

# THE ARMLEY SCHULZE



HAUPTWERK™ version 4 SAMPLE SET

## USER MANUAL

Version 2.05 - © Lavender Audio 2017



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## USER MANUAL

Thank you for purchasing this sample set. Please note that installation files for the single-channel set are supplied on DVD and that the multi-channel files are supplied on a USB Memory Stick. It is recommended that you take a little time to read the user manual available either online or on any of the installation DVDs to familiarise yourself with the various features it offers.

**NB. Hauptwerk version 4 and upwards (version 4.2.1 minimum) is supported.**

### 1.1 Installation of the 57 stop set - single-channel sample set

The single-channel variant of the Armley 57 stop set requires a total of five Data packages and one Organ package to be installed. These are identified as follows ...

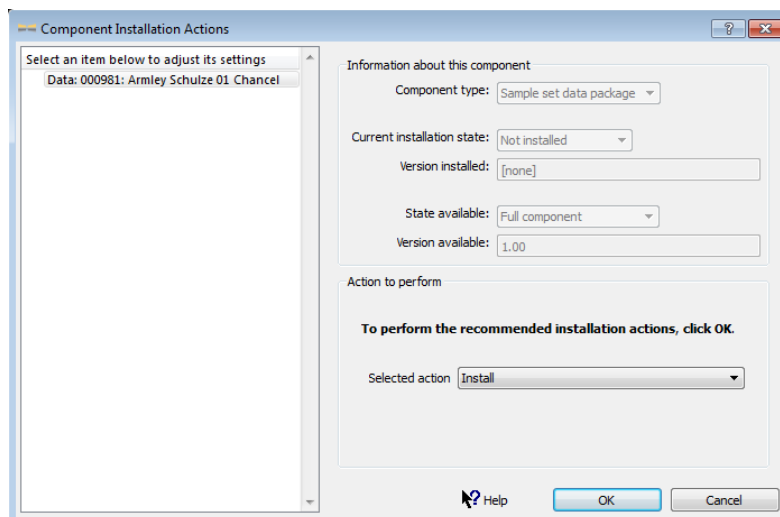
Armley-DataPackage-981 and Armley-DataPackage-984 ... these are both found on DVD-1

Armley-DataPackage-987 ... this is found on DVD-2

Armley-DataPackage-990 ... this is found on DVD-3

Armley-DataPackage-993 and Armley-57Single-OrganPackage ... these are both found on DVD-4

If the evaluation set has already been downloaded and installed, then it won't be necessary to install Armley-DataPackage-981. For correct installation, it is essential that Hauptwerk's component installer is used. Start Hauptwerk and (unless installing from a download) insert DVD-1 into your DVD drive. In Hauptwerk, choose "File | Install organ or temperament..." and then navigate to your DVD drive or to the location you saved the downloaded installation files and find the first data installation package. Once Hauptwerk has analysed the package you will be presented with the sample set licence which you will need to accept. After a while, the following screen is presented.



Ensure that the Selected action for the [Data] item is set to Install and then click OK. Installation should then proceed and the whole process should complete quickly.

Repeat the process as necessary with packages on DVD-1 through to DVD-4, installing the remaining items as detailed above. There is also a patch on DVD-4 that may be installed - this fixes some minor issues with a few of the samples. Note that the OrganPackage includes both the standard and enhanced organ definitions - you can choose which to install via the "Selected action" drop-down on the screen as shown above.

### 1.2 Installation of the 57 stop set - multi-channel sample set

There are a total of 15 Data packages and 1 Organ package (Armley-57Multi-OrganPackage) that need to be installed in order for the 57 stop multi-channel sample set to load successfully. These data packages are numbered in sequence from 981 through to 995 and all may be found in the root directory of the USB Memory Stick. If an upgrade to the 32 stop set has been purchased, this memory stick may only contain the Armley Volume 2 installation files, (ie Data Packages 990 to 995). If this is the case, please ensure that all Volume 1 files have been installed before proceeding with the Volume 2 installation. Please install any patches you may find only after all of the data packages have been installed.

