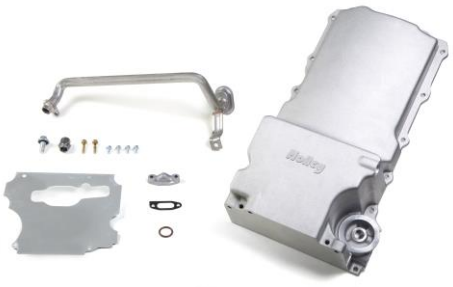
OIL PANS
P/N 302-1 & 302-2



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:

	302-1	302-2
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**).

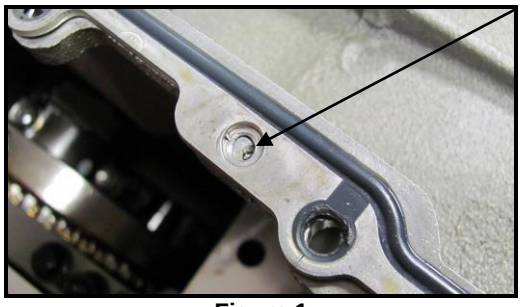


Figure 1

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.

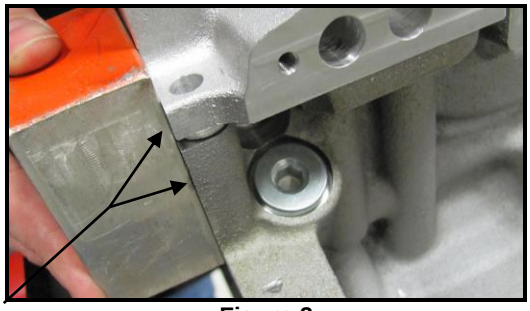


Figure 2

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**).

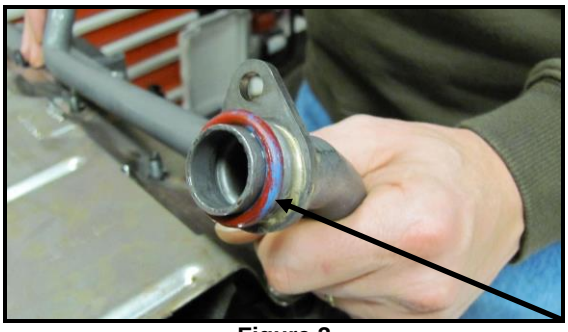


Figure 3

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.

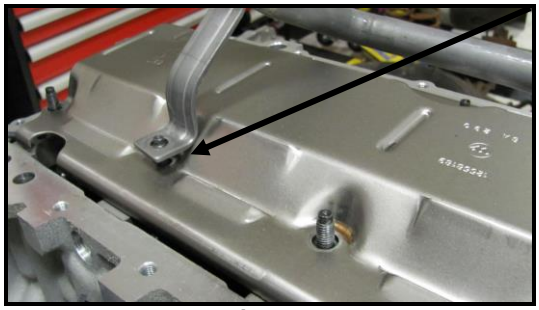


Figure 4

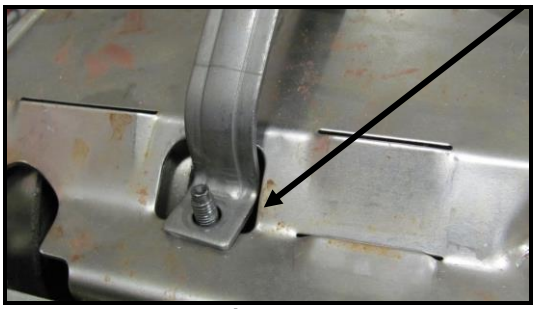
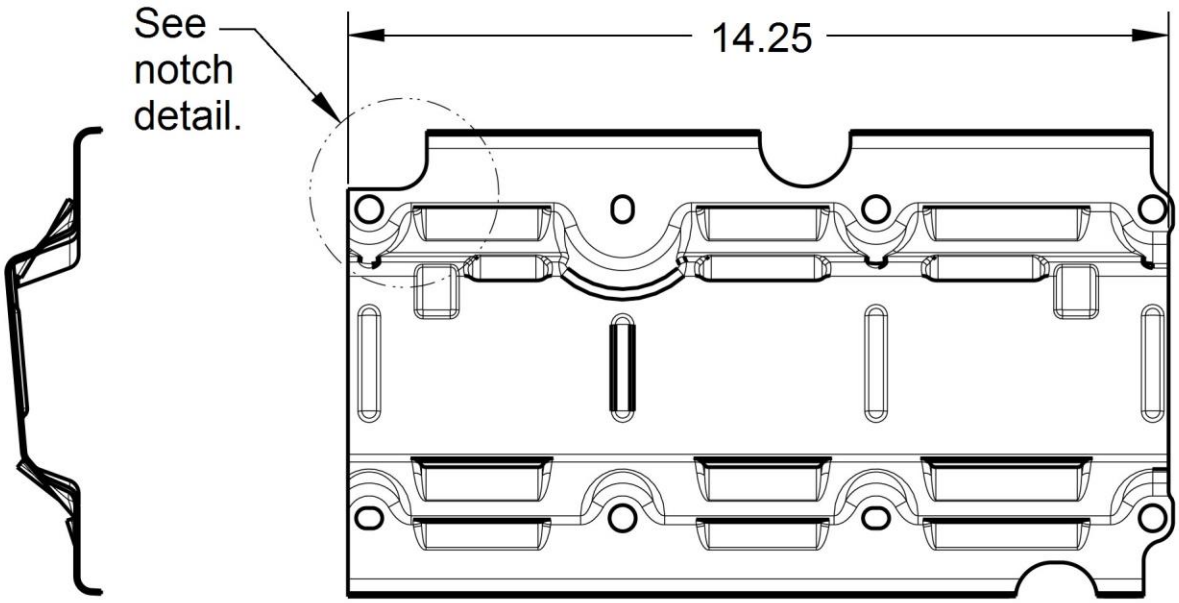


