



**INSTALLATION INSTRUCTIONS FOR
PRO RATCHET®
UNIVERSAL SHIFTER WITH KNOB
Part Nos. 80842 & 80843
for transmissions listed below**

INTRODUCTION

The B&M Pro Ratchet® shifter is equally at home on strip or street. With its positive ratchet design, you won't miss a shift. It is compatible with both standard- and reverse-pattern valve bodies. And its unique, "one hand" reverse lockout feature meets NHRA and IHRA safety requirements.

Before starting, take the time to read and understand these instructions.

Also, use the parts list to verify your kit's contents. In the unlikely event that any parts are missing, please contact B&M Technical Support for replacements.

NOTE: Some hardware bags are shared by similar B&M shifters. While your bag may include extra items that are used on other shifters, the parts list below shows all the parts required for this shifter.

REQUIRED SUPPLIES

- Medium strength thread-locking fluid (Permatex Blue or equivalent)

APPLICABLE TRANSMISSIONS

This shifter kit **includes all cable brackets and selector levers** required for use with the following automatic transmissions:

MANUFACTURER	TRANSMISSION
Chrysler (1966+) and AMC (1972+)	A727 / A518 and A904 / A500
Ford	C4 / C5 and C6
GM (Turbo-Hydramatic)	TH200, TH250, TH350, TH400, 200-4R, 700R4 and 4L60
GM (electronic <i>without</i> PRNDL switch)	4L60E, 4L65E, 4L70E, 4L75E, 4L80E and 4L85E

The shifter can also be used with the following transmissions, **with the applicable B&M bracket and selector lever kits** (sold separately):

MANUFACTURER	TRANSMISSION	INSTALL KIT
Ford	AOD	40496
Ford	AODE and 4R70W	40504
Ford	E4OD and 4R100	40505
GM (electronic <i>with</i> PRNDL switch)	4L60E, 4L65E, 4L70E, 4L75E, 4L80E and 4L85E	70499
GM	Powerglide (aluminum, 1962-73)	70497

Additional instructions for these transmissions are included with their install kits.

NOTES

- Installation requires better-than-average mechanical knowledge and skills. If this job is beyond your abilities, seek the services of a qualified technician.
- The shifter mechanism is precision-assembled at our factory. **Any modification or disassembly of the shifter will void its warranty, and can cause it to malfunction.** Disassemble items **only** where specified in the instructions.
- Installation of this shifter may require modification or complete removal of your vehicle's console, depending on the space available in your vehicle.
- If you do not understand any part of these instructions, please call **B&M Technical Support** at **(270) 781-9741** for assistance.
- The shifter cable in this kit is 5 feet long. Different length shifter cables are available separately from B&M, if required.

PARTS LIST



DESCRIPTION	QTY
SHIFTER ASSEMBLY, PRO RATCHET	1
WASHER, FLAT 1/4"	12
BOLT, 1/4-20 x 1-1/4"	4
PIN, LIMITER	1
E-CLIP	3
CABLE, SHIFTER, 5'	1
BOLT, 1/4-20 x 1/2"	1
NUT, HEX 1/4-20	6
MICRO-SWITCH	2
SCREW, 4-40 x 1-1/4", SLOTTED, PAN HEAD	2
WASHER, SPLIT LOCK #4	2
NUT, HEX 4-40	2
WASHER, SPLIT LOCK 1/4"	5
SELECTOR LEVER, CHRYSLER / AMC	1
CABLE BRACKET, CHRYSLER / AMC	1
SELECTOR LEVER, FORD C4 / C5 and C6	1
CABLE BRACKET, FORD C4 / C5	1
CABLE BRACKET, FORD C6	1
SELECTOR LEVER, GM TH & ELECTRONIC	1
CABLE BRKT, GM TH & ELECTRONIC (NO PRNDL SWITCH)	1
BOLT, 1/4-20 x 1-1/2"	1
BOLT, 5/16-18 x 1"	2
WASHER, SPLIT LOCK 5/16"	2
SPACER, 7/16" I.D. x 1/4" L	2
JAM NUT, 10-32 (COMES INSTALLED ON CABLE END)	1
SWIVEL, CABLE	1
PIN, COTTER 1/16" x 1"	1
WIRE TERMINAL, FEMALE DISC, 1/4", BLUE, 16-14 AWG	4
COVER ASSEMBLY, PRO RATCHET SHIFTER	1
SCREW, 10-32 x 3/8", STAINLESS, SOCKET, BUTTON HEAD	2
HANDLE, LOCKOUT LEVER, RED ALUMINUM	1
SCREW, 8-32 x 3/8", BLACK OXIDE, SOCKET, BUTTON HD	1
POSITION INDICATOR, THREADED, RED PLASTIC	1
DECAL SHEET, SHIFT PATTERN, PRO RATCHET	1
KNOB, SHIFT, WHITE	1
DECAL, SHIFT KNOB, B&M LOGO	1
INSERT, SHIFT KNOB, CLEAR	1

SAFETY WARNINGS

- **WORK SAFELY!** For maximum safety, perform this installation on a clean, level surface, and with the engine turned off. Chock the wheels to prevent the vehicle moving in either direction. To avoid bodily injury or vehicle damage, do not begin work until you are confident that the vehicle is safely secured and will not move.
- **AVOID SERIOUS INJURY OR DEATH BY CRUSHING!** If you have to raise the vehicle to work under it, securely support on a lift or jack stands. **NEVER work under a vehicle that is supported only by jacks!**
- **WARNING: This B&M performance shifter uses a heavy-duty cable to shift the transmission only; it is NOT intended or designed to operate a locking steering column! If your vehicle has a locking steering column, it must be modified or disabled to prevent the steering from unintentionally locking up while driving.** If you are not comfortable making this modification, or if you don't understand this warning, seek the services of a qualified technician for the safe installation of this shifter.

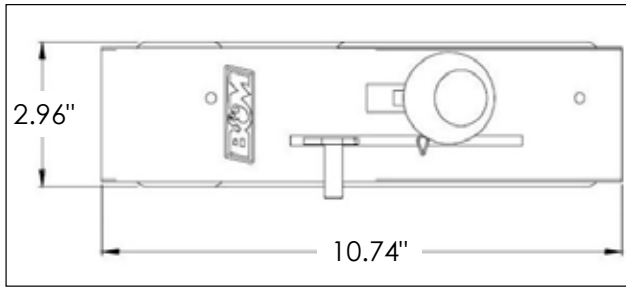
INSTALLATION

1. Remove the stock shift linkage.

Column Shifters: Remove all rods, levers or cables from the column and the transmission. Place the column shift lever in the PARK position. Remove the pin holding the shift lever in the column and remove the lever assembly. If your vehicle is equipped with a locking steering column, secure the column lock lever in the full up position. (**See WARNING re. locking steering columns, above.**)

Console Shifters: Remove the shifter mechanism from the console. Disconnect the rod or the cable from the transmission. Remove the 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.

Switch Wires: While removing the stock shift linkage, look for either Neutral Safety and / or Backup Light switches and wiring. (This mechanism varies on different vehicles. **See your vehicle's installation section for details.**) Label any such wires to simplify installation.



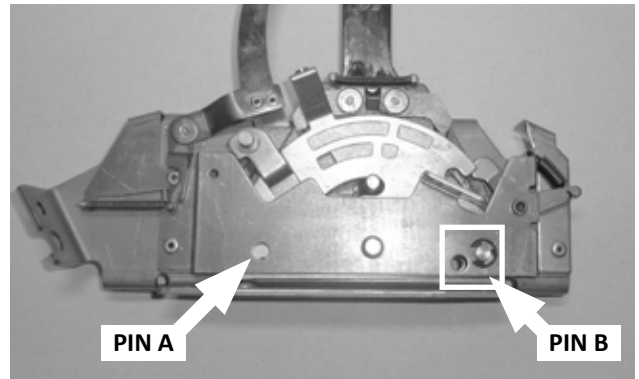
2. **Locate the B&M shifter in your vehicle.** Expose the mounting area for the shifter. Pull the carpet, if any, away from the floorboard where the shifter is to be mounted. If the vehicle has a bench type seat, move the seat to the full forward position. Place the **shifter** on the floor, locating it for ease and convenience of operation. (Note the shifter dimensions above.) The rear mounting hole of the mechanism must be at least 1-3/4" from the front of the seat when the seat is in the full forward position. Make sure the shift knob will clear the dash and seat when the handle is pushed forward and rearward. When you are satisfied with the position of the shifter, mark the location of its four mount holes on the floor.

3. **Drill the mount holes.** Drill four 9/32" mount holes through the floor. Put the shifter in place. Shim it to level (if necessary) using the twelve **1/4" flat washers** between the shifter and the floor, and temporarily hold it in place with the four **1/4-20 x 1-1/4" bolts**.

4. **Drill the cable hole.** Mark the location for the shifter cable hole 3" forward of the shifter's front mount holes. Drill or cut a 1-1/2" hole through the floor.

NOTE: If your vehicle's floor is too thin to properly support the shifter mechanism when bolted to it, fabricate a sheet metal stiffener to reinforce it.

