

# HA10 MOVING COIL CARTRIDGE PREAMPLIFIER

**The HA10 fills the need for a universal moving coil cartridge pre-amplifier which is inexpensive and yet gives the highest sound quality.**

Many people today are upgrading to moving coil cartridges, preferring their clear and detailed sound. In most cases, however, the outputs of moving coil cartridges are too low to drive standard amplifier inputs directly, and so a step-up device is needed. Most of the transformers and pre-amplifiers available today strain either the purse or the ears (or both) and, furthermore, are designed to suit only specific cartridges. The HA10 suffers from none of these draw-backs; it gives you the versatility, simplicity, sound quality and reliability you have come to expect from A&R (Cambridge) and all at a very reasonable price.

**Versatility** – Moving coil cartridges have a very wide range of output voltages and recommended load impedances. To cater for all of these we have incorporated five “DIL” switches with gold plated contacts inside the HA10 which allow the user to programme the input impedance and sensitivity to obtain optimum results from his cartridge. Moreover, the HA10 is available in all combinations of DIN or phono input and output connectors, to suit any turntable and amplifier. However, DIN connectors are recommended for the best reliability and highest sound quality.

**Simplicity** – The simple uncluttered styling of the HA10 is reflected in its ease of operation. When used with the A60 amplifier it receives its power through the DIN lead from the A60 – no more messing about with batteries which always die at the most inconvenient times!

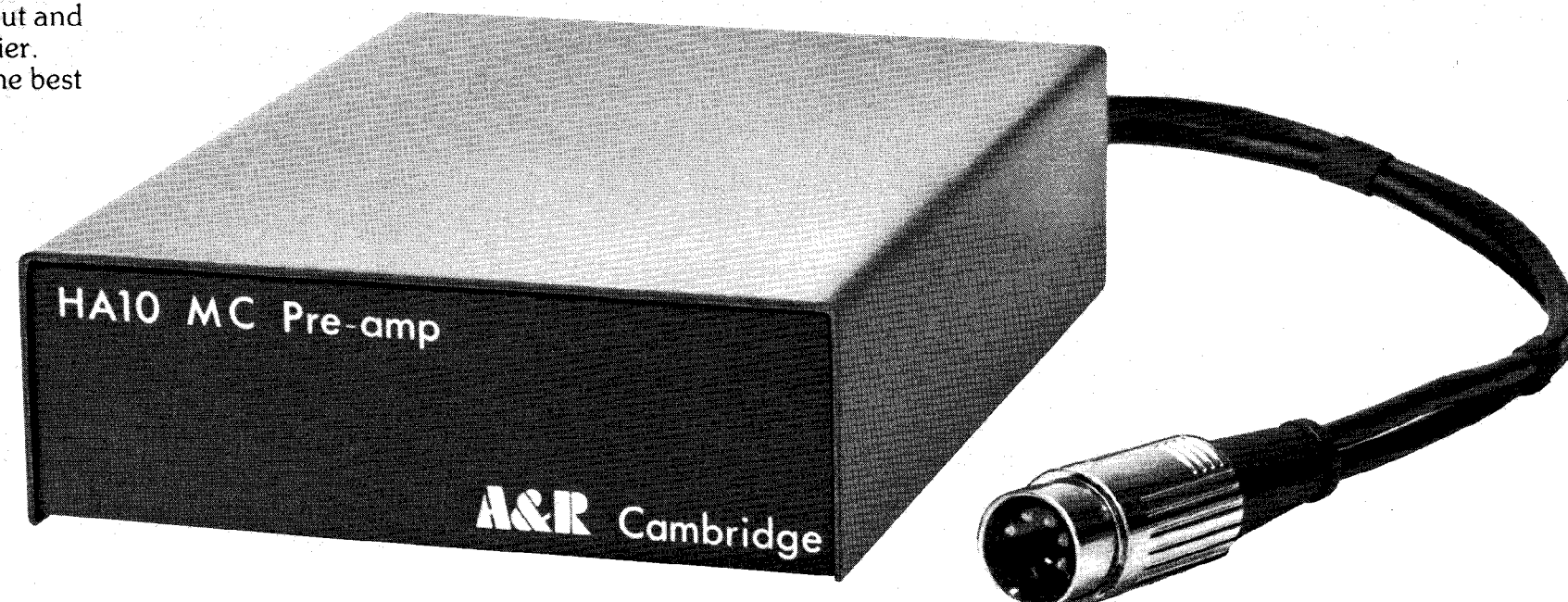
For use with amplifiers other than the A60 an inexpensive stabilised mains power supply (type MPSU) is available.

