

# CalCheck



Instrument User Manual V1.8



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## **Declaration of conformity**

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**Manufacturer:** Ion Science Ltd, The Way, Fowlmere, Cambridge, England. SG8 7UJ

**Product:** CalCheck

**Product description:** an easy to use reliable tool for the self calibration of gas and leak detection instruments, giving you peace of mind and confidence in the accuracy of the measurements you rely on.

**Directives:** 97/23/EC                      Pressure equipment

**Standards:**    BS EN 61010-1:2001    Safety requirements for measurement, control & lab equipment  
                  BS EN ISO 9001:2008    Quality management systems  
                  BS EN ISO 11118        Pressure vessel

I the undersigned hereby declare that the equipment specified above conforms to the stated Directives and Standards.

**Signed By:**



Name: Mark Stockdale,  
Position: Technical Director  
Date: 23<sup>rd</sup> April 2007

**Product Safety:** The pressurised cylinder used has been tested by our supplier in accordance to ISO 1118 and tested by them to their procedure number TPED B 8001.

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## **Statement**

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### **Principals of operation**

CalCheck is an easy to use reliable tool for the checking of calibration on gas and leak detectors, giving the user peace of mind and confidence in the accuracy of the measurements they rely on.

### **Quality assurance**

CalCheck has been manufactured in compliance with ISO9001:2008, which ensures that the equipment supplied to our customers has been designed and assembled reproducibly, and from traceable components.

### **Disposal**

Dispose of CalCheck and its components in accordance with all local and national safety and environmental requirements.

### **Calibration facility**

Ion Science Ltd offer a calibration service including the issue of certification using equipment which are themselves traceable to UK national standards. Ion Science recommends that the standard calibrated leak fitted to a CalCheck is returned to Ion Science on an annual basis to ensure continued accuracy.

### **Responsibility for use**

NB: Gas canisters are pressurised and should be treated as such. Do not puncture or incinerate dispose of safely. Store equipment in a cool dry environment.

**Do NOT use** with oxygen gas (cylinders). Only use authentic factory supplied spares for proper, validated and safe operation. Never remove or alter circlips, O-rings or gas delivery pipework.

## **Packing list**

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Please take a little time to check the contents in the CalCheck case before removal.

<b>Item</b>	<b>Description</b>	<b>Qty</b>
1.	CalCheck base with handle	1
2.	Gas can with protective cap	1
3.	Standard calibrated leak (pre fitted) in a transit box	1

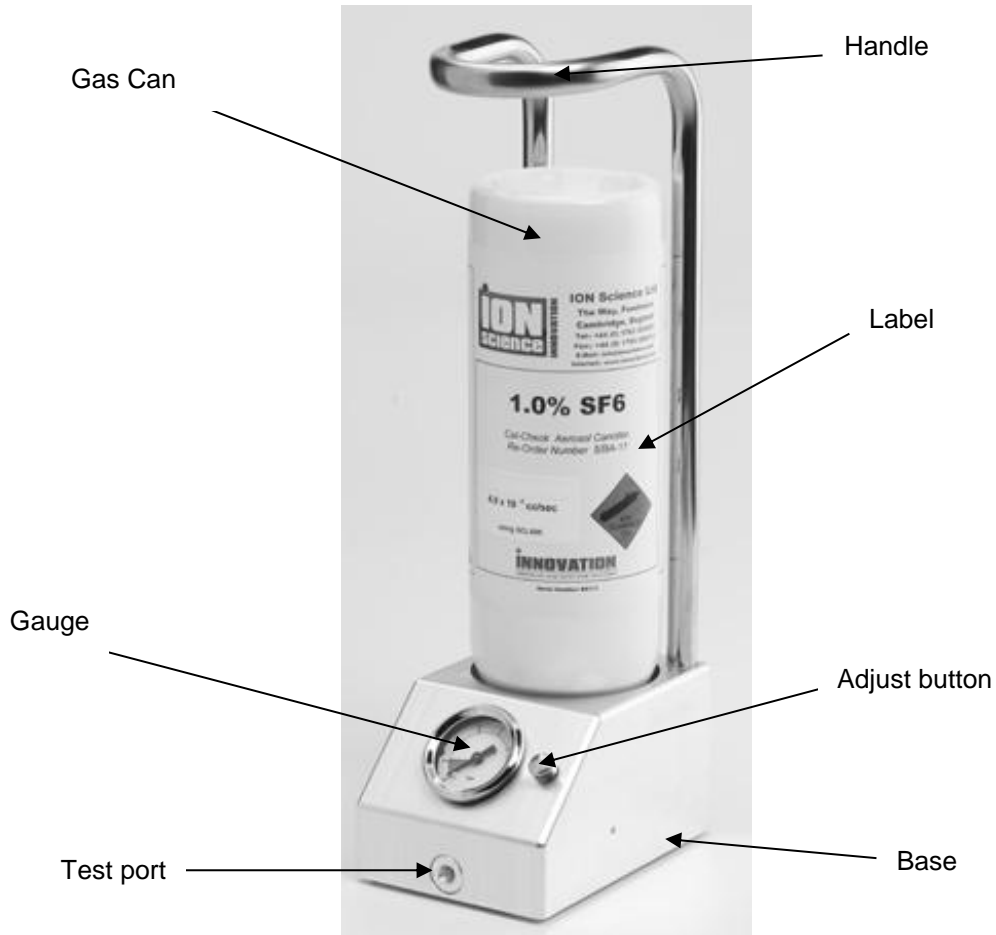
Total weight of a packed CalCheck is 2.4 kg for all varieties.

