USER MANUAL

C1D1 AIR DRYER INSTALLATION

SET UP | MAINTENANCE | SERVICING

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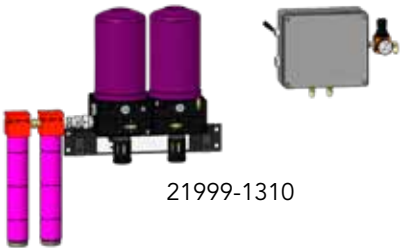
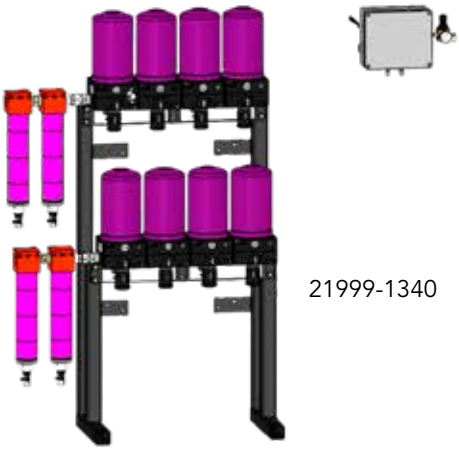


21999-1310

21999-1320

21999-1330



21999-1340

*Larger rail dryers not shown

CONTENTS

TECHNICAL INFORMATION & SPECS

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 Ststem can provide dewpoints down to -80°F and relative low humidity down to .01% RH. All C1D1 dryers come standard with float drains in the filters but can be upgraded to include Moisture Minder Pneumatic Drains to assure proper dispersal of all contaminants captured in the water separators and oil coalescing filters.

PART #	REGENERATION ORIFICE	TOTAL # OF TOWERS	# OF TOWERS DRYING	# OF TOWERS REGENERATING	CYCLE TIME FOR TOWER SHIFTING
21999-1310	.030	2	1	1	2 minutes
21999-1320	.030	4	2	2	2 minutes
21999-1330	.030	6	3	3	2 minutes
21999-1340	.030	8	4	4	2 minutes
21999-1350	.030	12	6	6	2 minutes
21999-1355	.030	18	9	9	2 minutes
21999-1360	.030	24	12	12	2 minutes

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. The C1D1 Pneumatic Controller sends out the pneumatic pilot signals to cycle the towers from their drying function to regeneration mode every 2 minutes.

SPECIFICATIONS

IMPORTANT: The Tsunami C1D1 Regenerative Dryer is intended for indoor installation unless considerations are implemented to protect the controller from weather and environmental contamination concerns to avoid damage to the components exposed to these conditions.

Maximum Inlet Air Temperature: 150°F
Maximum Pressure: 125 psi
Inlet Port Size: - 21999-1310 1/2" NPT
- All Other Models: 1" NPT
Outlet Ports: All Models 1" NPT

DRYER P/N	MAX INLET FLOW
21999-1310	40 CFM
21999-1320	80 CFM
21999-1330	120 CFM
21999-1340	160 CFM
21999-1350	200 CFM
21999-1355	300 CFM
21999-1360	400 CFM

INSTALLATION INSTRUCTIONS

INSTALLATION & SERVICE REQUIREMENTS

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

BYPASS CIRCUIT

For ease of service, it's highly recommended to install a bypass cicuit arount the regenerative dryer. Follow the diagram when installaing a bypass circuit. Verify that system pressure is relieved prior to performing installation.

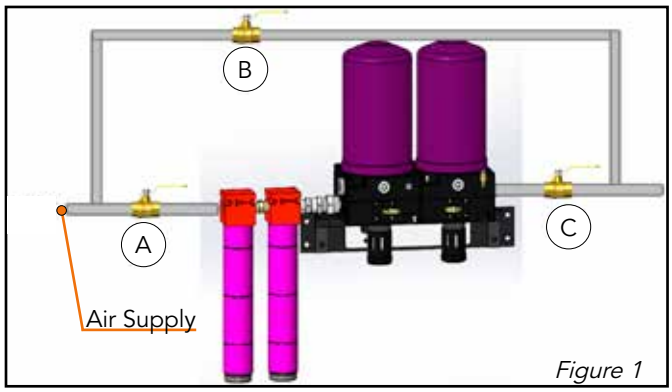


Figure 1

(A) Inlet Ball Valve (B) Bypass Ball Valve (C) Outlet Ball Valve

Using the dryer: Open the inlet (A) and outlet (C) valves and close the bypass (B) ball valve to direct airflow through the regenerative air 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) valve to direct airflow around the dryer. This will allow service or maintenance to be performed without shutting down total compressed air supply. Release system pressure by opening filter drain ball valve.

