FACTORY FIVE RACING

XTF Stage 1 Assembly Manual

Revision 1A, November 1, 2024

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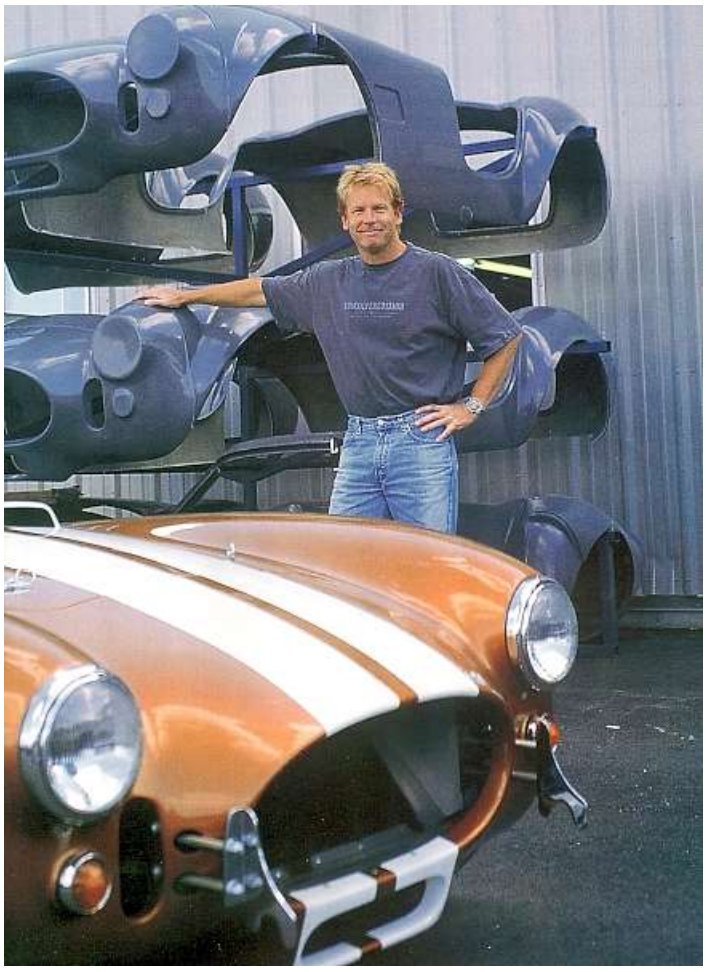
General Information

Foreword



If you are reading this, you are embarking on a mission to build your own vehicle, or at least considering doing so. I wanted to share with you some of my experiences and lessons learned while working with literally thousands of people who have completed this undertaking with us. The lessons learned here are important and will hopefully help with your decisions as well as with the project and the completed car.
First of all, the idea of building your own vehicle is NOT for everyone. It is a serious endeavor that should be undertaken with care and consideration. The desire to build your own custom car goes way back. It is part of our uniquely American car-centric culture, and those who build their own cars are at the very center of this. Since the earliest days of Hot Rodding, literally tens of thousands of people have built their own cars. Even more have done restorations and major customizations to existing cars. As fun as this project is, a person should be candid about their abilities turning a wrench. This is not a place for novices. That is even truer in racing, where danger and risk are part of the very definition of always trying to go faster. The late Carroll Smith wrote something I really loved that speaks to this point.

“There is no magic! The one basic truth of successful race car preparation bears repeating. There is no magic. There is only logic, common sense, forethought, vast amounts of hard work, and a fanatic dedication to the task at hand”.

Carroll Smith
“Prepare to Win”

I can’t think of anything more appropriate to say about the right way to approach the serious work of building your own car. Carroll passed away not too long ago, but his accomplishments behind the Ford Lemans victories and his contributions to the motorsports community continues in his writings that are all at the top of my list of recommended readings for the car builder or racer. After being honest about the skills, responsibility, and dedication required to build a car, I feel the need to talk about the PROCESS of building a car in an equally candid manner.
The process of building a car is a lot like the process of having kids. As a matter of fact, it’s absolutely the best analogy I can find (apologies in advance to all of you without kids, try and

bear with me). Both things are easy to get started. With a car project you order a manual, talk to car guys, get all excited over glossy photos and perhaps order a kit from us. With the whole pregnancy thing, well for most folks that's even easier to get started…

When my wife was pregnant with our first daughter, I was sure we would never have any more children. From the swollen ankles to the morning sickness, to the delivery room scene from the movie "Alien", the whole process was difficult, and while she didn't complain too much thru the nine months, it was obviously hard work. Another thing, she wouldn't have been the best salesman for others considering getting started on the baby thing.

When it comes to the car project, once the kit arrives and the process begins it is much the same as pregnancy. Frankly the degree to which a person breezes through the project or languishes is commonly a factor of skill, but still, building a car for anyone is a tough job and there are inevitably issues. How many times have you gotten the wrong part at NAPA, gotten home to realize the alternator has a six ribbed pulley not five…? You will meet challenges building this car and you will be frustrated at times. Thankfully there are internet discussion forums where you can vent your frustrations and complain about the idiots who designed this kit. We smile when reading these posts because we know that while the pregnant woman complains, the mother loves her children in an unreasonable and perhaps even undeserved way!

All the way through the process, as you build your truck, the seasoned guys at Factory Five in tech support will help you. The larger community of Factory Five customers will also be there for you, as the one thing that really sets us above the crowd of other companies is the size, competence and enthusiasm of our customer community.

When the baby arrives and when your truck is done, there will still be more work. With babies, it's up all night, diapers, and strange maternity contraptions that men don't speak of in the light of day… With the truck there will be other challenges. A wrench dropped from 25 feet away will inexplicably shoot sideways into any freshly painted surface and my favorite was my own engineers who felt the need to test out how long an 8.8" rear diff can run on a track without gear oil (answer, about three laps before deciding to stop moving).

There will be highs and there will be lows, but in the end, there are few parents who don't treasure their children more than life itself, and there are few Factory Five owners whose lives remain unchanged by the experience and the artwork they have crafted.

It's one of the greatest experiences in the world to raise children. It's also one of the most rewarding things I know to build your own car. Even today at car shows, open houses, and events wherever Factory Five cars are found, I smile to hear the inevitable first words every guy says to me… "Let me show you what I've done".

The vehicles that we build are more than cars and trucks. They are a reflection of us. The badge of honor that comes with having built your own car is a special one indeed. You will join a community of others who have earned their own… and THAT is the story of Factory Five Racing and that is what awaits you in this process.

David Smith
President

Warning!

Assembly of a Factory Five vehicle kit should ONLY be performed by persons experienced, trained, and familiar with custom vehicle work including, but not limited to, brakes, wheels/tires, engines/running gear, steering systems, suspension systems, automotive restoration, competitive driving, and all aspects of custom vehicle work. Failure to safely assemble a Factory Five Racing vehicle parts kit can result in serious injury or death.

Advice of Factory Five Technical Support does not guarantee proper installation. YOU, or the person who does the assembly must be qualified to do this. It is not possible for Factory Five to foresee or understand all potential issues that may arise during your build while we offer advice and assistance over the phone, via email, or even in person.

Do not assume anything. Like all vehicle work, improperly assembled vehicle parts can cause serious injury or death.

Purchaser expressly ASSUMES THE RISK of all personal, property, and economic injury, damage, or loss, either direct or indirect, arising from the use, misuse, or failure to determine the appropriate use of any Factory Five product.

Factory Five vehicles are part of a category of vehicles that include custom builds such as hot rods, Cobra replicas, and other high-performance vehicles. They are capable of extreme performance and should be operated safely, and only by skilled drivers. Do not loan your Factory Five to a friend!

Building your own vehicle and racing are dangerous endeavors, and the buyer expressly assumes the risk of all personal, property, or economic injury resulting from the use of said products.

Safety Tips

Read the manual. It is at least a good guide and place to start.

Don't take shortcuts.

Before starting work, make sure you have the proper tools, the required parts, and sufficient space for the job. If you damage any parts it will probably be because they were either not stored properly or the wrong tool was used to install them.

Don't work when you're too tired or upset. The truck you will be building is a highly capable machine, and your life depends on the quality of your workmanship.

Never work under a raised truck unless it is well supported by stands intended for that purpose. Never work under a truck supported by a jack.

Always observe good safety practices such as the use of eye protection, protective clothing, and gloves.

Keep the battery disconnected whenever you work on fuel or electrical systems and always keep a fire extinguisher handy.

Don't allow children in the work area.
Partially assembled vehicles attract a crowd. Keep garage doors closed or mark off work areas.

Make sure that all electrical equipment is grounded. If working alone, have someone check on you periodically.

When using an engine hoist, make sure that the working load rating is correct for the weight.
Work in a well-ventilated and well-lighted area.
Use portable safety lights for under-carriage work. Never use an exposed bulb type light.
Be mindful of the environment. Avoid spills of solvents or engine fluids. If a spill occurs, clean up immediately and dispose of it in hazardous waste containers.

Never let a friend or someone else drive your truck.
Clean your build area after each assembly is completed. This will speed your build process as it ensures that you know where your tools are and prevents tripping injuries.

It is impossible to anticipate all of the possible hazards. Care and Common Sense will prevent most accidents.

How to use This Book

This Assembly manual is intended to help you build your Factory Five Kit. This book will not explain such things as engine or transmission building. A secondary purpose of this book is to use it as reference for owners that want to do maintenance work on their truck or for those that purchase a finished build, to understand their truck better.

This manual was written with the average weekend mechanic in mind. It is best to follow the manual step by step but **if there is a part missing from the kit move to the next section and come back to it later when the part is available**. If the instructions are followed then the resulting truck should be a great performing truck.

ICON KEY	
	Valuable information
	Tools needed

We have included an Icon key as the beginning of each section that contains useful information for each assembly that details the tools needed for that assembly, what assembly in the kit parts are packaged in that are needed for that step and any useful information or warnings.

What You Get

The Factory Five Stage 1 kit gives you everything you need to build your truck in one big package. We include the suspension components, body panels, and all trim down to the smallest details like fasteners, brackets, and weatherstripping.

Body panels: Hand laid ⅛" laminate composite body panels made with vinyl ester resin OR optional carbon fiber body panels
Front Suspension: Jig-welded tubular upper and lower control arms, high performance shock absorbers, tie rod extensions
Rear Suspension: Long travel leaf springs, high performance shock absorbers.
Fuel System: Pre-formed Fuel fill tubes, vent lines, and supporting bracketry
Brake System: Front brake hoses
Drivetrain: Front CV Axles.

What you Need

- 2015-2020 Ford F150 truck, 5.5' bed with 3.5L Ecoboost or 5.0L Coyote Engine.
- Good looking wheels with the correct offset with tires to match the desired look.

Optional Parts

Factory Five will make new options available. Check www.Factoryfiveparts.com for the latest parts.Part instructions for all Factory Five parts and options can be found online at:

www.factoryfiveparts.com/instructions/

Tool List

The following lists detail the tools and supplies that are needed to build your kit. The “helpful” items are not crucial to the assembly but make life easier. Home Depot HUSKY®, Lowes CRAFTSMAN®, Tekton, and Snap-On® tools are all guaranteed for life and we have found them to be more reliable over discount tools.

_____ Storage shelves for kit and running gear parts
_____ Body storage area (can be outside)
_____ SAE and metric socket set + 1⅛” socket
_____ Deep sockets for some common sizes are helpful.
_____ Torx star drive bit sockets
_____ SAE Combination wrench set (3/8”– 15/16”)
_____ Metric combination wrench set (10mm – 18mm)
_____ Full set of standard and Phillips head screwdrivers
_____ Standard Hex key set
_____ Long nose pliers, 4.5”
_____ Snap ring pliers
_____ Pop rivet tool with 1/8” and 3/16” heads
_____ Drill
_____ Drill bits (⅛”, 3/16”, 7/32”, ¼”, 5/16”, ⅝”)
_____ Driver bit set
_____ Caulk gun
_____ 24 oz. Plastic Dead Blow hammer
_____ Razor knife
_____ Bench top vise
_____ Tape measure or straight edge ruler/T-square
_____ Hydraulic floor jack
_____ Work Bench or 2 Saw horses with 4’x 8’ ⅜
_____ Trim removal tool
_____ 4 Jack 6000lb truck stands
_____ Sawzall (metal blade)
_____ 5/16” Fuel/brake line bender (hand held)
_____ Torque wrench (Click style, ⅜” drive)
_____ Eye protection
_____ Gloves
_____ The thing between your ears

Required Supplies

_____ Fluids - See Appendix
_____ Blue Lok-tite
_____ Chassis grease - Valvoline® Moly Fortified Multi-Purpose Grease - VV633
_____ Silicone Door and window sealant, GE Silicone II or equivalent - 1 tube
_____ Black RTV sealant
_____ Black permanent marker with pointed tip.
_____ Masking Tape

Rear bumper removal

The rear bumper is large and bulky so we recommend having a friend help.

Remove all electrical plugs and the 3 bolts on each side holding the rear bumper to the frame. Keep the nuts to reattach the new bumper once assembled.

Remove all the bolts, these will be reused.

Remove all the parking sensors, these will be reused.

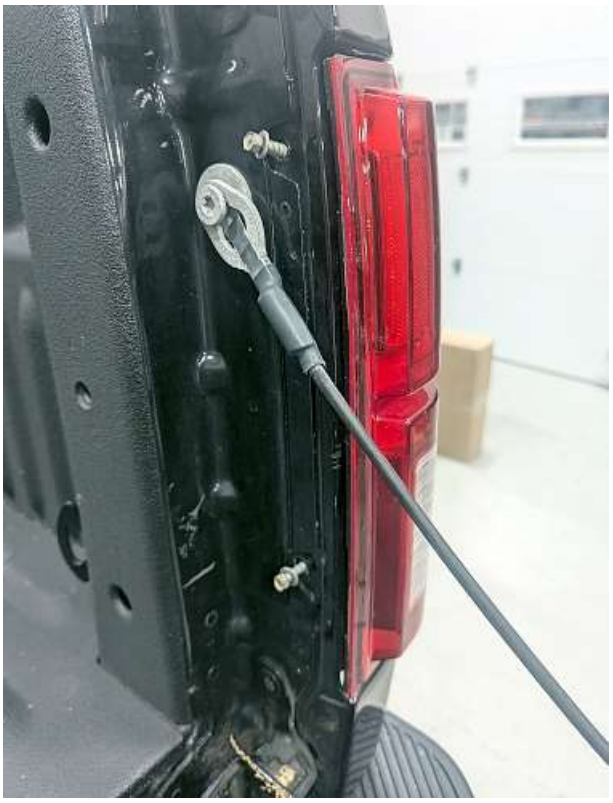
Carefully separate the plastic top from the metal sides, it will get reused.

Rear Fender removal

- Keep all fasteners taken off the truck “Just in Case.”

Remove the fuel filler door from the bed and save for later.

Taillights



Remove factory hardware holding the tail light into the bed.

Pull the tail light towards the rear of the vehicle, freeing up the pins from the plastic/rubber mounts in the Fender.

Remove the tail light from the vehicle and set aside.

Bedside covers

Using a trim removal tool or small pry bar, pop the plastic caps off the top of the bed.

Work your way towards the front. These do not get reused, so unless you are planning to sell them, it is okay if the clips break.

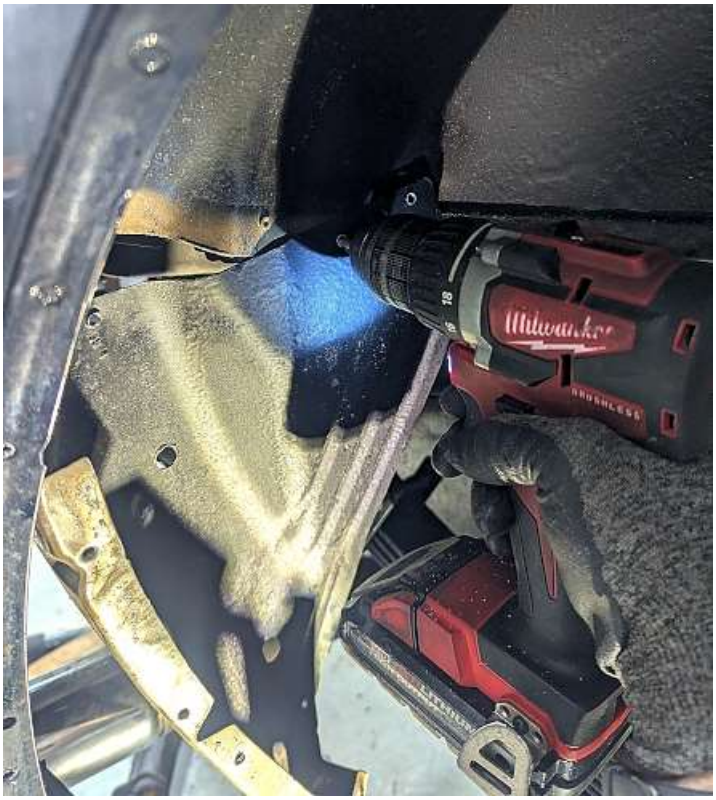
Bedside prep

🛠 Trim removal tool, 10mm wrench, Drill, drill bits, Sawzall, masking tape, grinder.

