LoadMaxx
Installation Guide

Hendrickson Drive Suspensions

Welded Steer and Drive Brackets

Air-Weigh Customer Support: 888-459-3247

Table of Contents

About LoadMaxx for Hendrickson Suspensions

LoadMaxx is a weighing system for vehicles that works by using deflection sensors and/or air pressure sensors. The sensors measure suspension flex or air pressure changes and converts that number into weight, which is displayed in the truck cab. Weight information, including axle group, net, and gross vehicle weights, is also displayed.

The LoadMaxx scale for vocational vehicles with Hendrickson suspension includes a dash-mounted display, a ComLink module,installation jig, mounting cables, a deflection sensor with mounting hardware for the steer axle, and 2 deflection sensors with mounting hardware for the Hendrickson suspension.

Please see the User Guide, included with your scale kit, to calibrate your scale after installation.

About Installation

Overview

There are three major components of the LoadMaxx scale that you will install, listed as follows:

- Electronics: dash-mounted display, ComLink module, power cables and sensor extension cables
- Deflection sensor for the steer axle (vocational vehicles only)
- Deflection sensors for the Hendrickson drive suspension

Tools Required

You will need the following tools to install the deflection sensors on the steer and drive axles.

- Sander/grinder
- 40-grit medium sandpaper
- Chalk or permanent marker
- 22 MM combination wrench
- Torque wrench
- 22 MM socket and socket handle
- Enamel spray paint, any color
- Welder, MIG or ARC
- E7018 welding electrodes for ARC welders
- E70S-3 or E71T-1 welding wire for MIG welders
- C-clamps
- Tape measure

Note: The reusable Installation Jig (sold separately) is required for this installation.

Optional Tools

Deflection sensor test box (P/N 1001)

Installing the Steer Axle Sensor Bracket

Note: This section applies only to scales using the 5817 configuration. The 5809 or 5810 configurations do not include a steer axle sensor. If you are using one of these configurations, skip this section and see the section on installing the drive axle sensor (page 6).

Preparing the Steer Axle Sensor Brackets

1. Locate and mark the center of the steer axle.
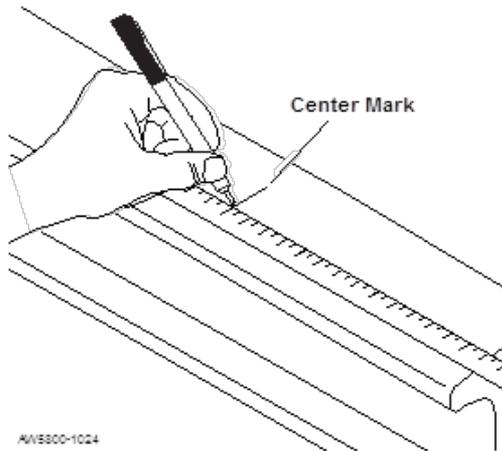
Marking the Center of the Steer Axle

2. Using chalk or a permanent marker, mark the top of the steer axle 3" on either side of the center mark (6 inches in total). Clean this area. If the axle is heavily caked with dirt or grease, use a degreaser such as Brakleen to remove the worst.

3. Using 40-grit medium sandpaper or a pneumatic grinder, sand the 6-inch area until nothing remains but bare metal. We recommend that you partially grind down the mold line as well.
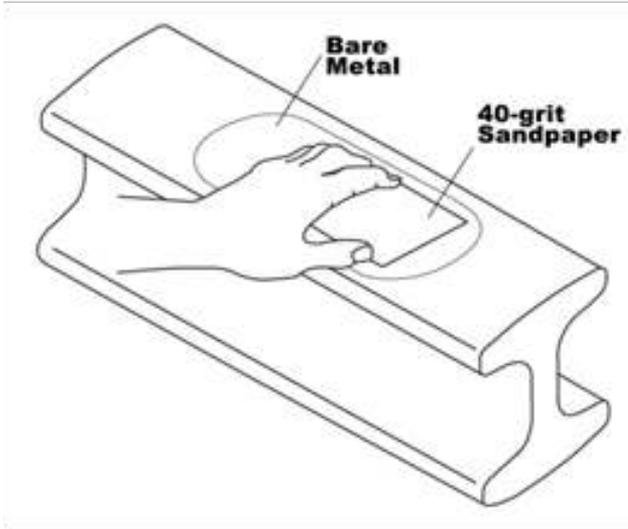
Sanding the Steer Axle

4. Re-mark the center of the steer axle.
5. Verify that the bracket contact pads fit into the sanded area and that no axle paint is left under the pad. If there is any paint at all that will be touching the brackets, sand until it has been removed.
6. Once you have prepared the axle, place the bracket assembly onto the axle to ensure that it fits properly. All four bracket mounting pads should sit firmly on the axle without rocking in any direction. If the bracket rocks, sand or grind off any excess axle material until the bracket fits properly.

Note: Make sure that the main body of the bracket does not touch the axle. Only the feet of the bracket should touch the axle.

