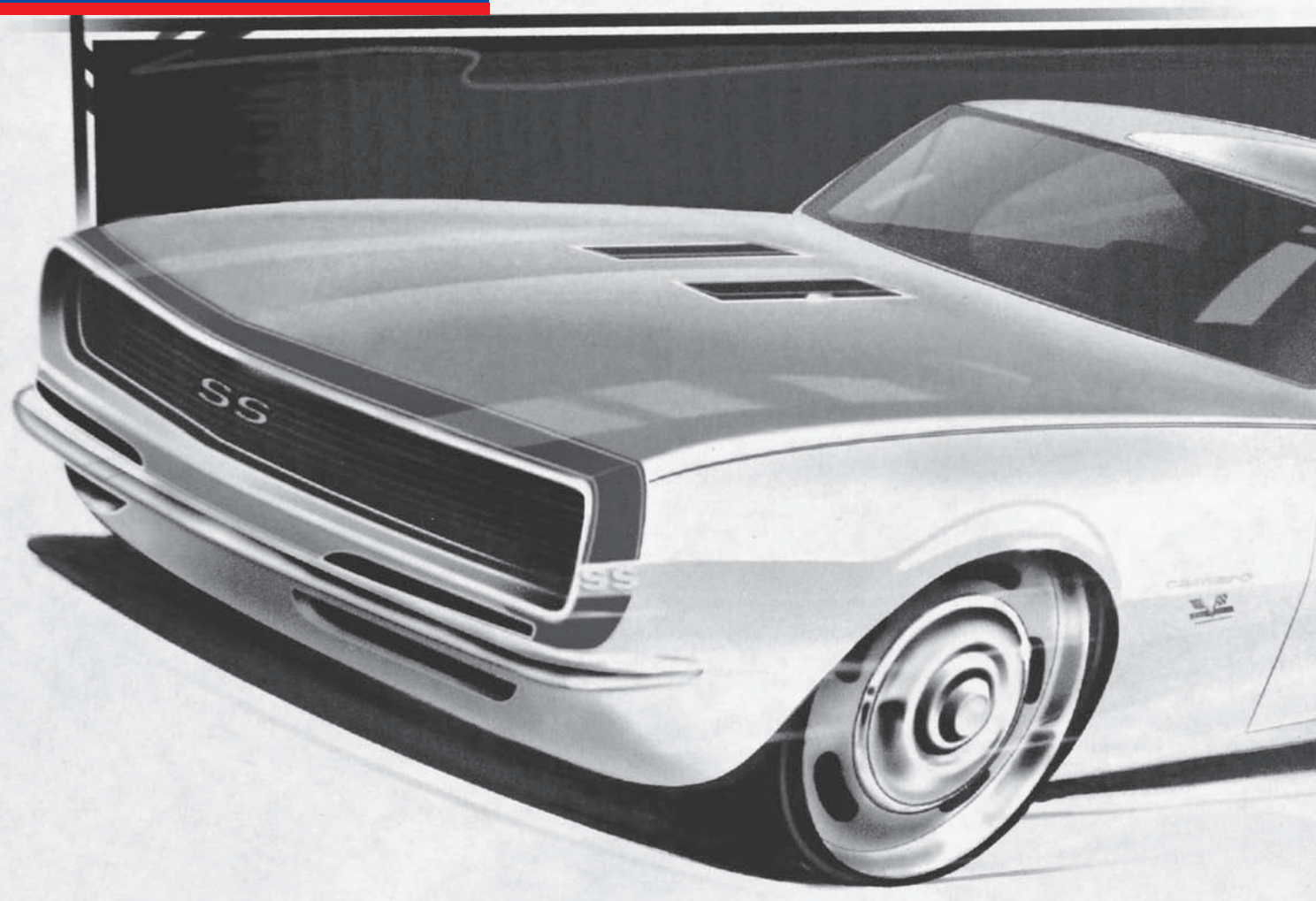
How To



DYNACORN '67 CAMARO BUILDUP, START-TO-FINISH

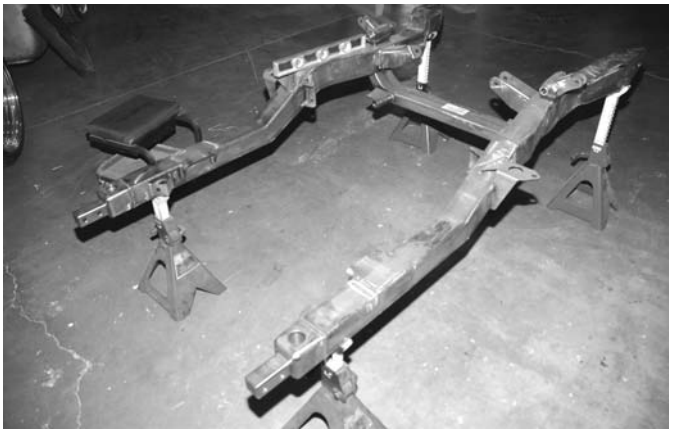
Part Two

BY BOB MCCLURG

In the last issue of Super Chevy CAMARO PERFORMERS Magazine, we kicked off our series on the buildup of Dynacorn Classic Bodies, Incorperated's 1967 Camaro show car, aka. "The Dynacorn Gem," being built at Sal Perez' San Bernardino, a California-based American Muscle Cars, Incorporated shop.

Dynacorn Classic Bodies, Inc, a Division of Dynacorn International broke new ground with the introduction of the company's GM Restoration Parts licensed, "Replacement Body Shells" for the 1969 Camaro coupe and convertible. Stamped by project partner Golden Trust, and manufactured out of Automotive Grade Universal Steel 1006, which is reputed to be .0002-inch thicker than OE, these Replacement Body Shells feature a total of 350 EDPM-coated sub assembly's or component panels which are jig-welded together to form a single body shell, or to be more specific, a complete coach with doors and deck lid included. These Replacement Body Shells are assembled by a licensed Dynacorn Classic Bodies, Inc. sub-assembler like American Muscle

Shown is Dynacorn Classic Bodies, Inc's pre-production prototype 1967 Camaro coupe body shell (first one ever built) ready and waiting on the lift at Sal Perez' San Bernardino, CA-based American Muscle Cars, Inc. shop. At this point, it looks like a veritable diamond in the rough. Not to worry!



This is our bare Chris Alston Chassisworks 1967 to 1969 front clip, or sub frame (p/n 917701) leveled out on a set of jack stands to insure that all suspension components are correctly aligned upon assembly. These sub frames are manufactured out of CNC die stamped and laser cut boxed steel which is welded together to form a rock-solid foundation. This setup also features a trick mandrel bent 2x4-inch front cross member, and all suspension and engine mount brackets are CNC machined. Alston's front sub frame even comes with its own alignment pins to make installation hassle free.

