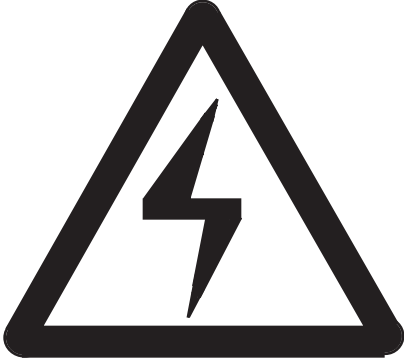


## 14.1 REPLACING COMPONENTS ON THE DRIVE UNIT



### **DANGER** ELECTRIC SHOCK RISK

**Isolate electrical supply  
before working on this equipment.**

## 14.2 ROUTINE MAINTENANCE

Only minor adjustments should be necessary on initial start-up, depending on the application. In addition, some common sense maintenance needs to be followed.

**KEEP IT CLEAN:** The control should be kept free of dust, dirt, oil, caustic atmosphere and excessive moisture.

**KEEP IT COOL:** The control should be located away from machines having a high ambient temperature. Air flow across heatsinks must not be restricted by other equipment within an enclosure.

**KEEP CONNECTIONS TIGHT:** The equipment should be kept away from high vibration areas that could loosen connections or cause chafing of wires. All interconnections should be retightened at time of initial start-up and at least every six months.

### **WARNING**

**THE DC MOTOR MAY BE AT LINE VOLTAGE EVEN WHEN IT IS NOT IN OPERATION. THEREFORE, NEVER ATTEMPT TO INSPECT, TOUCH OR REMOVE ANY INTERNAL PART OF THE DC MOTOR (SUCH AS THE BRUSHES) WITHOUT FIRST MAKING SURE THAT ALL AC POWER TO THE CONTROL AS WELL AS THE DC POWER TO THE MOTOR HAS BEEN DISCONNECTED.**

The motor should be inspected at regular intervals and the following checks must be made:

- A. See that both the inside and outside of the motor are not excessively dirty. This can cause added motor heating, and therefore, can shorten motor life.
- B. If a motor blower is used, make sure that the air passages are clean and the impeller is free to rotate. If air filters are used, they should be cleaned at regular intervals or replaced if they are disposable. Any reduction in cooling air will increase motor heating.
- C. Inspect the commutator and brushes. Replace the brushes if needed. Make sure that the proper brush grade is used.
- D. The motor bearing should be greased per the manufacturer's instructions as to type of grease and maintenance frequency. Overgreasing can cause excessive bearing heating and failure. Consult the instructions supplied with the motor for more details.

The following outlines the correct method for replacing components such as pcb's, fuses, field rectifiers, etc., after location by fault diagnosis.

### **WARNING**

**THE DRIVE MAIN ISOLATOR MUST BE SWITCHED OFF BEFORE STARTING REPAIR WORK.**

# 14 Repair & Maintenance

## 14.3 PERSONALITY BOARD MDA-2 REMOVAL (ALL MODELS)

See Figure 8-2.

### Record all wide connections.

With the hinged panel closed, remove the wires connected to the Terminal Block and all communications and encoder cables on the MDA-2 Personality Board. Unscrew the four screws which secure the board to the panel. Ease the Personality Board gently out of the 96-pin socket which connects it to the Control Board (MDA-1).

## 14.4 CONTROL BOARD MDA-1 REMOVAL (ALL MODELS)

See Figure 8-2.