5. **Return the carpet** to its original position (but do not secure it yet). Cut holes in the carpet for the shifter mount holes, and cut a 1-1/2" slit for the cable. **(Do not use a drill bit to make the holes in the carpet.)**



6. **Configure park and speed limiter pins for your application** as shown. (The shifter comes configured for GM 3-speed transmissions.)

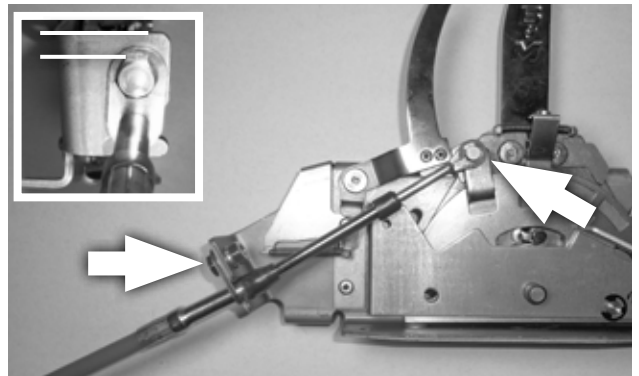
TRANSMISSION	PARK LIMITER PIN A	SPEED LIMITER PIN B
All Chrysler / AMC and Ford	INSTALL *	Leave in rear hole
GM 3-speeds	Not used	Leave in rear hole
GM 4-speeds	Not used	REMOVE
GM Powerglide [†] (2-speed)	Not used	MOVE TO FRONT HOLE

*Secure the park limiter pin with 2 E-clips.

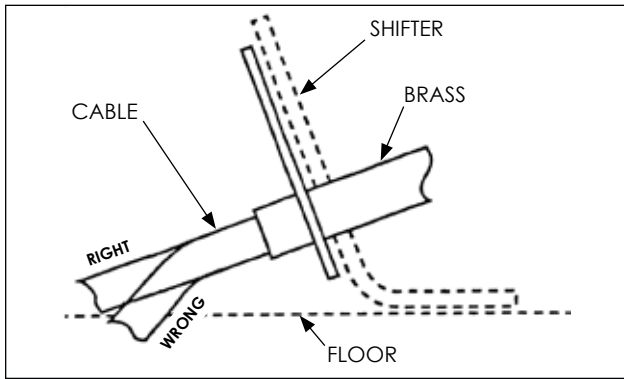
[†]Powerglide included for reference only; see footnote in "Operation."

NOTES:

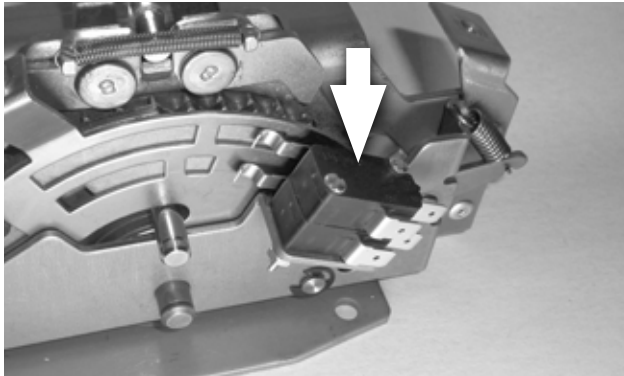
- The **park limiter pin must be used with Chrysler / AMC and Ford transmissions** to avoid stretching the shifter cable. (Selector lever travel from REVERSE to PARK is longer on GM transmissions than on Chrysler and Ford transmissions.)
- Selector levers on all Chrysler / AMC and Ford transmissions (whether 3- or 4-speed) have just 3 forward speed positions.



7. **Assemble the cable and shifter.** Secure the **cable** eye to the shifter pin with an **E-clip**. Then secure the cable's mount tab to the **outside** surface of the shifter base with the **1/4-20 x 1/2" bolt and nut** (apply **medium strength thread-locking fluid** to bolt). Align a bolt flat with the top edge of the cable mount tab on the shifter, as shown, for best fit of the shifter cover.



CAUTION: Do not kink the cable anywhere along its length, or it will lock up. The cable should be kept straight for at least 2" after it leaves the brass at each end.



8. Install the two switches on the shifter mechanism as shown, using the two **#4-40 × 1-1/4" screws, lock washers and nuts**.

CAUTION: Do not over-tighten the fasteners, as this may crack the switch housings.

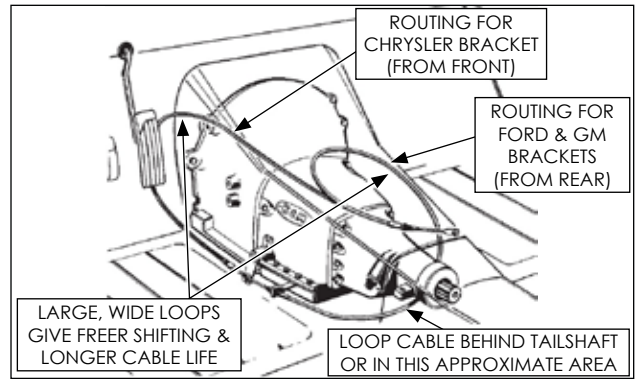
After tightening the fasteners, check placement of the switches to verify that:

- the **Neutral Safety (bottom) switch** closes in NEUTRAL and PARK only; and
- the **Backup Light (top) switch** closes in REVERSE only.

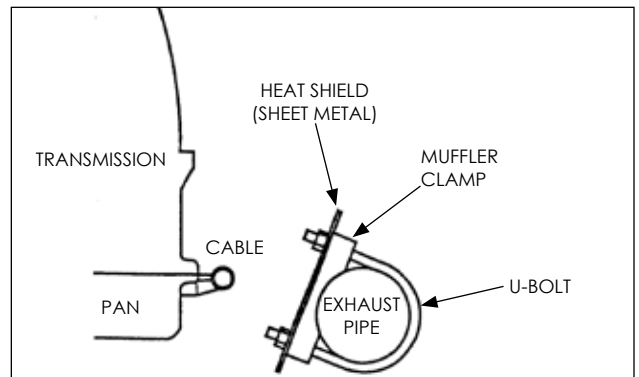
NOTES:

- Refer to the shifter-transmission position table in the "Operation" section.
- The switch mount holes should allow the required positioning for proper actuation. However, the switch arms may be carefully bent, if necessary.

9. Install the shifter in the vehicle. Slide the cable through the carpet and the hole in the floor, then bolt the shifter to the floor using the four **1/4-20 × 1-1/4" bolts, lock washers and nuts**, and using the twelve **1/4" flat washers** as leveling shims, if required. Do not bend the shifter mount tabs.



10. Route the cable approximately as shown, based on your application. **Avoid any sharp bends which may kink or otherwise damage the cable.** Seal the cable hole shut to keep exhaust fumes, water, etc. out of the passenger compartment. Use clamps and / or cable ties (customer supplied) to secure the cable housing in such a way as to prevent contact with the exhaust system, engine, or any moving parts.



CAUTION: Heat will severely damage the shift cable, causing the housing to melt or become brittle. If the cable must be routed near exhaust system components, fabricate a heat shield. **Do not wrap the cable, as this retains heat.**

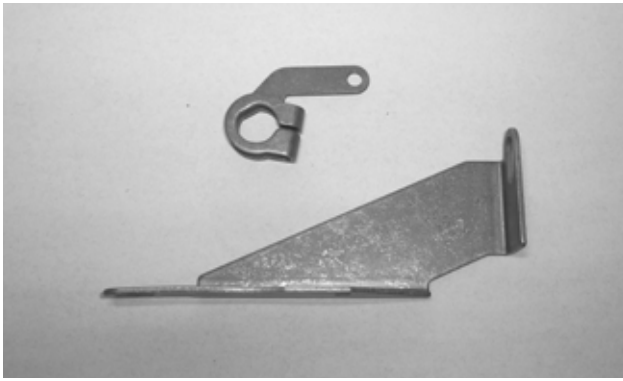
NOTE: The instruction photos show transmissions on a work bench, not installed in vehicles.

For CHRYSLER / AMC applications, go to STEP 11.

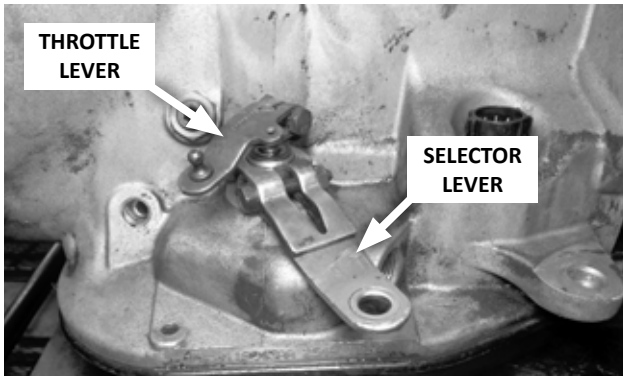
For FORD applications, go to STEP 26.

For GM applications, go to STEP 43.

