

Solaris Air Compressor

User Manual



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Change History

Rev	Comment	Name	Date
1	Release	Liam Couttie	01/09/2016
2	Declarations Update	Liam Couttie	02/09/2016
3	Content Update	Liam Couttie	29/10/2016
4	Content Update	Liam Couttie	29/11/2018
5	Updates to incorporate CSA feedback	Liam Couttie	07/11/2019

How to use this Manual

This manual is intended for end users and has been written as a reference document where you can skip to the relevant information.

Users can refer to the contents page to find the relevant information.

Please review each of the following sections carefully.

Thank you for selecting Peak Scientific to meet your gas generation needs, and should you require any further assistance or support please do not hesitate to contact Peak Scientific or the Peak Partner from which you purchased your air compressor.

Introduction

Peak Scientific's Solaris Air Compressor has been engineered and designed to support the Solaris 10 Nitrogen generator for labs without an external supply of high quality air. Available in both a 230v and 110v option this unit is suitable for all regions.

Developed with a space-saving stackable form factor, Solaris can be placed on a benchtop and stacked with the nitrogen generator on top to contain gas supply in a single system whilst saving valuable laboratory workspace.

Solaris has been developed to provide an on-site gas supply of high purity nitrogen for ELSD (Evaporative Light Scattering Detector) for labs using HPLC (High Performance Liquid Chromatography) or alternatively to supply Compact Mass Spectrometer instruments.

Other features include:

- Suitable to supply compressed air for Solaris 10 Nitrogen model.
- Provides compressed air on demand.
- Minimum maintenance with only an annual compressor service.
- Small and Stackable.

To ensure this air compressor model meets our high expectations with regards to reliability and performance, we have tested this new model extensively at our manufacturing plant and with end users around the world to ensure reliability and longevity of the system.

Warranties and Liabilities




1. The Company warrants that it has title to the Goods.
2. Subject to the provisions of this clause the Company warrants that the Goods shall comply in all material respects with any specification referred to in the Order Confirmation (as the same may be amended) and shall, subject thereto, be free from defects in material and workmanship for the lesser of a period of twelve months from the date of delivery or thirteen months from the date of dispatch from the factory.
3. Save as provided in this clause and except where the Goods are sold to a person dealing as a consumer (within the meaning of the Unfair Contract Terms Act 1977) all warranties, conditions or other terms implied by statute or common law are hereby expressly excluded save to the extent they may not be lawfully excluded. When the Goods are sold to a consumer within the meaning of the Unfair Contract Terms Act 1977 their statutory rights are not affected by the provisions of this clause.
4. In the event of the Customer making a claim in respect of any defect in terms of clause 2 hereof the Customer must.
 1. Reasonably satisfy the Company that the Goods have been properly installed, commissioned, stored, serviced and used and without prejudice to the generality of the foregoing that any defect is not the direct or indirect result of lack of repair and/or servicing, incorrect repair and/or servicing, use of wrong materials and/or incorrect spare parts
 2. Allow the company to inspect the Goods and/or any installation and any relevant packaging as and when reasonably required by the Company.
5. Subject to the Company being notified of any defect as is referred to in sub-clause 2 hereof within a reasonable time of it becoming apparent and subject always to the terms of sub-clause 4 hereof, the Company shall, in its option, replace or repair the defective Goods or refund a proportionate part of the Price. The Company shall have no further liability to the Customer (save as mentioned in sub-clause 6 hereof).
6. The Company shall be liable to indemnify the Customer in respect of any claim for death or personal injury to any person in so far as such is attributable to the negligence or breach of duty of the Company or any failure by the Company to comply with the provisions of sub-clause 2 hereof.
7. Save as provided in sub-clause 2 hereof the Company shall not be liable in respect of any claim by the customer for costs, damages, loss or expenses (whether direct, indirect, consequential or otherwise) or indemnity in any respect howsoever arising including, but not by way of limitation, liability arising in negligence (other than pursuant to clause 6 above) that may be suffered by the Customer or any third party.

