P/N 12614HKR
1970-81 GM F-Body LS Swap Automatic Transmission Crossmember
(GM 4L60, 4L65, 4L70 and 4L75 transmissions only)

Installation Instructions 199R10649

Thank you for choosing to use this Hooker™ transmission crossmember as part of your engine/transmission swap project. This crossmember is part of the most comprehensively engineered system of mounting components, headers and exhaust systems available for this application. The entire Hooker™ swap system is designed to decrease your total swap installation effort and cost while increasing the engineered quality of your vehicle and compatibility of these components with other popular aftermarket components.

IMPORTANT DESIGN AND INSTALLATION INFORMATION:

This crossmember is designed as part of a fully-engineered LS swap mounting system for 2nd-gen F-body vehicles. It has been CAD designed and FEA validated to provide excellent structural strength and torsional rigidity from its high-strength low-alloy steel construction. As a further benefit to the user, a maximized ground clearance pathway for routing 2.5" or 3" exhaust system tubing is included as a main design feature.

Installation of this crossmember requires the use of a stock GM 4L60/4L65 automatic transmission isolator mount from a 2003 Chevy/GMC truck or 2002 Camaro vehicle, or an aftermarket Prothane™ 7-1604 polyurethane mount or one of equivalent installed height.

Due to its unique design geometry, this crossmember must be installed in conjunction with Hooker™ 1970-74 or 1975-81 F-body LS swap engine mounting brackets to provide proper driveline operation angles and allow installation of an LS engine and 4L60/4L65/4L70/4L75 automatic transmission into this application without requiring any cutting or hammering of the vehicle body.

The related Hooker™ engine mounting brackets share the same chassis-centered geometry of this crossmember to provide an optimized 3° to 3.5° engine/transmission inclination angle that is critical to providing the minimized U-joint working angles that are desired for lowered performance and competition vehicles.

The installed geometry of this crossmember and the compatible Hooker™ engine mounting brackets align the engine crankshaft and transmission output shaft axis with the center line of the chassis, like most pro-built cars and aftermarket subframes for 2nd-gen F-bodies (like DSE for example).

With these components installed, your driveline will be purposely configured with compound U-joint angles, due to the centered engine/transmission and the stock pinion offset of your rear differential (like the previously mentioned pro-built cars and aftermarket subframes for 2nd-gen F-bodies).). If you wish to check your U-joint working angles you merely need to sum together the calculated horizontal angular offset of your driveline (half a degree as designed by Hooker™) and the typical measured vertical angles of your driveline components. Detailed information on how to measure and calculate single plane and compound U-joint working angles is available from Spicer.

A suitable lifting jack or stand will be required to install this crossmember with the appropriate transmissions for which it is intended.

COMPATIBILITY:

This crossmember was specifically designed for compatibility with Hooker engine swap mounts, cast iron LS exhaust manifolds, headers and exhaust systems and Holley® LS oil pan and accessory drive components for this application.

Oil pans that are directly installable with this crossmember include the Holley® **302-1** and **302-2** LS retrofit pan, the stock F-body, and various aftermarket fabricated steel pans.

The F-body, GTO and Corvette accessory drives are all installable with these mounts with the following exclusions:

- GTO alternators will need to be swapped to an F-body unit to clear the steering box pitman arm.
- Corvette power steering pump pulley will likely need to be swapped for a smaller diameter pulley/pump to clear the upper control arm.
- Stock low-mount A/C compressors are not installable with these mounts; compressor must be upper-mounted to right cylinder head with the use of a Holley **20-133** (GM R4), **20-134** (Sanden SD508 or SD7), or similar bracket assembly.

If desired, a Holley® **20-135** upper-mounted Corvette style alternator/power steering bracket can be installed (swap to smaller diameter power steering pump pulley recommended for upper A-arm clearance) and is compatible with all F-body/GTO, Corvette and truck balancer/water pump offsets with the use of the following Holley bracket spacer kits: Corvette - **21-1**, F-body/GTO - **21-2,** and Chevy/GMC truck/2010-up Camaro - **21-3**.

Two additional complete accessory drive bracket kits are available that include both the A/C and alternator/power steering brackets listed above. These kits are part numbers **20-131** (GM R4 compressor) and **20-132** (Sanden SD508 or SD7 compressor).

Hooker™ LS swap manifolds **(8501HKR),** mid-length headers **(2471HKR & 2472HKR),** and long-tube headers **(2295HKR & 2296HKR, 2297HKR and 2298HKR)** are compatible with most stock A/C evaporator cases on the firewall, when installed with this Hooker™ LS engine swap transmission crossmember.

Due to the unique chassis-centered geometry of its design, this crossmember is not compatible with any type or brand of universal LS engine swap plates, including those produced by Hooker. This crossmember is only compatible with **12512HKR** and **12613HKR** Hooker engine mounting bracket kits.

Use of this crossmember with half-height body bushings is only possible if relief pockets are fabricated into the floor to clear the arched humps of the crossmember and may require further floor clearance operations to clear the transmission bellhousing/case.

