MiniPurge Type Z(Y) LC Manual

ML 447

This manual covers Mini-Z(Y)-Purge Leakage Compensation

Sizes: **1, 2 & 3**

Mounting Options: **bp, pm, nm, ss**

Output Options: **IS, PO**

CONTENTS:

1. Specification Sheet - MiniPurge Type Z(Y) Systems

Model No. (Example): **07 1 ZLC / ss / IS** **(Note: Not all codes are applicable)**

Purge System Type

07 = MiniPurge

Size

1 = Sub MiniPurge
Purge flow rate 8 scfm, 225 Nl / min

2 = MiniPurge
Purge flow rate 16 scfm, 450 Nl /min

3 = Super MiniPurge
Purge flow rate 32 scfm, 900 Nl/min

Approval / Certification

Z =	**Y =**
Europe	
EN 60079-0, EN 60079-2	
Sira 01ATEX1295X	
2804 Ⓔx II 3 (2) G D	2804 Ⓔx II 2 (2) G D
Ex [pzc] IIC T6 Gb	Ex [pyb] IIC T6 Gb
Ex [pzc] IIIC T85°C	Ex [pyb] IIIC T85°C Db
T_{amb} -20°C +55°C	T_{amb} -20°C +55°C
IEC	
IEC 60079-0, IEC 60079-2	
IECEx SIR 07.0027X	
Ex [pzc] IIC T6 Gb	Ex [pyb] IIC T6 Gb
Ex [pzc] IIIC T85°C	Ex [pyb] IIIC T85°C Db
T_{amb} -20°C +55°C	T_{amb} -20°C +55°C
USA / Canada NFPA 496	
FM 1X8A4AE	
Class I Div 2	Class I Div 1
Groups A, B, C & D	Groups A, B, C & D
Tamb = 60°C	Tamb = 60°C
UL E190061	
Class I Div 2	Class I Div 1
Groups A, B, C & D	Groups A, B, C & D
Brazil	
INMETRO - TUV	
TÜV 12.1462X	
Ex [pzc] IIC T6 Gb	Ex [pyb] IIC T6 Gb
Ex [pzc] IIIC T85°C Db	Ex [pyb] IIIC T85°C Db
-20°C ≤ Ta ≤ +55°C	-20°C ≤ Ta ≤ +55°C
China	
CCC	
CNEX 2020312304000830	
Ex [pzc] IIC T6 Gb	Ex [pyb] IIC T6 Gb
Ex [pzc] IIIC T85°C Db	Ex [pyb] IIIC T85°C Db
-20°C ≤ Ta ≤ +55°C	-20°C ≤ Ta ≤ +55°C
Russia	
EAC	
RU C GB. A ЖК 58 .B .00906 20	
1 Ex [pz] IIC T6 Gb	1Ex [py] IIC T6 Gb
Ex [pz] IIIC T85°C Db	Ex [py] IIIC T85°C Db
-20°C ≤ Ta ≤ +55°C	-20°C ≤ Ta ≤ +55°C

For limitations and conditions of use refer to the applicable certificate at the back of this manual.

Alarm (Signals)

IS = Internal Switch
'Alarm' : Dry, VFC, SPST N/O Contact

For Intrinsically Safe Circuits:
Install to EP80-2-11
Ci = 0 Li = 0
Umax = 30 Vdc, Imax = 101 mA
Umax = 19.2 Vdc, Imax = 350 Ma

Hermetically Sealed Switch (ATEX only)
Ex mc IIC T5 Gc
Ex mc IIIC T100°C Dc
Vmax = 254 Vac, Imax = 0.7 A

PO = Pneumatic Output
'Alarm' : Loss of Pressure = No signal
"Pressurized" = at supply pressure

MiniPurge Housing

bp = Back Plate (Top/Side Mount) 316L Stainless Steel (NROB finish)

pm = Panel Mount (Side/Front Mount) 316L Stainless Steel (NROB finish)

nm = Non Metallic (Top/Side Mount) Polystyrene c/w clear cover

ss = 316L Stainless Steel (NROB finish) Neoprene "Top" Mount Gasket

Purging Method

LC = Leakage Compensation

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Supply Pressure : 60 psi / 0.4MPa / 4 barg must be regulated at inlet.
Maximum supply pressure 115 psi / 0.8MPa / 8 barg. Compressed Air / Nitrogen

Flow & Pressure Sensors

Low Pressure Sensor : 0.2 "WC / 50 Pa (0.5 mbarg)
Flow Sensor : 1.1 "WC / 280 Pa (2.8 mbarg)

Leakage Compensation : Size 1: Variable up to 2 scfm (60 Nl/min) to compensate for Enclosure Leakage
: Size 2: Variable up to 9 scfm (250 Nl/min) to compensate for Enclosure Leakage
: Size 3: Variable up to 28.3 scfm (800 Nl/min) to compensate for Enclosure Leakage

Relief Valve

	MiniPurge Size 1	**MiniPurge Size 2**	**MiniPurge Size 3**
Model No	**RLV25/ss/FS**	**RLV36/ss/FS**	**RLV52/ss/FS**
Opening Pressure	: 4" WC / 1 kPa (10 mbarg)		
Material	: 316L Stainless Steel, Spark Arrestor: Stainless Steel mesh, Neoprene Gasket		
Action on "Loss of Pressure"	: ALARM ONLY		

2. Application Suitability

MiniPurge® Systems are certified for use in Hazardous Areas, where the Hazardous Area is non-mining (i.e. above ground) and the hazard is caused by flammable gasses, vapours or dust.

Mini-Z-Purge® Systems may be used in IECEx, ATEX Zone 2(22) - Category 3 and NEC 500 Class I, Div 2.

Mini-Y-Purge® Systems may be used in IECEx, ATEX Zone 1(21) - Category 2 and NEC 500 Class I, Div 1.

MiniPurge® systems may be used for hazards of any gas group. However, apparatus associated with the MiniPurge® system, such as Non-Incendive, Intrinsically Safe signalling circuits and flameproof enclosures containing switching devices may be limited in their gas group. The certification documentation supplied with any such devices must be checked to ensure their suitability.

This system is designed for use primarily with compressed air. Where other inert compressed gasses are used (Nitrogen, for example) the user must take suitable precautions so that the build up of the 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 a risk of asphyxiation exists, a warning label must be fitted to the Pressurized Enclosure.

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

Materials of construction:

• Stainless Steel	• Aluminium	• Acrylic
• Mild (carbon) Steel	• Nylon	• Silicone Rubber
• Brass	• Polyurethane	• Neoprene

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3. Installation, Operation and Maintenance for LC Systems

This MiniPurge® is designed for use under 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.

The MiniPurge® system shall be installed and operated in accordance with relevant standards, such as IEC / EN 60079-14, NEC 500, NFPA 496 and any local codes of practice that are in force.

For IEC / ATEX applications, references to the NFPA 496 within the ML384, should be replaced by the equivalent clause in IEC / EN 60079-2.

For IEC / ATEX applications, the "Example calculations:" in section 1.1.4 within ML384 should read:

If the PE external dimensions indicate a volume of 500 Litres then,

$$\frac{\text{500 litres enclosure volume x } \mathbf{5} \text{ volume changes}}{\text{225 litres/minute purge flow rate}} = \text{12 minutes purge time}$$

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4. Drawings

Consult the appropriate drawings according to the selected system.

SYSTEM *ZLC	/bp/IS	/bp/PO	/pm/IS	/pm/PO	/nm/IS	/ss/IS	/ss/PO
XBR-8TD0-011	✓	✓					
XBR-7TD0-030	✓	✓					
XBR-8TD0-009			✓	✓			
XBR-7TD0-029			✓	✓			
XBR-7TD0-031					✓		
XBR-8TD0-013						✓	✓
XBR-7TD0-028 (1 & 2)						✓	✓
XBR-7TD0-032	✓	✓	✓	✓	✓	✓	✓
EP80-2-11	✓		✓		✓	✓	
XSD-RTD0-004 (1 & 2)	✓	✓	✓	✓	✓	✓	✓

5. Certificates

Certificates can be found in the accompanying booklet (ML569) or downloaded the certificates at www.expoworldwide.com

EU-Declaration of Conformity - SC004-CE

6. D890 Appendix

Installation, Operation and Maintenance Manual for MiniPurge®
Leakage Compensation (Model LC) and
MiniPurge® Continuous Flow with High Purge (Model CFHP)
conforming to NFPA 496

IMPORTANT NOTE It is essential, to ensure conformity with the standard, that the user of the system observes the following instructions.

Please refer to the latest standard for detailed requirements and definitions.

Contents:

Section 0 Description and Principle of Operation

All MiniPurge® pressurization systems provide:

a) a method of pressurizing a Pressurized Enclosure (PE) while at the same time compensating for any leakage, together with

b) a method of purging the enclosure, before power is turned on, to remove any flammable gas that may have entered the enclosure while it was not pressurized.

Type **Leakage Compensation (LC)** and **Continuous Flow with High Purge (CFHP)** systems comprise the following two major parts:

- A **Control Unit (CU)** containing as a minimum, for "Y" and "Z" Pressurization, a Leakage Compensation Valve (LCV), Minimum Pressure and Purge Flow sensing devices, and a "Pressurized"/"Alarm" indicator. The CU supplies a 'Pressurized' signal showing whether the PE pressure is satisfactory or not.

For Type "X" Pressurization, the CU has, in addition, a fully automatic Purging controller with a Purge timer and electrical power switch interlock.

Note: For "Y" Pressurization, the electrical equipment inside the protected enclosure shall meet the requirement for Division 2 or Class 2 locations.

- A **Relief Valve (RLV),** fitted to the PE, to provide a means of limiting the maximum pressure experienced by the PE during operation. The RLV model number has suffixes defining the diameter of the valve aperture (in millimeters) and material, e.g. RLV **/cs (Carbon Steel) or /ss (Stainless Steel). All RLVs incorporate a Spark Arrestor to prevent sparks being ejected from the PE through the RLV aperture.

CFHP systems with a Continuous Flow of air after purging have a calibrated Outlet Orifice which can be either within the Relief Valve (suffix **/cf) or a separate item type SA** or SAU**.

0.1 "Leakage Compensation" Systems, Model LC

A Leakage Compensation System, Model LC, is intended to have minimal flow after the initial purge time. The PE is built as leak tight as possible and the LC system merely tops up for any enclosure leakage. The system provides an initial high flow of purging air that leaves the PE through the Relief Valve. After the initial purging has been completed the Control Unit changes over to Leakage Compensation mode and the Relief Valve closes. The only flow thereafter is the flow through the "Leakage Compensation Valve" (LCV) which is adjusted so that the flow is enough to compensate for any leakage from the PE.

The Purging Flow rate is monitored by a separate "Purge Flow Sensor" located in the CU, which detects the differential pressure across the purge flow orifice located directly before the RLV. The Purge Flow Sensor is set to operate when the desired differential pressure is exceeded. The output from the Flow Sensor is indicated on the CU and on "X" Pressurization systems, used to operate the automatic purge timer. Both Enclosure Pressure and Purge Flow have to be correct before the Purge Timer can start.

0.2 "Continuous Flow after High Purge", Model CFHP System

The CFHP system construction is identical to a LC model, with the addition of one or more fixed Outlet Orifices to provide a deliberate "leak" at a known flow rate. The Outlet Orifice is pre-calibrated so that the pressure drop at the desired flow rate is known. The Minimum Pressure Sensor within the Control Unit will be set to the same value as the pressure drop. When the PE pressure exceeds the calibrated pressure the Continuous Flow must be taking place.

The Leakage Compensation Valve in the CU is opened sufficiently to provide enough air to compensate for any accidental leakage as well as to provide the Continuous Flow through the outlet orifice. In this way a high flow rate is provided during the initial purge period which is thereafter reduced to the desired Continuous Flow rate. Even if the PE had no accidental leakage there would still be a flow from the outlet orifice.

There are three ways of providing the calibrated Outlet Orifice. Please consult the system specification sheet to determine which has been supplied. The choice:

- Type SAU** where an Orifice disk is removable and can be easily changed by the user to give different flow rates according to the size of the PE and the available air supply capacity. (** denotes the metric thread size of the SAU body)

- Type SA** where the orifice size is fixed and the way to change the flow rate is either to change the setting

of the Minimum Pressure Sensor or to replace the SA with one of another size. (** denotes the nominal thread size of the SA body)

- For low flow rates, the Outlet Orifice may be incorporated within the Relief Valve making use of the existing Spark Arrestor. The Relief Valve will then have a suffix /CF**, where ** is the orifice size in millimeters.

Section 1 Installation of the System

The installation of the MiniPurge® system, the protective gas supply, any alarm device should be in accordance with the requirements of NFPA 496.

The electrical installation associated with the MiniPurge® system shall conform to the local codes and the relevant clauses of NFPA 496.

All electrical parts of the MiniPurge system shall be installed in accordance with the applicable requirements of the NEC for USA and CEC for Canada.

1.1 Installation of the Expo LC and CFHP Systems

1.1.1 The Expo system should be installed either directly on or as close as possible to the Pressurized Enclosure (PE). It should be installed so that the system indicators may be readily observed.

1.1.2 All parts of any system carry a common serial number. If installing more than one system, ensure that this commonality is maintained on each installation.

1.1.3 Any tubing, conduit and fittings used to connect to the PE should be metallic, or, if non-metallic, conform to the local codes for flammability ratings. No valve may be fitted in any tube connecting the Expo system to the PE.

1.1.4 The user or manufacturer of the PE shall determine the volume of the PE, the necessary purging volume, and the time to be allowed for purging, using the chosen Expo system purging flow rate. It is the user's responsibility to verify or enter this data on the PE and/or Expo system nameplate. Ask Expo if in doubt.

Example calculations:

a) If the PE external dimensions give a volume of 20 cubic feet, and it is NOT a motor, multiply the volume by four to get the Purging Volume i.e. 80 cubic feet. Divide the Purging Volume by the purge rate e.g. 32 cubic feet per minute, and round up to the next even minute above, i.e. Purging time would be 4 minutes.

b) If the PE is a motor, multiply the internal free volume by ten to get the Purging Volume. For the example above, Purging time would be 8 minutes.

For Type “Y” or “Z” Pressurization, the protected equipment may be permitted to be energized immediately where 25 Pa (0.1”WC) exist in the enclosure and the enclosure is known to be below the ignitable concentration of combustible material.

1.1.5 If the PE contains an internal source of release of flammable gas or vapor, the procedures for assessment of the release as given in NFPA 496 shall be observed.

1.1.6 User must take precaution if abnormal release of flammable gas or vapor within the enclosure can affect the external area.

1.1.7 Where a release of flammable gas or vapor within an enclosure can occur either in normal condition or abnormal operation, protection shall be provided by one of the step as specified in NFPA 496.

For more information on enclosure containing internal source of release or enclosure containing an open flame, contact Expo Technologies.

The user must verify that the specification of the Expo system e.g. pressures, continuous flow (dilution) rate and type of protective gas are correct for the specific application. If an inert protective gas is required, the Expo Control Unit can be specified to have Compressed Air for the control logic and Inert Gas for the protective gas to minimize Inert Gas consumption.

1.1.8 More than one PE can be protected by a single system. If PEs are connected and purged in “series” e.g. “Daisy Chained”, the Outlet Orifice must be fitted on the last enclosure with the Purge Inlet to the first enclosure. The bore and length of the tube or conduit used to interconnect the enclosures is critical and will determine the maximum pressure experienced by the first enclosure in the series. Advice on sizing can be obtained from Expo Technologies. The test pressure for all the enclosures should be 3 times the pressure inside the first enclosure when purging is taking place.

If PE’s are to be connected in parallel each enclosure must have its own outlet Relief Valve, Purge Flow Sensor and Pressure Sensor. System “Models” can be mixed e.g. Model LC for one enclosure and Model CF for another. An example would be a Gas Chromatograph instrument. Expo systems with this facility have option code “TW”.

1.2 Quality and Installation of the Pressurizing Air or Inert Gas Supply

1.2.1 The source of the compressed air must be in a non-classified area. Inert gas may be used as an alternative to compressed air.

1.2.2 All pipe connection for the protective gas shall be protected from mechanical damage; where the source of the compressed air intake line passes through a classified location, the construction shall be of non-combustible material, and designed to prevent leakage of flammable gases, vapours, or dust into the protective gas. It must be protected against mechanical damage and corrosion.

1.2.3 Unless a supply shut-off valve has been specially fitted within the Expo system, a valve with the same, or larger, thread size as the Control Unit inlet fitting shall be fitted externally. In addition, for "Y" and "Z" Pressurization systems, a suitable indicator shall be provided:

Note: To conform to NFPA: Any protected enclosure that can be isolated from the protective gas supply shall be equipped with an alarm and shall have this warning:

WARNING: PROTECTIVE GAS SUPPLY VALVE
This valve must be kept open unless the area atmosphere is known to be below the ignitable concentration of combustible materials or unless all equipment within the protected enclosure is de-energized.

