COMPONENT MAINTENANCE MANUAL Z03

Component Maintenance Manual

with

Illustrated Parts List

for

Z03K000
Z03K000A
Z03K000B
Z03K000C
Z03K000D

Electrostatic Spray System

WARNING

A danger of injury or death from electrical shock exists when the system is on. NEVER touch the red Power Supply leads, the electrode jumper wires or the electrodes while the system is turned on. Should a ground check on the aircraft become necessary do not get within two feet of the electrodes. Only qualified and trained personnel should perform maintenance on this equipment.

COMPONENT MAINTENANCE MANUAL Z03

RECORD OF REVISIONS

REVISION	*ISSUE DATE*	*POSTED DATE:*	*POSTED BY:*
1	10-11-06	10-11-06	Spectrum E.S.

COMPONENT MAINTENANCE MANUAL Z03

LIST OF EFFECTIVE PAGES
and
TABLE OF CONTENTS

* INITIAL RELEASE 8-15-05

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This manual contains proprietary information and should not be distributed to unauthorized personnel or repair facilities. This manual is designed to provide basic service, maintenance and repair information for the electrical components of the electrostatic spray system. Some subcomponents are not considered as field repairable. Instruction is provided to trouble shoot and determine the condition and replace as necessary those defective components. The mechanical components (nozzles and valves) are mentioned and described only as they interface with the electrical components. Nozzle maintenance and service are covered under a separate manual.

1.0 GENERAL System description and theory of operation:

Initial use: Have both voltage rheostat dials in the full counterclockwise position. After take off switch the power on. Two windows on the meter box will illuminate indicating 0.0 volts. Turn either the left or right rheostat dial clockwise to raise the voltage to 6.0. Repeat this procedure with the other rheostat dial raising the voltage to 6.0.

Current flow as expressed by the bar graph LED display will only be observed while spraying unless wet air, leaking or electrode obstruction is occurring (see troubleshooting).

Upon beginning spraying the bar graph for both the left and right boom will be illuminated from left to right on the scale of 1 to 10 (x 100 Scale). Ideal operating current range should be between 150 and 350 with 350 the number best suited for most sprayed formulations. 350 is displayed on the bar graph as 3.5. The bar graph is designed to show the current relative to full scale. At full scale the reading of 10 indicates the current is 2 Milliamps or 2,000 Microamps. The actual current is proportional to full scale as displayed on the bar graph. A display reading of 5.0 indicates the actual current is 1 Milliamp or 1,000 Microamps. So the ideal reading of 1.5 to 3.5 indicate an actual current between 300 to 700 Microamps.

Observe the current flow scale. To increase the current flow to reach 350 turn either the left or right rheostat dial clockwise to increase the current flow or counterclockwise to decrease. The current flow will increase with the increase in voltage. Turn the other rheostat dial to match the other booms current flow.

NOTE: When the current flow for both booms is matched, that is they are both indicating the same current flow, the voltages to each boom will rarely be the same. They could be as much as 1.0 kV different. Matching the voltages on each boom is not the object during spraying rather matching the current flow is the objective.

The current flow bar graph lights should be lit to the 350 mark on each scale with no light flickering. If one or more lights are flickering the voltage is adjusted too high and the flickering lights indicate system shorting is occurring on that boom (see troubleshooting). Lower the voltage/current flow until the flickering stops then match the other booms current flow.
After spraying is complete it is not necessary to turn the rheostat dials back to 6.0 kV. Simply turn the power switch on the control box off. The system is now set for the next spraying if the same spray

formulation is being used. Each spray formulation has it's own charging characteristics. If a different spray formulation is being applied then the initial set up of beginning with 6.0 kV should be applied.

2.0 EQUIPMENT AND MATERIALS

2.1 EQUIPMENT

Power supply capable of 10A @ 28VDC continuous duty	Commercially Available
Z03-TB-1 Break Out Box (BOB)	ZEE Systems, Inc.
Z03-TB-2 Meter Panel Calibrator	ZEE Systems, Inc.
MANUAL TPZ03-033 Calibration and Test Procedure	ZEE Systems, Inc.
FUNCTIONAL TEST PROCEDURE Z03-035FTP Test Procedure for Z03-035 Control Box	ZEE Systems, Inc.
CALIBRATION and TEST PROCEDURE Z03-034FTP Calibration and Test Report for Z03-034 Meter Panel	ZEE Systems, Inc.
CALIBRATION and TEST PROCEDURE Z03-033FTP Calibration and Test Report	ZEE Systems, Inc.
Digital Volt Meter (DVM)	Commercially Available
Ohm-meter with 20Mohm scale or greater	Commercially available
Load Resistor, 500Kilo-ohms @ 10w (1 each)*	Commercially Available

*Individual components may be assembled in parallel to achieve values stated above. The parts must be matched and to .01% tolerance.

2.2 MATERIALS

Solder, Rosin Core 63/37, .030-.035 dia. Specification QQ-S-5711E or later, or equivalent	Commercially Available

3.0 REPAIR AND REPLACEMENT

WARNING

A danger of injury or death from electrical shock exists when the system is on. NEVER touch the red Power Supply leads, the electrode jumper wires or the electrodes while the system is turned on. Should a ground check on the aircraft become necessary do not get within two feet of the electrodes. Only qualified and trained personnel should perform maintenance on this equipment.

3.0.1 Refer to section 7.2 for bench check procedures.

3.1 POWER SUPPLY UNIT (PSU)

NOTE

The PSU is sealed with a rubber gasket between the Cover and the Base Plate. Take care not to damage the gasket when removing the Cover.

3.1.1 Disassembly: Remove the six bolts which hold down the Cover. There is a P.C. Board (PCB) attached to the Cover. Lift the cover slowly taking care not to damage the wiring to the PCB.

3.1.2 Power Supply replacement:

NOTE

DO NOT open or attempt to repair the H10885 and H10886 Internal Power Supply Modules inside the Z03-033-1 Power Supply Unit. The Power Supply manufacturer does not authorize field repair of these units. The internal power supply module has a 2 year limited warranty. Replace any defective Power Supply Module and return it to Spectrum Electrostatic Sprayers, Inc. for return to the manufacturer for warranty evaluation.

Unplug the connector strip to each power supply and note which is positive and negative connector. The two power supplies are attached from the bottom of the Plate. Remove the six screws and lift the plate and then remove the screws holding the Power Supply. Attach the Power Supply to the Plate and attach the Plate to the Base Plate.

3.1.2.1 New H10885 and H10886 Power Supply Modules are shipped from the factory set at 500V maximum output. Refer to Manual TPZ03-033 for calibration and test procedures.

3.1.3 Replace any damaged or defective components. Refer to FIG. 2 and FIG. 2A for details.

3.2 METER PANEL UNIT

3.2.1 Disassembly: Remove the four screws on the base and lift the base to expose the internal components. Refer to FIG. 4 for details. The Z03-034-3 MP supplies outgoing signals, left volts, left amps, right volts, right amps, through the M24308/1-1F, nine pin connector. These signals may be liked to other onboard GPS data systems.

3.2.2 Component replacement: To remove the Z03-037-3 PCB Assembly unplug the ribbon cable then loosen and remove the lock nut holding the PCB in place. Refer to FIG. 4 for details. It may be necessary to unsolder the wires to the connector and fan. Install the new PCB in reverse order of removal, refer to FIG. 4B wiring diagram to attach wires.

3.2.3 To remove the Z03-027-2 PCB and Z03-037-1 PCB you must first remove the Z03-037-3 PCB, refer to section 3.2.2 and FIG. 4 for details. Install new components in reverse order of disassembly. Refer to Z03-034FTP for calibration and test procedures.

3.3 CONTROL UNIT

3.3.1 Disassembly: Remove the four screws and lift the Cover Assembly up. There is a rubber gasket under the cover take care not to damage the gasket. Refer to FIG. 5 and FIG. 5A for details. Using standard

practices inspect and test the electrical components. Replace any defective component. The most common component to fail is the L-ADJ and R-ADL Potentiometers. Replace any defective component. Refer to Z03-035FTP for test procedures.

3.4 CABLES

3.4.1 Disassembly: Remove the connector shell and slide back the black rubber boot to expose the solder connections. Each solder joint will be covered with black shrink tubing. Do not remove the shrink tubing unless the continuity or impedance checks indicate a failure on a particular wire.

3.4.2 Perform a pin to pin continuity check. Refer to FIG. 6 for details.

3.4.3 Perform an impedance check. Assume a cable with an 8 pin connector. Pins are A thru H. Use an Ohm-meter with at least a 20 Mohm scale. FOR THIS TEST, ALL READINGS SHOULD BE 20 MOHMS OR GREATER. Place probe one on pin A. Place probe two on pin B. The meter should read 20 Mohm or greater. Keep probe one on pin A. Place probe two on pin C. The meter should read at least 20 Mohm or greater. Continue test keeping probe one on pin A and move probe two to pins C thru H. Place probe one on pin B. Place probe two on pin C, continue pin B to pins D thru H. Place probe one on pin C. Place probe two on pin D, continue pin C to pins E thru H. Continue the sequence established. The last check should be probe one on pin G. Probe two on pin H. Any reading less than 20 Mohm shows a defective cable. Repair defective condition or component or replace cable.

