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PART #	DESCRIPTION
51010	22-23 TOYOTA TUNDRA 6" CROSS MEMBER KIT
51011	22-23 TOYOTA TUNDRA 6" FRONT BOX KIT
51014	22-23 TOYOTA TUNDRA 6" FRONT KNUCKLE KIT
51017	22-23 TOYOTA TUNDRA 6" FRONT SKID PLATE



COMPONENTS INCLUDED	
<p>51010 INCLUDES:</p> <ul style="list-style-type: none"> (1) 154170 22 TUNDRA FRONT CROSS MEMBER (1) 154171 22 TUNDRA REAR CROSS MEMBER <p>51014 INCLUDES:</p> <ul style="list-style-type: none"> (1) 158100D STEERING KNUCKLE DRIVER (1) 158100P STEERING KNUCKLE PASSENGER (4) 157030 22 TUNDRA STEERING STOP (8) 605993 1/4-20 X 1 SHCS 18-8 <p>51017 INCLUDES:</p> <ul style="list-style-type: none"> (1) 154177 22 TUNDRA 6" DIFF SKID PLATE 	<p>51011 INCLUDES:</p> <ul style="list-style-type: none"> (1) 150133 22 TUNDRA FRONT UPPER BRAKELINE BRKT DRIV (1) 150134 22 TUNDRA FRONT UPPER BRAKELINE BRKT PASS (1) 150135 22 TUNDRA FRONT LOWER BRAKELINE BRKT DRIV (1) 150136 22 TUNDRA FRONT LOWER BRAKELINE BRKT PASS (1) 150138 22 TUNDRA KNUCKLE ABS BRKT DRIV (1) 150139 22 TUNDRA KNUCKLE ABS BRKT PASS (1) 150141 22 TUNDRA KNUCKLE BRAKELINE BRKT DRIV (1) 150142 22 TUNDRA KNUCKLE BRAKELINE BRKT PASS (2) 154160 22 TUNDRA TIE ROD (1) 154175 22 TUNDRA 4" SWAY BAR DROP DRIV (1) 154176 22 TUNDRA 4" SWAY BAR DROP PASS (2) 154184 22 TUNDRA FRONT BUMP STOP EXTENSION (1) 154185 22 TUNDRA FRONT BUMP STOP SUPPORT DRIV (1) 154186 22 TUNDRA FRONT BUMP STOP SUPPORT PASS

HARDWARE INCLUDED	
<p>51010H HARDWARE KIT</p> <ul style="list-style-type: none"> (2) 605824 M18-2.50 X 160MM HHCS GR10.9 YZINC (2) 605820 M18-2.50 X 160MM HHCS GR10.9 YZINC (4) 605833 M18-2.5 C-LOCK GRC CZINC (8) 605832 M18 FALT WASHER GR 10.9 YZINC (1) 605969 VIBRATITE RED 2ML BULLET 	<p>51011H HARDWARE KIT</p> <ul style="list-style-type: none"> (1) 295003-08 8" TUNDRA BREATHER HOSE (4) 605330 1/2 SAE FLAT WASHER GR9 YZINC (4) 605302 1/2-13 X 1.500 HHCS GR8 YZINC (4) 605333 1/2-13 FLANGED NYLOCK NUT GRG YZINC (16) 605016 5/16 SAE FLAT WASHER GR8 YZINC (8) 605011 5/16-18 X 0.750 HHCS GR8 YZINC (8) 605015 5/16-18 NYLOCK NUT GR5 CZINC (4) 605060 1/4-20 X .599 LO PRO BHCS BOXIDE (2) 605830 M10-1.25 SERRATED FLANGE NUT GR8.8 CZINC (2) 605808 M10-1.25 X 25MM SHCS (2) 605866 M10 FLAT WASHER SS (6) 605121 3/8-16 NYLOCK NUT GR8 CZINC (6) 605101 3/8-16 X 1.000 HHCS GR8 YZINC (12) 605133 3/8 SAE FLAT WASHER GR8 YZINC (4) 605321 1/2-13 NYLOCK NUT GR8 YZINC (4) 605301 1/2-13 X 1.250 HHCS GR8 YZINC
<p>51017H HARDWARE KIT</p> <ul style="list-style-type: none"> (5) 605301 1/2-13 X 1.250 HHCS GR8 YZINC (5) 605333 1/2-13 FLANGED NYLOCK NUT GRG YZINC (5) 605330 1/2 SAE FLAT WASHER GR8 YZINC (1) 605969 VIBRATITE RED 2ML BULLET 	

