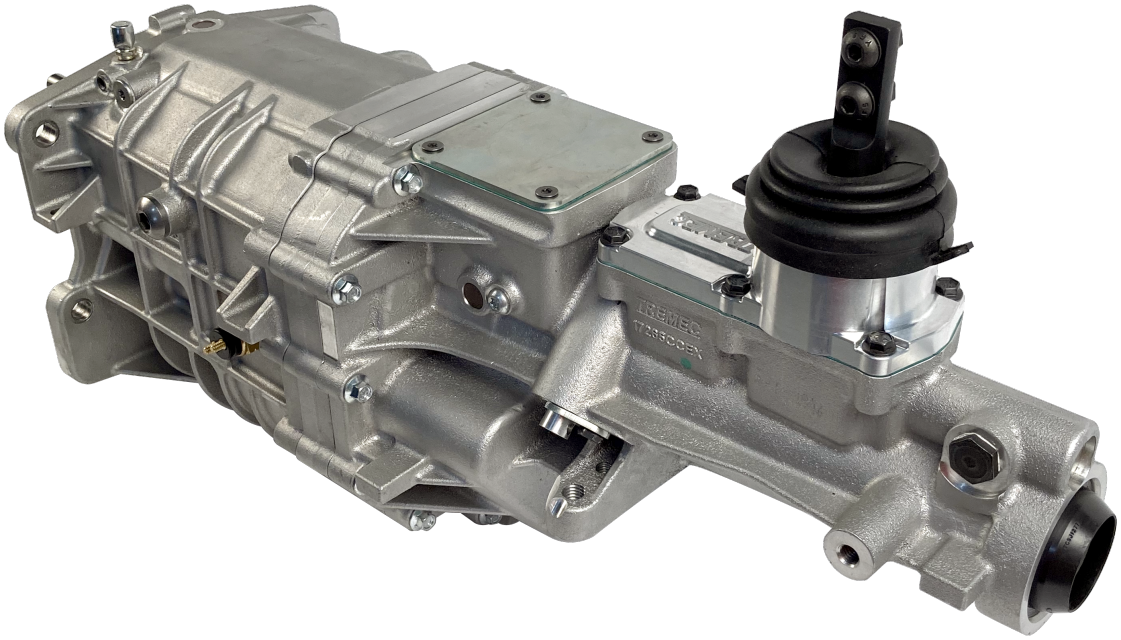
SILVER SPORT Transmissions™

GENERAL INSTALLATION
EasyFit™ Kit



TKX 5-SPEED
TRANSMISSION CONVERSION INSTALLATION MANUAL

As we offer different levels of kits, our EasyFit Kit and our PefectFit™ Kit, your EasyFit Kit may not contain all the components listed in this manual. If you need or have questions about any of the components in the highlighted sections, please contact one of our experienced Silver Sport Transmissions sales techs at 888-609-0094 or find them on ShiftSST.com.

PARTS & ACCESSORIES AVAILABLE FOR PURCHASE

1. Bellhousing
2. Bellhousing Alignment Tool
3. Bellhousing Offset Dowel Pins
4. Flywheel
5. Clutch Kit
6. Clutch Alignment Tool
7. Hydraulic Clutch Kit
8. Shifter Handle
9. Shifter Boot and Trim Ring
10. Speedo Cable and Gear
11. Speedo Cable Adapter
12. Transmission Fluid
13. Driveshaft

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 FACTORY SERVICE MANUAL FOR ADDITIONAL DETAILS OF THE PROCEDURES BELOW, AS REQUIRED.

FOR BOLT TORQUE SPECIFICATIONS, REFER TO YOUR FACTORY SERVICE MANUAL.

