



crown CT1600B Com Tech 1600 Amplifier User Manual

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crown CT1600B Com Tech 1600 Amplifier



1996 by CROWN INTERNATIONAL, INC.

- **Mailing Address:** P.O. Box 1000 Elkhart, IN U.S.A. 46515-1000
- **Shipping Address:** 57620 C.R. 105 Elkhart, IN U.S.A. 46517

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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.

- **Mail:** P.O. Box 1000 Elkhart IN 46515-1000
- **Shipping:** 57620 C.R. 105 Elkhart IN 46517
- **Phone:** (800) 342-6939/(219) 294-8200
- **FAX:** (219) 294-8301

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.

WARNING

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

Introduction

This manual contains service information on Crown power amplifiers. It is designed to be used in conjunction with the applicable Owner's Manual. However, some important information is duplicated in this Service Manual in case the Owner's Manual is not readily available.

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

Scope

This Service Manual is intended to apply to all versions of the CT-1600B amplifier including the Amcron version. The Parts Listings include parts specific for the US version and the European version (CT-1600BE13). For parts specific only to other versions contact the Crown Technical Support Group for help in finding part numbers. This Service Manual includes several sections. These sections include Parts Information, Specifications, Voltage Conversion, Circuit Theory, Electrical Test Procedures, Non-Module Parts Lists, and Module Parts Lists. Schematics are attached. Note that component parts with circuit board comprise a complete module. Module part numbers are always associated with a specific circuit board, although an unpopulated circuit board may be built up with different parts to create different modules. Note that Crown does not sell blank (unpopulated) circuit boards.

Each of the compact audio power amplifiers are designed for professional or commercial use. Providing high power amplification from 20Hz to 20KHz with minimum distortion, they feature balanced inputs with bridged and parallel monophonic capability. Specific features vary depending on model family.

Warranty

Each Owner's Manual contains basic policies as related to the customer. In addition it should be stated that this service documentation is meant to be used only by properly trained service personnel. Because most Crown products carry a 3 Year Full Warranty (including round trip shipping within the United States), all warranty service should be referred to the Crown Factory or Authorized Warranty Service Center. See the applicable Owner's Manual for warranty details. To find the location of the nearest Authorized Service Center or obtain instructions for receiving Crown Factory Service please contact the Crown Technical Support Group (within North America) or your Crown/Amcron Importer (outside North America).

Crown Technical Support Group Factory Service Parts Department

- **Mailing Address:** PO Box 1000 Elkhart, IN USA 46515-1000
- **Shipping Address:** 57620 C.R. 105 Elkhart, IN USA 46517
- **Phone:** (219) 294-8200
- **Toll Free:** (800) 342-6939
- **FAX:** (219) 294-8301

Parts Information

General Information

Later sections include both mechanical and electrical parts lists for this product. The parts listed are current as of the date printed. Crown reserves the right to modify and improve its products for the benefit of its customers.

Part Numbering System

As of the printing of this manual, Crown is using two numbering systems. The elder system always uses eight characters. The first character is a letter. Common letters used are C, D, H, M, P, and Q. The second through sixth characters are numbers. The numbers build sequentially (for each prefix letter) as new parts are added to our parts inventory system. (In some cases there will be a space then a four character number after the prefix letter; the space is considered a character.) The seventh character is usually a hyphen, though it may be a letter to indicate a revision or special note. The last character is called a check-digit, and is useful to Crown for internal tracking.

Crown is in the process of converting to a new part number system. Length may vary from eight to twelve characters. There is still a letter prefix, then five numbers. These five numbers identify a type of part. The seventh character is a hyphen. Remaining characters identify the details of the type of part identified by the first part of the number.

Standard and Special Parts

Many smaller electrical and electronic parts used by Crown are stocked by and available from electronic supply houses. However, some electronic parts that appear to be standard are actually special. A part ordered from Crown will assure an acceptable re-placement. Structural items such as modules and panels are available from Crown only.

Ordering Parts

When ordering parts, be sure to give the product model, and include a description and part number (CPN/DPN) from the parts listing. Price quotes are available on request.

Shipment

Shipment will be normally made by UPS or best other method unless you specify otherwise. Shipments are made to and from Elkhart, Indiana USA, 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.

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, and 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/Amcron products. Part prices and availability are subject to change without notice.

Crown Parts Department

- **Mailing Address:** PO Box 1000 Elkhart, IN USA 46515-1000

- **Shipping Address:** 57620 C.R. 105 Elkhart, IN USA 46517
- **Phone:** (219) 294-8210 or: (219) 294-8211
- **Toll Free:** (800) 342-6939 FAX: (219) 294-8301

Specifications

Unless noted otherwise, all specifications are based on driving an 8 ohm load per channel, both channels driven, the sensitivity switch in the 26dB position, the AC supply is 120VAC at 60Hz. Crown specifications are guaranteed through the warranty period (normally 3 years). Because our testing methods are more stringent than our published specifications, every Crown amplifier will exceed its published specifications.

Power

- 8 Ohm Stereo—540W/Ch
- 4 Ohm Stereo—875W/Ch
- 70-V Line Stereo—890W/Ch
- 8 Ohm Bridge Mono—1720W
- 4 Ohm Parallel Mono—1080W
- 2 Ohm Parallel Mono—1750W
- Bridge Mono, 140-V Line—1780W
- Parallel Mono, 70-V Line—1765W

Load Impedances: Rated for 16, 8, 4, 2, Ohm, and 70-V use. Safe with all types of loads, even totally reactive loads.

AC Mains: 120VAC at 60 Hz with standard three-wire grounded connector for North American units; 100VAC, 120VAC, 220VAC, and 240VAC at 50 or 60 Hz units are available when ordered country specific. Com-Tech amplifiers are not voltage convertible.

Performance

- **Frequency Response:** ± 0.1 dB from 20 Hz to 20 kHz at 1 Watt.
- **Phase Response:** $\pm 10^\circ$ from 10 Hz to 20 kHz at 1 Watt.
- **Signal to Noise Ratio:** A-weighted, better than 105 dB below full rated output. Better than 100 dB below full rated output from 20 Hz to 20 kHz. Total Harmonic Distortion (THD): $< 0.05\%$ from 20 Hz to 1 kHz, increasing linearly to 0.1% at 20 kHz at 500W.
- **I.M. Distortion:** $< 0.05\%$ from less than 164 milliwatts to 520 W at 26 dB gain.
- **Slew Rate:** > 13 V per microsecond. (Slew rates are limited to useful levels for ultrasonic/RF protection.)
- **Damping Factor:** > 1000 from 10 Hz to 400 Hz.
- **DC Offset:** < 10 millivolts.

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

Output Impedance: < 10 milliohms in series with < 2 microhenries.

Protection Systems: Output Device Emulation Protection (ODEP) limits drive in the event of dangerous dynamic thermal conditions without interrupting power. Current limiting for shorted load protection. DC/LF and common mode output current Fault circuitry to mute audio. Delay of 4 seconds from turn on mutes amplifier to prevent dangerous turn-on transients.

Mechanical

- **Input Connectors:** Balanced three-terminal barrier block for each channel on standard P.I.P.-BB module (included)
- **Output Connectors:** Four-terminal barrier block.
- **Front Panel Controls:** A front panel rocker switch used to power the amplifier on and off.
- **Back Panel Controls:** A three-position switch which selects Stereo, Bridge-Mono, or Parallel-Mono mode. A rotary potentiometer for each channel used to control output level. A two position recessed switch for each channel selects between 8/4 ohm and 70-V modes. A push button circuit breaker used to protect the power supply.
- **Internal Controls:** A three-position switch selects 0.775V, 1.4V, or 26 dB voltage gain input sensitivity.
- **Indicators:** Amber Enable indicator shows on/off status of low-voltage power supply. A green indicator for each channel shows the reserve energy status. If no reserve energy is available the indicator will dim in proportion to ODEP limiting. A yellow indicator for each channel flashes in the event of distortion. And green SPI (signal presence indicator) indicators show the presence of output signal.
- **Construction:** Black splatter-coat steel chassis with specially designed flow-through ventilation system.
- **Mounting:** Standard EIA 310 front-panel rack mount with supports for supplemental rear corner mounting.
- **Dimensions:** 19 inches wide, 7 inches high, 16 inches deep behind front mounting surface.
- **Weight:** 57 lbs, 14 oz. (26.3 kg)

Theory

Overview

It should be noted that over time Crown makes improvements and changes to their products for various reasons. This manual is up to date as of the time of writing. For additional information regarding these amplifiers, refer to the applicable Technical Notes provided by Crown for this product. This section of the manual explains the general operation of a typical Crown power amplifier. Topics covered include Front End, Grounded Bridge, and ODEP. Due to variations in design from vintage to vintage (and similarities with other Crown products) the theory of operation remains simplified.

Features

Com-Tech amplifiers utilize numerous Crown innovations including grounded bridge and ODEP technologies. Cooling techniques make use of the what is essentially air conditioner technology. Air flows bottom to top, and front to side. Air flows a short distance across a wide heatsink. This type of air flow provides significantly better cooling than the "wind tunnel" technology used by many other manufacturers. Output transistors are of the metal can type rather than plastic case. This allows for a significantly higher thermal margin for the given voltage and current ratings. All devices used are tested and graded to ensure maximum reliability. Another electronic technique used is negative feedback. Almost all power amplifiers utilize negative feedback to control gain and provide stability, but Crown uses multiple nested feedback loops for maximum stability and greatly improved damping. Most Crown amplifiers have damping in excess of 1000 in the bass frequency range. This feedback, along with our compensation and ultra-low distortion output topology, make Crown amplifiers superior. Features specific to the Com-Tech Series' include slew rate limiting, and audio muting for delay or protective action. This amplifier can operate in either a Bridged or Parallel Mono mode as well as dual (stereo). A sensitivity switch allows selection of input voltage required for rated output. Level controls are mounted on the rear panel and are of the rotary type. Front panel indicators let the user know the status of the low voltage power supply (enable), signal presence, distortion, and an ODEP indicator for each channel which shows the reserve energy status. In general, the packaging of this model is designed for maximum watt/price/weight/size value with user friendly features. For additional details refer to the specification section, or to the applicable Owner's Manual.

Front End Operation

The front end is comprised of three stages: Balanced Gain Stage (BGS), Variable Gain Stage (VGS), and the

Error Amp. Figure 1 shows a simplified diagram of a typical front end with voltage amplification stages.

Balanced Gain Stage (BGS)

Input to the amplifier is balanced. The shield may be isolated from chassis ground by an RC network to interrupt ground loops via the Ground Lift Switch. The non-inverting (hot) side of the balanced input is fed to the non-inverting input of the first op-amp stage. The inverting (negative) side of the balanced input is fed to the inverting input of the first op-amp stage. A potentiometer is provided for common mode rejection adjustment. Electrically, the BGS is at unity gain. (From an audio perspective, however, this stage actually provides +6dB 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.

Variable Gain Stage (VGS)

From the output of the BGS, the signal goes to the VGS where gain is determined by the position of the Sensitivity Switch, and level is determined by the level control. VGS is an inverting stage with the input being fed to its op-amp stage. Because gain after this stage is fixed at 26dB (factor of 20), greater amplifier sensitivity is achieved by controlling the ratio of feedback to input resistance. The Sensitivity Switch sets the input impedance to this stage and varies the gain such that the overall amplifier gain is 26 dB, or is adjusted appropriately for 0.775V or 1.4V input to attain rated output.

Error Amp

The inverted output from the VGS is fed to the non-inverting input of the Error Amp op-amp stage through an AC coupling capacitor and input resistor. Amplifier output is fed back via the negative feedback (NFB) loop resistor. The ratio of feedback resistor to input resistor fixes gain from the Error Amp input to the output of the amplifier at 26 dB. Diodes prevent overdriving the Error Amp. Because the Error Amp amplifies the difference between input and output signals, any difference in the two waveforms will produce a near open loop gain condition which in turn results in high peak output voltage. The output of the Error Amp, called the Error Signal (ES) drives the Voltage Translators.

Voltage Amplification

The Voltage Translator stage separates the output of the Error Amp into balanced positive and negative drive voltages for the Last Voltage Amplifiers (LVAs), translating the signal from ground referenced $\pm 15V$ to $\pm V_{cc}$ reference. LVAs provide the main voltage amplification and drive the High Side output stages. Gain from Voltage Translator input to amplifier output is a factor of 25.2.

Voltage Translators

A voltage divider network splits the Error Signal (ES) into positive and negative drive signals for the balanced voltage translator stage. These offset reference voltages drive the input to the Voltage Translator transistors. A nested NFB loop from the output of the amplifier mixes with the inverted signal riding on the offset references. This negative feedback fixes gain at the offset reference points (and the output of the Error Amp) at a factor of -25.2 with respect to the amplifier output. The Voltage Translators are arranged in a common base configuration for non-inverting voltage gain with equal gain. They shift the audio from the $\pm 15V$ reference to VCC reference. Their outputs drive their respective LVA.

Also tied into the Voltage Translator inputs are ODEP limiting transistors and control/protection transistors. The ODEP transistors steal drive as dictated by the ODEP circuitry (discussed later). The control/protection transistors act as switches to totally shunt audio to ground during the turn-on delay, or during a DC/LF or Fault protective action.

Last Voltage Amplifiers (LVAs)

The Voltage Translator stage channels the signal to the Last Voltage Amplifiers (LVA's) in a balanced configuration. The +LVA and -LVA, with their push-pull effect through the Bias Servo, drive the fully complementary output stage. The LVAs are configured as common emitter amplifiers. This configuration provides sufficient voltage gain and inverts the audio. The polarity inversion is necessary to avoid an overall polarity inversion from input jack to output jack, and it allows the NFB loop to control Error Amp gain by feeding back to its non-inverting input (with its polarity opposite to the output of the VGS). With the added voltage swing provided by the LVAs, the signal then gains current amplification through the Darlington emitter-follower output stage.

Grounded Bridge Topology

Figure 2 is a simplified example of the grounded bridge output topology. It consists of four quadrants of three deep Darlington (composite) emitter-follower stages per channel: one NPN and one PNP on the High Side of the bridge (driving the load), and one NPN and one PNP on the Low Side of the bridge (controlling the ground reference for the rails). The output stages are biased to operate class AB+B for ultra low distortion in the signal zero-crossing region and high efficiency.

High Side (HS)

The High Side (HS) of the bridge operates much like a conventional bipolar push-pull output configuration.

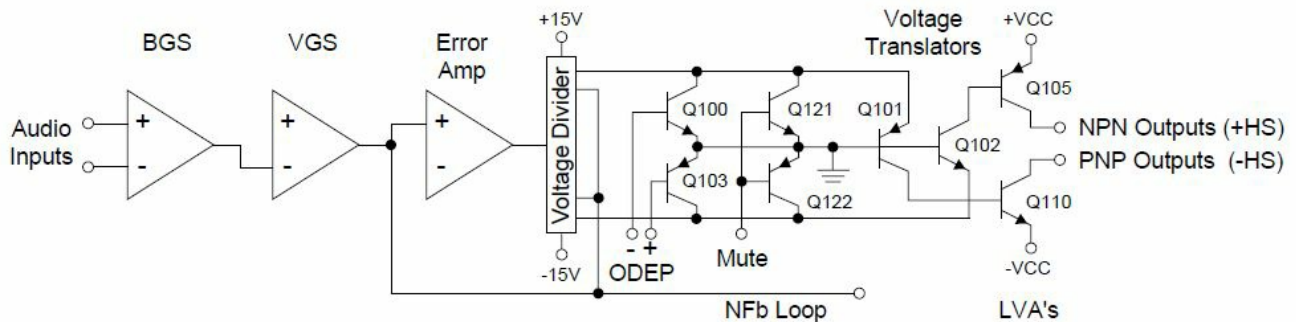


Figure 1. Typical Amplifier Front End and Voltage Amplification Stages.

As the input drive voltage becomes more positive, the HS NPN conducts and delivers positive voltage to the load. Eventually the NPN devices reach full conduction and +Vcc is across the load. At this time the HS PNP is biased off. When the drive signal is negative going, the HS PNP conducts to deliver -Vcc to the load and the HS NPN stage is off. The output of the +LVA drives the base of predriver device. Together, the predriver and driver form the first two parts of the three-deep Darlington and are biased class AB. They provide output drive through the bias resistor, bypassing the output devices, at levels below about 100mW. An RLC network between the predriver and driver provide phase shift compensation and limit driver base current to safe levels. Output devices are biased class B, just below cutoff. At about 100mW output they switch on to conduct high current to the load. Together with predriver and driver, the output device provide an overall class AB+B output. The negative half of the HS is almost identical to the positive half, except that the devices are PNP. One difference is that the PNP bias resistor is slightly greater in value so that PNP output devices run closer to the cutoff level under static (no signal) conditions. This is because PNP devices require greater drive current. HS bias is regulated by Q18, the Bias Servo. Q18 is a Vbe multiplier which maintains approximately 3.3V Vce under static conditions. The positive and negative halves of the HS output are in parallel with this 3.3V. With a full base-emitter on voltage drop across predrivers and drivers, the balance of voltage results in approximately .35V drop across the bias resistors in the positive half, and about .5V across the bias resistor in the negative half. Q18 conduction (and thus bias) is adjustable. A diode string prevents excessive charge build up within the high conduction output devices when off. Flyback diodes shunt back-EMF pulses from reactive loads to the power supply to protect output devices from dangerous reverse voltage levels. An output terminating circuit blocks RF on output lines from entering the amplifier through its output connectors.

