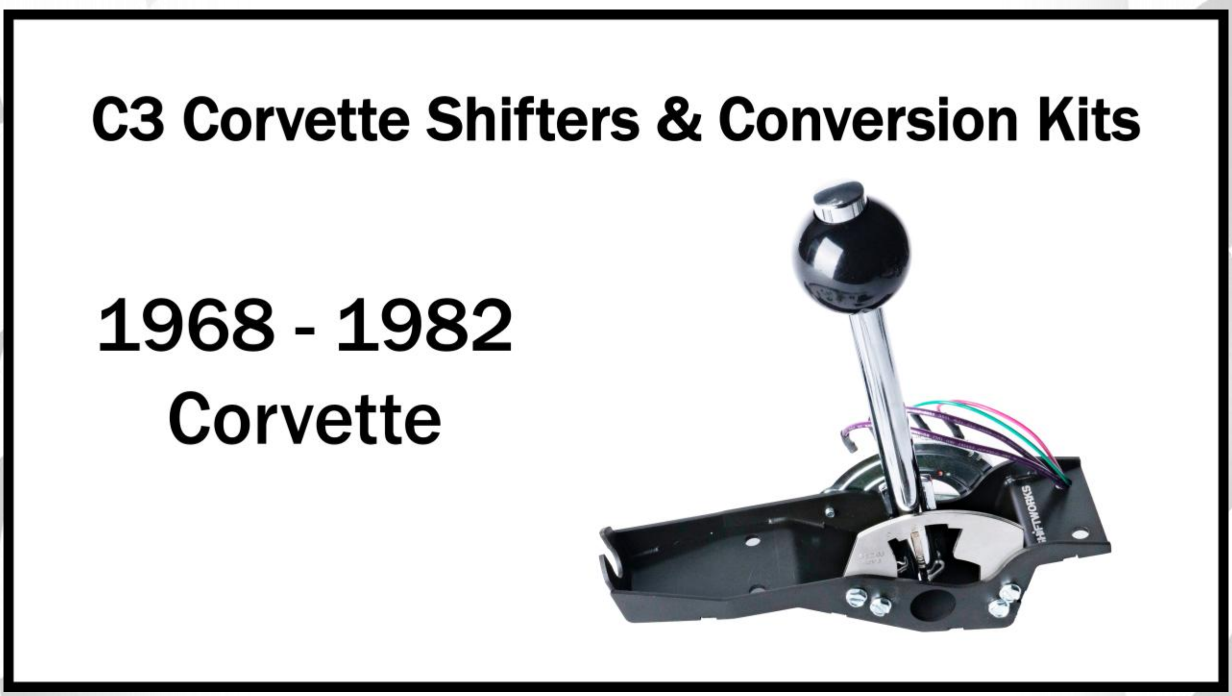
“*Classic Appearance* **meets** *Modern Performance*”

Thank you for your purchase!

With any questions regarding your purchase, products, or installation do not hesitate to reach out to us:

Phone: (585) 924-2700

Email: Support@shiftworks.com



This set of instructions will cover Shifter Packages & Conversion Kits.

* Always verify you have purchased the correct kit for your application BEFORE beginning your installation!!!

Conversion Kits

	1968-71 Corvette	1972-76 Corvette	1977-82 Corvette
TH350 TH400 TH200-4R 700-R4, 4L60E, 4L70E 4L80E	SC2401	SC2402	SC2403
6L80E, 6L90E, 8L90E	SC2401-6	SC2402-6	SC2403-6

Shifter Packages

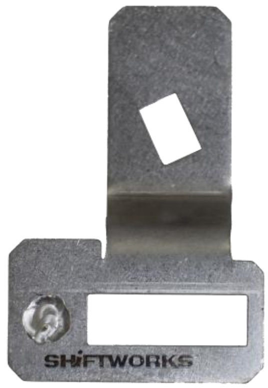
	1968-76 Corvette	1977-82 Corvette
TH350 TH400 TH200-4R 700-R4, 4L60E, 4L70E 4L80E	SW270-C3A SW270-C3AR	SW270-C3B SW270-C3BR
6L80E, 6L90E, 8L90E	SW270-C3A6	SW270-C3B6

Parts Overview

Shift Control Levers:

602F

602L



613

613L

Transmission Cable Bracket:

3 & 4 Speed Automatic Pan Brackets

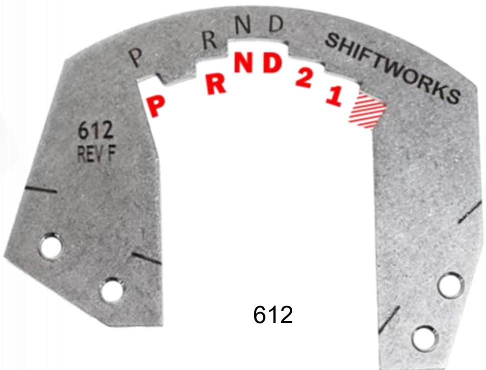
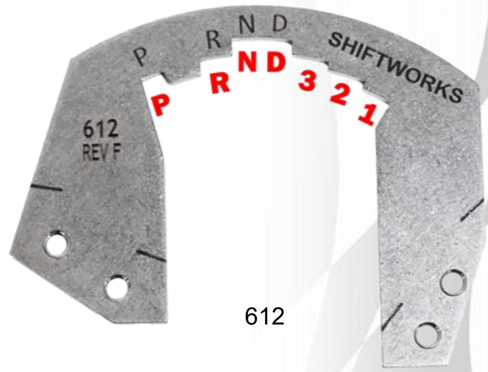
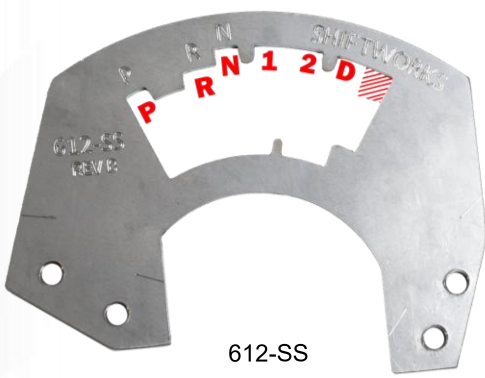
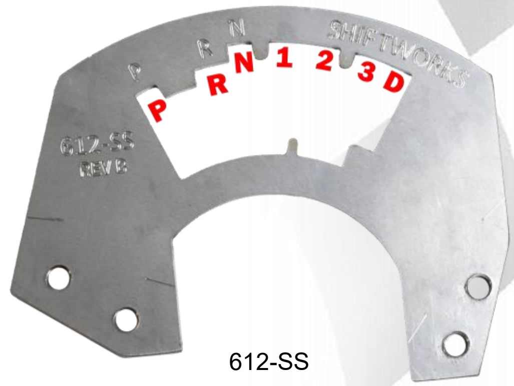
603.4

603.5

6 and 8 Speed Automatic Case Bracket

650-110

3 or 4-Spd Detents & Gear Positions

	3-Spd Auto	*4-Spd Auto*
Regular-Shift	 612	 612
Slap-Shift (***Regular*** **Pattern)**	 612-SS	 612-SS
Slap-Shift (***Reverse*** **Pattern)** **for Reverse Valve Body Transmissions*	 612-SS	 612-SS

Hardware Overview:

This is an overview of the hardware items you can expect to find in your Shiftworks shifter conversion kit.

