



WS 260 PRECISION SCALE TM



⚠️ WARNING

TO REDUCE THE RISK OF INJURY OR PRODUCT DAMAGE,
READ OPERATION MANUAL PRIOR TO OPERATING PRODUCT.

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Introduction

Thank you for choosing the WS260 Precision Scale, where innovation meets accuracy. This state-of-the-art measurement tool boasts a robust aluminum construction and provides a wide measurement range, tailored perfectly for the rigorous demands of HVAC-R field service work. With an unwavering commitment to durability, stability, and pinpoint accuracy, the WS260 Precision Scale promises to be an invaluable asset in any professional's toolkit.

From the intricate task of measuring critical charges in mere grams to managing large systems with hundreds of pounds of refrigerant, the WS260 Precision Scale is up to the task. Its easy-to-read backlit digital display ensures you obtain precise readings at a glance. Enhance your measurement experience further by connecting the scale to our dedicated mobile app. With the Appion Central™ app, you can tap into advanced features like data logging, recovery cylinder management, and more, ensuring you stay ahead in the fast-paced world of HVAC-R servicing.

Warnings and Safety Information

- Never store the measuring instrument together with solvents.
- Operate the measuring instrument only within the parameters specified in this manual.
- Do not expose the measuring instruments or equipment to temperatures outside of the stated operating temperatures.
- Use only specified batteries (AA Batteries).
- Do not use leaky or damaged batteries.
- Batteries must only be changed in a non-hazardous area.
- Battery operating temperatures may vary by manufacturer. The batteries supplied with this unit are for storage and operating temperatures between 32°F - 104°F (0°C - 40°C).
- Dispose of batteries in accordance with any applicable local law and regulations.
- Do not dispose of the product or battery in a fire or heat above 212°F (100°C).
- Remove batteries before storing the device for long periods of time.



Refrigerant Storage Container Safety

What Can Happen: Refrigerant storage containers may vent or explode when the working pressure of the container is exceeded.

How To Prevent It: Refrigerant storage containers are designed with different working pressures. Verify that the rating of the storage cylinder is appropriate for the refrigerant being recovered.

For R-410a, 4BA400 and 4BW400 are appropriate ratings for refrigerant storage containers.

What Can Happen: “80% Shut Off Switches,” also known as Tank Overfill Sensors and Overfill Protection Devices, may fail to prevent overfilling of the storage cylinder leading to venting or explosion.

These sensors only cut power to the recovery machine, and do not stop the flow of refrigerant, which may continue due to a siphon, or due to temperature-induced migration.

How To Prevent It: Do not rely on these switches to prevent overfilling. Only a refrigerant scale can provide an active and accurate measurement of the amount of refrigerant in the storage container.

Do not rely on these switches to stop the flow of refrigerant into the container. Only the valves on the recovery machine and on the cylinder can stop the flow of refrigerant into the container.

Refrigerant Storage Container Safety (cont.)

What Can Happen: Refrigerant expands when heated (**Diagram 1**), and storage containers may vent or explode when filled over 80% capacity.

How To Prevent It: A refrigerant scale must be used to monitor the amount of refrigerant in the storage container.

Be sure to close the valves on the storage container when it has reached 80% capacity.