Low Side (LS)

The Low Side (LS) operates quite differently. The power supply bridge rectifier is not ground referenced, nor is the secondary of the main transformer. In other words, the high voltage power supply floats with respect to ground, but $\pm V_{cc}$ remain constant with respect to each other. This allows the power supply to deliver $+V_{cc}$ and $-V_{cc}$ from the same bridge rectifier and filter as a total difference in potential, regardless of their voltages with respect to ground. The LS uses

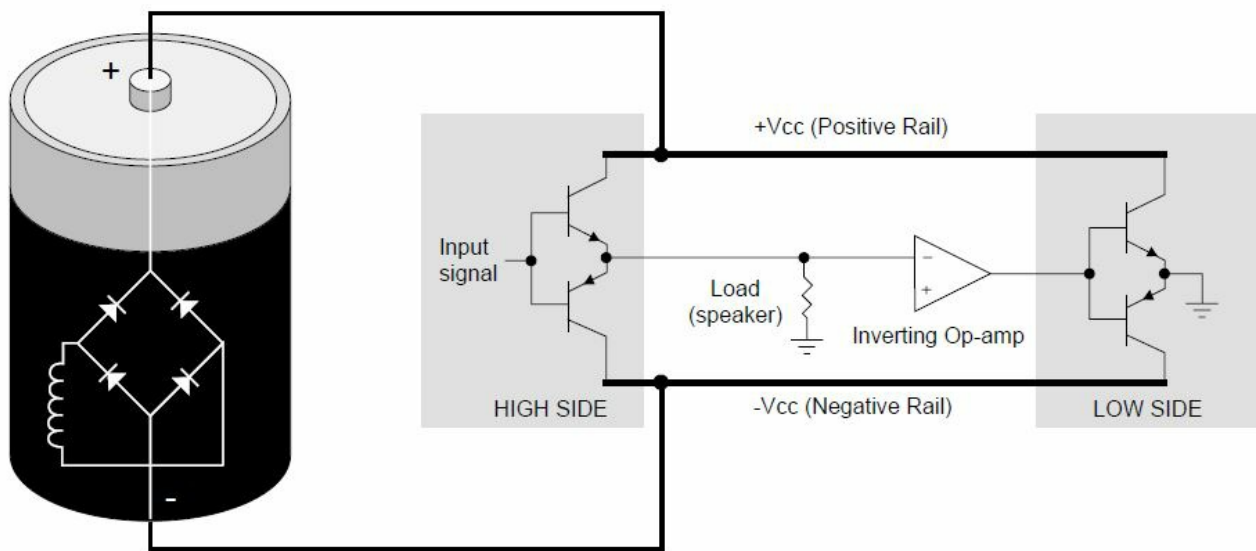


Figure 2. Crown Patented Grounded Bridge Topology

inverted feedback from the HS output to control the ground reference for the rails ($\pm V_{cc}$). Both LS quad-rants are arranged in a three-deep Darlington and are biased AB+B in the same manner as the HS. When the amplifier output swings positive, the audio is fed to an op-amp stage where it is inverted. This inverted signal is delivered directly to the bases of the positive (NPN) and negative (PNP) LS predrivers. The negative drive forces the LS PNP devices on (NPN off). As the PNP devices conduct, V_{ce} of the PNP Darlington drops. With LS device emitters tied to ground, $-V_{cc}$ is pulled toward ground reference. Since the power supply is not ground referenced (and the total voltage from $+V_{cc}$ to $-V_{cc}$ is constant) $+V_{cc}$ is forced higher above ground potential. This continues until, at the positive amplifier output peak, $-V_{cc} = 0V$ and $+V_{cc}$ equals the total power supply potential with a positive polarity. If, for example, the power supply produced a total of 70V from rail to rail ($\pm 35V_{DC}$ measured from ground with no signal), the amplifier output would reach a positive peak of +70V. Conversely, during a negative swing of the HS output where HS PNP devices conduct, the op-amp would output a positive voltage forcing LS NPN devices to conduct. This would result in $+V_{cc}$ swinging toward ground potential and $-V_{cc}$ further from ground potential. At the negative amplifier output peak, $+V_{cc} = 0V$ and $-V_{cc}$ equals the total power supply potential with a negative polarity. Using the same example as above, a 70V supply would allow a negative output peak of -70V. In summary, a power supply which produces a total of 70VDC rail to rail (or $\pm 35V_{DC}$ statically) is capable of producing 140V peak-to-peak at the amplifier output when the grounded bridge topology is used. The voltage used in this example are relatively close to the voltages of the PB-1/460CSL. The total effect is to deliver a peak to peak voltage to the speaker load which is twice the voltage produced by the power supply. Benefits include full utilization of the power supply (it conducts current during both halves of the output signal; conventional designs require two power supplies per channel, one positive and one negative), and never exposing any output device to more than half of the peak to peak output voltage (which does occur in conventional designs). Low side bias is established by a diode string which also shunts built up charges on the output devices. Bias is adjustable via potentiometer. Flyback diodes perform the same function as the HS flybacks. The output of the LS is tied directly to chassis ground via ground strap.

Output Device Emulation Protection (ODEP)

To further protect the output stages, a specially developed ODEP circuit is used. It produces a complex analog output signal. This signal is proportional to the always changing safe-operating-area margin of the output transistors. The ODEP signal controls the Voltage Translator stage by removing drive that may exceed the safe-operating-area of the output stage. ODEP senses output current by measuring the voltage dropped across LS emitter resistors. LS NPN current (negative amplifier output) and $+V_{cc}$ are sensed, then multiplied to obtain a signal proportional to output power. Positive and negative ODEP voltages are adjustable via two potentiometers. Across $\pm ODEP$ are a PTC and a thermal sense (current source). The PTC is essentially a cutoff switch that causes hard ODEP limiting if heatsink temperature exceeds a safe maximum, regardless of signal level. The thermal sense causes the differential between $+ODEP$ and $-ODEP$ to decrease as heatsink temperature increases. An increase in positive output signal output into a load will result in $-ODEP$ voltage dropping; an increase in negative output voltage and current will cause $+ODEP$ voltage to drop. A complex RC network

between the \pm ODEP circuitry is used to simulate the thermal barriers between the interior of the output device die (immeasurable by normal means) and the time delay from heat generation at the die until heat dissipates to the thermal sensor. The combined effects of thermal history and instantaneous dynamic power level result in an accurate simulation of the actual thermal condition of the output transistors.

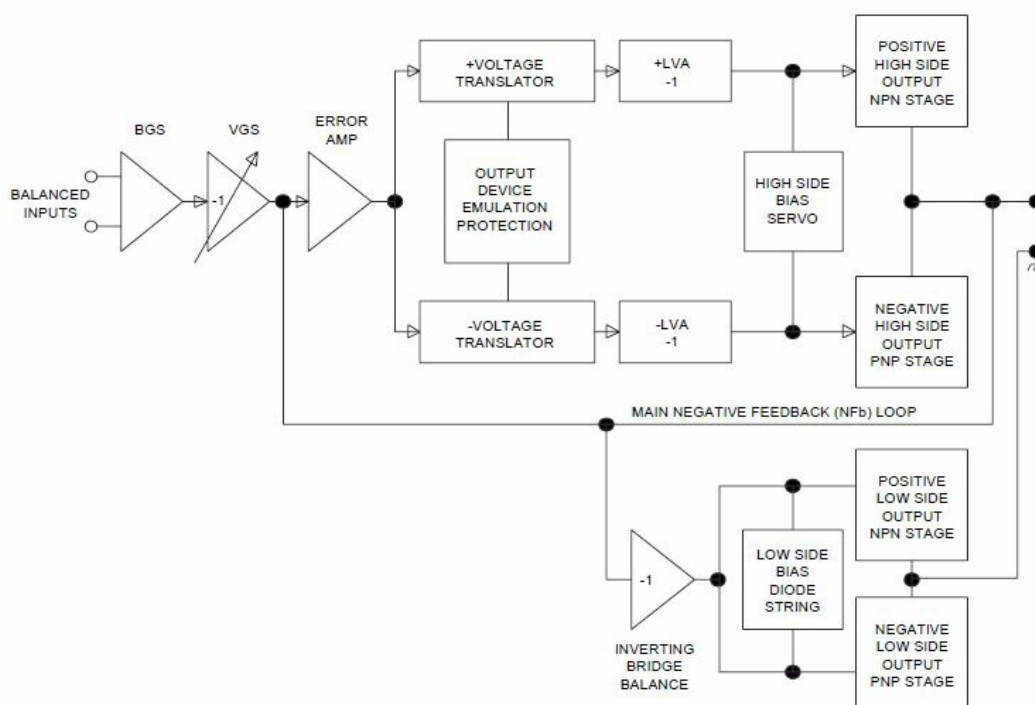


Figure 3. Typical Crown Amplifier Basic Block Diagram (One Channel Shown)

Electrical Checkout Procedures

General Information

The following test procedures are to be used to verify operation of this amplifier. DO NOT connect a load or inject a signal unless directed to do so by the procedure. These tests, though meant for verification and alignment of the amplifier, may also be very helpful in troubleshooting. For best results, tests should be performed in order. All tests assume that AC power is from a regulated 120 VAC source. Test equipment includes an oscilloscope, a DMM, a signal generator, loads, and I.M.D. and T.H.D. noise test equipment.

Standard Initial Conditions

Level controls fully clockwise. Stereo/Mono switch in Stereo. Sensitivity switch in 26 dB fixed gain position. 70-V mode switches in the 8/4 ohm position. It is assumed, in each step, that conditions of the amplifier are per these initial conditions unless otherwise specified.

Test 1: DC Offset

Spec: 0 VDC, ± 10 mV. Initial Conditions: Controls per standard, inputs shorted. Procedure: Measure DC voltage at the output connectors (rear panel). There is no adjustment for output offset. If spec is not met, there is an electrical malfunction. Slightly out of spec measurement is usually due to U104/U204 out of tolerance.

Test 2: Output Bias Adjustment

Spec: 300 to 320 mVDC. Initial Conditions: Controls per standard, heatsink temperature less than 40°C. Procedure: Measure DC voltage on the output module across R02 (5.6 ohm), adjust R26 if necessary. Measure DC voltage on the output module across R21 (5.6 ohm), adjust R23 if necessary. Repeat for second channel.

Test 3: ODEP Voltage Adjustment

Spec: Bias Per Chart, ± 0.1 V DC. Initial Conditions: Controls per standard, heatsink at room temperature 20 to

30°C (68 to 86°F). Note: This adjustment should normally be performed within 2 minutes of turn on from ambient (cold) conditions. If possible measure heatsink temperature, if not measure ambient room temperature. Use this information when referencing the following chart. The following list of ODEP bias voltages VS. temperature is based on the use of Main Modules built on any circuit board up to and including the D 7993-5 board.

°F	°C	V _{-ODEP}	V _{+ODEP}
66	18.9	-10.31	11.41
68	20.0	-10.26	11.36
70	21.1	-10.20	11.30
72	22.2	-10.14	11.24
74	23.3	-10.09	11.19
76	24.4	-10.03	11.13
77	25.0	-10.00	11.10
78	25.6	-9.97	11.07
80	26.7	-9.91	11.01
82	27.8	-9.86	10.96
84	28.9	-9.80	10.90
86	30.0	-9.74	10.84
88	31.1	-9.69	10.79
90	32.2	-9.63	10.73
92	33.3	-9.57	10.67
94	34.4	-9.51	10.61

The following list of ODEP bias voltages VS. temperature is based on the use of Main Modules built on any circuit board after the D 7993-5 board.

°F	°C	V _{-ODEP}	V _{+ODEP}
66	18.9	-10.31	10.31
68	20.0	-10.26	10.26
70	21.1	-10.20	10.20
72	22.2	-10.14	10.14
74	23.3	-10.09	10.09
76	24.4	-10.03	10.03
77	25.0	-10.00	10.00
78	25.6	-9.97	9.97
80	26.7	-9.91	9.91
82	27.8	-9.86	9.86
84	28.9	-9.80	9.80
86	30.0	-9.74	9.74
88	31.1	-9.69	9.69
90	32.2	-9.63	9.63
92	33.3	-9.57	9.57
94	34.4	-9.51	9.51

- **ODEP Procedure:** Measure pin 3 of J500 and, if necessary, adjust R121 to obtain V_{-ODEP} as specified above. Measure pin 3 of J500 and, if necessary, adjust R221 to obtain V_{-ODEP} as specified above.
- **+ODEP Procedure:** Measure pin 4 of J500 and, if necessary, adjust R132 to obtain V_{+ODEP} as specified above. Measure pin 4 of J500 and, if necessary, adjust R232 to obtain V_{+ODEP} as specified above.

Test 4: AC Power Draw

- **Spec:** 80 Watts maximum quiescent.
- **Initial Conditions:** Controls per standard.
- **Procedure:** With no input signal and no load, measure AC line wattage draw. If current draw is excessive, check for high AC line voltage or high bias voltage.

Test 5: Common Mode Rejection

- **Spec at 100 Hz:** –70 dB.
- **Spec at 20 kHz:** –50 dB.
- **Initial Conditions:** Controls per standard.
- **Procedure:** No load. Inject a 0 dBu (.775VRMS) 100 Hz sine wave into each channel, one channel at a time, with inverting and non-inverting inputs shorted together. At the output measure less than –44 dBu (4.9mVRMS). Inject a 0 dBu 20 kHz sine wave into each channel, one channel at a time, with inverting and non-inverting inputs shorted together. At the output measure less than –24 dBu (49mVRMS). For Main Modules with board numbers lower than D 7993-5 adjust N100 and N200 to calibrate CMR. For Main Modules with board number D 7993-5 or greater adjust R921 and R1021.

Test 6: Voltage Gain

- **Spec 26dB Gain:** Gain of 20.0 \pm 3%.
- **Spec 0.775V 8/4 ohm Sensitivity:** \pm 6%.
- **Spec 0.775V 70-V Sensitivity:** \pm 6%.
- **Initial Conditions:** Controls per standard.
- **Procedure:** No load connected. Inject a 0.775 VAC 1 kHz sine wave with the Sensitivity Switch in the 26 dB position. Measure 15.5 VAC \pm 0.5 VAC at the amplifier output. Inject a 0.775 VAC 1 kHz sine wave with the Sensitivity Switch in the 0.775V 8/4 ohm position. Measure 65.7 VAC \pm 3.9 VAC at the amplifier output. Inject a 0.775 VAC 1 kHz sine wave with the Sensitivity Switch in the 0.775 VAC 70-V position and the Output Mode Switch in the 70-V position. Measure 70.7 VAC \pm 4.2 VAC at the amplifier output. Return the Sensitivity Switch to the 26 dB position. Return the Output Mode Switches to the 8/4 ohm position.

Test 7: Phase Response

- **Spec:** \pm 10° from 10 Hz to 20 kHz at 1 Watt.
- **Initial Conditions:** Controls per standard, 8 ohm load on each channel.
- **Procedure:** Inject a 1 kHz sine wave and adjust for 1 watt output (2.8 VAC). Check input and output signals against each other, input and output signals must be within 10° of each other.

Test 8: Level Controls

- **Spec:** Level controlled by level controls.
- **Initial Conditions:** Controls per standard.
- **Procedure:** No load. Inject a 1 kHz sine wave. With level controls fully clockwise you should see full gain. As

controls are rotated counterclockwise, observe similar gain reduction in each channel. When complete, return level controls to fully clockwise position.

Test 9: Current Limit

- **Spec:** Current Limit at 39 Amps, ± 6 Amps.
- **Initial Conditions:** Controls per standard.
- **Procedure:** Load each channel to 1 ohm. Inject a 1 kHz differentiated (or 10% duty cycle) square wave. See figure 4. Increase output level until current limit occurs. Current limit should occur at 39 ± 6 Amps (39 Vpk). Observe clean (no oscillations) current clipping.

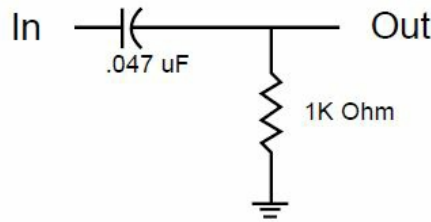


Figure 4. Differentiator Circuit

Test 10: Slew Rate & 10 KHz Square Wave

- **Spec:** 17 – 25 V/ μ S, 8 ohm load.
- **Initial Conditions:** Controls per standard.
- **Procedure:** Load each channel to 8 ohms. Inject a 10 kHz square wave to obtain 35 Volts zero-to-peak at each output. Observe the slope of the square wave. It should typically measure 17-25 V/ μ S. Also, the square wave must not include overshoot, ringing, or any type of oscillation.

Test 11: Crosstalk

- **Spec:** -60 dB at 20 kHz.
- **Initial Conditions:** Controls per standard. Terminate input of channel not driven with 600 ohms. Procedure: 8 ohm load on each channel. Inject a 20 kHz sine wave into the channel 1 input and increase output level to 64 VAC. Measure less than 64 mVAC at the output of channel 2. Inject a 20 kHz sine wave into the channel 2 input and increase output level to 64 VAC. Measure less than 64 mVAC at the output of Ch 1.

Test 12: Output Power

Spec at 8 Ohm Stereo: ≥ 540 Watts/Ch at 0.1% THD Spec at 4 Ohm Stereo: ≥ 850 Watts/Ch at 0.1% THD Spec at 70-V Mode, Stereo: ≥ 875 Watts/Ch at 0.1% THD Initial Conditions: Controls per standard Procedure: Load each channel to 8 ohms. Inject a 1 kHz sine wave and measure at least 65.72 VAC at the output of each channel. Load each channel to 4 ohms. Inject a 1 kHz sine wave and measure at least 58.31 VAC at the output of each channel. Switch each channel to the 70-V mode. Load each channel to 6.25 ohms. Inject a 1 kHz sine wave and measure at least 70.7 VAC at the output of each channel. All power measurements must be at less than 0.1% THD.

Test 13: Reactive Loads

Spec: No oscillations. Safe with all types of loads. Initial Conditions: Controls per standard. Procedure Capacitive: Load each channel to 8 ohms in parallel with .94 μ F. Inject a 20 kHz sine wave with 56.9 VAC output for 10 seconds. Procedure Inductive: Load each channel to 8 ohms in parallel with 159 μ H. Inject a 1 kHz sine wave with

15 VAC output for 10 seconds. Procedure Torture: Load each channel with the primary (red and black leads) of a PS-U transformer (CPN D 7040-5). Each channel in the 70-V mode. Inject a 10 Hz sine wave with an output level sufficient enough to cause 3 to 5 flyback pulses for 10 seconds. Procedure Short: Inject a 60 Hz sine wave into the input and adjust for 5 VAC at the output. Short each channel, one at a time, for 10 seconds.

