USER MANUAL

TSUNAMI
COMPRESSED AIR SOLUTIONS

HIGH TEMPERATURE REGENERATIVE DRYER INSTALLATION

SET UP | SERVICING | TROUBLESHOOTING

www.tsunami.us.com

21999-1255

21999-1260

21999-1257

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TSUNAMI COMPRESSED AIR SOLUTIONS

For over 35 years, Tsunami Compressed Air Solutions™, has set the industry standard for quality compressed air filtration and drying solutions. While we strive to bring cutting-edge technology to the world of pneumatics, we continue to focus on the core principles that built the foundation of our successful business: quality, value, and world-class customer service.

At Suburban Manufacturing Group, our mission is to build value for our customers by producing quality, innovative, application-based products. Suburban is an engineering driven organization that partners with customers to design and develop unique and specific fluid power products.

Today, we distribute thousands of fluid power solutions worldwide right from our U.S. manufacturing facility located in Monticello, Minnesota.

a division of

SUBURBAN MANUFACTURING GROUP

SCAN TO WATCH VIDEO - HOW TO INSTALL HIGH TEMP DRYER:

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 and eye protection when working with compressed air prooducts. 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 the 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 operational parameters.

DESCRIPTION

Congratulations on the purchase of your Tsunami High Temperature Regenerative Drying System! By adhering to the specifications and maintenance schedule listed on the manual, your air system will provide years of service with minimal maintenance.

Incoming compressed air first enters the aftercooler, where elevated air temperatures are reduced to between 5°F and 20°F above ambient temperature before entering the dryer. Cooling the air upstream allows the dryer to operate more efficiently and significantly improves moisture removal performance.
After exiting the aftercooler, the cooled air enters the 1st stage water separator, where bulk water and particulates are removed down to 10 microns. The air then passes through the 2nd stage oil coalescing filter, where oil aerosols are reduced to .001 ppm and remaining particulates are captured down to .01 micron.
This pretreated air then enters the regenerative dryer, where molecular sieve desiccant adsorbs water vapor from the compressed air stream. Approximately every 2 minutes, the timer sends a signal that shifts an internal piston. This piston shift redirects airflow through the opposing dryer canister(s), allowing continuous drying.
The Tsunami Regenerative Drying System can achieve dew points down to -80°F and relative humidity levels as low as .01% RH. All dryers come standard with automatic drains, ensuring proper discharge of all contaminants collected in both the water separator and oil coalescing filter.

PART #	REGENERATION ORIFICE	# OF TOWERS	# OF TOWERS DRYING	# OF TOWERS REGENERATING
21999-1255	.018	2	1	1
21999-1257	.024	2	1	1
21999-1260	.030	2	1	1

DRYER SPECIFICATIONS

PART #	MAX FLOW	MAX PSI	MAX TEMP	NPT (INLET, OUTLET)	WEIGHT	DIMENSIONS (IN)
21999-1255	15 CFM	175	300°F	3/4", 1/2"	83 lbs	22 x 38 x 13
21999-1257	25 CFM	175	300°F	3/4", 1/2"	88 lbs	27 x 38 x 13
21999-1260	40 CFM	175	300°F	3/4", 1/2"	92 lbs	28 x 38 x 13

BEFORE INSTALL

WHAT'S INCLUDED

- Aftercooler
- Wall brackets
- 4 bolts
- 4 lock washers
- 4 washers
- Mounting template
- Regenerative Desiccant Dryer
- Compressed Air Filters
- Automatic Drains
- Purge Exhaust Mufflers
- Solenoid Valve Timer

WHAT'S NOT INCLUDED

Use appropriate hardware for mounting brackets to wall; **MOUNTING HARDWARE IS NOT INCLUDED.**

- Ensure the selected hardware can support the weight of the Aftercooler.
- Recommended bolt size for mounting brackets: 1/4" or 5/16" diameter.

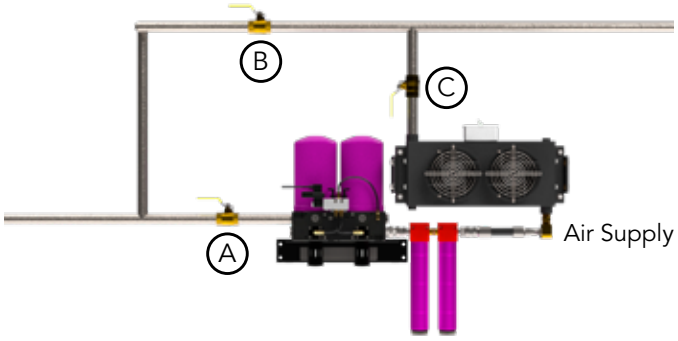
INSTALLATION & SERVICE REQUIREMENTS

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.