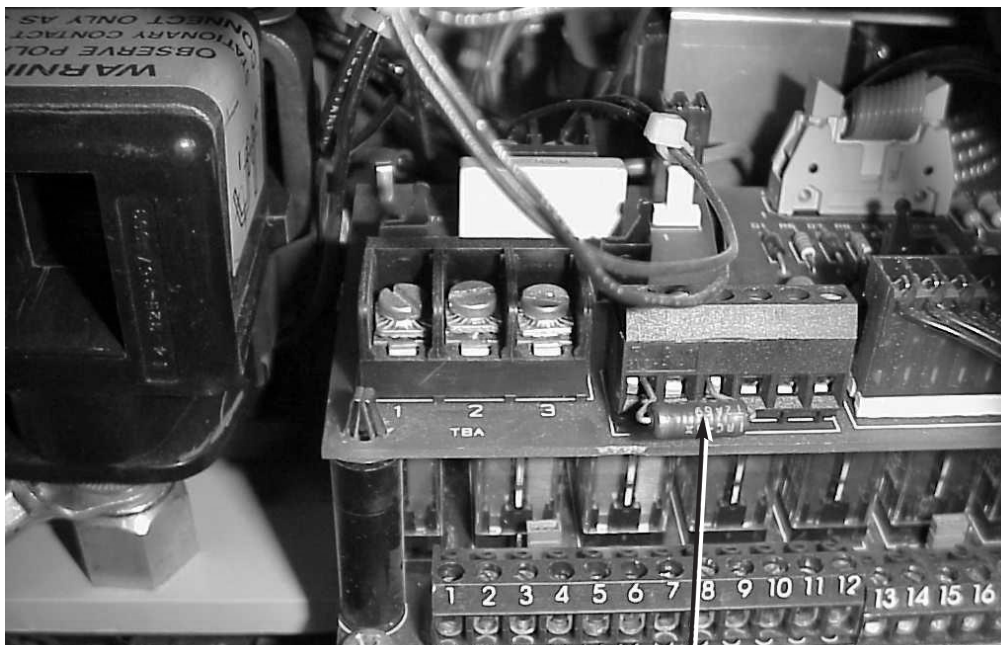
Remove the two lid screws located above the Display Panel and swing the hinged panel forward (unless this has been done earlier). Remove the four (4) screws located on the backside of the panel which hold the Display Panel to the Control Board. Undo the two screws securing the Control Board to the hinged panel. Disconnect the 34-pin Ribbon Cable, and gently ease the Control Board out of the 96-pin plug which connects it to the Personality Board (unless this has already been removed.)

## 14.5 INSPECTION OF THE CONTACTOR/ FUSE CHASSIS (MODELS 9500-8X02 THROUGH 9500-8X06)

See Figure 14-1.

To open the unit for inspection of the contactor/fuse chassis, undo the two screws located above the display panel and swing the hinged panel forward.

If replacing a Size 1 Quantum III, simply pull off the entire TBS connector (as it is removable) with the correct HP scaling resistor still attached, and place it on to the replacement drive. This will ensure the replacement is correctly scaled to your existing motor.



Horsepower Scaling Resistor

## 14.6 REMOVAL OF THE CONTACTOR/ FUSE CHASSIS FROM THE MOLDED BASE (MODELS 9500-8X02 THROUGH 9500-8X06)

See Figure 14-1.

Remove the green ground wire from the grounding bar. Remove the three nuts and washers which hold the bussbars to the molded base at the L1, L2, L3 end of the drive. Remove the three wires marked 1, 2, 3 from the studs. Remove the two nuts and associated washers holding the bussbars to the molded base on the left hand side of the drive. Remove the two phillips screws located next to the L1 fuseblock and the A-fuseblock which hold the chassis to the molded base. Remove the two screws located on the sides of the drive which hold the chassis to the base. Remove the Chassis from the base by pulling straight off. Disconnect the 34-pin ribbon cable at PL1 on the SCR PCB found in the base. Remove the J1 connector and the J4,5,6,7 stake on the connectors on the 9500-4030 board.

## 14.7 FIELD RECTIFIER—CHANGING

### 1. Low HP models 9500-8X02 to -8X06.

A Field Regulator MDA-3 is used. Refer to the Options Section for installation instructions.

### 2. Medium HP models 9500-8X07 to 9500-8X11.

See Figure 14-2. Remove the left cover by loosening the four (4) screws. Remove the AC armature buss bar by removing the nut and associated hardware from the top of the buss bar and remove the threaded bolt from the bottom. Disconnect the “stake on” wiring, making sure to mark the location of each wire. Remove the rectifiers by removing two (2) threaded bolts. Replace the defective rectifiers and reinstall on the heatsink using the two threaded bolts. Re-install the A2 buss bar. Insure all mechanical connections are tightened to eliminate any “resistance” connections.

