1967-69 GM F-BODY/1968-74 GM X-BODY LS SWAP ENGINE BRACKETS P/N 12618HKR
Installation Instructions

Thank you for choosing to use HOOKER™ engine swap brackets as part of your engine/transmission swap project. These mounting brackets are part of the most comprehensively engineered system of mounting components, headers and exhaust systems available for this application. The entire HOOKER™ swap system is designed to decrease your total swap installation effort and cost, while increasing the engineered quality of your vehicle and compatibility of these components with other popular aftermarket components.

PRE-INSTALLATION CONSIDERATIONS:

Check that the hardware package includes the following**:**
(4) M10 x 1.5 lock nuts
(12) M10 x 1.5 x 25 flat head cap screws
(4) 3/8”-16 x 1” bolts
(4) 3/8”-16 x 1/2” bolts
(4) 3/8-16 lock nuts.

These brackets are designed to be used in conjunction with stock OE clamshell style engine mounts (as installed on all 1972-81 Camaro vehicles) that will be retrofitted into the swap vehicle through the use of the specially designed spacer plates included with this kit. The OE clamshell mounts and the long horizontally installed bolts used to secure them to the HOOKER™ brackets are not included with this kit 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 (Anchor brand P/N 2292 or equivalent) be installed at the time of installation.

NOTE: 1973 and 1974 model year X-body cars that are factory equipped with clamshell mounts may have to the clamshell mounting holes re-drilled in the subframe to properly position the engine for correct fitment of HOOKER™ headers for this application (see more info under the INSTALLATION heading of this document).

The combined use of these mounting brackets and related HOOKER™ transmission swap crossmembers, will allow installation of an LS engine with a GM Powerglide, TH350, TH400, 700R4, 2004R or 4L60/4L65/4L70/4L75 automatic into any 1967-69 GM F-body vehicle without requiring any cutting or hammering to the vehicle body.

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

Due to their considerably lower transmission tunnel height, 1968-74 X-body vehicles will require tunnel modifications to install either a TREMEC® LS F-body/GTO T56 transmission, or a TREMEC® aftermarket T56 Magnum transmission using the HOOKER™ system of engine mounts and transmission crossmembers.

For best fitment and overall component clearances, HOOKER™ headers and mounting components for this swap application are designed with a chassis-centered engine and transmission location, which varies only slightly from the original minor passenger’s side offset used by GM. The engine and transmission have also been positioned to enable hassle-free installation and to promote good vehicle handling performance. The unique design geometry of these engine brackets require the use of HOOKER™ transmission crossmembers and headers to achieved the designed fitment between all components in this swap application. Use of any non-Hooker brand transmission crossmember or headers will have adverse effects on the ease of installation, component clearance, ground clearance and engine inclination angle (3° with HOOKER™ engine mounts and transmission crossmembers) you can expect from your installation.

With these components installed, your driveline will be purposely configured with compound U-joint angles, due to the chassis-centered alignment of your engine/transmission and the stock pinion offset of your rear differential. 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™) 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.

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

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

COMPATIBILITY:

These engine swap mounting brackets were specifically designed for bolt-in compatibility with HOOKER™ transmission swap crossmembers, headers and exhaust systems, and Holley® LS oil pans and accessory drive components for this application.

OIL PANS that are bolt-in compatible with these mounts are:

- Holley® F-body LS retrofit pan (part number **302-2**), a notched stock F-body, and various aftermarket fabricated steel pans are also usable with these mounting brackets.
- Holley oil pan number **302-1** is also installable with these mounts, but requires notching of the engine crossmember to allow installation, due to the stroker crank compatible dimensions at its front end.

ACCESSORY DRIVES (F-body, GTO and Corvette) are all installable with these mounts following these guidelines:

- Low-mount alternators will require notching/clearancing of the engine crossmember for installation
- The stock plastic shroud on rear of the F-body alternator may have to be modified or removed completely. GTO alternators may need to be swapped to an F-body alternator for maximum clearance.
- If swapping a Corvette LS engine with factory accessory drive components, the 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. A custom right side engine mounting bracket can be fabricated that attaches further back on the subframe if low-mount compressor location is an absolute requirement for your swap.

