Building Quality without Compromise

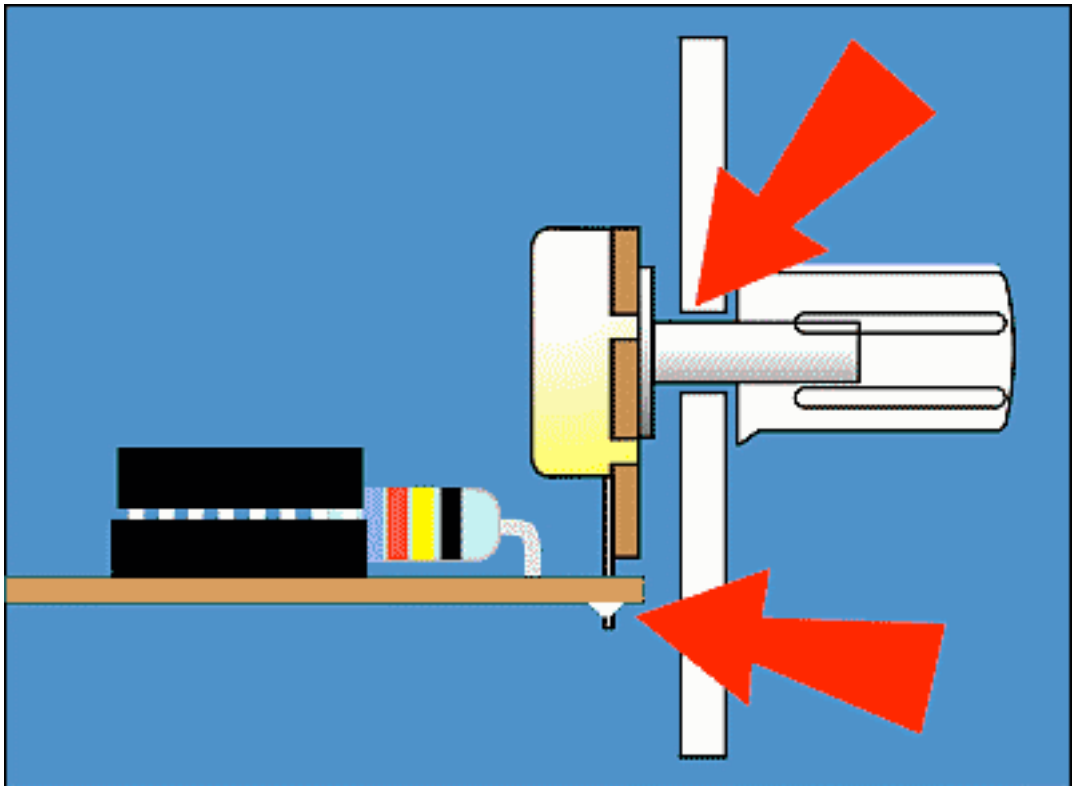
Technical design requirements for long, reliable product life

At **ARX**, we take pride in building professional audio products that work consistently throughout a long product life. We take the utmost care with the little details that make the difference between a product that might work the first time, and a product that works every time!

So we've produced this Technical File to show you some of the important details that we build into every one of our signal processing products; details that make them stand out from the run-of-the-mill, marginally designed, OEM*** sourced low budget products.

At first glance, all rack mounted signal processors look the same. A row of knobs on the front panel, and a matching row of connectors on the rear panel. It's only when you look closely that you can see the important differences in manufacturing quality.

Picture 1 shows a cross sectional view of the front panel assembly of a typical OEM sourced low cost product. The shaft of the pot (potentiometer) that the knob slides onto is just pushed through the front panel (top arrow) and 'wobbles' in the hole, since the hole needs to be larger than the shaft to accommodate manufacturing and assembly tolerances. When you turn the knob, considerable stress is placed on the solder joints at the bottom of the pot (bottom arrow) where it connects to the circuit board. These solder joints have to cope with the twisting stress of the shaft, and the front-to-back flexing as the shaft wobbles in its hole.