DRYER INSTALLATION

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

All dryers contained in this manual follow the same installation procedures; not all images are directly associated with the drying technology you have, but the installation process is the same throughout.

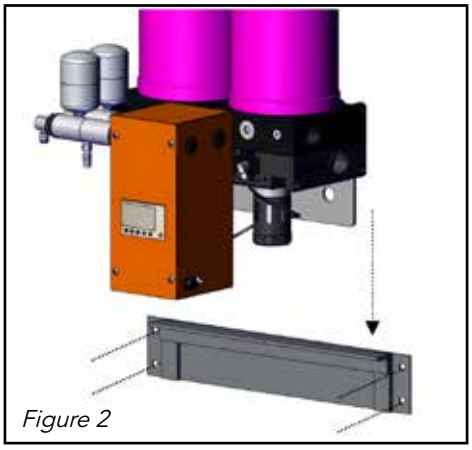


Figure 2

1. Remove all system pressure.
2. Using the appropriate hardware (not included), mount dryer bracket to wall. *Figure 2*
3. 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 2*
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 3*
5. Determine the 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 3*

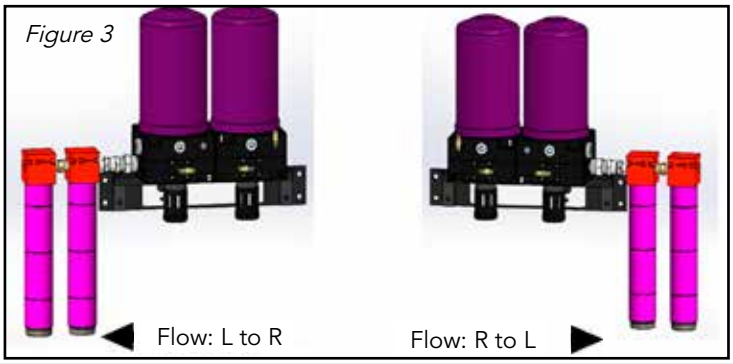


Figure 3

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. Attach the filte assembly to the dryer housing by connecting the MALE and FEMALE JIC fittings. Tighten firmly.

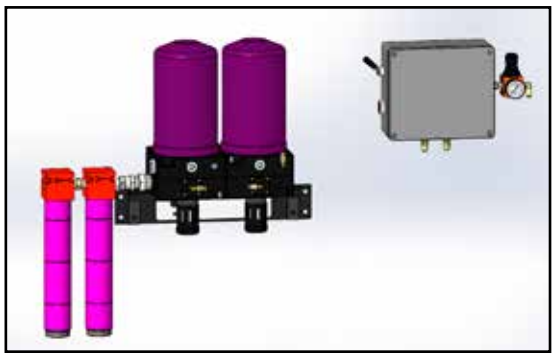
INSTALLATION INSTRUCTIONS

PNEUMATIC CONTROLLER MOUNTING

- It is important to note that the controller MUST be mounted within 10 feet of the dryer; the closer the better.
- The controller MUST be mounted in an upright position.
- The controller MUST be mounted indoors or in an area with inclement weather and environmental protection considerations.
- The controller IS NOT intended or designed for outdoor installation without protection.
- The controller MUST NOT exceed 90 psi inlet pressure on the inlet regulator.
- The controller WILL consume some air volume which must be accounted for in outlet air volume available; 1.5 CFM.
- Follow the instructions provided from the enclosure manufacturer; if none are included, follow these directions.

Controller Requirements:

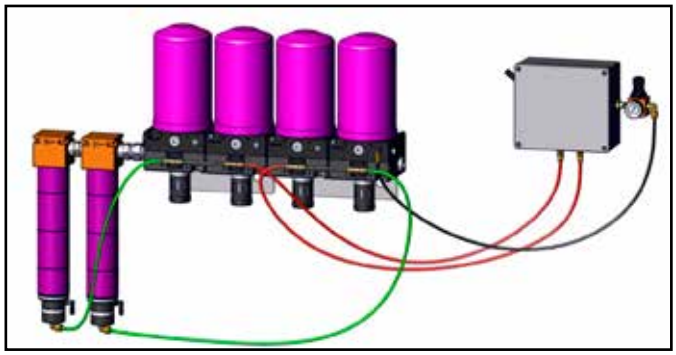
1. Recommended operating psi: 90 psi
2. Supply air MUST be free of water, particulates, and oil.

