MOVING COIL PREAMP

(PRE-PREAMPLIFIER)

MODEL MCP-1

INSTRUCTION MANUAL

audio research corporation

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INTRODUCTION

Congratulations on your purchase. The model MCP-1 is an optional "Head Amp" or pre-preamplifier designed for use in Audio Research model SP-4 and SP-5 preamplifiers. It provides the additional wide-band gain necessary when using low output moving coil type phono cartridges. "Analog Module" circuitry provides unequaled performance under actual dynamic listening conditions. Conservative design and extensive use of high quality industrial grade components insure many years of trouble-free performance.

The MCP-1 is factory preset for an input impedance of 110 ohms and a gain of 26dB which should be satisfactory for most low output cartridges. However, to accommodate the large variety of low output cartridges available, both the input impedance and the gain of the MCP-1 can be altered. It is suggested that this and the initial installation be done only by qualified service personnel since disassembly of the SP-4 or SP-5 and soldering is involved. Refer to succeeding sections of this manual for further instruction.

WARRANTY

A limited 90-Day Warranty (from the date of purchase by the original purchaser) is provided by Audio Research Corporation.

WARNING - RESTRICTED USE PRODUCT

THIS PRODUCT IS INTENDED FOR USE ONLY AS AN INTEGRAL SUPPLEMENTARY PART OF THE AUDIO RESEARCH SP-4 OR SP-5 PRE-AMPLIFIERS. THERE IS NO WARRANTY OF ANY KIND UNLESS THE PRODUCT IS SO USED.

(Explanatory Note: The MCP-1 requires that operating power be supplied it by the device it is used with. A highly regulated and decoupled supply is mandatory for system stability such as the SP-4 and SP-5 units provide.

WARNING: SYSTEM DAMAGE CAN OCCUR FROM ATTEMPTS TO POWER IT FROM OTHER SOURCES.)

PACKAGING

Save All the Packaging - Your Audio Research component is a precision electronic instrument and should be properly cartoned any time shipment is made. You may never have occasion to return it to the factory for service, but if such should be necessary, or other occasion to ship it occurs, the original packaging may save your investment from unnecessary damage or delay.

INSTALLATION

The MCP-1 is an option supplied either factory installed in Audio Research SP-4/SP-5 preamplifiers or as a naked electronics assembly ready for field installation by authorized service personnel. If the latter is required, refer to the procedures below and diagram on page 4:

1) Unplug the preamplifier power cord.

2) Remove the preamplifier top and bottom covers.
   Note: If an SP-4 is to be retrofited, the "head amp" input connectors must be "floated" from the rear chassis. This is accomplished by removing the connectors and enlarging the existing mounting holes (by drill or ream) to 5/16" diameter. Re-install the connectors using insulated shoulder washers, locking type solder lug and hex nut. These parts may be obtained from Audio Research in "kit" form.

3) Remove the preamplifier side panel, adjacent to the "head amp" input connectors, using an allen wrench.

4) Position and hold the MCP-1 above the upper opening of the head-amp compartment with the modules facing outward as shown in the diagram to the right.

5) Referring to the upper component layout diagram on the back page, solder the heavy black ground wire (coming from the preamplifier rear panel ground lug) to the MCP-1 ground turret terminal #1 (bottom section).

6) Solder the two black head-amp input connector ground wires (coming from preamp rear chassis) to the upper section of the MCP-1 ground turret terminal #1.
   Note: When retrofitting an SP-4, these ground wires must be soldered to the connector grounding solder lugs.

7) Carefully start to slide the MCP-1 into the compartment while guiding the red and white power leads through the forward hole of the compartment wall. Also guide the blue and yellow output leads through the rear hole of the compartment wall. Allow the black ground wires to coil or bunch up on the top side of the MCP-1 circuit board.

8) When pushed into final position, complete the mounting to the compartment wall with the (4) #6-32 screws and lockwashers provided.

9) Solder the red and white power leads (protruding through the forward compartment wire exit hole) to the preamplifier mother board funlets "P" and "N" respectively (located near the wire exit).

10) Before connecting the white input wires (coming from the input connectors), slip a ferrite bead (packed with the MCP-1 in a separate plastic bag) over each wire.
    Note: When retrofitting an SP-4, these input wires must be soldered to the center terminal of the input connectors.
    Solder the right and left white input wires to funlets #2 and #3 respectively. The wires should attach from the under or circuit side of the board. At a mid-point along each wire, secure the bead by kinking the wire on each side of it.

11) Follow the appropriate step below for the output lead connections:

(SP-4) - On the circuit side of the preamplifier mother board, remove the short wire jumpers between funlets "1" & "2" and "1" and "G" - located in front of the "tuner" input connectors. Solder a 270 ohm 1/4W resistor vertically into funlets "1" and "2" - close to the resistor body.

Solder the blue and yellow MCP-1 output leads (coming through the rear wire exit hole) to the other end of the resistors in funlets "1" and "2" respectively. Make this connection close to the resistor body and clip off excess lead length.

(SP-5) - On the preamplifier mother board, unsolder the existing (2) black and (2) white "phono" input leads from the funlets located in front of the "tape" inputs. These (4) unsoldered lead ends should then be terminated and soldered in the (4) unused funlets in front of the "phono" inputs. Solder the yellow and blue MCP-1 output leads (coming through the rear wire exit hole to the "L" and "R" funlets previously occupied by the white phono input wires.)

