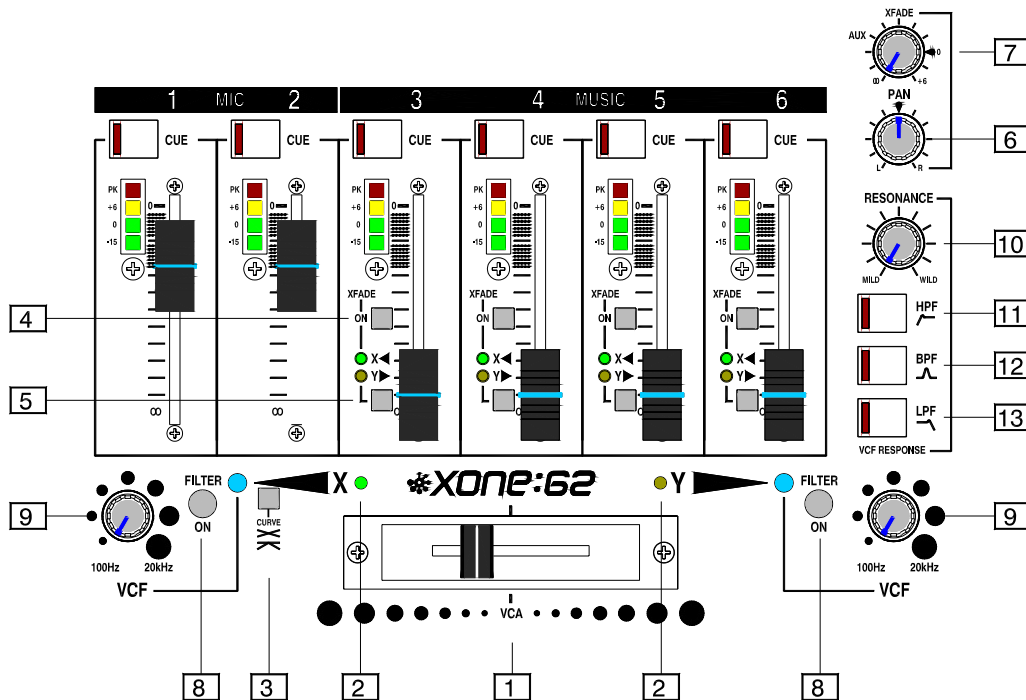


Crossfader and VCF

The crossfader is the one feature that instantly sets the DJ mixer apart from a conventional mixer. It is applied to the stereo music channels and lets you smoothly fade from one track into another using a single fader. It is also used as a creative performance tool to layer or interact between two sounds when cut or scratch mixing. It is fully assignable from each music channel and can be easily replaced if it becomes damaged or worn through exceptional mechanical operation. The high quality Penny & Giles type is used on the model.

The **XONE:62** is unique in being the first DJ mixer to include an analogue voltage controlled filter (VCF) section. These filters provide live performance tools far more powerful than any equaliser or kill switch. They produce the same warm analog resonant frequency sweeping sound as made popular by well known classic analogue synthesisers, but using the latest high performance technology for quiet, stable operation.



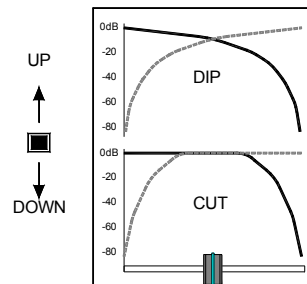
1 VCA Crossfader. The XONE:62 uses four high performance voltage controlled amplifiers (VCA), a pair for each side of the stereo crossfader. The robust 45mm fader produces a DC control voltage which determines the signal level of the VCAs. The voltage is filtered to prevent any audible noise, clicks or scratchiness resulting should the fader track become worn. This benefit would not be possible if the signal were routed through a conventional audio fader.

2 XY Indicators. A colour coded led above each side of the crossfader helps you visually check which channel is routed to which side, green for X, yellow for Y.

