissions' Technical Support at **888-609-0094** for assistance.

THIS CANNOT BE CORRECTED WITH THE TRANSMISSION INSTALLED IN THE CAR!
TEST SHIFT FIRST!

A. REMOVE EXISTING EQUIPMENT

1. Disconnect negative (-) battery cable.
2. Remove shifter knob and boot. Place shifter in neutral.
3. Remove console, if equipped.
4. Raise car securely on lift or jack stands. 6 ton stands are taller and will give you more working room under the car.
5. Remove clutch linkage at torque arm to clutch fork.
6. Unbolt starter and set aside.
7. Remove bellhousing dust cover.
8. Remove driveshaft at rear differential and remove from car.
9. Using an angle finder or digital level, measure the transmission angle. The most reliable place to get the measurement is from the machined vertical face that the rear seal goes into at the back of the tailhousing. Record this measurement for future reference.
10. Remove shift lever and shifter assembly.

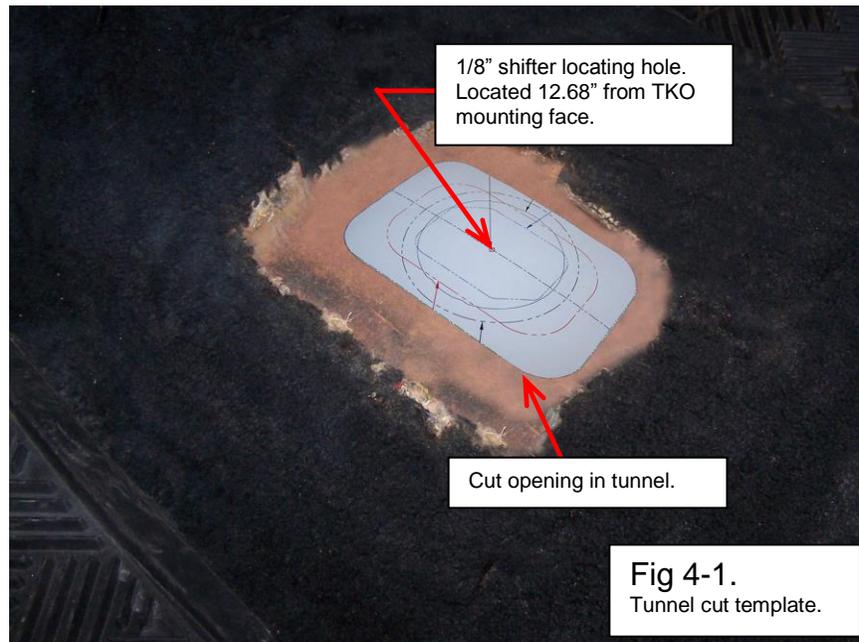
11. Remove breather assembly and distributor cap from engine. Big block vehicles may need the fan shroud loosened as fan blades may contact it as the engine is lowered in the back during transmission removal.
12. Disconnect throttle linkage.
13. Remove speedometer cable.
14. Disconnect reverse lamp wiring.
15. Secure rear of engine with hydraulic jack.
16. Remove exhaust, as required, for working clearance and to permit the engine to drop.
17. Unbolt transmission from the bellhousing mount (if applicable), or unbolt from crossmember and remove crossmember.
18. Secure transmission (jack recommended) and unbolt from bellhousing, then move rearward and remove from vehicle.
19. Remove bellhousing and clutch unit.
20. Remove clutch fork and release bearing from bellhousing. Inspect release bearing, fork, and pivot ball stud for wear. Contact Silver Sport Transmissions or your local parts supplier if replacements are needed.
21. Inspect flywheel ring gear teeth (no cracks, chips, wear), and friction surface (no cracks). Silver Sport Transmissions strongly suggests removing flywheel and having it resurfaced, then dynamically balanced at a reputable automotive machine shop **unless** the engine was externally balanced with the flywheel installed.
22. Remove pilot bushing using removal tool.

