

Aria

MM / MC Phono Stage

INTRODUCTION

The function of a phono pre amplifier is to match the output from a pick up cartridge to the input of a line level amplifier. It is required to amplify the very low signals produced by the cartridge and also to equalise the frequency curve in accordance with RIAA record cutting standard.

Moving coil (MC) and moving magnet (MM) cartridges require different types of phono pre amplifiers to achieve optimum performance. The **Aria** uses two separate circuits dedicated to both moving coil and moving magnet cartridges and avoids compromises.

The **Aria** is an "all analogue amplifier" with no digital control circuitry. The fully aluminium case screens the internal circuit from any stray RFI signals.

We have avoided including any superfluous gadgets as they obstruct the signal path and degrade the sound quality. The **Aria** incorporates remarkable and innovative design ideas. These innovations are described more fully in the technology section of this manual.

Alternatively, you can simply switch on, sit back and let your **Aria** sing for itself.

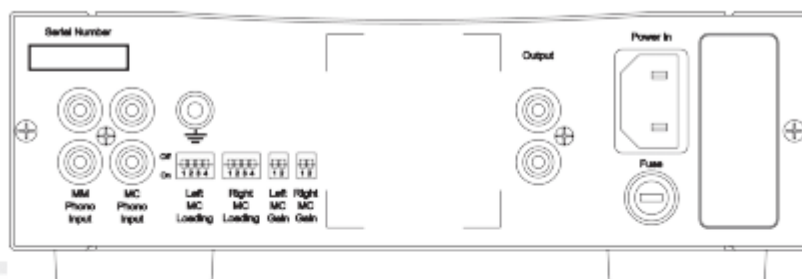
TECHNOLOGY

The **Aria** has two entirely separate high performance phono stages. One fully adjustable dedicated moving coil and a moving magnet stage. Each stage has its own separate input sockets and input preamplifier circuitry. This enables Rega to design bespoke input circuitry for each cartridge without compromise. The MM/MC signal switching is performed at a high level and a low impedance using relays thus not causing any degradation of the signal.

The MC input uses parallel connected low noise FET's (Field Effect Transistor) configured as a compound pair configuration. The use of FET transistors ensures there is no bias current flowing in the cartridge coil so as not to upset the delicate magnetic geometry of the cartridge. The MC input has the provision for selecting resistive input loading of 70 to 400Ω and capacitive loading of 1000 to 4200pF. The input sensitivity can be changed by 6dB, via the back panel.

The MM input uses low noise bipolar input transistors also configured as a compound pair. There are two separate power supplies for each channel and further sub power supplies for each of the low noise input circuits. Nichicon FG electrolytic capacitors have been used in critical positions in the power supplies. ICEL and Wima polypropylene capacitors have been used in the signal path and equalization networks. Discrete circuitry is used throughout the signal path ensuring full control of the circuit design.

BACK PANEL / CONNECTIVITY



Setup

Separate inputs are used for moving magnet and moving coil cartridges. Connect your turntable's tonearm cable to the appropriate input sockets on the back of the **Aria**. If your tonearm has a separate earth this should be firmly connected to the earth terminal shown on the rear panel in the diagram above.

Connect the **Aria** to your amplifier via the sockets marked **Output** to the appropriate line level input on the back of your amplifier. Use a high quality phono cable such as the Rega Couple 2 (not supplied). The mains power lead (supplied) should be connected to the IEC socket on the right hand side located above the fuse holder.

NB. Always switch both pre and power amps off **before** changing any connections.

FRONT PANEL INDICATORS

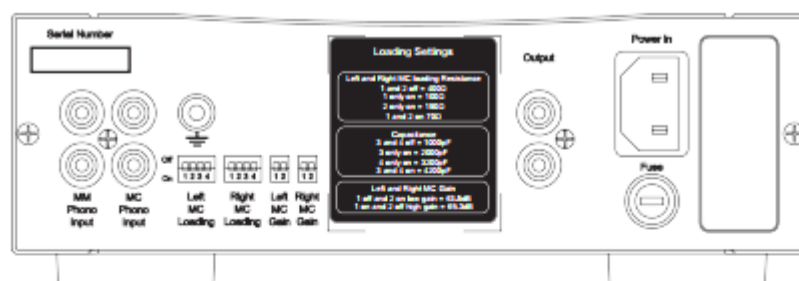


Powering Up

The **Aria** is activated by pressing the On/Off button situated to the left of the control panel. The REGA logo indicator below it will glow RED. It is recommended to activate the **Aria** before the power amplifiers and deactivate after they have been switched off.

NB. The unit will be in MUTE for approximately 5 seconds when powered-up or switching between inputs. MM or MC inputs are selected by pressing the input button on the front panel. The LED indicator will show the selected input. When switching between MM & MC the **Aria** goes into mute briefly to avoid any intrusive switching noise whilst the circuitry settles. When switching between MC and MM both LED's will temporarily light, with a short delay in the audible 'click' of the relay. This is a function of the mute and relay contact cleaning / activation circuit and is normal.

