RIGHT WEIGH

Installation & Operation Manual

ONBOARD LOAD SCALE
EXTERIOR DIGITAL | 201-EBT-01(B)

Bluetooth®

Thank you for choosing to drive more and scale less! Here at Right Weigh, we are committed to making our products simple to install and easy to use. We understand that installation can vary between vehicles and yours may not be described in this manual. In any event, our technical support team is ready to answer your questions!

(503) 628-0838
(888) 818-2058 - Toll Free (USA ONLY)

support@rwls.com

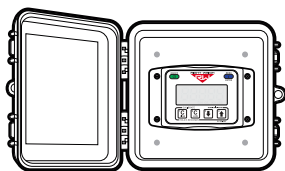www.rwls.com/how-to-calibrate-install/

IMPORTANT!

Please read instructions COMPLETELY and thoroughly before installation. Right Weigh, Inc. is not responsible or liable for product failure or vehicle damage due to improper installation. The installation requirements are outlined in this manual and should be followed thoroughly to avoid inaccuracy or damage to the product.

It is also important to be aware of vehicle manufacturer policies before making modifications to the vehicle. Right Weigh, Inc. is not liable or responsible for issues regarding warranties with other manufacturers. This is the responsibility of the customer. If you are unsure about how these installation practices apply to your vehicle, please contact your vehicle or component manufacturer.
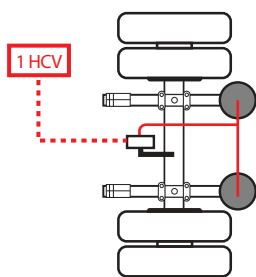
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ONBOARD LOAD SCALE
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Bluetooth®

SPECIFICATIONS & OVERVIEW
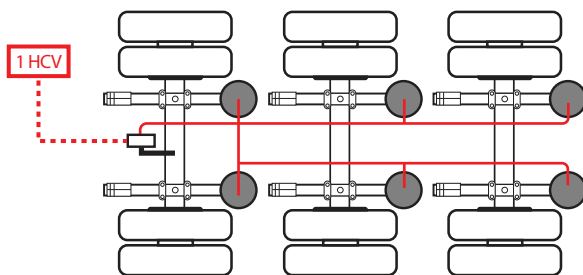
The Right Weigh 201-EBT-01(B) digital load scale has one internal air pressure sensor. This scale will monitor one air suspension single, tandem, or tridem drive axle group or trailer axle group with one Height Control Valve (HCV).

1 HCV

Single Axle Group

1 HCV

Tandem Axle Group

1 HCV

Tri Axle Group

⚠ The 201-EBT-01(B) cannot be used on an axle group that has two HCVs. To monitor an axle group that has two HCVs you will need the 201-EBT-02(B)

Drop Axle:

This load scale can be used to monitor one axle group with an air ride lift axle if the lift axle air bags are controlled by the same height control valve as the other axles in the group. The scale will need to be setup using multiple calibration mode. Refer to the Multiple Calibration Mode section for more information.

⚠ Independently regulated lift axles cannot be considered part of an axle group and must be in the UP position when calibrating and weighing

Estimated Steer Axle:

The weight of the steers can be estimated if this scale is used to monitor the drive axle group. Refer to the Estimated Steer Mode section for more information.

Technical Specifications
Operating Temperature: -22° F to +185° F (-30° C to +85° C)
Storage Temperature: -40° F to +185° F (-40° C to +85° C)
Power Requirement: 9 VDC to 32 VDC (Switched)
Units: Pounds (LBS) or Kilograms (KG)
Housing: High impact polycarbonate blend
Display: 0.8" LCD sunlight readable

4½"
114 mm

4½"
114 mm

16"
406 mm

8³⁄₁₆"
208 mm

7-¼"
114 mm

3⁷⁄₁₆"
87 mm

5"
127 mm

MENU/
ENTER

POWER
ON/OFF

2⁷⁄₁₆"
62 mm

RIGHT WEIGH

ON/OFF   MENU
                      i
                    ENTER

C/H C/L KG LBS

CALIBRATE   www.rwls.com

1 C   2 C   3 ↓   4 ↑
HIGH   LOW

HOLD 3 SECONDS   EL 003-0003

(4)
UP ARROW

(1)
CAL HIGH

(2)
CAL LOW

(3)
DOWN ARROW

The 201-EBT-01 scale is designed to be mounted on the outside of a truck or trailer, however it must still be mounted in a protective enclosure. A protective box and mounting bracket are included with the 201-EBT-01B.

