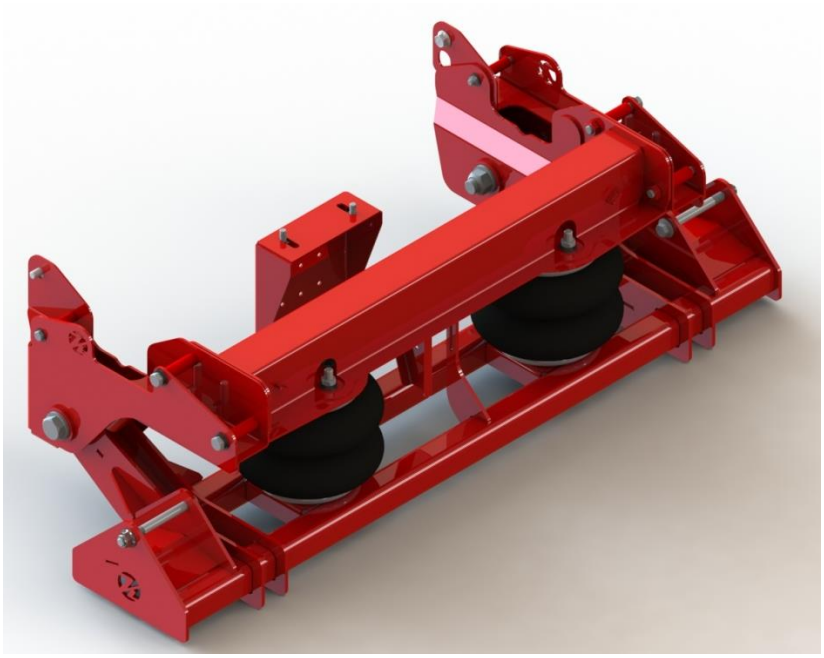
kelderman

# 2-Stage Rear Kit Installation Manual

- 2015 Ford Transit 350HD, DRW Extended Length Long Wheel Base Passenger Wagon and Cargo Van

**Kit Number: KLM-10003178**

# Contents



## Ford Transit 350HD

### Stock Height

- **Contents**

# Kit Numbers

- **This installation manual covers the following kits.**

| Kit Number | Description |
|---|---|
| KLM-10003178 | 2-Stage Rear Kit – Stock Height |

# Introduction

- **Important**

  It is important that the entire installation instructions be read thoroughly before proceeding with bumper installation.

- **Product Installer Responsibilities**

  Installer is responsible for installing this product in accordance with Kelderman Mfg. Inc. specifications and installation instructions.

  Installer is responsible for providing proper installation of vehicle components and attachments as well as required or necessary clearance for suspension components, axles, wheels, tires, and all other vehicle components to ensure a safe and sound installation and operation of this product.

- **Product Owner Responsibilities**

  Owner is solely responsible for pre-operation inspection, periodic inspections, maintenance, and use of the product as specified by Kelderman Mfg. Inc. Of particular importance is the re-torque of fasteners. This re-torque must be performed within 90 days or 1000 miles of this product being put into service.

- **Definition of Terms**
  - **Warning:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
  - **Caution:** A potential hazardous situation may result in property damage.
  - **Note:** Provide information or suggestions that help correctly perform a task.
  - **Torque:** When italicized "*torque*" alerts the installer to tighten fasteners to a specified value.

# Safety

- **Your Safety and the Safety of Others is Very Important.**
  Read and understand all safety precautions and instructions before installing this product.

- **CAUTION: Trucks Equipped with Parking Sensors or Other Like Devices.**
  Relocation of these devices will alter the field of view. It is the responsibility of the owner to understand how these changes affect the operation of these systems.

- **This Product is Intended for Off-Road Use**
  All liability for installation and use rests with the owner.

- **WARNING: Careless Installation Can Result in Serious Injury or Property Damage**
  - Wear eye & ear protection.
  - Disconnect the battery before doing any work on the vehicle.
  - Work on flat level ground.
  - Ensure truck is properly supported by jack stands. Never work under a vehicle supported only by hydraulic jacks.
  - Take precautions when lifting product. Due to the size and weight of this product two people are recommended for installation.
  - Never work directly under the product until it has been securely fastened to the vehicle.
  - Avoid sharp, hot, and moving components when routing electrical cables and air lines.
  - If drilling inspect both sides of the surface and remove/relocate any objects located in the way.
  - Ensure all bolts are properly tightened before driving.

