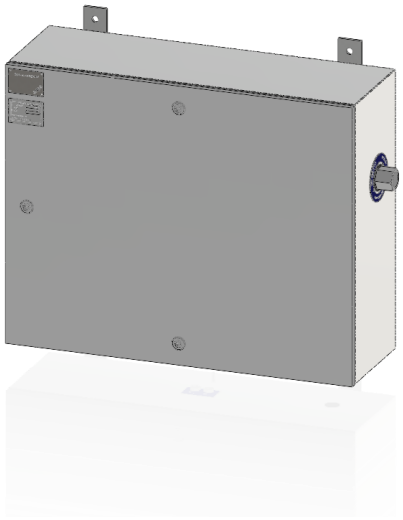
ASU-0000-008 - Air Isolation Unit Manual
ML571



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 Motor Enclosure to provide appropriate instructions for the Enclosure.)

Contents

1. ASU-0000-008 - General System Specification

Technical Specifications

Part number:	ASU-0000-008
Enclosure Material:	Stainless Steel 316L.
Mounting Method:	Wall mounting straps. Fixing holes as per drawing.
Temperature Limits:	-10°C to +55°C
Compressed Air Supply:	Clean, dry, oil free air or inert gas. Refer to *Air Supply Quality* section in *Installation of the System.* Supply Pressure: 5 to 16 barg (73 to 232 psi).
Process Connections:	Purge supply and outlet to pressurized enclosure 1" NPT female. Minimum supply line 25 mm (1") ID tube, inlet sized appropriately for flow rate. Filter Drain $^{1}/_{8}$"NPT female, minimum 6 mm pipe to be used.

2. Quick User Guide

Installation

The Air Isolation unit must be installed by a competent engineer, in accordance with relevant standards and any local codes or practice.

- Ensure the system is installed according to the full instructions in the *"Installation of the System"* section of this manual.
- All piping's must be clean and free of dirt, condensation, and debris prior to connection to the system or pressurized enclosure.
- It is strongly recommended that a local isolation valve is installed on the air supply upstream of the system.

Note: Most faults are due to restricted air supply, inadequate supply pipe work or drop in air supply
pressure during the purge process.

3. Application Suitability

Air isolation unit systems are acceptable 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.

The following materials are used in the construction of Air isolator unit. 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
- Brass
- Silicone Rubber
- PTFE

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4. Description and Principle of Operation

The Air isolation unit is designed to supply filtered air to a purge system from a remote location.

5. Main Components

Air Supply Filter

The unit is provided with x2 40µ liquid / dust filter elements. The user of the Air isolation unit must ensure that air supply is to the quality stated in *Air Supply Quality* paragraph found in the *Installation of the System* section.
The system is designed so that air should only flow through one filter at any time.

Before air is sent to the Air Isolation Unit, all valves must be closed. To change which filter airflow is being directed to, both 2 way valves must be shut prior to selecting a filter.

3 Way Valve (Red Handle)

To send airflow to the bottom filter, the red handle should be turned 90 degrees anti clockwise and left in a horizontal position, then the top 2 way valve should be opened. To send airflow to the top filter, the red handle should be turned 90 degrees clockwise and left in a vertical position, then the bottom 2 way valve should be opened.

2 Way Valves (Yellow Handle)

To select a filter to direct airflow to, the 2 way valve next to the filter should be opened.

6. Installation of the System

The Air supply Isolator must be installed by a competent person in accordance with relevant standards, such as 60079-19.

Copies of the Current Standard can be purchased from Expo Technologies or B.S.I or relevant local code / Standard.

Air Supply Quality

The Air isolation unit system should be connected to a protective gas supply, which is suitable for purging and
pressurization.
The supply pipe connection to the air isolation unit 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 air isolation unit 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.

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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.
When an inert gas is being used to supply the purge system, risk of asphyxiation exists. Refer to Application
Suitability section.
Before connection of the air supply to the purge system, the supply pipe work should be flushed through with instrument quality air to remove any debris that may remain in the pipes. This must be carried out for at least 10 seconds for every meter of supply pipe.
Unless a supply shut-off valve has been fitted to the air isolation unit system, an external shut-off valve with the same, or larger, thread size as the Control Unit inlet fitting should be fitted by the installer to prevent any restriction of purge flow.
The purge air from the air isolation unit should be piped within the pressurized enclosure to ensure purging of potential dead air spots.
The purge system is fitted with an internal regulator factory set to 3 bar feeding the logic.

