Version 1.2

KLM20547

KLM20547AL

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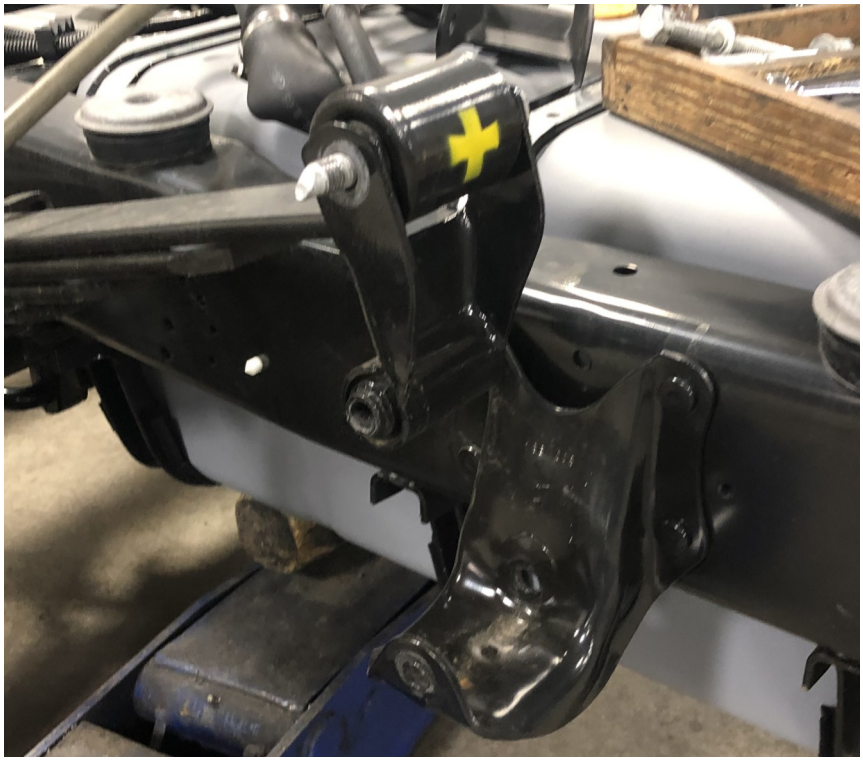
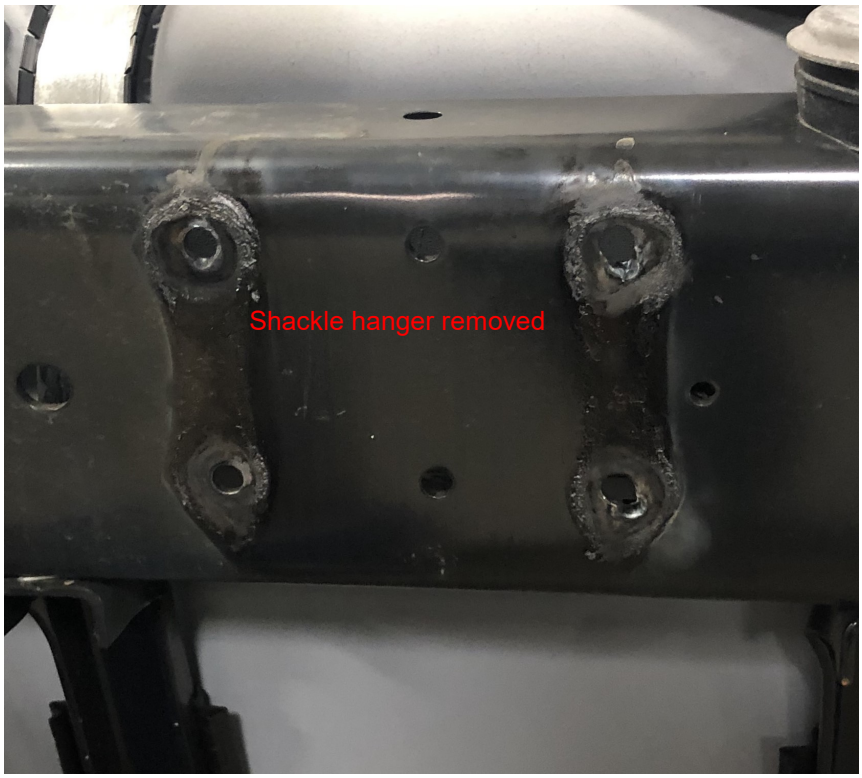
2011+ Ford E-350/450 Cutaway Chassis
2 Stage Rear Air Suspension Install Instructions

