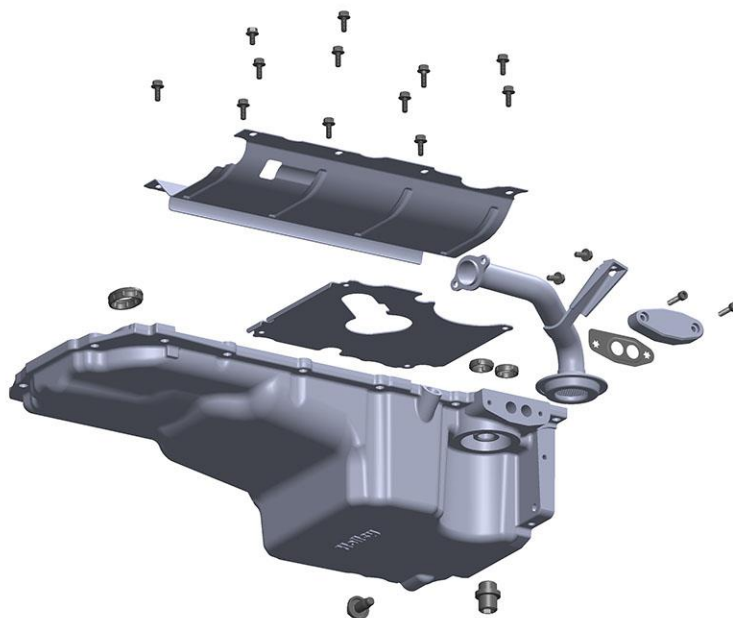




OIL PANS P/N 302-20, 302-20BK, & 302-21



Instruction Sheet 199R11159

CONGRATULATIONS on your purchase of a Holley® **LT Retro-fit Oil Pan**! We feel that you have purchased the finest performance oil pan manufactured today. Should you need information or parts assistance, please contact our Technical Service Department at 1-866-464-6553 or 1-270-781-9741, Monday through Friday, 8 a.m. to 6 p.m. CST. Please have the part number of the product you purchased on hand when you call.

WARNING! These instructions must be read and fully understood before beginning installation. Failure to follow these instructions may result in poor performance, vehicle damage, personal injury, or death. If these instructions are not fully understood, installation should not be attempted.

INTRODUCTION:

Holley® Performance Products has written this instruction sheet for the installation of the **LT Retro-fit Oil Pan**. This instruction sheet contains all the information needed to install the oil pan. Please read all the **WARNINGS** and **NOTES**, as they contain valuable information that can save you time and money. Holley® Performance Products cannot and will not be responsible for any alleged or actual engine or other damage, or other conditions resulting from misapplication of the oil pan described herein. However, it is our intent to provide the best possible products for our customer; products that perform properly and satisfy your expectations.

APPLICATIONS:

302-20 & 302-21 – These Holley® LT Gen 1 F-Body Retro-fit oil pans are designed specifically for LT engine retrofit installation in 1967-69 Camaro/Firebird (Gen 1 F-body), 1968-1974 Nova/Apollo/Omega/Ventura (Gen 1 X-body) vehicles. The 302-20 oil pan may also service other popular muscle/classic car and truck chassis where more engine-to-chassis clearance is required near the front half of the oil pan.

302-30 – Road Race Baffle (optional accessory)

IMPORTANT APPLICATION NOTES:

- This oil pan provide OEM fitment and oil filter mounting provisions.
- Not intended to be used with engines that originally utilized a dry sump system.
- Allows for strokes up to 4.0".