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



Using the dryer: Open the inlet (A) and outlet (C) ball valves and close the bypass (B) 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) valve to direct airflow around the dryer. This will allow service or maintenance to be preformed without shutting down total compressed air supply.

ADDITIONAL NOTES

- Ensure the mounting wall can support the weight of the High Temp Regenerative Dryer (83-92 lbs).
- Mark mounting locations on the wall using the supplied template. If necessary, pre-drill holes in wall for the hardware.
- Secure brackets on the wall, with each bracket having two bolts minimum.

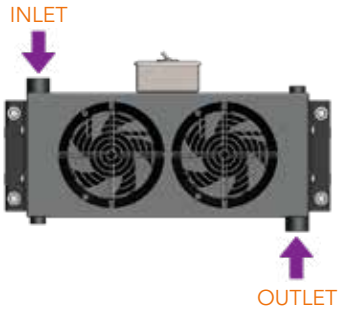
The supplied connecting hose from the Aftercooler to the Dryer is designed specifically for Aftercooler orientation which is parallel to the wall and mounted furthest from the wall. Orientation perpendicular to the wall may require custom plumbing solutions performed by the installer.

INSTALLATION ORIENTATION

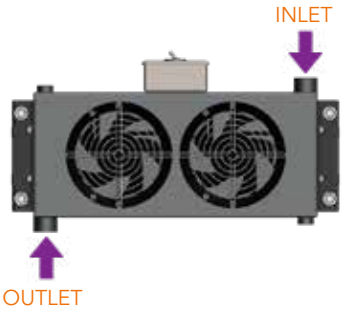
If desired for your Aftercooler installation, the heat exchanger of the Aftercooler can be flipped to change which sides the inlet and outlet ports are located. This will need to be done prior to installation.

SCAN TO WATCH VIDEO - HOW TO FLIP HEAT EXCHANGER:

ORIGINAL ORIENTATION



FLIPPED ORIENTATION



HOW TO FLIP ORIENTATION OF HEAT EXCHANGER

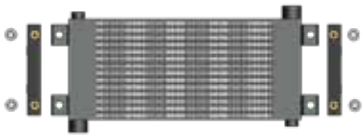
STEP 1: Place Aftercooler on a table, with heat exchanger down.

STEP 2: Remove 4x bolts, using 1/2" wrench.

STEP 3: Remove tubes from the heat exchanger. Set bolts and tubes next to heat exchanger.

STEP 4: Remove shroud and set aside.

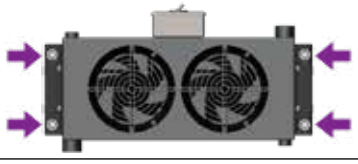
STEP 5: Rotate heat exchanger so inlet and outlet ports flip locations.



STEP 6: Set tubes inside of heat exchanger. Confirm holes for wall brackets are facing towards the outside of the heat exchanger.

STEP 7: Set fan shroud on heat exchanger, aligning edges to heat exchanger.

STEP 8: Secure fan shroud, heat exchanger, and tubes with bolts using 1/2" wrench.



STEP 9: Verify hardware is tight. Proceed with wall mounted installation.

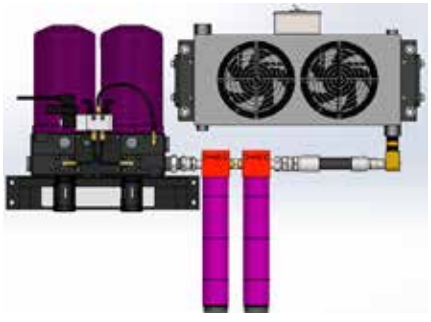
Inlet and outlet locations can be configured depending on air system layout.

Configuration #1: Inlet on top of Aftercooler and outlet on left side of Dryer (shown on right)

Configuration #2: Inlet on top of Aftercooler and outlet on right side of Dryer

a. Outlet on right side of Dryer requires Aftercooler heat exchanger to be disassembled from fan shroud and flipped.

b. **These instructions will explain installation for Configuration #1**. If Configuration #2 is preferred, inlet filters, Dryer plugs, and Dryer outlet will be flipped to the opposite side of the Dryer.