Test 14: ODEP Limiting

Spec: No oscillation on ODEP limiting wave form; either channel controls limiting in Parallel Mono mode. Initial Conditions: Controls per standard; rag or other obstruction blocking fan blade so it does not turn. Procedure: Load the amplifier to 2 ohms per channel. Inject a 60 Hz sine wave into each channel and adjust the output to 15 VAC. Allow the amplifier to heat up until you observe a wave form similar to figure 5. Allow the amplifier to cool for a few minutes. Switch the amplifier to Parallel Mono mode and remove the load from channel 2. Inject a 60 Hz sine wave into each channel and adjust the output to 15 VAC. Allow the amplifier to heat up and observe limiting on both channels.

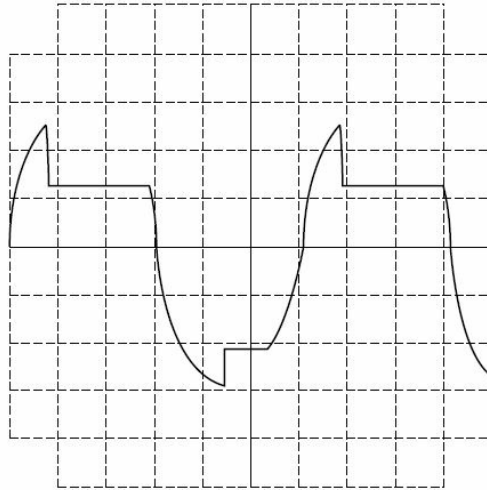


Figure 5. ODEP Limiting Wave Form

Test 15: LF Protection

- **Spec:** Amplifier mutes for dangerous subsonic frequencies.
- **Initial Conditions:** Controls per standard.
- **Procedure:** No load. Inject a .5 Hz 6 Vp-p, or a 2 Hz 6 VAC sine wave into each channel and verify that each channel cycles into mute.

Test 16: Signal to Noise Ratio

- **Spec:** ≥ 100 dB below 8 ohm rated continuous average 20-20kHz power.
- **Initial Conditions:** Controls per standard. Short inputs.
- **Procedure:** Load each channel to 8 ohms. Measure less than 648 μ V at the output of each channel (20 Hz- 20 kHz bandpass filter).

Test 17: Turn off Transients

- **Spec:** < 80mV across an 8 ohm speaker load
- **Initial Conditions:** Controls per standard.
- **Procedure:** Load the output with an 8 ohm speaker. From an on condition, turn off the amplifier and monitor the output noise at the time of turn off.

Note: Turn off noise may increase significantly if the amplifier is cycled off and on.

Test 18: Intermodulation Distortion

- **Spec at 0 dB output:** $\leq 0.01\%$.
- **Spec at -35 dB output:** $\leq 0.05\%$.
- **Initial Conditions:** Controls per standard.
- **Procedure:** Load each channel to 8 ohms. Inject a SMPTE standard IM signal (60 Hz and 7 kHz sine wave mixed at 4:1 ratio). Set the 60 Hz portion of the sine wave to 51 volts RMS. Set the 7 kHz portion to 25%. With an IM analyzer measure less than 0.01% IMD. Repeat test at -35 dB (reference 51 volts RMS, 60 Hz portion) and measure less than 0.05% IMD.

Test 19: Clipping

Spec: No protective action during test. Initial Conditions: Controls per standard. Procedure: Load each channel to 8 ohms. Inject a 1 kHz sine wave into each input and drive the output 6 dB into clip for 10 seconds. The amplifier should not activate any protective circuits (ODEP, Fault, or LF Protection).

Post Testing

After completion of testing, if all tests are satisfactory, the amplifier controls should be returned to the positions required by customer. If conditions are unknown or unspecified, factory settings are as follows:

- **Level Controls:** 9 to 11 O'Clock.
- **Sensitivity Switch:** 0.775V 8/4 Ohm.
- **Stereo/Mono Switch:** Stereo.
- **70-V Mode Switches:** 8/4 Ohm position.
- **Power:** Off

Parts List (Non-Module)

Supplimental Items

<i>CPN</i>	<i>Item</i>	<i>Quantity</i>
A10087-71012	Rack Screw, 10-32 x .75	8
C 3342-0	Feet, Selfstick Black	4
D 4137-2	Nylon Washer	4
A10086-70808	Screw, 8-32 x .5 (For volume cover)	2
A10101-12	Spacer, #8 x 5/16OD x 1/4L (For volume cover)	2
F11489-6	Plexiglass Plate (Volume cover)	1
K80636-2	CT Series Reference Manual	1

Power Supply

<i>CPN</i>	<i>Item</i>	<i>Quantity</i>
A10086-70604	Screw, 6-32 x .25	2
A10098-7	#6 Belleville Spring Washer	2
C 7786-4	Screw, 10-32 x 5.0 (For transformer)	2
C 7859-9	Relay, 30A 120VAC SPST (100V-120V Models)	1
C 9837-3	Breaker, 30 Amp (100V-120V Models)	1
C10177-1	Breaker, 20 Amp VDE (200V-240V Models)	1
C 9924-9	Faston, TAB .250 Stud Mount	2
D 7145-2	Power Transformer (120V 60 Hz)	1
D 9008-0	Power Transformer (220V/240V)	1
D 8087-5	Power Transformer (100V/120V)	1
A10094-8	Washer, #10 Internal Tooth	4
A10098-5	Washer, 1/4" Belleville Spring	4
C 8752-5	Bridge Rectifier, 35A 400V	2
C 9852-2	Capacitor, 6300 μ F 200V Electrolytic	2
C 9870-4	Screw, 10-32 x .38	4
D 2934-4	Solder Lug, .218 Hole	4
D 6764-1	Washer, Shoulder	4
D 8438-0	Bracket, Capacitor	2

Output Assembly (One Per Channel)

<i>CPN</i>	<i>Item</i>	<i>Quantity (Per Channel)</i>
A10315-1	Screw, 6-32 x .56 Hex Washer Head	12
C 9387-9	Plasti-Rivit, .156 2 Prong Blk	2
C 9491-9	Screw, 6-32 x .312 Pan Hd	29
C 8188-2	Output Power Transistor, PNP	6
C 8187-4	Output Power Transistor, NPN	6
C 8573-5	Driver Transistor, 2SA1186 PNP	2
C 8574-3	Driver Transistor, 2SC2837 NPN	2
M20591-0	Old Style Driver Transistor Assm. NPN, 2SC2527	2
M20590-2	Old Style Driver Transistor Assm. PNP, 2SA1077	2
D 7665-9	Mounting Clip, TO3P (For Drivers)	2
D 7666-7	Mounting Bracket, TO3P (For Drivers)	2
D 7796-2	Sil Pad, 2.87 x 14.57 (Between Heatsink & Chassis)	1
D 6280-8	Sil Pad for use with Output Board P10315-3	1
D 6104-0	Sil Pad for use with Output Board P10233-8	1
D 7797-0	Output Pad (Between Module and Chassis)	1
C 7597-4	Output Pad for use with Output Board P10315-3	1
D 7026-4	Output Pad for use with Output Board P10233-8	1
D 8774-8	PTC, 95DegC Cast Alum.	1
F12019-0	Heatsink (Under Diode String)	1

Output Assembly Cont. (One Per Channel)

C 8813-5	Bias Transistor MPS8097/MPSA18 NPN (Q18)	1
B 5842-8	Tubing, #24 Thin Wall Red (For Q18)	Order in Inches
C 5826-0	LM234Z-6 Thermal Sense (S100/200)	1
B 5464-1	Tubing, #24 Teflon Thin Wall	Order in Inches
D 8197-2	Shroud, 1.75 x 14.45 Paper	1
M21324-5	Aluminum Heat Sink, 3/4" With Fins	2

Back Panel Assembly

CPN	Item	Quantity
D 8367-1	Knob, .5 Dia. Level Control	2
A10086-10410	Screw, 4-40 x .62	2
A10086-70808	Screw, 8-32 x .5	4
A10094-2	Lockwasher, #4 Internal Star	2
A10100-7	Aluminum Spacer, .250OD x .140ID x .312L	2
A10109-70808	Screw, 8-18 x .5	4
A10214-7	Strain Relief	1
C10187-0	Strain Relief (For European Power Cord)	1
A11793-0101D	Power Cord, 14-3 SJT Neon UL/CSA	1
A10793-0503D	Power Cord, European Plug (E-13 Amplifiers)	1
C 4508-5	IC Socket, 16 Pin	1
C 5990-4	Barrier Block, 4 Term.	1
C 6821-0	Edge Card Connector, 22 Contact	1
C 7957-1	Slide Switch, DPDT 15A (70-V Mode)	2
C 8812-7	Cable Tie, 5.5"	2
C10060-9	Header, 5 Pin R Angle Locking	1
D 6899-5	Ribbon Connector, PIP Daisy	1
D 7623-8	Cable, 10" 22AWG With Terminals	1
F12725-2	Back Panel	1
P10286-6	PIP Interconnect Board	1

Chassis Front Assembly

CPN	Item	Quantity
A10031-1	Captive Nut, 8-32 x .060 Flush (For rack ears)	4
A10110-70812	Screw, 8-32 x .75 PH Head (For Grille)	5
A10101-5	Nylon Washer, .5 x .136 x .02 (For Grille)	5
A10173-1	Clip, Filter Grille	5
C 5297-4	Screw, 8-32 x .37 (For rack ears)	4
C 6487-0	Power Switch, 2 Pole 22 Amp Rocker	1
D 7119-7	Air Filter, 4.9 x 16.23	1
F11574J4	Front Panel Overlay	1
F12708-8	End Cap (For Rack ears)	2
F12712-0	Grille, Filter	1
F11577J7	4.024" Finger Guard	1

Main Chassis Assembly

CPN	Item	Quantity
A10094-3	Washer, #6 Internal Star, Black	11
A10094-4	Washer, #6 Internal Star, Zinc	2
A10101-13	Washer, .250OD X .175ID X .187L Fiber Spacer	5
A10101-14	Washer, .380OD x .170ID x .125	5
A10110-70605	Screw, 6-32 x .312 Taptite (For covers)	9

Main Chassis Assembly Cont.

<i>CPN</i>	<i>Item</i>	<i>Quantity</i>
D 7249-2	Label, 3 Position Voltage Gain	1
D 8501-5	Cover	2
A10086-10606	Screw, 6-32 x .375	2
A10086-70806	Screw, 8-32 x .37	1
A10094-6	Washer, #8 Internal Star	2
A10099-7	Shoulder Washer, #10 Nylon	4
A10109-10822	Screw, 8-18 x 1.375	2
A10110-70812	8-32 x .750 Tapdite	2
A10102-5	Hex Nut, 6-32	2
A10106-70806	Screw, #8 x .37 Hex Washer Head	4
A10192-1	Snap Bushing, OCB .500	4
C 6066-2	Resistor, 33 Ohm 10W	1
C 7858-1	Fan, 4.7" Ball Bearing	1
C 1811-6	4" Cable Tie	8
C 3163-0	Solder Lug, #6	1
C 6457-3	Screw, #8 x 3/8	2
C 6873-1	.875 Spacer Toggle Nut Plastic	2
C 7862-3	Board Support, 7/8 Locking	2
C 9491-9	Screw, 6-32 x .312	5
C10111-0	Button, Mtg.	2
D 6109-9	.25 Tab #8H Terminal Strip	1
D 7060-3	Sil Pad, 7 Mil 2.05 x .775	1
F11632-1	Bracket, Transformer Mtg.	1
F12643-7	Chassis, 7"	1

PIP-BB

<i>CPN</i>	<i>Item</i>	<i>Quantity</i>
M46011-9	PIP-BB Assembly	1
A10086-70806	Screw, 8-32 x .37	2
A10094-5	Lockwasher, #8 Internal Star Black	2
A10110-10608	Screw, 6-32 x .5	4
A10266-2202	Resistor, 22 Ohm .5W	2
C 3842-9	Barrier Block, 3 Position	2
C 6806-1	Capacitor, .01μF 100V	2
C 7161-0	Screw, #8 x 1/4 #6 PNHD	2
F12553J7	Panel	1
P10343-5	PC Board	1

Module and Schematic Information**Module History**

The Com Tech 1600B amplifier was introduced in 1990. Since then there have been several updates and revisions, some of which called for new modules. The following is a list of all modules used up to this date, January 1996.

Output Modules: (left and right are identical)

Q42758-5

Original Output Module on P10233-8 or P10265-5 board.

Q42889-8

Output Module on P10315-3 board.

Q42973-0

Output Module on P10337-7 board. No longer available. Use Q43192-6 as service replacement.

Q43051-4

Output Module on P10337-7 board. No longer available. Use Q43192-6 as service replacement.

Q43192-6

Output Module on P10396-3 board.

Main Modules

Q42782-5

Original B Version Main Module on D 7222-9 board. No longer available. Use Q43131-4 as a service replacement.

Q42919-3

Main Module on D 7605-5 board. No longer available. Use Q23131-4 as a service replacement.

Q43010-0

Main Module on D 7911-7 board. Use Q43131-4 as a service replacement.

Q43041-5

Main Module on D 7993-5 board. No longer available. Use Q43131-4 as service replacement.

Q43131-4

Main Module on D 8283-0 board.

Q43240-3

Main Module on D 8369-7 board. Detent Pots. Not reverse compatible.

Control Module:

- **Q42828-6**

CT-1600 Control Module on P10251-0 board. No longer available. Use Q43241-1 as service replacement.

- **Q43213-0**

CT-1600 Control Module on P10404-5 board. No longer available. Use Q43241-1 as service replacement.

- **Q43241-1**

CT-1600 Control Module on P10405-2 board.

Display Module

- Q42706-4

- CT display on D 7083-5 board.

Schematic Information

The schematics provided are representative only. There may be slight variations between amplifier to amplifier. These schematics are intended to be used for troubleshooting purposes only. For amplifiers with main boards D 7605-5 or earlier, refer to schematic number J0482-0. For amplifiers with main boards D 7911-7, D 7993-5, or D 8283-0 refer to schematic number J0525-6. For amplifiers with main board D 8369-7 refer to schematic number J0633-8.

Q42828-6 Control Module (P10251-0 board) Parts Lists

Capacitors

C700	C800	C 8426-6	.1μF 250V
C701	C801	C 8426-6	.1μF 250V
C900		C 8963-8	.47μF 250V

Diodes

D700	D800	C 3181-2	1N4148
D900		C 2851-1	1N4004

Relays

K1		C 7860-7	SPST
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Transistors

Q700	Q800	C 3625-8	PNP 2N4125
Q701	Q801	C 7663-5	Triac MAC224A4
Q900		C 3625-8	PNP 2N4125
Q901		C 3625-8	PNP 2N4125
Q902		C 3625-8	PNP 2N4125

Capacitors

C700	C800	C 8426-6	.1μF 250V
C701	C801	C 8426-6	.1μF 250V
C900		C 8963-8	.47μF 250V

Diodes

D700	D800	C 3181-2	1N4148
D900		C 2851-1	1N4004

Relays

K1		C 7860-7	SPST
----	--	----------	------

Transistors

Q700	Q800	C 3625-8	PNP 2N4125
Q701	Q801	C 7663-5	Triac MAC224A4
Q900		C 3625-8	PNP 2N4125
Q901		C 3625-8	PNP 2N4125
Q902		C 3625-8	PNP 2N4125

Resistors

R700	R800	A10266-1222	1.2K .5W
R701	R801	A10266-1812	180 .5W
R900		A10266-2722	2.7K .5W
R901		A10266-1021	1.5K .5W
R902		C 7669-2	300 10W
R903		C 7669-2	300 10W
R904		A10266-3902	39 .5W

ICs

U700	U800	C 7664-3	MOC3031 Optotriac
U901		C 7665-0	MOC3011 Optotriac
U902		C 7665-0	MOC3011 Optotriac

Misc.

Board		P10251-0	
J900		C 7672-6	8 Pin MTA Header
Tab Terminal		C 7817-7	W1-W3, W100-W102
			W200-W202
0 Ohm Jmp		C 5868-2	

Resistors

R700	R800	A10266-1222	1.2K .5W
R701	R801	A10266-1812	180 .5W
R900		A10266-2722	2.7K .5W
R901		A10266-1021	1.5K .5W
R902		C 7669-2	300 10W
R903		C 7669-2	300 10W
R904		A10266-3902	39 .5W

ICs

U700	U800	C 7664-3	MOC3031 Optotriac
U901		C 7665-0	MOC3011 Optotriac
U902		C 7665-0	MOC3011 Optotriac

Misc.

Board		P10251-0	
J900		C 7672-6	8 Pin MTA Header
Tab Terminal		C 7817-7	W1-W3, W100-W102
			W200-W202
0 Ohm Jmp		C 5868-2	

Capacitors

C700	C800	C 8426-6	.1μF 200V
C701	C801	C 8426-6	.1μF 200V
C900		C 8963-8	.47μF 250V
C901		C 8511-5	.047μF 250V

Diodes

D700	D800	C 3181-2	1N4148
D900		C 2851-1	1N4004

Relays

K1		C 7860-7	SPST
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Transistors

Q700	Q800	C 3625-8	PNP 2N4125
Q701	Q801	C 7663-5	Triac MAC224A4
Q900		C 3625-8	PNP 2N4125
Q901		C 3625-8	PNP 2N4125
Q902		C 3625-8	PNP 2N4125

Capacitors

C700	C800	C 8426-6	.1μF 250V
C701	C801	C 8426-6	.1μF 250V
C900		C 8963-8	.47μF 250V

Diodes

D700	D800	C 3181-2	1N4148
D900		C 2851-1	1N4004

Relays

K1		C 7860-7	SPST
----	--	----------	------

Transistors

Q700	Q800	C 3625-8	PNP 2N4125
Q701	Q801	C 7663-5	Triac MAC224A4
Q900		C 3625-8	PNP 2N4125
Q901		C 3625-8	PNP 2N4125
Q902		C 3625-8	PNP 2N4125

Resistors

R700	R800	A10266-1822	1.8K .5W
R701	R801	A10266-1812	180 .5W
R900		A10266-2722	2.7K .5W
R901		A10266-1021	1.5K .5W
R902		C 7669-2	300 10W
R903		C 7669-2	300 10W
R904		A10266-3902	39 .5W
R905		A10266-3602	36 .5W

ICs

U700	U800	C 7664-3	MOC3031 Optotriac
U901		C 7665-0	MOC3011 Optotriac

Misc.

