BATTERY CHARGER

MANUAL

OHIO MAGNETICS, INC.
A SUBSIDIARY OF PEERLESS-WINSMITH, INC.

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INTRODUCTION

1 . 1 Ohio Magnetics Warranty - BATTERY BACK-UP SYSTEMS

Ohio Magnetics, Inc. a subsidiary of Peerless-Winsmith, Inc. warrants to the original purchaser of each new Battery Back-up System, manufactured by and sold by Ohio Magnetics, Inc., to be free from manufacturing defects in material and workmanship under normal service for a period of ninety (90) days, from and after the date of shipment from our Maple Hts., Ohio plant.

Ohio Magnetics' obligation under this warranty is expressly limited to the replacement or repair of any part or parts which are proven to our satisfaction to be defective under normal use and service, at the Ohio Magnetics, Inc. plant at Maple Heights, Ohio or at a point designated by it.

Ohio Magnetics, Inc. will not be held responsible for the cost of consequential labor, loss of profit, down time, or any transportation charges incurred in connection with the replacement of or repair of said Battery Back-up System or parts thereof found to be defective. It shall not be responsible for consequential damages or contingent liabilities arising from the use of, or performance of, Ohio Battery Back-up Systems.

This warranty does not apply to any Ohio Battery Back-up System or parts thereof, which have been subject to accident, negligence , alteration, abuse or misuse , or upon which repairs or alterations have been made by other than Ohio Magnetics, Inc., except where said repairs are made by others with its prior written approval.

Ohio Magnetics, Inc. makes no warranty with respect to accessory equipment manufactured by others and sold by Ohio Magnetics, Inc.. These items are subject to the warranties the manufacturer and any warranty claims on these items shall be directed by the user to the respective manufacturer.

Ohio Magnetics, Inc. makes no other express, implied or statutory warranties, nor is anyone authorized to make any on its behalf .

1.2 **RECEIVING**

If damage incurred in shipping is observed upon receipt of rectifier, notify and file claim with carrier.

BEFORE YOU FULLY UNPACK THIS UNIT READ THIS FOR YOUR PROTECTION!
(This information applies only on shipments within the United States)

DAMAGE

This shipment was packaged and delivered to the carrier with the utmost care to insure safe delivery of goods. When shipment is received and signed for by the transportation company, consignor's responsibility ceases. Do not accept shipment which evidences damage or shortage until agent of carrier endorses a statement of the irregularity on the face of the transportation receipt. Without documentary evidence, claim can not be filed.

CONCEALED DAMAGE

Interstate Commerce Commission has indicated that a carrier is as much responsible for concealed damage as for visible damage in transit. Upon receipt of shipment, promptly unpack and check thoroughly. If concealed damage is discovered, cease further unpacking and request immediate inspection by local agent of carrier. A written report of the agent's findings, with his signature, is necessary to support claim.

SHORTAGE

Check shipment against shipping papers. Do not discard packing materials or packing cases until contents have been found to be correct. The removal of badly needed items, before shipment has been checked, may create a shortage. Check all possibilities before reporting a shortage.

CLAIMS

If your agent or carrier has been given an opportunity to inspect the shipment, any claim for a shortage or damaged merchandise can be handled as a simple and routine procedure. Claims must be filed by consignee. Shipping terms are f.o.b. Cleveland, Ohio.

LOSS

In the event of complete loss, claim will be handled in the same manner as for Shipping Damage or Shortage.

1.2 (Cont.) **SHIPPING DAMAGE OR SHORTAGE**

TRUCK SHIPMENT

The original destination freight bill bearing notation of damage or shortage by the carrier and the inspector's report, attached to a certified copy of the original* bill of lading of the transportation company at point of origin, must be available to support claim. All claims will be initiated at point of destination.

EXPRESS SHIPMENT

Should there be damage or shortage, claim must be supported by a certified copy of the original* paid express receipt (whether issued at point of origin or destination) bearing the agent's notation of damage or shortage, or the inspector's report of same attached.

