

INSTALL INSTRUCTIONS

2023+ FORD F250-450 SUPER DUTY 4X4 FRONT 3" LIFT KIT

**KIT NUMBERS:****#10032358 - F250/350****#10016213 - F450****kelderman****KELDERMAN MANUFACTURING****2686 HIGHWAY 92 EAST OSKALOOSA, IOWA 52577****INFO@KELDERMAN.COM 1-800-334-6150**

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KIT NUMBERS

- THIS INSTALLATION MANUAL COVERS THE FOLLOWING AIR RIDE KITS.

KIT NUMBER	DESCRIPTION
10032358	2023+ FORD F250/350 - PICKUP - 4WD - KIT - CONTROL ARM FRONT - 3" LIFT - 1" FORWARD
10016213	2023+ FORD F450 - PICKUP - 4WD - KIT - CONTROL ARM FRONT - 3" LIFT - 1" FORWARD



INTRODUCTION

IMPORTANT

- ♦ IT IS IMPORTANT THAT THE ENTIRE INSTALLATION INSTRUCTIONS BE READ THOROUGHLY BEFORE PROCEEDING WITH INSTALLATION.
- ♦ IF YOUR KIT WAS ORDERED RAW, OPEN EVERY BOX AND LOCATE ALL PARTS. THERE ARE SEVERAL SMALLER BUSHING PIECES AND BOLTS THAT ARE PACKAGED SEPARATELY INSIDE THE MAIN BOX.

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 OTHER VEHICLE COMPONENTS TO ENSURE A SAFE AND SOUND INSTALLATION AND OPERATION OF THIS PRODUCT.

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.

REQUIRED TOOLS:

TAPS REQUIRED: 1/4"-20 AND 3/8"-24
DRILL BITS REQUIRED: 13/64", 21/64", 7/16"

BOLT TORQUE CHART

BOLT SIZE	GRADE 5 TORQUE	GRADE 8 TORQUE
1/4"-20	8 <i>FT-LB</i>	12 <i>FT-LB</i>
3/8"-16	19 <i>FT-LB</i>	26 <i>FT-LB</i>
3/8"-24	21 <i>FT-LB</i>	30 <i>FT-LB</i>
1/2"-13	45 <i>FT-LB</i>	64 <i>FT-LB</i>
1/2"-20	50 <i>FT-LB</i>	70 <i>FT-LB</i>
9/16"-18	70 <i>FT-LB</i>	100 <i>FT-LB</i>
5/8"-11	90 <i>FT-LB</i>	125 <i>FT-LB</i>
5/8"-18	100 <i>FT-LB</i>	150 <i>FT-LB</i>
3/4"-16	175 <i>FT-LB</i>	250 <i>FT-LB</i>
7/8"-14	275 <i>FT-LB</i>	400 <i>FT-LB</i>
M14-2.0	78 <i>FT-LB</i>	112 <i>FT-LB</i>

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.

WARNING: COMPONENTS UNDER PRESSURE.

- ◆ BLEED ALL PRESSURE FROM THE AIR SYSTEM BEFORE PERFORMING ANY MAINTENANCE OR SERVICE. SERIOUS INJURY COULD OCCUR IF COMPONENTS ARE REMOVED WHILE SYSTEM IS PRESSURIZED.

WARNING: CARELESS INSTALLATION CAN RESULT IN SERIOUS INJURY OR PROPERTY DAMAGE

- ◆ WEAR EYE 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.

PRODUCT OWNER RESPONSIBILITIES

- ◆ PRODUCT 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 2500 MILES OF THIS PRODUCT BEING PUT INTO SERVICE.
- ◆ THE KELDERMAN AIR SUSPENSION IS FULLY AUTOMATIC IN CONTROLLING THE HEIGHT OF THE CHASSIS WHEN PROPERLY INSTALLED.
- ◆ NO MANUAL INTERVENTION TO CONTROL AIR PRESSURE OR RIDE HEIGHT IS NEEDED DURING THE COURSE OF NORMAL OPERATION.
- ◆ PRODUCT OWNER IS RESPONSIBLE FOR “*DOWN TIME*” EXPENSES, CARGO DAMAGE, AND ALL BUSINESS COSTS AND LOSSES RESULTING FROM A WARRANTABLE FAILURE.

SERVICE INTERVALS

FIRST 2,500 MILES

- ◆ CHECK RIDE HEIGHT $\pm 1/4$ "
- ◆ CHECK FOR AIR LEAKS AROUND FITTINGS.
- ◆ CHECK FOR ANY LOOSE OR RUBBING HOSES AND WIRES.
- ◆ RE-TORQUE ALL HARDWARE.

EVERY 30,000 MILES

- ◆ CHECK RIDE HEIGHT $\pm 1/4$ "
- ◆ CHECK FOR AIR LEAKS AROUND FITTINGS.

