

7929 Lincoln Ave. Riverside, CA 92504  
 Phone: 951.689.ICON | Fax: 951.689.1016

PART #	DESCRIPTION
95002	17-20 FORD RAPTOR 3.0 VS RR CDCV COILOVER KIT

COMPONENTS INCLUDED	
(1) 194964RCD 17-20 RAPTOR COILOVER (DRVR) (1) 194964RCP 17-20 RAPTOR COILOVER (PASS)	(1) 194507 10-20 RAPTOR RESI MOUNT (DRVR) (1) 194508 10-20 RAPTOR RESI MOUNT (PASS) (1) 95002H 17-20 RAPTOR COILOVER HARDWARE KIT
HARDWARE INCLUDED	
95002H HARDWARE KIT	
(2) 197011 04-08 F-150 & RAPTOR ADAPTOR LCA (2) 197013 10+ RAPTOR ADAPTOR LCA NARROW (4) 257260 EXTRUDED RESI MOUNT CLAMP (2) 257262M EXTRUDED RESERVOIR MOUNT (4) 605040 10-32 X 1.125 SOCKET HEAD BOLT (4) 605052 1/4-20 NYLOCK NUT	(4) 605053 1/4 FLAT WASHER (4) 605055 1/4-20 X .750 BUTTONHEAD BOLT (2) 605500 5/8-11 X 5.000 BOLT (2) 605520 5/8-11 NYLOCK NUT (4) 605530 5/8 FLAT WASHER (1) 611019 COILOVER PAIR HARDWARE KIT
611019 HARDWARE KIT	
(6) 605101 3/8-16 X 1.00 BOLT	(6) 605131 3/8 SPLIT LOCK WASHER
TOOLS REQUIRED	
JACK JACK STANDS 5/32" ALLEN WRENCH TORQUE WRENCH 7/16" SOCKET / WRENCH 9/16" SOCKET / WRENCH	15/16" SOCKET / WRENCH 15MM SOCKET / WRENCH 18MM SOCKET / WRENCH 21MM SOCKET / WRENCH 27MM SOCKET / WRENCH 30MM SOCKET / WRENCH
TECH NOTES	
<p>1. 2019-UP VEHICLES WITH FACTORY LIVE VALVE SHOCKS WILL NEED AN ICON DAMPER INTERFACE DEVICE (PN: 95199) TO ALLOW THE VEHICLE DRIVE MODES TO OPERATE CORRECTLY WITH THE OE SHOCKS REMOVED.</p> <p>2. YOUR ICON COILOVER ASSEMBLIES ARE PRESET TO ICON'S RECOMMENDED RIDE HEIGHT. REDUCING DROOP TRAVEL WILL REDUCE RIDE QUALITY. DO NOT PRELOAD THE COIL BEYOND 1.65" OF EXPOSED THREADS BETWEEN THE BOTTOM OF THE TOP CAP AND THE TOP OF THE COIL ADJUSTER NUT. ADJUSTING PRELOAD BEYOND THIS SETTING WILL CAUSE THE COIL TO BIND AND DAMAGE WILL OCCUR TO COILOVER AND/OR VEHICLE.</p> <p>3. YOUR ICON COILOVER ASSEMBLIES COME FACTORY CHARGED TO 150 PSI. RELEASING NITROGEN PRESSURE MAY LEAD TO SHOCK MALFUNCTION AND REDUCED RIDE QUALITY. FAILURE CAUSED BY LOW NITROGEN PRESSURE IS NOT COVERED UNDER ICON'S WARRANTY POLICY.</p>	



WARNING!
<p><b>** 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!</b></p> <p><b>** ICON VEHICLE DYNAMICS RECOMMENDS THAT YOU EXERCISE EXTREME CAUTION WHEN WORKING UNDER A VEHICLE THAT IS SUPPORTED WITH JACK STANDS.</b></p> <p><b>** 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.</b></p>

## INSTALLATION

**1.** Using a properly rated jack, raise the front 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 front wheels.

NOTE: If installing on 2019-UP vehicles with factory Live Valve shocks, the Live Valve wire harness will need to be removed. Trace the wire from the shocks all the way to the plug while removing any retaining clips that secure the wire to the frame. Depress the locking tab on the plug to disconnect it and then remove it from the vehicle.

**2.** Remove the front OEM shock assemblies from the vehicle. To gain access to the (3) nuts on the upper mount unclip the wiring harness on the side of the battery as shown. [FIGURE 1 & 2]

FIG.1



FIG.2



**3.** Disconnect the tie rod and upper control arm from the knuckle. Loosen the nuts (18mm and 21mm) and strike the side of the knuckle at the taper to dislodge. Tie or bungee cord the top of the knuckle to prevent it from flopping outward and overextending the CV joints. Disconnect the sway bar link at the sway bar using an 18mm. [FIGURE 3 & 4]

FIG.3



FIG.4



**4.** Remove the lower shock bolt (30mm nut, 27mm head). Remove the (3) upper shock mount bolts. NOTE: Do not loosen the center nut on the top of the shock or the assembly can come apart violently, resulting in damage and serious injury. Remove the shock assembly from the vehicle. You will have to push down on the lower control arm to get the bottom of the shock to come out of its pocket in the arm. If the knuckle is held slightly outward from vertical then the arm will extend downward easier.

NOTE: If you are installing ICON upper control arms, do so now. Refer to upper control arm instructions.

**5.** Assemble and install the reservoir mounts. Loosely install the clamp blocks onto the dovetail clamp base with the supplied #10 x 1-1/8" socket head screws (5/32" allen). Secure the clamp base to the reservoir bracket with the supplied 1/4" button head bolts and nylock nuts (5/32" allen, 7/16" wrench). [FIGURE 5]

FIG.5



**6.** Install the reservoir assembly to the vehicle on the forward upper control arm bolt. Remove the nut (21mm) on the front upper control arm pivot bolt, on the passenger side you must also remove the ground wire located just below the nut, slide the reservoir bracket assembly over the bolt and reinstall the nut. If using ICON upper control arms, torque bolt to factory spec. If using OEM upper control arms, DO NOT TIGHTEN at this time. This must be tightened on the ground to avoid damaging the OEM upper control arm bushings. Reinstall the ground wire through the bracket. [FIGURE 6 & 7]

FIG.6



FIG.7



**7.** Install the ICON coilover assembly. Install the heim spacers in the lower control arm with the shorter one towards the front of the truck. Make sure the spacers in the lower eyelet of the shock are oriented correctly. It helps to get the 3/8" x 1" upper bolts ready with the lock washers on them and placed in a easy to reach spot once you get the coilover up in position, as the coilover assembly is very heavy, an extra set of hands is recommended for this step.

**8.** Lift the coilover assembly up into position and start the (3) upper mount bolts. Push down on the lower control arm and to get the lower eyelet into position in the lower control arm pocket. [FIGURE 8 & 9]

FIG.8

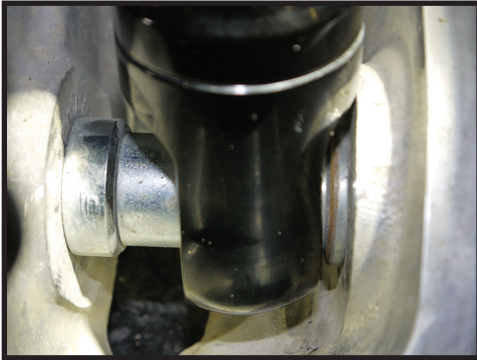


FIG.9

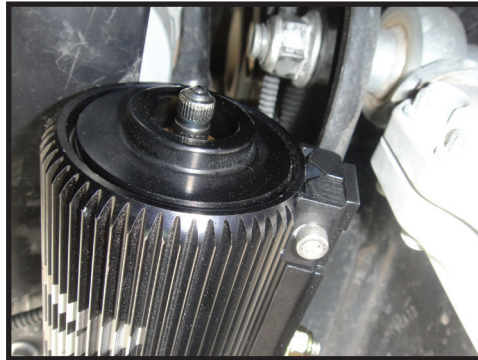


**9.** Install the lower 5/8" x 5" bolt and washer through the lower pivot then install the second washer and nut. [Torque to 120 ft-lbs]

**10.** Reattach the upper ball joint, tie rod, and sway bar link [Torque to factory spec]. Tighten the (3) upper mount bolts. [Torque to 35 ft-lbs]

**11.** Mount the shock reservoir: Insert the back of the reservoir dovetail into the back of the mount and rotate it into the mount. Position the clamp blocks over the front part of the dove tail and secure by tightening the #10 allen head bolts. Do not overtighten. [Torque to 24 in-lbs] [FIGURE 10]

FIG.10



**12.** Reinstall wheels and secure the wire harness clip on the side of the battery. Slowly lower the vehicle to the ground. Scrub out the suspension by rolling forward and backward a couple of feet 2-3 times. [Torque lugs to factory spec]

**13.** With the vehicle sitting on the ground you can now torque the front upper control arm pivot bolts to factory spec.