Safety Notices

Peak Scientific Instruments cannot anticipate every possible circumstance which may represent a potential hazard. The warnings detailed within this manual refer to the most likely potential hazards, but by definition cannot be all inclusive. If the user employs an operating procedure, item of equipment or a method of working which is not specifically recommended by Peak Scientific, the user must ensure that the equipment will not be damaged or become hazardous to persons or property.

Symbols

This manual uses the following symbols to highlight specific areas important to the safe and proper use of the air compressor.

 WARNING	A WARNING notice denotes a hazard. It calls attention to an operating procedure, process or similar, which if not correctly performed or adhered to, could cause personal injury or in the worst case death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood or met.
 CAUTION	A CAUTION notice denotes a hazard. It calls attention to an operating procedure, process or similar, which if not correctly performed or adhered to, could cause damage to the air compressor or the application. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood or met.
	Caution, risk of electric shock. Ensure power to the air compressor has been removed before proceeding.

Safety Notice to Users



These instructions must be read thoroughly and understood before installation and operation of your Peak Solaris Air Compressor. Use of the air compressor in a manner not specified by Peak Scientific MAY impair the SAFETY provided by the equipment.



When handling, operating or carrying out any maintenance, personnel must employ safe engineering practices and observe all relevant local health and safety requirements and regulations. The attention of UK users is drawn to the Health and Safety at Work Act 1974, and the Institute of Electrical Engineers regulations.



If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment maybe impaired.

Declaration of Conformity

We Peak Scientific Instruments Ltd.
Of Fountain Crescent, Inchinnan, Renfrewshire, PA4 9RE
Declare that:


Equipment: Air Compressor
Models: Solaris Air Compressor 110V & 230V

To which this declaration relates, is in conformity with the applicable EC directives, harmonized standards, and other normative requirements.

- Low Voltage Directive 2014/35/EU
EN 61010-1: 2010 Electrical Equipment for measurement, control and laboratory use.
- Electromagnetic Compatibility Directive 2014/130/EU
EN 61326-1: 2013 Electrical Equipment for measurement, control and laboratory use.
- FCC47 CFR Part 15 Class B
Unintentional radiators; Conducted and Radiated emissions limits.

All evaluation, testing and certification issued by:

York EMC Services Ltd.
Earls Road, Grangemouth Technology Park
Grangemouth
KY11 9HZ

Signed:  Name: Chris Pugh
Date: 19/08/2016 Position: Engineering & Operations Director



Environmental Declaration

We Peak Scientific Instruments Ltd.
Of Fountain Crescent, Inchinnan, Renfrewshire, PA4 9RE

Declare that:

Equipment: Air Compressor

Models: Solaris Air Compressor

Is fully compliant with the following Directives

- 2012/19/EU WEEE (Waste of Electrical and Electronic Equipment)
- 2011/65/EU RoHS 2 (Restriction of Hazardous Substance)

Peak Scientific Instruments Ltd fully complies with its obligations towards the European WEEE (Waste of Electrical and Electronic Equipment) Directive 2012/19/EU. These obligations are being met within the B2B compliance group.

Peak Scientific Instruments Ltd has developed all reasonable 'due diligence' controls to ensure that our products comply with the principles and requirements of the European recast RoHS (Restriction of Hazardous Substances) Directive 2011/65/EU. Similar directives in the United States and China, for example, have also been captured within this program.