The following steps will walk you through how to correctly mount and install the scale. Be sure to choose a location that is easily accessible and safe from potential damage (forklift posts, tire caps, etc.)
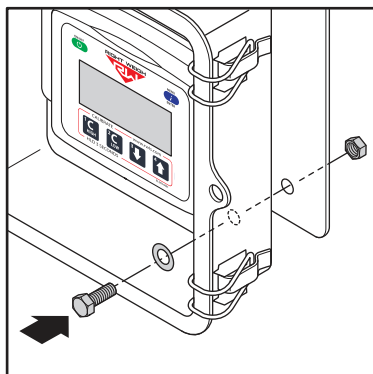

⚠ DO NOT mount the scale directly to the chassis or any other main beam unless it is approved by the vehicle manufacturer. Doing so may void the warranty with the vehicle manufacturer.

1 CHOOSE LOCATION

Make sure the location chosen is easily accessible and safe from potential damage (forklift posts, tire caps, etc.). Mount the bracket in the chosen location and install the gauge box to the bracket using supplied hardware.

⚠ Make sure to use BOTH supplied mounting bolts to secure the bracket to the vehicle. Using only one bolt can result in a cracked bracket and the scale falling off the vehicle.
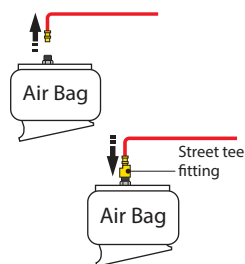
2 DUMP AIR FROM SUSPENSION SYSTEM

3 — INSTALL NEW STREET TEE FITTING

Remove the suspension air line fitting from the top of one of the air bags.

Insert a street tee fitting into the top of the air bag that matches the thread size of the vehicle suspension. Reinstall the suspension air line and fitting into the street tee. For more information on the parts needed for air line installation, see Appendix A.

Air Bag

Air Bag — Street tee fitting

4 — INSTALL NEW 1/4" AIR LINE

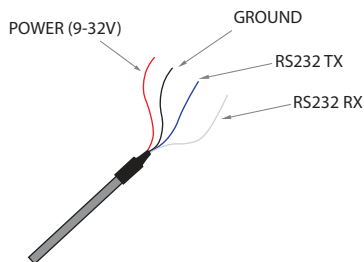Install a new 1/4" air line and fitting into the remaining port on the tee.

Air Bag

5 — ROUTE AIR LINE TO GAUGE

Route the new 1/4" air line from the tee fitting assembly to the gauge. Secure air line with zip ties. Insert the air line into the push-to-connect fitting on the back of the gauge. DO NOT ROTATE THE AIR FITTING!

6 — CONNECT TO POWER / RS232

The cable coming out of the scale is used to power the scale and to transmit/receive vehicle data. Connect the RED wire to a switched positive (+) power source and the BLACK wire to chassis ground (-). The required supply voltage must be between 9 and 32 volts DC. For more information on wiring connection and insulation, see Appendix B.

The white and blue wires are for RS232 communication (use is optional). The BLUE wire is output from the scale (TX) and the WHITE wire is input to the scale (RX). For more information about this feature, please contact Right Weigh Technical Support listed on page 2.

POWER (9-32V) · GROUND · RS232 TX · RS232 RX

⚠ DO NOT connect directly to a battery or any constant power source, gauge should be connected to a switched source so that it can be disconnected from power when not in use. Most users connect the power to vehicle marker lights or the AUX/ABS wire.

Electrical connections MUST be insulated, see appendix B for instructions.

The next few pages cover the operation modes that are built into the 201-EBT-01(B). The load scale can only be setup in one operating mode at a time. If the mode is changed, the calibration data will be reset to factory defaults, requiring re-calibration.

- Sensor Average Mode (AVG): This is the default mode of the scale. It will give you a single weight for the axle group it is attached to.

- Sensor Average + Estimated Steer Mode (S-AVG): For monitoring the weight of a drive axle group and also calculating an estimated steer axle weight based on the weight ratio between the drive axle group and the steer axle.

- Multiple Calibration Mode (4CAL):   Four sets of calibration data can be stored for use when the axle group is weighed under different conditions, such as when an integrated air ride lift axle is used on the same HCV.