If desired, a Holley® **20-135** upper-mounted Corvette style alternator/power steering bracket can be installed and configured for compatibility with either stock truck or F-body water pump/balancer offsets. The additional spacer plate kit needed to achieve proper spacing is as follows: 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 mid-length headers **(2473HKR & 2474HKR),** and full-length headers **(2275HKR & 2276HKR)** will all allow the use of the stock A/C evaporator case on the firewall, when installed with these HOOKER™ LS engine swap mounting brackets.

The engine position obtained with these brackets is compatible with the factory installed wiper motor and power brake booster.

No coil/coil bracket relocation is required with these mounts when stock OE valve covers are used.

TIPS FOR A SUCCESSFUL ENGINE SWAP:

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

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

3. 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.

4. 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.

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

6. 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.

7. Do not overstress components that are designed for stock four or six cylinder torque by over-abuse with a motor of greater horsepower, i.e. drive shafts.

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

VEHICLE PREP:

1. Remove hood from vehicle.

2. Disconnect battery and fuel lines.

3. Remove existing wiring harness and set aside for later re-use of connectors, as needed, to complete electrical connections to the swap engine harness.

4. Drain and remove radiator/hoses from vehicle.

5. Remove the driveshaft, engine, engine frame stands, transmission, transmission crossmember, and related parts from the vehicle.

SWAP ENGINE/TRANS PREP:

1. Carefully remove the following components from the engine: spark plug wires, exhaust manifolds/O2 sensors, wiring harness/computer, MAF sensor, starter motor/plate and dust covers, A/C compressor and bracket, and the oil dipstick/tube and motor mounts.

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

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

4. Attach the included left and right side Hooker engine brackets to the engine; the proper indexing and left/right orientation of the brackets is achieved by ensuring the profiled clamshell **support ears** are positioned towards the front of the engine and the long **stepped jog** along the outer profile of the base plates are positioned up towards the top of the engine **(Figure 1)**.

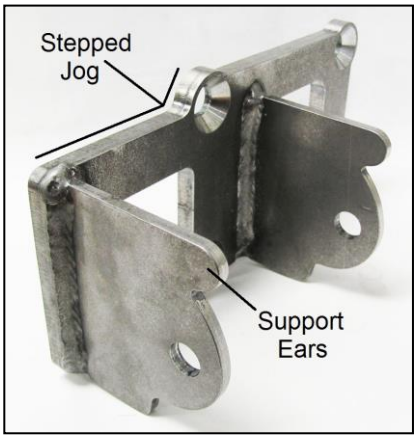

Figure 1 – Driver's side mount

ENGINE/TRANS INSTALL:

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

NOTE 2: Installation of these components into a 1973 or 1974 model year X-body vehicle will likely require new holes to be drilled into the subframe to accept the spacer plates in this kit that were designed to install into 1968-72 model year X-body cars that were factory equipped with engine frame stands. In such installations, it is recommended to remove your factory clamshells from the crossmember and perform a mock-up installation of your engine and transmission using your HOOKER™ engine mounts, transmission crossmember and headers. With the engine resting on the mounts and adapter plates against the subframe and the transmission supported by the HOOKER™ crossmember mounted in its intended position, move the engine and transmission forward and back as required to split the clearance evenly between the header tubes and steering box and ensure that the included short 3/8" bolts can be installed into the rear threaded holes of the adapter plates without interference with the subframe. Now, mark the position of the motor mount holes to be drilled in the subframe and remove the engine and transmission for drilling. Drill the holes to accept 3/8 fasteners and continue the installation as outlined below.

1. Attach the included adapter plates to each side of the subframe. Drill two 3/8" holes through the subframe and prep the upper rear corner of the driver's side clamshell mount as indicated in **Figure 2** on the next page. Install nuts on all four countersunk bolts and tighten through the access openings you used to remove the stock frame stands; a 6" socket extension works well for this purpose.

   - If you are performing a **simultaneous engine and transmission installation**, it is recommended that you attach the rubber OE clamshell mounts to the engine brackets (two wide-spaced holes positioned up) with the required long horizontal bolts and then move the entire assembly into position in the engine compartment and lower it down onto the subframe. Adjust the angle of the engine and transmission until the mounts are fairly flat against the crossmember and install the included 3/8" bolts into the four holes on each mount; the shortest bolts are to be installed in the threaded holes at the rear of the plates. Now, install the remaining supplied nuts onto the four bolts that protrude inside the crossmember and tighten all fasteners.

