Superior Filtration Products. Pure & Simple.
Tsunami Compressed Air Solutions™, a division of Suburban Manufacturing, offers a complete line of products engineered to give customers dry, clean air for their specific application demands. Our systems use the latest technology to provide the highest quality compressed air available.

"Engineering Value through Quality and Innovation"
# PRODUCT GUIDE

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# TECHNICAL INFORMATION

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</tbody>
</table>

# APPLICATION GUIDE

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</tr>
</tbody>
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TSUNAMI REGENERATIVE DRYERS

The Tsunami Regenerative Dryer uses the latest technology to provide your application with the cleanest, driest compressed air available. Our systems are complete packages and include Tsunami water separators, oil coalescing filters and Moisture Minder® automatic drains to assure proper draining of water and oils. Tsunami Regenerative Dryers are available in a variety of sizes and configurations to fit your specific application requirements. For more information on Regenerative Dryers, see Technical Information - Air Drying on pgs. 16-17.

- 3 Year Warranty on all Complete Drying Systems
- Low Dew Points - down to –80°F
- Low Relative Humidity - down to .01% RH
- Expandable Drying Technology - Increase dryer capacity without buying a new system
- Easy, Low Cost Maintenance - Simply replace oil coalescing filter element every six months
- Dual Inlet/Outlet Ports - Allows for multiple installation configurations
- For Maximum Performance size dryer at 100% duty cycle flow rate

Dryer flow rates based on 100° F inlet air @ 175 psi inlet pressure. Lower inlet pressure and higher temperatures affect the performance and quality of the downstream air. Standard orifice configuration - See pg. 22

COMPLETE DRYING SYSTEMS

Mounted Units
Wall Mounted units come complete with pre-filters, PLC, mounting rail and automatic drains.

<table>
<thead>
<tr>
<th>Size</th>
<th>Max Flow @ 100% Duty Cycle</th>
<th>Max Flow @ 70% Duty Cycle</th>
<th>Std Orifice Ø</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Inlet/Outlet NPT</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>10Hp</td>
<td>28 CFM</td>
<td>40 CFM</td>
<td>.030</td>
<td>31”</td>
<td>23”</td>
<td>12”</td>
<td>1”</td>
<td>21999-0710</td>
</tr>
<tr>
<td>15Hp</td>
<td>42 CFM</td>
<td>60 CFM</td>
<td>.045</td>
<td>31”</td>
<td>30”</td>
<td>12”</td>
<td>1”</td>
<td>21999-0715</td>
</tr>
<tr>
<td>20Hp</td>
<td>56 CFM</td>
<td>80 CFM</td>
<td>.030</td>
<td>31”</td>
<td>35”</td>
<td>12”</td>
<td>1”</td>
<td>21999-0720</td>
</tr>
<tr>
<td>30Hp</td>
<td>84 CFM</td>
<td>120 CFM</td>
<td>.060</td>
<td>31”</td>
<td>35”</td>
<td>12”</td>
<td>1”</td>
<td>21999-0730</td>
</tr>
</tbody>
</table>

Global units sent outside North America have special power adaptors: part number should be followed by –G

Ultra Drying System
Fully assembled solutions complete with pre-filters, PLC, automatic drains and outlet regulator. Ultra Systems come mounted on an 80 gallon tank for storing ultra dry air.

<table>
<thead>
<tr>
<th>Size</th>
<th>Max Flow @ 100% Duty Cycle</th>
<th>Max Flow @ 70% Duty Cycle</th>
<th>Std Orifice Ø</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Inlet/Outlet NPT</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>10Hp</td>
<td>28 CFM</td>
<td>40 CFM</td>
<td>.030</td>
<td>71”</td>
<td>51”</td>
<td>28”</td>
<td>1”</td>
<td>21999-0810</td>
</tr>
<tr>
<td>15Hp</td>
<td>42 CFM</td>
<td>60 CFM</td>
<td>.045</td>
<td>71”</td>
<td>51”</td>
<td>28”</td>
<td>1”</td>
<td>21999-0815</td>
</tr>
<tr>
<td>20Hp</td>
<td>56 CFM</td>
<td>80 CFM</td>
<td>.030</td>
<td>71”</td>
<td>51”</td>
<td>28”</td>
<td>1”</td>
<td>21999-0820</td>
</tr>
<tr>
<td>30Hp</td>
<td>84 CFM</td>
<td>120 CFM</td>
<td>.060</td>
<td>71”</td>
<td>51”</td>
<td>28”</td>
<td>1”</td>
<td>21999-0830</td>
</tr>
</tbody>
</table>

UNIQUE APPLICATION SOLUTIONS

Portable Regenerative Dryer
Up to 20 minutes of clean, dry air between manual regeneration cycles.
- Oil coalescing pre-filter with regulator
- Provides dry air where you need it
- 35’ Tsunami Ultra-flo Hose
- All contained in one case with wheels

<table>
<thead>
<tr>
<th>Max Flow @ 100% Duty Cycle</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 CFM</td>
<td>21999-0788</td>
</tr>
</tbody>
</table>

Single Tower Regenerative Dryer
Up to 20 Minutes of clean, dry air between manual regeneration cycles.
- 2-Stage Tsunami Filtration
- Economical solution for low air demand
- Manual control valve may be mounted up to 50’ away

<table>
<thead>
<tr>
<th>Max Flow @ 100% Duty Cycle</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 CFM</td>
<td>21999-0722</td>
</tr>
</tbody>
</table>
MEMBRANE DRYING SYSTEM

Easy installation, low maintenance drying system

- First-stage water separator with float drain
- Second-stage oil coalescing filter with float drain
- Third-stage membrane dryer unit
- High flow piston regulator downstream

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Membrane Drying System</td>
<td>21999-0357</td>
</tr>
<tr>
<td>Membrane Dryer Core</td>
<td>21999-0355</td>
</tr>
</tbody>
</table>

Specifications

- 3.3 CFM sweep air @ 100PSI
- 175psi maximum inlet pressure
- 60psi maximum outlet pressure
- 100° F maximum inlet air temp
- ½” NPT ports

DO NOT EXCEED

- 20 CFM max inlet flow
- 16.7 CFM max outlet flow

CUSTOM CONFIGURED DRYING SOLUTIONS

Suburban Manufacturing has engineered customizable Tsunami dryers to supply dry, clean air for specific application requirements. Systems can be configured by tower drying capacity, orifice size, and control type to assure that the proper solution is provided. Pre-filtration sold separately.

Configurable options include:

A) Select number of regenerative drying manifolds
B) Choose control type
C) Choose orifice size
D) Determine tower capacity requirements & drop-in mounting rail option

Base Dryer

<table>
<thead>
<tr>
<th>Tower</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

Control Type

- 12v Air Valve
- 120v Air Valve
- PLC
- Global PLC

Orifice Size

<table>
<thead>
<tr>
<th>Orifice Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>.015</td>
</tr>
<tr>
<td>.030</td>
</tr>
<tr>
<td>.045</td>
</tr>
<tr>
<td>.060</td>
</tr>
<tr>
<td>.080</td>
</tr>
<tr>
<td>.090</td>
</tr>
</tbody>
</table>

Tower / Mounting Option

- Standard Capacity
- High Capacity
- Wall Bracket

For more information on how to appropriately size and order your application specific dryer, see Technical Information - Configuring Custom Dryers on pgs. 22-23.

Rail-Mounted Regenerative Dryers 50Hp - 150Hp

High capacity rail-mounted dryers have been configured to achieve dew points from –20°F to –80°F, depending on duty cycle and flow rates. Pre-filtration sold separately.

