



**SILVER SPORT**  
*Transmissions*

# **MUSTANG**

## **1964<sup>1</sup>/<sub>2</sub> - 1970**



# **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 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 receive two templates for body modification. One is for the shifter opening and the other is for the transmission tunnel rib. If your vehicle requires modification, these templates will guide you through the process. Further instruction for body modification is provided within this manual. You will also receive bellhousing runout instructions and a driveline measurement sheet.

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

**PLEASE READ THE INSTRUCTIONS BEFORE INSTALLATION**

## TRANSMISSION REMOVAL PROCEDURE

- DISCONNECT BATTERY NEGATIVE CABLE
- LIFT & SECURE VEHICLE
  - PLACE VEHICLE ON LIFT OR
  - SECURE ON JACKSTANDS (AT LEAST 18" VERTICAL CLEARANCE)



- TRANSMISSION ACCESS
  - REMOVE AS NECESSARY: EXHAUST, PARKING BRAKE LINKAGE AND CABLE, BRACKETS, ETC. TO ALLOW TRANSMISSION REMOVAL
  - REMOVE UNDERBODY PLATE (CONVERTIBLE ONLY)
  - DO NOT REMOVE CROSSMEMBER YET
  - MAKE REFERENCE NOTES FOR REINSTALLATION

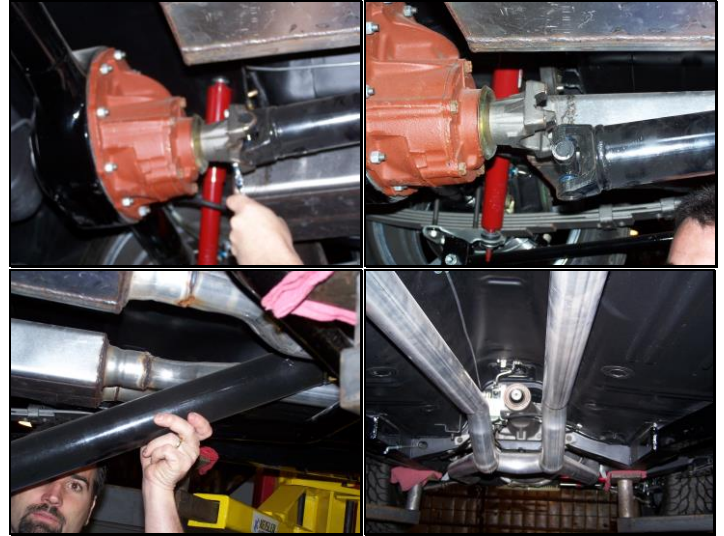


- MEASURE DRIVESHAFT LENGTH

- DRAIN TRANSMISSION



- REMOVE DRIVESHAFT
  - DISCONNECT DRIVESHAFT FROM DIFFERENTIAL AT REAR UNIVERSAL JOINT
  - REMOVE DRIVESHAFT FROM TRANSMISSION AT SLIPYOKE



- DISCONNECT PARTS ATTACHED TO TRANSMISSION
  - REVERSE LIGHT SWITCH AND WIRING
  - SPEEDOMETER CABLE

- REMOVE STARTER
  - MAKE SURE NEGATIVE BATTERY CABLE IS DISCONNECTED
  - REMOVE FROM CAR OR MOVE FOR CLEARANCE



- DISCONNECT CLUTCH ACTUATION
  - MAKE ADJUSTMENT REFERENCE NOTES FOR REASSEMBLY

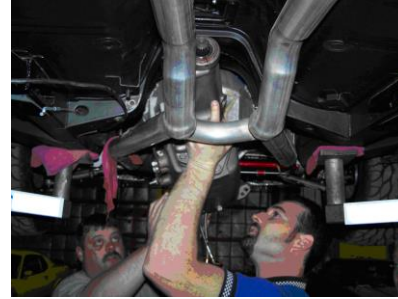


TRANSMISSION REMOVED FOR CLARITY

- REMOVE CROSSMEMBER AND ISOLATOR MOUNT
  - SUPPORT ENGINE / TRANSMISSION WITH A JACK OR TRIPOD
  - REMOVE CROSSMEMBER BOLTS THROUGH CHASSIS AND NUTS FROM ISOLATOR MOUNT
  - REMOVE CROSSMEMBER



