

Oxford EQ Plug-in Operation Manual

1 Introduction.

Congratulations on acquiring the OXF-R3 EQ for Powercore / VST. This application draws on the considerable experience of the Oxford Team in professional audio and studio systems, the team that designed the OXF-R3 console system. The Oxford EQ plug-in is based on the OXF-R3 EQ section and provides a truly professional EQ processor for the VST user.

It is a fully functional 5-band application with selectable shelf settings on LF and HF sections. Additionally, separate variable slope low pass and high pass filters are provided. The EQ also features 4 different selectable EQ types that cover most of the EQ styles currently popular amongst professional users, including some legacy styles, which are renowned for their artistic capability. The use of novel coefficient generation and intelligent processing design provides unparalleled performance that surpasses analogue EQ in both sound quality and artistic freedom.

2 Included Plugins.

Three separate plugin types are provided in this package to enable the user to optimise processing load depending on requirements during session:

- 5 band EQ with Filters.
- 5 band EQ without Filters
- Filter section only.

Mono and stereo versions of each type are also provided, for a total of six plugins. The filter section is run independently from the EQ section such that the system processing load can be optimised when the filtering function is not required (i.e. during mixing).

3 System Requirements.

- Approved TC Works CPU and hardware configuration
- MacOS 9.0.4 or higher (Macintosh version)
- Windows 98SE / Me / 2000 / XP (Windows version)
- 800x600 minimum display
- A VST compliant host application (e.g. Cubase / Logic / Nuendo)
- One or more TC Works Powercore cards

4 Installation.

The plug-in is currently available only by download from www.sonyplugins.co.uk or www.sonyplugins.com web sites. After entering your details and credit card number a temporary

authorisation code will be issued immediately that allows 30days use. The software is then node locked to the target system. After the payment is cleared, another permanent authorisation code will be issued.

4.1 Macintosh

Double click the installer to begin the installation process, and follow the onscreen prompts. The installer will search your system for folders named 'VSTPlugins'. If only one of these is found, the plugins will be installed automatically to this location. Alternatively, if more than one such folder exists, you will be prompted to choose the application you wish to use the plugins with; they will then be installed in the 'VSTPlugins' subfolder of this application. Once installation is complete, you are of course free to copy these plugins elsewhere for use with other applications.

You will need to register your plugins with Sony prior to use. Once you have done this, you will receive both a key file and an authorisation code. You should place the key file into the Preferences subfolder of your main System Folder, and enter the code when first running the Oxford plugins. Your plugins will then be authorised.