Remove the plastic clips holding the plastic wheel well from the fender flares using a flathead screwdriver or trim removal tool.

Remove all fasteners from the inner wheel well.

Drill out the spot welds along the fender flare lip.



Drill out the spot welds and rivets from the inner wheel well that hold the outer bedside panel to the inside wheel well. These spot welds hold 3 panels together, the inner bed wall, the inner wheel well/bed wall, and the outer bedside panel. The spot weld only needs drilling out between the bedside panel and inner wheel well, so the drill does not have to go the whole way through.

Overlay the bed side body panel (Optional Carbon Fiber shown) on top of the OEM bedside to get an idea of how much you need to remove.

Tape off the bedside along the line you need to cut.

Above shows what needs to be removed, the large piece with the 4x4 graphic, and the small piece you taped off in the previous step. **You MUST leave the taillight structure intact**, as well as a little bit of bedside panel at the front of the bed.

More material can be removed from the top tape line, if desired.

Depending on how you cut your bedside, the body panel below the taillight may be separated from the one beneath it. Drill a hole and add a rivet to prevent rattles.

Repeat on the driver side, first removing the fuel fill bolt and fuel fill lines.

Rear Fender Install

- The fiberglass panels will need some sanding and trimming to fit.
- The Carbon fiber panels are thinner and may require washers/spacers to move the panel out to align the panels correctly.
- The Carbon Fiber rear fenders come with spacers to go under the top of the Fender to lift the panel and match the body lines.
- Cookie tool or sander, Rivet gun, Drill, $^{3}/_{16}$" drill bit
- Box 6 Rear Fender mount hardware

Test fit the bed side on truck. Check to see how it fits at the front of the bed.

Use a grinding wheel to remove material from the top and bottom of the tail light surround. Test fit the new panel and close the tailgate. Remove material until you are satisfied with the tailgate gap and how the panel aligns with the inside bed wall.

Taillights

With the panel held up in place, use the existing bolt holes for the taillights in the tailgate opening to drill the bedside panel where the screw bosses are on the tail light. You can also put a dab of anti-seize or similar on the light bosses, push the tail light into place, then remove. The anti-seize will contact the panel, marking the spot that needs to be drilled.

If necessary, these holes can be enlarged using a die grinder or a larger drill bit.

Push the pins on the back of the tail light into the holes in the panel. These are pre-drilled on the carbon panels, but for fiberglass panels you will need to mark and drill a $^{3}/_{16}$" hole. You can use the anti-seize trick again to mark the hole locations.

Bed side trimming

The new bedside panel will need to be trimmed slightly to allow the top of the tailgate to close.

Use a cookie or similar tool to trim the panel and allow the tailgate to close. Do a little at a time and repeatedly test to avoid over-trimming.

Uniform gap along the tailgate.

Bed side mounts

🚘 Box 6

In front of the wheel drill a $^{3}/_{16}$” hole and rivet the new bedside panel to the old aluminum panel.

New Factory Five panel riveted to the OEM panel.

Push bulb seal onto the splash panel edges that will be against the inside of the body panels. Driver's side shown.

Position the rear splash guard behind the wheel next to the stake pocket. Drill the using a 3/16" drill bit then rivet with 3/16" rivets.

Position the rear fender mount behind the wheel next to the splash guard and the bottom of the new fender.

Drill through the splash guard and stake pocket using a 3/16" drill bit then rivet with 3/16" rivets.

Overlay the two 90-degree tabs and drill the aluminum panel using a $^{3}/_{16}$" drill bit to use the same hole as the stainless bracket. Rivet to the bedside body panel with $^{3}/_{16}$" rivets.

Attach the top of the panel to the top of the bed by drilling $^{3}/_{16}$” holes and riveting with the large head rivets. We used a 4” rivet spacing. Not all of these rivets will hit the aluminum bed structure, that is okay.

Fuel System

Fuel filler tube

🛠 Ratchet, sockets, Sawzall

Remove the single bolt holding the fuel filler pipe so it can move freely and detach from the filler door.

In the Driver side wheel well, locate the fuel fill hose and vent tube.

Disconnect the vent tube from the fuel tank.
Undo the hose clamp holding the fuel filler tube and pull it out of the hose.

The fuel fill we took off in the previous steps needs cut. Cut the fill tube at the sharpie line above, right below the welded tab for the OEM vent line.

On the other end, cut the fill tube after the bend, about 2 inches after it necks down to a 1” diameter.

The trimmed OEM filler neck with the rubber line attached to the 2” stub you made in the previous step.

Fuel Filler Door

🛠 Countersink, drill, $^{3}/_{32}$” drill bit, Phillips head screwdriver.
🚘 F150 Fuel filler door, Box 5 Fuel System.

Test fit the cap in the opening, it slides in hinge side first and is easier to get into place if it is slightly opened.

The cap should sit flush in the opening, if it is being held up at any point remove the minimum amount of material to get the door in place.

With the cap held in place, drill a 3/32” hole above the flat pad under the seal and through the flange and the fender.

Repeat drilling the holes on the bottom side of the flat pad.

Countersink the holes in the flange to allow the cap to still shut flush.

Screw the cap in place into the fender with the #8 oval head screws.

Push the filler neck through the fuel filler cap opening.

Filler neck in the filler cap.

Locate the Fuel filler ring.

Push the filler neck out then install the ring behind the yellow filler end by starting on one side and working around the ring with your finger.

The ring should pop into place behind the yellow filler and will be a slightly loose fit but will prevent the filler neck from pushing through the rubber filler cover opening.

Fuel vent tube assembly

- Box 5 Fuel system

🛠 Razor knife, ratchet, sockets

For the fuel fill vent line connecting to the fuel tank, remove the OEM connector from the nylon tube by carefully cutting the nylon with a razor knife. Do not cut deep or the barbs will get cut.

Using the provided rubber fuel line and hose clamps, push the rubber line over the OEM connector and tighten the clamp. On the other end, push the rubber line over the Factory Five barb fitting and tighten the clamp.

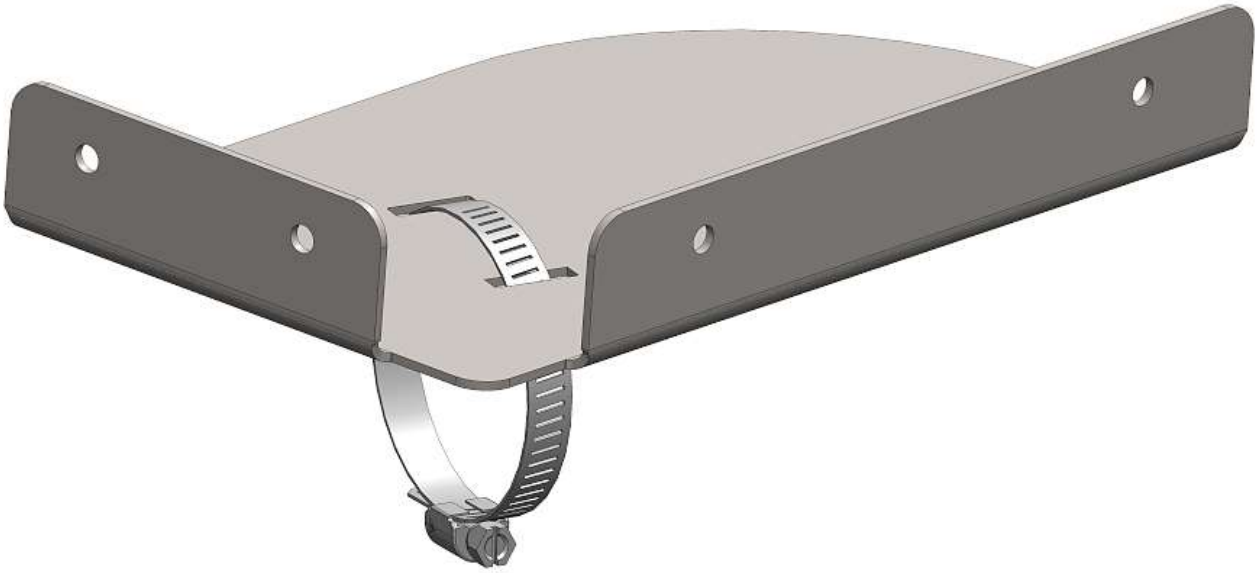
Thread the barb fitting on to the provided $^{5}/_{16}$" hardline and tighten.

Reattach the shortened OEM fill tube to the rubber line going to the gas tank and tighten the hose clamp. A little bit of WD-40 on the inside of the rubber line can help to get the rubber over the flare on the metal tube.

Attach the rubber line to the pre-formed 1" line Factory Five provides and tighten both clamps.

Fuel line mounts

🛠 Marker, Drill, 3/16” drill bit, ratchet sockets, Rivet gun.



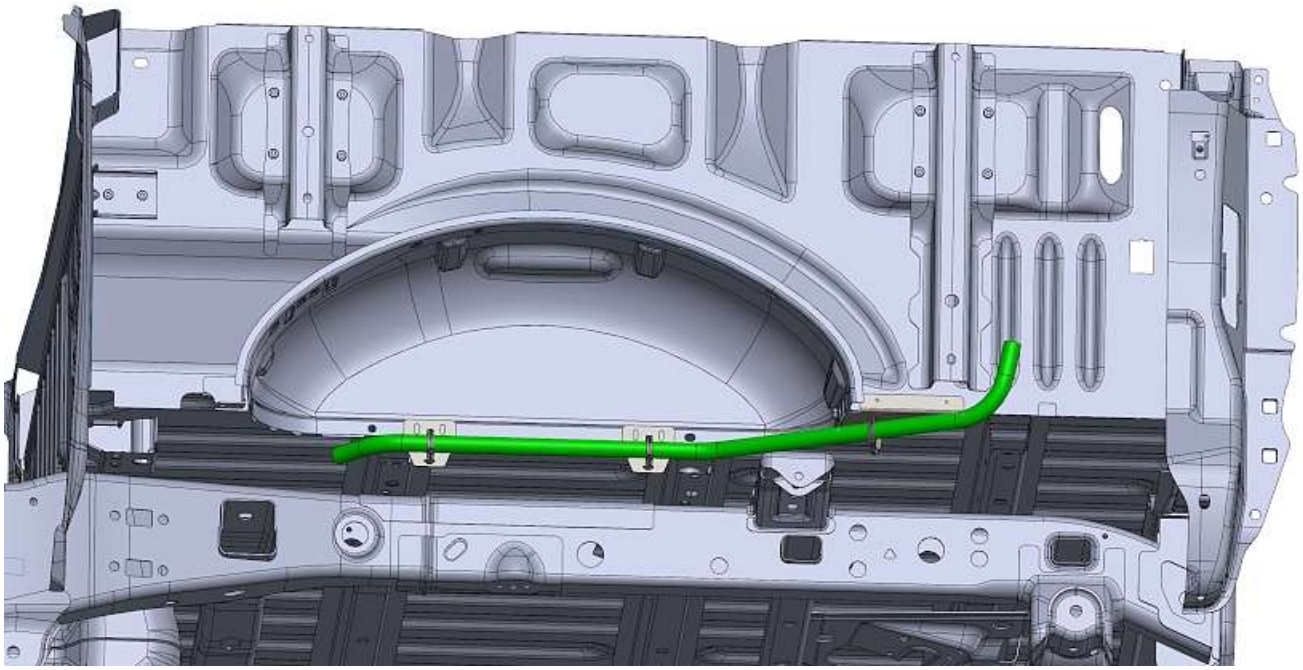
Run a hose clamp through the slots as shown leaving the end out of the worm gear.

Hold the stainless-steel mount up to the rear of the wheel well and mark the 1st hole to drill.

Drill a 3/16” hole.

Rivet the panel to the bed structure, then drill and rivet the other 2 holes.

Fuel filler tube



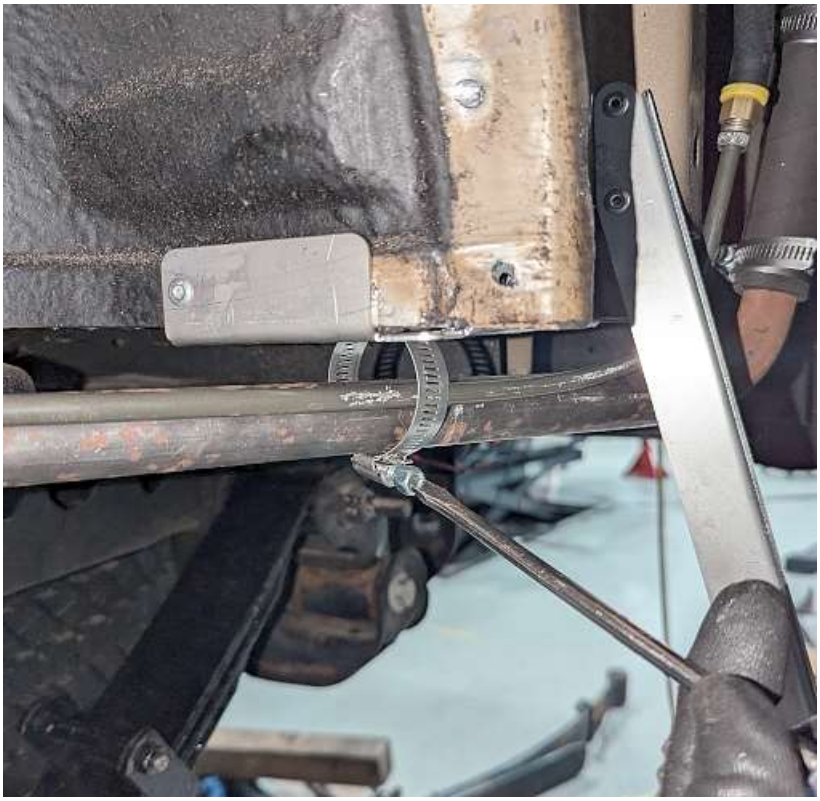
Push the rubber tube, with hose clamp on, on the 1” tank fill tube and route the 1” tube as shown through the corner line mount and use it to locate the line mounts.

Attach the fuel filler hardline to the filler neck and tighten the clamps.

Run a hose clamp through the slots in the other line mounts as shown leaving the end out of the worm gear.

Drill holes for ¼” button head bolts and bolt the fuel line mount to the bottom bed flange. Loosely attach the fill tube.

Repeat for the second mount.



Tighten the hose clamp on the corner mount.

Using the provided fuel fill line as a template, manually bend the vent tube hardline to match the 1” fill tube. Be careful to not kink the hardline. Run the line to the fuel tank and reconnect the OEM connector.

Attach the fuel vent hardline to the filler neck and tighten the clamps.

Exhaust

Loosen the exhaust clamp on the OEM exhaust tip.

Extend the exhaust tip out so that it matches the wider fenders. If a different angle is desired, you can cut the exhaust tube before the last bend and rotate it to the desired position, then use a band clamp to attach the exhaust.