**Sound quality** – Meticulous attention to detail in the design of the HA10 has resulted in an exceptionally high overload margin and low distortion and noise figures. The excellent power supply available from the A60 enables the design to be unfettered by the constraints of battery supplies. Combined with optimised sensitivity and cartridge matching this results in the highest possible sound quality.

**Reliability** – The HA10, like other A&R (Cambridge) products, has been developed with reliability as a major design criterion. All units are extensively tested and “burnt in” before being despatched to our network of selected dealers.

**A&R**  
CAMBRIDGE

**Sound Reliability.**

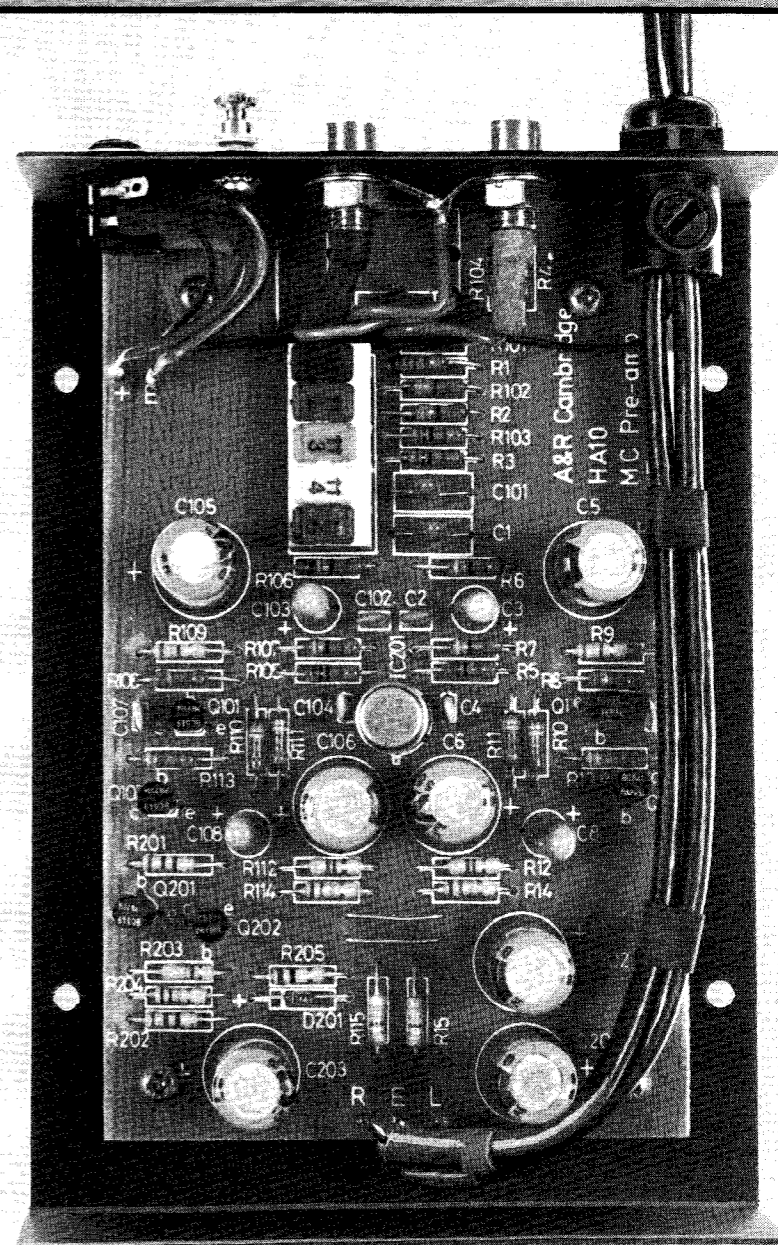




# HA10 SPECIFICATION

<b>Sensitivity (for 2 mV output)</b>	65 $\mu$ V (high gain) 130 $\mu$ V (low gain)
<b>Distortion</b>	THD less than 0.01% 10 Hz-50kHz at 200 mV output
<b>Overload Margin</b>	40 dB, 10 Hz-20 kHz
