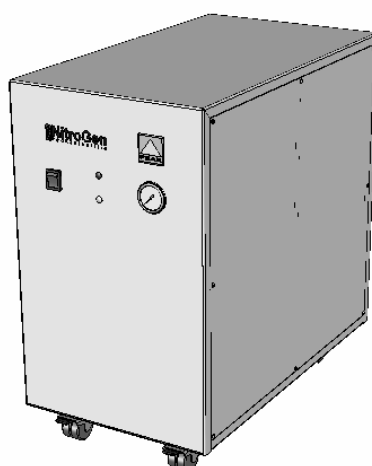




# ***MSQ18LA***

## **Nitrogen Generator for Mass Spectrometers**

User Manual  
Document No. 065779  
November 2008



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## Safety Notice

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### **Caution**

These instructions must be read thoroughly and understood before installation and operation of your MSQ18LA Nitrogen Generator. Use of the generator in a manner not specified 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.

## Technical Specifications

<b>Generator Environment</b>	
Minimum operating ambient temperature	5°C (41°F)
Maximum operating ambient temperature	25°C (77°F)
Maximum relative humidity	70%
Maximum altitude	2000 meters
<b>Nitrogen Outlet</b>	
Maximum flow	18 l/min (0.64 cfm)
Maximum pressure	6.9 bar (100 psi)
Particles	< 0.01 um
Outlet 1/4" BSP	1
Pressure gauges	1
Phthalates	None
Suspended liquids	None
Startup time	30 min
<b>Electrical Requirements</b>	
@230 V $\pm$ 10% (50/60 Hz)	3.6 A
<b>FUSE DETAILS</b>	
Current rating	10.0 A
Voltage rating	250 V
Breaking capacity @250 V	1500 A
Type	UL/CSA, T10 A/250 V
Electrical connection	C19; Single-phase power cord
Noise level	54 dBA @ 1 m
<b>General</b>	
Dimensions in cm (inches) W x D x H	40 x 70 x 71 (15.7 x 27.5 x 28)
Weight	60 kg (132 lb)
Shipping weight	85 kg (187 lb)

# Introduction

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Welcome to the user manual for the MSQ18LA Nitrogen Generator. Enclosed in this manual you will find the information required to ensure that your generator is operated and serviced according to our recommended guidelines, which will prepare you for long and trouble-free nitrogen generation.

Please review each of the following sections carefully and ensure that the maintenance log at the rear of this manual is updated for future reference.

Thank you for selecting Dionex to meet your gas generation needs. Should you require any further assistance or support, please do not hesitate to contact your local Dionex Service Representative.

# Unpacking and Installation

Although every precaution is taken to ensure safe transit and packaging, it is advisable to fully inspect the unit for any sign of transit damage.

Check the “SHOCKWATCH” label for signs of rough handling prior to unpacking:



**ANY DAMAGE SHOULD BE REPORTED IMMEDIATELY TO THE CARRIER AND DIONEX.**

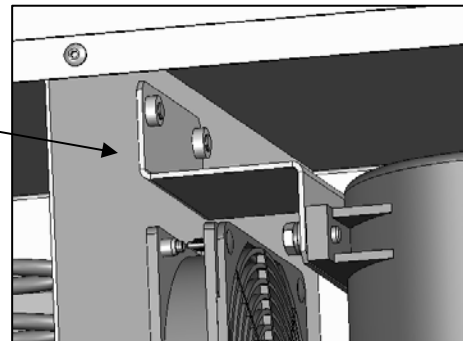
Follow the unpacking instructions posted on the side of the crate. It will require two people to lift the crate clear and to maneuver the generator onto the floor.

## **Removal of Transit Bracket**

Remove the side cover from the cabinet.  
Remove the two screws, the hex bolt, and the Transit Bracket which secures the compressor to the cabinet.

Make sure the compressor mounts are located on their positioning bosses.

Refit the side cover to the cabinet.



## **⚠ Caution**

**Important Note: The Transit Bracket must be removed prior to switching the unit on. Failure to do so will result in LOUD NOISE and will cause damage to the equipment.**

The unit can now be moved to its final location on the castors provided.