AIR EXPRESS

Claim must be initiated at point o f destination. The express agent at point of destination will fill out a "Bad Order Report" which will be returned to party submitting claim. The original invoice, original* air express receipt, "Bad Order Report" and a letter of transmittal , must be submitted in support of claim.

RAIL FREIGHT

Claim will be initiated at point of destination. However, inspection papers filled out by the consignee and endorsed by the freight office of destination along with paid freight bill, original* bill of lading, original invoice or certified copy of same , plus a bill to the freight agent for claim charges, must be forwarded to the Freight Agent at point of origin in support of claim. Shipping charges reimbursed will be those prorated over total weight of shipment involved in the claim.

AIR FREIGHT

Claim must be initiated at point of destination. Claim must be filed by submitting a letter on company stationery with an explanation of the extent of damage or loss and forwarded with a copy of the original* air bill, and original invoice or photostat of same, to the airline having carried the shipment .

* Upon request certified photostatic copies of original papers held by Ohio Magnetics, Inc. required in support of claims, will be made available.

1.3 **CHECKING BEFORE INSTALLATION**

If damage is not incurred in shipping, proceed checking the nameplate data of the equipment against the nameplate data, and inquiry sheet in this section of the manual. The two should agree, The nameplate is located on the door.

Before installing equipment, it is recommended that a thorough visual inspection be made. All terminal connections should be checked for loose connections that could have occurred in transit. Careful check should be made for any frayed wiring or cracked insulation.

MODEL No.: **SERIAL No.:**

INPUT POWER:

Voltage:	V-ac
Phase:	3 Ø
Frequency:	Hz
Current:	A-ac
Power Factor:	0.90 ~ 0.96

OUTPUT POWER:

Power:	KW
Voltage:	V-dc
Current:	A-dc
Ripple:	4.6 %
Regulation	8.0 %

ENVIRONMENTAL DATA

Ambient Temperature (maximum):	60°C
Altitude (maximum):	1000 m

OPTIONS:

Enclosure: NEMA IP (IEC 529)

	LOCAL	REMOTE
Lockable Latch (1,12)		
Disconnect Switch		
Input Control (Pushbuttons)		
Input Control (Selector Switch)		
Output Indication (Pilot Light)		
Output Indication (Meter Package)		
Undercurrent Limit Alarm		
Relay Switcher		
Local/Remote Selector Switch		

2.) **INSTALLATION & ADJUSTMENTS**

2.1) MOUNTING - LEVELING

Battery Charging Fixed Voltage Rectifiers are rated 2, 4, 6.5 & 10 kW and are packaged in a wall mounted enclosure. The enclosures should be situated in a leveled position and bolted to the wall. Install the rectifier in a location suited to its NEMA or IP (IEC 529) rating. (See outline drawing in Section 5). Punch holes in the bottom of the enclosure for input and output cables.

2.2) CONNECTION OF BATTERY CHARGER

Before connecting the Battery Charger Power Supply to the power line, check the power line voltages (all three phases) to confirm that the values are the same as indicated on the equipment nameplate. When connecting the battery charger, all wiring must conform to local codes. If the input line does not have a ground (earth) conductor, then the enclosure must be grounded (earthed) properly.

This model of Battery is designed to be powered on at the same time as the main rectifier. It is also designed to be shut off when the main rectifier is shut off, whether the main rectifier or the battery charger is shut off deliberately or by a failure in either unit.

Next step is to connect the unit:

FIXED DIODE OUTPUT:

a.) Input power cable to TB1: L1, L2, L3

b.) Control Power Cable to TB1: 22, 24, 21

c.) Output Power (load) cable to TB2: E5 (+), E2 (-)

Note: Control Power lines 22, 24 and 21 connect to the switched Control Power Terminals of the Main Power Rectifier. Reference interconnection drawing (see section 5) for further information on battery charger connections to other components.

SCR OUTPUT:

a.) Input power cable to TB1: L1, L2, L3

b.) Control Power Cable to TB2: 20, 24

c.) Output Power (load) cable to TB3: E5 (+), E2 (-)

Note: Control Power lines 20 and 24 connect to the auxiliary MS starter contacts of the Main Power Rectifier via terminal block connection 20BC and 24BC. Reference interconnection drawing (see section 5) for further information on battery charger connections to other components.