INSTALLATION & SERVICE REQUIREMENTS

Need a visual aid? **Scan the QR code on page 2** to watch the official installation video.

STEP 1: Use mounting template for locations of Aftercooler and Dryer.
- Use appropriate hardware for weight of Aftercooler and Dryer.
- Ensure wall can support the weight of Aftercooler (28lbs) and Dryer (62lbs).

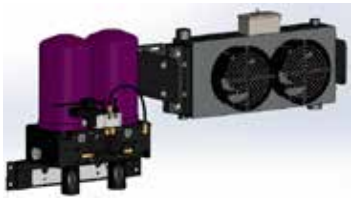
STEP 2: Pre-drill holes for mounting hardware.

STEP 3: Secure Aftercooler wall brackets and Dryer wall brackets to the wall. **Hardware not included.**

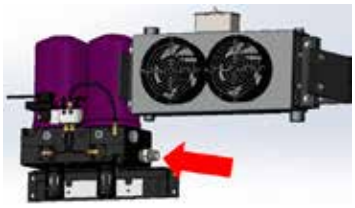
STEP 4: Install Aftercooler using supplied hardware and 1/2" wrench.

Aftercooler must be installed in the holes furthest away from the wall in the parallel to wall configuration if using supplied hose to connect Aftercooler to prefilters and Dryer.

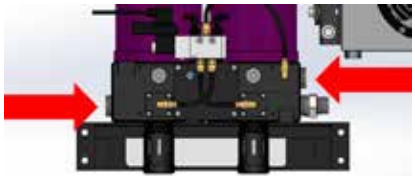
STEP 5: Install Dryer on wall bracket. Slide plate into slot of wall bracket.



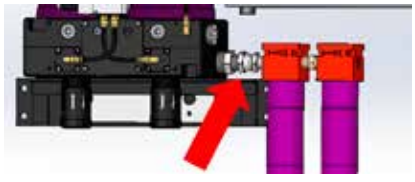
STEP 6: Install adapter fitting to Dryer inlet. Apply thread sealant to 1" side of 1" NPT x 3/4" NPT adapter. Install adapter to inlet of Dryer on the side next to the Aftercooler.



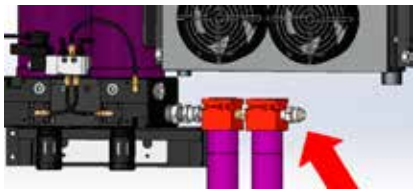
STEP 7: Install plugs to unused inlet and outlet ports of the Dryer. Apply thread sealant to plugs. Use wrench and hex tool included with Dryer. One plug is installed in the outlet on the right side of the Dryer and one plug is installed in the inlet on the left side of the Dryer.



STEP 8: Install Prefilters to Dryer inlet. It is recommended to use two wrenches; one to hold the adapter fitting from the Dryer, one to tighten the filter outlet fitting onto the adapter.

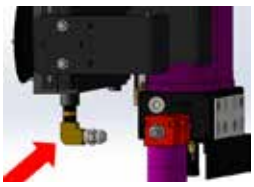


STEP 9: Install 1/2" NPT x 3/4" JIC adpater to filter inlet. Use thread sealant on NPT threads.



STEP 10: Assemble fittings for outlet of Aftercooler. Use thread sealant on NPT threads.

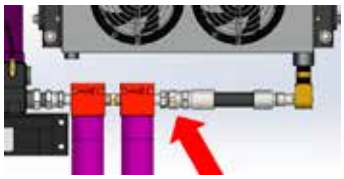
STEP 11: Install fitting assembly to outlet of Aftercooler; 3/4" NPT nipple to Aftercoler outlet. Use thread sealant. JIC Adapter should point towards wall.



STEP 12: Shift Dryer to edge of slot in wall bracket, opposite of Aftercooler, to make room for hose installation.

STEP 13: Install elbow hose end to Aftercooler outlet fitting assembly. Use 2 wrenches. Hold the adapter fitting in place & tighten the hose end.

STEP 14: Align the hose end with the inlet of the Prefilters. Slide Dryer towards hose and begin tightening hose end by hand. Once hand tight, use two wrenches to secure fit.



STEP 15: Verify all fittings have been installed with thread sealant and are tight.

STEP 16: Pressurize unit and check for leaks.

