McIntosh®

OWNER'S MANUAL

C38
SYSTEM
CONTROL
CENTER

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1. Read all instructions - Read the safety and operating instructions before operating the instrument.
2. Retain Instructions - Retain the safety and operating instructions for future reference.
3. Heed warnings - Adhere to warnings and operating instructions.
4. Follow Instructions - Follow all operating and use instructions.

   WARNING: TO REDUCE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS INSTRUMENT TO RAIN OR MOISTURE.

5. Power Sources - Connect the power supply only to the type described in the operating instructions or as marked on the unit.
6. Power-Cord Protection - Route power-supply cords so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the instrument.
7. Ventilation - Locate the instrument for proper ventilation. For example, the instrument should not be placed on a bed, sofa, rug, or similar surface that may block ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet, that may impede the flow of air through the ventilation openings.
8. Heat - Locate the instrument away from heat sources such as radiators, heat registers, stoves, or other appliance (including amplifiers) that produce heat.
9. Wall or Cabinet Mounting - Mount the instrument in a wall or cabinet only as described in the owner's manual.
10. Water and Moisture - Do not use the instrument near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
11. Cleaning - Clean the instrument by dusting with a dry cloth. Clean the panel with a cloth moistened with a window cleaner.
12. Object and Liquid Entry - Do not permit objects to fall and liquids to spill into the instrument through enclosure openings.
13. Nonuse Periods - Unplug the power cord from the AC power outlet when left unused for a long period of time.
14. Damage Requiring Service - Service must be performed by qualified service personnel when:
    A. The power supply cord or the plug has been damaged; or
    B. Objects have fallen, or liquid has been spilled into the instrument; or
    C. The instrument has been exposed to rain; or
    D. The instrument does not appear to operate normally or exhibits a marked change in performance; or
    E. The instrument has been dropped, or the enclosure damaged.
15. Servicing - Do not attempt to service beyond that described in the operating instructions. All other service should be referred to qualified service personnel.
16. Grounding or Polarization - Do not defeat the inherent design features of the polarized plug. Non-polarized line cord adaptors will defeat the safety provided by the polarized AC plug.
17. **CAUTION: TO PREVENT ELECTRICAL SHOCK DO NOT USE THIS (POLARIZED) PLUG** WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

    ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

 The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

 CAUTION: TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

 The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: THIS UNIT IS CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS. CONTINUED EXPOSURE TO HIGH SOUND PRESSURE LEVELS CAN CAUSE PERMANENT HEARING IMPAIRMENT OR LOSS. USER CAUTION IS ADVISED AND EAR PROTECTION IS RECOMMENDED WHEN PLAYING AT HIGH VOLUMES.

Your decision to own this piece of Mcintosh Stereo Equipment ranks you at the very top among discriminating music listeners. You now have "The Best". The Mcintosh dedication to "Quality", is assurance that you will receive thousands of hours of musical enjoyment from this unit.

Please take a short time to read the information in this manual. We want you to be as familiar as possible with all the features and functions of your new piece of Mcintosh. This will ensure that you receive all the performance benefits this instrument can offer you, and that it will become a highly valued part of your home music system.

The serial number, purchase date, and Mcintosh Laboratory Service Contract number are important to you for possible insurance claim or future service. Record this information here.

Serial Number	Purchase Date

Service Contract Number

Upon application, Mcintosh Laboratory provides a Service Contract to the original purchaser. Your Mcintosh Authorized Service Agency can expedite repairs when you provide the Service Contract with the instrument for repair.

TAKE ADVANTAGE OF 3 YEARS OF CONTRACT SERVICE. . .
FILL IN THE APPLICATION NOW.

Your C38 System Control Center will give you many years of satisfactory performance. If you have any questions, please contact,

Mcintosh Laboratory Inc.
2 Chambers Street
Binghamton, New York 13903-2699
Phone: 607-723-3512

McINTOSH THREE YEAR SERVICE CONTRACT

An application for A THREE YEAR SERVICE CONTRACT is included with this manual. The terms of the contract are:

1. If the instrument covered by this contract becomes defective, Mcintosh will provide all parts, materials, and labor needed to return the measured performance of the instrument to the original performance limits free of any charge. The service contract does not cover any shipping costs to and from the authorized service agency or the factory.

2. Any Mcintosh authorized service agency will repair all Mcintosh instruments at normal service rates. To receive the free service under the terms of the service contract, the service contract certificate must accompany the instrument when taken to the service agency.

3. Always have service done by a Mcintosh authorized service agency. *If the instrument is modified or damaged as a result of unauthorized repair the service contract will be cancelled.* Damage by improper use or mishandling is not covered by the service contract.

4. The service contract is issued to you as the original purchaser. To protect you from misrepresentation this contract cannot be transferred to a second owner.

5. Units in operation outside the United States and Canada are not covered by the Mcintosh Factory Service Contract, irrespective of the place of purchase. Nor are units acquired outside the USA and Canada, the purchasers of which should consult with their dealer to ascertain what, if any, service contract or warranty may be available locally.

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Mcintosh Laboratory has earned a world wide reputation for its technical contributions for improved sound reproduction. Mcintosh products incorporate an advanced level of technical innovations that have integrity proven by time. The Mcintosh "Classic" design is also recognized as the most outstanding in the industry.

Mcintosh products are designed to be maximum user friendly, so anyone can enjoy using them. Another Mcintosh design policy is to provide products that are easy to maintain. The legendary reliability of Mcintosh products is a matter of record since 1949.

The C38, Remote Controlled, System Control Center is a perfect example of a simple, yet elegant instrument which will allow you to enjoy outstanding music reproduction together with a wide range of convenient operating functions. The C38 has a built-in capability of controlling two separate listening areas. The LISTEN signals are defined as Area A which is usually the main area where all the sound equipment is located. The RECORD signals are available at a pair of outputs marked B, and can be used for a remote area with its own dedicated power amplifier and pair of speakers.

Data ports are provided for seven audio remote controlled accessories. This feature allows you to control a compatible unit by transmitting with its hand held remote controller direct to a C38 sensor. A data port is also provided to control the optional Mcintosh MVS-3 Video Selector for switching video signals in addition to audio signals. Another data port connects to the optional Mcintosh HC-1 Home Controller to allow control of accessories or appliances.