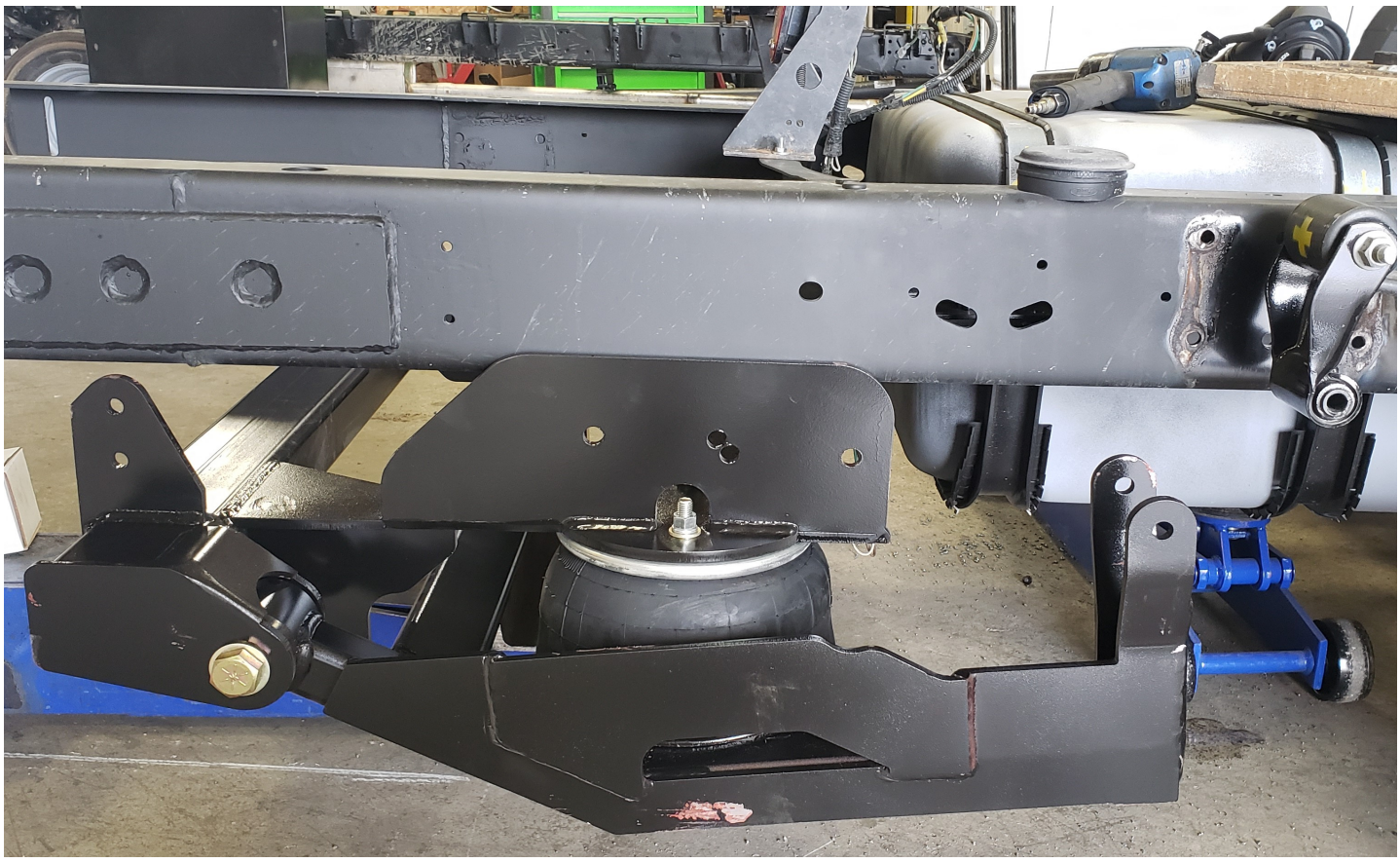
1. Make sure the vehicle is on a level concrete surface. Jack the truck up from the frame in front of the rear leaf spring perch so the rear tires are barely touching the ground.
2. Remove the lower shackle bolt that fastens the shackle hanger. Using a torch, rivet buster or grinder, remove the four rivets off the side of the frame that held the rear shackle hanger in place.
3. It may be required to cut the exhaust tailpipe in order to install the air ride suspension. A new tailpipe may be required.