CHANGING SCALE MODES

1

With the scale OFF, hold both the UP and DOWN arrow buttons, and press the ON/OFF button. Release all 3 buttons. The scale will display the current mode.

PRESS

HOLDING

2

Press the UP arrow button to cycle through the configuration modes. To confirm your selection, turn the scale off by pressing the ON/OFF button.

PRESS

8

SENSOR AVERAGE + ESTIMATED STEER MODE (S-AVG)

In Estimated Steer mode, a 201-EBT-01(B) installed on a single height control valve tractor to monitor the drive axle group can also estimate the steer axle weight. In this mode, there is a small number in the lower left of the display - either 1, 2, or 1 & 2 simultaneously - to let you know which axle group is being displayed. Axle group 1 displays the estimated steer axle weight, axle group 2 is the drive axle group weight, and 1 & 2 are the two weights combined.

MENU *i* **ENTER**   Use the MENU button to switch the display between the axle groups.

EST. STEER AXLE WEIGHT   DRIVE AXLE WEIGHT   TOTAL WEIGHT

⚠ Estimated steer is NOT for straight trucks or anyone who slides their fifth wheel regularly
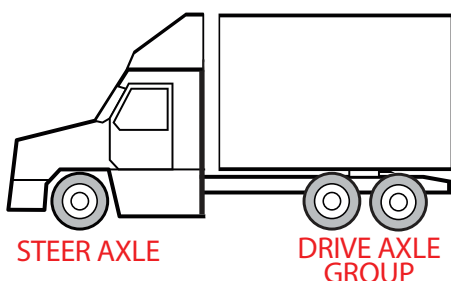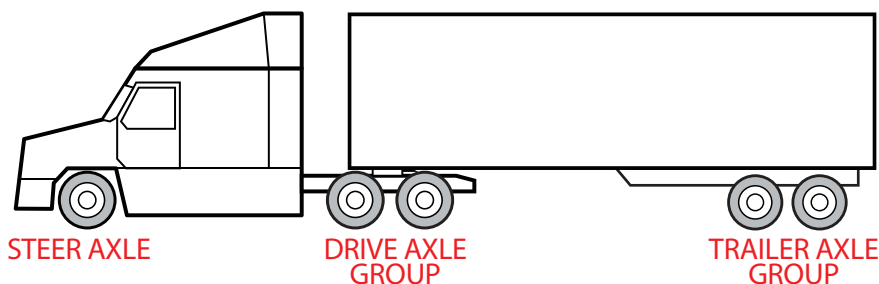
MULTIPLE CALIBRATION MODE (4CAL)

The 201-EBT-01(B) digital load scale in Multiple Calibration mode (4CAL) can store 4 sets of calibration data. This can be useful for an axle group which has one or more integrated air ride lift axle(s) using the same HCV, or a suspension which has many operating conditions.

For example, on some 4-axle heavy-haul trailers, there are 2 fixed axles, a lift axle, and a flip axle all on the same HCV. Many operators use calibration set "2" when only 2 axles are down, calibration set "3" when 3 axles are down, and calibration set "4" when all 4 axles are down.

MENU *i* **ENTER**   Use the MENU button to switch the display between the different calibration sets.

CALIBRATION

The 201-EBT-01(B) load scale must be calibrated both empty and loaded to work properly. The scale associates the air pressure in the suspension system to the weight you enter at the time of calibration. You will need to calibrate once while the vehicle is empty, and again while the vehicle is loaded for each axle group being monitored.

STEER AXLE   DRIVE AXLE GROUP   TRAILER AXLE GROUP

STEER AXLE   DRIVE AXLE GROUP

⚠ Only enter on-the-ground weight of axle or group being monitored. DO NOT use gross weight, tare weight, etc.

Follow calibration steps on the next page, once these are complete the gauge will be ready to use!

CHANGING UNITS

With the gauge on, hold the UP ARROW and then press the MENU button. This will toggle the settings between pounds and kilograms.

4 + MENU *i* ENTER

EMPTY CALIBRATION POINT

1: While the vehicle is empty, obtain axle group weights from a certified in-ground scale.

2: Park on a level surface. Shift the transmission to neutral and set the parking brakes. Chock the wheels to prevent unexpected vehicle movement, then release the parking and service brakes.

3: Make sure the Height Control Valve (HCV) has fully inflated the air bags. If needed, briefly dump the air from the suspension and allow the HCV to refill the system.

ON/OFF 4: Press the ON/OFF button to turn on the Right Weigh load scale.

