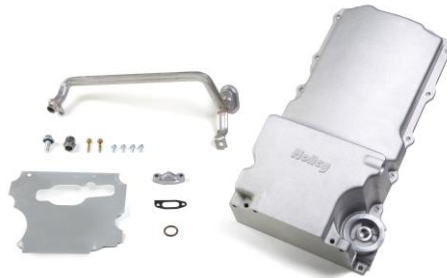




OIL PANS P/N 302-1 & 302-2



Instruction Sheet 199R10566

CONGRATULATIONS on your purchase of a Holley® **LS 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.

Requires use of Holley 302-15 Dipstick and Tube Kit or LS3 dipstick (GM P/N 12669528) and tube (GM P/N 12625031).

INTRODUCTION:

Holley® Performance Products has written this instruction sheet for the installation of the **LS 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:

302-1 – The Holley® P/N 302-1 LS Retro-fit oil pan is designed for LS engine retrofit installation in a wide range of popular GM muscle/classic car and truck chassis.

302-2 – The Holley® P/N 302-2 LS Gen 1 F-Body Retro-fit oil pan is designed specifically for LS engine retrofit installation in 1967-69 Camaro/Firebird (Gen 1 F-body), 1968-1974 Nova/Apollo/Omega/Ventura (Gen 1 X-body) vehicles. The 302-2 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.

IMPORTANT APPLICATION NOTES:

- Both oil pans provide OEM fitment and oil filter mounting provisions.
- 302-1 & 302-2 are not intended to be used with engines that originally utilized a dry sump system.
- 302-1 is designed to use a GM full length windage tray. Depending on which full-length windage tray is used, some modification to the tray may be required. See the instructions showing the modification which may be required.
- 302-2 is designed to use a GM "F-body" windage tray, GM P/N 12558253. A modification to the windage tray is required to provide clearance to the pick-up tube. A full-length windage tray may be used if the front quarter of the tray is removed. See the instructions showing the windage tray modifications required.
- 302-2 may not be used on LS7 engines or engines with a stroke longer than 3.62". The internal rotating assembly to oil pan clearance provided in the front half of the oil pan is patterned after a GM 98-02 LS1 oil pan.

The Holley® LS Swap oil pans are designed to work with an LS3 dipstick and tube (if desired). Below are the part numbers:

- LS Dipstick – GM P/N 12669528
- LS tube – GM P/N 12625031

NOTE: There are LS engine applications that have a plug installed in the dipstick hole location to be used with this oil pan. This plug will need to be removed before the oil pan is installed on the engine to allow the installation of the proper dipstick tube.

PAN CAPACITIES:

	<u>302-1</u>	<u>302-2</u>
Sump Oil Capacity –	5.5 Qts	5.7 Qts
Total Oil Capacity w/ stock filter –	6 Qts	6.2 Qts

PARTS NEEDED:

- Oil Pan Gasket (Mr. Gasket P/N 6665G, GM® 12612350, or equivalent)
- High Quality RTV sealer
- Oil
- Oil Filter (AC Delco® PF48 or PF48E, Mobile M1-113, Wix 57060, K&N HP-1017, or equivalent)

REMOVAL:

1. Drain the engine oil. Remove oil filter.
2. Remove the starter motor.
3. Disconnect the oil level sensor electrical connector (if equipped).
4. Remove the oil level sensor from the oil pan and set aside. The sensor will not be utilized in the Holley® pan.
5. Remove the RH transmission cover and bolt.
6. Remove the LH transmission cover and bolt.
7. Remove the bottom two transmission bellhousing bolts.
8. Remove the oil pan bolts.
9. Rotate the oil pan until it can be removed from around the oil pump pickup screen. Removal of the oil pan may not be possible with the engine in the vehicle).

NOTE: Holley® does not recommend or condone the use of the old pan gasket. A new gasket is highly recommended.

WARNING! Use extreme care when drilling the oil pan rivets to not gouge, score or damage the oil pan gasket.

10. If reusing the oil pan gasket, carefully drill out the oil pan gasket rivets (x2) if necessary (**Figure 1**).



Figure 1

11. Remove oil pan gasket.
12. Remove the oil pump pickup screen retaining bolt and nut.
13. Remove the oil pump pickup screen and O-ring, discard O-ring and set the pickup aside as it will not be re-used.
14. While the oil pan is removed, check the dipstick hole on the right side of the engine below cylinder #6 to assure that there is no plug installed and that the dipstick tube will fit in the hole.

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: The oil pan on LS engines is a structural member. The alignment of the pan is critical to provide the proper mounting points for the transmission bellhousing. The rear of the oil pan must never protrude from the rear of the block. The rear of the block and oil pan are to be flush (**Figure 2**).

IMPORTANT: Ensure that a helicoil has been installed in your pan by installing the drain plug.

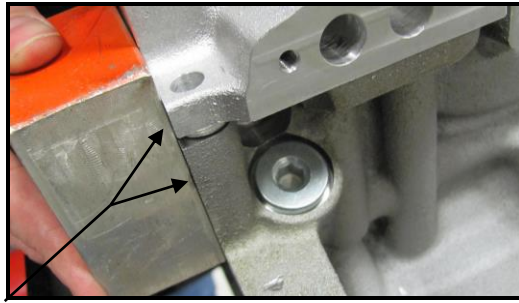


Figure 2

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:

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

IMPORTANT: Ensure that a helicoil has been installed in your pan by installing the drain plug.

2. Install the supplied O-ring onto the oil pump pickup screen assembly and lubricate with clean engine oil (**Figure 3**).

