



**'60-'65 Ford Falcon
Coil Spring IFS**

1-800-984-6259

www.totalcostinvolved.com

Note:

All engine installations with this front end will require a rear sump oil pan.

Version 1

1960-1965 Falcon Front Suspension **Installation Instructions**

Thank you for choosing TCI Engineering's Falcon front suspension package. The kit has been designed to not only allow your Falcon to handle corners, steer and brake better and have more engine compartment room but have that low sports car stance. Although the install will require cutting, grinding, drilling, welding and quite a few hours of your labor, the results are well worth the effort. I will take you through the install step by step.



Before from the front.



After from the front.



The engine has to be removed. On this project, we decided to leave the transmission installed just to see if it hampered the front end installation.

Remove all the old suspension components including the steering column.



I used a die grinder with a cut off wheel to cut the coils in a couple of places for much easier removal.

Next the shock towers, suspension brackets, have to be removed, but first clean as much of the underbody coating in the wheel well around the shock towers as possible to facilitate cutting.

When it came to cutting off all the old suspension mounting brackets, I've tried a saber saw, a die grinder with a cutoff wheel, oxy/acetylene torch and a plasma cutter. By far the plasma cutter was the easiest, cleanest and most accurate.



Start with the lower A-arm/motor mount brackets first.

When cutting, be careful not to cut into the main frame rail.

We will be grinding off the material welded to the main rail.

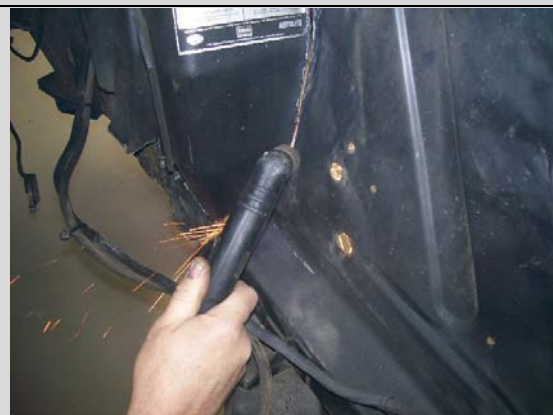


Next are the shock towers. The first cut will be made from inside the wheel well just above the main frame rail flange.



The rest of the cutting will be from inside the engine compartment.

Cut the lower edges of the tower from the frame rail.



The vertical cuts on the towers are made at the bend radius between the tower and fender panel.



The final cut is made across the top in the bend radius.



If a TCI sway bar package is being installed go ahead and cut off the stock sway bar brackets and the strut rod support channels.

This is highly recommended for superior handling and cleaner appearance.



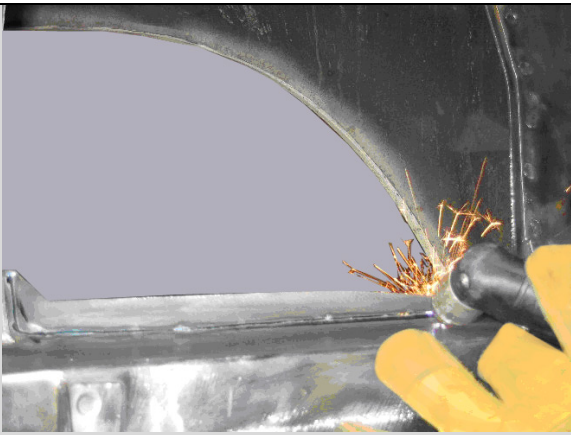
Remove all excess material, welds and paint from the main rails to all for the installation of the boxing plates.

Remove excess material around shock tower opening until it is flat to the fender panel; also straighten up inside cut lines for clean appearance.



The outer flange on the top of the main rail has to be removed.

