



**SILVER SPORT**  
*Transmissions*

**CHEVELLE 1968-1972**

**442 / CUTLASS 1970-1972**



**TKO 5-SPEED  
MANUAL TO MANUAL  
TRANSMISSION CONVERSION  
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 FACTORY SERVICE MANUAL (FSM) FOR ADDITIONAL DETAILS OF THE PROCEDURES BELOW, AS REQUIRED.

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

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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 6). 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 at **888-609-0094** for instructions.

**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. 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).

## B. TEST FITMENT AND TUNNEL MODIFICATION

If your car is a factory 4-speed, proceed to “TEST FITMENT” below. If your car is an automatic, a column shift 3-speed, or the vehicle was previously converted from such to a 4-speed, **a factory reproduction 4-speed tunnel hump must be installed in the vehicle before proceeding.** It is necessary for proper alignment and use of the Silver Sport Transmissions sheet metal cutting template and sheet metal that are provided in the kit. The 4-speed tunnel hump also provides additional tunnel clearance for your new transmission. Contact Silver Sport Transmissions to purchase a reproduction 4-speed tunnel hump if you do not have one.

**NOTE:** The amount of tunnel clearance that exists can vary from car to car. Once the factory 4-speed hump is installed in your car, Silver Sport Transmissions strongly recommends trial fitting your transmission before cutting your tunnel to install the TKO sheet metal. Some cars will only require minor dimpling or a much smaller area to be cut. Silver Sport Transmissions’ template and sheet metal is designed to be large enough to allow the TKO to fit in most if not all vehicles of this type, with plenty of clearance in the tunnel. Your car may not need as much clearance as our modification provides.

## TEST FITMENT

1. Temporarily install bellhousing to engine. No clutch or flywheel is necessary for this step.
2. Lower engine, and install transmission to bellhousing using HWG-PACK A. Support the transmission with a jack.
3. Attach isolator mount to transmission using hardware pack HWG-PACK H.
4. Raise the transmission enough to be able to install your factory crossmember under the new isolator mount. The crossmember will be mounted approximately 1-1/2" further back on the frame than it would be with a 4-speed. It may be necessary to remove the shift tower from the transmission to gain clearance to raise the transmission far enough. If required, remove the (2) socket-head bolts from the top of the transmission shift tower and lift up on the tower to remove.
5. Lower transmission with isolator onto crossmember and check for interference with floor tunnel. If there is less than 1/4" clearance at any point between the transmission and the body, modification will be needed. 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 tailhousing. If there are any points that are too close, you may prefer to "dimple" the tunnel instead of cutting. Proceed to Step 10 if you can obtain enough clearance without cutting your tunnel. If you need more room than your tunnel provides, proceed with our cutting template and sheet metal installation instructions below.

## TUNNEL MODIFICATION

6. Make sure you use the correct template (TMG-00102) for your car. The 4-speed hump for a console car is different than the hump for a non-console car, so the templates are different. See the instructions on the template. The rear of the non-console template lines up with the front edge of the shifter opening. There is a cutout in the rear of the console version template that lines up with the front portion of the shifter opening. Using the template provided, mark the sections to be cut by tracing on the floor for the lines designated on the paper template as shown in red.

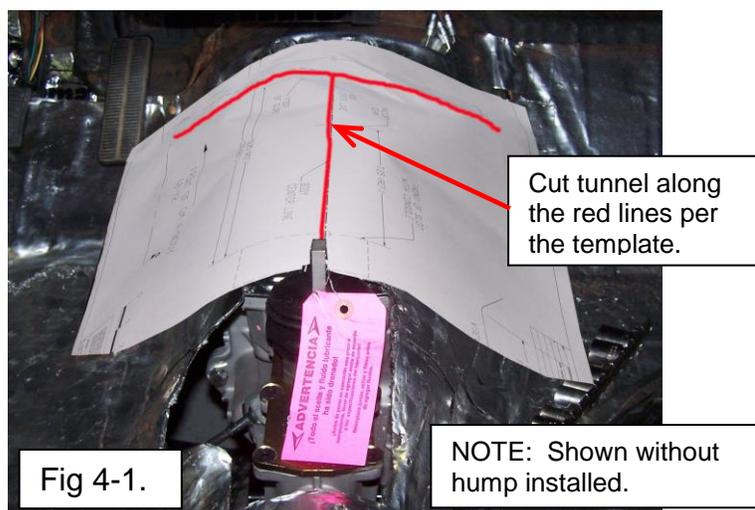


Fig 4-1.

NOTE: Shown without hump installed.

7. Remove the paper template and cut tunnel down the center spine and side cuts as shown.



Fig 5-1.