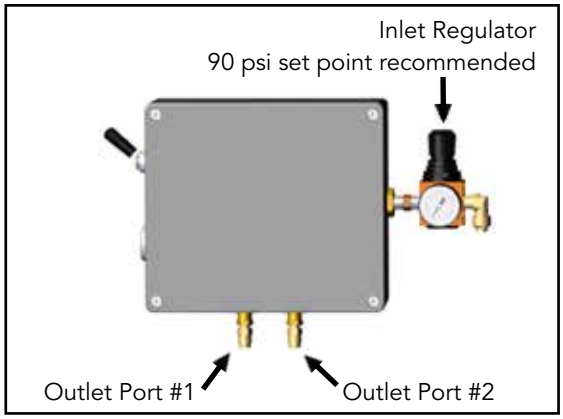


1. Remove all system pressure.
2. Remove enclosure cover.
3. Secure bracket clips with provided hardware; bolts should be dropped into enclosure holes and affixed to brackets.
4. Secure brackets and enclosure to the wall; be certain your mounting hardware and mounting location can support the weight of the controller.
5. Reattach enclosure lid.

TUBING CONNECTIONS FROM CONTROLLER TO THE DRYER

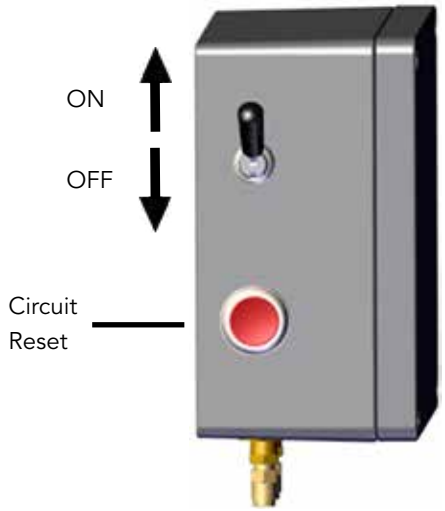
The image below shows the routing for P/N 21999-1320 with pneumatic filter drains. Standard units with float drains do not require the additional tubing to be routed dryer tees to drains.





1. Connecting the controller supply: route the 1/4" tubing from the push connect elbow on the dryer to the air inlet regulator on the pneumatic controller. (BLACK LINE)
2. Connecting the controller pilot lines to the dryer: route 1/4" tubing from each outlet to an open tee on the dryer. It is recommended to connect Outlet Port #1 to the left tee connection on the dryer and Outlet Port #2 to the right tee connection on the dryer. (RED LINES)
   ** Rail mounted dryers will come assembled on a pallet and all tubing will be plumbed except two open tees on the top of the dryer bank.
3. Connecting pneumatic drains on all MM models: route tubing from open tees to push connect elbows of the filter drains (GREEN LINE)
   ** These tees are typically open on each end of the dryer bank as shown.

PNEUMATIC CONTROLLER OPERATION



1. Set the inlet regulator to 90 psi.
2. Flip the switch on the left of the enclosure up to the ON position.
3. The dryer will automatically start cycling the dryer, alternating pilot signals every 120 seconds while air pressure is present in the system.
4. Turn the switch to OFF position to stop the dryer from cycling.

NOTE: The circuit reset button is used to reset the circuit to the beginning of the cycle. This function is not to be utilized under normal operating conditions.

MAINTENANCE - COALESCING ELEMENT

6 Month Service, Every 6 Months

- 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.