Cable Clip

Cable Adjuster Pin

M10x1.5 Hex Nut

10/32 -3/8 Machine Screw

Small Washer

Sheet Metal Screw

Cotter Pin

M8x1.25

Hex Bolt

Required Tools for Installation

This is a list of typical tools required to complete this job. Additional tools may be required depending on your application.

- Metric socket set
- SAE socket set
- Standard wrench set
- Pliers
- Drill
- 13/64” Drill Bit
- Phillips & Flat-head screwdrivers

Preliminary steps

Before installing and adjusting your shifter assembly, follow these steps to ensure you have the best adjustment for your shifter and installation process.

1.) Chock wheels and disconnect the vehicles battery

Safety is always the most important step. When installing this kit, it is important to properly chock wheels to ensure the vehicle will not roll or move while clicking through the transmission gears. Additionally, disconnect the vehicles battery before continuing.

Figure 1

2.) Adjust both bulkheads on the shifter cable to be in the center of their threads.

Setting your Shiftworks cable bulkhead to the center of their threads will help later with your cable adjustment.

Simply turn the bulkheads until they are in the middle of the threads. These bulkheads are used for fine adjustments.

Figure 2

3.) Remove the center console to gain access to your shifter assembly.

Remove the center console and surrounding trim to gain access to your shifter assembly. Refer to the factory service manual for details on how to properly remove the console.

**** If you are installing a Shiftworks complete Shifter Package and NOT converting your factory shifter, skip to <u>step 6.</u>***

4.) Removing the Factory Detent

The current detent will need to be removed. It will be fastened to the shifter generally using factory spot welds. With the spot welds you will see indentations on the shifter body. Drill out the spot welds with the smallest drill bit moving up to a 7/32” bit. Then remove detent from assembly [see Fig. 3].

Figure 3

5.) Installing and adjusting the new Shiftworks Detent

Your new Shiftworks detent will be installed using the following provided hardware [see Fig. 4].

(4) 10-32 x 3/8”
Machine Screws

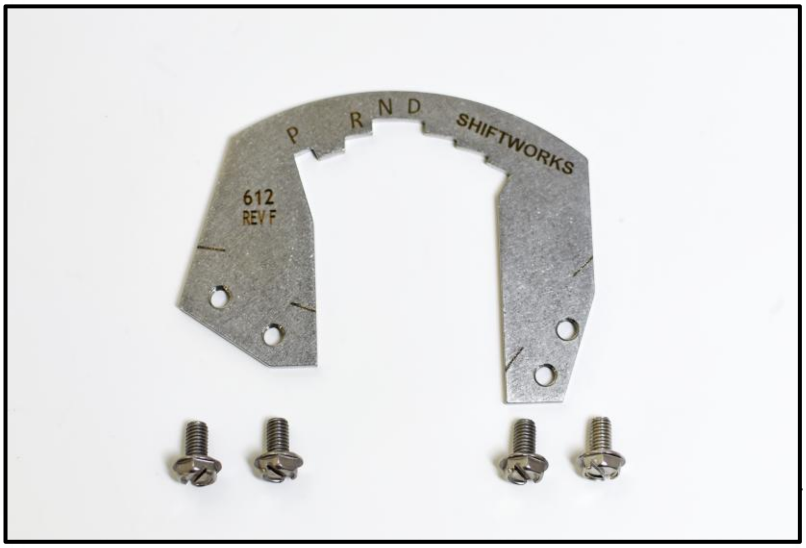


Figure 4

Loosely install the machine screws to fasten the detent to the shifter body. You will notice on the detent that there are markings which indicate where the detent should sit in relation to the shifter body [see Fig. 5].

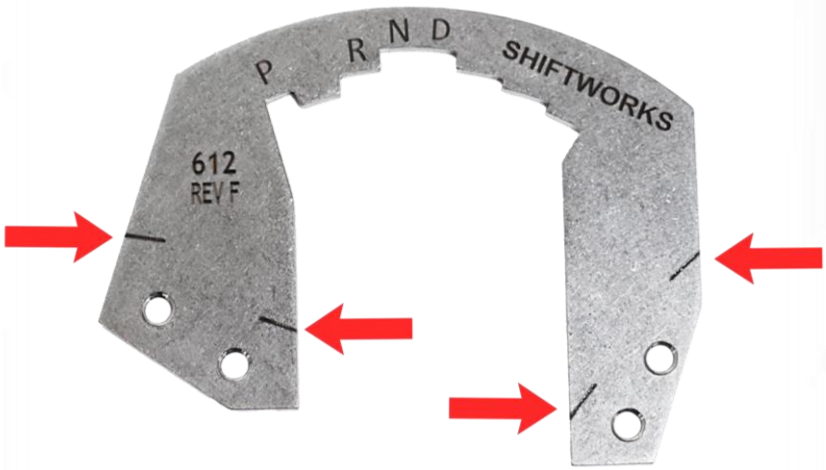


Figure 5

These alignment points are to get the best placement for your detent. Align these markings with the side of the shifter body and tighten hardware

[see Fig. 6].

Figure 6

Before proceeding further, check that the shifter will still move though it is entire range of motion and properly engages with all gear positions and stops.

6.) Reinstall The Shifter

Before you reinstall the shifter, you need to run the shifter cable. You will be unable to install the shifter cable with the shifter in place. Be sure to route the shifter cable from inside the car through the hole in the chassis with label end first. Once the cable is fastened in place with the rubber side of the 3-hole grommet facing down, install the shifter, securing it with the four factory mounting bolts. We will adjust the cable later. To view adjustment instructions, visit page 17.