8. The cut sections of the tunnel will be pried up and out and bent to provide required clearance for the TKO transmission resulting in approx. 1/2"-3/4" gap down the middle tunnel split cut. Check for interference with floor tunnel. You will need a minimum of 1/4" of clearance between the transmission and the 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 additional cutting of the tunnel.
9. With proper clearance now set on cut tunnel areas, install body metal supplied in the kit to cover the tunnel openings. Attach the (2) body metal pieces supplied with kit to tunnel with screws or rivets as shown in Fig. 5-2. Use a seam sealer such as LORD® Fuser 803DTM Metal Sealer or equivalent between new and old metal. Paint both sides for corrosion protection.

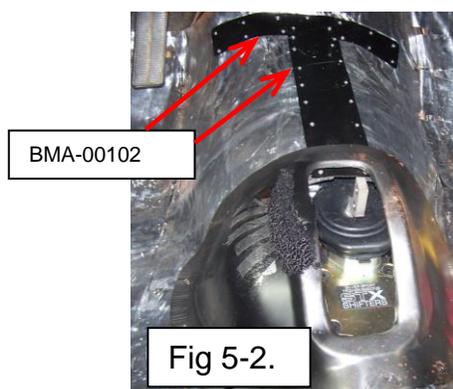


Fig 5-2.

CONSOLE FLOOR TUNNEL WITH NEW SHEET METAL

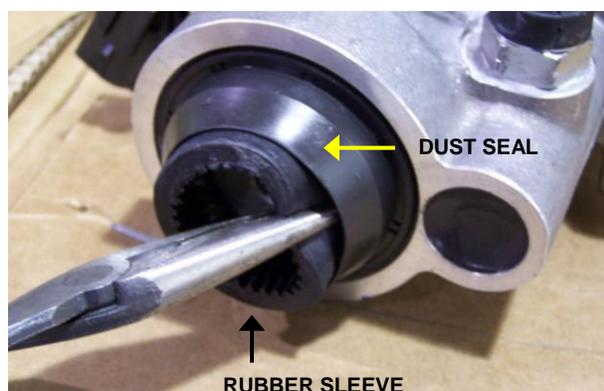
10. This is a good time to take the driveline measurement, per the driveshaft instruction sheet, as long as the total weight of the car is supported on the axles to provide an accurate measurement. After the final clearance check and the driveshaft measurements, remove the transmission and bellhousing to complete the remaining work.

## C. TRANSMISSION INSTALLATION

**Before installing, please note that Oldsmobile Crankshafts, which were installed with Automatic Transmissions, were not machined to accept a pilot bearing. If you have an Automatic Crankshaft, then you will need to either have the crankshaft machined to accept the manual pilot bearing or purchase an adapter and shorten the input shaft.**

1. Confirm existence of rubber sleeve on output shaft (see photo on next page). 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. Reinstall the fill plug after adding fluid.
2. Install new pilot bearing assembly using a socket of similar diameter to the bearing and a 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.

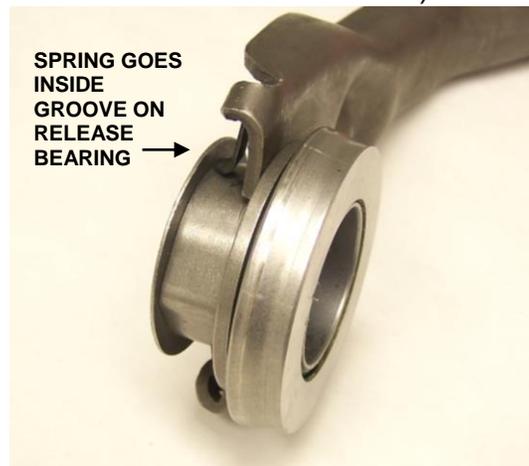


CHEVROLET PILOT BRG. PONTIAC PILOT BRG.  
(TRANSMISSION SIDE SHOWN)

3. 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.
4. 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.

5. Lower rear of engine as far as possible (required for new transmission installation).
6. 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 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.
7. 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.

8. 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 sleeve may be temporarily removed from the output shaft, the slip yoke inserted and the output shaft 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:** 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.

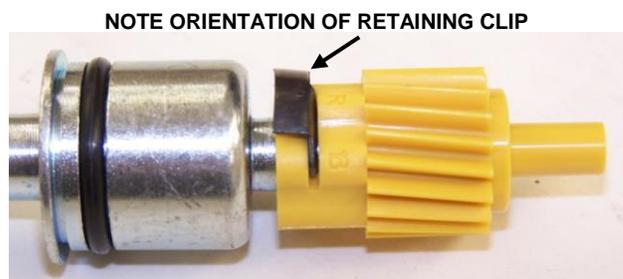
9. Once the transmission is fully seated by hand against the bellhousing, fasten with 1/2" x 1 3/4" bolts and washers provided (HWG-PACK A) and torque to 50 lb.-ft.