Figure 5

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.



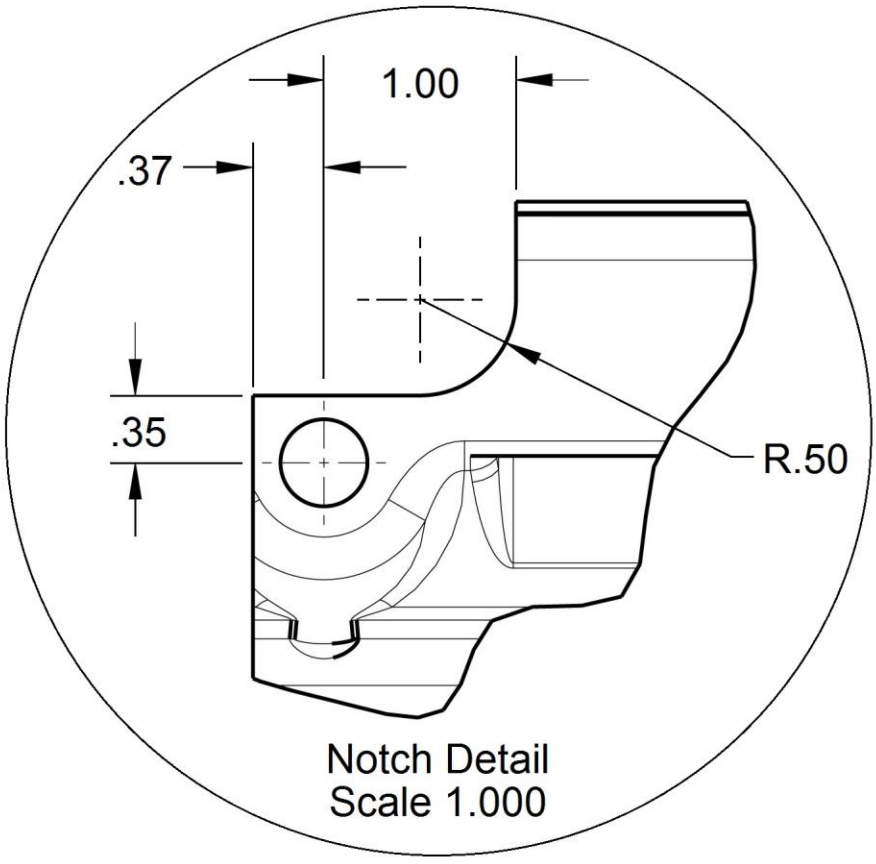


Figure 6

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.

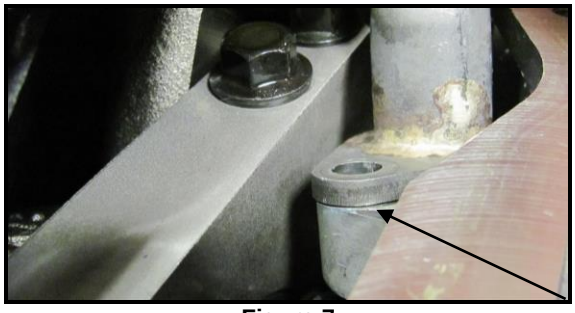


Figure 7

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

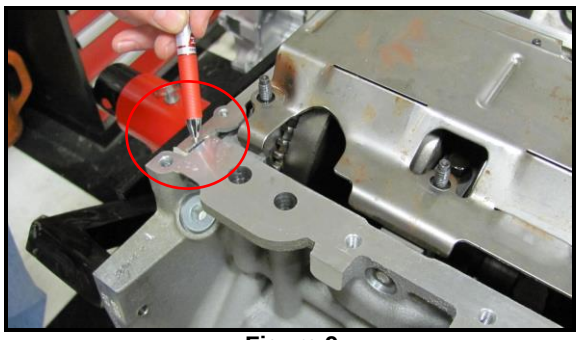


Figure 9

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.