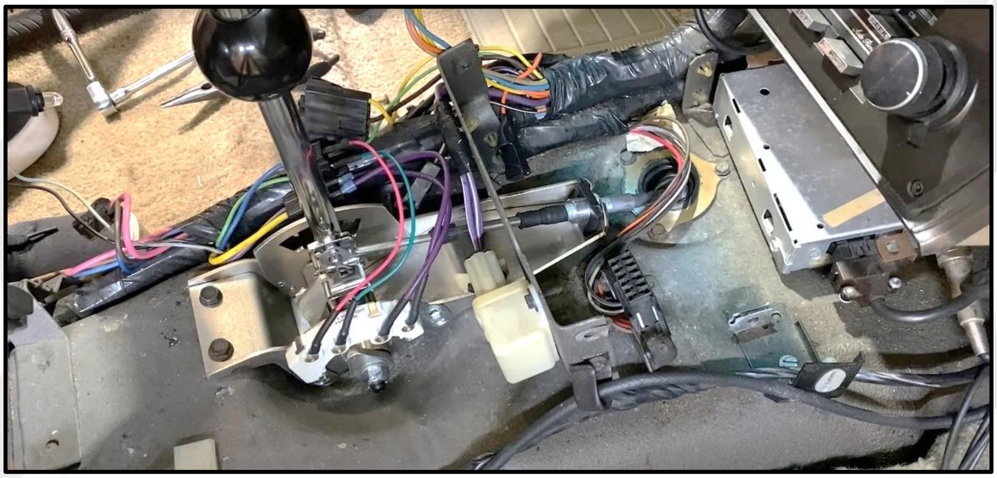


Figure 7

Original shifters have a have a closed end while our Shiftworks shifter has an open end for the cable to mount to. On original shifters be sure to route the cable through the opening when installing the shifter. You will not be able to after.

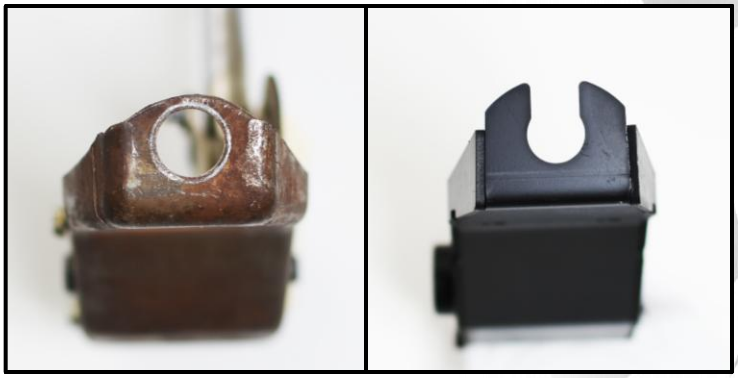


Figure 8

Please note:

Original shifters utilize a retaining clip to hold the cable eyelet to the shifter. Our Shiftworks shifters use a cotter pin style retainer [see Fig 9].

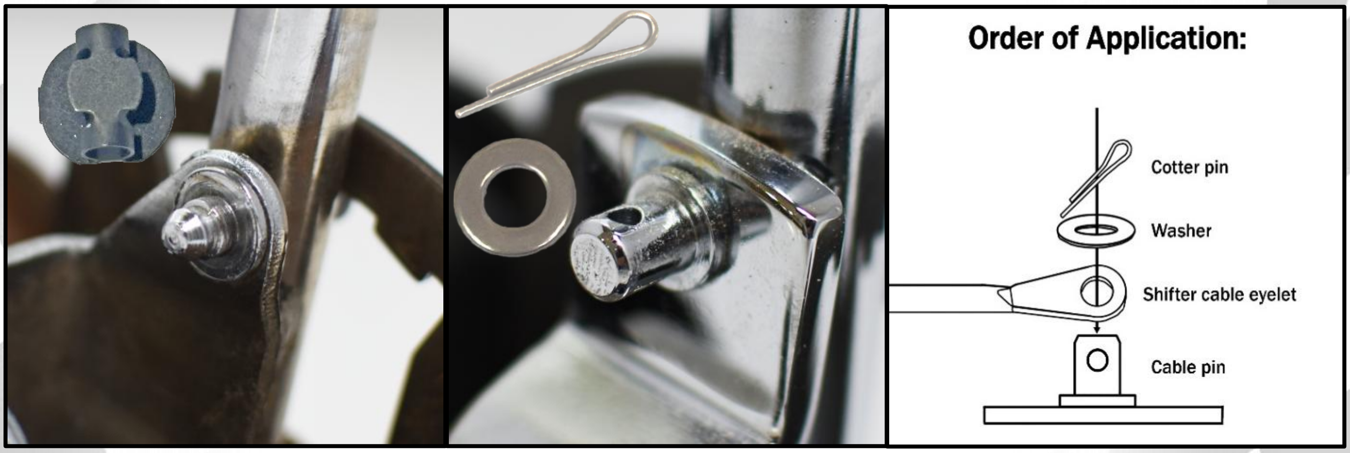
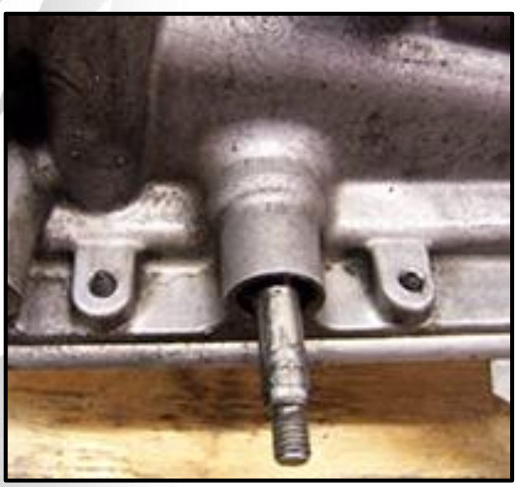


Figure 9

7.) Install Shift Control Lever

In your Shiftworks conversion kit, you will receive a new shift control lever that attaches to the transmission's range select shaft. The range select shaft length will either be what we call a short-shaft or a long-shaft depending on the transmission. Typically, the TH350, TH400, 200-4R, and 700R4 use a “short” range select shaft. The 4LE series transmissions can vary between a “short” or “long” range select shaft, while 6-speed and 8-speed transmissions almost always utilize a “short” range select shaft.