- If you are performing an **engine-only installation** at this time, it is recommended that you attach the rubber OE clamshell mounts to the spacer plates attached to the subframe (two wide-spaced holes positioned up) with the supplied 3/8 bolts; the shortest bolts are to be installed in the threaded holes at the rear of the plates. Now, install the remaining supplied nuts onto the four bolts that protrude inside the crossmember and tighten all fasteners.

2. Move the engine into position in the engine compartment and lower it down onto the clamshell mounts. Adjust the angle of the engine so that the engine bracket ears are resting squarely on the clamshell mounts and install the long horizontally positioned bolts through each mount and install and tighten a nut on each.

3. Prop-up and support the transmission tail shaft and then proceed to install your HOOKER™ transmission crossmember and headers per the instructions included in their packaging.

4. If using, proceed to installing your HOOKER™ transmission swap crossmember and headers per the instructions included with their packaging.

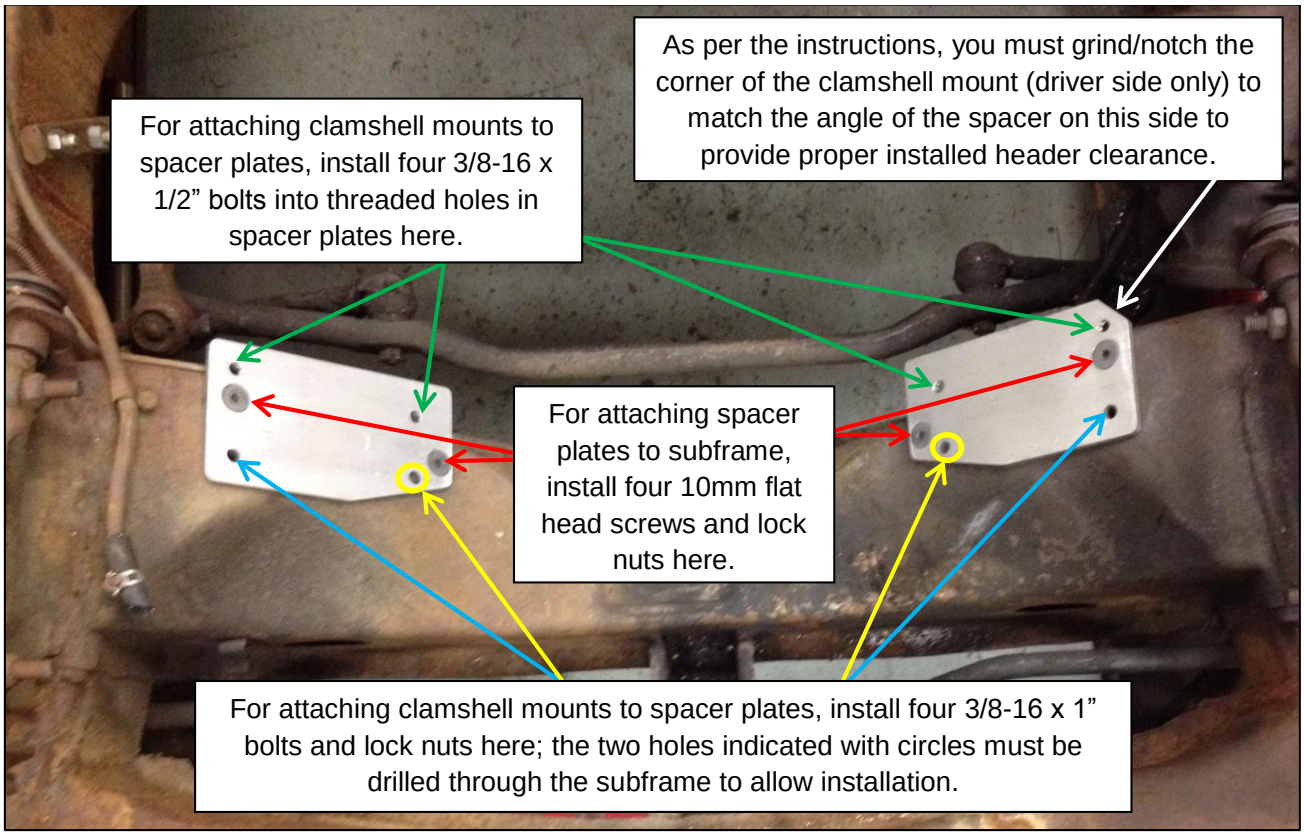

Figure 2 Adapter plate/clamshell fastener schedule