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
3. All Kits - MAA-00100 – Driveshaft Measuring Procedure

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 (IF FACTORY MANUAL CAR SKIP TO SECTION B)

1. Disconnect negative (-) battery cable.
2. If equipped with console, remove to permit disconnecting and removing floor shift components. If equipped with key/steering wheel lock, the linkage must be locked in position to permit key removal and turning steering wheel at all times. If column shift, remove linkage at steering column. Remove linkage from transmission.
3. Remove engine breather assembly, throttle linkage, ignition cap and components and any other items that would restrict lowering the back of the engine for transmission removal.
4. Remove the automatic dipstick tube bracket from its attachment at the engine. Some vehicles will permit removal of the dipstick tube from the transmission while others are removed with the transmission. Fluid may drain from the transmission at this point if the dipstick tube is removed.
5. Remove the transmission kickdown cable/linkage and brackets from the engine and vehicle. If a column shift, remove linkage between steering column and transmission and any associated brackets.
6. If equipped, remove vacuum modulator vacuum line from its connection at the engine and plug the engine vacuum source.
7. Remove fluid cooling lines at radiator and transmission. Fluid may drain. Plug the radiator connections.
8. Locate and disconnect the neutral safety switch wiring and backup light wiring, if equipped. Tag for future reuse during manual transmission installation.
9. Remove the automatic brake pedal. Depending on the vehicle and the under dash access, pedal removal may require removal of the front seat, underdash facia and or dropping the steering column. If the new pedal kit includes a new pedal support bracket, the original pedal bracket will also need to be removed. Retain all parts until the new pedals are installed.
10. Locate the factory clutch rod hole used for standard transmission vehicles. The hole generally has a factory rubber plug sealing it and is located behind the factory insulating/carpeting material.
11. Raise car securely on lift or jack stands (6-Ton recommended).
12. Loosen exhaust at manifold and remove as required for working clearance and to allow the engine to drop during transmission removal.
13. The emergency brake cable may need to be disconnected for working clearance.
14. Remove the driveshaft at the differential and transmission, if necessary, and remove driveshaft from vehicle.
15. Unbolt starter and set aside.
16. Remove speedometer cable.
17. Remove torque converter dust cover.
18. Remove the torque converter to flex plate fasteners. The engine will need to be rotated manually to access all the fasteners. (**NOTE**: The battery should have already been disconnected as directed in step number 1 to prevent accidental startup)
19. Secure rear of engine with hydraulic jack.
20. Remove bolts from transmission isolator at the crossmember and raise engine slightly to remove weight from crossmember.
21. Secure and support transmission (transmission jack recommended) and remove the crossmember.
22. Remove the bellhousing bolts holding transmission to the engine, lowering back of engine and transmission, as required, permitting access to all bolts.
23. Move transmission and torque converter rearward as a unit and disengage the transmission bellhousing from dowel pins. Continue moving rearward until the transmission unit can be lowered and removed from the car.
24. Remove the flex plate from the crankshaft.

B. REMOVE EXISTING EQUIPMENT (Factory Manual Car)

1. Disconnect negative (-) battery cable.
2. Remove shifter knob and boot. Place shifter in neutral.
3. Remove console, if equipped.
4. Remove front seat(s) and front carpet.
5. Raise car securely on lift or jack stands. 6 ton stands are usually taller and will give you more room under the car. 18 inches of working room or more is recommended.
6. Remove clutch linkage at torque arm to clutch fork.
7. Unbolt starter and set aside.
8. Remove bellhousing dust cover.
9. Remove driveshaft at rear differential and remove from car.
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 permit engine to drop.
17. Unbolt transmission isolator from the 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 (not supplied).