7. If the brackets have protective tape on them, remove the tape from around the bottom of the bracket assembly.
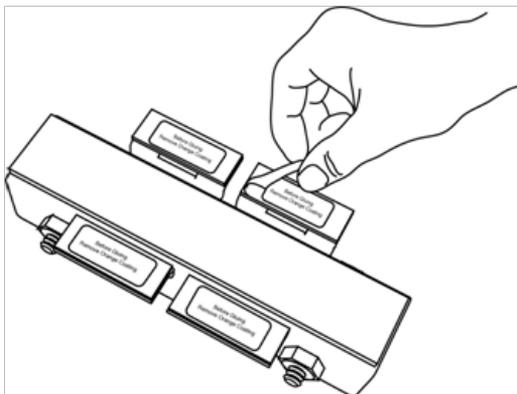
Removing the Protective Plastic Strips

8. Clean the underside of the bracket assembly with one of the supplied isopropyl alcohol pads.
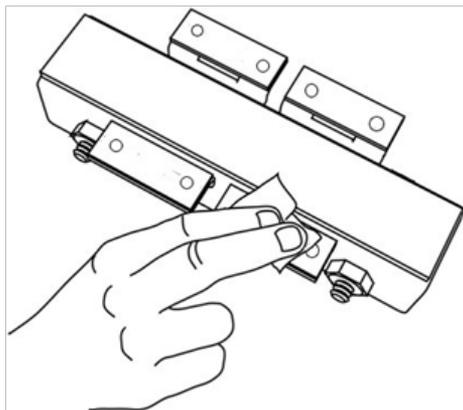
Cleaning the Bottom of the Bracket Assembly

Welding the Bracket

Note: Air-Weigh takes no responsibility for damage or failure of the steer axle due to improper welding.

1. Place the new bracket assembly at the center of the axle. Use C-clamps(NOT PICTURED) to hold the bracket in place. Make sure you leave the alignment tool in the bracket assembly while welding.
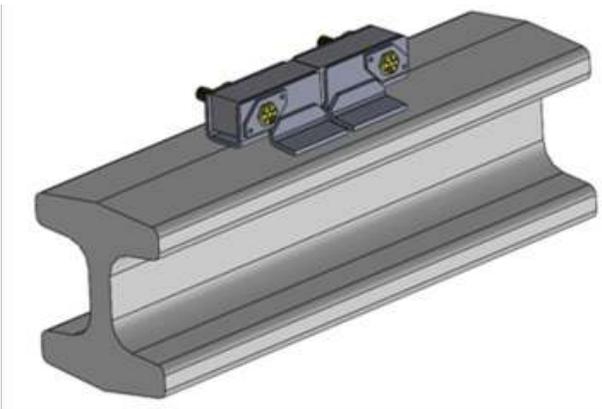
Bracket Assembly Centered on Axle

2. Tack weld all 8 corners of the base.
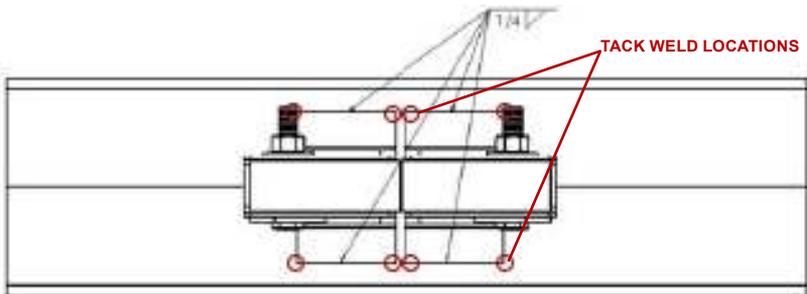
Bracket Assembly Centered on Axle

Note: Do not operate the vehicle while the alignment tool is still in place.

3. Fillet weld a full bead on the front and back edges of each bracket piece, as per ANSI/AWS 2.4-79, AWS A5.4, AWS A5.9 and AWS A5.22 standards. Do NOT weld the sides of the bracket, only the edges indicated below. Air-Weigh recommends that you use equipment similar to Miller Shopmaster 300 AC/DC; AMP/VOLT setting of 22; wire speed of 3.5; and a welding argon gas mixture of 75/25. MIG welding should use 309 stainless wire. MIG welding will use the same settings as the Miller Shopmaster noted above.

Adding a Protective Spray Paint Coating

To prevent steer axle corrosion, we recommend you spray paint around the base of the bracket.