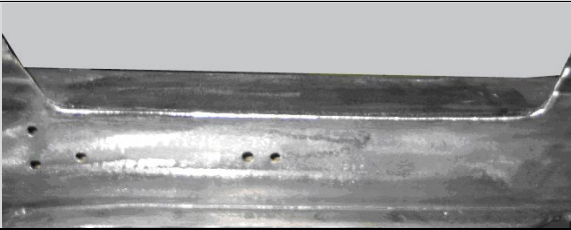
Draw a line through the centers of the spot welds.



Carefully cut the flange off, leave about 1/8" or so extra material.

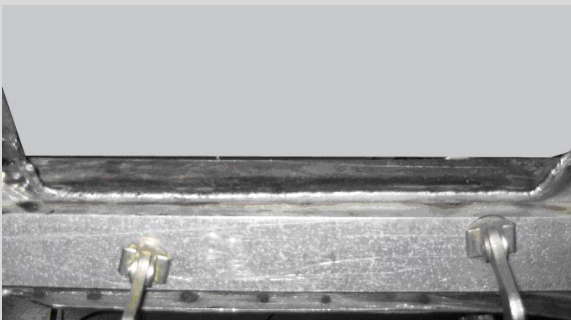
Use a grinder to remove the last 1/8" material.

If you try to plasma cut the entire flange off in one pass you will remove too much material from the frame rail.



Finish grinding the rest of the remaining flange lip flat with to the top of the rail.

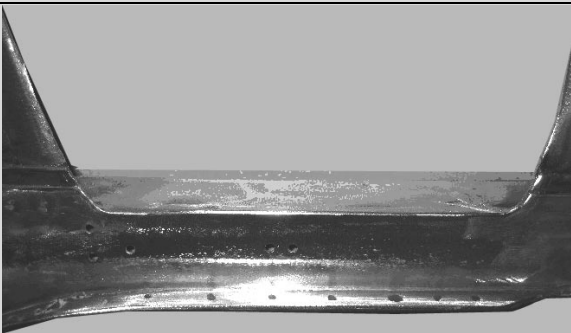
Although you cannot see it in the picture, there is a split between the top and the side rail metal.



The top and outside of the rail will be seam welded back together.

Clamp a two foot flat piece of material (I used 1" x 2" aluminum bar) about 3/4" down from the top of the frame rail to maintain a straight edge.

Massage down any high spots or irregularities that aren't straight and square with a small hammer. Finally, weld the seam and side together also include the short side flanges going upward.



Next grind the welded area flat and square.

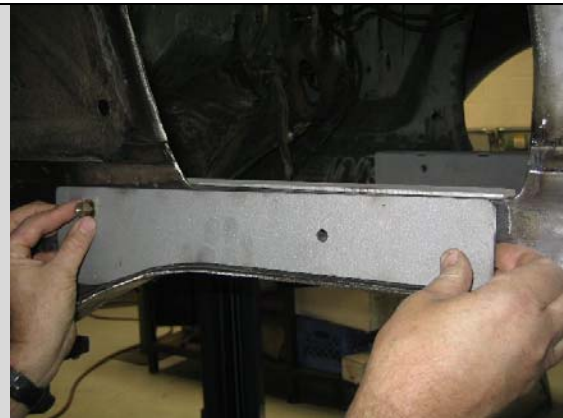
At this point, you are done removing parts and done preparing the frame rails.

This is a good point to do any other engine compartment cleaning you would like.



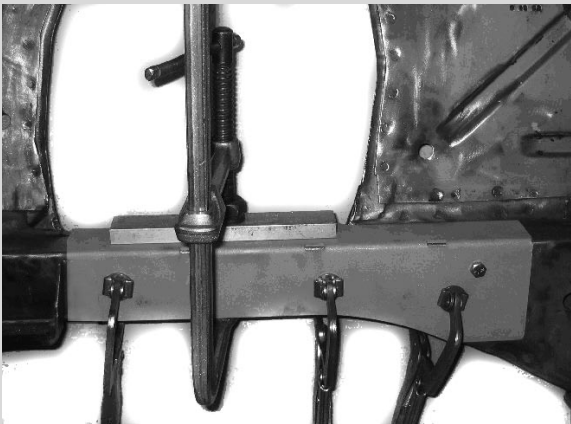
You are now ready to start installing the boxing plates to strengthen the frame in the cross member area.