Where a specific certificate of compliance is required, this can be requested, on a product serial number basis, directly from Peak Scientific Instruments Ltd, by contacting us through our website on www.peakscientific.com

Signed:  Name: Chris Pugh

Date: 19/08/2016 Position: Engineering & Operations Director



Technical Specification

Solaris Air Compressor

Environment

Minimum Operating Ambient Temperature	5°C (41°F)
Maximum Operating Ambient Temperature	35°C (95°F)
Maximum Altitude	2000 m
Maximum Relative Humidity	70% Non-Condensing
Minimum Storage Temperature	-20°C (-4°F)
Maximum Storage Temperature	60°C (140°F)

Compressor Outlets

Maximum Pressure	8.27 bar (120 psi)
Particles	<0.01µm
Phthalates	None
Suspended Liquids	None
Gas Outlets	1 x ¼" BSPP
Drain Outlets	1 x ¼" BSPP
Pressure Gauges	1

Electrical Requirements

Voltage	~100 / 100-115 VAC	~220-240 / 208-230VAC
Frequency	50/60 Hz	50/60 Hz
Current	5.0 / 5.2A	2.3-2.7 / 3.2A
Input Connection	C14 Plug	
Power Cord (Supplied)	C13 Socket to Local Connection	
Pollution Degree	2	
Insulation Category	I	

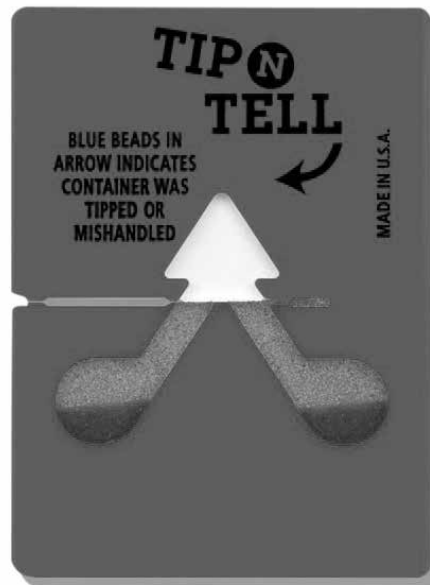
General

Dimensions cm (inches) WxDxH	41.6 (16.3) x 54.0 (21.2) x 40.6 (15.8)
Compressor Weight Kg (lbs)	41.5 (91.5)
Shipping Weight Kg (lbs)	51.5 (114)

Unpacking

Although Peak Scientific takes every precaution with safe transit and packaging, it is advisable to fully inspect the unit for any sign of transit damage.

Check 'SHOCKWATCH' and 'TIP-N-TELL' labels for signs of rough handling prior to unpacking.



Any damage should be reported immediately to the carrier and Peak Scientific or the Peak Partner from where the unit was purchased.

Follow the unpacking instructions posted on the side of the crate. It will require two people to remove the unit from the shipping crate and to manoeuvre the air compressor onto the bench.

Please save the product packaging for storage or future shipment of the air compressor.

Note: Included with the air compressor is a "Fittings Kit" containing mains power leads for UK, EU & US and also all the required fittings and warranty registration card. Be careful not to discard these with the packaging.

Fittings Kit Contents

Supplied in the Fittings Kit are all the fittings required to connect the air compressor to the application. The contents of the Fittings Kit are as follows:

1. Teflon Tubing	x 3m
2. ¼" Compression Fitting	x 2
3. 2.5mm Hex Key	x 1
4. UK Mains Power Cable	x 1
5. EU Mains Power Cable	x 1
6. US Mains Power Cable 110v	x 1
7. US Mains Power Cable 230v	x 1

All of the air compressor output ports are located on the output panel at the rear of the unit.

Unpacking Instructions

The unit weight constitutes a two person lift and as such, safe lifting practices should be employed; do not attempt to lift on your own, as you will significantly increase the chance of injury & damage to yourself and others around you.

1. Remove the screws encircled in red around the bottom of the crate lid and lift upwards.
2. Next, with someone on either side of the unit, position your hands underneath the unit ready to lift.
3. Ensuring your knees are bent and your back is straight, lift the unit to the desired location.

