YOUNGSTER'S T-BUCKET FRAME PLANS

Version 1.0, Released February 25th, 2008

In the early 1960's my hot rodder friends and I were always on the look out for a model A or T coupe for a hot rod project. Then in November of 1964 Car Craft magazine started a series on building a T bucket roadster. Well, that changed everything! A company called Almquist had been advertising a 'glass body for a couple of years. It was a poor body, but it only cost \$99. One of those bodies, coupled with an model A front end (about \$10-\$15), a '50 Ford donor car from the back row at the local used car lot (about \$50), and you had the makings of a T - and a roadster to boot!

Mine got finished, sort of - the older guys where quick to point out "better ways to do this or that". That's where it all started. I got a lot of help from those who had been there before me. Over the years I got a lot of help from a countless number of people and it hasn't stopped yet, I'm still learning and *I hope to God I never stop!*

Now I feel it's time to try and pay back a little of what I owe, that's the reason I've decided to put together this set of plans for a T-bucket chassis. I've seen a lot of stuff done that is sub-standard and down right unsafe. I've either built, or had a hand in building, several T's over the last 40 years and I'd like to pass along some of the information to those who can use it. I don't want anything for these plans, all I ask is that you freely pass them along to others.

Now, about the plans - The chassis is one that I've used on the last 6 or so cars. The plans start out with dimensions for the frame rails and a procedure for welding them together. They proceed on to the front and rear suspension and include a parts list with sources and a procedure for welding and installing those components on your frame. That's where I stop. I want *you* to build *your* car. I'm not going to dictate how you should build it, that's where you can make it yours. I'll be around to answer questions and for you to bounce your ideas off of and I'll be more than happy to help. I currently frequent the T-Bucket Forums at http://www.tbucketeers.com/if you have questions or comments please stop by and post a note.

Please understand that I'm by no means a tech writer. You may find some spelling and grammatical errors but I think the intent will be clear. I've also included several illustrations to help, but I'm not a technical illustrator either. I hope things are clear but if they are not then by all means post a note to the site listed above and I'll try to help all I can. If needed I can easily release an updated plan set with any clarifications or additions deemed necessary included.

And finally, I would like to gratefully acknowledge the help of Steve Robertson (SLR_65) for helping me create this pdf file.

--Ron Young, February 25th, 2008

Please Note

Several of the illustrations are full size illustrations, but if you do not have Adobe Acrobat setup up properly they may not print full size. To insure they are printing at full size please click on "file" and then "print" from within Adobe Acrobat. A printer setup screen should now appear, a little more than half way down on the left side of that screen is an option titled "page scaling" with a drop down menu next to it, click on the downward facing arrow on the right side of the drop down menu to reveal the options available and choose the first option ("none"), then click on "OK" in the lower right corner of the screen and it should begin printing your plan set at the intended size.

These dimensions are for a 101" wheelbase chassis. That is to say a body with a 20" pickup bed would be the best choice for this chassis. If you are building a modified with a gas tank behind the body this frame should work just fine for you. If you want to use a turtle deck on the back, then add 4" to the length of the rear top rails for a 105" wheelbase. The 105" wheelbase is the longest you can build out of a 20' length of tubing. Some manufacturers offer a 14" box also. I prefer the 20" version because it gives you a little more room for a gas tank, battery, etc. inside the box.

You will find your build will go faster if you have the major components before you start the build. At a minimum having the body, pickup box, engine and transmission, rims and tires that are close to the height of the ones you plan on running. It makes it a lot easier to reference the location of future parts and assemblies. Then to, you can mock everything up, climb in and make some really disgusting noises. Just don't let the wife and kids catch you.

When you get around to setting up the engine in your chassis, think about using a dummy engine and trans. If you can come up with a block, heads, pan, water pump, dizzy, intake manifold and a trans housing, you'll be all set. It's sure a lot easier to move around in the chassis. With the dummy you can set up all of your mounts, build headers, check for clearance issues, cut your firewall, build the trans hump, just to name a few reasons. Look around. You can likely find most of the pieces for little or nothing.

The same goes for rims and tires. There is no reason to have your good set of wheels around during your build. A set of OEM rims and tires that are at least close to the height of the ones you are going to run will help keep the cost down during the build.

I've even gone so far as to build a mock up radiator. You can use 1x2's and cardboard or thin plywood for materials. I used pieces of an old hand rail for the inlet and outlets. A couple of sheet metal brackets for the shell and the frame mounts and your in business. Radiators get dinged up real easy. When you do buy yours, cut a couple of panels out of a box and tape them on the front and the back of your cooler. That will help keep those nicks and bent fins from showing up.

Speaking of cardboard, when it comes time to build your gas tank, cardboard is a lot more forgiving than metal and it's cheaper too. With some searching if you can find a box that is close to the size of your battery, the battery tray can be built. A good source of posterboard for templates is as close as the nearest liquor store. Most of the signs they use are made of the thicker stuff. You can cut it with a band saw or a sabre saw. It even sands well with sandpaper.

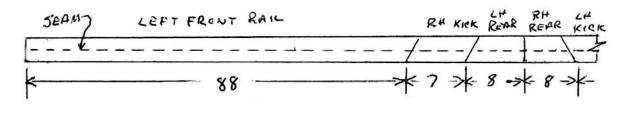
Well, there you go. You can build your frame now. The front and rear suspensions are next. One last thing - if you are at all in doubt about your welding skills, find someone who you trust to weld up your frame and suspension. These are the backbone of your car and you don't want to compromise them. A little money spent here could make a big difference in enjoying your T.

