



INSTALLATION OVERVIEW

Manufacturer	EPIROC
Type	DRILL RIG
Model	PIT VIPER
Site	
Serial Number	
Cabin Pressure Max	> 250 Pascals
Set Auto Cabin Pressure	50 Pascals
Key Modules	HEPA H14 Variable Speed Pressuriser FRESH AIR INTAKE
	INPRESS Cabin Pressure Display - Data Logger
	HEPA Return Air filter - RECIRCULATION AIR INTAKE
	Activated Carbon Module with HEPA Final Filter



SAFETY FIRST ALWAYS!

WARNING

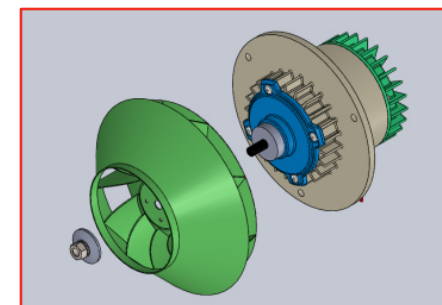
The pressurisation system described in this manual has the following areas which may be dangerous if not treated with great care.

Qualified staff must wear the correct personal protective equipment when cleaning and servicing this unit due to hazardous dust and fibres which may be caught by the stages of air filtration during normal unit operation.

The electrical power system is supplied by 12V DC or 24V DC and no work should be carried out on the pressuriser system without the correct safe work procedures and electrical safety measures being taken, and all relevant circuit breakers opened to isolate the circuit.

The air filtration system may have several types of high-speed rotating equipment installed with very sharp edges. Ensure all safety guards are in place while the system is running.

Please be aware that HEPA filters cannot be cleaned and must be replaced at the end of their lifecycle or if filter media has been damaged.



SYSTEM OVERVIEW

1. Dirty, hazardous air enters the filter assembly through angled veins.
2. The veins cause the air flow to spin and move.
3. The spinning air flow is accelerated further by the integrated pre-cleaner rotor. Centrifugal force throws the heavier than air dirt and dust particles to the outside walls ejector ports.
4. 90% + of the coarse dust and hazardous debris is ejected safely away as this process extends the lifecycle of the filter media.
5. An inner vortex is formed and only precleaned air is drawn down into the filter chamber.
6. The pre-cleaned air is pushed through the easily serviceable filter media rated for submicron dust particle filtration. HEPA (High-efficiency Particulate Air) media complies with OH&S guidance for respirable silica, coal dust and mineral fibres down to 0.3-micron particles.

7. A variable speed centrifugal air pump generates powerful pressurised air.
8. Clean, hazard free, pressurised air is delivered to the operator's cabin.
9. The pressurised air is mixed with the HVAC systems return air.

HEPA Return Air Filter isolates HVAC system thus provides highest protection factor for the operator.

In essence, this part of the system controls dust from shoes and clothes.

10. The air passes through the HVAC system and into the cab.
11. Positive cabin pressure ensures a safe work environment. Positive internal pressure repels harmful, hazardous dust.

12. The BreatheSafe INPRESS unit monitors the cabin pressure as measured through its built-in pressure transducer and calculates the error based on the pressure set-point. This value is applied to an algorithm and the controller calculates a proportional output which adjusts the speed of the pressuriser motor.

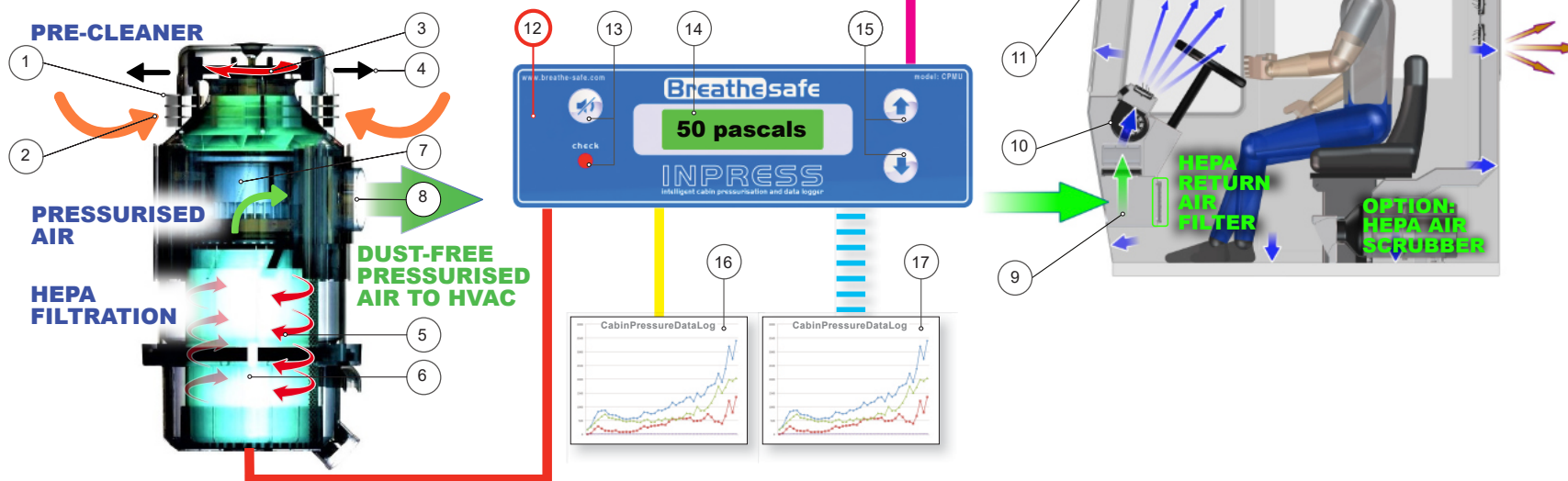
13. If the cabin pressure drops below the set point a visual and if fitted, an audible alarm is activated.

14. A backlit LCD, displays actual cabin pressure in pascals on the top line and the time and date or any alarms present, on the bottom line.

15. The digital interface allows the operator to easily adjust the pressure set point and access additional features.

16. Typically the processor can save up to 3.5 months of data including date, time, pressure readings and alarm instances. Data logs are easily downloadable via a standard RS232 cable.

17. If required, remote data log access, report analysis and management are available using the 4G network and customer support.



CRITICAL PARTS

INPRESS TL PRESSURISER 24V

Item	Part Number	Qty.	Description	Service Interval
1	TLF700EN	1	Fresh Air HEPA H14 Filter TESTED AS PER EN1822	500 - 1000 Hours
2	TQ470148518056H	1	Cabin HEPA Return Air Filter (Recirculation)	500 - 1000 Hours
3	TL4M	1	Brushless Blower motor - INPRESS TL	7500 Hours
4	TQUCPM INPRESS	1	BREATHE SAFE DIGITAL DISPLAY - DATA RECORDER	15000 Hours

INPRESS TL ACTIVATED CARBON PHASE

Item	Part Number	Qty.	Description	Service Interval
1	TQ47055400SCSO2	1	MK2 & MK3 FILTER MODULE: ACTIVATED CARBON	500 - 1000 HOURS
			Includes: 1 x HEPA final filter	
			1 x Solid Core Activated Carbon Module	
2	TQUPCH405Z	1	MK3 CASE STAINLESS STEEL	10000 HOURS



SPECIFICATIONS
HIGH CAPACITY HEPA PRESSURISER

Blower	: Brushless Blower P/N TL4
Voltage	: 24v
Current draw	: 11 amps (peak)
Air Flow	: Upto 180 m ³ /h.
Pre-cleaner	: Integrated VLR (Very Low Restriction).
Filter Element	: Breathe Safe HEPA Primary Filter (H14=99.99% MPPS) TESTED AS PER EN1822 - P/N TLF700EN
Plugs & Fittings	: Mining Spec. Deutsch electrical plugs as standard.
Construction	: High strength composite construction.
Serviceability	: Easy access HEPA filter with twist-lock dust cap single assembly.
Finish	: Satin Powder Coated throughout (Ducting).
Mounting	: Heavy Duty adjustable mounting brackets.
Design	: Fully designed in SolidWorks 3D CAD.
FEA Testing	: Critical components FEA (Finite Element Analyst) tested in Solid Works Simulation.
CDF Testing	: CFD (Computational Fluid Dynamics) simulations in FlowWorks to ensure optimum air flow through the system.



