



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.

More LS swap/engine performance components, such as EFI fuel control systems, fuel filters, fuel pumps, plumbing hose/fittings and valve covers can be found at www.holley.com.

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

If any are missing, please contact Technical Service at 1-866-464-6553 or 270-781-9741.

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.

Any questions? Please contact Technical Service: 1-866-464-6553 or 270-781-9741. For online help, please refer to: www.holley.com.

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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.

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199R10686

Date: 12-9-13



1967-69 GM F-BODY/1968-72 GM X-BODY LT SWAP ENGINE BRACKETS
P/N 71221012HKR
Installation Instructions



Thank you for choosing to use Hooker Blackheart engine swap brackets as part of your LT engine swap project. These mounting brackets are part of the most comprehensively engineered system of mounting components, headers and exhaust systems available for this application. The entire Hooker Blackheart 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.

PRE-INSTALLATION CONSIDERATIONS:

Check that the hardware package includes the following:

Qty.	Description
4	M10 x 1.5 lock Nuts
8	M10 x 1.5 x 30 Bolts
4	M10 x 1.5 x 25 Flat Head Cap Screws

Qty.	Description
4	3/8"-16 x 1.25" Bolts
4	3/8"-16 x 1/2" Bolts
4	3/8-16 Lock Nuts

Required Hardware (not incl.)	
Qty.	Description
2	7/16" -14 x 5-1/4" Bolts
2	7/16-14 Lock Nuts

If these are missing, please contact Technical Service at 1-866-464-6553 or 270-781-9741.

These brackets are designed to be used in conjunction with stock GM 1972-up SB Chevy clamshell style engine mounts that will be retrofitted into the swap vehicle through the use of the specially designed spacer plates included with this kit. The clamshell mount cages and inserts can be obtained from Hooker/Holley as part numbers 71221004HKR, 71221014HKR (black insert), or 71221015HKR (red insert) respectively. Rubber mounts from other aftermarket sources (i.e. Anchor brand 2292 mounts) may also be used. In order to achieve the intended fitment and clearances of these components, it is highly recommended that new clamshell mounts be installed at the time of installation of the Hooker engine mounting brackets.

The combined use of these mounting brackets and the related Hooker Blackheart transmission cross members, will allow installation of an LT engine with a GM Powerglide, TH350, TH400, 700R4, 2004R, 4L60-4L70 or 4L80/4L85 automatic into any 1967-69 GM F-body vehicle without requiring any cutting or hammering to the vehicle body.

With the exception of the needed shifter hole, these components also permit no-cutting-required installation of a TREMEC® LS F-body/GTO T56 transmission into any 1967-69 F-body. TREMEC® aftermarket T56 Magnum transmission installations may require tunnel modifications for installation into a 1967-69 F-body.

Due to their lower transmission tunnel height, 1968-72 X-body vehicles may also require tunnel modifications to install either a TREMEC® LS F-body/GTO T56 transmission, or a TREMEC® aftermarket T56 Magnum transmission using the Hooker Blackheart system of engine mounts and transmission crossmembers.

An engine hoist will be required to position the engine/trans into the vehicle in its proper orientation. Use of an angle-adjustable engine sling will greatly ease the hoisting/loading operation and negate the possible need to reposition the lifting chains mid-operation. An automotive lift or a jack and jack stands will be required to safely raise and support the vehicle.

CAUTION! WORK ONLY ON A LEVEL SURFACE. USE JACKS /JACKSTANDS OF SUFFICIENT CAPACITY TO LIFT AND SUPPORT YOUR VEHICLE. NEVER WORK UNDER A VEHICLE SUPPORTED BY A FLOOR OR BUMPER JACK.

