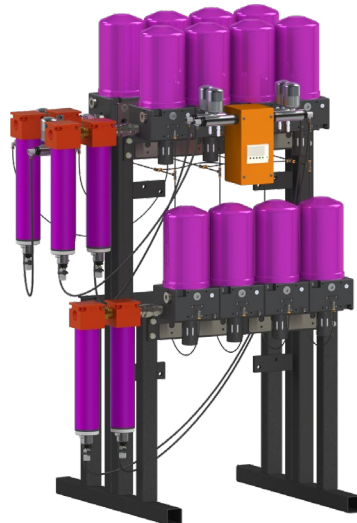


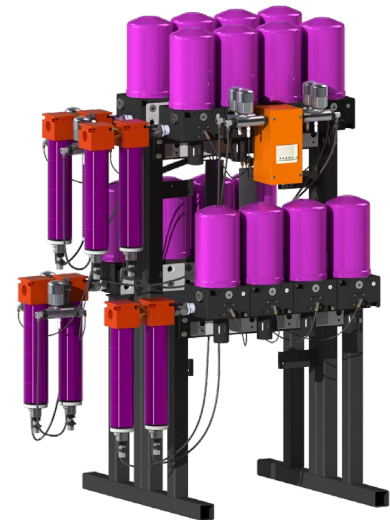
THIS USER MANUAL APPLIES TO TSUNAMI RAIL MOUNTED REGENERATIVE DRYERS



21999-0740 / 21999-0750



21999-0755



21999-0760



**WARNING**

Your safety is very important. Read all instructions before beginning any service or installation on your Tsunami Regenerative Dryer. Always wear safety eye protection when working with compressed air products. Failure to follow maintenance instructions could result in operating failure or product damage. System pressure must be released prior to any installation or service. Always install the system with the arrows indicating the direction of airflow. Use appropriate thread sealant on all connection fittings unless otherwise specified. Do not alter the dryer or filtration system from its original design as this may cause failure in its operation parameters.

**DESCRIPTION**

Congratulations on the purchase of your Tsunami Regenerative Drying System! By adhering to the specifications and maintenance schedule listed in the manual, your air system will provide years of service with minimal maintenance. This Tsunami Regenerative Drying System can provide dew points down to -80°F and relative humidity down to .01% RH. All Ultra dryers come standard with Moisture Minder Pneumatic Drains to assure proper dispersal of all contaminants captured in the water separators and oil coalescing filters. These dryers are configured with Two to Four, 4-tower banks; tower cycling is as follows:

Unit	Regeneration Orifice	# of 4-Tower Banks	# of Towers Drying	# of Towers Regenerating	Cycle Time for Tower Shifting
21999-0740	.045	2	4	4	2 minutes
21999-0750	.060	2	6	2	45 Seconds
21999-0755	.060	3	9	3	45 Seconds
21999-0760	.060	4	12	4	45 Seconds

Incoming air enters the pre-filters removing bulk contaminants; water, oil, and particulates. The pretreated air enters the regenerative dryer where molecular sieve desiccant captures water vapor. Approximately every 45 seconds, the Programmable Logic Controller (PLC) sends out a pilot signal to an internal piston to shift towers into regeneration mode.

**DRYER SPECIFICATIONS**

Maximum Inlet Air Temperature: 150°F	Maximum Flow:
Maximum Pressure: 175 psi	21999-0740 160 CFM
Inlet Ports: 1" NPT	21999-0750 200 CFM
Outlet Ports: 1" NPT	21999-0755 300 CFM
	21999-0760 400 CFM

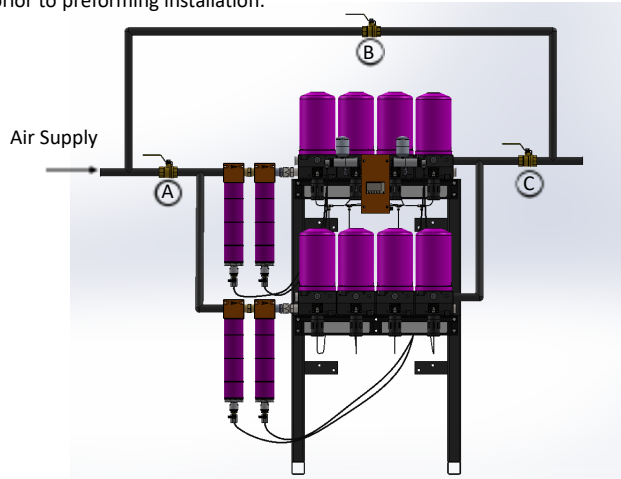
**INSTALLATION & SERVICE REQUIREMENTS**

**IMPORTANT:** Tsunami Regenerative Dryers are configurable in multiple variations. Before beginning installation it is important to determine the direction of air flow which best meets your installation application requirements. **Failure to follow required maintenance schedule will void warranty.**