The convenience of C38 remote control operation is enhanced by its capability of directly interfacing with the Mcintosh CR10 Remote Control System. The CR10 can add an additional four remote areas of control.

There are eight pairs of high level inputs to accommodate all the traditional program sources as well as the most recent new sources. A pair of low level inputs is also provided that will accept signals from a moving magnet phono cartridge in a record player. Digital Logic integrated circuits drive Electromagnetic Switches on all inputs and operating functions for the most reliable and distortion free switching available.

Separate RECORD and LISTEN circuits allow recording from one source while listening to another. A continuously variable Active Loudness Control allows loudness compensation to be selected for any setting of the volume control. The Loudness Control circuit elements are removed from the circuit path when the control is in the flat or fully counterclockwise position.

Bass and Treble tone controls provide 12dB of boost or cut. At the center "Flat Response" or detent position of the tone controls, all tone control circuit elements are removed from the signal path.

Two Signal Processor loops are provided. One is for Listen signals and one is for Record signals. Power supply voltage regulator circuits maintain stable operation even though the AC power line may vary. Double shielding of the power transformer completely isolates it from the audio circuits. This eliminates the need for a clumsy outboard power transformer used by some less sophisticated designs.

Front panel pushbuttons control two switched outputs as well as two pairs of speakers when an optional SCR3 switching relay is added.

The Mcintosh C38 "Classic Glass" front panel has all control, switch and pushbutton nomenclature illuminated.

The C38 can be placed upright on a table or shelf, standing on its own plastic feet. It can also be installed in an optional Mcintosh L72 equipment cabinet. Follow the mounting instructions enclosed with the L72 cabinet.

The C38 can also be custom installed in a piece of furniture or cabinet of your choice. The required panel cutout and unit dimensions are shown on Page 18 of this manual.

Always provide adequate ventilation for your C38, even though it develops very little heat. Cool operation insures the longest possible operating life for any electronic instrument. Do not install your C38 directly above a heat generating component such as a high powered amplifier. In a system stack, the power amplifier should always be at the top. If all the components are installed in a single cabinet, a quiet running ventilation fan can be a definite asset in maintaining all the system components at the coolest possible temperatures.

A custom cabinet installation should allow the following recommended minimum spacing dimensions for cool operation. Allow at least 1 1/2 inches (3.8cm) above the unit so airflow is not obstructed. Allow 17 inches (43.2cm) depth behind the mounting panel, which includes clearance for connectors. Allow 1 1/8 inches (2.9cm) in front of the mounting panel for knob clearance.

The back cover of this manual folds out to show photographs of the front and rear panels of the C38. Fold it out to assist you in identifying and locating the front panel controls, switches, pushbuttons, and the rear panel connectors. The letters and numbers on the photographs refer to the information that follows.

A. BASS AND TREBLE

Provide 12dB boost and cut, with neutral flat response at the center detent position. The Bass and Treble controls affect only the MAIN, SWITCHED 1 and 2 and BALANCED (Area A) outputs.

B. RECORD

Selects the program signal that will feed the TAPE 1, TAPE 2, TAPE 3 and Area B OUTPUT jacks.

C. INFRARED SENSOR

This IR sensor accepts commands from the HR38 hand held remote controller.

D. LISTEN

Selects the program signal that feeds the MAIN, SWITCHED 1 and 2, and BALANCED (Area A) outputs.

E. VOLUME

Adjusts the volume level at the MAIN, SWITCHED 1 and 2, AND BALANCED (Area A) outputs. The volume level can be controlled by manually adjusting the VOLUME knob, or pressing the appropriate ▲ (Up) or ▼ (Down) button on the HR38 hand held Remote Controller.

The volume level is controlled in remote Area B by using the HR38 transmitting to a wall mounted IR sensor or by a WK-1 keypad.

The TAPE OUTPUT and Area B volume levels are not affected by the C38 front panel VOLUME control settings.

TURN ON CHARACTERISTICS

Area A: The Program signal and volume settings last used will be in effect.

Area B: The Tuner signals will automatically be selected with volume at 50dB below maximum.

F and G. LOUD (loudness) and BALANCE (concentric controls)

BALANCE control, (large outer knob), adjusts the volume of the channels relative to each other. The BALANCE control affects only the MAIN, SWITCHED 1 and 2, and BALANCED (Area A) outputs.

L, (Left): Turn the control to the left to accent the left channel by reducing the volume of the right channel.

R, (Right): Turn the control to the right to accent the right channel by reducing the volume of the left channel.

LOUDness control, (small inner knob), provides frequency response contoured to compensate for the behavior of the human ear at softer listening levels. At the fully counterclockwise detent position, the frequency response is perfectly flat and the loudness circuit components are removed from the signal path. Turn the control clockwise to modify the frequency response in the correct proportion required for softer listening levels. The compensated frequency response is not affected by changes in the volume control settings. First adjust the volume for the desired listening level, then adjust the Loudness Control to the setting you personally prefer.

The Loudness Control affects only the MAIN, SWITCHED 1 and 2, and BALANCED (Area A) outputs.

NOTE: The flat frequency response setting of the LOUDness Control is at the fully COUNTER CLOCKWISE position, not at the center or 12 o'clock position where the Balance Control is neutral.

THE SIX PUSHBUTTONS ARE PRESS AND RELEASE, WITH RED LED INDICATORS TO SHOW THE SELECTED OPERATING MODES.

H. RECord LOCK

Press the RECord LOCK button to temporarily disable the Area B IR sensor so the unit cannot be controlled by the Hand Held HR38. An example of this feature allows the C38 to be set up to record a program on tape, without danger of someone accidentally changing the previously made settings. The red LED above the pushbutton will blink on and off to indicate the RECord LOCK function is operating.

I. MONOphonic

Press the MONO button to add the left and right channel signals together for mono operation. The MAIN, SWITCHED 1 and 2, and BALANCED (Area A) outputs will all be mono. A red LED above the MONO pushbutton will light to indicate the MONO mode of operation.

MONO operation does not affect the TAPE and Area B outputs, which are always stereo.

J. MUTE

Press the MUTE button to turn off the signals at the MAIN, SWITCHED 1 and 2, and BALANCED (Area A) outputs. A red LED above the MUTE pushbutton will blink on and off to indicate signals are muted. Press MUTE again to restore normal sound. The TAPE and Area B outputs are not affected by the front panel MUTE pushbutton.

