



Model RCD™-2
Passive Self-Pumping™ Dehydrator

Part Number 17963

May 2008

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Operation

General

Containing just one moving part, the RCD–2 Passive Self-Pumping Dehydrator dries waveguide and coax in fixed, mobile and solar powered systems with volumes up to one cubic foot. It eliminates the need to operate pressurization equipment from emergency power when used as a backup for mechanical systems. The RCD–2 may also be used to protect equipment from moisture damage during transit and unheated storage.

The RCD–2 uses variations in ambient temperature and barometric pressure to pressurize the waveguide or coax. When the pressure inside the waveguide is less than atmospheric, a sensitive check valve in bottom of the bottle opens. This allows ambient air to enter the waveguide or coax after it has passed through and been dried by the desiccant. When the internal pressure exceeds atmospheric, the check valve closes thus holding the system at a positive pressure.

This feature improves performance in two ways. First, it increases drying efficiency by keeping the system at a positive pressure. Thus dry air generally leaks out rather than moist air leaking in. Second, this feature insures controlled dry air circulation in the waveguide or coax. When compared to a passive dehydrator that relies upon gas diffusion, circulation dramatically improves response to environmental changes.

The RCD–2 contains desiccant sealed in a pressure-tight container. Tubing pneumatically connects the RCD–2 to the waveguide or coax. Unlike mechanical pressurization, the RCD–2 works best in a tightly sealed system.

The RCD–2 employs a blend of silica gel and activated alumina desiccants. This combination provides cost effective drying while indicating when desiccant regeneration is required. The desiccant can either be replaced or regenerated by heating in a convection oven. Depending upon the system volume and tightness, along with environmental conditions at the site, the desiccant lasts 12 to 18 months, or more, before needing regeneration or replacement.

A broken feed window at the antenna can expose waveguide or coax to rain or melted snow. Under these conditions, the negligible solubility of the desiccant blend used in the RCD–2 will neither contribute to the problems caused by water immersion nor leave a corrosive residue. After immersion, RCD–2 performance can be restored by replacing the desiccant.

A copy of the Material Safety Data Sheet for the desiccant blend is available from Customer Service.

Applications

RCD–2 applications include both primary and secondary dehydration. Primary application include waveguide/coax drying where the RCD–2 is the only dehydrator. These include systems smaller than one cubic foot. This volume limit can be increased, to an extent, by using multiple RCD–2 dehydrators.

The RCD-2 does not require electric power. Thus, it is ideally suited to applications with limited power budgets such as solar powered stations.

Secondary applications include backing up mechanical pressurization systems. For example, an RCD-2 could eliminate the need to operate the pressurization system from expensive and limited emergency power (i.e., UPS). It would also insure dry waveguide or coax in the event of pressurization equipment failure.

Use the RCD-2 for backing up pressurization equipment operating at pressures of 8 psig, or less. Safety requires limiting the absolute maximum RCD-2 pressure to 20 psig.

The RCD-2 protects against moisture condensation during shipping and storage of microwave equipment.

Maintenance

When to Replace or Regenerate the Desiccant

The RCD-2 uses a granular desiccant blend consisting of white activated alumina and blue silica gel. The silica gel granules turn light pink when spent to indicate the need to replace or regenerate the desiccant.

Normally, the desiccant usually requires replacement or regeneration every 12 to 18 months. The exact interval depends upon system tightness and environmental conditions. A leaky system in a damp climate will shorten the replacement interval. Monthly visual inspection is recommended.

A feed window failure can fill the waveguide system with water thus immersing the desiccant. If this happens, replace the desiccant since immersion reduces its efficiency.

How to Replace or Regenerate the Desiccant

Detach the tubing from the cap-end of the RCD-2. Avoid disturbing the pressure adapter fitting attached to the cap. Next, remove the RCD-2 by releasing the cable tie or separating it from its Velcro® mounting pad.