**Note:** Included with the generator is a plastic envelope pack containing manuals and fittings. Be careful not to discard these with the packing. The MSQ18LA User Manual (P/N 065779) is on the MSQ Manuals CD (P/N 062793), which is part of the MSQ Ship Kit (P/N 062792). The MSQ Ship Kit is a no-charge item that ships with every new MSQ order.

***Please save the product packaging and Transit Bracket for storage or future shipment of the generator.***

## Useful Installation Information

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The diameter of the tubing which will be connected to the air outlet is important and is determined by the length of tubing required. Failure to follow these recommendations could lead to accelerated compressor wear.

- 10 meters. Use 6/4 (6mm O/D, 4mm I/D) Teflon® PTFE (polytetrafluoroethylene) tubing.
- 10 - 40 meters. Use 10/8 (10mm O/D, 8mm I/D).

A combination of 6/4 and 10/8 tubing (see imperial units below) may be used to ensure that there is no large diameter tubing within the lab (i.e., use 6/4 tubing for the first 10 meters and 10/8 tubing for the final 20 meters).

The imperial equivalents are:

- 6/4 = 1/4" OD, 3/16" ID
- 10/8 = 3/8" OD, 5/16" ID

Keep connections and bends to a minimum.

The generator is supplied with 6mm Push-in Legris fittings and 2M of PTFE tubing (included with every new MSQ).

## Electrical Connection

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### Important Electrical Notice

This unit is classified as **SAFETY CLASS 1** equipment. **THIS UNIT MUST BE GROUNDED.** Before connecting the unit to the wall outlet supply, please check the output voltage. The electrical requirement is 230 V (50/60 Hz), 3.6 A.

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

Connect the generator to a single-phase supply, using the power cord provided.



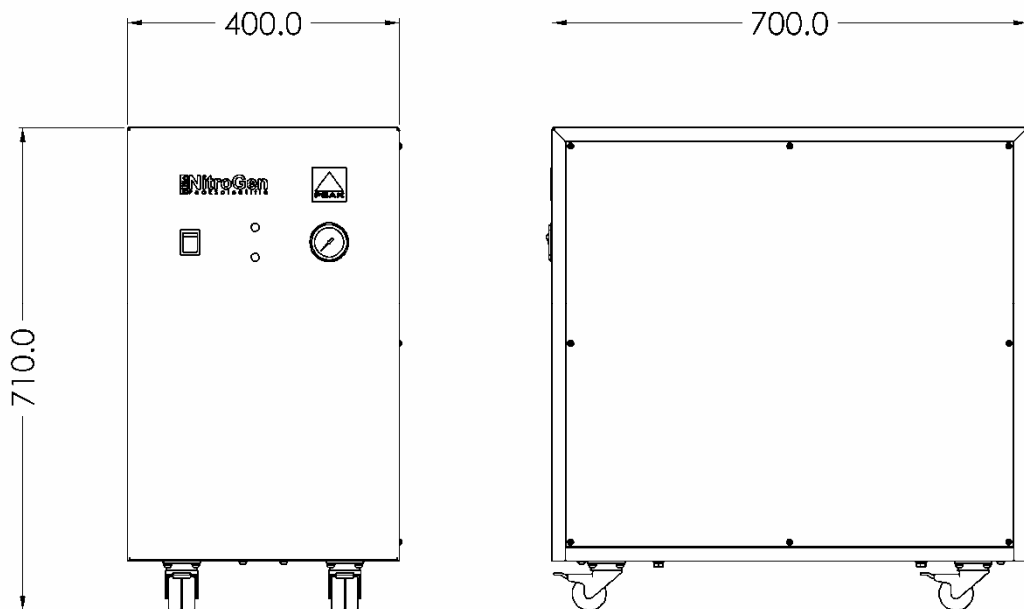
## Generator Environment

The generator is designed for indoor use only. It should be installed adjacent to the mass spectrometer it is supplying. If this is not convenient then the unit can be located elsewhere; however, consideration should be made of the lengths of pipe runs as pressure drops can result from extended runs of pipe. Please see “Useful Installation Information” (page 8) for further details.