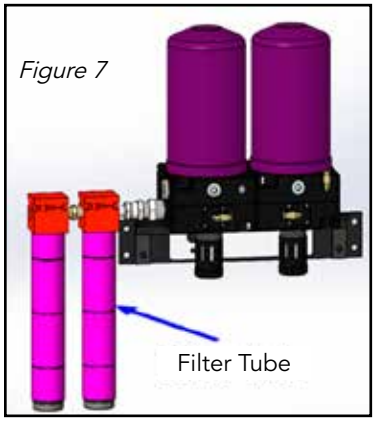


Figure 7

1. Release system pressure in the dryer; while not recommended, utilizing the manual actuation of the safety valve on the bottom of the dryer is one method. *Figure 7*
2. Remove filter tube from the filter head by rotating the tube counterclockwise.
3. Remove bottom baffle, filter element, top adaptor, and O-ring. *Figure 8*

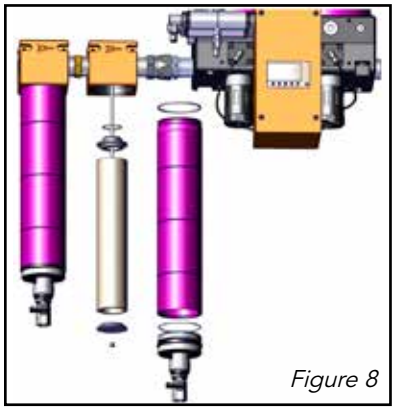


Figure 8

4. 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!
5. Install outer tube by rotating clockwise onto filter head.
6. Slowly pressurize the unit.

MAINTENANCE - PISTON INSPECTION / REPLACEMENT

6 Month Service

- Inspect and lubricate pistons and piston bores

1 Year Service

- Inspect pistons, replace if excessive wear noticeable

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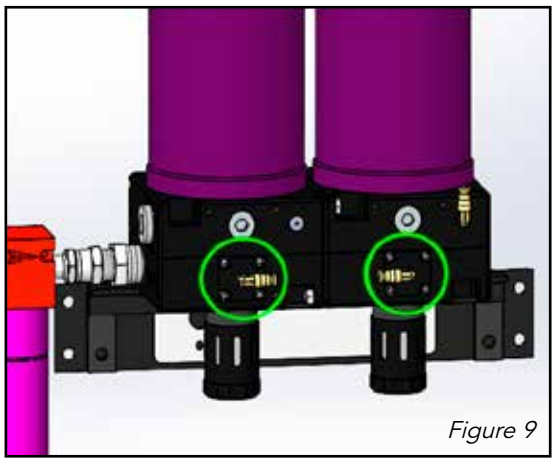

Figure 9

Note: There is one piston associated with each dryer canister.

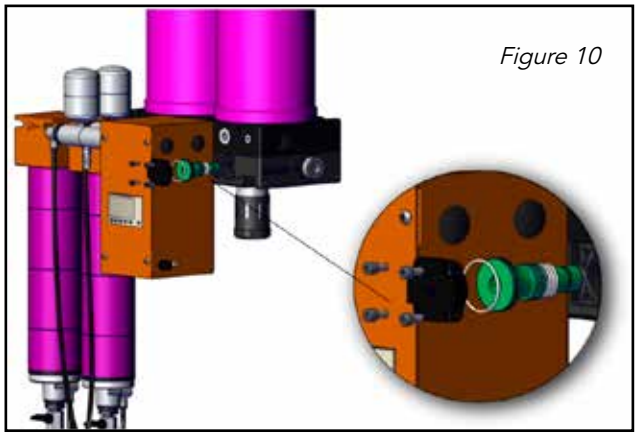

Figure 10

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

1. Release system pressure in the dryer; while not recommended, utilizing the manual actuation of the safety valve on the bottom of the dryer is one method.
2. Disconnect tubing from quick-connect fitting located on piston cover. Push-in orange ring. *Figure 9*
3. Using a 4 mm hex key wrench, remove the four socket head cap screws holding the piston cover in place; remove piston cover for access to piston. *Figure 10*
4. Using a 1/2"-13 bolt, remove the piston; be sure to remove the piston spring. *Figure 10*
5. Use the provided grease in the element replacement kit to lubricate the piston bore. Grease thoroughly.
6. Lubricate the three black O-rings located on the piston.
7. Install piston and piston spring.
8. Install the piston cover using the 4 socket head screws.
9. Connect pilot line tubing to quick-connect fitting located on piston cover.
10. Slowly pressurize the unit.