Area B can be muted by pressing the MUTE pushbutton on the HR38, when in Area B, and transmitting to the IR sensor located in that area.

K. HEADPHONES

Plug in a pair of low impedance dynamic headphones to this jack for headphone listening.

L. SPEAKERS 1 AND 2

Press SPEAKERS 1 to turn on the rear panel SWITCHED 1 OUTPUT jacks. These outputs allow you to switch C38 signals to other power amplifiers or accessories. Press the push-

button again to turn the signals off. A red LED will light to indicate which outputs are turned on.

If the optional SCR-3 Switching Relay is being used with the C38, the pair of speakers connected to the Speaker 1 terminals will be turned ON or OFF with the SPEAKERS 1 pushbutton.

Press SPEAKERS 2 to turn on or off, the second set of outputs or speaker terminals in a similar manner.

The SPEAKERS 1 and 2 pushbuttons have no effect on the MAIN, BALANCED, Area B or TAPE outputs.

M. POWER

Press the POWER pushbutton to turn the C38 system on in Area A. Press again to turn off. The entire C38 front panel nomenclature will illuminate when the power is on.

Turn on Area B and its dedicated power amplifier by pressing the HR38 POWER pushbutton when in Area B where its area IR sensor is located. When Area B first comes on, the Tuner signals will automatically be selected at a volume level 50dB below maximum. All the program accessory units connected to the C38 Switched AC outlet will also turn on, allowing you to select any desired signal.

The C38 front panel will be illuminated, but the MAIN or Area A will be in Mute mode. To restore operation in Area A, press the POWER button either on the C38 front panel or with the HR38. Area A can be turned on only in Area A.

ALL THE ABOVE OPERATING FUNCTIONS CAN BE PERFORMED AT THE C38 FRONT PANEL, AS WELL AS BY PUSHBUTTONS ON THE HR38 HAND HELD REMOTE CONTROLLER.

HR38 HAND HELD REMOTE CONTROLLER

The descriptions below of the HR38 pushbuttons refer to the numbers on the photograph.

1. Select any of the eight program listen signal sources.

2. Select either Tuner station presets, or relay operation on the HC-1 Home Controller. First press the HOME pushbutton and then press the desired number button 0 through 9 within 5 seconds to activate relays in the HC-1.

3. Select additional audio/video program signal sources when the optional Mcintosh MVS-3 Audio/Video Selector is added. You must first press the C38 VIDEO input pushbutton before pressing any of the five pushbuttons that operate the MVS-3.

4. Select Tuner functions, AM, FM, Search or Seek.

5. Select CD Player, CD Changer or Tape Recorder functions.

When using a Mcintosh single play CD player, the functions are STOP, BACK TRACK, NEXT TRACK and PLAY.
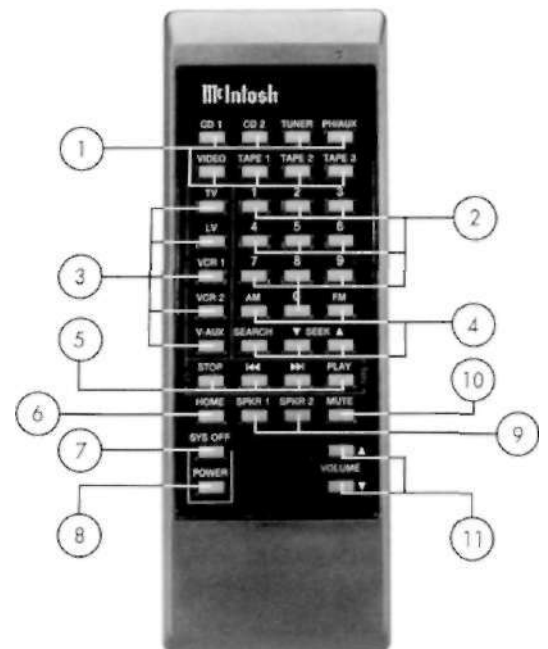
When using a Mcintosh CD Changer, the functions are STOP, BACK TRACK, NEXT TRACK and PLAY. In the STOP position, BACK TRACK selects which disc to play, and NEXT TRACK selects the SINGLE disc.

When using a compatible Tape Recorder, the functions are STOP, FAST REWIND, FAST FOR-WARD and PLAY.

6. Press HOME to operate HC-1 Home Controller functions, then within five seconds, press a pushbutton from 0 through 9 to operate the desired relays on the HC-1.

7. Press SYS OFF to turn the entire C38 system OFF from either Area A or Area B.

8. Press POWER to turn on the main system in Area A. Press in Area B to turn on just remote Area B.

9. Select Switched Outputs 1 or 2, and Speakers 1 or 2, (when optional SCR-3 is being used).

10. Press to mute signals.

11. Press ▲ (Up) to raise volume, and ▼ (Down) to lower volume.

HOW TO INSTALL BATTERIES IN THE HR38 HAND HELD REMOTE CONTROLLER

Slide open the battery compartment. Insert two type AA batteries into the compartment, making sure to observe the battery polarities indicated in the battery compartment.

When the batteries are nearing exhaustion, the effective range of the remote controller decreases, and MAY even fail to operate. In this case, replace both batteries with fresh ones.

NOTE:
1. Do not mix old and new batteries. Use ONLY batteries that are new.
2. Make sure both batteries are of the same type and identical.
3. To prevent damage caused by possible battery leakage, remove the batteries from the remote controller if it is not going to be used for an extended period of time.
4. Never dismantle batteries or dispose of them in a fire, as they may explode. Dispose of old batteries in an approved method for proper safety.

Use high quality cables to interconnect the C38 with its associated equipment. Quality cables will ensure the best possible performance from your Mcintosh stereo system. Your Mcintosh dealer can advise you on the type and lengths of cables best suited for your installation.

LISTEN OUTPUT FUNCTIONS
1. BALANCED OUTPUTS (Area A Only)
    Connect a cable with an XLR type balanced connector from each of the C38 BALANC-ED OUTPUT jacks to the balanced input jacks of a power amplifier.

    Using balanced connectors and cables can reduce noise or interference by as much as 40dB especially if the cables are quite long. If two separate mono power amplifiers are used in a stereo system, using balanced cables can reduce the possibility of hum pickup. If cable lengths between the C38 and a stereo power amplifier are one meter or less, regular unbalanced cables are usually perfectly adequate.

