



INSTALLATION OVERVIEW	
Manufacturer	KOMATSU
Type	WHEL LOADER
Model	WA320-8
Site	HAMERSLEY IRON / PILBARA IRON
Serial Number	86155
Cabin Pressure Max	412 Pascals
Set Auto Cabin Pressure	50 Pascals
Key Modules	HEPA H13 Variable Speed Pressuriser FRESH AIR INTAKE
	INPRESS Cabin Pressure Display - Data Logger
	HEPA Return Air Filter RECIRCULATION AIR INTAKE
	OHS - OPERATOR ISOLATION



SAFETY FIRST ALWAYS!

# WARNING

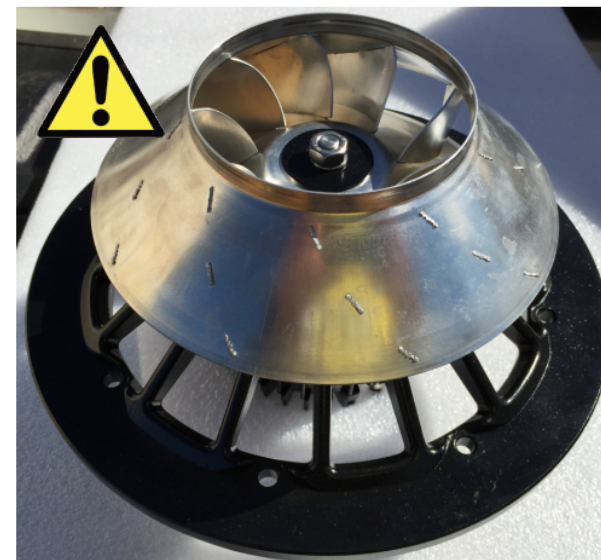
The pressurisation system described in this manual has the following areas which may be dangerous if not treated with great care.

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.

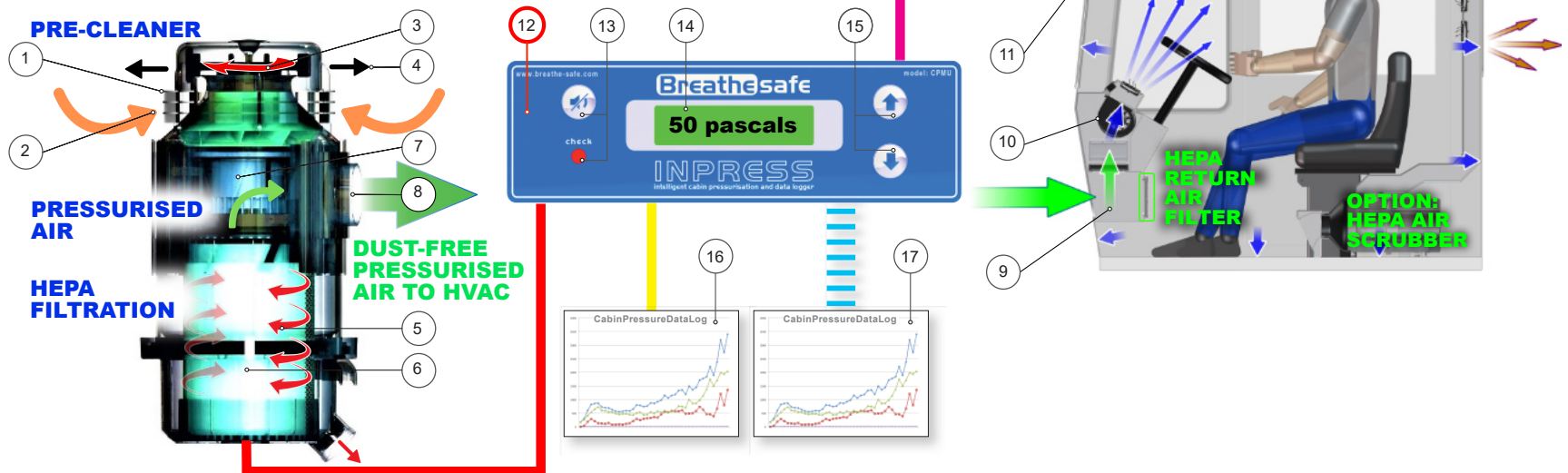
13. If the cabin pressure drops below the set point a visual and if fitted, an audible alarm is activated.

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 H13 Filter TESTED AS PER EN1822	500 - 1000 Hours
2	TQ4701285165H	1	Cabin HEPA RETURN AIR FILTER	500 - 1000 Hours
3	TL4M	1	Brushless Blower motor - INPRESS TL	7500 Hours
4	TQUCPM INPRESS	1	BREATHE SAFE DIGITAL DISPLAY - DATA RECORDER	10000 Hours