### 3. High HP models 9500-8315 to 9500-8320 and 9500-8312 to 9500-8314.

See Figure 14-3. Remove the left cover by loosening the four screws. Disconnect the “stake on” wiring, making sure to mark the location of each wire. Remove the rectifiers by removing two (2) threaded bolts. Replace the defective rectifiers and reinstall on the heatsink using the two threaded bolts. Reconnect all wiring.

### 4. On all Quantum III models:

- Clean all old compound from the heatsink.
- Check that the part number of the new component is compatible with the old one.
- Spread a thin layer of heatsink compound on the base of the rectifier and secure it to the heatsink.

## 14.8 REPLACEMENT OF FUSES

### 14.8.1 Low HP Models 9500-8X02 to 9500-8X06

See Figure 14-1.

Open the unit as outlined in paragraph 14.5. The line fuses 1FU, 2FU, and 3FU and armature fuse 4FU are located at the top of the unit. Remove the nuts from the top of the fuse and the bolts securing the bottom, along with associated hardware. Remove the defective fuse(s) and reinstall, insuring all mechanical connections are tight.

The transformer primary fuses 5FU and 6FU, and secondary fuse 7FU are mounted on top of the transformer in clip holders for ease of maintenance.

The field fuses FS1 and FS3 are located on the power board and are accessible from the bottom of the unit without opening the hinged cover. They are mounted in clip holders for ease of maintenance.

### 14.8.2 Medium HP Models 9500-8X07 to 9500-8X11

See Figure 14-2.

To replace the line fuses 1FU, 2FU, and 3FU, remove the protective plexiglass cover at the top of the panel. Remove the defective fuse(s) by removing the two (2) nuts and associated hardware. Replace the fuse(s), insuring all mechanical connections are tightened. Replace the protective cover.

The armature fuse (on regenerative units only) 4FU and T1 transformer fuses 5FU, 6FU, and 7FU are located at the bottom of the panel. Remove the protective plexiglass cover. The armature fuse is located on the left side and is replaced by removing the two(2) nuts and hardware.

The T1 transformer fuses are located on top of the transformer in clip holders. Insure all mechanical connections are tightened and replace the protective cover.

## 14 Repair & Maintenance

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To replace field fuses FS1, FS2 and FS3 on the MDA6 power board, loosen the four screws to remove the left plastic cover. The fuses are located on the left corner in clip holders.

To replace the FS1, FS2 and FS3 fuses on the MDA5 snubber board, remove the left cover as detailed above. Also remove two (2) screws in top of right hinged cover. The fuses are located on the left side, center, and right side of the board.

### 14.8.3 High HP Models 9500-8315 to 9500-8320

See Figure 14-3.

The line fuses 1FU, 2FU, and 3FU are located on the right side of the panel. Remove the protective cover and unbolt the fuse(s) from the line and drive buss connections. Replace fuse(s), insuring all mechanical connections are tightened.