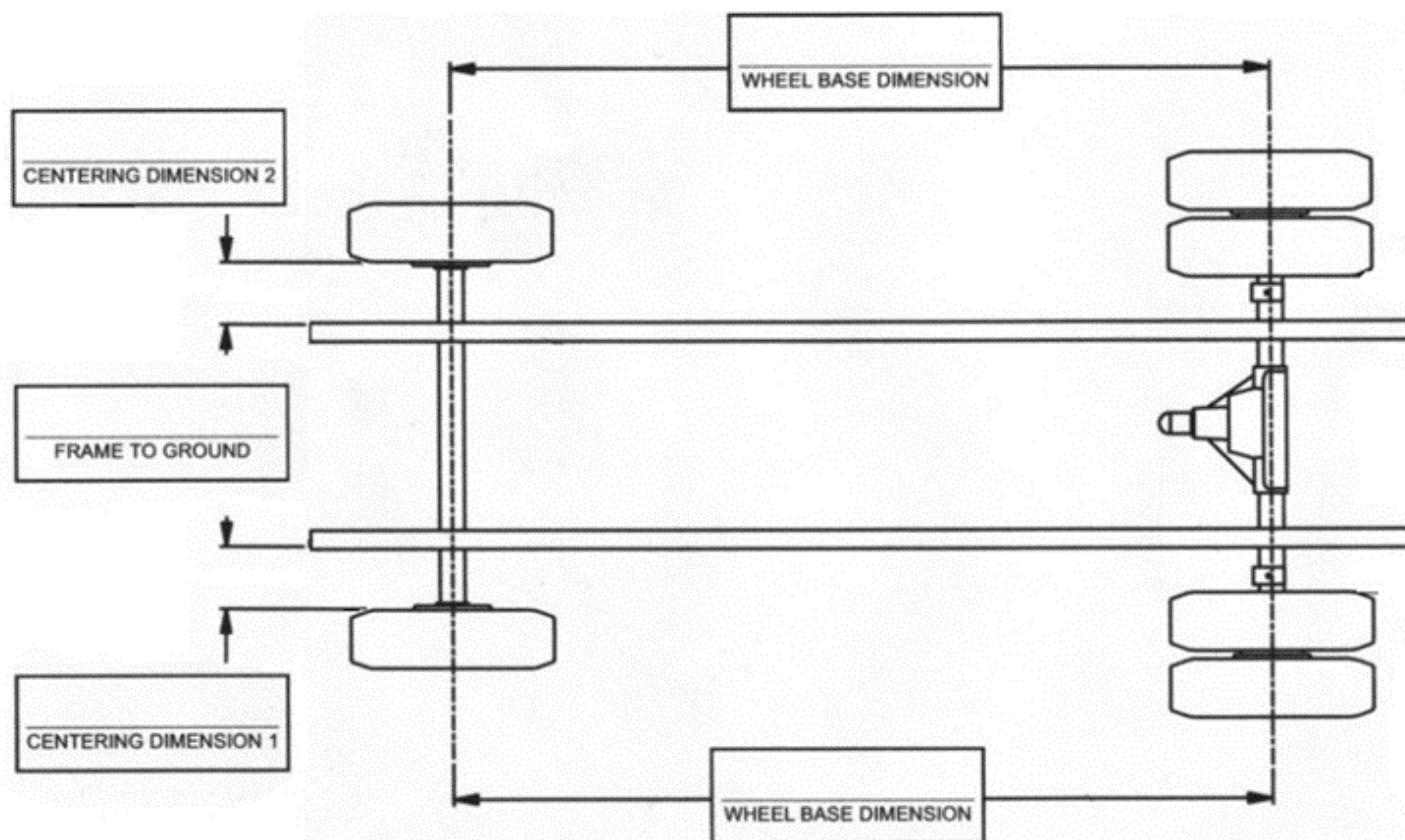
DISASSEMBLY

BEFORE DOING ANYTHING, MEASURE THE PINION ANGLE AND RECORD IT. THIS IS IMPORTANT BECAUSE YOU WILL NEED TO PUT THE AXLE BACK TO THIS MEASUREMENT AFTER INSTALLATION. SEE FIGURE 1.

PINION ANGLE _____



TAKE THE FOLLOWING MEASUREMENTS FOR FUTURE REFERENCE. THESE MEASUREMENTS WILL BE USED TO ADJUST THE SUSPENSION AFTER INSTALLATION.



JACK THE TRUCK UP FROM THE AXLE UNTIL THE WHEELS ARE OFF THE GROUND. PLACE A JACK STANDS UNDER THE FRONT OF THE FRAME. KEEP THE JACK UNDER THE AXLE AND REMOVE THE WHEELS. REMOVE THE SHOCKS AND UNHOOK THE SWAY BAR END LINKS. UN-BOLT THE BRAKE LINE BRACKET FROM THE LOWER COIL SPRING MOUNT AND LOWER THE JACK DOWN. REMOVE THE COILS AND CAST SPRING PERCH BOLTED ON TOP OF THE AXLE.



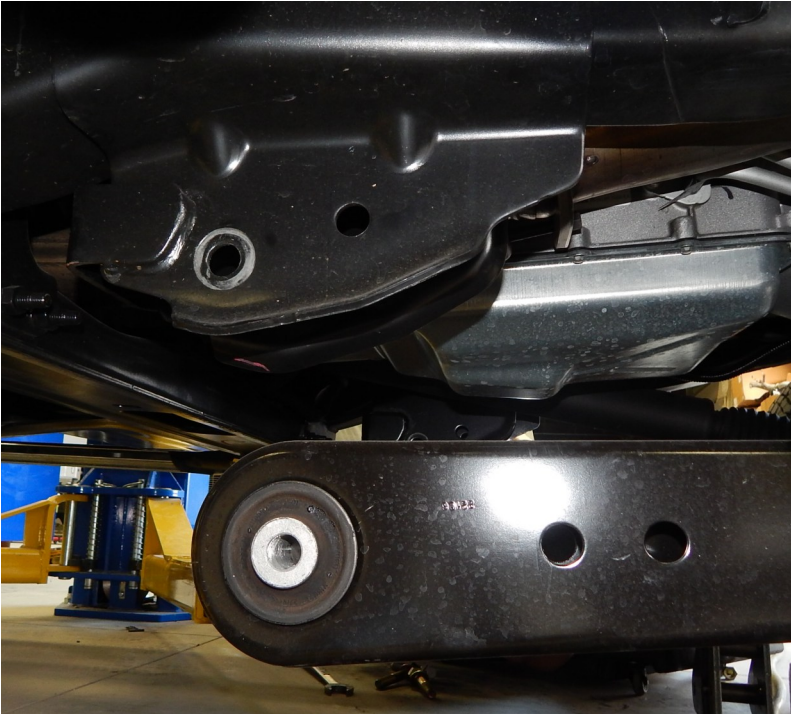
REMOVE BUMP
STOPS BEFORE
STARTING THE
INSTALLATION
PROCESS. REMOVE
RUBBER AND THEN
UN-BOLT THE
METAL STOP
PLATE.



