

Tanis Engine Dehydrator

User's Guide

Model TED-4010E



Tanis Aircraft Products
PO Box 117
Glenwood, MN 56334
800-443-2136
320-634-4772

www.TanisAircraft.com

Copyright 2007 by Tanis Aircraft Products.
All rights Reserved.
Printed in the United States of America



Tanis Engine Dehydrator Model TED-4010E

Table of Contents

About this Product.....	4
Application.....	5
Digital Thermometer/Hygrometer.....	5
Using the Dehydrator.....	6,7
Before Flight.....	8
Precautions.....	8
Reactivating the Desiccant.....	9
Operating Suggestions.....	10
Specifications.....	10
Replacing the Desiccant.....	11

Congratulations! You have purchased another fine product manufactured by Tanis Aircraft Products, the industry leaders in aircraft engine preheat systems and other quality aircraft accessories.

ABOUT THIS PRODUCT

The Tanis Engine Dehydrator is designed to reduce the moisture in your aircraft engine crankcase in order to discourage the formation of rust on internal engine components.

The Moisture Problem

Moisture is a natural byproduct of combustion. Part of this moisture blows by the piston rings and collects in the engine crankcase. After flight, as the internal temperature drops below the dew point, moisture will condense on the colder parts of the engine and collect in the crankcase. This moisture, combined with the mild acid byproducts normally found in the engine, can cause rust problems in any climate.

The Solution

Use the Tanis Engine Dehydrator between flights and reduce crankcase humidity levels. After engine operation we have found humidity levels to be as high as 85% to 98%. Our tests show that with continuous use of the Tanis Engine Dehydrator the humidity levels will be reduced significantly, usually to less than 10%.

Features of the Tanis Engine Dehydrator

- The dehydrator contains a built-in digital thermometer/hygrometer with a remote sensor mounted inside the dehydrator unit. It is used for monitoring the temperature and humidity of the air circulating through the engine. This gives the user an indication that the system is performing as it should.
- The dehydrator uses a color-changing desiccant to indicate when the desiccant is saturated and needs to be reactivated.
- The dehydrator is equipped with an internal heater for reactivating the desiccant after it becomes saturated with moisture. There is no need to remove the desiccant from the dehydrator.
- The dehydrator re-circulates air through the engine crankcase as it removes moisture, rather than just ventilating the crankcase with outside air.

APPLICATION

- The dehydrator will work with all Lycoming engines.
- The dehydrator will work with large-bore Continental engines. However, some of these engines will require an adaptor to be compatible with the dehydrator. An adaptor kit is included with each dehydrator. The affected engines are those with the oil breather connected to the side of the oil fill pipe. These engines typically have the alternator mounted in the front of the engine. Following is a partial list of affected engines that may need the adaptor:

IO-520B, BA, BB, C, CB, M, MB
TSIO-520B, BB, D, DB, U, UB, V, VB
IO-550A, B, C, G, N, P, R

For more details refer to the enclosed document entitled, “Adaptor Installation Instructions for Continental Engines”.

- The dehydrator will generally not work with small bore Continentals. These engines include those in this series: A65, A85, A90, C65, C85, C90, 0-200.
- For engine applications other than Lycoming or Continental, please call Tanis for more information.

DIGITAL THERMOMETER/HYGROMETER

Battery

The digital thermometer/hygrometer display is powered by an “AA Size” battery already installed at the factory. When the display begins to dim, you will need to replace the battery. Simply open the dehydrator lid to access the battery mounted in the display unit.

Digital Display

The digital display in your dehydrator is programmed to indicate down to approximately 7% relative humidity. The dehydrator can achieve moisture levels below this point, even though not indicated on the display.