There are two ways to install the air suspension. You can assemble the kit with the upper framework on the chassis first, install the air bags, and then install the swing arm last. The alternate way is to assemble the parts on the shop floor and lift them up as a complete assembly with a floor jack. The second option will be shown here.

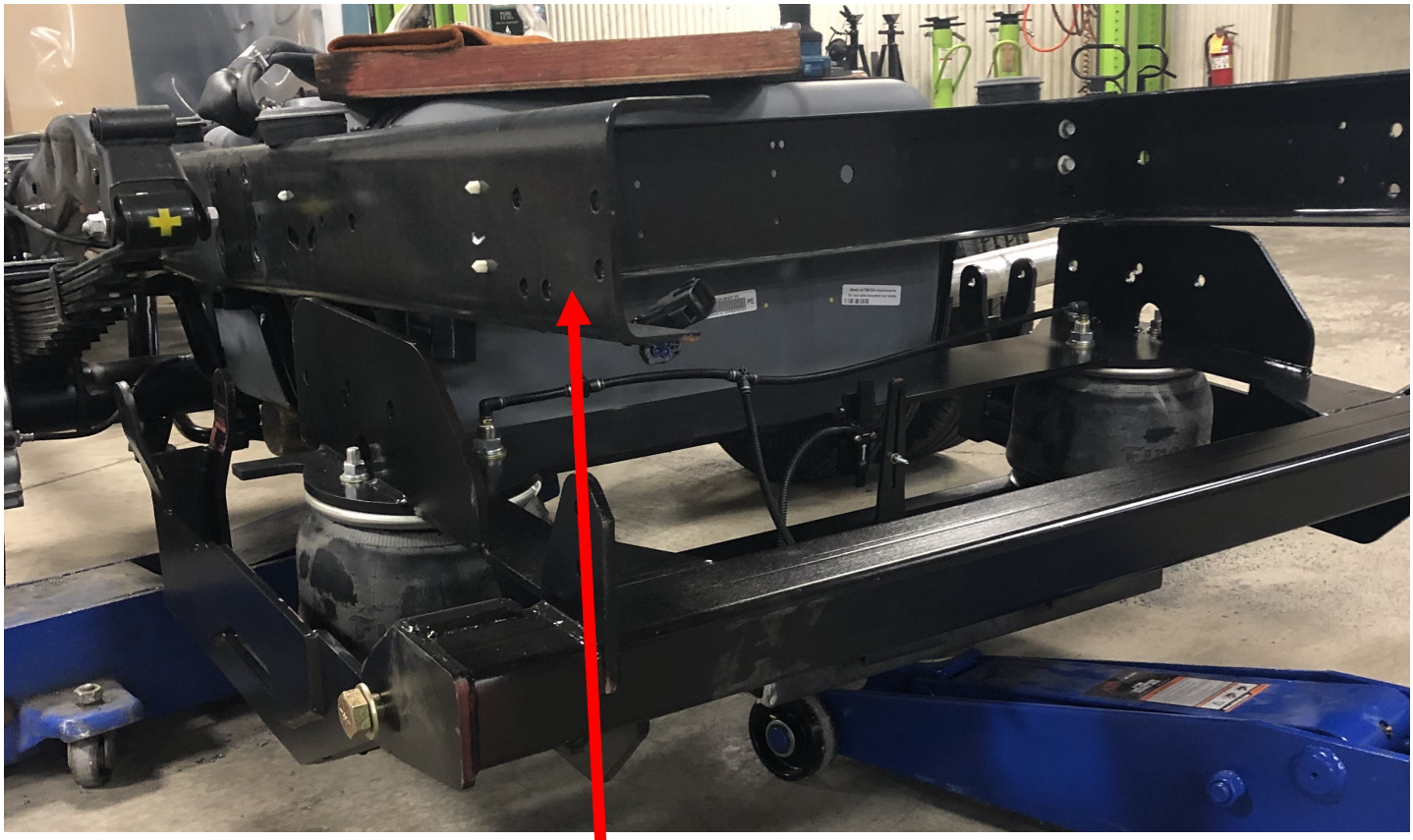
4. Locate the upper framework (Part # 20549) and locate the air bags (Part # F9039). Fasten the air bags to the upper framework with the 1/2” and 3/4” nuts, flat washers and lock washers. Torque the nuts to 35 ft./lbs. Insert the air fitting into the air bag and tighten.
5. The lower swing arm (Part # 20548) fastens to the upper framework with the 7/8 x 5 1/2” bolts. Do NOT fully tighten the 7/8” nuts until the install is complete. Fasten the bottom of the air bag to the swing arm with the 3/4” bolt and lock washer. Torque the 3/4” nut to 35 ft./lbs.