The sizes of recommended cables and wires are given in the equipment spare parts section 6. Use proper schematic and wiring drawings listed in Section 5.

2 .3 MANUAL OR AUTOMATIC RESET ON OVERLOAD RELAYS

The overload relay can be operated in two different modes:

Manual Reset Mode, and Automatic Reset Mode (Electrically operated starters only - Siemens).

In manual reset mode the arrow on the top of blue reset button points to “H”. This is the recommended and safe mode of operation. In this mode, if the relay is activated by an overload condition, the blue button has to be pushed to reset the overload relay.

In the automatic mode of operation (for test purposes only), the blue button is depressed, and turned CCW so the arrow on top of: blue button points to "A" position. In this mode, if the overload relay is activated by an overload condition the relay will reset itself as soon as the heater element in the overload relay cools off. This mode of operation is not recommended with 2-wire switch control in the starter coil circuit.

Manual Reset Mode, and Automatic Reset Mode (Electrically operated starters only - ABB).

In the top center of the overload relay is an off white colored switch with a Phillips type adjustment screw. The factory setting is in the manual position as the arrow on the switch points to the word “MAN” at about 8 o'clock. To switch to automatic (for test purposes only) rotate the switch CCW so that the arrow points to the word “AUT” at about the 4 o’clock position. In this mode, if the overload relay is activated by an overload condition the relay will reset itself as soon as the heater element in the overload relay cools off. This mode of operation is not recommended with 2-wire switch control in the starter coil circuit.

It is not recommended that the setting be left in the automatic mode. This mode is unsafe for normal operation and should only be used for testing purposes only. Since power can restore itself without warning, it can be a harm to someone or something at the moment power is restored, therefore this setting must remain in the manual position for normal operation.

2.4 OVERLOAD SETTING ADJUSTMENT

The overload current setting is factory set for the maximum allowable current the rectifier can handle. DO NOT READJUST THIS SETTING. Readjustment may cause the rectifier to fail. Setting the Overload too high may prevent it from tripping in the event of an overload or short circuit. Setting the overload too low may cause it to trip under a normal condition. If there are problems with this device, contact Ohio Magnetics, Inc.

2.5 ADJUSTMENT OF POWER TRANSFORMER PRIMARY TAPS

Transformers supplied with Ohio Magnetics' battery chargers are supplied with transformers to match the normal supply voltage for the region where the battery charger is used. Each transformer has a set of primary taps used to match the input voltage to the prevailing line conditions. Transformers are shipped from the factory with the taps wired to the nominal voltage for the region the battery charger is used. If the output of the transformer is too low or too high, the taps will need to be changed in the field to provide the desired output voltage. When voltage conditions are not matched to the proper tap connections, overheating of the transformer and unsatisfactory voltage conditions at the load will result. NEVER change the taps while power is on. There is a danger of electrocution and fire if taps are changed while the power is on. Battery charger outputs should never exceed 125/250 V-dc on a continuos basis.

Battery charger taps are to set to provide a 120 to 122 V output or a 240 to 245 V output for proper charging of the batteries. If voltage is outside of this range, adjust taps accordingly.

BATTERY CHARGERS SOLD IN NORTH AMERICA where the nominal supply voltage is either 240 V or 480 V; 60 Hz alternating current have transformer taps for following voltages:

240 V nominal: 230 V (-5 %); 240 V (RATED); 250 V (+5 %)
480 V nominal: 460 V (-5 %); 470 V (-2.5 %); 480 V (rated); 490 V (+2.5 %); 500 V (+5 %)

These transformers are designated as series multiple type. When wired in the multiple (parallel) configuration, the input voltage is 240 V. When wired in the series condition, the input voltage is 480 V. To determine the correct tap, reference the schematic diagram that came with this manual. NEVER change the taps while power is on. There is a danger of electrocution and fire if taps are changed while the power is on.