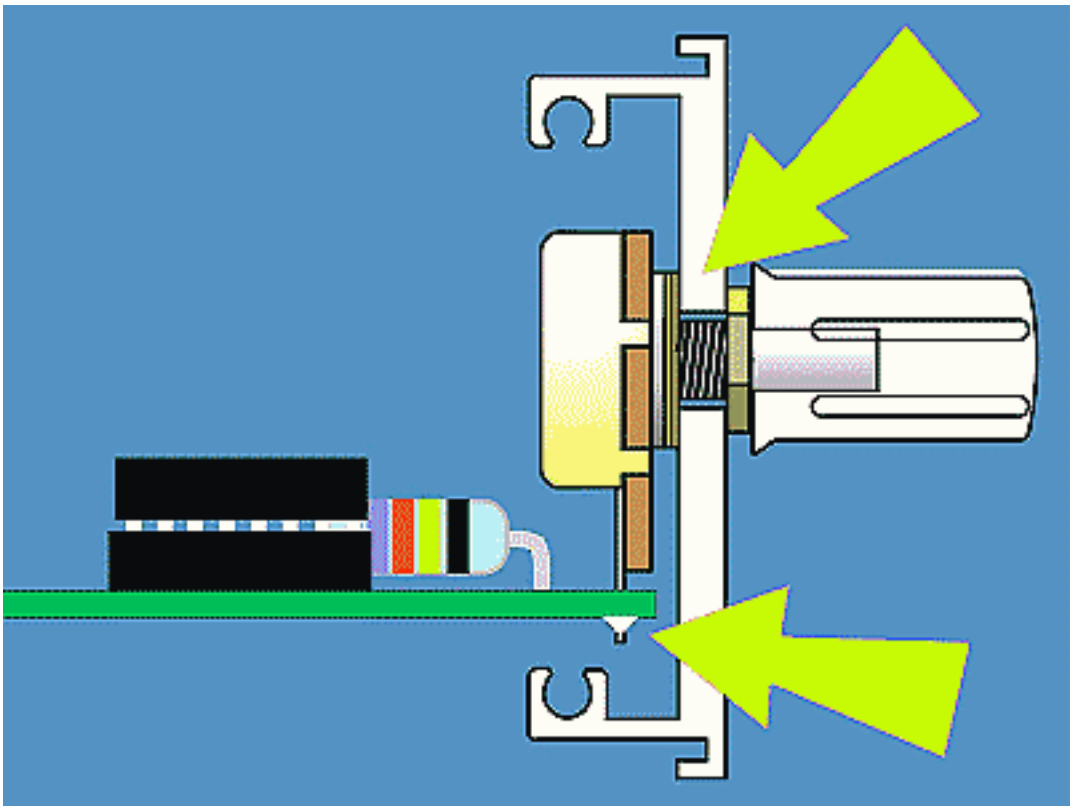


Picture 1

What does this mean in practical terms?

Sooner or later, due to this mechanical stress, one or more of these solder joints will either crack or fail totally. If it cracks, the connection will be intermittent and the control will sometimes work (usually when you thump it!) and sometimes not. Hardly the basis for a reliable system. Ask any technician and they'll tell you that an intermittent fault is one of the hardest of any to track down. Continued thumping will eventually lead to total failure of the solder joint(s).

Compare this to **Picture 2** which shows the same cross sectional view of an **ARX** signal processor. Here you can see that the pot shaft (top arrow) is firmly bolted to the front panel with a nut as well as washers to absorb any twisting or flexing stress and dissipate it to the rigid, complex U channel aluminum extruded front panel.

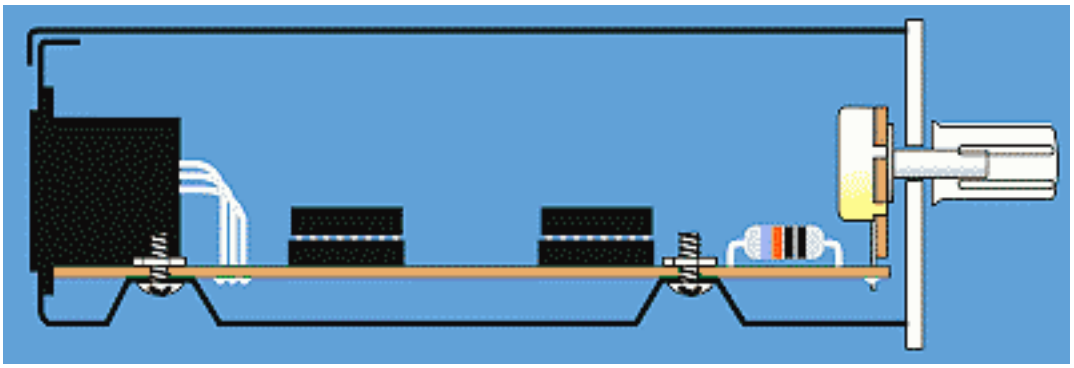


Picture 2

No stress is placed on the solder joints (bottom arrow), which maintain their integrity for a long and stress-free life!