Long Range Select Shaft

Figure 10

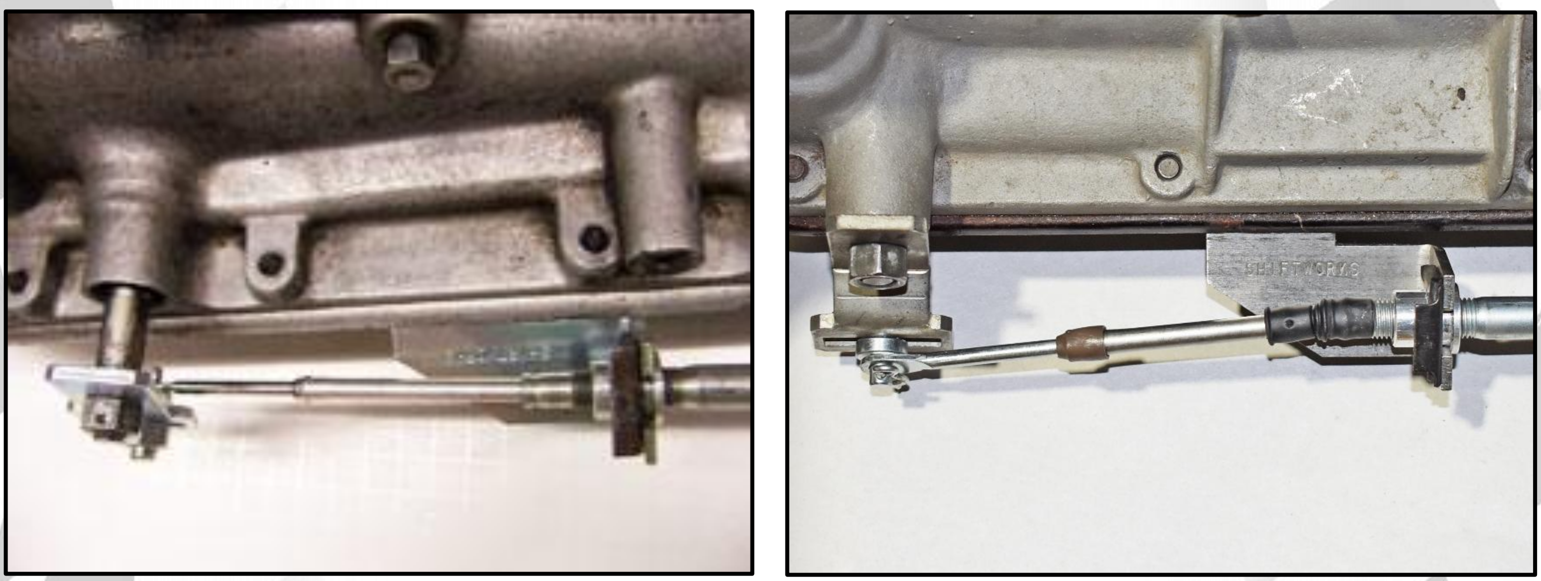
Short Range Select Shaft

Figure 11

To remedy this, some of our kits come with an additional shift control lever. Shift control levers are always installed with the "Shiftworks" logo facing outwards away from the transmission. Install your Shiftworks shift control lever by matching the cutouts on the shaft to the opening on lever. Then install and tighten the M10 x 1.5 nut.

Figure 12

Correct Applications



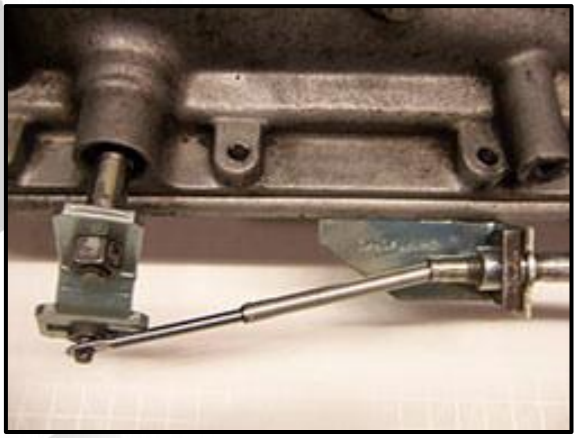
Correct – Long Shaft

Correct – Short Shaft

Figure 13

Incorrect Applications

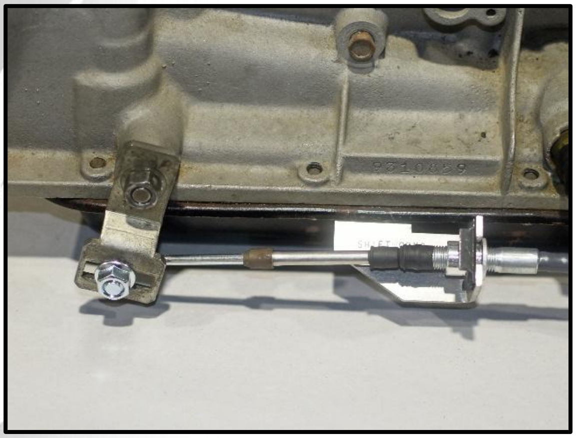
Making sure you install the range select shaft and the shift cable correctly is important to the functionality of your shift linkage as well as the longevity of the components. Be sure to install correctly and please contact Shiftworks customer service at (585) 924-2700 or email support@shiftworks.com with any questions.



Incorrect

Figure 14

This is the incorrect lever for the long range select shaft. As you can see by the steep angle in the cable. This can cause resistance and binding in the shifter linkage.



Incorrect

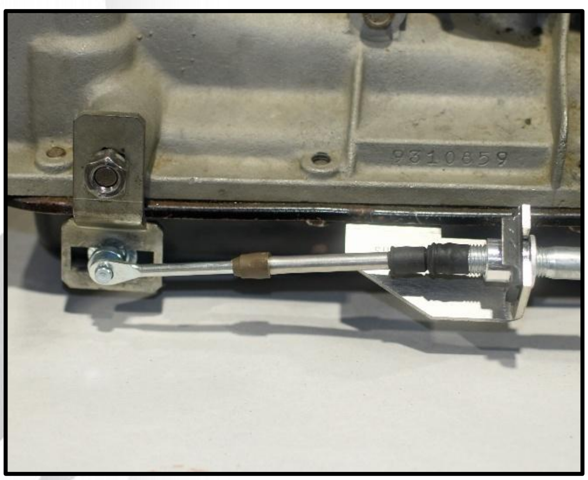
Figure 15

This is incorrect because the cable adjuster pin is backwards on the shift control lever. This will typically damage the cable eyelet when attempting to force into park.

Incorrect

Figure 16

This is incorrect because the cable adjuster pin is backwards on the shift control lever and can lead to the cable binding when shifting out of park.



Incorrect

Figure 17

This is incorrect due to the shift control lever being installed backwards. On all shift control levers the “Shiftworks” logo will be facing out.

8.) Install Transmission Cable Bracket

3 and 4 speed application

Remove the two transmission pan bolts and loosely install the Shiftworks transmission pan bracket. Please note the adjustment holes on the transmission pan bracket. The bracket features multiple adjustment holes to accommodate different transmission applications. We have created diagrams for which holes we recommend using which are ideal for specific applications. Please refer to those below to see what is recommended for your application.