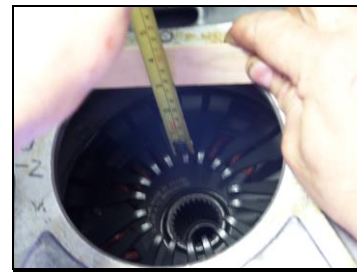
- REMOVE TRANSMISSION
  - SUPPORT ENGINE



- LOWER TRANSMISSION TAIL
  - FOR SHIFTER LINKAGE ACCESS



- MEASURE FOR HYDRAULIC SLAVE CYLINDER
  - IF HYDRAULIC CLUTCH IS TO BE INSTALLED IN THE FUTURE
  - MAKE MEASUREMENT WITH BELLHOUSING AND PRESSURE PLATE / CLUTCH DISK INSTALLED
  - MEASURE FROM THE TRANSMISSION / BELLHOUSING MATING SURFACE TO THE PRESSURE PLATE FINGERS
  - RECORD MEASUREMENT FOR REFERENCE



- DISCONNECT SHIFTER LINKAGE
  - REMOVE AS NECESSARY
  - DISCONNECT SHIFTER HANDLE



- REMOVE TRANSMISSION TO BELLHOUSING BOLTS
  - SUPPORT TRANSMISSION



- REMOVE BELLHOUSING
  - WITH CLUTCH ACTUATION ARM AND RELEASE BEARING
  - TWO DOWEL PINS LOCATE THE BELLHOUSING TO THE REAR OF THE ENGINE BLOCK
  - MAKE SURE DOWEL PINS ARE INSTALLED
  - REPLACE DOWEL PINS IF DAMAGED OR MISSING
  - MEASURE BELLHOUSING DEPTH IF NECESSARY AS FOLLOWS:
    - MEASURE FROM THE TRANSMISSION / BELLHOUSING MATING SURFACE TO THE ENGINE SIDE BELLHOUSING OPENING THROUGH THE CENTER OF THE BELLHOUSING
    - RECORD MEASUREMENT FOR REFERENCE



- REMOVE CLUTCH
  - REMOVE PRESSURE PLATE BOLTS AND PRESSURE PLATE
  - REMOVE CLUTCH DISK



- INSPECT CONDITION / DAMAGE
  - FLYWHEEL – CHECK FOR SCORING, CRACKS, AND RING GEAR CONDITION
  - FLYWHEEL BOLTS – CHECK FOR DAMAGED THREADS AND BOLT HEAD CONDITION
  - PRESSURE PLATE – CHECK FOR SCORING, CRACKS, AND FINGER CONDITION
  - CLUTCH – FOR THICKNESS (FSM) AND CRACKS
  - REPLACE PARTS AS NECESSARY

- REMOVE INPUT SHAFT PILOT BEARING
  - MEASURE PILOT HOLE DIAMETER AND RECORD
  - CONFIRM SUPPLIED PILOT BEARING SIZE IS CORRECT



- SHIFTER OPENING MODIFICATIONS
  - IN GENERAL, MODIFY AS NEEDED TO ACHIEVE ¼" CLEARANCE AROUND SHIFT TOWER
  - MOST DRIVETRAIN / CHASSIS COMBINATIONS DO NOT REQUIRE SHIFTER OPENING MODIFICATION
  - GENERALLY, ONLY THE FRONT EDGE OF THE OPENING IS TRIMMED WHEN NECESSARY
  - SEE TEMPLATE FOR SPECIFIC INFORMATION



