Air Weigh

LoadMaxx Plus & QuickLoad Plus

Installation Guide

For Trailers with Mechanical Suspensions

Air-Weigh Customer Support: 888-459-3247

PN 901-0171-000 R0

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Trailer Overview

Air-Weigh Trailer Scales for mechanical suspensions accurately measures real-time, on-the-ground weights. The leaf spring scale is currently designed for tandem and tri-axle trailers.

The LoadMaxx Plus version enables drivers to view steer, drive, trailer, GVW, and net payload on any LoadMaxx equipped tractor.

Air-Weigh App

Download the Air-Weigh app and view weight data on any smart device. Available for download in the Apple and Android app stores.

Installation Overview

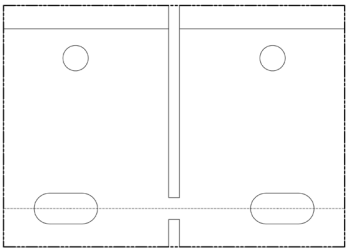
There are five major components of the scale that you will install:

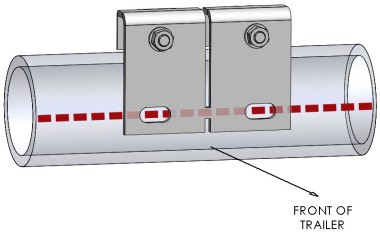
- Trailer scale display
- Power interface and extension cables
- Sensor interface and extension cables
- Deflection sensors x2
- Brackets x2

Note: When installing this kit on a three axle trailer, the first sensor is to be installed on the forward facing side of the center axle and the second sensor is to be installed on the forward facing side of the rear axle.

Before calibrating, note that there is a required break-in period of 100 miles. First verify that your A/D readings are set in the required range. See Setting the A/D Values, starting on page 14, for more information.

Note: Use the bracket template that has been provided with your trailer kit and follow directions on the template to double check that the bracket will fit.





Note: Bracket is installed on the front and rear axles for tandem trailers and on the center and rear axles for tri-axle trailers.

Tools Required

You will need the following tools to install the trailer scale and deflection sensors:

- Standard wrench set or adjustable wrench
- Drill with ¼-inch drill bit, or larger if flush mounted
- Flush wire cutter
- Needle nose pliers
- Grinder
- Chalk or permanent marker
- MIG or ARC welder
- Torque wrench
- 22mm socket
- Enamel spray paint, any color
- Tape measure
- C-clamps (2)

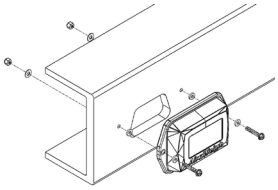
Optional Tool

- Deflection sensor test box, p/n 1001

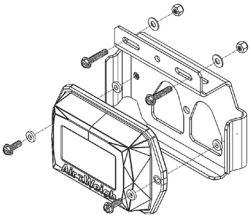
Mounting the Scale

There are three ways you can mount the trailer scale:

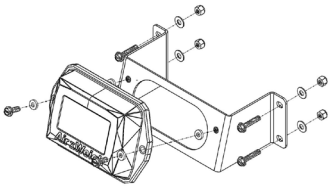
- Flush mounted to the trailer frame itself
- Using a Van bracket
- Using a Frame Rail bracket



Flush Mount



Van Bracket



Frame Rail Bracket

Choose the mounting method that will work the best for your trailer configuration. **Air-Weigh recommends that you mount it on the driver's side, 10 feet ahead of the front axle.** Mount the trailer scale in a position that is easy to view and is protected from direct tire spray and road debris. In regions where severe weather is a consideration, contact Air-Weigh for more information on protective enclosures.

Note: When choosing a location to mount the scale display, first consider the length of cables in your scale kit. Make sure there is enough length in your power and sensor cables to run from where you are mounting the display to where you are connecting to power and installing the brackets and deflection sensors.

Note about cables: Do not place strain on the cables. If there is a sharp bend in the wires, the environmental seal could fail, allowing water to damage the scale. If the scale is disconnected from the trailer, the power cable and air line will not support the weight of the scale.

Mounting Flush to the Trailer

A flush mounted scale is mounted directly to the side of the trailer.

