

BatteryMINDer

Goes High-Tech

by Dick Russ



Battery Minder leads in PA-32 forward baggage.



Temperature sensing lead.

I'm sure many of you have seen their advertisements in this magazine, and I am sure many of you might own or use a BatteryMINDer®. The April 2007 issue of Piper Flyer featured an excellent article by Charles Lloyd on the BatteryMINDer. If you save back issues of the magazine (as I do), you might wish to take a look Lloyd's article along with this one.

This article is for those who have not read about the BatteryMINDer, as well as for anyone that has, and also for those readers who are interested in some of the advances and benefits of the most recent model of the BatteryMINDer. This article will also detail installation procedures.

I have had the earlier-model 12117 BatteryMINDer on the Lance for the past two and a half years. I used it on the 180 the year before that, and feel it was very beneficial to the reliability and longevity of the battery and charging system. When I switched over to a Concorde sealed battery, I bought the new and vastly improved model 12240-AA-S1.

A word of caution for those who own and are using the smaller BatteryMINDer model 12117 on their aircraft batteries: this is an excellent unit, but it should not be used on sealed batteries. The 12117 has a tendency to boil the electrolyte over time, and with sealed batteries, you have no way to replenish the loss.

The newer, high-tech model 12248-AA-S1 will not allow this to happen. It has circuitry to monitor battery temperature and regulate charging output to prevent overheating and overcharging issues.

Dean Ritter, the owner of Diversified Aviation Services, also went one step further with his improvements. Due to the high cost of aircraft batteries, he felt it was important to have battery manufacturers approve the BatteryMINDer for use on their products. Both Concorde and Gill have approved the BatteryMINDer for use on their aircraft batteries after extensive testing.



Battery Minder leads connected to battery.



Battery Minder with wires in sleeving.

Even as high-tech as the new BatteryMINDER may be, it is very easy to hook up to your aircraft. It conveniently comes with two means of connection, depending on the user's needs. One means is the conventional squeeze-type clamp ends; the other means is by terminal ends that fasten directly to the battery. I personally prefer the terminal-type installation, but either will work just fine for PA-28s. Not so for the PA-32s and 34s. On these models, you'll need to connect the cables using the terminal connectors.

When I made the installation on the 180, I drilled a hole in the battery box using a Unibit, installed a rubber grommet,

and ran the wires through the grommet. I then sealed the wires in the grommet with a room-temperature vulcanization (RTV) adhesive rated for high temperatures. Lastly, I ran the wires just outside of the battery access door where it was easy to hook up the Battery Minder after each flight.

When it came to the Lance (and this is true for any PA-32), the installation required no modification to the battery box, which was, in my opinion, much easier.

The BatteryMINDER has just three terminals (cables) to connect: a positive terminal, a negative terminal (see pg. 42) and a temperature sensing terminal (see pg. 42). The cable at-



Battery Minder leads from battery cover.



Battery Minder leads extending out of baggage compartment floor.

taching to the positive battery post (see pg. 43) has a built-in fuse to protect the aircraft's electrical system.

The hookup is just a matter of connecting the positive lead (and temperature sensor) to the positive terminal on the battery followed by the negative lead to the negative terminal of the battery. Once the connections are made, it's a matter of reinstalling the battery cover (see pg. 44) with the wires positioned under the edge of the cover.

Then comes reinstallation of the baggage floor, with the BatteryMINDER leads extending out around the edge of the floor (see pg. 44 & 45).

I recommend connecting the BatteryMINDER any time the plane is not in use. To do this, simply plug in the quick-disconnect cables to the previously-installed leads (see pg. 45). As you can see in the photo(s), (see pg. 45) I like to set the BatteryMINDER on a stool when in use. I could have placed it in the baggage compartment, but due to the unit's heat, I prefer it to be outside the plane.

For readers that haven't had a chance to read the article about battery sulphation and charging, I probably should give some background on the principle of desulphiding and charging aircraft batteries according to the experts.