If the carton appears damaged in any way please contact the carrier.

If any goods appear to be damaged or missing please contact Ion Science and arrange for the return of the whole CalCheck carton including documentation within 3 days. The CalCheck is warranted against manufacturer defects.

## CalCheck features

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GasCheck / Gas Check  
R2pc



Hydrosteel



GasCheck / LeakCheckSF<sub>6</sub>

## Introduction

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CalCheck is an easy to use and convenient means of traceably checking the normal response of gas leak detecting instruments such as Ion Science Ltd's Gas Check, GasCheck R2pc, GasCheck SF<sub>6</sub> and Hydrosteel as well as helium mass spectrometer leak detectors.

CalCheck incorporates a Standard Calibrated Leak, which has a specified flow rate at 1 bar gauge pressure, through which the gas from the can leaks enabling the user to present their instrument a known leak testing its accuracy.

CalCheck users benefit from its versatility as the same base unit can be used for calibration with many different gases and at many different leak rates. Both the gas and the standard calibrated leak can be easily changed in the field. Ion Science can supply any non-corrosive gas at a variety of concentrations and a wide variety of standard calibrated leaks are available, the smallest being  $1 \times 10^{-4}$  ml/sec.



## Getting started

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Within 5 minutes of unpacking a CalCheck the user can be making reliable self calibration checks.

1. Remove the protective cap from the gas can. Make sure that the spigot is in place, if not see troubleshooting.
2. Gently hand screw the gas cylinder into the brass receptive plate, do not over tighten as the screw may strip
3. Check that the standard calibrated leak is in position, attached to and behind the test port and is finger tight.
4. Push down on the top of the gas cylinder. The needle in the gauge should quickly rise into the white section, if not see troubleshooting
5. Press the adjust button until the needle moves into the green area of the gauge or 1 bar.
6. CalCheck is now ready for use. Present your detection instrument to the test port for checking.

NB: If using a CalCheck to calibrate an Ion Science Hydrosteel instrument the process is the same as above except the test port in this case contains a thread. At step 6, handscrew the free end of conduit connected to the Hydrosteel to the test port and check the response is within limits presented in the Hydrosteel manual.

CalCheck is designed for use in normal indoor environmental conditions, avoid condensation and dust ingress. It is NOT designed for use with oxygen.



## **Changing gases and standard calibrated leaks**

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Gas canisters simply unscrew from the CalCheck vertically.

The gas cans provided have a standard thread and integral valve.

There is no need to remove the carrying handle, which acts as additional protection for the can if CalCheck is dropped, as there will be enough clearance to withdraw and replace a gas can.

First check that the standard calibrated leak assembly is properly fitted and the gas can is not held (pressed) down as excessive or unexpected venting will occur during changeover.

Press the adjust button to relieve CalCheck's dial pressure. With the CalCheck dial safely in the "red" on the dial, unscrew the gas can.

Remove the plastic storage cap from the new gas can and check that the spigot is in place. Hand screw the can into the CalCheck base. Depress the gas can in order to flush the new gas through the internal volume to the calibrated leak, press the adjust button to flush the venting lines.