3 Crossfader Curve. The VCA system allows that the fader law (curve) to be easily changed to suit the style of mixing. Set the tamperproof underpanel CURVE switch to the position required. Two standard curves are available. Experiment with both to understand their effect on the sound:

Dip Curve With the switch in its normal up position each signal is attenuated by 6dB in the middle position. This means that there is no overall change in level as the two similar signals mix, ideal for seamless beat mixing when fading smoothly from one track to another.

Cut Curve When the switch is pressed each signal has no attenuation in the middle position. Attenuation starts as the fader moves beyond the middle. This gives a more dramatic response better suited to cut or scratch mixing, layering different sounds, or to emphasis a mix.



4] **XFADE ON.** In the up position the music signal is routed directly to the mix. Press to route the signal through the crossfader.

5] **XY.** To route to the left (X) side make sure the switch is in its up position. Press to route to the right (Y) side. Either the green X led or yellow Y led lights to show which side is routed. Both leds are off if the signal is not routed through the crossfader.

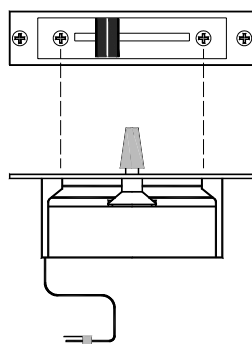
6] **XFADE PAN.** Adjust to change the balance between the left and right crossfader output signals. Use this to correct an imbalance in the stereo output, or as a dynamic performance effect. For normal performance make sure the PAN control is in its detented centre position.

7] **XFADE to AUX send.** This controls sends the output of the crossfader to the stereo Aux mix. For example, you could send the DJ music mix to a monitor, zone, effect or special recording feed.

Replacing the Crossfader

The crossfader on a DJ mixer is heavily used and can suffer considerable wear and tear. The audio design using VCAs prevents clicks and scratchiness as the fader wears. However, the movement can become mechanically stiff or sloppy in time, or become ingrained with dirt. Should this be the case the fader may need replacement.

The **XONE:62** crossfader is removable and can easily be replaced in a few minutes. Make sure you order the correct Penny & Giles version from your Allen & Heath dealer: XONE2:XFADER



Use a medium size cross-point (Pozidriv) screwdriver to undo and remove the two outer screws on the crossfader plate. Do not remove the inner screws. Lift the crossfader assembly up and away from the console panel. Unplug the cable from the old crossfader and plug in the new assembly. Check that the connector is correctly aligned and pushed on. Replace the assembly making sure the cable faces the left side of the console. Refit the screws and test operation.

The VCF Filters

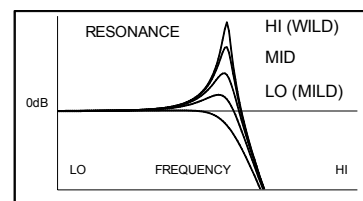
A **voltage controlled filter** is an audio filter whose cut-off frequency is altered by a DC control voltage rather than a variable resistor. This produces a much wider operating range and more control over the filter response to create unlimited combinations of tonal effect.

Each X and Y side of the crossfader is provided with its own stereo VCF. Each can be switched in or out, and each has its own frequency sweep control. The filter type and resonance effect are globally selected affecting both filters simultaneously.

8] **FILTER ON switch.** Each X and Y filter has its own ON switch. The blue led lights when the filter is switched on. The signal is not affected by the filter if the switch is in its off position. Use this to punch the filter effect in or out.

9] **VCF SWEEP control.** Each X and Y filter has its own frequency sweep control to adjust the cut-off point anywhere from low to high frequency. Rotating the control during performance produces the dynamic sweeping effects desired by performing DJs. These large soft touch controls are positioned either side of the crossfader for convenient live operation. Separate controls for X and Y mean that the effect can be applied to each track independently and faded in as the crossfader is operated. Note that the filter type and resonance setting apply to both filters and are not independently controlled.

10] **RESONANCE control.** Adjust this to change the 'Q' or 'sharpness' of the filters. This affects how they respond around the cut-off frequency. At the minimum MILD setting the filters have a gentle roll-off 'knee' giving a subtle, smooth response. At the clockwise WILD setting they produce a resonant feedback boost around cut-off resulting in some very dramatic performance effects. The sound varies according to the filter type selected. To avoid unexpected results it is best to start experimenting with RESONANCE set to a low position.



