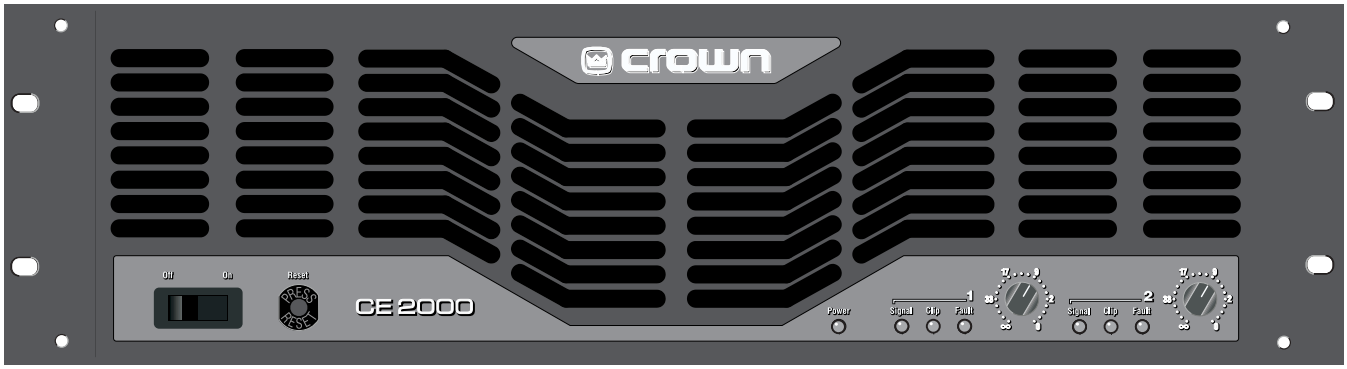
CE SERIES

Service Manual



PROFESSIONAL AUDIO AMPLIFIERS

Models:
CE-1000, CE-2000
(some units may have the model names: CE-1000A, CE-2000A, CE-2000TX, UT-1010, UT-2020, M120, M240, S2, and S3)

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130352-1
10/02
Rev. D

The information furnished in this manual does not include all of the details of design, production, or variations of the equipment. Nor does it cover every possible situation which may arise during installation, operation or maintenance. If you need special assistance beyond the scope of this manual, please contact the Crown Technical Support Group.

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CAUTION

TO PREVENT ELECTRIC SHOCK DO NOT REMOVE TOP OR BOTTOM COVERS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. DISCONNECT POWER CORD BEFORE REMOVING REAR INPUT MODULE TO ACCESS GAIN SWITCH.

AVIS

À PRÉVENIR LE CHOC ÉLECTRIQUE N'ENLEVEZ PAS LES COUVERTURES. RIEN DES PARTIES UTILES À L'INTÉRIEUR. DÉBRANCHER LA BORNE AVANT D'OUVRIR LA MODULE EN ARRIÈRE.



WARNING

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE!

Revision History

Revision Number	Date	Changes
Rev. A	3-98	Initial Printing
Rev. B	2-99	Added Additional Module Documentation. Added Revision History. Added Inside Cover Page. Updated Cover Page and Table of Contents.
Rev. C	5-99	Updated Graphic on Page 1-1. Updated Specifications on Page 1-2. Added Section 7, Module and Schematic Information. Added Section 8, Module Parts Lists. Moved existing Module Parts Lists from Section 6 to Section 8. Added Module Parts Lists for Module CPNs:102139-11, 102140-11, 127321-1, 127323-1, 127353-1, 127373-2, 127354-1, and 127354-2. Added Section 9, Field Service Modifications. Added Section 10, Schematics. Moved all existing Schematics from Section 6 to Section 10. Added Schematics 102141M and 102142M. Updated Cover Page, Revision History and Table of Contents.
Rev. D	10-02	Revised fan part no. from 125400-3 to 133551-1. Updated phone number area code. Updated sections 1.2, 1.3.6, 7.2, 7.2.1, 7.2.3, 7.3, 7.3.2, 7.3.3, 7.4.1, 9.2, 9.4. Added Module Parts Lists for Module CPNs: 102140-9 revB, 126883-2 rev B, 127321-2, 127323-2, 127353-3, 127354-3, 127451-4 and 127452-4. Added Schematics 127451-4 and 127452-4. Added Assembly Parts List for CE1000A and CE2000A Domestic. Revised Crown logo. Updated Cover Page, Revision History and Table of Contents.

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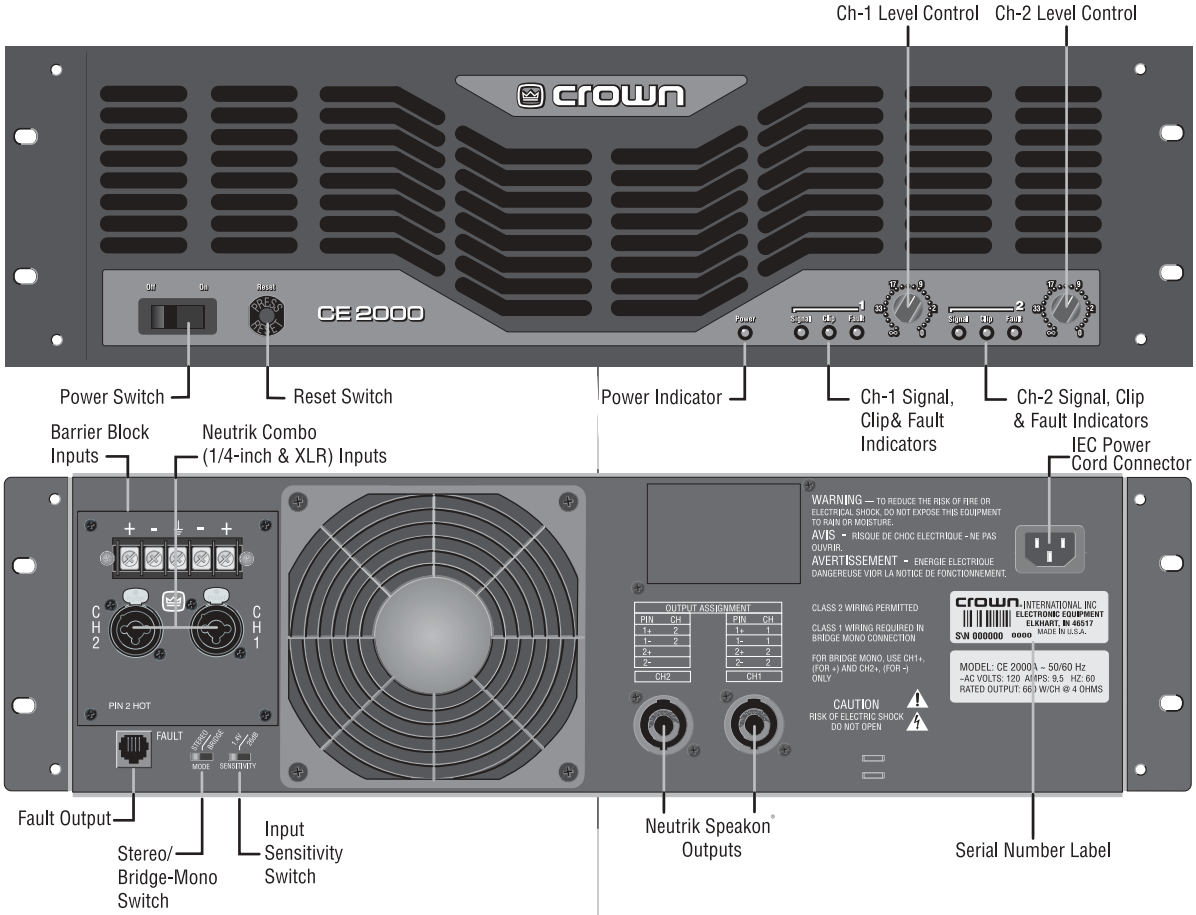
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PART I
Technical Information

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CE 2000 front and back panels

1 Introduction

This manual contains service information for the Crown *CE-Series* power amplifiers. It is designed to be used in conjunction with the *CE-Series* Reference Manual. Some important information is, however, duplicated in this Service Manual in case the Reference Manual is not readily available.

NOTE: THE INFORMATION IN THIS MANUAL IS INTENDED FOR USE BY AN EXPERIENCED TECHNICIAN ONLY!

1.1 The CE-Series

The *CE-Series* amplifiers are compact, audio power amplifiers designed for professional use. These units provide high-power amplification from 20 Hz-20 kHz with minimum distortion. Features of these amplifiers are both Balanced Neutrik Combo (1/4-inch and XLR) and Barrier Block Inputs, Signal, Clip and Fault indicators, stereo or bridged-mono capability, switchable sensitivity, and Neutrik Speakon© Outputs. These units also feature a proportional speed fan, which optimizes cooling efficiency.

1.2 Warranty

Each Reference Manual contains basic policies as related to the customer. For further assistance please contact the Crown Technical Support Group at:

Crown International, Inc.
Mailing: PO Box 1000
Elkhart, IN 46515-1000
or
Shipping:
1718 W. Mishawaka Rd.
Elkhart, IN 46517

Toll Free: (800) 342-6939
Phone: (574) 294-8000
FAX: (574) 294-8301
Web: www.crownaudio.com

1.3 Specifications

Crown specifications are guaranteed for three years. Further, we guarantee that every Crown amplifier will meet *or exceed* its published specs.

1.3.1 Performance

Note: Measurements made in Stereo, both channels driven into 8 ohms.

Frequency Response: ± 0.1 dB from 20 Hz to 20 kHz at 1 watt.

Phase Response: ±15° from 20 Hz to 20 kHz at 1 watt.

Signal to Noise at 8 Ohms Rated Power: >105 dB A Weighted. >100 dB from 20 Hz to 20 kHz.

Total Harmonic Distortion (THD): <0.5% from 20 Hz to 1 kHz.

I.M. Distortion (60 Hz and 7 kHz at 4:1): <0.1% from 8 ohms rated power to -35 dB.

Damping Factor: >400 from 10 Hz to 400 Hz.

Crosstalk: >–55 dB from 20 Hz to 20 kHz.

Common Mode Rejection (CMR): >70 dB from 20-Hz to 1 kHz.

1.3.2 Power

Output Power: (Max. average power at 1 kHz with 0.5% THD.)

CE 1000 Stereo: 275 W/channel into 8 ohms, 450 W/channel into 4 ohms, 560 W/channel into 2 ohms, both channels driven.

CE 1000 Bridged Mono: 900 W into 8 ohms, 1100 W into 4 ohms.

CE 2000 Stereo: 400 W/channel into 8 ohms, 660 W/channel into 4 ohms, 975 W/channel into 2 ohms, both channels driven.

CE 2000 Bridged Mono: 1320 W into 8 ohms, 1950 W into 4 ohms.

Load Impedance: Rated for 16-, 8-, 4-, and 2-ohm use. Safe with all types of loads, even reactive ones.

AC Power CE 1000: 120V/50-60 Hz @ 6.3 amps, 230-240V/50 Hz @ 3.5 amps, 100V/50 Hz @ 7.6 amps

AC Power CE 2000: 120V/50-60 Hz @ 9.5 amps, 230-240V/50 Hz @ 5.1 amps, 100V/50 Hz @ 11.4 amps

1.3.3 Controls

Front Panel: An on/off rocker switch; also, a detented rotary level control for each channel.

Back Panel: A two-position input sensitivity switch located below the input connectors. Can be set to 1.4 V for full output into an 8-ohm load, or set to a fixed voltage gain of 26 dB; Some models have an internal jumper located on the Main PWA for setting optional 0.775V sensitivity. A two-position mode switch located below the input connectors. When turned to stereo, the amplifier operates as two independent channels. When in "bridge-mono" mode the amplifier bridges the two output channels for twice the output voltage.

1.3.4 Indicators

A green LED **SIGNAL** indicator for each channel, which flashes when a very low level signal (>–40 dBm) is present at input.

A red LED **CLIP** indicator for each channel which turns on when distortion becomes audible in the amplifier output.

A red **FAULT** indicator which will blink under 5 different conditions:

1. When the amplifier is first powered up, until the unit is ready for operation.
2. If the heatsinks reach a temperature above normal working limits.
3. If the transformer thermal protection circuit is activated.
4. If the load on the amplifier develops a short- circuit.
5. Should the amplifier ouput stage become non-operational.

A green LED **POWER** indicator that turns on when the amplifier has been turned on and has power.

1.3.5 Input/Output

Input Stage: Input is electronically balanced and employs precision 1% resistors.

Input Impedance: Nominally 20 K ohms, balanced. Nominally 10 K ohms, unbalanced.

Input Sensitivity: 1.4 volts for standard 1-kHz power or fixed 26-dB gain.

Output Impedance: <20 milliohms in series with less than 3 microhenries in stereo mode.

DC Output Offset: <±10 millivolts.

1.3.6 Connectors

Inputs: One Neutrik Combo connector for each channel which features a balanced 1/4-inch phone jack and a 3-pin female XLR connector, in parallel with a barrier strip termination.

Outputs: Two Neutrik Speakon® NL4MP (mates with NL4FC) output connectors. Optional binding post and barrier block output adaptors are available on the CE 1000A and CE2000A, and are standard on some models.

1.3.7 Construction

Rugged steel chassis formed into a durable package that is coated with enviromentally friendly powder for long life and ease of maintenance.

Dimensions: Standard 19-inch (48.3-cm) rack mount width (EIA RS-310-B), 5.25-inch (13.34-cm) height and 12.25-inch (31.11-cm) depth behind front mounting surface.

Weight: The CE 1000 weighs 32.6 pounds (14.79 kg). The CE 2000 weighs 40.3 pounds (18.28 kg). For shipping weight, add 6 lbs (2.7 kg) to each amp.
Mounting: Standard EIA 310 front-panel rack mount.

2 Maintenance

Fundamentally, troubleshooting involves looking for an abnormal situation. When a problem has been observed, it is obvious that something is not doing what it is expected to do. A single part, solder joint, or trace is usually the root cause, and testing for typical voltages and signal tracing can usually result in a solution for most of the problem units. Unfortunately, there are two other scenarios. (1) Sometimes a single problem may cause other parts to fail so there will be several parts that must be replaced. In this case, however, finding the root cause is not as important as just finding all of the blown or damaged parts and replacing them. The failed part will probably (but not always) be among them and the act of replacing the parts will fix the amplifier. (2) If the observed behavior is an oscillation, high THD, or the output slammed to one of the rails, the very nature of a feedback amplifier will spread this effect throughout the power amplifier section. This troubleshooting guide and a familiarity with amplifier operation should help you fix whatever comes your way!

2.1 Surface Mount Technology

The *CE-Series* amplifiers use surface mount technology in their design. There are several advantages to using surface mount technology (SMT), including; (1) surface mount devices (SMDs) are much smaller, and are mounted to the surface of the board, so more components can be placed on the board. (2) Components can be attached to both sides of the board, allowing the board size to be reduced. (3) SMT boards are lighter and provide better electrical performance signal speed.

Of course, there are also things to watch out for with SMT. (1) The placement of the components on the board, not through a hole, makes the components and the solder joint more susceptible to damage. (2) Rework of SMDs can often require specialized tools, equipment, or training. (3) SMDs are very small and can be difficult to handle, see, and identify.

Remember that on the CE-Series amplifiers, the SMDs on the bottom side of the main module are GLUED. Take care not to damage components while trying to remove them from the surface of the module.

2.2 Cautions and Warnings

DANGER: The outputs of this amplifier can produce LETHAL energy levels! Be very careful when making connections. Do not attempt to change output wiring until the amplifier has been off at least 10 seconds.

WARNING: This unit is capable of producing high sound pressure levels. Continued exposure to high sound pressure levels can cause permanent hearing impairment or loss. User caution is advised and ear protection is recommended when using at high levels.

WARNING: Do not expose this unit to rain or moisture.

WARNING: Only properly trained and qualified technicians should attempt to service this unit. There are no user serviceable parts inside.

WARNING: When performing service checks with the power off, discharge the main power supply filter capacitors fully before taking any measurements or touching any electrical components. A 300-ohm 10-W resistor is recommended for this. Hold the resistor with pliers, as the resistor may become extremely hot.

WARNING: Under load, with a sine wave signal at full power into both channels, the amplifier may draw in excess of 30 amperes from the AC service mains.

WARNING: When performing tests in Section 2.3, do not connect any load to the amplifier until instructed to do so. There is no danger to the amplifier in operating without any load (open outputs).

WARNING: Do not change the position of the Mode Switch when the amplifier is turned on. If the position of this switch is changed while the amplifier is powered, transients may damage your speakers.

WARNING: Heatsinks are not at ground potential. Simultaneously touching either heatsink and ground, or both heatsinks will cause electrical shock.

CAUTION: Eye protection should be worn at all times when protective covers are removed and the amplifier is plugged in.

CAUTION: When performing tests in Section 2.3 that require a load, the load must be resistive and must be capable of handling 1000 W (per channel).

CAUTION: Disconnect the power cord before installing or removing any cover or panel.

CAUTION: Electrostatic discharge will destroy certain components in the amplifier. Techicians must have approved ESD protection. Proper grounding straps and test equipment are required.

2.3 Troubleshooting

2.3.1 Pre-AC-Checks

A number of checks can be made prior to powering up the unit. These should be done in order to prevent an unwanted disaster when turning the unit on. Once these checks are made, power may be applied for further checks. Note: It will be necessary to remove the top panel for complete access to all modules.

Step 1: Acquire all information possible from the person(s) having the problem to determine the nature of the complaint. Ask questions like "Why was the amplifier brought in for repair?" "Does it do this at turn on, does it take a while, or does it only happen sometimes?" If you observe nothing wrong, inquire tactfully how the unit was being used when the malfunction occurred. This will help determine if the unit may have been misused, if the user misunderstood what happened, or if another system component may be at fault. Remember, this is one of the first amplifier series to have only Neutrik Speakon® connectors for the outputs. There is room for error in assembling the connectors. Be sure to ask if the person may have had problems with the Speakons.

Step 2: Always do a complete visual inspection. A problem may be obvious just by looking at the unit. Things to look for include burned components, wires not connected, fan obstructions, loose hardware or connections, and soldering. Plugged heatsinks can greatly reduce amplifier efficiency. The fan blades should spin freely. Burns and other physical damage should be repaired and components in the affected circuit areas should be checked carefully before continuing.

Whether a problem is identified by visual inspection or not, several checks should be performed prior to turning the amplifier on. These should be performed if any of the following problems have been reported: catastrophic failure, no signal output with constantly blinking Fault LED, or the condition of the amplifier is otherwise unknown but failure is suspected.

The third step on the "to do" list involves a number of electrical checks. Due to the protection features of the CE-Series amplifiers, it should be safe to turn-on under all circumstances, but these preliminary checks may allow a partial (if not complete) repair before power is ever applied. These checks are designed to find problems in the output stages. The ultimate guide should always be common sense.

2.3.2 Main Module Removal

1. Remove the top cover by removing the four side screws, lift up slightly on the rear of the cover, and then pull it toward the back of the amplifier. Many of the parts are located on the bottom side of the circuit board. In most situations, the circuit board won't need to be removed from the chassis. In the event that it does, go to step 2.
2. Remove the red and blue wires from the rectifier block that is screwed to the bottom of the chassis near the power supply capacitors and short the wires together through a resistor such as a 300-ohm 10 W.
3. Disconnect the in-line FASTON that connects the circuit board to the transformer.
4. Disconnect the 4-wire connector from the circuit board that comes from the transformer.
5. Disconnect the small white wire that connects the circuit board to the rectifier block.
6. Remove the four screws that hold the input assembly to the chassis. Unplug the input assembly from the ribbon cable.
7. Remove the four screws that hold the output jacks to the back panel.
8. Unplug the fan from the circuit board.
9. Remove the eight screws (five in the rear, three in the front) that hold the circuit board down to the chassis.
10. Remove the knobs from the gain pots by pulling the knobs out the front. The circuit board will now lift out of the chassis; but be careful, it is a tight fit.

2.3.3 Static Checks

1. Locate the flyback diodes D114, D115, D214, and D215 on the main modules and check for indications of a short. If a short is indicated, this means that an output device or driver transistor in parallel with that diode is shorted, usually not the diode itself. If an output device is found to be defective, emitter resistors should also be checked. If no output device is found defective, perform a quick check of driver, pre-driver, and bias transistors. Then, if no problem is found, move to the power-on checks in Section 2.3
2. Check driver and pre-driver transistors for shorts or opens. If a fault is found, do an in-circuit static check of all semiconductors on the output modules. If no output device and nothing upstream is found defective, move to power-on checks. Otherwise continue.
3. If a failure has occurred anywhere in the output stages, check the bias servo transistor. Any failure associated with bias transistors may result in repeat failure of the affected channel even if all other defective components have been found and replaced.
4. If a failure is found in any LVAs, checks should continue up to the voltage translator stage.
5. Failure within the power supply itself is very rare; however, a cursory check of major items is always prudent.

2.4 Checkout/Adjustment Procedures

The following instructions outline an orderly checkout and troubleshooting procedure. The purpose and arrangement of this procedure is to ensure proper operation after a repair has been completed. Before beginning these power-on tests, review all cautions and warnings in Section 2.1, and perform the checks listed in Section 2.2. These checks will minimize the possibility of receiving a nasty surprise when turning on the CE-Series amplifier.

WARNING! Most adjustments are made with the cover removed.

WARNING! Most adjustments are made with the cover removed. Prior to any AC power off testing, discharge all power supply capacitors. Also, use extreme caution when making internal adjustments when the unit is powered.

2.4.1 Equipment Required

The following is a list of standard equipment needed to perform all the tests listed in Section 2.3.3:
Line Voltage Variac: 2-kW or larger.
Oscilloscope: 2 Channel, 10-MHz or better.
Digital Multimeter: Various measurements.
Watt Meter: For AC line draw.
ACVM: Peak reading RMS calibrated (all AC line voltage and amplifier output voltage checks).
I.M.D. Analyzer: 60 Hz/7 kHz in 4:1 ratio, accurate to 0.001% I.M.D.
T.H.D. Analyzer: Accurate to 0.001%.
Loads: 2000 W continuous at 1 ohm.

2.4.2 Initial Conditions

The start of each step assumes all switches are pre-set to the following positions:
Mode Switch: STEREO position.
Input Sensitivity Switch: 1.4 V position.
Level Controls: Both up (clockwise) fully.

2.4.3 Test Procedure

The following steps are arranged in order for best results and, for the most part, easiest use. Read each step carefully before proceeding. Read all precautions in Section 2.1 before continuing. Use extreme caution and good common sense at all times. The preceding warnings and cautions are detailed for good reason.

2.4.4 Service Kit Wire Extensions

A service kit containing wire extensions is available from the Crown Parts Department (part # 125581-1). By using the wire extensions provided in the kit, maneuverablility of the main module is greatly increased. When using the service kit, it is required that all instructions be followed.

Special Note On Grounding: Whenever the main module is removed from the chassis and power is applied, the grounding wires absolutely must be attached. Also, if you are attempting to make very precise THD or noise measurements, the main module must be completely installed in the chassis with all seven mounting screws properly seated to their specified torque, 12-14 in-lb (1.35-1.58 newton meters). This assures a proper low-impedance ground path for the module. However, if you require measuring THD or noise with the main module removed from the chassis, please call technical support for further information and instruction.

If you are attempting to check or measure VI limiting, output power, or any other test which would require the amplifier to produce large amounts of heat, the main module should be securely mounted inside the chassis with the fan connected. If the module must be removed from the chassis, the test should be of very short duration, and/or an external fan should be used for cooling the heat sinks.

Service Kit Assembly Instructions

1. Follow the main module removal procedure.
2. Attach the 16AWG blue wire in the service kit to the 16AWG blue wire on the main module and to the negative tab on the rectifier.
3. Attach the 16AWG red wire in the service kit to the 16AWG red wire on the main module and to the positive tab on the rectifier.
4. Attach the 22AWG white wire in the service kit to the 22AWG white wire on the main module and to the AC tab on the rectifier.
5. Attach the 14AWG black/white wire in the service kit to the 14AWG black/white wire on the main module to the 14AWG black/white wire coming from the transformer.
6. Plug in the female 4-pin connector on the 4-wire service assembly to the 4-pin header on the main board. Plug the male end into the 4-pin female connector coming from the transformer, making sure the orientation is as shown in Figure 2.1. Plug in the input module.

Optional Grounding Wire

7. On the 12AWG green ground wire, attach the longest wires' ring terminal to the chassis ground shown in Figure 2.2, using the PWA mounting screw. The remaining three wires should be attached to the PWA at the three grounding locations shown in Figure 2.2, using the 6-32 screws and 6-32 hex nuts provided in the kit.

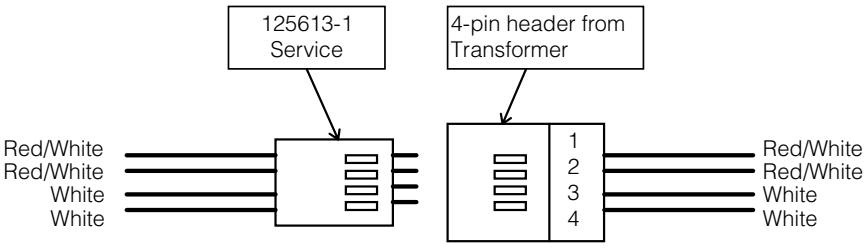


Figure 2.1 4-pin Connector Wiring Diagram.

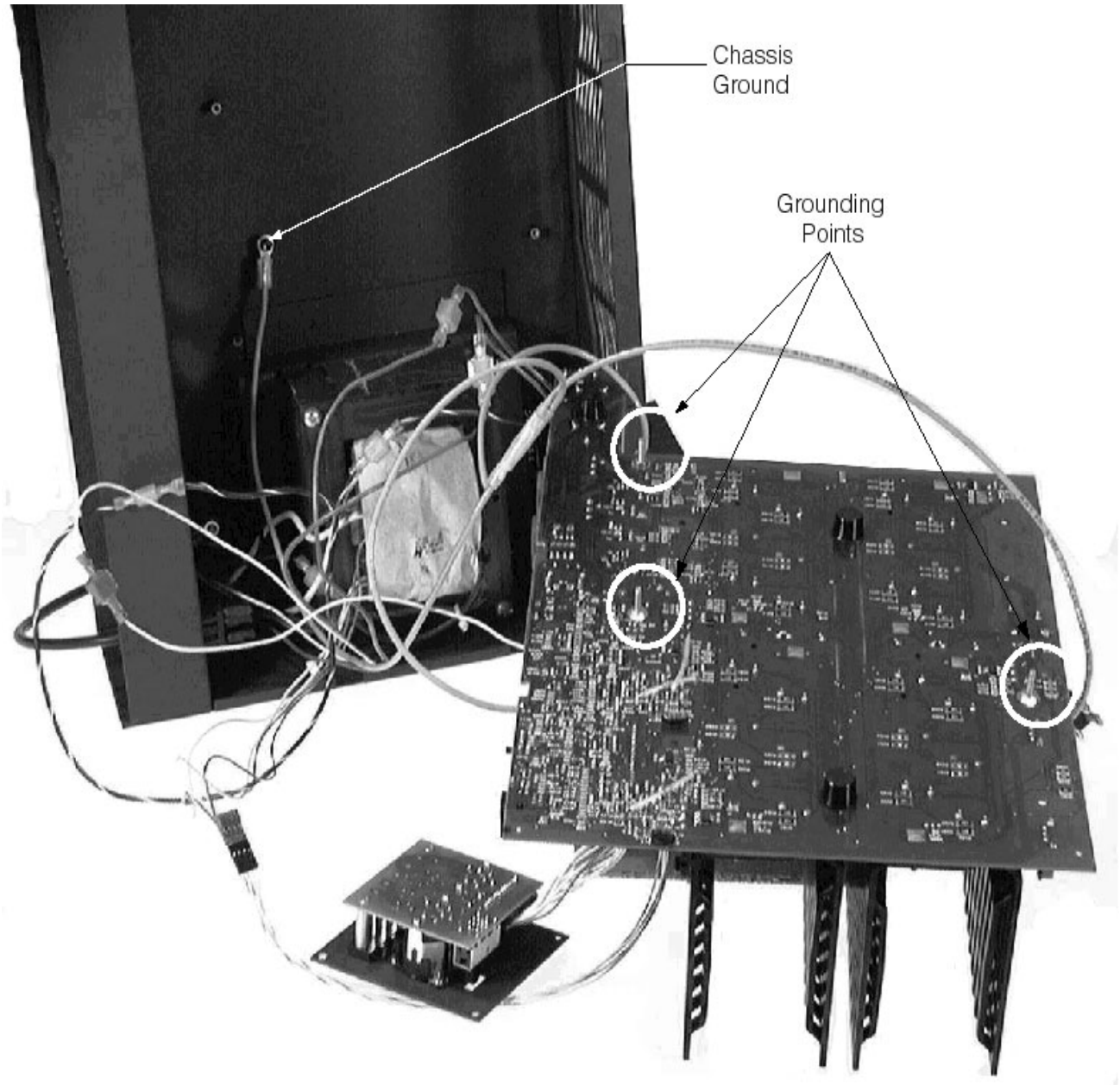


Figure 2.2 CE 1000 with Main Module Removed and Service Kit Installed

WARNING: Do not connect any load to the CE-Series power amplifier during these tests until specifically instructed to do so.

Type of Test or Adjustment	Input Signal and Load Parameters	Comments
1. Turn-on Delay	No Signal No Load	Check for a delay of approximately 6 seconds from the time the power switch is turned on until the fault indication clears. If the fault fails to clear, check for presence of rail voltages and for a DC offset. Turn unit off, disconnect the power cord, discharge power supplies, and check for a failure in the output stage of the affected channel, or other applicable circuit area. If the fans lock in high speed after delay times out, check fan control components.
2. DC Output Offset	No Signal No Load	With the input level controls turned fully clockwise, the DC offset for both channels should be less than ±10 millivolts. A large DC offset usually indicates a failure in the output stage, though such an offset should have shut down the amplifier on a DC/LFI signal.
3. Quiescent Power	No Signal No Load	While there is no published specification on quiescent power, it should be checked. A power draw with the fan off or operating slowly will normally be less than 150 W (<1.5 A). If quiescent power greatly exceeds expectation, then turn the amplifier off immediately and search for power supply or output failure. If quiescent draw exceeds expectation by a "small" amount, check bias immediately.
4. Bias	No Signal No Load	Bias voltage is set while the amplifier is at room temperature. If the amplifier is hot from prior testing for repair or other purposes, it should be set aside until it has cooled before continuing with this check. Bias, once factory set, normally will not require adjustment. For channel 1: Measure the voltage at TP38 with respect to channel 1 positive output (DO NOT measure from ground reference). The bias voltage should equal 0.31V ± 50 millivolts. If the bias voltage needs to be adjusted, adjust R134 for the correct bias voltage. For channel 2: Measure the voltage at TP39 with respect to channel 2 positive output (DO NOT measure from ground reference). The bias voltage should equal 0.31V ± 50 millivolts. If the bias voltage needs to be adjusted, adjust R234 for the correct bias voltage.
5. Sensitivity (Gain)	1-kHz Sine Wave No Load	Set the sensitivity switch to the 26-dB position, check that both level controls are full clockwise. Insert a 1.4V 1-kHz sine wave and measure 26.6V–29.4V at the output of each channel. Set the sensitivity switch to the1.4V position and measure 44.5V-49.2V at the output of each channel for the CE 1000, and measure 53.7V-59.4V at the output of each channel for the CE 2000.

Type of Test or Adjustment	Input Signal and Load Parameters	Comments
6. Bridge Mono	1-kHz Sine Wave No Load	Note: Always turn power to the amplifier off prior to changing the position of the Mode Switch. With the dual/mono switch in the bridge mono position, insert a 0.775 Vrms 1-kHz signal into channel one input. There should be signal present on both channel outputs, equal in amplitude, with channel two 180 degrees out of polarity from channel one (see Fig. 2.3). Channel one input level control should control the output level for both channels. Return the amplifier to stereo operation.
7. LED Check	No Input No Load	Turn the amplifier on after being off at least 10 seconds. Make sure the green Power LED is on. If not, check the ground screw at the front of the amplifier, near C218, that holds the PWB to the chassis. Also suspect R4, E1, or R19.
8. Current Limit	1-kHz Sine Wave	Set the sensitivity switch to 26-dB and check that both level controls are fully clockwise. Insert a 3.5V 1-kHz sine wave into channel 1 only and capture the output signal on a digital storage scope. Turn off the signal. The limits for the CE 1000 are 20 A ±5 A. For the CE 2000 the limits are 25.5 A ±5.5 A. Change the input signal to channel 2 only and repeat the test.
9. 10-kHz Square Wave Slew Rate Test	10-kHz Sq. Wave 8-ohm Load	With an 8-ohm load on each channel, insert a 10-kHz square wave and adjust amplitude to produce an output 10V below clipping. Observe a 7V/µS (or higher) slew rate. The output waveform should be stable with no ringing or over-shoot.

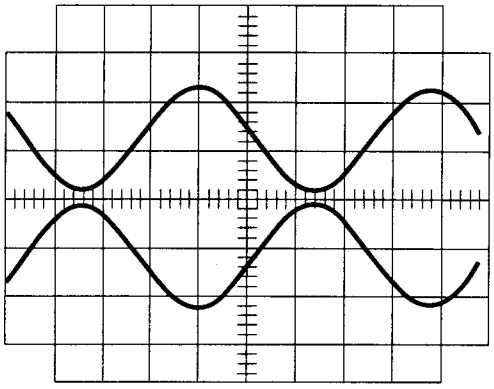


Fig. 2.3 Bridge MONO

WARNING: Many of the following checks are done by connecting a resistive load to the output of the amplifier. Use caution and follow check-out procedures carefully to ensure correct results. These tests require a resistive load capable of over 2000 W continuous into as low as 2 ohms.

WARNING: The CE-Series is capable of drawing in excess of 30 Amperes of current from 120VAC mains when loaded to 2 ohms per channel and with both channels driven by a 1 kHz sine wave.

For tests numbered 10-15 the main module should be placed back into the chassis if at all possible. Otherwise, the heatsinks will become very warm, causing the amplifier to thermally protect itself. It is also possible under high-power bench testing to trip the front panel circuit breaker. Also, with the module removed from the chassis, test #14, Fan Operation, will not be able to be performed.

Type of Test or Adjustment	Input Signal and Load Parameters	Comments
10. 1-kHz Power + THD	1-kHz Sine Wave Various Loads	Make sure the sensitivity switch is set to 26 dB. Note: Operation with a sine wave into a low-impedance load will cause the circuit breaker to trip after 10 to 20 seconds. AC Mains of 120 VAC, 60-Hz 8-Ohm Load: Minimum voltage is 46.9 Vrms (275W) with <0.5% THD for the CE 1000 and 56.6 Vrms (400W) with <0.5% THD for the CE 2000. 4-Ohm Load: Minimum voltage is 42.4 Vrms (450W) with <0.5% THD for the CE 1000, and 51.3 Vrms (660W) with <0.5% THD for the CE 2000. 2-Ohm Load: Minimum voltage is 33.4 Vrms (560W) with <0.5% THD for the CE 1000, and 44.1 Vrms (975W) with <0.5% THD for the CE 2000.
11. Intermodulation Distortion (I.M.D.)	I.M. Signal Source 8-ohm Load	You may need to adjust your variac back up to nominal line voltage during these tests. Place the sensitivity switch in the 26-dB position. Use a 60-Hz/7-kHz (standard SMPTE IM signal) input signal summed in a 4:1 ratio. Set the 60-Hz portion for 33.9 Vrms at the output of the channel under test for the CE 1000, or 40.8 Vrms at the output of the channel under test for the CE 2000. This is your 0-dB reference. Measure the I.M. distortion. Check in -5 dB (power) steps until -35 dB is reached. Readings should be less than 0.1% at each level.

Type of Test or Adjustment	Input Signal and Load Parameters	Comments
12. Noise	No Signal No Load	Make sure the sensitivity switch is in the 26-dB position and the level controls are fully clockwise. Terminate the input with a 600-ohm load. Using a 20 to 20,000- Hz bandpass filter, measure the noise on the output of the channel under test. Noise is measured relative to power output at 8-ohms (275 Watts (46.9 Vrms) for CE1000, 400 Watts (56.6 Vrms) for CE 2000) and should be at least 100-dB down from these numbers.
13. Crosstalk Check	20-kHz Sine Wave 8-ohm Load	Make sure the sensitivity switch is set in the 26-dB position. Load each channel to 8-ohms. Insert a 20-kHz sine wave into channel 1 and adjust for 44.7 Vrms output. Terminate channel 2 input with 600 ohms. Measure less than 80 mVrms at the output of channel 2. (Greater than 55 dB down at 20-kHz) Move the input signal from channel 1 to channel 2 and the 600-ohm termination from channel 2 to channel 1. Ensure there is 44.7 Vrms at the output of channel 2. Measure less than 80 mVrms at the output of channel 1.
14. Fan Operation	1-kHz Sine Wave 4-ohm Load	Make sure the mode switch is in the “stereo” position. Plug a 1-kHz source into channel 1, 2 or both and observe the amplifier outputs with a voltmeter. Set the inputs so that about 10 Vrms is on the outputs and set the load to 4-ohms. If the amplifier produces power until the heatsinks get so hot that a channel goes into thermal protection, the fan is not working correctly. With the amplifier still in thermal protection, measure the voltage at J4 pin 1 (the red fan wire). If this voltage is greater than 20VDC, there is a problem in the wiring of the fan, or a problem with the fan itself. If the voltage is less than 20VDC, then the fan control circuit needs attention. U106 is a thermally controlled current source that is thermally connected to the heatsink. For channel 1, R190 develops a voltage across it due to this current, and this signal is OR’ed with the voltage from channel 2 and the transformer thermal switch. U4A is a DC amplifier that voltage amplifies the signal, and Q1 and Q2 current amplify this signal to drive the fan. If the heatsinks are hot, and U4-7 is negative, suspect U106, R191, R190, D119, R20, R21, R22, and U4. If the heatsinks are hot, and U4-7 is positive but U4-1 is low, suspect R23, R12, R11, and U4. If U4-1 is quite high (above 10V), but J4-1 is not the same voltage, Q1, Q2, R14, or R15 may be at fault.

Type of Test or Adjustment	Input Signal and Load Parameters	Comments
15. Fault Jack	No Signal No Load	Turn off the amplifier and set up the DMM to measure the voltage at U105-7. Turn on the amplifier and observe this voltage. Before the relays click in, U105-7 should be positive, and after they click in U105-7 should be negative. If this is not the case, suspect R179, and U105. For every condition that J5 presents an open circuit, the "fault" LED should blink, with one exception; when the amplifier is off, the LED cannot blink. Verify that when the amplifier is in its turn-on delay, the "fault" LEDs both blink. If they don't, but the fault jack operates correctly, suspect D124, C122, R180, R182, R183, E102, E181, and R105.
Post Testing Procedure		At the completion of testing, set all switches per customer request. If none are specified by the customer, the following are standard factory settings for original shipment: Mode Switch: STEREO position. Input Sensitivity Switch: To 1.4V position. Level Controls: Both down (counter-clockwise) fully.

3 Circuit Theory

3.0 Overview

This section of the manual explains the general operation of the CE power amplifier. Topics covered include Front End Operation, Voltage Amplification, Output Stage Topology, Protection Circuitry and Power Supplies. For simplicity, the circuit theory will only refer to channel one. It may be assumed that channel two is identical to channel one.

3.1 Front End Operation

The front end is comprised of three stages: Balanced Gain Stage (BGS), Variable Gain Stage (VGS) and the Error Amp. These front end stages are shown along with the rest of the amplifier in block diagram form in Figure 3.1.

3.2 Balanced Gain Stage (BGS)

Input to the amplifier is balanced. The shield is isolated from chassis ground by an RC network to interrupt ground loops. The inverting (-) side of the balanced input is fed to the non-inverting input of the first op-amp (U500-A) stage located on the input card. The non-inverting (+) side of the balanced input is fed to the inverting input of the first op-amp stage. Electrically, the BGS is at unity gain. (From an audio perspective, however, this stage actually provides +6-dB gain if a fully balanced signal is placed on its input.) The BGS is a non-inverting stage. Its output is delivered to the Variable Gain Stage.

3.3 Variable Gain Stage (VGS)

From the output of the BGS, the signal goes to the VGS where it is inverted and gain is determined by the position of the sensitivity switch (26 dB or 1.4V), and level is determined by the level control. The sensitivity switch allows for R505 to be either in or out of the local feedback path of U500-B. When R505 is out of the path (i.e. sensitivity switch in 1.4V position), and the gain of U500-B is greater than 1, the amplifier will produce full rated output when the amplitude of the input is 1.4 volts. Likewise, when the sensitivity switch is in the 26-dB position, R505 is in parallel with R506. This sets the gain of U500-B at 1.0 volt/volt. In

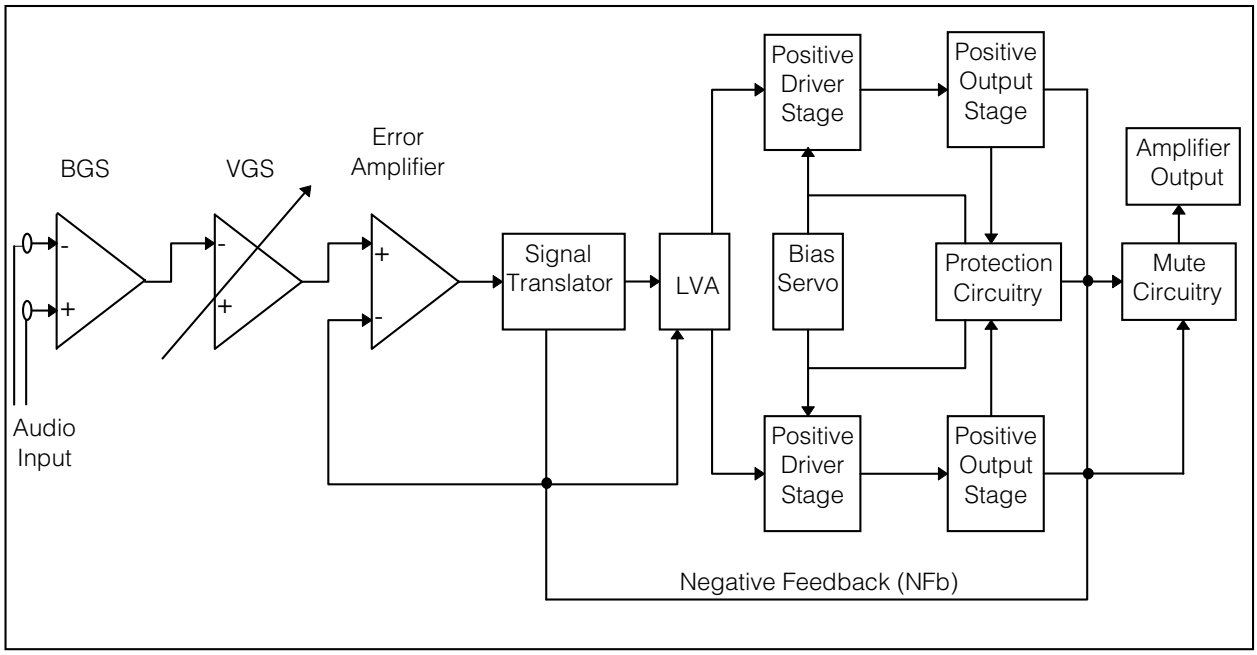


Figure 3.1 Block Diagram of CE Amplifier Circuit Operation

this case, the gain of the VGS is unity and the amplifier will have an overall fixed gain of 20 volt/volt or 26- dB. The VGS is an inverting stage.

3.4 Error Amp

The inverted output from the VGS is fed to the non-inverting input of the Error Amp (U101-C) through an AC coupling capacitor C103 and input resistor R106. Diodes D103 and D104 prevent overdriving the Error Amp. Amplifier output is fed back via the negative feedback (NFb) loop through R112 and C106 (pre-terminator network) and R322 (post-terminator network). The overall closed-loop mid-band gain is set to be 20 or 26 dB by resistors R112 and R110.

The Error Amp's job is to keep both inputs at the same potential. Since the signal fed to the inverting input is $^1/_{20}$ of the amplifier output, the Error Amp output should be the same as the non-inverting input, which should be $^1/_{20}$ of the output of the amplifier during linear operation (i.e., what goes in, comes out with gain). Any type of non-linearity in the output will cause the Error Amp to compensate with the opposite of the non-linearity. For example, if the amplifier clips, the error amp will travel all the way to its opposite rail trying to compensate. The output of the Error Amp, called the Error Signal (ES) drives the Voltage Translator (Q103).

3.5 Voltage Amplification

The voltage amplification stage consists of the voltage translator, last voltage amplifier and the bias servo. Each of these items are discussed in this section.

3.5.1 Voltage Translator

The Error Amp output is only capable of swinging several volts and therefore must be voltage amplified to drive the output stage. The purpose of the voltage translator, Q103, is to level shift or translate the voltage from a reference around ground to a reference just above -Vcc. The result is higher voltage swing capabilities from the LVA. This is required since the next stage is referenced to -Vcc. The diode D105 protects the voltage translator from reverse biasing.

3.5.2 Last Voltage Amplifier (LVA)

The next stage is the Last Voltage Amplifier Q107. The LVA provides voltage gain necessary to provide drive to the output stage. R115 in the base of Q107 provides collector current for Q103, the voltage translator, and it also allows the signal of the collector of Q107 to be developed across it and thus amplified.

The series combination of D126 and D127, in parallel with the base-emitter junction of Q107 and R136, form a circuit that limits the current through Q107. One of these diode drops equates to the base-emitter junction of Q107, and the other equates to the voltage on R136. Therefore, the current through Q107 cannot rise higher than that required to produce a diode drop across R136.

3.5.3 Bias Servo

Q104, R132, R133 and R134 form the bias servo. This circuit is also known as a V_{BE} Multiplier or a level shifter. Q104 is called the bias transistor. The purpose of this circuit is to provide and control bias to the output stage. By utilizing the constant current source Q105, the bias servo effectively multiplies the voltage across the bias transistors base-emitter junction and produces the output voltage across the bias transistors collector-emitter junction. The bias adjustment pot R134 is included to allow adjustment of the bias voltage.

The bias transistor is mounted on the main module and thermally connected to the heatsink. The purpose of this is to allow the bias transistor to automatically adjust the bias voltage as needed depending on the temperature of the output devices. This is possible because the forward voltage drop across a P-N junction decreases by approximately 2 mV for every 1° C increase in temperature.

3.6 Output Topology

The output topology for the CE series amplifiers is a type of quasi-complementary design using only N-P-N output devices. They also have the classic CROWN AB+B biasing configuration also known as MultiMode® or triple-deep Darlington. The pre-drivers and drivers are biased at 0.6V and the output transistors have a 0.31VDC voltage from base-emitter and are therefore at a sub-turn-on voltage. In this type of topology (AB+B), the driver transistors carry the bias current, while the output transistors sense when the drivers have developed significant current, and thus take over and deliver the needed current. This is a proven design that provides maximum efficiency with minimum crossover notch distortion and idling amplifier heat. Thus there is no bias current adjustment, as the output circuit is not temperature-tolerance critical.

This output topology has become quite common in power amplifier design. Typical Darlington transistors, connected in the Common Emitter configuration, are used

when extremely high input resistance and very high h_{fe} (current gain) are required. Figure 3.1 includes the block diagram of the output stage. The output stages can be further broken down by Pre-driver, Driver, Output Devices, Flyback Diodes and Output Terminating Network.

Be sure when replacing the heatsink that the nuts are torqued properly. The heatsink receives its power through these nuts, and without them being torqued properly, the amplifier will not function correctly.

3.6.1 Pre-Driver

There is both a positive side pre-driver Q110 and a negative side pre-driver Q120. The level-shifted signal from Q107 is applied directly to the base of Q110 where it is current amplified. The level shifted signal applied to the base should be symmetrical relative to 0 VDC plus the DC offset required to bias on Q110 and the driver. The positive predriver is connected as an emitter-follower stage with no sign inversion; the negative side must provide sign inversion and level shifting so that the driver can be referenced to the negative rail. Thus, the output is taken off of the collector.

3.6.2 Driver

The positive side driver, Q112, is driven by the pre-driver, Q110. Likewise, the negative side driver, Q121, is driven by the negative pre-driver, Q120. The Class AB+B nature of the output stage means that the drivers are on as Class AB devices, and the amount of bias can be measured across R150 or R165. The resistors R150 and R165 are called the bias resistors because they are connected directly across the base-emitter junction of the output devices.

3.6.3 Output Devices

The output devices, Q114-Q119 on the positive side and Q123-Q128 on the negative side are driven directly from the emitters of the respective drivers. The most important characteristic between output devices is their ability to share current handling. In ideal current sharing all of the output devices produce the same amount of current; that is, no one output device works more than or less than any other output device. However, not all transistors have identical current gain. This is why, for optimum performance, it is absolutely critical that the output devices be matched. When the output devices are matched, they will have current gains that are very similar. To ensure optimal performance, numbered devices should only be ordered from the Crown Service Department.

3.6.4 Flyback Diodes

D114 and D115 are called flyback diodes. In the event that a back EMF (flyback) pulse exceeds the power supply voltage, the flyback diode will shunt this voltage to the supply in order to protect the output devices.

3.6.5 Output Terminating Network

R158, L102 and C118 form the output terminating network. This network serves several functions. It allows the amplifier to better drive very reactive loads and improves amplifier stability.

3.7 Power Supply

There is one current source and three different power supplies in the CE series amplifiers: the low-voltage supply, bootstrap supply and the high-voltage supply. Each of these circuits will be discussed in this section.

3.7.1 Low Voltage Supply

The low-voltage supply is a bipolar supply producing +15V and -15V via two three-terminal regulators. The source of AC voltage comes from special taps on the main transformer. This type of low-voltage supply produces an extremely stable and dependable voltage source for all of the low-voltage circuitry.

3.7.2 Bootstrap Supply

The bootstrap supply is a voltage doubler network that consists of C1, C3, D6 and D7. The AC leg of the secondary is applied to R1, which limits the current. Since the voltage at +Vcc is tied through D6, the voltage on C1+ can be no lower than +Vcc - 0.7V so the voltage of C1+ will be +Vcc - 0.7VDC when there is no input on WP6. As the voltage on WP6 goes positive, C1- rises, minus the voltage drop on R1, and therefore, C1+ rises relative to ground by the same amount. D7 will conduct, charging C3+. As WP6 completes its cycle and goes negative, D7 prevents the charge built up on C3 from travelling back to C1. So, every positive cycle of WP6 adds charge up to the point that C3+ reaches twice WP6 peak minus the drop on R1. The voltage developed at C3+ has a significant amount of ripple, and that ripple is not equal in amplitude to that on +Vcc. R2 provides a current path and isolation between the voltage required (HI-V) and that on C3+. D8 (10V Zener) is placed between HI-V and +Vcc to limit HI-V to +Vcc +10VDC.

The purpose of this supply is prevent the bias string from limiting the rail voltage. If the top of the bias string was connected to the positive rail voltage, the current required for bias flowing through a resistor to create a

current source would drop enough voltage to require a higher rail voltage. This would increase the dissipation of the outputs since they would never reach this voltage. By using a bootstrap supply, the bias string never limits the available voltage swing of the amplifier.

3.7.3 High Voltage Supply

The high voltage supply is bipolar and produces the rail voltages +Vcc and -Vcc. It is full-wave rectified and capacitively filtered. The transformer scales the line voltage to the voltages required by the amplifier. It also provides isolation between the line voltage appearing at the primary winding of the transformer and the rest of the amplifier.

3.7.4 Constant Current Source

Q105 and R135 form a constant current source utilizing the bootstrap supply HI-V and the rail voltage +Vcc. This source is derived from the difference between HI-V and +Vcc (which is +10V) being developed across R135 and Q105 base-emitter junction. Since this difference is presented across the base-emitter junction, the ripple of HI-V relative to +Vcc must be zero for a constant current to be produced. Another very important component is C138. C138 overpowers the base-collector capacitance of Q105. This ensures that the slew limit of the LVA is set by a more constant capacitance rather than one that is much more variable with the applied voltage. This lowers distortion by making the rate of change of the waveform less dependent on the output voltage.

The constant current source is required for proper operation of the bias servo circuit. It also helps to provide isolation between the front end input stage supply and the rail voltage.

3.8 Protection Circuitry

The CE series of amplifiers are equipped with a great deal of protection circuitry to protect the amplifier under a wide and varied array of fault conditions. Each of the fault conditions and fault circuitry will be reviewed in this section. Also, the CE amplifiers provide an output fault connector to allow remote monitoring of the amplifier's condition. This remote fault connector will also be covered. A block diagram of the Protection Circuitry Logic is shown in Figure 3.2.

3.8.1 Time Dependent VI Limit

There is a special type of VI limiting in the CE amplifiers. It is called Time Dependent VI limiting. While most current limiting circuitry is independent of frequency, that is, it limits VI regardless of what the frequency is, Time Dependent VI limiting will actually adjust the VI limiting of the amplifier based on the frequency of the signal.

The time/frequency dependence of the limiter also allows for higher, non-repetitive peak-currents than is allowed for continuous wave output signals. The result is an amplifier more suited to reproducing music.

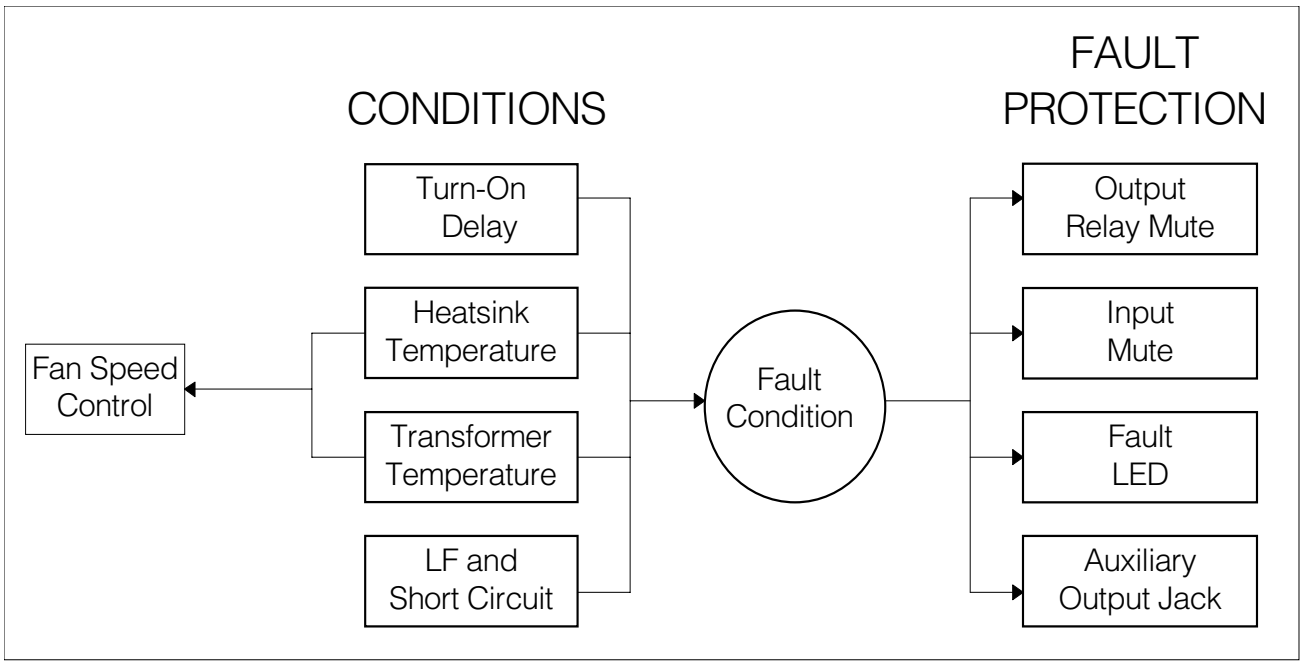


Figure 3.2 Block Diagram of Protection Circuitry Logic

The VI circuitry first senses the output current from the current sense resistors R152 and R301 on the positive side, and R159 and R300 on the negative side. This voltage is then fed to the limiting transistors Q108 and Q109. Before the output current becomes dangerously high, the limiting transistor is activated, which in turn limits the drive voltage at the base of the pre-driver. When the pre-driver current and the limiter current are equal to the current available from the constant current source, a limit point is reached, and the protection circuitry remains in this state until the overload is removed.

The frequency dependence of the circuitry comes from the capacitors C113 and C114. The resistors R140 through R143 are referenced to ground and only affect current limit when the output voltage is higher than ground. The resistors also serve to drain the charge from C113 and C114, thus increasing the current limit as the output voltage is increased. The diodes D113 and D114 serve to block voltage during opposing cycles so that the positive current limit circuitry is not affected by negative output signals and vice-versa. The VI limiter is pre-biased by R317 and R318. This is done so that less current in the output stage is required to activate it.

3.8.2 Temperature Protection

There are three different temperatures that are monitored on the CE amplifiers; the transformer temperature and both channel 1 and 2 heat-sink temperature. The transformer temperature is monitored by an internal thermal switch which is closed (shorted) during normal operation. When the transformer reaches its thermal limit, the switch opens to protect the transformer, the fan speed is turned to full, and the relay K100 is turned on, thereby isolating the load from the output of the amplifier. When the relay K100 is turned on, the mute circuitry is simultaneously activated. The mute circuitry will effectively steal the drive from the error amp. Essentially, the amplifier is safely shut down until the transformer is cool enough for the thermal switch to close.

The heatsink temperature is reported via U106. This device delivers a current proportional to the absolute temperature that is set to 1 µA per °K of heatsink temperature by R191. (U106 is attached to the heatsink with electrically insulating and thermally conducting epoxy.) This current is delivered through R190 to develop a voltage at the anode of D119. This voltage is then used to adjust fan speed control, and will also activate relay K100 and the mute circuitry if the heatsink reaches dangerous levels.

3.8.3 Low-Frequency and Short-Circuit Protection

The output of the error amp is monitored by the window comparator, U102-B. The window comparator is designed to detect a LF (Low Frequency) condition. When this condition is detected, the comparator U5-A changes state and the amplifier goes into fault mode.

If the output signal remains in a DC condition for enough time to charge C123 through R185 to a value above the threshold of the bilateral switch Q132, then Q132 will conduct and turn on TRIAC Q131. Q131 will remain on until the voltage at Q131-2 reaches within a few volts of ground and C123 discharges enough to turn Q132 off. The detection circuit of C123 and R185 is designed to only allow Q131 to turn on during a fault condition, but it is possible to trip the circuit with a rail-to-rail square wave of 5-Hz. If an output device faults, typically the rail will short through the output device to the output. Q131 will then turn on and short the rail through the shorted output to ground. This will prevent the DC voltage from destroying the load. R184 is used as a path to ground for any leakage current from Q132 that may build up charge on Q131-G.

3.8.4 Input Compressor

The output of the error amp is monitored by the window comparator, U102-D. Since the gain from the error amplifier output is fixed at 20, the maximum amplitude of the error amplifier is known, and any clipping will cause the error amplifier to exceed this maximum value. The window is designed to detect this maximum value plus a predetermined tolerance. When this value is exceeded, the output of the comparator goes low.

U101-D, Q100 and U100 are the major components comprising a fast-attack, slow-decay circuit used to compress the signal coming out of the VGS. This compression action only occurs when the output of the comparator, U102-D, detects clipping on the output of the error amp. It is important to note that in the event of a signal being clipped at the error amp, not only is the compressor activated, but, the red clip LED is also turned on. In this way the amplifier will not produce a distorted output, but will visually inform the user that the input signal is too large and is being compressed.

3.8.5 Turn-On Delay

U104-A provides a time delay after turn-on to let the rails stabilize before connecting the load to the amplifier output. The block diagram in Figure 3.2 shows that, while the turn-on delay circuit is active, the amplifier is in fault mode.

3.8.6 Output Relay Muting

The relay K100 is in series with the output of the amplifier. The relay coil is connected to U104-A, U104-B and U104-C; these inputs determine if the relay should be open (disconnecting the load from the amplifier) or closed. The fault conditions which drive the relay inputs are outlined in Figure 3.2 and listed here.

1. Heat sink exceeds thermal limit
2. Transformer exceeds thermal limit
3. A short has been applied to the output
4. There is DC on the output
5. The turn-on timer has not released the relay yet

3.8.7 Input Muting

The summed output from U104 -A,B,C is also used to drive an inverter, U104-D, that mutes the input to the error amplifier via Q133. Q133 is a FET, which can open faster than the relay can. This saves the relay, K100, from having to switch high currents which can erode the contact surfaces.

3.8.8 Auxiliary Output Jack

The auxiliary output jack allows for remote monitoring of the amplifier's fault status. The concept of the auxiliary output jack is to short two pins of a common RJ-11 connector (J5) together through a transistor any time that the amplifier is operating normally. If the amplifier is off or in any fault condition, the two pins on J5 will effectively be an open circuit.

3.9 Fan Control Circuitry

There are two different kinds of input to the fan speed control. One is the heatsink temperature and the other is the input from the transformer thermal switch. The heatsink temperature is reported via U106, which is thermally connected to the heaksink. The current from U106 is delivered through R190 to develop a voltage at the anode of D119. D119 is used as part of an OR gate with channel 2 and with the transformer thermal sense.

As the reported heatsink and/or transformer temperature rises, the Darlington transistors, Q1 and Q2, are turned on harder. So, a thermally proportional voltage is supplied to the fan, allowing it to run faster as the reported temperatures increase. However, if all of the reported temperatures are below a set threshold level, the transistors Q1 and Q2 will be biased off, hence cutting off the supply voltage to the fan. This results in lower power consumption and lower noise levels during times of low-power operation.

4 Neutrik Connectors

The *CE-Series* of amplifiers uses Neutrik Speakon connectors for the outputs. While the Reference Manual contains detailed instructions on how to assemble these connectors, we thought we would include the information here as well. This may help in troubleshooting problems that may have arisen from incorrect assembly.

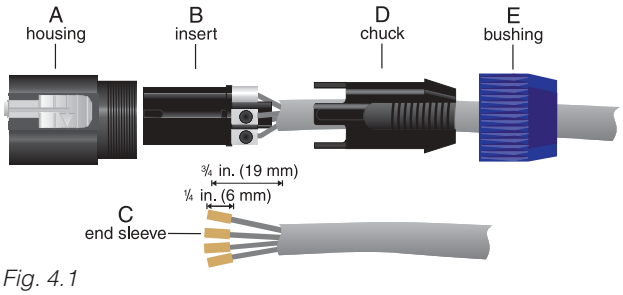


Fig. 4.1
Order of Assembly for the Neutrik Speakon NL4FC Connector

You will need two (2) Neutrik Speakon® NL4FC connectors to interface with this amplifier.* You will also need high-quality two- or four-conductor speaker cable with the appropriate end-connectors to fit the inputs on your speakers, a pair of needle-nosed pliers and a 1.5-mm hex key to assemble the Speakon connectors.

To assemble the Neutrik Speakon NL4FC connector, complete the following steps:

Slide the bushing (E) and chuck (D) onto the end of the cable as shown (Figure 4.1).**

Strip approximately 3/4-inch (19-mm) of casing from the cable end. Strip approximately 1/4-inch (6-mm) from the end of each of the conductors down to bare wire.

Slide the end sleeves (C) onto the wire ends and crimp in place.

* You can purchase the Speakon® NL4FC connectors from your local dealer, or contact NEUTRIK AG, Im alten riet 34, Schaan FL-9494, Furstentum Liechtenstein, 011-41-75-237-2424, FAX 011-41-75-232-5393, www.neutrik.com or Neutrik USA, Inc., 195 Lehigh Ave., Lakewood, NJ 08701-4527, (908) 901-9488, Fax (908) 901-9608, www.neutrikusa.com or Crown International, Inc., 1718 West Mishawaka Road, Elkhart, IN 46517-4095, USA, 219-294-8000, FAX 219-294-8329, www.crownaudio.com.

** Your NL4FC connector kit should contain both a black and a white chuck. Use the white chuck for cable with a diameter of 0.25- to 0.5-inch (6.35- to 12.7 mm). Use the black chuck for cable with a diameter of 0.375- to 0.625-inch (9.525- to 15.875-mm).