3.4.4 Perform a visual inspection around the pin solder connections. Look for any contamination that may cause a short or high impedance condition. Remove any contamination that will not damage the solder joints. If the contamination cannot be removed unsolder the wires from the connector and replace the connector. Refer to FIG. 6 for details.

4.0 SERVICING

5.0 MAINTENANCE SCHEDULES

COMPONENT	MAINTENANCE	INTERVAL
POWER SUPPLY UNIY	No scheduled maintenance. REPLACE/REPAIR	 ON CONDITION
METER PANEL UNIT	No scheduled maintenance. REPLACE/REPAIR	 ON CONDITION
CONTROL UNIT	No scheduled maintenance. REPLACE/REPAIR	 ON CONDITION
CABLES	No scheduled maintenance. REPLACE/REPAIR	 ON CONDITION
NOZZLES	REPLACE	ON CONDITION
	Check for leaks at the nozzle.	Before every flight .

There cannot be ANY leaking from the nozzle components allowing liquid to get onto the electrode as shorting/arcing will occur.	
Rinse the inside of the nozzles by flushing the boom with clean water.	After the last flight of the day or changing formulations.
Wash all parts of the nozzles and boom with soap and water and or power wash.	When dirt and or spray Buildup is observed.

6.0 TOLERANCES No special tolerances apply other than those mentioned in this manual. Check with the airplane manufacturers repair or maintenance manual or Flight Manual Supplement for any special requirements.

7.0 TROUBLE SHOOTING

7.1 On the aircraft:

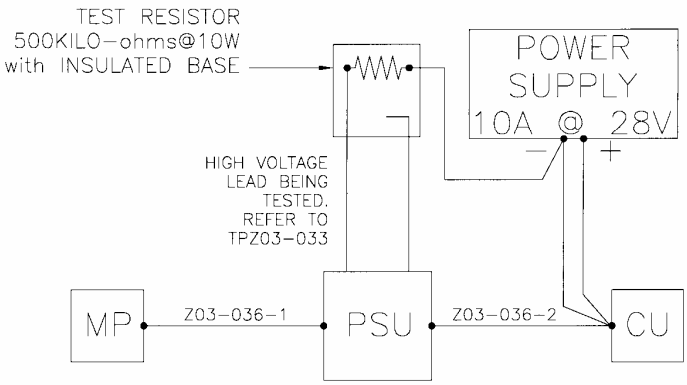
WARNING

A danger of injury or death from electrical shock exists when the system is on. NEVER touch the red Power Supply leads, the electrode jumper wires or the electrodes while the system is turned on. Should a ground check on the aircraft become necessary do not get within two feet of the electrodes. Only qualified and trained personnel should perform maintenance on this equipment.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No voltage output	Tripped Circuit Breaker.	Check CB fuses.
MP, Erratic readings on	Defective cable.	Inspect and test cable. Repair or replace.
	Bad ground in PSU or Cables.	Check resistance to aircraft ground Should be less than 10 ohms.
	Defective processor PCB inside MP	Verify cable isolation. Replace Z03-037-3 PCB only after cable isolation is verified.
	Bad display module (rare) High G force or excessive Vibration.	Replace Z03-037-1and Z03-037-2 PCBs.
MP, Bar Graph flickering	Electrical arcing or Momentary shorting of the boom(s).	Reduce voltage setting.

	Plumbing leak at Nozzle.	Check top of brass check valve. Check large plastic nut on Nozzle barrel. Check for any leaks on the boom or nozzle assembly.
	Cable short.	Connect BOB Z03-TB-1 to determine the condition of the cable.
	Loose Nozzle Jumper(s)	Check connections.
MP, bar graph spiking out Voltage to 0.0	Large leak at nozzle.	Check for leak(s).
	Reduced or angled spray Cone from orifice restriction or debris inside nozzle.	Clean the inside of the nozzle and nozzle barrel. Check aircraft and ground loading filtration.
System ON, but not spraying, current flow noted.	Flying in high humidity conditions or light Rain.	Normal.

7.2 <u>On the bench:</u>



Z03 SYSTEM TEST SET UP
FIG. A

<u>WARNING</u>

<u>A danger of injury or death from electrical shock exists when the system is on.</u> NEVER touch the red Power Supply leads or the test resistor while the system is turned on. Insure that the test resistor is properly insulated. Do not get within 2 feet of the test resistor when the system is on. <u>Only qualified and trained personnel should perform maintenance on this equipment.</u>

7.2.1 Cable Assemblies: Check the cables first to insure that proper signals are sent. 1) Disassemble and inspect cable connectors for corrosion. 2) Perform Pin to Pin Continuity Check on cable assemblies. 3) Check for high impedance shorts across all pins of the cable assemblies. Refer to section 3.4 for test details. Repair or replace any defective component or condition before proceeding.

7.2.2 Connect all components of sprayer system in accordance with Figure A. Test Set Schematic for repair of the Power Supply Unit, Control Unit, Meter Panel, and Cable Assemblies to verify reported failure. Perform TPZ03-033 FTP. If sprayer system fails FTP disconnect all sprayer components and test the Control Unit, Meter Panel as follows:

7.2.3 Control Unit: Perform the TPZ03-035 FTP to verify proper operation of the Control Unit.

7.2.4 Meter Panel: Perform the Z03-034FTP. Use the Z03-TB-2 Meter Panel Calibrator to verify proper operation of the Meter Panel.

7.2.5 Repair or replace any defective component.

7.2.6 Connect all components of sprayer system and perform TPZ03-033 FTP again. If sprayer system again fails the FTP the problem has been isolated to the PSU.

7.2.7 Disconnect all sprayer components and perform steps 7.2.3 and 7.2.4 again on the Control Unit and Meter Panel. This verifies if the Power Supply Unit failure has caused any damage to the attached components.

7.2.8 Remove the six bolts (ref: 3.1.1) and place the PSU cover to expose the internal components but in a position so the system may be operated with the other known good components.

7.2.9 Connect all components of sprayer system in accordance with Fig. A and troubleshoot the PSU as follows:

7.2.10 Make sure the CU Master Switch is OFF.

7.2.11 Inspect the internal wiring of PSU for any breaks, burns, or chafes.

7.2.12 Ensure the wire screws on the Power Supply connectors are tight.

Turn on the power source. At the CU turn the Master Switch ON.

7.2.13 Check that the cooling fan is operating.

7.2.14 Check for proper voltages at Power Supply connectors.

7.2.15 Swap the Right Side (Positive) and Left Side (Negative) power supply connectors of PSU to see if the failure swaps sides on the Left and Right MPU display.

7.2.15.1 If failure follows from Right to Left or Left to Right side – replace the respective failed Power Supply.

7.2.16 If failure does not follow sides check continuity of PSU circuit board and connectors.

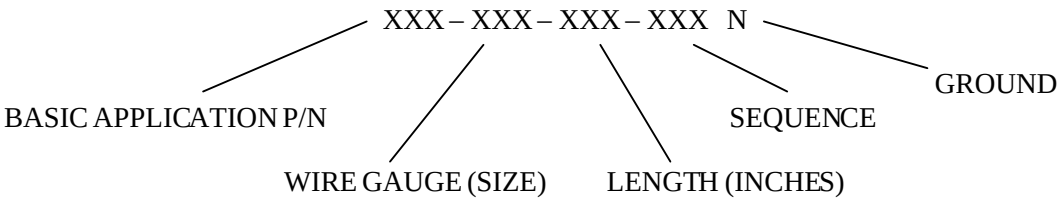
7.2.17 Repair or replace any defective part or condition.

7.2.18 Perform TPZ03-033 FTP.

8.0 ILLUSTRATED PARTS LIST

8.1 EXPLANATION OF SYMBOLS AND WIRE CODE:
ALT - The Part Number shown is an approved alternate, either part number may be used.
MOD "X" Refers to modification information of this part as applicable to this assembly.
NP - Not Procurable individually, see next higher assembly.
NS - Not Shown
OBS – Obsolete, no longer available or supported.
USAGE/QTY - This identifies parts used on specific applications (not common to all units). If no code is shown the part is used in all applications.
.. - Part of higher assembly.
*/# - See explanation at end of parts list.
Equivalent AN, MS and NAS hardware may be used and considered interchangeable.

