

## Installation Instructions

# ***Tork Master Torque Converter***

Part Number 20400, 20402, 20404

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This B&M Tork Master torque converter will fit TH-350 and TH-400 transmission fitted to Chevrolet small block or big block V-8 engines. This includes Buick, Oldsmobile and Pontiac models that are equipped with Chevrolet built engines. It is not recommended for big block engines or supercharged small block engines. The torque converter will also fit Chevrolet built 3.8 liter and 4.3 liter 90° V-6 engines. This converter will not fit TH-350 transmissions originally equipped with a clutch converter.

### **INTRODUCTION**

Automatic transmissions operate at temperatures between 150° F and 250° F. It is suggested that the vehicle be allowed to cool for a few hours to avoid burns from hot oil and parts. The vehicle should be off the ground for ease of installation. Jack stands, wheel ramps or a hoist will work fine. Make sure the vehicle is firmly supported!!! Try to raise it 1-2 feet so you have plenty of room to work easily. Also have a small box or pan handy to put bolts in so they won't be lost and a drain pan to catch oil. We suggest you rent a transmission jack from a rental yard to remove the transmission as the

transmission/converter assembly is heavy. A regular floor jack may be used if a transmission jack is unavailable.

Due to variations between different car models, exact instructions for every vehicle cannot be provided. These instructions are sufficient for all vehicle installations. You may find it necessary to disconnect and lower exhaust pipes during transmission removal.

**STEP 1.** Drain oil pan. This will make less of a mess during transmission removal. If you do not have a drain plug, you should consider installing a B&M Drain Plug Kit #80250 while transmission is out of vehicle. If your transmission does not have a drain plug, loosen the oil pan bolts to allow the fluid to drain. After the fluid has drained, snug the oil pan back into place.

**STEP 2.** Remove driveshaft. Be careful not to damage the smooth bushing diameter on slip yoke models. Do not let the cups fall off the U-joint crosses. You may lose some of the needle bearings if the cups fall on the ground.

**STEP 3.** Disconnect vacuum line to vacuum modulator.

**TH-350:** Disconnect kickdown cable at carburetor. Remove retaining bolt from kickdown cable at transmission. Pull cable out of transmission and disconnect cable from detent wire link. (see fig. 1) Allow cable to hang free.

**TH-400:** Disconnect kickdown wire from electrical connector on left side of transmission.

**STEP 4.** Disconnect shifter linkage.

**STEP 5.** Loosen and disconnect speedometer cable.

**STEP 6.** Disconnect oil cooler lines. Use a fitting wrench, if available, to avoid damage to compression nuts. We recommend that the oil cooler lines be flushed out to remove any foreign particles trapped in the cooler. Cooler lines should be flushed in both directions with solvent and air pressure. If you are replacing a torque converter that has failed, replace the transmission oil cooler. It is impossible to completely clean out and existing cooler after a torque converter failure.

**STEP 7.** Remove dipstick and tube assembly. Remove torque converter cover pan bolts and remove converter cover pan. Remove flexplate to converter bolts. Use the starter motor to "bump" each bolt into position.

