A Lear Siegler Company

THE POWER SOURCE

AQS MODEL 24-400

NICKEL-CADMIUM AIRCRAFT BATTERY CHARGER/ANALYZER

GENERAL INFORMATION

PRIMARY POWER:	115 VOLTS AC
	60 HERTZ
	SINGLE PHASE
	(NOMINAL ± 10%)
WEIGHT:	3.6 KG.
WIDTH:	16 CM.
HEIGHT:	30 CM.
DEPTH:	20.3 CM.

CONVECTION COOLED

OPERATING INSTRUCTIONS

PRECAUTIONS

1) ALWAYS HAVE SELECTOR SWITCH IN "OFF" POSITION BEFORE CONNECTING OR DISCONNECTING BATTERY.

2) NEVER TURN UNIT ON CHARGE WITHOUT A BATTERY CONNECTED.

BATTERY CHARGING

CONSTANT CURRENT CHARGE RATE ADJUSTABLE FROM 25 TO 500 MILLIAMPERES.

BATTERY ANALYZING

CONSTANT CURRENT DISCHARGE ADJUSTABLE FROM .5 TO 5 AMPERES.

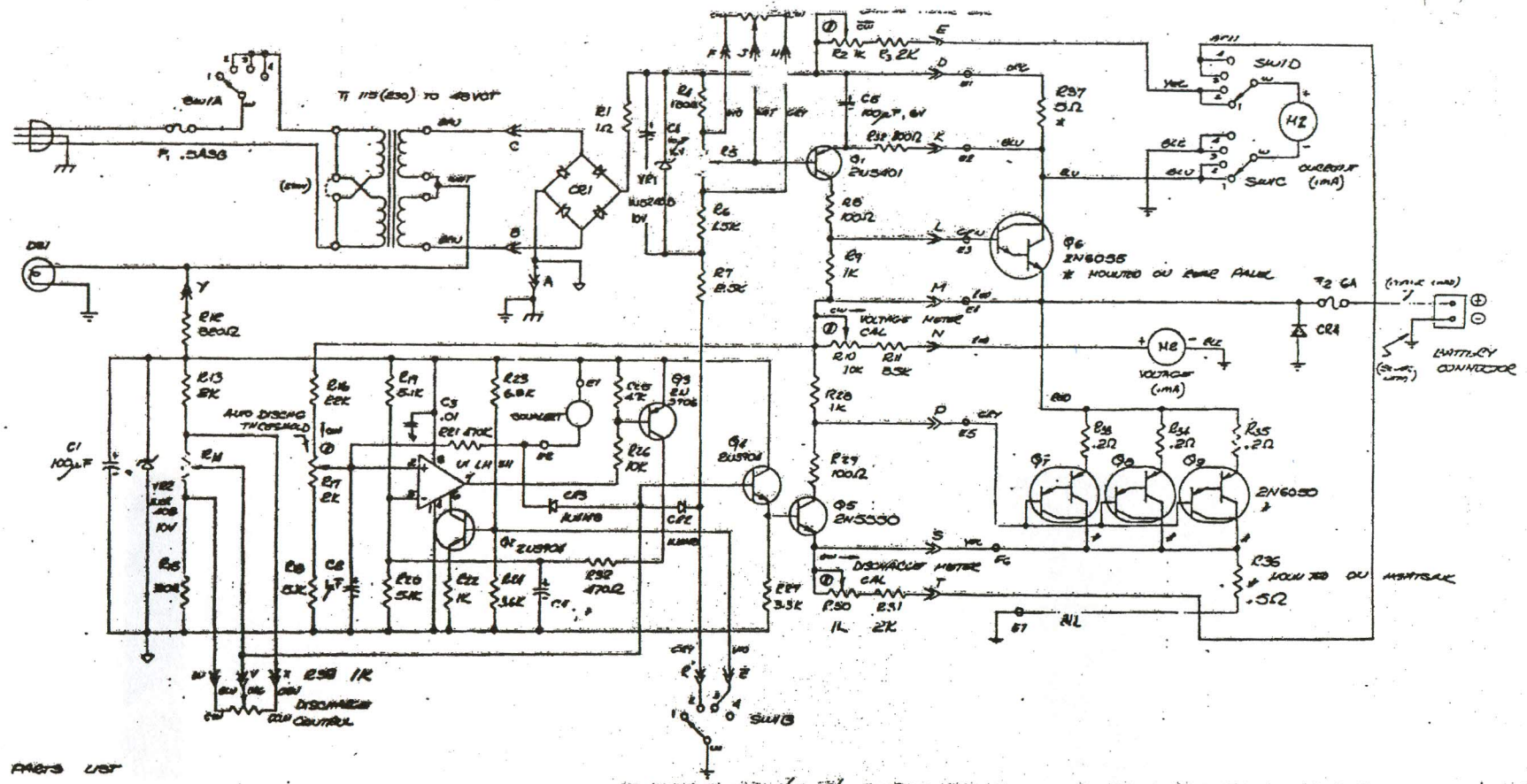
A) AUTO DISCHARGE MODE TERMINATES WHEN BATTERY VOLTAGE DROPS TO 20V AND STARTS AUDIBLE SIGNAL.

B) MANUAL DISCHARGE MODE ENABLES THE TECHNICIAN TO CHECK INDIVIDUAL CELLS FOR LOW VOLTAGE WHILE BATTERY PACK IS UNDER A LOAD.

