Engineering a 1934 Ford Pro Street-Street Rod

- **This "Picture Book" Outlines the Steps in Engineering and Building a Functional Pro Street-Street Rod**
- **Built a "Hot Rod" when in high school, my first car a 1941 Ford Opera Coupe. Been an avid Hot Rodder ever since but no time to build another.**
- **Modified many of the cars I owned as daily drivers and would "bench race" and dream over the years of what I would build! This is an overview of the design and construction of that *"dream!"***
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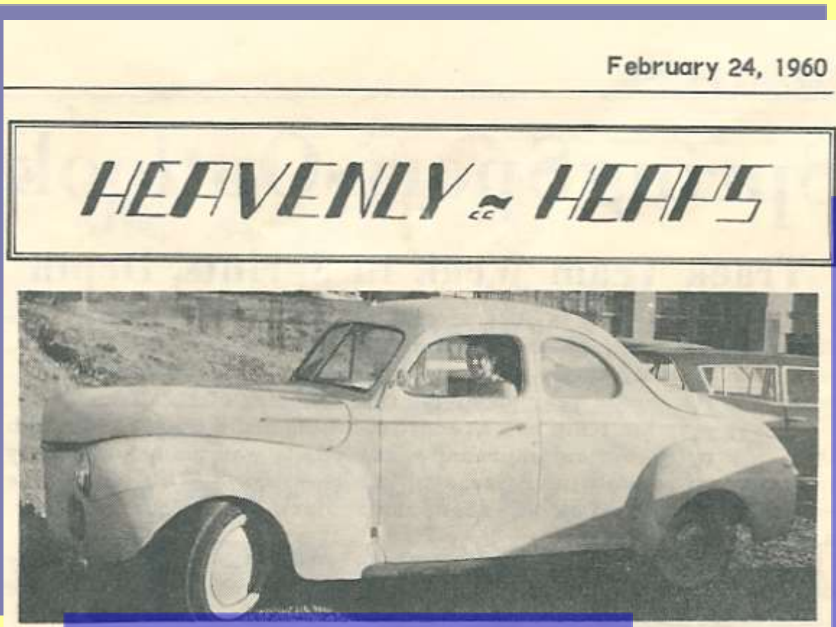
For Sale: Email: Jerry_Uttrachi@NetWelding.com

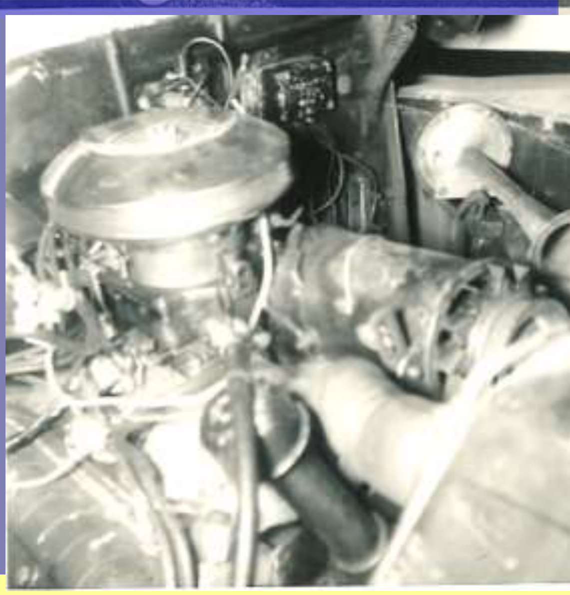
Enjoy,
Jerry Uttrachi,
President,
WA Technology

Time to Build a "Hot Rod" Again!

- Some 50 years ago I built a 1941 Ford "Hot Rod."
- In 1999 I decided to build a "Street Rod" with all of the features dreamed about over the years.
- Having small block Chevy's in a number of cars, it was time for a Big Block.
- A '34 Sedan allowed the room needed for the Pro Street Chassis and 502/502 engine combination desired.
- This ***"Picture Story"*** presents planning and tconstruction details of the project.

In The Beginning






STATE OF NEW JERSEY
DEPARTMENT OF LAW AND PUBLIC SAFETY
DIVISION OF MOTOR VEHICLES

OCT 30 59

VOID UNLESS VALIDATED

AEY 245 — LICENSE NUMBER
OCT 60 — EXPIRES

GERALD UTTRACHI
260 GREYLOCK PKWAY
BELLEVILLE, NJ

FORD — MAKE
41 — YEAR
COLOR
CPE — BODY CODE

02433 — SERIAL NO.
2
15.00 — AMOUNT PAID
INSP OOT

It started in the late 50's. This 1941 Ford opera Coupe was built while in High School (top photo's from an article in the High School paper.) The 1/8" over bored '51 Olds Engine in the '41 Coupe was built in the basement. Some 40 years later this 1934 Ford Project started in a similar fashion with the ZZ 502/502 Chevy Big Block crate motor assembled in the garage.

Engine Arrives In Garage

The achieved goal was 0 to 60 mph in under 3.5 seconds. All of the parts used, needed to met that objective. A Chevy ZZ 502/502 Crate Motor is the surest and in the long run, the most economical way get a high performance big block. A 4 bolt main block, a high lift roller cam, 3/8” OD pushrods, forged crank, forged pistons, and forged 4340 connecting rods with 7/16” bolts, Oval port aluminum heads, CNC port matched aluminum manifold, Holley 850 carb, aluminum water pump, geared starter etc. All come in some 30 boxes packed in the crate! Note the quarter (arrow) next to the 2.25” stainless intake and 1.88 stainless exhaust valves.

Engine Assembly

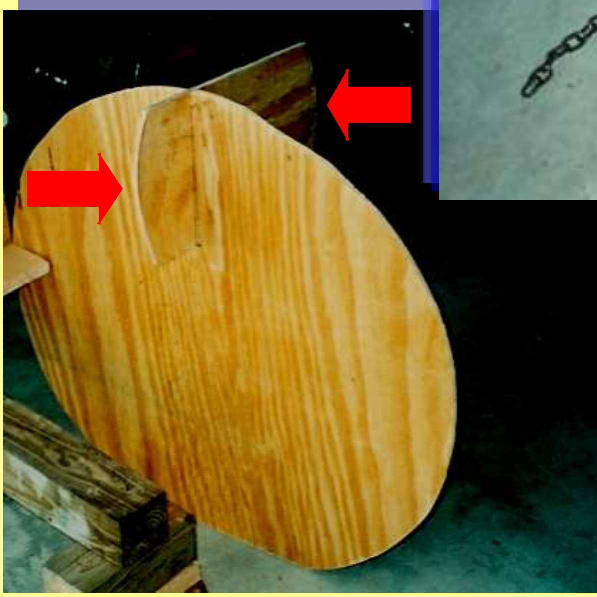
Assembling the engine requires a calibrated torque wrench in addition to standard tools. Bought a new Craftsman. Keeping the engine in the shipping crate base (arrow) made it easy to work on and transport when finished.

As Chevy says in their promotional piece for the engine:

"Some assembly required." "Some assembly is good!"

Adjusting the rocker arms/lifters and tightening all of the bolts to the proper torque values in the proper sequence are the only critical tasks.

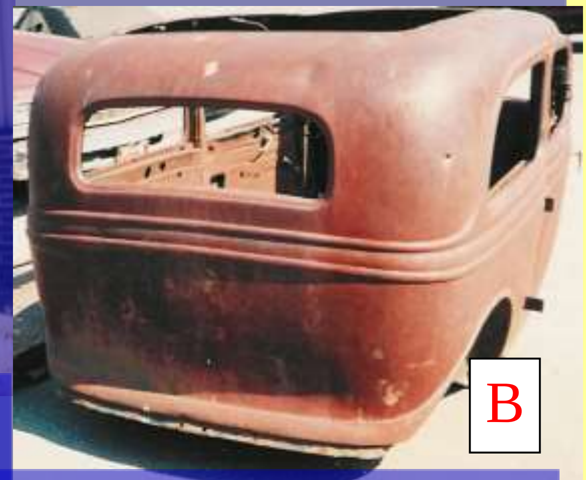
Transmission; Headers & Tire Template



Custom Transmissions of Florence SC built the TH-400 transmission with racing clutches and other race proven parts. They also supplied a high performance, 11 inch, 2400 rpm stall converter.

The round template with tire cross section (arrows) was made from the motor crate box wood! It was built to help define the required rear wheel offset. It performed the task perfectly with the proper wheel offset allowing equal front and rear clearance for the 16.5” section width Mickey Thomson Sportsman tires on 12 inch wide rims. Full length Headers are from Sanderson, Jet Hot coated.

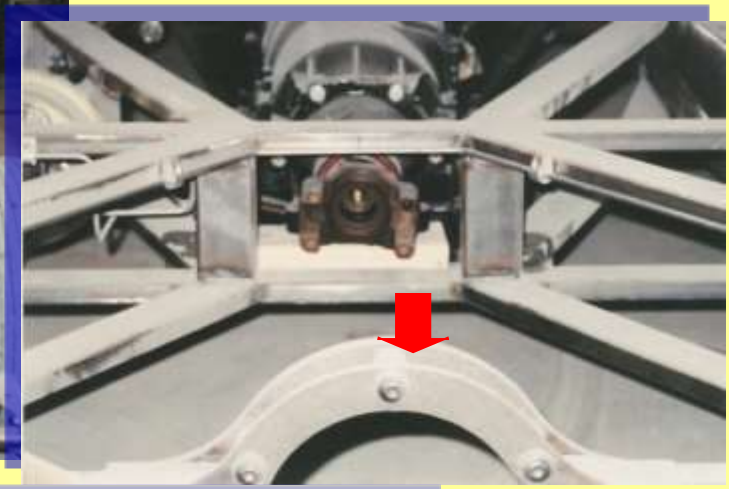
Gibbon, Fiberglass Reproductions



Gibbon Fiberglass, Darlington SC built the body (Unfortunately no longer in business). One of the top body builders in the country at the time, they make their molds (A) from original bodies (B). Kyle Bond, the owner, liked to assemble the bodies on the chassis that will be used.

I selected a TCI Pro-Street chassis built in California. Selected independent front suspension, a 4 bar link rear, coil- over shock/spring combos, anti-roll bars front and back and disk brakes on all 4 corners. Rack and pinion steering and power brakes finish off this very rigid frame. I visited TCI in Ontario California and saw the excellent workmanship they employ. Most welds are made with TIG to assure high quality and superior weld appearance (C).

Mounting Engine And Transmission In The Chassis

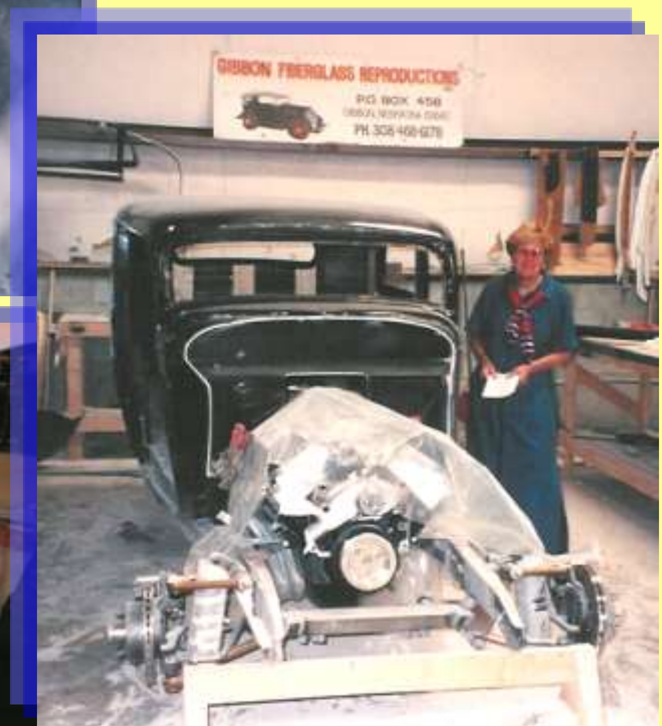


Mounting the engine/transmission in a bare chassis is a snap. TCI supplies the motor and trans mounts and Chevy even supplies the engine lifting lugs!

The rigid frame is composed of rectangular tubing all welded together. Since TIG is used for most of the welds, they are excellent in appearance and require no grinding. As noted, the chassis is bare steel, not painted.

The arrows point to the driveshaft loop which TCI employees. it not only protects the drive shaft from dropping in case of a universal failure but it also significantly stiffens the frame.

Assembling The Body



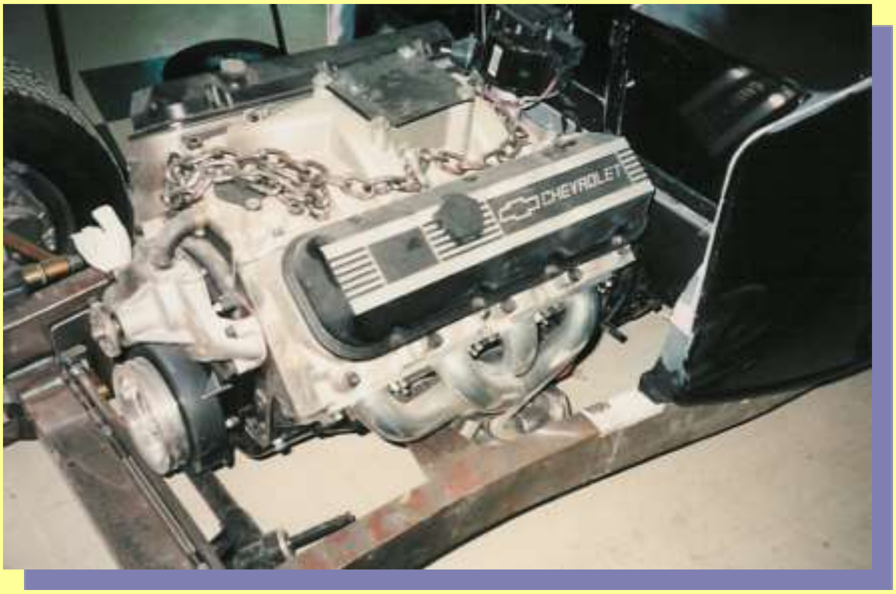
With the engine in place, the body is assembled on the chassis. Gibbon uses lots of oak reinforcement in door and window frames as well as bracing in the rear.
Note with the engine in place, the firewall is custom assembled to clear the engine and the HEI distributor. Chassis was ordered from TCI with the engine set-back. That achieved a final weight balance of 53% on the rear wheels. Perfect to the 0 to 60 mph goal! Wheel tubs were added and molded into the body (see arrow) to clear the massive rear tires.
My wife (Christine) is checking out the progress.