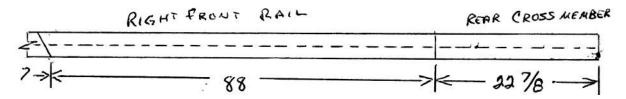
This is a set of plans for a T bucket frame that I have been using for the last 15 years or so. To date there are 9 cars with this frame under them on the road. I would hope to add your T to this list.

The chassis is set up for a small block Chevy, but most all of the 4 cylinder and V6 engines will fit also. One of the finished cars is running a flathead with this chassis. If you are planning on using another make of engine, you will need to add to the length of the front rails. Measure the engine you want to use from the water pump flange or the lower crankshaft pulley, which ever one is the furthest forward, to the back of the most rearward head. If your engine has a rear mounted distributor, to the back of it. Now subtract 33" from this measurement. This is how many inches you will have to add to the front frame rails.

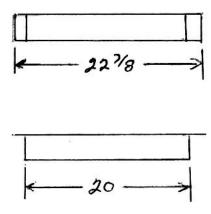
I use 1-1/2" x 3" 11 ga. Tubing for my chassis. Some like 2" x 3" 10 or 11 ga. tubing. The choice is up to you. All of the dimensions here are for the 1-1/2" x 3" tubing, so if you use the 2" x 3" tubing you will have to make the dimension adjustments. For the frame you will need to buy a 20' length of 1-1/2" x 3" 11 ga. tubing and 2' of 2" x 3/16" wall round tubing.

The drawing below has the dimension for cutting your tubing. To keep a clean look, layout your cuts so the seam in the tubing is on the side of the frame rails. Before you start cutting, lay out all the pieces on your tubing. Lay out the front main rails on each end with the 60 degree angle toward the center of the tube, then lay out the kick, rear rails, and then the rear crossmember.

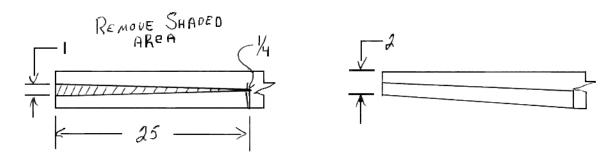




The piece of tubing for the rear crossmember needs to be trimmed back on each end to form the caps for the side rails. Below is the layout for it. You will be cutting 3 sides off leaving 1 side as the cap.

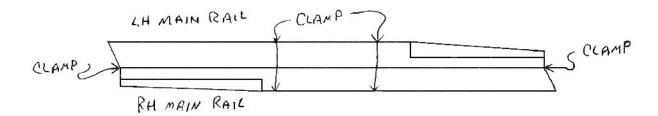


Now that you've got your tubing cut, we can start on the main tapers. The drawing below has the dimensions. I would recommend using a cut off wheel in a die grinder, it seems to give you the control you need to make straight cuts. If you don't have an air compressor, a sabre saw with a 24 tooth blade will work. Using a plasma cutter seems to put a lot of heat in the metal causing it to warp. The relief cut to the outside of the rail is ¼ inch at the end of the long cut.

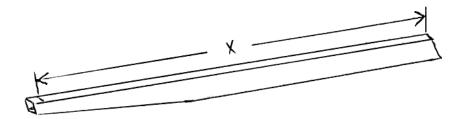


After all the cuts are made, pull the bottom section up to meet the top – be sure to keep a 2 inch opening for the front crossmember. You might have to adjust the relief cut to allow the two sections to come together. When everything lines up, put a tack at the front of the long cut. By stacking the two front rails on top of each other, you can check to be sure they match. This is very important. You want one side to be an exact copy of the other.

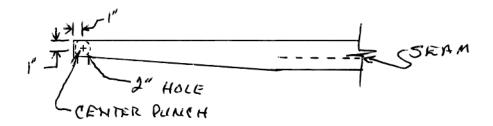
Before you begin welding, take one of the rails and flip it end for end. Now clamp the two together as shown. This will keep the distortion to a minimum. I prefer to mig weld the tapers, so I leave a 1/16" gap to ensure penetration. It is also a very good idea to skip weld these seams. Start on one side and run a 1 inch weld every 3 inches. Now do the second side of the same tube. Now do the same with the second tube. Then back to the first tube. You want the tube to be cool enough that you can lay your hand on the tube before you start the second set of welds. Run your welds up to the previous welds from 1 inch behind them. In other words, you want the second welds to end where you started the first welds. Now keep switching tubes until all 4 seams are welded. Let the tube get completely cool before taking them apart.



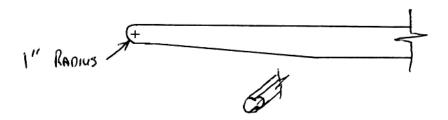
On top of each of the front rails, measure back 1" from the front. Now measure from the angle cut at the back of the rail to the 1" mark. This dimension must be the dame on both rails. If it's not, adjust the longer one to the length of the shorter one.



Now bring the 1" line over the edge of the tube to the inside of the tube (seam side). Mark and center punch 1" down from the top of the tube. This is the center for your front crossmember. Drill a 2" hole here.