Factory Shifter with Shiftworks Conversion Kit

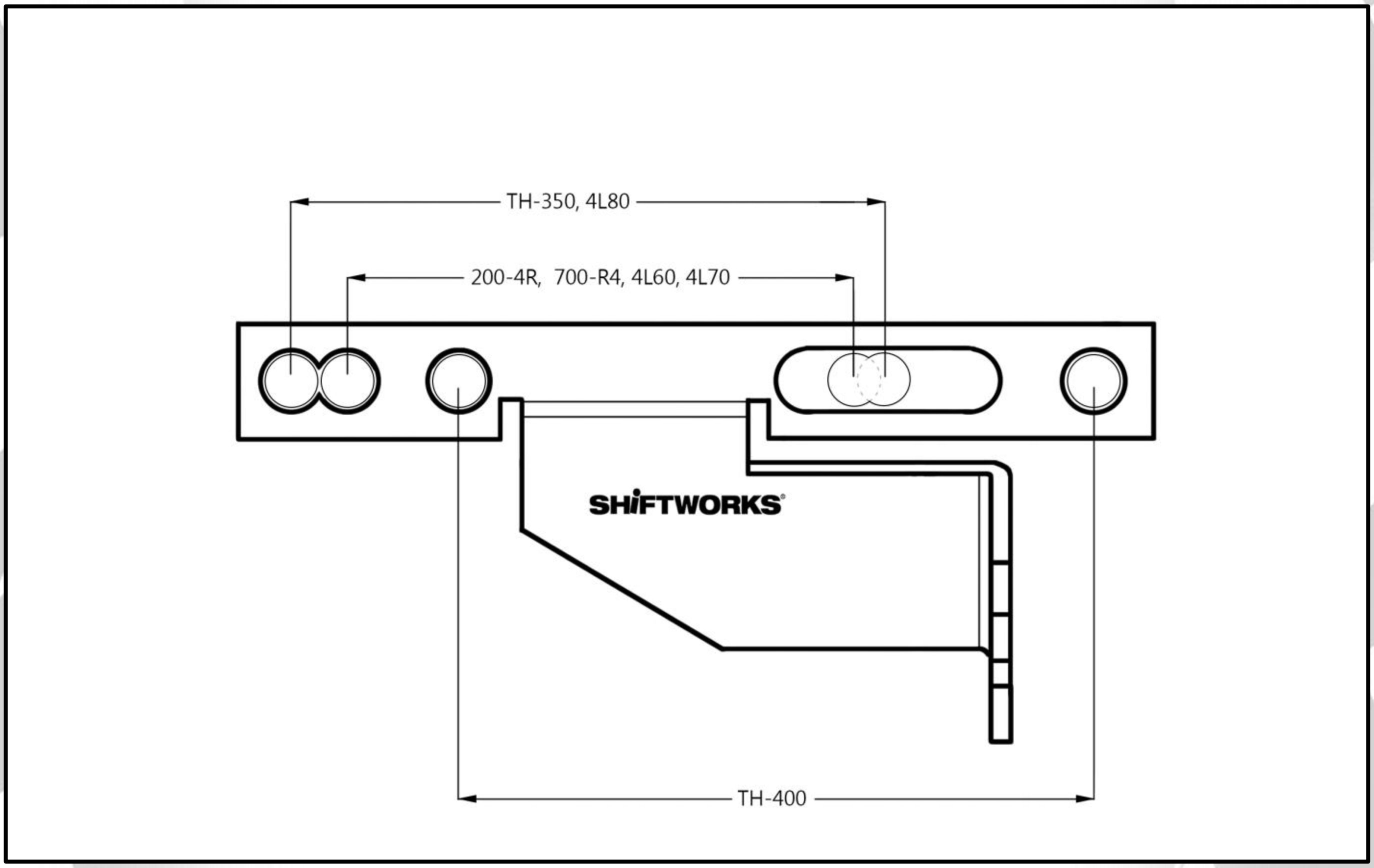


Figure 18

Shiftworks Shifter

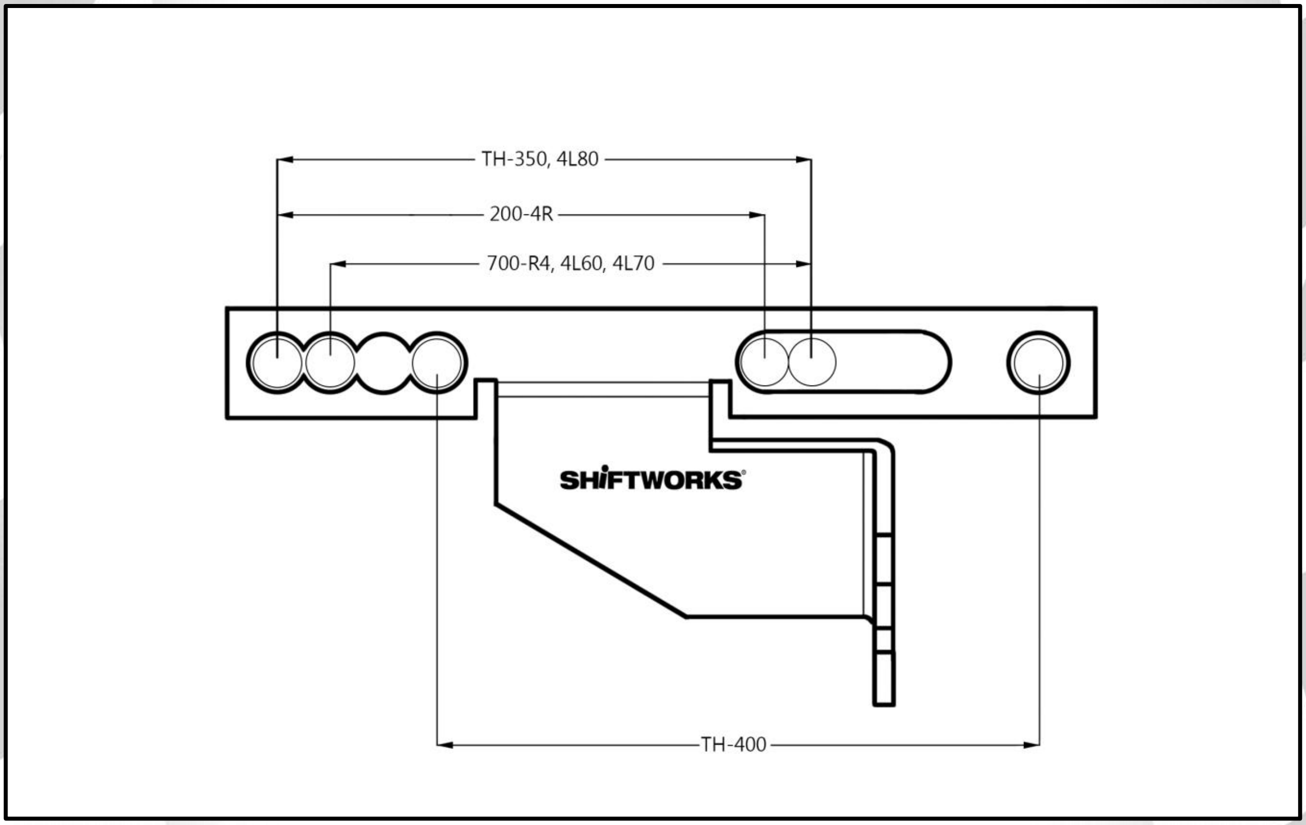


Figure 19

Tighten transmission pan bolts with bracket installed. **Make sure not to overtighten**. The transmission case is aluminum and will strip easily.