B. VEHICLE PREPARATION

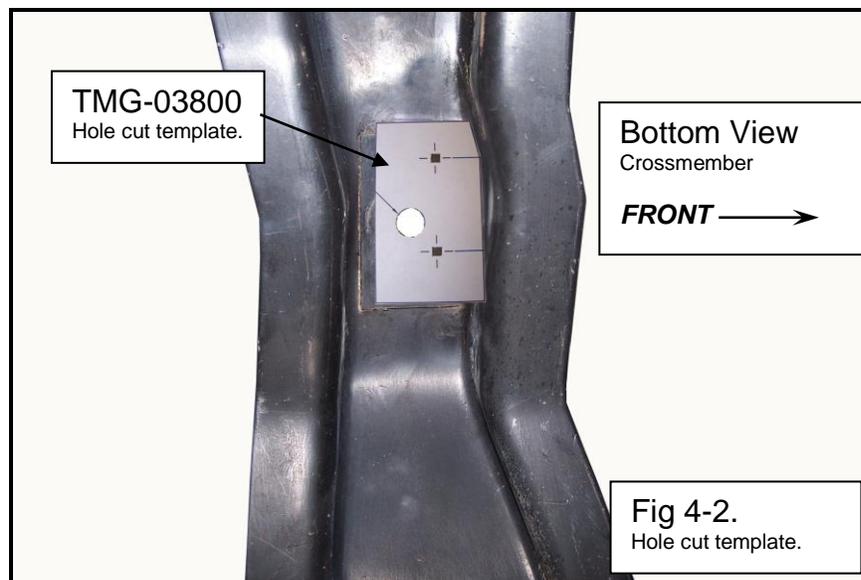
If you are converting from an automatic transmission or from a column-shift vehicle, first you must cut the shifter hole. To locate the shifter hole, use the following procedure:

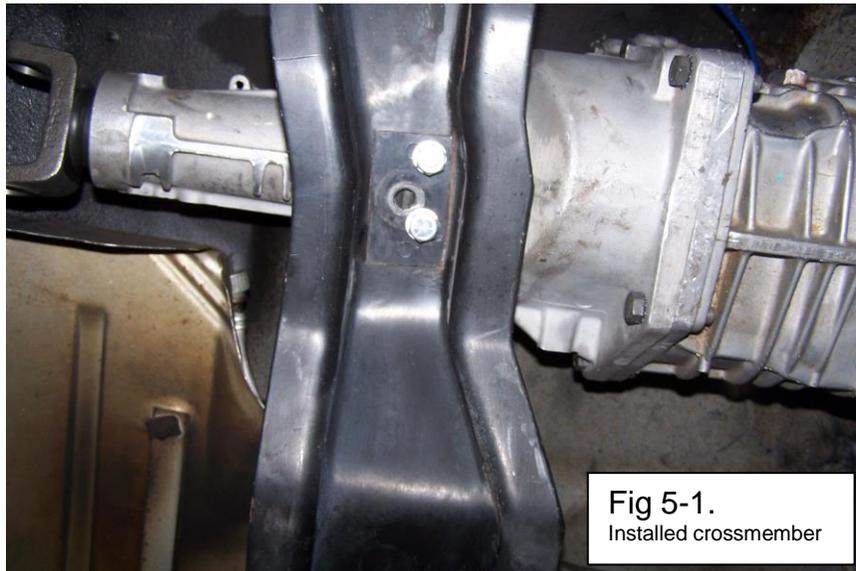
Due to variation in dimensions on these cars from the factory, some cars might need an additional tunnel modification to achieve the correct driveline angle.

