



# Installation Instructions Pro Ratchet Shifter

Part Nos. 80840 and 80841

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The **B&M Pro Ratchet** shifter is a full ratchet shifter that is equally at home on the strip and on the street. It will work with most popular three speed automatic transmissions. It has a positive ratchet design so that you will not miss a shift, either up or down. It works with both standard and reverse pattern valve bodies. It has a unique "one hand" reverse lockout feature that meets NHRA and IHRA requirements. You don't need to use two hands to shift into reverse.

Part No. 80840 is for use only with aluminum Powerglide transmissions. 80841 is for use with three speed automatic transmissions: GM TH-400, TH-350, TH-250 and TH-200; Ford C-4 and C-6; and Chrysler 1966 and later Torqueflite A-727 and A-904.

Your **B&M Pro Ratchet** comes equipped with a Neutral safety and backup light switches, transmission brackets and levers and a five foot shift cable. Optional shifter cables in 2 ft. (80830), 3 ft. (80831), 4 ft. (80832), 8 ft. (80834), 10 ft. (80835) and 12 ft. (80836) are also available.

Please read the instructions and review the illustrations thoroughly before beginning the installation.

The mechanical components of this shifter are precision made and assembled at our factory. Any modification or disassembly of these parts can cause the shifter to malfunction and will void the warranty. You should disassemble only those items outlined in the instructions.

The vehicle should be about 2 feet off the ground for ease of installation. Use jack stands, wheel ramps or a vehicle lift. Make sure the vehicle is firmly supported before attempting to work on it.

**IMPORTANT:** If your vehicle is equipped with a locking steering column. Securing the column lock lever in the engine compart-

ment in the full up position will allow the steering wheel to be locked and unlocked and the ignition key to be removed.

**WARNING:** This allows the steering wheel to be locked **WHENEVER** the ignition key is turned to the "lock" position **WHILE THE VEHICLE IS MOVING, OR AT ANY OTHER TIME.** Securing the steering column lock lever in any other position will both **PREVENT** the steering wheel from locking and removal of the ignition key.

## INSTALLATION

**STEP 1.** Remove stock shift linkage;

**Column Shifters:** Remove all rods, levers or cables from column and transmission. Place column shift lever in "Park" position. Remove pin holding shift lever in column and remove lever assembly. If your vehicle is equipped with a locking steering column, secure the column lock lever in the full up position.

**WARNING:** This allows the steering wheel to be locked and ignition key removed **WHENEVER** the ignition key is turned to the "lock" position **WHILE THE VEHICLE IS MOVING, OR AT ANY OTHER TIME.**

**Console Shifters:** Remove shifter mechanism from console. Disconnect rod or cable from transmission. Remove cable bracket if equipped. If there is a cable or linkage from the console shifter or transmission to the steering column lock, it must be blocked in the "Park" position as described above.

**NOTE:** Shifter installation may require console modification or complete console removal depending on the space available in your vehicle.

**STEP 2.** Pull the carpet, if any, away from the floorboard where the shifter is to be mounted. If the vehicle has a bench type seat, move seat to the full forward position. Place the shifter on the floor with the stick

shifted to the rearmost position. Locate the shifter for ease and convenience of operation. See **figure 2** for shifter dimensions. (The rear mounting hole of the mechanism must be at least 1 $\frac{3}{4}$ " from the front of the seat when the seat is in the full forward position.) Make sure the knob clears the dash with the shifter in the forward position. Mark the position of four mounting holes on the floor.

**STEP 3.** Drill four 9/32" mounting holes where marked. Temporarily mount the shifter in place using washers as required to get it level. Mark the location for the shifter cable hole, 3" ahead of the front shifter mounting hole. Drill or cut 1 $\frac{1}{2}$ " diameter cable hole in floorboard. **NOTE:** Some floorboards are extremely thin and will not adequately support the shifter mechanism when bolted to the floor. For those vehicles we recommend that you fabricate a stiffener plate for additional strength.

**STEP 4.** Install (but do not secure) carpet back to its original position. Cut holes in the carpet for the mounting holes and a 1 $\frac{1}{2}$ " slit for the cable. **DO NOT** use a drill bit to make holes in carpet.

**STEP 5.** Install the cable on shifter as shown in **figure 1**. The cable attachment tab should be bolted to the outside surface of the shifter base using  $\frac{1}{4}$ " X  $\frac{1}{2}$ " bolt, lock washer and nut. Install E-Ring to secure the cable.

**STEP 6.** Install the backup light switch and the neutral safety switch in place on the shifter mechanism. Install using two #4-40 screws, nuts and lock washers, as shown in **figure 1**. If necessary bend the fingers slightly so that they engage the slots. **Beware,** Over tightening the switch attachment screws will crack the switch housings. Adjust switches so that the neutral safety switch (the lower switch) operates in Neutral and Park only and so that the backup light switch (the