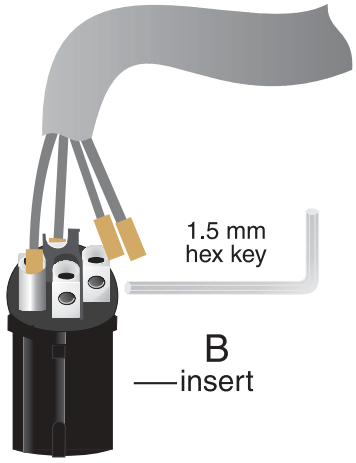


Fig. 4.2
Wiring for the Neutrik Speakon NL4FC Connector

Insert each wire with end sleeve into the top of appropriate slot of the connector insert (B) as shown in Figure4.2. Use a 1.5-mm hex key inserted into each side slot to tighten the connection.

If the Mode switch is in the “Stereo” position (for stereo configuration), connect the positive (+) and negative (–) leads of each wire to the appropriate Channel 1 and Channel 2 connectors as shown in Figure 4.3. You may use all 4 poles of the Channel 1 output connector to feed both speakers, if you wish.

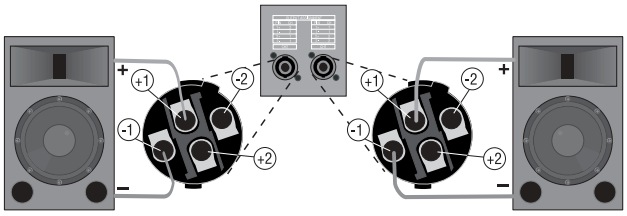


Fig. 4.3
Stereo Output Wiring

If the Mode switch is in the “Bridge” position (for mono configuration), connect the load across the (+) terminals of the connector as shown in Figure 4.4. For Bridge-Mono Mode, non-inverting output, Ch1+ is the positive (+) and Ch2+ is the negative (–).

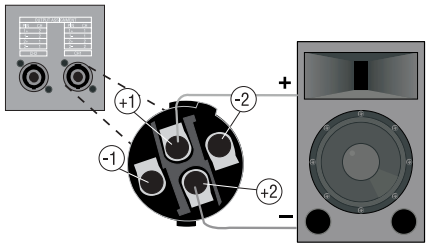


Fig. 4.4
Bridge-Mono Output Wiring

Never short or parallel the output channels of a *CE-Series* amplifier to itself or any other amplifier.

Slide the connector insert (B) into the connector housing (A), making sure that the large notch on the outer edge of the insert lines up with the large groove on the inside of the connector housing. The insert should slide easily through the housing and out the other side until it extends approximately 3/4-inch (19-mm) from the end of the housing (see Figure 4.5).

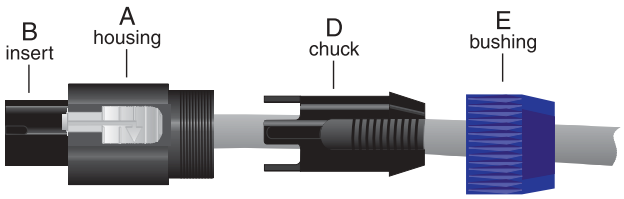


Fig. 4.5
Detailed Neutrik Speakon NL4FC Connector Assembly: Insert into Connector Housing

Slide the chuck (D) along the cable and insert into the housing, making sure that the large notch on the outer edge of the chuck lines up with the large groove on the inside of the connector housing. The chuck should slide easily into the insert/housing combination until only approximately 3/8-inch (9.5-mm) of the chuck end extends from the back end of the connector as shown in Figure 4.6.

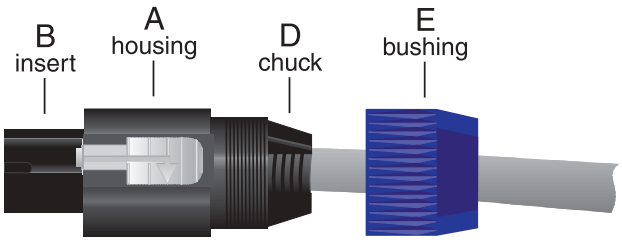


Fig. 4.6
Detailed Neutrik Speakon NL4FC Connector Assembly: Chuck into Connector Housing

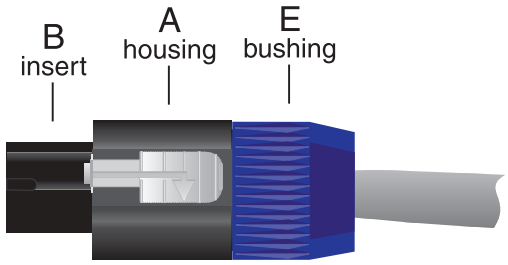


Fig. 4.7
Detailed Neutrik Speakon NL4FC Connector Assembly: Bushing onto Connector Housing Assembly

Slide the bushing along the cable and screw onto the end of the connector combination as shown in Figure 4.7. **Note that the bushing features a special locking construction which will prevent disassembly of the NL4FC connector once this cap is tightened into place. Before tightening, you may want to test the connector to make sure it has been assembled properly.**

Why Speakon?

For amplifiers, the most popular termination device on professional products has been the dual banana (which incidentally was pioneered by Crown with the DC-300 model). However, recent regulatory requirements in Europe have outlawed the use of the dual banana plug and forced users to terminate speaker cables with spade lugs or bare ends—an approach that is clearly not advantageous to the customer who wants to reconfigure his system or quickly change out a defective product. It is possible that similar regulatory controls will appear worldwide over the next few years.

One solution to this problem is to use the Neutrik Speakon® connector. Here at Crown, we wanted to develop a system for you that eliminated the need for specialized, time-consuming, interface cables. The major loudspeaker manufacturers have been using Speakon connectors for the input termination on their products for several years now, so you can be assured of the connector's reliability in the workplace. With Speakon connectors, you can plug straight from the amp to the speaker, and start making those great sounds right away.

The Speakon connector used on this amplifier meets all known safety regulations. Once wired correctly, the connector cannot be plugged in backwards, causing the type of inverted polarity situations that are common with banana hookups. It will provide a safe, secure and reliable method of interfacing your amplifier to the load.

PART II
Component Documentation

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5 Parts

5.1 General Information

This section contains an overview of the procedure for ordering parts from Crown's service department. The following section, Section 6, includes schematics used for referencing the circuit board components, exploded views, and parts lists.

Most mechanical and structural items are illustrated and indexed in the exploded view drawings. Where electronic parts are shown in these drawings, the schematic designations are also given.

Electronic parts located on printed circuit boards are illustrated by schematic symbols on the trace side and by component shape symbols on the component side. Where applicable, quantities of parts are also given.

5.2 Standard and Special Parts

Many smaller electrical and electronic parts used in the *CE-Series* amplifiers are stocked by, and available from, electronic supply houses. However, some electronic parts that appear to be standard are actually special. Graded and matched output transistors should always be purchased from Crown Audio. A part ordered from Crown will assure an acceptable replacement. Structural items such as covers and panels are available from Crown only.

5.3 Ordering Parts

When ordering parts, be sure to give the amplifier model and serial number and include a description and the Crown Part Number (CPN) from the parts listing. Price quotes are available on request.

5.4 Shipment

Shipment will be normally made by UPS or best other method unless you specify otherwise. Shipments are made to and from Elkhart, IN, only. Established accounts with Crown will receive shipment freight prepaid and will be billed. All others will receive shipment on a C.O.D. or pre-payment (check or credit card) basis.

5.5 Terms

Normal terms are pre-paid. Net-30 days applies to only those firms having pre-established accounts with Crown. If pre-paying, the order must be packed and weighed before a total bill can be established, after which an amount due will be issued and shipment made upon receipt of pre-payment. New parts returned for credit are subject to a 10% re-stocking fee. Authorization from the Crown Parts Department must be obtained before returning parts for credit.

Crown is not a general parts warehouse. Parts sold by the Crown Parts Department are solely for servicing Crown products. **Part prices and availability subject to change without notice.**

To order parts...
Call the Crown Parts Department at:

Ph. (574) 294-8200
Toll Free: ***(800) 342-6939***
Fax: (574) 294-8124

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6 Exploded Views, Parts Lists

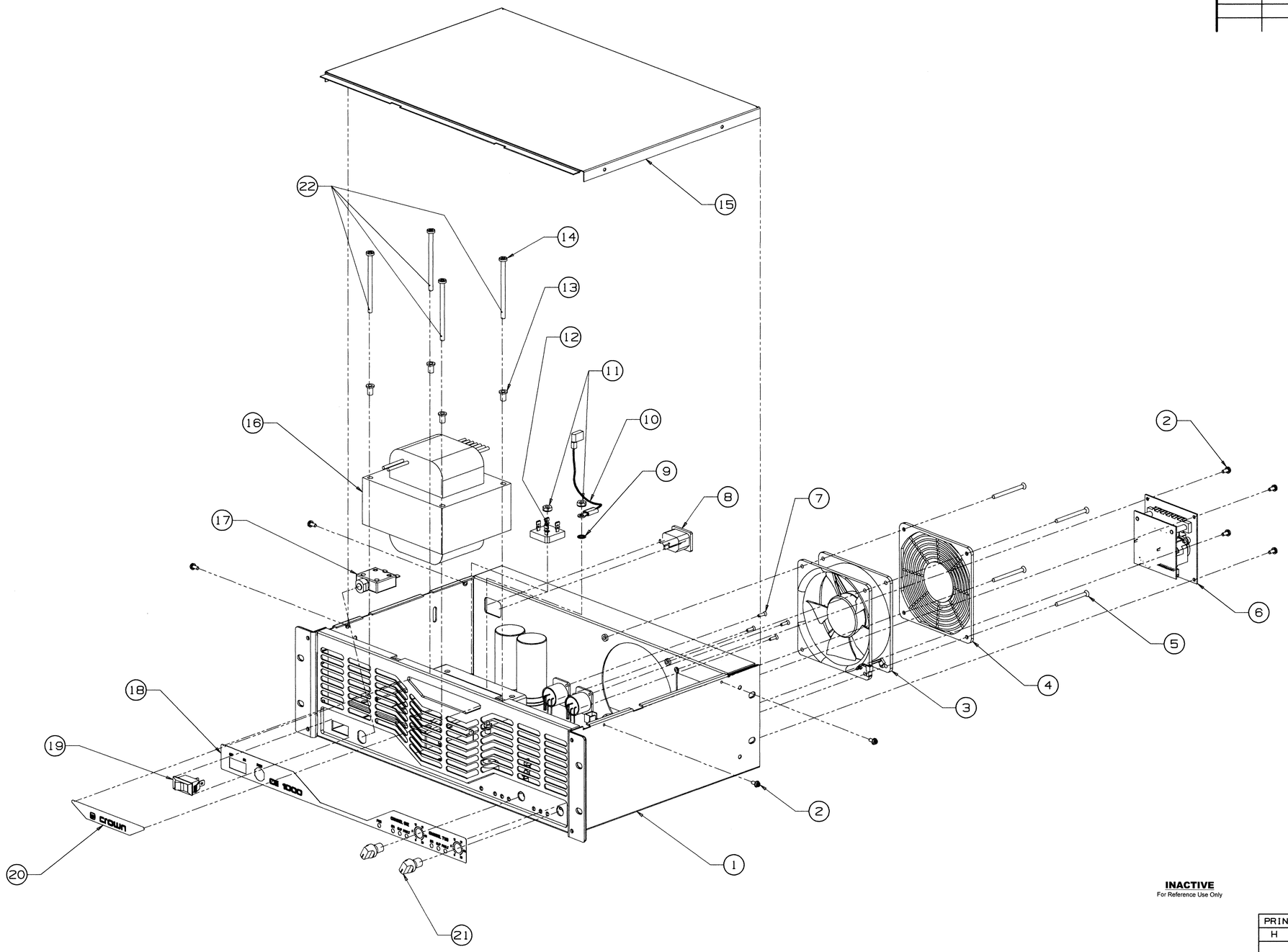
See illustration on next page (102632).

Obtain CPNs (Crown Part Numbers) from the bill of material following the illustration. The CPNs on the illustration may not be up-to-date.

Notes: 1) Item 1 assy. is shown with heatsink assys. removed in order to provide clarity.

Assy. CE 1000 Domestic

E.C.	ZONE	REV	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	EE	PE
		(A)	INITIAL RELEASE	10-31-97	JAG	RC	BL		TS
		(B)	ADDED SHEET 2	11-5-97	JAG	DF	BL		TS
		(C)	ITEM 5 TORQUE SETTING WAS 13-15 IN LBS., ITEM 3 WAS C.P.N. 125400-1. ITEM 18 WAS C.P.N. 102651-1	12-1-97	JAG				
		(D)							
		(E)							



RECOMMENDED ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
2	102884-1	16-18 IN LBS.
© 5	103281-1	7-9 IN LBS.
7	103175-1	4-5 IN LBS.
11	A10056-3	16-18 IN LBS.
14	125105-1	16-18 IN LBS.

NOTES:
1) ITEM 1 ASSY. IS SHOWN WITH HEAT-SINK ASSY'S. REMOVED IN ORDER TO PROVIDE CLARITY.

			ITEM	DESCRIPTION	C.P.N.
		X	22	PERMALOCK MM-115	S 2217-8
		2	21	KNOB, CE1000/CE2000 GAIN RUBBERIZED	102657-1
		1	20	OVERLAY, CE1000/CE2000 TOP FRONT	125349-1
		1	19	SWITCH, ROCKER SPST 22A CHAS MT	C10228-2
©		1	18	OVERLAY, CE1000 BOTTOM FRONT	102651-2
		1	17	BRKR, 1 POLE 12A SNAP-IN	102640-1
		1	16	XFMR, CE1000 120V 60Hz	101180-2
		1	15	COVER, CE1000/CE2000 TOP PC	125178-1
		4	14	10-32 x 2.875 PAN HD PH MSCR	125105-1
		4	13	#10 NYL SHLDR WASHER #10-375-A	A10099-7
		1	12	35A 400V BRIDGE RECTIFIER	C 8752-2
		2	11	10-32 HEX NUT W/BELLE	A10056-3
		1	10	WIRE, 14 GRN #10 RING x 5 x FLAG	A12119-K050M
		1	9	#10 INT TOOTH LOCKWASHER ZINC	A10094-8
		1	8	IEC SNAP IN 15A UL/10A VDE	102650-1
		4	7	M2.9 x 9.5MM FLT HD PH TFS BZ AB	103175-1
		1	6	INPUT ASSY, CE1000 STANDARD	102881-1
		4	5	8-32 x 1.844 FLT HD PH BLK STL	103281-1
		1	4	GAURD, FAN	102649-1
©		1	3	FAN, 120 x 120 x 38MM 24VDC NMB	125400-2
		8	2	6-32 x .312 PNHD TORX TFS SEM BZ	102884-1
		1	1	ASSY, CE1000 PWA & CHASSIS	125432-1
		X		ASSY, CE1000 DOMESTIC	
-3	-2	-1	PART NO. & QTY.		

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PRINTS TO
H

CROWN\DWGS | DWG102632 | 1,2,252,254-256

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA ROAD ELKHART, IN 46517 PHONE (219) 294-8000

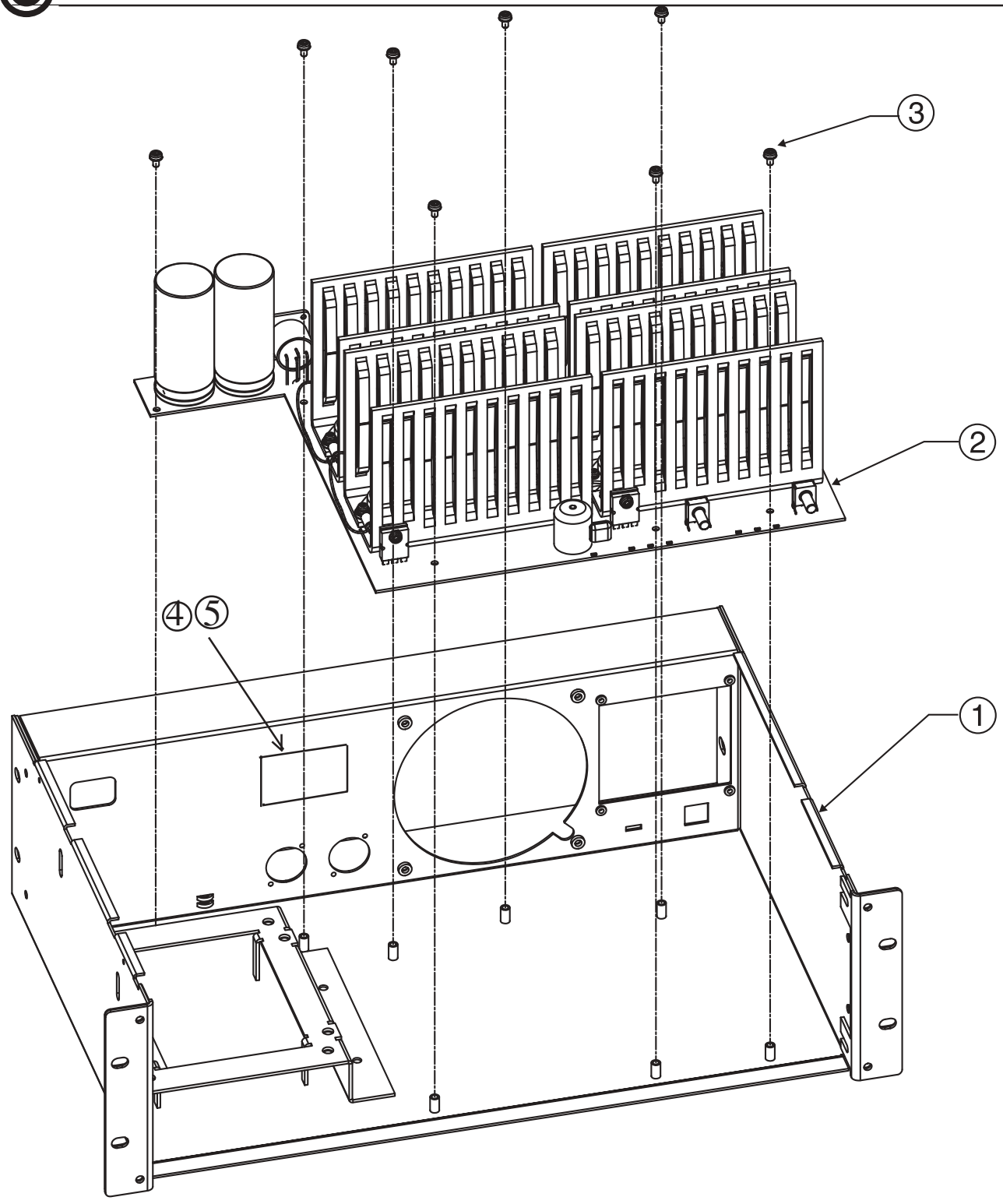
ASSY, CE1000 DOMESTIC

DRAWN	JAG	10-31-97	APPROVED BY:			DO NOT SCALE PRINT	
CHECKED	RWC	10-31-97	ME	BL	10-31-97	SUPERSEDES	
SCALE	NONE		EE			E.C.	
PROJ#	MD390		PE	TS	10-31-97	DWG. NO. 102632 (sht 1 of 2)	REV ©
NEXT ASSEMBLY							

102632 DWG. NO. REV ©

Assy. CE 1000 Domestic

Item	Qty.	Description		CPN
1	1	Chassis, CE 1000/CE 2000 WELD		133817-1
2	8	6-32 x .312 PNHD TORX TFS SEM BZ		102884-1
3	1	Fan, 120 x 120 x 38mm 24VDC NMB	old	125400-2
3	1	Fan, 120 x 120 x 38mm 24VDC 140CFM	new	133551-1
4	1	Guard, Fan		102649-1
5	4	8-32 x 1.844 FLT HD PH BLK STL		103281-1
6	1	Input Assembly, CE1000 Standard		126773-4
7	4	M2.9 x 9.5mm FLT HD PH TFS BZ AB		103175-1
8	1	IEC Snap IN 15A UL/10A VDE		102650-1
9	1	#10 INT Tooth Lockwasher Zinc		A10094-8
10	1	Wire, 14 GRN #10 Ring x 5 x FLAG		A12119-K050M
11	2	10-32 Hex Nut w/Belle		A10056-3
12	1	35A 400V Bridge Rectifier		C 8752-2
13	4	#10 NYL SHLDR Washer #10-375-A		A10099-7
14	4	10-32 x 2.875 PAN HD PH MSCR		125105-1
15	1	Cover, CE 1000/CE 2000 Top PC		133824-1
16	1	XFMR, CE 1000 120V 60HZ		101180-2
17	1	BRKR, 1 Pole 12A Snap-in		102640-1
18	1	Overlay, CE 1000 Bottom Front		102651-5
19	1	Switch, Rocker SPST 22A CHAS MT		126459-1
20	1	Overlay, CE 1000/CE 2000 Top Front		128284-1
21	2	Knob, CE 1000/CE 2000 Gain Rubberized		102657-1
22	X	Permalock MM-115		S 2217-8



Note: Item 1 is shown with front face plate removed in order to provide clarity.

Assy. CE 1000 PWA & Chassis

Assy. CE 1000 PWA & Chassis

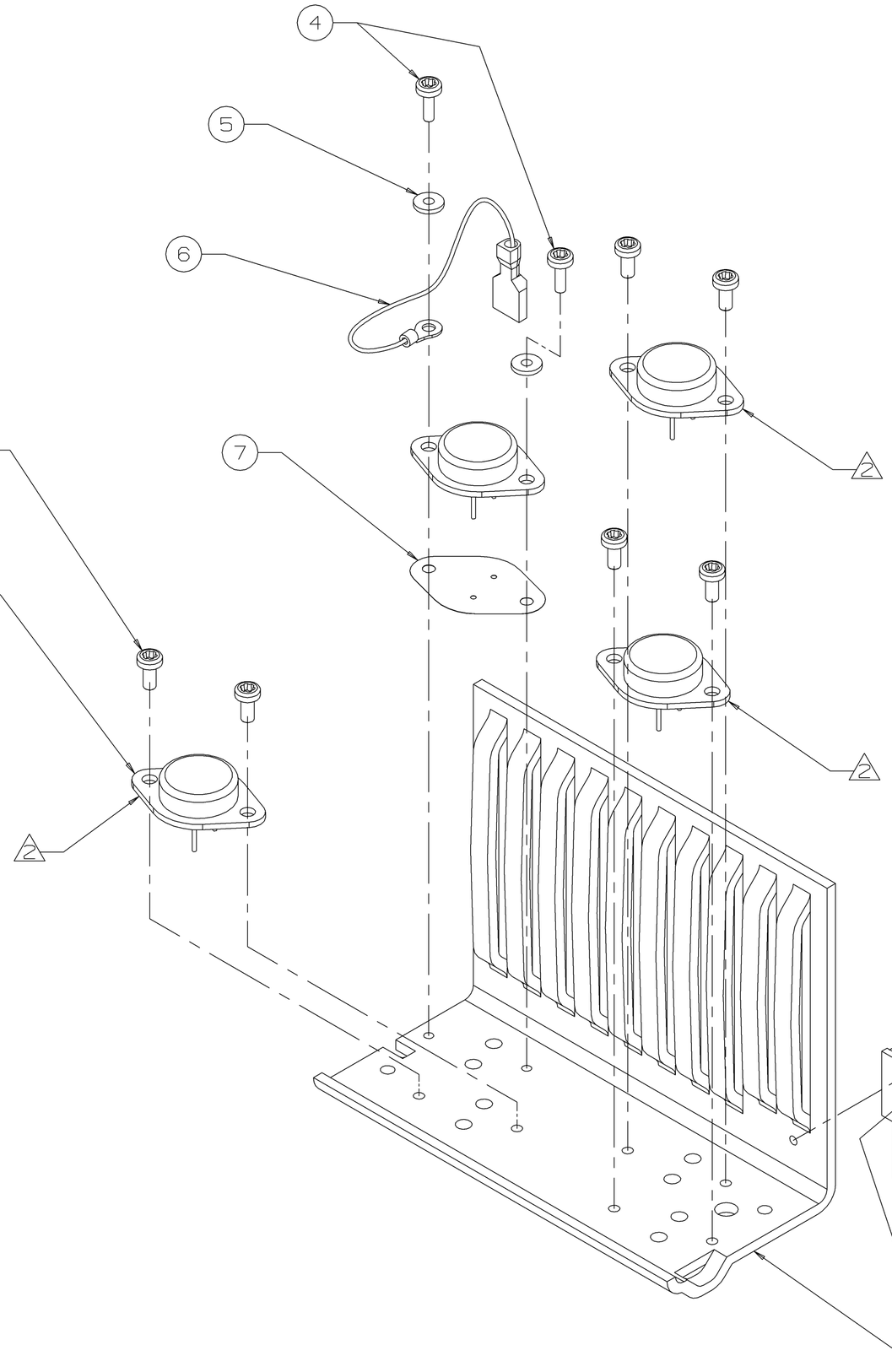
Item	Qty.	Description	CPN
1	1	Chassis, CE 1000/CE 2000 WELD/AP/PC/SP	133817-1
2	1	PWA, CE1000 MAIN	127451-4
3	8	6-32 X .25 Torx Pnhd Nylon	132240-10604
4	1	Blank Plate	126730-1
5	2	Screws	126979-1

See illustration on next page (133695-1).

HS Assy. CE 1000 Isolated Ch.1

DWG NO. 133695-1 | SH 1 | REV (A)

REVISIONS					APPROVALS			
E.C.N.	ZONE	REV	DESCRIPTION	DATE	DWN	CHK	CM	PE
		(A)	INITIAL RELEASE DERIVED FROM 133695-1 REV 1, TITLE WAS CE100.	12-17-01	EDT	N/A	MMG	PJ



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
4	126785-1	10-12 IN LBS.
8	102719-1	12-14 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

(2) APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 9 TO HEATSINK.

(3) APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

ITEM	QTY	DESCRIPTION	PART NO.
(9)	4	NPN, TO-3 MJ21194 PWR	102659-1
(8)	6	6-32 x .312 TORX PAN HD TFS	102719-1
(7)	1	ISOLATOR, TO-3 0.16 GOLD C/W	102577-1
(6)	1	WIRE, BLK 5" 6 RING x .25 FAST	A11389-A050K
(5)	2	SHLDR WSHR, M3 NYLON/GLASS GRN	126017-2
(4)	2	4-40 x .375 #6 PNHD T15 SEM STL Z	126785-1
(3)	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
(2)	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
(1)	1	HEATSINK, CE1000	102606-6

DISTRIBUTION			DWN	EDT	12-17-01
K			CHK	N/A	N/A
CROWN\DWGS			CM	MMG	2/11/02
DWG133695-1.PRT			PE	PJ	12-17-01
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1718 WEST MISHAWAKA RD.
ELKHART, IN 46517
PHONE (219)-294-8000
WWW.CROWNINTL.COM

TITLE
HS ASM, CE1000 ISOLATED CH1

SIZE C | DWG NO. 133695-1 | REV (A)

SCALE 1:1 | PROJ NO. MD390 | SHEET 1 OF 1

HS Assy. CE 1000 Isolated Ch.1

Item	Qty.	Description	CPN
1	1	Heatsink, CE1000	102606-6
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1
5	2	NYL .115 SHLDR WSHR	126017-2
6	1	Wire, BLK 5" 6 RING x .25 FAST	A11389-A050K
7	1	Isolator, TO-3 0.16 GOLD C/W	102577-1
8	6	6-32 x .312 TORX PAN HD TFS	102719-1
9	4	NPN, TO-3 MJ21194 PWR	102659-1

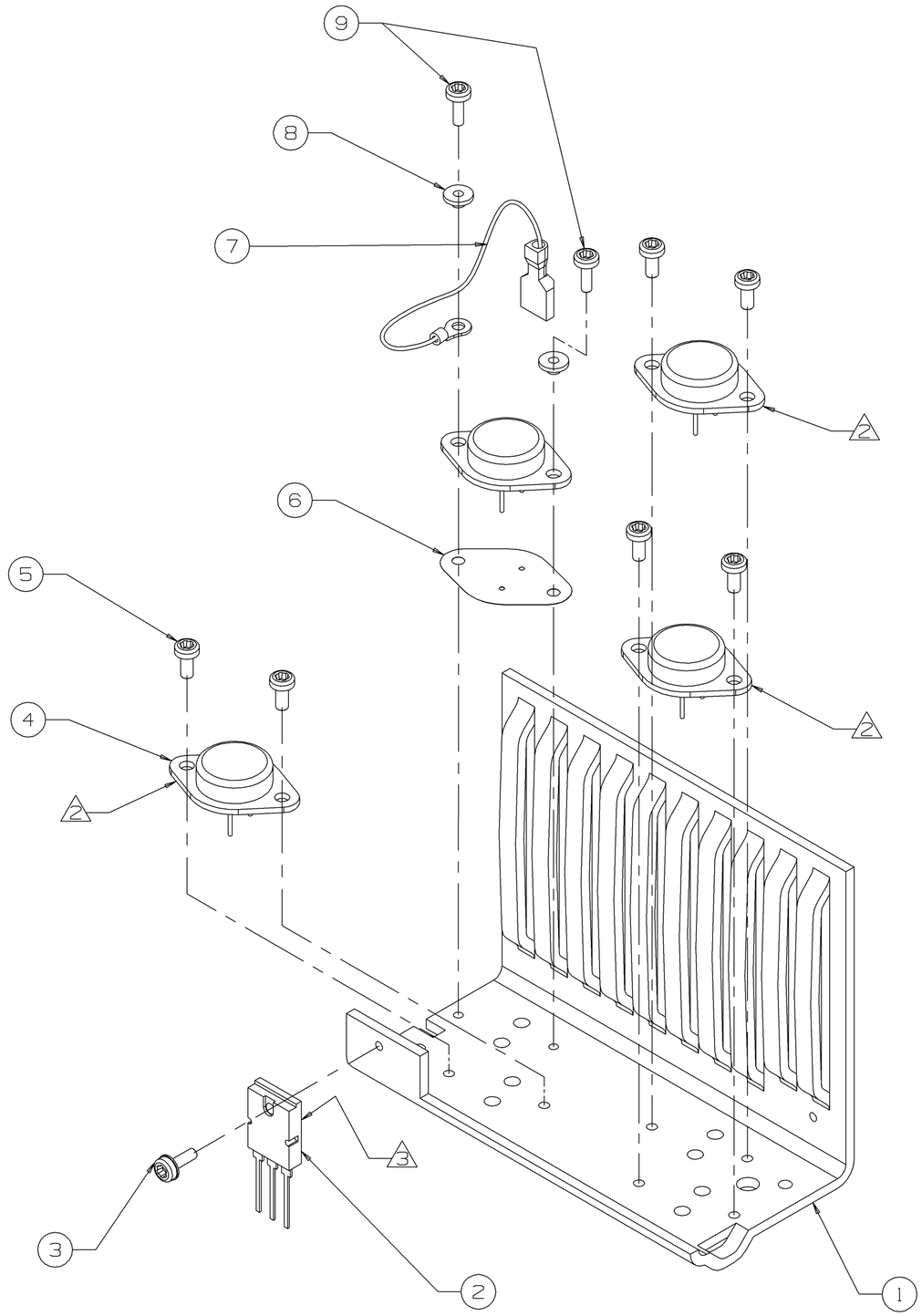
See illustration on next page (102570-3).

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HS Assy. CE 1000 Isolated Ch.2

DWG. NO. 102570-3 REV. C

E.C.	ZONE	REV	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	CM	PE
		A	INITIAL RELEASE FOR PRODUCTION	11-18-98	JAG	ET			TS
01N0777		B	CHANGED DISTUBUTION CODE FROM H TO K	6-21-01	NE	ET	N/A	CB	PJ
01N1439		C	ITEM 8, 126017-2 WAS 126017-1.	11-15-01	EDT	N/A	N/A	MG	PJ
		D							
		E							



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
5	102719-1	12-14 IN LBS.
9	126785-1	10-12 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

△2 APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 4 TO HEATSINK.

△3 APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

ITEM	QTY	DESCRIPTION	C.P.N.
9	2	4-40 x .375 #6 PNHD T15 SEM STL Z	126785-1
8	2	SHLDR WSHR, #4 GLASS/NYLON RED	126017-2
7	1	WIRE, BLK 5" 6 RING x .25 FAST	A11389-A050K
6	1	ISOLATOR, TO-3 0.16 GOLD C/W	102577-1
5	6	6-32 x .312 TORX PAN HD TFS	102719-1
4	4	NPN, TO-3 MJ21194 PWR	102659-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
1	1	HEATSINK, CE1000 PC	102606-7

(C)

PRINTS TO
K

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA ROAD ELKHART, IN 46517 PHONE (219) 294-8000

HS ASSY, CE1000 ISOLATED CH2

DRAWN	JAG	11-18-98	APPROVED BY:			DO NOT SCALE PRINT
CHECKED	ET	11-19-98	MECH ENGR			SUPERSEDES
SCALE	1 = 1		MFG ENGR			E.C.
PROJ#	MD390		PROJ ENGR	TS	11-19-98	DWG. NO. 102570-3 REV. C

CROWN\DWGS | DWG102570-3 | 1,252,254-256

NEXT ASSEMBLY 102139

HS Assy. CE 1000 Isolated Ch.2

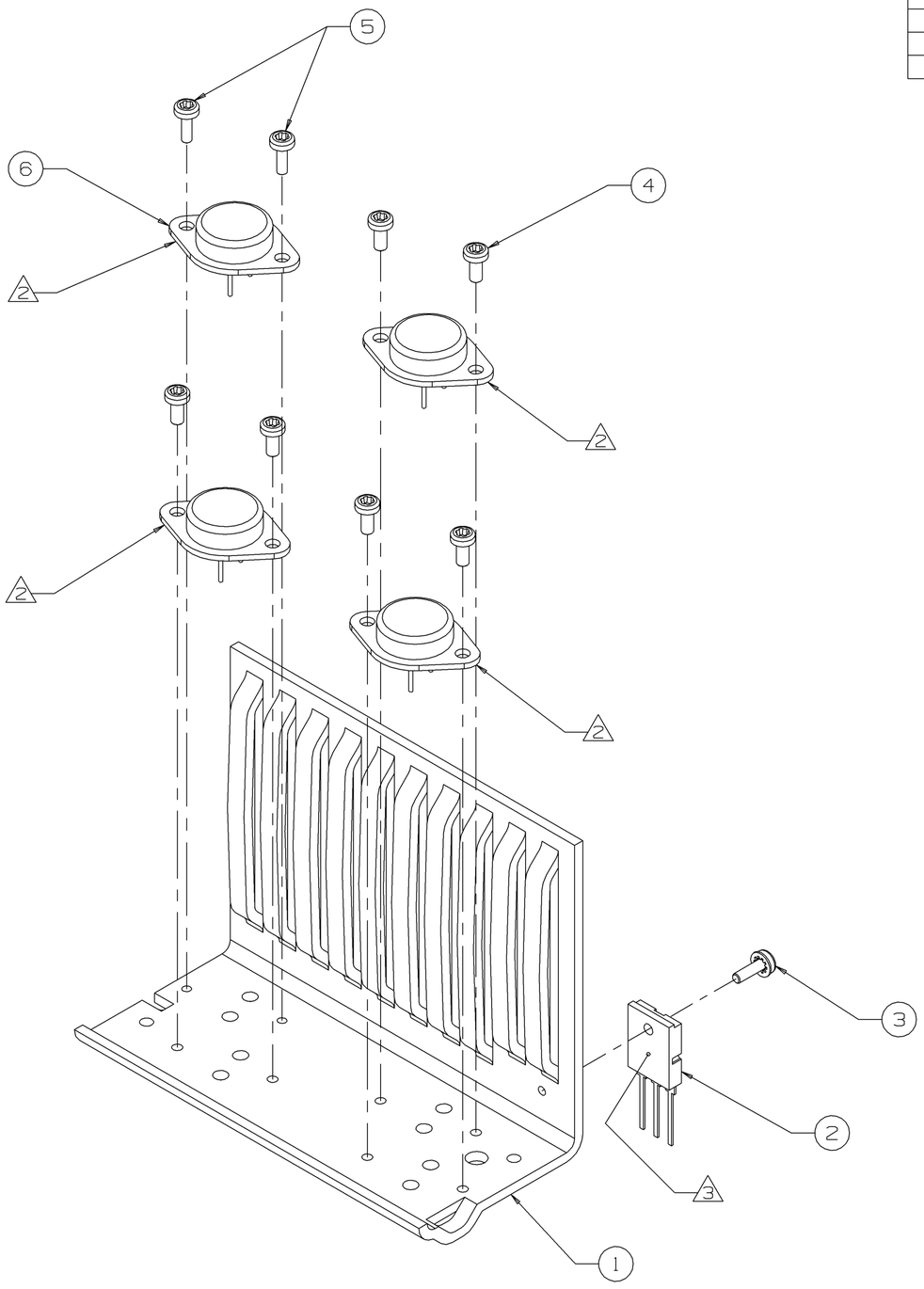
Item	Qty.	Description	CPN
1	1	Heatsink, CE1000	102606-7
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	4	NPN, TO-3 MJ21194 PWR	102659-1
5	6	6-32 x .312 TORX PAN HD TFS	102719-1
6	1	Isolator, TO-3 0.16 GOLD C/W	102577-1
7	1	Wire, BLK 5" 6 RING x .25 FAST	A11389-A050K
8	2	NYL .115 SHLDR WSHR	126017-2
9	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1

See illustration on next page (133696-1).

HS Assy. CE 1000 Non-isolated Ch.1

DWG NO.	133696-1	SH	REV
		1	A

REVISIONS					APPROVALS			
E.C.N.	ZONE	REV	DESCRIPTION	DATE	DWN	CHK	CM	PE
		A	INITIAL RELEASE DERIVED FROM 133696-1 REV 1, TITLE WAS INSULATED.	12-17-01	EDT	N/A	MMG	PJ



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
4	102719-1	12-14 IN LBS.
5	126785-1	10-12 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

(2) APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 6 TO HEATSINK.

(3) APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

ITEM	QTY	DESCRIPTION	PART NO.
6	4	NPN, TO-3 MJ21194 PWR	102659-1
5	2	4-40 X .375 #6 PNHD T15 SEM STL Z	126785-1
4	6	6-32 x .312 TORX PAN HD TFS	102719-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
1	1	HEATSINK, CE1000	102606-6

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DISTRIBUTION			DWN	EDT	12-17-01
K			CHK	N/A	N/A
CROWN\DWGS			CM	MMG	1/14/02
DWG133696-1.PRT			PE	PJ	12-17-01
TOLERANCE UNLESS OTHERWISE SPECIFIED .00 = ±.020 .000 = ±.010 ANGLES = ±1.0°					
DO NOT SCALE DRAWING					

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA RD.
ELKHART, IN 46517
PHONE (219)-294-8000
WWW.CROWNINTL.COM

TITLE
HS ASM, CE1000 NON-ISOLATED CH1

SIZE	DWG NO.	REV
C	133696-1	A

SCALE 1:1	PROJ NO. MD390	SHEET 1 OF 1

HS Assy. CE 1000 Non-isolated Ch.1

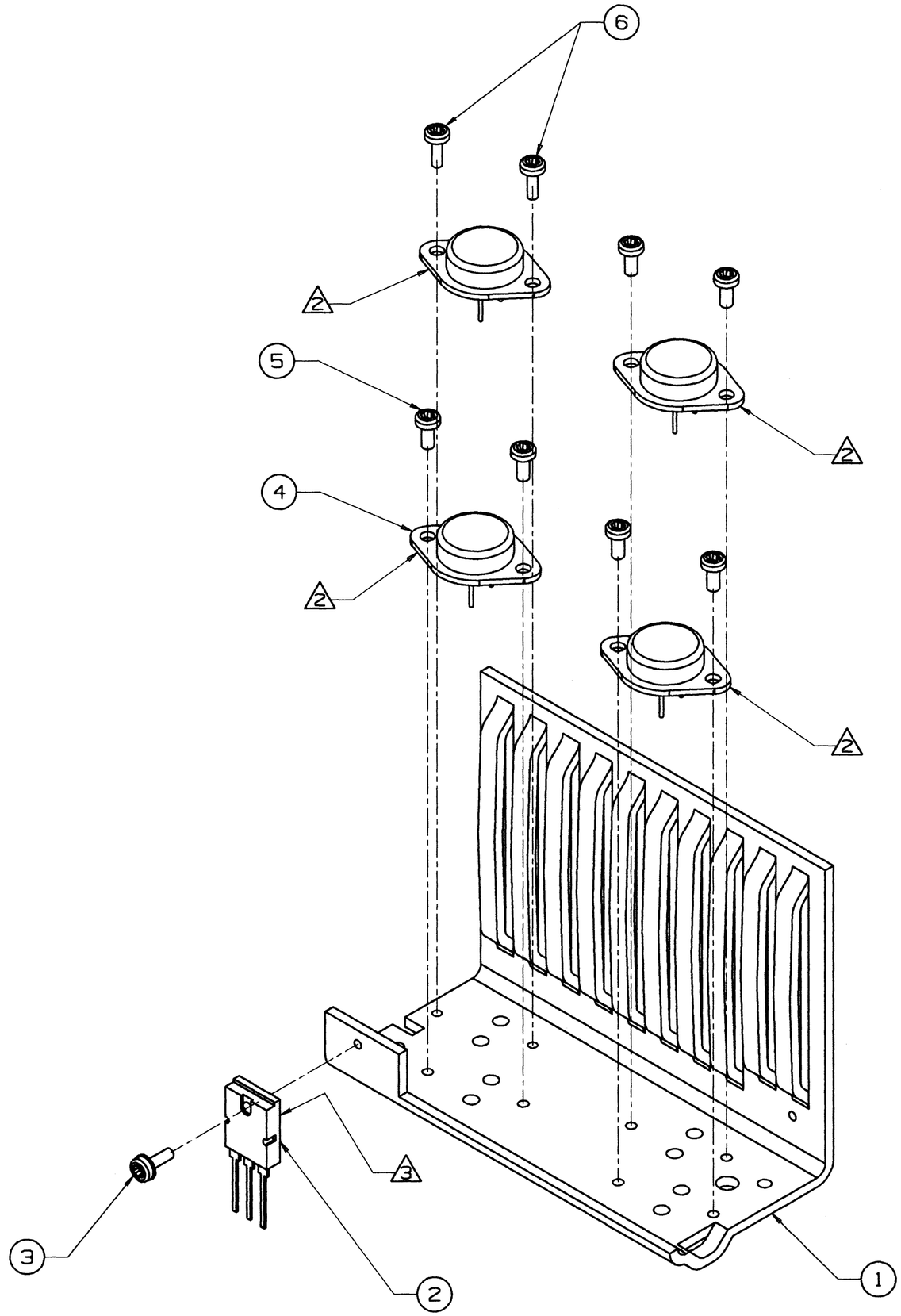
Item	Qty.	Description	CPN
1	1	Heatsink, CE1000	102606-6
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	6	6-32 x .312 TORX PAN HD TFS	102719-1
5	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1
6	4	NPN, TO-3 MJ21194 PWR	102659-1

See illustration on next page (102572-3).

HS Assy. CE 1000 Non-isolated Ch.2

DRG. NO. 102572-3 REV (B)

E.C.	ZONE	REV	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	CM	PE
		(A)	INITIAL RELEASE FOR PRODUCTION	11-19-98	JAG	ET			TS
01N0777		(B)	CHANGED DISTRIBUTION CODE FROM H TO K	6-21-01	NE	ET			
		(C)							
		(D)							
		(E)							



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
5	102719-1	12-14 IN LBS.
6	126785-1	10-12 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

(2) APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 4 TO HEATSINK.

(3) APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

ITEM	QTY	DESCRIPTION	C.P.N.
(6)	2	4-40 X .375 #6 PNHD T15 SEM STL Z	126785-1
(5)	6	6-32 x .312 TORX PAN HD TFS	102719-1
(4)	4	NPN, TO-3 MJ21194 PWR	102659-1
(3)	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
(2)	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
(1)	1	HEATSINK, CE1000 PC	102606-7

PRINTS TO K

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA ROAD ELKHART, IN 46517 PHONE (219) 294-8000

HS ASSY, CE1000 NON-ISOLATED CH2

DRAWN	JAG	11-19-98	APPROVED BY:		DO NOT SCALE PRINT
CHECKED	ET	11-19-98	MECH ENGR		SUPERSEDES
SCALE	1 = 1		MFG ENGR		E.C.
PROJ#	MD390		PROJ ENGR	TS 11-19-98	DWG. NO. 102572-3 REV (B)
NEXT ASSEMBLY	102139				

CROWN\DWGS | DWG102572-3 | 1,252,254-256

HS Assy. CE 1000 Non-isolated Ch.2

Item	Qty.	Description	CPN
1	1	Heatsink, CE1000	102606-7
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	4	NPN, TO-3 MJ21194 PWR	102659-1
5	6	6-32 x .312 TORX PAN HD TFS	102719-1
6	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1

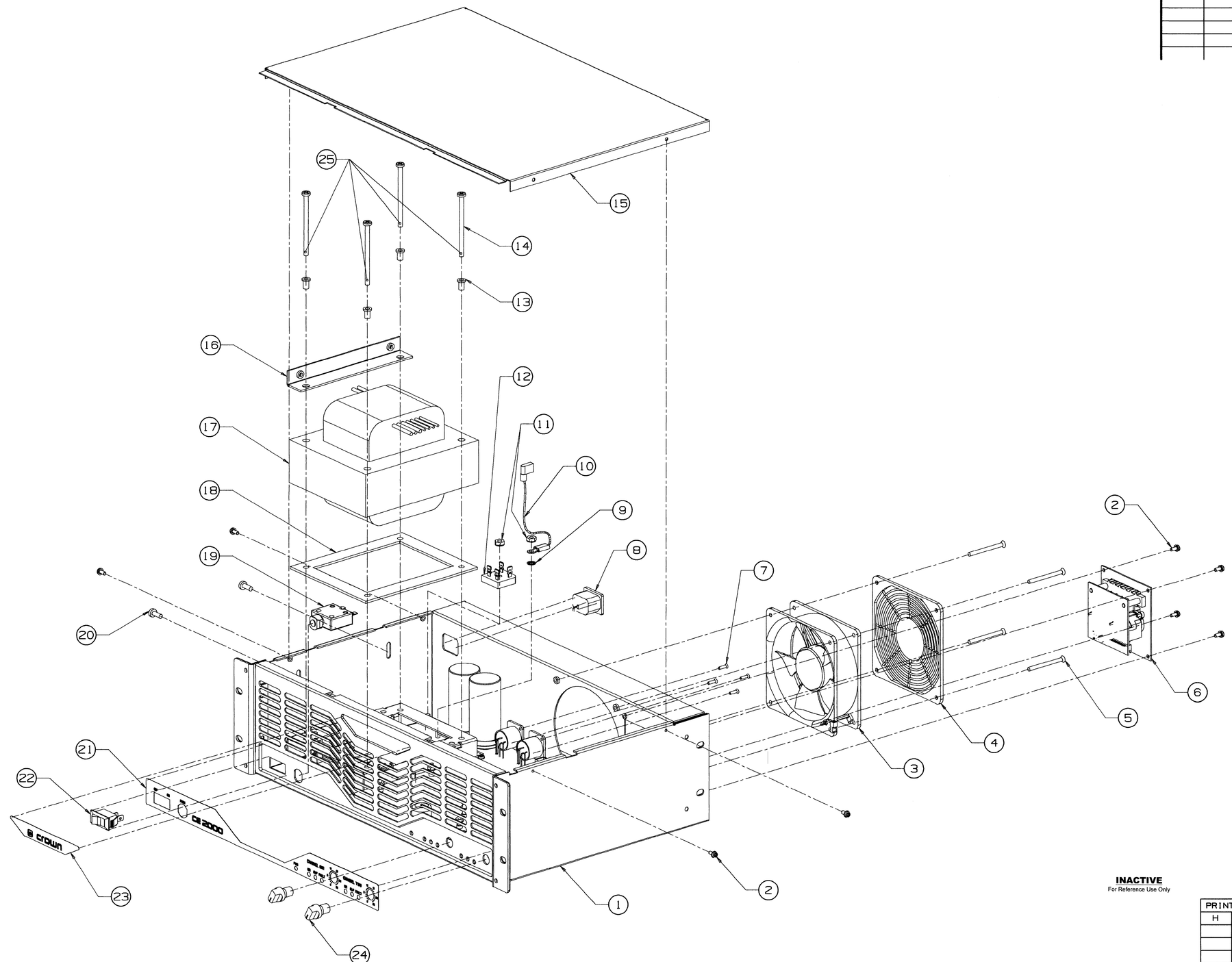
See illustration on next page (102634).

Obtain CPNs (Crown Part Numbers) from the bill of material following the illustration. The CPNs on the illustration may not be up-to-date.

Notes: 1) Item 1 assy. is shown with heatsink assys. removed in order to provide clarity.

Assy. CE 2000 Domestic

E.C.	ZONE	REV	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	EE	PE
		A	INITIAL RELEASE	12-19-97	JAG	JAG			
		B							
		C							
		D							
		E							



RECOMMENDED ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
2	102884-1	16-18 IN LBS.
5	103281-1	7-9 IN LBS.
7	103175-1	4-5 IN LBS.
11	A10056-3	16-18 IN LBS.
14	125105-1	16-18 IN LBS.
20	102720-1	16-18 IN LBS.

NOTES:
1) ITEM 1 ASSY. IS SHOWN WITH HEAT-SINK ASSY'S. REMOVED IN ORDER TO PROVIDE CLARITY.

			ITEM	DESCRIPTION	C.P.N.
		X	25	PERMALOCK MM-115	S 2217-8
		2	24	KNOB, CE1000/CE2000 GAIN RUBBERIZED	102657-1
		1	23	OVERLAY, CE1000/CE2000 TOP FRONT	125349-1
		1	22	SWITCH, ROCKER SPST 22A CHAS MT	C10228-2
		1	21	OVERLAY, CE2000 BOTTOM FRONT	102652-2
		2	20	10-32 x .375 PAN HD PH SEM BZ	102720-1
		1	19	BRKR, 1 POLE 12A SNAP-IN	102640-1
		1	18	GASKET, CE2000 XFMR .125 THK SIL RUBBER	125488-1
		1	17	XFMR, CE2000 120V 60Hz	101181-2
		1	16	BRKT, CE2000 XFMR TOP AP	102679-3
		1	15	COVER, CE1000/CE2000 TOP PC	125178-1
		4	14	10-32 x 2.875 PAN HD PH MSCR	125105-1
		4	13	#10 NYL SHLDR WASHER #10-375-A	A10099-7
		1	12	35A 400V BRIDGE RECTIFIER	C 8752-2
		2	11	10-32 HEX NUT W/BELLE	A10056-3
		1	10	WIRE, 14 GRN #10 RING x 5 x FLAG	A12119-K050M
		1	9	#10 INT TOOTH LOCKWASHER ZINC	A10094-8
		1	8	IEC SNAP IN 15A UL/10A VDE	102650-1
		4	7	M2.9 x 9.5MM FLT HD PH TFS BZ AB	103175-1
		1	6	INPUT ASSY, CE1000 STANDARD	102881-1
		4	5	8-32 x 1.844 FLT HD PH BLK STL	103281-1
		1	4	GAURD, FAN	102649-1
		1	3	FAN, 120 x 120 x 38MM 24VDC 118CFM	125400-1
		8	2	6-32 x .312 PNHD TORX TFS SEM BZ	102884-1
		1	1	ASSY, CE2000 PWA & CHASSIS	125433-1
		X		ASSY, CE2000 DOMESTIC	
-3	-2	-1	PART NO. & QTY.		

INACTIVE
For Reference Use Only

PRINTS TO
H

CROWN\DWGS | DWG102634 | 1,2,252,254-256

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA ROAD ELKHART, IN 46517 PHONE (219) 294-8000

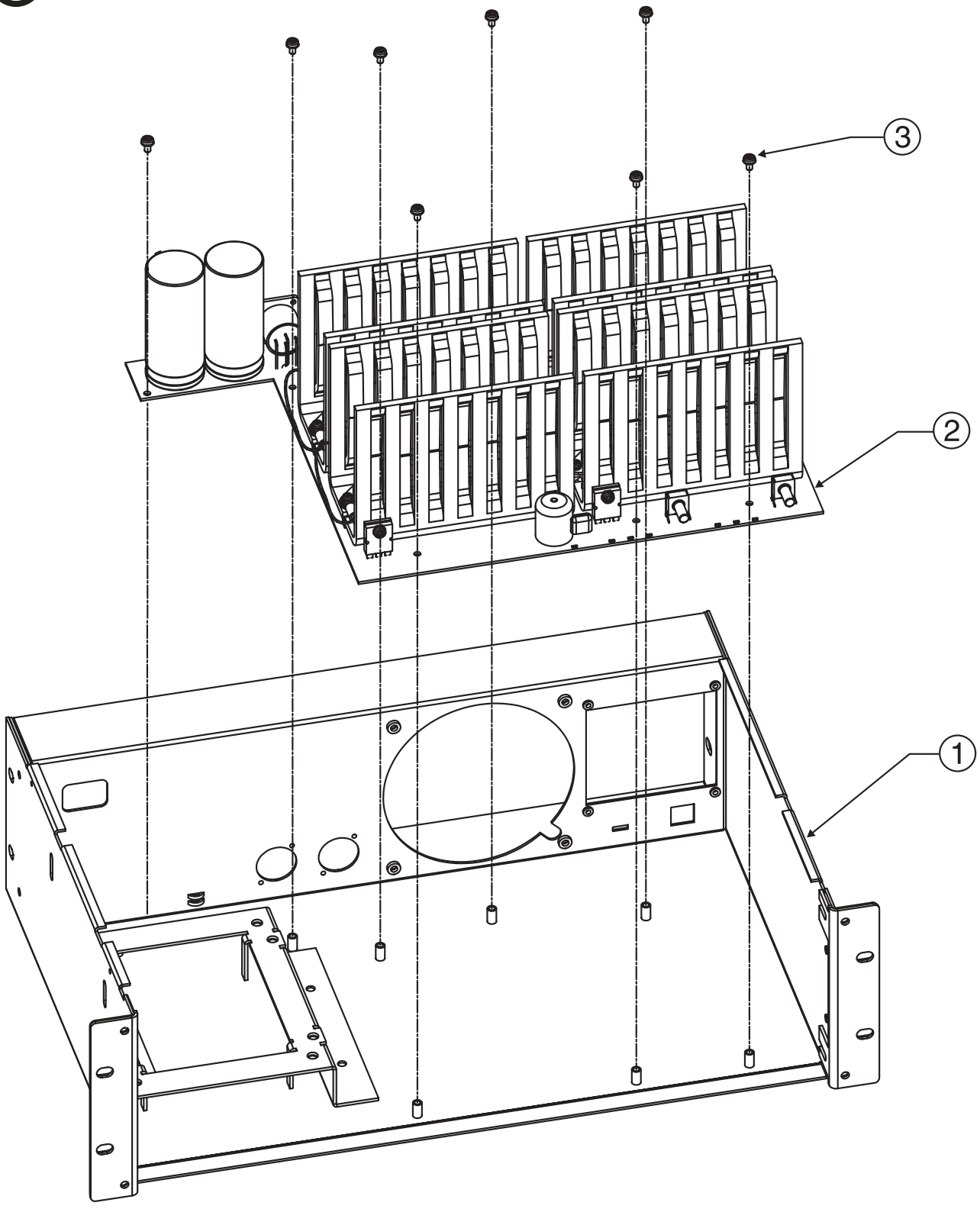
ASSY, CE2000 DOMESTIC

DRAWN	JAG 12-19-97	APPROVED BY:			DO NOT SCALE PRINT
CHECKED	12-19-97	ME	12-19-97		SUPERSEDES
SCALE	NONE	EE			E.C.
PROJ#	MD390	PE	12-19-97	DWG. NO. 102634 (sht 1 of 2)	REV A
NEXT ASSEMBLY					

DWG. NO. 102634 REV A

Assy. CE 2000 Domestic

Item	Qty.	Description	CPN
1	1	Chassis, CE1000/CE2000 WELD	133817-1
2	8	6-32 x .312 PNHD TORX TFS SEM BZ	102884-1
3	1	Fan, 120 x 120 x 38mm 24VDC 118CFM	133551-1
4	1	Guard, Fan	102649-1
5	4	8-32 x 1.844 FLT HD PH BLK STL	103281-1
6	1	Input Assembly, CE1000 Standard	126773-4
7	4	M2.9 x 9.5mm FLT HD PH TFS BZ AB	103175-1
8	1	IEC Snap In 15A UL/10A VDE	102650-1
9	1	#10 INT Tooth Lockwasher Zinc	A10094-8
10	1	Wire, 14 GRN #10 Ring x 5 x FLAG	A12119-K050M
11	2	10-32 Hex Nut w/Belle	A10056-3
12	1	35A 400V Bridge Rectifier	C 8752-5
13	4	#10 NYL SHLDR Washer #10-375-A	A10099-7
14	4	10-32 x 2.875 PAN HD PH MSCR	125105-1
15	1	Cover, CE 1000/CE 2000 Top PC	133824-1
16	1	BRKT, CE 2000 XFMR TOP AP	133820-1
17	1	XFMR, CE 2000 120V 60HZ	101181-3
18	1	Gasket, CE 2000 XFMR .125 THK SIL Rubber	125488-1
19	1	BRKR, 1 Pole 18A Snap-in	102641-1
20	2	10-32 x .375 PAN HD PH SEM BZ	102720-1
21	1	Overlay, CE 2000 Bottom Front	102652-5
22	1	Switch, Rocker SPST 22A CHAS MT	126459-1
23	1	Overlay, CE 1000/CE 2000 Top Front	128284-1
24	2	Knob, CE 1000/CE 2000 Gain Rubberized	102657-1
25	X	Permalock MM-115	S 2217-8



Note: Item 1 is shown with front face plate removed in order to provide clarity.

Assy. CE 2000 PWA & Chassis

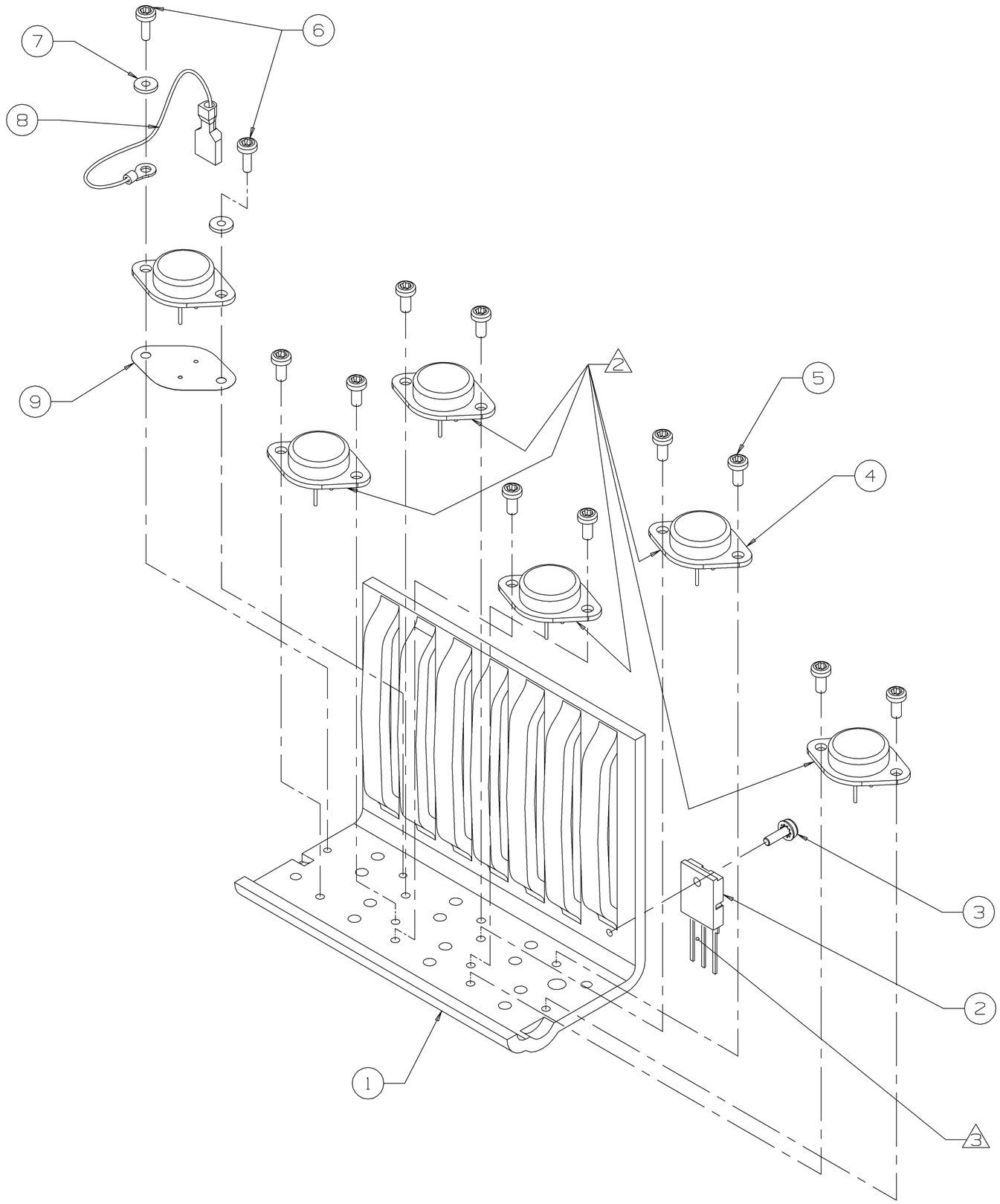
Assy. CE 2000 PWA & Chassis

Item	Qty.	Description	CPN
1	1	Chassis, CE 1000/CE 2000 WELD/AP/PC/SP	125612-2
2	1	PWA, CE 2000 Main	102140-6
3	8	MSCR, 6-32X.25 TORX PNHD NYLON	132240-10604

See illustration on next page (133697-1).