FRONT READY FOR INSTALLATION

ASSEMBLY

1. REMOVE THE REAR BOLTS THAT HOLD THE FACTORY RADIUS ARMS TO THE FRAME. INSERT THE KELDERMAN TRAILING ARM INTO THE FACTORY MOUNT AND FASTEN WITH THE 3/4"-16 X 5-1/2" BOLTS. NOTE: YOU WILL USE SPACER (#10015110) ON THE OUTER REAR RADIUS ARM MOUNT. DO ONE SIDE AT A TIME.



2. LOCATE THE PAN HARD BAR/TRACK BAR DROP BRACKET (#69471 IS F250/350 AND #69460 IS FOR THE F450 PICKUP KITS) INSTALL THE PAN HARD BAR DROP WITH THE FACTORY BOLTS. IT FASTENS JUST LIKE THE OEM BRACKET. TORQUE THESE BOLTS TO 95 FT./LBS. REMOVE THE STEERING ARM FROM THE STOCK PITMAN ARM. SET ASIDE THE NUT, LOCKING CROWN AND COTTER PIN. REMOVE THE PITMAN ARM. YOU WILL REUSE THE NUT AND LOCK WASHER. REMOVE THE PAN HARD BAR BOLT AND PAN HARD BAR MOUNT. LOCATE AND INSTALL THE DROP PITMAN ARM (#80213 IS F250/350 AND #80115 IS F450). TORQUE THE FACTORY NUT TO 275 FT./LBS. AND TORQUE THE STEERING ARM BALL JOINT NUT TO 115 FT./LBS. REINSTALL THE LOCKING CROWN AND COTTER PIN.

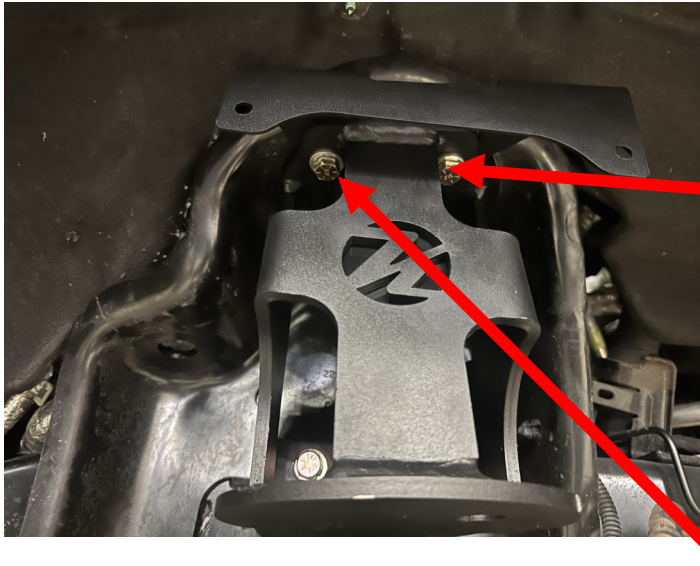
NOTE: AFTER 15 MILES, RE-TORQUE THE PITMAN ARM.



PITMAN ARM LOCATION



3. LOCATE THE UPPER AIR BAG MOUNTS (#69090-DS AND 69094-PS) AND SHOCK RESERVOIR MOUNTS (#69468-DS AND #69469-PS). THE SHOCK RESERVOIR MOUNTS MOUNT IN BETWEEN THE UPPER AIR BAG MOUNTS AND UPPER COIL BUCKET WITH (2) 3/8"-24 X 2" BOLTS. THE BACK OF THE UPPER AIR BAG MOUNT FASTENS TO THE FRAME WITH (2) 3/8 X 1-1/2" BOLTS TO THE SIDE OF THE FRAME. USE THE UPPER AIR BAG MOUNT TO MARK WHERE TO DRILL THE HOLES IN THE FRAME. DRILL THE UPPER HOLES TO 7/16". DRILL THE HOLES IN THE SIDE OF THE FRAME TO 21/64". USE A 3/8"-24 TAP TO THREAD THE SIDE OF THE FRAME. PUT THE UPPER BAG MOUNT IN PLACE AND SNUG THE BOLTS IN THE FRAME (USE LOCTITE 242 BLUE). NEXT INSTALL THE UPPER BOLTS AND TORQUE THEM.

