

CUT BROTHERS

INSTALLATION INSTRUCTIONS FOR '73-'87 K10/K20/K30 4WD LS CONVERSION CROSSMEMBER PART#: SB-4WD-LSengineCrossKit-01



Thank you for purchasing Cut Brothers '73-'87 K10/K20 4WD LS Conversion Crossmember kit. The kit is designed to replace the factory crossmember and engine mount perches of the indicated models to allow a drop in installation of any LS based engine (4.8, 5.3, 6.0) from a '99-'07* donor Chevy or GMC truck using its OEM engine mounts, oil pan, and exhaust manifolds**, as well as maintaining the factory location of the A/C compressor without needing to modify or cut the frame rails for clearance. Other benefits include the ability to run crossover and/or high clearance steering without interfering with the crossmember. The crossmember also incorporates a removable center section to allow removal of the oil pan with the engine in the truck, should it be required to do so.

*Other year model LS engines from non-truck applications can be utilized with this crossmember (including LS1 5.7 and Gen IV LS engines). It will require using factory engine mounts from a '99-'07 LS based Chevy/GMC truck. The oil pan from other models *may* work, as they are normally slimmer and less bulky than the truck oil pan (i.e. '98-'02 F-Body Camaro). However, fitment has not been verified with any other oil pan and is up to the purchaser/users discretion.

**NOTE: See section at end of instructions on Exhaust Manifold recommendations.

DISCLAIMER

By purchasing and installing this product, you are agreeing to the liability disclaimer available in full on Cut Bros Facebook page. In summary, this disclaimer states that all products sold by Cut Bros are intended for offroad use only. Cut Bros does not and will not accept liability for any issues or damages arising from the usage and installation of this product and/or due to the usage of these instructions for installation. It is ultimately the responsibility of the purchaser and/or user to ensure that this product is installed in a safe manner and that their vehicle is safe to operate.

CROSSMEMBER INSTALLATION

NOTE: Installation is possible with engine already in the vehicle. However, to ease installation, it is recommended that engine is removed. Instructions are written assuming engine is NOT in the vehicle. If you are attempting to install crossmember with engine already installed, ensure engine is adequately supported, as you will be working underneath and around it.

Removal of steel rivets and drilling is also required. Always use appropriate protective equipment for the chosen removal method when doing these operations.

1. Begin by removing hardware attaching passenger and driver factory engine mount perches to the frame. On each mount, there are two bolts on top, one on rear bottom, one on outside of frame, and two on front (attaching to factory cross member). Original engine mount perches will not be reused.



DRIVERS SIDE



PASSENGERS SIDE

2. Remove original engine crossmember by removing the four steel rivets that attach it to the frame. This can be accomplished using any one of several methods (drilling through the head of the rivet and punching out, grinding the head off and punching out, torching/plasma cutting the head off and punching out, air chiseling the head off and punching out, etc.; you get the idea). No matter the method, be careful not to excessively damage the frame at the rear most locating holes where the original crossmember attached (more so if using a torch/plasma, don't excessively heat or melt the frame). Original engine crossmember will not be reused.



DRIVERS SIDE – Note two bolts are on back side under mount and 2nd rivet is hidden under mount. It will be visible after mount is removed.

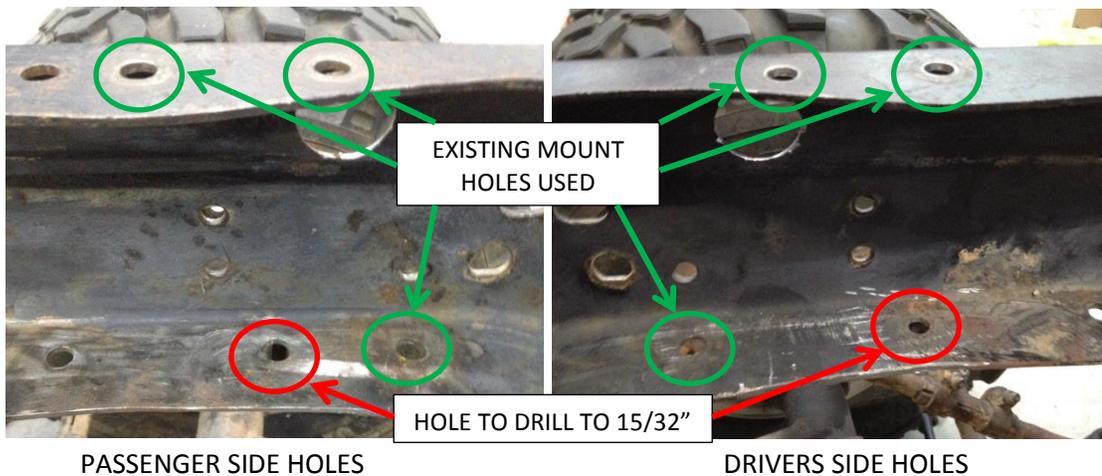


PASSENGERS SIDE – Remove two bolts attaching to mount.
Then remove two rivets attaching to frame using appropriate removal method.

- Using a 15/32" bit, drill out rear hole that was used by the original crossmember on passenger side and indicated hole on drivers side.

