Installation Manual

Striker Pro Grip Ratchet Shifter – 2, 3 and 4 Speed

RTS-80689

WARNING: PLEASE READ ALL INSTRUCTIONS BEFORE PROCEEDING. RTS WILL NOT BE RESPONSIBLE FOR ANY DAMAGE AS A RESULT OF THE INCORRECT INSTALLATION OF THIS PRODUCT. IT IS RECOMMENDED THAT A QUALIFIED AUTOMOTIVE TECHNICIAN PERFORMS THIS INSTALLATION.

Introduction

RTS' Pro Ratchet Shifter is a right-hand drive configured automatic shifter that comes equipped with a Striker pistol grip handle housed in a full billet aluminium cover. It always returns to the centre once shifted and includes a reverse lockout function and provision for two buttons in the handle. It includes an LED-backed gear position indicator and micro switches for reverse lights and neutral safety, making this shifter easy to pass engineering.

Applicable Transmissions

Manufacturer	Transmission
Ford	C4, C5 and C6
GM (Turbo)	TH200, TH250, TH350, TH400, 200-4R, 700R4 and 4L60
GM (Electronic without PRNDL switch)	4L60E, 4L65E, 4L70E, EL75E, 4L80E and 4L85E
Chrysler (1966+) and AMC (1972+)	A727/A518 and A904/A500

Table 1

The following bracket and lever kits are sold separately and designed to work with all RTS Shifters:

- GM 4L60E, 4L65E, 4L80E, 4L85E with PRNDL Switch
- Holden Trimatic, Drivers Side + Passenger Side
- GM Powerglide
- Ford AOD

Notes

- Installation requires better-than-average mechanical knowledge and skills.
- The shifter mechanism is pre-assembled at our factory. Any modification or disassembly of the shifter mechanism will void its warranty and may cause it to malfunction.
- Installation of this shifter may require modification or complete removal of your vehicle's console, depending on the space available.

Shifter Assembly/Disassembly

The below steps outline the procedure for assembling/disassembling the shifter for installation.

1. Remove the 6x countersink screws from one side of the aluminium cover as shown in figure 1.
2. Slide the other side of the cover out which will have the 6 spacers still attached.

Figure 1

3. Remove the handle side covers by unscrewing the 4x countersink bolts on the sides of the handle. Remove the screw holding the reverse lockout lever as shown in figure 2.

Figure 2

4. Unscrew both the button and blanking plug on the shifter handle (this will allow the cover to be pulled off upwards). Unscrew the two 1/8” allen head bolts on the shifter cover to detach it from the shifter mechanism.

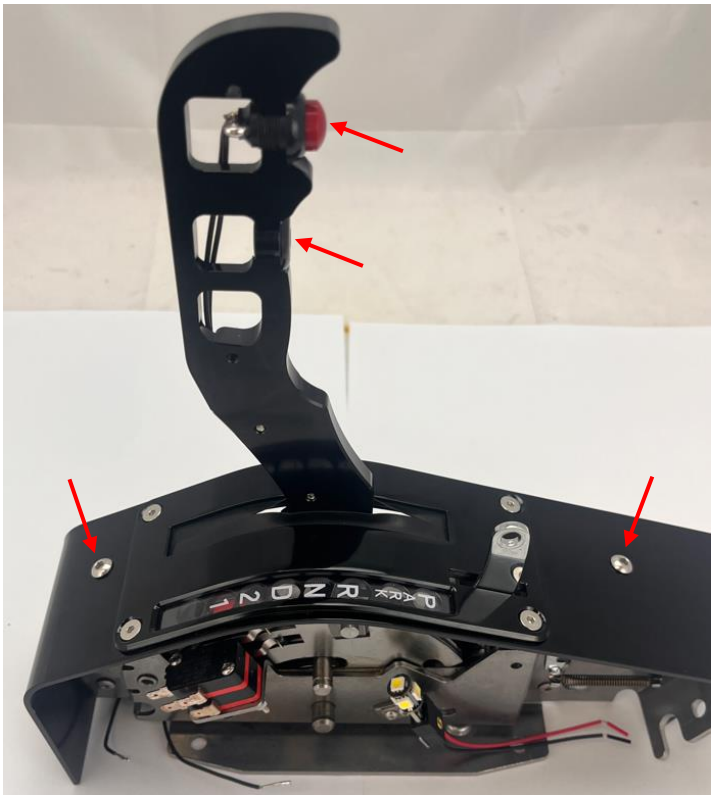

Figure 3

5. To remove the top plate assembly from the shifter cover, unscrew the 4 countersink bolts. This will allow you to change the indicator panel to suit your specific transmission.

Figure 4

Installation

1. Remove the stock shift linkage:
    a. **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. Secure the column lock lever in the full up position (if applicable).
    b. **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.
    c. **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. Remove the cover of the shifter by following the disassembly procedure shown above to begin the mounting process.
3. Remove any carpet away from the floor pan 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. 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 shifter grip 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.
4. Drill four 9/32” (7mm) mount holes through the floor for the 4 mounting positions. Put the shifter in place. Shim it to level if necessary, using the provided 1/4” flat washers between the shifter and the floor, and temporarily hold it in place with the four 1/4"-20 x 1.25” bolts.
5. Drill the cable hole by marking the location for the shifter cable hole roughly 3” (76mm) forward of the shifter’s front mount holes. Drill or cut a 1.5” 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 for reinforcement.
6. Return the carpet into the original position (but do not secure it yet). Cut holes in the carpet for the shifter mounting holes and cut a 1.5” slit for the cable (do not use a drill but to make holes in the carpet).
7. Configure the Park and speed limiter pins for your specific application according to table 2 shown below (the shifter comes pre-assembled in GM 3-speed configuration).

    Note: The park limiter pin MUST be used with Chrysler / AMC and Ford transmissions to avoid damaging the shifter cable.

Transmission	Pin A	Pin B	Pin C
All Chrysler / AMC	Installed	Not Installed	Installed
GM 3-Speed	Installed	Not Installed	Not Installed
GM 4-Speed	Not Installed	Not Installed	Not Installed
GM Powerglide (2-speed)	Not Installed	Installed	Not Installed
Ford 3-Speed	Installed	Not Installed	Installed
Ford 4-Speed	Not Installed	Not Installed	Installed

Table 2

Note: when changing all pins, ensure to use the supplied e-clips to retain the pins.