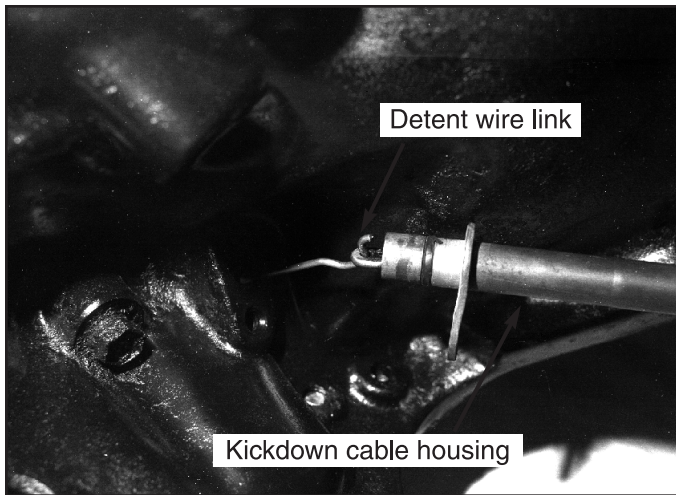


Figure 1

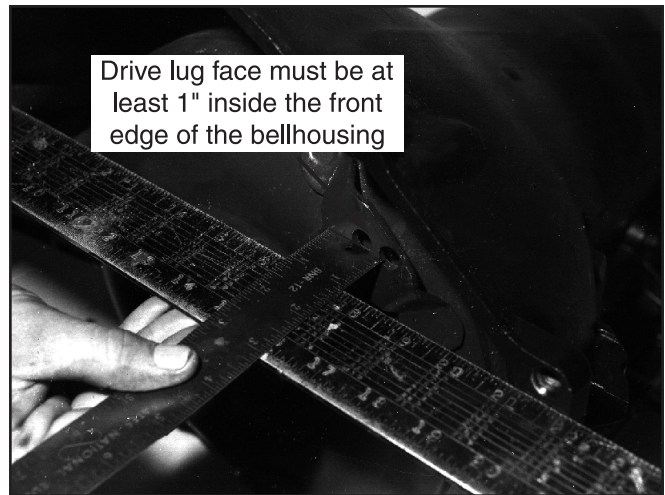


Figure 2

**STEP 8.** Remove distributor cap to prevent damage during transmission removal. Support the transmission with a jack. Place a jack, jack stand or block loosely under the engine oil pan to support it. Remove transmission mount bolts. Raise the transmission slightly and remove the crossmember. Be sure the transmission jack supports the transmission on a wide area so you don't crush the oil pan.

**STEP 9.** Remove bellhousing bolts. Lower transmission until engine is supported. Pull transmission back slightly away from engine. Make sure converter stays with transmission. Lower transmission/converter assembly and remove from vehicle.

**STEP 10.** Pull converter off the front of transmission. Some oil will leak out at this time. If you plan to store your original torque converter, drain it and cover the neck to prevent entry of dirt.

**STEP 11.** Inspect your engine block. Make sure there are no burrs that will prevent the transmission from bolting down flat against the engine. File off any burrs that may be present. Dowel pins should stick out of the engine block a minimum of 1/2" for proper alignment. Insufficient dowel pin engagement can cause front seal and/or bushing failure.

**STEP 12.** Inspect your flexplate. Check for distortion, excessive warpage or worn/elongated bolt holes. The flexplate should not be "dished" backwards. Check condition

of starter ring gear teeth. Distorted or worn flexplates should be replaced. (See table on page 3.)

**STEP 13.** Check the bolt pattern of your B&M torque converter and make sure it matches your flexplate. There are two bolt patterns possible from GM:

**TH-350:** Three-3/8" bolts on a 10-3/4" diameter circle.

**TH 400:** Three-3/8" bolts on an 11-1/2" diameter circle.

If your stock flexplate does not match up to the bolt pattern on your B&M torque converter, you will have to replace your flexplate.

**STEP 14.** Install flexplate onto crankshaft if you have removed or replaced, it. When properly installed, the raised inner lip on the flexplate crankshaft diameter is away from the crankshaft. Install flexplate to crankshaft bolts and torque to 55 ft.lbs.

**STEP 15.** Install B&M torque converter against crankshaft and flexplate. The converter should fit in the crank snugly with no excessive slop. A tight fit may indicate burrs or rust in the pilot diameter of the crank. This can be cleaned with some emery paper or a file. If the converter hits the ring gear, file the outside edge of the lug slightly. If your flexplate is new or in good condition the converter may not contact the flexplate before it bottoms in the crankshaft. A 1/16" -

1/8" gap is normal. When the flexplate to converter bolts are tightened, the flexplate will bow backwards slightly and hold the torque converter against the crankshaft.

**STEP 16.** Inspect front pump seal in the transmission. If the seal looks worn or cracked, replace with a new seal. Lubricate the seal with ATF or white grease. Pour 1 quart of ATF into the B&M torque converter so there will be some lubrication on initial startup. We recommend that you use B&M Trick Shift ATF. Trick Shift is superior in lubrication, heat capacity and friction material performance, if Trick Shift is unavailable, we recommend Ford Type F fluid over Dexron fluid.

**STEP 17.** Install B&M torque converter onto transmission. Push and rotate the converter to engage input shaft, reaction shaft and oil pump rotors. Place a straight edge across the face of the transmission bellhousing. Measure the distance from the face of the bellhousing to the face of the torque converter drive lug. The drive lug must be at least 1" inside the bellhousing. (see fig. 2) A measurement of less than 1" indicates the torque converter is not fully engaged in the transmission. Continue to rotate and turn the converter to obtain full engagement. If you install the transmission without full converter engagement, you will damage the pump.