The Holley® LT Swap oil pans are designed to work with an LT1 dipstick and tube (if desired). Below are the part numbers:

- LT Dipstick – GM P/N 12658475
- LT tube – GM P/N 12661062

PAN CAPACITIES:

Sump Oil Capacity –	5.6 Qts
Total Oil Capacity w/ stock filter –	6.1 Qts

PARTS NEEDED:

- High Quality Gray RTV sealer (GM P/N 12378521 or equivalent)
- Thread sealant (Loctite® brand 567 pipe thread sealant or equivalent)
- Thread locking compound (blue Loctite® or equivalent)
- Oil Filter (AC Delco® PF64 or equivalent)
- Oil

REMOVAL:

1. Remove the oil level indicator tube.
2. Remove the bolt and the left rear transmission cover.
3. Remove the starter motor assembly.
4. Remove the engine oil cooler adapter.
5. Remove the bolt and right transmission cover.
6. Disconnect the engine oil level sensor electrical connector. This sensor will not be utilized in the Holley pan.
7. Remove the bolts from the bell housing to the oil pan.
8. Remove the oil pan bolts.
9. Remove the oil pan from the engine block.

IMPORTANT: All gasket surfaces should be free of oil or other foreign material during assembly. Inspect the engine block oil gallery passages to make sure they are free from any debris or restrictions.

IMPORTANT: It is advisable to wash all of the new parts well before installing to remove any dirt or debris from the packing and shipping process.

IMPORTANT: It is advisable to test-fit the oil pan to the engine before installation to ensure that the crankshaft and connecting rods clear the windage tray, oil pump pick-up screen, and the oil pan, making a full revolution of the rotating assembly by hand.

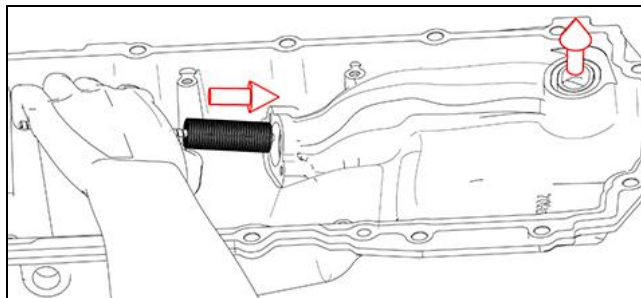
IMPORTANT: It is advisable to mock up the engine and oil pan in the intended vehicle to ensure there is no contact of the pan to the frame or cross-members.

INSTALLATION:

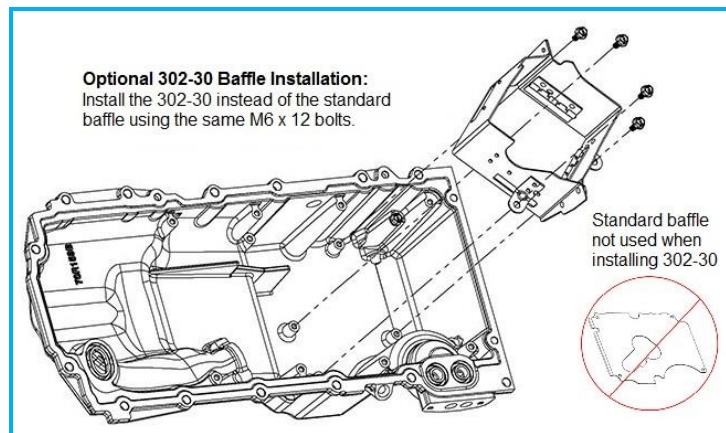
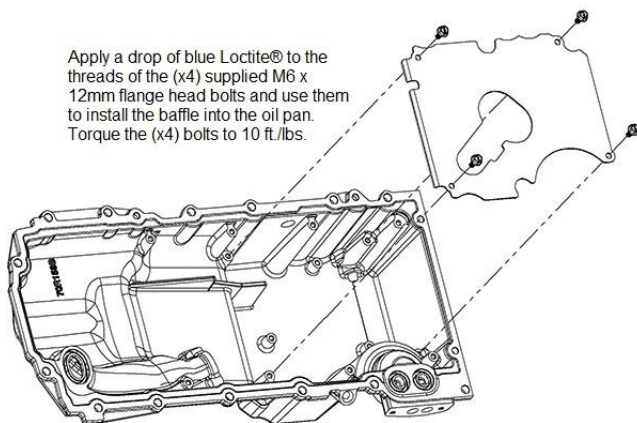
IMPORTANT! Thoroughly clean all components before assembly to remove any/all contaminants.