- Dryer Installation 21999-0740 & 21999-0750 ..... pg. 2
- Dryer Installation 21999-0755 & 21999-0760 ..... pg. 3
- 6 Month Service - indicated by PLC notification ..... pg. 4
  - Replace oil coalescing filter elements
  - Lubricate pistons and piston bores
- 3 Year Service ..... pg. 5
  - Replace desiccant towers
  - Replace Pistons
- PLC Programming ..... pg. 5
- Parts Breakdown – Service Parts ..... pg. 6
- Troubleshooting Guide ..... pg. 7

## INSTALLATION INSTRUCTIONS - BYPASS CIRCUIT INSTALL

For ease of service, it is highly recommended to install a bypass circuit around the regenerative dryer. Follow the diagram below when installing a bypass circuit. Verify that system pressure is relieved prior to performing installation.



A. Inlet Ball Valve    B. Bypass Ball Valve    C. Outlet Ball Valve

Using the Dryer: Open the inlet (A) and outlet (C) ball valves and close the Bypass (B) ball valve to direct air flow through the regenerative dryer. This will provide clean, dry air downstream.

Bypassing the Dryer: Close the inlet (A) and outlet (C) ball valves and open the Bypass (B) ball valve to direct airflow around the dryer. This will allow service or maintenance to be performed without shutting down total compressed air supply.

## INSTALLATION INSTRUCTIONS - DRYER INSTALLTION

**IMPORTANT:** Tsunami Regenerative Dryers are configurable in multiple variations. Before beginning installation it is important to determine the direction of air flow which best meets your installation application requirements.

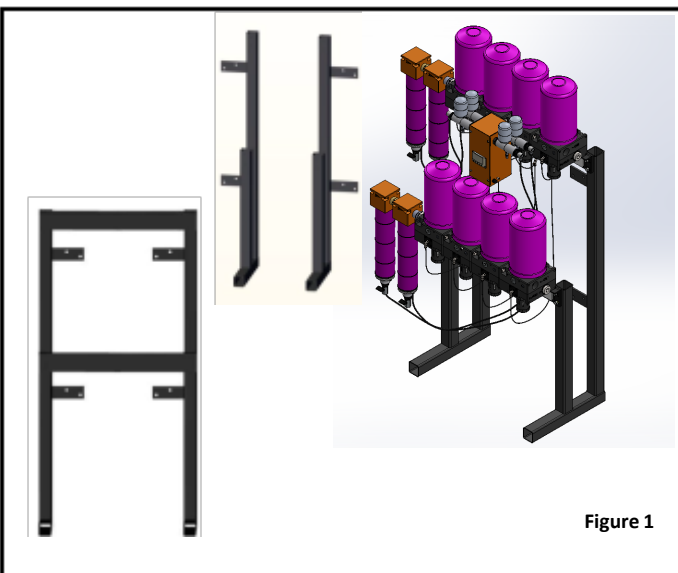


Figure 1

1. Remove all system pressure.
2. Remove hardware from frame. Install cross members with bolt and lock washer. Square up rack using level or square. Tighten with 9/16" socket.
3. Using the appropriate hardware (not included), mount dryer bracket to wall. Figure 1. Can be configured with brackets on inside or outside of rack. Securing to floor is optional if dryer is also secured to wall.
4. Once the wall bracket has been properly secured to the wall, place the dryer mounting rail into the slot(s) of the wall bracket. Figure 1

## INSTALLATION INSTRUCTIONS - DRYER INSTALLTION cont.

4. Using an adjustable or 1-3/8" wrench, connect the supplied FEMALE JIC fitting to the outlet port of the Tsunami pre-filter assembly. Use appropriate thread sealant. Figure 2
5. Determine preferred direction of flow.
6. Using the appropriate thread sealant, install the MALE JIC connector to either the left or right INLET / AUX port of the dryer. Figure 2

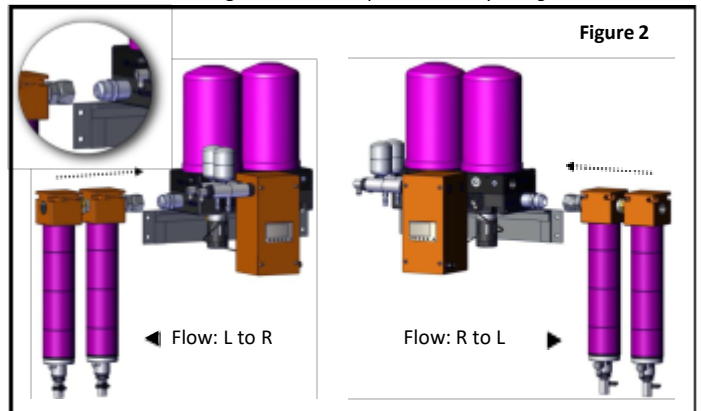


Figure 2

7. Using an adjustable or 5/8" wrench, plug the remaining open ports with the provided 1" port plugs and large hex tool. Use appropriate thread sealant.
8. Attached the filter assembly to the dryer housing by connecting the MALE and FEMALE JIC fittings. Tighten firmly.
9. Use the provided 1/4" black nylon tubing to connect the Moisture Minder® Piston Drains to the strainers located on the bottom of each filter housing. Excess tubing can be trimmed to length. Figure 3