Cars, Inc. and retail for approximately $13,500 F.O.B, San Bernardino, CA. Front sheet metal extra charge.

And, with the debut of the Dynacorn Gem at last summer's "Hot August Nights" week long cruise event, (Reno, NV,) comes the official release of Dynacorn Classic Bodies, Inc.'s new 1967 Camaro coupe Replacement Body Shell.

In Part Two of our Dynacorn Classic Bodies 1967 Camaro Show Car Buildup Series, we're going to follow along as American Muscle Cars Project Director Bret Maxwell and Dan Woods begin bolting together our Chris Alston Chassisworks 1967-69 Camaro and Firebird front (sub) frame, and Chassisworks tubular upper and lower a-arm coil over front suspension and dropped spindle assemblies, p/n 917701.

With that completed, the next thing on the dynamic duo's work list will be the assembly of the Currie Enterprises 3.89:1 geared Alston Chassisworks-Fab 9, big bearing nine-inch Ford rear axle housing which will feature a set of Currie Enterprises 31-spline steel billet rear axles, and Wilwood Enterprises Dynalite Pro Series four-piston, 12.19-inch vented and slotted rotor rear disc brakes and e-brake assemblies, p/n 140-7140.

In Part Three of our "Dynacorn Gem" start-to-finish buildup series, we'll complete the assembly of our Chassisworks front frame clip, bolting up a set of 13-inch cross drilled and slotted rotor Wilwood six-piston front disc brakes, and test fit this crucial sub assembly to the Dynacorn Classic Bodies, Inc. pre-production prototype 1967 Camaro coachwork. We'll also be fitting up the Alston-Currie Fab 9 rear axle to the car as well as work a little metal magic on the Camaro's firewall to accommodate that formidable GM Performance Parts 502-cid, Holley carbureted big-block, so stay tuned!

