



## Installation Manual

**3" suspension system w/uniball upper control arms.**

**2015 - 2016 Ford F150**

**Part # 23035**

SS03022016

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**2015-2016 Ford F150**

**3" suspension system w/uniball upper arms**

<b>Part #</b>	<b>Description</b>	<b>Qty.</b>
20930-01	Driver side upper control arm	1
20930-02	Passenger side upper control arm	1
22909-01	Upper Strut Spacer	2
23000-05	DS & PS pre load spacer	2
TCI-R39	Add a Leaf spring	2
D2PNB	Hardware bag	1
23005NB	Hardware bag	1
23035INST	Instruction manual	1
22909NB	Hardware bag	1
MIRRORHANGER	Rear view mirror hanger	1
WARNINGDECAL	Warning decal	1

**Congratulations on your selection to purchase a Tuff Country EZ-Ride Suspension System. We at Tuff Country EZ-Ride Suspension are proud to offer a high quality product at the industries most competitive pricing. Thank you for your confidence in us and our product.**

**If you desire to return your vehicle to stock, it is the customers responsibility to save all stock hardware and components.**

**The Tuff Country EZ-Ride Suspension product safety label that is included in your kit box must be installed inside the cab in plain view of all occupants.**

**Special note: Before installation begins, it is the customers/installers responsibility to make sure that all parts are on hand. If any parts are missing, please feel free to call one of our customer service representatives @ (801) 280-2777.**

### Important customer information:

**Tuff Country EZ-Ride Suspension highly recommends that a qualified or a certified mechanic performs this installation.**

**It is the responsibility of the customer/installer to wear safety glasses at all times when performing this installation.**

**It is the customers/installers responsibility to read and understand all steps before installation begins. If you have any questions or concerns, please contact our technical department @ (801) 280-2777. Also, the OEM manual should be used as a reference guide.**

**This vehicles reaction and handling characteristics may differ from standard cars and/or trucks. Modifications to improve and/or enhance off road performance may raise the intended center of gravity. Extreme caution must be utilized when encountering driving conditions which may cause vehicle imbalance or loss of control. DRIVE SAFELY! Avoid abrupt maneuvers: such as sudden sharp turns which could cause a roll over, resulting in serious injury or death.**

**It is the customers responsibility to make sure that a re-torque is performed on all hardware associated with this suspension system after the first 100 miles of installation. It is also the customers responsibility to do a complete re-torque after every 3000 miles or after every off road use.**

**After the original installation, Tuff Country EZ-Ride Suspension also recommends having the alignment checked every 6 months to ensure proper tracking, proper wear on tires and front end components. Tuff Country EZ-Ride Suspension takes no responsibility for abuse, improper installation or improper suspension maintenance.**

### Limited lifetime warranty

Notice to all Tuff Country EZ-Ride Suspension customers: It is your responsibility to keep your original sales receipt! If failure should occur on any Tuff Country EZ-Ride Suspension component, your original sales receipt must accompany the warranted unit to receive warranty. Warranty will be void if the customer can not provide the original sales receipt. Do not install a body lift in conjunction with a suspension system. If a body lift is used in conjunction with any Tuff Country EZ-Ride Suspension product, your Tuff Country EZ-Ride Suspension WARRANTY WILL BE VOID. Tuff Country Inc. ("Tuff Country" ) suspension products are warranted to be free from defects in material and workmanship for life if purchased, installed and maintained on a non-commercial vehicle; otherwise, for a period of twelve (12) months, from the date of purchase and installation on a commercial vehicle, or twelve thousand (12,000) miles (which ever occurs first). Tuff Country does not warrant or make any representations concerning Tuff Country Products when not installed and used strictly in accordance with the manufacturer's instructions for such installation and operation and accordance with good installation and maintenance practices of the automotive industry. This warranty does not apply to the cosmetic finish of Tuff Country products nor to Tuff Country products which have been altered, improperly installed, maintained, used or repaired, or damaged by accident, negligence, misuse or racing. ("Racing is used in its broadest sense, and, for example, without regards to formalities in relation to prizes, competition, etc.) This warranty is void if the product is removed from the original vehicle and re-installed on that or any other vehicle. This warranty is exclusive and is in lieu of any implied warranty of merchantability, fitness for a particular purpose or other warranty of quality, whether express or implied, except the warranty of title. All implied warranties are limited to the duration of this warranty. The remedies set forth in this warranty are exclusive. This warranty excludes all labor charges or other incidental or consequential damages. Any part or product returned for warranty claim must be returned through the dealer of the distributor from whom it was purchased. Tuff Country reserves the right to examine all parts returned to it for warranty claim to determine whether or not any such part has failed because of defect in material or workmanship. The obligation of Tuff Country under this warranty shall be limited to repairing, replacing or crediting, at its option, any part or product found to be so defective. Regardless of whether any part is repaired, replaced or credited under this warranty, shipping and/or transportation charges on the return of such product must be prepaid by the customer under this warranty.

