



## GM LS/LT Engine Mount Components

### 71221016HKR, 71221017HKR, 71221018HKR, 71221019HKR, 71223015HKR, & 71223016HKR Installation Instructions



71221016HKR



71221019HKR



71223015HKR



71223016HKR

Thank you for choosing to use Hooker Blackheart LS/LT engine mount components as part of your performance vehicle project. These mounts may be used as direct replacement parts on any 1998-02 V8 equipped GM F-body vehicle (with 71221018HKR), or to perform an LT engine swap in a 1998-02 V8 equipped GM F-body vehicle (with 71221019HKR) using the factory frame stands. Additionally, they may be used to mount an LS or LT engine into a GM 1983-93 F-body or 1964-72 A-body vehicle using specific Hooker LS engine swap brackets developed for those applications. Please read these instructions thoroughly before attempting installation.

#### **PRE-INSTALLATION CONSIDERATIONS:**

These components were designed in conjunction with one another to eliminate the rivet-drilling operation typically required to install polyurethane inserts in 1998-2002 GM F-body vehicles.

Hooker Blackheart LS and LT clamshell housings are both stamped from thicker gauge steel than is typically used to manufacture clamshell housings of stock replacement LS engine mounts, which means they provide a stronger mounting foundation for high horsepower applications.

While easy to install, careful attention should be paid to the installation steps within this document to ensure the insert is not installed into the clamshell upside-down or backwards, which would cause in-car installation issues.

#### **COMPATIBILITY INFORMATION:**

Although Hooker Blackheart clamshell housings (LS and LT versions) were CAD designed specifically for use with Hooker Blackheart polyurethane inserts, they will physically accept GM 1998-02 F-body LS polyurethane inserts from Energy Suspension™ and Prothane™ also.

#### **BEFORE BEGINNING...**

Check that the hardware package includes the following:

**71221016HKR-** (1) **black** LS/LT polyurethane insert

**71221017HKR-** (1) **red** LS/LT polyurethane insert

**71221018HKR-** (1) **LS** engine mount clamshell (upper and lower halves), (4) 5/16 bolts, (4) 5/16 washers and (4) 5/16 lock nuts

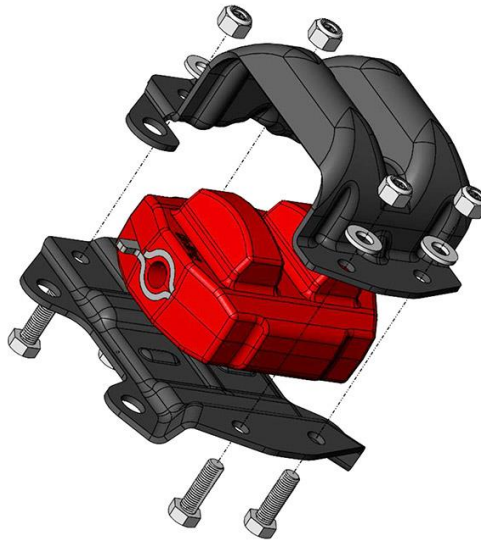
**71221019HKR-** (1) **LT** engine mount clamshell (upper and lower halves), (4) 5/16 bolts, (4) 5/16 washers and (4) 5/16 lock nuts

**71223015HKR-** (2) M12 x 150mm flanged head, Grade 10.9, LS/LT engine mount/bracket couple-bolts, (2) M12 flanged nuts

**71223016HKR-** (4) 5/16 bolts, (4) 5/16 washers, and (4) 5/16 lock nuts (this is a replacement hardware kit for the fasteners included with the 71221018HKR and 71221019HKR engine mount clamshell kits).

