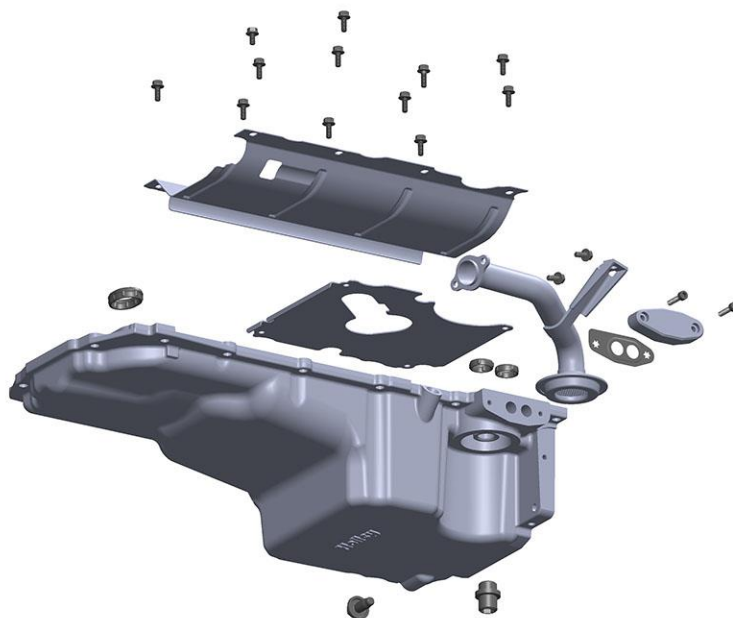




OIL PANS P/N 302-20, 302-20BK, & 302-21



Instruction Sheet 199R11159

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

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

INTRODUCTION:

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

APPLICATIONS:

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

302-30 – Road Race Baffle (optional accessory)

IMPORTANT APPLICATION NOTES:

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

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

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

PAN CAPACITIES:

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

PARTS NEEDED:

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

REMOVAL:

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

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

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

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

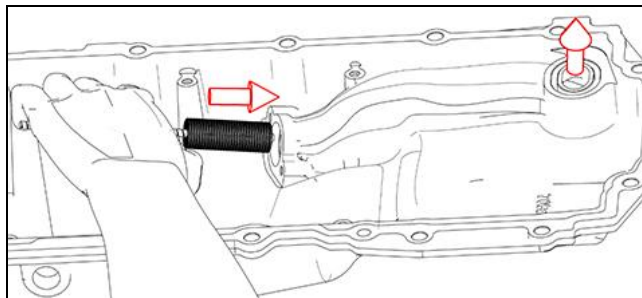
IMPORTANT: It is advisable to mock up the engine and oil pan in the intended vehicle to ensure there is no contact of the pan to the frame or cross-members.

INSTALLATION:

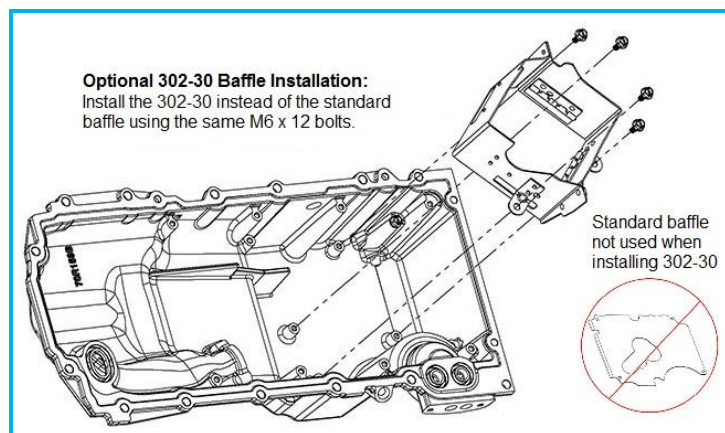
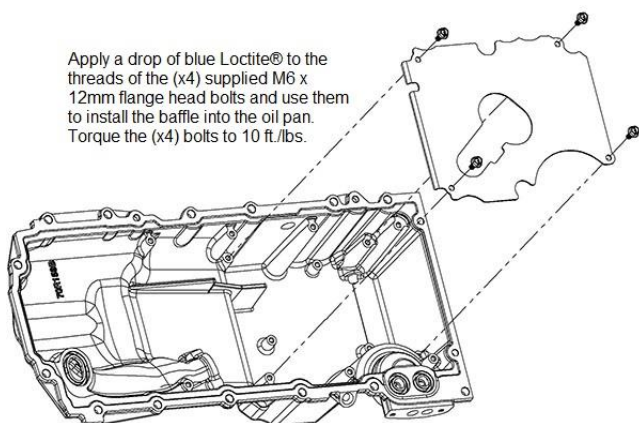
IMPORTANT! Thoroughly clean all components before assembly to remove any/all contaminants.

