

TERAFLEX

INSTALLATION GUIDE

Installation Guide for the TeraFlex Hemi Conversion Kit



Note: This installation should be done by an experienced mechanic and fabricator and one who has experience in engine conversions.

This installation will take AT LEAST 4 weeks.

This installation guide is for reference and may not include each and every step required for your installation.

This kit is designed to aid you in the installation of a 345hp 5.7L Hemi into your TJ Wrangler.

This kit may include:

Shift Linkage Plate	Part #SLK-03
Hemi Belly-Up Plate	Part #BUT-03-Hemi
Gas Pedal Mounting Bracket	Part #880
Aluminum Radiator	Part #2015-A
Hemi Jeep HD Motor Mounts	Part #885
Transfer Case Mounts	Part #883
Hemi Wiring Harness:	
Jeep w/manual transmission,	Part # 570300
Jeep w/automatic transmission,	Part # 570400
universal w/manual transmission,	Part # 570100
universal w/automatic transmission,	Part # 570200

Please familiarize yourself with this installation by reading all of the instructions and reviewing the included pictures before you begin.



Fuse/Relay Box &
Hemi Engine Wiring Harness

1. Remove the factory wiring harness and the fuse/relay box.

Note: You will need to send your factory harness, including the fuse/relay box, to TeraFlex to be modified. This process will take about two to three weeks plus shipping to complete.

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2. Measure from the center of the yoke of your transfer case to the center yoke of your axle. Write that measurement down, it is the measurement of your current drive shaft. Assuming you don't change the lift or transfer case of your vehicle, this measurement will be used later to determine if you need to order a custom driveshaft.
3. Remove the original engine from your TJ. Then remove your transmission and transfer case. When removing the factory skid plate, remove the four bolts that connect the transmission to the skid plate. Loosen the six frame rail bolts, then remove the six bolts and the factory skid plate. Save these bolts; they will be used to install the BUT-03-Hemi.
4. If you have a 231 transfer case, TeraFlex provides new mounting brackets (Part #883). Install these by simply bolting them onto the factory transfer case mounts.
5. It is recommended to wash the engine bay while the engine is out to ensure a clean installation.
6. The Hemi engine will require new motor mounts, different than those needed for your original engine. After removing the original engine, cut the stock motor mounts off the frame and clean up the frame.



Hemi Jeep HD Motor Mounts

Note: The Hemi motor mounts are laser cut from 1/4" thick steel and machined from DOM tubing. The mounts are designed to properly locate the engine with the correct height and angle to fit in the TJ engine bay (a body lift is required to make room for the Hemi under the hood of the Jeep, available separately from TeraFlex). The mounts

use a high quality rubber bushing to isolate engine vibration. They are installed by welding the frame tabs on the Jeep frame.

7. After the factory mounts are removed, it is best to bolt the engine side of the motor mounts to the engine. Then you bolt the side



plates to the bushing assembly. The plates should be marked with the proper orientation, ie. pass front, pass rear, etc. Bolt the transmission to the engine and swing it into position in the engine bay. It is best to use an engine hoist to put the engine in position. The back of the engine head should be 1/2" away from the firewall of the Jeep. You can also double check by measuring from the face of the motor mount to the face of the cross-member tube. The Passenger side should measure 29" and the Driver will measure 28.5". Make sure the engine is square and tack the motor mounts in place. (Part #885).

8. Double check everything and remove the engine. Then, using a spacer, do the final welding. (The spacer will protect against the extreme heat while welding so that nothing will warp). Weld the frame tabs (4 total) to the Jeep frame. Two gussets are provided for each motor mount. Weld the triangular piece to the front as shown in the following photo. Weld the rectangular piece in between the motor mount tabs. Remove the spacers.

Note: This welding needs to be done by a professional who is an experienced fabricator/welder.



9. You can now swing the engine and transmission into it's final resting place using an engine hoist. Match the engine side of the motor mounts to the motor mounts welded onto the frame and bolt into place.



10. Install the transfer case by bolting it onto the transmission. Secure it using the mounting brackets provided by TeraFlex. **Note:** Modifications necessary to install an Atlas II Transfer Case.

11. At this point, measure again from from the center of the yoke of your transfer case to the center yoke of your axle. If it is different than your original measurement, make sure you still have enough length both when the driveshaft is extended and compressed. You may need to order a custom drive shaft.

Note: If you use the wrong length driveshaft, damage can occur to the transfer case.

12. You will need to install a shift linkage plate (Part #SLK-03) onto your transmission so that your

shift linkage will still line up. It bolts onto the transmission as shown in the picture below.



13. Attach your new Belly Up skid plate, (Part #BUT-03-Hemi), to the frame by aligning the transmission bolts with the holes in the skid plate and then bolting the skid plate to the frame using the original six factory bolts.



14. Bolt the transmission mount to the skid plate using the factory nuts and the mounting holes in the center of the plate.

15. Install the aluminum V-8 conversion radiator. (Part #2015-A).



16. The Hemi is drive by wire compared to the cable actuated throttle of the TJ. Using the drive by wire gas pedal from an '05 Grand Cherokee (available separately from Chrysler, PN 52109683AB) with TeraFlex's Gas Pedal Mounting Bracket (Part #880, the electronic gas pedal can be mounted in the TJ in place of the factory gas pedal.