PRESSURISER PARTS



**BREATHE SAFE SYSTEM:
HEPA H14 VARIABLE SPEED
PRESSURISER**

ACTIVATED CARBON MODULE

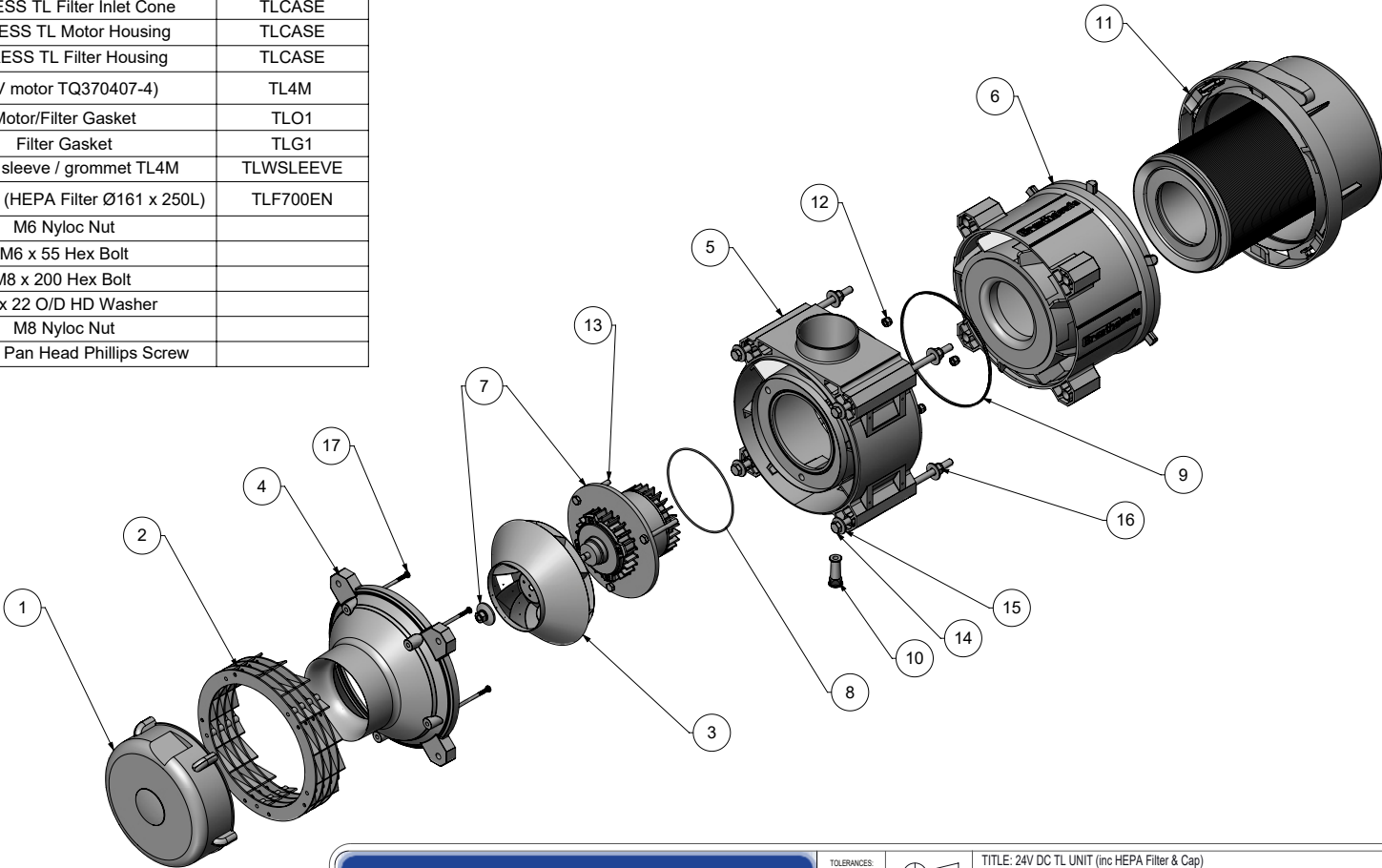


PRESSURISER PARTS

Remove **ALL** weld spatter, burrs / sharp edges. **ALL** edges to be rounded R1mm prior to powdercoating

Dress welds for good appearance.

Item No.	Qty.	DESCRIPTION	PartNo
1	1	Cover & Rotor Assy	TQP99999HOOD
2	4	Injector Ring	TQP99999RINGS
3	1	INPRESS Fan Blade	TL4M
4	1	INPRESS TL Filter Inlet Cone	TLCASE
5	1	INPRESS TL Motor Housing	TLCASE
6	1	INPRESS TL Filter Housing	TLCASE
7	1	(24V motor TQ370407-4)	TL4M
8	1	Motor/Filter Gasket	TLO1
9	1	Filter Gasket	TLG1
10	1	Wiring sleeve / grommet TL4M	TLWSLEEVE
11	1	Filter Seal (HEPA Filter Ø161 x 250L)	TLF700EN
12	3	M6 Nyloc Nut	
13	3	M6 x 55 Hex Bolt	
14	4	M8 x 200 Hex Bolt	
15	8	M8 x 22 O/D HD Washer	
16	4	M8 Nyloc Nut	
17	5	M4 x 75 Pan Head Phillips Screw	



REVISIONS			
REV.	DESCRIPTION	DATE	APP'D
1	HARDWARE & PART NO'S UPDATED	03/01/2019	B.D.

Breathe**safe**

TOLERANCES:

LINEAR:

XX = ± 1.50mm

XX.X = ± 0.75mm

XX.XX = ± 0.25mm

ANGULAR: ± 0° 50'

Unless Stated On Dwg

Proprietary & Confidential

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TITLE: 24V DC TL UNIT (inc HEPA Filter & Cap)

Manufacturer: Breathe Safe

Model: INPRESS TL

Part No: TL4

Drawn: B.D.

Drawn Date: 06/10/2016

Material: N/A mm - N/A

Dwg No: 07364 EXPLODED BOM

Weight: N/A Kg

Rev: 9

PRESSURISER PARTS

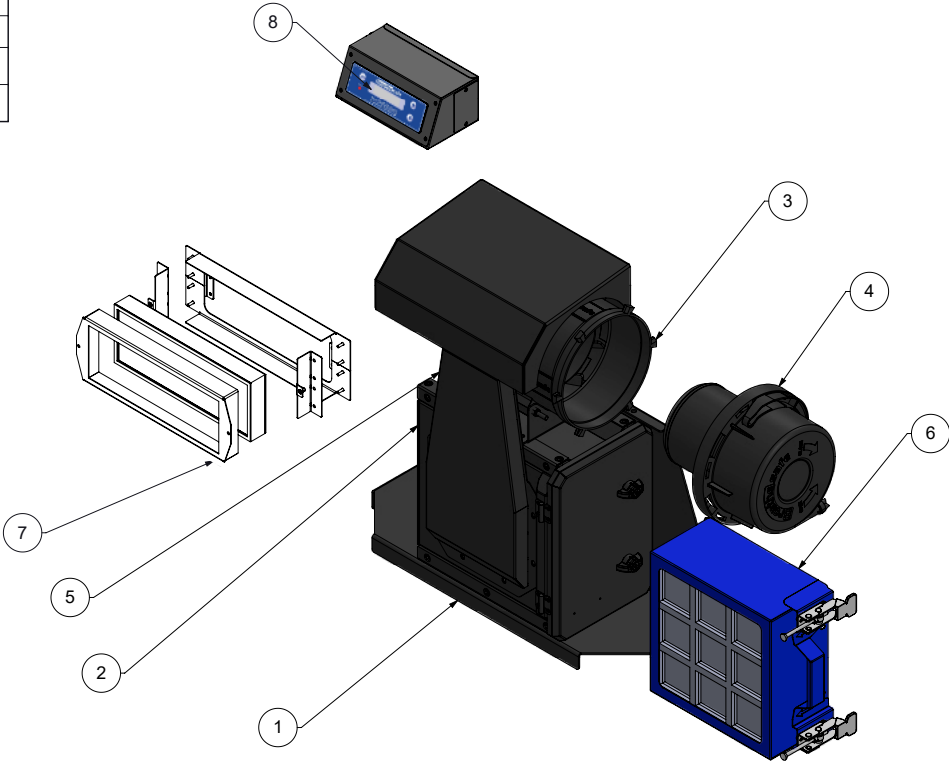
Breathe-safe				
Item No.	Material#	Part No	Description	Qty
1		TQM DP11312	SO2 Mount Plate	1
2		TQUPCH405Z	MK3 Base Case 316SS	1
3		TL4	24V DC TL UNIT Variable Speed	1
4		TLF700EN	H14 Filter (Tested as per EN1822)	1
5		TQMDP08776	TL4 to SO2 Slimline Duct Assy	1
6		TQ47055400SCSO2	Solid Carbon Filter C/W HEPA SM Kit	1
7		TQ470148518056H	Hepa Filter Assy 270x 250 x 51	1
8		TQUCPMINPT	Data Logger c/w Pressure sensor	1

HEPA H14 FILTER

PN: TLF700EN

ACTIVATED CARBON

PN: TQ47055400SCSO2



OEM: EPIROC
MODEL: PIT VIPER

[Remove ALL weld spatter, burrs / sharp edges. ALL edges to be rounded R1mm prior to powdercoating. Dress welds for good appearance.]

