

Introduction:

ZinAmp's Valve Phono Stage is available with 3 options; MM, MC and Z-ACT

This manual covers building these variants from and relevant differences are called out.

Technical questions can be emailed to help@zinamp.co.uk



What to Do:

Please follow the steps in the order indicated, including all of the tests. Anything that you're not sure of, contact help@zinamp.co.uk

What NOT to Do:

We strongly advise against assembling everything, switching on and expecting it to simply "work". This is a complex device and can be unforgiving if wired or assembled incorrectly. Unforgiving means some parts may be burned or destroyed due to being incorrectly installed. Please follow the steps as indicated and if unsure, email help@zinamp.co.uk

Support and Returns Policy - please read

We appreciate that not everyone has the same skills or experience. Analogue audio electronics is a notoriously unforgiving area for the unsuspecting. We urge you to take great care. This starts with reading these instructions through before you start and to reach out to us for help if you are not sure.

We have devised the following policy to help you decide what to do in the event of a mishap. Electric shocks, explosions and damage conjure emotions that we didn't foresee. We empathise that you may feel anger towards our product if things go wrong - and we hope this is temporary. We are here to help. The following three situations cover most of the likely scenarios. If you believe our stance on any of these to be unfair or undermine your rights, then please contact us before you begin. The last thing we want is for you to have a pile of unusable metalwork and electronics with our name on it - as this is bad for our brand and for your confidence in us.

1. I started on this and I realise it's not for me:

No problem. If you are able to put everything back in the box undamaged and ship it back to us within 28 days, we will refund you the purchase price in full. If you want us to finish the amp for you, we will invoice you the difference between the self-assembly and assembled product, plus shipping. This second option is available for up to six-months from purchase. Please note, refunds take up to 14 days to materialise as we need to check the contents of the returned box.

2. I had a major mishap and I think I blew something:

Ok, send us an email and tell us what happened, with pictures, if possible. If there was smoke or cracking sounds, the chances are a board or module is damaged and needs replacing. We sell replacement modules; the prices of most of these are on our website. Please note that in this event, we are unable to offer refunds. We will - however - still try and help you complete your build.

3. I bought this over a year ago and have only now started building it. Can you help me?

Unlimited help and support via email is available for 12 months. If you email us after this period, we will try and answer your questions. If you run into difficulty and damage any modules, we cannot guarantee being able to sell you a compatible replacement as we update our products frequently. We may be able to repair your existing modules, but please be aware there is a charge for this and we ask that you cover postage both ways.

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Basic Architecture

The phono stage is built around a main 'host' board. It hosts the following modules:

1. High Voltage Switch Mode Power Supply (SMPS)
2. Low Voltage Split-rail Power Supply
3. Cross-feed filter

Additional Boards connect to the host board via ribbon cables. These are:

4. Selector Switch
5. RCA Input/Output Array
6. Volume Control
7. Cross-feed Filter Switch

Assembly Steps - Overview

Assembly comprises the following steps. We recommend taking each step one at a time in the order stipulated below. This will make testing and trouble-shooting relatively straightforward.

- 1. Check the holes in the enclosure are tapped:** For most kits, these will be ready-tapped/threaded. If not, these will require an M3 and M4 tap to complete.
- 2. Attach Rubber feet to Base:** Four rubber feet are screwed to the base with M3 machine screws; one in each corner.
- 3. Identify Switches and Connectors:** Ensure these are all in your package. Contact parts@zinamp.co.uk if you think anything is missing.
- 4. Fit the Ground, Fuse and Power Terminals:** These are required to safely power the amplifier
- 5. Install Switches and Volume Pot into the Front Panel:** The power switch is normally factory installed, but the selector switch, volume pot and Crossfeed switch are fitted by the constructor
- 6. Fit RCA Array in Rear Panel:** The RCA array has all of the external audio connectors on it and is fitted from the inside of the enclosure.
- 7. Fit Valves:** Valves are fitted into risers that plug into the main board. Take care not to bend any pins while doing this. They should insert without resistance.
- 8. Fit main board into enclosure:** The board is retained with nylon threaded screws - these are already fitted in the board.
- 9. Connect Power, Fuse and Switch Cables:** The terminals are clearly marked on the board and must not be mixed up!
- 10. Switch on and check the main voltage:** The power supply in the amplifier puts out 290v DC. Take care from this point on!
- 11. Connect Boards with Ribbon Cables:** Each ribbon cable has a 'way around' i.e. a wrong-way and right-way. Check the images provided to ensure a neat and compact installation.
- 12. MM Audio:** Requires a Turntable with an MM cartridge
- 13. Install MC Module - if you have it:** The optional MC module fits over the top of the main board.
- 14. MC Audio Test:** Can be performed with an MC or MM cartridge. Sound will be dull through an MM cart, but the test will confirm l & r channels are both working.
- 15. Fit Lid, Front Panel and Dials:** use the screws provided and don't over-tighten the screws. Aluminium threads strip very easily. Touch-tight is fine.