1. Using any enamel-based spray paint, paint around the base of the bracket and over the welded section. Paint all bare metal around the bracket completely.
2. Once the paint is dry, we recommend that you paint all exposed metal a second time.
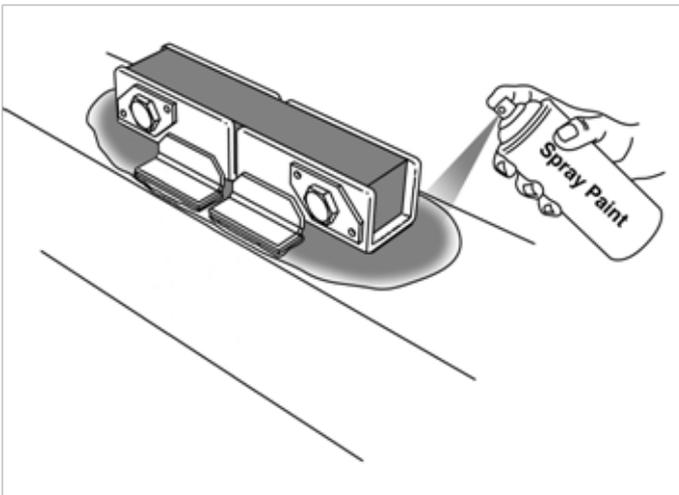
Spray Paint Coating

Installing the Drive Axle Sensor Bracket

Assembling the Bracket to the Jig

Note: You must make sure that the frame rail will not hit the top of the deflection sensor bracket when the suspension is at maximum weight. As an approximation, ensure that the travel between the frame stop and the suspension is at least a 1/2 inch more than the distance from the top of the bracket to the frame rail above it.

1. Place a flat washer on a cap screw and insert through the J-bracket and then through the jig.
2. Place a second flat washer on the cap screw followed by a hex nut.
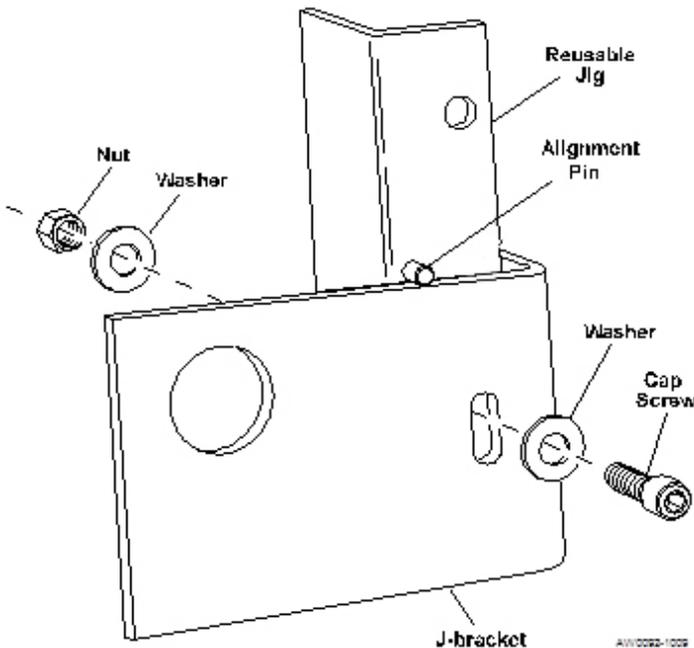
Assembling the J-Bracket to the Jig

3. Make sure both alignment pins are touching the J-bracket.
4. Securely tighten the J-bracket to the jig assembly.
5. Repeat the above steps using a second J-Bracket. Ensure all edges are parallel and at the same height.
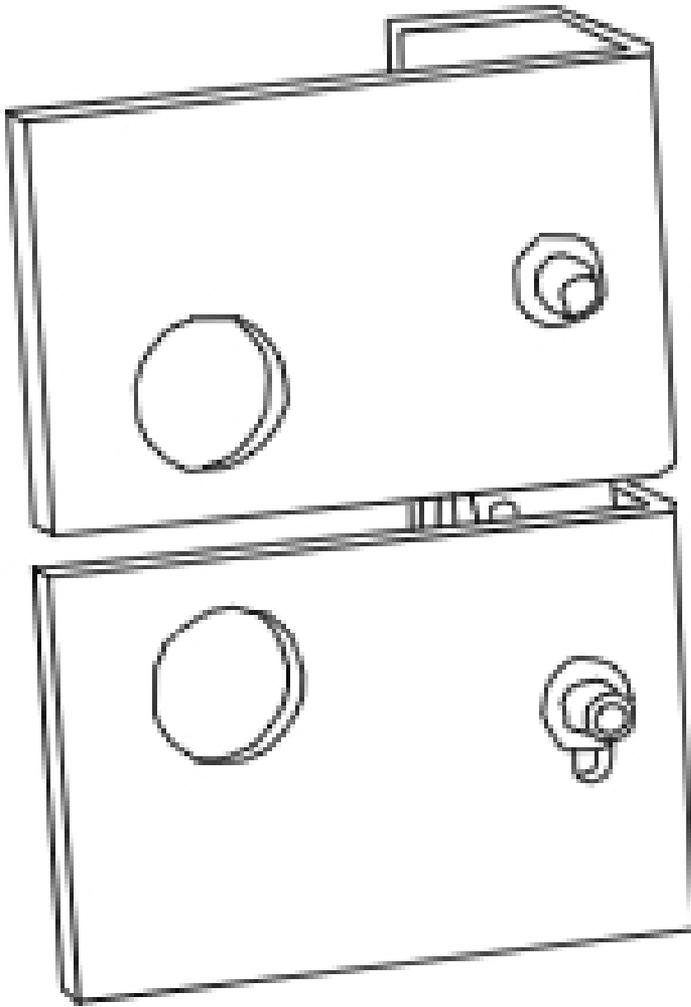
Completing the J-Bracket Assembly

J-Bracket Placement and Surface Preparation

1. Place the appropriate spacer (see Table below) against the bar pin end on either the front or the back of the equalizing beam. Put the J-bracket assembly against the spacer onto the equalizing beam.