1. Remove the new Holley® oil pan, parts kit, pickup screen, windage tray, and baffle from the box.

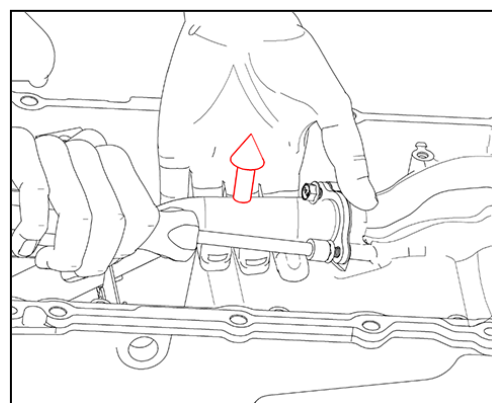
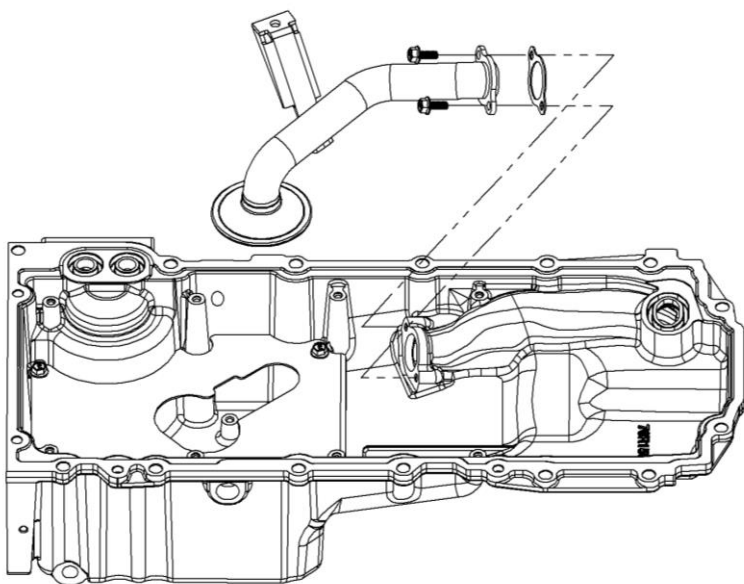
WARNING! Push a flexible brush all the way through the pan's internal passage to assure it is clean and unobstructed. Any obstruction can affect oil pressure and damage the engine. See photo below.



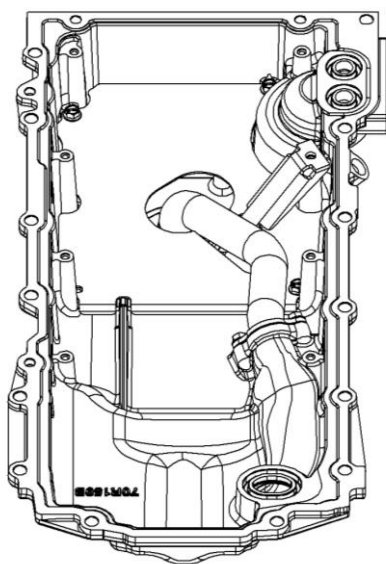
2. Pre-assemble pan.



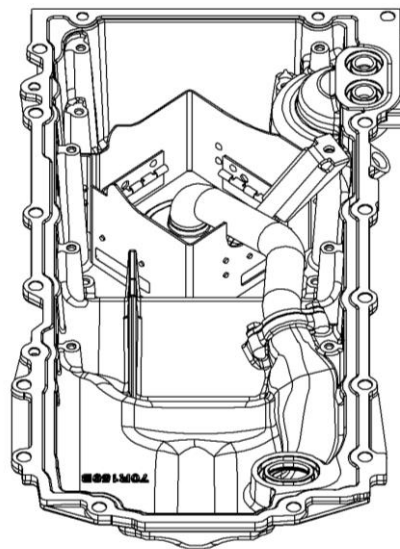
Install the oil screen/pickup tube and **gasket** with supplied (x2) M6 x 16 flange head bolts. Apply a drop of blue Loctite® to the threads before installing. You may need to slightly adjust the bracket to provide precise alignment of the hole. Torque the bolts to 10 ft./lbs.