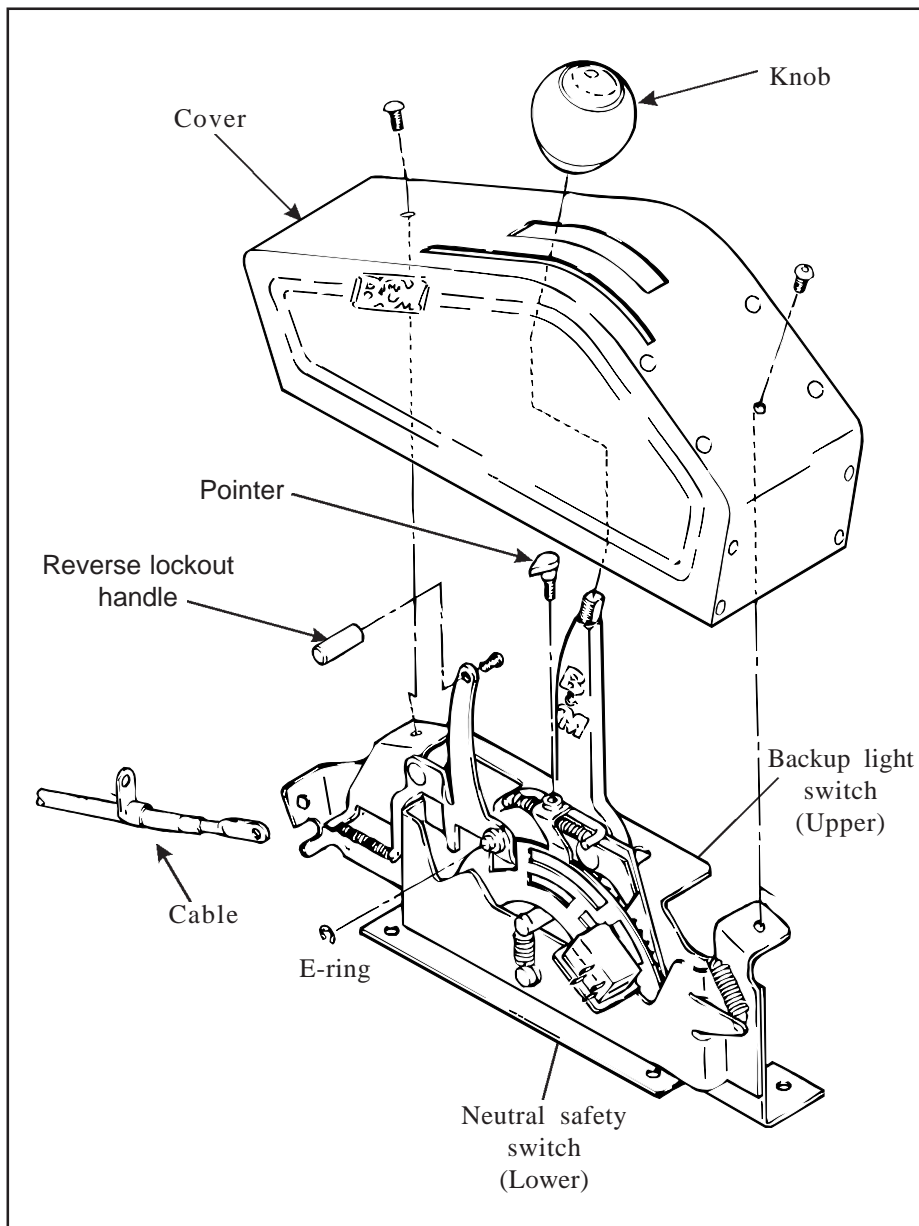


Figure 1

upper switch) operates in Reverse only by loosening screws and sliding switch as required. Then retighten screws.

**STEP 7.** Install the shifter mechanism into vehicle. Slide the shifter cable through carpet and hole in floor. Bolt shifter down using four 1/4" hex bolts and nuts. If required use 1/4" washers as shims between the shifter mechanism and the floor to level shifter. Do not bend the shifter mounting tabs. **ROUTE CABLE AS SHOWN IN FIGURE 3, AVOID SHARP BENDS WHICH WILL KINK AND DAMAGE CABLE.** Use cable clamps or tie wraps to secure the cable housing to the chassis to avoid contact with hot engine or exhaust system. Seal cable hole shut to avoid the entry of exhaust fumes or water. For General Motors vehicles with three speed transmissions go to **Step 8**, For Ford vehicles go to **Step 13**, For Chrysler vehicles go to **Step 19**. For aluminum Powerglide equipped vehicles go to **Step 25**.

## GENERAL MOTORS

**STEP 8.** If you have not already done so, remove the stock selector lever nut and selector lever. Discard stock lever and stock shifter linkage. Install **B&M** selector lever in position using stock selector lever nut, see **figure 4**. Torque nut to 23 lb. ft. The lever should move smoothly from front to rear with a positive click in each gear position.

**STEP 9.** Remove two transmission oil pan bolts from the middle of the left side of the oil pan. Install cable bracket in position, see **figure 4**.) The bracket must be installed with two spacers between the pan and bracket. (If your transmission is equipped with a cast aluminum oil pan, these spacers should be omitted however the cable bracket may have to be modified.) Install the two 5/16-18 x 1.00" bolts supplied and tighten 12-13 lb-ft. Do not over-tighten as this can damage pan gasket.

**STEP 10.** Route the shifter cable according to

**figure 3.** Avoid kinks and sharp bends and route the cable away from hot engine or exhaust parts.

Remove the two rubber boots, one large nut, and a large lockwasher her from the threaded end of the shifter cable. Slide the end of the cable into the cable bracket, Install large nut and lockwasher loosely over end of cable. Install two rubber boots onto end of cable. Install the swivel on the threaded end of the cable and position it in the center of the threaded portion.

**STEP 11.** Move the transmission selector lever by hand to full rear position (LOW). Operate the shifter lever to the low gear position (ratcheted all the way back). Adjust the large nuts on the cable so that the swivel will slide into the rear hole on the selector lever. Tighten the large nuts completely. Be sure that the swivel will slide freely in and out of the hole in the selector lever. **Note: The shifter will not operate correctly unless the rear hole in the shift lever is used.**

Leave the swivel out of the hole and move the selector lever to PARK, all the way forward. Also move the shifter to PARK position (all the way forward). Reinsert the swivel into the rear hole in the selector lever. Check to see that the swivel will slide freely in and out of the rear hole in the selector lever in this position. If it does not slip in freely, adjust the swivel slightly until it will slip into the hole in the lever.

Move the shifter back to the low gear position and check that the swivel will still slide easily in and out of the rear hole in the selector lever. (If you do not use the rear hole in the lever, it will be impossible to correctly adjust the cable.) Operate shifter through all gear positions. Check to make sure swivel will slide in and out of the rear selector lever hole in each gear position. The shift cable is now correctly adjusted. Install cotter key supplied with shifter into swivel and spread key ends.

If you have a problem, **DO NOT FORCE THE SHIFTER**, this will damage the cable, the shifter or the transmission. Simply start at the beginning and check all your steps.

**STEP 12.** On GM vehicles, the Neutral safety/backup light switch is located on the console shifter or steering column. Locate and identify the Neutral safety switch (the engine will not crank unless these wires are connected together). Disconnect Battery ground cable before beginning to wire the Neutral safety switch. Reroute the wires to the **B&M Pro Ratchet**.

On GM vehicles the neutral safety switch may be located on the shifter (steering column or console), or it may be a mechanical interlock in the steering column that prevents the key from turning to the Start position unless the shifter is in the Park or Neutral position. Identify the type of