**14.** Have the vehicle professionally aligned.

***VERIFY ALL FASTENERS ARE PROPERLY TORQUED BEFORE DRIVING VEHICLE.***

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

## 3.0 VS SERIES SHOCK & COILOVER TECHNICAL INFORMATION

### MAINTENANCE

ICON shock absorbers are a high quality rebuildable race style shock absorber designed for optimal performance. With a unit of this caliber on your vehicle, routine maintenance is required to keep them looking and operating in like new condition. Residual oil and assembly lube may be present at all seal paths from the factory out of the box and is considered normal. Pooling of oil however is not acceptable at any time and one should contact the ICON dealer where purchased.

**BELOW ARE GUIDELINES BASED ON HOW YOU USE YOUR VEHICLE BUT YOUR MILEAGE MAY VARY:**

#### **STREET USE:**

- Send in for factory servicing every 40,000 miles or if a leak develops, ride quality decreases, or they begin to make excessive noise.
- Remove any buildup of road salt, mud, or debris from shocks and coil springs anytime accrued
- Clean with mild soap and water with each oil change or anytime you notice build up.
- Wax the cylinders yearly with automotive wax to prevent corrosion.
- Check nitrogen pressure yearly. (252004 charge needle assembly available at any ICON distributor)
- Check bearings for excessive wear yearly.
- DO NOT apply any type of lube to the upper and lower bearings.

#### **STREET/DIRT:**

- Send in for factory servicing every 15,000 miles or if a leak develops, ride quality decreases, or they begin to make excessive noise.
- Clean with mild soap and water with each oil change, offroad trip, or anytime you notice build up.
- Wax the cylinders yearly with automotive wax to prevent corrosion.
- Check nitrogen pressure each dirt outing. (252004 charge needle assembly available at any ICON distributor)
- Check bearings for excessive wear yearly.
- DO NOT apply any type of lube to the upper and lower bearings.

#### **DIRT USE:**

- Send in for factory servicing every 1,000 miles.
- Check nitrogen pressure each outing. (252004 charge needle assembly available at any ICON distributor)
- Remove any buildup of mud or debris from shocks and coil springs after every outing.

#### **SELF-SERVICE:**

- Contact ICON for service kits & tools at (951) 689-4266.

### PRODUCT REGISTRATION

Please visit: <http://www.iconvehicledynamics.com/tech-support/registration/> to register your product.

### ICON VEHICLE DYNAMICS SHOCK ABSORBER WARRANTY

This shock absorber has a 1 year warranty against any manufacturer's defects. If a shock fails within the initial year of ownership, the shock must be shipped to ICON Vehicle Dynamics for inspection and service. If a shock is inspected and it has been determined the shock failed due to neglect, damage caused by improper installation or any other reason besides "normal wear and tear", the owner of said shock is responsible for all service costs. This includes labor, parts, and shipping.

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.

To send a shock in for warranty please visit our website <http://www.iconvehicledynamics.com/tech-support/shock-service/>



**ICON VEHICLE DYNAMICS®**  
PERFORMANCE SUSPENSION SYSTEMS AND SHOCK ABSORBERS

7929 Lincoln Ave. Riverside, CA 92504 Phone: 951.689.ICON Fax: 951.689.1016  
[www.iconvehicledynamics.com](http://www.iconvehicledynamics.com)



**FOLLOW US ON FACEBOOK!**



7929 Lincoln Ave. Riverside, CA 92504  
Phone: 951.689.ICON | Fax: 951.689.1016

PART #	DESCRIPTION
95121	17-20 RAPTOR REAR HYDRAULIC BUMP STOP KIT

**COMPONENTS INCLUDED**

(2) 204907 BUMP STOP ASSEMBLY (1) 190011 ABS VENT BRACKET (1) 197030 BUMP STOP CROSS BAR (2) 194031 BUMP STOP TENSION RODS (1) 194020 BUMP STOP MOUNT (DRVR) (1) 194021 BUMP STOP MOUNT (PASS) (1) 194022 INSIDE BUMP STOP MOUNT (DRVR)	(1) 194023 INSIDE BUMP STOP MOUNT (PASS) (2) 194024 STRIKER PLATE (2) 194025 BUMP STOP NUT PLATE (1) 194026 TENSION MID PLATE (FRONT) (1) 194027 TENSION MID PLATE (REAR) (2) 194028 STRIKER NUT PLATE (1) 95121H 17-UP RAPTOR BUMP HARDWARE KIT
---	--

**HARDWARE INCLUDED**

95121H HARDWARE KIT

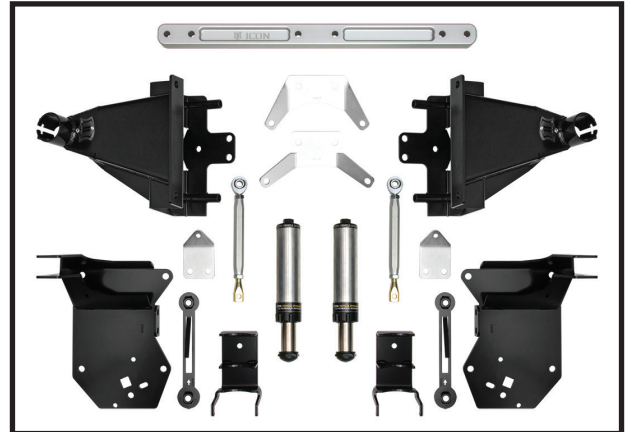
(2) 169003 SLEEVE .750 X .510 X .250 (2) 194028 REAR BUMP STRIKER NUT TAB (2) 209003 SLEEVE 2.25 X 2.010 X 1.00 (2) 295523 KMXL8 LEFT HAND ROD END (2) 295524 1/2-20 CLEVIS .25 SLOT X .38 HOLE (4) 605052 1/4-20 NYLOCK NUT (4) 605057 1/4-20 X 2.000 HHCS (2) 605090 5/16-18 X .750 FHSCS 18-8 SS (2) 605108 3/8-16 X 1.250 HHCS (2) 605121 3/8-16 NYLOCK NUT (4) 605133 3/8" FLAT WASHER	(8) 605302 1/2-13 X 1.500 HHCS (2) 605304 1/2-13 X 2.250 HHCS (6) 605306 1/2-13 X 2.500 HHCS (4) 605314 1/2-13 X 4.250 HHCS (18) 605321 1/2-13 NYLOCK NUT (42) 605330 1/2" FLAT WASHER (4) 605342 1/2-13 X 2.75 HHCS FULL THREAD (2) 605355 1/2-20 JAM NUT THIN (2) 605356 1/2-20 LEFT HAND JAM NUT (2) 605970 VIBRATITE ANTI SEIZE TUBE (2) 605860 M8 X 1.25 X 30MM FLANGE BOLT
---	--

**TOOLS REQUIRED**

JACK JACK STANDS TORQUE WRENCH 3/4" SOCKET / WRENCH 7/16" SOCKET / WRENCH 5/32" ALLEN WRENCH	9/16" SOCKET / WRENCH 10MM SOCKET / WRENCH 13MM SOCKET / WRENCH 15MM SOCKET / WRENCH 16MM SOCKET / WRENCH 18MM SOCKET / WRENCH
---	---

**TECH NOTES**

1. YOUR ICON BUMP STOP ASSEMBLIES COME FACTORY CHARGED TO 150 PSI. PLEASE CONSULT ICON PRIOR TO MAKING ANY NITROGEN PRESSURE CHANGES.
2. ICON BUMP STOP KIT WORKS WITH OEM RAPTOR REAR SHOCKS AND LEAF SPRINGS.
3. MAKE SURE THAT THE BUMP STOP SPACER RING IS INSTALLED (REFER TO DIAGRAM). FAILURE TO INSTALL RING WILL CAUSE DAMAGE THAT IS NOT COVERED UNDER ICON'S WARRANTY POLICY.



**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. Remove the spare tire from underneath the bed, refer to the factory service manual for removal procedure. This is best done on the ground before placing the vehicle on jack stands.
2. Using a properly rated jack, raise the rear of the vehicle and support it with jack stands under the frame rails. Remove wheels and slowly lower the suspension to full extension.
3. Remove the factory bump stops. Twist and pull outward on the rubber bump stop to release it from the cup. Remove the bolt and bump stop cup, save the factory hardware. [FIGURE 1 & 2]

FIG.1



FIG.2



**4.** Move brake line bracket and wire harness on the driver side. Nothing needs to be disconnected just pushed out of the way. Remove the bolt holding the brake line bracket to the inside of the frame. Using a panel clip tool or large flat screwdriver, pop the plastic retaining clips out of the inside and top of the frame rail. You can now flex the lines and harness away from the inside of the frame. [FIGURE 3 & 4]

FIG.3



FIG.4



**5.** Move the exhaust on the passenger side of the vehicle. Loosen the exhaust clamps forward of the muffler. Remove the exhaust hangers just rear of the axle on both sides. Remove the two bolts from the rear exhaust hanger where it attaches to the bumper on each side, set aside for reinstallation later. The exhaust can now drop down out of the way to allow for bracket installation. A bungee or strap can be used to help support some of the weight in the lowered position. [FIGURE 5 - 8]