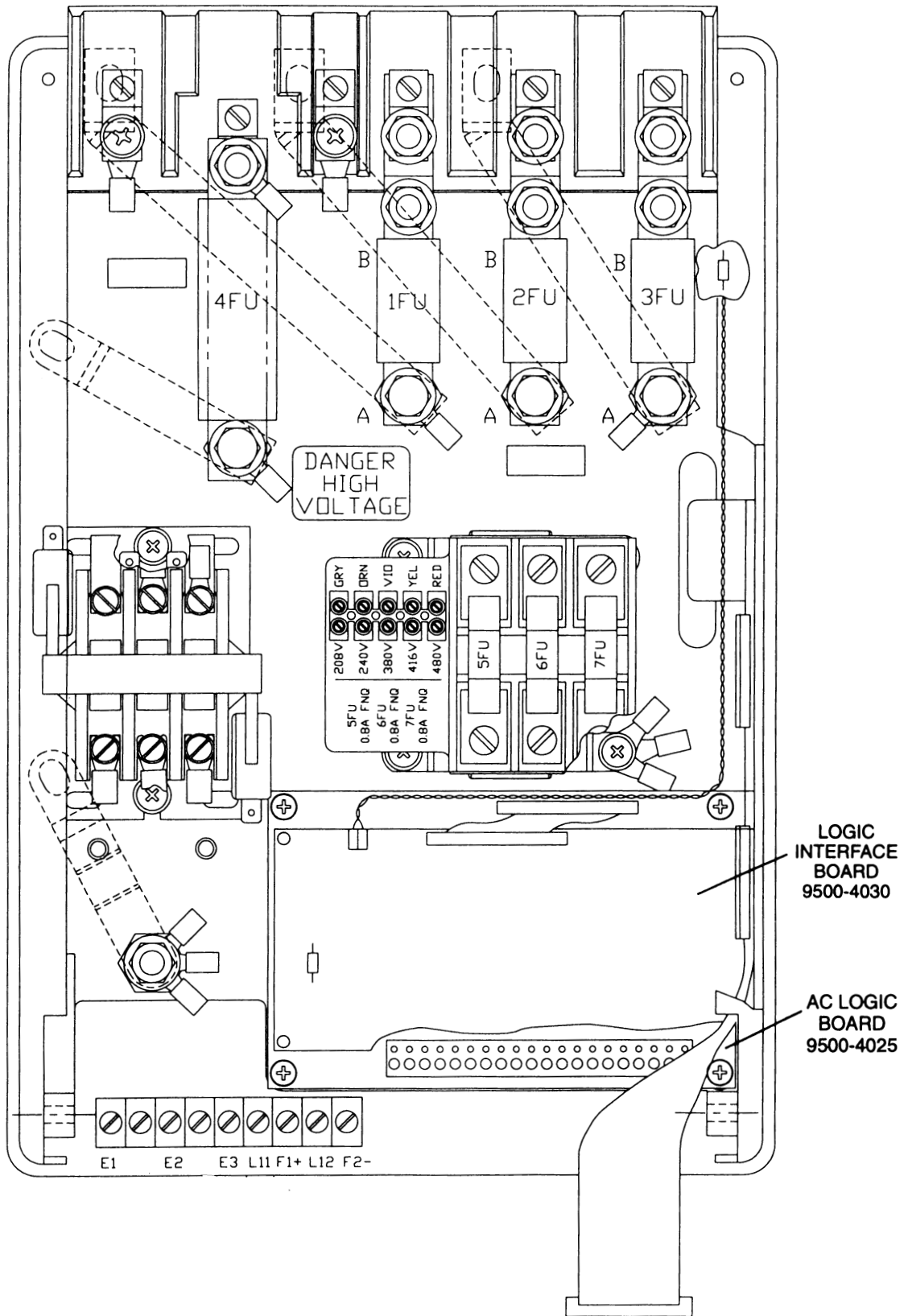
The T1 transformer primary fuses 5FU and 6FU and secondary fuse 7FU are located on top of the transformer in clip holders.

To replace the fuses in the 9500-4040 line suppressor board, loosen the four(4) screws to remove the protective plexiglass cover. The fuses are located on the right side of the board in clip holders. Replace all protective covers.