Oak Reinforcement/Delivering Tires And Wheels

Of interest, the original steel Ford body used oak reinforcement in similar places as the fiberglass reproduction. In the fiberglass reproduction body, oak reinforcement is bonded around the Door and window openings.

Mounted and balanced tires and wheels being delivered in the Sonoma. Even the front tires are wide to provide good handling. The actual wheel/tire combination is needed before fitting the fenders so the fit will be perfect.

Body Awaits Preparation For Painting



Body is finished and waits in Gibbon’s showroom for the next step, fitting of fenders and preparation for painting the frame and priming the body.
Sanderson headers required replacing the outer head bolts with lower hex heads than supplied.

Fitting Rear Fenders

Scott Manfull fitting the rear fenders and body parts using a come-along with the wheels and tires in place. When complete the fenders and reproduction rubber coated, steel running boards all fit perfectly.

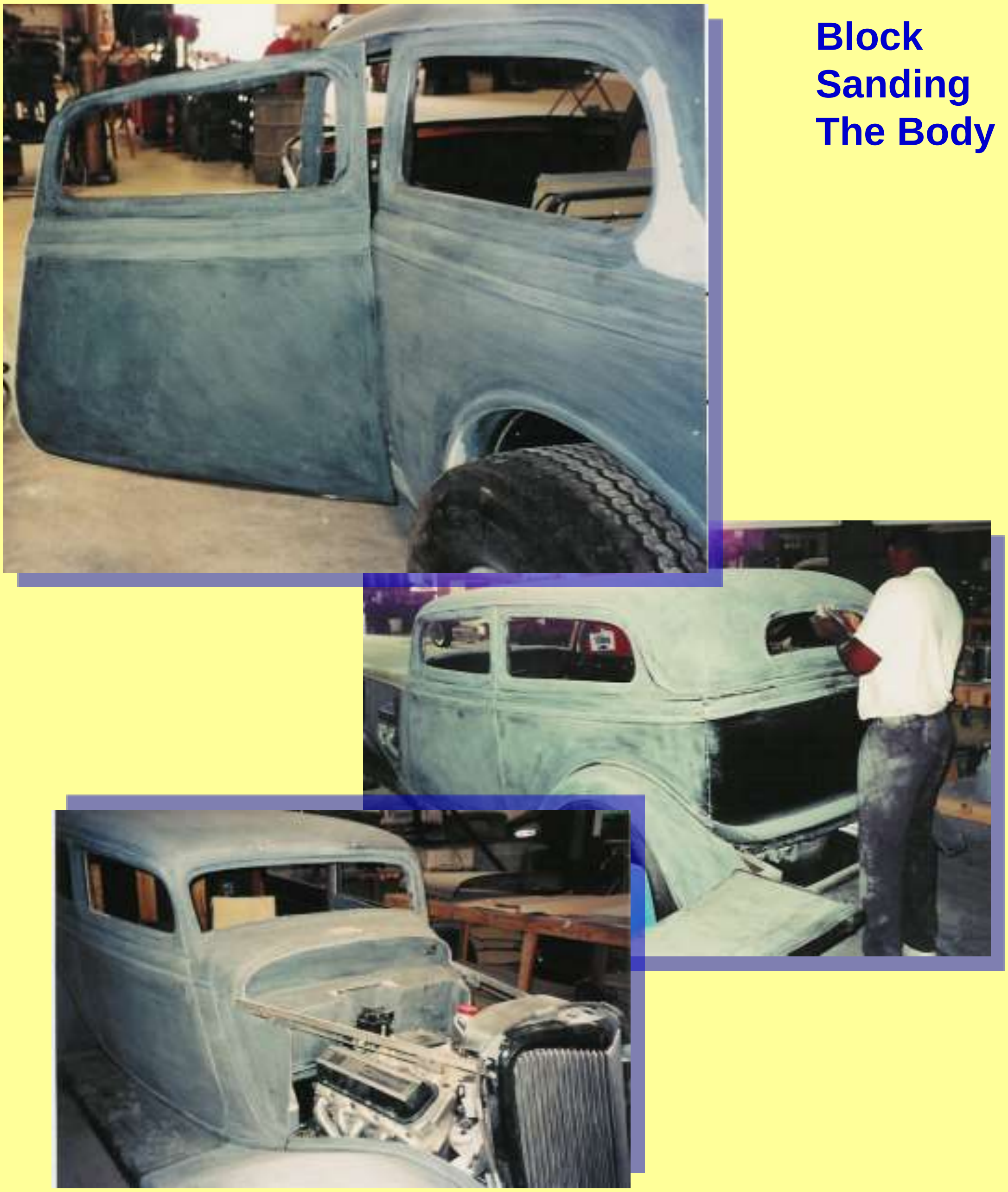
Scott did the finishing of most of the car with a keen eye to fixing even small gaps.

Fitting Front Fenders

With the Griffon aluminum radiator mounted, Scott can fit the steel hood and front fenders.

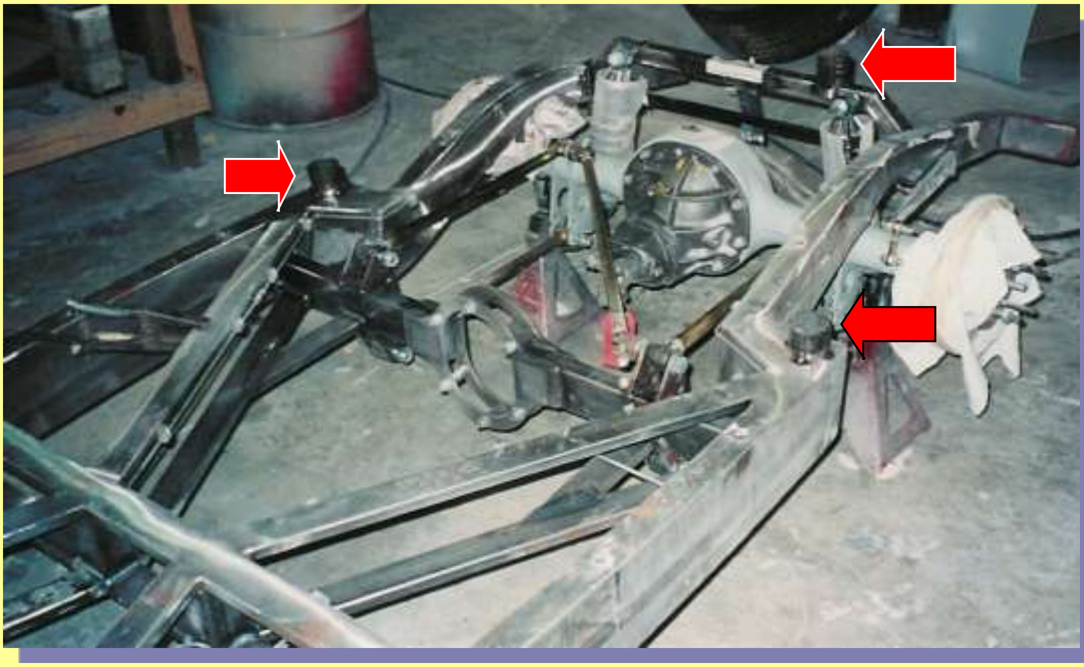
The Griffon radiator incorporates an integral overflow tank in its construction (see red arrow). The small tube (white arrow) exiting the bottom of the top tank is an air vent that extends internally to the top of the overflow tank.

Block Sanding The Body



Filling low spots and block sanding the body in preparation for primer.
All of the contours are checked, door seams are made equal and filler used where needed to make all parts fit properly.
The body is then block sanded several times with finer and finer grit sandpaper prior to priming.

Chassis Primed And Ready For Paint



Chassis being disassembled for priming and painting. Note roll bar stubs which I supplied and Scott welded to the frame (see arrows). After an epoxy primer, it is wet sanded in preparation for two tone paint which matches body colors. All moving parts are in dark silver. Stationary chassis parts are light silver. Same color combo as the body.

Patented Gas Saver System Used in the Shop

Scott used their MIG welder to join the rollbar stubs to the frame.

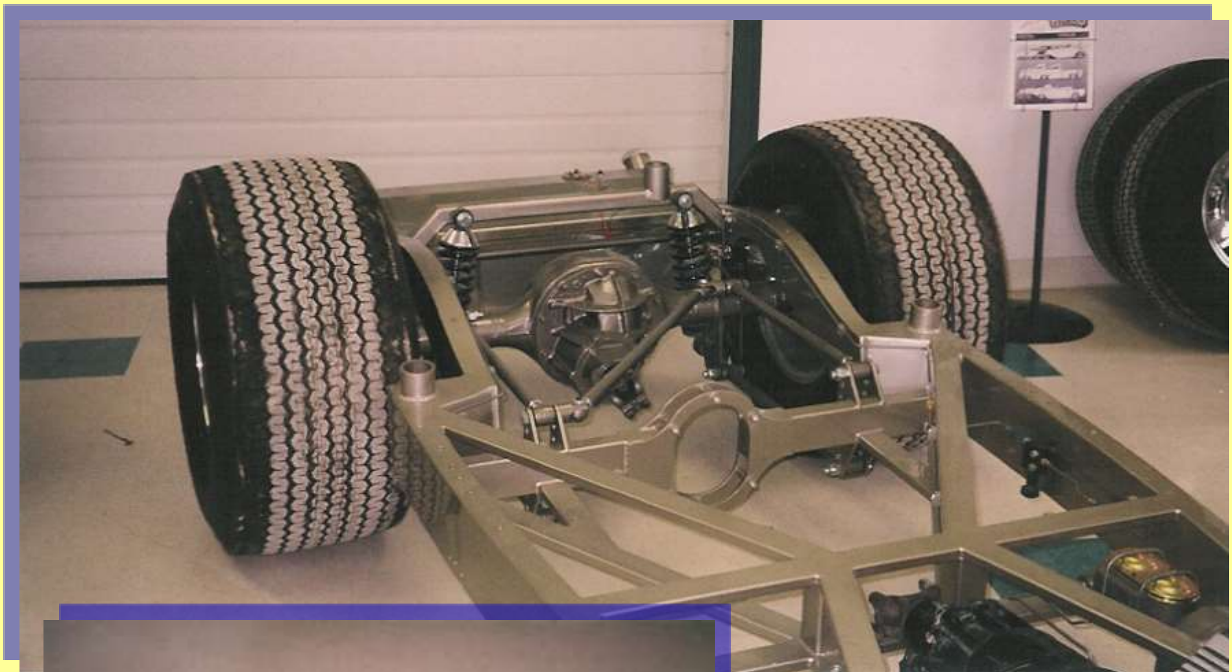
When our **Gas Saver System** (***GSS***) was granted a US patent we put one on the Gibbons MIG welder. The ***GSS*** was easily installed by simply replacing the existing gas hose from cylinder to welder and threading on the ***GSS*** hose fittings (photo left).

The gas flow at weld start was measured with a rotameter flow meter mounted over the gun nozzle. With the original ¼ inch gas delivery hose a gas flow surge of 150 CFH was measured at the weld start. With the guns small gas cup used a flow rate greater than about 40 CFH creates turbulence. Air is then mixed into the gas stream causing poor weld starts and possibly porosity. Flow surge at the weld start was about 50 CFH with the ***GSS*** installed and lasted less than a second. With the many short welds made gas waste and use will be easily reduced by 50 to 75%. Kyle Bond, President, indicated a big benefit is the reduced time and effort in changing cylinders less frequently. Weld start quality is also a significant advantage. Kyle, an excellent automotive painter, was well aware of the effects of gas surge caused by pressure buildup in the delivery hose when stopped. He has to deal with the visible effects when he uses the long air hose lines on the spray gun in his paint booth! It's too bad we can't see the shielding gas waste as Kyle can the effects of excess pressure when he starts his spray gun! To bad our gas surge is not visible! ***NOTE: OUR PRODUCTS ARE ONLY SOLD ON OUR WEBSITE.*** **Interested? Email: GUttrachi@aol.com**

Finished Chassis

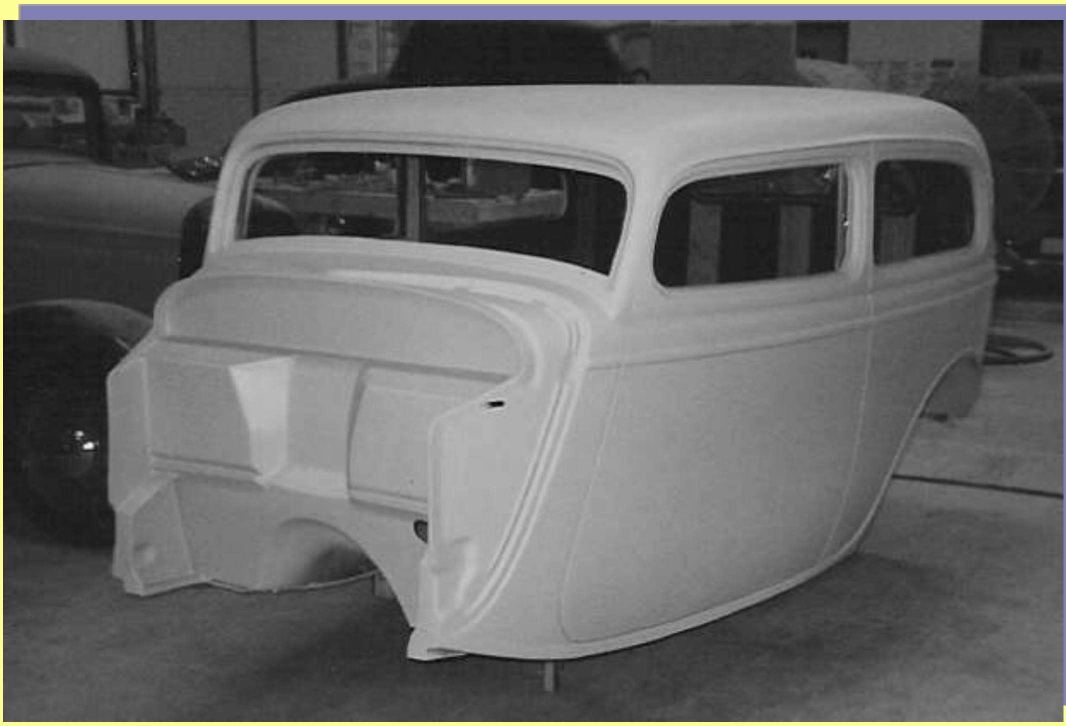
Kyle Bond and Scott reassembling the painted chassis. The chassis is back in the office/showroom. The detail is excellent. The base coat / clear coat on the frame looks as good as the body.

