

Introduction

We hope that your engine to transmission conversion goes very well, and that the installation of your Novak adapter works as smoothly as it is designed to. This kit is for adapting most AMC I6 & V8 (258, 4.0L, 304, 360 & 401) engines to most GM HydraMatic transmissions, including the TH350, TH400 & TH700R4.



Note to the Installer

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

JEEP POWERTRAIN SUPERIORITY

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 these advanced procedures. Vehicular conversion work can be among the most difficult of automotive mechanical and electrical tasks and it is upon the customer to ascertain whether they are working within their expertise or whether they should acquire competent assistance.

This guide is not intended to replace the service manual specific to your vehicle. It is not possible to document the wiring, routing and specific system details of every Jeep and the installer should obtain and use both their vehicle's manual and the engine or transmission donor vehicle's manual in conjunction with these instructions.

Your Local Legal Requirements

This guide is not meant to explain, interpret or notify the installer of local or national laws concerning vehicle changes, engine conversions and the emissions systems surrounding them. It is the installer's responsibility to know and understand their local legal requirements and regulations and to make their installation conform to demands of the jurisdictions in which they live.

Novak does not recommend nor condone the disabling or modification of the vehicle or any of its associated systems that could render it unsafe or out of conformance with any laws in which the vehicle may be licensed or operate. Neither Novak Conversions nor its directors, principles nor employees are responsible for any changes made to your vehicle.



We recommend you consult and know your own city, county, state or national laws. If your vehicle requires referee inspection, you may wish to establish a rapport with a referee and discuss your plans and seek advice and approval from them.

Conversion Procedure

Test Fitment

Mock up the adapter to the transmission face to verify fitment before assembling it to the engine block. You should check your HydraMatic dowel pin bores to make sure they are in good condition and without burrs. Also, test fit the provided torque converter spacer sleeve onto your torque converter.

Disassembly

Remove your existing manual transmission and bellhousing or automatic transmission. You will also remove the factory flywheel or flexplate. Removal of the crank pilot bushing is optional.

Your Torque Converter

The grand majority of GM torque converters have the standard size three-bolt pattern that is ~10-5/8" on diameter. However, some factory or aftermarket heavy-duty TH400 torque converters (as seen in RV and heavier truck applications) may use a larger bolt pattern diameter, which is not compatible with our particular flexplate that is included with this kit. You may wish to exchange this converter towards one with the standard diameter bolt pattern. The converter can be rated at any duty or stall you wish.

4.0L Starter Information (Renix era 4.0L only)

This conversion requires the use of a 1980's era, CJ 258 I6 starter in lieu of the Renix 4.0L starter when done in conjunction with a Hesco CPS kit. You can exchange your starter towards a new or remanufactured CJ starter at your local parts house.

Starter Motor Installation Options

There are three possible methods to installing the starter motor due to some of the variations in engines and the castings of the HydraMatic cases.

Starter Option 1

The first method is recommended when there is only limited bolt head clearance on the upper starter bolt through the adapter. This method is initially more difficult but will allow for easier starter change-outs, without the need to detach the transmission from the engine and move the geartrain rearward a few inches. This method involves drilling an access / clearance hole through the HydraMatic transmission starter pocket. This hole will correspond with the upper mounting hole on the AMC starter.

With this optional feature, you can now exchange your starter more easily in the future.



Begin by temporarily mounting the adapter plate to the transmission face, using two bolts. Next, choose a 3/8" center drill and chuck it into your hand drill. You may wish to lubricate the shank of the drill bit. Pilot it towards the rear through the upper 3/8" starter hole, perpendicular to the face of the adapter. Drill straight into the upper starter pocket area, just far enough to allow your next drill to start straight and on center.

Select a .406" (13/32") or .404" (Y size) or .397" (X size) drill bit. Pilot it through the same hole with the same orientation as the previous drill and drill entirely through the center-drilled hole.



Now, remove the adapter plate from the front of the transmission. To make the job easier, drill with increasingly larger drill bits between .406" up through a .500" drill. You have now created a hole that will offer clearance for the head of a 3/8-16 x 1-1/2" socket-head cap screw (Allen) as well as an access hole for an Allen wrench.



The Starter Motor

AMC starters can vary in their nose length, and it is possible that the wrong version be supplied by your parts source. Once installed, slide the starter's pinion gear into the flexplate's ring gear to make sure you get full tooth engagement. Partial tooth engagement indicates that you have a starter for the wrong model of Jeep or that your starter was mistaken for a Ford version of your Motocraft starter by the exchange re-builder.

We recommend a #3209 starter. Since AMC starters can have varying engagement, you may require a shim set to back the starter off. Use Dorman #02359.

Starter Option 2

This second method is initially simpler, but will make future starter removal and reinstallation more difficult. Simply omit the creation of this access hole, only ensuring that there is clearance for the 3/8" hex head bolt that secures the upper portion of the starter motor. Insert the 3/8-16 bolt into the adapter prior to finally installing the transmission against the adapter face. When installing your starter, thread the bolt into the upper starter threads and ease the start-

er against the plate while turning the bolt into the threads. Go as far as you can by hand and then use an open-ended wrench. It is recommend to use a light drop of LocTite Blue on these threads - or - you can use a longer 3/8-16 bolt and install a jam nut behind the starter's boss.