Remove the cap from the top of the RCD-2 bottle. This may require substantial force. Use slip-joint pliers if necessary.

If you wish to replace rather than regenerate, dispose of the bottle containing the spent desiccant. The pre-measured desiccant is supplied in a replacement bottle. Included with the bottle are new Velcro® mounting pads. Replace the mounting pads as necessary.

To regenerate the desiccant, use needle nose pliers to remove the gray filter from the inside top of the bottle. If necessary, dry the filter. Save the filter for reinstallation. Empty the RCD-2 into a clean baking dish.

If it has been immersed, the RCD-2 requires additional maintenance or replacement. Using needle nose pliers, remove the gray filter in the bottom of the bottle. Wash both the filter and the bottle, including the check valve, in deionized or distilled water. Thoroughly dry both the filter and the bottle. Reinstall the filter in the bottom of

the bottle.

Heat the desiccant in a convection oven at 350° F for at least 2 hours or until the silica gel particles turn dark blue. Cool to room temperature. Immediately thereafter, pour the desiccant into the RCD–2. Reinstall the gray filter in the top of the bottle.

Reinstall the original cap while taking care not to disturb the adapter fitting. Use slip-joint pliers to securely tighten the cap since leakage will reduce the desiccant service life. Reinstall the RCD–2. Reconnect the tubing to the waveguide or coax system.

Replaceable Parts

Replaceable Parts List

Part Number	Description
18024	RCD–2 Replacement Desiccant Kit

Installation

Materials Supplied.

Before disposing of the packing materials, verify the inclusion of the items show below in the Packing Lists. Immediately notify Customer Service of any discrepancy or shipping damage.

RCD–2 Packing List

Quantity	Part Number	Description
1	17961	RCD–2 Passive Dehydrator
1	17957	Accessory Kit
1	18018	Instruction Manual

Accessory Kit Packing List

Quantity	Part Number	Description
1	17967	Velcro® strip (loop)
1	17968	Velcro® strip (hoop)
1	17984	Velcro® cable clamp
1	14508	Cable clamp mount

General

The RCD–2 can be located indoors or outdoors. If used outdoors, choose a location protected from exposure

Installation (continued)

to rain, snow, etc. Mount the RCD-2 upright or horizontally. Choose an accessible location since the desiccant requires periodic replacement or regeneration.

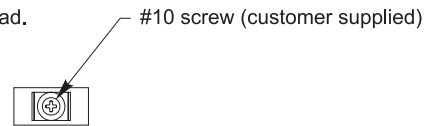
The Accessory Kit contains components for mounting the RCD-2 in two different ways. Use the convenient Velcro strips in fixed installations where vibration and shock are not present. See Figure 1. Use the cable clamp to secure the RCD-2 in mobile installations such as SNG trucks or when extra mechanical security is desired. See Figure 2.

Connecting the RCD-2 to the waveguide requires customer supplied components. These include fittings for connecting tubing between the 1/8" male NPT pipe fitting and the waveguide pressurization flange, the tubing and the waveguide pressurization flange and Teflon tape for sealing all pipe threads.

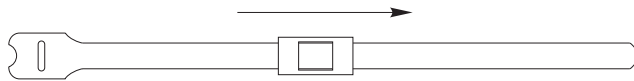
Remove the red protective caps from the RCD-2 to expose the threaded portion of the pressure fitting and the inlet to the check valve. The protective caps prevent the desiccant from absorbing moisture during storage. THE TUBING CONNECTS TO THE CUSTOMER SUPPLIED FITTING ATTACHED TO THE CAP END OF THE RCD-2 BOTTLE. Do not attach the fitting to the plastic fitting installed in the bottom of the bottle. The check valve must be unobstructed for proper operation.

Getting the best performance and longest desiccant life requires an airtight system. Take extra care to make certain that the system is leak free or at least as tight as is practical.