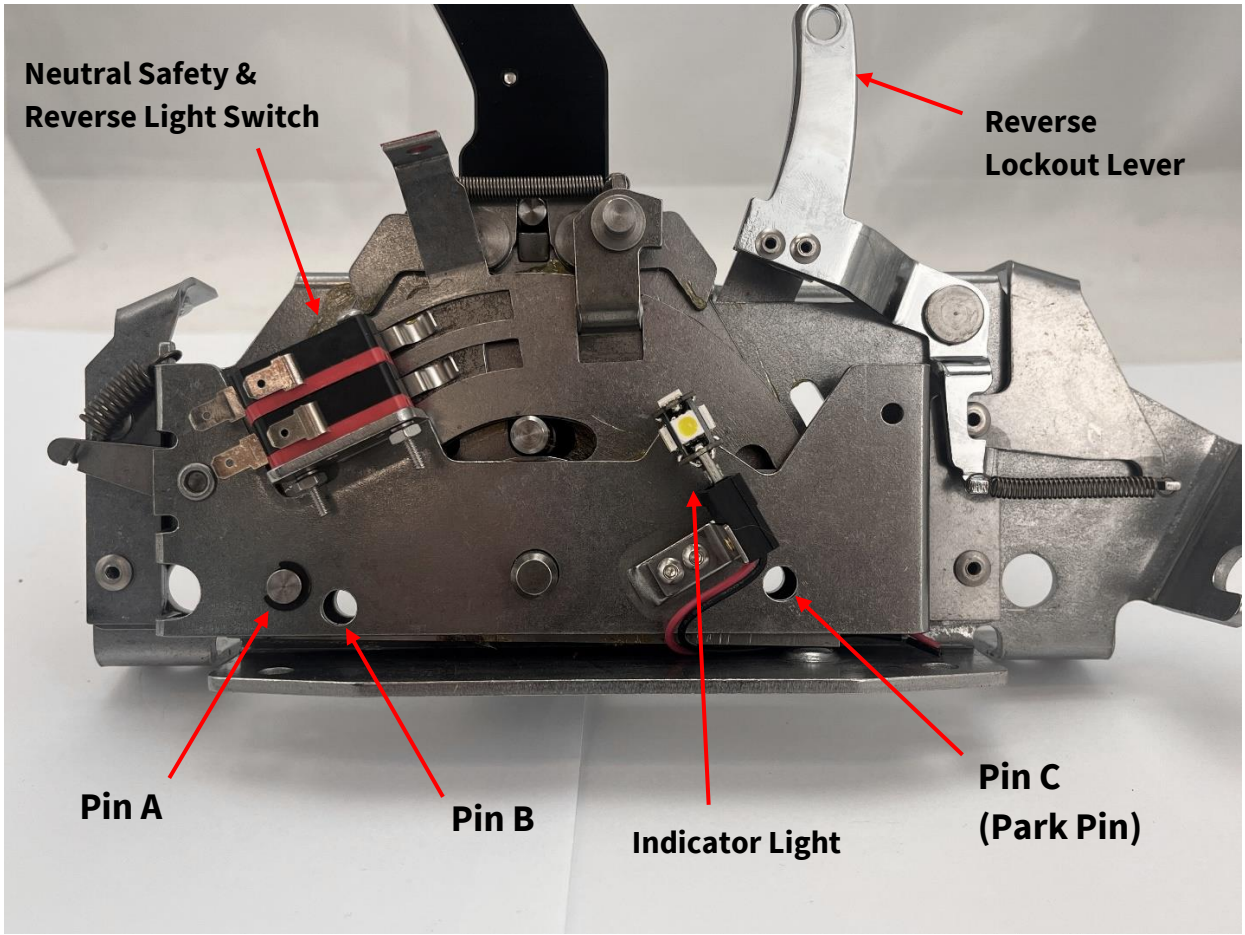

Figure 5

8. Assemble the cable and shifter by securing the cable eye to the shifter pin with the supplied e-clip. Then secure the cable's mount tab to the outside surface of the shifter base with the supplied 1/4"-20 x 0.50" bolt and nut and apply a medium strength loctite (shown in figure 6).

   Note: do not kink the cable anywhere along its length or it will lock up (keep it straight for at least 2" after the brass at each end).

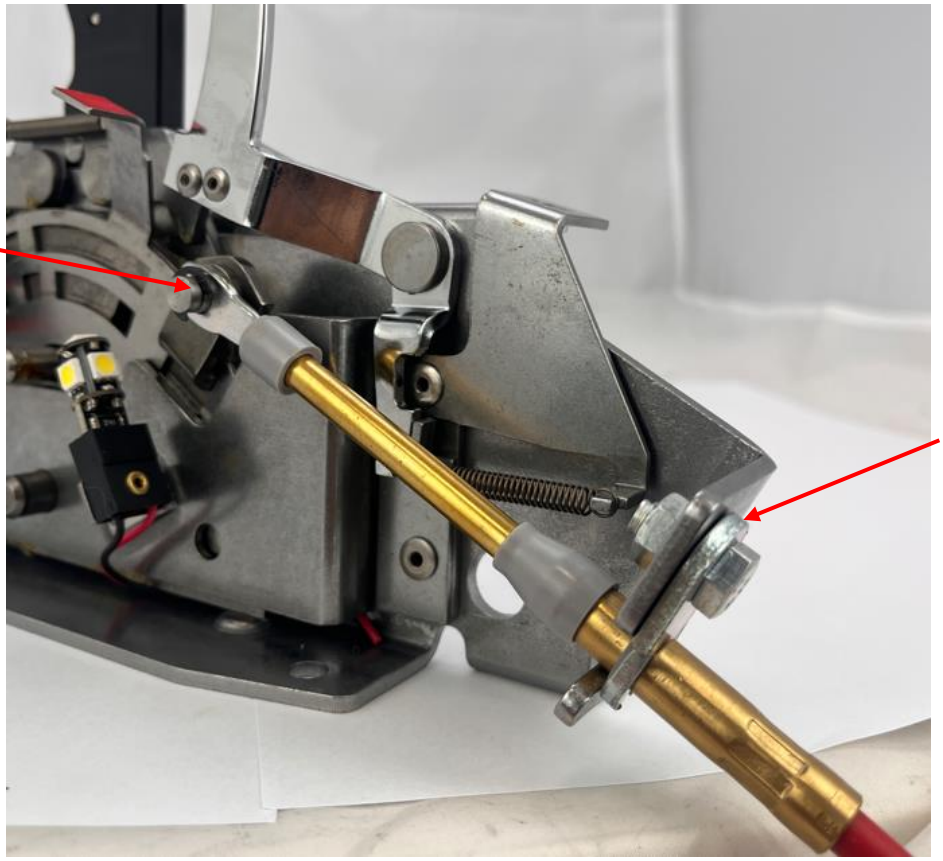

Figure 6

9. Check to ensure the two pre-installed microswitches are securely fastened and verify:

- **a.** That the Neutral safety switch (bottom) closes in NEUTRAL and PARK only.
- **b.** The reverse light switch (top) closes in REVERSE only.

10. Install the shifter into the vehicle. Slide the cable through the carpet and the hole in the floor, then bolt the shifter to the floor using the supplied 4x 1/4”-20 x 1.25” bolts, lock washers and nuts. Use the twelve 1/4” flat washers as leveling shims if required. Do not bend the shifter mounting tabs.

11. Route the cable to the transmission in the largest loop possible to avoid kinks and bends which will damage the cable. Seal the cable hole in the cabin shut to keep exhaust fumes and other debris from entering the vehicle. Always keep the cable at least 100mm away from all heat sources such as exhausts. Heat shielding may be required if this is not possible. Use clamps and/or cable ties to secure the cable housing.

Note: try avoiding wrapping the cable as this will retain heat and shield the cable from the heat source instead.

For Chrysler / AMC Transmissions, go to step 12.

For Ford Transmissions, go to step 26.

For GM Transmissions, go to step 43.

Chrysler / AMC Applications

12. Grab the Chrysler / AMC selector lever and cable bracket from the included parts kit (figure 7):

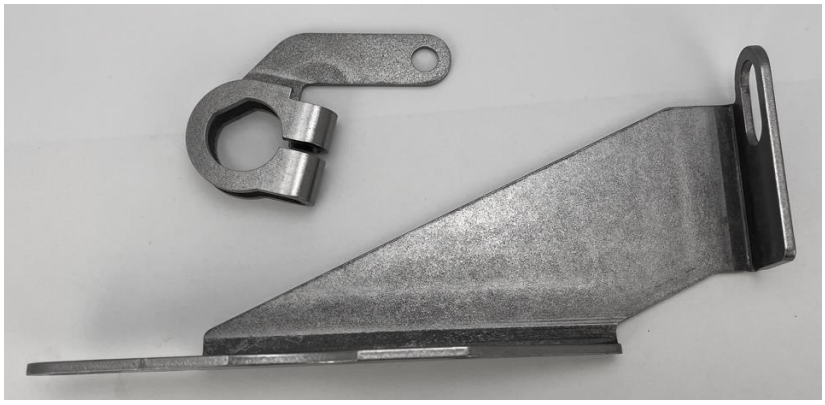

Figure 7

13. Disconnect the stock controls by loosening the throttle lever pinch bolt and removing the lever from its shaft. Carefully move the lever and linkage aside, allowing them to hang free. Remove and discard the stock selector lever and shift linkage.

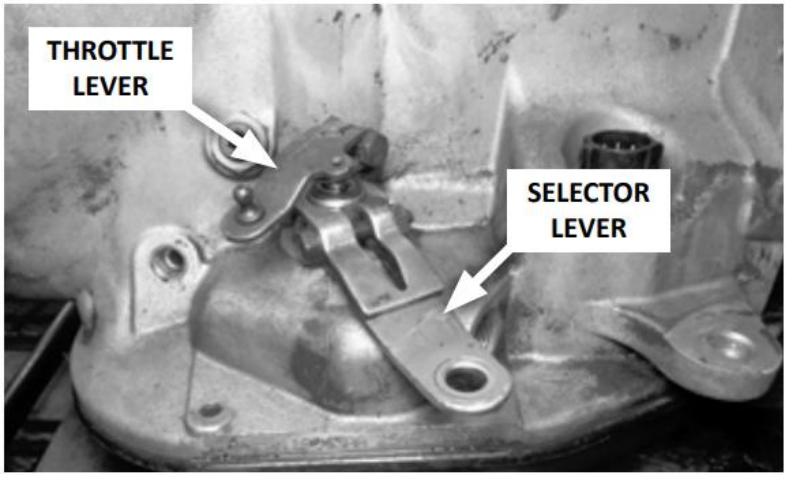

Figure 8

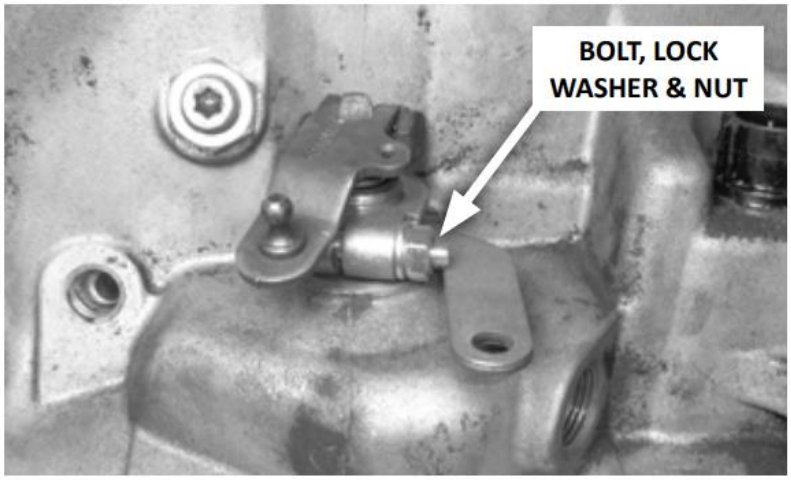

Figure 9

14. Install the RTS selector lever using the 1/4"-20 x 1.50” bolt, spring washer and nut (figure 9). 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.