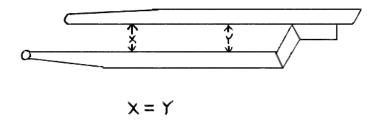


On the outside of the rail, bring the 1" line down the tube. Now measure down 1" from the top. Use this point to scribe a 2" circle. Now trim the top, bottom, and outside of each rail.



Now for the front crossmember. Cut the 2" tube 22-7/8" long and set it aside. The last thing you need to do before assembling your frame is to fabricate the spring perches and their gussets. These pieces are made from \(^1\)4" stock. When you cut the 2" hole in the gussets, a little oversize is OK, this will make it easier to square them to the front crossmember. See drawing.

With all the pieces cut, you can start assembling your frame. Bevel the joints on the side rail pieces to about 45 degrees, about half the wall thickness. Lay out one side on a flat surface, making sure the front side rail and the rear side rails are parallel. To check this, position the other front side rail above the rear side rail and measure the distance between the two.

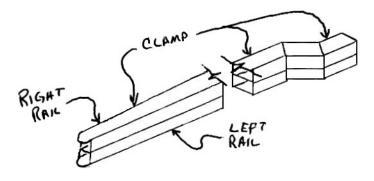


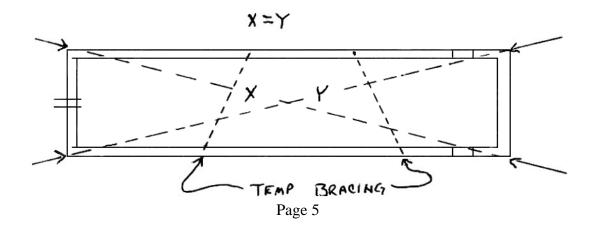
Clamp down the side to be welded and recheck your measurements. When you are satisfied that everything is where it should be, tack the three pieces together. I prefer to tack on the top and bottom sides of the tubing so the tacks don't get in the way when I tack the other side. Check to see that nothing moved during the tacking. If it looks good, lay the other side on top of the first side, check the dimensions and clamp the two sides together. Be sure the second side lines up perfectly with the first side and tack it. Now check to see that nothing moved and that the tacked sides are flat. Now weld the 1-1/2" sides of the tubing.

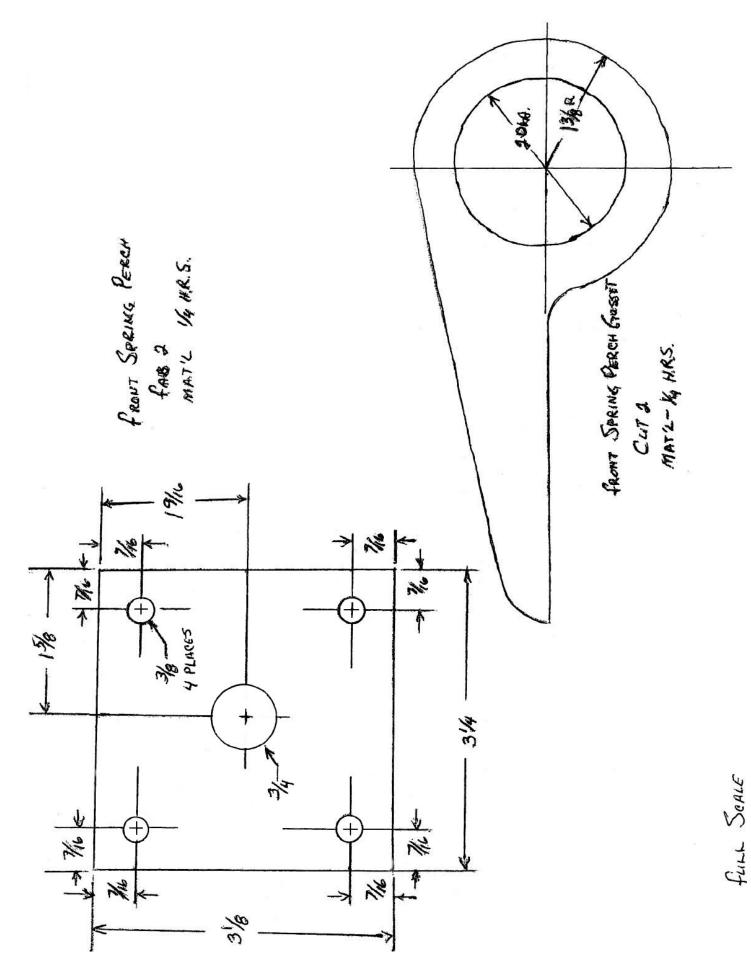
Set the two side rails on edge so they are level and parallel with each other. Now tack the rear crossmember to the side rails. Tack on the inside corner, it makes it easier to adjust the squareness later.

Now for the front crossmember. Slide the two spring perch gussets onto the tube and position it between the rails. If there is a seam on the tube, place it down and to the back. You can now tack the crossmember to the side rails, again on the inside corner.

Cross measure the frame to be sure it is square. I can't stress how important it is that you keep the frame square at this point. I strongly suggest you tack tubes across the frame once everything is where it should b. Weld it up, skipping around so as to not pull it out of shape.