The folded inside boxing plates are located by using a bolt and aligning the rear holes in the folded bracket with the upper front steering box hole (drivers side 7/16" x 3" bolt) and the upper idler arm hole (passenger side 3/8" x 3" bolt).



Install the correct outside boxing plate with the bolt and fasten with nut. (The plate with the hole closest to the rear is the passenger side.)

Align the boxing plate edge parallel with the top plate exposing an even section of the stock frame that when welded will tie both boxing plates to each other and to the frame.



After clamping boxing plates using support plates double check to make sure plates are flat on the frame rail and as close to 90 degrees as possible to each other.



It's time to tack weld inner and outer boxing plates to each other and to the frame. When it comes to welding, I prefer to heli-arc because it's cleaner and less grinding afterwards but a wire feed will work fine, just a little more clean-up grinding afterwards.



The rosette welded three slots in the folded boxing plate tie it to the frame.

Note; the rosette weld to the left is not done yet.



Weld the outside boxing plate totally 360 degrees around tying it to the frame and the inside boxing plate.



Weld the inside boxing plate on the top, ends, sides and rosettes.

The portion following the bottom line of the frame will be welded later.



Next it is time to install the formed bottom boxing plate.

Install with the straight edge facing inward towards the engine compartment and the curved and notched edge facing out towards the wheel well.



Align inside edge of the bottom boxing plate parallel with the edge of the inside boxing plate allowing 1/8 inch gap for weld penetration.

Clamp securely checking for flatness.

Tack-weld lower boxing plate. Weld inside edge to frame and inside boxing plate tying both together. Weld boxing plate on the underside of the frame. Don't weld the outside edge at this time.



The outside edge of the frame is where the two stamped flanges of the frame are spot welded together and will require clearance grinding for the coil spring before welding.



The entire length of the stamped flange edges needs to be removed.

Using the outer edge of the lower boxing plate as the template, grind the two stock frame flanges till they match the profile of the boxing plate edge.

Turn the heat up on your welder and seam weld both frame flanges and the boxing plate edge together.



Drill the frame through from both sides in the 3/8" hole in the boxing plates to make the locating point.

Time to make it all look good.

Grind and sand the weld edges, round the corners and weld spot fill any pits or imperfections for a clean finish.



You are now ready to install the cross member. First install the one inch wide locating plate using a 3/8 inch bolt through the 3/8 inch holes drilled earlier. Next slide the cross member (steering rack brackets forward) between the rails behind (firewall side) the locating plates.

You may have to trim the ends slightly to get the cross member to tap in. Trim equally from both sides.

Use a sturdy flat cross bar (approximately 32" long), two short flat spacers (two inch's) and a long c-clamp to pull the cross member up tight against the bottom of the frame and snug up against the locating plates.



Note:
(Please use a large bar and clamp to help finalize task)



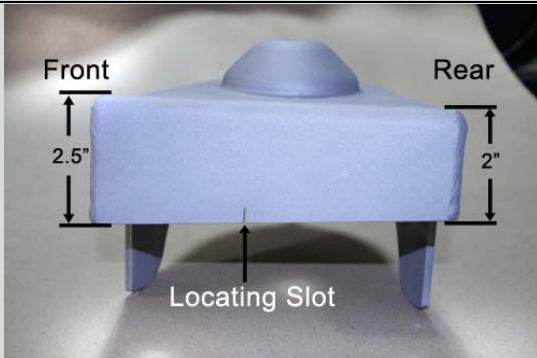
Next check to make sure that the cross member is 90 degrees to the top of the frame. This is critical for correct engine angle and lower A-arm angle.

Corrections can be made by slightly trimming the front or rear edge of the cross member that contacts the bottom of the frame.

