

INSTRUCTION MANUAL

McINTOSH MODEL C20

STEREO COMPENSATORS

Serial No. 11001 and Above

McINTOSH LABORATORY, INC
2 Chambers St. Binghamton, N. Y.
U.S.A.

INSTRUCTIONAL MANUAL
McINTOSH C20
STEREO COMPENSATOR
ELECTRICAL AND MECHANICAL SPECIFICATIONS

Power Source	110 VAC; 35 Watts
Output	Main: 2.5 volts with rated input Tape: .25 volts with rated input
Input Sensitivity and Impedance	Tape AUX and Tuner: .25V., 470K Phono: XTAL 0.1V., Very high Low 2 MV., 47K High 10 MV., 47K
Frequency Response	± .5 DB 20 to 20,000
Hum and Noise Level	Tape and Tuner: Better than 80 db below output Mic and Phono: Less than 2 microvolts at input terminals. (—115dbm)
Size	Chassis 14 1/4" wide; 4 1/4" high; 12" deep Front Panel 14 3/4" wide x 4 3/4" high
Weight	17 Pounds

FRONT PANEL CONTROLS

CONTROL	INPUTS AFFECTED	PURPOSE
Inputs Selector	All	Select desired sound source
Volume	All	Control sound level
Aural Compensator	All	Produce loudness contours to compensate for human ear response (Fletcher-Munsen effect)
Bass and Treble Tone	All	Continuously variable control of low and high frequencies
Rumble Filter	All	Reduce very low frequency disturbances such as "rumble" and "wow"
Record Compensator Bass-Treble	Phono & Tape Head	Provide frequency compensation for phonograph recordings or tape heads
Mode Selector	All	Select stereo or monophonic operation
Balance	All	Balance inequalities in source material on stereo
Phase	All	Correct phase in source material
HF Cutoff Filter	All	Remove unwanted high frequency noises

INSTALLATION INSTRUCTIONS FOR THE McINTOSH C20 STEREO COMPENSATOR

The C20 may be mounted in its own cabinet or shelf mounted in a custom cabinet. The preamplifier has been designed to mount on a shelf rather than hang from the front panel.

Enclosed in the instruction manual envelope are two copies of the "PANEL CUTOUT TEMPLATE" and two copies of the "SHELF MOUNTING TEMPLATE" for mounting the C20. Prepare the cabinet for the mounting of the C20 by first cutting the wooden cabinet panel to receive the preamplifier front panel.

1. On the back of the wooden cabinet panel make a vertical center line on the exact center of the area in which the preamplifier will mount. Extend this center line to the shelf.

2. Fold the "PANEL CUTOUT TEMPLATE" on the "FOLD LINE." The "FOLD LINE" is the line of the top of the shelf on which the preamplifier will mount.

3. Place the "PANEL CUTOUT TEMPLATE" in the proper location on the inside of the cabinet with the fold line against the shelf. The template center line should match the center line scribed on the panel in step 1.

4. In the center of the "CUTOUT AREA" on the "PANEL CUTOUT TEMPLATE" are two holes marked "LOCATION HOLES." Carefully and accurately drill these two holes with a 5/32 inch drill.

5. Transfer the "PANEL CUTOUT TEMPLATE" to the front of the wooden cabinet panel. Match the "LOCATION HOLES" for the proper positioning of the template. Proceed with marking the location of the six holes and the outline of the cutout on the front of the wooden cabinet panel.

IMPORTANT: DRILL THE FOUR 3/16 INCH AND THE TWO 5/32 INCH HOLES BEFORE CUTTING OUT THE HOLE IN THE WOODEN CABINET PANEL.

The preamplifier front panel has a 1/4 inch overlap to cover the edges of the cutout in cabinet panel. Next prepare the shelf for mounting the preamplifier.

1. Measure the thickness of the wooden cabinet panel.

2. "FOLD LINES" have been supplied on the "SHELF CUTOUT TEMPLATE" for standard panel thickness up to one inch. Fold on correct fold line for your wooden panel thickness.

3. Place the folded edge of the template against the back of the front panel. The template center line must match the center line extended to the shelf in step #1 of the front panel cutout instructions.

4. Carefully mark the locations of the four 1/4 inch holes.

5. Drill the shelf.

Next prepare the C20 for mounting in the cabinet by removing the pressed wood shipping pallet from the bottom of the preamplifier.

Remove the knobs by gently pulling them toward you. Do not remove the knobs on the three push buttons.

The preamplifier front panel has been attached to the chassis by two angle brackets that are for shipping purposes only. These are removed by unscrewing the four screws (two on each side) that hold the angle brackets to the chassis. After removing these four screws the preamplifier panel can be slipped off over the knob shafts.

After removing the panel lay it face down on a protected surface for the following operations.

Remove the four 6/32 inch screws (one on each corner) that hold the two shipping brackets to the preamplifier front panel.

