Air▲Weigh

LoadMaxx
Installation Guide

Ford F-750 Trucks

Air-Weigh Customer Support: 888-459-3247

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About LoadMaxx for F-750s

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 convert that number into weight which is displayed in the truck cab.. Weight information, which includes axle group weights as well as net and gross vehicle weights, are also displayed

The LoadMaxx scale includes a dash-mounted display, a ComLink™ module, mounting cables, a deflection sensor with mounting hardware for the steer axle, and a deflection sensor with mounting hardware.

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

2" LCD Display

LoadMaxx ComLink

Steer Axle
Deflection Sensor
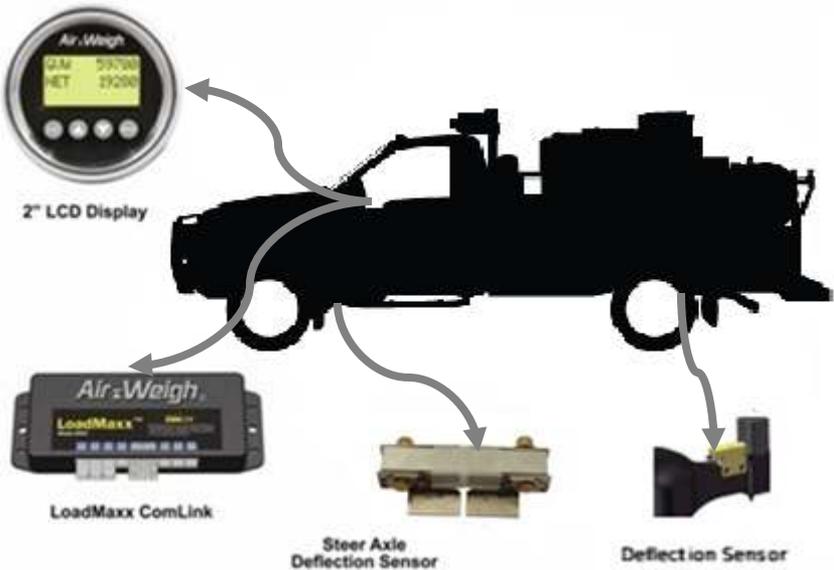
Deflection Sensor

Fig. 1: Major Components Location

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About Installation

Overview

There are three major components of the LoadMaxx scale that you will install:

- 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 suspension

Installation Components

For a full list of installation components, please see the Bill of Materials, insert 905-0008-000 R0.

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
- Flat-blade screwdriver
- Combination wrench
- Torque wrench
- 22mm 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
- 309 Stainless Wire
- C-clamps
- Tape measure

Optional Tools

- Deflection sensor test box, available from Air-Weigh

Installing the Steer Axle Sensor Bracket

Preparing the Steer Axle Sensor Brackets

1. Locate and mark the center of the steer axle (Fig. 2)

Center Mark

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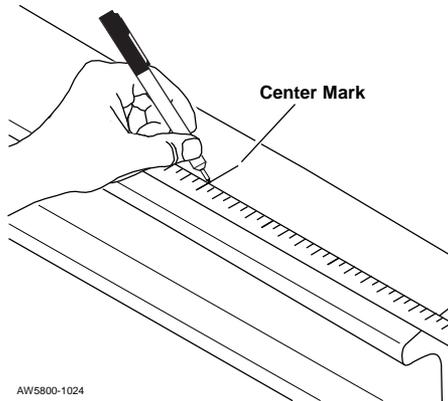
Fig. 2: Marking the Center of the Steer Axle

2. Using chalk or permanent marker, mark the top of the steer axle 3 inches 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 Brakleen to remove the worst. Then clean the 6-inch area using two of the alcohol pads supplied in the installation kit (Fig. 3).

