ICON VEHICLE DYNAMICS®
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95225 INSTALLATION INSTRUCTIONS

10-3-2018 REV.A

PART #	DESCRIPTION
95225	2017-UP FORD F150 RAPTOR MULTI-RATE LEAF SPRING KIT

COMPONENTS INCLUDED

(2) 198510 17-UP RAPTOR F150 MULTI-RATE LEAF SPRING W/ ADD A LEAF	(1) 95225H LEAF SPRING HARDWARE KIT

HARDWARE INCLUDED

95225H HARDWARE KIT

(2) 190007 LEAF SPRING CLAMP PLATE (4) 195010 5/8" U-BOLTS W/ HARDWARE	(2) 605831 M18 OEM FORD BOLT

TOOLS REQUIRED

JACK JACK STANDS GRINDER W/ CUT-OFF WHEEL (OR SAWZALL) VISE GRIPS C-CLAMPS TORQUE WRENCH 9/16" SOCKET / WRENCH 3/4" SOCKET / WRENCH	15/16" SOCKET / WRENCH 10MM SOCKET / WRENCH 15MM SOCKET / WRENCH 18MM SOCKET / WRENCH 19MM SOCKET / WRENCH 21MM SOCKET / WRENCH 24MM SOCKET / WRENCH 27MM SOCKET / WRENCH

TECH NOTES

1. ICON MULTI-RATE LEAF SPRING KIT REQUIRES BUMP STOP SPACER KIT (95226) IF ICON HYDRAULIC BUMP STOP KIT (95121) IS NOT USED.

THE ICON MULTI-RATE LEAF SPRING IS MODULAR, MEANING THAT YOU CAN CONFIGURE THE SPRING PACK TO YOUR DESIRED SETTING FROM THESE AVAILABLE OPTIONS:

OPTION #1 - THE SPRING IS SHIPPED AT THIS SETTING (LIGHTEST SPRING RATE).

OPTION #2 - REPLACE THE 3RD SPRING (COUNTING FROM THE TOP DOWN, NOT INCLUDING THE HALF LENGTH REBOUND LEAF) WITH THE ADDITIONAL LEAF.

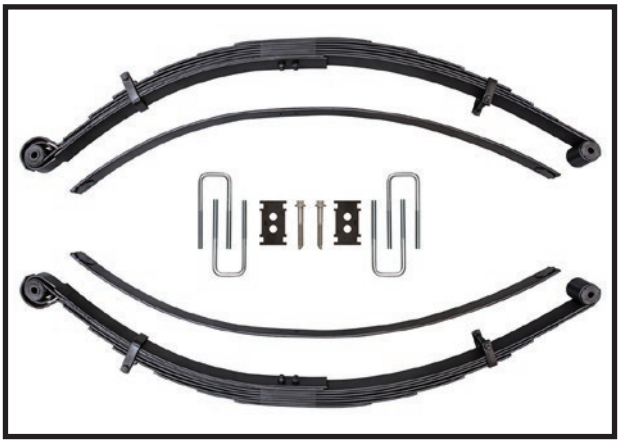
OPTION #3 - PLACE THE ADDITIONAL LEAF IN THE 3RD SPRING POSITION (COUNTING FROM THE TOP DOWN, NOT INCLUDING THE HALF LENGTH REBOUND LEAF). DO NOT REMOVE LEAF FROM THE SPRING PACK.

ICON'S MEASURED SPECS FROM OUR TEST TRUCK (2017 CREW CAB RAPTOR):

OPTION #1 - LIFT HEIGHT OVER STOCK: + 1.00" (UNLOADED)

OPTION #2 - LIFT HEIGHT OVER STOCK + 2.25" (UNLOADED)
LIFT HEIGHT OVER STOCK WITH 400LBS IN BED: + 1.00"

OPTION #3 - LIFT HEIGHT OVER STOCK: + 3.00" (UNLOADED)
LIFT HEIGHT OVER STOCK WITH 850LBS IN BED: + .50"



WARNING!

*** READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION! IF THESE INSTRUCTIONS ARE NOT PROPERLY FOLLOWED SEVERE FRAME, SUSPENSION AND TIRE DAMAGE MAY RESULT TO THE VEHICLE!*

*** ICON VEHICLE DYNAMICS RECOMMENDS THAT YOU EXERCISE EXTREME CAUTION WHEN WORKING UNDER A VEHICLE THAT IS SUPPORTED WITH JACK STANDS.*

*** ICON VEHICLE DYNAMICS RECOMMENDS ALL INSTALLATION TO BE PERFORMED BY A PROFESSIONAL SHOP/SERVICE TECHNICIAN. PRODUCT FAILURE CAUSED BY IMPROPER INSTALLATION WILL NOT BE COVERED UNDER ICON'S WARRANTY POLICY.*

INSTALLATION

1. Using a properly rated jack, raise the rear of the vehicle and support the frame rails with jack stands. Ensure the jack stands are secure and set properly before lowering the jack. NEVER WORK UNDER AN UNSUPPORTED VEHICLE. Remove the rear wheels.

2. With a floor jack under the rear end, slightly raise the rear axle housing from full droop to remove tension from the shock, loosen and remove the shocks. Make sure the axle is well supported. Keep all of the hardware, it will be reused.

3. Remove the parking brake bracket from the driver side front spring pocket using a 10mm to allow access to the spring bolt. With the screw removed, grind or cut the screw shorter to provide more room for the leaf spring in the pocket. **[FIGURE 1 & 2]**

FIG.1

FIG.2

4. Remove the vent line from the axle and remove the vent fitting which also holds the brake line bracket to the axle tube. This will allow for additional flex in the lines so the axle may be drooped further.

5. Slowly lower the axle to unload the tension in the leaf spring. When the axle reaches full droop on the leaf springs jack the rear end back up about 1" to relieve any negative pressure in the spring and to insure that the axle weight is being supported by the jack.

6. Replace one side at a time so that the other side helps maintain pinion angle and prevents the drive shaft from pulling out. However, loosening the U-bolts slightly on both sides during the installation process reduces bind and aids in the installation.

7. Starting on the driver's side, remove the U-bolts and lower U-bolt plate. Lower the axle slightly to disengage the center pins from the block and axle pad. Remove the factory block.

8. Using a 21mm and a 24mm, loosen the upper shackle bolt and remove the nut from the lower shackle bolt. **[FIGURE 3]**

FIG.3

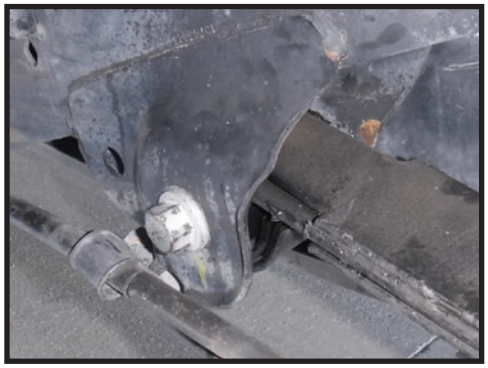


FIG.4

9. The front spring bolt cannot be removed because of interference with the gas tank and exhaust so it must be cut out. New bolts are supplied in the kit. Remove the nut from the front spring bolt, it will be reused (27mm nut, 24mm head). Push the bolt back though the hole so that there is adequate shank exposed under the head of the bolt to cut the head off. This can be done with either an abrasive cutting disc or reciprocating saw. Clamping a vise grip on the nut end of the bolt helps hold the bolt while cutting. Cut the head off of the bolt. **[FIGURE 4]**

10. The spring is now only being held in by the shank of the front bolt and the lower rear shackle bolt. This is a heavy assembly so use caution when removing the bolts, use a helper if possible. Remove the bolts and remove the spring from the vehicle.

11. Remove the shackle from the stock spring noting the orientation of the shackle and the direction of the bolt, the open part of the formed metal shackle should be toward the spring. If the shackle is put on backward it can bind against the leaf pack under compression of the suspension. Install the shackle on the new spring, start the nut but DO NOT TIGHTEN.

12. Install the spring in the vehicle, again, its heavy so use a helper. Install the new front bolt in the opposite direction from factory, from the outside inward and start the nut but do not tighten. Install the lower shackle bolt, start the nut but do not tighten.