In the parts bag are six 6/32 x 1 1/4 inches threaded rods. Install these in the six drilled and tapped holes in the back of the preamplifier front panel.

The panel is now ready to be attached to the cabinet. The six threaded rods are inserted through the two 5/32 inch and the four 3/16 inch holes in the cabinet panel. Secure the panel to the wooden cabinet panel by installing on the rods the 6/32 "KEP" nuts supplied in the parts bag. Bring the nuts up tight with a wrench or nut driver.

The preamplifier can now be installed in the cabinet.

IMPORTANT: USE CARE IN SLIDING THE CHASSIS INTO THE CABINET TO PREVENT THE SCRATCHING OF THE BACK OF THE FRONT PANEL BY THE END OF THE CONTROL SHAFTS.

The telephone jacks and push buttons may require adjustment to properly fit at the time of installation. Gentle pressure on the jack assembly and shafts of the push buttons will bring these parts into proper alignment.

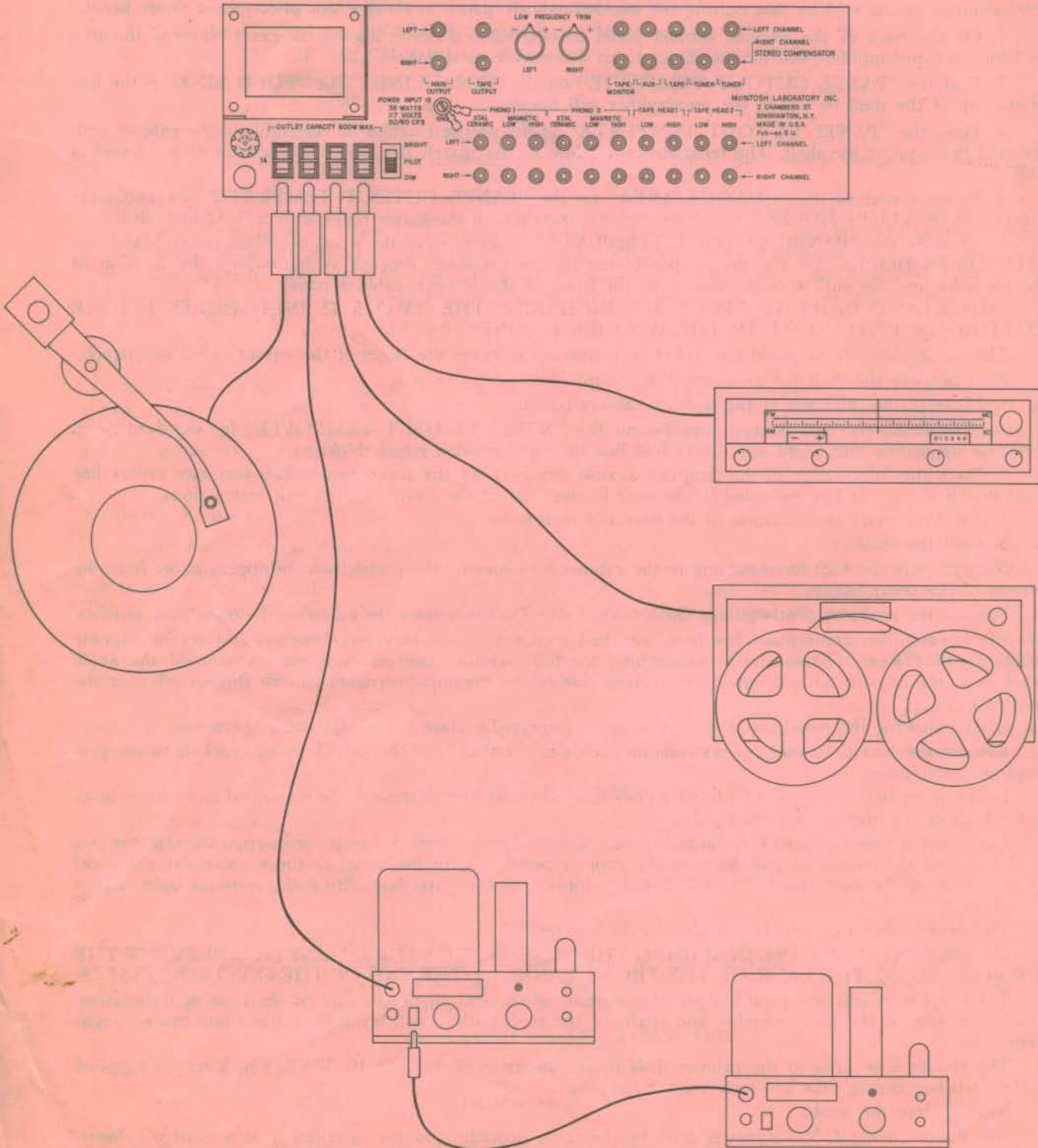
The chassis is secured to the cabinet shelf by the insertion of the four 10/32 x 3/4 inch screws supplied in the parts bag through the 1/4 inch holes in the shelf.