INSTALLATION:

Pre-installation notice: In all vehicles, this crossmember is to be installed with its mounting flanges resting in the scalloped pockets formed into the top of the subframe rails. On some earlier vehicles and depending on what transmission you are installing, the factory mounting holes present in the formed pockets will align with the holes in this crossmember and can be used for attachment purposes using two bolts/nuts per side (**Figure 1**). Later vehicles were produced with no holes in this location, which requires installation using the supplied angle brackets under the crossmember to attach the crossmember to the inside walls of the subframe through four drilled holes (**Figure 2**). If you are removing your subframe for any reason, you can also use that opportunity to drill new attachment holes in the top of the subframe and nut access holes in the bottom of the subframe to be able to attach the crossember as shown in figure 1.

Figure 1
Top surface attachment method to top of subframe

Figure 2
Angle bracket attachment method on inside walls of subframe

This crossmember is designed to provide an exhaust routing path with maximized ground clearance. Be aware that 1970-74 models have floor pans which are lower to the top of the subframe than those of 1975-81 models and require more careful maneuvering of the crossmember into position to reduce the possibility of marring of the underside finish of the floor. Worn or collapsed body bushings will further diminish the available installation space and may require increased force or leverage to be applied to the crossmember to persuade it into proper position. It is highly recommended that new body bushings be installed prior to performing your engine/trans swap.

This crossmember provides geometry that allows the use of two OE rubber isolators (2003 GM truck or 98-2002 Camaro 4L60 isolators) for reduced drivetrain vibration characteristics, or a Prothane™ 7-1604 polyurethane isolator for more positive drive train control. The center slot in the crossmember is sized to accept the smaller stud of the OE rubber truck isolator "as-is" and must be reamed slightly larger to accept the stud size of the Camaro isolator. The slightly more forward outer slots in the crossmember are for attaching the Prothane™ isolator, which requires installation of the supplied two-hole plate spacer between the isolator and the crossmember to compensate for the difference in height between the OE rubber isolators and the Prothane™ polyurethane isolator.

WARNING! Leaving this spacer out, when using the Prothane™ isolator, will increase the engine inclination angle beyond that intended by Hooker™ and decrease the ground clearance of Hooker™ headers designed for this application.

1. Check that the hardware package includes the following**:**

   (2) Angle Brackets
   (4) 3/8-16 x 1" Flanged Head Bolts
   (4) 3/8" Flanged Nuts
   (4) 7/16-14 x 1" Flanged Head Bolts
   (4) 7/16" Flanged Nuts.

2. Raise the tail shaft of the transmission to its highest possible point of lift.

3. Insert either end of the crossmember between the vehicle subframe and floor sheet metal

4. Shift the crossmember over far enough to allow the free hanging end to be pushed up above the height of the subframe then shift the crossmember over to center it on both mounting surfaces of the subframe. Depending on the state of condition of your body bushings, you may need to use a rubber mallet to assist in this effort.

5. If your vehicle is an earlier model with pre-punched factory holes present in the subframe at the location of the crossmember pocket, use the holes present to attach the crossmember with the supplied nuts and bolts and skip to **step 6** now. If there are no such holes in your vehicle subframe, or the ones present do not line up with the holes in the crossmember, complete steps A,B and C below before moving on to step 6.

   A. Connect the crossmember to the transmission using the isolator you intend to use in operation and lower the weight of the transmission onto the crossmember to the point where the crossmember mounting flanges are resting squarely against the mounting surfaces of the subframe
   B. Attach the two supplied angle brackets to the underside of the crossmember and seat each against the side of the frame rail; tighten the brackets against the crossmember and mark the center of all four holes located adjacent to the subframe for the purpose of drilling. Move the brackets and crossmember out of the way, pilot drill, and drill all four holes to 7/16" diameter.

   C. Move the crossmember and angle brackets back to their previous position and attach the brackets to the subframe with the supplied bolts and nuts.

      Tip: While working through the open ends of the subframe rails, use a long box end wrench or paint stick with double-sided tape to capture the nuts against the inside of the subframe wall and slide them back into position at the drilled holes.

6. Securely attach the isolator to the transmission with appropriately sized bolts.

7. Attach the isolator to the crossmember with the hardware supplied with the isolator and tighten all fasteners.

LIMITATION OF LIABILITY – DISCLAIMER:

The regulation of emissions production, noise levels, and safety standards is undertaken by the federal government, each of the fifty state legislatures, and by many local municipalities, towns, and counties.

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Unless expressly stated to the contrary in the catalog, instruction sheet; or price list, the entire risk as to the conformity of any company product in any such state and as to repair should the product prove to be defective or non-conforming, is on the retail purchaser, the buyer, the ultimate consumer, of such product and it is not upon the seller, distributor, or manufacturer.
In this connection, the retail purchaser, the buyer, the ultimate consumer assumes the burden of the entire cost of any and all necessary service, alterations, or repair.