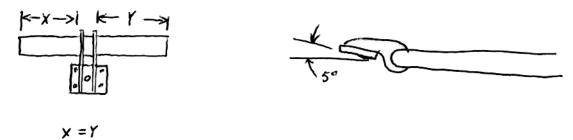


Page 6

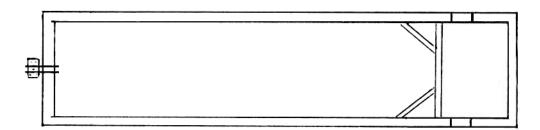
The Spring perch is designed to be used in one of two ways. You can weld the gussets to the edges of the perch or in the center of the perch. Personally I prefer to go with the center position. It seems to flow better with the rest of the piece sizes around it.



Measure to find the front crossmember. Slide the gussets so they are equal distant from the center. Square them up and weld the spring perch to them. Now set your frame so it is level. Raise the spring perch so it is 5 degrees up from the top of the side rails and weld it to the crossmember tube.



At this point I put a temporary K type crossmember just forward of the kick to hold the dimensions until I get a center crossmember installed. Then you can take the pieces off that you added to hold the squareness before.



I use MAS Racing Products as a source for the front axle and hair pins. When you are ready to order your parts, call the order in. The number is 615-644-6811. Ask to talk to the fabrication shop foreman, his name is Rich. You can tell him what you want and answer any questions he might have. This has always worked very well for me. My parts have most always arrived in a week or so. Here is a list of parts and estimated prices for you;

4" dropped axle, 2" o.d., standard length, for '37 - '48 Ford spindles	\$200.00
one pair of 27" hair pin radius rods, tapped 5/8" fine thread	\$140.00
one pair of 36" hair pin radius rods, tapped 5/8" fine thread	\$150.00
one set of urethane bushings	\$ 25.00
	\$ 3.00

Let's talk about tires for a minute. I would recommend running 165 RS 15" tires on the front. They have a large enough footprint to handle turning and stopping your car. These are the tires available as replacement for an early VW bug. They fit best on a 5" rims and are about 27" tall. For the purpose of set up, you can use a pair of Ford pickup 15" rims with 27" tires on the front. For the rear I would suggest a couple of rollers about 28" or 29" tall. 235 R 15" work well here. Older full size ford cars or Dodge car or van rims will fit the recommended Mayerick rear end.

You will need to find a set of '37 to '48 ford spindles. You might hear of someone using '49 to '54 Chevy spindles. They will work, but the bearings are very expensive. The other thing is you will have to heat and reshape the spindle steering arms for tie rod clearance and Ackerman. This is easier to do with the Ford spindles. Econoline spindles have also been used. To me they don't have the look with the bolt on steering arm, just too busy for my taste.

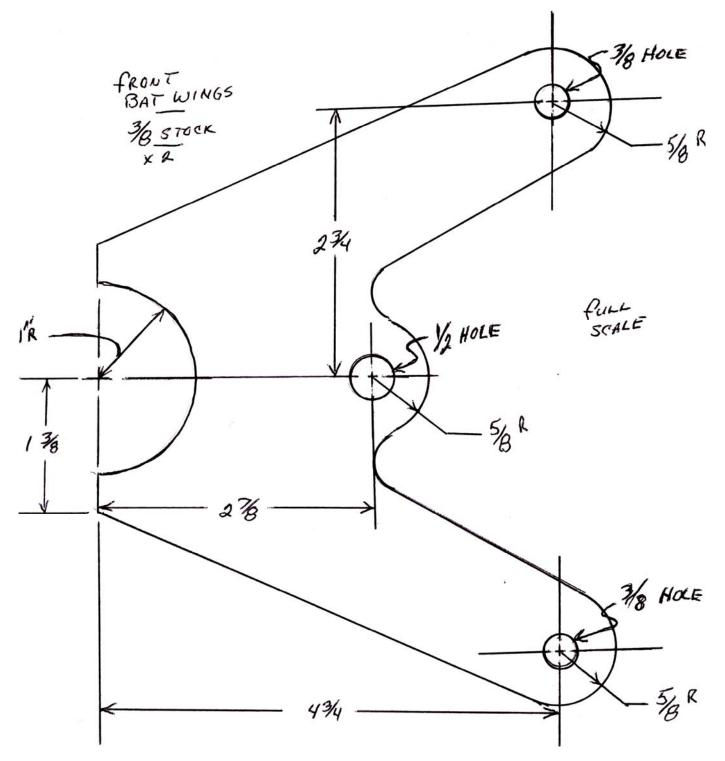
On the subject of brakes. You have some options here. There are of course disc brake kits out there from any number of venders. Another option is the F-1 or F-100 Bendix type brakes. This is pretty much a bolt on swap. You have to do a little grinding on the inner bearing race and the top of the spindle, but it's no big deal. The nice part of this swap is that it gives you Bendix brakes both front and rear. A master cylinder from a '67 Mustang is fully compatible with this set up. The NAPA p/n is 101485. It is a drum/drum, non power unit. By the way, that same master cylinder will work with the '40 to '48 Ford brakes too.

For fabricating your tie rod, drag link, motor mounts, frame hair pin mounts, and coil-over mounts you will need to buy a length of $7/8 \times 3/16$ wall DOM tubing. A 20' length will cost about \$95. If you don't have a steel retailer near you, check with some of the local factories or welding shops. Sometimes they will order tubing like this for you.