8.2 WIRE CODE. All wire shall conform to M22759/19 specifications.



8.3 Electrostatic Spray Kit

FIG -ITEM	PART NUMBER	DESCRIPTION	QTY	USAGE/NOTE
1	Z03K000	Kit, Electrostatic Spray		A
	Z03K000A	Kit, Electrostatic Spray		B
	Z03K000B	Kit, Electrostatic Spray		C
	Z03K000C	Kit, Electrostatic Spray		D
	Z03K000D	Kit, Electrostatic Spray		E
-1	Z03-033-1	Power Supply Unit (PSU)	1	
-2	Z03-034-1	Meter Panel Unit (MP)	1	A,B
	Z03-034-2	Meter Panel Unit (MP)	1	C,D
	Z03-034-3	Meter Panel Unit (MP)	1	E
-3	Z03-035-1	Control Unit (CU)	1	
-4	Z03-036-1	Cable Assembly	1	
-5	Z03-036-2	Cable Assembly	1	A,C
	Z03-036-4	Cable Assembly	1	B,D

NOTE: Kits may be assembled with serviceable (not new) parts. These kits will be identified with the letter "R" at the end of the kit number. Example: a Z03K000B kit assembled with serviceable components would be kit part number Z03K000BR.

NOTE: The Z03-034-3 Meter Panel Unit may be used as an alternate for the Z03-034-2 MP for earlier Kits (Z03K000 A/B/C). The Z03-034-2 CANNOT be used in place of the Z03-034-3. The Z03-034-3 must be used in the Z03K000D Kit.

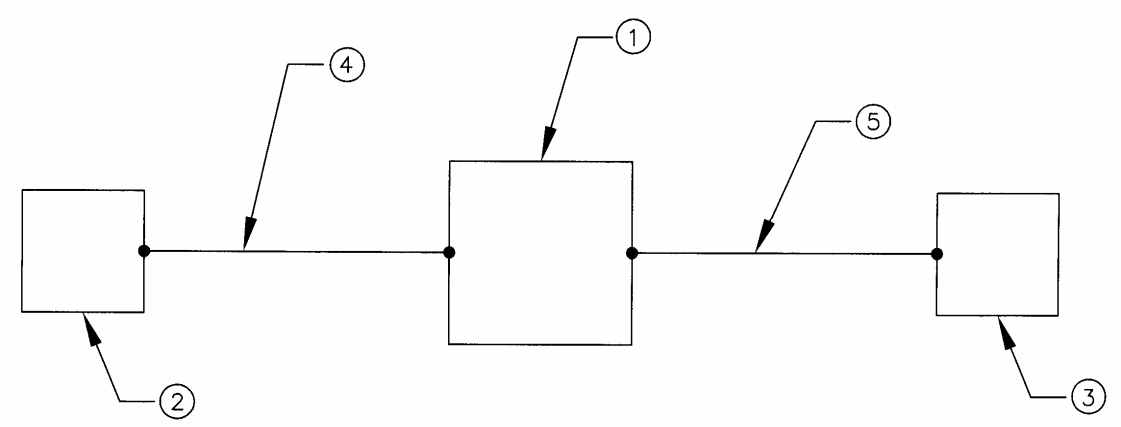


FIG. 1

8.4 Power Supply Unit P/N: Z03-033-1

FIG -ITEM	PART NUMBER	DESCRIPTION	QTY	USAGE/NOTE
2/2A/2B				
	Z03-033-1	Power Supply Unit		
-1	Z03-301-1	BASE PLATE ASSY	1	
-2	Z03-320-1	PLATE ASSY	1	
-3	Z03-500-1	COVER	1	
-4	ZSP5-511-49.25-3	GASKET	1	
-5	Z03-031-1	P.C.BOARD ASSY	1	MOD A
	Z03-030-1	P.C.BOARD ASSY	1	OBS
-6	Z03-801-1	FAN ASSY	1	
-7	H10886	POWEWR SUPPLY (-)	1	
-8	H10885	POWER SUPPLY (+)	1	
-9	MS35206-245	SCREW	16	
-10	AN935-8 ALT: MS35338-42	WASHER, LOCK	16	
-11	AN960-8L ALT: NAS1149F-N816P	WASHER, FLAT	12	
-12	MS35207-263	SCREW	7	
-13	AN935-10 ALT: MS35338-43	WASHER, LOCK	7	
-14	AN960-10L ALT: NAS1149F-0332P	WASHER, FLAT	7	
-15	PT02A-12-8S	CONNECTOR	1	
-16	PT02A-12-8P	CONNECTOR	1	
-17	MS35206-217	SCREW	8	
-18	AN960-4L ALT: NAS1149F-N416P	WASHER, FLAT	8	
-19	AN364-440A ALT: NAS1022N-04	NUT	8	
-20	AN515-6R7 ALT: MS35206-229	SCREW	4	
-21	AN935-6 ALT: MS35338-41	WASHER, LOCK	4	
-22	AN960-6L ALT: NAS1149F-N616P	WASHER, FLAT	4	
-23	AN365-632A ALT: NAS1021AX-06	NUT	4	
-24	AN3-63A	BOLT	6	
-25	AN960-10L ALT: NAS1149F-0332P	WASHER, FLAT	6	
-26	8418	STAND OFF	4	
-27	Z03-000-3	I.D. PLATE	1	
-28	WHF-0076	LABLE "DANGER"	2	
-29	MS35489-134 ALT: AN931-3-9	GROMMET	2	
-30(NS)	Z03K033	KIT, MODIFICATION	1	MOD. B*
-31	T22-AB-5	MOUNT, CUP	4	MOD. C**
-32(NS)	Z03K033-2	KIT, MODIFICATION	1	MOD. C**
-33	Z03-16-36-01N	WIRE (M22759/16-16-09) 36”	1	MOD. C**
NS	. . MS25036-108	TERMINAL, RING	1	#
NS	. . MS25036-154	TERMINAL, RING	1	#

* Reference Service Letter Z03-033-1
** Reference Service Letter Z03K033-2
# Ends for Z03-16-36-01N Wire

