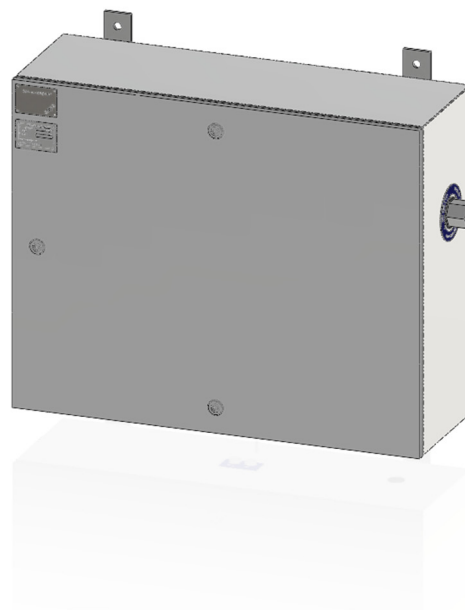


# ASU-0000-009 - Air Isolation Unit Manual ML576



## **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.)

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## 1. ASU-0000-009 - General System Specification

### Technical Specifications

Part number:	ASU-0000-009
Enclosure Material:	Stainless Steel 316L.
Mounting Method:	Wall mounting straps. Fixing holes as per drawing.
Temperature Limits:	-20°C to +55°C
Compressed Air Supply:	Clean, dry, oil free air or inert gas. Refer to <i>Air Supply Quality</i> section in <i>Installation of the System</i> . Supply Pressure: 5.2 to 8 barg (75.4 to 116 psi).
Process Connections:	Purge supply and outlet to pressurized enclosure 2" NPT female. Minimum supply line 50 mm (2") 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 gases, vapours or dust.

The following are main materials of construction of the Air isolation 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

## 4. Description and Principle of Operation

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

Filter elements can be changed without the need for switching off the air supply

To initially operate the system, all two-way valves must be closed prior to air being applied to the system.

Once the two-way valves are closed air can be supplied to the system.

To send airflow to the top filter, the red handle of the three-way L ported valve should be turned 90 degrees anticlockwise and left in a horizontal position.

To send airflow to the bottom filter, the red handle of the three-way L ported valve should be turned 90 degrees clockwise and left in a vertical position.

Once the chosen filter (top or bottom) has been selected via the three-way L ported valve.

The two-way valve next to the chosen filter needs to be opened (rotate clockwise 90 degrees).

To change the filter that airflow is being directed to whilst the system is in Operation, the following steps need to be followed.

Check that the small two-way valves located at the bottom of each filter are normally closed.

To change the filter airflow is going to, the three-way valve needs to be rotated 90 degrees.

The filter that was previously in use needs to be drained and relieved of air via the small two-way valve located at the bottom of the filter underneath the pressure gauge.

The two-way valve next to the filter that was previously in use needs to be closed and the two-way valve next to the filter in use needs to be opened. Following this both small two-way valves located at the bottom of each filter should be normally closed

## 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.

## 6. Installation of the System

The Air isolation unit must be installed by a competent person in accordance with relevant standards, and local codes of practice.

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.

#### *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  $0.5 \mu\text{m} < \text{particle size} \leq 1 \mu\text{m}$ , maximum 1000 particles / m<sup>3</sup>

