MiniEPS®
Environmental Pressurization System
ML557

IMPORTANT NOTE

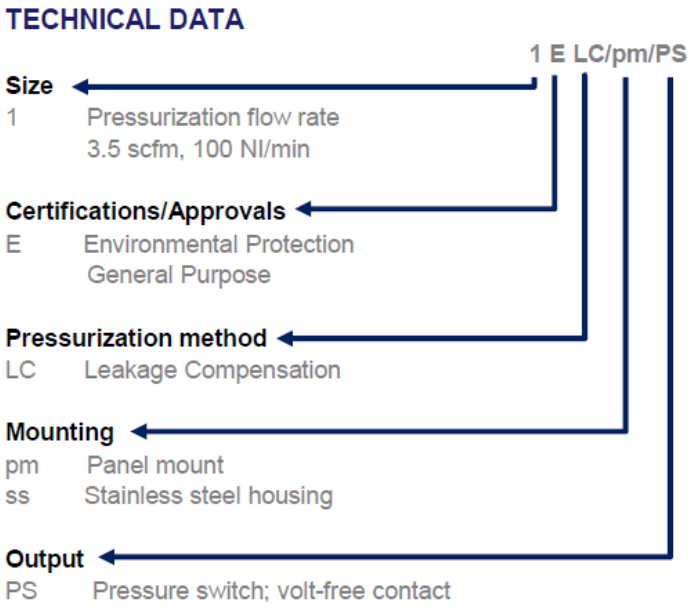
It is essential for safety that the installer and user of the Expo system observe the following instructions:

Please refer to the standard for principles and definitions.

(N.B. These instructions apply only to the Pressurizing system. It is the responsibility of the manufacturer of the Pressurized Enclosure to provide appropriate instructions for the Enclosure.)

Contents

1. MiniEPS® - General System Specification



Panel Mount

Model No:	1ELC/pm/PS
Location of System:	Side or Front of Pressurized Enclosure

Stainless Steel Housing

Model No:	1ELC/ss/PS
Location of System:	Top or Side of Pressurized Enclosure

Technical Specifications

Pressurization Medium:	Compressed air or inert gas. Clean, dry and free of corrosive gases or vapors.
Temperature Range:	-20°C to +60°C (-4°F to +140°F)
Supply Pressure:	2-7 barg (29 to 116 psi)
Supply Connection:	¼" NPT
Maximum Flow Rate:	100 Nl/min (3.5 scfm)
Low Pressure Sensor:	'Alarm' setting 1.25 mbar (0.5" wc)
Local Indication:	GREEN indicates pressure OK RED indicates low pressure
Remote Indication:	Volt-free contact/switch, open on alarm 375VA @ 120/240V ac 2A @ 24V ac/dc
Overpressure protection:	Integrated relief valve + Magnetic operation (patented) + Opening pressure 10 mbar max (4" wc)
Construction:	316L Stainless Steel

Approvals

The MiniEPS® conforms to UL 50 & 50E for enclosures and will maintain pre-existing UL Type 4X and IP66 enclosure integrity when installed in line with Manufacturer instructions.

2. Application Suitability

The MiniEPS® is for use in non-hazardous area environments and has been designed for use in normal industrial conditions of ambient temperature, humidity and vibration. Please consult Expo before installing this equipment in conditions that may cause stresses beyond normal industrial conditions.

This system is designed for use primarily with compressed air. Where other inert compressed gases are used (Nitrogen, for example), the user must take suitable precautions so that the buildup of inert gas does not present a hazard to health. Consult the Control of Substances Hazardous to Health (COSHH) data sheet for the gas used. Where risk of asphyxiation exists, a warning label must be fitted to the Pressurized Enclosure.

The following materials are used in the construction of the MiniEPS®. If substances that will adversely affect any of these materials are present in the surrounding environment please consult Expo Technologies for further guidance.

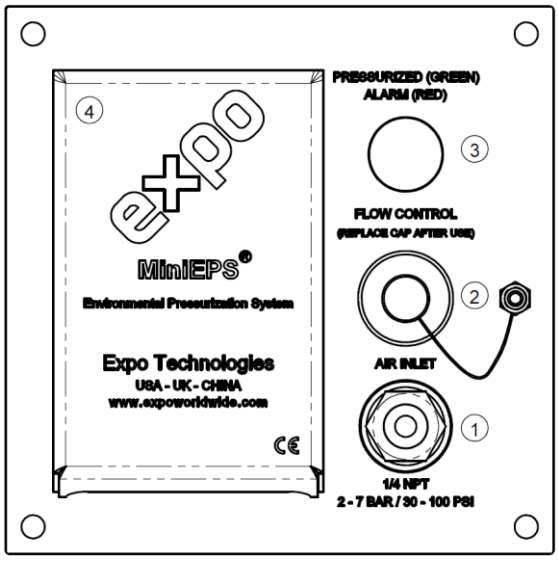
Stainless Steel	Polycarbonate	Aluminium
Mild (Carbon) Steel	Polyamide	Polyurethane
Brass	AB	Silicone Rubber
Copper	PVC	

3. Description and Principle of Operation

The MiniEPS® is an environmental pressurization system, designed for non-hazardous areas that may contain dusty, dirty and/or corrosive atmospheres. It requires a supply of compressed or instrument air, or an inert gas to regulate the pressure within the enclosure. This prevents the accumulation of damaging gases and/or dusts, extending the life of the enclosure's expensive electrical equipment and instrumentation. Due to the positive pressure inside the enclosure, corrosive or harmful elements remain outside.

The pressurization system maintains a constant pressure of 1.25 mbar (0.5" wc) inside the enclosure, with an optional remote alarm output. It is designed for typical industrial enclosures up to 7m^3 (250 cu ft) or larger, depending upon the leak rate of the enclosure.

4. Main Components



1. Air Inlet:
Connection for supply gas, ¼" NPT.

2. Flow Control Valve:
Used to control the flow of air into the enclosure. Protective cap ensures no dust can penetrate into enclosure and must be replaced after using the valve.

3. Visual Indicator:
Turns from red to green when the enclosure is pressurized to the minimum set point of 1.25 mbar (0.5" WC). If pressure is lost the indicator will automatically return to red.

4. Relief Valve:
Provides overpressure protection for the enclosure in case of regulator failure.

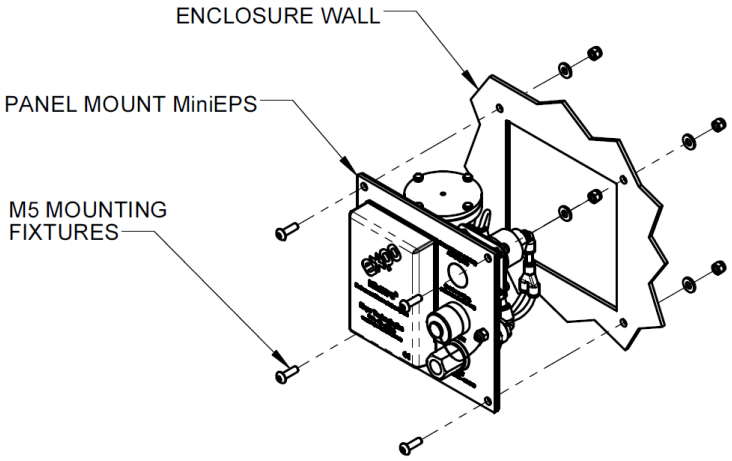
5. Installation of the System

The MiniEPS® must be installed in the attitude shown in drawings 1ELC-PM-PS and 1ELC-SS-PS. Cut-out drawings for both the panel-mount and stainless steel housing variations are included at the rear of this manual, XBR-1TD0-038. The fixtures used to secure the MiniEPS® to the pressurized enclosure must conform to the enclosure manufacturer's instructions where present.

Ensure that the MiniEPS is located so that visual indicator is easily seen.

Panel-Mount Installation

- Ensure that the gasket is not damaged prior to installation
- Cut aperture and clearance holes in enclosure as per drawing XBR-1TD0-038
- Attach MiniEPS® to enclosure using 4 off suitable M5 fixings



Stainless Steel Housing Installation - General

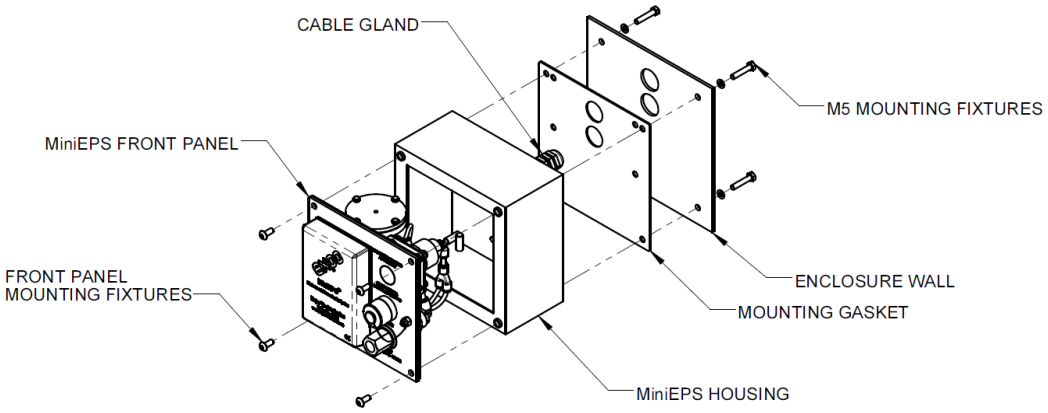
- Ensure that the gasket is not damaged prior to installation.
- Installation is designed to be configured at the point of use. Remove the front panel of the MiniEPS® from the housing by undoing the 4 off screws.
- One mounting gasket is provided with the MiniEPS® that can be used for either side or top mounting.

