

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

PART #	DESCRIPTION
78700	2011-UP GM HD 6-8" SUSPENSION SYSTEM

### COMPONENTS INCLUDED

174701 - BOX 1 OF 3 - SUBFRAME BRACKETS	
(1) 174030 11-UP GM HD FRONT DROP BRACKET (1) 174031 11-UP GM HD REAR DROP BRACKET	(1) 174701H HARDWARE KIT
174702 - BOX 2 OF 3 - SKID PLATE / DIFF DROP	
(1) 174032 11-UP GM HD DRIVER DIFF DROP (1) 174033 11-UP GM HD PASSENGER DIFF DROP (1) 174036 11-UP GM HD DIFF SKID PLATE (1) 174045 11-UP GM HD TRANS SKID SYSTEM (1) 174048 11-UP GM HD TRANS SKID ADAPTOR (1) 174051 11-UP GM HD E-BRAKE DROP	(1) 174052 11-UP GM HD REAR BRAKE LINE DROP (2) 174475 11-UP GM HD FABRICATED BLOCK (1) 177059 11-UP GM HD DRIVER AXLE SPACER (2) 177062 11-UP GM HD SWAY BAR EXT. LINK (1) 179583 U-BOLT KIT (1) 174702H HARDWARE KIT
174703 - BOX 3 OF 3 - KNUCKLES	
(1) 174060 11-UP GM HD DRIVER KNUCKLE (1) 174061 11-UP GM HD PASSENGER KNUCKLE	(1) 174703H HARDWARE KIT



### HARDWARE INCLUDED

174701H HARDWARE KIT	
(2) 170149 WASHER 2.50 X .740 X .134 BLACK (2) 605815 M18-2.5 X 140MM BOLT (2) 605820 M18-2.5 X 130MM BOLT	(4) 605821 M18-2.5 LOCK NUT (8) 605832 M18 FLAT WASHER
174702H HARDWARE KIT	
BAG 1 - SWAY BAR DROP HARDWARE	
(4) 605106 3/8-16 X 3.250 BOLT (1) 605969 RED THREAD LOCK	(4) 150109 WASHER 1.25 X .395 X .125
BAG 2 - DIFF DROP HARDWARE	
(2) 605302 1/2-13 X 1.500 BOLT (2) 605321 1/2-13 LOCK NUT (11) 605330 1/2 SAE FLAT WASHER (2) 605817 M12-1.75 X 30MM BOLT	(1) 605818 M12-1.75 X 45MM BOLT (3) 605823 M12-1.75 LOCK NUT (8) 605825 M10-1.50 X 60MM BOLT
BAG 3 - SKID PLATE HARDWARE	
(12) 605100 3/8-16 X .750 BOLT	(12) 605133 3/8 SAE FLAT WASHER
BAG 4 - E-BRAKE AND BRAKELINE DROP HARDWARE	
(2) 605011 5/16-18 X 0.750 BOLT (2) 605015 5/16-18 LOCK NUT (4) 605016 5/16 SAE FLAT WASHER	(1) 605101 3/8-16 X 1.000 (1) 605121 3/8-16 LOCK NUT (2) 605133 3/8 SAE FLAT WASHER
174703H HARDWARE KIT	
(1) 170141 11+ GM HD BRAKE LINE DROP BKT DRVR (1) 170142 11+ GM HD BRAKE LINE DROP BKT PASS (2) 170143 11+ GM HD BRAKE LINE KNUCKLE MNT (2) 605024 10-32 X .750 FLAT HEAD SCREW (4) 605026 10-32 X .375 BUTTON HEAD SCREW (6) 605052 1/4-20 LOCK NUT	(12) 605053 1/4 SAE FLAT WASHER (6) 605054 1/4-20 X .750 BOLT (2) 605924 5/16-3/8 DBL LINE SNAP IN CLAMP (10) 605929 11 x .178 NYLON CABLE TIE (2) 605935 #4, 1/4" ADEL CLAMP