Performance of the generator (like all sophisticated equipment) is affected by ambient conditions. Care 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, at the rear, and across the top of the unit. Please refer to the drawing below for the general dimensions of the unit.

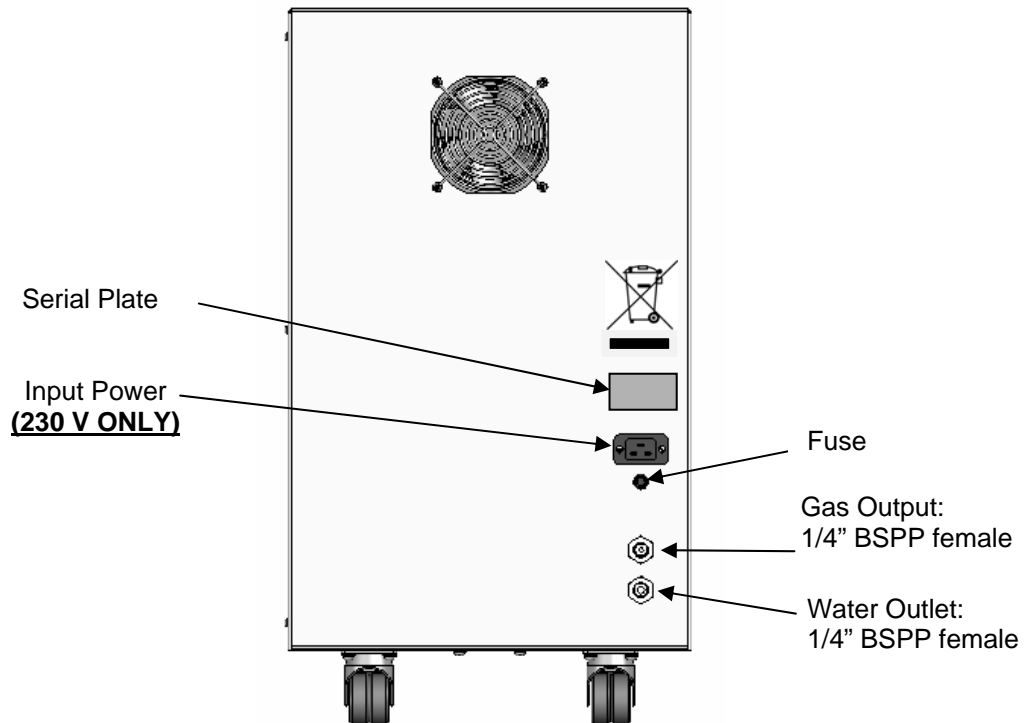
Maximum Ambient Conditions: 25°C (dry bulb) 70%RH (Max)