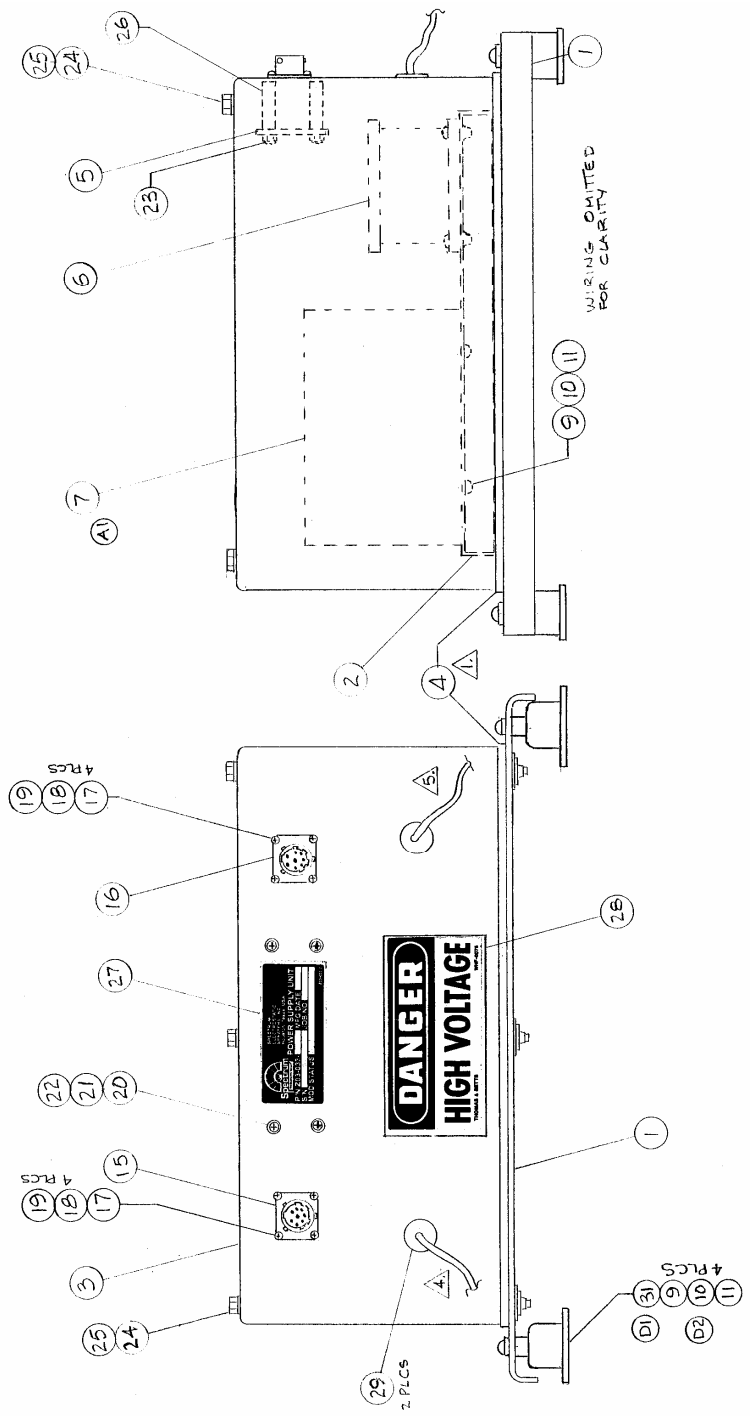

WIRING OMITTED FOR CLARITY
4 PLCS
DANGER
HIGH VOLTAGE
2 PLCS

FIG. 2

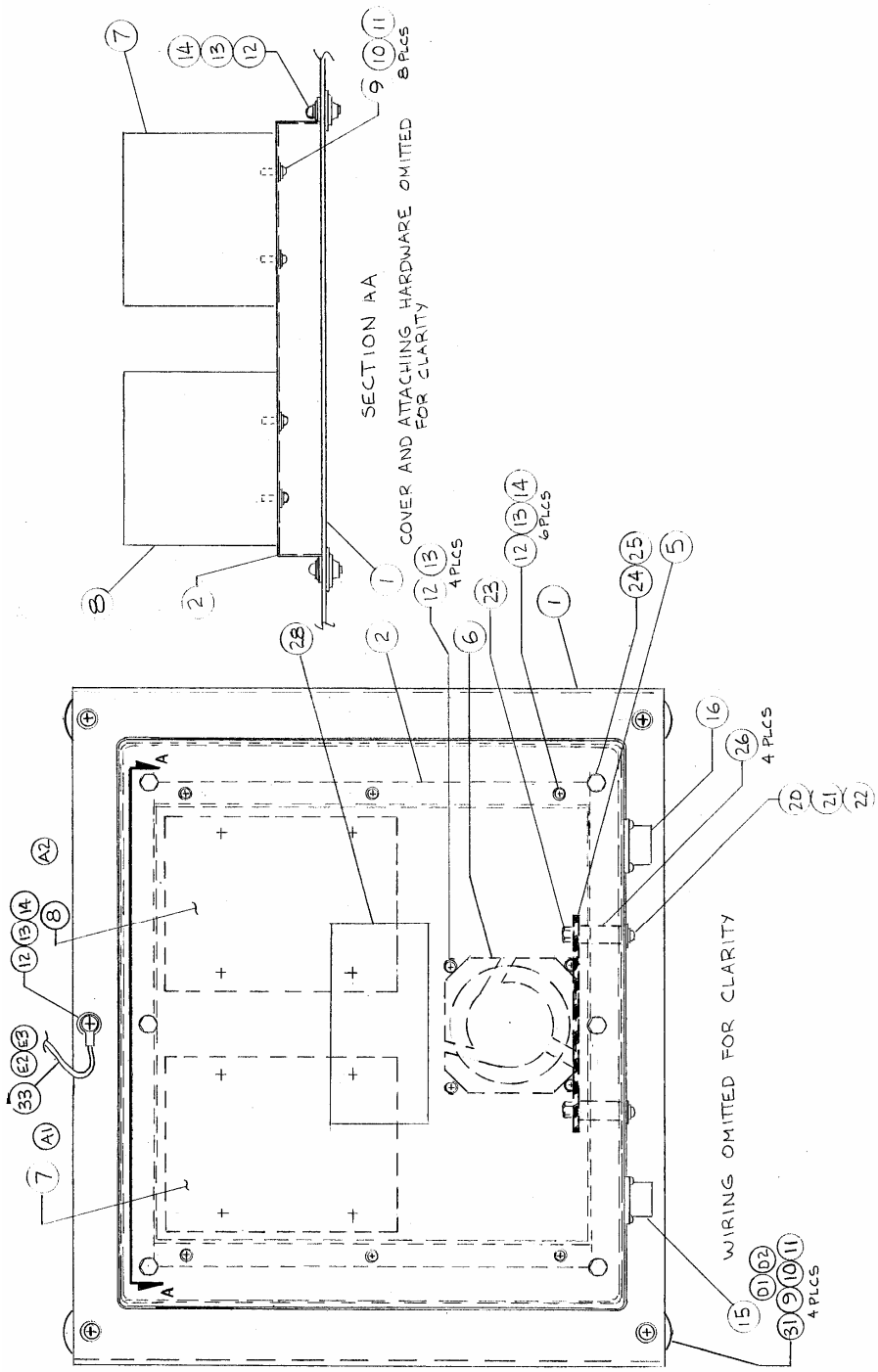
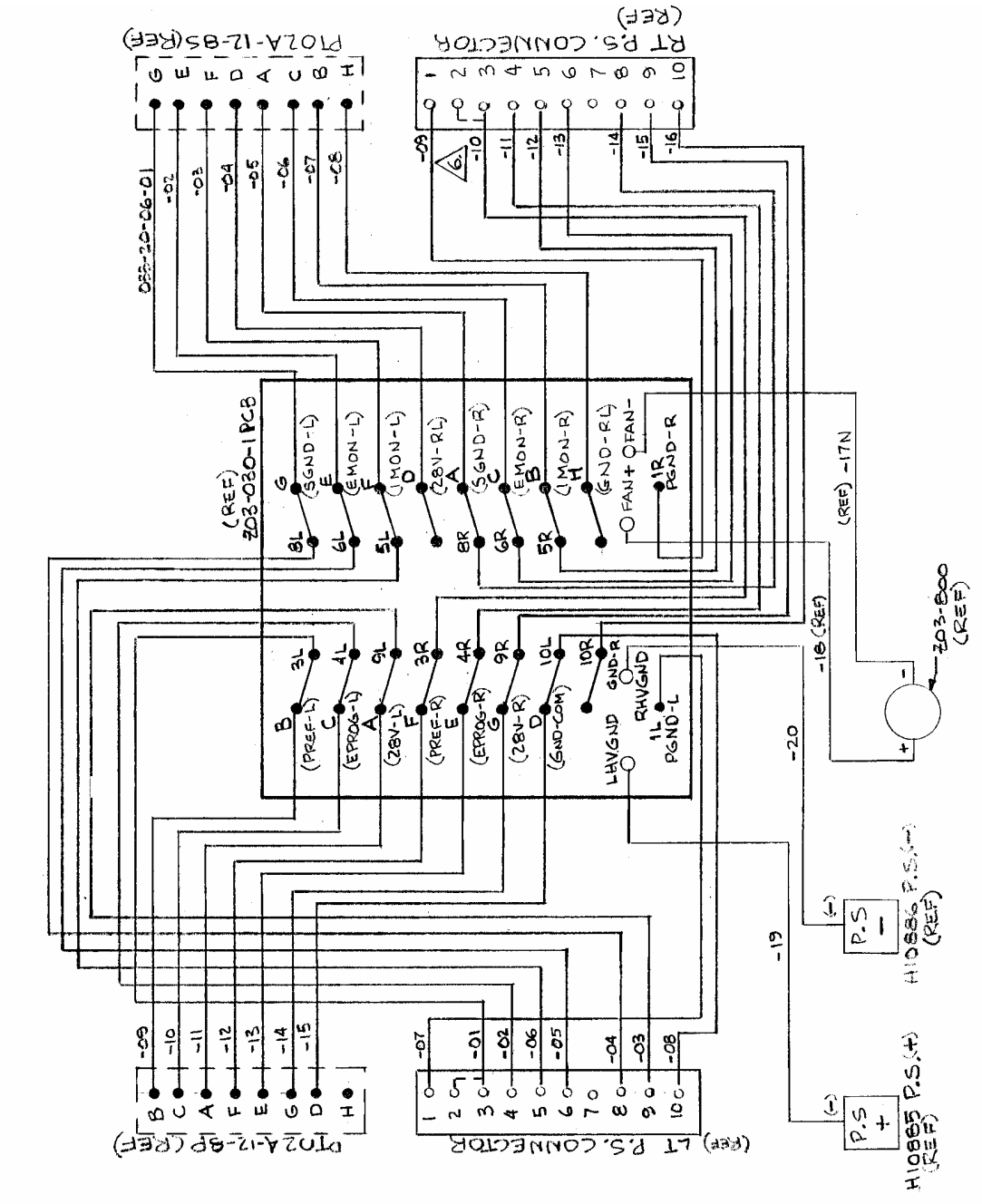