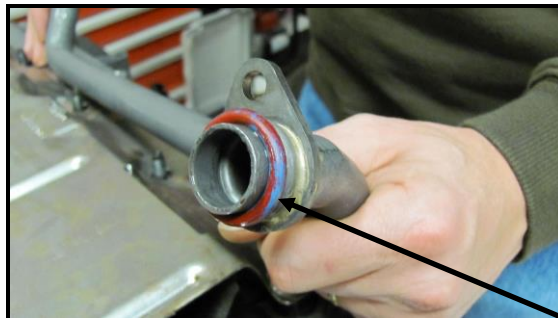


Figure 3

WINDAGE TRAY INSTALLATION AND MODIFICATIONS:

P/N 302-1 OIL PAN:

WARNING! Due to the design of the Holley® oil pump pickup screen, slight modifications may have to be made to the oil deflector before the pickup screen will sit flush (**Figures 4 & 5**). Be sure to inspect this area before bolting the pickup screen into place as modifications may have to be made. GM offers an oil deflector that has the necessary clearance for the mounting bracket of the pickup screen. The GM P/N is 12611129, if modifications to the oil deflector are not desired.

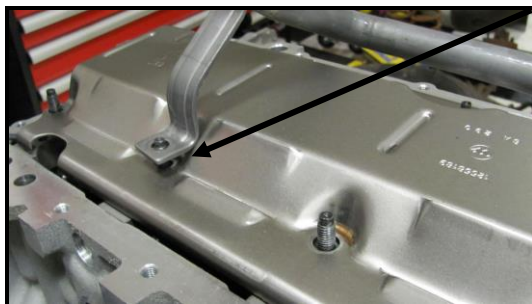


Figure 4



Figure 5

P/N 302-2 OIL PAN:

WARNING! The 302-2 oil pan is design to use a GM LS "F-Body" windage tray, GM P/N 12558253. Due to the design of the Holley® oil pump pickup screen, a modification to the windage tray must be made. A cut to provide clearance to the oil pick-up tube must be made as shown in **Figure 6**. The cut-out below may be used as a template for the cut.

A full-length windage tray may be used if it is modified to remove the front quarter of the tray and the required cut is made to provide clearance to the pick-up tube (**Figure 6**). A very careful check should be made to ensure that the oil pick-up tube has clearance to the windage tray and that the oil pick-up tube mounting bracket seats down properly on the mounting stud and windage tray without interference.

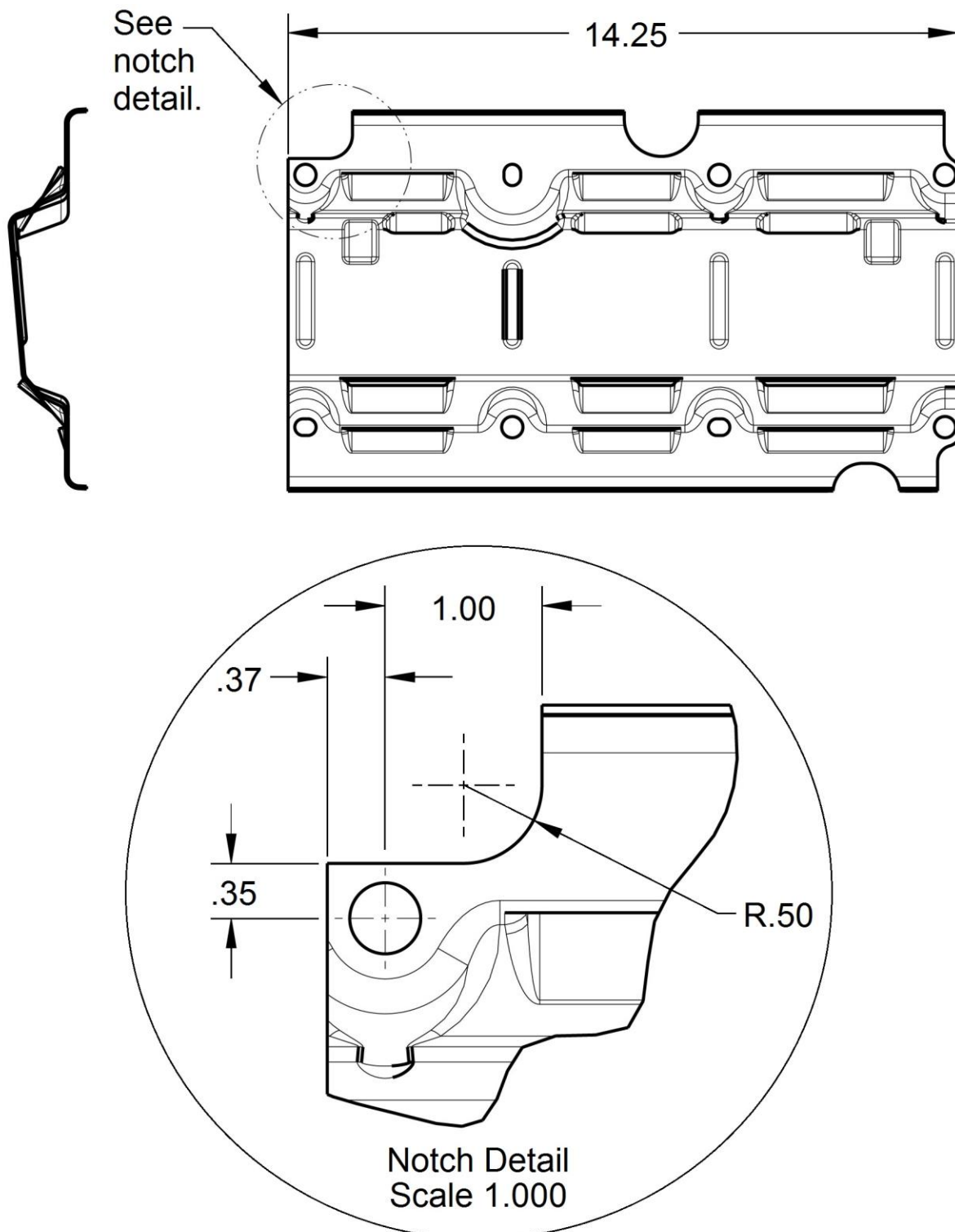


Figure 6

3. Install the new Holley® oil pump pickup screen assembly ensuring that oil pump pickup screen tube is pushed completely into the oil pump before tightening the bolt (**Figure 7**). Do not allow the bolt to pull the tube into the pump.