13. Trim the center pins: Cut off the excess thread leaving 2-3 threads above the nut on the center pins. **[FIGURE 5]**

FIG.5

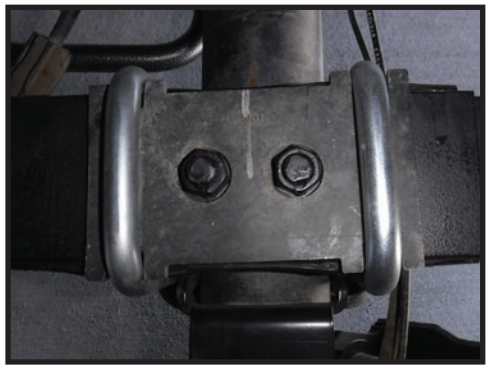


FIG.6

14. Raise the axle up to the spring and align the center pins in the spring pad. Place the clamp plate on top of the leaf pack. Install the new U-bolts using the openings in the spring plate to locate them correctly. Install the factory lower spring plate, washers and nuts. Take up the slack in the U-bolts but do not tighten. **[FIGURE 6]**

15. Repeat steps 7-14 on passenger side.

16. Raise the axle enough to reinstall the shocks. Tighten the U-bolts to approximately 40 ft-lbs. Final torque will be set with the truck sitting under its own weight on the ground.

17. Reattach the lower brake line bracket and vent line. Connect the parking brake bracket to the front driver side spring pocket using the shorter screw and torque to factory spec using a 10mm.

18. Reinstall the tires and lower the vehicle to the ground. Bounce the back of the truck a couple of times to let the bushings center at ride height.

19. Torque the front spring eye and shackle bolts: Front bolt 181 ft-lbs, Shackle bolts 89 ft-lbs.

20. Torque the U-bolts 145 ft-lbs.

CHANGING SPRING RATE:

1. Using a properly rated jack, raise the rear of the vehicle and support the frame rails with jack stands. Ensure the jack stands are secure and set properly before lowering the jack. NEVER WORK UNDER AN UNSUPPORTED VEHICLE. Remove the rear wheels.

2. With a floor jack under the rear end, slightly raise the rear axle housing from full droop to remove tension from the shock, loosen and remove the shocks. Make sure the axle is well supported. Keep all of the hardware, it will be reused.

3. Remove the vent line from the axle and remove the vent fitting which also holds the brake line bracket to the axle tube. This will allow for additional flex in the lines so the axle may be drooped further.

4. Slowly lower the axle to unload the tension in the leaf spring. When the axle reaches full droop on the leaf springs jack the rear end back up about 1" to relieve any negative pressure in the spring and to insure that the axle weight is being supported by the jack.

5. Replace one side at a time so that the other side helps maintain pinion angle and prevents the drive shaft from pulling out. However loosening the U-bolts slightly on both sides during the installation process reduces bind and aids in the installation.

6. Lower the axle so there is a couple of inches clearance between the leaf pack and the spring pad.

7. Use a C-clamp to clamp the first 3 leaves on the front and the first 2 leaves in the back together to help hold them in the vehicle and maintain their alignment. **[FIGURE 1 & 2]**

FIG.1

FIG.2

8. Remove the cross bolts and sleeves from the spring retainers. Carefully loosen the center pins, it may be necessary to hold the head of the pins with a vise grip. There may be some residual force left in the spring before the nuts are fully off the center pin so it helps to use a C-clamp near the middle of the pack also to slowly release the pressure.

9. Remove the bottom 5 leafs of the pack.

SPRING RATE CHANGE OPTIONS:

Counting from the top down (not including the half length rebound leaf), you can either replace the 3rd spring with the add-a-leaf or leave the existing spring installed and make the add-a-leaf the new 3rd spring.

Add-a-leaf replaces #3 = 1.25" higher ride height (unloaded) and 20% higher spring rate
Add-a-leaf becomes #3 = 2.0" higher ride height (unloaded) and 40% higher spring rate

10. Add or replace the additional leaf and additional separator plate to the pack. Line up all the holes and put the new center pins through the pack. The center pins are fine thread, use care not to damage the threads on assembly. **[FIGURE 3]**

FIG.3

11. Put the bottom half of the pack back in the vehicle guiding the center pins up through the upper 3 leaves. A long drift punch helps to align the holes. It may be helpful to loosen the 2 C-clamps slightly on the front and rear to help shift all leaves into position. Use a large C-clamp near the middle to pull everything together until you can get the nuts started on the center pin.