New Grand Cherokee Gas Pedal and Mounting Bracket (Part #880)

Note: The Hemi Engine Wiring Harness includes a plug for the drive by wire pedal so the position of the pedal can be sent to the Hemi PCM. The PCM then controls the throttle module on the Hemi to control the speed of the engine. TeraFlex only uses factory parts wired with the factory redundant system for safety. Drive by wire does feel a little different as the PCM revs the engine down more gently than the standard cable system.

17. The exhaust system of your vehicle will need to be custom built. It is recommended that you take it to a shop that specializes in customized exhaust systems. The 2004 and newer Hemi engines use four oxygen sensors. There is one for the passenger bank and one for the driver bank on the exhaust down pipes. Two more oxygen sensors are located for each bank after the catalytic converters. **Note:** Catalytic converters and four oxygen sensors are required for proper operation of the engine management system.

18. Next you need to finish the wiring of the vehicle. Using your modified wiring harness from TeraFlex, you should be able to simply plug your TJ harness right into the Hemi harness, so that the vehicle sensors and actuators are wired correctly to the PCM.

Note: A new PCM that is purchased through Tera Manufacturing or your local Mopar Dealer will need to be "Flashed" with the correct program before it will run the vehicle. It is recommended that Teraflex "Flash" your new PCM while out of the vehicle at our facility. When we flash a new computer we are able to put your Jeeps VIN number into the computer so the PCM will match the vehicle.

After the PCM is flashed and installed in the vehicle, there are two items that need to be done at your local dealer. The Transmission and the Electronic Throttle control need to be "Learned" by the PCM and your local Dealer will be able to perform this service by using the Chrysler DRB scan tool.



PRODUCT INFORMATION

MAINTENANCE INFORMATION:

It is the buyer's responsibility to have all suspension, drivetrain, steering, and other components checked for proper tightness and torque after the first 100 miles and every 3000 miles after that.

NOTICE TO INSTALLER:

The enclosed "Warning to Driver" sticker must be installed in the vehicle in driver's view. This sticker is to act as a constant safety reminder when operating the vehicle. It is your responsibility as the equipment installer to install the provided sticker and to forward the product instructions to the vehicle's owner for review. If a "Warning to Driver" sticker or product installation guide were not included in the kit, FREE replacement stickers and instructions are available by request. It is the installer's duty to ensure a safe and controllable vehicle after the modifications have been performed.

WARNING:

Neither the seller nor the manufacturer will be liable for any loss, damage, or injury directly or indirectly arising from the use of or inability to determine the use of these products. Before using, the user shall determine the suitability of the products for its intended use, and the user shall assume all responsibility and risk in connection therewith.

WARNING TO DRIVER:

This vehicle has been modified to enhance off road performance and has unique handling characteristics. Use in harsh environments can cause extreme stress on the components. Vehicle should be inspected after being off road to make sure that all the components are in working order and safe to travel on the highway. All fasteners should be checked so that they are at the correct torque specifications as the vibration and stresses from off roading may cause critical fasteners to work loose. Extra care should be taken to inspect the critical components, steering, and brake systems. During each oil change components such as arms, tie rod ends, etc should be greased and checked for excessive wear. Any worn components should be replaced. When returning to the pavement always set or restore tire air pressure to the factory recommendation and connect or engage any disabled sway bar mechanisms. Because of the higher center of gravity and larger tires, this vehicle handles and reacts differently than many passenger cars, both on and off road. You must drive it safely! Extreme care should be taken to prevent vehicle rollover or loss of control, which can result in serious injury or death. Avoid sudden sharp turns or abrupt maneuvers. Generally, braking performance and capabilities are decreased when significantly larger/heavier tires are used, especially when used in combination with transfer case low-range reduction kits. Take this into consideration while driving. Do not add, alter or fabricate any factory or aftermarket parts to increase vehicle height over the intended height of the TeraFlex product purchased. Mixing component brand is not recommended. TeraFlex Inc. will not be responsible for any altered product or any improper installation or use of our products. We will be happy to answer any questions concerning the design, function, and correct use of our products. It is ultimately the buyer's responsibility to have all bolts/nuts checked for tightness after the first 100 miles and then every 3000 miles. Wheel alignment, steering system, suspension and drive line systems must be inspected by a qualified professional mechanic at least every 3000 miles.

TERAFLEX PRODUCT WARRANTY:

Tera Manufacturing warrants TeraFlex Suspension products to the original retail purchaser to be free of defects in material and workmanship for as long as the original purchaser owns the vehicle on which products were originally installed.

Failure to complete regular maintenance (grease every 3000 miles) on TeraFlex FlexArms will void this warranty. All other conditions of the standard TeraFlex product warranty apply.

All TeraLow products are covered by TeraFlex's two (2) year warranty to be free of defects in material and workmanship for two years from date purchased.

Tera axles are covered by a 12-month warranty to be free of defects in materials and workmanship.

This warranty does not cover or include product finish, improperly installed or applied products, improperly maintained products, products or components used for racing or competition or damage due to abuse or neglect, products that fail due to the use of larger tire and wheel combinations.

All returns must be accompanied by an original invoice. It is the customer's responsibility to remove the product from the vehicle. Shipping charges are the responsibility of the customer. Tera Manufacturing will pay the return freight if the product meets the terms of warranty.

This warranty is for the replacement or repair of defective TeraFlex products only and does not include freight charges, labor charges for removal of or installation of TeraFlex or related products or components, costs incurred due to down time of the vehicle, or lost profits due to vehicle down time.

A returned goods authorization number (RGA#) must accompany any returned products. For more information please contact a TeraFlex customer service representative.

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