Residual Water  $1 \mu\text{m}$  maximum density, +3°C\* pressure dewpoint

Oil Content  $\leq 0.01 \text{ mg} / \text{m}^3$  concentration total oil

## 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.

## 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)
Air Isolation Unit 2"	ASU-0000-009-GA	1 of 2 & 2 of 2

8  3RD ANGLE PROJECTION

7 DIMENSIONS IN mm [ ] DENOTES IMPERIAL

6 DO NOT SCALE

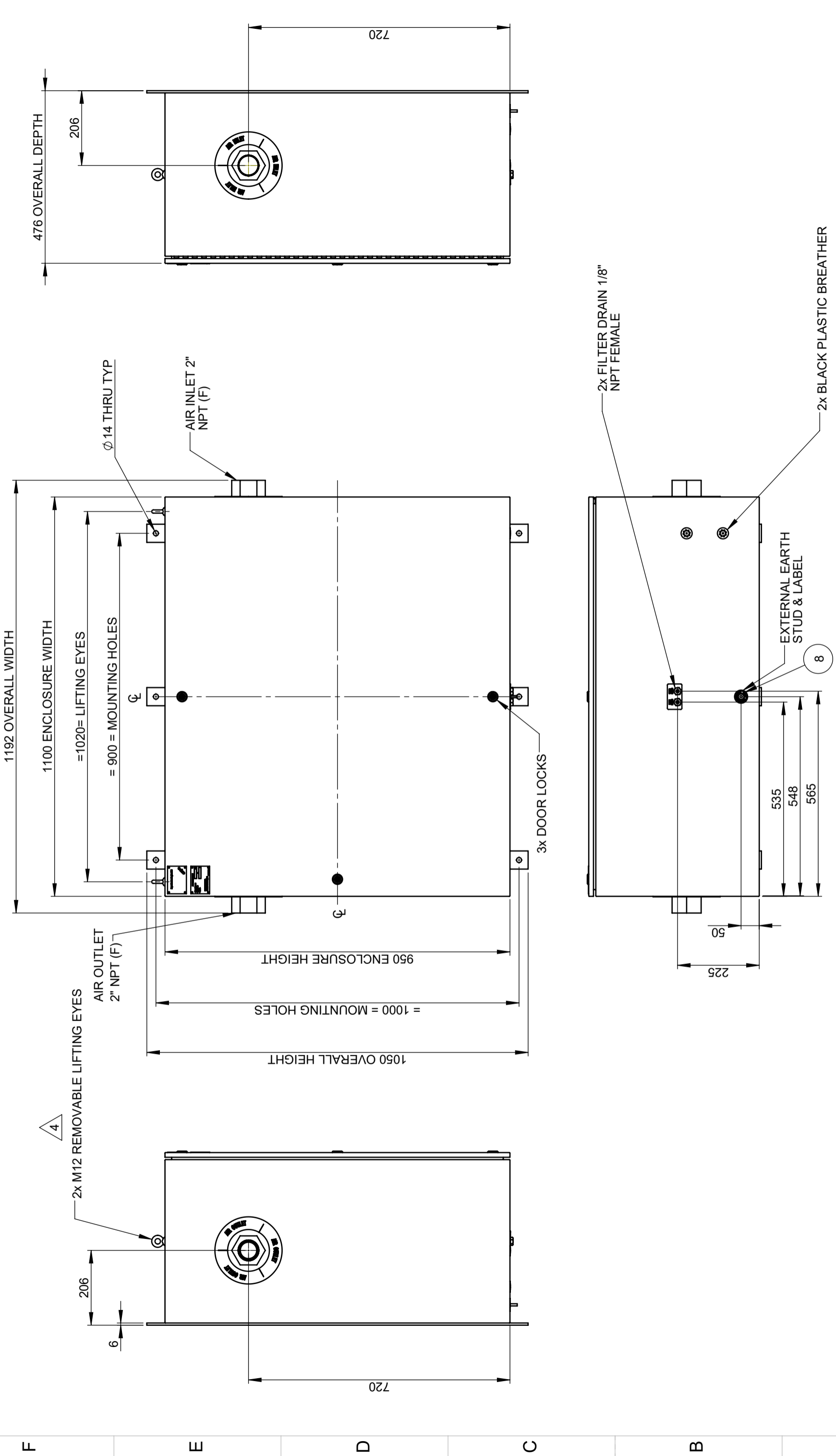
5 IF IN DOUBT ASK

4

3

2 1

The contents of this drawing / document are Copyright © Expo Technologies Limited. They are to be treated as confidential and are returnable upon request. They are not to be copied or communicated in part or in whole without written consent from Expo Technologies Limited, neither are they to be used in any way against our interests.



