

**Tisch Environmental**  
**747-30**  
**Advanced Ultra-Pure Air Generator**



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## 1.0 Introduction

Tisch Environmental was established in 1971 as the pioneer of ultra-pure air generation and gas generation instrumentation. Based in Cleves, Ohio TISCH has remained on the forefront of manufacturing and design of laboratory instrumentation. With over 40 years of innovation, TISCH products are unsurpassed in quality and air purity specifications. At AACO we place customer service as our highest priority. We would like to welcome you to our company and thank you for choosing TISCH products.

### 1.1 Contact Us

If you require assistance please contact us:

**Direct:** (513) 467-1477  
**Fax:** (513) 467-9009  
**Email:** sales@Tischinst.com  
**Website:** www.Tischinst.com  
**Address:** **Tisch Environmental**  
145 South Miami Ave.  
Cleves, OH 45002

### 1.2 Patents, Copyrights, Trademarks

Tisch Environmental instrumentation is protected by patent in the United States of America. The distribution or duplication of TISCH products, designs, or trade secrets is strictly prohibited without the express written consent of Tisch Environmental.

### 1.3 Warranty

Instruments manufactured by Tisch Environmental are guaranteed by warranty to be free of defects in materials and workmanship for two years after shipment from Tisch Environmental factories. The liability of Tisch Environmental is limited to servicing or replacing any defective part of any instrument returned to the factory by the original purchaser. All service traceable to defects in original material or workmanship is considered warranty service and is performed free of charge. The expense of warranty shipping charges to and from our factory will be borne by Tisch Environmental. Service performed to rectify an instrument malfunction caused by abuse, acts of god or neglect, and service performed after the two-year warranty period will be charged to the customer at the current prices for labor, parts, and transportation. The right is reserved to make changes in construction, design specifications, and prices without prior notice.

### 1.4 Equipment Description

The 747-30 is a compact, highly efficient ultra-zero air generator that converts ambient air to pollutant-free ultra-pure zero air. The unit employs a heated catalyst for hydrocarbon and CO removal and a pressure swing absorption system for contaminant and optional CO<sub>2</sub> removal. The unit is provided in a 5U case for standard rack mounting or for benchtop mounting. The 747-30 can be used in a variety of applications for the reliable generation of ultra-zero air.

#### Industries and Applications

- Automotive emission monitoring
- Gas Chromatography
- Oil and Natural gas
- Aerospace
- Laboratory instrumentation

- Calibration and Certification
- Environmental gaseous instrumentation
- Ultra-zero air generation
- Reliable generation of ultra-high purity zero air
- Economical replacement of zero air bottles

### 1.5 747 Series Ordering Information

## 2.0 Safety Precautions

Before using Tisch Environmental products, always be sure to review the corresponding operations manual and take all necessary safety precautions. Tisch Environmental products are to be used only for the purposes specified by the operations manual. Tisch Environmental cannot guarantee the safe usage of its instruments in procedures that do not adhere to Tisch Environmental guidelines and standards. If you have concerns about the safety of your product or questions about safe practices, contact Tisch Environmental by phone or e-mail to speak with a representative.

### 2.1 Symbols used in this document

The following symbols are used in this document:



Shock hazard – this symbol is used to alert the operator that there is a potential for an electrical shock hazard.



General Attention – this symbol is used to alert the operator of an important directive.



High temperature – this symbol is used to alert the operator that there is a potential for surfaces to have a temperature high enough to burn the skin.

## 2.2 Safety Warnings

### General



Service and repair of this instrument should only be attempted by a trained technician whom is familiar with electrical safety.



During operation, the housing of the methane reactor inside the instrument will become hot to the touch and could cause serious burns. Do not attempt to service or remove the instrument's cover until the unit has cooled completely.

### Electrical



Do not remove the inner enclosure covers without disconnecting mains power and powering down the unit completely.



Use grounded electrical connections at all times to prevent inadvertent electrical shock hazards.



Use only an approved cord. The cord must be rated for the environment used and the current and voltage rating of the instrument.

## 3.0 Specifications

### Environmental

For indoor use only  
Enclosure rating IPX0  
No wet locations  
Altitude up to 2000 m  
Temperature rating 5°C to 40°C  
Maximum relative humidity 80% @ 31°C max to 50% at 40°C  
Pollution degree 2

### Weight

18.6 kg (41 lbs)

### Dimensions

219mm (8.625") H x 483mm (19") W x 432mm (17") D

### Electrical

#### **120VAC Operation**

Nominal Voltage: 120V / 60Hz Mains  
Maximum Current: 8 Amps  
Fuse: 10 Amp Time-lag fuse

#### **220VAC Operation**

Nominal Voltage: 220V / 50hz Mains  
Maximum Voltage: 220V  
Maximum Current: 4 Amps  
Fuse: 5 Amp Time-lag fuse

Mains supply fluctuations up to  $\pm 10\%$  of nominal voltage

Overvoltage Category II

Connection: Detachable cord set, IEC-320 socket to accept an IEC-320 C13 cord set

Overvoltage category: II

### Duty

Designed for continuous use



**Gas Purity**

SO<sub>2</sub> < 0.5 ppb  
H<sub>2</sub>S < 0.5 ppb  
NO < 0.5 ppb  
NO<sub>2</sub> < 0.5 ppb  
NH<sub>3</sub> < 0.5 ppb  
O<sub>3</sub> < 1 ppb  
CO < 1 ppb  
Hydrocarbons < 0.5 ppb (Methane and non-methane)

**Pressure**

Input pressure of 60-80 PSI will yield an output of 50 PSI  
Maximum operating pressure is 90 psi.

