RF80H REFLEX

Featuring DigiFLEX®

CHARGER/ANALYZER FOR AIRCRAFT BATTERIES

1 HOUR CHARGE — 1 HOUR DISCHARGE

SINCE 1929
CHRISTIE
ELECTRIC CORP

reFLEX GOES DIGITAL WITH THE RF80H CHARGER/ANALYZER

THE AMAZING reFLEX CHARGER RESULTS

- Up to 90% **faster** than conventional methods. Aircraft batteries can be charged in 1 hour instead of as many as 14 hours — AND THE BATTERY STAYS COOL.
- Produces **higher battery capacity** (over 130% capacity not unusual). The depolarization pulses of the reFLEX charging process reduce battery impedance, gassing, heating and electrolyte losses.
- **Increases battery life** due to over 90% charging efficiency.
- Frequently **rejuvenates batteries** that otherwise fail specifications.
- **Better cell balance, less "memory," negligible heating and gassing.**
- Charges battery of unknown state-of-charge — **no need to discharge battery first.**
- Saves on manpower, time and battery inventory.
- The **only true cell balance test** available anywhere.
- Unique **color bar display showing battery state-of-charge.**
- **Digital** voltage and current **readouts.**
- Cell fatigue testing — saves 18 hours over other methods.

OTHER EXCLUSIVE reFLEX CHARGER/ ANALYZER FEATURES

- **State-of-charge indicator** can **reduce charge time** to as little as 5 minutes.
- Fully automatic programmable **charge-discharge-recharge cycle takes only 2 to 3 hours,** compared to other units requiring up to 30 hours.
- Services virtually **all of today's aircraft ni-cad batteries.**
- Selectable **GO/NO-GO** levels with indicators, as well as actual **ampere-hour capacity read-out.**
- Digital voltage and current read-out.

THE SECRET'S IN THE BURP

reFLEX charging employs a revolutionary patented charging concept — the burp. Unlike constant potential, constant current or pulse chargers, the reFLEX charger injects NEGATIVE (discharge) pulses during the charging process.

reFLEX charging is like a baby being bottle-fed. The baby must be burped to get rid of gases. Similarly, a battery accumulates gases across the plate areas when it is being "fed" or charged. By continuously "burping" (reFLEXING) the battery with negative pulses, larger charging currents can be used all the way to full charge with negligible battery heating. The first ni-cad was "burped" in 1969. Now, virtually every major airline, armed forces around the world, and many corporate aircraft fleets use this revolutionary charger.

1 hour charge-1 hour discharge... and the battery stays cool

For Sintered, Vented NI-CAD Batteries: 6-55 A-H (19, 20, 22 cell), 40-55 A-H (11 cell)*

*Complete charge or discharge time with most aircraft ni-cad batteries is 1 hour up to 40 A-H. 1 hour and 10 minutes or less up to 55 A-H. Some lower rate ni-cads require additional ½ to 1 hour.

Warning light flashes when fuse is blown due to incorrect cell or A-H setting.

Facilitates deep discharge reconditioning (erases "memory") particularly of batteries exposed to other chargers.

Step-By-Step Operating Instructions.

Digital meter displays "average" total battery voltage, automatically polarity-compensated "trough" cell voltage, charge current, or discharge current.

Actual ampere-hour capacity displayed until manually reset, whether battery tests good or bad.

Red display shows charge mode and amplitude. Green display shows discharge mode or state of charge of battery.

Complete charge to higher than nominal capacity usually in 1 hour or less AND THE BATTERY STAYS COOL.

Matches charger to batteries of different characteristics.

Both Short Cycle and Long Cycle provide completely automatic charge-discharge-recharge. Long Cycle also offers, in a few additional minutes, battery A-H discharge capacity reading.

Select ampere-hour rating.

Select number of cells.

If battery reaches predialed minimum acceptable A-H capacity before average cell voltage falls below 1 volt, battery will be automatically recharged and "CYCLE COMPLETE" light comes on.

If battery does not reach predialed minimum acceptable A-H capacity before average cell voltage falls below 1 volt, unit stops and "BATTERY REJECT" light comes on.

Set REGULATED constant current discharge to any current value.