1. Remove the front seats and carpet.
2. Temporarily attach bell housing to the engine.
3. From rear face of bell housing (transmission mounting face), measure 12.68" on driveline centerline and mark center location on underside of tunnel. Drill 1/8" dia shifter locating hole thru tunnel.
4. Cut out the paper shifter hole cutting template TMG-10205 for the proper hole corresponding to the shifter boot that will be installed. Place the paper template on the top of tunnel to align with the 1/8" dia shifter locating hole and tape to tunnel. See Fig 4-1.
5. Mark the area to be cut by tracing around the template area. Carefully cut the shifter opening area thru the tunnel.



6. Original crossmember will be reused by adding (2) holes for isolator mount attachment with the TKO.
7. Cut out isolator mounting hole template TMG-03800 and align locating hole with original isolator hole in crossmember. Mark and centerpunch the (2) hole locations and drill to 1/2" dia.
See FIG 4-2. Deburr holes and paint for rust protection.



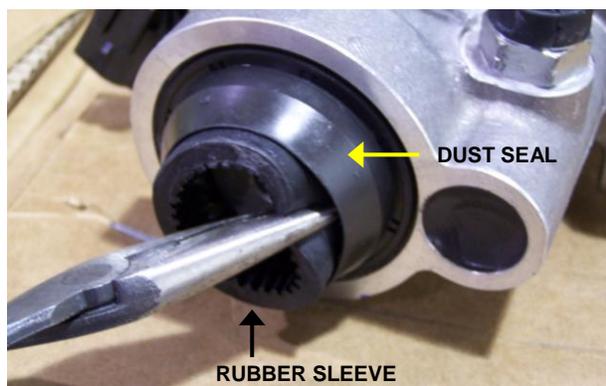


8. Install crossmember to isolator mount with hardware pack HWG-PACK B. Raise engine until ends of crossmember are in contact with bottom surface of frame rails. Making sure crossmember is square to driveline and using the crossmember mounting holes as a guide, mark locations for new frame rail holes.
9. Remove crossmember from isolator and drill 9/16" dia hole thru the frame member on each side.
10. Install crossmember on frame rails. Lower engine to rest isolator on crossmember.
11. Verify 1/8 to 1/4" minimum clearance between TKO and tunnel. An easy way to check areas that you cannot see is to use a length of rubber hose that is 1/4" outside diameter. Loop it over the transmission at the bellhousing and see if you can slide it all the way to the tail housing. If the transmission has less than 1/4" clearance at any point in the tunnel, you may be able to "massage" the tunnel with a hammer and dolly to prevent cutting the tunnel.
12. This would be a good time to take the driveline measurement per the driveline instruction sheet so that the new SST driveshaft can be ordered. See MAA-00100 form in the customer info pack.
13. Remove all components installed for test fit.

C. TRANSMISSION INSTALLATION

1. Confirm existence of rubber sleeve in tailshaft. Reinstalling the rubber sleeve that was removed during test shifting will help prevent fluid leakage during the installation. Fill transmission with 2 quarts, 20 ounces of transmission fluid, or until fluid runs out of the fill hole with the vehicle level.
2. Install new flywheel and flywheel bolts torqued to factory spec. Be sure to tighten bolts in alternating star pattern sequence.
3. Install new pilot bearing assembly using a socket of similar diameter to the bearing and a hard rubber mallet. Make sure the bearing is installed facing the right direction (see photo below). Gently tap bearing fully into crankshaft until bearing face is flush with crankshaft face.

NOTE: The pilot bearing is designed to be a slight press fit in the bore, and the pilot bearing hole is not always sized correctly in some crankshafts. Your pilot bearing OD should be between one-half of a thousandth and two thousandths of an inch (0.0005" - 0.002") larger than the ID of the hole in your crankshaft. If outside of this range, a different pilot bearing is required, or your crankshaft or pilot bearing may be modified to fit. Contact your local parts store or machine shop for a suitable replacement or to modify your existing parts.