Balanced Jack Pin Configuration:
    Pin 1. System Ground
    Pin 2. + Output
    Pin 3. - Output

2. SWITCHED 1 and 2 OUTPUTS (Area A only)

Two additional power amplifiers or accessory components can be connected to the SWITCHED 1 and 2 Outputs. Audio signals are fed to these outputs only when the appropriate front panel SPEAKERS 1 or 2 pushbuttons are pressed. This switching capability is useful when additional power amplifiers are used to feed remote area speakers.

Connect a pair of shielded cables from either one or both pairs of SWITCHED OUTPUT jacks to the input jacks of either one or two power amplifiers.

3. MAIN OUTPUTS (Unbalanced)

Connect a pair of shielded cables from the MAIN outputs to the inputs of a power amplifier. Signals are fed to the MAIN outputs whenever the C38 is on and operating.

4. AREA B OUTPUT

Whatever signal is selected by the RECORD input selector switch also appears at the Area B output jacks when Area B is ON. This signal can be fed to another power amplifier connected to a pair of speakers in a remote area. The volume level in Area B is controlled only by the HR38 transmitting to a wall mounted IR sensor, or by the WK-1 keypad.

5. (LISTEN) PROCESSOR FROM AND TO

An external signal processor can be added to the C38 which will affect only the (LISTEN) MAIN, SWITCHED 1 and 2, (Area A) outputs. The PROCESSOR FROM jacks have built-in switching contacts that allow normal signals to pass through when no cables are connected. When an external signal processor is properly connected, the program signals will feed to the processor from the C38 PROCESSOR TO jacks, and return to the C38 at the PROCESSOR FROM jacks.

Connect a pair of cables from the external processor Output jacks to the C38 LISTEN PROCESSOR FROM jacks. Connect another pair of cables from the external processor Input jacks to the C38 LISTEN PROCESSOR TO jacks.

WHEN AN EXTERNAL SIGNAL PROCESSOR IS CONNECTED TO THE C38 LISTEN PRO-CESSOR JACKS, THE PROCESSOR MUST BE TURNED ON AND OPERATING, OR IN BYPASS MODE, FOR A PROGRAM TO BE HEARD THROUGH THE SYSTEM IN AREA A.

RECORD OUTPUT FUNCTIONS

6. TAPE OUTPUTS 1, 2, AND 3

These outputs provide signals to feed as many as three separate tape recorders. The program that appears at the TAPE OUTPUTS is determined by the setting of the front panel RECORD Switch.

(The program signal selected by the RECORD Switch also appears at the Area B output jacks when Area B is ON.)

Connect a pair of cables from the C38 TAPE 1 OUTPUTS to the high level inputs of a tape recorder. Connect cables to a second and third tape recorder in a similar manner from TAPE 2 and 3 OUTPUTS.

7. (RECORD) PROCESSOR FROM and TO

An external signal processor can be connected to the C38 which will affect only the TAPE RECORD and Area B Outputs. The PROCESSOR FROM jacks have built-in switching contacts that allow normal signals to pass through to the TAPE OUTPUTS when no cables are connected. When an external processor is properly connected, the RECORD signals will feed to the processor from the C38 PROCESSOR TO jacks, and return to the C38 at the PRO-CESSOR FROM jacks.

Connect a pair of cables from the processor output jacks to the C38 RECORD PROCESSOR FROM jacks. Connect another pair of cables from the processor input jacks to the C38 RECORD PROCESSOR TO jacks.

WHEN AN EXTERNAL SIGNAL PROCESSOR IS CONNECTED TO THE C38 RECORD PROCESSOR jacks, THE PROCESSOR MUST BE TURNED ON AND OPERATING, OR IN BYPASS MODE, FOR A PROGRAM TO BE FED TO THE TAPE OUTPUTS OR AREA B OUTPUTS.

AUDIO INPUTS

8. VIDEO

Use these inputs for audio signals from accessories such as a Laser Disc player, VCR, TV receiver or MVS-3 Audio/Video Selector. Connect a pair of cables from the video accessory outputs to the C38 VIDEO inputs.

When the VIDEO inputs are selected, data is also available at the VIDEO Data port to feed the optional MVS-3 Video Selector for switching five additional audio/video signals.

9. TAPE 1, 2 and 3

A total of three tape recorders can be connected to the C38. The separate LISTEN and RECORD selector switches allow recording, and listening to the original signal or monitoring the recorded signal from a three head recorder. The TAPE inputs can also be used for other accessory audio equipment with similar output levels.

Connect a pair of cables from the outputs of a tape recorder to the appropriate 1, 2 or 3, C38 TAPE inputs. (Connect the tape recorder Outputs as indicated in Step 6 above.)

IF MORE THAN ONE TAPE RECORDER IS CONNECTED FOR BOTH RECORD AND PLAYBACK, MAKE CERTAIN THAT THE INPUTS AND OUTPUTS OF EACH RECORDER ARE CONNECTED TO THE SAME MATCHING NUMBER JACKS.

When a C38 is connected to a CR10 Remote Control System, only TAPE 1 and TAPE 2 can be accessed from the CR 10.

10. TUNER

Connect a pair of cables from the outputs of a tuner to the C38 TUNER inputs. Connect the Control cable from the C38 TUNER CONTROL connector to the matching connector on a Mcintosh tuner. This allows you to control tuner operation with the HR38 hand held remote controller or a WK-1 keypad.

11. CD1 and CD2

Connect a pair of cables from the outputs of a CD player to either pair of C38 CD INPUTS. For example, CD1 inputs could be used for a single disc player, and CD2 inputs for a CD changer.

When a C38 is connected to a CR 10 Remote Control System, only CD2 can be selected from the CR 10.

12 and 13. PH/AUX (PHono/AUXiliary)

Both the PHono and Auxiliary inputs are selected by the same position on the front panel LISTEN and RECORD selector switches. Either the PHono Inputs, or the Auxiliary can be used, but not both at the same time. When a pair of cables is connected to the Auxiliary input jacks, the PHono section is automatically bypassed.

Auxiliary: Connect a pair of cables from the audio outputs of an accessory unit to the C38 AUX inputs.

To use the PHono inputs, FIRST remove any cables connected to the AUX inputs.