MC CARTRIDGE ADJUSTMENT



IMPORTANT Turn off the **Aria** before changing any of the settings on the back, especially the **MC Gain** setting which causes the MC input circuit to re-adjust. (This may cause a big 'thump' through the speakers if the amplifier is on and the **Aria** is the source component). The MC input has the provision for selecting resistive input loading of 70 to 400 Ω and capacitive loading of 1000 to 4200pF. The input sensitivity can also be changed by 6dB. You must adjust each channel (left and right) individually. Via the use of the dip switches located on the back panel. Your cartridge manufacturer will state the recommended loading for the model MC cartridge you have chosen.

If you are using the Rega Apheta MC we recommend the following settings:

Left and Right MC Loading Resistance - **1 only on = 100 Ω**

Left and Right MC Loading Capacitance - **3 and 4 off = 1000pF**

Left and Right MC Gain - **1 on and 2 off high gain = 69.3dB**

INSTALLATION

The **Aria** will work well on most surfaces, provided there is sufficient air around it to prevent overheating. To avoid any possible magnetic interference and increased hum levels, position the **Aria** as far away from the turntable as the tonearm lead will allow, this ensures all delicate electronics are kept away from other transformers and motors etc. Try not to stack other Hi-Fi components directly on top of each other. Given the nature of sensitive high gain phono amplifiers the **Aria** may need placing away from high power amplifiers that use large transformers. If in the rare event that low level noise should become overly intrusive, try using the lower gain setting (see page 5), and move the unit away from possible noise sources as described.

Ventilation

The minimal heat produced by the **Aria** is dissipated by the case, particularly the left hand side. Try to ensure that the case has an uninterrupted air passage around it.

Warm up

The **Aria** circuit has been carefully designed to work with a minimal "warm up" period of just a few minutes as the sensitive input circuits stabilise and reach their optimal operating conditions. The MC input circuit uses a self-adjusting servo control to keep the MC input circuit at its optimum operating point compensating for any variations in ambient and operating temperature.

TECHNICAL SPECIFICATIONS

Maximum output level = 11V RMS.

Rated output level = 200mV.

Output resistance = 100Ω.

Minimum output resistance for a -3dB point at 15Hz = 1K.

AC supply 230V & 115V Nominal +/- 10%.

230V / 20mm Fuse / T250mAL

115V / 20mm Fuse / T500mAL

Power Consumption = 10 Watts.

Ambient operating temperature 5 to 35°C

TECHNICAL SPECIFICATION / MC INPUT

Generator source resistance = 15Ω.

Loading set to 100Ω and 4200pF.

Input sensitivity (0dB high gain setting) = 70uV for 200mV output.

Input sensitivity (-6dB low gain setting) = 133uV for 200mV output.

Resistive Input loading = 70, 100, 150 & 400Ω.

TECHNICAL SPECIFICATION / MC INPUT CONTINUED

Resistive Input loading = 70, 100, 150 & 400 Ω .

Capacitive Input loading = 1000, 2000, 3200 & 4200pF.

Maximum input level (0dB high gain setting) = 5.1mV at 1KHz.

Maximum input level (-6dB high gain setting) = 10mV at 1KHz.

Gain (0dB high gain setting) = 69.3dB at 1KHz.

Gain (-6dB low gain setting) = 63.5dB at 1KHz.

Frequency response (100K Ω output load) = 13Hz (-3dB) to 70KHz (-0.2dB).

RIAA accuracy (100K Ω output load) = better than +/-0.2dB 70Hz to 70KHz.

THD+Noise(-6dB low gain setting) = typically 0.035% at IV Bandwidth 100Hz to 22KHz.

Noise (15 Ω terminator and -6dB low gain setting) = typically -71dBV un-weighted 100Hz to 22KHz.

Signal to noise ratio (un-weighted 100Hz-22KHz bandwidth and 0dB high gain setting) = -67dB using 1KHz 5cm/sec track on the HFS69 test record and Apheta cartridge fitted to a RPB turntable.

Notes on test record levels.

The output will be 1.35V using the 1KHz 5cm/sec track on the HFS69 test record using the Apheta cartridge and the 0dB high gain setting.

TECHNICAL SPECIFICATION / MM INPUT

Generator source resistance = 40 Ω .

Input sensitivity = 1.7mV for 200mV output.

Input loading = 47K in parallel with 100pF.

Maximum input level = 93mV at 1KHz.

Gain = 41.4dB at 1KHz.

Frequency response (100K Ω output load) = 15Hz (-3dB) to 100KHz (-0.2dB).

RIAA accuracy (100K Ω output load) = better than +/-0.2dB 100Hz to 100KHz.

THD+Noise = typically 0.005% at IV Bandwidth 100Hz to 22KHz.

Noise (150 Ω terminator on input) = typically -86dBV un-weighted 100Hz to 22KHz.

LOADING SETTINGS

Adjustable via back panel

Left and Right MC Loading Resistance

1 and 2 off = 400 Ω

1 only on = 100 Ω

2 only on = 150 Ω

1 and 2 on = 70 Ω

Capacitance

3 and 4 off = 1000pF

3 only on = 2000pF

4 only on = 3200pF

3 and 4 on = 4200pF

Left and Right MC Gain

1 off and 2 on low gain = 63.5dB

1 on and 2 off high gain = 69.3dB