Starter Option 3

Thread a 3/8-16 stud into the starter's upper mounting hole, using a very light drop of a removable thread locking compound such as Permatex® Loctite Blue. Assemble the starter to the adapter plate, threading the nut on by hand as you slowly approach the front of the adapter plate with the starter. Finish by tightening the nut with an open-ended wrench.



Additional Starter Discussion

Installers need to know that there are a few odd cranks out there, and sometimes, the starter motor pinion just does not thrust into mesh with the ring gear.

In this instance, we've had customers install, for example, a IMI high-torque gear drive starter (www.hitorque.com). Early 390 engines can use these starters if the installer will call IMI and request a longer pinion gear from them, in which case it will then reach the differently spaced ring gears.

As an example, a customer used the above conversion kit on a 1969 AMX with a 1969 390 block and 1974, 401 crankshaft and utilized a IMI mini high torque starter. Customer just needs to contact IMI and have them send a longer gear to switch on the starter so as to get full engagement of teeth into flexplate ring gear.

Flexplate Assembly Installations

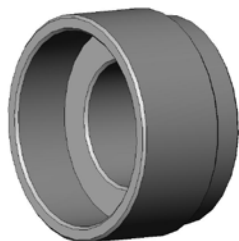
On some earlier AMC engines that had automatic transmissions, you may notice that there is a crank bore sizing sleeve in the rear bore of the crank. If your rearmost crank bore measures less than ~1-13/16" it will be necessary to remove this bushing prior to proceeding. Now, clean this rear most bore of the crank flange in preparation for installing the provided torque converter spacer sleeve. Then, install this sleeve squarely in the crank bore. You may wish to use a hammer and a block of wood or other style of drift, making sure it does not get cocked crooked in the process. When driven home, it will seat against the machined step in the bushing. Next, install the new flex-

plate provided in your adapter kit, followed by the provided reinforcement ring and crank flange bolts. Using a very light drop of removable thread locking compound on the threads, install these bolts and torque in crossing pattern and in three sequential steps up to 100 ft. lbs.

Adapter Plate Installation

Install the provided aluminum cover plate onto the block. You'll notice that it features an access port and cover plate with sheet metal screws. This will allow you to tighten your torque converter to the flexplate using a socket wrench.

Verify that the engine block rear mounting face is clean and free of debris or any build-up that would prevent the adapter



and transmission assembly from seating flat against the engine. You will leave installed the factory dowel pins that are located at the 9 & 3 o'clock positions. Make sure they are free of scale.

You may use a light abrasive to make sure they are clean and smooth. Note the orientation of the starter pocket of the adapter. Align the adapter with these pins and gently tap it into place.

Make sure it slides on with only moderate effort and keep it parallel to the block face. Once squarely installed, thread the 3/8-16 countersink bolts into every hole available on the engine

block (AMC I6's and V8's differ here). We recommend the use of LockTite Blue and in sparing amounts to the threads of these bolts. These bolts should be torqued to 38 ft. lbs. Be certain that your

Allen hex key has full engagement into these bolts as you are achieving full torque on them.

You will see that we have pre-installed the 3/8-16 studs protruding rearward, in addition to the 5/8" Chevrolet transmission alignment dowel pins.

Thru-dowels Alignment & Attachment

On I6 engines only, focus on the transmission flange bolt holes at the 3 & 9 o'clock positions. These holes cross over with the precision locating roll pin locations on I6 & V8 engines. The bolt will go through these pins, transmission, adapter and block, sandwiching the entire assembly together. As you will see, the holes are clearance drilled from the factory at 3/8" diameter. These transmission holes should be drilled open to ~7/16" which should allow the use of the two 5/16" (grade 8) bolts, washers & nuts. This is suggested rather than drilling holes to make adequate offset 3/8" clearance. In combination with the other block bolts, these 5/16" bolts will provide plenty of tensional pinch and strength at these locations.

Torque Converter and Transmission Installation

Install and seat your torque converter into your transmission. It should seat into both positions in the pump.

Lift and align the transmission onto the adapter studs and tentatively spin on the four washers and nuts to secure the transmission safely onto the engine, and pull it snug against the face of the adapter. Torque these nuts to 38 ft. lbs

Torque Converter to Flexplate Spacing

Rotationally align the flexplate bolt holes to the torque converter bosses.

Since the adapter spaces the transmission back slightly, we will be spacing the torque converter back from the flexplate as well. We have provided three steel stand-offs and some zinc plated washers to install between the flexplate and the corresponding torque converter drive bosses. Note here that torque converters can vary slightly in thickness



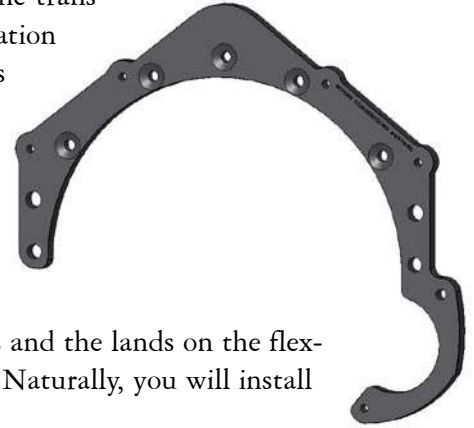
Torque convertor reinforcement ring

4.0L Installations With Novak Kit #437AMC-5

If you're installing our #437AMC-5 kit, skip to the bottom of these instructions for information on installation of the provided CPS sensor, then return to this section for completion.