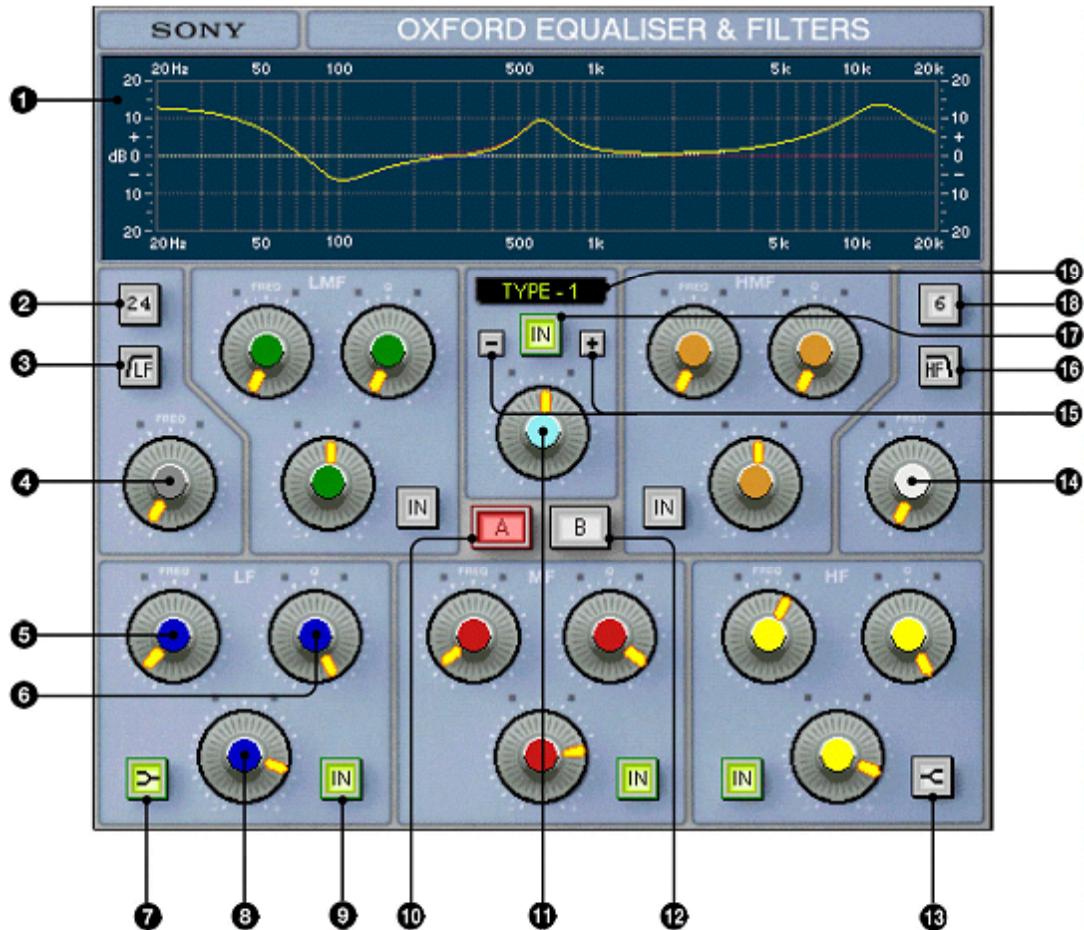
4.2 Windows

Double click the installer to begin the installation process, and follow the onscreen prompts. The installer will attempt to detect your shared 'VSTPlugins' directory, but you may also select another location if desired. You will have to restart once installation is complete.

You will need to register your plugins with Sony prior to use. Once you have done this, you will receive both a key file and an authorisation code. You should place the key file into your 'Windows' (Windows 98SE/Me) or 'WINNT' (Windows 2000/XP) directory, and enter the code when first running the Oxford plugins. Your plugins will then be authorised.

5 Control list and functions.

The Plug-in user interface consists of two sections for EQUALISATION and FILTERING functions. The filter section controls, included in the EQ GUI, are greyed out when the filter is not in use, and vice versa.



1. Response display.

Displays current active EQ and filter response curves.

2. LF and HF (18.) SLOPE button.

Selects LF and HF filter Slopes 6dB – 36dB/oct in 6dB/oct steps.

3. / LF and HF \ (16.) button.

Switches low pass and high pass filters in/out.

4. LF and HF (14.) FILTER FREQ controls

Sets LF and HF filter turnover frequencies.

5. FREQ controls.

Sets the centre frequencies or turnover frequencies for shelf curves.

6. Q controls.

Sets bandwidth of EQ curves. Sets amount of overshoot function in shelving sections.

7. LF and HF (13.) Shelving buttons.

Select shelving function for high and low EQ sections.

8. +/- controls.

Sets Boost or cut gains.

9. IN buttons.

Allow individual EQ sections to be switched in/out.

10. A & B (12.) buttons.

Two complete EQ (excluding filter) settings can exist simultaneously. The A&B buttons allow toggling between them for comparison purposes.

11. Gain control.

Sets the attenuation level to the EQ section to avoid clipping signals when in boost.

12. A & B buttons (as 10.)

13. LF and HF Shelving buttons (as 7.)

14. LF and HF FILTER FREQ controls (as 4.)

15. +/- buttons

Selects EQ function types. Four types are offered on the Oxford R3 EQ plug-in.

17. IN button.

Applies the EQ function type selected by +/- push buttons in (22.) The IN button light will go out if another EQ type is selected, indicating that the EQ remains unchanged until the IN button is depressed.

19. 8 Character display.

Displays the graph type selected by +/- buttons in (22.).

Mouse rate control

In linear mode (see below), fine adjustments to any control setting can be achieved by pressing the 'Apple command' (Macintosh version) or 'Shift' (PC version) key *before* clicking on the control to be adjusted and holding this key down during the operation.

This rescales the control rate with the mouse movement so that very fine adjustments can be made.

Knob control modes

If your application supports it, all plugins can support three modes of control for knobs: Circular (the control is set to the value at which it is first clicked, and the value then increases or decreases with circular mouse movement), Relative Circular (the control's value increases or decreases with circular mouse movement relative to its initial value), and Linear (the control's value increases or decreases with up and down mouse movements respectively).

