

JH-600 SERIES PROFESSIONAL MIXING CONSOLE

ERRATA AND CHANGES

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MACK

2007 S.E. BRADLEY PL., LAKEWORTH, FL 33409-7000 (407) 352-7600 FAX (407) 352-7601

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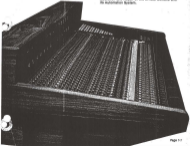
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JH-600 MIXING CONSOLE

The JH-600 Console is a professional mixing console and remains enough to be used for Studio, Remote and Broadcast applications.

The JH-600 is an In-Line Console with each I/O comprising one complete Mic and one complete Stereo channel in each I/O.

This service and repair manual will give the Serv/Technician the information required for Control and Repair of the JH-600 Console and its automation system.



MCI PROFESSIONAL RECORDING EQUIPMENT

ONE YEAR WARRANTY

This warranty is applicable to the warranty registration cards properly completed and returned to MCI Inc., within 90 (ninety) days after delivery.

MCI Inc. warrants to the Original Using Purchaser that MCI Professional Recording Equipment shall be free from defects in workmanship or materials for a period of One Year from date of first delivery to the Original Using Purchaser and agrees to repair or replace at MCI's option all parts showing such defects subject to all the following provisions:

For the period of the One Year Warranty, MCI Inc. will repair or replace all defective parts at no charge for materials. After the first 90 days from date of delivery to the Original Using Purchaser labor incident to the repair or replacement will be charged at standard dealer rates. Travel expenses from the Dealer's Service Center to the installation site are included from this Warranty.

All Warranty transactions must be effected through the MCI Dealer from which the Original Using Purchaser obtained the MCI Professional Recording Equipment. MCI Inc. responsibility under this Warranty is limited to making replacement parts available to the dealer in Fort Lauderdale, Florida.

This warranty is express and exclusive. There are no warranties, expressed or implied INCLUDING ANY WARRANTY OF MERCHANTABILITY beyond those stated herein. This warranty does not apply to equipment that has been altered or repaired by other than MCI Inc. approved personnel, used or purchased, or has been subject to negligence, misuse, improper adjustments, or accidents. No person, including any dealer, agent or representative of MCI Inc. is authorized to assume for MCI Inc. any liability beyond its obligation to this warranty. In no event shall MCI Inc. be liable for any loss or damage, direct or consequential arising out of the use of, or inability to use any MCI Professional Recording Equipment.

The provisions of this warranty are severable. If any provision shall be deemed invalid the remaining provisions shall remain in full force and effect.

All necessary operational adjustments required by MCI Inc. within 90 days after the delivery of the units must be provided to the Original Using Purchaser free of charge by MCI Inc., Fort Lauderdale, Florida.

Future enhancements released after the date of the serial list to make available for other applicable equipment users through the MCI Dealer from which your equipment was purchased.

MCI Inc., 4800 NE 41st Avenue, Fort Lauderdale, Florida 33308 USA

MCI



SECTION 1

JH-600 SERIES MIXING CONSOLE

The JH-600 Series is a professional mixing console versatile enough to be used in radio, records, and broadcast applications.

The JH-600 is an inline console. Each VO Module contains one complete microphone and one complete radio channel. Up to 16 VO channels are available in the JH-608; up to 32 VO channels are available in the JH-606.

The VO feature can be either a fully automated RCA fader system, a non-automated RCA fader

system, or a non-RCA push fader system. MCI's automation controls fader levels, mutes, and solo. The non-automated RCA system allows grouping and group control of fader levels, mutes, and solo. The non-RCA feature permits only local control of fader levels and mutes.

Three metering systems are available with the JH-600 console: the Creative Display light meters, mechanical VO meters, or mechanical peak program meters.

Additional fader systems and all three meter systems for both the JH-608 and the JH-606 consoles are covered in this manual. Consult the JH-6000 Supplement for additional information on the JH-6000 inline console.



RCI Professional Recording Equipment

ONE YEAR WARRANTY

RCI, a Division of Ray-Compartec of America ("RCI"), warrants the Original Using Purchaser that RCI professional recording equipment shall be free from defects in workmanship or materials for a period of One Year from date of final delivery to the Original Using Purchaser and agrees to repair or replace RCI's entire sales of parts during such labor charges as well as shipping charges.

For the period while One Year Warranty, RCI will repair or replace all defective parts at no charge for materials. After the first 90 days from date of delivery to the Original Using Purchaser, labor charges for the repair or replacement will be charged at standard Dealer rates. Travel expenses from the Dealer's Service Center to the installation site are excluded from this Warranty.

All Warranty transactions must be effected through the RCI Dealer from which the Original Using Purchaser obtained the RCI Professional Recording Equipment. RCI's responsibility under this Warranty is limited to making replacement parts available to the dealer for Fort Lauderdale, Florida.

This Warranty is express and exclusive. There is no warranty, expressed or implied INCLUDING ANY WARRANTY OF MERCHANTABILITY beyond these stated terms. This Warranty does not apply to equipment that has been altered or repaired by other than RCI's approved procedures, and/or personnel, or has been subject to negligence, misuse, improper adjustment, or accident. No person, including any dealer, agent or representative of RCI is authorized to assume for RCI any liability, except as set forth in this Warranty. It is agreed that RCI is not liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use any RCI Professional Recording Equipment.

The provisions of this Warranty are severable. If any provision shall be deemed invalid, the remaining provisions shall remain in full force and effect.

All necessary operational instructions released by RCI within 90 days after the delivery of the equipment will be provided to the Original Using Purchaser free of charge at RCI, Fort Lauderdale, Florida.

Previous instructions released after the above 90 day period will be made available for sale to applicable equipment users through the RCI Dealer from which your equipment was purchased.

RCI, a Division of Ray-Compartec of America

2200 W. Commercial Blvd., Fort Lauderdale, Florida 33309 USA

WEST

SECTION 2

DESCRIPTION OF FUNCTIONS

While you are learning to operate this console, we suggest that you locate each group of controls throughout each page, identify the location of these controls as you learn the functions. That way you will begin to associate the location with the function.

On the following pages is a short explanation of the FUNCTION of each SWITCH and each FLIGHT or the **CONTROL PANEL Controls**. These explanations are organized into **GROUPS** and into groups of controls on each **PANEL**.

Although descriptive buttons have familiar names and symbols, the professional audio field is highly standardized and enough to assume that all the names mean the same thing to everyone. To make sure that the user of this equipment is using the better terminology in (S.O.), we are furnishing a glossary of terms. Please read through this glossary FIRST, the SECOND time you read, or learn, or symbol this (S.O.) or **CONTROL PANEL**. Start the explanations in THIS book use THESE terms.

Glossary

AUX — Abbreviation for Auxiliary Input or Output.

CHASSIS — An audio device external to the console.

CHANNEL — This term is used to designate the amplifiers, controls, and sections which typically feed an audio signal to the multitrack tape recorder.

CHANNELS, BUTTON SOURCE — Summing bus for gathering signals which are to be fed to one track of a multitrack tape recorder.

COMM — Abbreviation for communications.

COMM-BUSIBLE — The Communications Module consists of the ground and controls for an audio section; for the whole circuit, the talk-back circuit and the communications circuit.

COMMUNICATIONS CIRCUIT — The communication function allows the console operator to speak directly to the buses. It does not disrupt signal going to tape.

CONTROL PANEL (CONTROL SECTION) — This section contains the circuit and controls for the control room speakers.

cue — This is the telephone-circuit, also called talkback.

cue — Special routing which transfers master input position and level to the channel bus section.

SEND RETURN — This function is found on several channels and is very similar to the master function on the 10 Module panel. This is a line level return to the mix output buses or the channel buses.

EQ — Abbreviation for equalization or equalizer.

EQUALIZATION CIRCUIT — The equalization circuits are used to modify the sound being fed through the circuit so as to emphasize or suppress some characteristics of the sound to improve the final mix.