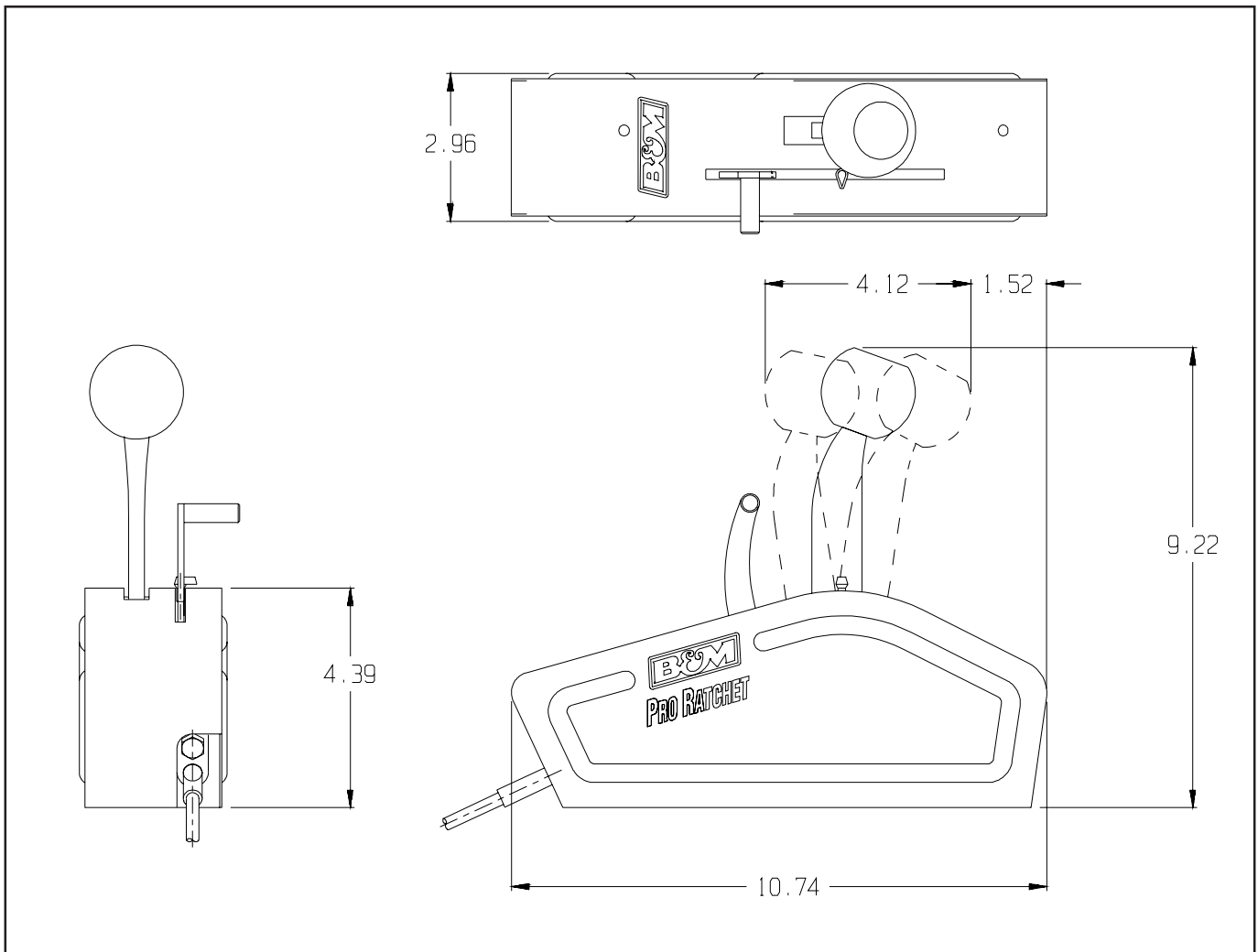


Figure 2

neutral safety system you have. If the key will not turn to the Start position unless the stock shifter is in Park or Neutral, you have a mechanical interlock, otherwise you have a neutral safety switch. With either type, disconnect battery ground cable to prevent accidental shorts. If you have a neutral safety switch, locate and identify the neutral safety wires (engine will not crank unless these wires are connected together). Extend the wires from the GM switch to the shifter. Strip 1/4" insulation off the wires and install slip-on terminals supplied in kit. Crimp terminals onto wires using a crimping tool or pliers. Connect the Neutral safety wires to the **LOWER** switch and the backup light wires to the **UPPER** switch, see figure 1. Tape terminal connections and all other connections to prevent shorts.

If you have a mechanical interlock cut the wire that goes from the start position on the ignition switch to the solenoid on the starter. This wire is usually a 10 or 12 gauge purple wire. Run wires from both ends of the cut wire to the **B&M Pro Ratchet**. Put slip-on terminals on the ends of the lengthened wire. Crimp terminals onto wires using a crimping tool or pliers. Connect the wires to the **LOWER** switch on the shifter. The backup

