Appion®

PRECISION SCALE WS130™

⚠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 WS130 Precision Scale, where portability meets precision. This compact, lightweight measurement tool packs a powerful punch and is designed for the HVAC/R technician on the go. Its durable construction and wide measurement range make it perfect for a variety of systems. With its robust build and seamless integration with the Appion Central™ app, the WS130 is designed to simplify your workflow without sacrificing reliability.

Ideal for smaller systems and tight spaces, the WS130 boasts a generous measurement range for its size. Effortlessly manage refrigerant charges and track usage directly through the Appion Central™ app, where real-time readings pair with advanced features like data logging and recovery cylinder management. Experience freedom and precision with the WS130 – your essential companion for efficient 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.
- Always ground recovery cylinders to a known good ground to avoid static buildup in the recovery cylinder.

⚠WARNING

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:

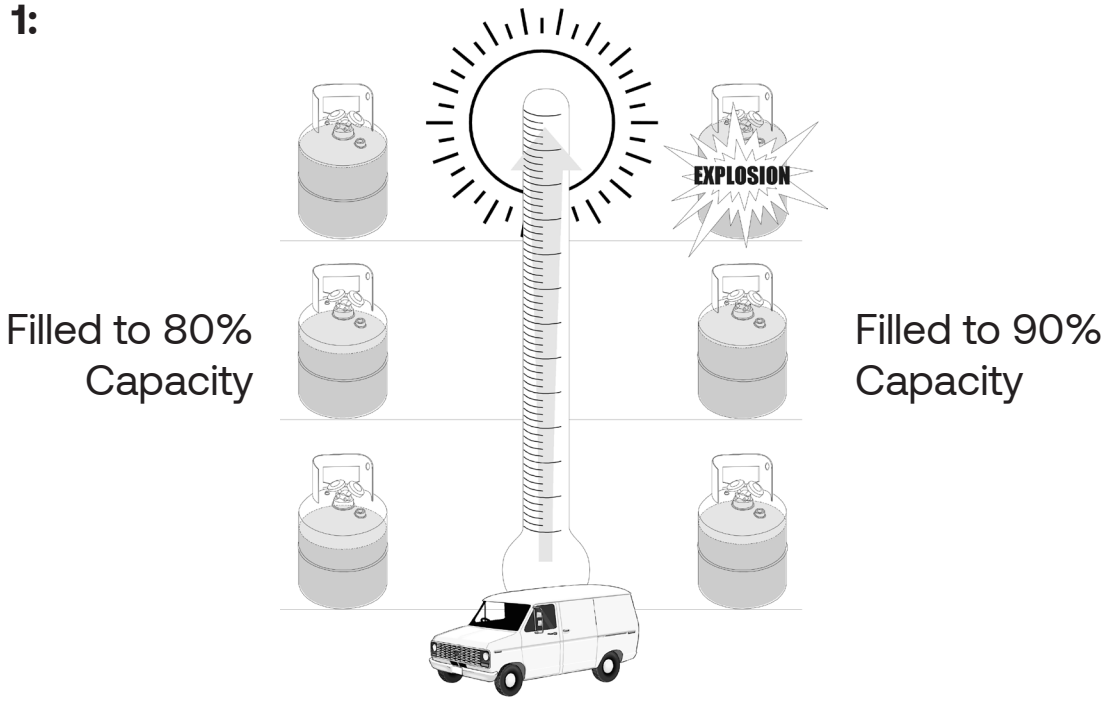
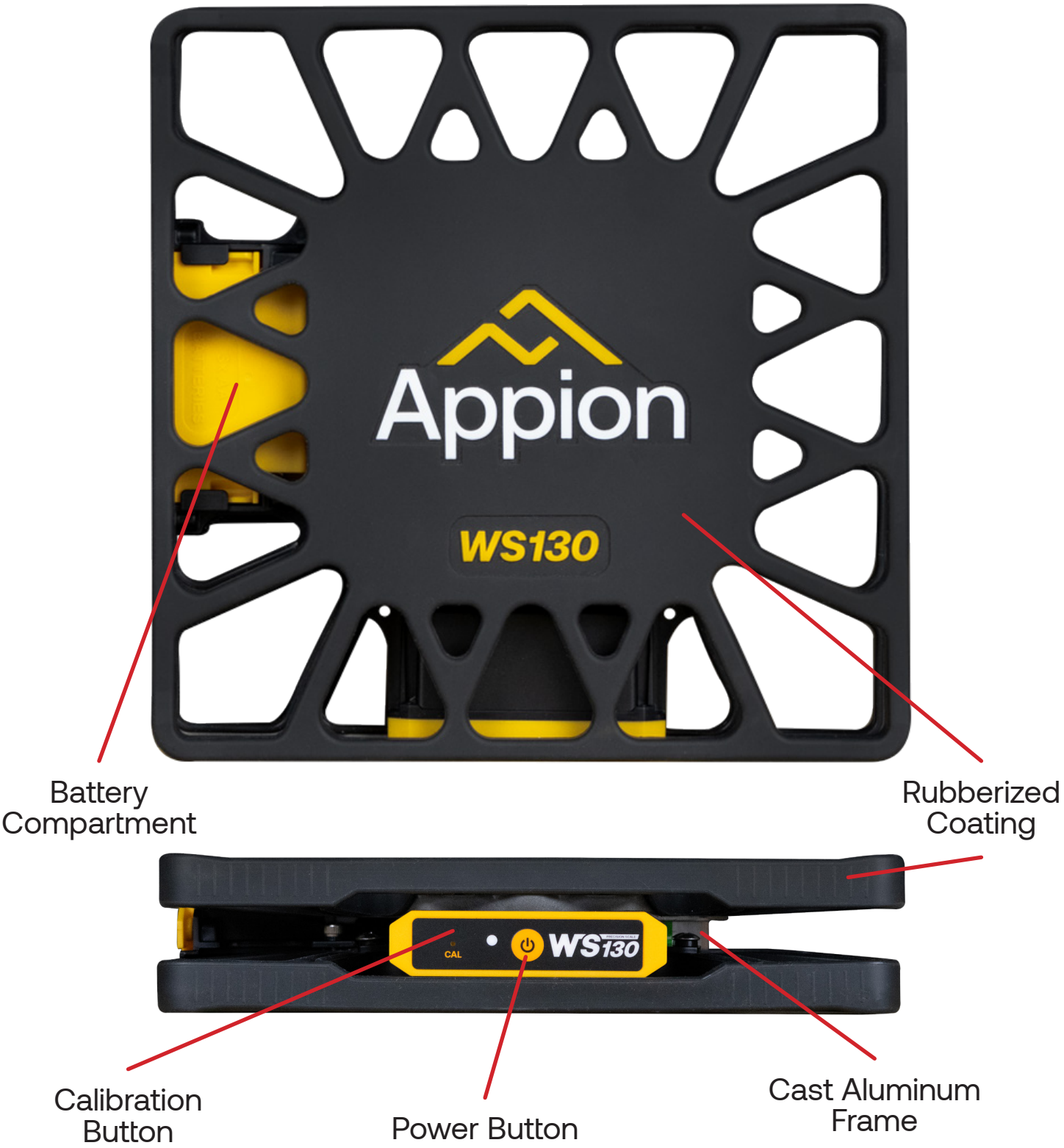