# Disassembly

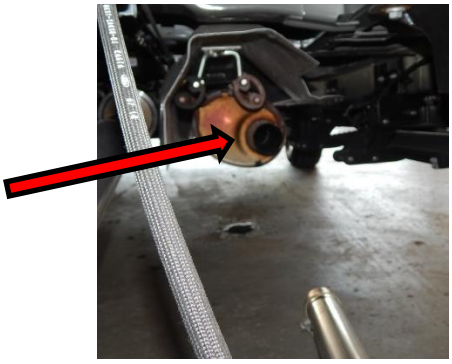
**1:** Park the vehicle on a flat level surface and record the following measurements. For consistency mark the frame location where measurements are taken.

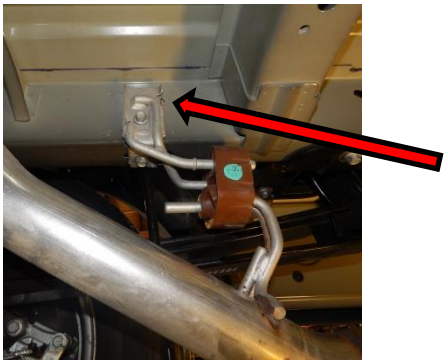
- Pinion Angle:_____
- Wheel Base:_____

Distance between the top of the axle and the bottom of the frame.

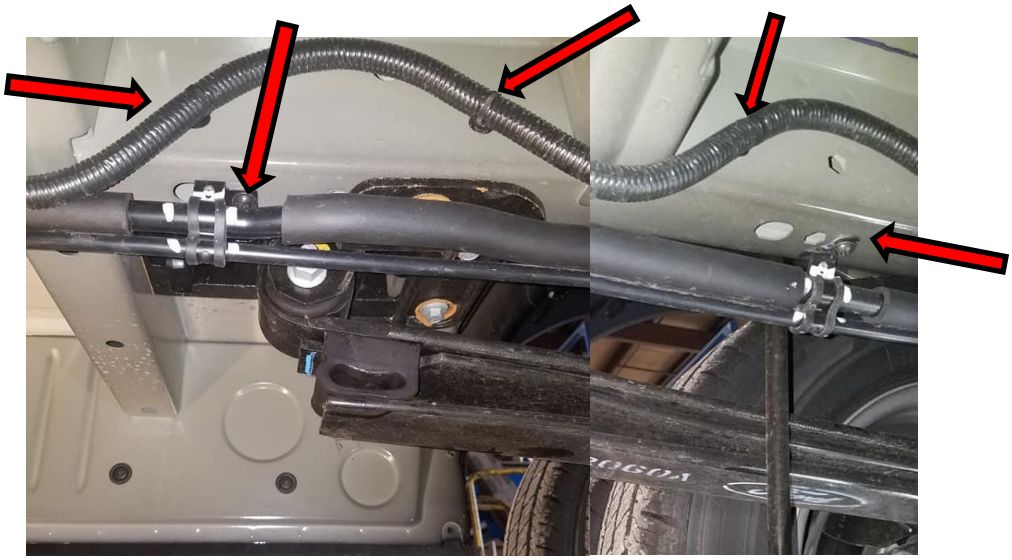
- Right Side:_____
- Left Side:_____

**2:** Remove the rear section of the exhaust; it will come apart just behind the muffler. Remove the rear exhaust hanger from the passenger side frame rail. The hanger will be reused when installing the new tail pipe.



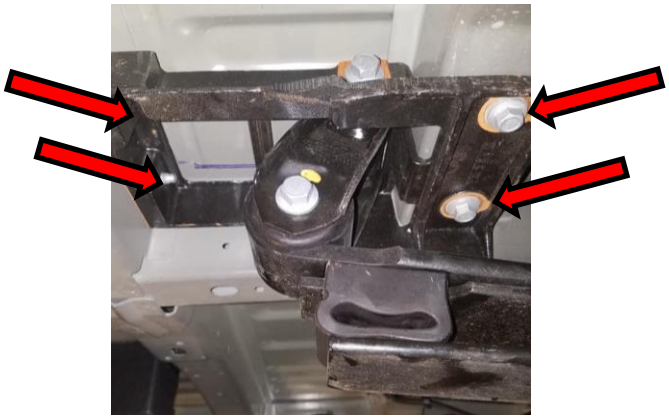


**3:** Unbolt the rear air conditioner lines from the driver's side frame rail just before and after the rear axle. Carefully pull the lines toward the center of the van and tie up out of the way. **Caution:** Do not disconnect the lines. Unclip the wiring harness from the frame in this same location.