Important information that needs to be read before installation begins:

Tuff Country recommends a 33" x 12.50" tire with a wheel that has a back spacing of 5.5" or less. The stock tires and wheels can be used in conjunction with this lift kit. If a wider tire is installed on the stock wheel, contact with the upper control arm will occur, and is not recommended.

This Suspension kit comes with (1) installation manual and some post installation procedure literature and it is the installers responsibility to make sure that the customer receives the post installation procedure literature. If a customer would like a copy of the installation manual, please have them visit our website at [www.tuffcountry.com](http://www.tuffcountry.com). Have them go to the customer care section to download these instructions. If you have any questions, please feel free to call us at (801) 280-2777.

The OE shocks will be long enough once this suspension system has been installed but Tuff Country highly recommends replacing the rear shocks. If you have not already ordered your rear shocks, please contact Tuff Country or your local Tuff Country dealer and order your new rear shocks. Tuff Country recommends install a 30" fully extended nitrogen gas shock.

Before installation begins, Tuff Country EZ-Ride Suspension highly recommends that the installer performs a test drive on the vehicle. During the test drive, check to see if there are any uncommon sounds or vibrations. If uncommon sounds or vibrations occur on the test drive, uncommon sounds or vibrations will be enhanced once the suspension system has been installed. Tuff Country EZ-Ride Suspension highly recommends notifying the customer prior to installation to inform the customer of these issues if they exist.

Make sure to use loctite on all new and stock hardware associated with the installation of this suspension system.

Tuff Country EZ-Ride Suspension recommends a wall mounted strut compressor be used when performing the steps that talk about installing the pre-load spacer into the strut. If you do not have a wall mounted strut compressor, please have these steps performed by your local Ford Dealership

Recommended tools selection:

Wall mounted strut compressor  
Torque wrench  
Standard socket set  
Standard wrench set  
Metric socket set  
Metric wrench set  
Tape measure  
Hydraulic floor jacks  
Air chisel

Hardware bag 23005NB includes:

Description	Quantity	
S10246	9/16" non tapered uniball sleeve	2
S10259	tapered uni ball sleeve	2
9165B	9/16" x 5" bolt	2
916UN	9/16" unitorque nut	2
12WA	1/2" flat washer	4
S10236	.750" x .563" x 2.400" sleeve	4
TC-002 (poly bushing)		8
SERT04 (sert fitting)		4

Hardware bag D2PNB includes:

Description	Quantity
38NLN (3/8" nylon nut)	6
516WA (5/16" USS flat washer)	6

Please follow instructions carefully:

Before installation begins, measure from the center of the hub, to the bottom of the fender well, and record measurements below.

Pre-installation measurements:

Driver side front: \_\_\_\_\_  
 Passenger side front: \_\_\_\_\_  
 Driver side rear: \_\_\_\_\_  
 Passenger side rear: \_\_\_\_\_

At the end of the installation take the same measurements and compare to the pre-installation measurements.

Post-installation measurements:

Driver side front: \_\_\_\_\_  
 Passenger side front: \_\_\_\_\_  
 Driver side rear: \_\_\_\_\_  
 Passenger side rear: \_\_\_\_\_

Front end installation:

1. To begin installation, block the rear tires of the vehicle so that the vehicle is stable and can't roll backwards. Safely lift the front of the vehicle and support the vehicle with a pair of jack stands. Place a jack stand on both the driver and the passenger side. Next, remove the front wheels and tires from both sides.