Stainless Steel Housing Installation - Side Mounting

- Drill two off Ø17mm holes in the **rear** of the MiniEPS® using the pre-punched centre-marks as a guide.
- Drill mounting holes in the enclosure as per drawing XBR-1TD0-038
- Ensuring a clean surface, attach the self-adhesive gasket provided to the **rear** of the MiniEPS®, lining up the gasket holes with the holes drilled in the enclosure.

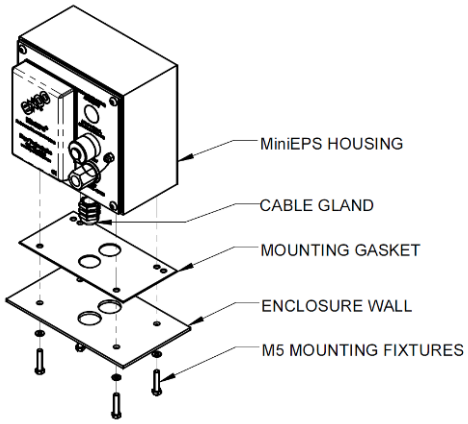
- Pass the alarm switch cable through either of the holes in the housing and through the cable gland provided. Attach the cable gland to the housing using the black plastic nut provided.

- Re-attach the front panel to the housing.
- Pull the cable slack through the cable gland being careful not to apply to much force. Tighten the cable gland to clamp the cable in place.
- Fix the MiniEPS® to enclosure



Stainless Steel Housing Installation - Top Mounting

- Drill two off Ø17mm holes in the **bottom** of the MiniEPS® using the pre-punched centre-marks as a guide
- Drill mounting holes in the enclosure as per drawing XBR-1TD0-038
- Cut the self-adhesive gasket to size referring to drawing XBR-1TD0-038 and attach to the **base** of the MiniEPS®
- Ensuring a clean surface, attach the self-adhesive gasket provided to the **base** of the MiniEPS®, lining up the gasket holes with the holes drilled in the enclosure
- Pass the alarm switch cable through either of the holes in the housing and through the cable gland provided. Attach the cable gland to the housing using the black plastic nut provided
- Re-attach the front panel to the housing
- Pull the cable slack through the cable gland being careful not to apply to much force. Tighten the cable gland to clamp the cable in place
- Fix the MiniEPS® to the enclosure provided.
- Attach the cable gland provided to either of the holes. Drill mounting holes in the enclosure as per drawing XBR-1TD0-038.
- Fix the assembled MiniEPS® to your enclosure



Compressed gas connection

Connect compressed gas supply to bulkhead fitting using a suitable ¼" NPT fitting.
The MiniEPS® system should be connected to a protective gas supply, which is suitable for pressurization. The supply pipe connection to the MiniPurge® must be appropriate for the maximum input flow rate for the application.

The air supply must be regulated at a pressure less than the maximum stated inlet pressure.

The air supply must be: clean, non-flammable and from a non-hazardous location. The air should be of Instrument Air Quality. Although the purge control system will operate with lower air quality, its operational life will be adversely affected. The equipment that is being protected by the MiniPurge® may also suffer because of poor air quality.

With reference to BS ISO 8573-1: 2010, Instrument Air is typically specified as:

Particle Class 1

In each cubic metre of compressed air, the particulate count should not exceed 20,000 particles in the 0.1 to 0.5 micron size range, 400 particles in the 0.5 to 1 micron size range and 10 particles in the 1 to 5 micron size range.

Humidity or pressure dew point

The dew point, at line pressure, shall be at least 10 °C below the minimum local recorded ambient temperature at the plant site. In no case, should the dew point at line pressure exceed +3 °C.

Oil Class 2

In each cubic metre of compressed air, not more than 0.1mg of oil is allowed. This is a total level for liquid oil, oil aerosol and oil vapour.

The minimum air supply pressure should be 2 bar/ 30 psig / 0.2MPa. Ensure that the supply pipework is sufficiently sized to deliver leakage compensation flow to the enclosure and maintain minimum pressure. The compressed air / inert gas supply should have a dedicated local air pressure filter/regulator.

Electrical Switch Connection

The MiniEPS® is supplied with a single pole normally-open alarm switch and 2m flying lead (0.75mm^2 CSA).

Earthing

The MiniEPS® should be earthed using the M6 earth stud provided; earth cable cross-sectional area must be suitable for the local installation standards.

6. Commissioning

Proceed as follows:

- Check that the system has been installed in accordance with this manual.
- Disconnect the supply pipe from the inlet to the MiniEPS® system and blow it through for at least 10 seconds per meter (3ft) of length to remove any debris or condensation.

- It may be advisable to install an external shutoff valve with the same, or larger, thread size as the MiniEPS® inlet fitting upstream of the connection.

- Unscrew the protective cap and open the Flow Control Valve (FCV) until the alarm/pressurized indicator just turns from red to green. Clockwise will reduce the flow and anti-clockwise will increase the airflow

- If the FCV is opened fully and the indicator has still not turned green, check the air supply pressure **at the inlet to the control unit while flow is taking place**. It must be above the minimum 2 bar/ 30 psig/ 200kPa specified. Also check for leaks, open doors, missing glands or entry seals in the enclosure.

- Once the enclosure is pressurized with the indicator showing green, replace the FCV cap.

- **Please note that this cap must be present to maintain the original enclosure standard of UL50e Type 4X or IP66.**

7. Maintenance of the System

The maintenance recommended for the system consists of the following, supplemented by any additional local requirements imposed by the local Code of Practice.

Initial Maintenance

Expo recommends that the functionality of the flow control valve is inspected 6 months after installation.

Routine Maintenance

At least every two years, the following additional checks are recommended:

- There are no unauthorized modifications
- The flow control valve cap is present
- Seals are undamaged
- The source of air is uncontaminated
- Adequate spares are carried
- The action on pressure failure is correct

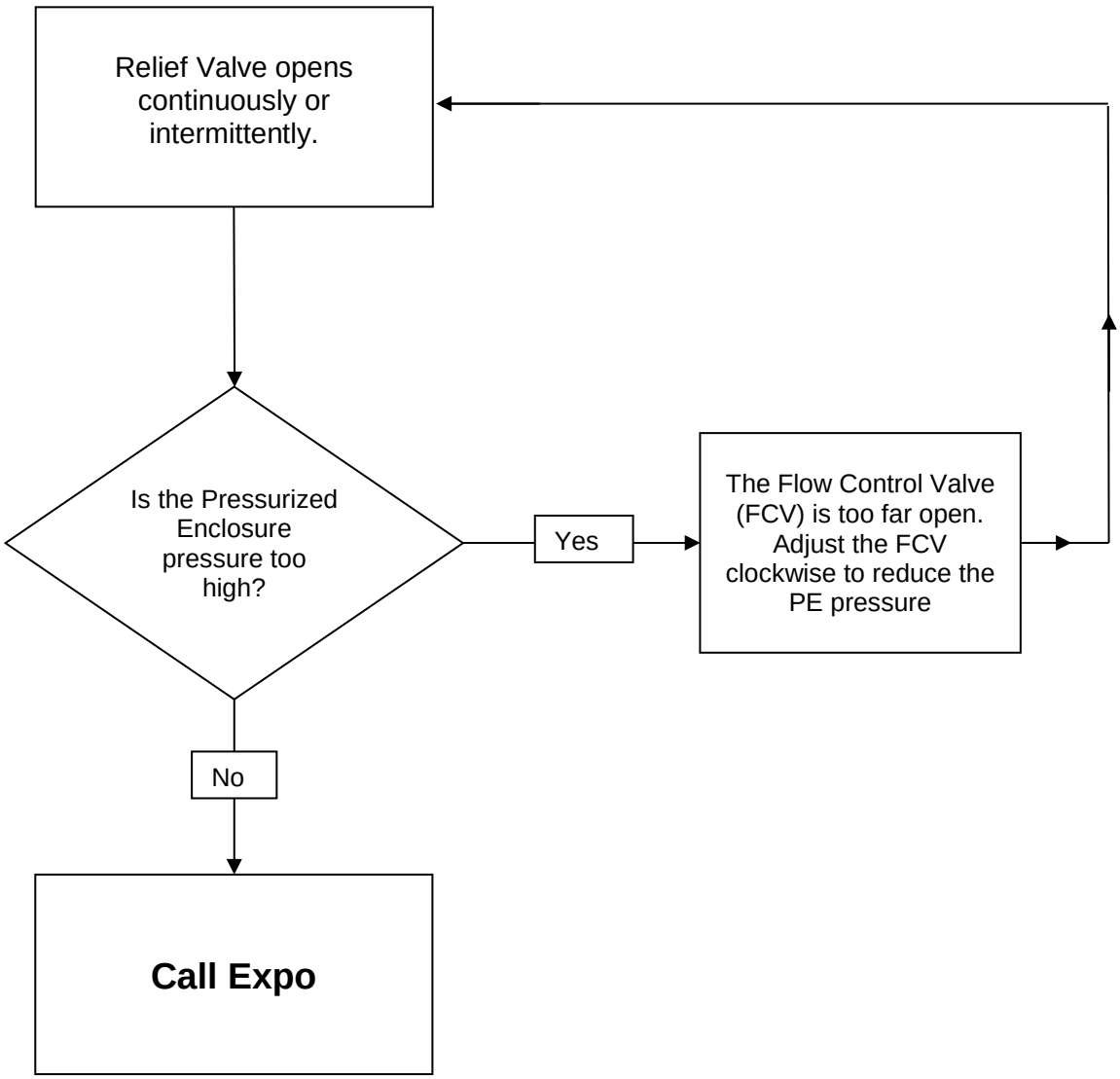
Pressure Sensor Calibration

If it is decided that the minimum pressure /purge flow sensor needs recalibrating it must be returned to Expo for this service.