15. Install the cable bracket using the two pan bolt holes directly below the selector lever, using the two 5/16”-18 x 1.0” bolts and spring washers. For stamped sheet metal pans, use the two spacers provided between the pan and bracket (not required for cast pans). Tighten the bolts to 12 ft-lbs (16 Nm). Do not over-tighten the bolts, as this can damage the pan gasket.

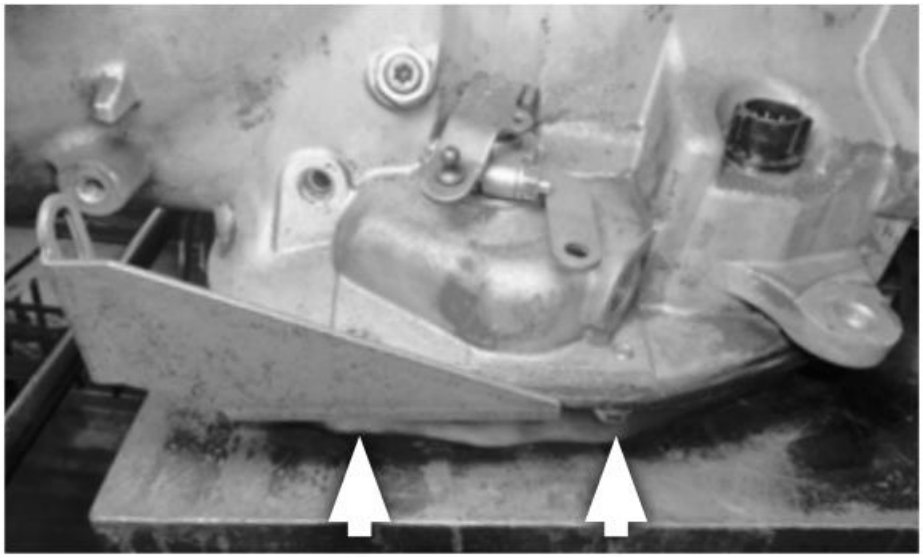

Figure 10

16. Attach the shifter cable to the bracket by firstly removing the small jam nut, two plastic dust boots and one large nut and spring washer from the cable housing. Then insert the cable housing in the cable bracket, reinstall the spring washer and nut on the cable (loosely to allow room for adjustment), and reinstall the two dust boots.

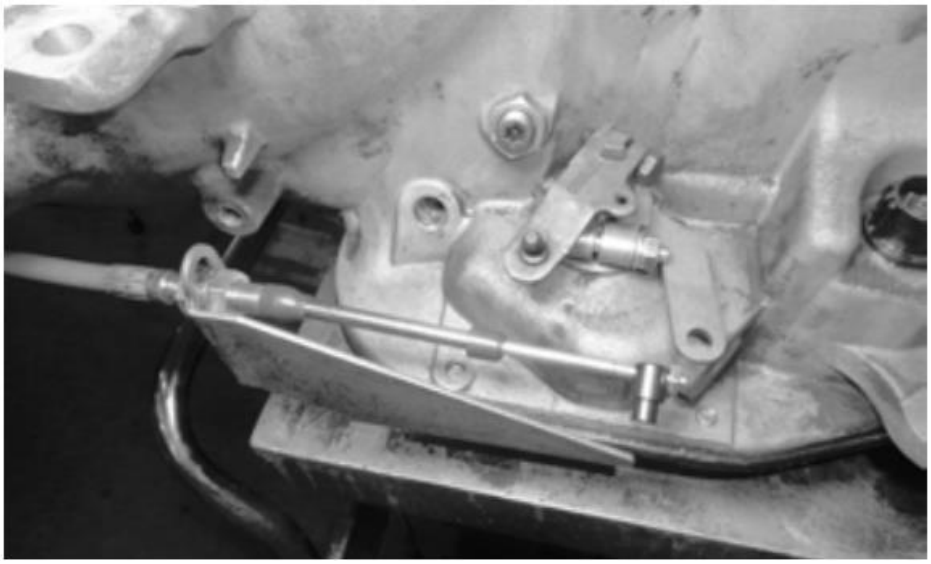

Figure 11

17. Thread the provided swivel onto the shifter cable to roughly the middle of the threaded section, then reinstall but do not tighten the jam nut.

Note: ensure the park and speed limiter pins are installed as per table 2 for Chrysler.

18. Manually move the selector lever to the LOW position (FULLY FORWARD). 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.

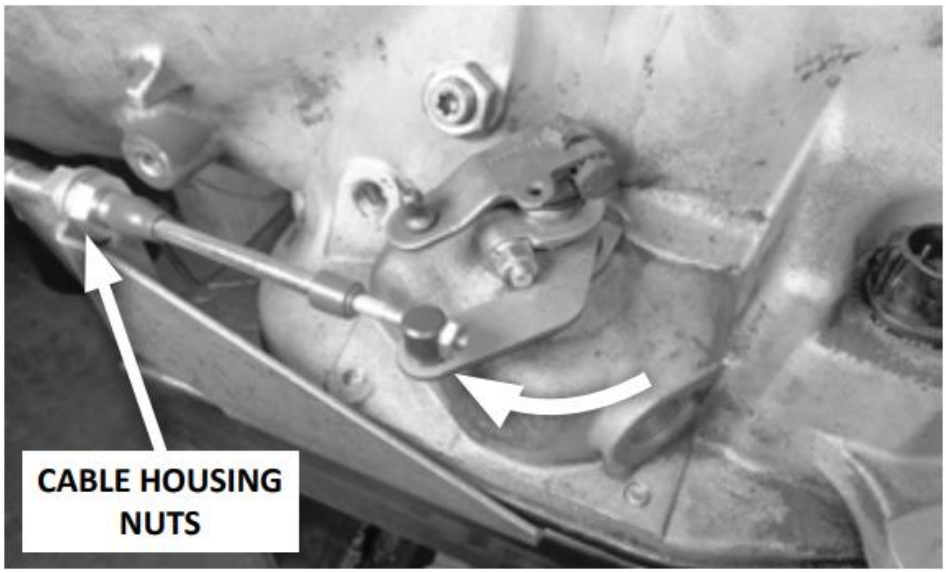

Figure 12

19. When the swivel slips freely in and out of the selector lever, tighten the jam nut.

20. With the swivel still in the selector lever, move the shifter to the PARK (fully forward) position. Verify that the swivel still slips freely in and out of the selector lever. If it doesn't, adjust the swivel (and / or cable housing nuts) until it does.

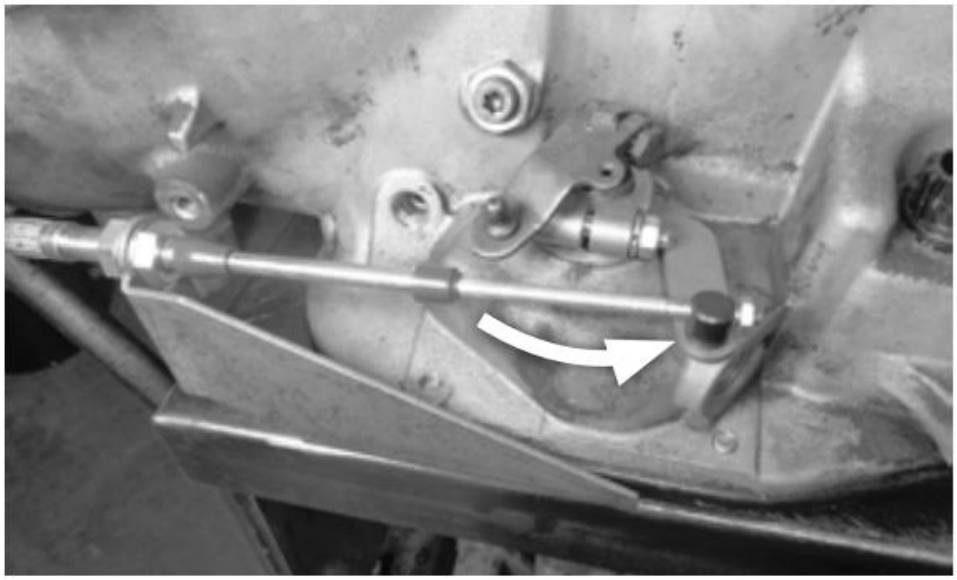

Figure 13

21. 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. When this is achieved, the cable has been correctly adjusted. Ensure all cable housing nuts and the swivel jam nut are tight.