<b>Frequency Response</b>	10 Hz-20 kHz +0/-0.25 dB
<b>Channel Balance</b>	$\pm$ 0.25 dB
<b>Noise-CCIR/ARM weighted (via RIAA equaliser ref. specified input)</b>	Less than -60 dB (high gain) Less than -63 dB (low gain)
<b>Input Impedance</b>	Resistance switchable: 330/100/30/10 ohms Capacitance switchable: 10 nF/1.0 $\mu$ F
<b>Power Requirement</b>	+ 15 volts at 15 mA (supplied from A60 or MPSU power supply)
<b>Input &amp; output terminations</b>	Available with the following combinations of 5-pin DIN and phono connectors phono in, DIN out } for use with A60, and other DIN DIN in, DIN out } input amplifiers Phono in, phono out DIN in, phono out (to special order)
<b>Dimensions</b>	143 x 97 x 37 millimetres
<b>Weight</b>	Approximately 460 gm

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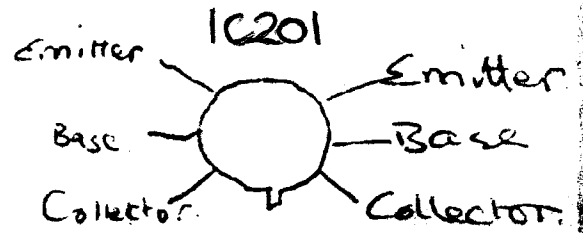
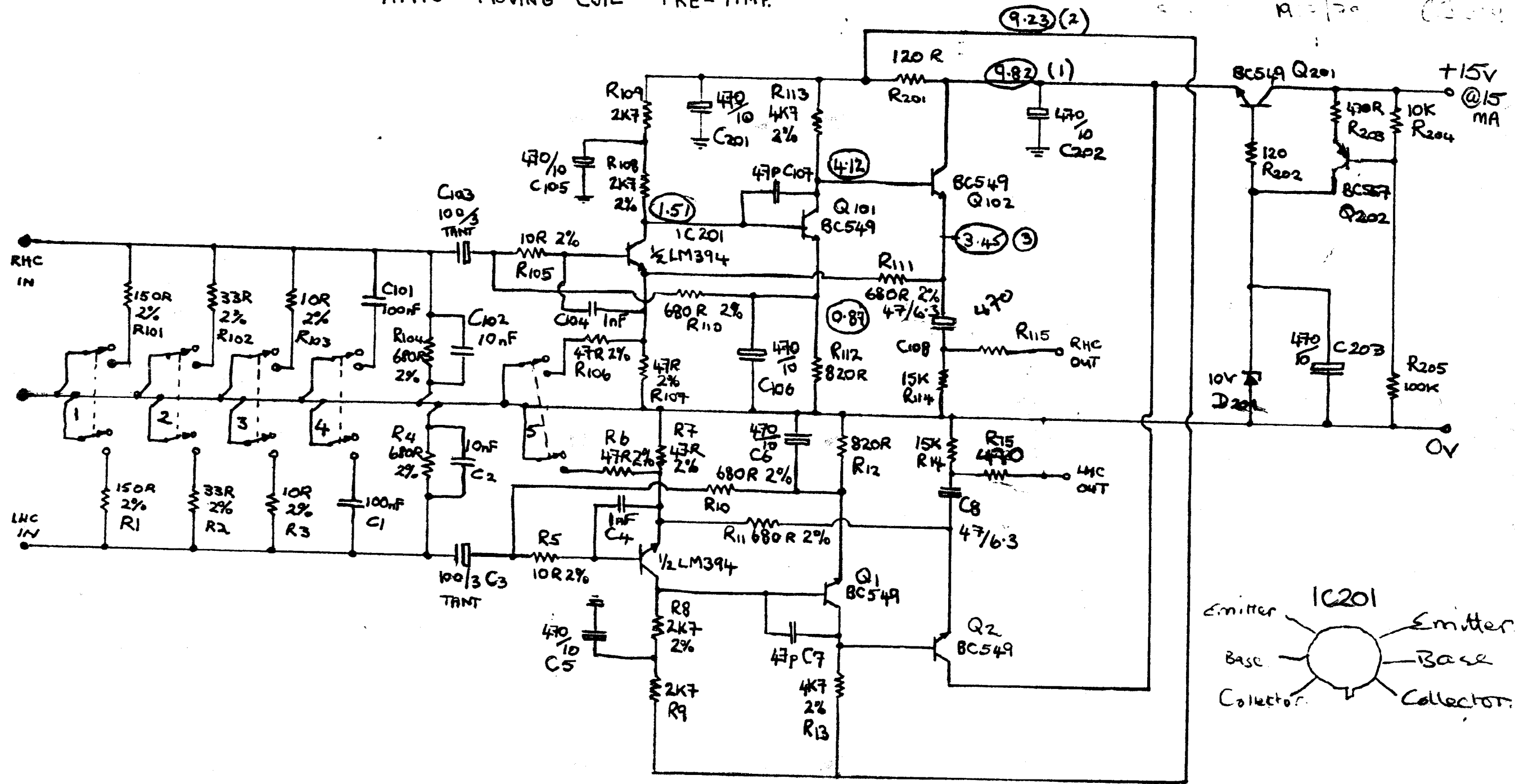
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SPJ drawn with Lov. care.  
+ Mark.