Holley® Technical Support
1801 Russellville Road
Bowling Green, KY 42101
270-781-9741
www.holley.com

© 2011 Holley Performance Products, Inc. All rights reserved. Tous Droits Réservés.

199R10566
Revision Date: 8-28-20

GM F-Body LS Swap Engine Mounting Brackets
P/N 12512HKR (1970-74) & P/N 12613HKR (1975-81)

Thank you for choosing to use Hooker Blackheart engine swap mounting brackets as part of your engine/transmission swap project. These Hooker Blackheart 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.

IMPORTANT DESIGN AND INSTALLATION INFORMATION:

YEAR RANGE	MODEL	PART #	USES TEMPLATE?	NOTES
1970-1972	Camaro	12512HKR	Yes	This part number includes a template and only this year range Camaro uses the template
1970-1972	Firebird	12512HKR	Yes	This part number includes a template and only this year range Firebird uses the template
1973-1974	Camaro	12512HKR	No	Highly recommended that new clamshell mounts be installed
1973-1974	Firebird	12512HKR	No	Highly recommended that new clamshell mounts be installed
1975-1981	Camaro	12613HKR	No (Not Included)	Highly recommended that new clamshell mounts be installed
1975-1981	Firebird	12613HKR	No (Not Included)	Highly recommended that new clamshell mounts be installed

These brackets are designed to be used in conjunction with stock OE clamshell style engine mounts, as installed on all 1972-81 Camaro vehicles (Anchor brand P/N 2292 stock rubber replacement clamshell mounts, or Hooker/Holley 71221004HKR clamshell mount cages and 71221014HKR / 71221015HKR poly inserts are recommended). Installation of the 12512HKR brackets into early model 2nd-gen F-body vehicles that were not factory equipped with clamshell mounts requires drilling holes into your vehicle's sub-frame and may require the engine to be hoisted into and out of the vehicle a few of times to verify parts fitment before final installation of the engine.

A drilling template is provided with P/N 12512HKR to properly install the clamshell mounts on 1970-1972 pre-clamshell Camaro vehicles. Installation of 12512HKR brackets on early pre-clamshell Firebird applications will also require drilling, but will use the clamshell mounts themselves as a drilling template to locate one new hole for each mount. The clamshell mounts themselves, and the long coupler bolts (7/16"x 5-1/4") and nuts (7/16") used to secure them to the Hooker Blackheart brackets are not included with these kits and will need to be purchased separately. 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 on 1975-81 cars and is REQUIRED on 1970 and 1972 model year vehicles that were not originally equipped with clamshell mounts.

The combined use of these mounting brackets and related Hooker Blackheart transmission swap crossmembers will allow installation of an LS engine with an 4L60/4L65/4L70/4L70 automatic or TREMEC® LS F-body/GTO T56 transmission into this application without requiring any cutting or hammering to the vehicle body with the exception of the hole for a manual shifter. Installation of a TREMEC® aftermarket T56 Magnum transmission may require floor modifications due to its larger physical size.

Unlike the stock small-block and big-block engine mounting brackets used by GM on 2nd-gen F-bodies, the designed geometry of these engine swap mounting brackets align the engine crankshaft and transmission output shaft axis just off the center-line of the chassis like stock small-block equipped 1st-gen F-body/1968-74 Nova (3rd Gen X-body) vehicles.

Related Hooker Blackheart transmission swap crossmembers share the same chassis-centered geometry of these engine mounting brackets to provide an optimized 3° to 3.5° engine/transmission inclination angle, which is the key to providing minimized U-joint working angles that are desired for lowered, performance/competition vehicles.

With these components installed, your driveline will be purposely configured with compound U-joint angles due to the close-to-center engine/transmission and the stock pinion offset of your rear differential (just like the previously mentioned stock 1st-gen Camaro/68-74 Nova). If you wish to check your U-joint working angles, you merely need to sum together the calculated horizontal angular offset of your driveline (half a degree as designed by Hooker Blackheart engineering) and the typical measured vertical angles of your driveline components. Detailed information on how to measure and calculate single plane and compound U-joint working angles is available from Spicer by going to www.spicerparts.com and search for publication number J3311-1-DSSP.