HS Assy. CE 2000 Isolated Ch.1

REVISIONS					APPROVALS			
E.C.N.	ZONE	REV	DESCRIPTION	DATE	DWN	CHK	CM	PE
		A	INITIAL RELEASE DERIVED FROM 133697-1 REV 1, NO CHANGE	12-17-01	EDT	N/A	MMG	PJ



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
5	102719-1	12-14 IN LBS.
6	126785-1	10-12 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

2 APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 4 TO HEATSINK.

3 APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

ITEM	QTY	DESCRIPTION	PART NO.
9	1	ISOLATOR, TO-3 0.16 GOLD C/W	102577-1
8	1	WIRE, BLK 5" 6 RING x .25 FAST	A11389-A050K
7	2	SHLDR WSHR, M3 NYLON/GLASS GRN	126017-2
6	2	4-40 X .375 #6 PNHD T15 SEM STL Z	126785-1
5	10	6-32 x .312 TORX PAN HD TFS	102719-1
4	6	NPN, TO-3 MJ21194 PWR	102659-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
1	1	HEATSINK, CE2000	102607-6

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DISTRIBUTION			DWN	EDT	12-17-01
K			CHK	N/A	N/A
CROWN\DWGS			CM	MMG	2/11/02
DWG133697-1.PRT			PE	PJ	12-17-01
TOLERANCE UNLESS OTHERWISE SPECIFIED .00 = ±.020 .000 = ±.010 ANGLES = ±1.0°					
DO NOT SCALE DRAWING					

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1718 WEST MISHAWAKA RD.
ELKHART, IN 46517
PHONE (219)-294-8000
WWW.CROWNINTL.COM

TITLE
HS ASM, CE2000 ISOLATED CH1

SIZE	DWG NO.	REV
C	133697-1	A

SCALE 7/8:1 | PROJ NO. MD390 | SHEET 1 OF 1

HS Assy. CE 2000 Isolated Ch.1

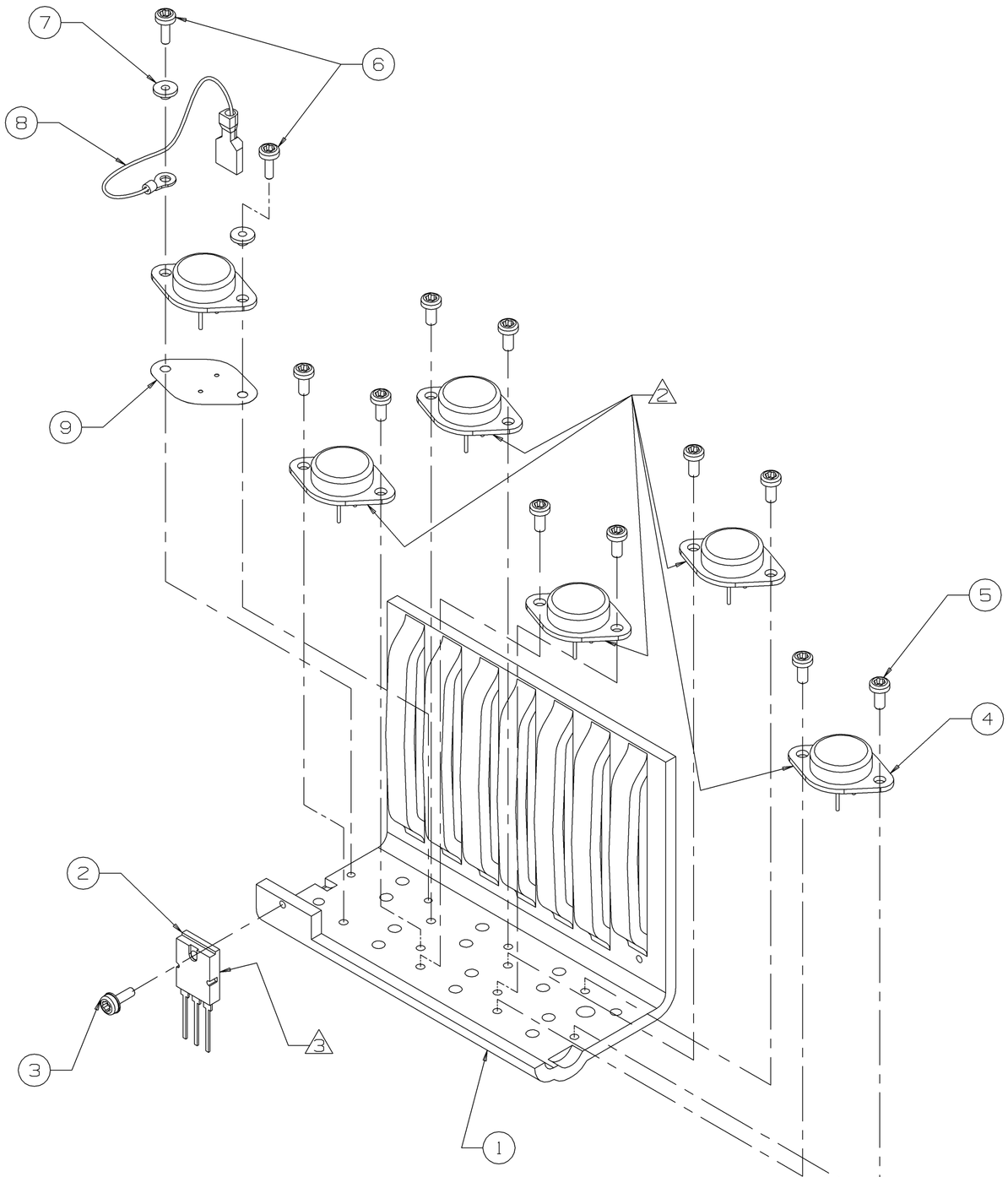
Item	Qty.	Description	CPN
1	1	Heatsink, CE 2000	102607-6
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	6	NPN, TO-3 MJ21194 PWR	102659-1
5	10	6-32 x .312 TORX PAN HD TFS	102719-1
6	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1
7	2	NYL .115 SHLDR WSHR	126017-2
8	1	Wire, BLK 5" 6 RING x .25 FAST	A11389-A050K
9	1	Isolator, TO-3 0.16 GOLD C/W	102577-1

See illustration on next page (102574-3).

HS Assy. CE 2000 Isolated Ch.2

DWG. NO. 102574-3 REV Ⓒ

E.C.	ZONE	REV	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	CM	PE
		Ⓐ	INITIAL RELEASE FOR PRODUCTION	11-19-98	JAG	ET			TS
01N0777		Ⓑ	CHANGED DISTRIBUTION CODE FROM H TO K	6-22-01	NE	ET	N/A	CB	PJ
01N1439		Ⓒ	ITEM 7, 126017-2 WAS 126017-1.	11-15-01	ET	N/A	N/A	MG	PJ
		Ⓓ							
		Ⓔ							



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
5	102719-1	12-14 IN LBS.
6	126785-1	10-12 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

△2 APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 4 TO HEATSINK.

△3 APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

Ⓒ

ITEM	QTY	DESCRIPTION	C.P.N.
⑨	1	ISOLATOR, TO-3 0.16 GOLD C/W	102577-1
⑧	1	WIRE, BLK 5" 6 RING x .25 FAST	A11389-A050K
⑦	2	SHLDR WSHR, #4 GLASS/NYLON RED	126017-2
⑥	2	4-40 x .375 #6 PNHD T15 SEM STL Z	126785-1
⑤	10	6-32 x .312 TORX PAN HD TFS	102719-1
④	6	NPN, TO-3 MJ21194 PWR	102659-1
③	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
②	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
①	1	HEATSINK, CE2000 PC	102607-7

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA ROAD ELKHART, IN 46517 PHONE (219) 294-8000

HS ASSY, CE2000 ISOLATED CH2

PRINTS TO
K

DRAWN	JAG	11-19-98	APPROVED BY:			DO NOT SCALE PRINT
CHECKED	ET	11-19-98	MECH ENGR			SUPERSEDES
SCALE	7/8 = 1		MFG ENGR			E.C.
PROJ#	MD390		PROJ ENGR	TS	11-19-98	DWG. NO. 102574-3 REV Ⓒ

CROWN\DWGS | DWG102574-3 | 1,252,254-256 | NEXT ASSEMBLY 102140

HS Assy. CE 2000 Isolated Ch.2

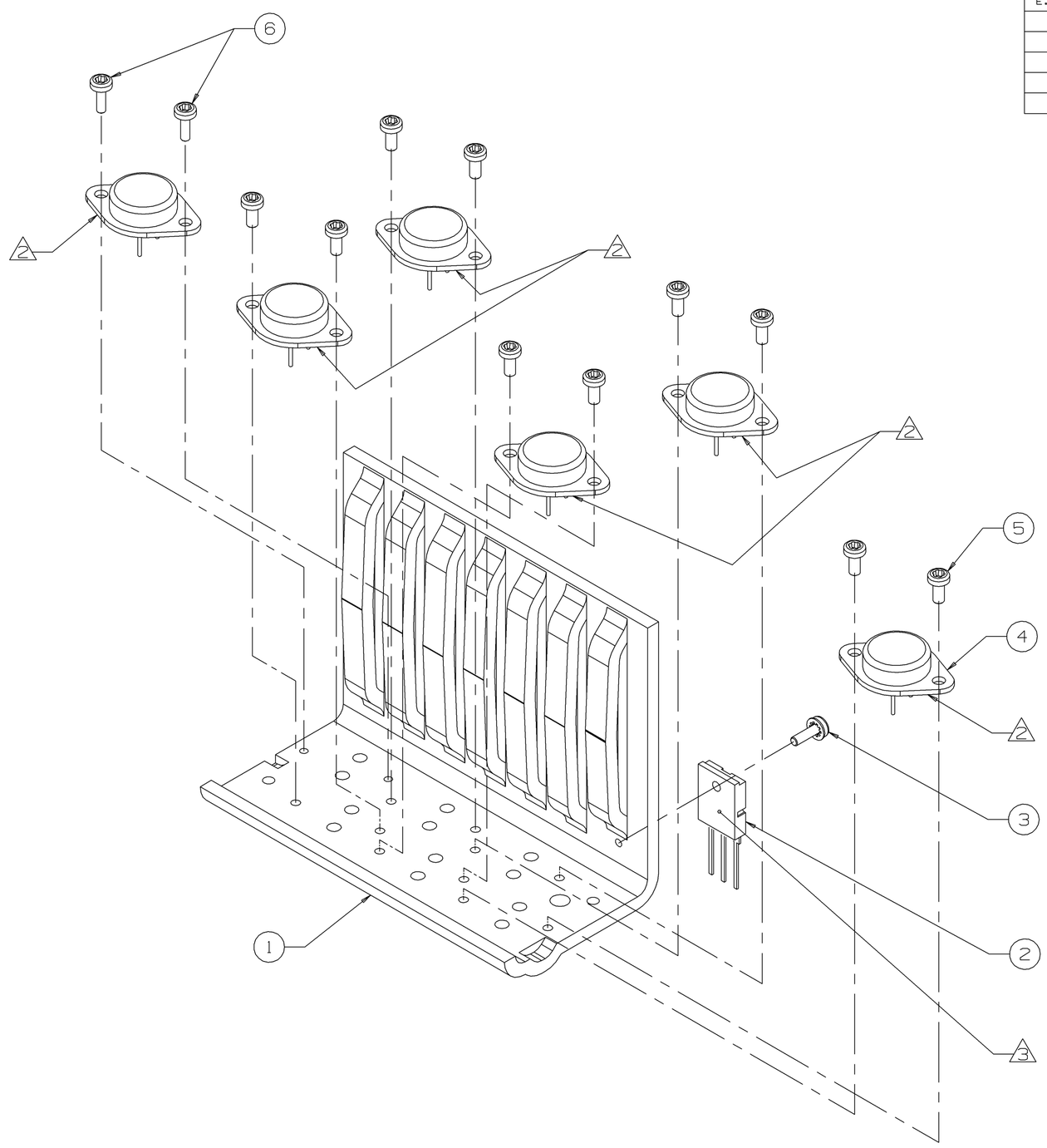
Item	Qty.	Description	CPN
1	1	Heatsink, CE 2000	102607-7
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	6	NPN, TO-3 MJ21194 PWR	102659-1
5	10	6-32 x .312 TORX PAN HD TFS	102719-1
6	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1
7	2	NYL .115 SHLDR WASHER	126017-2
8	1	Wire, BLK 5" 6 RING x .25 FAST	A11389-A050K
9	1	Isolator, TO-3 0.16 GOLD C/W	102577-1

See illustration on next page (133698-1).

HS Assy. CE 2000 Non-isolated Ch.1

DWG NO.	133698-1	SH 1	REV A

REVISIONS					APPROVALS			
E.C.N.	ZONE	REV	DESCRIPTION	DATE	DWN	CHK	CM	PE
		A	INITIAL RELEASE DERIVED FROM 133698-1 REV 1, NO CHANGE	12-17-01	EDT	N/A	MG	PJ



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
5	102719-1	12-14 IN LBS.
6	126785-1	10-12 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

(2) APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 4 TO HEATSINK.

(3) APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

ITEM	QTY	DESCRIPTION	PART NO.
6	2	4-40 x .375 #6 PNHD T15 SEM STL Z	126785-1
5	10	6-32 x .312 TORX PAN HD TFS	102719-1
4	6	NPN, TO-3 MJ21194 PWR	102659-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
1	1	HEATSINK, CE2000	102607-6

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DISTRIBUTION			DWN	EDT	12-17-01
K			CHK	N/A	N/A
CROWN\DWGS			CM	MMG	1/15/02
DWG133698-1.PRT			PE	PJ	12-17-01
TOLERANCE UNLESS OTHERWISE SPECIFIED .00 = ±.020 .000 = ±.010 ANGLES = ±1.0°					
DO NOT SCALE DRAWING					

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA RD.
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TITLE
HS ASM, CE2000 NON-ISOLATED CH1

SIZE	DWG NO.	REV
C	133698-1	A

SCALE 1:1	PROJ NO. MD390	SHEET 1 OF 1

HS Assy. CE 2000 Non-isolated Ch.1

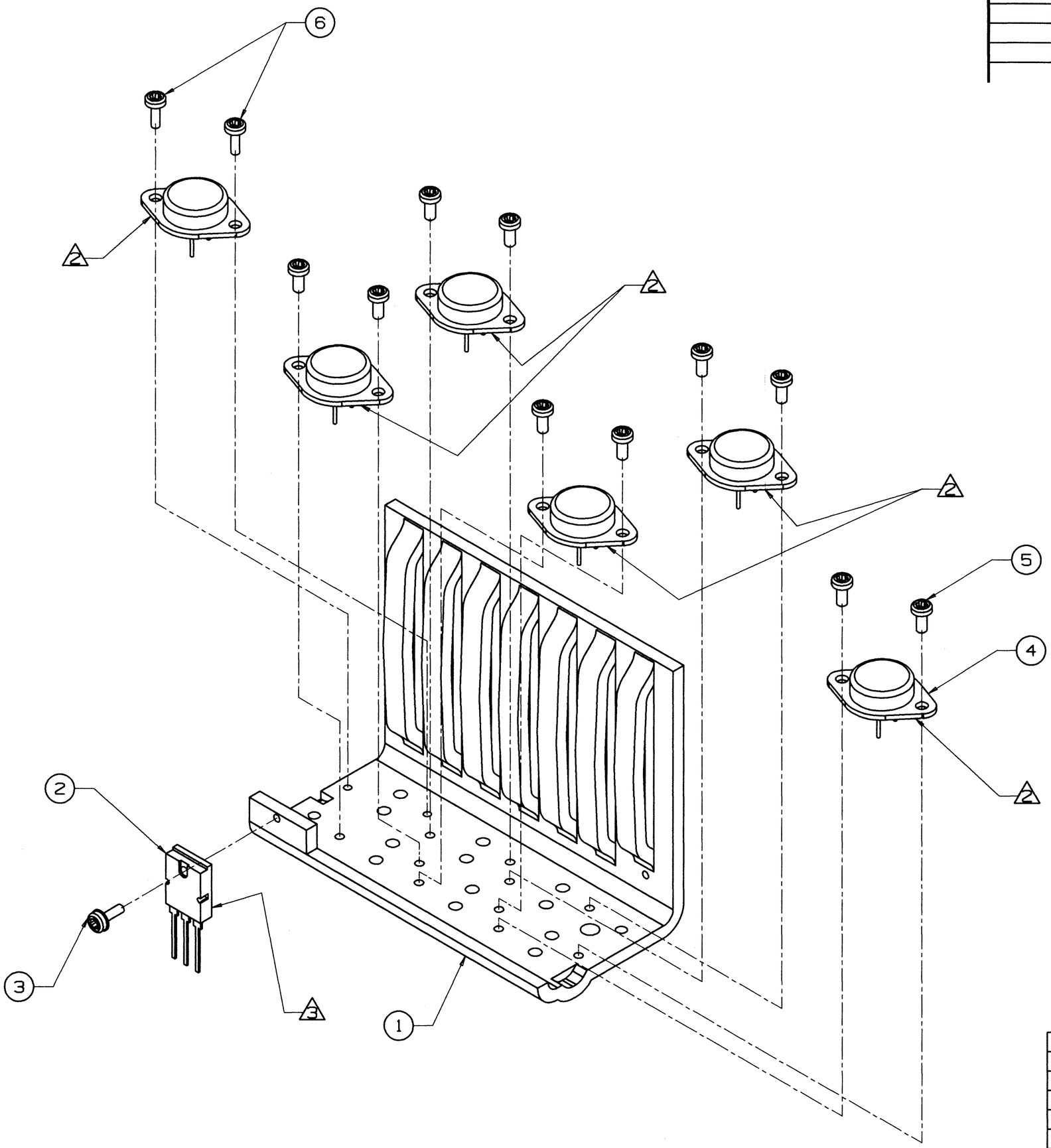
Item	Qty.	Description	CPN
1	1	Heatsink, CE 2000	102607-6
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	6	NPN, TO-3 MJ21194 PWR	102659-1
5	10	6-32 x .312 TORX PAN HD TFS	102719-1
6	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1

See illustration on next page (102576-3).

HS Assy. CE 2000 Non-isolated Ch.2

DWG. NO. 102576-3 REV (B)

E.C.	ZONE	REV	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	CM	PE
		(A)	INITIAL RELEASE FOR PRODUCTION	11-19-98	JAG	ET			TS
01N0777		(B)	DISTRIBUTION CODE WAS "H".	6-22-01	ET	WE	NA	CB	MY
		(C)							
		(D)							
		(E)							



ASSEMBLY TORQUES

ITEM No.	C.P.N.	TORQUE SETTINGS
3	103233-1	12-14 IN LBS.
5	102719-1	12-14 IN LBS.
6	126785-1	10-12 IN LBS.

NOTES:
1) ITEM 1 IS SHOWN SECTIONED IN ORDER TO PROVIDE CLARITY.

(2) APPLY WHITE GREASE C.P.N. S 2162-6 ON MATING SURFACE OF ITEM 4 TO HEATSINK.

(3) APPLY CLEAR GREASE C.P.N. S 2422-4 ON MATING SURFACE OF ITEM 2 TO HEATSINK.

ITEM	QTY	DESCRIPTION	C.P.N.
(6)	2	4-40 x .375 #6 PNHD T15 SEM STL Z	126785-1
(5)	10	6-32 x .312 TORX PAN HD TFS	102719-1
(4)	6	NPN, TO-3 MJ21194 PWR	102659-1
(3)	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
(2)	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
(1)	1	HEATSINK, CE2000 PC	102607-7

PRINTS TO: K

CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA ROAD ELKHART, IN 46517 PHONE (219) 294-8000

HS ASSY, CE2000 NON-ISOLATED CH2

DRAWN	JAG	11-19-98	APPROVED BY:		DO NOT SCALE PRINT
CHECKED	ET	11-19-98	MECH ENGR		SUPERSEDES
SCALE	1 = 1		MFG ENGR		E.C.
PROJ#	MD390		PROJ ENGR	TS 11-19-98	DWG. NO. 102576-3 REV (B)
NEXT ASSEMBLY 102140					

CROWN\DWGS | DWG102576-3 | 1,252,254-256

HS Assy. CE 2000 Non-isolated Ch.2

Item	Qty.	Description	CPN
1	1	Heatsink, CE 2000	102607-7
2	1	2SC5242 NPN 230V 15A 30MHZ	103200-1
3	1	M3 x 10 TFS 6-32 TORX PNHD SEM BZ	103233-1
4	6	NPN, TO-3 MJ21194 PWR	102659-1
5	10	6-32 x .312 TORX PAN HD TFS	102719-1
6	2	4-40 x .437 TORX PAN HD TFS SEM	126785-1

Assy. CE 1000 Domestic (using PWA 102139-8)
Refer to drawing on page 6-2.

Item	Qty.	Description		CPN
1	1	Assy, CE1000 PWA & Chassis		
	1	PWA, CE1000 Main/Input		102139-8
	1	Chassis, CE1000/CE2000	125612-3	[NOW 133817-1]
2	8	Screw, 6-32X.312 Torx Pnhd Sem		103433-70605
3	1	Fan, 120 x 120 x 38mm 24VDC 140CFM		133551-1
4	1	Guard, Fan		102649-1
5	4	8-32 x 1.844 FLT HD PH BLK STL		103281-1
6	1	Asm, CE1000/CE2000 Input		126773-3
7	4	M2.9 x 9.5mm FLT HD PH TFS BZ AB		103175-1
8	1	IEC Snap IN 15A UL/10A VDE		102650-1
9	1	[was #10 INT Tooth Lockwasher Zinc		[was A10094-8]
10	1	Wire, 14 GRN Flagx5xring		A12119-M050N
11	2	8-32 Hex Nut w/Belle		A11056-2
12	1	35A 400V Bridge Rectifier		C 8752-2
13	4	#10 NYL SHLDR Washer #10-375-A		A10099-7
14	4	10-32 x 2.875 PAN HD PH MSCR		125105-1
15	1	[was Cover, CE 1000/CE 2000 Top PC}		[was 125178-1]
16	1	XFMR, CE 1000 120V 60HZ		101180-2
17	1	BRKR, 1 Pole 12A Snap-in		102640-1
18	1	[was Overlay, CE 1000 Bottom Front]		[was 102651-2]
19	1	Switch, Rocker SPST 22A CHAS MT		C10228-2
20	1	[was Overlay, CE 1000/CE 2000 Top Front]		[was 125349-1]
21	2	[was Knob, CE 1000/CE 2000 Gain Rubberized]		[was 102657-1]
22	X	[was Permalock MM-115]		[was S 2217-8]

Assy. CE 1000 Domestic (using PWA 102139-8) continued
Parts NOT shown in drawing on page 6-2:

Item	Qty.	Description	CPN
	1	Wire, 14 blk fast fast x 4.0 x flag	A11384-C040M
	1	Wire, 14 blk fast x 14 x tab	A11384-C140N
	1	Wire, 14 blk flag x 14 x flag	A11384M140M
	1	Wire, 14 grn #8ring x 5 x flag	A12119-N050M
	3	Tie, cable 4" or more 18 lb	C 1811-6
	X	Threadlocker, Titan 7242 50 ML	S 2217-8
	4	Screw, 6-32X.312 Torx Pnhd Sem	103415-70605
	8	Mscr, 6-32x.25 Torx Pn Hd Sem	103435-70604
	1	Serffan 120x120x38mm24VDC118CFM	125400-1
	1	Chas, CE1000 PWA &	125432-4
	1	Clip, D390 Breaker Mounting	125476-2
	1	Switch, rocker SPST 22A Chas Mt	126459-1

Assy. CE 1000A Domestic (using PWA 102139-8)
Refer to drawing on page 6-2.

Item	Qty.	Description	CPN
1	1	Assy, CE1000 PWA & Chassis	
	1	PWA, Main/input CE1000A	127451-4
	1	Chas, CE1000A/CE2000A Charcoal	126729-5
2	8	[was Screw, 6-32X.312 Torx Pnhd Sem]	[was103433-70605]
3	1	Fan, 120 x 120 x 38mm 24VDC 140CFM	133551-1
4	1	Guard, Fan	102649-1
5	4	8-32 x 1.844 FLT HD PH BLK STL	103281-1
6	1	Asm, CE1000/2000A Input	126773-4
7	4	M2.9 x 9.5mm FLT HD PH TFS BZ AB	103175-1
8	1	IEC Snap IN 15A UL/10A VDE	102650-1
9	1	[was #10 INT Tooth Lockwasher Zinc	[was A10094-8]
10	1	Wire, 14 GRN Flagx5xring	A12119-M050N
11	2	8-32 Hex Nut w/Belle	A11056-2
12	1	35A 400V Bridge Rectifier	C 8752-2
13	4	#10 NYL SHLDR Washer #10-375-A	A10099-7
14	4	10-32 x 2.875 PAN HD PH MSCR	125105-1
15	1	[was Cover, CE 1000/CE 2000 Top PC}	[was 125178-1]
16	1	XFMR, CE 1000 120V 60HZ	101180-2
17	1	BRKR, 1 Pole 12A Snap-in	102640-1
18	1	[was Overlay, CE 1000 Bottom Front]	[was 102651-2]
19	1	Switch, Rocker SPST 22A Chas Mt	126459-1
20	1	[was Overlay, CE 1000/CE 2000 Top Front]	[was 125349-1]
21	2	[was Knob, CE 1000/CE 2000 Gain Rubberized]	[was 102657-1]
22	X	[was Permalock MM-115]	[was S 2217-8]

Assy. CE 1000A Domestic (using PWA 102139-8) continued
Parts NOT shown in drawing on page 6-2:

Item	Qty.	Description	CPN
	1	Wire, 14 blk fast fast x 4.0 x flag	A11384-C040M
	1	Wire, 14 blk fast x 14 x tab	A11384-C140N
	1	Wire, 14 blk flag x 14 x flag	A11384M140M
	1	Wire, 14 grn #8ring x 5 x flag	A12119-N050M
	3	Tie, cable 4" or more 18 lb	C 1811-6
	X	Threadlocker, Titan 7242 50 ML	S 2217-8
	8	Mscr, 6-32x.25 Torx Pn Hd Sem	103435-70604
	1	Pnl, CD output blank	126730-1
	1	Clip, D390 Breaker Mounting	125476-2
	1	.25OD x .18ID x 1.062 AL SPCR	A10100-50
	1	8-32x3/8 pnhd T15 Thdrol sem b	126979-1
	1	6-32x.31 pnhd acr ph tr isem b	127436-1
	1	Serf PWA, CE1000 Main/input	02129-11

Assy. CE 2000 Domestic (Using PWA 102140-8)
Refer to diagram on page 6-14.

Item	Qty.	Description	CPN
1	1	Assy, CE 2000 PWA & Chassis	
	1	PWA, CE2000 Main/input	102140-8
	1	Chassis, CE1000/CE2000	125612-3
2	8	[was 6-32 x .312 PNHD TORX TFS SEM BZ]	[was 102884-1]
3	1	Fan, 120 x 120 x 38mm 24VDC 140CFM	133551-1
4	1	Guard, Fan	102649-1
5	4	8-32 x 1.844 FLT HD PH BLK STL	103281-1
6	1	Asm, CE1000/CE2000 input	126773-3
7	4	M2.9 x 9.5mm FLT HD PH TFS BZ AB	103175-1
8	1	IEC Snap In 15A UL/10A VDE	102650-1
9	1	[was #10 INT Tooth Lockwasher Zinc]	[was A10094-8]
10	1	[was Wire, 14 GRN #10 Ring x 5 x FLAG]	[was A12119-K050M]
11	2	8-32 Hex Nut w/Belle	A11056-2
12	1	35A 400V Bridge Rectifier	C 8752-2
13	4	#10 NYL SHLDR Washer #10-375-A	A10099-7
14	4	10-32 x 2.875 PAN HD PH MSCR	125105-1
15	1	[was Cover, CE 1000/CE 2000 Top PC]	[was 125178-1]
16	1	BRKT, CE 2000 XFMR TOP AP	102679-3
17	1	XFMR, CE2K 120V 60Hz w/bellybnd	101181-3
18	1	Gasket, CE 2000 XFMR .125 THK SIL Rubber	125488-1
19	1	BRKR, 1 Pole 18A Snap-in	102641-1
20	2	10-32 x .375 PAN HD PH SEM BZ	102720-1
21	1	[was Overlay, CE 2000 Bottom Front]	[was 102652-2]
22	1	Switch, Rocker SPST 22A CHAS MT	126459-1
23	1	[was Overlay, CE 1000/CE 2000 Top Front]	[was 125349-1]
24	2	[was Knob, CE 1000/CE 2000 Gain Rubberized]	[was 102657-1]
25	X	Permalock MM-115	S 2217-8

Assy. CE 2000 Domestic (using PWA 102140-8) continued
Parts NOT shown in drawing on page 6-14:

Item	Qty.	Description	CPN
	1	Wire, 14 blk fast fast x 4.0 x flag	A11384-C040M
	1	Wire, 14 blk fast x 14 x tab	A11384-C140N
	1	Wire, 14 blk flag x 14 x flag	A11384M140M
	1	Wire, 14 grn #8ring x 5 x flag	A12119-N050M
	3	Tie, cable 4" or more 18 lb	C 1811-6
	X	Threadlocker, Titan 7242 50 ML	S 2217-8
	8	Mscr, 6-32x.25 Torx Pn Hd Sem	103435-70604
	1	Clip, D390 Breaker Mounting	125476-2
	1	375 x 205 x 250 nylon spacer	A10101-18
	1	Wire, 14 grn flagx5xring	A12119-M050N
	4	Screw, 6-32x.312 torx pnhd sem	103415-70605
	4	Sems, 6-32x.31 torx pnhd star	103433-70605
	1	Serffan120x120x38mm24VDC118CFM	125400-1
	1	Chas, CE2000 PWA &	125433-4

Assy. CE 2000A Domestic (Using PWA 127452-4)

Refer to diagram on page 6-14.

Item	Qty.	Description	CPN
1	1	Assy, CE 2000A PWA & Chassis	
	1	PWA, Main/input CE2000	127452-4
	1	Chas, CE1000A/CE20000A charcoal	126729-5
2	8	[was 6-32 x .312 PNHD TORX TFS SEM BZ]	[was 102884-1]
3	1	Fan, 120 x 120 x 38mm 24VDC 140CFM	133551-1
4	1	Guard, Fan	102649-1
5	4	8-32 x 1.844 FLT HD PH BLK STL	103281-1
6	1	Asm, CE1000/2000A input	126773-4
7	4	M2.9 x 9.5mm FLT HD PH TFS BZ AB	103175-1
8	1	IEC Snap In 15A UL/10A VDE	102650-1
9	1	[was #10 INT Tooth Lockwasher Zinc]	[was A10094-8]
10	1	[was Wire, 14 GRN #10 Ring x 5 x FLAG]	[was A12119-K050M]
11	2	8-32 Hex Nut w/Belle	A11056-2
12	1	35A 400V Bridge Rectifier	C 8752-2
13	4	#10 NYL SHLDR Washer #10-375-A	A10099-7
14	4	10-32 x 2.875 PAN HD PH MSCR	125105-1
15	1	[was Cover, CE 1000/CE 2000 Top PC]	[was 125178-1]
16	1	BRKT, CE 2000 XFMR TOP AP	102679-3
17	1	XFMR, CE2K 120V 60Hz w/bellybnd	101181-3
18	1	Gasket, CE 2000 XFMR .125 THK SIL Rubber	125488-1
19	1	BRKR, 1 Pole 18A Snap-in	102641-1
20	2	10-32 x .375 PAN HD PH SEM BZ	102720-1
21	1	[was Overlay, CE 2000 Bottom Front]	[was 102652-2]
22	1	Switch, Rocker SPST 22A CHAS MT	126459-1
23	1	[was Overlay, CE 1000/CE 2000 Top Front]	[was 125349-1]
24	2	[was Knob, CE 1000/CE 2000 Gain Rubberized]	[was 102657-1]
25	X	Permalock MM-115	S 2217-8

Assy. CE 2000A Domestic (using PWA 127452-4) continued
Parts NOT shown in drawing on page 6-14:

Item	Qty.	Description	CPN
	1	Wire, 14 blk fast fast x 4.0 x flag	A11384-C040M
	1	Wire, 14 blk fast x 14 x tab	A11384-C140N
	1	Wire, 14 blk flag x 14 x flag	A11384M140M
	1	Wire, 14 grn #8ring x 5 x flag	A12119-N050M
	3	Tie, cable 4" or more 18 lb	C 1811-6
	X	Threadlocker, Titan 7242 50 ML	S 2217-8
	8	Mscr, 6-32x.25 Torx Pn Hd Sem	103435-70604
	1	Clip, D390 Breaker Mounting	125476-2
	1	375 x 205 x 250 nylon spacer	A10101-18
	1	Wire, 14 grn flagx5xring	A12119-M050N
	1	.25OD x .18ID x 1.062 AL spcr	A10100-50
	1	Pnl, CD output blank	126730-1
	2	8-32x3/8 pnhd T15 thdrol sem b	126979-1
	4	6-32x.31 pnhd acr ph tr isem b	127436-1
	1	7.5: cable tie&clamp	C 1813-2
	1	Serf PWA, CE2000 Main/input	102140-11

7 Module and Schematic Information

7.1 General Information

Since the introduction of the CE series family of amplifiers there have been several updates and revisions. Many of these changes called for new modules. The following pages list all modules used as of the printing of this manual, along with suggested service replacements for obsolete modules where applicable. Call the Crown Technical Support Group if you require a parts list or schematic for a module not included in this manual.

The schematics referenced and provided are representative only. There may be slight variations between amplifier to amplifier. These schematics are intended to be used for troubleshooting purposes only.

Note on circuit board designations: Crown circuit boards are referenced with a PWA and/or PWB part number. PWA stands for Printed Wire Assembly. This is the completed circuit board with all components assembled. PWB stands for Printed Wire Board. This is the circuit board only, without components.

7.2 CE-1000, UT-1010, M-120, S2

7.2.1 Main PWAs:

102139-5
Main PWA built on 102138-5 PWB. Used only in early CE-1000. Use 127451-4 as service replacement.

102139-6
Main PWA built on 102138-6 PWB. Replaced 102139-5. Use 127451-4 as service replacement.

102139-8
Main PWA built on 102138-8 PWB. Replaced 102138-6. First main module with sensitivity switch. Use 127451-4 as service replacement.

102139-9
Main PWA built on 102138-9 PWB. Used only in export models. Added 0.775V sensitivity. Use 127451-4 as service replacement.

102139-11
Main PWA built on 102138-9 PWB. Used only in export models. Includes bootstrap update. Use 127451-4 as service replacement.

127451-4
Special service replacement PWA. Used as replacement for all PWAs. Comes with other assortment of parts which may need to be replaced in the amplifier depending on version of original main PWA. (refer to instruction sheet shipped with PWA).

127353-1
Main PWA built on 102138-9 PWB. Added 0.775V sensitivity. Use 127451-4 as service replacement.

127353-2
Main PWA built on 102138-9 PWB. Includes bootstrap update. Use 127451-4 as service replacement.

7.2.2 Input PWA:

102689
Original input PWA built on 102688 PWB. Included sensitivity switch.

126883
Input PWA built on 127004 PWB. Used with main PWAs starting with 102139-8.Sensitivity switch was removed, and moved to the main PWA. Use 127049-1 as service replacement, which is PWA 126883 with new faceplate.

7.2.3 Schematic Diagrams

Main PWA

For main PWAs 102139-5 or 102139-6 refer to schematic 102141 F.

For main PWA 102139-8 refer to schematic 102141 J.

For main PWA 102139-9 refer to schematic 102141 L.

For main PWA 127321-1 refer to schematic 102141 M.

For main PWAs 127353-1 or 127353-2 refer to schematic 102141 M.

Input Module

For input PWA 102689 refer to schematic 102567.

For input PWA 126883 refer to schematic 127014.

7.3 CE-1000A

7.3.1 Main/Input PWA:

127451-4
Main/input PWA built on 127450-1 PWB.

7.3.2 Schematic Diagrams

Main PWA

For main PWA 127451-4 refer to schematic 127451-4.

7.4 CE-2000, UT-2020, M-240, S3

7.4.1 Main PWA:

102140-5

Main PWA built on 102138-5 PWB. Used only in early CE-2000. Use 127452-4 as service replacement.

102140-6

Main PWA built on 102138-6 PWB. Replaced 102139-5. Use 127452-4 as service replacement.

102140-8

Main PWA built on 102138-8 PWB. Replaced 102138-6. First main PWA with sensitivity switch. Use 127452-4 as service replacement.

102140-9

Main PWA built on 102138-9 PWB. Added 0.775V sensitivity. Used only in export models. Use 127452-4 as service replacement.

102140-11

Main PWA built on 102138-9 PWB. Used only in export models. Includes bootstrap update. Use 127452-4 as service replacement.

127452-4

Special service replacement PWA. Used as replacement for all PWA. Comes with other assortment of parts which may need to be replaced in the amplifier depending on version of original main PWA. (refer to instruction sheet shipped with PWA).

127354-1

Main PWA built on 102138-9 PWB. Added 0.775V sensitivity. Use 127452-4 as service replacement.

127354-2

Main PWA built on 102138-9 PWB. Includes bootstrap update. Use 127452-4 as service replacement.

7.4.2 Input Module:

102690

Original input PWA built on 102688 PWB. Included sensitivity switch.

126883

Input PWA built on 127004 PWB. Used with main PWAs starting with 102139-8. Sensitivity switch was removed, and moved to the main PWA. Use 127049-1 as service replacement, which is PWA 126883 with new faceplate.

7.4.3 Schematic Diagrams

Main PWA

For main PWAs 102140-5 or 102140-6 refer to schematic 102141 F.

For main PWA 102140-8 refer to schematic 102142 J.

For main PWA 102140-9 refer to schematic 102142 L.

For main PWA 127354-1 or 127354-2 refer to schematic 102142 M.

Input PWA

For input PWA 102690 refer to schematic 102568.

For input PWA 126883 refer to schematic 127014.

7.5 CE-2000A

7.5.1 Main/Input PWA:

127452-4

Main/input PWA built on 127450-1 PWB.

7.5.2 Schematic Diagrams

Main/Input PWA

For main/input PWA 127452-4 refer to schematic 127452-4.

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8 Module Parts Lists

The following pages provide parts lists for modules used in the CE Series amplifiers, along with component maps to help locate individual parts. Schematics are located in the back of the manual.

102139 rev H

PWA, Main CE1000

PWB part number 102138-6
PWA part number 102139-6
Schematic Drawing number 102141 rev F

E.C.N. D.C.N.	ZONE	REV.	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	EE	PE
		E	NOTE 2 WAS 102139-4. NOTE 3 WAS 102139-4.	11/20/97	TLM	KW			TS
DCN# 97D0003		F	R16 WAS 2.2K. ADDED NOTES 13 & 14. ADDED ITEM 8 CABLE TIE. WP1 WAS A11378-A858S. WP2 WAS 103331-N858P. WP3 WAS A11378-C858S. ADDED C26 SILKSCREEN LEGEND TO SHT 10 COMPONENT MAP. CORRECTED C26 CPN ON SHTEET 6. MOVED ITEM 2 ON SHEET 10 COMPONENT MAP. R258 IS NOW A "DO NOT INSTALL".	12/12/97	TLM	KW			TS
DCN# 98D0002		G	NOTE 2 WAS 102138-5. NOTE 3 WAS 102139-5. R1 WAS A11371-1025, R2 WAS A11371-2223. R5 WAS A11388-80711. R11 WAS A11371-5141. ADDED R7.	01-08-98	KLW	TLM			TS
DCN# 98D0006		H	WP1 WAS A11378-3858A. WP2 WAS A11566-3858N. WP3 WAS A11379-3858C. R188 AND R288 WERE 102595-2.	01-16-98	TLM	KW			PS

NOTES:

1. SCHEMATIC DRAWING NUMBER 102141.
2. PWB PART NUMBER 102138-6.
3. PWA PART NUMBER 102139-6.
4. THE PWA SHALL MEET THE IPC-A-610_ CLASS 2 STANDARDS.
5. ALL LEADS SHALL BE TRIMMED TO 0.093" OR LESS.
6. POSITION COMPONENTS AS SHOWN ON COMPONENT MAP.
7. COMPONENTS THAT HAVE (*) AFTER THEIR MAP LOCATION ARE MOUNTED ON THE BOTTOM SIDE OF THE PRINTED CIRCUIT BOARD.
8. REMOVE SOLDER OR PREVENT SOLDER FROM ACCUMULATING IN HOLES.
9. THE VENT HOLE ON TOP OF THE RELAYS K188 AND K288 MUST BE OPENED AFTER THE CLEANING PROCESS, BY EITHER REMOVING THE SEALING TAPE OR CUTTING OFF THE CIRCULAR TAB WITH AN "EXACTO" KNIFE OR SIMULAR CUTTING TOOL. WARNING, THIS STEP MUST BE DONE AFTER THE CLEANING PROCESS NOT BEFORE!!! WATER OR CLEANING SOLVENTS ENTERING THE RELAY VENT HOLE WILL DAMAGE THE RELAY.
10. CONNECT THE WIRES THAT COME FROM Q123 AND Q223 TO WP4 AND WP5 RESPECTFULLY.
11. THE PWA PART NUMBER AND DRAWING REVISION FOR THIS MODULE SHALL BE MARKED ON THE P.C. BOARD AND SHALL BE PERMANENT.
12. INSTALLATION OF U186 AND U286 IS AS FOLLOWS:
    - 12A. REMOVE MIDDLE SLEEVE FROM TRANSISTOR H42902-8
    - 12B. BEND TRANSISTOR AT 90 DEG. FLAT SIDE DOWN
    - 12C. PLACE TRANSISTOR INTO THE PWB AS SHOWN ON THE COMPONENT MAP DETAIL B.
    - 12D. MIX OUTPUT EPOXY AND ACCELERATOR TOGETHER. APPLY THE MIXTURE TO THE TRANSISTOR AND HEATSINK. THE MIXTURE MUST FILL THE HEATSINK HOLE AND THE LEADS OF THE DEVICE. ESPECIALLY THE CENTER LEAD. (NOTE: NO VISIBLE AIR GAPS AROUND THE TRANSISTOR AND THE TRANSISTOR LEADS CANNOT TOUCH THE HEATSINK)
    - 12E. HOLD THE TRANSISTOR AGAINST THE HEATSINK UNTIL EPOXY SETS-UP
13. TORQUE 8-32 HEX NUTS (CPN A11856-1) AS FOLLOWS:
    - 13A. PRE-WAVE TORQUE OF 4-8 INCH LBS.
    - 13B. POST-WAVE AND WHEN ASSEMBLY HAS COOLED DOWN TO HANDLING TEMPERATURE TORQUE OF 13-15 INCH LBS.
14. INSTALL J3 CONNECTOR AS SHOWN ON COMPONENT MAP



CAUTION

STATIC CAN DAMAGE COMPONENTS!

DO NOT HANDLE

UNLESS WRIST STRAP IS WORN

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PRINTS TO: K

CROWN INTERNATIONAL INC.

1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

PWA, MAIN CE1000

TOL. UNLESS SPECIFIED X.XX - ± 0.020 X.XXX - ± 0.010 DRILLS - ± 0.003

DRAWN	TLM	09-09-97	APPROVED BY:			DO NOT SCALE PRINT
CHECKED	KW	09-09-97	ME			SUPERSEDES 102139 REV.G
SCALE	NONE		EE	PW	09-09-97	E.C. DCN# 98D0006
PROJ #	MD398D0		PE	TS	09-09-97	DWG. NO. 102139 SHEET 1 CONT. ON SHEET 2 REV H
FILENAME: 102139-6H01.PCB			NEXT ASM:			

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
101016-1	LBL, BARCODE, , ,	1	2
101031-1	0.250 FASTON, AUTO INSERTABL	2	WP4, WP5
101571-1	HDR, 2 POS .1 CTR MTA SHRD	1	J4
101573-1	HDR, 4 POS .1 CTR MTA SHRD	1	J2
101993-1	JACK, 6P4 COND MODULAR R/A	1	J5
102138-6	PWB, CE1000/CE2000 MAIN	1	1
102438-101K2	100PF 200V NPO 0805 T/R	6	C104, C120, C135, C204, C220,
			C235
102438-221K2	220PF 200V 10% NPO 0805 T/R	2	C111, C211
102438-560K2	56PF 200V 10% NPO T/R	2	C106, C206
102438-820K2	82PF 200V 10% NPO 0805 T/R	4	C108, C208, C138, C238
102465-1	.47UF 50V 20% RADIAL T/R	2	C101, C201
102466-1	10UF 250V 20% RADIAL T/R	1	C1
102467-1	22UF 25V 20% RADIAL T/R	2	C103, C203
102468-1	47UF 10V 20% NP RAD T/R	4	C113, C114, C213, C214
102470-1	INDUCTOR, 2.75UH 11A RADIAL	2	L102, L202
102472-3	12POS .100CTR ASSY SGL ROW	1	J3
102473-1	SPEAKON, 4 POLE PCB HORZ	2	J100, J200
102476-1	LED, SMT R/A GREEN	3	E1, E101, E201
102477-1	LED, SMT R/A RED	4	E100, E102, E200, E202
102478-1	TRIAC DRIVER, SBS 8V THRESH	2	Q132, Q232
102479-1	PWR NPN DARLINGTON 100V 2A	2	Q1, Q2
102480-1	MMBF4856LT1 FET 25V SOT-23	2	Q133, Q233
102481-1	NPN 25V LOW NOISE SOT-23	2	Q108, Q208
102483-1	PNP 300V 500MA SOT-23	2	Q103, Q203
102486-1	OPTO BJT NPN SOIC-8 CTR=100%	1	U3
102488-1	SPDT HORIZ SLIDE	1	S100
102569-1	HS ASM, T1 ISOLATED CH1, , ,	1	HS3
102570-1	HS ASM, T1 ISOLATED CH2, , ,	1	HS4
102571-1	HS ASM, T1 NON-ISOLATED CH1,	1	HS1
102572-1	HS ASM, T1 NON-ISOLATED CH2,	1	HS2
102595-2	5K LIN 21 DETENT 12MM HORIZ	2	R100, R200
102608-1	SPACER, 6X.187 LONG AL	8	HW1, HW2, HW3, HW4, HW5, HW6,
			HW7, HW8
103180-1	BUMPER, 0.4" TALL BLK W/ADH	3	7
103191-1	0.47UF 50V Z5U 1210 T/R	4	C121, C124, C221, C224
103192-1	SOT-223 NPN 300V 500MA 50MHZ	4	Q107, Q110, Q207, Q210
103193-1	SOT-223 PNP 300V 500MA 50MHZ	4	Q105, Q120, Q205, Q220
103199-1	0.4 OHM 1W 5% 2512 T/R	36	R152, R153, R156, R157, R159,
			R167, R168, R171, R172, R252,
			R253, R256, R257, R259, R267,
			R267, R268, R271, R272, R300,
			R301, R302, R305, R306, R307,
			R308, R311, R312, R400, R401,
			R402, R405, R406, R407, R408,
			R411, R412
103210-1	2.2UF 160V RADIAL T/R	4	C136, C137, C236, C237
103331-N050R	WIRE, 14 BLK/WHT 3/16X5.0XT	1	WP2
125106-1	MAC9D 8 AMP 400V TRIAC	2	Q131, Q231
125242-1	CAP, .625ID X 1" VINYL	1	3
125478-1	3.83KOHM 0.5W 1% 2010 T/R	2	R142, R242

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DRAWN	TLM	08-09-97	DWG. NO.	SHEET 2	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 3	H

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
125482-1	ADHESIVE LOCTITE 384 OUTPUT	0	5
125483-1	ACTIVATOR LOCTITE "OUTPUT"	0	6
125508-1	10UF 50V 20% SMT AL ELEC T/R	1	C3
A10020-7	6-32 X .625 PCB CAPTIVE STUD	8	HW10,HW11,HW12,HW13,HW14,
			HW15,HW16,HW9
A10266-2R74	2.7 OHM 2W 5% CF T/R	1	R158
A11056-1	6-32 HEX NUT W/BELLEVILLE	8	HW17,HW18,HW19,HW20,HW21,
			HW22,HW23,HW24
A11368-10011	1.KOHM .1W 1% CHIP 0805	4	R106,R110,R206,R210
A11368-10021	10K 1/10W 1% SMD 0805 T/R	24	R101,R104,R107,R108,R111,
			R176,R177,R182,R185,
			R193,R201,R204,R211,R276,
			R277,R282,R285,R293,R313,
			R316,R413,R416,R9,R27
A11368-10031	100.KOHM .1W 1% CHIP 0805	13	R123,R125,R179,R289,
			R183,R186,R189,R223,
			R225,R25,R279,R283,R286,
A11368-12121	12.1KOHM .1W 1% 0805 T/R	1	R21
A11368-13703	137 OHM .25W 1% 1210 T/R	2	R139,R239
A11368-15831	158KOHM .1W 1% 0805 T/R	8	R122,R124,R222,R224,R187,
			R188,R287,R288
A11368-19122	19.1 KOHM .125W 1% CHIP RES	4	R112,R109,R212,R209
A11368-20023	20.0KOHM .25W 1% 1210 T/R	3	R10,R184,R284
A11368-22601	226 OHM 0.1W 1% 0805 T/R	4	R116,R216,R191,R291
A11368-39231	392 KOHM .1W 1% 0805 T/R	8	R126,R180,R22,R226,R280,R23
			R102,R202
A11368-49901	499 OHM .1W 1% 0805 T/R	4	R103,R203,R137,R237
A11368-51111	5.11KOHM .1W 1% 0805 T/R	6	R113,R213,R175,R275,R315,
			R415
A11368-57621	57.6K, 0.10W, 1%, CF	4	R190,R290,R20,R24
A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	3	R12,R115,R215
A11368-82511	8.25KOHM .1W 1% CHIP 0805	5	R5,R18,R114,R214,R17
A11368-88711	8.87KOHM .1W 1% CHIP 0805	1	R6
A11368-90921	90.9K, 0.10W 1% MF 0805	4	R120,R220,R178,R278,
A11369-102J2	.001UF 50V 5% NPO MLC 0805 T	2	C134,C234
A11369-270K2	27PF 50V 10% NPO 0805 T/R	2	C107,C207
A11369-471K2	470PF 50V 10% NPO 0805 T/R	2	C110,C210
A11371-0R02	0. OHM .125W 5% CHIP RES T/R	2	R323,R423
A11371-0R21	.2OHM .1W 5% 0805 T/R	2	R14,R15
A11371-1011	100 OHM .1W 5% 0805 T/R	3	R13,R147,R247
A11371-1022	1.KOHM .125W 5% CHIP RES T/R	1	R8
A11371-1213	120 OHM .25W 5% 1210 T/R	6	R138,R144,R145,R238,R244,R245
A11371-1331	13KOHM .1W 5% 0805 T/R	4	R146,R161,R246,R261
A11371-1501	15 OHM .1W 5% 0805 T/R	2	R160,R260
A11371-1811	180 OHM .1W 5% 0805 T/R	4	R148,R163,R248,R263
A11371-2223	2.2K 0.25W 5% 1210 T/R	2	R132,R232
A11371-2225	2.2K OHM 1W 5% 2512 T/R	3	R1,R2,R7
A11371-2713	270 OHM .25W 5% 1210 T/R	2	R322,R422
A11371-3313	330 OHM .25W 5% 1210 T/R	2	R19,R4
A11371-3333	33 KOHM .25W 5% 1210 T/R	6	R119,R219,R140,R143,R240,R243

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 3	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 4	H

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A11371-3341	330 KOHM .1W 5% 0805 T/R	7	R3,R11,R117,R217,R26,R314,
			R414
A11371-3923	3.9K .25W 5% 1210 T/R	3	R16,R135,R235
A11371-3934	39K .5W 5% 2010 SMT T/R	4	R317,R318,R417,R418
A11371-4701	RES. 47 OHM .1W 5% CHIP 0805	2	R162,R262
A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	5	R29,R174,R192,R274,R292
A11371-5R63	5.6 OHM .25W 5% 1210 T/R	4	R150,R165,R250,R265
A11371-5R65	5.6 OHM 1W 5% 2512 T/R	2	R420,R421
A11371-6814	680 OHM .5W 5% 2010 T/R	6	R105,R128,R181,R205,R228,
			R281
A11371-6821	6.8KOHM .1W 5% CHIP 0805	2	R127,R227
A11371-7511	750 OHM .1W 5% 0805 T/R	3	R28,R133,R233
A11371-8201	82 OHM .1W 5% 0805 T/R	4	R194,R294,R136,R236
A11371-8211	820 OHM .1W 5% 0805 T/R	6	R195,R295,R129,R141,R229,
			R241
A11378-A050U	WIRE, 16 RED 3/16" X 5 X FAS	1	WP1
A11379-C050U	WIRE, 16 BLU 3/16" X 5 X FLA	1	WP3
A11427-103K2	.01 UF 50V 10% X7R MLC 0805	6	C102,C109,C115,C202,C209,C215
A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X	28	C12,C139,C122,C126,C127,
			C128,C129,C130,C131,C132,
			C133,C239,C222,C226,C227,
			C228,C229,C230,C231,C232,
			C233,C24,C25,C6,C7,C2,C28,C29
A11427-123K2	.012 50V 10% X7R 0805 T/R	2	C112,C212
A11427-272K2	2700PF 50V 10% X7R 0805 T/R	2	C117,C217
A11427-472K2	4700PF 50V 10% X7R 0805 T/R	4	C116,C119,C216,C219
A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	1	WP6
C 2851-1	RECTIFIER, 1N4004 SILICON T/	7	D1,D10,D2,D3,D4,D6,D7
C 3510-2	CHOKE, 10% AXIAL 470 UH TR	4	L100,L101,L200,L201
C 3549-0	DIODE, ZENER 10V 1N5240B T/R	1	D8
C 4477-3	470 UF 35V VERT	2	C4,C5
C 5095-2	MC7815CT +15V. REG	1	U1
C 5096-0	MC7915CT -15V. REG	1	U2
C 5362-6	2.2UF 50V VERT ELECT T/A	1	C27
C 7091-9	.33 UF 50V Z5U CHIP CAP	3	C22,C140,C240
C 7448-1	MMBT3904 CHIP NPN	6	Q100,Q101,Q129,Q200,Q201,
			Q229
C 7816-9	VACTEC VTL5C2 OPTO-CELL	2	U100,U200
C 7947-2	8" CABLE TIE RED	1	8
C 8262-5	MC3307BD LOW NOISE DUAL OP A	4	U105,U205,U4,U5
C 8426-6	.1UF 250V 10% MET POLY RADIA	2	C118,C218
C 8576-8	100UF 35V 10% ALUM ELECT T/A	1	C26
C 9012-3	OP AMP, QUAD LO NOISE MC3307	2	U101,U201
C 9038-8	COMPARATOR, QUAD LM339D SO-1	4	U102,U104,U202,U204
C 9157-6	100UF 16V 20% NP ELEC RAD T/	2	C123,C223
C 9252-5	2N3904 40V NPN TRANSISTOR T/	2	Q104,Q204
C 9283-0	DIODE, 1N914/1N4148 SOT-23 S	54	D101,D102,D103,D104,D105,
			D106,D107,D108,D109,D110,

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 4	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 5	H

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
			D111,D112,D113,D116,D117,
			D118,D119,D120,D121,D122,
			D123,D124,D125,D13,D201,
			D202,D203,D204,D205,D206,
			D207,D208,D209,D210,D211,
			D212,D213,D216,D217,D218,
			D221,D222,D223,D224,D225,
			D9,D126,D127,D128,D129,
			D226,D227,D228,D229,
C 9896-9	TEST POINT PCB .1" CTR LOOP	2	TP38,TP39
C 9918-1	TO220 VERT CLIP-ON HEATSINK	2	U1X,U2X
C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-	6	Q102,Q111,Q202,Q211,Q109,
			Q209
C10208-4	100.UF 25V 20% RAD ELECT T/R	2	C105,C205
C10335-5	RELAY 30A 24V T90 SEALED CE	2	K100,K200
C10422-1	DIODE, 3A 400V 1N5404 AXIAL	4	D114,D115,D214,D215
C10613-5	1 KOHM TOP ADJUST TRIMMER T/	2	R134,R234
D 8917-3	8200UF 110VDC ELECTROLYTIC	2	C20,C21
H42902-9	ASM. THERMAL SENSE	2	U106,U206
S 5700-0	732 RTV RUBBER 10.3 OZ CLEAR	0	4

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DRAWN	TLM	09-09-97	DWG. NO. 102139	SHEET 5 CONT. ON SHEET 6	REV H
PROJ.	MD398D9				

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
1	102138-6	PWB, CE1000/CE2000 MAIN	
2	101016-1	LBL, BARCODE, . .	
3	125242-1	CAP, .625ID X 1" VINYL	
C1	102466-1	10UF 250V 20% RADIAL T/R	J 1 *
C2	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 10 *
C3	125508-1	10UF 50V 20% SMT AL ELEC T/R	I 8
C4	C 4477-3	470 UF 35V VERT	G 10
C5	C 4477-3	470 UF 35V VERT	G 10
C6	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	H 10 *
C7	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	H 10 *
C12	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	I 9 *
C20	D 8917-3	8200UF 110VDC ELECTROLYTIC	C 9
C21	D 8917-3	8200UF 110VDC ELECTROLYTIC	A 9
C22	C 7091-9	0.33 UF 50V Z5U CHIP CAP	N 9 *
C24	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	N 10 *
C25	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	O 9 *
C26	C 8576-8	100UF 35V 10% ALUM ELECT T/A	I 9
C27	C 5362-6	2.2UF 50V VERT ELECT T/A	H 10
C28	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	J 9 *
C29	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	I 9 *
C101	102465-1	0.47UF 50V 20% RADIAL T/R	M 9
C102	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	M 9 *
C103	102467-1	22UF 25V 20% RADIAL T/R	M 9
C104	102438-101K2	100PF, 200V, , 0805	M 9 *
C105	C10208-4	100.UF 25V 20% RAD ELECT T/R	L 9
C106	102438-560K2	56PF 200V 10% NPO 0805 T/R	L 9 *
C107	A11369-270K2	27PF 50V 10% NPO 0805 T/R	L 9 *
C108	102438-820K2	82PF 200V 10% NPO 0805 T/R	L 10 *
C109	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	H 6 *
C110	A11369-471K2	470PF 50V 10% NPO 0805 T/R	M 7 *
C111	102438-221K2	220PF 200V 10% NPO 0805 T/R	N 8 *
C112	A11427-123K2	.012 50V 10% X7R 0805 T/R	O 8 *
C113	102468-1	47UF 10V 20% NP RAD T/R	N 8
C114	102468-1	47UF 10V 20% NP RAD T/R	N 8
C115	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	N 8 *
C116	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	N 7 *
C117	A11427-272K2	2700PF 50V 10% X7R 0805 T/R	I 8 *
C118	C 8426-6	.1UF 250V 10% MET POLY RADIAL	I 8
C119	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	I 8 *
C120	102438-101K2	100PF 200V NPO 0805 T/R	I 7 *
C121	103191-1	0.47 UF 50V Z5U 1210 T/R	G 8 *
C122	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 8 *
C123	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	G 9
C124	103191-1	0.47UF 50V Z5U 1210 T/R	L 9 *
C126	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	N 10 *
C127	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	M 9 *
C128	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	M 10 *
C129	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	M 9 *
C130	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	H 8 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 6	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 7	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C131	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	G 7 *
C132	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 7 *
C133	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 8 *
C134	A11369-102J2	.001UF 50V 5% NPO MLC 0805 T/R	M 7 *
C135	102438-101K2	100PF 200V NPO 0805 T/R	N 7 *
C136	103210-1	2.2UF 160V RADIAL T/R	I 7
C137	103210-1	2.2UF 160V RADIAL T/R	I 7
C138	102438-820K2	82PF 200V 10% NPO 0805 T/R	M 7 *
C139	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	N 8 *
C140	C 7091-9	.33 UF 50V Z5U CHIP CAP	L 9
C201	102465-1	0.47UF 50V 20% RADIAL T/R	J 9
C202	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	K 9 *
C203	102467-1	22UF 25V 20% RADIAL T/R	K 9
C204	102438-101K2	100PF 200V NPO 0805 T/R	J 9 *
C205	C10208-4	100.UF 25V 20% RAD ELECT T/R	J 9
C206	102438-560K2	56PF 200V 10% NPO 0805 T/R	J 9 *
C207	A11369-270K2	27PF 50V 10% NPO 0805 T/R	J 9 *
C208	102438-820K2	82PF 200V 10% NPO 0805 T/R	J 10 *
C209	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	H 3 *
C210	A11369-471K2	470PF 50V 10% NPO 0805 T/R	K 7 *
C211	102438-221K2	220PF 200V 10% NPO 0805 T/R	K 8 *
C212	A11427-123K2	.012 50V 10% X7R 0805 T/R	L 8 *
C213	102468-1	47UF 10V 20% NP RAD T/R	K 8
C214	102468-1	47UF 10V 20% NP RAD T/R	K 8
C215	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	K 8 *
C216	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	J 2 *
C217	A11427-272K2	2700PF 50V 10% X7R 0805 T/R	D 1 *
C218	C 8426-6	.1UF 250V 10% MET POLY RADIAL	I 1
C219	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	E 1 *
C220	102438-101K2	100PF 200V NPO 0805 T/R	D 2 *
C221	103191-1	0.47 UF 50V Z5U 1210 T/R	E 8 *
C222	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 8 *
C223	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 9
C224	103191-1	0.47UF 50V Z5U 1210 T/R	J 9 *
C226	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	L 10 *
C227	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	K 9 *
C228	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	J 10 *
C229	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	J 9 *
C230	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 8 *
C231	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 7 *
C232	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 7 *
C233	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	D 8 *
C234	A11369-102J2	.001UF 50V 5% NPO MLC 0805 T/R	J 7 *
C235	102438-101K2	100PF 200V NPO 0805 T/R	J 2 *
C236	103210-1	2.2UF 160V RADIAL T/R	I 1
C237	103210-1	2.2UF 160V RADIAL T/R	I 1
C238	102438-820K2	82PF 200V 10% NPO 0805 T/R	J 7 *
C239	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 7 *
C240	C 7091-9	.33 UF 50V Z5U CHIP CAP	J 9
D1	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	G 10

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	TLM	09-09-97	DWG. NO.	SHEET 7	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 8	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D2	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	G 10
D3	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	G 10
D4	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	G 10
D6	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	J 8
D7	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	J 8
D8	C 3549-0	DIODE, ZENER 10V 1N5240B T/R	J 8
D9	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D10	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	I 10
D13	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D101	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9 *
D102	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9 *
D103	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9 *
D104	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9 *
D105	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 10 *
D106	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D107	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D108	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D109	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D110	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D111	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D112	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D113	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D114	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 6
D115	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 5
D116	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 8 *
D117	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 10 *
D118	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 10 *
D119	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D120	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D121	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9 *
D122	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 10 *
D123	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 9 *
D124	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7 *
D125	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	H 7 *
D126	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 7
D127	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 7
D128	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	H 7 *
D129	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7 *
D201	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9 *
D202	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9 *
D203	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9 *
D204	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9 *
D205	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 10 *
D206	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D207	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D208	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D209	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D210	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D211	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D212	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 8 *
D213	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 8 *

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DRAWN	TLM	09-09-97	DWG. NO. 102139	SHEET 8 CONT. ON SHEET 9	REV H
PROJ.	MD390D8				

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PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D214	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 3
D215	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 2
D216	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 8 *
D217	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 10 *
D218	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 10 *
D221	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9 *
D222	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 10 *
D223	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 9 *
D224	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7 *
D225	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 7 *
D226	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7
D227	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7
D228	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7 *
D229	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 7 *
E1	102476-1	LED, SMT R/A GREEN	I 1
E100	102477-1	LED, SMT R/A RED	J 1
E101	102476-1	LED, SMT R/A GREEN	J 1
E102	102477-1	LED, SMT R/A RED	K 1
E200	102477-1	LED, SMT R/A RED	M 1
E201	102476-1	LED, SMT R/A GREEN	L 1
E202	102477-1	LED, SMT R/A RED	M 1
HS1	102571-1	HS ASM, T1 NON-ISOLATED CH1,	L 6
HS2	102572-1	HS ASM, T1 NON-ISOLATED CH2,	L 3
HS3	102569-1	HS ASM, T1 ISOLATED CH1, . .	G 6
HS4	102570-1	HS ASM, T1 ISOLATED CH2, . .	G 3
HW1	102608-1	SPACER, 6 X 0.187 LONG, AL	N 6
HW2	102608-1	SPACER, 6 X 0.187 LONG, AL	J 5
HW3	102608-1	SPACER, 6 X 0.187 LONG, AL	N 3
HW4	102608-1	SPACER, 6 X 0.187 LONG, AL	J 3
HW5	102608-1	SPACER, 6 X 0.187 LONG, AL	I 6
HW6	102608-1	SPACER, 6 X 0.187 LONG, AL	D 5
HW7	102608-1	SPACER, 6 X 0.187 LONG, AL	I 3
HW8	102608-1	SPACER, 6 X 0.187 LONG, AL	D 3
HW9	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	N 6
HW10	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	J 5
HW11	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	N 3
HW12	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	J 3
HW13	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	I 6
HW14	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	D 5
HW15	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	I 3
HW16	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	D 3
HW17	A11056-1	6-32 HEX NUT W/BELLEVILLE	N 6
HW18	A11056-1	6-32 HEX NUT W/BELLEVILLE	J 5
HW19	A11056-1	6-32 HEX NUT W/BELLEVILLE	N 3
HW20	A11056-1	6-32 HEX NUT W/BELLEVILLE	J 3
HW21	A11056-1	6-32 HEX NUT W/BELLEVILLE	I 6
HW22	A11056-1	6-32 HEX NUT W/BELLEVILLE	D 5
HW23	A11056-1	6-32 HEX NUT W/BELLEVILLE	I 3
HW24	A11056-1	6-32 HEX NUT W/BELLEVILLE	D 3
J2	101573-1	HDR, 4 POS .1 CTR MTA SHRD	G 10
J3	102472-3	12POS .100CTR ASSY SGL ROW	M 8

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 9	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 10	H