Chassis Details



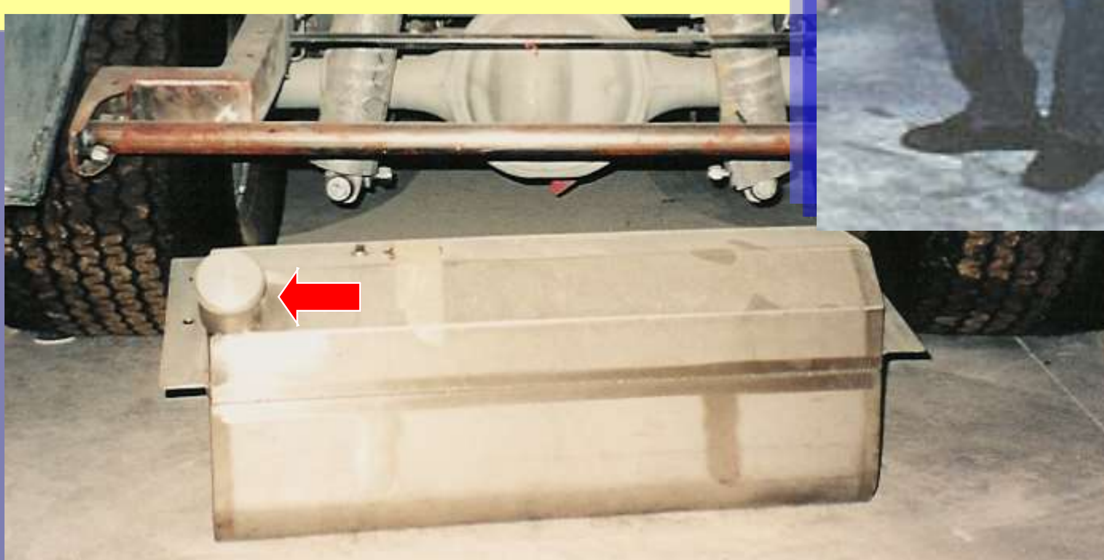
Chassis detail is so good it is a shame to cover it up!! Coil overs incorporate adjustable shocks which can be changed from soft to maximum control with the turn of a knob. The front and rear anti-roll bars use heim joints for a rock solid feel and quick response. Not a “canyon carver” but handles well.

Priming The Body



Several coats of epoxy primer are sprayed with the body off the chassis. Parts are sprayed separately. Sufficient primer is used to allow multiple wet sandings prior to final painting.

Gas Tank Detail

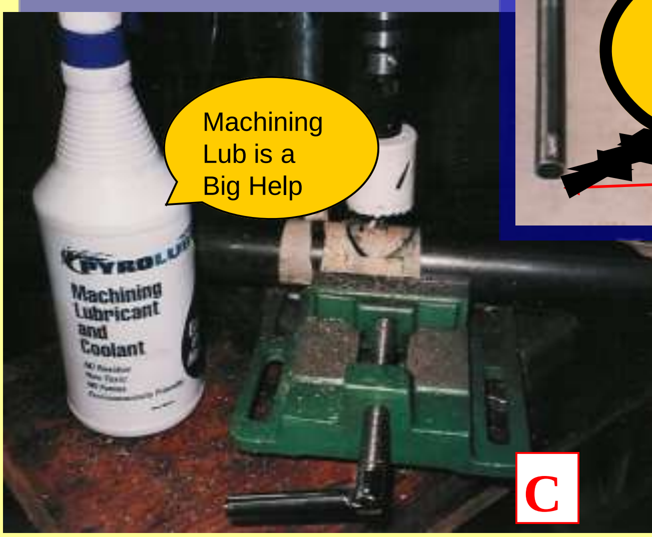


A friend, Randy Stone, and Kyle discuss some modifications needed on the stainless steel gas tank inlet neck. Randy did a great job of plasma cutting and TIG welding the tank neck so it was straight and fit perfectly (arrow, lower picture.)

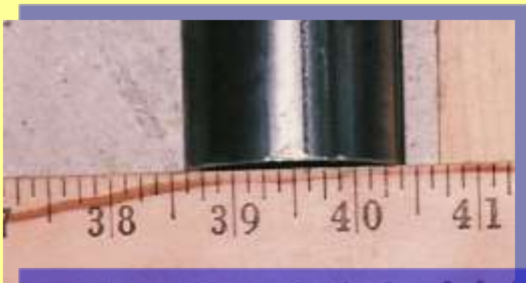
Body Waits In Queue For Painting

Primed body and painted chassis are back together. They are sitting in the Gibbon Office/Showroom waiting their turn in queue to have the body painted. During this time there is plenty for me to do at home as well as some work done on the car while it sits in the showroom.

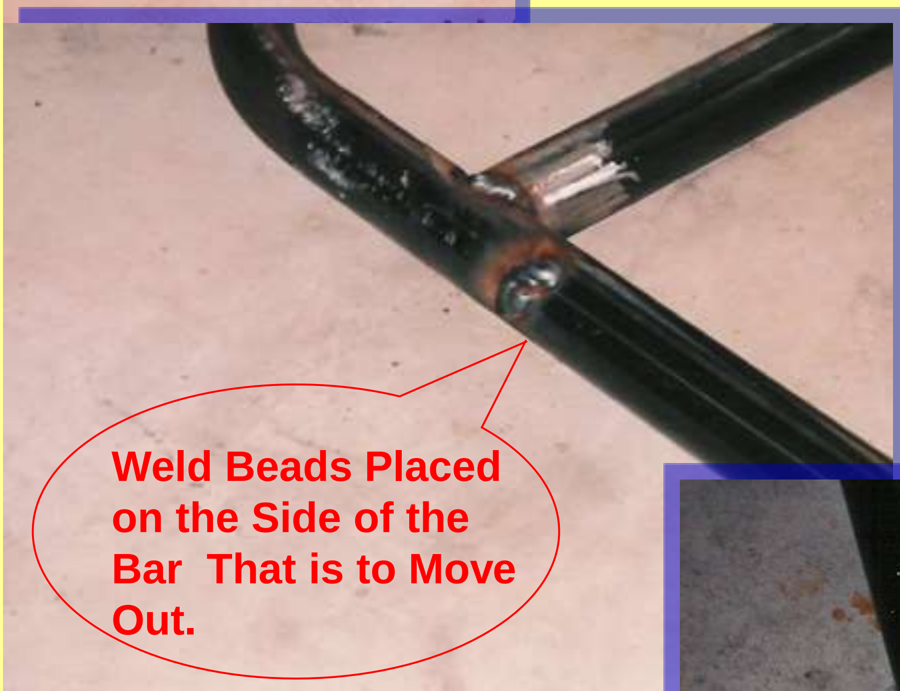
Fabricating The Roll Bar At Home



S & W race Cars supplied the 0.134” wall X 1-3/4” roll bar tubing. They shipped two bends and straight lengths which were cut and welded together using an ID sized tube as an alignment bar and weld backing, (see arrow in **A**). The cross brace ends (arrow figure **B**) were made in a drill press with a hole saw (**C**)to provide the proper fit. All welds were made with 0.030 ER70S-2 MIG wire and a Tri-Mix shielding gas (90% Argon, 8% CO_2 and 2% Oxygen). Despite allowing for some weld shrinkage, the distance (arrows in **B**) between legs was 3/16 “ to short!!



Arc Straightening Solves The Dimension Problem



A properly placed arc weld bead can be used to spread the bottom of the bar the needed 3/16 inches. For every degree steel is heated or cooled it expands or shrinks .0000065 inches/inch. Doesn't sound like much, but cooling down from the melting point of 2800 deg. F is a .018 " shrinkage for every 1 inch weld on a cold base! Do that a few times near the cross brace and the movement "at the end of the bar" will be 3/16 " (0.187)! Normally called weld distortion, here it's a benefit!

Arc Straightening

Five weld beads later the 3/16 “ shortfall was eliminated. the excess weld metal used for the “arc straightening” was ground off.   All other welds were ground to provide smooth transitions. Primed, the roll bar was brought back to Gibbon’s where it fit perfectly into the frame stubs. It will be bolted in later.

Our MIG Welder

Our work shop, like most, has limited room. The shielding gas cylinder owned and used (160 cubic feet) is chained to one wall of the shop. It is too big for a small welder/cylinder cart. The 150 amp welder fits on a movable Cart.

When welding needs to be performed it's within a 30 foot radius of the cylinder. By using a 25 foot shielding gas delivery hose and the 10 foot torch lead this objective is met (see photo.) However with a 25 foot conventional delivery hose shielding gas loss would be excessive. The gas cylinder would require refilling to often. Thus the ***GSS*** solves the problem. In addition to saving wasted shielding gas *(over 50%)* the ***GSS*** provides improved weld start quality . For the many short welds made the shielding gas turbulence created by the excessive starting gas blast last for much of the weld. This creates excess weld spatter and inferior weld appearance.

If you have a welder and regulator that use threaded female connectors (as do most US made welders and gas regulators flow controls - then simply order the length of ***GSS*** needed on our website NetWelding.com It will come with the fittings installed, either 3 feet (part number FB3), 6 feet (FB6), 12 feet FB12, or 25 feet, FB25. Have a welder or cylinder regulator with just a hose barb? Email and we'll provide the proper ***GSS.*** **Interested? Email: GUttrachi@aol.com**

Modifying Dash For Dakota Digital Gages

The “flat” dash isn’t very flat (A)! The dash was brought home to fit the Dakota digital gage panel. After cutting out the area needed for a Dakota digital dash, 5/16 “ gaps are present. Small strips of Balsa wood, epoxy filler and Bondo are used to contour the dash area where needed (B). After lots of sanding and priming it is delivered back to gibbon (C). The final contoured area can be seen in this finished painted dash before the Dakota digital panel is installed (D).

Fabricating Tail Lights & Brackets

‘34 Ford Cowl lights were converted to stop/tail/directional lights using red lenses. The light support brackets (A), which attach to the stainless bumper, were make from plasma cut stainless, MIG welded together (B). Welds were ground smooth and the brackets polished. Rear Fog /back-up lights were added and are visible under the stainless bumper (C & D). They are actuated with the shifter in reverse or with a dash switch. The 55 watt halogen bulbs make the car very visible in poor weather.

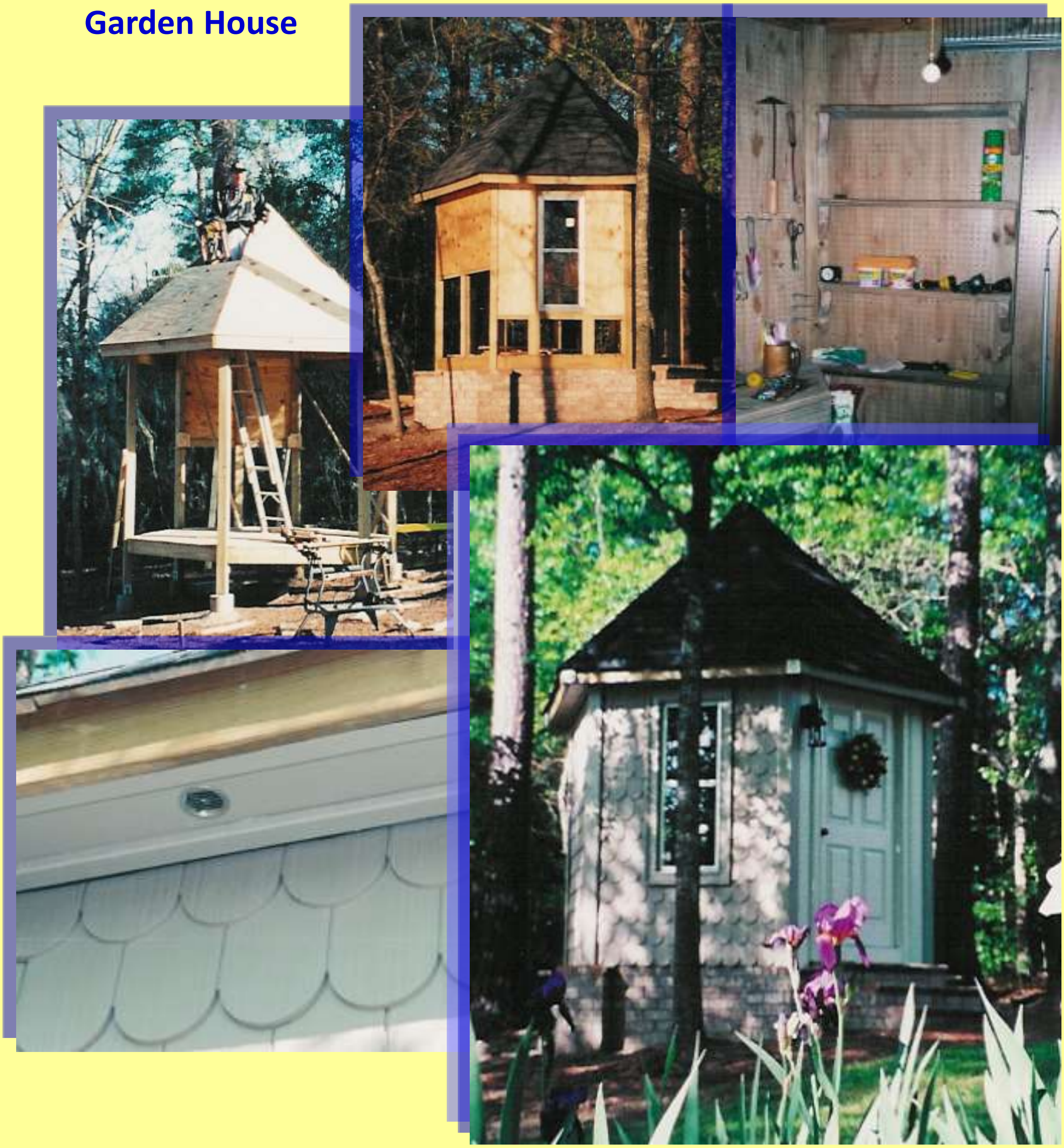
Garage Is Ready

Planning to spend a lot of time on the garage floor so decided to install commercial vinyl title.   A day of cleaning and two days to lay the tile with lots of help from Christine! Built several more cabinets to match those existing (see arrows). It's a pleasure to work on the floor now!