Table: Spacer for Specific Suspension Type
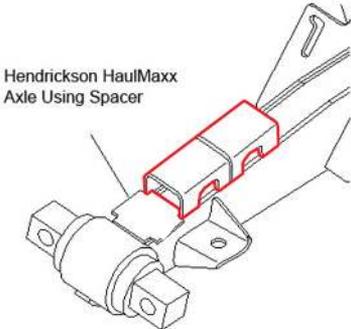
Hendrickson HaulMaxx Axle Using Spacer	Hendrickson HN462/463 Axle Using Spacer
Hendrickson HAULMAXX **HMX 400, HMX, HMX 460**	**Hendrickson HN462/463** **HN 462, HN 402, HN FR,** **RT 463, RTE 463, HN 522**
120-0079-XXX	**120-0080-XXX**
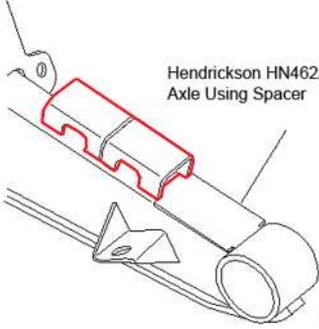
2. Hold the J-bracket assembly firmly on the suspension and mark the area inside the two large holes of each J-bracket.

3. Remove the J-bracket assembly and set it aside.

4. Using a sander or grinder with 40-grit sandpaper, clean a wide area around the marked areas until only bare metal is visible.

5. Repeat steps 1-4 on opposite side of the suspension so you have one bracket on the passenger's side and one on the driver's side of your suspension.

Grind Area Until
Bare Metal Is Exposed
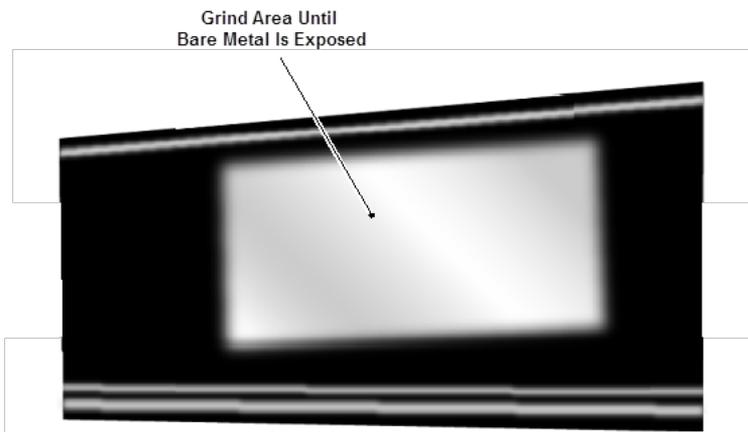
Preparing Suspension Surface for Welding

Welding the J-Bracket

1. Using the appropriate spacer, place the J-bracket assembly back on the walking beam.

2. Using two C-clamps, secure the bracket assembly to the walking beam.

3. Using a MIG or ARC welder, tack-weld the two large holes (top, bottom, left, right).

4. Then plug-weld the circumference of the two large holes in the J-bracket assemblies only.

5. Once the welds are completely cooled, remove the clamps.

6. Remove the two cap screws, four flat washers and two nuts from the J-bracket assembly and remove the assembly jig. Repeat with the second J-bracket on the opposite side of the suspension and retain the nuts and bolts.

7. Use enamel spray paint and paint all welded and sanded areas to prevent oxidization. Do not paint where sensor will be installed.
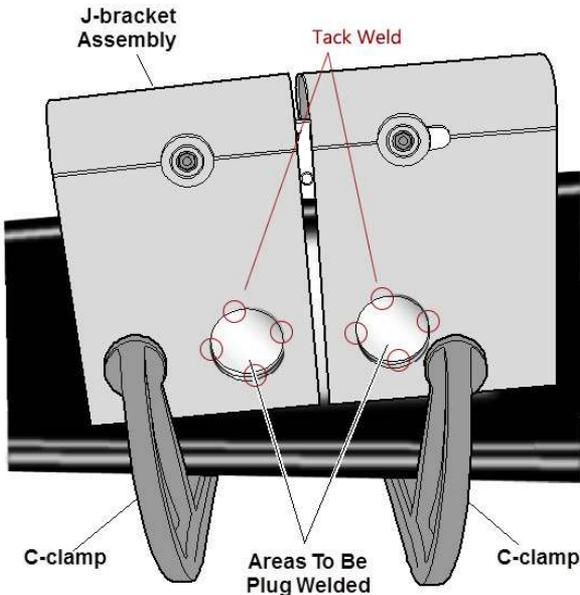
Clamping the J-bracket Assembly to the Suspension

Routing Cables

1. Route the 20' steer extension cable and the 40' drive extension cable along their respective axles and the frame, and then through the cab firewall. Leave enough length for sensor connections. If at all possible, route along an existing wire harness. Be careful to avoid routing along pieces of the frame that may move or cause wiring to rub.
2. Secure the cables loosely to the suspension using zip ties.