MENU ENTER 5: For S-AVG and 4CAL modes, press the blue MENU button to select the proper axle group or calibration set.

C LOW 6: Press and hold the C LOW button until the "C/L" symbol appears.

7: Adjust the value using the UP and DOWN arrows so that it matches your scale ticket for the axle group.

C LOW 8: To save, press and hold the C LOW button until the "C/L" symbol disappears.

9: Repeat steps 5-8 for all axle groups or calibration sets.

LOADED CALIBRATION POINT

Repeat "empty calibration point" steps 1-3 with the vehicle fully loaded.

ON/OFF 4: Press the ON/OFF button to turn on the Right Weigh load scale.

MENU ENTER 5: For S-AVG and 4CAL modes, press the blue MENU button to select the proper axle group or calibration set.

C HIGH 6: Press and hold the C HIGH button until the "C/H" symbol appears.

7: Adjust the value using the UP and DOWN arrows so that it matches your scale ticket for the axle group.

C HIGH 8: To save, press and hold the C HIGH button until the "C/H" symbol disappears.

9: Repeat steps 5-8 for all axle groups or calibration sets.

Follow these steps while weighing your vehicle:

1: Park on a level surface. Shift the transmission to neutral and set the parking brakes.

2: Chock the wheels to prevent unexpected vehicle movement, then release the parking and service brakes.

3: Make sure the Height Control Valve (HCV) has fully inflated the air bags. If needed, briefly dump the air from the suspension and allow the HCV to refill the system. (This may take several minutes depending on the type of HCV.)

4: Press the ON/OFF button to turn on the Right Weigh load scale.

5: Adjust the suspension or the load itself until the Right Weigh load scale displays a weight value below your legal limit.
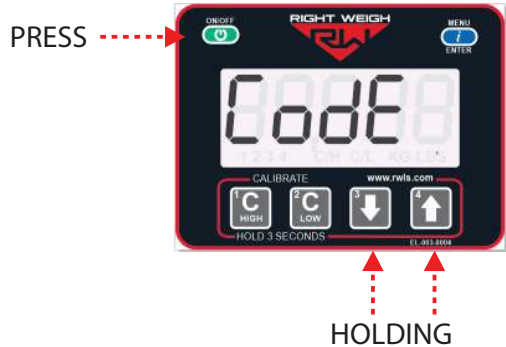
6: For S-AVG and 4CAL, press the blue MENU button. Repeat for drive axle group or other configurations.

7: Press the ON/OFF button to turn off the Right Weigh load scale.

1

With the gauge off, hold both the C LOW and C HIGH buttons, then press the ON/OFF button and release all three.

PRESS

HOLDING

2

Press the MENU button and "00000" will display on the screen. Enter a 5 digit PIN code using the 1, 2, 3, and 4 buttons. Press the MENU button again to save the code.

If the display shows "-----", then there is already a code set. See next page to change existing PIN code

PRESS

CHANGE SECURITY PIN CODE

1

With the gauge off, hold both the C LOW and C HIGH buttons, then press the ON/OFF button and release all three.

PRESS

HOLDING

2

Press the MENU button and "-----" will display on the screen. Enter the previous PIN code. If the code entered is correct, the display will show "Good".

PRESS

3

Press the MENU button and enter the new 5-digit PIN code using the 1, 2, 3, and 4 buttons. Press the MENU button again to save the code.

PRESS

OVERWEIGHT WARNING

The overweight warning can be added as a visual warning to the driver to flash anytime the gauge reads above a set weight.

1

With the scale turned on, press and hold both the C HIGH and C LOW buttons until the "C/H" symbol appears.

HOLD

2

The default display will show "0". Setting this to "0" will turn off the overweight feature.

3

Use the UP and DOWN arrows to set the desired warning weight. Press and hold the C HIGH and C LOW buttons to save.

HOLD TO SAVE   ADJUST

⚠ Setting the warning value to "0" will disable the overweight warning feature

Go to the Google Play or App Store and download the Right Weigh App!

Once the Right Weigh Load Scales app has been downloaded onto your smart device, follow these steps to connect to your scale.

1

With the gauge off, hold down the MENU button, press the ON/OFF button, and release both simultaneously.