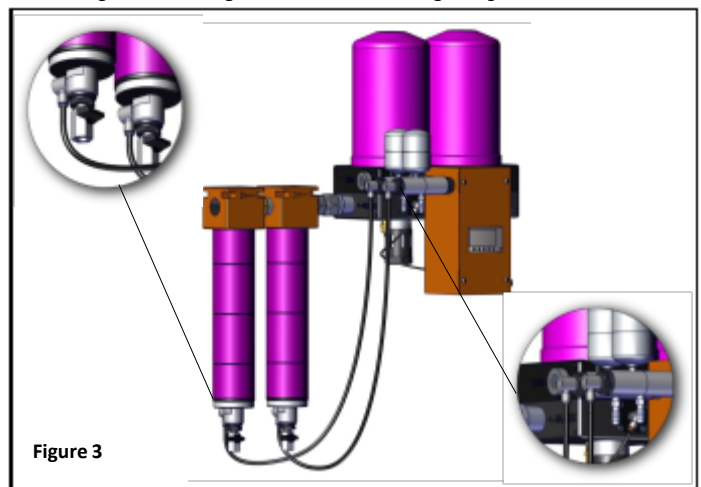
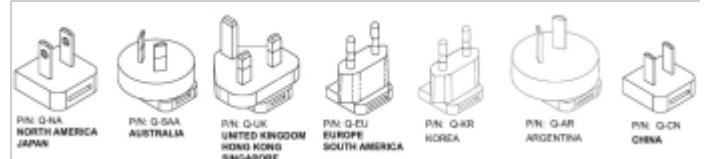


Figure 3

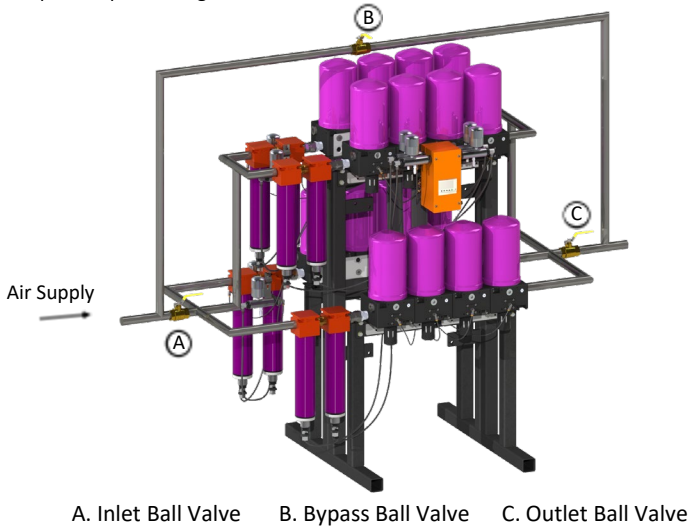
10. Attach 3/8" clear plastic tubing to the bottom of the Moisture Minder® Piston Drains. Follow all local and state regulations when routing the drain lines.
11. a. Connect power. Plug in wall pack adaptor to the PLC Control Box. Make sure to snug up the lock nut located on the PLC end of the power supply and then plug wall pack into 120v outlet  
 b. For 24v dryers, plug cord barrel into PLC then connect to power source; be certain to properly terminate the positive and negative wires for the correct polarity.

**\*\* Note:** For international dryer installations, outside of North America, choose the correct prong adaptor for the region prior to plugging into any power outlet. Reference chart below for your specific prong requirement.



## INSTALLATION INSTRUCTIONS - BYPASS CIRCUIT INSTALL

For ease of service, it is highly recommended to install a bypass circuit around the regenerative dryer. Follow the diagram below when installing a bypass circuit. Verify that system pressure is relieved prior to performing installation.

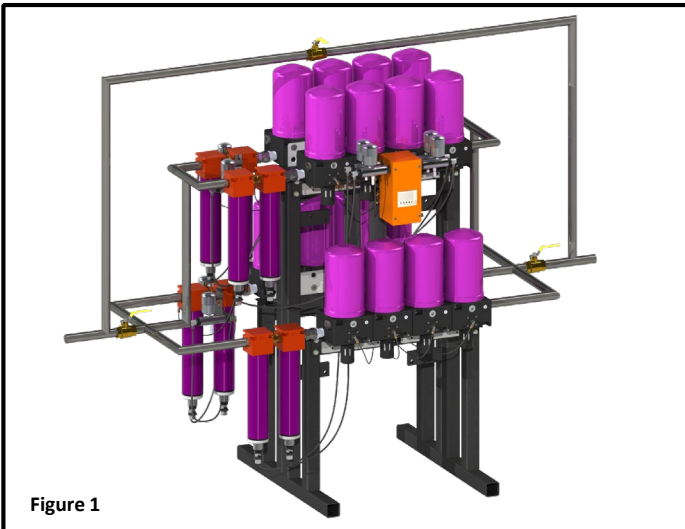


Using the dryer: Open the inlet (A) and outlet (C) ball valves and close the bypass (B) ball valve to direct air flow through the regenerative dryer. This will provide clean, dry air downstream.