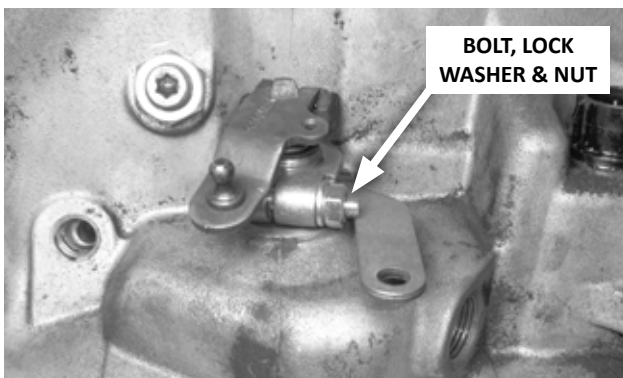
CHRYSLER / AMC



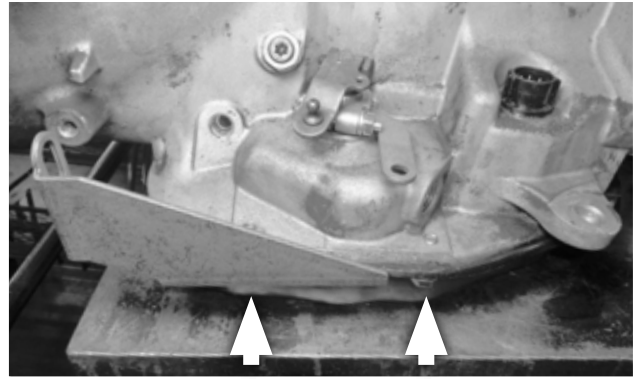
11. Get the Chrysler / AMC selector lever and cable bracket from the parts kit.



12. **Disconnect stock controls:** Loosen the throttle lever pinch bolt, remove the lever from its shaft, and carefully move the lever and linkage aside, allowing them to hang free. Remove and discard the stock selector lever and shift linkage.

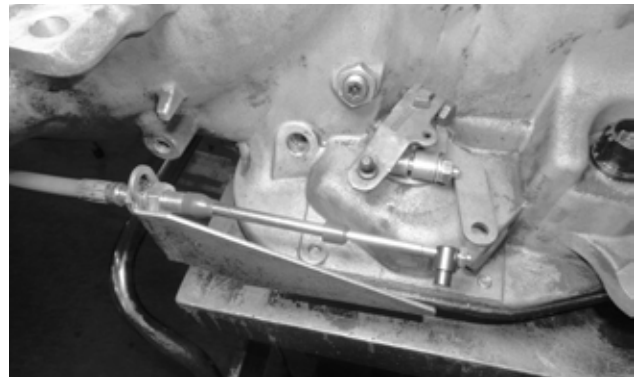


13. Install the B&M selector lever using the $1/4-20 \times 1-1/2$ " bolt, lock washer and nut. Be sure the lever is not pushed down against the transmission case, which could cause binding. The lever should travel smoothly back and forth, with a positive "click" in each position. Then reinstall the throttle lever and linkage, tighten its pinch bolt securely, and check for smooth operation.

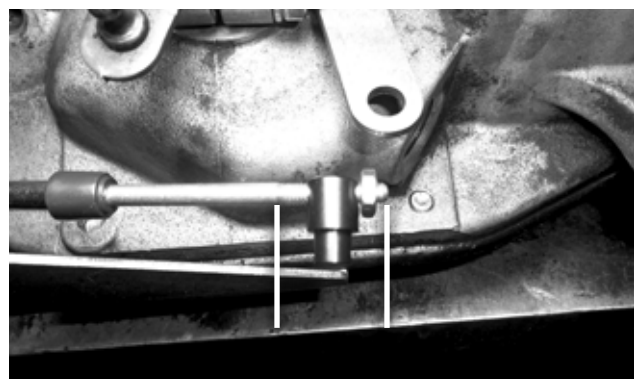


14. Install the cable bracket at the two pan bolt holes directly below the selector lever, using the two $5/16-18 \times 1$ " bolts and lock washers. For stamped sheet-metal (stock) pans, use the two spacers between the pan and bracket. (Spacers are not used with cast aluminum pans.) Tighten the bolts to 12-13 ft-lbs torque.

CAUTION: Do not over-tighten the bolts, as this can damage the pan gasket.

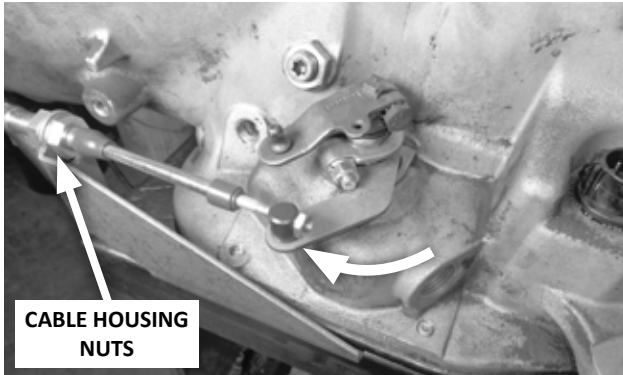


15. **Attach the shifter cable to the cable bracket:** First remove the small jam nut, two plastic dust boots, and one large nut and lock washer from the cable housing. Then insert the cable housing in the cable bracket, reinstall the lock washer and large nut on the cable (loosely, to allow room for adjustment), and reinstall the two dust boots.

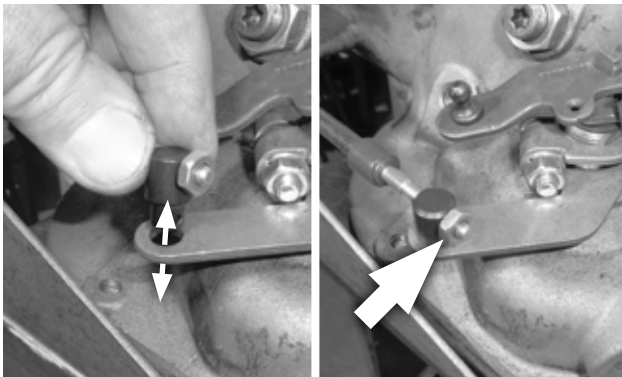


16. Thread the swivel onto the cable to about the middle of the threaded section, then reinstall (but do not tighten) the jam nut.

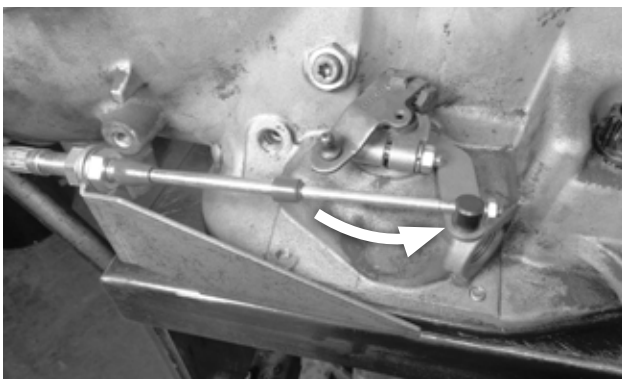
NOTE: Before proceeding, verify that the park and speed limiter pins are both installed as described at **Step 6**.



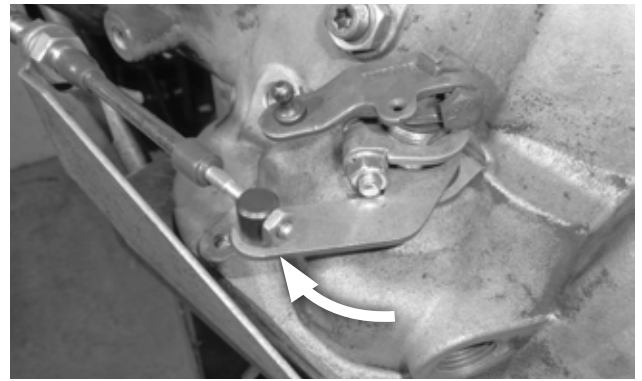
- 17. Manually move the selector lever to the LOW (full-forward) position.** Ratchet the shifter handle to the LOW position (furthest back). Adjust the cable housing nuts until the swivel slides freely in and out of the hole in the selector lever. Gradually tighten the nuts against the bracket, while continuing to check the fit of the swivel in the selector lever.



- 18. When the swivel slips freely in and out of the selector lever, snug the jam nut.**



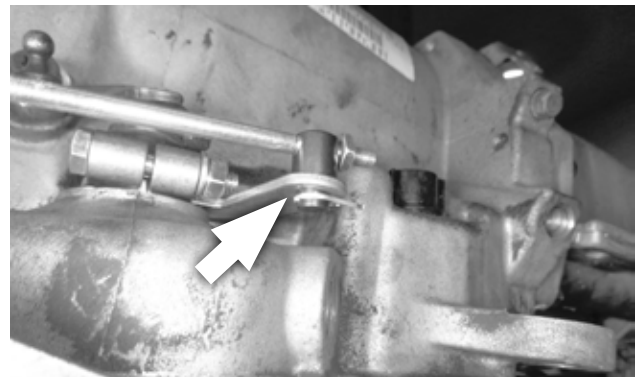
- 19. With the swivel still in the selector lever, move the shifter to the PARK (full-forward) position.** Verify that the swivel still slips freely in and out of the selector lever. If not, adjust the swivel (and / or the cable housing nuts, if necessary), until it does.



- 20. With the swivel still in the selector lever, operate the shifter through each position, verifying that the swivel slips freely in and out of the lever in each position.**

CAUTION: If you encounter restricted movement or any other problem during this process, **DO NOT FORCE THE SHIFTER.** Doing so may damage the cable, the shifter and / or the transmission. Simply return to **Step 17** and re-check each step.