If the multi-channel evaluation set has been installed, you won't need to install data Packages 981, 982 or 983. Again, the Organ package includes both standard and enhanced organ definitions for the multi-channel set.

Assuming the installation process has all been successful, the organ(s) is (are) now ready to load for the first time. Further information relating to this can be found in section 4 of the main user manual.

**NB. Use of this sample set requires an update to your Hauptwerk dongle. You should have received this update by the time the DVDs and/or USB Memory Stick have arrived. If not, please contact Lavender Audio.**

## 2. A brief history of the Armley Schulze organ

The work of the Schulze dynasty dates back to the time of J.S. Bach; however the fourth generation of this family - Johann Friedrich - is usually regarded as the first with international significance. His meeting with Weimar organist Johann Gottlob Töpfer in 1824 was highly formative, setting a course for the future sound of the Schulze organ. Töpfer's work on pipe scaling had become hugely influential to the organ builders of the 19th century and the importance he attached to foundation stops, strings and increasing wind pressures all represented a move away from established practices of the era.

Schulze's introduction to Great Britain came by personal invitation of Prince Albert in 1851 at the time of the Great Exhibition in Crystal Palace, London. The instrument exhibited there, although small, was noted for its excellent construction, warm but powerful chorus, not to mention new stops such as the Lieblich Gedact which were introduced to a British audience for the first time. This, along with the German company's newly found royal patronage, gradually caused the name of Schulze to become known across the United Kingdom, resulting in a variety of new commissions. By now, J.F.'s eldest son Edmund was supervising most of the work - it was he who had exhibited the Crystal Palace organ and he was responsible for noted instruments such as Doncaster and Tyne Dock, built in the early 1860s. In doing so, Edmund built relationships with the organ building trade in England - most of the Doncaster pipes were supplied by Edward Violette of London, a firm subsequently bought by Charles Brindley. Brindley himself provided a temporary instrument to Doncaster whilst the work was carried out on the new organ there and he ended up supplying pipework to Edmund Schulze in almost all of his other English commissions - with just one exception.

This is indeed where the Armley Schulze enters the story, although this organ was originally built for a very different environment ... a chalet styled wooden structure with seating for some 600 people. This so-called "Organ Room" was the brain child of Leeds-based engineer, mountain climber and organ aficionado Thomas Kennedy, whose wife Clara was an accomplished organist. The organ room was to be a part of the couple's newly built home, Meanwood Towers, a neo-gothic edifice designed by Edward Welby Pugin. History records initial correspondence between Kennedy and Schulze dating from 1866 where a sum of £500 is quoted for a two manual organ of 16 stops. Over the coming months, Kennedy continually changed the design brief and the specification eventually grew to four manuals and 55 stops. Schulze was further disadvantaged by a lack of knowledge of the dimensions of the new room, resulting in an overall delay to the completion of the project. Finally, in 1869, at a cost of £1800, the organ was installed and received a private opening recital given by Samuel Sebastian Wesley.

Sadly, some 8 years later Clara's health deteriorated and the organ was put up for sale. Two wealthy sisters from nearby Harrogate snapped up the instrument and presented it on loan to their newly completed local church of St Peter. The move was carried out by Edmund Schulze and Charles Brindley (now as part of Brindley and Foster, who were to build the St Anne's Moseley organ) - they must have thought this would be the organ's final resting place. However, a disagreement with the rector a year or so later resulted in the organ being placed back on the market again. This time, a wealthy Leeds textile manufacturer by the name of William Henry Eyres purchased the organ and presented it to St Bartholomew, Armley in gratitude for his marriage celebrations there. By now, Edmund had died, so this final move in 1879 was carried out by his brother Eduard alongside the ever-present Brindley. The opportunity was taken to further expand the instrument with the Open Metal 16' which form the display pipes and a full length open wood Subbass 32'. A year later, in 1880, the Schulze firm was wound up, having greatly influenced the romantic organs of both Germany and England.