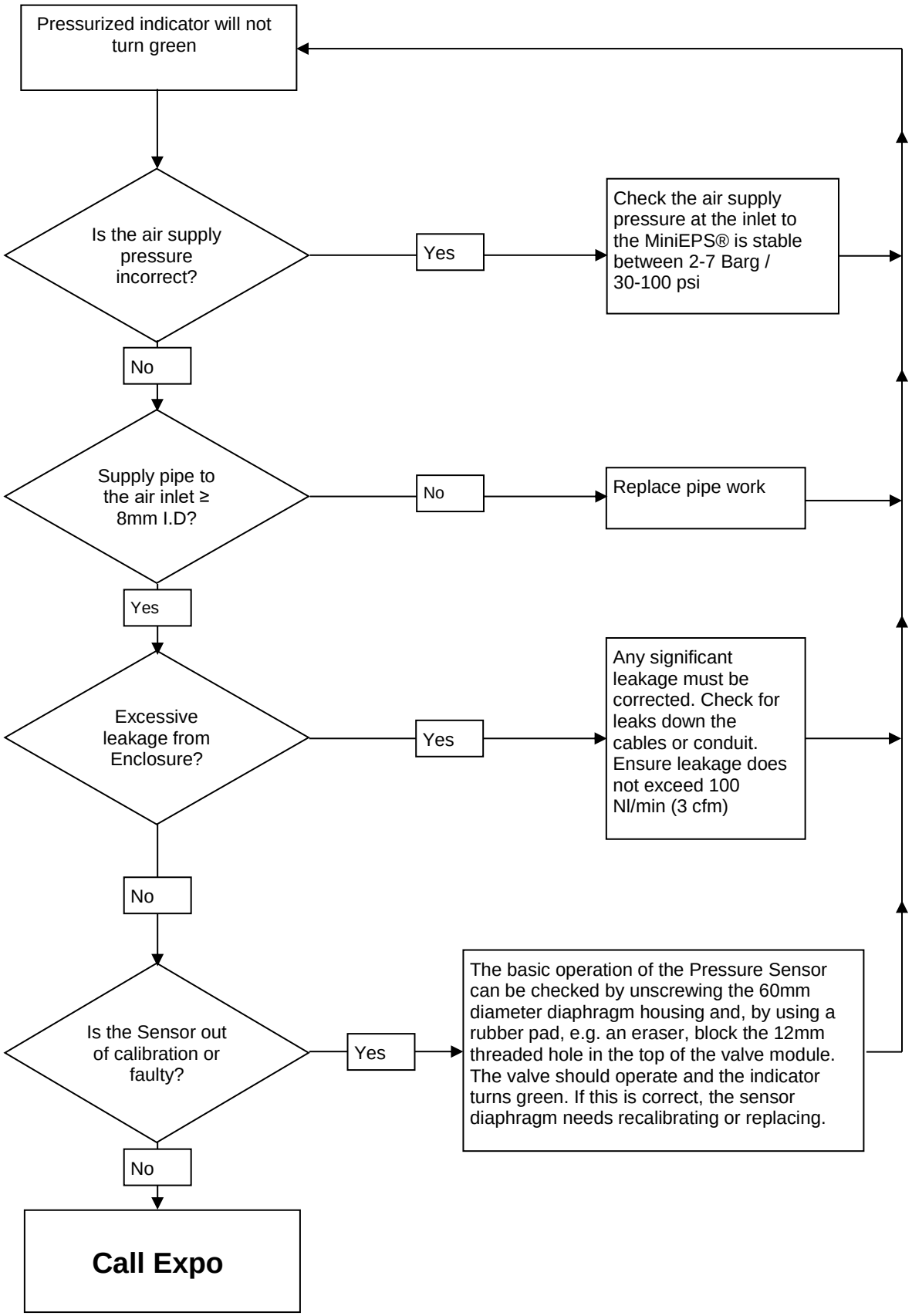
8. Fault Finding

If the system does not behave in the manner described above there is a fault. Some of the more likely faults are dealt with below. If a cure cannot be affected by following the procedure shown below please call Expo (24 hour answering) or your supplier for further assistance.

Possible Fault 1 – Relief Valve Opens Continuously/Intermittently



Possible Fault 2 – Indicator Will Not Turn Green



9. Recommended Spares List

Part Number	Description
MGA-Z000-158	Flow Control Valve Cap Gasket
S0030/606	Pressure sensor factory set to 1.25 mbarg
S0015/109	Visual Pressure Indicator
MCV-S000-093	Flow Control Valve Cap
MGA-Z000-159	Flow Control Valve Cap Gasket

10. Drawings and Diagrams

The following drawings are attached:

Title	Drawing Number	Sheet(s)
1ELC-PM-PS	MiniEPS® Panel Mount General Arrangement	1 of 1
1ELC-SS-PS	MiniEPS® 'ss' Housing General Arrangement	1 of 1
XBR-1TD0-038	MiniEPS® Installation Instructions	4 of 4

11. Declarations

See attached Declarations of Conformity:

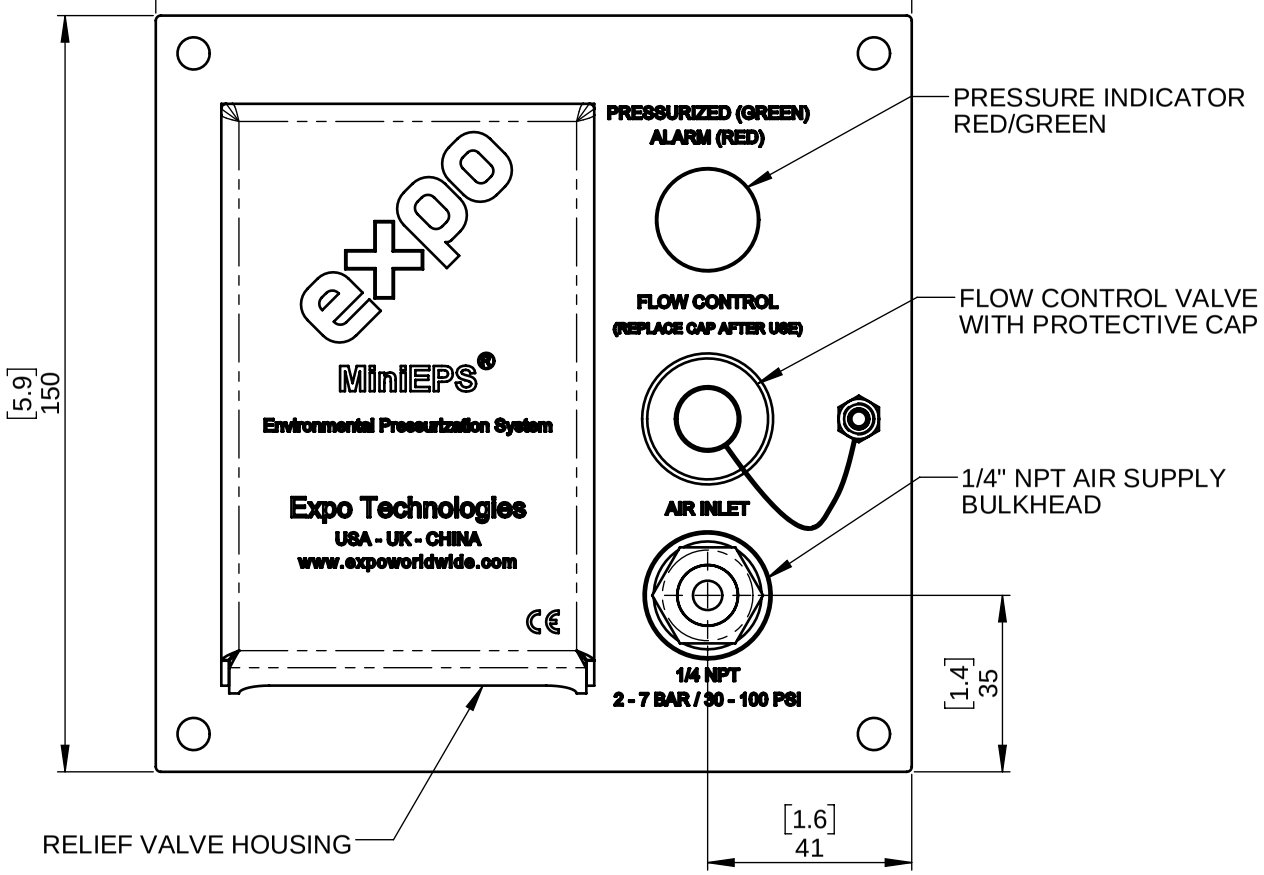
EXPO EU-Declaration of Conformity	SC036
EXPO Declaration of conformity with UL50 & UL50E	SC037

