

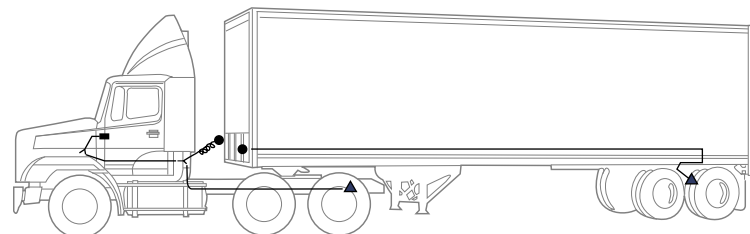
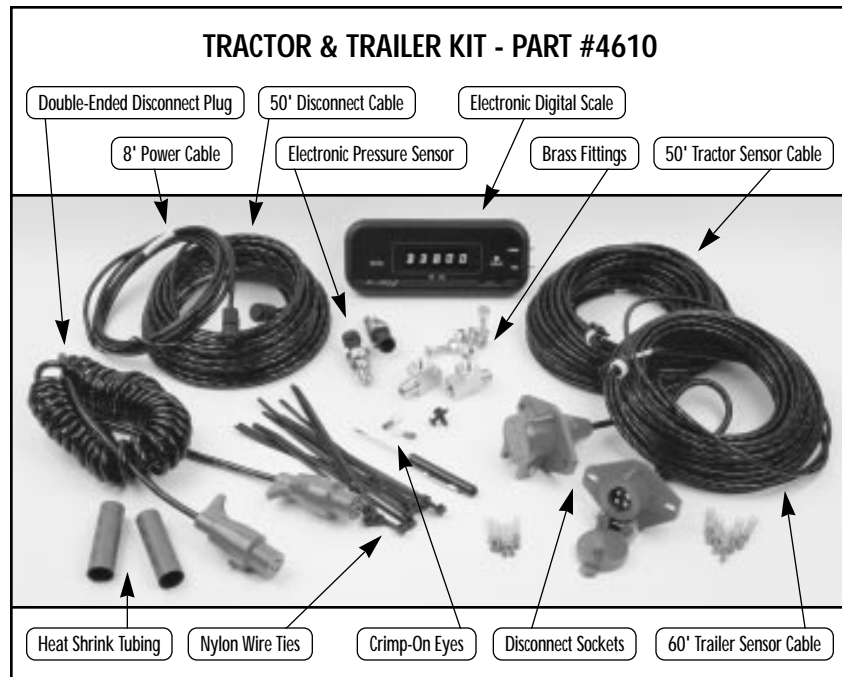


THE ACCURATE ON-BOARD ELECTRONIC SCALE
for Air-Ride Trucks & TrailersSM

AW 4600 MODEL

PATENTS #5,478,974; #623,635; #4,832,141

INSTALLATION • CALIBRATION • OPERATION



PARTS LIST Check the parts you need in the columns corresponding to the kit you will be installing.

PART DESCRIPTION & NUMBER	TRACTOR & TRAILER KIT 4610	TRACTOR ONLY KIT 4600	TRAILER ADD-ON KIT 4635	DUAL SENSOR PROCESSOR PKG. KIT 4655
Scale, Digital Electronic 050-4620	1	1		
Mounting Screws 131-4020	2	2		
8' Power Cable 010-8007	1	1		
50' Disconnect Cable 010-8006	1	1		
50' Tractor Sensor Cable 010-8003	1	1		
60' Trailer Sensor Cable 010-8004	1		1	
Pressure Sensor 010-9080	2	1	1	1
60' Dual Sensor Cable 010-8015				1
6' Sensor Cable 010-8002				1
Dual Sensor Processor 050-4026				1
Disconnect Socket 010-4570	2		2	
Disconnect Socket Mounting Bolt 131-4065	4		4	4
Disconnect Socket Mounting Nut 132-4070	4		4	4
15' Double-Ended Disconnect Plug 010-4568	1		1	
Brass Street Tee 150-4057	2	1	1	1
Nylon Wire Ties 145-4552	75	50	25	10
Crimp-On Eyes 139-4054	2	2		
3/4" Heat Shrink Tube - Adhesive 380-0075	2	1	2	
SolderGrips (Large - Red Tip) 010-5021	5		5	
SolderGrips (Small - Green Tip) 010-4521	5	5	5	
Calibration Screwdriver	1	1		
Installation Manual	1	1	1	1

SPECIFICATIONS

Input: Scale power input: 8 - 30 VDC
Sensor: 0-150 psi range
Operating Temperature: -30° to +80° C
Fitting Size: 1/4" NPT

Dimensions: Scale - 7" x 2-1/2" x 3/4"
Installation: Torque all fittings to 25 ft. lbs.
 Wrap all male fittings with at least two wraps of Teflon tape.