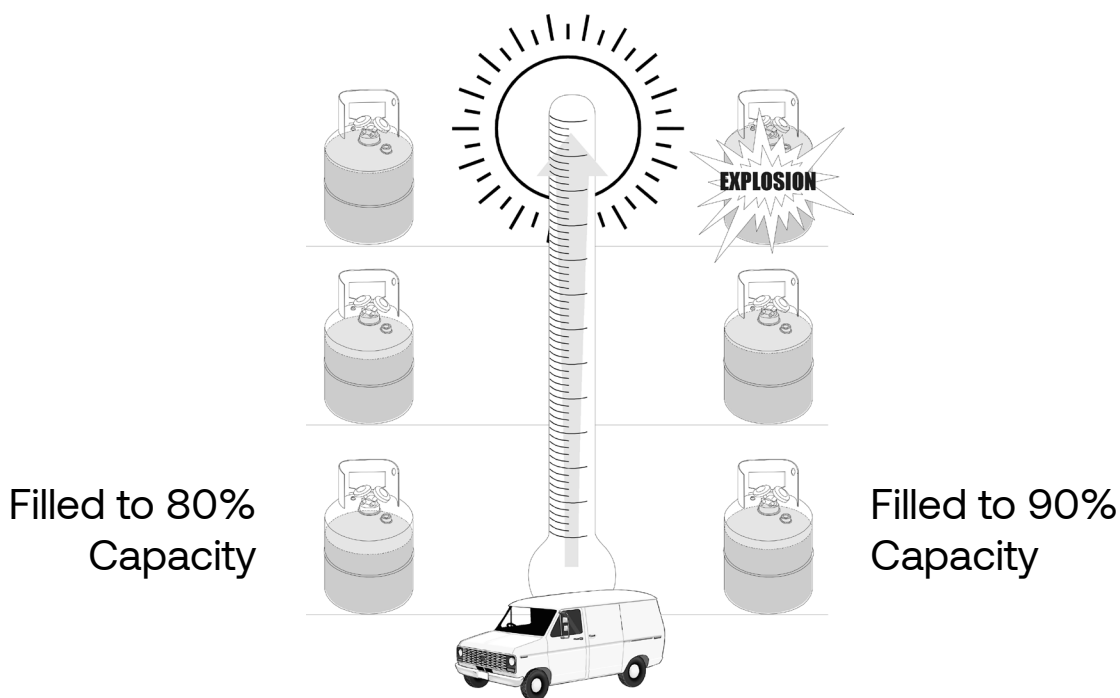


Diagram 1: Overfilled storage containers may explode due to liquid refrigerant expanding when heated.

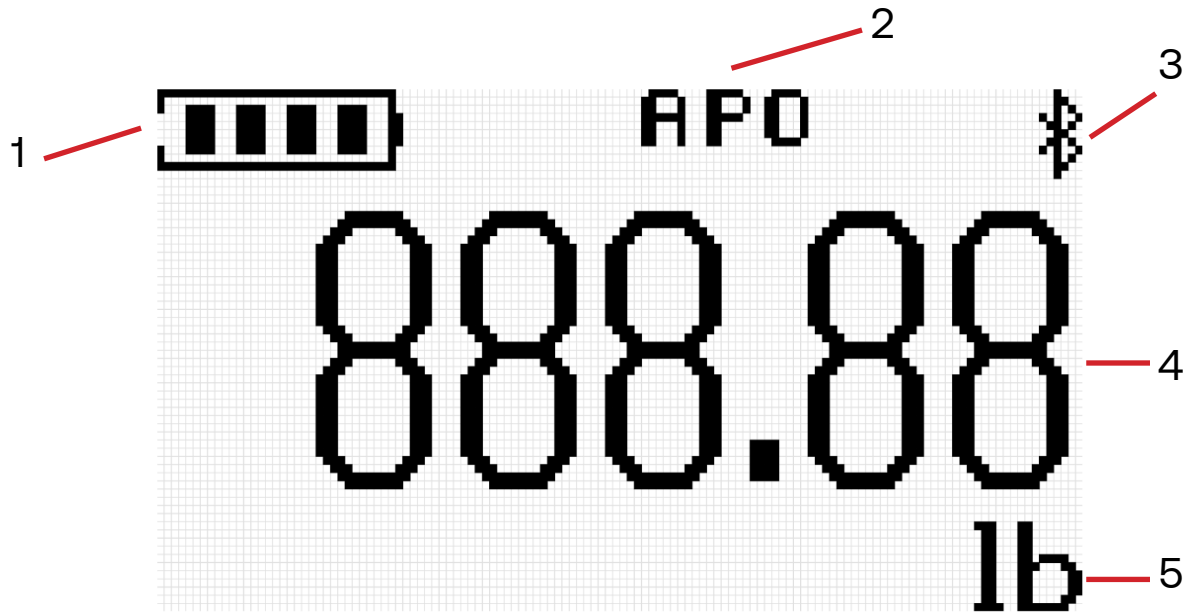
Transportation of refrigerant storage cylinders more than 80% full is a DOT violation.

See Page 25 for information on how to calculate 80% Fill Weight

Main Screen

Main Screen Display: Access the Main Screen by pressing and holding the power button to turn on the scale.