Consult your host's manual for details on how to change modes.

6 Oxford EQ Specifications and Control ranges.

Section	Gain	Frequency	Q/Slope	Overshoot
LF Filter	6dB/Oct steps	20Hz - 500Hz	0 –36dB/Oct	0 – 50% (Q adjust in Shelf)
LF Peak/Shelf	+/-20dB	20Hz - 400Hz	0.5 – 16	
LMF	+/-20dB	30Hz - 600Hz	0.5 – 16	
MF	+/-20dB	100Hz - 6KHz	0.5 – 16	
HMF	+/-20dB	900Hz - 18KHz	0.5 – 16	
HF Peak/Shelf	+/-20dB	2KHz - 20KHz	0.5 – 16	0 – 50% (Q adjust in Shelf)
HF Filter	6dB/Oct steps	1KHz - 20KHz	0 –36dB/Oct	

Total dynamic range	> 138dB* (RMS unweighted)	For any single section, including filters
Harmonic Distortion	Undetectable	Using FFT analysis down to –160dBr
Control induced noise	< -95dBr (peak)	During adjustment of any single control

* Excluding excess noise produced by the EQ applying gain to a 24bit dithered but silent input, or cascaded EQ applying gain to previous sections.

7 EQ types included in the Oxford Plug-in.

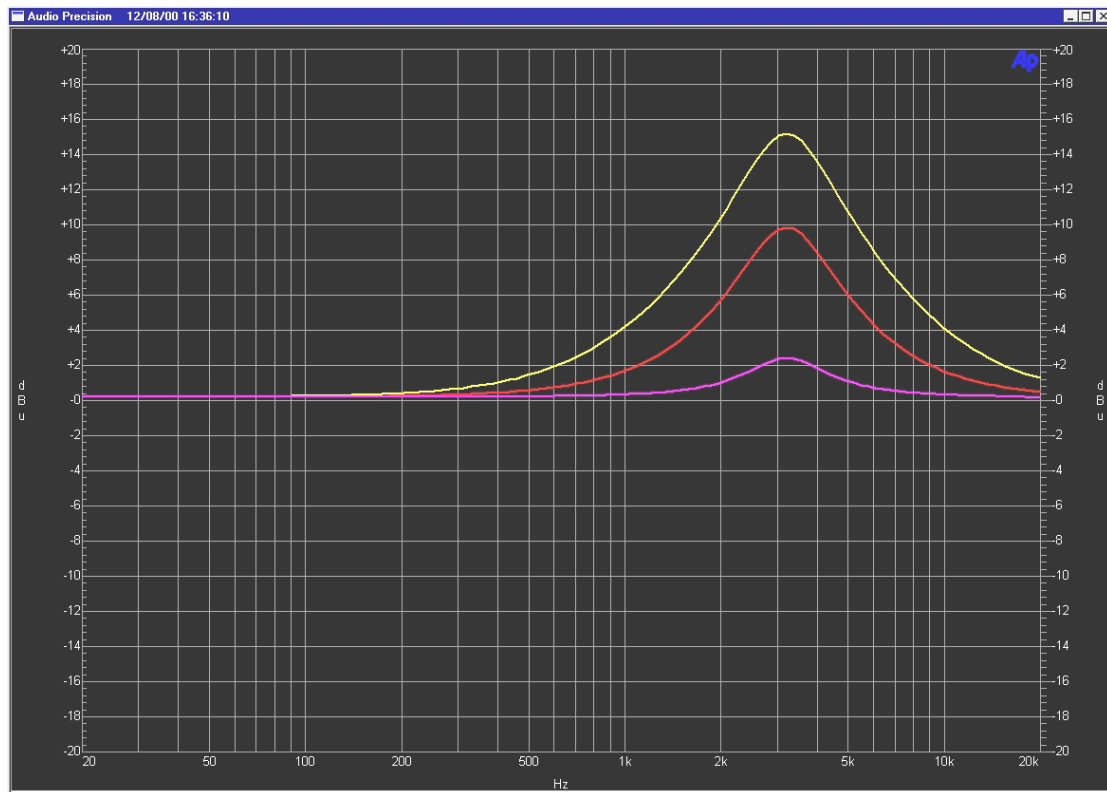
Programme equalisers have expanded, beyond their original use as distance correction devices for film and vision, into highly creative tools that represent a leading part of the sound engineer's artistic palette. A great many EQ designs have been developed over the years that have been attributed with qualities that lend themselves to particular uses and sounds. The Oxford EQ plug-in is designed to be flexible enough to address as many of these generic types as possible from a single application, by presenting a variety of types to the user. The following pages are presented as a general explanation of many of the factors that affect EQ performance and to illustrate how we have addressed these issues with the Oxford EQ plug-in.