PHono: Connect a pair of cables from a record player with a moving magnet type phono cartridge to the PH inputs.

14. GND (Ground)

If the phono player being used has a separate Ground lead, connect it to the GND terminal.

15. CD1 and CD2 CONTROL

Connect Control cables from the C38 CD1 and CD2 CONTROL connectors to the matching connectors on a Mcintosh CD player and changer. This connection allows you to control the CD units from the HR38 or a WK-1 wall mounted Keypad.

Connect cables from the C38, CD1 or CD2 DATA PORTS to the Data Inputs on a CD player and changer. These connections allow you to control the CD units with their own hand held remote controllers transmitting directly to the C38 front panel or remote IR sensors.

16. TO MULTI-ROOM CONTROLLER

This 25 pin connector allows you to add a Mcintosh CR10 Remote Control System. The CR10 can provide as many as four additional remote controlled listening areas, for a total of six. Additional CR 10 units can also be cascaded for even more control areas. Each CR 10 adds the capability of four areas.

All program signal sources connected to the C38, except for Tape 3 and CD1, are available for selection by a CR10.

17. TUNER CONTROL

Connect a control cable from the C38 TUNER CONTROL jack to the matching jack on a Mcintosh tuner. This connection allows you to operate the tuner with the HR38 or WK-1 wall mounted Keypad.

18. SCR (Optional Speaker Control relay)

The Mcintosh SCR-3 SPEAKER CONTROL RELAY provides capability for switching two pairs of speakers using the front panel SPEAKERS 1 and 2 pushbuttons. The SCR-3 also includes two high current AC outlets with a total current capacity of 1800 watts to operate accessory components such as large power amplifiers. These outlets turn on and off with the C38 POWER switch and can be used when the accessory components demand more current than the 1400 watt rating of the rear panel AC outlets controlled by the C 38 Power switch.

Plug the nine pin computer type connector from the SCR-3 into the SCR socket on the C38 rear panel. Plug the heavy AC cable from the SCR-3 into a wall outlet.

DO NOT PLUG THE SCR-3 HEAVY AC CABLE INTO ANY OF THE C38 REAR PANEL AC OUTLETS.

AC power control for additional accessories can be accommodated by adding the optional Mcintosh R612 or PC-2 AC Power Controller.

19. EXTERNAL SENSORS, AREA A and AREA B

A coaxial connector is provided for a remote IR sensor to control Area A, in addition to the built-in front panel sensor. The external sensor can be either the R649 wall mounted sensor, or the WK-1 Keypad.

A coaxial connector is also provided for an IR sensor or keypad for remote control in Area B.

The wall mounted R649 IR sensor and the WK-1 keypad have a status indicator built in. A red LED lights whenever the system is on and operating. The LED will blink on and off when the area is muted.

Both the IR sensor and the keypad connect to the C38 EXTERNAL SENSORS with a single R659/U or RG6 coaxial cable. The C38 IR power supply will allow connecting up to four IR sensors or keypads in parallel on the same coaxial line.

20. DATA PORTS

Nine data output ports are provided. These allow control of compatible remote controlled accessories with their own hand held controllers transmitting directly to a C38 IR sensor.

The VIDEO port allows data to be fed to an optional Mcintosh MVS-3 Audio/Video Selector for switching five additional audio/video signals.

A HOME port allows data to be fed to an optional Mcintosh HC-1 Home Controller for control of external accessories or appliances.

21. POWER CONTROL

This connector supplies a Logic 1 control signal to feed to a Power Control Input on a compatible accessory to turn on and off its AC power.

22. AC OUTLETS (TOTAL OF FOUR)

An UNSWITCHED AC outlet stays on at all times when the C38 is connected to a live AC wall outlet. This outlet can be used for an accessory that stays on all the time such as a clock or VCR that may be programmed to record when the main system is turned off.

A SWITCHED AC outlet turns on whenever the C38 is turned on in either Area A or Area B, and can be used to power any audio or video accessory used in the system. To expand the single AC switched outlet capability, a power controller such as the R612 or PC-2 can be used.

AREA A PWR AMP turns on AC to the power amplifier connected for use in the Main, Area A whenever the C38 is turned on.

AREA B PWR AMP turns on AC to the power amplifier connected to the Area B Outputs. The Area B amplifier can only be turned on by the HR38 or WK-1 keypad in Area B.

TOTAL CURRENT CAPACITY OF C38 REAR PANEL AC OUTLETS IS 1400 WATTS

PERFORMANCE LIMITS

Performance limits are the maximum deviation from perfection permitted by a Mcintosh instrument. We promise you that when you purchase a new C38 from a Mcintosh franchised Dealer, it will be capable of performance at or better than these limits.

FREQUENCY RESPONSE

+0, -0.5dB from 20Hz to 20,000Hz

RATED OUTPUT

2.5V at MAIN, SWITCHED 1 and 2, BALANCED and Area B Outputs

OUTPUT IMPEDANCE

600 ohms for MAIN, SWITCHED 1 and 2, BALANCED and Area B Outputs

MAXIMUM OUTPUT VOLTAGE

8V from 20Hz to 20,000Hz at MAIN, SWITCHED 1 and 2, BALANCED and Area B Outputs

TOTAL HARMONIC DISTORTION

0.002% maximum from 20Hz to 20,000Hz at rated output

SENSITIVITY

Phono: 2.5mV for 2.5V rated output, (0.5mV IHF)

High Level: 250mV for 2.5V rated output, (50mV IHF)

SIGNAL-TO-NOISE RATIO, A-WEIGHTED

Phono: 90dB below 10mV input, (84dB IHF)

High Level: 105dB below rated output, (95dB IHF)

MAXIMUM INPUT SIGNAL

Phono: 90mV

High Level: 10V

INPUT IMPEDANCE

Phono: 47K ohms and 65pF capacitance

High Level: 22K ohms

VOLTAGE GAIN

Phono to Tape: 40dB

Phono to Main: 60dB

High Level to Tape: 0dB

High Level to Main: 20dB

TONE CONTROLS

Bass and Treble variable, 12dB boost to 12dB cut

AC POWER OUTLETS

(TOTAL CURRENT CAPACITY OF ALL FOUR OUTLETS IS 1400 WATTS)