This parts layout photo shows the entire Chassisworks un-equal length, upper and lower a-arm suspension system including A-arms, ball joints, a ball joint wrench, set of Chassisworks dropped front spindles, bushings, mounting hardware, a pair of shock simulators, Alston VariShock, double adjustable coil-over shocks, and Chassisworks front hubs.

And there's more. In this second parts photo, we see the remainder of the Chassisworks frame assembly (there's a lot of stuff here, folks,) which includes the front anti-sway bar, a polished Chassisworks power steering rack, and Chassisworks tubular front transmission cross member setup for a Tremec TKO 500 five-speed transmission.

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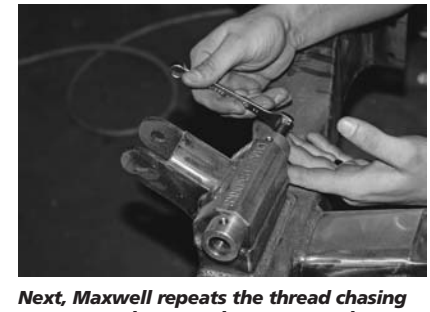
Actual suspension component assembly begins with Maxwell chasing threads on the control arms, while Dan Woods follows up with a little anti-sieze to the control arm adjusters for ease in installation. This procedure is followed with the installation of the actual ball joints themselves using the provided ball joint installation tool.

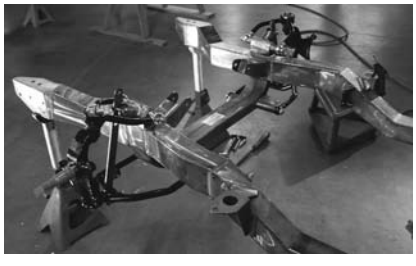


Next, Maxwell repeats the thread chasing process on the control arm mounts because any time in manufacturing, a small burr can get inside, and potentially damage potentially expensive fastener hardware. Just call it a safety precaution, folks!

With all the threads cleaned and chased actual lower control arm assembly begins using the special ?-inch Allen head pivot studs provided.

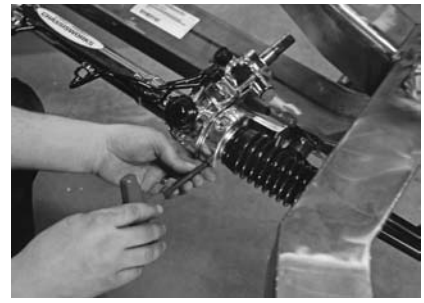
The lower A-arm ride height is set using the provided shock simulator brackets provided in the Chassisworks kit. Note that the top hole represents full extension while the bottom hole represents full compression The center hole, represents the ideal ride height (@ 12-inches) that you're shooting for.

Bret installs the upper control a-arms using ?-inch Allen head pivot studs which are tapped in with a mallet to insure that they seat properly. These studs are then tightened following the torque specifications provided in the Chassisworks catalogue.



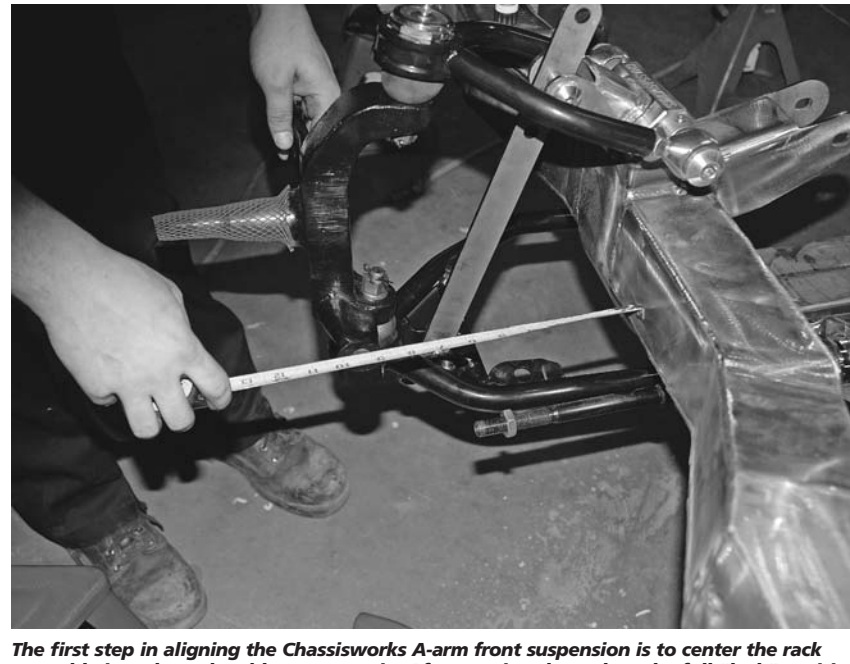
This procedure is followed with the installation of the Chassisworks dropped front spindles (which are marked "L and R,") using the provided 9/16 Grade 18 castle nuts. With both right and left side control arm and spindle installations complete, this is what you end up with. Looks pretty good, eh?