1.2.4 The tubing and fittings used must conform to 1.1.3 above.

1.3 Provision and Installation of Alarm Devices

Expo Technologies systems have a Minimum Pressure Sensor set to a pressure of at least 0.1" WC (0.25 mbar). When the PE pressure is above this set point the Sensor produces a positive "Pressurized" signal. This is displayed on a Red/Green indicator. This signal can be used to operate an electrical contact for a remote "Alarm". The pneumatic signal may be supplied either

a) to a pressure operated switch (MiniPurge® Option Code /IS) suitable for an Intrinsically Safe circuit, in accordance with Expo drawing EP80-2-11, (or for a Non-Incendive circuit in Division 2), or

b) to a bulkhead fitting where it is available to the user (MiniPurge® Option Code /PO). This signal can be used to operate an external electrical switch either local (e.g. explosionproof) or remote in a non-classified area, or

c) to an external terminal box (MiniPurge Option® Code /PA). This option is available with an auxiliary switch(es) for signal and circuit control, assessable to user via the external junction box. This switch is suitable for use in the Hazardous Location in accordance to NEC500/505 requirements.

When the enclosure pressure falls below the set point of the Sensor the "Pressurized" signal is removed, i.e. the absence of the signal indicates a "Alarm" ("Pressure Failure") condition. The user must make use of this external alarm facility in accordance with NFPA 496 requirements, if the system "Alarm" indicator is not located in a place where it can be readily observed.

Example: The "Pressurized" signal can be used to produce an "Alarm" action by means of a conventional "pressure switch" set to operate at around 15 psi (1 bar). The "Pressurized" signal from the CU at 30 psi (2 bar) or more will hold the switch in the operated position until the CU detects a low pressure in the PE and removes the "Pressurized" signal. The Alarm switch will reset and its contacts can be used to operate a remote electrical alarm.

If the switch is located in the hazardous area it must either be part of an Intrinsically Safe circuit, or be suitably protected e.g. explosionproof. The pressure switch should be IS or explosionproof even if it is fitted within the Pressurized Enclosure.

For

Expo Technologies Tip: Exception: For a "Z Purge" system fitted in a Division 2 area, a non-classified switch inside the PE can be used to operate a remote Alarm provided its electrical supply comes from within the PE (i.e. NOT PROVIDING DRY CONTACTS). When the PE is in use the Alarm can operate normally in response to the pneumatic signal from the CU with option /PO. When the PE power is switched off there is no need for an alarm! Ask for the circuit diagram.

The Alarm switch can also be located in a nearby non-classified location. To get the best response time the switch should be as close as possible to the CU and the maximum length of tubing between the CU and the Alarm switch should not exceed 150 feet (45 m) unless "Quick Exhaust Valves" are used (please ask Expo if in doubt).

Note: No valves may be fitted between the Expo system and the alarm switch.

1.4 Power Supplies and their Isolation

1.4.1 All power entering the PE shall be provided with a means of isolation. This requirement also applies to any external power sources that are connected to "dry contacts" or "volt-free contacts" within the PE.

1.4.2 Electrical power for the protective gas supply shall be from a separate power source. If the same power source for the pressurized enclosure is used, it shall be power off before any service disconnects for the enclosure.

Exception: Power to Intrinsically Safe, or other apparatus, which is already suitable for the location, need not be isolated by the Expo Technologies system.

Expo Technologies Tip: It is recommended to fit dry or volt-free contacts in the non-classified area or inside an explosionproof box rather than inside the PE. Please ask Expo about "MiniPurge® Interface Units" (MIU).

In the case of "X" Pressurization, the isolation of the power must be controlled by the Expo system using the "Purge Complete" pneumatic signal to operate a "Power Switch" in a similar manner to that described in 1.3 above.

In the case of "Y" or "Z" Pressurization the power may be controlled manually by the user by the use of local isolating switch.

1.4.3 In accordance with NFPA 496, *Mini-X-Purge system shall be used on protected equipment requiring automatic shutdown, such as motors or transformers that could be overloaded or equipment that can develop higher temperature than the marked Temperature Class (temperature detector devices shall be provided to detect any increase in temperature).* Expo Mini-X-Purge® systems can have the "Action on Pressure Failure" (normally "Alarm and Trip") adjusted by the user to become "Alarm Only". In case of an alarm, it is the responsibility of the user to de-energize the protected equipment as soon as possible. The system may require the addition of an "Alarm Only Kit" (/AO) to perform this function. Please contact Expo Technologies Sales office for further details.

Exception: The power may remain connected for a short period if immediate cut-off could result in a more

hazardous condition and if audible and visual alarms are provided in a constantly attended location.

1.4.4 The Power (cut-off) Switch must be approved for the location or located in a non-classified area.

1.4.5 No valves are permitted between the Power Switch and the Expo system.

1.4.6 For "X" Pressurization, the PE door shall have fasteners that can be opened only by the use of a tool or key. Otherwise the additional requirements from NFPA 496 should apply.

1.4.7 Protection equipment containing hot parts requiring a cool-down period shall require the use of key or tool for opening.

Note: The door switch provided with the Expo system (when requested) can be either pneumatic or electric.

1.5 Marking

1.5.1 The MiniPurge® system carries a nameplate and a specification sheet, which give specific data such as serial and models numbers, Pressure Sensor settings, flow rates and purge time.

1.5.2 Other marking, for the PE, required by the standard includes:

> *"**WARNING - PRESSURIZED ENCLOSURE***
> *This enclosure shall not be opened unless the area is known to be free of flammable materials or unless all devices within have been de-energized"*
>
> *"Power shall not be restored after the enclosure has been opened until the enclosure has been purged for____minutes at a flow rate of_____."*

Expo note: It is understood that NFPA 496 requires the de-energization of all devices that are not suitable for the hazard e.g. devices that are not Explosionproof or Intrinsically Safe. For example, an explosionproof anti-condensation heater would not have to be de-energized.

1.5.3 If Inert Gas is used as the Protective Gas and a risk of asphyxiation exists, a suitable warning plate should be fitted to the PE.

Section 2 Operation of the System

2.1 Initial Commissioning

2.1.1 Check that the system has been installed in accordance with Section 1 of this manual.

2.1.2 Disconnect the supply pipe from the inlet to the Control Unit and blow clean air through for at least 5 seconds per foot of length (15 sec / metre) to remove any debris, oil and condensation.

2.1.3 Connect a temporary pressure gauge or liquid manometer to the PE or Control Unit “Pressure Test Point”, [on the LP Sensor, by the removal of the Red plug - 5/32” (4mm) OD nylon tube].

2.2 Commissioning Leakage Compensation (LC) and Continuous Flow High Purge (CFHP) ”X” Purge systems.

On LC and CFHP "X" Purge systems proceed as follows:

2.2.1 Open the Leakage Compensation Valve (LCV) to about 50% of its travel.

2.2.2 Open the supply shutoff valve SLOWLY and allow the PE pressure to rise until the Relief Valve (RLV) opens. Check that the RLV opens at or below the figure specified in the documentation. Repeat the test several times.

2.2.3 Open the supply shutoff valve fully and the purging flow will start.

2.2.4 Check that the internal logic gauge reads 30 psi (2 bar). If not, adjust the logic pressure regulator to suit (lift the red ring to unlock the knob first.)

2.2.5 At this time the “Pressurized” indicator should be Green and the “Purging” indicator should be Yellow. If the "Purging" indicator remains Black the flow through the Relief Valve is below the minimum for which the Flow Sensor has been calibrated. Check the air supply pressure **at the inlet to the Control Unit while purging is taking place**. It must be above the minimum specified. The larger Super-Mini-X-Purge® system has a built-in gauge on the filter for this purpose.

2.2.6 On LC and CFHP "X" purge systems the purge timer will start as soon as the “Purging” indicator turns Yellow. Check that the time delay between the indicator turning Yellow and the application of power to the PE is not less than the minimum time required to purge the PE. Times in excess of the minimum are permitted and a tolerance of +25% is normally acceptable. If the time is too short it must be adjusted accordingly.

The system uses a pneumatic incremental timer which is adjusted by fully opening or closing one or more of five screwdriver-operated valves, arranged in a block on the control logic manifold – see GA Drawing. The opening of each valve incrementally provides a fixed number of minutes of purging time as in the following table

Valve:	1	2	3	4	5
Minutes:	2	4	8	8	16

Thus for a 12-minute purge time, valves 2 and 3 would be open and the others closed. For twenty-four minutes, 4 and 5 would be open and the others closed. **At least one valve must always be open and the screws must be at the appropriate limit of travel**.

2.2.7 After the power has been turned on by the Control Unit, the Purging Valve will close and the air flow into the enclosure will be controlled by the Leakage Compensation Valve (LCV). The initial setting of 50% open may be too high or too low. It should now be adjusted to set the PE pressure and leakage.

There are three possible situations:

a) Air continues to come out through the RLV Spark Arrestor after power has been turned on in considerable quantity. The LCV is too far open and the air flow is holding the RLV open continuously. (Note: Some CFHP systems have a deliberate but modest "Continuous" air flow through the RLV in normal operation; do not confuse this flow rate with that caused by excessive setting of the LCV.) Close the LCV slowly observing the manometer or gauge (see item 2.1.3 above). The PE pressure will start to fall as the flow decreases but eventually the RLV will close and the pressure rise again. At this point the Relief Valve may start to open intermittently as the PE pressure rises to the point where the RLV re-closes and the enclosure pressure starts to rise again. This is entirely normal for this type of RLV. Proceed now to b) below:

b) If the Relief Valve is opening intermittently the LCV is slightly too far open. Observe the manometer or gauge. When the RLV opens the enclosure pressure falls quickly to the point where the RLV recloses and the enclosure pressure starts to rise again. This is entirely normal for this type of RLV and shows that it is working correctly.

Then continue to close the LCV until the cycling stops and the enclosure pressure starts to fall. Carefully adjust the LCV until the PE pressure is approximately 50% of the RLV opening pressure and stable. This pressure may be around 2" WC (5 mbar) and will be the "normal working pressure".

We recommend that the setting of the Minimum Pressure Sensor is checked at this time. Note the position of the LCV knob. Slowly lower the PE pressure by closing the LCV further counting the number of turns from the "normal working pressure" position. Note the pressure at which the "Pressurized" indicator turns Red and check that it is not lower than the figure given in the documentation. Check also the "Alarm" electrical contacts (if fitted).

As soon as the "Pressurized" indicator turns Red, the enclosure power will be switched off (see also 2.2.8 below) and the system will start to re-purge.

While it is re-purging return the LCV to its "Normal Working Pressure" position so that, at the end of purging the enclosure pressure should immediately settle down at the correct "normal" pressure. Finally re-adjust the LCV if necessary.

c) If, at the end of purging, the PE pressure falls below the Minimum Pressure Sensor setting the LCV is not open far enough. The system will start to purge again. While it is purging open the LCV fully and check the enclosure for leakage. This time, at the end of purging, the enclosure should stay pressurized and the Relief Valve action be as in a) or b) above. It is likely that there is significant leakage from the enclosure and attempts to reduce the leakage will be time well spent.

CFHP systems are intended to have a Continuous Flow through the enclosure. The Continuous Flow may emerge through the RLV, in which case the RLV will have a "CF" in its model number. Some CFHP systems will have a separate Outlet Orifice/Spark Arrestor and air can be felt emerging through this aperture whenever the enclosure is pressurized.

2.3 Commissioning Leakage Compensation (LC) and Continuous Flow/High Purge (CFHP) "Y" and "Z" Systems.

On LC and CFHP "Y" and "Z" Purge systems, proceed as follows:

2.3.1 Open the supply shutoff valve.

2.3.2 Adjust the Leakage Compensation Valve (LCV) so that the enclosure pressure rises to the point where the "Pressurized" indicator turns green.

2.3.3 Continue to raise the PE pressure until the Relief Valve (RLV) opens. Check that the RLV opens at or below the figure specified in the documentation. Repeat the test several times.

2.3.4 Lower the PE pressure until the "Pressuized" indicator turns Red. Check that the indicator turns Red at or above the pressure specified in the documentation. Check the external alarm contacts (if fitted).

2.3.5 Open the LCV again and set the PE pressure to a level around 50% of the RLV operating pressures. This "working" pressure is not critical. The "Pressurized" indicator should be Green.

2.3.6 Turn the Purge Control Valve "On". This will start the High Purge Flow and the "Purging" indicator should turn Yellow. If the "Purging" indicator remains Black the flow through the outlet valve is below the minimum for which the Flow Sensor has been calibrated. Check the air supply pressure at the inlet to the Control Unit while purging is taking place. It must be above the minimum specified. (Super-Mini-Purge® systems have a built-in gauge on the filter for this purpose.) If the supply pressure is correct and the "Purging" indicator does not turn Yellow, there is too much leakage from the Pressurized Enclosure. Find and fix the leaks!

"Purging" does not start until the indicator turns Yellow

2.3.7 On LC and CFHP "Z" Purge systems the purge timing function is performed by the user. When the "Purging" indicator turns Yellow the Purge Flow is above the minimum required and the purge time can start. The user must ensure that the time delay between the indicator turning Yellow and the application of power to the PE is not less than the minimum time required to purge the PE as shown on the PE or Expo system nameplate.

Never turn on the power without purging first unless you have proved that the interior of the PE is gas free and checked that the "Pressurized" indicator is green!

2.3.8 After the purge time is completed the Purging Valve should be turned "Off". The High Purge Flow will cease and the air flow into the enclosure will then be controlled once again by the Leakage Compensation Valve (LCV), it should now be re-adjusted if necessary. The RLV should be closed and the enclosure pressure around 50% of the RLV opening pressure. If this is not so there are three possible situations:

a) Air continues to come out through the Spark Arrestor, after High Purge has been turned "Off", in

considerable quantity. The LCV is too far open and the air flow is holding the RLV open continuously. (Note: Some CFHP systems have a deliberate but modest "Continuous" air flow through the RLV in normal operation; do not confuse this flow rate with that caused by the excessive opening of the LCV.) Close the LCV slowly observing the manometer or gauge (see item 2.1.3 above). The PE pressure will start to fall as the flow decreases but eventually the RLV will close and the pressure rise again. At this point the Relief Valve will start to open intermittently as the PE pressure rises to the point where it exceeds the RLV opening pressure. When the RLV opens the pressure will fall quickly to the point where the RLV re-closes and the enclosure pressure starts to rise again. This is entirely normal for this type of RLV. Proceed now to b) below:

b) If the Relief Valve is opening intermittently the LCV is slightly too far open. Observe the manometer or gauge. When the RLV opens the enclosure pressure falls quickly to the point where the RLV re-closes and the enclosure pressure starts to rise again. This is entirely normal for this type of RLV and shows that it is working correctly.

Continue to close the LCV until the cycling stops and the enclosure pressure starts to fall. Carefully adjust the LCV until the PE pressure is approximately 50% of the RLV opening pressure and stable. This pressure may be around 2"WC (5 mbar) and will be the "normal working pressure".

c) If, at the end of purging, the PE pressure falls below the Minimum Pressure Sensor setting the LCV is not open far enough. The LCV should be opened until the PE pressure is around the normal working pressure.

2.3.9 CFHP systems are intended to have a Continuous Flow through the enclosure. The Continuous Flow may emerge through the RLV, in which case the RLV will have a "CF" in its model number. Some CFHP systems will have a separate Outlet Orifice/Spark Arrestor and air can be felt emerging through this aperture whenever the enclosure is pressurized.

2.3.10 "Y" and "Z" purge systems do not control the enclosure power. It is the responsibility of the user to switch off the power whenever the enclosure pressure falls below the minimum permitted i.e. when the "Pressurized" indicator turns Red.

2.4 Normal Operation

2.4.1 "X" Purge systems: Turn the air supply valve On or Off to start or stop the system, After this the Pressurizing and Purging sequence is entirely automatic.

2.4.2 "Y" and "Z" Purge systems are started and stopped in the same way as "X" purge system but the user must close the Power Switch only after the enclosure has been pressurized and purged sufficiently to ensure that the interior of the enclosure is gas free. It is the user's responsibility to shut off the power, as soon as possible after a pressure failure.

Section 3 Maintenance of the System

The maintenance recommended for the system consists of the following, supplemented by any additional local requirements imposed by the authority having jurisdiction.

3.1 Initial Maintenance

Expo recommends that the commissioning test be repeated at least every six months. They include checking the opening pressure of the Relief Valve, setting of the Minimum Pressure Sensor, the "Normal Working Pressure" of the enclosure and, for "X" Purge systems, the setting of the purge timer (as described in Section 2 of this manual).