TIPS FOR A SUCCESSFUL ENGINE SWAP:

1. Get a wiring diagram of your vehicle and one for the vehicle from which the new motor was removed. Make photocopies of both systems; add your modifications to these copies, so you will have accurate records for future reference.
2. Think carefully before removing or defeating any emissions device; a legal engine swap requires the emissions components to be intact, especially when you try to sell the vehicle.
3. Save as much hardware that is removed from the donor engine as possible. You may need some of these items later on.
4. Taking the time to do it right is cheaper than taking short-cuts and having to do it again. Make sure you pay close attention to critical areas like fuel systems and brake lines. Neglecting to double-check your work could have life or death consequences.
5. Do not overstress components that are designed for stock four or six cylinder torque by over-abuse with a motor of greater horsepower, i.e. drive shafts.
6. Don't forget to upgrade your radiator, fan(s), and hoses to accommodate the cooling requirements of your LT engine.

VEHICLE PREP:

1. Open hood and place protective covers over fenders
2. Disconnect battery and fuel lines.
3. Remove existing wiring harness and set aside for later re-use of connectors, as needed, to complete electrical connections to the swap engine harness.
4. Drain and remove radiator/hoses from vehicle.
5. Remove the driveshaft, engine, engine frame stands, transmission, transmission crossmember, and related parts from the vehicle.

SWAP ENGINE/TRANS PREP:

1. Carefully remove the following components from the engine: spark plug wires, exhaust manifolds/O2 sensors, wiring harness/computer, MAF sensor, starter motor/plate and dust covers, A/C compressor and bracket, and the oil dipstick/tube and motor mounts.
2. Clean and paint parts to be re-used, if desired.
3. Secure engine or engine/trans assembly to lifting sling and engine hoist.
4. Attach the included left and right side Hooker Blackheart engine brackets to the engine; the proper indexing and left/right orientation of the brackets is achieved by ensuring the profiled clamshell **support ears** are positioned towards the front of the engine. The image depicted in **Figure 1** is that of the driver's side bracket and is included as an identification aid to the installer.



Figure 1 – Driver's side mount

ENGINE/TRANS INSTALL:

NOTE 1: Although it's possible to install Hooker Blackheart headers for this application after installation of this mounting kit has been completed, it is most efficient to move the driver's side header assembly into position around the steering box as you lower the engine into place. Once the engine has been lowered into place, you can complete the installation of the headers as per the instructions included in their packaging. Use an assistant to lower the engine slowly while you hold the header in position; use caution to keep your fingers clear of any potential pinch points.

1. Attach the included adapter plates to each side of the subframe. Drill two 3/8" holes through the subframe and prep the upper rear corner of the driver's side clamshell mount as indicated in **Figure 2** on the next page. Install nuts on all four countersunk bolts and tighten through the access openings you used to remove the stock frame stands; a 6" socket extension works well for this purpose.
 - If you are performing a **simultaneous engine and transmission installation**, it is recommended that you attach the rubber OE clamshell mounts to the engine brackets (two wide-spaced holes positioned up) with the required long horizontal bolts and then move the entire assembly into position in the engine compartment and lower it down onto the subframe. Adjust the angle of the engine and transmission until the mounts are fairly flat against the crossmember and install the included 3/8" bolts into the four holes on each mount; the shortest bolts are to be installed in the threaded holes at the rear of the plates. Now, install the remaining supplied nuts onto the four bolts that protrude inside the crossmember and tighten all fasteners.
 - If you are performing an **engine-only installation** at this time, it is recommended that you attach the engine clamshell mounts to the spacer plates attached to the subframe (two wide-spaced holes positioned up) with the supplied 3/8 bolts; the shortest bolts are to be installed in the threaded holes at the rear of the plates. Now, install the remaining supplied nuts onto the four bolts that protrude inside the crossmember and tighten all fasteners.
2. Move the engine into position in the engine compartment and lower it down onto the clamshell mounts. Adjust the angle of the engine so that the engine bracket ears are resting squarely on the clamshell mounts and install the long horizontally positioned bolts through each mount and install and tighten a nut on each.
3. Prop-up and support the transmission tail shaft and then proceed to install your Hooker Blackheart transmission crossmember and headers per the instructions included in their packaging.
4. If using, proceed to installing your Hooker Blackheart transmission swap crossmember and headers per the instructions included with their packaging.