NOTE: Ensure the O-ring has not been pinched during installation.

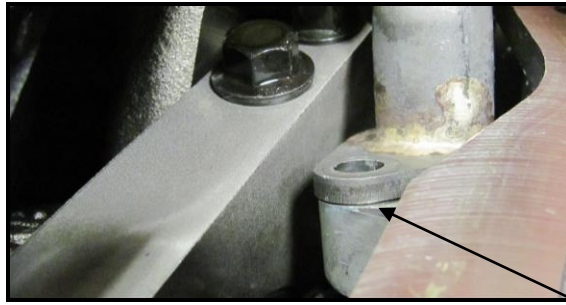


Figure 7

4. Rotate the crankshaft by hand to ensure there is adequate clearance between the pickup tube brace, oil deflector, and the crankshaft counterweights.
5. Install the oil pump screen nut and bolt(s). You may need to slightly bend the tab to provide precise alignment of the hole in the tab to the mounting stud.

NOTE: The 302-2 oil pump screen/pick-up tube features a two bolt oil pump mounting flange. There are two M6 x 16mm long flanged socket head capscrews included in the installation parts kit. Use one or both of these cap screws when installing the 302-2 pickup screen. One screw is sufficient to retain the pickup screen, the second screw is optional.

6. Tighten the oil pump pickup screen bolt(s) to 106 in./lbs. and the nut to 18 ft./lbs.
7. Pre-assemble the oil pan.
8. Apply a drop of blue Loctite® to the threads of the (x4) supplied 1/4-20 x 1/2 long cap screws and use them to install the baffle into the oil pan. Torque the (x4) baffle bolts to 8-10 ft./lbs.
9. Install the supplied oil passage cover, gasket and M6 x 1.0 x 30mm long bolts to the oil pan just above the oil filter. Tighten the oil passage cover bolts to 106 in./lbs.
10. Install the new oil pan gasket to the oil pan and install the oil pan bolts to the pan through the gasket. The gasket is designed to hold the bolts in place.
11. Apply a 5mm bead of RTV sealant 20mm long to the engine block (**Figure 8**) directly onto the tabs of the front cover gasket that protrude into the oil pan surface.



Figure 8

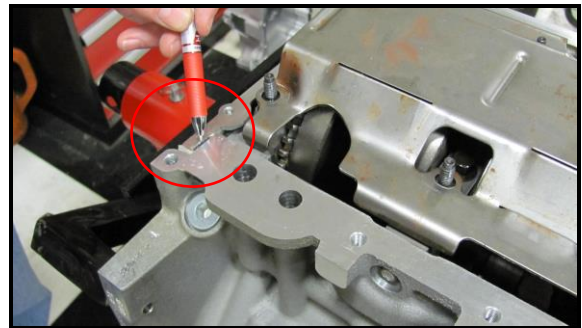


Figure 9

12. Apply a 5mm bead of RTV sealant 20mm long to the engine block (**Figure 9**) directly onto the tabs of the rear cover gasket that protrude into the oil pan surface.
13. Install the oil pan assembly to the engine block.
14. Snug all the oil pan bolts by hand (do not overtighten).
15. Install the two lower transmission bellhousing bolts until snug (do not overtighten).
16. Tighten the oil pan to block and oil pan to front cover bolts to 18 ft./lbs. (work from the center out).

17. Tighten the oil pan to rear cover bolts to 106 in./lbs.
18. Tighten the two transmission bellhousing-to-oil pan bolts to 37 ft./lbs. for either a manual or an automatic transmission.
19. Install the LH side transmission cover and bolt. Torque to 106 in./lbs. Install the RH side transmission cover and bolt. Torque to 106 in./lbs.
20. Install the supplied oil pan drain plug and tighten to 18 ft./lbs.
21. Install the supplied oil filter adapter and tighten to 40 ft./lbs.
22. 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.
23. Fill the crankcase with the proper quantity and grade of oil.
24. Be careful not to overfill with oil.
25. Start the vehicle and check for leaks and adequate oil pressure. Use the original dipstick to verify the oil level. This should read full after 6 quarts of oil with a new filter.

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199R10566
Revision Date: 8-28-20



P/N 12628HKR

GM 1967-69 F-Body/1968-72 X-Body LS Swap Powerglide*/TH350*/7004R* Transmission Adapter Kit

*Requires the use of a Hooker 12625HKR 4L60-4L75 transmission crossmember

P/N 12650HKR

TH400 / 2004R Transmission Mount Adapter Kit

Installation Instructions 199R10685

Thank you for choosing to use Hooker Blackheart products as part of your engine/transmission swap project. These products are designed as part of the most comprehensively engineered systems of mounting components, headers, and exhaust systems available for LS engine swaps. Hooker Blackheart LS swap systems are 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 PRE-INSTALLATION INFORMATION:

These components have been designed for use in multiple Hooker Blackheart LS engine swap system applications. They have been CAD designed and FEA validated to provide optimized strength and fitment geometry for each application they are called out to be used with.