In addition, the following checks are also recommended at that time:

- Check the RLV and any other Spark Arrestors. Remove any debris or corrosion, or replace the Spark Arrestor with a spare.

- Check the condition of the air supply filter element. Clean or replace it as necessary.

3.2 Routine Maintenance

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

- Apparatus is suitable for the Hazardous Location
- There are no unauthorized modifications
- The source of air is uncontaminated
- The interlocks and alarms function correctly
- Approval labels are legible and undamaged
- Adequate spares are carried
- The action on pressure failure is correct

Section 4 Fault Finding – LC and CFHP Systems

4.1 General

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 effected by following the procedure shown below please call Expo (24 hour answering) or your supplier for further assistance.

The system has been designed for ease of fault finding and many of the components fitted are plug-in or sub-base mounted. Check components by substitution only after establishing that such action is necessary. If the system is less than 12 months old, parts under warranty should be returned to Expo Technologies for investigation, with a full report of the fault and the system Serial number.

NOTE: As with any pneumatic system the greatest enemies are water, oil and debris in the air supply. For this reason a dust and water filter should always be fitted. But debris can enter from other sources and it is vital therefore that the procedures described in Section 2 is carried out before using the system for the first time, or following any disconnection of the pipework. Failure to perform this work may cause damage, which will not be covered under warranty.

Fault Finding

NOTE: Before making the following checks verify that the main supply pressure is between 60 and 115 psi (4-8 bar) at the Control Unit and, for X-Purge systems, the regulated pressure on the logic gauge is 30 psi (2 bar)

4.2 Minimum Pressure Alarm is ON Continuously ("Pressurized" Indicator is Red)

Possible cause 1: The Pressurized Enclosure (PE) pressure is too low. Try increasing the setting of the Leakage Compensation Valve (LCV) to raise the pressure in the PE.

Possible cause 2: Enclosure fault?

- Is the ACTUAL PE pressure below the setting of the Minimum Pressure Sensor? Check it with a manometer or gauge.
- Is there debris stuck on the face of the Relief Valve disk, perhaps held there because of the magnetic material?
- Has the PE door been closed and all conduit/cable glands sealed?
- Is the PE leaking too much?
- Has the pressure sensing tube been damaged?

Possible cause 3: System fault?

If checks above reveal that the PE is correct, the fault probably lies in the Control Unit. The basic operation of the Minimum Pressure Sensor can be checked by unscrewing the 2.4" (60mm) diameter diaphragm and, by using a finger, block the threaded hole in the top of the valve module. The valve should operate and the indicator should turn Green. If this works correctly and the enclosure pressure is above the setting of the Minimum Pressure Sensor it is likely that the Pressure Sensor diaphragm needs re-calibrating or replacing. (See 4.6)

4.3 Relief Valve Opens (Continuously or Intermittently)

Possible cause 1: The PE pressure is too high.

The Leakage Compensation Valve (LCV) is too far open. Adjust the LCV as described in Section 2 above.

Possible cause 2: Debris on the RLV disk allowing air to leak from the valve. Remove the RLV cover and clean the valve disk. The disk and spring may be removed from the RLV without affecting the calibration.

4.4 "Purging" Indicator Will Not Turn Yellow During Purging

Possible cause 1: Insufficient purging Flow due to inadequate air supply pressure. Check the air supply pressure at the inlet to the CU when flow is taking place. Excessive pressure drop in the supply pipe is a very common cause of this problem. The supply pipe must be at least as big as the CU inlet fitting, i.e. at least ½" NB (12 mm). Super-MiniPurge® systems with ¾" or 1" connections must have AT LEAST this internal diameter for supply and outlet tubing. Due to the high flows demanded from these large systems the need for adequate supply tubing is VITAL. If in doubt, or for long distances, install tubing that is at least 50% larger than the inlet size!

Possible cause 2: Excessive Pressurized Enclosure (PE) leakage. Check around the PE when flow is taking place. Any significant leakage must be cured. Has a Leakage Test been done? The total leakage should not exceed 10% of the Purge Flow Sensor setting. Check for leakage down the conduit through unsealed stopping boxes.

Possible cause 3: PE not strong enough. Repeat the PE pressure test. Is is recommended that the PE is tested to three times the Relief Valve opening pressure e.g. 12"WC (30 mbar) for systems with default settings. Has this been done?

Possible cause 4: The tubing from the RLV Flow Sensing point to the Purge Flow Sensor is not air-tight e.g. fitting nuts not tightened or tube damaged. Check and repair as necessary.

Possible cause 5: The Purge Flow Sensor is not operating correctly or out of calibration. The basic operation of the Purge Flow Sensor can be checked by unscrewing the 2.4" (60 mm) diameter diaphragm and by using a finger, block the threaded hole in the top of the valve module. The valve should operate and the indicator turn Yellow. If this works correctly and the flow through the Relief Valve is above the minimum required WITH THE RELIEF VALVE COVER FIRMLY SECURED IN PLACE the Sensor diaphragm needs re-calibrating or replacing.

4.5 System Fails to Switch Power On after the Purge Time has Elapsed? ("X"-Purge Systems Only)

Possible cause 1: Is power available? Is the power disconnect closed? Are the fuses or circuit breaker OK?

Possible cause 2: System fault? Timer not timed out?

a) Has the "Purging" indicator been Yellow for the whole of the purge time?

b) Is the logic pressure gauge at 30 psi (2 bar) ±10%.

c) Is there pressure at the Power Switch output bulkhead and at the Power Switch itself? Is the Switch set at 15 psi (1 bar)?

d) Is the pipe to the Power Switch airtight? The signal to the Power Switch bulkhead has a restrictor that limits the permissible leakage from the pipe.

e) Note the timer setting. Reset the timer to the minimum available purging period (see 2.2.6) and check operation on that purge time. If it works OK, increase the time progressively until either it is correct, or the system ceases to time out at all. In the latter case, there is an air leak in the timer circuit. (A leak in the timing circuit can cause the timer not to time out.) If possible, establish the source of the leak with soapy water and retest the system. This will involve removing the chassis from the Control Unit –be sure this is the cause before starting the work. It is VERY unusual!!

Ensure that the timer is returned to its original setting and the purge time checked before putting the system back into service.

Possible cause 3: Power Switch Fault. Check the operation of the Power Switch. It should close above 20 psi (1.4 bar).

4.6 Pressure Sensor Calibration

If it is decided that the Minimum Pressure Sensor or Purge Flow Sensor needs re-calibrating it can either be returned to Expo for this service or it can be done by the user as follows:

Disconnect the pressure sensing pipe from the top of the diaphragm. (It is a "push-in" quick release fitting; firmly push inwards the collar surrounding the pipe where it enters the fitting, and then pull the pipe outwards while maintaining the pressure on the collar). Unscrew the 2.4" (60 mm) diameter diaphragm housing from the top of the Sensor. Invert it and note the brass adjusting screw in the center. Turning the screw inwards (clockwise) will lower the setting. It is likely that the screw will be very stiff due to the locking sealant. If the screw cannot be moved the application of gentle heat in the area of the brass screw can often help. DO NOT OVERHEAT!

4.7 Filter Cleaning

If the filter element needs cleaning the transparent bowl can be unscrewed and removed. The filter element also unscrews and can then be cleaned in soapy water. Do not use solvents on any part of the filter assembly.

Expo Technologies tip: It is sometime easier, if the bowl is very tight, to remove the filter by undoing the fitting that holds the filter into the Control Unit. On Sub-Mini-X-Purge® systems it may be necessary to remove the Minimum Pressure Sensor diaphragm first.

Section 5 Annex of Options fitted

Refer to the annex of this manual for any options fitted as designated by the model code of the system

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

Expo Technologies Inc,
9140 Ravenna Road Unit #3,
Twinsburg,
OH 44087,
U.S.A.

3rd ANGLE PROJECTION

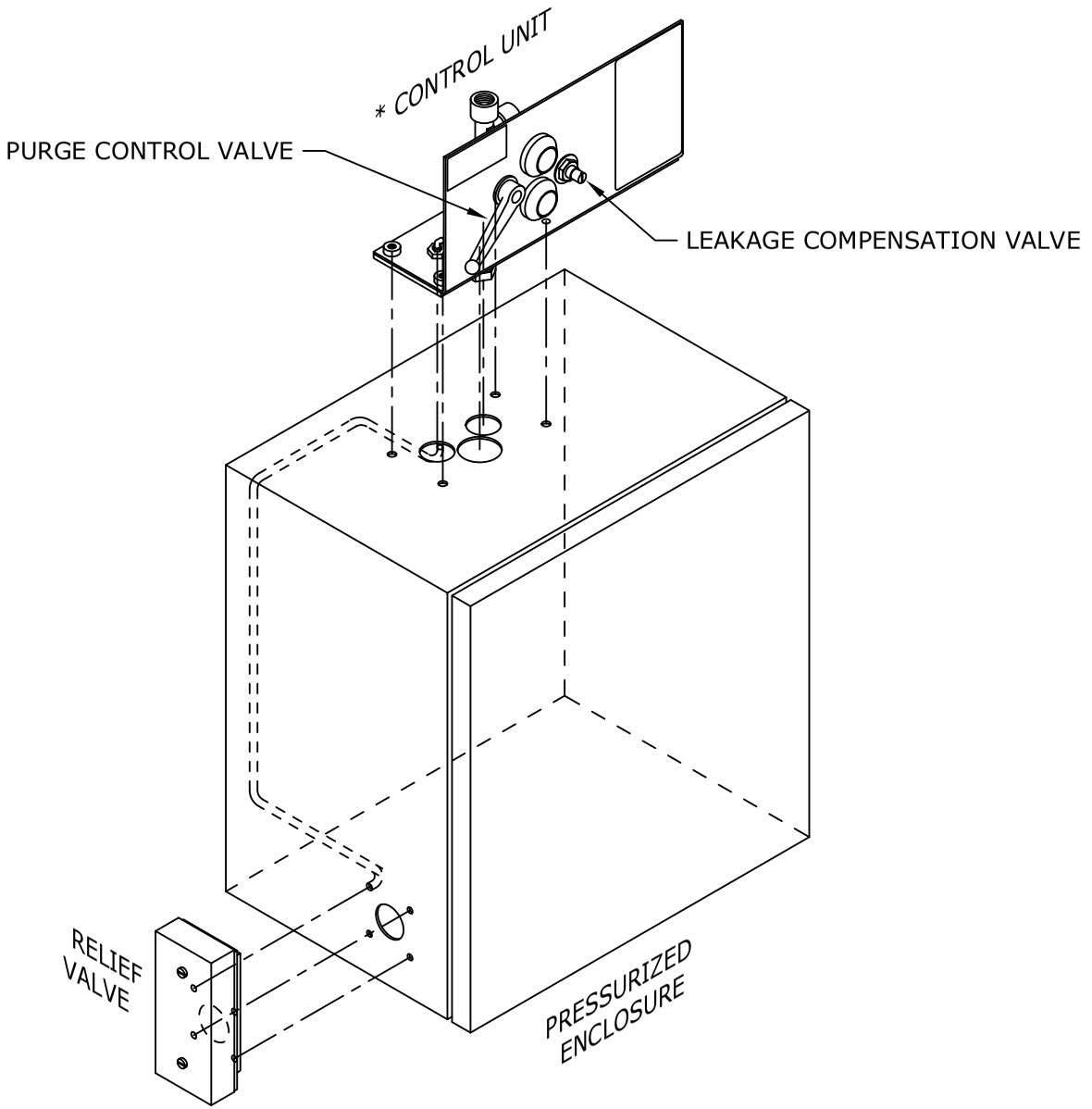
DIMENSIONS IN mm
DO NOT SCALE

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

Quick Installation Guide FOR LC:

1. With aid of supplied mounting template cut mounting holes into the enclosure.Ensure Control unit and Relief Valve are diagonally opposing.
2. Fix MiniPurge Control Unit to enclosure.
3. Fix Relief Valve to enclosure.
4. Pipe between MiniPurge Control Unit & Relief Valve.
5. Connect Output option, /IS or /PO as required, refer to manual.
6. Connect isolated air supply to MiniPurge Control Unit
7. Ensure enclosure door is closed and sealed from leaks.
8. Turn on air supply 60 psig (4 barg).
9. Slowly increase Leakage Compensation Valve until Alarm Indicator turns from RED to GREEN.
10. Turn Purge Control Valve to ON and ensure Purge Indicator turns from BLACK to YELLOW.
11. After Purge time has been completed turn Purge Control Valve OFF.
12. Power can now be applied to enclosure.
13. All queries refer to manual for assistance in the first instance.

* /PO option shown



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DR'WN	CDM	DATE:	24/12/03	18/6/08	11/6/18		FINISH
		APPROVED:	PAO	MLC	NK		
		DRAWING STATUS:					

Expo Technologies Limited SURREY TW16 5DB UNITED KINGDOM

TITLE: Z(Y)LC/bp QUICK INSTALLATION GUIDE

JOB No:

CUSTOMER:

SCALE: NTS

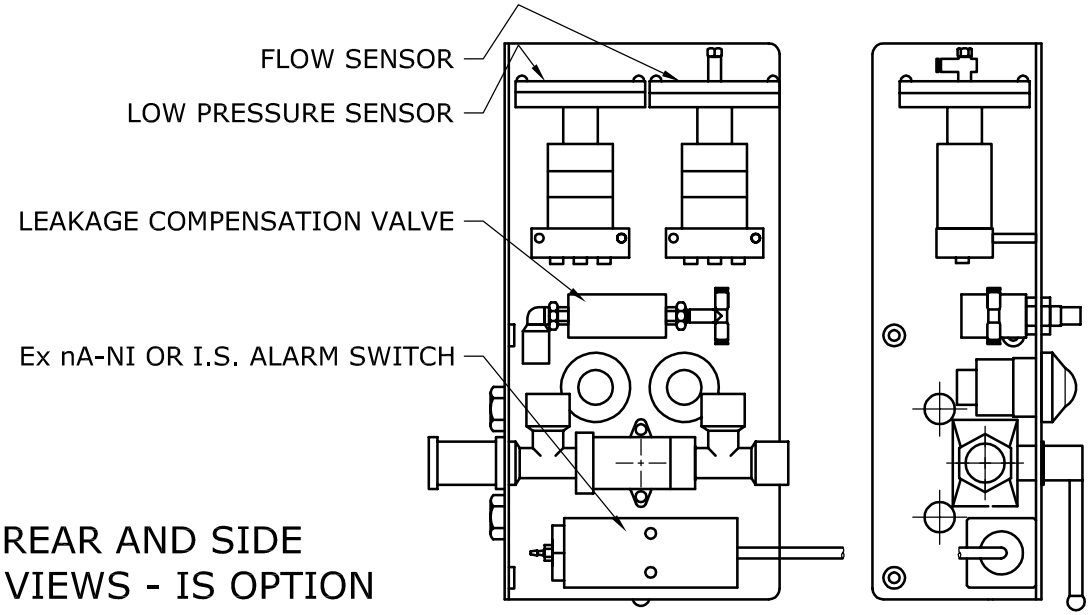
DRAWING No.: XBR-8TD0-011

SHEET No. 1 OF 1

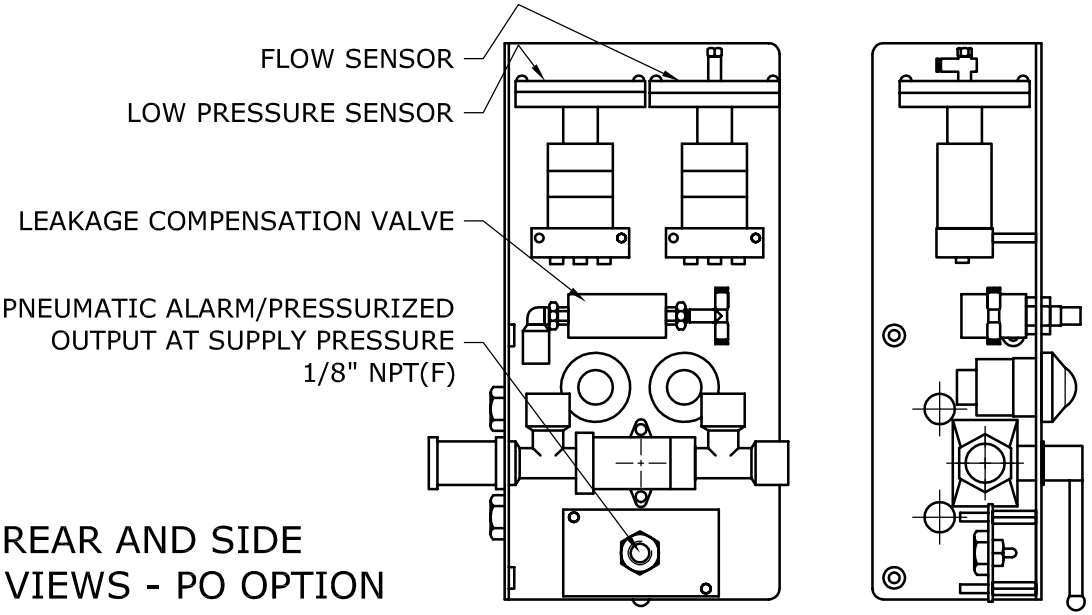
3rd ANGLE PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