Note: if faced with restricted movement, do not force the shifter. You may damage the cable, shifter or transmission. Return to step 18 and re-check each step.

22. Secure the swivel selector lever with the cotter pin. Operate the shifter through all gear positions again to ensure its operating correctly. Check the operation of the throttle linkage again and ensure there is no binding. This linkage is required on all transmissions using automatic valve bodies.

Neutral Safety and Reverse Light Switches (Chrysler / AMC)

1969+ VEHICLES: The stock neutral safety and reverse light switches are located on the transmission, and will continue to function normally. Therefore, neither of the switches on the the shifter will be used.

1966-68 VEHICLES: The stock neutral safety switch will continue to function normally. Therefore, only the reverse light switch on this shifter will be used

23. Reroute the reverse light switch wires by disconnecting the battery ground cable. Then disconnect the wires from the stock reverse light switch (located on either the steering column, or the console shifter). Route the wires to the reverse switch (upper) on the shifter.

24. Wire the switch by stripping 1/4" of insulation off the wires and crimp a terminal to each wire, using an appropriate crimping tool. Tape or heat-shrink the terminal-wire connections for added protection of the crimps. Connect the backup light wires to the UPPER switch.

25. Verify switch function by reconnect the battery ground cable. Check the backup light switch by verifying the backup light is on only when the shifter is in REVERSE.

Go to step 61 to finish installing the shifter.

Ford Applications

26. Grab the ford selector lever and appropriate cable bracket from the included parts kit:

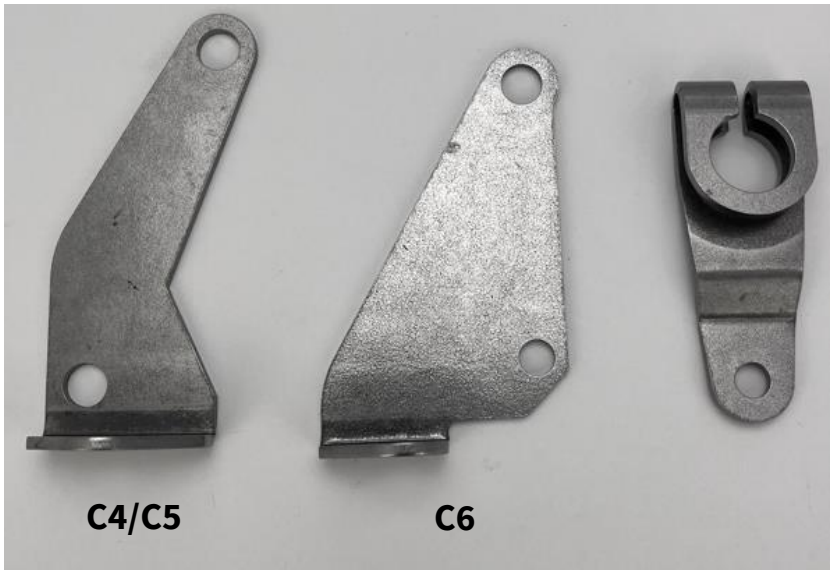

Figure 14

27. Disconnect the stock controls by removing the nut and lock washer. Carefully remove the throttle lever and move it and the linkage aside allowing them to hang free. Remove and discard the stock shift linkage. Ensure the oil seal remains in place between the selector and throttle shafts. If the seal comes out, replace before moving on.

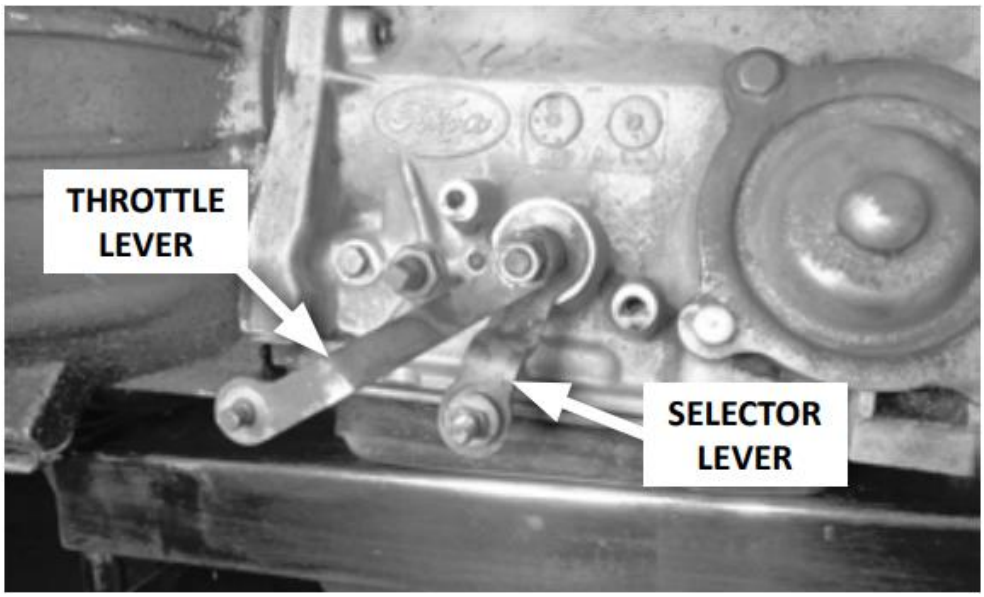

Figure 15

28. If your transmission has a neutral safety / reverse light switch, remove the two mount bolts and slide the switch off the selector shaft. Cut the wiring harness between the switch and the connector and discard the switch (these wires will be routed to the RTS switches later).