2. Remove the wire harness from the rack and pinion and let hang.



3. Working on the driver side tie rod end, loosen the nut and carefully separate the joint from the steering knuckle.



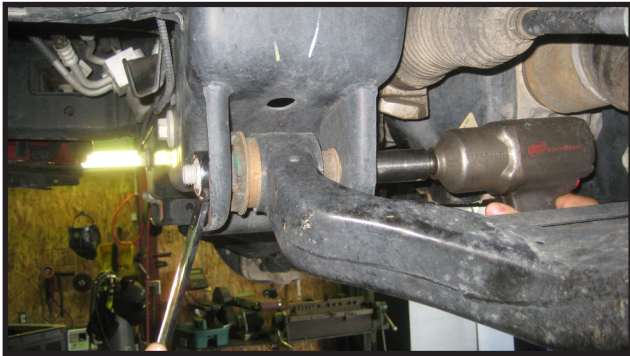
4. Working on the driver side, remove the nut from the lower swaybar endlink mounting location. Save nut for re-installation.



5. Working on the lower strut mount, remove the 2 nuts that secure it to the lower control arm and save hardware for later re-installation.



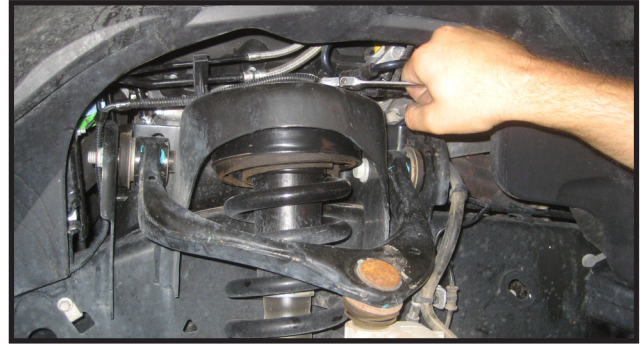
6. Remove the 2 bolts that connect the lower control arm to its pocket mounts on the frame rail.



7. At this point, the lower control arm will need to be dropped down away from the lower strut mount. **Be extra careful to not over extend any brakelines or the CV axle while performing this step.**



8. Remove the (3) mounting nuts on the upper strut mount and remove the strut from the vehicle. Set strut assembly aside.



9. Re-attach the lower control arm to the mounting pockets on the frame rail. The bolts only need to be pinned and not tightened, as this is just to hold the lower control arm and steering knuckle up while the new upper control arm is installed.



10. Remove the nut from the upper ball joint where it attaches to the steering knuckle. Carefully separate the ball joint from the steering knuckle by striking the knuckle with a hammer.

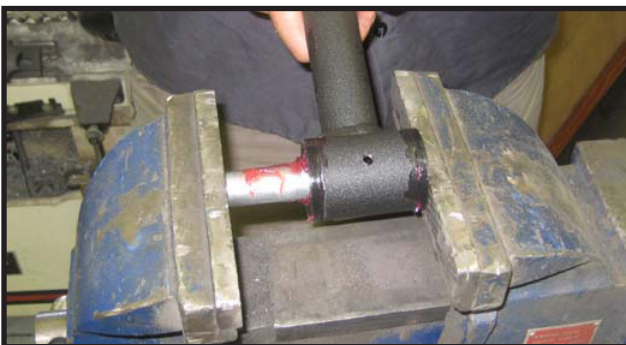




11. Remove the upper control arm from the vehicle, saving the hardware for later re-installation.



12. Locate the new driver side upper control arm part # 20930-01. Also locate (4) TC-002 bushings, (2) S10236 crush sleeves, and (2) SERT04 grease fittings from hardware bag 23005NB. Install the bushings and sleeves into the new upper control arm. **Special note: Make sure to use a fair amount of lithium or moly base grease before installing the new bushings and sleeves, this will increase the life of the bushing as well as help prevent squeaking.**



13. Install the new grease fittings into the threaded holes of the eyelets on the upper control arm. **Careful to not over tighten the fittings, they are soft brass and can easily be stripped out.**