Installation

Compressor Environment

The air compressor is designed for indoor use only. It should be installed adjacent to the application(s) it is supplying. If this is not convenient then the unit can be sited elsewhere, however, consideration should be made of the lengths of pipe runs as pressure drops can result from extended runs of pipe.

Performance of the air compressor (like all sophisticated equipment) is affected by ambient conditions. Note should also be taken to the proximity of Air Conditioning outlets. These can sometimes give rise to “pockets” of air with high relative humidity. Operation of the unit within such a pocket could adversely affect its performance. Consideration should also be given to the air flow around the unit. It is recommended that an air gap of 75mm (3”) should be maintained down both sides and at the rear of the unit. Please refer to the drawing below for the general dimensions of the unit.

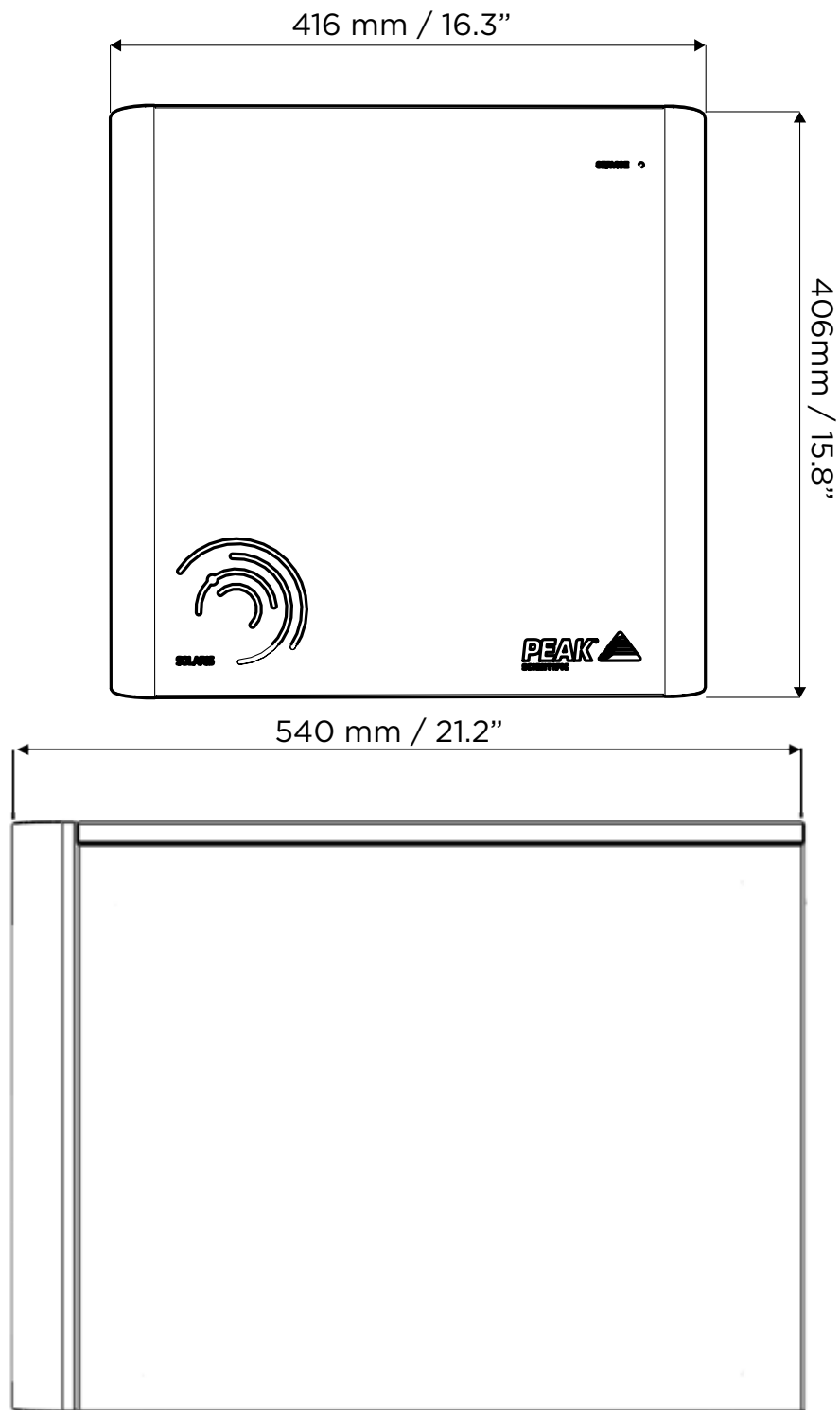
Please ensure Generator is situated in a well-ventilated environment and is positioned to allow easy disconnection from the mains supply if required.