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PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
J4	101571-1	HDR. 2POS .1 CTR MTA SHRD	L 10
J5	101993-1	JACK, 6P4 COND MODULAR R/A	N 10
J100	102473-1	SPEAKON, 4 POLE PCB HORZ	D 10
J200	102473-1	SPEAKON, 4 POLE PCB HORZ	F 10
K100	C10335-5	RELAY 30A 24V T90 SEALED CE	G 8
K200	C10335-5	RELAY 30A 24V T90 SEALED CE	E 8
L100	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	N 7
L101	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	I 7
L102	102470-1	INDUCTOR, 2.75UH 11A RADIAL	H 8
L200	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	J 1
L201	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	D 1
L202	102470-1	INDUCTOR, 2.75UH 11A RADIAL	I 1
Q1	102479-1	PWR NPN DARLINGTON 100V 2A	H 10
Q2	102479-1	PWR NPN DARLINGTON 100V 2A	I 10
Q100	C 7448-1	MMBT3904 CHIP NPN	M 9 *
Q101	C 7448-1	MMBT3904 CHIP NPN	M 9 *
Q102	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 9 *
Q103	102483-1	PNP 300V 500MA SOT-23	L 10 *
Q104	C 9252-5	2N3904 40V NPN TRANSISTOR T/A	I 6
Q105	103193-1	SOT-223 PNP 300V 500MA 50MHZ	M 8 *
Q107	103192-1	SOT-223 NPN 300V 500MA 50MHZ	M 8 *
Q108	102481-1	NPN 25V LOW NOISE SOT-23	N 8 *
Q109	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 8 *
Q110	103192-1	SOT-223 NPN 300V 500MA 50MHZ	N 7 *
Q111	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 7 *
Q112		INSTALLED ON THE PREVIOUS ASSEMBLY	N 7
Q114		INSTALLED ON THE PREVIOUS ASSEMBLY	J 6
Q115		INSTALLED ON THE PREVIOUS ASSEMBLY	K 5
Q116		OMITTED FOR THIS ASSEMBLY	L 6
Q117		OMITTED FOR THIS ASSEMBLY	L 5
Q118		INSTALLED ON THE PREVIOUS ASSEMBLY	M 6
Q119		INSTALLED ON THE PREVIOUS ASSEMBLY	N 5
Q120	103193-1	SOT-223 PNP 300V 500MA 50MHZ	I 7 *
Q121		INSTALLED ON THE PREVIOUS ASSEMBLY	I 7
Q123		INSTALLED ON THE PREVIOUS ASSEMBLY	E 6
Q124		INSTALLED ON THE PREVIOUS ASSEMBLY	E 5
Q125		OMITTED FOR THIS ASSEMBLY	F 6
Q126		OMITTED FOR THIS ASSEMBLY	G 5
Q127		INSTALLED ON THE PREVIOUS ASSEMBLY	H 6
Q128		INSTALLED ON THE PREVIOUS ASSEMBLY	H 5
Q129	C 7448-1	MMBT3904 CHIP NPN	G 9 *
Q131	125106-1	MAC9D 8 AMP 400V TRIAC	F 9
Q132	102478-1	TRIAC DRIVER, SBS 8V THRESH	G 8
Q133	102480-1	MMBF4856LT1 FET 25V SOT-23	M 9 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 10	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 11	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
Q200	C 7448-1	MMBT3904 CHIP NPN	K 9 *
Q201	C 7448-1	MMBT3904 CHIP NPN	K 9 *
Q202	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	L 9 *
Q203	102483-1	PNP 300V 500MA SOT-23	J 10 *
Q204	C 9252-5	2N3904 40V NPN TRANSISTOR T/A	I 3
Q205	103193-1	SOT-223 PNP 300V 500MA 50MHZ	J 8 *
Q207	103192-1	SOT-223 NPN 300V 500MA 50MHZ	K 8 *
Q208	102481-1	NPN 25V LOW NOISE SOT-23	K 8 *
Q209	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	K 8 *
Q210	103192-1	SOT-223 NPN 300V 500MA 50MHZ	J 2 *
Q211	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	J 2 *
Q212		INSTALLED ON THE PREVIOUS ASSEMBLY	J 2
Q214		INSTALLED ON THE PREVIOUS ASSEMBLY	J 3
Q215		INSTALLED ON THE PREVIOUS ASSEMBLY	K 3
Q216		OMITTED FOR THIS ASSEMBLY	L 3
Q217		OMITTED FOR THIS ASSEMBLY	L 3
Q218		INSTALLED ON THE PREVIOUS ASSEMBLY	M 3
Q219		INSTALLED ON THE PREVIOUS ASSEMBLY	N 3
Q220	103193-1	SOT-223 PNP 300V 500MA 50MHZ	D 2 *
Q221		INSTALLED ON THE PREVIOUS ASSEMBLY	D 2
Q223		INSTALLED ON THE PREVIOUS ASSEMBLY	E 3
Q224		INSTALLED ON THE PREVIOUS ASSEMBLY	E 3
Q225		OMITTED FOR THIS ASSEMBLY	F 3
Q226		OMITTED FOR THIS ASSEMBLY	G 3
Q227		INSTALLED ON THE PREVIOUS ASSEMBLY	H 3
Q228		INSTALLED ON THE PREVIOUS ASSEMBLY	H 3
Q229	C 7448-1	MMBT3904 CHIP NPN	E 9 *
Q231	125106-1	MAC9D 8 AMP 400V TRIAC	E 9
Q232	102478-1	TRIAC DRIVER, SBS 8V THRESH	F 8
Q233	102480-1	MMBF4856LT1 FET 25V SOT-23	J 9 *
R1	A11371-2225	2.2K OHM 1W 5% 2512 T/R	J 8 *
R2	A11371-2225	2.2K OHM 1W 5% 2512 T/R	J 8 *
R3	A11371-3341	330 KOHM .1W 5% 0805 T/R	I 8 *
R4	A11371-3313	330 OHM .25W 5% 1210 T/R	I 1 *
R5	A11368-82511	8.25K OHM 0.1W 1% CHIP 0805	D 8 *
R6	A11368-88711	8.87KOHM .1W 1% CHIP 0805	D 8 *
R7	A11371-2225	2.2K OHM 1W 5% 2512 T/R	J 8 *
R8	A11371-1022	1K .125W 5% CHIP RES T/R	H 9 *
R9	A11368-10021	10K 1/10W 1% SMD 0805 T/R	H 9 *
R10	A11368-20023	20.KOHM .25W 1% 1210 T/R	H 9 *
R11	A11371-3341	330K OHM 0.1W 5% CHIP 0805	I 9*
R12	A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	I 9 *
R13	A11371-1011	100 OHM .1W 5% 0805 T/R	I 10 *
R14	A11371-0R21	.2OHM .1W 5% 0805 T/R	I 10 *
R15	A11371-0R21	.2OHM .1W 5% 0805 T/R	I 10 *
R16	A11371-3923	3.9K 0.25W 5% 1210 T/R	N 9 *
R17	A11368-82511	8.25KOHM .1W 1% CHIP 0805	F 10 *
R18	A11368-82511	8.25KOHM .1W 1% CHIP 0805	D 8 *
R19	A11371-3313	330 OHM .25W 5% 1210 T/R	I 1 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 11	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 12	H

PARTS LIST

REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R20	A11368-57621	57.6K, 0.10W 1% MF 0805	I 9 *
R21	A11368-12121	12.1K .1W 1% 0805 T/R	I 9 *
R22	A11368-39231	392 KOHM .1W 1% 0805 T/R	I 9 *
R23	A11368-39231	392 KOHM .1W 1% 0805 T/R	I 9 *
R24	A11368-57621	57.6K, 0.10W 1% MF 0805	I 9 *
R25	A11368-10031	100.KOHM .1W 1% CHIP 0805	N 9 *
R26	A11371-3341	330 KOHM .1W 5% 0805 T/R	A 10 *
R27	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 9 *
R28	A11371-7511	750 OHM .1W 5% 0805 T/R	L 9 *
R29	A11371-4751	4.7MEGOHM. 0.10W 5% MF 0805	I 9 *
R100	102595-2	5K. . . DETENT	L 1
R101	A11368-10021	10K 1/10W 1% SMD 0805 T/R	M 10 *
R102	A11368-39231	392 KOHM .1W 1% CHIP 0805	N 9 *
R103	A11368-49901	499 OHM .1W 1% 0805 T/R	N 9 *
R104	A11368-10021	10K 1/10W 1% SMD 0805 T/R	N 9 *
R105	A11371-6814	680 OHM .5W 5% 2010 T/R	J 1 *
R106	A11368-10011	1.KOHM .1W 1% CHIP 0805	M 9 *
R107	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 10 *
R108	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 10 *
R109	A11368-19122	19.1KOHM .125W 1% CHIP RES	M 9 *
R110	A11368-10011	1.KOHM .1W 1% CHIP 0805	L 9 *
R111	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 9 *
R112	A11368-19122	19.1KOHM .125W 1% CHIP RES	L 9 *
R113	A11368-51111	5.11KOHM .1W 1% 0805 T/R	L 10 *
R114	A11368-82511	8.25KOHM .1W 1% CHIP 0805	L 10 *
R115	A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	L 10 *
R116	A11368-22601	226 OHM 0.1W 1% 0805 T/R	M 9 *
R117	A11371-3341	330 KOHM .1W 5% 0805 T/R	M 9 *
R119	A11371-3333	33 KOHM .25W 5% 1210 T/R	M 9 *
R120	A11368-90921	90.9K, 0.10W 1% MF 0805	M 9 *
R122	A11368-15831	158KOHM .1W 1% 0805 T/R	N 9 *
R123	A11368-10031	100.KOHM .1W 1% CHIP 0805	M 9 *
R124	A11368-15831	158KOHM .1W 1% 0805 T/R	M 9 *
R125	A11368-10031	100.KOHM .1W 1% CHIP 0805	N 9 *
R126	A11368-39231	392 KOHM .1W 1% 0805 T/R	M 9 *
R127	A11371-6821	6.8KOHM .1W 5% CHIP 0805	N 9 *
R128	A11371-6814	680 OHM .5W 5% 2010 T/R	J 1 *
R129	A11371-8211	820 OHM .1W 5% 0805 T/R	N 7 *
R130		DO NOT INSTALL	O 8 *
R131		DO NOT INSTALL	O 8 *
R132	A11371-2223	2.2K 0.25W 5% 1210 T/R	H 6 *
R133	A11371-7511	750 OHM .1W 5% 0805 T/R	H 6 *
R134	C10613-5	1 KOHM TOP ADJUST TRIMMER T/R	M 8
R135	A11371-3923	3.9K .25W 5% 1210 T/R	M 7 *
R136	A11371-8201	82 OHM .1W 5% 0805 T/R	M 7 *
R137	A11368-49901	499 OHM .1W 1% 0805 T/R	N 8 *
R138	A11371-1213	120 OHM .25W 5% 1210 T/R	N 8 *
R139	A11368-13733	137 OHM .25W 1% 1210 T/R	N 8 *
R140	A11371-3333	33 KOHM .25W 5% 1210 T/R	N 8 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 12 CONT. ON SHEET 13	REV
PROJ.	MD390D0		102139		H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R141	A11371-8211	820 OHM .1W 5% 0805 T/R	O 8*
R142	125478-1	3.83KOHM 0.5W 1% 2010 T/R	O 8 *
R143	A11371-3333	33 KOHM .25W 5% 1210 T/R	N 8 *
R144	A11371-1213	120 OHM .25W 5% 1210 T/R	N 8 *
R145	A11371-1213	120 OHM .25W 5% 1210 T/R	N 8 *
R146	A11371-1331	13KOHM .1W 5% 0805 T/R	N 7 *
R147	A11371-1011	100 OHM .1W 5% 0805 T/R	N 7 *
R148	A11371-1811	180 OHM .1W 5% 0805 T/R	M 7 *
R150	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	N 7 *
R152	103199-1	0.4, 1W, 5%, 2512	K 7 *
R153	103199-1	0.4, 1W, 5%, 2512	K 6 *
R154		OMITTED FOR THIS ASSEMBLY	L 7 *
R155		OMITTED FOR THIS ASSEMBLY	M 6 *
R156	103199-1	0.4, 1W, 5%, 2512	M 7 *
R157	103199-1	0.4, 1W, 5%, 2512	N 6 *
R158	A10266-2R74	2.7 OHM 2W 5% CF T/R	I 8
R159	103199-1	0.4, 1W, 5%, 2512	D 7 *
R160	A11371-1501	15 OHM .1W 5% 0805 T/R	I 8 *
R161	A11371-1331	13KOHM .1W 5% 0805 T/R	H 7 *
R162	A11371-4701	RES. 47 OHM .1W 5% CHIP 0805	H 7 *
R163	A11371-1811	180 OHM .1W 5% 0805 T/R	I 7 *
R165	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	I 5 *
R167	103199-1	0.4, 1W, 5%, 2512	E 7 *
R168	103199-1	0.4, 1W, 5%, 2512	F 6 *
R169		OMITTED FOR THIS ASSEMBLY	F 7 *
R170		OMITTED FOR THIS ASSEMBLY	G 6 *
R171	103199-1	0.4, 1W, 5%, 2512	G 7 *
R172	103199-1	0.4, 1W, 5%, 2512	H 6 *
R174	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	G 8 *
R175	A11368-51111	5.11KOHM .1W 1% 0805 T/R	G 8 *
R176	A11368-10021	10K 1/10W 1% SMD 0805 T/R	G 8 *
R177	A11368-10021	10K 1/10W 1% SMD 0805 T/R	H 8 *
R178	A11368-90921	90.9K, 0.10W 1% MF 0805	N 9 *
R179	A11368-10031	100.KOHM .1W 1% CHIP 0805	F 7 *
R180	A11368-39231	392 KOHM .1W 1% 0805 T/R	G 8 *
R181	A11371-6814	680 OHM .5W 5% 2010 T/R	J 1 *
R182	A11368-10021	10K 1/10W 1% SMD 0805 T/R	F 8 *
R183	A11368-10031	100.KOHM .1W 1% CHIP 0805	F 8 *
R184	A11368-20023	20.0KOHM .25W 1% 1210 T/R	F 9 *
R185	A11368-10021	10K 1/10W 1% SMD 0805 T/R	G 8 *
R186	A11368-10031	100.KOHM .1W 1% CHIP 0805	N 10 *
R187	A11368-15831	158KOHM .1W 1% 0805 T/R	M 10 *
R188	A11368-15831	158KOHM .1W 1% 0805 T/R	M 10 *
R189	A11368-10031	100.KOHM .1W 1% CHIP 0805	M 10 *
R190	A11368-57621	57.6K, .1W, 1%, CHIP	N 6 *
R191	A11368-22601	226 OHM 0.1W 1% 0805 T/R	N 6 *
R192	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	L 9 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 13	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 14	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R193	A11368-10021	10K 1/10W 1% SMD 0805 T/R	N 9 *
R194	A11371-8201	82 OHM .1W 5% 0805 T/R	M 7 *
R195	A11371-8211	820 OHM .1W 5% 0805 T/R	M 7 *
R200	102595-2	5K. . . DETENT	N 1
R201	A11368-10021	10K 1/10W 1% SMD 0805 T/R	K 10 *
R202	A11368-39231	392.KOHM .1W 1% CHIP 0805	L 9 *
R203	A11368-49901	499 OHM .1W 1% 0805 T/R	L 9 *
R204	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 9 *
R205	A11371-6814	680 OHM .5W 5% 2010 T/R	M 1 *
R206	A11368-10011	1.KOHM .1W 1% CHIP 0805	J 9 *
R209	A11368-19122	19.1KOHM .125W 1% CHIP RES	K 9 *
R210	A11368-10011	1.KOHM .1W 1% CHIP 0805	J 9 *
R211	A11368-10021	10K 1/10W 1% SMD 0805 T/R	J 9 *
R212	A11368-19122	19.1KOHM .125W 1% CHIP RES	J 9 *
R213	A11368-51111	5.11KOHM .1W 1% 0805 T/R	J 10 *
R214	A11368-82511	8.25KOHM .1W 1% CHIP 0805	J 10 *
R215	A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	J 10 *
R216	A11368-22601	226 OHM 0.1W 1% 0805 T/R	K 9 *
R217	A11371-3341	330 KOHM .1W 5% 0805 T/R	J 9 *
R219	A11371-3333	33 KOHM .25W 5% 1210 T/R	J 9 *
R220	A11368-90921	90.9K. 0.10W 1% MF 0805	K 9 *
R222	A11368-15831	158KOHM .1W 1% 0805 T/R	K 9 *
R223	A11368-10031	100.KOHM .1W 1% CHIP 0805	K 9 *
R224	A11368-15831	158KOHM .1W 1% 0805 T/R	K 9 *
R225	A11368-10031	100.KOHM .1W 1% CHIP 0805	L 9 *
R226	A11368-39231	392 KOHM .1W 1% 0805 T/R	K 9 *
R227	A11371-6821	6.8KOHM .1W 5% CHIP 0805	K 9 *
R228	A11371-6814	680 OHM .5W 5% 2010 T/R	M 1 *
R229	A11371-8211	820 OHM .1W 5% 0805 T/R	K 7 *
R230		DO NOT INSTALL	L 8 *
R231		DO NOT INSTALL	L 8 *
R232	A11371-2223	2.2K 0.25W 5% 1210 T/R	H 3 *
R233	A11371-7511	750 OHM .1W 5% 0805 T/R	H 3 *
R234	C10613-5	1 KOHM TOP ADJUST TRIMMER T/R	J 8
R235	A11371-3923	3.9K .25W 5% 1210 T/R	J 7 *
R236	A11371-8201	82 OHM .1W 5% 0805 T/R	J 7 *
R237	A11368-49901	499 OHM .1W 1% 0805 T/R	K 8 *
R238	A11371-1213	120 OHM .25W 5% 1210 T/R	K 8 *
R239	A11368-13703	137 OHM .25W 1% 1210 T/R	K 8 *
R240	A11371-3333	33 KOHM .25W 5% 1210 T/R	K 8 *
R241	A11371-8211	820 OHM .1W 5% 0805 T/R	L 8 *
R242	125478-1	3.83KOHM 0.5W 1% 2010 T/R	L 8 *
R243	A11371-3333	33 KOHM .25W 5% 1210 T/R	K 8 *
R244	A11371-1213	120 OHM .25W 5% 1210 T/R	K 8 *
R245	A11371-1213	120 OHM .25W 5% 1210 T/R	K 8 *
R246	A11371-1331	13KOHM .1W 5% 0805 T/R	J 2 *
R247	A11371-1011	100 OHM .1W 5% 0805 T/R	J 2 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 14	REV
PROJ.	MD390D9		102139	CONT. ON SHEET 15	H

PARTS LIST

REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R248	A11371-1811	180 OHM .1W 5% 0805 T/R	K 2 *
R250	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	J 2 *
R252	103199-1	0.4, 1W, 5%, 2512	K 4 *
R253	103199-1	0.4, 1W, 5%, 2512	K 3 *
R254		OMITTED FOR THIS ASSEMBLY	L 4 *
R255		OMITTED FOR THIS ASSEMBLY	M 3 *
R256	103199-1	0.4, 1W, 5%, 2512	N 4 *
R257	103199-1	0.4, 1W, 5%, 2512	N 3 *
R258		DO NOT INSTALL	H 1
R259	103199-1	0.4, 1W, 5%, 2512	D 4 *
R260	A11371-1501	15 OHM .1W 5% 0805 T/R	D 1 *
R261	A11371-1331	13KOHM .1W 5% 0805 T/R	E 2 *
R262	A11371-4701	RES. 47 OHM .1W 5% CHIP 0805	E 2 *
R263	A11371-1811	180 OHM .1W 5% 0805 T/R	E 2 *
R265	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	E 2 *
R267	103199-1	0.4, 1W, 5%, 2512	E 4 *
R268	103199-1	0.4, 1W, 5%, 2512	F 3 *
R269		OMITTED FOR THIS ASSEMBLY	F 4 *
R270		OMITTED FOR THIS ASSEMBLY	G 3 *
R271	103199-1	0.4, 1W, 5%, 2512	H 4 *
R272	103199-1	0.4, 1W, 5%, 2512	H 3 *
R274	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	E 8 *
R275	A11368-51111	5.11KOHM .1W 1% 0805 T/R	E 8 *
R276	A11368-10021	10K 1/10W 1% SMD 0805 T/R	E 8 *
R277	A11368-10021	10K 1/10W 1% SMD 0805 T/R	E 8 *
R278	A11368-90921	90.9K, 0.10W 1% MF 0805	L 9 *
R279	A11368-10031	100.KOHM .1W 1% CHIP 0805	E 7 *
R280	A11368-39231	392 KOHM .1W 1% 0805 T/R	E 8 *
R281	A11371-6814	680 OHM .5W 5% 2010 T/R	M 1 *
R282	A11368-10021	10K 1/10W 1% SMD 0805 T/R	D 8 *
R283	A11368-10031	100.KOHM .1W 1% CHIP 0805	D 8 *
R284	A11368-20023	20.0KOHM .25W 1% 1210 T/R	F 9 *
R285	A11368-10021	10K 1/10W 1% SMD 0805 T/R	F 8 *
R286	A11368-10031	100.KOHM .1W 1% CHIP 0805	L 10 *
R287	A11368-15831	158KOHM .1W 1% 0805 T/R	K 10 *
R288	A11368-15831	158KOHM .1W 1% 0805 T/R	K 10 *
R289	A11368-10031	100.KOHM .1W 1% CHIP 0805	K 10 *
R290	A11368-57621	57.6K, .1W, 1%, CHIP	N 3 *
R291	A11368-22601	226 OHM 0.1W 1% 0805 T/R	N 3 *
R292	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	J 9 *
R293	A11368-10021	10K 1/10W 1% SMD 0805 T/R	K 9 *
R294	A11371-8201	82 OHM .1W 5% 0805 T/R	J 7 *
R295	A11371-8211	820 OHM .1W 5% 0805 T/R	J 7 *
R300	103199-1	0.4, 1W, 5%, 2512	D 7 *
R301	103199-1	0.4, 1W, 5%, 2512	J 7 *
R302	103199-1	0.4, 1W, 5%, 2512	K 6 *
R303		OMITTED FOR THIS ASSEMBLY	L 7 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 15	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 16	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R304		OMITTED FOR THIS ASSEMBLY	M 6 *
R305	103199-1	0.4, 1W, 5%, 2512	M 7 *
R306	103199-1	0.4, 1W, 5%, 2512	N 6 *
R307	103199-1	0.4, 1W, 5%, 2512	E 7 *
R308	103199-1	0.4, 1W, 5%, 2512	F 6 *
R309		OMITTED FOR THIS ASSEMBLY	G 7 *
R310		OMITTED FOR THIS ASSEMBLY	G 6 *
R311	103199-1	0.4, 1W, 5%, 2512	G 7 *
R312	103199-1	0.4, 1W, 5%, 2512	I 6 *
R313	A11368-10021	10K 1/10W 1% SMD 0805 T/R	G 7 *
R314	A11371-3341	330 KOHM .1W 5% 0805 T/R	G 7 *
R315	A11368-51111	5.11KOHM .1W 1% 0805 T/R	H 7 *
R316	A11368-10021	10K 1/10W 1% SMD 0805 T/R	M 10 *
R317	A11371-3934	39K .5W 5% 2010 SMT T/R	N 7
R318	A11371-3934	39K .5W 5% 2010 SMT T/R	N 8
R319		DO NOT INSTALL	M 10 *
R322	A11371-2713	270 OHM .25W 5% 1210 T/R	L 9
R323	A11371-0R02	0 OHM .125W 5% CHIP RES T/R	G 7
R400	103199-1	0.4, 1W, 5%, 2512	D 4 *
R401	103199-1	0.4, 1W, 5%, 2512	J 4 *
R402	103199-1	0.4, 1W, 5%, 2512	K 3 *
R403		OMITTED FOR THIS ASSEMBLY	L 4 *
R404		OMITTED FOR THIS ASSEMBLY	M 3 *
R405	103199-1	0.4, 1W, 5%, 2512	M 4 *
R406	103199-1	0.4, 1W, 5%, 2512	N 3 *
R407	103199-1	0.4, 1W, 5%, 2512	E 4 *
R408	103199-1	0.4, 1W, 5%, 2512	F 3 *
R409		OMITTED FOR THIS ASSEMBLY	G 4 *
R410		OMITTED FOR THIS ASSEMBLY	G 3 *
R411	103199-1	0.4, 1W, 5%, 2512	H 4 *
R412	103199-1	0.4, 1W, 5%, 2512	I 3 *
R413	A11368-10021	10K 1/10W 1% SMD 0805 T/R	E 7 *
R414	A11371-3341	330 KOHM .1W 5% 0805 T/R	E 7 *
R415	A11368-51111	5.11KOHM .1W 1% 0805 T/R	E 7 *
R416	A11368-10021	10K 1/10W 1% SMD 0805 T/R	K 10 *
R417	A11371-3934	39K .5W 5% 2010 SMT T/R	K 7
R418	A11371-3934	39K .5W 5% 2010 SMT T/R	K 8
R419		DO NOT INSTALL	K 10 *
R420	A11371-5R65	5.6 OHM 1W 5% 2512 T/R	H 2 *
R421	A11371-5R65	5.6 OHM 1W 5% 2512 T/R	H 2 *
R422	A11371-2713	270 OHM .25W 5% 1210 T/R	J 9
R423	A11371-0R02	0 OHM .125W 5% CHIP RES T/R	F 7
S100	102488-1	SPDT HORIZ SLIDE	L 10
TP38	C 9896-9	TEST POINT PCB .1" CTR LOOP	K 2
TP39	C 9896-9	TEST POINT PCB .1" CTR LOOP	N 7
U1	C 5095-2	MC7815CT +15V. REG	H 10
U2	C 5096-0	MC7915CT -15V. REG	H 9
U3	102486-1	OPTO BJT NPN SOIC-8 CTR=100%	N 10
U4	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	I 9

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 16	REV
PROJ.	MD390D0		102139	CONT. ON SHEET 17	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
U5	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	N 9
U1X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	P 10
U2X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 9
U100	C 7816-9	VACTEC VTL5C2 OPTO-CELL	M 5
U101	C 9012-3	OP AMP, QUAD LO NOISE MC33079D	M 10
U102	C 9038-8	COMPARATOR, QUAD LM339D SO-14	N 9
U104	C 9038-8	COMPARATOR, QUAD LM339D SO-14	G 7
U105	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	F 7
U106	H42902-9	ASM. THERMAL SENSE	N 6
U200	C 7816-9	VACTEC VTL5C2 OPTO-CELL	K 9
U201	C 9012-3	OP AMP, QUAD LO NOISE MC33079D	J 10
U202	C 9038-8	COMPARATOR, QUAD LM339D SO-14	K 9
U204	C 9038-8	COMPARATOR, QUAD LM339D SO-14	E 7
U205	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	E 7
U206	H42902-9	ASM. THERMAL SENSE	N 3
WP1	A11378-A050U	WIRE, 16 RED 3/16" X 5 X FAST	A 10
WP2	103331-N050R	WIRE, 14 BLK/WHT 3/16 X 5.0 X TAB	A 10
WP3	A11379-C050U	WIRE, 16 BLU 3/16" X 5 X FLAG	A 10
WP4	101031-1	0.250 FASTON, AUTO INSERTABLE	D 7
WP5	101031-1	0.250 FASTON, AUTO INSERTABLE	D 4
WP6	A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	J 8
Z1		REFERENCE FOR SOLDER PAD LOCATION	E 9

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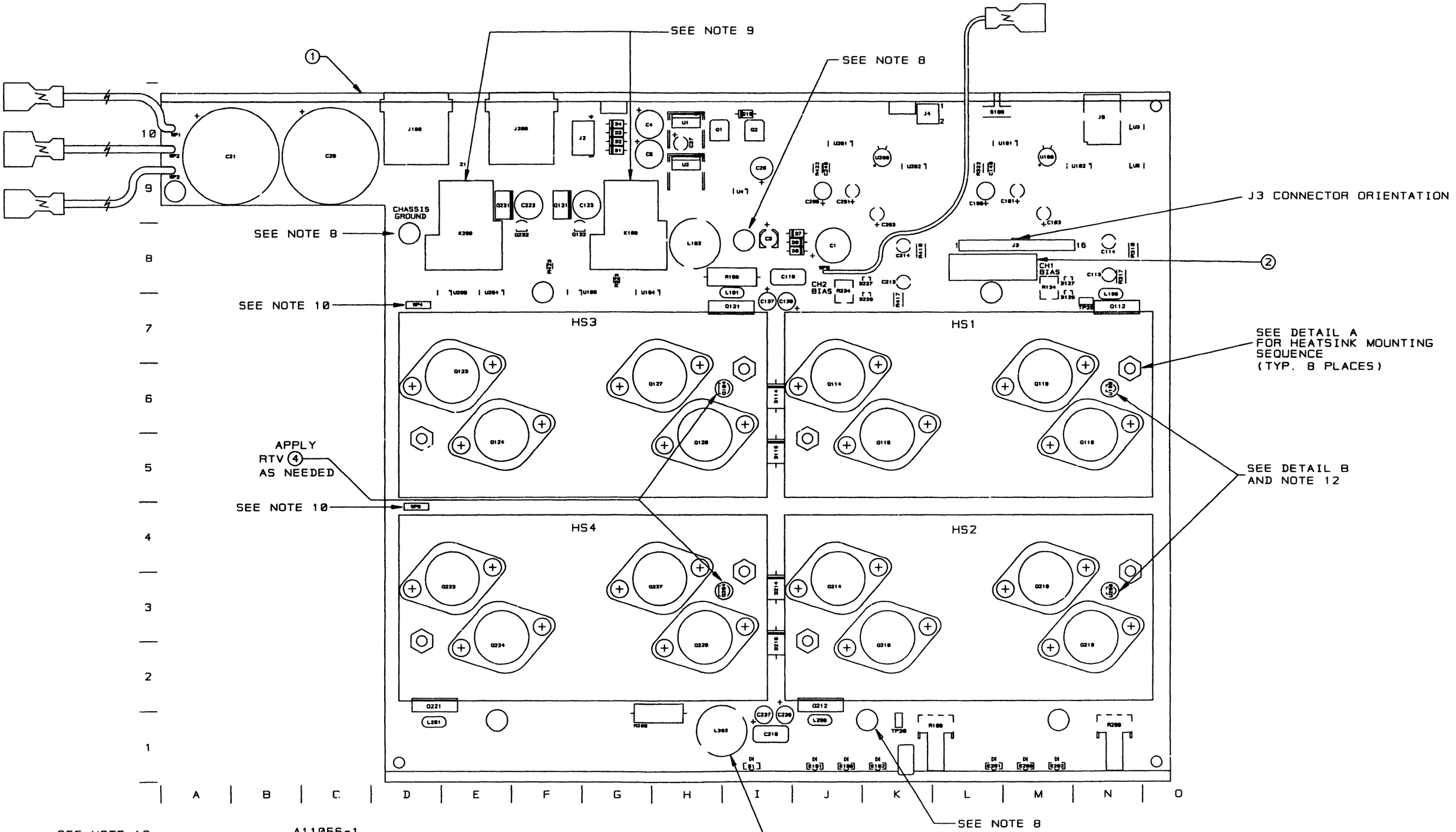
DRAWN	TLM	09-09-97	DWG. NO. 102139	SHEET 17 CONT. ON SHEET 18	REV H
PROJ.	MD390D0				

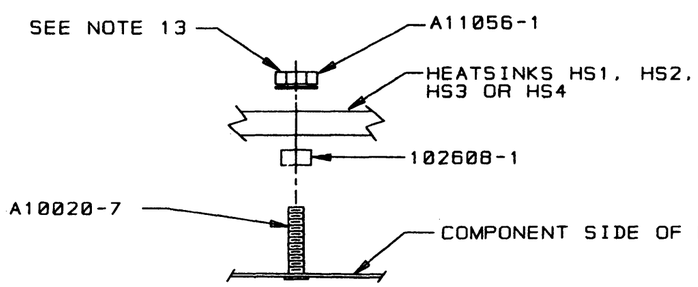
Component Map

for use with

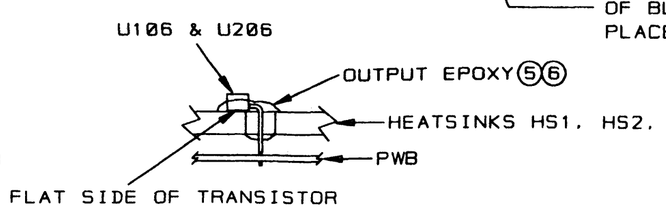
Main PWA #102139-6

COMPONENT MAP
(COMPONENT SIDE VIEW)





DETAIL A
SCALE 1:1



DETAIL B
SCALE 1:1

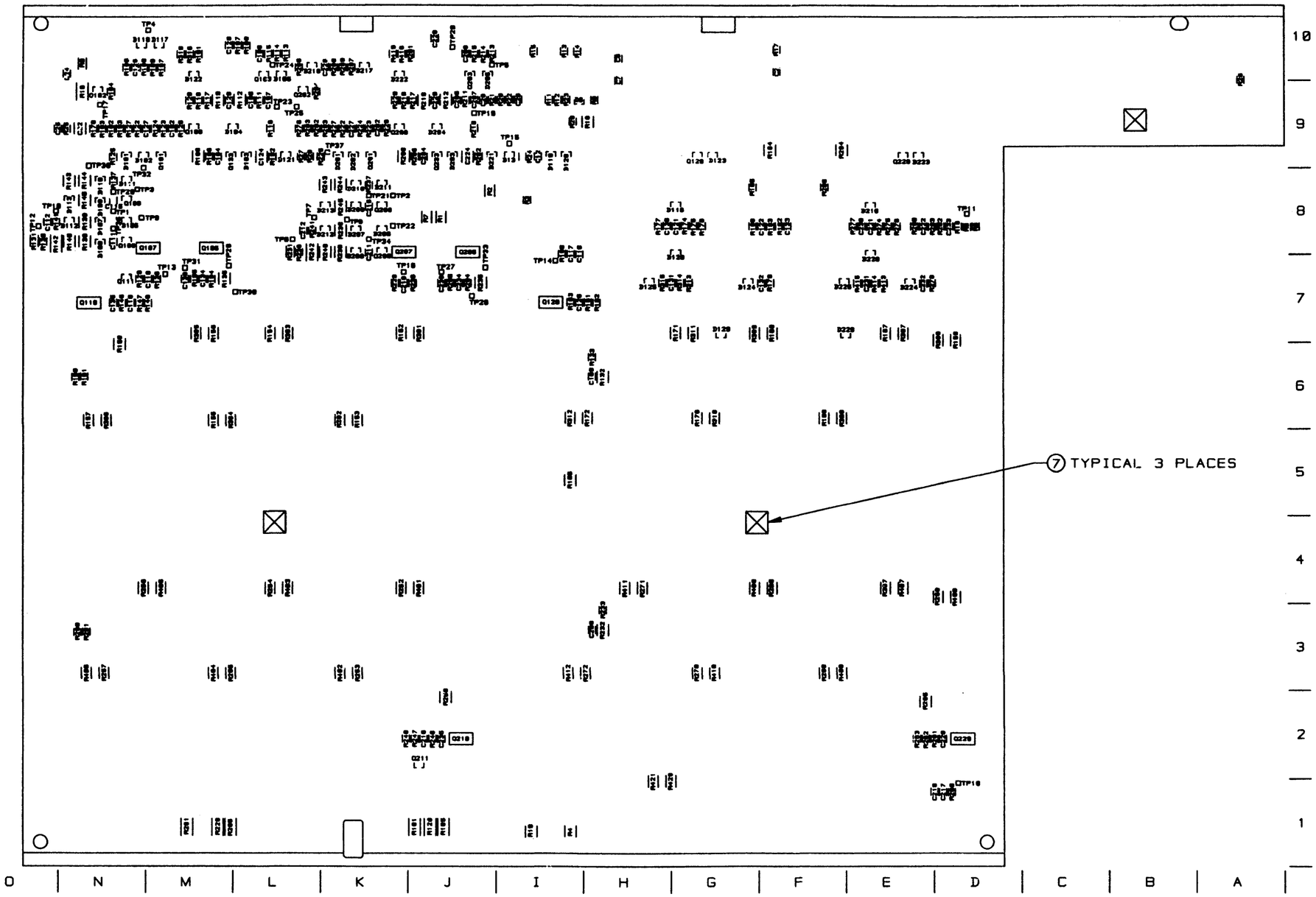
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DRAWN	TLM	09-09-97	DWG. NO. 102139	SHEET 18 CONT. ON SHEET 19	REV (H)
PROJ.	MD390D0				

COMPONENT MAP
(SOLDER SIDE VIEW)



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DRAWN	TLM	09-09-97	DWG. NO.	REV
PROJ.	MD3600		102139	H

SHEET 19 CONT. ON SHEET -

E.C.	ZONE	REV.	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	EE	PE
		A	PRODUCTION RELEASE (LEVEL I)	9-23-98	JFL	TLM			TS
98E0780		B	C606,C607 WERE 0.1MF. R1,R7,R32,R34 WERE 270. R6 WAS 8.87K. R18 WAS 7.68K. R29 WAS 4.7M. U100,U200 WERE 102723-1. J500,J600 WERE 125365-1. 102488-1 WAS DPDT. C 3510-2 WAS C 3510-7.	11-04-98	JAW	JL			

NOTES:

1. SCHEMATIC DRAWING NUMBER 102141.
2. PWB PART NUMBER 102138-8.
3. THE PWA SHALL MEET THE IPC-A-610_ CLASS 2 STANDARDS.
4. ALL LEADS SHALL BE TRIMMED TO 0.093" OR LESS.
5. POSITION COMPONENTS AS SHOWN ON COMPONENT MAP.
6. COMPONENTS THAT HAVE (*) AFTER THEIR MAP LOCATION ARE MOUNTED ON THE BOTTOM SIDE OF THE PRINTED CIRCUIT BOARD.
7. REMOVE SOLDER OR PREVENT SOLDER FROM ACCUMULATING IN HOLES.
8. THE VENT HOLE ON TOP OF THE RELAYS K100 AND K200 MUST BE OPENED AFTER THE CLEANING PROCESS, BY EITHER REMOVING THE SEALING TAPE OR CUTTING OFF THE CIRCULAR TAB WITH AN "EXACTO" KNIFE OR SIMULAR CUTTING TOOL. WARNING, THIS STEP MUST BE DONE AFTER THE CLEANING PROCESS NOT BEFORE!!! WATER OR CLEANING SOLVENTS ENTERING THE RELAY VENT HOLE WILL DAMAGE THE RELAY.
9. CONNECT THE WIRES THAT COME FROM Q123 AND Q223 TO WP4 AND WP5 RESPECTIVELY.
10. THE PWA PART NUMBER FOR THIS MODULE SHALL BE MARKED ON THE P.C. BOARD AND SHALL BE PERMANENT.
11. INSTALLATION OF U106 AND U206 IS AS FOLLOWS:
    - 11A. REMOVE MIDDLE SLEEVE FROM TRANSISTOR H42902-9
    - 11B. BEND TRANSISTOR AT 90 DEG. FLAT SIDE DOWN
    - 11C. PLACE TRANSISTOR INTO THE PWB AS SHOWN ON THE COMPONENT MAP DETAIL B.
    - 11D. MIX OUTPUT EPOXY AND ACCELERATOR TOGETHER. APPLY THE MIXTURE TO THE TRANSISTOR AND HEATSINK. THE MIXTURE MUST FILL THE HEATSINK HOLE AND THE LEADS OF THE DEVICE, ESPECIALLY THE CENTER LEAD. (NOTE: NO VISIBLE AIR GAPS AROUND THE TRANSISTOR AND THE TRANSISTOR LEADS CANNOT TOUCH THE HEATSINK)
    - 11E. HOLD THE TRANSISTOR AGAINST THE HEATSINK UNTIL EPOXY SETS-UP
12. TORQUE 6-32 HEX NUTS (CPN A11056-1) AS FOLLOWS:
    - 12A. PRE-WAVE TORQUE OF 4-6 INCH LBS.
    - 12B. POST-WAVE AND WHEN ASSEMBLY HAS COOLED DOWN TO HANDLING TEMPERATURE TORQUE OF 13-15 INCH LBS.
13. INSTALL J3 CONNECTOR AS SHOWN ON COMPONENT MAP
14. LABEL INPUT PWA WITH CPN 126883-1 ON COMPONENT SIDE.
15. APPLY GENEROUS COAT OF 127023-1 OVERCOAT TO PARTS C121,C124,C221,C224. COVER ADJACENT PARTS.



CAUTION

STATIC CAN DAMAGE COMPONENTS!

DO NOT HANDLE

UNLESS WRIST STRAP IS WORN

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PRINTS TO: K

PWA, MAIN/INPUT CE1000

TOL. UNLESS SPECIFIED
X.XX = ± 0.020
X.XXX = ± 0.010
DRILLS = ± 0.003

DRAWN	JFL	9-23-98	APPROVED BY:		DO NOT SCALE PRINT
CHECKED	TLM	09-24-98	ME		SUPERSEDES
SCALE	NONE		EE		E.C.
PROJ #	MD390D0		PE	TS 09-23-98	DWG. NO. 102139-8 SHEET 1 OF 20 REV B
FILENAME: 102139-8_A.PCB			NEXT ASM:		

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A10020-7	6-32 X .625 PCB CAPTIVE STUD	8	HW9, HW10, HW11, HW12, HW13, HW14,
			HW15, HW16
A10265-19121	19.1K 0.25W 1% MF	2	R112, R212
A10266-2R74	2.7 OHM 2W 5% CF	1	R158
A10434-104JD	0.1 MF 250V 5% MTL POLY	2	C118, C218
A11056-1	6-32 HEX NUT W/BELLEVILLE	8	HW17, HW18, HW19, HW20, HW21,
			HW22, HW23, HW24
A11368-10011	1K 0.10W 1% CHIP 0805	8	R101, R106, R110, R201, R206,
			R210, R316, R416
A11368-10021	10K 1/10W 1% CHIP 0805	34	R9, R27, R104, R107, R108, R111,
			R121, R176, R177, R182, R185,
			R193, R204, R211, R221, R276,
			R277, R282, R285, R293, R313,
			R413, R500, R501, R502, R503,
			R504, R506, R600, R601, R602,
			R603, R604, R606
A11368-10031	100K 0.1W 1% CHIP 0805	15	R25, R30, R31, R123, R125, R179,
			R183, R186, R189, R223, R225,
			R279, R283, R286, R289
A11368-12121	12.1K OHM 0.10W 1% CHIP 0805	1	R21
A11368-13703	137 OHM 0.25W 1% CHIP	2	R139, R239
A11368-15831	158K 0.10W 1% CHIP 0805	8	R122, R124, R187, R188, R222,
			R224, R287, R288
A11368-19122	19.1K 0.125W 1% CHIP 1206	2	R109, R209
A11368-20023	20K 0.25W 1% CHIP 1210	3	R10, R184, R284
A11368-22601	226 OHM 0.10W 1% CHIP 0805	4	R116, R191, R216, R291
A11368-39231	392K 0.10W 1% CHIP 0805	8	R22, R23, R102, R126, R180, R202,
			R226, R280
A11368-49901	499 OHM 0.10W 1% CHIP 0805	4	R103, R137, R203, R237
A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	6	R113, R175, R213, R275, R315, R415
A11368-57621	57.6K 0.10W 1% CHIP 0805	4	R20, R24, R190, R290
A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	2	R118, R218
A11368-68121	68.1K 0.10W 1% CHIP	3	R12, R115, R215
A11368-71511	7.15KOHM 0.10W 1% 0805 T/R	1	R18
A11368-76811	7.68KOHM 0.10W 1% SMT 0805	1	R5
A11368-82511	8.25K 0.1W 1% CHIP 0805	3	R17, R114, R214
A11368-93111	9.31K 0.1W 1% CHIP 0805	1	R6
A11368-90921	90.9K 0.10W 1% CHIP 0805	4	R120, R178, R220, R278
A11369-102J2	0.001UF 50V 5% NPO MLC 0805	2	C134, C234
A11369-120K2	12PF 50V 10% NPO 0805 T/R	6	C500, C501, C502, C600, C601, C602
A11369-270K2	27PF 50V 10% NPO 0805 T/R	2	C107, C207
A11369-330J2	33PF 50V 5% NPO MLC 0805	2	C142, C242
A11369-471K2	470PF 50V 10% NPO 0805 T/R	4	C110, C141, C210, C241
A11371-0R02	0.0 OHM JUMPER CHIP 1206	2	R323, R423
A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	2	R14, R15
A11371-1011	100 OHM 0.10W 5% CHIP 0805	3	R13, R147, R247
A11371-1013	100 OHM .25W 5% 1210 SMT T/R	2	R322, R422
A11371-1022	1K 0.125W 5% CHIP 1206	1	R8
A11371-1213	120 OHM 0.25W 5% CHIP	6	R138, R144, R145, R238, R244, R245
A11371-1331	13K OHM 0.10W 5% CHIP 0805	4	R146, R161, R246, R261

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DRAWN	JFL	9-23-98	DWG. NO.	SHEET 2 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A11371-1501	15 OHM 0.10W 5% CHIP	4	C606,C607,R160,R260
A11371-1811	180 OHM 0.10W 5% CHIP	4	R148,R163,R248,R263
A11371-2223	2.2K 0.25W 5% CHIP 1210	2	R132,R232
A11371-2225	2.2K 1W 5% CHIP 2512	3	R1,R2,R7
A11371-3313	330 OHM 0.25W 5% CHIP	2	R4,R19
A11371-3333	33K 0.25W 5% CHIP 1210	6	R119,R140,R143,R219,R240,R243
A11371-3341	330K 0.10W 5% CHIP 0805	7	R3,R11,R26,R117,R217,R314,
			R414
A11371-3923	3.9K 0.25W 5% CHIP	3	R16,R135,R235
A11371-3934	39K OHM 0.50W 5% CHIP 1210	4	R317,R318,R417,R418
A11371-4701	47 OHM 0.10W 5% CHIP	2	R162,R262
A11371-4751	4.7M 0.10W 5% CHIP 0805	4	R174,R192,R274,R292
A11371-5R63	5.6 0.25W 5% CHIP	4	R150,R165,R250,R265
A11371-5R65	5.6 OHM 1W 5% CHIP 2512	2	R420,R421
A11371-6814	680 OHM 0.50W 5% CHIP	6	R105,R128,R181,R205,R228,R281
A11371-6821	6.8K 0.10W 5% CHIP 0805	2	R127,R227
A11371-7511	750 OHM 0.10W 5% CHIP	3	R28,R133,R233
A11371-8201	82 OHM 0.10W 5% CHIP	4	R136,R194,R236,R294
A11371-8205	82 OHM 1W 5% CHIP 2512	1	R607
A11371-8211	820 OHM 0.10W 5% CHIP	6	R129,R141,R195,R229,R241,R295
A11378-A050U	WIRE, 16 RED FAST X 5 X TERM	1	WP1
A11379-C050U	WIRE, 16 BLU FAST X 5 X TERM	1	WP3
A11427-103K2	0.01MF 50V 10% CHIP 0805	6	C102,C109,C115,C202,C209,C215
A11427-104K2	0.1 MF 50V 10% 0805	32	C2,C6,C7,C12,C24,C25,C28,C29,
			C122,C126,C127,C128,C129,
			C130,C131,C132,C133,C139,
			C222,C226,C227,C228,C229,
			C230,C231,C232,C233,C239,
			C505,C506,C605,C608
A11427-123K2	0.012 MF 50V 10% CHIP	2	C112,C212
A11427-272K2	2700PF 50V 10% CHIP 0805	2	C117,C217
A11427-472K2	4700PF 50V 10% X7R 0805	4	C116,C119,C216,C219
A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	1	WP6
C 2851-1	1N4004 SILICON RECT.	7	D1,D2,D3,D4,D6,D7,D10
C 3510-2	CHOKE, 470UH 10% AXIAL	4	L100,L101,L200,L201
C 3549-0	DIODE ZENER, 10V, 1N5240B	1	D8
C 3679-5	33UF 50V 20% VERT ELECT	1	C31
C 4477-3	470 MF 35V VERT	2	C4,C5
C 5095-2	POS. 15 VOLT REG.	1	U1
C 5096-0	NEG. 15 VOLT REG.	1	U2
C 5362-6	2.2 MF 50V VERT	1	C27
C 7091-9	0.33 MF 50V CHIP 1206	3	C22,C140,C240
C 7448-1	MMBT3904 CHIP NPN	6	Q100,Q101,Q129,Q200,Q201,Q229
C 8262-5	MC33078D DUAL LO NOISE OP AM	4	U4,U5,U105,U205
C 8576-8	100 MF 35V 10% ELEC	1	C26
C 9012-3	MC33079D QUAD LO NOISE OP AM	3	U101,U201,U500
C 9038-8	COMPARATOR, QUAD LM339D SO-1	4	U102,U104,U202,U204
C 9157-6	100UF 16V 20% NP ELEC RAD T/	2	C123,C223

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DRAWN	JFL	9-23-98	DWG. NO.	SHEET 3 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
C 9252-5	2N3904 40V NPN TRANSISTOR	2	Q104,Q204
C 9283-0	DIODE, 1N914/1N4148 SOT-23 S	54	D9,D13,D101,D102,D103,D104,
			D105,D106,D107,D108,D109,
			D110,D111,D112,D113,D116,
			D117,D118,D119,D120,D121,
			D122,D123,D124,D125,D126,
			D127,D128,D129,D201,D202,
			D203,D204,D205,D206,D207,
			D208,D209,D210,D211,D212,
			D213,D216,D217,D218,D221,
			D222,D223,D224,D225,D226,
			D227,D228,D229
C 9896-9	TEST POINT LOOP	2	TP38,TP39
C 9918-1	TO220 VERT CLIP-ON HEATSINK	2	U1X,U2X
C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-	6	Q102,Q109,Q111,Q202,Q209,Q211
C10208-4	100 MF 25V 20% VERT ELEC	2	C105,C205
C10422-1	DIODE, 3A 400V 1N5404 AXIAL	4	D114,D115,D214,D215
C10613-5	1K TOP ADJUST TRIMMER T/R	2	R134,R234
D 8917-3	8200UF 110VDC ELECTROLYTIC	2	C20,C21
H42902-9	ASM, THERMAL SENSE	2	U106,U206
S 5700-0	732 RTV RUBBER 10.3 OZ CLEAR	0	4
101016-1	LBL, BARCODE, , ,	1	2
101031-1	.250 FASTON, AUTO INSERTABLE	3	WP4,WP5,WP7
101571-1	HDR 2 POS .1 CTR MTA SHRD	1	J4
101573-1	HDR 4 POS .1 CTR MTA SHRD	1	J2
101993-1	JACK, 6P4 COND MODULAR R/A	1	J5
102138-8	PWB, CE1000/CE2000 MAIN/INPU	1	1
102438-101K2	100PF 200V 10% NPO 0805	6	C104,C120,C135,C204,C220,C235
102438-221K2	220PF 200V 10% NPO 0805	2	C111,C211
102438-560K2	56PF 200V 10% NPO 0805	4	C106,C206,C504,C604
102438-820K2	82PF 200V 10% NPO 0805	4	C108,C138,C208,C238
102465-1	.47UF 50V 20% RADIAL T/R	2	C101,C201
102466-1	10UF 250V 20% RADIAL T/R	1	C1
102467-1	22MF 25V 20% RAD T/R	4	C103,C203,C503,C603
102468-1	47UF 10V 20% NP RAD T/R	4	C113,C114,C213,C214
102470-1	INDUCTOR, 2.75UH 11A RADIAL	2	L102,L202
102471-2	HDR, 12POS 2.5MM RT ANG KEYE	1	J502
102472-3	HDR, 16POS .100 CTR SGL ROW	1	J3
102473-1	SPEAKON, 4 POLE PCB HORZ	2	J100,J200
102475-1	BLOCK, 5 POS TERMINAL	1	TB1
102476-1	LED, SMT R/A GREEN	3	E1,E101,E201
102477-1	LED, SMT R/A RED	4	E100,E102,E200,E202
102478-1	TRIAC DRIVER SBS 8V THRESH	2	Q132,Q232
102479-1	PWR MJD112 NPN DARLINGTON 10	2	Q1,Q2
102480-1	FET, N-CH 25V 50MA SOT-23	2	Q133,Q233
102481-1	NPN 25V LOW NOISE SOT-23	2	Q108,Q208
102483-1	PNP 300V 500MA SOT-23	2	Q103,Q203
102486-1	OPTO BJT NPN SOIC-8 CTR =100	1	U3
102488-1	SPDT VERT SLIDE 12MM SHAFT	1	S100

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DRAWN	JFL	9-23-98	DWG. NO.	SHEET 4 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
102569-3	HS ASM, T1 ISOLATED CH1, , ,	1	HS3
102570-3	HS ASM, T1 ISOLATED CH2, , ,	1	HS4
102571-3	HS ASM, T1 NON-ISOLATED CH1,	1	HS1
102572-3	HS ASM, T1 NON-ISOLATED CH2,	1	HS2
102579-1	STAND, 1/4 RD SWAGE AL	2	HW25, HW26
102595-3	POT, 5K LIN 21 DNT 12MM HORI	2	R100, R200
102608-1	SPACER, 6X.187 LONG ALUMINUM	8	HW1, HW2, HW3, HW4, HW5, HW6, HW7,
			HW8
102723-2	OPTO CELL ON=500 OHM	2	U100, U200
103180-1	BUMPER, 0.4" TALL BLK W/ADH	3	7
103191-1	0.47UF Z5U 1210 20% 50V	4	C121, C124, C221, C224
103192-1	NPN 300V 500MA 50MHZ SOT-223	4	Q107, Q110, Q207, Q210
103193-1	PNP 300V 500MA 50MHZ SOT-223	4	Q105, Q120, Q205, Q220
103199-1	0.4 OHM 1W 5% 2512 T/R	36	R152, R153, R156, R157, R159,
			R167, R168, R171, R172, R252,
			R253, R256, R257, R259, R267,
			R268, R271, R272, R300, R301,
			R302, R305, R306, R307, R308,
			R311, R312, R400, R401, R402,
			R405, R406, R407, R408, R411, R412
103210-1	2.2UF 160V RADIAL T/R	4	C136, C137, C236, C237
103331-N050R	WIRE, 16 BLK/WHT TAB X 5 X T	1	WP2
103415-70608	SCREW,6-32 X.5 TORX PNHD SEM	2	HW27, HW28
125106-1	MAC9D 8 AMP 400V TRIAC	2	Q131, Q231
125242-1	CAP, .625ID X 1" VINYL	1	3
126929-1	1/4" TRS/XLR COMBO PCB VERT	2	J500, J600
125482-1	ADHESIVE LOCTITE 384 OUTPUT	0	5
125483-1	ACTIVATOR LOCTITE "OUTPUT"	0	6
125478-1	3.83KOHM 0.50W 1% 2010 T/R	2	R142, R242
125508-1	10UF 50VDC ELECTROLYTIC SMD	2	C3, C30
126317-1	REL, 30A 24V SPST PCB W/FAST	2	K100, K200
126325-1	DPDT MINI SLIDE NON-SHORT PC	1	S1
127023-1	OVERCOAT PEN	0	8

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DRAWN	JFL	9-23-98	DWG. NO.	SHEET 5 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C1	102466-1	10UF 250V 20% RADIAL T/R	J 8
C2	A11427-104K2	0.1 MF 50V 10% 0805	F 9*
C3	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C4	C 4477-3	470 MF 35V VERT	G 10
C5	C 4477-3	470 MF 35V VERT	G 9
C6	A11427-104K2	0.1 MF 50V 10% 0805	H 10*
C7	A11427-104K2	0.1 MF 50V 10% 0805	H 9*
C12	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C20	D 8917-3	8200UF 110VDC ELECTROLYTIC	C 9
C21	D 8917-3	8200UF 110VDC ELECTROLYTIC	B 9
C22	C 7091-9	0.33 MF 50V CHIP 1206	N 9*
C24	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C25	A11427-104K2	0.1 MF 50V 10% 0805	O 9*
C26	C 8576-8	100 MF 35V 10% ELEC	I 9
C27	C 5362-6	2.2 MF 50V VERT	H 10
C28	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C29	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C30	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C31	C 3679-5	33UF 50V 20% VERT ELECT	I 10
C101	102465-1	.47UF 50V 20% RADIAL T/R	M 9
C102	A11427-103K2	0.01MF 50V 10% CHIP 0805	M 9*
C103	102467-1	22MF 25V 20% RAD T/R	M 9
C104	102438-101K2	100PF 200V 10% NPO 0805	M 9*
C105	C10208-4	100 MF 25V 20% VERT ELEC	L 9
C106	102438-560K2	56PF 200V 10% NPO 0805	L 9*
C107	A11369-270K2	27PF 50V 10% NPO 0805 T/R	L 9*
C108	102438-820K2	82PF 200V 10% NPO 0805	L 10*
C109	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 6*
C110	A11369-471K2	470PF 50V 10% NPO 0805 T/R	M 7*
C111	102438-221K2	220PF 200V 10% NPO 0805	N 8*
C112	A11427-123K2	0.012 MF 50V 10% CHIP	O 8*
C113	102468-1	47UF 10V 20% NP RAD T/R	N 8
C114	102468-1	47UF 10V 20% NP RAD T/R	N 8
C115	A11427-103K2	0.01MF 50V 10% CHIP 0805	N 8*
C116	A11427-472K2	4700PF 50V 10% X7R 0805	N 7*
C117	A11427-272K2	2700PF 50V 10% CHIP 0805	I 7*
C118	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 8
C119	A11427-472K2	4700PF 50V 10% X7R 0805	I 7*
C120	102438-101K2	100PF 200V 10% NPO 0805	I 7*
C121	103191-1	0.47UF Z5U 1210 20% 50V	G 8*
C122	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C123	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 8
C124	103191-1	0.47UF Z5U 1210 20% 50V	L 9*
C126	A11427-104K2	0.1 MF 50V 10% 0805	N 10*
C127	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C128	A11427-104K2	0.1 MF 50V 10% 0805	M 10*
C129	A11427-104K2	0.1 MF 50V 10% 0805	M 9*

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 6 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C130	A11427-104K2	0.1 MF 50V 10% 0805	H 8*
C131	A11427-104K2	0.1 MF 50V 10% 0805	H 7*
C132	A11427-104K2	0.1 MF 50V 10% 0805	F 7*
C133	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C134	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	M 7*
C135	102438-101K2	100PF 200V 10% NPO 0805	N 7*
C136	103210-1	2.2UF 160V RADIAL T/R	I 7
C137	103210-1	2.2UF 160V RADIAL T/R	I 7
C138	102438-820K2	82PF 200V 10% NPO 0805	M 7*
C139	A11427-104K2	0.1 MF 50V 10% 0805	G 7*
C140	C 7091-9	0.33 MF 50V CHIP 1206	L 9
C141	A11369-471K2	470PF 50V 10% NPO 0805 T/R	N 10
C142	A11369-330J2	33PF 50V 5% NPO MLC 0805	M 10
C201	102465-1	.47UF 50V 20% RADIAL T/R	J 9
C202	A11427-103K2	0.01MF 50V 10% CHIP 0805	K 9*
C203	102467-1	22MF 25V 20% RAD T/R	K 9
C204	102438-101K2	100PF 200V 10% NPO 0805	J 9*
C205	C10208-4	100 MF 25V 20% VERT ELEC	J 9
C206	102438-560K2	56PF 200V 10% NPO 0805	J 9*
C207	A11369-270K2	27PF 50V 10% NPO 0805 T/R	J 9*
C208	102438-820K2	82PF 200V 10% NPO 0805	J 10*
C209	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 3*
C210	A11369-471K2	470PF 50V 10% NPO 0805 T/R	K 7*
C211	102438-221K2	220PF 200V 10% NPO 0805	K 7*
C212	A11427-123K2	0.012 MF 50V 10% CHIP	L 8*
C213	102468-1	47UF 10V 20% NP RAD T/R	K 8
C214	102468-1	47UF 10V 20% NP RAD T/R	K 8
C215	A11427-103K2	0.01MF 50V 10% CHIP 0805	K 8*
C216	A11427-472K2	4700PF 50V 10% X7R 0805	J 2*
C217	A11427-272K2	2700PF 50V 10% CHIP 0805	D 1*
C218	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 1
C219	A11427-472K2	4700PF 50V 10% X7R 0805	E 1*
C220	102438-101K2	100PF 200V 10% NPO 0805	D 2*
C221	103191-1	0.47UF Z5U 1210 20% 50V	E 8*
C222	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C223	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 9
C224	103191-1	0.47UF Z5U 1210 20% 50V	J 9*
C226	A11427-104K2	0.1 MF 50V 10% 0805	K 10*
C227	A11427-104K2	0.1 MF 50V 10% 0805	K 9*
C228	A11427-104K2	0.1 MF 50V 10% 0805	J 10*
C229	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C230	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C231	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C232	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C233	A11427-104K2	0.1 MF 50V 10% 0805	D 8*
C234	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	J 7*
C235	102438-101K2	100PF 200V 10% NPO 0805	J 2*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 7 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C236	103210-1	2.2UF 160V RADIAL T/R	I 1
C237	103210-1	2.2UF 160V RADIAL T/R	I 1
C238	102438-820K2	82PF 200V 10% NPO 0805	J 7*
C239	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C240	C 7091-9	0.33 MF 50V CHIP 1206	J 9
C241	A11369-471K2	470PF 50V 10% NPO 0805 T/R	L 10
C242	A11369-330J2	33PF 50V 5% NPO MLC 0805	K 10
C500	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C501	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C502	A11369-120K2	12PF 50V 10% NPO 0805 T/R	B 2
C503	102467-1	22MF 25V 20% RAD T/R	B 2
C504	102438-560K2	56PF 200V 10% NPO 0805	A 2
C505	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C506	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C509		OPEN	B 2
C600	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C601	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 1
C602	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C603	102467-1	22MF 25V 20% RAD T/R	B 2
C604	102438-560K2	56PF 200V 10% NPO 0805	B 2
C605	A11427-104K2	0.1 MF 50V 10% 0805	A 1
C606	A11371-1501	15 OHM 0.10W 5% CHIP	C 3
C607	A11371-1501	15 OHM 0.10W 5% CHIP	C 3
C608	A11427-104K2	0.1 MF 50V 10% 0805	B 1
C609		OPEN	B 2
D1	C 2851-1	1N4004 SILICON RECT.	G 9
D2	C 2851-1	1N4004 SILICON RECT.	G 10
D3	C 2851-1	1N4004 SILICON RECT.	G 10
D4	C 2851-1	1N4004 SILICON RECT.	G 10
D6	C 2851-1	1N4004 SILICON RECT.	J 8
D7	C 2851-1	1N4004 SILICON RECT.	J 8
D8	C 3549-0	DIODE ZENER, 10V, 1N5240B	J 8
D9	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D10	C 2851-1	1N4004 SILICON RECT.	I 10
D13	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D101	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D102	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D103	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D104	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9*
D105	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D106	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D107	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D108	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D109	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D110	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D111	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D112	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 8 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D113	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D114	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 6
D115	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 5
D116	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 8*
D117	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 10*
D118	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 10*
D119	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D120	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D121	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D122	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9*
D123	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 9*
D124	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7*
D125	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	H 7*
D126	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 7
D127	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 8
D128	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7*
D129	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 6*
D201	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D202	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D203	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D204	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D205	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D206	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D207	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D208	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7*
D209	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D210	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D211	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D212	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D213	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D214	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 3
D215	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 2
D216	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 8*
D217	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 10*
D218	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 10*
D221	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D222	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D223	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 9*
D224	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7*
D225	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 7*
D226	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7
D227	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8
D228	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7*
D229	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 6*
E1	102476-1	LED, SMT R/A GREEN	I 1
E100	102477-1	LED, SMT R/A RED	J 1
E101	102476-1	LED, SMT R/A GREEN	J 1