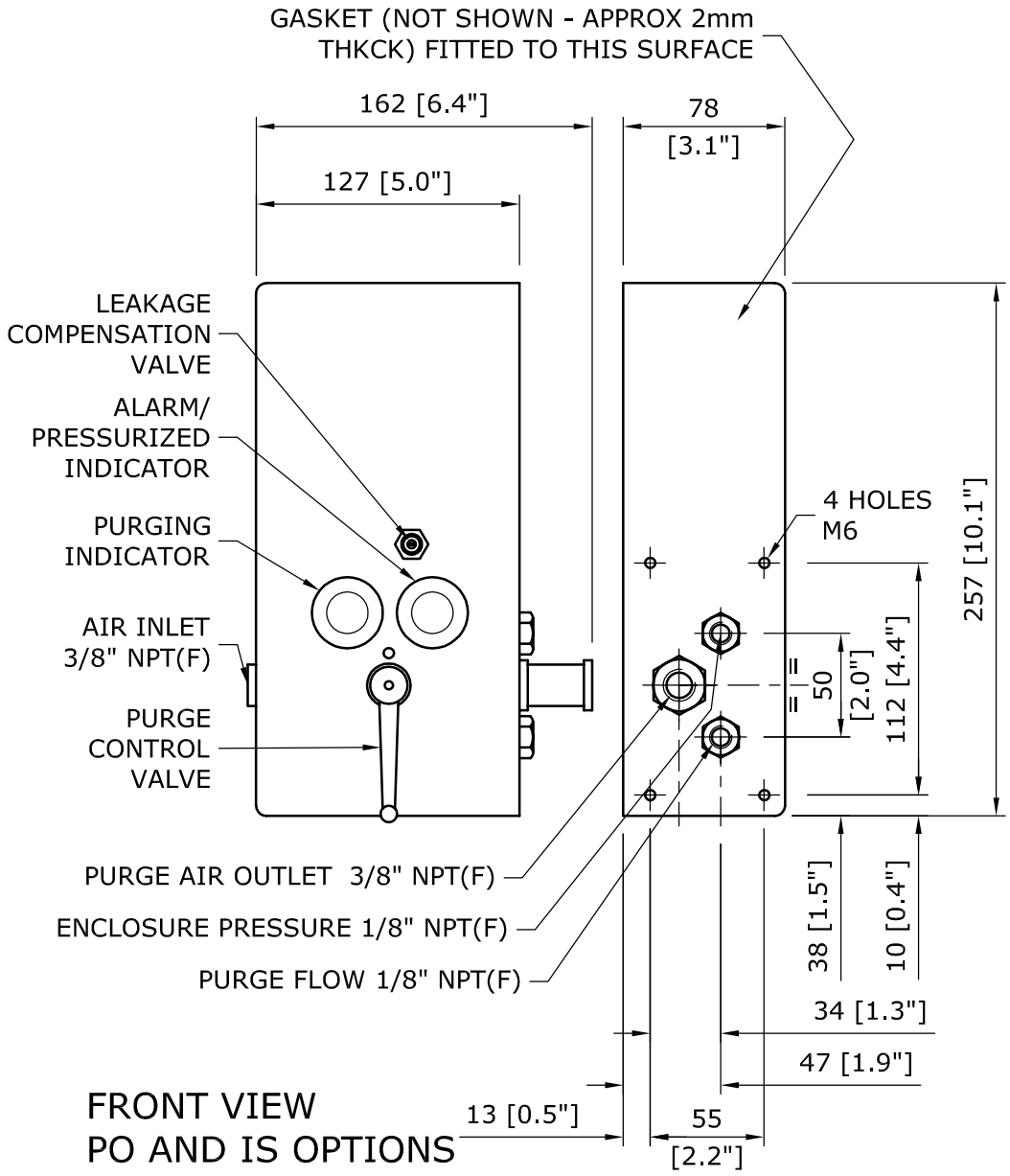
UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH



REAR AND SIDE VIEWS - IS OPTION



REAR AND SIDE VIEWS - PO OPTION



FRONT VIEW PO AND IS OPTIONS

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DR'WN	NRB	DATE:	18/6/08	30/7/08			FINISH
		APPROVED:	MLC	MLC			
		DRAWING STATUS: CERT RELATED					

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: MINIPURGE 1, 2 & 3 Z(Y)LC/bp/IS AND PO

JOB No:

CUSTOMER:

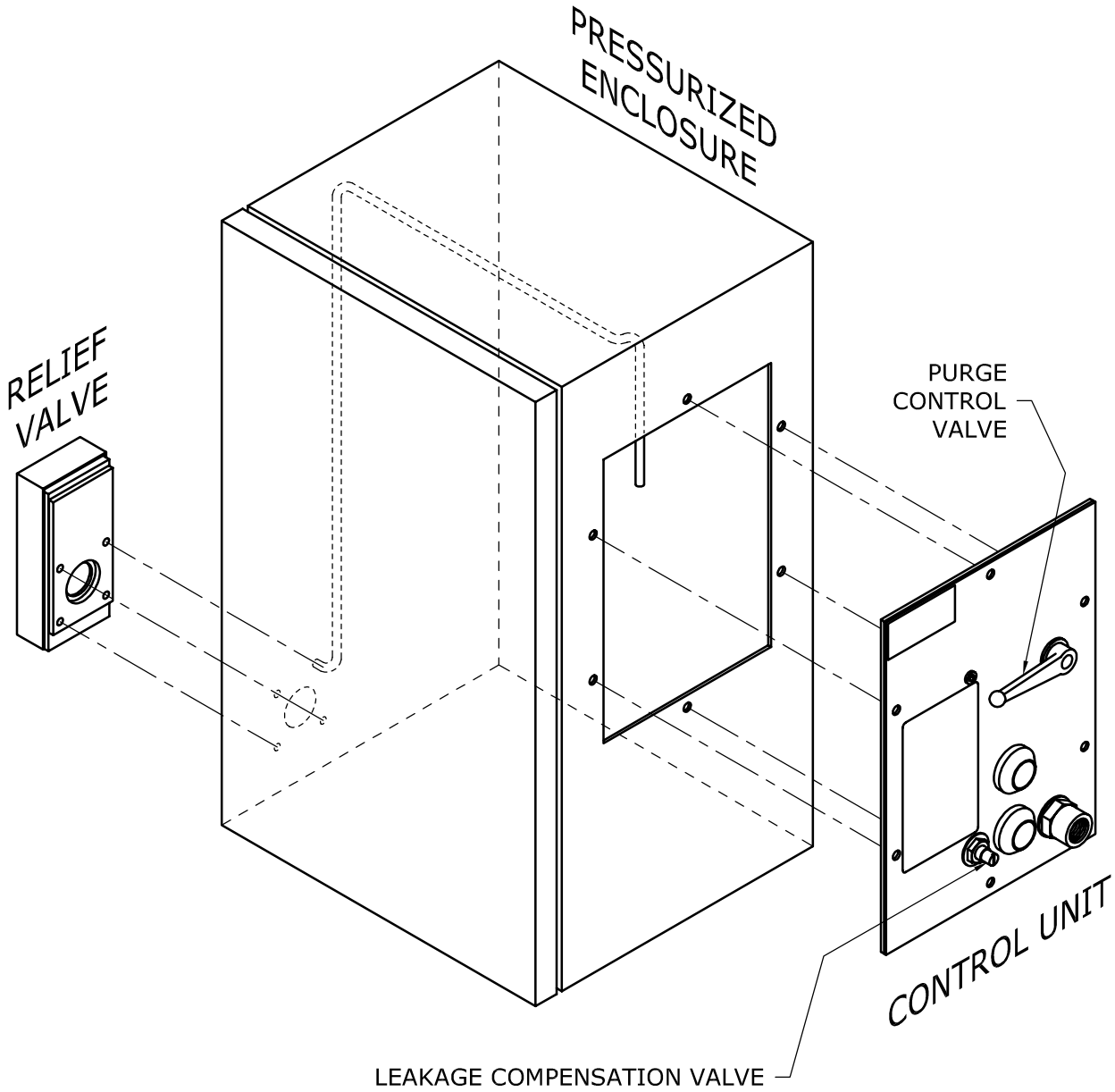
SCALE 2:5

DRAWING No. XBR-7TD0-030

SHEET No. 1 OF 1

Quick Installation Guide FOR LC:

1. With aid of supplied mounting template cut mounting holes into the enclosure.Ensure Control unit and Relief Valve are diagonally opposing.
2. Fix MiniPurge Control Unit to enclosure.
3. Fix Relief Valve to enclosure.
4. Pipe between MiniPurge Control Unit & Relief Valve.
5. Connect Output option, /IS or /PO as required, refer to manual.
6. Connect isolated air supply to MiniPurge Control Unit
7. Ensure enclosure door is closed and sealed from leaks.
8. Turn on air supply 60 psig (4 barg).
9. Slowly increase Leakage Compensation Valve until Alarm Indicator turns from RED to GREEN.
10. Turn Purge Control Valve to ON and ensure Purge Indicator turns from BLACK to YELLOW.
11. After Purge time has been completed turn Purge Control Valve OFF.
12. Power can now be applied to enclosure.
13. All queries refer to manual for assistance in the first instance.



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CHK'D	PAO	DATE:	23/12/03	18/6/08			FINISH
		APPROVED:	PAO	MLC			
DR'WN	CDM	DRAWING STATUS:					

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: Z(Y)LC/pm QUICK INSTALLATION GUIDE

JOB No:

CUSTOMER:

SCALE: NTS

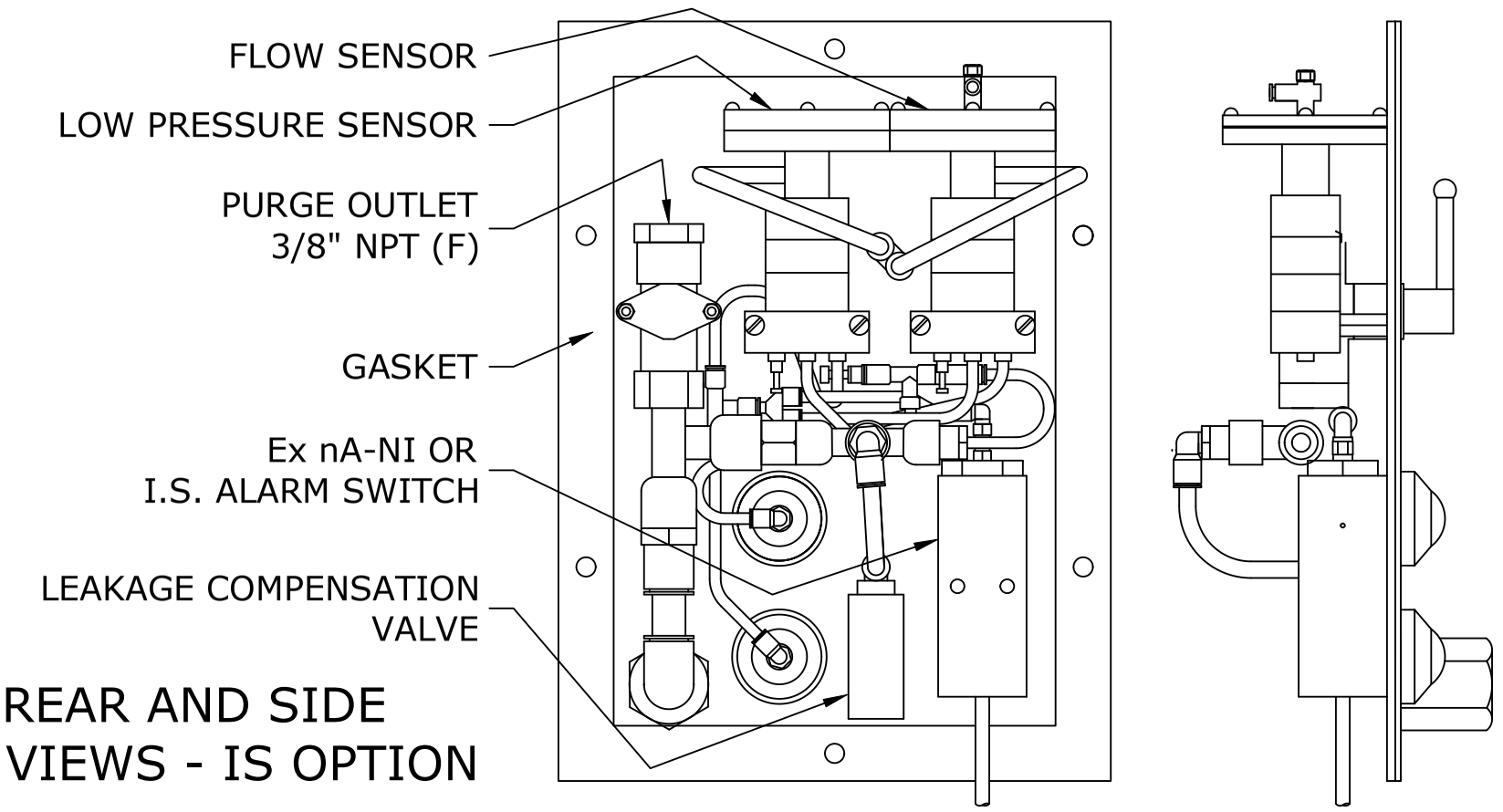
DRAWING No.: XBR-8TD0-009

SHEET No. 1 OF 1

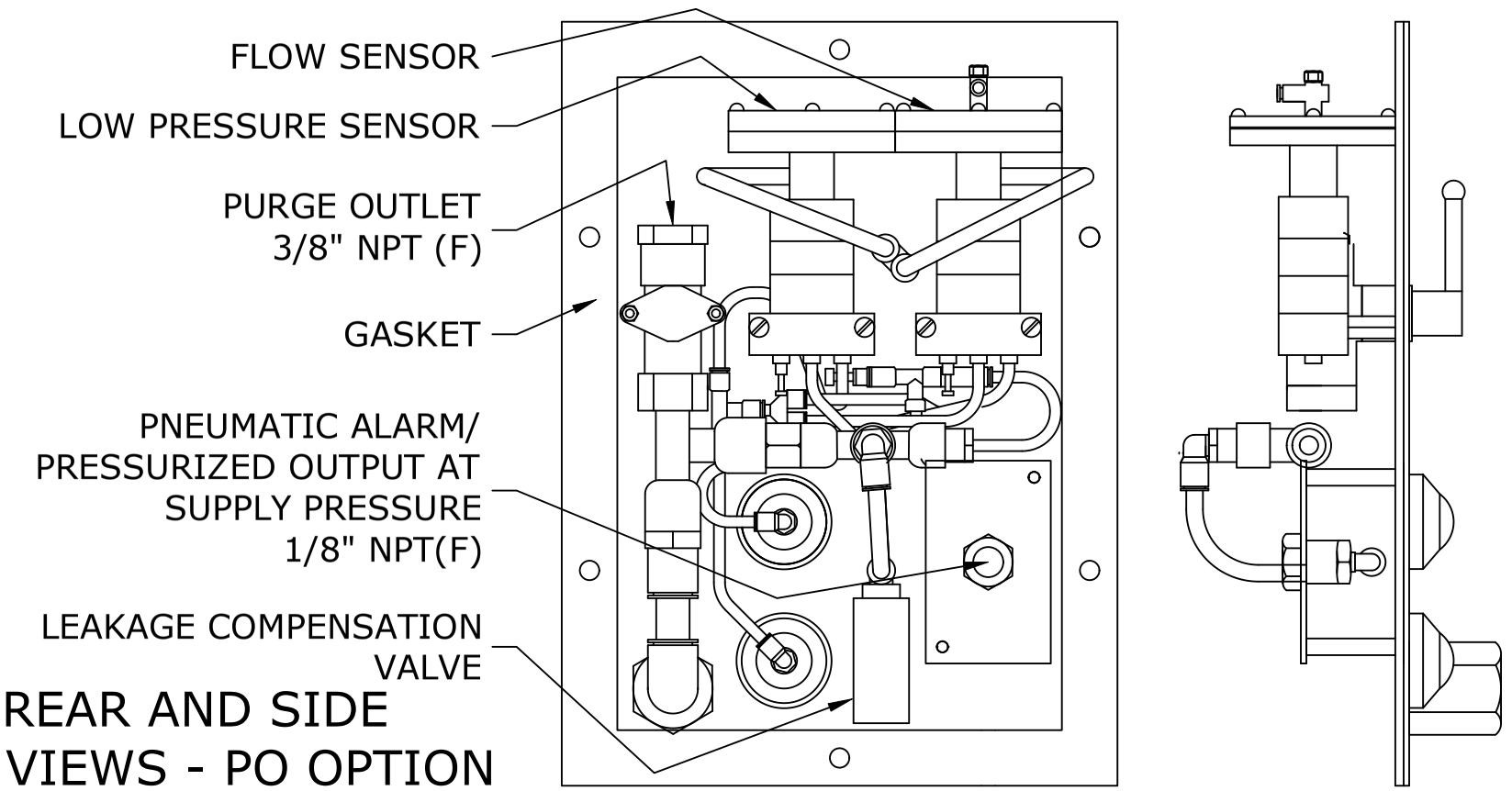
3rd ANGLE PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