SECTION AA
COVER AND ATTACHING HARDWARE OMITTED FOR CLARITY
WIRING OMITTED FOR CLARITY
8 PLCS
6 PLCS
4 PLCS

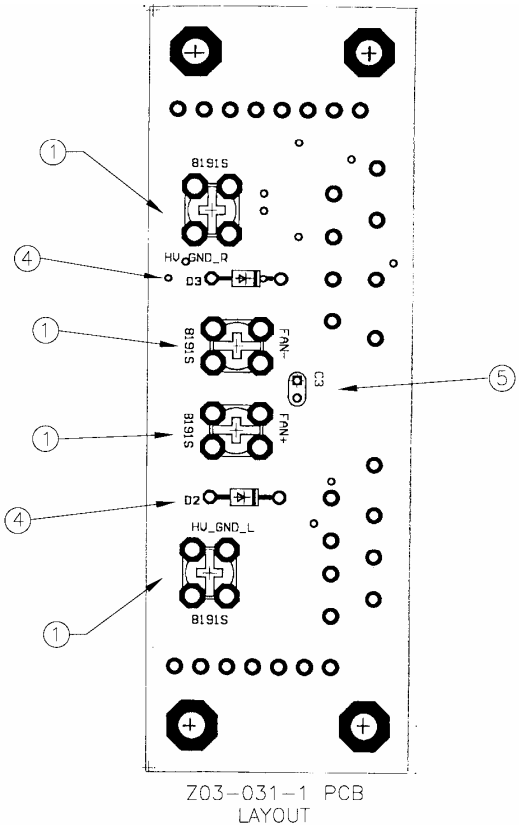
FIG. 2A

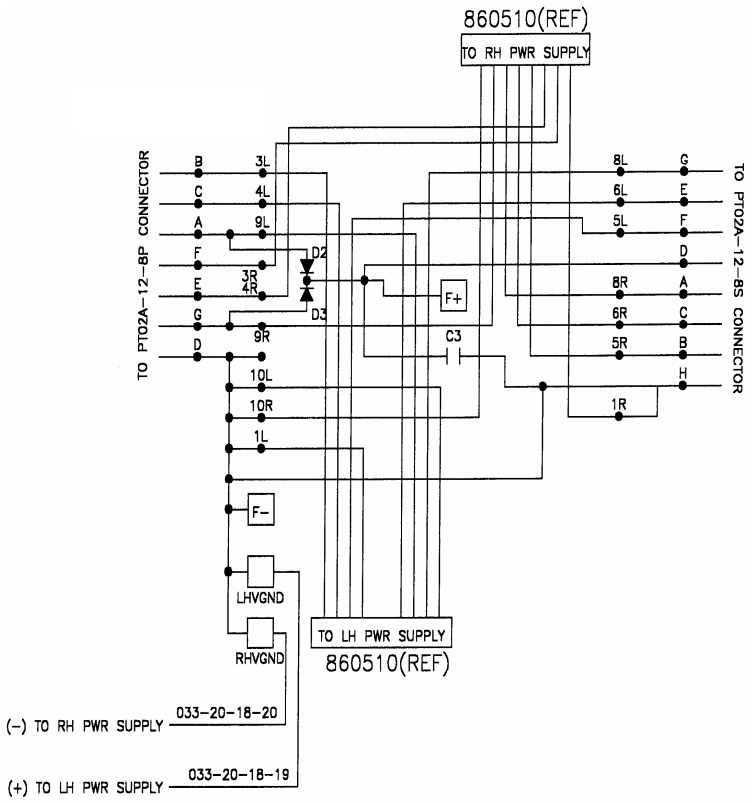


NOTE: 2-3 internally jumpered in P.S. connector
NOTE: Solid dot indicates solder joint. Blank circle indicates screw connection.

FIG. 2B

FIG -ITEM	PART NUMBER	DESCRIPTION	QTY	USAGE/NOTE
3				
	Z03-031-1	P.C. BOARD ASSY	1	
-1	8191S	SCREW LUG	4	
-2	033-20-18-19	WIRE	1	
-3	033-20-18-20	WIRE	1	
-4	1N4004	DIODE, D2, D3	2	
-5	.1uf/50V	CAPACITOR, C3	1	
-6	860510	CONNECTOR	2	
NS	AN935-6	WASHER, LOCK	4	





Z03-031-1 PCB SCHEMATIC

FIG. 3

8.5 Meter Panel Unit P/N: Z03-034-2

FIG -ITEM	PART NUMBER	DESCRIPTION	QTY	USAGE/NOTE
4/4A/4B				
	Z03-034-1	METER PANEL UNIT	1	OBS*
	Z03-034-2	METER PANEL UNIT	1	
	Z03-034-3	METER PANEL UNIT	1	SS -2, OCT 2006
-1	Z03-501-2	HOUSING, BASE	1	
-6	MS35190-238	SCREW	4	
-10	PT02A-12-8S	CONNECTOR	1	
-12	MS21083N04	NUT, LOCK	14	
-13	NAS1149FN416P	WASHER, FLAT	20	
-14	MS3367-4-9	CABLE TIE	AR	
-18	Z03-000-4	I.D. PLATE	1	
-19	Z03-501-3	HOUSING, TOP	1	-2
-20	Z03-037A	METER & PCB ASSY	1	
-21	. . Z03-037-1	PCB ASSEMBLY	1	
-22	. . Z03-037-2	PCB ASSEMBLY	1	
-23	. . Z03-037-3	PCB ASSEMBLY	1	
-24	. . CR0424HB-C50	FAN	1	
-25	Z03-400-1	LENS	1	
-26	MS24693S2	SCREW	2	
-27	MS35206-215	SCREW	8	
-28	MS35206-222	SCREW	4	
-29	NAS1149FN432P	WASHER, FLAT	4	
-30	CR230-ND	GUARD, FAN	2	
-31	MS35214-14	SCREW (BLACK)	4	
-32	AN935-4	WASHER, LOCK	4	
-33	8714K	STANDOFF	2	
-34	Z03-038-1	CABLE ASSY	1	-3
-35	4750-6	HEX NUT STAND-OFF	1	-3
-36	4750-6FW	WASHER, FLAT	4	-3
-37	4750-6LW	WASHER, LOCK	2	-3
-38	4750-6N	NUT	2	-3
-39	FSSK-1P	DUST COVER	1	-3
-40	Z03-501-4	HOUSING, TOP	1	-3

* Z03-034-1Meter Panel or replacement/repair parts are no longer available. Refer to Service Letter Z03-034-2. Items (-2, -3, -4, -5, -7, -8, -9, -11, -15, -16, -17) not listed above are for the Z03-034-1 MP.