Main Screen Example:



1. Battery Level Indicator
2. Auto Power Off Indicator
3. Bluetooth Indicator
4. Weight
5. Units

General Functions

Button Configuration:

			
Press	Menu, Select Menu Item	Backlight On/Off, Up Key	Down Key
Hold	Scale Power On/Off	Units Selection	Tare Scale
Both	↑ Bluetooth On/Off ↑		
	↑ Auto Power On/Off		↑

1. Quick PRESS a button for the “Press” functions.
2. HOLD a button for 2 seconds for the “Hold” function.
3. Quick press BOTH buttons for the “Both” function.

Power/Menu/Select

- Quick Press
 - Menu
 - From the main screen, press the power button to open the Main Menu.
 - Select
 - Press the power button to select an option.
- Hold 2 Seconds
 - Scale Power On/Off
 - Hold the power button for 2 seconds to power the scale on or off.

General Functions

Backlight/Up/Units

- Quick Press
 - Backlight On/Off
 - *When the backlight is toggled on, the backlight stays on for 2 minutes.*
 - Up
 - *Press the Backlight button to scroll UP through selectable options.*
 - Backlight + Power
 - *Bluetooth Toggle On/Off*
- Hold 2 Seconds
 - Units selection
 - *Press and hold the Backlight button for 2 seconds to select the weight units.*
 - *Press the Backlight/Up and Tare/Down buttons to scroll through selectable units.*
 - *Select the desired unit by pressing the Power button.*

Tare/Down

- Quick Press
 - Down
 - *Press the Tare button to scroll DOWN through selectable options.*
 - Tare + Power
 - *Auto Power Off On/Off*
- Hold 2 Seconds
 - Tare
 - *Press and hold the Tare button for 2 seconds to tare the scale.*
 - *The scale can be tared at any weight.*
 - *A tared zero is stored in the memory, and the tared zero will display after a power cycle.*

General Functions

Tare VS Zero:

- The **Tare** function is used to *reset* the reading and account for the container weight.
 - **Example:** Technician is recovering into an empty cylinder and wishes to track the weight of refrigerant removed from the system.
- The **Zero** function is used to *clear* the reading **and** store the weight of an **empty** platform.
 - **Example:** Technician has noted that the scale does not read 0.0 lbs when unladen on a flat, level surface.

Important Note: The backlight will turn off when Zeroed. This operation is normal.

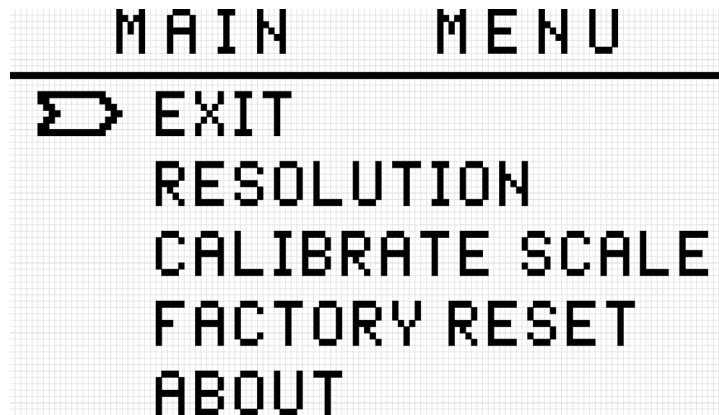
External Power

A USB Type-C cable (sold separately) may be used to power the WS260 in cases where battery power is not sufficient, or long-term use is desired. Remove the protective rubber plug on the left side of the display to access the USB-C port. A standard smartphone wall adapter (5V/1A) is adequate.

Important Note: When switching power sources, the scale must be recalibrated with the new power source. If the scale is not recalibrated after switching power sources, the reading will not be accurate.

General Functions

Main Menu: Access the Main Menu by quick-pressing the Power button while on the Main Screen.



Main Menu Selections

- Exit
 - Return to the Main Screen.
- Resolution
 - Adjust the displayed resolution.
- Calibrate Scale
 - Calibrate the Scale.
- Factory Reset
 - Reset the scale to factory-calibrated settings.
- About
 - View the scale serial number and version number.