SERVICE INSTRUCTIONS

DRYER CANISTER REPLACEMENT

3 Year Service

- Replace desiccant canisters
- Replace pistons - see instructions on page 7

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

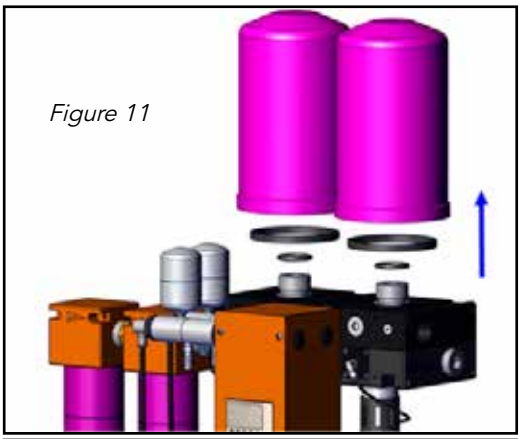


Figure 11

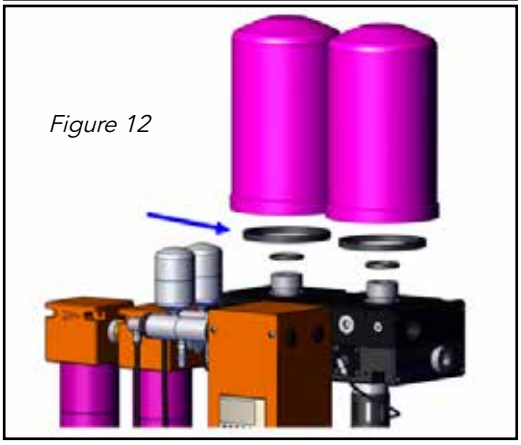
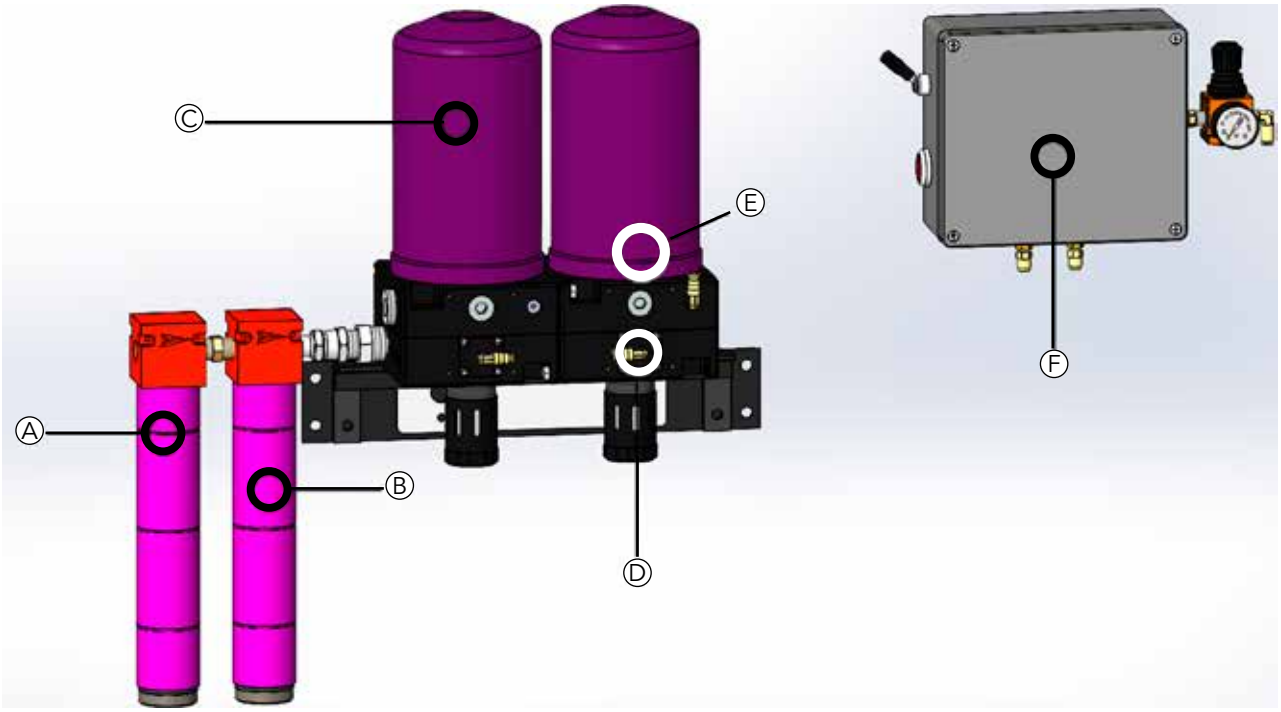