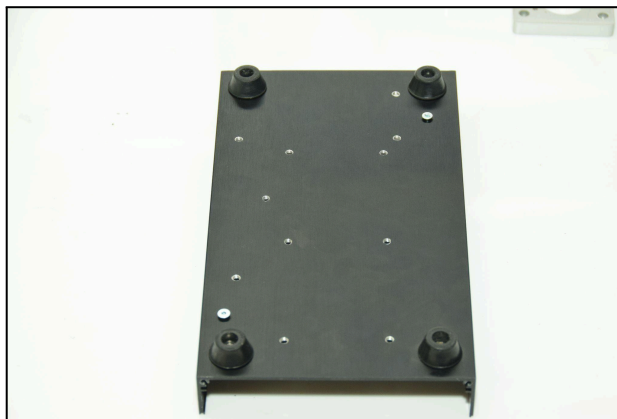
Assembly:

1. Check the holes in the enclosure are tapped

The metal enclosure has a number of holes in it. All of the 3mm and 4mm holes need to be tapped with M3 or M4 thread-tap. This may already be done, depending on the configuration of kit you have purchased. The larger holes i.e. those on the back and front panels.

2. Attach Rubber feet to Base

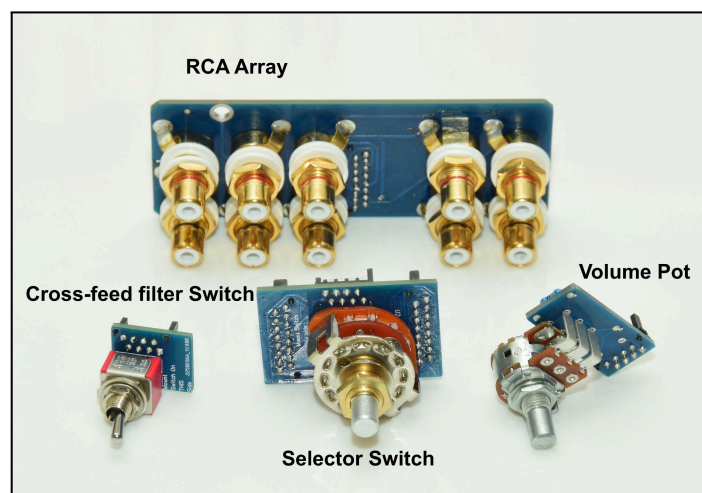
Depending on your kit configuration, you may or may not have feet attached to the box. These are screwed into the corners with M3 machine screws. Place a washer on each machine screw and punch a hole through the rubber foot with a screwdriver; this will allow the screw to protrude unhindered.