Installation of these products requires the use of a **Prothane™ 7-1604** poly mount, or an **Anchor™ 2268** rubber transmission mount for as-designed installation geometry to be achieved.

Use of the 12628HKR adapter kit with a 12625HKR 4L60-4L70 crossmember to install a Powerglide, TH350 or 700R4 transmission into an LS swapped GM 1st-gen F-body/3rd-gen F-body (using Hooker Blackheart 12618HKR LS swap engine brackets only) requires modifications (cutting and welding) be performed on the 12625HKR crossmember to complete the installation. The increased exhaust passage and ground clearance gained by using the 12625HKR crossmember as part of your LS swap project will more than justify the extra effort required for this operation.

Use of the 12650HKR spacer block kit with a 12626HKR T56 crossmember to install a 2004R transmission into an LS swapped GM 1st-gen F-body/3rd-gen X-body (using Hooker Blackheart 12618HKR LS swap engine brackets only) requires slight modification/welding to be done to the 12626HKR crossmember to fit around the case and pan of a 2004R transmission. The steel gusset bracket included within the 12650HKR kit is intended for this purpose and its use is outlined in these instructions. The increased exhaust passage and ground clearance gained by using the 12626HKR crossmember as part of your LS swap project will more than justify the extra effort required for this operation.

Use of the 12650HKR spacer block kit with any other Hooker Blackheart transmission crossmember to install a 2004R or TH400 transmission will not require any modifications to be done to the crossmember, or the use of the steel gusset bracket included in the 12650HKR adapter kit. Discard the gusset bracket in such cases.

These instructions are intended to supplement the basic installation steps outlined in various Hooker Blackheart transmission crossmember instruction sheets that call out the use of these parts. The drawings below can be seen in color by going to www.holley.com and searching for either 12628HKR or 12650HKR.

INSTALLATION OF 12628HKR

1. Check that the hardware package includes the following:

Qty.	Description	Qty.	Description
1	Adapter Bracket Assembly	2	7/16" Nuts
2	7/16" Bolts		

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

2. Cut a notch as wide as the 12628HKR bracket into the front of the 12625HKR crossmember. Place the notch in the center of the crossmember and cut it back 1-1/8" from the face of the crossbeam front flange (**Figure 1**).
3. Attach the bracket to the crossmember placing the supplied bolts and nuts in the holes that pass through both the bracket and crossmember (**Figure 2**).
4. If you are using this kit to install a 700R4 transmission, trim the front of the bracket off so that it is even with the front edge of the bracket gusset plate (**Figure 2**) and slightly notch the top edges of the upright crossmember gussets to clear the isolator mount base plate (**Figure 3**). If you are using this kit to install a Powerglide or TH350, leave the bracket length as-is, as you will be attaching the transmission mount to the forward set of holes in the bracket.
5. Once notching/clearancing is complete, clean parts and weld them together using either a MIG or TIG welder (**Figure 2**) and spot-paint as desired to match.

6. Install the crossmember per the instructions contained in its packaging.

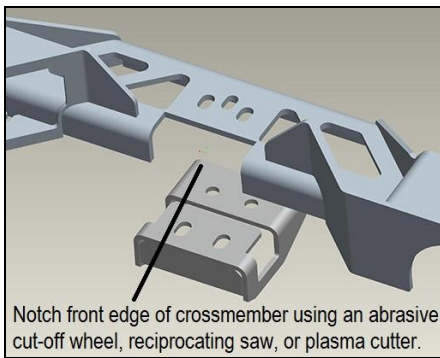


Figure 1

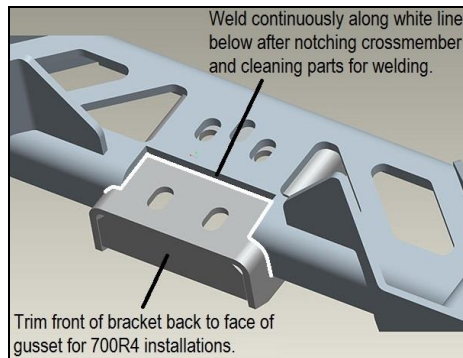


Figure 2

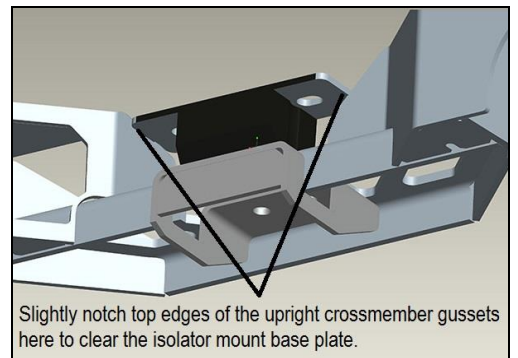


Figure 3

INSTALLATION OF 12650HKR

1. Check that the hardware package includes the following:

Qty.	Description	Qty.	Description
1	Aluminum Spacer Block	2	7/16" Bolts
1	Steel Gusset Bracket	2	7/16" Washers

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

2. If you are using this spacer block kit to install a 2004R into a GM 1st-gen F-body or 3rd-gen X-body using the Hooker Blackheart 12626HKR T56 crossmember, modify/cut the inside left upright wall of the crossmember to match what is shown in **Figures 4 and 5** below. Once modifications are complete, clean parts and weld them together using either a MIG or TIG welder, as indicated in **Figure 6** below and spot-paint as desired to match. Install the crossmember per the instructions contained in its packaging while installing the spacer block included in this kit between the crossmember and transmission isolator. Use the included long fasteners to attach the transmission mount to the crossmember.