Bypassing the Dryer: Close the inlet (A) and outlet (C) ball valves and open the bypass (B) ball valve to direct airflow around the dryer. This will allow for maintenance to be performed without shutting off the compressed air supply.

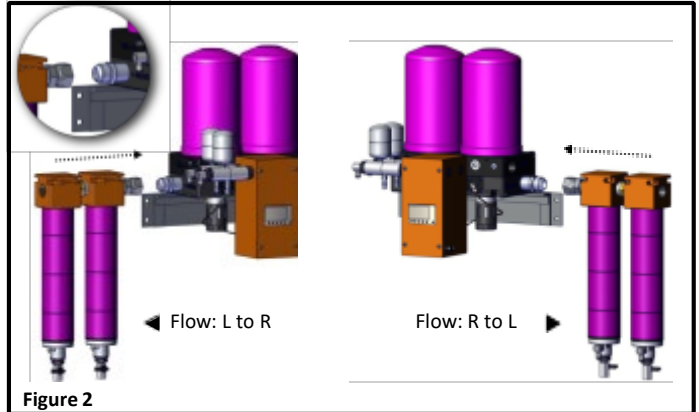
## INSTALLATION INSTRUCTIONS - DRYER INSTALLTION

**IMPORTANT:** Tsunami Regenerative Dryers are configurable in multiple variations. Before beginning installation it is important to determine the direction of air flow which best meets your installation application requirements.

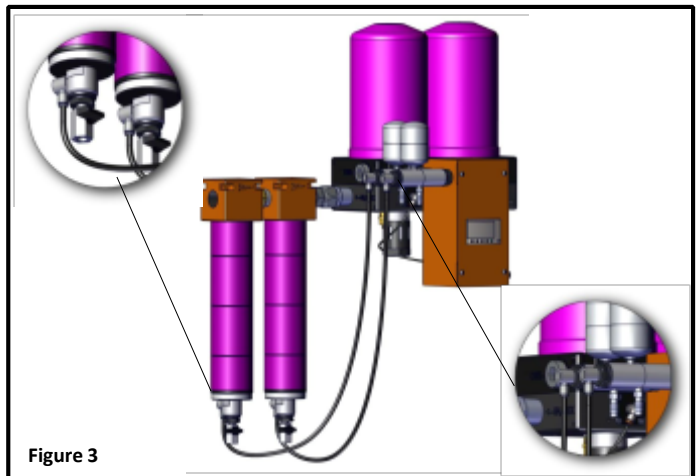


1. Remove all system pressure.
2. The regenerative dryer has three or four sets of filters, one for each bank of towers. Filters can be installed to the dryer providing flow direction from either the right or left. Filters have been labelled for each corresponding dryer bank.
3. Using an adjustable or 1-3/8" wrench, connect the supplied FEMALE JIC fitting to the outlet port of the Tsunami pre-filter assembly. Use appropriate thread sealant. *Figure 2*
4. Using appropriate thread sealant, install the MALE JIC connector to the INLET / AUX port of the dryer per your preferred flow direction. *Figure 2*

## INSTALLATION INSTRUCTIONS - DRYER INSTALLTION cont.

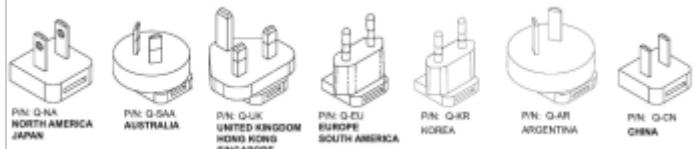


5. Attach the filter assembly to the dryer housing by connecting the MALE and FEMALE JIC fittings. Tighten firmly.
  6. Using an adjustable or 5/8" wrench, plug the remaining open ports with the provided 1" port plugs; use supplied 5/8" hex driver. Use appropriate thread sealant.
  7. Connect 1/4" black tubing from the Moisture Minder® drains to the strainers located on the bottom of each filter housing. *Figure 3*
- \*\* Note: Filter assembly #1 and #2 need to be connected to the drains on the PLC. Filter assembly #3 and #4 (300 & 400 CFM Models) require connection of the 5/32" pilot tubing to the drains; these have been labelled appropriately.