<table>
<thead>
<tr>
<th>Size</th>
<th>Max Flow @ 100% Duty Cycle</th>
<th>Max Flow @ 70% Duty Cycle</th>
<th>Orifice Ø</th>
<th>Height</th>
<th>Width</th>
<th>Depth</th>
<th>Inlet/Outlet NPT</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>50Hp</td>
<td>140 CFM</td>
<td>200 CFM</td>
<td>.080</td>
<td>66&quot;</td>
<td>23&quot;</td>
<td>14&quot;</td>
<td>2&quot;</td>
<td>21999-0750</td>
</tr>
<tr>
<td>75Hp</td>
<td>210 CFM</td>
<td>300 CFM</td>
<td>.080</td>
<td>66&quot;</td>
<td>90&quot;</td>
<td>14&quot;</td>
<td>2&quot;</td>
<td>21999-0755</td>
</tr>
<tr>
<td>100Hp</td>
<td>280 CFM</td>
<td>400 CFM</td>
<td>.080</td>
<td>66&quot;</td>
<td>90&quot;</td>
<td>14&quot;</td>
<td>2&quot;</td>
<td>21999-0760</td>
</tr>
<tr>
<td>125Hp</td>
<td>350 CFM</td>
<td>500 CFM</td>
<td>.080</td>
<td>66&quot;</td>
<td>135&quot;</td>
<td>14&quot;</td>
<td>2&quot;</td>
<td>21999-0765</td>
</tr>
<tr>
<td>150Hp</td>
<td>420 CFM</td>
<td>600 CFM</td>
<td>.080</td>
<td>66&quot;</td>
<td>135&quot;</td>
<td>14&quot;</td>
<td>2&quot;</td>
<td>21999-0770</td>
</tr>
</tbody>
</table>
TSUNAMI FILTRATION

The most important part of filtration is on the inside. Today, many manufacturers use die cast housings which collect chemicals from your compressed air and will eventually oxidize and create a white rust inside your filtration. What separates Tsunami from other manufacturers is that our filters are machined from 6061 aircraft aluminum. They are anodized for maximum corrosion resistance, inside and out. This prevents rust and corrosion from forming inside the filter housings unlike filters manufactured out of die cast materials. To further understand the technology behind our filtration, see *Technical Information - Filtration* on pgs. 18-19.

**Specifications - Filters are available from 20 SCFM to 240 SCFM. Multiple draining options available.**

Mounting brackets sold separately. See page 12.

<table>
<thead>
<tr>
<th>Filter Series</th>
<th>Maximum Flow Rate</th>
<th>Maximum Pressure</th>
<th>Maximum Temperature</th>
<th>Port Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Series</td>
<td>20 SCFM</td>
<td>250 PSI</td>
<td>175°F</td>
<td>1/4&quot; NPT</td>
</tr>
<tr>
<td>50 Series</td>
<td>50 SCFM</td>
<td>250 PSI</td>
<td>175°F</td>
<td>1/2&quot; NPT</td>
</tr>
<tr>
<td>120 Series</td>
<td>120 SCFM</td>
<td>250 PSI</td>
<td>175°F</td>
<td>1&quot; NPT</td>
</tr>
<tr>
<td>200 Series</td>
<td>200 SCFM</td>
<td>250 PSI</td>
<td>175°F</td>
<td>1-1/2&quot; NPT</td>
</tr>
<tr>
<td>240 Series</td>
<td>240 SCFM</td>
<td>250 PSI</td>
<td>175°F</td>
<td>1-1/4 NPT</td>
</tr>
</tbody>
</table>

FILTER DRAIN OPTIONS

Tsunami water separators and oil coalescing filters are designed to accommodate multiple drain types for specific application needs. Draining options include float drains, our patented Moisture Minder Electronic Drain and our patent pending pneumatic drain. To best select the appropriate drain type for your application, see *Drains* on pg. 10.

WATER SEPARATORS

The Tsunami water separator removes water, up to 1 quart per minute, and filters particulate down to 10 micron.

<table>
<thead>
<tr>
<th>Drain Type</th>
<th>20 SCFM</th>
<th>50 SCFM</th>
<th>120 SCFM</th>
<th>200 SCFM</th>
<th>240 SCFM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Float Drain</td>
<td>21999-0390</td>
<td>21999-0131</td>
<td>21999-0082</td>
<td>N/A</td>
<td>21999-0288</td>
</tr>
<tr>
<td>Electronic Drain</td>
<td>N/A</td>
<td>21999-0131-ED</td>
<td>21999-0082-ED</td>
<td>21999-0859-ED</td>
<td>21999-0288-ED</td>
</tr>
<tr>
<td>Pneumatic Drain</td>
<td>21999-0390-MM</td>
<td>21999-0131-MM</td>
<td>21999-0082-MM</td>
<td>21999-0850-MM</td>
<td>N/A</td>
</tr>
</tbody>
</table>

OIL COALESCING FILTERS

The Tsunami oil coalescing filter removes oil aerosols down to .001 ppm and traps particulates down to .01 micron.

<table>
<thead>
<tr>
<th>Drain Type</th>
<th>20 SCFM</th>
<th>50 SCFM</th>
<th>120 SCFM</th>
<th>200 SCFM</th>
<th>240 SCFM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Float Drain</td>
<td>21999-0390-Z-FD</td>
<td>21999-0131-Z-FD</td>
<td>21999-0082-Z-FD</td>
<td>N/A</td>
<td>21999-0289</td>
</tr>
<tr>
<td>Electronic Drain</td>
<td>N/A</td>
<td>21999-0131-Z-ED</td>
<td>21999-0082-Z-ED</td>
<td>21999-0850-Z-ED</td>
<td>N/A</td>
</tr>
<tr>
<td>Pneumatic Drain</td>
<td>21999-0390-Z-MM</td>
<td>21999-0131-Z-MM</td>
<td>21999-0082-Z-MM</td>
<td>21999-0850-Z-MM</td>
<td>N/A</td>
</tr>
</tbody>
</table>

ACTIVATED CARBON FILTERS

The Tsunami activated carbon filter removes oil vapor down to .003 ppm, removing odor and taste from the air.

<table>
<thead>
<tr>
<th>Drain Type</th>
<th>20 SCFM</th>
<th>50 SCFM</th>
<th>120 SCFM</th>
<th>200 SCFM</th>
<th>240 SCFM</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>21999-0390-AC</td>
<td>21999-0131-AC</td>
<td>21999-0082-AC</td>
<td>N/A</td>
<td>21999-0289-AC</td>
</tr>
</tbody>
</table>
TSUNAMI FILTRATION PACKAGES

Tsunami filtration packages come standard with float drains where water separators and oil coalescing filters are used. Mounting brackets included with filtration packages.

<table>
<thead>
<tr>
<th>Package #</th>
<th>Package #1</th>
<th>Package #2</th>
<th>Package #3</th>
<th>Package #4</th>
<th>Package #5</th>
<th>Package #6</th>
<th>Package #7</th>
<th>Package #8</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Series</td>
<td>21999-0416</td>
<td>21999-0415</td>
<td>21999-0424</td>
<td>21999-0677</td>
<td>21999-0421</td>
<td>21999-0678</td>
<td>N/A</td>
<td>21999-0414</td>
</tr>
<tr>
<td>50 Series</td>
<td>21999-0247</td>
<td>21999-0249</td>
<td>21999-0251</td>
<td>21999-0253</td>
<td>21999-0255</td>
<td>21999-0257</td>
<td>21999-0494</td>
<td>21999-0679</td>
</tr>
<tr>
<td>120 Series</td>
<td>21999-0248</td>
<td>21999-0250</td>
<td>21999-0252</td>
<td>21999-0254</td>
<td>21999-0256</td>
<td>21999-0258</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Package #1
Includes:
- water separator
- lubricator

Typical Applications
- Air Tools
- Tire Changers
- Automotive Lifts
- Robotics
- Machine Tool

Package #2
Includes:
- water separator regulator
- lubricator

Typical Applications
- Air Tools
- Tire Changers
- Automotive Lifts
- Robotics
- Machine Tool

Package #3
Includes:
- water separator
- oil coalescing filter

Typical Applications
- Air Tools
- Tire Changers
- Automotive Lifts
- Robotics
- Machine Tool

Package #4
Includes:
- water separator
- oil coalescing filter
- regulator

Typical Applications
- Industrial Painting
- Plasma Cutting
- Nitrogen Generators
- Critical Automation

Package #5
Includes:
- water separator
- oil coalescing filter
- activated carbon filter

Typical Applications
- Laser Cutters
- Automotive Painting
- Inspection Rooms
- Precision Equipment
- Medical
- Air Bearings

Package #6
Includes:
- water separator
- oil coalescing filter
- activated carbon filter
- regulator

Typical Applications
- Laser Cutters
- Automotive Painting
- Inspection Rooms
- Precision Equipment
- Medical
- Air Bearings

Package #7
Includes:
- oil coalescing filter
- regulator

Typical Applications
- Laser
- Air Tools
- Tire Changers
- Automotive Lifts
- Robotics
- Machine Tool

Package #8
Includes:
- water separator
- regulator

Typical Applications
- Laser
- Air Tools
- Tire Changers
- Automotive Lifts
- Robotics
- Medical
- Air Bearings

www.tsunami.us.com
GRADE “D” BREATHING AIR SYSTEMS

ENGINEERED TO OSHA REQUIREMENTS FOR GRADE “D” AIR. OSHA Regulations (Standard-29 CFR) Respiratory Protection–1910.134
**Use only with electric driven compressors** ! Follow all your state and local OSHA rules and regulations !!