STEP 17: Plug in Dryer and Aftercooler. Turn on switch for Aftercooler.

SERVICING & PARTS

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.

COALESCING ELEMENT SERVICING

6 Month Service

- **Oil Coalescing Filter Element Replacement**

1. Unplug unit from power source.
2. Release all system pressure (verify by pulling the safety valve).
3. Hold filter head with one hand. With the other hand, turn outer tube counter-clockwise to unscrew and remove it. *Figure 4*
4. Remove: bottom baffle, filter element, top adaptor, and O-ring. *Figure 5*
5. To put it back together, put the parts from step 4 back in the **reverse order**.
6. Turn bottom baffle until filter element can no longer spin freely. DO NOT OVER TIGHTEN! Reinstall outer tube by rotating clockwise onto filter head.
7. Slowly pressurize the unit.

Figure 4

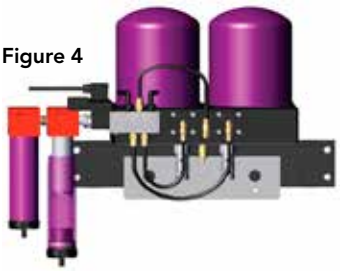
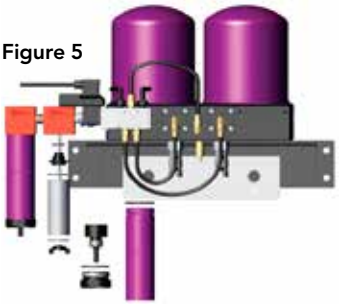


Figure 5



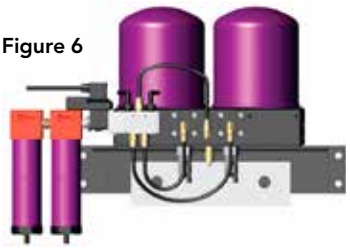
PISTON LUBRICATION SERVICING

6 Month Service

- **Inspect and lubricate pistons and piston bores**

1. Unplug unit from power source.
2. Release all system pressure (verify by pulling the safety valve).
3. Disconnect 1/4"tubing from quick-connect fitting located on piston cover. Push in on brass ring. While holding ring in, pull out tubing. *Figure 6*
4. Using a 4mm hex key wrench, remove the four socket head cap screws holding the piston cover in place. *Figure 7*
5. Remove piston cover for access to piston.
6. Using a finger or a 1/2"-13 bolt, remove the piston from the piston bore. Be sure to remove the piston spring. *Figure 7*
7. Using O-ring grease, lubricate the piston bore. Grease throroughly.
8. Lubricate the top three O-rings located on the piston.
   Note: It is not recommended to grease the front O-ring (small diameter).
9. Place spring back onto piston.
10. Carefully insert piston back into piston bore. Press until piston is fully seated.
11. Replace piston cover.
12. Using a 4mm hex key wrench, replace the four socket head cap screws holding the piston cover in place. Tighten until snug, then add 1/4 turn. *Figure 7*
13. Reconnect tubing to quick-connect fitting located on piston cover. *Figure 6*
14. Slowly pressurize the unit.

Figure 6



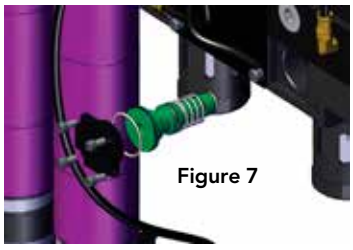


Figure 7

REGENERATIVE DRYER SERVICING

3 Year Service

- **Replace desiccant towers**
- **Replace pistons**

1. Unplug unit from power source.
2. Release all system pressure (verify by pulling the safety valve).
3. Using a strap wrench (if necessary), unscrew each canister from the top of the dryer housing. Discard spent canister.
4. Remove and discard small O-ring from dryer mounting stud.
5. Remove and discard large gasket from canister housing.
6. Clean top surface of dryer housing and mounting stud.
7. Using the supplied grease, apply light coating to the new O-ring. Install O-ring onto mounting stud. *Figure 8*
8. Apply a light amount of the supplied grease to both sides of the new canister gasket. *Figure 8*
9. Thread new canister onto the mounting stud. Once gasket contacts caister plate, tighten canister.
   **Pure-5: 1 turn
   **Pure-7, 10: 1/4 turn to 1/2 turn