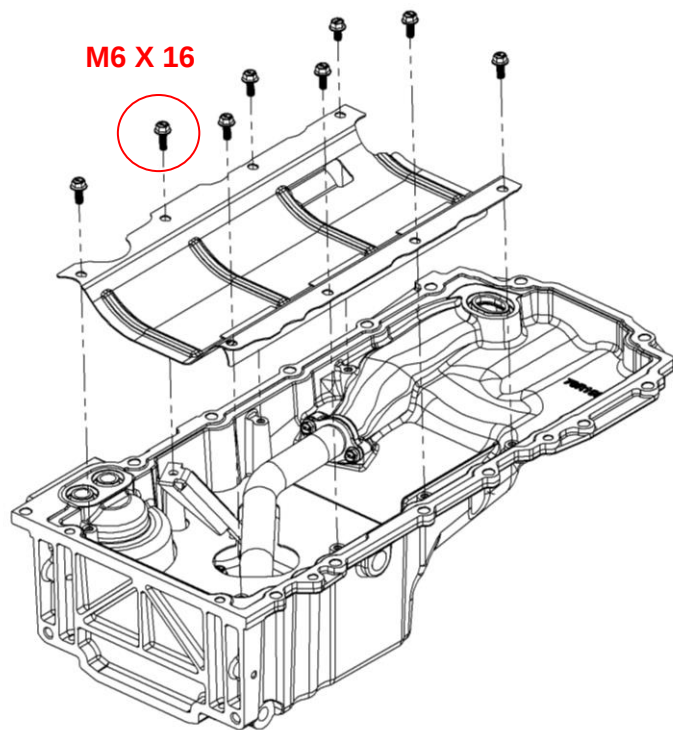


IMPORTANT: While the bolts are started, but still loose, lift the pickup tube. Tighten the two bolts while maintaining the lifted position. This process ensures proper clearance between the pickup inlet and the pan floor.

