

How To

Install a Subframe & Suspension

Chris Alston's exclusive component packages are making real racing suspensions more affordable than ever. Today, anyone can purchase a complete 4-Link Suspension System, roll cage, and "tin" interior for less money than it takes to build a decent engine. Moreover, Chassisworks components and instruction sheets are specially designed for home installation by anyone with basic welding skills.

To demonstrate the economic advantages of various Chassisworks packages, Chris Alston set out to convert a stock 1965 Mustang GT into a combination Pro Street/Super Street machine — without spending more than \$2000 (excluding wheels and tires). The finished product is rolling proof that a 10-second doorslammer chassis can, indeed, be built on even the most limited budget.

One secret to success is the universal Chassisworks Suspension System, which comes complete with a rear

Chassisworks Packages Make it Easy & Economical

Chris Alston's personal project car started out as a 4-speed 1965 Mustang with 130,000 miles. Original GT wheels were traded for a complete 9-inch Ford rearend.



subframe; two coil springs; OEM-style shock absorbers; a tubular upper cross-member; adjustable-height lower shock mounts; front and rear suspension brackets; an adjustable track-locator assembly; and your choice of either ladder bars or 4-link. (Spring rates vary with the application; each set of springs is custom-matched to the particular vehicle by Chassisworks.)

Frame components all come with Chassisworks' universal 4-link subframe kit, including dropped crossmember; upper shock mounts; shock crossmember; rear frame crossmember; and a pair of subframe connectors. Note the wrinkle-free finish of the mandrel-bent steel.



To stay within the \$2000 budget, Chris decided against modifying or even repainting the stock outer body. The original bucket seats, door panels, dashboard, headliner and carpet were all retained. Removing the entire rear floor made the subframe installation much easier and neater. Following the Chassisworks instructions, a "cut line" was made exactly 24 inches forward of the rear-axle center line. The long, narrow slits on either side of the transmission tunnel create clearance for the boxed connectors that will tie the new rear frame to the stock front subframe.

Leading edge of frame crossmember lines up against the stock floor. The driveshaft is centered over the dropped portion. Exceptionally tight bend of Chassisworks crossmembers ultimately creates additional tire clearance.



Next, installer Joel Garceau trims and installs both subframe connectors through the corresponding slots in the floor.



It's easier and more accurate to install the new frame in pieces — using the vehicle to help build it — than to weld it up on a bench, then try to make it fit the car. Chassisworks instructions guide the home builder through every step.



Instruction sheets reveal how to determine the correct frame width for your particular wheel-tire combination. In this case, outside width is 24 inches (note center-line mark on tunnel). Additional measurements are taken between the outside rails and the quarter panels at several points along the subframe, ensuring that the frame is installed perfectly square.



Roll-cage construction begins by bending four 1/8-inch floor plates to the contour of the floor. These will anchor the cage sides and main hoop. Once the prebent tubing is cut to length, an area slightly larger than each plate is marked off, as shown.



To ensure the best possible weld, each outlined area is ground to remove any paint, body filler or debris.



After tack-welding the floor plates, Garceau uses a magnetic level while tacking the main hoop.

Cage sides are carefully positioned to clear the stock sun visors and glove-compartment door.



Suspension stage begins by tacking in both sets of forward 4-link brackets, even with the outside of the frame rails.



Next, a strut connects the main hoop to the frame above the 4-link bars, forming an X-brace. Chassisworks installers use this notched section of angle iron to align and hold the three sections during welding.

Longest sections are the rear struts tying the main hoop into the back of the frame. Here, Garceau both measures for strut length and determines the section of the package tray to be notched for clearance.



The short strut at the right ties one side of the cage to the frame at a point just above the forward 4-link bracket. Installation of the horizontal seat-back brace and swing-out side-bar clevises (visible above torch) completed this 12-point roll cage.



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The many advantages of a mandrel-bent Chassisworks subframe begin with a super-low ride height. What brings the body way, way down is an ultra-high frame "kick-up" over the rearend. Moreover, by simply repositioning two bolts in the lower shock-absorber mounts, the body can be lowered even further — or raised — in a matter of minutes. As much as six full inches of "instant" height adjustment is built right into these unique Chassisworks shock mounts. (The design is also specially contoured to clear a back brace attached to any popular rearend housing, including the beefy 9-inch Ford.)

