

Operating and Installation Instructions for THE HAFLER DH-102 PRE-PREAMPLIFIER.

Moving coil phonograph cartridges have extremely low output levels, and thus require more gain than the standard phono preamplifier can provide. A pre-preamplifier, or head amplifier, is thus required. To preserve the subtle sonic benefits of which moving coil designs are capable demands not only low noise, but standards of low distortion, low phase shift, and accurate transient response commensurate with the very finest preamplifiers.

The DH-102 is a discrete transistor design which is a direct out-growth of the fully complementary mirror-image circuitry which has earned for the DH-101 control preamplifier the accolades of so many reviewers whose listening judgement is widely regarded. The DH-102 installs inside the DH-101, and converts the Phono 2 input to moving coil suitability. It boasts exceptional signal handling capabilities outside, as well as within the audio band, with unmeasurable levels of ultra-sonic intermodulation distortion (USIM). High frequency high level signals, where record pre-emphasis makes the task the hardest, are handled with exceptional ease. The DH-102 has a 500% safety margin at 20 kHz where the demands are greatest, and 10 times that in the mid-band, where the requirements are more modest. Pulse tests and the reproduction of high frequency RIAA pre-emphasized square waves confirm its superior transient response capability.

Each DH-102 is fully assembled and individually tested to assure its performance meets the high standards indicated by the specifications. The heavy steel case provides exemplary shielding from magnetic fields. To maintain its low noise level, the DH-102 is not self-powered, but instead draws power from the main amp's supply. To accommodate this, the DH-101 power supply was deliberately designed with sufficient filtering and adequate reserve. A special muting circuit in the DH-102 minimizes turn-on transients. To provide for past, present and future moving coil designs, an externally accessible switch provides either 20 or 34 dB of gain. It is located on the bottom of the DH-101.

OPERATION

Plug the output cables from a turntable which uses a moving coil cartridge into the Phono 2 input. The output cables from conventional magnetic cartridges should be connected to Phono 1. If you interchange these cartridge types in the tone arm, remember to shift the cable connections to the appropriate input.

The pre-preamplifier provides a maximum gain of 34 dB when the switch is toward its outer edge, or toward the nearer left side of the bottom of the preamp, when it is installed in the DH-101. 20 dB of gain is provided in the other switch position. Choose the one which suits your cartridge best, in terms of normal operation of the preamp volume control. It is suggested that the lower gain position be used in most instances, enabling the volume control to be operated in the upper part of its range where inter-channel balance is more closely controlled. Also, the overall signal-to-noise ratio of the system will be highest if the preamp volume control is operated at higher settings. Using the high-gain position when it is not necessary will not overload the pre-preamp, but nothing is achieved, since the noise level is proportional to the gain.

The input load impedance of the DH-102 is 600 ohms, which is suitable for most moving coil cartridges. If a lower load impedance is recommended for your cartridge, an appropriate value resistor may be connected in parallel across each channel input jack on the DH-101. For instance, a 120 ohm resistor across the input will yield an overall load of 100 ohms.

Since the DH-102 draws its power from the low voltage secondary side of the preamp power supply, there is no concern with differing line voltages in various countries. That has been taken care of in the preamp power supply wiring.

SERVICE AND LIMITED WARRANTY

The DH-102 is warranted for a full year from the purchase date against defects in material and workmanship. This includes parts, labor and return shipment from the factory to the owner within the continental U.S.A. The owner is responsible for returning the unit to the factory, and must submit a copy of the original dated bill of sale. Ship prepaid, preferably via United Parcel Service, and be sure to include your return shipping street address (preferably not a Post Office Box number).

If the DH-102 is installed in a DH-101 which is returned for service, both units will be serviced under the terms and charges of the DH-101 warranty.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

INSTALLATION IN THE DH-101 CONTROL PREAMPLIFIER

The step by step instructions detail normal installation inside the DH-101, which will take less than an hour. The usual kit-building tools are needed: 60/40 ROSIN CORE solder, a small tip soldering iron, wire cutters and strippers, screwdriver and narrow-nose pliers. The only skill required is knowing how to make a good solder connection in electronic equipment. Your DH-101 manual covers this in detail. If you did not build your DH-101 from a kit, and a review of these instructions makes you doubt installing it yourself, your dealer or a local serviceman can complete the task for a modest fee.

