

Introduction

We hope that the installation of your new Novak shifter goes very smoothly and that you achieve the improved results with your Jeep® that you intend.

Note to the Installer

This document and the use of any Novak products assumes a safe and adequate working knowledge of the automotive systems involved. We do not know and there is no way for Novak to determine the skill level of the customer and/or the installer of Novak products, or for Novak to publish all of the information on fundamentals that an individual should know before attempting some procedures. It is upon the customer to ascertain whether they are working within their expertise or whether they should acquire assistance.

Novak products and procedures are intended and recommended for off-road use only.

Applications & Compatibility

This Novak cable shifter kit #SK2XSJ has been designed and tested for Jeep Wagoneers, 1980-1991, which have had the NP231 & NP242 transfer cases retrofitted to them. These transfer cases are commonly found in 1988-2006 model Jeep Wrangler, Cherokee and other models.

Benefits

This shifter kit will not only provide superior shifting to the factory shifter assembly, but can adjust for nearly any modifications and variations, such as suspension lifts, body lifts, tummy tucks, powertrain conversions, etc. “

About Transfer Case Shifters

A trend of “dumbing down” transfer case shifters has long been in effect. Original Jeep transfer case shifters of the WWII era Dana 18’s were double stick versions. These were very simple, reliable controls that took some initial thinking on the driver’s part to figure out. Dana 20’s and some later Dana 18’s received a single lever to simplify operation. However, some Dana 20’s began to receive problematic remote-style shifters that have aggravated many a Jeoper in their operation as well as reliability.

With the advent of the New Process chain driven transfer cases, a single shifter with a “Z-gate” design was introduced, ostensibly as a safety to keep the operator or any unrestrained occupants in the Jeep from inadvertently shifting the transfer case during operation. One major fault these systems have is the complex maze of linkage rods, joints and brackets that zig and zag their way, eventually arriving to the transfer case shift plate. Of note is the wel-



JEOP POWERTRAIN SUPERIORITY

The NP231J (or NP231AMC)



The NP242J



comed simplicity of the elegant design offered by New Process, in that the rotating action of the shift plate on the transfer case proper, works in a clean, smooth manner - when independent of the OEM linkages between the driver and the transfer case itself.

Our goal at Novak was to permit the installation of a better transfer case in the FSJ Wagoneers and provide a clean and flexible cable shifter.

Suggested Tools

Please note that you will need:

- Conventional open and box end wrenches
- Socket, hex (Allen) wrenches
- Conventional socket set
- Drill and clearance bit for 1/4" bolts
- Paint (to seal drilled holes in body tub)

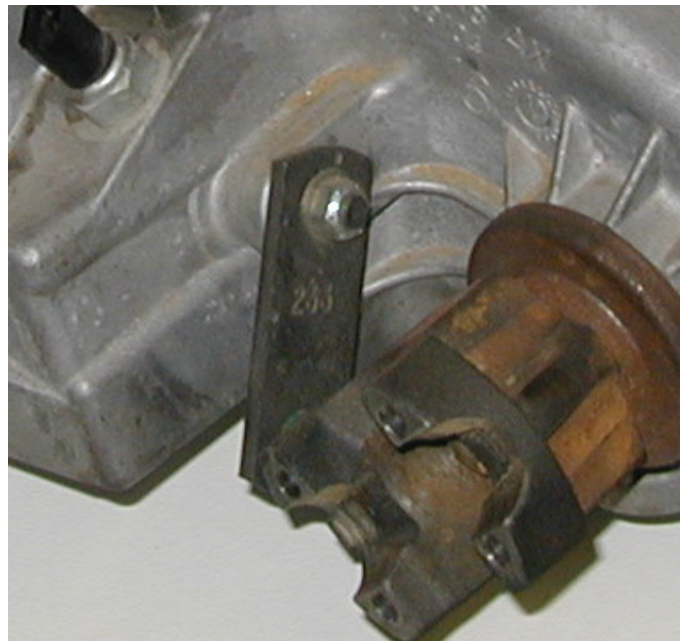
Factory Shifter Assembly Replacement

Crossmember Removal

We recommend that you remove the Jeep crossmember for ease of installation as it will provide more working room. However this is not always necessary. If removing the crossmember, be sure to support the transmission assembly with a floor jack and jack stand, and all according to standard automotive service safety procedures.

Shifter Linkage Removal

Remove the old transfer case shifter linkage, leaving the lever and bellcrank in the floor.