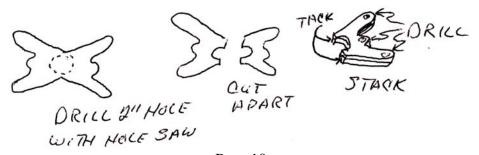
There are a number of companies you can purchase the following parts from. I have used Speedway in the past and have had no problems with the parts I've received. Here is a list of parts you will need with part numbers and prices as of 12/1/07.

		Cost	Quantity	Total
Item	Part #	Each	Required	Cost
front spring	910-3032	\$ 59.95	1	\$ 59.95
spring pivots	916-33005	\$ 6.95	2	\$ 13.90
shackles-1 3/4"	910-33323	\$ 19.95	1	\$ 19.95
adjustable bushed ends	910-080515str	\$ 14.95	5	\$ 74.75
jam nuts	910-01156	\$ 2.95	5	\$ 14.75
steering loop	720-4010	\$ 15.95	1	\$ 15.95
tie rod ends-rh	910-02909	\$ 9.95	2	\$ 19.90
jam nuts-rh	910-01059	\$ 2.95	2	\$ 4.90
tie rod ends-lh	910-02919	\$ 9.95	2	\$ 19.90
jam nuts-lh	910-01159	\$ 2.95	2	\$ 4.90
coil-over shocks	255-2254D	\$141.95	2	\$283.90
king pin set '37 to '40 Ford	910-32121	\$ 39.95	1	\$ 39.95
or				
king pin set '41 to '48 Ford	910-32122	\$ 39.95	1	\$ 39.95
If you decide to use the				
F-1 or F-100 brakes, you				
will need these bearings				
and seals;				
F-100 bearings & seals	916-3194	\$ 39.95	1	\$ 39.95

The next few pages are drawings of parts you will need to fabricate. They are full scale except where noted. Keep in mind, this is where you can start to show your talents as a detailer. Grinding, filing, rounding corners, etc. will set your car apart from everyone else's. I have a rule when I'm makin' mounts and brackets, "when it's good enough, spend a little more time to make it perfect".

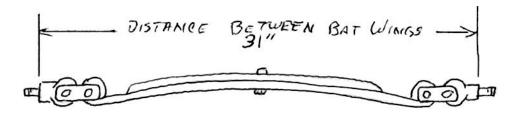


This is a full size template. Tip...layout like this:

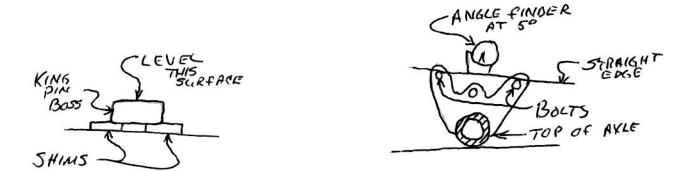


Page 10

The first step is to take the front spring apart. Use some caution here. Some springs are under quite a bit of tension when they are in a pack. Clamp the spring with C-clamps and replace the center bolt with one about 3" long. Now you can release the clamp slowly until the tension is relieved. Take the main leaf and install the shackles and spring perches. Lay this assembly out on a flat surface and measure the distance between the spring perches. This is the measurement you will use to locate the bat wings on the axle.



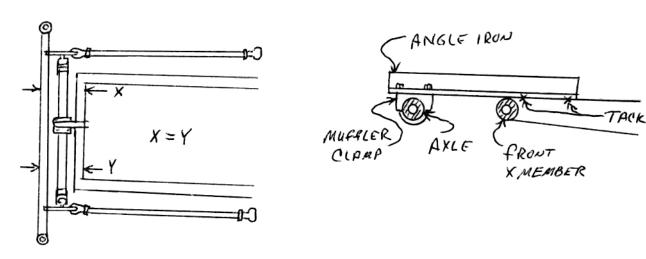
Lay the axle on its' face and level the king pin boss. Use shims if necessary to keep the axle level. Find the center of the axle and lay out the bat wing location using the spring perch measurement. Run two bolts through the holes for the clevis' and nut them. Using an angle finder across the bolts, set them at 5 degrees down at the top. Holding the bat wings at a 90 degree from the axle, tack them in place. Re-check your measurements and angles and finish weld the bat wings to the axle.