Many types of EQ exist with many areas where they differ. One of the most important areas is the issue of control ranges and interaction. Whilst it is true that with a parametric unit with continuous controls (i.e. not quantised) any response could be obtained by matching their curves, many of the popular EQs have control dependencies that err towards specific application. One of the main areas where EQs differ is Gain / Q dependency. Most analogue EQ has Gain / Q dependency as a result of the circuits used. This factor can greatly affect the artistic style that an EQ presents by facilitating certain parameter settings and encouraging particular uses when the unit is operated.

In the Oxford EQ plug-in we have covered this situation by providing 3 different styles of EQ that take account of Gain / Q dependency as well as overall control ranges. The following section describes these options.

7.1 Bandpass sections.

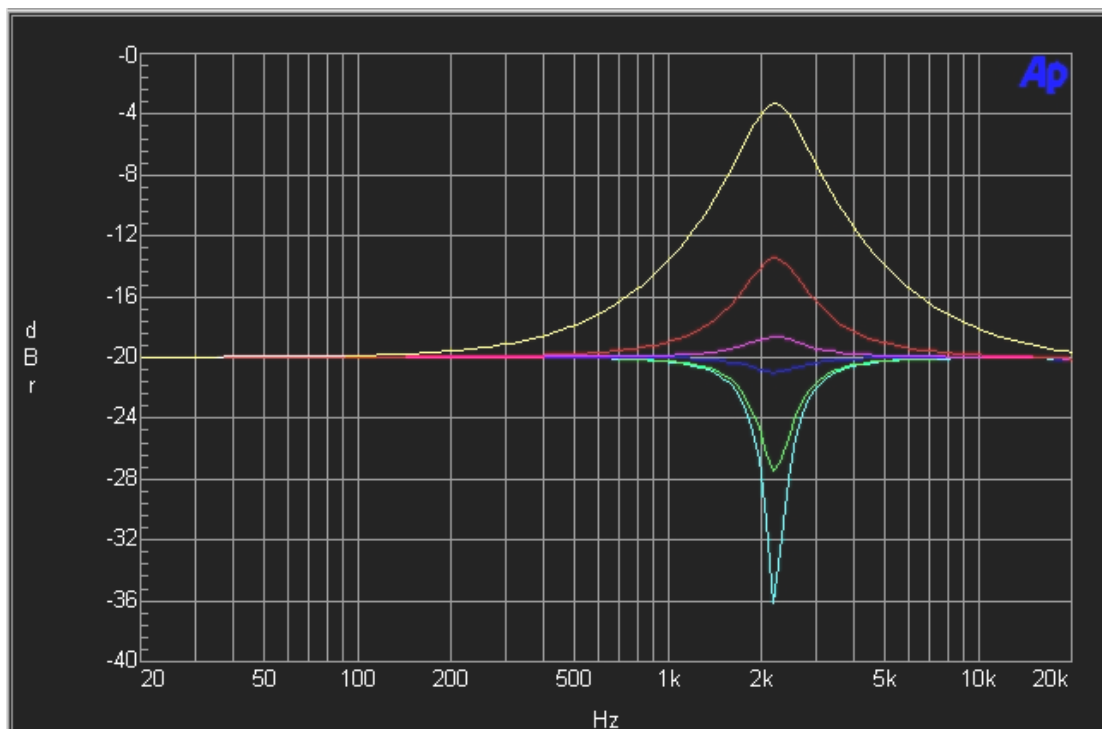
EQ type 1



This style has minimal Gain / Q dependency, smaller amounts of boost or cut still have relatively high Q and it is therefore precise and well defined in use.