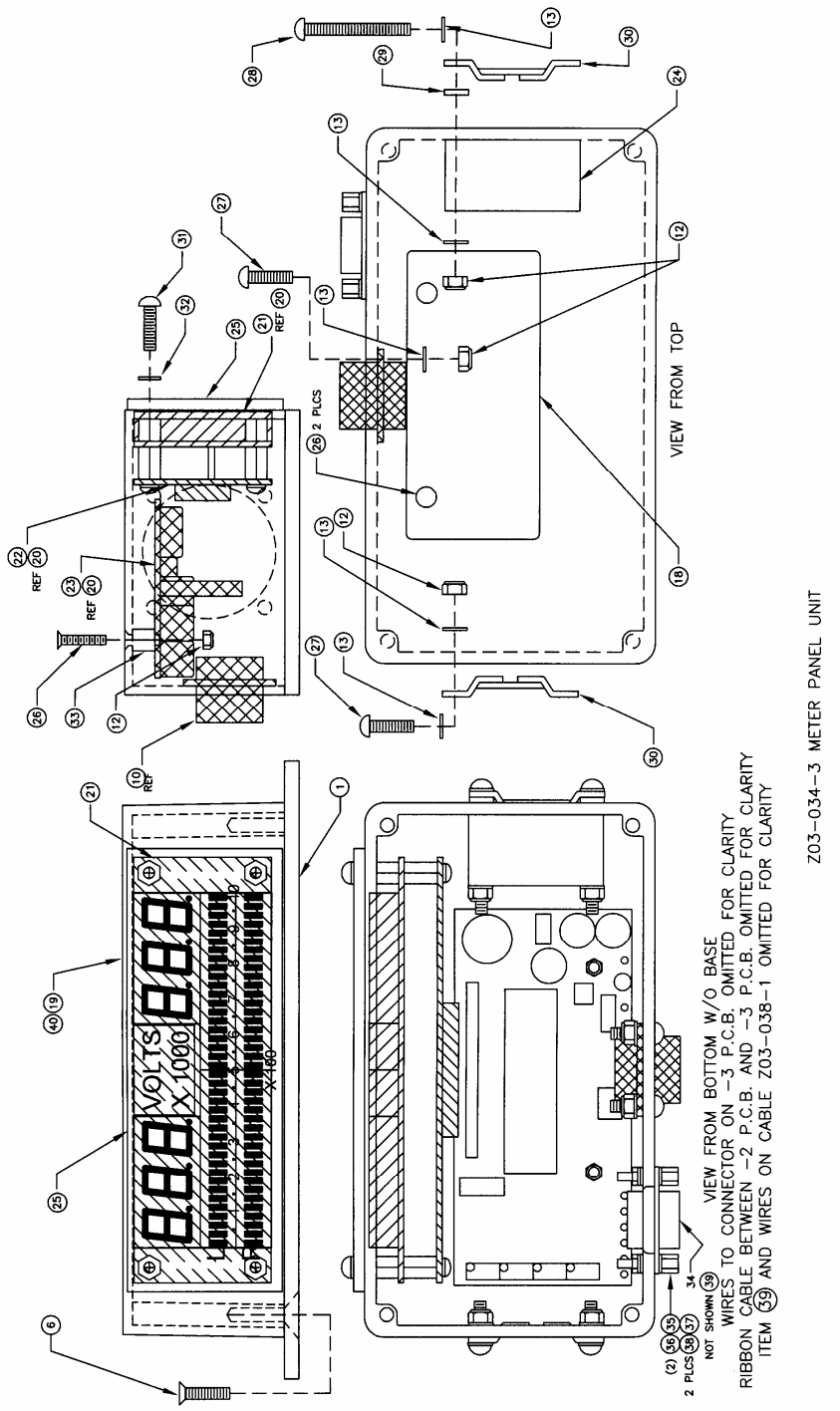

VIEW FROM TOP
VIEW FROM BOTTOM W/O BASE
WIRES TO CONNECTOR ON -3 P.C.B. OMITTED FOR CLARITY
RIBBON CABLE BETWEEN -2 P.C.B. AND -3 P.C.B. OMITTED FOR CLARITY
ITEM (39) AND WIRES ON CABLE Z03-038-1 OMITTED FOR CLARITY
Z03-034-3 METER PANEL UNIT
2 PLCS
REF
NOT SHOWN

FIG. 4

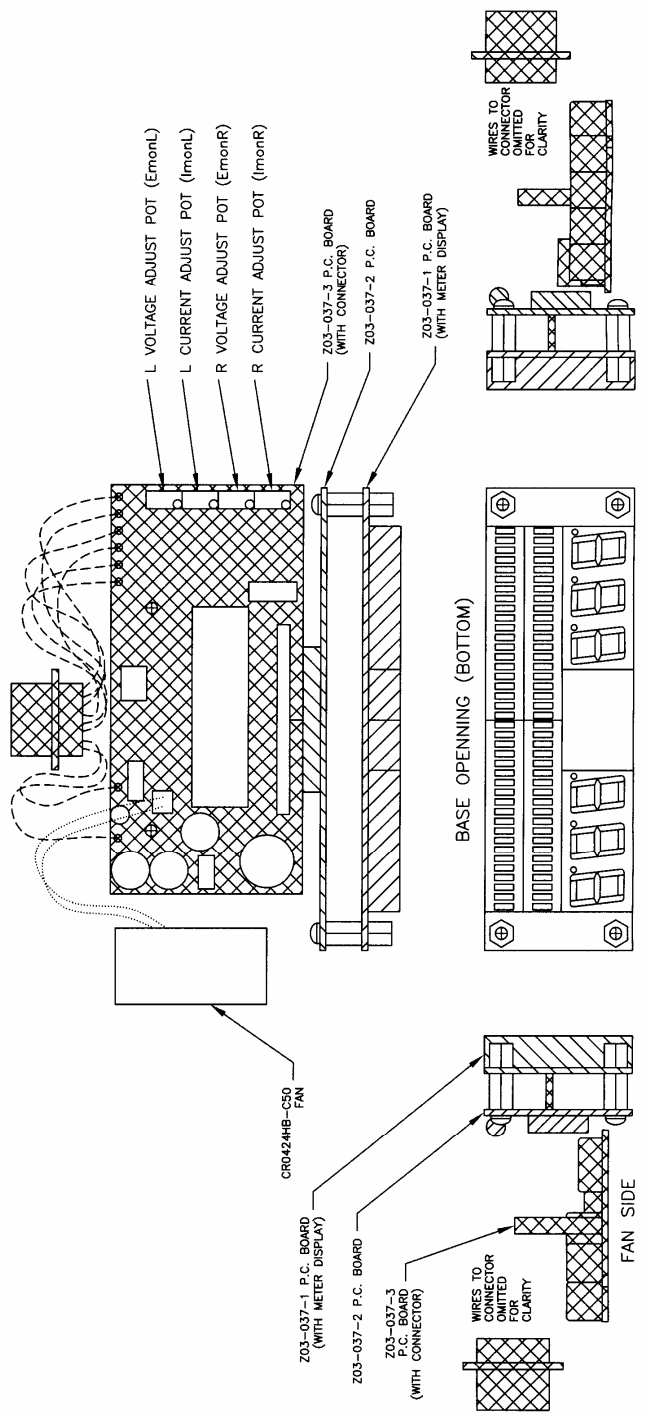

L VOLTAGE ADJUST POT (EmonL)
L CURRENT ADJUST POT (ImonL)
R VOLTAGE ADJUST POT (EmonR)
R CURRENT ADJUST POT (ImonR)
Z03-037-3 P.C. BOARD (WITH CONNECTOR)
Z03-037-2 P.C. BOARD
Z03-037-1 P.C. BOARD (WITH METER DISPLAY)
WIRES TO CONNECTOR OMITTED FOR CLARITY
BASE OPENNING (BOTTOM)
CR0424HB-C50 FAN
Z03-037-1 P.C. BOARD (WITH METER DISPLAY)
Z03-037-2 P.C. BOARD
Z03-037-3 P.C. BOARD (WITH CONNECTOR)
WIRES TO CONNECTOR OMITTED FOR CLARITY
FAN SIDE

FIG. 4A

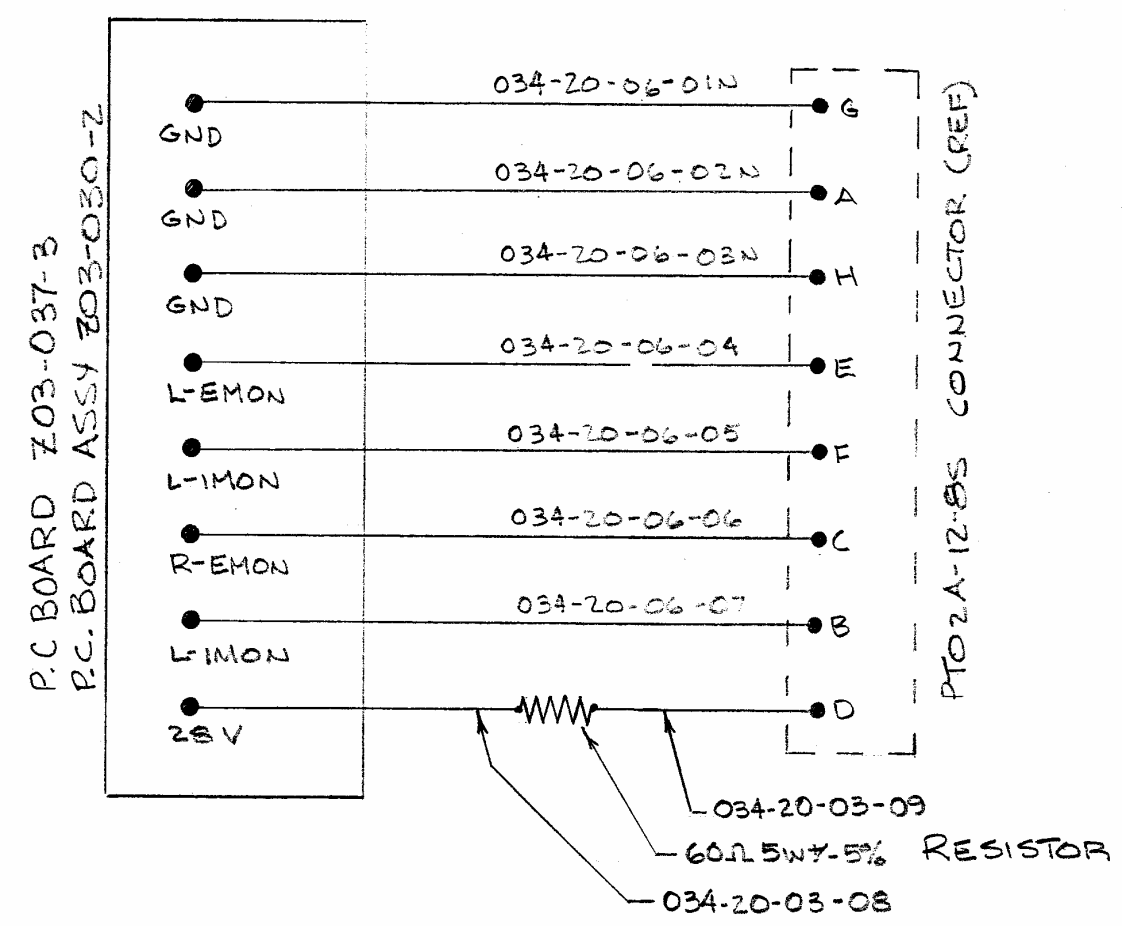

P.C BOARD Z03-037-3
P.C. BOARD ASSY 203-030-2
GND
GND
GND
L-EMON
L-IMON
R-EMON
L-IMON
28V
034-20-06-01N
034-20-06-02N
034-20-06-03N
034-20-06-04
034-20-06-05
034-20-06-06
034-20-06-07
G
A
H
E
F
C
B
D
PTO2A-12-8S CONNECTOR (REF)
034-20-03-09
60Ω 5W ±-5% RESISTOR
034-20-03-08

