



OPERATION MANUAL

36029 Battery Charger/Tester



Mid-Continent Instruments and Avionics
9400 E. 34th Street North
Wichita, KS 67226

Manual Number 9015914
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FOREWORD

This manual provides information intended for use by persons who are qualified to repair and service the Mid-Continent Instrument Co, Inc. 4300-4xx Series Electric Attitude Gyro; the LifeSaver®. If further information is required, please contact:

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9400 E. 34th St. North
Wichita, KS 67226 USA
Phone 316-630-0101 Fax 316-630-0723

We welcome your comments concerning this manual. Although every effort has been made to keep it free of errors, some may occur. When reporting a specific problem, please describe it briefly and include the manual part number, the paragraph/figure/table number, and the page number.
Send your comments to:

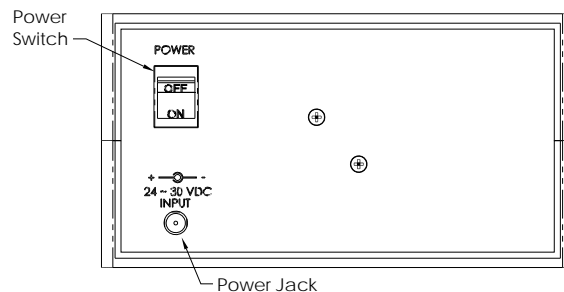
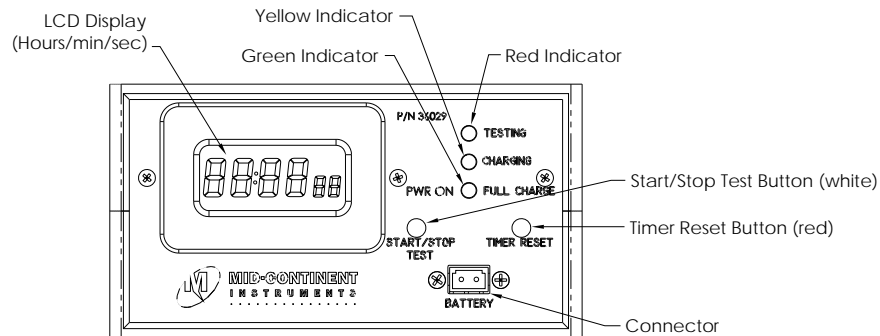
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1) Introduction:

The Battery Charger/Tester is used for charging and testing the Mid-Continent Instruments and Avionics Battery P/N 9015607, used primarily with the 4300-4xx Electric Attitude Indicator.

2) Features:



BATTERY CHARGER CONTROL PANEL

3) The following Indicators are provided:

Power On (without Battery): Green indicator, when illuminated indicates that the Battery Charger/Tester is on.

Charging: Yellow indicator, when illuminated indicates the Battery is in charging mode. Green indicator, when illuminated indicates the Battery is fully charged and in float charge mode. (Float charge is a continuous low rate charge that compensates for the self-discharge rate of a battery. This is also known as Trickle Charge.)

Battery Life Testing: Red indicator, when illuminated indicates Battery life testing is in process.



4) Power

Plug the AC Adapter* (MCI 9015904) into a standard wall outlet, and at the back of the test box. When the switch on the back of the unit is in the "ON" position, the Green indicator will illuminate and the Battery Charger/Tester is ready to use.

*AC Adapter - Input: 100-240VAC, 50/60Hz 30VA.
Output: 24VDC, 0.5A.

5) Charging Battery:

IMPORTANT BATTERY INFORMATION

- A) Do not charge a battery that shows signs of leakage or corrosion.
- B) Do not charge a battery at extreme temperatures. It is recommended to charge the Battery in a moderate temperature environment, avoiding extremes of either hot or cold.
- C) The Battery can be left on float charge indefinitely. Float charging will maintain the best possible conditions to maintain the life of the Battery.
- D) The Battery may be safely charged in any physical orientation.
- E) If battery has charged for 9 hours or more but the Full Charge Indicator does not illuminate, unplug the battery and check battery voltage to see if it is 20.5VDC \pm 0.5V. Plug battery back into the charger and wait for one minute, if indicator is still green, the battery is already fully charged. Proceed with Section 6 Testing Battery Capacity, if this test has not been performed prior to the charge. (Use this method to verify a full charge battery ONLY IF full charge light is not illuminated after charging 9 or more hours.)

Note: Only charge or test Mid-Continent Instruments and Avionics Battery P/N 9015607 with the 36029 Battery Charger/Tester. Charging or testing other types of batteries may damage the charger.