FIG.5



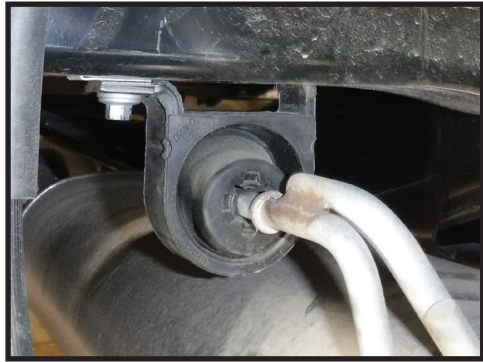
FIG.6



FIG.7



FIG.8



**6.** To clear the crossmember the exhaust will need to be positioned rearward. This is done by sliding the rear half of the exhaust out of the slip joint at the clamps by 3/4". [FIGURE 9 & 10]

FIG.9

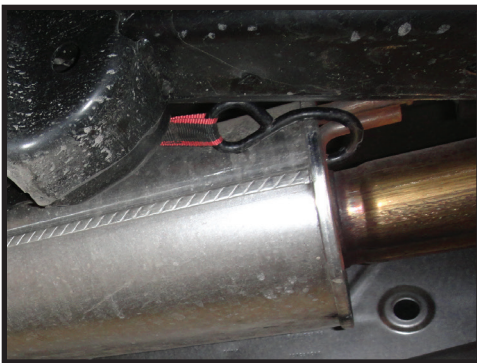
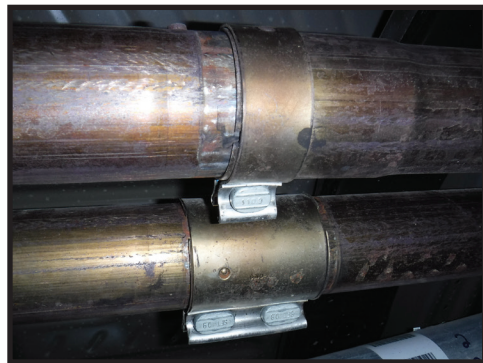


FIG.10



**7.** Inspect the frame, some factory welds may protrude above the frame surface. For ideal fitment you may need to sand the welds so that the surfaces meet well. Use rust inhibiting spray paint to cover any bare metal surfaces. When installing the bracketry system it is best to leave hardware loose until all hardware is partially threaded to assist in fitment. Raptors that have been driven hard off-road often experience some degree of frame damage just above the factory bump stop. This bump system can tolerate some frame distortion and still install well and align correctly but it may be necessary to leave some hardware very loose or slowly tighten hardware to pull the bracketry into place. [FIGURE 11 & 12]



FIG.11



FIG.12

**8.** Refer to the following illustration for correct bolt location and direction.

**9.** Position the outer bump stop brackets (PN: 194020, 194021) on the frame.

**10.** Position the nut plate on the inside of the frame with the arrow pointing toward the front of the truck. Pass the long end of the nut plate through pocket on the inside of the frame. Holding the handle, rotate the rest of the nut plate into the frame and position behind the holes in the frame. Install (2) 1/2" x 2.75" fully threaded bolts with washers through bracket and into the nut plate. Just start the threads a couple of turns. With the bolts started in the nut plates, pull the bump stop brackets back away from the frame so that the lower bolt tab of the bracket does not protrude past the inside surface of the frame rail [FIGURE 15]. This will allow room for the rest of the inner brace components to be installed. [FIGURE 13 - 16]



FIG.13



FIG.14

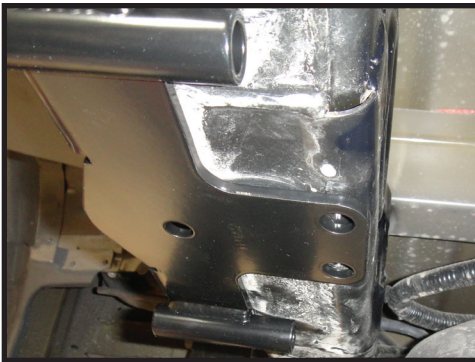


FIG.15

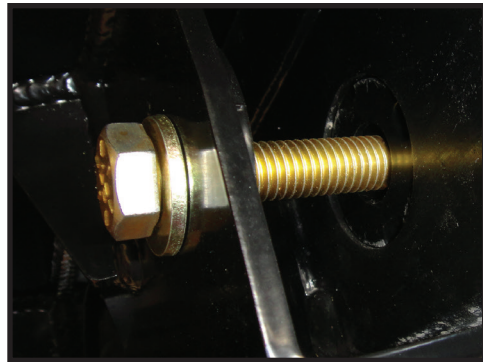


FIG.16

**11.** Preinstall the two mid plates (PN: 194026, 194027) on the billet crossmember with (2) 1/2"x 2.75" bolts and washers so that the head of the bolts points towards the front of the truck. [FIGURE 17 & 18]

FIG.17

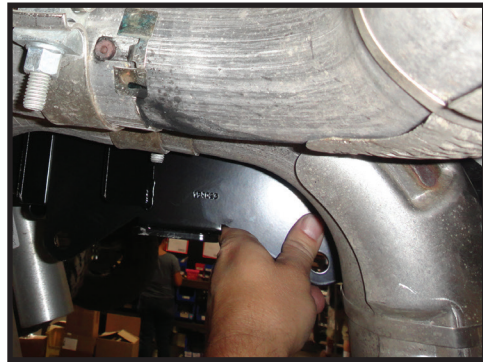
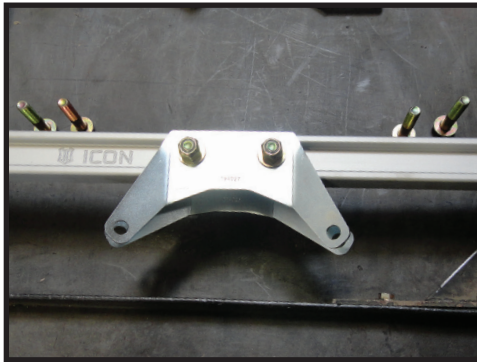


FIG.18

**12.** Install the inner brackets (PN: 194022, 194023) and the crossbar. All the crossbar bolts must go in from the front of the brackets (head of the bolts towards the front of the vehicle) to adequately clear the bed. Position the passenger side bracket over the exhaust and 2" lower than the underside of the bed. Insert the crossbar in the bracket tabs and slide (2) 1/2" x 2.75" bolts through the holes. Connect the driver side bracket to the other end of the crossbar in the same manner. This assembly is awkward to maneuver, an extra set of hands helps. You can now lift the components up into position under the bed and slide the outer brackets on each side inward to help support it. [FIGURE 19 & 20]

FIG.19



FIG.20

**13.** As you slide the outer brackets into position on the frame, make sure the nut plate is located correctly inside the frame with its locating washer on the rearward hole. You can snug up the fully threaded bolts to make sure it stays in place but do not tighten them. [FIGURE 21 & 22]

FIG.21

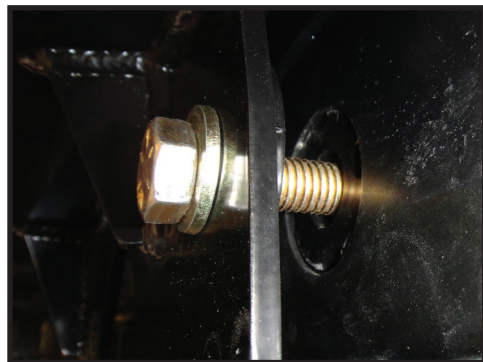
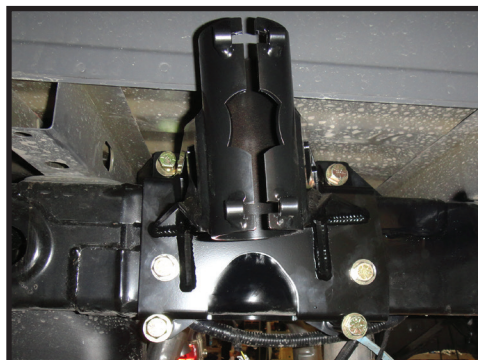


FIG.22

**14.** Install (2) 1/2" x 1.5" bolts with washers in the upper holes over the top of the frame on each side. The forward bolt goes into welded nut on the inside of the bracket. The rearward bolt uses a washer and nylock nut on the inside. Install (2) 1/2" x 4" bolts and washers on each side through the outer bracket tubes and through the inner bracket, secure with washers and nylock nuts [Torque 6 bolts to 78 ft-lbs]. Install the factory bolt that was removed from the bump stop through the hole in the bottom. [FIGURE 23]

FIG.23



**15.** Assemble the tension rods: Each tension rod gets a clevis on one end and a rod end on the other. The clevis is right hand threaded but the rod end is left hand threaded. Left hand threads are identified by a notch on the hex of both the jam nut and the tension rod. Thread the jam nuts on the rod end and clevis then thread them into the tension rod. Adjust to approximately 9.75" eye to eye, make sure equal amount of thread is exposed on both sides. [FIGURE 24]

FIG.24



FIG.25

**16.** Install the tension rod strut tabs on each side. IMPORTANT: on the driver side the tab goes ABOVE the tabs on the inner and outer bracket and on the passenger side it goes BELOW the tabs on the inner and outer bracket. Secure with (2) 1/2" x 1.25" bolts, washers, and nuts on each side. [FIGURE 26 & 27]