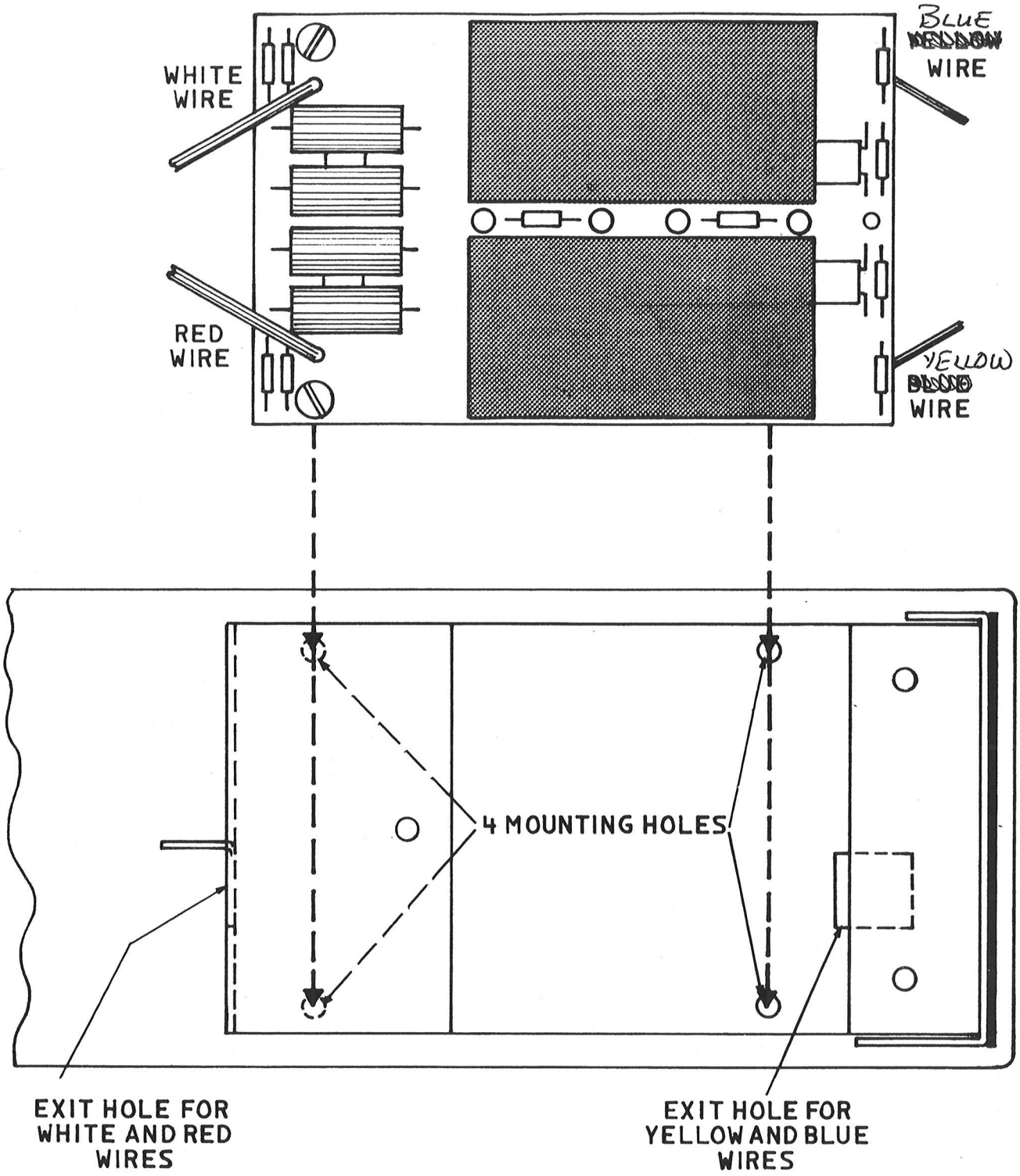
This completes the MCP-1 wiring and installation. Make sure all wires are neatly dressed and away from cover mounting surfaces. Replace the preamplifier end panel, top and bottom covers.

OPERATION

Once installed, the MCP-1 is ready for use. There are no internal adjustments necessary for proper operation. However, to accommodate the variety of low output cartridges available, the input impedance (load) and the gain can be altered as follows:

Referring to the component layout and schematic diagrams note the cartridge "load" resistors R1 and R2. These resistors are 110 ohms (maximum recommended value) as shipped from the factory and should be satisfactory for most cartridges. Simply replace these resistors with the desired lower value if a change is required. The MCP-1 gain is set for 26 dB as shipped. It can be changed +4 dB to - 6 dB if desired. This is accomplished with "gain" resistors R3 and R4. Use 10 ohms for 30 dB gain and 34 ohms for 20 dB. Other gain values between 20 and 30 dB may be realized by calculating a new value for R3, R4 using the equation:

$$(R3,R4) = 1 + \frac{309.5}{K}$$, where K = desired gain.



PREAMPLIFIER END VIEW
(SIDE PANELS REMOVED)

MCP-1 ASSEMBLY MOUNTING