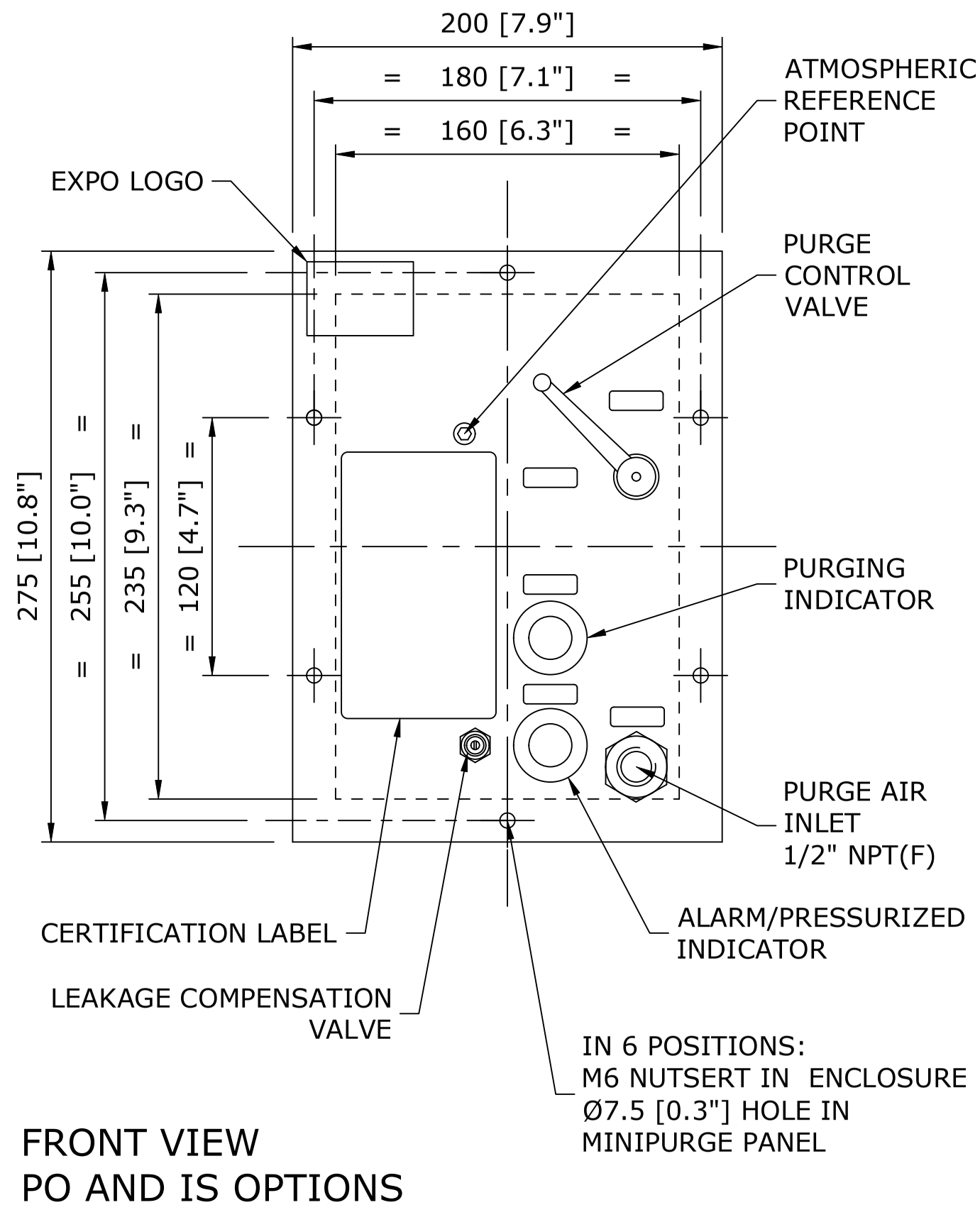
UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH



REAR AND SIDE VIEWS - IS OPTION



REAR AND SIDE VIEWS - PO OPTION



FRONT VIEW PO AND IS OPTIONS

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DR'WN	NRB	DATE:	18/6/08	5/9/12	20/01/20		FINISH
		APPROVED:	MLC	SB	MC		
		DRAWING STATUS: CERT RELATED					

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: MINIPURGE 1, 2 & 3 Z(Y)LC/pm/IS AND PO

JOB No:

CUSTOMER:

SCALE: N.T.S

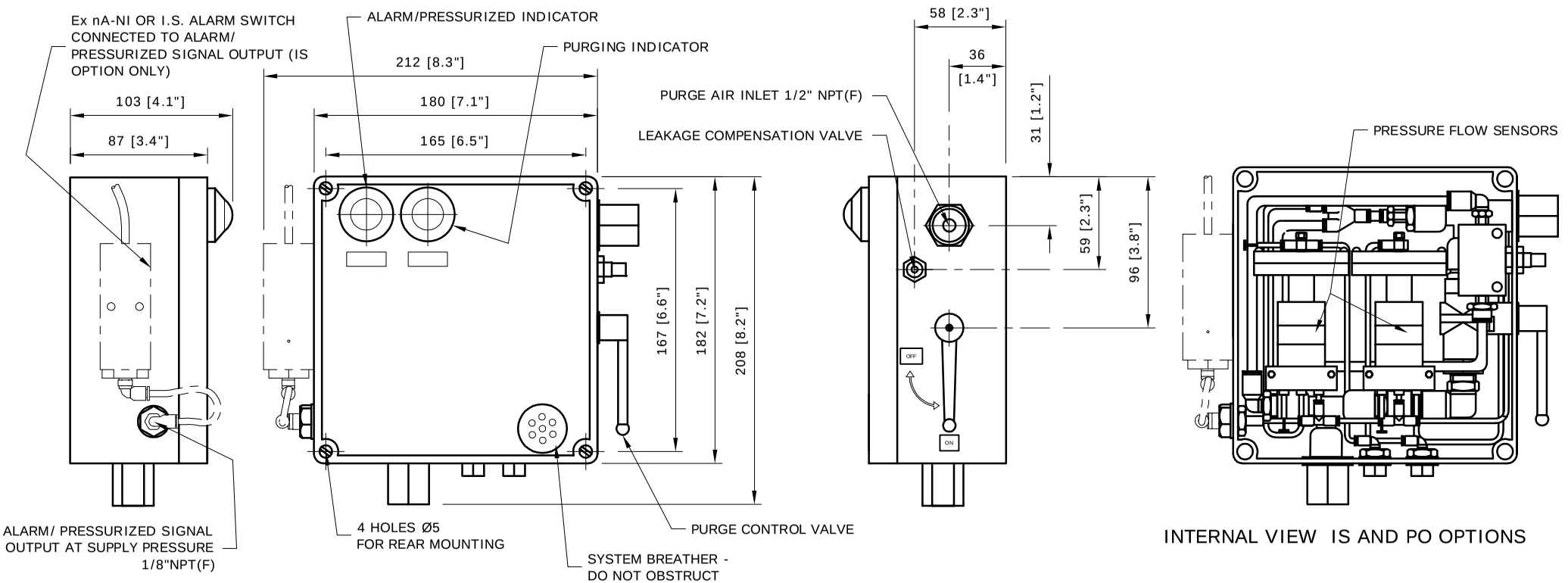
DRAWING No.: XBR-7TD0-029

SHEET No. 1 OF 1

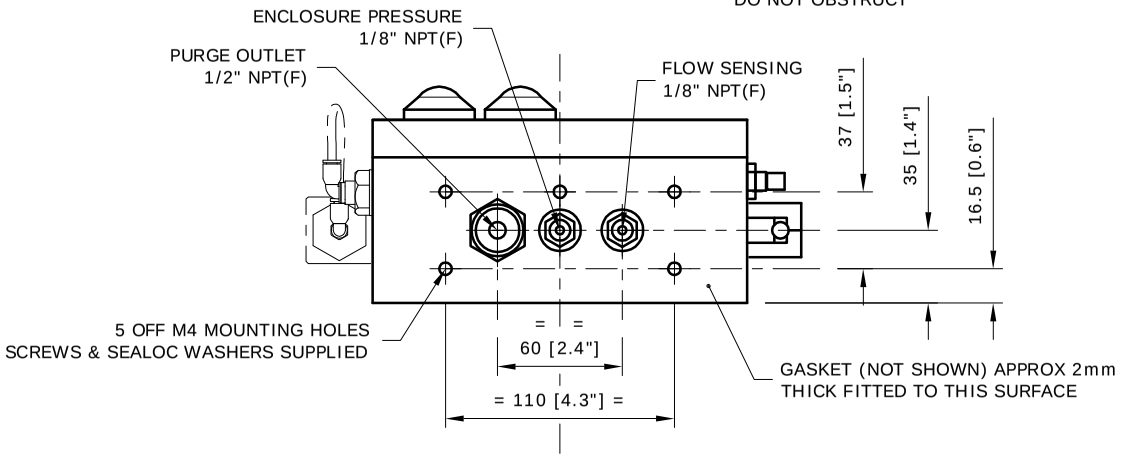
3rd ANGLE PROJECTION

DIMENSIONS IN mm
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



INTERNAL VIEW IS AND PO OPTIONS



NOTES:

1. MINI-Z-PURGE/ MINI-Y-PURGE MUST BE MOUNTED IN ONE OF THE TWO ATTITUDES SHOWN. TOP / REAR MOUNT.
2. APPROX WEIGHT: 3Kg (6.6 POUNDS).
3. EACH SYSTEM IS SUPPLIED WITH TWO ORIFICE RESTRICT0RS TO SUIT REQUIRED FLOW RATES.
4. IS OPTION SHOWN IN BROKEN LINE (— – —– – —).

APP'D	MLC	ISSUE:	1	2			MATERIAL
		MOD. No:	DRAWN	5161			
CHK'D	MLC	DATE:	18/6/08	1/3/11			FINISH
		APPROVED:	MLC	JPdB			
DR'WN	NRB	DRAWING STATUS: CERT RELATED					

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: MINIPURGE 1, 2 & 3 Z(Y)LC/nm/IS AND PO

JOB No:

CUSTOMER:

SCALE: N.T.S

DRAWING No.: XBR-7TD0-031

SHEET No. 1 OF 1

Quick Installation Guide FOR LC:

1. With aid of supplied mounting template cut mounting holes into the enclosure.Ensure Control unit and Relief Valve are diagonally opposing.
2. Fix MiniPurge Control Unit to enclosure.
3. Fix Relief Valve to enclosure.
4. Pipe between MiniPurge Control Unit & Relief Valve.
5. Connect Output option, /IS or /PO as required, refer to manual.
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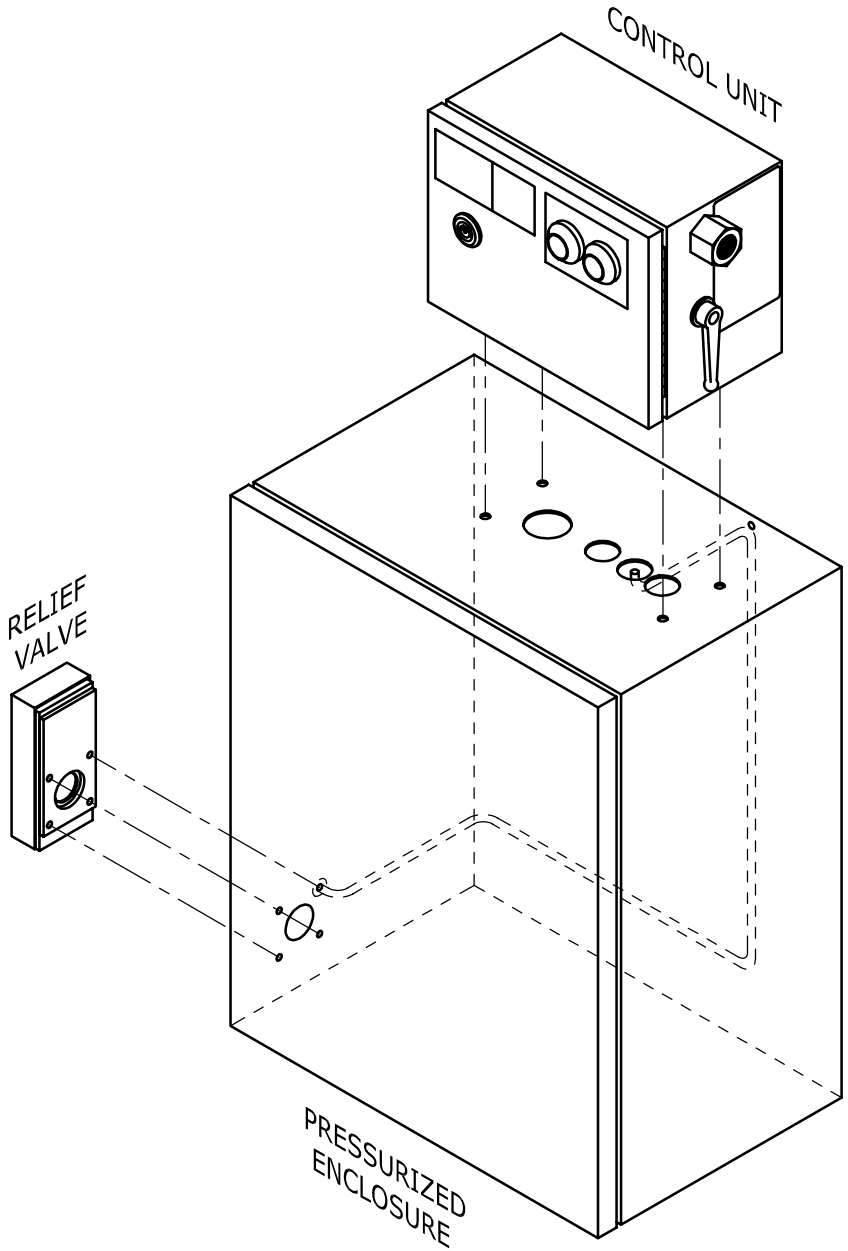
7. Ensure enclosure door is closed and sealed from leaks.
8. Turn on air supply 60 psig (4 barg).
9. Slowly increase Leakage Compensation Valve until Alarm Indicator turns from RED to GREEN.
10. Turn Purge Control Valve to ON and ensure Purge Indicator turns from BLACK to YELLOW.
11. After Purge time has been completed turn Purge Control Valve OFF.
12. Power can now be applied to enclosure.
13. All queries refer to manual for assistance in the first instance.