Minimum Operating Ambient Temperature: 5 °C (41 °F)

Maximum Operating Ambient Temperature: 35 °C (95 °F)

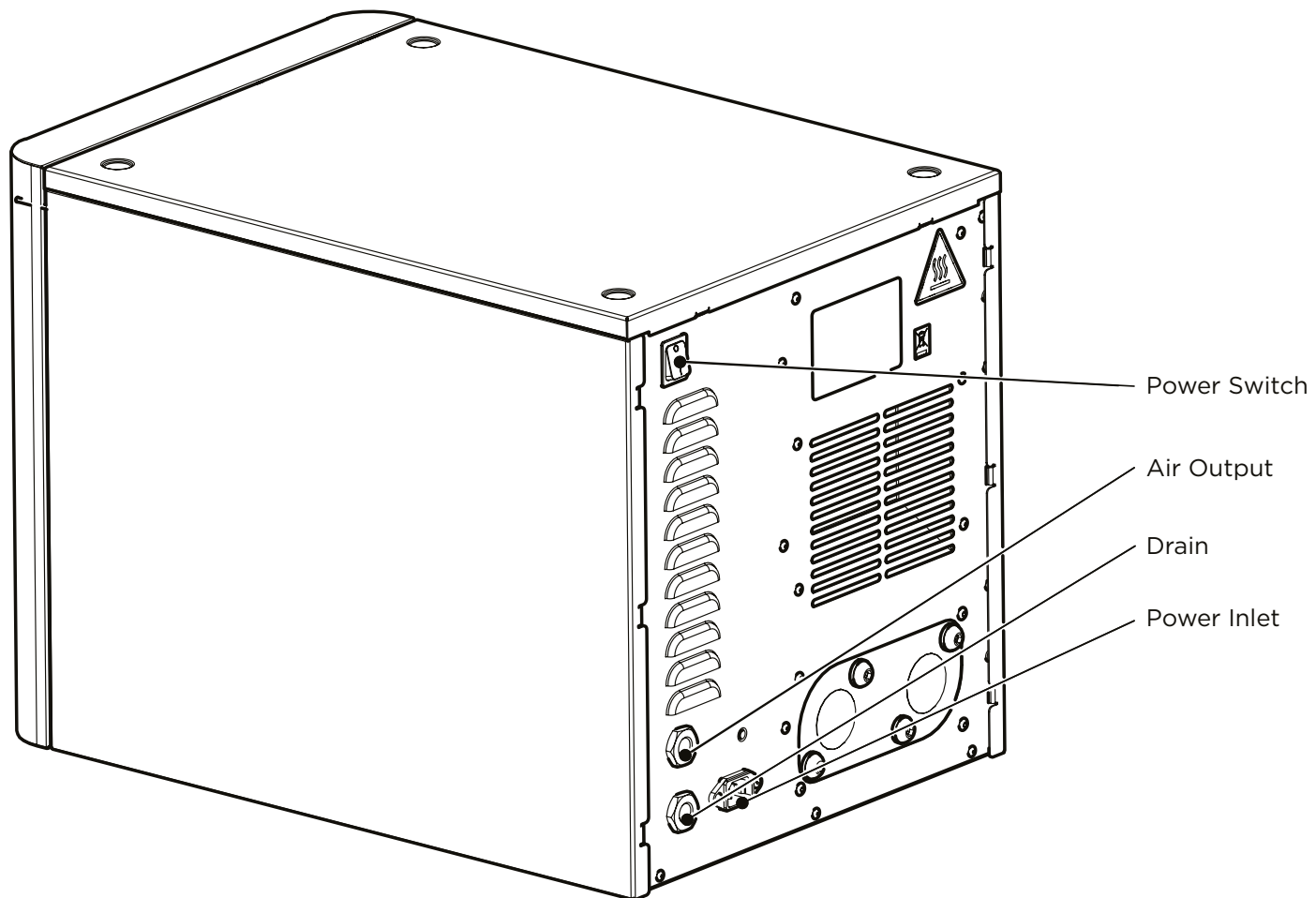
Compressor Overview

General Dimensions



The air compressor must always be placed on a flat, level surface. Failure to do so will affect the performance of the unit.

Rear Connections



Electrical Connection

Connect the air compressor into an appropriate electricity supply, between either 100-110VAC or 230VAC. Refer to the air compressor serial plate for input specification and ensure your supply matches the requirements.

If an appropriate mains power cords is not supplied or a substitute one is used then ensure that all components of it the plug, cord and connector have adequate ratings for the generator and appropriate approvals for the country of use. Failure to do so could cause damage to the generator or risk overloading of the power cord.



This unit is classified as SAFETY CLASS 1. THIS UNIT MUST BE EARTHED. Before connecting the unit to the mains supply, please check the information on the serial plate. The mains supply must be of the stated AC voltage and frequency.

EARTH/GROUND (E):-	Green & Yellow	or	Green
LIVE (L):-	Brown	or	Black
Neutral (N):-	Blue	or	White

Electrical requirements are nominal +/- 10% depending on chosen model. Extended periods at extremes can have a detrimental effect on the operation and life of the Air Compressor.



If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment maybe impaired.

Connecting to the application

Once the initial purge run of 30 minutes has completed the compressor is now ready to be connected to the application(s).



The pressure in the internal storage tanks must be allowed to dissipate before connecting the compressor to the application(s)