Enclosure Base with feet attached

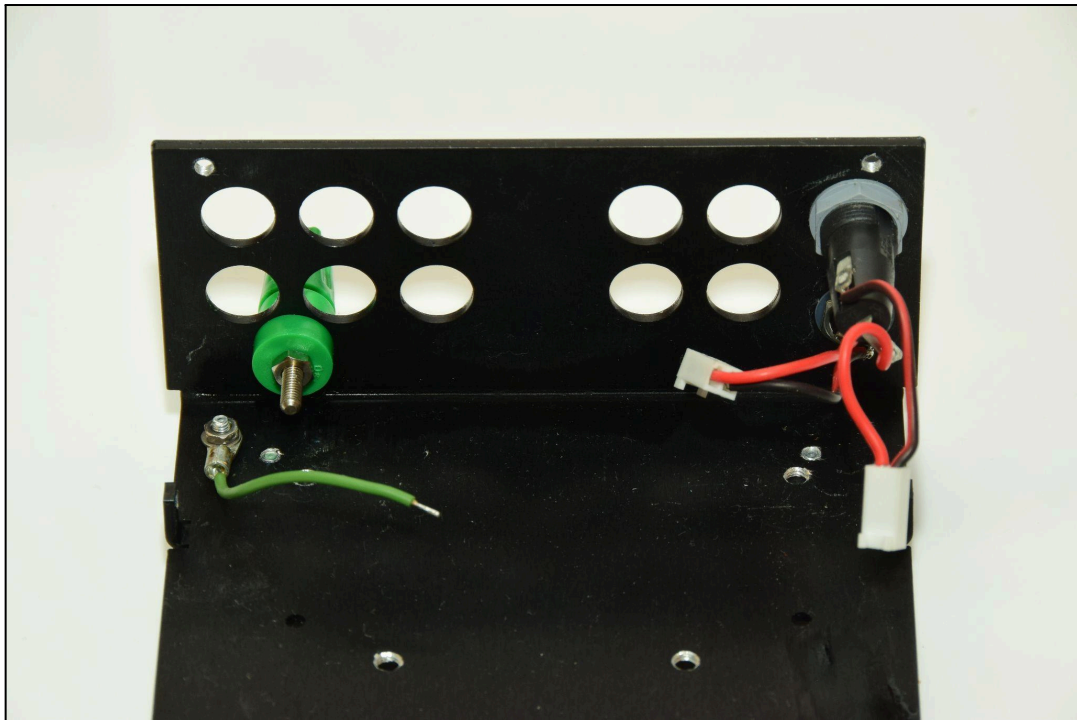
3. Identify the Switches and Connectors

Check you have the following items in your package



4. Fit the Ground, Fuse and Power Terminals into the back panel

The In some cases these may already have been fitted

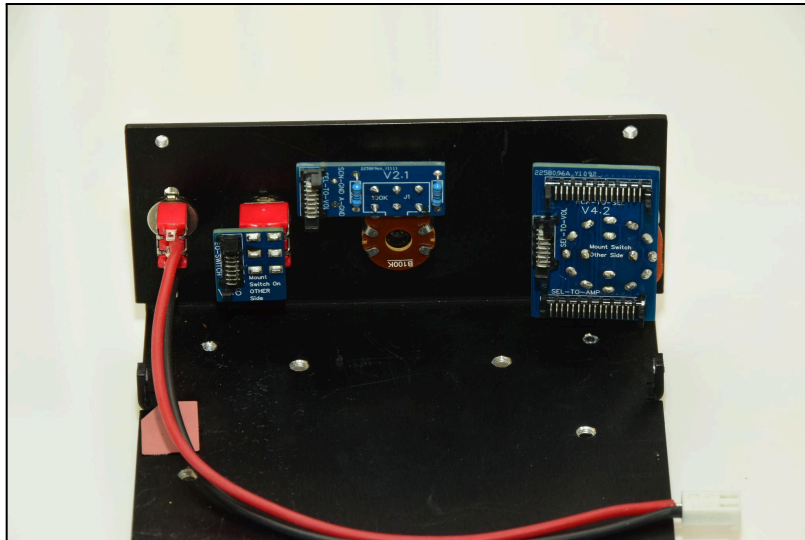


1. **Ground Wire** - 5cm green wire, connected to chassis
2. **Earth Pillar** - on back panel - green 4mm banana socket
3. **Fuse Holder** - fit a 1.5A slow-blow glass fuse and solder 5cm lengths of hookup wire terminating in a Molex KK254 connector block
4. **DC Socket** - Solder 5cm lengths of hookup wire - black -ve and red +ve. Terminate in a Molex KK254 connector block. Black on the left, Red on the right.

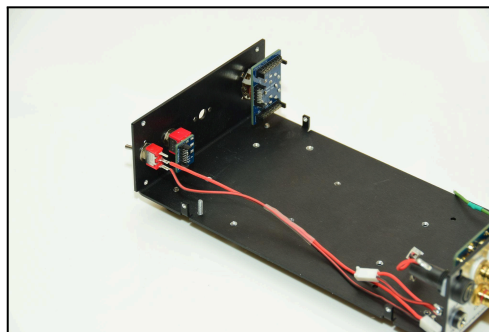
Note: Test the polarity of the DC socket by connecting the 18v DC adaptor. Use a multimeter and check the polarity is +ve on the red wire and -ve on the black wire. Getting this wrong may cause untold damage!