AIR-WEIGH PRODUCT SUPPORT

If you cannot correct a problem, or you suspect you have a malfunctioning part, please contact AIR-WEIGH PRODUCT SUPPORT at (800) 938-2500, Monday-Friday, 8 am - 5 pm Pacific Time. Outside U.S. and Canada, please call (541) 342-1521.

LIMITED WARRANTY

Your Hi-Tech Transport Electronics product is warranted against defects in materials or workmanship for one year from the date of the original purchase. Any Hi-Tech Transport Electronics product, which, because of a manufacturing mistake, malfunction or proves to be defective within the one year warranty period, will be repaired or replaced, at Hi-Tech Transport Electronics' option, and at no charge to you, provided it is returned to Hi-Tech Transport Electronics with proof of purchase.

use, abuse, misuse, or failure to comply with installation or operating instructions. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above warranty does not apply in those states. This warranty gives you specific legal rights and you may also have other rights, which vary state to state.

For repairs or replacement, please return the defective part of your Hi-Tech Transport Electronics product with proof of purchase to: Hi-Tech Transport Electronics, Product Support Department, 2895 Chad Drive, Eugene, Oregon 97408, USA.

This warranty does not cover incidental or consequential damage to persons or property caused by

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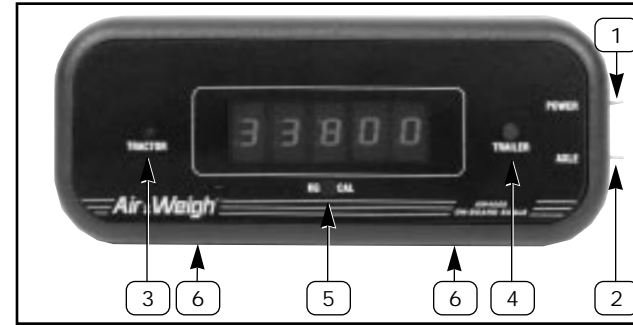
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May 1997

HOW IT WORKS

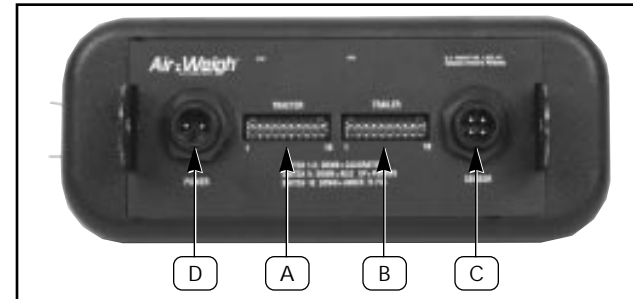
The patented Air-Weigh 4600 scale converts truck and trailer air-spring air pressure to an accurate weight display. The scale determines how much weight per pound of air pressure your suspension is supporting by comparing empty and loaded vehicle weights with the air pressure required to support those weights.

Once calibrated, the scale will display the on-the-ground weight of each axle group to within 300 - 400 lbs. (150 kilos) of an accurate, platform scale. To some extent, accuracy depends on weighing on a flat and level surface and the physical characteristics of the air suspension system itself.



FRONT PANEL FUNCTIONS

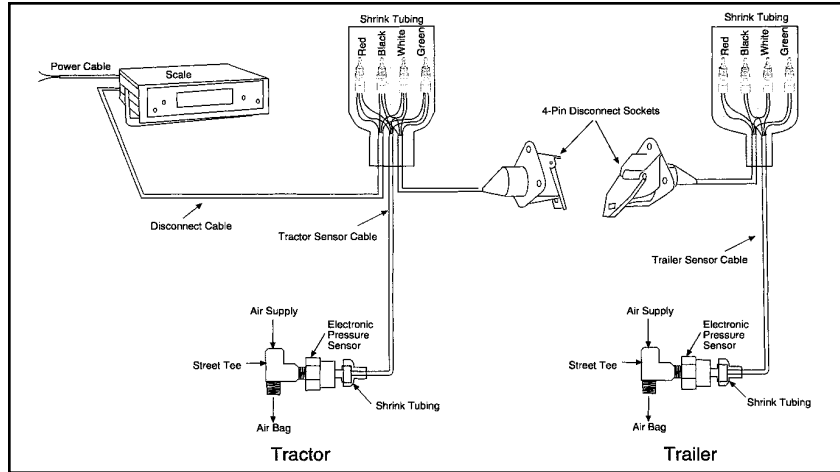
- 1. Power Switch:** UP position applies power to scale system.
- 2. Axle Switch:** UP position displays tractor drive axle group weight. CENTER position scans between tractor and trailer axle weights. DOWN position displays trailer axle group weight.
- 3. Tractor Light:** ON indicates tractor weight being displayed.
- 4. Trailer Light:** ON indicates trailer weight being displayed.
- 5. Kg/Cal Light:** ON indicates scale is in calibration mode or displaying weights in kilograms.
- 6. Fine Tune Adjustments:** Fine tunes tractor and trailer weight displays to closest 100 lbs./kgs.



