

“Beer Budget” Chevrolet LUV Engine Swap Guide

So you've been watching too many Tim Allen show's? Fell a need for speed that won't go away? Well whatever it was, you're just like the numerous other LUV owners that have taken the plunge to MORE POWER! Let me just say a few words before getting technical, what you are about to take on is quite a chunk of work so be sure and let the wife and kids know where to find you. The rewards you'll get on the flip side of your project will be never ending when you feel all that extra power, hopefully you're not the type that minds people yelling "what do you got in that thing?" cause you'll get a lot of that.

Also let's not forget safety, if you watch home improvement shows this job is a ten-hammer job on a scale of one to five to put it in perspective. Use safety glasses when needed since a snip here and a trim there will be needed at some point during the job. Make sure the truck is on solid jack stands all around and Hooker recommends the truck be 36" off the ground. This is usually since you'll be working around all under the truck and it makes it easier if the whole truck is off the ground, safely supported!

The Beer Budget swap is not targeted at a full competition setup, so don't expect to start clicking off 9 second passes the day you get the truck running. This swap is very budget conscious and is really a base starting point for anyone looking to swap motors. The component selection is based on cost and "fitment" compatibility. I will point out the caveats of selecting certain components and suggest options to suit your budget/need for speed. Don't get me wrong, building a nine second bumper dragging LUV truck is not too difficult, but will require some additional components and some beefier parts to work reliably. This swap is best suited for the daily driver, or show truck that won't see serious strip competition. For the most part this swap is as "bolt together" as it can get, which is how cost is saved considerably. Ok, let's get to the meat of the article.

Here are some of the things you will need before dropping in that fresh small block on the stand.

Hooker Headers engine mount frame bracket #12606	\$100	Summit
Hooker Headers trans mount bracket #12630	\$100	Summit
Hooker Headers super comp headers #2140	\$310	Summit
A Howe universal aluminum radiator #HOW.342B	\$200	Summit
A stock width 82-95 S-Truck (S-10/Sonoma) rear-end	\$100	Junkyard
A stock 1976 LUV or later automatic shifter	\$15	Junkyard
A stock 1970-1980 Camaro driveshaft	\$30	Junkyard
A stock GM throttle cable (F-Body)	\$5	Junkyard
2 Chevy pattern wheel's (preferably 15x7x5" offset)	\$30	Junkyard
Total	\$920	

You will also need:

A complete small block Chevy engine (sidemount block)

A short (6") tail shaft Turbo 350 or PowerGlide transmission

Note: If you plan to install a V6 the mount kit is #12617 but appears to no longer be available, call Hooker Headers to confirm.

Now once you have everything you need, you can get started. Trust me you will need more things as you go, but most items are small like wire, fasteners, connectors, belts, hoses, fluids, - soft parts in general and plan on spending over \$100 on this nickel and dime stuff. We will get to the ten-step Hooker Super Comp kit, but first I want to point out a few things to consider that the Hooker directions don't clarify.

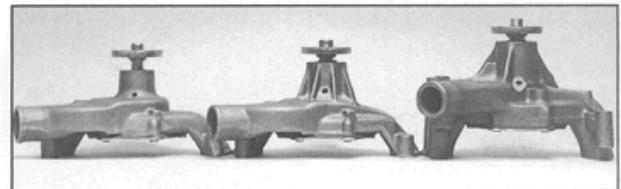
Water Pump

The small block Chevy has two (three really) water pump lengths. The early applications used a short water pump; the



corvette has one that is slightly

longer with different mounts for the accessories. Then in later applications there is a long water pump. Make note, to run a long water pump you will need to notch the first cross member of the frame (See pictures to left). This is what I did since I was 'lucky' (thanks CARB!) and got to retain the smog equipment and decided not to hassle with remounting the motor accessories. Also your radiator needs to be moved out another two inches and an electric fan has to be in front pushing air and the trans cooler will be snug under the water pump pulley, so if you can go with the short water pump setup I would strongly suggest that.



From left to right are a pre-1969 short pump, a 1971-82 Corvette pump and a 1969 and later long pump. Lengths are 5.545", 5.795" and 6.900" respectively.

Alternator

The later GM alternators work very well for this swap. You can use a one-wire hook up if needed and wire the white lead to the stock "idiot" light. One thing to note here is if you plan to run a big fuel pump, electric fan and even an electric water pump consider a high output alternator, they make 80-100 amp alternators that are quite reasonable, look for alternators that fit bigger cars like the caprice, or other Chevy's that have power accessories. I run a small dinky "el cheapo" 40 amp alternator and with the addition of the electric fan I have problems at night with the lights on and the truck has even died with the lights on at idle due to low output. The HEI requires full juice to keep it lit, so run heavy gauge wire direct to the HEI if running one, also keep an eye out for an article on the site about relays for all the details.