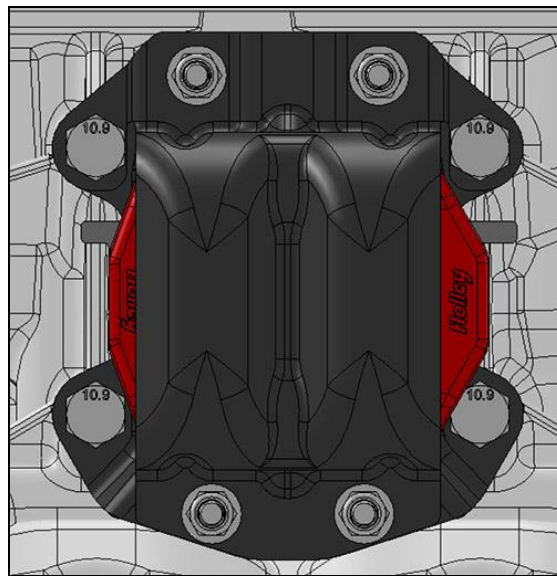
#### **INSTALLATION:**

1. Install the insert between the upper and lower clamshell halves while ensuring that the following conditions of orientation are met:
  - A. The metal tangs protruding from the ends of the insert are offset towards the top of the clamshell halves (the side with a straight edge compared to the slight "V" shaped edge of the bottom side).
  - B. The longer end of the insert protrudes from the right side of the clamshell housing. This is the case with both mounts to be installed on an engine, which means when installed on the engine, the longer end of the inserts will point towards the front of the car on the passenger's side of the engine, and towards the rear of the car on the driver's side of the engine.
2. With the above conditions met, fasten the upper and lower clamshell halves together using the 5/16" hardware included with each clamshell housing. Install the fasteners in the orientation shown in **Figure 1** on the next page (LT clamshell shown, LS clamshell similar).



**Figure 1**

3. Ensure the two large holes in the bottom of the upper and lower halves are aligned to allow unobstructed insertion of M10 bolts through each of them and then torque the 5/16 bolt/washer/nut assemblies to approximately 29 ft./lbs.
4. Attach the clamshell/insert assemblies to the intended engine with user-supplied M10 fasteners with the straight edge of the clamshells facing up as depicted in **Figure 2**.



**Figure 2**

5. Lower the engine onto the vehicle engine mounting brackets and couple the engine mounts to the brackets using the M12 bolts and nuts included in the Hooker Blackheart 71223015HKR hardware kit, or with similar fasteners. Tighten bolt/nut assemblies

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**199R11359**

**Revision Date: 8-2-19**



**GM 1963-1972 C10 Crossmember  
Installation Instructions  
71222024HKR**



Thank you for choosing to use this Hooker™ transmission crossmember as part of your LS 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. Please read these instructions in their entirety before attempting installation.

**COMPATIBILITY INFORMATION:**

This transmission crossmember was specifically designed for bolt-in compatibility with the HOOKER™ LS swap engine mounting bracket kit, cast iron LS exhaust manifolds, headers and exhaust systems also developed for this application. Various other Holley® components have been designed and/or validated for use with this system of components, as follows:

The engine/transmission positioning provided by this crossmember was designed for compatibility with the Holley® 302-2 and Holley 302-3 LS oil pans. Compatibility with other aftermarket/OE engine oil pans is unknown.

Hooker™ LS swap manifolds, LS Turbo manifolds, and long tube headers are compatible when installed using this Hooker LS engine swap transmission crossmember and the related Hooker BHS511 engine mounting bracket kit.

This crossmember was intentionally designed with high-tuck geometry to optimize the ground and dual exhaust routing clearances of this application.

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](http://www.holley.com).

Hooker recommends using a Prothane 7-1604 or Anchor 2268 transmission mount.

Designed for use with GM T56, 6L80, 4L80, 4L60, TH400, TH350, 700R4 transmissions

High hump floor pan will be needed when using 4L80, T56, 6L80 transmissions, and a bolt in tunnel is available from many C10 parts suppliers

It is recommended to install new body bushings before installing the new larger case transmissions

**BEFORE STARTING:**

Your vehicle must be raised a minimum of 36 inches. A floor hoist is ideal. If no hoist is available, we strongly urge the use of axle stands as a safety measure. Please read these instructions in their entirety before attempting installation.

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

**NOTE:** These instructions have been written with the assumption that you have already installed an LS engine into your vehicle using the Hooker BHS511 engine swap bracket kit. Satisfactory engine and transmission installation with any other type or brand of engine mounts is not intended with this crossmember.

## **INCLUDED HARDWARE:**

| Qty. | Description                 |
|------|-----------------------------|
| 1    | Center Crossmember          |
| 1    | Left Side Mounting Bracket  |
| 1    | Right Side Mounting Bracket |

| Qty. | Description     |
|------|-----------------|
| 12   | 3/8" x 1" Bolts |
| 12   | 3/8" Nuts       |

Depending on which crossmember you order, there will be a supplied spacer for your specific transmission. **Figure 1** shows the stack up of the spacer and transmission mount.

- T56 – no spacer
- 6L80 – 11/16"
- 4L80 – 1"
- 4L60 – 11/16"
- TH400 – 1"
- TH350 – 11/16"
- 700R4 – 11/16"

Check the hardware package. If anything is missing, please contact Technical Service at 1-866-464-6553 or 270-781-9741.

## **INSTALLATION:**

1. Raise the tail shaft of the transmission to its maximum height against the vehicle floor.
2. When looking at the crossmember, the center is at an angle. The upward side goes toward the front of the vehicle.
3. Install the left side bracket to the crossmember while working on the bench using the 4-3/8" bolts and tighten.
4. Install the crossmember into the vehicle. Install the right side bracket with the 4-3/8" bolts and tighten.
5. At this time, square the crossmember up with the frame and transmission and find at least two holes on each side for mounting. Use the 3/8" bolts for mounting and tighten.
6. If your trans uses a spacer, install it now, lower the trans to the spacer, and install the user supplied transmission mount bolts and tighten.
7. Once install is complete, tighten all 3/8" fasteners to 25 ft/lbs.