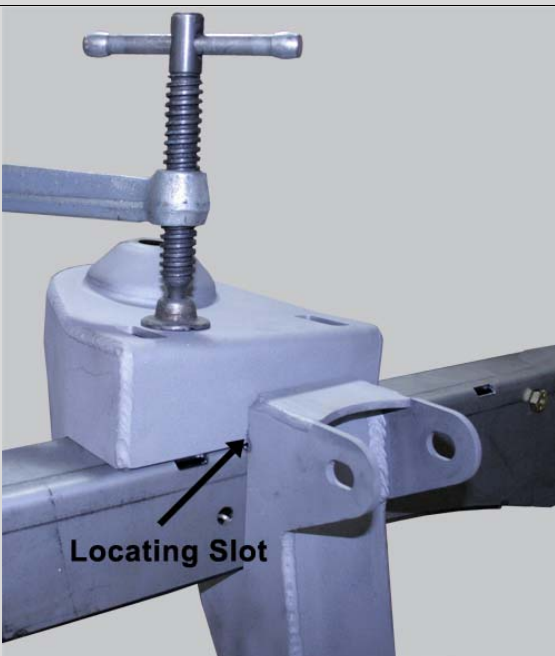


Double check for square and tack weld all sides and on the bottom.

Remove the locating plate and finishing welding all the way around, switching from side to side so as to not build up to much heat. Weld up the 3/8 inch holes on the inside and outside of the frame rails and grind flat for a clean appearance.



The a-arm/shock/coil spring tower bracket is mounted with the 2.5 inch end towards the front of the car. This is the built in anti-dive feature. When installed, the locating slot aligns with the front edge of the cross member previously installed.



Using a C-clamp and pull the bracket down snug to the top of the frame rail keeping the locating slot aligned with the front edge of the cross member and the outside legs of the bracket snug against the outside of frame rail.

When everything is tight, tack weld in several locations to prevent bracket from moving. Double check locating slot location then finish welding.



The sway bar bracket is mounted 11.25 inch's from the front edge of the cross member to the center of the bracket.

Clamp securely to the bottom of the frame with the wings flush against the inside of the frame and weld.



The lower a-arms are installed with the sway bar bung facing forward and ball joint threaded tapered stud facing up. The 5/8 inch pivot shaft is installed with the acorn nut facing forward with a thin stainless washer on both sides of each urethane bushing. Lightly tap the shaft with outside washer installed through the front a-arm urethane, front inner washer, cross member tube, rear inner washer, rear a-arm urethane now install rear outer washer and nylock nut using anti-seize and tighten.



The upper a-arm is installed next. Using the special a-arm T-bolts, install the two bolts from the outside through the coil tower a-arm slots into the triangular holes in the a-arm shaft (serrations on shaft face down against tower). Install self-locking nuts and tighten lightly.



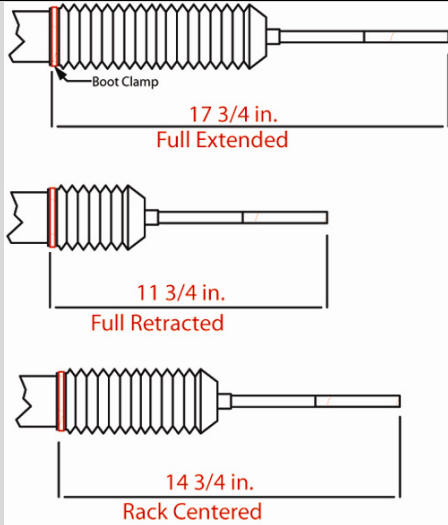
The coil spring and shock are next. This is a two person task and have a jack ready to put under the ball joint end of the a-arm after spring is seated. Install the coil spring with the flat ground end going up into the coil spring tower and the pig tail end of the spring facing down and outward and seated in the a-arm spring pocket. The spring will have to be collapsed using a pair of spring compressors or two people using long flat bars to force the spring into the lower pocket. Have the jack under the ball joint ready to partially raise the a-arm when the spring is seated. Extend the shock (with cupped washer & rubber bushing) up through the a-arm then through the tower shock hole. Install the long 7/16 inch bolt through the hole in the rear of the a-arm, then the shock sleeve and tighten. Install the upper rubber, cupped washer, nut and center in hole and tighten nut.