The next order of business is the installation of the polished Chassisworks steering rack installing it into the provided rack mounting bosses for trial setup.



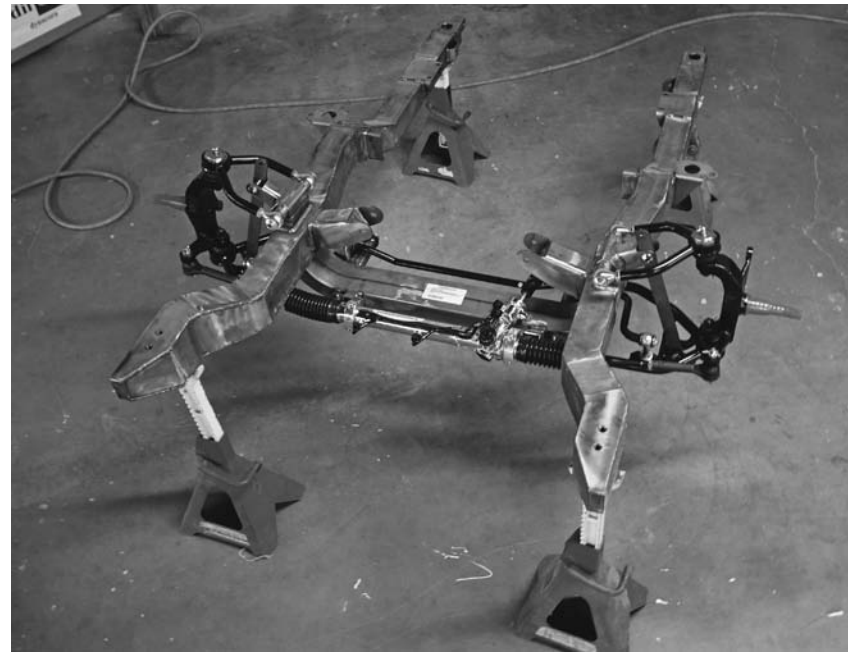
The steering rack is subsequently secured in place using the two billet-aluminum steering rack clamps, and ?-13 x 2-inch Allen bolts and accompanying ?-inch lock washers.

Prior to achieving dead center on the rack, Woods and Maxwell check out Alston's highly detailed installation instruction book. Virtually every step is covered using highly detailed photos along with listing nut and bolt sizes, torque specifications, etc;



The first step in aligning the Chassisworks A-arm front suspension is to center the rack assembly in order to be able to set toe in. After turning the rack to the full "lock" position on the passenger side, it is then reversed to the full "lock" position on the driver side. The driver's side should read 15-1/8-inces, while the passenger side should read, 9-7/8-inches. After adding the two, you should come up with a measurement of 25-inches, divided by two (2) equals 12-1/2-inches side-to-side.

Next the tie rod end is installed on the steering arm, while being aligned with the steering arm. The jam nut should be set at 8-5/8-inches, which is the distance from the frame to the inside of the tie rod end. This procedure should be repeated on the driver's side.



Both tie rod ends are secured in place using the provided 9/16-18 castle nuts and cotter pins included in the kit. At this juncture, we have a 90 percent complete front sub frame minus front brakes, ready for test fitting, which will take place in our next installment.