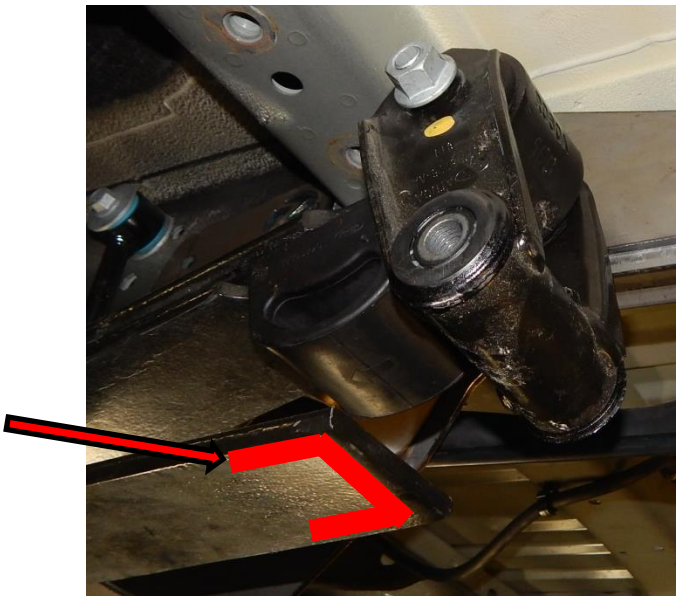


**4:** Chock the front wheels. Lift the rear of the vehicle just enough to take the weight off the leaf springs. Unbolt the shackle from the cast bracket. This bolt will be reused during install. The shackle can remain bolted to the spring.

**5:** Unbolt the cast shackle brackets from the frame. There are five bolts in each bracket; some of these bolts will be reused during install.

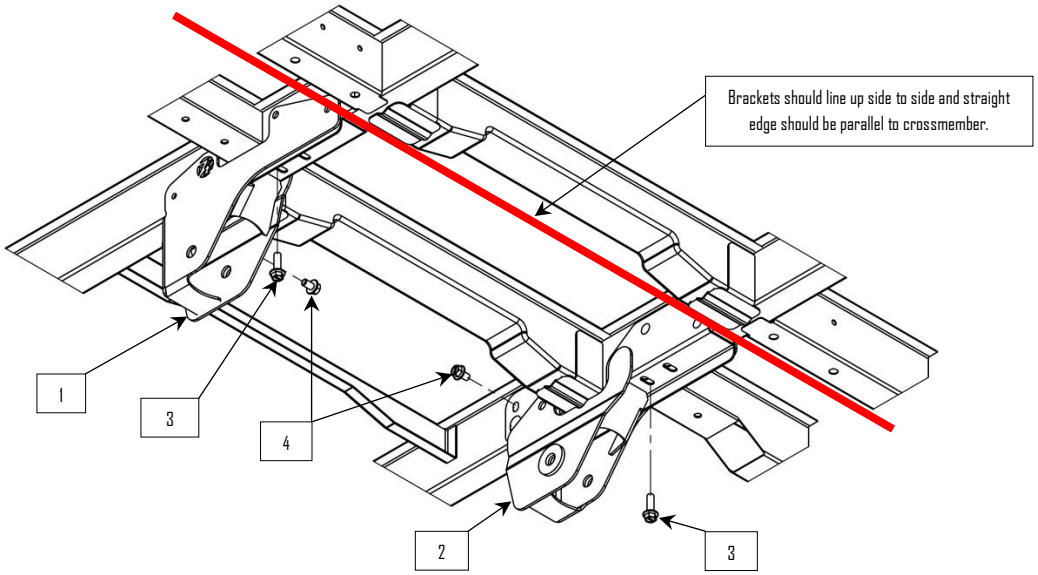


**6:** Flip the shackle over and remove 1/8” of material from the three edges of the overload spring outlined in red. Clearance the sides back 1/2". The spring needs to clear the shackle when compressed against the rubber overload pad.