8. Attach 3/8" clear plastic tubing to the barbed fitting on the bottom of the Moisture Minder® drains. Follow all local and state regulations when routing the drain lines and dispose of your condensate appropriately.
9.
  - a. Connect power. Plug in wall pack adaptor to the PLC Control Box. Make sure to snug up the lock nut located on the PLC end of the power supply and plug wall pack into 120v outlet
  - b. For 24v dryers, plug cord barrel into PLC then connect to power source; be certain to properly terminate the positive and negative wires for the correct polarity.

\*\* Note: For international dryer installations, outside of North America, choose the correct prong adaptor for the region prior to plugging into any power outlet. *Reference chart below for your specific prong requirement.*



## MAINTENANCE INSTRUCTIONS - COALESCING ELEMENT

### 6 Month Service - Indicated by PLC display

- Replace Oil Coalescing Filter Elements

Your safety is very important. Read all instructions before beginning any service or installation on your Tsunami Regenerative Dryer. Always wear safety eye protection when working with compressed air products.

Failure to follow maintenance instructions could result in operating failure or product damage. System pressure must be released prior to any installation or service.

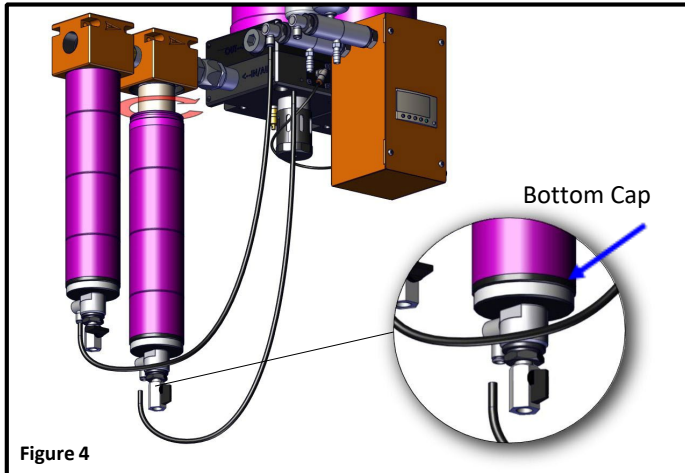


Figure 4

1. Once the system pressure has been released, open either ball valve located on the bottom of the filter housing to verify there is no pressure remaining inside the unit.
2. Disconnect the pilot line located at the bottom of the oil coalescing filter. *Figure 4*
3. Remove filter tube from filter head by rotating tube counter-clockwise.
4. Remove bottom baffle, filter element, top adaptor, and O-ring. *Figure 5*



Figure 5

5. Replace filter element and hardware in reverse order from previous steps. Tighten baffle until filter element can no longer spin freely. **DO NOT OVER TIGHTEN!**
6. Install outer tube by rotating clockwise onto filter head.
7. Connect drain tubing and plug unit back into wall.
8. Slowly pressurize the unit.

## MAINTENANCE INSTRUCTIONS - PISTON LUBRICATION

### 6 Month Service

- Inspect and lubricate pistons and piston bores

Your safety is very important. Read all instructions before beginning any service or installation on your Tsunami Regenerative Dryer. Always wear safety eye protection when working with compressed air products.

Failure to follow maintenance instructions could result in operating failure or product damage. System pressure must be released prior to any installation or service.

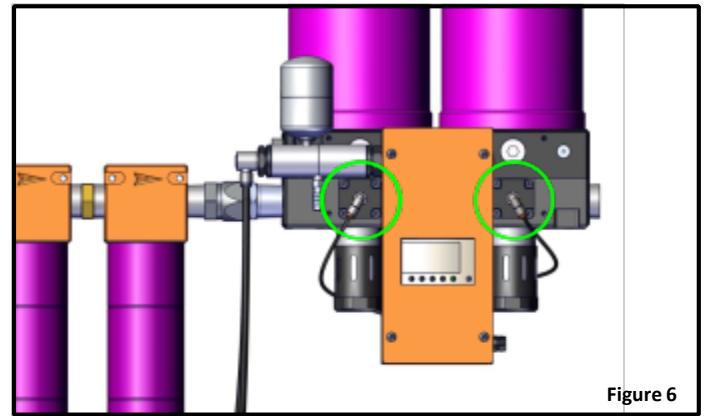


Figure 6

*Note: There is one piston associated with each dryer cannister..*

1. Disconnect tubing from quick-connect fitting located on piston cover. Push in on orange ring. While holding ring in, pull out tubing. *Figure 6*
2. Using a 4mm hex key wrench, remove the four socket head cap screws holding the piston cover in place; remove piston cover for access to piston. *Figure 7*
3. Using a 1/2-13 bolt, remove the piston; be sure to remove the piston spring. *Figure 7*
4. Use the provided grease in the element replacement kit to lubricate the piston bore. Grease thoroughly.
5. Lubricate the three black O-rings located on the piston.