Diagram 1: Overfilled storage containers may explode due to liquid refrigerant expanding when heated.

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

See Page 19 for information on how to calculate 80% Fill Weight

Scale Components



General Functions

Button Configuration:

Press	Tare	
Press Twice	APO On/Off	
Hold 2 Seconds	Power On/Off	
Hold 3 Seconds		Calibration Mode
Hold Both 5 Seconds	Factory Reset	

1. Quick PRESS any button for the “Press” function.
2. PRESS any button TWICE within two seconds for the “Press Twice” function.
3. HOLD any button for 2 seconds for the “Hold 2 Sec.” function.
4. HOLD any button for 3 seconds for the “Hold 3 Sec.” function.
5. HOLD BOTH buttons for five seconds for the “Hold Both 5 Sec.” function.

Power/Tare

Quick Press:

- Tare
  - *When the scale is on, quick press the Power button to tare the scale.*
  - *The scale can be tared at any weight.*

General Functions (cont.)

- *A tared value is stored in the memory which will display after a power cycle.*

Quick Press Twice:

- Auto Power Off On/Off
  - *Quick press the Power button twice within two seconds to toggle auto power on or off.*

Hold 2 Seconds:

- Scale Power On/Off
  - *Press and hold the Power button down for two seconds to power the scale on or off.*

Calibrate

Hold 3 Seconds:

- Calibrate Scale
  - *Press and hold the Calibrate button down for three seconds to enter calibration mode.*

Power + Calibrate

Hold 5 Seconds:

- Factory Reset
  - *Press and hold the Power button and Calibrate button down simultaneously for five seconds to reset the scale to factory settings.*

General Functions (cont.)

LED Blink Sequences

Power On
The green LED will illuminate for two seconds followed by a green LED blink indicating the scale has been powered on. Then the normal blink sequence will commence. The normal operation blink sequence will vary depending on if the auto power off function is on or off.

Power Off
The red LED will rapidly blink four times in one second indicating the scale has been powered off.

Normal Operation with Auto Power Off Enabled
The green LED will blink every three seconds indicating auto power off is on.

Normal Operation with Auto Power Off Disabled
The green LED will blink followed by an amber LED blink every three seconds indicating auto power off is off.

Low Battery Indicator
The red LED will blink every three seconds, indicating the batteries should be changed soon.

Enabling Auto Power Off
The amber LED will illuminate for two seconds. Then the normal operation with auto power off enabled blink sequence will commence.

General Functions (cont.)

Disabling Auto Power Off

The amber LED will blink four times in two seconds. Then the normal operation with auto power off disabled blink sequence will commence.