Next replace the knobs.

Installation in the L-55 cabinet is done by the same procedure as for installation in a custom cabinet. The cabinets are supplied with the cutouts and holes all prepared.

CONNECTING PROCEDURE

A. C. CONNECTIONS: On the rear of the panel of the C20, four A. C. receptacles have been provided. Three of the receptacles are controlled by the switch on the volume control. The fourth receptacle is red for identification and is not controlled. The red or uncontrolled receptacle is used for a turntable or record changer. The A. C. receptacles are rated for a maximum of 600 watts.



Provision has been made for 8 separate inputs: (1) Auxiliary, (2) Tape, (3) Tuner 1, (4) Tuner 2, (5) Phono 1, (6) Phono 2, (7) Tape Head 1, and (8) Tape Head 2. In addition a Tape Compare (Monitor) input has been supplied. The Tape Compare input accepts the signal fed from a tape playback preamplifier.

The Auxiliary, Tape, Tuner, and Tape Monitor inputs have a sensitivity of .25 volts. The input impedance is 100K ohms.

Each Phono input has been arranged in three groups. The first group is marked "XTAL-CERAMIC" and is to be used with a constant amplitude cartridge such as a ceramic, or frequency modulated device. The input sensitivity is 0.1 volt. The input termination is a capacitor creating an extremely high impedance.

The second group is marked "LOW" and is designed to be used with magnetic cartridges having an output of less than 10 MV. The input sensitivity is 2 MV. The impedance is 47K ohms.

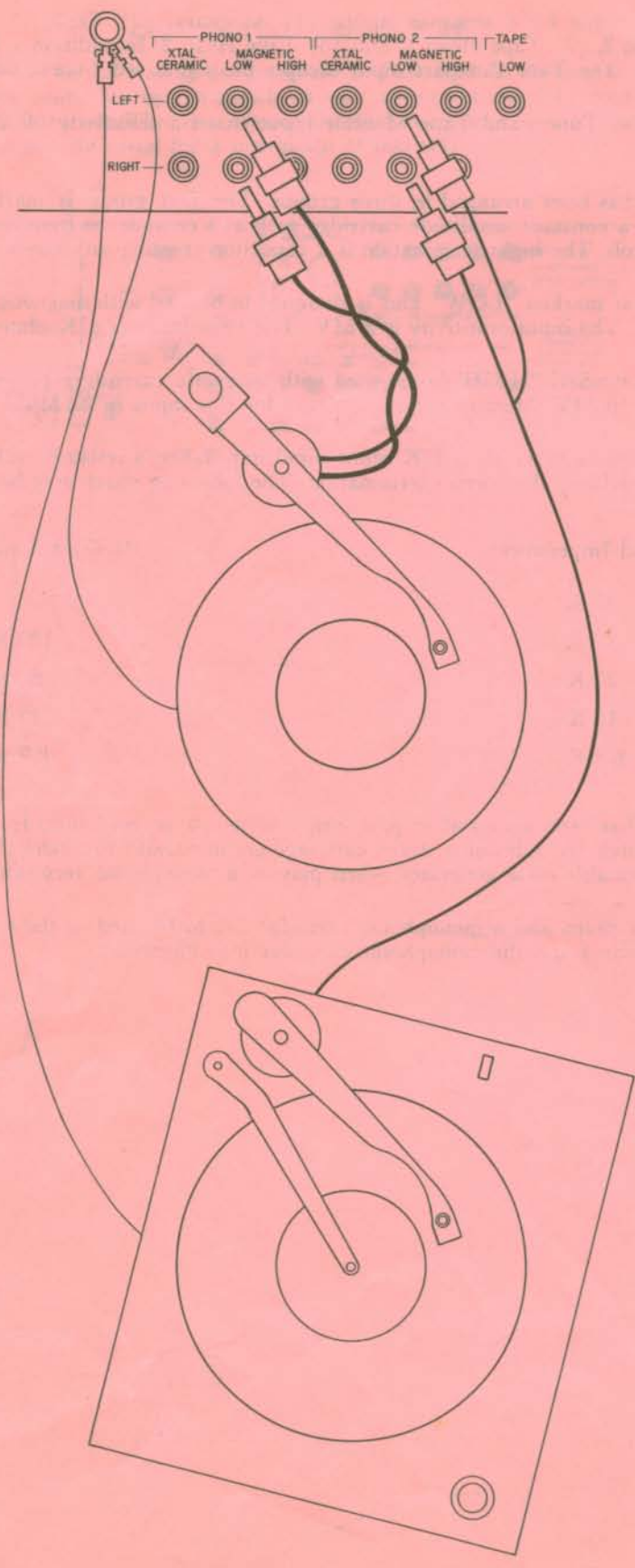
The third group is marked "HIGH" to be used with magnetic cartridges having relatively high output. The input sensitivity is 10 MV. Maximum input voltage for this input is 70 MV.