The final resting place for this wonderful piece of musical craftsmanship is an appropriate one - the organ was simply too loud for the Harrogate church, whereas Armley has sufficient space for both the pipes and their attendant powerful sound. In 1900, during cleaning, one small tonal alteration was made, probably by the Leeds firm of Abbott and Smith. The Swell Rohr Flöte was replaced by a Celeste, although the drawstop legend was left unchanged (it remains so to this day). Then, in 1905, a major restoration was carried out by James Jepson Binns. The ailing pneumatic lever action was replaced by Binns' own solidly reliable tubular pneumatic system and he also provided a new console in walnut. Binns was a huge admirer of Schulze (he tuned the instrument during its time at Meanwood), so it is certain that the overall tonal scheme as well as winding and slider soundboards were left untouched. However, as well as provision of his patent combination action, tremulants and a balanced swell pedal, it is known that Binns did raise the pitch from around C = 517Hz to 528Hz. At the same time, some of the reed tongues were weighted.

The organ saw out the rest of the 20th century largely as left by Binns, with only relatively minor work such as cleaning, overhaul, wind trunking replacement and a new electric combination action being carried out. Then, in 2004, an historically informed restoration was carried out by Harrison and Harrison of Durham. They sought to return the organ to its 1905 condition by preserving most of Binns' good work. However, it was deemed important to return the

organ pipework to the condition as left by Schulze, so reed loading was removed and resonators lengthened. The Choir and Echo pipework was moved to be at the same level as the Great whilst the Swell was raised above the Great. Finally, Harrisons installed a modern solid state combination system, discretely tucked away in a hidden drawer to one side of the keyboards.

### **3. Armley Schulze sample set background information**

Although the organ was built for a privately owned timber structure, Edmund Schulze must have suspected that the instrument would eventually find its way to a church environment. The scaling and power of some of the stops suggest as much and - in Armley - the acoustic approaches that of a small Cathedral. Indeed, although the reverb time is just in excess of 3 seconds, St Bartholomew's Church is a very resonant building, resulting in a significant component of reverberated sound being present even in recordings taken close to the pipework. The organ is situated in the chancel area, high on the north side and its power is very keenly felt in this part of the church. Further west, the power and brilliance is tamed (the famous five rank Great Mixtur becomes less strident) and the church's resonance increasingly affects the organ's sound, as would be expected.

With these factors in mind, the decision was taken to adopt a multi microphone approach with recording positions high in the chancel close to the pipes, as well as towards the east end of the nave. In addition, microphones placed in the nave pointing directly away from the organ give a surround sound position. This results in a multi-channel sample set with chancel, nave and surround stereo perspectives, with the single channel sample set featuring the chancel samples only. Sustain samples of some 6 - 8 seconds duration were taken and there are three release samples per note to take account of the difference between the sound of the release for short (staccato), medium (portato - typically 200 to 500 mS, depending on pitch) and long note durations. Some notes feature extra medium duration release samples, particularly for the slower evolving lower pitched pipes. Each sustain sample features a minimum of three individual loops.

There are individual tremulants for Swell, Choir and Echo. The Swell tremulant is subtle and not especially evident on many samples, whereas the Choir and Echo have a tremulant with a greater and more noticeable effect. Regardless, the Armley sample set features sampled tremulants throughout, with no use made of the Hauptwerk tremulant model. As a result, the tremulant speed (the Swell and Choir being fairly fast in typical Binns fashion) is not adjustable within Hauptwerk. The significant improvement in realism that sampled tremulant effected notes bring was felt to be of greater benefit than the ability to adjust tremulant speed.