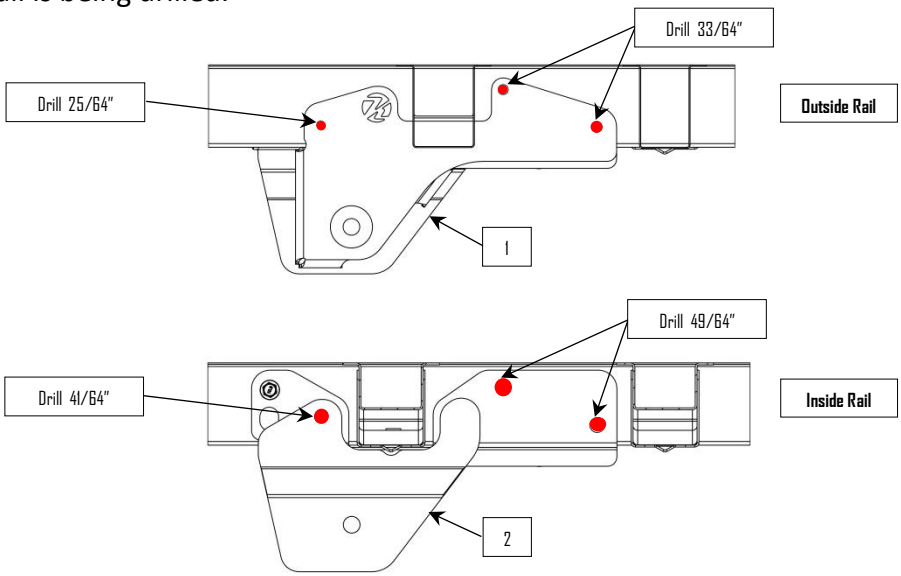


# Kit Installation

**7:** Bolt the driver side *(1)* and passenger side *(2)* swing arm brackets onto the frame. Reuse the M12-1.75 x 40mm flange bolts *(3)* removed in *step 5* to bolt into the forward hole on the underside of the frame. Use the M12-1.75 x 20mm flange bolts *(4)* supplied with the kit to bolt into the side of the frame opposite the sway bar link. **Note:** Use a long straight edge to align the back edges of each bracket.

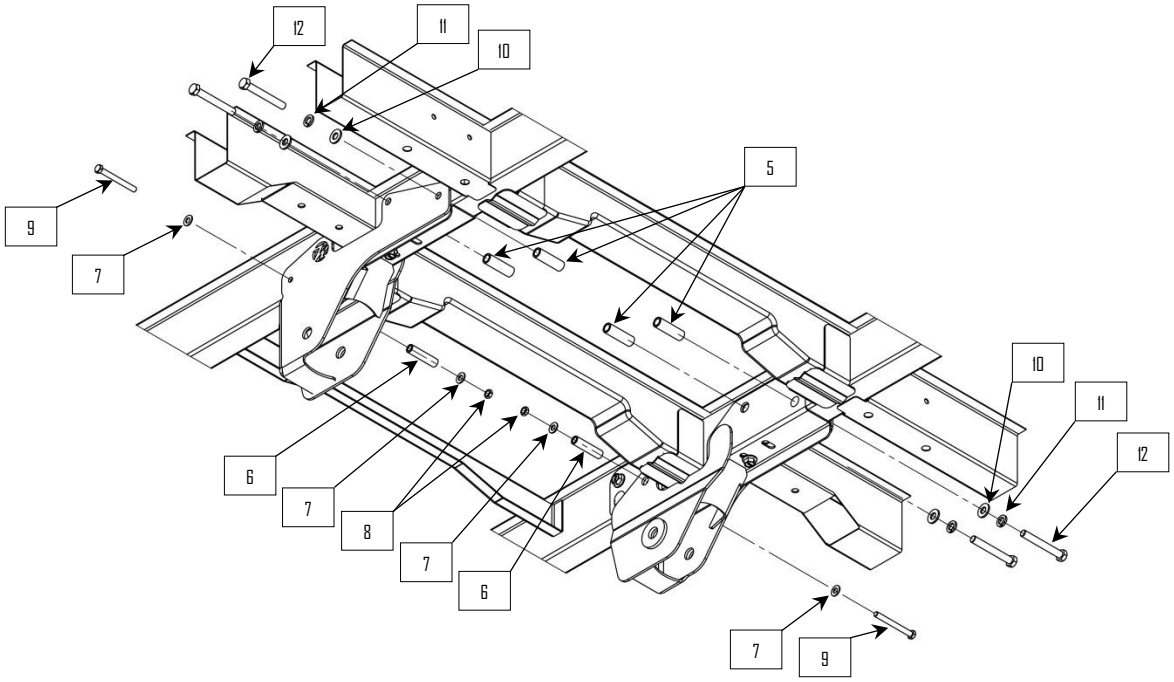



**8:** Use the driver side *(1)* and passenger side *(2)* swing arm brackets as drill guides for the frame. **NOTE:** Frame thru holes have differing diameters depending on which side of the rail is being drilled.