washers to be used as spacing shims to provide the maximum seated depth possible for the torque converter, *without creating any forward pressure on the flexplate*. As the installer, you must fully seat the converter, and then use these shims to create a small air gap between the converter bosses and the lands on the flexplate. Some assemblies will use none of the shims and some may use a few. Naturally, you will install an equal number of these shims on each stand-off.

and in how deep they install into the transmission. To a small degree, this variation is not a problem as the drive splines can accept some variability in engagement depth. However, we have provided these uniform



- There should be 1/8" to 1/4" of air gap. Too little or no gap will gall and ruin the pump and then the transmission. Too much gap will disengage the torque converter drive dogs from the pump.
- The installer should not have to pry the flexplate or torque converter into place. If this seems to be required, contact us immediately.

Insert the three 3/8" or M10 x 1.5 (as appropriate to your torque converter) graded bolts through the flexplate, stand-off and any necessary shims and thread them into the HydraMatic torque converter bosses or into the provided locknuts. You will need to rotate the flexplate and converter as you cycle through these. Torque these bolts to 38 ft. lbs.

Exhaust Clearance, V8's Only

Because of the rear-dump manifolds and aftermarket headers (i.e., Edelbrock) on V8 engines, it is likely necessary that the installer clearance the transmission flange at the interfering point. The transmission case is aluminum, so don't use a grinding wheel (as they can load up and explode). A deburring tool or a ~3/8" end mill chucked in your air motor or drill will make quick and clean work of this.

Transmission Shifters & Linkages

The transmission shift control unit can be cable operated with detent positions for all functions and should include a lockout so reverse cannot be accidentally engaged when moving. Several console type shifters of this type are made by

About Lock-up Torque Converters

Lock-up converters in automatic transmissions give the advantage of direct engine lockup through the otherwise fluid-coupled transmission. This function works either by the ECM or a vacuum switch. Earlier versions without ECM use a vacuum switch connected to ported vacuum. The transmission receives the signal and applies fluid pressure to the clutches in the lock-up converter. The system switches off due to a signal from the brake pedal. If you run the transmission with the converter unlocked all the time it will run a little hotter. Keeping it cool is important. The advantage of this lock-up converter is increased fuel economy and decreased heat at cruising speeds. If you would like to simplify the stock setups, torque converter controls are available through racing supply retailers in a variety of styles. These facilitate the proper installation of the TH350 and 700R4.

The on-road advantages are obvious. For the off-road, the ability to manually switch the torque converter on is excellent in that it allows for compression braking.

B&M and are widely available. Models Z Gate, Star, and Sportshifter are good choices. Hurst Performance makes a similar line of shifters for automatic transmissions. Direct linkage stick shifters like the Gennie (1.626.337.2536 or www.hotrodhotline.com/gennie) or Lokar (1.865.966.2269 or www.lokar.com) are excellent choices, especially where a manual transmission is being replaced and the transmission tunnel is configured for the manual. The look and feel of the latter style shifters are often preferable.

When replacing an automatic transmission, you will find that the factory linkage can be retained and adapted without difficulty. Your factory shifter may have one more position than is available for use with the TH350.

Your Torque Converter

The grand majority of GM torque converters have the standard size three-bolt pattern that is 10.7" on diameter. However, some factory or aftermarket heavy-duty TH400 torque converters (as seen in RV and heavier truck applications) may use a larger bolt pattern diameter, which is not compatible with our particular flexplate that is included with this kit. You may wish to exchange this converter towards one with the standard diameter bolt pattern. The converter can be rated at any duty or stall you wish.

Transmission Cooling

For every ten degrees cooler you can keep the transmission, you can add 25,000 miles to its service life. Therefore, use of a transmission oil cooler is advisable for any automatic transmission. We do not advise mounting a cooler in front of the Jeep radiator, however, as the grille opening area is reduced by an amount relative to cooler size. A front mounted cooler can also cause air flow turbulence with resultant loss of engine cooling. A transmission cooler can be mounted in the engine compartment and still provide satisfactory cooling. The passenger side firewall or backside of the front fender (in the engine compartment) are suitable locations for transmission coolers. If so located, the cooler should be mounted as to allow airflow through it. In other words, don't mount it flat on the firewall or fender well. Some choose successfully to use a supplemental frame rail style cooler as well.

The simplest cooling solution, in terms of the transmission and the likely engine conversion you are performing with it is the Novak RadLock radiator. They are available for all post-'71 CJ, YJ and TJ Jeeps with an integrated transmission cooler. Don't hesitate to contact us if you'd like further details.

Use of a transmission temperature gauge is also a good idea. These are widely available and generally inexpensive.

4.0L Installation Information

Individuals not doing 4.0L installs may skip to Conclusion at this point.

Crank Position Sensor

There are two options for individuals installing a HydraMatic to the 4.0L engine. One is to use a Crank Position Sensor relocation kit, like one made by Hesco, which integrates this crucial sensor onto the crank dampener, shown adjacent. They are typically around \$350. Removal of the radiator, front dampner, etc are required to install these kits. This is the only option available if you have a Renix style 4.0L, 1987-1990.