High RESONANCE settings can result in significant boost of selected frequencies. Reduce the channel GAIN if the signal levels increase enough to light the red PK leds in the output meters. Failure to do this may result in system overload and distortion.

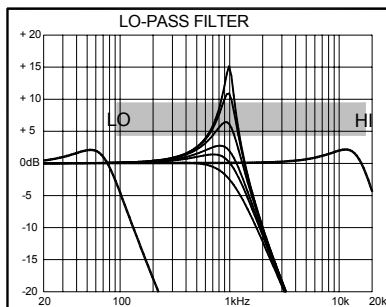
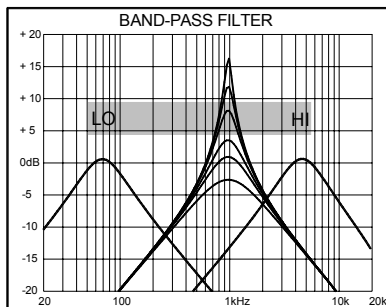
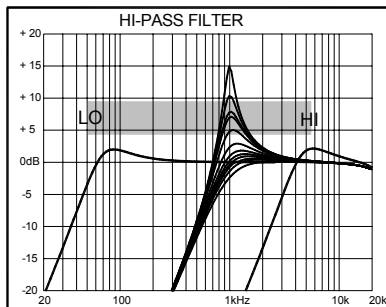
Filter Type Select

The filters are 'state variable'. This means that they provide three simultaneous filter types, high-pass, band-pass and low-pass. Three large illuminated switches select which type is active. You can press any combination together to create different response types such as 'notch' and an interesting 'all-pass' effect. The switches are 'soft switched' for live performance, meaning that the audio signal is ramped between filter states to prevent audible clicks. The selected type affects both X and Y filters.

Note that the last selected type is lost when power is removed from the console. The LPF is always selected when power is applied.

The graphs below show the effect on the audio frequency response for the three filter types. The range of sweep from low to high frequency is shown together with the effect of adjusting RESONANCE (one frequency with several resonance settings shown).

The vertical scale shows the amount of cut or boost around the normal 0dB operating level. The horizontal scale shows the change in frequency from low (bass) to high (treble).



11 HPF. Press this switch to select the high-pass filter. Frequencies below the cut-off point are removed. The cut-off point is adjusted using the large VCF control. At minimum little effect is heard as only sub bass frequencies are removed. Sweep clockwise to gradually remove the bass line followed by the higher frequencies. The highest frequency is limited to 10kHz as little useful material is heard beyond this.

Tip. Try switching the HPF in with VCF set fully clockwise at highest frequency, then gradually sweeping the frequency back to minimum. This can create an atmosphere of anticipation as the dance floor awaits the power of the beat to kick in.

12 BPF. Press this switch to select the band-pass filter. Frequencies above and below the cut-off point are removed leaving just a narrow band of sound. Sweep VCF around its mid position to affect lead sounds such as keyboard and vocals.

Tip. Try picking out individual sounds such as vocals and mixing them into the beat and bass of the opposite track to create a whole new mix. Add a little resonance to the BPF to lift the sound out of the mix.

13 LPF. Press this switch to select the low-pass filter. Frequencies above the cut-off point are removed. The cut-off point is adjusted using the VCF control. At minimum only sub bass remains. Sweep clockwise to gradually introduce the bass line followed by higher frequencies into the mix.

Tip. Try sweeping the LPF back to a low setting to keep the beat and energy going while talking over the mix. Try also punching in the filter and sweeping it back from high to low in time with the beat. Punch it out at the start of the next bar.

In addition to the three basic filter types you can experiment with new effects by selecting combinations of switches together. Press and release the switches together. They illuminate to show which filter types are active. For example:

HPF+LPF = NOTCH. Used with low settings of RESONANCE you get a phasing effect. Try sweeping the effect across the frequency range.

HPF+BPF+LPF = ALL PASS. A surprising effect considering that all frequencies are 'passed'. However, the filter type interaction around the cut-off point creates an interesting effect that varies from subtle to dramatic depending on the RESONANCE setting.

Tip. Take some time to experiment with the filters before 'going live'