If the cartridge requires other than 47K ohms input impedance, a resistor can be added across the terminals of the cartridge to achieve the correct termination. The following chart may be used as a guide:

Desired Impedance:	Resistor across input:
47 K	
37 K	180 K
27 K	62 K
15 K	22 K
6.8 K	8.2 K

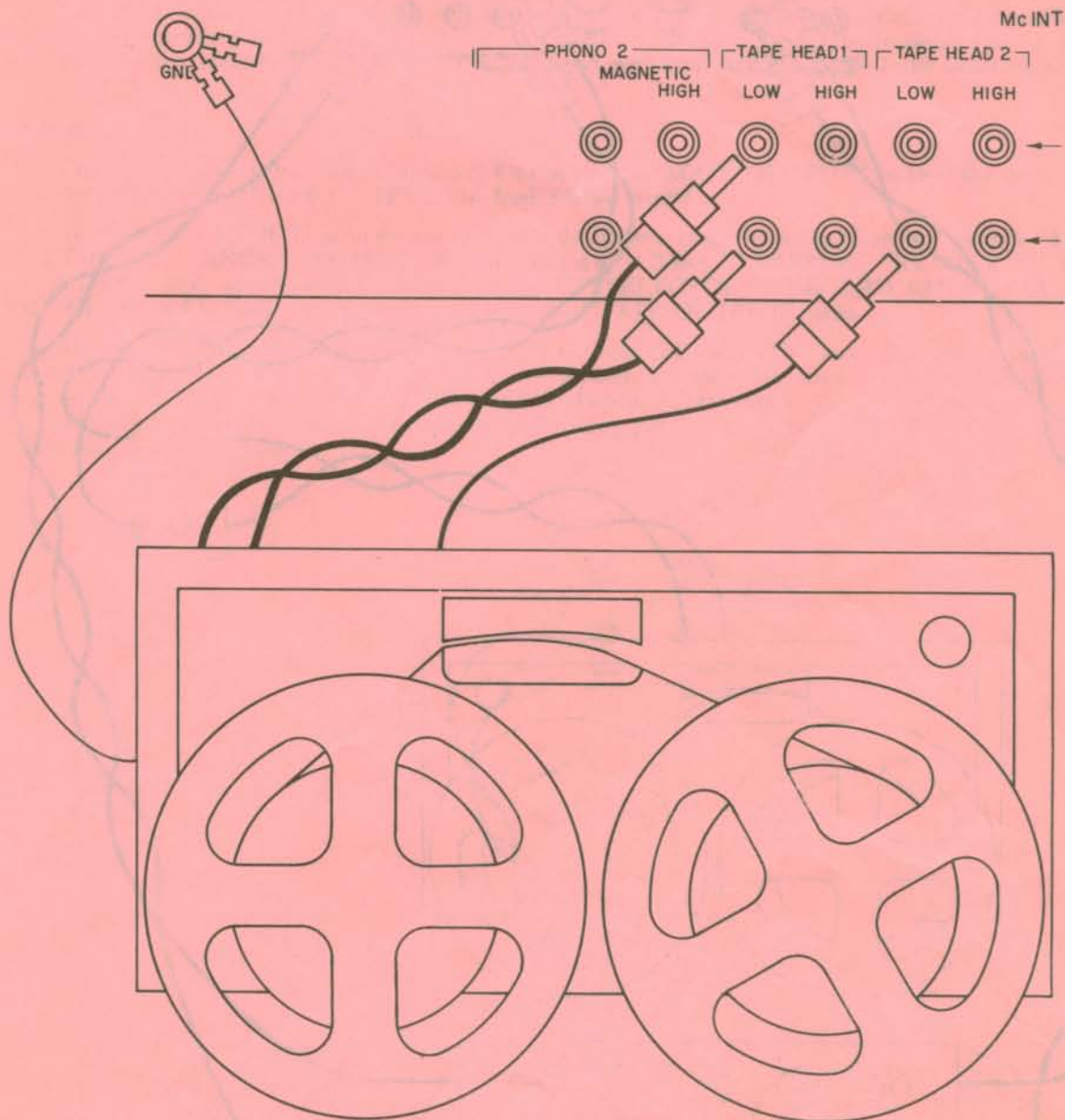
Each phono input has been arranged to play either stereo or monophonic. In the monophonic position of the input selector switch the sides of a stereo cartridge are in parallel to cancel all vertical output. Vertical output results in objectionable noise generated when playing a monophonic recording with a stereo cartridge.

In the event both a stereo and a monophonic cartridge are to be used in the system the stereo cartridge can be plugged into Phono 1 and the monophonic cartridge into Phono 2.