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

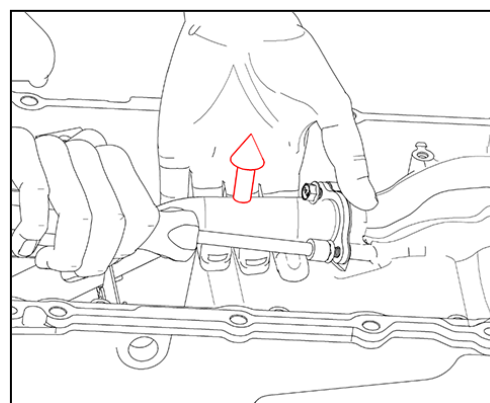
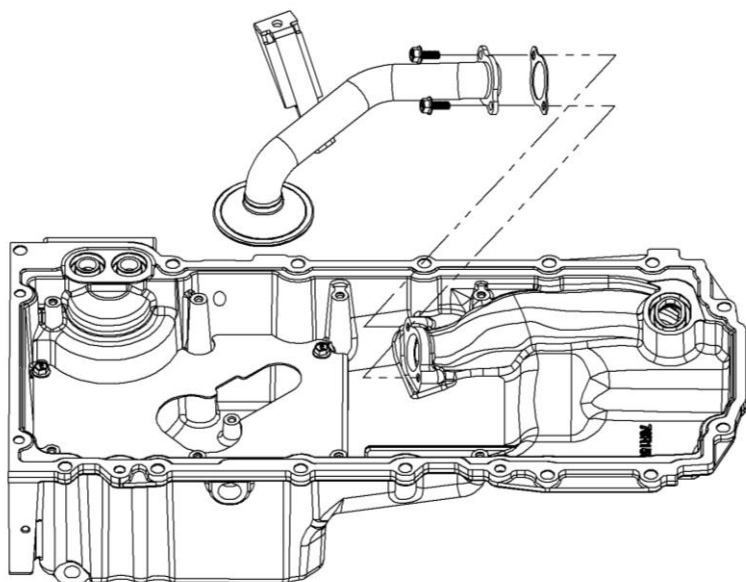
WARNING! Push a flexible brush all the way through the pan's internal passage to assure it is clean and unobstructed. Any obstruction can affect oil pressure and damage the engine. See photo below.



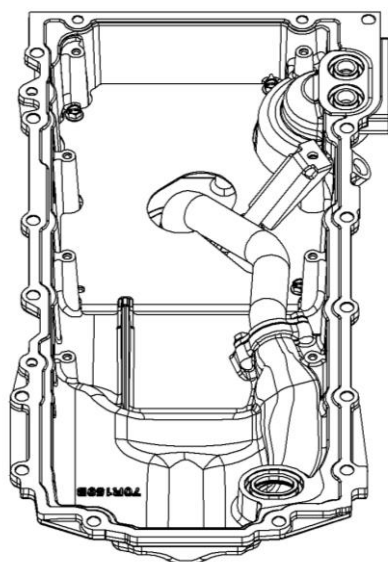
2. Pre-assemble pan.