General Functions

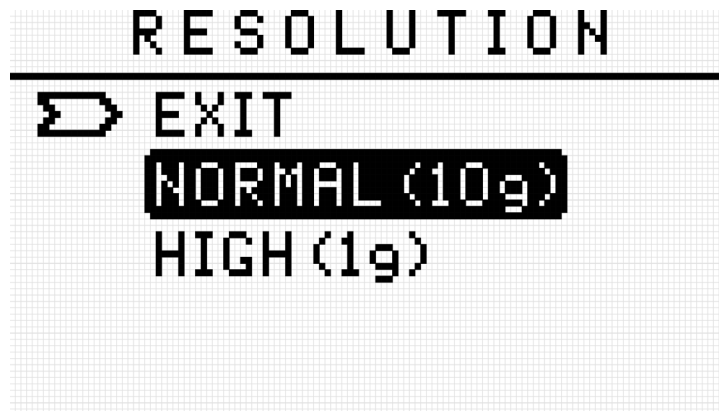
Main Menu Screen Controls

- Power/Select
 - Quick Press
 - *Press the Power button to select an option.*
- Backlight/Up
 - Quick Press
 - *Press the Backlight/Up button to scroll UP through selectable options.*
- Tare/Down
 - Quick Press
 - *Press the Tare/Down button to scroll DOWN through selectable options.*

Resolution

Access the Resolution screen by selecting RESOLUTION from the Main Menu. Select between Normal (10 g) and High (1 g) resolution.

Resolution Screen Example:



Resolution Navigation Tips:

- The selected resolution will be highlighted.
- Select EXIT to save the selected resolution and return to the Main Menu.

Calibrate Scale

Access the Calibration sub-screen by selecting CALIBRATE SCALE from the Main Menu. Zero the scale with an empty platform or adjust the factory calibration when switching between power supplies or if the scale is suspected to be displaying readings that are out of specification.

Calibration Sub-Screen Example:

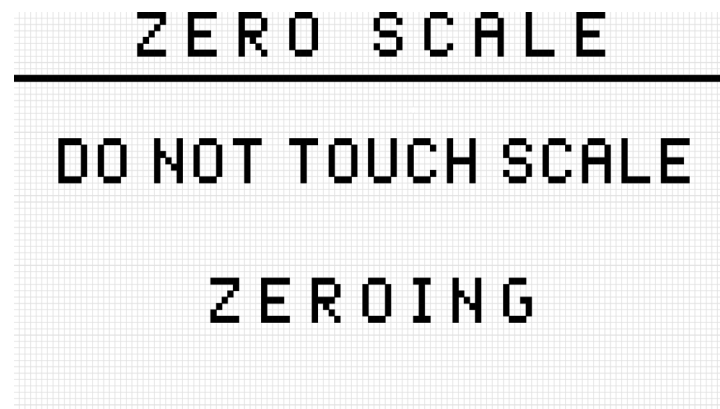
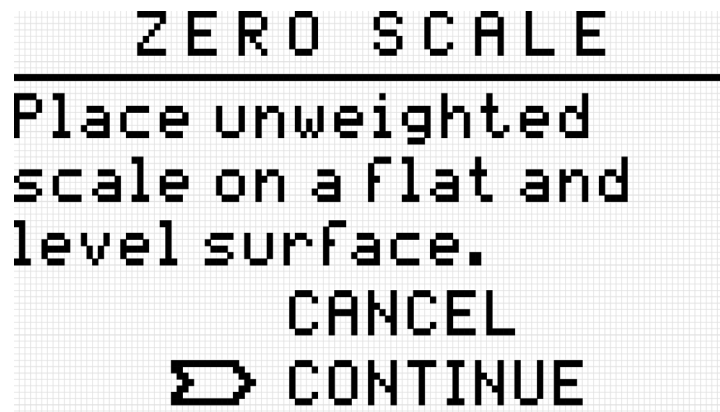


Calibration Sub-Screen Selections:

- Exit
 - Return to the Main Screen.
- Zero
 - Zero the scale with an empty platform.
- Calibrate Scale
 - Calibrate the scale with a certified 25 kg weight.