14. Install the new upper control arm into the vehicle using the OE bolts and hardware. **Torque to 95 ft lbs.**

15. Locate (2) S10246 sleeves, (2) S10259 sleeves, (2) 9/16" x 5" bolts, (4) 1/2" flat washers, and (2) 9/16" unitorque nuts from hardware bag 23005NB. Install the S10246 sleeve in the top of the uniball, and the S10259 tapered sleeve into the bottom of the uniball. Now install the tapered side of the sleeve into the top of the steering knuckle and secure using the new 9/16" hardware. Repeat on passenger side and **torque to 90 ft lbs.**

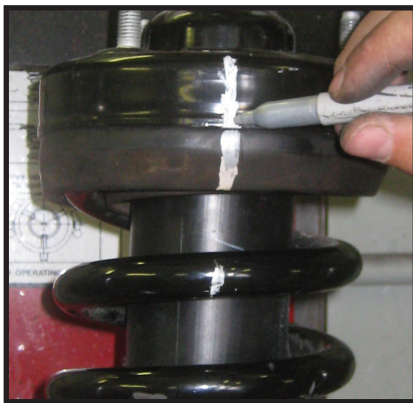


16. At this time it may be necessary to slightly bend the break line mounting bracket that is located on the rear pocket of the upper control arm. This will allow the new upper control arm to fully travel downward.



Tuff Country Ez-Ride Suspension recommends a wall mounted strut compressor be used when performing these next few steps, if you do not have a wall mounted strut compressor, please have these steps performed by a certified technician or at a Ford dealership.

17. Place the strut into the wall mounted strut compressor. Scribe a line on the bearing plate, rubber isolator, the top coil, the bottom coil, and the lower strut plate. This is done so that it can be re-assembled and line up.



18. Place a clamp on the lower coil spring and mount so tha the shock does not fall to the ground when the nut is removed.

19. Carefully compress the strut until the upper bearing plate can be removed. Remove the nut and hardware and save for later re-installation.



20. Locate the new pre-load spacer. Place the bearing plate on a work bench upside down. Remove the rubber isolator and install the pre-load spacer in its place. Re-install the rubber isolator making sure to line up your marks made earlier.





21. Install the modified bearing plate back into the strut using the OE hardware. **Make sure that all the reference lines you scribed earlier line up with each other to make installation much easier.**



22. Locate a new upper strut spacer part # 22909-01 and install it on the top of the strut using the new 22909NB hardware bag. **Torque nuts to 35 ft lbs.**



23. Secure the lower strut mount in a bench vise so that the (2) studs can be knocked out with a hammer. Make sure to thread a nut on the studs so that you don't damage the threads



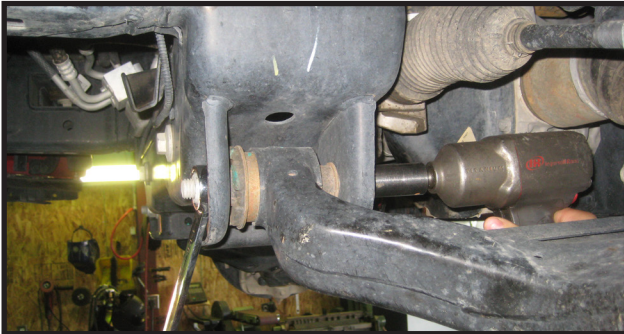
24. With the studs removed from the lower strut mount, you will now be able to re-install the strut assembly back into the vehicle. Locate (3) 3/8" nuts and (3) 5/16" washers from hardware bag D2PNB. Loosely start the nuts on the upper strut mount so the strut can still be maneuvered around. **Note: It is usually necessary to un-pin the lower control arm from the frame pockets again, to allow enough room to install the strut.**



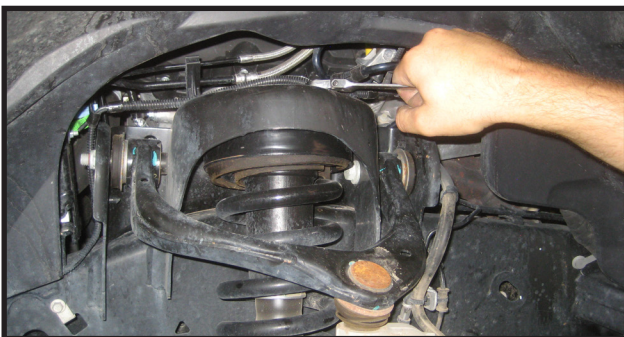
25. Line the lower strut mount up with its mounting holes on the lower control arm and re-install the (2) studs. Use the nuts to tighten and suck the studs back down into the mount.