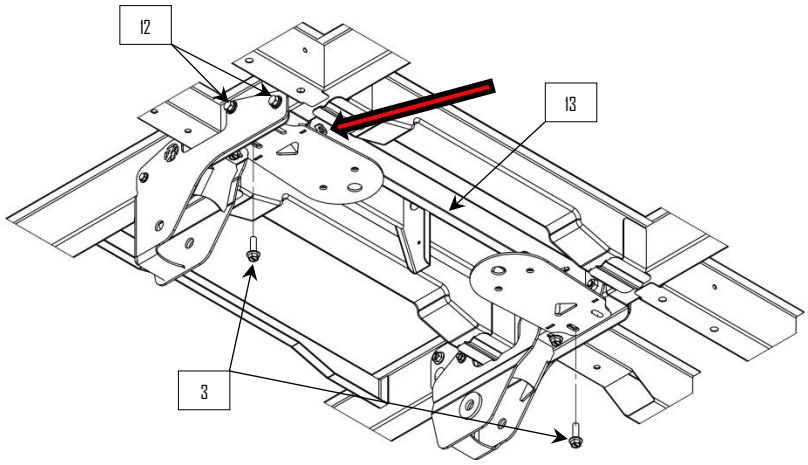


**9:** Insert the 3/8" bolts *(9)* thru the swing arm brackets and into the frame. Slide anti crush bushings *(6)* over the bolt and into the frame. Use flat washer *(7)* and lock nut *(8)* to fasten in place.

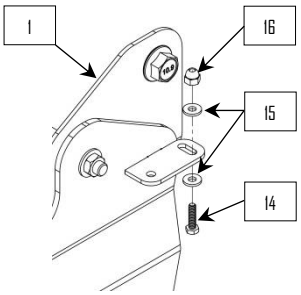
**10:** Insert the 1/2" bolts *(12)* thru the swing arm brackets and into the frame. Slide anti crush bushings *(5)* over the bolt and into the frame. **Caution:** Be careful not to drop anti crush bushings into the frame.



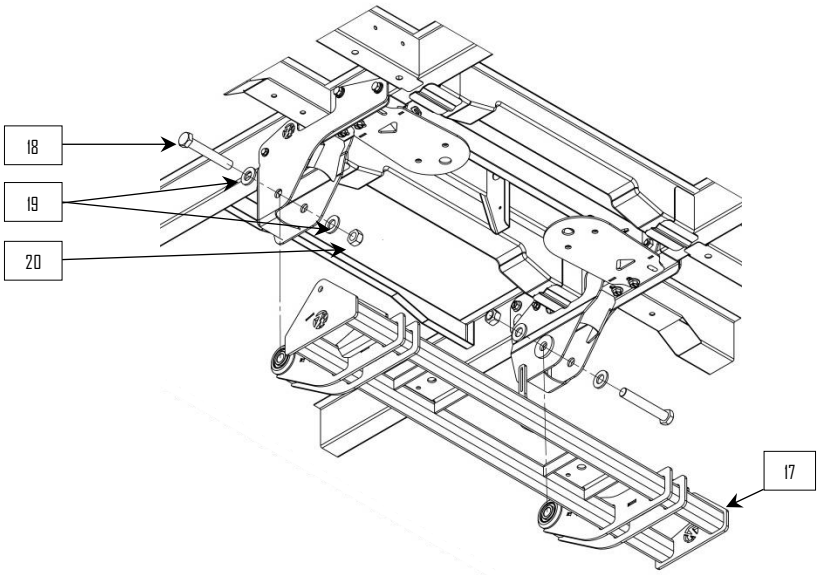

**11:** Install the upper bag crossmember *(13)* between the frame rails. The ½" bolts *(12)* from *step 10* will thread into the side plates of the crossmember. Reuse the M12-1.75 x 40mm flange bolts *(3)* removed in *step 5* to bolt into the remaining hole on the underside of the frame. **NOTE:** Run electrical harness overtop of crossmember *(13)* before bolting in place. Tie the harness to the tabs located on the crossmember.



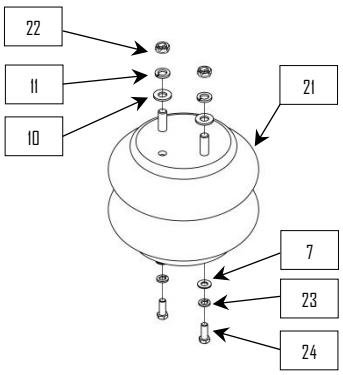
**12:** Bolt the air conditioner lines to the tab located on the inside of the driver side swing arm bracket *(1)* use the supplied #10-24 hardware. Tie the wiring harness to the hole on this tab



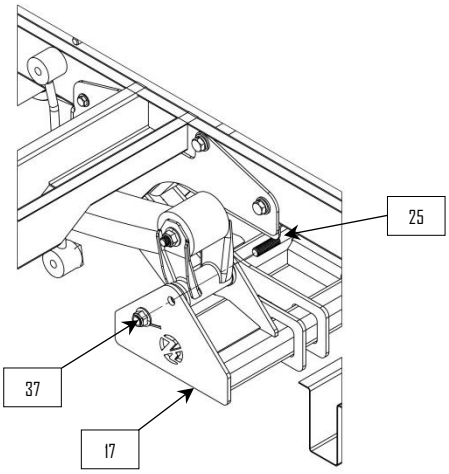

**13:** Use the 7/8”-14 bolts *(18)* flat washers *(19)* and lock nuts *(20)* to install the swing arm frame *(17).* **NOTE:** Bolts must point inward to clear the leaf springs.