PARTS LIST

AQS 24-400 CHARGER/ANALYZER

ITEM	DESCRIPTION	PART NUMBER
1.	CABINET ASSEMBLY	AQS-400C
2.	HEATSINK ASSEMBLY	AQS-400HS
3.	D.C. CABLE ASSEMBLY	AQS-1901A
4.	A.C. CABLE ASSEMBLY	AQS-1902A
5.	REAR PANEL ASSEMBLY	AQS-1903A
6.	CIRCUIT BOARD	AQS-1904A
7.	CIRCUIT BOARD CONNECTOR	AQS-1904C
M1.	VOLT METER	AQS-1905A
M2.	MILLIAMP AMMETER	AQS-1906A
SW1.	SELECTOR SWITCH (PRE-WIRED)	AQS-1907A
R39.	CHARGE POTENTIOMETER	AQS-1908A
R38.	DISCHARGE POTENTIOMETER	AQS-1909A
T1.	TRANSFORMER	AQS-1910A



PARTS LIST

U1 LM311P, COMPARATOR, TEXAS INSTRUMENTS
Q1 2N5401, HIGH VOLTAGE TRANSISTOR, MOTOROLA
Q2 2N3904, SMALL SIGNAL TRANSISTOR, MOTOROLA
Q3 2N3906 " " " "
Q4 2N3904 " " " "
Q5 2N5330, HIGH VOLTAGE TRANSISTOR, MOTOROLA
Q6 2N6056, DARLINGTON POWER TRANSISTOR, MOTOROLA

Q7 2N6050 " "
Q8 2N6050 " "
Q9 2N6050 " "
VR1 1N5240B, 10V±5%, ZENER DIODE, MOTOROLA
VR2 1N5240B, 10V±5%, " " "
CR1 VE28, BRIDGE RECTIFIER, VARO
CR2 1N4148, SMALL SIGNAL DIODE, TEXAS INSTRUMENTS
CR3 1N4148, " " " " "
M1, 0-1mA METER
M2, " "
T1, 115(230V) TO DUAL 24V TRANSFORMER, P9616, STANCOR

ALL RESISTORS ARE ¼W 5% EXCEPT AS FOLLOWS
R1 1Ω ½W 10%
R2 1K TRIMMER POT BECKMAN 63WR
R3 2K ¼W 1% RN60D
R7 2.5K 2W WW 10%
R10 10K TRIMMER POT BECKMAN 63WR
R11 35K ¼W 1% RN60D
R12 820Ω 2W 10%
R17 2K TRIMMER POT BECKMAN 63WR
R30 1K " " " "
R31 .2K ¼W 1% RN60D
R32 360Ω ¼W 5%
R33 .2Ω 2W 5% WW
R34 .2Ω " " "
R35 .2Ω " " "
R36 .5Ω 25W 5% RNB5
R37 5Ω 5W 5% RNB5
R38 1K 2W 10% CONTROL POT
R39 1K " " " "

C1 100μF 15V MALLORY TC2501B ELECTROLYTIC CAP
C2 1μF 20V TALLORY TAC TANTALUM CAP
C4 " " " " "
C3 .01μF, 25V CERAMIC CAPACITOR
SOLENOID, MALLORY SC628
DS1 28V INDICATOR
SW1 4 POLE, 4 POSITION ROTARY
C4 10μF, 16V
C5 100μF, 6V
CR4 100V, 10A DIODE

AERO QUALITY SALES		
24-400 CHARGER ANALYZER		
JPM 29 DEC 78		

JFM engineering, inc.

24-400

CALIBRATION TEST PROCEDURE

rev 1.3 - 15 December 1995

1.0 Preliminary:

1.1 Inspect the unit for any external defects.
Check for proper fuse and shock warning labels. Replace if needed.
1.2 Remove the rear panel and inspect the interior.
1.3 Connect to a battery through an external ammeter/ voltmeter test circuit.
1.4 Set charge and discharge current selectors to minimum.

2.0 Current, charge:

2.1 Set the mode selector switch to Charge.
2.2 Advance the charge current to 400mA ±4mA (per the external ammeter).
2.3 Adjust R2 for a reading of 400mA ±10mA on the 24-400 ammeter.
2.4 Verify meter tracking at currents of 50mA, 100mA, 200mA, 300mA and 500mA (±5%).
2.5 Decrease the current to minimum and turn the unit off.

3.0 Current, discharge:

3.1 Set the mode selector switch to Manual Discharge.
3.2 Advance the discharge current to 4A +-.04A (per the external ammeter).
3.3 Adjust R30 for a reading of 4A ±.1A on the 24-400 ammeter.
3.4 Verify meter tracking at currents of .5A, 1A, 2A, 3A and 5A (±5%).
3.5 Decrease the current to minimum and turn the unit off.

4.0 Voltage:

4.1 Disconnect the test set-up from the battery and re-connect it to a power supply.
4.2 Set the power supply to 20.0V ±0.1V (per the external voltmeter).
4.3 Adjust R10 for a reading of 20V ±0.5V on the 24-400 voltmeter.
4.4 Set the mode selector to Auto Discharge.
4.5 Adjust R17 (ccw) until the voltage cut off circuit is activated (beeper on).
If the unit sets the beeper on from the begining, adjust R17 clockwise and repeat the test (reset by switching momentarily the mode to manual discharge).
4.6 Verify the voltage cut-off point by repeating test 4.5 with a power supply above 20V and slowly decreasing it 20V ±0.2V. Re-adjust as necessary.

5.0 Final:

5.1 Re-inspect the unit.
5.2 Re-install the rear panel.
5.3 Affix calibration sticker.