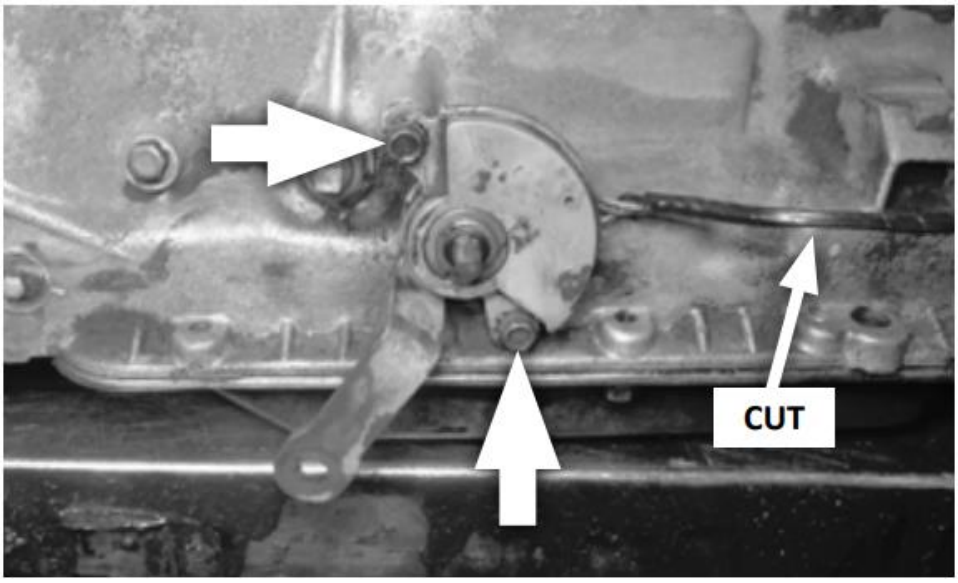

Figure 16

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

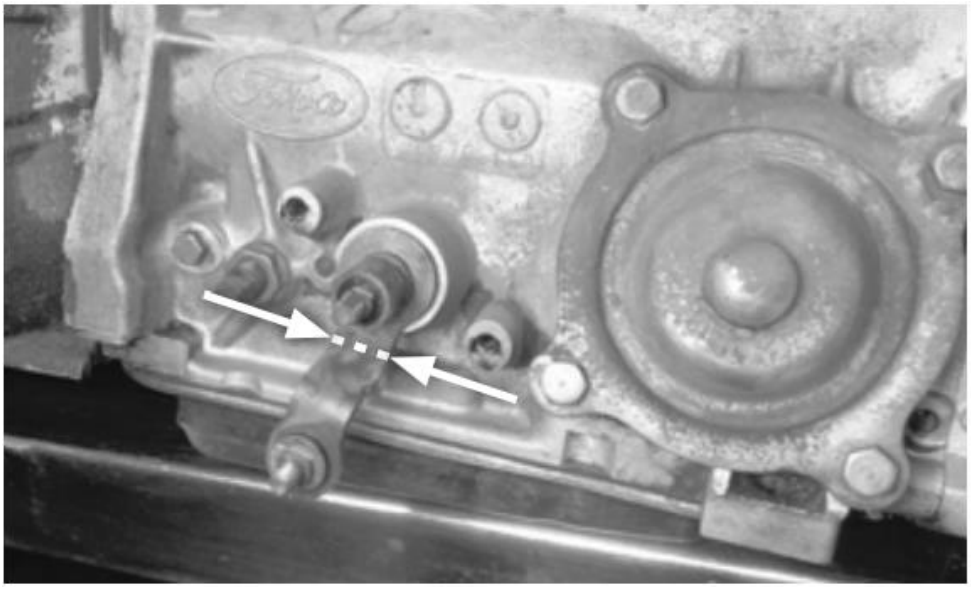

Figure 17

30. Install the supplied RTS selector lever using the 1/4"-20 x 1.50” bolt, spring washer and nut. With the selector shaft in NEUTRAL (the second click back from PARK, which is fully forward), align the selector lever perpendicular to the oil pan split-line, then tighten the fasteners. The lever should travel smoothly back and forth with a positive click in each position.

Note: If the selector shaft is grooved as shown in figure 18, centre 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.

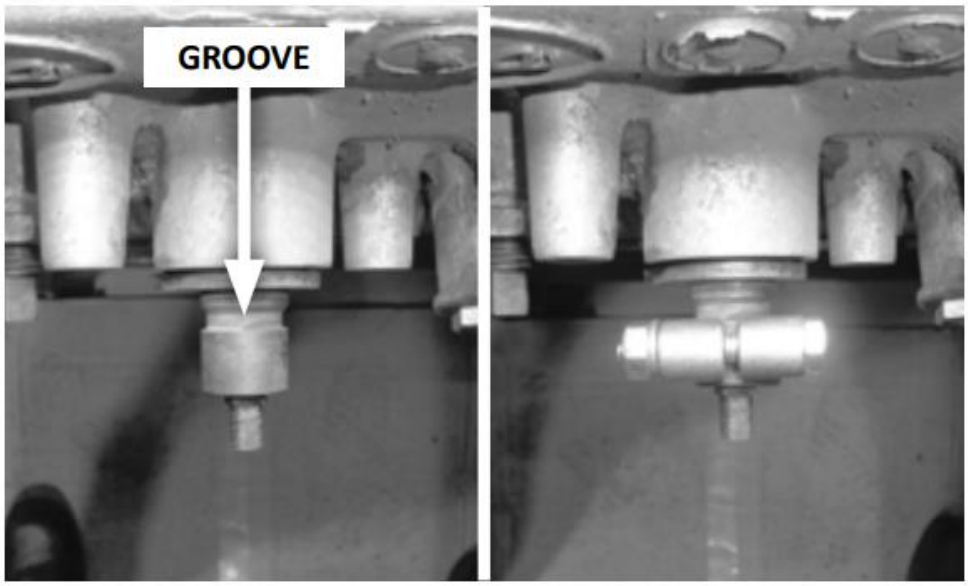

Figure 18

31. Install the cable bracket:

a. **C4/C5:** install the cable bracket onto the two lower servo cover bolt holes, using the two 5/16”-18 x 1.0” bolts, spacers and spring washers (figure 19). Tighten the bolts to 12 ft-lbs (16 Nm).

b. **C6:** install the cable bracket at the two left rear oil pan bolt holes, using the two 5/16”-18 x 1.0” bolts and spring washers (figure 20). For stamped steel pans, use the two provided spacers between the pan and bracket (not required for cast pans). Tighten the bolts to 12 ft-lbs (16 Nm).

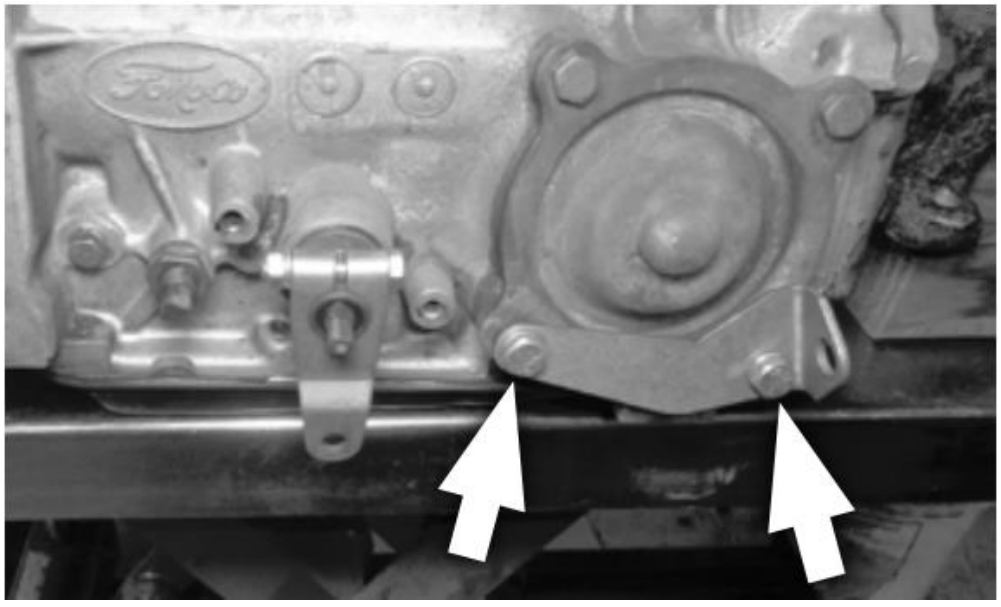

Figure 19

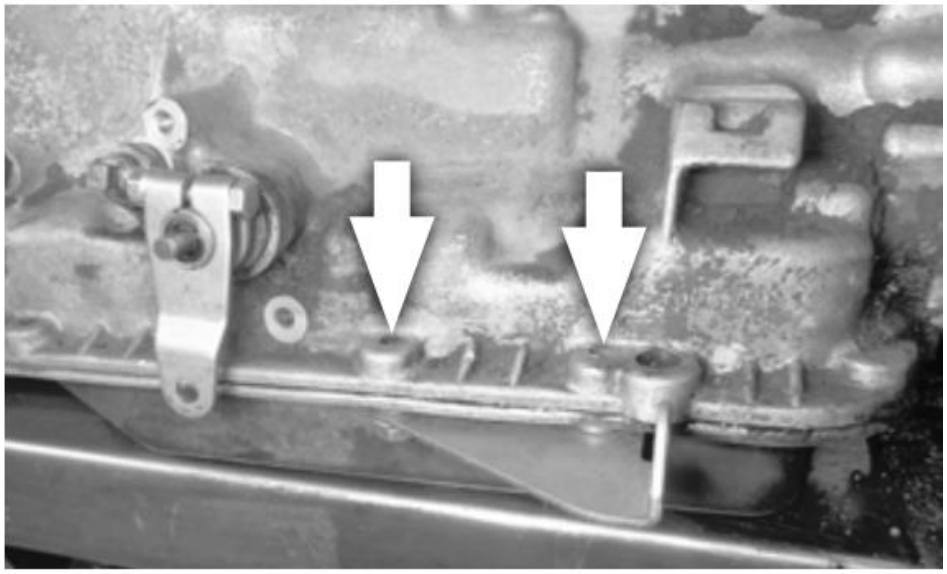

Figure 20

32. Attach the shifter cable to the cable bracket by removing 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 (figure 21).

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

Note: ensure the park and speed limiter pins are installed as per table 2 for your specific Ford transmission.

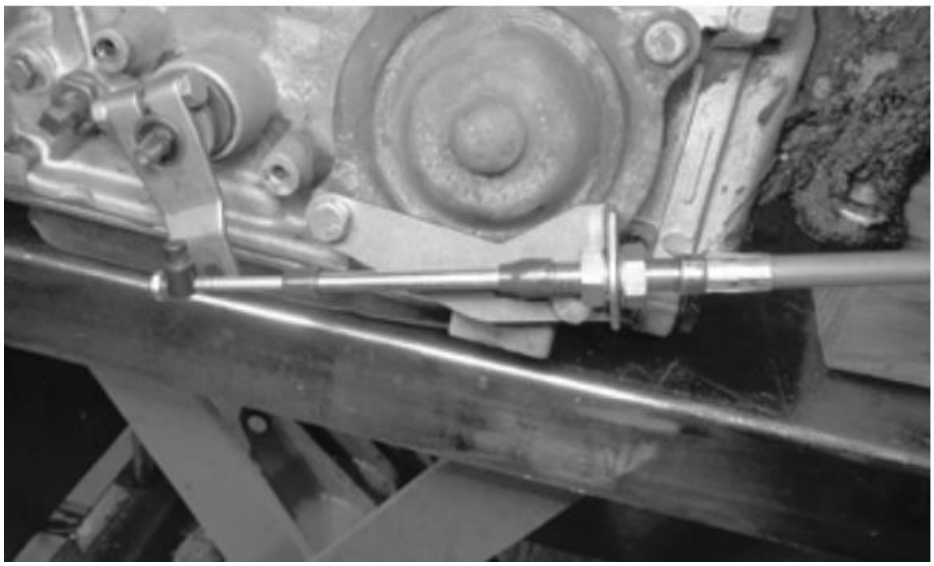

Figure 21

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) until it does.