When the swivel slips freely in and out of the selector lever in each position, the cable is correctly adjusted. Verify that the two cable housing nuts, and the cable swivel jam nut, are tight.



- 21. Secure the swivel to the selector lever with the cotter pin.** Operate the shifter through all the gear positions, verifying that it operates correctly.
- 22. Check the operation of the throttle linkage again.** The linkage must operate smoothly with no binding.

CAUTION: The throttle linkage must be connected and operating on all transmissions using automatic valve bodies, or transmission damage will result.

NEUTRAL SAFETY AND BACKUP LIGHT SWITCHES

1966-68 VEHICLES: The stock Neutral Safety switch will continue to function normally. Therefore, only the Backup Light switch on the Pro Ratchet® shifter will be used.

23. Reroute the Backup Light switch wires: Disconnect the battery ground cable. Then disconnect the wires from the stock Backup Light switch (located on either the steering column, or the console shifter). Route the wires to the Backup Light (upper) switch on the shifter.

24. Wire the switch: Strip 1/4" of insulation off the wires and crimp a **terminal** to each wire, **using an appropriate crimping tool**.

CAUTION: Use of an incorrect tool (e.g., pliers) to crimp the terminals may result in defective, unreliable connections.

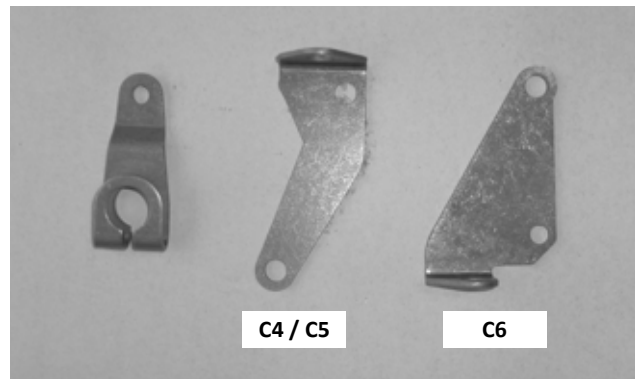
Tape or heat-shrink the terminal-wire connections for added protection of the crimps. Connect the backup light wires to the UPPER switch (see **Step 8**).

25. Verify switch function: Reconnect the battery ground cable. Check the backup light switch by verifying the backup light is on only when the shifter is in REVERSE. If required, adjust the Backup Light switch as described at **Step 8**.

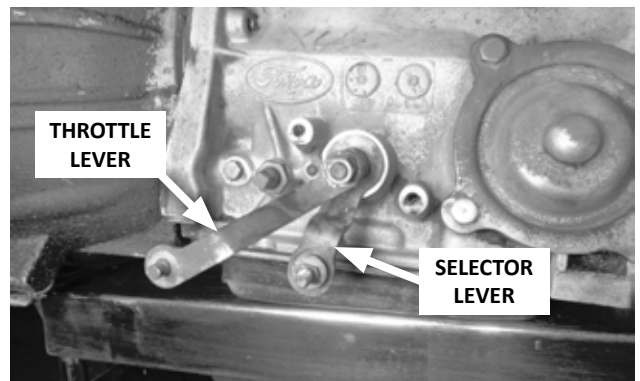
1969+ VEHICLES: The stock Neutral Safety and Backup Light switches are located on the transmission, and will continue to function normally. Therefore, neither of the switches on the Pro Ratchet® shifter will be used.

Proceed to Step 61, "Install shifter cover."

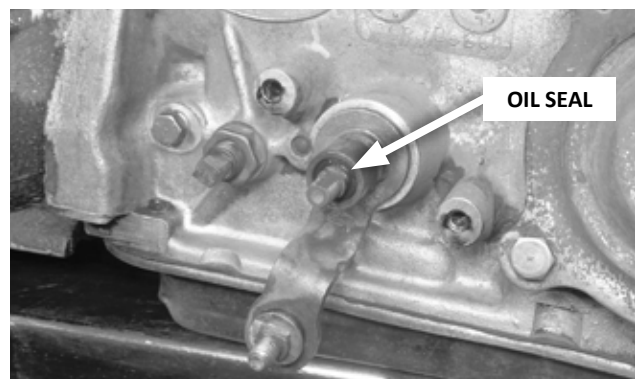
FORD



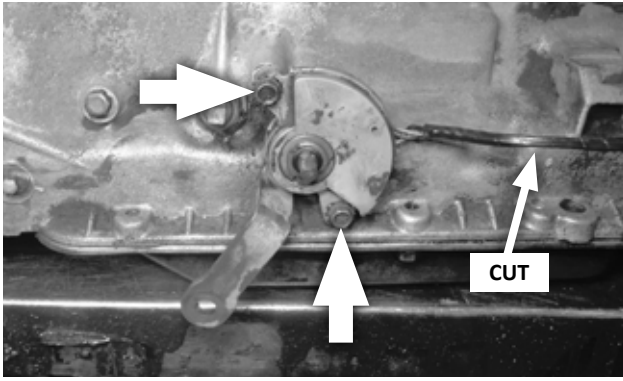
26. Get the Ford selector lever and appropriate cable bracket from the parts kit.



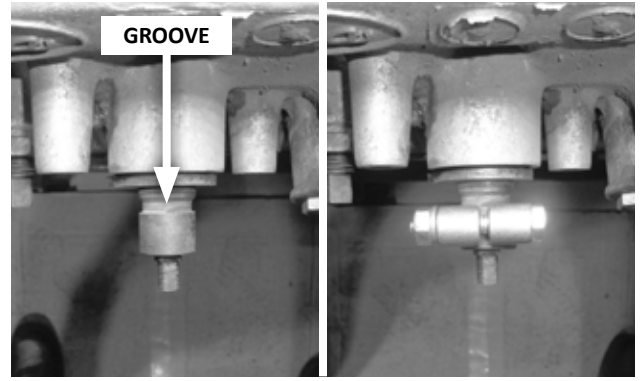
27. Disconnect stock controls: Remove and retain the nut and lock washer holding the throttle lever on its shaft. Carefully remove the throttle lever, and move it and its linkage aside, allowing them to hang free. Remove and discard the stock shift linkage.



CAUTION: Ensure that the oil seal remains in place between the selector and throttle shafts. If the seal comes out, replace it before continuing.

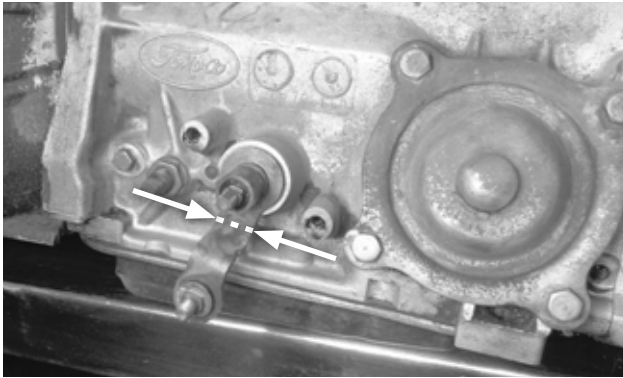


28. If your transmission is equipped with a Neutral Safety / Backup Light switch: Remove the two mount bolts and slide the switch off the selector shaft. Cut the wiring harness between the switch and its connector, and discard the switch. (The wires from the connector will be routed to the B&M switches later.)

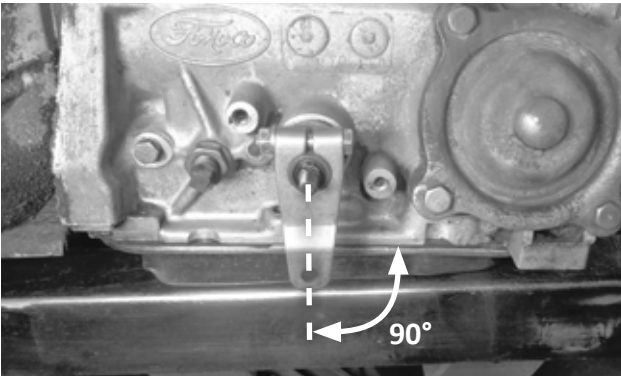


NOTE: If the selector shaft is grooved as shown, center the lever between the groove and the end of the shaft, so that the lever's inboard clamping surface does not land in the groove.

The lever should travel smoothly back and forth, with a positive "click" in each position.

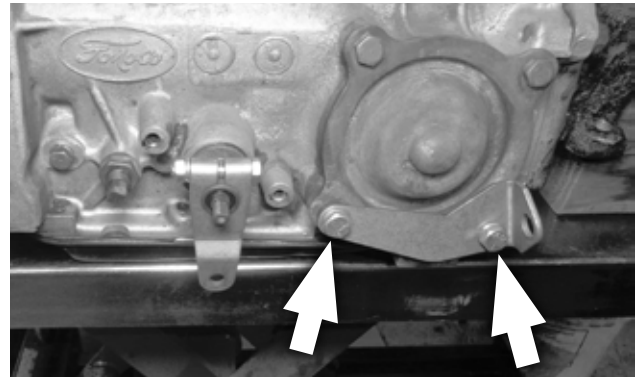


29. If the stock selector lever points generally downward, cut it off at the inboard bend, in order to allow the B&M lever to be positioned correctly.