Chassisworks subframes are also much narrower than older frame designs sold by competitors, thanks to the tighter bend of the dropped front crossmember. The extra three-to-four inches of tire clearance created here are really critical in a Vega or other small vehicle, whose performance may

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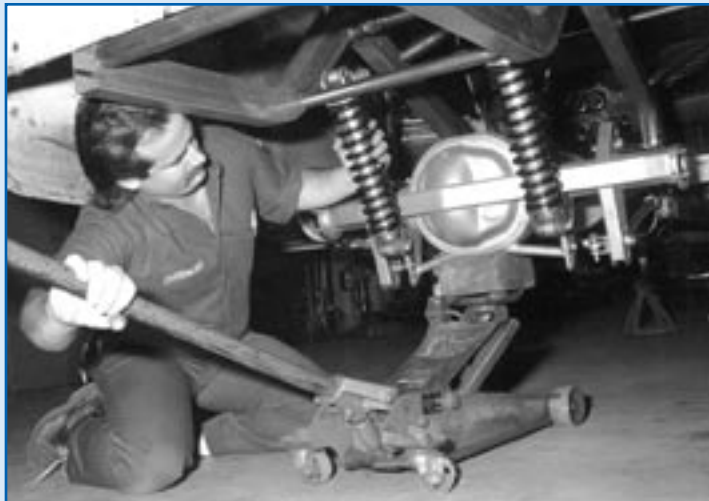
ultimately be limited by how much tire can be squeezed between the frame rails and quarter panels.

All Chassisworks subframes are shipped unassembled (for ease of installation), and generously oversized — good news for you truck owners shopping for extra-long steel all around.

While the stock rearend housing was on the bench for narrowing and bracing, the Chassisworks crew also welded on the lower shock mounts and 4-link brackets. Now, Garceau attaches the four rod ends.



After bolting both coil-spring assemblies to their lower brackets, Joel raises the entire rearend to align the upper shock mounts with the crossmember.



With the rearend assembly centered between the frame rails, the track-locator tube is measured, marked, and cut to length.



After determining the largest tire diameter (29 inches) that would fit inside the stock wheel openings, tinsmith Jimmy Berg selected a pair of 24x40-inch Chassisworks aluminum tubs.



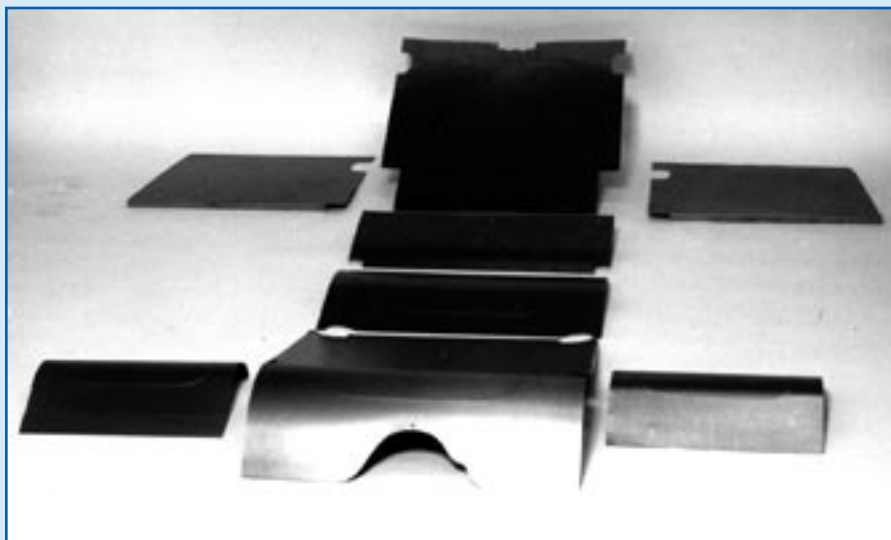
In this trial-fitting, both tubs are temporarily attached to the frame with Cleco clips.