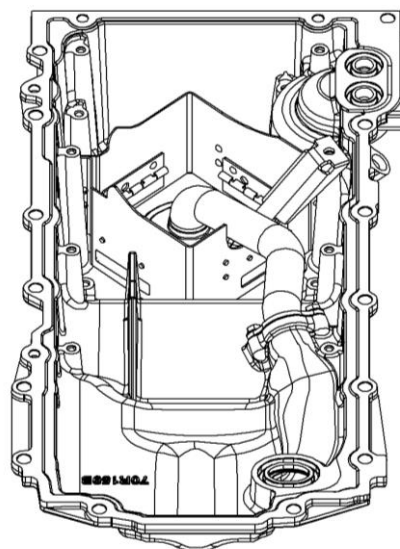
Install the oil screen/pickup tube and **gasket** with supplied (x2) M6 x 16 flange head bolts. Apply a drop of blue Loctite® to the threads before installing. You may need to slightly adjust the bracket to provide precise alignment of the hole. Torque the bolts to 10 ft./lbs.

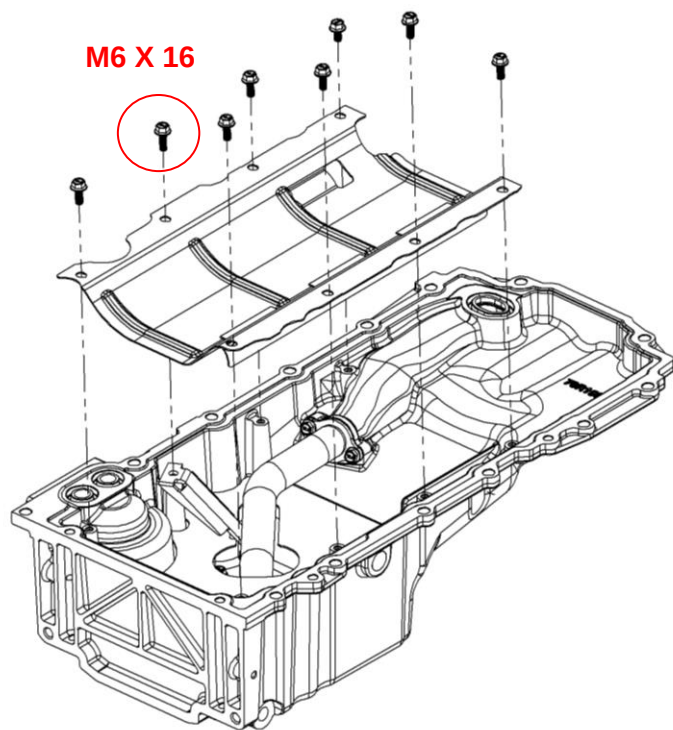


IMPORTANT: While the bolts are started, but still loose, lift the pickup tube. Tighten the two bolts while maintaining the lifted position. This process ensures proper clearance between the pickup inlet and the pan floor.