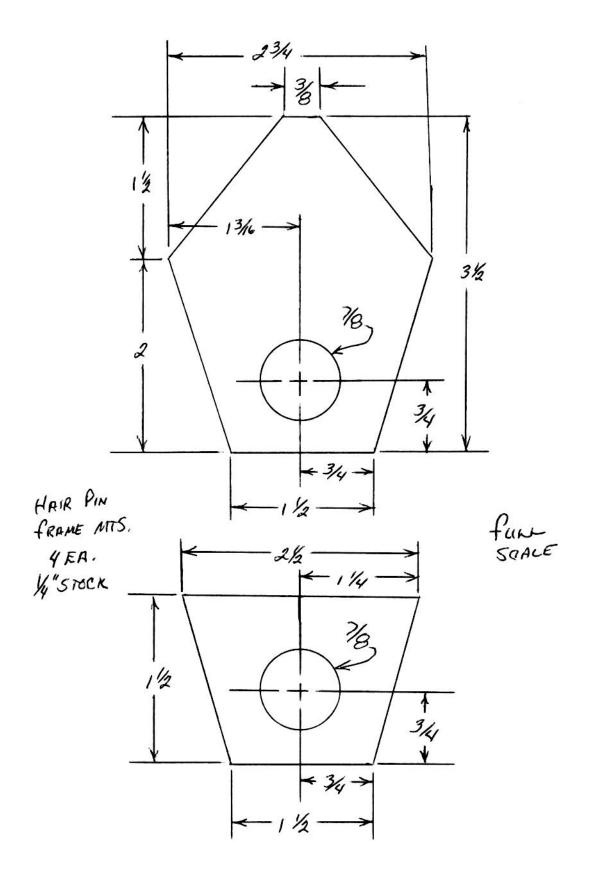


Assemble the 36" hair pins with the clevis' and bushing ends with their jam nuts. Thread these pieces in about half of the thread length and finger tighten the jam nuts. Be sure to use anti-seize on the threads. You don't want to think of what galled threads would mean at this point. The two assemblies must be the same in length. An easy way to do this is to stack one on top of the other and insert bolts in the clevis' and bushing ends. Now tighten the jam nuts.

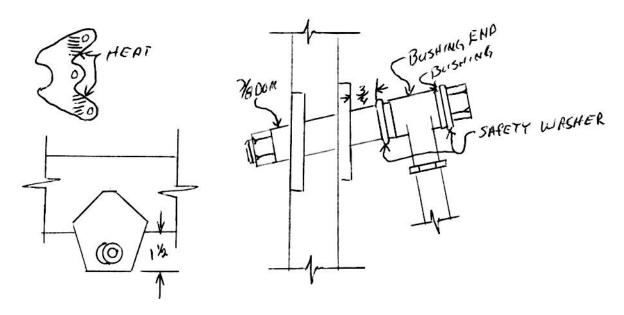


Bolt the spring assembly and the hair pins to the bat wings. Next bolt the axle assembly to the spring perch on the frame. Measure the distance between the axle and the front cross member at the end of the side rails. Set the axle so both sides are exactly the same. Bolt the axle to the angle iron and clamp the angle iron to the frame. Once I'm satisfied the axle /cross member is right, I tack the angle iron to the side rails. It's very important that this distance is perfect through out the heating and bending of the bat wings. At this point, I remove the spring assembly. This prevents damage and keeps them fresh looking.

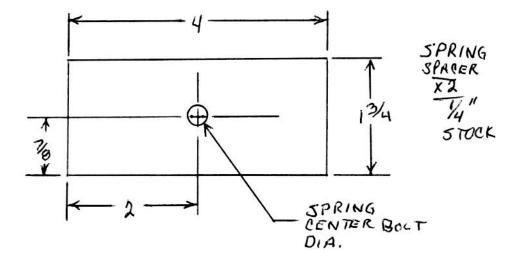




It is much easier to heat and bend the ears on the bat wings if the frame is upside down. Heat the bat wing in the shaded area and pull the hair pin to 3/4" from the frame rail. After the bat wings cool down, run a 1/2" x 5" bolt thru the bushing on the hairpin. Cut a piece of 7/8" dom 2-3/4" long and slide it onto the 1/2" bolt with an 1-1/4" od x 1/2" washer between them. Shape the hole in the outside frame plate so the dom tube fits thru it when the plate is flat on the frame rail. The frame plate will hang down 1-1/2" below the frame rail. Loosen the muffler clamp so you can rotate the hair pins to line the dom tube with the outside frame plate. Check to see that the frame plate is the same distance form the front cross member on each side. Tack the tube to the plate with 3/4"between the bushing washer and the frame plate. Tack the frame plate to the frame rail. Shape the inside plate for the tube so it is parallel to the outside plate. Finish weld the plates and the tube.



Turn the frame over and remove the angle iron and muffler clamps. Install the spring with the two 1-3/4" x 4" plates between the spring perch and the spring. This will give you an approximate ride height.