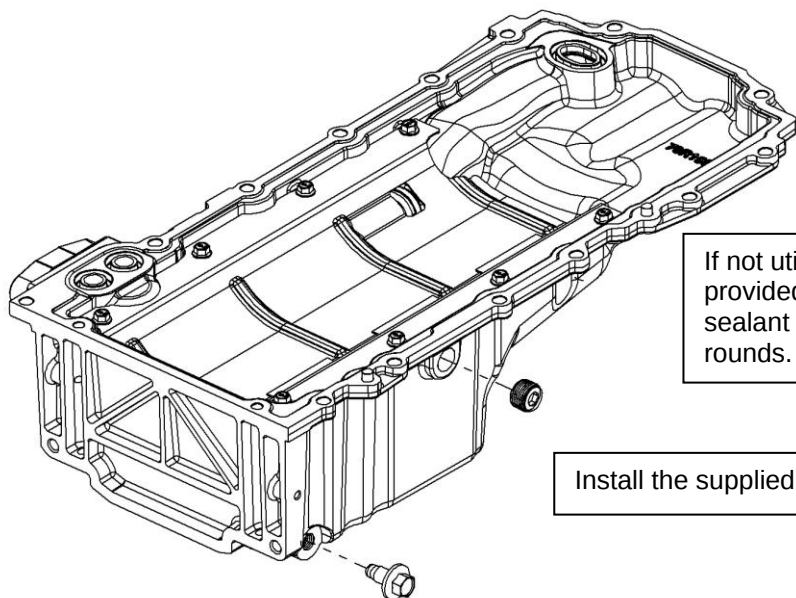


Assembled pickup with **optional** 302-30 baffle installed



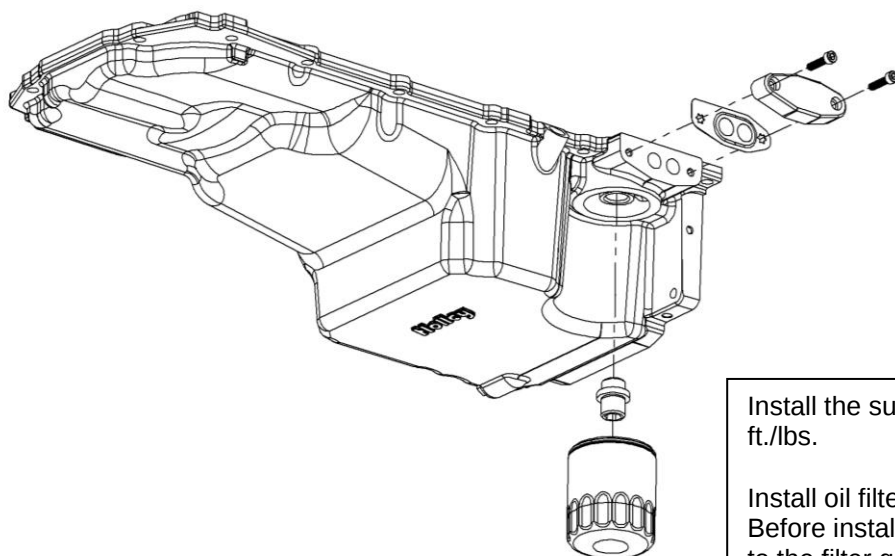


Install the windage tray. Apply a drop of blue Loctite® to the threads of the supplied (x7) M6 x 12 flange head bolts. Install the (x1) M6 x 16 flange head bolt in the location that also goes through the pickup tube bracket. Torque the bolts to 10 lb./ft.



If not utilizing the oil return port, install the 1/2" NPT plug provided. Use thread sealant (Loctite® brand 567 pipe thread sealant or equivalent). Install to finger tight then tighten 2 to 3 rounds.

Install the supplied oil pan drain plug and tighten to 18 ft./lbs.

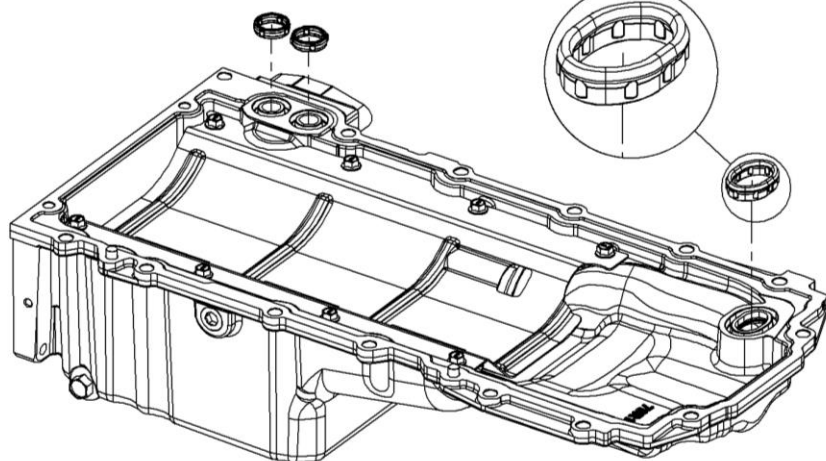


Install the supplied oil passage gasket, cover, and supplied (x2) M6 x 30mm socket head bolts to the oil pan just above the oil filter. Tighten the oil passage cover bolts to 106 in./lbs.

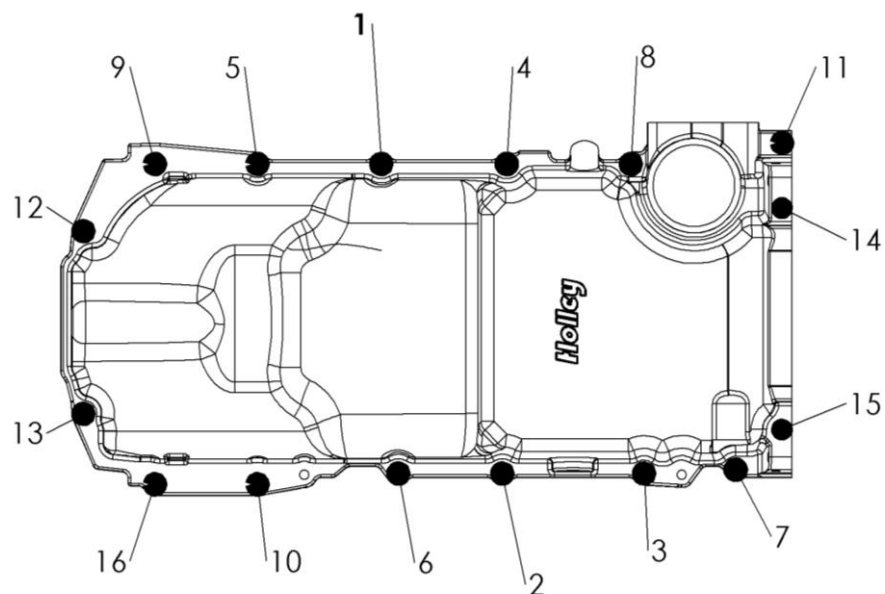
Install the supplied oil filter adapter and tighten to 40 ft./lbs.

