# LAND ROVER DEFENDER

## 2” Install Instructions

# J. Auston Fabrications

## DO NOT USE IMPACT TOOLS FOR BOLTS TO BODY!

Lift vehicle at lifting points under doors. Can be done with shop lift or tall jack stands of at least 32”, but then require a jacking table or cart to receive vehicle suspension front and rear carriages.

Remove tires and wheels and inner fender trimming (inner wheel wells). Remove front tow hook cover. From back, remove interior cargo cover and inner jack and cargo liner under exposing rear shock placement in rear cab. Remove from undercarriage the 3 aluminum skid plates and the 3 large molded fiber panels and the L shaped attachment bars along outside and back of fuel tanks.

**BACK SUSPENSION:**

Cut exhaust pipe at angle section piece of pipe, about 6 ½” from differential casting, and then cut pipe at rear muffler approx. 2” from muffler. See picture # 1&2

In right wheel well, release air line for airbag from the 3 clips on body locations by the shock giving line slack, DON’T remove line from bag! See picture # 3 (Red)

Remove bolt that holds bracket for brake line hardline to rubber hose and remove hardline by that location from clip on body. See picture # 3 (Yellow)

Remove differential breather line from clips on fuel fill tube by the body, and 2 on top of rear suspension carriage. See picture # 4

Remove bolt that holds rear suspension locking plate arm that located on corner of door sill at front of wheel well (bottom back corner of door), repeat this on other side. See picture # 5 & 6

On back of carriage, is a clip holding wire harness to carriage from body. Pull that clip out giving wire harness free play when lowering carriage. See picture # 7
In front of differential above driveshaft remove the 2 nuts that hold the inner suspension locking plate bars connecting behind fuel tank and over driveshaft CV joint. (Making sure removal of nuts on the triangulation bracing bars and not the fuel tank to body bolts). See picture # 8

Remove the 2 bolts holding the suspension locking plate right next to each side of fuel tank at outer back corner of tank. See picture # 9

Suspension carriage will be lowered 6” for install, no more due to slack in adjoining lines etc. This will also concave rear of heat shield below drive shaft between fuel tank, giving new shape for driveline after kit install and still keep mounting points for fiber UCP side panels. Support suspension carriage between lower control arms letting droop. Make sure carriage is supported equally to referenced to body so that still lines up exactly to body. Shim support where needed to equally support in relatively to body so that when unbolted from body it stays in position. See picture # 10 (Yellow)

Remove top nuts from shocks inside vehicle and unhook center wire from top of shock if applicable, then remove lower shock bolt and remove shock from vehicle. See picture # 11

Remove suspension cross member carriage bolts, (4 bolts), releasing cross member from body. The front or forward 2 hold on the locking plates and triangulation braces and will come down as main bolt is removed.

On back 2 aluminum spacer blocks, remove bolts that hold to fender, now slowly lower cross member or lift vehicle to create a 6” space between, (without aluminum spacer blocks), making sure that all wires, hoses, etc. are not compromised. See picture # 12 T

The drive shaft will be pulling down on heat shield at back of fuel tank, but that will form the reverse arc needed after install complete.

Use the 14mmx145mm bolt supplied in kit and insert into the 4” round X 3” tall block through the large hole for washer pass through, leaving head of bolt just outside of block and slip the black neoprene round gasket over other end of bolt to surface of block. See picture # 13 Apply medium thread locker to end 1 ½” of bolt. Insert bolt into body with block at gasket and head just protruding out of block large hole, (socket will fit through hole for tightening), hand thread into body as much as possible then tighten with tools leaving the half moon arch facing straight out and torque to specs. See picture # 14 & 15 (all 4) same. Slide in backing locking plates inside and will fall into large hole on bottom, filling hole pass through. This is to where suspension is bolted to with second set of bolts from kit. See picture # 16

On top of cross member at the 4 mounting points, place the keyed backing plates that orientate to bushing sleeve insert. See picture # 17

Bend fender bracket at top of blocks and drill and tap in where hole lines up. See picture # 18

Install center locking plate extension bracket at rear of fuel tanks with stock nuts orientating hole that is off center on top of bracket with head of bolt in body and tighten to body. See picture # 19

Now jack up suspension cross member up to new location under round blocks or lower vehicle to cross member. Using 14mmx125mm. install locking plate bolt through cross member into bottom of block by hand and towards front, hand tighten forward locking plate extensions between body and plate end. See picture # 20 Also align center locking plate arm onto new center bracket and nut. See picture # 21 (sometimes loosen bolts on other end at locking plate to give mobility and movement till ready to tighten all. Do same on other side. Install the rear bolts through stock bushing plate (looks like flying saucer) up through cross member carriage up to the drop in looking plates with nuts from kit and hand start threads. Use a wrench through half moon hole to the nut on the keyed backing nut/plate and tighten bolts snuggly from underneath and then torque to 135 Ft Lbs. See picture # 22

After 4 main bolts tightened then tighten locking plate to body with extension bracket sandwiched between body and plate, then tighten center bars at new center location. See picture # 20 & 21 Then tighten at plate and bar to door bottom using block and bolt (this bar can be deleted if wanted).