Garden House??

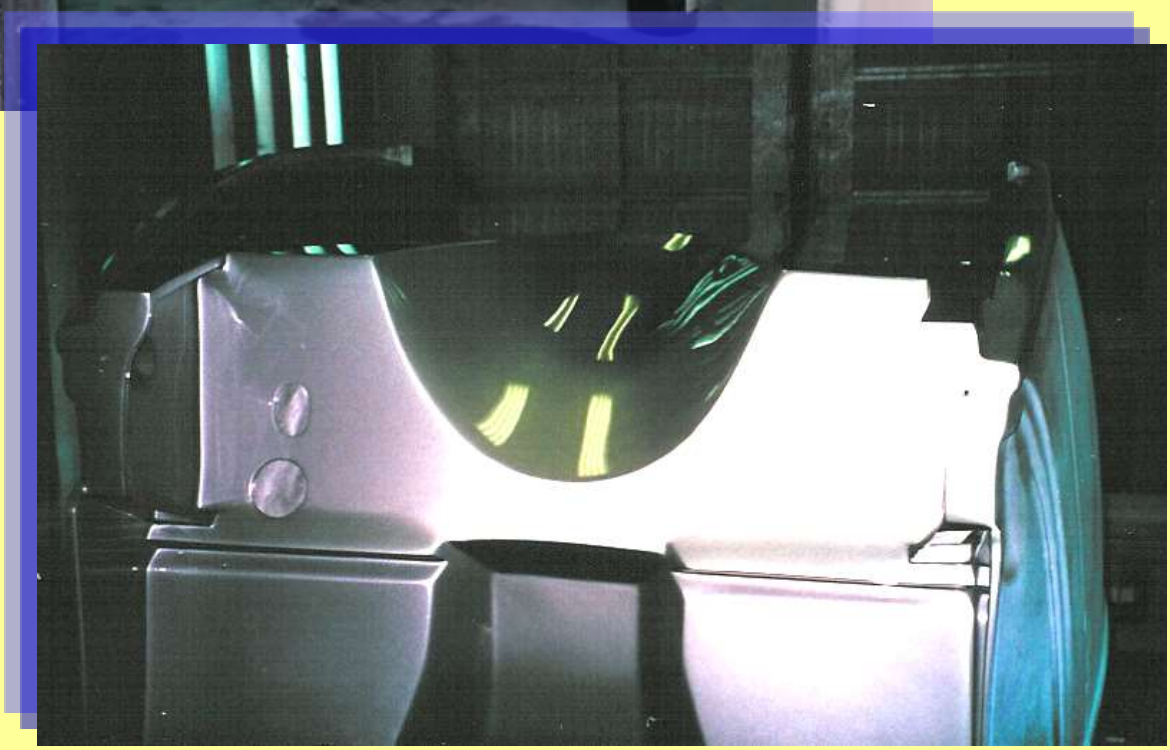
What's a garden house have to do with building a street rod?? A great deal. If you need room for the car in the garage, your Wife's garden tools need a another home --- Or you might !! Drafting board in hand this hexagonal garden house was planned and built. Placing the building on a slope required careful measurement. Putting the first roof frame up was the toughest task!

Garden House



Finished garden house had plenty of room for all the garden tools and a potting bench . Construction was treated lumber, plywood sheathing, vinyl gingerbread siding , a brick water table and roof singles match our house. Interior used wood grained peg board and treated lumber for shelves and potting bench.

Painting Firewall And Underside



Starting the painting process with finish painting the underside of the body and the firewall. After one more wet sanding the body is removed from the frame, turned upside down and supported in the paint booth. The firewall and the transmission tunnel are shown with finished paint in the bottom photo.

Base Paint Coats On The Body

The body is back on the frame, the finished firewall is masked off and three more wet standings on the exterior are next. With the sanding completed, painting is begun. Fenders are painted separately from the body, which is shown in the paint booth in the bottom photo. Timing is the key now. The base coats were completed late on a Friday. Only 24 hours can pass before the top clear coat is applied. Have to work quickly!

Painting The Flames

Kyle starts the flame painting process very early on Saturday morning. Flames are made with 1/8 “ masking tape. After the body is done the fenders and hood are next. Scott starts the laborious process of masking next to the flames Kyle has created. The toughest part is next. What appear to be pinstripes are actually done with fine masking tape and black paint! The process is described on the next page.

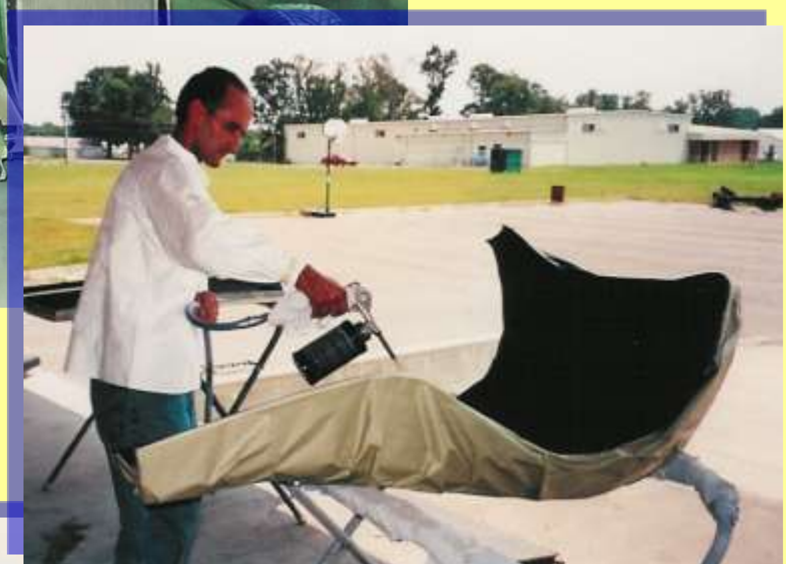
Painting And Masking The Pin Striping

Scott sprays black paint on the edges of the flames where the pin strip highlights will be. The most tedious and critical task was masking over the black paint with 1/8" masking Tape which will be the striping. Kyle is wearing a back brace since this took several hours of his time and he was bent over for most of it! The black paint under the tape will be the strip! The ends must be cut accurately!

Flames Finished

Dark silver flames are sprayed over the taped black pin striping and in the open areas. The tape must be removed quickly and very carefully. Once the edge tape is removed four people remove all the masking tape in preparation for the final clear coats (only place I could help!.) Everything was within the time schedule. The clear coats will be applied to the finished product within the required 24 hours!

Finishing Painting



With the clear coats applied the gloss shine is evident in top photo. great job guys!
Scott has only a few thinks left to paint. This is going to be a driver so an undercoating textured black paint is applied to the bottom of the fenders and running boards

Ready To Go Home!

Back together and ready to go home for finishing! "Street Rod Builder" magazine was doing a story about Gibbon fiberglass and took a photo of the car in this stage of construction for their January 2001 issue! No Interior, wiring, exhaust etc., now my work begins!

Going Home!

Stacy prepares the bill as I get ready to take the car home for finishing. Kyle drives the car on one of his trailers. He backs it into the driveway and we manage to get it off and into the garage without brakes and vice grip for steering!

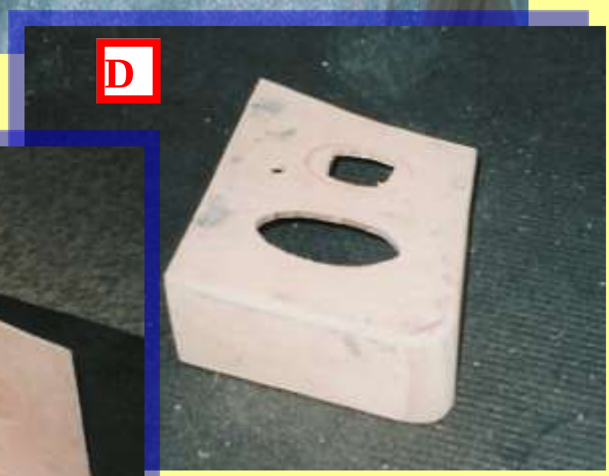
Up On All Fours

Lots of work is needed under the car as well as on the interior. Gibbon sold fiberglass stanchions which raise the car 12 “ off the ground providing a very stable platform. You feel very secure under the car and it leaves lots of room to work.

Stereo Wall

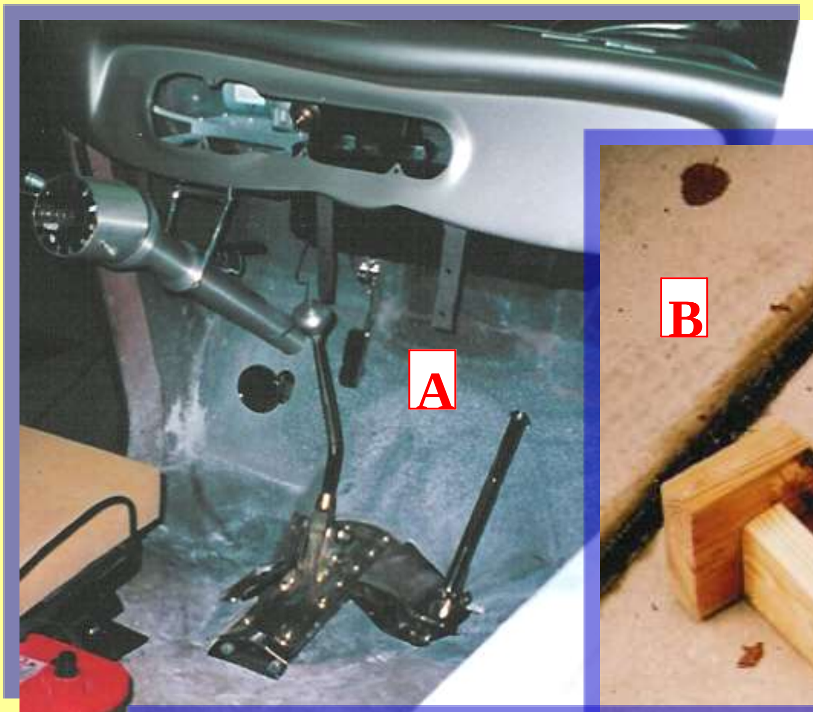
A “Sound Wall” replaces a back seat. Bottom frame and subwoofer box are built (A). The rear panel holds all of the wiring, relays, fuse panels and terminal strips for most of the rear wiring. Next the support for the power amps and CD player are added (B). The front panel is fitted (C). The large opening on the left is for the Optima sealed battery. The final panel (D), houses the sub woofer, main speakers, 4 tweeters, AM/FM radio with remote door/window control and the CD player which also operates by remote control. The power amps are 280 watts each and control the main speakers and the subwoofer. The 45 watt radio powers the tweeters. The alarm, electronic antenna and door/window remote are housed in the rear.

Dash Extension



The dash extension houses the air-conditioning controls, ignition switch, light and wiper switches. A separate switch panel is added to control the electric windows, fuel pump, radiator fans and rear fog lamps. I started with a warped 1/4 " oak plywood from Lowes (A)! Switches were laid out and openings cut (B). A piece of ½ " oak was joined at the bottom & side to hold shape and provide a turnaround for the dash extension (C). The drivers side is shown in (D).

Fabricating Tunnel Cover



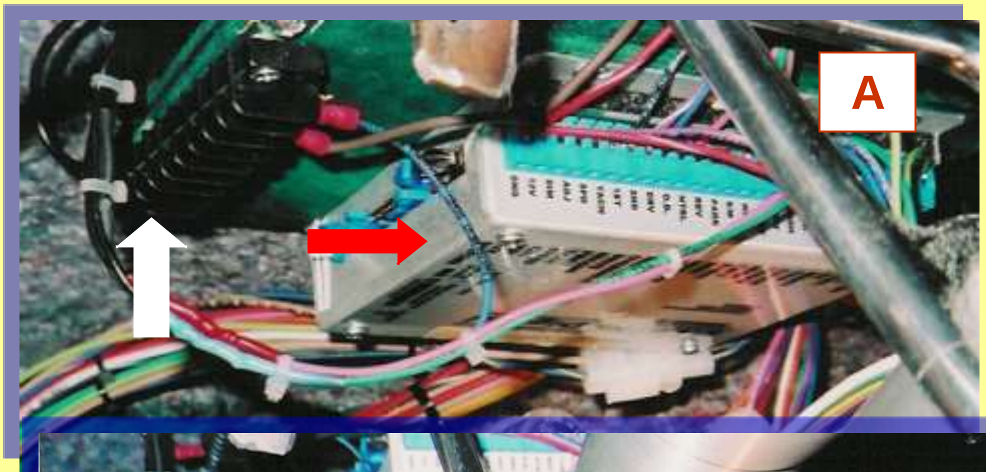
Starting with both left wheels off the ground = ~ 1500 lbs available to press when jacks are lowered