Due to the exclusive geometry designed into these Hooker Blackheart engine swap mounting brackets, attempts to install headers and/or transmission crossmembers other than those developed by Hooker Blackheart engineering will not be successful.

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 /JACK STANDS OF SUFFICIENT CAPACITY TO LIFT AND SUPPORT YOUR VEHICLE. NEVER WORK UNDER A VEHICLE SUPPORTED BY A FLOOR OR BUMPER JACK.

COMPATIBILITY:

These engine swap mounting brackets were specifically designed for bolt-in compatibility with Hooker Blackheart transmission swap crossmembers, cast iron LS exhaust manifolds, headers and exhaust systems, and Holley® LS oil pan and accessory drive components for this application.

Oil pans that are directly installable with these mounts include the Holley® **302-1, 302-2, and 302-3** LS retrofit pans, the stock F-body pan and various aftermarket fabricated steel pans.

The F-body, GTO and Corvette accessory drives are compatible with these mounts with the following exclusions:

- The stock plastic shroud on rear of the F-body alternator will have to be heavily modified or removed completely. GTO alternators will need to be swapped to an F-body unit to clear the steering box Pitman arm.
- 1970-74 vehicles will need to adopt the use of an offset Pitman arm, center link and inner tie rod ends from a 1979 Trans Am to allow installation and use of a low-mount F-body alternator.
- Corvette power steering pump pulley will likely need to be swapped for a smaller diameter pulley/pump to clear the upper control arm.
- Stock low-mount A/C compressors are not compatible with these mounts. The compressor must be upper-mounted to the right cylinder head with the use of a Holley® **20-133** (GM R4), **20-134** (Sanden SD508 or SD7), or similar bracket assembly.

If desired, a Holley® **20-135** upper-mounted Corvette style alternator/power steering bracket can be installed (swap to smaller diameter power steering pump pulley recommended for upper A-arm clearance) and is compatible with all F-body/GTO, Corvette and truck balancer/water pump offsets with the use of the following Holley® bracket spacer kits: Corvette - **21-1**, F-body/GTO - **21-2**, and Chevy/GMC truck/2010-up Camaro - **21-3**.

Two additional complete accessory drive bracket kits are available that include both the A/C and alternator/power steering brackets listed above. These kits are part numbers **20-131** (GM R4 compressor) and **20-132** (Sanden SD508 or SD7 compressor).

Hooker™ LS swap manifolds **(8501HKR)** and Hooker Blackheart long-tube headers **(70101311-RHKR/70101312-RHKR)** will all allow the use of the stock A/C evaporator case on the firewall when installed with these Hooker Blackheart LS engine swap mounting brackets.

The engine position obtained with these brackets is compatible with both the standard and optional hide-away windshield wiper motors mounted on the firewall.

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.

TIPS FOR A SUCCESSFUL ENGINE SWAP:

1. Check that the hardware package includes the following**:** (8) M10 x 1.5 x 30 Bolts, (8) 3/8”-16 x 1” bolts **(12512HKR only),** and (8) 3/8-16 flanged nuts **(12512HKR only)**. If these are missing, please contact Technical Service at 1-866-464-6553 or 270-781-9741.

2. Mark all hoses, wires, and vacuum lines, according to their function. Use masking tape and a pen for this.

3. Whenever possible, utilize the existing wiring and lines.

4. 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.

5. 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.

6. Save as much hardware that is removed from the donor engine as possible. You may need some of these items later.

7. 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.

8. Do not overstress components that are designed for stock four or six cylinder engine torque by over-abusing a motor of greater horsepower.

9. Don’t forget to upgrade your radiator, fan(s), and hoses to accommodate the cooling requirements of your LS engine.

VEHICLE PREP:

1. Remove the hood from the vehicle.

2. Disconnect the battery and fuel lines.

3. Remove the 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 all coolant and remove the radiator/hoses from vehicle.

5. Remove the driveshaft, engine, transmission and related mounts 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, the oil dipstick/tube, and motor mounts.

2. Clean and paint parts to be re-used, if desired.

3. Secure engine/trans assembly to lifting sling and engine hoist.

ENGINE INSTALL:

FOR INSTALLING 12512HKR BRACKETS ON PRE-CLAMSHELL VEHICLES:

Camaro applications-
1. Remove the factory engine frame stands (brackets to which engine mounts are attached) from the sub-frame. Next, align the included drilling template with the existing holes in either side of the sub-frame following **Figure 1** on the next page and pilot drill two 3/16" diameter holes in each side of the sub-frame in the positions indicated by the template. Use 3/8" bolts as guide pins in the template "align" holes to keep it in position as you drill.

2. Rotate and flip the template to align it with the opposite side of the sub-frame as shown in the diagram and repeat the pilot drilling process. Next, use a 25/64" drill bit and enlarge all the piloted holes to their final size.