Zeroing Scale

Zero Scale Screen Example:



Zeroing Process Tips:

- The scale can only be zeroed when reading less than 2 kg.
- The scale must be placed on a flat and level surface.
- The display backlight will automatically turn off while zeroing.
- Selecting CANCEL will revert to the previously saved zero.
- Vibrations or wind during Zeroing will cause inaccuracies.
- Only zero the scale when unloaded.

Calibrating the Scale

WARNING: Specific requirements must be met to perform an accurate calibration.

- The scale must be placed on a flat and level surface.
- A certified 25 kg weight is required.
- Always use new AA batteries for calibration purposes when using batteries as the power supply.
- When switching power sources, the scale must be recalibrated with the new power source. Example: The scale is plugged into USB power and was previously calibrated with battery power.
- If the scale is not recalibrated after switching power sources, the reading will not be accurate.

Calibration Screen Examples:

CALIBRATE SCALE

Warning: A 25kg
weight is required.

CANCEL

➞ CONTINUE

CALIBRATE SCALE

Place unweighted
scale on a flat and
level surface.

CANCEL

➞ CONTINUE

Calibrating the Scale (cont.)

CALIBRATE SCALE

DO NOT TOUCH SCALE

ZEROING

CALIBRATE SCALE

Place 25kg weight on
scale.

CANCEL

➡ CONTINUE

CALIBRATE SCALE

DO NOT TOUCH SCALE

25kg CALIBRATION

CALIBRATE SCALE

Scale calibrated.
Press continue to
save.

CANCEL

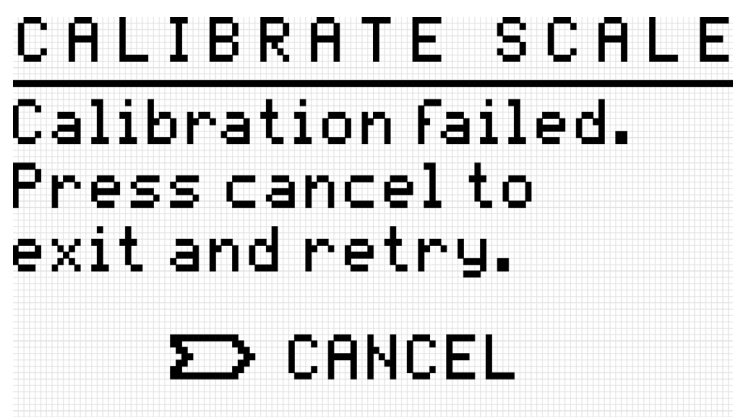
➡ CONTINUE

Calibrating the Scale (cont.)

Calibration Process Tips:

- The display backlight will automatically turn off during calibration.
- Selecting CANCEL during the calibration process will revert to the previously saved calibration.
- Vibrations or wind during calibration will cause inaccuracies.
- If the scale detects an issue during the calibration process, the failed calibration screen will appear.

Failed Calibration Screen Example:

A screenshot of a scale's LCD display showing a failed calibration message. The text is in a pixelated, monospaced font. At the top, 'CALIBRATE SCALE' is underlined. Below it, the message reads 'Calibration failed. Press cancel to exit and retry.' At the bottom, there is a right-pointing arrow icon followed by the word 'CANCEL'.

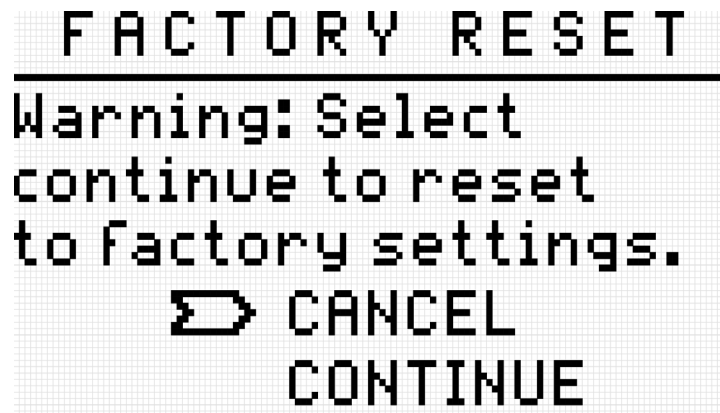
CALIBRATE SCALE

Calibration failed.
Press cancel to
exit and retry.