Note: Keep all cables a minimum of 12" from exhaust piping or properly shield cables.

Installing the ComLink and Display

The Optional Universal Mounting Pod can be used for installations where there is no space in the dash to mount the scale display.

Preparing the Cab Display for Installation

1. Select a location for the display (1) on the dash panel (5) with at least 3" of clearance behind the dash panel (5) for the unit and its connections. A higher dash position provides better visibility.

2. Using a hole saw, cut a 2-1/8" hole (2) in the dash where you will mount the display.

3. Remove the hex nuts (4) from the studs (6) on the back of the display (1) to release the mounting bracket (3).
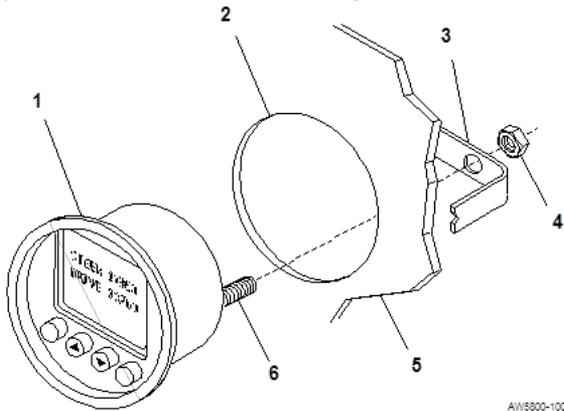
Display Preparation and Installation

Installing the Cab Display

1. Position the display (1) in the hole so that it appears level on the dash.

2. Reinstall the mounting bracket (3) on the back of the display (1) and secure with two nuts (4) on the display studs (6). Tighten the nuts (4) and secure the display (1) to the dash using 6 in-lbs. of torque. Do not over- tighten the mounting bracket nuts (4).

Mounting the ComLink

1. Select a location behind the dash for the ComLink module, ensuring there is adequate access to the scale and the electrical connections.

2. The ComLink module should be oriented with the connectors facing downward and installed by either one of the following methods, using the hardware provided:

    Use zip ties through the holes in the ComLink module mounting ears to secure it to any appropriate wire harness behind the dash.

    -OR -

    Find a flat location where the ComLink module can be attached using the 2-sided adhesive tape already in position on the back of the ComLink module. Remove all dust, grease or debris from the flat location using the supplied alcohol pad. Remove one or both of the red strips from the back of the ComLink module, exposing the adhesive tape. Place the ComLink module against the cleaned flat area and push hard enough to ensure adhesion. For best results, push the ComLink module into place using **15 ft lbs of pressure**, being careful not to crack the case. Using this method will make the ComLink module more difficult to remove.

Note: If you are using the optional printer, please see the document Printer Installation Instructions for information on connecting the printer to the ComLink.

Connecting Cables

The provided cables are used to connect the ComLink to the vehicle's electrical system, to the dash display unit, and, if desired, to an alarm output.

| Power and Ground Table	
White Wire	Vehicle Chassis Ground
Blue/Black Wire with In-Line Fuse	12VDC or 24VDC Key Hot Power
Gray Wire/Brown Wire	Alarm output 1 and 2 (same voltage as vehicle power)
Black Wires	Alarm ground Return 1 and 2

1. Connect the white wire to chassis ground.
2. Connect blue/black wire with inline fuse to the positive (+) or "hot" side of the 12 VDC or 24 VDC key hot power source. DO NOT connect directly to battery.
3. Connect the 10-pin plug of the power interface cable to the ComLink module.
4. Connect both the 2-pin and the 4-pin plugs of the power interface cable to the display.
5. When using an alarm, connect the alarm output wire and the ground return wire to the desired device (buzzer, horn, light, etc.).

Securing Cables and Reassembling the Dash

1. Connect the extension cable to the ComLink module in the dash. Drive cables should be connected to Port A and the steer cable should connect to Port B.
2. Coil and secure any excess wire using zip ties.
3. Tighten all zip ties and trim.
4. Reassemble the dash assembly after all sensors have been installed (next section) and sensor cables are connected. Ensure all connections are tight.