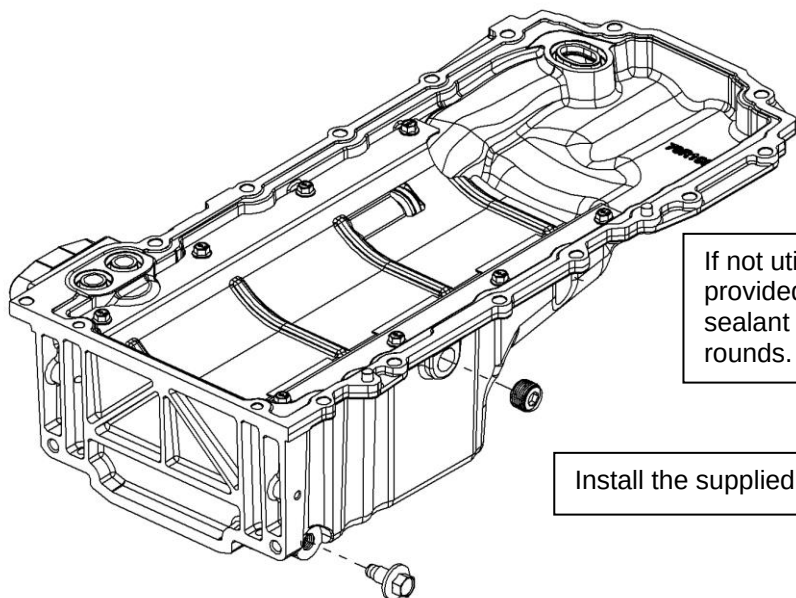
Assembled pickup with **optional** 302-30 baffle installed





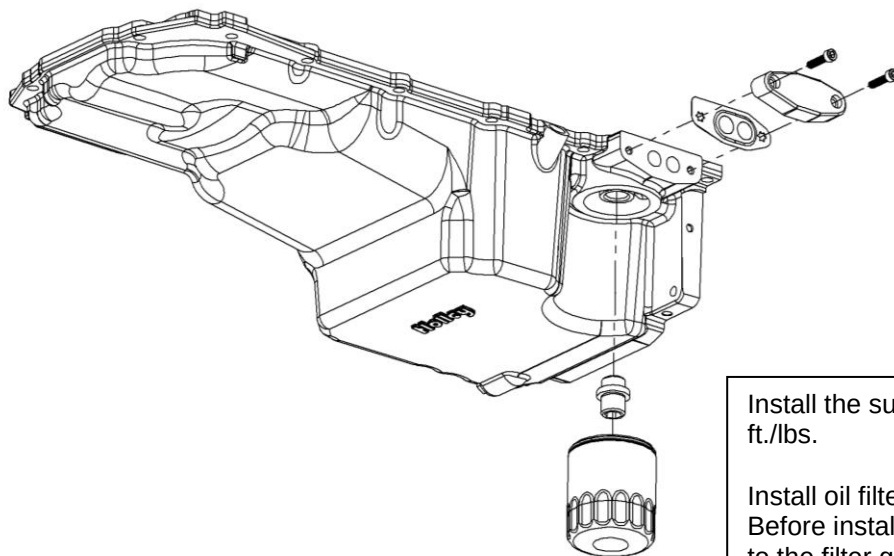
M6 X 16

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



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

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

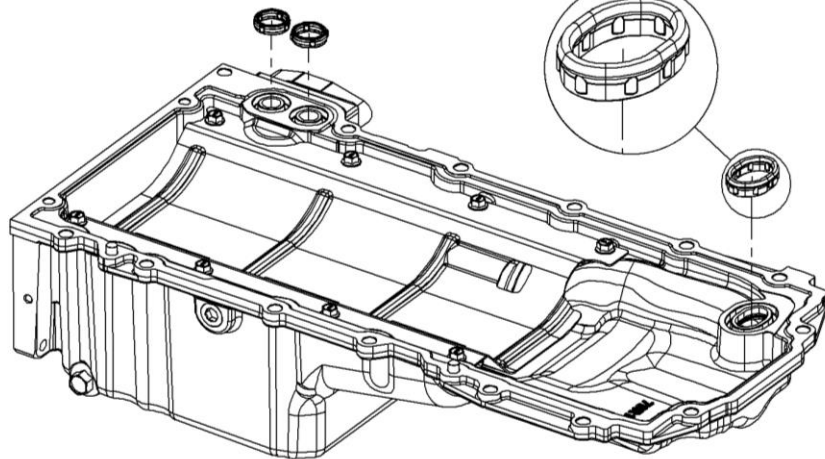


Install the supplied oil passage gasket, cover, and supplied (x2) M6 x 30mm socket head bolts to the oil pan just above the oil filter. Tighten the oil passage cover bolts to 106 in./lbs.