FADER — A gain control, usually a linear type.

GROUP CONTROL, GROUP — The faders, meters and circuitry needed to control the VCA gain and the mutes of a group-OTC module.

GROUP MUTE — A frequency switch that cuts.

HIGH FILTER — High pass filter that separates what they & that which when removed, unbalanced or 0 dB and attenuates.

IO MODULE — The Input/Output Module, controls all the electrical and the controls for a group channel of audio from mixer input to multitrack tape recorder. This, all of the electronics and controls for a channel of audio from the input to the mix buses and the send buses.

MATRIX MODULE — This module controls the master controls for stereo mixes.

MODULE — The amplifiers and switching circuits which make up the JMWK channels are built on 19" rack-mount circuit boards. Each group board has a panel attached which contains the controls and interconnects other rack-mounted components of the circuit board. Each circuit board and panel assembly is a module.

MTR — Abbreviation for multitrack.

MIXDOWN — This term is used to designate the amplifiers, controls and analog-to-digital converter for stereo. These circuits take the signal from the multitrack tape recorder and convert the stereo mix and send output.

MONO — Abbreviation for monoaural single-track.

MONO MIX — This is a monoaural mix derived from stereo mix outputs.

MOTHER BOARD — This is a printed circuit board used to distribute timing and supply voltages between modules.

MUTE — This is a term used in the patch bay for several patch bays together with 0dB and its position between each bay.

MULTIPLIER — This refers to the mixing sequence of the patch bays which usually lay horizontally at the upper part of a patchbay does not mean the audio path, the lower rack does mean the multitrack and transfers the audio signal from the patch cable.

MTR — This is the process of writing the apparent position of a sound.

MTR MTR — A potentiometer used to set the apparent position of a sound.

MIXDOWN — The mixing action.

MIX — Abbreviation of mixers.

MIXER — An audio output from the console normally used to mix-overhead, infra-earmics, solo for time, etc.

SLATE — This function is used to make a copy of the a specific slot can be made, copied, when used, the master controller is activated and low frequency and a low gain. This controller signal is summed with the corresponding signal, when recorded at high speed, the low frequency word is distorted, and when played back at normal speed, the low frequency will not be reproduced by the console monitors.

MCT — Abbreviation for meter.

SOLO — To give a channel to isolate the audio from a specific part of a single channel into the speaker system.

STUDIO MONITOR SYSTEM — This section can take the signals and the controls for the studio systems, for the auxiliary monitors, and for the two stereo out systems.

FLAME — an abbreviation for feedback.

TALKBACK — This mode of operation allows the console operator to talk directly to the studio.

VCA — Voltage-controlled amplifier. The gain of this amplifier can be changed by varying the voltage fed to one of the terminals.

WET — Routing the mix signal to show solo to be placed on the multitrack recorder.

VARIABLE Q EQUALIZER OPTION



HIGH FREQUENCY SELECT POT selects high Q equalized frequency, from 4.0KHz to 16KHz.

HIGH EQ LEVEL POT increases high frequencies from +1dB to -1dB at the frequency selected.

HIGH FREQUENCY'S BUTTON selects Q of high frequency peak filter. When up, bandwidth is 4.0KHz, when down, bandwidth is 8.0KHz.

HIGH FREQUENCY PEAK/SELF BUTTON will increase high frequency filter (down) or starting from high frequency filter (up).

HIGH FREQUENCY Q POT selects Q of mid frequency, from 2 to 5 with a Q of 3, bandwidth is 500Hz, with a 4 or 5, bandwidth is 250Hz.

HIGH EQ LEVEL POT increases mid frequencies from +1dB to -1dB at center frequency selected.

HIGH FREQUENCY SELECT POT selects mid EQ bandwidth center frequency, from 10KHz to 15KHz.

LOW FREQUENCY Q BUTTON selects Q of low frequency peak filter. When up, bandwidth is 4.0KHz, when down, bandwidth is 8.0KHz.

LOW EQ LEVEL POT decreases low frequencies from +1dB to -1dB at the frequency selected.

LOW FREQUENCY PEAK/SELF BUTTON selects peak low frequency filter (down) or starting from low frequency filter.

LOW FREQUENCY SELECT POT selects low EQ bandwidth frequency, from 6KHz to 12KHz.

EQ IN BUTTON switches EQ circuitry into the monitor when in, when out EQ circuitry is bypassed.

LOW PASS FILTER BUTTON rolls off high frequencies by 12dB/oct at 16KHz, not affected by EQ in button.

PHASE REVERSE BUTTON reverses the phase of the signal through the EQ section.

HIGH PASS FILTER BUTTON rolls off low frequencies by 12dB/oct at 6KHz, not affected by EQ in button.

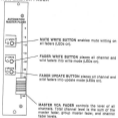
CHANNEL BUTTON changes EQ's to monitor input, when in EQ's in monitor input.

AUTOMATED I/O CHANNEL VOA FADER

The VOA FADER has identical controls and functions.

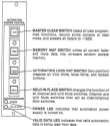


AUTOMATION MASTER FADER

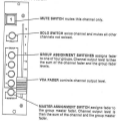


AUTOMATION MASTER CONTROL

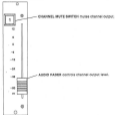
There is only one Automation Master Control panel. It controls automation functions for the entire device.



NON-AUTOMATED 10 CHANNEL VCA FADER



NON-AUTOMATED AUDIO CHANNEL FADER



AUDIO MONITOR STEREO FADERS



STEREO MASTER FADER controls output level of stereo monitor.

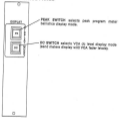
CONTROL ROOM MONITOR FADER controls output level of control monitor and alternate speakers.

AUDIO MASTER FADER



AUDIO MASTER FADER controls the output level of the 2 left and main mix.

LIGHT METER CONTROL PANEL

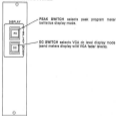


AUDIO MASTER FADER



AUDIO MASTER FADER controls the output levels of the public and radio mix.

LIGHT METER CONTROL PANEL



Pinouts

Row Legend

- 1 From Pump out**
12 — 18 (6)
Pressure-out patches are provided for each 10 module. These outputs are normalized to the Pressure Return. (See glossary for definition of normalized).
- 2 To Pump Return**
12 — 18 (6)
Pressure Return patches are provided for each 10 module. These inputs are normalized from the Pump out.
- 3 From Equalizer Out**
12 — 18 (6)
These patches provide a post EQ Patch point. These patches are normalized to the Filter input.
- 4 To Filter Input**
12 — 18 (6)
These patches provide inputs to the Filter. (EQ1, EQ2 & Pre-Filter). These patches are normalized from the EQ out.
- 5 Post Channel Line Output**
12 — 18 (6)
These patches provide access to the channel line output of each 10. These patches are connected to the Multitrack input.
- 6 To Multitrack Input**
12 — 18 (6)
Multitrack Input Patches provide access to the inputs of the multitrack tape machine.
- 7 Post Multitrack Output**
12 — 18 (6)
Multitrack output provides access from the output of the multitrack tape machine. Normalized to channel line input.
- 8 To Channel Line Input**
Channel Line Input provides access to the Channel Line Input. Normalized from multitrack output.
- 9 Stereo Patch Out**
L R
Stereo Patch-Out provides pre-fader patching to stereo-master. Normalized to stereo patch input.
- 10 Aux Out**
L R
Aux out provides patches that are connected to 2 file out.
- 11 Automation Data to Tape**
1 2 3 4
Feeds data to Taster connection.
- 12 Pres Set**
Bypass of automation Process. Bridged with Auto Data to Tape.
- 13 Stereo Input to**
L R
Stereo Patch In allows patching to the stereo filter.
- 14 MONO OUT**
MONO-OUT has single patchpoint (Phase 5 location) at the output of the Mono Mix-Out. It is also brought back to the Taster connection for permanent installation.
- 15 000**
000 is a dual purpose jack which can be used to pick up the output of the internal oscillator for external use, or as an injection point for an external oscillator to be used in internal circuits. When the internal oscillator switch is OFF, the patch point may be used to patch an external oscillator into the circuit. Impedance is 600 ohms.
- 16 TAPE 1**
L R
Tape Return 1 provides patch point to the mono tape machine return (mono mix).