6 and 8 speed application

Install the transmission case bracket as shown in the illustration. Use the provided M8 x 1.25 hardware to fasten the case bracket.

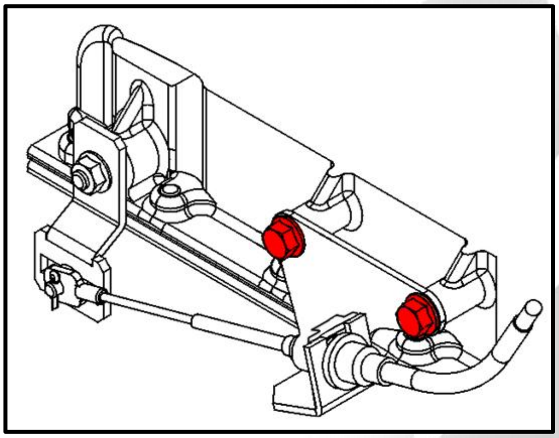


Figure 20

Linkage adjustment:

1.) Set a baseline

Ensure that the shifter cable bulkheads are centered on the threads at both ends and that the pin on the shift control lever is centered.

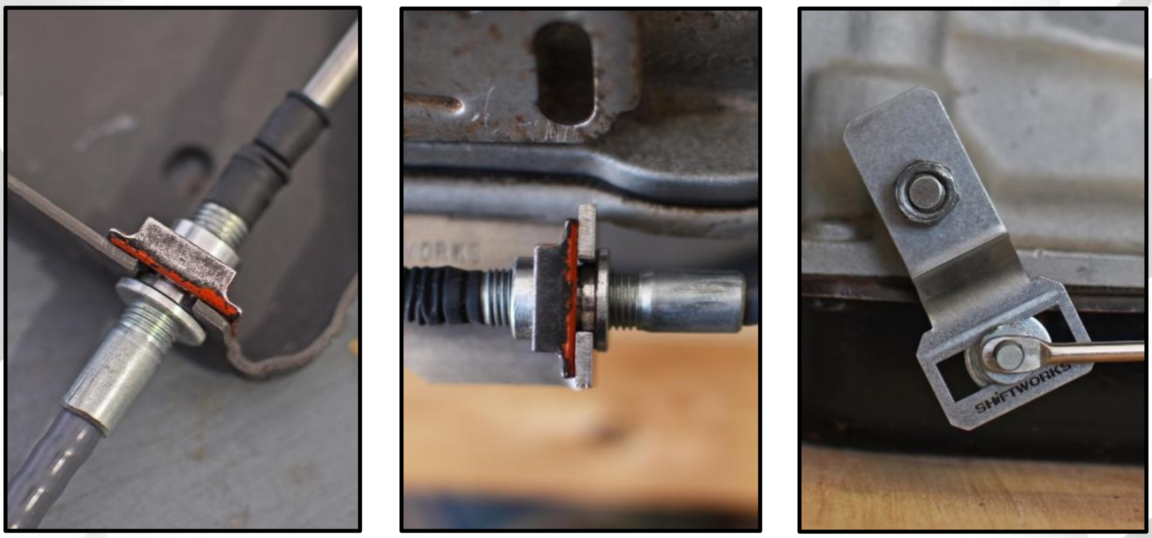


Figure 21

Baseline adjustments

2.) Adjust cable with BOTH the shifter and transmission in neutral

With your transmission in park, (All the way forward towards the front of the car) move the shift control lever down 2 clicks to the neutral position [See Fig 22]. Then place your shifter in the neutral position as well [See Fig 23].

Figure 22

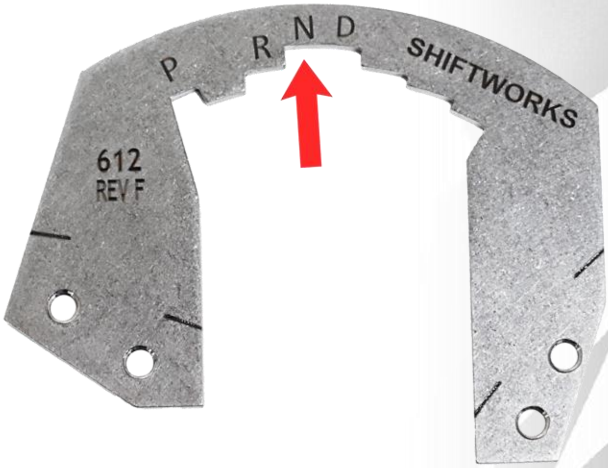


Figure 23

Install your cable into the car and connect linkage to the shifter first, then look at the cable at the transmission side. The cable is adjusted by moving the pin on the shift control lever and the adjustment slots on the transmission pan bracket. Fine adjustment can be made with the bulkheads on the cables.

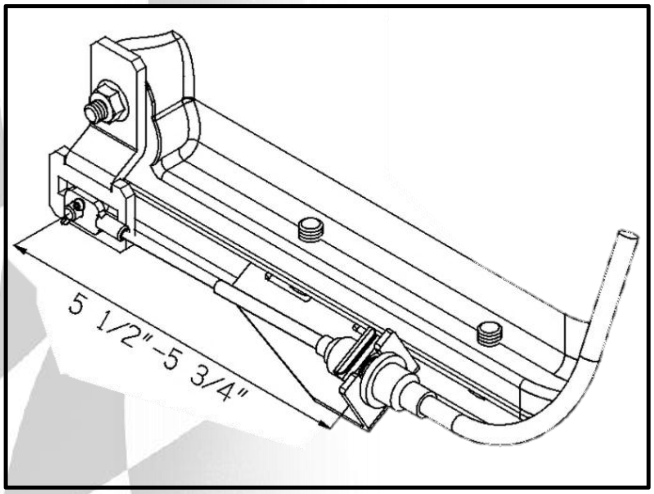


Figure 24

The cable eyelet and pin should be around 5 ½" to 5 ¾" to where the cable meets the transmission bracket. This measurement is taken in the neutral position. This measurement is a suggestion and could vary depending on your application.