PRESSURISER PARTS

HEPA RETURN AIR (CABIN) FILTER

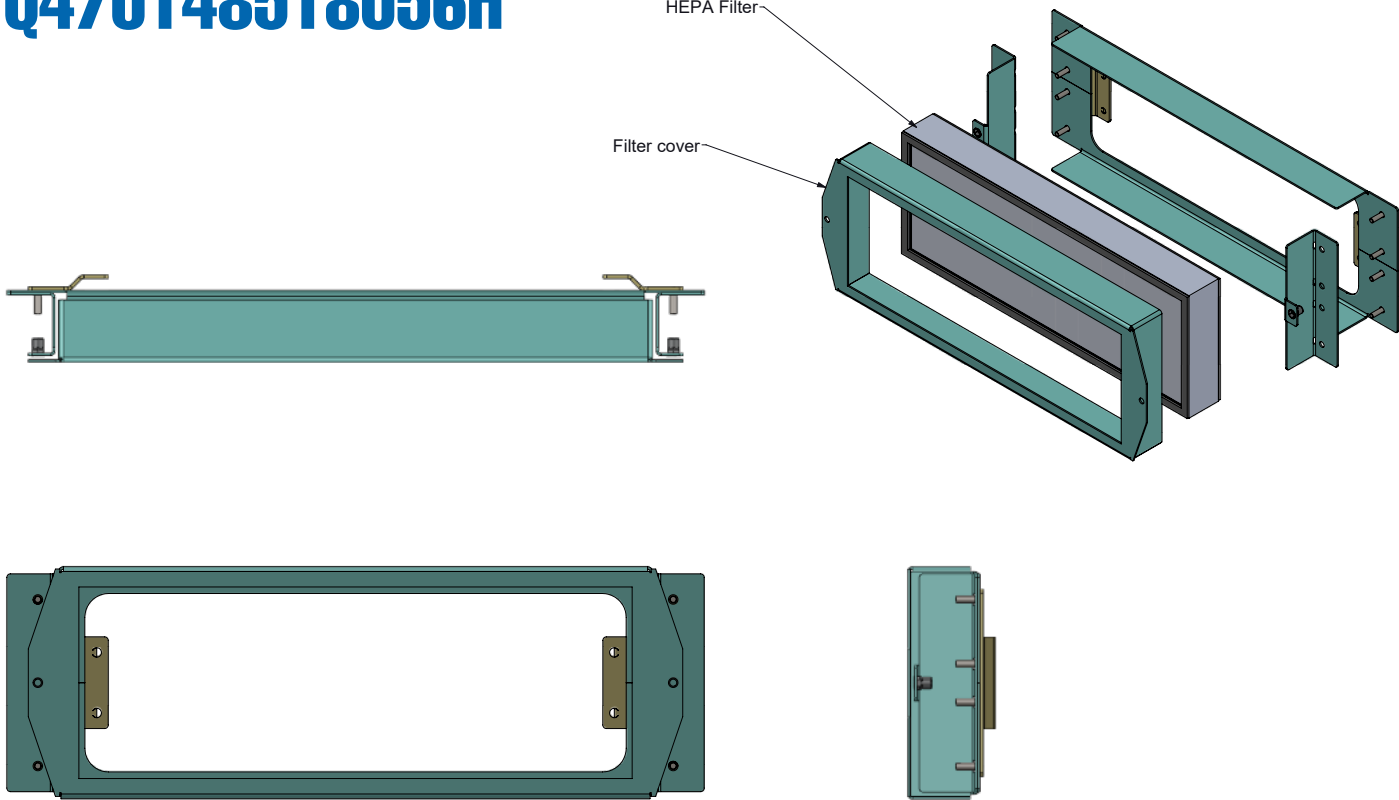
PN: TQ470148518056H

DRESS ALL EXTERNAL FILLET & PLUG WELDS

ALL SHARP EDGES GRIND TO R1mm

HEPA Filter

Filter cover



© BREATHE SAFE 2020

REVISIONS			
REV.	DESCRIPTION	DATE	APP'D



TOLERANCES
LINEAR:
XX = ±1.50mm
XXX = ±0.75mm
XXX = ±0.25mm
ANGULAR: = ± 0° 50'

Third Angle Projection
Proprietary & Confidential
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TITLE: R.A.F. Assy		Drawn: B.D.	Drawn Date: 15/06/2020
Manufacturer: Atlas Copco		Model: PV271	Weight: 4.2 Kg
Material: (See Part Dwg) mm - (See Part Dwg)		Part No: TQM DP10782 Swx File Name: 10782	Dwg No: 10782
		Rev: 0	



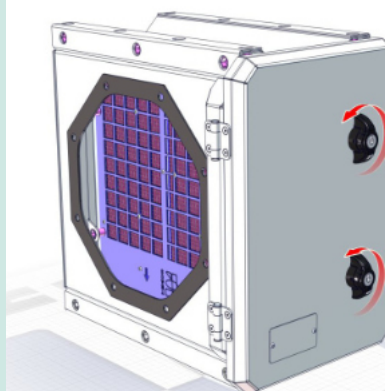
Filter Media Carrier Removal

Procedure Steps *(If in doubt please ask)*



1. Ensure all relevant circuit breakers are open and the electrical circuit is isolated.
2. Unlock & open the door - fig. 1
3. Uncouple both filter latches - fig. 2
4. Pull the filter in the opposite direction off the air flow arrows, until clear - fig. 3
5. Pull the filter towards you and remove - fig. 3
6. Clean the filter housing of all debris.
7. To replace the filter, assemble the components in reverse order.
8. A full Dispersed Oil Particulate (DOP) Test should be commissioned by an accredited body and a certificate produced to comply with ISO/IEC 17025, to AS1807.6 OR AS1807. (see example - appendix a).

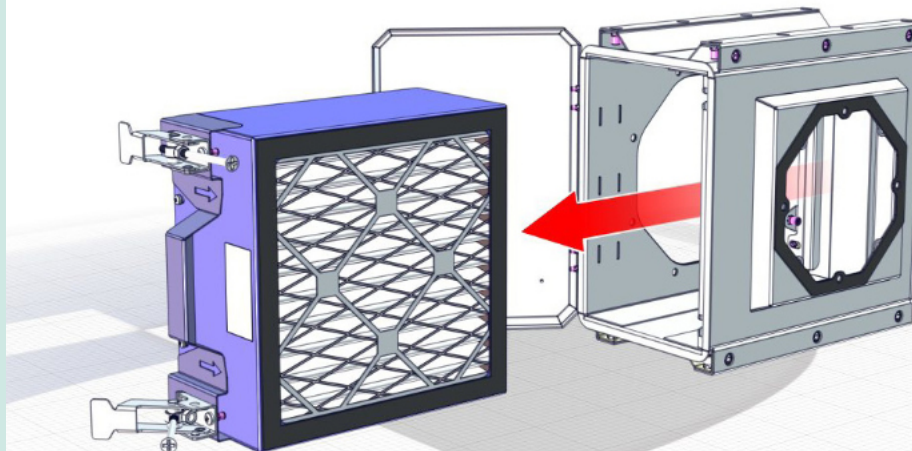
Fig 1



PRESSURISER PARTS

Activated Carbon Carrier Removal

Fig 3



Media & Secondary HEPA Filter Replacement

Procedure Steps *(If in doubt please ask)*



1. Please follow the steps shown for the Filter Media Carrier Removal, to remove the carrier from the case.
2. Unscrew & remove the 4-off M5 screws as shown in fig. 1
3. Lift out the solid Media Filter as shown in fig 2.
4. Lift out the Secondary HEPA Filter as shown in fig 2.
5. Clean the filter housing of all debris.
6. To refit, assemble the components in reverse order.

Fig

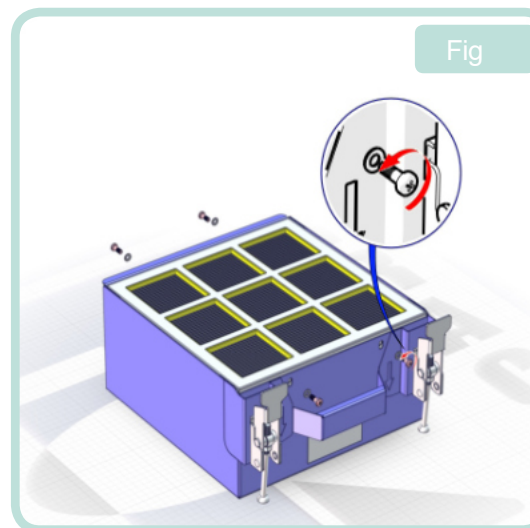
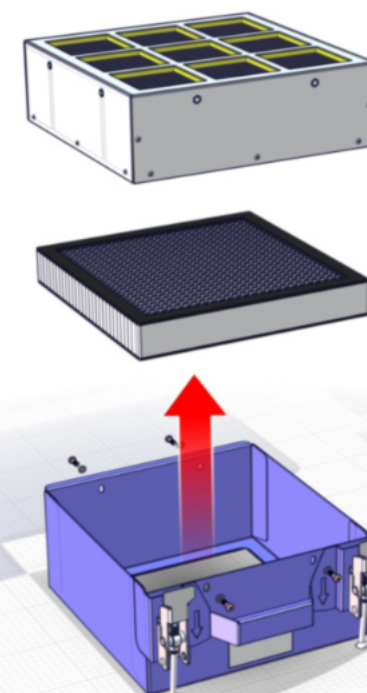


Fig 2



PRESSURISER PARTS

Activated carbon & final HEPAFilter



PARTS LIST

Digital Display INPRESS TL

INPRESS Cabin Pressure Monitor

PART NUMBER	DESCRIPTION
TQUCPM INPRESS	INPRESS Cabin Pressure Monitor
TQ657005	5 Amp Fuse - Controller
TQ657020	20 Amp Fuse - Motor

INPRESS Cabin Pressure Monitor - TQUCPM INPRESS



NOTE:

The INPRESS Cabin Pressure Monitor can be installed independently to display and record cabin pressure.