Pressure drop of 9 PSI is expected between input and output.

## 4.0 Operation

### 4.1 Unpacking / Assembly / Installation

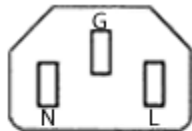
The 747-30 is shipped in a single box. Open the box from the top, do not open the box from the bottom.

The 747-30 comes completely assembled

The 747-30 can be installed on a bench top (rubber feet included) or rack-mounted (rack ears included).

### 4.2 Electrical Connection

The 747-30 has a standard C13 socket that will accept an IEC-320 C13 cord set.



IEC320 C13



Use grounded electrical connections at all times to prevent inadvertent electrical shock hazards.



Use only an approved CE/UL-listed cord. The cord must be rated for the environment used and the current and voltage rating of the instrument.

### 4.3 Powering ON the Instrument

Before the instrument can operate it must be put into STANDBY mode. This is achieved by first turning the rear power switch to the ON position. In STANDBY mode the fans will begin to operate.

To power ON the instrument press the power button on the front face of the instrument. The blue LEDs will illuminate indicating that the instrument is on and working.

## 4.4 Powering OFF the Instrument

To power OFF the instrument press and hold the power button for **3 seconds**. This will initiate “Shut Down Mode” and will properly cool down the system. *Shut Down Mode* will operate for 2 hours 30 minutes. The LEDs (including the power switch) of the 747 will flash slowly to indicate that the system is in *Shut Down Mode*.

Alternatively you can shut down the main power by utilizing the power switch on the rear of the unit. This option does not allow for proper cooling of the unit and the internal components will stay heated for a longer duration.

## 4.5 Operation of the 747-30



During operation, the housing of the methane reactor inside the instrument will become hot to the touch and could cause serious burns. Do not attempt to service or remove the instrument’s cover until the unit has cooled completely



Connect the incoming air connection to a clean, dry source of air. Moisture on the incoming air source can damage the PSA module and affect the purity of the air output.

After powering ON, the unit will illuminate the blue LEDs and the unit will begin to heat the methane reactor. The PSA (Pressure Swing Absorption) modules will continue to switch on and off at timed intervals.

It is recommended to wait up to 30 minutes to allow the unit to get to the correct reactor temperature of 290°C and stabilize for the generation of ultra-pure air.

The regulator on the front of the unit can be turned in the counter-clockwise direction to increase the output pressure and turned in the clockwise direction to decrease the output pressure.

If there is an alarm on the unit, the unit will shut down to prevent overheating. Please see section 5.0 for troubleshooting. When the unit shuts down due to an alarm condition, the blue LEDs will blink at a 2 second interval. When this occurs, the alarm condition must be corrected and then power must be cycled to the instrument, by switching the mains

power switch on the rear of the unit to allow the alarm condition to clear. If the alarm condition is not cleared, the instrument will not operate. If this occurs, please contact the factory for service.

## 5.0 Maintenance and Troubleshooting

Instruments manufactured by Tisch Environmental are guaranteed by warranty to be free of defects in materials and workmanship for two years after shipment from Tisch Environmental factories. If your instrument needs servicing or if you need assistance please contact our technicians during normal business hours.

**Direct:** (513) 467-9000  
**Fax:** (513) 467-9009  
**Email:** sales@tisch-env.com  
**Website:** www.Tisch-Env.com  
**Address:** **Tisch Environmental**  
 145 South Miami Ave.  
 Cleves, OH 45002

### 5.1 Replacement Parts and Accessories

Replacement Part	Model Number
Catalytic Reactor for 10L Ultra-zero air generator	AA-747-30X-1 (120V) AA-747-30X-2 (220V)
Pressure Swing Adsorption module (30 lpm) Type A Reactor	AA-747-30-A-PSA (A Type) 747-30-C-PSA (C Type)
Catalytic Reactor Post Filter	AA-747-30-PF
Fuse for incoming power entry 120V / 10A	AA-747-30-106
Fuse for incoming power entry 220V / 5A	AA-747-30-106-2

Internal 24VDC Fuse for power supply – 1.25A	AA-747-30-104
24VDC Solenoid	AA-747-30-217

## 5.2 Fuse Replacement

There are (2) fuse locations on the 747-30

The main fuse for the 747-30 is located in the power inlet



### **CAUTION: REMOVE POWER FROM UNIT BEFORE SERVICING**

To replace the fuse, use a small flat-head screwdriver to open the tray of the power inlet where the fuse(s) are located.