Tape Head

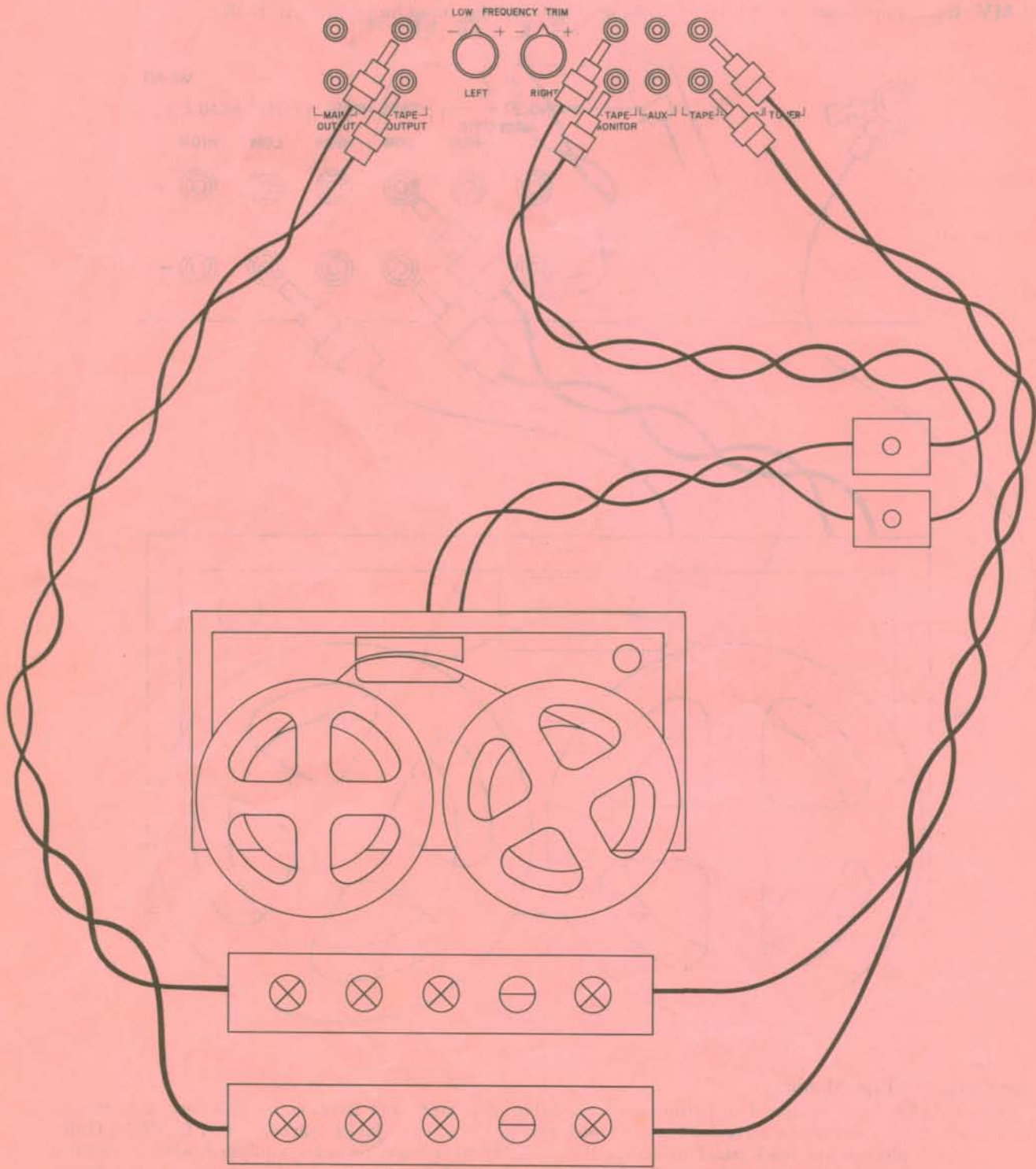
The output of a tape head in either stereo or monophonic can be fed directly into the inputs on the back panel identified as "TAPE HEAD." Facilities have been provided to handle two sets of tape heads. A stereo head could be fed into "TAPE HEAD 1" in the jacks marked "LOW" and a monophonic head could be fed into "TAPE HEAD 2." The input sensitivity of the "LOW" input is 1 MV and the "HIGH" input is 10 MV. Input impedance on "LOW" is 47K, on "HIGH" the input impedance is 167K.



Tape Compare (Tape Monitor)

The C20 has been equipped to permit the monitoring of a tape as it is being recorded enabling the instantaneous comparison of the recorded material with the signal source. Jacks marked "TAPE MONITOR" have been provided on the back panel to accept the signal from a tape recorder equipped with a monitor head. When the push button, located on the brass insert on the front panel, is in the out position the source signal is fed through the amplifiers and loudspeakers. When the button is depressed (in the out position) the signal source becomes the recorded tape and is fed through the amplifiers and loudspeakers.