Kit shown assembled and being raised into place. Current chassis

Has the frame extensions already installed.

6. Jack the framework up to the frame. Due to some frames having extensions welded to them, rear mounting tabs on the upper air ride framework will may be wider than the factory frame. If the frame is stock, use the supplied spacers (Part # 20528) in between the framework and chassis frame.



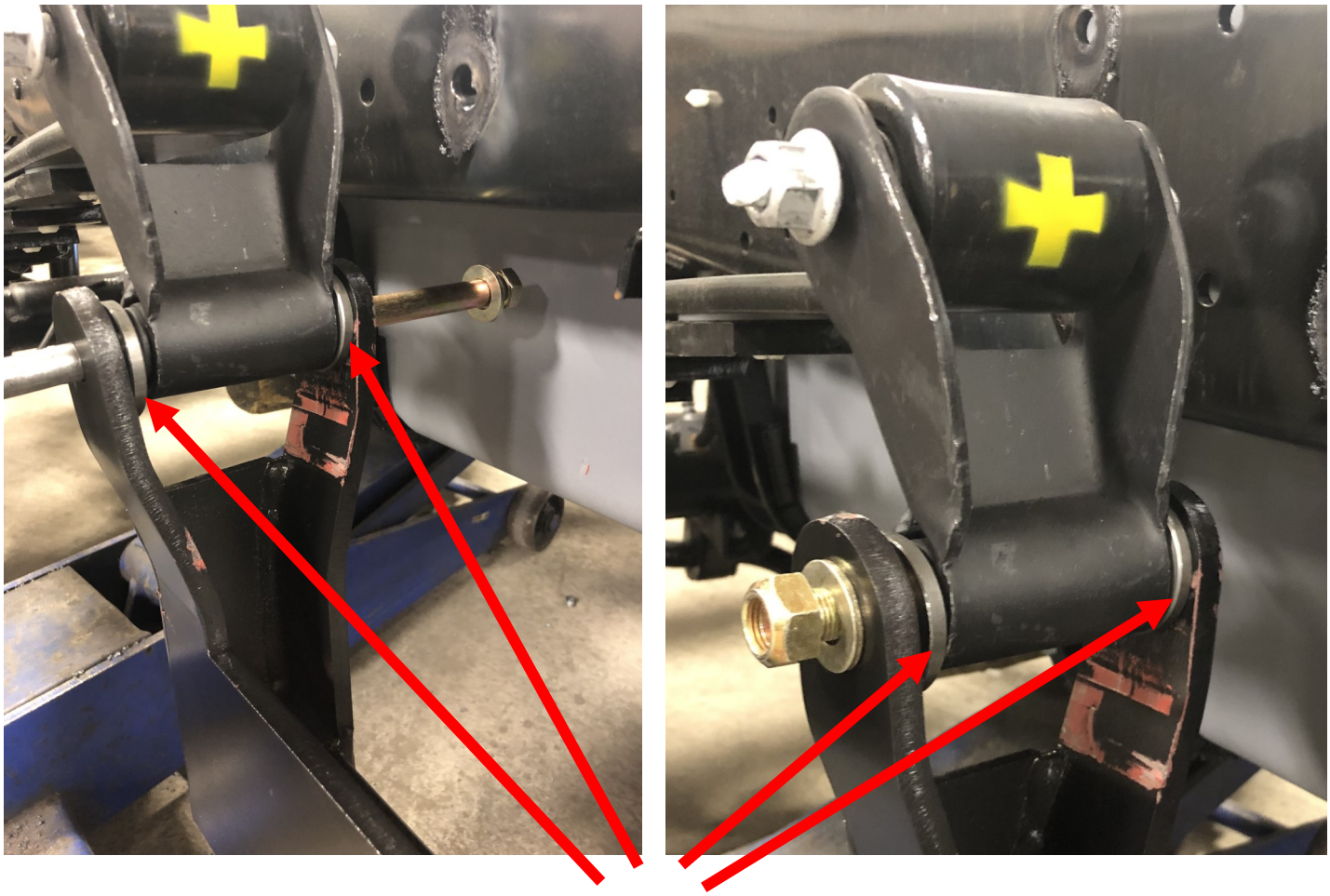
3/8" Frame Spacer

(# 20528) shown

7. Use four 5/8 x 2” bolts and four 1/2 x 2” bolts to fasten the air ride to the frame. Make sure to use a flat washer on each side of the bolt. Torque the 5/8” bolts to 150 ft./lbs. and the 1/2” bolts to 85 ft./lbs. If the frame has an extension welded to it, the spacer (Part # 20528) will not be needed.

5/8” bolts shown installed ***1/2” bolts shown installed***

8. Locate the 9/16 x 5 1/2” bolt and the four shackle spacers (Part # 20551). *The 9/16” bolts must be installed from inside out*. If the threaded bolt end faces the frame, it will rub on the frame, so make sure the bolt head faces the frame. It works well to use a punch to help keep the spacers in line when installing the 9/16” bolt. Once you have the bolt through the shackle (with spacers on each side) torque the 9/16” bolt to 125 ft./lbs.



Shackle spacers (Part # 20551)