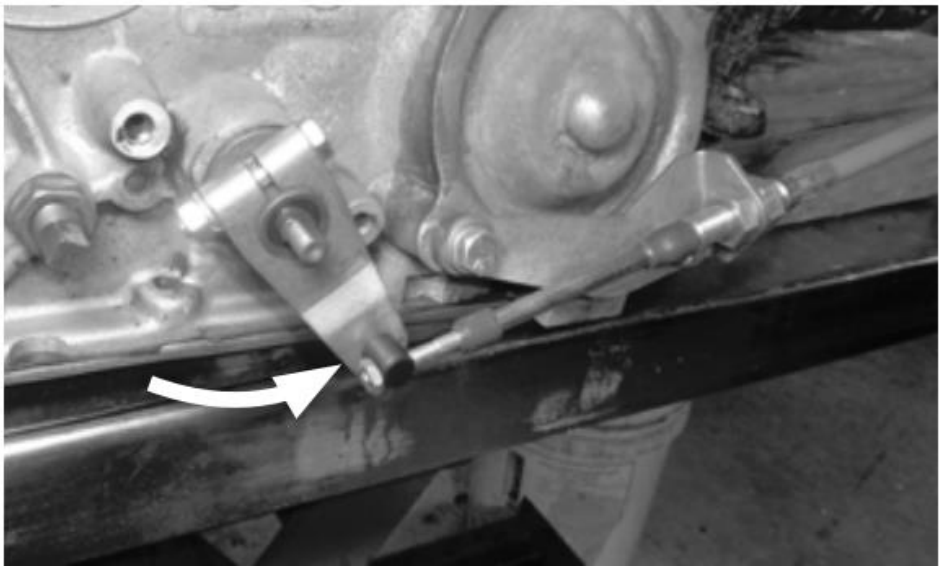

Figure 22

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. 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.

Note: if faced with restricted movement, do not force the shifter. You may damage the cable, shifter or transmission. Return to step 34 and re-check each step.

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 (figure 23).

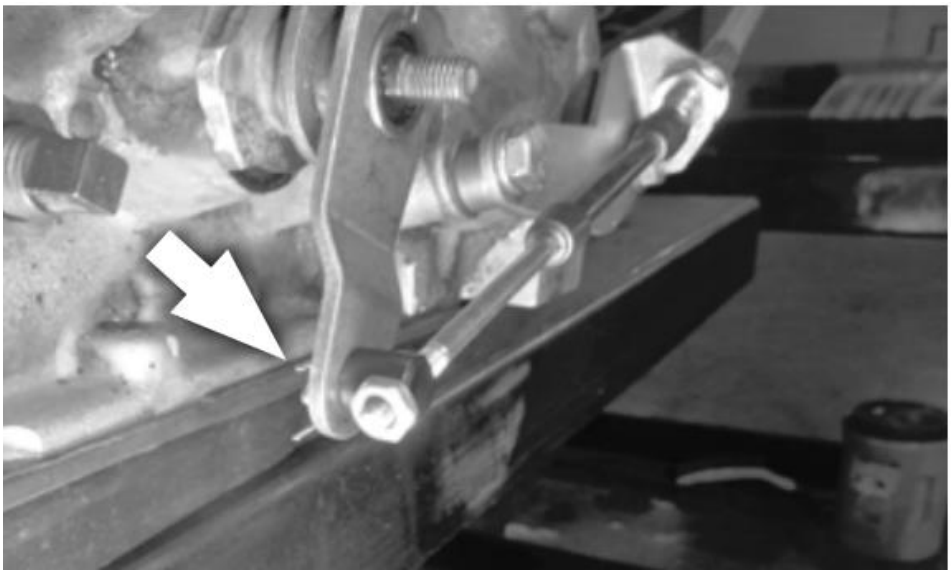

Figure 23

39. Reinstall the throttle lever, lock washer and nut on the throttle shaft and tighten securely (figure 24). The throttle lever should operate smoothly with no binding. This linkage must be connected and operating on all transmissions with automatic valve bodies.

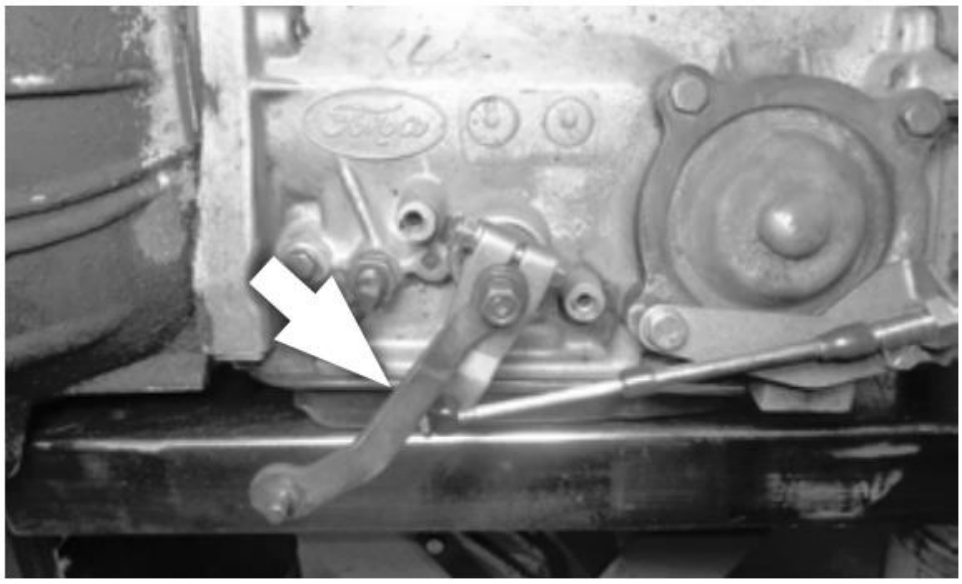

Figure 24

Neutral Safety and Reverse Light Switches (Ford)

40. Reroute the switch wires using 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 reverse light wires. Disconnect the battery ground cable and route both pairs of wires to the shifter.

41. Wire the switch by stripping 1/4" of insulation off the wires and crimp a terminal to each wire, using an appropriate crimping tool. Tape or heat-shrink the terminal-wire connections for added protection of the crimps. Connect the backup light wires to the UPPER switch on the shifter.

42. Verify switch function by reconnecting the battery ground cable, disconnecting the coil wire and setting 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 the reverse light operation with the shifter in REVERSE. If required, adjust the switches as described in step 9. After verifying correct switch operation, reconnect the coil wire.

Go to step 61 to finish installing the shifter.

General Motor (GM) Applications

43. Grab the GM selector lever and appropriate cable bracket from the included parts kit:

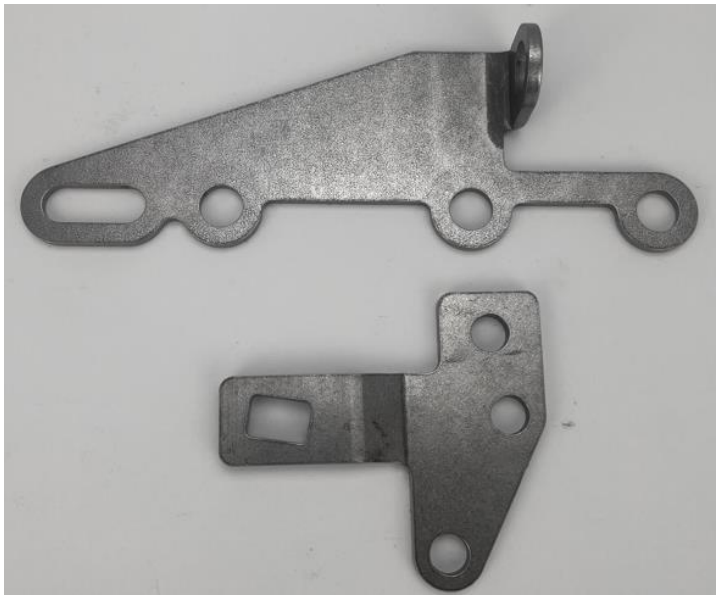

Figure 25

44. Disconnect the stock controls by removing the selector lever nut and discard the lever and shift linkage.

45. Install the RTS selector lever using the stock selector lever nut and tighten the nut to 23 ft-lbs (30 Nm). The lever should travel smoothy back and forth with a positive click in each position.