SPECIFICATIONS

HIGH CAPACITY HEPA PRESSURISER

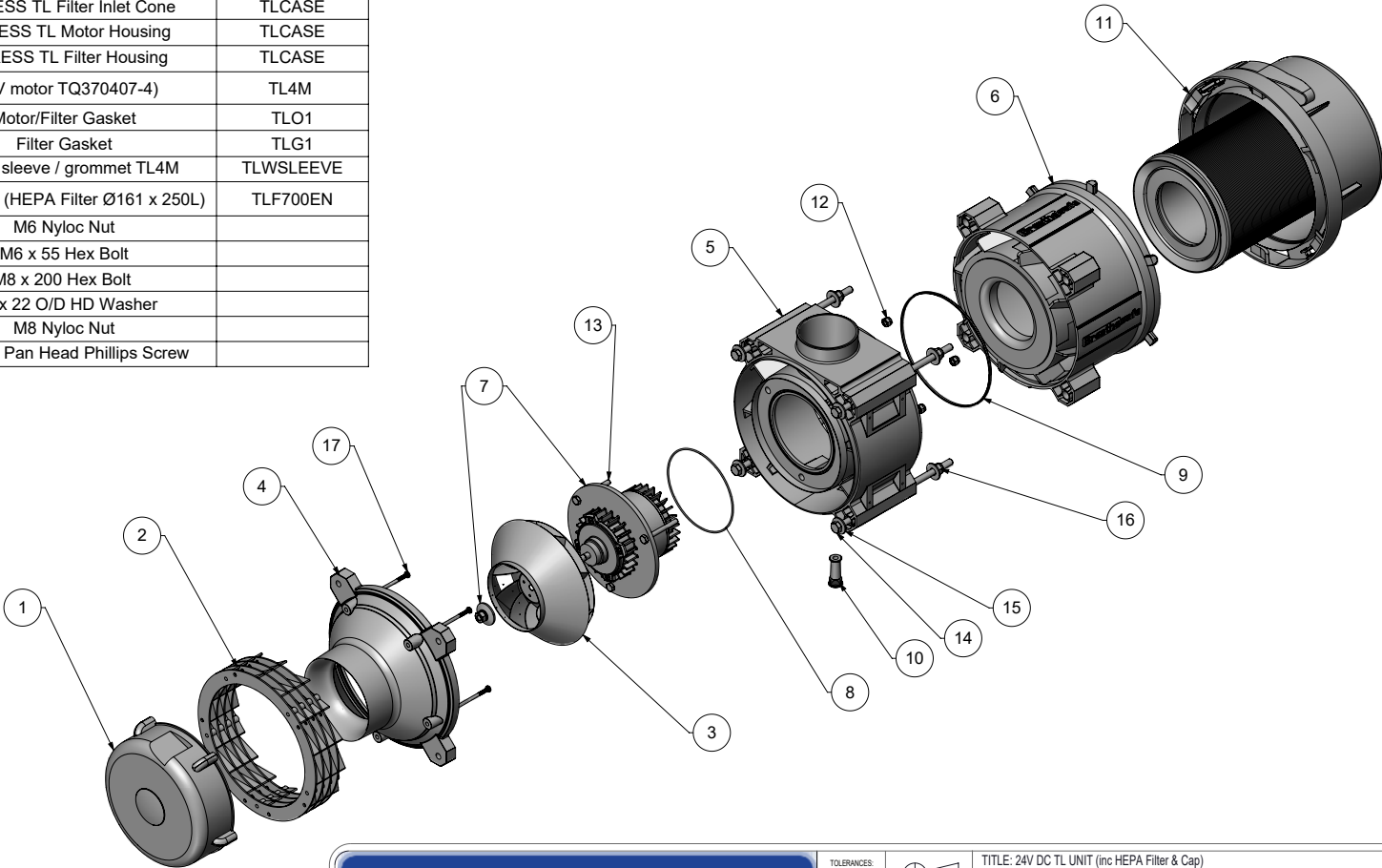
Blower	: Brushless Blower P/N TL4M
Voltage	: 24v
Current draw	: 11 amps (peek)
Air Flow	: Upto 180 m³/h.
Pre-cleaner	: Integrated VLR (Very Low Restriction).
Filter Element	: Breathe Safe HEPA Primary Filter (H13=99.97% MPPS) TESTED AS PER EN1822 - P/N TLF700EN
Plugs & Fittings	: Mining Spec. Deutsch 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.



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

PRESSURISER PARTS

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 =  $\pm 1.50\text{mm}$   
XX.X =  $\pm 0.75\text{mm}$   
XX.XX =  $\pm 0.25\text{mm}$   
ANGULAR:  $\pm 0^{\circ} 50'$   
Unless Stated On Dwg

