

DiVA

Service Manual

Issue 1.0

P1000 Amplifier



Arcam P-1000 Amplifier Board functions and operation

The power amplifiers in the P-1000 are of class H design and use a three rail power supply for high operating efficiency. These amplifier boards are field replaceable and the unit can be safely operated with one or more boards out of the unit. The operating descriptions below are divided into three groups. The input and signal control section. The amplifier section and the power switching section. Signal net name references as they appear in the schematic are designated here in bold type.

The line level audio path of the P-1000 very simple and short. Unbalanced audio sources are buffered by U6-A and summed with the balanced input from U1-A. The signal then passes through the gain set stage of U6-B and then on to the **AMP-IN** amplifier drive. The **AMP-IN** signal is also contoured by U2-A and on to the power switching section via the **COMM** output.

The gain switch S1 works by changing the local feedback around U6-B and has three settings. The "A" gain position provides an overall gain of 31.5 dB and is compatible with other Arcam amplifiers. The "B" setting is for use in THX compliant systems and the low gain "C" position can be used to lower the overall system noise level in installations where the speakers are very close to the listener.

Also at the input of the gain set stage are the mute transistor Q1 and the resistive element of the clipping eliminator circuit. When the P-1000 is turned on, the global mute signal at the **MUTE** input of U3-A is low. This forces its output to +12V which activates the mute transistor Q1 as well as the clipping eliminator circuit through D15. The **FLT_OUT** from the emitter follower Q24 and also goes high. Q1 then shunts the audio to ground and R11 goes to a low resistance state. The **FLT_OUT** passes on out to the channel status display board. When the global mute cycle finishes and the output from U3-B goes low, Q1 turns off and passes the audio signal immediately but the resistive element R11 has a slow release time which allows the audio output to ramp up in a controlled manner.

The local mute circuit of U3-B also has two other inputs. The thermal shutdown circuit of U2-B and R22 monitor the heatsink temperature of the amplifier. If the HS temperature exceeds approximately 95 Deg C, the output of U2-B goes high and toggles the local mute circuit on. Because of the hysteresis around U2-B, the thermal protection will remain active until the amplifier has cooled down approximately 20 Deg below the trip point. The second input is the **PROT** line from the amplifier. This is a fast acting input which goes to a low impedance state if a short circuit is detected at the amplifier output.

The clipping eliminator circuit has two inputs. The **AMPOUT** monitors the amplifier output signal and the **OPA-OUT** signal from the output of U1-B. The **OPA-OUT** line is inside the overall amplifier feedback loop and is very sensitive to any differences between the input and output signals in the audio path. If the unit is driven into clipping the difference signal from these two lines is amplified and used to drive the CLM5000 LDR. This causes the resistance of R11 to decrease and work as part of a voltage divider against R85 or R5. The effect of this is to reduce the signal level going into the amplifier thereby reducing the output clipping to a very low value. Typically this circuit will hold the THD to less than 1% with 10dB of overdrive at the input.

Arcam P-1000 Amplifier Board functions and operation

In the amplifier portion of the board, Q2 acts as a level shifter and drives the class A transistor Q13. The voltage source for the class A stage is from Q14 and is regulated by Z1. This constant voltage causes Q13 to act as a constant current source and stabilizes the output transistor bias regardless of changes in the AC mains. The class A drive voltage is also removed from Q13 anytime the local or global mute circuits are activated. In the un-muted state **CLA-MUTE** is $-12V$. When activated this line goes high to $+12V$ which removes Q14s base voltage when Q25 is turned on.

The bias temperature tracking is from diode D8 and the initial setting is made by adjusting RP1 for a voltage reading of .5 to 1.0 mV across either R51-R53 or R44-R45 after the unit has been on and running for a minute or two. A better method of setting the bias is to use a distortion analyzer and adjust the amplifier output for 1 volt at 2 kHz into an 8 Ohm load. After the amplifier has been on and allowed to warm up for a few minutes, adjust RP1 until the crossover notch just starts to disappear.

The output section is a complimentary feedback pair topology with Q9 and Q7,Q8 in the positive leg and Q12 and Q10,Q11 in the negative leg. The advantage of this configuration is higher peak output voltage and, because the emitters of the driver transistors become the effective output of the amplifier, crossover discontinuities are very fast and almost negligible without any bias setting. With the bias correctly adjusted the transition through the crossover region is seamless and the very low bias current holds the output stage dissipation to approximately 1 watt.

Output stage V-I limiting is through Q5 and Q6. The short circuit current limit is approximately 10 Amps and is set to this high value in order to handle the out of phase currents in highly reactive loads. At high output voltages, however, R37 increases this limit to 20 Amps. For short circuit loads where the current is very high but the output voltage is close to zero, Q4 is turned on and the **PROT** line activates the local signal mute circuit. This mute removes the output signal momentarily and then releases, cycling on/off until the fault is removed. To verify the short circuit protection, drive the amplifier to an output of 5 volts or more and short the output terminals together. The shorted channel output should cycle on and off and the front panel status indicator should toggle between green and amber.

To increase the efficiency and reliability of the amplifier, multiple voltage rails are made available to the output transistors. This addition of variable power supply voltages to the amplifier circuit creates what is known as a class H amplifier. In conventional amplifiers the output devices are simultaneously exposed to high voltage and high current. The product of this current and voltage is dissipated in the form of heat. To make matters worse, the efficiency of the amplifier is the poorest at lower power output levels. To side step this problem the class H amplifier greatly improves the efficiency by running at low power supply voltages when the signal level is low. The operating voltages increase only as required by the program material. Another benefit is in the form of reliability under demanding conditions. Because the output transistors are never exposed to the maximum positive and negative supply voltages at the same time, the amplifier is able to withstand both very high current, under short circuit conditions, as well as highly reactive currents presented by some speakers. With the overall efficiency gain, amplifier heatsink requirements are reduced by half.

Arcam P-1000 Amplifier Board functions and operation

With the amplifier operating at low output levels (<20 W) only the +/-20V low voltage rails are used. As the output requirements increase, the **COMM** signal from U2-A also increases and the peak value of this signal is compared to the low rail reference voltage at the comparators U4-A and U5-B. When the peak value of the **COMM** signal exceeds the reference the comparators will toggle on and the middle rail voltage will be supplied to the amplifier. For a positive signal, Q15 and Q17 turn on the 40 volt supply and on the negative swing Q23 and Q19 supply -40 volts.

As the requirements continue to increase the same sequence takes place for the +/- 60 volt supplies. U4-B, Q16 and Q18 supply the positive voltage and U5-A, Q22, Q20 and Q21 supply the negative voltage. The power diodes D7,D23 and D24,D25 isolate the high voltage supplies from the lower voltage supplies. Under short circuit conditions the **COMM** line signal goes to zero because of the mute drive to Q1 and only the low voltage supply is present at the output transistors.

To verify the correct operation of the commutator circuits drive the amplifier to 30-35 Vrms into an 8 Ohm load at 200 Hz and observe the positive and negative supplies. The positive rail voltage is monitored at the emitter of Q18 or at the junction of D7, D23 (cathode ends). To monitor the negative rail use TP2 which is connected to the junction of D24, D25. The waveforms should appear as shown in figure XX. If any of the rail voltages fail to operate, the output of the amplifier will be limited to a lower value by the clipping eliminator circuit. Because of this and the fact that the output will still be a sine wave, it may be necessary to remove the 8 Ohm load to determine which rail is not switching.

FIGURE 1 POSITIVE RAIL SWITCHING WAVEFORM

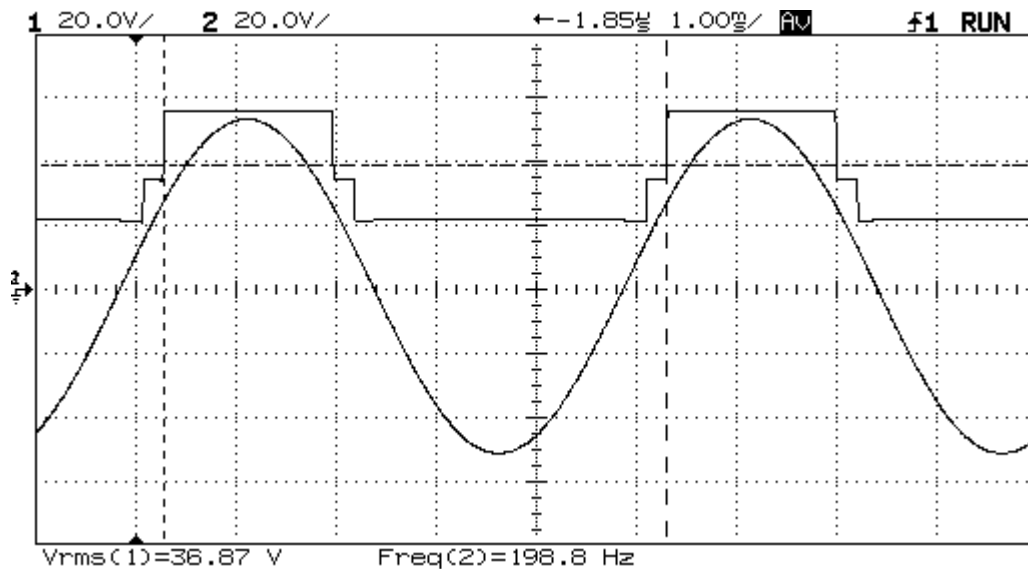


FIGURE 2 NEGATIVE GOING WAVEFORM

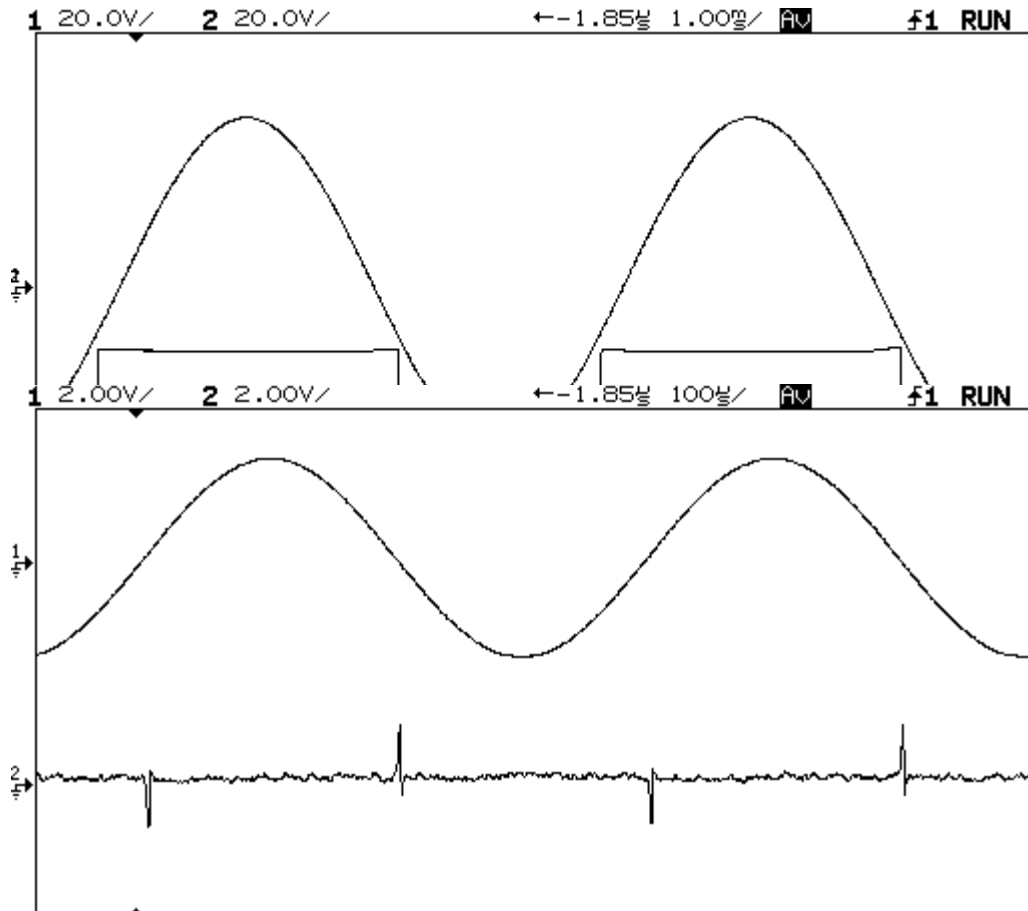
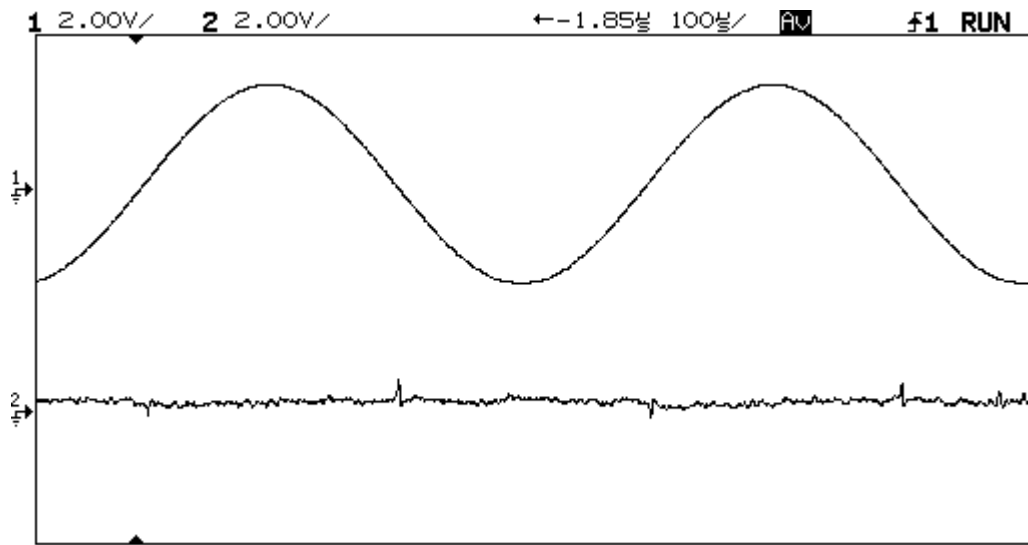


FIG 4 BIAS PROPERLY ADJUSTED (COLD)



P-1000 Display Board functions and operation.