Plug the Battery (P/N 9015607) into the connector labeled "BATTERY" with Tester power on. If the Battery is not fully charged, the Battery will immediately start charging (the Green Indicator will go off and the Yellow indicator will be illuminated).

When full charge is reached, the Yellow indicator will go off. The Green indicator will be illuminated, and the charger will automatically switch to float charge mode to maintain the Battery in full charge condition. Full charge may take up to 9 hours.



6) Testing Battery Capacity (Discharge Time):

The process to test the Battery life is a measure of the time to discharge a fully charged Battery into a load similar to that required to power a 4300-4xx gyro in emergency mode. Follow the steps below to run the test:

- A) Ensure the Battery is fully charged as described above in Section 5 Charging Battery.
- B) Connect the Battery, and then allow at least 1 minute for stabilization of the Battery condition before pushing the "START/STOP TEST" button.
- C) Push the white "START/STOP TEST" button once (push twice to cancel the test and switch back to fast charge mode). The Battery will start to discharge and the Green indicator will go off. The Red Indicator will light and the digital timer will start counting up on the display. When discharge is completed, the time will be shown on the digital display. For a new Battery, this will normally be 75 minutes or more. If discharge time is less than 60 minutes, it is recommended that the Battery be replaced.
- D) After the Battery discharge cycle is complete, the Battery Charger/Tester will automatically switch to fast charging mode, the Red Indicator will go off and the Yellow Indicator will come back on.
- E) Allow the Battery to fully charge before use (See Section 5 Charging Battery).

7) Recycle Information:

- A) Store spent batteries under cover and on an impervious surface.
- B) Keep spent batteries from freezing to avoid cracking their cases.
- C) DO NOT dispose of spent batteries in the trash or any landfill. The battery contains lead and MUST be routed to a recycling center.
- D) Choose a reputable battery recycler. Call 1-800-8BATTERY for a location near you or visit www.rbr.org on the Internet.



TEST PROCEDURE FOR 36029 BATTERY CHARGER/TESTER

MINIMUM PERFORMANCE STANDARD

(Annual verification of 36029 Charger/Tester performance is recommended.)

Equipment:

- Adapter (9015904), DC Power Supply (0-30V)
- 2 ea. Multimeter
- Test Cable (used to connect an ammeter in between Test Unit and Battery)
- Test Cable (used to connect a voltmeter across battery)
- Charger to be Tested (36029)
- 1ea known good battery (9015607) that has passed test recently and still has voltage across it equal or greater than 19V.

Test Procedure

1. Plug adapter (9015904) into back of Charger/Tester (36029) and into wall outlet. Power on, green LED will illuminate, display will show all zeros.
2. Push in Start/Stop button, red indicator will flash on then off, green will be off then on, while timer will remain unchanged.
3. Power off; connect Charger/Tester to Ammeter, Voltmeter, and a known good Battery. Power on, wait for thirty seconds. If light is still green, check voltmeter for $20.4V \pm 0.2V$, if light is yellow, wait until it switches back to green, then check voltmeter for $20.4V \pm 0.2V$.
4. Push in start/stop button, indicator will change from green to red, timer will start to count up. Ammeter will read $260 \text{ mA} \pm 30 \text{ mA}$. Let it run for approx. thirty seconds then push in start/stop button again. Indicator will change from red to yellow; timer will stop counting and display the elapsed time. Push in clear button, display will return to zero. Ammeter will be at $100 \text{ mA} \pm 2 \text{ mA}$ for a short time then start decreasing. Observe when charge current drops to 15 mA. Voltmeter should show $21.8V \pm 0.25VDC$. Indicator on Charger/Tester will switch from yellow to green when charge current is between 15 mA and 3 mA.
5. Push in start/stop button, indicator will change from green to red and timer will start to count up. Let it run for 85 minutes. After that check the voltage and current reading. When discharge voltage drops to 16V, start watching the discharge voltage and indicator closely, indicator will switch from red to yellow when discharge voltage is $15.5V \pm 0.3V$, and the timer will stop counting. If it happens too quickly to see it, or to verify, push in start/stop button to discharge the battery again and repeat the cycle.

Note: If red indicator keeps flashing when power is first turned on, turn off power and check connections for reversed polarity or a short circuit.



**WHEN THE PANEL GOES
DARK AT 20,000 FEET,
ONE LIGHT STILL SHINES...**



THE LIFESAVER

ELECTRIC ATTITUDE INDICATOR WITH SELF-CONTAINED POWER

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