You've probably read about sulphation, the number one cause of early battery failure and reduced performance. This condition affects over 85 percent of all new lead acid storage batteries sold in the U.S. each year. Batteries that are free of sulphate can be charged both faster and more fully, which increases power and greatly extends battery life.

You also may have heard of products that use high frequency sound waves to safely dissolve some of the existing sulphate. These devices also stop new sulphate from forming on your battery's plates—but only when they are plugged into a 120-Volt electrical source, or when an alternator is charging the battery.

Additional advantages of using sulphation-free batteries include extended alternator and belt life, as the charging system no longer needs to work as hard to charge batteries that will not accept high alternator output current due to sulphation buildup.

As effective as these devices have been, they fail to totally rid batteries of the old, long-established sulphate—the sulfate formed over many charge-discharge cycles, from over/under charging, or from using the wrong type of water. Moreover, if a battery was subject to high storage or operating temperatures (greater than 125 degrees F), the type of sulphate crystals formed under these conditions cannot be removed unless very high current and/or harmful high voltage is applied over an extended time period (i.e., weeks or months).

For years, a method referred to as equalization has also been used to accomplish desulphation. However, this method can only be used on maintenance-type (free electrolyte) vented batteries, not the newer maintenance-free types. Although equalization improves short-term performance on maintenance-types, overall life of the battery is significantly shortened.

The manufacturer of the BatteryMINDER brand charger/maintainer desulphators has developed a new series of onboard units that overcome the shortcomings of the previous pulsing-type battery desulphators. The BatteryMINDER can be used on all types of battery systems.

The new line of 12-Volt, 24-Volt, 36-Volt and 48-Volt battery systems utilize patented technology to produce a wide range of high frequency pulse designed to dissolve both old and newly-formed sulphate. Using Random Frequency Pulsation (RFP) technology, these devices sweep the entire frequency range known to cause sulphate crystals to resonate (dissolve). This allows the sulphuric acid in the sulphate crystals to safely return to the battery's electrolyte.

Additional advantages of using sulphation-free batteries include extended alternator and belt life, as the charging system no longer needs to work as hard to charge batteries that will not accept high alternator output current due to sulphation buildup. Better fuel economy can also be expected, as much lower output current is demanded from the alternator to keep



Picture showing Battery Minder hooked up and operating.



Battery Minder leads connected in baggage compartment.



Picture showing Battery Minder hooked up and operating.

clean sulphate-free batteries fully charged.

Each of the new series of BatteryMINDER On-Board Desulphators Conditioners can serve up to six batteries at a time. Thus, even large commercial vehicles, boats and commercial equipment require only one unit per system. All units are effective on all brands/types, including maintenance-free, gel, AGM, deep cycle, sealed, and free-electrolyte batteries. Installation is a simple two-wire (+ -) hookup to just one battery.

For less than the cost of one good quality battery, you can have a unit that will easily double the life of your entire battery system—whether you use one battery or six. And they guarantee it. To me, BatteryMINDER is the best product you can have to protect your battery and insure that you have starting power whenever you need it.

The new model 12248-AA-S1 (see pg. 43) will cost \$159.95. If you would like the multi-cable harness enclosed in a flexible safety sleeving (recommended), this will cost an ad-

ditional \$6.50. If you mention you read my article, Diversified Aviation Services will also include a special short RTA-18 ring terminal assembly at no cost.

All models are covered by a first year 100% money-back guarantee and 5-year, no-hassle warranty. For further information, contact Dean Ritter of Diversified Aviation Services (405-627-9350) or view the products on their web site: www.thebattery minder.com.

Dick Russ is a multi-thousand hour commercial, ME and instrument rated pilot. He's also a Flight Test Engineer and an A&P/IA who has restored many Pipers. In addition to his career as a freelance writer and aviation business owner, he was Senior Engineer on the Shuttle Enterprise Approach and Landing Test Program at Edwards AFB.

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