TOOLS REQUIRED	
<ul style="list-style-type: none"> JACK JACK STANDS SPRING COMPRESSOR BALL JOINT SEPERATOR FLAT BLADE SCREWDRIVER PLIERS TORQUE WRENCH RATCHETS 	<ul style="list-style-type: none"> HAMMER 4.5" GRINDER WITH CUT OFF WHEEL, RECIPRICATING SAW, DIE GRINDER WITH SANDING PAD 10, 12, 13, 14, 17, 19, 21, 22, 24, 26 SOCKET/WRENCH 38MM 12 POINT AXLE NUT SOCKET 5/32 HEX KEY 1/2", 9/16", 3/4" SOCKET/WRENCH

TOOLS REQUIRED	
<ol style="list-style-type: none"> 1. INSTALL TIME: 6-8 HOURS 2. LIFT HEIGHTS INDICATED ARE FOR A STOCK EQUIPPED VEHICLE. INCREASING EIGHT OF VEHICLE DUE TO ACCESSORIES WLL ALTER LIFT RANGE. 3. NOT COMPATIBLE WITH TUNDRAS EQUIPPED WITH LOAD-LEVELING REAR HEIGHT CONTROL AIR SUSPENSION. 	<p>WARNING!</p> <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

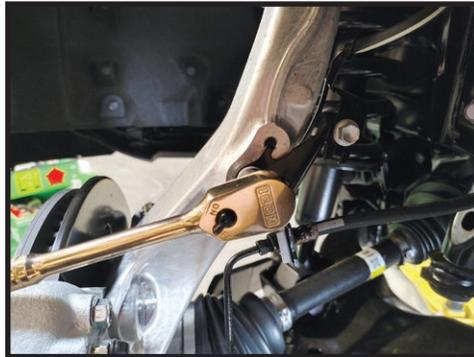
1. Open and inspect all hardware and components. Compare to the lists above to be sure all hardware and components are present. Contact ICON customer service if anything is missing.
2. Place vehicle in park on a level surface. Engage parking brake. Lift front of vehicle and place jack stands under the frame, near the front body mounts. Remove the front tires. NEVER WORK UNDER AN UNSUPPORTED VEHICLE.
3. Disconnect the sway bar link from the lower arm using a 19mm. Use a dead blow hammer to remove the link from the stud on the lower arm. Reinsert the bolt into the arm to keep track of it. [FIGURE 1]

FIG.1



4. Loosen and remove the sway bar from the frame using a 17mm. The skid plate/splash shield may need to be removed to access the sway bar brackets.
5. Remove the 2 12mm bolts that hold the brake line and speed sensor bracket to the spindle. [FIGURE 2]

FIG.2



6. Remove the brake caliper from the spindle using a 19mm. Once removed, use a strap or rope to support the caliper so it does not hang by the brake line. Remove the brake rotor and set aside. [FIGURE 3 & 4]

FIG.3

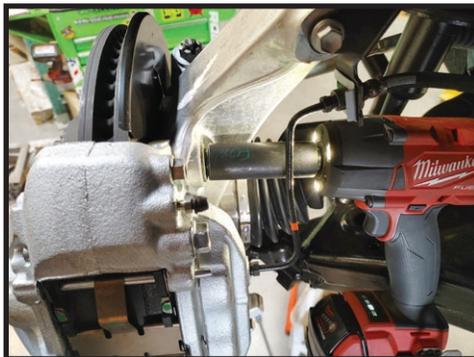


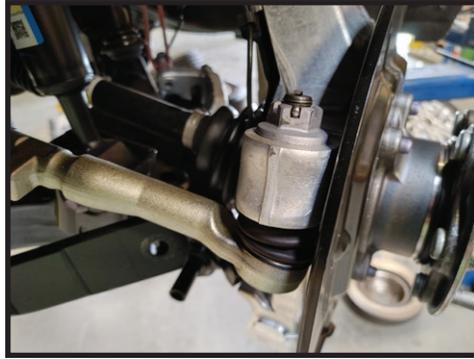
FIG.4



7. Loosen the jam nut on the tie rods.

8. Use a pliers to remove the cotter pin from the tie rod nut/stud. Remove the tie rod nut using a 24mm. [FIGURE 5]

FIG.5



9. Use a ball joint separator or a hammer to loosen the tie rod stud taper from the spindle. Remove the outer tie rod from the inner tie rod. [FIGURE 6]