8	7	6	5	4	3	2	1

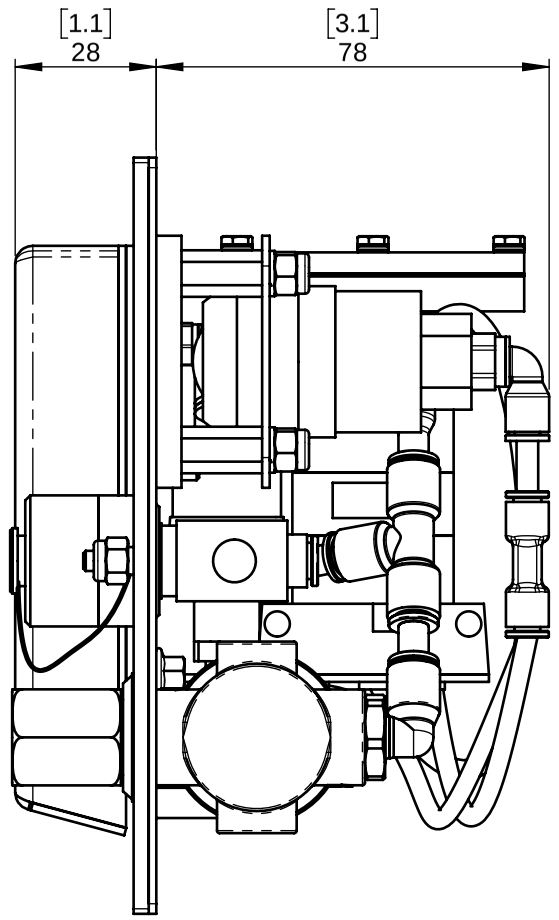
3RD ANGLE PROJECTION

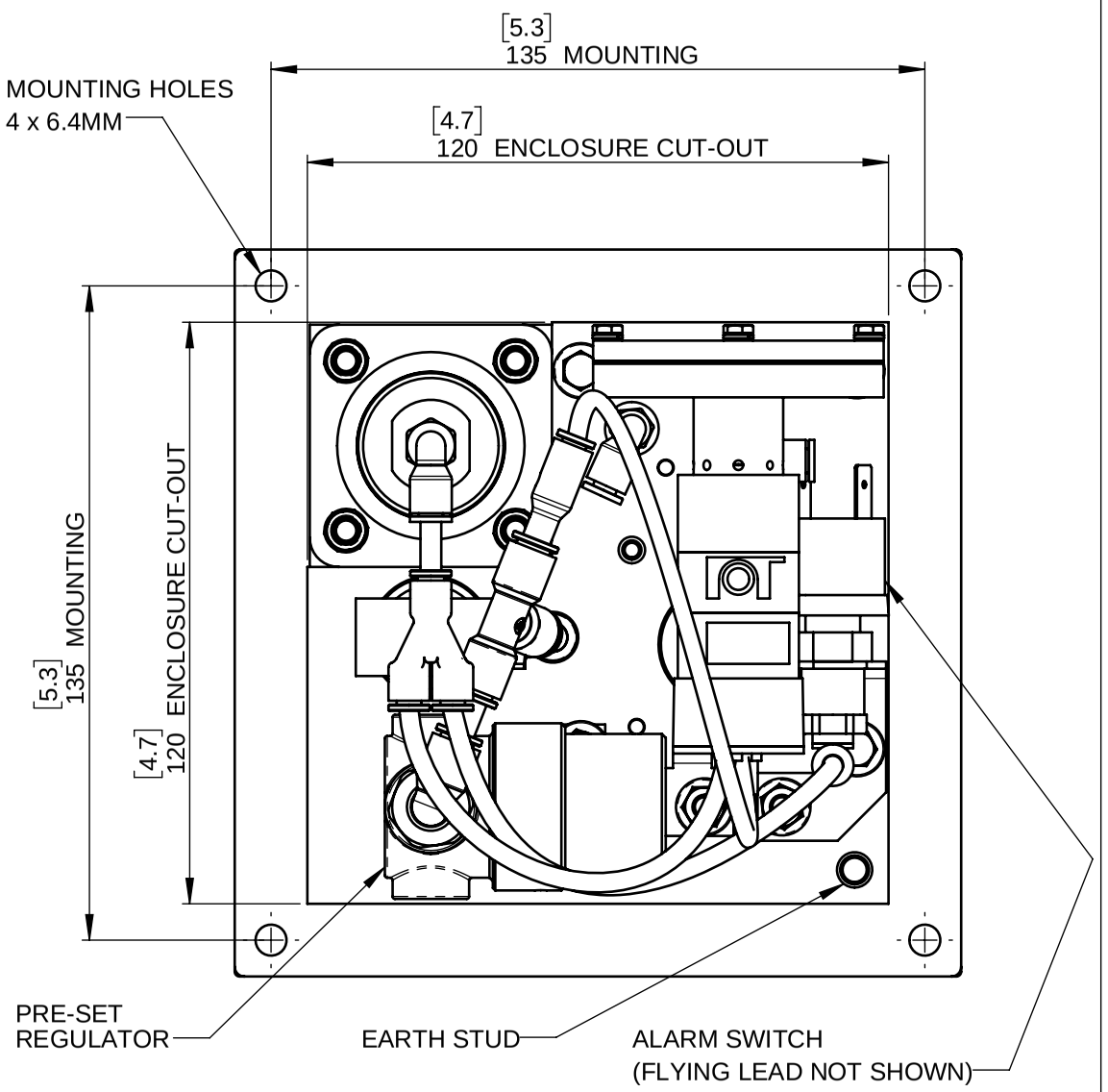
DIMENSIONS IN mm
[ ] DENOTES IMPERIAL
DO NOT SCALE

UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

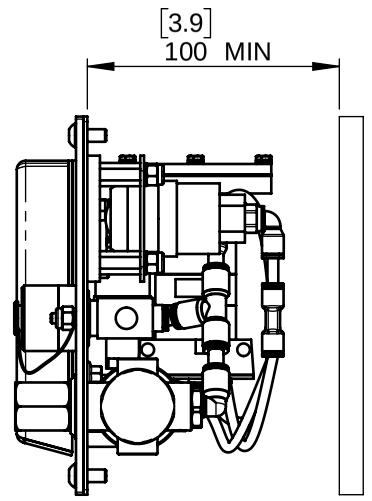


FRONT VIEW





REAR VIEW



ALLOW CLEARANCE TO ENSURE
EFFECTIVE AIR FLOW

NOTES

STAINLESS STEEL 316L CONSTRUCTION

MAINTAINS PRE-EXISTING UL 50E TYPE 4X AND IP66 ENCLOSURE INTEGRITY WHEN INSTALLED IN LINE WITH MANUFACTURE'S INSTRUCTIONS