When an inert gas is being used to supply the air isolation unit, risk of asphyxiation exists. Refer to Application Suitability section. Before connecting the air supply to the Air supply isolator, the supply pipe work should be flushed through with instrument quality air to remove any debris that may remain in the pipes. This must be carried out for at least 10 seconds for every metre of supply pipe.

Instrument Air Quality

Solid Particles 0.5 µm < particle size ≤ 1 µm, maximum 1000 particles / m3
Residual Water 1µm maximum density, +3 °C * pressure dewpoint
Oil Content ≤ 0.01 mg / m3 concentration total oil

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7. Commissioning

Initial Commissioning.

Refer to the General Arrangement (GA) drawing for the Air Supply Isolator systems operating layout.

If, after commissioning, the system does not perform as expected, refer to the Fault Finding Section.

Follow these steps:

1. Disconnect the air supply pipe from the inlet to the Air Isolation unit system.
2. Flush the pipe through with instrument quality air to remove any debris. This must be carried out for at least 10 seconds for every metre of supply pipe.
3. Check all connections between the system and the downstream motor purge unit.
4. Close and re-open the internal valves. See No. 3 and 6 in the GA drawing.

8. 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.

Expo recommends that the commissioning tests be repeated at every six to 24 months, dependent on the environment. In addition, the following checks are also recommended at that time:

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

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
- Approval labels are legible and undamaged
- Adequate spares are carried

9. 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.

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 for investigation, with a full report of the fault and the system Serial Number.

As with any pneumatic system the greatest enemies are water, oil and dirt in the air supply. For this reason, the air system must always incorporate a dust and water filter to provide air to instrument quality.

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10. Recommended Spares List

KFL-A01N-001	Filter kit for S0015/275 filter/regulator

11. Drawings and Diagrams

The following drawings are attached:

Title	Drawing Number	Sheet(s)
ASU-0000-008 General Arrangement	ASU-0000-008	1 of 2 & 2 of 2