5. Install Switches and Volume Pot into the Front Panel

The power switch may already be fitted



1. **Selector Switch** - observe the right way up by the writing on the PCB
2. **Volume Pot** - observe the right way up by the writing on the PCB
3. **Cross-feed Filter Switch** - observe the right way up by the writing on the PCB
4. **Power Switch** - The flat on the screw barrel of the switch should face 'up'. Solder two lengths of hookup wire - 220mm long, terminating in a Molex KK254 connector block. Connect the two lower pins of the switch. Leave the upper pin disconnected.



6. Fit RCA Array in Rear Panel



The RCA array inserts into the rear panel and is held in place with the nut of each RCA socket. The nylon shoulder washer goes in the inside and the plain washer on the outside, then the nut.

A 5cm length of green wire is required to ground the copper foil of the ribbon cable. Solder this into the RCA array as shown above.

7. Fit Valves:

Valves are fitted into risers (aka socket savers). These ensure the valve protrudes through the top of the enclosure so it can dissipate heat. You can test with the valve directly in the board socket, but you must fit the riser/saver before securing the enclosure lid.

The valves are not all the same. There are:

- 2 x 12AX7 or ECC83s - these are the front two and form the gain stage
- 1 x 12AT7 or ECC81 - this is the rear valve and works as the current follower

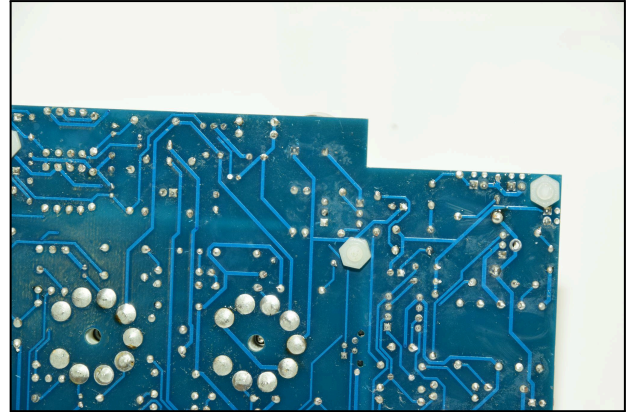
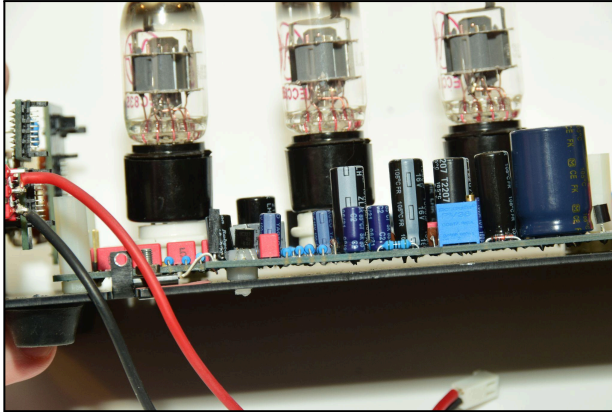
Note: we sometimes substitute the 12AT7/ECC81 with a 12AU7 or ECC82. This has no effect on the performance of the amplifier and is more a matter of availability.

Do not force the riser into the socket on the board. It should insert fully so there is no gap between board socket and riser. If you're finding this difficult, check the pins are straight and not corroded. Use small pliers to straighten any pins but be gentle! A little vaseline or oil may help. WD40 is not recommended as it gets onto the circuitry and can cause arcs.

8. Fit Main Board into Base of Enclosure

The main board has a number of nylon threaded screws protruding through it. These all have nylon hex nuts on them to prevent the board touching the metal base and shorting. The protruding nylon threads locate into holes in the base.

Note: there is a transistor that is bolted to the bottom of the enclosure - the enclosure acts as a heatsink for this transistor and must be bolted down when testing from this point onwards and must have a silicon isolation pad behind it.



9. Connect Power, Fuse and Switch Cables

Ensure the valves are properly inserted and connect the fuse, DC supply and switch cables to the main board. These are clearly marked. Do not mix them up. It is easy to mix the fuse and DC connectors up. Take care!