IMPORTANT: WHEN THE "TAPE COMPARE" PUSH BUTTON IS DEPRESSED SIGNAL FROM ANY OTHER SOURCES WILL NOT BE HEARD FROM THE LOUDSPEAKERS.



Rumble Filter

The push button on the brass front panel insert marked "RUMBLE FILTER" is a sharp roll off below 60 cycles to attenuate any low frequency noise generated in the signal source. When the button is in the filter is on.

Tape Jack

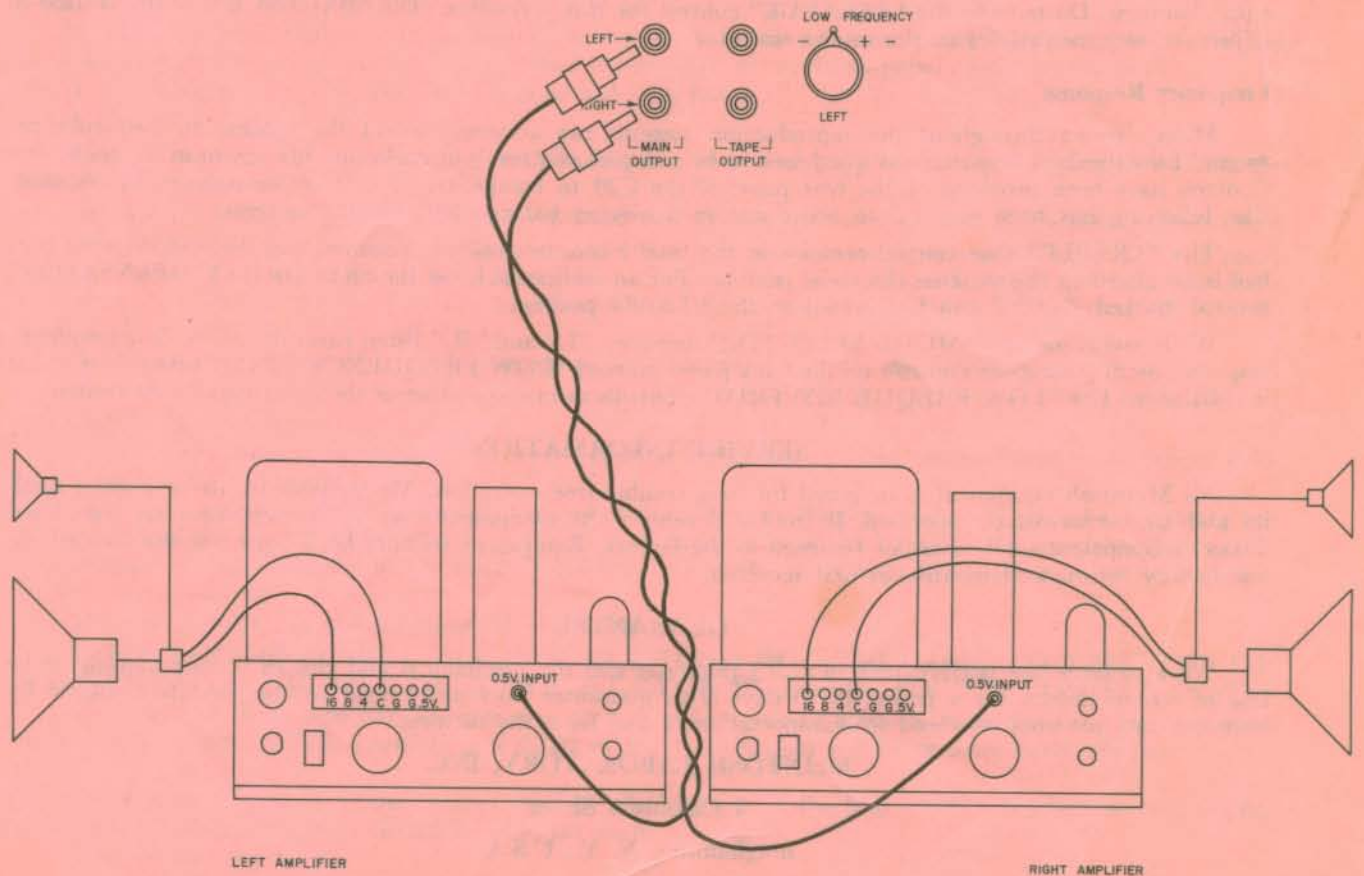
The two telephone jacks on the front panel are provided to supply input facilities for playback or output facilities for recording on a portable tape recorder without disconnecting a tape recorder built in the system. The push button identified as "TAPE JACK" controls the signal to or from the front panel telephone jacks.

Output

Two sets of outputs have been provided. One set is the "MAIN OUTPUT" to feed the power amplifiers and the other is the "TAPE OUTPUT" to feed a tape recorder.