3. Using the holes you just drilled and the top holes used for aligning the template (x4 bolts total each side), attach the clamshells to the sub-frame with the included 3/8" fasteners.

Firebird applications – Remove the factory engine frame stands (brackets to which the engine mounts are attached) and align the top two holes of each clamshell mount or template with the top two holes that were used to attach the frame stands you just removed to the sub-frame. Insert 3/8" bolts into the holes for use as guide pins to hold the alignment. Next, mark the position of the bottom rearward hole of each clamshell onto the sub-frame and drill them out to a final diameter of 25/64".

NOTE: The end of the clamshell mounts with the two wider spaced holes should be at the top of the sub-frame.

FOR INSTALLING 12512HKR AND 12613HKR BRACKETS ON FACTORY EQUIPPED CLAMSHELL VEHICLES:

1. Remove existing clamshell mounts from the sub-frame and replace them with the aftermarket rubber replacement clamshell mounts, or the Hooker/Holley clamshell mount cages and poly inserts previously mentioned on page 1.

FOR ALL MODELS:

1. Raise and maneuver the engine hoist into position for installing the engine/transmission. In order to be able to lower the assembly into its proper position in the vehicle, the initial position of the sling should provide at least a 45° tilt angle of the engine/transmission.

2. Using the supplied M10 bolts, attach the Hooker Blackheart left and right engine mounting brackets. The large holes in the base plates install towards the rear of the motor.

3. Lift the assembly high enough to clear the radiator support at the front of the car. If your hoist will not go high enough to clear the support, have an assistant lift the end of the transmission up to clear it as you move the hoist under the vehicle.

4. Lower the assembly into the engine compartment, level off, and place onto the clamshell mounts (new mounts recommended).

5. Prop up and support the transmission tail shaft and then install the long coupler bolts through engine bracket ears and mounts. Install purchased nuts onto the bolts and tighten them.

6. If purchased, proceed to installing your Hooker Blackheart transmission swap crossmember and headers per the instructions included with their packaging.