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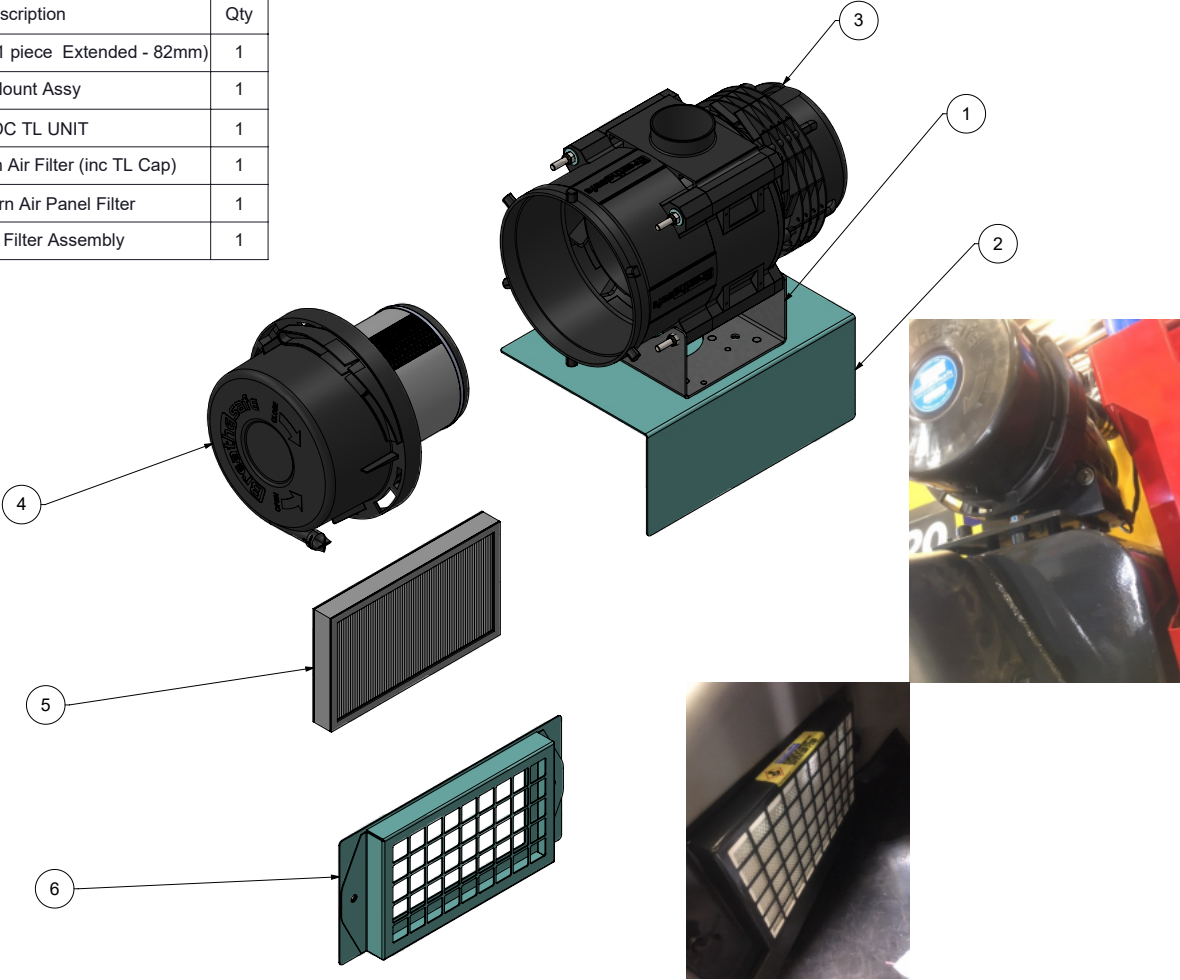
TITLE: 24V DC TL UNIT (inc HEPA Filter & Cap)

Manufacturer: Breathe Safe	Drawn: B.D.	Drawn Date: 06/10/2016
Model: INPRESS TL	Material: N/A mm - N/A	Weight: N/A Kg
Part No: TL4	Dwg No: 07364 EXPLODED BOM	Rev: 9



Breathe-safe				
Item No.	Material#	Part No	Description	Qty
1		TLM8	TL4 Mount Bracket (1 piece Extended - 82mm)	1
2		TQMDP09309	TL Mount Assy	1
3		TL4	24V DC TL UNIT	1
4		TLF700EN	HEPA H13 Fresh Air Filter (inc TL Cap)	1
5		TQ4701285165H	HEPA Return Air Panel Filter	1
6		TQMDP09330	Return Air Filter Assembly	1


PRESSURISER PARTS



Controller part number	TQUCPM INPRESS
BHP part number	11006321

REVISIONS			
REV.	DESCRIPTION	DATE	APP'D



TOLERANCES: LINEAR: XX = ±1.50mm XXX = ±0.75mm XX.XX = ±0.25mm  ANGULAR: ± 0°50'  Unless Stated On Dwg	<div>Third Angle Projection</div> 	TITLE: TL4 & R.A.F. Assy			
	<div>Proprietary &amp; Confidential</div> <div>The information contained in this drawing is the sole property of TRACS QLD Ltd. Any reproduction in part or as a whole without the written permission of TRACS Ltd. is prohibited.</div>	Manufacturer: Komatsu		Drawn: B.D.	Drawn Date:
		Model:WA320-8 (Loader)		Weight :	
		Material: N/A mm - N/A			
		Part No:	Dwg No:	Rev: 0	

