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## **TRANSMISSION INSTALLATION CONTENTS**

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## **INSTALLING THE *RICHMOND*** **6-SPEED AND SUPER STREET 5-SPEED WITH OVER DRIVE**

TRANS AM, CAMARO, CHEVELLE, GTO, CUTLASS, WITH T-10/MUNCIE

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To install the 6-speed, a new cross-member must be fabricated. The transmission mount has to be moved to the rear 3.75", and since the motor and transmission angle down, the mount will have to be .56" lower.

Some Muncie and T-10 transmissions have a 10 spline input and 27 spline output. Some have a 26 spline input and 32 spline output. The 6-speed has a 32 spline output, so the drive shaft yoke may need changed. Drive shaft yokes come with various hub lengths. For this application, the hub should be approximately 3" long. When installed, 2" to 2-1/4" of the hub should be in the transmission, which would leave 3/4" to 1" from the hub shoulder to the tailhousing seal. If necessary, cut to the proper length. The hub O.D. should be 1.885/1.886". Drive shaft length is okay in most instances.

The 6-speed uses the same bell-housing, flywheel, pilot bearing, throw-out bearing and pressure plate as the Muncie or T-10.

The 6-speed can be supplied with 10 or 26 spline input. If using a high torque motor or going to change the clutch anyway, use the 26 spline clutch, because the 26 fine splines are not cut as deep into the shaft as the 10 spline, which makes the 26 spline input 40 percent stronger.

Muncie or T-10 speedometer parts and rubber transmission mount may be reused or new parts are available from Chevrolet.

The shifter will be 2" to 3" to the rear. If using a console, Long Machine manufactures a special shifter handle to fit the console opening. Long manufactures the shifter that comes with the 6-speed. Contact Long Machine @ 717/867-1303.

## INSTALLING THE *RICHMOND* 6-SPEED

1963 TO 1982 CORVETTE WITH T-10 OR MUNCIE

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To install the 6-speed, the transmission mount must be moved to the rear 3.75". This has been accomplished by several methods. Some cross-members have a removable center extension that can be removed and re-fabricated. Some extensions are welded in and have to be cut out and re-fabricated. Another method commonly used is to cut the center section out of the cross-member and weld end plates with bolt holes on each end, then fabricate a removable center section. This way the motor does not have to be pulled to install or remove the transmission. Some have also cut out the complete cross-member and made a frame to frame bolt-in crossmember. On some of the Corvettes, a pulley for the emergency brake cable needs to be relocated. When relocating the transmission mount, check the driveline angle in the car. If the mount is too high, the transmission will hit the car floor pan, and it will change the drive shaft angle, which could cause a vibration.

Some Muncie and T-10 transmissions have a 10 spline input and 27 spline output. Some have a 26 spline input and 32 spline output. The 6-speed has a 32 spline output, so you may have to change the drive shaft yoke. For a Corvette, the yoke has to be open end. The hub on this yoke may be too long for the Richmond 6-speed. The hub length on this yoke should be cut to approximately 3" long. When installed, 2" to 2-1/4" of the hub should be in the transmission, which would leave 3/4" to 1" from the hub shoulder to the tail-housing seal. In most instances, the drive shaft length is close enough to meet these dimensions.

The 6-speed uses the same bell-housing, flywheel, pilot bearing, throw-out bearing and pressure plate as the T-10 or Muncie. The 6-speed can be supplied with a 10 or 26 spline input. If using a high torque motor or going to change the clutch anyway, use the 26 spline clutch, because the 26 fine splines are not cut as deep into the shaft as the 10 splines, which makes the 26 spline input 40 percent stronger.

T-10 or Muncie rubber transmission mount and speedometer parts may be reused or new parts are available from Chevrolet.

The shifter will be approximately 1" to the rear of the current location and may have to be cut 1" from the backside of the shifter hole under the console, but the shifter will fit the console with no modification to the console.

## INSTALLING THE *RICHMOND* STREET & ROAD RACE 5-SPEED

TRANS AM, CAMARO, CHEVELLE, GTO, CUTLASS, WITH T-10/MUNCIE

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To install the 5-speed, a new cross-member must be fabricated. The transmission mount has to be moved to the rear 2.25", and since the motor and transmission angle down, the mount will have to be .38" lower.

Some Muncie and T-10 transmissions have a 10 spline input and 27 spline output. Some have a 26 spline input and 32 spline output. The 5-speed has a 32 spline output, so change the drive shaft yoke may need changed. Drive shaft yokes come with various hub lengths. For this application, the hub should be approximately 4" long. When installed, 3" to 3-1/4" of the hub should be in the transmission, which would leave 3/4" to 1" from the hub shoulder to the tailhousing seal. If necessary, cut to the proper length. The hub O.D. should be 1.885/1.886". Drive shaft length is okay in most instances.