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

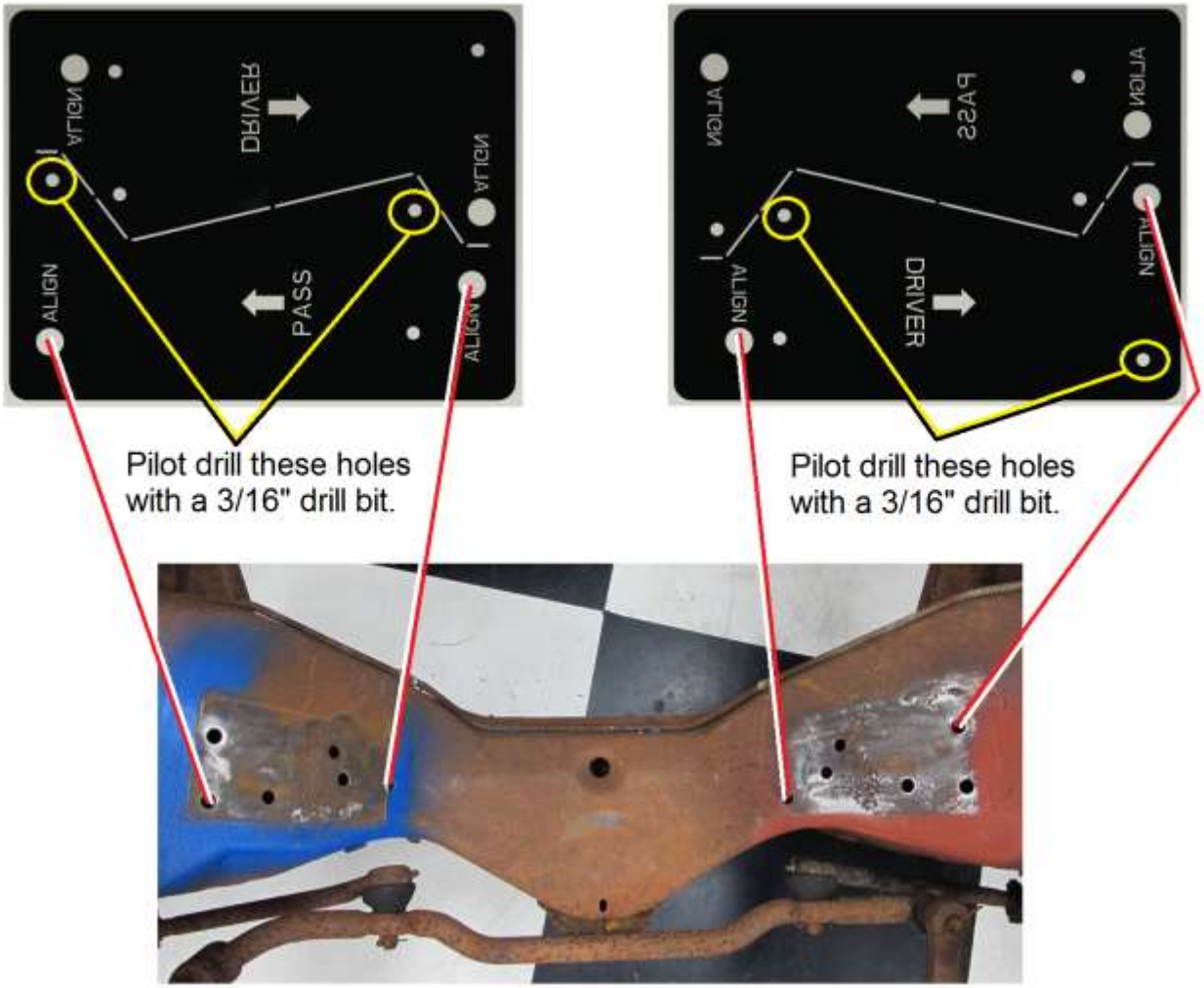


Figure 1

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.
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.

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.

© 2013 Holley Performance Products, Inc. All rights reserved. Tous Droits Réservés.

P/N 12616HKR-1

1970-81 GM F-Body T56/T56 Magnum/4L80E*/4L85E*/TH400*/2004R* Transmission Crossmember

***Requires the use of a separately available Hooker Blackheart adapter or spacer referenced in the text below to install.**

Installation Instructions

Thank you for choosing to use this Hooker Blackheart 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 vehicle application. The entire Hooker Blackheart LS swap system for this application 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 2nd-gen F-body vehicles. It has been CAD designed and FEA validated to provide maximized strength and stiffness along with high-clearance arches for exhaust system routing.

In addition to providing for direct installation of a GM 4th-gen F-Body/GTO T56, or T56 Magnum manual transmission, this crossmember can also be used to install a GM 4L80E, 4L85E, TH400, or 2004R transmission with the use of an available Hooker Blackheart **71223013HKR** adapter (4L80E/4L85E transmissions), or **12650HKR** spacer block kit (TH400 or 2004R transmissions).

Installation of this crossmember, with any of the above-mentioned transmissions, requires the use of a Hooker 71223029HKR, 71223030HKR, or Anchor Industries **2268** (rubber) transmission mount.

Due to its unique design geometry, this crossmember must be installed in conjunction with Hooker Blackheart **12512HKR** or **12613HKR** engine mounting brackets to provide correct engine offset geometry and U-joint working angles. This crossmember will provide for installation of a LS engine and Tremec™ LS F-body/GTO T56 transmission into this application without requiring any cutting or hammering of the vehicle body, with the exception of shifter hole that must be cut and the required clearance that must be provided for the reverse lockout solenoid. The location of the shifter hole dictates that it is necessary to cut into the floor mid-brace on some model year cars and will therefore require minor fabrication and/or welding to re-box the brace, if so desired. Installation of a Tremec™ aftermarket T56 Magnum transmission will require additional floor clearance modifications due to its physically larger size.

The installed geometry provided by this crossmember and the Hooker Blackheart 12512HKR and 12613HKR engine mounting brackets aligns the engine crankshaft and transmission output shaft axis with the center line of the chassis, like is the case with most pro-built cars and aftermarket subframes for 2nd-gen F-bodies (like DSE for example).

With these components installed, your driveline will be purposely configured with compound U-joint angles, due to the centered engine/transmission and the stock pinion offset of your rear differential**.** If you wish to check your U-joint working angles, detailed information on how to do so can be found at www.spicerparts.com (search for publication number J3311-1-DSSP).

A suitable lifting jack or stand will be required to install this crossmember with any of the transmissions listed in this document.

COMPATIBILITY:

This crossmember was specifically designed for compatibility with Hooker Blackheart engine mounting brackets, cast iron LS exhaust manifolds, headers and exhaust systems and Holley® LS oil pans and accessory drive components for this application.

Oil pans that are directly installable with this crossmember include the Holley® **302-1**, **302-2, and 302-3** LS oil pans, the stock F-body, and various aftermarket fabricated steel pans.

The F-body, GTO and Corvette accessory drives are all installable with these mounts with the following exclusions:

- GTO alternators will need to be swapped to an F-body unit to clear the steering box pitman arm.
- Corvette power steering pump pulley will likely need to be swapped for a smaller diameter pulley/pump to clear the upper control arm.
- Stock low-mount A/C compressors are not installable with these mounts; compressor must be upper-mounted to right cylinder head with the use of a Holley® **20-133** (GM R4), **20-134** (Sanden SD508 or SD7), or similar bracket assembly.