FIG. 4B

8.6 Control Unit P/N: Z03-035-1

FIG -ITEM	PART NUMBER	DESCRIPTION	QTY	USAGE/NOTE
5/5A/5B				
	Z03-035-1	Control Unit	1	
-1	Z03-502-1	COVER ASSY	1	
-2	Z03-502-2	BASE ASSY	1	
-3	NOT USED			
-4	Z03-001-1	PLACARD	1	
-5	Z03-000-5	I.D. PLATE	1	
-6	AN364-440	NUT, LOCK	4	
-7	AN960-4L	WASHER, FLAT	4	
-8	MS35207-217	SCREW	4	
-9	MS24694-7	SCREW	4	
-10	3445633A	FUSE HOLDER w/HARDWARE	2	
-11	2183.15	FUSE 3A	2	
-12	MS24523-22	SWITCH (1TL1-2)	1	
-13	7277-2-5	CIRCUIT BREAKER	1	
-14	535-1-1-502	POTENTIOMETER	2	
-15	JD-75-2-5	KNOB	2	
-16	PT02A-12-10P	CONNECTOR	1	
-17	4315	LENS (GREEN)	2	

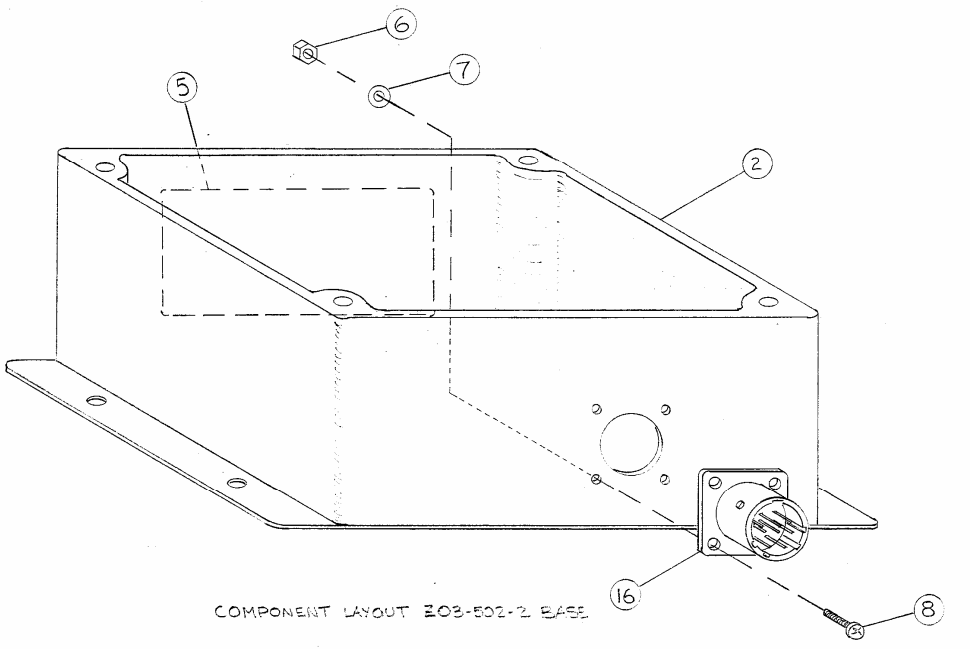


FIG. 5

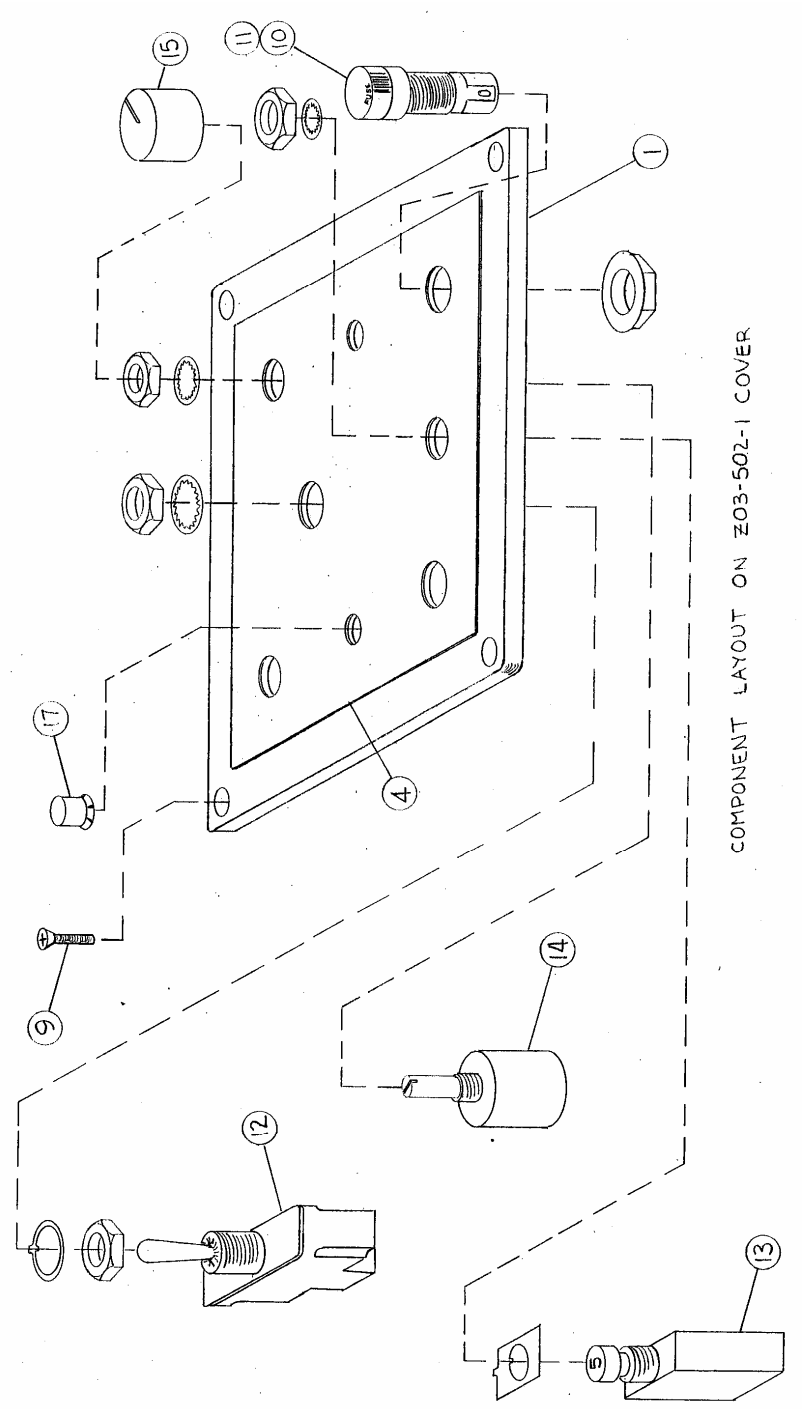


FIG. 5A

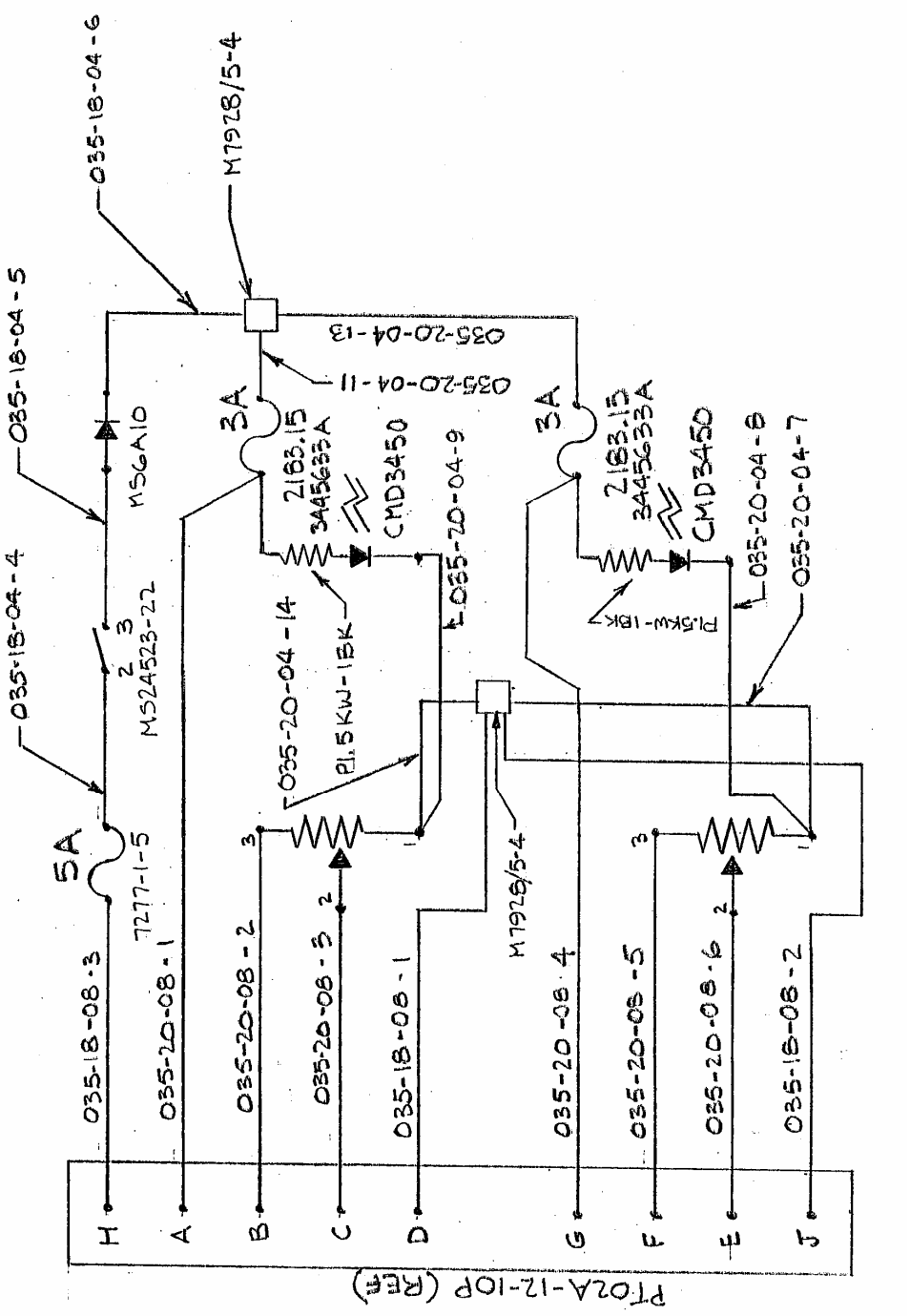

035-18-04-6
M7928/5-4
035-18-04-5
035-20-04-13
035-20-04-11
3A
2183.15
3445633A
CMD3450
035-20-04-9
035-20-04-8
035-20-04-7
035-18-04-4
035-20-04-14
P1.5KW-1BK
M524523-22
5A
7277-1-5
035-18-08-3
035-20-08-1
035-20-08-2
035-20-08-3
035-18-08-1
035-20-08-4
035-20-08-5
035-20-08-6
035-18-08-2
H
A
B
C
D
G
F
E
J
PTO2A-12-10P (REF)

FIG. 5B

8.7 Cable Assembly Z03-036-1/-2/-4

FIG -ITEM	PART NUMBER	DESCRIPTION	QTY	USAGE/NOTE	
6					
	Z03-036-1	CABLE ASSEMBLY		A	
	Z03-036-2	CABLE ASSEMBLY		B	
	Z03-036-4	CABLE ASSEMBLY		C	
-1	PT06A12-8P-SR	CONNECTOR	2	A	
-2	PT06A-12-8S-SR	CONNECTOR	1	B,C	
-3	PT06A-12-10S-SR	CONNECTOR	1	B,C	
-4	M22759/16-20-9	WIRE	AR	A	
-5	M22759/16-18-9	WIRE	AR	B,C	
-6	FSP-008	SHRINK, BLACK 1/8”	AR		
-7	FSP-016	SHRINK, BLACK1/4”	AR		
-8	9779-513-6	BOOT	2		
-9	FSP-008	SHRINK, RED 1/8”	AR	B,C	
-10	BU-26-2	BOOT	1		*

* Cables manufactured after July 2005 will have this boot.

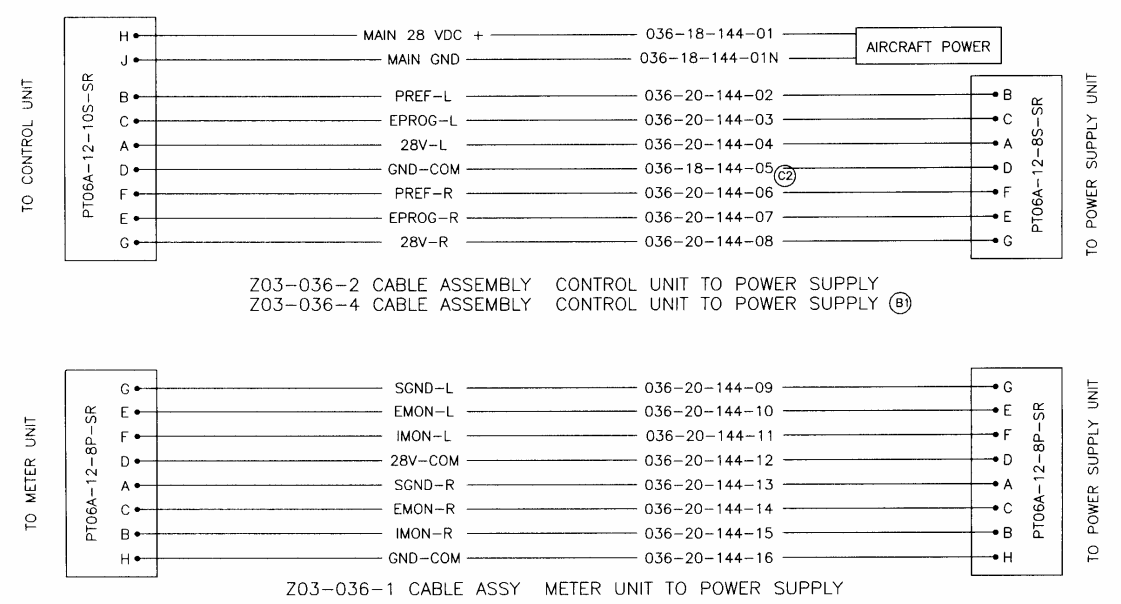


FIG. 6

9.0 SUMMARY OF MODIFICATIONS

9.1 POWER SUPPLY UNIT.

9.1.1 Mod. A. Product improvement upgrade. PCB Z03-031-1 replaced PCB Z03-030-1. Units manufactured after June 2002 have this modification.