Shock extension installation: Slide neoprene gasket over top of shock then place extension bracket on halfway down and put lock washer on each bolt and nut, tighten all nuts then ready to install down through lower A-arm and then into body first. See picture # 23 (may have to jack wheel hub up to get more outward room), tighten top nuts and reinstall wire connection to top, (might have to pull wire anchor clip to get more length), then install bottom of shock by jacking up wheel hub to match where bolt goes. Reattach wire harness clip to back of cross member and rebolt brake line bracket insert air and brake lines to stock clips as far as you can without pulling airbag fittings. See picture # 24

**FRONT SUSPENSION KIT INSTALL:**

Remove steering CV from steering shaft and rack-n-pinion and install from kit, steering shaft extension. Use lock- tight, (put aside until end). See picture # 25
Open hood and at shock towers unhook air lines for shocks from routing clips so that there is as much slack in line so that air fitting does not need to be taken off shock. Use an engine cradle to hold engine in place. Making sure support is not in way of removing air shocks bolts from tower and top nut of engine mount is assessable. See picture # 26 Also need to hang radiator in place so it doesn’t move when suspension cross member is dropped down. Remove sensor wire out of top of shock and then remove top shock nuts. See picture # 27

Take nut off of top of engine mount on each side and lift engine ¼”, also make sure radiator is suspended in place.
Under front of vehicle, remove bolt on each side of towing hook that holds to front rebar cross support See picture #. 28

Take the 2 screws that hold bottom of radiator to the toothed radiator brackets that are mounted to the front suspension cross bar next to tow hook. See picture

# 29 Remove screws that hook the front skirting to the suspension carriage along front. See picture # 30

In each wheel well pull the brake line bracket off of the sway bar bolt links to the shock fork and put nut back on by hand, (gives the brake line enough slack to not disconnect during installation). See picture # 31 Unclip the wires from bracket on rack-n-pinion that hold wire slack for rack-n-pinion for slack of lowering, See picture # 32 and ABS wires to hub. (just pull the rubber mounts out of their clips on body and steering knuckle locations), to give slack for 5" – 5 ½"of dropping of suspension cradle carriage from body. See picture #33 &36

Support steering knuckle from pulling away at top so that hub axle shafts do not pull out. (I sling to carriage). See picture # 34

Release top ball joint of upper control arm to steering knuckle.

Support front suspension carriage with jacking table or through center from front so that it keeps same orientation to the body as if bolted the front and rear cross member of this carriage will support full weight letting the arms towards the back can free float. See picture # 35

Once all supported, remove the 3 bolts on each side that hold entire carriage to vehicle. See picture # 36 (Red) & 37 (Some models have a 12mm bolt that is second from the front that will be reused if applicable making a 4$^{th}$ bolt to each side) Then slowly checking for binding wires, lines and etc, raise vehicle off suspension carriage 5-5 ½" from body. See picture # 38 (Yellow) The 1" round spacers at bolt locations are not to be used, the kit takes that into account for new kit sub frame parts. Orientate kit sub frame part with single hole to front and the other 2 holes past the depressed area towards the back. Using the neoprene strip on the small holed face of this part, insert the new 14mm X 145mm through the large hole side, through part, then through gasket leaving bolt head just outside of large hole, front and back of this (bar) bracket. See picture # 39 Hand thread these bolts in to assure threading correctly before tooling in. tighten kit sub frame

bar up tight to body and torque to spec’s. Then install other 6” long kit sub frame block where the suspension carriage arm was attached with the opening end of block on bottom towards back like the front bar just installed. Front of this block is solid and install same as front bar. See picture # 40 Slide in bolt backing (3 ½” med sized) locking bar into bottom with ring side down until it drops into large diam hole and then insert to the back of the front bar, the long locking bar with rings on bottom and smaller nut toward front, (middle of bar 12mm may or may not be used, depends on application), on the front of this suspension bracket takes the smaller offset holed, bolt locking backing nut, long end in first and bottom ring to fall in large hole in bottom of bar. See picture # 41 & 42 This transfers suspension carriage bolting locations exactly below former.