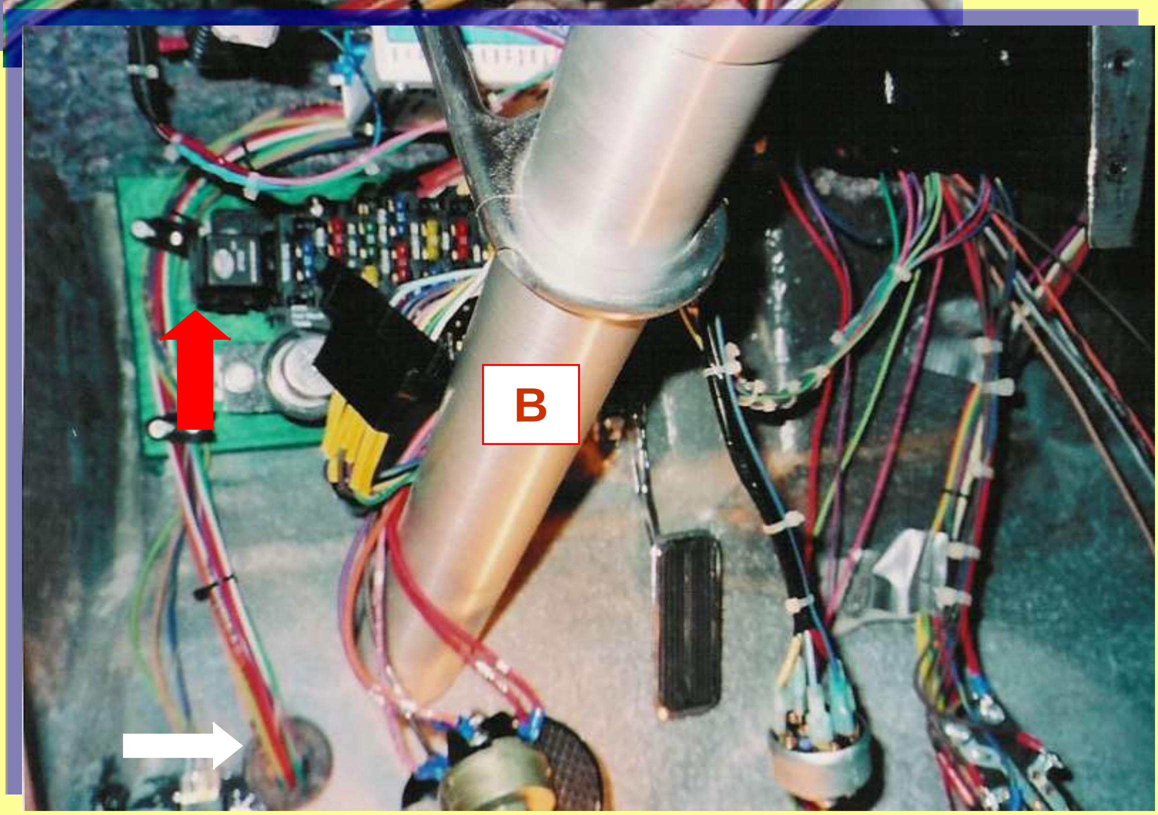
Quite a bit of the transmission tunnel needed to be cut away for the shifter, linkage and emergency brake (A). A cover for the area was made from 3/32” thick aluminum. A die set was made from wood to match the contour needed at the firewall end (B). A “1600 pound simulated press” was made by jacking up the Sonoma pickup! The die set with the trimmed aluminum were placed under the frame rail and the truck lowered until the form was achieved (C).

Finished Tunnel Cover

The metal pressing operation worked well. The engine side of the tunnel cover matches the existing tunnel and the rear tapers to a modest curve as needed, (A & B). Cutting just enough of a hole for the shifter and a little hammer work on the rear portion of the cover provides the contours needed (C). After unsuccessfully trying rivet thread inserts, it was fastened to the fiberglass with small stainless bolts and nuts. the area around the emergence brake was built up with several pieces of heavier aluminum stock that butt into the formed cover. Water based silicon is used to blend the tunnel cover to the fiberglass floor (D).

Wiring Panel And Dash Area



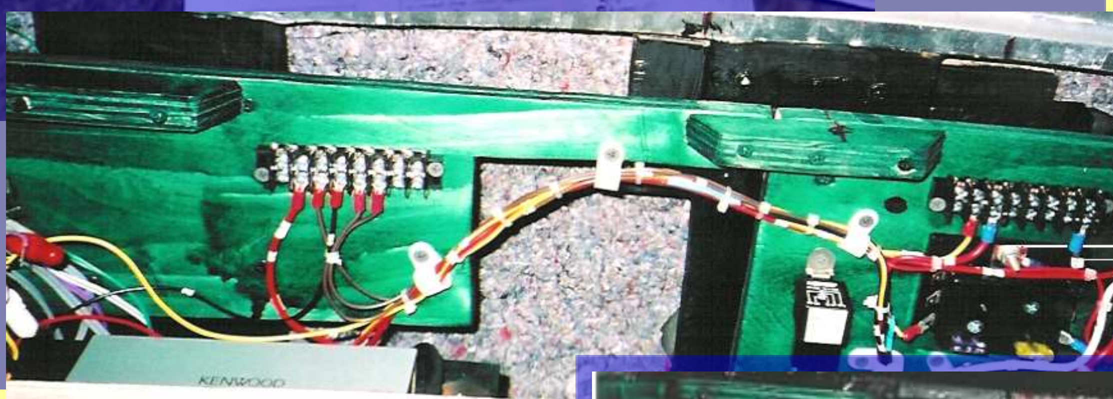


Dakota Digital dash control (red arrow, in A) is mounted on a shelf attached to the steel cowl brackets. Terminal strips (white arrow, in A) are used throughout the car to make wiring neater. Painless wiring harness (red arrow, in B) is installed on wood panel attached with epoxy to the firewall. Wires going to the front of the car exit through a grommet (white arrow in B).

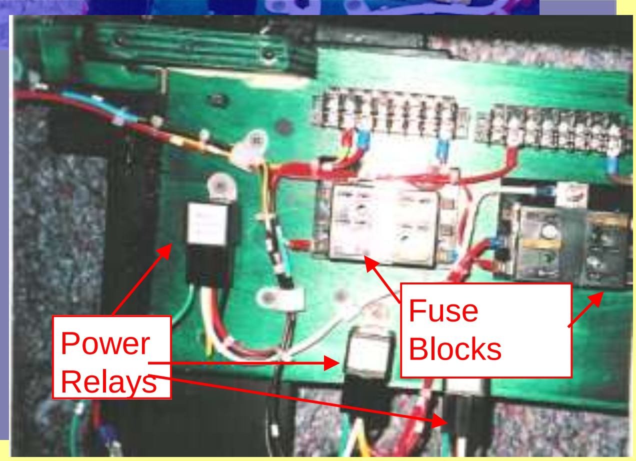
Interior Wiring Channels

Many wires go to the rear and come from each door. These are routed inside the car in fabricated channels (wood glued and screwed to the floor and covered with aluminum plate) to protect them from being stepped on or disturbed later. The interior floor soundproofing and padding is fit to fill the area and make a flat floor.

Rear Wiring Panel

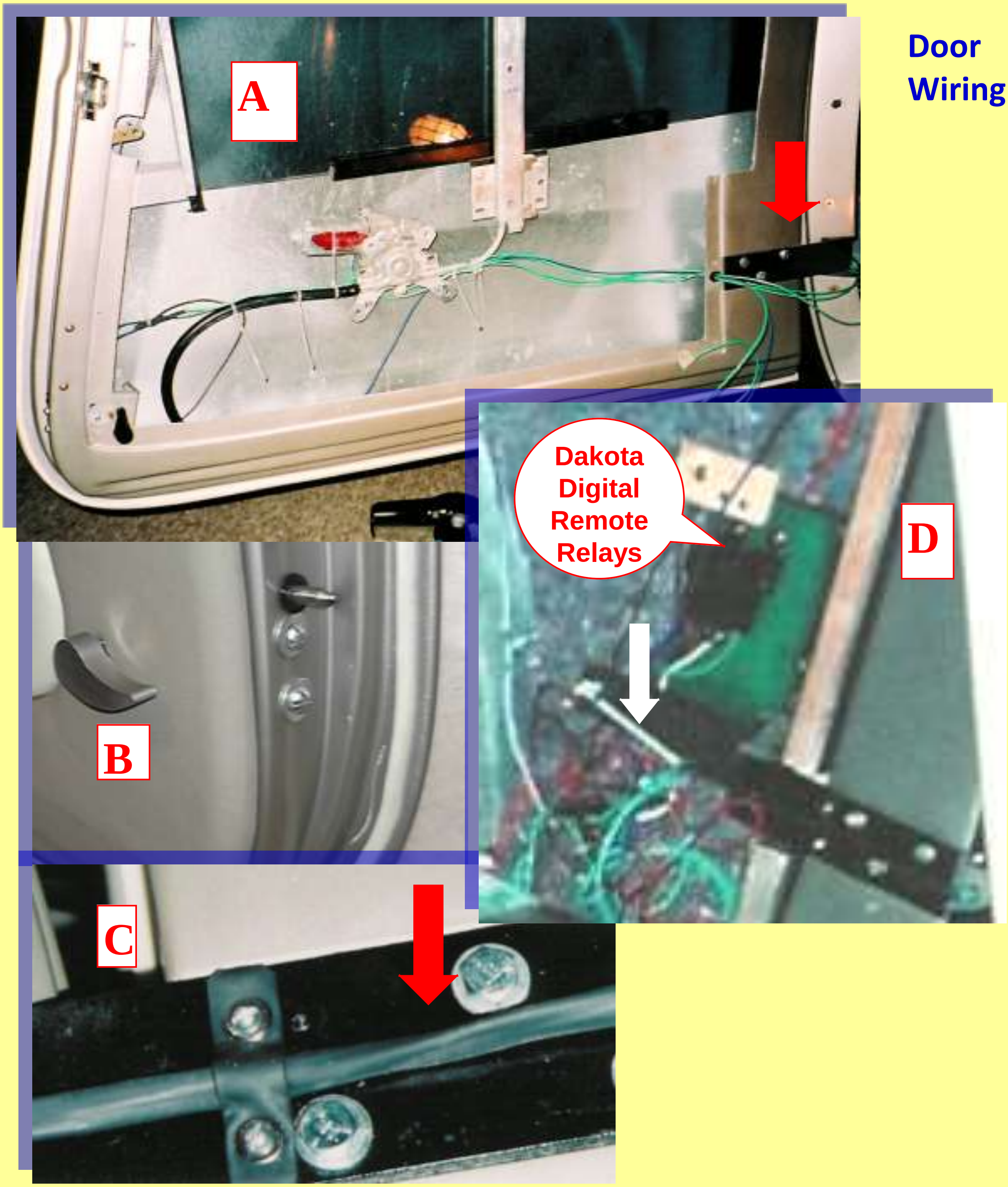


The complex maze of wires, fuse panels, relays and stereo components at the rear would not be possible to integrate without excellent wire diagrams that were developed on 2’ X 2’ sheets.



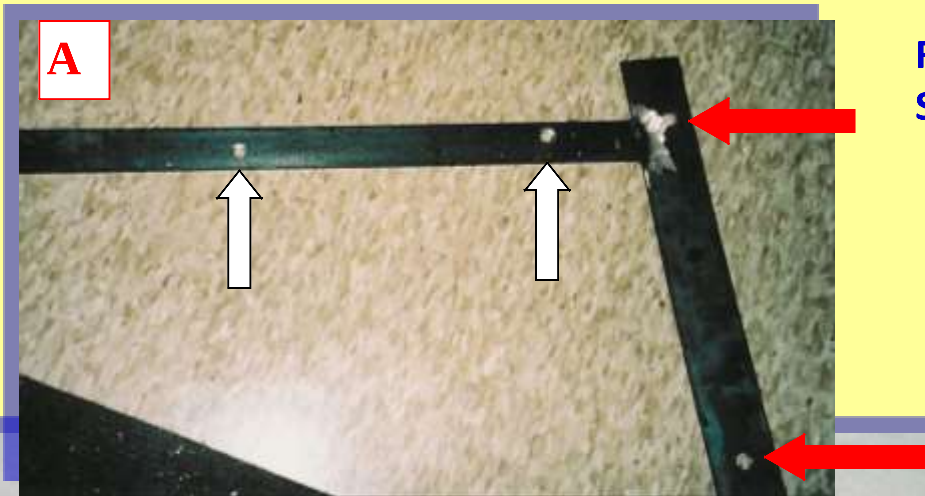
Several terminal strips and fuse blocks help reduce the confusion. One set is only for constant 12 volts, another for only ignition switched 12 volts. High amperage relays are used for fog/backup lights, fuel pump and to power the ignition switched fuse block and terminal switch. All power for the stereo components comes from these fuses.

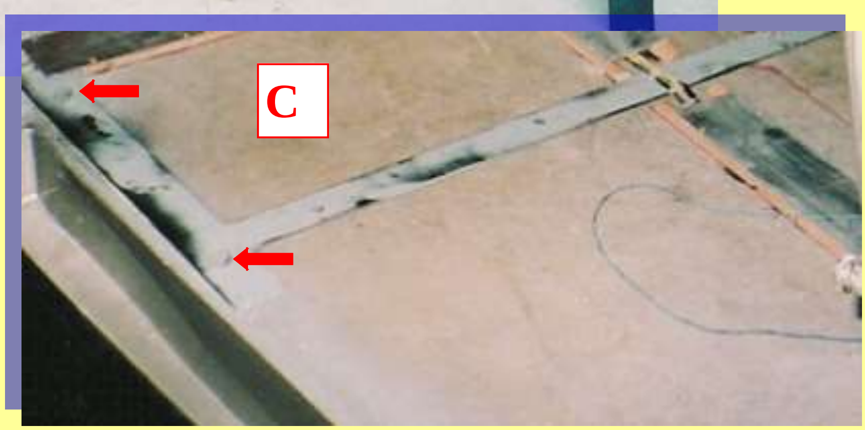
Door Wiring



There are a number of wires coming from the door (arrow, in A). Windows up and down, door opening and safety switch (B) signal. The door wires are shrink wrapped and fastened along the hinge (arrow in C). Too keep the shrink wrapped wire bundle from getting tangled a spring is used to provide tension (arrow in D)

Fabricating Seat Supports Brackets





To assure the seats are secured properly, 2” X 3/16” steel bars are cut and welded to bolt directly to the frame at the edges (red arrows in A) and accept the seat bolts through the floor (white arrows in A). A similar bar was made for the front seat bolts. Pieces were tacked in the car to assure alignment and then a full penetration weld made from both sides (B). The passenger side is shown bolted to the frame (arrows in C).