PRESS ····> <···· HOLD

2

Press the MENU button twice to see the unique identifier. This identifier will appear in the factory-set scale name and the scale ID displayed in the app.
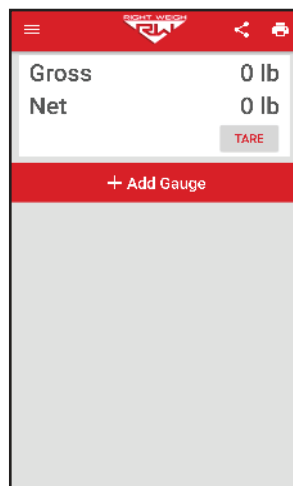
 <···· PRESS x2

3

Once the app has been downloaded and opened, you will see the home screen with no gauge connected to it and a gross weight of "0".

The Bluetooth connection range is between 30 to 75 meters or more, depending on the device brand and version, line of sight to the scale, and material interferences. A direct line-of-sight with no metal or concrete interference will provide the best possible signal. Metal or concrete obstructions will reduce the signal strength. Signal strength further degrades as more or thicker obstructions are added between the smart device and the load scale.
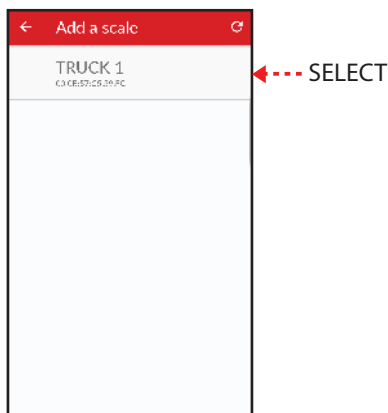
4

On the app home screen, press the "Add Gauge" button and choose whether the gauge is connected to the truck or trailer.
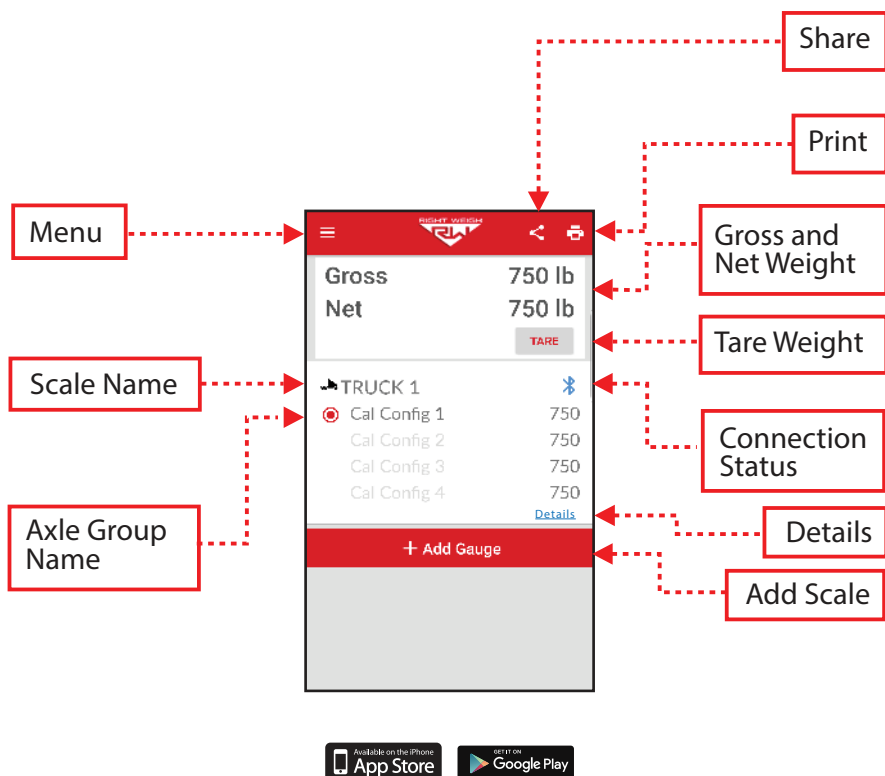
PRESS

CHOOSE

5

Look for the gauge with the name containing the unique identifier found in step 2. Select the appropriate gauge to add it to the home screen.

SELECT

RWLS APP - HOME

HOME SCREEN

Share

Print

Menu

Gross and
Net Weight

Tare Weight

Scale Name

Connection
Status

Axle Group
Name

Details

Add Scale

Gross 750 lb
Net 750 lb
TARE

TRUCK 1
Cal Config 1 750
Cal Config 2 750
Cal Config 3 750
Cal Config 4 750
Details

+ Add Gauge

Available on the iPhone
App Store

GET IT ON
Google Play

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MENU

The menu button opens a menu with three selections, View Data - view the data logged by the optional data saving feature found under Settings. Settings - see page 21 for more info. Contact Us - contact information to Right Weigh technical support. The app version number is also displayed at the bottom of the menu.