Please allow 2-3 week lead time on all breathing air products.

---

Single User Breathable Air System
- 2-stage Tsunami filtration - 50 Series
- Mounting bracket
- 50ft Tsunami Ultra-flo hose
- Belt unit
  - Dual regulators
  - Carbon filter
  - CO monitor
  - 5’ whip hose

Hood and calibration kit sold separately

<table>
<thead>
<tr>
<th>Port Size NPT</th>
<th>Max Flow</th>
<th>Max Pressure</th>
<th>Setting Range</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2”</td>
<td>25 CFM</td>
<td>250 PSI</td>
<td>0-120 PSI</td>
<td>21999-0791</td>
</tr>
<tr>
<td>1/4”</td>
<td></td>
<td>Belt Unit Only</td>
<td></td>
<td>21999-0790</td>
</tr>
</tbody>
</table>

---

1-4 Person Breathable Air Panel
- 3-stage Tsunami filtration
- Digital readout
- Automatic float drains
- Less faulty readings with continuous carbon monoxide monitoring
- Calibration made easy with Autocal®

Hoses, hoods, and calibration kit sold separately

<table>
<thead>
<tr>
<th>Port Size NPT</th>
<th>Max Flow</th>
<th>Max Pressure</th>
<th>Setting Range</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2”</td>
<td>50 CFM</td>
<td>250 PSI</td>
<td>-</td>
<td>21999-0265</td>
</tr>
</tbody>
</table>

---

**BREATHING AIR ACCESSORIES**

**Single User Breathable Air Accessories**
- Replacement Belt: SW-0946
- Replacement Spring: LC 125N 01 S

**GFG Breathing Air Accessories**
- Calibration Kit for CO Monitor: 21999-0264
- CO Monitor for Tsunami Breathable Air Panel: 21999-0263
- CO Monitor for Tsunami Single User Systems: RAM1418-017
- 110/120v Wall Pack Adaptor Replacement: 21999-0287

**SAS Breathing Air Accessories**
- Activated Carbon Filter Replacement Element: 21999-0399
- Gen-Nex Supplied Air Hood Assembly: 21999-0396
- Peel Off Lens Covers for Gen-Nex Hoods - 10 pk: 21999-0417
- Replacement Hoods w/o Headband or Hose - 3pk: 21999-0400
- 50’ Hose for Breathing Air: 21999-0397

**Bullard Breathing Air Accessories**
- 25’ Starter Hose & Quick Connectors (mandatory): 21999-0276
- 25’ Extension Hose & Quick Connectors: 21999-0277
- 50’ Extension Hose & Quick Connectors: 21999-0278
- 100’ Extension Hose & Quick Connectors: 21999-0279
- Full Hood Set (includes regulator and belt): 21999-0275
- Mylar Lens Covers - Full Hood - (25pk): 21999-0273
- Cooling Tube w/ Belt - Hood Only: 21999-0274
- Replacement Hood w/o Head Band - (10pk): 21999-0281
- Full Mask Set - Spectrum Series w/ belt & regulator: 21999-0285
- Mylar Lens Covers - Full Mask - (25pk): 21999-0272
- Replacement Lens for Full Mask: 21999-0282
- Cooling Vest - Medium - Large: 21999-0286
- Cooling Vest - X-Large - XX-Large: 21999-0287
- Cooling Tube for Vest: 21999-0280
PRECISION EQUIPMENT FILTRATION SYSTEMS

The number one cause of precision equipment downtime and repair is water, oil, oil vapor and particulates from compressed air systems. Fouling of air lines and air bearings can cause breakdowns and expensive repairs. Tsunami filtration systems are designed to maximize performance and eliminate downtime on your CMM, air gauging, and other air driven precision equipment.

- Maintains accuracy of machine
- Removes water, oil, & oil aerosols down to .01 micron
- Removes oil vapor down to .003 ppm
- Eliminates expensive repairs
- Easy installation
- Single adjustable auto drain ejects oil & water
- Micro-flex element capacity 3X larger that our competitor’s elements (Efficiency: Dry 99.949 Saturated 99.920)
- Grade “D” instrument air meets HEPA air quality standards
- 100% duty cycle

INDUSTRIAL GRADE UTILITY STATION

- Maintains accuracy of machine
- Removes water, oil, & oil aerosols down to .01 micron
- Removes oil vapor down to .003 ppm
- Eliminates expensive repairs
- Easy installation

<table>
<thead>
<tr>
<th>Package</th>
<th>Max Flow</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>20 CFM</td>
<td>20 Series Precision Equipment Filter System w/ Regulator</td>
<td>21999-0457</td>
</tr>
<tr>
<td>B</td>
<td>50 CFM</td>
<td>50 Series Precision Equipment Filter System</td>
<td>480-5039</td>
</tr>
<tr>
<td>C</td>
<td>50 CFM</td>
<td>50 Series Precision Equipment Filter System w/ Regulator</td>
<td>21999-0291</td>
</tr>
<tr>
<td>D</td>
<td>20 CFM</td>
<td>Precision Equipment Filter/Dryer System w/ Membrane Dryer &amp; Regulator</td>
<td>21999-0524</td>
</tr>
</tbody>
</table>

A 20 Series w/ regulator  B 50 Series  C 50 Series w/ regulator  D Membrane Dryer System

INDUSTRIAL GRADE UTILITY STATION

For use on CNC machining centers, machine tools, assembly stations, and automotive lifts. Eliminate the problems found in commercial grade boxes.

- Easy to install
- Electrical outlets equipped with 20 amp industrial GFI protection
- Electrical outlets located above air service to prevent moisture damage & tangling
- Air service through 2 outlets: one non-lubricated and one lubricated for pneumatic tools
- Powder coated finish for durability and long life
- Hooks to hang and organize hoses and cords

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial Grade Utility Station - 110/120v AC 20 amp</td>
<td>21999-0081</td>
</tr>
</tbody>
</table>

FILTERS - REGULATORS - LUBRICATORS

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Regulator w/ Gauge - 1/4” NPT - 25 SCFM</td>
<td>21999-0870</td>
</tr>
<tr>
<td>Pressure Regulator w/ Gauge - 1/2” NPT - 89 SCFM</td>
<td>21999-0871</td>
</tr>
<tr>
<td>Pressure Regulator w/ Gauge - 1” NPT - 160 SCFM</td>
<td>21999-0872</td>
</tr>
<tr>
<td>Special Regulator Kit for Air Amplifiers</td>
<td>21999-0680</td>
</tr>
<tr>
<td>Pressure Gage - (0-200 PSI) - 1/8” back mount - 1/4” NPT &amp; 1/2” NPT Regulators</td>
<td>4338228</td>
</tr>
<tr>
<td>Pressure Gage - (0-200 PSI) - 1/4” back mount - 1” Regulator</td>
<td>G201420B</td>
</tr>
<tr>
<td>Lubricator - 1/4” NPT - 25 SCFM</td>
<td>21999-0298</td>
</tr>
<tr>
<td>Lubricator - 1/2” NPT - 153 SCFM</td>
<td>21999-0195</td>
</tr>
<tr>
<td>Lubricator - 1” NPT - 565 SCFM</td>
<td>21999-0196</td>
</tr>
<tr>
<td>Filter-Regulator Combo 1/4”, 25 SCFM (F/R)</td>
<td>21999-0190</td>
</tr>
<tr>
<td>Filter-Regulator Combo 1/2”, 88 SCFM (F/R)</td>
<td>21999-0192</td>
</tr>
<tr>
<td>Filter-Regulator Combo 1/4” port, 25 SCFM (F/R/L)</td>
<td>8825701</td>
</tr>
</tbody>
</table>
PNEUMATIC DRAINS

Compressed air systems can become severely contaminated when the simple duty of draining compressor tanks and filters gets neglected. Failure to complete this task will eventually lead to catastrophic results. The solution… A complete line of Moisture Minder® automatic drains. Moisture Minder® drains are available in standalone or filter-mounted units. For a better understanding of how our pneumatic drains operate, see Technical Information - Drains on pg. 20.