- TUNNEL RIB MODIFICATIONS
  - THE RIB INSIDE THE TRANSMISSION TUNNEL WILL ALWAYS NEED TO BE MODIFIED
  - REFER TO CUTTING TEMPLATE AND PICTURES FOR CLARIFICATION
  - CUT AND REMOVE MATERIAL FROM TUNNEL RIB BASED ON TEMPLATE AND / OR TEST FIT



## BODY MODIFICATIONS

### NOTE:

SOME DRIVETRAIN / CHASSIS CONFIGURATIONS REQUIRE BODY MODIFICATION

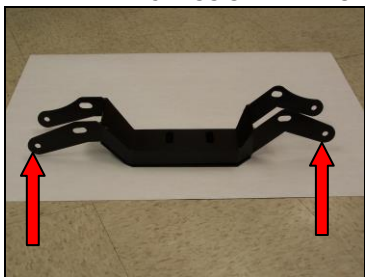
SEE GUIDELINES BELOW AND REFERENCE INCLUDED TEMPLATES PROVIDED

TEST FIT TRANSMISSION IF NECESSARY (AFTER BELLHOUSING INSTALLATION) TO DETERMINE IF BODY MODIFICATIONS ARE NEEDED

- **FINISH AND SEAL BODY MODIFICATIONS**
  - AFTER THE TUNNEL RIB IS CUT, IT IS RECOMMENDED TO SEAL THE CUT OPENING WITH A DURABLE SILICON SEALANT AND THEN PAINT THE MODIFIED AREA
  - THE EDGE OF THE SHIFTER OPENING SHOULD ALSO BE PAINTED IF MODIFIED

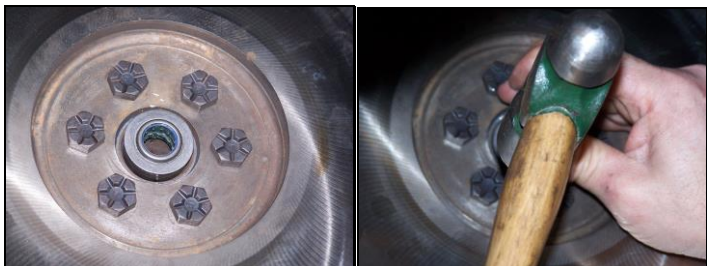


- **CROSSMEMBER**
  - THE SUPPLIED CROSSMEMBER HAS TWO ADDITIONAL MOUNTING HOLES FOR STRENGTH
  - TWO CORRESPONDING HOLES NEED TO BE CREATED IN THE CHASSIS LATER DURING THE INSTALLATION



## INSTALLATION PROCEDURE

- **INSTALL NEW PILOT BEARING**
  - CLEAN AND DEBUR (WITH A SMALL FILE OR GRINDING STONE, ETC.) PILOT BEARING HOLE IN CRANKSHAFT
  - CAREFULLY DRIVE BEARING INTO CRANKSHAFT WITH A BEARING DRIVER OR SOCKET (MATCH SOCKET OUTSIDE DIAMETER TO BEARING OUTSIDE DIAMETER)
  - LUBRICATE BEARING ON THE INSIDE WITH HIGH TEMPERATURE GREASE



- **INSTALL FLYWHEEL**
  - POSITION FLYWHEEL ONTO CRANKSHAFT FLANGE
  - ALIGN HOLES, USUALLY ONLY ONE POSITION IS CORRECT
  - INSTALL NEW FLYWHEEL BOLTS (RECOMMENDED)
  - USE A MEDIUM THREAD LOCKING COMPOUND (RECOMMENDED)
  - TORQUE TO FACTORY SPECIFICATION FOUND IN FSM



- **INSTALL CLUTCH**
  - USE ALIGNMENT PROVIDED TOOL TO POSITION CLUTCH DISK



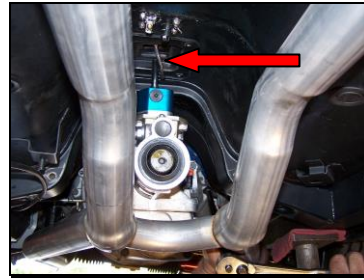
- **INSTALL PRESSURE PLATE**
  - USE NEW BOLTS (RECOMMENDED)
  - TORQUE TO FACTORY SPECIFICATION (FSM)