### General Dimensions

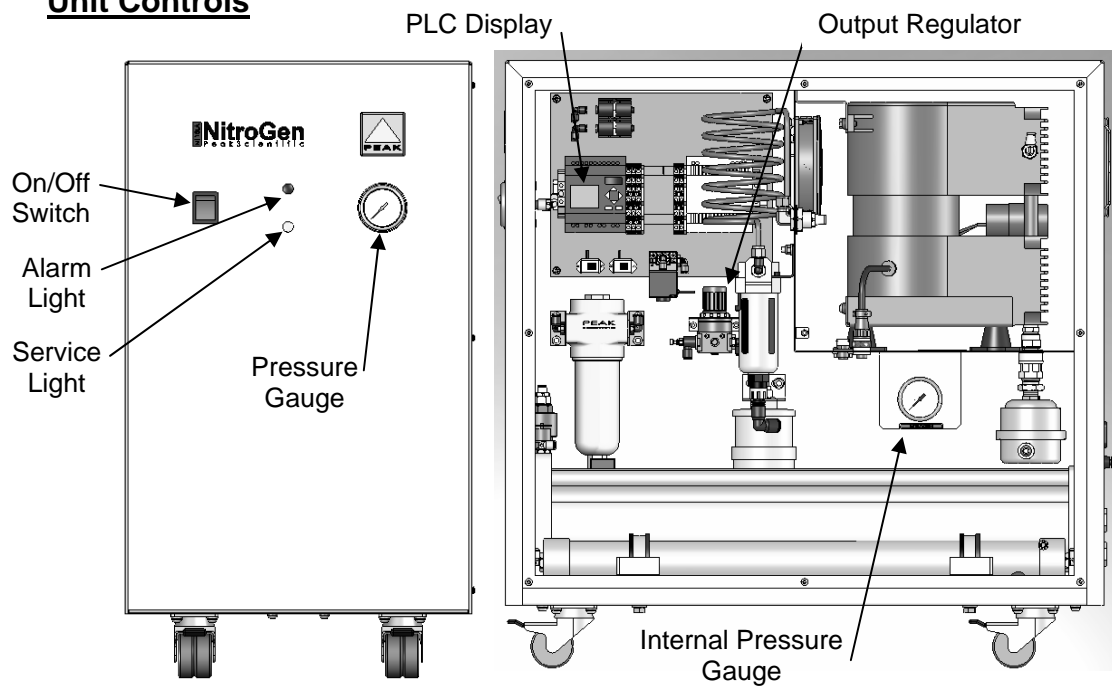


**Unit must always be placed on a level surface. Failure to do so will affect the performance of the generator.**

## Connections to Rear of Unit



## Unit Controls



## Operation

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The MSQ18LA Nitrogen Generator 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 maintenance recommendations, then it should simply be a matter of turning the generator on. The generator will automatically produce the factory default flow and pressure.

### Pressure & Flow Adjustment

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The system is configured in the factory to give standard Outlet Pressure and Flow Rate (see “Technical Specifications” on page 5). **These settings should NEVER require adjustment during normal operation.** During service/fault diagnosis, the settings can be changed by adjusting the pressure regulator and flow controller situated on the side panel (see page 10). Please contact your local Dionex Service Representative for further instructions.

### Unusual Operation

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If at any time the generator begins to emit excessive noise or vibration, then it should be switched off and you should contact your local Dionex Service Representative as soon as possible.

### System Drain

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Please ensure that the drain port at the rear of the compressor is led to a suitable connection or container. It should be noted that the generator will expel considerable amounts of water from this port. If a container is used, it should be emptied at regular intervals.

NOTE: The container must not have an airtight seal.

### Service

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Ensure that the generator is serviced in accordance with the maintenance recommendations (for details, refer to “Maintenance Schedule” on page 14).

# Alarm System

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## High flow - Alarm stage 1

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The red ALARM LED flashes and the buzzer sounds for 1 second every 30 seconds.  
This is triggered after 8 hours of continuous running of high flow.  
The alarm system resets automatically after the MSQ18LA returns to compressor cycling.

## High flow - Alarm stage 2

---

The red ALARM LED flashes and the buzzer sounds for 1 second every 10 seconds.  
This is triggered after 12 hours of continuous running of high flow.  
The alarm system resets automatically after the MSQ18LA returns to compressor cycling.

## High flow - Alarm stage 3

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The red ALARM LED flashes and the buzzer sounds constantly.  
This is triggered after 18 hours of continuous running of high flow.  
The alarm system can only be reset after intervention of a Dionex Service Representative.

## Service - Indication stage 1

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The yellow SERVICE LED flashes and the buzzer sounds for 1 second every 60 seconds.  
This is triggered after 3000 hours of compressor duty since the last service.  
The service alarm system can only be reset after intervention by a Dionex Service Representative. From this point you have an additional 1000 hours of compressor duty, at which time the control system will force the compressor to stop. It is, however, unlikely that the compressor will last this long and you should arrange for a service visit as soon as possible.

## Service - Indication stage 2

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The yellow SERVICE LED flashes and the buzzer sounds constantly.  
This is triggered after 3900 hours of compressor duty since the last service. This is your warning that in another 100 hours the compressor will stop.