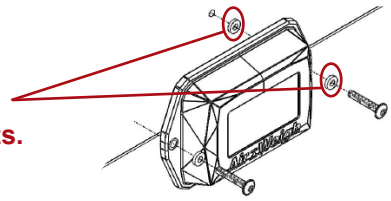
1. Determine the best location to mount the scale. This should be a flat area of the trailer, thin enough to make drilling possible and accessible from both front and back. Make sure the back side of the location is free of obstacles and debris that would interfere with the installation.
2. Use the supplied template or hold the scale in the location you will mount it for reference and cut a hole large enough to fit the port connections on the back.
3. Mark the trailer surface that touches each of the screw holes on the sides of the scale.

At this point, determine whether you want to connect the power to the display before or after you secure it to the trailer. If after, proceed to step 6 before completing steps 4 and 5.

4. Feed the power cables to the back of the trailer display from below the edge of the trailer or through the previously cut hole.
5. Plug the power interface cable into Port 1 on the back of the scale display.
6. Place the scale over the space you have prepared on the trailer, making sure port holes fit the hole on the trailer. Use the provided bolts, rubber washers (one for each front and back of the scale), and nuts to secure the scale to the side of the trailer.
7. Apply the provided blue Loctite to all threaded bolts to prevent bolts from backing out.

Note: The provided rubber washers are required to dampen the vibration.

Note: Do not overtighten mounting bolts. Torque to 10 inch lbs or 1.1 Nm.



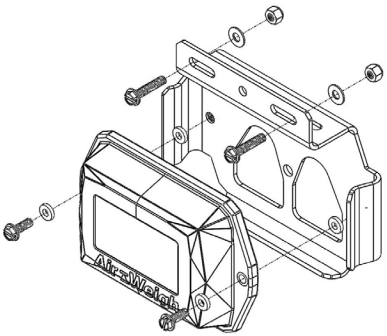
Mounting with a Van or a Frame Rail Bracket

1. Determine the best location to mount the scale. For the Van Bracket, the bracket screws should be mounted on a ledge, and the scale itself should hang off the ledge with no obstacles blocking it. For the Frame Rail Bracket, it should be visible while loading and in a protected area from direct tire spray.
2. Hold the bracket in the location you will mount it. Mark the trailer surface that is visible through the holes in the top of the bracket using a permanent marker.
3. Using the marked areas as a guide, drill two 1/4-inch holes into the surface of the trailer.
4. Secure the scale to the bracket by using the provided bolts and rubber washers. Insert one bolt and washer on each side of the scale through each of the scale wing holes and tighten.
5. Apply provided blue Loctite on threaded bolts.

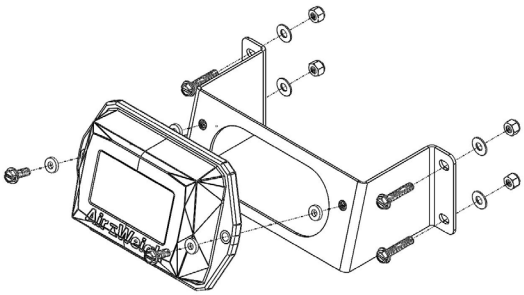
At this point, determine whether you want to connect the power to the display before or after you secure the bracket to the trailer. If after, proceed to step 8 before completing steps 6 and 7.

6. Feed the power cables to the back of the trailer display.
7. Plug the power interface cable into Port 1 on the back of the scale.
8. Secure the bracket to the trailer surface. To prevent the bolts from backing out, apply the provided blue Loctite to all threaded bolts before placing through bracket and securing to the trailer.

Do not overtighten mounting bolts. Torque to 6 inch lbs or .68 Nm.



Van Mounting Bracket



Frame Rail Mounting Bracket

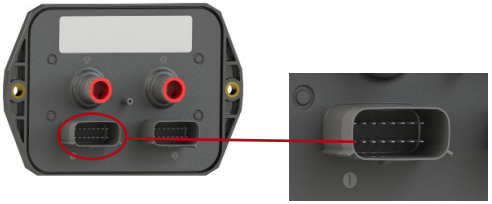
Connecting Power to the Scale

You can connect the trailer scale to the trailer's power either through the ABS brake harness, through the junction box, or directly through the lighting harness. All methods are equally effective regardless of your trailer setup; choose the method that is most convenient.