Features
• Automatic; only requires intermittent pilot signal
• No electricity required
• Seals made of Teflon® and Viton®
• Standard valve rated at 300psi
• Operates without pressure drop in air system

Benefits
• No manual adjustments required
• Saves money - no additional wiring
• Long life - can be used with synthetic oils
• Compatible with most systems

<table>
<thead>
<tr>
<th>Drain</th>
<th>Rating</th>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30 Hp</td>
<td>Moisture Minder I Automatic Drain - External Stainless Steel Reservoir</td>
<td>152-0000</td>
</tr>
<tr>
<td>B</td>
<td>5 Hp</td>
<td>Moisture Minder II Automatic Drain - Internal Reservoir</td>
<td>142-0000</td>
</tr>
<tr>
<td>C</td>
<td>20 CFM</td>
<td>20 Series - Moisture Minder Filter Drain Assembly (OEM / high volume only)</td>
<td>21999-0792</td>
</tr>
<tr>
<td>C</td>
<td>50 CFM</td>
<td>50 Series - Moisture Minder Filter Drain Assembly</td>
<td>21999-0795</td>
</tr>
<tr>
<td>C</td>
<td>120/240 CFM</td>
<td>120 Series - Moisture Minder Filter Drain Assembly</td>
<td>21999-0805</td>
</tr>
</tbody>
</table>

ELECTRONIC DRAINS

Moisture Minder® Electronic Drain Valve

The Moisture Minder® EDV incorporates a self-cleaning feature where a fixed strainer screen removes contaminants before reaching the valve orifice. See Technical Information - Electronic Drains on pg. 21.

• Dual size inlet - 1/4” I.D. - 1/2” O.D.
• Large 4mm internal orifice
• Internal armature and shaft made from stainless steel
• Solid state adjustable timer with test button
• Ball valve for self-cleaning strainer or manual drain

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDV Timed Solenoid w/ Strainer - 120/120v</td>
<td>21999-0177</td>
</tr>
<tr>
<td>EDV Timed Solenoid w/ Strainer - 220/230v</td>
<td>21999-0177-230</td>
</tr>
<tr>
<td>EDV Timed Solenoid w/ Strainer - 24v DC (minimum order quantity 100pc on 24v)</td>
<td>21999-0177-24</td>
</tr>
</tbody>
</table>

Tsunami Drain Minder II Controller

The Drain Minder II provides the air pilot signal to multiple pneumatic drains for maximizing the performance and efficiency of your compressed air system. See Technical Information - Electronic Drains on pg. 21.

• Adjustable from 30 sec to 120 min
• Drains can be located 100’ from controller
• Drains can be installed in explosion proof rooms because of air pilot signal
• Increases standard drain capacity to expel more condensate

Description | Part Number |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drain Minder II Controller</td>
<td>144-0001</td>
</tr>
</tbody>
</table>
ULTRA-FLO SPRAY HOSE

Defend your work in the booth and take your air system into the future with Tsunami Ultra-flo technology.

- Engineered for high temperature exposure
- Proprietary internal coating prevents contamination
- Advanced engineering allows hose to lay flat - not prone to coil
- Extremely lightweight
- Built in anti static strip reduces static build up
- 3/8" ID

Anti-static strip
- Reduces or eliminates static build up
- Great solution for all tool applications

<table>
<thead>
<tr>
<th>Ultra-flo Spray Hose - sold individually</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>5’ Ultra-flo Spray Hose - work line replacement</td>
<td>21999-0495</td>
</tr>
<tr>
<td>35’ Ultra-flo Hose</td>
<td>21999-0449</td>
</tr>
<tr>
<td>50’ Ultra-flo Hose</td>
<td>21999-0450</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ultra-flo Spray Hose - sold in packs</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>15’ Ultra-flo Spray Hose - 10 pack</td>
<td>21999-0836</td>
</tr>
<tr>
<td>25’ Ultra-flo Spray Hose - 10 pack</td>
<td>21999-0837</td>
</tr>
<tr>
<td>35’ Ultra-flo Spray Hose - 10 pack</td>
<td>21999-0783</td>
</tr>
<tr>
<td>50’ Ultra-flo Spray Hose - 5 pack</td>
<td>21999-0784</td>
</tr>
</tbody>
</table>

COUPLERS - PLUGS - BLOW GUNS

Safety push button couplings
- Venting-action eliminates hose-whip
- Leak-free design reduces energy cost
- One-hand connection is easy to operate

<table>
<thead>
<tr>
<th>Couplers - sold in 10 packs</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Flow Hose Coupler - 1/4” NPT Female Thread</td>
<td>21999-0831</td>
</tr>
<tr>
<td>High Flow Hose Coupler - 1/4” NPT Male Thread</td>
<td>21999-0832</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Plugs - sold in 10 packs</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Flow Hose Plug - 1/4” NPT Female Thread</td>
<td>21999-0833</td>
</tr>
<tr>
<td>High Flow Hose Plug - 1/4” NPT Male Thread</td>
<td>21999-0834</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blow Gun - sold in 10 packs</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nylon Tip OSHA Compliant Blow Gun</td>
<td>21999-0835</td>
</tr>
</tbody>
</table>

AIR MONITORING EQUIPMENT

Tsunami CFM Test Kit
- Measure the CFM usage at any air drop
- Easy to use; simply plug into air connection
- Complete with regulator and CFM flow meter
- Easy to read graph

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFM Test Kit</td>
<td>21999-0447</td>
</tr>
</tbody>
</table>

Tsunami Air Survey Kit
- Measure humidity, dew point and air temperature
- Easy to use; simply plug into air connection
- Complete with sensor filtration
- Easy to read LCD screen

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Survey Kit</td>
<td>21999-0440</td>
</tr>
</tbody>
</table>
### Replacement Parts & Accessories

#### Filtration Replacement Parts & Accessories

**Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Drain Tube Kit - 10 pack</td>
</tr>
<tr>
<td>H</td>
<td>Mounting Bracket - 20 Series</td>
</tr>
<tr>
<td>H</td>
<td>Mounting Bracket - 50 &amp; 120 Series</td>
</tr>
</tbody>
</table>

#### Outer Tube Replacement

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>20 Series</td>
</tr>
<tr>
<td>I</td>
<td>50 Series</td>
</tr>
<tr>
<td>I</td>
<td>120 / 240 Series</td>
</tr>
</tbody>
</table>

#### Bottom Cap Replacement

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
<td>20 Series</td>
</tr>
<tr>
<td>J</td>
<td>50 Series</td>
</tr>
<tr>
<td>J</td>
<td>120 / 240 Series</td>
</tr>
</tbody>
</table>

#### Heater Wraps

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Heater Wrap - 20 Series &amp; 50 Series Tsunami Filters - 110/120v AC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 20 Series &amp; 50 Series Tsunami Filters - 12v DC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 20 Series &amp; 50 Series Tsunami Filters - 24v DC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 120 Series Tsunami Filters - 110/120v AC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 120 Series Tsunami Filters - 12v DC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Band - 120 Series Tsunami Filters - 24v DC</td>
</tr>
</tbody>
</table>

#### Drain Replacement Parts & Accessories

**Pneumatic and Electronic Drain Parts and Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Deluxe Drain Installation Kit - best solution for installing pneumatic drains</td>
</tr>
<tr>
<td>M</td>
<td>Basic Drain Installation Kit - best solution for installing EDV drain</td>
</tr>
<tr>
<td>N</td>
<td>Strainer w/ 50 Mesh Screen</td>
</tr>
</tbody>
</table>