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 sand down the mold line as well. See Fig. 3.
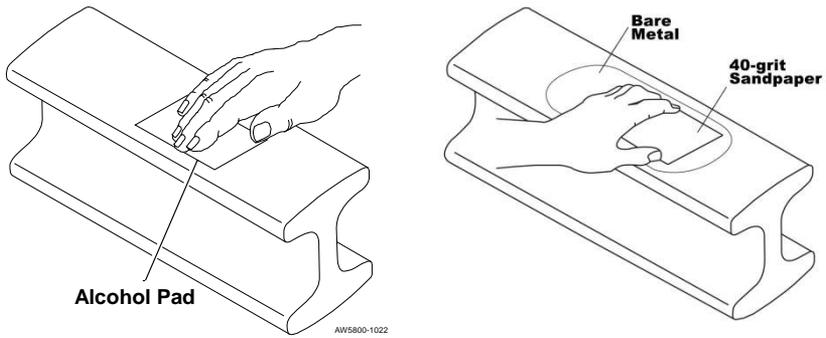
Fig. 3: Cleaning and Sanding the Steer Axle
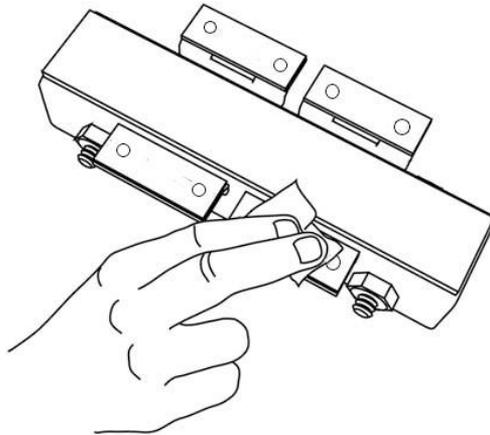
Fig. 5: Cleaning the Bottom of the Bracket Assembly

4. Clean the underside of the bracket assembly with one of the supplied isopropyl alcohol pads (Fig. 5).

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.

Welding the Bracket

Air-Weigh takes no responsibility for damage or failure of the steer axle due to improper welding
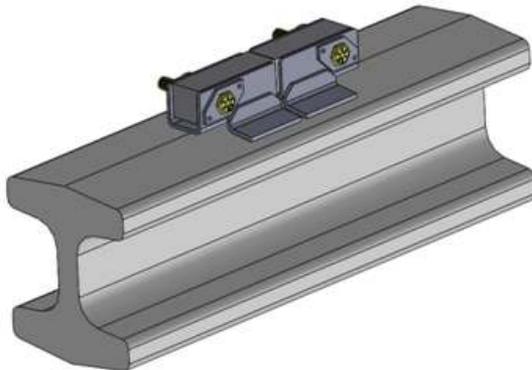
1. Place the new bracket assembly at the center of the axle (Fig. 3). Use C clamps to hold the bracket in place. Make sure you leave the alignment tool in the bracket assembly while welding.

Fig. 3: Bracket assembly centered on axle

2. 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 (Fig. 4). Do NOT weld the sides of the bracket, only the edges indicated on the next page. 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.

NOTE: Do not operate the vehicle while the alignment tool is still in place.
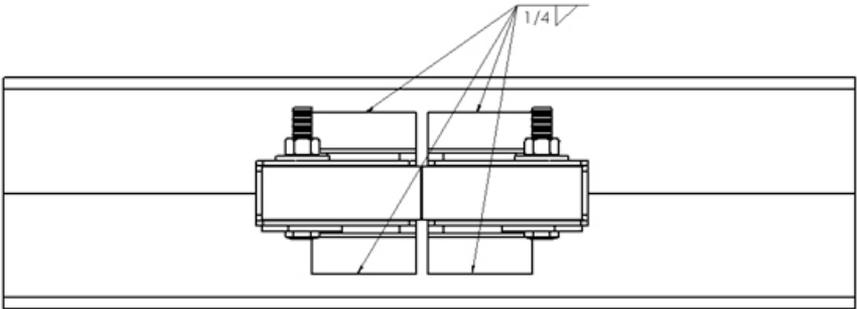
Fig. 4: Welded axle and bracket

Adding a Protective Spray Paint Coating

To prevent the steer axle bracket from delaminating due to 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 glued 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.
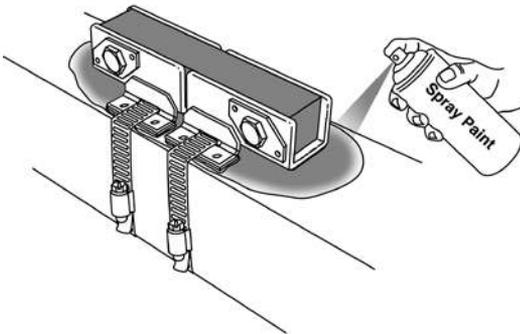
Fig. 10: Spray Paint Coating