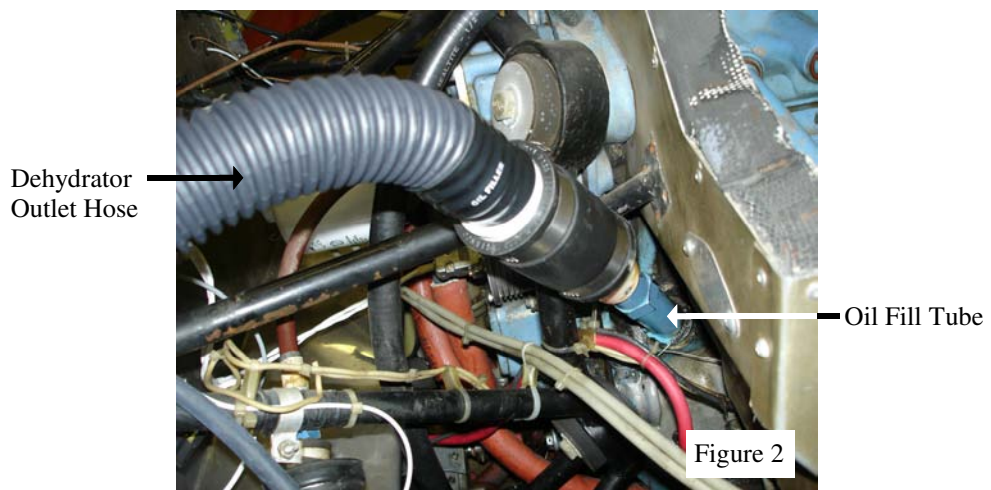
USING THE DEHYDRATOR

1. Safely park and secure the aircraft. For best results , use the dehydrator as soon as possible after flight. See the caution at the bottom of this page for turbocharged engines.
2. Attach hoses to the output and input tubes on the end of the dehydrator box, rotating slightly as you push them on for a better fit. They will only go on one way.
3. Remove the oil fill cap from the oil fill tube. Flag the oil cap as a reminder to replace it.
4. Push the dehydrator outlet hose over the oil fill tube as shown in Figure 2. The hose clamp may need to be adjusted initially for a snug fit. You should then be able to install and remove the fitting easily without further adjustment.
5. Place the control switch in the “DEHYDRATE” position to ventilate the crankcase for 5 to 10 minutes before connecting the inlet hose. This will purge the high humidity air and oil vapors from the crankcase and extend the life of the desiccant. Do not purge the system for extended periods in very humid outdoor conditions as this will prematurely saturate the desiccant.
6. Connect the dehydrator inlet hose to the crankcase vent tube that normally exhausts to the bottom rear of the engine cowl.
7. **Cover the secondary breather hole in the vent tube to improve the performance of the dehydrator.** This will also extend the interval between desiccant reactivations. In very humid conditions, failure to cover this hole will noticeably degrade the dehydrator performance. **REMEMBER TO REMOVE THE VENT HOLE COVER BEFORE FLIGHT.**

NOTE: On some engine types, the actual fittings for inlet and outlet hose attachments may differ than those illustrated. For those models, refer to the special application instructions shipped with the dehydrator.

CAUTION: Some turbocharged aircraft return from taxi with a very hot engine. You will need to allow more time to purge the crankcase to prevent depositing oil vapors in the desiccant. An oil film in the desiccant granules will degrade the moisture absorption capabilities of the desiccant quickly and may de-calibrate the humidity sensor.

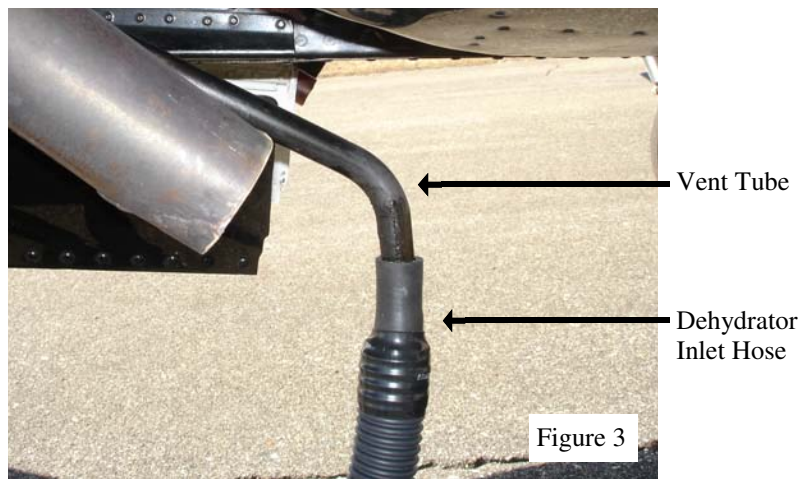
USING THE DEHYDRATOR—Cont'd



Dehydrator
Outlet Hose

Oil Fill Tube

Outlet Hose Attachment to Oil Fill Tube



Vent Tube

Dehydrator
Inlet Hose

Inlet Hose Attachment to Vent Tube

BEFORE FLIGHT

Follow These Steps to Remove the Dehydrator After Use

1. Move the dehydrator electric switch to the “OFF” position.
2. Remove hoses from the engine oil fill tube and crankcase vent tube.
3. **REPLACE THE OIL CAP ON THE OIL FILL TUBE.**
4. If a cover was placed over the secondary breather hole in the vent tube, remove it now. Refer to note 7 on page 6.
5. Plug the ends of the dehydrator hoses to prevent excess humidity from entering the desiccant. This will extend the time before the next reactivation is required.
6. Store the dehydrator in a dry area and in an upright position. The desiccant may spill from its container if the dehydrator is tipped. If this occurs, follow the safety precautions found in this User's Guide while handling the desiccant when replacing it to the container.

PRECAUTIONS

- A Material Safety Data Sheet (MSDS) is included with this product. Please read the complete document carefully. It is given to you to ensure your safety in handling the desiccant used in the dehydrator. We recommend the use of protective gloves, a respiratory protective device, and eye protection when handling the desiccant. See page 11 for desiccant replacement instructions.
- The box lid and inner desiccant cover **must** be open during reactivation.
- Do not touch or attempt to replace the desiccant within two hours of reactivation.
- During reactivation, the inside of the dehydrator is **HOT**. Do not touch the interior of the box during reactivation.
- Do not use the dehydrator in standing water and always use a grounded outlet.