---

**Replacement Parts & Accessories**

**REGENERATIVE DRYER REPLACEMENT PARTS**

<table>
<thead>
<tr>
<th>Tsunami Regenerative Dryer Maintenance Parts</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A  Piston Rebuild Kit for Tsunami Regenerative Dryer</td>
<td>21999-0707</td>
</tr>
<tr>
<td>A  Tower Replacement - standard capacity - purple</td>
<td>21999-0349</td>
</tr>
<tr>
<td>A  Tower Replacement - standard capacity - black</td>
<td>21999-0349-BK</td>
</tr>
<tr>
<td>A  Tower Replacement - high capacity - black</td>
<td>4055X001</td>
</tr>
<tr>
<td>B  PLC for 10Hp Tsunami Regenerative Dryer</td>
<td>21999-0672-10</td>
</tr>
<tr>
<td>B  PLC for 15Hp Tsunami Regenerative Dryer</td>
<td>21999-0672-15</td>
</tr>
<tr>
<td>B  PLC for 20Hp Tsunami Regenerative Dryer</td>
<td>21999-0672-20</td>
</tr>
<tr>
<td>B  PLC for 30Hp Tsunami Regenerative Dryer</td>
<td>21999-0672-30</td>
</tr>
<tr>
<td>D  Custom Dryer PLC - no drains</td>
<td>21999-0772-BK</td>
</tr>
<tr>
<td>E  Mobile Dryer PLC</td>
<td>21999-0718</td>
</tr>
<tr>
<td>E  PLC Power Supply for Tsunami Regenerative Dryer</td>
<td>21999-0714</td>
</tr>
<tr>
<td>E  PLC Power Supply for Global Tsunami Regenerative Dryer</td>
<td>21999-0714-G</td>
</tr>
<tr>
<td>F  Tower Mounting Stud / Dryer Regenerative Valve (.015)</td>
<td>21999-0651-15</td>
</tr>
<tr>
<td>F  Tower Mounting Stud / Dryer Regenerative Valve (.030)</td>
<td>21999-0651-30</td>
</tr>
<tr>
<td>F  Tower Mounting Stud / Dryer Regenerative Valve (.045)</td>
<td>21999-0651-45</td>
</tr>
<tr>
<td>F  Tower Mounting Stud / Dryer Regenerative Valve (.060)</td>
<td>21999-0651-60</td>
</tr>
<tr>
<td>F  Tower Mounting Stud / Dryer Regenerative Valve (.080)</td>
<td>21999-0651-80</td>
</tr>
</tbody>
</table>

---

**Filtration Replacement Parts & Accessories**

**Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Drain Tube Kit - 10 pack</td>
</tr>
<tr>
<td>H</td>
<td>Mounting Bracket - 20 Series</td>
</tr>
<tr>
<td>H</td>
<td>Mounting Bracket - 50 &amp; 120 Series</td>
</tr>
</tbody>
</table>

---

**Outer Tube Replacement**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>20 Series</td>
</tr>
<tr>
<td>I</td>
<td>50 Series</td>
</tr>
<tr>
<td>I</td>
<td>120 / 240 Series</td>
</tr>
</tbody>
</table>

---

**Bottom Cap Replacement**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J</td>
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</tr>
<tr>
<td>J</td>
<td>50 Series</td>
</tr>
<tr>
<td>J</td>
<td>120 / 240 Series</td>
</tr>
</tbody>
</table>

---

**Heater Wraps**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Heater Wrap - 20 Series &amp; 50 Series Tsunami Filters - 110/120v AC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 20 Series &amp; 50 Series Tsunami Filters - 12v DC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 20 Series &amp; 50 Series Tsunami Filters - 24v DC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 120 Series Tsunami Filters - 110/120v AC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Wrap - 120 Series Tsunami Filters - 12v DC</td>
</tr>
<tr>
<td>K</td>
<td>Heater Band - 120 Series Tsunami Filters - 24v DC</td>
</tr>
</tbody>
</table>

---

**DRAIN REPLACEMENT PARTS & ACCESSORIES**

**Pneumatic and Electronic Drain Parts and Accessories**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Deluxe Drain Installation Kit - best solution for installing pneumatic drains</td>
</tr>
<tr>
<td>M</td>
<td>Basic Drain Installation Kit - best solution for installing EDV drain</td>
</tr>
<tr>
<td>N</td>
<td>Strainer w/ 50 Mesh Screen</td>
</tr>
</tbody>
</table>
## FILTRATION SERVICE KITS - REPLACEMENT PACKS - MAINTENANCE KITS

<table>
<thead>
<tr>
<th>Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water Separator Service Kits - Includes SS element, inner tube, baffle, adaptor, O-rings and lock nut</strong></td>
<td></td>
</tr>
<tr>
<td>A 20 Series Water Separator Service Kit</td>
<td>21999-0846</td>
</tr>
<tr>
<td>B 50 Series Water Separator Service Kit</td>
<td>21999-0227</td>
</tr>
<tr>
<td>C 120 Series Water Separator Service Kit (240 Series requires 2 kits)</td>
<td>21999-0228</td>
</tr>
<tr>
<td><strong>Oil Coalescing Filter Service Kits - Includes coalescing element, baffle, adaptor, O-rings and lock nut</strong></td>
<td></td>
</tr>
<tr>
<td>D 20 Series Oil Coalescing Filter Service Kit</td>
<td>21999-0394</td>
</tr>
<tr>
<td>E 50/120/240 Series Oil Coalescing Filter Service Kit (240 Series requires 2 kits)</td>
<td>21999-0202</td>
</tr>
<tr>
<td>F Dryer Oil Coalescing Filter Service Kit</td>
<td>21999-0202-Z-SP</td>
</tr>
<tr>
<td><strong>Activated Carbon Filter Service Kits - Includes carbon element, baffle, adaptor, O-rings and lock nut</strong></td>
<td></td>
</tr>
<tr>
<td>G 20 Series Activated Carbon Filter Service Kit</td>
<td>21999-0395</td>
</tr>
<tr>
<td>H 50/120/240 Series Activated Carbon Filter Service Kit (240 Series requires 2 kits)</td>
<td>21999-0200</td>
</tr>
<tr>
<td><strong>Float Drain Replacement Pack - All Series - 20, 50, 120, 240</strong></td>
<td></td>
</tr>
<tr>
<td>I Float Drain Pack - kit includes 3 floats with bottom cap O-rings</td>
<td>21999-0868</td>
</tr>
<tr>
<td><strong>Oil Coalescing Replacement Element Packs - 5 elements each</strong></td>
<td></td>
</tr>
<tr>
<td>J 20 Series Oil Coalescing Filter Element</td>
<td>21999-0823</td>
</tr>
<tr>
<td>K 50/120/240 Oil Coalescing Filter Element (240 Series requires 2 kits)</td>
<td>21999-0825</td>
</tr>
<tr>
<td>L Dryer Oil Coalescing Filter Element</td>
<td>21999-0828</td>
</tr>
<tr>
<td><strong>Activated Carbon Replacement Elements Packs - 5 elements each</strong></td>
<td></td>
</tr>
<tr>
<td>M 20 Series Activated Carbon Filter Element</td>
<td>21999-0824</td>
</tr>
<tr>
<td>N 50/120/240 Activated Carbon Filter Element (240 Series requires 2 kits)</td>
<td>21999-0826</td>
</tr>
<tr>
<td><strong>PRECISION EQUIPMENT MAINTENANCE KITS &amp; ACCESSORIES</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Annual Maintenance Kits - contains (2) six month replacement element services along with O-rings</strong></td>
<td></td>
</tr>
<tr>
<td>O 20 Series</td>
<td>21999-0818</td>
</tr>
<tr>
<td>P 50 Series / Membrane Dryer</td>
<td>21999-0819</td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td></td>
</tr>
<tr>
<td>Q Condensation Collection Kit</td>
<td>21999-0821</td>
</tr>
</tbody>
</table>

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PARTS AND ACCESSORIES - 13
THE #1 RULE OF COMPRESSED AIR

For every 20 degrees that compressed air is cooled, the air loses 50% of its ability to hold moisture in vapor form (humidity) and it is dropped out as a liquid.

Air Drying and Air Filtration…. There is a Difference!

Air Drying - The removal of water vapor (humidity) from compressed air, typically accomplished in one of four ways.

- Desiccant (molecular sieve, activated alumina, silica gel)
- Membrane
- Refrigeration
- Deliquescent

When to use compressed air dryers

- Air dryers should be used when you want to remove or reduce the humidity levels in your compressed air system to meet or exceed the air quality requirements for their compressed air demands.

Air Filtration - The removal of particulates, water, oil droplets, and oil aerosols.