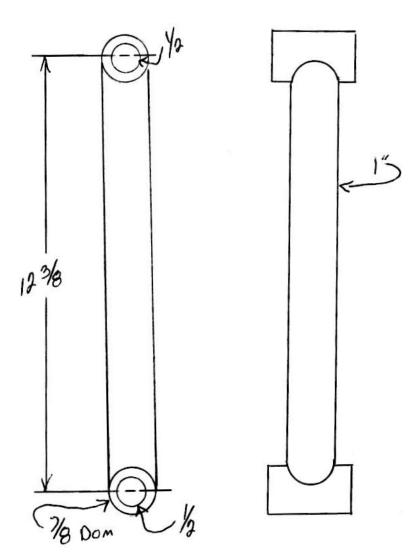


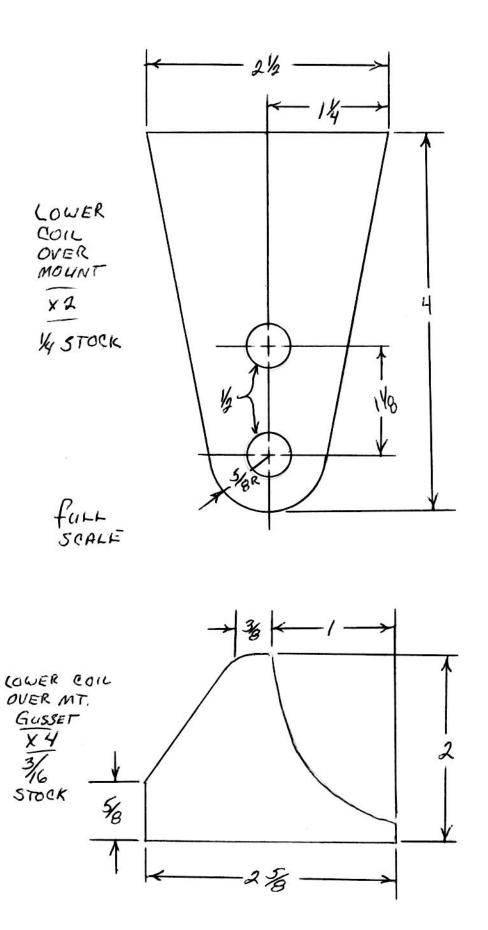


This packet is about setting up your rear suspension. The references to the rear axle are for an 8" Ford out of a Maverick. If you are using something else, you might have to make some adjustments to the given measurements and brackets.

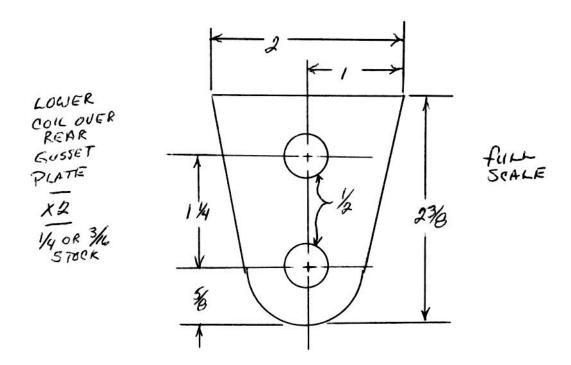
Disassemble the housing. Be sure to keep track of the nuts from the third member drop out and the axle flanges as they are costly to replace. Clean the housing inside and out. Remove the old spring perch pads. You can grind the areas where you will be welding, but I sandblast the outside of the housing. This gives you a clean surface to insure good, sound welds.

Measure the axle tubes, they do vary even one from th same manufacture. Fab the hairpin housing and frame mounts and the upper and lower coil-over mounts. You will find it much easier to measure and locate the rear axle if you make up a set of solid struts to use in place of the coil-overs themselves. It will also keep them fresh for your final assembly.