Battery

Depending on how the accessories mount on the engine (if your alternator is mounted on the driver side) you may still have enough room to install the battery back in the stock location. But more than likely you are going to want to move the battery to the back of the truck. This provides a couple advantages, one you will have a bit more room under the hood, and second you will improve weight transfer to the rear of the truck. Just use about 15 feet of heavy (2 gauge wire for low compression, 1 gauge wire for high compression engines as a guide) cable and route it up to the starter.

Starter

The small block Chevy has the starter mounted on the passenger side, where the Isuzu motor has the starter on the driver side, so think about running the starter lead over to that side. Also consider using a relay to the solenoid, or do a remote solenoid setup. If it gets toasty under the hood, the bigger motor may need more current to the solenoid, if you don't you'll just burn a hole through your pocket with the ignition key, specially if you run a big fuel pump and electric fan, ouch! I speak from experience. Or consider asbestos driving gloves!

Distributor

This is your choice and depends on what year LUV you have and if you need to run HEI. HEI distributors are a great setup either way for the money, so if you run one, you will need to trim the firewall, otherwise it may not clear, check to be sure since there are variations from one chassis to the other. I had to sub firewall mine (see photo to the right), this means cutting out the firewall into the tunnel about six inches and about two feet wide, to accommodate a fabricated sub firewall that opens up the back of the engine compartment for easy access, this allows everything to fit neatly, like the trans dipstick tube for example. You can get by without a sub firewall, with a smaller diameter distributor, or if you have deep pockets MSD has a front mount belt drive unit for about \$600. You can either "adjust" the stock trans dipstick tube, or get a flexible style like from Lokar. Also if you run HEI or electronic ignition, run a heavy gauge wire direct to the distributor, consider using a relay to tap the main power feed for maximum spark. One thing to note is if you do install a sub firewall, keep in mind you will probably have to toss your heater/defroster unit due to lack of space. You may also have to toss the emergency brake handle/brackets, as well as modify the windshield wiper motor mount bracket and you may have to trim the vanity tray below the glove box.



Fan

As mentioned in the Water Pump section you can run an electric fan, or you can run a low profile flex fan, these are cheaper. You make the decision on that, flex fan's tend to be noisy, add parasitic drag to the motor and are a cooling pain in stopped situations if you don't run a shroud.

Fuel Pump

The stock "piddle box" pump is ok for putting to the drug store for some ice cream cones, but put your foot to the floor with a thirsty small block and a decent carb and you will feel it nose over if you rev it under power. Spring for a nice carter, or Holley red or blue pump. But the stock pump is ok to get going and I was able to smoke tires without a problem with the stock pump, just don't bolt on that huge two stage plate system yet!

Fuel Line

The stock line is ok for putting and an occasional sprint, but if you plan to run nitrous go to the hardware store and pick up about twenty feet of 1/2" aluminum hard line, it may run you ten bucks. Use all 1/2" to the fuel block, or carb and you should be good to go.

Fuel Tank

The stock fuel tank works well for street applications. But if you plan on setting your truck on the rear bumper, consider a fuel cell, or sumping the existing tank.

Rear-end Selection

For this article I specified the stock S-Truck rear, (photo) please note this is a considerably weak rear-end, it has a small ring gear diameter (7.5") and the axles are weak as well. This rear-end can only handle a 300-325 horse motor on street tires, use slicks and you can bet it will give out in short time, specially if you have a sloppy high stall convert and don't even think about a trans break. Also the axles are C clip style, so



when it does snap an axle, one of your rear tires may go with it, right past you. For killer launches go to a Ford 9", unless you have a 12 bolt or solid 10 bolt just laying on the garage floor, grab a 9" and fork out the cash to have it narrowed and good alloy axles installed, this is a safety thing as much as a speed thing. Gears are cheap for these rears and you can easily find spools and softer drag gears for wheels up action at the track,

keep in mind you will need an extra \$1200 in your budget to do a 9" rear right. Also try to go with the 31-spine setup; we hope to do a 9" install article eventually, with hopefully some solid and modern (air bag) suspension tips. Also make note if you run the S-Truck rear, 15x7 inch wheels with a five inch offset fit perfect in the wheel well and will allow you to run a nine inch tire, I run 255/60R15's on the rear with about 1" of clearance on the inside and they tuck nice under the lip, you could squeeze a 275/60R15 but they might rub on turns.