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		APPROVED:	PAO	MLC			
DR'WN	CDM	DRAWING STATUS:					

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: Z(Y)LC/ss QUICK INSTALLATION GUIDE

JOB No:

CUSTOMER:

SCALE: NTS

DRAWING No.: XBR-8TD0-013

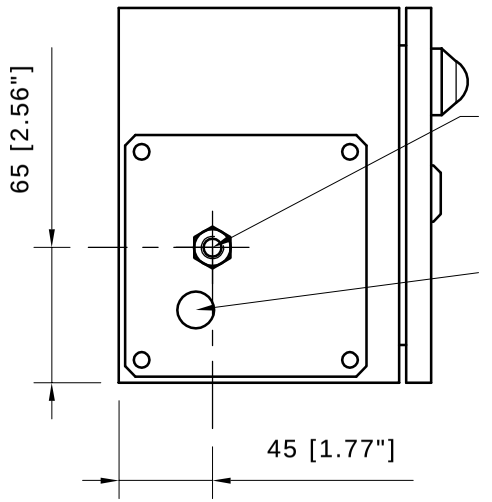
SHEET No. 1 OF 1

3rd ANGLE PROJECTION

DIMENSIONS IN mm
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

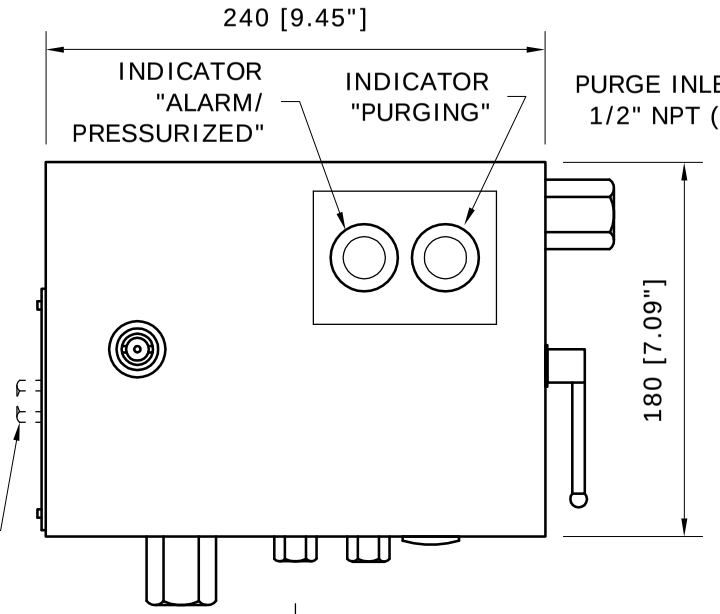
SIDE VIEW - PO OPTION

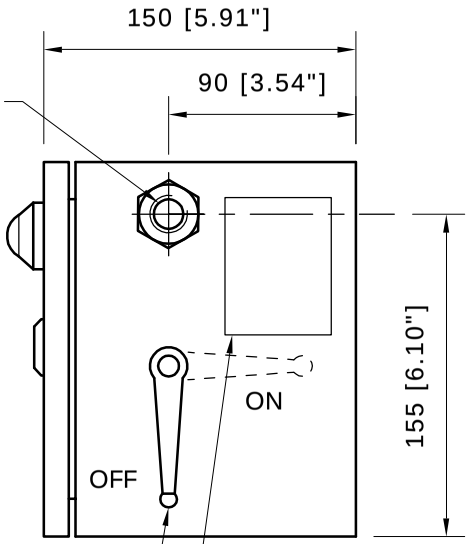


ALARM/PRESSURIZED SIGNAL OUTPUT AT SUPPLY PRESSURE 1/8"NPT(F)

HOLE - NOT USED - FITTED WITH BLIND GROMMET.

(PO OPTION ONLY)

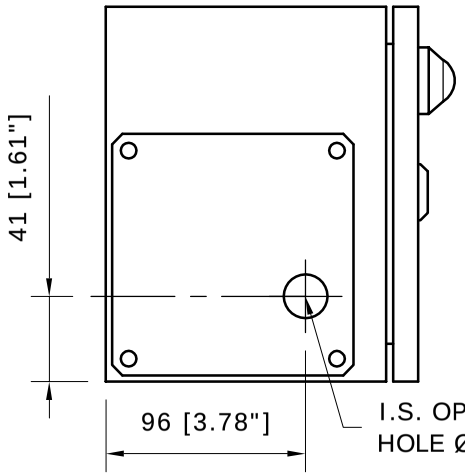




CERTIFICATION LABEL

PURGE CONTROL VALVE

SIDE VIEW - IS OPTION

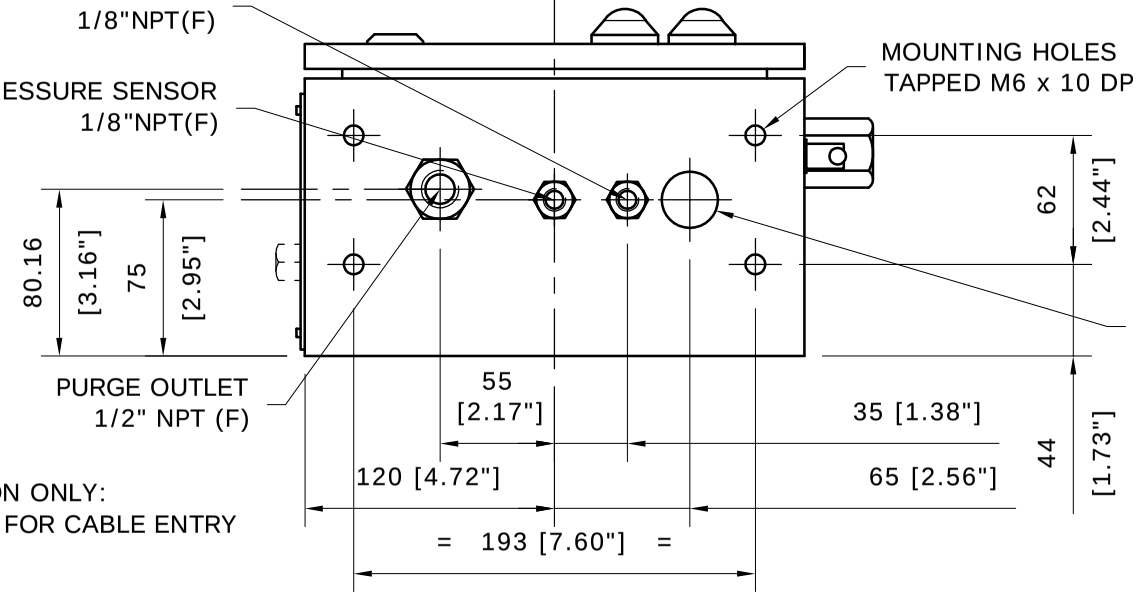


I.S. OPTION ONLY: HOLE Ø21 FOR CABLE ENTRY

FLOW SWITCH CONNECTION 1/8"NPT(F)

PRESSURE SENSOR 1/8"NPT(F)

MOUNTING HOLES TAPPED M6 x 10 DP



PURGE OUTLET 1/2" NPT (F)

I.S. AND PO OPTIONS: HOLE Ø21 FITTED WITH BLIND GROMMET. FOR USE ON I.S. OPTION AS ALTERNATIVE CABLE ENTRY.

APP'D	MLC	ISSUE:	1	2	3	
		MOD. No:	DRAWN	4733	5251	
CHK'D	MLC	DATE:	18/6/08	3/9/09	8/6/11	
		APPROVED:	MLC	JPdB	JPdB	
DR'WN	NRB	DRAWING STATUS: CERT RELATED				

MATERIAL

FINISH

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: MINIPURGE 1, 2 & 3 Z(Y)LC/ss/IS AND PO

JOB No:

CUSTOMER:

SCALE: N.T.S

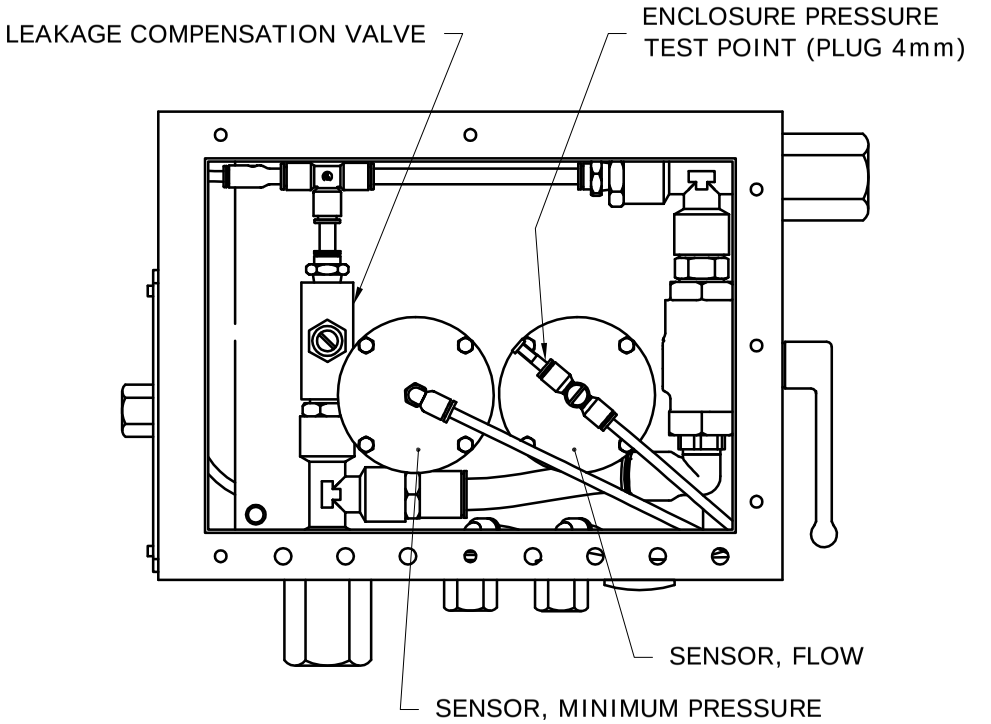
DRAWING No.: XBR-7TD0-028

SHEET No. 1 OF 2

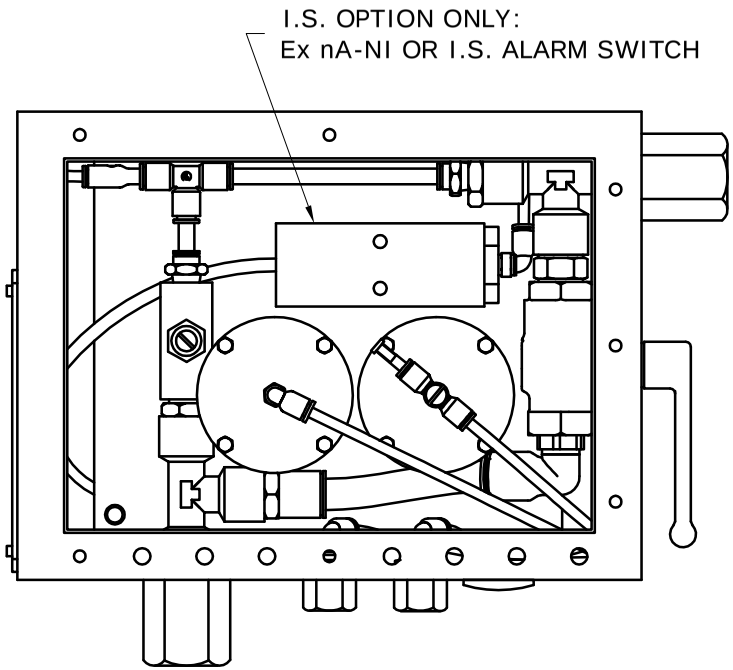
3rd ANGLE PROJECTION

DIMENSIONS IN mm
DO NOT SCALE

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



PO OPTION:
VIEW WITH DOOR REMOVED



IS OPTION:
VIEW WITH DOOR REMOVED

ALARM SWITCH AS INDICATED. ALL OTHER COMPONENTS SAME AS PO OPTION.

APP'D	MLC	ISSUE:	1	2	3		MATERIAL
CHK'D	MLC	MOD. No:	DRAWN	4733	5251		
DR'WN	NRB	DATE:	18/6/08	3/9/09	8/6/11		FINISH
		APPROVED:	MLC	JPdB	JPdB		
		DRAWING STATUS: CERT RELATED					

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: MINIPURGE 1, 2 & 3 Z(Y)LC/ss/IS AND PO

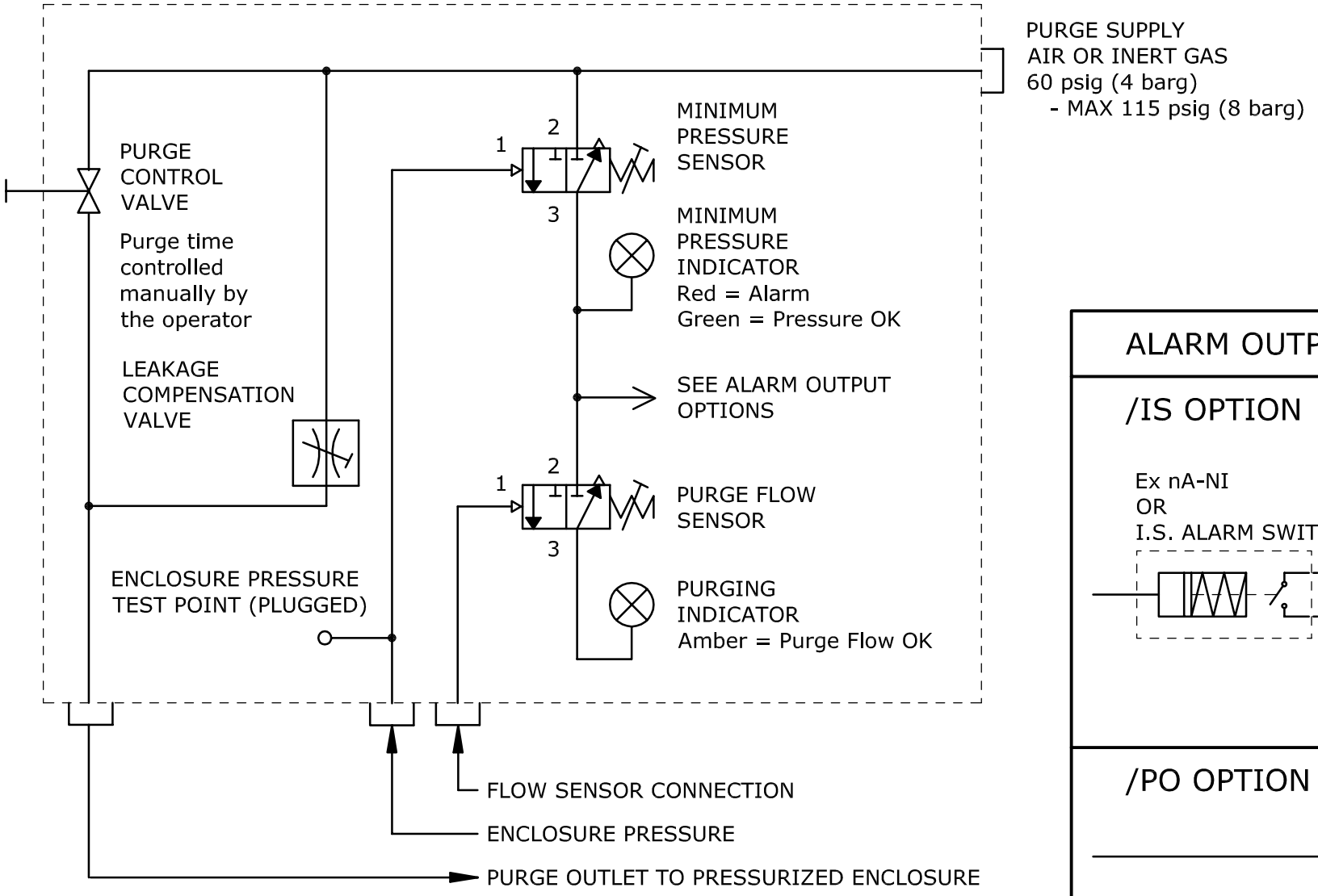
JOB No:

CUSTOMER:

SCALE: N.T.S

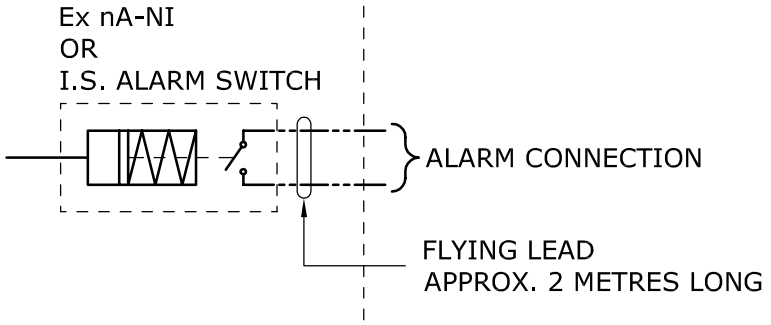
DRAWING No.: XBR-7TD0-028

SHEET No. 2 OF 2

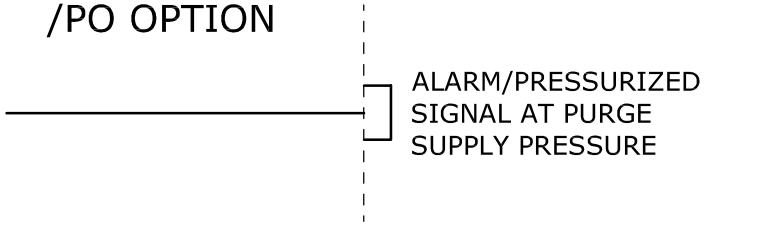


ALARM OUTPUT OPTIONS

/IS OPTION



/PO OPTION



APP'D	MLC	ISSUE:	1				MATERIAL
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DR'WN	NRB	DATE:	18/6/08				FINISH
		APPROVED:	MLC				
		DRAWING STATUS:	CERT RELATED				

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: MINIPURGE 1, 2 & 3 Z(Y)LC/xx/IS AND PO

JOB No:

CUSTOMER:

SCALE: N.T.S

DRAWING No.: XBR-7TD0-032

SHEET No. 1 OF 1

3rd ANGLE PROJECTION

DIMENSIONS IN mm

DO NOT SCALE

Fig 1a Single channel interface circuit
e.g. "Y" or "Z" Pressurization Alarm circuit

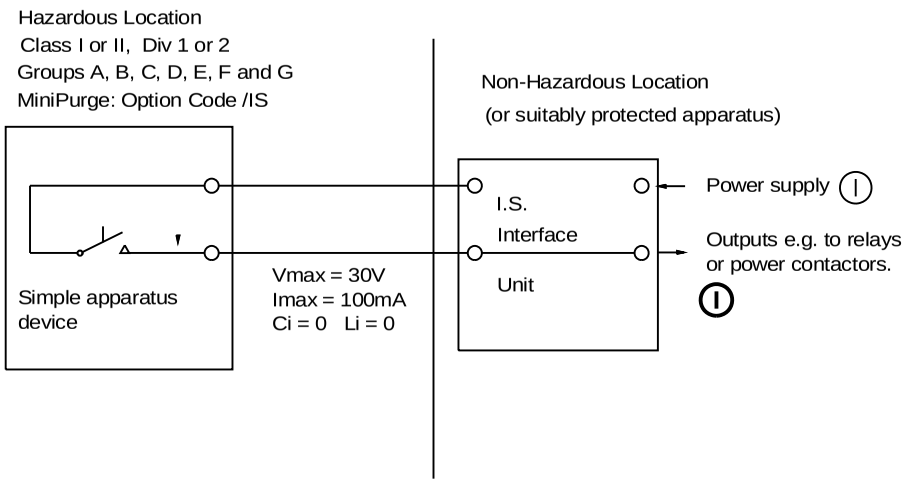
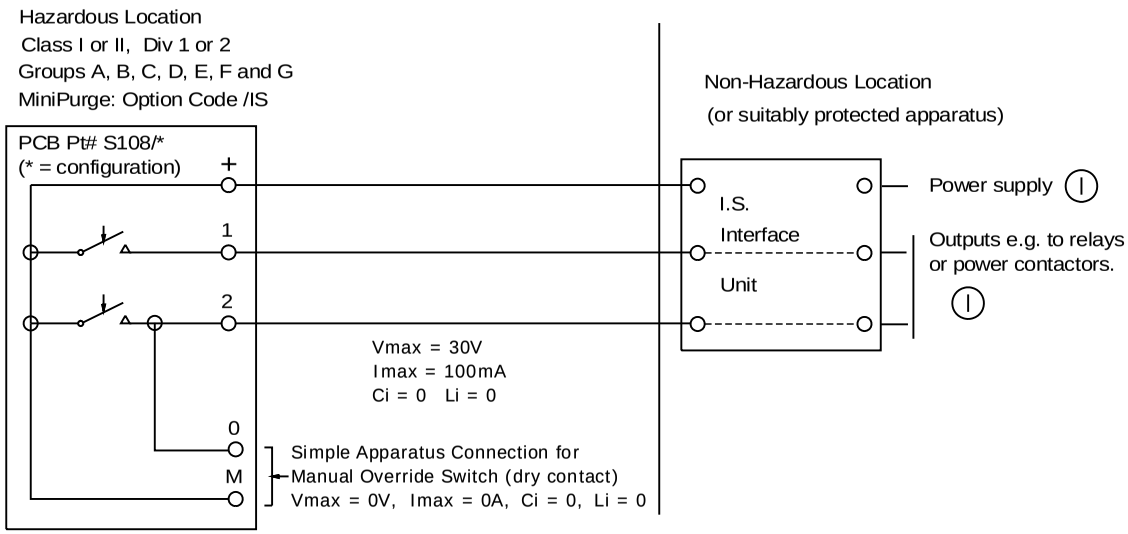


Fig 1b Multi-channel interface circuit
e.g. "X" pressurization Alarm & Power Control



Notes for both Fig 1a and Fig 1b

1 Electrical equipment connected to associated apparatus should not use or generate more than 250 volts

2 Installation shall be in accordance with the manufacturer's instructions and the National Electrical Code (ANSI/NFPA 70)

3 For guidance on Installation see ANSI/ISA RP12.6, (Installation of IS Instrument Systems in Class I Hazardous Locations)

(I) 4 Voc or Vt of associated apparatus is less than Vmax
Isc or It of associated apparatus is less than Imax
Ci plus capacitance of interconnecting cabling is less than Ca of the associated apparatus
Li plus inductance of interconnecting cabling is less than La of the associated apparatus

5 "Simple Apparatus" is a device that will not generate or store more than 1.2V, 0.1A, 25mW or 20uJ

6 For Gas Groups A, B permitted Imax for I.S., for V peak = 30V is 101 mA
Alternatively: For Gas Group A, B with Vpeak = 19.2V Imax for I.S. is 350mA.

REV.	MOD NUMBER	APPROVED DATE	APPROVED	DRAWN DATE: 13/07/2007		
4	4330	13/7/2007	MLC	DRAWING STATUS: Certified		
05	5076	01/11/2010	AMO	APP'D	CHK'D	DR'WN
06	5297	20/07/2011	AMO	AMO	AMO	AMO

THIS IS A CERTIFICATION DOCUMENT. ANY UNAUTHORISED CHANGE INVALIDATES APPROVAL.

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE: MINIPURGE OPTION 'IS'

JOB No:

CUSTOMER:

SCALE NTS

REV: 06

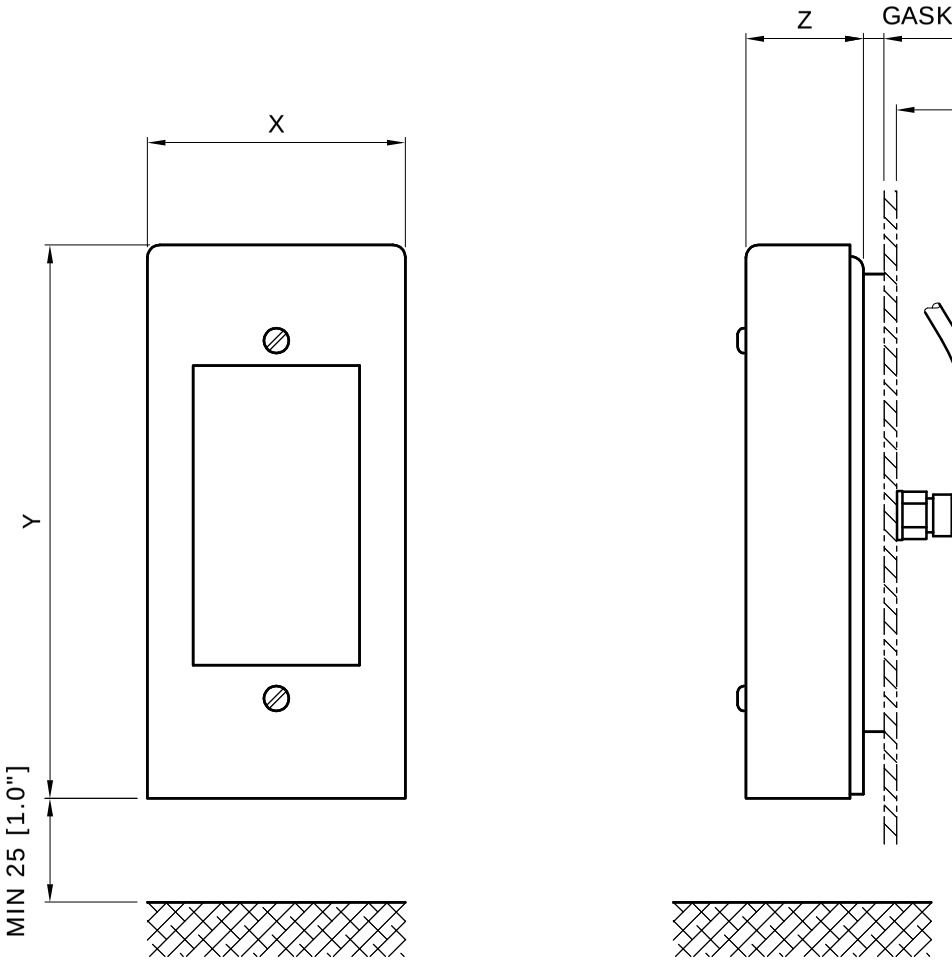
DRAWING No. EP80-2-11

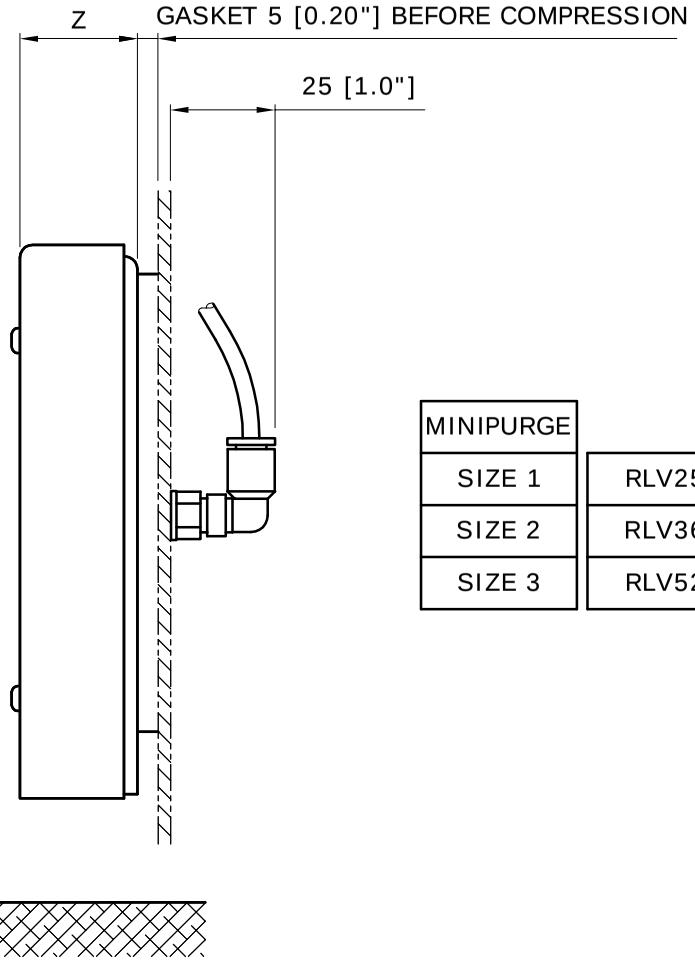
SHEET No. 1 OF 1

3rd ANGLE PROJECTION

DIMENSIONS IN mm
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





MINIPURGE		WIDTH X	HEIGHT Y	DEPTH Z
SIZE 1	RLV25	62 [2.44"]	133 [5.24"]	28 [1.10"]
SIZE 2	RLV36	88 [3.46"]	170 [6.69"]	33 [1.30"]
SIZE 3	RLV52	110 [4.33"]	185 [7.28"]	37 [1.46"]

APP'D	MLC	ISSUE:	1	2		
		MOD. No:	DRAWN	5136		
CHK'D	MLC	DATE:	18/6/08	1/4/11		
		APPROVED:	MLC	JPdB		
DR'WN	NRB	DRAWING STATUS: CERT RELATED				

MATERIAL

FINISH

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE
RELIEF VALVES FOR Z(Y)LC SYSTEMS

JOB No:

CUSTOMER:

SCALE N.T.S

DRAWING No.
XSD-RTD0-004

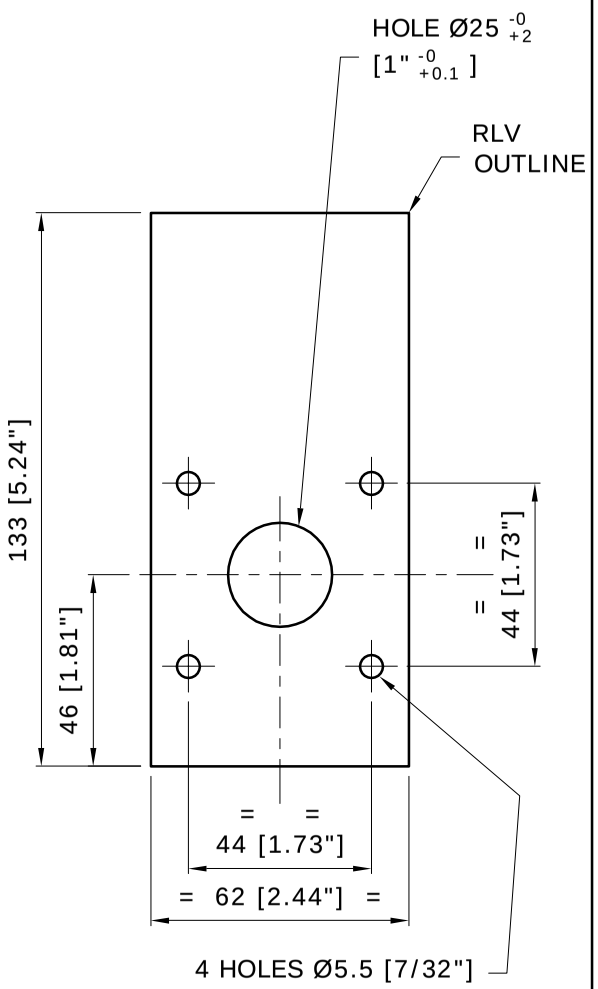
SHEET No. 1 OF 2

3rd ANGLE PROJECTION

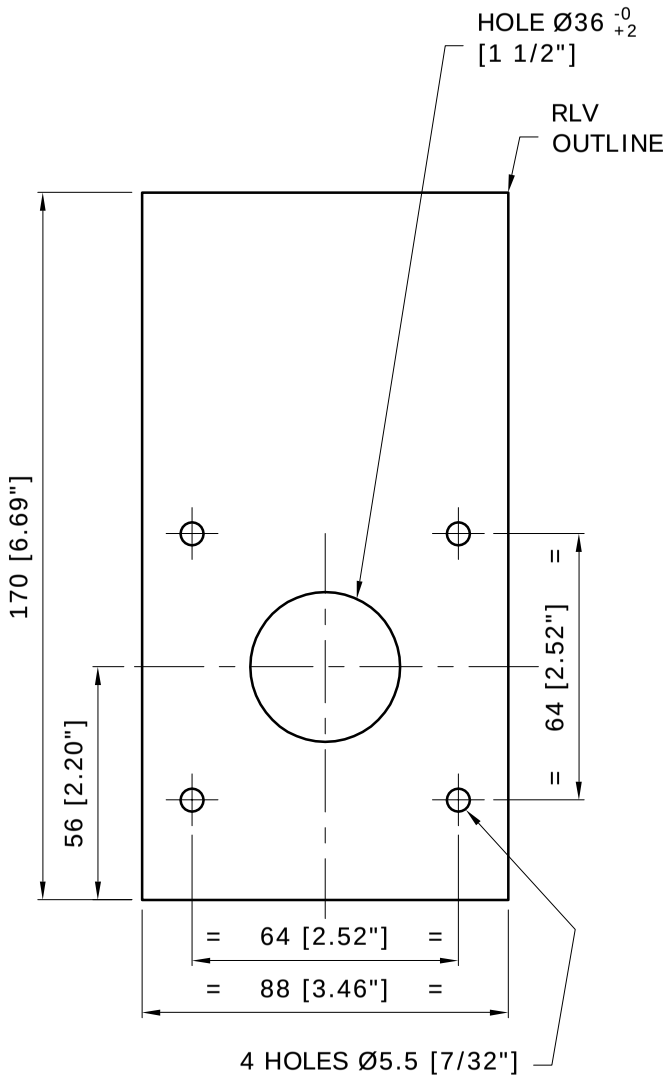
DIMENSIONS IN mm
DO NOT SCALE

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

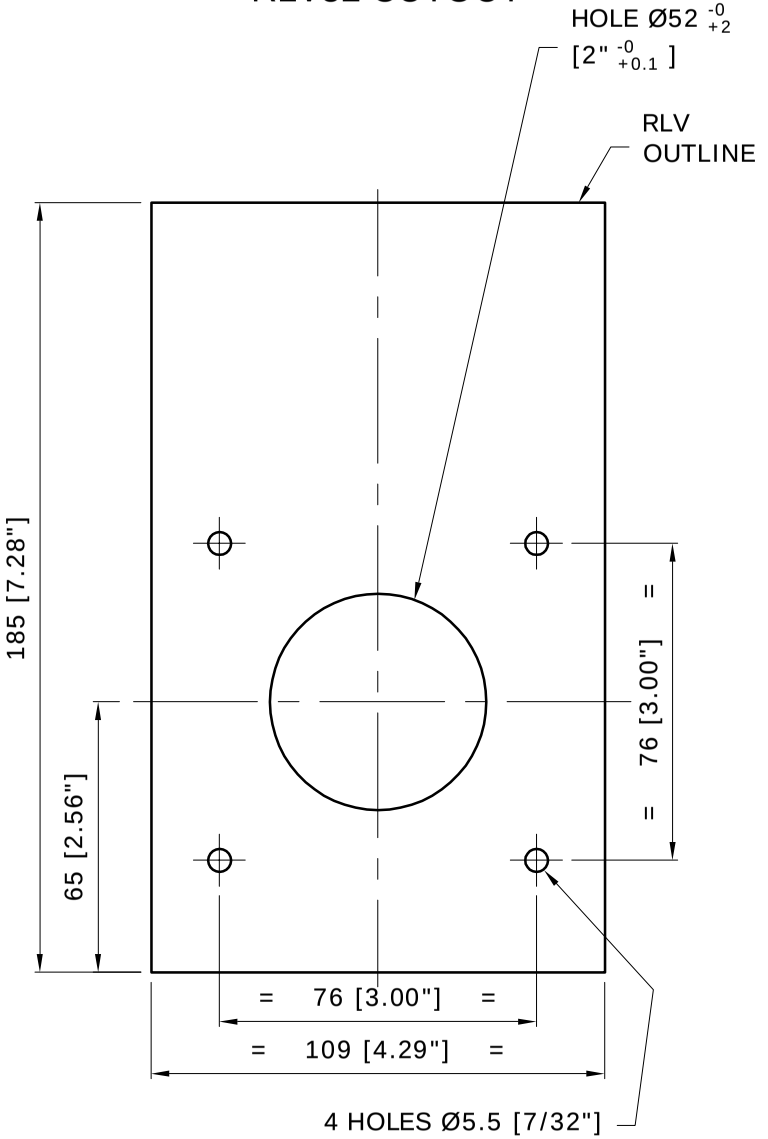
DETAIL 'A'
RLV25 CUTOUT



DETAIL 'B'
RLV36 CUTOUT



DETAIL 'C'
RLV52 CUTOUT



APP'D	MLC	ISSUE:	1	2		
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CHK'D	MLC	DATE:	18/6/08	1/4/11		
		APPROVED:	MLC	JPdB		
DR'WN	NRB	DRAWING STATUS: CERT RELATED				