**14:** Bolt the air bags *(21)* into the upper crossmember *(13).* Use flat washers *(10)* lock washer *(11)* and nuts *(22).* Then thread the air fitting into the top of the bag. Bolt the air bags *(21)* into the swing arm frame *(17).* Use flat washers *(7)* lock washers *(23)* and bolts *(24).*



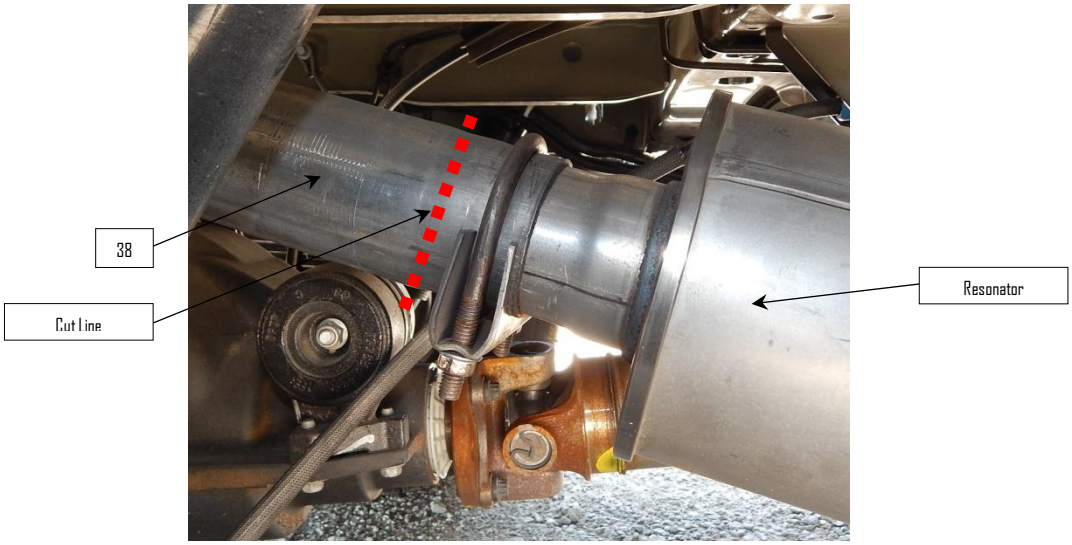
**15:** Use the M14 flange bolt *(25)* that was removed during *step 4* and M14 flange nut *(37)* to bolt the shackle to the swing arm frame *(17).* **NOTE:** Bolt must point outward to clear the frame.




**16:** Torque all fasteners according to the chart below.

| Bolt Size | Torque |
|---|---|
| 1/4"-20 | 70 *in-lb* |
| 3/8”-16 | 20 *ft-lb* |
| 1/2"-20 | 50 *ft-lb* |
| 9/16”-18 | 70 *ft-lb* |
| 7/8”-9 | 250 *ft-lb* |

**17:** Cut the old tail pipe 5” behind the smaller muffler/resonator. Reinstall the resonator section of the original tail pipe. Install the new exhaust tail pipe *(38)* using the supplied clamps.



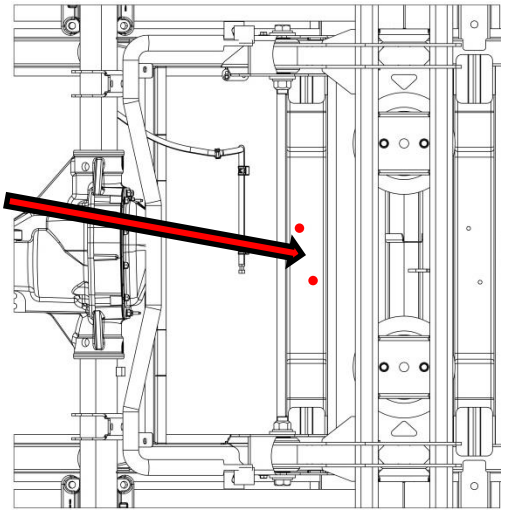
**18:** The exhaust hanger removed in *step 2* will be reused at the rear of the van. Fasten the exhaust hanger to the frame using flange bolt *(3).* Position the bracket so that the swing arm cannot contact the tail pipe. Check clearance with the swing arm at full droop while pushing up on the tail pipe. Reuse the factory exhaust tip on the new tail pipe.