26. If you un-pinned the lower control arm in Step # 24, at this time, re-attach the lower control arm to the frame pocket mounts and secure using the OE hardware. **Torque bolts to 115 ft lbs.**



27. Return to the (3) 3/8" nuts on the upper strut mount and tight them down. **torque to 45 ft lbs.**



28. Re-install the tie rod end into the steering knuckle and **torque nut to 95 ft lbs.**

29. Wait to re-install the Sway bar endlink into the lower control arm until this process has been performed on the passenger side, then re-install both sway bar endlinks.

**Repeat steps #3 - #28 on the passenger side of the vehicle, and lastly, re-install both sway bar endlinks.**

30. Re-install the steering wire harness on the Rack and pinion. Install tires and wheels and lower the vehicle back to the ground.

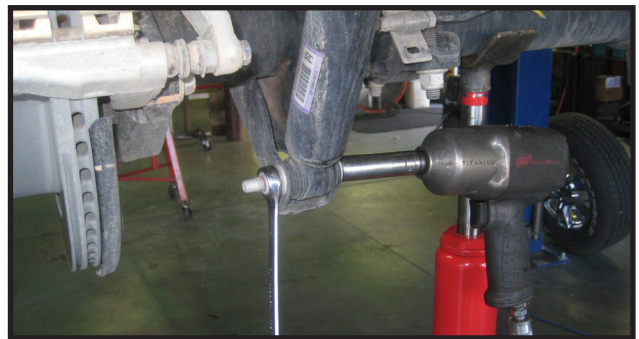
**Front End Installation Complete!**

**Rear End Installation:**

31. Carefully block the front tires so that the vehicle cannot roll forward, safely lift the rear of the vehicle and support it with a pair of jack stands under the frame. Remove the tires and wheels from the vehicle.

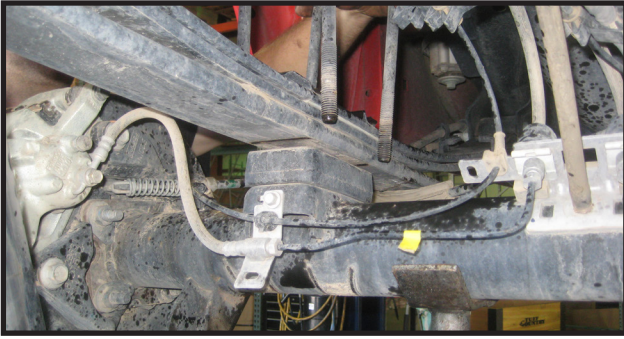
32. Place a hydraulic floor jack under the driver and passenger side of the axle.

33. Working on the driver side, remove the lower shock mounting hardware and save. **Special Note: the OE shocks will be long enough once this system has been installed but Tuff Country highly recommends replacing the rear shocks. If you have not already ordered your new shocks, please contact Tuff Country or your local Tuff Country dealer to order your new shocks. Tuff Country recommends a 30" fully extended nitrogen gas shock to be installed.**