# Installing and Adjusting the Steer Axle Sensor

1. Remove the alignment tool from the brackets. Retain the nuts and bolts.

2. Insert the steer axle sensor with its cable extending toward the side of the vehicle where the sensor extension cable has been routed to the firewall. Make sure the engraved lettering faces up.
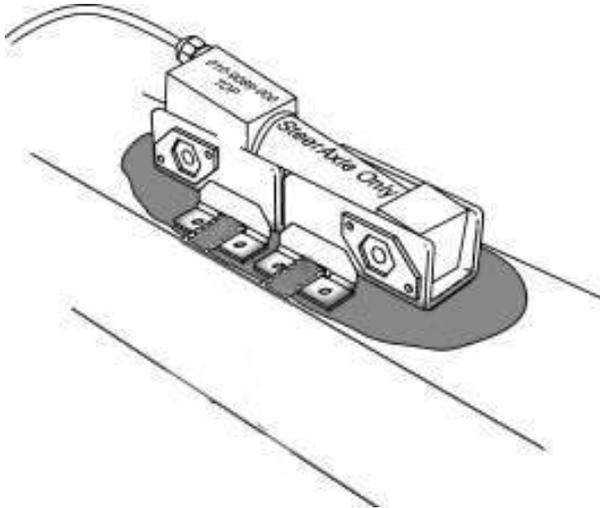
Inserting the Sensor Into the Bracket

3. Align the steer axle sensor with the holes in the steer axle bracket assembly.

4. Insert one bolt through the bracket hole on the sensor end with the engraved lettering on it so that the bolthead is secured in the manufactured bolthead holder. Place a washer and a nut at the end of the bolt and hand-tighten the nut. Add Loctite, or other threadlocker adhesive, to the bolts to prevent loosening and corrosion.

5. Insert the second bolt through the second bracket hole so that the bolthead is secured in the manufactured bolthead holder.. Hand-tighten the nut. Add Loctite, or other threadlocker adhesive, to the bolts to prevent loosening and corrosion.
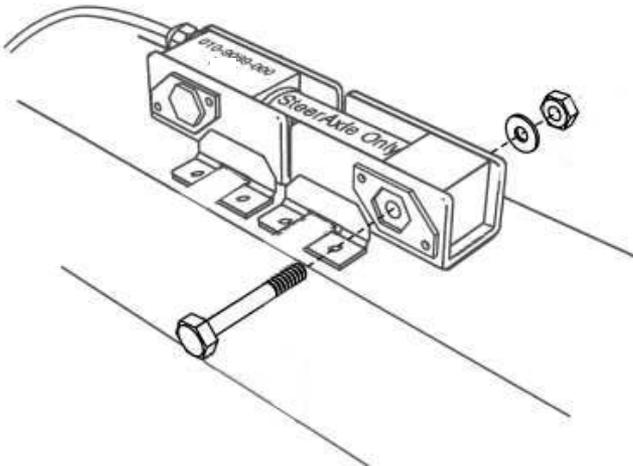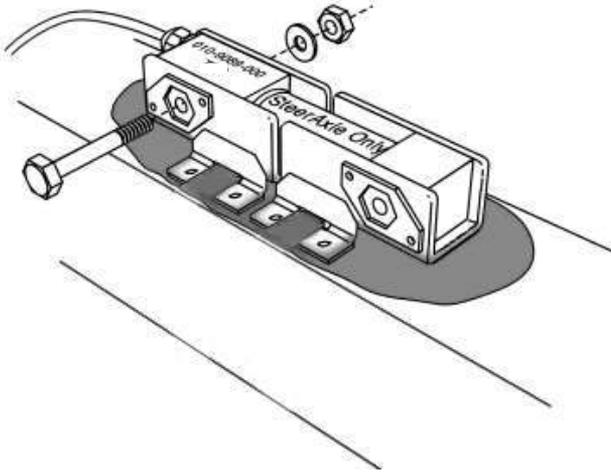

Attaching the Sensor to the Bracket

Installing the Drive Axle Deflection Sensor

Once welding is complete, you can install the deflection sensor.

1. Clean the mounting surface for the deflection sensor and bracket. Ensure there is no paint where the sensor is to be installed.

2. Attach the deflection sensor to the beam with the cable exiting toward the center mount. The engraved lettering should be facing up.

3. Place the washers on the two inch grade 10.9 bolts.

4. Place the bolts and washers through the holes in the sensor bracket to secure the deflection sensor.

5. Place the two hex nuts on the bolts.

6. Hand-tighten each nut and bolt assembly. Add Loctite, or other threadlocker adhesive, to the bolts to prevent loosening and corrosion.