Tare

The LED will rapidly alternate amber and green six times in one second. Once the blinking has stopped the scale will be tared and the normal operation blink sequence will commence.

Calibration

- Calibration Step 1 (0 kg)
  - *The amber LED will blink two times every three seconds indicating the scale is ready to take a sample.*
- Calibration Step 2 (25 kg)
  - *The amber LED will blink three times every three seconds indicating the scale is ready to take a sample.*
- Calibration Sampling
  - *The amber LED will rapidly blink for three seconds indicating a sample is being taken for calibration.*
- Calibration Error
  - *The red LED will slowly pulse, indicating an error has occurred during the calibration process.*

Factory Reset

The amber LED will blink rapidly for half a second indicating the scale has been reset to factory settings. Then the power on blink sequence will commence followed by the normal operation blink sequence.

Using the WS130

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

1. Remove the WS130 from its protective case and place it 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 WS130 on.
3. Connect the WS130 via Bluetooth® to the Appion Central™ App.
4. Tare the WS130 if necessary.
5. Begin weighing your materials.
6. View the readings on a smartphone, tablet, or other device via the Appion Central™ App.

Important Note: Always take the scale out of the case for use and ensure no objects are obstructing the upper platform from free movement.

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

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. Power on the WS130 to activate Bluetooth® capabilities.
2. In the Appion Central™ App, navigate to My Devices and connect to the WS130 as shown.
3. If the connection is lost due to exceeding the Bluetooth® range, move closer to the WS130 until the connection is re-established. The WS130 should automatically reconnect with the Appion Central™ App as long as scale is powered on.
    a. If the connection is lost due to loss of power repeat Step 1, then reconnect the WS130 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 WS130 will continue to operate normally even if Bluetooth® communication is lost.

Replacing the Batteries

CAUTION
Always replace the batteries in a non-hazardous area.

1. Use a Phillips screwdriver to remove the two screws holding the battery compartment in place.
2. Grab the outer tabs of the battery compartment and pull the battery compartment out of the WS130.
3. Release the tabs holding the battery compartment door to expose the batteries.
4. Replace the batteries.
5. Reassemble in reverse order.
6. Take care not to over-tighten the battery compartment screws during installation.

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.

Important Note: Long press the power button at any point during the calibration process to cancel the calibration and turn off the scale. Doing so will revert the scale back to the previously stored calibration.

1. Place the scale on a flat and level surface.
2. Power the WS130 on.
3. Ensure the platform is unladen, unobstructed, and free to move.
4. Hold the calibration button for three seconds to enter calibration mode.
5. The amber LED will flash two times every three seconds indicating the scale is ready to be zeroed.
6. Quick press the calibration button to zero the scale. The amber LED will blink rapidly indicating the scale is storing a calibrated zero value.
7. The amber LED will blink three times every three seconds indicating the scale is ready to sample a 25 kg weight.
8. Place a 25 kg certified weight centered on the platform.

Calibrating the Scale (cont.)

9. Quick press the calibration button to begin sampling the 25 kg weight. The amber LED will blink rapidly indicating the scale is storing a calibrated 25 kg value.
10. If the calibration is successful the scale will now return to normal operation mode and is ready to use.

Failed Calibration

Important Note: The red LED will pulse slowly if the calibration has failed.

To Restart Calibration
Quick press the calibration button to restart the calibration process.

To Exit
Long press the power button to cancel the calibration and turn off the scale, this will restore the scale to its previously stored calibration.

Appion Central™ App

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

Download on the App Store

GET IT ON Google Play

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/cm^2) 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 @ 130ºF (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	**0.84**

✪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.

WC x Fill Multiplier x 0.8 + TW = Max Total Tank Weight

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

47.6 x 1.08 x 0.8 + 24 = **65.1 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 WS130 is a precision instrument that must be maintained to ensure proper function. Please follow the guidelines listed.

1. Store the WS130 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 in the case. The case is for protection and may prevent the platform from free movement.
4. Remove batteries before storing the device for long periods of time.

Specifications

Scale Weight
3.6 lbs (1.6 kg) **without batteries*

Scale Dimensions
9.2 x 9.2 x 1.9 in. (23.3 x 23.3 x 4.8 cm)

Maximum Cylinder Base Size
9 in. (22.9 cm)
11 in. (27.9 cm) **with overhang*

Protection Rating
IP54

Units *in Appion Central™ App
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
105 hours

Specifications (cont.)

Auto Power Off
15 Minutes (Selectable On/Off)

Resolution
1 g, .1 oz, .01 lb

Accuracy
± 5 g (0-10 kg), ± 5 g + .03% of Reading (10 kg +)

Capacity
132.2 lb (60 kg)

Display Overload
132.2 lb (60.001 kg)

Sensor Overload
198.4 lb (90 kg)

Wireless Range
1000 ft (305 m) **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 WS130 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 Mail:
Appion Inc.
2800 South Tejon Street
Englewood, CO 80110 USA

Register by Email or Fax:
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: _____

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QR Code Index

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Product Registration

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