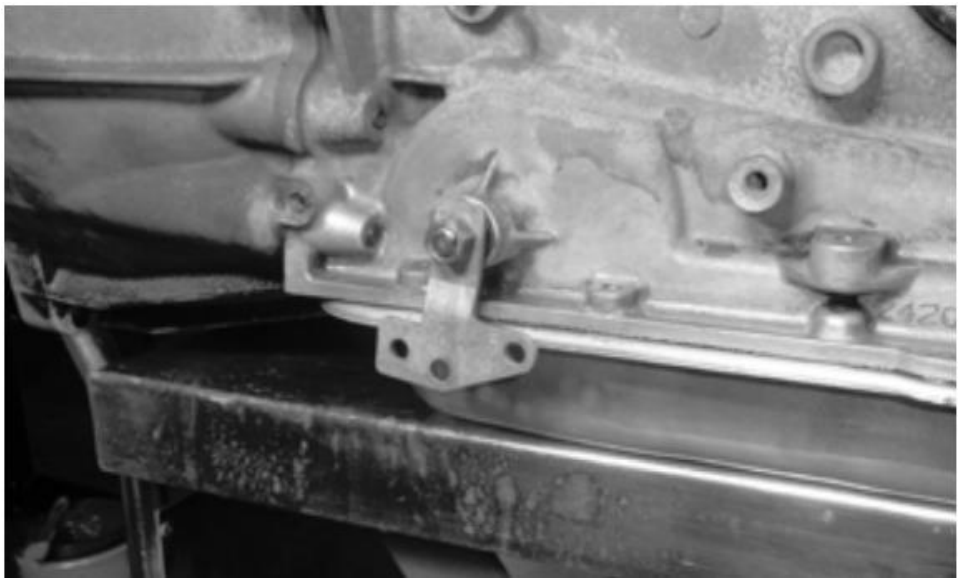

Figure 26

46. Determine which holes on the RTS cable bracket need to be used depending on which transmission you are using. Remove the two oil pan bolts to the rear of the selector shaft.

47. Install the cable bracket using the two 5/16”-18 x 1.0" bolts and spring washers on the bracket holes that fit your transmission. Tighten to 12 ft-lbs (16 Nm).

Note: for stamped steel stock pans, use the two provided spacers between the pan and bracket.

Note: for cast aluminium pans, the spacers are not required but the bracket may need to be trimmed to fit as the cast pans are thicker in certain areas (figure 27).

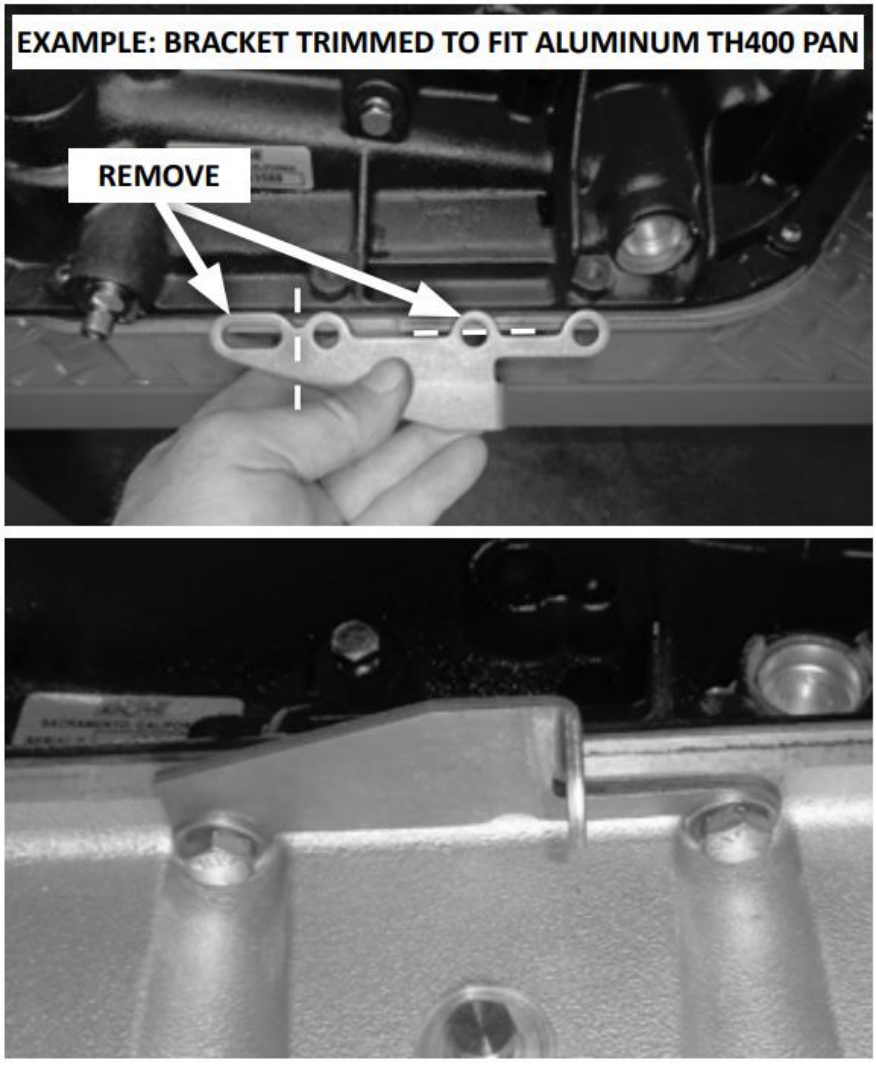

Figure 27

48. Attach the shifter cable to the cable bracket by removing 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: ensure the park and speed limiter pins are installed as per table 2 for your specific GM transmission.

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

Note: Selector levers on GM transmissions travel twice the distance between PARK and REVERSE than they do between the remaining positions, which is why the shifter's park limiter pin was removed in step 7. Shifter position 1 (full-forward) is PARK; position 3 is REVERSE; and position 2 is a "transition" step between PARK and REVERSE.

Note: 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!

51. Adjust the cable housing nuts until the swivel slides freely in and out of the correct hole in the selector lever as seen in figure 28 (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. The shifter will not operate correctly unless the correct on the lever is used.

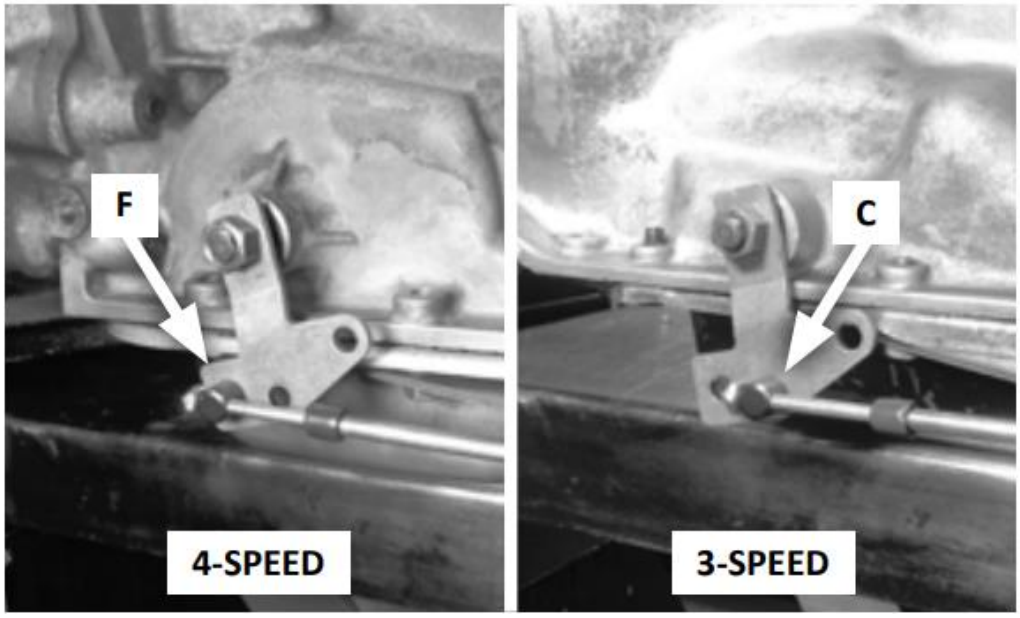

Figure 28

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

53. With the swivel still in the selector lever, push the shifter forward to REVERSE (figure 29). 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), until it does.