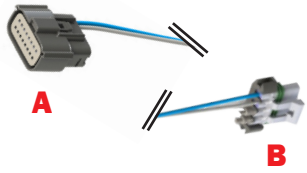
Note: If using lighting harness for power, the lights need to be on in order for the trailer scale to have power.

Power Cable Installation Guide

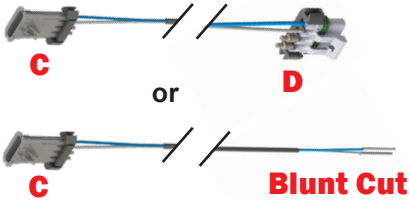
1. Scale Display



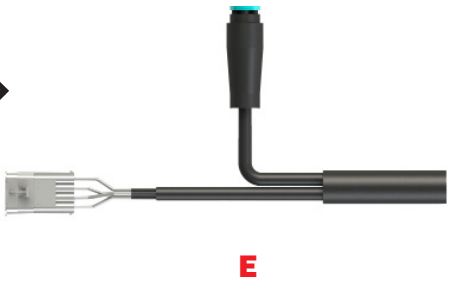
2. Interface Cable



3. Power Cable



4. ABS-T Breakout



Connection order

1. Plug interface cable (A) into Scale Display Port 1
2. Plug interface cable (B) to Power Cable (C)
3. Plug Power Cable (D) into ABS T-Breakout (E) or wire Blunt cut end to junction box or lighting harness

Connecting Power with the ABS Connector

Connecting the T-Breakout to the Power Cable

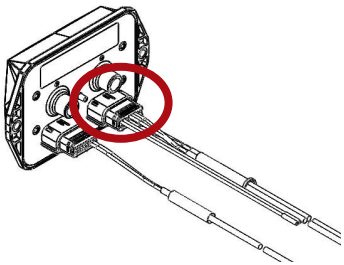
North American trailer manufacturers use one of two standard connectors to connect the trailer's wiring harness to the ABS brake system: USA Brand, which uses a 6-pin plug, or Sealco, which uses a 5-pin plug. Air-Weigh provides T-breakout connectors that do not require splicing or soldering and do not interrupt power to the ABS system for each of these connector types.

1. Locate the ABS system harness. Trace the harness to the breakout connection.
2. Disconnect the 5- or 6-pin breakout connection.
3. Connect the supplied ABS T-breakout connector to both ends of the ABS harness breakout. Make sure the locking tabs are locked securely. If you are using the USA connector, make sure all pins are properly aligned and the white plug is firmly seated in its locking hole. Failure to do so will cause faults in your ABS system.
4. Connect the scale's power extension cable to the T-breakout connector.
5. Route the power extension cable along the frame of the trailer toward the location where the scale is installed. If possible, route along an existing wiring harness. If the trailer has a sliding suspension you **must** use an existing wiring harness or umbilical to avoid damaging or breaking the cable.
6. Secure the cable loosely to the frame using zip ties.
7. Connect the end of the power extension cable to the power interface cable. Make sure the cable is under no strain and is not bend.

Connecting Power to a Junction Box

1. Starting at the 7-way connector at the front of the trailer, follow the wiring harness until you reach/find the junction box. Remove the cover of the junction box to expose the wiring. Find the blue ABS power wire.
2. Using the supplied ring terminals, connect the blue power wire on the end of the trailer scale power cable to the blue ABS wire in the junction box. Connect the white ground wire on the end of the scale power cable to the white ground wire in the junction box.
3. Route the power extension cable along the frame of the trailer toward the location where the scale is installed. If possible, route along an existing wiring harness. If the trailer has a sliding suspension you **must** use an existing wiring harness or umbilical to avoid damaging or breaking the cable.
4. Secure the cable loosely to the frame using zip ties.
5. Connect the end of the power extension cable to the power interface cable. Make sure the cable is under no strain and is not bent.