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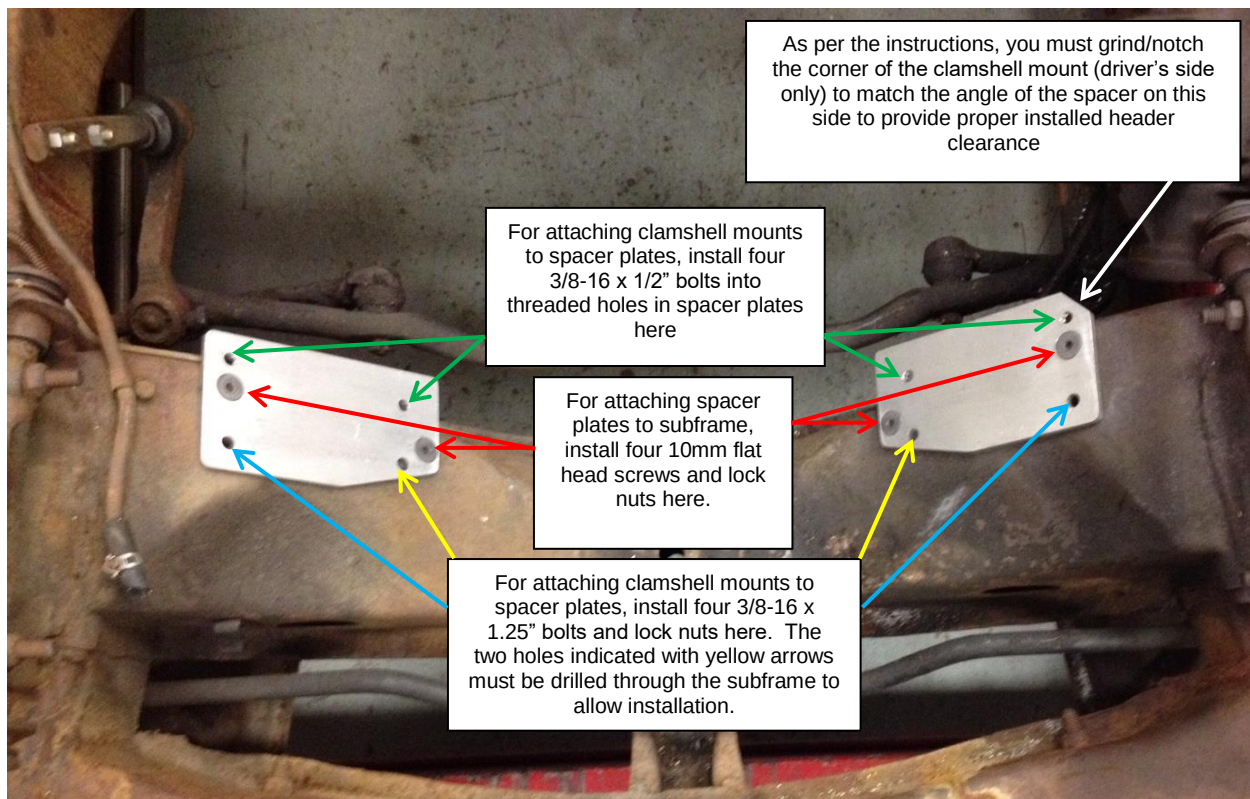


Figure 2 Adapter Plate/Clamshell Fastener Schedule

COMPATIBILITY:

These engine swap mounting brackets were specifically designed for compatibility with the Holley® **302-20** LT swap oil pan and Hooker Blackheart transmission swap crossmembers, headers, and exhaust systems listed below.

EXHAUST

Hooker Blackheart 70101352-RHKR LT swap long-tube headers and 70501318-RHKR / 70501319-RHKR (1967-1969 F-Body) and 70501320-RHKR and 70501321-RHKR (1968-1974 X-Body) exhaust systems.