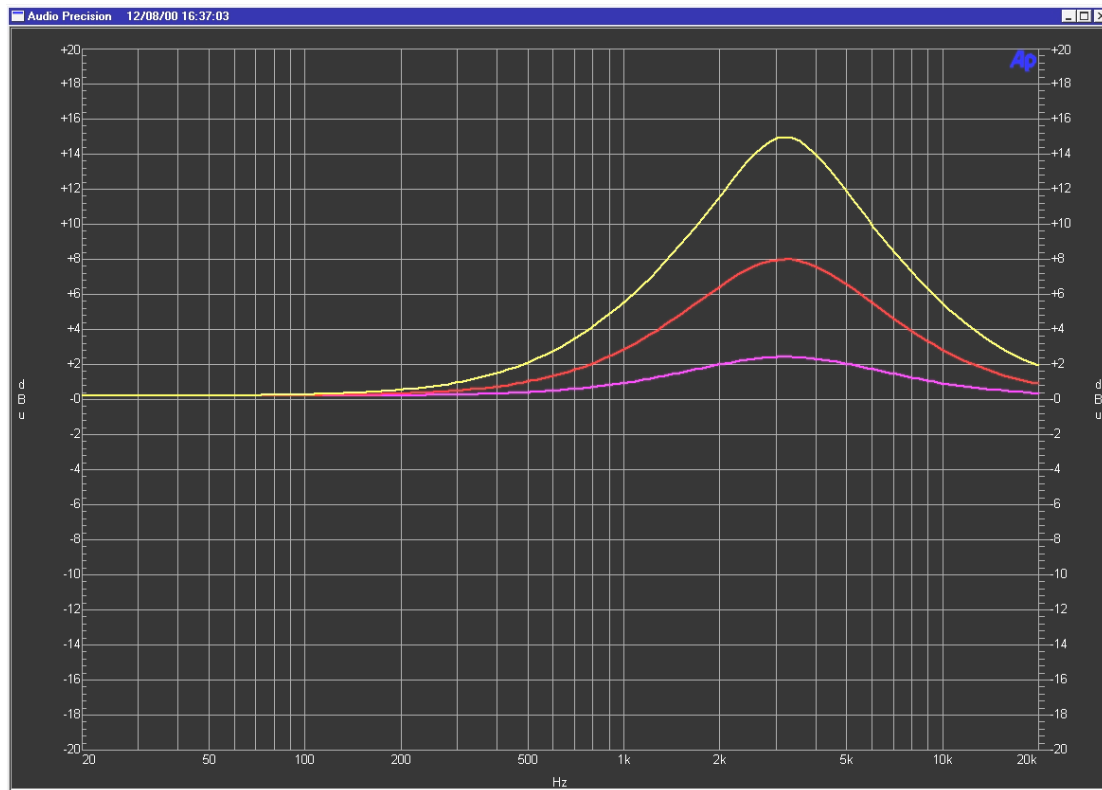
However it is sometimes difficult to obtain overall EQ fill on combined sources and subtle EQ on vocals and the like, as the user needs to adjust the Q control to maintain an effect when the gain is changed. Failure to understand this fact has often added to the reputation of this type of EQ for sounding 'hard' or 'harsh'. However, because the user retains separate control of all its parameters, this EQ is still the most flexible for users that have the time and patience to spend when using it. It is most like the original 4000 series SSLs, and other 'clinical' styles of EQ that became popular in the 1980's.

EQ type 2



The type 2 EQ is exactly similar in boost as the type 1, but has constant Q responses in cut. This is the only type of EQ offered in the Oxford plug-in that has unsymmetrical curves. Therefore EQ done in boost cannot be readily reversed by cut afterwards. The EQ resembles some speciality legacy units and lends itself well to resonance control for percussion instruments such as drums, since relatively high Q is available at low gain settings, whilst fairly subtle 'fill EQ' can be achieved in boost settings at the same time.