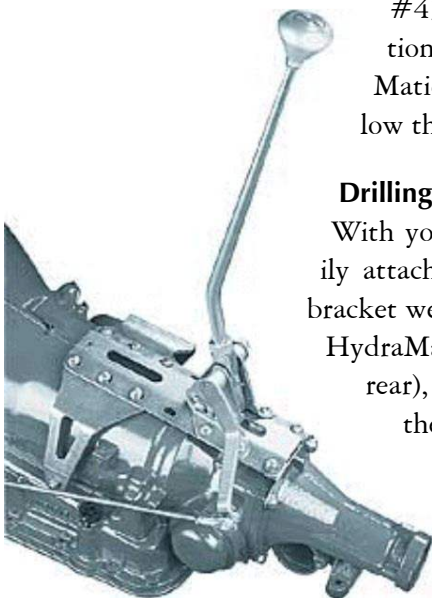
For the 4.0L engines, 1991-2006, we think a much better option is our #437AMC-5 kit, which includes a crank position sensor that is installed through the HydraMatic case. If you've purchased this version, follow the following procedure.

Drilling The Bellhousing

With your transmission not yet installed, temporarily attach the combined drill bushing / CPS mount bracket we've provided behind the engine flange of the

HydraMatic transmission on the Chevy holes at about 10 and 11 o'clock (looking from the rear), using a couple of 3/8" bolts and nuts. Tighten these to the case using a washer on the front, engine mating flange to spread the pressure. Make sure your transmission input is covered or sealed with the torque converter installed, so that no chips could enter the transmission.

You will then use a 1/2" drill through the drill bushing. The hardened drill bushing will shoulder and guide the bit for an accurate hole in your automatic bellhousing.



The aluminum of these cases is not especially hard and drilling a clean hole without piloting is easily done. Let the drill bushing guide you, but don't put excessive pressure on it in any one direction. This drilled hole will provide through clearance for the barrel of the new CPS sensor. Remove the drill bushing bracket and clean all chips away from your work.

You may wish to test install the CPS (as below) and if you deem necessary, drill the 1/2" hole open larger to 5/8" for easier angled installation.

CPS Installation

Turn the flexplate to an area where there is no gap under the hole you've just drilled into your transmission case. Assemble the transmission to the adapter plate and engine as described in the rest of these instructions. Install the CPS mount bracket onto the two studs coming from the adapter plate and onto the backside of the transmission flange, in the corresponding holes as earlier.

You'll note that we've placed an o-ring in the unthreaded belt of this sensor to center it in the bushing. Install the threaded CPS sensor into the drill bushing. Run one of the provided 12mm nuts up the bottom of the barrel so it shoulders against the base of the drill bushing. Run a second nut over the wire leads and down the top of the barrel.

Air gap between the sensor and flexplate reluctor ring target should be .025" to .035". Allow the bottom of the sensor to touch the ring, then thread the top nut down to stand the sensor back this amount. One turn of the nut on the barrel equals .040" of an inch, so 2/3" of a turn of the nut downward would be about right. Alternatively, you can use a feeler gauge between the bottom of the nut and the top flange of the mount bushing. Now, turn your flexplate and make certain the runout of the reluctor ring does not allow for interference between the reluctor and the sensor. Adjust the gap if necessary, then tighten the upper nut with an open end wrench.

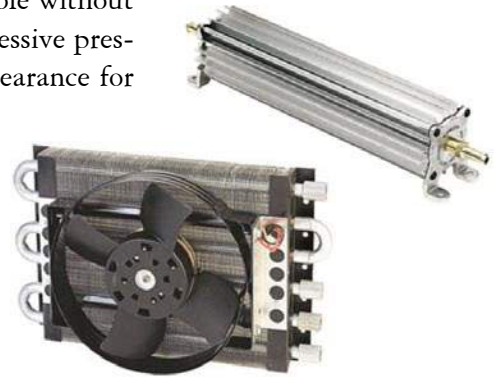
CPS Wiring

Because Jeep used a handful of different connectors for the Crank Position Sensor, we've provided a sensor that has leads instead. Use a solder iron to connect your new sensor into

Important note about the GM transmission flange thickness:

Nearly all GM automatic transmission flanges are 3/4" thick. We have heard of one instance where a customer's flange was 5/8" thick. We recommend you measure the flange thickness at the ears where the CPS bracket installs. If your transmission has this rare 5/8" flange, we recommend you stack one or two 3/8" flat washers underneath the CPS bracket to position it more closely over the crank reluctor target, prior to drilling.

the wires coming from your computer. The above wiring legend will help you match up each wire according to its function. Alternatively, you can solder your sensor into the old sensor's plug if you wish to have a disconnect. Use proper wiring practices. Do not rely on butt connectors, but only solder joints. Use heat shrink



4.0L to HydraMatic Conversions

- Your 4.0L computer may need to be coded or exchanged for one programmed for manual transmission operation, though our customers report that the Jeep computer receives no feedback from the Jeep automatic other than a resistance reading when operating the Jeep lockup torque converter.

- Use of this kit with stroker and/or supercharger versions of the 4.0 is entirely acceptable.