12. Tighten the center pins to 54 ft-lbs. Reinstall the cross bolts and sleeves in the retainer clips. Make sure the bolt go from the inside out with the head toward the frame for clearance. Trim the center pins: Cut off the excess thread 2-3 threads above the nut on the center pins.

13. Raise the axle up to the spring and align the center pins in the spring pad. Place the clamp plate on top of the leaf pack. Install the U-bolts using the openings in the spring plate to locate them correctly. Install the factory lower spring plate, washers and nuts. Take up the slack in the U-bolts but DO NOT TIGHTEN.

14. Repeat process on opposite side.

15. Raise the axle enough to reinstall the shocks. Tighten the U-bolts to approximately 40 ft-lbs. Final torque will be set on the ground. Reattach the lower brake line bracket and vent line.

16. Reinstall the tires and lower the vehicle to the ground. Torque U-bolts to 145 ft-lbs.

VERIFY ALL FASTENERS ARE PROPERLY TORQUED BEFORE DRIVING VEHICLE.

RETORQUE ALL NUTS, BOLTS AND LUGS AFTER 100 MILES AND PERIODICALLY THEREAFTER.

ICON VEHICLE DYNAMICS LIMITED LIFETIME WARRANTY

ICON Vehicle Dynamics warrants to the original retail purchaser who owns the vehicle on which the product was originally installed. ICON Vehicle Dynamics does not warrant the product for finish, alterations, modifications and/or installation contrary to ICON Vehicle Dynamics instructions. ICON Vehicle Dynamics products are not designed, nor are they intended to be installed on vehicles used in race applications, for racing purposes or for similar activities. (A "race" is defined as any contest between two or more vehicles, or a contest of one or more vehicles against the clock, whether or not such contest is for a prize). This warranty does not include coverage for police or taxi vehicles, race vehicles, or vehicles used for government or commercial purposes. Also excluded from this warranty are sales outside of the United States of America and Canada.

ICON Vehicle Dynamics' obligation under this warranty is limited to the repair or replacement, at ICON Vehicle Dynamics' discretion, of the defective product. Any and all costs of removal, installation or re-installation, freight charges and incidental or consequential damages are expressly excluded from this warranty. Items that are subject to wear are not considered defective when worn and are not covered.

ICON Vehicle Dynamics components must be installed as a complete kit as shown in our current application guide. Any substitutions or exemptions of required components will immediately void the warranty. Some finish damage may happen to parts during shipping and is not covered under warranty.

This warranty is expressly in lieu of all other warranties expressed or implied. This warranty shall not apply to any product that has been improperly installed, modified or customized subject to accident, negligence, abuse or misuse.

ICON VEHICLE DYNAMICS LIABILITY DISCLAIMER

ICON does not make any representations or warranties regarding the fitness of any ICON product for a particular installation or conformance of any ICON product with a particular vehicle application. Installation of any ICON suspension system is at the sole discretion of the end user and in making a purchase of any ICON suspension system, the purchaser assumes the responsibility and liability for any and all damage or injury, of any kind or nature whatsoever, caused by, resulting from, arising out of, or occurring in connection with the use or installation of any ICON suspension system. ICON is not liable for and specifically disavows any installation that is not in conformance with original equipment manufacturer's recommendations or instructions. Purchaser agrees that in the event of any claim or lawsuit arising out of the installation or use of an ICON suspension system, purchaser shall indemnify and hold harmless ICON, its agents, employees, officers and owners from and against any and all loss, expense, damage or injury that ICON may sustain as the result of such claim. [ICON defers to and recommends recalibration after suspension installation on 2018 model Toyota vehicles and other manufacturers who make any similar recommendations.]

ICON VEHICLE DYNAMICS®
PERFORMANCE SUSPENSION SYSTEMS AND SHOCK ABSORBERS

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