Suspension Equalizing Beam
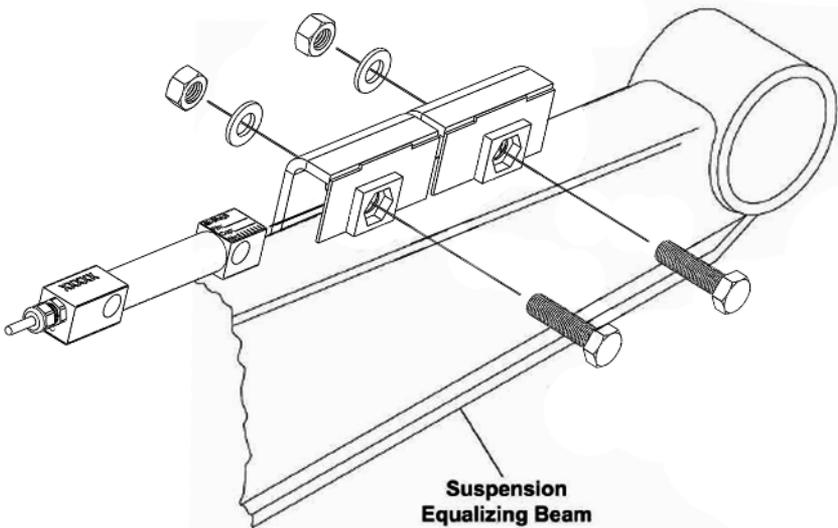
Installing the Deflection Sensor

Setting the A/D Values

At this point, you have installed all of the LoadMaxx system components. You will next adjust the steer and drive axle deflection sensors to read weight correctly by setting the A/D values. A/D refers to the analog-to-digital conversion of the sensor reading.

This step will require the use of either the LoadMaxx in-dash display or the Deflection Sensor Test box (P/N 1001). If using the LoadMaxx in-dash display, the scale must be installed and powered, and the Deflection Sensor Extension Cable must be installed.

The process below must be completed for both the steer and drive axles.

1. To assemble the connectors, insert the deflection sensor connector plug into the sensor extension cable connector OR connect to the deflection sensor test box. Ensure the locking tabs on the connector plug engage completely.
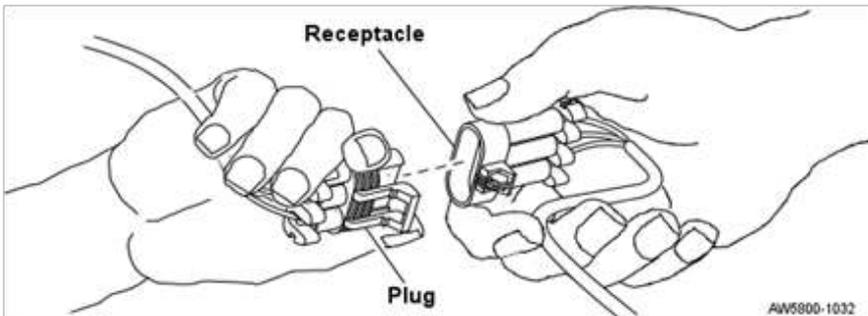
Assembling the Electrical Connector

2. Tighten both nuts and use a torque wrench to torque to 60 ft-lbs.

Note: When tightening the bolts, ALWAYS torque the nut, NOT the bolt head. The bolt head should be in the bolt head holder, which is built into the bracket.

3. Verify the A/D reading using the display in the cab (start the ignition to power on the display), or the deflection sensor test box. If the reading is within range (750-1250), continue to instructions for the **Final Sensor Torque.** If the reading is not within range, follow the instructions to adjust the A/D readings below.

Adjusting the A/D Reading

The process below must be completed for both the steer and drive axles.

If the A/D reading is above 1250, follow these instructions:

1. Loosen the nuts on both ends of the sensor
2. At the plastic nut where the cable enters the sensor, exert **DOWNWARD** pressure with your fingers until the A/D reading is between 750 and 1250. Continue to apply pressure to maintain the desired A/D reading during the torque procedures in step 3.
3. Tighten the nut on the cable end of the sensor and torque to 60 ft/lbs. **Continue to apply pressure with your finger to the plastic nut during torquing in order to maintain the desired A/D reading.** If the A/D readings are still within the 750 to 1250 range after the nuts on both sides of the sensor have been torque to 60 ft/lbs, continue to instructions for the **Final Sensor Torque.**

If the A/D reading is below 750, or there is no A/D reading at all, follow the steps below:

1. Loosen the nuts on both ends of the sensor
2. At the plastic nut where the cable enters the sensor, exert **UPWARD** pressure with your fingers until the A/D reading is between 750 and 1250. Continue to apply pressure to maintain the desired A/D reading during the torque procedures in step 3.
3. Tighten the nut on the cable end of the sensor and torqued to 60 ft/lbs. **Continue to apply pressure with your finger to the plastic nut during torquing in order to maintain the desired A/D reading.** If the A/D readings are still within the 750 to 1250 range after the nuts on both sides of the sensor have been torqued to 60 ft/lbs., continue to instructions for the **Final Sensor Torque**.


Final Sensor Torque

The process below must be completed for both the steer and drive axles.

1. Torque both nuts to 120 ft/lbs.
2. Perform a final check to A/D values using the readings from the in-cab QuickLoad display, not from the A/D Box. If A/D readings are not within range, repeat the **Adjusting the A/D reading steps.**

Steer Axle Cover Installation

1. Mount the cover over the sensor and the brackets so that the sensor cable is completely under the cover. The sensor extension cable should emerge from the cover's end port on whichever side you choose to route the cable. Ensure that the cable has free play and is not pinched by the sensor cover.