The organ is tuned to equal temperament at approximately A=440 Hz. At the time of sampling, the organ was well tuned, so all of the samples have been left at their recorded pitch with only the most out of tune being re-pitched from within the organ definition file. As a result, the normal tuning errors that are found in even the best regulated organs are present here and therefore contribute to the overall realism of the organ. However, it may be considered necessary to use the organ at either a different pitch or with a different temperament. This is possible and the organ definition file has been carefully programmed to produce appropriate randomised tuning errors when not using the original organ tuning (the strength of these tuning errors can be adjusted within Hauptwerk or even disabled completely). The most realistic sound, though, will be when the original organ tuning is selected. Note that adjusting the random tuning errors has no effect in original organ tuning mode.

#### **Multi-channel considerations and suggestions.**

For those using a multi-channel version of the Armley sample sets, the extra samples taken from Nave and Surround positions offer greater flexibility than might first be expected. The simple blend of all three positions to a single stereo speaker or headphone feed does indeed give a sound with a lot of reverberation - for many tastes this would be considered excessive. Indeed, some will find the Chancel samples themselves contain as much reverberated sound as they need. However, and perhaps paradoxically, the extra samples can be of use when attempting to reduce the amount of reverberation, should a drier sound be desired. Try loading the Chancel samples using one of Hauptwerk's sample truncation algorithms (Simulated dry, long decay, (2'C @ 250ms) is a good starting point although experimentation with this setting is recommended) and then set the Nave and Surround sample set to load normally with no truncation. Now, when blending the Nave and/or Surround samples with the truncated Chancel sounds, the direct/reverb balance ranges from an almost "in the pipes" sound to a "back of the church" feel. For those with multi-speaker setups, routing the Surround samples to the rear speakers whilst maintaining a blend of truncated Chancel and Nave to the front speakers gives a grand spacious effect whilst maintaining a good degree of clarity. Faders provided on the Settings screen (described later in this manual) make the setting of relative volumes both quick and intuitive.



#### 4. System requirements and loading the 57 stop organ for the first time

Computer requirements vary depending on whether the single or multi-channel set is loaded. The sample memory limit of 3 GB for Hauptwerk Basic edition means that Hauptwerk Advanced Edition should be considered essential for both single and multi-channel variants of the complete set. For the single channel set, a decent dual core or (ideally) quad core processor is recommended, alongside 16 GB of system memory (RAM). The multi-channel complete set really does require 32 GB or more of system RAM, alongside a fast (eg i5/i7) quad core processor.

The sample set was tested on a PC consisting of an Intel i7-4820K processor with 64 GB of system memory running Windows 8.1 64 bit and this platform has proven more than adequate to run this organ with all realism features enabled. A lesser spec. PC (Core2 Quad Q6600 with 16 GB memory) was also found to be suitable, albeit the polyphony demands of the multi-channel set when loading all samples did cause high CPU usage. For those with older or slower computers, Hauptwerk's polyphony management system should allow processing power limitations not to be especially noticeable, assuming of course the maximum polyphony has been properly set.

The following table, which is based on the enhanced set, gives very approximate figures for the amount of RAM (memory) the organ samples require with various different loading options set. None of these figures take into account the RAM needed by the operating system or Hauptwerk itself. Where no figure is given, that particular loading option (although valid) hasn't been tested, generally because it wouldn't make sense to use it.

Single channel (x3 for multi-channel*)	24 bit	20 bit	16 bit	16 bit (no trimmed ranks loaded)	14 bit (no trimmed ranks loaded)
Uncompressed	29918 MB	●	14959 MB	●	●
Lossless compression	17236 MB	15381 MB	9039 MB	●	●
Single loops and compression	●	13036 MB	7537 MB	4823 MB	4300 MB

\* Multiplying by 3 will give an approximate figure. For instance, all three stereo channels loaded at 24 bit, all loops and lossless compression has been measured as requiring 50,878 MB of RAM. It is of course possible to load just two channels (eg Chancel and Surround only), in which case simply multiply these figures by 2.

To achieve best results, the organ should be loaded at 24 bits resolution, no memory compression and with all realism features enabled. If your system doesn't have sufficient memory to allow this, then it is recommended to try the following in order until the set loads reliably (it is wise to allow for a small amount of unused memory to keep the operating system happy !)

