

INSTALLATION GUIDE

AUTOMATIC Transmission Crossmember for LS Engine Swap into '70-81 Camaro/Firebird (Fits 4L60 [later 2-piece housing only], 4L65, 4L70 transmissions)

PART # 6419

READ ENTIRE INSTALLATION GUIDE BEFORE BEGINNING THIS INSTALLATION

This transmission crossmember is specifically designed to assist in the installation of a 4L60/65/70 transmission ('96-later with separate bellhousing only) into 1970-81 Chevy Camaros and Firebirds powered by an LS platform engine. It was developed for use with Trans-Dapt's LS swap engine mount kit #4202 ('70-74 model year) or #4203 ('75-81 model year), and Hedman Heddars #68720 series of Camaro/LS headers. To ensure a drivetrain/pinion angle that is within recommended factory specification, it is strongly recommended that this crossmember be used in conjunction with Trans-Dapt's #4202 and 4203 engine mount kits only. Trans-Dapt Performance Products cannot guarantee a proper pinion angle if installed with any other LS/Gen 1 F-Body engine mounts.

This is a complex engine swap project that may require cutting, drilling or other modification to the vehicle. There are many installation factors to consider when performing this engine swap and exact steps may vary from model to model. This installation guide offers general instructions for the proper installation of the transmission crossmember only. For further details regarding any other aspect of the engine swap, we recommend the use of a published how-to guide, dedicated to the engine swap project you are about to perform. This is an advanced user project. If you're uncomfortable with any aspect of it, we suggest you consult with a certified mechanic.

The crossmember and brackets are shipped with a temporary black finish to protect the components from corrosion while awaiting installation. This finish is not intended to be the final finish. Thoroughly clean these components to the bare metal before applying any final finish.

THIS KIT CONTAINS

1pc. Transmission Crossmember
1pr. Frame Rail Adapter Brackets
1pc. Rubber Transmission Isolator
1pc. Transmission Isolator Spacer
4pc. 3/8"-16 x 1" Hex Head Bolts
4pc. 3/8"-16 Nylon Insert Locknuts
4pc. 3/8" Hardened Flat Washers
6pc. 7/16"-14 x 1" Hex Head Bolts
4pc. 7/16"-14 Nylon Insert Locknuts
6pc. 7/16" Split Lock Washers

This transmission crossmember can be installed two different ways. If the body is off the frame, or you have enough clearance between the frame rail and the floor board, the crossmember can be bolted directly to the TOP of the frame rails. If the body is installed, you don't have enough clearance to insert bolts from the top, or the factory crossmember holes in the frame rails do not align with the crossmember's bolt holes, the crossmember can be installed using the included frame rail brackets, which get installed onto the side of the frame rails. Refer to (ill. A)

INSTALLATION INSTRUCTIONS

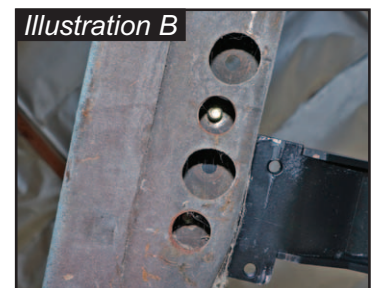
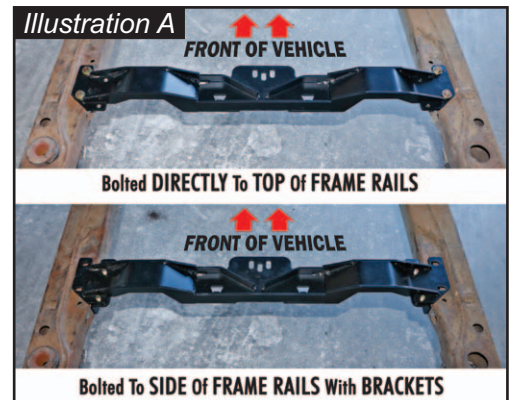
1. Prepare frame rails by removing any old hardware or brackets, and remove any rust or debris.
2. Lower engine and transmission into position as a single unit and securely mount the engine to the chassis following the mount manufacturer's instructions. (This crossmember is designed to work best with Trans-Dapt #4202 or #4203 engine mounts which have been developed for this project)
3. Loosely attach the supplied rubber isolator pad to the transmission housing (these bolts not supplied).
4. Using a transmission jack, raise the tail of the transmission housing to allow room for crossmember installation.