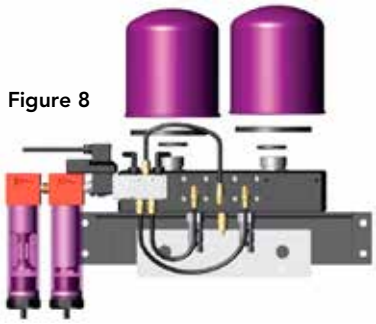
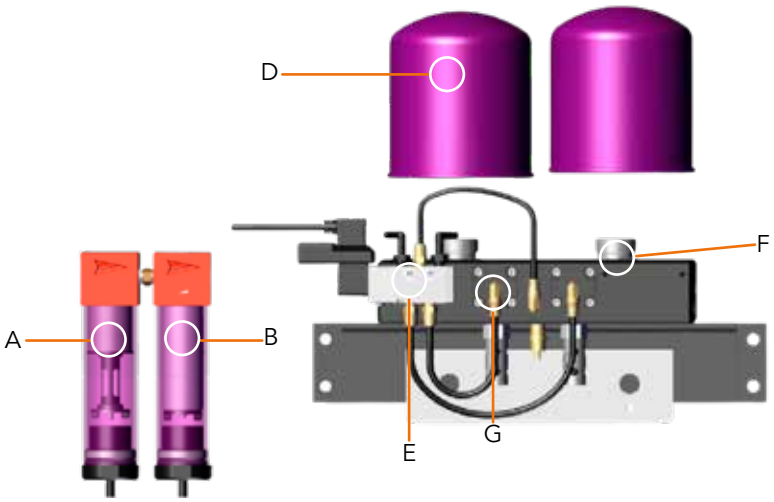


Figure 8

SERVICE PARTS



Model Shown P/N:
21999-1255

A Water Separator Service Kit

DRYER P/N	SERVICE KIT P/N
21999-1255	21999-0846
21999-1257	21999-0227
21999-1260	21999-0227

B Oil Coalescing Service Kit

DRYER P/N	SERVICE KIT P/N
21999-1255	21999-0394
21999-1257	21999-0202
21999-1260	21999-0202

C Automatic Float Drain Replacement

DRYER P/N	SERVICE KIT P/N
21999-1255	21999-0868
21999-1257	21999-0868
21999-1260	21999-0868

D Dryer Desiccant Canister Replacement

DRYER P/N	DRAIN P/N
21999-1255	21999-0976
21999-1257	21999-0349
21999-1260	21999-0349

E Solenoid Timer Valve Replacement

DRYER P/N	VALVE P/N
21999-1255	21999-0941
21999-1257	21999-0941
21999-1260	21999-0941

F Tower Stud/Regeneration Valve

DRYER P/N	DRAIN P/N
21999-1255	21999-1108-12
21999-1257	21999-0650-24
21999-1260	21999-0650-30

G Piston Replacement Kit

DRYER P/N	PISTON P/N
21999-1255	21999-0707
21999-1257	21999-0707
21999-1260	21999-0707

TROUBLESHOOTING

PROBLEM & SOLUTION TABLES

REGENERATIVE AIR DRYER

PROBLEM	CAUSE	SOLUTION
Water / Oil Carryover	A. Water Separator not properly draining.	A. Remove and verify automatic drains are functioning.
	B. Coalescing filter element cracked or saturated.	B. Replace coalescing filter element. See maintenance instructions page 8.
	C. Desiccant tower saturated or oil carry-over has gotten on the media.	C. Replace desiccant canister. See service instructions page 9.
	D. Overflowing dryer.	D. Reduce the CFM being used downstream of dryer. Contact distributor.
	E. Dryer not sized properly.	E. Contact your distributor for more information.
Excess Air Purging Out Muffler	A. Piston stuck.	A. Grease or replace piston. See maintenance instructions page 8.
Dryer Not Cycling	A. Power cord damaged.	A. Replace power cord. Contact your distributor for more information.
	B. Solenoid timer valve not properly working.	B. Replace solenoid timer valve.

AFTERCOOLER

PROBLEM	CAUSE	SOLUTION
Outlet air is too hot	A. Fans are not on	A. Turn on fans and check outlet for power
	B. Over maximum flow rate	B. Reduce flow rate through Aftercooler
	C. Inlet temperature over maximum	C. Reduce inlet air temperature
Insufficient air pressure downstream	A. Blockage in Aftercooler	A. Depressurize and check inlet/outlet ports for blockage

TSUNAMI

COMPRESSED AIR SOLUTIONS

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