FIG.26

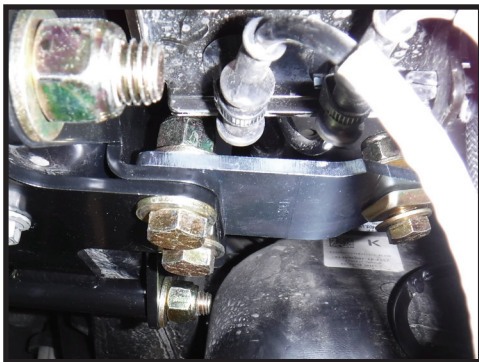


FIG.27



**17.** The crossmember is in slotted holes. Center it left to right and tighten the (4) bolts to 78 ft-lbs.

**18.** Install the tension rods. Adjust to length until the holes line up. Install the 3/8" x 1" bolt, washers, and nut at the clevis. Install the 1/2" x 1.75" bolt, washer, and nut at the rod end with supplied spacer in front of the rod end [FIGURE 25]. Make sure the jam nuts are backed up away from the tension rod then turn the rod to take up the slack, rotate the rod an additional 1/2 turn with a wrench to pretension and stabilize the bracketry system. Tighten, 3/8" to 45ft-lbs, 1/2" to 78ft-lbs, and jam nuts to 54ft-lbs using a wrench on both the jam nut and rod so as not to twist the rod end.

**19.** Replace exhaust hangers. It is common for the rubber in the hangers to compress over time. It may be necessary to bend the rods that go through the hangers to position the exhaust higher for clearance to the strut rods.

**20.** Install the bump stops. Apply anti-seize to the inside of the bump stop mount, slide the 1" spacer ring over the bump stop, then slide the bump stop up into the mount. Install the 1/4" bolts and nuts in the mount's pinch tubes and tighten. Do not over tighten the pinch bolts or the bump stop could bind and not fully extend. [FIGURE 28 & 29]

FIG.28

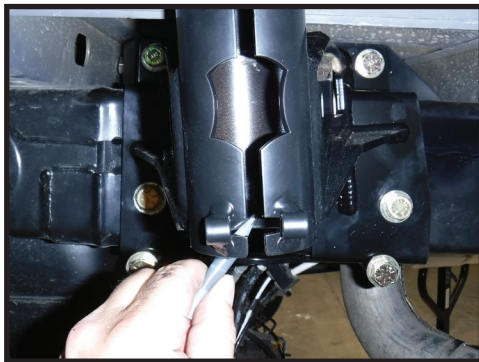


FIG.29



**21.** Install the striker pads on the axle tube. Pop the ABS clip from the tab on the axle tube. The lower portion of the striker plate hooks under the leaf spring pad on the axle. The slot where the ABS tab was will need to be opened up for the bolt that will secure the striker. Standard drill bits will tend to catch in the oval hole, a die grinder is recommended. Tighten until the pad is in full contact with the axle tube but do not overtighten. [FIGURE 30 - 33]

FIG.30



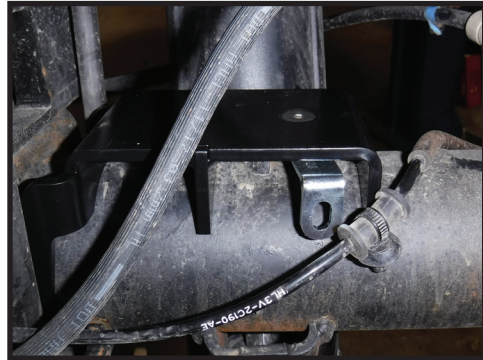
FIG.31



FIG.32



FIG.33

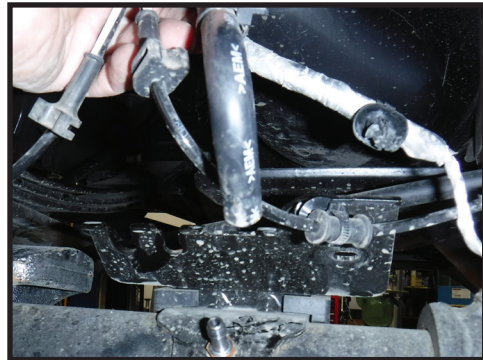


**22.** Install ABS clip in the striker nut plate. The clips will need to be repositioned to allow slack in the ABS wire. Slide the rubber grommets in the clip and the next closest clip under the leaf spring, use lube or soapy water to ease sliding them. [FIGURE 34 & 35]

FIG.34



FIG.35



**23.** Install the low profile ABS and vent line bracket. Remove the ABS and grommets from there slots, wire clips and vent hose. Unscrew the vent fitting from the axle and remove bracket. Install the low profile bracket with the factory vent fitting. Again, you will need to reposition the grommets on the ABS wires. Slide until they can be reinserted in the bracket and make sure there is adequate slack in all parts of the wires. Reinstall the vent hose on the fitting. [FIGURE 36 & 37]

FIG.36



FIG.37



**24.** Reinstall the wire harness and bracket on the driver side inside frame rail with longer supplied 8mm bolt. There is an oval hole in the inner bracket to accommodate the clip that was removed from the top of the frame. [FIGURE 38 & 39]

FIG.38

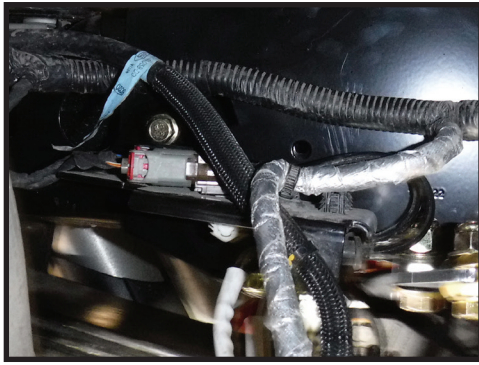
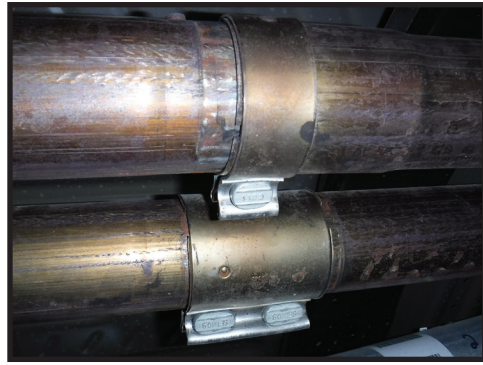


FIG.39



**25.** Confirm that the exhaust has been moved back 3/4" and clears all components. Reinstall the brackets at the middle crossmember in front of the axle and the brackets at the rear bumper. Tighten the clamps where it was slid apart.

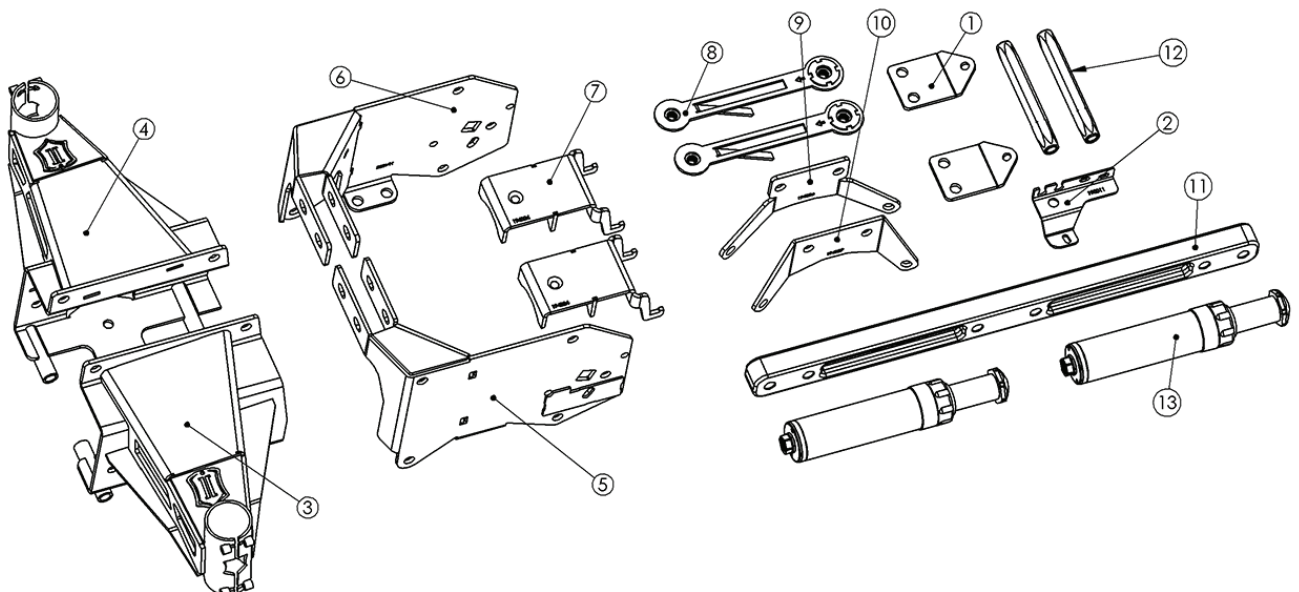
**26.** Install wheels and slowly lower vehicle to the ground. Reinstall spare tire.