### 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.



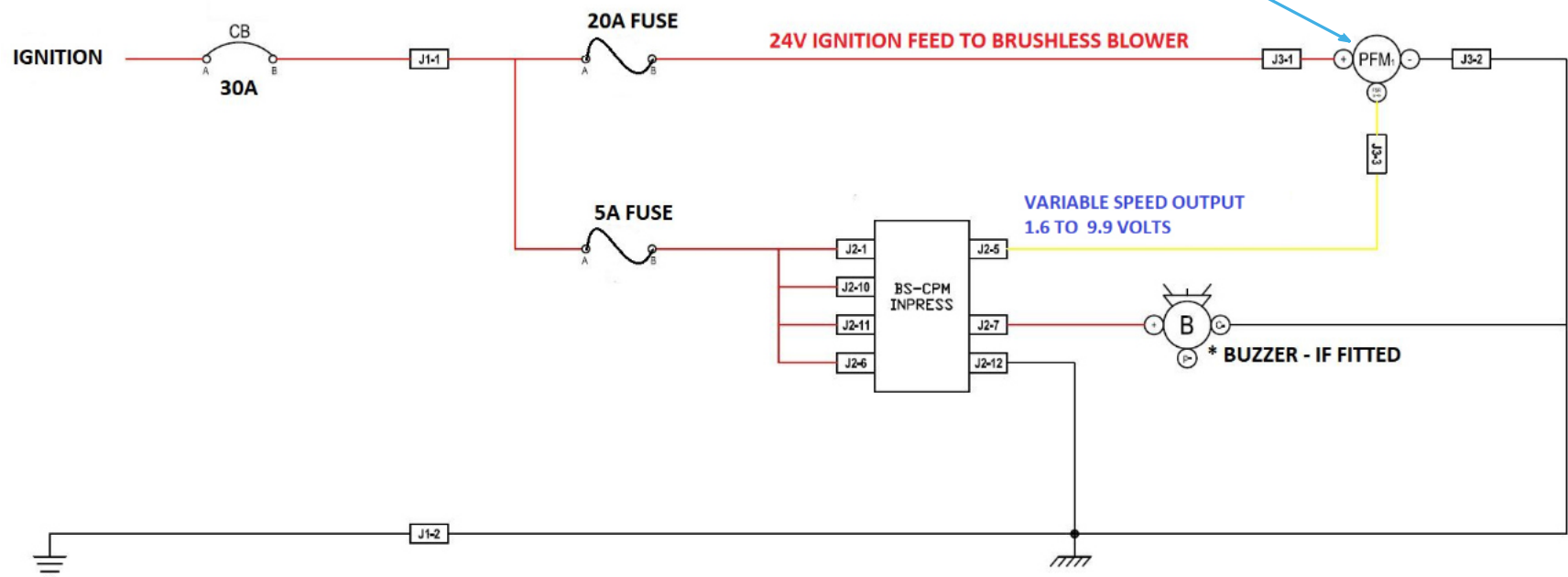
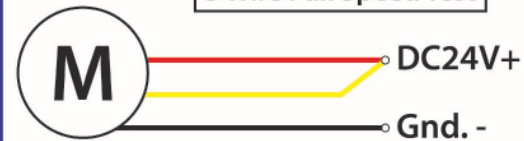
### TECHNICAL DETAILS

## PRESSURISER WIRING SCHEMATIC

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

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



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: <b>TLF700EN</b>	Replace HEPA filter element Vacuum out housing before replacing the filter elements.
HEPA Return Air Filter p/n: <b>TQ4701285165H</b>	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 correctl fitted Check latches are operational and in good order. Replace / Re-tension fixtures and fittings required.



7500 Hours / 12 months\*

\* unless extreme conditions or cabin pressure drops below 25 Pa

Component / System	Action Required
500 Hour Inspection	All 500 hour inspection actions.
Pressurisers Blower <b>TL4M</b>	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

Using a manometer test the internal cabin pressure.

**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 300 Pa from new.



Hard hat



Eye protection



Dust mask



Ear protection



Protective clothing



Face Shield



Gloves



Safety footwear



**Safety matters**

## 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

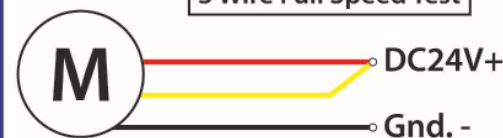
1. Check main circuit breaker or fused power supply. Make sure the motor is receiving the correct power supply with the ignition on & engine running. - 24volts across the red & black wires (Turn on the HVAC fan to speed one)
2. Check that the In-cabin control unit is also receiving 24v across pins 1 & 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 100Pa 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.



Date Printed / Copied 15 July 2014

- Please Do Not Scale -

### CABIN PRESSURE TEST

**INPRESS CONTROLLER  
SERVICE TEST MODE**

## 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.



**\*\* To exit ServiceTest Mode press the Mute button for 2 seconds**



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#### TOLERANCES

LINEAR : XX. =  $\pm 1.50\text{mm}$   
XX.X =  $\pm 0.75\text{mm}$   
XX.XX =  $\pm 0.25\text{mm}$   
ANGULAR :  $\pm 0^\circ 30'$   
(Unless Stated on Drawing)

Title: BreatheSafe INPRESS General Arrangement  
Model: INPRESS  
Material: BreatheSafe  
Drawn By: Steve Johnstone

Dwg No: 03690	Rev: -
Part No: -	Sheet No: 1 of 1
Weight: 0.96 kg	Date: 29/05/2014