Installing the Drive Axle Sensor

Assembling the Bracket to the Jig

1. Ensure the alignment pin of the bracket mounting jig is touching the bracket (Fig. 11).

2. Tighten the supplied bolt to the jig assembly securely using a wrench.

3. Repeat the above steps for the second bracket. Ensure all edges are parallel and at the same height (Fig. 12).
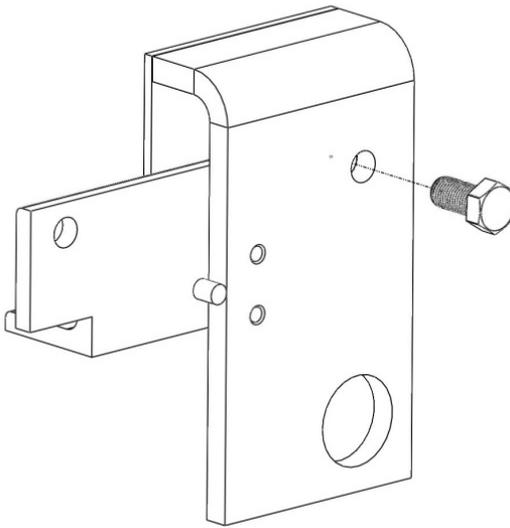
Fig. 11: Assembling the Bracket to the Jig
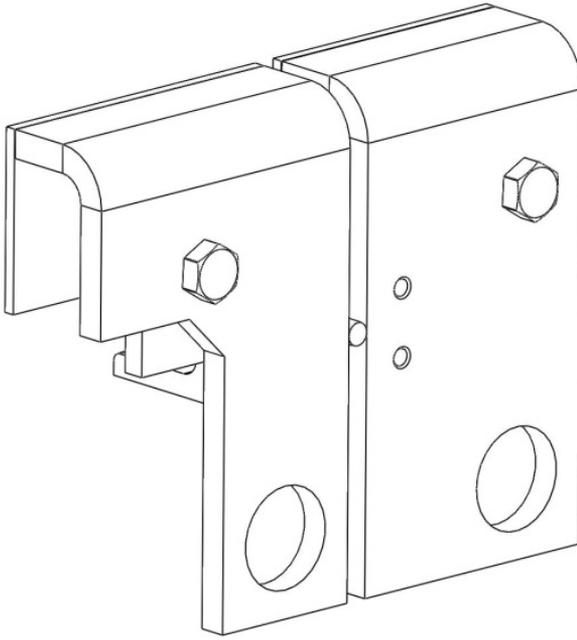
Fig. 12: Completing the Bracket Assembly

Surface Preparation

1. Hold the bracket assembly firmly on the suspension and mark the area inside the two large holes with a permanent marker.

2. Remove the bracket assembly and set it aside.

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

Welding the Bracket

1. Place the bracket assembly on the suspension. Make sure the bare metal you sanded earlier lines up with the large holes in the brackets.

2. Using two C-clamps, secure the bracket assembly to the suspension (Fig. 12)

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 bracket assemblies **ONLY**.

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

6. Using enamel spray paint, paint all welded and sanded areas to prevent oxidization.

7. Remove the two bolts from the bracket assembly and remove the assembly jig.
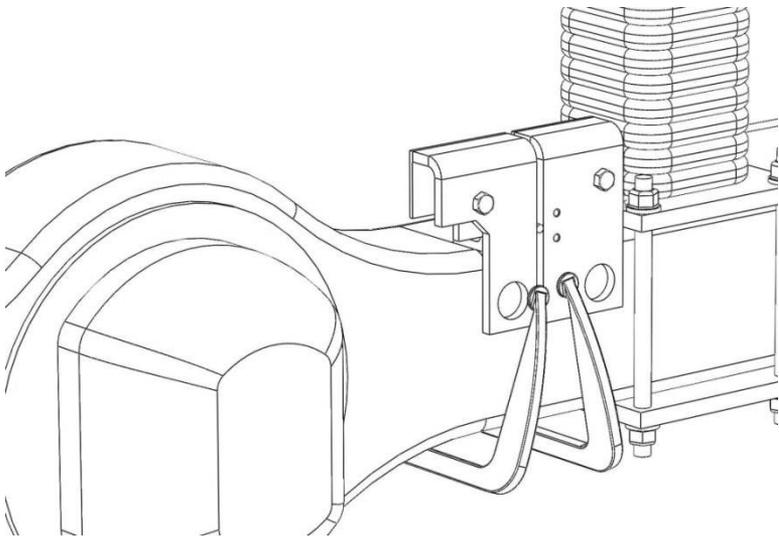
Fig. 12: Clamping the bracket assembly to the suspension