BATTERY CHARGERS SOLD IN CENTRAL AMERICA AND SOME PARTS OF ASIA where the nominal supply voltage is either 220 V or 440 V; 50 or 60 Hz alternating current have battery charger taps for following voltages:

220 V nominal: 200 V (-10 %); 220 V (RATED); 240 V (+10 %)
440 V nominal: 400 V (-10 %); 440 V (-5 %); 440 V (rated); 460 V (+5 %); 480 V (+10 %)

These transformers are designated as series multiple type. When wired in the multiple (parallel) configuration, the input voltage is 220 V. When wired in the series condition, the input voltage is 440 V. To determine the correct tap, reference the schematic diagram that came with this manual. NEVER change the taps while power is on. There is a danger of electrocution and fire if taps are changed while the power is on.

BATTERY CHARGERS SOLD IN CANADA where the nominal supply voltage is 575 V; 60 Hz alternating current have transformer taps for following voltages:

550 V (-5 %); 575 V (rated); 600 V (+5 %)

To determine the correct tap, reference the schematic diagram that came with this manual. NEVER change the taps while power is on. There is a danger of electrocution and fire if taps are changed while the power is on.

BATTERY CHARGERS SOLD EVERYWHERE ELSE where the nominal supply voltage is 400 V; 50 Hz alternating current have battery charger taps for following voltages:

380 V (-5 %); 400 V (rated); 415 V (+4 %)

The 380 V setting is found mostly in South America, parts of Europe, Asia and Africa. The 400 V setting is used primarily for western Europe. The 415 V setting is found in Britain and former British colonies in Asia.

To determine the correct tap, reference the schematic diagram that came with this manual. NEVER change the taps while power is on. There is a danger of electrocution and fire if taps are changed while the power is on.

OUTPUT TAP CONFIGURATIONS

Transformers are equipped with a dual secondary for either 120-122 V-dc or 240-245 V-dc output. On dual output transformers, the transformer is connected to the proper setting for the battery charger. Never change this connection or damage to the battery charger and/or magnet may occur. The battery charger is fused wired for the proper current based on the output voltage. If you need to change the output voltage setting for any reason, first contact the factory for details.

The output of the transformer itself is usually about 90 V-ac line to line for 120-122 V-dc systems and 180 V-ac line to line for 240-245 V-dc systems.

Transformers outputs are factory set for system they were designed to work with. Do not change output or damage to system may result. Consult factory first before making any unauthorized changes.

3.) **OPERATION**

3.1 Make sure all connections are made and power is available.

3.2 Turn on input power to main rectifier and battery charger via circuit breaker or disconnect switch, or whatever is applicable The power is then present at the input power terminal block TB1 of the main power rectifier and the battery charger.

WARNING: **Once power is applied to the rectifier and battery back-up, dangerous high voltages are present inside the rectifier. Do not place your hands near any exposed terminals. Make connections and disconnections only when power is off.**

3.3 If applicable, depress or turn the optional pushbutton or selector switch associated with the main power rectifier. Both the MS starter in the rectifier and the battery charger should energized. This will be indicated by pilot light PL1 on the door illuminating.. If starter fails to energize, check to make sure that there is no overload condition or a short. Check to make sure there is proper voltage at TB1 terminals L1 through L3. Also, check to verify that the overload is reset, by depressing reset button.

3.4 The power transformer TXl converts the standard line voltage available to the voltage necessary to produce either 120-122 V-dc or 240-245 V-dc output at the rated power The voltage is rectified to its DC value via a full wave diode or SCR bridge The diode bridge allows only for a fixed voltage output, dependent on the input voltage and input tap settings of the transformer. SCRs allow the output voltage to be varied and regulated from zero (0) to a maximum of 122 V-dc or 245 V-dc, depending on the model.

Note on SCR models: FIRING and REGULATING board are used in conjunction with the SCRs to vary and regulate the output voltage, or to limit and regulate the output current This is accomplished by two potentiometers; one to adjust and/or limit the maximum voltage, and the other to limit and/or regulate the maximum current.