The "TAPE OUTPUT" is unaffected by any adjustments made with the following controls "MODE SELECTOR," "BALANCE," "PHASE," "AURAL COMP," "BASS," "TREBLE," "RUMBLE FILTER," and "VOLUME." Any adjustments made in the "INPUT SELECTOR," "RECORD COMPENSATOR," and "HF CUTOFF FILTER" do effect the signal at the "TAPE OUTPUT" jacks.

The main and tape output jacks are fed from cathode followers. The input impedance of devices connected to these outputs should be 50,000 ohms or greater, and the capacitive reactance of audio cables connecting these devices should not be less than 8,000 ohms at 20,000 cycles. This is the reactance of a capacity of 1,000 mmf. Audio cable having a capacity of 25 mmf per foot may be 40 feet long, 13.5 mmf per foot cable may be 75 feet long.



BALANCING A STEREO SYSTEM

A properly balanced stereo system must be in phase, equal in loudness, and equal in frequency response. The C20 has been so designed that once properly balanced the system will remain in balance through all modes of operation. A very familiar recording either stereo or monophonic should be used for balancing the system. The following procedure has been outlined to assist you in balancing for these critical requirements.

1. Turn the "INPUT SELECTOR" to "PHONO 1 M."
2. Turn each "RECORD COMPENSATOR" control to "RIAA."
3. Turn the "BASS" and "TREBLE" controls to "0."
4. Turn the "MODE SELECTOR" to "STEREO."
5. Turn the "BALANCE" and "PHASE" controls to "0."
6. Turn the "HF CUTOFF FILTER" to "FLAT."
7. Turn the "AURAL COMP" control to "FLAT."

With the controls set as above a monophonic signal will be fed to each side of the preamplifier.

Phase

Stand approximately 10 feet in front of and midway between the loudspeakers. The source of sound should appear to be directly in front of you. Rotate the "PHASE" control between "0" and "180." If the source of sound is not directly in front of you in "0" position reverse the leads to one loudspeaker. Do not use the "PHASE" switch to achieve proper phase. The switch has been provided to correct possible inaccurate phase in source material.

Amplitude

Rotate the "BASS" and "TREBLE" tone controls totally counterclockwise; the "PHASE" control remains in the "0" position. While the record is playing switch the "MODE SELECTOR" between "L" and "R." Adjust the control marked "GAIN" on the input to the power amplifier until the loudspeakers are of equal loudness. Do not use the "BALANCE" control for this procedure. The "BALANCE" control is used to adjust for any inequalities in the source material.

Frequency Response

Many factors throughout the reproduction systems can adversely affect the balance in frequency response. Loudspeakers in particular are prone to be unequal as a result of enclosure, placement in the room, etc. Controls have been provided on the rear panel of the C20 to compensate for these inequalities in response. The following has been outlined to assist you in achieving balance between the systems.

The "TREBLE" tone control remains in the totally counterclockwise position, and the "BASS" tone control is advanced to the extreme clockwise position. For an additional boost the "RECORD COMPENSATOR" control marked "BASS" can be rotated to the "TAPE" position.

While switching the "MODE SELECTOR" between "L" and "R," listen carefully to the low frequency response. By adjusting the controls on the back panel marked "LOW FREQUENCY TRIM" bring the systems into balance. The "LOW FREQUENCY TRIM" controls are independent of the front panel tone controls.

SERVICE INFORMATION

All McIntosh equipment is designed for long trouble free operation. All components are of highest quality and are conservatively operated. If trouble develops the equipment may be serviced by your franchised dealer, a competent serviceman, or returned to the factory. Equipment will not be accepted at the factory unless factory return authorization is first received.