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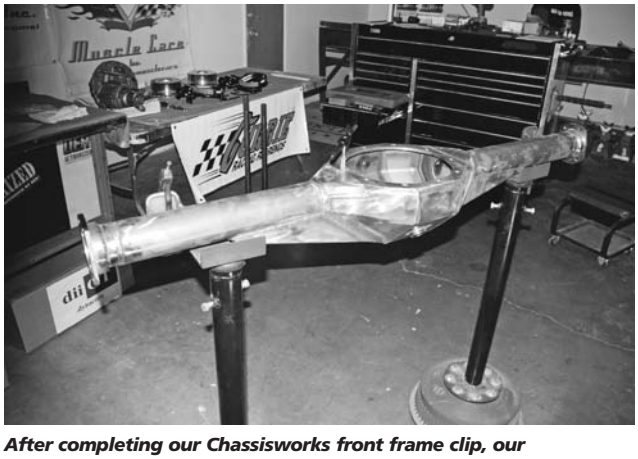


After completing our Chassisworks front frame clip, our installation team tackled the Chassisworks-Fab 9 sheet metal nine-inch Ford big bearing rear axle housing.

Shown are some of the rear end components being used on this build including a set of Currie Enterprises 31-spline steel billet axles, and a set of 12.19-inch, slotted and cross drilled Chassisworks-Wilwood Disc Brakes four-piston rear disc brakes.

Of course, the other key player our Chassisworks Fab-9 axle housing buildup is one of Currie Enterprises 9+ 3.89:1 geared nodular iron gear cases.

Rear axle mockup begins with the installation of a series of four, 3/8-24 axle studs to set up the rear end.

Next, in goes the Currie Enterprises "chunk," or completed 3.89:1 geared third member. The wooden sticks are used to cushion the third member from slamming down on the mounting surface, and possibly stripping the studs.

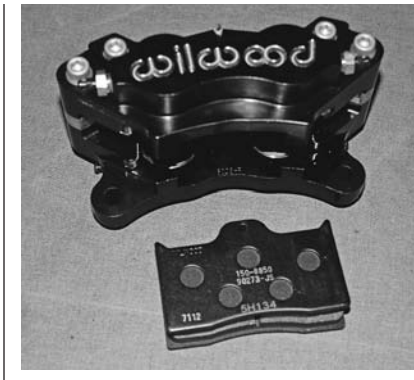
With the carrier in place, it gets snugged in place via a series of 3/8-inch Nylok nuts.

Next comes the installation of the Wilwood-Ford emergency brake assemblies which are mounted up to the Fab-9 axle bearing flanges using four, (4) 3/8-inch retaining nuts and bolts.

With that done, in go the Currie Enterprises 31-spline billet axles.

Then Bret and Dan tighten down the axle bearing retainers side-to-side.

On go the Wilwood Brakes 12.19-inch slotted and cross drilled rotor's or rear "hats."



This is followed with the installation of the actual Wilwood four-piston disc brake calipers using the provided mounting brackets using 3/8-24 nuts and bolts. And that's all for now, gang!

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DYNACORN '67 CAMARO BUILDUP START-TO-FINISH

Part Three

Firewall Smoothing, Engine & Transmission Mockup, Rearend Installation.