### TOOLS REQUIRED

RECIPROCATING SAW OR CUTTING WHEEL PLIERS TORQUE WRENCH 7/16" SOCKET / WRENCH 1/2" SOCKET / WRENCH 9/16" SOCKET / WRENCH 3/4" SOCKET / WRENCH 1 1/16" SOCKET / WRENCH T30 TORX 8MM SOCKET / WRENCH	10MM SOCKET / WRENCH 13MM SOCKET / WRENCH 15MM SOCKET / WRENCH 17MM SOCKET / WRENCH 18MM SOCKET / WRENCH 19MM SOCKET / WRENCH 21MM SOCKET / WRENCH 24MM SOCKET / WRENCH 27MM SOCKET / WRENCH 36MM SOCKET / WRENCH
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### TECH NOTES

- VEHICLES EQUIPPED WITH OVERLOAD SPRINGS ABOVE THE EXISTING PACK OR IF INSTALLING A LIFT BLOCK TALLER THAN 4", REQUIRE LONGER U-BOLTS (PART #179585).
- THE DRIVE LINE ANGLE HAS BEEN MODIFIED IN ORDER TO KEEP THE MOST DIRECT DRIVELINE ANGLE GOING FROM THE LOWERED DIFFERENTIAL TO THE TRANSFER CASE. HOWEVER, DRIVELINE VIBRATION WILL OCCUR AT SPEED WHILE IN 4WD. TO PREVENT DRIVELINE VIBRATION, A FRONT DRIVE SHAFT (PART #78705)-[ALLISON TRANS] OR (PART #78706)-[4L80E TRANS] IS RECOMMENDED.
- THIS KIT INCLUDES BRAKE LINES BRACKETS TO EXTEND THE EXISTING BRAKE LINES, HOWEVER EXTENDED BRAKE LINES (PART #78707) ARE HIGHLY RECOMMENDED.
- A 35" X 12.5" TIRE ON AN 8" WIDE WHEEL WITH 5.5" BACKSPACING FITS WITHOUT FENDER TRIMMING REQUIRED. WIDER TIRES AND/OR LESS BACKSPACING WILL REQUIRE FENDER TRIMMING.

**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 HIGHLY RECOMMENDS USING A 2 POST LIFT FOR THIS EXTENSIVE INSTALL!**

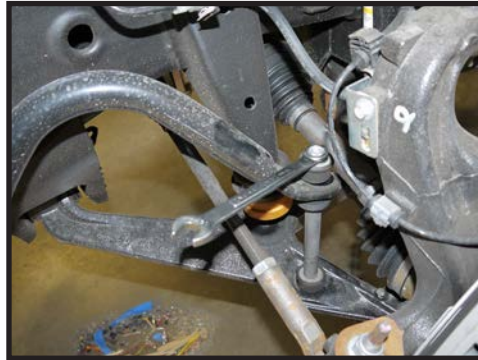


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## INSTALLATION

1. Lift the hood and disconnect the battery terminals.
2. Lift the truck and securely place heavy duty jack stands under the manufacturer's recommended lifting locations for the front of the truck. Take care when lifting the vehicle, and allow 10-12" of ground clearance from the bottom of the tire. Never work under an unsupported vehicle.
3. Remove the front tires.
4. Remove the sway bar links using a 15mm wrench and socket. Hold both ends and loosen. Once the links are removed, remove the bushings and hardware and set them aside to be used with the new billet sway bar links provided. (FIGURE 1)

FIG.1



5. With the weight of the vehicle taken off of the torsion bars, use a 21mm socket to loosen the torsion adjuster bolt.
6. Remove the front and middle skid plates using 15mm sockets (if equipped). (FIGURE 2)

FIG.2



FIG.3



7. Remove the brake line bracket from the knuckle using a 13mm. (FIGURE 3)

8. Using a 21mm, remove the 2 bolts holding the caliper to the knuckle. Using strong string or wire, tie the brake caliper to the frame. Keep it up and out of the way as much as possible. It is a heavy caliper and must not hang from the brake lines. (FIGURE 4, FIGURE 5)