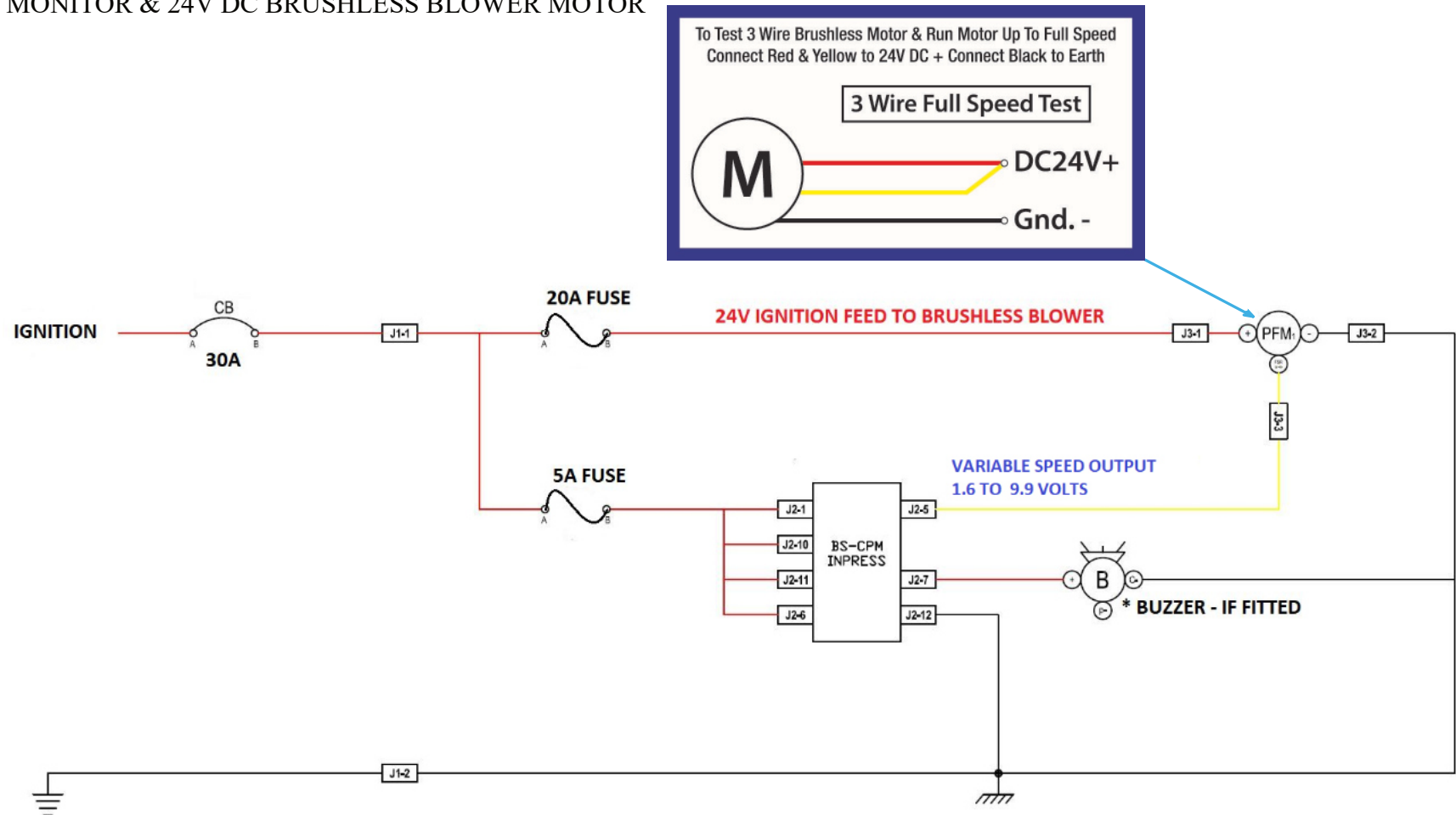
This is a cost-effective method for fitting a cabin pressure display including capability to record & download data.

Please note that positive AIR pressure inside the cabin does not mean overall safety without SUBMICRON or high-efficiency particulate air (HEPA) filtration-pressurisation.

TECHNICAL DETAILS

PRESSURISER WIRING SCHEMATIC

INPRESS TL CABIN AUTO PRESSURE
MONITOR & 24V DC BRUSHLESS BLOWER MOTOR



MAINTENANCE SCHEDULE

The following tables show are our suggested maintenance schedule for all units. Please note that site conditions may alter this.

500 Hours*

Component / System	Action Required
Turbo Pre-cleaner	Check operation of the Turbo Pre-cleaner
Pressuriser Blower	Ensure blower is operational.
HEPA Primary Filter p/n: TLF700EN	Replace HEPA filter element Vacuum out housing before replacing the filter elements.
HEPA Return Air Filter p/n: TQM DP10782	Vacuum inside cabin floor before replacing filter
Filter Frame Assembly, Mounts, Seals & Filter Housing.	Check door seals, all bolts, screws and all mounts are secure. Check the filter canister & ensure it is correctly fitted Check latches are operational and in good order. Replace / Re-tension fixtures and fittings required.

* unless extreme conditions or cabin pressure drops below 25 Pa

7500 Hours / 12 months*

Component / System	Action Required
500 Hour Inspection	All 500 hour inspection actions.
Pressurisers Blower TL4M	Replace BRUSHLESS Pressuriser blower.



**This Cabin is Fitted with Breathe Safe
HEPA Grade Air Filtration & Pressurisation
System That Exceeds EN15695 To Minimise
Your Exposure to Harmful Airborne Dust**

! ATTENTION
Protect YOUR Lungs:
Keep Door and Windows
Closed at All Times

Maintenance:

- **REPLACE FILTERS AFTER 500 HOURS OR WHEN CHECK LIGHT STAYS ON**
- **WEAR RPE/PPE WHEN HANDLING OLD FILTERS**
- **HEPA FILTERS CANNOT BE CLEANED**

www.breathe-safe.com
P: 1300 667 597

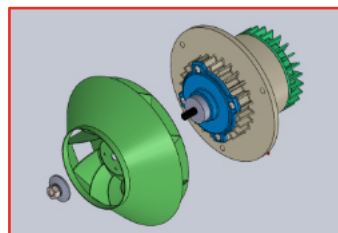
COMMISSIONING PROCEDURES

Cabin Pressuriser

WARNING: Qualified staff must wear the correct personal protective equipment when cleaning and servicing this unit due to hazardous dust and fibres which may be caught by the stages of air filtration during normal unit operation.

The electrical power system is supplied by 12V DC or 24V DC and no work should be carried out on the pressuriser system without the correct safe work procedures and electrical safety measures being taken, and all relevant circuit breakers opened to isolate the circuit.

The air filtration system may have several types of high-speed rotating equipment installed with very sharp edges. Ensure all safety guards are in place while the system is running.



Commissioning Steps

STEP 1.

Power up the pressuriser and ensure the fan or fans are operating correctly.

STEP 2

Make sure the pressuriser switches on and off with the ignition.

STEP 3

Follow cabin sealing test and review internal cabin pressure (*see page 17*).

NOTE: The effectiveness of the Pressuriser is dependent on how well the cabin is sealed. Effective cabin pressurisation is achieved with a minimum of 25Pa above ambient pressure. We recommend 250 Pa MAX pressuriser speed with new filters.



Hard hat



Eye protection



Dust mask



Ear protection



Protective clothing



Face Shield



Gloves



Safety footwear



Safety matters

OEM: EPIROC MODEL: PIT VIPER

BreatheSafe

intelligent cabin air filtration

FAULT DIAGNOSIS

Cabin Pressuriser

NOTE: This section is written on the assumption that the tradesperson is qualified in heavy-duty HVAC systems & has a good understanding of cabin fresh air filtration & cabin pressurisation.

They must have a good understanding of the operation of the system prior to fault diagnosis and repairs (If in doubt please ask).

Fault Pressuriser blower is not running

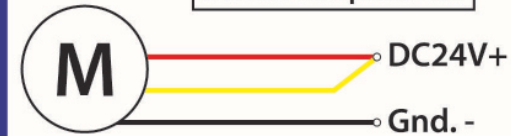
1. Check main circuit breaker or fused power supply. Make sure the motor is receiving the correct power supply with the ignition on & engine running. - 24volts across the red & black wires (Turn on the HVAC fan to speed one)
2. Check that the In-cabin control unit is also receiving 24v across pins 1 & pin 12 at the back of the control unit.
3. With the machine running open one of the doors or windows. Check the voltage on the yellow wire to the fan motor you should have 10v (max speed) if it is not running then test the blower.

Testing of the brushless blower

1. To test the brushless blower - Disconnect it from the main control loom (can only be tested when isolated).
2. Supply 24v DC to both the Red & Yellow wires on the motor. Connect the black wire to earth. The motor will now increase speed to full RPM. If it does not increase speed to full RPM then it is faulty.

To Test 3 Wire Brushless Motor & Run Motor Up To Full Speed
Connect Red & Yellow to 24V DC + Connect Black to Earth

3 Wire Full Speed Test



Dust in the cabin - TESTING CABIN SEALING

1. Check filters are they serviceable - if in doubt remove them while testing.
2. Press & hold the down key on the controller for 10 Seconds this will put the unit into test mode (10 volts will be applied to the yellow wire forcing it onto high speed - maximum output)
3. Using a smoke bomb or a smoke machine inspect the cabin for leaks as you find & seal each leak check the pressure we recommend at least 250 Pa of cabin pressure with all the filters in place. Allow cabin sealants to cure if there are large leakages as overpressure will push through these. Test again and once you have achieved recommended cabin air pressure you can reset the controller by pressing the speaker symbol for 2 seconds.

Note - Ensure all boot, bolts, hoses, cover panels & gaskets have been refitted after the last service/repair.