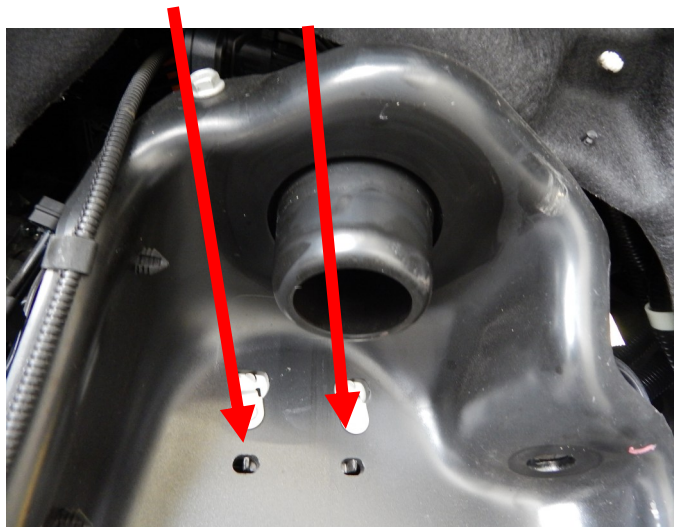


DRILL THE UPPER HOLES IN THE SPRING PERCH 7/16"

CAUTION: THERE ARE WIRES ABOVE THE SPRING PERCH PLACE A FLAT PIECE OF STEEL ABOVE THE PERCH TO PREVENT DRILLING INTO THE WIRING HARNESS

INSERT THE SHOCK REMOTE RESERVOIR MOUNTS HERE ON TOP OF THE UPPER AIR BAG MOUNT AND UNDER THE FACTORY SPRING PERCH SEE PICTURE ON FOLLOWING PAGE

DRILL THE HOLES IN THE SIDE OF THE FRAME WITH A 21/64" DRILL BIT AND THREAD THE HOLES WITH 3/8"-24 TAP.





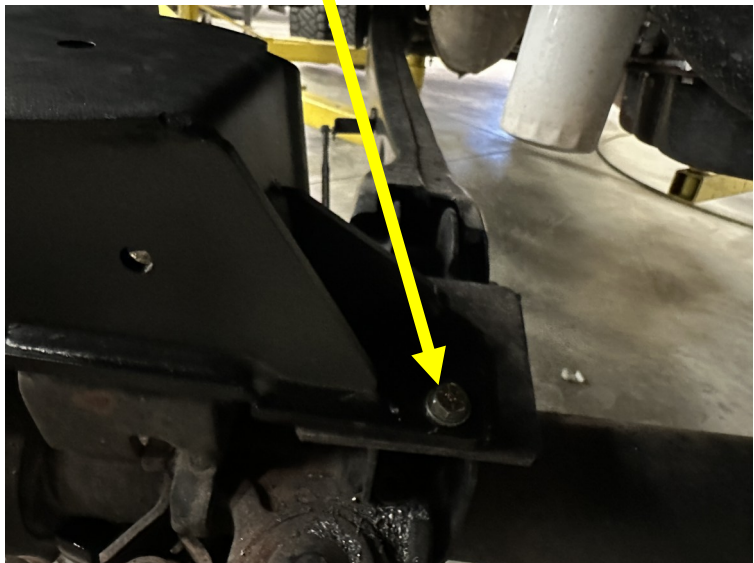
UPPER BAG MOUNT INSTALLED WITH BACKING PLATE BEHIND "K" LOGO AND SHOCK RESERVOIR MOUNT IN PLACE NOTICE THE SHOCK MOUNT IS ANGLED. THE LONG SIDE GOES TOWARDS THE FRONT OF THE TRUCK.

USE BLUE LOCTITE ON THE BOLTS GOING INTO THE FRAME. TIGHTEN THESE BOLTS FIRST. JUST RUN THE BOLTS DOWN SNUG. ONCE THESE ARE SNUG, NEXT TIGHTEN THE TOP BOLTS (WITH THE REMOTE RESERVOIR