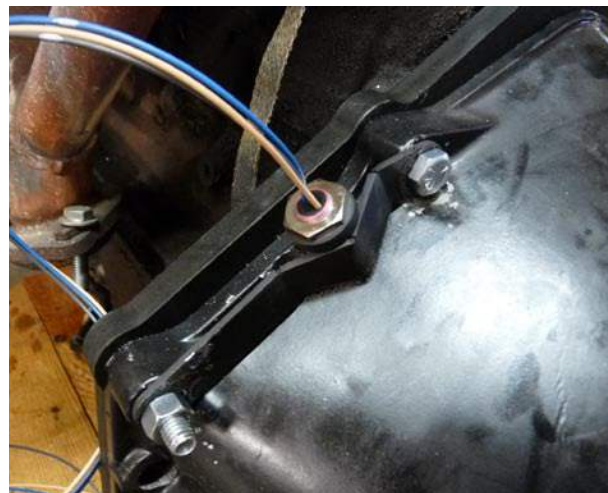


tubing on each individual wire as well as the bundle of three. It is wise to protect it afterwards with a wiring loom.

700R4 Wiring Information in Wrangler Jeeps

If you are replacing a Jeep automatic transmission in your fuel-injected (PCM-controlled) Wrangler, note that it is possible to use the PCM to control the TCC (Torque Converter Clutch) on the 700R4.

As a comparison with the factory automatic set-up, the Jeep supplies the auto transmission with 12V in Run. When at the appropriate speed (via the VSS), the Jeep PCM triggers the ground going to the transmission. This ground activates the TCC.



When installing the 700R4, it can work the same way by connecting the factory Jeep 12V and Ground wiring wire directly to the 700R4. By doing this, the proper resistance in the Ground circuit is detected by the Jeep PCM so it is not alerted to any fault.

When the brake pedal is pressed, a signal is sent to the PCM, which in turn de-activates the ground circuit going to the 700R4 TCC, releasing the lock-up.

Kick-Down / TV Cable Installation

There are multiple ways that an individual can install a kick-down / throttle valve cable to an AMC engine. We will show one example of one on a 258 engine. For all initial kick-down set up procedures listed, the transmission should be in Park.

The kick-down cable is just what its title implies - it kicks the transmission down into the next lowest gear when throttle is applied and the cable is pulled.

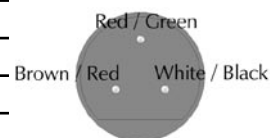
The 700R4 has a very picky kickdown and adjustments must be made just right not just for proper operation but also to prevent transmission damage.

The TH350 features a simpler and more forgiving kick-down that is more binary than variable, and the user can adjust it to preference.

This example shows a Lokar brand kick-down cable. We used the supplied tabbed washer in the kit. This tabbed washer is secured using a vertical exhaust manifold bolt. We placed a compound bend in it to point the cable end towards the throttle pivot. In this scenario, the throttle pivot linear travel distance was measured and

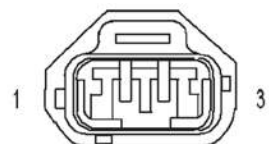
Typical YJ CPS Pinouts

Terminal	Color	Function
	Red/Green	CPS Signal
	Brown/Red	Sensor Ground
	White/Black	8V Supply



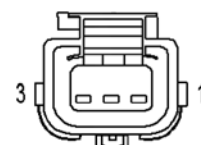
Earlier TJ / XJ CPS Pinouts

Terminal	Color	Function
1	Gray/Black	CPS Signal
2	Black/Light Blue	Sensor Ground
3	Orange	5V Supply



Later TJ CPS Pinouts

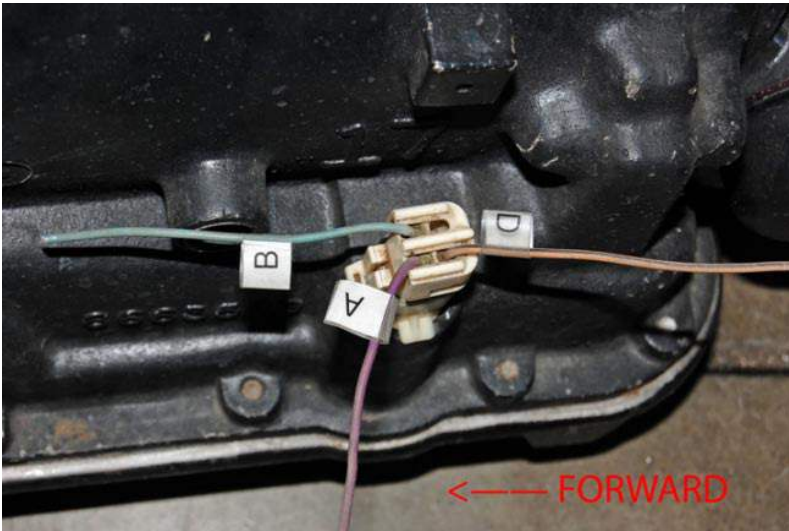
Terminal	Color	Function
1	Orange	5V Supply
2	Black/Light Blue	Sensor Ground
3	Gray/Black	CPS Signal



Match to Cherry® Sensor

Brown	5V Supply
Black	CPS Signal
Blue	Ground

There are other plug types, but the wire color codes are typically the same.



Torque converter electrical connections as on the TH350C and TH700R4 must be properly made to ensure longevity and operation if the transmission is so equipped.

Terminal "A" gets connected to a switched (vehicle "run" hot) 12 volt lead. This can be interrupted by the brake pedal if desired (off when the brake is pressed) but this isn't required. The transmission will lockup when in 4th gear.