FIG.6



10. Remove the wheel speed sensor from the front side of the spindle using a 10mm. Remove the bracket from the spindle using a 12mm. [FIGURE 7 & 8]

FIG.7



FIG.8

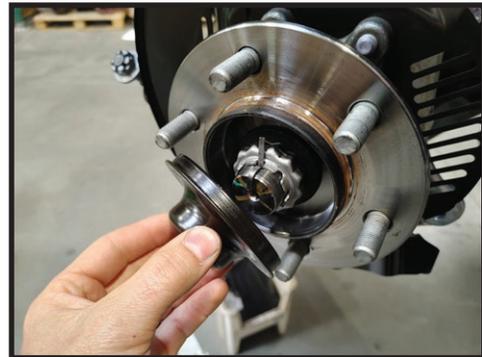


11. Remove the hub cap from the hub using a flat blade screwdriver to pry it away and off. [FIGURE 9 & 10]

FIG.9



FIG.10



12. Use a pliers to remove the cotter pin holding the nut lock plate in place. [FIGURE 11]

FIG.11



13. Use a 38mm 12 point socket on an impact wrench to remove the axle nut. [FIGURE 12]

FIG.12



14. Use a deadblow hammer to hit the stub axle free of the hub. It won't come completely out of the hub yet.

15. Remove the cotter pin from the upper control arm stud/nut.

16. Use a 19mm to loosen the upper control arm ball joint nut. [FIGURE 13]

FIG.13



17. Use a 22mm to remove the 2 bolts from the bottom side of the spindle. Remove spindle being sure the stub axle comes out of the spindle. [FIGURE 14 & 15]

FIG.14



FIG.15



18. Use a rope or strap to support the cv/axle assembly out of the way. [FIGURE 16]

FIG.16



19. Remove the lower ball joint cotter pin and nut using a 24mm. Use a ball joint spreader to dislodge the taper from the knuckle adapter. Set aside, it will not be reused.

20. Support lower control arm and loosen the pivot bolts at the frame using a 24mm.

21. Remove the lower shock bolt using a 22mm. [FIGURE 17]

FIG.17



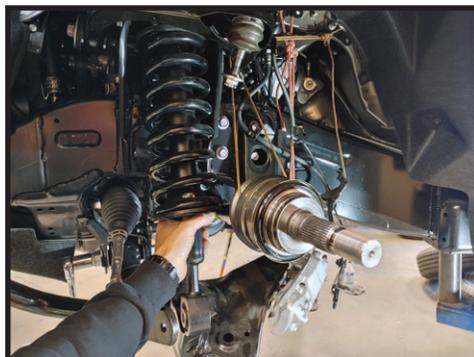
22. Remove upper shock mount nuts using a 14mm. [FIGURE 18]

FIG.18



23. Lower the control arm and remove the coilover assembly. [FIGURE 19]

FIG.19



24. Remove the bumpstop from the frame using a large adjustable wrench. [FIGURE 20]

FIG.20



25. Remove the lower control arm from the frame using a 24mm to loosen and remove the pivot/alignment bolts. Set aside the bolts as they will be reused.

26. Repeat all steps on passenger side.

27. Next will be to remove the front differential.

28. Remove the driveshaft from the back of the front differential using a 14mm. A pry bar or large screwdriver can be wedged between the frame and U-joint to keep the driveshaft from spinning.

29. The front axles can be removed from the diff using a screw driver or pry bar between the dust cover and diff and prying the axle out. The axle is held in place with a compression snap ring. Care should be taken not to damage the seal that is under the dust cover. The axles can be left in place, be careful not to let the CVs over-extend as damage can occur.