9.1.2 Mod. B. Product improvement upgrade. Install metal sleeve on Power Supply control wires. Refer to Service Letter Z03-033-1 for details. Unit manufactured after June 2003 have this modification.

9.1.3 Mod. C. Product improvement upgrade. Install shock mounts and secondary grounding strap to Power Supply. Refer to Service Letter Z03-033-2 for details. Units manufactured after January 2005 have this modification.

9.2 METER PANEL UNIT

9.2.1 Mod A is applicable to Z03-034-1 only. Product improvement upgrade. PCB Z03-031-2 replaced PCB Z03-030-2. Units manufactured after June 2002 have this modification.

9.3 CONTROL UNIT

9.3.1 Mod. A. Design change. Moves the location of the connector.

9.4 CABLES No modifications assigned at this time.

9.5 NOZZLES No modifications assigned at this time.

10.0 SUMMARY OF SERVICE BULLETINS No Service Bulletins apply at this time.

11.0 SUMMARY OF SERVICE LETTERS The Service Letters described herein are not part of this manual. Contact Spectrum Electrostatic Sprayers, Inc. for copies.

11.1 Service Letter Z03-033-1. Product improvement. Describes procedure to attach sleeves to Power Supply Unit control wires.

11.2 Service Letter Z03-033-2. Product improvement. Adds shock mounts and secondary grounding strap to Power Supply Unit.

11.3 Service Letter Z03-034-1. Describes normal function characteristics of Meter Panel display at start up.

11.4 Service Letter Z03-034-2. Product improvement. Describes interchangeability of the Meter Panel Unit part number Z03-034-1 and part number Z03-034-2.

11.5 Service Letter Z03-035-1. Product improvement. Describes wire re-location in the Control Unit.

11.6 Service Letter Z03K000-1. Installation requirement change. To eliminate the Static Wicks and Zero Center Micro-Amp Meter from the kit.