GUARANTEE

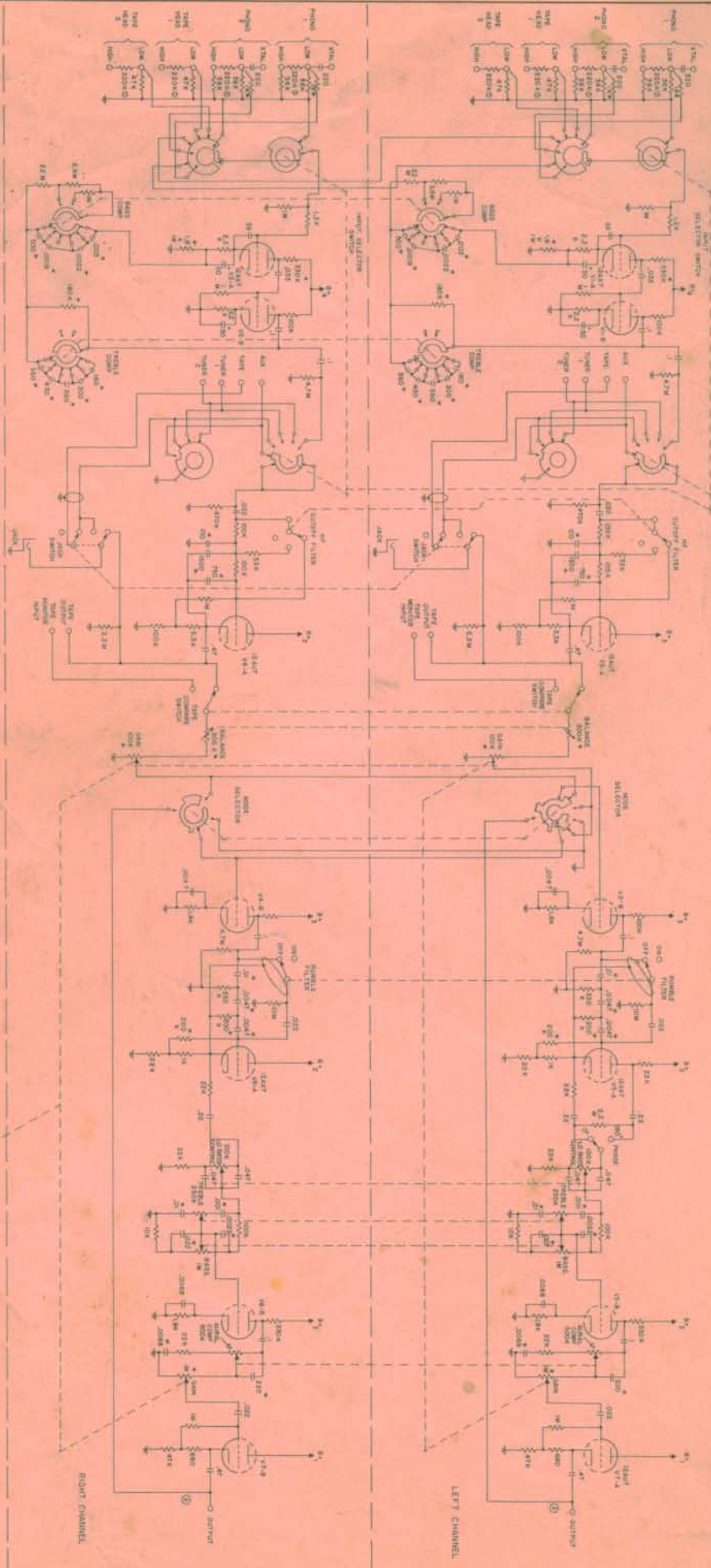
We guarantee the performance of this equipment and the mechanical and electrical workmanship to be free of serious defects for a period of 90 days. This guarantee does not extend to components damaged by improper use nor does it extend to transportation to and from the factory.

McINTOSH LABORATORY, INC.

2 Chambers Street

Binghamton, N. Y., U.S.A.

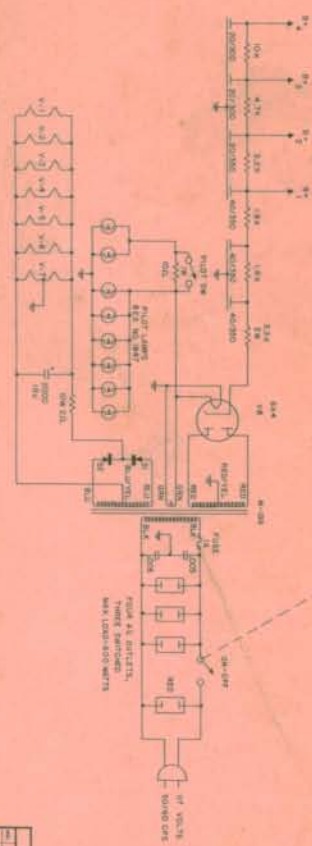
In Canada: Manufactured Under License by McCurdy Radio Industries, Ltd.
22 Front Street West, Toronto, Canada



NOTE
 ALL START POINTS ARE SHOWN IN
 CIRCLES. CLOCKWISE ROTATION,
 FROM BOTTOM SWITCHES ARE SHOWN
 IN CIRCLES.

COMPONENTS ARE:
 ALL RESISTORS ARE IN OHMS, UNLESS
 OTHERWISE SPECIFIED. RESISTORS
 ARE 1/2 WATT, 5% TOLERANCE UNLESS
 OTHERWISE SPECIFIED. RESISTORS
 WITH NUMBERS GREATER THAN 1, EXCEPT
 AS NOTED, ARE 1/4 WATT.
 * THESE PARTS ARE SILENT CONDUCTORS
 AND HAVE SPECIAL CHARACTERISTICS
 SUCH AS LOW NOISE OR RESISTANCE
 TO SHOCK.

① 100K USED IN SOME WIRTS.
 ② THIS CONNECTION NOT SHOWN IN
 SOME WIRTS.



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HUNTINGTON LABORATORY, INC.
 2 CLAWSON ST. BIRMINGHAM, ALA.
 C-20 SCHEDULE
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 DATE 12-20-58
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