10. Switch on and check the main voltage

Connect the 18vDC power supply. Using a multimeter, check the voltage of the high-voltage supply at the two terminals shown (GND | 290v). These should read between 280 and 290v DC. This is factory-set and you shouldn't need to adjust it. If you're not sure, email: help@zinamp.co.uk

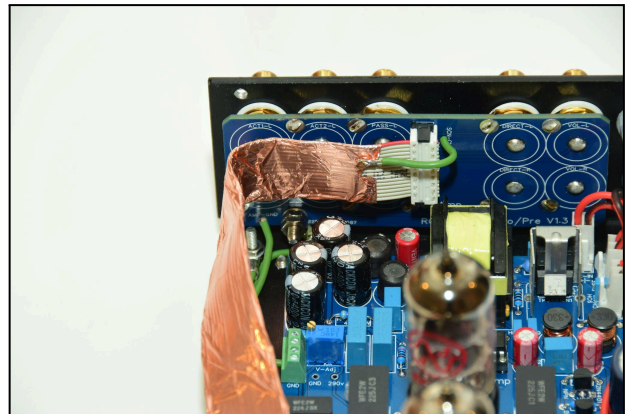
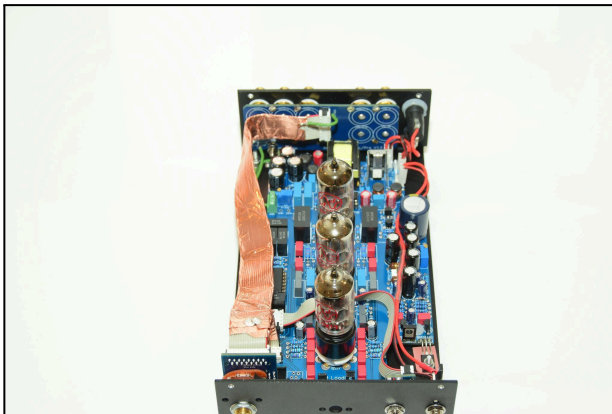


Switch off and remove the power cable when done.

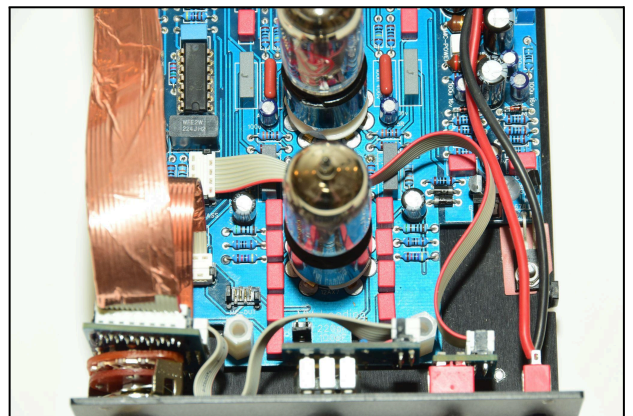
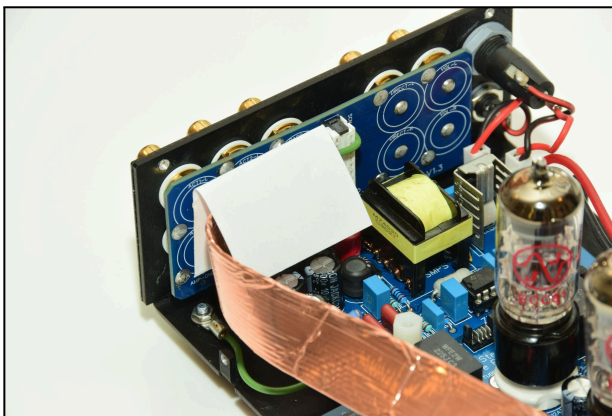
11. Connect Boards with Ribbon Cables

Ensure you have switched off and removed the power cable before proceeding with this step.

Connect the Molex Picoflex ribbon cables as shown. You will note that each has a right way or a wrong way. Each connector on the board has a thick and a thin locator - thick at one end, thin at the other. Each ribbon cable is constructed so that it has a particular way around. This means when you attach the cable to the connector at one end, then try the other end of the cable, you'll see they locate the opposite way around. Observe the pictures below to see the right (and wrong) way to connect each cable.



Solder the green wire on the RCA array to the copper foil of the ribbon cable. Avoid melting the ribbon cable - apply heat for no more than two seconds.



The longest of the cables may already have insulation around it. If not a small piece of folded white card or paper will prevent the RCA terminals being shorted-to-ground by the copper foil of the ribbon cable.

The two copper-foiled ribbon cables on the selector switch should touch. This ensures both copper screens are grounded.