The P-1000 display functions are divided into two separate blocks, power on/off and channel status indications. The power on/off LED indicators are driven by the Standby Power supply on the main board and are active any time the P-1000 is connected to the AC mains supply and the rear panel power switch is on. The Channel Status LEDs receive power from both the Main power supply and from each individual amplifier channel.

With the P-1000 connected to the AC mains with the power switch on, the **PWR-LED** line is high which turns on the red Standby LED on. It also turns Q2 on which forces the run LED off.

When the unit is turned on via the front panel power button or the rear panel 12V trigger **PWR-LED** line goes low and +12V from the main power supply turns on the green run LED.

The amplifier channel status LEDs, at turn on, are driven by the **FLT** lines and show amber for approximately 2 seconds. When the turn on mute cycle has finished the **FLT** lines go low and the LEDs receive their power from the -12V supply and are illuminated green.

If one of the amplifier channels becomes hot enough to thermal out the **FLT** line for that channel will go high until that amplifier channel cools down. During the off time the status led will show amber. Other channels are not affected by this action.

If one of the amplifier channels has a short circuit across the output terminals the **FLT** line will be activated momentarily and the status LED will alternate between amber and green. This amber/green cycle will continue as long as the fault is present and the amplifier is trying to run program material. When the fault is removed the LED for that channel will return to a steady green. No other channels are affected by this action.

In the event of a DC offset fault from the amplifier, the **OFFSET** line goes high which turns on both LEDs and the color changes to a steady amber. A DC fault condition will also shut down the main power supply. This removes the power to the status LEDs and all the channel indicators will go off. Although it very unlikely that a DC fault will ever take place, it does trigger a latching circuit that receives its power from the standby supply. This means that it will be unaffected by the front power button or the rear panel 12V trigger. The only way to clear this condition is to completely remove the power either by turning the unit off via the rear panel power switch or by disconnecting the AC mains cord for a few minutes. This allows the offset latching circuit to reset to the off state.

Arcam P-1000 Main Board functions and operation

In addition to the high current supply voltages for the seven amplifier channels, the Main board also contains the circuitry for power on/off control, DC fault protection, the standby housekeeping power and other control circuits as well as the bussing interconnections to all channels.

Since the P-1000 is a multi rail class H amplifier, the Main board has three high power plus/minus voltage supplies for the amplifier output stages. The +/- 12V for the signal level amplifier circuits is obtained from the +/- 20 volt low rail supply. These 20 volt low rails are also fused for added DC fault protection but under no operational conditions including amplifier output short circuits should these fuses ever fail. The middle (+/- 40V) and high (+/- 60V) rails are capacitive input filters and require no further explanation.

Because the middle and high voltage supplies have no direct discharge path to the output stages when the unit is turned off, Q8 and Q9 form dynamic discharge resistors. This serves two purposes. First it discharges the main bulk capacitors when the unit is off and second, this energy is redirected to the +/- 12-volt supplies which eliminates turn off irregularities. Q8 and Q9 function only for a minute or so when the unit is powered down.

The standby power supply is functional at all times when the unit is connected to the AC mains and the rear panel power switch is on. The function of the **STBY** supply is to provide power for the power on/off logic, display and the DC fault circuit. One additional function is to supply the amplifier circuits with a small (less than 1 volt) DC negative bias which eliminates turn on "pops". This is accomplished through R62 and D15. Because the power requirements of these circuits is so low the power consumption when the P-1000 is in the standby mode is less than 2 watts.

The DC fault circuit, which includes Q2, 3 and 4, is a bi-directional DC level sensing circuit. The output of each amplifier is monitored through the **CH1** through **CH7** R-C networks. If a positive going DC voltage is present on any of these inputs, Q2 becomes forward biased, turns on and forces Q3 on. Likewise, for a negative going DC fault Q2 operates in a common base mode with R12 holding the base close to ground potential while the emitter goes negative and the circuit is again activated. Because of the positive feedback through R26, Q3 latches on and, through Q4, pulls the base of the emitter follower Q7 to ground. This action shuts down the Opto coupler U3 and the main power supply Triac goes to the off state and turns the P-1000 off. The **OFFSET** line drives the global mute circuit and the power LED will show as amber. The unit will remain in this shutdown mode until all power is removed for a minute or so until the standby voltage drops close to zero. If the offset circuit is activated, LED D12 on the main board will be on and serve as a visual indication that the unit is in shutdown mode. Shorting **TP1** and **TP2** together on the main board will force the circuit to reset.

The power on/off switching can be done three ways. Turning the rear panel switch on or off, pressing the front panel power button (assuming the rear panel switch is on) or by applying a 12 volt DC trigger to the rear panel 3.5 MM jack. The logic switching functions of the P-1000 are then controlled by U1 and U2 which maintain a zero crossing on/off drive to the main triac.

Arcam P-1000 Main Board functions and operation

To perform these functions an AC mains sine wave from the standby transformer secondary is applied to the input of U2-D. This **LV_AC_IN** signal is then half wave rectified and the output of gate U2-D is a square wave clock signal to the CLK input of U1-B. By using a clock signal derived from the AC mains, zero crossing turn on/off is assured regardless of which method is used. If the unit is turned on via the rear panel power switch the SET input of U1-A goes high and the Q output becomes the DATA input to U1-B whose Q output goes high on the first clock cycle from U2-D. This high output then turns on the Optocoupler U3 and the main triac is gated on thereby turning on the main power. If the front panel power button is pressed again, the Q output is clocked through the DATA input of U1-A causing its Q output to go low. This low state is passed through U1-B, on to the Opto and the unit is turned off. Since U1-A is a divide by 2 circuit subsequent button presses will switch the unit on and off. The **PWR_LED** line from U1-A drives the front panel standby LED and the **PWR_ON** line is used to supply power to Q5 in the power on/off mute circuit.

The rear panel 12 volt remote input is independent of the front panel power button and will cycle the unit on or off depending on whether a 12 volt input is present. The remote switching, unlike the front panel switching, is voltage level dependent and operates by forcing a SET or RESET on U1-A. The main power triac switching, however, is still controlled by the clock signal from U2-D. The rear panel control also incorporates a time delay of 1-2 seconds through the R-C pair R2-C4. This allows for a staggered turn on sequence if an entire system is powered on by a single 12 volt trigger source.

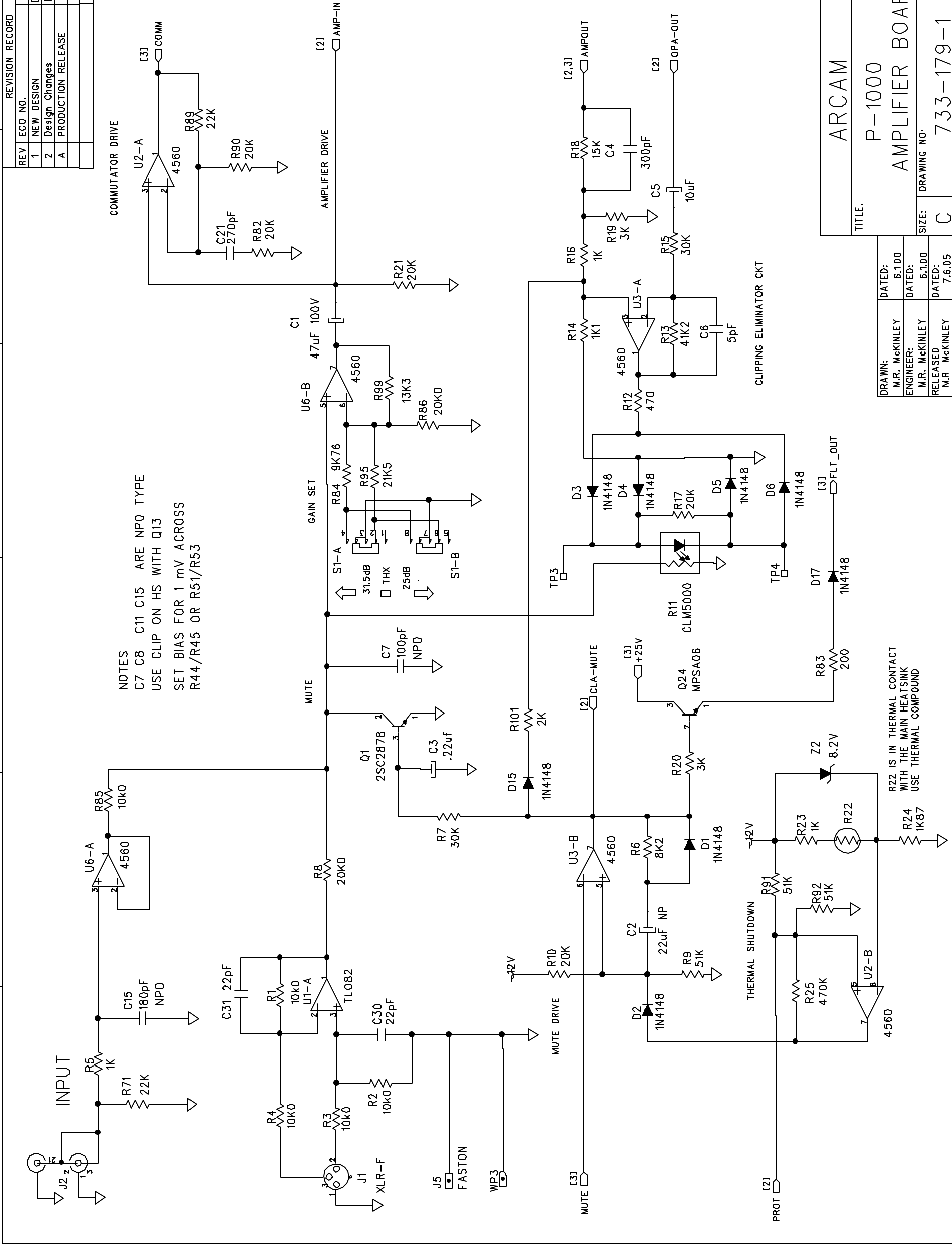
Because triacs and SCRs remain conductive only when a current is flowing through them, a constant load circuit is included on the transformer secondary windings. The R-C network of R64 on the 20 volt winding and the 3 uF 250V capacitor across the 60 volt windings correct this by holding the triac on through the zero crossing point. This equalizes the transformer flux and prevents mechanical transformer "buzz" due to unequal conduction cycles across the windings.

When the P-1000 is turned on, the global mute circuit is activated by the network around Q5. Initially Q5 will be off and the **MUTE** output will be -12 V. This mute voltage is distributed to all seven channels and will activate the local mute circuit on each of the amplifier boards. As C30 discharges, the voltage eventually exceeds the zener drop of Z4 and turns Q5 on which then toggles high for a **MUTE** line voltage of -4V. When the global mute line is high (-4V), the individual channels are active and will pass a signal. The **FLT** outputs from the amplifier boards are used to provide the channel status LED drive. If any amplifier channel is in the muted state its **FLT** output is high and the corresponding channel status LED will show as amber.

As shipped the P-1000 is meant to operate at either 230Vac or 120Vac. To change the AC mains operating voltage it is necessary to replace the main power transformer with one of the desired voltage. In addition it is also required that the standby transformer primary windings are rewired to accept the new voltage. JP1, JP2 and JP3 determine which voltage the standby transformer is set for. For 230Vac operation JP1 is used and JP2 and 3 are removed. For 120Vac operation JP2 and 3 are installed and JP3 is removed. The fuse F1 is an F50mAL type and remains the same value for either voltage.

REVISION RECORD		
REV	ECD NO.	BY: DATE.
1	NEW DESIGN	DMCK 1.28.05
2	Design Changes	DMCK 3.11.05
A	PRODUCTION RELEASE	DMCK 7.6.05