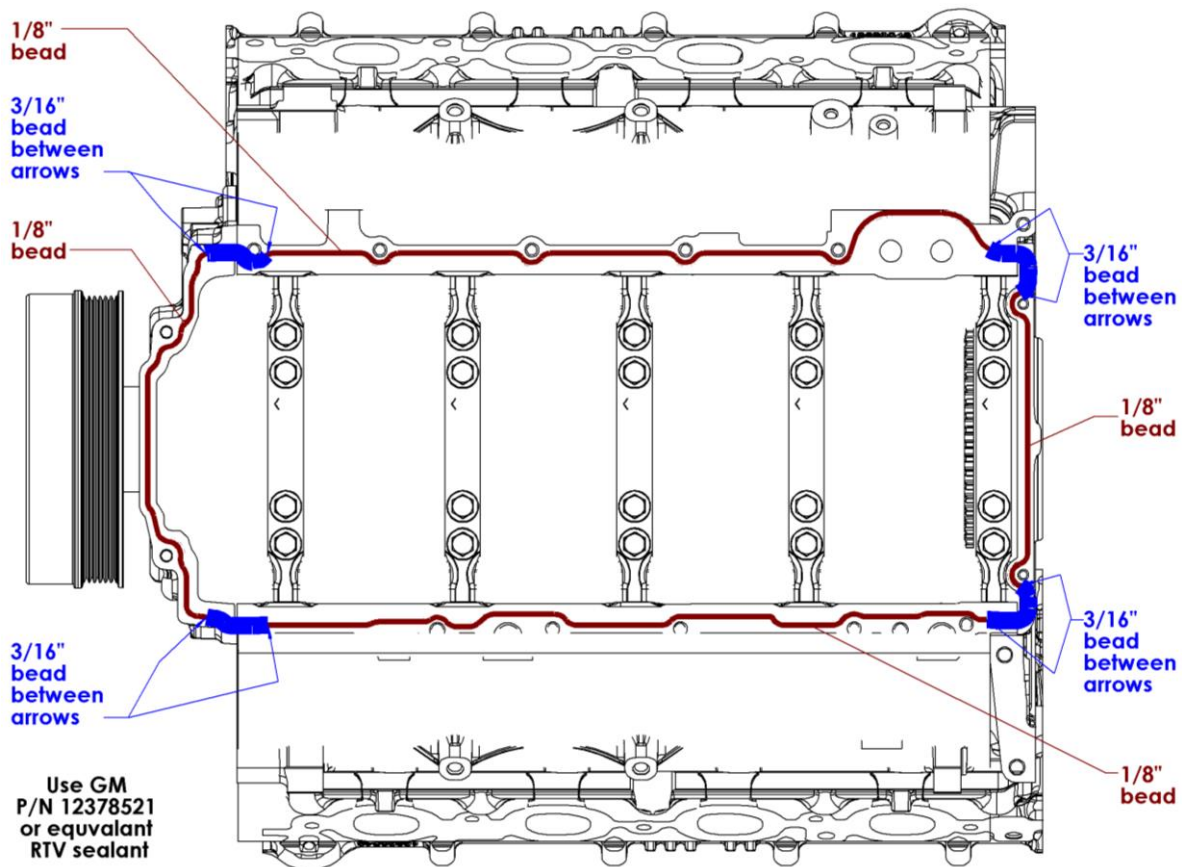
Install the supplied oil filter adapter and tighten to 40 ft./lbs.

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

Install supplied two oil filter passage seals.