REVISION TABLE		DRAWN DATE	DRAWING STATUS	APPROVED
REV.	MOD NUMBER	APPROVED DATE	APPROVED	
C	6764	19/09/2019	PB	
03	6764	19/09/2019	PB	
04	6790	20/02/2020	PB	


APPROVED	CHECKED	DRAWN
PB	KM	NH

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

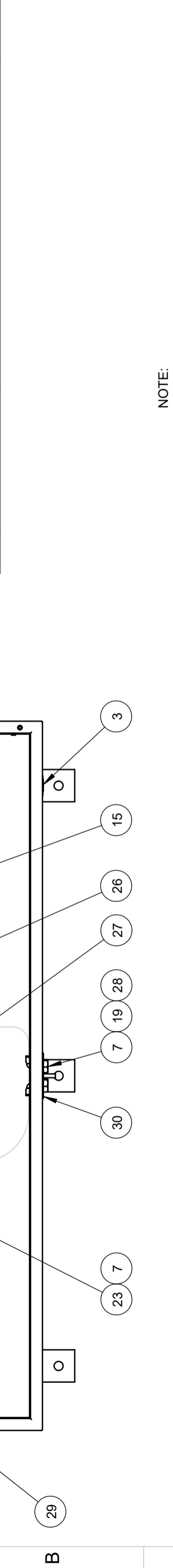
MATERIAL SEE PART DETAILS  
 FINISH SEE PART DETAILS

**Expo Technologies Limited**  
 SURREY TW16 5DB UNITED KINGDOM  
 TITLE  
**AIR ISOLATION UNIT 2"**

FIRST USED ON 53347  
 WEIGHT (kg)  
 DRAWING No. ASU-0000-009  
 SHEET No. 1 OF 2

SCALE 1:10 REV. 04  


ITEM	PART NUMBER	DESCRIPTION	QTY
1	ASU-0000-009	HOUSING	1
3	S0514-001	BLACK PLASTIC BREATHER	2
4	TTA-28J0-0S0	2" NPT (F) TO 2" BSP (M) ADAPTOR	2
5	TUC-3JV0-0S1	2" BSP to 2" BSPTM UNION CONICAL TIGHTENED	2
6	TUC-4JJ0-0S2	2" EQUAL UNION BSPP F-F, 316ss 2G thread to ISO-228	1
7	S0024-175	BULKHEAD 1/8"NPT FEMALE X 5mm FEMALE	4
8	MLA-PDZ0-006	LABEL MAINS EARTH CIRCULAR	1
11	TTT-5JJ0-0S0	2" BSPP EQUAL FEMALE TEE 316 ST STEEL	1
12	TTE-3JJ0-0S0	2 INCH 90 DEG ELBOW F-F STAINLESS STEEL	4
13	HVP-B000-016	TWO WAY VALVE 2 INCH	2
14	HVP-B000-017	THREE WAY VALVE 2 INCH	1
15	TTR-3FEK-0S0	2" THREADED RUNNING NIPPLE (SEE SHEET 2)	7
17	FNP-51F0-00S	2" BSP NUT	22
18	S0018-156	Copper Washer 2" BSP	20
19	S0018-019	COPPER WASHER 1/4" BSP	4
20	FWM-60E0-00N	68.8 OD, 60ID, 5.5 THK NYLON WASHER	4
21	FBM-1015-2F0	U bolt M10 OD of pipe 61mm	1
22	MBK-S000-747	SLOTTED PIPE HOLDING BRACKET	1
23	S0015-018	PRESURE GAUGE	2
24	HTS-A200-803	2" S/STEEL PIPE THREAD BOTH ENDS	1
25	RLCI-04025-J	NUTSERT CLOSED M4	9
26	HF1-A01N-006	2 INCH FILTER	2
27	TPE-106M-0P0	STUD ELBOW 1/8"BSPT x 6 OD PUSH IN	2
28	TPE-406N-0N0	STUD FEMALE ELBOW 1/4" BSPTx6od LOW PROFILE	2
29	HTS-A200-818	2" S/STEEL PIPE THREAD BOTH ENDS	1
30	MLA-PAZ0-170	FILTER DRAIN LABEL	1
31	S0096-004	M12 LIFTING EYE BOLT	2



NOTE:  
SEE DRAWING ASU-0000-009-MF FOR FULL DETAILS

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