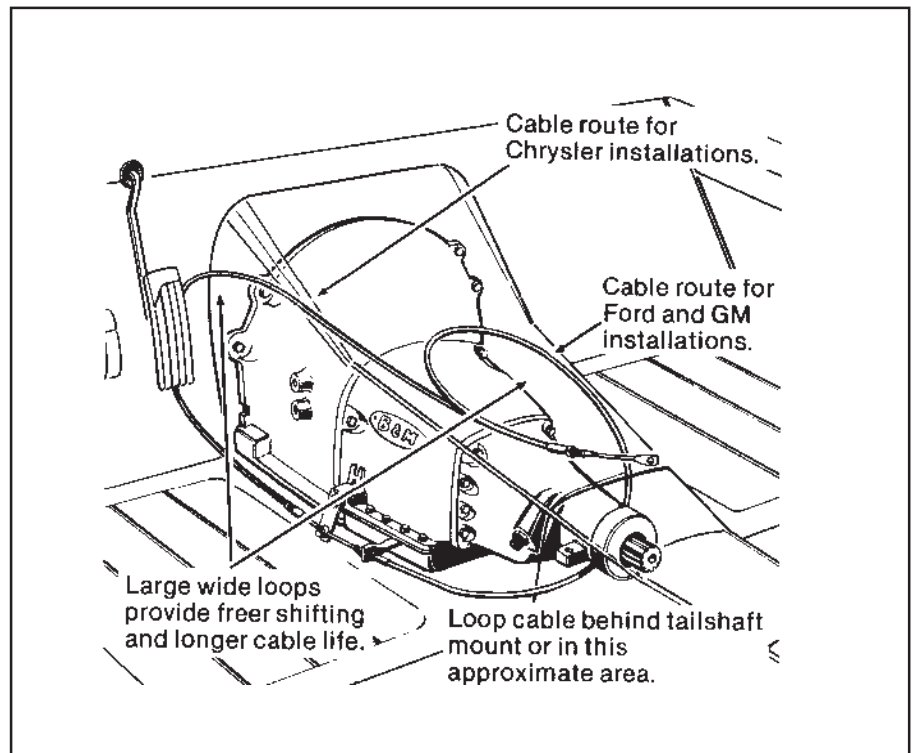


Figure 3

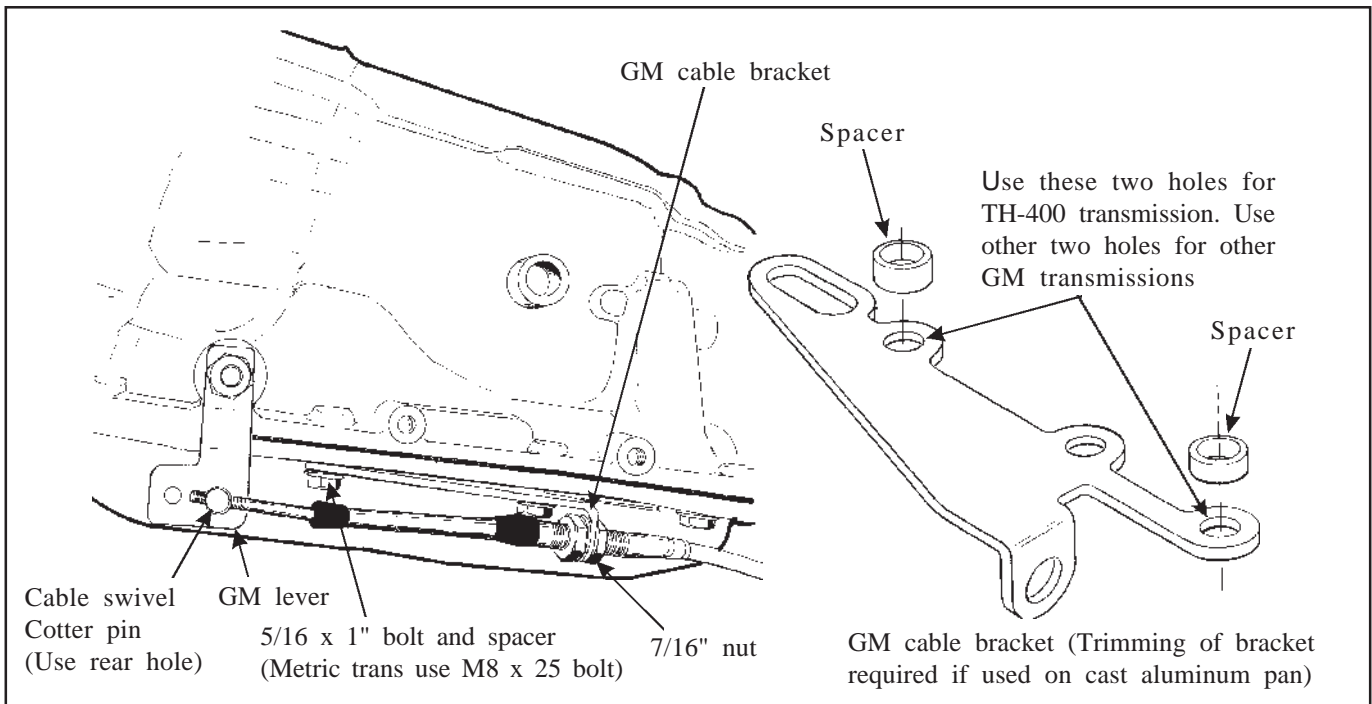


Figure 4

light switch is usually located on the steering column behind the instrument panel. Lengthen these wires and run them to the **UPPER** switch on the shifter. Tape terminal connections and all other connections to prevent shorts.

Reconnect battery ground cable, disconnect coil wire and set the parking brake. Check switch operation by attempting to start motor in each shifter position. **The starter must crank only when shifter is in the Park or Neutral position.** Check Backup light operation when the shifter is shifted to the Reverse position. Adjust switches if required. Reconnect coil wire. Go

to **Step 37.**

#### FORD

**STEP 13.** If you have not already done so, remove the nut and lockwasher holding the downshift linkage onto the downshift lever shaft. The downshift lever is the outer lever on C-4, C-5 and C-6 transmissions. Pull the lever off the shaft and allow the linkage to hang free. Remove and discard stock shift linkage rods. Some C-6, late C-4 and all C-5 transmissions have a neutral safety/backup light switch on the transmission shift lever. If your transmission is so equipped, remove the two bolts holding the

switch in place and slide it off the shift shaft. Disconnect the switch at the factory plug and discard it.

**STEP 14.** Install the **B&M** selector lever, see **figure 5 or 6.** Note: The **B&M** lever must point downward for proper operation. If the stock shift lever on your transmission points down, you will have to remove the lower part of the stock arm by cutting it off to clear the **B&M** lever, see **figure 5.** Install **B&M** selector lever onto shift shaft of transmission. Align selector lever so when it points straight down it travels equal arcs in both directions from center, then tighten  $\frac{1}{4}$ "-20 x  $1\frac{1}{2}$ " pinch bolt and nut. The lever should travel smoothly

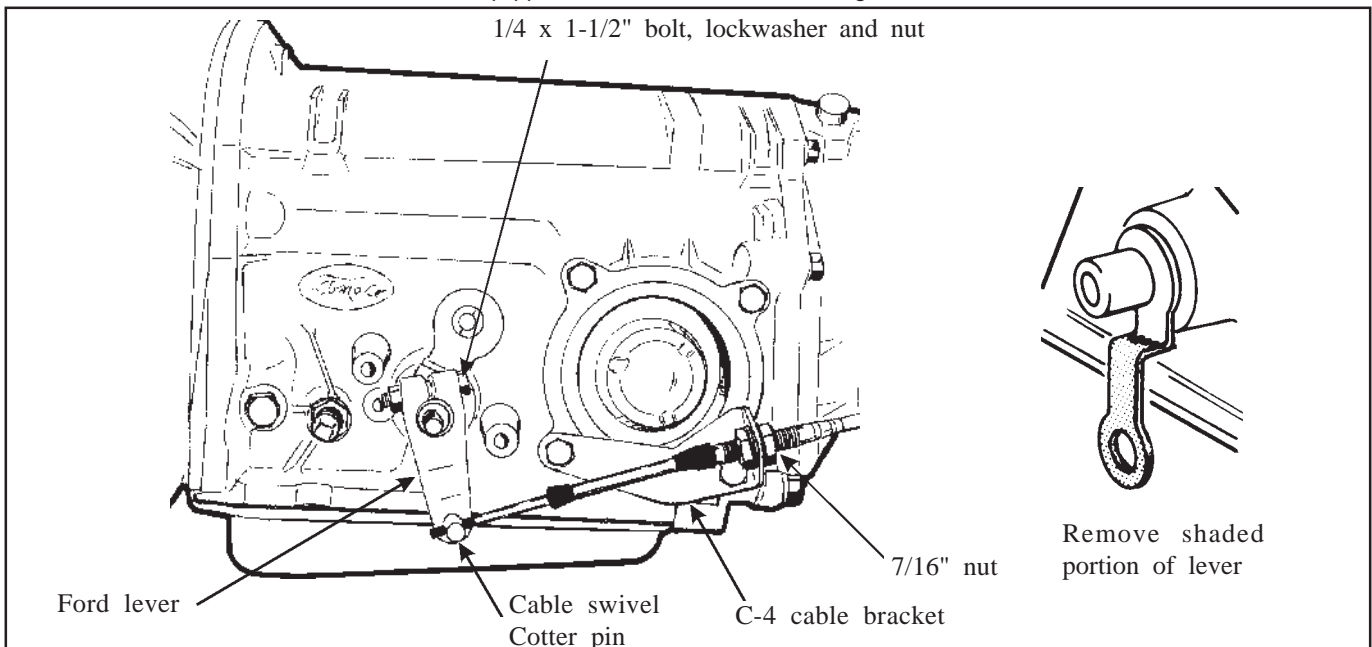


Figure 5

from front to back with a positive click in each gear position. Make sure O-ring is in position on downshift shaft and install downshift lever in position on shaft. Install lockwasher and nut and tighten securely. Downshift lever must operate smoothly. Reconnect downshift linkage.