One Unswitched

One Switched for Area A power amplifier

One Switched for Area B power amplifier

One Switched for accessories

POWER REQUIREMENTS

120V, 50/60HZ, 25 Watts

MECHANICAL INFORMATION
SIZE

Front Panel: 17 1/2 inches (44.5cm) wide, by 5 3/8 inches (13.7cm) high

Depth behind mounting panel including clearance for connectors: 17 inches (43.2cm)

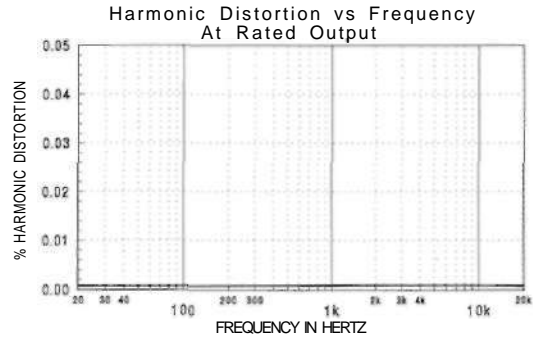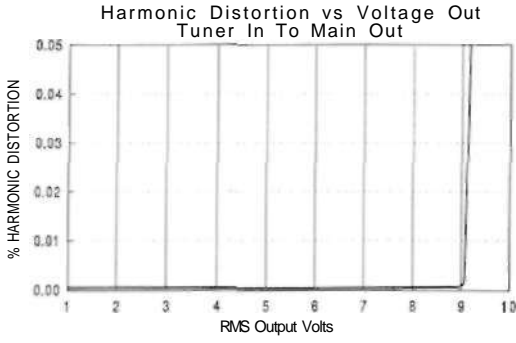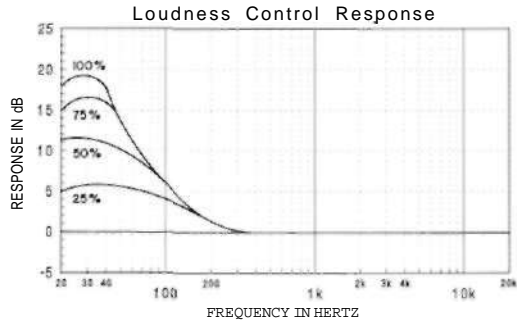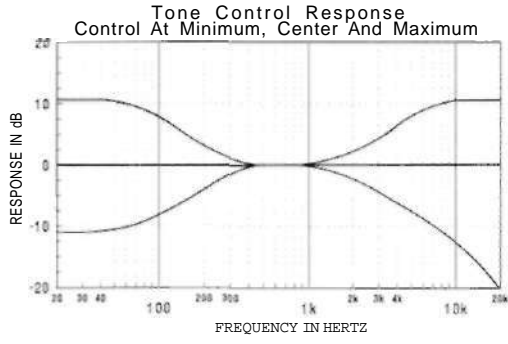Knob clearance required in front of Mounting Panel: 1 1/8 inches (2.9cm)

FINISH

Front Panel is glass, with gold/teal nomenclature illumination. The chassis is black.

WEIGHT

20 pounds (9.1 Kg) net, 35 pounds (15.9Kg) in shipping carton

Tone Control Response
Control At Minimum, Center And Maximum

RESPONSE IN dB

FREQUENCY IN HERTZ

Loudness Control Response

RESPONSE IN dB

100%
75%
50%
25%

FREQUENCY IN HERTZ

Harmonic Distortion vs Voltage Out
Tuner In To Main Out

% HARMONIC DISTORTION

RMS Output Volts

Harmonic Distortion vs Frequency
At Rated Output

% HARMONIC DISTORTION

FREQUENCY IN HERTZ

PERFORMANCE CHARTS

LOGIC DRIVEN CONTROL

All Inputs, Outputs, CD, Tuner, SCR and Video selector lines are controlled by logic circuits in the C38. This logic is changed by front panel switches or by two microprocessor IR decoders, one for LISTEN/MAIN (Area A), and one for RECORD (Area B). These microprocessors are programmed with exclusive Mcintosh software. They receive data from the C38 front panel IR sensor, or from external IR sensors and provide the command signals for all switching functions and volume control. A third microprocessor decodes the CD1, CD2 and TUNER Control commands.

The logic circuits activate Electro-Magnetic switches for the final step in all signal switching.

ELECTRO-MAGNETIC SWITCHING

All signal switching in the C38 is done by ELECTRO-MAGNETIC methods. ELECTRO-MAGNETIC switching is an old and proven technology that has been upgraded with modern materials and manufacturing techniques.

Each switch consists of a sealed glass tube filled with an inert oxygen free atmosphere, with tiny leads protruding from either end. These leads extend into the tube and overlap one another with a separation of a few thousandths of an inch. The leads are made from a ferrous material that is influenced by a magnetic field. They are first plated with gold as a base material, then with rhodium and ruthenium. Ruthenium is the best contact material known. The glass assembly is then placed in the center of a multi-layer coil of copper wire. The entire assembly is molded together in a tough shock absorbing plastic. The switch and coil connections extend from the bottom in the form of printed circuit board terminals.

When a DC voltage is applied to the coil, current flows and creates a magnetic field. The force of the field causes the leads to bend and contact one another inside the sealed glass tube. The inert oxygen free atmosphere eliminates corrosion of the contacts, insuring a low resistance, distortion free switch. The switching control signals come from the C38 logic circuits.

PHONO PREAMPLIFIER

The phono preamplifier uses a high technology integrated circuit operational amplifier that has an extremely wide frequency range capability. Its differential input stage has been optimized for low noise and low distortion. The open loop gain for this circuit is 100,000. With high open loop gain, a large amount of negative feedback can be used around this preamplifier section to reduce noise and distortion to an extremely low value. The feedback network also provides precision RIAA frequency equalization which follows the required response curve very accurately throughout the entire audio range. The network uses 1% tolerance metal film resistors and 5% tolerance polypropylene capacitors.

To achieve low-noise performance, it is essential that the feedback network have very low impedance. A circuit design of this type acts as a small power amplifier. This preamplifier section will actually produce more than 100 milliwatts output power. This extra margin of performance results in a phono preamplifier with extremely low distortion and noise.

This preamplifier circuit has a very wide dynamic range. It will accept up to 90 millivolts of input signal without overload. This is far greater than the maximum output voltage capability of any current model magnetic phono cartridge.