Welding Floor Supports Required Quality MIG Welds

To assure the seats are properly secured to the floor, you need more than fender washers attaching them to the fiberglass floor even though ours is ¼ inch thick. By placing 3/16 inch steel bars along the frame on each side they can be bolted to it. After the side bars were temporarily bolted in place, the cross brace needed to be tack welded to assure the proper fit. The welder was connected and a few tack welds made.

Then, as we do much of our welding, the tacked assembly was brought outside the garage door. The 25 foot ***GSS*** provided the length we need to have any spatter hit the concrete and not our tiled floor! Interested? Email: GUttrachi@aol.com

The one problem with welding out of doors is managing the breeze. When the air is still 20 to 25 CFH gas flow is all that is needed with our ½ inch diameter torch nozzle. However when there is a breeze the first thing to do, depending on the amount, is to place your body between where the breeze is coming from and the work. It most cases that is all that is needed. You can also increase the gas flow rate to 35 CFH. But be careful with that small diameter nozzle much more than 35 CFH and your just creating turbulence and pulling air into the gas stream!

User In Georgia

Perry Thomasson Purchased a 50 foot Gas Saver System For His Home Shop Perry has a very well equipped home shop. He uses a 175 amp MIG welder. However the small welder cart only held a medium size shielding gas cylinder and he wanted to reduce the number of times he had to have it filled. He purchased the largest cylinder his distributor offered for sale and chained it to a wall in his shop. He needed a much longer gas delivery hose so he added a 50 foot conventional 1/4 inch ID hose. He found he was using a gas great deal of shielding gas hose.

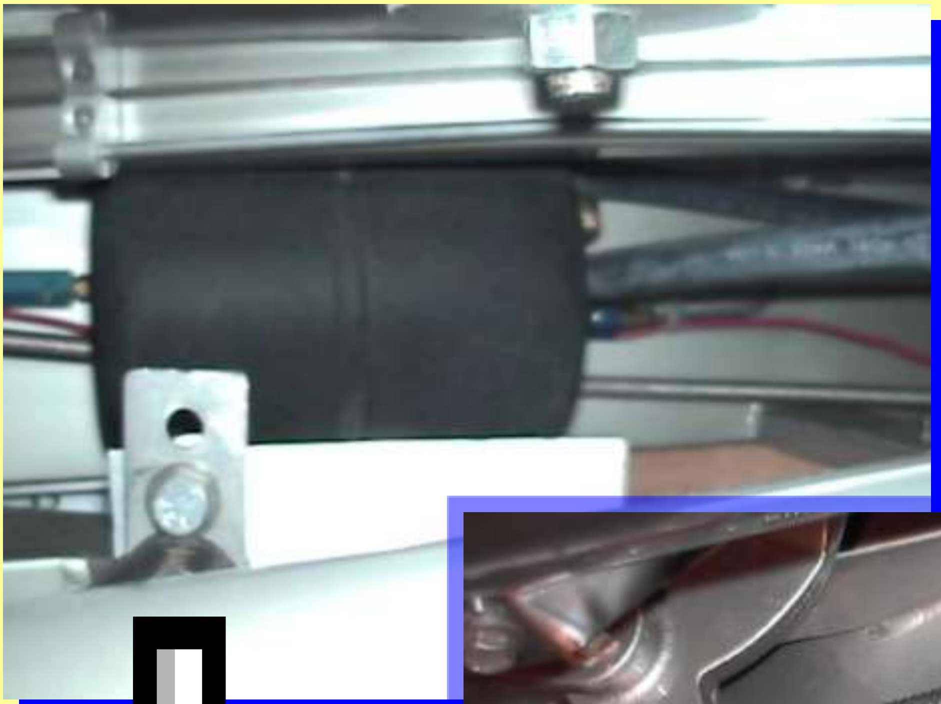
He purchased a Gas Saver System (***GSS***) and saved a significant amount of shielding gas while improving his weld starts by reducing the starting gas surge. Since his regulator/flowgauge had a hose barb on the output he used a splice connector we supplied with the ***GSS***. He simply cut the existing gas delivery hose close to the regulator and spliced in the ***GSS*** hose. The welder end uses a standard CGA fitting that is supplied with the system. Perry also needed a heavy duty power cord to supply the 220 volts to his welder. He new the cables would be laying on his work shop floor so he installed a cable cover. We have added a Leather Cable Cover to the WA Technology product line. It comes in a 25 foot length but can be cut for shorter needs and snapped together for longer lengths like Perry's 50 foot system. When not in use he covers the welder to keep it clean. Note the fire extinguisher and neatness of the area to maintain a safe working environment.

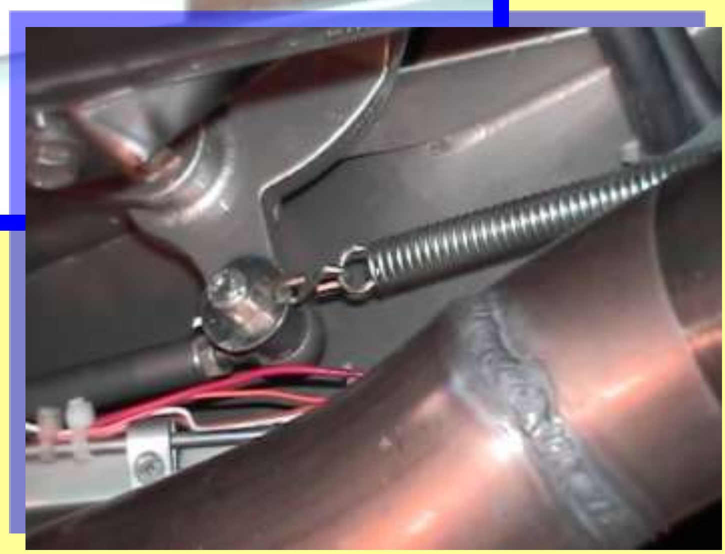
Perry had this to say about the ***GSS*****:**

*" **The system works great. Thanks for the professional service and a great product.""***

Interested? Email: GUttrachi@aol.com

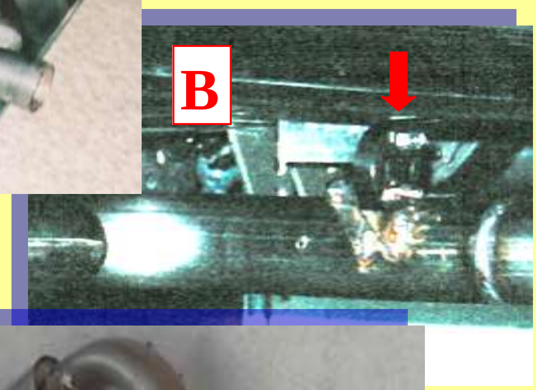
Special Brake Features

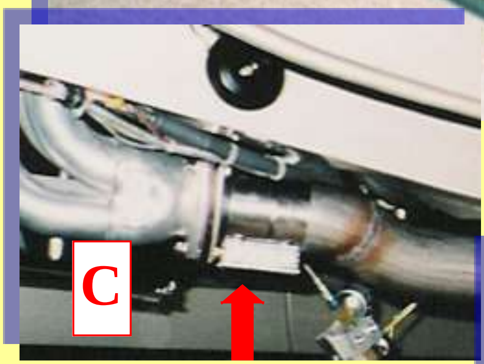


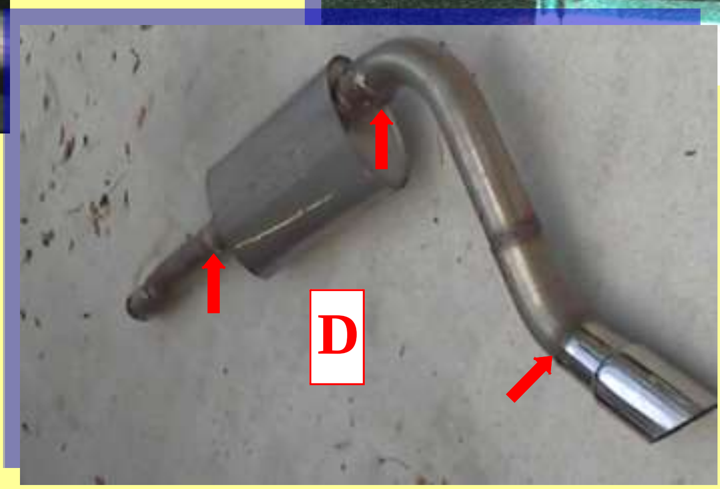


Power brakes have a small vacuum booster diaphragm because of their location. Don't expect a great deal of boost. A return spring was needed to help keep the pedal up to the highest position. A vacuum reservoir tank was inserted below the drivers seat to assure a high vacuum under all conditions. Silicon brake fluid was tried but replaced with dot 4. The silicon fluid caused a spongy pedal and was ultimately replaced with DOT 4.

Borla Exhaust System

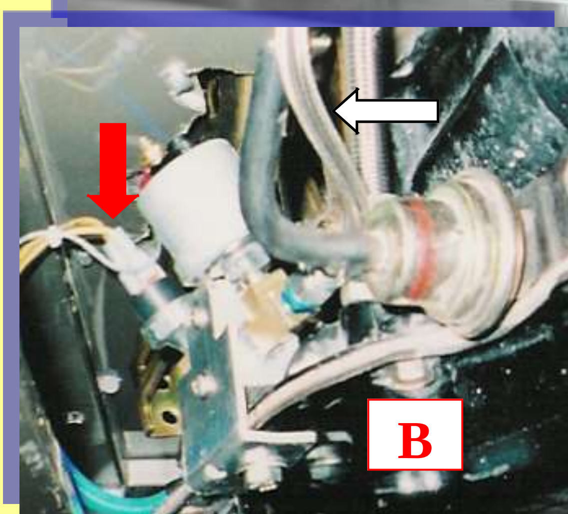


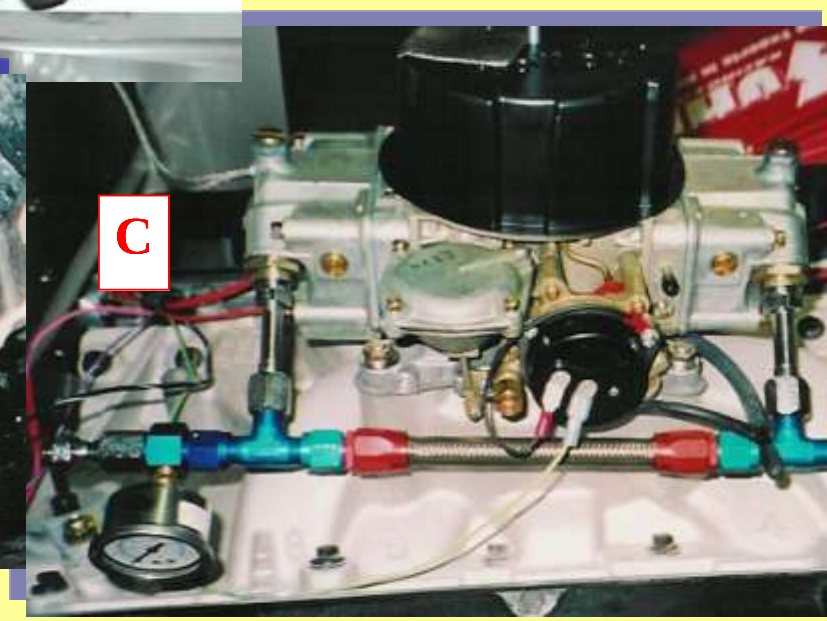




A Bola 3" stainless street rod exhaust system is fabricated from mufflers, pipes, bends and clamps supplied with their kit. In photo A, the cut and tack welded parts are brought for TIG welding of all the butt joints. In the rear, hangers are made to support the system (arrow in B). To connect the SS pipes to the steel header collector a SS band clamp is used (arrow in c). The mufflers and pipe Tip slip joints are MIG welded for a leak proof system (arrows in D). A tri-Mix Argon, CO_2 , oxygen shielding gas with 0.030" diameter 308L HS wire does a great job of MIG welding stainless.

Fuel System

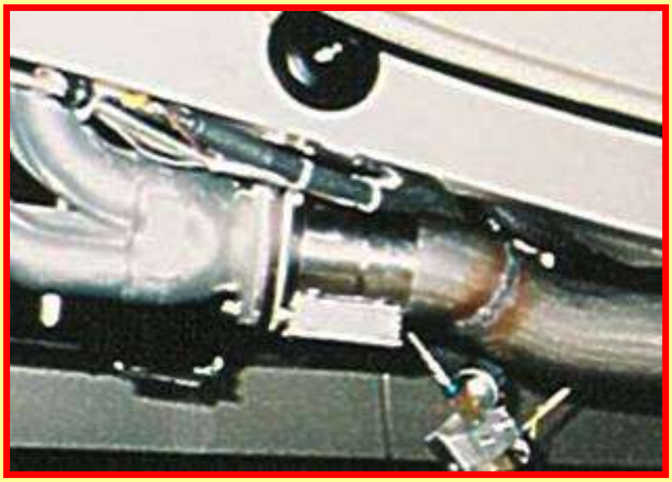




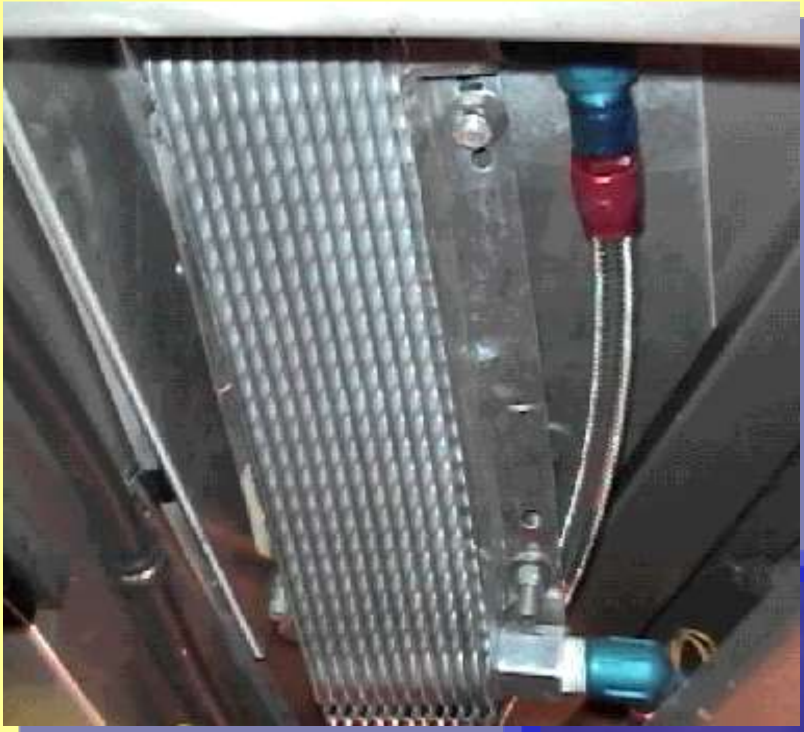
A Holley racing fuel pump is located near the tank at the rear. A K&N high flow fuel filter is mounted before the pump (A). As a safety measure, the fuel pump actuating relay is connected in series with an oil pressure switch. If oil pressure is lost for any reason the pump stops. The switch (red arrow in b) is mounted in a fabricated manifold along with the oil pressure sending switch on a bracket attached to the transmission oil pan. Both are fed by a braded stainless hose (white arrow, B) from the oil pressure port behind the distributor. The Holley 850 Carb (replaced with a double pumper) is fed though braded stainless “AN” lines from the pressure regulator mounted on the front frame rail(C).