➡ CANCEL

Factory Reset

Access Factory Reset by selecting FACTORY RESET from the Main Menu. Reset all user-saved settings back to the original factory-calibrated settings.



Factory Reset Tips:

- Selecting CANCEL exits back to the Main Menu.
- Selecting CONTINUE resets the device to factory-calibrated settings.

About

Access the About screen by selecting ABOUT from the Main Menu. View the serial number and firmware version number of the device.

About Screen Example:



About Screen Controls:

- Power/Exit
 - Quick Press
 - *Press the Power button to exit the About screen and return to the Main Menu.*

Using the WS260

Caution: Always wear hand and eye protection, and work in well-ventilated areas when handling refrigerants.

1. Remove the WS260 from its protective case and place on a level and firm surface. If the scale is used on a sloped or otherwise unstable surface, irregular or inaccurate readings may result.
2. Power the WS260 on.
3. Zero the WS260 if necessary.
4. Connect the WS260 via Bluetooth to the Appion Central™ App (optional).
5. Begin weighing your materials.
6. View the readings on the backlit display or via the Appion Central™ App.

Important Note: Always take the scale out of the case for use.

Important Note: Always take care when placing objects on the platform. Excessive force or dropping objects on the platform can permanently damage the load cell.

Appion Central Bluetooth Operation

Note: Bluetooth communication requires a compatible device running the Appion Central™ App. Development of the Appion Central™ App is ongoing, and any information presented in this manual about the Appion Central™ App may not be up to date. Please visit AppionTools.com or your device's App Store for the latest Appion Central™ App and additional information.

1. With the WS260 powered on, press and hold the Backlight/Up button AND the Power button until the Bluetooth symbol appears on the WS260 screen.
2. In the Appion Central™ App, navigate to My Devices and connect to the WS260.
3. If the connection is lost due to exceeding the Bluetooth range or due to loss of power, repeat Step 1, then reconnect the WS260 through the Appion Central™ App interface.

Note: Bluetooth range may vary due to obstructions or interference. The Appion Central™ App will indicate when communication is lost.

Note: The WS260 will continue to operate normally even if Bluetooth communication is lost.

Appion Central™ App

Scan the QR Code below to download the app and access the user guide.



Refrigerant Recovery Tips

Accounting for Hose Weight

The weight of recovery hoses should be taken into consideration during recovery and charging. Be sure to 'tare' the scale only after placing the cylinder on the platform **and** connecting hoses (to both tank and system). Also make note of the weight if hoses are removed at any point during the process.

Purging Non-Condensables from Recovery Cylinders

In the event that the Recovery Cylinder pressure is higher than expected, or if the recovery process seems slower than usual, use an external gauge (not the gauge on the recovery machine) and a Refrigerant Pressure/Temperature chart to check for the presence of non-condensable gases in the cylinder.

You can bleed/purge non-condensables into another cylinder following this procedure:

1. The recovery cylinder must remain undisturbed for at least 24 hours for the non-condensables to rise to the top of the cylinder.
2. Connect the recovery cylinder Vapor Port to the Vapor Port of an empty second recovery cylinder with a short 1/4 in. hose.
3. Consult a Refrigerant Pressure/Temperature chart, and check the temperature of the recovery cylinder to determine what the pressure should be.
4. While the pressure is higher than the pressure on the chart, slowly open the Vapor Port to bleed off excess pressure until it is about 5 psi (0.35 kg/cm²) above the pressure listed on the chart.
5. Close the valves and let the cylinder stand still for 10 minutes. Repeat if necessary.

Refrigerant Recovery Tips (cont.)

80% Fill Weight

Refrigerant recovery cylinders should only be filled to 80% of their *maximum* volume to allow for expansion during transportation. Recovery cylinder weight capacity is calculated by the manufacturer using water and given as *Water Capacity*. Since refrigerant has a different density than water you must make a quick calculation to determine the *maximum weight* of refrigerant you can recover.