The sensitivity of this circuit is 2.5 millivolts for 2.5 volts at the main output. The gain is 40dB at 1000Hz. A signal input of 10 millivolts results in 1 volt at the Tape Outputs. The Tape Output source impedance of the phono preamplifier is less than 100 ohms, and will drive a load impedance of 1000 ohms or higher.

LOUDNESS AMPLIFIER

High level signals feed into the preamplifier past the input and mode switching, through the volume control and then into the loudness amplifier. The C38 uses an active loudness control circuit design. An integrated circuit operational amplifier is used with two separate feedback circuits. One feedback loop has flat frequency response, and the other loop has loudness compensation. A potentiometer placed between these two feedback loops makes it possible to select any degree of frequency response from flat, to full loudness compensation. The overall gain of the loudness circuit is 20dB, which remains constant at mid frequencies, regardless of the position of the loudness control. The bass and treble compensation increase from the reference gain, and the desired amount of loudness compensation can be selected at any volume control setting.
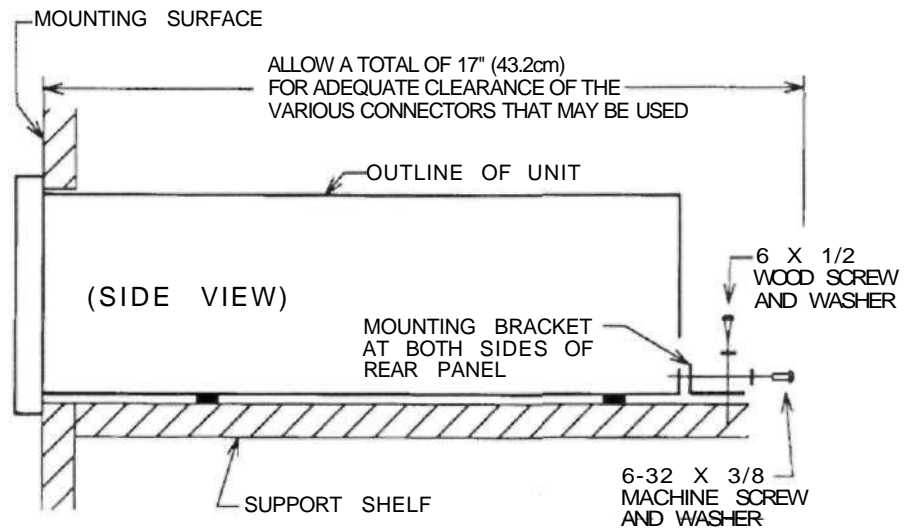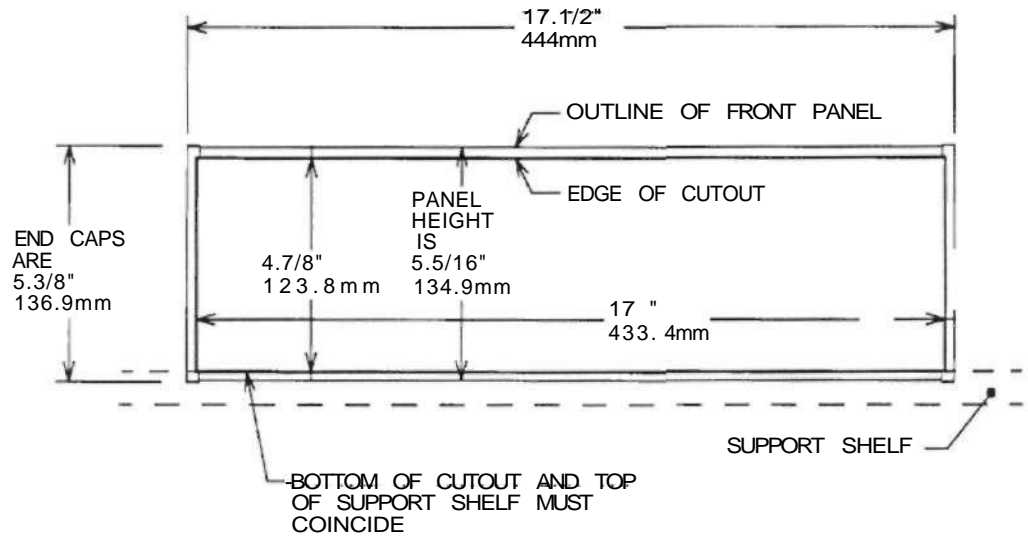
TONE CONTROL AMPLIFIER