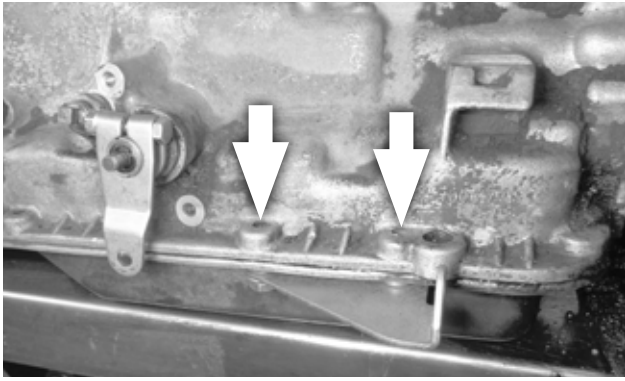
30. Install the B&M selector lever using the 1/4-20 x 1-1/2" bolt, lock washer and nut. With the selector shaft in NEUTRAL (the second click back from PARK, which is full-forward), align the selector lever perpendicular to the oil pan split-line, then tighten the fasteners.

31. Install the cable bracket:



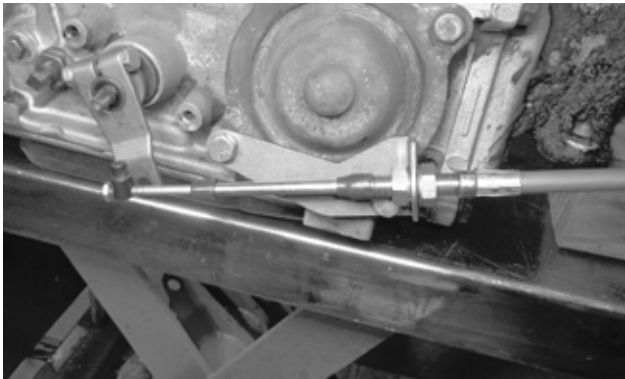
A. C4 / C5 transmissions: Install the cable bracket at the two lower servo cover bolt holes, using the two 5/16-18 x 1" bolts, spacers, and lock washers. Tighten the bolts to 12-13 ft-lbs torque.

CAUTION: Do not over-tighten the bolts, as this can distort the servo cover.

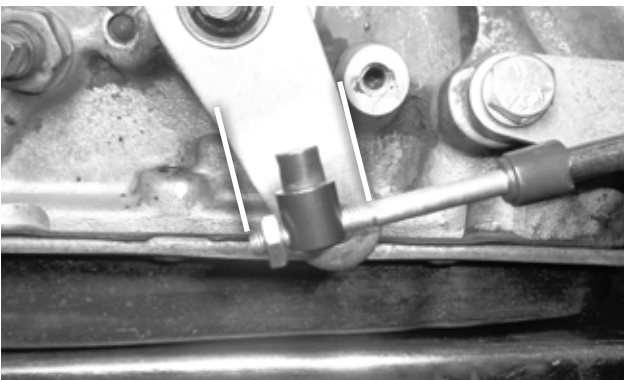


B. C6 transmissions: Install the **cable bracket** at the two left rear oil pan bolt holes, using the two **5/16-18 x 1" bolts** and **lock washers**. For stamped sheet-metal (stock) pans, use the two **spacers** between the pan and bracket. (Spacers are not used with cast aluminum pans.) Tighten the bolts to 12-13 ft-lbs torque.

CAUTION: Do not over-tighten the bolts, as this can damage the pan gasket.

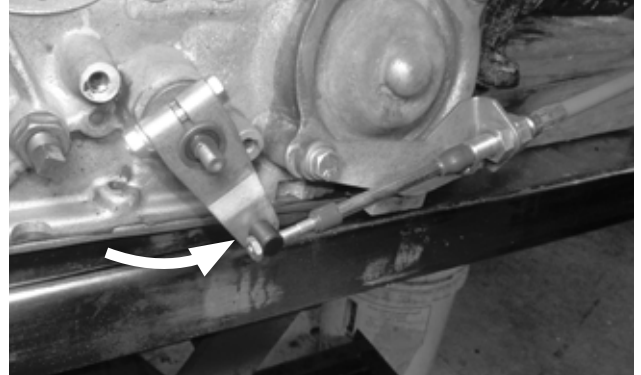


32. Attach the shifter cable to the cable bracket: First remove the small jam nut, two plastic dust boots, and one large nut and lock washer from the cable housing. Then insert the cable housing in the cable bracket, reinstall the lock washer and large nut on the cable (loosely, to allow room for adjustment), and reinstall the two dust boots.

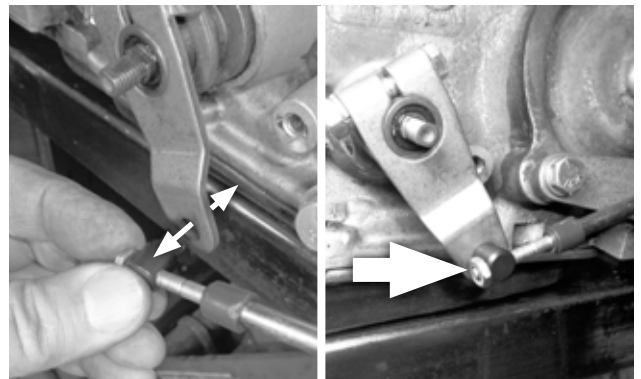


33. Thread the swivel onto the cable to about the middle of the threaded section, then reinstall (but do not tighten) the **jam nut**.

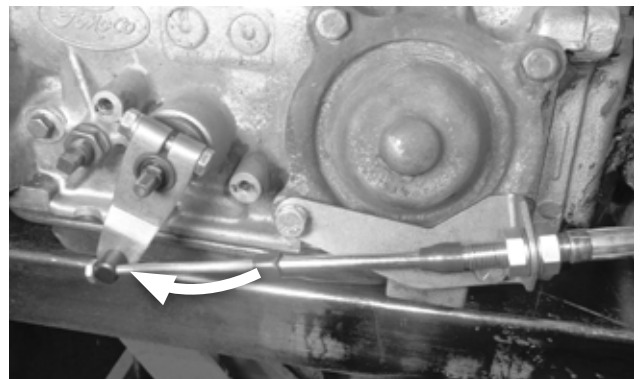
NOTE: Before proceeding, verify that the park and speed limiter pins are both installed as described at **Step 6**.



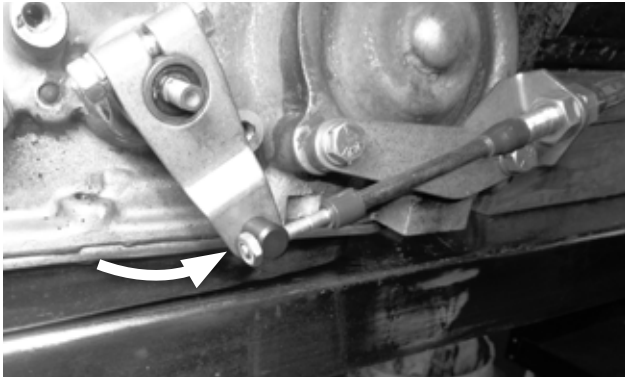
34. Manually move the selector lever to the **LOW** (full-rear) position. Ratchet the shifter handle to the **LOW** position (furthest back). Adjust the cable housing nuts until the swivel slides freely in and out of the hole in the selector lever. Gradually tighten the nuts against the bracket, while continuing to check the fit of the swivel in the selector lever.



35. When the swivel slips freely in and out of the selector lever, snug the jam nut.



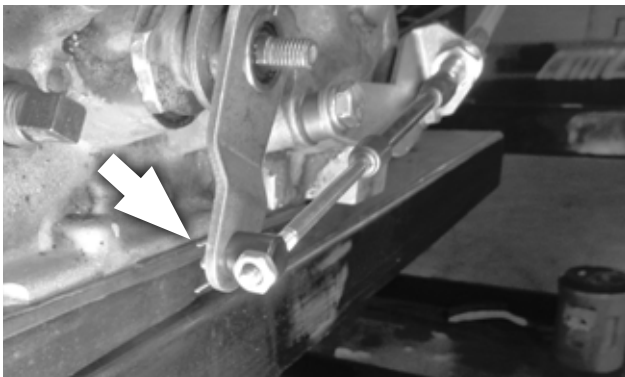
36. With the swivel still in the selector lever, move the shifter to the **PARK (full-forward) position.** Verify that the swivel still slips freely in and out of the selector lever. If not, adjust the swivel (and / or the cable housing nuts, if necessary), until it does.



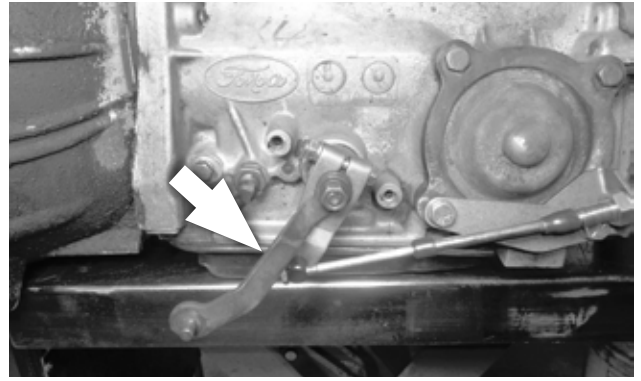
37. With the swivel still in the selector lever, operate the shifter through each position, verifying that the swivel slips freely in and out of the lever in each position.