SUPPLY PRESSURE: 2-7 BARG

DO NOT OBSTRUCT RELIEF VALVE OUTLET

EQUIVALENT IMPERIAL DIMENSIONS SHOWN IN BRACKETS

REFER TO DRG XBR-1TD0-038 FOR MOUNTING DETAILS

IF IN DOUBT ASK

REVISION TABLE			
REV.	MOD NUMBER	APPROVED DATE	APPROVED
01	DRAWN	22/12/2016	MLC

DRAWN DATE: 30/11/2016
DRAWING STATUS: RELEASED

APPROVED	CHECKED	DRAWN
MLC	MSP	DM

MATERIAL: SEE PART DETAILS
FINISH: SEE PART DETAILS

Expo Technologies Limited SURREY TW16 5DB UNITED KINGDOM

TITLE: PANELMOUNT MINI EPS

WEIGHT: 2KG (4.4LB) | JOB No.: - | CUSTOMER: -

A3 | SCALE 2:3 | REV. 01

DRAWING No. 1ELC-PM-PS

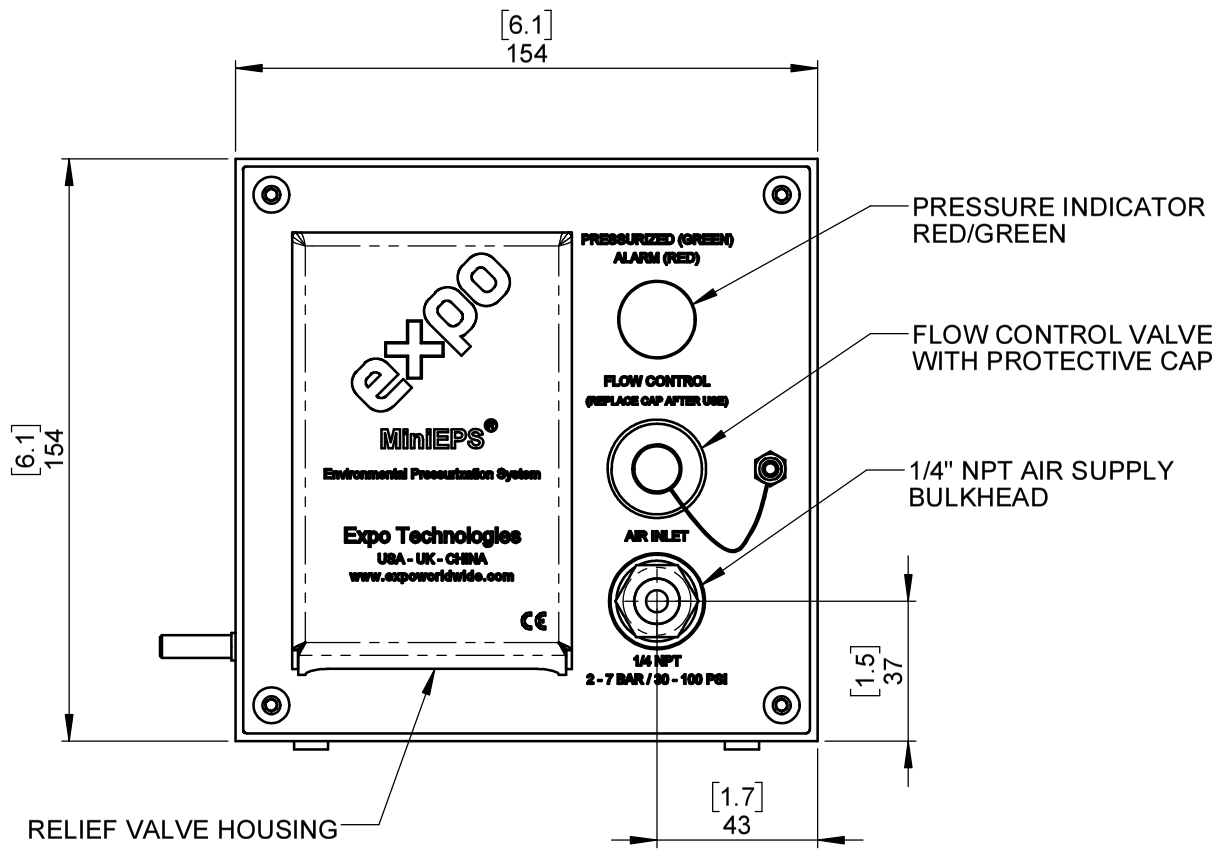
SHEET No. 1 OF 1

8	7	6	5	4	3	2	1

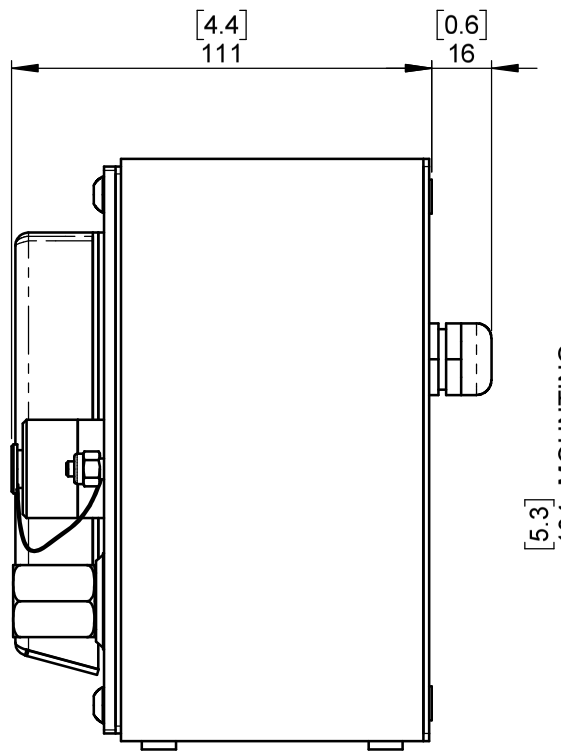
3RD ANGLE PROJECTION

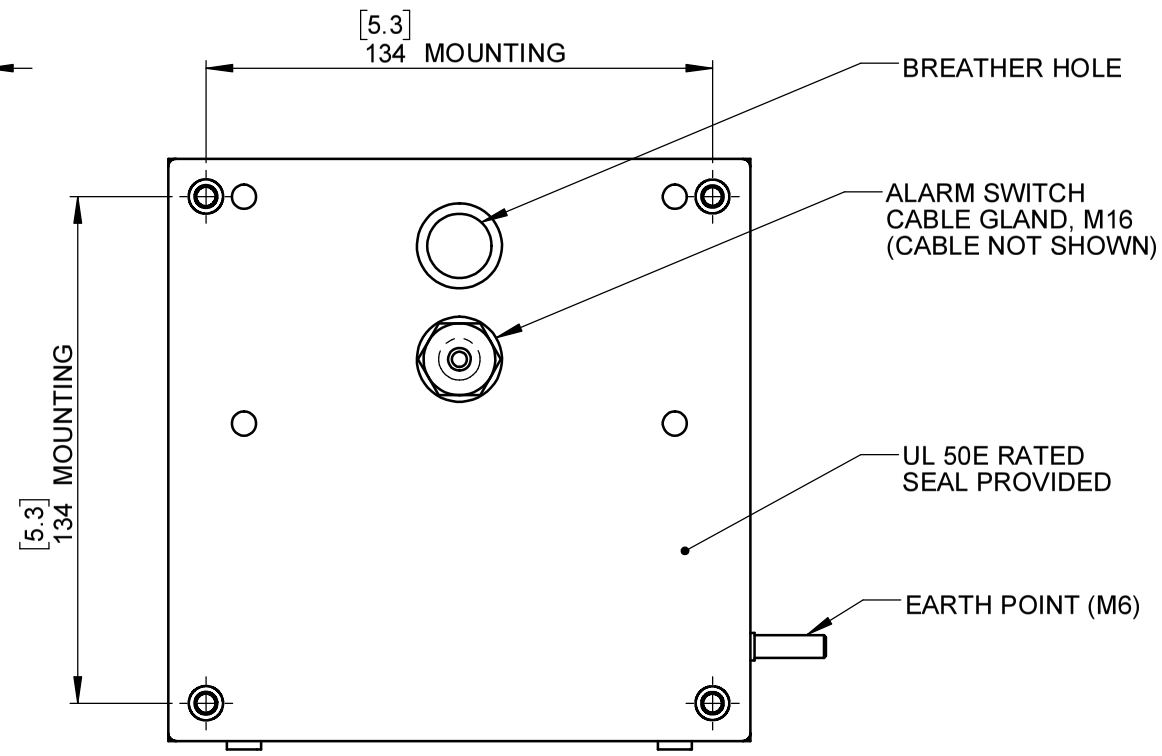
DIMENSIONS IN mm
[ ] DENOTES IMPERIAL
DO NOT SCALE

UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH



FRONT VIEW





REAR VIEW

NOTES

STAINLESS STEEL 316L CONSTRUCTION

MAINTAINS PRE-EXISTING UL 50E TYPE 4X AND IP66 ENCLOSURE INTEGRITY WHEN INSTALLED IN LINE WITH MANUFACTURE'S INSTRUCTIONS