Installing the Deflection Sensor

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

1. Clean the mounting surface for the deflection sensor and bracket with Brakleen®. Ensure there is no paint between the two surfaces to be mated.

2. Attach the deflection sensor to the beam with the cable exiting toward the center mount. The word TOP should be facing up (Fig. 13)

3. Place the hardened washers on the two bolts.

4. Place the bolts and washers through the holes in the deflection sensor and then the slots in the brackets.

5. Place the two hex nuts on the bolts.

6. Hand-tighten each nut and bolt assembly.
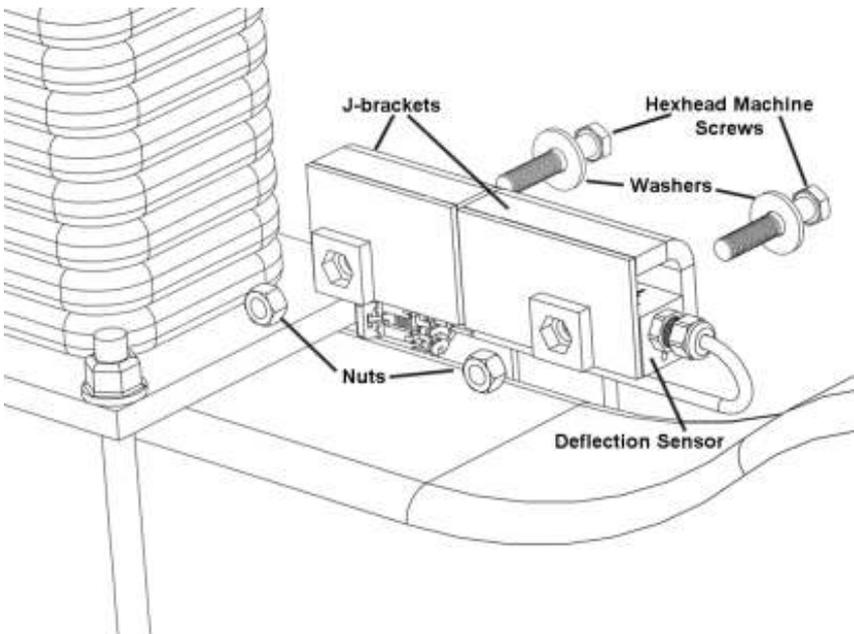
Fig. 13: Installing the Deflection Sensor

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 1/2" more than the distance from the top of the bracket to the frame rail above it.

Installing the Comlink and Display

Preparing the Cab Display for Installation

1. Select a location for the display (1) on the dash panel (5) with at least 3 inches 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-inch 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).
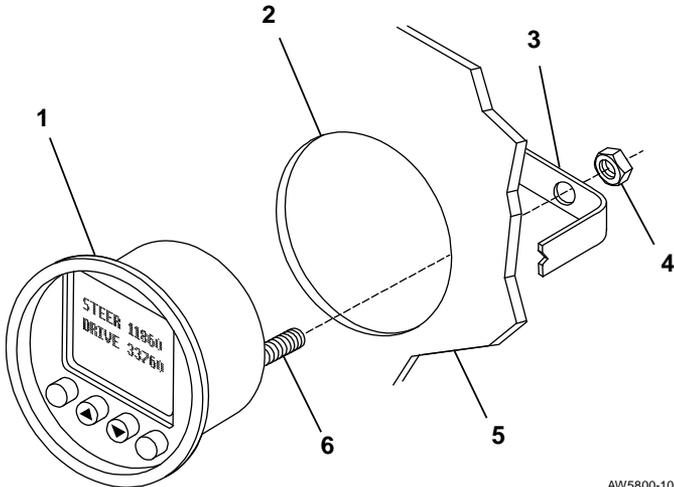
AW5800-1001

Figure 14: 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 any one of the following methods, using the hardware provided:

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

    <div align="center">-OR -</div>

    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 steady force, being careful not to crack the case. Using this method will make the ComLink module more difficult to remove.

