



# REGENERATIVE DRYING SYSTEMS

## User Manual Installation Instructions

!! Please Retain This Manual for Your Records !!



Take your compressed air system into the future with the newest regenerative drying system.

Tsunami Compressed Air Solutions is a division of



# **YOUR SAFETY IS IMPORTANT**

Read ALL instructions before you begin the installation of your  
Tsunami Regenerative Drying System

Observe and follow all caution and warning instructions

## **!!CAUTION!!**

**\*\*SYSTEM PRESSURE MUST BE RELEASED  
PRIOR TO INSTALLING DRYER\*\***

- Tsunami Regenerative Drying Systems should be installed with a bypass circuit to allow for proper maintenance of unit
- Always wear eye protection when working on Tsunami Regenerative Drying Systems
- Use only proper tools and follow all precautions which pertain to the use of those tools
- Use appropriate thread sealant on all fittings unless otherwise specified

## **\*\*IMPORTANT\*\***

**There is a MANDATORY 6 month maintenance schedule for the  
Oil coalescing pre-filter, P/N 21999-0202-Z-SP**

**Failure to follow all maintenance schedules will void all warranties**

**\*\*It is MANDATORY to install a bypass circuit around the dryer for maintenance purposes\*\***

**— use appropriate thread sealant on all fittings unless otherwise specified —**

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Congratulations on your purchase of the Tsunami Regenerative Drying System. We are very pleased that you have decided to use the latest technology to improve your compressed air system.

Your air system, using regenerative drying technology, will provide years of service with little maintenance required.

Thank You.

# The Tsunami Regenerative Dryer

## Product Description

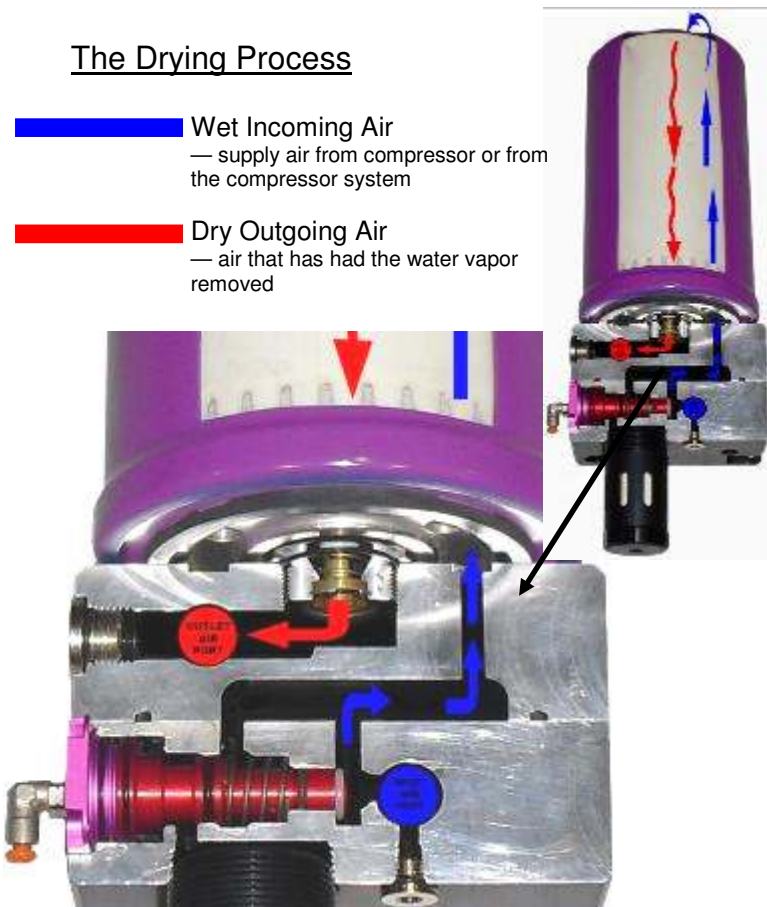
The Tsunami Regenerative Dryer System uses the latest technology to provide your facility with the cleanest, driest compressed air available. Our systems, unlike some of our competitors, are complete systems. This includes the Tsunami water separators and Tsunami oil coalescing filters. We use Moisture Minder® automatic piston drains to assure proper draining of water and oils before the dryer.