REAR PANEL FUNCTIONS

- A. TRACTOR Dip Switches:** Combination of UP (U) and DOWN (D) switch positions sets TRACTOR channel to a corresponding calibration setting, as indicated on page 8. **Switches 1 - 7:** All DOWN = Calibration Mode. **Switch 8** controls calibration setting: UP = Calibration DOWN = Weight. **Switch 9** controls lbs./kgs. setting: UP = Pound DOWN = Kilo. **Switch 10** controls display increments: DOWN = Maximum Sensitivity.
- B. TRAILER Dip Switches:** Same as above, but sets TRAILER channel to a corresponding calibration setting. In most cases, TRACTOR and TRAILER dip switches will be set to different calibration settings.
- C. SENSOR Input Socket:** This connection provides power to, and receives signals from, the pressure sensors.
- D. POWER Input Socket:** This connection provides power and ground to the scale.

INSTALLATION INSTRUCTIONS



Note: If you're installing a TRACTOR ONLY Kit, you may connect the TRACTOR Sensor Cable directly to the scale's Disconnect Cable, instead of routing to the back of the Disconnect Socket. You may use the SolderGrips in your kit to simplify your wiring connections. See SolderGrip instructions.

1 INSTALL THE SCALE

Step 1: Select location for scale and mount bracket.

Step 2: Route and connect Power Cable from scale to reliable 12VDC and ground sources. Red = Power. Black = Ground.

Step 3: Route 50' Disconnect Cable from scale to tractor mounted Disconnect Socket location. Cable may be cut to length. Do not connect to socket yet.

2 INSTALL THE SENSORS

Note: If you have two height control valves (left and right sides) on a single axle group, you must install an Air-Weigh Dual Sensor Processor Kit to combine the pressure signals from both valve systems into a single axle group sensor signal.

Note: Your kit includes a 50' TRACTOR Sensor Cable and a 60' TRAILER Sensor Cable. You may cut these cables to length, but you MUST use the TRACTOR Sensor Cable on the TRACTOR sensor and the TRAILER Sensor Cable on the TRAILER sensor, because the cable connectors are wired differently to send the sensor signals to the correct channel in the scale. The TRACTOR Sensor signal uses the green wire. The TRAILER Sensor signal uses the white wire.

Step 1: Exhaust air pressure from suspension.

Step 2: Locate convenient access to suspension air lines, normally at an airbag.

Step 3: Disconnect air line and install the brass street tee in the airbag fitting. Wrap Teflon tape around fitting to prevent air leak. Reattach air line to TOP of street tee fitting.

Step 4:

Attach pressure sensor, with Teflon wrap, to SIDE of street tee fitting. It is important that the sensor be mounted horizontally to reduce water access to its connections.



Step 5: Plug TRACTOR Sensor Cable into TRACTOR sensor. Plug TRAILER Sensor Cable into TRAILER sensor.

Step 6:

Use tie-wraps to form a dip in the Sensor Cable near the sensor to prevent water from running down the cable into the sensor socket.



Step 7: Route the loose end of the Sensor Cables to Disconnect Socket locations on the tractor and the trailer. Cables may be cut to length.

3 INSTALL 4-PIN DISCONNECT SOCKET

Note: You only need to install the Disconnect Sockets if you are installing the Air-Weigh scale on your TRAILER. Remember to grease and maintain sockets.

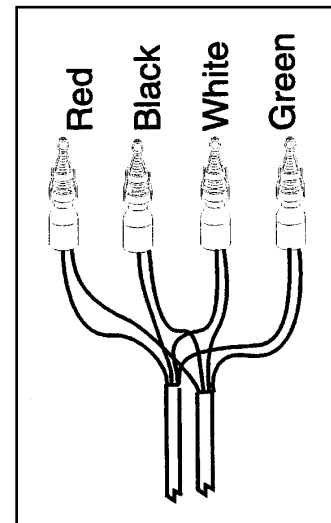
Step 1: Drill mounting holes in convenient locations.