Driveshaft

The second generation Camaro drive shaft is a direct bolt in to my 75. I got it out of a 79 Camaro with the 230 straight six in it and turbo 350 trans, so to be certain make sure the lengths are the same for the different Camaro drive trains, or just find one with the 230-6 and auto. If you plan to run with the big boys, have the drive shaft inspected and if needed rebalanced, have new Spicer U-joints installed and greased, then you'll be ready to drag some chrome.

Shifter Installation

The stock LUV shifter, 76 and up bolts right in, drill four small holes to drive some self tapping screws into and you're money. The stock link will bolt right onto the turbo 350 trans, I do not know about the PowerGlide, if someone can confirm, please let us know. The nice thing about the stock shifter is it has the neutral safety switch ready to hook up, get your wire rolls out.

Radiator

Go with the Howe, it's the best deal for the money. The only OEM unit I found that was even close was a stock 1970 straight six Nova unit. You can get them three and four row, but by the time you buy one, or re-core an old one you could just get the Howe aluminum unit that cools better and is lighter. Trust me I run the Nova radiator and it sucks, I had to cut into the core support rails too much to



squeeze it in and it does rub slightly, but knock on wood it has never leaked in five years of daily driving. But it does get hot when idling, so I am springing for the Howe when I go with a much zestier small block. Whatever radiator you use,



you will need to trim the core support out as illustrated here. You will need the extra room, even when using the short water pump. The photo on the right illustrates about how much room you will have using the short water pump, with the Hooker kit.

Exhaust

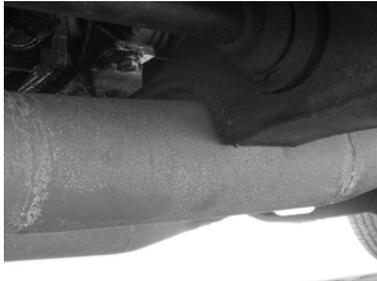
Ok this is another area "do as I say not as I do". You will see in the illustration that I used exhaust manifolds. Do yourself a favor and use the Hooker headers. To use stock manifolds requires some serious firewall trimming as indicated in the photo. However if you will need to smog the truck after the conversion you may have no choice but to run manifolds. While I am on the topic of exhaust, lets not forget emissions in general. If your truck is a post 73 model or less than 30 years old and you live in a state that requires regular smog inspections, then things will be more



complicated. It can be done as my truck is testament to that fact, but this does add more cost in both time and money. Make sure the motor you use has the same year (or close) heads, for example my truck is a 75, I used 78 Chevy heads, then just cut the restrictive bowls under the seats out a bit on a Serdi head machine. You can also run CARB exempt heads and any other parts you like, as long as the have an exemption order on file with C.A.R.B. After the conversion you will need to take the truck to a state test only facility (for California) and a state referee will test the truck for \$30 bucks a shot. Some good advice would be to find a local smog shop that will get the thing tuned for a reasonable amount, don't do like I did and fart with the carb and timing in the garage and use the "hmmm, it smells clean, lets try!" because the state facility won't even touch the tune, they only inspect. If you were building a later truck that will need smog, it wouldn't hurt to stop by and just talk with the tech; they are usually quite helpful and will let you know what exactly you will need.

Frame

Just a few words on the frame, this is one of the LUV's best features by far. Just take a look at one, aside from having six (yes six!) cross members and being fully boxed most



of its length, it's probably one of the strongest per pound frames around. I have seen many LUV's running the stock (unaltered) frame and turning nine-second passes and numerous hard wheel stands. I wouldn't doubt if you got one up on the bumper and for some reason lifted, it wouldn't hurt the frame much at all, I hope to have the option to test that theory someday, although a new set of shocks would probably be in order. One cool concept is notching the third cross member to allow better ground clearance when running large "sewer pipe" type exhaust. The photo to the left shows a notched cross member, using 4" pipe halves welded into the frame for a neat finished look.