If you want to manually control the converter clutch, then a switched lead to ground on terminal "D" will cause an immediate lockup whenever "A" has 12V. We advise you use a momentary switch here instead of a persistent one for safety, as a locked up torque converter in an emergency situation will increase braking distance.

sure.

- Control of shift points.
- Control of both part-throttle and full-throttle downshifts.

The overarching goal is to calibrate the cable to match engine torque to the line pressure of the transmission, and this is an extremely important calibration and can only be done by the installer and as such it is the installer's responsibility to do so correctly, in accordance with these steps.

TV Cable Setup Procedure, preliminary

1. Make sure your transmission fluid level is correct (see Fluids, above).
2. Make sure the engine and brakes are in good operation and tune.
3. Obtain the correct length of cable. If you are working with a factory GM application, obtain the factory cable. If you are working with a Jeep or other conversion application, a universal TV cable may be indicated.
4. Make sure the carburetor / throttle-body end of your TV cable is not connected and make sure the TV cable housing seal is in place at its base. Carefully pull the TV link out of the TV port on the transmission valve body, using needle nose pliers. *Use only the cleanest of procedures and do not allow any contaminants to drop into this port.* Connect the link to the TV cable. Bolt the cable housing flange to the transmission with its corresponding 10mm bolt.
5. Choose and install the appropriate throttle pivot and cable mounting brackets for your application (see box, adjacent).
6. Push the TV adjusting tab and move the cable housing 1-1/2" towards the carburetor pivot plate. Then have an

found to be at the location shown, where we drilled for our pull-point.

Kick-Down / TV Cable: TH700R4 / 4L60 and TH350 Models

Improper adjustment of the TV (or kickdown) cable. TV adjustment is absolutely critical to the life and proper operation of the TH350, TH700R4 and 4L60 transmissions and can lead to a long and healthy life or a quick failure.

This section applies only to the 1969-1984 TH350 and the 1982-1992 700R4 / 4L60 transmissions. 4L60E and other models do not have a TV cable feature as they are fully controlled electronically.

The most common cause of 700R4 transmission failures and performance problems is the incorrect setup of the Throttle Valve cable. It is commonly referred to as the kick-down cable, but it has more functions than this, including:

- The regulation of transmission line pressure. This is the pressure that the transmission uses to clamp bands and clutches.
- Shift feel, as a consequence of the above line pres-

assistant depress the throttle pedal to its maximum. While they hold the pedal, bend the throttle cable bracket away from the carburetor until the carburetor arm (and corresponding throttle shaft centerline) bottom against their stop.

7. With your assistant still holding the pedal at the floor, depress the adjustment tab and slide the TV housing firmly away from the carb until it stops. Then release the adjustment tab and let it lock.

8. Measure your results. Your TV cable end should be 1.110" (up to 1.125" or down to 1.095") from the throttle shaft centerline. As a result, the TV cable end must travel 1.378" to 1.416" between Closed Throttle and Wide Open Throttle positions. The line of cable travel must be perpendicular to the cable mounting bracket face.

9. Adjust the TV cable with the engine off. Press the adjustment tab (see diagram) and push the slider. Then, release the tab and rotate the throttle lever to Wide Open Throttle. The cable will self-adjust during which you will hear a few clicks, after which you will release the throttle lever.

Drive Test

1988 and later gas models have a part throttle 3rd - 1st gear & 2nd - 1st gear kickdown. This means that the TV could be adjusted wrong and still have a low-speed kickdown. This could result in a max throttle 2nd - 3rd & 3rd to 2nd being too low, and the pressure rise could be off in relationship to the throttle opening. Here's how you can get it right on.

Having performed the above steps (and not until the above steps are done) adjust the TV to the maximum as discussed above in #6, above. Drive your vehicle and place your shifter into the 3rd gear position, at 47 MPH, floor the pedal and make a 3rd - 2nd kickdown.

Pull over and reduce the the TV one click.

Repeat the above procedure until it does not kick down from 3rd - 2nd at 47 MPH. Now, repeat the driving procedure and mark and increase the TV by one click per sortie until you once again have a 3rd - 2nd kickdown. Pull over and make a mark on the housing; this is your MIN mark.

Now, test drive again and adjust for the best feel between the MAX and MIN marks.



SOME HINTS: The mark you made is MAX TV. Moving the mark AWAY from the adjustment assembly reduces TV. Diesel and gas V8's work best from max to two clicks away (about 3/32"). V6's work better with about 4 clicks away from max (5/32").

Pressure Gauge Method

This is the very best way to test your work and set up a 700R4. It does require attaching a line pressure gauge to the port on the 700R4, but it can be well worth it.

A stock transmission will produce about 65 PSI at idle. A Novak-built trans will have about 70-75 PSI at idle. When you even touch the throttle the gauge must respond and rise immediately or your geometry is incorrect. At maximum throttle (and therefore maximum TV) it will read between 150 – 180 PSI. If you achieve this condition, you have set your TV system up correctly.

Conclusion

While reading through these instructions, and especially while performing the transmission swap, it is often recognized that it is not the swap itself that provides the greatest difficulty, but in the ancillary things like linkages, mounts, clearances, and the like. Any good installation should consider all the points in this article and also allow for time, energy and funds for the dozens of variations in drive train conversions that cannot be anticipated. When executed with care, this conversion can be a strong, enjoyable and reliable upgrade to your Jeep.