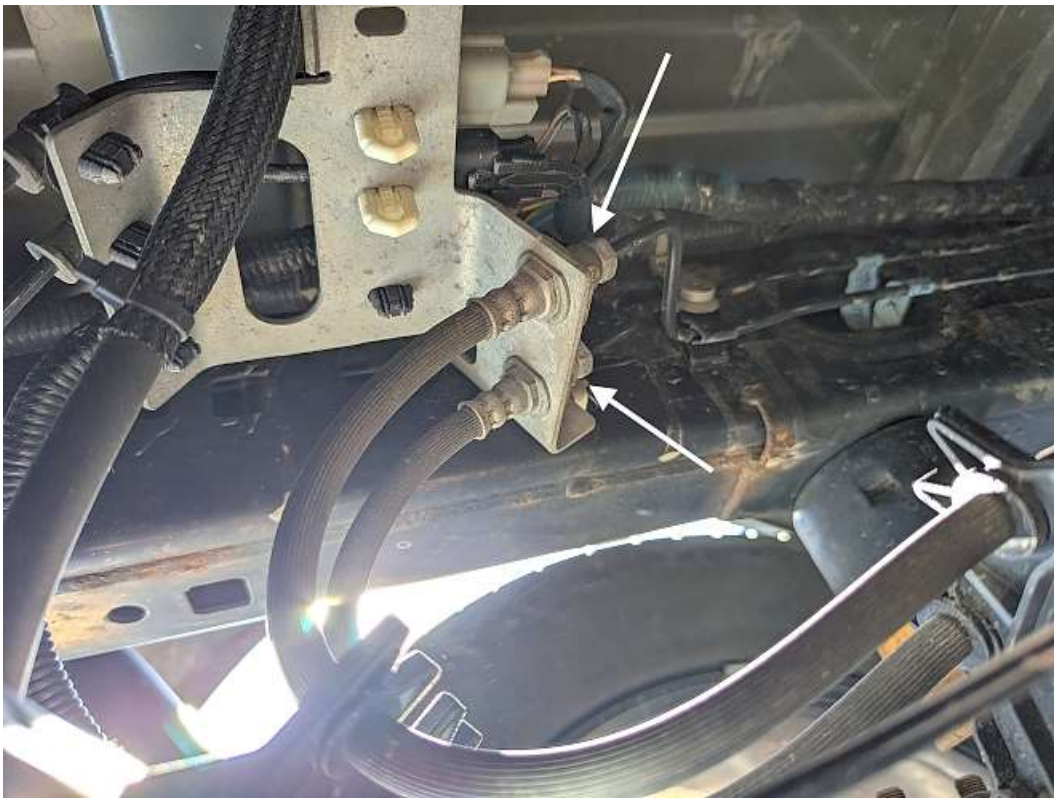
Rear Suspension

- The Stage 1 kit comes with leaf springs that both lift the truck AND provide more travel than the stock leaf springs.
- The new leaf springs also have a spring rate more suited for high-speed off-roading. Performance shock absorbers help properly dampen the spring for proper body control.

Remove the wheels and place the frame on jack stands. It needs to be high enough so that the tires are off the ground while the leaf springs are in full droop.

Rear brake lines

Remove the flexible brake lines from the axle by undoing the hardline nut and removing the clip holding it to the bracket with a flathead screwdriver.



Remove the flexible brake lines from the frame by undoing the hardline nut and removing the clip holding it to the bracket with a flathead screwdriver.

Rear shock Removal

Unbolt the rear shock from the frame.

Unbolt the rear shock from the axle.

Rear Leaf Spring removal

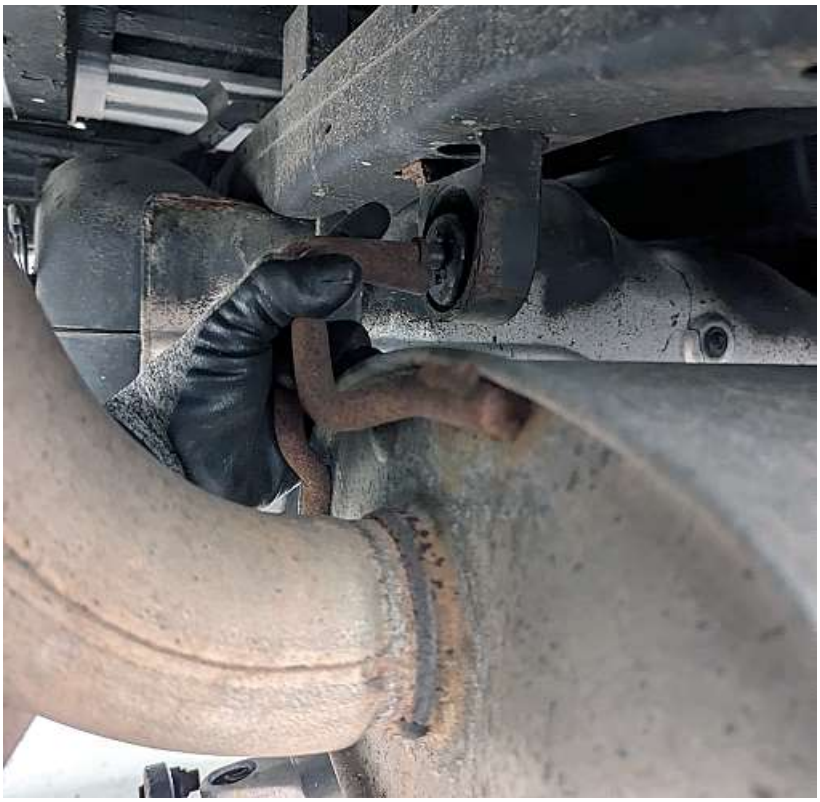
Make sure the axle is supported by a jack or jack stand because the axle will drop to the ground after the nuts are removed.

Unbolt the 4 nuts from the square U-bolts holding the axle to the leaf spring.

Remove the shackle-to-frame bolt. The shackle-to-leaf spring bolt can be removed once the spring is off the truck.

- Remove the passenger side leaf spring first.
- The exhaust needs to be moved out of the way to remove the front leaf spring bolt.

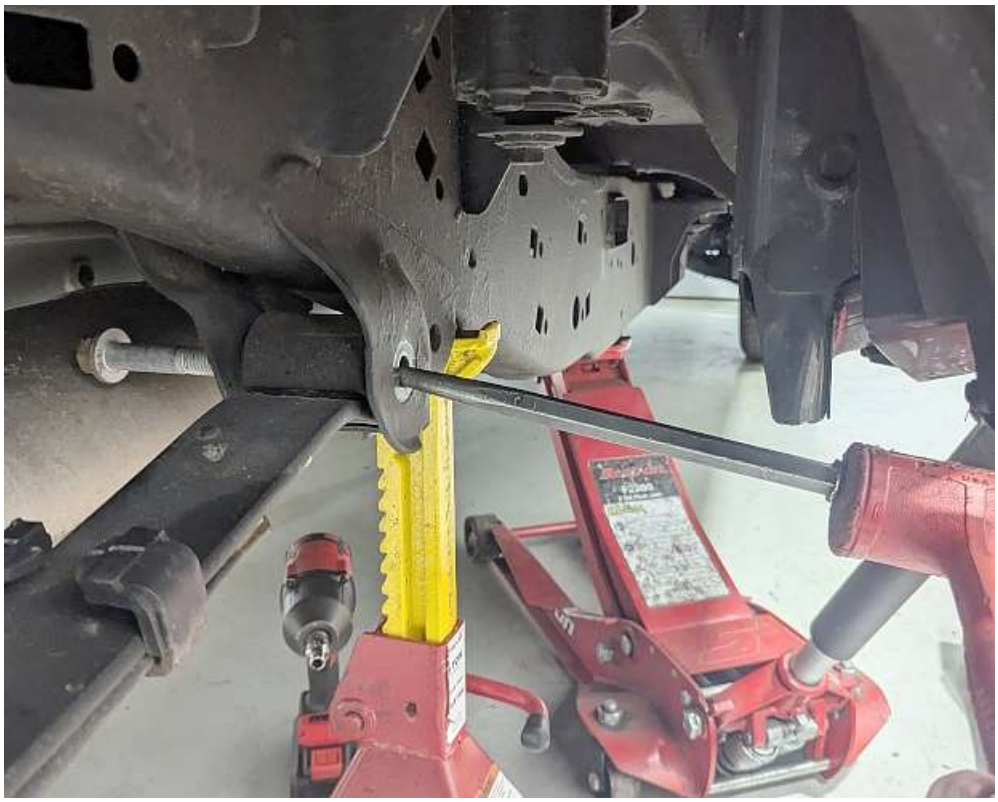
Remove the exhaust hanger bolts. There are 3 hangers that need to be removed.



Remove the second exhaust hanger bolt.

Remove the third hanger bolt, and move the exhaust to the side. Make sure the weight is supported with a jack or strap so it is not entirely hanging from the front exhaust bolts.

Crack the front leaf spring bolt loose with a breaker bar.



With the exhaust out of the way, remove the front bolt. A mallet and dowel pin can help if it is stubborn.

On the driver side, the front leaf spring bolt will need to be cut to remove the spring because it hits the gas tank if you try to pull it out.

Remove the OEM lift block from the OEM leaf springs.

Leaf Spring Installation

Box 2

The OEM lift block can be used below the new leaf springs to give your truck additional lift in the back.

- We recommend you **do not** use the block unless you wish for your truck to have rake (for towing or heavy bed loads).

Install the bushings and sleeve into the new leaf springs.

Add Loctite to the bolts.

The OEM rear leaf spring bolt and the shackle bolt are reused.

Place the spring on top of the axle and bolt the spring to the frame. (we recommend you run the provided front bolt from the outside in).

Attach the U-bolts holding the axle to the spring. A ratchet strap going from the axle to the frame can help align the leaf spring bolt nubs to the holes in the spring pad on the axle.

Rear shock installation

- OEM shock hardware, Box 4

Bolt the shock body end to the frame.

Attach the new shock to the axle.

Repeat the process on the other side.

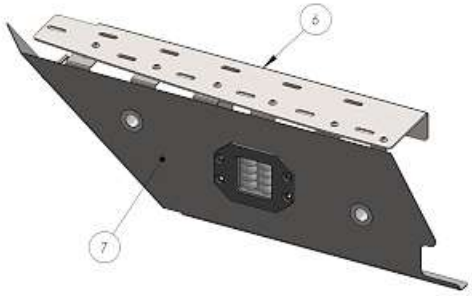
Rear Bumper

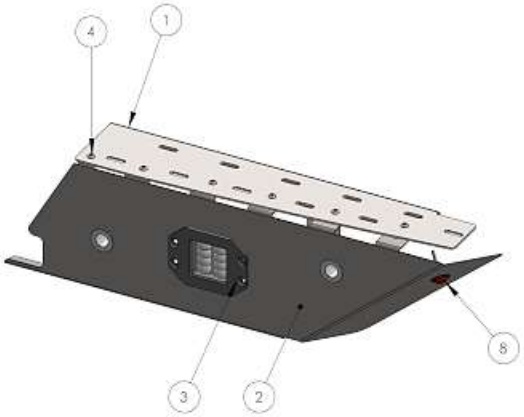
Box 34

Ratchet, sockets, $^{5}/_{32}$" hex key, saw.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	70805	70805 - RIGHT REAR BUMPER TOP	1
2	70806	70808 - RIGHT REAR BUMPER FRONT	1
3	70263	REVERSE LIGHT	2
4	34364	1/4"-20 x 3/4" BLACK BUTTON HEAD BOLT	12
5	10802	1/4" NYLON INSERT LOCKNUT	12
6	70803	70804 - LEFT REAR BUMPER TOP	1
7	70806	70807 - LEFT REAR BUMPER FRONT	1
8	70202	RED MARKER LIGHT	2
9	70393	BACK-UP SENSOR MOUNT	2

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	10/3/24	





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XTF STAGE 1

USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
TWO PLACE DECIMAL ±0.01
THREE PLACE DECIMAL ±0.005
FOUR PLACE DECIMAL ±0.001

MATERIAL

FINISH

	NAME	DATE
DRAWN		

COMMENTS:

PRINTED 10/4/2024

Factory Five Racing, Inc.

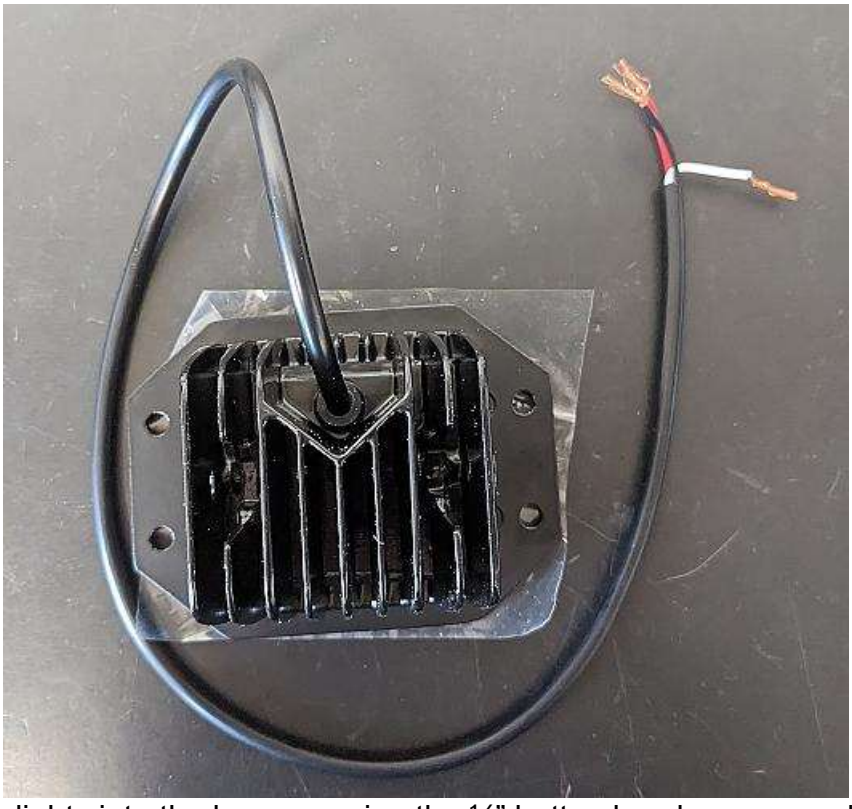
TITLE: REAR BUMPER PARTS

SIZE	DWG. NO.	REV
A	70802	A

SCALE: 1:7 | WEIGHT: | SHEET 1 OF 1

Assemble the rear bumper parts. The front piece gets curved along the top piece, tightening each bolt starting from the inside as you work your way to the outside bolt. Use the ¼" black button head screws, locknuts and 5/32" hex key.

Push the ¾" red lights into the bumper.

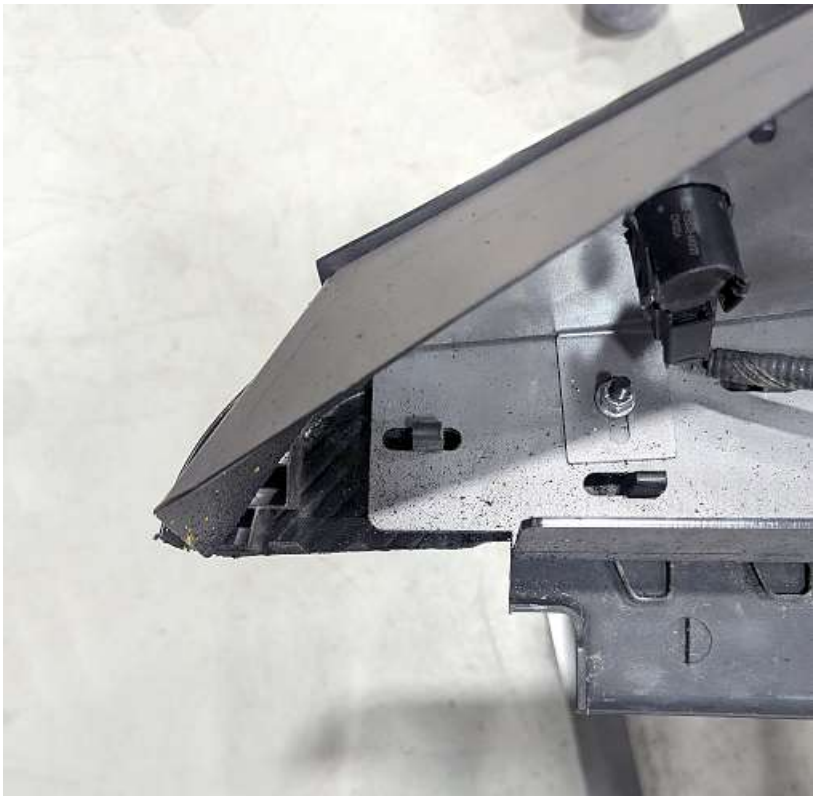


Install the reverse lights into the bumper using the ¼" button head screws and locknuts.

Install the OEM license plate lights
Install the included back-up sensor mounts into the bumper.
If the F-150 was equipped, install the OEM back-up sensors into the sensor mounts. If not equipped with back-up sensors, install the included hole plugs into the sensor mounts.

Attach the plastic top to the assembled bumper, making sure the plastic clips are fully pushed through the top plate. Use OEM bolts to attach to the bumper structure.

Using the top plate as a guide, trim the plastic top to clear the rear bedside panel.