**STEP 18.** Place the transmission in position on transmission jack. Be sure the jack supports the transmission on a wide area, so you don't crush the oil pan. Install transmission/torque converter against the engine. Transmission should engage dowel pins and sit flat against the engine block with hand pressure only. If the transmission will not sit flat against the engine, the converter is not installed into the transmission all the way or there is some interference problem. **Do not attempt to pull the transmission up against the engine with the bellhousing bolts as this can cause transmission and/or torque converter damage.**

**STEP 19.** Once the transmission is in position against the engine, install transmission bellhousing bolts and tighten 30-35 ft.lbs. At this point the torque converter should spin freely. A tight converter indicates improper engagement, badly burred crankshaft or distorted flexplate. **This condition must be corrected before going any further.**

**STEP 20.** Inspect rubber transmission mount. Worn, cracked or oil soaked transmission and/or engine mounts should be replaced. Raise transmission and install crossmember in place. Tighten crossmember and transmission mount bolts securely.

**STEP 21.** Install three flexplate to converter nuts and bolts. If your flexplate has slotted holes rather than round holes, put a washer under the head of the bolt. After the first bolt is installed finger tight, use the starter motor to "bump" each bolt location into place. After all bolts are in place, tighten bolts to 30 - 35 ft.lbs. Install converter cover pan and tighten bolts to 8 ft.lbs. Install distributor cap.

**STEP 22.** Install dipstick and tube assembly. Use a small amount of sealer at the O-ring to prevent leaks. Connect oil cooler lines. Use a fitting wrench on the compression nuts to avoid damage to the nuts and hold the fittings with a wrench while tightening compression nuts to 75 inch pounds.

**STEP 23.** Connect speedometer cable.

**STEP 24.** Connect shifter linkage.

Check shifter adjustment. Selector lever position must coincide with detent feel in the transmission. There must be equal clearance between the Neutral stop and detent position and the Drive stop and detent position.

**STEP 25.** Inspect vacuum line. Replace any vacuum lines that are broken, cracked, kinked or restricted. Vacuum source should be from the manifold for proper vacuum sensing to automatic valve bodies.

**TH-350:** Connect kickdown cable to detent wire link at transmission. (see fig. 1) Push cable into transmission. Install retaining bolt and tighten securely. Connect cable end to carburetor. Adjust kickdown cable so full throttle coincides with maximum kickdown cable travel. B&M offers an adjustable kickdown replacement cable # 30287.

**TH-400:** Connect kickdown switch wire to electrical connector on left side of case.

**STEP 26.** Install driveshaft. Make sure U-joint cups are properly installed. Tighten U-joint bolts or nuts securely.

**STEP 27.** Lower vehicle but keep the rear wheels off the ground, if possible. Add 5 quarts of B&M Trick Shift to the transmission. While Trick Shift is superior in heat capacity, lubrication and friction material performance, if Trick Shift is unavailable, we recommend Ford Type F fluid over Dexron or Type A fluid.

**STEP 28.** Start engine and place shifter in the Neutral position. Add fluid until the oil level is between the Add and the Full marks. Shift

transmission through all gear positions. If the rear wheels are off the ground, allow the transmission to shift through all gears several times. Place selector in Neutral and check fluid level. Do not overfill. Check for leaks at cooler lines, etc.

**Torque Converter Performance:** Modified torque converters are installed to improve performance and durability not available from a stock torque converter. Your Tork Master 2000 torque converter should have a stall speed in the 1900-2100 rpm range with a small block engine. Your Tork Master 3000 torque converter should have a stall speed in the 2800-3200 rpm range with a small block engine.

**Oil Cooling:** The factory heat exchanger is usually inadequate for Heavy Duty applications. The B&M Transmission Oil Coolers listed below are recommended for performance applications. (See your B&M dealer.) Heat is the major enemy of automatic transmissions and a cooler will also prolong the life of your transmission. B&M will not warranty torque converters which show heat damage from misuse or inadequate cooling.