30. Disconnect the wiring harness from above the steering rack. Follow the wires that connect to the diff. Unplug the connector and remove the retaining clip so the differential can be removed. [FIGURE 21]

FIG.21



31. Remove the vent line from the top driver side of the differential. [FIGURE 22]

FIG.22



32. Support the front diff with a jack for removal. Remove the 2 bolts from the rear diff mount and diff using a 22 mm. Use a 12mm hex key and remove the purple nut from the rear diff mount from the rear cross member. Jack up the diff up until the rear mount can be removed.

33. Use a 19mm to remove the 2 bolts from the driver side diff and diff mount. Remove the 3 bolts from the passenger side diff mount using a 22mm. [FIGURE 23 & 24]

FIG.23



FIG.24

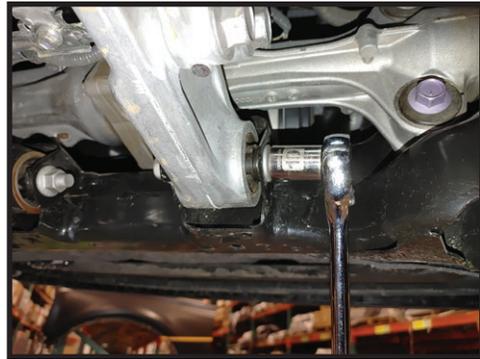


34. Use a 19mm to remove the 2 diff mounts from the front cross member. Slowly lower and remove the front diff and axles from the vehicle. [FIGURE 25 & 26]

FIG.25



FIG.26



35. With the diff removed, the rear cross member can be cut to clear the lowered differential. Using the photos below as a guide, mark where to cut. Use a cut off wheel or reciprocating saw to cut off the marked section. Clean the edges and spray paint to prevent rust and corrosion from forming. [FIGURE 27 & 28]

FIG.27



FIG.28



36. Install the new front ICON cross member. The stainless-steel shield designates the front of the front cross member. Loosely install the hardware. M18-2.50 X 130mm will be used. Install a washer under the head of the bolt before installing into the frame. Then a washer and C-lock nut. Leave the hardware loose for now. [FIGURE 29]

FIG.29



37. Replace the factory vent line with the supplied longer hose.

38. Lift the differential back in place. Reinstall the diff mounts and bolts into their respective tabs. Use a jack to hold the diff in place while the rear cross member is installed. Be sure not to pinch the wiring harness.

39. Reconnect the wiring harness and vent line.

40. With the diff in place, install the rear ICON cross member using the supplied hardware. The differential mounting tab will point to the rear of the truck. Use the remaining M18 hardware to secure the cross member to the frame mounts. Leave the hardware loose for now. [Figure 30]

FIG.30



41. Install the rear diff mount using the factory nut and bolts. Install the front mounts and bolts now. Check the clearance between the diff and the frame that was cut. Make sure the diff housing is not rubbing against the frame. [FIGURE 31 & 32]

FIG.31



FIG.32



42. Install the lower control arms into the cross-member brackets using the factory hardware. The longer bolt goes in the rear mount. Make sure the cam washer fits between the tabs on the brackets. [FIGURE 33 & 34]

FIG.33



FIG.34



43. The remaining steps can be completed on the left and right side simultaneously.

44. With both lower arms installed, you can now tighten the M18 bolts. Use thread locker on the threads. The alignment bolts need to be tightened once the truck is back on the ground.

45. Install the new bump stop extension using the supplied M10 Bolt and washer. Use thread locker. The extensions fit on both sides.

46. Install the bump stop extension support that connects to the rear cross member. The supports are left/right specific. The hardware on the extension is 3/8-16 x 1.000, washers and nylock nuts. The hardware for the support to cross member is 1/2-13x1.250, washers and nylock nut. Tighten the hardware once all the bolts and nuts are installed. Install the bump stop into the extension using the supplied M10-1.25 serrated nut and thread locker. [FIGURE 35]

FIG.35



47. Remove the upper control arm, if an ICON UCA has been purchased. If continuing to use the OEM UCA, leave it installed.

48. Move onto the OEM knuckle now. You want to remove the hub/bearing assembly. Use a 12mm hex key to loosen and remove the 4 bolts holding the hub to the knuckle. The rotor splash shield will come off with the hub assembly. Note the orientation.