NOTE: A 7/16" drill bit can be used. However, it may make it more difficult to get crossmember aligned. It is recommended to use the 15/32" to give clearance to allow some movement.

NOTE: It has been noted that frames may not have the hole indicated on the driver's side frame rail. Currently, we are not aware of a correlation as to what models do and/or don't have this hole factory. If the hole is not there, it is recommended to install as indicated in the following steps, and after the unit has been fully installed, mark the location of the hole on the frame, remove crossmember and drill hole out. As an option, the hole can be marked on the bottom side of frame and line drill hole to match up with crossmember so as to not require having to remove the crossmember once installed.



- Install drivers side mount bracket on inside of drivers side frame channel. Depending on hardware provided, kit may either have bolts, flat washers, lock washers, and nuts or bolts, flat washers, and prevailing torque nuts (i.e. crimped nut). Install four each of supplied 7/16" hardware. Install passenger side mount bracket on inside of passenger side frame channel. Install four each of supplied 7/16" hardware. It is recommended to put nuts to inside of frame, but it does not affect functionality. Leave hardware loose at this point.

NOTE: Some kits were supplied with lock washer and regular nut versus the prevailing torque nuts. Functionally it does not matter which hardware is used.



PASSENGER SIDE INSTALLED



DRIVERS SIDE INSTALLED

5. Install crossmember between mount brackets. The lowest part of crossmember should go to the rear.
6. Install 1/2" X 6" bolts. Start with the two upper outer bolts then install the inner lower bolts. Adjust mount brackets (which hardware is loose on) as needed to allow bolts to pass through. If bolts don't freely pass by hand, light tapping on head or turning the bolt with a ratchet will help bolt to pass through.

TIP: If three bolts are installed and one bolt doesn't perfectly line up on the bracket, take out the upper outer bolt on the bracket that doesn't line up and install the inner lower bolt first, then the outer bolt last. (It seems stupid, but this method has made it line up sufficiently enough to get the bolt in).



CROSSMEMBER ORIENTATION AND OUTER BOLTS INSTALLED



CROSSMEMBER HARDWARE INSTALLED

7. Install 1/2" flat washer, lock washer, and nut. Torque 1/2" bolts to 60 Ft.-Lbs.
8. Torque four 7/16" bolts on each mount bracket to frame (eight total bolts) to 55 Ft.-Lbs. This is the same regardless of whether a regular nut or prevailing torque nut is used.

ENGINE INSTALLATION

This instruction does not cover any other aspects of the engine installation, other than what relate to the crossmember. Hardware is not supplied for attachment of OEM engine mounts to engine. For those using an LS engine that is not a pullout from a '99-'07, you will need to acquire appropriate hardware to attach engine mounts to the engine. It is recommended to remove the exhaust manifolds when installing the engine in order to allow clearance for tightening the engine mount to frame mount bolts. Other details to complete the full engine installation are dependent on the purchaser/user.

1. With the OEM engine truck mounts attached to the engine and hardware torqued to factory values (refer to GM service manual or equivalent for torque specification), use an appropriate lifting device to lift and lower engine onto crossmember.
2. Install three 7/16" flanged bolts on each engine mount to frame mount. The engine may need to be supported by the lift in order to get the bolt holes to line up and hardware installed. Torque bolts to 37 Ft.-Lbs.
3. Remove lifting device.

A/C COMPRESSOR

One benefit of using this crossmember is the ability to retain the A/C compressor in the factory LS truck mounted location. While this prevents the need to cut or modify the frame, make brackets to relocate (or retain older generation compressor), or otherwise having to remove it all together, there is still the obstacle of reconnecting it to the factory lines and system. The OEM flexible lines that went to the A/C compressor on the '99-'07 truck will not work, as they are too bulky at the compressor bulkhead and will not clear the frame.

This means that custom lines will need to be made in order to reconnect the A/C lines utilizing a billet adapter block that bolts to the A/C compressor and directs the lines forward. Currently, this is left up to purchaser/end users discretion as to how they want to go about adapting and connecting the lines. As we collect more information on the various ways to go about this, we will attempt to compile a detailed enough list of potential ways to go about connecting them. It should be noted that there are at least two different styles of A/C compressors used on the '99-'07 trucks; those that have a single manifold attachment and those with two individual manifolds. This will play into the required adaptors in order to orient the lines forward.

EXHAUST MANIFOLDS

Factory exhaust manifolds will clear if they are of the non-EGR type. EGR manifolds will not clear. On some non-EGR manifolds, there is still a casted boss where the EGR pipe would have been located that may need to be clearanced to prevent touching the frame during torqueing of the engine. As an alternative, '98-'02 F-Body Camaro LS1 factory exhaust manifolds have been verified to clear without modification.

Since the intent was to be able to use the exhaust manifolds from the donor truck to keep costs lower for the swap, no specific tubular headers have been test fitted or verified. However, some still may want to run tubular shorty or long tube headers. At this time, we do not have a list and have not verified any specific ones to fit or not fit, as there are too many variations out there to buy and try. Usage of tubular headers is at the purchaser/installers own discretion as to determining if they will fit and or clear. If you chose to use them and they do fit, let us know and we will update a list of ones that will fit without issue so others may know.