    <div align="center">-OR -</div>

    Use self-tapping screws to secure the ComLink module to its location.

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.

Table 2: Wiring Harness Hookup

Power and Ground Table	
White Wire	Vehicle Chassis Ground
Blue/Black Wire with In-Line Fuse	12VDC or 24VDC Ignition 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 ignition-on 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.).

NOTE: If you are using the optional printer, please see the document Printer Installation Instructions (p/n 901-0105-000) for information on connecting the printer to the ComLink. The printer includes three cables. It and its cables can be stored when it is not in use.

Routing Cables

1. Route the 20-foot steer extension cable and the 40-foot drive extension cables 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 nylon ties.

3. Connect the extension cables to the ComLink module in the dash. Drive cables should be connected to Ports A and B; the steer cable should connect to Port C.

NOTE: Keep all cables a minimum of 12 inches from exhaust piping or properly shield cables.

Securing Cables and Reassembling the Dash

1. Coil and secure any excess wire using nylon ties.
2. Tighten all nylon ties and trim.
3. Reassemble the dash assembly after all sensors have been installed and sensor cables are connected. Ensure all connections are tight.

Installing and Adjusting the Steer Axle Sensor

Before you install the steer axle sensor, make sure the steer axle adhesive is fixed and feels solid to the touch.

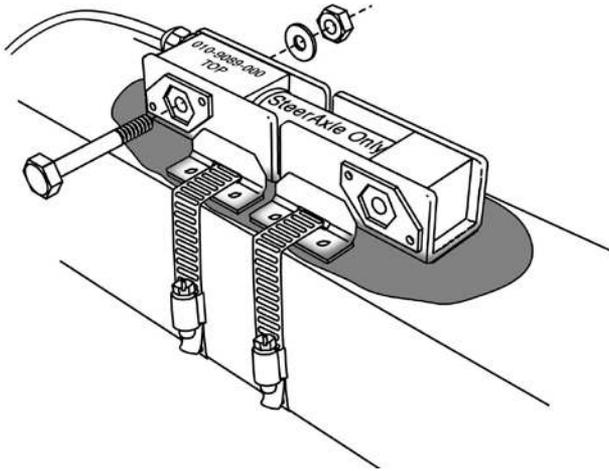## Installing the Deflection Sensor

1. Remove the alignment tool from the brackets. It should fit loosely. Retain the two bolts and nuts to use when you install the deflection sensor.

2. Clean the bracket channels with an alcohol pad.

3. Clean the sensor ends with the remaining alcohol pad.

4. 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 word "TOP" faces up (Fig. 15).
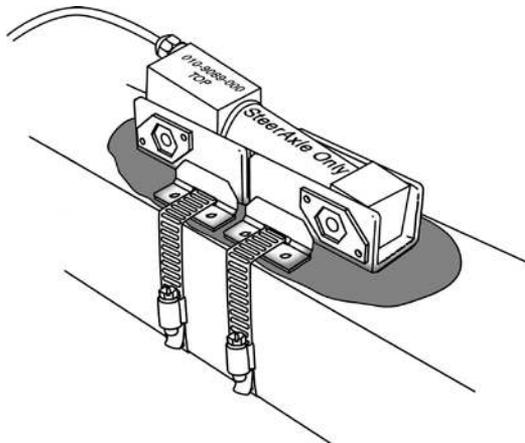
Fig. 15: Inserting the Sensor into the Bracket

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

6. Insert one bolt through the bracket hole on the sensor end with the word "TOP" on it (Fig. 16). Place a washer and a nut at the end of the bolt and hand-tighten the nut.

7. Insert the second bolt through the second bracket hole. Place the connector assembly bracket tab on the other side of the bolt facing away from the bracket. Then place a washer and a nut behind the tab. Hand-tighten the nut (Fig. 17).