CABIN PRESSURE TEST

INPRESS CONTROLLER SERVICE TEST MODE

*TEST WITH NEW FILTER PN TLF700EN

CABIN SEALING TEST PROCEDURE

- 1- Start Engine - Pressuriser is ON.
 - 2- Ensure all windows & doors are CLOSED correctly.
 - 3- Hold down button on INPRESS controller down for 10 seconds
- *This will force the blower motor onto MAX speed & still display the cabin Pressure.
- 4- Photograph maximum cabin pressure and include it in the commissioning sheet report.

Notes: new cabin or a cabin with new seals:

Open a window slightly before closing entrance door to vent static air pressure inside the cabin. When entrance door is fully closed then close the window to begin test.



SERVICE TEST MODE
Hold down for 10 seconds

** To exit Service Test Mode press the Mute button for two seconds.

OPERATING INSTRUCTIONS

BreatheSafe INPRESS

Users Guide

The BreatheSafe INPRESS unit is a rugged industrial controller, specifically designed to monitor, record and intelligently control the cabin pressure inside a vehicle's cab.

Efficient cabin air filtration and pressure management ensure harmful clouds of dust and toxic fumes, cannot ingress into the cab and be inhaled by the operators.

The controller has a built-in 14-bit digital pressure sensor that can accurately measure pressures between -250.0 and $+250.0$ Pascals with repeatable accuracy.

An alarm setpoint can be set via the user keypad between the range of 0.0 and 100.0 Pascals. This feature can be accessed by entering the settings menu.



A red L.E.D. alarm, bright even in strong sunlight, is activated if the monitored pressure falls below a user adjustable set point.

Appropriate alarm descriptions are displayed on the backlit LCD, allowing effective system diagnostics.

Key Features

- Digital Cabin Pressure Monitoring System
- Data Logger with DAC Technology
- Intelligent Fan Speed Output
- Automatic Cabin Pressurisation



OPERATING INSTRUCTIONS

BreatheSafe INPRESS

Controller Appearance

ALARM MUTE BUTTON

When an alarm is present, press this button to mute the alarm. The red check LED will remain on whilst the alarm is present.

16X2 ALPHANUMERIC LCD DISPLAY L.E.D.BACK LIT

Displays actual cabin pressure in Pascals on the top line and time and date or any alarms present on the bottom line.

UP BUTTON

This button is only used when setting up the BreatheSafe unit. When pressed it increments values.



BRIGHT L.E.D. ALARM

Illuminates when the cabin pressure drops below the pre-set set point. Also if a door opens or a window opens for more than a pre-set time period.

REAR CONNECTIONS

This instrument has rear connections for Power, Window Open, Door Open, Normally Open or Normally Closed Volt Free contacts for remote alarm monitoring and RS232 data logger download port.

DOWN BUTTON


This button is only used when setting up the BreatheSafe unit. When pressed it decrements a value or exits a function.




OPERATING INSTRUCTIONS

BreatheSafe INPRESS

Low Pressure Alarm

If the cabin pressure falls below the pressure Set-point, the bright red alarm L.E.D.  will illuminate. A description of the alarm trigger will be displayed on the LCD display to help with diagnostics.

An audible alarm (where fitted) further enhances this safety feature. The audible alarm may be muted at any time by pressing and holding the Mute button  for 2 seconds.

The Mute button will become valid once all alarms have cleared and a new alarm is triggered.





Set-up Parameters

Placing the BreatheSafe INPRESS unit into set-up mode allows the adjustment of the following parameters -

- Time (hours, minutes and seconds)
- Date (day, month, year)
- Pressure Alarm set-point
- Resetting of the data logging
- Calibration and system settings

Enter Set-up Mode

To enter the set-up mode, press and hold the Up  and Down  buttons simultaneously for approximately 5 seconds.

Change Time & Date

Enter the Set-up mode. Use the Up and Down buttons to cycle to where the display asks - **Change time? Yes or No.**

Press the Up  button for Yes.






OEM: EPIROC MODEL: PIT VIPER

BreatheSafe

intelligent cabin air filtration

OPERATING INSTRUCTIONS



BreatheSafe INPRESS


The display will show the time on the top line and the date on the bottom line. Press the Up  button to increase the time variable and press the Down  button to skip to the next time or date variable. Press the Mute  button at any time to exit this screen and enter the next function.

Change Set-point

Enter the Set-up mode. Use the Up and Down buttons to cycle to where the display asks - **Change Set-point? Yes or No.**


Press the Up  button for Yes.

The display will show the current pressure Alarm Set-point. Use the Up  or Down  keys to increase the pressure alarm value from 0.0 to 100.0 pascals.


Press the Mute  button at any time to exit this screen and enter the next function.

Reset Data Log

Enter the Set-up mode. Use the Up and Down buttons to cycle to where the display asks - **Reset Data Log? Yes or No.**

Press the Up  button to reset the internal pointer back to the beginning of the memory data area. The BreatheSafe

INPRESS unit will start to data log from the first memory location once again.

Please note that this feature does not delete the previously recorded data but simply over-writes it. Press the Mute  button at any time to exit this screen and enter the next function.

There are other parameters that can be adjusted but these are password protected as they contain system settings that affect the calibration and system performance, therefore, they are not generally available to the end user.



Typical BreatheSafe INPRESS installation



TECHNICAL DETAILS

BreatheSafe INPRESS

Specifications

Specification

Input voltage dc	: 12.5 to 36V continuous operation (Regulator is automotive grade - protected against 60V Load Dumps & -50V Reverse Power).
Protection	: Protected against reverse power for an indefinite period of time. No fuses or circuit breakers to replace or reset.
Current at 24Vdc	: Normal operation no alarms = 0.04Amps - With alarms present = 0.08Amps
Display Resolution	: 0.1 Pascal.
Operating Pressure	: -250.0 to +250.0 Pascals linear.
Temperature range	: 0 to 60 °C
Alarm Set point	: 0.0 to 100.0 Pascals - Settable via the user keypad.
Input Pressure	: 14 bits digital pressure sensor (Alarm 30 secs. on delay - 5 secs. off delay).
Window Monitor	: 12/24Vdc = Window closed - 0Vdc = Window open (Alarm 10 secs. delay - 5 secs. off delay).
Door Monitor	: 12/24Vdc = Door Closed - 0Vdc = Door open (Alarm 10 secs. on delay - 5 secs. off delay).
Volt Free Output	: N/O & N/C output relay - 125Vac/60Vdc 2A - Isolation between coil and contacts 1000Vac.
Connections	: Via 12 way Deutsch connector.
Dimensions	: Fascia 187.5 x 58mm x 3.5mm thick machined aluminium - Depth approximately 60mm without the connector.
Weight	: 480 grams (16.9 ounces)



TECHNICAL DETAILS

BreatheSafe INPRESS

Connector Pin-Out Details

All dimensions in mm

ITEM	PIN	DESIGNATION
1	Pin 1	12-24Vdc supply.
2	Pin 2	
3	Pin 3	
4	Pin 4	
5	Pin 5	DAC output for fan speed control
6	Pin 6	Relay Common
7	Pin 7	Relay N/O
8	Pin 8	Relay N/C
10	Pin 10	DOOR +ve input
11	Pin 11	WINDOW +ve input
12	Pin 12	0Vdc supply

E-Mail: nick@breathe-safe.com

BreatheSafe, 290 Beatty Road Archerfield, Brisbane, Qld 4108 Tel: 07 3276 7833, Fax: 07 3276 8960

TECHNICAL DETAILS

BreatheSafe INPRESS

Data Logging

By default, the BreatheSafe INPRESS unit starts data logging as soon as power is applied. This feature cannot be stopped or disabled.

Data logging records time, date, pressure reading, and any alarms activated during operation.

Data Formats

BU No: [xxxxxx](#) (the device number unique to each unit and used for identification - format = 000000)

Time [\[09:25\]](#)

Date [\[25/07/12\]](#)

Pressure [32.8](#) (Pascals) as an example.

Alarm type:

[0](#) = no alarm

[1](#) = low pressure alarm

[2](#) = window open

[3](#) = Door Open

Data Downloading

Stored data can only be downloaded using an RS232 port set to 57600 baud, 8-bit, Parity none, 1 stop bit and no flow control

The downloaded data is comma delimited and you can use Excel for further processing. In Excel go to Data, Text to columns, selected Delimited, deselect all options apart from Comma and then select finish and the data will automatically be placed into separate columns in Excel ready for use.

The data logging information can only be downloaded via a terminal program like Tera Term for instance. This program is freeware and can be easily downloaded using Google search. Download the program and run it on a standard computer.

Select serial for the communication and for the correct connection parameters please see the previous page under DATA LOGGING. Go to the Setup menu and select Window. In this section modify Scroll Buffer to show 11000 lines and press Ok. You are now ready to start downloading the logged data.

Ensure that a standard RS232 cable is connected to the RS232 port on the BreatheSafe controller and enter the capital letter 'T' on Tera Term and the download should automatically start within two to



OEM: EPIROC MODEL: PIT VIPER

TECHNICAL DETAILS

BreatheSafe INPRESS

three seconds.

The download will take approximately 1 minute and at the end, it will display 'Done' on the BreatheSafe controller and 'End' on the computer screen. Simply select all data and paste on a standard Excel page and follow the settings as explained above.

The downloaded data is not deleted. Data logging simply pauses during the download and resumes once the download has finished. Saved data logs are not affected.

When the internal memory is full the controller simply wraps around and over-writes the older logged information.

Fan Speed Control Output

The BreatheSafe INPRESS unit has a 12-bit DAC (Digital to Analogue Converter) output to automatically control the fan speeds to maintain a pre-set cabin pressure based on the BreatheSafe unit's alarm set-point.