ACCESSORY DRIVES

Accessory drive system/component compatibility is currently unknown for this application and is to be determined in the future.

VEHICLE COMPONENTS

Compatibility with any specific type/brand of windshield wiper motor, or power brake booster is unknown.

Not compatible with small block heater core, must use big block heater core to maintain heater function.

Not compatible with stock A/C evaporator case.

More LT engine performance components, such intake manifolds, EFI fuel control systems, fuel filters, fuel pumps, plumbing hose/fittings and valve covers can be found at www.holley.com.

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Technical Service: 1-866-464-6553

Phone: 1-270-781-9741

Website: www.holley.com

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199R11817

Date: 4-17-19



Transmission Polyurethane Mount - GM
71223029HKR & 71223030HKR
Installation Instructions



Thank you for choosing to use the Hooker BlackHeart™ transmission mount as part of your performance vehicle project. Please read thoroughly and understand these instructions before attempting installation.

PRE-INSTALLATION CONSIDERATIONS:

These polyurethane transmission mounts may be used as a direct replacement for stock GM rubber mounts that measure 1.75" in height. Replacement of mounts with a greater height than 1.75" can be accommodated with the use of shim washers between the crossmember and the mount.

The polyurethane construction is capable of high horsepower applications while preserving vibration dampening and the safety interlock design of the inner components ensures that even if the polyurethane fails the mount will not separate. These polyurethane mounts are capable of fitting either a one or two stud type of crossmember interface.

BEFORE BEGINNING:

Check that the package contains the following hardware:

71223029HKR	
Qty.	Description
1	Black Polyurethane Transmission Mount
2	7/16"-14 x 1.5" Studs
2	7/16"-14 Hex Nuts
2	Flat Washers
2	Lock Washers

71223030HKR	
Qty.	Description
1	Red Polyurethane Transmission Mount
2	7/16"-14 x 1.5" Studs
2	7/16"-14 Hex Nuts
2	Flat Washers
2	Lock Washers

INSTALLATION:

1. Determine if your application requires a one or two stud crossmember interface. Install the supplied stud(s) (7/16"-14 x 1.5") into the appropriate threaded holes in the polyurethane mount with a 7/32" hex key. If no hex key is available, the studs can also be installed into the mount by "double nutting" the end of the stud with the supplied hex nuts. Install the stud(s) until firmly seated in place.
2. Install the mount onto the crossmember with hardware provided (shown in **Figure 1**). Do not tighten the hex nuts at this time.
3. Install the factory transmission bolts (user supplied). Do not tighten the bolts at this time.
4. Confirm alignment of the polyurethane mount with the transmission and crossmember. Tighten and torque the transmission bolts to factory torque specifications. Also tighten and torque the crossmember hex nut(s) to 49 ft./lbs.

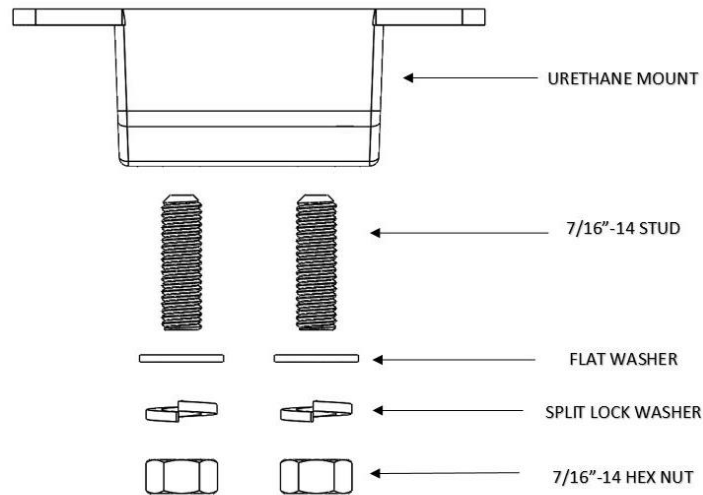


Figure 1

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Date: 1-24-19