REACTIVATING THE DESICCANT

This is required when the desiccant turns pink or red from absorbing moisture. If possible, reactivate the desiccant with the dehydrator in a warm room. If the dehydrator is in a very cold area, the desiccant container may not heat enough

2. Remove hoses from the dehydrator box.
3. Unlatch and open the dehydrator lid. Lift the inner clear plastic desiccant cover and support it with the latch.
4. Move the electric switch down to the "REACTIVATE" position. The internal electric heating element will begin to heat the desiccant to remove moisture. The fan will also be operating during reactivation. The pilot light will indicate that the heating element and fan are on.
5. Allow 8 hours to reactivate the desiccant. When the granules have turned from red to blue, the desiccant is dried out and the dehydrator can be returned to service.
6. Re-latch the cover and plug the hose ends to prevent reabsorbing moisture. Or, re-attach the hose ends to the engine.
6. Allow the desiccant to cool completely before using the dehydrator.



Dehydrator Lid in the "REACTIVATE" Position

OPERATING SUGGESTIONS

- Continuous operation of the dehydrator is recommended as long as the desiccant is blue. A change in color to pink or red indicates the desiccant is saturated and needs to be reactivated (for reactivation instructions see page 9).
- Continuous operation of the dehydrator will drop the internal humidity of the crankcase to less than 20% within minutes and it will maintain this level as long as the desiccant granules remain blue in color. Water in liquid form will take much longer to remove. The humidity will return to high levels very quickly if the dehydrator is disconnected before all of the water is removed.
- If you have a Tanis engine preheat system, turn it on for several hours initially while dehydrating the engine. This will speed up the dehydration process.
- **The Tanis Engine Dehydrator cannot reverse rust damage that has already occurred prior to its use.** It is not designed to be used as a long term engine storage device. For long term storage, follow the engine manufacturer's Service Bulletins for proper storage procedures.

Cold Weather Operation

- The digital hygrometer used in this dehydrator is not temperature compensated at temperatures below 45 deg F. Below this temperature the humidity indication is not accurate and reads much higher than the actual humidity.

SPECIFICATIONS

Dimensions	L 16"x W 9-1/2" x H 9-1/2"
Box Weight w/o Desiccant	7 lbs, 10 oz
Desiccant Weight	4.5 Lbs
Voltage	115 VAC
Overload Protection	5.0 AMP In-line Fuse
Full Load Amps Normal	.20 AMPS
Full Load Amps Reactivation	2.75 AMPS
Approximate fan CFM	1.5 CFM
Desiccant Material	Amorphous Silicon Dioxide/Cobalt Chloride

REPLACING THE DESICCANT

1. The desiccant needs to be replaced when ineffective, noted by a decrease in its ability to remove moisture from the engine. With regular use this happens after approximately one year of dehydrator operation. The decreased effectiveness is the result of an engine oil film that can accumulate on the desiccant beads.
2. Before starting this procedure refer to the MSDS sheet that you received with the dehydrator. Please read the complete document carefully — it is given to you to ensure your safety in handling the desiccant. Use protective gloves, a respiratory protective device, and eye protection when handling the desiccant.
3. To remove the desiccant, first prepare the dehydrator following these steps:
 - Remove hoses from the dehydrator box.
 - Place the switch in the “Off” position and unplug the dehydrator.
 - Open the dehydrator box and unplug the fan wires.
 - Lift the clear plastic desiccant cover. Then, holding the sides of the fan, pull the fan nozzle out of the grommet until the cover and fan assembly are free. You may need to lightly twist or wiggle the nozzle to more easily remove it.
4. Prepare a bucket, paper or plastic bag, or trash can in which to pour desiccant. Tip the box quickly and wait for all of the desiccant to pour out. You may gently shake or tap the box to ensure all desiccant is removed. It is normal for some desiccant to stick to the heating element or other surfaces in the box. To remove it, simply tap the heating wire or brush the beads off.
5. When refilling with new desiccant, unzip one end of the plastic bag containing the desiccant, and insert into the desiccant box. Release the corner and allow the bag to unzip and empty into the box.
6. Reinstall the cover and fan assembly by pushing the fan nozzle back through the grommet while twisting slightly. It may be necessary to push back on the grommet with your other hand to prevent it from coming loose. Re-connect the fan wires.
7. Dispose of the used desiccant and container in accordance with federal, state and local requirements.

To order the desiccant replacement kit ask for part number TED-1040E-R



Tanis Aircraft Products
PO Box 117
Glenwood, MN 56334
800-443-2136
320-634-4772

www.TanisAircraft.com

Rev 4 - 11/07