In essence, the BreatheSafe INPRESS unit monitors the cabin pressure as measured through its built-in pressure transducer and calculates the error based on the pressure set-point. This value is applied to an algorithm and the controller calculates a proportional output which adjusts

the speed of the pressuriser motors.

The controller automatically adds an offset of 2.0 Pascal's to the alarm set-point and uses that value as the pressure set-point for fan speed control. If the alarm set-point is 25.0 Pascal's, the unit will, in fact, try to maintain 27.0 Pascal's during normal running.

Remote Access

The controller can be accessed remotely for data downloads using the 3G network. This feature requires an on-going service provision with a network provider and is an additional cost.

With remote access, the logged data can be remotely downloaded at any time so long as the BreatheSafe INPRESS unit is powered up and within network coverage range.

Using a program such as Tera Term, described previously, make the remote connection as TCP/IP and enter the IP address of the device including the pre-programmed TCP port number. Once connected to the remote device, enter the letter 'T' followed by the <Enter> key and the download will start within three seconds.

To find out if you are connected to the BreatheSafe INPRESS unit



TECHNICAL DETAILS

BreatheSafe INPRESS

check the Tera Term taskbar for Connected or Disconnected status.

We are able to provide at a cost, a remote access service for our BreatheSafe INPRESS units which includes periodic data downloads, data processing and analysis and provision of the downloaded data in pdf format for future reference.

For further details on this feature please contact us.

Mounting Details


The unit is designed to be dashboard-mounted and utilizes a proprietary housing to secure the unit.

Mounting can be in any orientation, preferably internally and positioned such that the operator can monitor the cabin pressure, ensuring his working environment is safe.

External Volt-Free Alarm Details

The BreatheSafe INPRESS unit's volt-free relay can be used to connect back to an automated alarm system for remote monitoring.

Alternatively, it can directly control a siren to warn the driver of the low pressure or door/window open.

The alarm can be muted by pressing and holding the Mute button  for approximately 3 seconds. The Mute button will become valid once all alarms have cleared and a new alarm is triggered.

Supply Power

The BreatheSafe INPRESS unit is designed to operate via the vehicle's ignition key-switch. The unit becomes fully operational approximately 5 seconds after turning the ignition on.

Although fusing is not a requirement, it is advisable to fit an inline fuse rated at 5A maximum for added protection up to the unit's connector. The unit is fully protected against reverse power for an indefinite period of time.

The operating voltage is in the range of 12.5 to 36Vdc and the power supply is designed specifically to operate in the harsh vehicle environments, which may include battery jump starts and battery chargers.

The door and window digital inputs operate in the range of 12 to 24Vdc commensurate with the vehicle's power supply.



TECHNICAL DETAILS

BreatheSafe INPRESS

Calibration

The BreatheSafe INPRESS controller is fully digital and should not require further calibration or set up. The unit becomes fully operational approximately 5 seconds after being switched on.

For added peace of mind, if you suspect that your unit has suffered a severe physical shock, please return it back to for a full inspection and calibration check

Please do not attempt to open this unit and tamper with it as there are no user serviceable parts inside and you may cause it irreparable damage in the process.

Data Logging Schedule

The BreatheSafe INPRESS controller is designed to start Data Logging as soon as it is powered up. Data samples are taken and recorded every 15 minutes with time, date and current pressure readings. This is additional to normal alarm logging which occurs at every alarm instance.

The unit is designed to log over 10500 instances in its internal memory. The memory is not battery dependent and can retain data for up to 10 years. Under normal operation, the controller logs four

samples every hour. Based on a 24-hour operation and with no alarms the controller can record over 3.5 months' worth of data.

This period is shortened if the BreatheSafe Ultra unit experiences many alarms throughout each day. Based on an additional 10 alarms per day, the BreatheSafe Ultra controller can still, log over 3.4 months' worth of data.

When the data logger's memory is full it returns to the beginning and over-writes previously recorded data in an endless loop. It is therefore **very important** that the data is downloaded every two months as required *, to ensure that there is no loss of important information.

BreatheSafe can offer this service and peace of mind at a very affordable monthly charge **.

Please contact us for more information.

* The two months is an estimation only based on average usage to ensure data is not over-written.

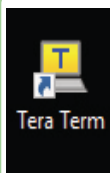
** This service can only be provided where there is 3G/4G mobile data network coverage and the BreatheSafe unit is powered up.

Vehicle Management Systems (VMS) integration can be developed to report alarms and cabin pressure.



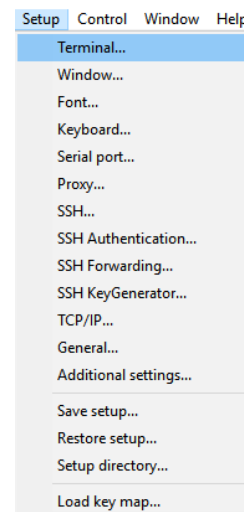
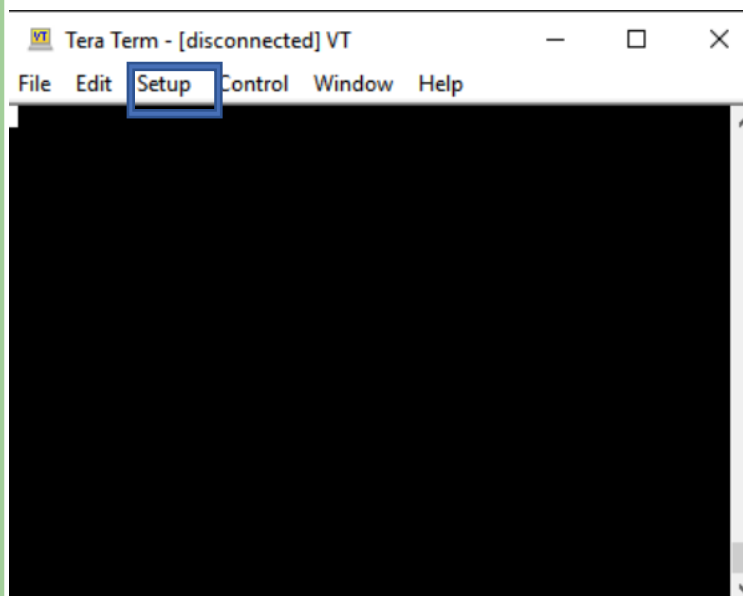
TECHNICAL DETAILS

BreatheSafe DATA LOGGING



Bluetooth Dongle Setting up

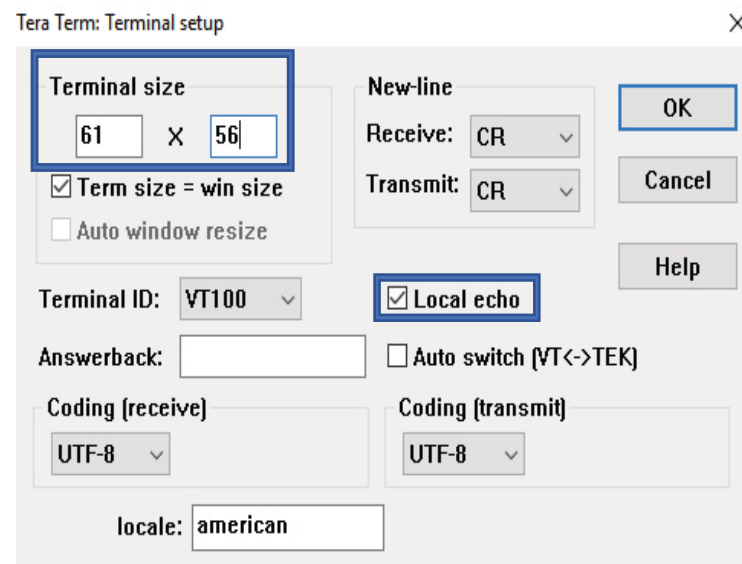
- 1) Plug the USB Dongle into a free USB port on your computer.
- 2) Open up TeraTerm software.
- 3) Use the following settings in TeraTerm:



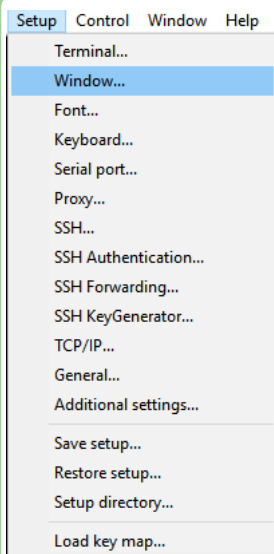
- a) Under 'Setup' click on Terminal,
- b) Tick the 'Local Echo' button,
- c) In the same window you can set the 'Terminal size' as 61 x 56 but this can be changed at any time.