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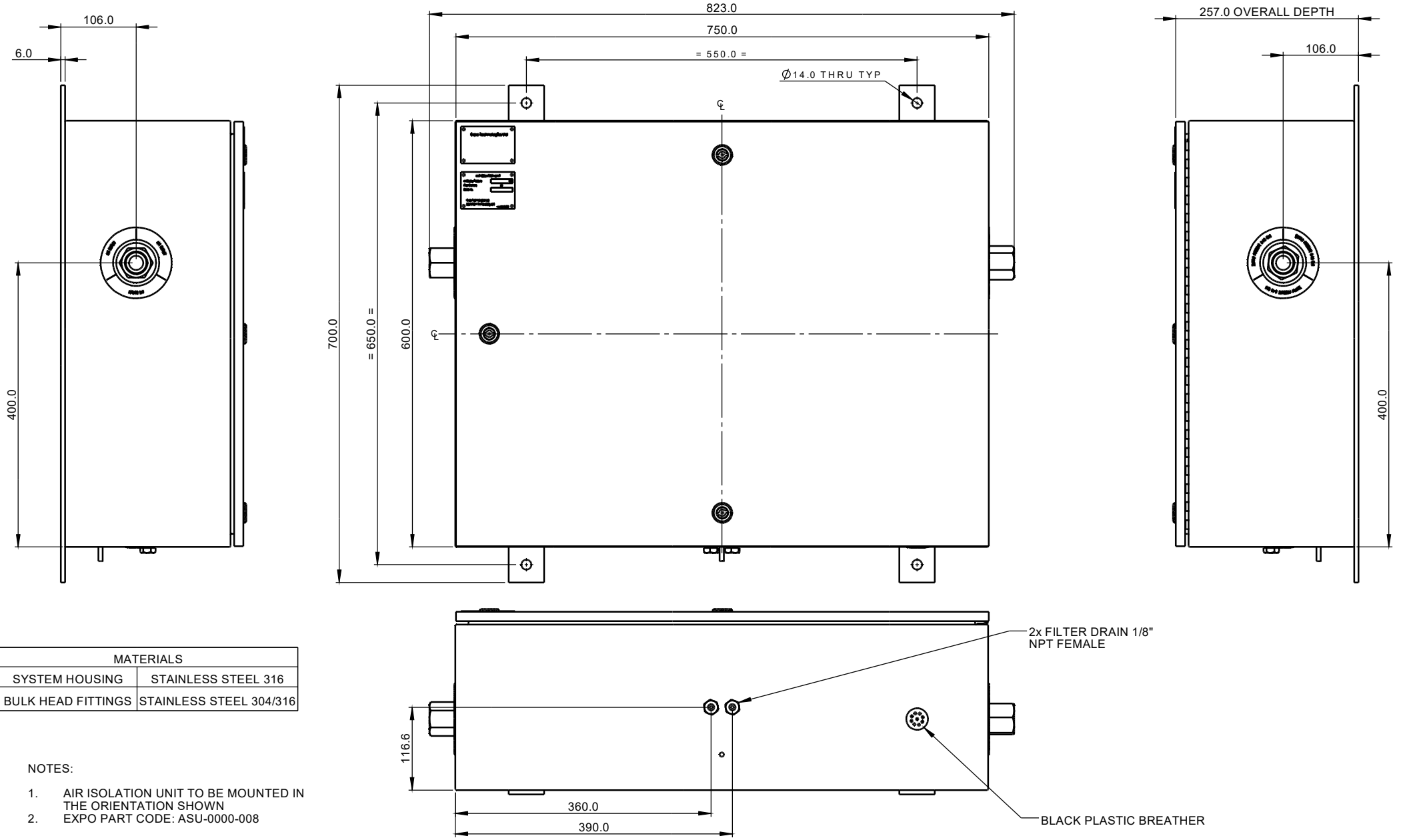
8	7	6	5	4	3	2	1

3RD ANGLE PROJECTION

DIMENSIONS IN mm
[ ] DENOTES IMPERIAL

TOLERANCES UNLESS OTHERWISE STATED
FLATNESS TO BE LESS THAN 0.4 OVER ANY 100mm LENGTH
DECIMALS X ±0.5, X.X ±0.2, X.XX ±0.1, X.XXX ±0.05
ANGLE STD ±1°

DO NOT SCALE IF IN DOUBT ASK



MATERIALS	
SYSTEM HOUSING	STAINLESS STEEL 316
BULK HEAD FITTINGS	STAINLESS STEEL 304/316

NOTES:

1. AIR ISOLATION UNIT TO BE MOUNTED IN THE ORIENTATION SHOWN
2. EXPO PART CODE: ASU-0000-008

REVISION	MOD No.	DATE	DRAWN	CHECKED	APPROVED
05	DQN-12456	06/11/2020	CE	RJ	AR
04	DQN-12429	16/04/2020	CE	RJ	AR
03	6643	18/06/2018			PB