For TH400 Application:

Use the single non-slotted hole at the end of the transmission cable bracket [See Fig 25].

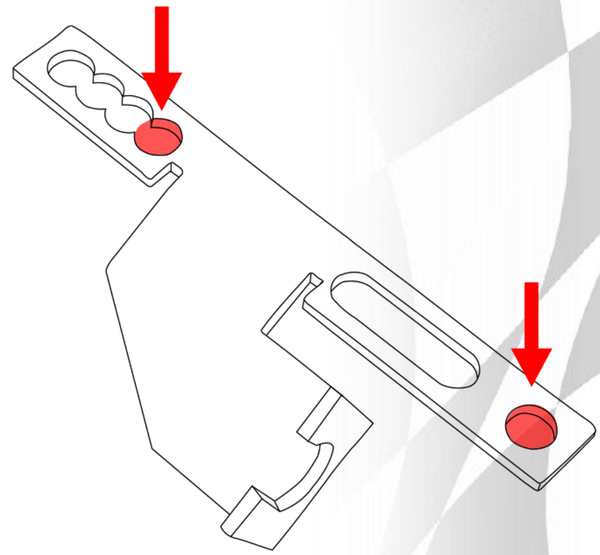


Figure 25

For 6-8 speed Application:

Attach the transmission cable bracket to the case as shown in the illustration to the right [Fig 26]. The suggested distance from the pin to the face of the case bracket should be around 5 ½” – 5 ¾”. This measurement can vary on different applications and is just a base measurement to aim for.

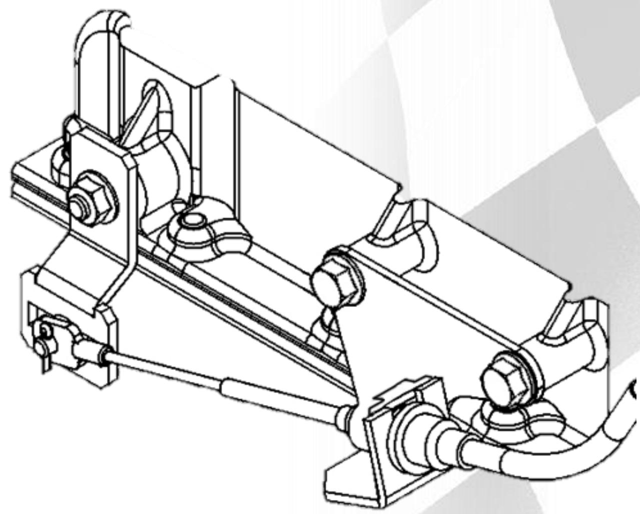
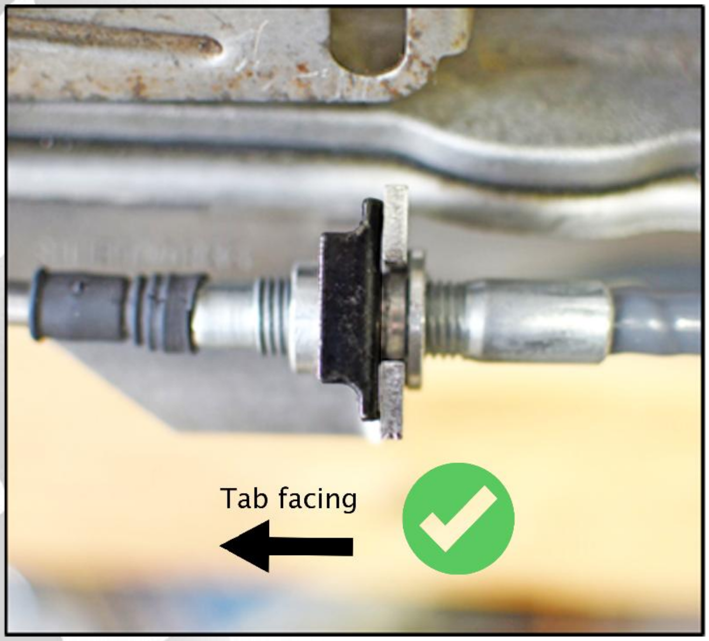


Figure 26

Cable Clip Installation:

One of the most common mistakes made installing a new cable is how the cable clips are installed. Installing these clips backwards can cause a loose fit and potential for the clip to come out. Be sure to install the clips the correct way as shown in the photos below [Fig 27].



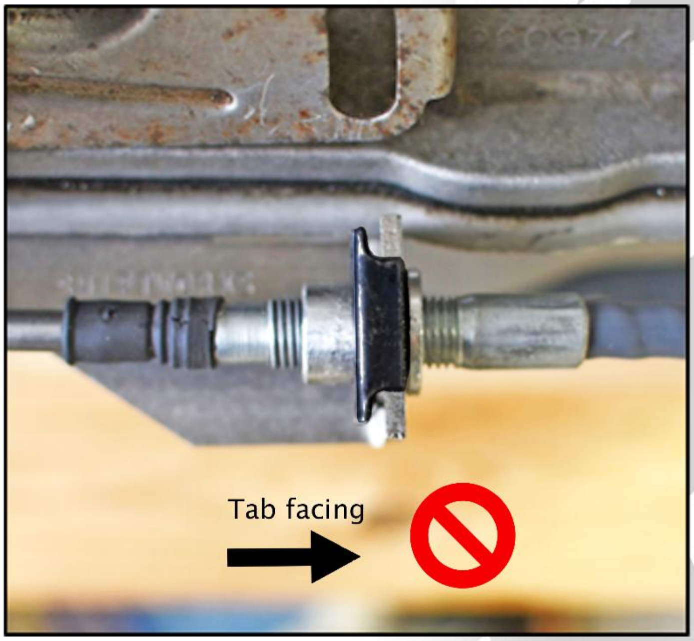


Figure 27

Correct

Incorrect

Large adjustments should be made first with the cable pin on the shift control lever. Then adjust the bulkheads on the cables for fine adjustments. With both the transmission and shifter in neutral, adjust the shift cable so the cable eyelet can freely be removed from the pin on the shift control lever in any gear. There should be no resistance when taking the cable off the pin. By doing this procedure you are ensuring your transmission is fully in gear.

Ensure your transmission cable bracket is positioned properly, and make sure the shifter cable bracket on the side of the shifter is tight and positioned in the center of its slot.