Board		P10404-5	
J900		C 7672-6	8 Pin MTA Header
J901		C 7873-0	2 Pin MTA Header
Tab Terminal		C 7817-7	W1-W3, W100-W102, W200-W202

Resistors

R700	R800	A10266-3622	3.6K .5W
R701	R801	A10266-1812	180 .5W
R702	R802	A10266-3622	3.6K .5W
R703	R803	A10266-3622	3.6K .5W
R900		A10266-2722	2.7K .5W
R901		A10266-1021	1.5K .5W
R902		C 7669-2	300 10W
R903		C 7669-2	300 10W
R904		A10266-3902	39 .5W

ICs

U700	U800	C 7664-3	MOC3031 Optotriac
U901		C 7665-0	MOC3011 Optotriac
U902		C 7665-0	MOC3011 Optotriac

Misc.

Board		P10405-2	
J900		C 7672-6	8 Pin MTA Header
J901		C 7873-0	2 Pin MTA Header
Tab Terminal		C 7817-7	W1-W3, W100-W102 W200-W202
0 Ohm Jmp		C 5868-2	

Capacitors

C500	C600	C 6802-0	.47μF 50V
C901		C 6804-6	.1μF 50V

Diodes

D500	D600	C 3181-2	1N4148
D501	D601	C 3181-2	1N4148
D900		C 3533-4	1N966B 16V Zener
D901		C 3533-4	1N966B 16V Zener

LED's

E500	E600	C 7863-1	Green
E501	E601	C 4431-0	Yellow
E502	E602	C 7863-1	Green
E900		C 4342-9	Amber

Transistors

Q500	Q600	C 3625-8	2N4125
Q501	Q601	C 3625-8	2N4125
Q502	Q602	C 7458-0	2N4123
Q503	Q603	C 3625-8	2N4125

Integrated Circuits

U903	C 4345-2	LMT339
U904	C 7661-9	LM358N
U905	C 4345-2	LMT339

Misc.

Board	D 7083-5	
IC Socket	C 4508-5	16 Pin
LED Spacer	C 7712-0	
Cable	H42913-6	8 Cond 24AWG Ribbon Cable with Connector

Resistors

R500	R600	A10266-1031	10K
R501	R601	A10266-2221	2.2K
R502	R602	A10266-1051	1M
R503	R603	A102662751	2.7M
R504	R604	A10266-2032	20K .5W
R505	R605	A10266-2221	2.2K
R506	R606	A10266-4751	4.7M
R507	R607	A10266-2221	2.2K
R508	R608	A10266-1021	1K
R905		A10266-5141	510K
R906		A10266-2721	2.7K
R907		A10266-5141	510K
R908		A10266-3931	39K
R909		A10266-3931	39K
R910		A10266-4741	470K
R911		A10266-3931	39K
R912		A10266-1041	100K
R913		A10266-1031	10K
R914		A10266-8211	820
R915		A10266-3931	39K
R916		A10266-3631	36K
R917		A10266-8211	820
R918		A10266-3931	39K

Q42758-5 Output Module (P10233-8 or P10263-5 board) Parts List

Capacitors			Resistors		
C01	C 3978-1	.047μF	R00	C 2626-7	470
C02	C 2938-6	.1μF	R01	C 2872-7	100
C03	C 2938-6	.1μF	R02	C 3299-2	5.6 .5W
C04	C 6806-1	.01μF	R03	C 6486-2	.2 5W
C05	C 6806-1	.01μF	R04	C 6486-2	.2 5W
C06	C 6806-1	.01μF	R05	C 6486-2	.2 5W
C07	C 6807-9	.001μF	R06	C 6486-2	.2 5W
C08	C 6809-5	220pF	R07	C 6486-2	.2 5W
C09	C 6810-3	180pF	R08	C 6486-2	.2 5W
Diodes			R09	C 4479-9	22
D01	C 2851-1	1N4004	R10	C 2872-7	100
D02	C 2851-1	1N4004	R11	C 7317-8	2.7 5W
D03	C 2851-1	1N4004	R12	C 1001-4	2.7 1W
D04	C 2851-1	1N4004	R13	C 2626-7	470
D05	C 2851-1	1N4004	R15	C 6486-2	.2 5W
D06	C 2851-1	1N4004	R16	C 6486-2	.2 5W
D07	C 2851-1	1N4004	R17	C 6486-2	.2 5W
D08	C 2851-1	1N4004	R18	C 6486-2	.2 5W
D09	C 2851-1	1N4004	R19	C 6486-2	.2 5W
D10	C 2851-1	1N4004	R20	C 6486-2	.2 5W
D11	C 2851-1	1N4004	R21	C 3299-2	5.6 .5W
D12	C 2851-1	1N4004	R22	C 4479-9	22
Inductors			R23	C 6844-2	250 Pot LS Bias
L00	C 6592-6	1.3μH Output Coil	R24	C 4300-7	13K
L01	C 3510-2	470μH	R25	C 2628-3	2.2K
L02	C 3510-2	470μH	R26	C 6844-2	250 Pot HS Bias
Transistors			R27	C 6495-3	390
Q17	C 7271-7	NPN MPSU10	R28	C 4300-7	13K
Q19	C 7318-6	PNP MPSU60	R30*	C 6626-3*	102*
Note: Q18, S100, Driver Transistors, and Output Transistors are not included with Output Module. See Output Assembly parts list for these part numbers.			Misc.		
			Board	P10233-8 or P10263-5	
			Jumpers	C 5868-2	0 Ohm .25W
			J500 J600	C 7057-0	10 Pin Header
			<p>*Note: R30 is 102 Ohms in most units, though in some cases a different value may be used to match the installed S100/S200 LM334 (C5826-0) device grade. This is the standard value and is used with the most common LM334 grade, green. If the LM334 is marked with a blue dot, R30 should be a 107 Ohm resistor (A10265-10701); if it is marked with a yellow dot then R30 should be a 100 Ohm resistor (A10265-10001).</p>		

Q42889-8 Output Module (P10315-3 board) Parts List

Capacitors

C01	C 8511-5	.047μF 250V Ax
C02	C 8426-6	.1μF
C03	C 8426-6	.1μF
C04	C 6806-1	.01μF
C05	C 6806-1	.01μF
C06	C 6806-1	.01μF
C07	C 6807-9	.001μF
C08	C 6809-5	220pF
C09	C 6810-3	180pF

Diodes

D01	C 2851-1	1N4004
D02	C 2851-1	1N4004
D03	C 2851-1	1N4004
D04	C 2851-1	1N4004
D05	C 2851-1	1N4004
D06	C 2851-1	1N4004
D07	C 2851-1	1N4004
D08	C 2851-1	1N4004
D09	C 2851-1	1N4004
D10	C 2851-1	1N4004
D11	C 2851-1	1N4004
D12	C 2851-1	1N4004

Inductors

L00	C 6592-6	1.3μH Output Coil
L01	C 3510-2	470μH
L02	C 3510-2	470μH

Transistors

Q17	C 8508-1	NPN 2SC3298B
Q19	C 8509-9	PNP 2SA1306B

Note: Q18, S100, Driver Transistors, and Output Transistors are not included with Output Module. See Output Assembly parts list for part numbers.

Resistors

R00	C 2626-7	470
R01	C 2872-7	100
R02	C 7778-1	5.6 .5W Flame Proof
R03	C 6486-2	.2 5W
R04	C 6486-2	.2 5W
R05	C 6486-2	.2 5W
R06	C 6486-2	.2 5W
R07	C 6486-2	.2 5W
R08	C 6486-2	.2 5W
R09	C 7779-9	22 Flame proof
R10	C 2872-7	100
R11	C 7317-8	2.7 5W
R12	C 1001-4	2.7 1W
R13	C 2626-7	470
R15	C 6486-2	.2 5W
R16	C 6486-2	.2 5W
R17	C 6486-2	.2 5W
R18	C 6486-2	.2 5W
R19	C 6486-2	.2 5W
R20	C 6486-2	.2 5W
R21	C 7778-1	5.6 .5W Flame Proof
R22	C 7779-9	22 Flame Proof
R23	C 6844-2	250 Pot LS Bias
R24	C 4300-7	13K
R25	C 2628-3	2.2K
R26	C 6844-2	250 Pot HS Bias
R27	C 6495-3	390
R28	C 4300-7	13K
R30*	C 6626-3*	102*

Misc.

Board	P10315-3	
Jumpers	C 5868-2	0 Ohm .25W
Clips	D 6414-3	Q17/Q19 Hold Down
J500 J600	C 7057-0	10 Pin Header

*Note: R30 is 102 Ohms in most units, though in some cases a different value may be used to match the installed S100/S200 LM334 (C5826-0) device grade. This is the standard value and is used with the most common LM334 grade, green. If the LM334 is marked with a blue dot, R30 should be a 107 Ohm resistor (A10265-10701); if it is marked with a yellow dot then R30 should be a 100 Ohm resistor (A10265-10001).

Q42973-0 Output Module (P10337-7 board) Parts List

Capacitors			Resistors		
C01	C 8511-5	.047μF	R00	A10266-7501	75
C02	C 8426-6	.1μF	R01	A10266-1011	100
C03	C 8426-6	.1μF	R02	C 7778-1	5.6 .5W Flame Proof
C04	C 6806-1	.01μF	R03	D 6486-2	.2 5W
C05	C 6806-1	.01μF	R04	D 6486-2	.2 5W
C06	C 6806-1	.01μF	R05	D 6486-2	.2 5W
C07	C 6807-9	.001μF	R06	D 6486-2	.2 5W
C08	C 6810-3	180pF	R07	D 6486-2	.2 5W
C09	C 6809-5	220pF	R08	D 6486-2	.2 5W
C43	C 7697-3	.01μF	R09	C 7779-9	22 .5W Flame Proof
Diodes			R10	A10266-1011	100
D01	C 2851-1	1N4004	R11	C 7317-8	2.7 5W
D02	C 2851-1	1N4004	R12	A10266-2R73	2.7 1W
D03	C 2851-1	1N4004	R13	A10266-7501	75
D04	C 2851-1	1N4004	R14	A10266-2R73	2.7 1W
D05	C 2941-0	1N5402	R15	D 6486-2	.2 5W
D06	C 2941-0	1N5402	R16	D 6486-2	.2 5W
D07	C 2941-0	1N5402	R17	D 6486-2	.2 5W
D08	C 2941-0	1N5402	R18	D 6486-2	.2 5W
D09	C 2851-1	1N4004	R19	D 6486-2	.2 5W
D10	C 2851-1	1N4004	R20	D 6486-2	.2 5W
D11	C 2851-1	1N4004	R21	C 7778-1	5.6 .5W Flame Proof
D12	C 2851-1	1N4004	R22	C 7779-9	22 .5W Flame Proof
Inductors			R23	C 6844-2	250 Pot LS
L00	C 6592-6	Output Coil	R24	A10266-1331	13K
L01	C 3510-2	470μH	R25	A10266-2221	2.2K
L02	C 3510-2	470μH	R26	C 6844-2	250 Pot HS
Transistors			R27	A10266-3911	390
Q17	C 8508-1	NPN 2SC3298B	R28	A10266-1331	13K
Q19	C 8509-9	PNP 2SA1306B	R29	A10266-5101	51
Note: Q18, S100, Driver Transistors, and Output Transistors are not included with Output Module. See Output Assembly parts list for these part numbers.			R30*	A10265-10201*	102*
			Misc.		
			Board	P10337-7	
			Jumpers	C 5868-2	0 Ohm (Qty 6)
			Clips	D 6414-3	Q17/Q19
			J500 J600	C 7057-0	10 Pin Header
			*Note: R30 is 102 Ohms in most units, though in some cases a different value may be used to match the installed S100/S200 LM334 (C5826-0) device grade. This is the standard value and is used with the most common LM334 grade, green. If the LM334 is marked with a blue dot, R30 should be a 107 Ohm resistor (A10265-10701); if it is marked with a yellow dot then R30 should be a 100 Ohm resistor (A10265-10001).		

Q43051-4 Output Module (P10337-7 board) Parts List

Capacitors

C01	C 8511-5	.047μF 250V Ax
C02	C 8426-6	.1μF
C03	C 8426-6	.1μF
C04	C 6806-1	.01μF 100V Ax
C05	C 6806-1	.01μF 100V Ax
C06	C 6806-1	.01μF 100V Ax
C07	C 6807-9	.001μF 100V Ax
C08	C 6810-3	180pF
C09	C 6809-5	220pF
C43	C 7697-3	.01μF Disc

Diodes

D01	C 2851-1	1N4004
D02	C 2851-1	1N4004
D03	C 2851-1	1N4004
D04	C 2851-1	1N4004
D05	C 2941-0	1N5402
D06	C 2941-0	1N5402
D07	C 2941-0	1N5402
D08	C 2941-0	1N5402
D09	C 2851-1	1N4004
D10	C 2851-1	1N4004
D11	C 2851-1	1N4004
D12	C 2851-1	1N4004

Inductors

L00	C 6592-6	1.3μH Output Coil
L01	C 3510-2	470μH
L02	C 3510-2	470μH

Transistors

Q17	C 8508-1	NPN 2SC3298B
Q19	C 8509-9	PNP 2SA1306B

Note: Q18, S100, Driver Transistors, and Output Transistors are not included with Output Module. See Output Assembly parts list for these part numbers.

Resistors

R00	A10266-7501	75
R01	A10266-1011	100
R02	C 7778-1	5.6 .5W Flame Proof
R03	C 6486-2	.2 5W
R04	C 6486-2	.2 5W
R05	C 6486-2	.2 5W
R06	C 6486-2	.2 5W
R07	C 6486-2	.2 5W
R08	C 6486-2	.2 5W
R09	C 7779-9	22 .5W Flame Proof
R10	A10266-1011	100
R11	C 7317-8	2.7 5W
R12	A10266-2R73	2.7 1W
R13	A10266-7501	75
R14	A10266-2R73	2.7 1W
R15	C 6486-2	.2 5W
R16	C 6486-2	.2 5W
R17	C 6486-2	.2 5W
R18	C 6486-2	.2 5W
R19	C 6486-2	.2 5W
R20	C 6486-2	.2 5W
R21	C 7778-1	5.6 .5W Flame Proof
R22	C 7779-9	22 .5W Flame Proof
R23	C 6844-2	250 Pot LS Bias
R24	A10266-1331	13K
R25	A10266-2221	2.2K
R26	C 6844-2	250 Pot HS Bias
R27	A10266-3911	390
R28	A10266-1331	13K
R29	A10266-5101	51
R30*	A10265-10201*	102* 1%

Misc.

Board	P10337-7	
Z1-Z8	C 5868-2	0 Ohm Jumper
Clips	D 6414-3	Q17/Q19 Hold Down
J500	J600	C 7057-0
		10 Pin Header

*Note: R30 is 102 Ohms in most units, though in some cases a different value may be used to match the installed S100/S200 LM334 (C5826-0) device grade. This is the standard value and is used with the most common LM334 grade, green. If the LM334 is marked with a blue dot, R30 should be a 107 Ohm resistor (A10265-10701); if it is marked with a yellow dot then R30 should be a 100 Ohm resistor (A10265-10001).

Q43192-6 Output Module (P10396-3 board) Parts List Cont.

Capacitors			Resistors		
C01	C 8511-5	.047μF 250V Ax	R00	A10266-7501	75
C02	C 8426-6	.1μF	R01	A10266-1011	100
C03	C 8426-6	.1μF	R02	C 7778-1	5.6 .5W Flame Proof
C04	C 6806-1	.01μF 100V Ax	R03	C 6486-2	.2 5W
C05	C 6806-1	.01μF 100V Ax	R04	C 6486-2	.2 5W
C06	C 6806-1	.01μF 100V Ax	R05	C 6486-2	.2 5W
C07	C 6807-9	.001μF 100V Ax	R06	C 6486-2	.2 5W
C08	C 6810-3	180pF	R07	C 6486-2	.2 5W
C09	C 6809-5	220pF	R08	C 6486-2	.2 5W
C43	C 7697-3	.01μF Disc	R09	C 7779-9	22 .5W Flame Proof
Diodes			R10	A10266-1011	100
D01	C 2851-1	1N4004	R11	C 7317-8	2.7 5W
D02	C 2851-1	1N4004	R12	A10266-2R73	2.7 1W
D03	C 2851-1	1N4004	R13	A10266-7501	75
D04	C 2851-1	1N4004	R14	A10266-2R73	2.7 1W
D05	C 2941-0	1N5402	R15	C 6486-2	.2 5W
D06	C 2941-0	1N5402	R16	C 6486-2	.2 5W
D07	C 2941-0	1N5402	R17	C 6486-2	.2 5W
D08	C 2941-0	1N5402	R18	C 6486-2	.2 5W
D09	C 2851-1	1N4004	R19	C 6486-2	.2 5W
D10	C 2851-1	1N4004	R20	C 6486-2	.2 5W
D11	C 2851-1	1N4004	R21	C 7778-1	5.6 .5W Flame Proof
D12	C 2851-1	1N4004	R22	C 7779-9	22 .5W Flame Proof
Inductors			R23	C 6844-2	250 Pot LS Bias
L00	C 6592-6	1.3μH Output Coil	R24	A10266-1331	13K
L01	C 3510-2	470μH	R25	A10266-2221	2.2K
L02	C 3510-2	470μH	R26	C 6844-2	250 Pot HS Bias
Transistors			R27	A10266-3911	390
Q17	C 8508-1	NPN 2SC3298B	R28	A10266-1331	13K
Q19	C 8509-9	PNP 2SA1306B	R29	A10266-5101	51
			R30*	A10265-10201*	102* 1%
			Misc.		
			Board	P10396-3	
			Z1-Z7, Z9	C 5868-2	0 Ohm Jumper
			Z8	A10124-24	Solid Wire
			Clips	D 6414-3	Q17/Q19 Hold Down
			J500 J600	C 7057-0	10 Pin Header
Note: Q18, S100, Driver Transistors, and Output Transistors are not included with Output Module. See Output Assembly parts list for these part numbers.			*Note: R30 is 102 Ohms in most units, though in some cases a different value may be used to match the installed S100/S200 LM334 (C5826-0) device grade. This is the standard value and is used with the most common LM334 grade, green. If the LM334 is marked with a blue dot, R30 should be a 107 Ohm resistor (A10265-10701); if it is marked with a yellow dot then R30 should be a 100 Ohm resistor (A10265-10001).		