Attach the ¼” compression fitting to the outlet of the air compressor. Using the ¼” tubing supplied, connect the outlet of the air compressor to the inlet on the application.

If you require more tubing than is supplied please refer to the Tubing Lengths section.



Once the tubing is connected to the application, please ensure that it is thoroughly checked for being leak-tight. Even the slightest leak in the gas supply between the air compressor and the application can lead to a reduction in efficiency.

Tubing Lengths



The diameter of the tubing which will be connected to the gas outlet is important and is determined by the length of tubing required. Failure to follow these recommendations could lead to pressure between compressor and application.

- < 10 meters: Use ¼”/⅜” (¼” O/D, ⅜” I/D) P.T.F.E. tubing.
- > 10 - 40 meters: Use ⅜”/ ⅝” (⅜” O/D, ⅝” I/D). Tubing and fittings not supplied in the fittings kit.
- > 40 metres: Please contact Peak Scientific with the relevant distance and we will calculate the flow resistance and the tubing size required.

A combination of ¼”/⅜” and ⅜”/⅝” tubing may be used to ensure that there is no large diameter tubing within the lab (i.e. for the first 20 meters from the air compressor use ⅜”/⅝” and the final 10 meters to the application use ¼”/⅜” tubing). Keep the connections and bends to a minimum.

Normal Operation

The Solaris Air Compressor is designed specifically to minimize operator involvement. Given that the system is installed as described in earlier sections and is serviced in accordance with the specified maintenance recommendations (see Service Requirements), then it should simply be a matter of turning the air compressor on when it is required.