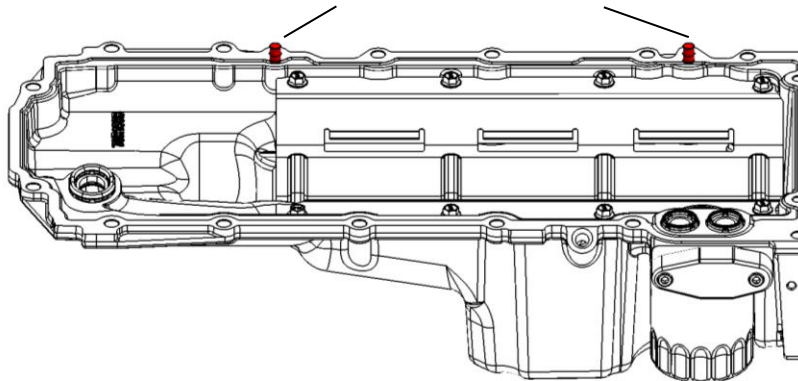


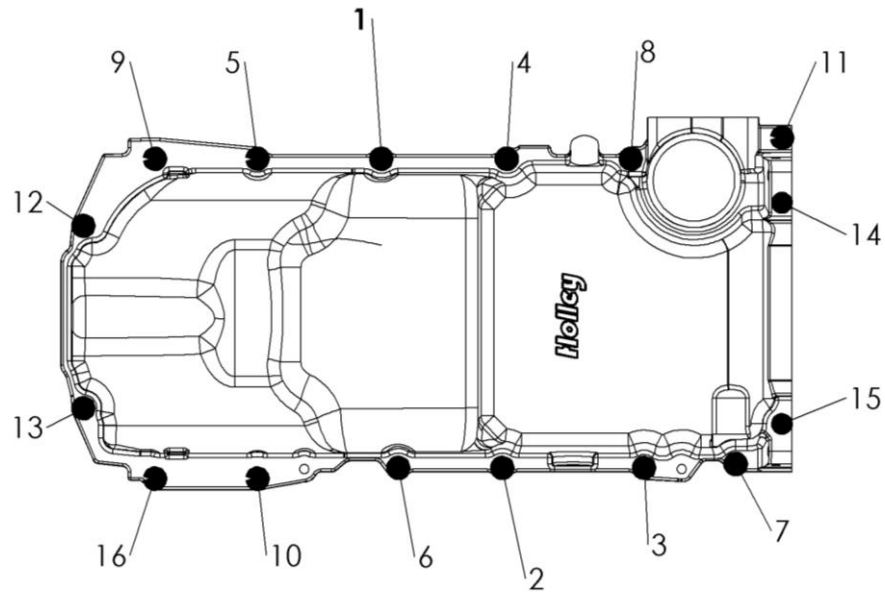
Install supplied pickup to oil pump seal. Warning: This seal must be oriented as pictured.



3. Apply a bead of RTV sealant (GM P/N 12378521 or equivalent) in the amount shown above.
4. Position the oil pan in place on the engine block.

NOTE: Pan will locate on pan's two dowel pins.





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

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

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

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

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

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

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

**Holley® Technical Support
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Bowling Green, KY 42101
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www.holley.com**

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**199R11159
Revision Date: 10-11-21**



GM LS/LT Engine Mount Components

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



71221016HKR



71221019HKR



71223015HKR



71223016HKR

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

PRE-INSTALLATION CONSIDERATIONS:

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

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

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

COMPATIBILITY INFORMATION:

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

BEFORE BEGINNING...