SHARE

The share icon will allow you to send your weight data via email or text message.

PRINT

The print icon will allow you to print a weight receipt to most Bluetooth "POS" receipt printers with your weight data and location on it.

GROSS AND NET WEIGHT

Gross weight is the total weight of all monitored axle groups from all connected gauges. Net weight is the net change in gross weight since the tare button was last pressed.

TARE

Pressing the "TARE" button will zero the net weight. Press "TARE" before loading to see how much commodity has been loaded on the vehicle. All of the vehicle's axles must be monitored for a correct gross or net weight.

SCALE NAME

Once you have connected the gauge to your phone app, the scale name will display here.

AXLE GROUP NAME

These names represent the axle groups being monitored and are dependent on the operating mode of the scale.

CONNECTION STATUS

A blue icon means the scale is connected. If the icon is gray, the scale has been disconnected or is out of range and pressing the refresh icon will allow the app to attempt to reconnect.

DETAILS

Clicking on the Details button will send you to a details page with more information on the scale status and will allow you to set the scale name.

ADD SCALE

Once your scale has been connected to power, click the "+ Add Gauge" button to scan for and connect to each scale on your vehicle. Be sure to add them in the order they appear on your vehicle.

To get to the scale details screen:

iOS devices: press the details link shown below the axle weights on the home screen.
Android devices: press on the scale name shown on the home screen.

This page will display information for that specific scale and includes the ability to rename the scale.

DELETE SCALE

Select this icon to disconnect the scale from the device and remove it from the home screen

SCALE NAME

To re-name the scale, select the pencil icon to the right. When finished, press "OK" to save. If the name doesn't change, try deleting the scale and re-adding it on the app

If there is a PIN code previously set on the gauge, follow steps 1 and 2 on page 14 to unlock the gauge before beginning
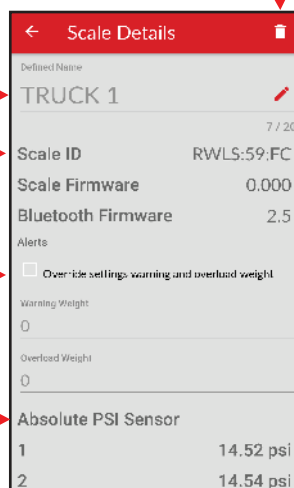
SCALE INFORMATION

Under the scale name, you can find the scale's unique identifier, firmware version, and Bluetooth version

WARNING AND OVERLOAD WEIGHTS

These weights are typically set in the "Settings" menu of the app, but here they can be overwritten for each scale individually
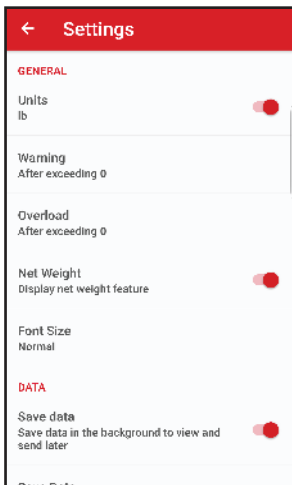
Android App Shown

SENSOR VALUES

Here you can find the psi value for each air sensor. Weight information will also be displayed below these values

To get to the settings screen, press the menu button on the top left of the home screen and navigate to "Settings"
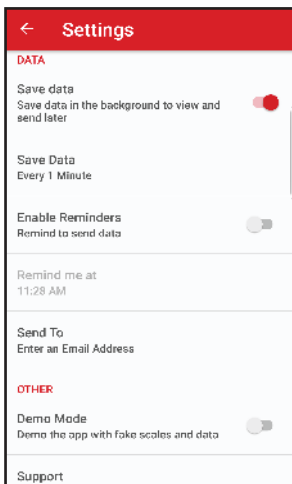

Android App Shown

CHANGING UNITS

Change the units to either pounds (LB) or kilograms (KG)

SET WARNING AND OVERLOAD WEIGHTS

Set warning and overload weight limit defaults

NET WEIGHT

Toggle the net weight feature on/off. The net weight feature is an additional weight display on the home screen that shows net change in gross weight since the "TARE" button was last pressed.
Pressing "TARE" does not affect calibration and can be pressed anytime

Android App Shown

DATA SAVING

Specify data saving and where to send the information to

DEMO MODE

Turn on demo mode to see all the app features without connecting to a gauge

PROBLEM WITH THE GAUGE?