We strongly suggest that you keep these instructions for future reference. For questions concerning your conversion, contact the 4wd retailer or technician you bought the kit from. If you bought your conversion kit directly from us, contact us and we'll be pleased to answer your questions.

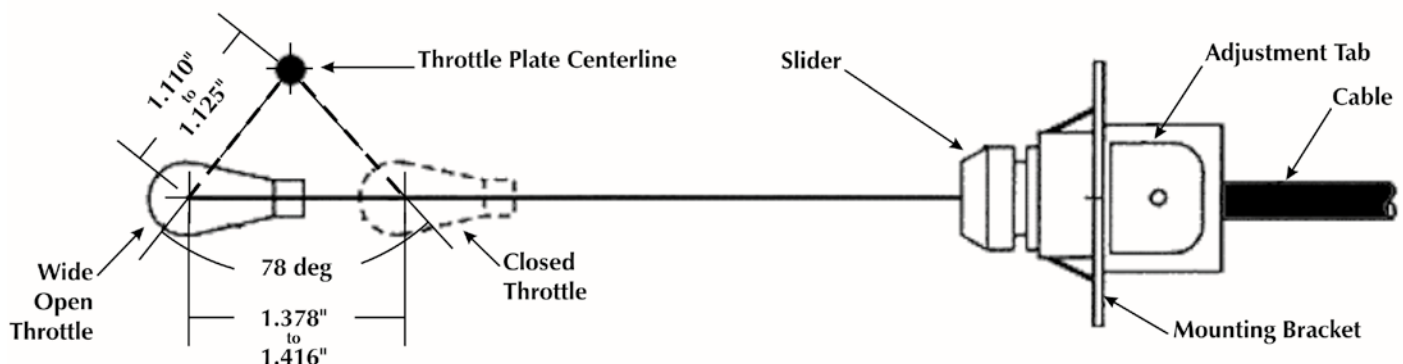
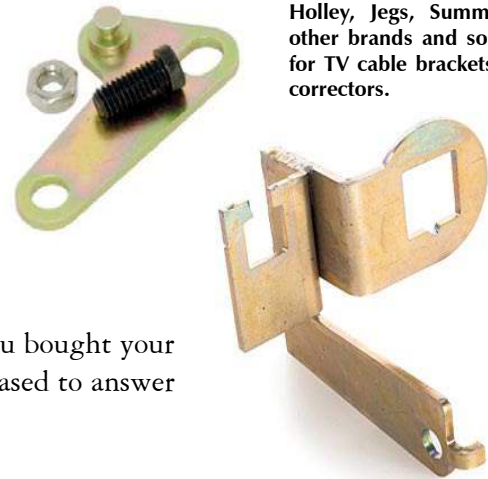


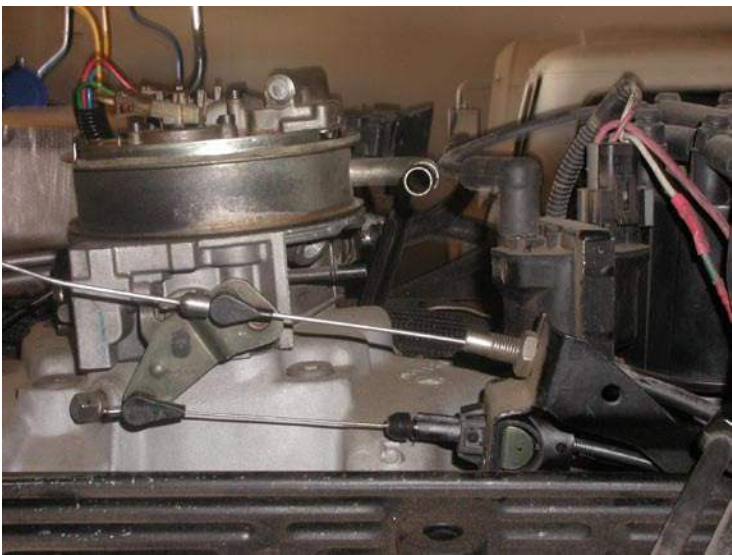
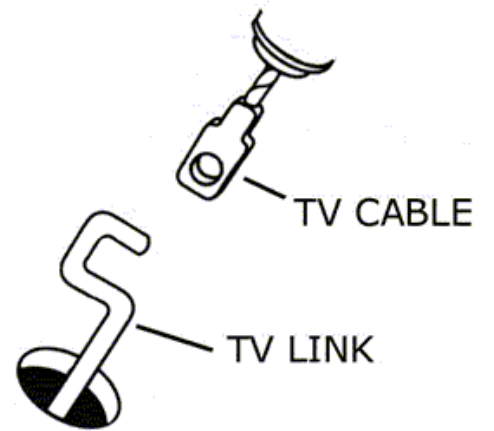
There is no final word to our instruction packages. We update them often and invite our customers to offer any suggestions, images or questions they may have that can make the process easier for any to follow. Note our contact information below. We will be happy to answer your questions.