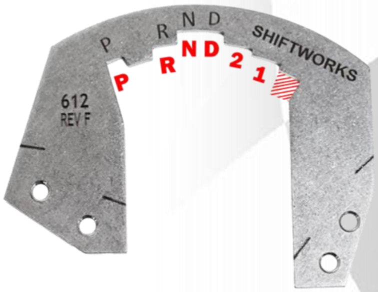
Use Shiftworks cable **#K100 Series** or **#K102 Series**. No other cables are recommended.

Regular-Shift Operation

* **Shifter will operate much like a factory shifter would.** Thus, for any application the user needs to **upshift with caution** to not shift through their intended gear and push the handle all the way into neutral.

3-Speed & 4-Speed Auto

- * **3-spd applications** use the same shift gate as a 4-spd, but the lowest gear position will not be used.



- **Downshifting,** PRESS and HOLD button down while performing the shift
- **Upshifting,** user will need to push the handle forward until the shifter and transmission engage the next gear.

- **IF** the user is for any reason concerned with potentially over-shifting due the factory style of the shift gate, they should consider using a slap-shift gate instead.

Slap-Shift Operation

Our slap shifters are made for drivers wanting to manually shift their automatic transmission with precision.

Benefits of using our slap-shift gates:

1. provide stops for each gear change,
2. allow for accurate upshifting AND downshifting,
3. can be used for regular OR reverse valve body transmissions.
4. The same gate is used for 3-spd and 4-spd applications, so no need to change your shifter if you switch from one setup to another.

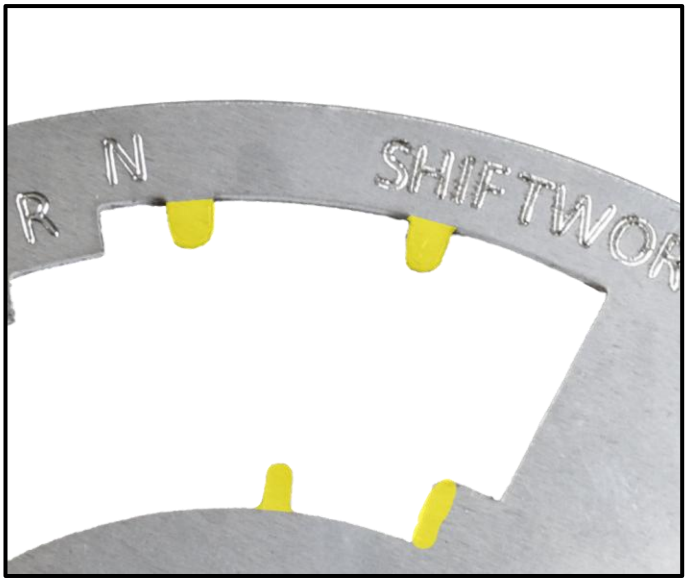


Figure 28

The slap shift functions are utilized through the use of these stops on the detent which are highlighted in yellow, allowing for a driver to shift to the next stop without the worry of over-shifting. How to shift depending on your setup is outlined next.

Slap-Shift Operation (Continued)

For REGULAR Pattern Transmissions

3-Speed Auto

- **1st to 2nd upshift** (or) **2nd to 1st downshift**
    - PRESS and HOLD button down while performing the shift

- **2nd to 3rd upshift** (or) **3rd to 2nd downshift**
    - DO NOT press button down while performing the shift

4-Speed Auto

- **1st to 2nd upshift (or) 2nd to 1st downshift**
    - DO NOT press button down while performing the shift

- **2nd to 3rd upshift (or) 3rd to 2nd downshift**
    - PRESS and HOLD button down while performing the shift

- **3rd to 4th upshift (or) 4th to 3rd downshift**
    - DO NOT press button down while performing the shift

Slap-Shift Operation (Continued)

For REVERSE* Pattern Transmissions

*** NOTE: Reverse pattern means 1^{st} gear is next to Neutral**

3-Speed Auto, Reverse Valve Body

- **1^{st} to 2^{nd} upshift** (or) **2^{nd} to 1^{st} downshift**
  - DO NOT press button down while performing the shift

- **2^{nd} to 3^{rd} upshift** (or) **3^{rd} to 2^{nd} downshift**
  - PRESS and HOLD button down while performing the shift

4-Speed Auto, Reverse Valve Body

- **1^{st} to 2^{nd} upshift (or) 2^{nd} to 1^{st} downshift**
  - DO NOT press button down while performing the shift

- **2^{nd} to 3^{rd} upshift (or) 3^{rd} to 2^{nd} downshift**
  - PRESS and HOLD button down while performing the shift

- **3^{rd} to 4^{th} upshift (or) 4^{th} to 3^{rd} downshift**
  - DO NOT press button down while performing the shift

<u>6 or 8 speed Detent & Gear Positions</u>

Please note: With the 6L80E and 8L90E transmissions, you **<u>cannot mechanically select individual forward gears</u>** with the shifter.

In order to manually select the 1^{st} through 6^{th} (or 8^{th}) gear positions, you would need to first put the shifter in the "M" or "Manual" Position, and then provide the TCM (Transmission Control Module) with an electrical based input, such as steering wheel mounted paddle shifters in order to shift up or down.

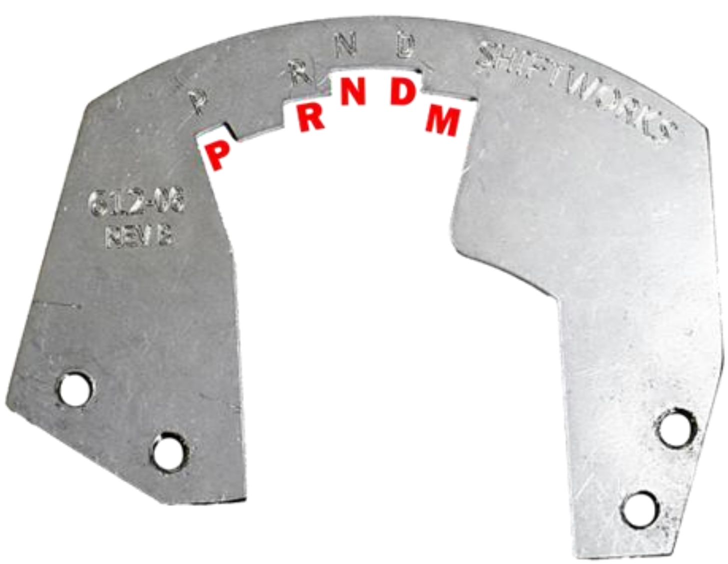


Figure 29

If you are having difficulty setting up your shift linkage or have any other questions regarding products, please reach out to us. We are here to help.

Phone: **585-924-2700**

Email: **support@shiftworks.com**

Social media:

Instagram: **@shiftworksshifters**

Facebook: **Shiftworks, inc.**

Thank you for choosing Shiftworks!

www.shiftworks.com