NOTES
 C7 C8 C11 C15 ARE NPO TYPE
 USE CLIP ON HS WITH Q13
 SET BIAS FOR 1 mV ACROSS
 R44/R45 OR R51/R53

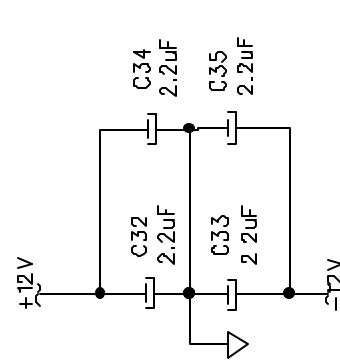
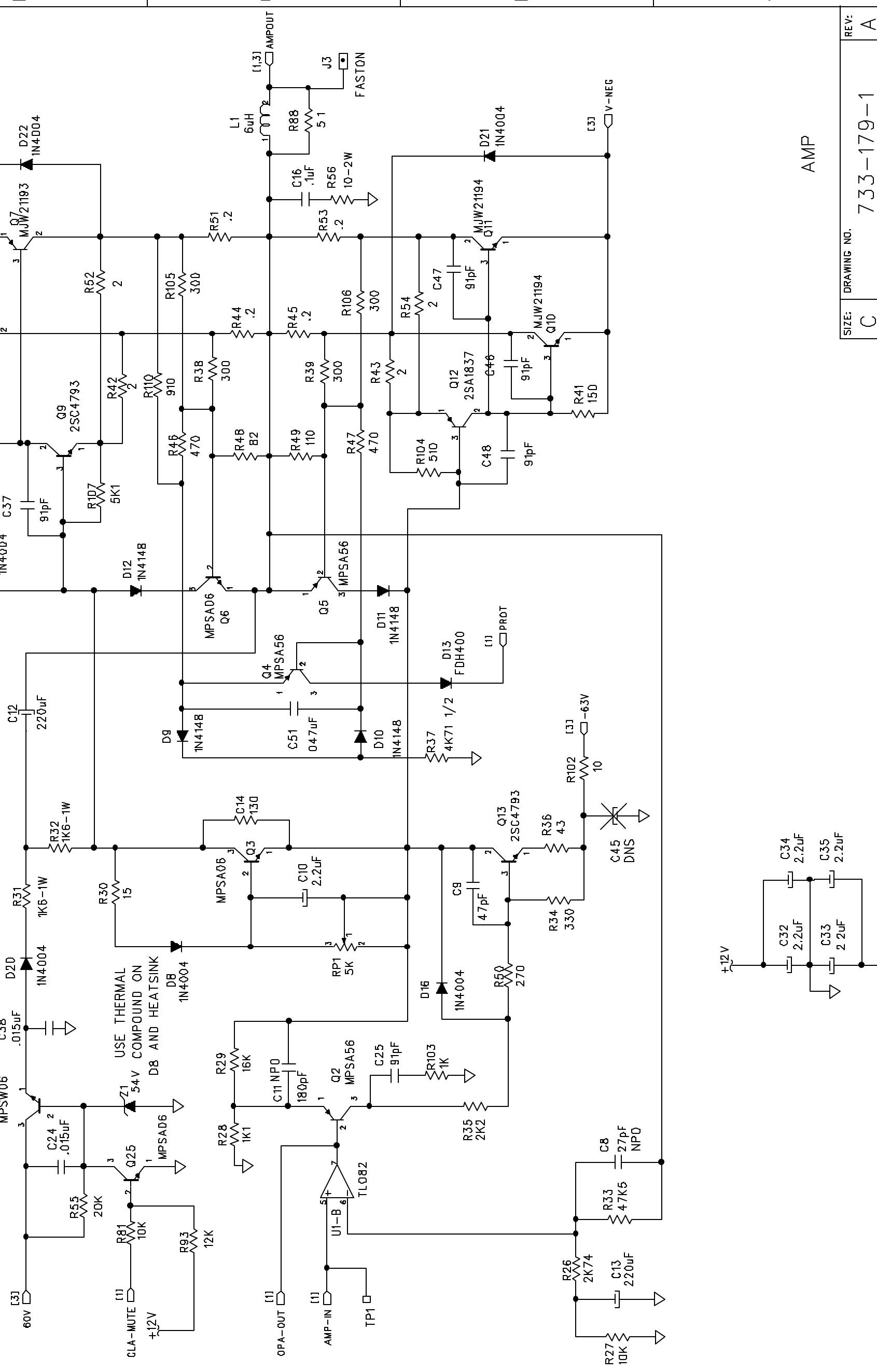


TITLE:		ARCAM
DRAWING NO.		P-1000
AMPLIFIER BOARD		
SIZE:	DRAWING NO.	733-179-1
DATE CODE:	SCALE:	NONE
SHEET:	1	OF 3

DRAWN:	DATED:
M.R. MCKINLEY	8.1.00
ENGINEER:	DATED:
M.R. MCKINLEY	6.1.00
RELEASED:	DATED:
M.R. MCKINLEY	7.6.05
OTHER:	DATED:
DONNA MCKINLEY	8.1.00

R22 IS IN THERMAL CONTACT WITH THE MAIN HEATSINK USE THERMAL COMPOUND

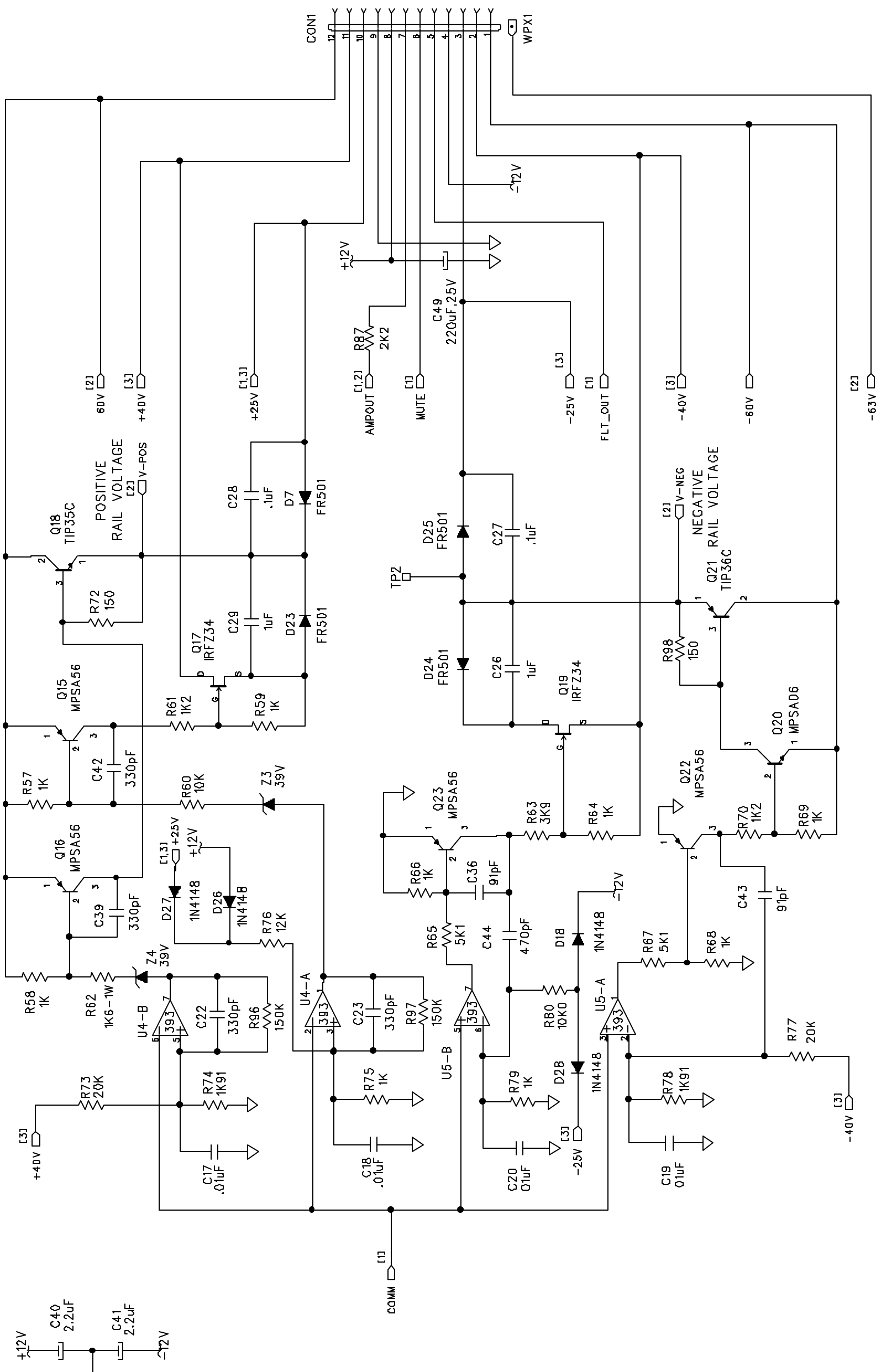
CLASS A VOLTAGE SOURCE



AMP

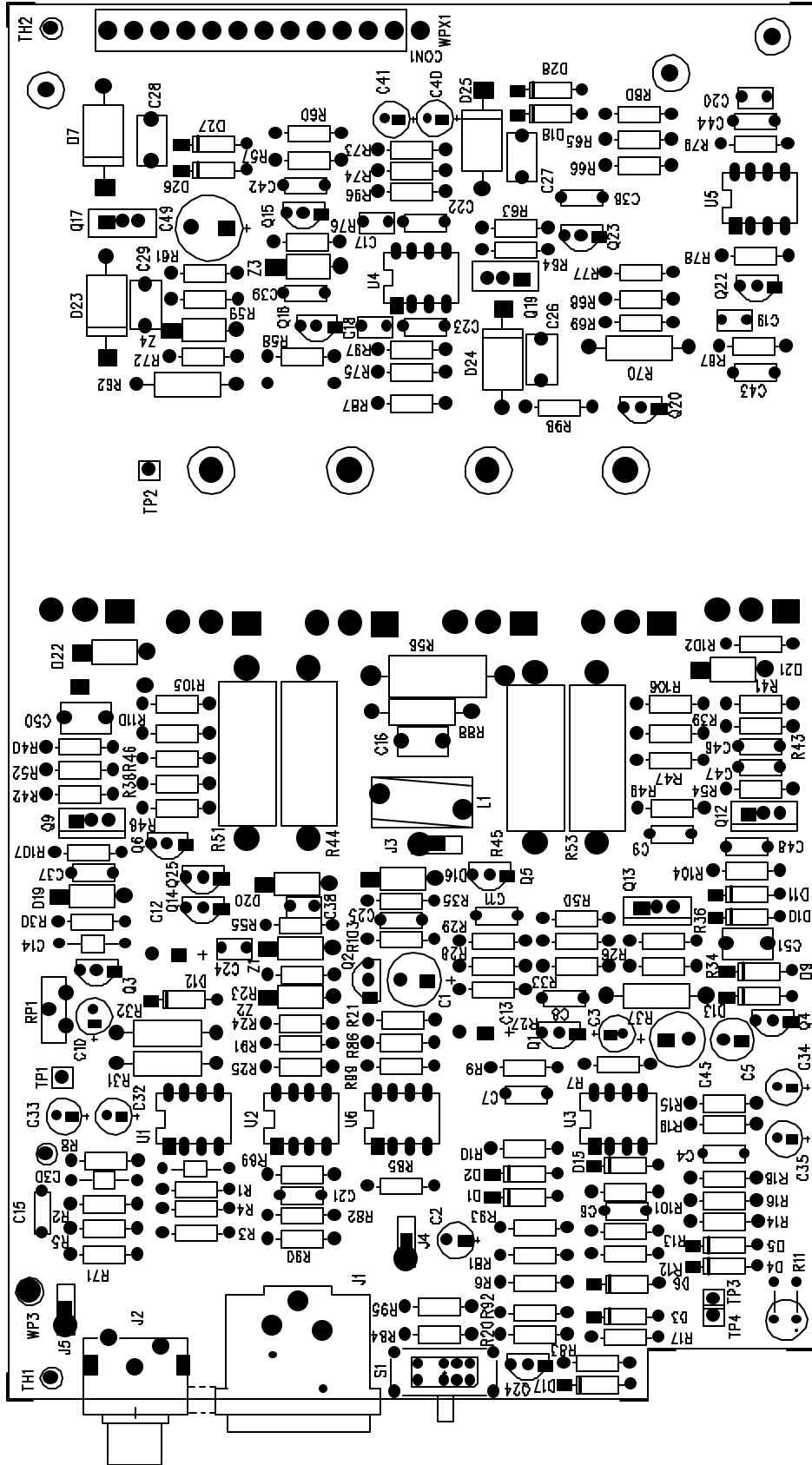
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DATE CODE: 7.6.05	SCALE: NONE	SHEET: 2 OF 3

6 5 4 3 2 1



SIZE: C	DRAWING NO. 733-179-1	REV: A
DATE CODE: 7.6.05	SCALE: NONE	SHEET: 3 OF 3

POWER



ARCAM P1000
 733-179-2
 REV-A
 REFERENCE DESIGNATORS
 P1000- AMP BD.

ARCAM P-1000 AMPLIFIER BOARD

REVISION A

<u>Reference No</u>	<u>Part No</u>	<u>Description</u>
CAPACITOR		
C1 C45	205-813-4	CAP EL RADIAL 47uF 100V
C2	210-311-4	CAP EL NP 22uF 25V
C3	206-529-4	CAP EL RADIAL .22uF 50V
C4 C22 C23 C39 C42	203-038-4	CAP CERAMIC 330pF 1KV 20%
C5	205-509-4	CAP EL RADIAL 10uF 50V
C6	203-002-4	CAP CERAMIC 5pF 1KV 20%
C7 C25 C36 C37 C43 C46 C47 C48	203-027-4	CAP CERAMIC 100pF 1KV 20% NPO
C8	203-015-4	CAP CERAMIC 27pF 1KV 20% NPO
C9	203-019-4	CAP CERAMIC 47pF 1KV 20%
C10 C32 C33 C34 C35 C40 C41	205-505-4	CAP EL RADIAL 2.2uF 50V
C11 C15	203-031-4	CAP CERAMIC 180pF 1KV 20% NPO
C12 C13 C49	205-317-4	CAP EL RADIAL 220uF 25V
C16 C26 C27 C28 C29	201-125-4	CAP MYLAR .1uF 100V 10%
C17 C18 C19 C20	201-013-4	CAP MYLAR .01uF 50V 10%
C21	203-036-4	CAP CERAMIC 270pF 1KV 20%
C24	201-015-4	CAP MYLAR .015uF 50V 10%
C30 C31	224-012-3	CAP CERAMIC 22pf 50V 20% AX .35"
C38	201-015-4	CAP MYLAR .015uF 50V 10%
C44	203-043-4	CAP CERAMIC 470pF 1KV 20%
C50		NOT USED
C51	201-121-4	CAP MYLAR .047uF 100V 10%
DIODE		
D1 D2 D3 D4 D5 D6 D9 D10 D11 D12	302-001-4	DIODE 1N4148 SIGNAL .4"
D7 D23 D24 D25	304-008-0	DIODE FAST REC 5A
D8	301-001-1	DIODE 4004 1A 400V UN-PREP
D13	302-006-0	DIODE FDH400 HV SIGNAL .4"
D16 D19 D20 D21 D22	301-001-4	RECT 1N4004 1A 400V .4"
TRANSISTOR		
Q1	311-015-0	TRANS 2SC2878 NPN TO-92 ECB
Q2 Q4 Q5 Q15 Q16 Q22 Q23	311-010-0	TRANS MPSA56 PNP TO-92
Q3 Q14	311-003-0	TRANSISTOR MPSW06 NPN 1W
Q6 Q20 Q24 Q25	311-009-0	TRANS MPSA06 NPN TO-92
Q7 Q8	312-014-0	TRANSISTOR MJW21193 PNP PWR 250V
Q9 Q13	312-012-0	TRANS 2SC4793 NPN TO220
Q10 Q11	312-015-0	TRANSISTOR MJW21194 NPN PWR 250V
Q12	312-013-0	TRANS 2SA1837 PNP TO-220
Q17 Q19	314-001-0	TRANSISTOR IRFZ34 PWR FET
Q18	312-001-0	TRANSISTOR TIP35C NPN PWR 100V
Q21	312-002-0	TRANSISTOR TIP36C PNP PWR 100V
RESISTOR		
C14	103-051-4	RES CF 1/4W 5% 130 OHM .4"
R1	109-289-4	RES MF 1/4W 1% 10.0K .4"