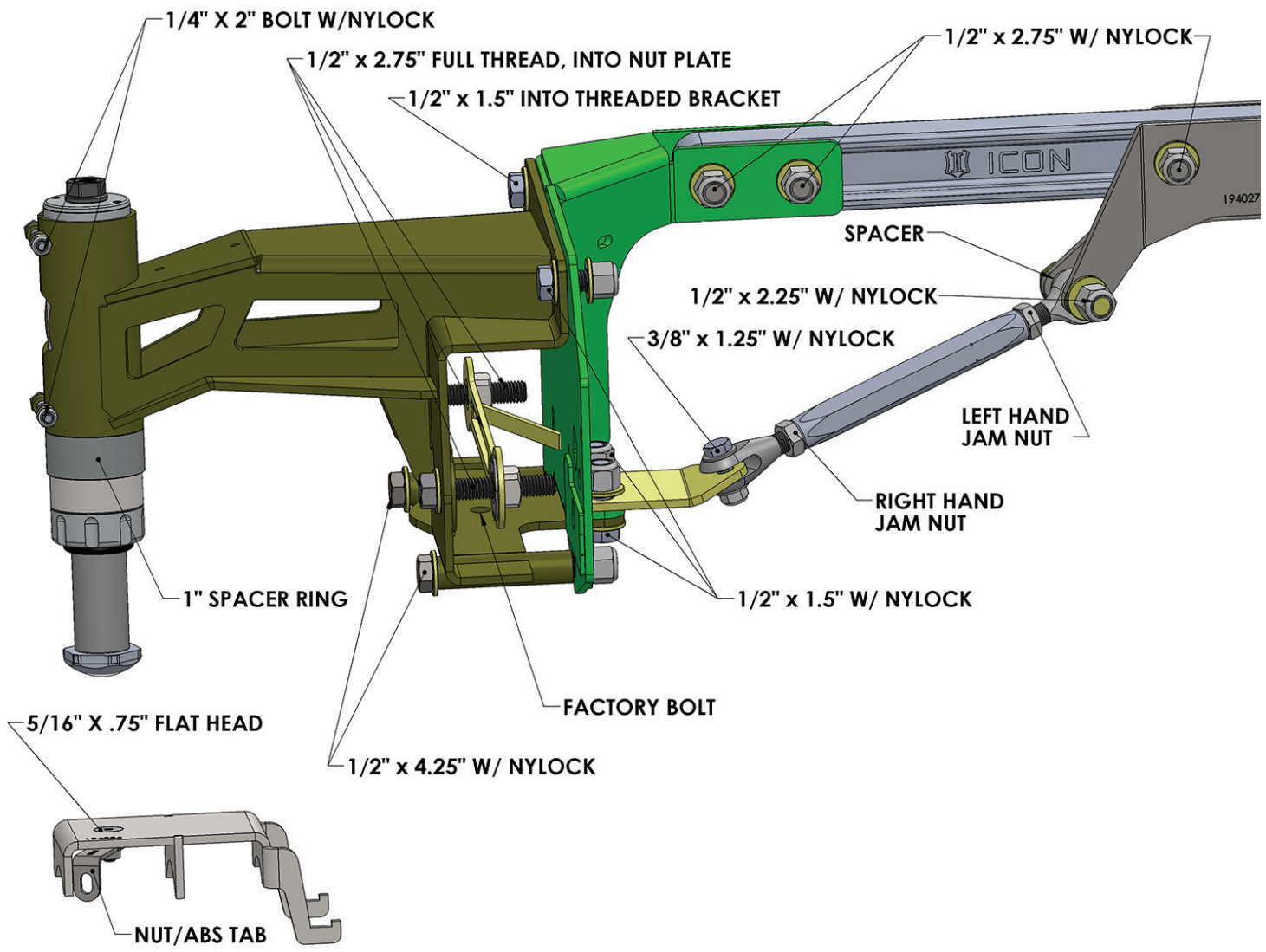
**27.** After first use, retorque lower center bolt and the (2) side bolts into the nut plate.

**VERIFY ALL FASTENERS ARE PROPERLY TORQUED BEFORE DRIVING VEHICLE.**

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

ITEM	PN	DESCRIPTION	QTY
1	190005	RAPTOR RR BUMP STRUT TAB	2
2	190011	17+ RAPTOR BUMP ABS VENT BRACKET BLKZINC	1
3	194020	17+ RAPTOR RR AIR BUMP MNT DRVR	1
4	194021	17+ RAPTOR RR AIR BUMP MNT PASS	1
5	194022	17+ RAPTOR AIR BUMP MNT INSIDE DRVR	1
6	194023	17+ RAPTOR AIR BUMP MNT INSIDE PASS	1
7	194024	17+ RAPTOR RR BUMP STRIKER PLATE	2
8	194025	17+ RAPTOR RR BUMP NUT PLATE CZINC	2
9	194026	17+ RAPTOR RR BUMP STRUT MID PLATE FRT	1
10	194027	17+ RAPTOR RR BUMP STRUT MID PLATE RR	1
11	197030	17+ RAPTOR RR BUMP CROSS BAR	1
12	197031	17+ RAPTOR RR BUMP TENSION ROD	2
13	204907	2.0 AIR BUMP 2.5 TRAVEL 1:1 HD	2
14	95121H	17+ RAPTOR BUMP HARDWARE KIT	1





## 2.0 SERIES BUMP STOP TECHNICAL INFORMATION

### MAINTENANCE

ICON shock absorbers are a high quality rebuildable race style shock absorber designed for optimal performance. With a unit of this caliber on your vehicle, routine maintenance is required to keep them looking and operating in like new condition. Residual oil and assembly lube may be present at all seal paths from the factory out of the box and is considered normal. Pooling of oil however is not acceptable at any time and one should contact the ICON dealer where purchased.

**BELOW ARE GUIDELINES BASED ON HOW YOU USE YOUR VEHICLE BUT YOUR MILEAGE MAY VARY:**

#### **STREET USE:**

- Send in for factory servicing every 40,000 miles or if a leak develops, ride quality decreases, or they begin to make excessive noise.
- Remove any buildup of road salt, mud, or debris from shocks anytime accrued
- Clean with mild soap and water with each oil change or anytime you notice build up.
- Wax the cylinders yearly with automotive wax to prevent corrosion.
- Check nitrogen pressure yearly. (252004 charge needle assembly available at any ICON distributor)

#### **STREET/DIRT:**

- Send in for factory servicing every 15,000 miles or if a leak develops, ride quality decreases, or they begin to make excessive noise.
- Clean with mild soap and water with each oil change, offroad trip, or anytime you notice build up.
- Wax the cylinders yearly with automotive wax to prevent corrosion.
- Check nitrogen pressure each dirt outing. (252004 charge needle assembly available at any ICON distributor)

#### **DIRT USE:**

- Send in for factory servicing every 1,000 miles.
- Check nitrogen pressure each outing. (252004 charge needle assembly available at any ICON distributor)
- Remove any buildup of mud or debris from shocks after every outing.

#### **SELF-SERVICE:**

- Contact ICON for service kits & tools at (951) 689-4266.

### PRODUCT REGISTRATION

Please visit: <http://www.iconvehicledynamics.com/tech-support/registration/> to register your product.

### ICON VEHICLE DYNAMICS SHOCK ABSORBER WARRANTY

This shock absorber has a 1 year warranty against any manufacturer's defects. If a shock fails within the initial year of ownership, the shock must be shipped to ICON Vehicle Dynamics for inspection and service. If a shock is inspected and it has been determined the shock failed due to neglect, damage caused by improper installation or any other reason besides "normal wear and tear", the owner of said shock is responsible for all service costs. This includes labor, parts, and shipping.

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.