**STEP 15.** Cable bracket installation:

**C-4, C-5:** Remove the two lower bolts from the rear servo cover. Install cable bracket in position, see **figure 5**. Install two servo cover bolts as removed and tighten 12-13 ft. lb. Do not overtighten as this can distort servo cover.

**C-6:** Remove the two transmission oil pan bolts from the left rear corner of the oil pan. Install cable bracket in position, see **figure 6**, with two spacers between the pan and bracket. (If your transmission is equipped with a cast aluminum oil pan, these spacers are omitted.) Install the two 5/16-18 x 1.00" bolts supplied and tighten 12-13 ft-lb. Do not overtighten as this can damage pan gasket.

**STEP 16.** Route the shifter cable according to **figure 3**. Avoid kinks and sharp bends and route the cable away from hot engine or exhaust parts.

Remove the two rubber boots, one large nut, and a large lockwasher from the threaded end of the shifter cable. Slide the end of the cable into the cable bracket, install large nut and lockwasher loosely over end of cable. Install two rubber boots onto end of cable. Install the swivel on the threaded end of the cable and position it in the center of the threaded portion.

**STEP 17.** Move the transmission selector lever by hand to full rear position (LOW). Place the shifter lever to the low gear position (ratcheted all the way back). Adjust the large nuts on the cable so that the swivel will slide into the hole on the selector lever. Tighten the large nuts completely. Be sure that the swivel will slide freely in and out of the hole in the selector lever.

With the swivel in the selector lever, move the shifter to PARK position, as far forward as the shifter will go without forcing it. (The shifter has further travel that is used to reach the GM park position but is not used on Ford transmissions. Trying to force the cable will damage the cable.) The shift lever on the transmission should be all the way forward. Check to see that the swivel will slide freely in and out of the hole in the lever in this position. If it does not slip in freely, adjust the swivel slightly until it will slip into the hole in the lever in both LOW and PARK positions. Operate shifter through all gear positions. Check to make sure swivel will slide in and out of the selector lever hole in each gear position. Install cotter key supplied with shifter into swivel and spread key ends.

If you have a problem, **DO NOT FORCE THE SHIFTER**, this will damage the cable, the shifter or the transmission. Simply start at the beginning and carefully check all your

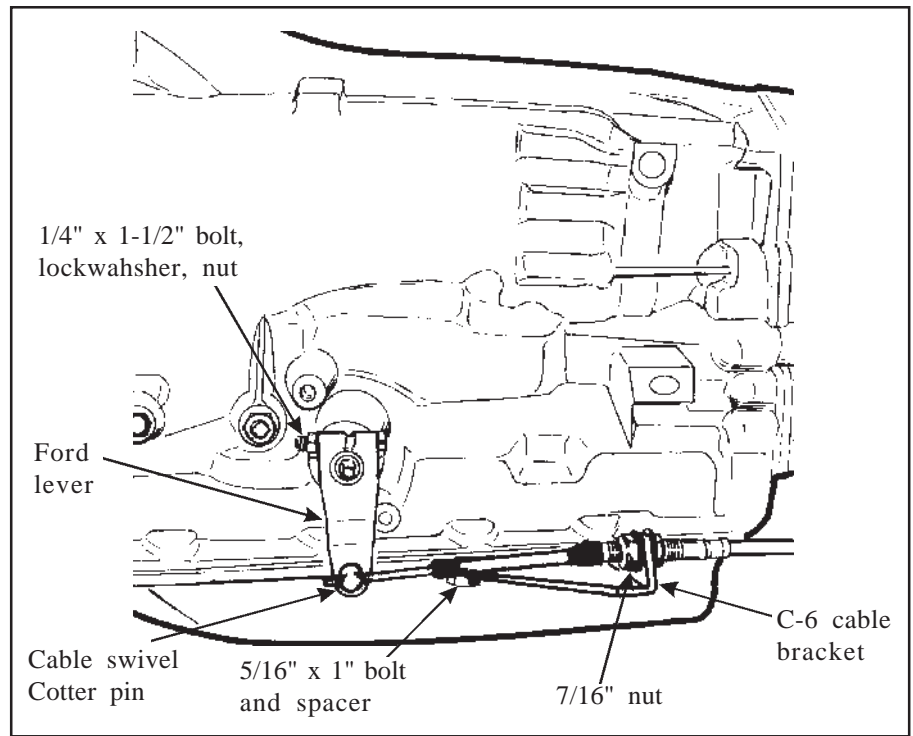


Figure 6

steps.

**IMPORTANT:** Do not force the shifter to over travel into the Park position. This will move the shifter into GM Park position and will damage the cable or transmission.

**STEP 18.** On Ford vehicles, the Neutral safety/Backup light switch is located on the transmission (or on the steering column on some early vehicles). If the vehicle has an AOD transmission the Neutral safety/Backup light switches on the B&M shifter will **NOT** be used. The Neutral safety/Backup light switch on the AOD transmissions will continue to function normally.

On the C-4 and C-5 transmissions it is necessary to completely remove the stock Neutral safety/Backup light switch in order to install the **B&M** transmission shift lever. On C-4, C-5 and C-6 transmissions, it will be necessary to hook up the Neutral safety/Backup light switches on the **B&M Pro Ratchet**. Locate and identify the Neutral safety (the engine will not crank unless these wires are connected together), and Reverse light wires. Disconnect Battery ground cable before beginning to wire the Neutral safety and Reverse light switches. Reroute the wires to the **B&M Pro Ratchet**. Strip 1/4" insulation off wires and install supplied slip-on terminals. Crimp terminals onto wires using a crimping tool or pliers. Connect the Neutral safety wires to the **LOWER** switch and the Reverse light wires to the **UPPER** switch, see **figure 1**. Tape terminal connections to prevent shorts. Reconnect battery ground cable, disconnect coil wire and set the parking brake. Check switch operation by attempting to start motor in each shifter

position. **The starter must crank only when shifter is in the Park or Neutral position.** Check Backup light operation when the shifter is shifted to the Reverse position. Adjust switches if required. Reconnect coil wire. Go to **Step 37**.

**CHRYSLER**

**STEP 19.** If you have not already done so, loosen pinch bolt on throttle lever on transmission. This is the lever on the small diameter shaft. Pry the lever off with a screwdriver and allow linkage to hang free. Remove and discard stock shift lever and stock shift linkage. Install B&M selector lever in position and tighten pinch bolt securely, see **figure 7**. Make sure lever is not pushed down so far as to touch the transmission case. This will cause the lever to bind on the case. The lever should travel smoothly from front to back with a positive click in each gear position. Install stock throttle lever in position on small diameter shaft as removed and tighten pinch bolt securely. Throttle lever must operate smoothly.