ARCAM P-1000 AMPLIFIER BOARD

REVISION A

<u>Reference No</u>	<u>Part No</u>	<u>Description</u>
RESISTOR		
R2	109-289-4	RES MF 1/4W 1% 10.0K .4"
R3	109-289-4	RES MF 1/4W 1% 10.0K .4"

<u>Reference No</u>	<u>Part No</u>	<u>Description</u>
R4	109-289-4	RES MF 1/4W 1% 10.0 KOHM .4"
R5	103-072-4	RES CF 1/4W 5% 1K .4"
R6	103-094-4	RES CF 1/4W 5% 8.2K .4"
R7	103-107-4	RES CF 1/4W 5% 30K .4"
R8	109-318-4	RES MF 1/4W 1% 20.0K .4"
R9	103-113-4	RES CF 1/4W 5% 51K .4"
R10	103-103-4	RES CF 1/4W 5% 20K .4"
R11	325-004-0	PHOTO RES
R12	103-064-4	RES CF 1/4W 5% 470 OHM .4"
R13	109-348-4	RES MF 1/4W 1% 41.2K .4"
R14	103-073-4	RES CF 1/4W 5% 1.1K .4"
R15	103-107-4	RES CF 1/4W 5% 30K .4"
R16	103-072-4	RES CF 1/4W 5% 1K .4"
R17	103-103-4	RES CF 1/4W 5% 20K .4"
R18	103-100-4	RES CF 1/4W 5% 15K .4"
R19	103-083-4	RES CF 1/4W 5% 3K .4"
R20	103-083-4	RES CF 1/4W 5% 3K .4"
R21	103-103-4	RES CF 1/4W 5% 20K .4"
R23	103-072-4	RES CF 1/4W 5% 1K .4"
R24	109-219-4	RES MF 1/4W 1% 1.87K .4"
R25	103-136-4	RES CF 1/4W 5% 470K .4"
R26	109-235-4	RES MF 1/4W 1% 2.74K .4"
R27	103-096-4	RES CF 1/4W 5% 10K .4"
R28	103-073-4	RES CF 1/4W 5% 1.1K .4"
R29	103-101-4	RES CF 1/4W 5% 16K .4"
R30	103-028-4	RES CF 1/4W 5% 15 OHM .4"
R31	116-019-0	RES 1W MOF 5% 1.6K
R32	116-019-0	RES 1W MOF 5% 1.6K
R33	109-354-4	RES MF 1/4W 1% 47.5K .4"
R34	103-060-4	RES CF 1/4W 5% 330 OHM .4"
R35	103-080-4	RES CF 1/4W 5% 2.2K .4"
R36	103-039-4	RES CF 1/4W 5% 43 OHM .4"
R37	105-088-5	RES CF 1/2W 5% 4.7K OHM .5"
R38	103-059-4	RES CF 1/4W 5% 300 OHM .4"
R39	103-059-4	RES CF 1/4W 5% 300 OHM .4"
R40	103-045-4	RES CF 1/4W 5% 75 OHM .4"
R41	103-052-4	RES CF 1/4W 5% 150 OHM .4"
R42	103-008-4	RES CF 1/4W 5% 2 OHM .4"
R43	103-008-4	RES CF 1/4W 5% 2 OHM .4"
R44	114-004-0	RES 5W WW 5% .2 OHM
R45	114-004-0	RES 5W WW 5% .2 OHM
R46	103-064-4	RES CF 1/4W 5% 470 OHM .4"

ARCAM P-1000 AMPLIFIER BOARD

REVISION A

<u>Reference No</u>	<u>Part No</u>	<u>Description</u>
R47	103-064-4	RES CF 1/4W 5% 470 OHM .4"
R48	103-046-4	RES CF 1/4W 5% 82 OHM .4"
R49	103-049-4	RES CF 1/4W 5% 110 OHM .4"
R50	103-058-4	RES CF 1/4W 5% 270 OHM .4"
R51	114-004-0	RES 5W WW 5% .2 OHM
R52	103-008-4	RES CF 1/4W 5% 2 OHM .4"
R53	114-004-0	RES 5W WW 5% .2 OHM
R54	103-008-4	RES CF 1/4W 5% 2 OHM .4"
R55	103-103-4	RES CF 1/4W 5% 20K .4"

<u>Reference No</u>	<u>Part No</u>	<u>Description</u>
R56	111-004-0	RES MOF 2W MOX 5% 10 OHM
R57	103-072-4	RES CF 1/4W 5% 1K .4"
R58	103-072-4	RES CF 1/4W 5% 1K .4"
R59	103-072-4	RES CF 1/4W 5% 1K .4"
R60	103-096-4	RES CF 1/4W 5% 10K .4"
R61	103-074-4	RES CF 1/4W 5% 1.2K .4"
R62	116-019-0	RES 1W MOF 5% 1.6K
R63	103-086-4	RES CF 1/4W 5% 3.9K .4"
R64	103-072-4	RES CF 1/4W 5% 1K .4"
R65	103-089-4	RES CF 1/4W 5% 5.1K .4"
R66	103-072-4	RES CF 1/4W 5% 1K .4"
R67	103-089-4	RES CF 1/4W 5% 5.1K .4"
R68	103-072-4	RES CF 1/4W 5% 1K .4"
R69	103-072-4	RES CF 1/4W 5% 1K .4"
R70	116-010-0	RES CF 1W 5% 1.2K .4"
R71	103-104-4	RES CF 1/4W 5% 22K .4"
R72	103-052-4	RES CF 1/4W 5% 150 OHM .4"
R73	103-103-4	RES CF 1/4W 5% 20K .4"
R74	109-220-4	RES MF 1/4W 1% 1.91K .4"
R75	103-072-4	RES CF 1/4W 5% 1K .4"
R76	103-098-4	RES CF 1/4W 5% 12K .4"
R77	103-103-4	RES CF 1/4W 5% 20K .4"
R78	109-220-4	RES MF 1/4W 1% 1.91K .4"
R79	103-072-4	RES CF 1/4W 5% 1K .4"
R80	109-289-4	RES MF 1/4W 1% 10.0 KOHM .4"
R81	103-096-4	RES CF 1/4W 5% 10K .4"
R82	103-103-4	RES CF 1/4W 5% 20K .4"
R83	103-055-4	RES CF 1/4W 5% 200 OHM .4"
R84	109-228-4	RES MF 1/4W 1% 9.76K .4"
R85	109-289-4	RES MF 1/4W 1% 10.0K .4"
R86	109-318-4	RES MF 1/4W 1% 20.0K .4"
R87	103-080-4	RES CF 1/4W 5% 2.2K .4"
R88	116-018-0	RES MOX 5.1 OHM 1W
R89	103-104-4	RES CF 1/4W 5% 22K .4"
R90	103-103-4	RES CF 1/4W 5% 20K .4"
R91	103-113-4	RES CF 1/4W 5% 51K .4"

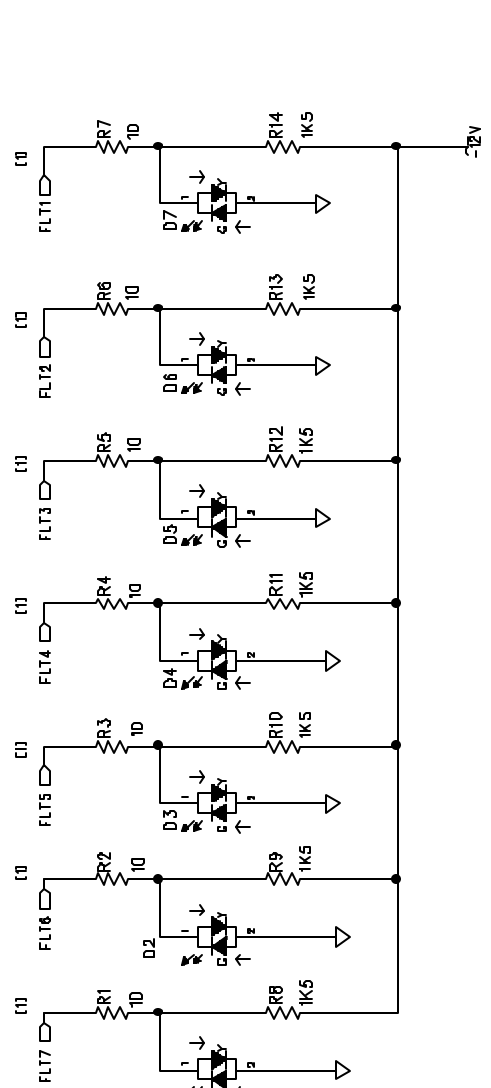
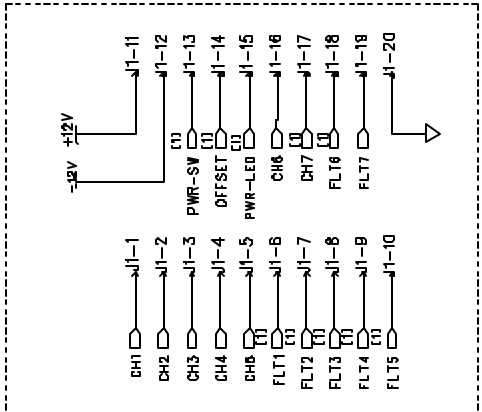
ARCAM P-1000 AMPLIFIER BOARD

REVISION A

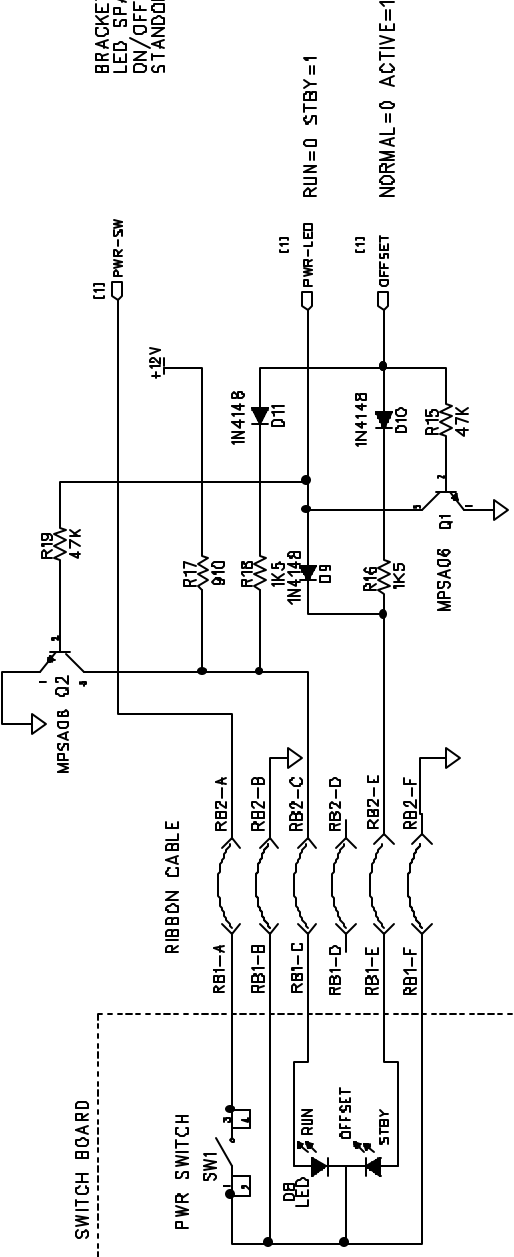
<u>Reference No</u>	<u>Part No</u>	<u>Description</u>
R92	103-113-4	RES CF 1/4W 5% 51K .4"
R93	103-098-4	RES CF 1/4W 5% 12K .4"
R95	109-321-4	RES MF 1/4W 1% 21.5K .4"
R96	103-124-4	RES CF 1/4W 5% 150K .4"
R97	103-124-4	RES CF 1/4W 5% 150K .4"
R98	103-052-4	RES CF 1/4W 5% 150 OHM .4"
R99	109-225-4	RES MF 1/4W 1% 13.3K .4"
R101	103-079-4	RES CF 1/4W 5% 2K .4"
R102	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R103	103-072-4	RES CF 1/4W 5% 1K .4"
R104	103-065-4	RES CF 1/4W 5% 510 OHM .4"
R105	103-059-4	RES CF 1/4W 5% 300 OHM .4"
R106	103-059-4	RES CF 1/4W 5% 300 OHM .4"
R107	103-089-4	RES CF 1/4W 5% 5.1K .4"
R110	103-071-4	RES CF 1/4W 5% 910 OHM .4"

<u>Reference No</u>	<u>Part No</u>	<u>Description</u>
IC		
U1	322-010-0	IC TLO82 DUAL OPAMP
U2 U3 U6	322-007-0	IC 4560 DUAL OPAMP DIP
U4 U5	322-029-0	IC LM393 DUAL COMP
ZENER		
Z1	303-025-0	DIODE ZEN 4758 54V .4"
Z2	303-004-0	DIODE ZEN 4738 8.2V .4"
Z3 Z4	303-010-0	DIODE ZEN 4754 39V .4"
L1	353-007-0	INDUCTOR 6UH AXIAL
CONNECTOR		
J1	454-008-0	XLR FEMALE R/A PCB MT TYPE A
J2	446-020-0	RCA JACK DUAL VERTICAL
J3 J5	421-010-0	FASTON 250
CON1	445-016-0	CONN 13 PIN/ST/ .156 TIN
MISC		
S1	470-023-0	SWITCH SLIDE SP3T HORZ
TP1 TP2 TP3 TP4	445-015-0	TEST POINT 1 PIN
RP1	147-001-0	POT ROTARY 10mm 5K H-ADJ
R22	170-001-4	THERMISTOR 10K NTC .4"
JACK PLATE	633-301-0	INPUT JACK MTG PLATE