FIG.4



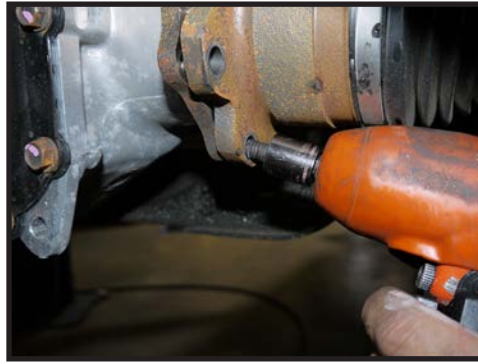
FIG.5



9. Disconnect the ABS line at the connector in front of the shock tower. Pull the ABS line clip out of the knuckle and remove the clip from the line.

10. Disconnect the axle flange from the differential using a 15mm. (FIGURE 6)

**FIG.6**



**11.** Remove the unit bearing dust cap using a chisel and hammer.

**12.** Remove the front and rear bump stops from their pockets by twisting and pulling.

**13.** Using a 21mm, remove the nut connecting the tie-rod to the knuckle. Use a hammer or ball joint separator to separate the taper of the tie-rod from the knuckle. (FIGURE 7)

**FIG.7**



**14.** Remove the axle nut using a 36mm and remove the axle from the back side of the knuckle.

**15.** Remove the rotor from the hub using a T30 Torx bit.

**16.** Loosen the nut connecting the UCA to the knuckle using an 18mm. Use a hammer or ball joint separator to break the taper loose. (FIGURE 8)

**FIG.8**



**17.** Remove the 4 bolts from the back side of the knuckle using a 21mm, holding the hub to the knuckle. Remove the hub from the knuckle.

**18.** Remove the large O-ring from the knuckle. SAVE FOR LATER.

**19.** Rotate the knuckle forward or backward to allow for more access to the back side of the knuckle. Use a hammer or ball joint separator to break the taper loose connecting the knuckle to the LCA.

**20.** Carefully hold the knuckle and remove the nuts holding the knuckle to the UCA and the LCA and remove the knuckle.

**21.** The LCA can now be loosened from the frame pockets using a 21mm and a 24mm.

**22.** The LCA is being supported by the shock, slightly lift the LCA with a floor jack and then remove the nuts connecting the shock to the shock bolts shock bucket using a 21mm wrench. Loosen and remove the lower shock bolt and nut with a 21mm socket and remove the shock. (FIGURE 9)



FIG.9



**23.** Slide the torsion bar forward through the LCA hex and out of the torsion cross member while holding the torsion key to keep it from dropping (The torsion bar cannot be removed yet). Set the torsion key aside.

**24.** Finish removing the frame bolts and carefully remove the LCA. Slide the torsion bar out of the LCA hex as you remove the LCA.

**25.** Remove the rear LCA cross member brace using 18mm wrench and ratchet.

**26.** The rear LCA mount on the driver side will need to be trimmed using the supplied template as a guide. Cut out the template in the back of the install packet. The arrow on the template is aiming up to help orientate the template to the chassis. Hold up the template, locate with the hole, and mark the trim line of the frame. Cut along the trim line to remove the section of cross member. This will allow the differential to be able to drop lower without interfering with the frame. (Figure 10, Figure 11)

**27.** In order to lower the differential, it will need to be securely supported with a jack while the hardware is loosened. Start to loosen