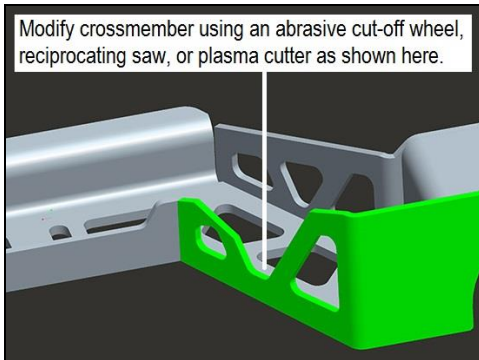


Figure 4

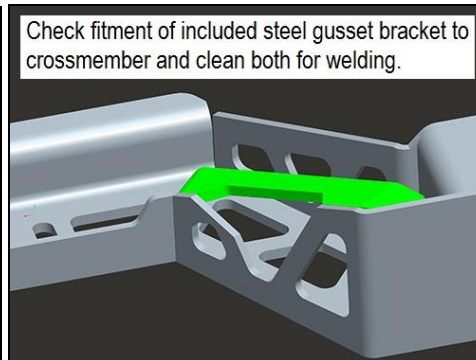


Figure 5

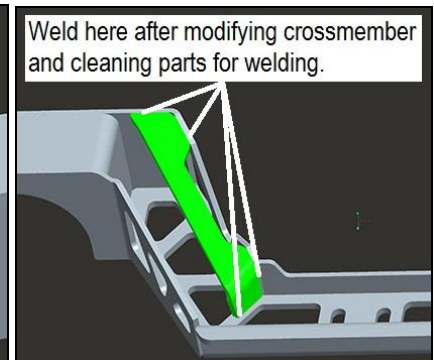


Figure 6

3. If you are using this spacer block kit and a Hooker Blackheart transmission crossmember to install a 2004R or TH400 transmission into any other vehicle besides a GM 1st-gen F-body or 3rd-gen X-body, do not modify the crossmember in any way. Install the crossmember per the instructions contained in its packaging while installing the spacer block included in this kit between the crossmember and transmission mount. Use the included long fasteners to attach the transmission mount to the crossmember. Discard the included gusset bracket as it is not needed in these applications.

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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199R10685

Revision Date: 8-22-18



1982-1992 GM F-Body LS Swap Engine Mounting Brackets 71221003HKR

Installation Instructions



Thank you for choosing to use Hooker Blackheart engine 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 engine mounting brackets requires the use of 1998-2002 GM Camaro/Firebird LS1 engine motor mounts. GM replacement rubber mounts (part number 22179268) or Hooker/Holley polyurethane motor mounts (71221018HKR clamshell housings and 71221016HKR or 71221017HKR inserts) are recommended. Aftermarket poly motor mount inserts from other sources have been found to deviate from factory design specifications and will cause installation issues.

The long horizontally installed through bolts/nuts that couple the engine mounts to the Hooker Blackheart engine brackets are to be user supplied. Stock GM bolts/nuts or the Hooker Blackheart 71223015HKR hardware kit are recommended to be used.

COMPATIBILITY INFORMATION:

When used with the related Hooker Blackheart **71222005HKR** transmission crossmember, these engine swap mounting brackets will replicate the factory engine/transmission inclination angle used in 1982-92 V8 GM F-body applications.

This engine swap mounting bracket kit requires the use of a Holley® **302-2** or **302-3** oil pan for installation and provides engine compatibility with all Holley and stock GM accessory drive systems (GM truck accessory drive system alternator will not clear the stock hood).

More LS 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
8	3/8 x 1" Bolts
8	M10 x 1.5 x 25mm Bolts
8	3/8 Nylon Lock Nuts

INSTALLATION:

1. Detach the two stock brake line hold-down clips that are attached to the K-member directly behind the engine mounts.
2. Remove the factory engine mounts from the K-member and clean the bracket mounting surfaces.

3. Attach the Hooker Blackheart engine mounting brackets to the K-member, as oriented in **Figure 1**, using the supplied 3/8" bolts/nuts.



Figure 1

4. Relocate the brake line clips to a suitable area on the K-member and reattach them by drilling new holes for the factory screws.
5. Install new motor mounts onto the LS engine to be installed.
6. Install the engine/transmission assembly onto the Hooker Blackheart engine brackets and couple the engine mounts to the engine brackets using the user-sourced bolts/nuts.
7. Raise the rear of the transmission as high as it will go and install the Hooker Blackheart **71222005HKR** transmission crossmember per the instructions included with its packaging.
8. Your LS swap engine and transmission are now mounted and ready to be outfitted with headers and an exhaust system. Hooker Blackheart 3rd-Gen LS swap headers and dual exhaust systems are specifically designed for use with these engine mounting brackets.

LIMITATION OF LIABILITY – DISCLAIMER:

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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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199R10915

Revision Date: 9-28-20



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).

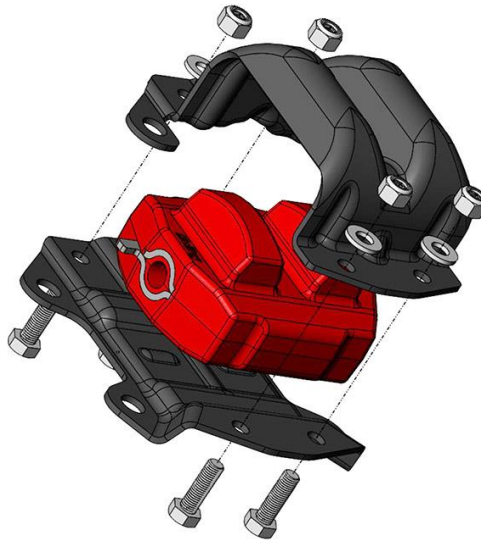


Figure 1

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**.