We can configure systems to provide very low dew points (down to -80° F) or very low relative humidity (down to .01%) with very low sweep rates. Flow rate and sweep rate determine the quality of your compressed air.

- This technology functions by passing wet, dirty compressed air through the Tsunami water separator which removes bulk water and oil down to 10 microns, then the air passes through the Tsunami oil coalescing filter which further removes oil and particulates down to .01 micron.
- This pretreated air enters the dryer and passes through one or more desiccant canisters.
- These canisters are filled with a molecular sieve bed which is under tight compression, so there is virtually no movement or banging together of the beads to cause material break down. Our desiccant media is also encapsulated in a 10 micron filter bag which eliminates the possibility of desiccant carryover downstream.
- As the wet air passes through the towers, the molecular sieve draws the water vapor in while under pressure. At the same time, one or more towers are depressurized. These towers discharge water vapor through the mufflers below those towers with the use of sweep air.
- The PLC controller sends out a pilot signal for an internal spool to shift, which switches the flow of air through the towers.
- This switching of tower operation now allows wet, incoming air to flow through a new or previously dried tower. We take a little air from the dry, outlet flow and direct this air backward through the wet towers via a very small orifice in the regeneration valve. (This is referred to as sweep air or the regeneration process). This dry flow of air through the wet beads will dry them out so they are ready for a new cycle. It's like changing your desiccant every few minutes. Our system assures a continuous flow of clean, dry compressed air for your needs.

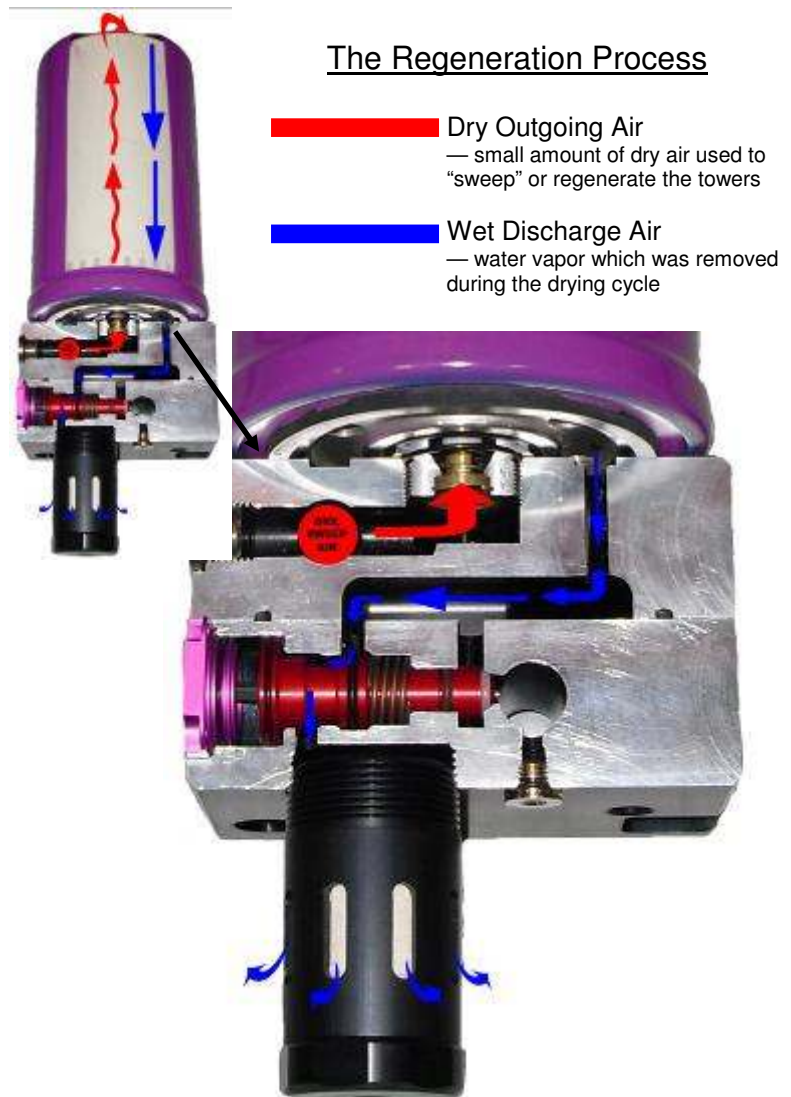
### The Drying Process

- **Wet Incoming Air**  
— supply air from compressor or from the compressor system
- **Dry Outgoing Air**  
— air that has had the water vapor removed