*Note: Avoid lubricating the small, cream colored O-ring at piston tip.*

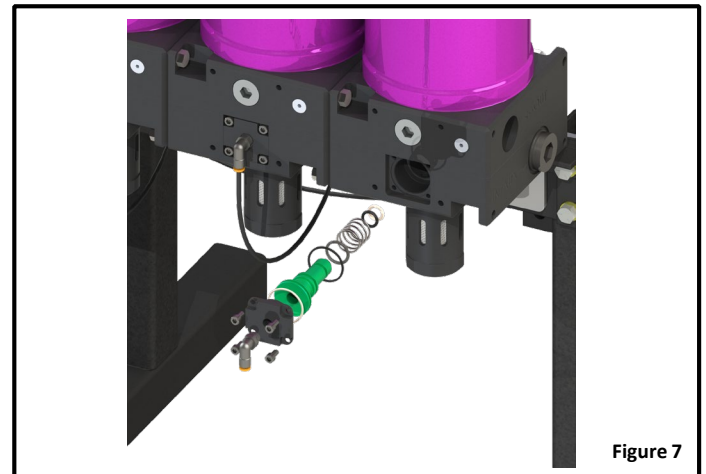


Figure 7

6. Install piston and piston spring.
7. Install the piston cover using the 4 socket head screws.
8. Connect pilot line tubing to quick-connect fitting located on piston cover.
9. Slowly pressurize the unit.



**SERVICE INSTRUCTIONS - DRYER CANISTER REPLACEMENT**

**3 Year Service**

- Replace desiccant towers
- Replace pistons

Your safety is very important. Read all instructions before beginning any service or installation on your Tsunami Regenerative Dryer.

Always wear safety eye protection when working with compressed air products.

Failure to follow maintenance instructions could result in operating failure or product damage. System pressure must be released prior to any installation or service.

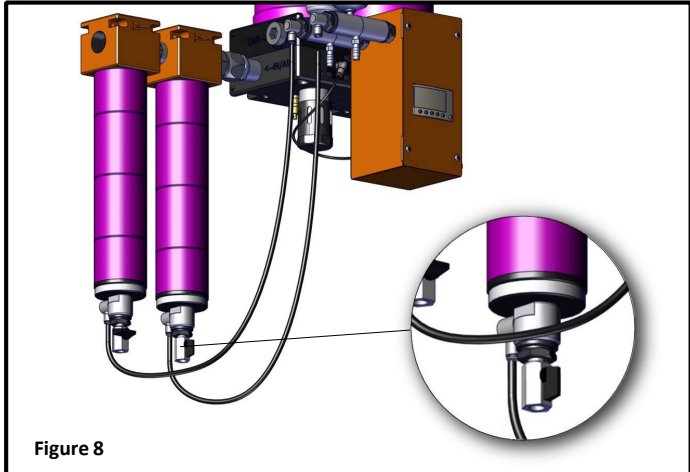


Figure 8

1. Once the system pressure has been released, open either ball valve located on the bottom of the filter housing to verify there is no remaining pressure inside the unit. *Figure 8*
2. Using a strap wrench (if necessary), unscrew each canister from the top of the dryer housing and discard; be sure to discard the large canister gasket also.
3. Remove and discard tower sealing O-ring from dryer mounting stud.