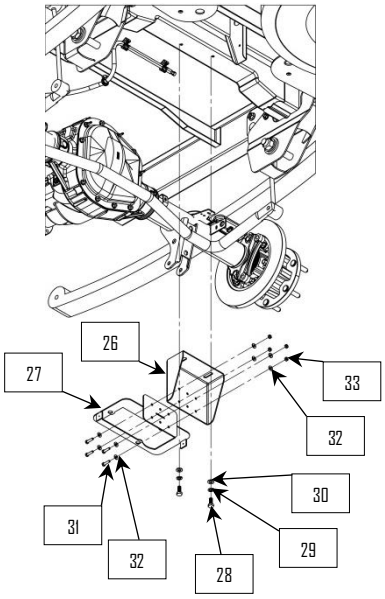

**19:** If installing this kit as manual fill proceed to *step 20*. If installing the electronic self-leveling air control system proceed to *step 21*.

**20:** Plumb the air lines and mount the fill where convenient. **CAUTION:** Avoid sharp, hot, and moving components when routing electrical cables and air lines

# Self-Leveling Air Control System

**21:** Locate the two holes in the crossmember closest to the rear axle. Tap these holes to M10-1.5.

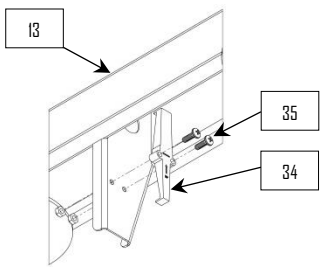


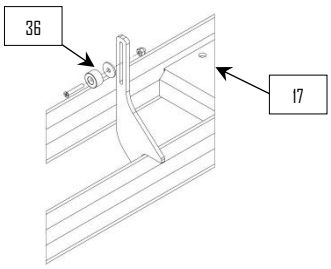



**22:** Bolt compressor base *(27)* to the compressor frame bracket *(26).* Use the 1/4" hardware supplied in the self-leveling controls kit. Hex bolt *(31)*, flat washers *(32)*, and lock nuts *(33).*

**23:** Use M10 hex bolts *(28)* with lock washers *(29)* and flat washers *(30)* to fasten compressor frame bracket *(26)* to the frame.

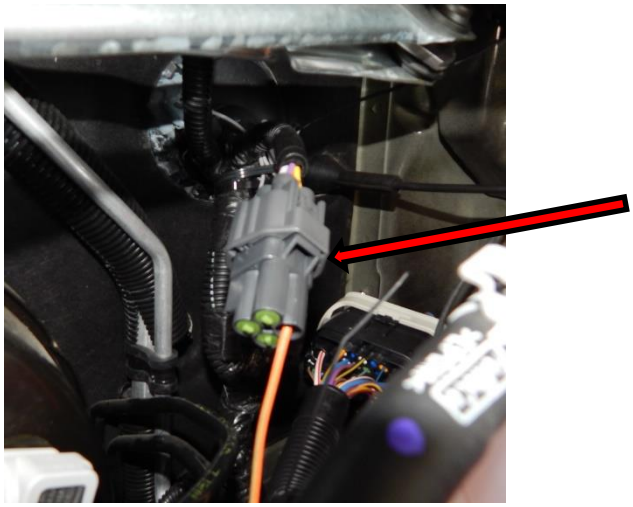
**24:** Install the magnet sensor *(34)* onto the upper bag crossmember *(13)* using the supplied bolt kit *(35).* Install the magnet *(36)* onto the swing arm frame *(17).* To position the magnet first fill the air bags to the ride height position (bag height = 7”). The swing arm should be sitting parallel to the ground. Position the magnet 1” bellow the white line on the sensor. Once everything is operational check the bag height and reposition magnet if required.