10 From TAPE 1
L R
Tape Returns 2, 3, and 4 provide patch points for the Stereo TAPE Machine Outputs.

11 From TAPE 2
L R

12 From TAPE 3
L R

13 Aux In
Aux In provides patch point to Auxiliary Input to monitor system.

14 Automation Rate from Tape
1 2 3 4
Return from tape to patchbay.

15 Processor In
Input to automation processor.

16 MUX 1 THE MUX
1 2 3 4 1 2 3 4

17 MUX 2 THE MUX
1 2 3 4 1 2 3 4

Five sets of MUX jacks are provided. Each set has 4 (MIX) channels in parallel. The tie switch between each set connects the four sets together when pulled into the UP position. With all 4 tie switches in the UP position, the 20 jacks would be in parallel.

18 Tie Lines

19 1 - 2, 3 - 4
Connections to patch bay for external equipment.

20 Send Output

1 - 4
Send outputs 1-4 are normalized to Channel Inputs. Send outputs 5-8 are non-normalized to Cue Amp inputs.

21 Cue Amp In

1 - 2
Cue Amp In are normalized patch points located between the output transformers and the cueing inputs. Channel 1 is non-normalized to Group 1-2, 3.
(Cue amp 2 is normalized to Sends 2 & 4)

22 Sends
1 - 2 - 4

Send and channel input patches are provided for the six Send outputs. These normalized patch points are located between the Send output transformers and the inputs to the Send Channels.

23 Channel Input
1 - 2 - 4

24 Return Patch Out

1-4
Return Patch out provides patch points to preclude output for Send Returns 1-4. (Normalized to RCA Input 1-4)

25 Split Out

Split Out provides patch points to preclude input of Returns 2 & 4.

26 PFL In

PFL In provides patch to Aux Input for Pre-Filter-Later amp.

27 Phase Meter
Input to phase meter AM

28 VCA Input
1 2 3 4

VCA inputs to Schematic VCA. Patches on wiring outputs.

29 Mut 1

30 Mut 2

31 Mut 3

1 2

32 Mut 4

1 2

Mut 1 and Mut 2 jacks provide access to two isolation transformers. These transformers are normally used for loading the console through foot zone speaker location. Transformers are of 100-ohm type.

- 11. Four Chamber Output**
Chamber Returns are provided for returns from 4 Echo Chambers. These jack points are normalized to selected return inputs. Chambers 1-4 are normalized to Echo/Return inputs Chambers 1-4 are normalized.
- 12. YCA Output**
1 1/2" 6
YCA Outputs from optional YCA Pads are located on ending surface. (Normalized to Return Patch Inputs.)
- 13. To Return Inputs**
Return inputs are provided for the Echo Return signals in the console. The inputs are normalized to chamber outputs.
- 14. Return Input to Return Patch**
Return patch 11 provides input to Echo Return Patches 1 through 4.
- 15. To Lines**
1 — 10
- 16. 1 — 10**
- 17. 12 — 11**
- 18. 10 — 12**
The Lines Jacks are provided so that any external function may be brought directly to the console. Connections to these 10 Lines are made to the Trunkal Connectors on the back of the console.

SECTION 3

MAINFRAME AND INSTALLATION

RECOMMENDED SERVICE TOOLS REQUIRED FOR JH-600 CONSOLE

The following is a recommended list of tools to service the JH-600 Console:

AC Voltmeter
Sensitar-UPol 150 or equivalent

DC Voltmeter (Electronic type-0.2 volt full scale)
Fisher Model 54 or equivalent

Radio Signal Generator
Sola-Pol Model 1550 or equivalent

Frequency Counter
Sola-Pol Model 550 or equivalent

Impedance Analyzer
Sola-Pol Model 55A or equivalent

Oscilloscope
Sola-Pol Model 1550 Dual Trace 100-cv
500 kHz or equivalent

ACI Module Extender Board (JH-600 only)
AS40000-17040

	MCI PART NO.
Allen Drive Bit (Sizing)	95-101-45
Bit (Over-Drilling)	
1/8"	95B
5/16"	95C
3/8"	95D
1/2"	95E
Amphenol/Polar Hand-Entry Tool	KA-3010-1-00
Amphenol/Polar Pin Removal Tool	PO-3030-1-00
Molex Hand-Entry Tool	MTR-1000
Molex Pin-Removal Tool for 16 pin wire	HT-3020
Molex Pin-Removal Tool for 32 pin wire	HT-3030



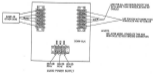
Part No.	Description	QTY	Part No.	Description	QTY
1	Light Meter Power Cable	1	1	Light Meter Power Cable	1
2	Light Meter Power Cable	1	2	Light Meter Power Cable	1
3	Light Meter Power Cable	1	3	Light Meter Power Cable	1
4	Light Meter Power Cable	1	4	Light Meter Power Cable	1
5	Light Meter Power Cable	1	5	Light Meter Power Cable	1
6	Light Meter Power Cable	1	6	Light Meter Power Cable	1
7	Light Meter Power Cable	1	7	Light Meter Power Cable	1
8	Light Meter Power Cable	1	8	Light Meter Power Cable	1
9	Light Meter Power Cable	1	9	Light Meter Power Cable	1
10	Light Meter Power Cable	1	10	Light Meter Power Cable	1

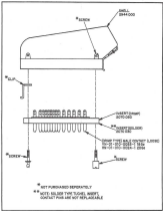
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CONSOLE	ADAPTER	CONSOLE
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5





Tubed Exploded View

JR-600 TUCKER KITS

The Tucker Kit for the JR-600 Console will be ordered by the following part numbers:

Option 02 is the solder type Tucker Leg for the male connector.

Option 11 is the crimp-on type Tucker Leg for the male connector:

Kit 0000-0004-02	Kit 0000-0004-11
Kit 0000-0004-02	Kit 0000-0004-11

These kits will consist of the following parts:

Kit 0000-0004-02

Qty.
 28 2000-000
 28 2044-000

Plug, Insert
 28x20

Kit 0000-0004-11

Qty.
 11 2070-000

Plug, Insert

11 2044-000 28x20

Kit 0000-0004-11

Qty.
 28 2070-000 Plug, Insert
 11 2044-000-28x20-11 Contact, Male, Loose
 Contact 28x20-11 28x20

Kit 0000-0004-11

Qty.
 11 2070-000 Plug, Insert
 28 2044-000-28x20-11 Contact, Male, Loose
 Contact 28x20 28x20
 11 2044-000 28x20

Larger contacts are available for the Crimp-on 504 Tucker Connector (24x20 size 15):

VN-01-010-0004-1 Contact, Male 15x20 28x20
 (28x20 Contact contacts are also available)
 VN-01-010-0004-2 Contact, Male 24x20 28x20

I/O ADJUSTMENTS

There is one adjustment on the I/O Module for the 7610-S receiver. Proceed with the following steps:

Radio Adjustment

- Step 1.** Inject a 1 kHz signal at -4 dB into the Channel Line Input.
- Step 2.** Set the Mixture G to the minimum position (MIX G = 0).

Step 3. Adjust the Mixture EQ Frequency select until maximum signal is read at the Channel Line Output.

Step 4. Turn the Mixture Q control and observe meter deflection on an AC meter.

Step 5. If misadjusted the meter deflection will be great as the Mixture Q is moved.

Step 6. Adjust RCT to minimum fluctuation as the Mixture Q control is moved. (This centers the Mixture QL. RCT is located between the Mixture Q and the Mixture EQ Frequency Select Pot.)