Below is a list of problems we have seen with a simple fix. If you don't see your problem listed here or our troubleshooting doesn't fix your problem, call Right Weigh Tech Support listed on page 2 for further assistance!

ERRATIC / INACCURATE READINGS

<u>The vehicle is not parked on a level surface:</u>
Parking on sloped or banked surfaces will cause the vehicle weight distribution to shift between the axle groups.

<u>The vehicle's brakes are on:</u>
When the vehicle brakes are set, they could apply additional pressure or torque on the suspension air bags. This will cause the suspension to have a different air pressure than what is normally needed to hold up the given weight.

<u>The vehicle is parked on an uneven or rough surface:</u>
If one or more of the vehicle's wheels are in a pothole, that could result in additional pressure or torque on the suspension air bags. This will cause the suspension to have a different air pressure than what is noramlly needed to hold up the given weight.

<u>There is a significant air leak in the suspension system:</u>
This could cause the HCV to refill the suspension at regular intervals to maintain the vehicle's ride height. If there is a significant leak, the gauge display will slowly decrease in value and then quickly increase in value when the HCV refills the suspension system.

<u>The Height Control Valve (HCV) is malfunctioning or broken:</u>
If the HCV is not functioning correctly, the air pressure applied to the suspension system could be inconsistent and/or erratic. To test for an HCV problem, acquire a weight reading from the Right Weigh gauge and write it down (refer to gauge operating instructions for proper procedure). Drive the vehicle around the block and return to the same location. Acquire a second reading from the Right Weigh gauge. If the two readings are significantly different, then the HCV might be malfunctioning.

SCALE DISPLAY IS BLINKING

<u>Current weight is above the alarm limit programmed by the user:</u>
With scale on, press and hold the 1 & 2 buttons simultaneously. The display will show the alarm limit weight. To remove the alarm weight, set this number to 0 using the down arrow, and then hold 1 & 2 again until the display is cleared.

APP WON'T CONNECT TO THE GAUGE

Scale is connected to a constant power source:
The gauge should never be connected to a constant power source, rewire so that it is connected to a switched power source. If the gauge is powered too long it can stop transmitting a Bluetooth signal and may need to be disconnected and reconnected to work again.

Scale is already connected to another device:
The scale can only connect to one device at a time

Phone needs to be re-set:
To reset your phone - close the app, turn off Bluetooth, and wait 10 seconds. Then open the app and turn the Bluetooth back on. Try rescanning for the scale. If this still doesn't work, in some cases it is necessary to restart the phone completely.

SCALE DOES NOT POWER ON

Scale is not connected to a switched power source of between 9 and 32 volts:
If there is a bad connection in the circuit which causes voltage to drop below 9 volts, the scale will not power on. Test the power source with a voltmeter.

Scale connected directly to battery:
The scale is active anytime it is connected to power, even if the display is off. To reset it, disconnect and reconnect the power source, wait 10 seconds, then try again to turn the display on.

Polarity is incorrect:
The red wire must be connected to positive and the black to negative.

CANNOT CHANGE CALIBRATION DATA

The scale has an active user-defined security PIN:
If the scale is protected with a PIN code, the PIN must be entered before calibration data can be changed. The scale will display "CodE" and the previously set 5-digit PIN code must be entered to change the data.

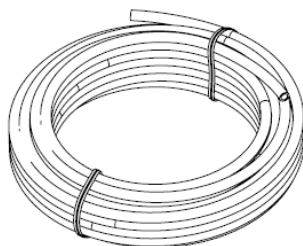# GAUGE WILL NOT CALIBRATE LOW/HIGH

Air pressure in the system is not changing:
To enter low or high cal mode, the gauge must see a measurable change in air pressure. Make sure you calibrate high when the vehicle is near the legal limit and calibrate low when the truck is empty. Also, be sure the air line is connected directly to an air bag NOT the main air supply or brake system.
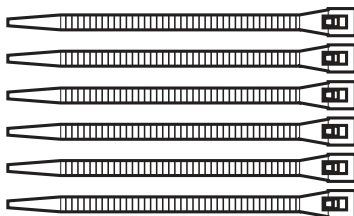
The following is a list of additional parts needed for air line installation. This list is just a suggestion and may not be all of the parts needed for your specific vehicle. Check with your Right Weigh dealer for optional installation kits.