- **Output — REFLEX charge: 5-80 amps. Analyze (discharge): 5-50 amps.**
- **Input power: 208/230 volts, 1 phase, 50/60 Hz., 23 amps. (Can be reconnected to limit current to 13 amps with some batteries. Also available for 115 volt operation.)**
- **Cables: a-c without plug; d-c with Elcon or equivalent plug; additional d-c cable without plug for small batteries.**
- **Weight: 150 lbs.**
- **Dimensions: 17⅞" W x 19¾" D x 11¾"H.**

DigiFLEX®

- is a new concept in aircraft nickel-cadmium battery servicing. Together with REFLEX charging, it provides DURING CHARGE the type of information heretofore only available during a subsequent **discharge** (which also requires a **recharge**).
- comes standard as part of the RF80H REFLEX charger/analyzer.
- has a green bar display which, during the last few minutes of CHARGE, gives an indication of relative battery state-of-charge and battery state-of-health.
- has a digital display which, during the last few minutes of CHARGE, gives readings of relative cell ampere-hour capacities (as the cells are manually scanned).
- provides a digital readout for average battery voltage and constant current amps during REFLEX or constant current charge, as well as battery voltage, cell voltages and current during discharge.
- shows by means of the red and green bar displays whether the charger/analyzer is in REFLEX charge, constant current charge or discharge.

The RF80H includes the novel DigiFLEX circuit which brings a major advance to ni-cad battery **analyzing** — just as REFLEX brought a major advance to ni-cad battery **charging.**

In other words, DigiFLEX provides relative ampere-hour **discharge capacity** readings for each cell and the battery **DURING CHARGE.** This is accomplished through unique data analysis during the negative pulses (which are interjected between the positive charging pulses).

On the other hand, a conventional digital voltmeter reads **only voltage during charge.** *Unfortunately, there is no correlation between battery charging voltage and discharge capacity.*

HOW DigiFLEX IS USED

Battery State-Of-Charge and Capacity

Assume that it had **previously** been determined (or the unit set such) that with a particular battery① all 10 greenbars light up when that battery is at normal charging temperature, is fully REFLEX charged, and has just 100% rated capacity. If **now,** after 30 minutes of REFLEX charge, only 5 bars light up, the battery apparently is not yet charged. If after 40 minutes all bars light up, the battery is most likely fully charged and apparently still has its full capacity.

On the other hand, if after 60 minutes of charge — and, to make sure, after an additional 10 minutes of charge — only 6,7,8, or 9 green bars light up, that battery is most likely no longer capable of 100% rated capacity, at least without further maintenance such as deep discharge equalizing.

Regardless of whether a battery can still reach 100% rated capacity, the operator can usually tell when the battery will no longer accept additional charge by observing when the number of green bars starts to decrease.

Relative Cell Capacity

When the individual cells are quickly scanned with the probes during the last few minutes of REFLEX charging, or are scanned whenever the maximum number of green bars appropriate for that battery light up, any **cell** that reads 1.60② has approximately the same ampere-hour capacity as the **battery.** Any cell that reads higher has a higher capacity; any cell that reads lower has a lower capacity. If any cell reads appreciably lower, the battery should be rejected, pending further maintenance such as deep discharge equalizing.

DigiFLEX Analysis					=	A revolutionary concept of battery and cell **ANALYSIS DURING CHARGE**
REFLEX® Charge					=	Full charge in ½ to 1 hour
REFLEX Charge	+	**Discharge** Analysis			=	Charge-Discharge Analysis-Recharge in 2½ to 3 hours.
REFLEX Charge	+	**DigiFLEX Pre-**Analysis	+	**Discharge** Analysis	=	*Better battery quality* with battery and cell analysis **DURING CHARGE** as a double check on analysis during discharge. Takes 2½ to 3 hours.
REFLEX Charge	+	**DigiFLEX** Analysis			=	*Still greater productivity* through full charge + battery and cell analysis — **all in just ½ to 1 hour of Charge**

① Ni-cad battery characteristics differ by brand, type, service history, etc.

② 1.57 if the charger/analyzer is set to battery type "B" rather than "A".

SINCE 1929
CHRISTIE ELECTRIC CORP.
18120 South Broadway, Gardena, California 90248 U.S.A.
(213) 715-1402, TWX 910-349-6260, FAX (213) 618-8368

OTHER CHRISTIE AIRCRAFT PRODUCTS

- Rectodyne DC Power Carts for Starting & Service
- High Current D-C Power Supplies for Calibration and Checkout
- Chargers and Testers for lead acid batteries

Printed in U.S.A.