### The Regeneration Process

- **Dry Outgoing Air**  
— small amount of dry air used to "sweep" or regenerate the towers
- **Wet Discharge Air**  
— water vapor which was removed during the drying cycle





## **\*\*SYSTEM PRESSURE MUST BE RELEASED PRIOR TO INSTALLING DRYER\*\***

- This instruction manual contains the installation guide for all Tsunami Regenerative Drying Systems.
- All wall mounted dryers follow the same installation procedures
- The programming of the PLC controller is pre-set from the factory
- The PLC contains one notification alerting you to perform your 6 month maintenance on the oil coalescing pre-filter

### Features of the Tsunami Regenerative Dryers

Dual inlet ports and outlet ports provides for easier installation.  
The unique design of this modular system also allows compressed air to bypass through the inlet chamber for use downstream without having to pass through the drying technology.



Tower mounting stud with built-in regeneration valve. The size of the regeneration orifice controls how much air is used by the system to dry the towers.

Reducing air volume and increasing orifice size can provide even lower dew points; down to -80°F.



Dryer housings are machined from solid aluminum blocks.

Hard coat anodize provides superior strength and corrosion resistance.

Pre-filtration consists of a Tsunami water separator and oil coalescing filter.

These units can handle up to a quart of liquid per minute for extremely wet and dirty air systems.



Single piston spool per tower reduces the number of moving components. Makes for easy maintenance.

Moisture Minder pneumatic drains automatically actuate with the dryer to eliminate any water and oil trapped by the Tsunami pre-filters. Eliminates the need for float drains on our pre-filtration.



PLC controller allows for more consistent air flow by staggering tower sequencing.

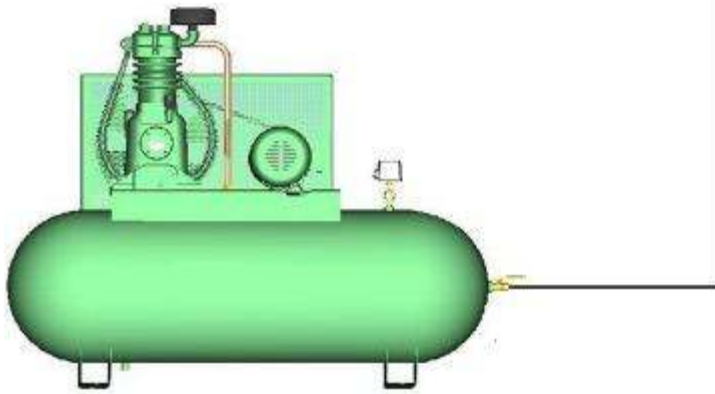
# Installation procedures for wall mounted Tsunami Regenerative Dryers

**\*\*It is MANDATORY to install a bypass circuit around the dryer\*\***

## **!! IMPORTANT !!**

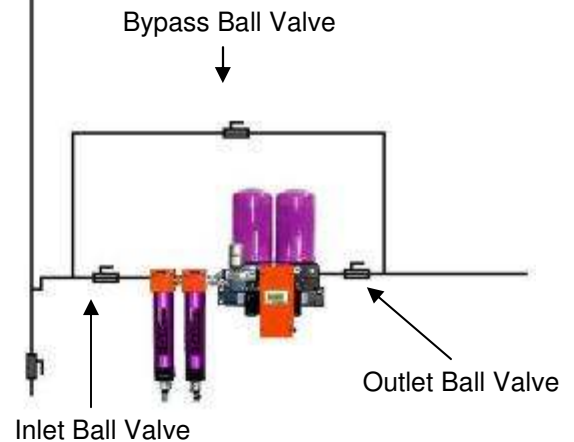
The inlet air temperature to all drying technology affects how dry your outlet air is.

Compressors without a radiator type after cooler should allow a minimum of 20 feet of distance between the compressor and the Tsunami Regenerative Dryer



## **How to Use the Dryer**

Open inlet and outlet ball valves and close the bypass valve to direct air flow through the regenerative dryer which provides dry air downstream.