FIGURE 10. PCB LAYOUT (TOP VIEW)

**UNIQUE PARTS FOR I/O MODULE
STANDARD EQUALIZER BOARD**

OP Amp	200P
OP Amp	741P
15 Pin Female Connector (94)	PL 1005L
EO Mounting Bracket	MC-0800-01 14-00
EO Plug-On PCB	PC-0400-0000-00
EO Plug-On PCB Assy.	PC-000-0000-00

CHANNEL PLUG ON BOARD

Transfer	2000P
Ons Plug-On Assy	PC-0000-00 00
Ons Plug-On PCB Assy	PC-0000-00 00

LOWER PLUG ON BOARD

Transfer	2000P
IO Lower Plug-On PCB Assy.	PC-0000-00 00

MIC PREAMP BOARD

Diode	1N914
Transfer	10 100P
4 Pin Mount	08 00 100P
2 Pin Mount	08 00 100P
New Mic Pre Amp PCB Assy.	PC-000-0000-00

IO TRANSFORMER ASSEMBLY

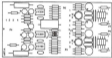
IO XFMR Assy.	AD-000-000-00
Isolator Assy, 2 Pin	8000-2
Transformer PC Mount	8P-10000-0000-00

IO MODULE MAIN PCB

IO Main PCB Assy.	PCA-000-0000-00
8 Pin Mount	0800 000
4 Pin Mount	0800 000
Diode	1N914
Diode	1N914
OP Amp	200P
Transfer	2000P
Transfer	2000P
IC	741P
IO Plug Panel	MC-0800-0000-00
15 Pin Male Jack 200 00	EL 1000LP
FEI	8P-000-0000-00
Resistor OP Plug Mount 100	01-00 100

VAR-O IO BOARD

Var-O IO PCB Assy	PCA-000-0004-00
OP Amp	200P
OP Amp	741CP
Var-O Mounting Bracket	MC-0800-01 00 00
15 Pin Male Plug 200 000	EL 1000P



COMPONENT SIDE
TOP VIEW OF PCB BOARD
PCB BOARD

UNIQUE PARTS FOR VO MODULE STANDARD EQUALIZER BOARD

OP Amp	202P
OP Amp	141E
12 Pin Female Connector (EQ)	PL1900E
EQ Mounting Bracket	MS-1000-01 (E-Q)
EQ Plug On PCB	PL-1000-01 (E-Q)
EQ Plug On PCB Assy.	PCA-1000-01 (E-Q)

CHANNEL PLUG ON BOARD

Transistor	2N3004
Resistor-OP Plug (10K)	100K 100P
Zero Plug On PCB	PL-1000-01 (Z)
Zero Plug On PCB Assy.	PCA-1000-01 (Z)

LOWER PLUG ON BOARD

Transistor	2N3004
VO Lower-Plug On PCB Assy.	PCA-1000-01 (L)

MIC PREAMP BOARD

Diode	1N914
Transistor	2N3004
4 Pin (Male)	2E-00-1000
4 Pin (Male)	2E-00-1000
Micro Preamp PCB Assy.	PCA-1000-01 (M)

EQ TRANSFORMER ASSEMBLY

VO (EQ) Assy.	MS-1000-0000-00
Resistor Assy. 12 Pin	140-100-0
Transformer (EQ Mount)	SP-1001-0100-00

VO MODULE MAIN PCB

VO Main PCB Assy.	PCA-1000-01 (V)
4 Pin (Male)	2E-00-1000
4 Pin (Male)	2E-00-1000
Diode	1N914
Diode	1N914
OP AMP	202P
Transistor	2N3004
Transistor	2N3004
IC	141E
VO Top Panel	MS-1000-0000-01
12 Pin Male Jack (EQ In)	SL-1000EP
FBT	SP-1001-0100-00
Resistor-OP Plug (10K)	100K 100P

VARIO EQ BOARD

VO (EQ) PCB Assy.	PCA-1000-01 (V)
OP AMP	202P
OP AMP	141E
Panel & Mounting Bracket	MS-1000-01 (E-Q)
12 Pin (Male Plug (EQ In)	SL-1000EP

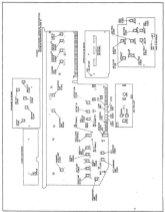


FIGURE 10-10 TARGET TERMINATION SYSTEM

SECTION 5 COMM MODULE

REMOTE SWITCHING LINE

On the JH60 Console there are 4 Remote Switching Lines provided for the Comm Functions.

These functions are activated by inserting the terminal connector to ground.

The location of the Remote Switching Lines are on a Tapped Connector. (See Tapped Panel Con. NC00Y0100001)

Pin 0	Remote Indicator
Pin 1	Remote Tailhook
Pin 2	Remote Comm
Pin 3	Remote Slave

NOTE: There are only 3 Pins provided for tailhook functions on the Tapped Panel.

In addition to the Remote Comm Functions, connections for a Remote Tailhook and Tailhook Parking Output are provided on the same Tapped Connector.

CAUTION:

DO NOT connect microphone to low side of equipment.

This connection is for OE for Condenser Microphone installed in rear housing.

OSCILLATOR ADJUSTMENTS

There are two adjustments on the Comm Module. These are Oscillator adjustments.

Oscillator Level (See PC layout for location of adjustment)

- Step 1. Turn on Oscillator by depressing one of the Range Select switches.
(A, X or, 100)
- Step 2. Set Oscillator level control on the front panel to 0-DB.
- Step 3. While monitoring the output of the Oscillator with an AC Voltmeter, ADJUST R-1070 for a 0-DB level out.
- Step 4. Vary the Oscillator Level and frequency. The signal should vary no more than a 3-DB.

Oscillator Frequency

- Step 1. Set Oscillator Frequency select to 100 Hz.
- Step 2. Set Oscillator range switch to the 01 position.
- Step 3. While looking at the output of the Oscillator, adjust R-33 for 100 Hz.

Step 4. Repeat Steps 2 and 3 for adjusting the frequency in the 100 and 1000 positions.

Range	R 100
10	10 00
100	10 00
1000	10 00

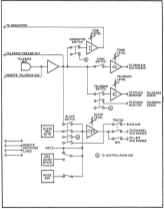
Oscillator Stability

Step 1. Turn on Oscillator by depressing X1 on the Oscillator Range Meter.

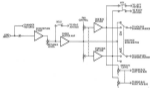
Step 2. Set Oscillator frequency meter to 20 Hz lowest position.

Step 3. While monitoring the output of the Oscillator, vary the frequency from 20 Hz to 20 kHz and observe for parasites in this range.

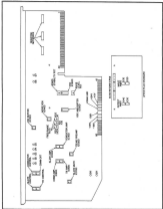
Step 4. If parasites are present, adjust R 100 for best stability at both low and high frequencies.



5



Current Mode Logic – NAND Return 1
Signal Flow Diagram



OFFICE MOBILE PL LAYOUT
TWENTYFOUR

SECTION 6 MASTER MODULE

MASTER MODULE ADJUSTMENTS

There are 2 adjustments on the Master Module. These are the summary adjustments for the Differential Output Stages (2 Mts Left, Right, and Mono Mts.).

Step 1

Inject a tone signal into Slave Return 1 at midline. Set EPH level to mid position. Check Pan Pot for Center Position and that the Master Audio Fader is at full position.

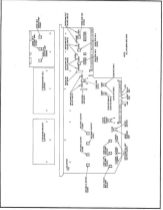
Step 2

While monitoring L Mts-Out (Mono Mts out for Mono Mts adjustment with ph AD amplifier) and multimeter at the Feedback, adjust the sensitivity for equal output on both right and left sides of the Differential Output referenced to Around. L Mts M100L, Right M100R, Mono M100.