CAUTION: If you encounter restricted movement or any other problem during this process, **DO NOT FORCE THE SHIFTER**. Doing so may damage the cable, the shifter and / or the transmission. Simply return to **Step 34** and re-check each step.

When the swivel slips freely in and out of the selector lever in each position, the cable is correctly adjusted. Verify that the two cable housing nuts, and the cable swivel jam nut, are tight.



38. Secure the swivel to the selector lever with the cotter pin. Operate the shifter through all the gear positions, verifying that it operates correctly.



39. Reinstall the throttle lever, lock washer and nut on the throttle shaft and tighten securely. The throttle lever must operate smoothly with no binding.

CAUTION: The throttle linkage must be connected and operating on all transmissions using automatic valve bodies, or transmission damage will result.

NEUTRAL SAFETY AND BACKUP LIGHT SWITCHES

40. **Reroute the switch wires:** Use an applicable electrical schematic to locate and identify the two Neutral Safety circuit wires (which prevent cranking unless the transmission is in NEUTRAL or PARK), and the two Backup Light wires. Disconnect the battery ground cable. Route both pairs of wires to the B&M Pro Ratchet® shifter.

41. **Wire the switches:** Strip 1/4" of insulation off the wires and crimp a terminal to each wire, using an appropriate crimping tool.

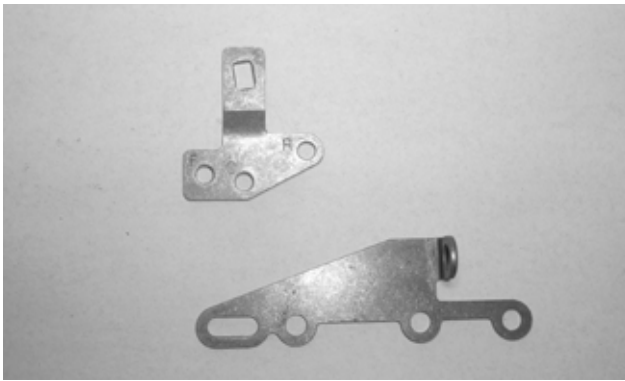
CAUTION: Use of an incorrect tool (e.g., pliers) to crimp the terminals may result in defective, unreliable connections.

Tape or heat-shrink the terminal-wire connections for added protection of the crimps. Connect the Backup Light wires to the UPPER switch, and connect the Neutral Safety wires to the LOWER switch (see **Step 8**).

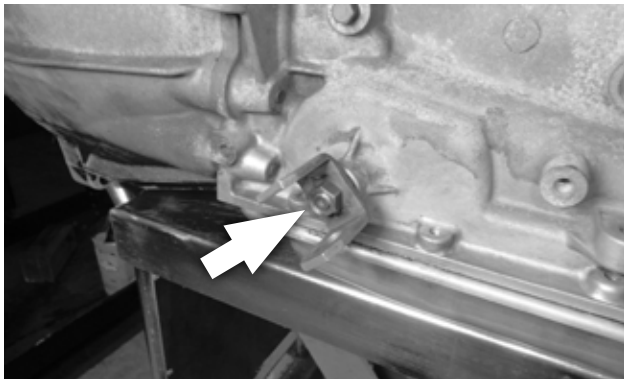
42. **Verify switch function:** Reconnect the battery ground cable, disconnect the coil wire and set the parking brake. Check the Neutral Safety switch by attempting to start the engine in each shifter position. The starter must crank only when the shifter is in either PARK or NEUTRAL. Check Backup Light operation with the shifter in REVERSE. If required, adjust the switches as described at **Step 8**. After verifying correct switch operation, reconnect the coil wire.

Proceed to **Step 61**, "Install shifter cover."

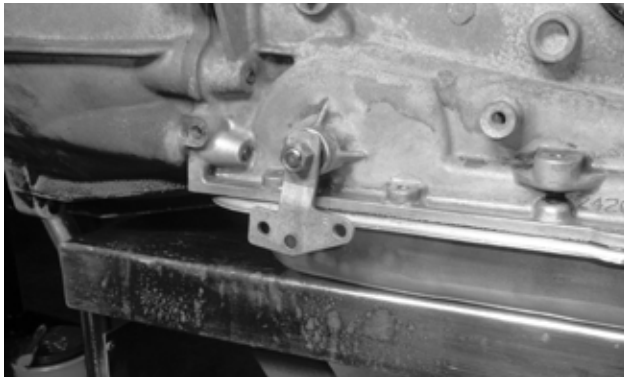
GENERAL MOTORS



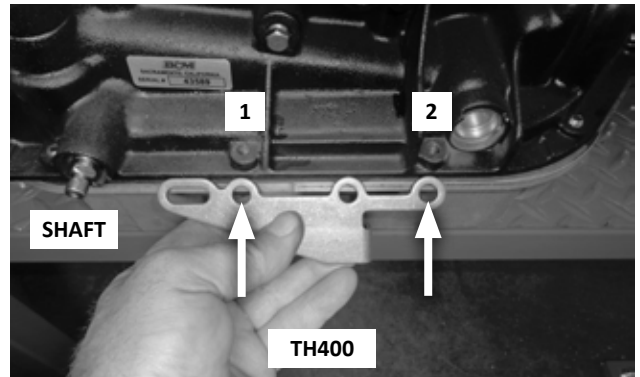
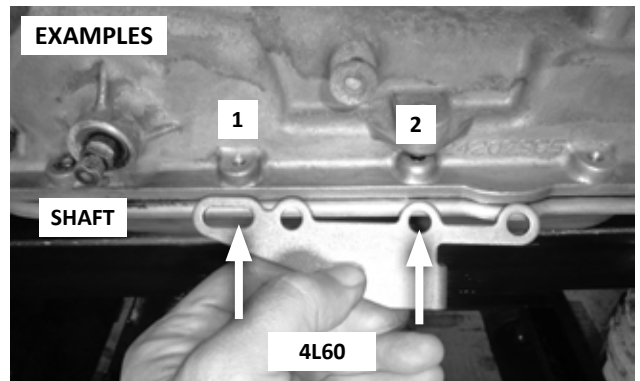
43. Get the GM selector lever and cable bracket from the parts kit.



44. **Disconnect stock controls:** Remove and retain the selector lever nut. Remove and discard the selector lever and shift linkage.

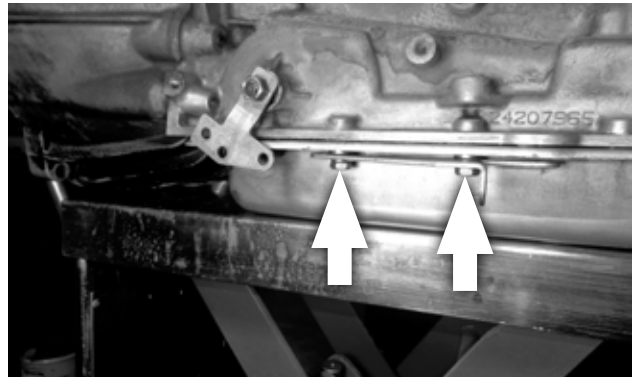


45. **Install the B&M selector lever** using the stock selector lever nut, and tighten the nut to 23 ft-lbs torque. The lever should travel smoothly back and forth, with a positive “click” in each position.

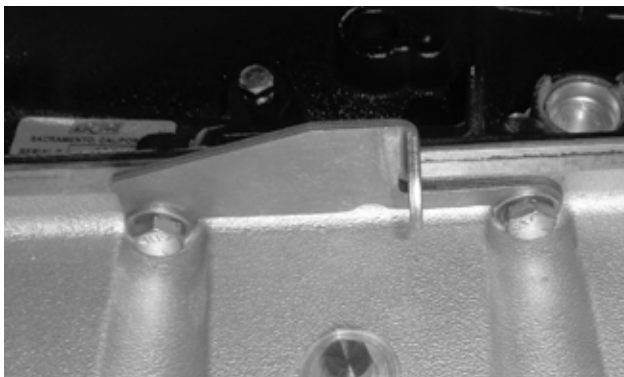
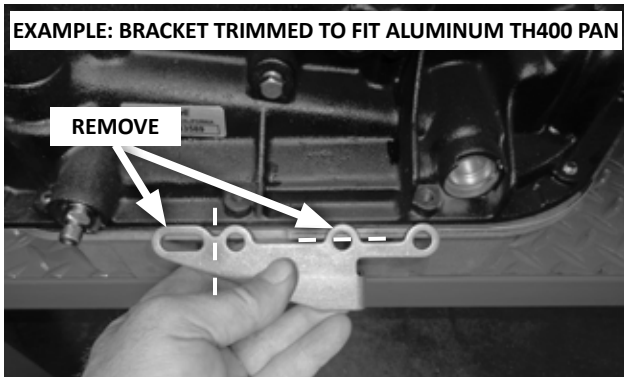


46. **Determine which holes on the cable bracket will be used:** Remove the two oil pan bolts to the rear of the selector shaft. Determine which bracket holes will be used on your transmission.