**NOTE: For optimal system efficiency, close inlet and outlet ball valves when air system is idle**

**... At the end of the day and over the weekend or anytime compressed air is not being used ...**

## **How to Bypass the Dryer**

Close inlet and outlet ball valves and open the bypass valve to direct air flow around the dryer which allows you to perform maintenance or service

## **Step 1:**

Verify that you have received all dryer installation components supplied with your Tsunami Regenerative Dryer.



10Hp



15Hp



20Hp / 30Hp

## **All Dryer Systems include:**

- Tsunami Regenerative Dryer
- Large Tsunami water separator and oil coalescing filter assembly for pre-filtering the air
- Wall mounting bracket
  - \* 10Hp Dryers use a single slot bracket
  - \*\* 15-30Hp Dryers use a dual slot bracket
- Fittings to connect pre-filters to dryer
- Port plugs
- Universal wall pack power supply - 100v to 240v
- Drain Tubing



Pre-filter Assembly



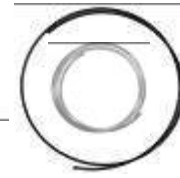
\* Single Slot Bracket



\*\* Dual Slot Bracket



Pre-filter Fittings and Port Plug Kit



Drain Tubing



Wall Pack Power Supply

Dryers shipped outside of North America receive a prong adaptor kit for the wall pack power supply



## Step 2:

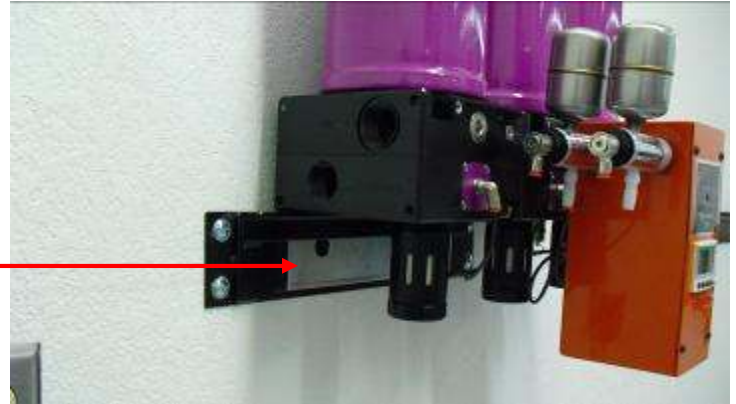
Mount dryer wall bracket to the wall using appropriate hardware.

- Single wall bracket must support 75 pounds
- Dual wall bracket must support 150 pounds



## Step 3:

Once the wall bracket has been properly secured to the wall, carefully place the dryer mounting rail into the slot(s) of the wall bracket.



## Step 4:

Attach the female JIC connector to the outlet port of the Tsunami filter assembly. (as shown)

**\*\*use appropriate thread sealant\*\***

## Step 5:

Install the male JIC connector to either the left or the right INLET / AUX port of the dryer.

**\*\*use appropriate thread sealant\*\***



## Step 6:

Choose your outlet flow port, left or right.

Plug the remaining open ports using the port plugs and port plug tool

**\*\*use appropriate thread sealant\*\***







## Step 7:

Attach the filter assembly to the dryer by connecting the JIC fittings. Tighten firmly.

## Step 8:

Measure and cut the black tubing to connect the Moisture Minder® piston drains to the filter assembly. There is one drain per filter.

It does not matter which drain goes to which filter.

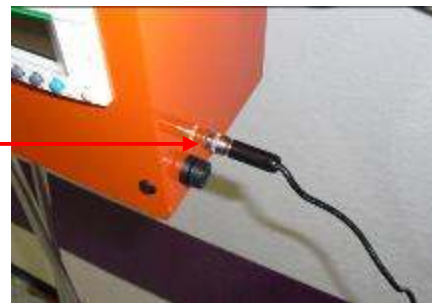


## Step 9:

Measure and cut the clear plastic tubing to connect to the Moisture Minder® discharge ports. Route drain tubing to a bucket or a floor drain.

## Step 10a:

Connect the wall pack adaptor to the PLC control box. Make sure to snug up the locking nut on the plug end. Plug wall pack into outlet.