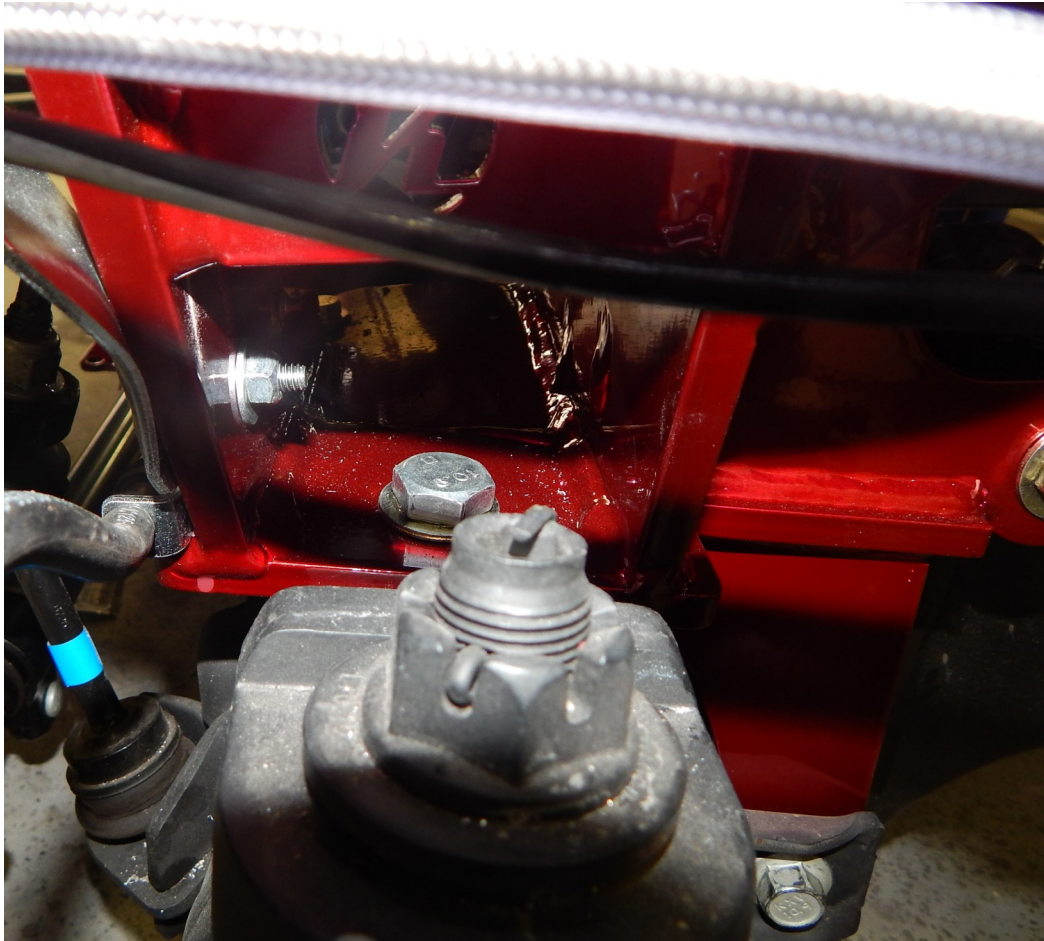


4. IF THE TRUCK IS A F-450 PICKUP, GO TO PAGE 8. THE LOWER AIR BAG MOUNTS ARE DIFFERENT THAN THE F250-350 P/U. THE F450 ALSO REQUIRES SHOCK SPACERS. LOCATE THE LOWER AIR BAG MOUNTS (#69476-DS AND #69485-PS). THEY FASTEN TO THE AXLE WITH THE M14-2.0 X 25MM BOLT AND THE 3/8"-24 X 1-1/2" BOLT. THE BOTTOM EXTENSION OF THE LOWER AIR BAG MOUNT FASTENS TO THE SHOCK MOUNT ON THE AXLE WITH THE FACTORY SHOCK MOUNT. YOU WILL NEED TO DRILL A HOLE IN THE PAD ON EACH SIDE. THE DRIVER SIDE USES THE HOLE FURTHEST AWAY FROM THE TIRE AND THE PASSENGER SIDE USES THE HOLE CLOSEST TO THE TIRE. DRILL THIS HOLE WITH A 3/8" DRILL BIT. USE THE AIR BAG MOUNT AS A DRILL JIG. ONCE YOU FINISH DRILLING THE HOLES, INSERT THE 3/8"-24 X 1-1/4" BOLT AND TORQUE THEM.

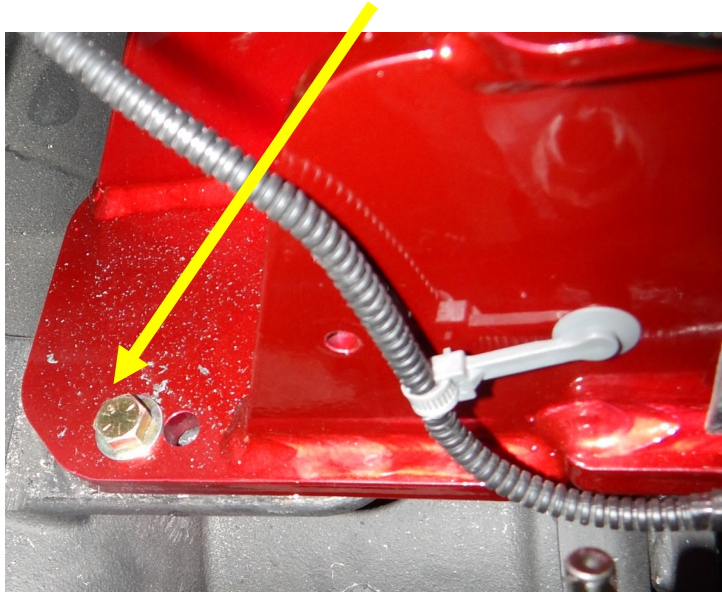
*DRIVERS SIDE USES HOLE
CLOSEST TO THE TRUCK FRAME*



5. LOCATE THE AIR BAGS (#80012-5323). THEY FASTEN INTO THE UPPER AIR BAG MOUNT WITH THE 1/2" AND 3/4" NUTS AND WASHERS. THE BOTTOM OF THE AIR BAG FASTENS TO THE LOWER AIR BAG MOUNT WITH THE 1/2"-20 X 3-3/4" BOLT.