## 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.



## 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

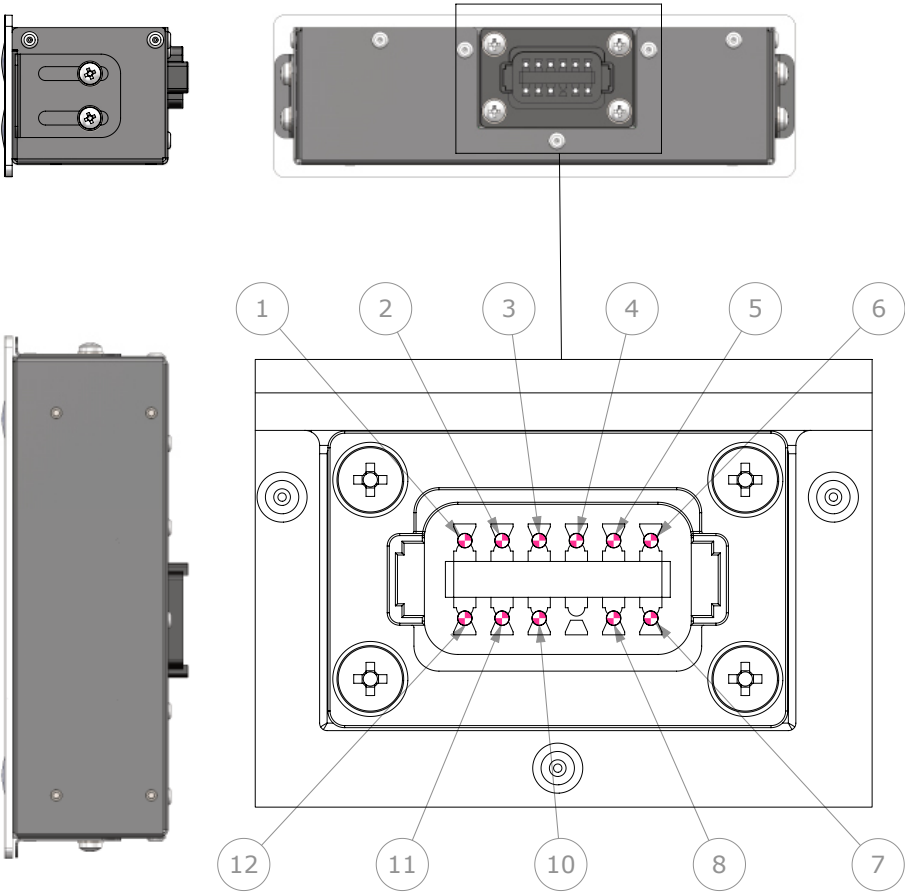
ITEM	PIN	DESIGNATION
1	Pin 1	12-24Vdc supply.
2	Pin 2	
3	Pin 3	
4	Pin 4	
5	Pin 5	DAC output for fan speed control
6	Pin 6	Relay Common
7	Pin 7	Relay N/O
8	Pin 8	Relay N/C
10	Pin 10	DOOR +ve input
11	Pin 11	WINDOW +ve input
12	Pin 12	0Vdc supply

Date Printed / Copied: 03 June 2014

- Please Do Not Scale -

E-Mail: [nick@breathe-safe.com](mailto:nick@breathe-safe.com)

Breathesafe, 250 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



## 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.

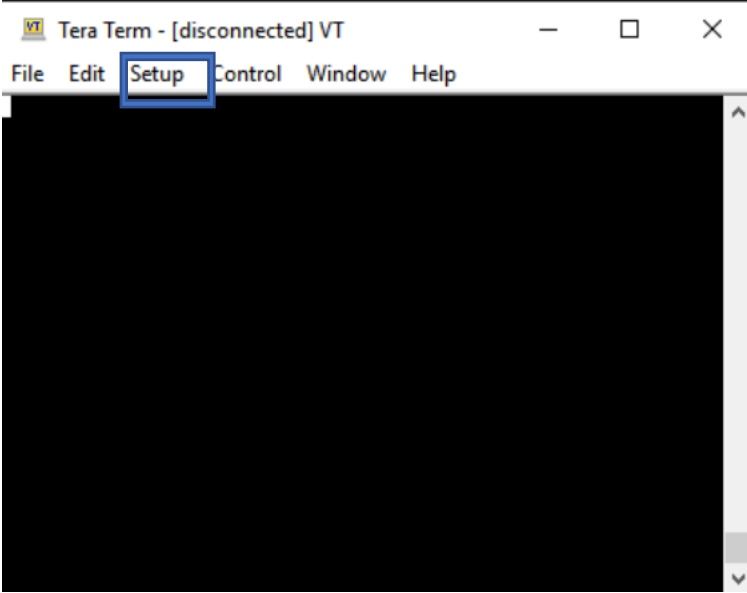
Vehicle Management Systems (VMS) integration can be developed to report alarms and cabin pressure.





### 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:



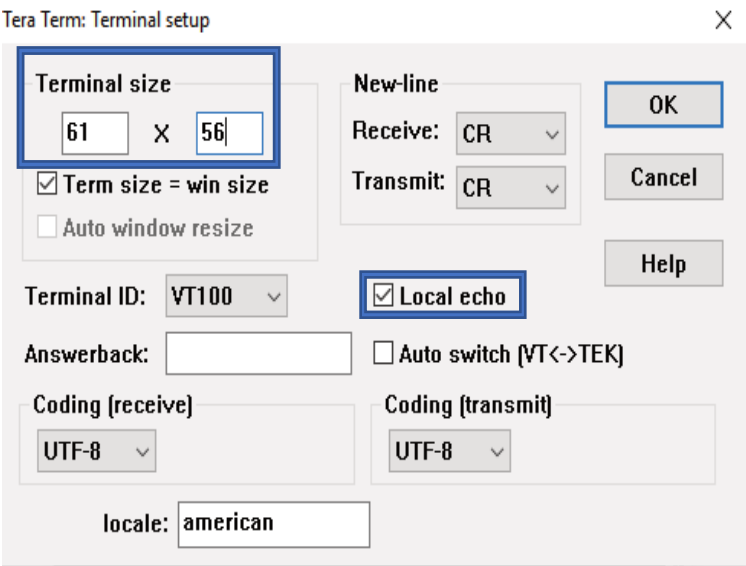
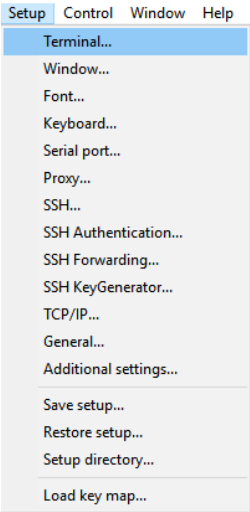
### TECHNICAL DETAILS

#### Breathesafe DATA LOGGING

- 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.