PLEASE NOTE: THE FIRING AND REGULATOR BOARDS ARE ALL PRESET AND CALIBRATED TO FUNCTION PROPERLY WITH THE SCRs THERE ARE NO CUSTOMER ADJUSTMENTS OR REPAIRS TO BE DONE TO THE BOARDS. THE BOARDS CONTAIN NO USER SERVICEABLE PARTS. ATTEMPTS TO SELF-SERVICE THE BOARDS COULD RESULT IN PERMANENT DAMAGE TO THE SCRs, THE BOARDS THEMSELVES, INJURY TO THE PERSON ATTEMPTING TO SELF-SERVICE THE BOARDS, AS WELL AS VOIDING ANY AND/OR ALL WARRANTIES. IF YOU EXPERIENCE ANY PROBLEMS WITH THE OPERATION OF THE BATTERY CHARGER, PLEASE CONTACT US AT OHIO MAGNETICS, INC.

The potentiometers are located inside the cabinet on a separate sub panel (P/N: 1400B102000) on the side wall of the battery charger enclosure. The voltage adjustment pot is located on the left side of the panel. The current adjustment pot is located on the right side of the panel. These

adjustments are factory set for optimal performance. Do not attempt to make any adjustments without first consulting the factory.

3.5 The three phase full wave SCR Bridge is protected by AC power fuses F1-F3, by DC power fuses F4 and F4, by a transient voltage suppresser, and by MOV snubber networks, to guard against AC and DC voltage transients and spikes. The transient voltage suppresser (TVS) also protects the inductive load against self generated transient voltages.

The three phase full wave diode bridge is protected by DC power fuses F1 and F2 only.

3.6 A (optional on diode bridge battery chargers) local or remote meter package (Voltmeter & Ammeter) is used to indicate the voltage and current present at the output terminal block TB3. On diode bridge models, a DC indicator lamp is used to indicate the presence of DC voltage and to warn that the internal components are live and to indicate that a danger exists if the enclosure door is opened while the power is on.

3.7 The starter overload relay is protecting the battery charger power supply against flagrant overloads. The overload relay will open the starter circuit when current is above 125 %, of full load. The starter is also sensitive to single phasing of the three phase input. The starter will open the input circuit within 2 min of the occurrence of single phasing.

If the overload has tripped, let the unit cool before attempting to reset the starter. To reset the starter after an overload, depress the "RESET" button, located on the starter. If the button will not stay in and power stay on, then refer to the troubleshooting section of section 4.

NOTE: The diode bridge and SCR bridge is protected from overheating by use of a thermal temperature switch. This switch is connected in series with the control power for the starter coil. If an over temperature situation should exist, the starter in both the rectifier and battery charger will shut down. If the starter has tripped off, and the overload unit is not tripped, the starter has tripped due to an overheat condition on the diode/SCR bridge. Check the reason this has occurred before resetting the overload or the situation will occur again. Always allow the diode/SCR bridge to cool before attempting to restart the starter. If the temperature switch appears to be tripping too often, then the diode/SCR bridge is getting too hot and an alternate cooling system must be added.

3.8 The primary of the power transformer can be adjusted to match the variation of the input voltage, up to and including ! 5 % of standard input value on transformers rated for 240/480 V; 60 Hz only. On transformers rated 220/440; 50/60 Hz, the input variation is ! 10 %. The details are described in section 2 (Installation and Adjustments) and on the schematic drawings.
3.9 The control terminal block TB2 units is actively used when an instrument package is used in remote operation.

3.10 Please note, the voltage and current setting will vary somewhat depending on the operating temperature of the components. This is normal, Once the unit is operating for a short time, conditions will stabilize.

3.11 LOAD POWER: The rated power of the battery charger is the maximum rating at either 120-122 V-dc or 240-245 V-dc. On SCR models, as the voltage is reduced the power of the battery charger is derated by the same factor. This is because the current is limited by the transformer and regulator board via the shunt to a maximum value. Power is the product of the voltage and the current. If either the current, the voltage or both together are lowered to a value less than maximum, the maximum power is also lowered. The regulator board via the shunt limits the output current to a value that produces 50 mV in the shunt, but it is possible that long before this limit is reached, the transformer itself will limit the current by reducing the output voltage.