The air compressor will automatically produce the factory set flow and pressure as detailed in the Technical Specifications and as required by the Solaris 10 Nitrogen generator.

The generator compressor stops periodically to eject moisture from its drain bowls; this is controlled by a timer. When the compressor is running it is controlled by a pressure switch with two sets of limits:

Output A :

The high point turns the LEDS green indicating required pressure is available. The low point turns the LEDS yellow indicating the pressure has dropped below the required level.

Output B:

The high point turns the compressor off indicating there has been no drop in pressure from the output and the demand has stopped. The low point will restart the compressor if the pressure is dropping.

On Demand Gas

The air compressor system will produce compressed air on demand. If the application is operating and requires a gas flow, the system it is connected to will supply this to suit the requirements of the application. If the application requirement for gas stops, the system will also stop, once it has reached its upper set limit in the internal storage tanks. If the demand from the application starts again, the system will detect the demand for gas and will automatically start again to suit the demand.

Unusual Operation

If at any time the air compressor begins to emit excessive noise or vibration, then it should be switched off and you should contact Peak Scientific or the Peak Partner from which the unit has been purchased.

Service Requirements

Service Schedule

Purchase Interval	Component	Part No.	Qty.
12 Months	Solaris Air Compressor Annual Maintenance Kit Kit Includes; 1 x 1st Stage Coalescing Filter Element 1 x 2nd Stage Coalescing Filter Element 1 x Silencer Filter Element 1 x Inlet Filter Element 1 x 3/2 Valve 2 x 2/2 Valve 2 x Plug In Relay 1 x Comp. Service Kit	08-9454	1
Compressor Assembly *	Compressor Assembly Solaris Air Compressor	08-8316	1

* If your compressors have been refitted 3 times they must now be replaced. Please note that when replacing the compressor assembly, the full Annual Maintenance Kit will not be required. Please contact your service provider for more information.


Peak Protected

With Peak Scientific you invest in not only a product but peace of mind. With a network of certified Peak engineers stationed throughout the globe, Peak's rapid response team are never far away and our commitment is to keep your running day in, day out, protecting your laboratory workflow.


[Peak Protected] can provide...



Installation
A dedicated Peak engineer will visit your lab to install and setup your generator



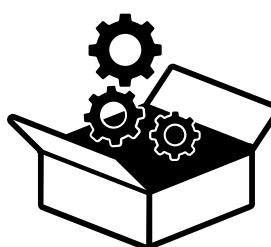
Complete plan
Swift response by a Peak Service Engineer within 72 hours & planned preventative maintenance



Premium Protected
Guaranteed rapid on-site response within 24 hours & planned preventative maintenance



IQ/OQ
Certified assurance for applications requiring documented qualification



Spares
Genuine Peak parts with express delivery, ensuring optimal performance and lifetime



Technical Support Hotline
Around the clock support by phone or online with our global technical helpdesk

To find out more about protecting your investment visit: www.peakscientific.com/protected

Cleaning

Clean the outside of the unit only using warm soapy water and a clean damp cloth. Ensure all excess fluid is thoroughly removed from the cloth prior to use.



Cleaning should only be undertaken with the power switched off and the power cord removed from the rear of the air compressor.





Under no circumstances should any solvents or abrasive cleaning solutions be used as these can contain fumes that could be harmful to the air compressor.



Care should be taken with Leak Detections Liquids.

Troubleshooting

Problem	Possible Solution
<p>The air compressor will not switch on and the power switch does not illuminate.</p>	<ul style="list-style-type: none"> • Ensure power cord is plugged into the air compressor and that the power socket is turned on. • Check the fuse in the power cord plug. • Contact your service provider. 
<p>The air compressor will not switch on but the power switch is illuminated.</p>	<ul style="list-style-type: none"> • Disconnect power cord from the rear of the air compressor. Open the left hand panel and check that the circuit breaker is turned on (switch in the up position). Reconnect power cord. • Contact your service provider. 
<p>Compressor is running but pressure is not building.</p>	<ul style="list-style-type: none"> • Contact your service provider.
<p>Yellow “SERVICE” LED on front panel is on constantly.</p>	<ul style="list-style-type: none"> • The compressor is due for service. Contact your service provider. • Refer to Service Indication section of this manual for further information.
<p>Yellow “SERVICE” LED on front panel is flashing.</p>	<ul style="list-style-type: none"> • The compressor is overdue for service. Contact your service provider urgently. • Refer to Service Indication section of this manual for further information.