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 9 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
E102	102477-1	LED, SMT R/A RED	K 1
E200	102477-1	LED, SMT R/A RED	M 1
E201	102476-1	LED, SMT R/A GREEN	L 1
E202	102477-1	LED, SMT R/A RED	M 1
HS1	102571-3	HS ASM, T1 NON-ISOLATED CH1,	L 6
HS2	102572-3	HS ASM, T1 NON-ISOLATED CH2,	L 3
HS3	102569-3	HS ASM, T1 ISOLATED CH1, , ,	G 6
HS4	102570-3	HS ASM, T1 ISOLATED CH2, , ,	G 3
HW1	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW2	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW3	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW4	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW5	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW6	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW7	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW8	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW9	A10020-7	6-32 X .625 PCB CAPTIVE STUD	D 5
HW10	A10020-7	6-32 X .625 PCB CAPTIVE STUD	I 6
HW11	A10020-7	6-32 X .625 PCB CAPTIVE STUD	D 2
HW12	A10020-7	6-32 X .625 PCB CAPTIVE STUD	I 3
HW13	A10020-7	6-32 X .625 PCB CAPTIVE STUD	J 5
HW14	A10020-7	6-32 X .625 PCB CAPTIVE STUD	N 6
HW15	A10020-7	6-32 X .625 PCB CAPTIVE STUD	J 2
HW16	A10020-7	6-32 X .625 PCB CAPTIVE STUD	N 3
HW17	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW18	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW19	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW20	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW21	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW22	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW23	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW24	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW25	102579-1	STAND, 1/4 RD SWAGE AL	A 1
HW26	102579-1	STAND, 1/4 RD SWAGE AL	A 2
HW27	103415-70608	SCREW, 6-32 X.5 TORX PNHD SEM	A 4
HW28	103415-70608	SCREW, 6-32 X.5 TORX PNHD SEM	A 4
J2	101573-1	HDR 4 POS .1 CTR MTA SHRD	G 10
J3	102472-3	HDR, 16POS .100 CTR SGL ROW	M 8
J4	101571-1	HDR 2 POS .1 CTR MTA SHRD	L 10
J5	101993-1	JACK, 6P4 COND MODULAR R/A	N 10
J100	102473-1	SPEAKON, 4 POLE PCB HORZ	D 10
J200	102473-1	SPEAKON, 4 POLE PCB HORZ	F 10
J500	126929-1	1/4" TRS/XLR COMBO PCB VERT	B 3
J502	102471-2	HDR, 12POS 2.5MM RT ANG KEYED	C 1
J600	126929-1	1/4" TRS/XLR COMBO PCB VERT	B 1
K100	126317-1	REL, 30A 24V SPST PCB W/FASTON	G 9
K200	126317-1	REL, 30A 24V SPST PCB W/FASTON	E 9
L100	C 3510-2	CHOKE, 470UH 10% AXIAL	N 7

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 10 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
L101	C 3510-2	CHOKE, 470UH 10% AXIAL	I 7
L102	102470-1	INDUCTOR, 2.75UH 11A RADIAL	H 8
L200	C 3510-2	CHOKE, 470UH 10% AXIAL	J 1
L201	C 3510-2	CHOKE, 470UH 10% AXIAL	D 1
L202	102470-1	INDUCTOR, 2.75UH 11A RADIAL	I 1
Q1	102479-1	PWR MJD112 NPN DARLINGTON 100V	H 10
Q2	102479-1	PWR MJD112 NPN DARLINGTON 100V	I 10
Q100	C 7448-1	MMBT3904 CHIP NPN	M 9*
Q101	C 7448-1	MMBT3904 CHIP NPN	M 9*
Q102	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 9*
Q103	102483-1	PNP 300V 500MA SOT-23	L 9*
Q104	C 9252-5	2N3904 40V NPN TRANSISTOR	I 6
Q105	103193-1	PNP 300V 500MA 50MHZ SOT-223	M 7*
Q107	103192-1	NPN 300V 500MA 50MHZ SOT-223	M 7*
Q108	102481-1	NPN 25V LOW NOISE SOT-23	N 8*
Q109	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 8*
Q110	103192-1	NPN 300V 500MA 50MHZ SOT-223	N 7*
Q111	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 7*
Q112		INSTALLED ON THE PREVIOUS ASSEMBLY	N 7
Q114		INSTALLED ON THE PREVIOUS ASSEMBLY	J 6
Q115		INSTALLED ON THE PREVIOUS ASSEMBLY	K 5
Q118		INSTALLED ON THE PREVIOUS ASSEMBLY	M 6
Q119		INSTALLED ON THE PREVIOUS ASSEMBLY	N 5
Q120	103193-1	PNP 300V 500MA 50MHZ SOT-223	I 7*
Q121		INSTALLED ON THE PREVIOUS ASSEMBLY	I 7
Q123		INSTALLED ON THE PREVIOUS ASSEMBLY	E 6
Q124		INSTALLED ON THE PREVIOUS ASSEMBLY	E 5
Q127		INSTALLED ON THE PREVIOUS ASSEMBLY	H 6
Q128		INSTALLED ON THE PREVIOUS ASSEMBLY	H 5
Q129	C 7448-1	MMBT3904 CHIP NPN	G 9*
Q131	125106-1	MAC9D 8 AMP 400V TRIAC	F 9
Q132	102478-1	TRIAC DRIVER SBS 8V THRESH	F 9
Q133	102480-1	FET, N-CH 25V 50MA SOT-23	M 9*
Q200	C 7448-1	MMBT3904 CHIP NPN	K 9*
Q201	C 7448-1	MMBT3904 CHIP NPN	K 9*
Q202	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	L 9*
Q203	102483-1	PNP 300V 500MA SOT-23	J 9*
Q204	C 9252-5	2N3904 40V NPN TRANSISTOR	I 3
Q205	103193-1	PNP 300V 500MA 50MHZ SOT-223	J 7*
Q207	103192-1	NPN 300V 500MA 50MHZ SOT-223	K 7*
Q208	102481-1	NPN 25V LOW NOISE SOT-23	K 7*
Q209	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	K 8*
Q210	103192-1	NPN 300V 500MA 50MHZ SOT-223	J 2*
Q211	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	J 2*
Q212		INSTALLED ON THE PREVIOUS ASSEMBLY	J 2
Q214		INSTALLED ON THE PREVIOUS ASSEMBLY	J 3
Q215		INSTALLED ON THE PREVIOUS ASSEMBLY	K 3

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 11 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
Q218		INSTALLED ON THE PREVIOUS ASSEMBLY	M 3
Q219		INSTALLED ON THE PREVIOUS ASSEMBLY	N 3
Q220	103193-1	PNP 300V 500MA 50MHZ SOT-223	D 2*
Q221		INSTALLED ON THE PREVIOUS ASSEMBLY	D 2
Q223		INSTALLED ON THE PREVIOUS ASSEMBLY	E 3
Q224		INSTALLED ON THE PREVIOUS ASSEMBLY	E 3
Q227		INSTALLED ON THE PREVIOUS ASSEMBLY	H 3
Q228		INSTALLED ON THE PREVIOUS ASSEMBLY	H 3
Q229	C 7448-1	MMBT3904 CHIP NPN	E 9*
Q231	125106-1	MAC9D 8 AMP 400V TRIAC	E 9
Q232	102478-1	TRIAC DRIVER SBS 8V THRESH	F 8
Q233	102480-1	FET, N-CH 25V 50MA SOT-23	J 9*
R1	A11371-2225	2.2K 1W 5% CHIP 2512	J 8*
R2	A11371-2225	2.2K 1W 5% CHIP 2512	J 8*
R3	A11371-3341	330K 0.10W 5% CHIP 0805	I 8*
R4	A11371-3313	330 OHM 0.25W 5% CHIP	I 1*
R5	A11368-76811	7.68KOHM 0.10W 1% SMT 0805	D 8*
R6	A11368-93111	9.31K 0.1W 1% CHIP 0805	D 8*
R7	A11371-2225	2.2K 1W 5% CHIP 2512	J 8*
R8	A11371-1022	1K 0.125W 5% CHIP 1206	N 10*
R9	A11368-10021	10K 1/10W 1% CHIP 0805	H 9*
R10	A11368-20023	20K 0.25W 1% CHIP 1210	H 9*
R11	A11371-3341	330K 0.10W 5% CHIP 0805	I 9*
R12	A11368-68121	68.1K 0.10W 1% CHIP	I 9*
R13	A11371-1011	100 OHM 0.10W 5% CHIP 0805	I 10*
R14	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R15	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R16	A11371-3923	3.9K 0.25W 5% CHIP	N 9*
R17	A11368-82511	8.25K 0.1W 1% CHIP 0805	F 10*
R18	A11368-71511	7.15K 0.1W 1% CHIP 0805	D 8*
R19	A11371-3313	330 OHM 0.25W 5% CHIP	I 1*
R20	A11368-57621	57.6K 0.10W 1% CHIP 0805	I 9*
R21	A11368-12121	12.1K OHM 0.10W 1% CHIP 0805	J 9*
R22	A11368-39231	392K 0.10W 1% CHIP 0805	I 9*
R23	A11368-39231	392K 0.10W 1% CHIP 0805	I 9*
R24	A11368-57621	57.6K 0.10W 1% CHIP 0805	I 9*
R25	A11368-10031	100K 0.1W 1% CHIP 0805	N 9*
R26	A11371-3341	330K 0.10W 5% CHIP 0805	A 9*
R27	A11368-10021	10K 1/10W 1% CHIP 0805	L 9*
R28	A11371-7511	750 OHM 0.10W 5% CHIP	L 9*
R29		OPEN	
R30	A11368-10031	100K 0.1W 1% CHIP 0805	I 8*
R31	A11368-10031	100K 0.1W 1% CHIP 0805	J 8*
R100	102595-3	POT, 5K LIN 21 DNT 12MM HORIZ	L 1
R101	A11368-10011	1K 0.10W 1% CHIP 0805	M 10*
R102	A11368-39231	392K 0.10W 1% CHIP 0805	N 9*
R103	A11368-49901	499 OHM 0.10W 1% CHIP 0805	N 9*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 12 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R104	A11368-10021	10K 1/10W 1% CHIP 0805	N 9*
R105	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R106	A11368-10011	1K 0.10W 1% CHIP 0805	M 9*
R107	A11368-10021	10K 1/10W 1% CHIP 0805	L 10*
R108	A11368-10021	10K 1/10W 1% CHIP 0805	L 10*
R109	A11368-19122	19.1K 0.125W 1% CHIP 1206	M 9*
R110	A11368-10011	1K 0.10W 1% CHIP 0805	L 9*
R111	A11368-10021	10K 1/10W 1% CHIP 0805	L 9*
R112	A10265-19121	19.1K 0.25W 1% MF	L 9
R113	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	L 10*
R114	A11368-82511	8.25K 0.1W 1% CHIP 0805	L 10*
R115	A11368-68121	68.1K 0.10W 1% CHIP	L 10*
R116	A11368-22601	226 OHM 0.10W 1% CHIP 0805	M 9*
R117	A11371-3341	330K 0.10W 5% CHIP 0805	M 9*
R118	A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	M 10
R119	A11371-3333	33K 0.25W 5% CHIP 1210	M 9*
R120	A11368-90921	90.9K 0.10W 1% CHIP 0805	M 9*
R121	A11368-10021	10K 1/10W 1% CHIP 0805	M 10
R122	A11368-15831	158K 0.10W 1% CHIP 0805	N 9*
R123	A11368-10031	100K 0.1W 1% CHIP 0805	M 9*
R124	A11368-15831	158K 0.10W 1% CHIP 0805	M 9*
R125	A11368-10031	100K 0.1W 1% CHIP 0805	N 9*
R126	A11368-39231	392K 0.10W 1% CHIP 0805	M 9*
R127	A11371-6821	6.8K 0.10W 5% CHIP 0805	N 9*
R128	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R129	A11371-8211	820 OHM 0.10W 5% CHIP	N 7*
R130		OPEN	O 8*
R131		OPEN	O 8*
R132	A11371-2223	2.2K 0.25W 5% CHIP 1210	H 6*
R133	A11371-7511	750 OHM 0.10W 5% CHIP	H 6*
R134	C10613-5	1K TOP ADJUST TRIMMER T/R	M 7
R135	A11371-3923	3.9K 0.25W 5% CHIP	M 7*
R136	A11371-8201	82 OHM 0.10W 5% CHIP	M 7*
R137	A11368-49901	499 OHM 0.10W 1% CHIP 0805	N 8*
R138	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R139	A11368-13703	137 OHM 0.25W 1% CHIP	N 8*
R140	A11371-3333	33K 0.25W 5% CHIP 1210	N 8*
R141	A11371-8211	820 OHM 0.10W 5% CHIP	O 8*
R142	125478-1	3.83KOHM 0.50W 1% 2010 T/R	O 8*
R143	A11371-3333	33K 0.25W 5% CHIP 1210	N 8*
R144	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R145	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R146	A11371-1331	13K OHM 0.10W 5% CHIP 0805	N 7*
R147	A11371-1011	100 OHM 0.10W 5% CHIP 0805	N 7*
R148	A11371-1811	180 OHM 0.10W 5% CHIP	M 7*
R150	A11371-5R63	5.6 0.25W 5% CHIP	N 6*
R152	103199-1	0.4 OHM 1W 5% 2512 T/R	K 6*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 13 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R153	103199-1	0.4 OHM 1W 5% 2512 T/R	K 5*
R156	103199-1	0.4 OHM 1W 5% 2512 T/R	M 6*
R157	103199-1	0.4 OHM 1W 5% 2512 T/R	N 5*
R158	A10266-2R74	2.7 OHM 2W 5% CF	I 8
R159	103199-1	0.4 OHM 1W 5% 2512 T/R	D 6*
R160	A11371-1501	15 OHM 0.10W 5% CHIP	I 7*
R161	A11371-1331	13K OHM 0.10W 5% CHIP 0805	H 7*
R162	A11371-4701	47 OHM 0.10W 5% CHIP	H 7*
R163	A11371-1811	180 OHM 0.10W 5% CHIP	I 7*
R165	A11371-5R63	5.6 0.25W 5% CHIP	I 5*
R167	103199-1	0.4 OHM 1W 5% 2512 T/R	E 6*
R168	103199-1	0.4 OHM 1W 5% 2512 T/R	F 6*
R171	103199-1	0.4 OHM 1W 5% 2512 T/R	G 6*
R172	103199-1	0.4 OHM 1W 5% 2512 T/R	H 6*
R174	A11371-4751	4.7M 0.10W 5% CHIP 0805	G 8*
R175	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	G 8*
R176	A11368-10021	10K 1/10W 1% CHIP 0805	G 8*
R177	A11368-10021	10K 1/10W 1% CHIP 0805	H 8*
R178	A11368-90921	90.9K 0.10W 1% CHIP 0805	N 9*
R179	A11368-10031	100K 0.1W 1% CHIP 0805	F 7*
R180	A11368-39231	392K 0.10W 1% CHIP 0805	G 8*
R181	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R182	A11368-10021	10K 1/10W 1% CHIP 0805	F 8*
R183	A11368-10031	100K 0.1W 1% CHIP 0805	F 8*
R184	A11368-20023	20K 0.25W 1% CHIP 1210	F 9*
R185	A11368-10021	10K 1/10W 1% CHIP 0805	G 8*
R186	A11368-10031	100K 0.1W 1% CHIP 0805	N 10*
R187	A11368-15831	158K 0.10W 1% CHIP 0805	M 10*
R188	A11368-15831	158K 0.10W 1% CHIP 0805	N 10*
R189	A11368-10031	100K 0.1W 1% CHIP 0805	M 10*
R190	A11368-57621	57.6K 0.10W 1% CHIP 0805	N 6*
R191	A11368-22601	226 OHM 0.10W 1% CHIP 0805	N 6*
R192	A11371-4751	4.7M 0.10W 5% CHIP 0805	L 9*
R193	A11368-10021	10K 1/10W 1% CHIP 0805	N 9*
R194	A11371-8201	82 OHM 0.10W 5% CHIP	M 7*
R195	A11371-8211	820 OHM 0.10W 5% CHIP	M 7*
R200	102595-3	POT, 5K LIN 21 DNT 12MM HORIZ	N 1
R201	A11368-10011	1K 0.10W 1% CHIP 0805	K 10*
R202	A11368-39231	392K 0.10W 1% CHIP 0805	L 9*
R203	A11368-49901	499 OHM 0.10W 1% CHIP 0805	L 9*
R204	A11368-10021	10K 1/10W 1% CHIP 0805	L 9*
R205	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R206	A11368-10011	1K 0.10W 1% CHIP 0805	J 9*
R209	A11368-19122	19.1K 0.125W 1% CHIP 1206	K 9*
R210	A11368-10011	1K 0.10W 1% CHIP 0805	J 9*
R211	A11368-10021	10K 1/10W 1% CHIP 0805	J 9*
R212	A10265-19121	19.1K 0.25W 1% MF	J 9

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 14 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R213	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	J 10*
R214	A11368-82511	8.25K 0.1W 1% CHIP 0805	J 10*
R215	A11368-68121	68.1K 0.10W 1% CHIP	J 10*
R216	A11368-22601	226 OHM 0.10W 1% CHIP 0805	K 9*
R217	A11371-3341	330K 0.10W 5% CHIP 0805	J 9*
R218	A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	K 10
R219	A11371-3333	33K 0.25W 5% CHIP 1210	J 9*
R220	A11368-90921	90.9K 0.10W 1% CHIP 0805	K 9*
R221	A11368-10021	10K 1/10W 1% CHIP 0805	K 10
R222	A11368-15831	158K 0.10W 1% CHIP 0805	K 9*
R223	A11368-10031	100K 0.1W 1% CHIP 0805	K 9*
R224	A11368-15831	158K 0.10W 1% CHIP 0805	K 9*
R225	A11368-10031	100K 0.1W 1% CHIP 0805	L 9*
R226	A11368-39231	392K 0.10W 1% CHIP 0805	K 9*
R227	A11371-6821	6.8K 0.10W 5% CHIP 0805	K 9*
R228	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R229	A11371-8211	820 OHM 0.10W 5% CHIP	K 7*
R230		OPEN	L 7*
R231		OPEN	L 7*
R232	A11371-2223	2.2K 0.25W 5% CHIP 1210	H 3*
R233	A11371-7511	750 OHM 0.10W 5% CHIP	H 3*
R234	C10613-5	1K TOP ADJUST TRIMMER T/R	J 7
R235	A11371-3923	3.9K 0.25W 5% CHIP	J 7*
R236	A11371-8201	82 OHM 0.10W 5% CHIP	J 7*
R237	A11368-49901	499 OHM 0.10W 1% CHIP 0805	K 8*
R238	A11371-1213	120 OHM 0.25W 5% CHIP	K 7*
R239	A11368-13703	137 OHM 0.25W 1% CHIP	K 8*
R240	A11371-3333	33K 0.25W 5% CHIP 1210	K 7*
R241	A11371-8211	820 OHM 0.10W 5% CHIP	L 8*
R242	125478-1	3.83KOHM 0.50W 1% 2010 T/R	L 7*
R243	A11371-3333	33K 0.25W 5% CHIP 1210	K 8*
R244	A11371-1213	120 OHM 0.25W 5% CHIP	K 8*
R245	A11371-1213	120 OHM 0.25W 5% CHIP	K 8*
R246	A11371-1331	13K OHM 0.10W 5% CHIP 0805	J 2*
R247	A11371-1011	100 OHM 0.10W 5% CHIP 0805	J 2*
R248	A11371-1811	180 OHM 0.10W 5% CHIP	K 2*
R250	A11371-5R63	5.6 0.25W 5% CHIP	J 2*
R252	103199-1	0.4 OHM 1W 5% 2512 T/R	K 4*
R253	103199-1	0.4 OHM 1W 5% 2512 T/R	K 3*
R256	103199-1	0.4 OHM 1W 5% 2512 T/R	N 4*
R257	103199-1	0.4 OHM 1W 5% 2512 T/R	N 3*
R259	103199-1	0.4 OHM 1W 5% 2512 T/R	D 3*
R260	A11371-1501	15 OHM 0.10W 5% CHIP	D 1*
R261	A11371-1331	13K OHM 0.10W 5% CHIP 0805	E 2*
R262	A11371-4701	47 OHM 0.10W 5% CHIP	E 2*
R263	A11371-1811	180 OHM 0.10W 5% CHIP	E 2*
R265	A11371-5R63	5.6 0.25W 5% CHIP	E 2*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 15 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R267	103199-1	0.4 OHM 1W 5% 2512 T/R	E 4*
R268	103199-1	0.4 OHM 1W 5% 2512 T/R	F 3*
R271	103199-1	0.4 OHM 1W 5% 2512 T/R	H 4*
R272	103199-1	0.4 OHM 1W 5% 2512 T/R	H 3*
R274	A11371-4751	4.7M 0.10W 5% CHIP 0805	E 8*
R275	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	E 8*
R276	A11368-10021	10K 1/10W 1% CHIP 0805	E 8*
R277	A11368-10021	10K 1/10W 1% CHIP 0805	E 8*
R278	A11368-90921	90.9K 0.10W 1% CHIP 0805	L 9*
R279	A11368-10031	100K 0.1W 1% CHIP 0805	E 7*
R280	A11368-39231	392K 0.10W 1% CHIP 0805	E 8*
R281	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R282	A11368-10021	10K 1/10W 1% CHIP 0805	D 8*
R283	A11368-10031	100K 0.1W 1% CHIP 0805	E 8*
R284	A11368-20023	20K 0.25W 1% CHIP 1210	F 9*
R285	A11368-10021	10K 1/10W 1% CHIP 0805	F 8*
R286	A11368-10031	100K 0.1W 1% CHIP 0805	L 10*
R287	A11368-15831	158K 0.10W 1% CHIP 0805	K 10*
R288	A11368-15831	158K 0.10W 1% CHIP 0805	K 10*
R289	A11368-10031	100K 0.1W 1% CHIP 0805	K 10*
R290	A11368-57621	57.6K 0.10W 1% CHIP 0805	N 3*
R291	A11368-22601	226 OHM 0.10W 1% CHIP 0805	N 3*
R292	A11371-4751	4.7M 0.10W 5% CHIP 0805	J 9*
R293	A11368-10021	10K 1/10W 1% CHIP 0805	K 9*
R294	A11371-8201	82 OHM 0.10W 5% CHIP	J 7*
R295	A11371-8211	820 OHM 0.10W 5% CHIP	J 7*
R300	103199-1	0.4 OHM 1W 5% 2512 T/R	D 6*
R301	103199-1	0.4 OHM 1W 5% 2512 T/R	J 6*
R302	103199-1	0.4 OHM 1W 5% 2512 T/R	K 5*
R305	103199-1	0.4 OHM 1W 5% 2512 T/R	M 6*
R306	103199-1	0.4 OHM 1W 5% 2512 T/R	N 5*
R307	103199-1	0.4 OHM 1W 5% 2512 T/R	E 6*
R308	103199-1	0.4 OHM 1W 5% 2512 T/R	F 6*
R311	103199-1	0.4 OHM 1W 5% 2512 T/R	G 6*
R312	103199-1	0.4 OHM 1W 5% 2512 T/R	I 6*
R313	A11368-10021	10K 1/10W 1% CHIP 0805	G 7*
R314	A11371-3341	330K 0.10W 5% CHIP 0805	G 7*
R315	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	H 7*
R316	A11368-10011	1K 0.10W 1% CHIP 0805	M 10*
R317	A11371-3934	39K OHM 0.50W 5% CHIP 1210	N 8
R318	A11371-3934	39K OHM 0.50W 5% CHIP 1210	N 8
R319		OPEN	M 10*
R322	A11371-1013	100 OHM .25W 5% 1210 SMT T/R	L 9
R323	A11371-0R02	0.0 OHM JUMPER CHIP 1206	G 8
R400	103199-1	0.4 OHM 1W 5% 2512 T/R	D 3*
R401	103199-1	0.4 OHM 1W 5% 2512 T/R	J 4*
R402	103199-1	0.4 OHM 1W 5% 2512 T/R	K 3*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 16 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R405	103199-1	0.4 OHM 1W 5% 2512 T/R	M 4*
R406	103199-1	0.4 OHM 1W 5% 2512 T/R	N 3*
R407	103199-1	0.4 OHM 1W 5% 2512 T/R	E 4*
R408	103199-1	0.4 OHM 1W 5% 2512 T/R	F 3*
R411	103199-1	0.4 OHM 1W 5% 2512 T/R	H 4*
R412	103199-1	0.4 OHM 1W 5% 2512 T/R	I 3*
R413	A11368-10021	10K 1/10W 1% CHIP 0805	E 7*
R414	A11371-3341	330K 0.10W 5% CHIP 0805	E 7*
R415	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	E 7*
R416	A11368-10011	1K 0.10W 1% CHIP 0805	K 10*
R417	A11371-3934	39K OHM 0.50W 5% CHIP 1210	K 7
R418	A11371-3934	39K OHM 0.50W 5% CHIP 1210	K 8
R419		OPEN	K 10*
R420	A11371-5R65	5.6 OHM 1W 5% CHIP 2512	H 1*
R421	A11371-5R65	5.6 OHM 1W 5% CHIP 2512	H 1*
R422	A11371-1013	100 OHM .25W 5% 1210 SMT T/R	J 9
R423	A11371-0R02	0.0 OHM JUMPER CHIP 1206	F 8
R500	A11368-10021	10K 1/10W 1% CHIP 0805	A 3
R501	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R502	A11368-10021	10K 1/10W 1% CHIP 0805	B 2
R503	A11368-10021	10K 1/10W 1% CHIP 0805	B 2
R504	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R506	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R508		OPEN	C 2
R600	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R601	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R602	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R603	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R604	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R606	A11368-10021	10K 1/10W 1% CHIP 0805	B 2
R607	A11371-8205	82 OHM 1W 5% CHIP 2512	A 1
R608		OPEN	C 1
S1	126325-1	DPDT MINI SLIDE NON-SHORT PC	L 10
S100	102488-1	SPDT VERT SLIDE 12MM SHAFT	L 10
TB1	102475-1	BLOCK, 5 POS TERMINAL	A 2
TP38	C 9896-9	TEST POINT LOOP	K 1
TP39	C 9896-9	TEST POINT LOOP	N 7
U1	C 5095-2	POS. 15 VOLT REG.	H 10
U1X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 10
U2	C 5096-0	NEG. 15 VOLT REG.	H 9
U2X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 9
U3	102486-1	OPTO BJT NPN SOIC-8 CTR =100%	N 10
U4	C 8262-5	MC33078D DUAL LO NOISE OP AMP	I 9
U5	C 8262-5	MC33078D DUAL LO NOISE OP AMP	N 9
U100	102723-2	OPTO CELL ON=500 OHM	M 9
U101	C 9012-3	MC33079D QUAD LO NOISE OP AMP	M 10
U102	C 9038-8	COMPARATOR, QUAD LM339D SO-14	N 9
U104	C 9038-8	COMPARATOR, QUAD LM339D SO-14	G 7
U105	C 8262-5	MC33078D DUAL LO NOISE OP AMP	F 7

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 17 OF 20	REV
PROJ.	MD390D0		102139-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
U106	H42902-9	ASM, THERMAL SENSE	N 6
U200	102723-2	OPTO CELL ON-500 OHM	K 9
U201	C 9012-3	MC33079D QUAD LO NOISE OP AMP	J 10
U202	C 9038-8	COMPARATOR, QUAD LM339D SO-14	K 9
U204	C 9038-8	COMPARATOR, QUAD LM339D SO-14	E 7
U205	C 8262-5	MC33078D DUAL LO NOISE OP AMP	E 7
U206	H42902-9	ASM, THERMAL SENSE	N 3
U500	C 9012-3	MC33079D QUAD LO NOISE OP AMP	A 2
WP1	A11378-A050U	WIRE, 16 RED FAST X 5 X TERM	A 10
WP2	103331-N050R	WIRE, 16 BLK/WHT TAB X 5 X T	A 9
WP3	A11379-C050U	WIRE, 16 BLU FAST X 5 X TERM	A 9
WP4	101031-1	.250 FASTON, AUTO INSERTABLE	D 7
WP5	101031-1	.250 FASTON, AUTO INSERTABLE	D 4
WP6	A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	J 8
WP7	101031-1	.250 FASTON, AUTO INSERTABLE	D 8
Z1		OPEN	E 9

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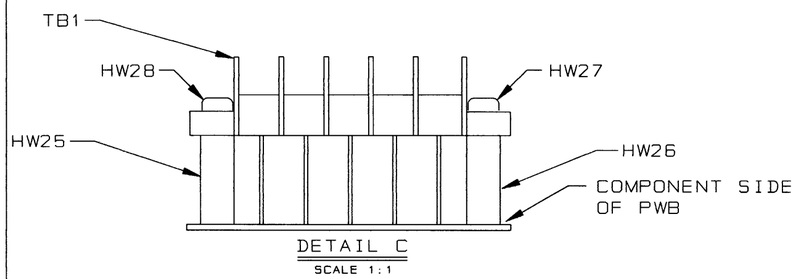
DRAWN	JFL	9-23-98	DWG. NO.	SHEET 18 OF 20	REV
PROJ.	MD390D0		102139-8		B

Component Map

for use with

Main PWA #102139-8

COMPONENT MAP
(COMPONENT SIDE VIEW)



DETAIL C
SCALE 1:1

SEE NOTE 8

SEE NOTE 7

J3 CONNECTOR ORIENTATION

SEE NOTE 7

SEE NOTE 9

SEE DETAIL A FOR HEATSINK MOUNTING SEQUENCE (TYP. 8 PLACES)

APPLY RTV (4) AS NEEDED

SEE NOTE 9

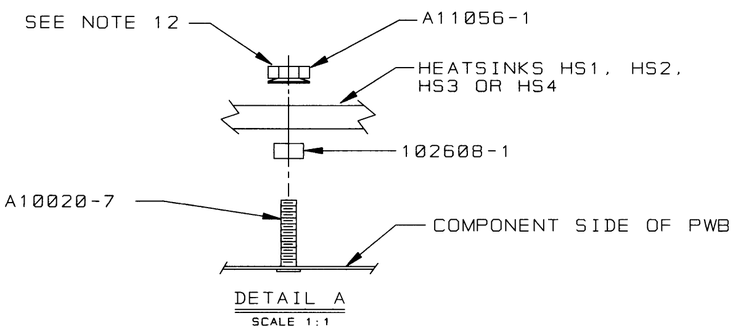
SEE DETAIL B AND NOTE 11

SEE NOTE 14

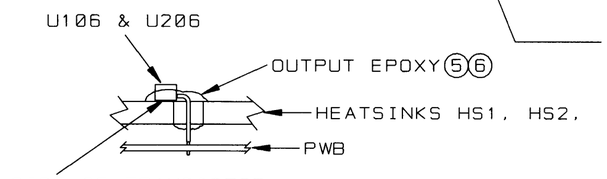
SEE DETAIL C

SEE NOTE 7

APPLY RTV (4) TO THE INSIDE OF BLACK VINYL CAP (3) THEN PLACE CAP OVER L202.



DETAIL A
SCALE 1:1



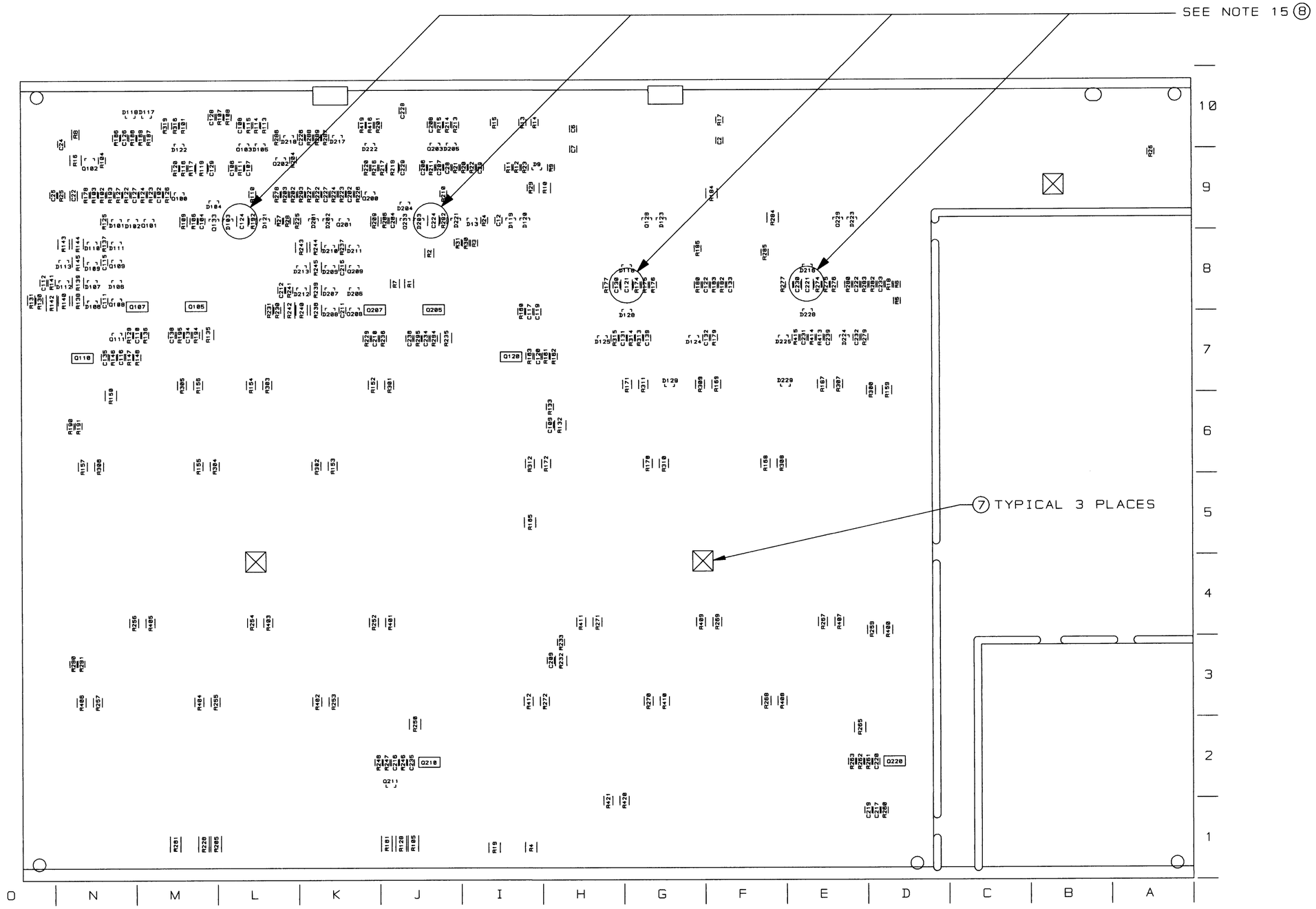
DETAIL B
SCALE 1:1

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1718 W. MISHAWAKA RD. ELKHART IN. 46517 PHONE (219) 294-8000

SCALE	NONE	DWG. NO.	SHEET 19 OF 20	REV
PROJ. #	MD390D0	102139-8		(B)



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SCALE	NONE	DWG. NO.	SHEET 20 OF 20	REV
PROJ. #	MD390D0	102139-8		B

E.C.	ZONE	REV.	DESCRIPTION	DATE	BY	APPROVALS CHK	CM	EE	PE
		A	INITIAL RELEASE TO PRODUCTION(LEVEL I)	12-22-98	JAW	JW			TS
99E0042		B	C606,C607,C608 WERE 2.7 OHM. HW27,HW28 WERE 103415-70608. WP1 WAS A11378-A050S. WP3 WAS A11378-C050S.	01-28-99	JAW	KW	CB		

NOTES:

1. SCHEMATIC DRAWING NUMBER 102141.
2. PWB PART NUMBER 102138-9.
3. THE PWA SHALL MEET THE IPC-A-610_ CLASS 2 STANDARDS.
4. ALL LEADS SHALL BE TRIMMED TO 0.093" OR LESS.
5. POSITION COMPONENTS AS SHOWN ON COMPONENT MAP.
6. COMPONENTS THAT HAVE (*) AFTER THEIR MAP LOCATION ARE MOUNTED ON THE BOTTOM SIDE OF THE PRINTED CIRCUIT BOARD.
7. REMOVE SOLDER OR PREVENT SOLDER FROM ACCUMULATING IN HOLES.
8. THE VENT HOLE ON TOP OF THE RELAYS K100 AND K200 MUST BE OPENED AFTER THE CLEANING PROCESS. BY EITHER REMOVING THE SEALING TAPE OR CUTTING OFF THE CIRCULAR TAB WITH AN "EXACTO" KNIFE OR SIMULAR CUTTING TOOL. WARNING, THIS STEP MUST BE DONE AFTER THE CLEANING PROCESS NOT BEFORE!!! WATER OR CLEANING SOLVENTS ENTERING THE RELAY VENT HOLE WILL DAMAGE THE RELAY.
9. CONNECT THE WIRES THAT COME FROM Q123 AND Q223 TO WP4 AND WP5 RESPECTIVELY.
10. THE PWA PART NUMBER FOR THIS MODULE SHALL BE MARKED ON THE P.C. BOARD AND SHALL BE PERMANENT.
11. INSTALLATION OF U106 AND U206 IS AS FOLLOWS:
    - 11A. REMOVE MIDDLE SLEEVE FROM TRANSISTOR H42902-9
    - 11B. BEND TRANSISTOR AT 90 DEG. FLAT SIDE DOWN
    - 11C. PLACE TRANSISTOR INTO THE PWB AS SHOWN ON THE COMPONENT MAP DETAIL B.
    - 11D. MIX OUTPUT EPOXY AND ACCELERATOR TOGETHER. APPLY THE MIXTURE TO THE TRANSISTOR AND HEATSINK. THE MIXTURE MUST FILL THE HEATSINK HOLE AND THE LEADS OF THE DEVICE, ESPECIALLY THE CENTER LEAD. (NOTE: NO VISIBLE AIR GAPS AROUND THE TRANSISTOR AND THE TRANSISTOR LEADS CANNOT TOUCH THE HEATSINK)
    - 11E. HOLD THE TRANSISTOR AGAINST THE HEATSINK UNTIL EPOXY SETS-UP
12. TORQUE 6-32 HEX NUTS (CPN A11056-1) AS FOLLOWS:
    - 12A. PRE-WAVE TORQUE OF 4-6 INCH LBS.
    - 12B. POST-WAVE AND WHEN ASSEMBLY HAS COOLED DOWN TO HANDLING TEMPERATURE TORQUE OF 13-15 INCH LBS.
13. INSTALL J3 CONNECTOR AS SHOWN ON COMPONENT MAP
14. LABEL INPUT PWA WITH CPN 126883-2 ON COMPONENT SIDE.



CAUTION

STATIC CAN DAMAGE COMPONENTS!

DO NOT HANDLE

UNLESS WRIST STRAP IS WORN

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

PRINTS TO: K

PWA, MAIN/INPUT CE1000

TOL. UNLESS SPECIFIED
X.XX = ± 0.020
X.XXX = ± 0.010
DRILLS = ± 0.003

DRAWN	JAW	12-22-98	APPROVED BY:		DO NOT SCALE PRINT
CHECKED	JW	12-23-98	ME		SUPERSEDES
SCALE	NONE		EE		E.C.
PROJ #	MD390D0		PE	TS 12-23-98	DWG. NO. SHEET 1 OF 20
FILENAME: 102139-9_B.PCB			NEXT ASM:		102139-9

REV (B)

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A10020-7	6-32 X .625 PCB CAPTIVE STUD	8	HW9, HW10, HW11, HW12, HW13, HW14,
			HW15, HW16
A10265-19121	19.1K 0.25W 1% MF	2	R112, R212
A10266-2R74	2.7 OHM 2W 5% CF	1	R158
A10434-104JD	0.1 MF 250V 5% MTL POLY	2	C118, C218
A11056-1	6-32 HEX NUT W/BELLEVILLE	8	HW17, HW18, HW19, HW20, HW21,
			HW22, HW23, HW24
A11368-10011	1K 0.10W 1% CHIP 0805	8	R101, R106, R110, R201, R206,
			R210, R316, R416
A11368-10021	10K 1/10W 1% CHIP 0805	35	R9, R104, R107, R108, R111, R121,
			R176, R177, R182, R185, R193,
			R196, R204, R211, R221, R276,
			R277, R282, R285, R293, R296,
			R313, R413, R500, R501, R502,
			R503, R504, R506, R600, R601,
			R602, R603, R604, R606
A11368-10031	100K 0.1W 1% CHIP 0805	15	R25, R30, R31, R123, R125, R179,
			R183, R186, R189, R223, R225,
			R279, R283, R286, R289
A11368-12121	12.1K OHM 0.10W 1% CHIP 0805	1	R21
A11368-13703	137 OHM 0.25W 1% CHIP	2	R139, R239
A11368-15002	150 OHM 0.125W 1% CHIP	2	R137, R237
A11368-15831	158K 0.10W 1% CHIP 0805	8	R122, R124, R187, R188, R222,
			R224, R287, R288
A11368-19122	19.1K 0.125W 1% CHIP 1206	2	R109, R209
A11368-20021	20K 0.10W 1% CHIP 0805	1	R27
A11368-20023	20K 0.25W 1% CHIP 1210	3	R10, R184, R284
A11368-22601	226 OHM 0.10W 1% CHIP 0805	4	R116, R191, R216, R291
A11368-39231	392K 0.10W 1% CHIP 0805	6	R22, R23, R102, R180, R202, R280
A11368-49901	499 OHM 0.10W 1% CHIP 0805	2	R103, R203
A11368-49921	49.9K 0.1W 1% CHIP 0805	2	R126, R226
A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	8	R113, R175, R197, R213, R275,
			R297, R315, R415
A11368-57621	57.6K 0.10W 1% CHIP 0805	4	R20, R24, R190, R290
A11368-60432	604K OHM 0.125W 1% CHIP 1206	4	R174, R192, R274, R292
A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	2	R118, R218
A11368-68121	68.1K 0.10W 1% CHIP	3	R12, R115, R215
A11368-69811	6.98K OHM 0.10W 1% CHIP 0805	1	R5
A11368-71511	7.15K 1/10W 1% CHIP 0805	1	R18
A11368-82511	8.25K 0.1W 1% CHIP 0805	3	R17, R114, R214
A11368-90921	90.9K 0.10W 1% CHIP 0805	4	R120, R178, R220, R278
A11368-93111	9.31K 0.1W 1% CHIP 0805	1	R6
A11369-102J2	0.001UF 50V 5% NPO MLC 0805	2	C134, C234
A11369-120K2	12PF 50V 10% NPO 0805 T/R	6	C500, C501, C502, C600, C601, C602
A11369-270K2	27PF 50V 10% NPO 0805 T/R	2	C107, C207
A11369-330J2	33PF 50V 5% NPO MLC 0805	2	C142, C242
A11369-471K2	470PF 50V 10% NPO 0805 T/R	4	C110, C141, C210, C241

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 2 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A11371-0R02	0.0 OHM JUMPER CHIP 1206	4	R199,R299,R323,R423
A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	3	R14,R15,R33
A11371-1011	100 OHM 0.10W 5% CHIP 0805	3	R13,R147,R247
A11371-1013	100 OHM .25W 5% 1210 SMT T/R	2	R322,R422
A11371-1022	1K 0.125W 5% CHIP 1206	1	R8
A11371-1213	120 OHM 0.25W 5% CHIP	6	R138,R144,R145,R238,R244,R245
A11371-1331	13K OHM 0.10W 5% CHIP 0805	4	R146,R161,R246,R261
A11371-1501	15 OHM 0.10W 5% CHIP	5	C606,C607,C608,R160,R260
A11371-1811	180 OHM 0.10W 5% CHIP	4	R148,R163,R248,R263
A11371-2223	2.2K 0.25W 5% CHIP 1210	2	R132,R232
A11371-2225	2.2K 1W 5% CHIP 2512	1	R2
A11371-3313	330 OHM 0.25W 5% CHIP	2	R4,R19
A11371-3333	33K 0.25W 5% CHIP 1210	6	R119,R140,R143,R219,R240,R243
A11371-3341	330K 0.10W 5% CHIP 0805	7	R3,R11,R26,R117,R217,R314,
			R414
A11371-3923	3.9K 0.25W 5% CHIP	3	R16,R135,R235
A11371-3934	39K OHM 0.50W 5% CHIP 1210	4	R317,R318,R417,R418
A11371-4701	47 OHM 0.10W 5% CHIP	2	R162,R262
A11371-5615	560 OHM 1W 5% 2512 T/R	2	R32,R34
A11371-5R63	5.6 0.25W 5% CHIP	4	R150,R165,R250,R265
A11371-5R65	5.6 OHM 1W 5% CHIP 2512	2	R420,R421
A11371-6814	680 OHM 0.50W 5% CHIP	6	R105,R128,R181,R205,R228,R281
A11371-6821	6.8K 0.10W 5% CHIP 0805	2	R127,R227
A11371-7511	750 OHM 0.10W 5% CHIP	3	R28,R133,R233
A11371-8201	82 OHM 0.10W 5% CHIP	4	R136,R194,R236,R294
A11371-8205	82 OHM 1W 5% CHIP 2512	1	R607
A11371-8211	820 OHM 0.10W 5% CHIP	6	R129,R141,R195,R229,R241,R295
A11378-A050U	WIRE, 16 RED FAST X 5 X TERM	1	WP1
A11379-C050U	WIRE, 16 BLU FAST X 5 X TERM	1	WP3
A11427-103K2	0.01MF 50V 10% CHIP 0805	4	C109,C111,C209,C211
A11427-103K5	0.01MF 50V 5% X7R 1206	2	C143,C243
A11427-104K2	0.1 MF 50V 10% 0805	33	C2,C6,C7,C12,C24,C25,C28,C29,
			C115,C122,C126,C127,C128,
			C129,C130,C131,C132,C133,
			C139,C215,C222,C226,C227,
			C228,C229,C230,C231,C232,
			C233,C239,C505,C506,C605
A11427-123K2	0.012 MF 50V 10% CHIP	2	C112,C212
A11427-272K2	2700PF 50V 10% CHIP 0805	2	C117,C217
A11427-472K2	4700PF 50V 10% X7R 0805	4	C116,C119,C216,C219
A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	1	WP6
C 2851-1	1N4004 SILICON RECT.	7	D1,D2,D3,D4,D6,D7,D10
C 3510-2	CHOKE, 470UH 10% AXIAL	4	L100,L101,L200,L201
C 3549-0	DIODE ZENER, 10V, 1N5240B	1	D8
C 3679-5	33UF 50V 20% VERT ELECT	1	C31
C 4477-3	470 MF 35V VERT	2	C4,C5

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 3 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
C 5095-2	POS. 15 VOLT REG.	1	U1
C 5096-0	NEG. 15 VOLT REG.	1	U2
C 5362-6	2.2 MF 50V VERT	1	C27
C 6802-0	.47 MF 50V AX CERM	2	C102,C202
C 7091-9	0.33 MF 50V CHIP 1206	3	C22,C140,C240
C 7325-1	2P 2 POS. PC SLIDE SW.	1	S2
C 7448-1	MMBT3904 CHIP NPN	6	Q100,Q101,Q129,Q200,Q201,Q229
C 8262-5	MC33078D DUAL LO NOISE OP AM	4	U4,U5,U105,U205
C 8576-8	100 MF 35V 10% ELEC	1	C26
C 9012-3	MC33079D QUAD LO NOISE OP AM	3	U101,U201,U500
C 9038-8	COMPARATOR, QUAD LM339D SO-1	4	U102,U104,U202,U204
C 9157-6	100UF 16V 20% NP ELEC RAD T/	2	C123,C223
C 9252-5	2N3904 40V NPN TRANSISTOR	2	Q104,Q204
C 9283-0	DIODE, 1N914/1N4148 SOT-23 S	56	D9,D13,D101,D102,D103,D104,
			D105,D106,D107,D108,D109,
			D110,D111,D112,D113,D116,
			D117,D118,D119,D120,D121,
			D122,D123,D124,D125,D126,
			D127,D128,D129,D130,D201,
			D202,D203,D204,D205,D206,
			D207,D208,D209,D210,D211,
			D212,D213,D216,D217,D218,
			D221,D222,D223,D224,D225,
			D226,D227,D228,D229,D230
C 9896-9	TEST POINT LOOP	2	TP38,TP39
C 9918-1	TO220 VERT CLIP-ON HEATSINK	2	U1X,U2X
C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-	6	Q102,Q109,Q111,Q202,Q209,Q211
C10196-1	2.2MF 50V 20% RAD T/R	4	C121,C124,C221,C224
C10208-4	100 MF 25V 20% VERT ELEC	2	C105,C205
C10422-1	DIODE, 3A 400V 1N5404 AXIAL	4	D114,D115,D214,D215
C10613-5	1K TOP ADJUST TRIMMER T/R	2	R134,R234
D 8917-3	8200UF 110VDC ELECTROLYTIC	2	C20,C21
H42902-9	ASM, THERMAL SENSE	2	U106,U206
101016-1	LBL, BARCODE, , ,	1	2
101031-1	.250 FASTON, AUTO INSERTABLE	3	WP4,WP5,WP7
101571-1	HDR 2 POS .1 CTR MTA SHRD	1	J4
101573-1	HDR 4 POS .1 CTR MTA SHRD	1	J2
101993-1	JACK, 6P4 COND MODULAR R/A	1	J5
102138-9	PWB, CE1000/CE2000 MAIN/INPU	1	1
102438-101K2	100PF 200V 10% NPO 0805	6	C104,C120,C135,C204,C220,C235
102438-560K2	56PF 200V 10% NPO 0805	4	C106,C206,C504,C604
102438-820K2	82PF 200V 10% NPO 0805	4	C108,C138,C208,C238
102465-1	.47UF 50V 20% RADIAL T/R	2	C101,C201
102466-1	10UF 250V 20% RADIAL T/R	1	C1
102467-1	22MF 25V 20% RAD T/R	4	C103,C203,C503,C603
102468-1	47UF 10V 20% NP RAD T/R	4	C113,C114,C213,C214
102470-1	INDUCTOR, 2.75UH 11A RADIAL	2	L102,L202
102471-2	HDR, 12POS 2.5MM RT ANG KEYE	1	J502
102472-3	HDR, 16POS .100 CTR SGL ROW	1	J3

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 4 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
102473-1	SPEAKON, 4 POLE PCB HORZ	2	J100,J200
102475-1	BLOCK, 5 POS TERMINAL	1	TB1
102476-1	LED, SMT R/A GREEN	3	E1,E101,E201
102477-1	LED, SMT R/A RED	4	E100,E102,E200,E202
102478-1	TRIAC DRIVER SBS 8V THRESH	2	Q132,Q232
102479-1	PWR MJD112 NPN DARLINGTON 10	3	Q1,Q2,Q3
102480-1	FET, N-CH 25V 50MA SOT-23	2	Q133,Q233
102481-1	NPN 25V LOW NOISE SOT-23	2	Q108,Q208
102483-1	PNP 300V 500MA SOT-23	2	Q103,Q203
102486-1	OPTO BJT NPN SOIC-8 CTR =100	1	U3
102488-1	SPDT HORIZ SLIDE	1	S1
102569-3	HS ASM, T1 ISOLATED CH1, , ,	1	HS3
102570-3	HS ASM, T1 ISOLATED CH2, , ,	1	HS4
102571-3	HS ASM, T1 NON-ISOLATED CH1,	1	HS1
102572-3	HS ASM, T1 NON-ISOLATED CH2,	1	HS2
102579-1	STAND, 1/4 RD SWAGE AL	2	HW25,HW26
102595-3	POT, 5K LIN 21 DNT 12MM HORI	2	R100,R200
102608-1	SPACER, 6X.187 LONG ALUMINUM	8	HW1,HW2,HW3,HW4,HW5,HW6,HW7,
			HW8
102723-2	OPTO CELL ON=500 OHM	2	U100,U200
103180-1	BUMPER, 0.4" TALL BLK W/ADH	3	7
103191-1	0.47UF Z5U 1210 20% 50V	2	C144,C244
103192-1	NPN 300V 500MA 50MHZ SOT-223	4	Q107,Q110,Q207,Q210
103193-1	PNP 300V 500MA 50MHZ SOT-223	4	Q105,Q120,Q205,Q220
103199-1	0.4 OHM 1W 5% 2512 T/R	38	R1,R7,R152,R153,R156,R157,
			R159,R167,R168,R171,R172,
			R252,R253,R256,R257,R259,
			R267,R268,R271,R272,R300,
			R301,R302,R305,R306,R307,
			R308,R311,R312,R400,R401,
			R402,R405,R406,R407,R408,
			R411,R412
103210-1	2.2UF 160V RADIAL T/R	4	C136,C137,C236,C237
103331-N050R	WIRE, 16 BLK/WHT TAB X 5 X T	1	WP2
103435-70608	SCREW,6-32 X.5 TORX PNHD SEM	2	HW27,HW28
125106-1	MAC9D 8 AMP 400V TRIAC	2	Q131,Q231
125242-1	CAP, .625ID X 1" VINYL	1	3
125478-1	3.83KOHM 0.50W 1% 2010 T/R	2	R142,R242
125482-1	ADHESIVE LOCTITE 384 OUTPUT	0	5
125483-1	ACTIVATOR LOCTITE "OUTPUT"	0	6
125508-1	10UF 50VDC ELECTROLYTIC SMD	2	C3,C30
126317-1	REL, 30A 24V SPST PCB W/FAST	2	K100,K200
126825-1	SILICONE, CLEAR 3OZ SYRINGE	0	4
126929-1	1/4" TRS/XLR COMBO PCB VERT	2	J500,J600

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 5 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C1	102466-1	10UF 250V 20% RADIAL T/R	J 8
C2	A11427-104K2	0.1 MF 50V 10% 0805	F 9*
C3	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C4	C 4477-3	470 MF 35V VERT	G 10
C5	C 4477-3	470 MF 35V VERT	G 9
C6	A11427-104K2	0.1 MF 50V 10% 0805	H 10*
C7	A11427-104K2	0.1 MF 50V 10% 0805	H 9*
C12	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C20	D 8917-3	8200UF 110VDC ELECTROLYTIC	C 9
C21	D 8917-3	8200UF 110VDC ELECTROLYTIC	B 9
C22	C 7091-9	0.33 MF 50V CHIP 1206	N 9*
C24	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C25	A11427-104K2	0.1 MF 50V 10% 0805	O 9*
C26	C 8576-8	100 MF 35V 10% ELEC	I 9
C27	C 5362-6	2.2 MF 50V VERT	H 10
C28	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C29	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C30	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C31	C 3679-5	33UF 50V 20% VERT ELECT	I 10
C101	102465-1	.47UF 50V 20% RADIAL T/R	M 9
C102	C 6802-0	.47 MF 50V AX CERM	M 9
C103	102467-1	22MF 25V 20% RAD T/R	M 9
C104	102438-101K2	100PF 200V 10% NPO 0805	M 9*
C105	C10208-4	100 MF 25V 20% VERT ELEC	L 9
C106	102438-560K2	56PF 200V 10% NPO 0805	L 9*
C107	A11369-270K2	27PF 50V 10% NPO 0805 T/R	L 9*
C108	102438-820K2	82PF 200V 10% NPO 0805	L 10*
C109	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 6*
C110	A11369-471K2	470PF 50V 10% NPO 0805 T/R	M 7*
C111	A11427-103K2	0.01MF 50V 10% CHIP 0805	N 8*
C112	A11427-123K2	0.012 MF 50V 10% CHIP	O 8*
C113	102468-1	47UF 10V 20% NP RAD T/R	N 8
C114	102468-1	47UF 10V 20% NP RAD T/R	N 8
C115	A11427-104K2	0.1 MF 50V 10% 0805	N 8*
C116	A11427-472K2	4700PF 50V 10% X7R 0805	N 7*
C117	A11427-272K2	2700PF 50V 10% CHIP 0805	I 7*
C118	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 8
C119	A11427-472K2	4700PF 50V 10% X7R 0805	I 7*
C120	102438-101K2	100PF 200V 10% NPO 0805	I 7*
C121	C10196-1	2.2MF 50V 20% RAD T/R	G 8
C122	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C123	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 8
C124	C10196-1	2.2MF 50V 20% RAD T/R	L 9
C126	A11427-104K2	0.1 MF 50V 10% 0805	N 10*
C127	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C128	A11427-104K2	0.1 MF 50V 10% 0805	M 10*
C129	A11427-104K2	0.1 MF 50V 10% 0805	M 9*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 6 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C130	A11427-104K2	0.1 MF 50V 10% 0805	H 8*
C131	A11427-104K2	0.1 MF 50V 10% 0805	H 7*
C132	A11427-104K2	0.1 MF 50V 10% 0805	F 7*
C133	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C134	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	M 7*
C135	102438-101K2	100PF 200V 10% NPO 0805	N 7*
C136	103210-1	2.2UF 160V RADIAL T/R	I 7
C137	103210-1	2.2UF 160V RADIAL T/R	I 7
C138	102438-820K2	82PF 200V 10% NPO 0805	M 7*
C139	A11427-104K2	0.1 MF 50V 10% 0805	G 7*
C140	C 7091-9	0.33 MF 50V CHIP 1206	L 9
C141	A11369-471K2	470PF 50V 10% NPO 0805 T/R	N 10
C142	A11369-330J2	33PF 50V 5% NPO MLC 0805	M 10
C143	A11427-103K5	0.01MF 50V 5% X7R 1206	M 9*
C144	103191-1	0.47UF Z5U 1210 20% 50V	G 7*
C201	102465-1	.47UF 50V 20% RADIAL T/R	J 9
C202	C 6802-0	.47 MF 50V AX CERM	K 9
C203	102467-1	22MF 25V 20% RAD T/R	K 9
C204	102438-101K2	100PF 200V 10% NPO 0805	J 9*
C205	C10208-4	100 MF 25V 20% VERT ELEC	J 9
C206	102438-560K2	56PF 200V 10% NPO 0805	J 9*
C207	A11369-270K2	27PF 50V 10% NPO 0805 T/R	J 9*
C208	102438-820K2	82PF 200V 10% NPO 0805	J 10*
C209	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 3*
C210	A11369-471K2	470PF 50V 10% NPO 0805 T/R	K 7*
C211	A11427-103K2	0.01MF 50V 10% CHIP 0805	K 7*
C212	A11427-123K2	0.012 MF 50V 10% CHIP	L 8*
C213	102468-1	47UF 10V 20% NP RAD T/R	K 8
C214	102468-1	47UF 10V 20% NP RAD T/R	K 8
C215	A11427-104K2	0.1 MF 50V 10% 0805	K 8*
C216	A11427-472K2	4700PF 50V 10% X7R 0805	J 2*
C217	A11427-272K2	2700PF 50V 10% CHIP 0805	D 1*
C218	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 1
C219	A11427-472K2	4700PF 50V 10% X7R 0805	E 1*
C220	102438-101K2	100PF 200V 10% NPO 0805	D 2*
C221	C10196-1	2.2MF 50V 20% RAD T/R	E 8
C222	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C223	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 9
C224	C10196-1	2.2MF 50V 20% RAD T/R	J 9
C226	A11427-104K2	0.1 MF 50V 10% 0805	K 10*
C227	A11427-104K2	0.1 MF 50V 10% 0805	K 9*
C228	A11427-104K2	0.1 MF 50V 10% 0805	J 10*
C229	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C230	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C231	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C232	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C233	A11427-104K2	0.1 MF 50V 10% 0805	D 8*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 7 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C234	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	J 7*
C235	102438-101K2	100PF 200V 10% NPO 0805	J 2*
C236	103210-1	2.2UF 160V RADIAL T/R	I 1
C237	103210-1	2.2UF 160V RADIAL T/R	I 1
C238	102438-820K2	82PF 200V 10% NPO 0805	J 7*
C239	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C240	C 7091-9	0.33 MF 50V CHIP 1206	J 9
C241	A11369-471K2	470PF 50V 10% NPO 0805 T/R	L 10
C242	A11369-330J2	33PF 50V 5% NPO MLC 0805	K 10
C243	A11427-103K5	0.01MF 50V 5% X7R 1206	K 9*
C244	103191-1	0.47UF Z5U 1210 20% 50V	E 7*
C500	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C501	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C502	A11369-120K2	12PF 50V 10% NPO 0805 T/R	B 2
C503	102467-1	22MF 25V 20% RAD T/R	B 2
C504	102438-560K2	56PF 200V 10% NPO 0805	A 2
C505	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C506	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C509		OPEN	B 2
C600	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C601	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 1
C602	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C603	102467-1	22MF 25V 20% RAD T/R	B 2
C604	102438-560K2	56PF 200V 10% NPO 0805	B 2
C605	A11427-104K2	0.1 MF 50V 10% 0805	A 1
C606	A11371-1501	15 OHM 0.1W 5% CHIP 0805	C 3
C607	A11371-1501	15 OHM 0.1W 5% CHIP 0805	C 3
C608	A11371-1501	15 OHM 0.1W 5% CHIP 0805	B 1
C609		OPEN	B 2
D1	C 2851-1	1N4004 SILICON RECT.	G 9
D2	C 2851-1	1N4004 SILICON RECT.	G 10
D3	C 2851-1	1N4004 SILICON RECT.	G 10
D4	C 2851-1	1N4004 SILICON RECT.	G 10
D6	C 2851-1	1N4004 SILICON RECT.	J 8
D7	C 2851-1	1N4004 SILICON RECT.	J 8
D8	C 3549-0	DIODE ZENER, 10V, 1N5240B	J 8
D9	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D10	C 2851-1	1N4004 SILICON RECT.	I 10
D13	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D101	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D102	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D103	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D104	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9*
D105	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D106	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D107	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D108	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 8 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D109	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D110	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D111	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D112	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D113	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D114	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 6
D115	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 5
D116	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 8*
D117	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 10*
D118	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 10*
D119	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D120	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D121	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D122	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9*
D123	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 9*
D124	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7*
D125	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	H 7*
D126	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 7
D127	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 8
D128	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7*
D129	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 6*
D130	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9
D201	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D202	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D203	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D204	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D205	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D206	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D207	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D208	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7*
D209	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D210	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D211	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D212	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D213	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D214	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 3
D215	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 2
D216	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 8*
D217	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 10*
D218	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 10*
D221	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D222	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D223	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 9*
D224	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7*
D225	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 7*
D226	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7
D227	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 9 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D228	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7*
D229	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 6*
D230	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9
E1	102476-1	LED, SMT R/A GREEN	I 1
E100	102477-1	LED, SMT R/A RED	J 1
E101	102476-1	LED, SMT R/A GREEN	J 1
E102	102477-1	LED, SMT R/A RED	K 1
E200	102477-1	LED, SMT R/A RED	M 1
E201	102476-1	LED, SMT R/A GREEN	L 1
E202	102477-1	LED, SMT R/A RED	M 1
H11		OPEN	K 1
H14		OPEN	I 8
H18		OPEN	D 8
HS1	102571-3	HS ASM, T1 NON-ISOLATED CH1,	
HS2	102572-3	HS ASM, T1 NON-ISOLATED CH2,	
HS3	102569-3	HS ASM, T1 ISOLATED CH1, . .	
HS4	102570-3	HS ASM, T1 ISOLATED CH2, . .	
HW1	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW2	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW3	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW4	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW5	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW6	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW7	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW8	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW9	A10020-7	6-32 X .625 PCB CAPTIVE STUD	D 5
HW10	A10020-7	6-32 X .625 PCB CAPTIVE STUD	I 6
HW11	A10020-7	6-32 X .625 PCB CAPTIVE STUD	D 2
HW12	A10020-7	6-32 X .625 PCB CAPTIVE STUD	I 3
HW13	A10020-7	6-32 X .625 PCB CAPTIVE STUD	J 5
HW14	A10020-7	6-32 X .625 PCB CAPTIVE STUD	N 6
HW15	A10020-7	6-32 X .625 PCB CAPTIVE STUD	J 2
HW16	A10020-7	6-32 X .625 PCB CAPTIVE STUD	N 3
HW17	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW18	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW19	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW20	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW21	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW22	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW23	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW24	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW25	102579-1	STAND, 1/4 RD SWAGE AL	A 4
HW26	102579-1	STAND, 1/4 RD SWAGE AL	A 4
HW27	103435-70608	SCREW, 6-32 X.5 TORX PNHD SEM	A 4
HW28	103435-70608	SCREW, 6-32 X.5 TORX PNHD SEM	A 4
J2	101573-1	HDR 4 POS .1 CTR MTA SHRD	G 10
J3	102472-3	HDR, 16POS .100 CTR SGL ROW	M 8
J4	101571-1	HDR 2 POS .1 CTR MTA SHRD	L 10
J5	101993-1	JACK, 6P4 COND MODULAR R/A	