# HA10 MOVING COIL PRE-AMP.



### Suggested cartridge loadings

All low output moving coil cartridges will operate with the matching switches in the out position. However, with certain cartridges improved results may be obtained with a lower load resistance or, occasionally, a higher input capacitance to control the cartridge's high frequency response. Also, cartridges with very low output voltages will benefit from the higher gain setting.

Suggested settings for some of the more popular moving coil cartridges are given in table 2. When using other cartridges, consult your dealer or the cartridge specification sheet. No harm can be caused by experimentation with gain or loadings provided the warnings given above are adhered to.

HA10

MOVING COIL CARTRIDGE PRE-AMPLIFIER

OPERATING INSTRUCTIONS

CARTRIDGE	SWITCH				
	Brown (9&10)	Red (7&8)	Orange (5&6)	Yellow (3&4)	Green (1&2)
Audio Technica AT30E	OUT	IN	OUT	OUT	OUT
Coral 777 EX	IN	OUT	OUT	OUT	OUT
Coral MC81	IN	OUT	OUT	OUT	OUT
Denon	OUT	OUT	OUT	OUT	OUT
Elite	IN	OUT	OUT	OUT	IN
Entre 1	IN	OUT	OUT	OUT	OUT/IN
F R Mk 111	OUT	OUT	OUT	IN	OUT/IN
Ortofon	OUT	IN	OUT	OUT	IN
Supex/ASAK	OUT	OUT	OUT	OUT	OUT

Table 2 Suggested cartridge loadings

### HA10 Specifications

Sensitivity for 2 mV output	63 $\mu$ V (high gain) 130 $\mu$ V (low gain)
Distortion (at 200 mV output)	THD 0.01%, 10 Hz - 50 kHz
Overload margin	40 dB, 10 Hz - 20 kHz
Frequency response	10 Hz - 20 kHz, +0/-0.25 dB
Channel balance	$\pm$ 0.25 dB
Noise CCIR/ARM weighted (via RIAA equaliser and referred to 2mV/1kHz at HA10 output)	Less than -60 dB (high gain) Less than -63 dB (low gain)
Input impedance	Resistance switchable: 330/100/ 30/10 ohms Capacitance switchable: 10nF/ 1.0 $\mu$ F
Power requirement	+15 volts at 15 mA (supplied from A60 or MPSUA)
Dimensions	143 x 97 x 37 millimetres
Weight	Approx. 460 gm

# **Arcam**

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# HA10 MOVING COIL CARTRIDGE PRE-AMPLIFIER

## OPERATING INSTRUCTIONS

### Introduction

The HA10 is designed to raise the output voltage from low output moving coil cartridges to a level compatible with the normal magnetic cartridge input of modern high fidelity amplifiers. (NB. Low output moving coil cartridges generally have outputs in the range 20µV/cm/sec to 200µV/cm/sec. So called 'high output' moving coil cartridges, such as the Ultimo 10X, Satin M117 and Mission 773 tend to have outputs of about 500µV/cm/sec and as such should be fed directly into the amplifier's normal pick-up input - the extra gain of the HA10 is not necessary.)