(TRANSMISSION SIDE SHOWN)

4. Install bellhousing and inspect for proper alignment to crankshaft using dial indicator or test indicator (SST can provide these tools at extra cost). See "Inspection and Correction of Bellhousing To Crankshaft Runout" instructions MAA-00101 provided with your literature package. Make sure to record your runout data in a safe place, as it will be required in the event of a warranty issue. Mark offset dowel pin position if used to correct bellhousing runout, and carefully remove bellhousing.
5. Using clutch alignment tool, attach clutch disc and pressure plate to flywheel. Install each bolt with medium thread locking compound only finger tight on the first round, then incrementally tighten each one in a star pattern sequence until all are snug. Torque each one in the same sequence to 35 lb.-ft.

NOTE: When installing the pressure plate and clutch disc onto the flywheel, **NEVER** use power or air tools. Using power or air tools will cause the flanges of the pressure plate to distort. This will in turn cause uneven pressure plate finger heights, which will lead to inconsistent or unsuccessful clutch releases. See MAA-05000 clutch installation instructions for more details.

6. Lower rear of engine (required for new transmission installation).

7. With the bellhousing still removed from the engine, install clutch fork and release bearing in the bellhousing if using mechanical clutch linkage. *The tips of the clutch fork and the spring fingers on the rear side of the clutch fork both fit inside the same groove on the release bearing.* If you purchased the SST hydraulic system with your transmission, the hydraulic release bearing will already be installed and you will not be using a clutch fork.
8. Install bellhousing to engine, while making sure that there are no hoses, cables, or wires caught between the bellhousing and engine block. Torque the fasteners to the specification found in your Factory Service Manual.



IMPORTANT !!! Refer to MAA-00101 Inspection and Correction of Bellhousing to Crankshaft Runout

It is an absolute **requirement** that **runout** is **checked** and **corrected** **PRIOR** to installing the transmission. The runout specification for all of Silver Sport's kits is **0.005" (5 thousandths of an inch) MAXIMUM**. You **MUST** document the results **PRIOR** to installation of transmission and keep these measurements recorded in a safe place for your transmission warranty. Silver Sport's Customer Service will need this information if a warranty issue arises.

9. Install transmission, using caution when inserting the input shaft into the clutch disc and pilot bearing. Do not allow weight of transmission to rest on assembly until fully engaged (doing so can misalign disc or damage pilot bearing). The rubber tailshaft sleeve may be temporarily removed and the slip yoke inserted and the tailshaft rotated, as required, to facilitate engagement into clutch disk. **DO NOT** use the transmission to bellhousing bolts to draw the transmission up to the bellhousing!

NOTE: If the transmission stops approximately 1/2 - 3/4 inch away from seating fully against the bellhousing, install and **finger-tighten** bellhousing to transmission bolts (HWG-PACK A). Connect clutch linkage and depress pedal lightly while pushing transmission forward to facilitate alignment of clutch disk to input shaft and pilot bearing. **DO NOT** force the transmission into engagement – damage to the pilot bearing may result. Tighten bellhousing to engine bolts once the transmission is seated against the bellhousing.

WARNING: THE FOLLOWING CAN CAUSE THE EARS OF THE TRANSMISSION CASE TO BREAK AND IS NOT COVERED UNDER WARRANTY (SEE PHOTO):

- a) **DRAWING THE TRANSMISSION UP TO THE BELLHOUSING BY THE BOLTS.**
- b) **NOT TORQUING THE TRANSMISSION-TO-BELLHOUSING BOLTS TO 50 lb.-ft.**
- c) **NOT HAVING THE TRANSMISSION FULLY SEATED AGAINST THE BELL HOUSING WHEN TORQUING THE TRANSMISSION-TO-BELLHOUSING BOLTS.**