<b>B&amp;M Transmission Oil Coolers</b>	
<b>B&amp;M Part Number</b>	<b>Rating</b>
<b>70255</b>	16,000 GVW
<b>70268</b>	19,000 GVW
<b>70264</b>	24,000 GVW

<b>B&amp;M Flexplates</b>	
<b>20230</b>	'55-'85 Chevrolet SB V-8 & 90° V-6 with 168 tooth ring gear and 10-3/4" or 11-1/2" bolt circle except 400
<b>20232</b>	'55-'85 Chevrolet 400 externally balanced SB V-8 with 168 tooth ring gear and 10-3/4" or 11-1/2" bolt circle
<b>20230</b>	'90 & earlier Chevrolet BB V-8 with 168 tooth ring gear and 10-3/4" or 11-1/2" bolt circle except 454
<b>20233</b>	'90 & earlier Chevrolet 454 externally balanced BB V-8 with 168 tooth ring gear and 10-3/4" or 11-1/2" bolt circle
<b>20237</b>	'55-85 Chevrolet SB V-8 with 153 tooth ring gear and 10-3/4" bolt circle except 400
<b>20238</b>	'86-'97 Chevrolet externally balanced SB V-8 with 153 tooth ring gear and 10-3/4" bolt circle
<b>20239</b>	'86-'97 Chevrolet externally balanced SB V-8, 168 tooth ring gear and 10-3/4" bolt circle & 11-1/2" bolt circle



# Trick Shift Automatic Transmission Fluid



## Original Trick Shift™ ATF

### For All Pre-1993 Vehicles

Trick Shift was originally developed by B&M for racing applications. Now it's the most popular high performance fluid on the street also! Not an additive, this is the best performance ATF available! It's blend of foam inhibitors, pressure agents and shift modifiers will provide extended transmission life and drastically improve shift feel. Trick Shift is the easiest way to measurably improve the transmission performance of your vehicle. Trick Shift works with all automatic transmissions\* when a firmer shift is desired. You can literally 'Pour In Performance!' It can be mixed with stock-type transmission fluids, however to attain maximum improvement you should use Trick Shift exclusively. Ideal for towing, light trucks and RV applications as well as racing. Not recommended for electronic controlled transmissions.

Trick Shift ATF - one US Quart .....80259

## Synthetic Trick Shift™ ATF

### Synthetic Performance ATF - For All Pre-2000 Vehicles\*

Formulated as a performance automatic transmission fluid. Synthetic Trick Shift features the latest synthetic fluid technology suitable for most late model automatic transmissions as well as many manual transmissions. Not an additive, this safe and effective formula of extreme pressure agents, foam inhibitors and exceptional thermal stability will provide a long service life for your transmission. Applications include street, racing, off-road, towing and heavy-duty fleet use. Synthetic Trick Shift may be mixed with all other types of ATF but works best by itself. When using B&M Synthetic Trick Shift you can literally 'Pour In Performance'. Meets or exceeds Mercon or Dexron III requirements.

Mercon is a trademark of Ford Motor Company. Dexron III is a trademark of General Motors Corporation.

Synthetic Trick Shift ATF - one US Quart ..... 80286

\* Not recommended for automatic transmissions manufactured after 2000. Not intended for use in CVTs.

## Automatic Transmission Oil Capacity Chart

GENERAL MOTORS			
TRANSMISSION	STOCK PAN	WITH B&M DEEP PAN	STOCK CONVERTER
Turbo-Hydro 700R4	5 quarts	Add 3 Quarts	4.5 quarts
Turbo-Hydro 400	3 quarts	Add 2 Quarts	7.0 quarts
Turbo-Hydro 350	3 quarts	Add 3 Quarts	6.0 quarts
Powerglide	4 quarts	Add 2 quarts	5.0 quarts
Turbo-Hydro 200	3 quarts		4.5 quarts
4L60E	5 quarts	Add 3 quarts	4.5 quarts
4L80E	7 quarts	Add 3 quarts	4.5 quarts

FORD MOTOR COMPANY			
TRANSMISSION	STOCK PAN	WITH B&M DEEP PAN	STOCK CONVERTER
C6	5 quarts		5.0 quarts
C4	3 quarts	Add 2 quarts	5.0 quarts
AOD & AODE	6 quarts	Add 3 quarts	5.0 quarts
E4OD	10 quarts	Add 3 quarts	5.0 quarts
CHRYSLER			
A-727 & 518 TF	4 quarts	Add 4 Quarts	4.0 quarts
A-904 & 500 TF	4 quarts		4.0 quarts

B&M CONVERTER CAPACITIES	
12" Converters	.....6 quarts
11" Converters	.....5 quarts
10" Converters	.....4 quarts
9" Converters	.....3 quarts
8" Converters	.....3 quarts

\*Capacities listed are approximated. **Note:** If you change or remove the valve body get additional oil equal to half your torque converter capacity.