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 10 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
J100	102473-1	SPEAKON, 4 POLE PCB HORZ	D 10
J200	102473-1	SPEAKON, 4 POLE PCB HORZ	F 10
J500	126929-1	1/4" TRS/XLR COMBO PCB VERT	B 3
J502	102471-2	HDR, 12POS 2.5MM RT ANG KEYED	C 1
J600	126929-1	1/4" TRS/XLR COMBO PCB VERT	B 1
K100	126317-1	REL, 30A 24V SPST PCB W/FASTON	G 9
K200	126317-1	REL, 30A 24V SPST PCB W/FASTON	E 9
L100	C 3510-2	CHOKE, 470UH 10% AXIAL	N 7
L101	C 3510-2	CHOKE, 470UH 10% AXIAL	I 7
L102	102470-1	INDUCTOR, 2.75UH 11A RADIAL	H 8
L200	C 3510-2	CHOKE, 470UH 10% AXIAL	J 1
L201	C 3510-2	CHOKE, 470UH 10% AXIAL	D 1
L202	102470-1	INDUCTOR, 2.75UH 11A RADIAL	I 1
Q1	102479-1	PWR MJD112 NPN DARLINGTON 100V	H 10
Q2	102479-1	PWR MJD112 NPN DARLINGTON 100V	I 10
Q3	102479-1	PWR MJD112 NPN DARLINGTON 100V	I 10
Q100	C 7448-1	MMBT3904 CHIP NPN	M 9*
Q101	C 7448-1	MMBT3904 CHIP NPN	M 9*
Q102	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 9*
Q103	102483-1	PNP 300V 500MA SOT-23	L 9*
Q104	C 9252-5	2N3904 40V NPN TRANSISTOR	I 6
Q105	103193-1	PNP 300V 500MA 50MHZ SOT-223	M 7*
Q107	103192-1	NPN 300V 500MA 50MHZ SOT-223	M 7*
Q108	102481-1	NPN 25V LOW NOISE SOT-23	N 8*
Q109	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 8*
Q110	103192-1	NPN 300V 500MA 50MHZ SOT-223	N 7*
Q111	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 7*
Q120	103193-1	PNP 300V 500MA 50MHZ SOT-223	I 7*
Q129	C 7448-1	MMBT3904 CHIP NPN	G 9*
Q131	125106-1	MAC9D 8 AMP 400V TRIAC	F 9
Q132	102478-1	TRIAC DRIVER SBS 8V THRESH	F 9
Q133	102480-1	FET, N-CH 25V 50MA SOT-23	M 9*
Q200	C 7448-1	MMBT3904 CHIP NPN	K 9*
Q201	C 7448-1	MMBT3904 CHIP NPN	K 9*
Q202	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	L 9*
Q203	102483-1	PNP 300V 500MA SOT-23	J 9*
Q204	C 9252-5	2N3904 40V NPN TRANSISTOR	I 3
Q205	103193-1	PNP 300V 500MA 50MHZ SOT-223	J 7*
Q207	103192-1	NPN 300V 500MA 50MHZ SOT-223	K 7*

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 11 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
Q208	102481-1	NPN 25V LOW NOISE SOT-23	K 7*
Q209	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	K 8*
Q210	103192-1	NPN 300V 500MA 50MHZ SOT-223	J 2*
Q211	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	J 2*
Q220	103193-1	PNP 300V 500MA 50MHZ SOT-223	D 2*
Q229	C 7448-1	MMBT3904 CHIP NPN	E 9*
Q231	125106-1	MAC9D 8 AMP 400V TRIAC	E 9
Q232	102478-1	TRIAC DRIVER SBS 8V THRESH	F 8
Q233	102480-1	FET, N-CH 25V 50MA SOT-23	J 9*
R1	103199-1	0.4 OHM 1W 5% 2512 T/R	J 8*
R2	A11371-2225	2.2K 1W 5% CHIP 2512	J 8*
R3	A11371-3341	330K 0.10W 5% CHIP 0805	I 8*
R4	A11371-3313	330 OHM 0.25W 5% CHIP	I 1*
R5	A11368-69811	6.98K OHM 0.10W 1% CHIP 0805	D 8*
R6	A11368-93111	9.31K 0.1W 1% CHIP 0805	D 8*
R7	103199-1	0.4 OHM 1W 5% 2512 T/R	J 8*
R8	A11371-1022	1K 0.125W 5% CHIP 1206	N 10*
R9	A11368-10021	10K 1/10W 1% CHIP 0805	H 9*
R10	A11368-20023	20K 0.25W 1% CHIP 1210	H 9*
R11	A11371-3341	330K 0.10W 5% CHIP 0805	I 9*
R12	A11368-68121	68.1K 0.10W 1% CHIP	I 9*
R13	A11371-1011	100 OHM 0.10W 5% CHIP 0805	I 10*
R14	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R15	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R16	A11371-3923	3.9K 0.25W 5% CHIP	N 9*
R17	A11368-82511	8.25K 0.1W 1% CHIP 0805	F 10*
R18	A11368-71511	7.15K 1/10W 1% CHIP 0805	D 8*
R19	A11371-3313	330 OHM 0.25W 5% CHIP	I 1*
R20	A11368-57621	57.6K 0.10W 1% CHIP 0805	I 9*
R21	A11368-12121	12.1K OHM 0.10W 1% CHIP 0805	J 9*
R22	A11368-39231	392K 0.10W 1% CHIP 0805	I 9*
R23	A11368-39231	392K 0.10W 1% CHIP 0805	I 9*
R24	A11368-57621	57.6K 0.10W 1% CHIP 0805	I 9*
R25	A11368-10031	100K 0.1W 1% CHIP 0805	N 9*
R26	A11371-3341	330K 0.10W 5% CHIP 0805	A 9*
R27	A11368-20021	20K 0.10W 1% CHIP 0805	L 9*
R28	A11371-7511	750 OHM 0.10W 5% CHIP	L 9*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 12 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R30	A11368-10031	100K 0.1W 1% CHIP 0805	I 8*
R31	A11368-10031	100K 0.1W 1% CHIP 0805	J 8*
R32	A11371-5615	560 OHM 1W 5% 2512 T/R	J 8
R33	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R34	A11371-5615	560 OHM 1W 5% 2512 T/R	J 8
R100	102595-3	POT, 5K LIN 21 DNT 12MM HORIZ	L 1
R101	A11368-10011	1K 0.10W 1% CHIP 0805	M 10*
R102	A11368-39231	392K 0.10W 1% CHIP 0805	N 9*
R103	A11368-49901	499 OHM 0.10W 1% CHIP 0805	N 9*
R104	A11368-10021	10K 1/10W 1% CHIP 0805	N 9*
R105	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R106	A11368-10011	1K 0.10W 1% CHIP 0805	M 9*
R107	A11368-10021	10K 1/10W 1% CHIP 0805	L 10*
R108	A11368-10021	10K 1/10W 1% CHIP 0805	L 10*
R109	A11368-19122	19.1K 0.125W 1% CHIP 1206	M 9*
R110	A11368-10011	1K 0.10W 1% CHIP 0805	L 9*
R111	A11368-10021	10K 1/10W 1% CHIP 0805	L 9*
R112	A10265-19121	19.1K 0.25W 1% MF	L 9
R113	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	L 10*
R114	A11368-82511	8.25K 0.1W 1% CHIP 0805	L 10*
R115	A11368-68121	68.1K 0.10W 1% CHIP	L 10*
R116	A11368-22601	226 OHM 0.10W 1% CHIP 0805	M 9*
R117	A11371-3341	330K 0.10W 5% CHIP 0805	M 9*
R118	A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	M 10
R119	A11371-3333	33K 0.25W 5% CHIP 1210	M 9*
R120	A11368-90921	90.9K 0.10W 1% CHIP 0805	M 9*
R121	A11368-10021	10K 1/10W 1% CHIP 0805	M 10
R122	A11368-15831	158K 0.10W 1% CHIP 0805	N 9*
R123	A11368-10031	100K 0.1W 1% CHIP 0805	M 9*
R124	A11368-15831	158K 0.10W 1% CHIP 0805	M 9*
R125	A11368-10031	100K 0.1W 1% CHIP 0805	N 9*
R126	A11368-49921	49.9K 0.1W 1% CHIP 0805	M 9*
R127	A11371-6821	6.8K 0.10W 5% CHIP 0805	N 9*
R128	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R129	A11371-8211	820 OHM 0.10W 5% CHIP	N 7*
R130		OPEN	O 8*
R131		OPEN	O 8*
R132	A11371-2223	2.2K 0.25W 5% CHIP 1210	H 6*
R133	A11371-7511	750 OHM 0.10W 5% CHIP	H 6*
R134	C10613-5	1K TOP ADJUST TRIMMER T/R	M 7
R135	A11371-3923	3.9K 0.25W 5% CHIP	M 7*
R136	A11371-8201	82 OHM 0.10W 5% CHIP	M 7*
R137	A11368-15002	150 OHM 0.125W 1% CHIP	N 8*
R138	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R139	A11368-13703	137 OHM 0.25W 1% CHIP	N 8*
R140	A11371-3333	33K 0.25W 5% CHIP 1210	N 8*
R141	A11371-8211	820 OHM 0.10W 5% CHIP	O 8*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 13 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R142	125478-1	3.83KOHM 0.50W 1% 2010 T/R	O 8*
R143	A11371-3333	33K 0.25W 5% CHIP 1210	N 8*
R144	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R145	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R146	A11371-1331	13K OHM 0.10W 5% CHIP 0805	N 7*
R147	A11371-1011	100 OHM 0.10W 5% CHIP 0805	N 7*
R148	A11371-1811	180 OHM 0.10W 5% CHIP	M 7*
R150	A11371-5R63	5.6 0.25W 5% CHIP	N 6*
R152	103199-1	0.4 OHM 1W 5% 2512 T/R	K 6*
R153	103199-1	0.4 OHM 1W 5% 2512 T/R	K 5*
R156	103199-1	0.4 OHM 1W 5% 2512 T/R	M 6*
R157	103199-1	0.4 OHM 1W 5% 2512 T/R	N 5*
R158	A10266-2R74	2.7 OHM 2W 5% CF	I 8
R159	103199-1	0.4 OHM 1W 5% 2512 T/R	D 6*
R160	A11371-1501	15 OHM 0.10W 5% CHIP	I 7*
R161	A11371-1331	13K OHM 0.10W 5% CHIP 0805	H 7*
R162	A11371-4701	47 OHM 0.10W 5% CHIP	H 7*
R163	A11371-1811	180 OHM 0.10W 5% CHIP	I 7*
R165	A11371-5R63	5.6 0.25W 5% CHIP	I 5*
R167	103199-1	0.4 OHM 1W 5% 2512 T/R	E 6*
R168	103199-1	0.4 OHM 1W 5% 2512 T/R	F 6*
R171	103199-1	0.4 OHM 1W 5% 2512 T/R	G 6*
R172	103199-1	0.4 OHM 1W 5% 2512 T/R	H 6*
R174	A11368-60432	604K OHM 0.125W 1% CHIP 1206	G 8*
R175	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	G 8*
R176	A11368-10021	10K 1/10W 1% CHIP 0805	G 8*
R177	A11368-10021	10K 1/10W 1% CHIP 0805	H 8*
R178	A11368-90921	90.9K 0.10W 1% CHIP 0805	N 9*
R179	A11368-10031	100K 0.1W 1% CHIP 0805	F 7*
R180	A11368-39231	392K 0.10W 1% CHIP 0805	G 8*
R181	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R182	A11368-10021	10K 1/10W 1% CHIP 0805	F 8*
R183	A11368-10031	100K 0.1W 1% CHIP 0805	F 8*
R184	A11368-20023	20K 0.25W 1% CHIP 1210	F 9*
R185	A11368-10021	10K 1/10W 1% CHIP 0805	G 8*
R186	A11368-10031	100K 0.1W 1% CHIP 0805	N 10*
R187	A11368-15831	158K 0.10W 1% CHIP 0805	M 10*
R188	A11368-15831	158K 0.10W 1% CHIP 0805	N 10*
R189	A11368-10031	100K 0.1W 1% CHIP 0805	M 10*
R190	A11368-57621	57.6K 0.10W 1% CHIP 0805	N 6*
R191	A11368-22601	226 OHM 0.10W 1% CHIP 0805	N 6*
R192	A11368-60432	604K OHM 0.125W 1% CHIP 1206	L 9*
R193	A11368-10021	10K 1/10W 1% CHIP 0805	N 9*
R194	A11371-8201	82 OHM 0.10W 5% CHIP	M 7*
R195	A11371-8211	820 OHM 0.10W 5% CHIP	M 7*
R196	A11368-10021	10K 1/10W 1% CHIP 0805	M 9*
R197	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	M 10

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 14 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R198		OPEN	M 10
R199	A11371-0R02	0.0 OHM JUMPER CHIP 1206	N 8*
R200	102595-3	POT, 5K LIN 21 DNT 12MM HORIZ	N 1
R201	A11368-10011	1K 0.10W 1% CHIP 0805	K 10*
R202	A11368-39231	392K 0.10W 1% CHIP 0805	L 9*
R203	A11368-49901	499 OHM 0.10W 1% CHIP 0805	L 9*
R204	A11368-10021	10K 1/10W 1% CHIP 0805	L 9*
R205	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R206	A11368-10011	1K 0.10W 1% CHIP 0805	J 9*
R209	A11368-19122	19.1K 0.125W 1% CHIP 1206	K 9*
R210	A11368-10011	1K 0.10W 1% CHIP 0805	J 9*
R211	A11368-10021	10K 1/10W 1% CHIP 0805	J 9*
R212	A10265-19121	19.1K 0.25W 1% MF	J 9
R213	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	J 10*
R214	A11368-82511	8.25K 0.1W 1% CHIP 0805	J 10*
R215	A11368-68121	68.1K 0.10W 1% CHIP	J 10*
R216	A11368-22601	226 OHM 0.10W 1% CHIP 0805	K 9*
R217	A11371-3341	330K 0.10W 5% CHIP 0805	J 9*
R218	A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	K 10
R219	A11371-3333	33K 0.25W 5% CHIP 1210	J 9*
R220	A11368-90921	90.9K 0.10W 1% CHIP 0805	K 9*
R221	A11368-10021	10K 1/10W 1% CHIP 0805	K 10
R222	A11368-15831	158K 0.10W 1% CHIP 0805	K 9*
R223	A11368-10031	100K 0.1W 1% CHIP 0805	K 9*
R224	A11368-15831	158K 0.10W 1% CHIP 0805	K 9*
R225	A11368-10031	100K 0.1W 1% CHIP 0805	L 9*
R226	A11368-49921	49.9K 0.1W 1% CHIP 0805	K 9*
R227	A11371-6821	6.8K 0.10W 5% CHIP 0805	K 9*
R228	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R229	A11371-8211	820 OHM 0.10W 5% CHIP	K 7*
R230		OPEN	L 7*
R231		OPEN	L 7*
R232	A11371-2223	2.2K 0.25W 5% CHIP 1210	H 3*
R233	A11371-7511	750 OHM 0.10W 5% CHIP	H 3*
R234	C10613-5	1K TOP ADJUST TRIMMER T/R	J 7
R235	A11371-3923	3.9K 0.25W 5% CHIP	J 7*
R236	A11371-8201	82 OHM 0.10W 5% CHIP	J 7*
R237	A11368-15002	150 OHM 0.125W 1% CHIP	K 8*
R238	A11371-1213	120 OHM 0.25W 5% CHIP	K 7*
R239	A11368-13703	137 OHM 0.25W 1% CHIP	K 8*
R240	A11371-3333	33K 0.25W 5% CHIP 1210	K 7*
R241	A11371-8211	820 OHM 0.10W 5% CHIP	L 8*
R242	125478-1	3.83KOHM 0.50W 1% 2010 T/R	L 7*
R243	A11371-3333	33K 0.25W 5% CHIP 1210	K 8*
R244	A11371-1213	120 OHM 0.25W 5% CHIP	K 8*
R245	A11371-1213	120 OHM 0.25W 5% CHIP	K 8*
R246	A11371-1331	13K OHM 0.10W 5% CHIP 0805	J 2*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 15 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R247	A11371-1011	100 OHM 0.10W 5% CHIP 0805	J 2*
R248	A11371-1811	180 OHM 0.10W 5% CHIP	K 2*
R250	A11371-5R63	5.6 0.25W 5% CHIP	J 2*
R252	103199-1	0.4 OHM 1W 5% 2512 T/R	K 4*
R253	103199-1	0.4 OHM 1W 5% 2512 T/R	K 3*
R256	103199-1	0.4 OHM 1W 5% 2512 T/R	N 4*
R257	103199-1	0.4 OHM 1W 5% 2512 T/R	N 3*
R259	103199-1	0.4 OHM 1W 5% 2512 T/R	D 3*
R260	A11371-1501	15 OHM 0.10W 5% CHIP	D 1*
R261	A11371-1331	13K OHM 0.10W 5% CHIP 0805	E 2*
R262	A11371-4701	47 OHM 0.10W 5% CHIP	E 2*
R263	A11371-1811	180 OHM 0.10W 5% CHIP	E 2*
R265	A11371-5R63	5.6 0.25W 5% CHIP	E 2*
R267	103199-1	0.4 OHM 1W 5% 2512 T/R	E 4*
R268	103199-1	0.4 OHM 1W 5% 2512 T/R	F 3*
R271	103199-1	0.4 OHM 1W 5% 2512 T/R	H 4*
R272	103199-1	0.4 OHM 1W 5% 2512 T/R	H 3*
R274	A11368-60432	604K OHM 0.125W 1% CHIP 1206	E 8*
R275	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	E 8*
R276	A11368-10021	10K 1/10W 1% CHIP 0805	E 8*
R277	A11368-10021	10K 1/10W 1% CHIP 0805	E 8*
R278	A11368-90921	90.9K 0.10W 1% CHIP 0805	L 9*
R279	A11368-10031	100K 0.1W 1% CHIP 0805	E 7*
R280	A11368-39231	392K 0.10W 1% CHIP 0805	E 8*
R281	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R282	A11368-10021	10K 1/10W 1% CHIP 0805	D 8*
R283	A11368-10031	100K 0.1W 1% CHIP 0805	E 8*
R284	A11368-20023	20K 0.25W 1% CHIP 1210	F 9*
R285	A11368-10021	10K 1/10W 1% CHIP 0805	F 8*
R286	A11368-10031	100K 0.1W 1% CHIP 0805	L 10*
R287	A11368-15831	158K 0.10W 1% CHIP 0805	K 10*
R288	A11368-15831	158K 0.10W 1% CHIP 0805	K 10*
R289	A11368-10031	100K 0.1W 1% CHIP 0805	K 10*
R290	A11368-57621	57.6K 0.10W 1% CHIP 0805	N 3*
R291	A11368-22601	226 OHM 0.10W 1% CHIP 0805	N 3*
R292	A11368-60432	604K OHM 0.125W 1% CHIP 1206	J 9*
R293	A11368-10021	10K 1/10W 1% CHIP 0805	K 9*
R294	A11371-8201	82 OHM 0.10W 5% CHIP	J 7*
R295	A11371-8211	820 OHM 0.10W 5% CHIP	J 7*
R296	A11368-10021	10K 1/10W 1% CHIP 0805	K 9*
R297	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	K 10
R298		OPEN	K 10
R299	A11371-0R02	0.0 OHM JUMPER CHIP 1206	K 8*
R300	103199-1	0.4 OHM 1W 5% 2512 T/R	D 6*
R301	103199-1	0.4 OHM 1W 5% 2512 T/R	J 6*
R302	103199-1	0.4 OHM 1W 5% 2512 T/R	K 5*
R305	103199-1	0.4 OHM 1W 5% 2512 T/R	M 6*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 16 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R306	103199-1	0.4 OHM 1W 5% 2512 T/R	N 5*
R307	103199-1	0.4 OHM 1W 5% 2512 T/R	E 6*
R308	103199-1	0.4 OHM 1W 5% 2512 T/R	F 6*
R311	103199-1	0.4 OHM 1W 5% 2512 T/R	G 6*
R312	103199-1	0.4 OHM 1W 5% 2512 T/R	I 6*
R313	A11368-10021	10K 1/10W 1% CHIP 0805	G 7*
R314	A11371-3341	330K 0.10W 5% CHIP 0805	G 7*
R315	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	H 7*
R316	A11368-10011	1K 0.10W 1% CHIP 0805	M 10*
R317	A11371-3934	39K OHM 0.50W 5% CHIP 1210	N 8
R318	A11371-3934	39K OHM 0.50W 5% CHIP 1210	N 8
R319		OPEN	M 10*
R322	A11371-1013	100 OHM .25W 5% 1210 SMT T/R	L 9
R323	A11371-0R02	0.0 OHM JUMPER CHIP 1206	G 8
R400	103199-1	0.4 OHM 1W 5% 2512 T/R	D 3*
R401	103199-1	0.4 OHM 1W 5% 2512 T/R	J 4*
R402	103199-1	0.4 OHM 1W 5% 2512 T/R	K 3*
R405	103199-1	0.4 OHM 1W 5% 2512 T/R	M 4*
R406	103199-1	0.4 OHM 1W 5% 2512 T/R	N 3*
R407	103199-1	0.4 OHM 1W 5% 2512 T/R	E 4*
R408	103199-1	0.4 OHM 1W 5% 2512 T/R	F 3*
R411	103199-1	0.4 OHM 1W 5% 2512 T/R	H 4*
R412	103199-1	0.4 OHM 1W 5% 2512 T/R	I 3*
R413	A11368-10021	10K 1/10W 1% CHIP 0805	E 7*
R414	A11371-3341	330K 0.10W 5% CHIP 0805	E 7*
R415	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	E 7*
R416	A11368-10011	1K 0.10W 1% CHIP 0805	K 10*
R417	A11371-3934	39K OHM 0.50W 5% CHIP 1210	K 7
R418	A11371-3934	39K OHM 0.50W 5% CHIP 1210	K 8
R419		OPEN	K 10*
R420	A11371-5R65	5.6 OHM 1W 5% CHIP 2512	H 1*
R421	A11371-5R65	5.6 OHM 1W 5% CHIP 2512	H 1*
R422	A11371-1013	100 OHM .25W 5% 1210 SMT T/R	J 9
R423	A11371-0R02	0.0 OHM JUMPER CHIP 1206	F 8
R500	A11368-10021	10K 1/10W 1% CHIP 0805	A 3
R501	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R502	A11368-10021	10K 1/10W 1% CHIP 0805	B 2
R503	A11368-10021	10K 1/10W 1% CHIP 0805	B 2
R504	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R506	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R508		OPEN	C 2
R600	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R601	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R602	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R603	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R604	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R606	A11368-10021	10K 1/10W 1% CHIP 0805	B 2

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JAW	12/21/98	DWG. NO.	SHEET 17 OF 20	REV
PROJ.	MD390D0		102139-9		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R607	A11371-8205	82 OHM 1W 5% CHIP 2512	A 1
R608		OPEN	C 1
S1	102488-1	SPDT HORIZ SLIDE	L 10
S2	C 7325-1	2P 2 POS. PC SLIDE SW.	L 10
TB1	102475-1	BLOCK, 5 POS TERMINAL	A 2
TP38	C 9896-9	TEST POINT LOOP	K 1
TP39	C 9896-9	TEST POINT LOOP	N 7
U1	C 5095-2	POS. 15 VOLT REG.	H 10
U1X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 10
U2	C 5096-0	NEG. 15 VOLT REG.	H 9
U2X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 9
U3	102486-1	OPTO BJT NPN SOIC-8 CTR =100%	N 10
U4	C 8262-5	MC33078D DUAL LO NOISE OP AMP	I 9
U5	C 8262-5	MC33078D DUAL LO NOISE OP AMP	N 9
U100	102723-2	OPTO CELL ON=500 OHM	M 9
U101	C 9012-3	MC33079D QUAD LO NOISE OP AMP	M 10
U102	C 9038-8	COMPARATOR, QUAD LM339D SO-14	N 9
U104	C 9038-8	COMPARATOR, QUAD LM339D SO-14	G 7
U105	C 8262-5	MC33078D DUAL LO NOISE OP AMP	F 7
U106	H42902-9	ASM, THERMAL SENSE	N 6
U200	102723-2	OPTO CELL ON=500 OHM	K 9
U201	C 9012-3	MC33079D QUAD LO NOISE OP AMP	J 10
U202	C 9038-8	COMPARATOR, QUAD LM339D SO-14	K 9
U204	C 9038-8	COMPARATOR, QUAD LM339D SO-14	E 7
U205	C 8262-5	MC33078D DUAL LO NOISE OP AMP	E 7
U206	H42902-9	ASM, THERMAL SENSE	N 3
U500	C 9012-3	MC33079D QUAD LO NOISE OP AMP	A 2
WP1	A11378-A050U	WIRE, 16 RED FAST X 5 X TERM	A 10
WP2	103331-N050R	WIRE, 16 BLK/WHT TAB X 5 X T	A 9
WP3	A11379-C050U	WIRE, 16 BLU FAST X 5 X TERM	A 9
WP4	101031-1	.250 FASTON, AUTO INSERTABLE	D 7
WP5	101031-1	.250 FASTON, AUTO INSERTABLE	D 4
WP6	A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	J 8
WP7	101031-1	.250 FASTON, AUTO INSERTABLE	D 8
Z1		OPEN	E 9
1	102138-9	PWB, CE1000/CE2000 MAIN/INPU	SEE COMP MAP
2	101016-1	LBL, BARCODE, , ,	SEE COMP MAP
3	125242-1	CAP, .625ID X 1" VINYL	SEE COMP MAP
4	126825-1	SILICONE, CLEAR 3OZ SYRINGE	SEE COMP MAP
5	125482-1	ADHESIVE LOCTITE 384 OUTPUT	SEE COMP MAP
6	125483-1	ACTIVATOR LOCTITE "OUTPUT"	SEE COMP MAP
7	103180-1	BUMPER, 0.4" TALL BLK W/ADH	SEE COMP MAP

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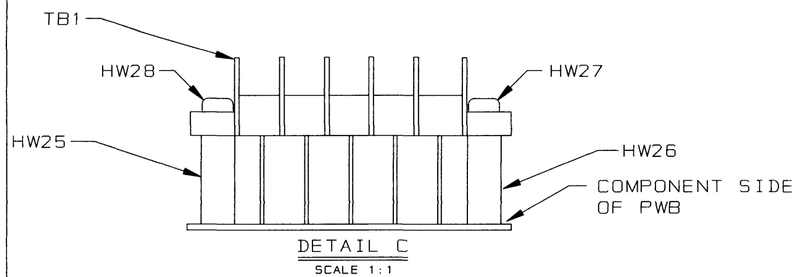
DRAWN	JAW	12/21/98	DWG. NO.	SHEET 18 OF 20	REV
PROJ.	MD390D0		102139-9		B

Component Map

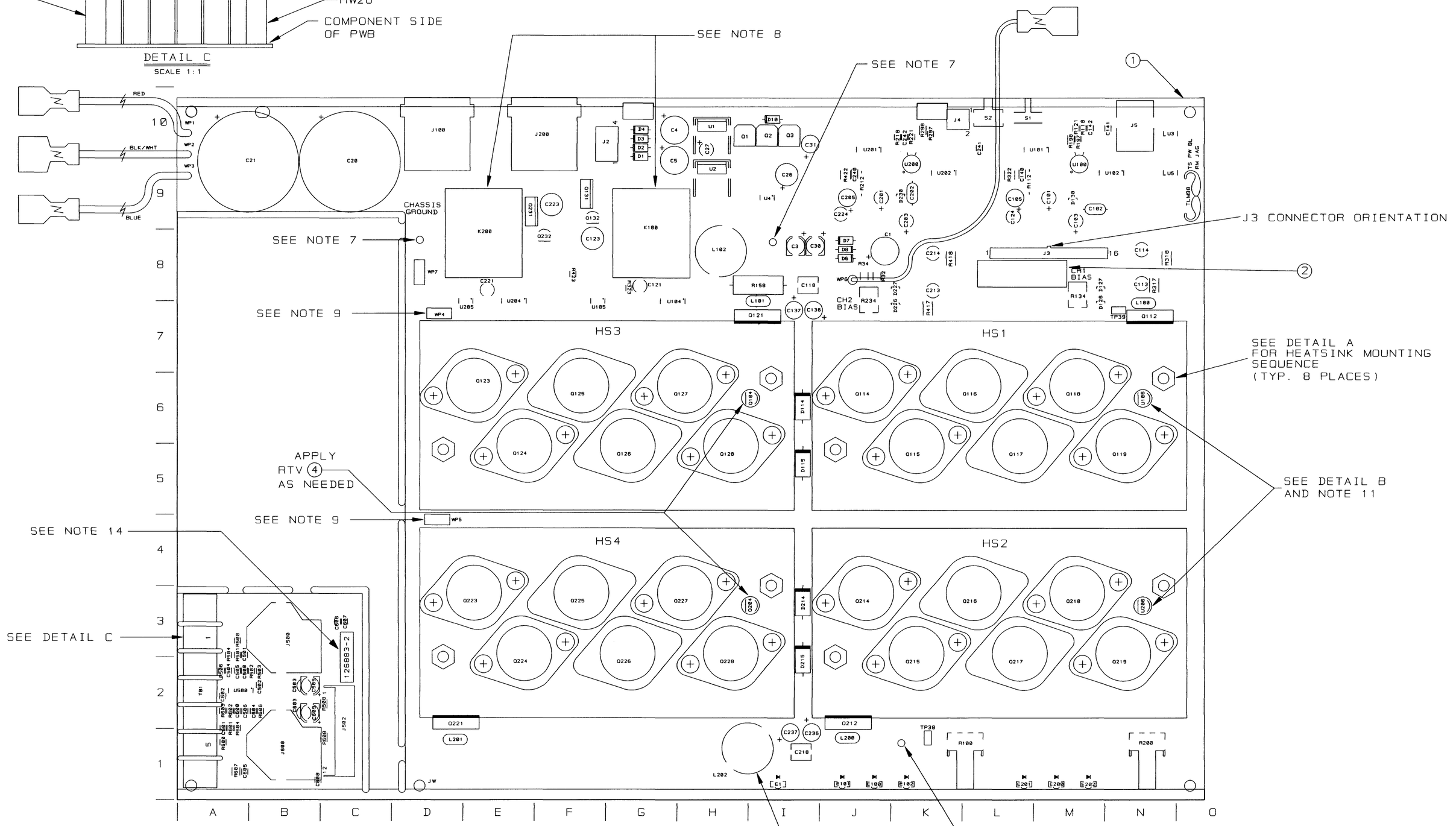
for use with

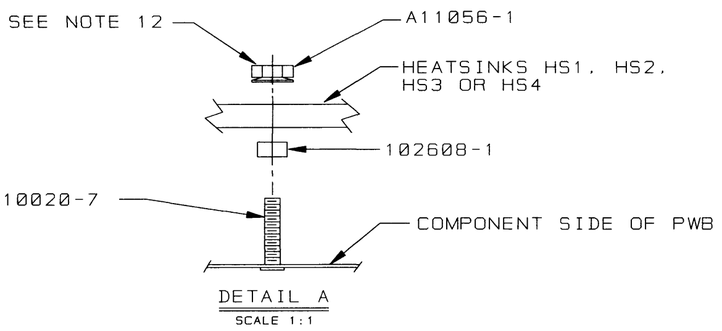
Main PWA #102139-9

COMPONENT MAP
(COMPONENT SIDE VIEW)

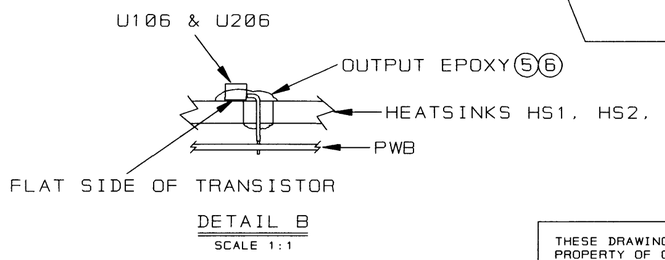


DETAIL C
SCALE 1:1





DETAIL A
SCALE 1:1



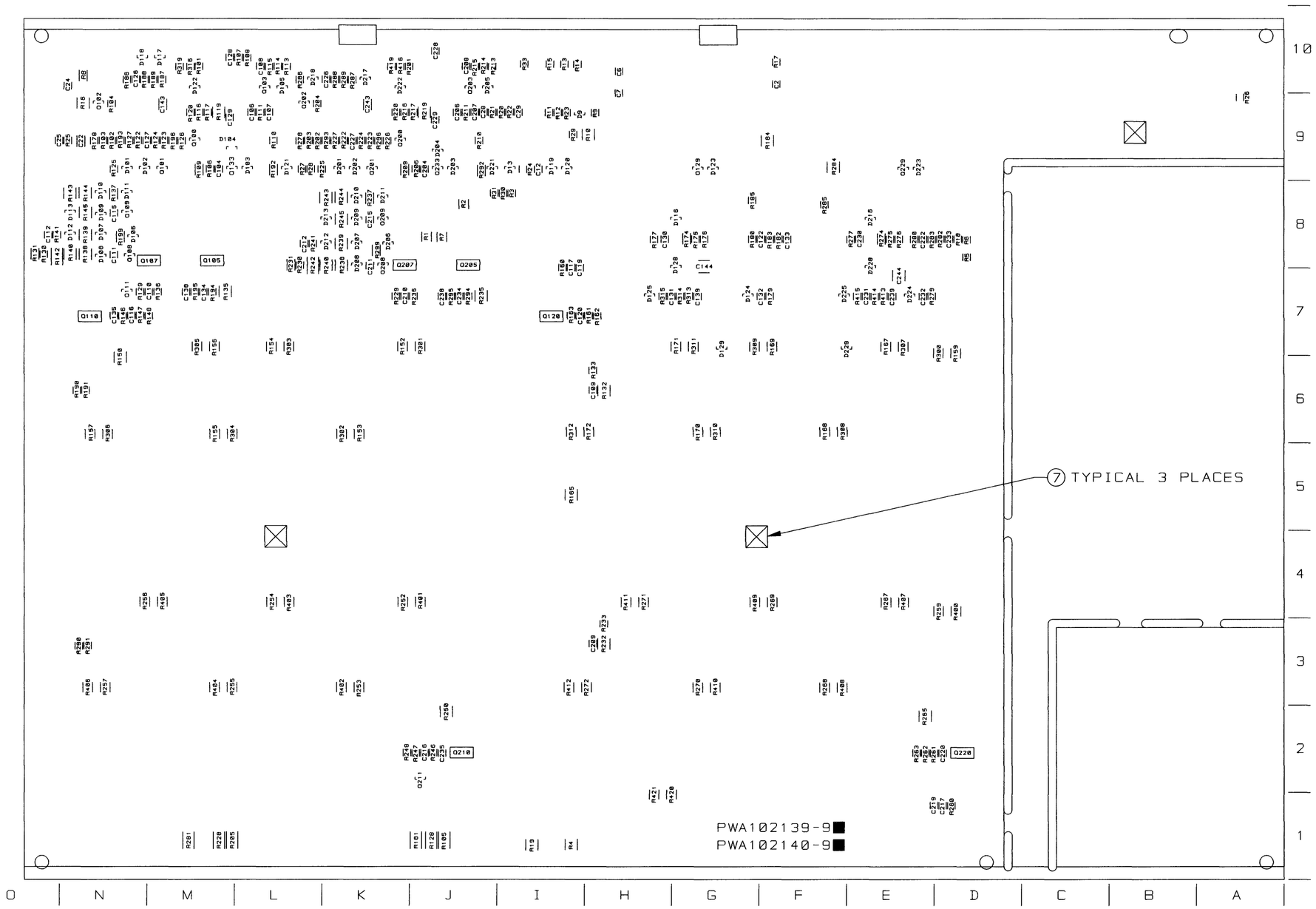
DETAIL B
SCALE 1:1

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CROWN INTERNATIONAL, INC.
1718 W. MISHAWAKA RD. ELKHART IN, 46517 PHONE (219) 294-8000

SCALE	NONE	DWG. NO.	SHEET 19 OF 20	REV
PROJ. #	MD390D0	102139-9		B



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CROWN INTERNATIONAL, INC.
1718 W. MISHAWAKA RD. ELKHART IN, 46517 PHONE (219) 294-8000

SCALE	NONE	DWG. NO.	SHEET 20 OF 20	REV
PROJ. #	MD390D0	102139-9		B

E.C.	ZONE	REV.	DESCRIPTION	DATE	BY	APPROVALS CHK	CM	EE	PE
		A	INITIAL RELEASE FOR PRODUCTION.	03-26-99	KLW	jaw			

NOTES:

1. SCHEMATIC DRAWING NUMBER 102141.
2. PWB PART NUMBER 102138-9.
3. THE PWA SHALL MEET THE IPC-A-610_ CLASS 2 STANDARDS.
4. ALL LEADS SHALL BE TRIMMED TO 0.093" OR LESS.
5. POSITION COMPONENTS AS SHOWN ON COMPONENT MAP.
6. COMPONENTS THAT HAVE (*) AFTER THEIR MAP LOCATION ARE MOUNTED ON THE BOTTOM SIDE OF THE PRINTED CIRCUIT BOARD.
7. REMOVE SOLDER OR PREVENT SOLDER FROM ACCUMULATING IN HOLES.
8. THE VENT HOLE ON TOP OF THE RELAYS K100 AND K200 MUST BE OPENED AFTER THE CLEANING PROCESS, BY EITHER REMOVING THE SEALING TAPE OR CUTTING OFF THE CIRCULAR TAB WITH AN "EXACTO" KNIFE OR SIMULAR CUTTING TOOL. WARNING, THIS STEP MUST BE DONE AFTER THE CLEANING PROCESS NOT BEFORE!!! WATER OR CLEANING SOLVENTS ENTERING THE RELAY VENT HOLE WILL DAMAGE THE RELAY.
9. CONNECT THE WIRES THAT COME FROM Q123 AND Q223 TO WP4 AND WP5 RESPECTIVELY.
10. THE PWA PART NUMBER FOR THIS MODULE SHALL BE MARKED ON THE TOP SIDE OF THE P.C. BOARD AND SHALL BE PERMANENT. USE A MARKER AND MARK OUT THE OLD PWA NUMBERS ON THE BOTTOM.
11. INSTALLATION OF U106 AND U206 IS AS FOLLOWS:
    - 11A. REMOVE MIDDLE SLEEVE FROM TRANSISTOR H42902-9
    - 11B. BEND TRANSISTOR AT 90 DEG. FLAT SIDE DOWN
    - 11C. PLACE TRANSISTOR INTO THE PWB AS SHOWN ON THE COMPONENT MAP DETAIL B.
    - 11D. MIX OUTPUT EPOXY AND ACCELERATOR TOGETHER. APPLY THE MIXTURE TO THE TRANSISTOR AND HEATSINK. THE MIXTURE MUST FILL THE HEATSINK HOLE AND THE LEADS OF THE DEVICE, ESPECIALLY THE CENTER LEAD. (NOTE: NO VISIBLE AIR GAPS AROUND THE TRANSISTOR AND THE TRANSISTOR LEADS CANNOT TOUCH THE HEATSINK)
    - 11E. HOLD THE TRANSISTOR AGAINST THE HEATSINK UNTIL EPOXY SETS-UP
12. TORQUE 6-32 HEX NUTS (CPN A11056-1) AS FOLLOWS:
    - 12A. PRE-WAVE TORQUE OF 4-6 INCH LBS.
    - 12B. POST-WAVE AND WHEN ASSEMBLY HAS COOLED DOWN TO HANDLING TEMPERATURE TORQUE OF 13-15 INCH LBS.
13. INSTALL J3 CONNECTOR AS SHOWN ON COMPONENT MAP
14. LABEL INPUT PWA WITH CPN 126883-2 ON COMPONENT SIDE.



CAUTION

STATIC CAN DAMAGE COMPONENTS!

DO NOT HANDLE

UNLESS WRIST STRAP IS WORN

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

PRINTS TO: K

PWA, MAIN/INPUT CE1000

TOL. UNLESS SPECIFIED
X.XX - ± 0.020
X.XXX - ± 0.010
DRILLS - ± 0.003

DRAWN	KLW	03-26-99	APPROVED BY:	DO NOT SCALE PRINT
CHECKED	jaw	03-26-99	ME 3-30-99	SUPERSEDES
SCALE	NONE		EE N/A N/A	E.C.
PROJ #	MD390D0		PE 3-30-99	DWG. NO. 102139-11 SHEET 1 OF 20 REV A
FILENAME: 102139-11_A_01.PCB			NEXT ASM:	

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A10020-7	6-32 X .625 PCB CAPTIVE STUD	8	HW9,HW10,HW11,HW12,HW13,HW14,
			HW15,HW16
A10265-19121	19.1K 0.25W 1% MF	2	R112,R212
A10266-2R74	2.7 OHM 2W 5% CF	1	R158
A10434-104JD	0.1 MF 250V 5% MTL POLY	2	C118,C218
A11056-1	6-32 HEX NUT W/BELLEVILLE	8	HW17,HW18,HW19,HW20,HW21,
			HW22,HW23,HW24
A11368-10011	1K 0.10W 1% CHIP 0805	8	R101,R106,R110,R201,R206,
			R210,R316,R416
A11368-10021	10K 1/10W 1% CHIP 0805	35	R9,R104,R107,R108,R111,R121,
			R176,R177,R182,R185,R193,
			R196,R204,R211,R221,R276,
			R277,R282,R285,R293,R296,
			R313,R413,R500,R501,R502,
			R503,R504,R506,R600,R601,
			R602,R603,R604,R606
A11368-10031	100K 0.1W 1% CHIP 0805	15	R25,R30,R31,R123,R125,R179,
			R183,R186,R189,R223,R225,
			R279,R283,R286,R289
A11368-12121	12.1K OHM 0.10W 1% CHIP 0805	1	R21
A11368-13703	137 OHM 0.25W 1% CHIP	2	R139,R239
A11368-15002	150 OHM 0.125W 1% CHIP	2	R137,R237
A11368-15831	158K 0.10W 1% CHIP 0805	8	R122,R124,R187,R188,R222,
			R224,R287,R288
A11368-19122	19.1K 0.125W 1% CHIP 1206	2	R109,R209
A11368-20021	20K 0.10W 1% CHIP 0805	1	R27
A11368-20023	20K 0.25W 1% CHIP 1210	3	R10,R184,R284
A11368-22601	226 OHM 0.10W 1% CHIP 0805	4	R116,R191,R216,R291
A11368-39231	392K 0.10W 1% CHIP 0805	6	R22,R23,R102,R180,R202,R280
A11368-49901	499 OHM 0.10W 1% CHIP 0805	2	R103,R203
A11368-49921	49.9K 0.1W 1% CHIP 0805	2	R126,R226
A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	8	R113,R175,R197,R213,R275,
			R297,R315,R415
A11368-57621	57.6K 0.10W 1% CHIP 0805	4	R20,R24,R190,R290
A11368-60432	604K OHM 0.125W 1% CHIP 1206	4	R174,R192,R274,R292
A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	2	R118,R218
A11368-68121	68.1K 0.10W 1% CHIP	3	R12,R115,R215
A11368-69811	6.98K OHM 0.10W 1% CHIP 0805	1	R5
A11368-71511	7.15K 1/10W 1% CHIP 0805	1	R18
A11368-82511	8.25K 0.1W 1% CHIP 0805	3	R17,R114,R214
A11368-90921	90.9K 0.10W 1% CHIP 0805	4	R120,R178,R220,R278
A11368-93111	9.31K 0.1W 1% CHIP 0805	1	R6
A11369-102J2	0.001UF 50V 5% NPO MLC 0805	2	C134,C234
A11369-120K2	12PF 50V 10% NPO 0805 T/R	6	C500,C501,C502,C600,C601,C602
A11369-270K2	27PF 50V 10% NPO 0805 T/R	2	C107,C207
A11369-330J2	33PF 50V 5% NPO MLC 0805	2	C142,C242
A11369-471K2	470PF 50V 10% NPO 0805 T/R	4	C110,C141,C210,C241

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 2 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A11371-0R02	0.0 OHM JUMPER CHIP 1206	4	R199,R299,R323,R423
A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	3	R14,R15,R33
A11371-1011	100 OHM 0.10W 5% CHIP 0805	3	R13,R147,R247
A11371-1013	100 OHM .25W 5% 1210 SMT T/R	2	R322,R422
A11371-1022	1K 0.125W 5% CHIP 1206	1	R8
A11371-1213	120 OHM 0.25W 5% CHIP	6	R138,R144,R145,R238,R244,R245
A11371-1331	13K OHM 0.10W 5% CHIP 0805	4	R146,R161,R246,R261
A11371-1501	15 OHM 0.10W 5% CHIP	5	C606,C607,C608,R160,R260
A11371-1811	180 OHM 0.10W 5% CHIP	4	R148,R163,R248,R263
A11371-2223	2.2K 0.25W 5% CHIP 1210	2	R132,R232
A11371-2225	2.2K 1W 5% CHIP 2512	1	R2
A11371-3313	330 OHM 0.25W 5% CHIP	2	R4,R19
A11371-3333	33K 0.25W 5% CHIP 1210	6	R119,R140,R143,R219,R240,R243
A11371-3341	330K 0.10W 5% CHIP 0805	7	R3,R11,R26,R117,R217,R314,
			R414
A11371-3923	3.9K 0.25W 5% CHIP	3	R16,R135,R235
A11371-3934	39K OHM 0.50W 5% CHIP 1210	4	R317,R318,R417,R418
A11371-4701	47 OHM 0.10W 5% CHIP	2	R162,R262
A11371-5615	560 OHM 1W 5% 2512 T/R	2	R32,R34
A11371-5R63	5.6 0.25W 5% CHIP	4	R150,R165,R250,R265
A11371-5R65	5.6 OHM 1W 5% CHIP 2512	2	R420,R421
A11371-6814	680 OHM 0.50W 5% CHIP	6	R105,R128,R181,R205,R228,R281
A11371-6821	6.8K 0.10W 5% CHIP 0805	2	R127,R227
A11371-7511	750 OHM 0.10W 5% CHIP	3	R28,R133,R233
A11371-8201	82 OHM 0.10W 5% CHIP	4	R136,R194,R236,R294
A11371-8205	82 OHM 1W 5% CHIP 2512	1	R607
A11371-8211	820 OHM 0.10W 5% CHIP	6	R129,R141,R195,R229,R241,R295
A11378-A050U	WIRE, 16 RED FAST X 5 X TERM	1	WP1
A11379-C050U	WIRE, 16 BLU FAST X 5 X TERM	1	WP3
A11427-103K2	0.01MF 50V 10% CHIP 0805	4	C109,C111,C209,C211
A11427-103K5	0.01MF 50V 5% X7R 1206	2	C143,C243
A11427-104K2	0.1 MF 50V 10% 0805	33	C2,C6,C7,C12,C24,C25,C28,C29,
			C115,C122,C126,C127,C128,
			C129,C130,C131,C132,C133,
			C139,C215,C222,C226,C227,
			C228,C229,C230,C231,C232,
			C233,C239,C505,C506,C605
A11427-123K2	0.012 MF 50V 10% CHIP	2	C112,C212
A11427-272K2	2700PF 50V 10% CHIP 0805	2	C117,C217
A11427-472K2	4700PF 50V 10% X7R 0805	4	C116,C119,C216,C219
C 2851-1	1N4004 SILICON RECT.	7	D1,D2,D3,D4,D6,D7,D10
C 3510-2	CHOKE, 470UH 10% AXIAL	4	L100,L101,L200,L201
C 3549-0	DIODE ZENER, 10V, 1N5240B	1	D8
C 3679-5	33UF 50V 20% VERT ELECT	1	C31
C 4477-3	470 MF 35V VERT	2	C4,C5

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 3 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
C 5095-2	POS. 15 VOLT REG.	1	U1
C 5096-0	NEG. 15 VOLT REG.	1	U2
C 5362-6	2.2 MF 50V VERT	1	C27
C 6802-0	.47 MF 50V AX CERM	2	C102,C202
C 7091-9	0.33 MF 50V CHIP 1206	3	C22,C140,C240
C 7325-1	2P 2 POS. PC SLIDE SW.	1	S2
C 7448-1	MMBT3904 CHIP NPN	6	Q100,Q101,Q129,Q200,Q201,Q229
C 8262-5	MC33078D DUAL LO NOISE OP AM	4	U4,U5,U105,U205
C 8576-8	100 MF 35V 10% ELEC	1	C26
C 9012-3	MC33079D QUAD LO NOISE OP AM	3	U101,U201,U500
C 9038-8	COMPARATOR, QUAD LM339D SO-1	4	U102,U104,U202,U204
C 9157-6	100UF 16V 20% NP ELEC RAD T/	2	C123,C223
C 9252-5	2N3904 40V NPN TRANSISTOR	2	Q104,Q204
C 9283-0	DIODE, 1N914/1N4148 SOT-23 S	56	D9,D13,D101,D102,D103,D104,
			D105,D106,D107,D108,D109,
			D110,D111,D112,D113,D116,
			D117,D118,D119,D120,D121,
			D122,D123,D124,D125,D126,
			D127,D128,D129,D130,D201,
			D202,D203,D204,D205,D206,
			D207,D208,D209,D210,D211,
			D212,D213,D216,D217,D218,
			D221,D222,D223,D224,D225,
			D226,D227,D228,D229,D230
C 9896-9	TEST POINT LOOP	2	TP38,TP39
C 9918-1	TO220 VERT CLIP-ON HEATSINK	2	U1X,U2X
C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-	6	Q102,Q109,Q111,Q202,Q209,Q211
C10196-1	2.2MF 50V 20% RAD T/R	4	C121,C124,C221,C224
C10208-4	100 MF 25V 20% VERT ELEC	2	C105,C205
C10422-1	DIODE, 3A 400V 1N5404 AXIAL	4	D114,D115,D214,D215
C10613-5	1K TOP ADJUST TRIMMER T/R	2	R134,R234
D 8917-3	8200UF 110VDC ELECTROLYTIC	2	C20,C21
H42902-9	ASM, THERMAL SENSE	2	U106,U206
101016-1	LBL, BARCODE, , ,	1	2
101031-1	.250 FASTON, AUTO INSERTABLE	3	WP4,WP5,WP7
101571-1	HDR 2 POS .1 CTR MTA SHRD	1	J4
101573-1	HDR 4 POS .1 CTR MTA SHRD	1	J2
101993-1	JACK, 6P4 COND MODULAR R/A	1	J5
102138-9	PWB, CE1000/CE2000 MAIN/INPU	1	1
102438-101K2	100PF 200V 10% NPO 0805	6	C104,C120,C135,C204,C220,C235
102438-560K2	56PF 200V 10% NPO 0805	4	C106,C206,C504,C604
102438-820K2	82PF 200V 10% NPO 0805	4	C108,C138,C208,C238
102465-1	.47UF 50V 20% RADIAL T/R	2	C101,C201
102466-1	10UF 250V 20% RADIAL T/R	1	C1
102467-1	22MF 25V 20% RAD T/R	4	C103,C203,C503,C603
102468-1	47UF 10V 20% NP RAD T/R	4	C113,C114,C213,C214
102470-1	INDUCTOR, 2.75UH 11A RADIAL	2	L102,L202
102471-2	HDR, 12POS 2.5MM RT ANG KEYE	1	J502
102472-3	HDR, 16POS .100 CTR SGL ROW	1	J3

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 4 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
102473-1	SPEAKON, 4 POLE PCB HORZ	2	J100,J200
102475-1	BLOCK, 5 POS TERMINAL	1	TB1
102476-1	LED, SMT R/A GREEN	3	E1,E101,E201
102477-1	LED, SMT R/A RED	4	E100,E102,E200,E202
102478-1	TRIAC DRIVER SBS 8V THRESH	2	Q132,Q232
102479-1	PWR MJD112 NPN DARLINGTON 10	3	Q1,Q2,Q3
102480-1	FET, N-CH 25V 50MA SOT-23	2	Q133,Q233
102481-1	NPN 25V LOW NOISE SOT-23	2	Q108,Q208
102483-1	PNP 300V 500MA SOT-23	2	Q103,Q203
102486-1	OPTO BJT NPN SOIC-8 CTR =100	1	U3
102488-1	SPDT HORIZ SLIDE	1	S1
102569-3	HS ASM, T1 ISOLATED CH1, , ,	1	HS3
102570-3	HS ASM, T1 ISOLATED CH2, , ,	1	HS4
102571-3	HS ASM, T1 NON-ISOLATED CH1,	1	HS1
102572-3	HS ASM, T1 NON-ISOLATED CH2,	1	HS2
102579-1	STAND, 1/4 RD SWAGE AL	2	HW25,HW26
102595-3	POT, 5K LIN 21 DNT 12MM HORI	2	R100,R200
102608-1	SPACER, 6X.187 LONG ALUMINUM	8	HW1,HW2,HW3,HW4,HW5,HW6,HW7,
			HW8
102723-2	OPTO CELL ON=500 OHM	2	U100,U200
103180-1	BUMPER, 0.4" TALL BLK W/ADH	3	7
103191-1	0.47UF Z5U 1210 20% 50V	2	C144,C244
103192-1	NPN 300V 500MA 50MHZ SOT-223	4	Q107,Q110,Q207,Q210
103193-1	PNP 300V 500MA 50MHZ SOT-223	4	Q105,Q120,Q205,Q220
103199-1	0.4 OHM 1W 5% 2512 T/R	38	R1,R7,R152,R153,R156,R157,
			R159,R167,R168,R171,R172,
			R252,R253,R256,R257,R259,
			R267,R268,R271,R272,R300,
			R301,R302,R305,R306,R307,
			R308,R311,R312,R400,R401,
			R402,R405,R406,R407,R408,
			R411,R412
103210-1	2.2UF 160V RADIAL T/R	4	C136,C137,C236,C237
103331-N050R	WIRE, 16 BLK/WHT TAB X 5 X T	1	WP2
103435-70608	SCREW,6-32 X.5 TORX PNHD SEM	2	HW27,HW28
125106-1	MAC9D 8 AMP 400V TRIAC	2	Q131,Q231
125242-1	CAP, .625ID X 1" VINYL	1	3
125478-1	3.83KOHM 0.50W 1% 2010 T/R	2	R142,R242
125482-1	ADHESIVE LOCTITE 384 OUTPUT	0	5
125483-1	ACTIVATOR LOCTITE "OUTPUT"	0	6
125508-1	10UF 50VDC ELECTROLYTIC SMD	2	C3,C30
126317-1	REL, 30A 24V SPST PCB W/FAST	2	K100,K200
126825-1	SILICONE, CLEAR 3OZ SYRINGE	0	4
126929-1	1/4" TRS/XLR COMBO PCB VERT	2	J500,J600
127442-1	PREP, CE HI-V WIRE	1	WP6

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 5 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C1	102466-1	10UF 250V 20% RADIAL T/R	J 8
C2	A11427-104K2	0.1 MF 50V 10% 0805	F 9*
C3	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C4	C 4477-3	470 MF 35V VERT	G 10
C5	C 4477-3	470 MF 35V VERT	G 9
C6	A11427-104K2	0.1 MF 50V 10% 0805	H 10*
C7	A11427-104K2	0.1 MF 50V 10% 0805	H 9*
C12	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C20	D 8917-3	8200UF 110VDC ELECTROLYTIC	C 9
C21	D 8917-3	8200UF 110VDC ELECTROLYTIC	B 9
C22	C 7091-9	0.33 MF 50V CHIP 1206	N 9*
C24	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C25	A11427-104K2	0.1 MF 50V 10% 0805	O 9*
C26	C 8576-8	100 MF 35V 10% ELEC	I 9
C27	C 5362-6	2.2 MF 50V VERT	H 10
C28	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C29	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C30	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C31	C 3679-5	33UF 50V 20% VERT ELECT	I 10
C101	102465-1	.47UF 50V 20% RADIAL T/R	M 9
C102	C 6802-0	.47 MF 50V AX CERM	M 9
C103	102467-1	22MF 25V 20% RAD T/R	M 9
C104	102438-101K2	100PF 200V 10% NPO 0805	M 9*
C105	C10208-4	100 MF 25V 20% VERT ELEC	L 9
C106	102438-560K2	56PF 200V 10% NPO 0805	L 9*
C107	A11369-270K2	27PF 50V 10% NPO 0805 T/R	L 9*
C108	102438-820K2	82PF 200V 10% NPO 0805	L 10*
C109	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 6*
C110	A11369-471K2	470PF 50V 10% NPO 0805 T/R	M 7*
C111	A11427-103K2	0.01MF 50V 10% CHIP 0805	N 8*
C112	A11427-123K2	0.012 MF 50V 10% CHIP	O 8*
C113	102468-1	47UF 10V 20% NP RAD T/R	N 8
C114	102468-1	47UF 10V 20% NP RAD T/R	N 8
C115	A11427-104K2	0.1 MF 50V 10% 0805	N 8*
C116	A11427-472K2	4700PF 50V 10% X7R 0805	N 7*
C117	A11427-272K2	2700PF 50V 10% CHIP 0805	I 7*
C118	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 8
C119	A11427-472K2	4700PF 50V 10% X7R 0805	I 7*
C120	102438-101K2	100PF 200V 10% NPO 0805	I 7*
C121	C10196-1	2.2MF 50V 20% RAD T/R	G 8
C122	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C123	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 8
C124	C10196-1	2.2MF 50V 20% RAD T/R	L 9
C126	A11427-104K2	0.1 MF 50V 10% 0805	N 10*
C127	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C128	A11427-104K2	0.1 MF 50V 10% 0805	M 10*
C129	A11427-104K2	0.1 MF 50V 10% 0805	M 9*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 6 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C130	A11427-104K2	0.1 MF 50V 10% 0805	H 8*
C131	A11427-104K2	0.1 MF 50V 10% 0805	H 7*
C132	A11427-104K2	0.1 MF 50V 10% 0805	F 7*
C133	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C134	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	M 7*
C135	102438-101K2	100PF 200V 10% NPO 0805	N 7*
C136	103210-1	2.2UF 160V RADIAL T/R	I 7
C137	103210-1	2.2UF 160V RADIAL T/R	I 7
C138	102438-820K2	82PF 200V 10% NPO 0805	M 7*
C139	A11427-104K2	0.1 MF 50V 10% 0805	G 7*
C140	C 7091-9	0.33 MF 50V CHIP 1206	L 9
C141	A11369-471K2	470PF 50V 10% NPO 0805 T/R	N 10
C142	A11369-330J2	33PF 50V 5% NPO MLC 0805	M 10
C143	A11427-103K5	0.01MF 50V 5% X7R 1206	M 9*
C144	103191-1	0.47UF Z5U 1210 20% 50V	G 7*
C201	102465-1	.47UF 50V 20% RADIAL T/R	J 9
C202	C 6802-0	.47 MF 50V AX CERM	K 9
C203	102467-1	22MF 25V 20% RAD T/R	K 9
C204	102438-101K2	100PF 200V 10% NPO 0805	J 9*
C205	C10208-4	100 MF 25V 20% VERT ELEC	J 9
C206	102438-560K2	56PF 200V 10% NPO 0805	J 9*
C207	A11369-270K2	27PF 50V 10% NPO 0805 T/R	J 9*
C208	102438-820K2	82PF 200V 10% NPO 0805	J 10*
C209	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 3*
C210	A11369-471K2	470PF 50V 10% NPO 0805 T/R	K 7*
C211	A11427-103K2	0.01MF 50V 10% CHIP 0805	K 7*
C212	A11427-123K2	0.012 MF 50V 10% CHIP	L 8*
C213	102468-1	47UF 10V 20% NP RAD T/R	K 8
C214	102468-1	47UF 10V 20% NP RAD T/R	K 8
C215	A11427-104K2	0.1 MF 50V 10% 0805	K 8*
C216	A11427-472K2	4700PF 50V 10% X7R 0805	J 2*
C217	A11427-272K2	2700PF 50V 10% CHIP 0805	D 1*
C218	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 1
C219	A11427-472K2	4700PF 50V 10% X7R 0805	E 1*
C220	102438-101K2	100PF 200V 10% NPO 0805	D 2*
C221	C10196-1	2.2MF 50V 20% RAD T/R	E 8
C222	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C223	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 9
C224	C10196-1	2.2MF 50V 20% RAD T/R	J 9
C226	A11427-104K2	0.1 MF 50V 10% 0805	K 10*
C227	A11427-104K2	0.1 MF 50V 10% 0805	K 9*
C228	A11427-104K2	0.1 MF 50V 10% 0805	J 10*
C229	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C230	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C231	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C232	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C233	A11427-104K2	0.1 MF 50V 10% 0805	D 8*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 7 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C234	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	J 7*
C235	102438-101K2	100PF 200V 10% NPO 0805	J 2*
C236	103210-1	2.2UF 160V RADIAL T/R	I 1
C237	103210-1	2.2UF 160V RADIAL T/R	I 1
C238	102438-820K2	82PF 200V 10% NPO 0805	J 7*
C239	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C240	C 7091-9	0.33 MF 50V CHIP 1206	J 9
C241	A11369-471K2	470PF 50V 10% NPO 0805 T/R	L 10
C242	A11369-330J2	33PF 50V 5% NPO MLC 0805	K 10
C243	A11427-103K5	0.01MF 50V 5% X7R 1206	K 9*
C244	103191-1	0.47UF Z5U 1210 20% 50V	E 7*
C500	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C501	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C502	A11369-120K2	12PF 50V 10% NPO 0805 T/R	B 2
C503	102467-1	22MF 25V 20% RAD T/R	B 2
C504	102438-560K2	56PF 200V 10% NPO 0805	A 2
C505	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C506	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C509		OPEN	B 2
C600	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C601	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 1
C602	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C603	102467-1	22MF 25V 20% RAD T/R	B 2
C604	102438-560K2	56PF 200V 10% NPO 0805	B 2
C605	A11427-104K2	0.1 MF 50V 10% 0805	A 1
C606	A11371-1501	15 OHM 0.1W 5% CHIP 0805	C 3
C607	A11371-1501	15 OHM 0.1W 5% CHIP 0805	C 3
C608	A11371-1501	15 OHM 0.1W 5% CHIP 0805	B 1
C609		OPEN	B 2
D1	C 2851-1	1N4004 SILICON RECT.	G 9
D2	C 2851-1	1N4004 SILICON RECT.	G 10
D3	C 2851-1	1N4004 SILICON RECT.	G 10
D4	C 2851-1	1N4004 SILICON RECT.	G 10
D6	C 2851-1	1N4004 SILICON RECT.	J 8
D7	C 2851-1	1N4004 SILICON RECT.	J 8
D8	C 3549-0	DIODE ZENER, 10V, 1N5240B	J 8
D9	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D10	C 2851-1	1N4004 SILICON RECT.	I 10
D13	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D101	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D102	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D103	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D104	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9*
D105	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D106	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D107	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D108	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 8 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D109	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D110	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D111	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D112	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D113	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D114	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 6
D115	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 5
D116	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 8*
D117	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 10*
D118	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 10*
D119	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D120	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D121	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D122	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9*
D123	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 9*
D124	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7*
D125	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	H 7*
D126	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 7
D127	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 8
D128	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7*
D129	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 6*
D130	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9
D201	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D202	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D203	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D204	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D205	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D206	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D207	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D208	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7*
D209	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D210	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D211	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D212	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D213	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8*
D214	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 3
D215	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 2
D216	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 8*
D217	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 10*
D218	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 10*
D221	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9*
D222	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9*
D223	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 9*
D224	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7*
D225	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 7*
D226	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7
D227	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 9 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D228	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7*
D229	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 6*
D230	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9
E1	102476-1	LED, SMT R/A GREEN	I 1
E100	102477-1	LED, SMT R/A RED	J 1
E101	102476-1	LED, SMT R/A GREEN	J 1
E102	102477-1	LED, SMT R/A RED	K 1
E200	102477-1	LED, SMT R/A RED	M 1
E201	102476-1	LED, SMT R/A GREEN	L 1
E202	102477-1	LED, SMT R/A RED	M 1
H11		OPEN	K 1
H14		OPEN	I 8
H18		OPEN	D 8
HS1	102571-3	HS ASM, T1 NON-ISOLATED CH1,	
HS2	102572-3	HS ASM, T1 NON-ISOLATED CH2,	
HS3	102569-3	HS ASM, T1 ISOLATED CH1, , ,	
HS4	102570-3	HS ASM, T1 ISOLATED CH2, , ,	
HW1	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW2	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW3	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW4	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW5	102608-1	SPACER, 6X.187 LONG ALUMINUM	A 4
HW6	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW7	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW8	102608-1	SPACER, 6X.187 LONG ALUMINUM	B 4
HW9	A10020-7	6-32 X .625 PCB CAPTIVE STUD	D 5
HW10	A10020-7	6-32 X .625 PCB CAPTIVE STUD	I 6
HW11	A10020-7	6-32 X .625 PCB CAPTIVE STUD	D 2
HW12	A10020-7	6-32 X .625 PCB CAPTIVE STUD	I 3
HW13	A10020-7	6-32 X .625 PCB CAPTIVE STUD	J 5
HW14	A10020-7	6-32 X .625 PCB CAPTIVE STUD	N 6
HW15	A10020-7	6-32 X .625 PCB CAPTIVE STUD	J 2
HW16	A10020-7	6-32 X .625 PCB CAPTIVE STUD	N 3
HW17	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW18	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW19	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW20	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW21	A11056-1	6-32 HEX NUT W/BELLEVILLE	A 4
HW22	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW23	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW24	A11056-1	6-32 HEX NUT W/BELLEVILLE	B 4
HW25	102579-1	STAND, 1/4 RD SWAGE AL	A 4
HW26	102579-1	STAND, 1/4 RD SWAGE AL	A 4
HW27	103435-70608	SCREW,6-32 X.5 TORX PNHD SEM	A 4
HW28	103435-70608	SCREW,6-32 X.5 TORX PNHD SEM	A 4
J2	101573-1	HDR 4 POS .1 CTR MTA SHRD	G 10
J3	102472-3	HDR, 16POS .100 CTR SGL ROW	M 8
J4	101571-1	HDR 2 POS .1 CTR MTA SHRD	L 10
J5	101993-1	JACK, 6P4 COND MODULAR R/A	