### 14.8.4 High HP Models 9500-8315 to 9500-8320 and 9500-8112 to 9500-8114

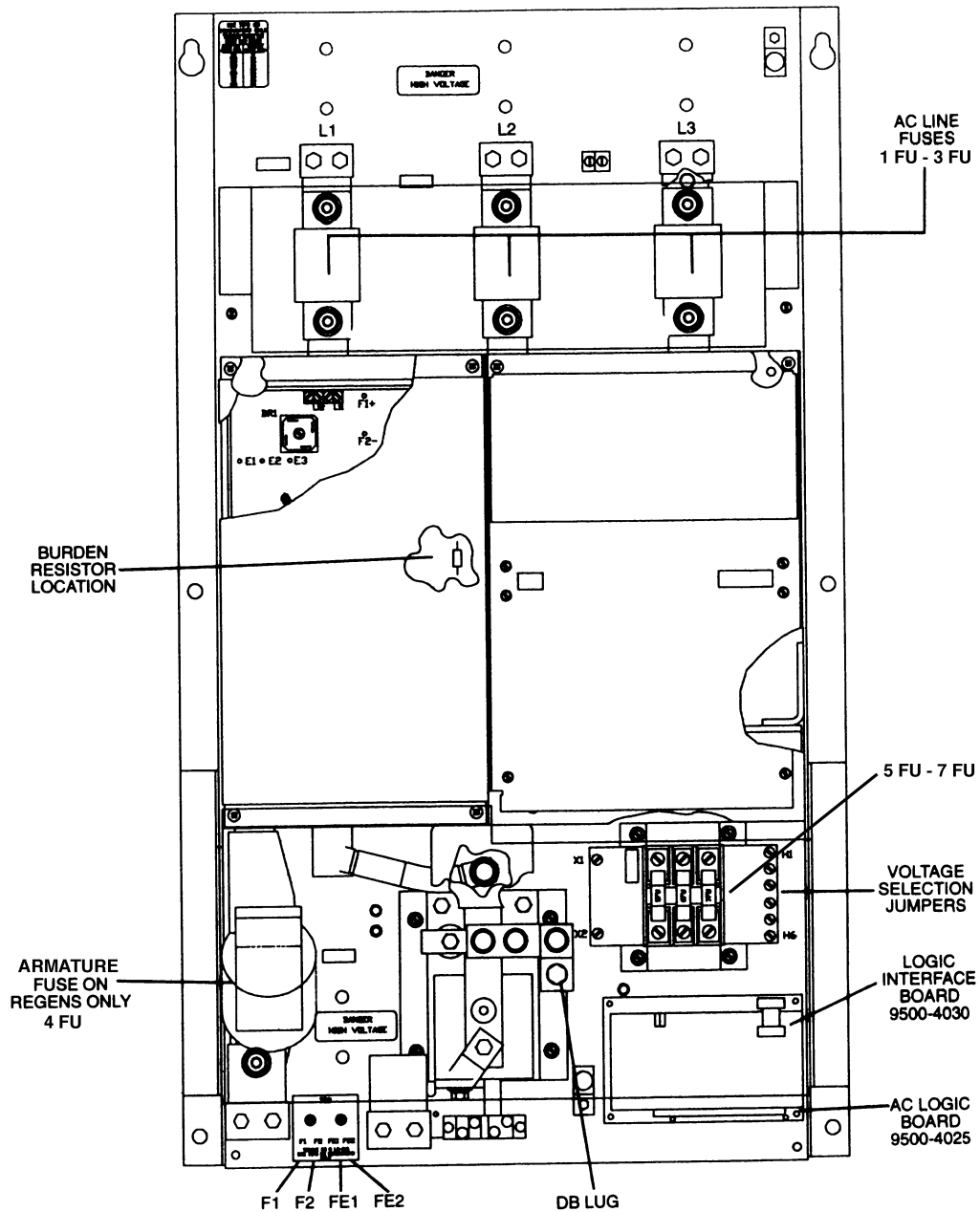
To replace the field fuses FS1, FS2 and FS3 on the MDA6 power board, loosen the four screws to remove the left plastic cover. The fuses are located on the left corner in clip holders.

To replace FS1, FS2, and FS3 on the SD1 snubber board, loosen the two screws on the top of the metal hinged cover and swing it down. The SD1 boards are located on the heat sinks. Remove the two nuts and associated hardware to replace the defective fuse(s). Replace hardware and tighten nuts. Fasten hinged metal panel.