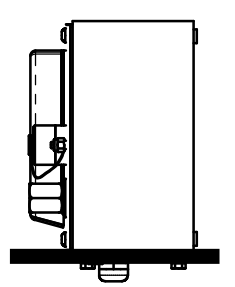
SUPPLY PRESSURE: 2-7 BARG

DO NOT OBSTRUCT RELIEF VALVE OUTLET

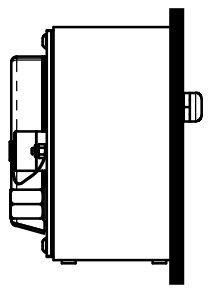
EQUIVALENT IMPERIAL DIMENSIONS SHOWN IN BRACKETS

MOUNTABLE IN TOP OR SIDE CONFIGURATIONS, REFER TO DRG XBR-1TD0-038 FOR MOUNTING DETAILS

CONFIGURATION OPTIONS



TOP MOUNT



SIDE MOUNT

IF IN DOUBT ASK

REVISION TABLE			
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DRAWN DATE: 30/11/2016
DRAWING STATUS: RELEASED

APPROVED	CHECKED	DRAWN
MLC	MSP	DM

MATERIAL: SEE PART DETAILS
FINISH: SEE PART DETAILS

Expo Technologies Limited SURREY TW16 5DB UNITED KINGDOM

TITLE: STAINLESS STEEL HOUSED MINI EPS

WEIGHT: 3KG (6.6LBS) | JOB No.: - | CUSTOMER: -

A3 | SCALE 1:1 | REV. 01

DRAWING No. 1ELC-SS-PS

SHEET No. 1 OF 1

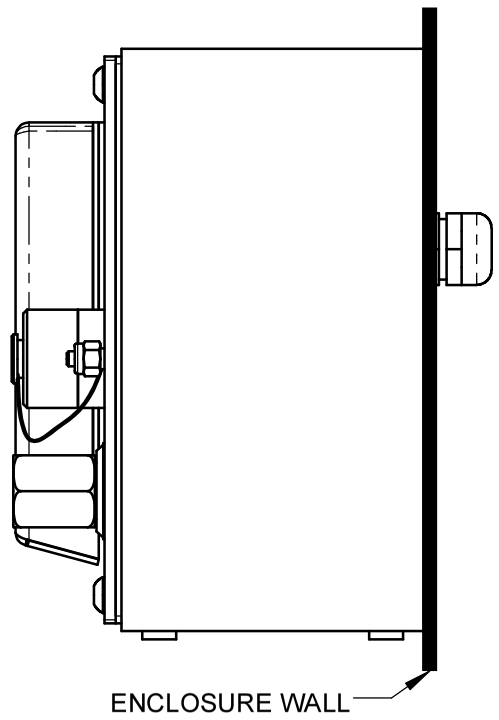
8	7	6	5	4	3	2	1

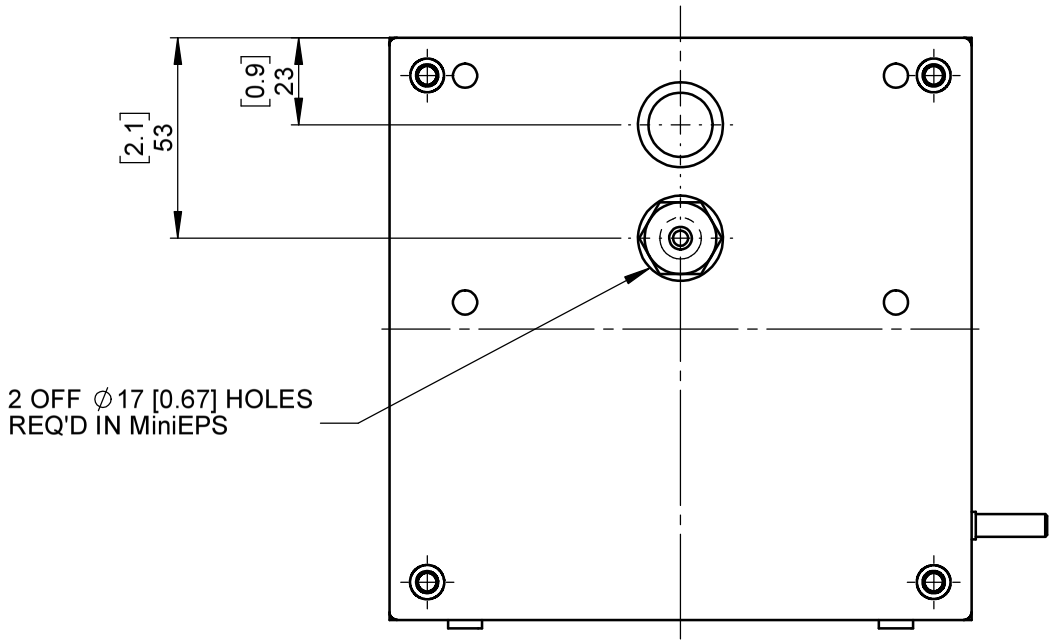
3RD ANGLE PROJECTION

DIMENSIONS IN mm
[ ] DENOTES IMPERIAL
DO NOT SCALE

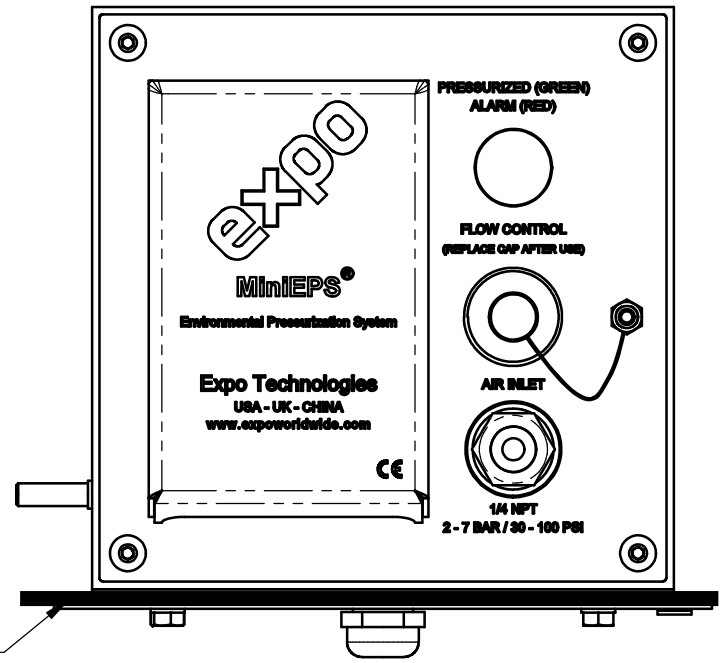
UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