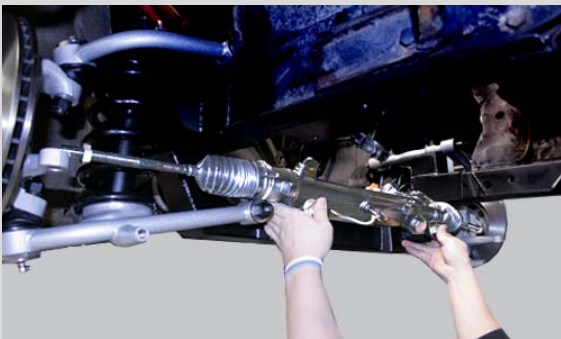
The spindle and disc brake assembly comes completely assembled with the bearings packed and seals installed.

Set the spindle assembly onto the lower ball joint stud with the grease boot on and the steering arm facing forward and the caliper facing rearward. Install the nut, tighten and install cotter pin.

Pull the upper a-arm ball joint stud into the top of the spindle with grease boot on and install nut, tighten and install cotter pin.

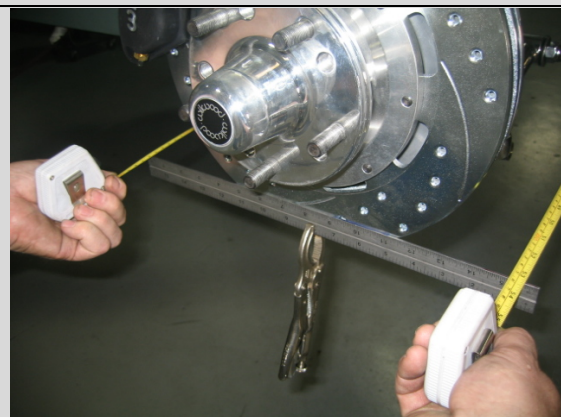


The rack assembly needs to be centered to allow equal steering left to right. On a bench, turn the pinion out to lock one way. Measure from a convenient point to the end of the tie rod. (This rack was $17 \frac{3}{4}$). Turn the pinion to the opposite lock position and measure from the same point to the end of the same tie rod ($11 \frac{3}{4}$). $17 \frac{3}{4}$ minus $11 \frac{3}{4}$ = 6. Divide by 2=3 Add that number to the smallest measurement ($11 \frac{3}{4}$ + 3" = $14 \frac{3}{4}$ ") and turn the pinion back till you get that measurement and your rack is centered.

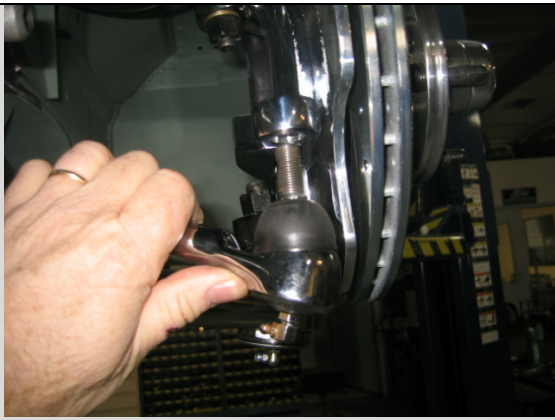


Install the rack and pinion gear assembly using the two 5/8 inch bolts with anti-seize on the threads and tighten.

Note. Some rack and pinion assemblies come with two 5/8 inch thick spacers in the box. They are not to be used on this application. The rack bushings set directly against the brackets on the cross member using no spacers.



Before installing the tie rod ends onto the rack assembly, align rotors straight forward and clamp a straight edge to each rotor as shown then using a tape measure front and rear; set the toe-in approximately 1/8" for a starting point to adjust the tie rods onto the rack assembly evenly to keep the rack centered for equal turning left and right.