- ◆ Use lossless memory compression (audio quality is unaffected although polyphony is reduced by approximately 15%)
- ◆ Load some or all samples at 20 bit resolution
- ◆ Load some or all samples at 16 bit resolution.
- ◆ Only load a single loop on some or all samples.
- ◆ Load some or all samples at 14 bit resolution
- ◆ Only load single releases for some or all samples

It is possible to go a fair way down this list with little obvious loss of realism or quality – however the last option should be avoided if at all possible. You can also reduce the load on your computer's processor by disabling the wind model, disabling real time harmonic shaping and disabling interpolation, all of which will affect the realism of the organ. The first time the organ is loaded the sample cache is built. This takes a considerable time – maybe 10 minutes or more for slower computers. However, subsequent loads are much quicker.

Once the organ is loaded, you can use Hauptwerk to connect the keyboards, stops, pistons and swell pedals of your MIDI setup as necessary. Before doing so, it may be worth reading the following section which contains useful information on the various playing aids incorporated in this organ as well as offering suggestions on how best to connect more modestly equipped consoles.

## 5. Armley Schulze Sample Set Screens

### Console Screen



The console screen provides a representation of the Armley organ based on original photographs of the instrument. Most of the contents of these screens will not require much in the way of explanation, however, a few brief points may be of use.

All controls on these screens can easily be assigned to virtual console hardware controls by right-clicking the control and selecting the auto-detect option. The order of the manuals - from top to bottom - is Echo, Swell, Great and Choir.

Each manual has a number of combination pistons which are located on the keyslip immediately below. The general pistons are found on the Echo and Swell keyslips towards the right hand side.

The action of the Great and Pedal pistons may be combined by drawing the "Gt & Ped Combs Coupled" coupler, whereby pressing a Great divisional piston will cause the corresponding Pedal combination to act as well (and vice versa when pressing a pedal toe piston). The row of toe pistons to the left of the swell pedal are, by default, a duplication of the swell divisionals; however, the "Gens. On Swell Toe Pistons" transfer, when enabled, will change their use to being a duplication of the General pistons. As would be expected, "Gens. on Pedal Toe Pistons" turns the right hand set of toe pistons into generals.

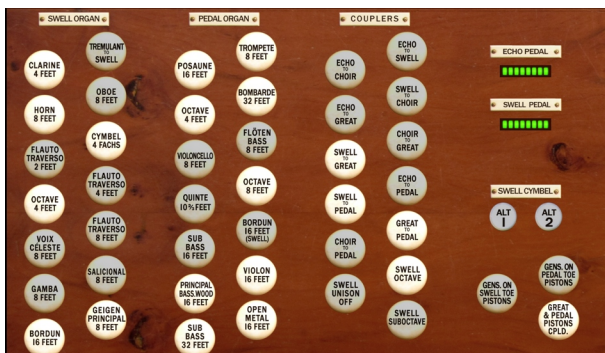
### Stops + Pistons Screen



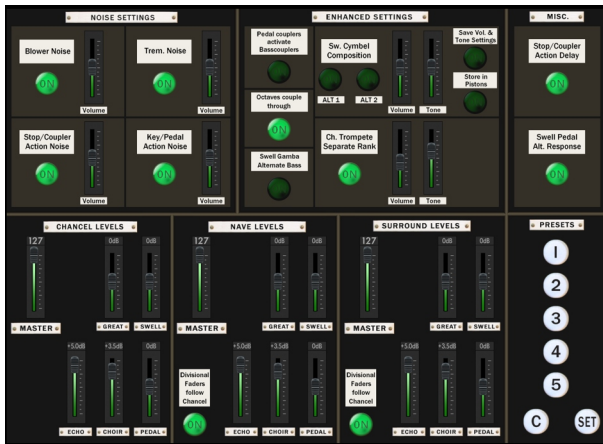
The Stops+Pistons screen simply removes the central manual/pedal display and replaces it with a larger representation of the instrument's pistons along with a graphic showing the position of the swell pedal. This screen is probably the best one to use if controlling the Armley organ from just a single monitor.