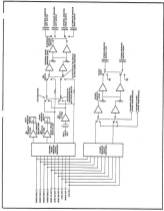
FIGURE 10-10 RADIO RECEIVER SIGNAL FLOW

Radio Receiver Signal Flow Diagram



SECTION 7

MONITOR MODULE



SECTION 8 POWER SUPPLIES

JH-808 POWER SUPPLY FUSE REQUIREMENTS

Main Supply

800 or 1000 Type	3 A	500 Ma
1000 Type	1 A	500 Ma
1200	10 A	500 Ma
1400	1 A	Fast 500

Peripheral Supply

800 or 1000 Type	3 A	500 Ma
1000 Type	1 A	500 Ma
Control -40V	3 A	Fast 500
Control -80V	3 A	Fast 500
Automation -40V	3 A	Fast 500
Automation -80V	3 A	500 Ma

CAUTION:

On JH-808 Control Units use two 1/8" Power Supply Channels. Be sure when adjusting to monitor the current supply (no damage may result to Control if the wrong supply is adjusted).

POWER SUPPLY ADJUSTMENTS

PERIPHERAL POWER SUPPLY

1400 Power Supply

While monitoring the -40V terminal of the Power Panel on the 1400 Control, adjust R2 on the V_{REG} Regulator Board for 1400 CC.

AUDIO POWER SUPPLY

1200 Power Supply

While monitoring the +100 terminal of the Power Panel on the 800 Control, adjust R2 on the 1200 Regulator Board for +100 CC. (This also sets the -100 supply.)

WARNING:

To prevent possible catastrophic damage to the various printed circuit assemblies within the Optometer system, the power supply must be completely disconnected from the system and alignment performed using a dummy plug, connected as shown below:

LIGHTWEIGHT POWER SUPPLY

A. 5V Regulator (overstage) (no adjustment)

1. Connect POSITIVE lead of IC1 to pin 10, 15, or 16.
2. Connect NEGATIVE lead of IC1 to pin 11, 14, or 17.
3. Adjust OUTPUT LEVEL, pot, located through rear chassis cover of supply unit until meter reads 5.1 VDC.
4. Adjust potentiometer labeled OVERVOLTAGE TRIP until output voltage falls.

B. 1V Regulator Adjustment

1. Connect POSITIVE lead of IC2 to pin 10, 15, or 16.
2. Connect NEGATIVE lead of IC2 to pin 11, 14, or 17.
3. Adjust 0V LEVEL, pot located through rear chassis cover of supply unit until meter reads +1.0VDC.

C. +100VDC Regulator Adjustment

1. Remove power supply top covers.
2. Connect POSITIVE lead of IC3 to pin 20 or 21.
3. Connect NEGATIVE lead of IC3 to pin 18 or 19.
4. Adjust pot on PC1000-0882 for a meter reading of +100VDC + 10%DC.



Battery Plug

UNIQUE PARTS FOR POWER SUPPLIES

84V REGULATOR

2 Pin Molex Locking	25-85-1021
Diode	104004
17V Zener Diode	102841 17V
50V Zener Diode	102838 50V
Transistor	202004
Transistor	202005
Transistor	202076 202005
Transistor	202077 202005
Diode, Diode	17015
Transistor	15-45-2005
OP Amp	742007
40 Reg PCB Assembly	PCB-2005-2004-01

84V REGULATOR

2 Pin Molex Locking	25-85-1021
2 Pin Molex Locking	25-85-1021
16V Zener Diode	102840 16V
50V Zener Diode	102838 50V
Transistor	202004
OP Amp	742007
Zener Diode	20475
Transistor	202005
40 Reg. PCB Assembly	PCB-2005-2004-01

84V REGULATOR

Zener Diode	102840
Transistor	202076 202005
Transistor	202077 202005
Zener Diode	20475
Transistor	202005
40 PCB Reg. Assembly	PCB-2005-2004-01

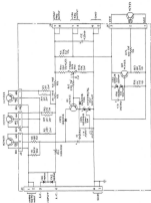
UNIQUE PARTS FOR POWER SUPPLIES

8000 POWER SUPPLY Sub-Chassis

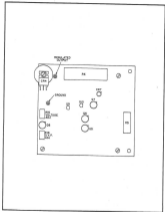
Power Transformer	8P-100-0000-01
Bridge Rectifier	202004
Fuse Holder	807 Fuseholder
Power Fan	800-100000-014
Filter Inductor	8P-100-0000-01
Filter Cap	8P01 8P0000-002
Filter Cap	10-00 8P0000-002

PERIPHERAL POWER SUPPLY CHASSIS

Filter-Cap	10P01 8P0000-002
Fuse Holder	807 Fuseholder
Power Transformer	8P-100-0000-01
Bridge-Rectifier	202004
Filter-Cap	8P01 8P0000-002
Filter Inductor	8P-100-0000-01



1. The motor is connected to the 3-phase supply through the contactor (C) and the thermal relay (TR).
 2. The control circuit is connected to the 100V AC supply through the 100V AC lamp and the 100V AC motor.
 3. The stop button (SB1) is connected to the 100V AC supply through the 100V AC lamp and the 100V AC motor.



12V AUDIO POWER SUPPLY @ 5AMP LOAD REGULATED OUTPUT

POSITIVE SUPPLY

NEGATIVE SUPPLY

Vertical Division
Horizontal Division



12V PERIPHERAL POWER SUPPLY @ 3 AMP LOAD UNREGULATED OUTPUT RIPPLE 70mV

POSITIVE SUPPLY

NEGATIVE SUPPLY

Vertical Division
Horizontal Division



**+24V POWER SUPPLY @ 5 AMP LOAD
REGULATED OUTPUT**



Vertical 10V/Div
Horizontal 2ms/Div

+18V POWER SUPPLY @ 5 AMP LOAD

UNREGULATED BY
CONTROL (P)



UNREGULATED BY
CONTROL (P)

Vertical 10V/Div
Horizontal 2ms/Div

+500V PHANTOM POWER SUPPLY @ 1 AMP LOAD



Vertical: 50V/Div
Horizontal: 200ns/Div

**+330V/75V LM POWER SUPPLY @ .35 AMP LOAD REGULATED
MEASURED BETWEEN 200V and 75V SUPPLIES**



Vertical: 50V/Div
Horizontal: 200ns/Div

SECTION 9

STANDARD/AUTOMATED FADER PACKAGES

AUTOMATED VO FADER PACKAGE

Each VO Fader Package contains a 4 inch wide x 6 inch deep plastic Fader with an expanded paper.

This package also contains all of the controls for the Automation, (See the Automation Section of this manual for more detailed explanation of controls.)

Automation Controls:

Channel Mute Button
Mute Hold Button
Mute LED's (6)
Viter Button
Limiter Button
Master Group Assign Button
Group Assign Transmittal Button

The Automated VO Fader Package also contains the following control circuitry:

Fader Reference Amplifier — Senses 0dB level through the VCA Fader for the Automation Gain level.

Fader Buffer — To "lock" the VCA Fader from the Automation REMOTE OUTPUT.

Fader/Level Comparator — Senses when the VCA Fader is in the down position.

Automation By-Pass Sensing — This PPT Sensing Circuit works in conjunction with

the Automation "ON" Switch to determine if the automation power supply is on. When the automation supply is off, the automation is disabled and the VCA Fader switches over to manual Audio Fader.

Ground Compensation Amplifier — Compensates between Audio Ground and Digital Ground, this prevents "floating" of circuitry.

Mute Locking — This circuit senses when the Channel Mute Button is activated.

100 Hz Filter — This circuit "cops off" all the spurious tones 100 Hz to prevent noise from entering the Control Line of the VCA.

Active Indicator — To sense the ribbon gate time running to the Automation System to prevent a loading effect.

Fader to Channel Sense — This circuit detects if the VCA Fader is in the Channel Mute. When VCA Fader is in Channel mode the Automation System is disabled.