Install oil filter now or after pan installation is complete. Before installing the new oil filter, apply a thin film of oil to the filter gasket. Install the new engine oil filter and follow the manufacturer's recommendation for tightening procedures.

Install supplied two oil filter passage seals.



Install supplied pickup to oil pump seal. Warning: This seal must be oriented as pictured.



Torque:
M8 bolts to 18 lb./feet. (bolts 1 through 13).
M6 bolts to 106 lb./inch. (bolts 14 and 15).

5. Install the mounting bolts for the oil pan assembly.
6. Tighten the oil pan mounting bolts to 18 ft./lbs.
7. Tighten the oil pan mounting bolts M6 to 106 in./lbs.
8. Install the bell housing to oil pan bolts. Tighten the bolts to 37 ft./lbs.
9. Install the starter assembly.
10. Install left and right rear transmission cover and bolt.

NOTE: For truck engine applications, a thin spacer (approximately 2mm thick) may be required at the bolt between the covers and the pan (spacers not included).

NOTE: Tighten the transmission cover bolt to 106 in./lbs.

11. Install the oil level indicator tube. Confirm O-ring seal is in place. If tube is not new, replace tube seal before installation.

NOTE: Tighten the tube bracket bolt to 88 in./lbs.

12. Fill the crankcase with the proper quantity and grade of oil. Be careful not to overfill with oil.
13. Start the vehicle and check for leaks and adequate oil pressure. Use the dipstick to verify the oil level. This should read full after 6 quarts of oil with a new filter.

**Holley® Technical Support
1801 Russellville Road
Bowling Green, KY 42101
866-464-6553
www.holley.com**

© 2016 Holley Performance Products, Inc. All rights reserved. Tous Droits Réservés.

199R11159

Revision Date: 10-11-21



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).

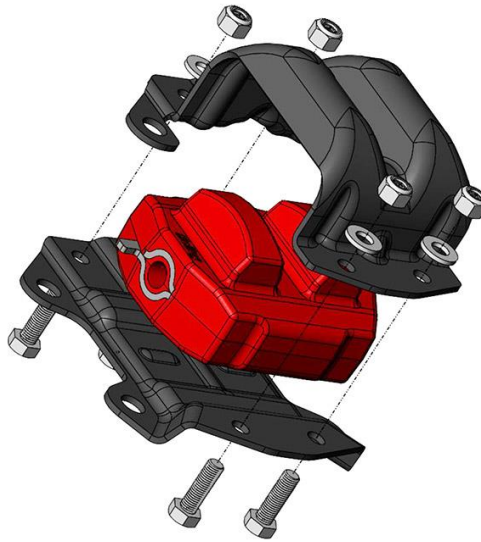


Figure 1

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**.