Q42782-5 Main Module (D 7222-9 board) Parts List

<i>Capacitors</i>			<i>Diodes</i>		
C1	C 4303-1	1000µF	D1	C 2851-1	1N4004
C2	C 3913-8	470µF	D2	C 2851-1	1N4004
C3	C 4303-1	1000µF	D3	C 2851-1	1N4004
C4	C 6802-0	.47µF	D4	C 2851-1	1N4004
C5	A10124-24	Jumper Wire	D5	C 2851-1	1N4004
C6	A10124-24	Jumper Wire	D6	C 2851-1	1N4004
C7	C 8897-8	.1µF	D7	C 2851-1	1N4004
C100	C200 C 8026-4	100µF	D9	C 5061-4	1N3070
C101	C201 C 3409-7	47pF	D104	D204 C 2851-1	1N4004
C103	C203 C 6805-3	.022µF	D105	D205 C 2851-1	1N4004
C104	C204 C 6805-3	.022µF	D106	D206 C 2851-1	1N4004
C105	C205 C 6812-9	47pF	D107	D207 C 2851-1	1N4004
C106	C206 C 6812-9	47pF	D108	D208 C 3181-2	1N4148
C107	C207 C 6804-6	.1µF	D109	D209 C 3181-2	1N4148
C108	C208 C 6814-5	12pF	D110	D210 C 3181-2	1N4148
C109	C209 C 6804-6	.1µF	D111	D211 C 5061-4	1N3070
C110	C210 C 5362-6	2.2µF	D112	D212 C 3181-2	1N4148
C111	C211 C 6804-6	.1µF	D113	D213 C 3181-2	1N4148
C112	C212 C 6803-8	.12µF	D114	D214 OPEN	
C113	C213 C 6802-0	.47µF	D115	D215 OPEN	
C114	C214 C 8026-4	100µF	D120	D220 C 3181-2	1N4148
C115	C215 C 8026-4	100µF	D121	D221 C 3181-2	1N4148
C116	C216 C 6802-0	.47µF	D122	D222 C 3181-2	1N4148
C117	C217 C 6803-8	.12µF	D123	D223 C 5061-4	1N3070
C118	C218 C 6814-5	12pF	D124	D224 C 3181-2	1N4148
C119	C219 C 6802-0	.47µF	D125	D225 C 3181-2	1N4148
C120	C220 C 6804-6	.1µF			
C122	C222 C 6811-1	100pF	<i>Transistors</i>		
C123	C223 C 6812-9	47pF	Q100	Q200 D 2961-7	NPN 2N3859A
C124	C224 C 6812-9	47pF	Q101	Q201 C 3578-9	PNP MPSA93
C129	C229 C 6814-5	12pF	Q102	Q202 C 3810-6	NPN MPSA43
C130	C230 C 6814-5	12pF	Q103	Q203 C 3786-8	PNP PN4250
C133	C233 C 6813-7	27pF	Q105	Q205 C 3578-9	PNP MPSA93
C134	C234 C 6805-3	.022µF	Q106	Q206 C 3625-8	NPN 2N4125
C135	C235 C 6805-3	.022µF	Q107	Q207 C 3786-8	PNP PN4250
C136	C236 C 6808-7	470pF	Q108	Q208 D 2961-7	NPN 2N3859A
C137	C237 C 6808-7	470pF	Q109	Q209 D 2961-7	NPN 2N3859A
C138	C238 C 6813-7	27pF	Q110	Q210 C 3810-6	NPN MPSA43
C139	C239 C 6813-7	27pF	Q112	Q212 C 3625-8	NPN 2N4125
C140	C240 C 6812-9	47pF	Q113	Q213 C 3625-8	NPN 2N4125
C141	C241 C 6812-9	47pF	Q115	Q215 D 2962-5	NPN MPS8097
C144	C244 C 8026-4	100µF	Q116	Q216 C 3786-8	PNP PN4250
C145	C245 C 6812-9	47pF	Q117	Q217 D 2961-7	NPN 2N3859A
C146	C246 C 6812-9	47pF	Q118	Q218 D 2961-7	NPN 2N3859A
C147	C247 C 6806-1	.01µF	Q119	Q219 C 3625-8	NPN 2N4125
C148	C248 C 6810-3	180pF	Q120	Q220 C 3625-8	NPN 2N4125
C149	C249 C 6808-7	470pF	Q121	Q221 C 7458-0	NPN 2N4123
C150	C250 C 6806-1	.01µF	Q122	Q222 C 7458-0	NPN 2N4123
C151	C251 C 6806-1	.01µF	Q123	Q223 C 7458-0	NPN 2N4123
C152	C252 C 6813-7	27pF	Q124	Q224 C 3625-8	NPN 2N4125
C153	C253 C 6804-6	.1µF			
C154	C254 C 6804-6	.1µF			
C156	C256 C 6804-6	.1µF			

Q42782-5 Main Module (D 7222-9 board) Parts List

Resistors		(.25W 5% unless noted otherwise)	
N100	N200	C 4669-4	Resistor Network
N101	N201	D 6081-0	Resistor Network
N102	N202	D 6082-8	Resistor Network
R1		A10265-10021	10K 1%
R2		OPEN	
R3		OPEN	
R4		A10265-10521	10.5K 1%
R7		A10266-1041	100K
R8		A10266-2031	20K
R9		A10266-6821	6.8K
R10		OPEN	
R16		A10266-6821	6.8K
R17		A10266-2031	20K
R18		A10266-1041	100K
R100	R200	C 7409-3	5K Linear Pot
R101	R201	A10265-10211	1.02K 1%
R102	R202	A10266-5111	510
R103	R203	A10265-20521	20.5K 1%
R104	R204	A10266-2721	2.7K
R105	R205	A10266-2721	2.7K
R106	R206	A10266-1231	12K
R107	R207	A10266-6831	68K
R108	R208	A10266-8211	820
R109	R209	A10266-6801	68
R110	R210	A10266-6831	68K
R111	R211	A10266-1231	12K
R112	R212	A10266-5131	51K
R113	R213	A10266-4721	4.7K
R114	R214	A10266-4721	4.7K
R115	R215	A10266-5141	510K
R116	R216	A10266-3351	3.3M
R117	R217	A10266-4731	47K
R118	R218	A10266-2711	270
R119	R219	A10266-3911	390
R120	R220	A10266-2711	270
R121	R221	C 5062-2	100K Pot (-ODEP)
R122	R222	A10266-2741	270K
R123	R223	A10266-2032	20K .5W
R124	R224	A10266-6821	6.8K
R125	R225	C 7782-3	100 Flame Proof
R126	R226	C 7782-3	100 Flame Proof
R127	R227	A10266-6821	6.8K
R128	R228	A10266-1031	10K
R129	R229	A10266-1041	100K
R130	R230	A10266-1041	100K
R131	R231	A10266-1031	10K
R132	R232	C 5062-2	100K Pot (+ODEP)
R133	R233	A10266-2741	270K
R134	R234	A10266-2032	20K .5W
R135	R235	C 7782-3	100 Flame Proof
R136	R236	A10266-6821	6.8K

R137	R237	C 7782-3	100 Flame Proof
R138	R238	A10266-6821	6.8K
R139	R239	A10266-8211	820
R140	R240	A10266-6801	68
R141	R241	A10266-1541	150K
R142	R242	A10266-1541	150K
R143	R243	A10266-1041	100K
R144	R244	A10266-1041	100K
R145	R245	A10266-1851	1.8M
R146	R246	A10266-1031	10K
R147	R247	C 7781-5	200 .5W Flame Proof
R148	R248	A10266-2721	2.7K
R149	R249	C 7781-5	200 .5W Flame Proof
R150	R250	A10266-2721	2.7K
R151	R251	A10266-1031	10K
R152	R252	A10265-1231	12K
R153	R253	JUMPER	A10124-24
R154	R254	C 8261-7	121K 0.1%
R155	R255	A10266-1321	1.3K
R156	R256	A10266-1321	1.3K
R157	R257	A10266-1321	1.3K
R158	R258	A10265-9121	9.1K
R159	R259	A10266-3321	3.3K
R160	R260	C 8260-9	10K 0.1%
R161	R261	A10266-4701	47
R162	R262	A10266-4701	47
R163	R263	C 8261-7	121K 0.1%
R164	R264	C 8260-9	10K 0.1%
R165	R265	C 8261-7	121K 0.1%
R166	R266	A10266-1851	1.8M
R167	R267	A10265-10011	1K 1%
R168	R268	A10265-95301	953 1%
R169	R269	A10266-2431	24K
R170	R270	A10265-10011	1K 1%
R171	R271	A10265-95301	953 1%
R172	R272	A10266-2431	24K
R173	R273	C 8260-9	10K 0.1%
R174	R274	A10265-24921	24.9K 1%
R175	R275	A10265-76811	7.68K 1%
R176	R276	A10265-24921	24.9K 1%
R177	R277	A10265-69811	6.98K 1%
R178	R278	A10266-1231	12K
R179	R279	A10266-1321	1.3K
R180	R280	A10266-4711	470
R181	R281	A10266-4721	4.7K
R182	R282	A10266-2201	22
R183	R283	A10266-2421	2.4K
R184	R284	A10266-4741	470K
R185	R285	A10266-2421	2.4K
R186	R286	A10266-2751	2.7M
R187	R287	A10266-3631	36K
R188	R288	A10266-3631	36K

R189	R289	A10266-2731	27K
R190	R290	A10266-2051	2M
R191	R291	A10266-3331	33K
R192	R292	A10266-1031	10K
R193	R293	A10266-1031	10K
R194	R294	A10266-2031	20K
R195	R295	A10266-4701	47
R196	R296	A10266-4721	4.7K
R197	R297	A10266-1031	10K
R198	R298	A10266-4721	4.7K
R199	R299	A10266-1031	10K

Switches

S2	OPEN	
S3	C 7960-5	Sensitivity
S4	C 6781-6	Switch, Stereo/Mono

IC's

U1	C 5095-2	UA7815
U2	C 5096-0	UA7915
U100	U200	C 6911-9
U101	U201	C 4345-2
U102	U202	C 4345-2
U103	U203	C 6910-1
U104	U204	C 6900-2
		MC34084P

Misc.

Board	D 7222-9	
Socket	C 3450-1	14 Pin (Qty 6)
Nut	A10102-5	Hex 6-32 (Qty 2)
Heatsink	C 5341-0	TO-220 (Qty 2)
Torq Spreader	C 6541-4	(Qty 2)
Washer	A10096-5	#6, Split (Qty 2)
Screw	A10240-0608	Stainless (Qty 2)
J1	C 7593-4	5 Pin Header
J2	C 4508-5	16 Pin Socket
J11	C 7526-4	3 Pin Header
J100	J200	OPEN
J500	J800	D 6619-7
J600	J700	D 6620-5
Cable Tie	C 1811-6	10 Inch Ribbon
		6 Inch Ribbon
		(Qty 4)

Q42919-3 Main Module (D 7605-5 board) Parts List

<i>Capacitors</i>				C154	C254	C 5243-8	.1µF 250V
C1	C	4303-1	1000µF	C155	C255	C 6804-6	.1µF
C2	C	3913-8	470µF	C156	C256	C 6804-6	.1µF
C3	C	4303-1	1000µF	C157	C257	C 6806-1	.01µF
C4	C	6802-0	.47µF	<i>Diodes</i>			
C5	A10124-24	Jumper Wire		D1		C 2851-1	1N4004
C6	A10124-24	Jumper Wire		D2		C 2851-1	1N4004
C7	C	6804-6	.1µF	D3		C 2851-1	1N4004
C100	C200	C 5311-3	22µF	D4		C 2851-1	1N4004
C101	C201	C 2821-4	10pF	D5		C 2851-1	1N4004
C103	C203	C 6805-3	.022µF	D6		C 2851-1	1N4004
C104	C204	C 6805-3	.022µF	D7		C 2851-1	1N4004
C105	C205	C 6812-9	47pF	D9		C 5061-4	1N3070
C106	C206	C 6812-9	47pF	D104	D204	C 2851-1	1N4004
C107	C207	C 6804-6	.1µF	D105	D205	C 2851-1	1N4004
C108	C208	C 6814-5	12pF	D106	D206	C 2851-1	1N4004
C109	C209	C 7417-6	.0033µF	D107	D207	C 2851-1	1N4004
C110	C210	C 5362-6	2.2µF	D108	D208	C 3181-2	1N4148
C111	C211	C 6804-6	.1µF	D109	D209	C 3181-2	1N4148
C112	C212	C 6803-8	.12µF	D110	D210	C 3181-2	1N4148
C113	C213	C 6802-0	.47µF	D111	D211	C 5061-4	1N3070
C114	C214	C 8026-4	100µF	D112	D212	C 3181-2	1N4148
C115	C215	C 8026-4	100µF	D113	D213	C 3181-2	1N4148
C116	C216	C 6802-0	.47µF	D114	D214	OPEN	
C117	C217	C 6803-8	.12µF	D115	D215	OPEN	
C118	C218	C 6814-5	12pF	D120	D220	C 3181-2	1N4148
C119	C219	C 6802-0	.47µF	D121	D221	C 3181-2	1N4148
C120	C220	C 6804-6	.1µF	D122	D222	C 3181-2	1N4148
C122	C222	C 6811-1	100pF	D123	D223	C 5061-4	1N3070
C123	C223	C 6812-9	47pF	D124	D224	C 3181-2	1N4148
C124	C224	C 6812-9	47pF	D125	D225	C 3181-2	1N4148
C129	C229	C 6814-5	12pF	<i>Transistors</i>			
C130	C230	C 6813-7	27pF	Q100	Q200	D 2961-7	NPN 2N3859A
C133	C233	C 6813-7	27pF	Q101	Q201	C 3578-9	PNP MPSA93
C134	C234	C 6805-3	.022µF	Q102	Q202	C 3810-6	NPN MPSA43
C135	C235	C 6805-3	.022µF	Q103	Q203	C 3786-8	PNP PN4250
C136	C236	C 6808-7	470pF	Q105	Q205	C 3578-9	PNP MPSA93
C137	C237	C 6808-7	470pF	Q106	Q206	C 3625-8	NPN 2N4125
C138	C238	C 6813-7	27pF	Q107	Q207	C 3786-8	PNP PN4250
C139	C239	C 6813-7	27pF	Q108	Q208	D 2961-7	NPN 2N3859A
C140	C240	C 6812-9	47pF	Q109	Q209	D 2961-7	NPN 2N3859A
C141	C241	C 6812-9	47pF	Q110	Q210	C 3810-6	NPN MPSA43
C144	C244	C 8026-4	100µF	Q112	Q212	C 3625-8	NPN 2N4125
C145	C245	C 6812-9	47pF	Q113	Q213	C 3625-8	NPN 2N4125
C146	C246	C 6812-9	47pF	Q115	Q215	D 2962-5	NPN MPS8097
C147	C247	C 6806-1	.01µF	Q116	Q216	C 3786-8	PNP PN4250
C148	C248	C 6810-3	180pF	Q117	Q217	D 2961-7	NPN 2N3859A
C149	C249	C 6808-7	470pF	Q118	Q218	D 2961-7	NPN 2N3859A
C150	C250	C 6806-1	.01µF	Q119	Q219	C 3625-8	NPN 2N4125
C151	C251	C 6806-1	.01µF	Q120	Q220	C 3625-8	NPN 2N4125
C152	C252	C 6950-7	82pF				
C153	C253	C 6804-6	.1µF				