If desired, a Holley® **20-135** upper-mounted Corvette style alternator/power steering bracket can be installed (swap to smaller diameter power steering pump pulley recommended for upper A-arm clearance) and is compatible with all F-body/GTO, Corvette, and truck balancer/water pump offsets with the use of the following Holley® bracket spacer kits: Corvette - **21-1**, F-body/GTO - **21-2,** and Chevy/GMC truck/2010-up Camaro - **21-3**.

Two additional complete accessory drive bracket kits are available that include both the A/C and alternator/power steering brackets listed above. These kits are part numbers **20-131** (GM R4 compressor) and **20-132** (Sanden SD508 or SD7 compressor).

Hooker™ LS swap manifolds **(8501HKR & 8502HKR),** and Hooker Blackheart mid-length headers (**2471HKR, 2472HKR, 70201307-RHKR, and 70201308-RHKR)** and long-tube headers **(2295HKR, 2296HKR, 2297HKR, 2298HKR, 70101309-RHKR, 70101310-RHKR, 70101311-RHKR and 70101312-RHKR)** are all compatible with most stock A/C evaporator cases on the firewall, when installed with this Hooker Blackheart LS engine swap transmission crossmember.

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.

Use of this crossmember with half-height body bushings is only possible if relief pockets are fabricated into the floor to clear the arched humps of the crossmember and may require further floor clearance operations to clear the transmission bellhousing/case.

INSTALLATION:

This crossmember is designed to provide an exhaust routing path with maximized ground clearance. Be aware that 1970-74 models have floor pans which are lower to the top of the subframe than those of 1975-81 models and require more careful maneuvering of the crossmember into position to reduce the possibility of marring of the underside finish of the floor. 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.

INCLUDED HARDWARE:

- 3/8 x 1 Flanged Bolts – QTY 8
- 3/8 Flanged Nuts – QTY 8

1. Raise the tail shaft of the transmission to its highest possible point of lift.

2. Install one side bracket to the crossmember using the supplied 3/8 hardware and Insert the crossmember between the subframe and floor sheet metal. The correct side bracket will match the contour of the frame rail.

3. Once you have the crossmember in place, attach the remaining side bracket to the crossmember. Using the 3/8 hardware, install the bolts through the frame rail of the subframe and tighten.

4. Attach your chosen transmission mount to the transmission in the following manner:

5. Lower the transmission on to the crossmember while performing the following:

    A. For T56 Transmissions, install directly to the crossmember using one of the mentioned rubber mounts.

    B. For TH400 or 2004R installations, place the optional Hooker Blackheart **12650HKR** spacer block between the crossmember and the mentioned rubber mount.

    C. For 4L80E/4L85E installations, lower directly onto the crossmember using the mentioned rubber mount.

6. Loosely attach the rubber mount to the crossmember with the hardware supplied with the mount chosen

7. Tighten all hardware and inspect install before driving the vehicle.

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

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.

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.

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.

© 2022 Hooker Headers, Inc. All rights reserved. Tous Droits Réservés.

199R12394
Date: 4-12-22

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.

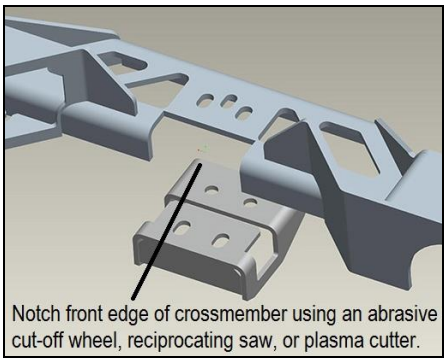


Figure 1

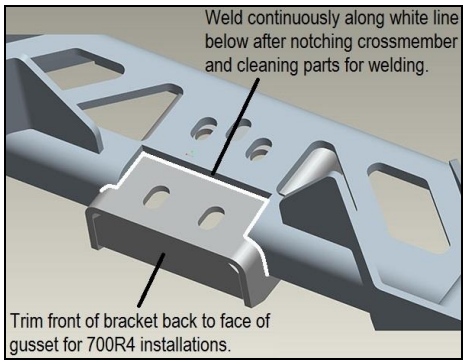


Figure 2

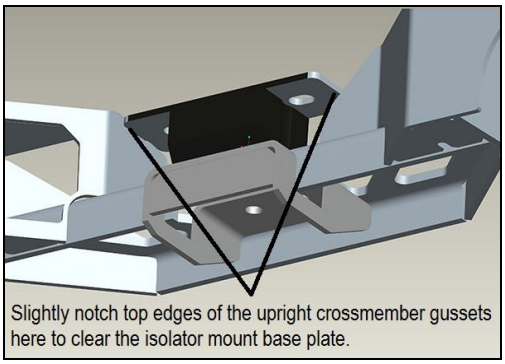


Figure 3

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.