**STEP 20.** Remove the two transmission oil pan bolts directly below the shift lever. Install cable bracket in position, see **figure 7**, with two spacers between the pan and bracket. (If your transmission is equipped with a cast aluminum oil pan these spacers can be omitted.) Install the two 5/16-18 x 1.00" pan bolts supplied and tighten to 12-13ft-lb. Do not overtighten as this can damage pan gasket.

**STEP 21.** Route the shifter cable according to **figure 3**. Avoid kinks and sharp bends and route the cable away from hot engine or exhaust parts.

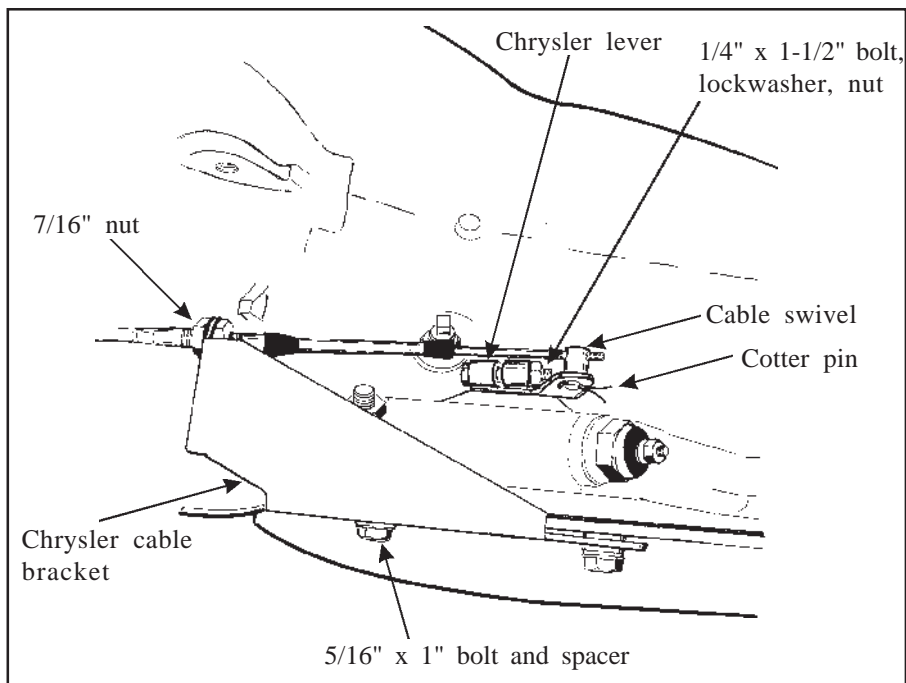


Figure 7

Remove the two rubber boots, one large nut, and a large lockwasher from the threaded end of the shifter cable. Slide the end of the cable into the cable bracket. Install large nut and lockwasher loosely over end of cable. Install two rubber boots onto end of cable. Install the swivel on the threaded end of the cable and position it in the center of the threaded portion.

**STEP 22.** Move the transmission selector lever by hand to full forward position (LOW). Place the shifter lever to the low gear position (ratcheted all the way back). Adjust the large nuts on the cable so that the swivel will slide into the hole on the selector lever. Tighten the large nuts completely. Be sure that the swivel will slide freely in and out of the hole in the selector lever.

With the swivel in the selector lever, move the shifter to PARK position, as far forward as the shifter will go without forcing it. (The shifter has further travel that is used to reach the GM park position but is not used on Chrysler transmissions. Trying to force the shifter will damage the cable.) The shift lever on the transmission should be all the way back. Check to see that the swivel will slide freely in and out of the hole in the lever in this position. If it does not slip in freely, adjust the swivel slightly until it will slip into the hole in the lever in both LOW and PARK positions. Operate shifter through all gear positions. Check to make sure swivel will slide in and out of the selector lever hole in each gear position. Install cotter key supplied with shifter into swivel and spread key ends.

If you have a problem, **DO NOT FORCE THE SHIFTER**, this will damage the cable, the shifter or the transmission. Simply start at

the beginning and carefully check all your steps.

**IMPORTANT:** Do not force the shifter to over travel into the Park position. This will move the shifter into GM Park position and will damage the cable or transmission.

**STEP 23.** Check operation of throttle linkage again. Linkage must operate smoothly with no bind. All transmissions using automatic valve bodies must have the throttle linkage connected and operating or transmission damage will result.

**STEP 24.** Neutral Safety/Backup Light switch.

'66-'68: The Neutral safety switch will continue to function normally. It will not be necessary to hook up the Neutral safety switch wires on the shifter. Disconnect the battery ground cable before wiring the Backup light switch. Locate the original Backup Light switch on the steering column or console shifter. Run these wires to the **UPPER** switch on the **B&M Pro Ratchet**, see figure 1. Reconnect ground wire and check light for proper operation. Adjust switches on the shifter if required.

'69 and Later: The Neutral Safety/Backup switch is located on the transmission and will continue to function normally. It will not be necessary to connect any wires to the switches on the shifter. Go to **Step 37**.

#### POWERGLIDE

**STEP 25.** Disconnect the throttle to transmission linkage, if any and discard. The Powerglide shift lever supplied with this shifter has no provision for a throttle linkage.

**STEP 26.** Drain transmission oil pan. **Caution: Be sure transmission is cool before attempting to drain oil.** Place drain pan under transmission. Remove drain plug, if so

equipped. If your pan does not have a drain plug, remove oil pan bolts one at a time, working towards the front. As you loosen the last two bolts, the oil pan will tilt down and allow the oil to drain. Note: If your oil pan sticks to the gasket, pry it down with a screwdriver before loosening the last two bolts to break it free. Remove oil pan and set aside.

**STEP 27.** Remove manual valve guide plate by removing two bolts. See figure 8. Unhook and remove detent roller spring. Allow detent roller to pivot out of the way. Not how the pin on the manual valve selector engages the groove in the manual valve.

**STEP 28.** If your transmission has a throttle valve lever on the outside of the shift lever, loosen the inner pinch bolt on the throttle lever. Slide the throttle lever and shaft out of the transmission. Remove the inner throttle valve lever. Discard these parts.

**STEP 29.** Loosen the pinch bolt on the selector lever. This can be either an Allen head bolt of a 12 point bolt head. Do not remove the pinch bolt. Slightly pry the manual valve lever and slide selector shaft from the transmission. Discard selector shaft.

**STEP 30.** This transmission includes the B&M Powerglide Pro-Lever shift lever, which is a two piece lever with separate lever and shaft. Install B&M selector shaft into transmission with the lever pointing down. Hold the stock selector lever in position in the case, engage the pin on the selector lever with the manual valve and rotate the B&M shaft until the flat on the shaft engages the serrations on the lever. Push B&M lever firmly into the transmission until lever stops on shoulder of shaft. Tighten pinch bolt securely.