Q42919-3 Main Module (D 7605-5 board) Parts List

Q121	Q221	C 7458-0	NPN 2N4123	R132	R232	C 5062-2	100K Pot (+ODEP)
Q122	Q222	C 7458-0	NPN 2N4123	R133	R233	A10266-2741	270K
Q123	Q223	C 7458-0	NPN 2N4123	R134	R234	A10266-2032	20K .5W
Q124	Q224	C 3625-8	NPN 2N4125	R135	R235	C 7782-3	100 Flame Proof
Resistors (.25W 5% unless noted otherwise)				R136	R236	A10266-6821	6.8K
N100	N200	C 4669-4	Resistor Network	R137	R237	C 7782-3	100 Flame Proof
N101	N201	D 6081-0	Resistor Network	R138	R238	A10266-6821	6.8K
N102	N202	D 6082-8	Resistor Network	R139	R239	A10266-8211	820
R1		A10265-53621	53.6K 1%	R140	R240	A10266-6801	68
R2		A10266-2231	22K	R141	R241	A10266-1541	150K
R3		A10266-2231	22K	R142	R242	A10266-1541	150K
R4		A10265-46421	46.4K 1%	R143	R243	A10266-1041	100K
R7		A10266-1041	100K	R144	R244	A10266-1041	100K
R8		A10266-2031	20K	R145	R245	A10266-1851	1.8M
R9		A10266-5121	5.1K	R146	R246	A10266-1231	12K
R10		OPEN		R147	R247	C 1007-1	100
R16		A10266-5121	5.1K	R148	R248	A10266-2721	2.7K
R17		A10266-2031	20K	R149	R249	C 1007-1	100
R18		A10266-1041	100K	R150	R250	A10266-2721	2.7K
R100	R200	C 7409-3	5K Linear Pot	R151	R251	A10266-1231	12K
R101	R201	A10265-49911	4.99K 1%	R152	R252	A10266-1231	12K
R102	R202	A10266-5111	510	R153	R253	JUMPER	A10124-24
R103	R203	A10265-10031	100K 1%	R154	R254	A10265-12131	121K 1%
R104	R204	A10266-2721	2.7K	R155	R255	A10266-1321	1.3K
R105	R205	A10266-2721	2.7K	R156	R256	A10266-1321	1.3K
R106	R206	A10266-1231	12K	R157	R257	A10266-1321	1.3K
R107	R207	A10266-6831	68K	R158	R258	A10266-9121	9.1K
R108	R208	A10266-8211	820	R159	R259	A10266-1021	1K
R109	R209	A10266-6801	68	R160	R260	A10266-10021	10K 1%
R110	R210	A10266-6831	68K	R161	R261	A10266-4701	47
R111	R211	A10266-1231	12K	R162	R262	A10266-4701	47
R112	R212	A10266-5131	51K	R163	R263	A10265-12131	121K 1%
R113	R213	A10266-4721	4.7K	R164	R264	A10265-10021	10K 1%
R114	R214	A10266-4721	4.7K	R165	R265	A10265-12131	121K 1%
R115	R215	A10266-5141	510K	R166	R266	A10266-1851	1.8M
R116	R216	A10266-2751	2.7M	R167	R267	A10265-10011	1K 1%
R117	R217	A10266-4731	47K	R168	R268	A10265-95301	953 1%
R118	R218	A10266-2711	270	R169	R269	A10266-2431	24K
R119	R219	A10266-3911	390	R170	R270	A10265-10011	1K 1%
R120	R220	A10266-2711	270	R171	R271	A10265-95301	953 1%
R121	R221	C 5062-2	100K Pot (-ODEP)	R172	R272	A10266-2431	24K
R122	R222	A10266-2741	270K	R173	R273	A10265-10021	10K 1%
R123	R223	A10266-2032	20K .5W	R174	R274	A10265-24921	24.9K 1%
R124	R224	A10266-6821	6.8K	R175	R275	A10265-76811	7.68K 1%
R125	R225	C 7782-3	100 Flame Proof	R176	R276	A10265-24921	24.9K 1%
R126	R226	C 7782-3	100 Flame Proof	R177	R277	A10265-69811	6.98K 1%
R127	R227	A10266-6821	6.8K	R178	R278	A10266-1231	12K
R128	R228	A10266-1031	10K	R179	R279	A10266-1321	1.3K
R129	R229	A10266-1041	100K	R180	R280	A10266-4711	470
R130	R230	A10266-1041	100K	R181	R281	A10266-4721	4.7K
R131	R231	A10266-1031	10K	R182	R282	A10266-2201	22
				R183	R283	A10266-2421	2.4K

Q42919-3 Main Module (D 7605-5 board) Parts List

R184	R284	A10266-4741	470K	Switches		
R185	R285	A10266-2421	2.4K	S2	OPEN	
R186	R286	A10266-2751	2.7M	S3	C 7960-5	Sensitivity
R187	R287	A10266-3631	36K	S4	C 6781-6	Switch, Stereo/Mono
R188	R288	A10266-3631	36K	IC's		
R189	R289	A10266-2731	27K	U1	C 5095-2	UA7815
R190	R290	A10266-2051	2M	U2	C 5096-0	UA7915
R191	R291	A10266-3331	33K	U100	U200	C 6911-9
R192	R292	A10266-1031	10K	U101	U201	C 4345-2
R193	R293	A10266-1031	10K	U102	U202	C 4345-2
R194	R294	A10266-1041	100K	U103	U203	C 6910-1
R195	R295	A10266-3021	3K	U104	U204	C 7558-7
R196	R296	A10266-4721	4.7K			MC33079P
R197	R297	A10266-1031	10K	Misc.		
R198	R298	A10266-4721	4.7K	Board	D 7605-5	
R199	R299	A10266-1031	10K	Socket	C 3450-1	14 Pin (Qty 6)
R906	R1006	A10266-1541	150K	Nut	A10102-5	Hex 6-32 (Qty 2)
R907	R1007	A10266-1541	150K	Heatsink	C 5341-0	TO-220 (Qty 2)
R908	R1008	A10266-1541	150K	Torq Spreader	C 6541-4	(Qty 2)
R909	R1009	A10266-4741	470K	Washer	A10096-5	#6, Split (Qty 2)
R910	R1010	A10266-4741	470K	Screw	A10240-0608	Stainless (Qty 2)
R911	R1011	A10266-1521	1.5K	J1	C 7593-4	5 Pin Header
R912	R1012	A10266-4711	470	J2	C 4508-5	16 Pin Socket
R913	R1013	A10266-1051	1M	J11	C 7526-4	3 Pin Header
R914	R1014	A10266-1051	1M	J100	J200	OPEN
R915	R1015	A10266-2201	22	J500	J800	D 6619-7
R916	R1016	A10266-2201	22	J600	J700	D 6620-5
				Cable Tie	C 1811-6	10 Inch Ribbon 6 Inch Ribbon (Qty 4)

Q43010-0 Main Module (D 7911-7 board) Parts List

<i>Capacitors</i>				C154	C254	C 5243-8	.1µF 250V
C1		C 4303-1	1000µF	C155	C255	C 6804-6	.1µF
C2		C 3913-8	470µF	C156	C256	C 6804-6	.1µF
C3		C 4303-1	1000µF	C157	C257	C 6806-1	.01µF
C4		C 6802-0	.47µF	<i>Diodes</i>			
C5		A10124-24	Jumper Wire	D1		C 2851-1	1N4004
C6		A10124-24	Jumper Wire	D2		C 2851-1	1N4004
C7		C 6804-6	.1µF	D3		C 2851-1	1N4004
C100	C200	C 5311-3	22µF	D4		C 2851-1	1N4004
C101	C201	C 2821-4	10pF	D5		C 2851-1	1N4004
C103	C203	C 6805-3	.022µF	D6		C 2851-1	1N4004
C104	C204	C 6805-3	.022µF	D7		C 2851-1	1N4004
C105	C205	C 6812-9	47pF	D9		C 5061-4	1N3070
C106	C206	C 6812-9	47pF	D104	D204	C 2851-1	1N4004
C107	C207	C 6804-6	.1µF	D105	D205	C 2851-1	1N4004
C108	C208	C 6814-5	12pF	D106	D206	C 2851-1	1N4004
C109	C209	C 7417-6	.0033µF	D107	D207	C 2851-1	1N4004
C110	C210	C 5362-6	2.2µF	D108	D208	C 3181-2	1N4148
C111	C211	C 6804-6	.1µF	D109	D209	C 3181-2	1N4148
C112	C212	C 6803-8	.12µF	D110	D210	C 3181-2	1N4148
C113	C213	C 6802-0	.47µF	D111	D211	C 5061-4	1N3070
C114	C214	C 8026-4	100µF	D112	D212	C 3181-2	1N4148
C115	C215	C 8026-4	100µF	D113	D213	C 3181-2	1N4148
C116	C216	C 6802-0	.47µF	D114	D214	OPEN	
C117	C217	C 6803-8	.12µF	D115	D215	OPEN	
C118	C218	C 6814-5	12pF	D120	D220	C 3181-2	1N4148
C119	C219	C 6802-0	.47µF	D121	D221	C 3181-2	1N4148
C120	C220	C 6804-6	.1µF	D122	D222	C 3181-2	1N4148
C122	C222	C 6811-1	100pF	D123	D223	C 5061-4	1N3070
C123	C223	C 6812-9	47pF	D124	D224	C 3181-2	1N4148
C124	C224	C 6812-9	47pF	D125	D225	C 3181-2	1N4148
C129	C229	C 6814-5	12pF	<i>Transistors</i>			
C130	C230	C 6813-7	27pF	Q100	Q200	D 2961-7	NPN 2N3859A
C133	C233	C 6813-7	27pF	Q101	Q201	C 3578-9	PNP MPSA93
C134	C234	C 6805-3	.022µF	Q102	Q202	C 3810-6	NPN MPSA43
C135	C235	C 6805-3	.022µF	Q103	Q203	C 3786-8	PNP PN4250
C136	C236	C 6808-7	470pF	Q105	Q205	C 3578-9	PNP MPSA93
C137	C237	C 6808-7	470pF	Q106	Q206	C 3625-8	NPN 2N4125
C138	C238	C 6813-7	27pF	Q107	Q207	C 3786-8	PNP PN4250
C139	C239	C 6813-7	27pF	Q108	Q208	D 2961-7	NPN 2N3859A
C140	C240	C 6812-9	47pF	Q109	Q209	D 2961-7	NPN 2N3859A
C141	C241	C 6812-9	47pF	Q110	Q210	C 3810-6	NPN MPSA43
C144	C244	C 8026-4	100µF	Q112	Q212	C 3625-8	NPN 2N4125
C145	C245	C 6812-9	47pF	Q113	Q213	C 3625-8	NPN 2N4125
C146	C246	C 6812-9	47pF	Q115	Q215	D 2962-5	NPN MPS8097
C147	C247	C 6806-1	.01µF	Q116	Q216	C 3786-8	PNP PN4250
C148	C248	C 6810-3	180pF	Q117	Q217	D 2961-7	NPN 2N3859A
C149	C249	C 6808-7	470pF	Q118	Q218	D 2961-7	NPN 2N3859A
C150	C250	C 6806-1	.01µF	Q119	Q219	C 3625-8	NPN 2N4125
C151	C251	C 6806-1	.01µF	Q120	Q220	C 3625-8	NPN 2N4125
C152	C252	C 6950-7	82pF				
C153	C253	C 6804-6	.1µF				

Q43010-0 Main Module (D 7911-7 board) Parts List

Q121	Q221	C 7458-0	NPN 2N4123	R132	R232	C 5062-2	100K Pot (+ODEP)
Q122	Q222	C 7458-0	NPN 2N4123	R133	R233	A10266-2741	270K
Q123	Q223	C 7458-0	NPN 2N4123	R134	R234	A10266-2032	20K .5W
Q124	Q224	C 3625-8	NPN 2N4125	R135	R235	C 7782-3	100 Flame Proof
Resistors (.25W 5% unless noted otherwise)				R136	R236	A10266-6821	6.8K
N100	N200	C 4669-4	Resistor Network	R137	R237	C 7782-3	100 Flame Proof
N101	N201	D 6081-0	Resistor Network	R138	R238	A10266-6821	6.8K
N102	N202	D 6082-8	Resistor Network	R139	R239	A10266-8211	820
R1		A10265-53621	53.6K 1%	R140	R240	A10266-6801	68
R2		A10266-2231	22K	R141	R241	A10266-1541	150K
R3		A10266-2231	22K	R142	R242	A10266-1541	150K
R4		A10265-46421	46.4K 1%	R143	R243	A10266-1041	100K
R7		A10266-1041	100K	R144	R244	A10266-1041	100K
R8		A10266-2031	20K	R145	R245	A10266-1851	1.8M
R9		A10266-5121	5.1K	R146	R246	A10266-1231	12K
R10		OPEN		R147	R247	C 1007-1	100
R16		A10266-5121	5.1K	R148	R248	A10266-2721	2.7K
R17		A10266-2031	20K	R149	R249	C 1007-1	100
R18		A10266-1041	100K	R150	R250	A10266-2721	2.7K
R100	R200	C 7409-3	5K Linear Pot	R151	R251	A10266-1231	12K
R101	R201	A10265-49911	4.99K 1%	R152	R252	A10266-1231	12K
R102	R202	A10266-5111	510	R153	R253	JUMPER	A10124-24
R103	R203	A10265-10031	100K 1%	R154	R254	A10265-12131	121K 1%
R104	R204	A10266-2721	2.7K	R155	R255	A10266-1321	1.3K
R105	R205	A10266-2721	2.7K	R156	R256	A10266-1321	1.3K
R106	R206	A10266-1231	12K	R157	R257	A10266-1321	1.3K
R107	R207	A10266-6831	68K	R158	R258	A10266-9121	9.1K
R108	R208	A10266-8211	820	R159	R259	A10266-1021	1K
R109	R209	A10266-6801	68	R160	R260	A10266-10021	10K 1%
R110	R210	A10266-6831	68K	R161	R261	A10266-4701	47
R111	R211	A10266-1231	12K	R162	R262	A10266-4701	47
R112	R212	A10266-5131	51K	R163	R263	A10265-12131	121K 1%
R113	R213	A10266-4721	4.7K	R164	R264	A10265-10021	10K 1%
R114	R214	A10266-4721	4.7K	R165	R265	A10265-12131	121K 1%
R115	R215	A10266-5141	510K	R166	R266	A10266-1851	1.8M
R116	R216	A10266-2751	2.7M	R167	R267	A10265-10011	1K 1%
R117	R217	A10266-4731	47K	R168	R268	A10265-95301	953 1%
R118	R218	A10266-2711	270	R169	R269	A10266-2431	24K
R119	R219	A10266-3911	390	R170	R270	A10265-10011	1K 1%
R120	R220	A10266-2711	270	R171	R271	A10265-95301	953 1%
R121	R221	C 5062-2	100K Pot (-ODEP)	R172	R272	A10266-2431	24K
R122	R222	A10266-2741	270K	R173	R273	A10265-10021	10K 1%
R123	R223	A10266-2032	20K .5W	R174	R274	A10265-24921	24.9K 1%
R124	R224	A10266-6821	6.8K	R175	R275	A10265-76811	7.68K 1%
R125	R225	C 7782-3	100 Flame Proof	R176	R276	A10265-24921	24.9K 1%
R126	R226	C 7782-3	100 Flame Proof	R177	R277	A10265-69811	6.98K 1%
R127	R227	A10266-6821	6.8K	R178	R278	A10266-1231	12K
R128	R228	A10266-1031	10K	R179	R279	A10266-1321	1.3K
R129	R229	A10266-1041	100K	R180	R280	A10266-4711	470
R130	R230	A10266-1041	100K	R181	R281	A10266-4721	4.7K
R131	R231	A10266-1031	10K	R182	R282	A10266-2201	22
				R183	R283	A10266-2421	2.4K

Q43010-0 Main Module (D 7911-7 board) Parts List

R184	R284	A10266-4741	470K	Switches		
R185	R285	A10266-2421	2.4K	S2	OPEN	
R186	R286	A10266-2751	2.7M	S3	C 7960-5	Sensitivity
R187	R287	A10266-3631	36K	S4	C 6781-6	Switch, Stereo/Mono
R188	R288	A10266-3631	36K	IC's		
R189	R289	A10266-2731	27K	U1	C 5095-2	UA7815
R190	R290	A10266-2051	2M	U2	C 5096-0	UA7915
R191	R291	A10266-3331	33K	U100	U200	C 6911-9
R192	R292	A10266-1031	10K	U101	U201	C 4345-2
R193	R293	A10266-1031	10K	U102	U202	C 4345-2
R194	R294	A10266-1041	100K	U103	U203	C 6910-1
R195	R295	A10266-3021	3K	U104	U204	C 7558-7
R196	R296	A10266-4721	4.7K			MC33079P
R197	R297	A10266-1031	10K	Misc.		
R198	R298	A10266-4721	4.7K	Board	D 7605-5	
R199	R299	A10266-1031	10K	Socket	C 3450-1	14 Pin (Qty 6)
R906	R1006	A10266-1541	150K	Nut	A10102-5	Hex 6-32 (Qty 2)
R907	R1007	A10266-1541	150K	Heatsink	C 5341-0	TO-220 (Qty 2)
R908	R1008	A10266-1541	150K	Torq Spreader	C 6541-4	(Qty 2)
R909	R1009	A10266-4741	470K	Washer	A10096-5	#6, Split (Qty 2)
R910	R1010	A10266-4741	470K	Screw	A10240-0608	Stainless (Qty 2)
R911	R1011	A10266-1521	1.5K	J1	C 7593-4	5 Pin Header
R912	R1012	A10266-4711	470	J2	C 4508-5	16 Pin Socket
R913	R1013	A10266-1051	1M	J11	C 7526-4	3 Pin Header
R914	R1014	A10266-1051	1M	J100	J200	OPEN
R915	R1015	A10266-2201	22	J500	J800	D 6619-7
R916	R1016	A10266-2201	22	J600	J700	D 6620-5
				Cable Tie	C 1811-6	10 Inch Ribbon 6 Inch Ribbon (Qty 4)