Refrigerant	Liquid Density @ 130°F (Lb/ Ft ³)	Fill Multiplier
Water	61.522	-
R-22	66.312	1.08
R-134a	67.46	1.10
R-404A	53.18	0.86
R-407C	62.28	1.01
R-410A	56.11	0.91
R-417A	62.383	1.01
R-417C	65.243	1.06
R-422A	58.343	0.95
R-422B	61.85	1.01
R-422C	59.174	0.96
R-422D	60.642	0.99
R-437A	65.231	1.06
R-438A	61.804	1.00
R-454B	51.830	0.80

✪See Page 6 for additional information

Stamped markings on the recovery tank indicate Tare Weight (TW) and Water Capacity (WC). The following equation should be used to calculate the maximum weight allowed in a cylinder.

$$\text{WC} \times \text{Fill Multiplier} \times 0.8 + \text{TW} = \text{Max Total Tank Weight}$$

Example (R-22): WC is 47.6 lbs, TW is 24 lbs.

$$47.6 \times 1.08 \times 0.8 + 24 = \mathbf{65.1 \text{ lbs}}$$

Total Tank Weight
(41.1 lbs of R-22)

Refrigerant Recovery Tips (cont.)

Preparing a Cylinder for Recovery: Prior to beginning recovery, the cylinder should always be evacuated with a vacuum pump. A deep vacuum of 500 microns or better is recommended as this eliminates the possibility of non-condensables as well as improves the initial refrigerant transfer. Always verify with a digital vacuum gauge to ensure you have hit the target. *New recovery cylinders may not be sufficiently evacuated - always verify before use.*

Preparing for Fast Refrigerant Recovery

Every recovery procedure starts with the same four basics:

- **Remove** any **access valve cores** from the AC/R System access fittings with a Valve Core Removal Tool. This removes restrictions that would otherwise limit the performance of the recovery machine and/or cause overheating of the recovery cylinder.
- **Remove** any **core depressors** from the hose fittings. Do not use “quick disconnect” or “auto-shutoff” hose connections for refrigerant recovery, as this can bring the recovery to a halt. Use only ball valves for low-loss.
- **Use** the shortest length of **3/8 in. diameter hoses** possible on **every** connection. Even with 1/4 in. fittings, the larger hose diameter can deliver better performance during recovery.
- **Purge** the hoses of **non-condensables** as you connect them, as needed, using best practices to minimize any refrigerant release (aka “*de minimis*”). Excess non-condensables can cause tank overheating, and may contaminate recovered refrigerant.

🔧 Tip: Consult the manufacturer of your Refrigerant Recovery Machine for setup guidance.

🌐 Visit www.AppionTools.com/FullFlow to learn more.

Refrigerant Recovery Tips (cont.)

Additional Equipment Considerations: Refrigerant recovery requires—and can often benefit from specific use of—additional equipment that connects the recovery machine to the system and recovery cylinder. Verify operational details and safety information from the manufacturers of other equipment before use.

- **⚠️ WARNING** A leaking hose may cause venting of refrigerant, and may introduce atmospheric air or other contaminants into the recovered refrigerant. Examine the **gaskets on each hose** to ensure they are intact, checking for any damage or wear that may lead to leaks.
- **Valve Core Removal Tools** with a ball valve (such as the Appion Valve Core Removal Tool) can be used as high flow low-loss fittings, in addition to the main function of removing valve cores.
- The **recovery cylinder** should have extra capacity beyond the amount you intend to recover.
- Examine your **external manifold gauges** (if used) for proper valve operation and calibration of the gauges. Contact the manifold gauge manufacturer for instructions in this process. **Note:** *Appion does not recommend the use of a manifold gauge set on most systems due to restriction of flow & refrigerant loss.*
- Use a **new inline filter drier** when pumping dirty refrigerant. Replace the filter drier after each use. If the filter has exceeded its capacity, this may affect the performance of the recovery machine.
- Use a **sight glass** to verify liquid flow. This can also be useful for troubleshooting purposes. Make sure that the sight glass is in good condition and does not leak.

General Maintenance and Care

The WS260 is a precision instrument that must be maintained to ensure proper function. Please follow the guidelines listed.

1. Store the WS260 in a cool, dry environment when not in use. The recommended storage temperature (without batteries) is -4 °F to 140 °F (-20 °C to 60 °C).
2. Inspect the platform before use to ensure no objects or materials are obstructing the platform from free movement while in use.
3. Never use the scale inside the case. The case is for protection and prevents the platform from free movement.
4. Remove batteries before storing the device for long periods of time.