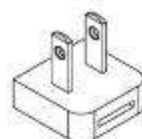


## Step 10b:

International installations outside of North America must choose the correct prong adaptor for their region prior to plugging into power outlet.



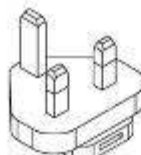
Part Number	INPUT CONNECTORS
Q-NA	CLASS II MODEL NEMA 1-15P AC POWER PLUG WITH 2 PRONGS
Q-SAA	AUSTRALIAN CONFIGURATION: SAA 2 PINS CLASS II
Q-UK	UK CONFIGURATION: UK 2 PINS CLASS II
Q-EU	EUROPEAN CONFIGURATION: EUROPLUG 2 PINS, CLASS II
Q-KR	KOREAN CONFIGURATION
Q-AR	ARGENTINA CONFIGURATION
Q-CN	CHINA CONFIGURATION



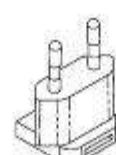
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NORTH AMERICA  
JAPAN



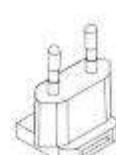
P/N: Q-SAA  
AUSTRALIA



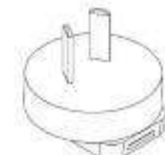
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UNITED KINGDOM  
HONG KONG  
SINGAPORE



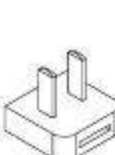
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EUROPE  
SOUTH AMERICA



P/N: Q-KR  
KOREA



P/N: Q-AR  
ARGENTINA



P/N: Q-CN  
CHINA



# Installation procedures for Tsunami Ultra Drying System

## Step 1:

Connect inlet air supply to 1"NPT port



## Step 2:

Connect outlet air supply to 1"NPT port on regulator

## Step 3:

Make sure the wall pack adaptor is connected to the PLC control box. Be sure to snug up the locking nut on the plug end.

Plug wall pack into outlet.

International installations outside of North America must choose the correct prong adaptor for their region prior to plugging into power outlet. (see Page 8, Step 10b)



## How to Use the Bypass System on a Tsunami Ultra Drying System

### Drying Mode:

3 way ball valve handle is down  
Outlet ball valve is horizontal



3 Way Ball Valve



Outlet Ball Valve

### Bypass Mode

3 way ball valve handle is horizontal  
Outlet ball valve is down



3 Way Ball Valve



Outlet Ball Valve

If your system has been in bypass mode for a while, open up the ball valve on the bottom of the tank and drain any moisture that may have been trapped while in the bypass mode.

# Installation procedures for 50Hp Tsunami Stand Alone Drying System

## Step 1:

Connect inlet air supply to 1½" NPT port



## Step 2:

Connect outlet air supply to 1½" NPT port

## Step 3:

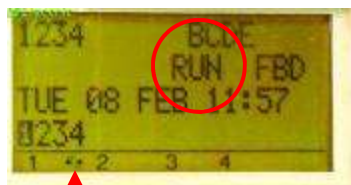
Make sure the wall pack adaptor is connected to the PLC control box. Be sure to snug up the locking nut on the plug end. Plug wall pack into outlet.

International installations outside of North America must choose the correct prong adaptor for their region prior to plugging into power outlet. (see Page 8, Step 10b)



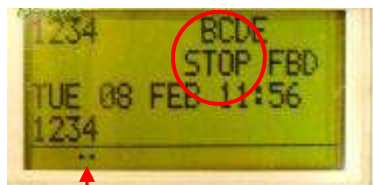
## Programmable Logic Controller

- The PLC used on the Tsunami Regenerative Dryer is pre-programmed and should automatically jump into the run mode once the unit is plugged in to your power supply.
- There are 3 basic display screens: Run Mode, Stop Mode, and Warning mode. The warning mode tells you that it is time to perform your mandatory maintenance on the oil coalescing pre-filter of the dryer



**RUN MODE**  
NORMAL OPERATING CONDITION

- RUN is displayed on the screen
- The little icons on the bottom of the display move in a rotating manner



**STOP MODE**  
PLC needs to be manually shifted to run mode (see below)

- STOP is displayed on the screen
- The little icons on the bottom of the display have stopped rotating



**WARNING MODE**

Mandatory maintenance is due on the oil coalescing element

- To reset, press and hold in both the left and right arrow buttons for approx. 10 seconds

## How to get your PLC into the RUN Mode

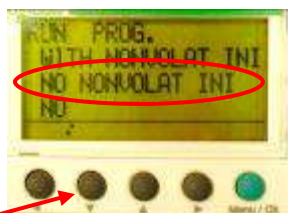
### Step 1:

Press the Menu/OK button to bring up the menu screen.