This is most effective when done in stages:

- Water separator - removes bulk water, oil, and large particulates (down to 10 micron)
- Coalescing filter - removes oil, small aerosols and fine particulates (down to .01 micron)
- Activated carbon filter - removes oil vapors; eliminates odors and taste (down to .003ppm)

Where to place compressed air filtration

- The further away from the compressor, the more effective your filtration will work.
- On or near the equipment, directly connected to air supply connection (IMPORTANT)
- In front of all air dryers as pre-filters
- Water separators should be placed at all air tool drops with regulators

IMPORTANT THINGS TO KNOW

- Proper control of air pressure throughout your facility can help save 10-15% of your compressed air energy costs.
- Repairing an audible air leak can save you $50 or more per year in energy used to drive your compressor.
- When sizing a compressor for manufacturing, it is important to calculate total machine air consumption as well as total air consumed by machine operators and other personnel.
- Proper control of air volume (CFM) will make all your air drying and filtration technology perform at their rated capacity. Most pieces of equipment have a manufacturer's specification of volume consumption along with the recommended operating pressure.
- Improper use of volume can cause an "over-flowing" of the rated capacity of your dryer or filtration which causes a carry over of moisture and contaminants.

- Many OSHA approved blow off guns can consume up to 35CFM, the equivalent of a 10Hp compressor. (example shown)
- Many color changing indicators used with desiccant systems do not begin to change color before 20%RH. (example shown)
UNDERSTANDING YOUR COMPRESSED AIR SYSTEM

Understanding your facility's compressed air requirements is essential to efficiently and effectively managing the system. By supplying the following information, Tsunami Compressed Air Solutions™ can provide recommendations that will save you money and eliminate costly down time.

How many compressors are in your facility? ________

If multiple compressors are available, are they set up in series or parallel? _____________________

Are any of the compressors used for backup? ___________

What is the system air pressure in the main receiver tank? ______PSI At furthest air drop? ______PSI

Do the compressor(s) or receiver tank(s) have automatic drains? _____Y _____N

Are the drains working? _____Y _____N

Where are the compressor(s) located? (in a closed room, outside, on a mezzanine, etc.) _____________________

Is there a pressure regulator located at or near the compressor for the whole system? _____Y _____N

If yes, what pressure is it set at? (look at pressure gauge) ______PSI

Is the compressor room ventilated? _____Y _____N

If yes, inlet/outlet ventilated? ________ manual or electronic vent control? ___________________

Does the receiver tank of the compressor feel warm to the touch? _____Y _____N

Is there a refrigerated dryer? _____Y _____N

If yes, is it working? _____Y _____N

(This can be determined by grasping the inlet air line and the outlet air line with your hand, one should be warm and the other should be cool. If there is no difference, it probably is not working.)

Does the refrigerated dryer have pre-filters installed before the unit? _____Y _____N

If there is no refrigerated dryer, is there another type of drying technology being used? _____Y _____N

If yes, what type? _______________________________

Does the drying technology (refrigerated or other) have pre-filters installed before the unit? _____Y _____N

Is the air system a loop system or a “dead end/dead stick” system? ___________________________

What is the line size of the main air supply lines in the facility? ______ Line size of air drops off main? ______

Are there air leaks in the piping, at air fittings, or air hose? _____Y _____N

What material is the piping made from? _____Copper _____Black Iron_____ Galvanized _____PVC

   Note: Tsunami Compressed Air Solutions™ does not recommend PVC or other plastic piping

How many employees will be using the air system? ________

How many machines consume compressed air? ________ Total CFM required to operate? ________

<table>
<thead>
<tr>
<th>HP</th>
<th>Manufacturer</th>
<th>Model Number</th>
<th>Piston / Rotary Vane / Rotary Screw</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
REGENERATIVE DRYERS - HOW THEY WORK

1. The technology functions by passing contaminated compressed air through the Tsunami water separator where bulk water and oil is removed down to 10 micron. The air then passes through the oil coalescing filter which further removes oil and particulates down to .01 micron.

2. The pretreated air enters the dryer and passes through the desiccant canister(s). Molecular sieve desiccant forms a bed encapsulated within a 10 micron filter bag. The molecular sieve bed is spring loaded, under tight compression, virtually eliminating bead movement which causes breakdown of the media.

3. As the wet air passes through the tower(s), the molecular sieve draws the water vapor in while under pressure. At the same time, one or more tower(s) become depressurized. With the use of sweep air, the towers discharge water vapor through the mufflers located below the dryer manifolds.

4. The PLC sends out a pilot signal shifting an internal spool. When the spool shifts, air is redirected from the saturated tower(s) to the dried tower(s).

5. A small amount of air from the dry outlet flow is then directed backward through the wet towers via a small orifice in the regeneration valve. (This is referred to as “sweep air” or the “regeneration process”) The desiccant is dried as the sweep air passes back through the canister(s). The tower is now ready to be cycled again. It’s like changing your desiccant every few minutes.

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
Technical Information - Air Drying

**TSUNAMI REGENERATIVE DRYER**

- Can handle high inlet temperature up to 150°F
- Performs well with high demand surge flows
- No Aftercooler Required
- Complete with Tsunami 2-stage pre-filters and automatic drains
- Dew points … down to -80°F
- No refrigerant to maintain
- Works great with low flow rates
- Minimal maintenance required
  - Change oil coalescing element every 6 months

**REFRIGERANT DRYER**

- Max Inlet temperature 100°F
- Moisture will carry over during high demand surge flows
- Requires Aftercooler
- Must purchase pre-filters and automatic drains separately
- Dew points … 35-50°F
- Refrigerant to maintain
- Low flow rates may allow water carry over at separator
- Regular Maintenance required:
  - Clean Heat Exchanger
  - Electric Motor
  - Refrigerant Compressor
  - Replace Separator Elements and Float Drain
**How It Works**

Once the aerosol is captured by a fiber, it coalesces with other captured aerosols to form a bulk liquid which is forced by the air flow to the outer surface of the filter media. A non-wicking drain layer attached to the outer surface of the filter media separates the oil and water liquid from the air flow and drains the liquid via gravity to the sump of the filter housing, preventing entrainment.

**Construction**

Tsunami coalescing media is made of 100% borosilicate glass micro fibers bonded together with a resin binder. In the standard configuration, chemical-resistant polypropylene cores and layers intimately support the coalescing media. A non-wicking drain layer is in intimate contact with the outside of the outer support core.
**TSUNAMI WATER SEPARATOR**
- Dynamic technology
- Machined from 6061 aircraft aluminum, anodized. Maximum corrosion protection
- Air flows thru center air channel tube to the bottom of Tsunami
- It hits the baffle plate depositing the liquid and particulate in the large drain sump
- The air is then redirected 180° and flows up thru the oversized Stainless Steel mesh element
- Any remaining water droplets and aerosols to 10 micron are forced to the outside and will run down to the drain sump.
- Up-flow gravity separation
- Performance is 100% consistent at all flows

**STANDARD FILTER**
- 1940’s technology
- Made of die cast aluminum
- Interior not coated, causes corrosion.
- Water separation is created by centrifugal motion (spinning the air)
- Does not work well with intermittent or low flows. Allows moisture carryover
- Need high continuous flow for best performance
- Short separation distance between air inlet and filter element, moisture carries over
- Short element life

**Heads:**
- TSU: Machined from 6061 aircraft aluminum, anodized. Maximum corrosion protection
- Standard: Made of die cast aluminum
- Interior not coated, causes corrosion.