Swing arm (# 20548 shown attached to leaf spring shackle using Shackle spacers (Part # 20551)

9. Once the air ride is installed, locate the (optional) electronic, self-leveling air controls system. The air compressor box fastens to the side of the frame with the mounting brackets using four 9/16 x 1 3/4” bolts. It does not matter if it’s the inside of the frame or the outside of the frame. Prior to mounting, lay the compressor box down around mid frame and lay out the wiring harness. The power and ground will go up to the battery. The orange wire goes under the dash. The sensor harness will go along the inside of the frame and down to the sensor mount. You want to make sure the compressor box isn't mounted too far forward where the sensor harness cannot reach the rear suspension. Once the best location is determined, drill four 13/32” holes in the frame and fasten the box mounting brackets to the frame with the four 3/8” bolts. Fasten the compressor mounting plate to the 1/4 x 1” bolts.

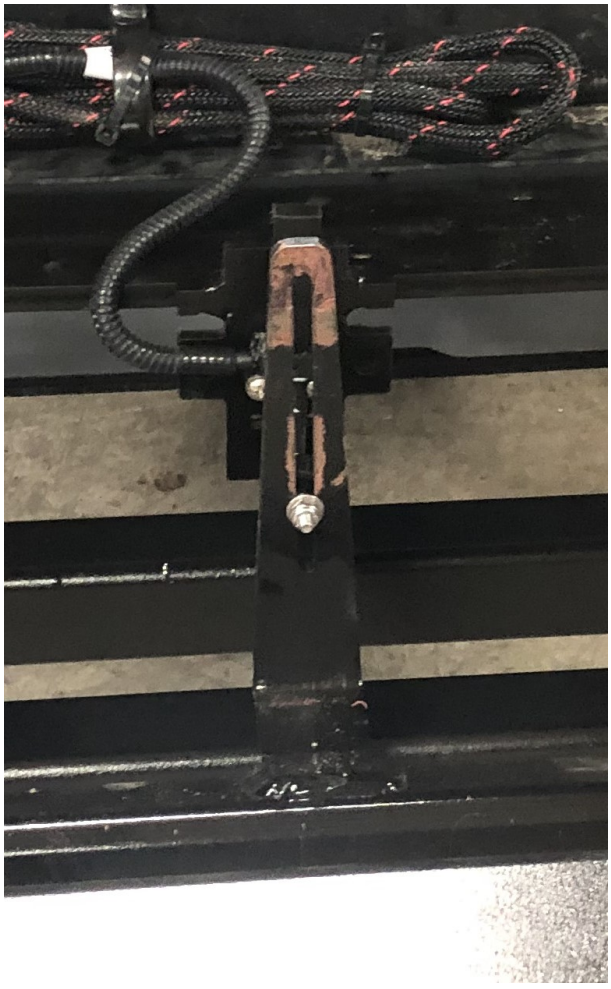
10. Locate the ECU/sensor and magnet. The ECU/sensor fastens to the mounting plate on the upper framework with the two 10 x 1 1/4” bolts. The magnet fastens to the slotted tab that is welded on the swing arm. Start with the magnet about 3/8” above the bottom of the slot and make adjustments as needed.