3.12 The battery charger power supply can be turned off by use of optional selector switch, or off push-button (red cap), connected with the main rectifier.

4.1 **TROUBLESHOOTING CHART**

PROBLEM:	**PROBLEM AREA:**	**PROBABLE CAUSE:**	**CORRECTION:**
NO OUTPUT VOLTAGE	STARTER DE-ENERGIZED	STARTER NOT TURNED ON	TURN ON RECTIFIER
	STARTER WILL NOT ENERGIZE	NO CONTROL VOLTAGE PRESENT	SEEK POINT OF VOLTAGE LOSS, REPAIR
		PHASE 1 OR 2 OPEN	CHECK SOURCE OF OPEN, REPAIR
		TRIPPED OVERLOAD RELAY	RESET OVERLOAD RELAY
		FAULTY SWITCH OR PB	REPLACE SWITCH OR PB
	NO VOLTAGE AT CONTROL X-FORMER	F6 AND/OR F7 OPEN	REPLACE FUSE
	NO OUTPUT OF DIODE/SCR BRIDGE	DIODE/SCR BRIDGE OPEN	REPLACE FAILED COMPONENT(S) ON BRIDGE
	F1, F2 AND/OR F3 OPEN	SHORT IN DIODE/SCR OR LOAD	CLEAR SHORT, REPLACE FUSE(S)
	F4, F5 OPEN	OVERLOAD CONDITION IN LOAD	REPLACE FUSE, CHECK CURRENT DRAW OF LOAD REDUCE LOAD TO LESS THAN MAX ALLOWABLE
	F6, F7; OR TX2 OR STARTER COIL OPEN	SHORT CIRCUIT/GROUND OR OVERHEATING	CLEAR SHORT/GROUND; CHECK FOR PROPER COOLING, REPLACE DAMAGED PARTS
LOW OUTPUT VOLTAGE	LOW INPUT VOLTAGE TO BRIDGE	WRONG TAP CONNECTION OF PWR X-FORMER	CHANGE TAP CONNECTION
	SINGLE PHASING	OPEN AC FUSE F1, F2, F3	CHECK FOR SHORT; REPLACE BAD FUSE
		ONE DIODE/SCR IN BRIDGE OPEN (OUTPUT SHORT)	REPLACE DEFECTIVE DIODE/SCR
		ONE SECONDARY COIL IN PWR X-FORMER OPEN	REPLACE POWER TRANSFORMER
		TO MUCH HEAT	CHECK TEMP OF RECT LESS THAN 60°C
		SHORT IN LOAD	REMOVE SHORT CONDITION
		OVERLOAD RECENTLY TRIPPED (STILL WARM)	ALLOW OVERLOAD TO COOL BEFORE RESETTING
HIGH OUTPUT VOLTAGE	TRANSFORMER TX1	WRONG TAP CONDITION ON PRIMARY SIDE	CHANGE TAP CONNECTION, REFER TO SCHEMATIC
	SCR'S OPERATING AT MAX OUTPUT		

CONSULT FACTORY FOR FURTHER ASSISTANCE IN SOLVING RECTIFIER PROBLEMS

4.2) **MAINTENANCE**

4.2a Clean power supply periodically of accumulated dust and dirt. Special attention should be given to the Rectifier Diode or SCR Assembly. This is necessary to eliminate possibility of arcing and to prevent loss of efficiency of heat sinks in unit.

Cleaning is best accomplished by means of a compressed air blower, or soft hair brush.

CAUTION: Never use any cleaning fluids on electrical parts.

4.2b Periodically, check all components and connections for tightness. Expansion and contraction of parts along with vibration may cause even the best connections to become loose after long periods of use.

4.2c **Voltage Checks:**

Check input voltages, transformer primary and secondary voltages and input voltages at diode or SCR bridge on ac voltmeter scale. Check diode or SCR bridge output voltage and dc bus plus and minus on the dc voltage scale.

4.2d **Resistance and Continuity Test**

Warning: Never conduct the following checks with power on.