BOLT DIRECTLY TO TOP OF FRAME RAILS

(Use this section if the body is off the frame. If body is installed, skip to step 7):

5. With the angled corner of the crossmember's mounting flanges facing the rear of the car, rest the crossmember on the frame rails (ill. A). Position the crossmember so that the rubber transmission isolator pad rests on the crossmember perch, when the tailshaft is lowered into position. Loosely bolt the isolator pad to the crossmember using two 7/16-14x1" bolts and lockwashers in the 2 outer holes on the crossmember perch. **IMPORTANT:** If you are installing this crossmember with a Polyurethane isolator, (i.e. Prothane #6-1604 or #7-1604) the isolator spacer included with this kit must be used to ensure proper vertical positioning of the transmission tailshaft. **DO NOT USE** the spacer provided, if you are utilizing the rubber isolator included with this crossmember (ill. J). Check that the crossmember is perpendicular to the frame rails.
6. If the crossmember bolt holes align with four factory bolts on the frame rails with the transmission bolted to the crossmember, bolt the crossmember to the chassis using four 3/8"-16 x 1" Grade 8 bolts, 3/8" hardened flat washers and 3/8"-16 locknuts, all included with your crossmember (ill. B & C). Make certain the centerline of the crossmember is centered between the frame rails, then tighten the fasteners that bolt the crossmember to the chassis,

(Continued On Reverse Side)



as well as, the two bolts fastening the crossmember to the transmission isolator pad. If the factory frame rail holes do not align with the holes on the crossmember, the L-shaped adapter brackets must be used to bolt the crossmember to the chassis. If the L-shaped brackets are required, please continue to step #7. If the crossmember mounted directly to the top of the frame using the O.E. mounting holes, and you have torqued down all of the transmission housing-to-isolator, isolator-to-crossmember, and crossmember to chassis bolts, you may skip to step #14.

BOLT TO SIDE OF FRAME RAILS

(Use this section if factory crossmember bolt holes on frame do not align with the holes on the LS swap crossmember, or there is insufficient clearance between body and frame to install bolts into the top of the frame rails.):

7. If the crossmember does not install using factory frame rail holes, you will need to utilize the L-Shaped brackets included with the crossmember to attach it to the frame rail sidewall. If still installed, unbolt the rubber isolator pad *(and spacer)* from the crossmember and remove the crossmember from the car. Choose the holes in the L-bracket that work best for the transmission location and loosely bolt an L-bracket to each end of the crossmember as shown *(ill. D)*. At this time, these brackets should be able to slide inward and outward.
8. With the angled corner of the crossmember's mounting flanges facing the rear of the car, place the crossmember on the frame rails. Position the crossmember so that the rubber transmission isolator pad *(and spacer if used)* rests on the crossmember perch, and the 2 outer bolt holes in the isolator align with outer bolt slots in the crossmember's perch, when the tailshaft is lowered into position. Loosely bolt the isolator pad *(and spacer if used)* to the crossmember using two 7/16" bolts and lockwasher in the outer slots of the crossmember perch. **IMPORTANT:** If you are installing this crossmember with a Polyurethane isolator, *(i.e. Prothane #6-1604 or #7-1604)* the isolator spacer included with this kit must be used to ensure proper vertical positioning of the transmission tailshaft. **DO NOT USE** the spacer provided, if you are utilizing the rubber isolator included with this crossmember *(ill. J)*. Check that the crossmember is perpendicular to the frame rails.
9. Once the correct location is determined for the installation of the crossmember, push the L-brackets outward so that the brackets sit flush against the sidewall of both frame rails. With the brackets precisely located against the frame rail, mark and/or center punch the frame rail on each side. A total of 4 holes will need to be drilled into the frame rails *(ill. F)*.
10. Unbolt the isolator pad from the transmission crossmember. Raise the tail of the transmission, and slide the crossmember out of the way. Drill a pilot hole, then drill the four holes *(2 per side)* to a final diameter of 0.4375" (7/16") into the inner wall **ONLY** *(ill. G)*. Do not drill through the outer wall!
11. Reposition the crossmember into its proper location on the frame rails and bolt the crossmember to the frame rails using the new holes drilled into the frame rails sidewall. Use two supplied 7/16-14 x 1" hex head bolts, 7/16" lock washers and nylon locknut per side *(ill. H)*. Additional holes may need to be created into the bottom of the frame rails for access to install the nuts.
12. Make certain the crossmember perch is centered between the frame rails and lower the transmission down onto the crossmember. Bolt the crossmember to the isolator pad/transmission housing. Remember to use the steel transmission spacer, included with this kit, if you are installing the crossmember with a polyurethane style transmission mount pad *(ill. J)*. No spacer is required if using the rubber pad included with the crossmember.
13. Tighten the four bolts that connect the L-brackets to the crossmember.
14. Double check the entire driveline to ensure all pinion angles are within the proper range.
15. The transmission crossmember installation portion of your LS swap project is now complete.

IMPORTANT- To ensure that the recommended driveline pinion angle is achieved, only use the rubber isolator pad included in this kit (Trans-Dapt pad #9442), or, Trans-Dapt's high-performance polyurethane isolator pad (Trans-Dapt #4237), along with the steel, 2-hole isolator spacer included in this kit to install your transmission. Combining this crossmember with any other isolator pad, or failure to install the isolator spacer, may result in an improperly angled drivetrain.