Note: Do not check the swivel fit in PARK, 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 (figure 30).

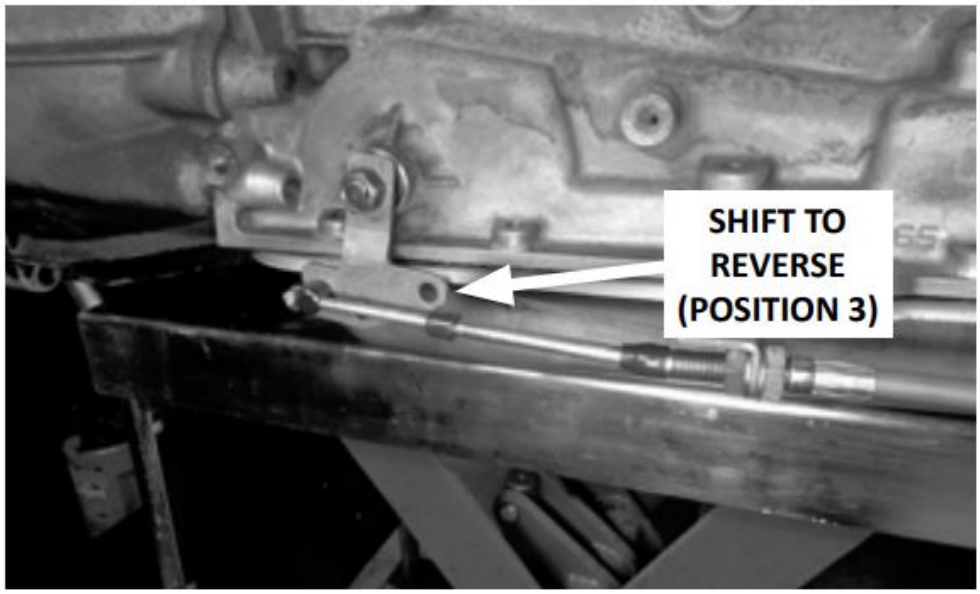

Figure 29

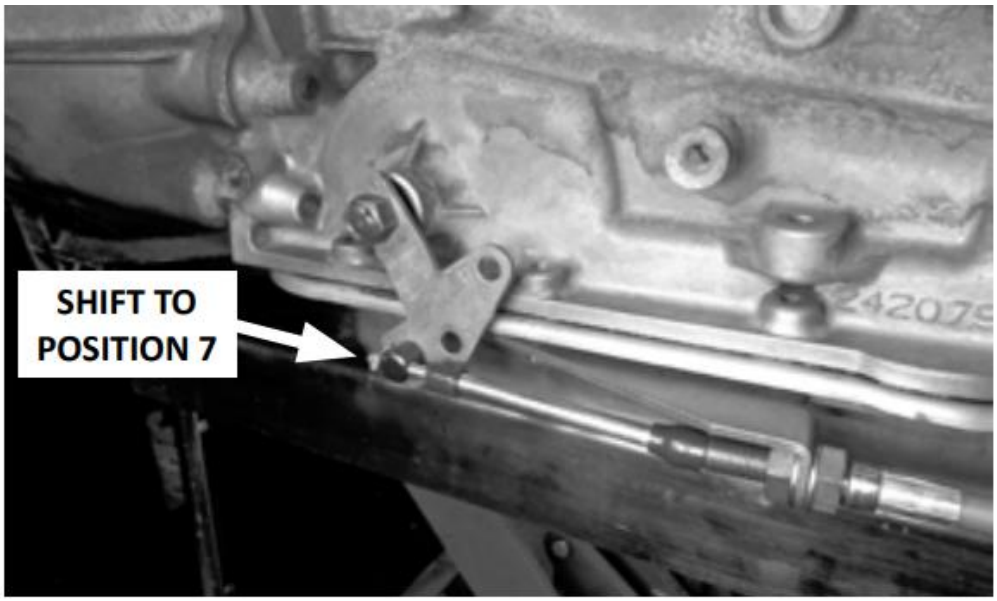

Figure 30

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.

Note: if faced with restricted movement, do not force the shifter. You may damage the cable, shifter or transmission. Return to step 50 and re-check each step.

55. Once the swivel slips freely in and out of the selector lever in each position, secure the swivel to the selector lever with the cotter pin. Operate the shifter through all gear positions to verify that its operating correctly.

Neutral Safety and Reverse Light Switches (GM)

56. Determine the type of neutral safety mechanism in your vehicle. It may be either be 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 by firstly disconnecting 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 RTS 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 RTS shifter.

58. Reverse light switch: use an applicable electrical schematic to locate and identify the two reverse light wires (usually located on the steering column behind the instrument panel). Route these wires to the RTS shifter.

59. Wire the switches by stripping 1/4" of insulation off the wires and crimp a terminal to each wire, using an appropriate crimping tool. Tape or heat-shrink the terminal-wire connections for added protection of the crimps. Connect the reverse light wires to the UPPER switch, and connect the neutral safety wires to the LOWER switch.

60. 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 reverse light operation with the shifter in REVERSE. If required, adjust the switches (step 9). After verifying correct switch operation, reconnect the coil wire.

Post Installation

61. After the shifter assembly is bolted to the floor and the shifter cable and micro switches are all connected, you can now begin to reinstall the shifter cover and body components including the cover side plates, reverse lockout lever and handle (steps 1-5 backwards).

62. Ensure you have the correct gear indicator window installed on the cover for your transmission. There is a total of 4 indicator windows included (1x reverse pattern window).

63. If you are using the button in the handle to run a trans brake or line lock for example, ensure you run it through a relay due to possible current draw overloading. If not using this button, replace it with one of the two supplied billet block off plugs. Extra switches can be purchased separately (PN: RTS-SFT387400) if required.

64. To wire the indicator globe, run a power wire from an appropriate source which should usually come from the vehicles instrument light circuit. Connect the other wire to an appropriate ground. Ensure all wires are insulated and away from moving components. If the LED does not illuminate, remove it from the socket and rotate 180 degrees.

65. Finally ensure the shifter mechanism can move into each gear position freely with no binding and ensure there is no debris on the mechanism. The Ratchet design of this shifter means that the handle will always return to the centre, regardless of what gear you're in. When putting the car in reverse, you will need to push the reverse lockout lever forward to allow the shifter to move forward into reverse. When going back from reverse to driving gears, the lever will automatically move back to its locked position.

Reminder: for GM transmissions, the gearbox will only go into the PARK setting by shifting the handle forward TWICE.

Note: once you have driven the vehicle for a short duration of time, recheck the cable adjustment as the cable can settle in and may need slight readjusting.

Installation Checklist

- Cable is connected to the shifter pin, and cable housing is securely fastened to the shifter base.
- Shifter is securely mounted to floorboard.
- Cable is routed clear of exhaust system, engine, and any moving parts.
- Selector lever is securely installed on the transmission.
- Cable bracket bolts are tightened to 12-13 ft-lbs torque.
- Shifter is properly adjusted; cable boots are installed; cable nuts are tightened; swivel is secured with cotter key.
- The Neutral Safety switch is connected and properly adjusted to prevent engine start in FORWARD and REVERSE drive gears.
- There is no debris in the shifter mechanism.
- Shifter moves freely into and out of all positions.

If your shifter is not working properly, do not attempt to drive your car. Ensure you have followed all instructions correctly. If you think there is an issue with the shifter (broken or defective) please contact your RTS dealer.

Parts List

Description	QTY	Description	QTY
Shifter Assembly	1	2-Speed Indicator Window	1
5ft Race Shifter Cable	1	3-Speed Indicator Window (Installed)	1
Shifter Handle Side Cover	2	4-Speed Indicator Window	1
Reverse lockout lever	1	4-Speed Indicator Window (Reverse Pattern)	1
Trans Brake / Line Lock Button	1	Park limiter Pin	1
Handle block off plug	2	Retaining E-Clip	3
Micro switch	2	Cable Bracket Spacers	2
LED Indicator Light Assembly	1	1/4” Flat Washers	12
Cable Swivel	1	1/4" Spring Lock Washer	5
Cable Swivel Cotter Pin	1	1/4"-20 Lock Nuts	6
Chrysler / AMC Selector Lever	1	1/4”-20 x 0.50” Bolt	1
Chrysler / AMC Cable Bracket	1	1/4”-20 x 1.25” Bolt	4
Ford C4 / C6 Selector Lever	1	1/4”-20 x 1.50” Bolt	1
Ford C4 Cable Bracket	1	5/16” Flat Washers	2
Ford C6 Cable Bracket	1	5/16”-18 x 1.0” Bolt	2
GM Selector Lever (No PRNDL switch)	1	1/4” Female Wire Terminal (16-14 AWG)	4
GM Cable Bracket (No PRNDL switch)	1	Rubber Grommet	1