Step 2: Route Sensor Cables to Disconnect Sockets. You may cut to length.

Note: You will be routing both the TRACTOR Sensor Cable and the Scale Disconnect Cable to the back of the TRACTOR Disconnect Socket, so each solder connection will have three like-colored wires (red to red, black to black, white to white, green to green to green).

Step 3: Prepare to solder the wires by sliding a large piece of heatshrink over the wires for use after the connections have been made.

Step 4: Solder the like-colored wires together (red to red, black to black, white to white, green to green).



Note: You may use the SolderGrips in your kit to simplify your wiring connections. See SolderGrip instructions.

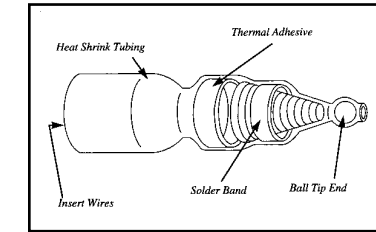
Step 5: Finish off the installation by protecting the solder connections with the heatshrink and securing the wiring with tie-wraps.

USING THE SOLDERGRIPS

SolderGrips function much like household wiring wire-nuts, except that the SolderGrips also have heat-sensitive solder and sealant.

Note: Use the LARGE size SolderGrip (red tip) with a THREE-wire connection.

Step 1: Strip 3/8" of insulation from each wire.



Step 2: Insert wires all the way into the SolderGrip, twisting until snug.

Step 3: Holding the SolderGrip horizontally, heat the ball tip of the connector until the solder band melts and flows. Then heat the remainder of the connector until the plastic shrinks around the wires and the adhesive flows out the end. Do not overheat and create bubbles in SolderGrip.



CALIBRATION

Air-Weigh's unique, patented calibration and weighing method enables any vehicle with a height control, or leveling valve to accurately display on-the-ground weights.

During calibration, you will compare the differences in air pressure in the air suspension system to the differences in vehicle weights. In the calibration mode, your Air-Weigh 4600 scale will display a reading that represents air pressure to a tenth of a point (note the decimal point in the display when in calibration mode).

You will use the Calibration Worksheet on page 7 to write the scale's air pressure readings and certified weights for empty/loaded and tractor/trailer calibrations. Keep a record of your calibration worksheet for future reference. Complete the Calibration Worksheet to determine Dip Switch settings, then fine tune the weight display to the closest 100 lbs./kgs.

Notes:

1. Your Air-Weigh scale will only be as accurate as the commercial scale you use to check-weigh during calibration. Ideally, you would use the same commercial scale to weigh both empty and loaded.
2. An integral part to on-board weighing accuracy is the ability of the vehicle's height control, or leveling valves to return the frame of the vehicle to the precise factory-specified ride height after loading or unloading.
3. **LIFT AXLES:** Tractors or trailers equipped with lift axles should always be calibrated and weighed with the lift axles in the UP position. As the lift axle is lowered, you can determine the amount of weight it is supporting by seeing how much weight is transferred off the weighing axles and onto other axles.
4. When calibrating the loaded weight, the vehicle does not need to be fully loaded, but the greater the difference between empty and loaded weights, the more accurate your scale will be. Once calibrated, your Air-Weigh scale will accurately display weights up to 99,900 lbs./kgs. per axle group.
5. Do not include the steer axle in your tractor weight calibration.
6. When calibrating and weighing, the vehicle should be on a flat and level surface. It should have the brakes released to prevent binding in the air suspension system. Block the tires. The motor should be idling. The air suspension system should be fully inflated to factory-specified ride height.

TO CALIBRATE

Note: You may begin calibrating either when empty or loaded, but you must calibrate for both empty AND loaded. For the most accurate weight display, fine tune ONLY when the vehicle is heavily loaded.

Step 1: Weigh the vehicle at a reliable certified scale. **Set Dip Switches on rear panel to Calibration positions (Switches 1 - 10 = DDDDDDDUUD).**

Set AXLE toggle switch (on right edge of scale) to TRACTOR (tractor light is lit). Weigh the drive axles only (you may need to subtract the steer axle weights from the total tractor weight to get a drive axle only weight). Write the Air-Weigh scale pressure reading for the TRACTOR in the appropriate space: empty (1b) or loaded (2b). Fill in the weights in the matching spaces: empty (1a) or loaded (2a).