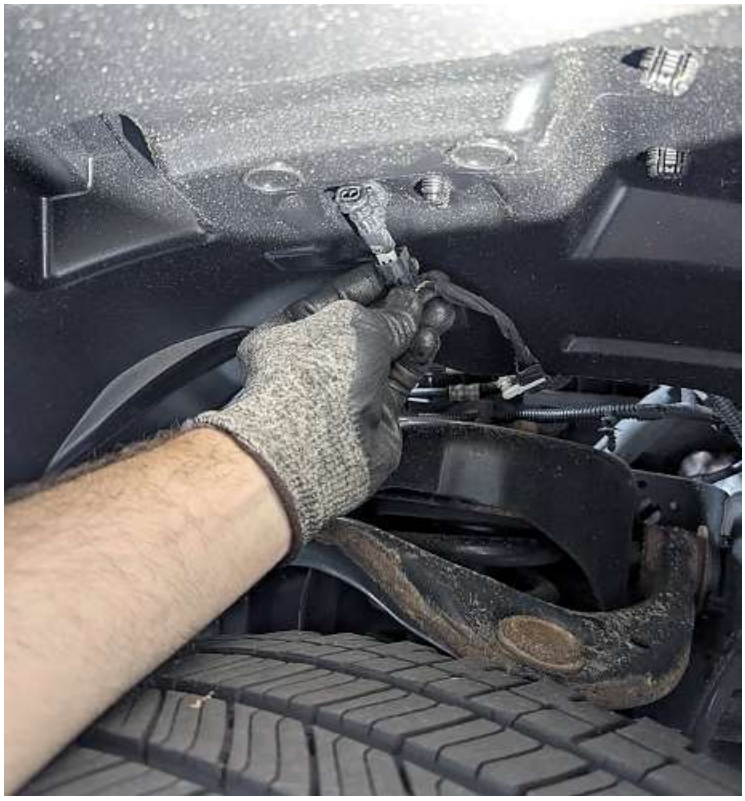


Trim the plastic top. If you prefer, you can trim it curved so it follows the body line and wraps around the bedside panel. Reattach the bumper to the frame with the nuts removed in the previous steps.

Front Body Disassembly

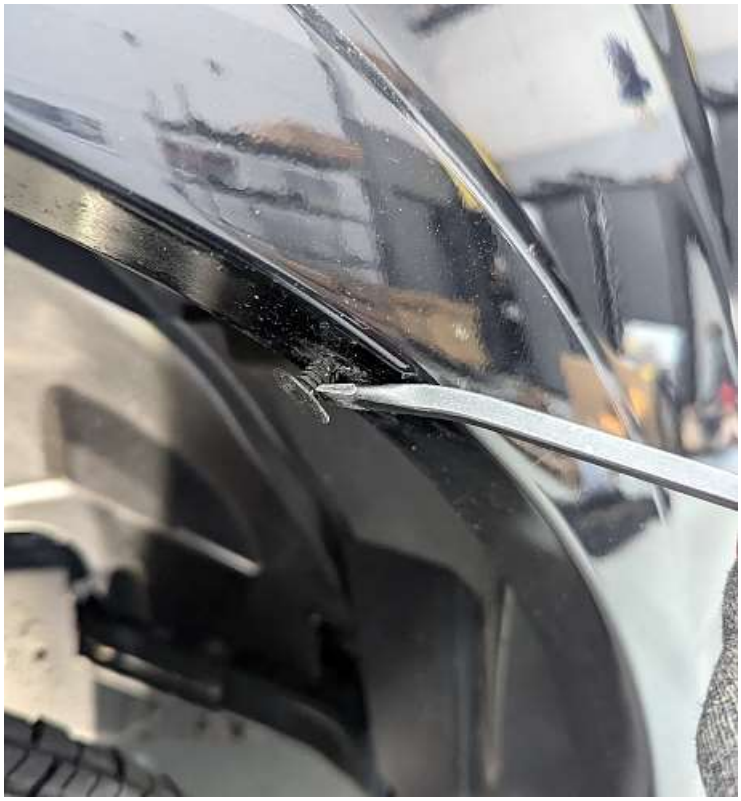
Front Fender

- Video - [2015-2020 Ford F150 Fender Removal with Fender Flare | ReveMoto]



Unplug and remove the sensor on the wheel well in the driver's side.

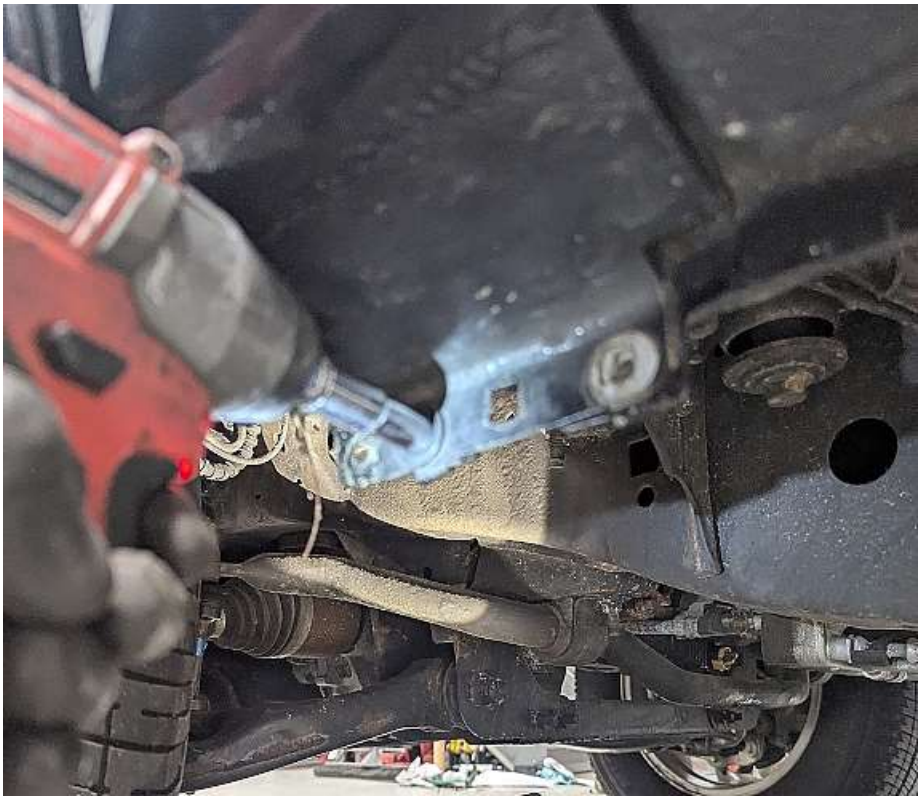
Pull the plug tabs out of the wheel well liner inside the engine bay.



Remove the body clips from the fender flare.

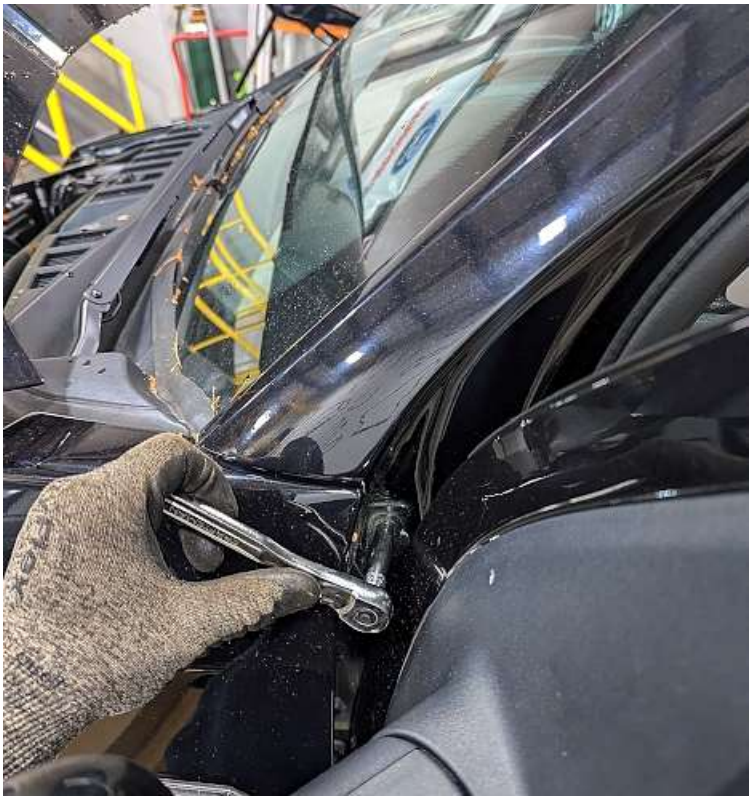
Remove the bolts from the fender inside the wheel well.

Remove the bolts from the front and rear of the wheel well.

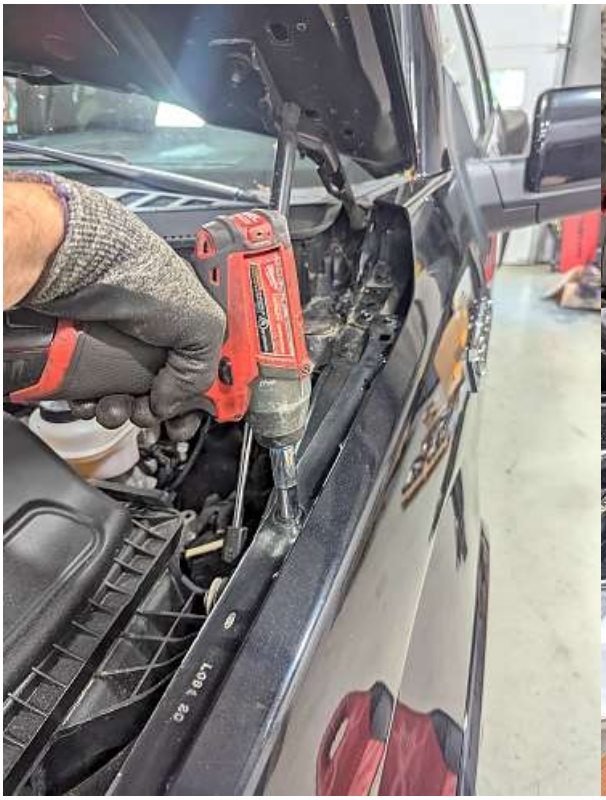
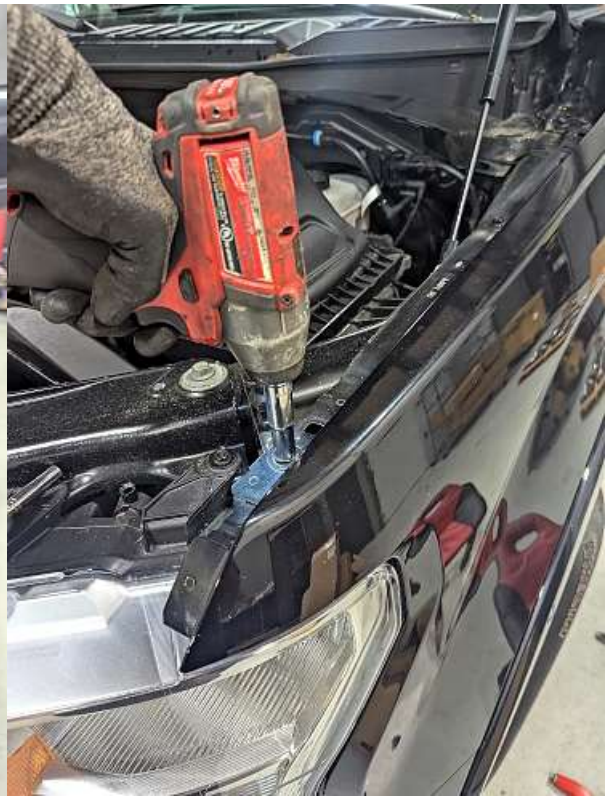


Remove the two bolts from the bottom of the front fender and keep.

Remove the liner from the wheel well. Be careful of any wires or plugs that may still be attached to the liner.



Front the bolts from inside the door opening near the mirror, and from the top inside of the engine bay.

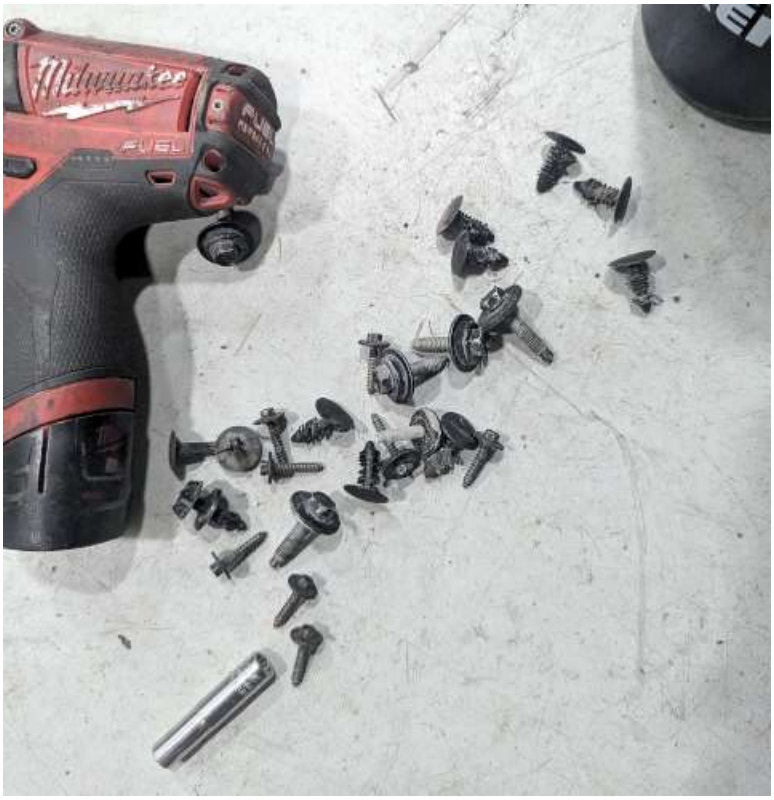
Remove the 2 more bolts from the top of the fender inside the engine bay.

Remove the bolt underneath the cowl near the corner of the windshield.

The foam inside the fender is glued to the fender. Using a knife can help separate it from the fender. Any plastic clips can be squeezed and removed with long pliers.

Remove the bolt from inside the fender, the foam is circled around the hole so a deep socket helps here.

The fender should now be free and able to be pulled away from the vehicle. The foam can be a pain, go slow, and use a knife or pry bar to help separate the fender.



Keep all the hardware and clips you removed “just in case.”

The passenger side fender is the same removal process, with the addition of the antenna. Unthread the antenna from its post and unbolt the bracket underneath.

Front Grill

- Removing the grill is detailed below. The links below are helpful videos.

[How to Remove a 2018-2020 F-150 Factory Grille]
[How to Remove the Factory Front Bumper on a 2015 Ford F-150]
[2018-2020 F150 Grille & Headlight Removal (FAST AND EASY!)]
[How to Remove & Replace 2018-2020 F-150 Factory Halogen Headlights]

- The front bumper is heavy, have a friend hold the bumper when undoing the final bolts.

Remove all the plastic clips and any bolts from the top of the grill.

Unbolt the headlights from the front frame horns. There are 2 bolts up top (pictured above), and a bolt on the bottom corners of the grille.

Unplug the shutter motor. This needs to be freed from the OEM grille and saved, see below.

Unbolt the front bumper plastic retaining clip.

You may need to unbolt the retaining clip (in previous pic) bracket to aid in the bumper removal.

Remove the plastic covers from the front bumper. In this you can also see 1 of 2 bolts underneath the headlight that needs to be removed from each side.

Unbolt the bolts holding the front bumper to the frame. 3 each side, 2 facing out and 1 facing in.

Unplug the front fog lights.

Remove the nuts from the back of the front bumper and the bumper should now come free from the vehicle.

Remove the bumper from the vehicle. This is large and bulky so having a friend help is a good idea.

Front Suspension Disassembly

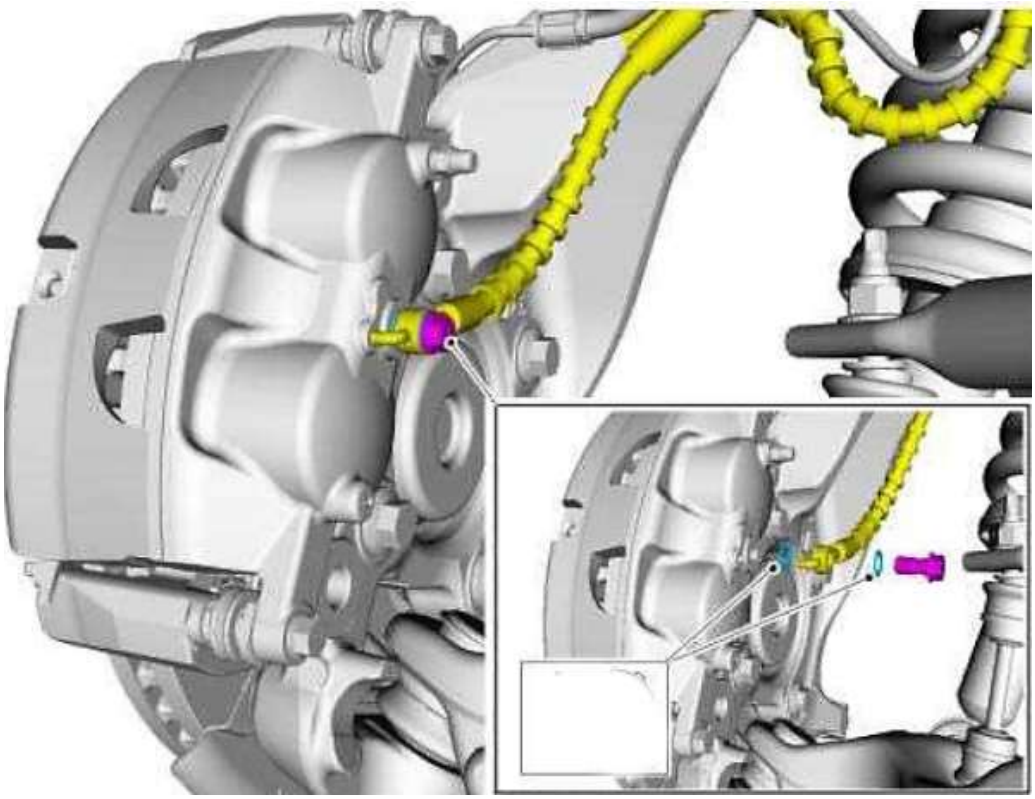
The following guide shows you how to remove the stock suspension and install the Factory Five suspension components.