Alarm Installation



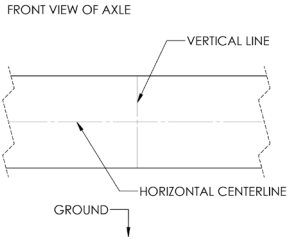
Insert the Alarm cable into Port 2 on the back of the scale. The gray, sealed wire from the main wiring harness is the alarm circuit output. It can be connected to any self-grounded alarm device with a current draw of 1.0 amps or less. The alarm voltage will be the same as the vehicle output voltage. You must install a relay for any device that draws more than 1.0 amps. Do not disturb the sealed end of the wire if alarm is not installed.

When using an alarm, connect the alarm output wire and the ground return wire to the desired device. Ensure that any unused alarm wires are electrically insulated.

Welding the Deflection Sensor Brackets

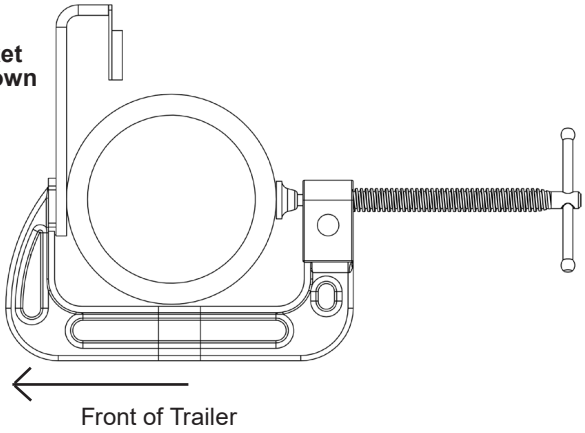
Note: Air-Weigh takes no responsibility for damage or failure of the trailer axle due to improper welding or failure to follow these instructions.

1. Find and mark the center of the forward face on the trailer axle(s), front and rear for tandems or middle and rear for tri-axles.

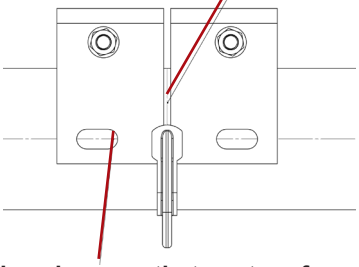


2. Hold the bracket assembly on the forward side of the trailer axle centered on the mark. Use C-clamps to hold it in place.

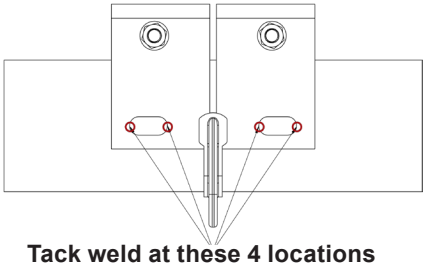
Orient the bracket vertically as shown

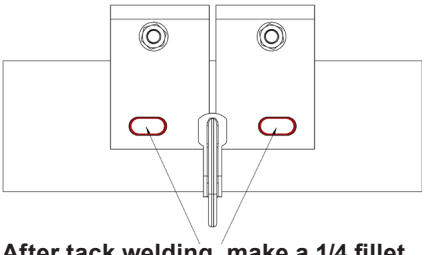


3. Using a permanent marker, mark the inside circumference of the bracket slots on the axle.
4. Remove the C-clamp and bracket. Remove the paint on the axles to expose bare metal where indicated by the marker. Make sure there is no paint remaining where the bracket will be welded.
5. Remark the vertical and horizontal center marks.
6. Replace the bracket over the sanded area and secure it in place with C-clamps.



7. Using a MIG or ARC welder, tack-weld the left and right ends of each slot and then weld the entire length of the slot. **Do not weld in any other location.**





8. Repeat steps 1-6 for the other axle.
9. When the welds are completely cooled, remove the C-clamps.

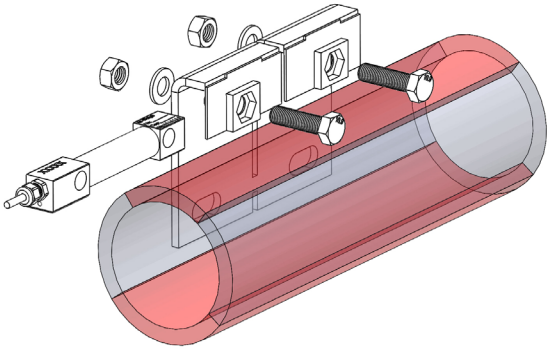
Installing the Deflection Sensors

Repeat the below steps for both front and rear deflection sensor install.