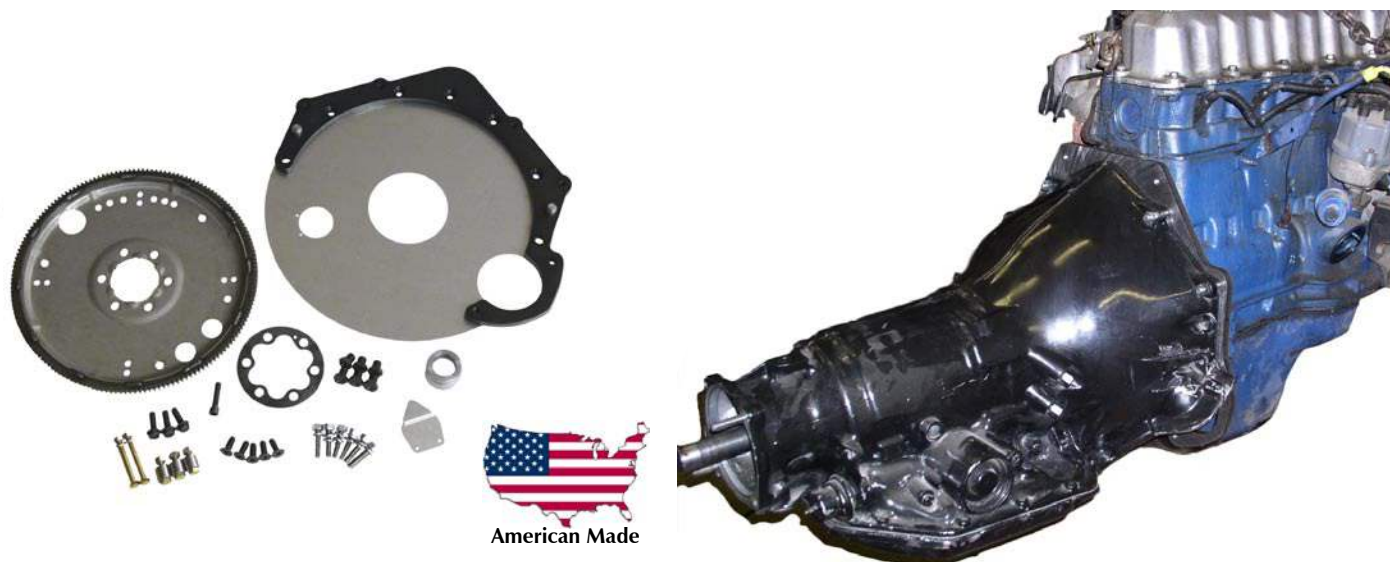
Throttle Brackets

Because there are several different carburetor, TBI and even SFI applications, we cannot possibly list all the TV cable brackets available for your particular throttle system. If you are working with a factory GM TBI application, GM or your salvage source may have the proper bracket. If you are working with a carburetor, you may look at

TCI, Jet, B&M, Hughes, Holley, Jegs, Summit or other brands and sources for TV cable brackets and correctors.







Part No.	Description	Qty.
F-P437	Adapter, plate, 437, adapting AMC engine blocks to Chevrolet automatic transmissions	1
various	Flexplate, 258, 304, 360, 401 or 4.0L engine	1
F-S437	Plate, shield, engine to transmission, for 437AMC kits	1
F-C437	Cover, access port, for 437AMC kits	1
SC-10-38	Screw, sheet metal, 10 x 3/8"	2
3214094	Ring, flexplate to crank reinforcement, 6-bolt style, all AMC cranks	1
200-2905	Bolt, flexplate to crank, AMC automatics	6
SPC-1128x410	Spacer, 4.0L flexplate to GM torque converter	3
BT-SHS-38-16x1.000	Bolt, 3/8-16 x 1, hex socket, standard head	3
91458A114	Threadlocker, Loctite 243 blue, .5 ml capsule, oil resistant, 10 min. cure	1
BT-SHS-38-16x1.500	Bolt, 3/8-16 x 1-1/2, hex socket, standard head	1
SD-38-16x1.750-Z	Stud, 3/8-16 x 1-3/4, fully threaded, zinc plated steel	3
NT-HEX-38-16x0.328-G5Z	Nut, 3/8-16, hex, grade 5, zinc plated	3
WA-SL-38	Washer, lock, split, 3/8, zinc plated	4
WA-F-38x0.750x0.090-Z	Washer, flat, 3/8 x 3/4 x .090 thick, zinc plated	4
BT-HEX-516-24-2.750-G8	Bolt, 5/16-24 x 2-3/4, hex head, grade 8	2
NT-HEX-516-24x0.266-G5Z	Nut, 5/16-24, hex, grade 5, zinc plated	2
WA-F-516x0.625x0.045-Z	Washer, flat, 5/16 x 5/8 x .045 thick, zinc plated	4
92415A452	Pin, alignment, 437AMC plate to HydraMatic transmissions, 5/8" OD x 1/4" ID x 1" long, zinc plated steel	2
* F-T437	Bracket, crank position sensor, 4.0L to GM transmissions	1
* S-340CPS	Sensor, crank position, 4.0L engine, threaded barrel style, .460 x 2.560. Includes locking jam nuts	1
* DB-437CPS	Bushing, drill, hardened, DB-437CPS 437AMC-5 kit	1
* 5233T18	O-ring, 1mm x 10mm x 12mm, silicone, for 437AMC-5 kit	1

* 437AMC-5 (CPS) version kit only

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