- Now is a good time to replace any worn-out components such as brake pads, rotors, sway bar end links, etc.
- Below is a helpful brake replacement video. Remember to keep all OEM hardware, a lot of it is reused.

Video - 2015-2020 F150 Powerstop Z36 Complete Brake Kit Install (0:00-2:37)

Front Brake Caliper

- The caliper and hardline will leak during this process, so make sure to bleed the brakes before driving the truck.



Remove the OEM front brake hose from the caliper.

Remove the OEM rubber brake line clip and hose from the frame mount.

Front suspension

Remove the axle nut cap with a flathead.

Remove the axle nut.

Remove the vacuum line from the hub.

Remove the 3 bolts holding the hub to the knuckle.

Remove the tie rod end nut and separate from the knuckle. If you use a mallet, be careful to not damage the threads.

Remove the upper and lower ball joint nuts.

Separate the knuckle from the ball joints and the CV axle. A pickle fork helps to separate the lower ball joint and knuckle.

Make sure the speed sensor is removed from the hub before you remove the knuckle from the truck.

Remove the lower shock nuts from the lower control arm.

Remove the upper nut from the sway bar end link. Use a box wrench on the nut and a socket or box wrench on the shaft to stop from spinning. These are very prone to stripping and spinning, see below.

If the shaft is stripped or spinning, cut the stud with a cutoff wheel and order new end links. We recommend doing this regardless, as new links are inexpensive.

Use a pry bar to push the control arm down and shock up to separate the two. Be careful, when the shock studs clear the holes, it will pop out. Keep the top of the shock bolted to the frame to prevent it from springing out of the truck.

Remove the top shock hardware and remove the strut from the vehicle.

With the strut tower now empty, remove the upper control arm bolts and remove the control arm.

Remove the lower control arm bolts and remove the control arm.

Remove the CV shaft from the front differential by pulling straight out, and using a pry bar against the diff to pop it out.

Remove the tie rod links from the tie rod, using heat helps a lot on rusty parts.

Front Tire Bar removal

- There are small metal bars in both the front and rear of the wheel well that need to be removed to allow the 37” tire to clear.

Loosen the 2 bolts holding the front bar on.

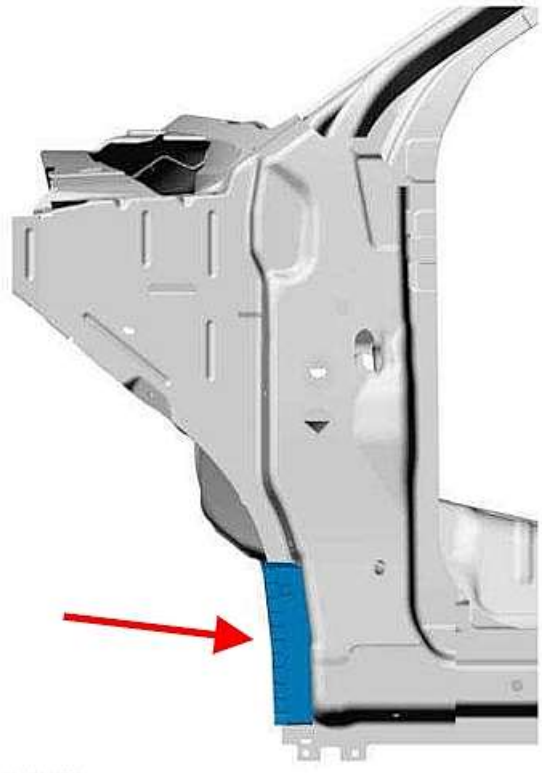
With a pair of pliers clamped holding the bolt up, cut the bolt with a cutoff wheel, Sawzall, or similar method. Then pull up more of the stud, clamp, and cut again, if necessary.

The bar in the rear of the wheel well is removed as well. Remove the bolts, then cut the bar in half so you can pull it out of the tube it is bolted to.

Tube has been cut in half and removed from the truck.

Front Cab Reinforcement

🛠 Sawzall/Cutoff wheel



Remove the cab reinforcement foam/plastic pieces behind the front wheel.

Cutting in a nice line tangent to the cab support curve, remove material from the front corner until the tires clear at full lock, both ways.

Only a little material needs to be removed for the tires to clear. The easiest way to do this is to turn the tires lock-to-lock to see where they would rub, trim, and repeat until the tires can clear the front corner, turning both ways and under compression.

The body panel may need some slight trimming to clear the tires as well, depending on how you have fit your body to the truck.

Front Suspension Installation

Front control arms

Front control arms (Box 25 & 26)

Install the lower control arm. Resting the ball joint end on the ground so the arm is near vertical, and using a mallet to pound the collars in works well.

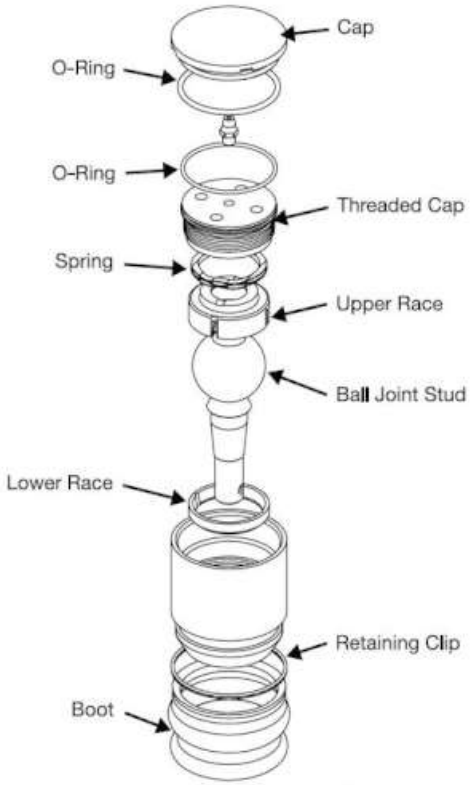
If you have the means to make a tool like the one above, it can greatly help to align the sleeves with the frame slots.

If not, a dowel pin and a mallet works well too. Install the bolts and nuts. Torque: **100-110 ft-lbs.**

Front Upper Control arm

- Recommended grease to use:
  Valvoline® Moly Fortified Multi-Purpose Grease - VV633
  Sta-Lube® Moly-Graph Multi-Purpose Grease - SL3330
- Maintenance Lubrication Interval - Add 5 to 10 pumps of grease to the ball joint at each oil change, or after operating the vehicle in wet or dusty conditions.
- Front upper control arms (Box 1)

Ball joint Assembly



Install thinner O-ring onto threaded retainer cap and thicker O-ring onto cap.

Apply a small amount of grease to the inside of the lower race and install into housing with chamfer side down.
Apply a liberal coating of grease to the ball stud and install into the housing.
Install upper race and spring as shown.

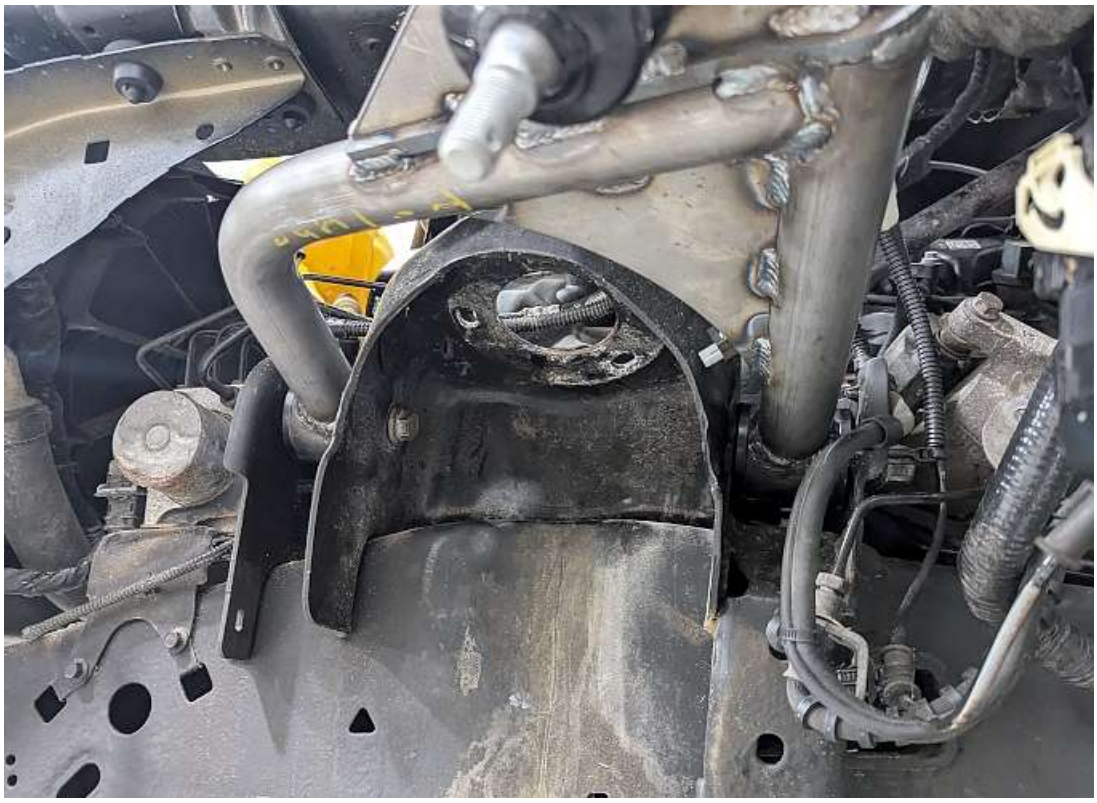
Ball joint Tool

Insert the dowel pins into the ball joint tool plate.

Push the pins in so that they are flush with the opposite side. If necessary, put it in a vise.

Use a ⅜" Torque wrench and the ball joint tool to torque the threaded cap to **50 lb.-ft [68 Nm]** and screw in supplied grease fitting.
Install boot and spiral retainer clip into outside housing groove.
Grease the ball joint via grease fitting. 5 to 10 pumps from a standard grease gun is sufficient.
WARNING: FAILURE TO GREASE AND MAINTAIN THIS BALL JOINT MAY RESULT IN PREMATURE FAILURE.

Push in the top cap until seated.

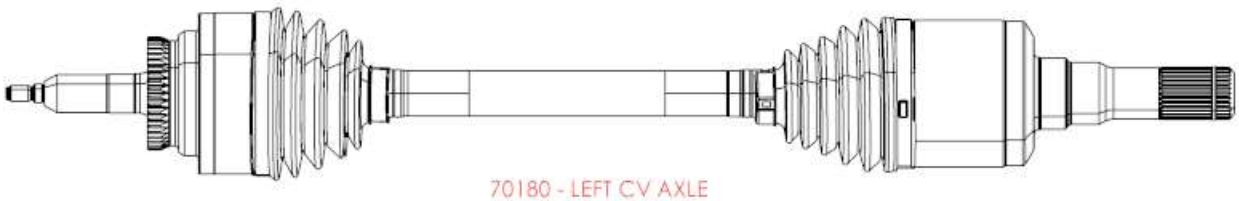


Install the upper control arm with the OEM hardware.

CV Axles

Box 44

70181 - RIGHT CV AXLE



70180 - LEFT CV AXLE

Insert the inner CV axle into the Front Differential.

Front Shocks

Reuse the OEM front springs
Spring Compressor
Box 3

The snap ring has different grooves depending on the desired ride height, pictured here is the maximum lift.

Refer to the Fox instructions to assemble the front struts.

Install the strut top mount.

Attach the shock to the lower control arm using the given hardware. If the bar pin is not aligned with the angle of the control arm, a large adjustable wrench can help twist it so the holes line up.

Swaybar and steering links

- Box 44 Inner Tie rod extensions

Attach the sway bar links to the control arm and sway bar.

Install the tie rod extensions and jam nuts. These are bare metal, so paint if desired to prevent rust.

Install the OEM tie rod ends to the extension. With the steering centered, try to match the amount of thread showing on both sides.

Front Spindle

With the help of a friend, lift the Spindle onto the lower control arm ball joint and at the same time insert the CV axle end into the spindle.

Tighten the lower ball joint nut to **76 lb.-ft (103Nm)** and install the cotter pin.

Insert the upper ball joint into the spindle and tighten the nut to **45 lb.-ft (61 Nm)**; tighten further only as necessary to install the cotter pin.

Put blue Loctite on the CV axle nut and attach it to the CV axle. Tighten the nut to **18 lb.-ft (24Nm).**

Front Brakes

- Now is a good time to put new brake pads/rotors on if yours are worn out.

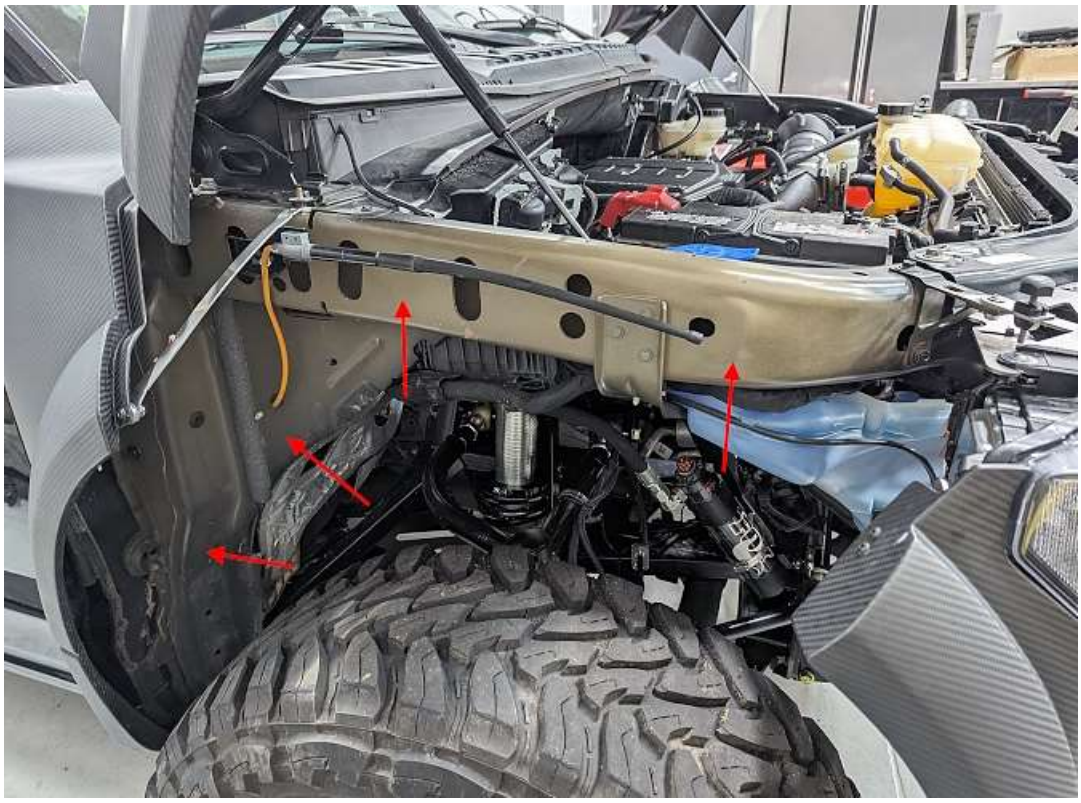
- Brake hoses (Box 5)

Locate the new longer hoses.

Install the new included longer brake hoses to the caliper and hardline. Torque the Banjo bolt to **26 lb.-ft (35Nm)**.