FIG.10

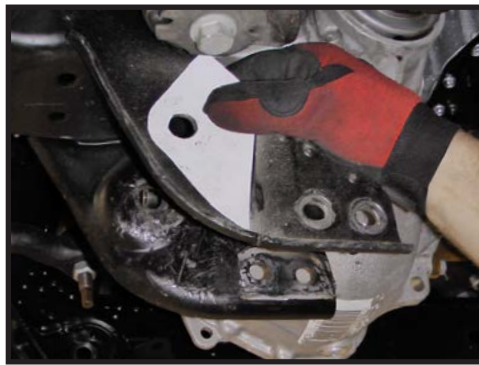
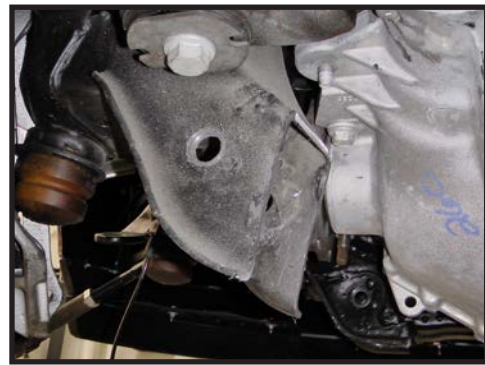


FIG.11



the 3 bolts on the driver side using an 18mm ratcheting wrench and an 18mm and 15mm socket. Then remove the 2 passenger side bolts using a 21mm socket. Slowly lower the differential as much as needed in order to install the new differential drop mounts (Part #174032 Driver & Part #174033 Passenger). Be sure not to damage any differential wires (unclip as necessary).

**28.** On the driver side, the 2 longer factory bolts will be used in the lower forward-most holes with the supplied M12 lock nuts and washers. Use a 19mm and 18mm to tighten. The shortest factory bolt remaining will go in the upper rear-most hole in the driver side diff drop along with a supplied lock nut and washer. Use a 15mm and 19mm to tighten. The 2 supplied M12 X 30mm bolts will be used in the upper forward-most holes and thread into the frame bracket. The supplied M12 X 45mm bolt will be used in the lower rear-most hole. Use a 19mm to tighten [Torque all mentioned hardware to 85 ft-lbs]. (FIGURE 12, FIGURE 13)

FIG.12

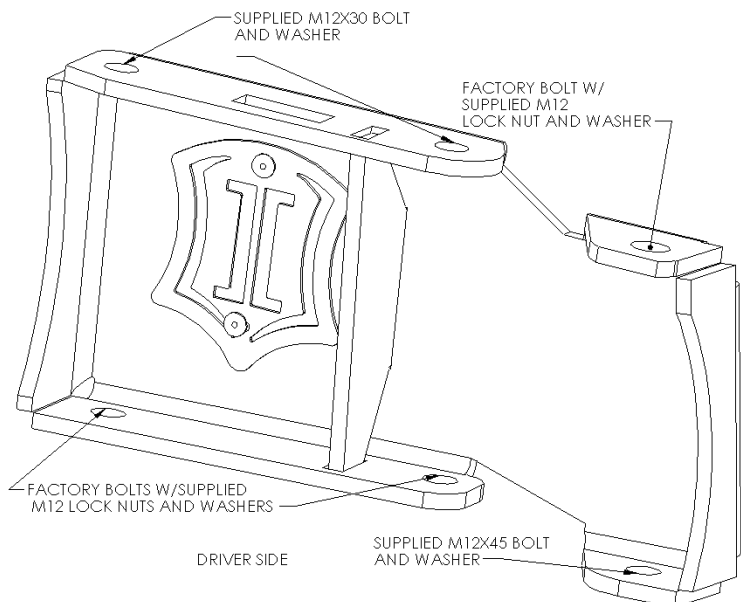
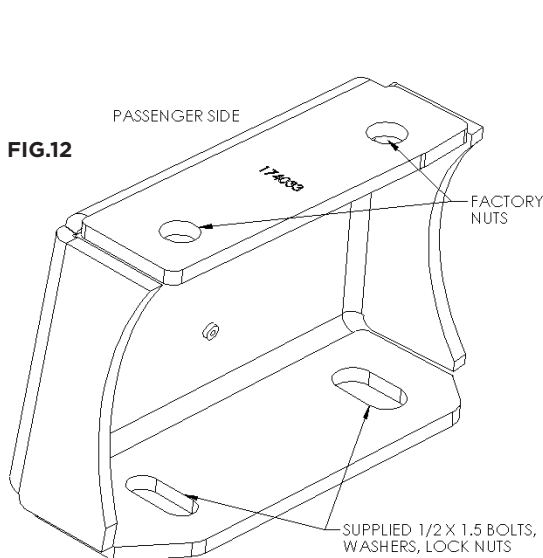