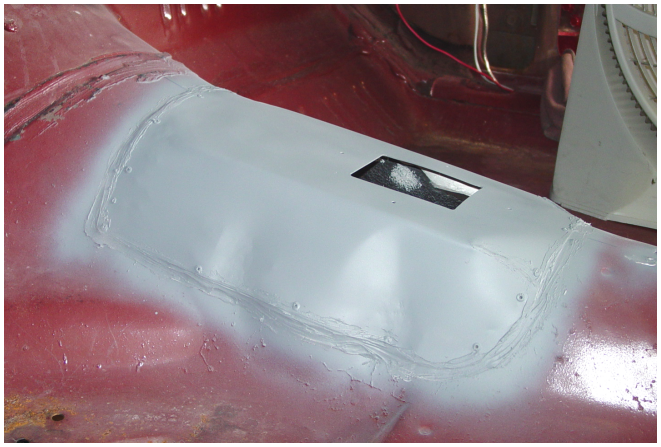
C. INSTALL NEW EQUIPMENT

1. 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:
    (a) Measure the transmission from the bellhousing mounting face to the center of the shift lever, including offset from the centerline (if any).
    (b) Temporarily install the bellhousing to the engine (clutch unit not required) and raise the engine to approximate final elevation.
    (c) Transfer the shifter location to the underside of the transmission tunnel by measuring from the transmission mounting face of the bellhousing rearward down the underside of the transmission tunnel, and mark the shift lever location, including any offset.
    (d) Measure the rectangular section of the shift tower, and transfer this to the underside of the transmission tunnel. Drill pilot holes and cut out the required area.

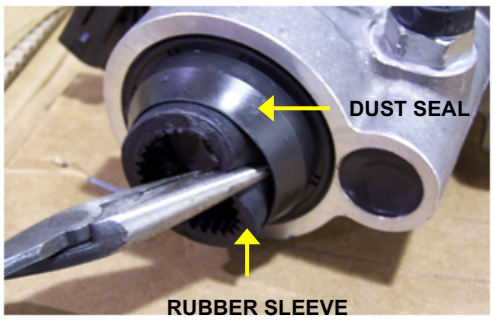
NOTE: Confirm that nothing is in the way inside or under the vehicle during cutting.

2. Some vehicles will require additional tunnel modification in order to get the transmission high enough in the tunnel. If modification is required, the top of the tunnel will typically need to be squared off somewhat and possibly raised higher. To determine if modification is needed, temporarily install the bellhousing (clutch unit not required) and transmission on to the engine and begin to raise into place. When the transmission contacts the underside of the tunnel, measure the transmission angle as you did in Step A-5 above. You want the new transmission to be very close to the same angle as the original one to preserve the driveline geometry.
3. If the new transmission (jacked all the way up) is higher than your original, lower the new transmission to the same angle as your old transmission, and check for clearance around the transmission case. You should have at least 1/4 inch of clearance everywhere. If your new transmission is not high enough, then some modification is necessary. You may be able to create enough clearance by dimpling the tunnel in the spots that the transmission touches. If you need to raise the transmission significantly, then it may be necessary to cut out a portion of the tunnel and raise it to create clearance.

4. Using a paint marker, mark the tunnel around the area of the transmission needing removal and remove the material. Raise the transmission into place and measure again from the center of the output shaft straight up to the top center of the tunnel. Several attempts may be required to fully determine the area to be removed and permit the transmission to sit at the proper height.
5. Once the opening is made, a cardboard (or other stiff material) template can be made to cover and overlap the area. The template will be used to cut a repair patch from 20 gauge sheet metal to cover the opening. Additional slits in the sheet metal at the appropriate locations will assist in folding and shaping the sheet metal. Remove the transmission and bell housing.
6. Install the sheet metal, seam seal with LORD® Fuser 803DTM Metal Sealer or equivalent and paint. Below are photos of a typical tunnel modification with new sheet metal installed:



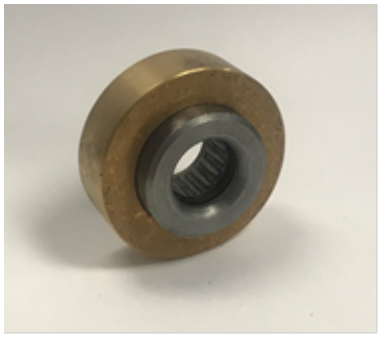
7. If your vehicle uses a crossmember to support the transmission, you will now need to modify the crossmember and/or its mounting points on the frame. In some vehicles, you will only need to slide the crossmember backwards or forwards on the frame rails and drill new holes in the frame. Some vehicles may require that you modify the crossmember perch, and others will require that you section the crossmember and move the center portion in one or more directions.
8. Temporarily reinstall the transmission in the car (no clutch assembly necessary). Install the isolator mount onto the transmission, and test-fit the crossmember to determine what modifications are necessary. Return to these instructions when the crossmember has been modified for proper fitment with the new transmission at the correct angle.