If CalCheck has been recently used with a different gas type allow an extra half minute for the new gas type to leak through the test port, to avoid the possibility that the gas mixture delivered is altered or incorrect.

Changing standard calibrated leaks is simple. For safety reasons it is recommended to remove the gas can first. Then lay CalCheck down to show the standard calibrated leak assembly in the bottom of the base.

Unscrew and remove the leak assembly including the test port, leaving a hole where the test port was.

Unscrew the standard calibrated leak from the test port and replace it with the new certified calibrated leak.

Then screw the assembly back into the CalCheck base through the hole. If the old standard calibrated leak was faulty or in need of re-calibration pack it in its box and return it to Ion Science for traceable re-certification. Refer to troubleshooting for further details.

## Troubleshooting

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Most CalCheck problems are field fixable and tools are not necessary. When changing gas canisters or calibrated leaks tools are unnecessary and should only be tightened with fingers. Use the FAULT & ACTION matrix below for feasible adjustments, otherwise return complete CalCheck to your supplier or to Ion Science representative offices.

FAULT/SYMPTOM	ACTION
Dial stays in red when gas can pushed down	Check gas can is screwed in finger tight but not too tightly. When it is correct, a slight unscrewing action vents the gauge after the can has been pushed down.
	Check the leak assembly is screwed in finger tight but not too tightly. When it is correct, a slight unscrewing action vents the gauge after the can has been pushed.
	Gas can is empty and needs replacement. Follow procedure with approved spares.
	Spigot is missing from the gas canister, fit spigot or return to supplier.
Dial stays up at high pressure when adjust button is pushed down	The gas can has not released after being pushed down so that it's valve is open. Ease the gas can slightly upwards with fingers and repeat the adjust button push.
	The vent line is blocked. Inspect the nylon tube underneath the CalCheck. Removal vents gas nearer the instrument, so only alter this if the tube can be re-fixed.
Dial collapses rapidly without the adjust button being depressed	Check that the correct 'O' ring is present behind the standard calibrated leak.
CalCheck carrying handle is loose	Re-tighten the grub screws at the back of the CalCheck base with an Allen key. Do not remove the carry handle as this provides a gas can with drop protection.
Standard calibrated leak is blocked	Replace with another traceably certified standard calibrated leak using just finger tightness only. Return the old SCL in it's box to factory.

## Spares

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<u>Description</u>	<u>Part No</u>
Gas canister 2% Hydrogen (for CalCheck Hydrogen)	5/BA-03
Gas canister 100% Helium	5/BA-09
Gas canister 0.1% SF6	5/BA-10
Gas canister 1% SF6	5/BA-11
Gas canister 5% R134a	5/BA-12
Other gases on request	
Standard calibrated leak with traceable calibration certificate	A-21045
Complete Cal Check package (specify gas)	A-21500
Complete CalCheck Hydrosteel package	A-21500/H
Re-calibration of calibrated leak or replacement	CALSCL

**NB When placing an order please specify leak rate in ml/sec, ml/min or ml/hr; the inlet pressure in mb, bar or psig and gas eg Helium.**

## **Technical specification**

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### **Construction**

Stainless steel and alloys with ancillary components

### **Gases available**

Helium, Hydrogen, Isobutylene, SF6, R134a, R22, R1301, R600a, and any other non-corrosive gas.

### **Leak rates available**

As low as 5 g/yr for refrigerants, or  $5 \times 10^{-4}$  mm/sec 100% helium depending on the gas concentration used.

### **Calibration**

Each standard calibrated leak is supplied with a traceable certificate valid for 12 months. Ion Science advises that each standard leak is returned for calibration every 12 months.

### **Extras**

Additional gas/leak kits can be purchased and used with the same base assembly.

### **Weight & dimensions**

CalCheck base with handle	1.45 kg	340 x 95 x 135 mm
Gas can with protective cap	<0.25 kg	260 x 80 $\phi$ mm
Standard calibrated leak in box	0.12 kg	45 x 145 x 110 mm
Packed in case	2.4 kg	450 x 190 x 140 mm

## **Service**

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At Ion Science we recommend that all of our gas detection instruments be returned for service and factory calibration once every 12 months to ensure effective on-going operation.

The CalCheck instrument does not need to be returned, but the calibrated leak must be sent direct to Ion Science for calibration.

Contact Ion Science or your local distributor for further information.

[Find](#) your local distributor by visiting: [www.ionscience.com](http://www.ionscience.com)