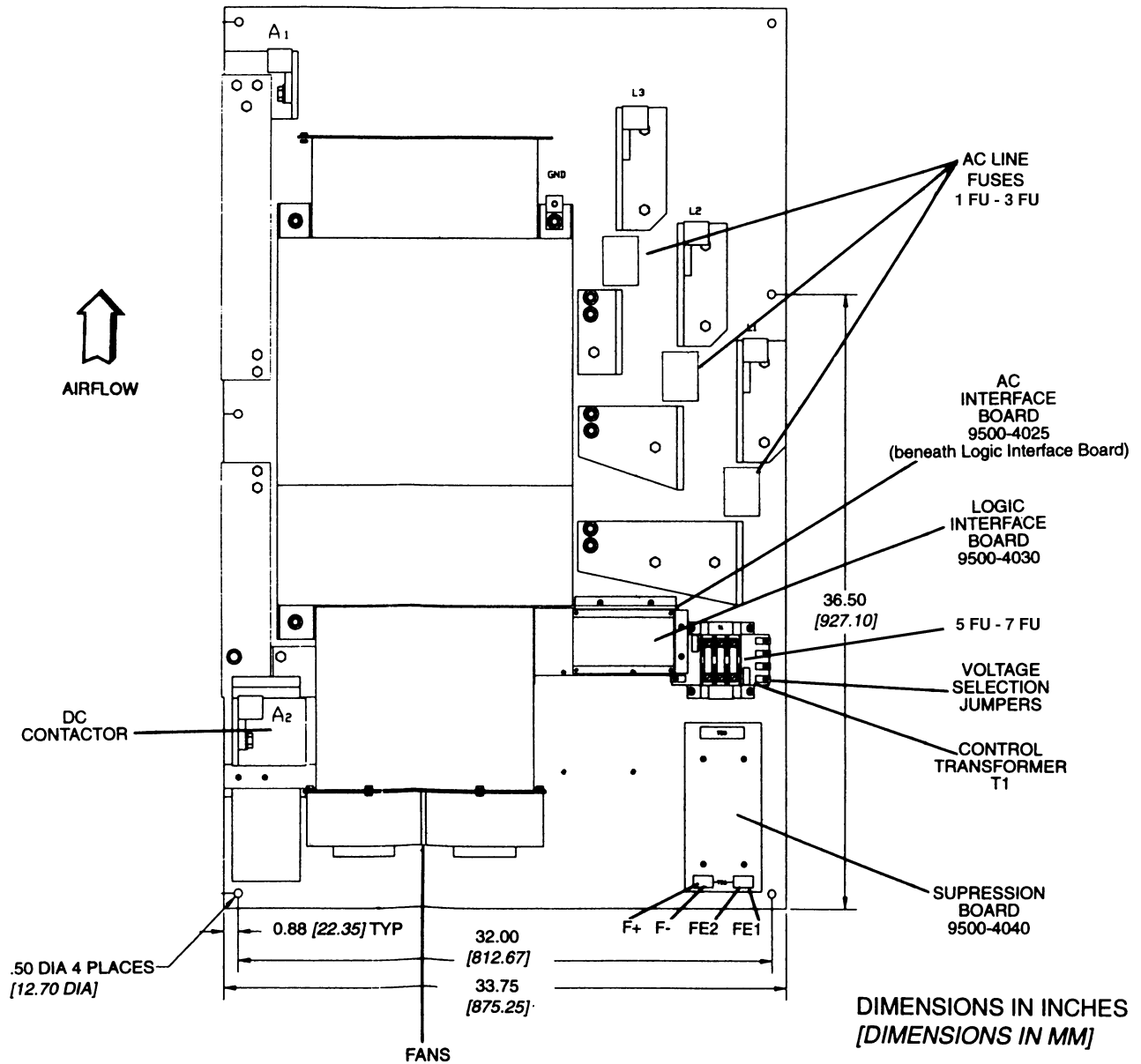
**Figure 14-1.**  
5-100 HP Quantum III Unit

# 14 Repair & Maintenance



- L1
- L2 - Main 3 phase AC supply to control
- L3
  
- FE1 - Field Economy connections. Jumper for
- FE2 - full field. Used with Field Economy Kit 2200-9201
  
- F1 - Motor Field Connections
- F2

Figure 14-2.  
75-400 HP Quantum III Unit



- L1
- L2 - Main 3 phase AC supply to control
- L3
  
- A1 - Armature Connections
- A2
  
- F1 - Motor Field Connections
- F2
  
- FE1 - Field Economy connections. Jumper for
- FE2 - full field. Used with Field Economy Kit 2200-9201