Fig. 16: Attaching the Sensor to the Bracket

Setting the A/D Values

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 (Fig. 18).
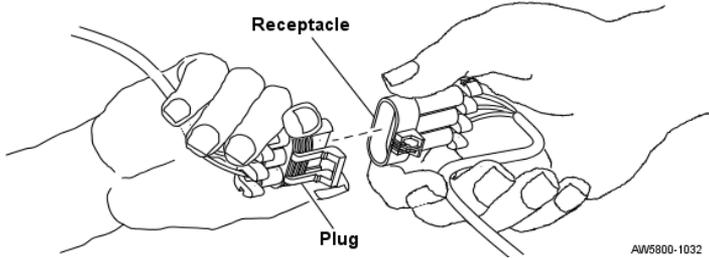
Fig. 18: Assembling the Electrical Connector

2. Tighten both nuts and use a torque wrench to torque to 30 ft-lbs.

   NOTE: When tightening the bolts, ALWAYS check the torque on the nut, NOT the bolt head.

   NOTE: A/D refers to the analog-to-digital conversion of the sensor reading.

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 to 1250), continue to instructions for the final sensor torque. If the reading is not within range, follow the instructions below.

A/D Reading is BELOW 750

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

- Loosen the nut on **the non-cable end** of the sensor.

- Exert upward pressure lightly with your fingers (or a screwdriver, if necessary) under **the non-cable end** of the sensor until the A/D reading is between 750 and 1250.

- Hand tighten the nut on **the non-cable end** of sensor and torque. If the A/D readings are still within proper range, continue to instructions for the final sensor torque.

A/D Reading is ABOVE 1250

If the A/D reading is **above 1250**, follow the steps below.

- Loosen the nut on **the non-cable end** of the sensor.

- Exert downward pressure lightly with your fingers on **the non-cable end** of the sensor until the A/D reading is between 750 and 1250.

- Hand tighten nut and torque. If the A/D reading is still in range, proceed to instructions for the final sensor torque.

Final Sensor Torque

4. Tighten both bolts to a minimum of 100 ft-lbs and an optimal 120 ft-lbs.

5. Perform a final check of A/D values. If not within range, repeat the steps for altering A/D readings.

6. If you are using the deflection sensor test box to set A/D values, disconnect the box and connect the deflection sensor cable to the sensor extension cable.

Steer Axle Finishing Touches

1. Route the cable coming out of the receptacle portion of the connector assembly so it can be used for a driver's side hookup or a passenger side hookup.

NOTE: Make sure there is enough slack in the sensor extension cable between the axle and the frame to allow for axle movement.

2. **Driver's side sensor orientation:** Facing toward the rear of the vehicle, route the cable from the connector assembly so it runs to the right of the steer axle sensor assembly (Fig. 19).
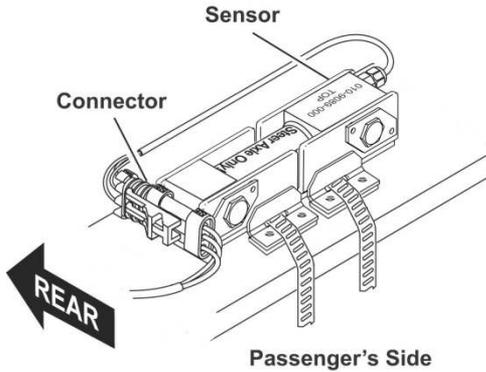
Fig. 19: Driver's side orientation

3. **Passenger's side sensor orientation:** Facing toward the rear of the vehicle, route the cable from the connector assembly so it runs to the left of the steer axle sensor assembly (Fig. 20).