DRAWN DATE: 09/05/2018
DRAWING STATUS: RELEASED
REVISION: 05
SCALE: 1:5
A3

MATERIAL: SEE PART DETAILS
FINISH: SEE PART DETAILS
WEIGHT (Kg): 28.7

Expo Technologies Limited
SURREY TW16 5DB UNITED KINGDOM

TITLE: AIR ISOLATION UNIT

DRAWING No.: ASU-0000-008

SHEET No. 1 OF 2

8	7	6	5	4	3	2	1

3RD ANGLE PROJECTION

DIMENSIONS IN mm
[ ] DENOTES IMPERIAL

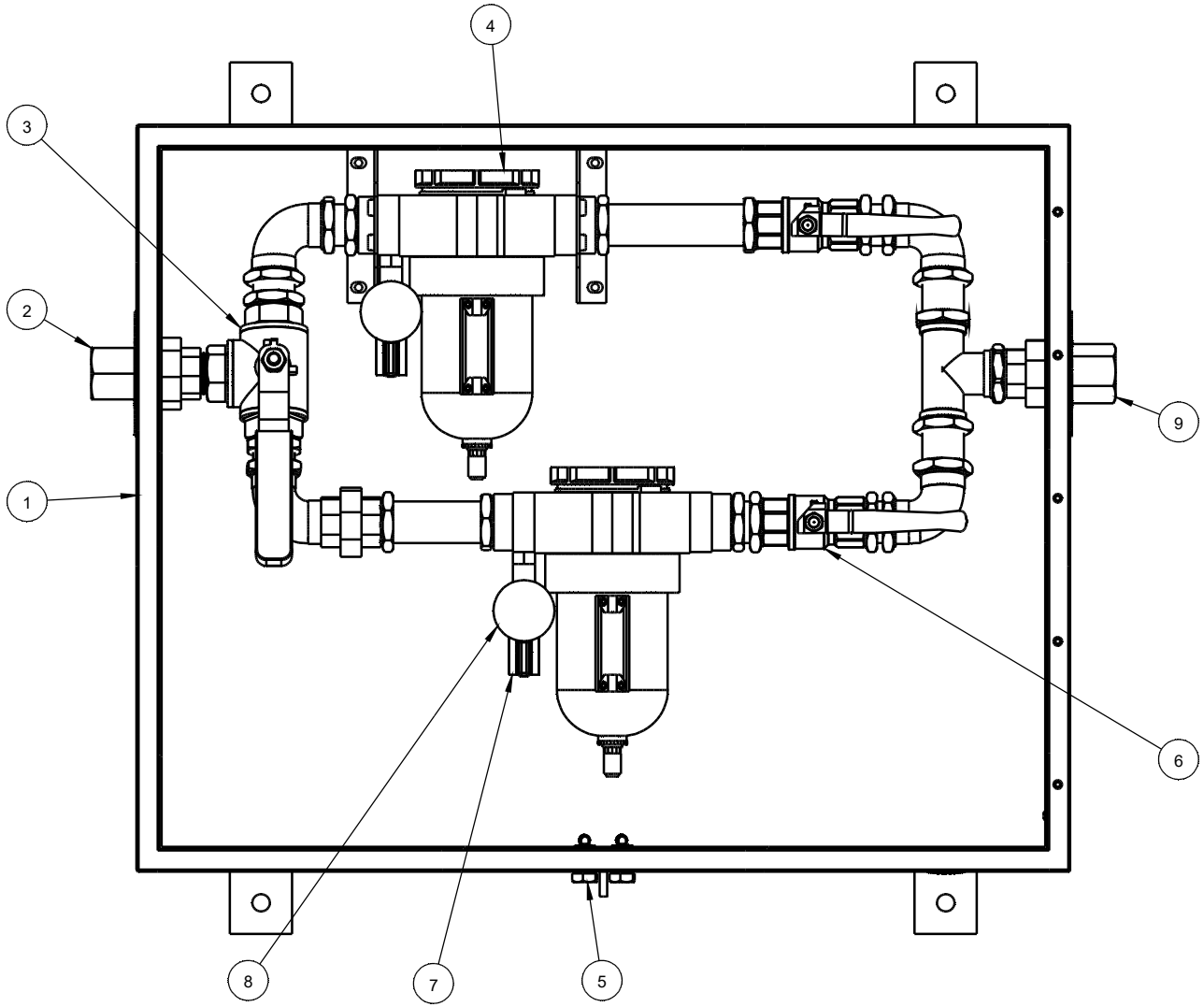
TOLERANCES UNLESS OTHERWISE STATED
FLATNESS TO BE LESS THAN 0.4 OVER ANY 100mm LENGTH

DECIMALS
X ±0.5
X.X ±0.2
X.XX ±0.1
X.XXX ±0.05

ANGLE
STD ±1°

DO NOT SCALE IF IN DOUBT ASK

ITEM	DESCRIPTION	QTY
1	HOUSING	1
2	AIR OUTLET	1
3	THREE WAY VALVE	1
4	FILTER	2
5	FILTER, AUTO DRAIN	2
6	TWO WAY VALVE	2
7	TWO WAY VALVE	2
8	PRESSURE GAUGE 0-25BARG	2
9	AIR INLET	1



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SHEET No. 2 OF 2

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