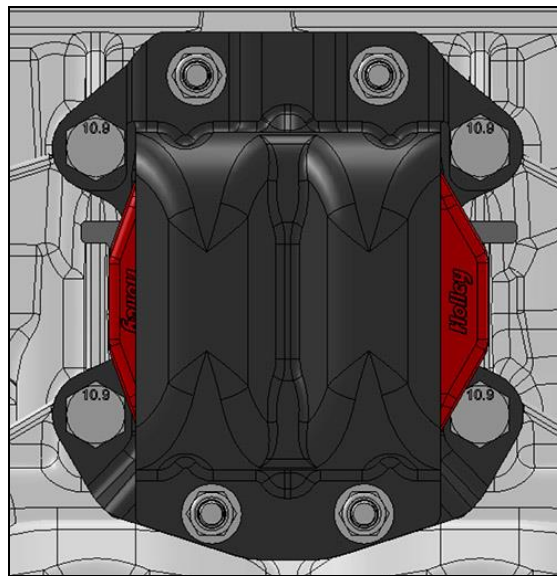


Figure 2

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

LIMITATION OF LIABILITY – DISCLAIMER:

HOLLEY/HOOKER™ makes no warranties of merchantability, of fitness for particular purpose, or that its products are approved for general use, or that its products comply with laws, regulations, or ordinances in the state where they may be sold to the ultimate purchaser, the consumer.

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.

© 2017 Hooker Headers, Inc. All rights reserved. Tous Droits Réservés.

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.

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

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.

HOOKETM makes no warranties of merchantability, of fitness for particular purpose, or that its products are approved for general use, or that its products comply with laws, regulations, or ordinances in the state where they may be sold to the ultimate purchaser, the consumer.

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.

THE FOREGOING STATEMENT LIMITS THE LIABILITY OF THE MANUFACTURER.

California vehicle code, sections 27156 and 38391, prohibits the advertising, offering for sale, or installation of any device, which modifies a vehicle's emission control system, unless exempted, unless otherwise noted. HOOKETM Headers that have not received an Executive Order (E.O.) exemption from these code sections are not legal for sale or use in California on vehicles originally equipped with catalytic converters, except for racing vehicles, which may never be driven upon a highway. Check with your local authorities to determine if these headers are legal for use in your particular area.

© 2019 Hooker Headers, Inc. All rights reserved. Tous Droits Réservés.

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.

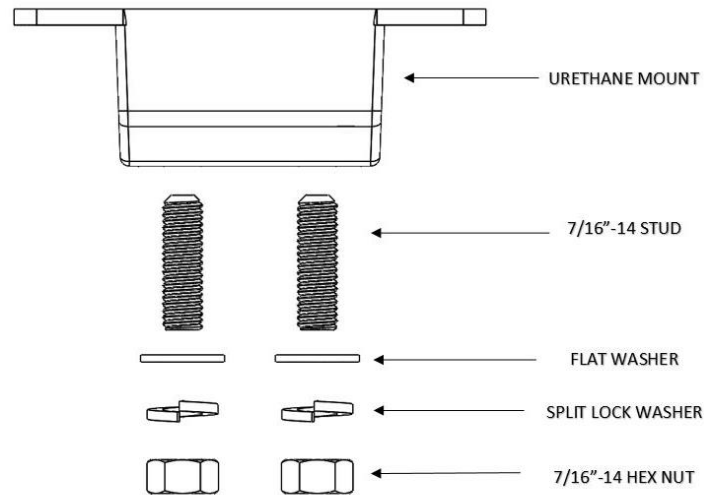


Figure 1

LIMITATION OF LIABILITY – DISCLAIMER:

HOOKER™ BLACKHEART makes no warranties of merchantability, of fitness for particular purpose, or that its products are approved for general use, or that its products comply with laws, regulations, or ordinances in the state where they may be sold to the ultimate purchaser, the consumer.

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.

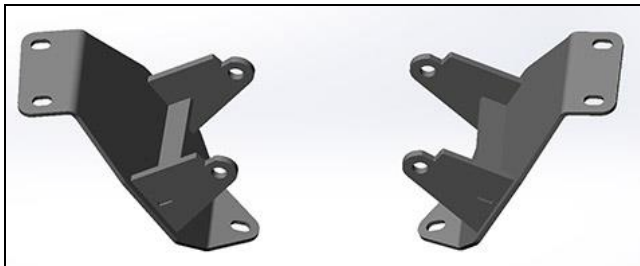
© 2018 Hooker Headers, Inc. All rights reserved. Tous Droits Réservés.