**STEP 31.** Install manual valve guide plate in place. (Make sure that pin on selector lever is engaged in groove in manual valve.) Install the two bolts and tighten to 15 lb-ft. Install detent roller spring. Hook spring to detent roller and tab. Selector lever must travel freely and smoothly from front to back with a positive click in each gear position.

**STEP 32.** Clean oil pan and scrape old gasket off of pan and case. (Note: if your pan does not have a drain plug, you may wish to install a B&M Drain Plug Kit, part number 80250, at this time.) Old gasket can cause leaks. Install oil pan with new gasket. Install pan bolts except for the two center bolts on left side of pan. Tighten pan bolts to 8 lb-ft. Do not overtighten as this can damage the pan gasket.

**STEP 33.** Install cable bracket in position with the two remaining pan bolts. See figure 8. Install the B&M lever onto the shaft with the lever pointing down. If your cable comes from the front (usually a rear engine car) the lever is installed pointing upwards. You will have to make your own cable bracket for this installation.

**STEP 34.** Route the shifter cable according

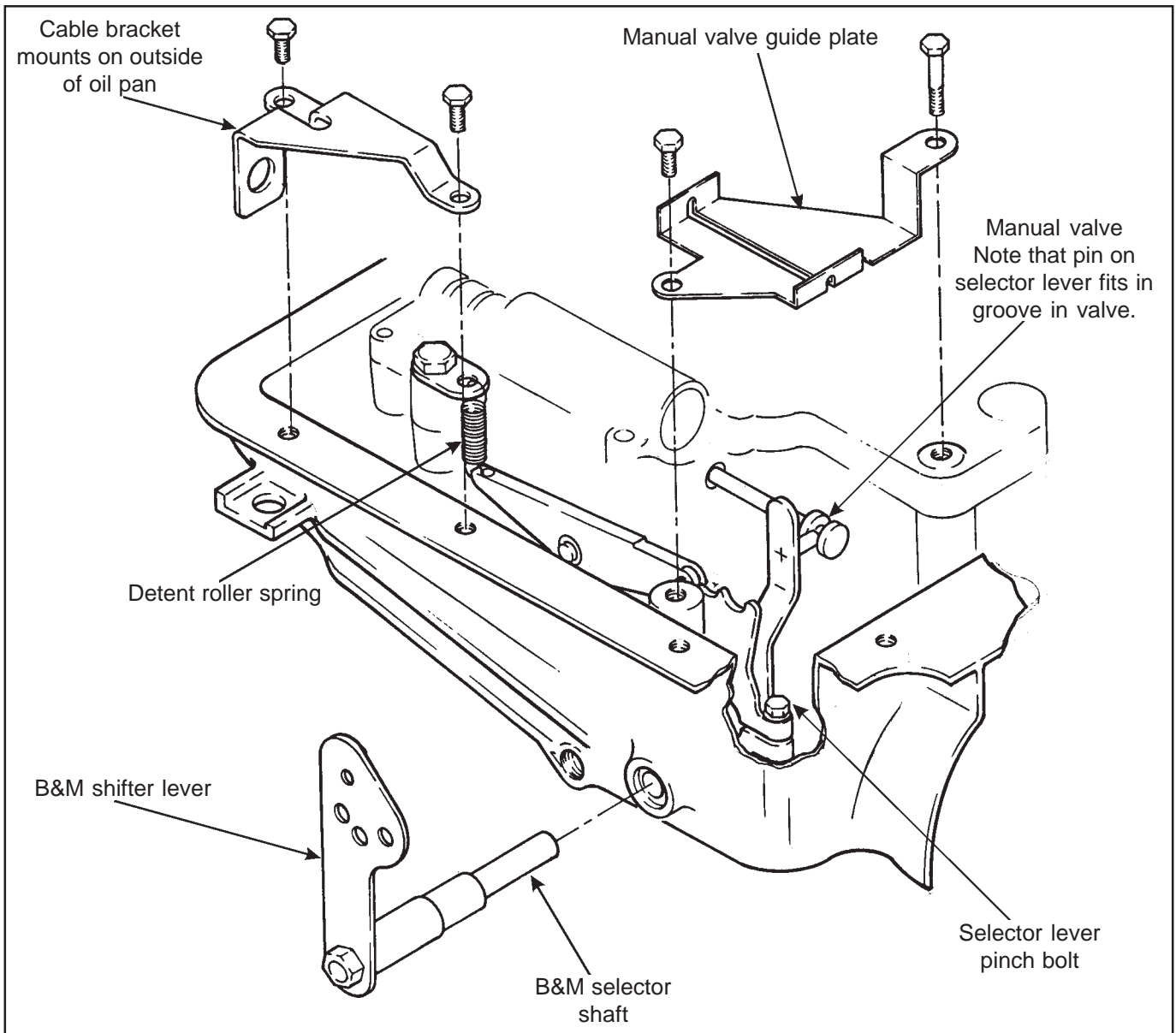


Figure 8

to **figure 3**. Avoid kinks and sharp bends and route the cable away from hot engine or exhaust parts.

Remove the two rubber boots, one large nut, and a large lockwasher her from the threaded end of the shifter cable. Slide the end of the cable into the cable bracket, Install large nut and lockwasher loosely over end of cable. Install two rubber boots onto end of cable. Install the swivel on the threaded end of the cable and position it in the center of the threaded portion.

**STEP 35.** Move the transmission selector lever by hand to full rear position (LOW). Operate the shifter lever to the low gear position (ratcheted all the way back). Adjust the large nuts on the cable so that the swivel will slide into the hole in the selector lever that is labeled "B&M2". See **figure 9**. Tighten the large nuts completely. Be sure that the swivel will slide freely in and out of the hole in the selector lever. **Note: The shifter will not operate correctly unless the B&M2 hole in the shift lever is used.**

**WARNING**

PERIODIC INSPECTION AND MAINTENANCE OF YOUR SHIFTER IS RECOMMENDED TO ENSURE THAT THE MECHANISM IS WELL LUBRICATED, FREE FROM DIRT OR RUST AND THAT THE CABLE IS PROPERLY ADJUSTED. LACK OF MAINTENANCE COULD RESULT IN A FAILURE INCLUDING A FAILURE OF THE REVERSE LOCKOUT SAFETY FEATURE.