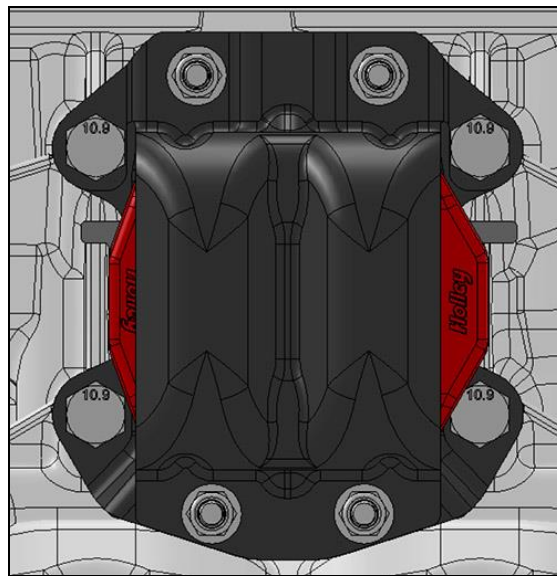


Figure 2

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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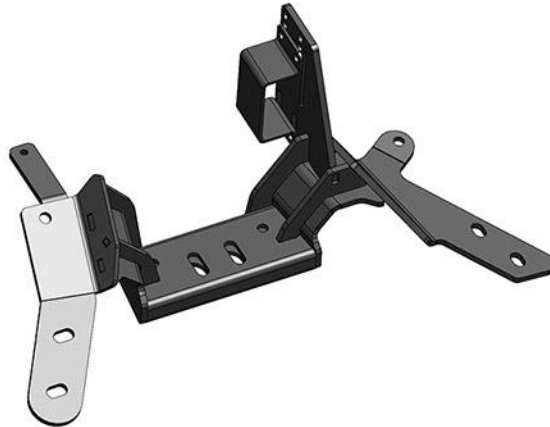
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199R11359

Revision Date: 8-2-19



**1984-92 GM F-Body LS Swap T56/T56 Magnum/4L60-4L70*/4L80-4L85*/TH400*/2004R*
Transmission Crossmember
71222005HKR
Installation Instructions**



*** Installation requires the use of a separately available Hooker transmission adapter kit.**

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.

PRE-INSTALLATION CONSIDERATIONS:

This crossmember is designed as part of a fully-engineered LS swap mounting system for 1984-92 GM F-body vehicles. It has been CAD designed to provide an optimized balance of weight, stiffness and strength. This crossmember provides direct installation capability for 4th-gen F-body/GTO T56 and aftermarket Tremec T56 Magnum transmissions. Installation of a 4L60-4L70, 4L80/4L85, TH400 or 2004R automatic transmission can also be accomplished using this crossmember and the Hooker **12650HKR**, **71223003HKR**, or **71223004HKR** adapter kits referenced later in this document.

Installation of this crossmember, with any of the above mentioned transmissions, requires the use of an aftermarket **Prothane™ 7-1604** polyurethane mount (or stock/aftermarket rubber mount) and an **Energy Suspension 3.1111** 4th-gen F-body V-8 torque arm bushing.

Due to the unique design geometry of this transmission crossmember, attempts to install it with headers and/or engine mounting plates/brackets other than those developed by HOOKER™ for this application will more than likely not be successful.

When used with the related Hooker™ **71221003HKR** engine mounting bracket kit, this CAD designed transmission crossmember will replicate the stock small block Chevy engine/transmission inclination angle designed into these cars by GM.

A suitable lifting jack will be required to install this crossmember with the appropriate transmissions for which it is intended. 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 /JACK STANDS OF SUFFICIENT CAPACITY TO LIFT AND SUPPORT YOUR VEHICLE. NEVER WORK UNDER A VEHICLE SUPPORTED BY A FLOOR OR BUMPER JACK.

COMPATIBILITY INFORMATION:

This transmission crossmember was specifically designed for bolt-in compatibility with the HOOKER™ LS swap engine mounting bracket kit, headers and exhaust systems also developed for this application. Various other Holley® and OE LS 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** LS oil pan; compatibility with other aftermarket/OE engine oil pans is unknown. The Holley 302-1 LS engine oil pan is not bolt-in compatible with this transmission crossmember.

The Hooker **70101316-RHKR** and **70101315-RHKR** LS swap headers are both compatible with the stock A/C evaporator case when installed using this Hooker LS engine swap transmission crossmember and the related Hooker **71221003HKR** 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.

INSTALLATION:

NOTE: These instructions have been written with the assumption that you have already installed an LS engine into your vehicle using the Hooker **71221003HKR** engine swap bracket kit. Satisfactory engine and transmission installation with any other type or brand of engine mounts is not intended with this crossmember.

1. Check that the hardware package includes everything listed below. If any are missing, please contact Technical Service at 1-866-464-6553 or 270-781-9741.

Hardware Kit:					
Qty.	Description	Qty.	Description	Qty.	Description
1	Crossmember Assembly	2	3/8 Black Oxide Washers	1	1/4 Bolt
1	Torque Arm Bushing Attaching Bracket	4	5/16 Bolts	1	1/4 Lock Nut
2	Welded Nut Backing Plates	4	5/16 Lock Nuts	1*	T56 Magnum Spacer
2	3/8 Flanged Head Bolts				

*If you are installing a T56 Magnum transmission, the included two-hole spacer is to be installed between the crossmember and the isolator to compensate for the isolator mounting surface of the T56 Magnum being closer to the transmission output shaft centerline than the same surface on an LS 4th-gen F-Body/GTO T56.