NOTES:

-THE MAGNET IS TAPERED AND SO IS THE HEAD OF THE BOLT. THE TAPERED BOLT MUST FACE THE ECU/SENSOR IN ORDER TO WORK.

-THE MAGNET WILL SET ABOUT 1” LOWER THAN THE WHITE LINE ON THE ECU/SENSOR WITH THE AIR RIDE AT THE CORRECT RIDE HEIGHT (AIR BAGS AT 8” AND SWINGARM LEVEL WITH THE GROUND).

-SOMETIMES THE SYSTEM WILL NOT WORK UNLESS THERE IS AT LEAST 10 POUNDS OF AIR IN THE BAGS. A BARE CHASSIS MAY NOT HAVE ENOUGH WEIGHT FOR THE SYSTEM TO WORK.



11. Run the power wires up to the battery. Zip tie the air compressor harness to the factory wiring harness that goes up to the engine compartment. The red wire (fused 40 amp) goes to the positive terminal of the battery. The black wire goes to the negative post of the battery. The pink wire (fused 5 amp) goes to the yellow and orange wire under the hood. When routing the wires into the cabin, make sure to have a grommet where ever the wires go through metal to prevent them from being cut and shorting out the system. ***NOTE: MAKE SURE WIRES ARE ZIP TIED AWAY FROM THE EXHAUST. HEAT FROM THE ENGINE OR EXHAUST CAN DAMAGE WIRES & THE HARNESS.***

The drivers side step well has a rubber grommet that allows you to cut and push the wire through into the cab section.