Figure 12

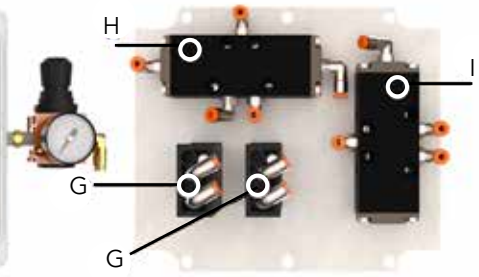
1. Release system pressure in the dryer, open either ball valve located on the bottom of the filter housing to verify there is no pressure remaining inside of the unit. *Figure 7, Page 6*
2. Using a strap wrench (if necessary), unscrew each canister from the top of the filter housing. *Figure 11*
3. Inspect small O-ring on mounting stud, replace if necessary.
4. Discard used canisters and prep for reassembly.
5. Clean top surface of dryer housing and regeneration valve.
6. Using the supplied grease, apply light coating to the small O-ring on the tower mounting stud.
7. Apply a light amount of the supplied grease to the new canister gasket. *Figure 12*
8. Thread new canister onto the regeneration valve. 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.
9. Slowly pressurize the unit.

SERVICE PARTS BREAKDOWN

TSUNAMI REGENERATIVE DRYER SERVICE PARTS



Faceplate - Front



Faceplate - Back

Enclosure - Interior

- **A** Water Separator Service Kit
  21999-1310: P/N: 21999-0227
  All Other Models: P/N: 21999-0228
- **B** Oil Coalescing Element Service Kit
  P/N 21999-0202
- **C** Dryer Desiccant Canister
  P/N: 21999-0309
- **D** Piston Replacement Kit
  P/N: 21999-0309
- **E** Regeneration Valve
  P/N: 21999-0650-30
- **F** Pneumatic Controller
  P/N: 21999-0951
- **G** Pneumatic Timer
  P/N: 51020-30
- **H** Double Air Pilot 5-Way Valve
  P/N: 4A12006T
- **I** Single Pilot 5-Way Valve
  P/N: 4A11006T
- **J** On/Off Toggle Switch
  P/N: 75022-26-21
- **K** Reset Switch
  P/N: 75022-62-21
- **L** Regulator w/ Gauge
  P/N: 21999-0870

TROUBLESHOOTING GUIDE

PROBLEM	CAUSE	SOLUTION
Water / Oil Carryover	A. Water Separator not properly draining	a. Drain manually and verify the Moisture Minder is cycling
	B. Moisture Minder Drain not working	b. Replace drain
	C. Coalescing filter element cracked or saturated	c. Replace coalescing filter element - See Maintenance Instructions, Page 6
	D. Desiccant tower saturated or oil carryover has coated the media	d. Replace desiccant canister - See Service Instructions, Page 8
	E. Over-flowing dryer	e. Reduce the CFM being used downstream of dryer
	F. Dryer not sized properly	f. Contact your distributor for more information on how to upgrade/expand dryer capacity
Excess Air Venting from Muffler(s)	A. Piston is stuck	a. Grease or replace piston - See Maintenance Instructions, Page 7
	B. Piston tip missing O-ring	b. Replace piston
	C. Tower regeneration valve not seating properly	c. Replace tower regeneration valve
Dryer Not Cycling	A. Pneumatic controller not getting air supply	a. Verify the regulator has pressure from the dryer and is set correctly to 90 psi
	B. Pneumatic timer(s) not functioning correctly	b. Replace pneumatic timer(s)
	C. Pneumatic valve(s) not functioning	c. Replace valves
Dryer Dew Point is High	A. Dryer not cycling	a. Check pneumatic controller is sending pilot signals
	B. Excessive airflow through dryer	b. Reduce downstream air consumption and allow dryer to cycle for 24-48 hours without air demand downstream
	C. Incoming air is too hot	c. Install an aftercooler

FOR ANY OTHER PROBLEMS OR CONTINUED ISSUES, PLEASE CONTACT YOUR SALES REPRESENTATIVE

Our team is waiting to answer questions, provide clarification, and schedule a demo!

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COMPRESSED AIR SOLUTIONS