2. Raise the tailshaft of the transmission to its maximum height against the vehicle floor.
3. Remove the stock transmission crossmember from the vehicle, if present.
4. Attach a user-supplied Prothane™ 7-1604 isolator, or equivalent factory replacement rubber isolator, to the rear of the transmission.
5. Install the transmission into the car in the following manner:

4L60-4L70, 4L80/4L85, TH400 or 2004R – Attach the transmission to the engine and raise the tailshaft of the transmission up into the tunnel as far as it will go with a floor jack or screw-type stand.

4th-gen T56 or T56 Magnum – Attach the transmission to the engine with three bolts. Raise the tailshaft of the transmission up against the floor and mark the location for the shifter with a permanent marker. Remove the transmission and cut/trim the hole for the shifter. If the car was originally equipped with a T5 manual transmission, only a small approximately 3/4" deep notch will be required along the back edge of the shifter opening to be able to install a 4th-gen T56 transmission.

Once the shifter opening has been cut/trimmed, attach the transmission to the engine and raise the tailshaft of the transmission up into the tunnel as far as it will go with a floor jack or screw-type stand.

6. Temporarily attach the Hooker crossmember to the bottom of the vehicle subframe using the four threaded factory attachment holes and factory bolts (do not fully torque the bolts at this time). The two rear attachment holes in the crossmember will be observed to be obstructed by the subframe sheet metal at this point.
7. Use a 7/16" drill bit and drill through the sheet metal obstructing the rear attachment holes of the crossmember and then remove the crossmember from the vehicle.
8. Insert the two included (one per side) welded nut backing plates into the subframe rails through the large oval factory holes located in the bottom of each frame rail. The offset nut should be facing towards the rear of the car. See **Figure 1**. Using a telescoping magnet, or other suitable tool, push the backing plates all the way to the rear of the subframe rails until the hole/threaded nut in each is visible through the holes drilled in the previous step.



Figure 1

9. Install the crossmember onto the vehicle in the following manner:

4L60-4L70 – Attach a user supplied Hooker **71223003HKR** 4L60 transmission adapter bracket to the crossmember, using the fasteners included with the bracket, as shown in **Figure 2**. Attach the crossmember to the bottom of the subframe using the stock fasteners in the four forward holes. The supplied 3/8 bolts are to be installed through the two rear holes and into the welded-nut backing plates, which were previously installed inside the subframe rails. **The two supplied 3/8 black oxide washers are to be installed between the crossmember and the subframe at the location of the rear drilled hole on the driver's side of the crossmember.** Lower the transmission down onto the crossmember adapter and attach them together using the hardware supplied with the Prothane transmission isolator, or other user supplied hardware.

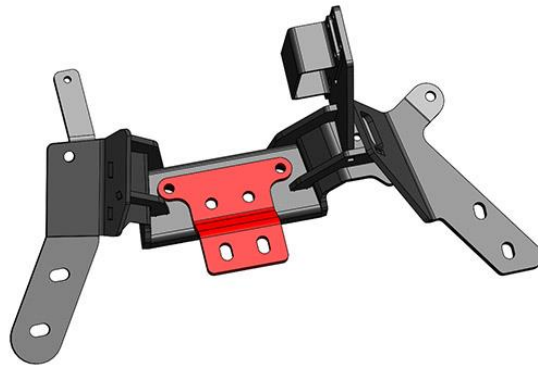


Figure 2

4L80 / 4L85 – Attach a user supplied Hooker **71223004HKR** 4L80 transmission adapter bracket to the crossmember, using the fasteners included with the bracket, as shown in **Figure 3**. Attach the crossmember to the bottom of the subframe using the stock fasteners in the four forward holes. The supplied 3/8 bolts are to be installed through the two rear holes and into the welded-nut backing plates, which were previously installed inside the subframe rails. **The supplied 3/8 washer/spacer is to be installed between the crossmember and the subframe at the location of the rear drilled hole on the driver's side of the crossmember.** Lower the transmission down onto the crossmember adapter and attach them together using the hardware supplied with the Prothane transmission isolator, or other user supplied hardware.

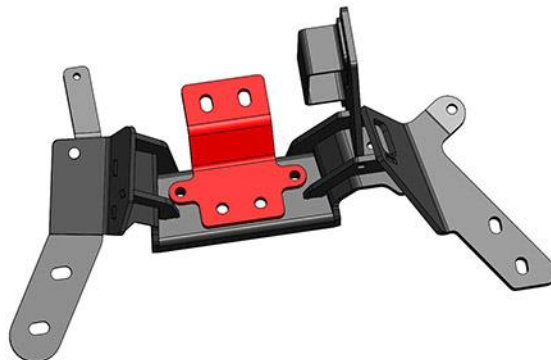


Figure 3

TH400 / 2004R – Attach the crossmember to the bottom of the subframe using the stock fasteners in the four forward holes and the two supplied 3/8 bolts the two rear holes; thread the 3/8 bolts into the welded-nut backing plates, which were previously installed inside the subframe rails. **The supplied 3/8 washer/spacer is to be installed between the crossmember and the subframe at the location of the rear drilled hole on the driver's side of the crossmember.**

Tighten all six attachment bolts and then place a user supplied Hooker **12650HKR** spacer block onto the top of the crossmember beam before lowering the transmission onto the spacer block. Attach the transmission to the crossmember using the long 7/16 bolts and washers included with the spacer block.