**Water Separation:**
- TSU: Air flows thru center air channel tube to the bottom of Tsunami
- It hits the baffle plate depositing the liquid and particulate in the large drain sump
- The air is then redirected 180° and flows up thru the oversized Stainless Steel mesh element
- Any remaining water droplets and aerosols to 10 micron are forced to the outside and will run down to the drain sump.
- Up-flow gravity separation
- Performance is 100% consistent at all flows
- Standard: Water separation is created by centrifugal motion (spinning the air)
- Does not work well with intermittent or low flows. Allows moisture carryover
- Need high continuous flow for best performance
- Short separation distance between air inlet and filter element, moisture carries over
- Short element life

**Elements:**
- TSU: Very small
- Plug Easily
- High pressure drop
- Frequent replacement required
- Standard: Very small
- Plug Easily
- High pressure drop
- Frequent replacement required

**Plastic Bowls:**
- Requires metal bowl guards for safety
- Compressor oils will cause cracking
- Unable to support multiple draining options
- Unable to handle large surges of water
- Aluminum Die Cast Bowls: Internal corrosion

**Barrel:**
- TSU: Oversize length and diameter
- Machined from 6061 aircraft aluminum
- Mil Spec anodized inside and out for corrosion resistance
- Large drain sump
- Can handle large surges of water
- Standard: Made of die cast aluminum
- Interior not coated, causes corrosion.
- Oversize length and diameter
- Machined from 6061 aircraft aluminum
- Mil Spec anodized inside and out for corrosion resistance
- Large drain sump
- Can handle large surges of water

**Bottom Cap:**
- TSU: Mil Spec anodized for corrosion resistance
- Elevated sump for sediment to accumulate (extended drain life)
- Easy to remove for servicing float drain
- Standard: Made of die cast aluminum
- Interior not coated, causes corrosion.
- Elevated sump for sediment to accumulate (extended drain life)
- Easy to remove for servicing float drain

**Drains:**
- TSU: Floater drains are standard on most filters
- Float drains are optional
- Location of float drains in one piece filter bowls cause premature drain failure
- Difficult replacement
- Standard: Manual drains are standard on most filters
- Float drains are optional
- Location of float drains in one piece filter bowls cause premature drain failure
- Difficult replacement
MOISTURE MINDER I - MOISTURE MINDER II

1) Pilot Signal Received
Condensation enters left hand, or water inlet of valve.

2) Pilot Signal From Unloader
Pilot signal is applied to air inlet. Piston will shift, closing off drain port. As piston continues to move it will open up the stainless ball check allowing condensate to be forced into the internal or external reservoir creating a discharge pressure.

3) Valve at Rest
When pilot signal is relieved, piston returns to relaxed position. The ball check closes first preventing zero pressure loss in the system. The drain port then opens and stored condensate is ejected from the drain port.

MOISTURE MINDER FILTER DRAIN ASSEMBLY

1) Pilot Signal Received
Condensation rests in the bottom of the filter housing, waiting for the drain to be actuated.

2) Pilot Signal From Unloader
Pilot signal causes piston to shift, closing off drain port. As piston continues to move it will open up the stainless ball check allowing condensate to be forced into the internal reservoir creating a discharge pressure.

3) Valve at Rest
When pilot signal is relieved, piston returns to relaxed position. The ball check closes, preventing zero pressure loss in system. The drain port opens and stored condensate is ejected from the drain port.
MOISTURE MINDER EDV ELECTRIC SOLENOID VALVE

1) Timer actuates
Condensate enters through the inlet side of the valve. Debris is captured inside the internal strainer.

2) Debris is ejected
When valve activates condensate flows thru strainer up to the orifice and out the back discharge port. Debris is captured by internal strainer which prevents fouling of orifice.

3) Manual Straining
Only open 1/4” ball valve to clean strainer or to manually drain the tank.

DRAIN MINDER II AUTOMATIC TIMER

The Drain Minder II can deliver the pilot signal needed to operate the Moisture Minder pneumatic drain valves when no other intermittent pilot signal is available. The control is installed in the typical system by teeing into a filtered air supply and connecting the supply line to the inlet side of the controller solenoid.
CUSTOM REGENERATIVE DRYERS

Our custom regenerative dryers allow flexibility for your specific application: transportation, industrial, medical/dental, agricultural, and other uses. When space is limited for dryer installations, our regenerative dryers allow for versatile installation options too.

Specific information is needed when customizing a dryer to make certain that the dryer’s performance will meet the air quality requirements.

Do you need exceptionally dry air for the entire facility?
If YES: What is the dew point / relative humidity desired?
What is the air output flow of compressor system?
What is the maximum outlet pressure of compressor system?
What is the system pressure needed for the facility?
What is the duty cycle of the compressor(s)?

If NO: What is the dew point / relative humidity desired for the specific application requiring dry air?
What is the air consumption (flow rate) of the application or process?
What is the system pressure in the facility?
What is the pressure required for the specific application or process?
What is the duty cycle of the application or process?

HOW TO CREATE YOUR CUSTOM DRYER P/N

STEP 1: Choose the number of dryer manifolds needed; this is determined by the number of towers required; tower quantity based on tower air flow capacity.
- Standard capacity towers rated @ 28 cfm each
- High capacity towers rated @ 40 cfm each

*** Important: You must subtract the regeneration volume from the dryer capacity to properly size a dryer, see orifice chart in step 3***

STEP 2: Choose your control type:
- 3 tower dryers require a PLC control:
  (2 towers in drying cycle and 1 tower in regeneration cycle)
- 4 tower dryers regenerate either 1 or 2 towers
- 4 tower dryer with air valve:
  (2 towers in drying cycle and 2 towers in regeneration cycle)
- 4 tower dryer with PLC:
  (3 towers in drying cycle and 1 tower in regeneration cycle)

STEP 3: Choose the orifice size for the appropriate amount of regeneration air needed
- High capacity towers require a minimum .060 orifice size.
- 3 tower dryers should use minimum .045 orifice size

<table>
<thead>
<tr>
<th>Regeneration Volume Consumed by Dryer - CFM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orifice Diameter</td>
</tr>
<tr>
<td>0.015</td>
</tr>
<tr>
<td>100 psi</td>
</tr>
<tr>
<td>125 psi</td>
</tr>
<tr>
<td>150 psi</td>
</tr>
<tr>
<td>175 psi</td>
</tr>
</tbody>
</table>

Regeneration Valve Orifice

Example shown in ordering matrix on pg. 23

P/N 872 - S - 3 - W

Dryer Manifolds

Air Valve

PLC

Example shown in ordering matrix on pg. 23

P/N 872 - S - 3 - W

Dryer Manifolds

Air Valve

PLC

Example shown in ordering matrix on pg. 23

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Example shown in ordering matrix on pg. 23

P/N 872 - S - 3 - W

Dryer Manifolds

Air Valve

PLC

Example shown in ordering matrix on pg. 23

P/N 872 - S - 3 - W

Dryer Manifolds

Air Valve

PLC

Example shown in ordering matrix on pg. 23

P/N 872 - S - 3 - W

Dryer Manifolds

Air Valve

PLC
STEP 4: Choose whether you need high capacity towers and/or the mounting rail.
- **Standard capacity towers come with all units unless specified with high capacity part designation.**
- Drop in mounting rail not included; must be specified with proper part designation.

OPTION: Choose the appropriate pre-filtration for the total inlet air volume to dryer; include regeneration air - see Page 6.

### Custom Dryers

**Manifolds**
- 2: 872
- 3: 873
- 4: 874

**Control Type**
- 12v Air Valve: D
- 120v Air Valve: S
- PLC: P
- Global PLC: G

**Orifice Size**
- .030: 3
- .045: 4
- .060: 6
- .080: 8
- .090: 9

**Tower / Mounting**
- Mounting Rail: W
- High Capacity w/o Mounting Rail: H
- High Capacity w/ Mounting Rail: J

Custom dryers come with a standard 90 day manufacturer’s warranty for defects in material and craftsmanship. Suburban Manufacturing strongly recommends the use of the Tsunami Complete Drying Systems whenever possible. For more information on these complete systems see pg. 4.

### MOBILE & INDUSTRIAL APPLICATION RECOMMENDATIONS

Custom regenerative dryers allow for ultimate compatibility in the following mobile and industrial applications: road striping, painting, top load pressure, spray foam trailers, inspection rooms, process equipment, assembly lines, and many others.

- Heater wraps for applications subject to temperatures below 40°F
- Tsunami pre-filters equipment with Moisture Minder Filter Drain
- PLC control mounted and assembled in NEMA 4 rated box
- No wall mounting rail required for mobile applications
- 12v air valve timer for mobile application compatibility
- Remote mounting option allows for easy plant, point of use applications

For more information on Filter Drains see pg. 10

Please contact your Suburban Manufacturing distributor when configuring custom dryers and ancillary products for specific application needs.
UNDERSTANDING YOUR PAINT SHOP

A proper understanding of your paint shops air quality needs are necessary to maximize efficiency and eliminate down time and costly rework. By supplying the following information, Tsunami Compressed Air Solutions™ can provide recommendations that will provide long term solutions to save you time and money.