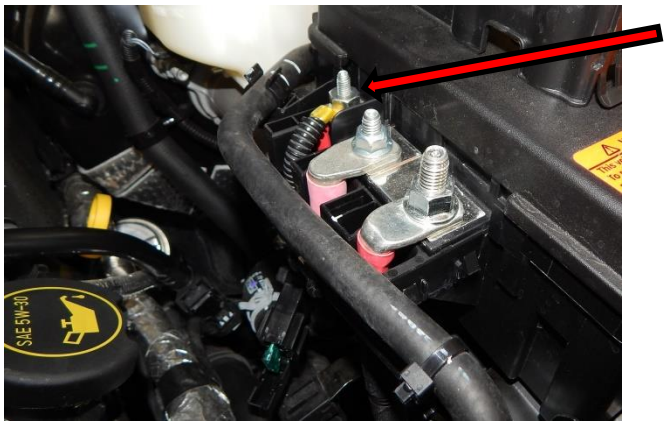



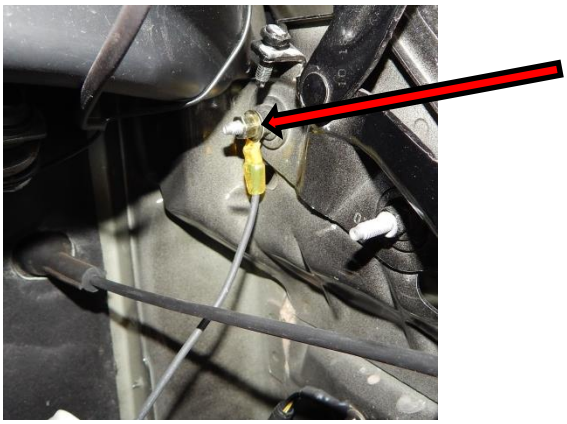
**25:** Plumb air lines and wire compressor according to the guide supplied with the self-leveling controls kit. **CAUTION:** Avoid sharp, hot, and moving components when routing electrical cables and air lines

**26:** A keyed power source can be found in a blank pigtail under the cowl on the driver side.



**27:** A Positive source from the battery can be found at the fuse/relay rail located on the driver's side fender. Ground the system to one of the studs for the hood hinge.





**28:** Park the vehicle on a flat level surface and record the following measurements. Compare to measurements taken in step one.

- Pinion Angle:_____
- Wheel Base:_____

Distance between the top of the axle and the bottom of the frame.

- Right Side:_____*(+1/4" lift over factory)*
- Left Side:_____*(+1/4" lift over factory)*

# Parts Key

| Item Number | Part Number | Description |
|---|---|---|
| 1 | 10003151 | Swing Arm Bracket (DS) |
| 2 | 10003152 | Swing Arm Bracket (PS) |
| 3 | 13929 | *OEM:* Flange Bolt - M12-1.75 x 40mm |
| 4 | 13947 | Flange Bolt - M12-1.75 x 20mm |
| 5 | 10003144 | Frame Anti Crush - 1/2" Bolt |
| 6 | 10003145 | Frame Anti Crush – 3/8" Bolt |
| 7 | 13002 | Flat Washer – 3/8” |
| 8 | 13122 | Lock Nut – 3/8”-24 |
| 9 | 12237 | Hex Bolt - 3/8”-24 X 3-1/2” |
| 10 | 13004 | Flat Washer – 1/2” |
| 11 | 13050 | Lock Washer – 1/2" |
| 12 | 12026 | Hex Bolt – 1/2"-13 X 3-3/4” |
| 13 | 10003162 | Upper Bag Crossmember |
| 14 | 14096 | Hex Bolt - #10-24 X 3/4" |
| 15 | 14062 | Flat Washer - #10 |
| 16 | 14050 | Lock Nut - #10-24 |
| 17 | 10003172 | Swing Arm Frame |
| 18 | 12633 | Hex Bolt – 7/8”-14 X 5-1/2” |
| 19 | 13030 | Flat Washer – 7/8” |
| 20 | 13130 | Lock Nut – 7/8”-14 |
| 21 | 80012-6905 | Air Bag |
| 22 | 13144 | Hex Nut – 1/2"-13 |
| 23 | 13046 | Lock Washer – 3/8” |
| 24 | 12210 | Hex Bolt – 3/8”-16 X 1” |
| 25 | 13941 | *OEM:* Flange Bolt – M14-2.0 X 140mm |
| 26 | 10003260 | Compressor Frame Bracket |
| 27 | 51616 | Compressor Base |
| 28 | 13868 | Hex Bolt – M10-1.5 X 25mm |
| 29 | 13893 | Lock Washer – M10 |
| 30 | 13886 | Flat Washer – M10 |
| 31 | 12110 | Hex Bolt – 1/4"-20 X 1” |
| 32 | 13000 | Flat Washer – 1/4" |
| 33 | 13100 | Lock Nut – 1/4"-20 |
| 34 | 80045 | ECU/Magnet Sensor |
| 35 | 80605 | Bolt Kit – ECU/Magnet Sensor |
| 36 | 80011-10966 | Magnet Kit |
| 37 | 13911 | Flange Nut – M14-2.0 |
| 38 | 10003403 | Exhaust Pipe & Hanger Kit |

# Notes

# Contact Information

- Kelderman Manufacturing appreciates your business. We strive to meet the needs of our customers by providing the highest quality products. If you have any questions concerning our products please call or email us at the following:

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