This sets the size of the TeraTerm window,

d) Click OK when ready,



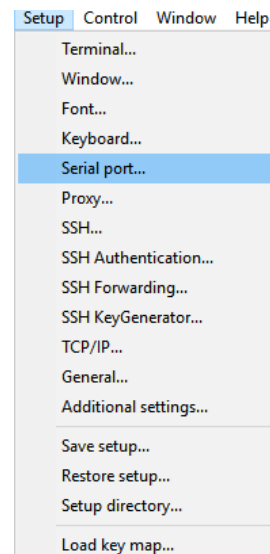
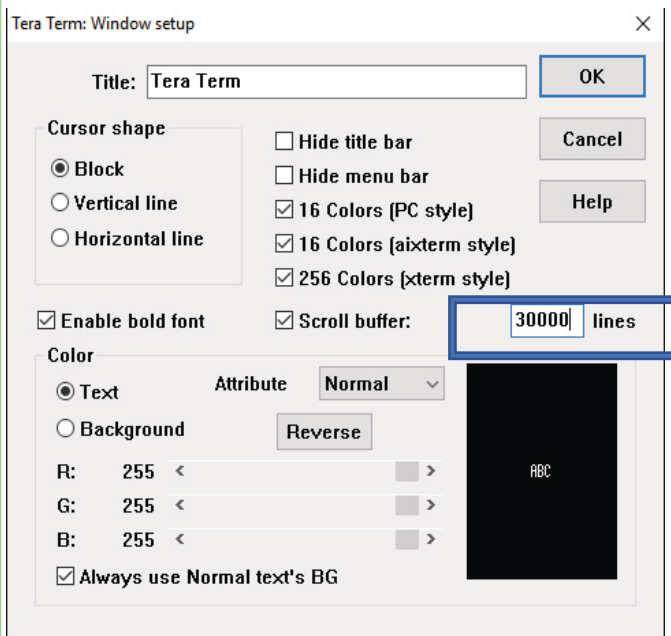
TECHNICAL DETAILS Data Downloading



e) Under 'Setup' click on Window,

f) To the right of Scroll buffer enter a value of 30000 lines,

g) Click OK when ready

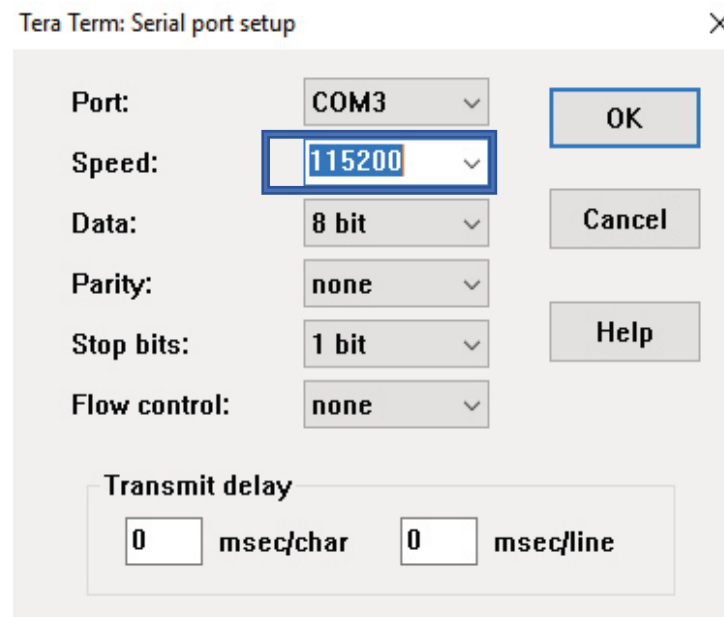


Next....

h) Under 'Setup' click on Serial Port,

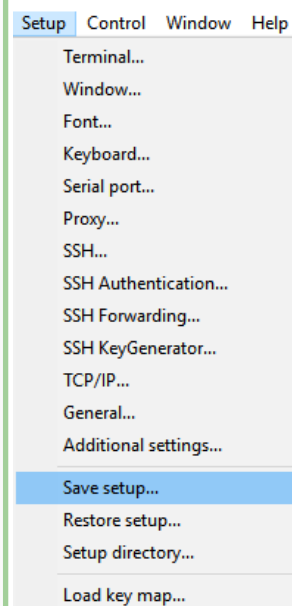
i) Under 'Speed' select 115200. Leave all other settings as they are,

j) Click OK when ready.



TECHNICAL DETAILS Data Downloading

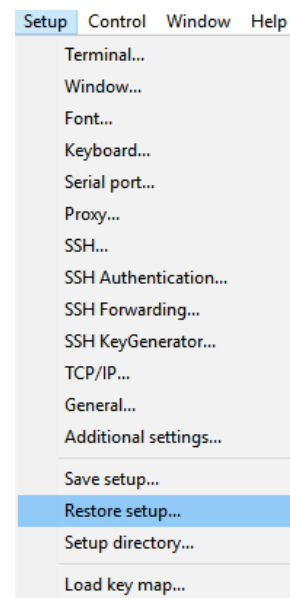
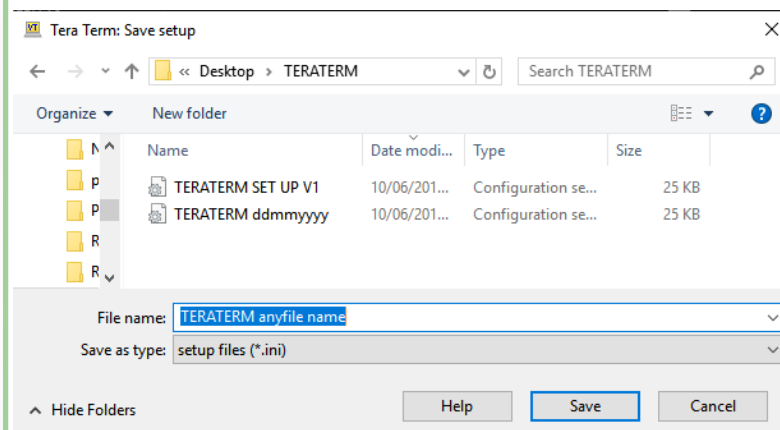
4) Save the entered settings so you don't need to go through the above steps again. To do this follow these steps:



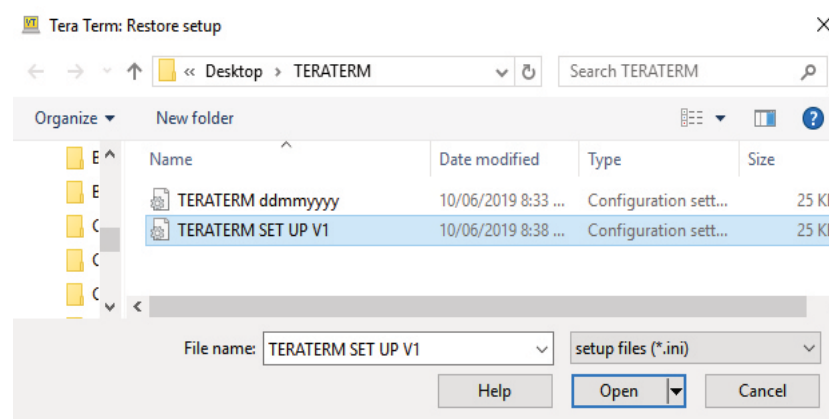
a) Under 'Setup' click on Save setup,

b) Give your file a name you will remember,

c) When ready select Save.



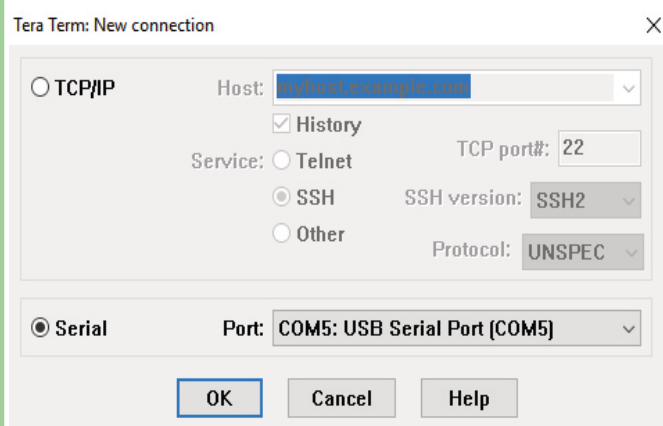
When you next open TeraTerm you can go to 'Setup' then 'Restore setup' and look for your saved file. Click on that file and press OK. Now TeraTerm will automatically open with the above settings already to be used.



TECHNICAL DETAILS Data Downloading

To use the Dongle with TeraTerm follow these instructions:

- a) After connecting the Bluetooth Dongle on your computer, open up TeraTerm as described above,
- b) Under the 'New connection' window, click on the 'Serial' button and on the right-hand side look for a USB connection. It will show something like "USB Serial Port (COM x)" where 'x' is the port number. Select that and press OK.



- c) Your dongle is now ready to use.

Dongle user instructions:

- a) Once the Dongle is connected and TeraTerm is up and running, press any key on the computer keyboard and the Dongle software will automatically load up on TeraTerm.
- b) Follow the instructions on the screen to make a Bluetooth connection.

Dongle user instructions:

- a) Once the Dongle is connected and TeraTerm is up and running, press any key on the computer keyboard and the Dongle software will automatically load up on TeraTerm.
- b) Follow the instructions on the screen to make a Bluetooth connection.

Press key 'I' to search for Bluetooth devices.

After some seconds the display will show Bluetooth devices available with 12- digit MAC address followed by the device serial number (6 digits)

With mouse left button highlight the MAC address. Then enter the letter 'C' and click the mouse right button. Device will now initiate connection and when finished will show **** CONNECTED ****

Commands:

Press 'T' to initiate data log download

Press 'K' to kill connection with BreatheSafe unit

Press 'R' anytime to reset Bluetooth Dongle

Once the connection between the Dongle and INPRESS is made the TeraTerm screen will clear the screen and show the message

*** CONNECTED ***

Now, simply type the letter 'T' and after a second or so, the download will start to appear. At this stage do nothing else until the log is downloaded in full. This process will take approximately 30 seconds to complete and will end with the instruction: 'Done'

Once the word 'Done' appears at the bottom of the downloaded data, the data download is complete. On the Tera Term window.