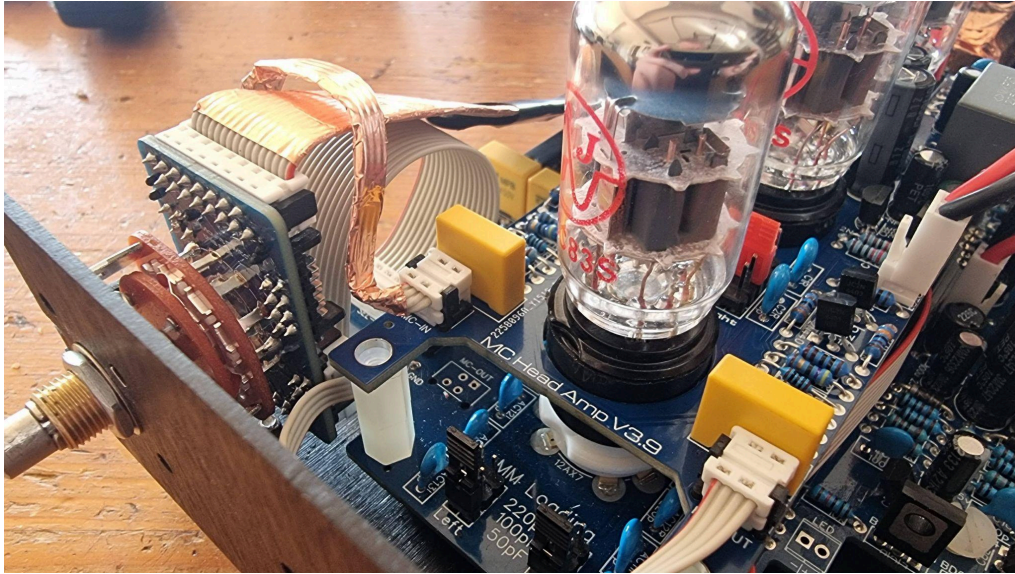
12. MM Audio test

Before installing the MC module or putting the lid on, it is prudent to test the MM valve amp with a moving magnet (MM) source.

1. Turn the selector switch fully anti-clockwise - to Ph.1 or MM position
2. Connect a turntable to the left-most RCA inputs
3. Connect a downstream amplifier to the volume controlled output - right-most RCA's
4. Switch on the phono amp before switching on the downstream amplifier - to avoid any startup noises.
5. Test the volume control works as expected

Any unexpected sound or behaviour, switch off before attempting to diagnose

13. Install MC Module - if you have it



The MC Module fits over the top of the Valves as shown above. Two small ribbon cables connect the MC module to the selector switch. A Molex 2-way power cable connects the module to the main board.

The two small ribbon cables shown in the picture are for MC-IN and MC-OUT. These must be the right way around! The cable for MC-IN is the left of the two and is usually screened in copper as shown. This copper can touch the copper for the wider ribbon cable that runs to the back of the amplifier.

Note the positions of the MC-In and MC-Out terminals on the Selector Switch.

14. MC Audio Test

With the MC Head Amp installed as shown, connect the power cable from the main board to the MC board. Observe the correct polarity of the power connector, although the connector should only fit one way around. Test the audio as follows:

1. Turn the selector to the MC position
2. Connect a turntable to the second-left RCA connectors
3. Connect a downstream amplifier to the volume controlled output - right-most RCAs
4. Switch on the phono amp before switching on the downstream amplifier - to avoid any startup noises.
5. Test the volume control works as expected

Any unexpected sound or behaviour, switch off before attempting to diagnose

15. Z-ACT

If you have the Z-ACT option, your RCA Array board will have some components on its surface, otherwise it won't. There is no separate test for Z-ACT at this stage as Z-ACT connects straight to the MM stage of the amplifier. This test is covered in step 12

16. Fit Lid and Front Panel and Dials

The bag of screws provided are for fixing the front panel and lid. The counter-sunk screws go in the side holes and retain the lid. The allen bolts retain the front panel

DON'T OVER-TIGHTEN - Aluminium threads strip easily!! Touch-tight is fine.

Dials require an allen key key to tighten them.

To remove the lid, remove the two screws on each side of the enclosure (4 in total) and lift the lid gently.

17. Final Clean

Clean off any finger marks or first using a fibre cloth sprayed with a little water-based glass cleaner (windex etc). Don't use metal polish or anything abrasive, nor any solvents. Don't use WD40 or similar products on the metalwork.

You may find a nice lustre can be achieved by wiping a small quantity of petroleum jelly (Vaseline) into the bodywork and front-panel and wiping off with a soft cloth. Use sparingly and apply evenly. An even lustre takes time and care but is worth the effort and will last for months.