VCA — Voltage Controlled Amplifier — An Amplifier that the gain can be changed by varying the voltage to the Control Voltage Terminal.

Audio Output Driver — To increase the Audio Output level of the VCA.

AUTOMATED ISO FADER PACKAGE ADJUSTMENT USING DR0222D VCA

There is only one adjustment on the ISO Fader Package. This is the VCA set.

1. Inject into the Channel Line input a 0 Hz FM signal.

Proceed with the following steps:

2. Adjust PCB on Fader Package for level 80.

1. Set VCA Fader to Normal Level (0-20)

FADER PACKAGE OPERATION

The VCA Fader package contains a Voltage Controlled Amplifier, limiting circuitry and a gain stage to write or Read an Automation Data Track.

When the Automation supply is turned off

(Perhaps P4) the FET switches to the reverse allowing the VCA Fader package to act as a normal Audio Fader. An Automation function and grouping will not work unless the Automation System is turned on.

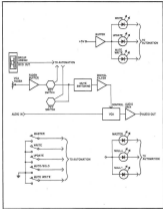


Figure 84
FADRA ASSEMBLY BLOCK DIAGRAM
TWO-CHANNEL

AUTOMATED MASTER PADER PACKAGE

The Automated Master contains a 2 inch x 2 inch the printed Pader with an expanded top.

This Pader package also contains all of the MASTER AUTOMATION (PART #020). (See the Automation Section of this manual for more detailed explanation of these controls.)

Power LED
Mode Home-Button and LED
Data LED
Home-Button and LED

Update Button and LED
Stop Button and LED
Master/Clear Button

The Automated Master also contains the Master Control Circuitry for the Automation system.

The head of the Automation Master is the 800043 Analog to Digital Converter IC (A to D Converter).

The A/D works as a MODULATOR to the functions programmed to the Automation System.

AUTOMATED MASTER ADJUSTMENTS

There are two adjustments on the Automated Master Pader, one is the gain adjustment, the other is the zero adjustment. Proceed with the following steps:

Step 1. Press the White Button to place the Master in white mode.

Step 2. Set the slider to the top (maximum gain).

Step 3. Using a voltmeter or multimeter, measure pins 8 through 12 of IC 1. There should all be low (0-0.5).

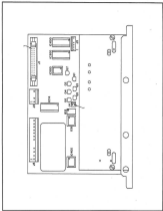
Step 4. Measure the output at pin 13 (0) and turn the Zero Adjustment (R20) until the

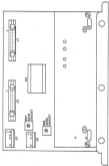
output toggles high (1-Bits). Slowly turn R18 back until the output just toggles back to a low.

Step 5. Set the slider to the bottom (minimum gain).

Step 6. Measure the output of pin 5 through 12 again, there should all be high (1-0.5).

Step 7. Measure the output of pin 13 and turn the Gain adjust (R21) until the output 0.045 Volts. Slowly turn R21 back until the output just toggles back to the high level.





CONTROLS FOR AUTOMATED MASTER PAPER

ITEM NO.	CONTROLS	PART NO.
1	POWER LED (Green)	87074
2	CRUSH LED (Red)	87075
3	SMALL LED (Green)	87076
4	SMALL LED (Red)	87077
5	SMALL LED (Green)	87078
6	SMALL LED (Red)	87079
7	SMALL LED (Green)	87080
8	SMALL LED (Red)	87081
9	SMALL LED (Green)	87082
10	SMALL LED (Red)	87083
11	SMALL LED (Green)	87084
12	SMALL LED (Red)	87085
13	SMALL LED (Green)	87086
14	SMALL LED (Red)	87087
15	SMALL LED (Green)	87088
16	SMALL LED (Red)	87089
17	SMALL LED (Green)	87090
18	SMALL LED (Red)	87091
19	SMALL LED (Green)	87092
20	SMALL LED (Red)	87093
21	SMALL LED (Green)	87094
22	SMALL LED (Red)	87095
23	SMALL LED (Green)	87096
24	SMALL LED (Red)	87097
25	SMALL LED (Green)	87098
26	SMALL LED (Red)	87099
27	SMALL LED (Green)	87100
28	SMALL LED (Red)	87101
29	SMALL LED (Green)	87102
30	SMALL LED (Red)	87103
31	SMALL LED (Green)	87104
32	SMALL LED (Red)	87105
33	SMALL LED (Green)	87106
34	SMALL LED (Red)	87107
35	SMALL LED (Green)	87108
36	SMALL LED (Red)	87109
37	SMALL LED (Green)	87110
38	SMALL LED (Red)	87111
39	SMALL LED (Green)	87112
40	SMALL LED (Red)	87113
41	SMALL LED (Green)	87114
42	SMALL LED (Red)	87115
43	SMALL LED (Green)	87116
44	SMALL LED (Red)	87117
45	SMALL LED (Green)	87118
46	SMALL LED (Red)	87119
47	SMALL LED (Green)	87120
48	SMALL LED (Red)	87121
49	SMALL LED (Green)	87122
50	SMALL LED (Red)	87123
51	SMALL LED (Green)	87124
52	SMALL LED (Red)	87125
53	SMALL LED (Green)	87126
54	SMALL LED (Red)	87127
55	SMALL LED (Green)	87128
56	SMALL LED (Red)	87129
57	SMALL LED (Green)	87130
58	SMALL LED (Red)	87131
59	SMALL LED (Green)	87132
60	SMALL LED (Red)	87133
61	SMALL LED (Green)	87134
62	SMALL LED (Red)	87135
63	SMALL LED (Green)	87136
64	SMALL LED (Red)	87137
65	SMALL LED (Green)	87138
66	SMALL LED (Red)	87139
67	SMALL LED (Green)	87140
68	SMALL LED (Red)	87141
69	SMALL LED (Green)	87142
70	SMALL LED (Red)	87143
71	SMALL LED (Green)	87144
72	SMALL LED (Red)	87145
73	SMALL LED (Green)	87146
74	SMALL LED (Red)	87147
75	SMALL LED (Green)	87148
76	SMALL LED (Red)	87149
77	SMALL LED (Green)	87150
78	SMALL LED (Red)	87151
79	SMALL LED (Green)	87152
80	SMALL LED (Red)	87153
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82	SMALL LED (Red)	87155
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84	SMALL LED (Red)	87157
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320	SMALL LED (Red)	87393
321	SMALL LED (Green)	87394
322	SMALL LED (Red)	87395
323	SMALL LED (Green)	87396
324	SMALL LED (Red)	87397
325		



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JR-600 VCA GROUPING ONLY OPTION

The VCA Grouping Only Option (OO) is a non-automated version of the JR-600 Series Console. This option uses a Master and Group fader assembly and VCA channel faders for each channel in place of the automation system.

The Master and Group fader assembly allows the channel faders to be assigned to any one of four groups. Once assigned, the output level is a product of both the channel fader and the group fader. Also, these groups and the respective channels can be assigned to the Group Master fader. This allows any combination of groups and channels to be controlled by one master fader.

Non-Automated VCA Channel Fader Controls

Channel Mute Switch — Mutes this channel only.

Channel Solo Button — Solos this channel, mutes all other channels assigned to a group and not soloed.

Group Select Buttons — Assigns channel to one of four groups. The output level is controlled by both a channel fader and the group fader.

Channel Master Button — Assigns channel to the Group Master fader. The level is then controlled by both the channel fader and the Group Master fader.

The Group 1, 2, 3, 4, and Master switches are ganged together, only one of these buttons should be pressed in at a time. If none of these switches is pressed in, the channel is phantom-mixed and the level is controlled by the channel fader only.

Group and Master Fader Controls

Group Mute Switch — Mutes all channels assigned to this group. This switch will not mute channels muted with their channel mute switches.

Group Solo Button — Solos all channels assigned to this group, mutes all other channels assigned to groups and not soloed.

Group Master — Assigns channels from group to the master fader. The level is then controlled by the channel fader, the group fader, and the group master fader.