*DRIVERS SIDE USES HOLE
CLOSEST TO THE TRUCK FRAME*

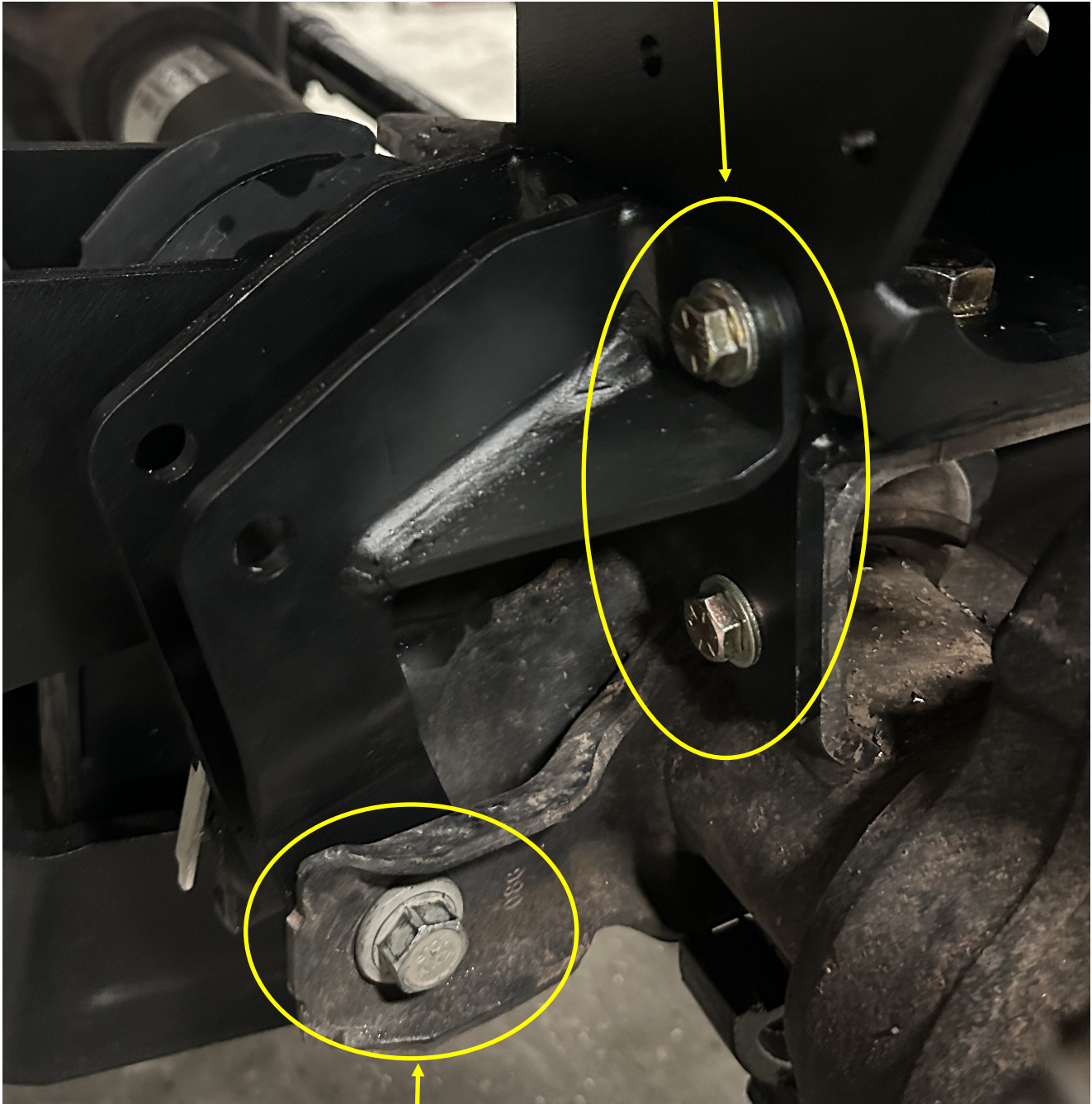


6. F450 PICKUP TRUCKS ONLY. LOCATE THE LOWER AIR BAG MOUNTS (#69487-DS AND 69459-PS). THEY FASTEN TO THE AXLE WITH THE M14-2.0 X 25MM BOLT AND THE 3/8"-24 X 1-1/2". PLACE THE LOWER BAG MOUNTS ON TOP OF THE PERCH. START THE 14MM BOLT TO LOCATE THE MOUNT IN POSITION. NO NEED TO TIGHTEN THIS BOLT. USE A PAINT MARKER TO LOCATE ON THE AXLE WHERE TO DRILL A HOLE FOR THE 3/8" BOLT. REMOVE THE BRACKET AND DRILL THE HOLE WITH A 7/16" DRILL BIT. PLACE THE BRACKETS ON THE AXLE AND FASTEN WITH THE 14MM BOLT AND THE 3/8" BOLT.



7. LOCATE THE SHOCK RELOCATION BRACKETS (#69389). USE THE FACTORY SHOCK BOLT TO FASTEN INTO PLACE. TORQUE THIS BOLT TO 95 FT-LBS. (F-450 ONLY). USE THE 1/2"-20 X 2-1/2" TO FASTEN THE SHOCK TO THE RELOCATION BRACKET.

1/2"-20 X 2-1/2" BOLTS



Factory Shock Bolt

8. LOCATE THE SHOCKS. ON THE F250/F-350 THE TOP OF THE SHOCK FASTENS INTO THE ORIGINAL SHOCK LOCATION AND THE BOTTOM OF THE SHOCK FASTENS INTO THE LOWER AIR BAG MOUNT WITH THE 1/2"-20 X 3" BOLT. TORQUE THE TOP NUT TO 35 FT./LBS. AND THE 1/2" SHOCK TO 85 FT./LBS. THE F450 TRUCKS USE THE FACTORY UPPER LOCATION AND THE BOTTOM FASTENS INTO THE SHOCK RELOCATION BRACKET. THE REMOTE RESERVOIR FASTENS TO THE RESERVOIR MOUNT WITH THE HOSE CLAMPS THAT COMES WITH THE SHOCKS.