9. Reinstall the rubber sleeve on the output shaft if it was removed during test shifting to 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.
10. Reinstall the fill plug after adding fluid.
11. 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 on next page). Gently tap bearing fully into crankshaft until bearing face is flush with crankshaft face.

    NOTE: The pilot bearing holes in some crankshafts are not sized consistently. The pilot bearing is designed to be a slight press fit in the bore. 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.

CHEVROLET PILOT BRG. PONTIAC PILOT BRG.



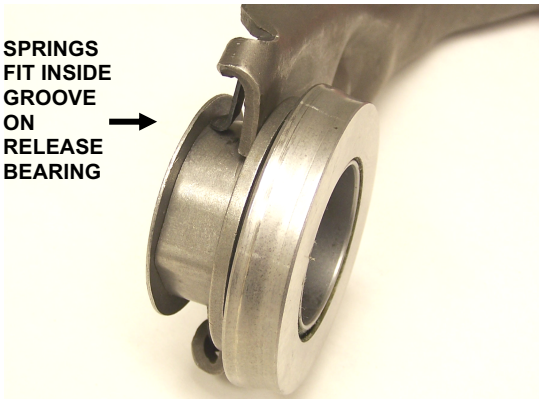
PBG-00104A Used with LS Engines

********TRANSMISSION SIDE SHOWN********

12. 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" 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.
13. Use the provided 26T alignment tool with large pilot dia end to center the clutch disk when applying torque to the pressure plate bolts. Install the bolts with medium thread locking compound per clutch instructions and tighten in a star pattern, one turn at a time to prevent distorting the pressure plate fingers, until the cover is snug against the flywheel. Torque the bolts to 35 lb.-ft. in a star pattern. **NOTE: When installing the pressure plate and clutch disk 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.

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

15. With the bellhousing still removed from the engine, install clutch fork and release bearing and 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.



16. 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.

17. 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). Due to the tight clearance around the upper right transmission to bellhousing bolt, a socket head bolt can be substituted for the hex head bolt if you do not have a suitable hex head wrench. 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 UNDER ANY CIRCUMSTANCES use the transmission-to-bellhousing bolts to draw/pull the transmission up to the bellhousing!**

NOTE: MECHANICAL CLUTCH LINKAGE ONLY If the transmission stops approximately 1/2 inch away from seating fully against the bellhousing, install and **finger-tighten** bellhousing to transmission bolts. 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.

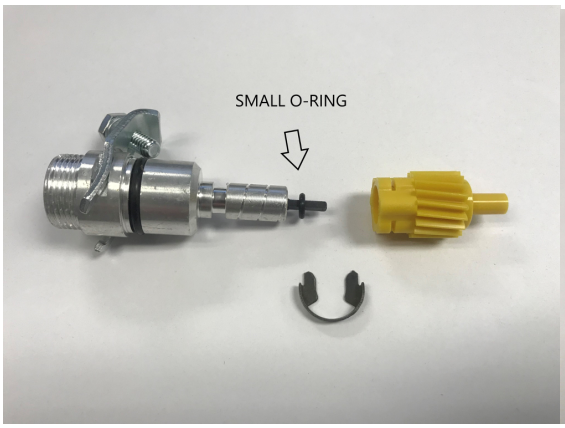
WARNING: THE FOLLOWING CAN CAUSE THE EARS OF THE TRANSMISSION CASE TO BREAK AND IS NOT COVERED UNDER WARRANTY (SEE PHOTO):