## Service - Indication stage 3

---

The yellow SERVICE LED flashes and the buzzer sounds constantly.  
This is triggered after 4000 hours of compressor duty since the last service. The control system will force the compressor to stop.

## Notes on Alarms

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The compressor cycle time is dictated by the flow requirement of the unit and is not driven by the PLC (Programmable Logic Controller). As the flow requirement reduces, the internal pressure switches will start the compressor cycling. The PLC will detect if the compressor starts cycling and, if so, will reset the alarm condition. Hence, if there is a high flow requirement, the compressor will not cycle and the alarm stages will progress.

If the alarm sounds at stage 1 or stage 2 during a low flow output, arrange for technical assistance.

If a leak in the system develops, the compressor will keep running continuously and not cycle. After a period of 18 hours, the unit would go into stage 3 of the alarm. Arrange for technical assistance to reset the alarm and find/fix the problem.

# Routine Maintenance

## Caution

**Servicing and/or repair of the generator should only be undertaken by a TECHNICALLY COMPETENT PERSON, with the generator in its safely isolated condition.**

### SAFELY ISOLATED CONDITION

Definition: The unit is in a Safely Isolated Condition when it is disconnected from its application, fully de-pressurized, and isolated from the electrical supply. Directions for isolating the generator are shown below.

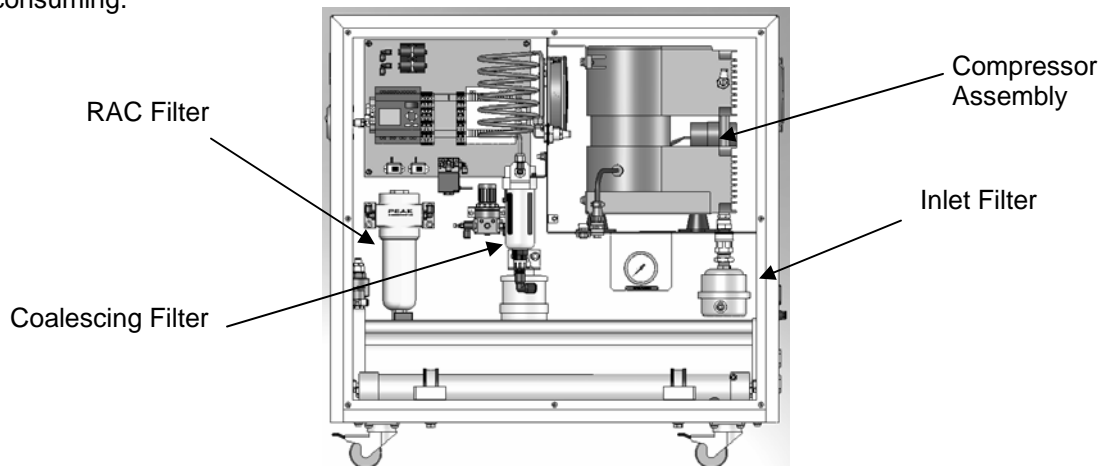
### ISOLATING THE GENERATOR

- Switch off the unit.
- Unplug the unit from the main power supply and remove the power cord from the rear of the unit.
- Disconnect from the application.
- Ensure the internal pressure gauge (page 10) reads **zero** prior to carrying out any work.