Note:

1. Use two bolts, nuts and washers to install the deflection sensor inside each bracket.
2. Insert the deflection sensor into the sensor bracket with the engraved lettering facing up and its cable extending toward the side of the trailer where you will route the sensor extension cable from the trailer scale display.

   NOTE: Use the SHORTER cable for the Front (Tandem) or Middle (Tri-axle) axle. Use the LONGER cable for the Rear axle. You can determine the cable length by the middle four digits of the part number on the cable (ex: 2500 = 25 feet).



Trailer Axle Sensor Installation

3. Insert both bolts through the hexagonal holes that hold the bolt head.
4. Place a washer and a nut at the end of each bolt and hand tighten the nut.

Routing the Axle Sensor Extension Cables

1. Starting from the trailer scale display, connect the gray interface cable to Port 2 on the back of the trailer scale.
2. Connect the SHORTER sensor extension cable to Sensor 1 connector on the opposite end of the gray interface cable.
3. Route the SHORTER sensor extension cable along the frame of the trailer toward the location where the FRONT sensor bracket is installed and the LONGER sensor extension cable along the frame to the location where the REAR sensor bracket is installed. If possible, route along an existing wiring harness. If the trailer has a sliding suspension you **must** use an existing wiring harness or umbilical to avoid damaging or breaking the cable.
4. Secure the cable loosely to the frame using zip ties.
5. Connect the end of the sensor extension cables to the connectors on the deflection sensors. Make sure the cable is under no strain and is not bent.

Note: Make sure there is enough slack in the sensor extension cable to allow for axle movement. Do not tighten or trim zip ties until the full installation is complete.

Setting the A/D Values

At this point, you have installed both trailer's axle sensors and routed extension cables. You will next adjust the 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 trailer display or the Deflection Sensor Test box (P/N 1001). If using the Deflection Sensor Test box, connect the box to the deflection sensor connector plug and skip to the Adjusting the A/D Readings section.

If using the trailer display, the scale must be installed and powered, and the Deflection Sensor Extension Cable must be installed.

1. Ensure that the deflection sensor connector is plugged into the sensor extension cable that has been routed from the trailer display.
2. Ensure the locking tabs on the connector plug engage completely.
3. Tighten both nuts on the sensor bracket using a torque wrench. Torque to 60 ft-lbs.
4. Verify the A/D reading using the trailer scale 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 on the following page.

Reading the A/D Values

During diagnostics steps, 2 sensors should appear on the screen. If not, call customer support for assistance.

1. With power to your trailer, turn on your scale. If the scale is off, touch the screen to wake it up
2. Select the image of a wrench  to go to the Setup menu
3. Select the medical bag  to go to Scale Diagnostics
4. Press the down arrow ⬇ until you see information on A/D readings. The screen should show A/D 1 and A/D 2 on the same screen. Each sensor values should range from 750-1250 during install
5. If the A/D readings are appropriate, your trailer has been installed correctly. If they are inaccurate, follow instructions for adjusting your A/D reading and check all connections and make sure they are securely attached

Adjusting the A/D Reading

The sensor values should range from 750-1250 during install and after the break-in period, a reading of 500-1500 is acceptable when empty.

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.

1. Loosen the nut on the plastic nut end of the sensor.
2. At the plastic nut where the cable enters the deflection sensor, exert **DOWNWARD pressure if the reading is above 1250** or **UPWARD pressure if the reading is below 750** 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 side of the sensor bracket where the cable end exits 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 bracket have been torqued to 60 ft/lbs, continue to instructions for the **Final Sensor Torque.**

DOWNWARD pressure

UPWARD pressure

Final Sensor Torque

1. Torque both nuts to 120 ft/lbs.
2. Apply supplied Loctite to the exposed threads of the bolts.
3. Perform a final check to A/D values using the readings from the trailer scale display, not from the A/D Box. If A/D readings are not within range, repeat the **Adjusting the A/D reading steps.**

Adding a Protective Spray Paint Coating

Using any enamel-based spray paint, paint the bracket, the welded sections, and all bare metal around the bracket completely.