Front suspension

Paint



Now is a good time to paint any OEM parts that might get seen. Above is a picture of the radiator support for a black truck. The brown areas shown are hidden on the F150 but are visible on the XTF Stage 1.

Headlights/Nose Panel

- Nose panel, Box 9 Headlight hardware, Box 6 Nose mount Fasteners, Box 6 Clearance lights
- 5/32" hex key, 7/16" wrench, 10mm deep, 7/16" socket, Ratchet, Drill, ¼" drill bit, wire crimper, head gun or small torch, wire strippers.

Insert a headlight into the nose.

Locate the top nose mount tabs.

Attach the round hole to the top of the headlight using a ¼” x ¾” screw and locknut leaving it loose enough so it can rotate.

Holding the headlight against the nose, rotate the mount tab onto the nose and mark the center of the slot.

Drill a ¼” mounting hole and attach the headlight to the nose.

The bottom headlight mount stops the headlight from popping out of the nose on the bottom edge.

Attach the bracket to the headlight bosses on the bottom with the OEM plastic screws. Mark and drill holes in the bottom flange of the nose and attach with the provided ¼-20 hardware.

Drill and mount three orange clearance lights 12” apart in the center of the nose.

Drill and mount one orange clearance light into the front lower corner of the nose.

Use half the wire and connectors in the clearance light hardware to make a harness for the clearance lights. Run the harness to one side and connect to the running light connector for the headlight.

Locate the 70504/05 bottom nose mounts.

Attach the mounts to the OE Radiator mount using the OEM fasteners so the longer part is towards the middle of the truck as shown. Do not drill mounting holes in the grill surround yet if installing the street bumper.

Attach the top of the headlight to the top main headlight bracket. The bottom of the picture is the front of the truck.

Attach the inside headlight bracket to the frame using the OEM fasteners and use the 0.40” spacer next to the light.

Attach the top outer bracket that goes from the top headlight bracket to the fender. Tighten the upper bolts in the middle of the slot.

Drill two $^{3}/_{16}$" holes in the fender in the center of the lower slots and attach with the provided 10-32 hardware.

Hood Bumpers

- Box 6 hood bumper mounts, ¼" drill tap from rear fender mount hardware.

🛠 Needle nose pliers, 5/32" hex key, 7/16" wrench.

Remove the hood bumper mounts from the front engine bay area on the cab by squeezing the tabs on the bottom side with needle nose pliers.

Push the bumper mount into the included extension bracket.

If removed, screw the hood bumper into the mount.

Use the included ¼” drill tap to open and tap the small hole in the end of the stock mount.

Attach the extension mount to the OEM bumper mount using a ¼”x ¾” screw and locknut. Screw the bumpers all the way down for now.

Front Fender Extension

🚘 OEM fasteners, Front Fender extension panels, Fender extension hardware (Box 6)
🛠 10mm wrench, 10mm socket, ratchet, drill, drill bits, Vise-Grip pliers.

With the door open, hold the Fender extension up so that it is even with the hood noting the top mount location (arrow in picture).

Open the door and mark the top mount location.

Remove the panel and drill the location marked with the correct size bit for the fastener size.

Cut the wider flange edge off the plastic cover then push a 38” piece of weatherstrip onto the OEM plastic fender seal.

For the carbon panels space the panel out using washers behind the panel.

Attach the Fender extension to the top mount.

Close the door and bring the bottom of the Fender Extension up so that it is even with the bottom of the cab mounting location and the front of it is slightly forward of the mount.

Set the gap by moving the bottom forward and back. Clamp in place.

Carefully try opening the door. It will be close but should clear. If necessary, remove the panel and slot the top mount to move the panel forward slightly.

✋ Pushing the bottom of the panel up will bow the middle out slightly.

- If necessary, trim more of the OEM foam in the bottom corner to allow the bottom of the panel to move up more.

The Carbon panel will need to get spaced out for correct fitment and door clearance.

Once the panel is aligned, drill the lower mounting hole locations and attach the Fender extension to the frame using the OEM fasteners.

In the engine bay, remove the screw under the front inside of the Fender extension (left side shown).

Bolt the Fender extension top mount to the frame and locate where to drill the flange on the Fender Extension.

Drill the ¼” mounting hole then use the included ¼” button head screws and washers to help set the height to match the hood.

Clamp the outer mount in place on the inner flange of the body and drill (2) ¼” holes. Attach with provided ¼-20 hardware.

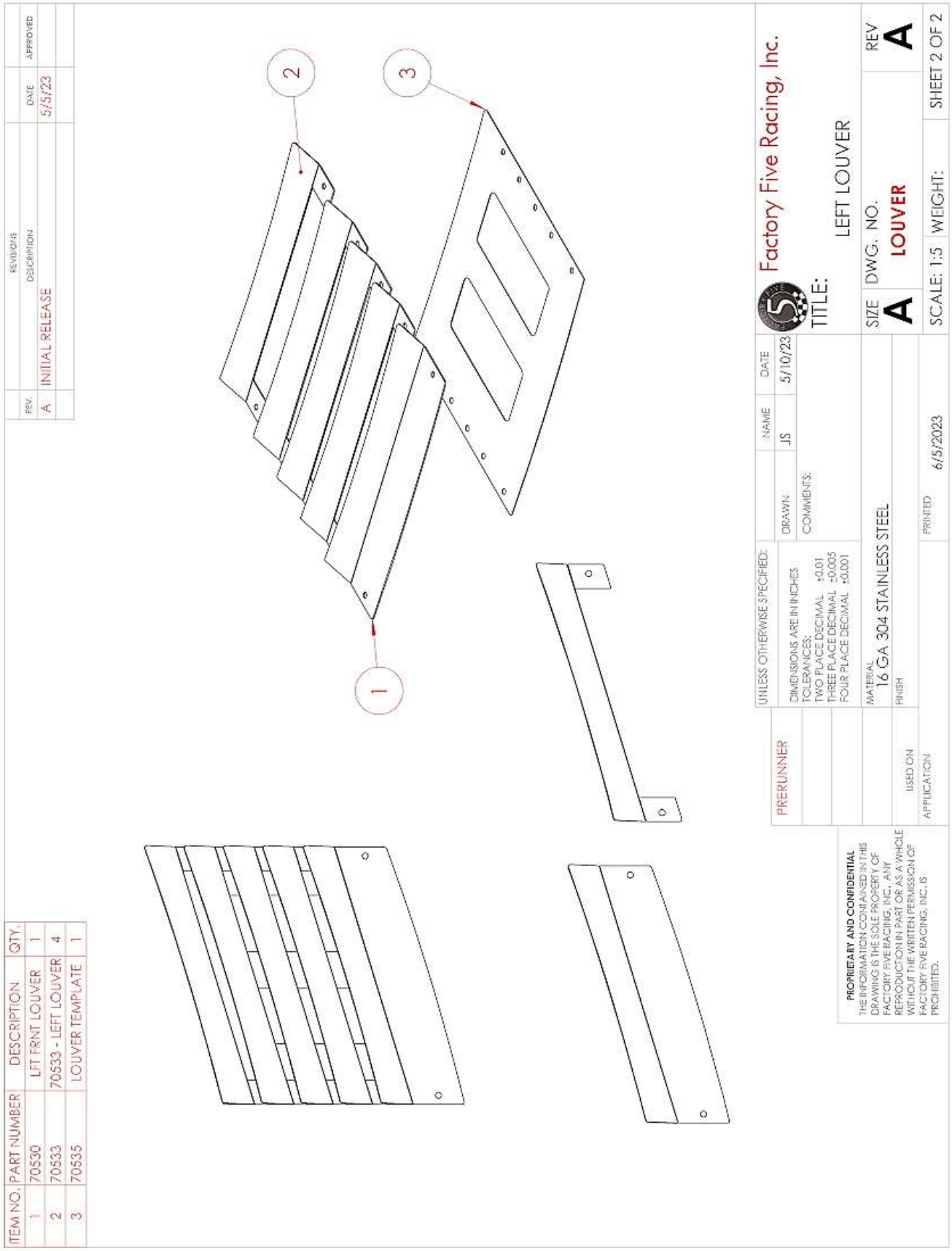
Bolt the inner fender mount to the outer mount attached to the fender using the $^{5}/_{16}$”x 1” button head screws. Leave the bolts just loose enough so the bracket can move in the slots. Hold the inner bracket against the frame and mark the middle of the mounting slots on the frame.

Remove the bracket and drill two $^{5}/_{16}$” mounting holes where marked then through-bolt with the $^{5}/_{16}$”x 1” button head screws and a lock nut on the backside.

Use the slots to adjust the fender to the desired position, then tighten down the bolts. Having a friend hold the fender in place while tightening the bolts is very helpful.

Hood

Hood Vents



Place the template on top of the hood in the vent area and drill the ¼" holes in the template.

Starting at the back, bolt each piece of the louver through the hood using the ¼” black button head screws.

Hood mounting

Attach the hood latch striker to the hood using the M6 bolts.

Tighten the screws to **106 in-lb. (12Nm).**

Attach the hood to the hood hinge brackets using the M10 bolts leave it slightly loose to allow adjustment.

Center the hood on the cab by matching the shape of the cowl to the trailing edge of the hood.

Tighten the hood hinge bolts to **18 ft-lb (25Nm)**.

Hood Latch

- Box 9 Headlight hardware

Locate the OEM hood latch bolts and (2) of the 0.40” spacers in the headlight hardware.

Space and attach the hood latch to the chassis centering the OEM bolts in the slots.

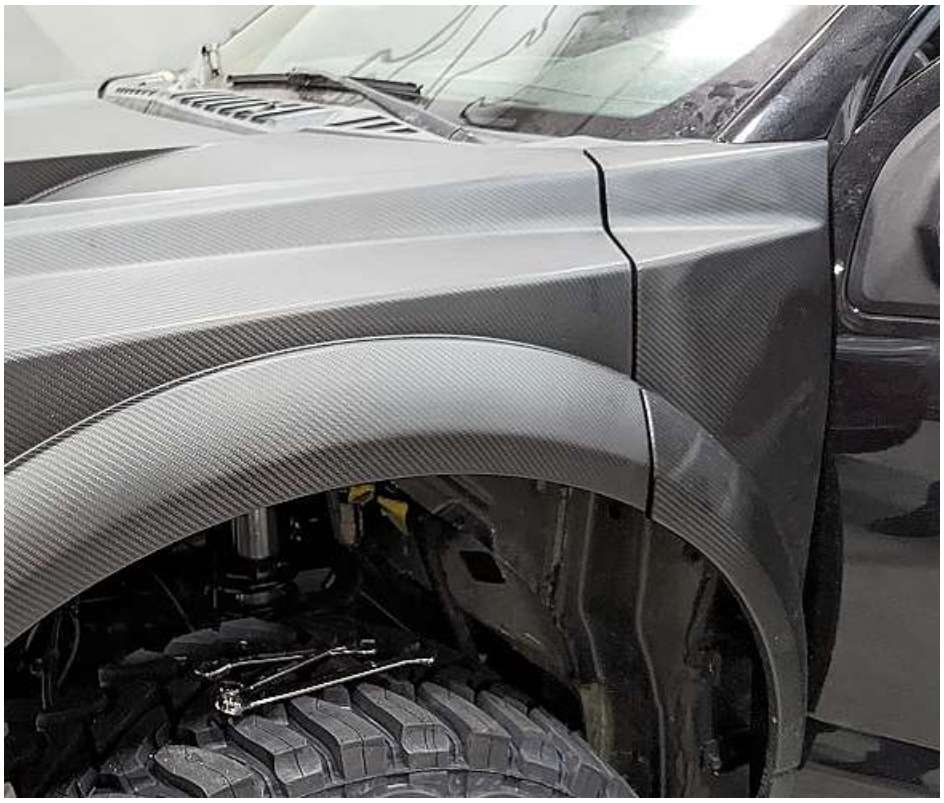
Close the hood and make sure the striker and latch engage.

With the hood closed, measure from the windshield to the start of the hood on each side of the truck.

If necessary open the hood, loosen the mounting bolts slightly and adjust the hood so that the measurements are the same side to side.

Close the hood and double check the measurements and readjust if necessary.

Hold the front edge of the Fender extension so that it aligns with the edge of the hood and reclamp the fender extension mount if necessary.



Raise or lower the hood latch so that the gap is even between the hood and the Fender extension. If necessary, adjust the Fender extension mounts to help with the fitment.

Raising the headlight/Nose panel may be necessary to set the gap at the front of the hood.

Antenna

On the right side, attach the antenna mount to the frame so that the mount sits just below the body panel.

Drill a hole through the body panel to pass the antenna through and screw into the mount.

Grill

Front Grill components (Box 17)
Razor knife, 3/32” Hex key, 11/32” wrench, clamps, drill, 5/32” drill bit

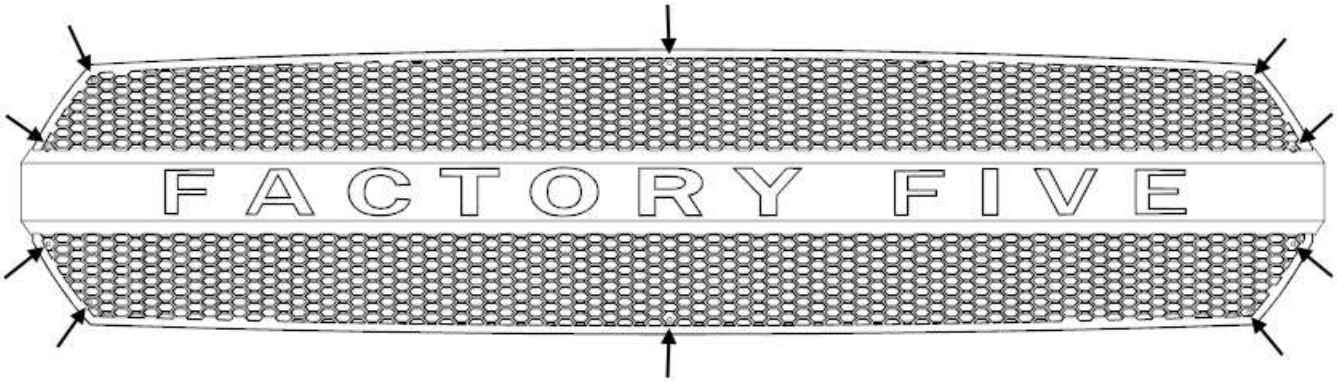
If desired paint the grill.

Factory Five provides stainless steel letters for the grill. Test fit the letters in the grill.

Attach double stick tape to the back side of each of the letters.

Remove the tape backing and push the letters into the grill letter locations.

Clamp the grill in place on the nose.



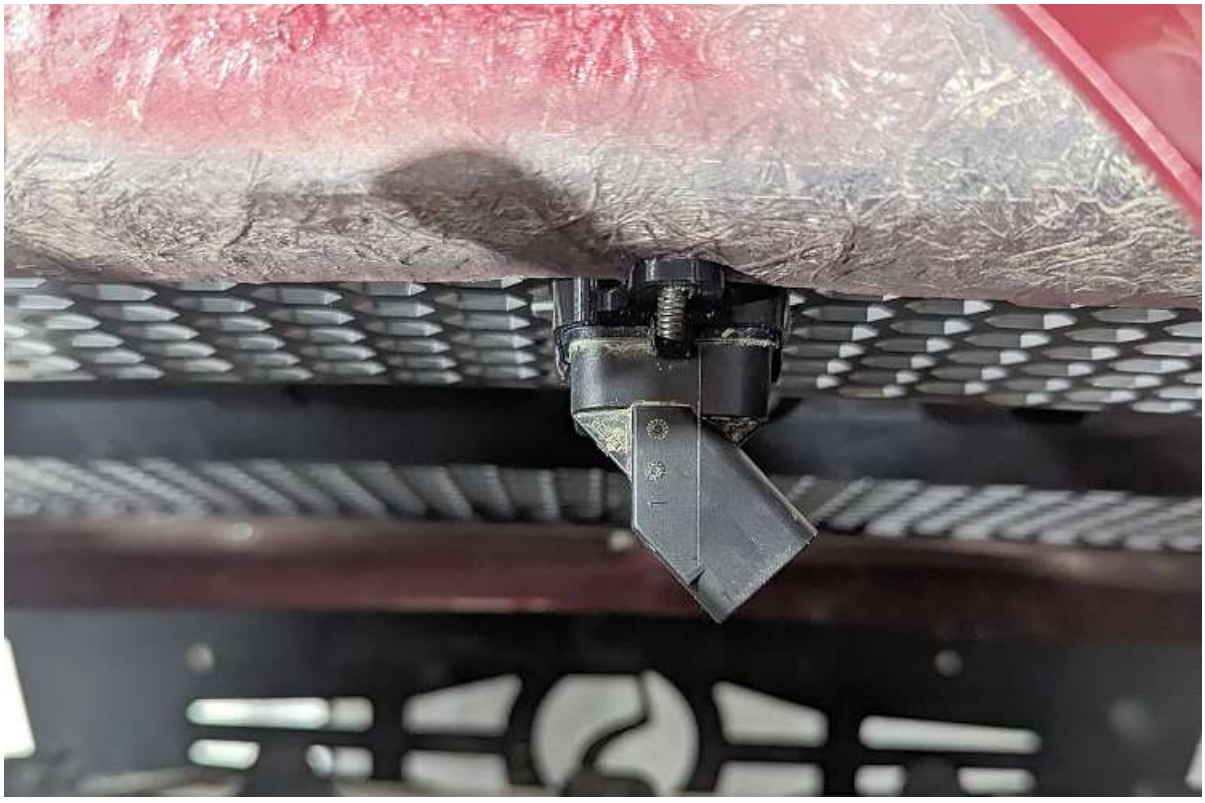
Use the holes in the grill as a guide to drill the mounting holes for the grill in the nose using a $^{5}/_{32}$" drill bit

Front Camera (if applicable)

- Box 17 Grill components, F150 Front Camera (if equipped)
- Air saw or wire snips or similar

Clip the OEM camera into the provided mount. The plug should be on the top, closest to the bolt hole.