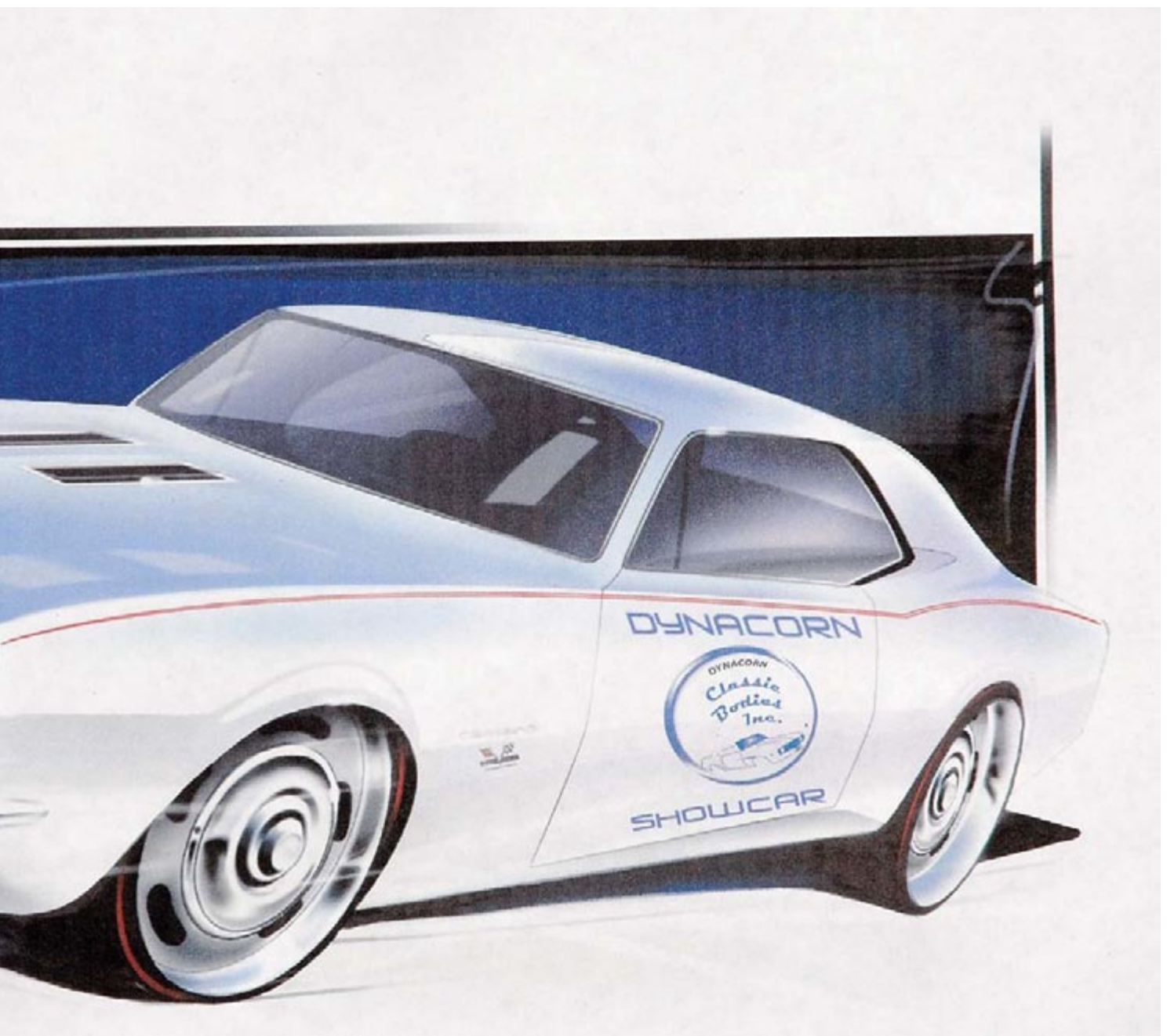
In the November 2006 issue we concluded part two of our Dyacorn Classic Bodies, Incorporated "Dynacorn Gem," 1967 Camaro show car buildup series with the initial mockup assembly of both our Chris Alston Chassisworks Camaro front sub frame, (a rock-solid piece if there ever was one) along with the assembly of our bullet-proof, Wilwood Engineering-equipped, Currie Enterprises "9+", 31-spline, 3.89:1 geared, live rear axle housing.

In our third installment, we're going to cover a number of subjects.

First: Since the Dynacorn Gem 1967 Camaro big-block is a street machine, it was not necessary to maintain that OE appearance. Given this fact, the builders decided that the '67 prototype should feature a filled and smoothed firewall according to current street machine standards, which will be initially covered in this installation.

Second: With firewall filled, smoothed and re-worked, we'll finish bolting together the Chris Alston Chassisworks CNC die-stamped and laser-cut boxed-steel 1967-69 Camaro front sub frame, (p/n 917701) complete with 2x4-inch boxed-steel front crossmember and Wilwood Engineering-equipped, Chassisworks unequal length a-arm front suspension, and bolt it up for the first time to the '67 Camaro unibody.

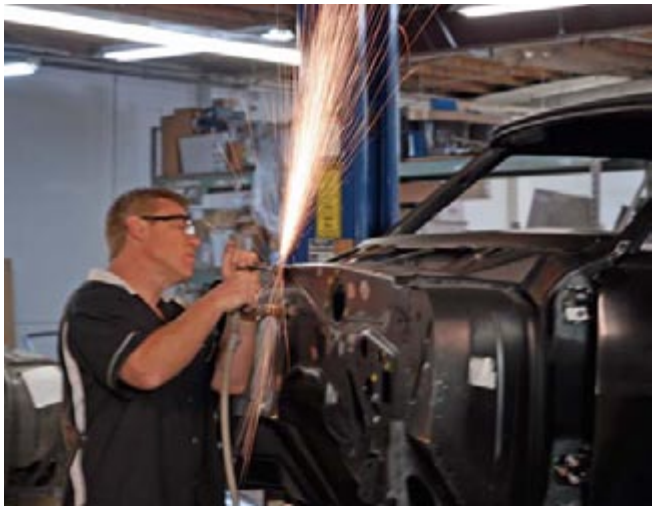
Third: In regards to the aforementioned 9.6:1 compression, four-bolt-main, 502-cid (4.47 x 4.00-inches) Holley 850-cfm-cabrureted, GM Performance Parts "502/502 Deluxe" big-block