Novak Shifter Installation

1. Place the original Wagoneer FSJ floor shifter into the High range position (shifter handle downward) as shown in the image. Carpet is shown removed, which is necessary for later steps.
2. Uninstall the original 231 / 242 transfer case bellcrank and replace it with the provided Novak bellcrank and its ball stud assembly, facing the upwards. See image.
3. Either by hand or with the help of an adjustable wrench or pry bar, snap the transfer case shifter into 2 High. It often helps to turn the driveshaft yokes. This is with the bellcrank in the up
4. Install and tighten the provided ball stud assembly into the original Wagoneer shifter bellcrank, as shown.
5. Install the transfer case anchor bracket, using the holes at about 1 o'clock and 3 o'clock, if viewing rearward on the Jeep. See image. Tighten these nuts to 38 ft. lbs.





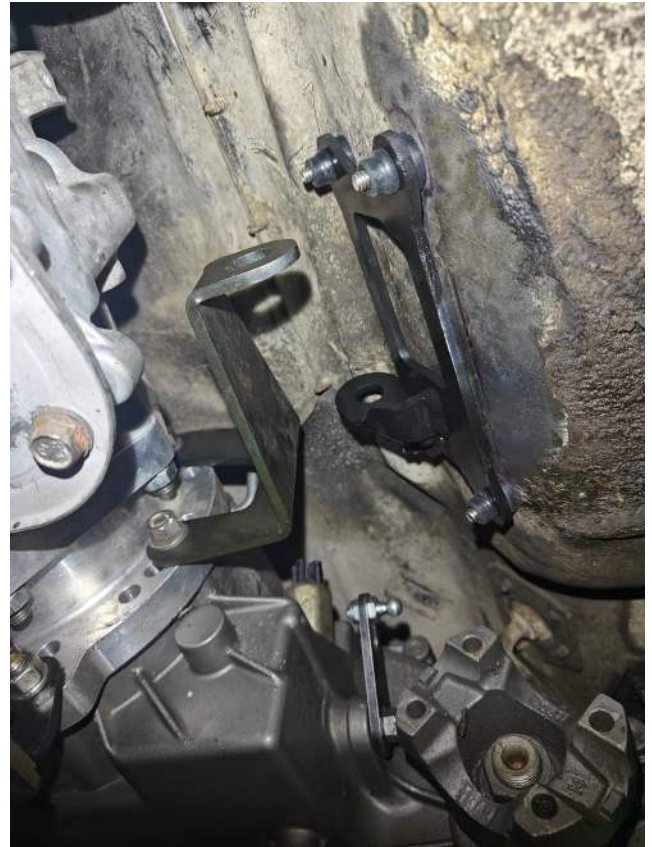
Install the provided ball stud into the factory shifter bellcrank (image, top).

Transfer case bellcrank, ball stud and brackets installed (image, right).

Fully installed with shifter in 2wd High (image, bottom).

6. Remove one of the two large nuts and one washer and install the actuator cable through the large transfer case anchor bracket hole. Install the washer and nut, positioning it to the middle of the available threads on the cable housing so you have adjustment room .

7. Though the body bracket is not yet affixed to the tunnel, remove one of the two large nuts and one washer and install the actuator cable through the large body bracket hole. Install the washer and nut, positioning it to the middle of the available threads on the cable housing just as you did in step 6 above.



8. Install the ball end joints on the cable ends of the transfer case side shifter and the body shifter bellcrank. Thread these to roughly the middle of their thread travel so you have adjustment room to either somewhat extend or retract these for later adjustment, if needed.

9. Snap the ball end joints onto their respective bellcranks, as shown.

10. Using the fore / aft position indicated by the cable, mock up the body bracket against the tunnel and mark a vertical reference line on the body tub on an edge of the bracket.

11. To establish the height location of the bracket in the tub, mock it up until the actuator cable end is misaligned just slightly downward with the shifter in 2 High. Through the motion of the cable and shift handle bellcrank, it will naturally misalign slightly high at mid-travel and again slightly low when in 4 Low.