- **INSTALL BELLHOUSING**
  - INSTALL BELLHOUSING WITH CLUTCH ACTUATOR ARM AND CLUTCH RELEASE BEARING
  - MAKE SURE THE DOWEL PINS ARE INSTALLED



- PERFORM BELLHOUSING RUNOUT
  - SEE INCLUDED BELLHOUSING RUNOUT INSTRUCTIONS
  - RECORD YOUR RUNOUT MEASUREMENTS IN A SAFE PLACE FOR FUTURE REFERENCE IF NEEDED FOR WARRANTY PURPOSES



- CLUTCH ACTUATION
  - INSTALL MECHANICAL CLUTCH COMPONENTS
  - INSTALLATION IS REVERSE OF REMOVAL
  - ADJUST TO FACTORY SPECIFICATION (FSM)

- FILL TRANSMISSION
  - **GM SYNCHROMESH** (GM PART #88900333; FORMERLY PART #12345349) OR PENNZOIL (PART #3501) IS THE RECOMMENDED FLUID AND WILL PROVIDE THE BEST SHIFT QUALITY. FILL WITH 2 QUARTS, 20 OUNCES OF FLUID.
  - DEXRON/MERCON ATF (NON-SYNTHETIC) AND MOBIL 1 ATF ARE THE ONLY OTHER FLUIDS APPROVED BY TREMEC. **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 GM SYNCHROMESH.

- INSTALL ISOLATOR MOUNT
  - BOLT ISOLATOR MOUNT TO TRANSMISSION USING HARDWARE SUPPLIED (HWF-PACK C)

- INSTALL TRANSMISSION TO BELLHOUSING
  - REMOVE SHIFT TOWER FOR EXTRA CLEARANCE IF NECESSARY
  - CAREFULLY LIFT TRANSMISSION INTO PLACE
  - INSTALL TRANSMISSION TO BELLHOUSING
  - SUPPORT TRANSMISSION WHILE GOING INTO PLACE
  - TORQUE TRANSMISSION TO BELLHOUSING BOLTS TO FACTORY SPECIFICATION (FSM)

- POSITION CROSSMEMBER
  - ATTACH CROSSMEMBER TO TRANSMISSION USING HARDWARE SUPPLIED (HWF-PACK A)
  - RAISE TRANSMISSION INTO PLACE
  - ALIGN CROSSMEMBER WITH CHASSIS MOUNTING HOLES
  - TEMPORARILY BOLT CROSSMEMBER TO CHASSIS USING FACTORY CROSSMEMBER MOUNTING HOLES AND SUPPLIED HARDWARE (1964-66 HWF-PACK B; 1967-1970 HWF-PACK E)
  - VERIFY POSITION AND ANGLE OF CROSSMEMBER
  - MARK TWO NEW CROSSMEMBER MOUNTING HOLES
  - REMOVE CROSSMEMBER AND DRILL MOUNTING HOLES
  - DEBUR HOLES



REMOVE SHIFT TOWER FOR EXTRA CLEARANCE IF NECESSARY



- INSTALL CROSSMEMBER
  - REATTACH CROSSMEMBER TO ISOLATOR MOUNT
  - MOUNT CROSSMEMBER TO CHASSIS



- ATTACH SHIFTER HANDLE
  - WHILE THE TRANSMISSION TAILHOUSING IS LOW, ATTACH SHIFTER HANDLE
  - ATTACH ANY OTHER COMPONENTS THAT WOULD BE MORE DIFFICULT TO ATTACH WITH THE TRANSMISSION FULLY INSTALLED