Pull the vehicle forward to weigh the trailer axles. Set AXLE toggle switch (on right edge of scale) to TRAILER (trailer light is lit). Record the Air-Weigh scale pressure reading for the TRAILER in the appropriate space: empty (1b) or loaded (2b). Fill in the weights in the matching spaces: empty (1a) or loaded (2a).

Step 2: Repeat STEP 1 after the vehicle has been loaded or unloaded. Record the scale pressure readings and weights for tractor and trailer.

Step 3: Determine Net PAYLOAD weight (3a) for tractor and trailer by subtracting the empty weights from the loaded weights.

Step 4: Determine Net PAYLOAD scale pressure reading (3b) for tractor and trailer by subtracting the empty pressure readings from the loaded pressure readings.

Step 5: Determine CALIBRATION NUMBER (4) for tractor and trailer Dip Switch settings by dividing the Net PAYLOAD weight (3a) by the Net PAYLOAD pressure reading (3b).

Step 6: Look up Dip Switch 1 - 7 settings for both Tractor and Trailer on Calibration Chart on back page. Select from either the Pound or Kilogram chart settings.

Step 7: Set the TRACTOR Dip Switches. Set switches 1 - 7 according to the Tractor Calibration Number you noted on your worksheet.

Set switch 8 to DOWN=Weight.
Set switch 9: UP=Pounds DOWN=Kilos.

Set switch 10 to DOWN=Max Sensitivity to display weight in smaller increments. In some cases, if the air pressure in the airbags exceeds 90 psi, switch 10 should be in the UP position for the most accurate weight readings.

Step 8: Set the TRAILER Dip Switches.

Set switches 1 - 7 according to the Trailer Calibration Number you noted on your worksheet.
Set switches 8, 9 and 10 in the same positions as in STEP 7. Switch 10 may be different.

Step 9: Fine tune the digital display to match the LOADED weights of the tractor and

trailer WHILE YOU ARE LOADED. Use adjustments on bottom edge of scale.

Adjust the Tractor Fine Tune by first selecting the TRACTOR display with the AXLE toggle switch, then adjusting the display to the closest 100 lbs./kgs. of the actual weight of the tractor drive axles while loaded.

Switch to the TRAILER display, then adjust the trailer weight display to the closest 100 lbs./kgs.

Calibration is completed. At any time, you can fine tune your weight display to match any certified scale, however certified scales may vary several hundred pounds from one location to another.

This is an example of the Calibration Worksheet filled out for the Tractor Drive Axle (s). To calibrate for the Trailer Axle (s), follow these same steps using the Trailer Axle (s).

Step 2a:
Record Loaded (Gross) Drive Axle Weight (without steering axle weight) in Box 2a.

Step 2b:
Record Air-Weigh scale readout for the Loaded (Gross) Drive Axle in Box 2b.

TRACTOR DRIVE AXLE(S) – Do Not Include Steering Axle				
	(Weight – lbs. or kilos)		(Readout Number – represents pressure, not weight)	
Loaded Drive Axle (s) Weight	2a =	33,860	2b =	58.900
Empty Drive Axle (s) Weight	1a =	10,580	1b =	14.500
PAYLOAD	3a =	23,280	3b =	44.400
			4 =	524

Step 1a:
Record Empty Drive Axle Weight (without steering axle weight) in Box 1a.

Step 1b:
Record the Air-Weigh scale readout for the Empty Drive Axle in Box 1b.

Step 3:
Record Payload Weight in Box 3a. To get Payload Weight, subtract Empty Drive Axle Weight from Loaded Drive Axle Weight.

Step 4:
Record Payload Number in Box 3b. To get Payload Number, subtract Empty Drive Axle Number from Loaded Drive Axle Number.

Step 5:
Record Calibration Number in Box 4. To get Calibration Number, divide Payload Weight by Payload Number.

CALIBRATION WORKSHEET				
WEIGHT FROM CERTIFIED SCALE			READOUT FROM AIR-WEIGH SCALE	
TRACTOR DRIVE AXLE(S) – Do Not Include Steering Axle				
	(Weight – lbs. or kilos)		(Readout Number – represents pressure, not weight)	
Loaded Drive Axle (s) Weight	2a =		2b =	
Empty Drive Axle (s) Weight	1a =		1b =	
PAYLOAD	3a =		3b =	
			4 =	
TRAILER AXLE(S)				
	(Weight – lbs. or kilos)		(Readout Number – represents pressure, not weight)	
Loaded Axle (s) Weight	2a =		2b =	
Empty Axle (s) Weight	1a =		1b =	
PAYLOAD	3a =		3b =	
			4 =	

FOR CALIBRATION NUMBER SETTINGS, SEE CHART ON BACK COVER.