**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 BELLHOUSING WHEN TORQUING THE TRANSMISSION-TO-BELLHOUSING BOLTS.**

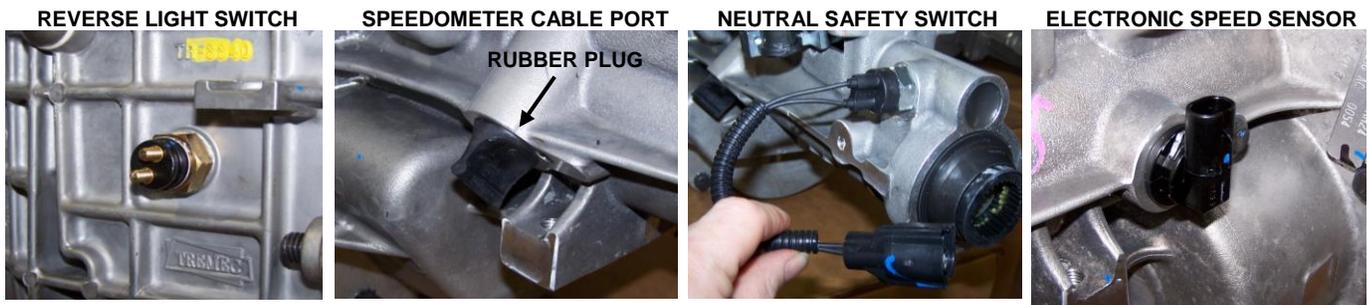


10. Raise up engine/transmission until transmission contacts the top of the tunnel.
11. Attach rubber isolator mount to transmission using M10-1.5 x 30 bolts and lock washers (HWG-PACK H).
12. Place your factory crossmember in the frame so that it lines up with the new isolator mount. Lower transmission 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. Confirm shifter is centered in tunnel hole.
13. Mark location of new holes required for attaching the crossmember to the frame. Drill new holes as needed on each frame rail along the same centerline as the factory holes. On some vehicles, you may find that the existing rear holes in the frame now line up with the front holes in your crossmember, or that your frame already has holes drilled very close to the correct locations.
14. Attach the crossmember to the frame using your original hardware.
15. The rubber sleeve **MUST** be removed from the output shaft at this point (see step C-1 and 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 rotate 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.
16. Reinstall bellhousing inspection cover and starter.
17. Connect clutch linkage - do not preload mechanical release bearing. Adjust linkage as required. If using a SST hydraulic system (available separately), follow instructions provided.
18. 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 on left side (see photo on next page) 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 (see photo below). The sensor is a standard two wire GM, sine wave output, with 17 pulses per output shaft revolution, 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 produce 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.

19. The reverse light switch is located on the driver's side of the main case and is a black-bodied switch with (2) studs (see photo below). 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.
20. The wire pigtail at the very back of the tailhousing is a neutral safety switch (see photo below). 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.



21. Install exhaust.
22. Reinstall shift tower if it was removed earlier.
23. 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.
24. Install front carpet and seat(s).
25. Install shifter boot and retainer ring, and/or console if equipped.
26. Connect tachometer drive cable to distributor (if equipped).
27. Connect throttle linkage to carburetor.
28. Install distributor cap and breather.
29. Tighten fan shroud if it was loosened earlier.
30. 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. Start engine and allow engine to idle for a few minutes.
4. Check for leaks while warming up.
5. Slowly rev engine in neutral and listen for any unusual sounds or vibration.
6. Shift through all forward gears with the clutch disengaged (clutch pedal depressed).
7. 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.
8. Test drive at low speeds and low RPM.
9. Gradually increase engine RPM and vehicle speed.
10. Compare this test drive to the pre-installation test drive.
11. Drive conservatively for the first 500-1000 miles for transmission break-in.
12. 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 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 4<sup>th</sup> gear
- TKO600: 600 lb.-ft. in 4<sup>th</sup> gear

GEAR RATIOS:

- TKO 500
  - 1<sup>ST</sup> 3.27
  - 2<sup>ND</sup> 1.98
  - 3<sup>RD</sup> 1.34
  - 4<sup>TH</sup> 1.00
  - 5<sup>TH</sup> 0.68
- TKO600
  - 1<sup>ST</sup> 2.87
  - 2<sup>ND</sup> 1.89
  - 3<sup>RD</sup> 1.28
  - 4<sup>TH</sup> 1.00
  - 5<sup>TH</sup> 0.64  
(0.82 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!**