These instructions retain the Phono 1 input for conventional magnetic cartridges, and convert only the Phono 2 position for moving coil use.

Although the DH-102 could be used with other preamplifiers which can provide the necessary power, the David Hafler Company cannot be responsible for the proper operation or performance of such non-standard combinations, other than to warrant the integrity of the DH-102 alone. All such alternative use is at the customer's risk.

INSTALLATION INSTRUCTIONS FOR THE DH-101

The wire colors given in parentheses () conform to the diagram for kit-built DH-101 preamplifiers, which use only red, green and black wires. This diagram, partially reproduced here in lighter tones, with the new wiring shown full weight, represents red wires as white, green as grey, and black as a solid tone.

If yours is a factory assembled preamplifier, the wire colors will be different. Just be certain that you follow the connection locations exactly.

SPECIFICATIONS

Rated Output: 300mV
THD at Rated Output: less than 0.005%
Maximum Output @ 0.1% THD: More than 3 V rms
Frequency Response (-3 dB points): 2 Hz — 1 MHz
Gain (switch selected): 34 dB or 20 dB
Input Impedance: 600 ohms in parallel with .01 μ f
Output Impedance: 50 ohms
Minimum Load Impedance: 10K ohms
Slew Rate: 40 V/ μ s
Rise Time (10%-90%): 300 ns
Typical Equivalent Input Noise, shorted input,
20 — 20 KHz: 115 nV
A weighted: 85 nV
Power Requirements: \pm 18 VDC, 30 ma
Size: 6.5" x 2.5" x 1.5"
Net Weight: 30 ounces (0.9 kg.)

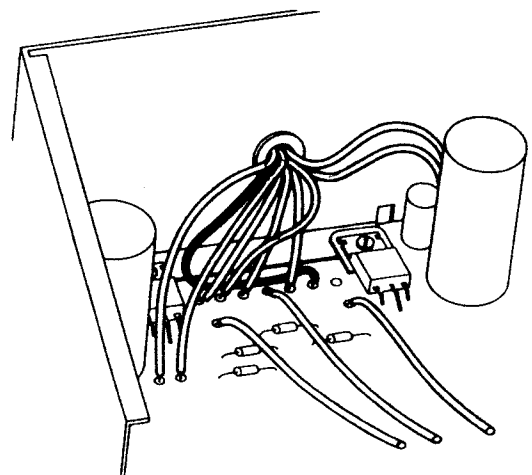
- 1 **Unplug the preamp's AC power cord from the wall socket!** Remove the four side screws that secure the cover, and set these aside. Observe the (green) and (red) wires that connect input sockets 9 and 20 to eyelets 9L and 9R on the main circuit board. Check to see that there is sufficient clearance for the pre-preamplifier under this pair by temporarily placing it behind the main board, with the switch handle projecting through the left side mounting hole. If necessary, replace these wires with a longer twisted pair. On early production preamps, these wires were grouped under the plastic ties alongside the brace. If yours are thus, unsolder them at the input sockets, and pull them out of the ties. These wires should be twisted together, shortened as necessary, and reconnected *directly* to the input sockets, leaving enough room for the pre-preamplifier to fit underneath. Be sure the #9 socket is connected to eyelet #9L in the corner of the board.
- 2 Remove the six screws securing the bottom plate, and set these parts aside. Remove the "U" shaped links from the External Patch sockets, if these were installed.
- 3 Unsolder the (red) wire from input socket #13, and unsolder it at the other end also, where it is connected to lug #13 of the Phono 2 switch SB. This wire will no longer be used. You may choose to unwind it from the twisted group of three, or you can simply cut it off at each end of the group. *Make sure* that the bare tip cannot contact any circuitry, or the chassis or bottom.
- 4 Unsolder the (green) wire from input socket #2, and also unsolder it at the other end, where it is connected to lug #1 of Phono 2 switch SB. This wire, no longer needed, may also be removed or cut, so it cannot make any contact.
- 5 There are two short bare wire jumpers on the input socket strips. One connects the *short* lugs of sockets #1 and #2, and the other connects the *short* lugs of sockets #12 and #13. Remove both of these short wires.
- 6 Trim the DH-102 leads as follows, and bare 1/4" on each:
 - Right input twisted pair — 3"
 - Left input twisted pair — 4"
 - Brown and Violet leads — 3"
 - Orange lead — 7"
 - Blue lead — 6-1/2"
 - Black lead — 4"
 - Red lead — 4-1/2"
 - Green lead — 5"