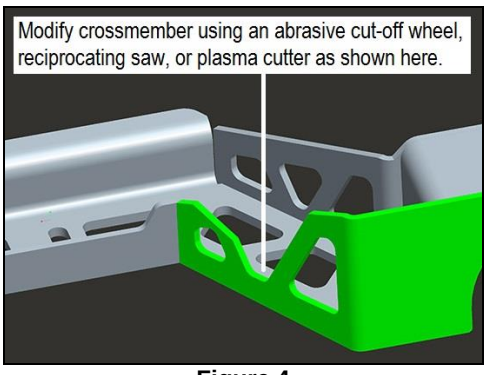


Figure 4

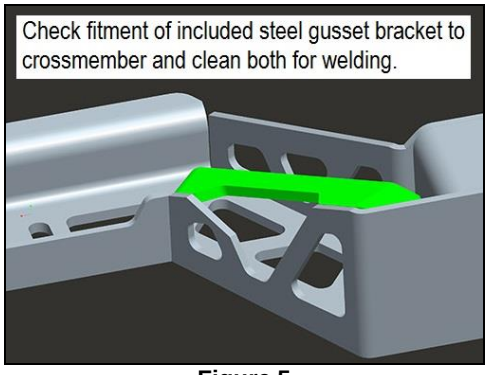


Figure 5

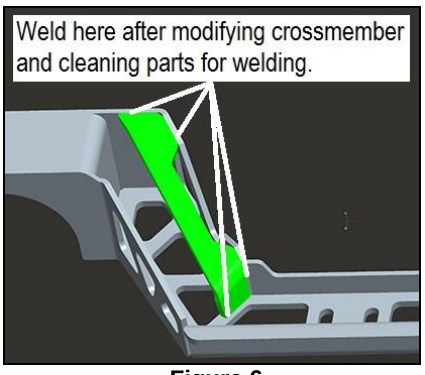


Figure 6

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.

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.

© 2014 Hooker Headers, Inc. All rights reserved. Tous Droits Réservés.

199R10685
Revision Date: 8-22-18

4L80/4L85 Transmission Crossmember Adapter Bracket
71223013HKR
Installation Instructions

Thank you for choosing to use this Hooker Blackheart product as part of your LS swap project. The components contained in this package are designed and intended for installation only with the specific Hooker Blackheart engine swap transmission crossmembers, as referenced on Holley's website, and within various Hooker Blackheart transmission crossmember instruction sheets.

1. Check that the hardware package includes the following**:**

Qty.	Description
1	Adapter Bracket
2	7/16" Bolts
2	7/16" Nuts
2	M10 Bolts

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.

INSTALLATION:

1. Remove the existing transmission isolator mount from the rear of the transmission, if present.

2. Remove the two bottom bolts attaching the extension housing to the transmission case.

3. Attach the adapter bracket to the transmission extension housing as shown in the image below. This can be accomplished by using the removed factory bolts at their original location and the supplied M10 bolts in the two upper holes lined up with the threaded holes in the machined isolator mounting pad.

4. Attach the transmission mount of your choice to the bottom of the adapter bracket using the supplied 7/16” bolts and nuts.

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.

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.

© 2016 Hooker Headers, Inc. All rights reserved.

199R11230
Revision Date: 10-5-18

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 accomodated 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.

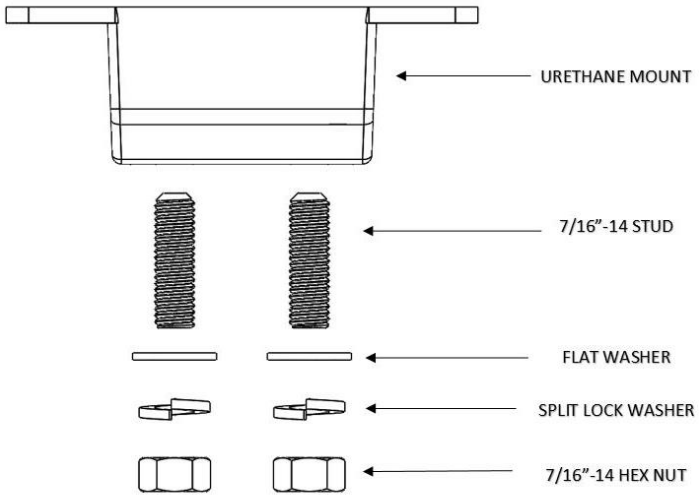


Figure 1

LIMITATION OF LIABLILITY – 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