The 5-speed uses the same bell-housing, flywheel, pilot bearing, throw-out bearing and pressure plate as the Muncie or T-10.

The 5-speed can be supplied with 10 or 26 spline input. If using a high torque motor or going to change the clutch anyway, use the 26 spline clutch, because the 26 fine splines are not cut as deep into the shaft as the 10 spline, which makes the 26 spline input 40 percent stronger.

Muncie or T-10 speedometer parts and rubber transmission mount may be reused or new parts are available from Chevrolet.

Two shifters are available: Hurst 407-0009 or Long HN1000. The shifter will be 1" to 2" to the rear. If using a console, Long Machine manufactures a special shifter handle to fit the console opening. Contact Long Machine @ 717/867-1303.

## INSTALLING THE *RICHMOND* STREET & ROAD RACE 5-SPEED

1963 TO 1982 CORVETTE WITH T-10 OR MUNCIE

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To install the 5-speed, the transmission mount must be moved to the rear 2.25". This has been accomplished by several methods. Some cross-members have a removable center extension that can be removed and re-fabricated. Some extensions are welded in and have to be cut out and re-fabricated. Another method commonly used is to cut the center section out of the cross-member and weld end plates with bolt holes on each end, then fabricate a removable center section. This way the motor does not have to be pulled to install or remove the transmission. Some have also cut out the complete cross-member and made a frame to frame bolt-in crossmember. On some of the Corvettes, a pulley for the emergency brake cable needs to be relocated. When relocating the transmission mount, check the driveline angle in the car. If the mount is too high, the transmission will hit the car floor pan, and it will change the drive shaft angle, which could cause a vibration.

Some Muncie and T-10 transmissions have a 10 spline input and 27 spline output. Some have a 26 spline input and 32 spline output. The 5-speed has a 32 spline output, so the drive shaft yoke may need to be changed. For a Corvette, the yoke has to be open end.

The 5-speed uses the same bell-housing, flywheel, pilot bearing, throw-out bearing and pressure plate as the T-10 or Muncie.

The 5-speed can be supplied with a 10 or 26 spline input. If using a high torque motor or going to change the clutch anyway, use the 26 spline clutch, because the 26 fine splines are not cut as deep into the shaft as the 10 splines, which makes the 26 spline input 40 percent stronger.

T-10 or Muncie rubber transmission mount and speedometer parts may be reused or new parts are available from Chevrolet.

Two shifters are available: Hurst 407-0009 or Long HN1001. The shifter will fit the console with no modification to the console.

## **INSTALLING THE *RICHMOND* 6-SPEED AND SUPER STREET 5-SPEED WITH OVER DRIVE**

1965 TO 1977 MUSTANG WITH FORD TOP LOADER

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Richmond 6-speed transmission number 7041626 will bolt to the Ford Top Loader bell-housing. It uses the same flywheel, pilot bearing, throw-out bearing and pressure plate as the small input top loader. It requires a Chevrolet 1 1/8-26 spline clutch disc. This input was used for this application because the spline O.D. is larger than the small input top loader and the 26 fine splines are not cut as deep into the shaft. This makes the transmission input shaft 50 percent stronger.

The length of this transmission from bell-housing face to end of tail-housing is 24", which is the approximate same length as the top loader, so in most instances the drive shaft length is okay. The long top loader will require a longer drive shaft. A GM 1 3/8-32 spline drive shaft yoke will be needed, Richmond part number SY-1310 or SY-1330. These yokes are also available from Chevrolet and Dana Spicer dealers.

The cross-member will have to be re-fabricated. The transmission mount has to be moved to the rear approximately 4.75". The motor and transmission angle down in relation to the frame; so the mount has to be moved back on the angle of the motor to keep the driveline angles the same and to keep the transmission from hitting the car floor pan. The rubber mount used on this application is a Chevrolet mount used on the GM T-10 and Muncie transmissions. A Chevrolet mount part number is 3913498.

The 6-speed is designed to use Chevrolet speedometer parts. The transmission comes with an 8 tooth speedometer drive gear on the output shaft. Richmond has available a speedometer adapter kit, part number 6360005-21. It comes with the parts that fit into the speedometer hole, a short cable that screws on at the transmission end with an adapter on the other to accept the Ford speedometer cable. The driven speedometer gear that comes with this adapter kit has 21 teeth. If this is not the correct tooth count to make your speedometer accurate, other gears are available from Chevrolet. There will be a formula in the owner's manual to help calculate the proper tooth count.