Note: After final torquing, the sensor will require a break-in period before it can be calibrated. We recommend driving the vehicle in normal operation for at least 100 miles before performing the calibration. If the vehicle operates on very smooth roads during break-in, more miles may be needed to achieve an adequate amount of suspension vibration.

Limited Warranty

Air-Weigh warrants (the “Limited Warranty”) that the Products will be free from defects in material and workmanship under normal use and service with proper maintenance for the following time periods:

(a) for new Scale kits, the Limited Warranty period will be 3 years;

(b) for new parts and accessories sold separately, the Limited Warranty period will be 1 year; and

(c) for repaired or refurbished items, including repaired or refurbished Scale kits and repaired or refurbished parts and accessories sold separately, the Limited Warranty period will be 90 days.

If any Product is determined to not conform to this Limited Warranty during its applicable Limited Warranty period, Air-Weigh will, at its exclusive option, either repair or replace the Product.

Limitations of Limited Warranty. Air-Weigh will have no obligation under the Limited Warranty with respect to any product if (a) Buyer fails to notify Air-Weigh in writing during the warranty period of a non-conformity, or (b) Buyer or any other person, entity, or governmental authority uses, misuses, or neglects the product in a manner inconsistent with the product’s specifications or directions for use or maintenance, modifies the product or improperly installs, handles, or maintains the product.

No Repair or Modification of the products. Except as explicitly authorized or in a separate written agreement with Air-Weigh, Buyer will not service, repair, modify, alter, replace, reverse engineer, or otherwise change any of the products.

Disclaimer of All Other Warranties. EXCEPT FOR THE LIMITED WARRANTIES SET OUT ABOVE, NEITHER AIR-WEIGH NOR ANY PERSON OR ENTITY ON AIR-WEIGH’S BEHALF HAS MADE OR MAKES FOR BUYER’S BENEFIT ANY EXPRESS OR IMPLIED REPRESENTATION OR WARRANTY WHATSOEVER, INCLUDING ANY WARRANTIES OF: (i) MERCHANTABILITY; (ii) FITNESS FOR A PARTICULAR PURPOSE; (iii) TITLE; OR (iv) NON-INFRINGEMENT; WHETHER ARISING BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, ALL OF WHICH ARE EXPRESSLY DISCLAIMED. BUYER ACKNOWLEDGES THAT IT HAS NOT RELIED ON ANY OTHER REPRESENTATION OR WARRANTY MADE BY AIR-WEIGH, OR ANY OTHER PERSON OR ENTITY ON AIR-WEIGH’S BEHALF.

Limitation of Liability.

IN NO EVENT WILL AIR-WEIGH BE LIABLE FOR CONSEQUENTIAL, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, PUNITIVE, OR ENHANCED DAMAGES, LOST PROFITS OR REVENUES, OR DIMINUTION IN VALUE, ARISING OUT OF OR RELATING TO ANY BREACH OF THESE TERMS, REGARDLESS OF WHETHER OR NOT THE DAMAGES WERE FORESEEABLE, WHETHER OR NOT AIR-WEIGH WAS ADVISED OF THE POSSIBILITY OF THE DAMAGES, OR THE LEGAL OR EQUITABLE THEORY (CONTRACT, TORT, OR OTHERWISE) ON WHICH THE CLAIM IS BASED.

IN NO CASE WILL AIR-WEIGH’S AGGREGATE LIABILITY ARISING OUT OF OR RELATED TO THESE TERMS, WHETHER ARISING OUT OF OR RELATED TO BREACH OF CONTRACT, TORT (INCLUDING NEGLIGENCE), OR OTHERWISE, EXCEED THE TOTAL OF THE AMOUNTS PAID TO AIR-WEIGH FOR THE PRODUCTS.

THE FOREGOING LIMITATIONS APPLY EVEN IF BUYER’S REMEDIES UNDER THESE TERMS FAIL OF THEIR ESSENTIAL PURPOSE.

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
1720 Willow Creek Circle, Suite 510
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 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.

Air Weigh

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