47. **Install the cable bracket** using the two 5/16-18 x 1" bolts and lock washers at the bracket holes that fit your transmission.



- A. **For stamped sheet-metal (stock) pans,** use the two spacers between the pan and bracket.



B. For cast aluminum pans:

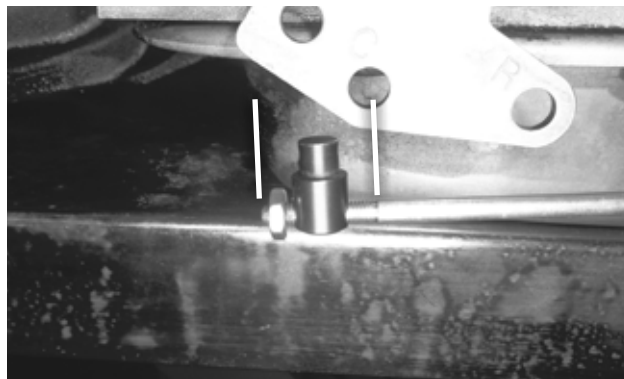
- The bracket may need to be trimmed to fit.
- The spacers are not used.

Tighten the bolts to 12-13 ft-lbs torque.

CAUTION: Do not over-tighten the bolts, as this can damage the pan gasket.



48. Attach the shifter cable to the cable bracket: First remove the small jam nut, two plastic dust boots, and one large nut and lock washer from the cable housing. Then insert the cable housing in the cable bracket, reinstall the lock washer and large nut on the cable (loosely, to allow room for adjustment), and reinstall the two dust boots.



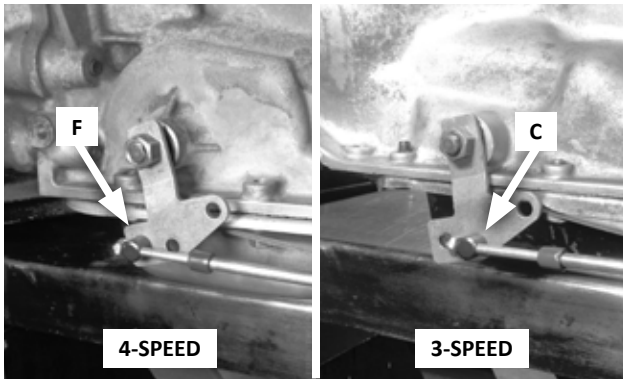
49. Thread the swivel onto the cable to about the middle of the threaded section, then reinstall (but do not tighten) the **jam nut**.

NOTE: Before proceeding, verify that the park limiter pin is removed, and that the speed limiter pin is installed (for 3-speed transmissions), or removed (for 4-speeds), as described at **Step 6**.

50. Manually move the selector lever to the DRIVE position (that is, 3 clicks back from full-forward / PARK). Ratchet the shifter handle to DRIVE (position 5, or 4 pulls back from full-forward).

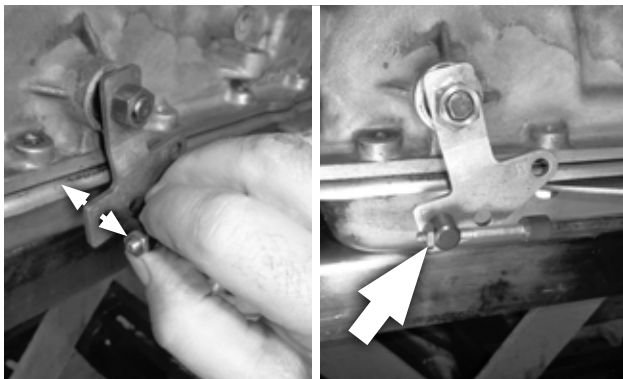
NOTE: Selector levers on GM transmissions travel twice the distance between PARK and REVERSE that they do between the remaining positions, which is why the Pro Ratchet® shifter's park limiter pin was removed at **Step 6**. Shifter position 1 (full-forward) is PARK; position 3 is REVERSE; and position 2 is a "transition" step between PARK and REVERSE.

CAUTION: Once the shifter is installed, do not leave the vehicle parked in shifter position 2, as the transmission's park pawl will not be engaged, which may allow the vehicle to roll! See "Operation" for further information.

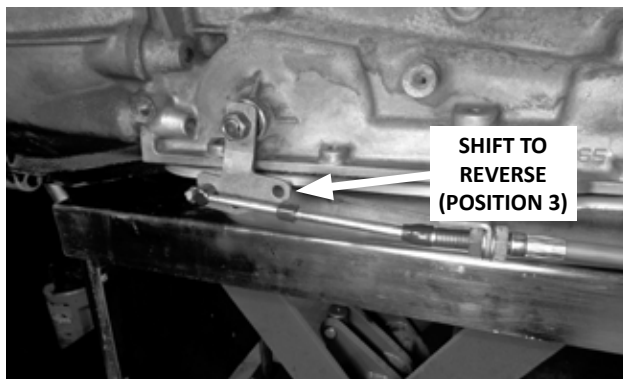


51. Adjust the cable housing nuts until the swivel slides freely in and out of the correct hole in the selector lever (hole F for 4-speeds; hole C for 3-speeds). Gradually tighten the nuts against the bracket, while continuing to check the fit of the swivel in the selector lever.

CAUTION: The shifter will not operate properly unless the correct hole in the selector lever is used (hole F for 4-speeds, hole C for 3-speeds).

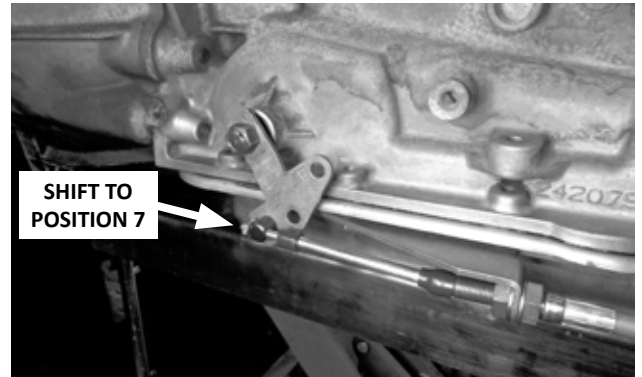


52. When the swivel slips freely in and out of the selector lever, snug the jam nut.



53. With the swivel still in the selector lever, push the shifter forward 2 steps to REVERSE (position 3). Verify that the swivel still slips freely in and out of the selector lever. If not, adjust the swivel (and / or the cable housing nuts, if necessary), until it does.

NOTE: Do not check the swivel fit in PARK (shifter position 1), as tension in the transmission will prevent correct adjustment in that position.

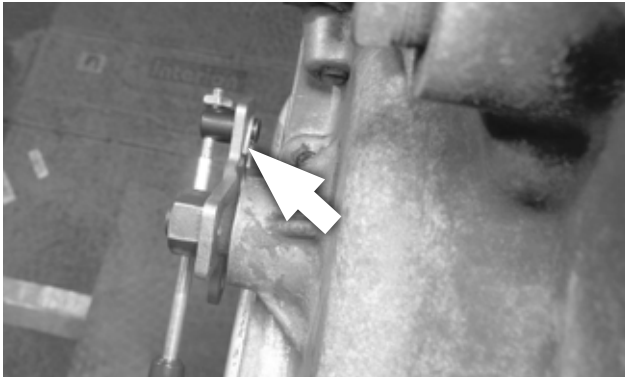


54. With the swivel still in the selector lever, pull the shifter back through position 7 (FIRST gear on 3-speeds, SECOND gear on 4-speeds), verifying that the swivel slips freely in and out of the lever in each position.

NOTE: On 4-speed transmissions, it is not necessary to check the swivel fit in FIRST gear (shifter position 8), as tension in the transmission will prevent correct adjustment in that position. Checking the swivel's fit from REVERSE (position 3) through SECOND gear (position 7) is sufficient to attain proper adjustment.

CAUTION: If you encounter restricted movement or any other problem during this process, DO NOT FORCE THE SHIFTER. Doing so may damage the cable, the shifter and / or the transmission. Simply return to Step 50 and re-check each step.

When the swivel slips freely in and out of the selector lever from shifter position 3 (REVERSE) through position 7 (FIRST gear on 3-speeds, SECOND gear on 4-speeds), the cable is correctly adjusted. Verify that the two cable housing nuts, and the cable swivel jam nut, are tight.



55. **Secure the swivel to the selector lever with the cotter pin.** Operate the shifter through all the gear positions, verifying that it operates correctly.

NEUTRAL SAFETY AND BACKUP LIGHT SWITCHES

56. **Determine the type of Neutral Safety mechanism in your vehicle.** It may be either:

- a **switch** on the stock shifter; or
- a **mechanical interlock** in the steering column that only allows the key to turn to START when the shifter is in PARK or NEUTRAL.

57. **Reroute the switch wires:** Disconnect the battery ground cable.

A. Neutral Safety switch: Use an applicable electrical schematic to locate and identify the two Neutral Safety circuit wires (which prevent cranking unless the transmission is in NEUTRAL or PARK). Route both wires to the B&M Shifter.