Go Online or Complete and Return

We know that registering any of your recently purchased products is not the first thing on your mind- but it is very important to both of us. Not all warranties are alike and Peak Scientific stand out against other gas suppliers as we offer a comprehensive, quick response, on-site warranty. This means that in the very unlikely case that your gas develops a fault we have rapid support teams on-hand around the world who are able to come to your lab and get you back up and running in no time.

Register for your **comprehensive 12 month on-site warranty** with ease online at www.peakscientific.com/protected.

Alternatively, you can send the completed form to Peak Scientific by post or email at warranty@peakscientific.com.

Go Online or Complete and Return

You can register for your **FREE 12 month Warranty** with ease online at www.peakscientific.com/protected.

Alternatively, you can send the completed form to Peak Scientific by post or email at warranty@peakscientific.com.

Product Warranty Registration			
Contact name			
Email address			
Company			
Address			
City/town			
Postcode			
Country			
Telephone			
serial #			
Model type			
Installation date			
Do you still use an alternative gas solution i.e. cylinders or bulk liquid?	Yes	No	
What gas requirements do you have in your lab?	Hydrogen	Nitrogen	Zero Air

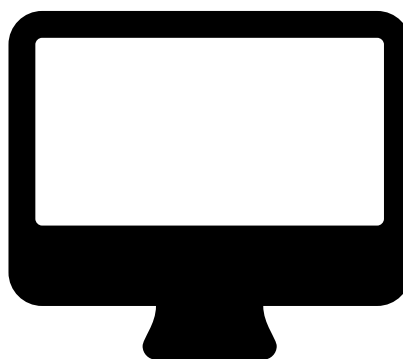
Extend your cover with

Peak Scientific offer comprehensive gas after sales support packages. Peak [Protected] aftercare support can guarantee an on-site response within 72 hours*, genuine parts from our ISO9001 approved factory and a 95% first-time fix rate. See our enclosed Peak [Protected] leaflet for further information.

Important!

You have 1 month to register your Peak Scientific product from the date of installation. Once registered the warranty will be honoured for a period of 12 months. If you wish to defer the installation of your product you must notify Peak Scientific immediately by emailing warranty@peakscientific.com. For products that remain unregistered after 1 month from the shipment date, the warranty will be considered active from the date of factory dispatch.

* Complete Plan only



Important!

You have **1 month to register** your Peak Scientific product from the date of installation. Once registered the warranty will be honoured for a period of 12 months. If you wish to defer the installation of your air compressor, you must notify Peak Scientific immediately by emailing **warranty@peakscientific.com**. For air compressors that remain unregistered after 1 month from the shipment date, the warranty will be considered active from the date of factory dispatch.

[**PEAK Protected**]TM

Peak Scientific has highly trained, fully certified Field Service Engineers located in over 20 countries across every continent around the world. This allows us to provide an industry-leading rapid response service to our customers. With [**Peak Protected**], your laboratory's productivity becomes our top priority.

To discuss Peak Protected generator cover and payment options speak to your local Peak Representative or for further information contact: protected@peakscientific.com

Peak Scientific

Fountain Crescent
Inchinnan Business Park
Inchinnan
PA4 9RE
Scotland, UK

Tel: +44 141 812 8100

Fax: +44 141 812 8200

For further information on any of our generator products please contact marketing@peakscientific.com