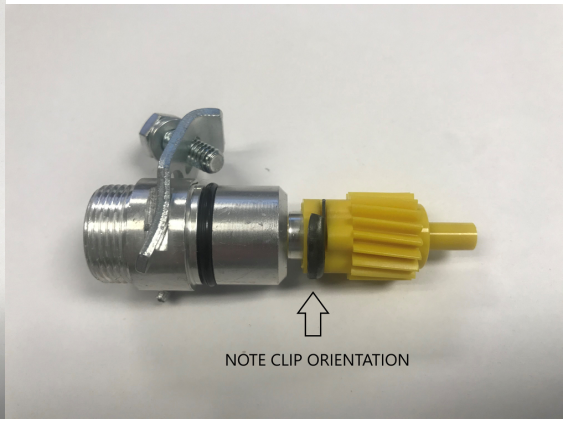
a) DRAWING THE TRANSMISSION UP TO THE BELLHOUSING BY THE BOLTS.
b) NOT TORQUING THE TRANSMISSION-TO-BELLHOUSING BOLTS TO 50 lb.-ft.
c) NOT HAVING THE TRANSMISSION FULLY SEATED AGAINST THE BELL-HOUSING WHEN TORQUING THE TRANSMISSION-TO-BELLHOUSING BOLTS.

18. Once the transmission is fully seated by hand against the bellhousing, fasten with 1/2" x 1-3/4" bolts and washers provided (HWG-PACK A) and torque to 50 lb.-ft.
19. Raise up engine/transmission until transmission contacts the top of the tunnel.
20. Attach rubber isolator mount to transmission using M10-1.5 x 30 bolts and lock washers (HWG-PACK H).
21. Install new crossmember using your original hardware to attach to the frame. Lower transmission fully onto crossmember, and attach to mount with hardware pack HWG-PACK B. Confirm no interference to car body or noise will occur as the driveline moves under load.
22. Confirm transmission is centered in floor tunnel.

23. The rubber tailshaft sleeve MUST be removed at this point (see step B-2 and photo on pg. 4). 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 rear 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.
24. Reinstall bellhousing inspection cover and starter.
25. Connect clutch linkage - do not preload mechanical release bearing. Adjust linkage as required. If using a SST hydraulic system (available separately), follow instructions provided.
26. 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.

*****Speedometer gear will have resitstance when turning after assembled*****





The TKX has 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.

27. 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 backup 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. 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.

REVERSE LIGHT SWITCH

NEUTRAL SAFETY SWITCH

MECHANICAL SPEEDOMETER PORT

ELECTRONIC SPEED SENSOR

28. Tighten exhaust.
29. Reinstall shift tower that was removed earlier.
30. 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.
31. Install shifter boot and retainer ring, and/or console if equipped.
32. Connect tachometer drive cable to distributor (if equipped).
33. Connect throttle linkage to carburetor.
34. Install distributor cap and breather.
35. 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 it 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, 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 888-609-0094.

SPECIFICATIONS AND MAINTENANCE

TREMEC HighPerformance ManualTransmission Fluid is endorsed by Tremec for use in all Tremec brand aftermarket performance transmissions. **GM Synchromesh (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 Synchromesh.

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

DO NOT EXCEED MAXIMUM INPUT TORQUE:

- TKX: 600 lb.-ft. in 4th gear

GEAR RATIOS:

- TKX Wide Ratio
  - 1ST 3.27
  - 2ND 1.98
  - 3RD 1.34
  - 4TH 1.00
  - 5TH 0.72
- TKX Close Ratio
  - 1ST 2.87
  - 2ND 1.89
  - 3RD 1.28
  - 4TH 1.00
  - 5TH 0.68 (0.81 OPTIONAL)

CONTACT INFORMATION

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SILVER SPORT TRANSMISSIONS IS DEDICATED TO YOUR SATISFACTION AND ENJOYMENT OF THIS PRODUCT. PLEASE, SEND US PICTURES OF YOUR CAR ALONG WITH A TESTIMONIAL OF HOW YOU RATE THIS PRODUCT. WE WILL BE POSTING MANY CUSTOMER FEEDBACK LETTERS AND PICTURES ON OUR WEBSITE AND BROCHURES.

ENJOY YOUR SILVER SPORT TRANSMISSION SYSTEM!