- INSTALL STARTER
  - MAKE SURE BATTERY NEGATIVE CABLE IS DISCONNECTED
  - ROUTE WIRING AWAY FROM HEAT

- CONNECT BACKUP LIGHTS
  - LOCATE FACTORY BACKUP LIGHT WIRING
  - SPLICE SUPPLIED CONNECTOR INTO HARNESS
- INSTALL SPEEDOMETER CABLE
  - INSTALL SPEEDOMETER DRIVE GEAR ONTO CABLE
  - INSTALL SPEEDOMETER CABLE WITH DRIVE GEAR INTO TRANSMISSION (USE HARDWARE SUPPLIED: HWA-PACK S)
  - 1969-1970 CARS REQUIRE A RETAINING COLLAR (SUPPLIED)



1969 - 1970 ONLY  
USES RETAINING  
COLLAR

- INSTALL DRIVESHAFT
  - SLIDE SLIPYOKES ONTO TRANSMISSION OUTPUT SHAFT
  - CONNECT REAR UNIVERSAL JOINT TO DIFFERENTIAL PINION
  - TORQUE TO FACTORY SPECIFICATION



- REPLACE COMPONENTS
  - INSTALL COMPONENTS PREVIOUSLY REMOVED FOR TRANSMISSION ACCESS
  - USE REFERENCE MADE EARLIER

- LOWER CAR OFF LIFT OR STANDS

- CONNECT NEGATIVE BATTERY CABLE

## FINAL INSTALLATION STEPS

- START-UP
  - 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. **GM SYNCHROMESH (PART #88900333; FORMERLY PART #12345349) OR PENNZOIL (PART #3501) IS THE RECOMMENDED FLUID AND WILL PROVIDE THE BEST SHIFT QUALITY.** 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 GM SYNCHROMESH. REINSTALL THE FILL PLUG AFTER ADDING FLUID.
  - START ENGINE AND ALLOW TO IDLE FOR A FEW MINUTES
  - CHECK FOR LEAKS WHILE WARMING UP
  - **SLOWLY** REV ENGINE IN NEUTRAL AND OBSERVE SOUND AND VIBRATION
  - SHIFT THROUGH ALL FORWARD GEARS WITH CLUTCH DISENGAGED (CLUTCH PEDAL DEPRESSED)
  - **DO NOT** SHIFT INTO REVERSE ABOVE IDLE SPEED (REVERSE IS NOT SYNCHRONIZED)
  - SHIFTING INTO REVERSE MAY REQUIRE SHIFTING INTO ANY FORWARD GEAR FIRST TO PREVENT GRINDING
  - TEST DRIVE AT LOW SPEEDS AND LOW ENGINE RPM
  - GRADUALLY INCREASE ENGINE RPM THEN INCREASE VEHICLE SPEED
  - DRIVE CONSERVATIVELY FOR THE FIRST 500-1000 MILES TO BREAK-IN THE TRANSMISSION
  - COMPARE THIS TEST DRIVE WITH INITIAL TEST DRIVE
  - CHANGE TRANSMISSION OIL EVERY 30,000 MILES



## SPECIFICATIONS

DO NOT EXCEED:

- TKO 500: 500 FT-LB IN 4<sup>TH</sup> GEAR
- TKO 600: 600 FT-LB IN 4<sup>TH</sup> GEAR
- **GM SYNCHROMESH (PART #88900333; FORMERLY PART #12345349) OR PENNZOIL (PART #3501) IS THE RECOMMENDED FLUID AND WILL PROVIDE THE BEST SHIFT QUALITY. DEXRON/MERCON ATF (NON-SYNTHETIC) AND MOBIL 1 ATF ARE THE ONLY OTHER FLUIDS APPROVED BY TREMEC. USE OF ANY OTHER FLUID WILL VOID YOUR WARRANTY.**
- 2 QUART, 20 OUNCE CAPACITY
- 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
  - TKO 600
    - 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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SALES EXTENSION: 113

CUSTOMER SERVICE AND TECH SUPPORT  
EXTENSION: 118

[WWW.SHIFTSST.COM](http://WWW.SHIFTSST.COM)

*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!**