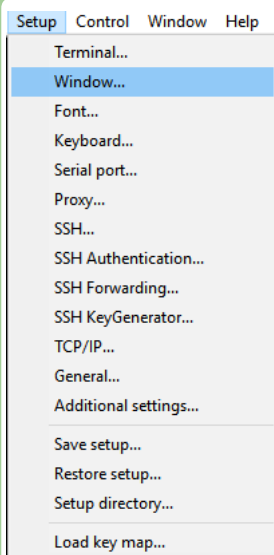
This sets the size of the TeraTerm window,

d) Click OK when ready,



### TECHNICAL DETAILS

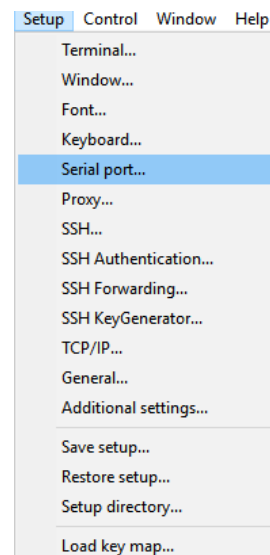
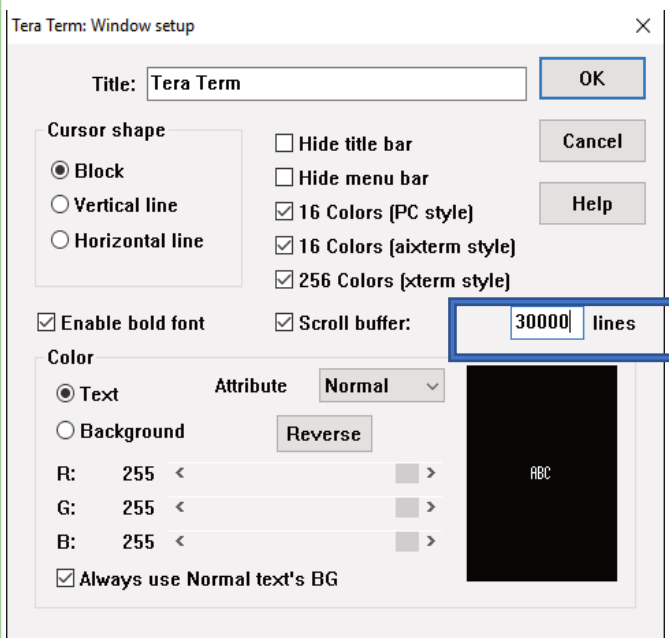
#### Data Downloading



e) Under 'Setup' click on Window,

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

g) Click OK when ready

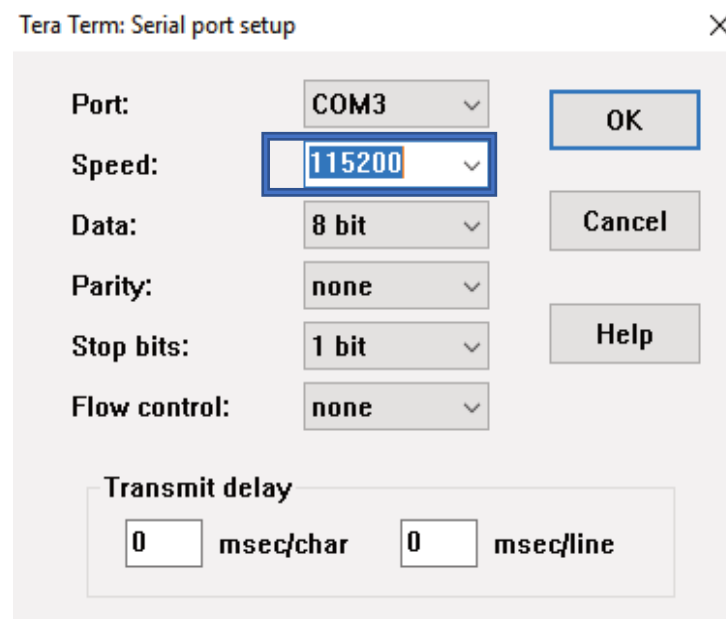


Next....

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:

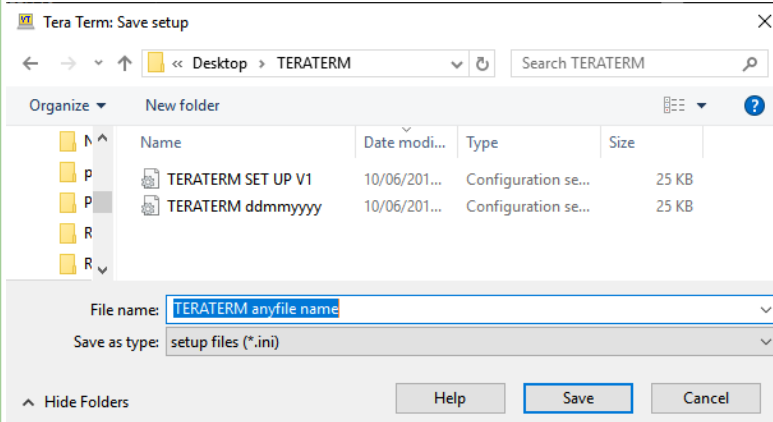
Setup Control Window Help

Terminal...  
Window...  
Font...  
Keyboard...  
Serial port...  
Proxy...  
SSH...  
SSH Authentication...  
SSH Forwarding...  
SSH KeyGenerator...  
TCP/IP...  
General...  
Additional settings...  
**Save setup...**  
Restore setup...  
Setup directory...  
Load key map...