B. Mechanical interlock: Use an applicable electrical schematic to locate and identify the wire that runs between the START pole on the ignition switch and the starter relay or solenoid. (This is usually a purple, 10 or 12 AWG wire.) Cut the wire, and route both ends to the B&M Shifter.

58. **Backup Light switch:** Use an applicable electrical schematic to locate and identify the two Backup Light wires (usually located on the steering column behind the instrument panel). Route these wires to the B&M Shifter.

59. **Wire the switches:** Strip 1/4" of insulation off the wires and crimp a **terminal** to each wire, **using an appropriate crimping tool.**

CAUTION: Use of an incorrect tool (e.g., pliers) to crimp the terminals may result in defective, unreliable connections.

Tape or heat-shrink the terminal-wire connections for added protection of the crimps. Connect the Backup

Light wires to the UPPER switch, and connect the Neutral Safety wires to the LOWER switch (see **Step 8**).

60. **Verify switch function:** Reconnect the battery ground cable, disconnect the coil wire and set the parking brake. Check the Neutral Safety switch by attempting to start the engine in each shifter position. The starter must crank only when the shifter is in either PARK or NEUTRAL. Check Backup Light operation with the shifter in REVERSE. If required, adjust the switches as described at **Step 8**. After verifying correct switch operation, reconnect the coil wire.

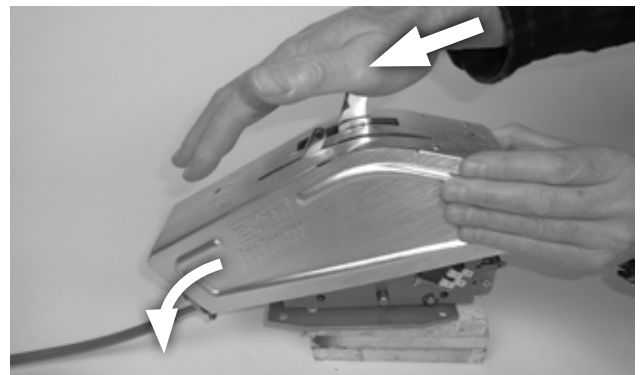
FINISH INSTALLATION

61. **Install the shifter cover:** Verify that there is a small square of insulating tape on the inside driver's side of the **shifter cover**. (The tape prevents the switch terminals from touching the cover.) Then install the cover as follows:

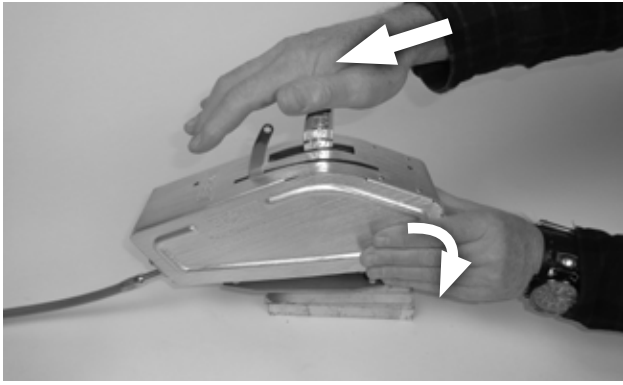
A. Move the shifter into REVERSE (position 3, or two pulls back from full-forward / position 1).



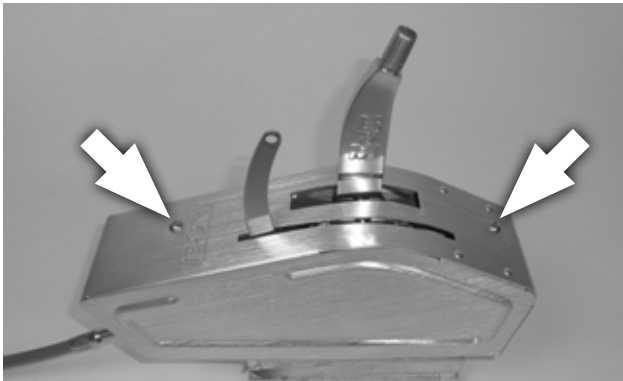
B. Verify the shifter mechanism is free of any debris and hardware. Lower the cover over the tips of the stick and the reverse lockout lever.



C. Push the stick forward and hold it there, lower the front of the cover over the front of the shifter, and **continue to hold the stick forward.**



D. Bring the cover over the rear of the shifter.



E. Release the stick, allowing it to return to its centered position. Then fasten the cover to the shifter with the two 10-32 screws.



62. Install the red aluminum handle on the left side of the reverse lockout lever using the 8-32 button head screw. Screw the red shifter position indicator pointer through the slot into the indicator arm. Use a medium strength thread locker to prevent the pointer from backing out in use. Select the shifter position indicator decal that is applicable to your transmission's valve body (see "Operation" NOTE), and affix it to the left of the pointer.



63. Install the shifter knob: Apply medium strength thread locker to the shifter threads.

NOTE: If thread locker is not used, the knob may either loosen in use, or its threads may gall, making it impossible to remove the knob from the stick in the future.

Carefully thread the knob onto the stick.

CAUTION: Avoid cross-threading! The knob should spin onto the stick with no resistance. If you start to feel any resistance, STOP, remove the knob, and align the threads properly.

Tighten the knob onto the shifter. Align and install the B&M logo decal on top of the knob. Position the clear plastic knob insert over the knob, and push down on it sharply to snap it into place.

64. Fasten the carpet to the vehicle floor.

Congratulations! Your B&M Pro Ratchet® Shifter is now installed and ready to use.

OPERATION

To move the transmission from one gear position to the next, pull or push the shifter handle to a full stop then release it (allowing it to return to its "centered" position). Repeat this action until the transmission is in the desired position—see the table below.

NOTE: The shifter-transmission positions shown apply to standard valve bodies. Custom valve bodies will alter your shifter-transmission positions accordingly.

Shifting from NEUTRAL to REVERSE requires that the reverse lockout lever be pushed forward first. This feature is designed to prevent unintentional shifting

from NEUTRAL into REVERSE while the vehicle is still moving forward.

CHRYSLER AND FORD TRANSMISSIONS: Shifter positions 1 and 8 are blocked. Position 2 is PARK; Position 7 is 1; and Position 5 is DRIVE (for 3-speeds) or OVERDRIVE (for 4-speeds).

GM TRANSMISSIONS: Refer to the table for your shifter-transmission positions.

Shifting GM transmissions to PARK: The GM transmission's selector lever travels twice the distance

between PARK and REVERSE that it does between the remaining positions. Shifter position 1 (full-forward) is PARK; position 3 is REVERSE, and position 2 is a "transition" step between PARK and REVERSE.

CAUTION: You must push the shifter forward TWICE (from positions 3 to position 1) in order to shift the transmission from REVERSE into PARK! DO NOT PARK THE VEHICLE IN SHIFTER POSITION 2, as the transmission's park pawl will not be engaged, which may allow the vehicle to roll!

SHIFTER POSITION	1 (FULL FWD)	2	3	4	5	6	7	8 (FULL RWD)
CHRYSLER & FORD	BLOCKED	PARK	REV	NEUT	DRIVE (3-SPD) OD (4-SPD)	2nd	1st	BLOCKED
GM 3-SPEED	PARK	NONE	REV	NEUT	DRIVE	2nd	1st	BLOCKED
GM 4-SPEED	PARK	NONE	REV	NEUT	DRIVE	3rd	2nd	1st
GM 2-SPEED (POWERGLIDE)*	PARK	NONE	REV	NEUT	DRIVE	LOW	BLOCKED	

*Powerglide shift pattern is included for reference only. Detailed instructions for use of this shifter with Powerglide transmissions are included with install kit 70497 (Powerglide cable bracket and selector lever).

INSTALLATION CHECKLIST

- Locking steering column lever is permanently fastened in the full up position (Step 1).
- Shifter is convenient to reach and has ample room for driver's hand in full-forward and full-rearward positions (Step 2).
- Carpet covers floorboard holes (Step 5).
- Cable is connected to the shifter pin, and cable housing is securely fastened to the shifter base (Step 7).
- Shifter is securely mounted to floorboard (Step 8).
- Cable is routed clear of exhaust system, engine, and any moving parts (Step 10).
- Selector lever is securely installed on the transmission (Step 13, 30 or 45).
- Cable bracket bolts are tightened to 12-13 ft-lbs torque (Step 14, 31 or 47).
- Shifter is properly adjusted; cable boots are installed; cable nuts are tightened; swivel is secured with cotter key (Steps 17-20; 34-37; or 50-54).
- The Neutral Safety switch is connected and properly adjusted to prevent engine start in FORWARD and REVERSE drive gears (Steps 40-42; or 56-60).

- There is no debris in the shifter mechanism (Step 61 B).
- Cover is installed (Step 61 E).
- Shifter moves freely into and out of all positions, as described in Shifter Operation.

CAUTION: If your shifter is not working properly do not attempt to drive your car! Verify you have followed all instructions. If the shifter is broken or defective return it to your B&M dealer.

IMPORTANT: RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

B&M Performance & Off-Road maintains a highly-trained technical service department to answer your technical questions, provide additional product information and offer various recommendations.

B&M Technical Support: (270) 781-9741