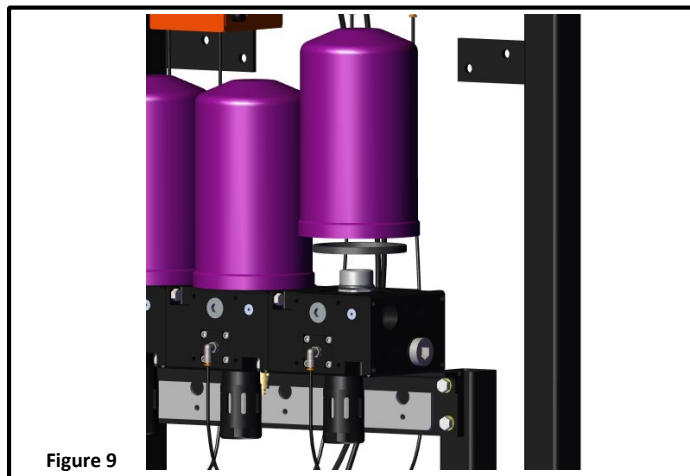


Figure 9

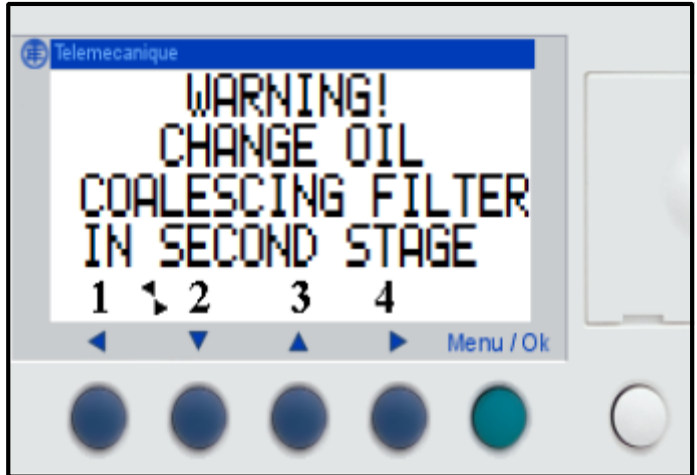
4. Clean top surface of dryer housing and mounting stud.
5. Using the supplied grease, apply light coating to the new O-ring.
6. Install O-ring onto mounting stud. *Figure 9*
7. Apply a light amount of the supplied grease to the new canister gasket.
8. Thread new canister onto the mounting stud. Once gasket contacts adaptor plate, tighten canister ¼ to ½ turn. DO NOT OVERTIGHTEN. Note: if tower gasket drops out of groove during installation, simply line up to groove while screwing tower down.

**SERVICE INSTRUCTIONS - PLC PROGRAMING**

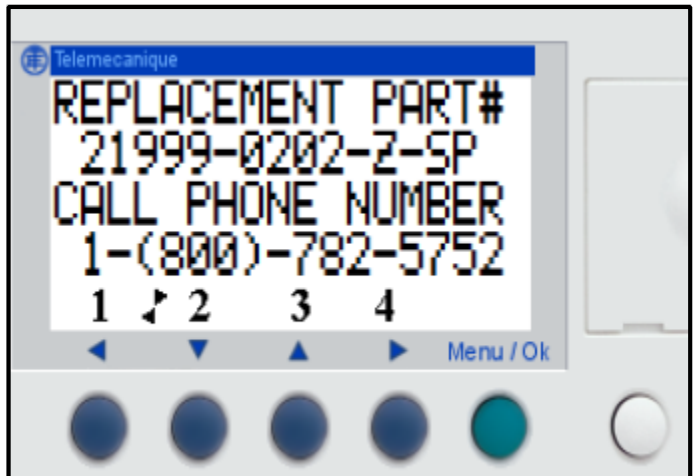
The PLC used on the Tsunami Regenerative Dryer is pre-programmed and will automatically start in run mode once the unit is plugged into your power supply.

The PLC has three basic display screens; RUN, STOP, AND WARNING. If the warning mode is displayed, perform the maintenance required on the oil coalescing pre-filters. Mandatory maintenance on the oil coalescing filters is required every six months. Failure to follow the mandatory maintenance schedule will void warranty.

Note: The following screens will be displayed every six months.