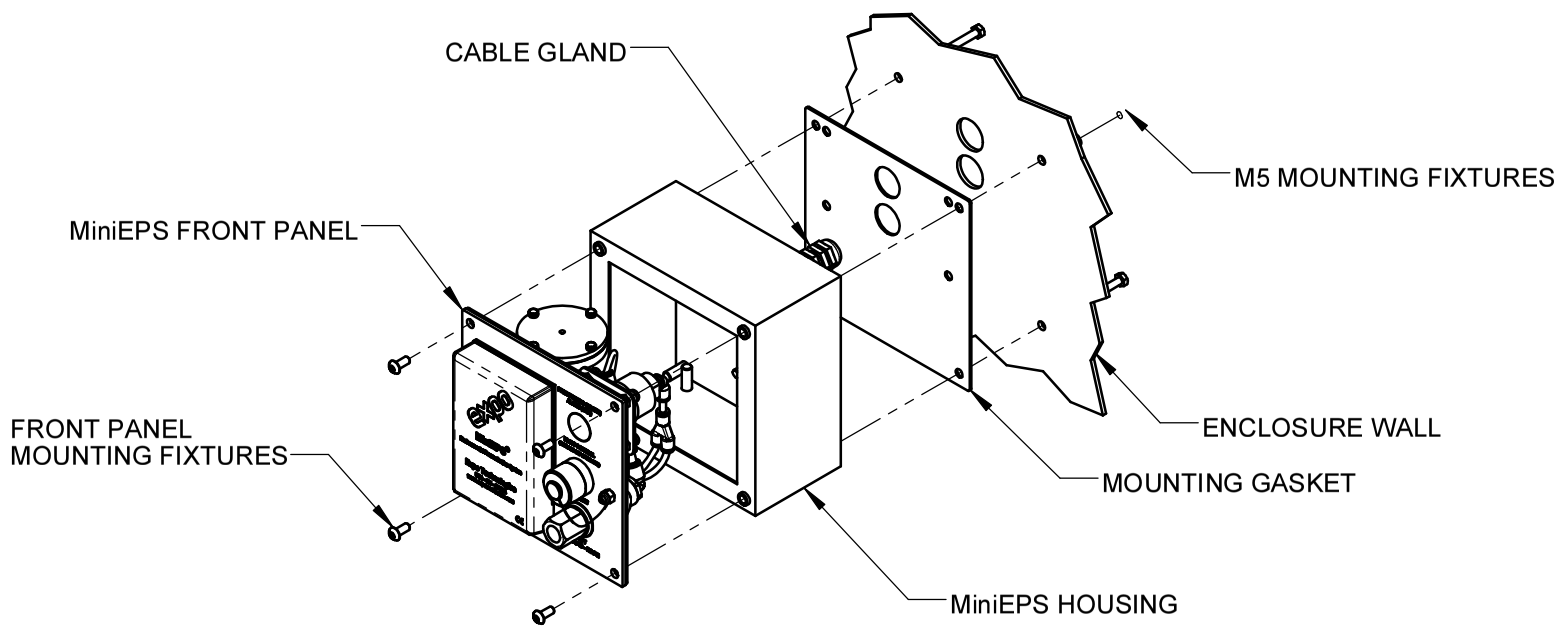
SIDE MOUNT CONFIGURATION

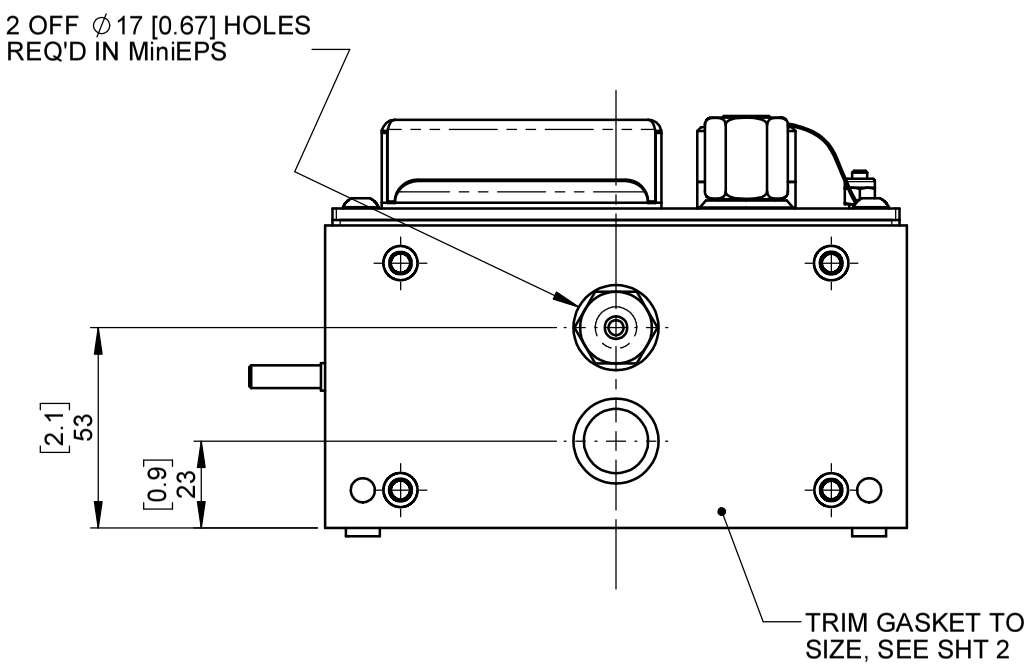




TOP MOUNT CONFIGURATION







NOTES

FIX TO ENCLOSURE USING 4 OFF M5 FITTINGS WITH SUITABLE WASHERS

CENTRE-MARKS FOR 17MM HOLES PROVIDED ON 'SS' HOUSING

IF IN DOUBT ASK

REVISION TABLE			
REV.	MOD NUMBER	APPROVED DATE	APPROVED
01	DRAWN	22/12/2016	MLC

DRAWN DATE:		
30/11/2016		
DRAWING STATUS:		
RELEASED		
APPROVED	CHECKED	DRAWN
MLC	MSP	DM

MATERIAL: -

FINISH: -

Expo Technologies Limited SURREY TW16 5DB UNITED KINGDOM

TITLE: MINIEPS MOUNTING INSTRUCTIONS

WEIGHT	JOB No.	CUSTOMER
	-	-

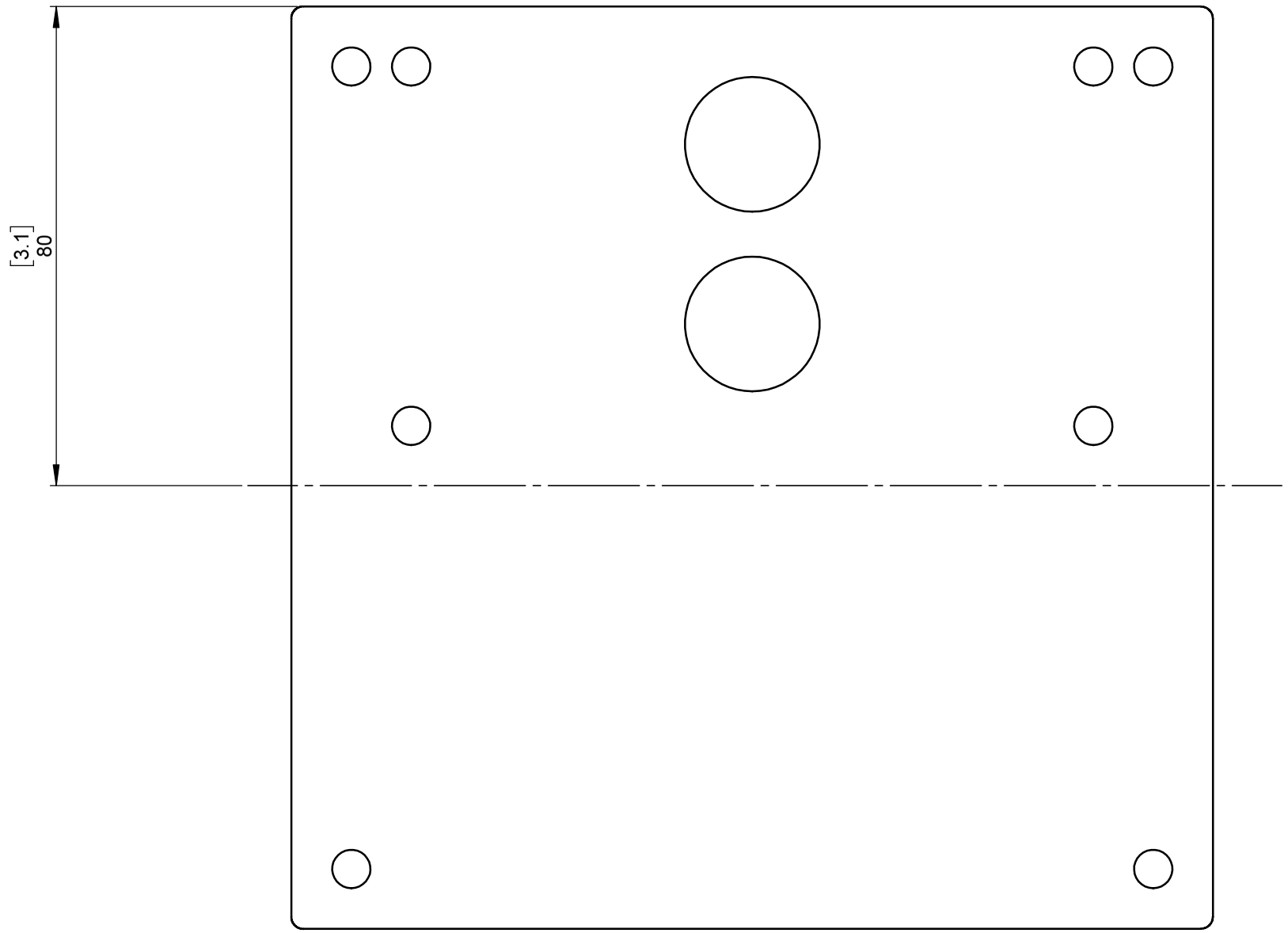
A3 | SCALE 1:2 | REV. 01

DRAWING No. XBR-1TD0-038

SHEET No. 1 OF 4

8	7	6	5	4	3	2	1
3RD ANGLE PROJECTION	DIMENSIONS IN mm [ ] DENOTES IMPERIAL DO NOT SCALE	UNSPECIFIED TOLERANCES FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH	NO DEC PLACE ±0.5 1 DEC PLACE ±0.2 2 DEC PLACE ±0.1				

CUT SUPPLIED MOUNTING GASKET TO SIZE INDICATED FOR **TOP MOUNT** CONFIGURATION



IF IN DOUBT ASK

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APPROVED: MLC / CHECKED: MSP / DRAWN: DM	FINISH: -	WEIGHT	JOB No.: - / CUSTOMER: -		SHEET No. 2 OF 4	