TO POWER SUPPLY



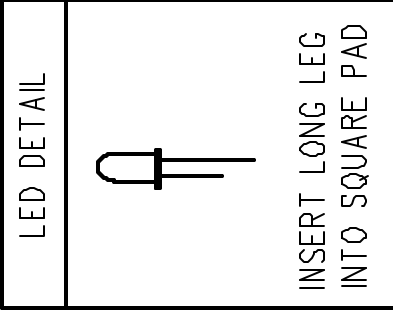
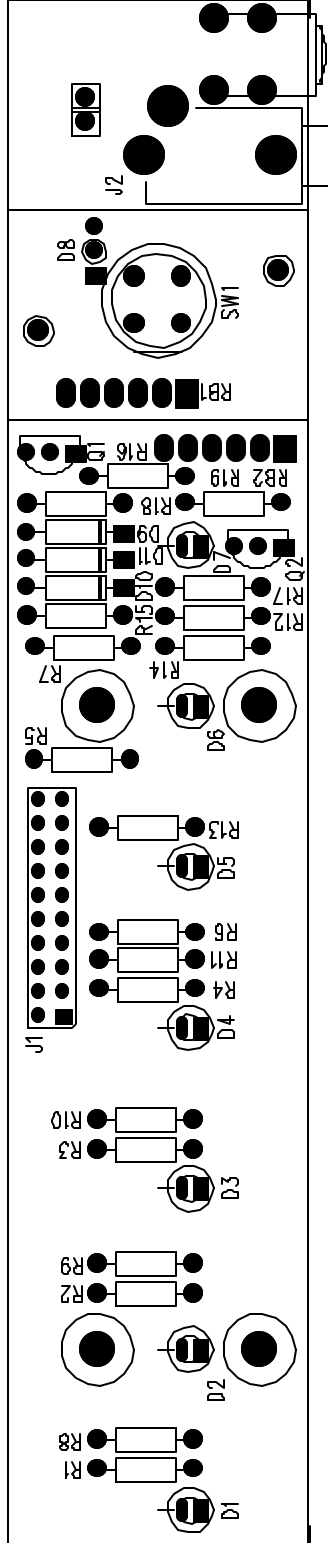
BRACKET IS 561-006-0
 LED SPACER IS 541-022-0
 DN/OFF BUTTON IS 581-053-0
 STANDOFF IS 533-004-0



RUN=0 STBY=1

NORMAL=0 ACTIVE=1

SIZE: C	DRAWING NO: 733-181-1	REV: A
DATE CODE: 10.24.00	SCALE: NONE	SHEET: 1 OF 1

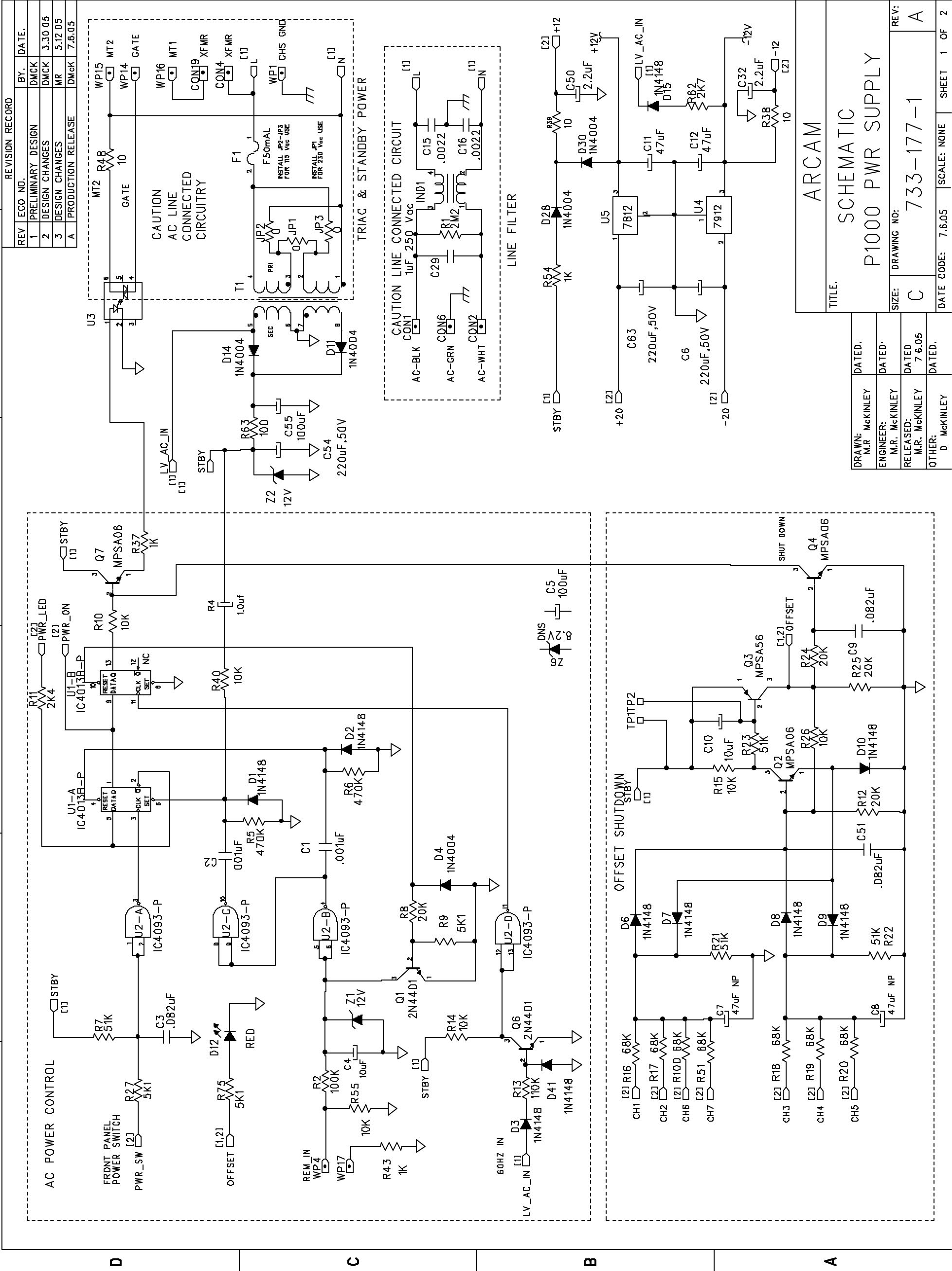


ARCAM
653-181-0
REV-A
PARTS LOCATOR
DISPLAY

ARCAM P-1000 DISPLAY BOARD

REVISION A

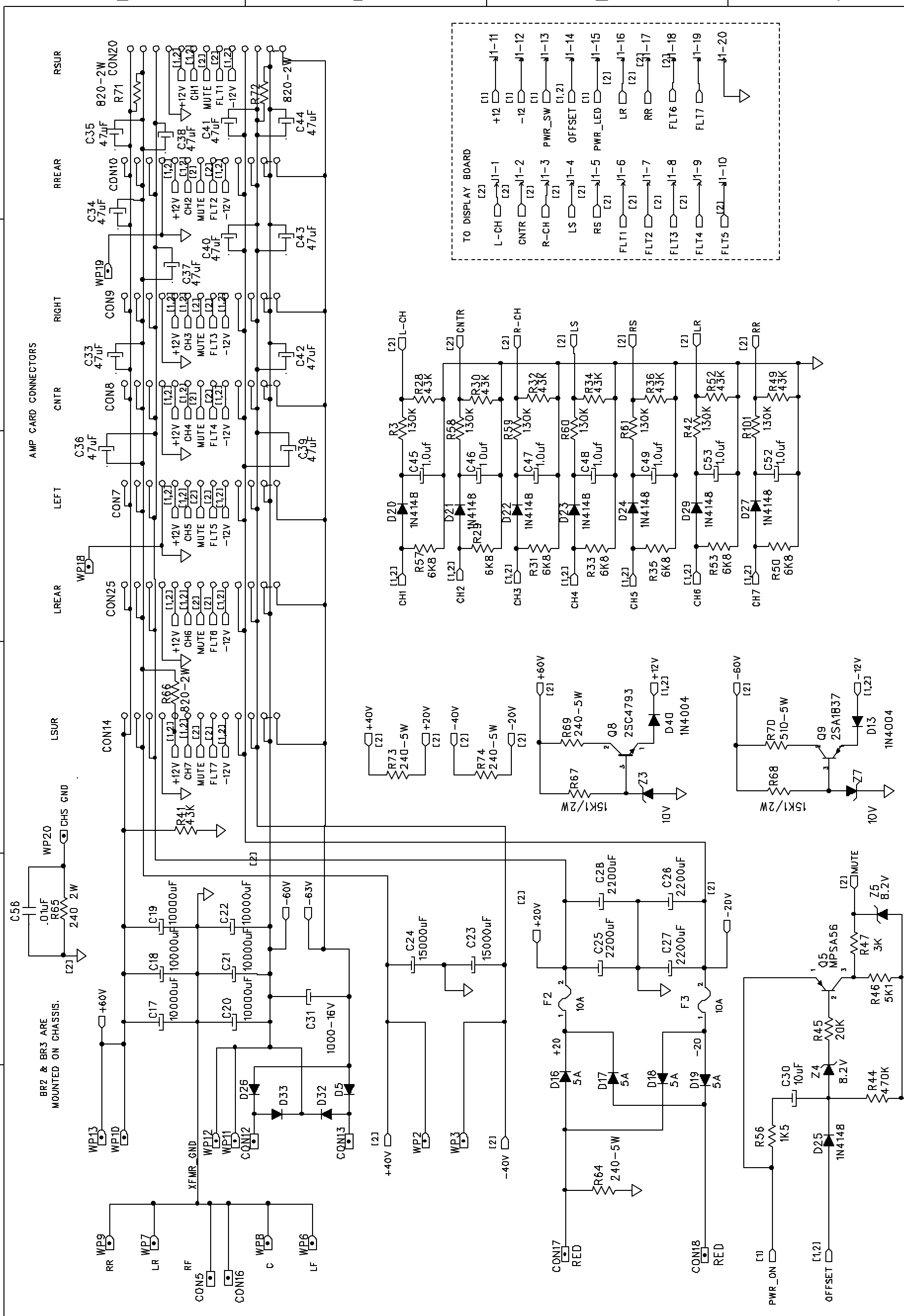
Reference No	Part No	Description
DIODE		
D1	307-010-0	DIODE LED YEL/GRN
D9 D10 D11	302-001-4	DIODE 1N4148 SIGNAL .4"
D2 D3 D4 D5 D6 D7 D8	307-010-0	DIODE LED YEL/GRN
TRANSISTOR		
Q1 Q2	311-009-0	TRANS MPSA06 NPN TO-92
RESISTOR		
R1	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R2	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R3	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R4	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R5	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R6	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R7	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R8	103-076-4	RES CF 1/4W 5% 1.5K .4"
R9	103-076-4	RES CF 1/4W 5% 1.5K .4"
R10	103-076-4	RES CF 1/4W 5% 1.5K .4"
R11	103-076-4	RES CF 1/4W 5% 1.5K .4"
R12	103-076-4	RES CF 1/4W 5% 1.5K .4"
R13	103-076-4	RES CF 1/4W 5% 1.5K .4"
R14	103-076-4	RES CF 1/4W 5% 1.5K .4"
R15	103-112-4	RES CF 1/4W 5% 47K .4"
R16	103-076-4	RES CF 1/4W 5% 1.5K .4"
R17	103-071-4	RES CF 1/4W 5% 910 OHM .4"
R18	103-076-4	RES CF 1/4W 5% 1.5K .4"
R19	103-112-4	RES CF 1/4W 5% 47K .4"
MISC		
J1	445-023-0	HDR 10 x 2 .1 RA GOLD
RB1-RB2	415-024-0	RIBBON CABLE
SW1	470-024-0	SPST MOMETARY CONTACT
BRACKET RA	561-006-0	RIGHT ANGLE MTG BRACKET
SPACER	541-022-0	USE WITH D1-D7
BUTTON	581-053-0	PWR ON/OFF
JACK	447-004-0	3.5 MM MONO FOR 12V TRIGGER
STANDOFF	533-004-0	.25" NYLON STANDOFF FOR PCB MTG