To send a shock in for warranty please visit our website <http://www.iconvehicledynamics.com/tech-support/shock-service/>

### 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.

7929 Lincoln Ave. Riverside, CA 92504  
Phone: 951.689.ICON | Fax: 951.689.1016

PART #	DESCRIPTION
95205	17-20 RAPTOR REAR 3.0 PB PAIR

COMPONENTS INCLUDED	
(2) 194965 17-20 RAPTOR REAR ZETA 3.0 SHOCK	(2) 95205H 17-20 RAPTOR REAR HARDWARE KIT
HARDWARE INCLUDED	
95205H HARDWARE KIT	
(1) 295527 NJF4 ROD END FEMALE (1) 295528 NJM4 ROD END MALE (1) 605052 1/4-20 NYLOCK NUT (3) 605053 1/4 FLAT WASHER	(1) 605854M M12-1.75 X 70MM FLANGE BOLT (1) 605063 1/4-20 X 1.25 SET SCREW (1) 605064 1/4-28 JAM NUT
TOOLS REQUIRED	
JACK JACK STANDS TORQUE WRENCH 5/32" ALLEN WRENCH	7/16" SOCKET / WRENCH 15MM SOCKET / WRENCH 16MM SOCKET / WRENCH 18MM SOCKET / WRENCH
TECH NOTES	
<p>1. 2019-UP VEHICLES WITH FACTORY LIVE VALVE SHOCKS WILL NEED AN ICON DAMPER INTERFACE DEVICE (PN: 95199) TO ALLOW THE VEHICLE DRIVE MODES TO OPERATE CORRECTLY WITH THE OE SHOCKS REMOVED.</p> <p>2. YOUR ICON SHOCK ASSEMBLIES COME FACTORY CHARGED TO 250 PSI. RELEASING NITROGEN PRESSURE MAY LEAD TO SHOCK MALFUNCTION AND REDUCED RIDE QUALITY. FAILURE CAUSED BY LOW NITROGEN PRESSURE IS NOT COVERED UNDER ICON'S WARRANTY POLICY.</p> <p>3. ICON RECOMMENDS FIRST INSTALLING OUR MULTI-RATE REAR LEAF SPRING KIT. THE LEAF SPRINGS WILL ALLOW THE REAR SUSPENSION TO EXTEND FURTHER, MAKING INSTALLATION MUCH EASIER.</p>	



WARNING!
<p>** 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!</p> <p>** ICON VEHICLE DYNAMICS RECOMMENDS THAT YOU EXERCISE EXTREME CAUTION WHEN WORKING UNDER A VEHICLE THAT IS SUPPORTED WITH JACK STANDS.</p> <p>** 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.</p>

## 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.

NOTE: If installing on 2019-UP vehicles with factory Live Valve shocks, the Live Valve wire harness will need to be removed. Trace the wire from the shocks all the way to the plug while removing any retaining clips that secure the wire to the frame. Depress the locking tab on the plug to disconnect it and then remove it from the vehicle.

**2.** Support the axle assembly with a floor jack and extend the rear suspension. Remove the factory rear shocks using a 15mm and 18mm. Save the factory hardware as it will be reused.

**3.** Both left and right shocks are identical and can be installed on either side. Install shocks with the bypass tubes facing outward and the reservoir toward the axle. Position the axle with the jack to match the extended length of the shock. It may be necessary to push down on the axle to get it to extend enough to install the new shocks. [FIGURE 1]

FIG.1



**4.** Remove the nut and (3) washers from the supplied 12mm bolt and set aside. Secure the lower end of the shock with the factory hardware. Fasten the upper mount with the supplied bolt and factory nut using a 16mm deep socket. [Torque to 78 ft-lbs]

**5.** Install the anti-wobble link. The purpose of the anti-wobble link is to keep the shock from flopping side to side and to keep the body of the shock from contacting the leaf spring or inner fender well. Subsequently, you can rock the shock back and forth to line up the wobble link. Place the (3) washers previously removed over the stud on the upper mount bolt. Slide the anti-wobble link over both of the studs on the bolt and top of the shock. Secure with the supplied 1/4" nylock nuts and a 7/16" wrench. [Torque to 10 ft-lbs] [FIGURE 2 & 3]

FIG.2

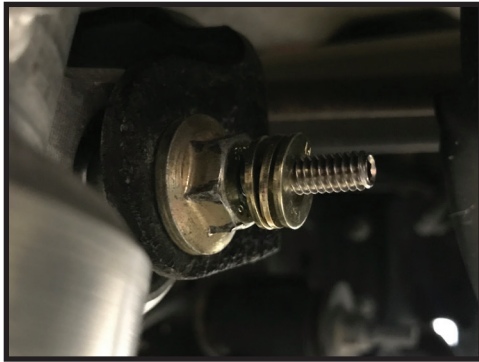


FIG.3



**6.** Reinstall rear wheels and slowly lower the vehicle back to the ground. [Torque lugs to factory spec]

**VERIFY ALL FASTENERS ARE PROPERLY TORQUED BEFORE DRIVING VEHICLE.  
RETORQUE ALL NUTS, BOLTS AND LUGS AFTER 100 MILES AND PERIODICALLY THEREAFTER.**

**COMPRESSION TUBE 1 (SHORT)**

ICON SETTINGS: ALL OUT

The short compression tube is designed to tune the "ride zone" specifically. The shocks piston is in this zone while at ride height, so any adjustments on this tube will be felt when street driving. This tube overlaps the long compression tube, therefore the long tube is used to add compression and it will affect the ride zone. The short tube can be used to counter any adjustments made to the long tube.

**COMPRESSION TUBE 2 (LONG)**

ICON SETTINGS: (4) REVOLUTIONS OUT FROM CLOSED

The long compression tube affects the ride zone and the zone leading into the "bump zone". This tube starts wide open; closing this tube off will start to affect the ride zone slightly and will start to stiffen the ride quality in the zone right after ride. If the vehicle is bottoming out easily, this tube will help increase the compression sooner and allow the shock to be slowing down more before it reaches the "bump zone".

**REBOUND TUBE**

ICON SETTINGS: (4) REVOLUTIONS OUT FROM CLOSED

Rebound control will greatly impair handling. Opening the rebound adjustment will cause the vehicle's rear end to feel loose and can cause the vehicle's rear end to "kick" or "buck". Closing off the rebound adjustment can cause the vehicle to feel like the rear wheels are frozen and the vehicle will become harsh and choppy. The rear end will begin to "pack up" when off-roading and may kick/buck due to the shock bottoming out and not being able to return fast enough to catch the next bump.

**FIELD TUNING GUIDE**

COMPRESSION TUBE 1	VALVE ON BOTTOM, THE SHORTER OF THE 2 TUBES. THIS VALVE HAS THE MOST FLOW AND WHEN OPEN ATTRIBUTES TO A SOFT RIDE. CAN BE LEFT MOSTLY OPEN UNLESS CARRYING A HEAVY LOAD. THE MORE ITS OPEN THE FASTER THE WHEEL CAN GO OVER AN OBSTACLE WITHOUT UPSETTING THE VEHICLE WHEN HIT AT SPEED. EFFECTIVE TO 65% OF TRAVEL
COMPRESSION TUBE 2	VALVE ON BOTTOM, THE LONGER OF THE 2 TUBES. THIS VALVE SLOWS DOWN THE WHEEL AS IT GETS CLOSER TO THE BUMP ZONE. WHEN DRIVING AGGRESSIVELY THIS VALVE KEEPS THE WHEEL FROM BLOWING THROUGH THE TRAVEL THE MORE IT IS CLOSED. EFFECTIVE TO 85% OF TRAVEL
REBOUND 2	VALVE ON TOP, INDEPENDENT TUBE. THIS VALVE CONTRIBUTES MOST TO THE OVERALL FEELING OF STABILITY. THE MORE ITS OPEN THE FASTER THE WHEEL CAN FOLLOW THE GROUND WHEN CYCLING QUICKLY. THE MORE ITS CLOSED THE MORE IT HOLDS THE CHASSIS DOWN. GENERALLY HAVING IT OPEN AS MUCH AS POSSIBLE WITHOUT MAKING IT TOO "FLOATY" IS BEST FOR OFF ROAD.

**RECOMMENDED SETTINGS**

	GENERAL OFFROAD	HIGH SPEED WHOOPS	UNLOADED STREET	LOADED	TOWING
COMP 1	7 (OPEN)*	7 (OPEN)*	7 (OPEN)*	5	4
COMP 2	4	2 - 3	4	3	2
REBOUND	5	5.5 - 7.5	4	3	1.5 - 2

SETTINGS REFERENCE FULL TURNS OUT (COUNTERCLOCKWISE) FROM FULLY CLOSED (CLOCKWISE). (4 CLICKS PER TURN)

\*BYPASS VALVE WILL STOP CLICKING AT 6 FULL TURNS OUT, BUT WILL CONTINUE TO TURN ONE MORE REVOLUTION TO FULLY OPEN POSITION.

## 3.0 VS SERIES SHOCK & COILOVER TECHNICAL INFORMATION

### MAINTENANCE

ICON shock absorbers are a high quality rebuildable race style shock absorber designed for optimal performance. With a unit of this caliber on your vehicle, routine maintenance is required to keep them looking and operating in like new condition. Residual oil and assembly lube may be present at all seal paths from the factory out of the box and is considered normal. Pooling of oil however is not acceptable at any time and one should contact the ICON dealer where purchased.

**BELOW ARE GUIDELINES BASED ON HOW YOU USE YOUR VEHICLE BUT YOUR MILEAGE MAY VARY:**

#### **STREET USE:**

- Send in for factory servicing every 40,000 miles or if a leak develops, ride quality decreases, or they begin to make excessive noise.
- Remove any buildup of road salt, mud, or debris from shocks and coil springs anytime accrued
- Clean with mild soap and water with each oil change or anytime you notice build up.
- Wax the cylinders yearly with automotive wax to prevent corrosion.
- Check nitrogen pressure yearly. (252004 charge needle assembly available at any ICON distributor)
- Check bearings for excessive wear yearly.
- DO NOT apply any type of lube to the upper and lower bearings.