FIG.13



FIG.14



**29.** On the passenger side, the original nuts are used to connect the drop bracket to the frame bracket; however, the forward-most hole is close to the bracket and may require a smaller nut. If so, use the supplied M12 lock nut. Use the supplied 1/2" hardware to connect the axle to the drop bracket. Tighten using a 3/4 [Torque factory hardware to factory spec. Torque supplied M12 hardware to 85 ft-lbs, Torque supplied 1/2 hardware to 75 ft-lbs]. (FIGURE 12, FIGURE 14)

**30.** Slide the front LCA drop bracket (Part #174030) into the front LCA frame pockets using the original M18 bolts. Using the 2 shorter original M18 bolts and nuts, mount the drop bracket to the existing cross member (the bends face forward). The bolts go in from the rear with the nut facing forward. Keep these bolts snug but not completely tightened. This will help in the following steps of the installation. (FIGURE 15)

FIG.15



FIG.16



**31.** Mount the rear LCA drop bracket (Part #174031) into the rear LCA frame pocket using the original M18 bolts. Using the 2 longer original M18 bolts and nuts, mount the drop bracket to the existing cross member. The bolts go in from the rear with the nuts facing forward. Keep these bolts snug but not completely tightened. This will help in the following steps of the installation. (Figure 16)

**32.** Once the LCA brackets are installed, install the differential skid plate (Part #174036) using the supplied 3/8-16 X .75 bolts. Go through and secure all remaining hardware on the new drop brackets and cross members, but do not fully tighten until both LCA's are installed.

**33.** To install the transmission skid plate, the transmission skid plate bracket (Part #174048) will have to be installed first. The mount bolts to the existing transmission cross member using the 4 bolts that tie the cross member to the chassis. The bolts on the driver's side will need to be flipped in the opposite direction using a 21mm (reverse 1 at a time). To temporarily take the weight off of the bolts, lift or pry the cross member up just enough to slide the bolts in and out. Instead of going in from the front and the nut on the back side, put the bolt in from the rear towards the front. Leave the nuts off for now. On the passenger side, remove the nuts, and slide the bolts out only enough to slip the bracket under the bolts. Slide the bracket up at an angle under the passenger side bolts, then rotate up and slide over the exposed threads of the reversed bolts. Slide the passenger side bolts back in and install the nuts on both sides [Torque to factory spec]. (FIGURE 17, FIGURE 18)

FIG.17



FIG.18



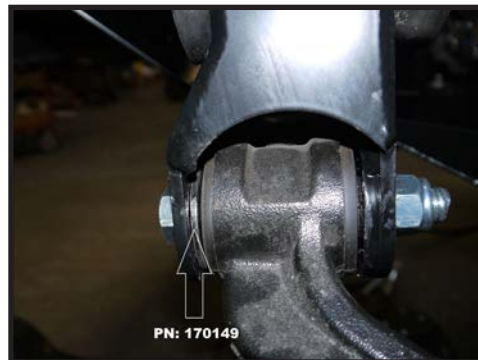
**34.** The transmission skid plate (Part #174045) can now be installed using the supplied 3/8" hardware but do not fully tighten until both LCA's are installed. Use a 9/16 [Torque to 30 ft-lbs].

**35.** If installing the standard IVD kit, the torsion drop brackets & bump stop extension will need to be installed at this time. Refer to the install instructions (Part #78702 - Torsion drop bracket).

**36.** If installing the IVD high clearance kit, the torsion relocater brackets will have to be installed on the LCA before it is placed into its new location. Refer to install instructions( Part #78703 - Torsion relocater).