Welding Steel & Stainless with Same Shielding Gas Mixture

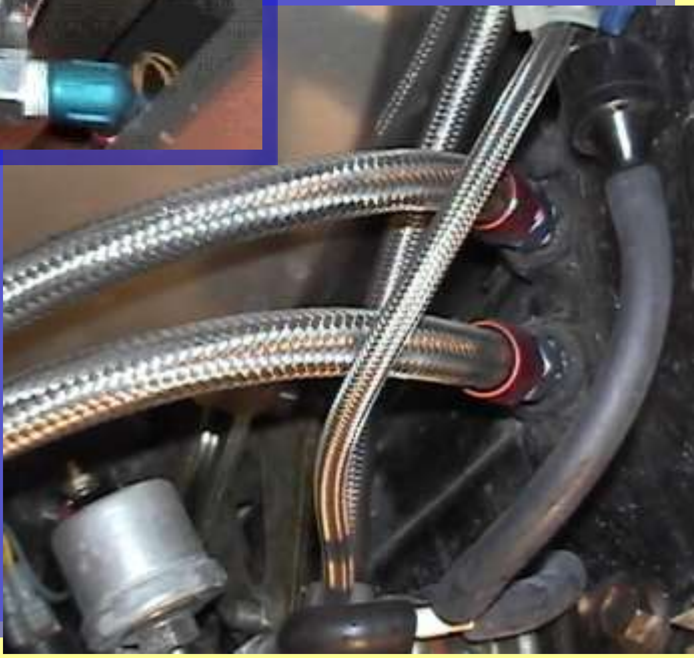
Welding Stainless Steel usually requires a different gas mixture than is used with carbon steel. When using the commonly recommended 25% CO_2/ 75% Argon gas mixture the CO_2 can produce excess carbon in the weld deposit. The carbon addition can cause corrosion problems if the part is to be used at high temperatures such as an exhaust system header. Since we were welding stainless as well as carbon steel we wanted a shielding gas mixture that had the benefits of lower spatter, good arc stability in the short arc mode but could weld stainless steel as well. The solution, a tri mix shielding gas. Ours consists of 90% Argon, 8% CO_2 and 2% Oxygen. The lower percentage CO_2 makes the short arc weld deposits too cold. However the 2% Oxygen increases the weld puddle heat and balances out the reduction from the lower CO_2. This mix will perform in the short arc mode where most welding is done for sheet metal and when welding out-of-position. However it will also support down hand spay arc welding of heavier sections assuming you welder can operate at higher amperages.



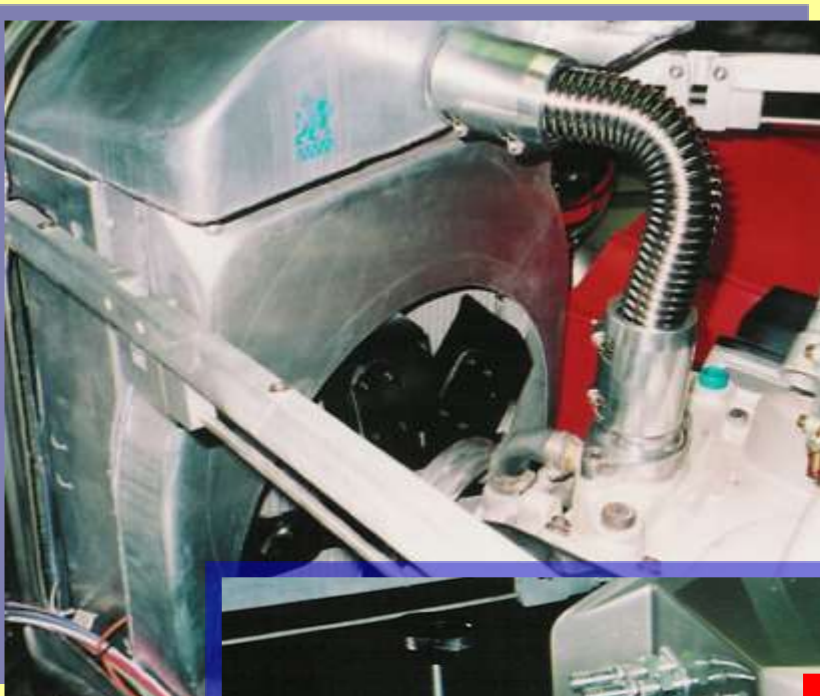
Welding the 3 inch diameter stainless exhaust is a good example of where it is preferable to use a low CO_2 gas mixture to avoid excess carbon in the weld deposit. This is especially important near the header exit where the gases are hottest.



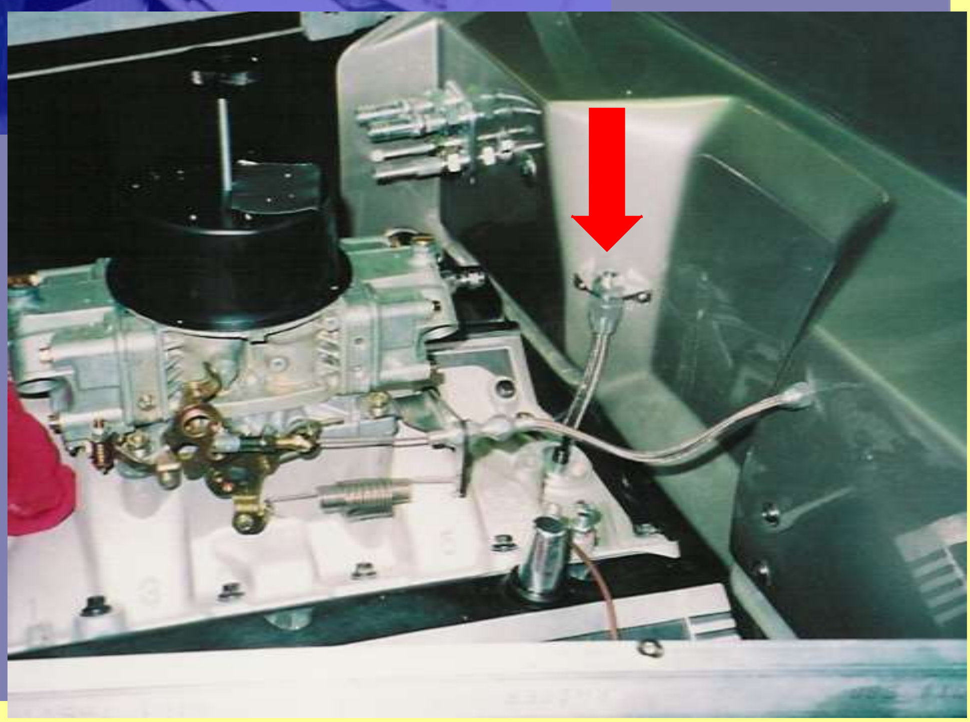
Transmission Oil Cooler



To keep the transmission fluid cool and reduce heat load on the radiator, a B&M trans cooler was inserted under the passenger seat area. Braded stainless oil lines with “AN” 6 connectors provide a rugged, flexible, leak free method of connecting the cooler. The Trans cooler coil in the radiator was not used.

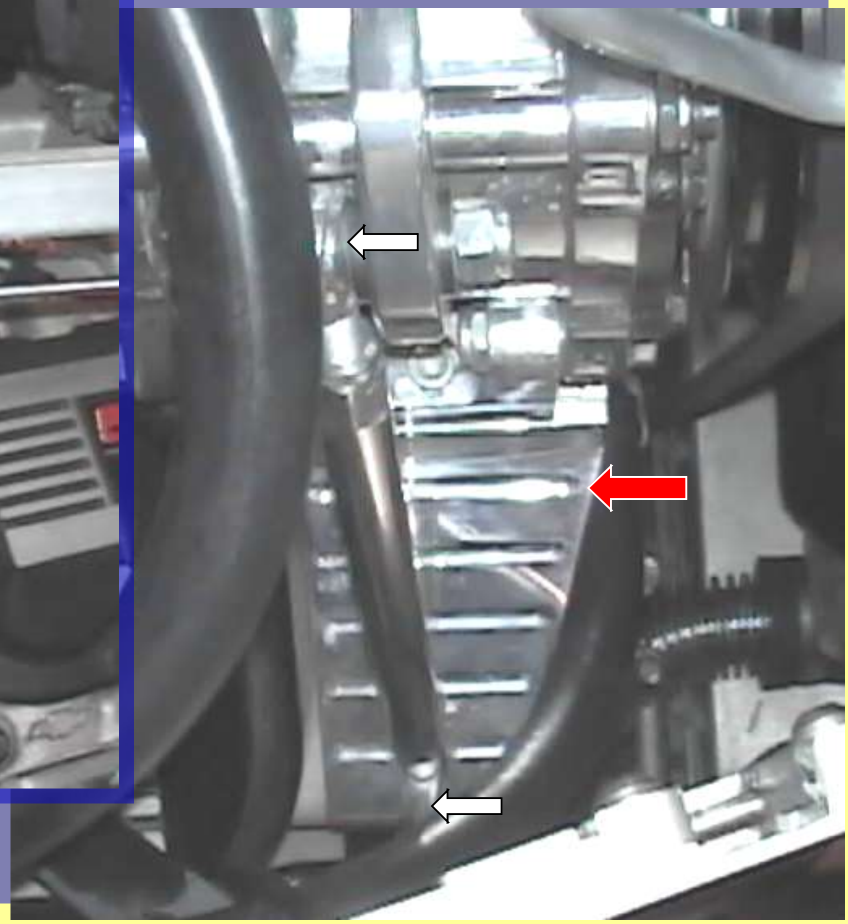


Completing Engine Compartment

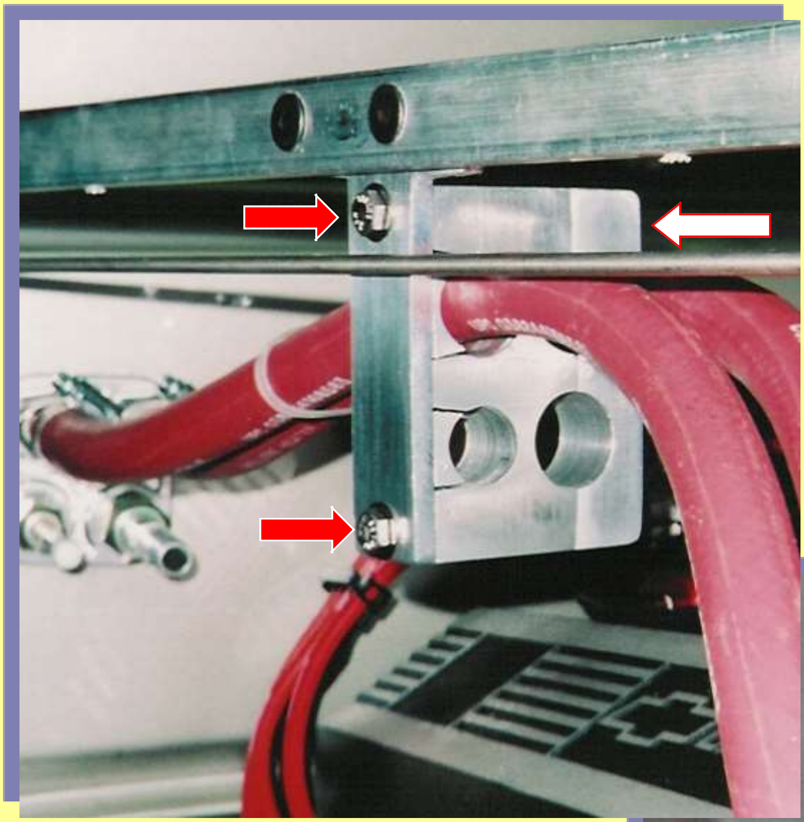


Stainless radiator hoses and polished aluminum end fittings make a custom fit attractive system. The Griffon aluminum fan shroud helps direct the air. A Lokar stainless brad throttle cable and stainless spring kit activate the Holley. A Lokar braded stainless transmission dip stick (red arrow) is compact and fits the engine compartment clean and mean look!

Alternator And Air-conditioning Compressor Mounting



Zoops billet aluminum brackets (red arrows) hold the polished aluminum alternator and air-conditioning compressor. The Zoops brackets are adjustable so perfect alignment can be achieved with the Zoops billet aluminum engine pulleys. Some bracket modifications were made to fit the tight confines of the engine compartment. Gates belts are employed to assure a positive drive, especially on the small diameter alternator pulley. The tension adjustments use threaded heim end connectors (white arrows) allowing precise belt tension. The alternator is a Powermaster high output unit testing at 95 amps/13.6 volts at idle and 140 amps/13.6 volts at highway speed .