**Figure 1**

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### **THE FOREGOING STATEMENT LIMITS THE LIABILITY OF THE MANUFACTURER.**

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**199R11658**

**Revision Date: 9-10-20**



**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:**

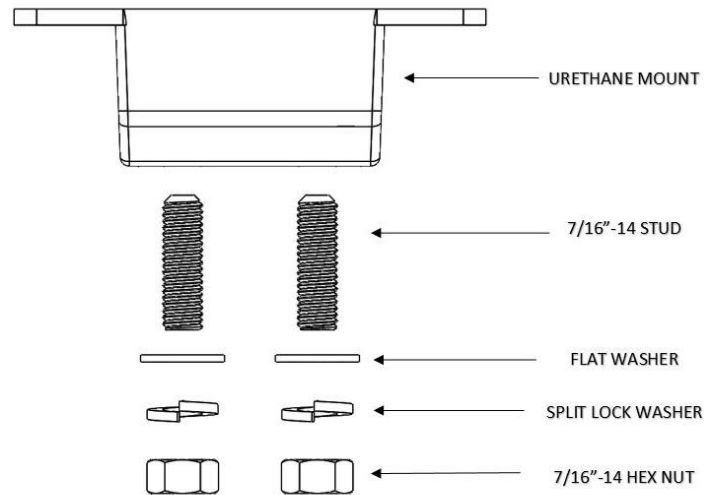
Check that the package contains the following hardware:

| 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**



## 1963-1967 GM C10 LS/LT Swap Engine Mounting Brackets BHS538 Installation Instructions



Thank you for choosing to use HOOKER™ engine swap mounting brackets as part of your LS and LT swap projects. These mounting brackets are part of the most comprehensively engineered system of mounting components, headers and exhaust systems available for this application. Please read these instructions thoroughly before attempting installation.

### **PRE-INSTALLATION CONSIDERATIONS:**

Installation of these brackets requires the use of new stock OE 4<sup>th</sup>-gen F-body LS engine mounts (ex: GM 22179268 or Anchor 3064) or aftermarket polyurethane inserts (Hooker Blackheart LS/LT Polyurethane Inserts – P/N's 71221016HKR (Black) or 71221017HKR (Red) along with Hooker 71221018HKR LS heavy duty clamshells or 71221019HKR LT heavy duty clamshells.

In addition, a pair of metric motor mount through-bolts and a pair of locking flange nuts will need to be sourced for connecting the Hooker engine brackets to the motor mounts. Specification requirements are 10.9 M12 x 1.75 x 140mm or Hooker Blackheart 71223015HKR engine mount bolt kit.

### **COMPATIBILITY INFORMATION:**

**These swap brackets are for wide frame rails only. Narrow frame rails commonly found on 1968-72 trucks will use BHS511 swap brackets (Figure 2).**

These LS/LT swap brackets have only been tested on 2-wheel drive applications.

This engine swap mounting bracket kit requires the use of a Holley® **302-2 and 302-3** oil pan for installation and provides engine compatibility with Holley accessory drive system equivalent in all spacing's.

More LS and LT 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](http://www.holley.com).

### **BEFORE BEGINNING:**

Check that the hardware package includes the following:

| Qty. | Description        |
|------|--------------------|
| 6    | 3/8 x 16 x 1 Bolts |
| 6    | 3/8 x 16 Nuts      |

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

## **INSTALLATION:**

1. Remove the factory engine mounts from the frame and clean the bracket mounting surfaces.
2. Attach the Hooker engine mounting brackets to the frame using the supplied 3/8" hardware. Leave the hardware loose at this time.



**Figure 1**

3. Install new OE rubber or aftermarket polyurethane mounts on the LS/LT engine to be installed.
4. Install the engine/transmission assembly onto the Hooker engine brackets and couple the engine mounts to the engine brackets using the Hooker Blackheart 71223015HKB engine mount bolt kit or user-sourced metric cap screws and flanged locking nuts.
5. Once the engine is sitting in the engine bay as it should, use a wrench to tighten the (x6) mounting bolts and through bolt.
6. Raise the rear of the transmission as high as it will go and install the Hooker LS/LT swap transmission crossmember per the instructions included with its packaging.
7. Your LS/LT engine and transmission swap are now mounted and ready to be outfitted with headers and an exhaust system. Hooker Blackheart LS/LT 63-67 C10 swap headers and dual exhaust systems are specifically designed for use with these engine mounting brackets.

## Frame Rail Comparison



Wide Frame Rail



Narrow Frame Rail

**Figure 2**

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