NON-AUTOMATED VCA FADER IM ADJUSTMENT

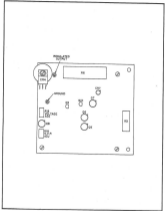
For VCA Faders using the JRC 200C

1. Set the channel fader to 0 dB.
2. Inject an FM signal into the channel input and monitor the +4 dBm output at the 20dB out.
3. Adjust IM2 on the channel fader board for minimum IM2 distortion of the output.

NON-AUTOMATED VCA FADER TRIM ADJUSTMENT

For VCA Faders using the JRC 200E

1. Connect an oscilloscope or OTR to Pin 8 of IC20E.
2. Disconnect any audio input to the automation control of the console. Set the channel fader to full distribution (down) and note the reading on the scope or meter. This should be between -20mV and 0Vrms.
3. Set the channel fader to maximum gain (up) and adjust TR1 to obtain the same 0dBm as in step 2.
4. Slowly wiggle the channel fader up and down and carefully fine tune TR1 for consistent dB change on the scope or meter. The dB level should not change by more than 0.5dB.



**$\pm 15V$ AUDIO POWER SUPPLY @ 5AMP LOAD
REGULATED OUTPUT**

POSITIVE SUPPLY

NEGATIVE SUPPLY

Vertical Scale: 500mV
Horizontal Scale: 500ns



**$\pm 15V$ PERIPHERAL POWER SUPPLY @ 3 AMP LOAD
UNREGULATED OUTPUT
RIPPLE 70mV**

POSITIVE SUPPLY

NEGATIVE SUPPLY

Vertical Scale: 500mV
Horizontal Scale: 500ns



CONTROLS FOR AUTOMATED MASTER PAPER



ITEM NO.	CONTROLS	PART NO.
1	POWER LED (Green)	87074
2	CRUSH LED (Red)	87075
3	SMITH LED (Green)	87076
4	SMITH LED (Red)	87077
5	SMITH LED (Green)	87078
6	SMITH LED (Red)	87079
7	SMITH LED (Green)	87080
8	SMITH LED (Red)	87081
9	SMITH LED (Green)	87082
10	SMITH LED (Red)	87083
11	SMITH LED (Green)	87084
12	SMITH LED (Red)	87085

REQUIRE PARTS FOR AUTOMATED MASTER PAPER

5/16 Drive Bolt	86001 1/4
400 Connector IC	86002
4 Pin Dip Switch	86003
Master Assembly Paper Top Feed	86004
Master Paper Assembly	86005
Automated Master PCB Assembly	86006



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JR-600 VCA GROUPING ONLY OPTION

The VCA Grouping Only Option (OO) is a non-automated version of the JR-600 series console. This option uses a Master and Group fader assembly and VCA channel faders for each channel in place of the automation system.

The Master and Group fader assembly allows the channel faders to be assigned to any one of four groups. Once assigned, the output level is a product of both the channel fader and the group fader. Also, these groups and the respective channels can be assigned to the Group Master fader. This allows any combination of groups and channels to be controlled by one master fader.

Non-Automated VCA Channel Fader Controls

Channel Mute Switch — Mutes this channel only.

Channel Solo Button — Solos this channel, mutes all other channels assigned to a group and not soloed.

Group Select Buttons — Assigns channel to one of four groups. The output level is controlled by both a channel fader and the group fader.

Channel Master Button — Assigns channel to the Group Master fader. The level is then controlled by both the channel fader and the Group Master fader.

The Group 1, 2, 3, 4, and Master switches are ganged together, only one of these buttons should be pressed in at a time. If none of these switches is pressed in, the channel is phantom-mute and the level is controlled by the channel fader only.

Group and Master Fader Controls

Group Mute Switch — Mutes all channels assigned to this group. This switch will not mute channels muted with their channel mute switches.

Group Solo Button — Solos all channels assigned to this group, mutes all other channels assigned to groups and not soloed.

Group Master — Assigns channels to the group to the master fader. The level is then controlled by the channel fader, the group fader, and the group master fader.

NON-AUTOMATED VCA FADER IM ADJUSTMENT

For VCA Faders using the JRC 200C

1. Set the channel fader to 0 dB.
2. Inject an FM signal into the channel input and monitor the +4 dBm output at the 20dB out.
3. Adjust IM2 on the channel fader board for minimum IM distortion at the output.

NON-AUTOMATED VCA FADER TRIM ADJUSTMENT

For VCA Faders using the JRC 200E

1. Connect an oscilloscope or OTR to Pin 8 of IC20E.
2. Disconnect any audio input to the automation control of the console. Set the channel fader to full distribution (down) and note the reading on the scope or meter. This should be between -20mV and 0Vrms.
3. Set the channel fader to maximum gain (up) and adjust IM2 to obtain the same reading as in step 2.
4. Slowly wiggle the channel fader up and down and carefully fine tune IM2 for consistent IM change on the scope or meter. The IM level should not change by more than 1dB.

JR-600 VCA GROUPING ONLY OPTION

The VCA Grouping Only Option (OO) is a non-automated version of the JR-600 series console. This option uses a Master and Group fader assembly and VCA channel faders for each channel in place of the automation system.

The Master and Group fader assembly allows the channel faders to be assigned to any one of four groups. Once assigned, the output level is a product of both the channel fader and the group fader. Also, these groups and the respective channels can be assigned to the Group Master fader. This allows any combination of groups and channels to be controlled by one master fader.

Non-Automated VCA Channel Fader Controls

Channel Mute Switch — Mutes this channel only.

Channel Solo Button — Solos this channel, mutes all other channels assigned to a group and not soloed.

Group Select Buttons — Assigns channel to one of four groups. The output level is controlled by both a channel fader and the group fader.

Channel Master Button — Assigns channel to the Group Master fader. The level is then controlled by both the channel fader and the Group Master fader.

The Group 1, 2, 3, 4, and Master switches are ganged together, only one of these buttons should be pressed in at a time. If none of these switches is pressed in, the channel is phantom-mixed and the level is controlled by the channel fader only.

Group and Master Fader Controls

Group Mute Switch — Mutes all channels assigned to this group. This switch will not mute channels muted with their channel mute switches.

Group Solo Button — Solos all channels assigned to this group, mutes all other channels assigned to groups and not soloed.

Group Master — Assigns channels from group to the master fader. The level is then controlled by the channel fader, the group fader, and the group master fader.

NON-AUTOMATED VCA FADER IM ADJUSTMENT

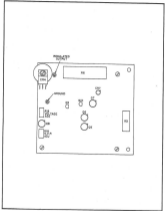
For VCA Faders using the JRC 200C

1. Set the channel fader to 0 dB.
2. Inject an FM signal into the channel input and monitor the +4 dBm output at the 2.0dB out.
3. Adjust IM2 on the channel fader board for minimum IM distortion of the output.

NON-AUTOMATED VCA FADER TRIM ADJUSTMENT

For VCA Faders using the JRC 200F

1. Connect an oscilloscope or OTC to Pin 6 of IC200.
2. Disconnect any audio input to the automation control of the console. Set the channel fader to full distribution (down) and note the reading on the scope or meter. This should be between -20mV and 0Vrms.
3. Set the channel fader to maximum gain (up) and adjust IM2 to obtain the same reading as in step 2.
4. Slowly wiggle the channel fader up and down and carefully fine tune IM2 for minimum IM change on the scope or meter. The dc level should not change by more than 50mV.