Check that the hardware package includes the following:

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

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

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

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

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

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

INSTALLATION:

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

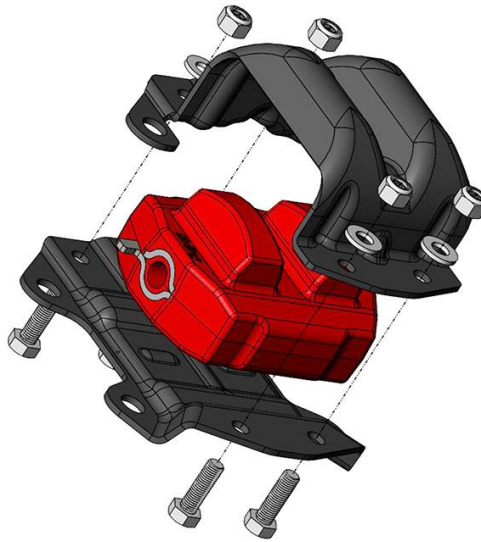


Figure 1

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

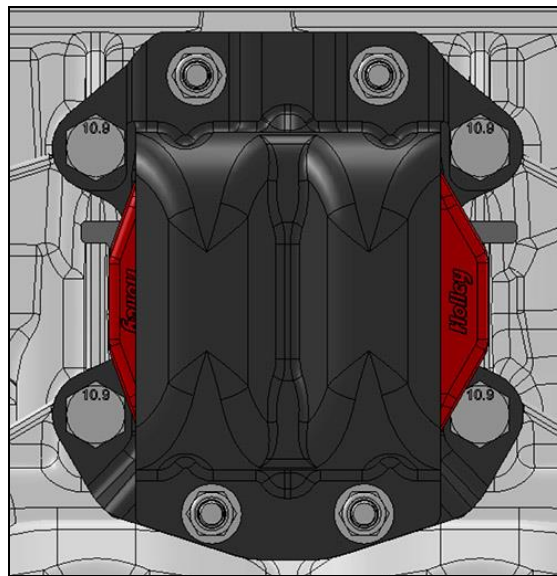


Figure 2

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

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199R11359

Revision Date: 8-2-19



1988-1998 GM C1500 (2WD) Optimized LS/LT Engine Mounting Brackets

P/N's BHS554 & BHS564

Installation Instructions



BHS554



BHS564

Thank you for choosing to install Hooker Blackheart products on your 1988-1998 GM C1500 truck project. These engine mounting brackets are designed specifically for use with Hooker Blackheart engine mounts only. The factory vehicle 4.3L V6 or V8 motor mounts/brackets must be removed from the frame in order to install and use these mounting brackets

PRE-INSTALLATION CHECK:

The proprietary design geometry of these engine mounting brackets requires them to be used with specific Hooker Blackheart engine mounting components to be able to install the engine. These additional components are to be purchased by the user as follows:

71221016HKR (black), or **71221017HKR** (red) poly inserts (2 required)

71221018HKR LS clamshell (2 required)

71221019HKR LT clamshell (2 required)

71223015HKR engine mount through-bolt hardware kit (1 required)

Check that the hardware package includes the following:

BHS554		BHS564	
Qty.	Description	Qty.	Description
9	M10 Bolts	8	M10 Bolts
9	M10 Nuts	8	M10 Nuts
2	M8 Bolts		
2	M8 Nuts		

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

IMPORTANT! Position and support your vehicle on a suitable surface. **USE CAUTION AND WORK ONLY ON A LEVEL SURFACE USING JACKS AND JACK STANDS OF SUFFICIENT CAPACITY TO LIFT AND SUPPORT YOUR VEHICLE. NEVER WORK UNDER A VEHICLE SUPPORTED BY A FLOOR OR BUMPER JACK.** Use of a two-post under arm lift or four-post drive-on lift will considerably reduce the time and effort required to complete the installation. **MAKE SURE LIFT LOCKS ARE ENGAGED BEFORE WORKING UNDER THE VEHICLE.**

INSTALLATION:

1. Identify the left and right bracket assemblies. The left (driver's) side bracket has a semi-circle identification notch along the front edge of its base plate and the right side (passenger's) bracket has a "V" notch in the same location.
2. Remove the existing factory motor mounts and/or brackets from the vehicle frame and discard them.
3. Using the supplied M10 fasteners, attach the left and right side mounting bracket assemblies to the vehicle frame using the three holes in each side of the frame that line-up with holes in the mounting brackets.
4. If installing rear-biased engine mounting brackets, attach the supplemental rear support bracket to the rear of the driver's side mounting bracket using the supplied M8 and M10 fasteners and the existing holes in the mounting bracket and vehicle frame. Refer to the image on the next page for the proper installed location and orientation of this bracket.
5. Once the fasteners are installed, tighten them all uniformly.
6. Drill new holes through the frame that correspond to the blocked holes in the mounting brackets and install M10 bolts/nuts into these holes and tighten them.

