

## SETTING UP AN OAS INSTRUMENT FOR OPTIMUM SOUND QUALITY

### THE OVERVIEW

#### Introduction

Since the world went digital, modern audio equipment is able to provide the user with a wide variety of adjustable parameters that define a particular sound quality. The tonal characteristics of this sound can lie anywhere on the sound spectrum between warm, rich and full bodied at one end to light, bright and brassy at the other. Experience with different types of audio equipment shows that rarely does this equipment sound at its best “out of the box” using the factory default settings. Time spent setting up the system before use can significantly improve sound quality, but operating manuals generally only define what each adjustable parameter does and provide little or no information on how they should be used !!

The Wersi OAS (Open Art System) instruments offer a bewildering array of sound quality adjustments. The good news is that these can be employed to achieve whatever tonal quality you prefer. The bad news is that there are an almost limitless number of combinations available, and the even worst news is that many of these adjustments inter-relate. So adopting a “trial and error” approach to setting up the instrument runs the risk that you could well fall off your perch (or should that be the organ bench !) long before you hit on a combination that satisfies your requirements. What’s needed is a systematic approach that enables a particular tonal quality to be specified and then sets out a procedure to achieve it.

So when I recently acquired an OAS organ, in order to achieve the best of sounds I thought it would be a good idea to concentrate first on setting up the instrument for optimum sound quality. The results were astonishing. The organ now sounds markedly different from when it was first switched on. Drawbar sounds are rich and full bodied and the instrumental sounds are amazingly realistic. In going through this setup process I have taken the opportunity to record my findings in the form of a set of guidelines. I hope that these will be of some help both to other first time users overwhelmed by the options available and to those more established users still iterating towards their preferred sound. The intention is to de-mystify the process so that what can seem at first like a baffling black art is replaced by a systematic procedure based on well established audio engineering principles. The guidelines are split into four parts, each dealing with a particular set of sound quality controls as detailed below.

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## Sound Quality Controls

There are four main sets of controls on the instrument that have a direct effect on sound quality.

### ***Gain Controls***

These controls are located on the input and output mixer menus. They enable the overall volume of the organ to be set and the volume of the various sound generators (drawbars, realdrums, wave/mp3 files and long waves for the manuals, accompaniment and drums) to be balanced. Setting the gain correctly in an audio system has a direct effect on sound quality. If the gain is too low the signal being mixed is weak, resulting in the possible introduction of noise and a lack of definition in the sound. If the gain is too high, signal clipping occurs, resulting in the sound becoming distorted.

In this part of the guidelines we shall investigate setting the various gain controls so that we can avoid these undesirable conditions and obtain the best possible sound quality.

### ***Equalisation Controls***

These controls are also located on the input and output mixer menus. They enable particular sections of the frequency spectrum to be boosted or attenuated, and as such have a major effect on the overall quality of the sound that the instrument produces.

In this part of the guidelines we shall investigate adjusting these controls to achieve a preferred tonal quality of sound from warm, rich and full bodied at one end of the sound spectrum to light, bright and brassy at the other.

### ***Reverberation Controls***

These controls are located on the input mixer menus associated with the different sound generators of the instrument and on the menus of two types of reverberation unit. Reverberation can add depth to the sound, producing a pleasing improvement in sound quality. Too little however can make the sound appear 'dry' whilst too much can produce a sort of 'audio mush' that renders the sound indistinct.

In this part of the guidelines we shall investigate configuring these controls for a variety of different acoustic environments so that just the right amount of appropriate reverberation is applied.

### ***Bass Controls***

The primary controls for setting up the bass sounds of the instrument are the equalisation controls previously discussed. Bass frequencies however are notoriously difficult to handle because they need to move large volumes of air. To achieve good authentic bass sounds we need the following three requirements to be present in an audio system. Firstly, large diameter speakers to generate the low frequencies required, secondly, large speaker cabinets to provide ample resonating air and thirdly a large sized room to allow the sound waves to successfully propagate. Inevitably all three of these requirements are compromised in a home organ installation.

In this part of the guidelines we shall discuss how to achieve a deep, rich tonal quality for the lower frequency instrumental and drawbar sounds. We shall also design a customised bass sound for the pedalboard that compensates for the limitations placed on sound quality by restricted room, speaker and cabinet size

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## Structure of the Guidelines

Each part of the guidelines is divided into four sections. The first section contains a brief explanation of the audio principles behind a particular set of sound quality controls. The second section provides a description of how these controls are deployed on the instrument. The third section outlines the strategy for adjusting these controls for optimum sound quality. The fourth section details how to implement these adjustments on the instrument. All actions required are fully explained but a basic understanding of the structure and operation of the Open Art System is necessary.

Each part of the guidelines is completely self contained so that you may choose either to complete the whole setup procedure in one go or to proceed in several separate stages.

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## Recommendations

Since a number of these sound quality adjustments are inter-related it is recommended that you follow the parts of the guidelines in the order listed.

Bear in mind that we are defining here the OVERALL sound of the organ rather than that of individual instruments and drawbar combinations, but these overall adjustments will almost certainly have an effect on the tonal quality of all the sounds generated on the organ.

So if you are setting up the instrument for the first time it is suggested that you follow these procedures first before making any tonal changes to the individual instruments.

If you are an established user you may have parameters defined in your total presets for volumes, balance, reverberation etc, as well as any sound control adjustments you have made to individual instruments. Please be aware that you may have to revisit some of these settings after setup is complete.

Now continue to Part 1 of the guidelines to set up the gain controls of the instrument

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