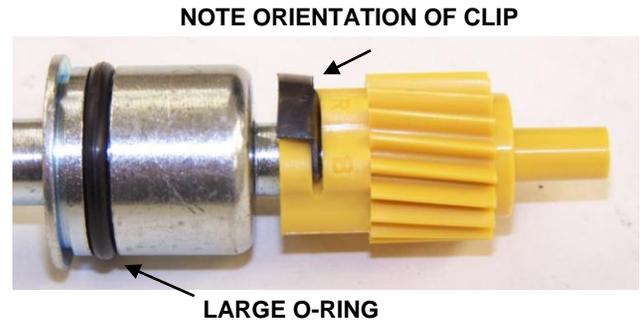


10. Once the transmission is fully seated by hand against the bellhousing, fasten with 1/2" x 1-3/4" bolts and lock washers provided (HWG-PACK A) and torque to 50 lb.-ft. Due to the tight clearance around the upper right transmission to bellhousing bolt, a socket head bolt (provided in hardware pack) can be substituted for the hex head bolt if you do not have a suitable wrench.
11. Attach rubber isolator mount to transmission using M10-1.5 x 30 bolts and lock washers (HWG-PACK H).
12. Install crossmember to isolator mount. Attach to frame using original hardware. Confirm no interference to car body or noise will occur as the driveline moves under load.



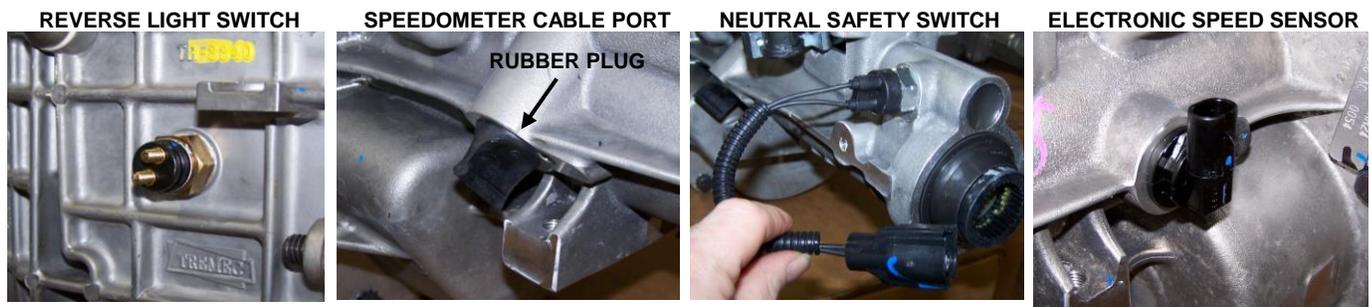
13. The rubber tailshaft sleeve **MUST** be removed at this point (see step C3 photo on pg. 6). Install driveshaft by inserting the slip yoke into the rear of the transmission first. Then position the rear U-joint in the differential U-joint saddles. It may be helpful to be able to turn the rear wheels. Install straps and torque to factory specs: 17 lb.-ft. for 1310/1330 U-bolts; 24 lb.-ft. for 1350 U-bolts. (excessive torque can distort bearing cap leading to premature failure). Double check your assembly.
14. Reinstall bellhousing inspection cover and starter.
15. Connect clutch linkage - do not preload mechanical release bearing. Adjust linkage as required, following the method laid out in your Factory Service Manual. If using a SST hydraulic system (available separately), follow instructions provided.

16. Wrap tape around speedometer cable ends to prevent damage and keep them clean while routing new speedometer cable to transmission. Remove rubber plug from the speedometer cable port and install new speedometer cable with gear, clip and o-ring (HWA-PACK S) into transmission case. Install cable retainer bolt and tighten bolt to 4 lb.-ft. Connect cable to speedometer.



The TKO 500 and 600 have provision for electronic speedometer output also. The speed sensor is located on the passenger side of the transmission, directly opposite the mechanical speedometer output. The sensor is a standard (2) wire GM, sine wave, with 17 pulses per revolution of output shaft, which equates to roughly 33,000 to 60,000 pulses per mile depending on axle ratio and tire size. For reference, a 26" tire with a 3.73 gear will give 49,212 pulses per mile. Please refer to your speedometer's installation instructions or contact the speedometer manufacturer for information on connecting and calibrating your electronic speedometer.