The Truck

Just a few words about selecting a base truck. Everything hinges on what year model you choose. Since about all first generation LUV trucks (72-80) are about the same price to pick up used, usually well under \$1,000 for a solid runner, consider these points. If you live in an emissions regulated state and plan to drive the truck on the street, try to find a pre 74 truck, or depending on when you are reading this, one that is 30 years or older. The laws in California dictate that the vehicle be a 73 year model or earlier, or 30 years old to be exempted from the inspection program. I am not telling you to build a tree killer, but you will save some money and some big hassle. If you plan to only race your truck, or live in a non-emissions regulated area, go with a later truck. I say this just because your selection will be greater and the newer trucks are usually in better shape. You don't want a truck with allot of rust on the frame if you can find one. The later trucks run a two-headlamp system that makes some things a bit easier, like installing an intercooler for example. Whatever year you select don't be surprised if finding certain parts is impossible. I for example have been searching literally for years for a new dash pad and door weather-stripping. I did finally find some universal stripping from J.C. Whitney, but OEM stuff seems to be no longer in existence. Your best source for most parts will be the junkyard, or a donor truck.

Ok here are the instructions from Hooker Industries, they are here for your convenience but to be on the safe side please refer to the instructions that come with your conversion kit before performing the conversion. Also be aware the complete unaltered instructions are in the information section where you found this article for the Hooker kit.

NOTE: 1. THIS CONVERSION KIT IS TO BE USED TO INSTALL A SMALL BLOCK CHEVY V8 WITH SIDE MOUNT ENGINE MOUNTS INTO A CHEVY LUV PICKUP.

2. USE HOOKER TRANSMISSION MOUNT PART NO. 12630 WITH TURBO HYDRA-MATIC 350, ALUMINUM CASE POWER GLIDE, B-W, SAGINAW, OR MUNCIE 4 SPEED. USE HOOKER PART NO. 12631 WITH TURBO HYDRA-MATIC 400.

3. USE HOOKER HEADERS PART NO. 2140.

4. ON VEHICLES TO BE EQUIPPED WITH MANUAL TRANSMISSION AND CABLE CLUTCH LINKAGE, USE HOOKER CLUTCH CABLE BRACKET PART NO. 10943.

5. DUE TO SPACE LIMITATIONS SOMETIME OF REMOTE OIL FILTER SYSTEM IS RECOMENDED.

THANK YOU FOR MAKING HOOKER HEADERS YOUR CHOICE IN A V8 CONVERSION KIT. DUE TO THE RESTRICTED ROOM AVAILABLE IN THE ENGINE COMPARTMENT, YOUR ENGINE MAY BE CLOSE TO SOME BODY AND CHASSIS COMPONENTS. THIS CONDITION IS NORMAL. WHILE NOT COMPLEX MAY BE TIME CONSUMING. HOWEVER, AS SOON

AS YOU START YOUR ENGINE, THE ADDITIONAL HORSEPOWER AND IMPROVED PERFORMANCE WILL MORE THAN JUSTIFY YOUR EFFORTS. PROPER INSTALLTION AND MAINTENENCE WILL INSURE LONG LIFE AND MAXIMUM PERFORMANCE FROM YOUR HOOKER V8 CONVERSION KIT.

BEFORE STARTING

YOUR VEHICLE MUST BE RAISED A MINIMUM OF 36 INCHES. A FLOOR HOIST IS IDEAL. IF NO HOIST IS AVAILABLE WE STRONGLY URGE THE USE OF AXLE STANDS AS A SAFETY MEASURE. CAUTION! YOUR CAR SHOULD NOT BE SUPPORTED ON A BUMPER JACK. A GOOD ENGINE HOIST IS ALSO NECESSARY TO INSTALL AND POSITION ENGINE FOR THIS INSTALLATION.

INSTALLATION PROCEEDURE - PLEASE READ CAREFULLY

1. REMOVE HOOD. MARK ALL WIRES, HOSES, CABLES, ETC. REMOVE RADIATOR, STOCK ENGINE AND TRANSMISSION. CUT OLD ENGINE MOUNT PADS FROM FRAME.
2. BOLT ON REAR TRANSMISSION MOUNT (SEE NOTE 3) TO FRAME OF VEHICLE AS PER INSTRUCTIONS. REAR MOUNT WILL POSITION ENGINE ON FRAME. USE A 1967-77 TRANSMISSION MOUNT.
3. REMOVE ALL LINES, WIRES, CANLES AND HOSES FROM FIREWALL OF VEHICLE. MODIFY FIREWALL AS SHOWN IN ILLUSTRATION "A". IT WILL BE NECESSARY TO CHANGE AND REPOSITION IDLER PULLEY FOR EMERGENCY BRAKE CABLE ATTACHED TO FIREWALL. SEE ILLUSTRATION "B".
4. A CHEVY Z-28 OIL PAN MUST BE INSTALLED FOR ADDITIONAL CLEARANCE IN THE AREA OF THE FRONT CROSSMEMBER.