REVISION RECORD			
REV	ECO NO.	BY:	DATE:
1		DMCK	
2		DMCK	3.30.05
3		MR	5.12.05
A		DMCK	7.6.05

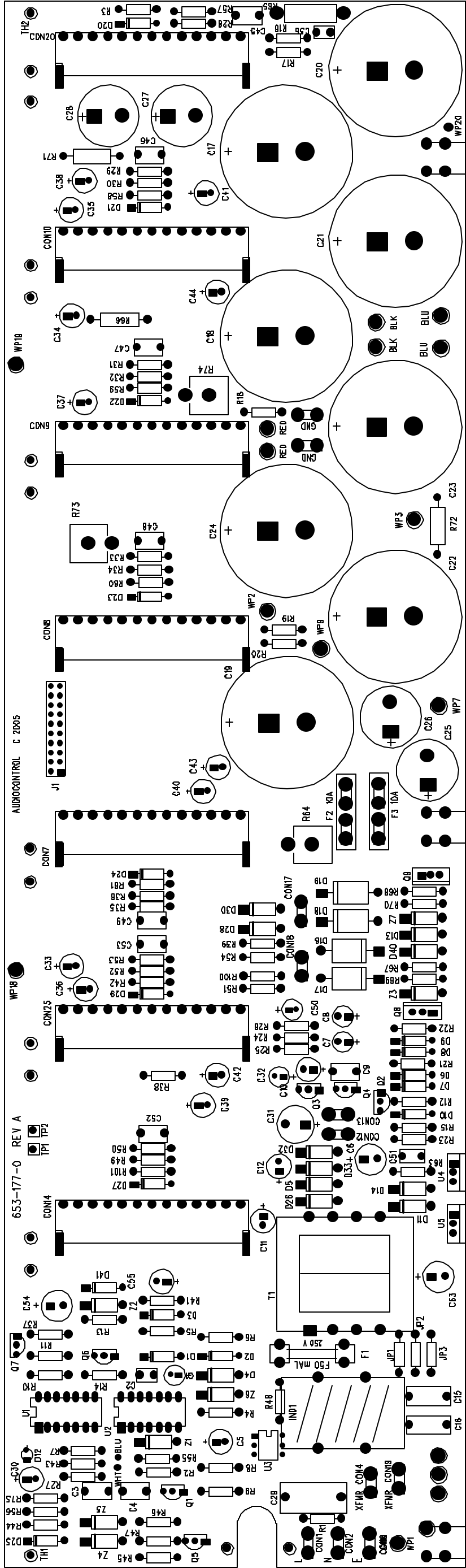
DRAWN: M.R. MCKINLEY		DATED:
ENGINEER: M.R. MCKINLEY		DATED:
RELEASED: M.R. MCKINLEY		DATED: 7.6.05
OTHER: D. MCKINLEY		DATED:

TITLE: ARCAM	
SCHEMATIC	
P1000 PWR SUPPLY	
SIZE: C	DRAWING NO: 733-177-1
DATE CODE: 7.6.05	SCALE: NONE
SHEET 1	OF 2



TO DISPLAY BOARD

L-CH	J1-1	[1]	+12	J1-11
CNTR	J1-2	[2]	-12	J1-12
R-CH	J1-3	[1]	PWR_SW	J1-13
LS	J1-4	[1]	OFFSET	J1-14
RS	J1-5	[1]	PWR_LED	J1-15
FLT1	J1-6	[2]	LR	J1-16
FLT2	J1-7	[2]	RR	J1-17
FLT3	J1-8	[2]	FLT6	J1-18
FLT4	J1-9	[2]	FLT7	J1-19
FLT5	J1-10	[2]		J1-20



WP5

ARCAM P1000
 733-177-2 REV-A
 PARTS DESIGNATORS
 P1000- POWER SUPPLY

AUDIOCONTROL
 653-177-0
 REV-A
 SILKSCREEN TOP

ARCAM P-1000 MAIN BOARD

REVISION A

Reference No	Part No	Description
CAPACITOR		
C1 C2	202-101-4	CAP MYLAR .001uF 100V 5%
C3 C9 C51	202-124-4	CAP MYLAR .082uF 100V 5%
C4 C10 C30	205-509-4	CAP EL RADIAL 10uF 50V
C5 C55	205-315-4	CAP EL RADIAL 100uF 25V
C6	205-517-1	CAP EL RADIAL 220uF 50V
C7 C8	210-307-4	CAP EL NP 47uF 25V
C11 C12 C33 C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 C44	205-513-4	CAP EL RADIAL 47uF 50V
C15 C16	240-057-4	CAP CERAMIC .0022 250V
C17 C18 C19 C20 C21 C22	205-781-0	CAP EL RADIAL 10000uF 80V
C23 C24	205-580-4	CAP EL RADIAL 15000uF 50V
C25 C26 C27 C28	205-422-4	CAP EL RADIAL 2200uF 35V
C29	240-025-0	CAP UL-CSA LINE CAP
C31	205-221-4	CAP EL RADIAL 1000uF 16V
C32 C50	205-505-4	CAP EL RADIAL 2.2uF 50V
C45 C46 C47 C48 C49 C52 C53	206-503-4	CAP EL RADIAL 1.0uF 50V
C54 C63	205-517-1	CAP EL RADIAL 220uF 50V
C56	202-113-4	CAP MYLAR .01uF 100V 5%
R4 - CAP USED IN THIS POSITION	206-503-4	CAP EL RADIAL 1.0uF 50V
DIODE		
D1 D2 D3 D6 D7 D8 D9 D10 D15 D20 D21 D22 D23 D24 D25 D27 D29 D41	302-001-4	DIODE 1N4148 SIGNAL .4"
D4 D5 D11 D13 D14 D26 D28 D30 D32 D33 D40	301-001-4	RECT 1N4004 1A 400V .4"
D12	307-001-0	DIODE LED RED
D16 D17 D18 D19	304-008-0	DIODE FAST REC 5A
D31	N/A	NOT USED
D34-D39	N/A	NOT USED
Z1 Z2	303-002-0	DIODE ZEN 4742 12V 1W .4"
Z3	303-001-0	DIODE ZEN 4740 10V .4"
Z4 Z5 Z6	303-004-0	DIODE 4738 ZEN 8.2V 1W .4"
Z7	303-001-0	DIODE ZEN 4740 10V .4"
TRANSISTOR		
Q1 Q6	311-011-0	TRANS 2N4401 NPN TO-92
Q2 Q4 Q7	311-009-0	TRANS MPSA06 NPN TO-92
Q3 Q5	311-010-0	TRANS MPSA56 PNP TO-92
Q8	312-012-0	TRANS 2SC4793 NPN TO220
Q9	312-013-0	TRANS 2SA1837 PNP TO-220

ARCAM P-1000 MAIN BOARD

REVISION A

Reference No	Part No	Description
RESISTOR		
R1	106-001-0	RES CF 1/2W 5% 2.2M
R2	103-120-4	RES CF 1/4W 5% 100K .4"

Reference No	Part No	Description
R3	103-123-4	RES CF 1/4W 5% 130K .4"
R4 SEE CAPACITORS		
R5	103-136-4	RES CF 1/4W 5% 470K .4"
R6	103-136-4	RES CF 1/4W 5% 470K .4"
R7	103-113-4	RES CF 1/4W 5% 51K .4"
R8	103-103-4	RES CF 1/4W 5% 20K .4"
R9	103-089-4	RES CF 1/4W 5% 5.1K .4"
R10	103-096-4	RES CF 1/4W 5% 10K .4"
R11	103-081-4	RES CF 1/4W 5% 2.4K .4"
R12	103-103-4	RES CF 1/4W 5% 20K .4"
R13	103-121-4	RES CF 1/4W 5% 110K .4"
R14	103-096-4	RES CF 1/4W 5% 10K .4"
R15	103-096-4	RES CF 1/4W 5% 10K .4"
R16	103-116-4	RES CF 1/4W 5% 68K .4"
R17	103-116-4	RES CF 1/4W 5% 68K .4"
R18	103-116-4	RES CF 1/4W 5% 68K .4"
R19	103-116-4	RES CF 1/4W 5% 68K .4"
R20	103-116-4	RES CF 1/4W 5% 68K .4"
R21	103-113-4	RES CF 1/4W 5% 51K .4"
R22	103-113-4	RES CF 1/4W 5% 51K .4"
R23	103-113-4	RES CF 1/4W 5% 51K .4"
R24	103-103-4	RES CF 1/4W 5% 20K .4"
R25	103-103-4	RES CF 1/4W 5% 20K .4"
R26	103-096-4	RES CF 1/4W 5% 10K .4"
R27	103-089-4	RES CF 1/4W 5% 5.1K .4"
R28	103-111-4	RES CF 1/4W 5% 43K .4"
R29	103-092-4	RES CF 1/4W 5% 6.8K .4"
R30	103-111-4	RES CF 1/4W 5% 43K .4"
R31	103-092-4	RES CF 1/4W 5% 6.8K .4"
R32	103-111-4	RES CF 1/4W 5% 43K .4"
R33	103-092-4	RES CF 1/4W 5% 6.8K .4"
R34	103-111-4	RES CF 1/4W 5% 43K .4"
R35	103-092-4	RES CF 1/4W 5% 6.8K .4"
R36	103-111-4	RES CF 1/4W 5% 43K .4"
R37	103-072-4	RES CF 1/4W 5% 1K .4"
R38	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R39	103-024-4	RES CF 1/4W 5% 10 OHM .4"
R40	101-096-0	RES CF 1/8W 5% 10K .35"
R41	103-111-4	RES CF 1/4W 5% 43K .4"

ARCAM *P-1000 MAIN BOARD*

REVISION A

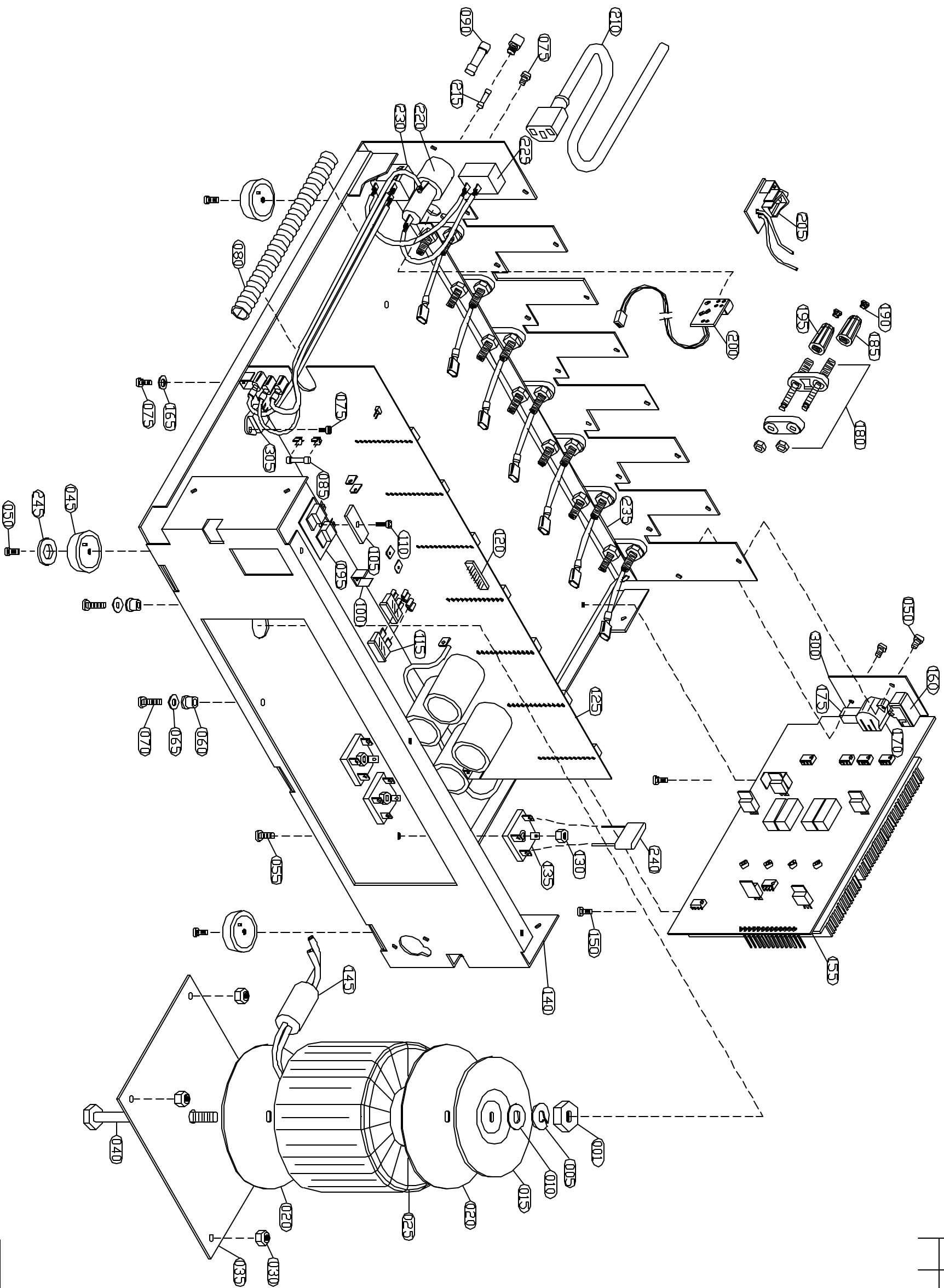
Reference No	Part No	Description
R42	103-123-4	RES CF 1/4W 5% 130K .4"
R43	103-072-4	RES CF 1/4W 5% 1K .4"
R44	103-136-4	RES CF 1/4W 5% 470K .4"
R45	103-103-4	RES CF 1/4W 5% 20K .4"
R46	103-089-4	RES CF 1/4W 5% 5.1K .4"
R47	103-083-4	RES CF 1/4W 5% 3K .4"
R48	103-024-4	RES CF 1/4W 5% 10 OHM .4"