49. Grab the ICON knuckle and install the hub and rotor splash shield in the same way it was removed from the OEM knuckle. Torque the bolts to 120 ft-lbs. Apply thread locker.

50. Install the steering stops, Using the 1/4-20 X 1 stainless screws. Apply blue thread locker before installing and tightening the screws. Torque to 6 ft-lbs.

51. Reinstall the axles now, if removed. Be sure the dust seal inside the differential is not cut. When inserting the axles, push in by hand until they stop, then grab a dead blow hammer, hold the axle straight out and hit the end of the axle until you feel it seat into the differential completely.

52. If any oil leaked out of the differential during removal, refill it now, with the proper spec oil. Refer to owner's manual.

53. Install the knuckle onto the lower ball joint. Rotate the ball joint so it is pointing outwards, insert the threaded end of the axle shaft into the knuckle, then slip the knuckle onto the stud and secure it with the OEM nut. Tighten the nut to OEM spec and secure it with the cotter pin.

54. Install the coil-over now. If no coil-over was purchased, install the coil spacer onto the top of the OEM coil-over and tighten the nuts to 35 ft-lbs. Install the coil-over and spacer assembly into the truck and secure with OEM nuts and bolts. Tighten the upper nuts to 35 ft-lbs. Tighten the lower pivot to OEM spec.

55. Install the axle shaft into the hub and lift the spindle so the upper balljoint can be connected and secured with the nut and cotter pin.

56. Install the axle nut and torque to OEM spec, then install the locking nut with cotter pin. Install dust cover.

57. Install the rotor, secure it with a lug nut, then install the brake caliper, making sure the lines are not twisted. Apply thread locker to the bolts and torque to 100 ft-lbs.

58. Route the speed sensor wires and brake lines so the brackets can be secured, to the knuckle using the 1/4-20 BHCS. The speed sensor wire clips will have to be carefully removed from the factory bracket and installed into the new ICON bracket. Use a needle nose or similar pliers to squeeze the backside of the clips and push them out of the bracket. [FIGURE 36 & 37]

FIG.36



FIG.37



59. Insert the speed sensor into the knuckle, using grease to lubricate the o-ring. Reuse the OEM bolt and tighten.

60. Install the OEM splash shield/skid plate that goes under the radiator, if it was removed.

61. Install the sway bar drop brackets onto the frame. The mounts are a mirror of each other. The flat side with shield should face out. Use the OEM bolts to secure the bracket to the frame. Snug the bolts.

62. Install the sway bar onto the mounts using the 1/2-13 x 1.500 bolts, washers and flanged nylock nuts. Tighten the 1/2" bolts to 70 ft-lbs. Tighten the OEM bolts to OEM specs.

63. If the sway bar links were removed from the sway bar, reinstall them now, then hook them back up to the lower control arm stud. This might need to be done when the truck is on the ground.

64. Install the new ICON tie rod and jam nut onto the OEM inner tie rod. The tie rods are identical, no left/right. Adjust the tie rod length so the knuckle assembly is visually straight. Install the tie rod stud into the knuckle from the top side. Install the supplied nylock nut and tighten to 50 ft-lbs. Tighten the tie rod jam nut.

65. If purchased, install the skid plate now. Using 1/2-13 x 1.250" bolts and washers and flanged nylock nuts. Start with rear center mounting hole. A second set of hands will be helpful to hold the skid plate in place. Then install the remaining 4 bolts. 2 in the rear corners, and 2 in the front, that go through the front cross member. [FIGURE 38, 39, 40, 41]

FIG.38

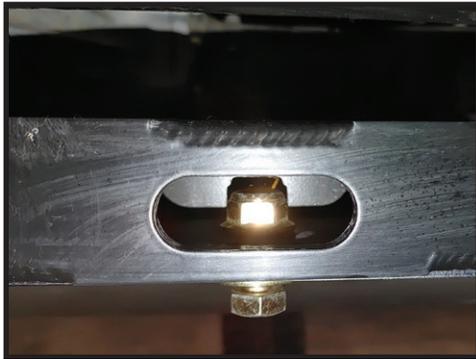


FIG.39



FIG.40



FIG.41



66. Install new wheels and tires. Set vehicle on ground and torque the lower arm pivots. Get vehicle professionally aligned.

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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