Diode Test:

Disconnect leads at diodes and check for open or short: (disconnect input and output cables)

A. Do not apply a megger or any high potential test equipment which may subject silicon diodes or SCRs to abnormal voltages .

B. Use a good quality multimeter to measure resistance values

C. Select the diode check function on your multimeter. If you are not sure how to do this, consult your multimeter operators manual. You should see either a 1. In the display or some other symbol denoting infinity (∞).

D. Test the meter by shorting the red and black lead together and note a reading of zero (0).

E. Place the black lead on the cathode (side with line marking) of the diode and the red lead on the anode. You should see a reading between 0.4 and 0.7 V on the meter. If the reading remains at ∞, then the diode is open. If the reading is low or zero, then the diode is shorted.

F. Reverse the multimeter leads on the diode and note the reading. The reading should be ∞. If it is zero, then the diode is shorted.

G . The diode is generally considered to be good if: 1.) reading is infinite or very high while the other reading is low.

Fuse and Wire Test:

Using a multimeter set on the 200 Ω (minimum) scale, place the red lead on one end of the wire or fuse and the black lead on the other. If the meter shows infinity, the wire or fuse is open and if it shows zero, then there is continuity in the wire or fuse.

Note: Some meters will not read zero, but will display a number from 0.1 to 0.3 Ω . This is normal and usually reflects the resistance of the meter leads. Ignore this reading, and assume it to be the same as zero.

4.2e **AIR FILTER MAINTENANCE**

On some model of powe supplies, cooling of the interior is accomplished by use of louvres and air filters. In all cases, it is necessary to clean the louvers and the filters on a regular basis. Failure to do so, will cause heat to build up inside the enclosure, because hot air will be unable to escape through the dirt.

Louvres and air filters should be cleaned once every three months (or sooner in dirtier environments) whether they need it or not. Cleaning is accomplished by first removing the air filters from the louvres. To remove the air filters, grab the edges with the fingers, slide the filter upward, and pull outward from the bottom.

Use compressed air to blow excess dust and dirt from the filters. What the forced compressed air did not remove, can be removed by rinsing the filters in a bucket of warm soapy water. After the filters are satisfactorily clean, rinse off the soap by running cold tap water through the filters. Allow to dry, before reinstalling.

The louvres can be cleaned by running a moist rag over the louvre slots to pick up excess dust and dirt. If there is oily dirt or dirt that is hard to remove, the use of an industrial cleaner especially made for a particular or specific dirt can be used.

After the louvres and air filters have been cleaned, the air filters can then be reinstalled in their slots.

6.0 DRAWINGS

6.01 Schematic _____

6.02 Wiring _____

6.03 Outline _____

6.04 Interconnection _____

6.05 _____ _____

6.06 _____ _____

6.07 _____ _____

6.08 _____ _____

6.09 _____ _____

6.10 _____ _____

6.11 _____ _____

7.0 EQUIPMENT DATA & SPARE PARTS LIST

MODEL NUMBER: _____

POWER TRANSFORMER	TX1	A-900553-_____
CONTROL TRANSFORMER	TX2	A-900553-_____
RECTIFIER DIODE BRIDGE	SDA	A-900589-_____
*DIODE MODULE	MOD1-MOD3	A-900550-_____
* THERMAL SWITCH (90°C)	THS	A-900516-11
STARTER	MS	A-900552-_____
*OVERLOAD ADJUSTMENT		_____ A
OUTPUT POWER DC FUSE	F1, F2	A-900555-_____
PILOT LIGHT BULB	PL1, 2	A-900275-11
TRANSIENT VOLTAGE SUPPRESSOR	TVS	A-900501-_____
CABLES & WIRES:		
INPUT POWER:		A-950000-_____ (BLK)
OUTPUT POWER (AC):		A-950000-_____ (BLK)
OUTPUT POWER (DC):		A-950000-_____ (BLK)
CONTROL:	AC (HV)	A-950000-44 (BLK)
	AC (LV)	A-950000-70 (BLK)
	DC	A-950000-160 (BLK)
GROUNDING (EARTHING):		A-950000-147 (GRN)