23. The reverse light switch is located on the driver's side of the main case and is a black-bodied switch with (2) studs. The switch is a normally open, non-directional switch that will complete the lighting circuit when the transmission is in reverse. SST has provided a two-wire harness with your kit that will attach to the 5-speed reverse light switch. It can be spliced into your car's wiring harness in place of your original switch that was mounted to your 4-speed shift linkage.
24. The wire pigtail at the very back of the tailhousing is a neutral safety switch. It is a normally open, non-directional switch that will complete the circuit when the transmission is in neutral. The plastic connector may be removed and the neutral safety switch may be spliced in to your starter circuit between the ignition switch and the starter solenoid if you so choose.



25. Tighten exhaust.
26. Bolt on shifter handle with 3/8"-24 x 1" bolts and washers provided (HWA-PACK L). Use medium strength threadlock compound. Torque to 25 lb.-ft. Confirm shifter motion through all gears.
27. Install shifter boot and retainer ring, and/or console if so equipped.
28. Connect tachometer drive cable to distributor (if equipped).
29. Connect throttle linkage to carburetor.
30. Install distributor cap and breather.
31. Reconnect the negative (-) battery cable.



FINAL INSTALLATION STEPS

1. If you did not fill the transmission with fluid before installation, remove the fill plug on the passenger's side of the transmission and fill with 2 quarts, 20 ounces of transmission fluid, or until fluid runs out of the fill hole with the vehicle level. Reinstall the fill plug after adding fluid.
2. Start engine and allow engine to idle for a few minutes.
3. Check for leaks while warming up.
4. Slowly rev engine in neutral and listen for any unusual sounds or vibration.
5. Shift through all forward gears with the clutch disengaged (clutch pedal depressed).
6. Do not shift into reverse above idle speed or while still moving forward; reverse is not synchronized. Shifting into reverse may require shifting into a forward gear first to prevent grinding.
7. Test drive at low speeds and low RPM.
8. Gradually increase engine RPM and vehicle speed.
9. Compare this test drive to the pre-installation test drive.
10. Drive conservatively for the first 500-1000 miles for transmission break-in.
11. If you experience vibration at highway speeds, verify that there is no body contact with the new transmission. If there is no contact, it may be necessary to adjust your driveline angle. Much has been written about driveline angles and how to determine them, and there is a lot of great information available online from multiple websites. If you need further help with your driveline angle, call Silver Sport Transmissions' Customer Service at 865-609-8187.

SPECIFICATIONS AND MAINTENANCE

TREMEC HighPerformance ManualTransmission Fluid is endorsed by Tremec for use in all Tremec brand aftermarket performance transmissions. **GM Synchronesh (part #88900333; formerly part #12345349) or Pennzoil (part #3501), DEXRON/MERCON ATF (non-synthetic), and Mobil 1 ATF are the ONLY other fluids approved by Tremec.**

The use of ANY other fluid will void your warranty. Silver Sport Transmissions recommends that the fluid be replaced after the first 500-1000 miles of normal driving, and then every 30,000 miles thereafter. It is acceptable to use the less-expensive DEXRON/MERCON fluid for the break-in period and then replace it with the Tremec HP MTF or GM Synchronesh.

FLUID CAPACITY: 2 QUARTS, 20 OUNCES (U.S.)

DO NOT EXCEED MAXIMUM
INPUT TORQUE:

- TKO500: 500 lb.-ft. in 4th gear
- TKO600: 600 lb.-ft. in 4th gear

GEAR RATIOS:

- TKO 500
 - 1ST 3.27
 - 2ND 1.98
 - 3RD 1.34
 - 4TH 1.00
 - 5TH 0.68
- TKO 600
 - 1ST 2.87
 - 2ND 1.89
 - 3RD 1.28
 - 4TH 1.00
 - 5TH 0.64
(0.82 OPTIONAL)

CONTACT INFORMATION

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TRANSMISSION SYSTEM!**