Rather than retaining any part of the stock floor, Chris Alston elected to replace it with a steel Chassisworks kit. Offered as a complete, trim-to-fit package, these prerolled floor panels and belly-pan pieces are available in your choice of either steel or aluminum.

"It's actually easier to rivet new floor panels on top of the new frame than it is to try to fit and piece the stock floor around the new frame," Chris explains. "When you keep the stock floor, you keep all the problems that came with it. By the time you cut out the wheel wells for each side, you've cut away half the floor, anyway. If you go ahead and throw the rest of it away, the frame can come up higher; the car can sit lower; you have a lot more room for the suspension; and you get a much cleaner, neater installation."

At the outset of this project, Chris intended to purchase and narrow a used 9-inch Ford rearend, then have its axles resplined for about \$100. However, a friend eagerly traded his complete 9-inch assembly — including drum brakes — straight across for the rare GT wheels that came with this Mustang. Then John Mazzarella of Strange Engineering offered an irresistible deal on a pair of brand-new axles. A universal Chassisworks back brace stiffened up the entire housing.

All of this back-half reconstruction left no room beneath the body for a fuel tank, necessitating a plastic cell in the trunk. Fully anticipating long highway cruises in his new toy, Chris installed a 16-gallon Pro Street cell and mounting brackets — bringing the grand total to just under \$2000. Indeed, all of the parts that went into this radically transformed Mustang cost less than rebuilding its engine — and will probably prove more important to its quarter-mile performance



Since this car will see regular street duty, Chris Alston selected the steel version of his rear-floor kit. Center sections come prebent and prerolled from Chassisworks to fit over the frame. (These finished pieces have already been trimmed and notched to fit the Mustang's roll cage, driveshaft loop and quarter panels.)

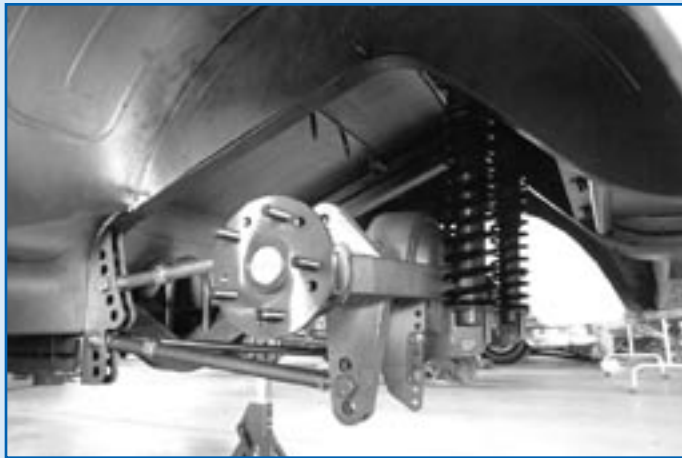


Cleco clips hold the various panels in place, pending powder coating. The rear firewall was custom-built. (Chassisworks has since added a production firewall to its interior kit for this application.)



Following powder coating, the wheel tubs, belly pans and floor sections will be riveted to the frame and sealed with silicone.

Exclusive Chassisworks lower shock mounts were specially designed to clear the axle housing's back brace, plus provide up to six inches of easy ride-height adjustment. Stock Ford brake drums will be fitted to the Strange axles.



The factory fuel tank was replaced by this 16-gallon cell. By modifying and relocating the stock deck-lid hinges inboard, Chassisworks eliminated interference with the tall wheel tubs. (Note original mounting locations near outer edges of lid.) Also, the factory lock mechanism remains intact.



Black cage tubing complements the original red dashboard, door panels, seats and carpet. Optional, swing-out side bars are highly recommended for street applications. Notice how the cage sections do not interfere with the factory armrests, window cranks, door handles, sun visors or glove box.



Closeup reveals reworked hinge and fabricated box mount, welded to the deck lid. The original spring latch was shortened and attached to the cage strut.

The transformation is complete! Treaded 29/18.5-15 rear tires and 15x14-inch Aerolite wheels fit inside the stock wheel openings. Front rims are matching 15x6-inch Aerolites. The original 289-cubic-inch engine, clutch and 4-speed are still in place.