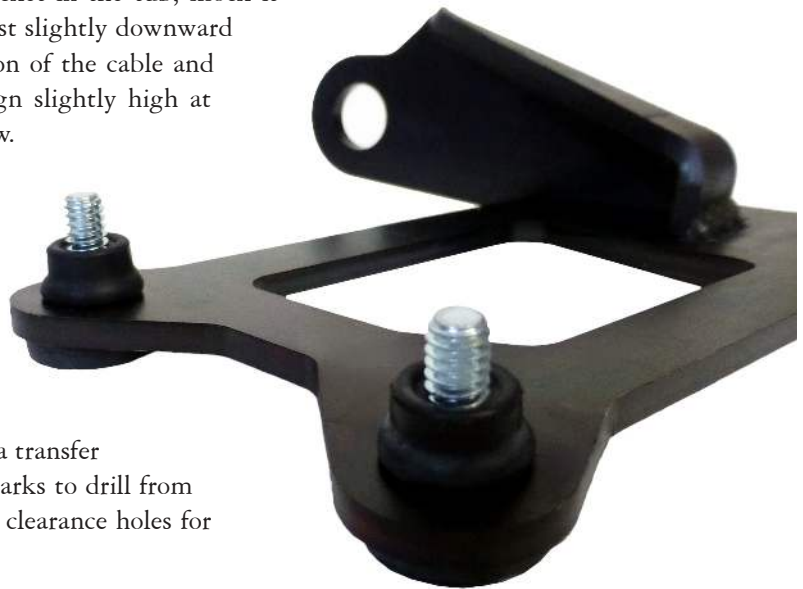
12. Mark a line on the body tub against the bracket edge for height.

13. Now use the body bracket to mark the four body tub holes to drill. If drilling from under the body, you may need to use an angle drill since the transfer case may block the use of a regular drill motor. Or you can use a transfer or snap punch under the body and use those marks to drill from inside the cab. Use a 0.265" to 0.281" drill for clearance holes for the 1/4" bolts provided.

14. Test install the body bracket to check your drilled holes. Insert the four provided rubber rivnuts into the bracket with the pads facing towards the body, and the brass inserts within the rivnuts facing the transmission. Test the action of the shifter and make any adjustments as needed to the threaded cable housing or shifter ends to make sure the transfer case shifts cleanly through its ranges & modes.

15. If it all fits, seal the drilled holes in your body sheet metal with primer and paint, do a final install and tighten of all the fasteners. Use the provided, stainless steel button head bolts, into the threaded rubber rivnuts. This is best done with the help of an assistant in the Jeep, but if you are installing this solo, you can use a strong tape to hold the bracket against the tub while you go topside to tighten the bolts into the rivnuts. Note that you may need to temporarily tape the rivnuts to the bracket to prevent them from turning during initial tightening, until they flare enough to start holding their own.

Fully assembled shifter system, in 4wd Low range (this image of a prototype shows welds instead of production units fasteners).



Torque these four fasteners to 1.2 ft. lbs. This will expose about 5 to 6 threads of a 1" long fastener.

Testing and Adjustment

You can now test shift your transfer case. This is best done with the wheels off the ground and the Jeep securely supported by jack stands. Shift into each range and mode as you turn the driveshafts for shifting ease. Verify that the shift lever position corresponds with the detent positions in the transfer case.

Usually, little adjustment is required. You can lengthen the shift cable by turning the bearing end a few turns out, but don't leave too little thread engagement - six or more threads of engagement are recommended. You can also effectively lengthen the cable by turning the housing jam nuts away from the ends, and what you do to one end of the housing, you should mimic on the other.

To shorten the effective length of the cable, do the opposite of above.

Finishing

Reinstall any interior components you may have removed. Reinstall the skid plate, if you removed it and attach all factory components

as before.

Conclusion

We have had great results with this shifter. When executed with care, this conversion can be a strong, enjoyable and reliable upgrade to your Jeep.

We suggest that you keep these instructions for future reference. For questions concerning your conversion, contact us. We'll be pleased to answer your questions.

There is no final word to our instruction packages. If you have a question you feel this information should have covered and didn't, please let us know about it. You are also welcome to submit your suggestions, ideas and images that you think we should include here which may help future conversion installers. Note our contact information below.

Cable & Joints Maintenance

The cable is teflon lined, internally and prelubricated for many years. However, in five years or earlier (if water crossings or other contamination) situations occur, one should spray some TriFlow down the cable and work it in. The linkage joints should be lubed yearly with a spray lube such as TriFlow or silicone spray.



Novak Kit #SK2XSJ includes:

- 1 x Body mounting bracket
- 1 x Transfer case anchor bracket
- 1 x Control cable assembly
- 4 x Bolts, Allen, button head, 1/4"x1"
- 4 x Rivnut, rubber with brass insert
- 2 x Ball end assembly
- Instructions



American Made

©Novak, Inc.

www.novak-adapt.com

877.602.1500