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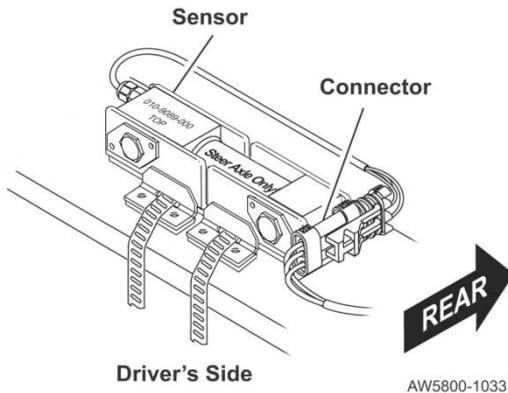
Fig. 20: Passenger's side orientation

4. Mount the cover over the sensor and the sensor brackets so that the sensor cable is completely under the cover. The bracket band clamps should emerge from the cover's side ports (Fig. 21).The sensor extension cable should emerge from the cover's end port on whichever side you choose to route the cable.
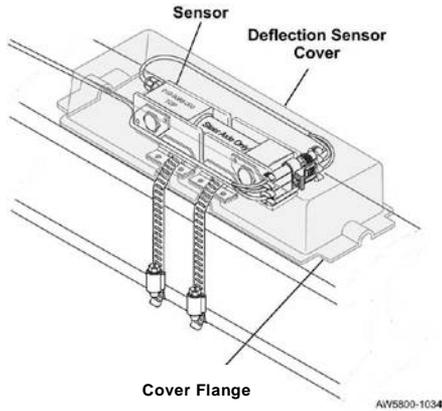
Fig. 21: Placing the Cover

5. 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 (Fig. 22). Fig. 23 shows completed installation.
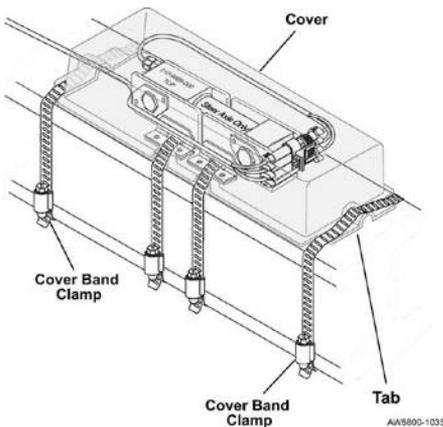
Fig. 22: Attaching Band Clamps to Cover

7. Secure the sensor cable to the axle. Run the drive sensor extension cable along the rear of the axle toward the side of the truck (driver's side or passenger's side), securing with a band clamp. Place split loom over the band clamp where it crosses over the cable. Secure the cable to the band clamp with nylon ties (Fig. 24). Use additional 24" nylon ties as required to secure the cable to the steer axle.
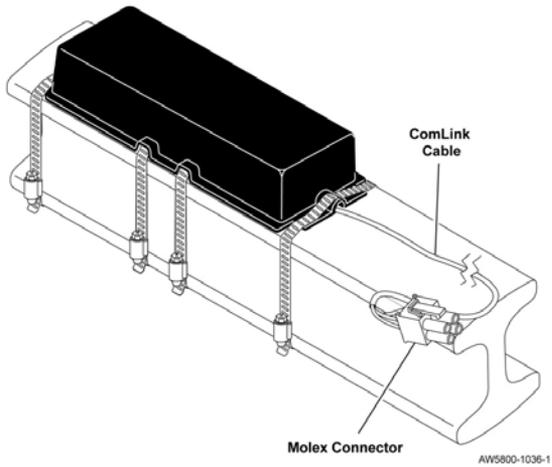
Fig. 23: Cover with Sensor Extension Cable
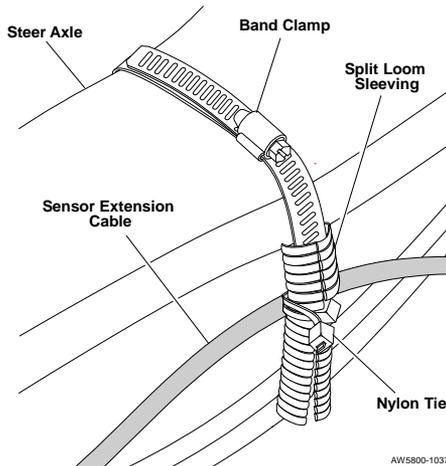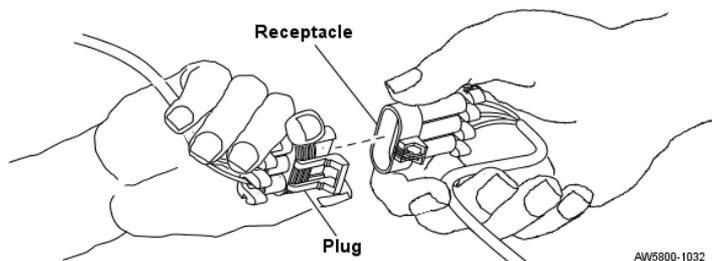

Fig. 24: Securing the Sensor Extension Cable to the Axle

Testing and Adjusting the Drive Axle Sensors

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 (Fig. 25).