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 10 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
J100	102473-1	SPEAKON, 4 POLE PCB HORZ	D 10
J200	102473-1	SPEAKON, 4 POLE PCB HORZ	F 10
J500	126929-1	1/4" TRS/XLR COMBO PCB VERT	B 3
J502	102471-2	HDR, 12POS 2.5MM RT ANG KEYED	C 1
J600	126929-1	1/4" TRS/XLR COMBO PCB VERT	B 1
K100	126317-1	REL, 30A 24V SPST PCB W/FASTON	G 9
K200	126317-1	REL, 30A 24V SPST PCB W/FASTON	E 9
L100	C 3510-2	CHOKE, 470UH 10% AXIAL	N 7
L101	C 3510-2	CHOKE, 470UH 10% AXIAL	I 7
L102	102470-1	INDUCTOR, 2.75UH 11A RADIAL	H 8
L200	C 3510-2	CHOKE, 470UH 10% AXIAL	J 1
L201	C 3510-2	CHOKE, 470UH 10% AXIAL	D 1
L202	102470-1	INDUCTOR, 2.75UH 11A RADIAL	I 1
Q1	102479-1	PWR MJD112 NPN DARLINGTON 100V	H 10
Q2	102479-1	PWR MJD112 NPN DARLINGTON 100V	I 10
Q3	102479-1	PWR MJD112 NPN DARLINGTON 100V	I 10
Q100	C 7448-1	MMBT3904 CHIP NPN	M 9*
Q101	C 7448-1	MMBT3904 CHIP NPN	M 9*
Q102	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 9*
Q103	102483-1	PNP 300V 500MA SOT-23	L 9*
Q104	C 9252-5	2N3904 40V NPN TRANSISTOR	I 6
Q105	103193-1	PNP 300V 500MA 50MHZ SOT-223	M 7*
Q107	103192-1	NPN 300V 500MA 50MHZ SOT-223	M 7*
Q108	102481-1	NPN 25V LOW NOISE SOT-23	N 8*
Q109	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 8*
Q110	103192-1	NPN 300V 500MA 50MHZ SOT-223	N 7*
Q111	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 7*
Q120	103193-1	PNP 300V 500MA 50MHZ SOT-223	I 7*
Q129	C 7448-1	MMBT3904 CHIP NPN	G 9*
Q131	125106-1	MAC9D 8 AMP 400V TRIAC	F 9
Q132	102478-1	TRIAC DRIVER SBS 8V THRESH	F 9
Q133	102480-1	FET, N-CH 25V 50MA SOT-23	M 9*
Q200	C 7448-1	MMBT3904 CHIP NPN	K 9*
Q201	C 7448-1	MMBT3904 CHIP NPN	K 9*
Q202	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	L 9*
Q203	102483-1	PNP 300V 500MA SOT-23	J 9*
Q204	C 9252-5	2N3904 40V NPN TRANSISTOR	I 3
Q205	103193-1	PNP 300V 500MA 50MHZ SOT-223	J 7*
Q207	103192-1	NPN 300V 500MA 50MHZ SOT-223	K 7*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 11 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
Q208	102481-1	NPN 25V LOW NOISE SOT-23	K 7*
Q209	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	K 8*
Q210	103192-1	NPN 300V 500MA 50MHZ SOT-223	J 2*
Q211	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	J 2*
Q220	103193-1	PNP 300V 500MA 50MHZ SOT-223	D 2*
Q229	C 7448-1	MMBT3904 CHIP NPN	E 9*
Q231	125106-1	MAC9D 8 AMP 400V TRIAC	E 9
Q232	102478-1	TRIAC DRIVER SBS 8V THRESH	F 8
Q233	102480-1	FET, N-CH 25V 50MA SOT-23	J 9*
R1	103199-1	0.4 OHM 1W 5% 2512 T/R	J 8*
R2	A11371-2225	2.2K 1W 5% CHIP 2512	J 8*
R3	A11371-3341	330K 0.10W 5% CHIP 0805	I 8*
R4	A11371-3313	330 OHM 0.25W 5% CHIP	I 1*
R5	A11368-69811	6.98K OHM 0.10W 1% CHIP 0805	D 8*
R6	A11368-93111	9.31K 0.1W 1% CHIP 0805	D 8*
R7	103199-1	0.4 OHM 1W 5% 2512 T/R	J 8*
R8	A11371-1022	1K 0.125W 5% CHIP 1206	N 10*
R9	A11368-10021	10K 1/10W 1% CHIP 0805	H 9*
R10	A11368-20023	20K 0.25W 1% CHIP 1210	H 9*
R11	A11371-3341	330K 0.10W 5% CHIP 0805	I 9*
R12	A11368-68121	68.1K 0.10W 1% CHIP	I 9*
R13	A11371-1011	100 OHM 0.10W 5% CHIP 0805	I 10*
R14	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R15	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R16	A11371-3923	3.9K 0.25W 5% CHIP	N 9*
R17	A11368-82511	8.25K 0.1W 1% CHIP 0805	F 10*
R18	A11368-71511	7.15K 1/10W 1% CHIP 0805	D 8*
R19	A11371-3313	330 OHM 0.25W 5% CHIP	I 1*
R20	A11368-57621	57.6K 0.10W 1% CHIP 0805	I 9*
R21	A11368-12121	12.1K OHM 0.10W 1% CHIP 0805	J 9*
R22	A11368-39231	392K 0.10W 1% CHIP 0805	I 9*
R23	A11368-39231	392K 0.10W 1% CHIP 0805	I 9*
R24	A11368-57621	57.6K 0.10W 1% CHIP 0805	I 9*
R25	A11368-10031	100K 0.1W 1% CHIP 0805	N 9*
R26	A11371-3341	330K 0.10W 5% CHIP 0805	A 9*
R27	A11368-20021	20K 0.10W 1% CHIP 0805	L 9*
R28	A11371-7511	750 OHM 0.10W 5% CHIP	L 9*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 12 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R30	A11368-10031	100K 0.1W 1% CHIP 0805	I 8*
R31	A11368-10031	100K 0.1W 1% CHIP 0805	J 8*
R32	A11371-5615	560 OHM 1W 5% 2512 T/R	J 8
R33	A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	I 10*
R34	A11371-5615	560 OHM 1W 5% 2512 T/R	J 8
R100	102595-3	POT, 5K LIN 21 DNT 12MM HORIZ	L 1
R101	A11368-10011	1K 0.10W 1% CHIP 0805	M 10*
R102	A11368-39231	392K 0.10W 1% CHIP 0805	N 9*
R103	A11368-49901	499 OHM 0.10W 1% CHIP 0805	N 9*
R104	A11368-10021	10K 1/10W 1% CHIP 0805	N 9*
R105	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R106	A11368-10011	1K 0.10W 1% CHIP 0805	M 9*
R107	A11368-10021	10K 1/10W 1% CHIP 0805	L 10*
R108	A11368-10021	10K 1/10W 1% CHIP 0805	L 10*
R109	A11368-19122	19.1K 0.125W 1% CHIP 1206	M 9*
R110	A11368-10011	1K 0.10W 1% CHIP 0805	L 9*
R111	A11368-10021	10K 1/10W 1% CHIP 0805	L 9*
R112	A10265-19121	19.1K 0.25W 1% MF	L 9
R113	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	L 10*
R114	A11368-82511	8.25K 0.1W 1% CHIP 0805	L 10*
R115	A11368-68121	68.1K 0.10W 1% CHIP	L 10*
R116	A11368-22601	226 OHM 0.10W 1% CHIP 0805	M 9*
R117	A11371-3341	330K 0.10W 5% CHIP 0805	M 9*
R118	A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	M 10
R119	A11371-3333	33K 0.25W 5% CHIP 1210	M 9*
R120	A11368-90921	90.9K 0.10W 1% CHIP 0805	M 9*
R121	A11368-10021	10K 1/10W 1% CHIP 0805	M 10
R122	A11368-15831	158K 0.10W 1% CHIP 0805	N 9*
R123	A11368-10031	100K 0.1W 1% CHIP 0805	M 9*
R124	A11368-15831	158K 0.10W 1% CHIP 0805	M 9*
R125	A11368-10031	100K 0.1W 1% CHIP 0805	N 9*
R126	A11368-49921	49.9K 0.1W 1% CHIP 0805	M 9*
R127	A11371-6821	6.8K 0.10W 5% CHIP 0805	N 9*
R128	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R129	A11371-8211	820 OHM 0.10W 5% CHIP	N 7*
R130		OPEN	O 8*
R131		OPEN	O 8*
R132	A11371-2223	2.2K 0.25W 5% CHIP 1210	H 6*
R133	A11371-7511	750 OHM 0.10W 5% CHIP	H 6*
R134	C10613-5	1K TOP ADJUST TRIMMER T/R	M 7
R135	A11371-3923	3.9K 0.25W 5% CHIP	M 7*
R136	A11371-8201	82 OHM 0.10W 5% CHIP	M 7*
R137	A11368-15002	150 OHM 0.125W 1% CHIP	N 8*
R138	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R139	A11368-13703	137 OHM 0.25W 1% CHIP	N 8*
R140	A11371-3333	33K 0.25W 5% CHIP 1210	N 8*
R141	A11371-8211	820 OHM 0.10W 5% CHIP	O 8*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 13 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R142	125478-1	3.83KOHM 0.50W 1% 2010 T/R	O 8*
R143	A11371-3333	33K 0.25W 5% CHIP 1210	N 8*
R144	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R145	A11371-1213	120 OHM 0.25W 5% CHIP	N 8*
R146	A11371-1331	13K OHM 0.10W 5% CHIP 0805	N 7*
R147	A11371-1011	100 OHM 0.10W 5% CHIP 0805	N 7*
R148	A11371-1811	180 OHM 0.10W 5% CHIP	M 7*
R150	A11371-5R63	5.6 0.25W 5% CHIP	N 6*
R152	103199-1	0.4 OHM 1W 5% 2512 T/R	K 6*
R153	103199-1	0.4 OHM 1W 5% 2512 T/R	K 5*
R156	103199-1	0.4 OHM 1W 5% 2512 T/R	M 6*
R157	103199-1	0.4 OHM 1W 5% 2512 T/R	N 5*
R158	A10266-2R74	2.7 OHM 2W 5% CF	I 8
R159	103199-1	0.4 OHM 1W 5% 2512 T/R	D 6*
R160	A11371-1501	15 OHM 0.10W 5% CHIP	I 7*
R161	A11371-1331	13K OHM 0.10W 5% CHIP 0805	H 7*
R162	A11371-4701	47 OHM 0.10W 5% CHIP	H 7*
R163	A11371-1811	180 OHM 0.10W 5% CHIP	I 7*
R165	A11371-5R63	5.6 0.25W 5% CHIP	I 5*
R167	103199-1	0.4 OHM 1W 5% 2512 T/R	E 6*
R168	103199-1	0.4 OHM 1W 5% 2512 T/R	F 6*
R171	103199-1	0.4 OHM 1W 5% 2512 T/R	G 6*
R172	103199-1	0.4 OHM 1W 5% 2512 T/R	H 6*
R174	A11368-60432	604K OHM 0.125W 1% CHIP 1206	G 8*
R175	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	G 8*
R176	A11368-10021	10K 1/10W 1% CHIP 0805	G 8*
R177	A11368-10021	10K 1/10W 1% CHIP 0805	H 8*
R178	A11368-90921	90.9K 0.10W 1% CHIP 0805	N 9*
R179	A11368-10031	100K 0.1W 1% CHIP 0805	F 7*
R180	A11368-39231	392K 0.10W 1% CHIP 0805	G 8*
R181	A11371-6814	680 OHM 0.50W 5% CHIP	J 1*
R182	A11368-10021	10K 1/10W 1% CHIP 0805	F 8*
R183	A11368-10031	100K 0.1W 1% CHIP 0805	F 8*
R184	A11368-20023	20K 0.25W 1% CHIP 1210	F 9*
R185	A11368-10021	10K 1/10W 1% CHIP 0805	G 8*
R186	A11368-10031	100K 0.1W 1% CHIP 0805	N 10*
R187	A11368-15831	158K 0.10W 1% CHIP 0805	M 10*
R188	A11368-15831	158K 0.10W 1% CHIP 0805	N 10*
R189	A11368-10031	100K 0.1W 1% CHIP 0805	M 10*
R190	A11368-57621	57.6K 0.10W 1% CHIP 0805	N 6*
R191	A11368-22601	226 OHM 0.10W 1% CHIP 0805	N 6*
R192	A11368-60432	604K OHM 0.125W 1% CHIP 1206	L 9*
R193	A11368-10021	10K 1/10W 1% CHIP 0805	N 9*
R194	A11371-8201	82 OHM 0.10W 5% CHIP	M 7*
R195	A11371-8211	820 OHM 0.10W 5% CHIP	M 7*
R196	A11368-10021	10K 1/10W 1% CHIP 0805	M 9*
R197	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	M 10

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 14 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R198		OPEN	M 10
R199	A11371-0R02	0.0 OHM JUMPER CHIP 1206	N 8*
R200	102595-3	POT, 5K LIN 21 DNT 12MM HORIZ	N 1
R201	A11368-10011	1K 0.10W 1% CHIP 0805	K 10*
R202	A11368-39231	392K 0.10W 1% CHIP 0805	L 9*
R203	A11368-49901	499 OHM 0.10W 1% CHIP 0805	L 9*
R204	A11368-10021	10K 1/10W 1% CHIP 0805	L 9*
R205	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R206	A11368-10011	1K 0.10W 1% CHIP 0805	J 9*
R209	A11368-19122	19.1K 0.125W 1% CHIP 1206	K 9*
R210	A11368-10011	1K 0.10W 1% CHIP 0805	J 9*
R211	A11368-10021	10K 1/10W 1% CHIP 0805	J 9*
R212	A10265-19121	19.1K 0.25W 1% MF	J 9
R213	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	J 10*
R214	A11368-82511	8.25K 0.1W 1% CHIP 0805	J 10*
R215	A11368-68121	68.1K 0.10W 1% CHIP	J 10*
R216	A11368-22601	226 OHM 0.10W 1% CHIP 0805	K 9*
R217	A11371-3341	330K 0.10W 5% CHIP 0805	J 9*
R218	A11368-68111	6.81K OHM 0.10W 1% CHIP 0805	K 10
R219	A11371-3333	33K 0.25W 5% CHIP 1210	J 9*
R220	A11368-90921	90.9K 0.10W 1% CHIP 0805	K 9*
R221	A11368-10021	10K 1/10W 1% CHIP 0805	K 10
R222	A11368-15831	158K 0.10W 1% CHIP 0805	K 9*
R223	A11368-10031	100K 0.1W 1% CHIP 0805	K 9*
R224	A11368-15831	158K 0.10W 1% CHIP 0805	K 9*
R225	A11368-10031	100K 0.1W 1% CHIP 0805	L 9*
R226	A11368-49921	49.9K 0.1W 1% CHIP 0805	K 9*
R227	A11371-6821	6.8K 0.10W 5% CHIP 0805	K 9*
R228	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R229	A11371-8211	820 OHM 0.10W 5% CHIP	K 7*
R230		OPEN	L 7*
R231		OPEN	L 7*
R232	A11371-2223	2.2K 0.25W 5% CHIP 1210	H 3*
R233	A11371-7511	750 OHM 0.10W 5% CHIP	H 3*
R234	C10613-5	1K TOP ADJUST TRIMMER T/R	J 7
R235	A11371-3923	3.9K 0.25W 5% CHIP	J 7*
R236	A11371-8201	82 OHM 0.10W 5% CHIP	J 7*
R237	A11368-15002	150 OHM 0.125W 1% CHIP	K 8*
R238	A11371-1213	120 OHM 0.25W 5% CHIP	K 7*
R239	A11368-13703	137 OHM 0.25W 1% CHIP	K 8*
R240	A11371-3333	33K 0.25W 5% CHIP 1210	K 7*
R241	A11371-8211	820 OHM 0.10W 5% CHIP	L 8*
R242	125478-1	3.83KOHM 0.50W 1% 2010 T/R	L 7*
R243	A11371-3333	33K 0.25W 5% CHIP 1210	K 8*
R244	A11371-1213	120 OHM 0.25W 5% CHIP	K 8*
R245	A11371-1213	120 OHM 0.25W 5% CHIP	K 8*
R246	A11371-1331	13K OHM 0.10W 5% CHIP 0805	J 2*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 15 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R247	A11371-1011	100 OHM 0.10W 5% CHIP 0805	J 2*
R248	A11371-1811	180 OHM 0.10W 5% CHIP	K 2*
R250	A11371-5R63	5.6 0.25W 5% CHIP	J 2*
R252	103199-1	0.4 OHM 1W 5% 2512 T/R	K 4*
R253	103199-1	0.4 OHM 1W 5% 2512 T/R	K 3*
R256	103199-1	0.4 OHM 1W 5% 2512 T/R	N 4*
R257	103199-1	0.4 OHM 1W 5% 2512 T/R	N 3*
R259	103199-1	0.4 OHM 1W 5% 2512 T/R	D 3*
R260	A11371-1501	15 OHM 0.10W 5% CHIP	D 1*
R261	A11371-1331	13K OHM 0.10W 5% CHIP 0805	E 2*
R262	A11371-4701	47 OHM 0.10W 5% CHIP	E 2*
R263	A11371-1811	180 OHM 0.10W 5% CHIP	E 2*
R265	A11371-5R63	5.6 0.25W 5% CHIP	E 2*
R267	103199-1	0.4 OHM 1W 5% 2512 T/R	E 4*
R268	103199-1	0.4 OHM 1W 5% 2512 T/R	F 3*
R271	103199-1	0.4 OHM 1W 5% 2512 T/R	H 4*
R272	103199-1	0.4 OHM 1W 5% 2512 T/R	H 3*
R274	A11368-60432	604K OHM 0.125W 1% CHIP 1206	E 8*
R275	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	E 8*
R276	A11368-10021	10K 1/10W 1% CHIP 0805	E 8*
R277	A11368-10021	10K 1/10W 1% CHIP 0805	E 8*
R278	A11368-90921	90.9K 0.10W 1% CHIP 0805	L 9*
R279	A11368-10031	100K 0.1W 1% CHIP 0805	E 7*
R280	A11368-39231	392K 0.10W 1% CHIP 0805	E 8*
R281	A11371-6814	680 OHM 0.50W 5% CHIP	M 1*
R282	A11368-10021	10K 1/10W 1% CHIP 0805	D 8*
R283	A11368-10031	100K 0.1W 1% CHIP 0805	E 8*
R284	A11368-20023	20K 0.25W 1% CHIP 1210	F 9*
R285	A11368-10021	10K 1/10W 1% CHIP 0805	F 8*
R286	A11368-10031	100K 0.1W 1% CHIP 0805	L 10*
R287	A11368-15831	158K 0.10W 1% CHIP 0805	K 10*
R288	A11368-15831	158K 0.10W 1% CHIP 0805	K 10*
R289	A11368-10031	100K 0.1W 1% CHIP 0805	K 10*
R290	A11368-57621	57.6K 0.10W 1% CHIP 0805	N 3*
R291	A11368-22601	226 OHM 0.10W 1% CHIP 0805	N 3*
R292	A11368-60432	604K OHM 0.125W 1% CHIP 1206	J 9*
R293	A11368-10021	10K 1/10W 1% CHIP 0805	K 9*
R294	A11371-8201	82 OHM 0.10W 5% CHIP	J 7*
R295	A11371-8211	820 OHM 0.10W 5% CHIP	J 7*
R296	A11368-10021	10K 1/10W 1% CHIP 0805	K 9*
R297	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	K 10
R298		OPEN	K 10
R299	A11371-0R02	0.0 OHM JUMPER CHIP 1206	K 8*
R300	103199-1	0.4 OHM 1W 5% 2512 T/R	D 6*
R301	103199-1	0.4 OHM 1W 5% 2512 T/R	J 6*
R302	103199-1	0.4 OHM 1W 5% 2512 T/R	K 5*
R305	103199-1	0.4 OHM 1W 5% 2512 T/R	M 6*

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CROWN INTERNATIONAL INC.
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DRAWN	KLW	03-26-99	DWG. NO.	SHEET 16 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R306	103199-1	0.4 OHM 1W 5% 2512 T/R	N 5*
R307	103199-1	0.4 OHM 1W 5% 2512 T/R	E 6*
R308	103199-1	0.4 OHM 1W 5% 2512 T/R	F 6*
R311	103199-1	0.4 OHM 1W 5% 2512 T/R	G 6*
R312	103199-1	0.4 OHM 1W 5% 2512 T/R	I 6*
R313	A11368-10021	10K 1/10W 1% CHIP 0805	G 7*
R314	A11371-3341	330K 0.10W 5% CHIP 0805	G 7*
R315	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	H 7*
R316	A11368-10011	1K 0.10W 1% CHIP 0805	M 10*
R317	A11371-3934	39K OHM 0.50W 5% CHIP 1210	N 8
R318	A11371-3934	39K OHM 0.50W 5% CHIP 1210	N 8
R319		OPEN	M 10*
R322	A11371-1013	100 OHM .25W 5% 1210 SMT T/R	L 9
R323	A11371-0R02	0.0 OHM JUMPER CHIP 1206	G 8
R400	103199-1	0.4 OHM 1W 5% 2512 T/R	D 3*
R401	103199-1	0.4 OHM 1W 5% 2512 T/R	J 4*
R402	103199-1	0.4 OHM 1W 5% 2512 T/R	K 3*
R405	103199-1	0.4 OHM 1W 5% 2512 T/R	M 4*
R406	103199-1	0.4 OHM 1W 5% 2512 T/R	N 3*
R407	103199-1	0.4 OHM 1W 5% 2512 T/R	E 4*
R408	103199-1	0.4 OHM 1W 5% 2512 T/R	F 3*
R411	103199-1	0.4 OHM 1W 5% 2512 T/R	H 4*
R412	103199-1	0.4 OHM 1W 5% 2512 T/R	I 3*
R413	A11368-10021	10K 1/10W 1% CHIP 0805	E 7*
R414	A11371-3341	330K 0.10W 5% CHIP 0805	E 7*
R415	A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	E 7*
R416	A11368-10011	1K 0.10W 1% CHIP 0805	K 10*
R417	A11371-3934	39K OHM 0.50W 5% CHIP 1210	K 7
R418	A11371-3934	39K OHM 0.50W 5% CHIP 1210	K 8
R419		OPEN	K 10*
R420	A11371-5R65	5.6 OHM 1W 5% CHIP 2512	H 1*
R421	A11371-5R65	5.6 OHM 1W 5% CHIP 2512	H 1*
R422	A11371-1013	100 OHM .25W 5% 1210 SMT T/R	J 9
R423	A11371-0R02	0.0 OHM JUMPER CHIP 1206	F 8
R500	A11368-10021	10K 1/10W 1% CHIP 0805	A 3
R501	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R502	A11368-10021	10K 1/10W 1% CHIP 0805	B 2
R503	A11368-10021	10K 1/10W 1% CHIP 0805	B 2
R504	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R506	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R508		OPEN	C 2
R600	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R601	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R602	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R603	A11368-10021	10K 1/10W 1% CHIP 0805	A 2
R604	A11368-10021	10K 1/10W 1% CHIP 0805	A 1
R606	A11368-10021	10K 1/10W 1% CHIP 0805	B 2

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	KLW	03-26-99	DWG. NO.	SHEET 17 OF 20	REV
PROJ.	MD390D0		102139-11		A

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R607	A11371-8205	82 OHM 1W 5% CHIP 2512	A 1
R608		OPEN	C 1
S1	102488-1	SPDT HORIZ SLIDE	L 10
S2	C 7325-1	2P 2 POS. PC SLIDE SW.	L 10
TB1	102475-1	BLOCK, 5 POS TERMINAL	A 2
TP38	C 9896-9	TEST POINT LOOP	K 1
TP39	C 9896-9	TEST POINT LOOP	N 7
U1	C 5095-2	POS. 15 VOLT REG.	H 10
U1X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 10
U2	C 5096-0	NEG. 15 VOLT REG.	H 9
U2X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 9
U3	102486-1	OPTO BJT NPN SOIC-8 CTR =100%	N 10
U4	C 8262-5	MC33078D DUAL LO NOISE OP AMP	I 9
U5	C 8262-5	MC33078D DUAL LO NOISE OP AMP	N 9
U100	102723-2	OPTO CELL ON=500 OHM	M 9
U101	C 9012-3	MC33079D QUAD LO NOISE OP AMP	M 10
U102	C 9038-8	COMPARATOR, QUAD LM339D SO-14	N 9
U104	C 9038-8	COMPARATOR, QUAD LM339D SO-14	G 7
U105	C 8262-5	MC33078D DUAL LO NOISE OP AMP	F 7
U106	H42902-9	ASM, THERMAL SENSE	N 6
U200	102723-2	OPTO CELL ON=500 OHM	K 9
U201	C 9012-3	MC33079D QUAD LO NOISE OP AMP	J 10
U202	C 9038-8	COMPARATOR, QUAD LM339D SO-14	K 9
U204	C 9038-8	COMPARATOR, QUAD LM339D SO-14	E 7
U205	C 8262-5	MC33078D DUAL LO NOISE OP AMP	E 7
U206	H42902-9	ASM, THERMAL SENSE	N 3
U500	C 9012-3	MC33079D QUAD LO NOISE OP AMP	A 2
WP1	A11378-A050U	WIRE, 16 RED FAST X 5 X TERM	A 10
WP2	103331-N050R	WIRE, 16 BLK/WHT TAB X 5 X T	A 9
WP3	A11379-C050U	WIRE, 16 BLU FAST X 5 X TERM	A 9
WP4	101031-1	.250 FASTON, AUTO INSERTABLE	D 7
WP5	101031-1	.250 FASTON, AUTO INSERTABLE	D 4
WP6	127442-1	PREP, CE HI-V WIRE	J 8
WP7	101031-1	.250 FASTON, AUTO INSERTABLE	D 8
Z1		OPEN	E 9
1	102138-9	PWB, CE1000/CE2000 MAIN/INPU	SEE COMP MAP
2	101016-1	LBL, BARCODE, , ,	SEE COMP MAP
3	125242-1	CAP, .625ID X 1" VINYL	SEE COMP MAP
4	126825-1	SILICONE, CLEAR 30Z SYRINGE	SEE COMP MAP
5	125482-1	ADHESIVE LOCTITE 384 OUTPUT	SEE COMP MAP
6	125483-1	ACTIVATOR LOCTITE "OUTPUT"	SEE COMP MAP
7	103180-1	BUMPER, 0.4" TALL BLK W/ADH	SEE COMP MAP

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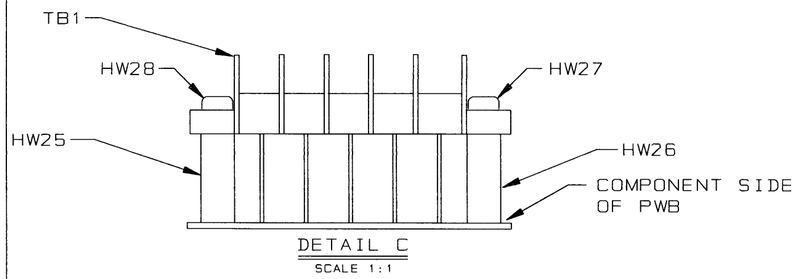
DRAWN	KLW	03-26-99	DWG. NO.	SHEET 18 OF 20	REV
PROJ.	MD390D0		102139-11		A

Component Map

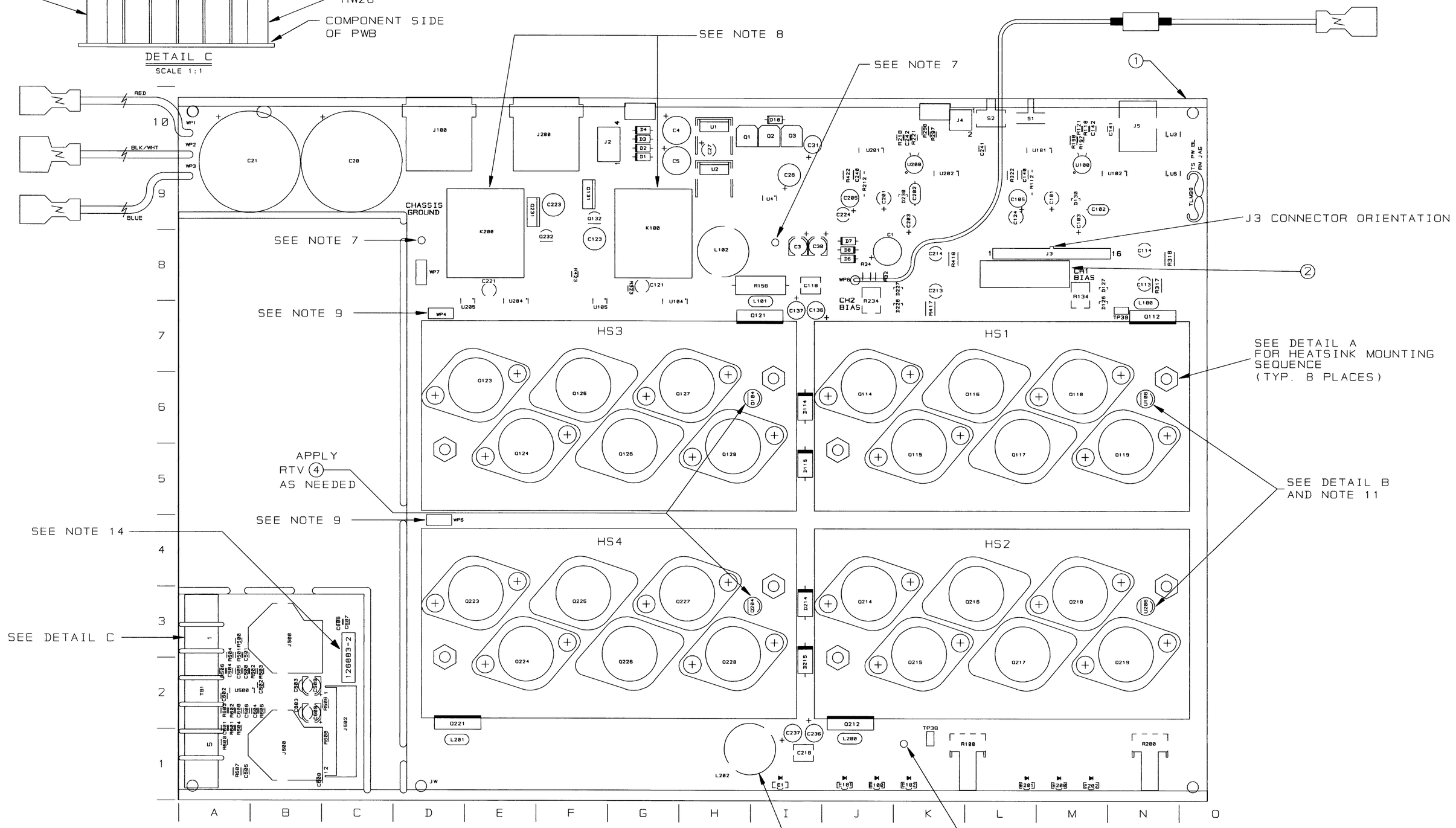
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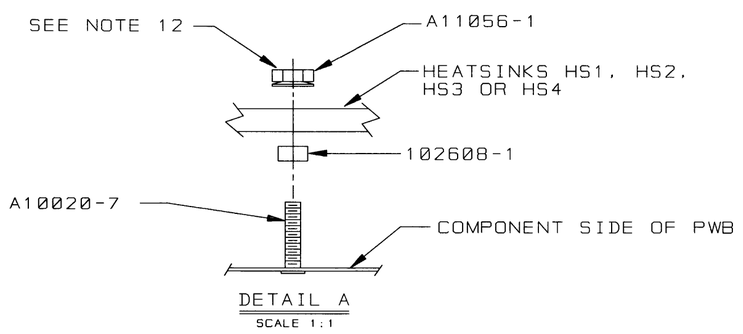
Main PWA #102139-11

COMPONENT MAP
(COMPONENT SIDE VIEW)

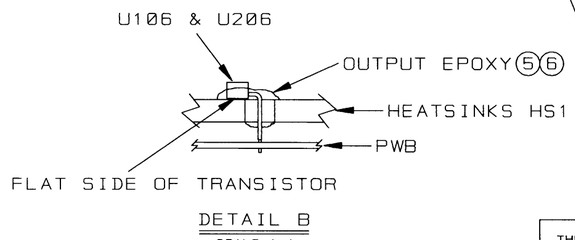


DETAIL C
SCALE 1:1





DETAIL A
SCALE 1:1



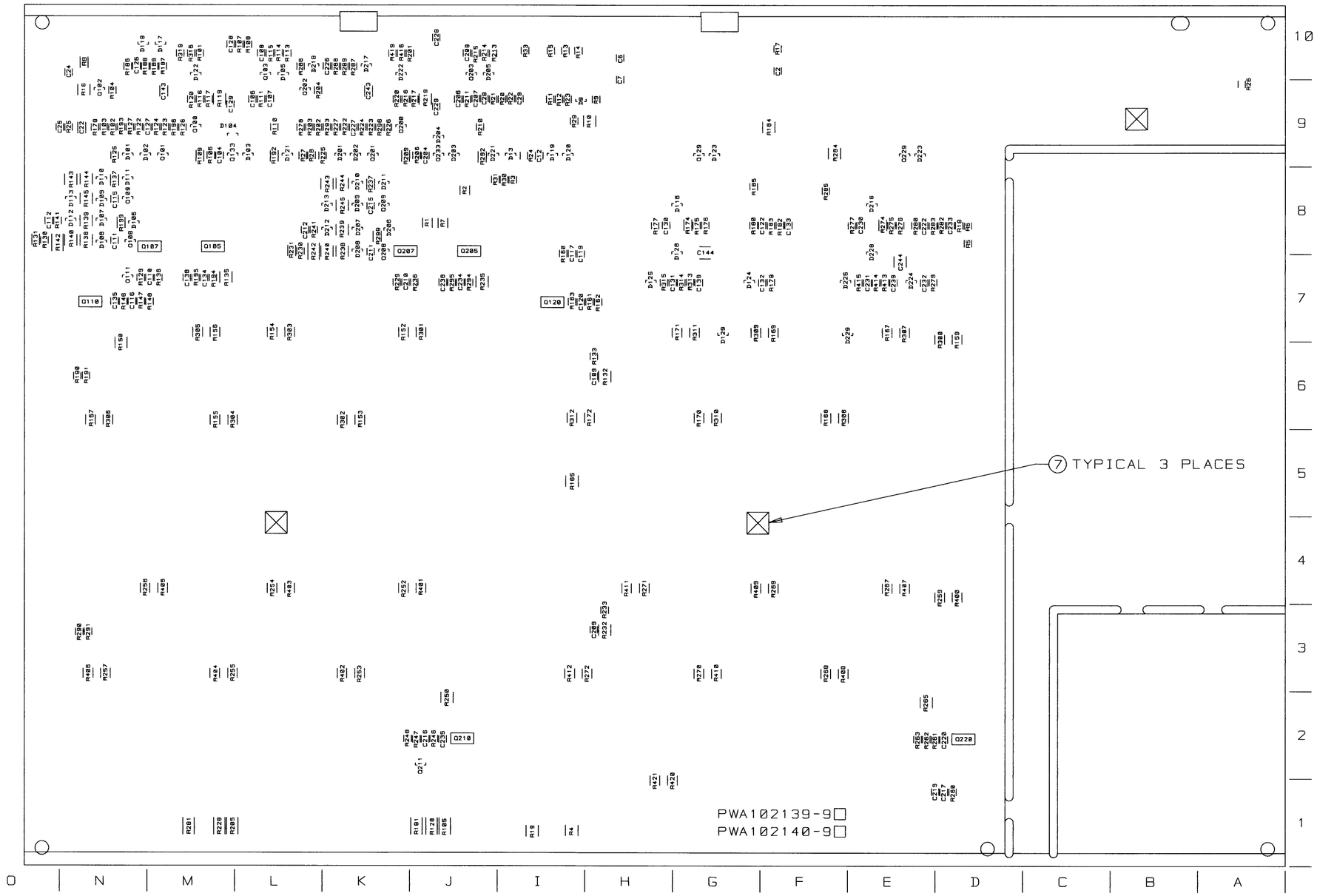
DETAIL B
SCALE 1:1

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CROWN INTERNATIONAL, INC.
1718 W. MISHAWAKA RD. ELKHART IN, 46517 PHONE (219) 294-8000

SCALE	NONE	DWG. NO.	SHEET 19 OF 20	REV
PROJ. #	MD390D0	102139-11		A



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1718 W. MISHAWAKA RD. ELKHART IN, 46517 PHONE (219) 294-8000

SCALE	NONE	DWG. NO.	SHEET 20 OF 20	REV
PROJ. #	MD390D0	102139-11		A

102140 rev H

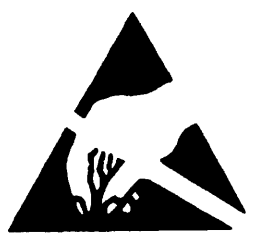
PWA, Main CE2000

PWB part number 102138-6
PWA part number 102140-6
Schematic Drawing number 102141 rev F

E.C.	ZONE	REV.	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	EE	PE
		E	NOTE 2 WAS 102130-4. NOTE 3 WAS 102140-4.	11/20/97	TLM	KW			TS
DCN# 97D0004		F	R16 WAS 2.2K. ADDED NOTES 13 & 14. ADDED ITEM 8 CABLE TIE. WP1 WAS A11370-A050S. WP2 WAS 103331-N05SP. WP3 WAS A11370-C050S. ADDED C26 SILKSCREEN LEGEND TO SHT 10 COMPONENT MAP. CORRECTED C26 CPN ON SHTEET 6. MOVED ITEM 2 ON SHEET 10 COMPONENT MAP. R250 IS NOW A "DO NOT INSTALL".	12/12/97	TLM	KW			TS
DCN# 98D0003		G	NOTE 2 WAS 102130-5. NOTE 3 WAS 102140-5. R1 WAS A11371-1025. R2 WAS A11371-2223. R5 WAS A11360-80711. R11 WAS A11371-5141. ADDED R7.	01-09-98	KLW	TLM			TS
DCN# 98D0007		H	WP1 WAS A11370-3050A. WP2 WAS A11566-3050N. WP3 WAS A11379-3050C. R100 AND R200 WERE 102595-2.	01-16-98	TLM	KW			TS

NOTES:

1. SCHEMATIC DRAWING NUMBER 102142.
2. PWB PART NUMBER 102130-6.
3. PWA PART NUMBER 102140-6.
4. THE PWA SHALL MEET THE IPC-A-610, CLASS 2 STANDARDS.
5. ALL LEADS SHALL BE TRIMMED TO 0.093" OR LESS.
6. POSITION COMPONENTS AS SHOWN ON COMPONENT MAP.
7. COMPONENTS THAT HAVE (*) AFTER THEIR MAP LOCATION ARE MOUNTED ON THE BOTTOM SIDE OF THE PRINTED CIRCUIT BOARD.
8. REMOVE SOLDER OR PREVENT SOLDER FROM ACCUMULATING IN HOLES.
9. THE VENT HOLE ON TOP OF THE RELAYS K100 AND K200 MUST BE OPENED AFTER THE CLEANING PROCESS. BY EITHER REMOVING THE SEALING TAPE OR CUTTING OFF THE CIRCULAR TAB WITH AN "EXACTO" KNIFE OR SIMULAR CUTTING TOOL. WARNING, THIS STEP MUST BE DONE AFTER THE CLEANING PROCESS NOT BEFORE!!! WATER OR CLEANING SOLVENTS ENTERING THE RELAY VENT HOLE WILL DAMAGE THE RELAY.
10. CONNECT THE WIRES THAT COME FROM Q123 AND Q223 TO WP4 AND WP5 RESPECTFULLY.
11. THE PWA PART NUMBER AND DRAWING REVISION FOR THIS MODULE SHALL BE MARKED ON THE P.C. BOARD AND SHALL BE PERMANENT.
12. INSTALLATION OF U105 AND U205 IS AS FOLLOWS:
    - 12A. REMOVE MIDDLE SLEEVE FROM TRANSISTOR H42902-9
    - 12B. BEND TRANSISTOR AT 90 DEG. FLAT SIDE DOWN
    - 12C. PLACE TRANSISTOR INTO THE PWB AS SHOWN ON THE COMPONENT MAP DETAIL B.
    - 12D. MIX OUTPUT EPOXY AND ACCELERATOR TOGETHER. APPLY THE MIXTURE TO THE TRANSISTOR AND HEATSINK. THE MIXTURE MUST FILL THE HEATSINK HOLE AND THE LEADS OF THE DEVICE. ESPECIALLY THE CENTER LEAD. (NOTE: NO VISIBLE AIR GAPS AROUND THE TRANSISTOR AND THE TRANSISTOR LEADS CANNOT TOUCH THE HEATSINK)
    - 12E. HOLD THE TRANSISTOR AGAINST THE HEATSINK UNTIL EPOXY SETS-UP
13. TORQUE 6-32 HEX NUTS (CPN A11056-1) AS FOLLOWS:
    - 13A. PRE-WAVE TORQUE OF 4-6 INCH LBS.
    - 13B. POST-WAVE AND WHEN ASSEMBLY HAS COOLED DOWN TO HANDLING TEMPERATURE TORQUE OF 13-15 INCH LBS.
14. INSTALL J3 CONNECTOR AS SHOWN ON COMPONENT MAP



CAUTION

STATIC CAN DAMAGE COMPONENTS!

DO NOT HANDLE

UNLESS WRIST STRAP IS WORN

INACTIVE

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

PWA, MAIN CE2000

TOL. UNLESS SPECIFIED
X.XX - ± 0.020
X.XXX - ± 0.010
DRILLS - ± 0.003

PRINTS TO: K

DRAWN	TLM	09-09-97	APPROVED BY:			DO NOT SCALE PRINT
CHECKED	KW	09-09-97	ME			SUPERSEDES 102140 REV.G
SCALE	NONE		EE	PW	09-09-97	E.C. DCN# 98D0007
PROJ #	MD390D0		PE	TS	09-09-97	DWG. NO. 102140
FILENAME: 102140-6H01.PCB			NEXT ASM:			SHEET 1 CONT. ON SHEET 2

REV (H)

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
101016-1	LBL. BARCODE. . .	1	Z
101031-1	0.250 FASTON. AUTO INSERTABL	2	WP4. WP5
101571-1	HDR. 2 POS .1 CTR MTA SHRD	1	J4
101573-1	HDR. 4 POS .1 CTR MTA SHRD	1	J2
101993-1	JACK. 6P4 COND MODULAR R/A	1	J5
102138-6	PWB. CE1000/CE2000 MAIN	1	1
102438-101K2	100PF 200V NPO 0805 T/R	6	C104.C120.C135.C204.C220.
			C235
102438-221K2	220PF 200V 10% NPO 0805 T/R	2	C111.C211
102438-560K2	56PF 200V 10% NPO T/R	2	C106.C206
102438-820K2	82PF 200V 10% NPO 0805 T/R	4	C108.C208.C138.C238
102465-1	.47UF 50V 20% RADIAL T/R	2	C101.C201
102466-1	10UF 250V 20% RADIAL T/R	1	C1
102467-1	22UF 25V 20% RADIAL T/R	2	C103.C203
102468-1	47UF 10V 20% NP RAD T/R	4	C113.C114.C213.C214
102470-1	INDUCTOR. 2.75UH 11A RADIAL	2	L102.L202
102472-3	12POS .100CTR ASSY SGL ROW	1	J3
102473-1	SPEAKON. 4 POLE PCB HORZ	2	J100.J200
102476-1	LED. SMT R/A GREEN	3	E1.E101.E201
102477-1	LED. SMT R/A RED	4	E100.E102.E200.E202
102478-1	TRIAC DRIVER. SBS 8V THRESH	2	Q132.Q232
102479-1	PWR NPN DARLINGTON 100V 2A	2	Q1.Q2
102480-1	MMBF4856LT1 FET 25V SOT-23	2	Q133.Q233
102481-1	NPN 25V LOW NOISE SOT-23	2	Q108.Q208
102483-1	PNP 300V 500MA SOT-23	2	Q103.Q203
102486-1	OPTO BJT NPN SOIC-8 CTR=100%	1	U3
102488-1	SPDT HORIZ SLIDE	1	S100
102573-1	HS ASM. T2 ISOLATED CH1. . .	1	HS3
102574-1	HS ASM. T2 ISOLATED CH2. . .	1	HS4
102575-1	HS ASM. T2 NON-ISOLATED CH1.	1	HS1
102576-1	HS ASM. T2 NON-ISOLATED CH2.	1	HS2
102578-1	SPACER. 6X.125 AL BLK ANOD	8	HW1.HW2.HW3.HW4.HW5.HW6.
			HW7.HW8
102595-2	5K LIN 21 DETENT 12MM HORIZ	2	R100.R200
103100-1	BUMPER. 0.4" TALL BLK W/ADH	3	7
103191-1	0.47UF 50V Z5U 1210 T/R	4	C121.C124.C221.C224
103192-1	SOT-223 NPN 300V 500MA 50MHZ	4	Q107.Q110.Q207.Q210
103193-1	SOT-223 PNP 300V 500MA 50MHZ	4	Q105.Q120.Q205.Q220
103199-1	0.4 OHM 1W 5% 2512 T/R	52	R152.R153.R154.R155.R156.
			R157.R159.R167.R168.R169.
			R170.R171.R172.R252.R253.
			R254.R255.R256.R257.R259.
			R267.R268.R269.R270.R271.
			R272.R300.R301.R302.R303.
			R304.R305.R306.R307.R308.
			R309.R310.R311.R312.R400.
			R401.R402.R403.R404.R405.
			R406.R407.R408.R409.R410.
			R411.R412
103210-1	2.2UF 160V RADIAL T/R	4	C136.C137.C236.C237
103331-N050R	WIRE. 14 BLK/WHT 3/16X5.0XT	1	WP2

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART. INDIANA 46517 PHONE (219) 294-8000

DRAWN	TLM	09-09-97	DWG. NO.	SHEET 2	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 3	H

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
125106-1	MAC9D 8 AMP 400V TRIAC	2	Q131,Q231
125242-1	CAP, .625ID X 1" VINYL	1	3
125482-1	ADHESIVE LOCTITE 384 OUTPUT	0	5
125483-1	ACTIVATOR LOCTITE "OUTPUT"	0	6
125508-1	10UF 50V 20% SMT AL ELEC T/R	1	C3
A10020-7	6-32 X .625 PCB CAPTIVE STUD	8	HW10,HW11,HW12,HW13,HW14,
			HW15,HW16,HW9
A10266-2R74	2.7 OHM 2W 5% CF T/R	1	R158
A11056-1	6-32 HEX NUT W/BELLEVILLE	8	HW17,HW18,HW19,HW20,HW21,
			HW22,HW23,HW24
A11368-10011	1.KOHM .1W 1% CHIP 0805	4	R106,R110,R206,R210
A11368-10021	10K 1/10W 1% SMD 0805 T/R	24	R101,R104,R107,R108,R111,
			R176,R177,R182,R185,
			R193,R201,R204,R211,R276,
			R277,R282,R285,R293,R313,
			R316,R413,R416,R9,R27
A11368-10031	100.KOHM .1W 1% CHIP 0805	13	R123,R125,R179,R289,
			R183,R186,R189,R223,
			R225,R25,R279,R283,R286,
A11368-10703	107 OHM .25W 1% 1210 T/R	2	R139,R239
A11368-12121	12.1KOHM .1W 1% 0805 T/R	1	R21
A11368-15831	158KOHM .1W 1% 0805 T/R	8	R122,R124,R222,R224,R187,
			R188,R287,R288
A11368-19122	19.1 KOHM .125W 1% CHIP RES	4	R112,R109,R212,R209
A11368-20023	20.0KOHM .25W 1% 1210 T/R	3	R10,R184,R284
A11368-22601	226 OHM 0.1W 1% 0805 T/R	4	R116,R216,R191,R291
A11368-39231	392 KOHM .1W 1% 0805 T/R	8	R126,R180,R22,R226,R280,R23
			R102,R202
A11368-49901	499 OHM .1W 1% 0805 T/R	4	R103,R203,R137,R237
A11368-51111	5.11KOHM .1W 1% 0805 T/R	6	R113,R213,R175,R275,R315,
			R415
A11368-57621	57.6K, 0.10W, 1%, CF	4	R190,R290,R20,R24
A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	3	R12,R115,R215
A11368-75R03	75 OHM .25W 1% 1210 T/R	2	R145,R245
A11368-82511	8.25KOHM .1W 1% CHIP 0805	5	R5,R18,R114,R214,R17
A11368-88711	8.87KOHM .1W 1% CHIP 0805	1	R6
A11368-90921	90.9K, 0.10W 1% MF 0805	4	R120,R220,R178,R278,
A11369-102J2	.001UF 50V 5% NPO MLC 0805 T	2	C134,C234
A11369-270K2	27PF 50V 10% NPO 0805 T/R	2	C107,C207
A11369-471K2	470PF 50V 10% NPO 0805 T/R	2	C110,C210
A11371-0R02	0. OHM .125W 5% CHIP RES T/R	2	R323,R423
A11371-0R21	.2OHM .1W 5% 0805 T/R	2	R14,R15
A11371-1011	100 OHM .1W 5% 0805 T/R	3	R13,R147,R247
A11371-1022	1.KOHM .125W 5% CHIP RES T/R	1	R8
A11371-1213	120 OHM .25W 5% 1210 T/R	4	R138,R144,R238,R244
A11371-1331	13KOHM .1W 5% 0805 T/R	4	R146,R161,R246,R261
A11371-1501	15 OHM .1W 5% 0805 T/R	2	R160,R260
A11371-1811	180 OHM .1W 5% 0805 T/R	4	R148,R163,R248,R263
A11371-2223	2.2K 0.25W 5% 1210 T/R	2	R132,R232
A11371-2225	2.2K OHM 1W 5% 2512 T/R	3	R1,R2,R7

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 3	REV
PROJ.	MD390D8		102140	CONT. ON SHEET 4	H

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A11371-2713	270 OHM .25W 5% 1210 T/R	2	R322,R422
A11371-3313	330 OHM .25W 5% 1210 T/R	2	R19,R4
A11371-3333	33 KOHM .25W 5% 1210 T/R	6	R119,R219,R140,R143,R240,R243
A11371-3341	330 KOHM .1W 5% 0805 T/R	7	R3,R11,R117,R217,R26,R314,
			R414
A11371-3923	3.9K .25W 5% 1210 T/R	3	R16,R135,R235
A11371-3934	39K .5W 5% 2010 SMT T/R	4	R317,R318,R417,R418
A11371-4701	RES, 47 OHM .1W 5% CHIP 0805	2	R162,R262
A11371-4724	4.7K OHM 0.5W 5% 2010 T/R	2	R142,R242
A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	5	R29,R174,R192,R274,R292
A11371-5R63	5.6 OHM .25W 5% 1210 T/R	4	R150,R165,R250,R265
A11371-5R65	5.6 OHM 1W 5% 2512 T/R	2	R420,R421
A11371-6814	680 OHM .5W 5% 2010 T/R	6	R105,R128,R181,R205,R228,
			R281
A11371-6821	6.8KOHM .1W 5% CHIP 0805	2	R127,R227
A11371-7511	750 OHM .1W 5% 0805 T/R	3	R28,R133,R233
A11371-8201	82 OHM .1W 5% 0805 T/R	4	R194,R294,R136,R236
A11371-8211	820 OHM .1W 5% 0805 T/R	6	R195,R295,R129,R141,R229,
			R241
A11378-A050U	WIRE, 16 RED 3/16" X 5 X FAS	1	WP1
A11379-C050U	WIRE, 16 BLU 3/16" X 5 X FLA	1	WP3
A11427-103K2	.01 UF 50V 10% X7R MLC 0805	6	C102,C109,C115,C202,C209,C215
A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X	28	C12,C139,C122,C126,C127,
			C128,C129,C130,C131,C132,
			C133,C239,C222,C226,C227,
			C228,C229,C230,C231,C232,
			C233,C24,C25,C6,C7,C2,C28,C29
A11427-123K2	.012 50V 10% X7R 0805 T/R	2	C112,C212
A11427-272K2	2700PF 50V 10% X7R 0805 T/R	2	C117,C217
A11427-472K2	4700PF 50V 10% X7R 0805 T/R	4	C116,C119,C216,C219
A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	1	WP6
C 2851-1	RECTIFIER, 1N4004 SILICON T/	7	D1,D10,D2,D3,D4,D6,D7
C 3510-2	CHOKE, 10% AXIAL 470 UH TR	4	L100,L101,L200,L201
C 3549-0	DIODE, ZENER 10V 1N5240B T/R	1	D8
C 4477-3	470 UF 35V VERT	2	C4,C5
C 5095-2	MC7815CT +15V. REG	1	U1
C 5096-0	MC7915CT -15V. REG	1	U2
C 5362-6	2.2UF 50V VERT ELECT T/A	1	C27
C 7091-9	.33 UF 50V Z5U CHIP CAP	3	C22,C140,C240
C 7448-1	MMBT3904 CHIP NPN	6	Q100,Q101,Q129,Q200,Q201,
			Q229
C 7816-9	VACTEC VTL5C2 OPTO-CELL	2	U100,U200
C 7947-2	8" CABLE TIE RED	1	8
C 8262-5	MC33078D LOW NOISE DUAL OP A	4	U105,U205,U4,U5
C 8426-6	.1UF 250V 10% MET POLY RADIA	2	C118,C218
C 8576-8	100UF 35V 10% ALUM ELECT T/A	1	C26
C 9012-3	OP AMP, QUAD LO NOISE MC3307	2	U101,U201
C 9038-8	COMPARATOR, QUAD LM339D SO-1	4	U102,U104,U202,U204
C 9157-6	100UF 16V 20% NP ELEC RAD T/	2	C123,C223

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 4	REV
PROJ.	MD390D8		102140	CONT. ON SHEET 5	H

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
C 9252-5	2N3904 40V NPN TRANSISTOR T/	2	Q104,Q204
C 9283-0	DIODE, 1N914/1N4148 SOT-23 S	54	D101,D102,D103,D104,D105,
			D106,D107,D108,D109,D110,
			D111,D112,D113,D116,D117,
			D118,D119,D120,D121,D122,
			D123,D124,D125,D13,D201,
			D202,D203,D204,D205,D206,
			D207,D208,D209,D210,D211,
			D212,D213,D216,D217,D218,
			D221,D222,D223,D224,D225,
			D9,D126,D127,D128,D129,
			D226,D227,D228,D229,
C 9896-9	TEST POINT PCB .1" CTR LOOP	2	TP38,TP39
C 9918-1	TO220 VERT CLIP-ON HEATSINK	2	U1X,U2X
C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-	6	Q102,Q111,Q202,Q211,Q109,
			Q209
C10208-4	100.UF 25V 20% RAD ELECT T/R	2	C105,C205
C10335-5	RELAY 30A 24V T90 SEALED CE	2	K100,K200
C10422-1	DIODE, 3A 400V 1N5404 AXIAL	4	D114,D115,D214,D215
C10613-5	1 KOHM TOP ADJUST TRIMMER T/	2	R134,R234
D 8917-3	8200UF 110VDC ELECTROLYTIC	2	C20,C21
H42902-9	ASM, THERMAL SENSE	2	U106,U206
S 5700-0	732 RTV RUBBER 10.3 OZ CLEAR	0	4

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DRAWN	TLM	09-09-97	DWG. NO. 102140	SHEET 5 CONT. ON SHEET 6	REV H
PROJ.	MD390D0				

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
1	102138-6	PWB, CE1000/CE2000 MAIN	
2	101016-1	LBL, BARCODE, , ,	
3	125242-1	CAP, .625ID X 1" VINYL	
C1	102466-1	10UF 250V 20% RADIAL T/R	J 1 *
C2	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 10 *
C3	125508-1	10UF 50V 20% SMT AL ELEC T/R	I 8
C4	C 4477-3	470 UF 35V VERT	G 10
C5	C 4477-3	470 UF 35V VERT	G 10
C6	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	H 10 *
C7	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	H 10 *
C12	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	I 9 *
C20	D 8917-3	8200UF 110VDC ELECTROLYTIC	C 9
C21	D 8917-3	8200UF 110VDC ELECTROLYTIC	A 9
C22	C 7091-9	0.33 UF 50V Z5U CHIP CAP	N 9 *
C24	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	N 10 *
C25	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	O 9 *
C26	C 8576-8	100UF 35V 10% ALUM ELECT T/A	I 9
C27	C 5362-6	2.2UF 50V VERT ELECT T/A	H 10
C28	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	J 9 *
C29	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	I 9 *
C101	102465-1	0.47UF 50V 20% RADIAL T/R	M 9
C102	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	M 9 *
C103	102467-1	22UF 25V 20% RADIAL T/R	M 9
C104	102438-101K2	100PF, 200V, , 0805	M 9 *
C105	C10208-4	100.UF 25V 20% RAD ELECT T/R	L 9
C106	102438-560K2	56PF 200V 10% NPO 0805 T/R	L 9 *
C107	A11369-270K2	27PF 50V 10% NPO 0805 T/R	L 9 *
C108	102438-820K2	82PF 200V 10% NPO 0805 T/R	L 10 *
C109	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	H 6 *
C110	A11369-471K2	470PF 50V 10% NPO 0805 T/R	M 7 *
C111	102438-221K2	220PF 200V 10% NPO 0805 T/R	N 8 *
C112	A11427-123K2	.012 50V 10% X7R 0805 T/R	O 8 *
C113	102468-1	47UF 10V 20% NP RAD T/R	N 8
C114	102468-1	47UF 10V 20% NP RAD T/R	N 8
C115	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	N 8 *
C116	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	N 7 *
C117	A11427-272K2	2700PF 50V 10% X7R 0805 T/R	I 8 *
C118	C 8426-6	.1UF 250V 10% MET POLY RADIAL	I 8
C119	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	I 8 *
C120	102438-101K2	100PF 200V NPO 0805 T/R	I 7 *
C121	103191-1	0.47 UF 50V Z5U 1210 T/R	G 8 *
C122	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 8 *
C123	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	G 9
C124	103191-1	0.47UF 50V Z5U 1210 T/R	L 9 *
C126	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	N 10 *
C127	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	M 9 *
C128	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	M 10 *
C129	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	M 9 *
C130	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	H 8 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 6	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 7	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C131	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	G 7 *
C132	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 7 *
C133	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	F 8 *
C134	A11369-102J2	.001UF 50V 5% NPO MLC 0805 T/R	M 7 *
C135	102438-101K2	100PF 200V NPO 0805 T/R	N 7 *
C136	103210-1	2.2UF 160V RADIAL T/R	I 7
C137	103210-1	2.2UF 160V RADIAL T/R	I 7
C138	102438-820K2	82PF 200V 10% NPO 0805 T/R	M 7 *
C139	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	N 8 *
C140	C 7091-9	.33 UF 50V Z5U CHIP CAP	L 9
C201	102465-1	0.47UF 50V 20% RADIAL T/R	J 9
C202	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	K 9 *
C203	102467-1	22UF 25V 20% RADIAL T/R	K 9
C204	102438-101K2	100PF 200V NPO 0805 T/R	J 9 *
C205	C10208-4	100.UF 25V 20% RAD ELECT T/R	J 9
C206	102438-560K2	56PF 200V 10% NPO 0805 T/R	J 9 *
C207	A11369-270K2	27PF 50V 10% NPO 0805 T/R	J 9 *
C208	102438-820K2	82PF 200V 10% NPO 0805 T/R	J 10 *
C209	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	H 3 *
C210	A11369-471K2	470PF 50V 10% NPO 0805 T/R	K 7 *
C211	102438-221K2	220PF 200V 10% NPO 0805 T/R	K 8 *
C212	A11427-123K2	.012 50V 10% X7R 0805 T/R	L 8 *
C213	102468-1	47UF 10V 20% NP RAD T/R	K 8
C214	102468-1	47UF 10V 20% NP RAD T/R	K 8
C215	A11427-103K2	.01 UF 50V 10% X7R MLC 0805	K 8 *
C216	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	J 2 *
C217	A11427-272K2	2700PF 50V 10% X7R 0805 T/R	D 1 *
C218	C 8426-6	.1UF 250V 10% MET POLY RADIAL	I 1
C219	A11427-472K2	4700PF 50V 10% X7R 0805 T/R	E 1 *
C220	102438-101K2	100PF 200V NPO 0805 T/R	D 2 *
C221	103191-1	0.47 UF 50V Z5U 1210 T/R	E 8 *
C222	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 8 *
C223	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 9
C224	103191-1	0.47UF 50V Z5U 1210 T/R	J 9 *
C226	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	L 10 *
C227	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	K 9 *
C228	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	J 10 *
C229	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	J 9 *
C230	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 8 *
C231	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 7 *
C232	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 7 *
C233	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	D 8 *
C234	A11369-102J2	.001UF 50V 5% NPO MLC 0805 T/R	J 7 *
C235	102438-101K2	100PF 200V NPO 0805 T/R	J 2 *
C236	103210-1	2.2UF 160V RADIAL T/R	I 1
C237	103210-1	2.2UF 160V RADIAL T/R	I 1
C238	102438-820K2	82PF 200V 10% NPO 0805 T/R	J 7 *
C239	A11427-104K2	.1UF 50V CHIP CAP 10% 0805 X7R	E 7 *
C240	C 7091-9	.33 UF 50V Z5U CHIP CAP	J 9
D1	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	G 10

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 7	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 8	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D2	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	G 10
D3	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	G 10
D4	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	C 10
D6	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	J 8
D7	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	J 8
D8	C 3549-0	DIODE, ZENER 10V 1N5240B T/R	J 8
D9	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D10	C 2851-1	RECTIFIER, 1N4004 SILICON T/R	I 10
D13	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D101	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9 *
D102	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9 *
D103	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9 *
D104	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9 *
D105	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 10 *
D106	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D107	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D108	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D109	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D110	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D111	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D112	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D113	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8 *
D114	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 6
D115	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 5
D116	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 8 *
D117	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 10 *
D118	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 10 *
D119	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D120	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9 *
D121	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9 *
D122	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 10 *
D123	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 9 *
D124	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7 *
D125	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	H 7 *
D126	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 7
D127	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 7
D128	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	H 7 *
D129	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	G 7 *
D201	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9 *
D202	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 9 *
D203	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9 *
D204	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9 *
D205	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 10 *
D206	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D207	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D208	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D209	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D210	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D211	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 8 *
D212	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 8 *
D213	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 8 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 8	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 9	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
D214	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 3
D215	C10422-1	DIODE, 3A 400V 1N5404 AXIAL	I 2
D216	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 8 *
D217	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 10 *
D218	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 10 *
D221	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	J 9 *
D222	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 10 *
D223	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 9 *
D224	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7 *
D225	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 7 *
D226	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7
D227	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	K 7
D228	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	E 7 *
D229	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	F 7 *
E1	102476-1	LED, SMT R/A GREEN	I 1
E100	102477-1	LED, SMT R/A RED	J 1
E101	102476-1	LED, SMT R/A GREEN	J 1
E102	102477-1	LED, SMT R/A RED	K 1
E200	102477-1	LED, SMT R/A RED	M 1
E201	102476-1	LED, SMT R/A GREEN	L 1
E202	102477-1	LED, SMT R/A RED	M 1
HS1	102575-1	HS ASM, T2 NON-ISOLATED CH1,	L 6
HS2	102576-1	HS ASM, T2 NON-ISOLATED CH2,	L 3
HS3	102573-1	HS ASM, T2 ISOLATED CH1, . .	G 6
HS4	102574-1	HS ASM, T2 ISOLATED CH2, . .	G 3
HW1	102578-1	SPACER, 6 X 0.250 LONG, AL	N 6
HW2	102578-1	SPACER, 6 X 0.250 LONG, AL	J 5
HW3	102578-1	SPACER, 6 X 0.250 LONG, AL	N 3
HW4	102578-1	SPACER, 6 X 0.250 LONG, AL	J 3
HW5	102578-1	SPACER, 6 X 0.250 LONG, AL	I 6
HW6	102578-1	SPACER, 6 X 0.250 LONG, AL	D 5
HW7	102578-1	SPACER, 6 X 0.250 LONG, AL	I 3
HW8	102578-1	SPACER, 6 X 0.250 LONG, AL	D 3
HW9	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	N 6
HW10	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	J 5
HW11	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	N 3
HW12	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	J 3
HW13	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	I 6
HW14	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	D 5
HW15	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	I 3
HW16	A10020-7	6-32 X 0.625 PCB CAPTIVE STUD	D 3
HW17	A11056-1	6-32 HEX NUT W/BELLEVILLE	N 6
HW18	A11056-1	6-32 HEX NUT W/BELLEVILLE	J 5
HW19	A11056-1	6-32 HEX NUT W/BELLEVILLE	N 3
HW20	A11056-1	6-32 HEX NUT W/BELLEVILLE	J 3
HW21	A11056-1	6-32 HEX NUT W/BELLEVILLE	I 6
HW22	A11056-1	6-32 HEX NUT W/BELLEVILLE	D 5
HW23	A11056-1	6-32 HEX NUT W/BELLEVILLE	I 3
HW24	A11056-1	6-32 HEX NUT W/BELLEVILLE	D 3
J2	101573-1	HDR, 4 POS .1 CTR MTA SHRD	G 10
J3	102472-3	12POS .100CTR ASSY SGL ROW	M 8