The tone control amplifier uses high technology integrated circuit operational amplifiers. The output stages have been optimized for optimum transient performance and minimum distortion. Another set of operational amplifiers is arranged in a circuit configuration equivalent to series tuned circuits. The series tuned circuits can be inserted into either the input, or the feedback loop by means of a potentiometer. The proper choice of circuit components results in a 12dB boost or cut at the desired bass and treble frequencies. When the tone control potentiometers are at their center or detent positions, all tone control elements are removed from the signal path, and the frequency response is perfectly flat.
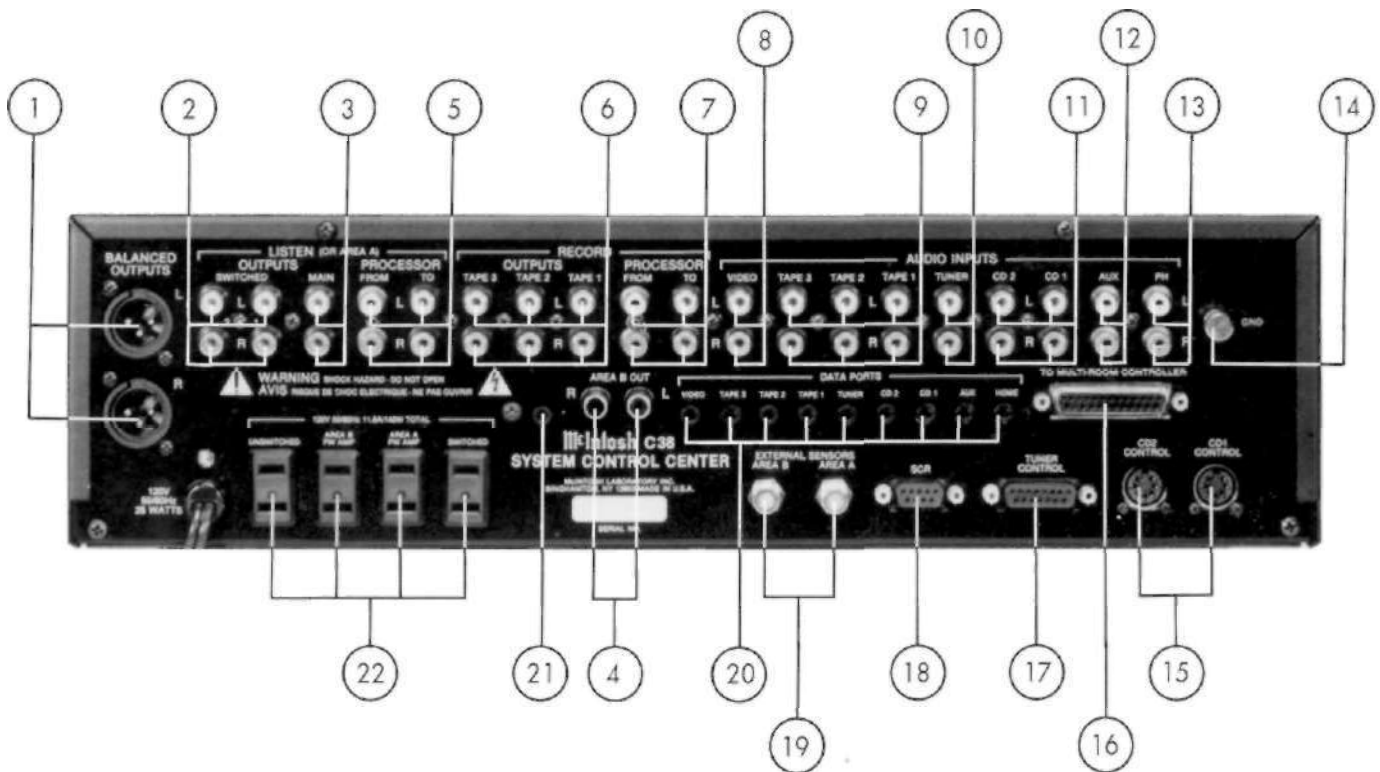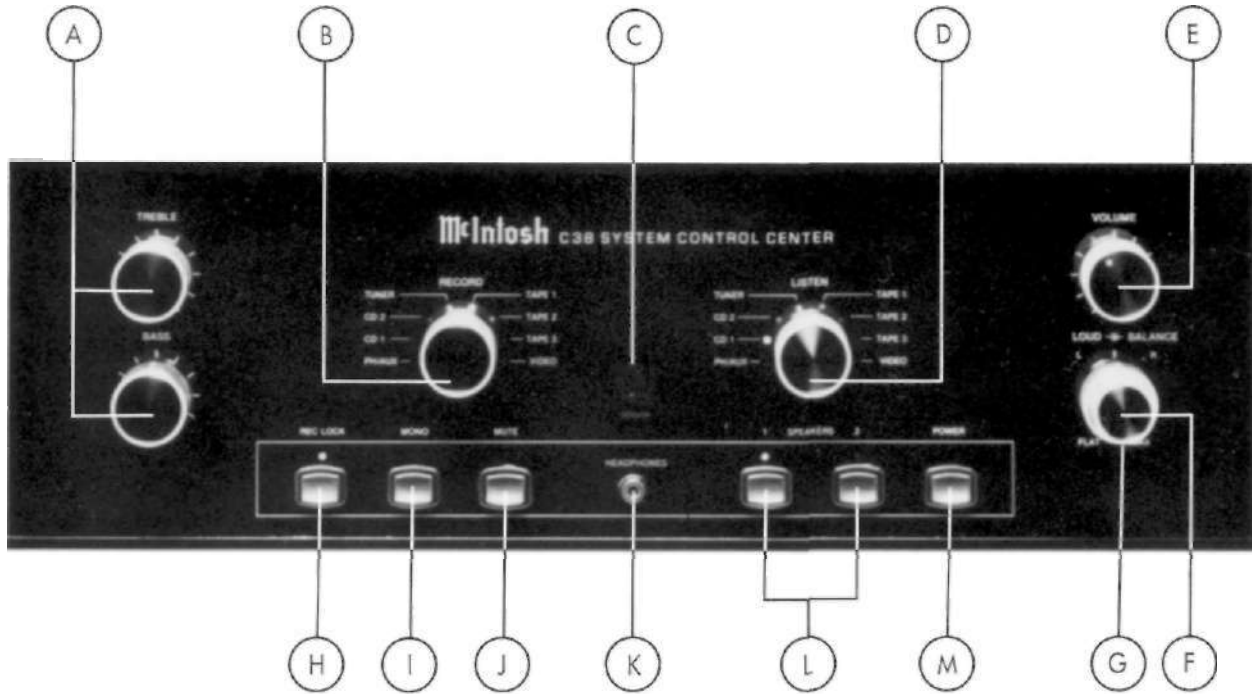
SYSTEM EXPANSION CAPABILITY

Audio buffer and data switches feed all required data and signals to a rear panel 25 pin subminiature "D" connector for system expansion. A Mcintosh CR10 Remote Control system can be added using this connector to add the capability of controlling up to four additional remote areas.

**TECHNICAL
DESCRIPTION**

C38 CUSTOM MOUNTING

17.1/2"
444mm

OUTLINE OF FRONT PANEL

EDGE OF CUTOUT

PANEL
HEIGHT
IS
5.5/16"
134.9mm

END CAPS
ARE
5.3/8"
136.9mm

4.7/8"
123.8mm

17 "
433.4mm

SUPPORT SHELF

BOTTOM OF CUTOUT AND TOP
OF SUPPORT SHELF MUST
COINCIDE

MOUNTING SURFACE

ALLOW A TOTAL OF 17" (43.2cm)
FOR ADEQUATE CLEARANCE OF THE
VARIOUS CONNECTORS THAT MAY BE USED

OUTLINE OF UNIT

6 X 1/2
WOOD SCREW
AND WASHER

(SIDE VIEW)

MOUNTING BRACKET
AT BOTH SIDES OF
REAR PANEL

SUPPORT SHELF

6-32 X 3/8
MACHINE SCREW
AND WASHER

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