1/4 Inch Air Line
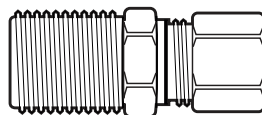Approximately 20 to 30 feet (6 to 9 meters)
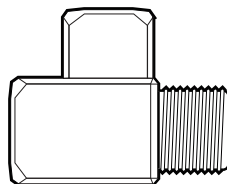
20 or more Zip Ties

Male Straight Fitting
Air line fitting for 1/4" air line, with a thread size to match the street tee fitting.
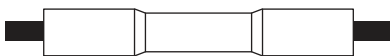
Street Tee Fitting
The thread size should match the air bag fitting. (1/4" NPT or 3/8" NPT)

It is very important that all wiring connections be made watertight. Connections which are not watertight can allow moisture to travel through the individual strands of the wires and make it's way into the scale, causing permanent damage to the electronics.

Heat shrinkable splices are included in the 201-SK Installation Kit.

Crimp each end of the wire into the connector with a wire crimp tool (tool not provided).

After crimping and heat shrinking

With a heat gun or heat torch, heat the connector until it shrinks completely around each wire end. Make sure you do not burn the wire jacket.

Add heat shrink

After heat shrinking

After all connections have been made, heat shrink the entire group of splices so that it seals on the outer jacket of both cables.

WARRANTY

Right Weigh is committed to providing quality products that function as intended, and we always stand behind our workmanship. Our industry leading warranty is our best effort to express this commitment. Products manufactured or sold by Right Weigh, Inc. are warrantied to be free from significant defects in material and workmanship 3 years from date of purchase. During this time, and within the boundaries set forth in this warranty statement, Right Weigh, Inc. will, at its sole discretion, correct the product problem or replace the product.

This warranty shall not apply to product problems resulting from: (1) Improper application, installation, incorrect wiring, or operation outside of the approved specifications of the product. (2) Accidents, faulty suspension parts or power surges (3) Inadequate maintenance or preparation by the buyer or user (4) Abuse, misuse, or unauthorized modification. (5) Acts of God, lightning strike, floods, fire, earthquake, etc.

Right Weigh, Inc. assumes no responsibility or liability for any loss or damages resulting from use of Right Weigh, Inc. products.

In no event shall Right Weigh, Inc. be liable for direct, indirect, special, incidental or consequential damages (including loss of profits or loss of time) resulting from the performance of a Right Weigh, Inc. product. In all cases, Right Weigh, Inc. liability will be limited to the original cost of the product in question. Right Weigh, Inc. reserves the right to make improvements in design, construction, and appearance of products without notice.

Return Policy and Authorization

Before returning any product, please obtain a Return Merchandise Authorization number (RMA#) by calling Customer Service at 503-628-0838 or e-mailing support@rwls.com. Include the RMA# and information regarding the reason for the return with the returned product. Shipping costs for returns must be prepaid by the customer. For your protection, items must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Right Weigh, Inc. will not be responsible for damage resulting from careless or insufficient packing or loss in transit.

An RMA# must be obtained by the original purchaser before any product can be returned. Only new, unused products may be returned. Installed, used, damaged, modified or customized products can not be returned for credit. Credit will be issued to the original purchaser after evaluation by Right Weigh, Inc.

Repairs/Replacements

An RMA# must be obtained before any product can be returned. Right Weigh, Inc. will evaluate returned products at no charge. If Right Weigh, Inc. determines that the returned product is under warranty it will repair the product or parts thereof at no charge, or if unrepairable, replace it with the same or functionally equivalent product whenever possible. Right Weigh, Inc. will return the product at its expense via a shipping method (carrier to be at sole discretion of Right Weigh, Inc.) equal to or faster than the method used by the customer. Products or parts thereof not covered by warranty will be repaired or replaced at customer expense upon authorization by the customer. Right Weigh, Inc. will return the repaired product at customer expense via a shipping method (carrier to be at sole discretion of Right Weigh, Inc.) equal to or faster than the method used by the customer.

For additional support contact:

<u>United States and Canada:</u>

Right Weigh, Inc.

(503) 628-0838

(888) 818-2058 - Toll Free (USA ONLY)

www.rwls.com

support@rwls.com