Q43041-5 Main Module (D 7993-5 board) Parts List

<i>Capacitors</i>				C155	C255	C 8897-8	.1µF
C1		C 4303-1	1000µF	C156	C256	C 8897-8	.1µF
C2		C 3913-8	470µF	C157	C257	C 6806-1	.01µF
C4		C 6802-0	.47µF	<i>Diodes</i>			
C5		A10124-24	Jumper Wire	D1		C 2851-1	1N4004
C6		A10124-24	Jumper Wire	D2		C 2851-1	1N4004
C7		C 8897-8	.1µF	D3		C 2851-1	1N4004
C100	C200	C 5311-3	22µF	D4		C 2851-1	1N4004
C101	C201	C 2821-4	10pF	D5		C 2851-1	1N4004
C103	C203	C 6805-3	.022µF	D6		C 2851-1	1N4004
C104	C204	C 6805-3	.022µF	D7		C 2851-1	1N4004
C105	C205	C 6812-9	47pF	D108	D208	C 3181-2	1N4148
C106	C206	C 6812-9	47pF	D109	D209	C 3181-2	1N4148
C107	C207	C 8897-8	.1µF	D110	D210	C 3181-2	1N4148
C108	C208	C 6814-5	12pF	D111	D211	C 5061-4	1N3070
C109	C209	C 7417-6	.0033µF	D112	D212	C 3181-2	1N4148
C110	C210	C 5362-6	2.2µF	D113	D213	C 3181-2	1N4148
C111	C211	C 8897-8	.1µF	D114	D214	OPEN	
C112	C212	C 8992-7	.56µF	D115	D215	OPEN	
C113	C213	C 8988-5	33µF	D120	D220	C 3181-2	1N4148
C114	C214	C 8854-9	100µF	D121	D221	C 3181-2	1N4148
C115	C215	C 8854-9	100µF	D122	D222	C 3181-2	1N4148
C116	C216	C 8988-5	33µF	D123	D223	C 5061-4	1N3070
C117	C217	C 8992-7	.56µF	D124	D224	C 3181-2	1N4148
C118	C218	C 6814-5	12pF	D125	D225	C 3181-2	1N4148
C119	C219	C 6802-0	.47µF	D126	D226	C 5061-4	1N3070
C120	C220	C 8897-8	.1µF	D127	D227	C 5061-4	1N3070
C122	C222	C 6811-1	100pF	D128	D228	C 5061-4	1N3070
C123	C223	C 6812-9	47pF	D129	D229	C 3181-2	1N4148
C124	C224	C 6812-9	47pF	D130	D230	C 3181-2	1N4148
C129	C229	C 6814-5	12pF	D131	D231	C 3181-2	1N4148
C130	C230	C 6813-7	27pF	D132	D232	C 3181-2	1N4148
C133	C233	C 6813-7	27pF	<i>Transistors</i>			
C134	C234	C 6805-3	.022µF	Q100	Q200	D 2961-7	NPN 2N3859A
C135	C235	C 6805-3	.022µF	Q101	Q201	C 3578-9	PNP MPSA93
C136	C236	C 6808-7	470pF	Q102	Q202	C 3810-6	NPN MPSA43
C137	C237	C 6808-7	470pF	Q103	Q203	C 3786-8	PNP PN4250
C138	C238	C 6813-7	27pF	Q105	Q205	C 3578-9	PNP MPSA93
C139	C239	C 6813-7	27pF	Q106	Q206	C 3625-8	NPN 2N4125
C140	C240	C 6812-9	47pF	Q107	Q207	C 3786-8	PNP PN4250
C141	C241	C 6812-9	47pF	Q108	Q208	D 2961-7	NPN 2N3859A
C144	C244	C 8576-8	100µF	Q109	Q209	D 2961-7	NPN 2N3859A
C145	C245	C 6812-9	47pF	Q110	Q210	C 3810-6	NPN MPSA43
C146	C246	C 6812-9	47pF	Q112	Q212	C 3625-8	NPN 2N4125
C147	C247	C 6806-1	.01µF	Q113	Q213	C 3625-8	NPN 2N4125
C148	C248	C 6810-3	180pF	Q115	Q215	D 2962-5	NPN MPS8097
C149	C249	C 6808-7	470pF	Q116	Q216	C 3786-8	PNP PN4250
C150	C250	C 6806-1	.01µF	Q117	Q217	D 2961-7	NPN 2N3859A
C151	C251	C 6806-1	.01µF	Q118	Q218	D 2961-7	NPN 2N3859A
C152	C252	C 6950-7	82pF 5%	Q119	Q219	C 3625-8	NPN 2N4125
C153	C253	C 8897-8	.1µF				
C154	C254	C 8426-6	.1µF 250V				

Q43041-5 Main Module (D 7993-5 board) Parts List

Q120	Q220	C 3625-8	NPN 2N4125	R131	R231	A10266-1031	10K
Q121	Q221	C 7458-0	NPN 2N4123	R132	R232	C 5062-2	100K Pot (+ODEP)
Q122	Q222	C 7458-0	NPN 2N4123	R133	R233	A10266-2741	270K
Q123	Q223	C 7458-0	NPN 2N4123	R134	R234	A10266-2032	20K .5W
Q124	Q224	C 3625-8	NPN 2N4125	R135	R235	C 7782-3	100 Flame Proof
Resistors				R136	R236	A10266-6821	6.8K
			(.25W 5% unless noted otherwise)	R137	R237	C 7782-3	100 Flame Proof
N101	N201	D 7945-5	Resistor Network	R138	R238	A10266-6821	6.8K
N102	N202	D 6082-8	Resistor Network	R139	R239	A10266-8211	820
R1		A10265-53621	53.6K 1%	R140	R240	A10266-6801	68
R2		OPEN		R141	R241	A10266-1541	150K
R3		OPEN		R142	R242	A10266-1541	150K
R4		A10265-46421	46.4K 1%	R143	R243	A10266-1041	100K
R7		A10266-1041	100K	R144	R244	A10266-1041	100K
R8		A10266-2031	20K	R145	R245	A10266-1851	1.8M
R9		A10266-5121	5.1K	R146	R246	A10266-1031	10K
R10		OPEN		R147	R247	C 7781-5	200 .5W Flame Proof
R16		A10266-5121	5.1K	R148	R248	A10266-2721	2.7K
R17		A10266-2031	20K	R149	R249	C 7781-5	200 .5W Flame Proof
R18		A10266-1041	100K	R150	R250	A10266-2721	2.7K
R100	R200	C 7409-3	5K Linear Pot	R151	R251	A10266-1031	10K
R101	R201	A10265-49911	4.99K 1%	R152	R252	A10265-11821	11.8K 1%
R102	R202	A10266-5111	510	R153	R253	JUMPER	A10124-24
R103	R203	A10265-10031	100K 1%	R154	R254	C 8261-7	121K 0.1%
R104	R204	A10266-2721	2.7K	R155	R255	A10266-1321	1.3K
R105	R205	A10266-2721	2.7K	R156	R256	A10266-1321	1.3K
R106	R206	A10266-1231	12K	R157	R257	A10266-1321	1.3K
R107	R207	A10266-6831	68K	R158	R258	A10265-11321	11.3K 1%
R108	R208	A10266-8211	820	R159	R259	A10266-1021	1K
R109	R209	A10266-6801	68	R160	R260	C 8260-9	10K 0.1%
R110	R210	A10266-6831	68K	R161	R261	A10266-4701	47
R111	R211	A10266-1231	12K	R162	R262	A10266-4701	47
R112	R212	A10266-5131	51K	R163	R263	C 8261-7	121K 0.1%
R113	R213	A10266-4721	4.7K	R164	R264	C 8260-9	10K 0.1%
R114	R214	A10266-4721	4.7K	R165	R265	C 8261-7	121K 0.1%
R115	R215	A10266-5141	510K	R166	R266	A10266-1851	1.8M
R116	R216	A10266-2751	2.7M	R167	R267	A10265-10011	1K 1%
R117	R217	A10266-4731	47K	R168	R268	A10265-97601	976 1%
R118	R218	A10266-2711	270	R170	R270	A10265-10011	1K 1%
R119	R219	A10266-3911	390	R171	R271	A10265-95301	953 1%
R120	R220	A10266-2711	270	R173	R273	C 8260-9	10K 0.1%
R121	R221	C 5062-2	100K Pot (-ODEP)	R174	R274	A10265-24921	24.9K 1%
R122	R222	A10266-2741	270K	R175	R275	A10265-76811	7.68K 1%
R123	R223	A10266-2032	20K .5W	R176	R276	A10265-24921	24.9K 1%
R124	R224	A10266-6821	6.8K	R177	R277	A10265-69811	6.98K 1%
R125	R225	C 7782-3	100 Flame Proof	R179	R279	A10266-1321	1.3K
R126	R226	C 7782-3	100 Flame Proof	R180	R280	A10266-4711	470
R127	R227	A10266-6821	6.8K	R181	R281	A10266-4721	4.7K
R128	R228	A10266-1031	10K	R182	R282	A10266-2201	22
R129	R229	A10266-1041	100K	R183	R283	A10266-2421	2.4K
R130	R230	A10266-1041	100K	R184	R284	A10266-4741	470K
				R185	R285	A10266-2421	2.4K

Q43041-5 Main Module (D 7993-5 board) Parts List

R186	R286	A10266-2751	2.7M	Switches		
R187	R287	A10266-3631	36K	S2	OPEN	
R188	R288	A10266-3631	36K	S3	C 7960-5	Sensitivity
R189	R289	A10266-2731	27K	S4	C 6781-6	Switch, Stereo/Mono
R190	R290	A10266-2051	2M	IC's		
R191	R291	A10266-3331	33K	U1	C 5095-2	UA7815
R192	R292	A10266-1031	10K	U2	C 5096-0	UA7915
R193	R293	A10266-1031	10K	U100	U200	C 6911-9
R194	R294	A10266-1041	100K	U101	U201	C 4345-2
R195	R295	A10266-3021	3K	U102	U202	C 4345-2
R196	R296	A10266-4721	4.7K	U103	U203	C 6910-1
R197	R297	A10266-1031	10K	U104	U204	C 7558-7
R198	R298	A10266-4721	4.7K			MC33079P
R199	R299	A10266-1031	10K	Misc.		
R906	R1006	OPEN		Board	D 7993-5	
R907	R1007	OPEN		Socket	C 3450-1	14 Pin (Qty 6)
R908	R1008	OPEN		Nut	A10102-5	Hex 6-32 (Qty 2)
R909	R1009	A10266-4741	470K	Heatsink	C 5341-0	TO-220 (Qty 2)
R910	R1010	A10266-4741	470K	Torq Spreader	C 6541-4	(Qty 2)
R911	R1011	A10266-1521	1.5K	Washer	A10096-5	#6, Split (Qty 2)
R912	R1012	A10266-4711	470	Screw	A10240-0608	Stainless (Qty 2)
R913	R1013	A10266-1051	1M	J1	C 7593-4	5 Pin Header
R914	R1014	A10266-1051	1M	J2	C 4508-5	16 Pin Socket
R915	R1015	A10266-2201	22	J11	C 7526-4	3 Pin Header
R916	R1016	A10266-2201	22	J100	J200	OPEN
R917	R1017	A10265-10021	10K 1%	J500	J800	D 6619-7
R918	R1018	A10265-10021	10K 1%	J600	J700	D 6620-5
R919	R1019	A10265-10021	10K 1%	Cable Tie	C 1811-6	10 Inch Ribbon
R920	R1020	A10265-10021	10K 1%			6 Inch Ribbon
R921	R1021	C 9079-2	200 Pot (CMR Null)			(Qty 4)

Q43131-4 Main Module (D8283-0 board) Parts List

Capacitors				C155	C255	C 8897-8	.1µF
C1		C 4303-1	1000µF	C156	C256	C 8897-8	.1µF
C2		C 3913-8	470µF	C157	C257	C 6806-1	.01µF
C4		C 6802-0	.47µF	C158	C258	C 6807-9	.001µF
C5		A10124-24	Jumper Wire	C159	C259	C 6807-9	.001µF
C6		A10124-24	Jumper Wire	C160	C260	C 6811-1	100pF
C7		C 8897-8	.1µF	C161	C261	C 6811-1	100pF
C100	C200	C 5311-3	22µF	Diodes			
C101	C201	C 9464-6	10pF	D1		C 2851-1	1N4004
C103	C203	C 6805-3	.022µF	D2		C 2851-1	1N4004
C104	C204	C 6805-3	.022µF	D3		C 2851-1	1N4004
C105	C205	C 6812-9	47pF	D4		C 2851-1	1N4004
C106	C206	C 6812-9	47pF	D5		C 2851-1	1N4004
C107	C207	C 8897-8	.1µF	D6		C 2851-1	1N4004
C108	C208	C 6814-5	12pF	D7		C 2851-1	1N4004
C109	C209	C 7417-6	.0033µF	D108	D208	C 3181-2	1N4148
C110	C210	C 5362-6	2.2µF	D109	D209	C 3181-2	1N4148
C111	C211	C 8897-8	.1µF	D110	D210	C 3181-2	1N4148
C112	C212	C 8992-7	.56µF	D111	D211	C 5061-4	1N3070
C113	C213	C 8988-5	33µF	D112	D212	C 3181-2	1N4148
C114	C214	C 8854-9	100µF	D113	D213	C 3181-2	1N4148
C115	C215	C 8854-9	100µF	D114	D214	C 3181-2	1N4148
C116	C216	C 8988-5	33µF	D115	D215	C 3181-2	1N4148
C117	C217	C 8992-7	.56µF	D120	D220	C 3181-2	1N4148
C118	C218	C 6814-5	12pF	D121	D221	C 3181-2	1N4148
C119	C219	C 6802-0	.47µF	D122	D222	C 3181-2	1N4148
C120	C220	C 8897-8	.1µF	D123	D223	C 5061-4	1N3070
C122	C222	C 6811-1	100pF	D124	D224	C 3181-2	1N4148
C123	C223	C 6812-9	47pF	D125	D225	C 3181-2	1N4148
C124	C224	C 6812-9	47pF	D126	D226	C 5061-4	1N3070
C129	C229	C 6814-5	12pF	D127	D227	C 5061-4	1N3070
C130	C230	C 6813-7	27pF	D128	D228	C 5061-4	1N3070
C133	C233	C 6813-7	27pF	D129	D229	C 3181-2	1N4148
C134	C234	C 6805-3	.022µF	D130	D230	C 3181-2	1N4148
C135	C235	C 6805-3	.022µF	D131	D231	C 3181-2	1N4148
C136	C236	C 6808-7	470pF	D132	D232	C 3181-2	1N4148
C137	C237	C 6808-7	470pF	D133	D233	C 3181-2	1N4148
C138	C238	C 6813-7	27pF	D134	D234	C 3181-2	1N4148
C139	C239	C 6813-7	27pF	Transistors			
C140	C240	C 6812-9	47pF	Q100	Q200	D 2961-7	NPN 2N3859A
C141	C241	C 6812-9	47pF	Q101	Q201	C 3578-9	PNP MPSA93
C144	C244	C 8576-8	100µF	Q102	Q202	C 3810-6	PNP MPSA43
C145	C245	C 6812-9	47pF	Q103	Q203	C 3786-8	PNP PN4250
C146	C246	C 6812-9	47pF	Q105	Q205	C 3578-9	PNP MPSA93
C147	C247	C 6806-1	.01µF	Q106	Q206	C 3625-8	NPN 2N4125
C148	C248	C 6810-3	180pF	Q107	Q207	C 3786-8	PNP PN4250
C149	C249	C 6808-7	470pF	Q108	Q208	C 5891-4	NPN MTS105
C150	C250	C 6806-1	.01µF	Q109	Q209	D 2961-7	NPN 2N3859A
C151	C251	C 6806-1	.01µF	Q110	Q210	C 3810-6	PNP MPSA43
C152	C252	C 6950-7	82pF 5%	Q112	Q212	C 3625-8	NPN 2N4125
C153	C253	C 8897-8	.1µF				
C154	C254	C 8426-6	.1µF 250V				

Q43131-4 Main Module (D8283-0 board) Parts List

Q113	Q213	C 3625-8	NPN 2N4125	R126	R226	C 7782-3	100 Flame Proof
Q115	Q215	D 2962-5	NPN MPS8097	R127	R227	A10266-6821	6.8K
Q116	Q216	C 3786-8	PNP PN4250	R128	R228	A10266-1331	13K
Q117	Q217	D 2961-7	NPN 2N3859A	R129	R229	A10266-1041	100K
Q118	Q218	D 2961-7	NPN 2N3859A	R130	R230	A10266-1041	100K
Q119	Q219	C 3625-8	NPN 2N4125	R131	R231	A10266-1331	13K
Q120	Q220	C 3625-8	NPN 2N4125	R132	R232	C 5062-2	100K Pot (+ODEP)
Q121	Q221	C 7458-0	NPN 2N4123	R133	R233	A10266-2741	270K
Q122	Q222	C 7458-0	NPN 2N4123	R134	R234	A10266-2032	20K .5W
Q123	Q223	C 7458-0	NPN 2N4123	R135	R235	C 7782-3	100 Flame Proof
Q124	Q224	C 3625-8	NPN 2N4125	R136	R236	A10266-6821	6.8K
Q125	Q225	C 3786-8	PNP PN4250A	R137	R237	C 7782-3	100 Flame Proof
Q126	Q226	C 5891-4	NPN MTS105	R138	R238	A10266-6821	6.8K
Resistors				R139	R239	A10266-8211	820
R1		A10265-53621	53.6K 1%	R140	R240	A10266-5601	56
R2		OPEN		R141	R241	A10266-1541	150K
R3		OPEN		R142	R242	A10266-1541	150K
R4		A10265-46421	46.4K 1%	R143	R243	A10266-1041	100K
R7		A10266-1041	100K	R144	R244	A10266-1041	100K
R8		A10266-2031	20K	R145	R245	A10266-2251	2.2M
R9		A10266-5121	5.1K	R146	R246	A10266-1231	12K
R10		OPEN		R147	R247	C 8836-6	100 .5W Flame Proof
R16		A10266-5121	5.1K	R148	R248	A10266-2721	2.7K
R17		A10266-2031	20K	R149	R249	C 8836-6	100 .5W Flame Proof
R18		A10266-1041	100K	R150	R250	A10266-2721	2.7K
R100	R200	C 7409-3	5K Linear Pot	R151	R251	A10266-1231	12K
R101	R201	A10265-49911	4.99K 1%	R152	R252	A10265-11321	11.3K 1%
R102	R202	A10266-5111	510	R153	R253	JUMPER	A10124-24
R103	R203	A10265-10031	100K 1%	R154	R254	C 8261-7	121K 0.1%
R104	R204	A10266-2721	2.7K	R155	R255	A10266-1321	1.3K
R105	R205	A10266-2721	2.7K	R156	R256	A10266-1321	1.3K
R106	R206	A10266-1231	12K	R157	R257	A10266-1321	1.3K
R107	R207	A10266-6831	68K	R158	R258	A10265-11321	11.3K 1%
R108	R208	A10266-8211	820	R159	R259	A10266-1021	1K
R109	R209	A10266-5601	56	R160	R260	C 8260-9	10K 0.1%
R110	R210	A10266-6831	68K	R161	R261	A10266-4701	47
R111	R211	A10266-1231	12K	R162	R262	A10266-4701	47
R112	R212	A10266-5131	51K	R163	R263	C 8261-7	121K 0.1%
R113	R213	A10266-4721	4.7K	R164	R264	C 8260-9	10K 0.1%
R114	R214	A10266-4721	4.7K	R165	R265	C 8261-7	121K 0.1%
R115	R215	A10266-5141	510K	R166	R266	A10266-2251	2.2M
R116	R216	A10266-2751	2.7M	R167	R267	A10265-10011	1K 1%
R117	R217	A10266-4731	47K	R168	R268	A10265-10011	1K 1%
R118	R218	A10265-27401	274 1%	R170	R270	A10265-10011	1K 1%
R119	R219	A10265-66501	665 1%	R171	R271	A10265-10011	1K 1%
R120	R220	A10265-28701	287 1%	R173	R273	C 8260-9	10K 0.1%
R121	R221	C 5062-2	100K Pot (-ODEP)	R174	R274	A10265-24921	24.9K 1%
R122	R222	A10266-2741	270K	R175	R275	A10265-76811	7.68K 1%
R123	R223	A10266-2032	20K .5W	R176	R276	A10265-24921	24.9K 1%
R124	R224	A10266-6821	6.8K	R177	R277	A10265-69811	6.98K 1%
R125	R225	C 7782-3	100 Flame Proof	R179	R279	A10266-1321	1.3K
				R180	R280	A10266-4711	470