The shifter in most applications will be 1" to 2" to the rear of the top loader location. If using a console, a special shifter handle is available from Long Machine that will extent forward under the console and come up thru the original opening. The shifter that comes with the transmission is manufactured by Long Machine (phone 707/867-1303). A cut of 1" to 2" from the backside of the shifter hole under the console may be necessary.

## INSTALLING THE *RICHMOND* STREET & ROAD RACE 5-SPEED

1965 TO 1977 MUSTANG WITH FORD TOP LOADER

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Richmond 5-speed transmission number 7041710 will bolt to the Ford Top Loader bell-housing. It uses the same flywheel, pilot bearing, throw-out bearing and pressure plate as the small input top loader. It requires a Chevrolet 1 1/8-26 spline clutch disc. This input was used for this application because the spline O.D. is larger than the small input top loader and the 26 fine splines are not cut as deep into the shaft. This makes the transmission input shaft 50 percent stronger.

The length of this transmission from bell-housing face to end of tail-housing is 24", which is the approximate same length as the top loader, so in most instances the drive shaft length is okay. The long top loader will require a longer drive shaft. A GM 1 3/8-32 spline drive shaft yoke will be needed, Richmond part number SY-1310 or SY-1330. These yokes are also available from Chevrolet and Dana Spicer dealers.

The cross-member will have to be re-fabricated. The transmission mount has to be moved to the rear approximately 3.25". The motor and transmission angle down in relation to the frame: so the mount has to be moved back on the angle of the motor to keep the driveline angles the same and to keep the transmission from hitting the car floor pan. The rubber mount used on this application is a Chevrolet mount used on the GM T-10 and Muncie transmissions. A Chevrolet mount part number is 3913498.

The 5-speed is designed to use Chevrolet speedometer parts. The transmission comes with an 8 tooth speedometer drive gear on the output shaft. Richmond has available a speedometer adapter kit, part number 6360005-21. It comes with the parts that fit into the speedometer hole, a short cable that screws on at the transmission end with an adapter on the other to accept the Ford speedometer cable. The driven speedometer gear that comes with this adapter kit has 21 teeth. If this is not the correct tooth count to make the speedometer accurate, other gears are available from Chevrolet. There will be a formula in the owner's manual to help calculate the proper tooth count.

Two shifter are available: Hurst 407-0009 and Long HN1000. The shifter may be approximately 1" to the rear of the top loader location. If using a console, a special shifter handle is available from Long Machine that will extend forward under the console and come up thru the original opening. Long Machine's phone number is 717/867-1303.

## INSTALLING THE *RICHMOND* 6-SPEED AND SUPER STREET 5-SPEED WITH OVER DRIVE

1984 TO 1993 MUSTANG WITH T-5

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Richmond 6-speed transmission number 7081610 is designed to replace the T-5 transmission on the 5.0 motor. This transmission comes with the shifter that fits the stock opening in the console. It also comes with a cross-member, back-up light switch and a speedometer adapter kit.

Additional parts needed are 1979 to 1983 Mustang bell-housing used with the 4-speed or a Lakewood 15202, Chevrolet transmission mount number 17990869 and Richmond drive shaft yoke number SY-1310.

You can reuse the same clutch cable linkage, pilot bearing, throwout bearing, clutch, and pressure plate that was on the T-5 transmission. Drive shaft length should also be okay.

## INSTALLING THE *RICHMOND* 6-SPEED AND SUPER STREET 5-SPEED WITH OVER DRIVE

1983 TO 1993 CAMARO AND TRANS AM WITH T-5

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Richmond 6-speed transmission number 7051626 is a replacement transmission for the T-5 transmission. The transmission bolts to the factory bell-housing, rotated 17 degrees, same as the T-5. The 6-speed uses the same pilot bearing, throw-out bearing, clutch and pressure plate as the T-5.

The Richmond 6-speed comes with the shifter that fits in the stock opening. There are provisions on the shifter plate for the torque arm to bolt to it. The transmission has a back-up light switch. It also comes with a new crossmember. The same transmission mount and speedometer parts can be used.

A new drive shaft yoke will be needed. The T-5 has a 27 spline output and the Richmond 6-speed has a 32 spline output. Richmond Yoke number SY-1310 can be used. The drive shaft length should be okay.

# INSTALLING THE *RICHMOND* 6-SPEED AND SUPER STREET 5-SPEED WITH OVER DRIVE

1984 TO 1988 CORVETTE WITH 4+3 TRANSMISSION

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## Rod Corvette 4+3 Replacement #7071626

Items required to complete installation:

### ▶ **Electronic Speedo Sensor, Connector and Driven Gear**

- GM #10456087 Sensor
- GM #14090592 Driven Gear (Ref. For 19 tooth)
- GM #12085498 Connector


Note: Different driven gears are available depending on rear axle ratio.