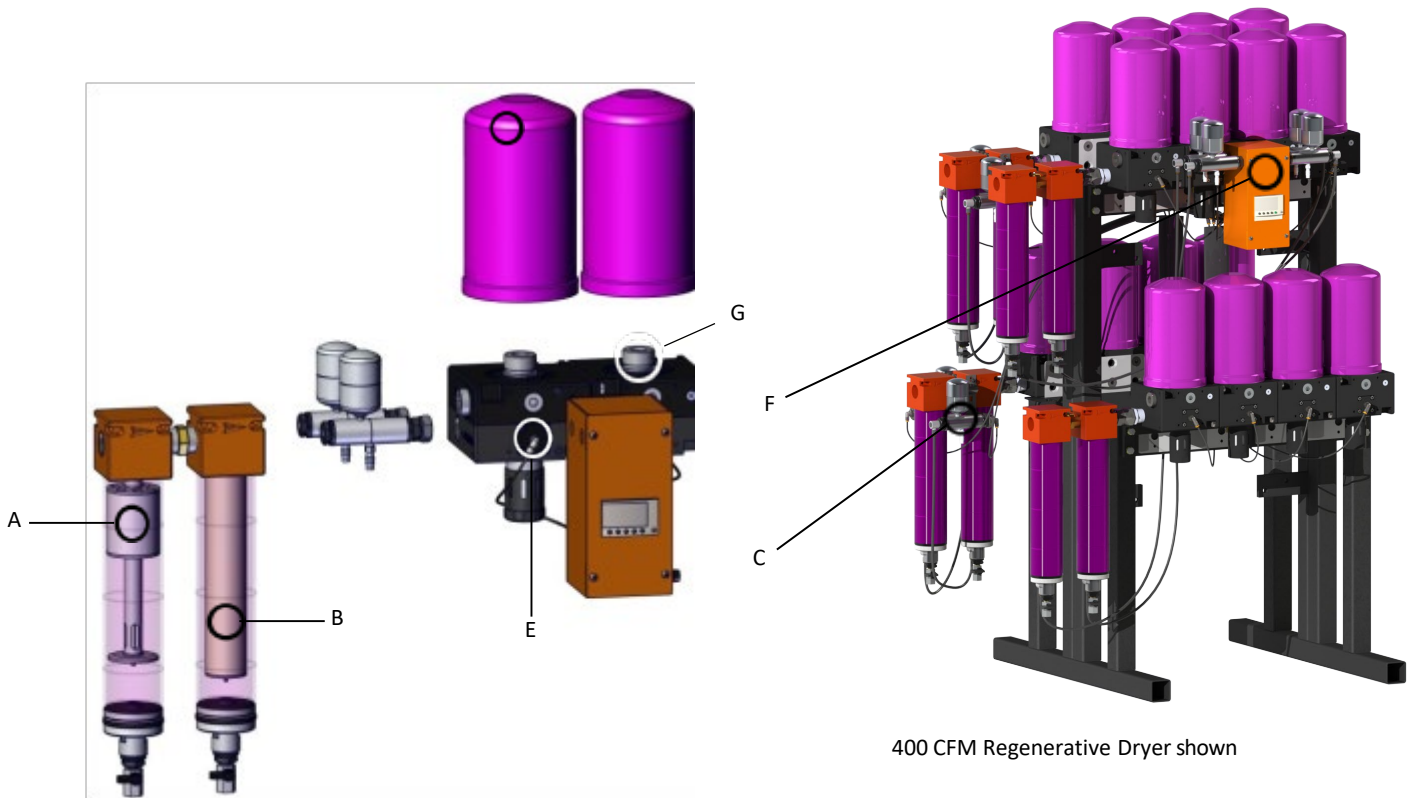


1. Change oil coalescing elements prior to resetting your PLC. For instructions on how to change element, see Maintenance Instructions for coalescing elements on page 3.
2. After the coalescing elements have been changed, press and hold the LEFT and RIGHT arrow keys simultaneously for 10-12 seconds to reset the PLC back to its original screen.



For all other displayed error messages, please contact Customer Service at [1.800.782.5752](tel:1.800.782.5752) or by email at [info@gosuburban.com](mailto:info@gosuburban.com)

TSUNAMI REGENERATIVE DRYER PARTS BREAKDOWN – SERVICE PARTS



400 CFM Regenerative Dryer shown

- A** Water Separator  
Service Kit P/N: 21999-0228
- B** Oil Coalescing Element  
Service Kit P/N: 21999-0202-Z-SP
- C** Reverse Moisture Minder® Drains  
Replacement P/N: 152-0000-R
- D** Dryer Desiccant Canister  
Replacement P/N: 21999-0349
- E** Piston Service Kit  
Replacement P/N: 21999-0707
- F** Programmable Logic Controller (PLC)  
with Drains  
120 VAC: P/N 21999-1139  
24 VDC: P/N 21999-1141  
  
PLC Power Cords  
120 VAC: P/N 21999-0714  
240 VAC: P/N 21999-0714-G (Int'l Dryers)  
24 VDC: P/N 21999-1133
- G** Regeneration Valve Replacement P/N:  
21999-0650-45 (21999-0740)  
21999-0650-60 (21999-0750)  
21999-0650-60 (21999-0755)  
21999-0650-60 (21999-0760)

Service Part Quantity Chart

	A	B	C	D	E	F	G
21999-0740	2	2	4	8	8	1	8
21999-0750	2	2	4	8	8	1	8
21999-0755	3	3	6	12	12	1	12
21999-0760	4	4	8	16	16	1	16

**TROUBLESHOOTING GUIDE - TSUNAMI REGENERATIVE DRYER**

Problem	Probable Cause	Correction
Water / Oil Carryover	<ul style="list-style-type: none"> <li>A. Water Separator not properly draining.</li> <li>B. Moisture Minder® Drain not working</li> <li>C. Coalescing filter element cracked or saturated.</li> <li>D. Desiccant tower saturated or oil carryover has coated the media.</li> <li>E. Over flowing dryer.</li> <li>F. Dryer not sized properly.</li> </ul>	<ul style="list-style-type: none"> <li>a. Drain manually and verify the Moisture Minder® is cycling.</li> <li>b. Replace drain.</li> <li>c. Replace coalescing filter element. See Maintenance Instructions Page 4.</li> <li>d. Replace desiccant canister. See Service Instructions Page 5.</li> <li>e. Reduce the CFM being used downstream of dryer. Contact Distributor.</li> <li>f. Contact your distributor for more info.</li> </ul>
Excess Air Cause Solutions	<ul style="list-style-type: none"> <li>A. Piston stuck.</li> <li>B. Piston tip missing o-ring.</li> <li>C. Tower regeneration valve not seating properly.</li> </ul>	<ul style="list-style-type: none"> <li>a. Grease or replace piston. See Maintenance Instructions Page 4.</li> <li>b. Replace piston.</li> <li>c. Replace tower regeneration valve.</li> </ul>
Dryer Not Cycling at All	<ul style="list-style-type: none"> <li>A. Power cord damaged.</li> <li>B. PLC in stop mode.</li> </ul>	<ul style="list-style-type: none"> <li>a. Replace power cord. Contact your distributor for more information.</li> <li>b. Contact your distributor for more information.</li> </ul>

Tsunami Compressed Air Solutions is a division of



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 (800)782-5752 fax (763) 295-6601