2. Very loosely install band clamps around the steer axle on both ends of the deflection sensor cover. Ensure that the band clamp on each side circles both the steer axle and the cover flange.

3. Secure the sensor cable to the axle using zip ties. Run the sensor extension cable along the rear of the axle toward either side of the truck, securing with a band clamp. Use additional 24" zip ties as required to secure the cable to the steer axle.
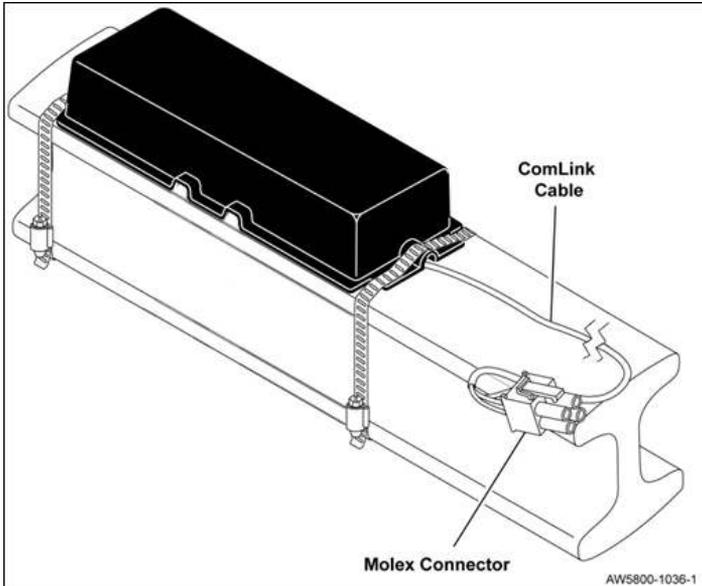
Cover with Sensor Extension Cable

Your Air-Weigh scale installation is now complete.

Note: After you have installed deflection sensors, do not calibrate until after the vehicle has been in normal operation for one week or 800 miles, whichever comes first. Allowing for this break-in period will give you a more accurate calibration.

Limited Warranty

For product failures due to material or manufacturing defects, Air-Weigh will replace or repair all components for up to three years from shipment date to the end-user Air-Weigh customer. These three-year components include: displays, ComLinks, sensors, power cables, sensor assemblies, sensor harnesses, and all other associated external components. Air-Weigh assumes no responsibility for administering warranty claims directly with any third-party end users.

The responsibility of Air-Weigh under this warranty is limited to the repair, replacement, or credit of the defective part or assembly.

This warranty does not cover incidental or consequential damage to persons or property caused by use, abuse, misuse, or failure to comply with installation or operating instructions. This limited warranty does not apply to any product that has failed due to accident, abuse, alteration, installation not consistent with printed installation instructions, improper maintenance, or improper operation or as a result of system integration or installation not explicitly approved in writing by Air-Weigh.

Air-Weigh and its resellers shall have no responsibility or liability for damages if the purchaser or any other person alters the vehicle incorporating Air-Weigh products. This limited warranty shall not apply to any product that has been repaired or altered by anyone not employed by Air-Weigh or not operated in accordance with the manufacturer's printed material delivered with this product.

Air-Weigh hereby expressly disclaims any and all implied warranties of any type, kind, or nature whatsoever, and particularly any implied warranty of merchantability or fitness for a particular purpose not expressly stated by Air-Weigh in its printed material delivered with its products. Some states do not allow the exclusion or limitation of incidental or consequential damages. If such laws apply, the limitations or exclusions contained in the terms and conditions of this warranty may not apply. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

Procedure For Warranty Claims

ALL customers should first contact Air-Weigh Customer Support Department at (888) 459-3247 for questions regarding the use, operation, repair or return of any Air-Weigh product.

In the event Air-Weigh requests to examine the product prior to disposition OR for repair or replacement, Air-Weigh requires a Return Material Authorization (RMA) number be issued before the item is returned. Customer Support will issue the RMA number. Please reference this RMA number in all correspondence.

The Air-Weigh RMA number **must** appear on the outside of the return packaging. Air-Weigh shall examine returned material within 30 days after receipt, or sooner if mutually agreed upon. If Air-Weigh determines that the part or assembly was defective in material or workmanship and within the warranty period, Air-Weigh will repair or replace the part or assembly and return freight pre-paid. In the event Air-Weigh determines that the part or assembly cannot be repaired or replaced and is within the warranty period, a credit not to exceed the purchase price will be issued to the Air-Weigh customer.

For our customers using purchase orders Air-Weigh will process a credit memo and notify the customer by email or fax. The customer will process a corresponding debit memo and notify Air-Weigh accordingly.

If the part or assembly received by Air-Weigh does not meet the requirements of the warranty program set forth above, at the Air-Weigh customer's request the part or assembly will either be discarded, returned freight collect, or repaired or replaced at the Air-Weigh customer's expense and returned freight collect.

Notes

Notes

Air Weigh