MATERIAL

FINISH

Expo Technologies Limited SURREY KT7 0RH UNITED KINGDOM

TITLE
RELIEF VALVES FOR Z(Y)LC SYSTEMS

JOB No:

CUSTOMER:

SCALE N.T.S

DRAWING No.
XSD-RTD0-004

SHEET No. 2 OF 2

EU Authorised Representative:
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46 Eastcote Drive, Little Island,
Co. Cork, T45 WR68, Ireland.
Email: EUAR@expopharma.ie

Manufacturer:
Expo Technologies Ltd
Unit 2, The Summit, Hanworth Road,
Sunbury-on-Thames, TW16 5DB, U.K.
Email: sales@expoworldwide.com

EU Declaration of Conformity CE

This declaration of conformity is issued under the sole responsibility of the manufacturer and EU authorised representative named above:

Object of the declaration:

Product Name:	MiniPurge Controller System
Product Options:	This declaration covers all variants associated with the above product

The object of the declaration described above is in conformity with the relevant Union harmonization legislation:

Type of Legislation:
Electromagnetic Compatibility Directive (EMC) 2014/35/EU
ATEX Directive 2014/34/EU

The Following harmonised standards and technical specifications have been applied:

Type of Legislation:	**General Standard:**	**Reference Standard:**
EMC Directive:	Generic standards - Immunity for industrial environments	EN 61000-6-2:2005
	Generic standards - Emission standard for industrial environments	BS EN IEC 61000-6-4:2007
ATEX Directive:	Equipment general requirements	EN IEC 60079-0:2018/AC:2020
	Equipment protection by intrinsic safety "i"	EN 60079-2:2014
	Equipment protection by pressurized enclosure "p"	EN 60079-11:2012

Notified Body:

NB Name:	ExVeritas
NB Number:	2804

Technical documentation and assessments are in the Expo Technologies confidential technical file SC004.

For and on behalf of Expo Technologies Ltd

John Paul De Beer
Managing Director

Date: 7th May 2024

D890

APPENDIX A

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. It is the responsibility of the manufacturer
of the Pressurized Motor Enclosure to provide appropriate instructions for the Enclosure.)

CONTENTS:

1 GENERAL INSTRUCTIONS

The D890 Minipurge system, incorporates the standard size 1 leakage compensation Z system pneumatic output option with the exception of the internals being set up in an opposite hand configuration.
The typical purge system includes the direction of the air inlets and outlets set up from right (inlet) to left (outlet) as opposed to the D890, configuring a left (inlet) to right (outlet) set up.
System Flow rate, Minimum pressure and flow pressure set points remain as standard. For additional information on the standard system, see Manual ML447

2 DRAWINGS AND DIAGRAMS

The following drawings are attached:

Title	Drawing Number	Sheet(s)
07 1ZLC/SS/PO/D890	D890-GA	1 of 1

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E: sales@expoworldwide.com

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E:sales.na@expoworldwide.com

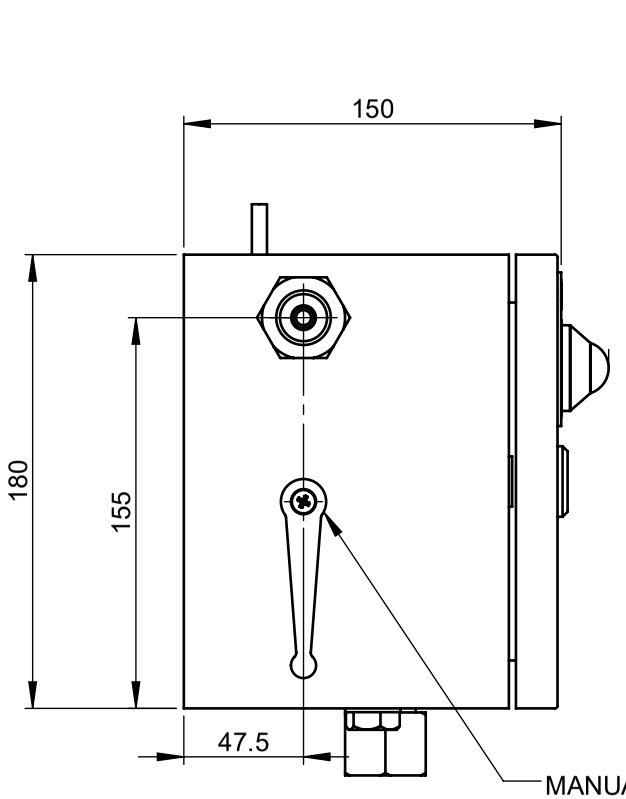
Expo Technologies China
T: +86 532 8906 9858
E: qingdao@expoworldwide.com

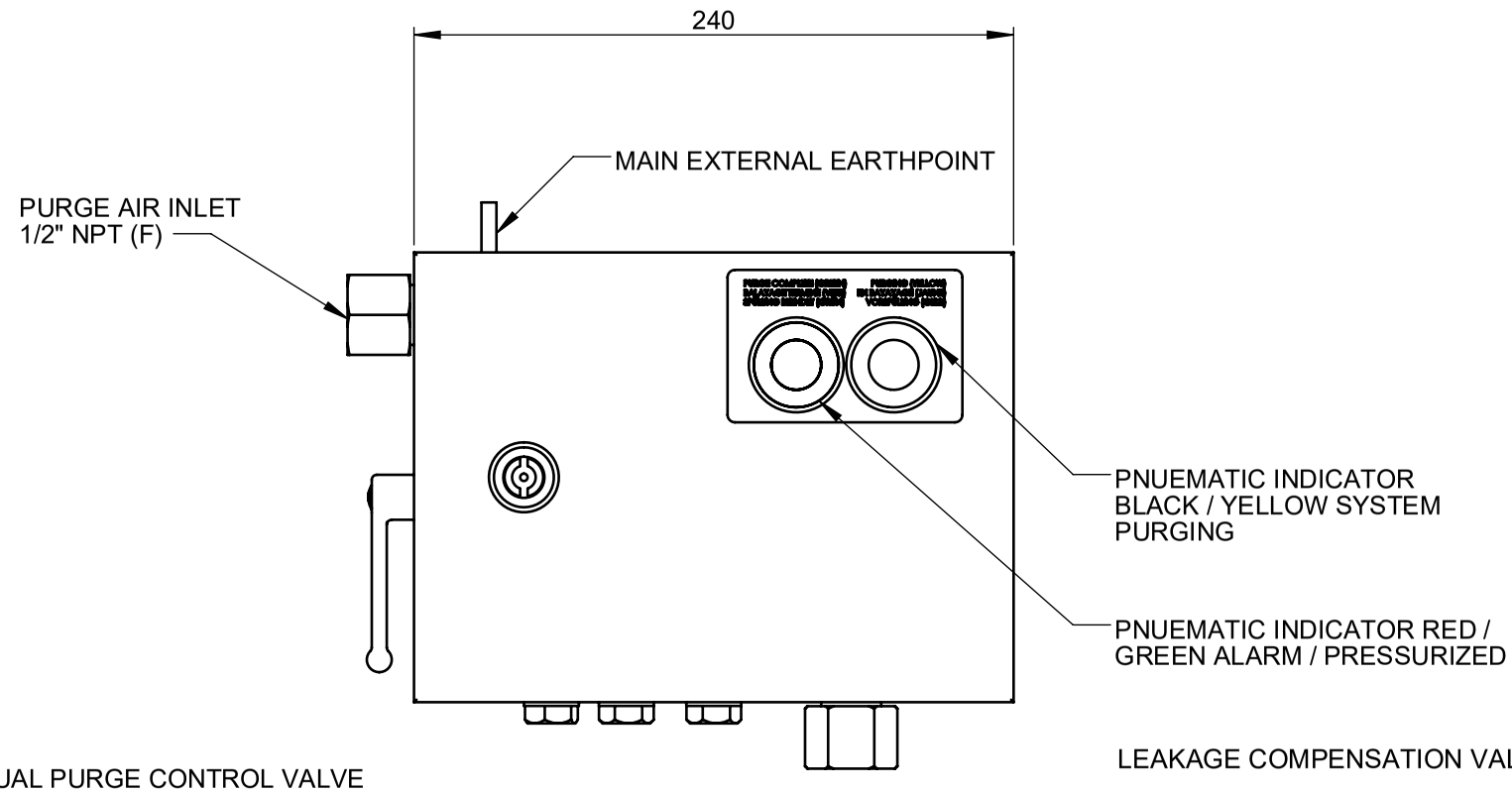
8	7	6	5	4	3	2	1

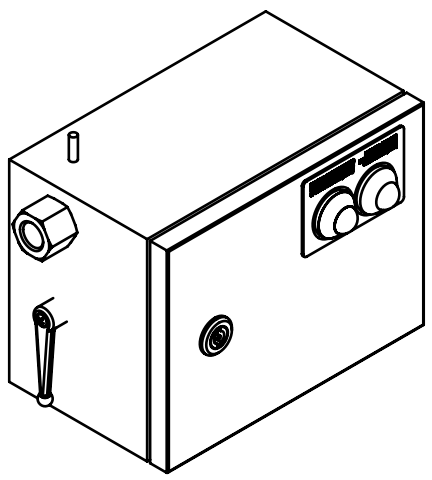
3RD ANGLE PROJECTION

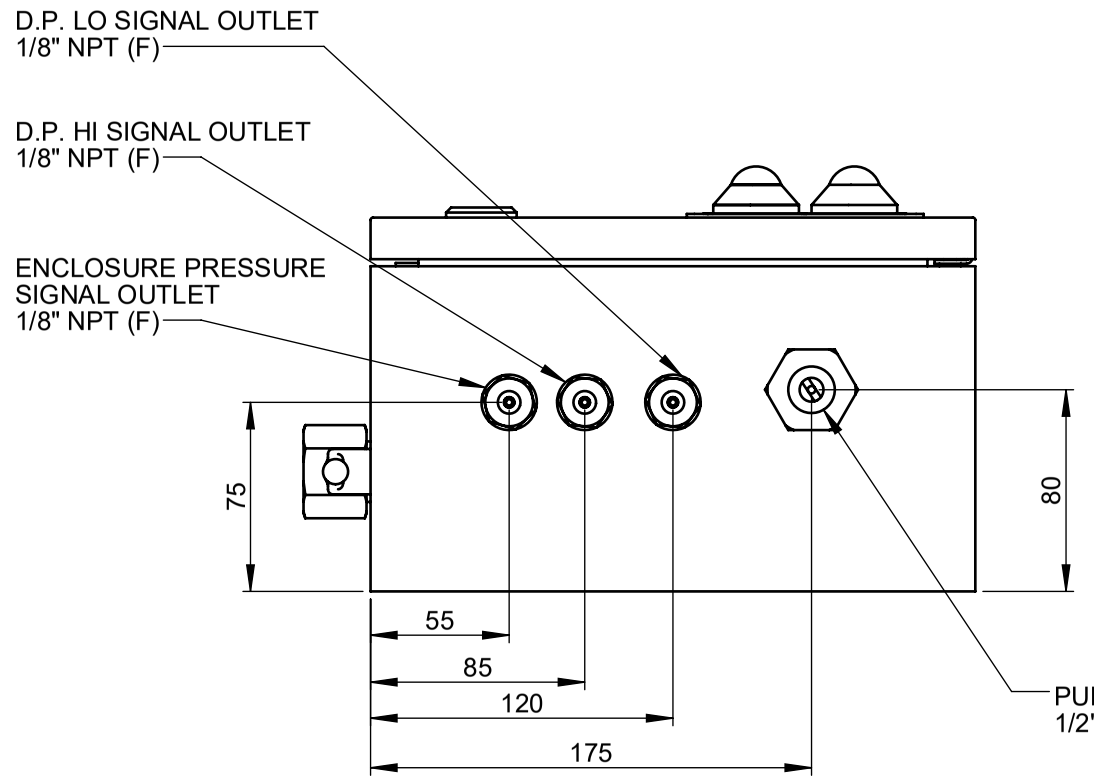
DIMENSIONS IN mm
[ ] DENOTES IMPERIAL
DO NOT SCALE

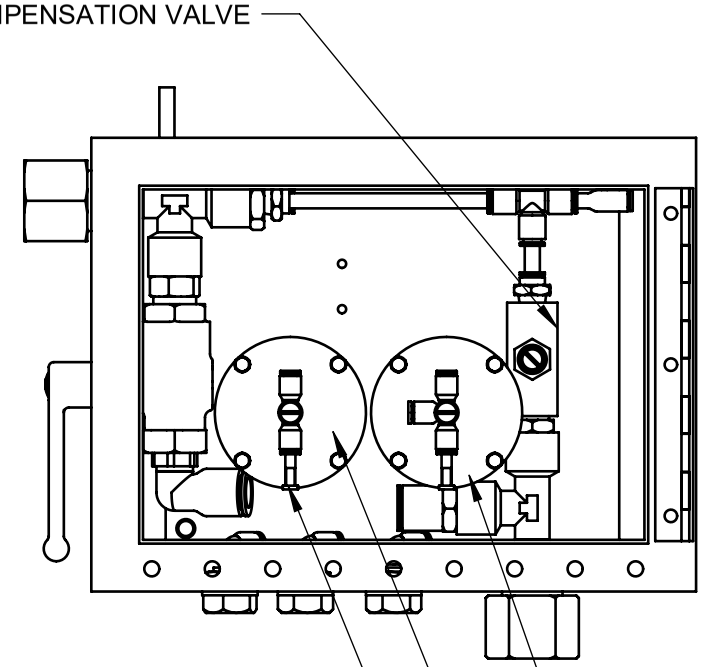
UNSPECIFIED TOLERANCES
NO DEC PLACE ±0.5
1 DEC PLACE ±0.2
2 DEC PLACE ±0.1
FLATNESS TO BE LESS THAN 0.4mm OVER ANY 100mm LENGTH











IF IN DOUBT ASK

REVISION TABLE			
REV.	MOD NUMBER	APPROVED DATE	APPROVED
01	DRAWN	14/02/2020	MH

DRAWN DATE: 29/11/2019
DRAWING STATUS: CERTIFIED

APPROVED	CHECKED	DRAWN
MH	RD	LG

THIS IS A CERTIFICATION DOCUMENT. ANY UNAUTHORISED CHANGE INVALIDATES APPROVAL.

Expo Technologies Limited SURREY TW16 5DB UNITED KINGDOM

TITLE: 07 1ZLC/SS/PO/D890

A3 | SCALE 1:3 | REV. 01

DRAWING No. D890-GA

SHEET No. 1 OF 1

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