NOTE: DO NOT MODIFY FRONT CROSSMEMBER FOR CLEARANCE.

5. USE 1968-77 CAMARO FRONT ENGINE MOUNTS TO ATTACHED FRAME PADS SUPPLIED IN CONVERSION KIT TO ENGINE.

NOTE: IF A MANUAL TRANSMISSION IS TO INSTALLED AND HOOKER CLUTCH CABLE BRACKET IS TO BE USED, IT WILL BE NECESSARY TO BUY AND INSTALL A 1975-77 MONZA V8 BELLHOUSING AND THROW OUT BEARING ARM. IF A HYDRALIC CLUTCH ASSEMBLY IS TO BE USED, REPLACE STOCK MASTER CYLINDER CLUTCH WITH A CHEVY TRUCK SLAVE CYLINDER #EW3447 EIS PART NO. FABRICATE A BRACKET TO BOLT SLAVE CYLINDER AS CLOSE TO STOCK BELLHOUSING AND IN STRAIGHT LINE WITH THROW OUT BEARING ARM.

6. INSTALL ENGINE AND TRANSMISSION INTO TRUCK. USING REAR TRANSMISSION MOUNT TO LOCATE FRONT TO REAR CHECK TO SEE THAT ENGINE IS LEVEL FROM SIDE TO SIDE AND CENTERED IN ENGINE COMPARTMENT. ONCE ALL THESE CHECKS ARE COMPLETED WELD FRAME PAD TO FRAME. SEE ILLUSTRATION "C".

NOTE: IF VEHICLE MUST BE MOVED TO BE WELDED DRILL 1/4" PILOT HOLES THROUGH FRAME PADS AND BOLT ENGINE DOWN WITH SELF-TAPPING SCREW SUPPLIED. THIS PROCEEDURE IS TO BE USED ONLY TO TEMPORARILY LOCATE ENGINE. UNDER NO CIRCUMSTANCES SHOULD VEHICLE BE OPERATED UNDER ITS OWN POWER UNTIL PADS ARE SECURLY WELDED TO FRAME! DUE TO VARIATIONS IN MANUFACTURING TUBE L-1 MAY TOUCH LEFT MOTOR MOUNT. GRIND RUBBER ON MOUNT FOR ADDITIONAL CLEARANCE.

7. THE STOCK RADIATOR WILL NEED TO BE RECORED AND REPOSITIONED. (A 1972-74 CHEVY LUV RADIATOR WILL ACCEPT A 4 TYBE CORE.) IT WILL BE NECESSARY TO CUT CENTER PIECE OF SUPPORT OUT, TRIM PANEL FOR RADIATOR CLEARANCE, AN EARLY WATER PUMP AND SINGLE GROVE CRANKSHAFT PULLEY MUST BE USED (SHORT SHAFT). POSITION RADIATOR SO THAT IT WILL CLEAR CROSS MEMBER. DRILL NEW HOLES AND ATTACH. A 13" 5 OR 6 BLADE FAN IS SUGGESTED FOR COOLING.
8. INSTALL THROTTLE CABLE AND PEDAL ASSEMBLY. A 1965-77 FORD OR 1968-77 CAMERO ASSEMBLY IS SUGGESTED.
9. IF HOOKERCLUTCH CABLE BRACKET PART NO. 10943 IS USED, INSTALL AS PER INSTRUCTIONS AT THIS TIME. IF HYDRAULIC CLUTCH IS USED, BE SURE TO INSTALL FLEX HOSE BETWEEN MASTER CYLINDER AND SLAVE CYLINDER, BLEED SYSTEM, CHECK TO MAKE SURE BRACKET FOR SLAVE CYLINDER DOES NOT FLEX, THERE ARE NOT LEAKS AND NO BINDING IN LINKAGE.

10. A HEAVY DUTY REAR END IS RECOMENDED SUCH AS A 10 BOLT CAMERO. THE DRIVE SHAFT WILL NEED TO BE MODIFIED. HOOK UP ALL WIRES, HOSES, CABLES AND LINKAGES. CHECK TO SEE THAT ADEQUATE CLEARANCE EXISTS BETWEEN ALL WIRES AND BRAKE LINES. CHECK ALL BOLTS FOR TIGHTNESS. WHEN FINISHED, GIVE YOUR CAR A TEST DRIVE CHECKING CAREFULLY FOR ANY NEW NOISES. AFTER SEVERAL DAYS DRIVING RETIGHTEN ALL BOLTS.