What else?

The manufacturing method of the unit in Picture 1 also requires that the circuit board be rigidly attached to the chassis of the unit, so that the knobs, LED's and switches will stay in their correct positions to go through the front panel (see below).



Picture 3

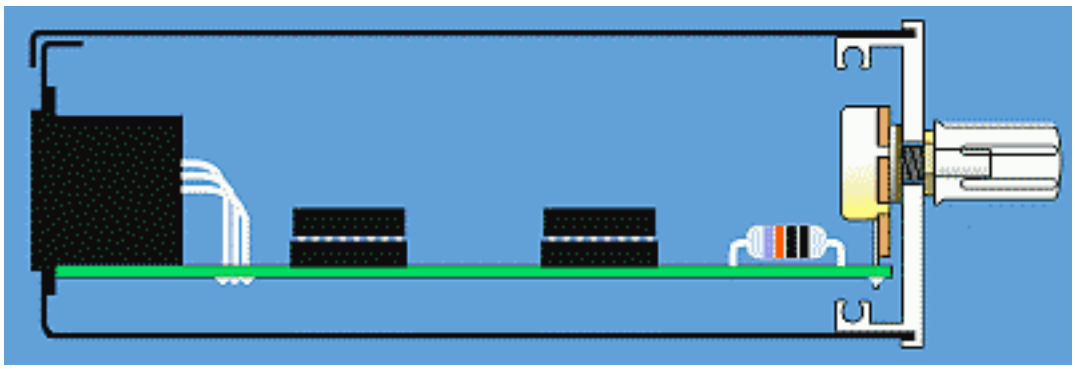
Circuit board rigidly mounted to chassis, with no ability to 'float' when flexed

Unfortunately, when the unit itself or the rack it is bolted into flexes during normal usage, this can lead to stress fractures in both the circuit board and the solder joints of the connectors on the rear panel.

In many marginally designed OEM units the circuit board itself is not fibreglass but made from phenolic resin. This is a lot cheaper, but is very brittle and prone to cracking, and sometimes even burning! You may even ask yourself “how a product containing a circuit board like that can be approved by the relevant electrical safety authorities?”

ARX signal processing circuit boards do not need to be rigidly attached to the chassis since they are bolted to the front panel (see below).

ARX circuit board and chassis layout



Picture 4

Fibreglass circuit board allowed to float, absorbing any flexing stress

Since all **ARX** circuit boards are made from high quality fibreglass, any flexing of the unit or rack is absorbed by the circuit board that is allowed to 'float' independently of the chassis between the front and back panels.

Connectors

Surely a connector is a connector is a connector? Sadly it's not.

ARX only uses XLR and jack connectors from such industry leaders as Neutrik, Amphenol and Cliff, because these products have been shown over many years to be long lasting and reliable.

The 'NoNamo' look-a-likes used in many OEM products are often short lived, inaccurately sized, poorly plated and a sloppy fit. **A noisy, crackly connector on a product that your whole show, recording, presentation or conference is running through can mean the difference between no business and return business!**

At **ARX** we treat our customers and our products with respect. After all, these are units that you are earning your living with.

Design and assembly methods like those described above have no place in products that work hard day in, day out, in auditoriums, clubs, concert halls, studios, broadcast and touring live sound reinforcement.

It doesn't matter whether you're a contractor, installer, broadcast, studio or live engineer – it's your reputation on the line every time the system is switched on.

So before you commit to that unit priced at 'too cheap to be true', you owe it to yourself to see how **ARX** delivers **'Quality Without Compromise'**

***OEM** – short for Original Equipment Manufacturing, and usually refers to products that are not manufactured by the company whose name is on the front, but by low cost offshore factories who then put the company's brand on them. If you think that sounds like a nightmare for service and spare parts – you're right!!!