Figure 14-3.  
250-1000 HP Quantum III Unit

# 14 Repair & Maintenance

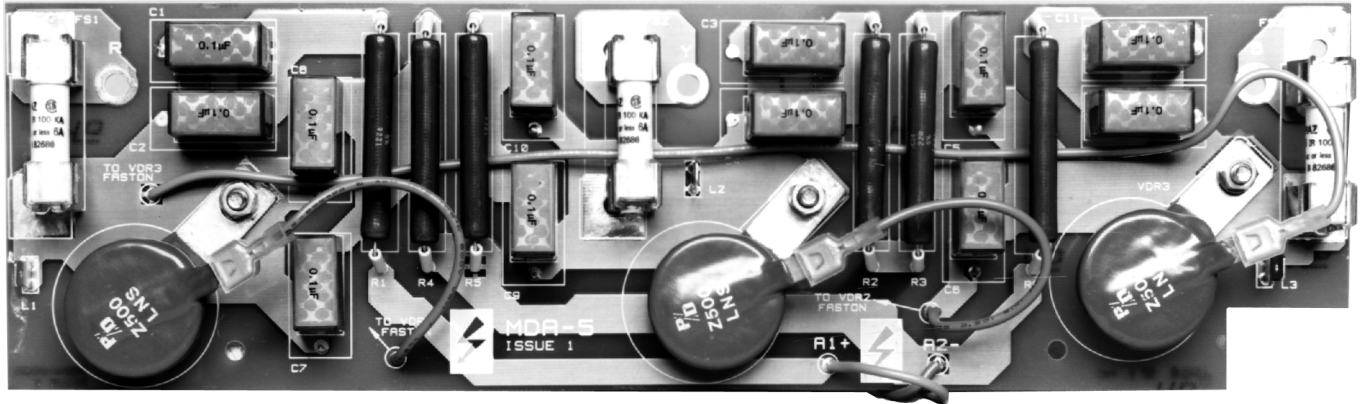


Figure 14-4.  
9300-5308 MDA5 Snubber Board

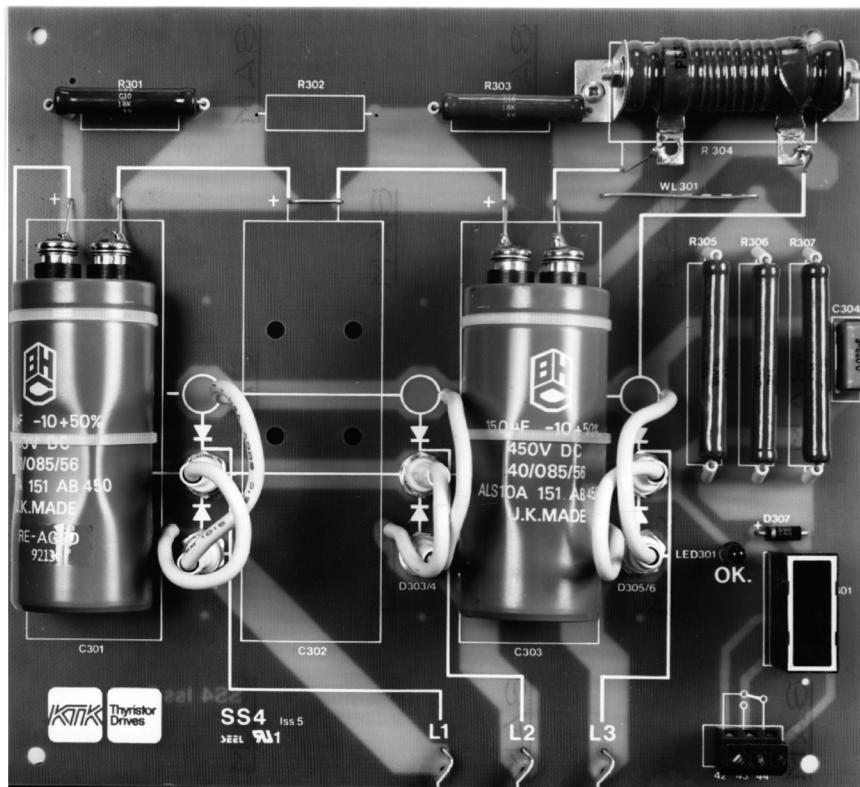


Figure 14-5.  
9300-1014 Board