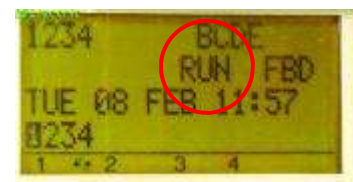
### Step 2:

- Press the down arrow to highlight Run/Stop
- Press the Menu/OK button to enter selection



### Step 3:

- Hit the down button until you highlight "NO NONVOLAT INI"
- Press Menu/OK button to enter selection



### Step 4:

- PLC should now display the RUN MODE on screen

# Maintenance Schedule for All Tsunami Regenerative Dryer Systems

6 month Maintenance: **(Mandatory)**

- Replace the oil coalescing element



P/N 21999-0202-Z-SP  
Oil Coalescing Replacement Element



P/N 21999-0707  
Piston Rebuild Kit



P/N 21999-0349  
Tower Replacement

3-5 year Maintenance Program:  
(Strongly Recommended)

- Replace piston spool valve - one per tower  
P/N 21999-0707
- Replace molecular sieve canisters (towers)  
P/N 21999-0349
- Perform 6 month maintenance requirement  
P/N 21999-0202-Z-SP

**\*\*SYSTEM PRESSURE MUST BE RELEASED PRIOR TO PERFORMING MAINTENANCE PROCEDURES\*\***

## Replacing the oil coalescing pre-filter element

**Step 1:** Open ball valve on bottom filter housing to release any system pressure



**Step 2:** Remove drain line and unscrew the filter housing



**Step 3:** Remove the bottom nut and replace element



**Step 4:** Screw housing onto filter head and attach drain line. Be sure to close ball valve on the bottom of the filter







## Limited Warranty Tsunami Regenerative Dryer

Suburban Manufacturing, Inc. warrants this unit to be free from manufacturing defects for a period of three years from the date the unit is shipped from factory according to the following terms:

1. This unit must be installed and maintained in accordance with the manufacturers' written recommendations and requirements as they exist from time to time,
2. This unit must be used for an appropriate applications;
3. This unit must not have been altered from its original state.
4. Proof of maintenance in accordance with the manufacturers' written requirements will be required.

Any portion of this unit found defective in material or workmanship will be repaired or replaced, at the manufacturers option, without charge for parts or labor, providing the unaltered product is returned to the manufacturer, shipped prepaid, within the three year time period set forth in this warranty and provided further that the manufacturer establishes that the product is defective in its material or workmanship.

This warranty specifically does not apply to:

1. Any unit which has been altered from its original state by the customer or anyone acting on behalf of the customer other than the manufacturer;
2. Repairs necessitated by accident, abuse, or failure to use the product in a manner for which it was designed;
3. Failure by the customer to follow the normal installation, application and maintenance requirements of the manufacturer;
4. Loss of use of any system of which this unit is a part, loss of time, inconvenience or any other incidental or consequential damages sustained by the customer.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES OR CONDITIONS, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE. THIS REMEDY OF REPAIR OR REPLACEMENT UNDER THIS WARRANTY IS EXCLUSIVE AND NEITHER THE MANUFACTURER NOR ITS AGENTS AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION OF ANY FORM OTHER THAN THE OBLIGATION TO REPAIR OR REPLACE WHICH IS SET FORTH IN THIS WRITTEN WARRANTY. THIS WRITTEN WARRANTY COMPLETELY EXCLUDES THE MANUFACTURERS' RESPONSIBILITY FOR BUSINESS INTERRUPTIONS, LOSS OF PROFITS, PERSONAL INJURY, COSTS OR DELAY, OR ANY OTHER DIRECT OR INDIRECT INCIDENTAL OR CONSEQUENTIAL LOSSES, COSTS, OR DAMAGES. THE CUSTOMER ACCEPTS THIS WARRANTY AS AN EXPRESS CONDITION OF PURCHASE OF THIS UNIT.