7. Install Hooker Blackheart clamshell mounts and inserts onto the engine and then install the engine into the vehicle and couple it to the frame mounting brackets with the Hooker Blackheart engine mount through-bolt hardware kit.



Proper rear-biased left-side supplemental support bracket installation orientation

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

COMPATIBILITY INFORMATION:

Each of these engine mounting bracket sets permits an LS or LT engine to be mounted in a different and discrete fore-aft position. The rear-biased mounting bracket set places the engine/transmission mating plane in the stock SB Chevy location to make using any transmission that was factory installed behind a V8 engine a drop-in exercise. The forward-biased mounting bracket set provides for a more optimized shifter location for T56 Magnum manual transmission installations and also increased accessory drive component clearance.

Be aware that mounting an LT engine in the rear-biased position may not allow the stock plastic cover of the right side valve cover to clear the firewall without the plastic cover being modified.

If needed, additional compatible LS engine swap components, such as EFI fuel control systems, fuel filters, fuel pumps, plumbing hose/fittings, valve covers and accessory drive brackets can be found at 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. HOKKER™ 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.

Technical Service: 1-866-464-6553

Phone: 1-270-781-9741

For online help, please refer to the Tech Service section of our website: www.holley.com

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199R12260

Revision Date: 3-24-21



BHS565

1988-2000 Chevy C1500 T56 Transmission Crossmember Adapter Installation Instructions

Thank you for choosing to use a Hooker™ transmission crossmember as part of your LS, or LT swap project. The components contained in this package are designed and intended to install a T56 Magnum, or GM 4th-gen F-body T56 transmission using a stock 1988-2000 C1500 700R4/4L60/4L60E transmission crossmember.

1. Check that the hardware package includes the following:

Qty.	Description
1	Bracket Assembly
3	M10 x 25mm Bolts
3	M10 Nuts

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

2. Remove the stock transmission crossmember from the vehicle, if installed, and place on a stable work table.
3. Position the supplied adapter bracket on top of the crossmember beam and center it over the slot for the stock mount. When correctly oriented, the adapter will step downward off the crossmember beam and cantilever towards the front of the vehicle.
4. Push the adapter up against the front wall of the crossmember, then mark and drill three M10, or 13/32" holes through the crossmember that correspond with the three holes in the adapter bracket.
5. Attach the adapter bracket to the crossmember using the supplied M10 bolts and nuts.
6. Reinstall the crossmember into the vehicle following the installation of a LS or LT engine and T56 transmission using Hooker Blackheart engine mounting brackets for this vehicle application. Slide the crossmember along the frame rails and position the adapter bracket under the transmission mount.
7. Attach a Hooker Blackheart 71223029HKR (black), or 71223030HKR (red) transmission mount to the bottom of the transmission and then attach the mount directly to the adapter bracket if a 4th-gen F-body T56 is being installed. If a T56 Magnum transmission is being installed, attach the transmission mount to adapter bracket while placing the supplied 5/16" spacer plate between the mount and the crossmember before doing so.
8. Attach the crossmember to the frame rails using the previously removed stock fasteners. Depending on the fore/aft engine mounting position used, the stock holes in the frame rails may be in proper alignment for this use. If the holes do not align with the holes in the crossmember, mark and drill new attachment holes in the frame rails as needed.

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

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199R12468

Revision Date: 4-6-23