Trim the grill in the center between the 2nd and 3rd open hexagon below the screw hole to make room for the camera. The fiberglass behind the grill may also need slight trimming depending on where your grill is mounted to the fiberglass.



Mount the camera using the longer #8 screw included with the grill parts.

Plug in the camera, making sure it “clicks”, and test its operation.

Cruise control front Radar Mount (if applicable)

F150 Front Radar sensor and mounting fasteners. Box 6 Cruise Radar mount parts

Drill, ¼” drill bit, marker, 5/32” hex key, 7/16” socket, ratchet.

Locate the F150 front radar sensor and fasteners.

Attach the sensor studs to the mounting bracket using the M6 locknuts included.

Attach the sensor to the harness and locate the mounting bracket on the nose to the left of the skid plate.

Use the bracket as a template to mark the mounting holes then drill the mounting holes with a ¼” drill bit.

Attach the mounting bracket to the nose using the black ¼” button head screws.

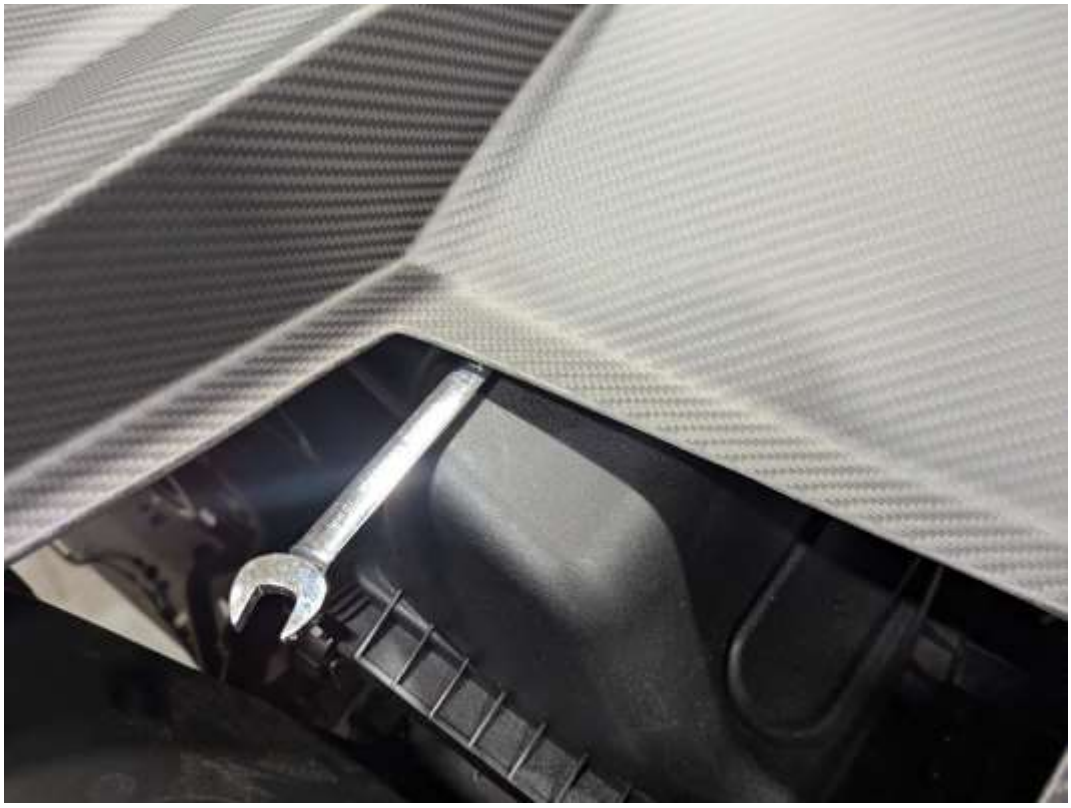
Stock Airbox

If using the stock airbox, it will need to be lowered to avoid hitting the hood.

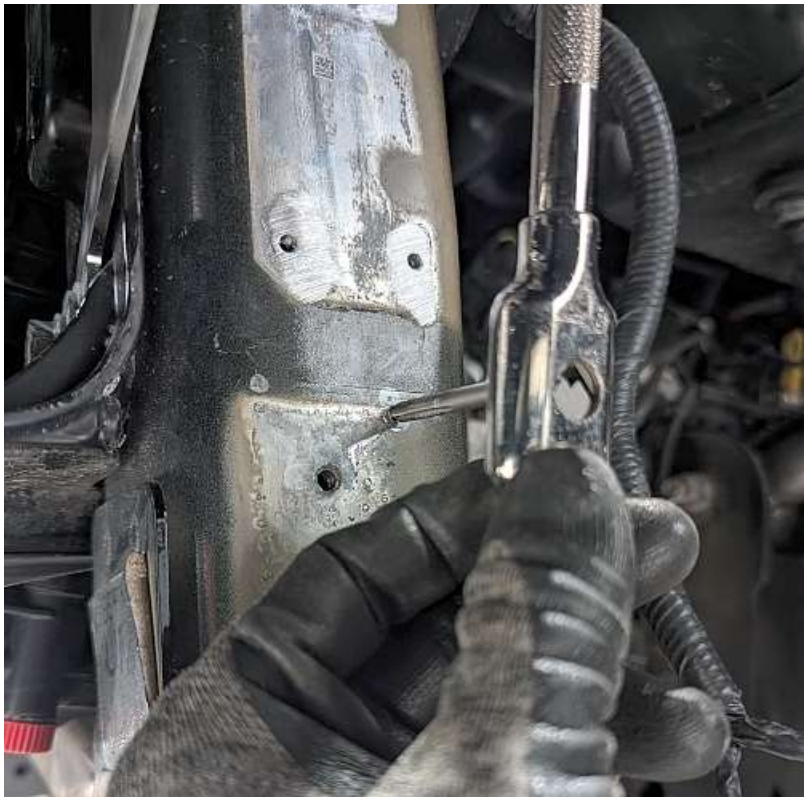
Remove the mount going from the frame horns to the bottom of the air box. Save hardware.

Remove the 4 bolts holding the mount to the front of the frame horns and grind flush.

With the mount off the truck, drill out the rivets holding the two pieces together. Only the front piece is re-used.



Close the hood and make sure there is a gap between the hood and air box. Attach the lower mount you previously removed and mark how much it needs lowered by.



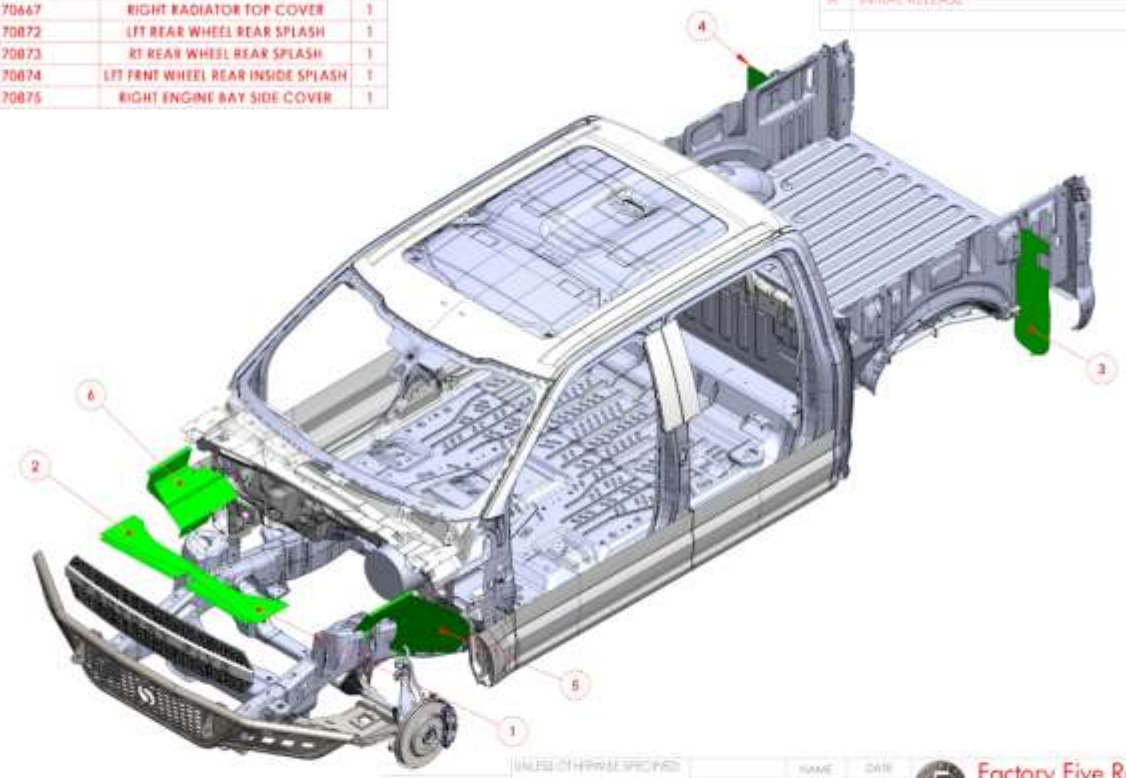
Drill and tap new holes at the marked locations, or use rivets.

Drill and tap a new hole in the side of the frame horn for the side mount. Mount the airbox.

Aluminum

- Packaged aluminum (Box 10)

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	70666	LEFT RADIATOR TOP COVER	1
2	70667	RIGHT RADIATOR TOP COVER	1
3	70872	LFT REAR WHEEL REAR SPLASH	1
4	70873	RT REAR WHEEL REAR SPLASH	1
5	70874	LFT FRNT WHEEL REAR INSIDE SPLASH	1
6	70875	RIGHT ENGINE BAY SIDE COVER	1



REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	10/17/24	

XTF STAGE 1

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES. TOLERANCES: TWO PLACE DECIMAL ±0.01, THREE PLACE DECIMAL ±0.005, FOUR PLACE DECIMAL ±0.001

	NAME	DATE
DRAWN		8/11/21
COMMENTS:		

MATERIAL

FINISH

USED ON

APPLICATION

PRINTED 10/17/2024

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Factory Five Racing, Inc.

TITLE: ALUMINUM

SIZE	DWG. NO.	REV
A	XTF Stage 1	A

SCALE: 1:25 WEIGHT: SHEET 1 OF 1

Radiator support to Nose

Left side

Position the panel so that it matches the curve of the Radiator Support.

Position the panel

Tighten the ¼” flange head screws with a $^{5}/_{32}$” Hex key.

Repeat for the right side.

Front Splash panels

Paint these panels if desired, or leave bare. Since they are aluminum, we find chemical treatment to greatly help in paint adhesion.

On the passenger side, hold the splash panel so the front is up against the battery box lower mount/washer fluid reservoir. Drill $^{3}/_{16}$" holes and rivet to the frame.

On the bottom, drill and rivet to the top of the shock tower.

On the driver's side mount the panel in a similar fashion. Clamp the top flange to the underside of the frame then drill $^{3}/_{16}$" holes and rivet through the frame gusset as shown above.

Drill $^{3}/_{16}$" holes and rivet through the top flange.

Attach the bottom tab flange to the shock tower.

Along the bottom edge, drill and rivet this tab to the main frame rail.

Front Bumper

🚘 Box 33
🛠 Ratchet, ¾” socket, Drill, ½” drill bit, Sawzall, marker, ruler

Remove the 2 bolts from inside the frame rails. Some trucks may have recovery hooks here, remove those as well.

Measure 3 inches back from the back of the front bumper mount plates and mark a line.

Using a Sawzall, cut the front 3” off the frame rails. This is necessary to make room for the tubular front bumper.

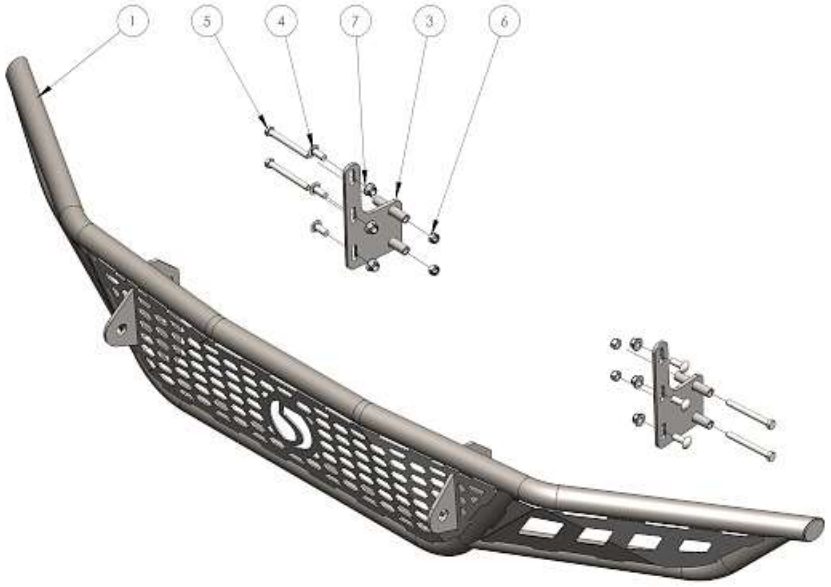
Bolt the provided template to the frame using the pre-existing holes in the frame rail. Mark the holes to drill on either side.

Drill the marked holes with a ½" bit. If you are having trouble with bumper mount alignment, you can go up to $^{9}/_{16}$" or ⅝" and use a washer.

If the sleeves on the provided mounts are too tight, you can slightly widen the frame rail walls with a large crescent wrench. When you tighten the bolts, the wall will be pulled back in tight.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	70320	TUBULAR FRNT BUMPER	1
2	70848	RIGHT FRNT BUMPER MOUNT	1
3	70848	LEFT FRNT BUMPER MOUNT	1
4	25590	1/2"x 1.25" CARRIAGE BOLT	6
5	13706	M12 x 110MM BOLT	4
6	13751	M12-1.75 NYLON LOCK NUT	4
7	25677	1/2"-13 FLANGED NYLON LOCK NUT	6

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	10/4/24	



XTF STAGE 1

USED ON

APPLICATION

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
TWO PLACE DECIMAL ±0.01
THREE PLACE DECIMAL ±0.005
FOUR PLACE DECIMAL ±0.001

MATERIAL

FINISH

	NAME	DATE
DRAWN		
COMMENTS:		

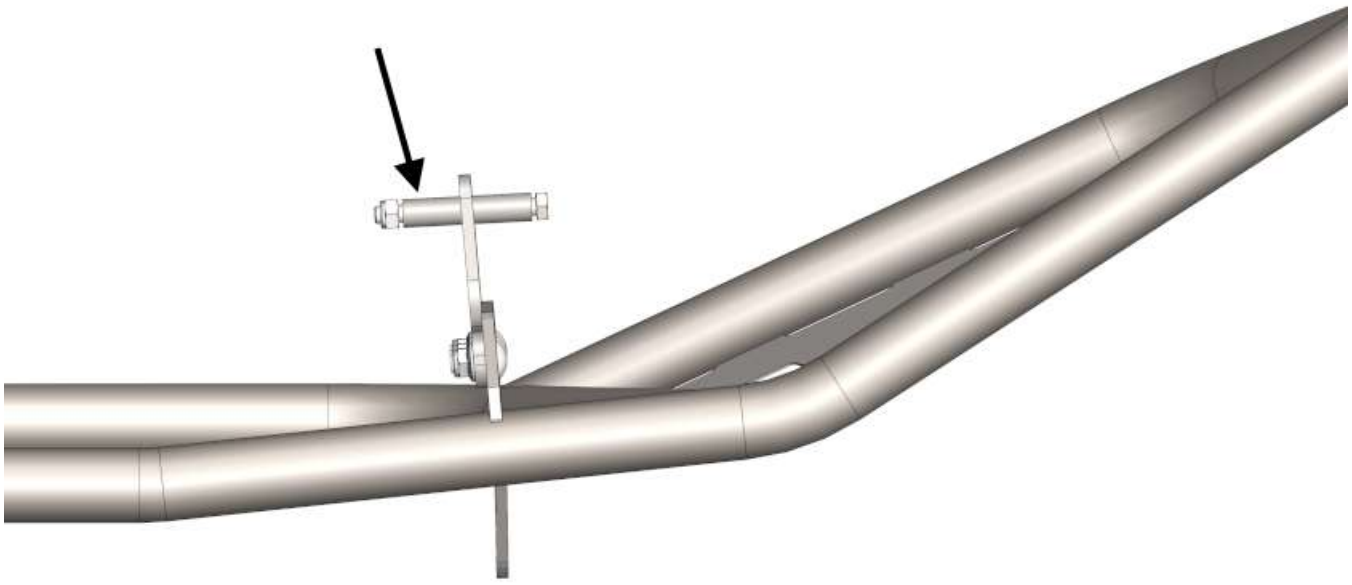
PRINTED 10/4/2024

Factory Five Racing, Inc.