#### **STREET/DIRT:**

- Send in for factory servicing every 15,000 miles or if a leak develops, ride quality decreases, or they begin to make excessive noise.
- Clean with mild soap and water with each oil change, offroad trip, or anytime you notice build up.
- Wax the cylinders yearly with automotive wax to prevent corrosion.
- Check nitrogen pressure each dirt outing. (252004 charge needle assembly available at any ICON distributor)
- Check bearings for excessive wear yearly.
- DO NOT apply any type of lube to the upper and lower bearings.

#### **DIRT USE:**

- Send in for factory servicing every 1,000 miles.
- Check nitrogen pressure each outing. (252004 charge needle assembly available at any ICON distributor)
- Remove any buildup of mud or debris from shocks and coil springs after every outing.

#### **SELF-SERVICE:**

- Contact ICON for service kits & tools at (951) 689-4266.

### PRODUCT REGISTRATION

Please visit: <http://www.iconvehicledynamics.com/tech-support/registration/> to register your product.

### ICON VEHICLE DYNAMICS SHOCK ABSORBER WARRANTY

This shock absorber has a 1 year warranty against any manufacturer's defects. If a shock fails within the initial year of ownership, the shock must be shipped to ICON Vehicle Dynamics for inspection and service. If a shock is inspected and it has been determined the shock failed due to neglect, damage caused by improper installation or any other reason besides "normal wear and tear", the owner of said shock is responsible for all service costs. This includes labor, parts, and shipping.

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.

To send a shock in for warranty please visit our website <http://www.iconvehicledynamics.com/tech-support/shock-service/>



**ICON VEHICLE DYNAMICS®**  
PERFORMANCE SUSPENSION SYSTEMS AND SHOCK ABSORBERS

7929 Lincoln Ave. Riverside, CA 92504 Phone: 951.689.ICON Fax: 951.689.1016  
[www.iconvehicledynamics.com](http://www.iconvehicledynamics.com)



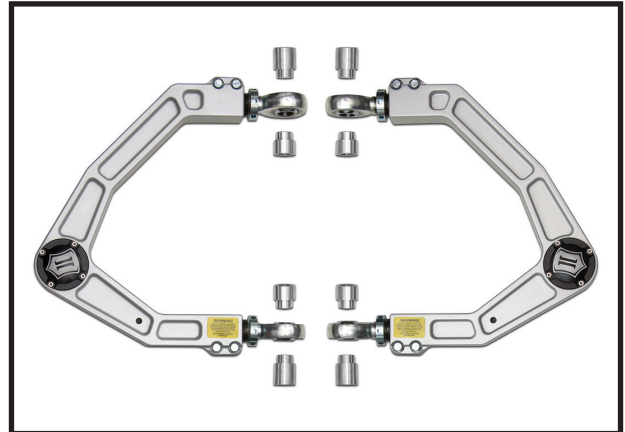
**FOLLOW US ON FACEBOOK!**



7929 Lincoln Ave. Riverside, CA 92504  
 Phone: 951.689.ICON Fax: 951.689.1016

PART #	DESCRIPTION
98562DJ	10-20 RAPTOR BILLET UCA DJ KIT

COMPONENTS INCLUDED	
(1) 197510 RAPTOR BILLET UCA (DRVR) (1) 197511 RAPTOR BILLET UCA (PASS)	(2) 190012 19-20 RAPTOR SENSOR BRACKET
HARDWARE INCLUDED	
(2) 155110 -.032 O-RING NITRILE (2) 157507 BILLET UCA DUST COVER (2) 197200BJ DELTA JOINT (4) 197502 HEIM SPACER .625 WIDE (4) 197503 HEIM SPACER .950 WIDE (4) 217520 L-R ADJ SLEEVE 1 1/8-12L 7/8-14	(4) 295514 RSMX12T ROD END (8) 605002 6-32 X .500 SHCS 18-8 (2) 605053 1/4 FLAT WASHER (2) 605069 1/4-20 X 1.25 BOLT (8) 605145 3/8-16 X 1.000 12PT (1) 605968 BLUE THREAD LOCKER 2ML BULLET
TOOLS REQUIRED	
JACK JACK STANDS SMALL SLEDGE HAMMER TORQUE WRENCH 9/16" SOCKET / WRENCH	15/16" SOCKET / WRENCH 15MM SOCKET / WRENCH 21MM SOCKET / WRENCH 27MM SOCKET / WRENCH 30MM SOCKET / WRENCH
TECH NOTES	
<p>1. ALL ICON UPPER CONTROL ARMS HAVE BEEN ENGINEERED TO ALLOW FOR THE MOST POSSIBLE CASTER, WHILE STILL ALLOWING THE VEHICLE TO BE PROPERLY ALIGNED. NOTIFY YOUR PROFESSIONAL ALIGNMENT SHOP OF THIS INFORMATION SO THAT MAXIMUM RIDE QUALITY CAN BE ACHIEVED.</p> <p>2. DO NOT EXCEED 2.375" ADJUSTMENT FROM THE CENTER OF THE ROD END TO THE EDGE OF THE BILLET UPPER CONTROL ARM. FAILURE CAUSED BY EXCESSIVE ADJUSTMENT WILL NOT BE COVERED UNDER ICON'S WARRANTY POLICY. REFER TO TECH NOTE PHOTO #2.</p> <p>3. ICON DELTA JOINTS ARE PRE-GREASED FROM THE FACTORY. ICON RECOMMENDS GREASING THE DELTA JOINT EVERY 3,000 MILES (OR EVERY OIL CHANGE). ADD NEW GREASE UNTIL ALL OF THE OLD GREASE IS EXPELLED FROM THE BOTTOM OF THE DELTA JOINT ASSEMBLY, WIPE AWAY EXCESS WITH A RAG OR SHOP TOWEL.</p>	



WARNING!
<p>** 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!</p> <p>** ICON VEHICLE DYNAMICS RECOMMENDS THAT YOU EXERCISE EXTREME CAUTION WHEN WORKING UNDER A VEHICLE THAT IS SUPPORTED WITH JACK STANDS.</p> <p>** 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.</p>

## INSTALLATION

**1.** Using a properly rated jack, raise the front 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 front wheels.

**LIVE VALVE ONLY:** Measure the position of the height sensor. With the suspension at full droop, measure the position of the sensor arm to the lower tang of the sensor bracket as shown on each side and record. DRIVER: \_\_\_\_\_, PASSENGER: \_\_\_\_\_. The measurement should be around 0.2" - 0.3". Unbolt the sensor link bracket from the bottom of the stock arm. Unbolt the link ball joint from the bracket and keep the nut for reattachment later. The sheet metal bracket from the stock arm will not be used. [FIGURE 1 & 2]

FIG.1



FIG.2



**2.** Remove the coilover/strut to gain access to the upper control arm bolts: Remove the lower shock bolt and then remove the (3) nuts on top of the coilover (use a 15mm, 27mm & 30mm socket/wrench for stock assembly, 9/16" & 15/16" socket/wrench for ICON assembly). Removing the lower shock end out of the pocket in the arm can be difficult because you are fighting the bushing stiffness from the lower control arm and sway bar tension. Disconnect the swaybar links and/or the top of the other shock to relieve some of the tension.

**3.** Loosen the taper on the upper ball joint and the tie rod end using an 18mm socket/wrench. Use a hammer to separate the upper ball joint taper and tie rod end. Take care not to damage the threads. Support the spindle so that it does not over extend the CV joints when detached.

**4.** Using a jack, slightly lift the lower control arm to prevent the suspension from being at full droop.

- 5. 5.** With the upper control arm detached from the spindle, begin to loosen the upper control arm from its mounts in the frame using a 21mm socket/wrench and remove the OEM assembly.
- 6. 6.** Before installing the new ICON upper control arms, make sure that the heim spacers are pointing in the right direction. The shorter one goes on the inside and the long one goes on the outside.
- 7. 7.** Place the driver side upper control arm into the mounts on the chassis and loosely fasten the OEM hardware.
- 8. 8.** Reinstall the factory shock assembly or refer to the ICON coilover installation instructions now.