"CHOP, CUT & REBUILD" cable TV host Dan Woods identifies the areas to be filled in on the Dynacorn Camaro firewall for TV viewers at home. They include the heater and the windshield wiper motor holes along with a veritable ton of stamped mounting holes which would normally be used to bolt up the OE engine compartment accessories, were this a re-body, or concourse restoration.

With potential weld-in areas identified and duly marked, Woods uses a wheel-a-brator to initially open up these areas.

Then American Musclecars, Inc. craftsman Jeff Martin begins TIG welding in some of the smaller holes.



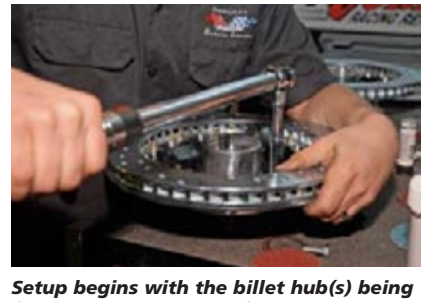
Dan Woods progressively follows up with a small die grinder to clean away excess welding slag from the filled-in areas.

One of the bigger areas in need of filling was the Windshield Wiper Motor mounting location which measures approximately 1-1/2 x 12-inches. When the car is completed, it will use a Specialty Power Hidden Windshield Wiper System, adapted by Perez' American Muscle Car crew, to fit the car.


Installer Martin first creates a weld-in "blank" which is initially tack-welded in place. After checking the fit it gets hammer welded in position.


Other firewall modifications include seam-welding the entire circumference of the firewall using a special heat absorbing putty called "Cool Blue" which was applied to the larger areas to avoid warp-age.

With the camera's rolling, Woods and Project Director Bret Maxwell focus (excuse the pun,) on installing the 11-3/4-inch vented directional rotor, Wilwood front disc brakes. First the mounting holes are all chased using the proper size tap.



Setup begins with the billet hub(s) being fitted to the backside of the rotor. The provided 12-point bolts measure 2-1/4-inches in length, and should be final torqued in sequence according to the Chassisworks Instruction Manual.

The bearing races are pressed into the billet hub at the factory. After packing the inner wheel bearing with a high-quality wheel bearing grease, our installers use a hammer and a seal installer to drive the seal into the hub.

Next, comes the installation of the front bearing, again using an ample supply of high quality wheel bearing grease.

Bret installs a completed rotor onto the correct spindle keeping in mind that they are directional. To fully set the bearings, the accompanying castle nut should be final torqued to 12 lb/ft while spinning the rotor in the forward direction. This will remove any excess grease that could cause wheel bearing play. The castle nut is then backed off to the "just loose" position which should produce the desired .001 to .005-inches of end play. Finally, the cotter pins are installed.

Next, Dan installs the passenger side Wilwood disc brake caliper using the 3/8-16 x 1-3/8-inch socket head Allen's, lock washers and flat washers provided in the kit.

Next, our installers drill and tap the side of the Chassisworks frame for two 10-32-inch threaded holes. These holes will position the brake line tab 2-inches below the top of the frame and 2-1/2-inches ahead of the weld on the front cross member. Once these holes have been made, the accompanying stainless-steel brake line brackets are installed using the provided 10-32 x 3/8-inch button head bolts.

With that done, we see the installation of the provided 3/8-inch, braided stainless brake lines.

Shown is the 90% completed Alston Chassisworks front frame.

After installing the SACHS clutch and pressure plate, Bret Maxwell bolts up the Lakewood big-block bell housing using the mounting bolts provided with the bell housing. CHOP, CUT & REBUILD host Dan Woods provides a little assistance.

Next, our man Dan installs the Chassisworks motor mounts provided using the provided 3/8-16 x 1-1/2-inch socket head Allens and 3/8-inch washers provided.

Now it's time to join together the 'Gem's GM Performance Parts 502/502 big-block and Keisler TKO 600 tranny.