4th-gen T56 / T56 Magnum – Attach the crossmember to the bottom of the subframe using the stock fasteners in the four forward holes and the two supplied 3/8 bolts the two rear holes; thread the 3/8 bolts into the welded-nut backing plates, which were previously installed inside the subframe rails. **The supplied 3/8 washer/spacer is to be installed between the crossmember and the subframe at the location of the rear drilled hole on the driver side of the crossmember.** Lower the transmission down onto the crossmember and attach them together using the hardware supplied with the Prothane transmission isolator, or other user supplied hardware.

10. Apply a light spray of penetrating oil to the end of the torque arm. Install the Energy Suspension bushing onto the torque arm, as depicted in **Figure 4**, if your torque arm is formed with its flanged edges facing towards the outside of the car. If your torque arm is formed with its flanged edges facing the transmission, flip the bushing over so it's internal profile corresponds with the orientation of the shape on the tip of the torque arm and install the bushing. Place the included saddle bracket over the bushing and attach it to the corresponding holes/slots in the crossmember with the included 5/16 nuts and bolts. The lowest row of holes approximates the stock mounting position of the torque arm. Moving the mount higher will raise the instant center of the rear suspension for increased anti-squat characteristics.

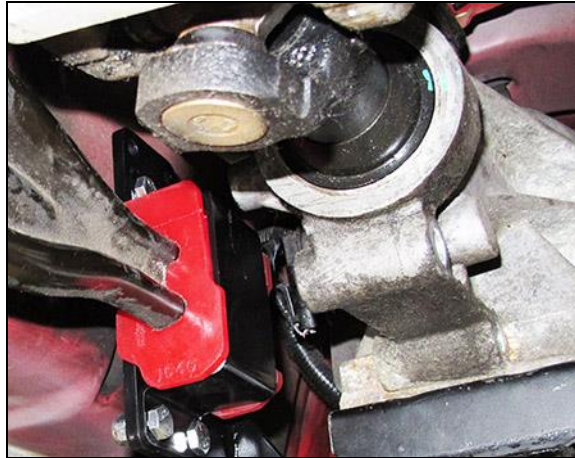


Figure 4

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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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. HOOKER™ 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.

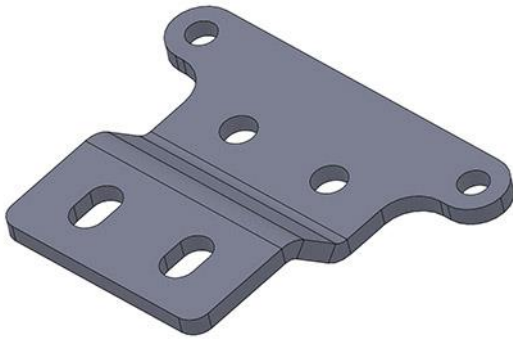
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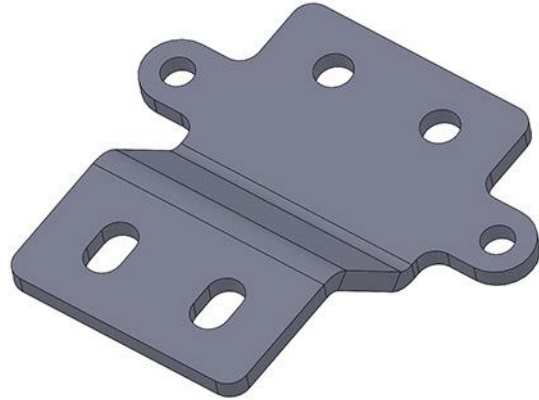
Revision Date: 9-16-16



Hooker Transmission Crossmember Adapter Bracket Kits 71223003HKR (4L60-4L70) & 71223004HKR (4L80-4L85) Installation Instructions



4L60-4L70



4L80-4L85

Thank you for choosing to use a Hooker™ transmission crossmember as part of your LS swap project. The components contained in this package are designed and intended for installation only with specific Hooker LS swap transmission crossmembers. Please refer to the instructions included with the compatible Hooker crossmember you are using for proper installation of these parts.

1. Check that the hardware package includes the following:

Qty.	Description	Qty.	Description
1	Bracket Assembly	2	7/16 x 1 Bolts
2	3/8 x 1" Bolts	2	7/16 Nuts
2	3/8 Nuts		

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

No other use of these components is intended, implied or recommended by Holley Performance Products.

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199R10879

Revision Date: 12-15-17



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.

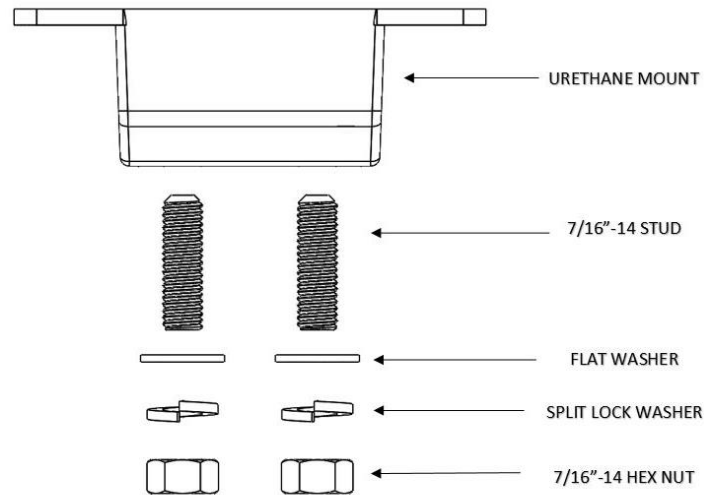


Figure 1

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Date: 1-24-19