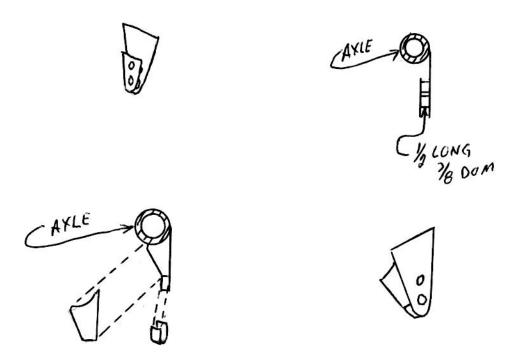


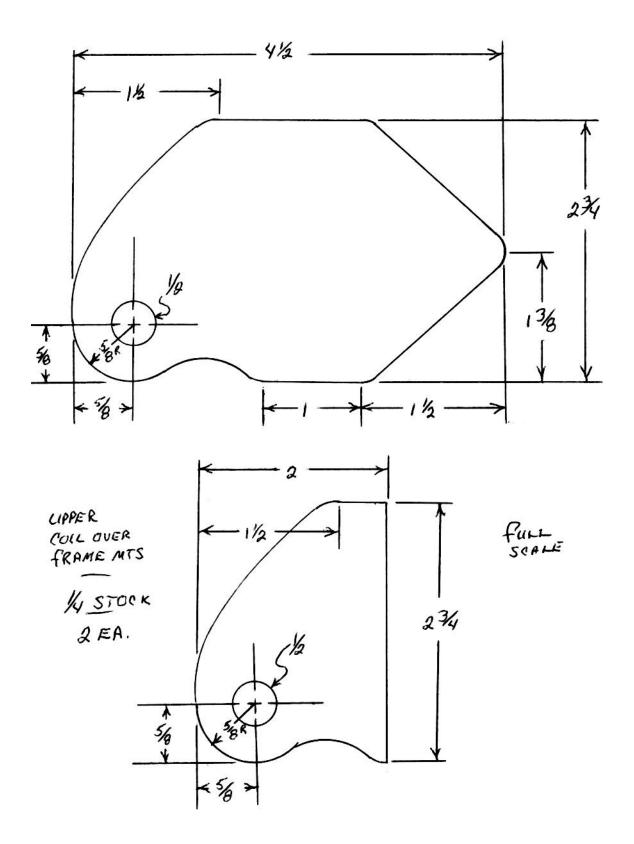


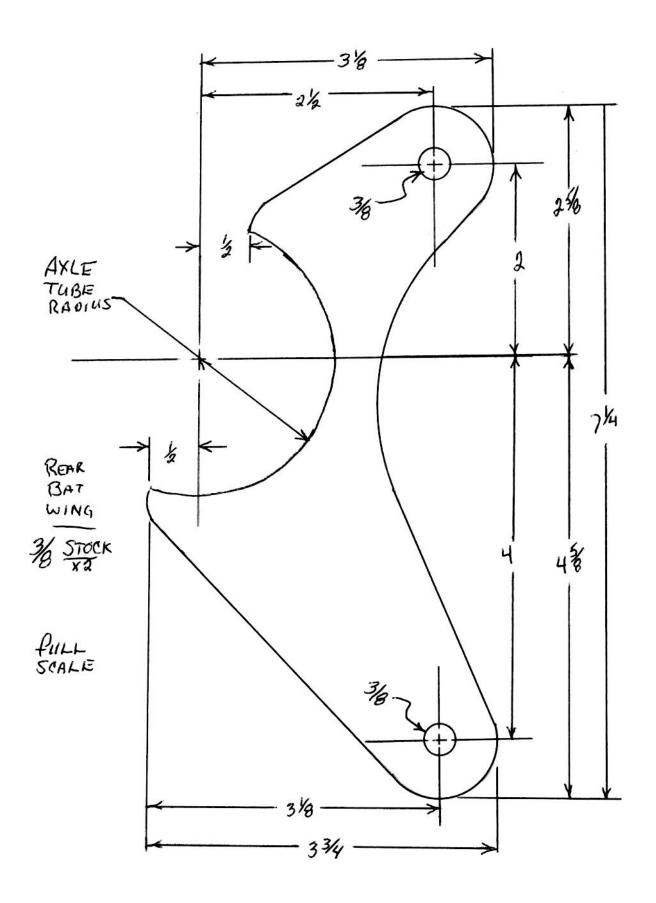
Page 17



Just a note here on the fabrication of the lower coil-over mount. Weld the two ¾" pieces of dom to the long plate. You can use two ½" bolts to hold them in alignment on the plate. Next bolt the back plate to the dom and tack it in place. After you locate the mount on the axle housing, add a gusset to each side. If you want to add the boxing piece, drill a weep hole in the center and weld it in place.

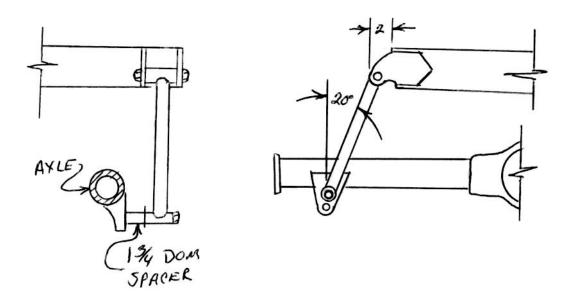




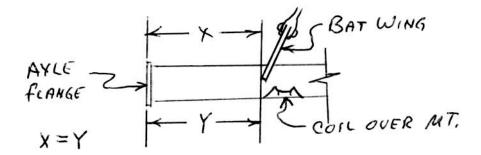


Page 20

Weld top rear strut / coil-over plate to rear cross member. Measure the top bushing on the coil-over. Use this measurement to locate and weld the other strut / coil-over plate to the side rail. Install the strut. Bolt the lower strut / coil-over mount to the strut with a piece of 7/8" dom as a spacer, 1-3/4" long. See diagram. Center the rear end housing under the frame. Using an angle finder on top of the housing, set it at 1 to 2 degrees up. Measure from a common point on the side rail to the housing on each side. These measurements are critical. Check and re-check them until they are perfect. Set the struts at a 20 degree angle using your angle finder. Tack the lower strut / coil-over mount to the housing. Finish lower coil over mount on housing. See diagram.



Assemble the rear hair pins the same way as you did the front ones. Install the rear bat wings and the 2 3/4" piece of dom to the hair pins. Set the bat wings the same distance from the end of the axle as the outside of the lower strut / coil-over mount. Locate the bushing end 3/4" out from the side rail, the same as you did with the front. Tack the bat wings to the rear end housing. Shape the hole in the outside hair pin plate to accept the dom tube. Making sure the plate is the same distance from the housing, tack it to the side rail. Shape the inside plate and tack it in place. Recheck all of your measurements and finish weld the hair pin and lower strut / coil-over mounts.



For the sway bar or pan hard bar, Speedway sells a good kit for \$80, part # 910-49800raw. If you find it necessary to shorten the bar, cut the end with the sleeve off and use the sleeve you got from MAS.

The last thing you have to do is to set the Ackerman on your spindles. This is so much easier to do with an extra pair of hands. Install your spindles with the king pins. On the rear end housing, find the center of the axle shafts and mark it on the top of the housing. Slip a pipe over the spindle shaft. Heat the spindle arm next to the king pin boss and bend it so the eye is in line with the center of the king pin and the mark on the rear housing.

Cut a piece of the 7/8" dom 44" long. This needs to be tapped with an 1-1/16" - 18 thread. It is not a common thread size and you probably won't find a shop with one on hand. They can be ordered from Speedway for about \$25. You will need it for your drag link. It also comes in handy for chasing threads on final assembly. Now you can bend the arm for your tie rod clearance. Install the tie rod to see now much clearance you need. Heat the same area as you did before and bend the arm down so it clears the hair pins, spring and frame. After it cools, heat the area behind the eye and bend it so the eye is parallel to the ground.

Assemble the rear end, install the front hubs and wheels and there you have it. Your rolling chassis and you had all the fun and satisfaction of doing it yourself. Have a cool one, pat yourself on the back and send me some pictures.