Q43131-4 Main Module (D8283-0 board) Parts List

R181	R281	A10266-4721	4.7K	Resistor Networks		
R182	R282	A10266-2201	22	N101	N201	D 7945-5 Resistor Network
R183	R283	A10266-2421	2.4K	N102	N202	D 6082-8 Resistor Network
R184	R284	A10266-4741	470K	Switches		
R185	R285	A10266-2421	2.4K	S2		OPEN
R186	R286	A10266-2751	2.7M	S3		C 7960-5 Sensitivity
R187	R287	A10266-3631	36K	S4		C 6781-6 Switch, Stereo/Mono
R188	R288	A10266-3631	36K	Integrated Circuits		
R189	R289	A10266-2731	27K	U1		C 5095-2 UA7815
R190	R290	A10266-2051	2M	U2		C 5096-0 UA7915
R191	R291	A10266-3331	33K	U100	U200	C 6911-9 UPA75
R192	R292	A10266-1031	10K	U101	U201	C 4345-2 LM339
R193	R293	A10266-1031	10K	U102	U202	C 4345-2 LM339
R194	R294	A10266-1041	100K	U103	U203	C 6910-1 UPA76
R195	R295	A10266-3021	3K	U104	U204	C 7558-7 MC33079P
R196	R296	A10266-4721	4.7K	Misc.		
R197	R297	A10266-1031	10K	Board		D 8283-0
R198	R298	A10266-4721	4.7K	Socket		C 3450-1 14 Pin (Qty 6)
R199	R299	A10266-1031	10K	Nut		A10102-5 Hex 6-32 (Qty 2)
R906	R1006	OPEN		Heatsink		C 5341-0 TO-220 (Qty 2)
R907	R1007	OPEN		Tq Spreader		C 6541-4 Tourque Sprdr Qty 2
R908	R1008	OPEN		Washer		A10096-5 #6, Split (Qty 2)
R909	R1009	A10266-4741	470K	Screw		A10240-0608 Stainless (Qty 2)
R910	R1010	A10266-4741	470K	J1		C 7593-4 5 Pin Header
R911	R1011	A10266-1521	1.5K	J2		C 4508-5 16 Pin Socket
R912	R1012	A10266-4711	470	J11		C 7526-4 3 Pin Header
R913	R1013	A10266-1051	1M	J100	J200	OPEN
R914	R1014	A10266-1051	1M	J500	J800	D 6619-7 10 Inch Ribbon
R915	R1015	A10266-2201	22	J600	J700	D 6620-5 6 Inch Ribbon
R916	R1016	A10266-2201	22	Cable Tie		C 1811-6 (Qty 4)
R917	R1017	A10265-10021	10K 1%	TP 1		C 9450-5 Header, 6 pin
R918	R1018	A10265-10021	10K 1%	Spacer		C 9225-1 Plastic (Qty 5)
R919	R1019	A10265-10021	10K 1%			
R920	R1020	A10265-10021	10K 1%			
R921	R1021	C 9079-2	200 Pot (CMR Null)			
R922	R1022	A10265-66501	665 1%			
R923	R1023	A10265-35711	3.57K 1%			
R924	R1024	A10265-66501	665 1%			
R925	R1025	A10265-10031	100K 1%			
R926	R1026	A10265-66501	665 1%			
R927	R1027	A10265-10031	100K 1%			
R928	R1028	A10265-35711	3.57K 1%			
R929	R1029	A10266-7531	75K			
R930	R1030	A10266-7531	75K			

Q43240-3 Main Module (D 8369-7 board) Parts List

<i>Capacitors</i>				C155	C255	C 8897-8	.1µF
C1		C 9859-7	1000µF	C156	C256	C 8897-8	.1µF
C2		C 9859-7	1000µF	C157	C257	C 6806-1	.01µF
C4		C 6802-0	.47µF	C158	C258	C 6807-9	.001µF
C5		A10124-24	Jumper Wire	C159	C259	C 6807-9	.001µF
C6		A10124-24	Jumper Wire	C160	C260	C 6811-1	100pF
C7		C 8897-8	.1µF	C161	C261	C 6811-1	100pF
C100	C200	C 5311-3	22µF	<i>Diodes</i>			
C101	C201	C 9464-6	10pF	D1		C 2851-1	1N4004
C103	C203	C 6805-3	.022µF	D2		C 2851-1	1N4004
C104	C204	C 6805-3	.022µF	D3		C 2851-1	1N4004
C105	C205	C 6812-9	47pF	D4		C 2851-1	1N4004
C106	C206	C 6812-9	47pF	D5		C 2851-1	1N4004
C107	C207	C 8897-8	.1µF	D6		C 2851-1	1N4004
C108	C208	C 6814-5	12pF	D7		C 2851-1	1N4004
C109	C209	C 7417-6	.0033µF	D108	D208	C 3181-2	1N4148
C110	C210	C 5362-6	2.2µF	D109	D209	C 3181-2	1N4148
C111	C211	C 8897-8	.1µF	D110	D210	C 3181-2	1N4148
C112	C212	C 8992-7	.56µF	D111	D211	C 5061-4	1N3070
C113	C213	C 8988-5	33µF	D112	D212	C 3181-2	1N4148
C114	C214	C 8854-9	100µF	D113	D213	C 3181-2	1N4148
C115	C215	C 8854-9	100µF	D114	D214	C 3181-2	1N4148
C116	C216	C 8988-5	33µF	D115	D215	C 3181-2	1N4148
C117	C217	C 8992-7	.56µF	D120	D220	C 3181-2	1N4148
C118	C218	C 6814-5	12pF	D121	D221	C 3181-2	1N4148
C119	C219	C 6802-0	.47µF	D122	D222	C 3181-2	1N4148
C120	C220	C 8897-8	.1µF	D123	D223	C 5061-4	1N3070
C122	C222	C 6811-1	100pF	D124	D224	C 3181-2	1N4148
C123	C223	C 6812-9	47pF	D125	D225	C 3181-2	1N4148
C124	C224	C 6812-9	47pF	D126	D226	C 5061-4	1N3070
C129	C229	C 6814-5	12pF	D127	D227	C 5061-4	1N3070
C130	C230	C 6813-7	27pF	D128	D228	C 5061-4	1N3070
C133	C233	C 6813-7	27pF	D129	D229	C 3181-2	1N4148
C134	C234	C 6805-3	.022µF	D130	D230	C 3181-2	1N4148
C135	C235	C 6805-3	.022µF	D131	D231	C 3181-2	1N4148
C136	C236	C 6808-7	470pF	D132	D232	C 3181-2	1N4148
C137	C237	C 6808-7	470pF	D133	D233	C 3181-2	1N4148
C138	C238	C 6813-7	27pF	D134	D234	C 3181-2	1N4148
C139	C239	C 6813-7	27pF	<i>Transistors</i>			
C140	C240	C 6812-9	47pF	Q100	Q200	D 2961-7	NPN SPS8010
C141	C241	C 6812-9	47pF	Q101	Q201	C 3578-9	PNP MPSA93
C144	C244	C 8576-8	100µF	Q102	Q202	C 3810-6	NPN MPSA43
C145	C245	C 6812-9	47pF	Q103	Q203	C 3786-8	PNP PN4250
C146	C246	C 6812-9	47pF	Q105	Q205	C 3578-9	PNP MPSA93
C147	C247	C 6806-1	.01µF	Q106	Q206	C 3625-8	NPN 2N4125
C148	C248	C 6810-3	180pF	Q107	Q207	C 3786-8	PNP PN4250
C149	C249	C 6808-7	470pF	Q108	Q208	C 5891-4	NPN MTS105
C150	C250	C 6806-1	.01µF	Q109	Q209	D 2961-7	NPN SPS8010
C151	C251	C 6806-1	.01µF	Q110	Q210	C 3810-6	NPN MPSA43
C152	C252	C 6950-7	82pF 5%	Q112	Q212	C 3625-8	NPN 2N4125
C153	C253	C 8897-8	.1µF				
C154	C254	A10434-104JD	.1µF 250V				

Q43240-3 Main Module (D 8369-7 board) Parts List

Q113	Q213	C 3625-8	NPN 2N4125	R126	R226	C 8836-6	100 .5W Flame Proof
Q115	Q215	D 2962-5	NPN MPS8097	R127	R227	A10266-6821	6.8K
Q116	Q216	C 3786-8	PNP PN4250	R128	R228	A10266-1331	13K
Q117	Q217	D 2961-7	NPN SPS8010	R129	R229	A10266-1041	100K
Q118	Q218	D 2961-7	NPN SPS8010	R130	R230	A10266-1041	100K
Q119	Q219	C 3625-8	NPN 2N4125	R131	R231	A10266-1331	13K
Q120	Q220	C 3625-8	NPN 2N4125	R132	R232	C 5062-2	100K Pot (+ODEP)
Q121	Q221	C 7458-0	NPN 2N4123	R133	R233	A10266-2741	270K
Q122	Q222	C 7458-0	NPN 2N4123	R134	R234	A10266-2032	20K .5W
Q123	Q223	C 7458-0	NPN 2N4123	R135	R235	C 8836-6	100 .5W Flame Proof
Q124	Q224	C 3625-8	NPN 2N4125	R136	R236	A10266-6821	6.8K
Q125	Q225	C 3786-8	PNP PN4250A	R137	R237	C 8836-6	100 .5W Flame Proof
Q126	Q226	C 5891-4	NPN MTS105	R138	R238	A10266-6821	6.8K
Resistors				R139	R239	A10266-8211	820
R1		A10265-53621	53.6K 1%	R140	R240	A10266-5601	56
R2		OPEN		R141	R241	A10266-1541	150K
R3		OPEN		R142	R242	A10266-1541	150K
R4		A10265-46421	46.4K 1%	R143	R243	A10266-1041	100K
R7		A10266-1041	100K	R144	R244	A10266-1041	100K
R8		A10266-2031	20K	R145	R245	A10266-3351	3.3M
R9		A10266-5121	5.1K	R146	R246	A10266-1231	12K
R10		OPEN		R147	R247	C 8836-6	100 .5W Flame Proof
R16		A10266-5121	5.1K	R148	R248	A10266-2721	2.7K
R17		A10266-2031	20K	R149	R249	C 8836-6	100 .5W Flame Proof
R18		A10266-1041	100K	R150	R250	A10266-2721	2.7K
R100	R200	C 9785-4	5K Linear W/21 Det.	R151	R251	A10266-1231	12K
R101	R201	A10265-49911	4.99K 1%	R152	R252	A10265-11321	11.3K 1%
R102	R202	A10266-5111	510	R153	R253	JUMPER	A10124-24
R103	R203	A10265-10031	100K 1%	R154	R254	C 8261-7	121K 0.1%
R104	R204	A10266-2721	2.7K	R155	R255	A10266-1321	1.3K
R105	R205	A10266-2721	2.7K	R156	R256	A10266-1321	1.3K
R106	R206	A10266-1231	12K	R157	R257	A10266-1321	1.3K
R107	R207	A10266-6831	68K	R158	R258	A10265-11321	11.3K 1%
R108	R208	A10266-8211	820	R159	R259	A10266-1021	1K
R109	R209	A10266-5601	56	R160	R260	C 8260-9	10K 0.1%
R110	R210	A10266-6831	68K	R161	R261	A10266-4701	47
R111	R211	A10266-1231	12K	R162	R262	A10266-4701	47
R112	R212	A10266-5131	51K	R163	R263	C 8261-7	121K 0.1%
R113	R213	A10266-4721	4.7K	R164	R264	C 8260-9	10K 0.1%
R114	R214	A10266-4721	4.7K	R165	R265	C 8261-7	121K 0.1%
R115	R215	A10266-3641	360K	R166	R266	A10266-2251	3.3M
R116	R216	A10266-2751	2.7M	R167	R267	A10265-10011	1K 1%
R117	R217	A10266-4731	47K	R168	R268	A10265-10011	1K 1%
R118	R218	A10265-27401	274 1%	R170	R270	A10265-10011	1K 1%
R119	R219	A10265-66501	665 1%	R171	R271	A10265-10011	1K 1%
R120	R220	A10265-28701	287 1%	R173	R273	C 8260-9	10K 0.1%
R121	R221	C 5062-2	100K Pot (-ODEP)	R174	R274	A10265-24921	24.9K 1%
R122	R222	A10266-2741	270K	R175	R275	A10265-76811	7.68K 1%
R123	R223	A10266-2032	20K .5W	R176	R276	A10265-24921	24.9K 1%
R124	R224	A10266-6821	6.8K	R177	R277	A10265-69811	6.98K 1%
R125	R225	C 8836-6	100 .5W Flame Proof	R178	R278	A10266-2021	2K
				R179	R279	A10266-1321	1.3K

Q43240-3 Main Module (D 8369-7 board) Parts List

R180	R280	A10266-4711	470
R181	R281	A10266-4721	4.7K
R182	R282	A10266-2201	22
R183	R283	A10266-2421	2.4K
R184	R284	A10266-4741	470K
R185	R285	A10266-2421	2.4K
R186	R286	A10266-2751	2.7M
R187	R287	A10266-3631	36K
R188	R288	A10266-3631	36K
R189	R289	A10266-2731	27K
R190	R290	A10266-2051	2M
R191	R291	A10266-1831	18K
R192	R292	A10266-6221	6.2K
R193	R293	A10266-6221	6.2K
R194	R294	A10266-1041	100K
R195	R295	A10266-3021	3K
R196	R296	A10266-4721	4.7K
R197	R297	A10266-1031	10K
R198	R298	A10266-4721	4.7K
R199	R299	A10266-1031	10K
R300	R400	A10266-1041	100K
R301	R401	A10266-1041	100K
R906	R1006	OPEN	
R907	R1007	OPEN	
R908	R1008	OPEN	
R909	R1009	A10266-4741	470K
R910	R1010	A10266-4741	470K
R911	R1011	A10266-1521	1.5K
R912	R1012	A10266-4711	470
R913	R1013	A10266-1051	1M
R914	R1014	A10266-1051	1M
R915	R1015	A10266-2201	22
R916	R1016	A10266-2201	22
R917	R1017	A10265-10021	10K 1%
R918	R1018	A10265-10021	10K 1%
R919	R1019	A10265-10021	10K 1%
R920	R1020	A10265-10021	10K 1%
R921	R1021	C 9079-2	200 Pot (CMR Null)
R922	R1022	A10265-66501	665 1%
R923	R1023	A10265-35711	3.57K 1%
R924	R1024	A10265-66501	665 1%
R925	R1025	A10265-10031	100K 1%
R926	R1026	A10265-66501	665 1%
R927	R1027	A10265-10031	100K 1%
R928	R1028	A10265-35711	3.57K 1%
R929	R1029	A10266-7531	75K
R930	R1030	A10266-7531	75K

Resistor Networks

N101	N201	D 7945-5	Resistor Network
N102	N202	D 6082-8	Resistor Network

Switches

S3	C 7960-5	Sensitivity
S4	C 6781-6	Switch, Stereo/Mono

Integrated Circuits

U1	C 5095-2	UA7815
U2	C 5096-0	UA7915
U100	U200	C 6911-9
U101	U201	C 4345-2
U102	U202	C 4345-2
U103	U203	C 6910-1
U104	U204	C 7558-7
		MC33079P

Misc.

Board	D 8369-7	
Socket	C 3450-1	14 Pin (Qty 6)
Nut	A10102-5	Hex 6-32 (Qty 2)
Heatsink	C 5341-0	TO-220 (Qty 2)
Tq Spreader	C 6541-4	(Qty 2)
Washer	A10096-5	#6, Split (Qty 2)
Screw	A10240-0608	Stainless (Qty 2)
J1	C 7593-4	5 Pin Header
J2	C 4508-5	16 Pin Socket
J11	C 7526-4	3 Pin Header
J100	J200	OPEN
J500	J800	D 6619-7
J600	J700	D 6620-5
Cable Tie	C 1811-6	(Qty 4)
TP 1	C 9450-5	Header, 6 pin RT Ang
Spacer	C 9225-1	Plastic Spcr (Qty 5)

Documents / Resources



POWER AMPLIFIER
SERVICE MANUAL
COM-TECH 1600

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