**37.** When mounting the LCA to the brackets, the supplied M18 x 130mm bolts go in from the front with the nut toward the back of the front pocket. The supplied washer (Part #170149) goes between the bracket and the front of the LCA BUSHING. The M18 x 140mm bolts are used in the back pocket, and go in from the back with the nut in the front. Use a 27mm to tighten [Torque to 175 ft-lbs]. (FIGURE 19)

FIG.19



**38.** If installing IVD UCAs (Part #78500), refer to UCA instructions and install now.

**39.** Refer to front shock instructions and install now.

**40.** Tighten the 18mm factory bolts connecting the sub-frame brackets to the frame using a 21mm and a 24mm [Torque to factory spec].

**41.** Slide the new knuckle onto the LCA ball joint and tighten snugly using a 24mm.

**42.** Insert the O-ring into the new knuckle that was removed earlier.

**43.** Install the hub on the new knuckle using the factory bolts and a 21mm [Torque to factory spec].

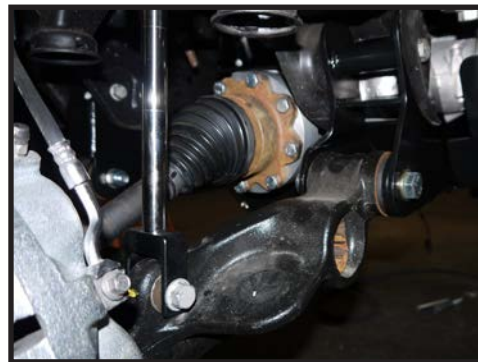
**44.** Slip the axle through the hub and install the nut and washer using a 36mm.

**45.** The knuckle can now be attached to the UCA, Lift the LCA up slightly to allow a better angle. Tighten the UCA to the knuckle using the original nut and a 18mm [Torque to factory spec].

**46.** Tighten the LCA to the knuckle using a 24mm [Torque to factory spec].

**47.** On the driver side, install the axle flange onto the differential using the supplied axle spacer (Part #177059) and M10 x 60mm bolts and a 17mm (use thread lock on bolts) [Torque to 50 ft-lbs]. (FIGURE 20)

FIG.20



**48.** The passenger side has been compensated for and does not need a spacer (use thread lock on original bolts). Use a 15mm [Torque to factory spec].

**49.** Tighten the axle nut using a 36mm [Torque to factory spec]. Put the metal dust cap on and tap it in to seat it.

**50.** Connect the ABS line to the connector near the front of the shock bucket.

**51.** Push the rear bump stop into its pocket. Make sure it clicks into place.

**52.** Mount the rotor to the hub using a T30 Torx bit [Torque to factory spec].

**53.** Set the caliper over the rotor and start the caliper bolts using a 21mm [Torque to factory spec].

If installing the extended brake lines(Part #78707), refer to instructions and install now. (If installing the extended brake lines, use the supplied adel clamp with a button head Philips screw to hold the brake line to the back of the knuckle) (FIGURE 21)  
(Then skip to step 56)



FIG.21



FIG.22



**54.** Remove the brake line bracket from the frame under the front of the UCA using a 13mm. Carefully bend the metal brake lines down and rearward to allow for enough clearance for the drop bracket. Mount the supplied brake line bracket (Part #170141 DRIVER & 170142 PASSENGER) to the frame using the original bolt [Torque to factory spec]. Mount the brake line tab to the supplied drop bracket using the supplied 5/16" hardware and a 1/2 [Torque to 17 ft-lbs]. (FIGURE 22)

**55.** Loosely mount the knuckle bracket to the back of the knuckle using the supplied Philips head screws. Tighten only until snug. Mount the factory brake line bracket to the supplied knuckle bracket using the supplied 1/4" hardware and a 7/16 [Torque to 8 ft-lbs]. There is an ear of the factory bracket (with plastic line clip) that needs to be cut off as it might collide with a piggyback shock reservoir. Cycle the steering to check clearance. (FIGURE 23, FIGURE 24)