For a further understand of your facility’s air requirements, see Facility Analysis on pg. 15

The Spray Booth
How many spray booths are there? __________
What type of booths do you have? _____Downdraft _____Cross Flow _____Semi Downdraft
How many spray drops in each booth? __________
What is the humidity reading in the booth(s)? %RH %RH %RH
  If yes, what brand or type? (ex: SATA, DeVilbiss, Sharpe, Camair, RTI, etc.) _________________
Is there air preparation at the booth? (filters or dryers) _____Y _____N
  If yes, how are you drying the basecoats? ____Booth Fans ____Handheld Blowers/Stands ____other
  If other, what is being used? _________________
Does the shop do mostly collision work or completes? _________________

The Paint Shop
How many painters will be using the air system? _______
How many shop employees total will be using the air system? _______
Is the air system a looped system or a “dead end”/“dead stick system”? _________________
What is the approximate distance from the compressor to the booth? __________Ft. (_____paces)
What is the approximate line size of the main air line? __________
What is the approximate line size of the supply air lines used in shop? _______
Are there air leaks in the piping, at air fittings, or air hoses? _____Y _____N
What material is the piping made from? _____Copper _____Black Iron _____Galvanized _____PVC
  (Tsunami Compressed Air Solutions™ does not recommend PVC or other plastic piping)

PROPER SHOP DIAGRAM
WHAT IS THE TRUE COST OF YOUR DRYING SYSTEM?

Did you buy your system because of the low upfront cost?

Do you perform maintenance as specified?

Do you know what the true cost of your current system is?

Manual change desiccant systems require you to perform maintenance by monitoring a moisture indicator. Unfortunately, when the indicator starts to change color your air has already exceeded the humidity threshold that the paint companies recommend by 100%. This results in poor paint jobs!

Footnote: Actual system results will vary based on climatic conditions, shop environment, maintenance and other factors.

### Annual Maintenance Cost Comparison

<table>
<thead>
<tr>
<th></th>
<th>1st Stage Annual Cost</th>
<th>2nd Stage Annual Cost</th>
<th>Annual Media Cost</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Total Over 3 Years</th>
</tr>
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<tbody>
<tr>
<td>Manual Desiccant Dryer Systems</td>
<td>$100</td>
<td>$100</td>
<td>$540</td>
<td>$740</td>
<td>$740</td>
<td>$740</td>
<td>$2,220</td>
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<tr>
<td>Tsunami Membrane Dryer</td>
<td>$0</td>
<td>$80</td>
<td>$900 *</td>
<td>$80</td>
<td>$80</td>
<td>$980</td>
<td>$1,140</td>
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<tr>
<td>Tsunami Regenerative Dryer</td>
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<td>$90</td>
<td>$440 **</td>
<td>$90</td>
<td>$90</td>
<td>$520</td>
<td>$700</td>
</tr>
</tbody>
</table>

* Based on a membrane core replacement after 3 years of service.
** Based on a typical 2 tower replacement in year 3.

** DID YOU KNOW?**

- Properly controlling air pressure throughout your shop can help save 10-15% of your compressed air energy costs.
- Repairing an audible air leak can save you $50 or more per year in energy used to drive your compressor.
- When sizing a compressor, you can figure 2 to 2.5Hp per person, depending on the pressure setting of the compressor.
- Proper control of air volume (CFM) will make all your air drying and filtration technology perform at their rated capacity. Most pieces of equipment have a manufacturer’s specification of volume consumption along with the recommended operating pressure.
- Improper use of volume can cause an “over-flowing” of the rated capacity of your equipment which causes a carry over of moisture and contaminates.

Many OSHA approved blow off guns can consume up to 35 CFM, the equivalent of a 10Hp compressor

Many color changing indicators used with desiccant systems do not change color before 20% rH.

The higher the air pressure supply to air amplifier stands used with waterborne paint increases the amount of air volume they consume.

www.tsunami.us.com
SOLVENT & WATERBORNE SPRAY BOOTH PACKAGES

- Waterborne Ready Systems
- Low Relative Humidity - down to .01%
- Low Dew Points - down to –80°F
- Low cost to maintain - under $100/yr on average
- Easy maintenance - replace coalescing filter every 6 months
- Expandable Drying Technology - Does not require buying new, larger dryer to increase shop’s capacity

Single Booth Package - 1 Drop - Waterborne
Double Booth Package - 2 Drops - Solvent *

Recommended P/Ns:
1. 21999-0710 10Hp Tsunami Regenerative Drying System
2. 21999-0494 Tsunami Filtration Package #7
3. 21999-0449 35’ Tsunami Ultra-flo Spray Hose

* Additional filter and hose needed for 2 drop solvent application

Double Booth Package - 2 Drops - Waterborne
Triple Booth Package - 3 Drops - Solvent *

Recommended P/Ns:
1. 21999-0715 15Hp Tsunami Regenerative Drying System
2. 21999-0494 Tsunami Filtration Package #7
3. 21999-0449 35’ Tsunami Ultra-flo Spray Hose

* Additional filter and hose needed for 3 drop solvent application

4+ Booth Package - Up to 6 Drops - Waterborne

Recommended P/Ns:
1. 21999-0830 30Hp Tsunami Ultra Drying System
2. 21999-0494 Tsunami Filtration Package #7
3. 21999-0449 35’ Tsunami Ultra-flo Spray Hose

For more information on Complete Tsunami Drying Systems see pgs. 4-5

SPECIALTY SPRAY PACKAGES

These filter systems should only be used for light use applications such as air brushing, waterborne gun cleaners, and spot welders. For normal to heavy use conditions, use our 50 CFM Filter packages.

Package #4 - 20CFM
P/N: 21999-0677
Special spray package with water separator, oil coalescing filter and regulator

Package #6 - 20CFM
P/N: 21999-0678
Special spray package with water separator, oil coalescing filter, activated carbon filter and regulator

For more information on 20 CFM filtration packages see pg. 7
PAINT SHOP SOLUTIONS

Maximizing your shop’s performance is one of Suburban Manufacturing's main focuses. Whether drying the air for the paint shop or the entire facility, the Tsunami Ultra Drying Systems provide “the solution” for clean, dry air. Our Ultra Systems provide easy installation and additional storage which helps reduce the shop’s ability to overrun the drying system.

- 3-year Warranty
- Built-in bypass circuit
- 80 gallon storage tank for storing exceptionally dry air
- Large Tsunami water separator and oil coalescing filter to pre-filter incoming air
- Moisture Minder automatic piston drains for pre-filters
- Outlet regulator allows for air conservation throughout facility
- Easy installation - unit comes preassembled (as shown)

Wall mounted units provide the best solution for your facility when space is limited. Systems are available from 10-30Hp.

*For more information on Complete Tsunami Drying Systems see pgs. 4-5*

**REMINDER**
Add Your Booth Filtration Package, Spray Hose and Compressor Drain Kit
**Components must be ordered separately from drying systems**

GOOD FILTRATION

Package #7 - 50CFM
P/N: 21999-0494
Oil coalescing filter and regulator

BETTER FILTRATION

Package #4 - 50CFM
P/N: 21999-0253
Water separator, oil coalescing filter and regulator

BEST FILTRATION

Package #6 - 50CFM
P/N: 21999-0257
Water separator, oil coalescing filter, activated carbon filter and regulator

P/N: 21999-0449
35' Tsunami Ultra-flo Spray Hose
P/N: 21999-0450
50' Tsunami Ultra-flo Spray Hose

P/N: 21999-0177
Moisture Minder EDV
P/N: 21999-0316
EDV Basic Installation Kit

www.tsunami.us.com
At Suburban Manufacturing, Inc., our mission is to build value for our customers by producing quality, innovative, engineered, application-based products. Suburban is an engineering driven organization that partners with our customers to design and develop unique and specific solutions for multiple application specific needs in the Defense, Hydraulics, Oil & Gas, Automotive, Agriculture, Construction & Utility and Industrial markets. In addition to custom engineered solutions, Suburban offers a complete line of standard products sold under the Protective Coverings, Lubrication Systems and Tsunami brands.

**PROTECTIVE COVERINGS**
Offers a complete line of protective sleeves, straps and engine blankets manufactured from a variety of custom fabrics to provide equipment and operator protection. The division manufactures custom-engineered-to-order solutions per customer specifications for a wide variety of industries and specific application needs.

**LUBRICATION SYSTEMS**
Offers a complete line of automatic chain oilers and grease systems. In addition, the division provides custom engineered solutions to a multitude of customers with unique applications.

**TSUNAMI**
Offers a complete line of products engineered to give customers dry clean air for their specific application demands. Our systems use the latest technology to provide the highest quality compressed air available.

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