8	7	6	5	4	3	2	1

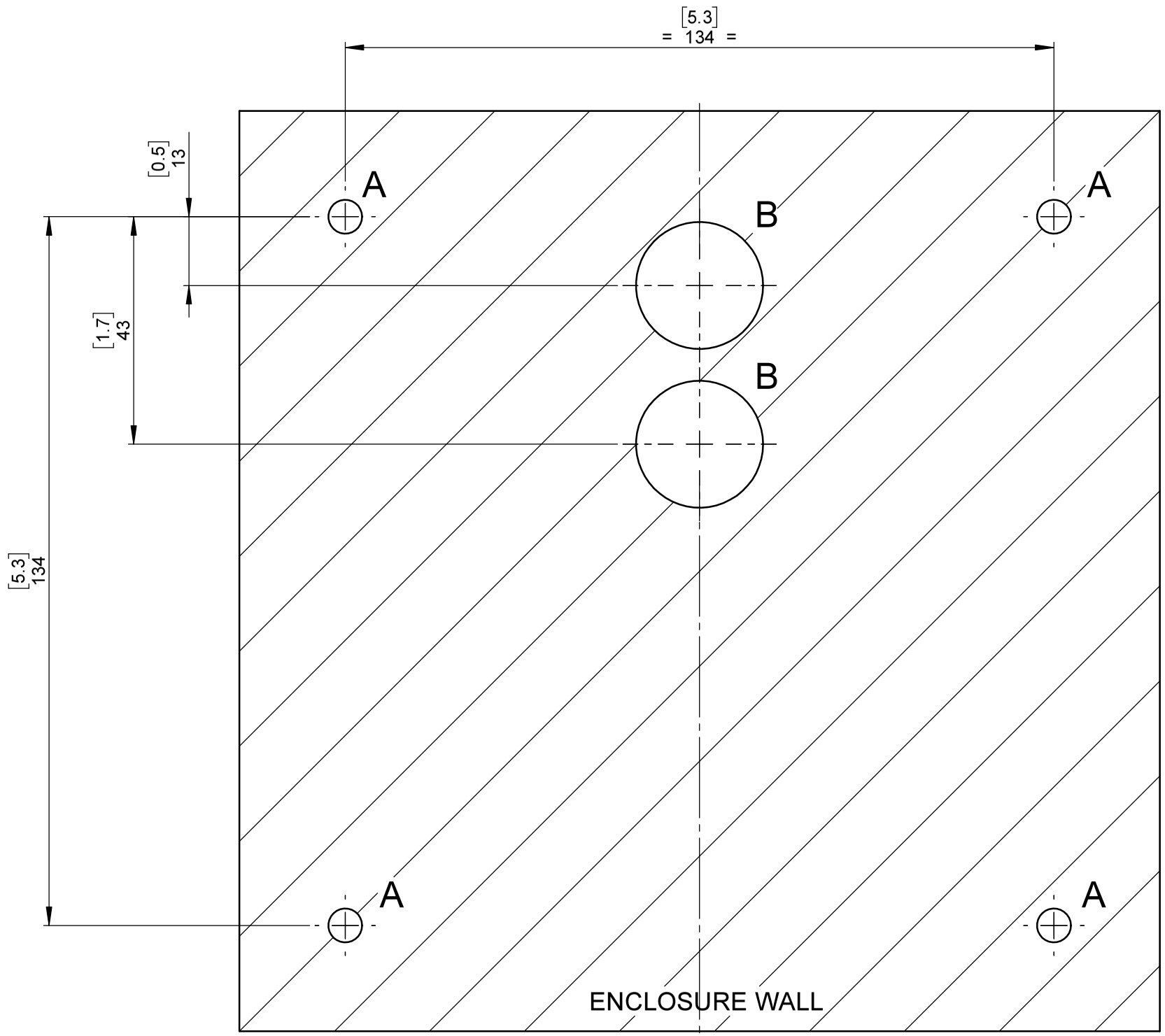
3RD ANGLE PROJECTION

DIMENSIONS IN mm
[ ] DENOTES IMPERIAL
DO NOT SCALE

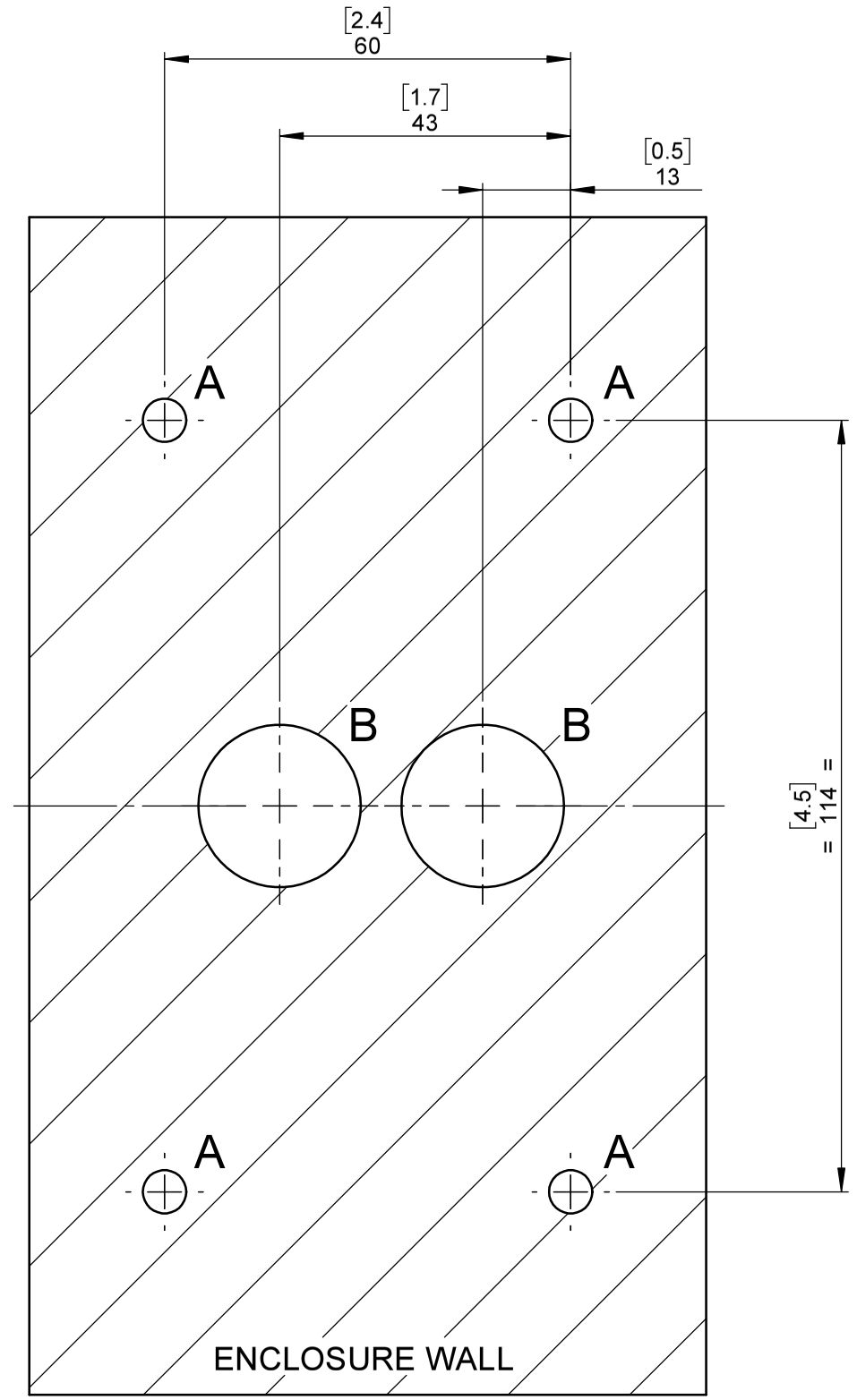
UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

REF	DIM	QTY
A	∅6.4 [0.25]	4
B	∅24 [0.94]	2

SIDE MOUNT DRILLING DETAILS



TOP MOUNT DRILLING DETAILS



IF IN DOUBT ASK

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DRAWING STATUS: RELEASED		TITLE: MINIEPS 'SS' ENCLOSURE DRILLING DETAILS	DRAWING No. XBR-1TD0-038
APPROVED: MLC · CHECKED: MSP · DRAWN: DM	FINISH: -	WEIGHT · JOB No.: - · CUSTOMER: -	SHEET No. 3 OF 4

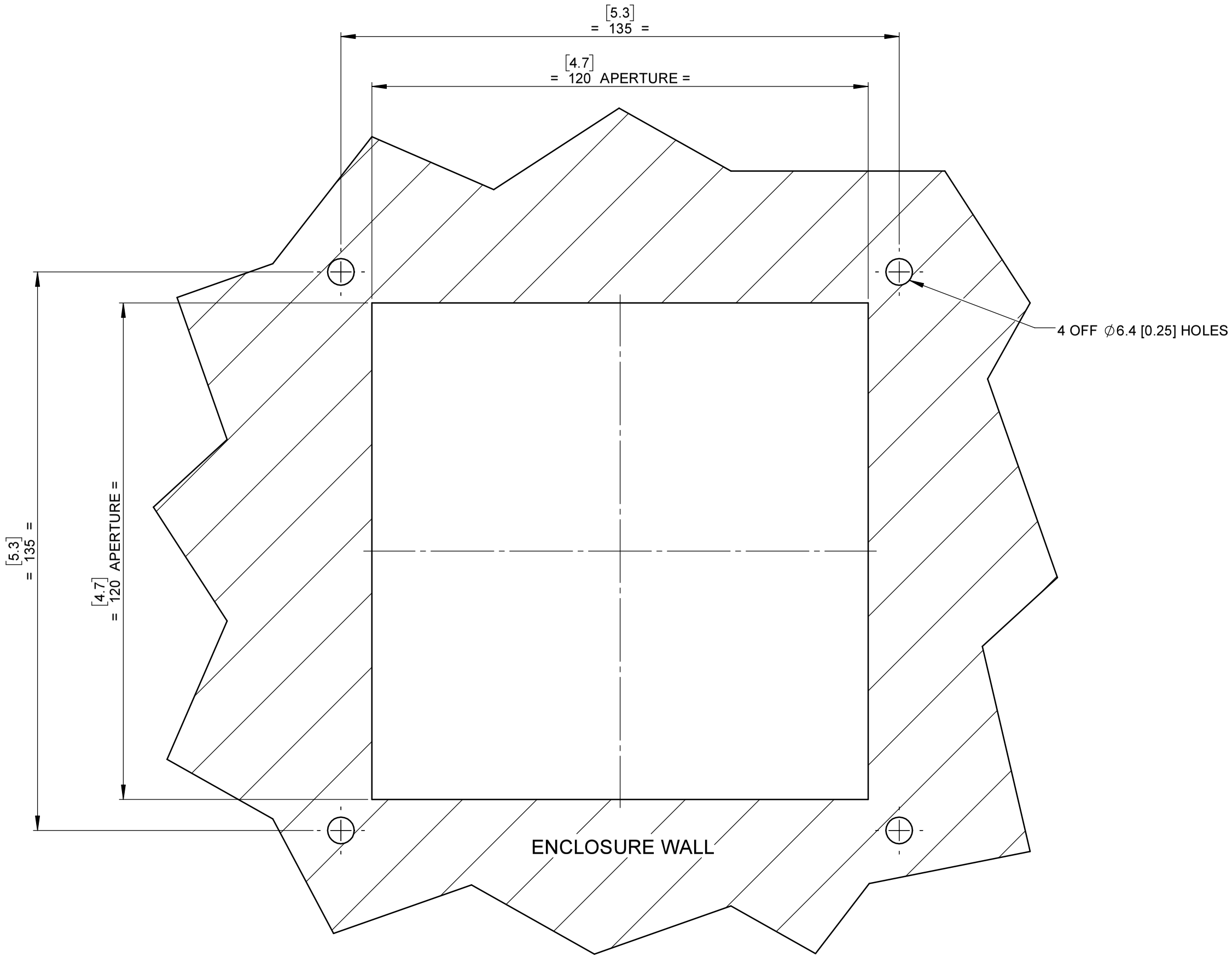
8	7	6	5	4	3	2	1

3RD ANGLE PROJECTION

DIMENSIONS IN mm
[ ] DENOTES IMPERIAL
DO NOT SCALE

UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH

F E D C B A



IF IN DOUBT ASK

DRAWN DATE: 30/11/2016	MATERIAL: -	Expo Technologies Limited, SURREY TW16 5DB UNITED KINGDOM		A3	SCALE 1:1 REV. 01
DRAWING STATUS: RELEASED		TITLE: MINIEPS PANEL MOUNT CUT-OUT DETAIL			DRAWING No. XBR-1TD0-038
APPROVED: MLC / CHECKED: MSP / DRAWN: DM	FINISH: -	WEIGHT	JOB No.: - / CUSTOMER: -		SHEET No. 4 OF 4

CE EU-Declaration of Conformity

With European Directives

Issued under the sole responsibility of

Expo Technologies Ltd
Unit 2, The Summit, Hanworth Road
Sunbury on Thames TW16 5DB, UK

This is to declare that all models of the MiniEPS, Mini-Environmental Pressurization System, are designed and manufactured in conformity with the following European Directives and standards:

Low Voltage Directive 2014/35/EU
The MiniEPS Systems meet the electrical safety requirements of EN 61010-1:2010 Safety requirements for equipment for measurement, control and laboratory use.

When installed and maintained according to the instructions provided by Expo Technologies, the MiniEPS Systems are able to maintain a minimum Degree of Protection of IP66 according to the requirements of EN 60529:1991.

Electromagnetic Compatibility Directive 2014/30/EU
The MiniEPS incorporate one more volt-free (“dry”) contacts which work in circuits specified by others. In normal operation these circuits are benign and not regulated by the scope of this Directive.

Pressure Equipment Directive 2014/68/EU
In normal operation and when installed according to the instructions provided by Expo Technologies, the MiniEPS Systems are designed for a maximum working pressure of 10mbar, therefore covered by Article 4, Paragraph 4 of this Directive.

MiniEPS systems are manufactured under Production Quality Assurance Notification SIRA 99 ATEX M043, issued by SIRA Certification Service, Notified Body No 0518.

Signed for and on behalf of Expo Technologies Ltd.,

John Paul de Beer
Managing Director

Date 21/12/2016
Confidential Assessment file reference SC036

Declaration of Conformity

With UL50 & UL50E Type 4X

Expo Technologies Ltd
Unit 2, The Summit, Hanworth Road
Sunbury on Thames TW16 5DB UK

This document confirms that
MiniEPS – Mini Environmental Pressurization Systems
are designed in compliance with the requirements
of standards UL50 & UL50E for enclosure Type 4X.

Product description

The MiniEPS is an environmental pressurization system, designed for non-hazardous areas that may contain dusty, dirty and/or corrosive atmospheres. It requires a supply of compressed or instrument air, or an inert gas to regulate the pressure within the enclosure. This prevents the accumulation of damaging gases and/or dusts, extending the life of the enclosure's expensive electrical equipment and instrumentation. Due to the positive pressure inside the enclosure, corrosive or harmful elements remain outside.

When installed and maintained according to the instructions provided by Expo Technologies, the MiniEPS System is able to maintain the classification of the enclosure, in which it is installed, as UL50 & UL50E Type 4X.

Signed
Managing Director

Date 22/Dec/2016
Confidential Assessment file reference SC037

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