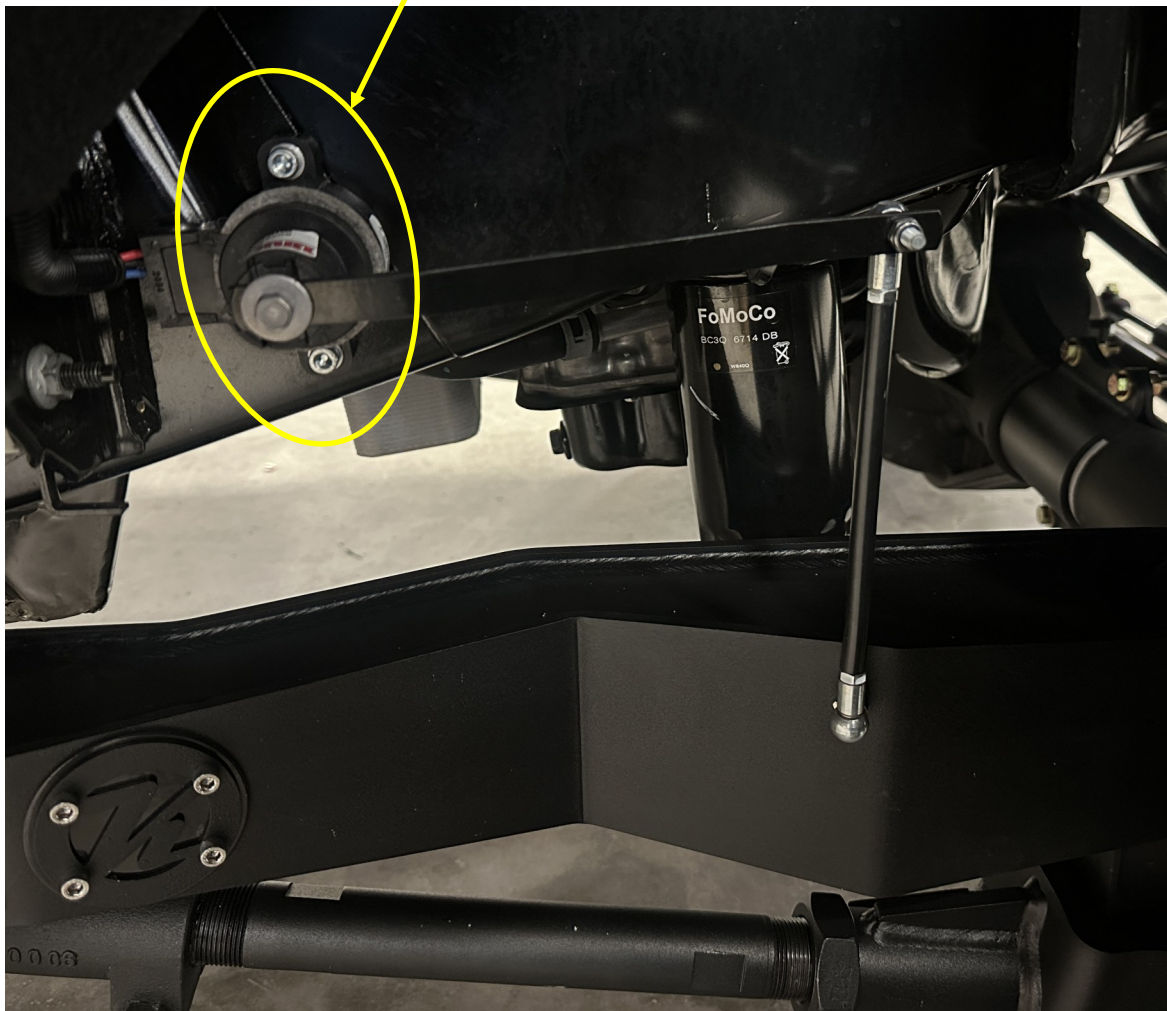


9. LOCATE THE SWAY BAR DROPS (#69173-DS AND 69174-PS). THEY FASTEN TO THE FRAME WITH THE OEM SWAY BAR BOLTS, TORQUE THESE BOLTS TO 55 FT./LBS. FASTEN THE SWAY BAR TO THE SWAY BAR DROP WITH THE 3/8" X 1-1/2" BOLTS. RECONNECT THE SWAY BAR TO THE FACTORY END LINKS.



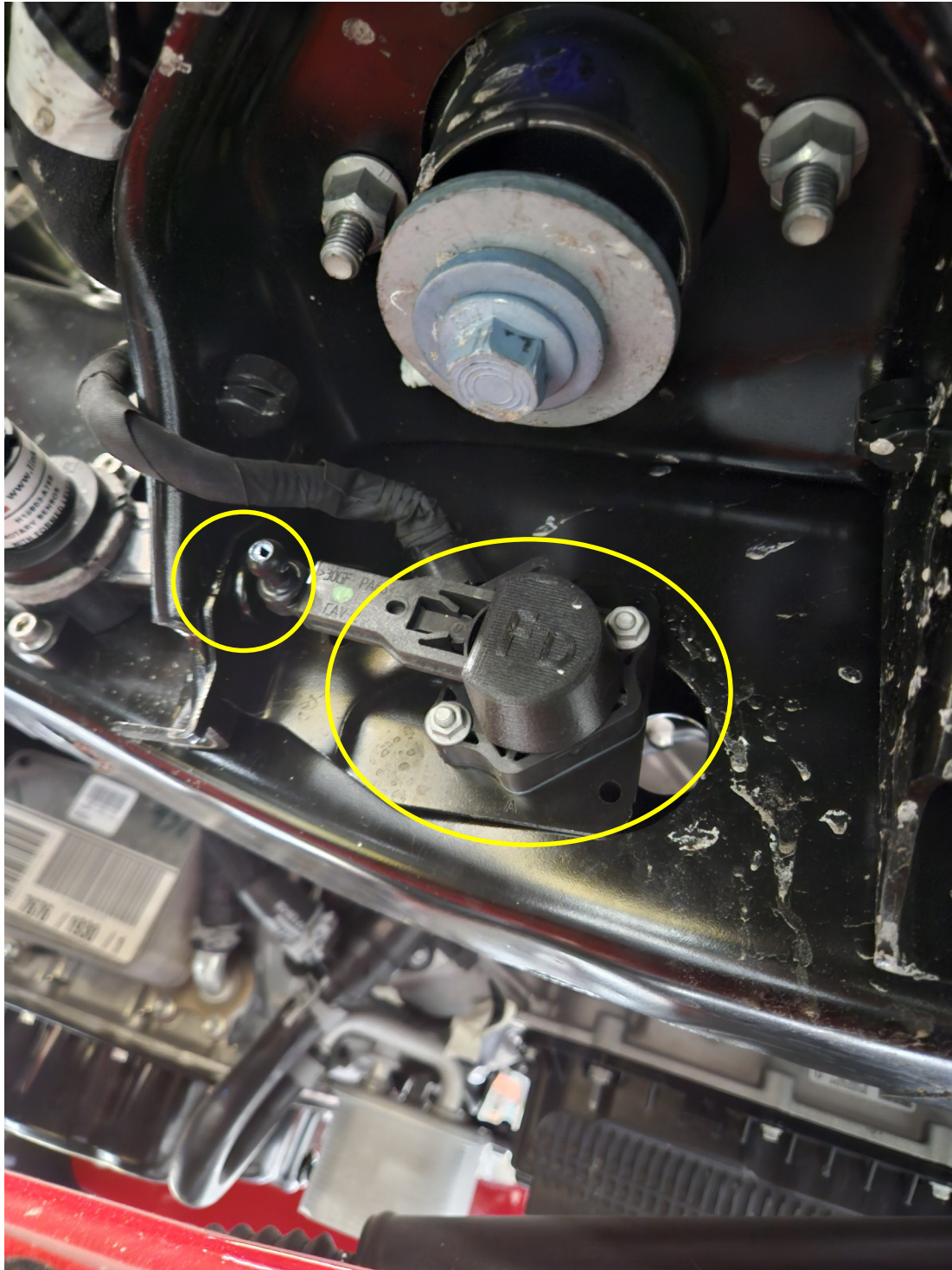
10. SET THE AIR BAGS AT 8" TALL. YOU CAN USE THE JACK TO DO THIS OR AIR UP THE SYSTEM. MEASURE IN BETWEEN THE UPPER AND LOWER AIR BAG MOUNTS. THIS WILL BE THE RIDE HEIGHT AND ACCORDING TO FIRESTONE, THIS IS THE "SWEET SPOT" WHERE THE AIR BAG RIDES THE SMOOTHEST. LOCATE THE MECHANICAL HEIGHT CONTROL VALVE OR ELECTRONIC SENSOR, DEPENDING ON WHAT SYSTEM YOU HAVE PURCHASED AND THE PROVIDED LINKAGE ROD. WHEN MOUNTING THE SENSOR OR LEVELING VALVE YOU WILL HAVE TO DRILL (2) 13/64" HOLES AND USE A 1/4-20" TAP TO TAP INTO THE FRAME. LINKAGE ROD SHOULD BE VERTICAL AT RIDE HEIGHT.