### Connections

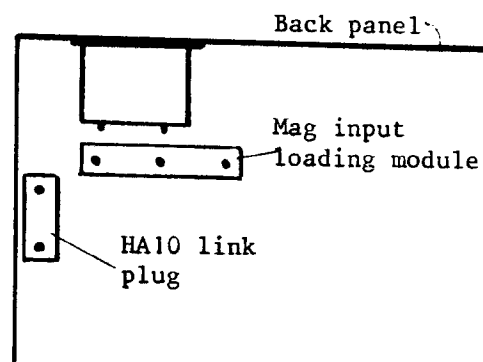
The standard version of the HA10 has phono input sockets and a 5-pin DIN output plug on a short captive lead. However, an alternative version is available to special order with phono socket inputs and phono plug outputs. You should choose whichever version suits your amplifier thus avoiding adaptors.

The HA10 output should be plugged into the magnetic pick-up input of your amplifier or pre-amplifier. The output leads from your turntable should be plugged into the HA10. If your turntable has a separate ground lead, then this should be connected to the screw terminal marked 'GND' on the HA10.

### Power

When used with the Arcam A60 amplifier the HA10 can be powered directly from the A60. The white link provided with the HA10 should be plugged across the pins on the A60 circuit board marked 'LINK FOR REMOVE POWER' (see figure 1) - the power is then supplied to pin 4 of the A60's pick-up DIN socket.

Figure 1  
Position of powering link  
in Arcam A60 Amplifier



When the HA10 is used with amplifiers other than the A60 a separate power supply is required. The Arcam MPSUA stabilised power supply is designed specifically for this purpose and plugs into the jack socket on the HA10 marked 'EXTERNAL POWER'.

### Operation

#### 1) Switching on and off

When the HA10 is used with the Arcam A60, the system switches on and off silently.

When using the HA10 with an MPSUA or other external supply, it is essential that the HA10 be switched on for a few seconds before turning on your amplifier, in order to avoid thumps.

The reverse applies to switching off (ie turn your amplifier off first).

#### 2) Positioning the HA10

Moving coil preamplifiers are very sensitive to external hum fields. The steel case of the HA10 helps considerably in this respect but certain basic rules should be followed:

- Keep the HA10 well away from the mains transformer(s) in ancillary equipment. The HA10 may be positioned on top of, behind or to the left hand side of an A60 or T21 without significant hum induction.
- Keep all mains and other power cables well away from the HA10 and especially from its input leads.
- Ensure that all earthing and connecting cables are sound and that all plugs are clean and pushed fully home. (Phono plugs are notorious in this respect.)

### Cartridge matching switches

The HA10 is fitted internally with five miniature gold-plated switches to provide optimum matching for any low output moving coil cartridge. To gain access to these switches turn off the HA10 and remove the four screws in the base with a No. 1 posidriv screwdriver. The lid may now be lifted off.

The action of the switches is shown in table 1; as supplied, all switches are 'out' and the HA10 is in the high input resistance, low input capacitance mode.

ON NO ACCOUNT SHOULD THESE SWITCHES BE OPERATED WITHOUT FIRST EITHER TURNING DOWN YOUR AMPLIFIER'S VOLUME CONTROL OR SELECTING ANOTHER INPUT. DAMAGE TO YOUR AMPLIFIER OR LOUDSPEAKERS COULD RESULT IF THIS ADVICE IS IGNORED.

SWITCH	INPUT RESISTANCE	INPUT CAPACITANCE	APPROXIMATE VOLTAGE GAIN
All out	330 Ω	10 nF	15x (24dB)
Brown (9&10) in	100 Ω	-	-
Red (7&8) in	30 Ω	-	-
Orange (5&6) in	10 Ω	-	-
Yellow (3&4) in	-	1.0 µF	-
Green (1&2) in	-	-	30x (30dB)

ie. use Yellow (3&4) switch to select capacitance; in gives 1.0 µF, out gives 10 nF; use green switch (1&2) to select gain; in gives 30x (30dB), out gives 15x (24dB); use brown (9&10), red (7&8) and orange (5&6) switches to vary resistance.

Table 1 Operation of cartridge matching switches