Remove the blown fuse(s) and replace with new fuse(s)

Fuse information:

220V Systems: P/N: AA-747-30-106-2 – 5 Amp, time-lag 5x20mm fuse

120V Systems: P/N: AA-747-30-106 - 10 Amp, time-lag 5x20mm fuse

There is an internal fuse for the 24VDC power supply that provides power to the internal controller and other internal equipment.

To replace the DC fuse, remove the top cover and located the fuse holder. The fuse holder can be opened by pulling up on the lever.

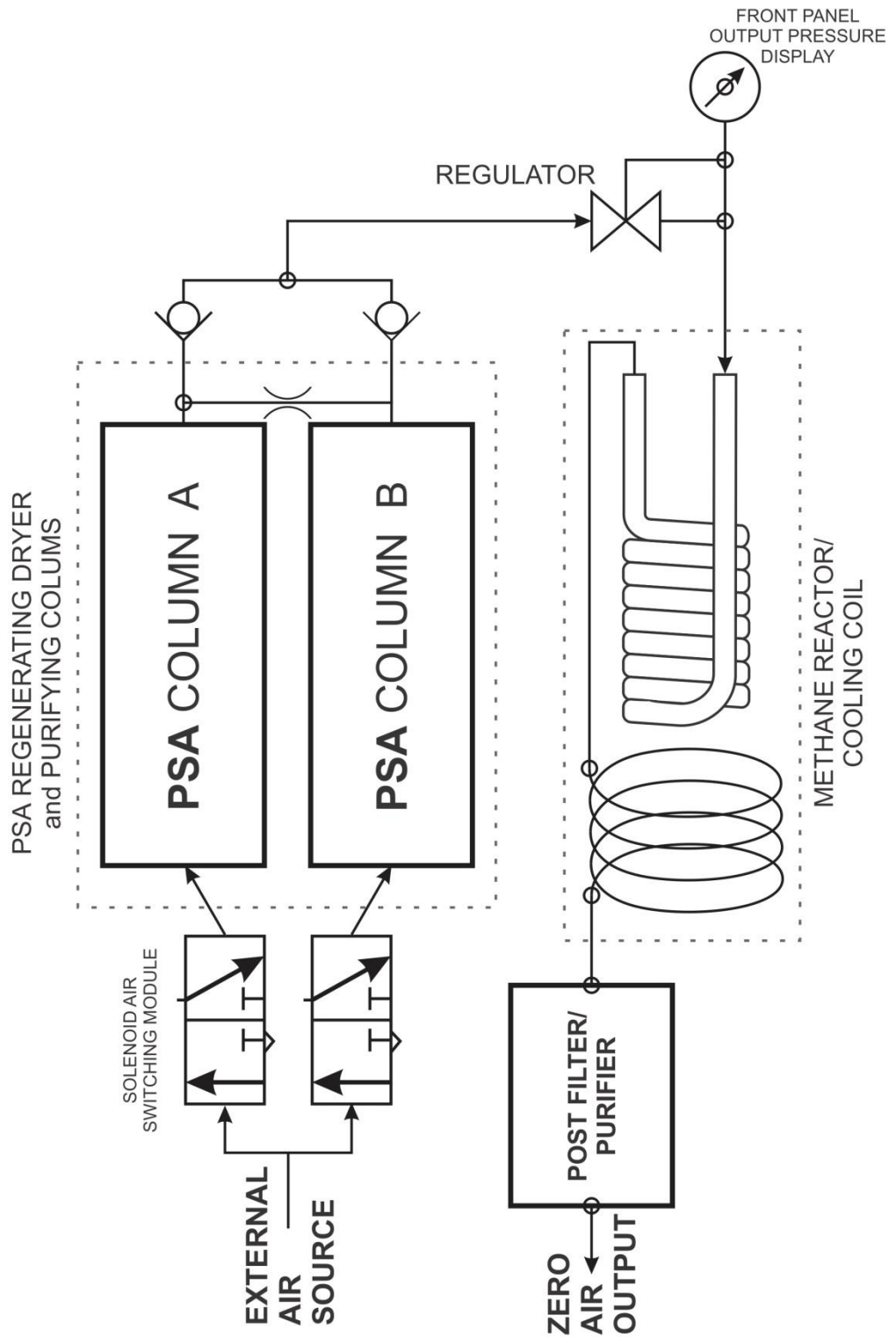
Fuse information:

P/N: AA-747-30-104 – 1.25 Amp, quick-blow 5x20mm fuse

## 5.3 Air flow Troubleshooting

To troubleshoot air-flow problems, please see Appendix A for the system diagram. By removing the connection to each major component, the air flow clog can be identified and remedied. If the system is connected to a dirty or wet incoming air supply, clogs can develop in the system and the PSA module can get fouled causing the media to congeal. It is imperative a clean, dry air source is used.

## Appendix A: System Diagrams



## Appendix B: Revision History

<b>Revision</b>	<b>Date</b>	<b>Description</b>
1.0	7/4/16	Manual created.
1.1	9/1/18	Section 4.4 shutdown sequence revised.
1.2	4/12/21	Company information revised.