Now move to install steering knuckle extension block. Slide the round pin of block into top of knuckle aligning bolt hole on front with knuckle upper control arm ball joint placement/ retaining bolt. May need to pound down to full seat this block into knuckle. Bar on the back side of knuckle. Insert knuckle retaining bolt and snug bolt through knuckle. Lean top of the knuckle towards back and drill through knuckle from the back with a 5/16” bit, through the hole on extending bar on back side with intending hole to come out I middle of depression of front of knuckle. Insert bolt from kit with angular lock nut to fit in depressed area and tighten. See picture # 43,44,45

Install in place, the top shock extension bracket with the orientation of large U shaped cut out to fit at air supply fitting and guide air line in both top and bottom plate using locking nuts from the kit, fully tighten to the top of shock. See picture # 46

Now remove the 2 radiator keyed brackets off of suspension carriage and mount to the top of new kits extension brackets and then mount that back on to prior location. See picture # 47

Take motor mounts out of suspension carriage and mount to the (top 3/8” thick plate) of kit brackets using same bolts but putting nut on underside. But pre

insert bolts from kit into bottom holes due to upper bolts in way of inserting in after top bolts installed. The (US) models have a special designed motor mount given in kit for left side and (EU) models have special one for right side, then mount back in location on carriage, rounded edged bottom side goes outward on carriage. See picture # 48 & 49

Now slowly lower vehicle or raise suspension carriage to meet up with kit sub frame brackets previously installed making sure that radiator brackets are aligning with bottom round positioning/ securing rods that protrude down into the round holes of the radiator brackets, and motor mount bolts to align to motor mount arms on engine and front skirting is under/outside carriage or else it will bind up and not finish in correct positions. Once suspension is bolted up to kits suspension mounting bars/block, then put the screw type bolt and rubber bushing back o the radiator securing rods and tighten. See picture # 50 And using kit bolts called out for each location install bolts from bottom through suspension into the slide in locking blocks fitting into large holes on bottom of kit sub frame bar and block. See picture # 51 & 52 Make sure that interior locking bars are aligned and in large hole on bottom making a flush underside and giving exact bolting location.

Front 14mm X 110mm Bolt
Mid (back of same bracket) 14mm X 45mm Bolt
Arm block 14mm X 75mm Bolt

(12mm X 45mm to center hole in front bar)

As inserting bolt, make sure not to raise the inner block out of large bottom hole and hand thread bolts in before using mechanical tools, torque to 130 Ft Lbs at the 3 locations on each side of vehicle, if the 4$^{th}$ hole is not utilized for carriage, then insert the 12mm X 45mm bolt into the large 2” washer and insert and tighten to lock down inner locking nut/bar of sub frame bar. Re-nut engine mount, now engine cradle support can be removed.

Now on each side, raise lower control arm guiding top of shock extended through shock tower holes for shock mounting. Make sure that the air line does not get smashed in between any surface. See picture # 53 Go to engine compartment and put stock nuts back on and tighten. Install the wire back into top of shock, may have to unclip wire from guiding clips in engine compartment to give extra length (slack), then attach upper control arm ball into steering knuckle extension and bolt through with kits, new bolt and nut and tighten. See picture # 54

Reattach the brake line onto shock fork at sway bar location and tighten and reattach electric sensor/ABS lines back into the clips that held them prior.

Install front hook plate extension. See picture #55

Attach inner fender liner extension tab, See picture # 56

Go over install and check that all bolts are tightened.

Install steering shaft CV Joint and Ext to shaft side then to steering gear. See pictures # 57 & 58

Install L shaped strap/bracket that goes along outside back of fuel tanks. You will have to bend this at the angle of the L shape to get it below the rear suspension locking bracket. See picture # 59 Install back/side fiber UCP skirting. Install aluminum skid plates with a slight trimming to the second on back. Thin the bracket that is 90 deg bend that goes to body on both sides next to suspension carriage arms and notch out for new sub frame bolt at that location. See picture # 60 Insert one of the 1” round spacer blocks that was on suspension between body and arm of skid plate on each side and use a 1” longer bolt in that location. Reinstall the inner wheel well linings on the front linings for the plastic side, you will have to trim on front skirting, the round fastening hole so that it can move upward to position that plastic inner liner needs to be at. See picture #. 61 Put tire and wheels back on.