When installing the DH-102 in the open preamp chassis, do not allow its weight to strain connections that have been soldered. Since it is necessary to have both the top and bottom of the unit accessible for soldering, the DH-102 has to "float" for the present, although it will later be fastened to the bottom plate.

- 7 Place the DH-102 inside the chassis on its narrow side, so that the switch is at the left, projecting forward. Be sure the (red) and (green) wires to input sockets 9 and 20 are above the DH-102. Feed the black, red and green power supply wires through the grommet in the preamp brace. The black wire, which will later require careful positioning, should be inserted first, and kept towards the front and bottom of the preamp as it comes through the grommet. If you have difficulty getting these wires through, a bit of soap on them will make the job easier.
- 8 Place the DH-102 against the back of the large circuit board to give you room for soldering. Select the red and black twisted right input pair, and solder the black wire to the *short* lug between input sockets #12 and #13. Solder the red wire to socket #13.
- 9 Select the green and black twisted left input pair, and solder the black wire to the *short* lug between input sockets #1 and #2. Solder the green wire to socket #2.
- 10 Select the brown wire and solder it to input socket #21. A (green) wire is already connected to this socket. Be sure both wires are soldered.

- 11 Select the violet wire and solder it to input socket #10. Be sure both it and the existing (red) wire are soldered.
- 12 Select the blue wire and solder it to Phono 2 switch SB lug #1.
- 13 Select the orange wire and solder it to Phono 2 switch SB lug #13.
- 14 In order to solder from the bottom of the board while the wire is inserted from the top, place the preamp upright on the left side, with the DH-102 on its end, against the side panel. Place the black power supply wire under (behind) all of the existing (black) wires connecting to the eyelets #11 on the power supply board, and solder it to one of the remaining eyelets #11. Since the eyelets on this board are filled with solder, you may wish to clear them first with a wooden toothpick. + B
- 15 Connect the red wire to eyelet #12 near the front of the board. An adjacent eyelet #12 has a (red) wire connected to it. Make sure both wires are firmly soldered. - B
- 16 Connect the green wire to eyelet #3 in the rear corner of the board. A (green) wire is presently connected to the adjacent eyelet #3. Be sure both wires are firmly soldered.
- 17 Partially install the bottom plate with two of the screws in the sides.
- 18 Place the preamp flat, and position the DH-102 correctly, with the switch protruding through the left hole in the bottom plate. Make sure no wires are either strained or trapped. With the two screws supplied with the DH-102, fasten it to the bottom plate. See that the wires stay clear of the center bottom hole in the back panel.
- 19 Install the remaining bottom plate screws. Insert the "U" shaped links in the External Patch sockets, unless these are to be connected to other equipment. Do not push these links in too far, or they may interfere with socket wiring.
- 20 Position the black power supply wire close behind the other (black) wires to eyelets #11, against the board to the front IC, and then sharply bend it up to the grommet. Any excess black wire should be pulled through to the other side of the brace, once placement is correct. See sketch. This positioning is essential for lowest hum and noise.