±15V ADDID POWER SUPPLY @ 5AMP LOAD REGULATED OUTPUT

POSITIVE SUPPLY

NEGATIVE SUPPLY

Vertical Scale:
Horizontal Scale:



±15V PERIPHERAL POWER SUPPLY @ 3 AMP LOAD UNREGULATED OUTPUT RIPPLE 70mV

POSITIVE SUPPLY

NEGATIVE SUPPLY

Vertical Scale:
Horizontal Scale:



**+24V POWER SUPPLY @ 6 AMP LOAD
REGULATED OUTPUT**



Vertical sensitivity:
Horizontal division

+8V POWER SUPPLY @ 6 AMP LOAD

UNREGULATED 8V
(CONSOLE IN)



UNREGULATED 8V
(AUTO IN)

Vertical sensitivity:
Horizontal division

-200W PHANTOM POWER SUPPLY @ 1 AMP LOAD



Vertical 100mV
Horizontal 1ms/div

**-200W LM POWER SUPPLY @ 1.5 AMP LOAD REGULATED
MEASURED BETWEEN 20V and 75V SUPPLIES**



Vertical 100mV
Horizontal 1ms/div

SECTION 9

STANDARD/AUTOMATED FADER PACKAGES

AUTOMATED 80 FADER PACKAGE

Each 80 Fader Package contains a 4 bus console that places Fader with an expanded tape.

This package also contains all of the controls for the Automation. (See the Automation Section of this manual for more detailed explanation of controls.)

Automation Controls:

Channel Mute Button
Mute Write Button
Bus LEDs (8)
Write Button
Update Button
Master-Group Assign Button
Group Assign/Thru/Format Switch

This automated 80 Fader Package also contains the following control circuitry:

Fader Reference Amplifier — Sets a DC level through the VCA Fader for the Automation Data level.

Fader Buffer — To isolate the VCA Fader from the Automation Switching Circuit.

Fader Down Comparator — Senses when the VCA Fader is in the down position.

Automation Bi-Pass Switching — This PBT Switching Circuit works in conjunction with

the Automation "CMT" Detect to determine if the Automation Power Supply is on. When the Automation Supply is on, the Automation is enabled and the VCA Fader acts like a normal Audio Fader.

Ground Compensation Amplifier — Compensates between Audio Ground and Digital Ground, this prevents "floating" of circuitry.

Mute Switching — This circuit senses when the Channel Mute Button is activated.

100-Hz Filter — This circuit "rolls off" all frequencies below 100 Hz to prevent noise from entering the compression of the VCA.

Active Indicator — To indicate the status when there is no routing to the automation system to prevent a loading effect.

Fader in Channel Sense — This circuit senses if the VCA Fader is in the Channel Mode. When VCA Fader is in Channel mode the Automation System is disabled.

VCA — Voltage Controlled Amplifier — An amplifier that the gain can be changed by varying the voltage to the Control Voltage Terminal.

Audio Output Driver — To increase the Audio Output level of the VCA.

AUTOMATED VO FADER PACKAGE ADJUSTMENT USING DECODED VCA

There is only one adjustment on the VO Fader Package. This is the VCA Set.

Proceed with the following steps:

1. Set VCA Fader to Normal Level (off)

2. Inject into the Channel Line input a 10 Hz test signal.

3. Adjust VCA on Fader Package for best fit.

FADER PACKAGE OPERATION

The VO (or Fader) package contains a Voltage Controlled Amplifier, switching circuitry and a gain stage to drive or receive an Automation Data Track.

When the Automation supply is turned off

(Pioneer: P.S.) the PET switches in the reverse allowing the VO (or Fader) package to act as a normal audio Fader. All automation functions and processing will not work unless the Automation System is turned on.

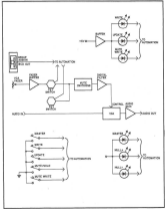


Figure 9-1
POWER ASSEMBLY BLOCK DIAGRAM
79060003002

AUTOMATED MASTER FADER PACKAGE

The Automated Master contains a 4 inch control-the plastic Fader with an expanded tape.

This Fader package also contains all of the MASTER AUTOMATION CONTROLS. (See the Automation Section of this Manual for more detailed explanation of these controls.)

Power LED
Mute Write Button and LED
Gain LED
Write Button and LED

1000Hz Button and LED
Solo Button and LED
Master Clear Button

The Automated Master also contains the Master Control Circuitry for the Automation system.

The heart of the Automation Master is the 870002 Analog to Digital Converter (IC) as to 87000000.

This IC works as a multiplier to the functions programmed to the Automation System.

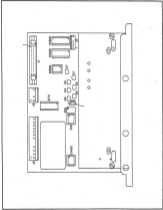
AUTOMATED MASTER ADJUSTMENTS

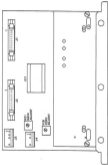
There are two adjustments on the Automated Master Fader one is the gain adjustment, the other is the zero adjustment. Proceed with the following steps:

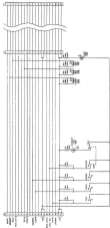
- Step 1. Press the Write Button to place the master in write mode.
- Step 2. Set the fader to the top (maximum gain).
- Step 3. Using a voltmeter or oscilloscope, measure pins 8 through 12 of IC1. These should all be low (0-2V).
- Step 4. Measure the output of pin 12 (IC1) and turn the Zero adjustment (clockwise) until the

output reaches high (4-6V). Slowly turn the Gain until the output just begins back to zero.

- Step 5. Set the fader to the bottom (minimum gain).
- Step 6. Measure the outputs of pins 8 through 12 again, these should all be high (2-6V).
- Step 7. Measure the output of pin 12 and turn the Gain Adjust (RNT) until the output drops low. Slowly turn RNT back until the output just begins back to the high level.







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JH-608 VCA GROUPING ONLY OPTION

The VCA Grouping Only Option (GO) is a non-automated version of the JH-608 Series controls. This option uses a Master and Group fader assembly and VCA channel faders for each channel in place of the automation system.

The Master and Group fader assembly allows the channel faders to be assigned to any one of four groups. Once assigned, the output level is a function of both the channel fader and the group fader. Also, these groups and the individual channels can be assigned to the Group Master fader. This allows the combination of groups and channels to be controlled by one fader fader.

Non-Automated VCA Channel Fader Controls

Channel Mute Switch — Mutes the channel only.

Channel Solo Button — Solos this channel; mutes all other channels assigned to a group and not soloed.

Group Select Buttons — Assigns channel to one of four groups. The level is then controlled by both the channel fader and the group fader.

Channel Master Button — Assigns channel to the Group Master fader. The level is then controlled by both the channel fader and the Group Master fader.

The GROUP 1, 2, 3, 4, and Master switches are ganged together; only one of these buttons should be pressed in at a time. If none of these switches are pressed in, the channel is unassigned, and the level is controlled by the channel fader only.

Group and Master Fader Controls

Group Mute Switch — Mutes all channels assigned to this group. This switch will not mute channels muted with their channel mute switches.

Group SOLO Button — Solos all channels assigned to this group; mutes all other channels assigned to groups and not soloed.

Group Master — Assigns all channels to the group to the master fader. The level is then controlled by the channel fader, the group fader, and the group master fader.

NON-AUTOMATED VCA FADER IM ADJUSTMENT

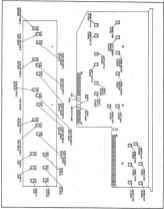
For VCA Faders using the dbx 300

1. Set the channel fader to 0 dB.
2. Inject an IM signal into the channel input and monitor the IM dB output at the 0 dB out.
3. Adjust IMB on the channel fader board for minimum IM distortion at the output.

NON-AUTOMATED VCA FADER TRIM ADJUSTMENT

For VCA Faders using the dbx 3001

1. Connect an oscilloscope or trim to the 0 of 0dB0.
2. Slowly vary the trim pot to the channel and zero up maximums. Set the channel fader to full attenuation (down) and note the reading on the oscilloscope meter; this should be between -20mV and +20mV.
3. Set the channel fader to maximum gain (up) and adjust IMB to obtain the same reading as in step 2.
4. Slowly wiggle the channel fader up and down and carefully fine-tune IMB for minimum db change on the scope or meter. The db level should not change by more than 1db.



MASTER NEEDLE PC LAYOUT
TWO-SIDING