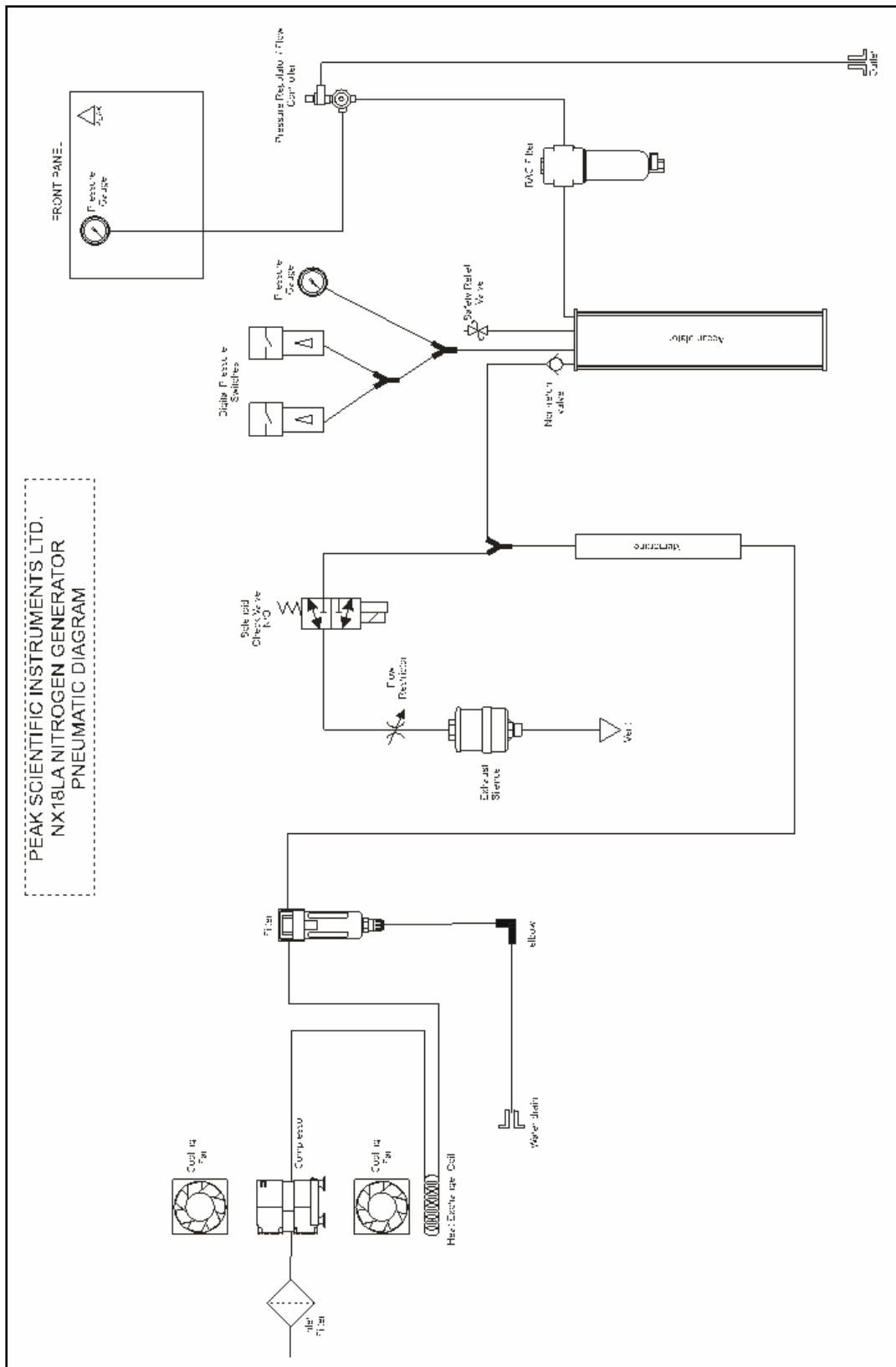
## Maintenance Schedule

SERVICE INTERVAL	COMPONENT	PEAK PART NO.	DIONEX KIT PART NO.
6 MONTHS	COALESCING FILTER	02-4335	068349
1 YEAR	COMPRESSOR INLET FILTER	02-4640	
	RAC FILTER	00-4425	
The Lesser of Every 3000 Hours or 18 Months	COMPRESSOR ASSEMBLY	08-8069	069347
ALTERNATIVE TO COMPRESSOR ASSY.	COMPRESSOR RE-FIT *	06-5529	No Dionex P/N