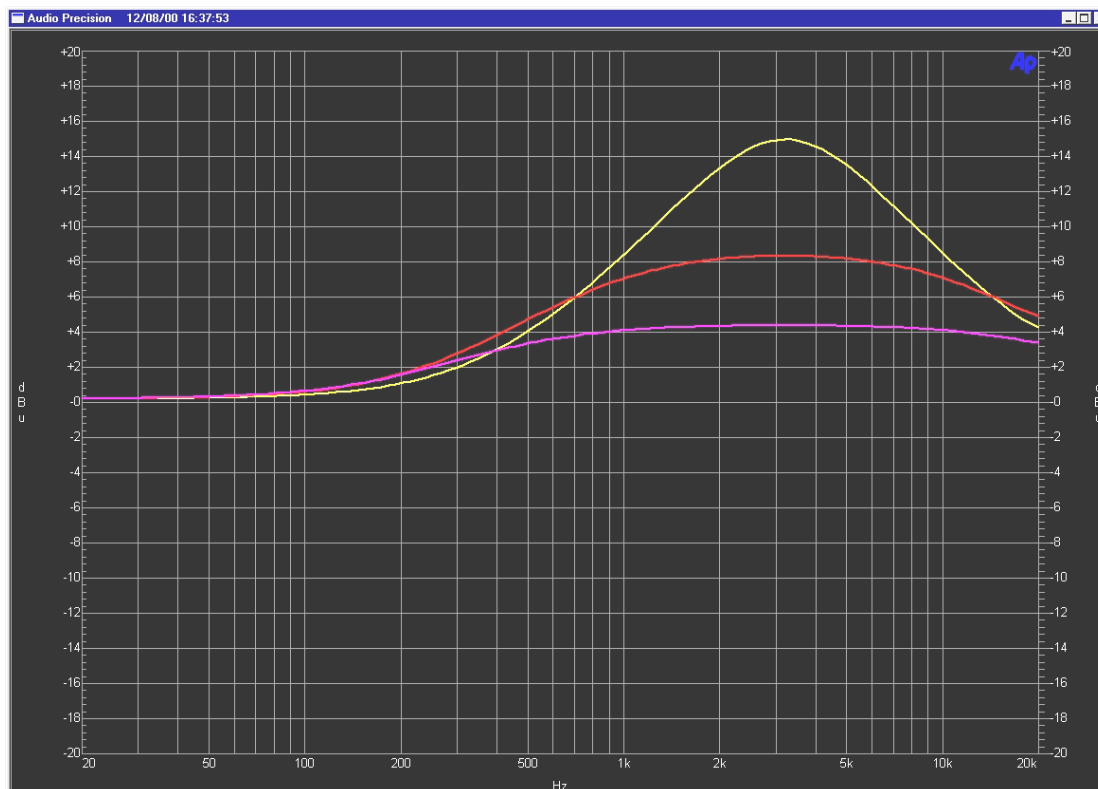
EQ type 3



This style of EQ has a moderate amount of Gain / Q dependency whereby the Q reduces with gain. This provides the EQ with a softer characteristic as EQ is progressively applied and since the effective bandwidth is increased for low gain settings, it sounds louder and more impressive when used at moderate settings. The gentler Q curve also lends itself better to overall EQ fills and more subtle corrections in instrument and vocal sources. Turning the Gain control seems to produce the effect that the ear is expecting without needing to adjust the Q control too often. Therefore EQs of this type are often dubbed as 'more musical sounding'.

This EQ most resembles the older and well-loved Neve types, their modern derivatives and later SSL G series. Also many of the more popular outboard EQs have this dependency to some extent.