DRILL HOLES IN THIS LOCATION.



THE MECHANICAL VALVE AT RIDE POSITION. NOTE THE ARM IS STRAIGHT. BEFORE INSTALLING ROTATE THE ARM 3 TURNS EACH WAY TO GET THE INTERNAL PARTS READY FOR OPERATION. THE TOP PORT IS EXHAUST, THE BOTTOM PORT IS INPUT FROM TANK AND MIDDLE PORT IS OUT TO AIR BAGS.

11. INSTALL FRONT SENSOR LOCK BRACKETS (#10029766). YOU WILL HAVE TO DISCONNECT AND UN-BOLT THE SENSOR AND BRACKET. YOU WILL INSTALL SENSOR LOCK OVER THE FACTORY SENSOR AND THEN FLIP THE BRACKET REARWARD USING THE EXISTING HOLE WHERE IT WAS MOUNTED FROM FACTORY.



REVISIONS							
REV.	DESCRIPTION	DATE	BY	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
				1	10006721	Purchased - Kelderman-Raptor Shock- Right Hand	1
				2	10006722	Purchased - Kelderman-Raptor Shock- Left Hand	1
				3	10007721	Pitman Arm - Modified (Purchased 80213)	1
				4	10015144	Kit - Adjustable Radius Arms	1
				5	10029222	Weldment - 3.5" PHB Drop Bracket - .375" Forward	1
				6	10029766	Front Sensor Lock Brackets (PS & DS)	1
				7	10030260	Assembly - 3" Swaybar Drop (DS)	1
				8	10030261	Assembly - 3" Swaybar Drop (PS)	1
				9	10030262	Assembly - Upper Bag Mount (DS)	1
				10	10030264	Assembly - Upper Bag Mount (PS)	1
				11	10030652	Assembly - Drive Shaft Spacer - 1" - Transercoase Flange	1
				12	10030695	Assembly - Lower Bag Mount (DS)	1
				13	10030696	Assembly - Lower Bag Mount (PS)	1
				14	10030697	Assembly - Shock Bracket (DS)	1
				15	10030698	Assembly - Shock Bracket (PS)	1
				16	51743	Assembly - 8" CTC Height Control Ball End Linkage Rod	2

Exploded view diagram of the front suspension assembly. The diagram shows the following components labeled with callouts: 3 (Upper Control Arm), 4 (Lower Control Arm), 5 (Stabilizer Bar), 6 (Front Sensor Lock Bracket), 7 (Swaybar Drop), 8 (Swaybar Drop), 9 (Upper Bag Mount), 10 (Upper Bag Mount), 11 (Drive Shaft Spacer), 12 (Lower Bag Mount), 13 (Lower Bag Mount), 14 (Shock Bracket), 15 (Shock Bracket), and 16 (8" CTC Height Control Ball End Linkage Rod).

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES	DATE: 11/16/2023	
STD. TOLERANCES: X.XX ±.010, X.XX ±.030, X.XX ±.010, X.XX ±.010, X.XX ±.010, X.XX ±.010	DESIGN BY: [Signature]	

PROJECT: 2023+ Ford F450 Pickup - 4WD

PART NUMBER: 10016213

DATE: 11/16/2023

DESIGN BY: [Signature]

SHEET 4 OF 4

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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