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 9	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 10	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
J4	101571-1	HDR, 2POS .1 CTR MTA SHRD	L 10
J5	101993-1	JACK, 6P4 COND MODULAR R/A	N 10
J100	102473-1	SPEAKON, 4 POLE PCB HORZ	J 10
J200	102473-1	SPEAKON, 4 POLE PCB HORZ	F 10
K100	C10335-5	RELAY 30A 24V T90 SEALED CE	G 8
K200	C10335-5	RELAY 30A 24V T90 SEALED CE	E 8
L100	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	N 7
L101	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	I 7
L102	102470-1	INDUCTOR, 2.75UH 11A RADIAL	H 8
L200	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	J 1
L201	C 3510-2	CHOKE, 10% AXIAL 470 UH TR	D 1
L202	102470-1	INDUCTOR, 2.75UH 11A RADIAL	I 1
Q1	102479-1	PWR NPN DARLINGTON 100V 2A	H 10
Q2	102479-1	PWR NPN DARLINGTON 100V 2A	I 10
Q100	C 7448-1	MMBT3904 CHIP NPN	M 9 *
Q101	C 7448-1	MMBT3904 CHIP NPN	M 9 *
Q102	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 9 *
Q103	102483-1	PNP 300V 500MA SOT-23	L 10 *
Q104	C 9252-5	2N3904 40V NPN TRANSISTOR T/A	I 6
Q105	103193-1	SOT-223 PNP 300V 500MA 50MHZ	M 8 *
Q107	103192-1	SOT-223 NPN 300V 500MA 50MHZ	M 8 *
Q108	102481-1	NPN 25V LOW NOISE SOT-23	N 8 *
Q109	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 8 *
Q110	103192-1	SOT-223 NPN 300V 500MA 50MHZ	N 7 *
Q111	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	N 7 *
Q112		INSTALLED ON THE PREVIOUS ASSEMBLY	N 7
Q114		INSTALLED ON THE PREVIOUS ASSEMBLY	J 6
Q115		INSTALLED ON THE PREVIOUS ASSEMBLY	K 5
Q116		INSTALLED ON THE PREVIOUS ASSEMBLY	L 6
Q117		INSTALLED ON THE PREVIOUS ASSEMBLY	L 5
Q118		INSTALLED ON THE PREVIOUS ASSEMBLY	M 6
Q119		INSTALLED ON THE PREVIOUS ASSEMBLY	N 5
Q120	103193-1	SOT-223 PNP 300V 500MA 50MHZ	I 7 *
Q121		INSTALLED ON THE PREVIOUS ASSEMBLY	I 7
Q123		INSTALLED ON THE PREVIOUS ASSEMBLY	E 6
Q124		INSTALLED ON THE PREVIOUS ASSEMBLY	E 5
Q125		INSTALLED ON THE PREVIOUS ASSEMBLY	F 6
Q126		INSTALLED ON THE PREVIOUS ASSEMBLY	G 5
Q127		INSTALLED ON THE PREVIOUS ASSEMBLY	H 6
Q128		INSTALLED ON THE PREVIOUS ASSEMBLY	H 5
Q129	C 7448-1	MMBT3904 CHIP NPN	G 9 *
Q131	125106-1	MAC9D 8 AMP 400V TRIAC	F 9
Q132	102478-1	TRIAC DRIVER, SBS 8V THRESH	G 8
Q133	102480-1	MMBF4856LT1 FET 25V SOT-23	M 9 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 10	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 11	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
Q200	C 7448-1	MMBT3904 CHIP NPN	K 9 *
Q201	C 7448-1	MMBT3904 CHIP NPN	K 9 *
Q202	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	L 9 *
Q203	102483-1	PNP 300V 500MA SOT-23	J 10 *
Q204	C 9252-5	2N3904 40V NPN TRANSISTOR T/A	I 3
Q205	103193-1	SOT-223 PNP 300V 500MA 50MHZ	J 8 *
Q207	103192-1	SOT-223 NPN 300V 500MA 50MHZ	K 8 *
Q208	102481-1	NPN 25V LOW NOISE SOT-23	K 8 *
Q209	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	K 8 *
Q210	103192-1	SOT-223 NPN 300V 500MA 50MHZ	J 2 *
Q211	C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-23	J 2 *
Q212		INSTALLED ON THE PREVIOUS ASSEMBLY	J 2
Q214		INSTALLED ON THE PREVIOUS ASSEMBLY	J 3
Q215		INSTALLED ON THE PREVIOUS ASSEMBLY	K 3
Q216		INSTALLED ON THE PREVIOUS ASSEMBLY	L 3
Q217		INSTALLED ON THE PREVIOUS ASSEMBLY	L 3
Q218		INSTALLED ON THE PREVIOUS ASSEMBLY	M 3
Q219		INSTALLED ON THE PREVIOUS ASSEMBLY	N 3
Q220	103193-1	SOT-223 PNP 300V 500MA 50MHZ	D 2 *
Q221		INSTALLED ON THE PREVIOUS ASSEMBLY	D 2
Q223		INSTALLED ON THE PREVIOUS ASSEMBLY	E 3
Q224		INSTALLED ON THE PREVIOUS ASSEMBLY	E 3
Q225		INSTALLED ON THE PREVIOUS ASSEMBLY	F 3
Q226		INSTALLED ON THE PREVIOUS ASSEMBLY	G 3
Q227		INSTALLED ON THE PREVIOUS ASSEMBLY	H 3
Q228		INSTALLED ON THE PREVIOUS ASSEMBLY	H 3
Q229	C 7448-1	MMBT3904 CHIP NPN	E 9 *
Q231	125106-1	MAC9D 8 AMP 400V TRIAC	E 9
Q232	102478-1	TRIAC DRIVER, SBS 8V THRESH	F 8
Q233	102480-1	MMBF4856LT1 FET 25V SOT-23	J 9 *
R1	A11371-2225	2.2K OHM 1W 5% 2512 T/R	J 8 *
R2	A11371-2225	2.2K OHM 1W 5% 2512 T/R	J 8 *
R3	A11371-3341	330 KOHM .1W 5% 0805 T/R	I 8 *
R4	A11371-3313	330 OHM .25W 5% 1210 T/R	I 1 *
R5	A11368-82511	8.25KOHM 0.1W 1% CHIP 0805	D 8 *
R6	A11368-88711	8.87KOHM .1W 1% CHIP 0805	D 8 *
R7	A11371-2225	2.2K OHM 1W 5% 2512 T/R	J 8 *
R8	A11371-1022	1K .125W 5% CHIP RES T/R	H 9 *
R9	A11368-10021	10K 1/10W 1% SMD 0805 T/R	H 9 *
R10	A11368-20023	20.KOHM .25W 1% 1210 T/R	H 9 *
R11	A11371-3341	330KOHM 0.1W 5% CHIP 0805	I 9 *
R12	A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	I 9 *
R13	A11371-1011	100 OHM .1W 5% 0805 T/R	I 10 *
R14	A11371-0R21	.20HM .1W 5% 0805 T/R	I 10 *
R15	A11371-0R21	.20HM .1W 5% 0805 T/R	I 10 *
R16	A11371-3923	3.9K 0.25W 5% 1210 T/R	N 9 *
R17	A11368-82511	8.25KOHM .1W 1% CHIP 0805	F 10 *
R18	A11368-82511	8.25KOHM .1W 1% CHIP 0805	D 8 *
R19	A11371-3313	330 OHM .25W 5% 1210 T/R	I 1 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 11	REV.
PROJ.	MD390D0		102140	CONT. ON SHEET 12	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R20	A11368-57621	57.6K, 0.10W 1% MF 0805	I 9 *
R21	A11368-12121	12.1K .1W 1% 0805 T/R	I 9 *
R22	A11368-39231	392 KOHM .1W 1% 0805 T/R	I 9 *
R23	A11368-39231	392 KOHM .1W 1% 0805 T/R	I 9 *
R24	A11368-57621	57.6K, 0.10W 1% MF 0805	I 9 *
R25	A11368-10031	100.KOHM .1W 1% CHIP 0805	N 9 *
R26	A11371-3341	330 KOHM .1W 5% 0805 T/R	A 10 *
R27	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 9 *
R28	A11371-7511	750 OHM .1W 5% 0805 T/R	L 9 *
R29	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	I 9 *
R100	102595-2	5K, , , DETENT	L 1
R101	A11368-10021	10K 1/10W 1% SMD 0805 T/R	M 10 *
R102	A11368-39231	392 KOHM .1W 1% CHIP 0805	N 9 *
R103	A11368-49901	499 OHM .1W 1% 0805 T/R	N 9 *
R104	A11368-10021	10K 1/10W 1% SMD 0805 T/R	N 9 *
R105	A11371-6814	680 OHM .5W 5% 2010 T/R	J 1 *
R106	A11368-10011	1.KOHM .1W 1% CHIP 0805	M 9 *
R107	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 10 *
R108	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 10 *
R109	A11368-19122	19.1KOHM .125W 1% CHIP RES	M 9 *
R110	A11368-10011	1.KOHM .1W 1% CHIP 0805	L 9 *
R111	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 9 *
R112	A11368-19122	19.1KOHM .125W 1% CHIP RES	L 9 *
R113	A11368-51111	5.11KOHM .1W 1% 0805 T/R	L 10 *
R114	A11368-82511	8.25KOHM .1W 1% CHIP 0805	L 10 *
R115	A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	L 10 *
R116	A11368-22601	226 OHM 0.1W 1% 0805 T/R	M 9 *
R117	A11371-3341	330 KOHM .1W 5% 0805 T/R	M 9 *
R119	A11371-3333	33 KOHM .25W 5% 1210 T/R	M 9 *
R120	A11368-90921	90.9K, 0.10W 1% MF 0805	M 9 *
R122	A11368-15831	158KOHM .1W 1% 0805 T/R	N 9 *
R123	A11368-10031	100.KOHM .1W 1% CHIP 0805	M 9 *
R124	A11368-15831	158KOHM .1W 1% 0805 T/R	M 9 *
R125	A11368-10031	100.KOHM .1W 1% CHIP 0805	N 9 *
R126	A11368-39231	392 KOHM .1W 1% 0805 T/R	M 9 *
R127	A11371-6821	6.8KOHM .1W 5% CHIP 0805	N 9 *
R128	A11371-6814	680 OHM .5W 5% 2010 T/R	J 1 *
R129	A11371-8211	820 OHM .1W 5% 0805 T/R	N 7 *
R130		DO NOT INSTALL	O 8 *
R131		DO NOT INSTALL	O 8 *
R132	A11371-2223	2.2K 0.25W 5% 1210 T/R	H 6 *
R133	A11371-7511	750 OHM .1W 5% 0805 T/R	H 6 *
R134	C10613-5	1 KOHM TOP ADJUST TRIMMER T/R	M 8
R135	A11371-3923	3.9K .25W 5% 1210 T/R	M 7 *
R136	A11371-8201	82 OHM .1W 5% 0805 T/R	M 7 *
R137	A11368-49901	499 OHM .1W 1% 0805 T/R	N 8 *
R138	A11371-1213	120 OHM .25W 5% 1210 T/R	N 8 *
R139	A11368-10703	107 OHM .25W 1% 1210 T/R	N 8 *
R140	A11371-3333	33 KOHM .25W 5% 1210 T/R	N 8 *

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	TLM	09-09-97	DWG. NO.	SHEET 12	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 13	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R141	A11371-8211	820 OHM .1W 5% 0805 T/R	O 8*
R142	A11371-4724	4.7K OHM 0.5W 5% 2010 T/R	O 8 *
R143	A11371-3333	33 KOHM .25W 5% 1210 T/R	N 8 *
R144	A11371-1213	120 OHM .25W 5% 1210 T/R	N 8 *
R145	A11368-75R03	75 OHM .25W 5% 1210 T/R	N 8 *
R146	A11371-1331	13KOHM .1W 5% 0805 T/R	N 7 *
R147	A11371-1011	100 OHM .1W 5% 0805 T/R	N 7 *
R148	A11371-1811	180 OHM .1W 5% 0805 T/R	M 7 *
R150	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	N 7 *
R152	103199-1	0.4, 1W, 5%, 2512	K 7 *
R153	103199-1	0.4, 1W, 5%, 2512	K 6 *
R154	103199-1	0.4, 1W, 5%, 2512	L 7 *
R155	103199-1	0.4, 1W, 5%, 2512	M 6 *
R156	103199-1	0.4, 1W, 5%, 2512	M 7 *
R157	103199-1	0.4, 1W, 5%, 2512	N 6 *
R158	A10266-2R74	2.7 OHM 2W 5% CF T/R	I 8
R159	103199-1	0.4, 1W, 5%, 2512	D 7 *
R160	A11371-1501	15 OHM .1W 5% 0805 T/R	I 8 *
R161	A11371-1331	13KOHM .1W 5% 0805 T/R	H 7 *
R162	A11371-4701	RES. 47 OHM .1W 5% CHIP 0805	H 7 *
R163	A11371-1811	180 OHM .1W 5% 0805 T/R	I 7 *
R165	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	I 5 *
R167	103199-1	0.4, 1W, 5%, 2512	E 7 *
R168	103199-1	0.4, 1W, 5%, 2512	F 6 *
R169	103199-1	0.4, 1W, 5%, 2512	F 7 *
R170	103199-1	0.4, 1W, 5%, 2512	G 6 *
R171	103199-1	0.4, 1W, 5%, 2512	G 7 *
R172	103199-1	0.4, 1W, 5%, 2512	H 6 *
R174	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	G 8 *
R175	A11368-51111	5.11KOHM .1W 1% 0805 T/R	G 8 *
R176	A11368-10021	10K 1/10W 1% SMD 0805 T/R	G 8 *
R177	A11368-10021	10K 1/10W 1% SMD 0805 T/R	H 8 *
R178	A11368-90921	90.9K, 0.10W 1% MF 0805	N 9 *
R179	A11368-10031	100.KOHM .1W 1% CHIP 0805	F 7 *
R180	A11368-39231	392 KOHM .1W 1% 0805 T/R	G 8 *
R181	A11371-6814	680 OHM .5W 5% 2010 T/R	J 1 *
R182	A11368-10021	10K 1/10W 1% SMD 0805 T/R	F 8 *
R183	A11368-10031	100.KOHM .1W 1% CHIP 0805	F 8 *
R184	A11368-20023	20.0KOHM .25W 1% 1210 T/R	F 9 *
R185	A11368-10021	10K 1/10W 1% SMD 0805 T/R	G 8 *
R186	A11368-10031	100.KOHM .1W 1% CHIP 0805	N 10 *
R187	A11368-15831	158KOHM .1W 1% 0805 T/R	M 10 *
R188	A11368-15831	158KOHM .1W 1% 0805 T/R	M 10 *
R189	A11368-10031	100.KOHM .1W 1% CHIP 0805	M 10 *
R190	A11368-57621	57.6K, .1W, 1%, CHIP	N 6 *
R191	A11368-22601	226 OHM 0.1W 1% 0805 T/R	N 6 *
R192	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	L 9 *

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	TLM	09-09-97	DWG. NO. 102140	SHEET 13 CONT. ON SHEET 14	REV H
PROJ.	MD390D0				

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R193	A11368-10021	10K 1/10W 1% SMD 0805 T/R	N 9 *
R194	A11371-8201	82 OHM .1W 5% 0805 T/R	M 7 *
R195	A11371-8211	820 OHM .1W 5% 0805 T/R	M 7 *
R200	102595-2	5K, , , DETENT	N 1
R201	A11368-10021	10K 1/10W 1% SMD 0805 T/R	K 10 *
R202	A11368-39231	392.KOHM .1W 1% CHIP 0805	L 9 *
R203	A11368-49901	499 OHM .1W 1% 0805 T/R	L 9 *
R204	A11368-10021	10K 1/10W 1% SMD 0805 T/R	L 9 *
R205	A11371-6814	680 OHM .5W 5% 2010 T/R	M 1 *
R206	A11368-10011	1.KOHM .1W 1% CHIP 0805	J 9 *
R209	A11368-19122	19.1KOHM .125W 1% CHIP RES	K 9 *
R210	A11368-10011	1.KOHM .1W 1% CHIP 0805	J 9 *
R211	A11368-10021	10K 1/10W 1% SMD 0805 T/R	J 9 *
R212	A11368-19122	19.1KOHM .125W 1% CHIP RES	J 9 *
R213	A11368-51111	5.11KOHM .1W 1% 0805 T/R	J 10 *
R214	A11368-82511	8.25KOHM .1W 1% CHIP 0805	J 10 *
R215	A11368-68121	68.1KOHM 0.1W 1% CHIP 0805	J 10 *
R216	A11368-22601	226 OHM 0.1W 1% 0805 T/R	K 9 *
R217	A11371-3341	330 KOHM .1W 5% 0805 T/R	J 9 *
R219	A11371-3333	33 KOHM .25W 5% 1210 T/R	J 9 *
R220	A11368-90921	90.9K, 0.10W 1% MF 0805	K 9 *
R222	A11368-15831	158KOHM .1W 1% 0805 T/R	K 9 *
R223	A11368-10031	100.KOHM .1W 1% CHIP 0805	K 9 *
R224	A11368-15831	158KOHM .1W 1% 0805 T/R	K 9 *
R225	A11368-10031	100.KOHM .1W 1% CHIP 0805	L 9 *
R226	A11368-39231	392 KOHM .1W 1% 0805 T/R	K 9 *
R227	A11371-6821	6.8KOHM .1W 5% CHIP 0805	K 9 *
R228	A11371-6814	680 OHM .5W 5% 2010 T/R	M 1 *
R229	A11371-8211	820 OHM .1W 5% 0805 T/R	K 7 *
R230		DO NOT INSTALL	L 8 *
R231		DO NOT INSTALL	L 8 *
R232	A11371-2223	2.2K 0.25W 5% 1210 T/R	H 3 *
R233	A11371-7511	750 OHM .1W 5% 0805 T/R	H 3 *
R234	C10613-5	1 KOHM TOP ADJUST TRIMMER T/R	J 8
R235	A11371-3923	3.9K .25W 5% 1210 T/R	J 7 *
R236	A11371-8201	82 OHM .1W 5% 0805 T/R	J 7 *
R237	A11368-49901	499 OHM .1W 1% 0805 T/R	K 8 *
R238	A11371-1213	120 OHM .25W 5% 1210 T/R	K 8 *
R239	A11368-10703	107 OHM .25W 1% 1210 T/R	K 8 *
R240	A11371-3333	33 KOHM .25W 5% 1210 T/R	K 8 *
R241	A11371-8211	820 OHM .1W 5% 0805 T/R	L 8 *
R242	A11371-4724	4.7K OHM 0.5W 5% 2010 T/R	L 8 *
R243	A11371-3333	33 KOHM .25W 5% 1210 T/R	K 8 *
R244	A11371-1213	120 OHM .25W 5% 1210 T/R	K 8 *
R245	A11371-75R03	75 OHM .25W 5% 1210 T/R	K 8 *
R246	A11371-1331	13KOHM .1W 5% 0805 T/R	J 2 *
R247	A11371-1011	100 OHM .1W 5% 0805 T/R	J 2 *

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	TLM	09-09-97	DWG. NO.	SHEET 14	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 15	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R248	A11371-1811	180 OHM .1W 5% 0805 T/R	K 2 *
R250	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	J 2 *
R252	103199-1	0.4, 1W, 5%, 2512	K 4 *
R253	103199-1	0.4, 1W, 5%, 2512	K 3 *
R254	103199-1	0.4, 1W, 5%, 2512	L 4 *
R255	103199-1	0.4, 1W, 5%, 2512	M 3 *
R256	103199-1	0.4, 1W, 5%, 2512	N 4 *
R257	103199-1	0.4, 1W, 5%, 2512	N 3 *
R258		DO NOT INSTALL	H 1
R259	103199-1	0.4, 1W, 5%, 2512	D 4 *
R260	A11371-1501	15 OHM .1W 5% 0805 T/R	D 1 *
R261	A11371-1331	13KOHM .1W 5% 0805 T/R	E 2 *
R262	A11371-4701	RES, 47 OHM .1W 5% CHIP 0805	E 2 *
R263	A11371-1811	180 OHM .1W 5% 0805 T/R	E 2 *
R265	A11371-5R63	5.6 OHM .25W 5% 1210 T/R	E 2 *
R267	103199-1	0.4, 1W, 5%, 2512	E 4 *
R268	103199-1	0.4, 1W, 5%, 2512	F 3 *
R269	103199-1	0.4, 1W, 5%, 2512	F 4 *
R270	103199-1	0.4, 1W, 5%, 2512	G 3 *
R271	103199-1	0.4, 1W, 5%, 2512	H 4 *
R272	103199-1	0.4, 1W, 5%, 2512	H 3 *
R274	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	E 8 *
R275	A11368-51111	5.11KOHM .1W 1% 0805 T/R	E 8 *
R276	A11368-10021	10K 1/10W 1% SMD 0805 T/R	E 8 *
R277	A11368-10021	10K 1/10W 1% SMD 0805 T/R	E 8 *
R278	A11368-90921	90.9K, 0.10W 1% MF 0805	L 9 *
R279	A11368-10031	100.KOHM .1W 1% CHIP 0805	E 7 *
R280	A11368-39231	392 KOHM .1W 1% 0805 T/R	E 8 *
R281	A11371-6814	680 OHM .5W 5% 2010 T/R	M 1 *
R282	A11368-10021	10K 1/10W 1% SMD 0805 T/R	D 8 *
R283	A11368-10031	100.KOHM .1W 1% CHIP 0805	D 8 *
R284	A11368-20023	20.0KOHM .25W 1% 1210 T/R	F 9 *
R285	A11368-10021	10K 1/10W 1% SMD 0805 T/R	F 8 *
R286	A11368-10031	100.KOHM .1W 1% CHIP 0805	L 10 *
R287	A11368-15831	158KOHM .1W 1% 0805 T/R	K 10 *
R288	A11368-15831	158KOHM .1W 1% 0805 T/R	K 10 *
R289	A11368-10031	100.KOHM .1W 1% CHIP 0805	K 10 *
R290	A11368-57621	57.6K, .1W, 1%, CHIP	N 3 *
R291	A11368-22601	226 OHM 0.1W 1% 0805 T/R	N 3 *
R292	A11371-4751	4.7MEGOHM, 0.10W 5% MF 0805	J 9 *
R293	A11368-10021	10K 1/10W 1% SMD 0805 T/R	K 9 *
R294	A11371-8201	82 OHM .1W 5% 0805 T/R	J 7 *
R295	A11371-8211	820 OHM .1W 5% 0805 T/R	J 7 *
R300	103199-1	0.4, 1W, 5%, 2512	D 7 *
R301	103199-1	0.4, 1W, 5%, 2512	J 7 *
R302	103199-1	0.4, 1W, 5%, 2512	K 6 *
R303	103199-1	0.4, 1W, 5%, 2512	L 7 *

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DRAWN	TLM	09-09-97	DWG. NO.	SHEET 15	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 16	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
R304	103199-1	0.4, 1W, 5%, 2512	M 6 *
R305	103199-1	0.4, 1W, 5%, 2512	M 7 *
R306	103199-1	0.4, 1W, 5%, 2512	N 6 *
R307	103199-1	0.4, 1W, 5%, 2512	E 7 *
R308	103199-1	0.4, 1W, 5%, 2512	F 6 *
R309	103199-1	0.4, 1W, 5%, 2512	G 7 *
R310	103199-1	0.4, 1W, 5%, 2512	G 6 *
R311	103199-1	0.4, 1W, 5%, 2512	G 7 *
R312	103199-1	0.4, 1W, 5%, 2512	I 6 *
R313	A11368-10021	10K 1/10W 1% SMD 0805 T/R	G 7 *
R314	A11371-3341	330 KOHM .1W 5% 0805 T/R	G 7 *
R315	A11368-51111	5.11KOHM .1W 1% 0805 T/R	H 7 *
R316	A11368-10021	10K 1/10W 1% SMD 0805 T/R	M 10 *
R317	A11371-3934	39K .5W 5% 2010 SMT T/R	N 7
R318	A11371-3934	39K .5W 5% 2010 SMT T/R	N 8
R319		DO NOT INSTALL	M 10 *
R322	A11371-2713	270 OHM .25W 5% 1210 T/R	L 9
R323	A11371-0R02	0 OHM .125W 5% CHIP RES T/R	G 7
R400	103199-1	0.4, 1W, 5%, 2512	D 4 *
R401	103199-1	0.4, 1W, 5%, 2512	J 4 *
R402	103199-1	0.4, 1W, 5%, 2512	K 3 *
R403	103199-1	0.4, 1W, 5%, 2512	L 4 *
R404	103199-1	0.4, 1W, 5%, 2512	M 3 *
R405	103199-1	0.4, 1W, 5%, 2512	M 4 *
R406	103199-1	0.4, 1W, 5%, 2512	N 3 *
R407	103199-1	0.4, 1W, 5%, 2512	E 4 *
R408	103199-1	0.4, 1W, 5%, 2512	F 3 *
R409	103199-1	0.4, 1W, 5%, 2512	G 4 *
R410	103199-1	0.4, 1W, 5%, 2512	G 3 *
R411	103199-1	0.4, 1W, 5%, 2512	H 4 *
R412	103199-1	0.4, 1W, 5%, 2512	I 3 *
R413	A11368-10021	10K 1/10W 1% SMD 0805 T/R	E 7 *
R414	A11371-3341	330 KOHM .1W 5% 0805 T/R	E 7 *
R415	A11368-51111	5.11KOHM .1W 1% 0805 T/R	E 7 *
R416	A11368-10021	10K 1/10W 1% SMD 0805 T/R	K 10 *
R417	A11371-3934	39K .5W 5% 2010 SMT T/R	K 7
R418	A11371-3934	39K .5W 5% 2010 SMT T/R	K 8
R419		DO NOT INSTALL	K 10 *
R420	A11371-5R65	5.6 OHM 1W 5% 2512 T/R	H 2 *
R421	A11371-5R65	5.6 OHM 1W 5% 2512 T/R	H 2 *
R422	A11371-2713	270 OHM .25W 5% 1210 T/R	J 9
R423	A11371-0R02	0 OHM .125W 5% CHIP RES T/R	F 7
S100	102488-1	SPDT HORIZ SLIDE	L 10
TP38	C 9896-9	TEST POINT PCB .1" CTR LOOP	K 2
TP39	C 9896-9	TEST POINT PCB .1" CTR LOOP	N 7
U1	C 5095-2	MC7815CT +15V. REG	H 10
U2	C 5096-0	MC7915CT -15V. REG	H 9
U3	102486-1	OPTO BJT NPN SOIC-8 CTR=100%	N 10
U4	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	I 9

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1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	TLM	09-09-97	DWG. NO.	SHEET 16	REV
PROJ.	MD390D0		102140	CONT. ON SHEET 17	H

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
U5	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	N 9
U1X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 10
U2X	C 9918-1	TO220 VERT CLIP-ON HEATSINK	H 9
U100	C 7816-9	VACTEC VTL5C2 OPTO-CELL	M 9
U101	C 9012-3	OP AMP, QUAD LO NOISE MC33079D	M 10
U102	C 9038-8	COMPARATOR, QUAD LM339D SO-14	N 9
U104	C 9038-8	COMPARATOR, QUAD LM339D SO-14	G 7
U105	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	F 7
U106	H42902-9	ASM, THERMAL SENSE	N 6
U200	C 7816-9	VACTEC VTL5C2 OPTO-CELL	K 9
U201	C 9012-3	OP AMP, QUAD LO NOISE MC33079D	J 10
U202	C 9038-8	COMPARATOR, QUAD LM339D SO-14	K 9
U204	C 9038-8	COMPARATOR, QUAD LM339D SO-14	E 7
U205	C 8262-5	MC33078D LOW NOISE DUAL OP AMP	E 7
U206	H42902-9	ASM, THERMAL SENSE	N 3
WP1	A11378-A050U	WIRE, 16 RED 3/16" X 5 X FAST	A 10
WP2	103331-N050R	WIRE, 14 BLK/WHT 3/16 X 5.0 X TAB	A 10
WP3	A11379-C050U	WIRE, 16 BLU 3/16" X 5 X FLAG	A 10
WP4	101031-1	0.250 FASTON, AUTO INSERTABLE	D 7
WP5	101031-1	0.250 FASTON, AUTO INSERTABLE	D 4
WP6	A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	J 8
Z1		REFERENCE FOR SOLDER PAD LOCATION	E 9

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DRAWN	TLM	09-09-97	DWG. NO. 102140	SHEET 17 CONT. ON SHEET 18	REV H
PROJ.	MD398D0				

Component Map

for use with

Main PWA #102140-6

DWG. NO. 102140 REV H

COMPONENT MAP
(COMPONENT SIDE VIEW)

SEE NOTE 9

SEE NOTE 8

J3 CONNECTOR ORIENTATION

CHASSIS GROUND

SEE NOTE 8

SEE NOTE 10

HS3

HS1

SEE DETAIL A FOR HEATSINK MOUNTING SEQUENCE (TYP. 8 PLACES)

APPLY RTV (4) AS NEEDED

SEE NOTE 10

HS4

HS2

SEE DETAIL B AND NOTE 12

SEE NOTE 8

APPLY RTV (4) TO THE INSIDE OF BLACK VINYL CAP (3) THEN PLACE CAP OVER L202.

SEE NOTE 13

A11056-1

HEATSINKS HS1, HS2, HS3 OR HS4

102578-1

A10020-7

COMPONENT SIDE OF PWB

DETAIL A
SCALE 1:1

U106 & U206

OUTPUT EPOXY (5)(6)

HEATSINKS HS1, HS2,

PWB

FLAT SIDE OF TRANSISTOR

DETAIL B
SCALE 1:1

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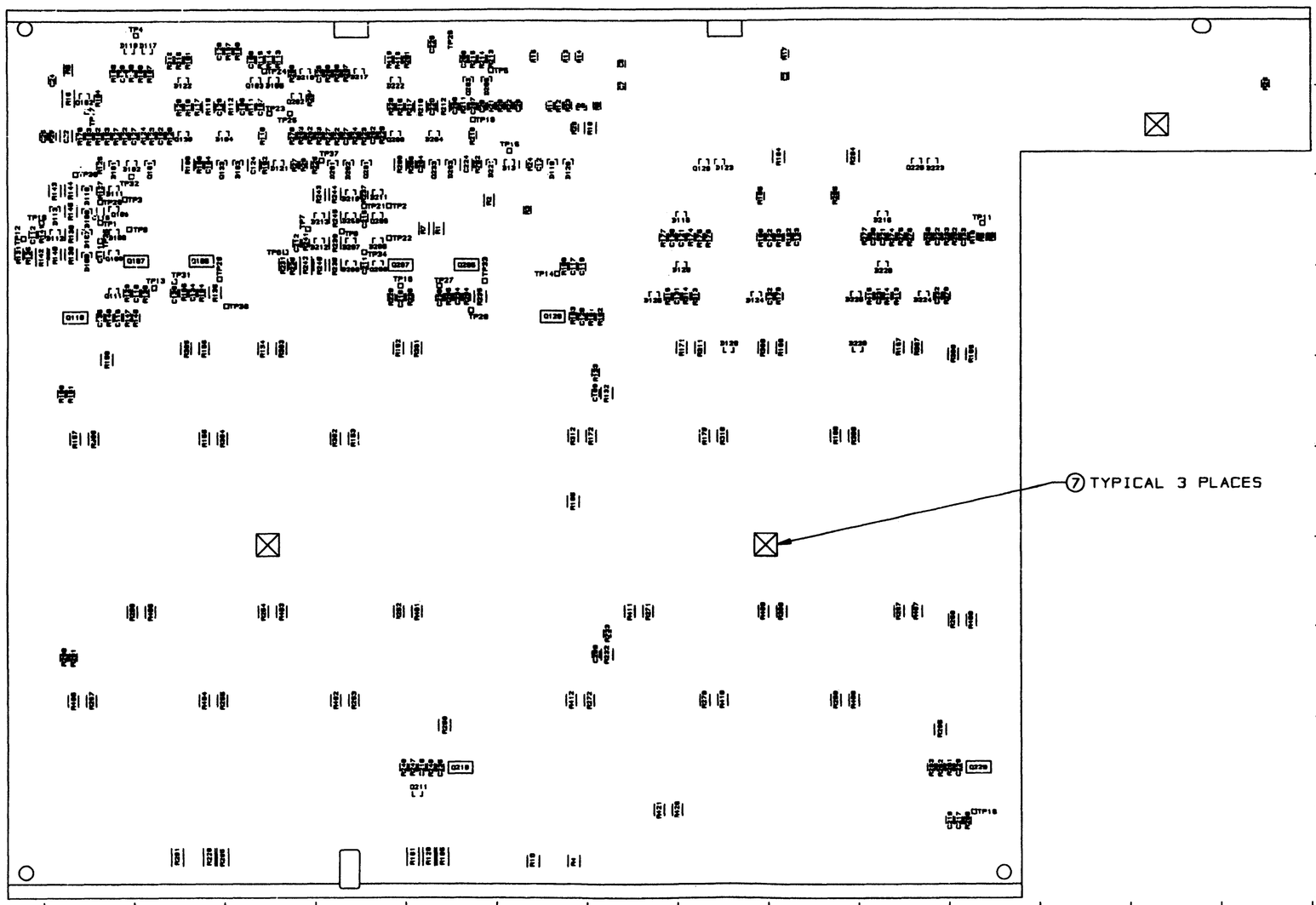
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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	TLM	09-09-97	DWG. NO. 102140	SHEET 18 CONT. ON SHEET 19	REV H
PROJ.		MD3900			

DWG. NO. 102140 REV H

COMPONENT MAP
(SOLDER SIDE VIEW)



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DRAWN	TLM	09-09-97	DWG. NO. 102140	REV H
PROJ.	MD398D8		SHEET 19 CONT. ON SHEET -	

E.C.	ZONE	REV.	DESCRIPTION	DATE	BY	APPROVALS CHK	ME	EE	PE
		A	PRODUCTION RELEASE (LEVEL I)	9-24-98	JFL	KLW			TS
98E0781		B	DELETED NOTE 3. CHANGED NOTE 10. ADDED NOTES 14,15. ADDED 127023-1. C606,C607 WERE 0.1MF. J500,J600 WERE 125365-1. L100,L101,L200,L201 WERE C 3510-7. R6 WAS 8.87K. R18 WAS 8.25K. R29 WAS 4.7M. S100 WAS LISTED AS DPDT. U100,U200 WERE 102723-1.	12/14/98	JAW				

NOTES:

1. SCHEMATIC DRAWING NUMBER 102142.
2. PWB PART NUMBER 102138-8.
3. THE PWA SHALL MEET THE IPC-A-610_ CLASS 2 STANDARDS.
4. ALL LEADS SHALL BE TRIMMED TO 0.093" OR LESS.
5. POSITION COMPONENTS AS SHOWN ON COMPONENT MAP.
6. COMPONENTS THAT HAVE (*) AFTER THEIR MAP LOCATION ARE MOUNTED ON THE BOTTOM SIDE OF THE PRINTED CIRCUIT BOARD.
7. REMOVE SOLDER OR PREVENT SOLDER FROM ACCUMULATING IN HOLES.
8. THE VENT HOLE ON TOP OF THE RELAYS K100 AND K200 MUST BE OPENED AFTER THE CLEANING PROCESS, BY EITHER REMOVING THE SEALING TAPE OR CUTTING OFF THE CIRCULAR TAB WITH AN "EXACTO" KNIFE OR SIMULAR CUTTING TOOL. WARNING, THIS STEP MUST BE DONE AFTER THE CLEANING PROCESS NOT BEFORE!!! WATER OR CLEANING SOLVENTS ENTERING THE RELAY VENT HOLE WILL DAMAGE THE RELAY.
9. CONNECT THE WIRES THAT COME FROM Q123 AND Q223 TO WP4 AND WP5 RESPECTFULLY.
10. THE PWA PART NUMBER FOR THIS MODULE SHALL BE MARKED ON THE P.C. BOARD AND SHALL BE PERMANENT.
11. INSTALLATION OF U106 AND U206 IS AS FOLLOWS:
    - 11A. REMOVE MIDDLE SLEEVE FROM TRANSISTOR H42902-9
    - 11B. BEND TRANSISTOR AT 90 DEG. FLAT SIDE DOWN
    - 11C. PLACE TRANSISTOR INTO THE PWB AS SHOWN ON THE COMPONENT MAP DETAIL B.
    - 11D. MIX OUTPUT EPOXY AND ACCELERATOR TOGETHER. APPLY THE MIXTURE TO THE TRANSISTOR AND HEATSINK. THE MIXTURE MUST FILL THE HEATSINK HOLE AND THE LEADS OF THE DEVICE, ESPECIALLY THE CENTER LEAD. (NOTE: NO VISIBLE AIR GAPS AROUND THE TRANSISTOR AND THE TRANSISTOR LEADS CANNOT TOUCH THE HEATSINK)
    - 11E. HOLD THE TRANSISTOR AGAINST THE HEATSINK UNTIL EPOXY SETS-UP
12. TORQUE 6-32 HEX NUTS (CPN A11056-1) AS FOLLOWS:
    - 12A. PRE-WAVE TORQUE OF 4-6 INCH LBS.
    - 12B. POST-WAVE AND WHEN ASSEMBLY HAS COOLED DOWN TO HANDLING TEMPERATURE TORQUE OF 13-15 INCH LBS.
13. INSTALL J3 CONNECTOR AS SHOWN ON COMPONENT MAP
14. LABEL INPUT PWA WITH CPN 126883-1 ON COMPONENT SIDE.
15. APPLY GENEROUS COAT OF 127023-1 OVERCOAT TO PARTS C121,C124,C221,C224. COVER ADJACENT PARTS.



CAUTION

STATIC CAN DAMAGE COMPONENTS!

DO NOT HANDLE

UNLESS WRIST STRAP IS WORN

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PRINTS TO: K

PWA, MAIN/INPUT CE2000

TOL. UNLESS SPECIFIED
X.XX = ± 0.020
X.XXX = ± 0.010
DRILLS = ± 0.003

DRAWN	JFL	9-24-98	APPROVED BY:			DO NOT SCALE PRINT
CHECKED	KLW	09/24/98	ME			SUPERSEDES
SCALE	NONE		EE			E.C.
PROJ #	MD390D0		PE	TS	09/23/98	DWG. NO. SHEET 1 OF 20
FILENAME: 102140-8_A.PCB			NEXT ASM:			102140-8

REV (B)

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A10020-7	6-32 X .625 PCB CAPTIVE STUD	8	HW9, HW10, HW11, HW12, HW13, HW14,
			HW15, HW16
A10265-19121	19.1K 0.25W 1% MF	2	R112, R212
A10266-2R74	2.7 OHM 2W 5% CF	1	R158
A10434-104JD	0.1 MF 250V 5% MTL POLY	2	C118, C218
A11056-1	6-32 HEX NUT W/BELLEVILLE	8	HW17, HW18, HW19, HW20, HW21,
			HW22, HW23, HW24
A11368-10011	1K 0.10W 1% CHIP 0805	8	R101, R106, R110, R201, R206,
			R210, R316, R416
A11368-10021	10K 1/10W 1% CHIP 0805	34	R9, R27, R104, R107, R108, R111,
			R121, R176, R177, R182, R185,
			R193, R204, R211, R221, R276,
			R277, R282, R285, R293, R313,
			R413, R500, R501, R502, R503,
			R504, R506, R600, R601, R602,
			R603, R604, R606
A11368-10031	100K 0.1W 1% CHIP 0805	15	R25, R30, R31, R123, R125, R179,
			R183, R186, R189, R223, R225,
			R279, R283, R286, R289
A11368-10221	10.2K 0.10W 1% CHIP 0805	2	R118, R218
A11368-10703	107 OHM 0.25W 1% CHIP	2	R139, R239
A11368-12121	12.1K OHM 0.10W 1% CHIP 0805	1	R21
A11368-15831	158K 0.10W 1% CHIP 0805	8	R122, R124, R187, R188, R222,
			R224, R287, R288
A11368-19122	19.1K 0.125W 1% CHIP 1206	2	R109, R209
A11368-20023	20K 0.25W 1% CHIP 1210	3	R10, R184, R284
A11368-22601	226 OHM 0.10W 1% CHIP 0805	4	R116, R191, R216, R291
A11368-39231	392K 0.10W 1% CHIP 0805	8	R22, R23, R102, R126, R180, R202,
			R226, R280
A11368-49901	499 OHM 0.10W 1% CHIP 0805	4	R103, R137, R203, R237
A11368-51111	5.11K OHM 0.10W 1% CHIP 0805	6	R113, R175, R213, R275, R315, R415
A11368-57621	57.6K 0.10W 1% CHIP 0805	4	R20, R24, R190, R290
A11368-68121	68.1K 0.10W 1% CHIP	3	R12, R115, R215
A11368-71511	7.15K 0.1W 1% CHIP 0805	1	R18
A11368-75R03	75 OHM 0.25W 1% CHIP 1210	2	R145, R245
A11368-76811	7.68KOHM 0.10W 1% SMT 0805	1	R5
A11368-82511	8.25K 0.1W 1% CHIP 0805	3	R17, R114, R214
A11368-90921	90.9K 0.10W 1% CHIP 0805	4	R120, R178, R220, R278
A11368-93111	9.31K 0.1W 1% CHIP 0805	1	R6
A11369-102J2	0.001UF 50V 5% NPO MLC 0805	2	C134, C234
A11369-120K2	12PF 50V 10% NPO 0805 T/R	6	C500, C501, C502, C600, C601, C602
A11369-270K2	27PF 50V 10% NPO 0805 T/R	2	C107, C207
A11369-330J2	33PF 50V 5% NPO MLC 0805	2	C142, C242
A11369-471K2	470PF 50V 10% NPO 0805 T/R	4	C110, C141, C210, C241
A11371-0R02	0.0 OHM JUMPER CHIP 1206	2	R323, R423
A11371-0R21	0.2 OHM 0.10W 5% CHIP 0805	2	R14, R15
A11371-1011	100 OHM 0.10W 5% CHIP 0805	3	R13, R147, R247
A11371-1013	100 OHM .25W 5% 1210 SMT T/R	2	R322, R422
A11371-1022	1K 0.125W 5% CHIP 1206	1	R8
A11371-1213	120 OHM 0.25W 5% CHIP	4	R138, R144, R238, R244

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DRAWN	JFL	9-24-98	DWG. NO.	SHEET 2 OF 20	REV
PROJ.	MD390D0		102140-8		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
A11371-1331	13K OHM 0.10W 5% CHIP 0805	4	R146,R161,R246,R261
A11371-1501	15 OHM 0.10W 5% CHIP	4	C606,C607,R160,R260
A11371-1811	180 OHM 0.10W 5% CHIP	4	R148,R163,R248,R263
A11371-2223	2.2K 0.25W 5% CHIP 1210	2	R132,R232
A11371-2225	2.2K 1W 5% CHIP 2512	3	R1,R2,R7
A11371-3313	330 OHM 0.25W 5% CHIP	2	R4,R19
A11371-3333	33K 0.25W 5% CHIP 1210	6	R119,R140,R143,R219,R240,R243
A11371-3341	330K 0.10W 5% CHIP 0805	7	R3,R11,R26,R117,R217,R314,
			R414
A11371-3923	3.9K 0.25W 5% CHIP	3	R16,R135,R235
A11371-3934	39K OHM 0.50W 5% CHIP 1210	4	R317,R318,R417,R418
A11371-4701	47 OHM 0.10W 5% CHIP	2	R162,R262
A11371-4724	4.7K OHM 0.50W 5% CHIP 2010	2	R142,R242
A11371-4751	4.7M 0.10W 5% CHIP 0805	4	R174,R192,R274,R292
A11371-5R63	5.6 0.25W 5% CHIP	4	R150,R165,R250,R265
A11371-5R65	5.6 OHM 1W 5% CHIP 2512	2	R420,R421
A11371-6814	680 OHM 0.50W 5% CHIP	6	R105,R128,R181,R205,R228,R281
A11371-6821	6.8K 0.10W 5% CHIP 0805	2	R127,R227
A11371-7511	750 OHM 0.10W 5% CHIP	3	R28,R133,R233
A11371-8201	82 OHM 0.10W 5% CHIP	4	R136,R194,R236,R294
A11371-8205	82 OHM 1W 5% CHIP 2512	1	R607
A11371-8211	820 OHM 0.10W 5% CHIP	6	R129,R141,R195,R229,R241,R295
A11378-A050U	WIRE, 16 RED FAST X 5 X TERM	1	WP1
A11379-C050U	WIRE, 16 BLU FAST X 5 X TERM	1	WP3
A11427-103K2	0.01MF 50V 10% CHIP 0805	6	C102,C109,C115,C202,C209,C215
A11427-104K2	0.1 MF 50V 10% 0805	32	C2,C6,C7,C12,C24,C25,C28,C29,
			C122,C126,C127,C128,C129,
			C130,C131,C132,C133,C139,
			C222,C226,C227,C228,C229,
			C230,C231,C232,C233,C239,
			C505,C506,C605,C608
A11427-123K2	0.012 MF 50V 10% CHIP	2	C112,C212
A11427-272K2	2700PF 50V 10% CHIP 0805	2	C117,C217
A11427-472K2	4700PF 50V 10% X7R 0805	4	C116,C119,C216,C219
A12125-3140K	WIRE, 22 WHT 3/16X14 X FAST	1	WP6
C 2851-1	1N4004 SILICON RECT.	7	D1,D2,D3,D4,D6,D7,D10
C 3510-2	CHOKE, 470UH 10% AXIAL	4	L100,L101,L200,L201
C 3549-0	DIODE ZENER, 10V, 1N5240B	1	D8
C 3679-5	33UF 50V 20% VERT ELECT	1	C31
C 4477-3	470 MF 35V VERT	2	C4,C5
C 5095-2	POS. 15 VOLT REG.	1	U1
C 5096-0	NEG. 15 VOLT REG.	1	U2
C 5362-6	2.2 MF 50V VERT	1	C27
C 7091-9	0.33 MF 50V CHIP 1206	3	C22,C140,C240
C 7448-1	MMBT3904 CHIP NPN	6	Q100,Q101,Q129,Q200,Q201,Q229
C 8262-5	MC33078D DUAL LO NOISE OP AM	4	U4,U5,U105,U205
C 8576-8	100 MF 35V 10% ELEC	1	C26
C 9012-3	MC33079D QUAD LO NOISE OP AM	3	U101,U201,U500

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DRAWN	JFL	9-24-98	DWG. NO.	SHEET 3 OF 20	REV
PROJ.	MD390D0		102140-8		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
C 9038-8	COMPARATOR, QUAD LM339D SO-1	4	U102,U104,U202,U204
C 9157-6	100UF 16V 20% NP ELEC RAD T/	2	C123,C223
C 9252-5	2N3904 40V NPN TRANSISTOR	2	Q104,Q204
C 9283-0	DIODE, 1N914/1N4148 SOT-23 S	54	D9,D13,D101,D102,D103,D104,
			D105,D106,D107,D108,D109,
			D110,D111,D112,D113,D116,
			D117,D118,D119,D120,D121,
			D122,D123,D124,D125,D126,
			D127,D128,D129,D201,D202,
			D203,D204,D205,D206,D207,
			D208,D209,D210,D211,D212,
			D213,D216,D217,D218,D221,
			D222,D223,D224,D225,D226,
			D227,D228,D229
C 9896-9	TEST POINT LOOP	2	TP38,TP39
C 9918-1	TO220 VERT CLIP-ON HEATSINK	2	U1X,U2X
C 9931-4	MMBT5087LT1 PNP XSISTOR SOT-	6	Q102,Q109,Q111,Q202,Q209,Q211
C10208-4	100 MF 25V 20% VERT ELEC	2	C105,C205
C10422-1	DIODE, 3A 400V 1N5404 AXIAL	4	D114,D115,D214,D215
C10613-5	1K TOP ADJUST TRIMMER T/R	2	R134,R234
D 8917-3	8200UF 110VDC ELECTROLYTIC	2	C20,C21
H42902-9	ASM, THERMAL SENSE	2	U106,U206
S 5700-0	732 RTV RUBBER 10.3 OZ CLEAR	0	4
101016-1	LBL, BARCODE, , ,	1	2
101031-1	.250 FASTON, AUTO INSERTABLE	3	WP4,WP5,WP7
101571-1	HDR 2 POS .1 CTR MTA SHRD	1	J4
101573-1	HDR 4 POS .1 CTR MTA SHRD	1	J2
101993-1	JACK, 6P4 COND MODULAR R/A	1	J5
102138-8	PWB, CE1000/CE2000 MAIN/INPU	1	1
102438-101K2	100PF 200V 10% NPO 0805	6	C104,C120,C135,C204,C220,C235
102438-221K2	220PF 200V 10% NPO 0805	2	C111,C211
102438-560K2	56PF 200V 10% NPO 0805	4	C106,C206,C504,C604
102438-820K2	82PF 200V 10% NPO 0805	4	C108,C138,C208,C238
102465-1	.47UF 50V 20% RADIAL T/R	2	C101,C201
102466-1	10UF 250V 20% RADIAL T/R	1	C1
102467-1	22MF 25V 20% RAD T/R	4	C103,C203,C503,C603
102468-1	47UF 10V 20% NP RAD T/R	4	C113,C114,C213,C214
102470-1	INDUCTOR, 2.75UH 11A RADIAL	2	L102,L202
102471-2	HDR, 12POS 2.5MM RT ANG KEYE	1	J502
102472-3	HDR, 16POS .100 CTR SGL ROW	1	J3
102473-1	SPEAKON, 4 POLE PCB HORZ	2	J100,J200
102475-1	BLOCK, 5 POS TERMINAL	1	TB1
102476-1	LED, SMT R/A GREEN	3	E1,E101,E201
102477-1	LED, SMT R/A RED	4	E100,E102,E200,E202
102478-1	TRIAC DRIVER SBS 8V THRESH	2	Q132,Q232
102479-1	PWR MJD112 NPN DARLINGTON 10	2	Q1,Q2
102480-1	FET, N-CH 25V 50MA SOT-23	2	Q133,Q233
102481-1	NPN 25V LOW NOISE SOT-23	2	Q108,Q208

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DRAWN	JFL	9-24-98	DWG. NO.	SHEET 4 OF 20	REV
PROJ.	MD390D0		102140-8		B

PARTS LIST			
C.P.N.	DESCRIPTION	QTY	REFERENCE DESIGNATION
102483-1	PNP 300V 500MA SOT-23	2	Q103,Q203
102486-1	OPTO BJT NPN SOIC-8 CTR =100	1	U3
102488-1	SPDT VERT SLIDE 12MM SHAFT	1	S100
102573-3	HS ASM, T2 ISOLATED CH1, , ,	1	HS3
102574-3	HS ASM, T2 ISOLATED CH2, , ,	1	HS4
102575-3	HS ASM, T2 NON-ISOLATED CH1,	1	HS1
102576-3	HS ASM, T2 NON-ISOLATED CH2,	1	HS2
102578-1	SPACER, 6X.125 AL BLK ANODIZ	8	HW1,HW2,HW3,HW4,HW5,HW6,HW7,
			HW8
102579-1	STAND, 1/4 RD SWAGE AL	2	HW25,HW26
102595-3	POT, 5K LIN 21 DNT 12MM HORI	2	R100,R200
102723-2	OPTO CELL ON=500 OHM	2	U100,U200
103180-1	BUMPER, 0.4" TALL BLK W/ADH	3	7
103191-1	0.47UF Z5U 1210 20% 50V	4	C121,C124,C221,C224
103192-1	NPN 300V 500MA 50MHZ SOT-223	4	Q107,Q110,Q207,Q210
103193-1	PNP 300V 500MA 50MHZ SOT-223	4	Q105,Q120,Q205,Q220
103199-1	0.4 OHM 1W 5% 2512 T/R	52	R152,R153,R154,R155,R156,
			R157,R159,R167,R168,R169,
			R170,R171,R172,R252,R253,
			R254,R255,R256,R257,R259,
			R267,R268,R269,R270,R271,
			R272,R300,R301,R302,R303,
			R304,R305,R306,R307,R308,
			R309,R310,R311,R312,R400,
			R401,R402,R403,R404,R405,
			R406,R407,R408,R409,R410,
			R411,R412
103210-1	2.2UF 160V RADIAL T/R	4	C136,C137,C236,C237
103331-N050R	WIRE, 16 BLK/WHT TAB X 5 X T	1	WP2
103415-70608	SCREW,6-32 X.5 TORX PNHD SEM	2	HW27,HW28
125106-1	MAC9D 8 AMP 400V TRIAC	2	Q131,Q231
125242-1	CAP, .625ID X 1" VINYL	1	3
125482-1	ADHESIVE LOCTITE 384 OUTPUT	0	5
125483-1	ACTIVATOR LOCTITE "OUTPUT"	0	6
126929-1	1/4" TRS/XLR COMBO PCB VERT	2	J500,J600
125508-1	10UF 50VDC ELECTROLYTIC SMD	2	C3,C30
126317-1	REL, 30A 24V SPST PCB W/FAST	2	K100,K200
126325-1	DPDT MINI SLIDE NON-SHORT PC	1	S1
127023-1	OVERCOAT PEN	0	7

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DRAWN	JFL	9-24-98	DWG. NO.	SHEET 5 OF 20	REV
PROJ.	MD390D0		102140-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C1	102466-1	10UF 250V 20% RADIAL T/R	J 8
C2	A11427-104K2	0.1 MF 50V 10% 0805	F 9*
C3	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C4	C 4477-3	470 MF 35V VERT	G 10
C5	C 4477-3	470 MF 35V VERT	G 9
C6	A11427-104K2	0.1 MF 50V 10% 0805	H 10*
C7	A11427-104K2	0.1 MF 50V 10% 0805	H 9*
C12	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C20	D 8917-3	8200UF 110VDC ELECTROLYTIC	C 9
C21	D 8917-3	8200UF 110VDC ELECTROLYTIC	B 9
C22	C 7091-9	0.33 MF 50V CHIP 1206	N 9*
C24	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C25	A11427-104K2	0.1 MF 50V 10% 0805	O 9*
C26	C 8576-8	100 MF 35V 10% ELEC	I 9
C27	C 5362-6	2.2 MF 50V VERT	H 10
C28	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C29	A11427-104K2	0.1 MF 50V 10% 0805	I 9*
C30	125508-1	10UF 50VDC ELECTROLYTIC SMD	I 8
C31	C 3679-5	33UF 50V 20% VERT ELECT	I 10
C101	102465-1	.47UF 50V 20% RADIAL T/R	M 9
C102	A11427-103K2	0.01MF 50V 10% CHIP 0805	M 9*
C103	102467-1	22MF 25V 20% RAD T/R	M 9
C104	102438-101K2	100PF 200V 10% NPO 0805	M 9*
C105	C10208-4	100 MF 25V 20% VERT ELEC	L 9
C106	102438-560K2	56PF 200V 10% NPO 0805	L 9*
C107	A11369-270K2	27PF 50V 10% NPO 0805 T/R	L 9*
C108	102438-820K2	82PF 200V 10% NPO 0805	L 10*
C109	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 6*
C110	A11369-471K2	470PF 50V 10% NPO 0805 T/R	M 7*
C111	102438-221K2	220PF 200V 10% NPO 0805	N 8*
C112	A11427-123K2	0.012 MF 50V 10% CHIP	O 8*
C113	102468-1	47UF 10V 20% NP RAD T/R	N 8
C114	102468-1	47UF 10V 20% NP RAD T/R	N 8
C115	A11427-103K2	0.01MF 50V 10% CHIP 0805	N 8*
C116	A11427-472K2	4700PF 50V 10% X7R 0805	N 7*
C117	A11427-272K2	2700PF 50V 10% CHIP 0805	I 7*
C118	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 8
C119	A11427-472K2	4700PF 50V 10% X7R 0805	I 7*
C120	102438-101K2	100PF 200V 10% NPO 0805	I 7*
C121	103191-1	0.47UF Z5U 1210 20% 50V	G 8*
C122	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C123	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 8
C124	103191-1	0.47UF Z5U 1210 20% 50V	L 9*
C126	A11427-104K2	0.1 MF 50V 10% 0805	N 10*
C127	A11427-104K2	0.1 MF 50V 10% 0805	N 9*
C128	A11427-104K2	0.1 MF 50V 10% 0805	M 10*
C129	A11427-104K2	0.1 MF 50V 10% 0805	M 9*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-24-98	DWG. NO.	SHEET 6 OF 20	REV
PROJ.	MD390D0		102140-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C130	A11427-104K2	0.1 MF 50V 10% 0805	H 8*
C131	A11427-104K2	0.1 MF 50V 10% 0805	H 7*
C132	A11427-104K2	0.1 MF 50V 10% 0805	F 7*
C133	A11427-104K2	0.1 MF 50V 10% 0805	F 8*
C134	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	M 7*
C135	102438-101K2	100PF 200V 10% NPO 0805	N 7*
C136	103210-1	2.2UF 160V RADIAL T/R	I 7
C137	103210-1	2.2UF 160V RADIAL T/R	I 7
C138	102438-820K2	82PF 200V 10% NPO 0805	M 7*
C139	A11427-104K2	0.1 MF 50V 10% 0805	G 7*
C140	C 7091-9	0.33 MF 50V CHIP 1206	L 9
C141	A11369-471K2	470PF 50V 10% NPO 0805 T/R	N 10
C142	A11369-330J2	33PF 50V 5% NPO MLC 0805	M 10
C201	102465-1	.47UF 50V 20% RADIAL T/R	J 9
C202	A11427-103K2	0.01MF 50V 10% CHIP 0805	K 9*
C203	102467-1	22MF 25V 20% RAD T/R	K 9
C204	102438-101K2	100PF 200V 10% NPO 0805	J 9*
C205	C10208-4	100 MF 25V 20% VERT ELEC	J 9
C206	102438-560K2	56PF 200V 10% NPO 0805	J 9*
C207	A11369-270K2	27PF 50V 10% NPO 0805 T/R	J 9*
C208	102438-820K2	82PF 200V 10% NPO 0805	J 10*
C209	A11427-103K2	0.01MF 50V 10% CHIP 0805	H 3*
C210	A11369-471K2	470PF 50V 10% NPO 0805 T/R	K 7*
C211	102438-221K2	220PF 200V 10% NPO 0805	K 7*
C212	A11427-123K2	0.012 MF 50V 10% CHIP	L 8*
C213	102468-1	47UF 10V 20% NP RAD T/R	K 8
C214	102468-1	47UF 10V 20% NP RAD T/R	K 8
C215	A11427-103K2	0.01MF 50V 10% CHIP 0805	K 8*
C216	A11427-472K2	4700PF 50V 10% X7R 0805	J 2*
C217	A11427-272K2	2700PF 50V 10% CHIP 0805	D 1*
C218	A10434-104JD	0.1 MF 250V 5% MTL POLY	I 1
C219	A11427-472K2	4700PF 50V 10% X7R 0805	E 1*
C220	102438-101K2	100PF 200V 10% NPO 0805	D 2*
C221	103191-1	0.47UF Z5U 1210 20% 50V	E 8*
C222	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C223	C 9157-6	100UF 16V 20% NP ELEC RAD T/R	F 9
C224	103191-1	0.47UF Z5U 1210 20% 50V	J 9*
C226	A11427-104K2	0.1 MF 50V 10% 0805	K 10*
C227	A11427-104K2	0.1 MF 50V 10% 0805	K 9*
C228	A11427-104K2	0.1 MF 50V 10% 0805	J 10*
C229	A11427-104K2	0.1 MF 50V 10% 0805	J 9*
C230	A11427-104K2	0.1 MF 50V 10% 0805	E 8*
C231	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C232	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C233	A11427-104K2	0.1 MF 50V 10% 0805	D 8*
C234	A11369-102J2	0.001UF 50V 5% NPO MLC 0805 T/	J 7*
C235	102438-101K2	100PF 200V 10% NPO 0805	J 2*

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CROWN INTERNATIONAL INC.
1718 WEST MISHAWAKA ROAD ELKHART, INDIANA 46517 PHONE (219) 294-8000

DRAWN	JFL	9-23-98	DWG. NO.	SHEET 7 OF 20	REV
PROJ.	MD390D0		102140-8		B

PARTS LIST			
REF DES	C.P.N.	DESCRIPTION	MAP LOC.
C236	103210-1	2.2UF 160V RADIAL T/R	I 1
C237	103210-1	2.2UF 160V RADIAL T/R	I 1
C238	102438-820K2	82PF 200V 10% NPO 0805	J 7*
C239	A11427-104K2	0.1 MF 50V 10% 0805	E 7*
C240	C 7091-9	0.33 MF 50V CHIP 1206	J 9
C241	A11369-471K2	470PF 50V 10% NPO 0805 T/R	L 10
C242	A11369-330J2	33PF 50V 5% NPO MLC 0805	K 10
C500	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C501	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C502	A11369-120K2	12PF 50V 10% NPO 0805 T/R	B 2
C503	102467-1	22MF 25V 20% RAD T/R	B 2
C504	102438-560K2	56PF 200V 10% NPO 0805	A 2
C505	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C506	A11427-104K2	0.1 MF 50V 10% 0805	A 2
C509		OPEN	B 2
C600	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C601	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 1
C602	A11369-120K2	12PF 50V 10% NPO 0805 T/R	A 2
C603	102467-1	22MF 25V 20% RAD T/R	B 2
C604	102438-560K2	56PF 200V 10% NPO 0805	B 2
C605	A11427-104K2	0.1 MF 50V 10% 0805	A 1
C606	A11371-1501	15 OHM 0.10W 5% CHIP	C 3
C607	A11371-1501	15 OHM 0.10W 5% CHIP	C 3
C608	A11427-104K2	0.1 MF 50V 10% 0805	B 1
C609		OPEN	B 2
D1	C 2851-1	1N4004 SILICON RECT.	G 9
D2	C 2851-1	1N4004 SILICON RECT.	G 10
D3	C 2851-1	1N4004 SILICON RECT.	G 10
D4	C 2851-1	1N4004 SILICON RECT.	G 10
D6	C 2851-1	1N4004 SILICON RECT.	J 8
D7	C 2851-1	1N4004 SILICON RECT.	J 8
D8	C 3549-0	DIODE ZENER, 10V, 1N5240B	J 8
D9	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D10	C 2851-1	1N4004 SILICON RECT.	I 10
D13	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	I 9*
D101	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D102	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 9*
D103	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D104	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	M 9*
D105	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	L 9*
D106	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D107	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D108	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D109	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D110	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D111	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*
D112	C 9283-0	DIODE, 1N914/1N4148 SOT-23 SMT	N 8*

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DRAWN	JFL	9-24-98	DWG. NO.	SHEET 8 OF 20	REV
PROJ.	MD390D0		102140-8		B