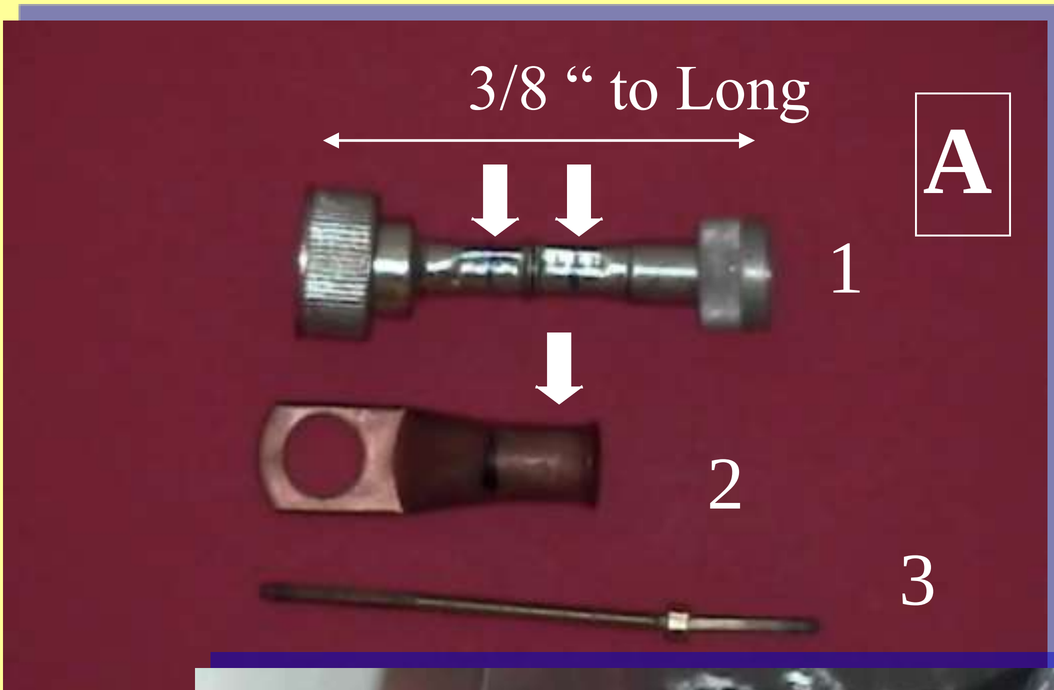


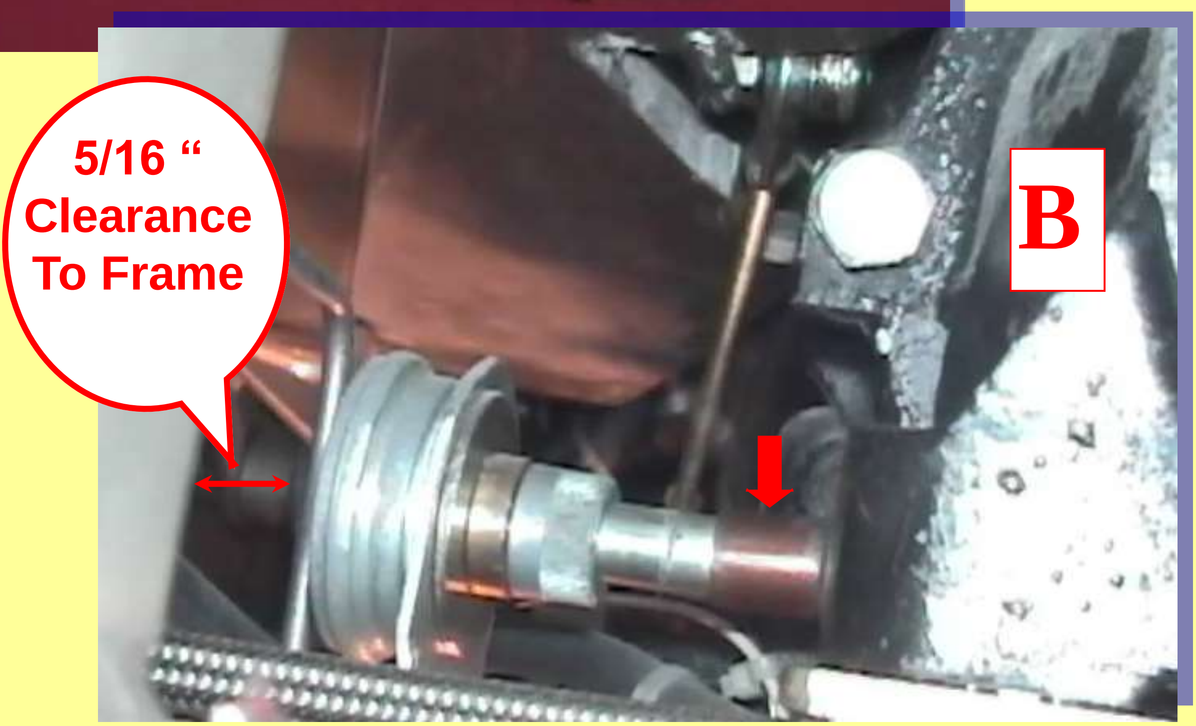
Heater And Air-conditioning Hose Management

To keep heater and air-conditioning hoses neat and compact in the engine compartment, a polished aluminum hose bracket was fabricated. It was made from 1 inch thick aluminum split to allow disassembly. hole saws were used to make the passages.

The hose bracket is attached to a polished aluminum “T” bracket, that is bolted to the hood support as noted. Through stainless bolts (red arrows) thread into the end aluminum block (white arrow). A vintage air polished aluminum bulkhead fitting completes the hose management system. Radiator hoses were changed to black to be consistent with the engine bay color scheme.

Modifying Speed Sender





Dakota Digital Dash speed sender is 3/8” too long for proper clearance to frame. Cut sender housing as shown with arrows in A1. Cut heavy wall copper tube (A 2) as coupler. Make shorter speedometer cable (A3) to fit with standard kit . Epoxy cut parts together with coupler.

In photo B the shortened sender is shown mounted to the transmission with copper coupler visible (arrow). Note there is now ~ 5/16” clearance with frame.

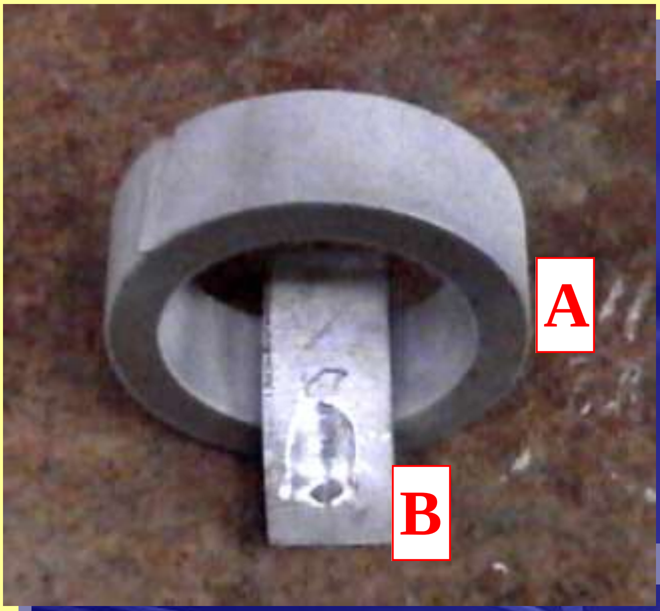
Starting The Interior

The interior matches the theme on the exterior with two shades of tan leather. The folks at Auto Interior Specialties insulated all the areas to assure a low noise interior. They custom made each panel In keeping with subtle color differential of the flames on the body. They did a great job of padding and covering the stereo wall and the dash extension.

Interior Surprises

Mark Hull, President of Auto Interior Specialists in Sumter SC (right in photo) personally did the door panels and seats. The crew surprised me with the headliner. I had no idea they were going to make it that elaborate with so much detail. Mark's integration of the arm rests with the flame tip is an outstanding idea.

Fabricating Harness Stops



Stops were made to prevent the shoulder harnesses from sliding outward on the roll bar. Donut shaped metal rings were cut with water jet from aluminum (A). Each donut was cut in half (B), drilled and threaded to accept two stainless steel Allen bolts. The four polished aluminum stops are shown at the arrows in lower photo.

Stainless Steel Nerf Bars

The design for the nerf bar front bumper came from the 50's. Since there would be no chrome on the car it was decided to make them from stainless steel. The design was drafted using French curves And a large radius compass. Randy Stone, a friend with a fab shop, developed a digital program for the shape and made the metal template on his cutting machine as a check. He then cut two pieces from 1/2" thick stainless. The stainless was polished by chrome rite platting in Fayetteville NC. Cobalt bits and machining lubricant were used to Drill mounting holes in 1/2 " stainless.

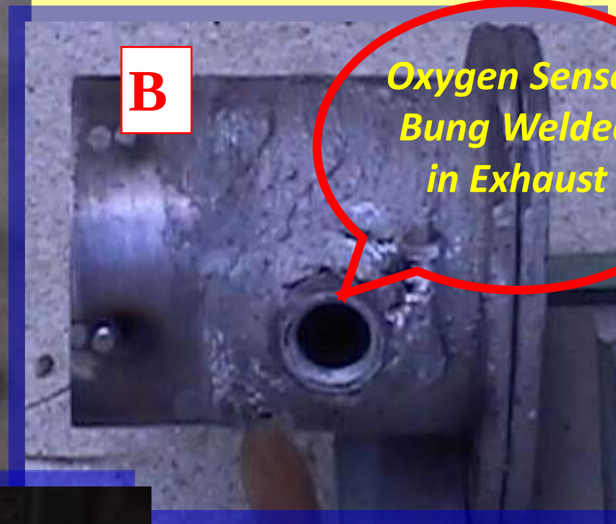
Dash Details

Dash detail theme is based on an oval shape. The air-conditioning duct outlets and oval dome light are from Phillips rod and custom in Florida. The oval rear view mirror is by Valley Auto accessories. The oval dash switch panels were fabricated from 1/8 ‘ aluminum and prepared with a mat finish. the oval air-conditioner control panel is from Vintage Air. The billet/leather steering wheel is by billet specialties with the pattern similar to the cars Centerline, Warrior wheel design.

Outside Details

Dual electric fans help keep things cool when idling. A Mallory ignition boosts the spark and provides a rev limiter. After a search of where to put front parking lights/directional signals ... 1934 Ford Commercial Stainless "twinlite" headlamp provided the solution. The amber dual element bulb inside the housing provides both functions.

Small Details



Fine tuning a Holley is much easier if an oxygen sensor and meter are installed (A & B). air/fuel ratios are measured and altered. An LED third brake light molded into the rear, is very visible (C).

Big Al's billet aluminum wipers (D) keep the rain off the windshield. It is a driver! Outside mirrors are by Valley Auto accessories. The polished billet (E) aluminum slotted arms are attached to stainless backed mirrors. They are quite effective in seeing in the rear.

Small Shop Owner Provided This *GSS* Feedback

Al Hackethal reported these findings after he purchased a 3 foot ***GSS*** for his small MIG welder and our leather cable cover for his TIG torch. He had this to say:

"Well, I can't believe it. I never thought a hose could make that much of a difference. I had a small job that's been waiting for a while. The weld quality, and even penetration is considerable better. Almost no spatter! The weld seemed to be hotter and I turned my MIG down a notch. "

Initially thought that my imagination had kicked in, but then realized that the gas I'm buying is actually working the way it's supposed to. Glad I found your website. This is one of the few things that really works better than any info could suggest. I understood the theory, though in practice I understood much better after the first couple of welds. Now I have better looking welds and almost no spatter, which means less grinding and finish work! In addition, the tip was cleaner after the job I just did.

This will provide savings in time, labor and maybe even consumables too. As a one man shop there's never enough time for anything.

Oh, the leather wrap for my TIG hoses worked very well and fits perfectly. I'd just replaced them (the hoses), but was looking for something to protect them that was better than the nylon wrap that's available around here. Now I'm TIGing again too, and much safer. It's good to know the coolant hoses are well protected. Much better than using a 300 amp TIG and then realizing that I was standing in a puddle of coolant, which is what recently happened. Can't pay the bills if I electrocute myself!

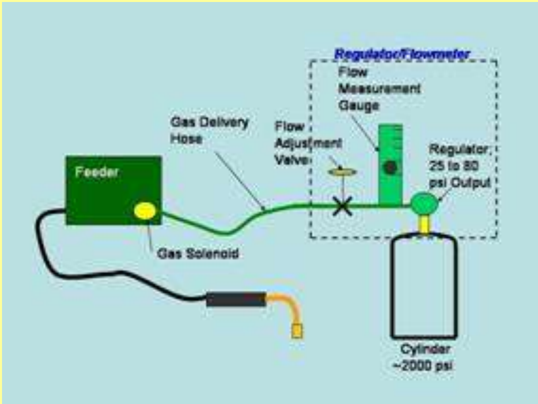
Thanks for making products affordable".

Email: GUttrachi@aol.com if interested.

Finished Interior

Finished Exterior

How Gas Saver System Works



Gas waste occurs every time you pull the MIG gun trigger even if it's only to inch the wire to cut off the end when starting.

To keep flow at the preset level the gas pressure in the cylinder regulator will be between 25 and 80 psi. However to flow shielding gas though the welder and torch requires only from 3 to 7 psi depending on restrictions. Therefore every time welding stops the pressure in the gas hose raises to the regulator pressure of 25 to 80 psi. That stores up to 7 times the hose volume of gas in the hose.

The patented ***GSS*** stores 80 to 85 % less gas then typical shielding gas hoses due to its small ID and peak flow control orifice. In addition to the wasted gas (which you can hear when you pull the torch trigger) the high flow surge also causes air to be pulled into the turbulent shielding gas stream! This is like starting with the gas cylinder shut off! You may have experienced that when you forgot to open the cylinder valve!

It takes a short time for the shielding gas flow to return to a smooth less turbulent (laminar) flow even when the start gas surge flow reduces. That can take several seconds so when making short welds or tack welds you're not getting all the benefits of the shielding gas you're purchasing!

The ***GSS*** also has a surge restriction orifice built into the fitting at the welder- wire feeder end. That limits peak flow (but not your setting) to a level that avoids excess turbulence but still allows a controlled amount of shielding gas to quickly purge the weld start area.

Just replace the exiting gas hose from cylinder regulator flow control to welder with our *GSS*. **Interested? Email: GUttrachi@aol.com**