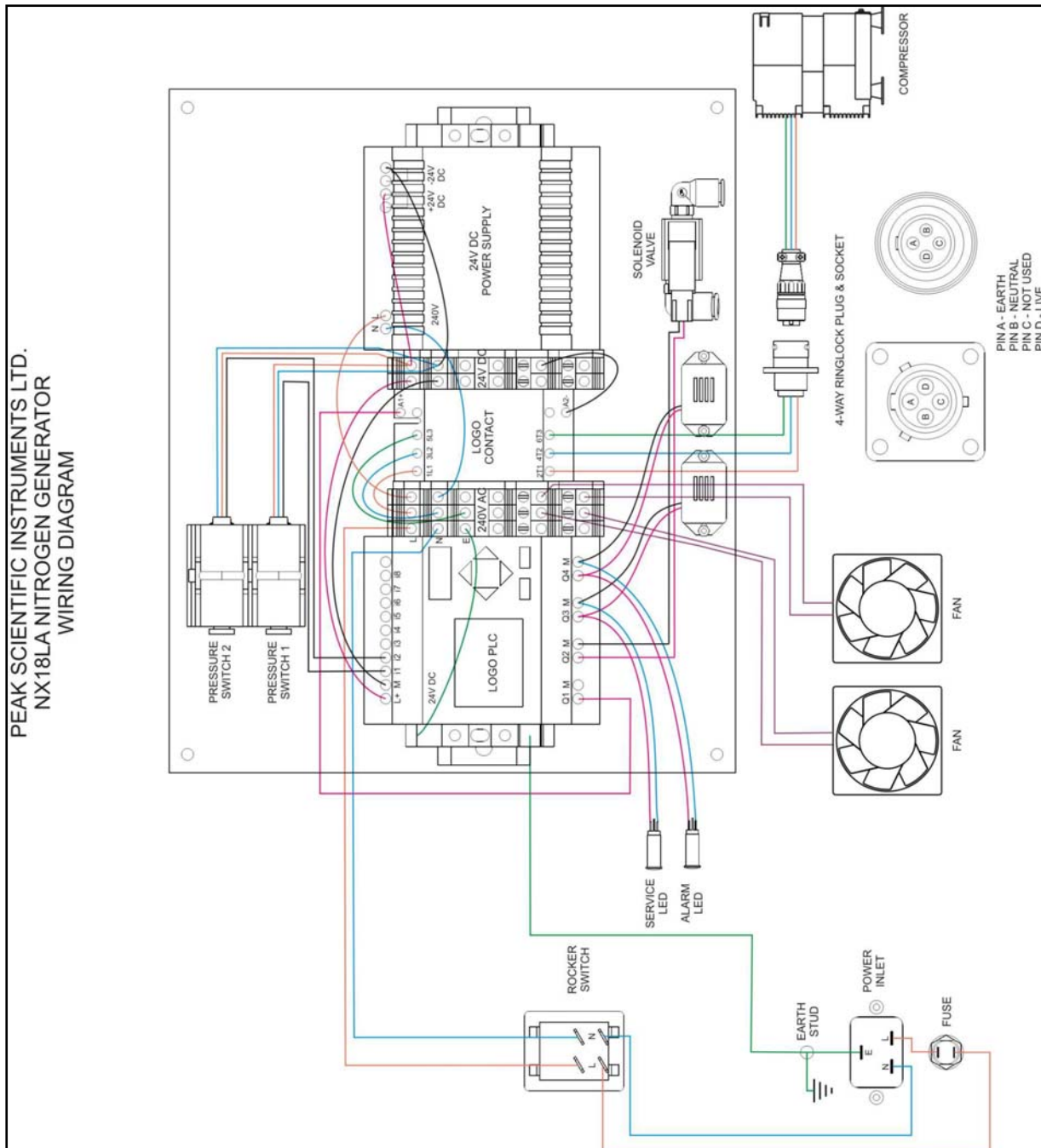
\* Compressors can be re-fitted (as an alternative to replacement) up to 3 times. This is a more cost-effective solution, but a degree of technical expertise is required and it can be time-consuming.



## MSQ18LA Pneumatic Diagram



## MSQ18LA Wiring Diagram





## **MSQ18LA Maintenance Log**

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**Serial Number** \_\_\_\_\_

<b>Work Done</b>	<b>Remarks</b>	<b>Name</b>	<b>Date</b>