Under 'Edit' click on 'Select all' and all the data will be highlighted. Click on 'Edit' again and this time select 'Copy'.



TECHNICAL DETAILS

Data Downloading

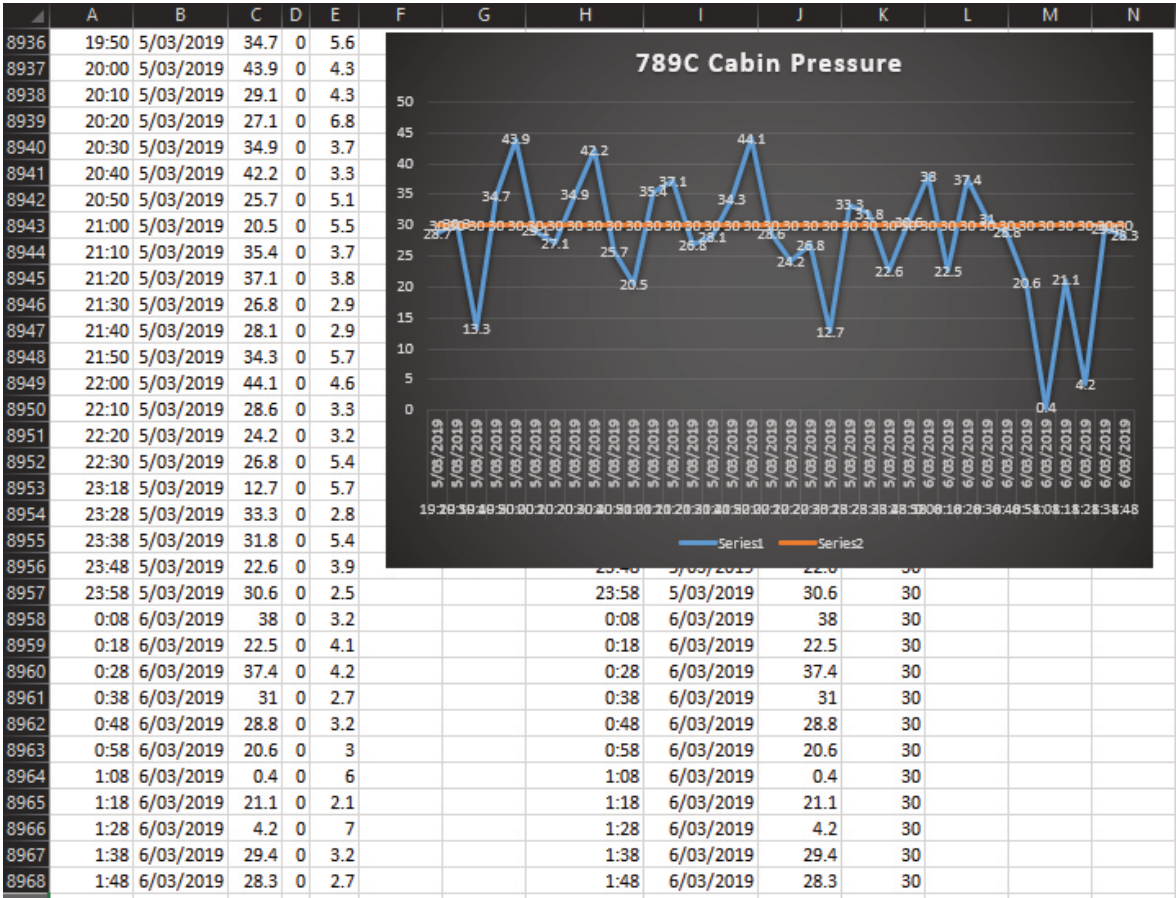
Excel Data Instructions

Open an Excel sheet and select the first cell A-1. Press and hold down the CTRL button on your keyboard and then press the letter V on the keyboard.

This will paste the copied data onto that Excel sheet. Once that data has been pasted onto the Excel sheet, on the pull-down menu click on ‘DATA’ followed by ‘Text to Columns’. On the newly opened window select ‘Delimited’ and then click on Next.

In the next window only select the ‘Comma’ button and then click ‘Finish’. The Excel fields will update such that each piece of data is placed in the correct columns.

The data is now ready for archiving.



WARRANTY

BreatheSafe Product Range Warranty

We warrant all goods to be of good material and workmanship and will replace at our Queensland factory or designated service branch*, any part proved to be defective in workmanship or material within a period of twelve (12) months from the date of commissioning or thirteen (13) months from the date of despatched from the factory whichever occurs first.

*Note - Systems must be maintained by trained & qualified personnel.

The customer should ensure that the system is maintained according to TRACS Qld service requirements and only Genuine parts must be used to service & maintain these systems.

Excluded from any express warranty are costs incurred in relation to service outside our factory or designated service branch including traveling time, waiting time, transport costs, mechanical, and overtime payments required.

This warranty does not cover damage caused by or through the fusion of the electric motors caused by the failure of electric overload protection devices, even where such motors or devices form part of the equipment supplied by us.

Interference with the equipment by or abuse, or by operating the equipment at ambient temperatures or with electrical power characteristics outside the ranges indicated in our specification shall be excluded from this warranty, as shall consequential damages.

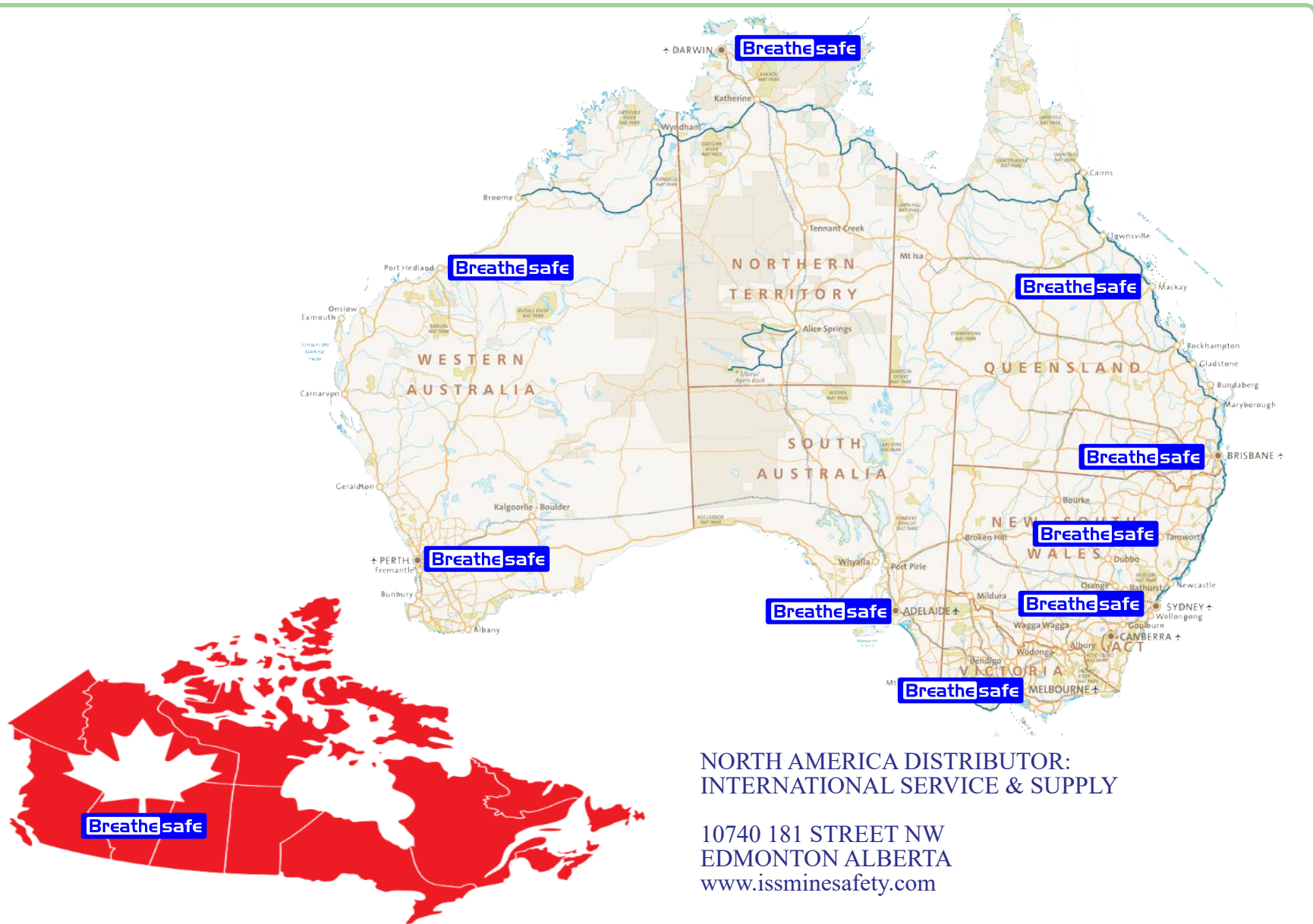
In the event of a suspected warranty claim, TRACS Qld should be contacted in the first instance to arrange the repair or to assist with diagnosis. Claims should be made within one month of the repair.

All parts deemed as failed or faulty must be returned to TRACS for evaluation unless otherwise stated in writing.



OEM: EPIROC
MODEL: PIT VIPER

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intelligent cabin air filtration



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