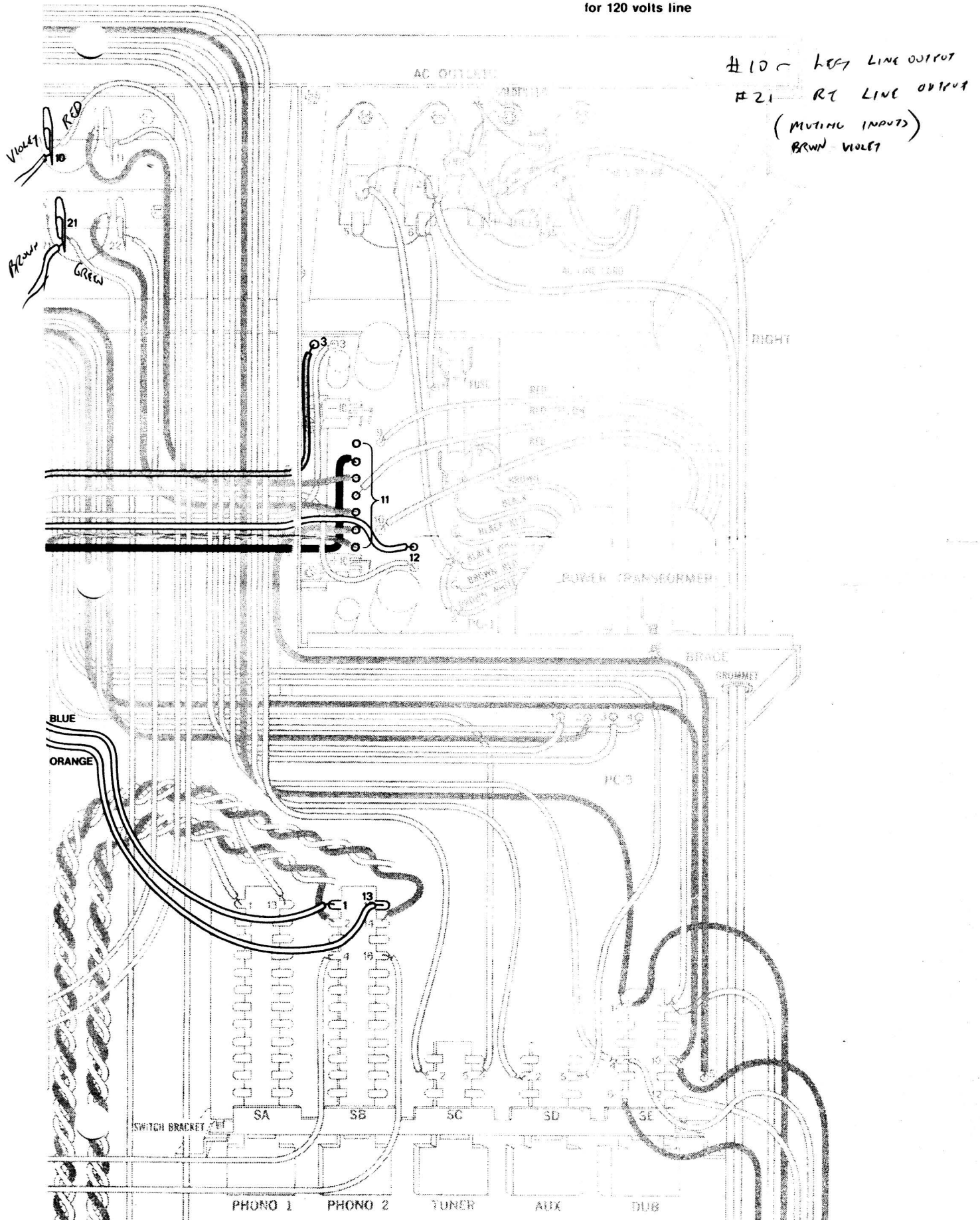
POWER SUPPLY GREEN WIRE →



- 21 The orange and blue wire to the Phono 2 switch can be placed near the bottom alongside the circuit board. Make sure all wires are clear of the top of the brace, and away from the cover screw mounting holes, and install the cover.
- 22 Place the self-adhesive label on the bottom so that it indicates the higher gain position of the switch is towards the left outside edge.

The switch handle may extend slightly beyond the feet on some units. If this is a problem, you may obtain higher rubber feet from the Hafler Company for \$1 to cover postage. Or, you may simply choose to install washers under the present feet.

PC-1 Connections shown
for 120 volts line



HAFLER DH-101 STEREO PREAMPLIFIER

PICTORIAL DIAGRAM