Scale Components



Specifications

Weight:

10 lbs (4.5 kg) *without batteries

Dimensions:

13.1 x 12 x 2.25 in. (33.3 x 30.5 x 5.7 cm)

Maximum Cylinder Base Size:

9 in. (22.9 cm)

Protection Rating:

IP54

Units:

Single line: kg, lb, oz.

Two Line: kg + g, lb + oz.

Operating Temperature:

-4 °F to 131 °F (-20 °C to 55 °C) *limited by battery performance

Storage Temperature:

-4 °F to 140 °F (-20 °C to 60 °C) *without batteries

Battery Type:

(3) AA Batteries

Battery Life:

96 hours *with Bluetooth Off in Normal Resolution Mode

Auto Power Off:

15 Minutes (Selectable On/Off)

Specifications (cont.)

Resolution:

Normal: 10 g, .5 oz., .1 lb.

High: 1 g, .1 oz., .01 lb.

Accuracy:

$\pm 5 \text{ g}$ 0-10 kg, $5 \text{ g} \pm .03\%$ of Reading

Capacity:

264.5 lb (120 kg)

Display Overload:

264.5 lb (120.01 kg)

Sensor Overload:

297.6 lb (135 kg)

Wireless Range:

1000 ft. **line of sight*

Regulatory Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Regulatory Information (cont.)

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Caution

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada Radio Equipment

This device complies with Industry Canada license-exempt RSS-247 standard. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Équipement radio d'Industrie Canada

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. l'appareil ne doit pas produire de brouillage.
2. l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Warranty Information

Appion Inc. (Hereinafter Appion) warrants that this equipment will, under normal and anticipated use, be free from defects in materials and workmanship for a period of one (1) year from the date of purchase by purchaser from an Appion-authorized distributor.

The complete Manufacturer's Limited Warranty is available online at AppionTools.com.

All warranty services must receive Appion Factory Authorization and an RGA number prior to any action. Contact your local Appion authorized distributor to obtain the RGA number and shipping instructions. To help us provide the best service, be sure to have the following information available:

- Serial number of the equipment
- Purchase date of the defective unit
- A detailed description of the problem

Appion offers technical troubleshooting support for the lifetime of every product. Regardless of your warranty status, feel free to reach out for assistance via phone at 303-937-1580. Visit our website, AppionTools.com, for extra technical insights that can enhance your product experience, making your job quicker and easier.

Warranty Information (cont.)

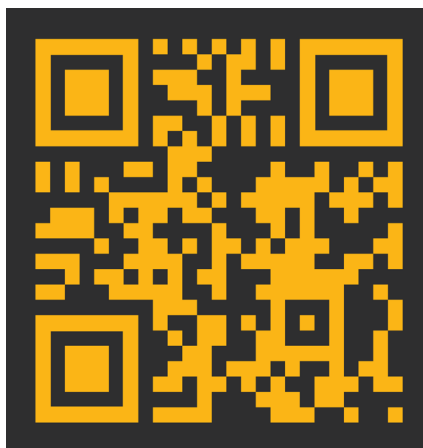
Appion WS260 Warranty Registration Card Please complete this card and return it within 10 days of purchase with a copy of your sales receipt.	
Your Name	Your Company
Street Address	Phone Number
City	State Zip
Email Address	Serial Number
Place of Purchase	Date of Purchase
How did you learn about our products? (Please only check one) ☐ Wholesaler _____ ☐ Recommended By: _____ ☐ Magazine ☐ Newspaper Ad ☐ Internet ☐ Other: _____	Please select your primary line of business. (Check all that apply) ☐ Automotive ☐ Commercial ☐ Residential ☐ Service ☐ Installation ☐ Other: _____
Register by <u>Mail</u>: Appion Inc. 2800 South Tejon Street Englewood, CO 80110 USA Register by <u>Email</u> or <u>Fax</u>: 1. Scan this page AND a copy of your sales receipt. 2. Email to: Sales@AppionInc.com or Fax this page and your sales receipt to: 1-303-937-1599	What features most interested you? (Check all that apply) ☐ High Production ☐ Low Cost ☐ Low Maintenance ☐ Portability ☐ Ease of Use ☐ Other: _____



QR Code Index



Appion Central™ App Download



Product Registration



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