a) Under 'Setup' click on Save setup,

b) Give your file a name you will remember,

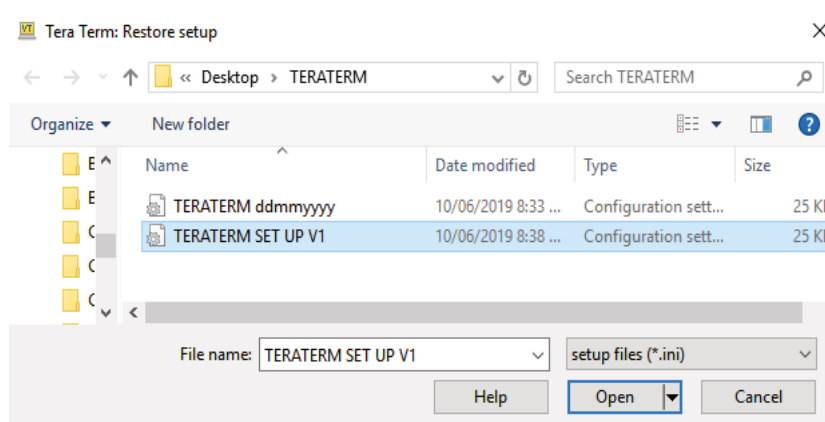
c) When ready select Save.



Setup Control Window Help

Terminal...  
Window...  
Font...  
Keyboard...  
Serial port...  
Proxy...  
SSH...  
SSH Authentication...  
SSH Forwarding...  
SSH KeyGenerator...  
TCP/IP...  
General...  
Additional settings...  
Save setup...  
**Restore setup...**  
Setup directory...  
Load key map...

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.

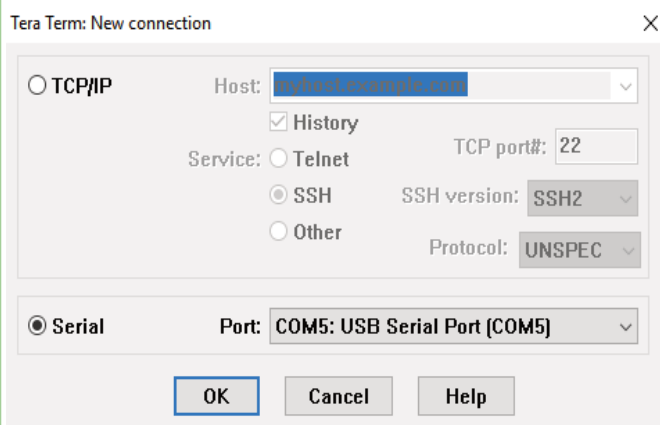


## TECHNICAL DETAILS

### Data Downloading

To use the Dongle with TeraTerm follow these instructions:

- After connecting the Bluetooth Dongle on your computer, open up TeraTerm as described above,
- 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.



- Your dongle is now ready to use.

Dongle user instructions:

- 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.
- Follow the instructions on the screen to make a Bluetooth connection.

Dongle user instructions:

- 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.
- 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