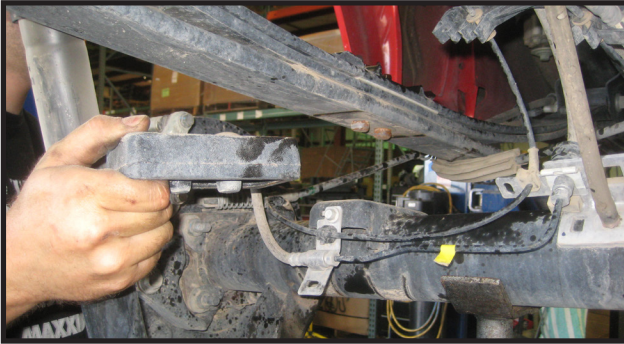


34. Working on the driver side, remove the u-bolt hardware and ubolts. Save the ubolts and hardware.





35. Lower the driver side of the axle down enough that the OE block can be removed. Remove the block and discard.



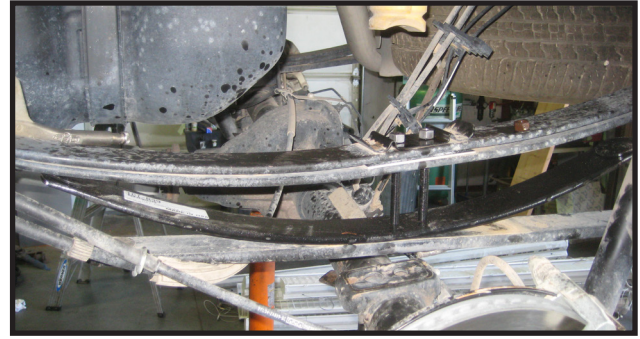
36. Place a vise grip or C-clamp on the outer ends of the rear leaf spring to prevent the leaves from shifting when the center pin is removed.



37. Carefully remove the center pin from the rear leaf spring and discard bolt. The leaf spring may be under some pressure so use caution.



38. Locate the new rear add-a-leaf, along with (2) new center pins and (2) nuts. Install the new add-a-leaf into the leaf pack in between the thick bottom overload spring, and the rest of the leaf back.



39. Tighten the new center pins in an alternating motion so that the gap is closed equally. Trim off the excess threads once the bolts have been tightened.



40. Remove the Vise grips or C-clamps for the leaf spring and raise the rear axle back up to the springs so the U-bolts can be re-installed.

41. Re-install the u-bolt plate and u-bolts. **Torque u-bolt nuts to 125 ft lbs.**

42. Re-install the lower shock bolt and hardware, unless you are putting new shocks on, then at this time, install the new shocks.

**Repeat steps 32 - 42 on the passenger side of the vehicle.**

43. Install tires and wheels and carefully lower the vehicle back to the ground.

44. Check and double check to make sure all steps have been performed properly.

**Congratulations, installation complete!**

**Special note: After the completion of the installation, Tuff Country EZ-Ride Suspension recommends taking the vehicle to an alignment shop and having a proper front end alignment performed.**

**Tuff Country EZ-Ride Suspension recommends that a complete re-torque is done on all bolts associated with this suspension system. It is the customers responsibility to make sure that a re-torque is performed on all hardware associated with this suspension system after the first 100 miles of installation. It is also the customers responsibility to do a complete re-torque after every 3000 miles or after every off road use. Neglect of following these steps could cause brackets to come loose and cause serious damage to the suspension system and to the vehicle.**

**Tuff Country EZ-Ride Suspension packages (2) sets of instruction sheets with this box kit. (1) is for the installer and (1) is for the customer. The (1) for the customer has some post installation procedure literature and it is the installers responsibility to make sure that the customer receives a copy of the installation manual along with the literature.**

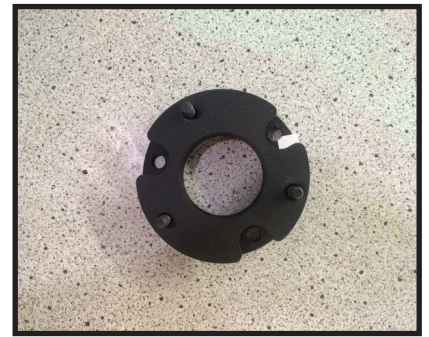
**If you have any questions or concerns, please feel free to contact Tuff Country or your local Tuff Country dealer.**



**20930-01 / Qty (1)**  
**Driver side Upper Control Arm**



**20930-02 / Qty (1)**  
**Pass. side Upper Control Arm**



**22909-01 / Qty (2)**  
**Upper Strut Spacer**



**S10246 / Qty (2)**



**S10259 / Qty (2)**



**23000-05 / Qty (2)**  
**Pre-Load Spacer**