Reference No	Part No	Description
R49	103-111-4	RES CF 1/4W 5% 43K .4"
R50	103-092-4	RES CF 1/4W 5% 6.8K .4"
R51	103-116-4	RES CF 1/4W 5% 68K .4"
R52	103-111-4	RES CF 1/4W 5% 43K .4"
R53	103-092-4	RES CF 1/4W 5% 6.8K .4"
R54	103-072-4	RES CF 1/4W 5% 1K .4"
R55	103-096-4	RES CF 1/4W 5% 10K .4"
R56	103-076-4	RES CF 1/4W 5% 1.5K .4"
R57	103-092-4	RES CF 1/4W 5% 6.8K .4"
R58	103-123-4	RES CF 1/4W 5% 130K .4"
R59	103-123-4	RES CF 1/4W 5% 130K .4"
R60	103-123-4	RES CF 1/4W 5% 130K .4"
R61	103-123-4	RES CF 1/4W 5% 130K .4"
R62	103-082-4	RES CF 1/4W 5% 2.7K .4"
R63	103-048-4	RES CF 1/4W 5% 100 OHM .4"
R64	114-007-0	RES 5W WW 5% 240 OHM
R65	116-006-0	RES MOX 2W 5% 240 OHM
R66	115-003-6	RES MOX 3W 5% 820 OHM
R67	105-100-4	RES CF 1/2W 5% 15K .6"
R68	105-100-4	RES CF 1/2W 5% 15K .6"
R69	114-007-0	RES 5W WW 5% 240 OHM
R70	114-008-0	RES 5W WW 5% 510 OHM
R71	117-002-6	RES MOX 2W 5% 820 OHM
R72	117-002-6	RES MOX 2W 5% 820 OHM
R73	114-007-0	RES 5W WW 5% 240 OHM
R74	114-007-0	RES 5W WW 5% 240 OHM
R75	103-089-4	RES CF 1/4W 5% 5.1K .4"
R100	103-116-4	RES CF 1/4W 5% 68K .4"
R101	103-123-4	RES CF 1/4W 5% 130K .4"
IC		
U1	321-002-0	Dual D-Flip-Flop
U2	321-009-0	IC4093 QUAD NAND GATE
U3	325-002-0	IC MCO3011 OPTOCOUPLER DIP6
U4	324-002-0	IC 7912 LINEAR REG 12V NEG
U5	324-001-0	IC 7812 LINEAR REG 12V POS

ARCAM P-1000 MAIN BOARD

REVISION A

Reference No	Part No	Description
MISC		
CON7-10 14 20 25	444-048-0	CON 156 RA ENTRY 12P
F1	461-011-0	FUSE HOLDER PCB 5MM
F2 F3	461-009-0	FUSE CLIP ATC
IND1	353-007-0	INDUCTOR 6UH AXIAL
J1	445-022-0	HDR 10Px2 .1 GOLD
JP1 JP2 JP3	119-001-4	JUMPER 1/4W BODY .4" PREP
T1	354-100-0	XFMR 30V CT PCB MNT
TP1 TP2	445-015-0	TEST POINT 1 PIN



REV.	DESCRIPTION	DATE	APPROVED	ECO NO.
001	XFMR ASSY			
005	XFMR ASSY			
010	XFMR ASSY			
015	XFMR ASSY			
020	XFMR ASSY			
025	356-223-0			
025	356-123-0			
030	523-001-0			
035	631-309-0			
040	XFMR ASSY			
045	583-010-0			
050	508-002-1			
055	502-024-0			
060	527-001-0			
065	511-016-0			
070	502-012-0			
075	502-001-0			
080	404-008-0			
085	463-020-0			
090	463-009-0			
095	402-005-0			
100	561-006-0			
105	631-185-0			
110	502-020-0			
115	462-005-0			
120	445-022-0			
125	731-177-0			
130	521-003-0			
135	305-005-0			
140	635-302-1			
145	351-006-0			
150	508-007-0			
155	731-181-0			
160	446-020-0			
165	512-002-1			
170	454-008-0			
175	470-023-0			
180	444-055-0			
185	527-003-2			
190	527-003-1			
195	444-046-1			
200	731-181-0			
205	447-004-0			
210	AS REQD			
215	463-012-0			
220	451-005-0			
220	461-010-0			
225	474-003-0			
230	431-006-0			
235	631-306-0			
240	221-005-0			
245	583-011-0			
300	633-301-0			
305	318-001-0			

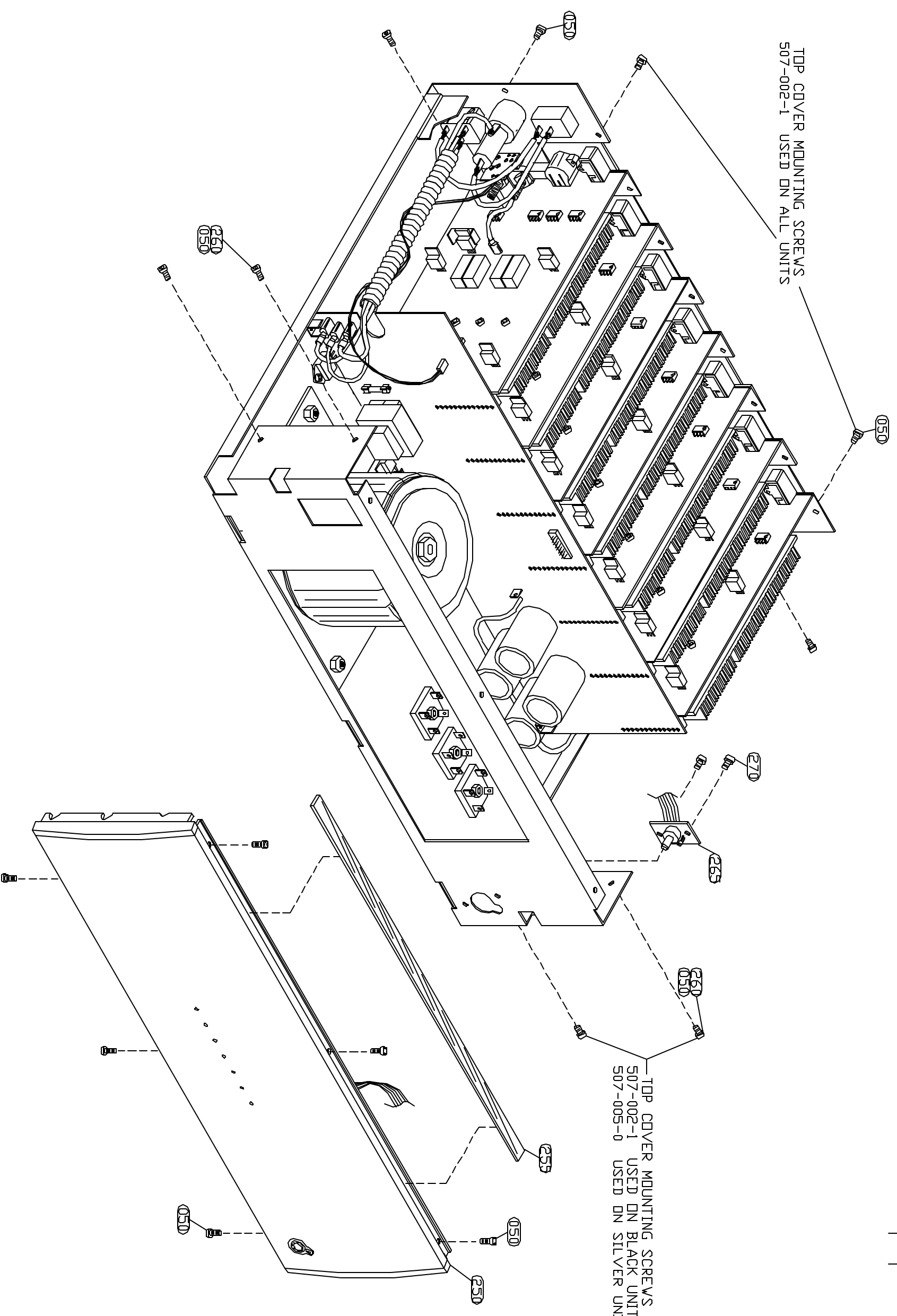
001	HEX NUT 10 x 1.5 MM
005	LOCK WASHER 10MM
010	FLAT WASHER 10MM
015	MOUNTING DISK
020	RUBBER WASHER
025	TRANSFORMER 230V UK/EUR
025	TRANSFORMER 120V US/CAN
030	NYLOCK HEX NUT #8
035	MOUNTING PLATE
040	HEX BOLT 10 x 115 MM
045	MOUNTING FOOT
050	SM #6 x 1/4 PHIL HD
055	MACH SCREW #8 x 1/2
060	WELLNUT #8
065	FLAT WASHER #8
070	MACH SCREW #8-32 x 3/4
075	MACH SCREW #6-32 x 1/4
080	SPLIT TUBING 5/8 x 7
085	FUSE F50 MAL
090	FUSE T10AL US/CAN
095	SIL-PAD
100	MOUNTING BRKT #6-32
105	PRESSURE PLATE
110	MACH SCREW #6-32 x 1/2
115	ATC FUSE 10 A
120	HEADER 20 PIN .1
125	MAIN PCB ASSY
130	KEPNUT #8-32
135	BRIDGE RECT 35 A
140	CHASSIS 115V
145	FERRITE LINE FILTER
150	SM SCREW #6 x 3/8
155	AMPLIFIER PCB ASSY
160	DUAL RCA JACK
165	INT LOCK WASHER 1/4"
170	XLR JACK
175	SWITCH DP 3PDS
180	SPKR TERMINAL ASSY
185	TERMINAL NUT RED
190	TERMINAL PLUG
195	TERMINAL NUT BLACK
200	REM INPUT PCB ASSY
205	3.5 MM MOND JACK
210	POWER CORD AS REQD
215	FUSE T6.3AL UK/EUR
220	FUSE HOLDER US/CAN
220	FUSE HOLDER UK/EUR
225	POWER SWITCH
230	AC MAINS INPUT CONN
235	BUSS BAR COPPER
240	MET MYLAR 3uF 250V
245	FOOT PAD
300	INPUT JACK MTG PLATE
305	TRIAC 35 A

ARCAM

P-1000 ASSEMBLY

REV. A	DATE 9.11.05	APPROVALS
DESIGNER	DRW. NO.	SCALE 100%
CHECKER	SHEET 1 OF 3	
APP. NO.		
APP. DATE		
APP. NAME		
APP. TITLE		

REVISIONS				
REV.	DESCRIPTION	DATE	APPROVED	EQD NO.



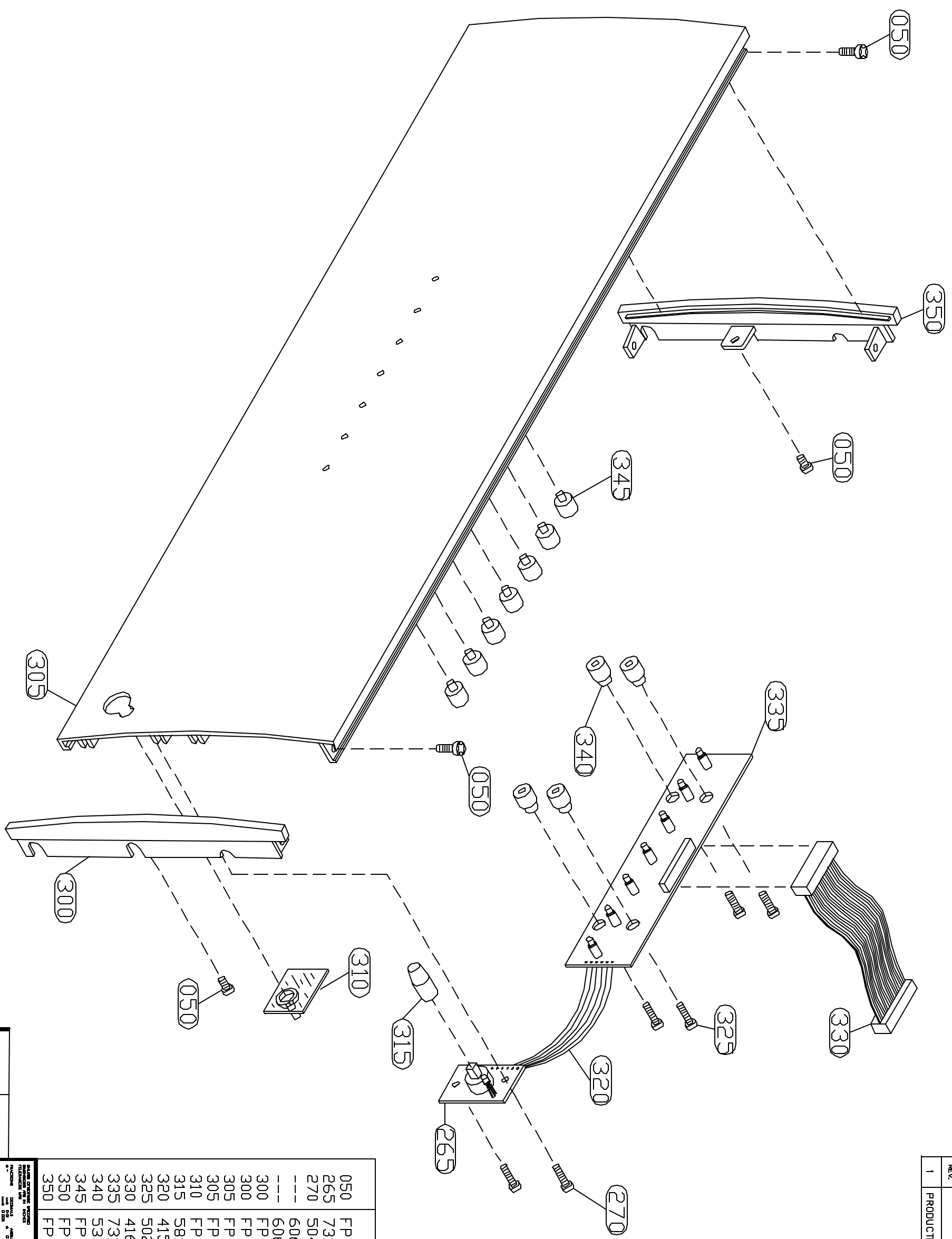
050	508-002-1	SM SCREW #6 x 1/4
250	606-023-0	FACIA ASSY SILVER
250	606-024-0	FACIA ASSY BLACK
255	030-00X-0	FDAM STRIP
260	507-005-0	TDRX SCREW 3.3 x 6.5
265	731-181-0	PWR SWITCH PCB ASSY
270	504-002-0	SDC HD 4-40 x 3/8
275		
280		
285		
290		

DATE OF REVISION 9-11-05		APPROVALS BRN MFR		MATERIAL -	
SIZE FROM NO D		DIM. NO -		FINISH -	
SCALE 100%		SHEET 2 OF 3		REV. A	