199R11754

Date: 1-24-19



1967-72 GM C10 LS/LT Swap Engine Mounting Brackets BHS511 Installation Instructions



Thank you for choosing to use Hooker Blackheart engine swap mounting brackets as part of your LS swap project. 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 4th-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 Blackheart 71221018HKR heavy duty clamshells or Prothane 7-512 or Energy Suspension 3-1151).

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 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 compatibility with Holley accessory drive system in all spacings.

More LS/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.

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.

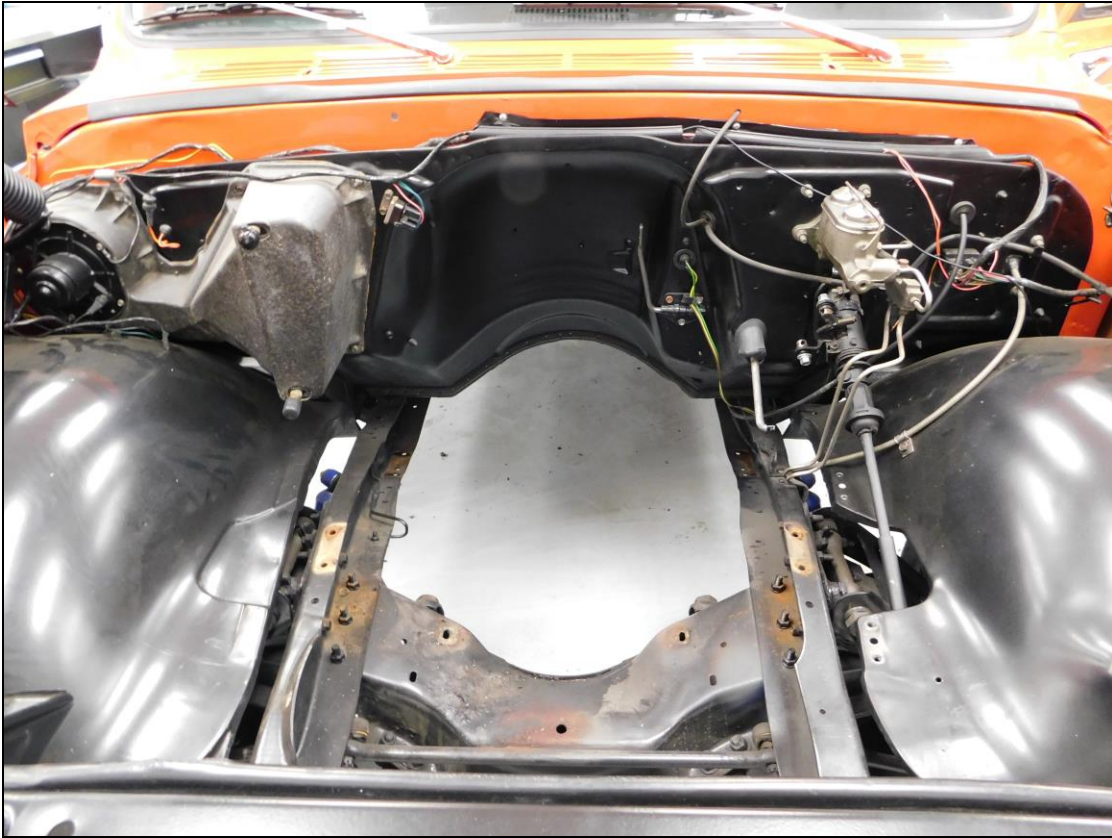


Figure 1

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 swap engine and transmission are now mounted and ready to be outfitted with headers and an exhaust system. Hooker Blackheart LS/LT 67-72 C10 swap headers and dual exhaust systems are specifically designed for use with these engine mounting brackets.

LIMITATION OF LIABILITY – DISCLAIMER:

HOOKER™ makes no warranties of merchantability, of fitness for particular purpose, or that its products are approved for general use, or that its products comply with laws, regulations, or ordinances in the state where they may be sold to the ultimate purchaser, the consumer.

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.

© 2019 Hooker Headers, Inc. All rights reserved. Tous Droits Réservés.

199R11654

Date: 8-27-19