FIG.23



FIG.24

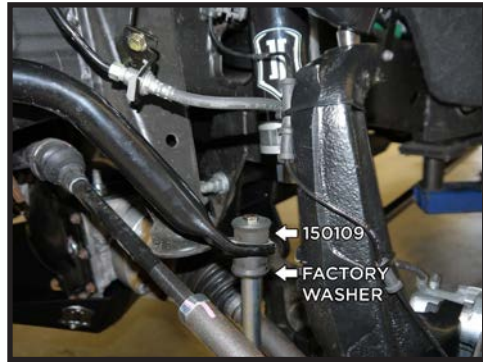


**56.** Zip tie the ABS line along the front of the knuckle and route around the front side of it. If there is sufficient room between the knuckle and the sway bar, use the supplied snap-in line clamp (Part #605924) and 10-32 X .750 flat head Philips screw to hold the ABS line to the back side of the knuckle. Cycle the steering and suspension to check for clearance issues. Zip tie as necessary to protect in all suspension cycling as well as steering. Pull the ABS connector clip out from the front of the shock bucket to allow for more slack in the line. Then zip tie to the shock bucket. (FIGURE 25, FIGURE 26)

FIG.25



FIG.26



**57.** Install the extended sway bar links using the supplied 3/8 x 3.25" bolts. The supplied washers (Part #150109) go at the boltheads, and the factory washers go against the link (The factory bushing retainer taps out of the factory sway bar link). Use red thread lock on the threads. Using a 5/8, keep the link from spinning as you tighten the bolts using a 9/16 [Torque to 20 ft-lbs]. (FIGURE 26)

Rear Lift Blocks:

**58.** Disconnect the wire parking brake hanger from the driver's side front spring hanger using a 13mm.

**59.** Mount the parking brake drop bracket (Part #174051) using the original bolt. Before tightening it to the frame, slide the supplied 3/8-16 X 1.00 bolt with washer in from the front side of the bracket. Tighten the bracket to the frame using a 13mm [Torque to factory spec]. Connect the wire hanger to the drop bracket using the supplied 3/8" lock nut and washer. Tighten with a 9/16 [Torque to 30 ft-lbs]. (FIGURE 27)

FIG.27



FIG.28



**60.** Remove the 2 bolts holding the brake line block to the rear differential. Bend the metal brake lines carefully up to allow adequate room for the supplied brake line bracket (Part #174052). Bolt the brake line bracket to the differential using the existing studs and nuts. Use a 13mm [Torque to factory spec]. Then bolt the brake line bracket to the brake line block using the supplied 5/16" hardware and a 1/2 [Torque to 17 ft-lbs]. (FIGURE 28)

**61.** Use a 21mm to remove the rear shocks.

**62.** Securely support the differential and only work on 1 side at a time. Remove the u-bolt nuts using a 27mm and remove the u-bolt plate. Remove the u-bolts.

**63.** Lower the differential slowly. Check for tension on all lines running to the differential to be sure not to damage anything. If needed, pull the plastic clips out to allow for more slack in the lines.

\*If using lift block larger than 4", or an overload pack is in place (like the 3500 HD Dually), longer u-bolts (Part #179585) must be used.\*

**64.** Slide the block under the spring and locate on the center pin hole in the spring seat. Lift the differential slowly while guiding the spring centerpin into the hole in the lift block.

**65.** Slide the supplied u-bolts over the spring. Slip the u-bolt plate over the u-bolts from the bottom and install the supplied washers and nuts [Torque to 240 ft-lbs].

**66.** If there is more than 1/4" of threads showing below the nut, cut off the excess length.

**67.** To install the rear shocks, refer to shock instructions.

**68.** Mount the wheels and set the truck on the ground.

**69.** Adjust the torsion keys to achieve the desired lift height.

**69.** Caster and camber will need to be adjusted after installation is complete. The toe will need to be adjusted before moving the vehicle to prevent premature tire wear. The alignment should be adjusted after the truck is sitting at the desired height. EXCEEDING 8" OF LIFT WILL DRAMATICALLY REDUCE RIDE QUALITY.

**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.

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***This template is 1:1. Cut it out and use it as a guide when trimming the LCA cross member for diff clearance (Step 26). The arrow points up.***