NAME OF THE REVISION P-1000 ASSEMBLY		DATE 9-11-05	
APPLICATION USED ON		DID NOT SCALE DRAWING	

ARCAM

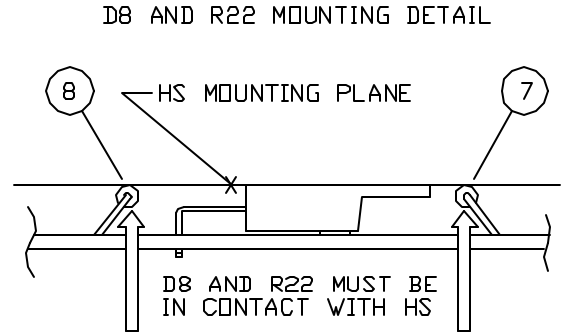
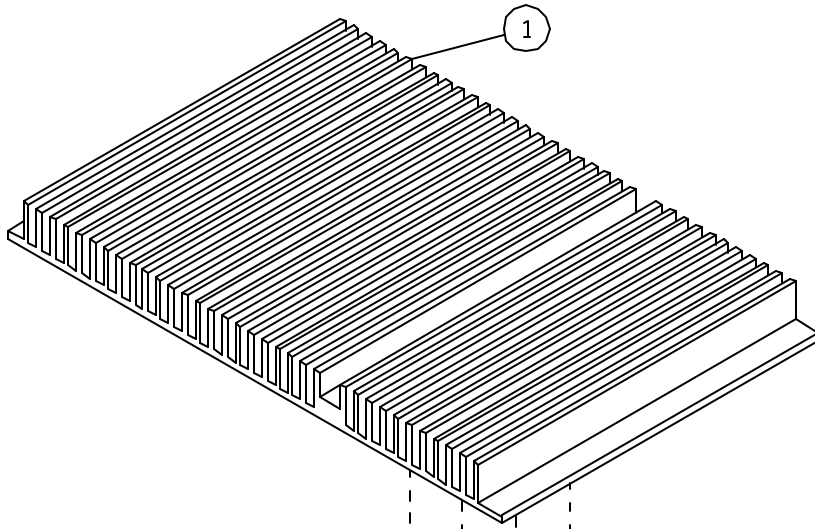
REVISIONS				
REV.	DESCRIPTION	DATE	APPROVED	EQD NO.
1	PRODUCTION RELEASE			



050	FP ASSY	SM SCREW #6 x 1/4
265	731-181-0	PWR SWITCH PCB ASSY
270	504-002-0	SOC HD SCREW 4-40 x 3/8
---	606-023-0	FACIA ASSY SILVER
---	606-024-0	FACIA ASSY BLACK
300	FP ASSY	END CAP RIGHT SIDE BLACK
300	FP ASSY	END CAP RIGHT SIDE SILVER
305	FP ASSY	FRONT PANEL EXT BLACK
305	FP ASSY	FRONT PANEL EXT SILVER
310	FP ASSY	LENS ASSY
315	581-053-0	POWER SWITCH BUTTON
320	415-024-0	RIBBON CABLE 6 COND
325	502-021-0	SCREW PAN HD 4-40 x 5/8
330	416-029-0	RIBBON CABLE ASSY 20 COND
335	731-181-0	DISPLAY PCB ASSY
340	533-004-0	STANDOFF #6 x 1/4
345	FP ASSY	DISPLAY LED LENS
350	FP ASSY	END CAP LEFT SIDE BLACK
350	FP ASSY	END CAP LEFT SIDE SILVER

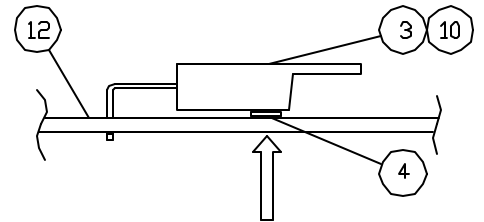
NAME: ARC CAM TITLE: P-1000 ASSEMBLY		DATE: 9.11.05 SCALE: 100%
MATERIAL: _____ FINISH: _____ DIM: _____ SCALE: _____	APPROVALS: DESIGNED: _____ CHECKED: _____ DRAWN: _____ DATE: _____	REV. A SHEET 3 OF 3
APP: _____ UED: _____ APPLICATION: _____	DID NOT SCALE DRAWING	

AMPLIFIER BOTTOM SIDE MOUNTED PARTS FINISHED ASSEMBLY 731-179-0 REVISION A

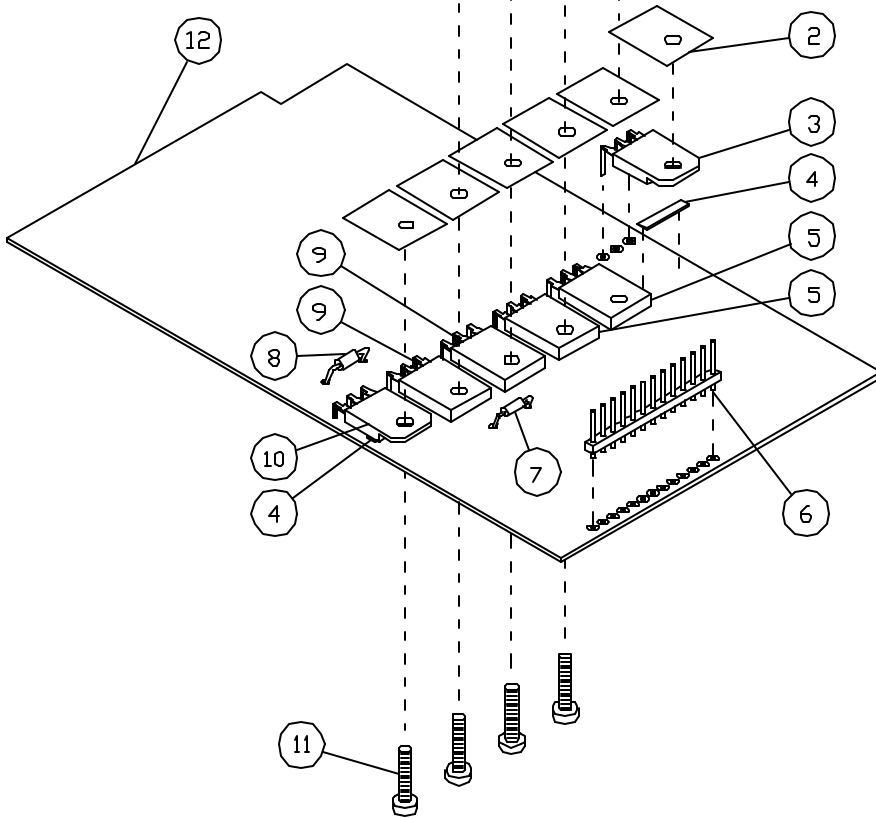


USE THERMAL COMPOUND
ON THESE PARTS AND HS

TIP35-36 MOUNTING DETAIL



PLACE .016" TAPE BETWEEN
TIP35/36 AND PCB BOARD



ITEMS 7 AND 8 MUST BE IN CONTACT
WITH MAIN HEATSINK. USE THERMAL
COMPOUND WITH THESE PARTS

APPLY THERMAL COMPOUND TO BOTH
SIDES OF MICA INSULATOR

POWER TRANSISTORS (ITEMS 3,5,9,10) MUST BE
MOUNTED FIRMLY AGAINST THE PC BOARD

ITEM	PART NO	DESCRIPTION
1	606-020-2	MAIN HEATSINK
2	401-005-0	MICA INSULATOR
3	301-002-0	TIP36C
4	030-007-0	TAPE .016 THK
5	312-015-0	MJW21194
6	445-016-0	HEADER .15"x13 PIN
7	170-001-1	10K NTC THERMISTOR
8	301-001-1	DIODE 1N4004 OR EQ
9	312-014-0	MJW21193
10	312-001-0	TIP35C
11	502-020-0	6-32 UNC x 1/2" BLK
12	653-179-0	PCB FR4 GLASS
13		
14		

ARCAM			
P-1000 AMP BOARD			
SIZE	FBCM NO.	DWG NO.	REV
		731-179-0	A
SCALE	7.17.DS	SHEET	

ARCAM P-1000 FINAL ASSEMBLY

REVISION A

<u>Item</u>	<u>Part Description</u>	<u>Part No</u>	<u>Where Used</u>
1	HEX NUT 10MM		SUPPLIED WITH TRANSFORMER
15	LOCATING WASHER		SUPPLIED WITH TRANSFORMER
20	RUBBER MTG GASKET		SUPPLIED WITH TRANSFORMER
25	TRANSFORMER 800VA 115V	356-123-0	US/CAN MODEL
25	TRANSFORMER 800VA 230V	356-223-0	UK/EUR MODEL
30	NUT 8-32 NYLOCK	523-001-0	XFMR MTG PLATE
35	MTG PLATE, TRANSFORMER	631-309-0	USE WITH TRANSFORMER
40	BOLT 10 x 115 MM		SUPPLIED WITH TRANSFORMER
45	FOOT	583-010-0	
50	SCREW SM #6 x 1/4	508-002-0	
55	SCREW 8-32 x 1/2" PH	502-022-0	USE WITH BRIDGE RECT
60	WELL NUT 8-32	527-001-0	XFMR MTG PLATE
65	WASHER #8 FLAT	511-016-0	XFMR MTG PLATE
70	SCREW 8-32 x 3/4 PH	502-012-0	XFMR MTG PLATE
75	SCREW 6-32 x 1/4 PH	502-001-0	USE TO MNT MAIN BD AND REM BD
80	FLEX TUBING 5/8" x 7.5"	404-008-0	USE OVER AC WIRING
90	FUSE T10AL MDA 10	463-009-0	US/CAN MODEL
95	SILPAD	402-005-0	USE WITH U4 U5
105	PRESSURE PLATE	631-185-0	USE WITH U4-U5
110	SCREW 6-32 x 1/2 PH	502-020-0	USE WITH PRESS PLATE ON U4 U5
125	MAIN BOARD	731-177-0	
130	KEP NUT #8	521-003-0	USE WITH BRIDGE RECT
135	RECTIFIER 35A BR	325-005-0	MOUNT TO CHASSIS + FACING MAIN BD
140	CHASSIS, BLACK	635-302-2	
145	LINE FILTER FERRITE CORE	351-006-0	MOUNT TO XFMR PRIMARY LEADS
150	SCREW SM #6 x 3/8	508-007-0	USE TO MOUNT HS AND FP
155	AMP BOARD	731-179-0	
165	WASHER #6 INT	512-001-0	MAIN BD MTG SCREWS
180	SPKR TERMINAL ASSY	444-055-0	BLACK
185	SPEAKER CONN RED	527-003-2	TOP ROW
195	SPEAKER CONN BLACK	527-003-1	BOTTOM ROW
200	REM 12V JACK PCB	731-181-0	PART OF DISPLAY BD
215	FUSE T6.3AL	463-012-0	UK/EUR MODEL
220	FUSE HOLDER	451-005-0	US/CAN MODEL
220	FUSE HOLDER	451-010-0	UK/EUR MODEL
230	POWER CORD SOCKET	431-006-0	
235	BUSS BAR COPPER	631-306-0	
240	CAP 3.3UF 250VDC MYLAR	221-005-0	ATTACH ACROSS XFMR BLUE LEADS
255	WEATHER STRIP FOAM TAPE	030-00X-0	USE ALONG TOP EDGE OF CHASSIS
265	POWER SW PCB	731-181-0	PART OF DISPLAY BD
270	SCREW 4-40 x 3/8 SOC HD	504-002-0	USE WITH PWR SW PCB ASSY
305	TRIAC 35 A	318-001-0	MOUNT TO MAIN PCB
315	BUTTON PLASTIC	581-046-0	USE WITH PWR SW PCB ASSY
330	RIBBON ASSY 20 POS IDC	416-029-0	
335	DISPLAY PCB ASSY	731-181-0	

ARCAM P-1000 FINAL ASSEMBLY

REVISION A

<u>Item</u>	<u>Part Description</u>	<u>Part No</u>	<u>Where Used</u>
	MASKING TAPE 1/2"	030-007-0	USE ON INSIDE EDGE OF TOP COVER
	TAPE DBL BACK FOAM 1/8"	030-002-0	USE UNDER LARGE CAPS
	SHRINK TUBING .25"	404-003-0	USE WITH AC WIRING

Item	Part Description	Part No	Where Used
	WIRE 18GA TEW BLU 3.5"	413-030-0	USE WITH BRIDGE RECT
	WIRE 18GA TEW BLK 4"	413-031-0	PWR SW TOP TO FUSE END TERM
	WIRE 18GA TEW BLK 5.5"	413-032-0	PWR SW BOT TO AC LINE BOT
	WIRE 18GA TEW BLK 13.25"	413-033-0	BUSS BAR TO WP18-19 ON MAIN BD
	FASTON FEM 18GA INSULATED	421-002-0	
	FASTON FEM 14GA INSULATED	421-014-0	
	TYWRAP	584-003-0	XFMR WIRING
	TYWRAP	584-025-0	LINE FILTER MTG
	FRONT PANEL BLK	606-022-X	
	FRONT PANEL SILVER	606-022-X	
	DAMPING PLATE	631-316-0	ATTACH TO INSIDE OF TOP COVER
	TOP COVER, BLACK	635-304-X	
	TOP COVER, SILVER	635-304-X	
	WIRE ASSY 18GA TEW 11.25"	704-053-0	AC LINE CONN TOP TO MAIN BD "L"
	WIRE ASSY 18GA TEW 12.25"	704-054-0	AC LINE GND TO MAIN BD "G"
	WIRE ASSY 18GA TEW 12.5"	704-055-0	FUSE HOLDER SIDE TO MAIN BD "N"
	WIRE ASSY 18GA TEW RED 4.25"	704-056-0	USE WITH RED JACKS
	RIBBON CABLE 20 COND	415-020-0	PART OF 416-029-0
	CONNECTOR IDC 20 POS	444-033-0	PART OF 416-029-0