



P/N 12625HKR
1967-69 GM F-Body/1968-74 GM X-body LS Swap
4L60/4L65/4L70/4L75 Automatic [Transmission Crossmember](#)

Installation Instructions



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 GM 1st-gen F-body/ 3rd-gen X-body vehicles. It has been CAD designed and FEA validated to provide excellent structural strength and stiffness 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.

The design geometry of this crossmember provides for direct installation of a GM 4L60, 4L65, 4L70 or 4L75 automatic transmission into this LS swap application. This crossmember can also be used to benefit from the same high ground clearance provision of the Hooker™ exhaust systems for this application when using a Powerglide, TH350 or 700R4 transmission and is done so through the use of an available Hooker™ weld-in adapter bracket, P/N 12628HKR.

Installation of GM 4L60/4L65/4L70 or 4L75 automatic transmission with this crossmember requires use of a stock 4L65 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.

Using this crossmember to install any transmission requiring the use of the optional Hooker™ weld-in adapter bracket mentioned above requires the use of a Prothane 7-1604 polyurethane mount or the OE rubber mount which it is designed to be substituted for (mount common to all late 50's through 1970's GM cars).

Due to its unique design geometry, this crossmember must be installed in conjunction with Hooker™ 1967-69 GM F-body/1968-74 GM X-body LS swap engine mounting brackets (12618HKR) to provide proper driveline operation angles and to allow installation of an LS engine and one of the above listed GM automatic transmissions into this application without requiring any cutting or hammering to the vehicle body.

The related Hooker™ engine mounting brackets work in conjunction with 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 design geometry of this crossmember and of the compatible Hooker™ engine mounting brackets are configured to align the engine crankshaft and transmission output shaft axis with the center line of the chassis, which is slightly modified from the just-off-center stock alignment geometry used by GM.

A suitable lift or jack and jack stands 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, 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® **302-2** LS retrofit pan, a notched stock 4th-gen F-body, and various aftermarket fabricated steel pans.

Compatible direct-fit Hooker™ headers and exhaust systems have been designed for use with this crossmember and related Hooker™ engine mount bracket kit, P/N **12618HKR**. Both mid-length and long-tube headers are available as are 100% stainless steel constructed exhaust systems, which feature OE quality hardware and stamped crossover assemblies. A list of header options can be found at www.holley.com; the Hooker™ exhaust systems can be ordered as P/N **42804HKR** (2.5") or **42805HKR** (3").

Suitability of this crossmember for any application not described in this document is undetermined, due to the unique geometry of its design.

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 NOTES:

This crossmember is designed to provide an exhaust routing path with maximized ground clearance. 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. 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 and exhaust systems designed for this application.

These instructions were formatted with the assumption that you have already installed your LS swap engine and attached transmission into your vehicle using the specific Hooker™ LS swap engine bracket kit for this application per the instructions included in its packaging.

1. Check that the hardware package includes the following:

- (1) Left Side Anchor Bracket
- (1) 3/8-16 x 3/4" Flanged Head Bolt
- (6) 3/8-16 x 1" Flanged Head Bolts
- (6) 3/8-16 Flanged Nuts
- (1) Spacer Plate

2. Raise the tail shaft of the transmission to its highest possible point of lift using a transmission jack, floor jack or screw type pole jack.
3. Feed the fixed right attachment foot of the welded crossmember assembly onto the top of the right side rail of the vehicle subframe.
4. Push the left side of the crossmember up until you can insert the included left side anchor bracket under it and be able to rest its frame mating surface on the top of the left side rail of the vehicle subframe; you will need to insert the right rear corner of the transmission case and pan into the window designed into the right side of the crossmember while doing this. Install the included short flanged head bolt through the center hole in the bracket and into the corresponding threaded hole in the crossmember; do not fully tighten the bolt at this point.

5. Install two sets of included flanged head bolts and nuts into the two remaining holes in the anchor bracket and crossmember and tighten all three bolts and/or nuts at this connection point.
6. Attach the transmission isolator of your choice to the mounting pad on your transmission.
7. Attach the crossmember to the subframe with the remaining included flanged head bolts and nuts; do not fully tighten the fasteners at this time.
8. Lower the transmission onto the crossmember and attach the transmission isolator to the crossmember using the fastener(s) included with the isolator.

NOTE: It was discovered during development of this LS swap component that there can be sizable width variations in the rear rails of production 1st-gen F-body/3rd-gen X-body subframes due to OE subframe production tolerances and/or collision damage and wear occurring over many years of vehicle use. To account for this variation, compensated slots have been designed into the right side of this Hooker crossmember that require a simple one-time measuring/sizing operation to be carried out during its initial installation to precisely fit this crossmember to your vehicle. **This operation is incorporated into the final two installation steps of this crossmember as follows:**

1. Measure the distance from the inside edge of each subframe rail to the out edge(s) of each fastener(s) used to attach the crossmember to the isolator. If the distance is equal, tighten the crossmember-to-frame fasteners. If the transmission (i.e. isolator bolts) are not centered between the frame rails, remove the crossmember and use a rotary file in an air grinder or a rat-tail hand file to remove enough material from the bottom of the slotted mounting holes in the right side of the crossmember to allow the crossmember to be shifted in the direction needed to center the isolator studs in between the frame rails. If a sizeable amount of shifting is required to the passenger side, you may need to obtain/use bolts without flanged heads at the right side attachment points to permit enough shifting to that side. Ample left side shifting, if needed, is possible using the included fasteners.
2. Reinstall the crossmember, center the isolator mounting studs between the frame rails, and then tighten all the mounting hardware.