1. Attach connector to bulkhead.



2. Slide Velcro® tie through connector.



3. Position bottle as shown and tighten Velcro® tie around bottle.

Contacting Customer Service

Office Hours

8:00 AM to 5:00 PM ET

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Environmental Technology, Inc.,
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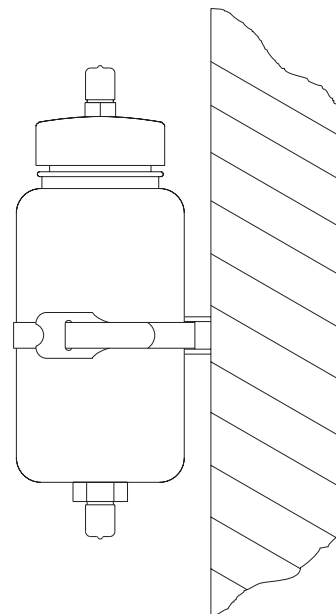
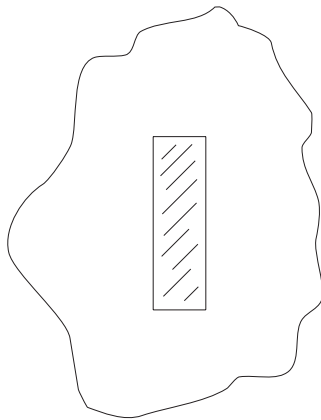
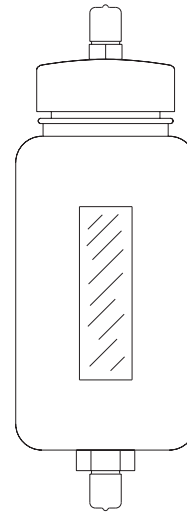


Figure 1

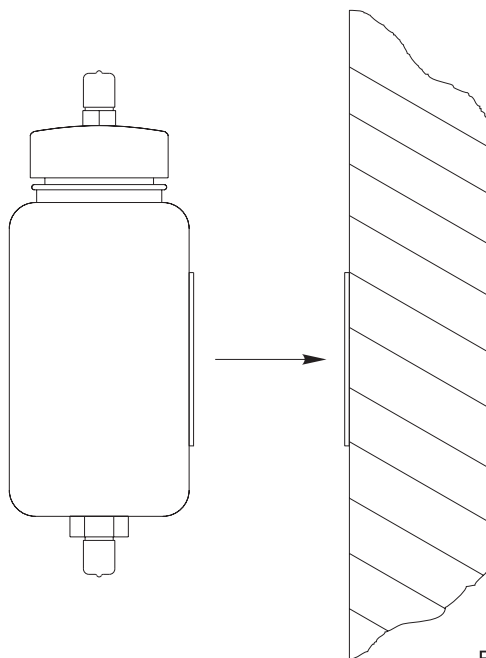
1. Remove plastic backing from first velcro strip. Position Velcro® as shown and stick to bulkhead.



2. Stick second Velcro® strip to bottle as shown.



3. Line up Velcro® strips and press together firmly.



4. Remove red caps. Connect adapter to top fitting.

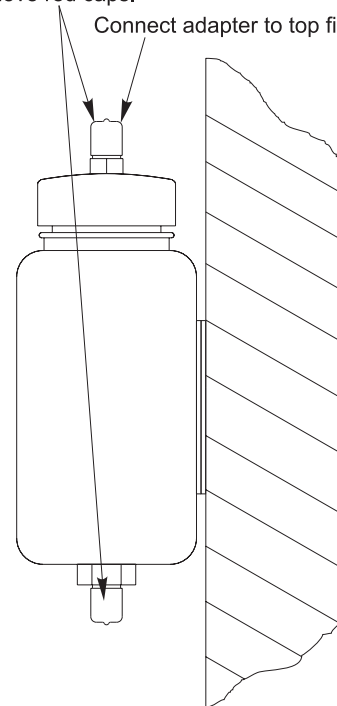


Figure 2



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