POUNDS & KILOGRAMS CALIBRATION CHART

Calibration Number		Tractor & Trailer Switches								Calibration Number		Tractor & Trailer Switches							
POUNDS	KILOS	1	2	3	4	5	6	7	8	POUNDS	KILOS	1	2	3	4	5	6	7	8
1225	557	U	D	D	D	D	D	D	D	745	339	U	D	D	D	D	U	D	D
1210	550	D	U	D	D	D	D	D	D	730	332	D	U	D	D	D	U	D	D
1195	543	U	U	D	D	D	D	D	D	715	325	U	U	D	D	D	U	D	D
1180	536	D	D	U	D	D	D	D	D	700	319	D	D	U	D	D	U	D	D
1165	530	U	D	U	D	D	D	D	D	685	311	U	D	U	D	D	U	D	D
1150	523	D	U	U	D	D	D	D	D	670	305	D	U	U	D	D	U	D	D
1135	515	U	U	U	D	D	D	D	D	655	298	U	U	U	D	D	U	D	D
1120	509	D	D	D	U	D	D	D	D	640	291	D	D	D	U	D	U	D	D
1105	502	U	D	D	U	D	D	D	D	625	284	U	D	D	U	D	U	D	D
1090	495	D	U	D	U	D	D	D	D	610	277	D	U	D	U	D	U	D	D
1075	489	U	U	D	U	D	D	D	D	595	270	U	U	D	U	D	U	D	D
1060	482	D	D	U	U	D	D	D	D	580	264	D	D	U	U	D	U	D	D
1045	475	U	D	U	U	D	D	D	D	565	257	U	D	U	U	D	U	D	D
1030	468	D	U	U	U	D	D	D	D	550	250	D	U	U	U	D	U	D	D
1015	461	U	U	U	U	D	D	D	D	535	243	U	U	U	U	D	U	D	D
1000	455	D	D	D	D	U	D	D	D	520	236	D	D	D	D	U	U	D	D
985	448	U	D	D	D	U	D	D	D	505	230	U	D	D	D	U	U	D	D
970	441	D	U	D	D	U	D	D	D	490	223	D	U	D	D	U	U	D	D
955	434	U	U	D	U	D	D	D	D	475	216	U	U	D	D	U	U	D	D
940	427	D	D	U	D	U	D	D	D	460	209	D	D	U	D	U	U	D	D
925	420	U	D	U	D	U	D	D	D	445	202	U	D	U	D	U	U	D	D
910	414	D	U	U	U	D	D	D	D	430	195	D	U	U	D	U	U	D	D
895	407	U	U	U	D	U	D	D	D	415	189	U	U	U	D	U	U	D	D
880	400	D	D	D	U	U	D	D	D	400	182	D	D	D	U	U	U	D	D
865	393	U	D	D	U	U	D	D	D	385	175	U	D	D	U	U	U	D	D
850	386	D	U	D	U	U	D	D	D	370	168	D	U	D	U	U	U	D	D
835	380	U	U	D	U	U	D	D	D	355	161	U	U	D	U	U	U	D	D
820	373	D	D	U	U	U	D	D	D	340	155	D	D	U	U	U	U	D	D
805	366	U	D	U	U	U	D	D	D	325	148	U	D	U	U	U	U	D	D
780	355	D	U	U	U	U	D	D	D	310	141	D	U	U	U	U	U	D	D
775	352	U	U	U	U	U	D	D	D	295	134	U	U	U	U	U	U	D	D
760	345	D	D	D	D	D	U	D	D										

TO USE THE CALIBRATION CHART

Find your calibration number (from page 7 worksheet) in one of the columns in this table. Round off to the nearest number. Set the tractor and trailer toggle switches on the back of the scale to the positions indicated. Then use the fine adjustment screws at the front of the scale to fine-tune the digital readout to the nearest 100 pounds (or kilos) of the loaded weights for tractor and trailer.

Note: Toggle Switch 9 displays weight in pounds or kilograms: DOWN = kilograms, UP = pounds.



If you have any questions or want further information about Air-Weigh products, call or write:

Air-Weigh™

U.S. & FOREIGN PATENTS

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for Air-Ride Trucks & Trailers™

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