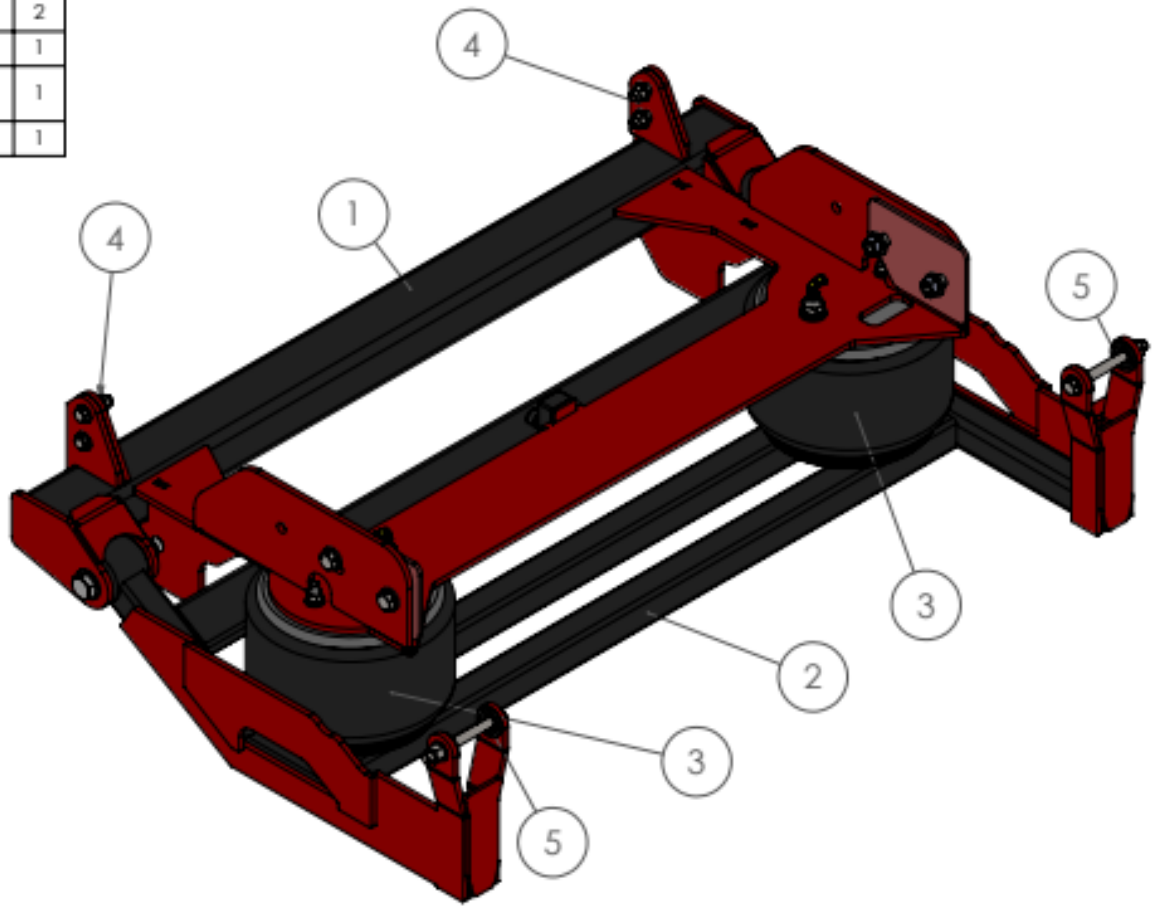
Yellow and orange wire is ignition

Tie the pink wire into the ignition.

12. Do a final leak test once the system has been installed. The kit will have very little air in the bags (with no body installed) that sometimes the air will leak back out through the compressor. It requires about 10-15 pounds of air pressure to seat the check valve in the compressor. If your system is leaking down overnight, do not be alarmed.

13. When making final adjustments, the airbag should be around 8” tall and the swing arm will be level with the ground. Double check to make sure all the bolts are torqued and the air fittings do not leak.

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	20549	Top Frame	1
2	20548	Swing Arm	1
3	80012-9039	Firestone W01-358-9039 Air Bag	2
4	20528	3/8" Frame Spacer	2
5	20551	Leaf Spring Shackle Bushing Retaining Washer	4
6	18126	Frame Spacer	2
7	80011-24060	ECU - Height Control	1
8	80011-Plastic Washer	Plastic Washer Supplied in 80011	1
9	80011-10966	Magnet - Supplied in 80011	1



REV	ECN	CHANGE DESCRIPTION	CHANGED BY	DATE

3RD ANGLE PROJECTION

UNLESS OTHERWISE SPEC: DIMNS: IN INCHES STD. TOLERANCES X.X ±.060 X.XX ±.030 X.XXX ±.010 FRAC.DIM: ±1/32" Deg: ± .5°

A | DO NOT SCALE DRAWING | 1:20 | Approximate Weight = 291.09 lbs

MATL SPECS:

DESCRIPTION: 2-Stage (Rear)