Install the tie rod end jam nut and then the tie rod end turning it an equal amount of turns per side until they line up with the steering arm tapered hole. Check the toe-in again, adjust if needed.



Install the sway bar (center drop of bar down) next using the four 3/8" bolts, washers and nylock nuts. The spacer plate goes against the frame bracket first then the saddle bracket next. The brackets are slotted to allow adjustment when aligning the rod end links from the sway bar to the lower a-arm. Cycle the bar up to check for interference with the flange on the edge of the frame, trim frame flange if needed. The rod end links are installed male end down using the 1/2 inch button head bolts. Definitely use anti-seize on the threads because the rod ends see a lot of water.



The finished assembly.

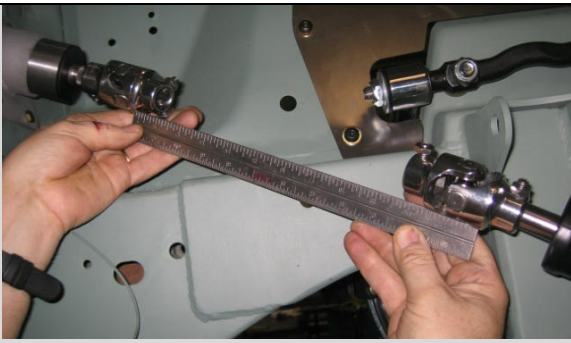
The steering column and linkage will be next.



The stock steering column can be cut and modified to work but I chose an Ididit brushed steel two inch diameter tilt retro fit steering column (TCI # 326-3100-00) and a Borgenson steering linkage package (TCI # 310-3120-03) to connect the rack and pinion to the steering wheel.



The column will need to have a firewall support. Ididit offers several styles of column supports. With the column installed, put the Borgenson universal joints onto the end of the column and the pinion on the rack. The power rack and the column were both 3/4"-36 spline X 3/4" DD.



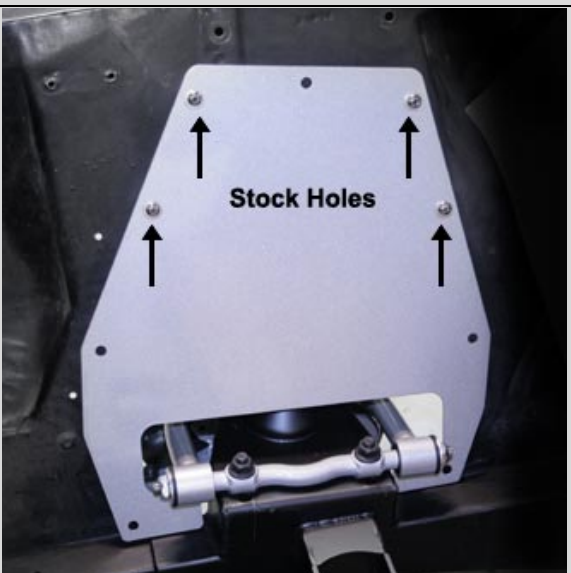
Correctly measure as shown and cut shaft to length. When in doubt cut a little longer and trim to fit. Shaft must never extend past flush with the inside of the yoke this will cause an interference problem and system failure.



The rack will have to be unbolted and slid forward to install the shaft. After the shaft is installed, tighten the set screws on the shaft to leave a mark then remove the shaft and drill shallow indent into shaft so the set screw will seat into the shaft preventing slippage.



Loctite the set screws before tightening and loctite the jam nuts.



The fender splash aprons are installed using the 4 existing holes that the factory bump stop bracket bolted on to. Using a 5/16 inch bit, drill the remaining holes in the inner fender panel and install the 5/16 inch button head bolts, washers and Nylock nuts.

You are ready to re-install the engine, hook up brake lines and related components.

Alignment specifications.

- Castor: Power Rack-----4 degrees
- Manuel Rack-----1 ½ to 2 degrees
- Camber-----0 degrees
- Toe-in-----1/32 to 1/16 inch.