Fig. 25: Assembling the Electrical Connector

2. Tighten both nuts and use a torque wrench to torque.

NOTE: When tightening the bolts, ALWAYS check the torque on the nut, NOT the bolt head.

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 to 1250), continue to instructions for the final sensor torque. If the reading is not within range, follow the instructions below.

A/D Reading is BELOW 750

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

- Loosen the nut on **the non-cable end** of the sensor.

- Exert upward pressure lightly with your fingers (or a screwdriver, if necessary) under **the non-cable end** of the sensor until the A/D reading is between 750 and 1250.

- Tighten the nut on **the non-cable end** of sensor and torque. If the A/D readings are still within proper range, continue to instructions for the final sensor torque.

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A/D Reading is ABOVE 1250

If the A/D reading is **above 1250**, follow the steps below.

- Loosen the nut on **the non-cable end** of the sensor.

- Exert downward pressure lightly with your fingers on **the non-cable end** of the sensor until the A/D reading is between 750 and 1250.

- Hand tighten nut and torque. If the A/D reading is still in range, proceed to instructions for the final sensor torque.

Final Sensor Torque

4. Tighten both bolts to 120 ft-lbs.

5. Perform a final check of A/D values. If not within range, repeat the steps for altering A/D readings.

6. If you are using the deflection sensor test box to set A/D values, disconnect the box and connect the deflection sensor cable to the sensor extension cable.

7. See Fig. 26 for completed installation. Secure mated connectors using cable ties threaded through the mounting holes in the bracket. Secure all cables using nylon ties.
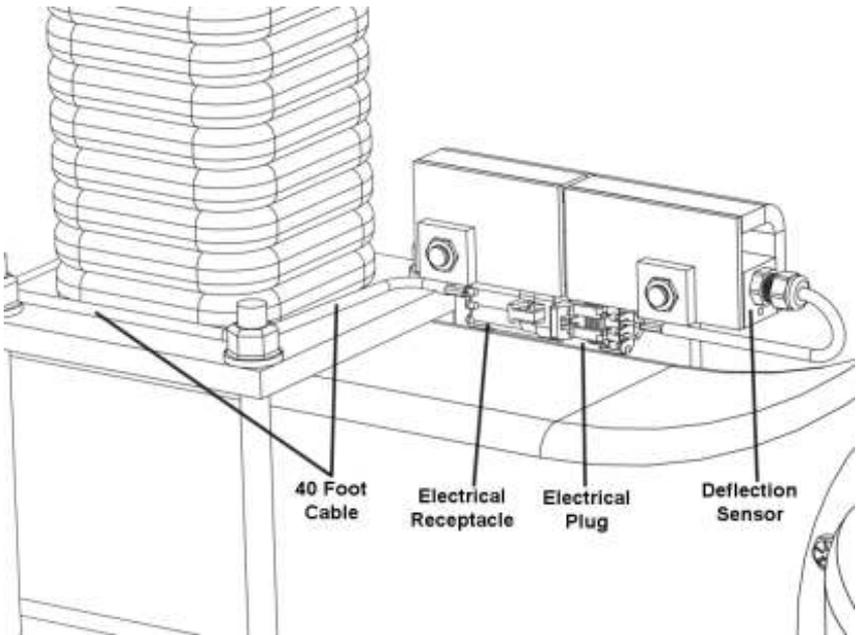
Figure 26. Completed Installation

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 3 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, 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 of 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, which vary state to state.

May be covered by U.S. Patent Nos. 5478974, 5780782, 7478001
Foreign Patent Nos. 260494, 677998, 2122766

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.

Claimed items shall be shipped freight pre-paid to:
Air-Weigh
Customer Support Department
1730 Willow Creek Circle, Suite 100
Eugene, Oregon 97402, USA

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 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 Air-Weigh customer's expense and returned freight collect.

Air Weigh

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