TITLE:
FRONT BUMPER PARTS

SIZE	DWG. NO.	REV
A	70812	A

SCALE: 1:10 WEIGHT: SHEET 1 OF 1



The mount brackets are side specific, note the angle of the bolt sleeves for the driver side mount.

Attach the tubular bumper to the mount using the provided hardware. Adjust the angle, height and distance to the nose panel as desired.

Finishing Touches

Speedometer

Your truck now has 37’s on it, but the computer thinks it still has the stock tires. Therefore, you will be going faster than your speedometer says. This difference increases the faster you go. For example, when you are going 30 mph your speedo may say 28, but when you are going 80 your speedo may read 70. FORSCAN is a ford software that you can download for free and change the tire diameter in the ECU. Other scanning tools and tuning software usually have this capability too. Consult web forums, your local tuners and truck shops to decide how you would like to adjust this. Or, use a phone GPS to determine your actual speed vs speedometer speed and adjust accordingly.

Ride Height

- 🛠 Tape measure
- 🖐 Make sure that the truck is at the correct ride height before the alignment procedure is done.
- 🖐 Ride height is adjusted by lowering or raising the spring seat on the coil-over shock.

Set the ride height to the desired height. Standard ride height is 11” measured from the ground to the bottom of the frame. This can be changed up to 4” higher or 2” lower for the desired look.

Tighten the spring seat using a hex key

- Check the ride height on both sides of the truck at the front and rear of the frame.
- If the ride height is changed after an alignment, the alignment must be redone.

Alignment

Take your truck to an alignment shop and have the truck aligned.

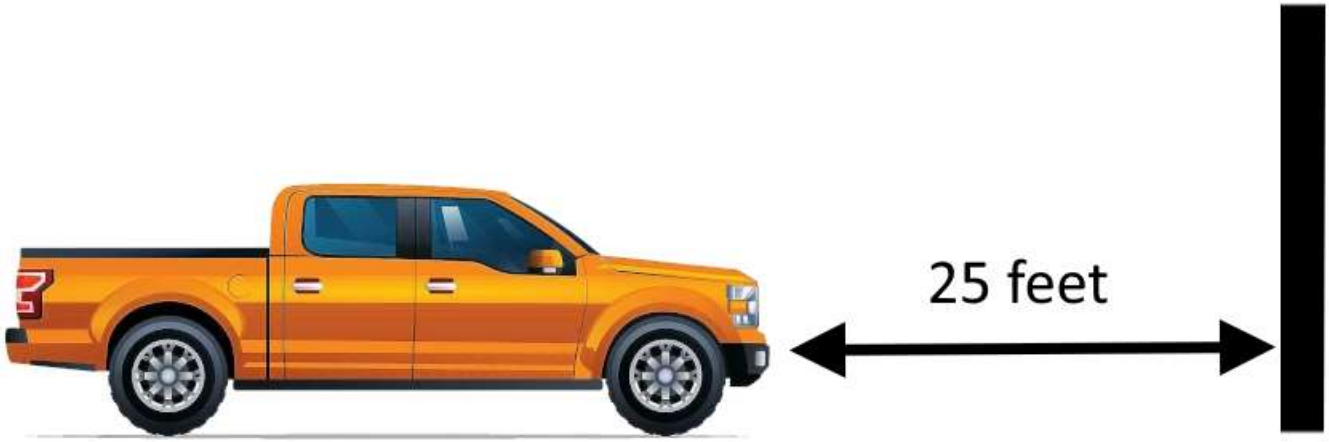
Use modified 2015 F150 specs:

Caster 4.50° to 5.00°
Camber -0.50° to -0.75°
Total Toe -$^{3}/_{16}$”

Headlight Alignment

- Masking tape, marker, tape measure.
- Make sure that the car is at the correct ride height before the alignment procedure is done.
- It is important that the headlights are aimed properly for them to perform at their best. Lights that are aimed incorrectly will not only perform poorly but may also offend oncoming traffic. When replacing bulbs, it is a good idea to verify that your lights are properly aimed. Slight variances in filament position can translate to large variances in beam pattern. The following procedure does not require special aiming equipment and ensures proper aim.

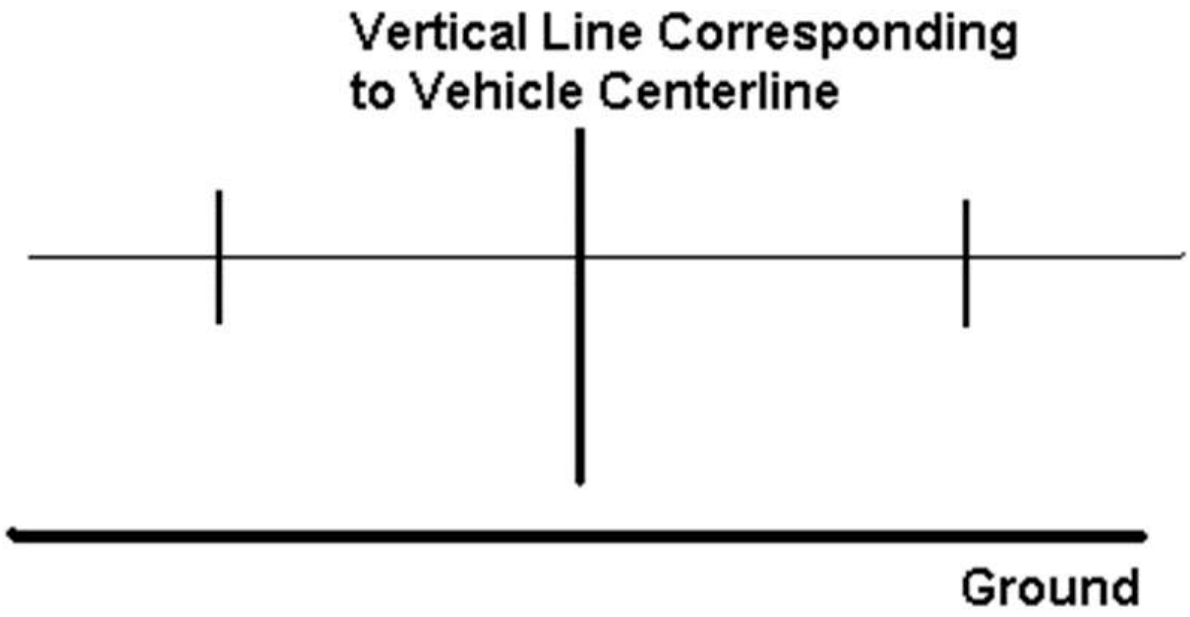
Find a flat, level surface next to a vertical white wall where the car can be parked (a garage door is an ideal location at home).
Pull the car straight up to the wall as close as possible.
Using masking tape and a marker, draw a vertical line on the wall corresponding to the centerline of the vehicle.



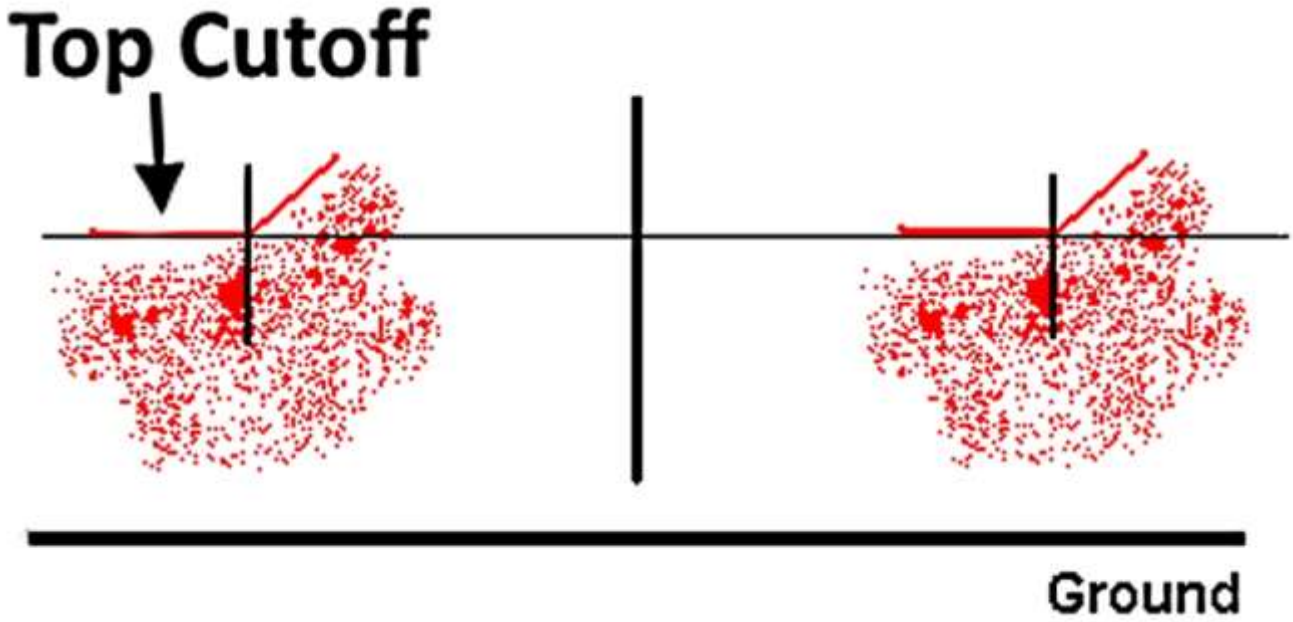
Pull the car straight back until the headlights are 25 feet from the wall.

Make the following two measurements and write them down:
Measurement A: From the ground to the geometric center of one of the headlight lenses
Measurement B: From one of the low beam headlights to the vehicle centerline.

With a piece of masking tape, draw one horizontal line on the wall at a height exactly **2 inches lower** than Measurement A.



On the line, make vertical marks both to the right and left of the vehicle centerline mark at the distance of Measurement B from the vehicle centerline vertical line.



Turn the headlights on and adjust the vertical aim of the headlights so that the top horizontal cutoff of each of the beams is located along the horizontal line drawn on the wall.

Adjust the horizontal aim of the low beam headlights so that the point at which the top cutoff of the beam begins to slope upwards is located at the vertical marks.

Appendix A – Maintenance

Check the items on a yearly basis or sooner depending on how hard the truck is driven.

Steering

Rack mount bolts tight _____
Tie Rod extension to Outer tie rod nuts tight _____
Outer Tie rod to spindle nut tight _____
Steering free lock to lock _____

Front Suspension

Ride height _____
Front wheel bearings tight _____
Upper and lower ball joint nuts tight _____
Upper control arm to frame bolts tight _____
Lower control arm bolts tight _____
Shock mounting bolts tight _____
Tire pressure set _____
Lug nuts tight _____

Brakes

Front Caliper bolts tight _____
Rear caliper bolts tight _____
Rotors clean no cracks or groves _____
Brakes bled/bleeders tight _____
No leaks under pressure _____
Reservoir full _____
Flexible lines tied up and undamaged _____

Electrical

Battery charged _____
Battery mount and connections secure _____
Brake lights functioning _____
All wires free and clear of moving or hot parts _____

Rear Suspension

Ride height _____
Leaf spring shackle bolts tight _____
Axle U-bolt bolts tight _____
Shock mounting bolts tight _____
Tire pressure set _____
Lug nuts tight _____

Engine

Oil level checked/changed/cap tight _____
Water level checked including reservoir _____
Belts tight _____
Engine mount nuts tight _____
Fuel lines, filler tube no leaks while filling _____
No coolant or oil leaks _____
Exhaust tight _____

Appendix B – 3.5L Ecoboost Capacities/Specs

CAPACITIES AND SPECIFICATIONS - 3.5L ECOBOOST™

Capacities

WARNING

The air conditioning refrigerant system contains refrigerant under high pressure. Only qualified personnel should service the air conditioning refrigerant system. Opening the air conditioning refrigerant system can cause personal injury.

Item	Capacity
Engine oil - 5W-30	6.0 qt (5.7 L)
Engine coolant - Orange	15.6 qt (14.75 L)
Brake fluid - DOT 4	Between MIN/MAX on brake fluid reservoir
Front axle fluid (Four-wheel drive)-80W-90	3.5 pt (1.7 L)
Rear axle fluid - 75W-85	5.5 pt (2.6 L)
Automatic transmission fluid*-Mercron LV	13.1 qt (12.4 L)
Transfer case fluid Four-wheel drive (Electronic Shift-on-the-Fly) - XL-12	1.5 qt (1.4 L)
Transfer case fluid Automatic four-wheel drive (Torque on demand) - Mercron LV XT-10-QLVC	1.5 qt (1.4 L)
Windshield washer fluid	Fill as required
Fuel tank	23.0 gal (87.1 L)
A/C Refrigerant - R-134a	1.5 lb (0.68 kg)
A/C Refrigerant Compressor Oil	3.4 fl oz (100.5 ml)

*Approximate dry fill capacity. Actual amount may vary during fluid changes.

Appendix C – 5.0L Capacities/Specs

CAPACITIES AND SPECIFICATIONS - 5.0L

Capacities

WARNING

The air conditioning refrigerant system contains refrigerant under high pressure. Only qualified personnel should service the air conditioning refrigerant system. Opening the air conditioning refrigerant system can cause personal injury.

Item	Capacity
Engine oil - 5W-20	7.7 qt (7.3 L)
Engine coolant - Orange	15.9 qt (15 L)
Brake fluid - DOT 4	Between MIN/MAX on brake fluid reservoir
Front axle fluid (Four-wheel drive)-80W-90	3.5 pt (1.7 L)
Rear axle fluid - 75W-85	5.5 pt (2.6 L)
Automatic transmission fluid*-Mercron LV	13.1 qt (12.4 L)
Transfer case fluid Four-wheel drive (Electronic Shift-on-the-Fly) - XL-12	1.5 qt (1.4 L)
Transfer case fluid Automatic four-wheel drive (Torque on demand) - Mercron LV XT-10-QLVC	1.5 qt (1.4 L)
Windshield washer fluid	Fill as required
Fuel tank	23.0 gal (87.1 L)
A/C Refrigerant - R-134a	1.5 lb (0.68 kg)
A/C Refrigerant Compressor Oil	3.4 fl oz (100.5 ml)

*Approximate dry fill capacity. Actual amount may vary during fluid changes.

Appendix D – Alignment Specifications

	LEFT	RIGHT	TOTAL
Camber	-0.50° ± 0.25°	-0.50° ± 0.25°	
Caster	4.75° ± 0.25°	4.75° ± 0.25°	
Total Toe	-	-	0.20° ± 0.20°
Rear Thrust angle	-	-	0° ± 0.50°

Appendix E – Torque Specifications

General Bolt torque specifications*

Thread	SAE English
Zinc Plated	Ft-Lb.
¼”-20	8
5/16”-18	17
⅜”-16	30
7/16”-14	48
½”-13	75
½”-20	83
⅝”-11	100
¾”-18	

Thread	SAE Metric
Zinc Plated	Ft-Lb.
M8	18
M10	33
M12	61
M14	98
M16	120

ATTENTION: Use the following specs in order to torque Stainless Bolts.
#10 11 ft-lb (132 in-lb.)
⅜” 16 ft-lb (192 in-lb.)
*Use above specs unless otherwise noted in the assembly process.