EQ type 4



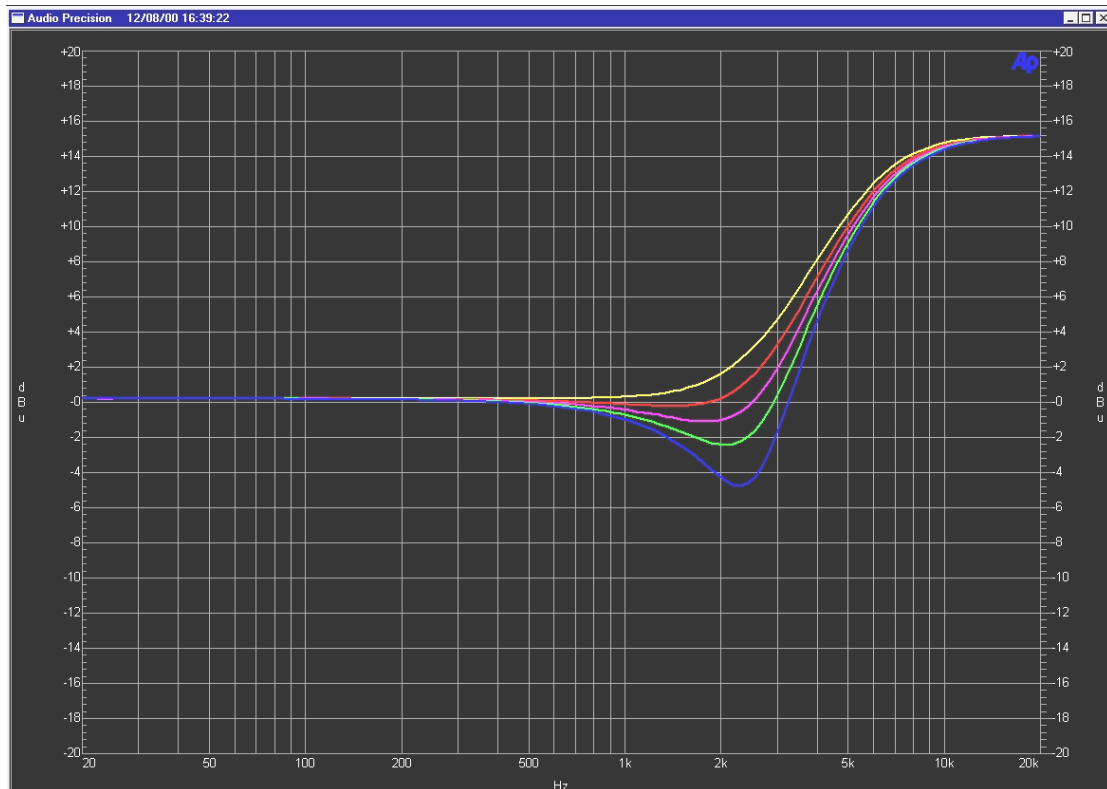
EQ type 4 builds on the type 3, using a far greater Gain / Q dependency which maintains an almost equal area under the curve in the boosted region with gain control operation. It is extremely soft and gentle in use and is most suited to overall EQ fill and character modification for mixed parts (and completed mixes) where subtle changes in overall impressions are required. Therefore it will also prove useful in mastering situations where there is requirement to match the sounds of tracks from different sources on a common production release.

7.2 Shelving sections.

In the Oxford EQ, the highest and lowest bandpass sections can be independently switched to shelving functions. Although shelving functions are often considered elementary, they are by no means all the same and their importance to the sound engineer should not be underestimated. Various types in common use are considered to favour certain types of use or are considered preferable by users of differing persuasions.

Our analysis of common shelving EQs has shown that one of the most important differences in the sound of the shelving EQ is the response around the band immediately below the HF section (and above the LF section). Many of the most loved classical EQs have a degree of 'undershoot' in this region (when in boost), either by design or as a result of circuit limitations in legacy units. Therefore most units can be characterised by control within this region of the frequency response. In appreciation of the importance of this parameter, the Oxford EQ provides the facility to modify the response in this region to provide differing styles of shelving EQ.

Shelving overshoot control (HF shelf Q control)



When the HF shelving function is selected, the Q control provides control of the ‘overshoot’ function.

With the Q control set to minimum (yellow plot) the section has no overshoot and performs a basic and accurate shelving function. This is most like the responses provided by the original SSL 4000 EQs and many other outboard units often described as ‘clean’ EQs. Although these are still very popular units, some engineers complain that they can sound harsh and overbearing in comparison with legacy EQs

As the Q control is increased the overshoot factor is also increased. For instance the red plot shows the slight dip in the response at around 1.5KHz for a boosted HF setting of 6KHz. This has the effect of suppressing the perceived mid range boost that occurs with the previous ‘clean’ variety, reducing the apparent ‘hardness’ of the sound. This, along with the increased slope rate, provides more apparent definition to the EQ in the band of interest.

The purple plot shows the effect of the Q control in mid position. This produces a gain loss of around 10% (of the boost gain) in the overshoot region and further defines the effect described above. This setting provides a response most like the legacy Neve designs and their derivatives and the later SSL G series EQs. This response produces an optimum effect by providing what the ear expects to hear as the gain control is operated and can explain the enduring popularity and renowned musical qualities attributed to EQs of this type.

At maximum (blue plot), the Q control provides for an overshoot of half the total boosted gain, i.e. for +20dB total HF boost the maximum loss in the overshoot region will be -8dB. The curves are symmetrical in cut and boost gain settings.