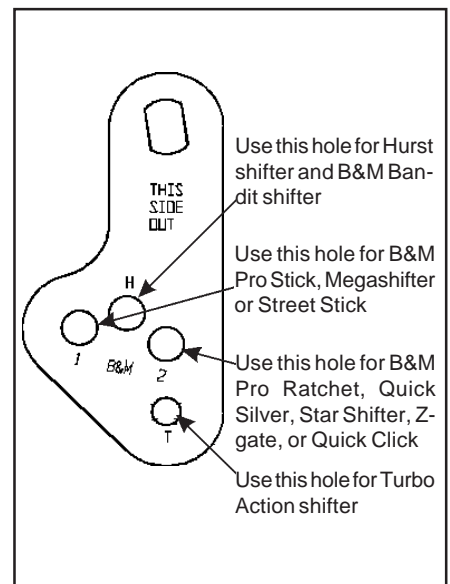


Figure 9

## TOOL LIST

1	Phillips screwdriver
1	7/16 socket
1	Ratchet or speed handle
1	7/16" wrench
1	1/2" wrench
1	9/16" wrench
2	11/16 wrench
1	3/32" Allen key
1	1/8" Allen key
1	9/32 drill bit
1	drill motor
1	1-1/2" holesaw
1	Crimping tool
1	Torque wrench 0-50 ft.lbs.
1	File
1	Tin snips
1	Wire strippers
1	Ruler
1	Dividers
1	Electrical tape
1	Hacksaw
1	Hammer
1	Drift pin
2-4	Jackstands
A/R	Cable ties

Leave the swivel out of the hole and move the selector lever to PARK, all the way forward. Also ratchet the shifter to PARK position (all the way forward). Reinsert the swivel into the **B&M2** hole in the selector lever. Check to see that the swivel will slide freely in and out of the B&M2 hole in the selector lever in this position. If it does not slip in freely, adjust the swivel slightly until it will slip into the B&M2 hole in the lever.

Move the shifter back to the low gear position and check that the swivel will slide easily in and out of the B&M2 hole in the selector lever. (If you do not use the B&M2 hole in the lever, it will be impossible to correctly adjust the cable.) Operate shifter through all gear positions. Check to make sure swivel will slide in and out of the B&M2 selector lever hole in each gear position. The shift cable is now correctly adjusted. Install cotter key supplied with shifter into swivel and spread key ends.

If you have a problem, **DO NOT FORCE THE SHIFTER**, this will damage the cable, the shifter or the transmission. Simply start at the beginning and carefully check all your steps.

**STEP 36.** Disconnect battery ground cable to prevent accidental shorts. Identify the neutral safety wires (engine will not crank unless these wires are connected together). Extend the wires to the shifter. Strip 1/4" insulation off the wires and install slip-on terminals supplied in kit. Crimp terminals onto wires using a crimping tool or pliers. Connect the Neutral safety wires to the **LOWER** switch and the backup light wires to the **UPPER** switch, see **figure 1**. Tape terminal connections and all other connections to prevent shorts.

## CHECK LIST

- \_\_\_ Locking steering column lever is permanently fastened in the full up position. Step 1.
- \_\_\_ Shifter is convenient to reach and has ample room for your hand in both park and low gear. Step 2.
- \_\_\_ Carpet covers floorboard holes. Step 4.
- \_\_\_ Cable is securely fastened to the shifter and held with E-Ring. Step 5.
- \_\_\_ Shifter is securely mounted to floorboard. Step 7.
- \_\_\_ Shifter cable is clear of exhaust system, engine and any moving parts. Step 7.
- \_\_\_ Throttle lever and shift lever are tight on transmission. GM step 9, Ford Step 14, Chrysler Step 20, Powerglide Step 30.
- \_\_\_ Oil pan bolts are tightened to 12-13 lb.ft. GM Step 10, Ford Step 16, Chrysler Step 21, Powerglide Step 33.
- \_\_\_ Shifter is properly adjusted. Cable boots are installed, cable nuts are tightened and swivel is secured with cotter key. GM Step 11, Ford Step 17, Chrysler Step 22, Powerglide Step 35.
- \_\_\_ The Neutral safety switch is connected and properly adjusted to prevent engine starts in drive gears and reverse. GM Step 12, Ford Step 18, Chry not required, Powerglide Step 36.
- \_\_\_ There is no debris in the shifter mechanism.
- \_\_\_ Cover installed. Step 37.
- \_\_\_ Shifter moves freely in all positions as described in Shifter Operation.
- \_\_\_ If your shifter is not working properly do not attempt to drive your car. Make sure you have followed all instructions. If the shifter is broken or defective return it to your **B&M** dealer.

Reconnect battery ground cable, disconnect coil wire and set the parking brake. Check switch operation by attempting to start motor in each shifter position. **The starter must crank only when shifter is in the Park or Neutral position.** Check Backup light operation when the shifter is shifted to the Reverse position. Adjust switches if required. Reconnect coil wire.

**STEP 37.** With the shifter bolted securely to the floor be sure that the shifter operates correctly. Check to see that There is a piece of insulating tape on the inside of the brushed aluminum cover on the drivers's side. This is to prevent the terminals on the switches from shorting out. Install the brushed aluminum cover over the shifter. Put the cover over the stick and then push the stick forward. Hook the front of the cover over the front of the shifter mechanism and then put the rear of the cover over the rear of the mechanism. The cover is secured by two button head #10-32 screws. Install the handle on the Reverse lockout lever using the #8-32 button head screw, The handle should stick out to the left of the shifter for easier one hand operation. Screw the red indicator pointer through the slot in the cover into the threaded

end of the indicator lever. Use loctite to keep the indicator pointer from turning. Select the correct indicator tape from the sheet and install it to the left of the pointer.

**STEP 37.** Tighten knob onto stick securely. Thread sealer will help keep the knob from loosening. Position knob insert on top of knob and align Pro Ratchet logo. Push down on insert to snap it in place. Secure carpet to floorboard and door edges. Your shifter is now ready to use.

## OPERATION

The **B&M Pro Ratchet** is a ratchet shifter. You push the stick forward for up shifts and pull it back for down shifts (with a standard pattern valve body). The ratchet shift allows firm, positive, no-miss upshifts and downshifts. Move the knob forward or backwards as far as it will go to select the next gear. Then let the spring return the stick to the central position. When you shift from Drive to Neutral the reverse lockout prevents the shifter from shifting any further (to prevent accidental selection of Reverse). To shift to Reverse the reverse lockout lever must be pushed forward. When the reverse lockout lever is pushed forward (with the shifter in Neutral) the lever snaps into the up position and is held there until the shifter is shifted to Reverse, so only one hand is needed.

On GM TH-200, TH-250, TH-350, TH-400 and Powerglide transmissions it is necessary to shift the ratchet twice to get from Reverse to Park. These transmissions have twice the travel from Reverse to Park as between the other gears. **If you only ratchet once out of Reverse you will not be fully in Park gear** and the car may move.

## IMPORTANT

Before installing the knob onto the shifter put Loctite on the threads of the stick. The knob may gall on the threads of the stick and make it impossible to remove the knob from the stick. If this occurs it can cause the stick to break if you use excessive force while attempting to remove the knob from the stick.