### ▶ **Transmission Output Yoke**

- Richmond Yoke #SY-1310

### ▶ **Shifter Boot**

- Any aftermarket floor shifter boot, approximately 3.5" x 4.5" (Ref. Hurst #1148429).

 **CAUTION** GM has built into these vehicles a security device that will lock out the steering wheel to prevent theft when car is not in use. This locking pin mechanism is attached to the 4+3 shifter. Since it is not possible to attach this cable to the ROD shifter, we strongly recommend that you remove the pin or override this device for your own safety. If this procedure is not done, the steering wheel will lock out.

## **Step 1 Removing the 4+3 Transmission**

The purchase of an applicable year Corvette Shop Manual to assist in disassembly of the transmission is recommended. Manuals are available through GM dealers or directly from Helm Publications @ 800/782-4356.

*General Outline for Removal:*

- Disconnect battery positive cable.
- Disconnect oxygen sensor wire connection.
- Remove complete exhaust system from exhaust manifold back.
- Remove drive shaft after first marking differential companion flange for reassembly.

- Remove plenum extension (distributor cover) and loosen or remove distributor cap to prevent interference with firewall.
- Support engine with floor jack under rear of oil pan.
- Support transmission with transmission jack.
- Remove driveline beam (torque arm).
- Lower engine/transmission for access and disconnect T.V. cable (throttle valve), if applicable. T.V. cables were used in 1984 through part of the 1986 models.
- Disconnect T.V. cable at TPI throttle and remove from vehicle.
- Disconnect overdrive cooler lines from overdrive and at radiator. Remove lines from vehicle.
- Drain overdrive fluid from radiator and plug radiator fitting.
- Disconnect shifter linkage at transmission and remove weather seals from floor pan.
- Disconnect first gear switch, if applicable, and overdrive electrical connectors. Tape connectors to prevent shorts and fasten out of the way with wire ties.
- Disconnect speedometer sensor and replace connector plug with GM #12085498. Plug may be wired either way.
- Disconnect backup/reverse light switch and replace connector with supplied plug. Plug may also be wired either way.
- Remove transmission assembly, 4 bolts, at bell-housing being careful to properly support transmission weight to prevent damage to clutch.
- Remove driver's seat, 4 bolts, from seat tracks to floor. Seat bottom can be loosened to get at electrical plugs.
- Remove shifter console trim plate with shifter boot after first removing shifter knob.
- Disconnect the reverse lock cable from shifter.
- Remove console storage compartment lock assembly.
- Remove the driver's side panel from console – (screws along storage compartment edge and through carpet into transmission tunnel).
- Remove shifter assembly and mounting bracket.
- Cut out recessed shifter mounting pocket from floor pan using body saw or similar tool.

### **Step 2 Install Speedometer Sensor GM #10456087**

It may be necessary to re-align sensor retainer on sensor housing for sensor electrical connector to be positioned toward bottom of transmission.

### **Step 3 Shifter**

Prior to installing the transmission, it is recommend that the shifter be assembled to the transmission and all rod adjustments made. Once all rods are set, disassemble shifter and rods from the transmission and set aside.

#### **Step 4 Install Rod Transmission**

- Tighten bolts at bell-housing, approximately 40 ft/lbs.
- Install driveline beam (torque arm).
- Install drive shaft.
- If necessary, trim floor pan for additional clearance with shifter in place.
- Connect Speedo sensor and backup light switch wire connectors.

#### **Step 5 Mounting the Shifter**

- Bolt shifter into place. Fasten shifter rods to the transmission. Place shifter alignment pin in place and reset the rod length, if required.  
Note: The shifter rods must work freely without binding. Binding rods will cause hard shifting. With rods set, set the shifter stops to prevent overshift.

#### **Step 6 Weather Seal**

- Fabricate and install a weather seal at shifter opening. This can be made from light gauge aluminum sheet and fastened to the floor pan using selftapping screws and silicone sealer.
- Place shifter boot over shifter handle and fasten using self-tapping screws.

#### **Step 7 Lockout Pin**

- Disconnect steering wheel lockout pin or override system. For disconnecting pin, see applicable year of Shop Manual.
- To override system, push cable up into case. Fasten end of cable to body using a self-tapping screw. Be sure cable will not work out of case.

 **CAUTION** If cable works free, the steering wheel will lock if pin is not removed.

#### **Step 8 Replace Console Panel & Seat**

Before installing, make sure transmission shifts with no interference to the console. Shift through all gears.

#### **Step 9 Gear Lube**

Fill transmission with gear lube to fill plug, approximately two quarts.

#### **Step 10 Run Check Procedure**

With car on jack stand, run transmission a few minutes in each gear. This will allow the lube to be circulated to all bearing and gears.