**LIVE VALVE ONLY:** Attach the supplied sensor link bracket to the link ball stud and attach the bracket to the bottom side of the ICON arm with the supplied 1/4" x 1.25 bolt and washer through the slotted hole. As you lower the arm to reconnect to the spindle check the clearance to the brake line and ABS bracket. Bend away from arm slightly as shown if necessary. [FIGURE 3 & 4]



**FIG.3**



**FIG.4**

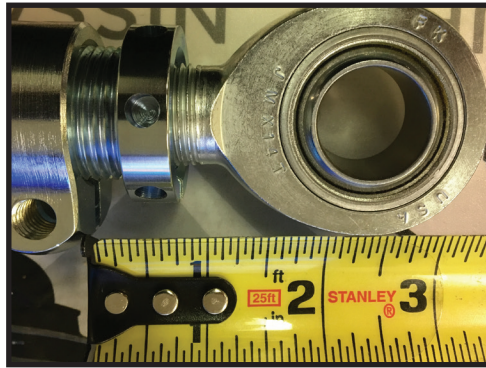
- 9.** Take care when inserting tapered pin into the spindle to not damage the threads. Use a 21mm socket/wrench to fasten the supplied lock nut onto the tapered pin to get it to seat properly. [Torque to 75 ft-lbs]
  - 10.** Tighten the upper control arm bolts using a 21mm socket/wrench. [Torque to factory spec]
  - 11.** ICON billet upper control arms utilize heim joints at each pivot to allow alignment using the adjusters on the upper control arms as well as cam adjusters on the lower control arms. The heims can be extended or contracted by turning the collar. Make sure that the slit in the collar lines up with the slit in the housing and then tighten the pinch bolts in an opposing pattern at least 3 times. [Torque to 35 ft-lbs]
  - 12.** Repeat steps on opposite side.
- LIVE VALVE ONLY:** Reset sensor position. Slide the sensor bracket in its slotted hole until the clearance dimension is the same as you recorded previously. Tighten the bolt, but do not overtighten or else the bracket will be distorted.
- 13.** Reinstall wheels and tighten lug nuts. [Torque to factory spec]
  - 14.** Install the dust cover: Make sure that the o-ring is seated in the groove in the cap and apply anti-seize to the (4) allen head screws. DO NOT over tighten.
  - 15.** Have the vehicle professionally aligned.
  - 16.** Once aligned, apply BLUE thread locker to the outer pinch bolts located on the sides of the arm. Tighten the pinch bolts in an opposing pattern at least 3 times. [Torque to 35 ft-lbs]

***VERIFY ALL FASTENERS ARE PROPERLY TORQUED BEFORE DRIVING VEHICLE.***

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



[TECH NOTE #2]



**ALIGNMENT NOTE**

ICON SHIPS THE BILLET UPPER CONTROL ARM AT THE MOST COMMON ALIGNMENT SETTING. ONE OF THE MAJOR PERFORMANCE ADVANTAGES OF AN ICON BILLET ADJUSTABLE UPPER CONTROL ARM IS THE ABILITY TO IMPROVE WHEEL POSITION. IMPROVING WHEEL POSITION IMPROVES FIREWALL CLEARANCE ALLOWING FOR LARGER TIRES AS THE SUSPENSION CYCLES. IN ORDER TO TAKE ADVANTAGE OF THIS FEATURE, DISCUSS WITH YOUR PROFESSIONAL ALIGNMENT SHOP THAT YOU WOULD LIKE TO CAM THE LOWER CONTROL ARM TO MAXIMIZE WHEEL POSITION FORWARD AND THEN ADJUST CAMBER AND CASTER WITH THE UPPER THREADED ADJUSTERS.

A MAJOR PERFORMANCE ADVANTAGE OF ALL ICON UPPER CONTROL ARMS IS INCREASED CASTER OVER STOCK. DISCUSS WITH A PROFESSIONAL ALIGNMENT SHOP THAT YOU WANT THE VEHICLE ALIGNED WITH THE CASTER AT THE MAX OF THE FACTORY RECOMMENDED SETTINGS IF YOU WANT TO TAKE ADVANTAGE OF THE DYNAMIC EFFECTS OF INCREASED CASTER.

**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®**

PERFORMANCE SUSPENSION SYSTEMS AND SHOCK ABSORBERS

7929 Lincoln Ave. Riverside, CA 92504 Phone: 951.689.ICON Fax: 951.689.1016  
www.iconvehicledynamics.com



**FOLLOW US ON FACEBOOK!**



7929 Lincoln Ave. Riverside, CA 92504  
Phone: 951.689.ICON | Fax: 951.689.1016

PART #	DESCRIPTION
198510	17-20 RAPTOR MULTI RATE LEAF SPRING KIT

**COMPONENTS INCLUDED**

(1) 198510 17-20 RAPTOR F150 MULTI-RATE LEAF SPRING W/ ADD A LEAF

**HARDWARE INCLUDED**

N/A

**TOOLS REQUIRED**

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

2. ICON MULTI-RATE LEAF SPRING KIT REQUIRES HARDWARE KIT (95225H) FOR INSTALLATION.

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**

- 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.
- 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.
- 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



- 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

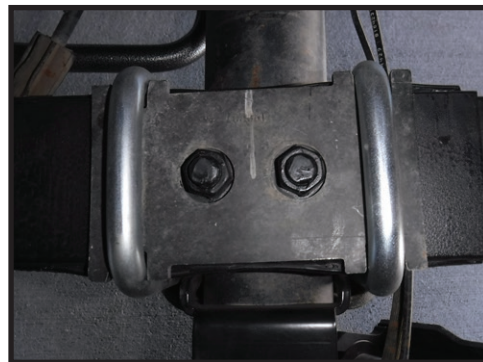


9. The front spring bolt cannot be removed because of interference with the gas tank and exhaust so it must be cut out. New bolts are supplied in the hardware kit (95225H). Remove the nut from the front spring bolt, it will be reused (27mm nut, 24mm head). Push the bolt back through the hole so that 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.

## **RATE CHANGE INSTRUCTIONS:**

- 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 leaves 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



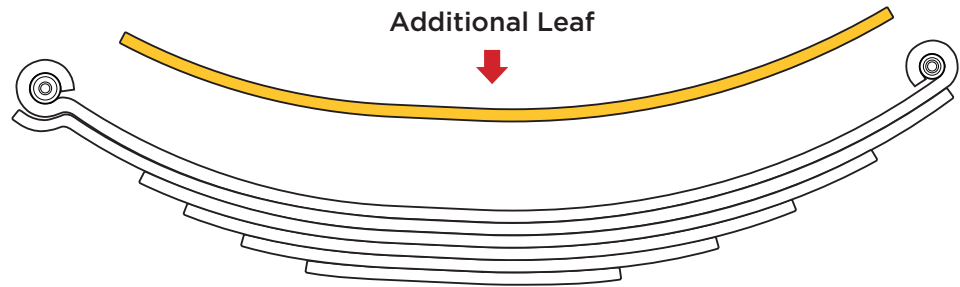
- 11.** Put the bottom half of the pack back in the vehicle guiding the center pins up through the upper 3 leaves. A long drift punch helps to align the holes. It may be helpful to loosen the 2 C-Clamps slightly on the front and rear to help shift all leaves into position. Use a large C-Clamp near the 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.

# MULTI-RATE LEAF SPRING RATE CHANGE OPTIONS

(General application for all models. Refer to these instructions for specific rates)

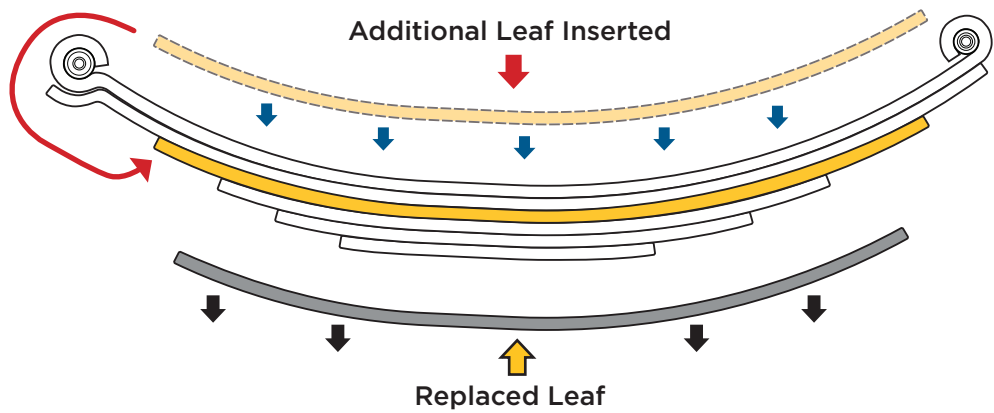
## OPTION 1

ADDITIONAL  
LEAF  
NOT USED



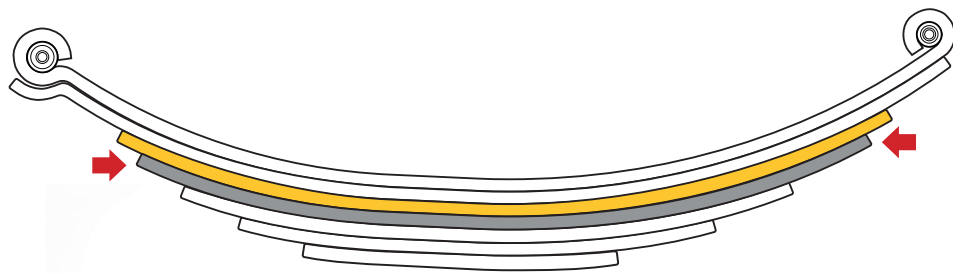
## OPTION 2

ADDITIONAL  
LEAF  
REPLACES  
LEAF



## OPTION 3

ADDITIONAL  
LEAF ADDED  
TO PACK



**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. [If applicable, ICON defers to and recommends recalibration of any/all vehicle stability systems after suspension installation.]



**ICON VEHICLE DYNAMICS®**

PERFORMANCE SUSPENSION SYSTEMS AND SHOCK ABSORBERS

7929 Lincoln Ave. Riverside, CA 92504 Phone: 951.689.ICON Fax: 951.689.1016  
www.iconvehicledynamics.com



**FOLLOW US ON FACEBOOK!**