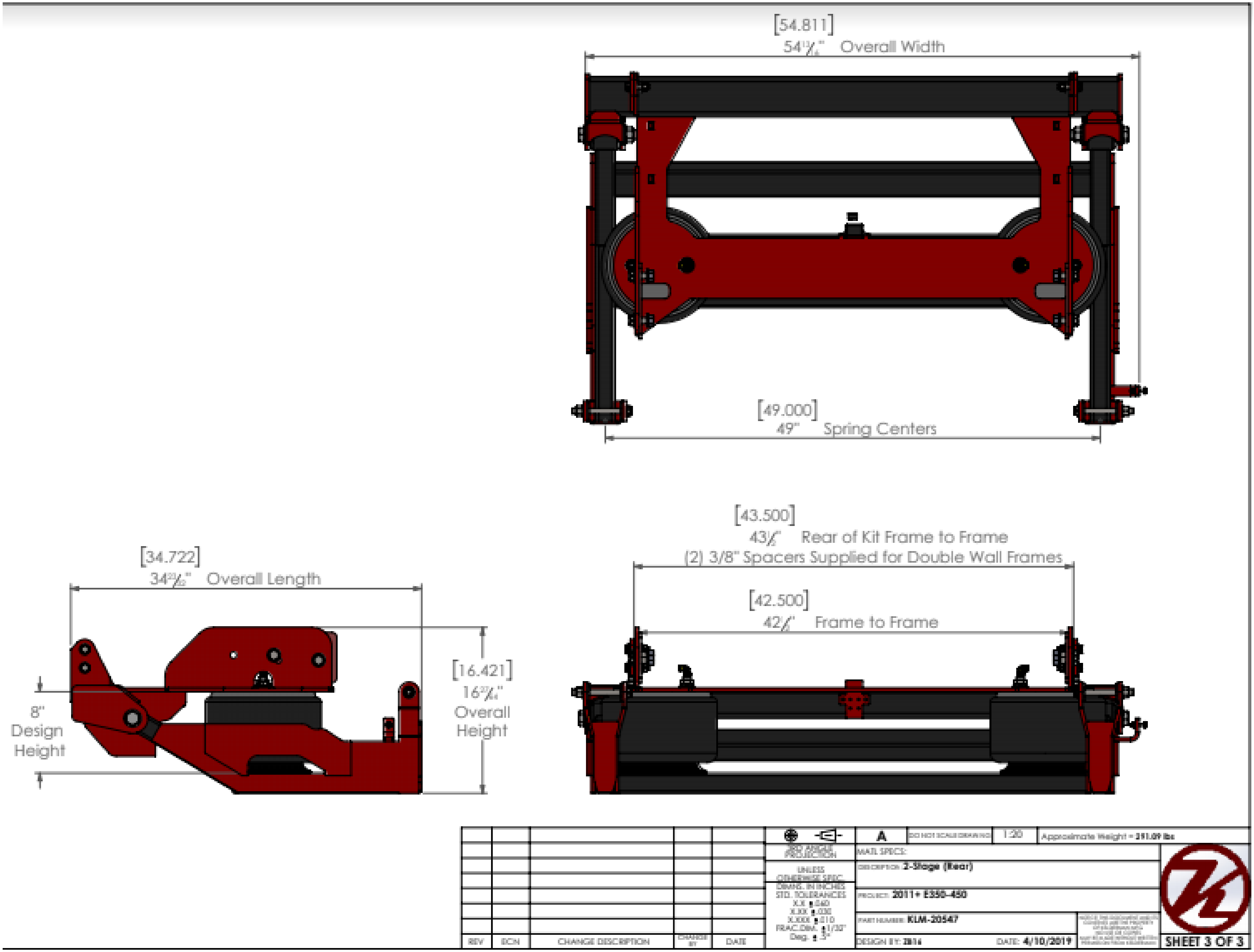
PROJECT: 2011+ E350-450

PART NUMBER: KLM-20547

DESIGN BY: ZB16 | DATE: 4/10/2019

PROPRIETARY AND CONFIDENTIAL

SHEET 2 OF 3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54 11/16" Overall Width
[49.000]
49" Spring Centers
[34.722]
34 23/32" Overall Length
8"
Design
Height
[16.421]
16 27/64"
Overall
Height
[43.500]
43 1/2" Rear of Kit Frame to Frame
(2) 3/8" Spacers Supplied for Double Wall Frames
[42.500]
42 1/2" Frame to Frame
REV
ECN
CHANGE DESCRIPTION
CHANGE BY
DATE
3RD ANGLE PROJECTION
UNLESS OTHERWISE SPEC.
DIMS. IN INCHES
STD. TOLERANCES
A
DO NOT SCALE DRAWING
1:20
MAT'L SPECS:
DESCRIPTION: 2-Stage (Rear)
PROJECT: 2011+ E350-450
PART NUMBER: KLM-20547
DATE: 4/10/2019
SHEET 3 OF 3