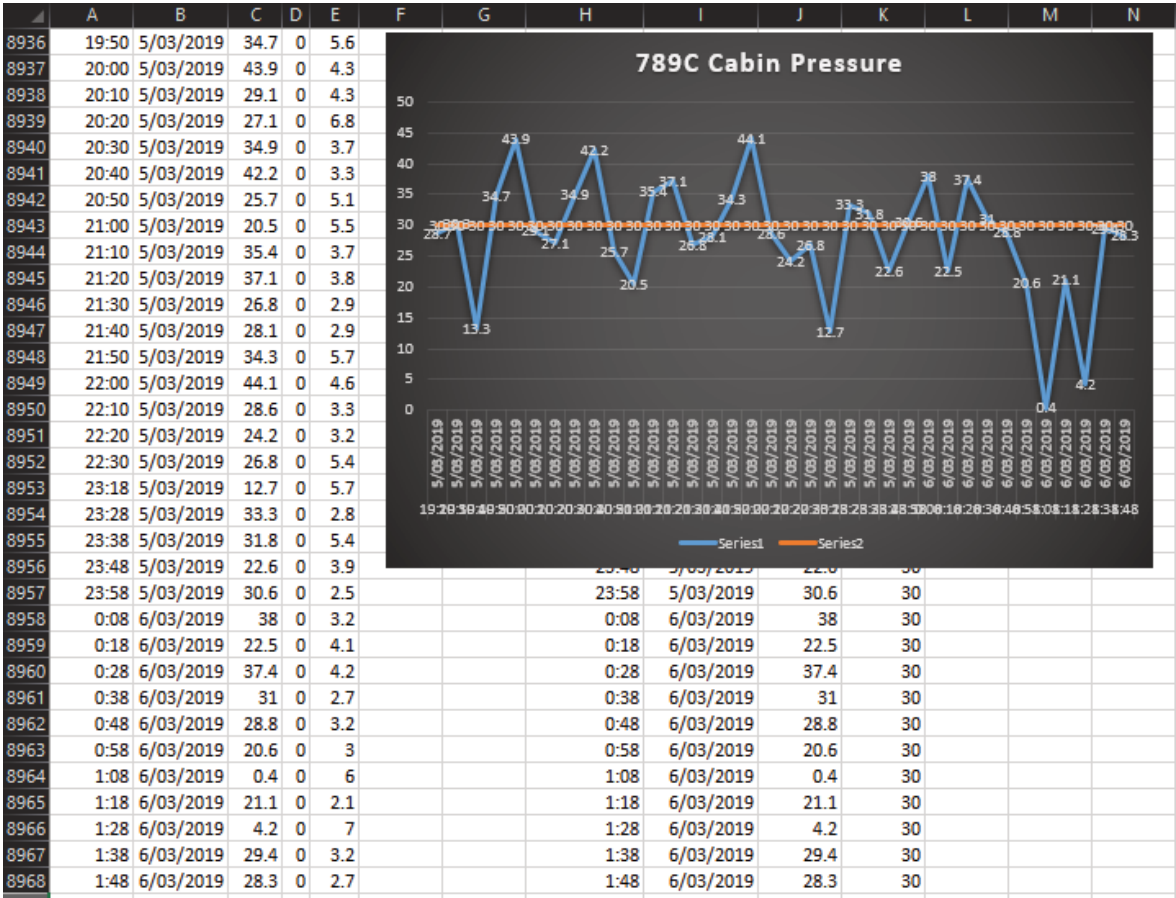
Excel Data Instructions

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.



Controlled document	Revision:
Issue date:	

# KOMATSU WA320-8

**Breathe safe**  
intelligent cabin air filtration

## CONTACT US

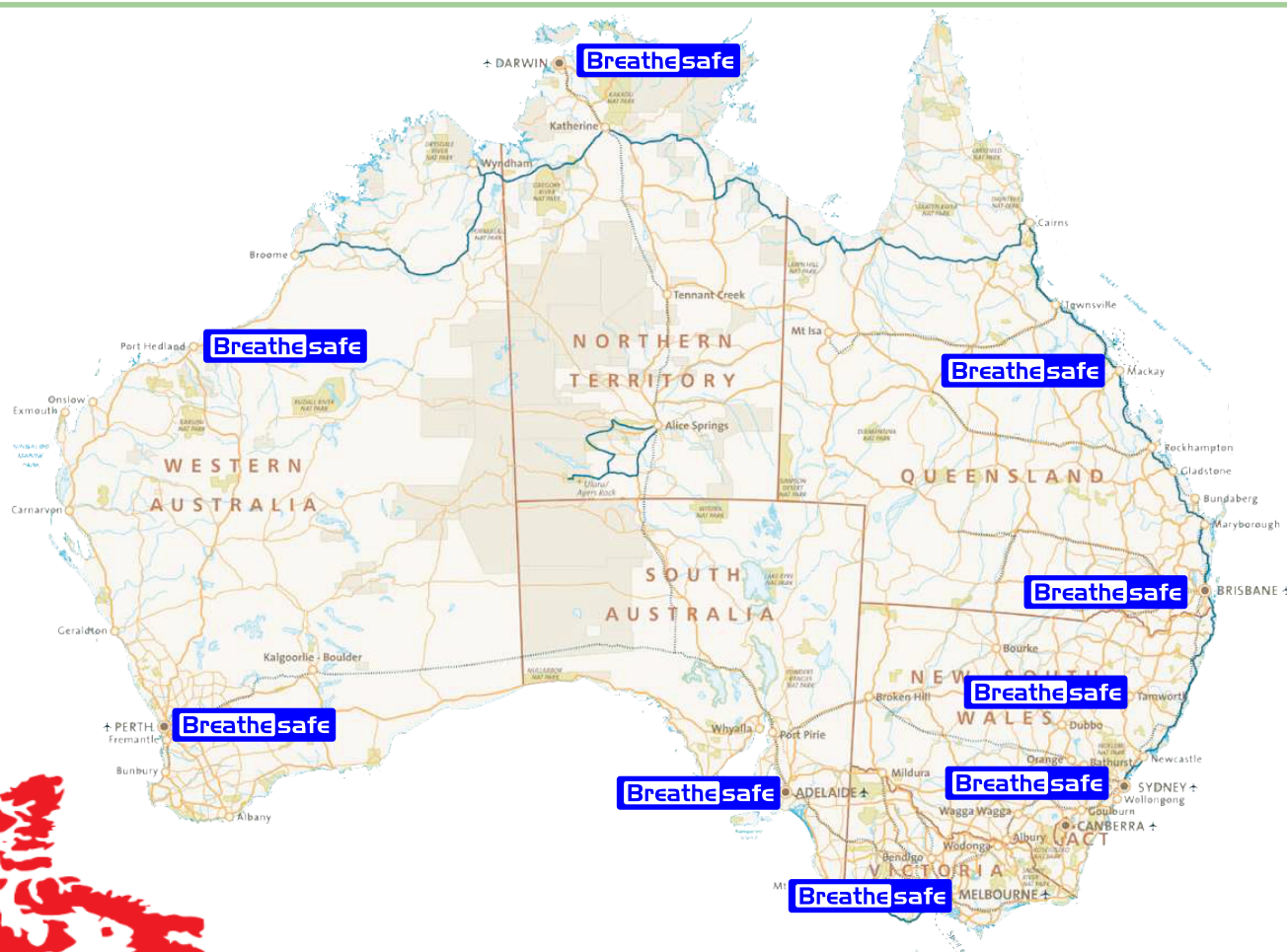
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Breathe-Safe is an Australian owned and operated company promoting Australian products.