Prior to dropping our 502 big-block power train into place, Woods and Maxwell install the Chassisworks transmission cross member using the provided bolts in the Chassisworks kit.

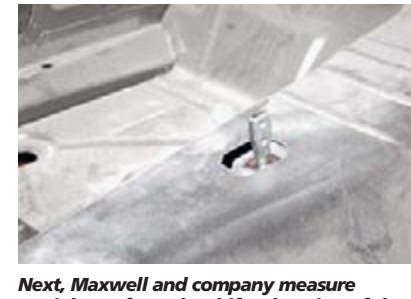
At this juncture it's time to begin positioning the big-block and five-speed into the Alston chassis.

Mating up front sub frame to the Camaro coachwork is a painstaking process.

Right off the bat, our installers experienced some clearance issues. For example, the factory GM HEI unit interfered with the Dynacorn Gem's firewall. However, a quick thinking Maxwell realized that an MSD Pro Billet HEI is slightly smaller. A quick substitution immediately rectified the problem.

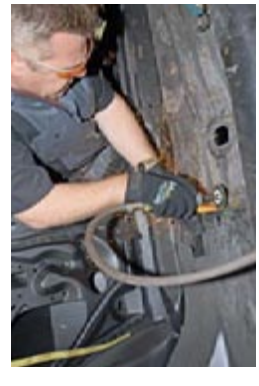
Another of the pleasing features about the Chassisworks F-Body sub frame is that the manufacturer provides the builder with a pair of 5/8-inch threaded frame alignment pins, invaluable items for all important pre-assembly.

This is how our 99% completed Chassisworks front sub frame looks like from the rear of the car once trial-fitted in place,



Next, Maxwell and company measure straight up from the shifter location of the TKO 600 transmission, and cut a "shifter slot" measuring approximately 1-1/2 x 3-inches in the center of the transmission tunnel.

Woods trial fits the Alston sub frame connectors (p/n 5601-20) up to the underside of our Dynacorn Reproduction Bodies '67 Camaro uni-body.



In the process, some seat clearance issues were addressed with the floor pan. A couple of slots were cut prior to bolting up the sub frame connectors.

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With sub frame connectors fitted in place, the mounting holes are drilled, and the combination 3/8-inch and ?-20 x 3-inch bolts are bolted into place.

With sub frame connectors properly bolted up, they should butt up to the Chassisworks front sub frame like this.

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Now it's time to install the 'Gem's Currie 9-plus live rear axle.

On the opposite end our crew installs the OE reproduction spring bucket for the Camaro rear leaf springs to "sit" in using the OE bolts provided.

Our installers begin with the installation of the Classic Industries '67 Camaro polyurethane spring eye bushings and shackle brackets using the provided reproduction Camaro shackle bracket bolts.

After the leaf springs are installed, the next step is getting the Currie "9+" rear axle housing in place. This is where having lots of friends is a good thing. And here's how it looks. In Part Four, we're going to install the fuel tank, exhaust system, and steering column. It's beginning to look like a car now.

DYNACORN '67
CAMARO BUILDUP START-TO-FINISH

Chevrolet crate engine (p/n 12496962) rated at 502 HP (@ 5200 RPM and 567 lb/ft. or torque @ 4200 RPM; and accompanying Keisler-Tremec TKO-600 five-speed manual gearbox equipped with a SACHS 11-inch clutch and 650-pound pressure plate housed in a Lakewood bell housing, we will also be installing one of Chassisworks Rear Transmission Cross members (part of the kit) as well as adding a pair of Chassisworks F-Body sub frame connectors.

Fourth: Last, but certainly not the least, we'll be Trial fitting our Currie Enterprises 3.89:1 geared, "9+" 9-inch live rear axle up to our '67 using a Classic Industries Camaro Rear Leaf Spring and Spring Shackle Kit. Since all parts are new in the modern Currie 9-inch rearends, we don't have to use that "F" word in describing this part anymore.

Obviously, this is a pretty ambitious undertaking, especially since the American Musclecar's, Incorporated crew (consisting of Project Director Bret Maxwell and helpers Jeff and Brad Martin) were given just eight weeks to have the Camaro ready for its grand debut at "Hot August Nights-06," not to mention the fact that they were also working around a film crew and one lone still photographer throughout the entire car building process.

Follow along with us as we transform this pre-production 1967 Camaro Replacement Body Shell into an awesome looking and performing big-block Camaro street machine the American Musclecars, Inc. way.