### LH and RH Jamb

These screens spread the stops over two pages and offer intelligent screen display. Best results will be obtained from widescreen monitors which have been rotated through 90 degrees to provide a narrow portrait perspective - the display is then very similar to that of the real instrument. For those using screens in a landscape format (maybe to cater for other sample sets which employ a terraced arrangement for the drawstops) the stops are displayed in a more functional but nonetheless clear format.



## Settings Screen



A variety of options may be controlled on this page, including the various enhanced settings which are described in the next section.

The Noise Settings are reasonably self-explanatory and – for each category – the option to switch the noise on or off as well as to set overall level is provided. The level adjustment is approximately +/- 6dB which roughly equates to a doubling or halving of the volume level. Further fine level control is available via Hauptwerk Advanced edition's voicing tools. Note that both the Choir and Echo action noise is very quiet on the real instrument, so key action noise is only programmed for Pedal, Great and Swell.

The Stop/Coupler action delay control inserts a short delay in the operation of all stops and couplers. This attempts to replicate the real life inertia of such systems, whereby the operation of a particular stop at the console doesn't result in the instantaneous sounding of its rank of pipes. The delay is a few hundred milliseconds. Below this control is one to alter the response of the swell pedal. On many virtual organ consoles, the swell pedal will generate MIDI controller messages linearly as the pedal is opened or closed. However, the effect of a swell box being opened tends not to be linear; rather, the greatest change of volume occurs just as the shutters are first opening with the rate of change decreasing as the box is opened further. The Swell Pedal Alternate Response facility attempts to model this effect.

The lower half of this screen is devoted to setting the relative levels of each division and - for those using the multi-channel variant of the Armley set - setting the overall balance between Chancel, Nave and Surround microphone positions. The faders controlling the various divisions (Great, Swell etc) default to the mid position and again offer +/- 6dB volume change, whereas the master fader default position is fully open - fully closing this control will reduce the volume to zero. The master fader also controls the level of the appropriate blower, tremulant and stop noise samples, but has no effect on the key action noises. Unlike the other noise samples which have separate multi-mic samples, the relatively quiet key action noise is presented from the chancel perspective only, so the overall volume of this may be simply controlled by the key action noise fader, regardless of the position of any of the main faders. Finally, there are five presets which may be used to store and recall the position of the divisional and overall volume faders.

### 6. The 57 Stop Enhanced sample set.

As it stands, the Armley Schulze organ is capable of producing a wide variety of tone colours. However, Hauptwerk allows for additional stops and other facilities to be incorporated into any sample set, so the opportunity has been taken to build various non-original enhancements into a separate Armley 57 Stop Enhanced organ definition. These enhancements are as follows:

#### Additional stops

Four additional stops have been provided. These are all designed to be in keeping with and compliment the Armley Schulze sound. Care has been taken to ensure they fit well with the existing samples.

**Great Superoctave 2'** - this allows for a "clean" 8/4/2 Great chorus with no twelfth component.

**Swell Flauto Traverso 2'** - a useful addition to the Swell flute family, adding brightness and flexibility.

**Echo Terz 1 3/5** - completing the Echo Cornet, but also useful in combination with other stops on that division.

**Pedal Bombarde 32'** - a downward extension of the Pedal Posaune, this stop underpins full organ wonderfully.

#### Additional couplers

Whilst sub and super-octave couplers may be provided by Hauptwerk's master couplers, the same is not true of the Unison Off. Therefore, these three intra-manual couplers have been provided for the Swell, Choir and Echo; these have also been integrated into the instrument's divisional and general combination pistons. In addition, there is a switch on the Settings screen which optionally allows these couplers to couple through to other divisions (eg with Swell Octave and Swell to Great drawn, Swell Octave to Great would also sound).



### **Stop borrowing**

Limited borrowing involving two ranks has been programmed. The Great Trompette 8' and Tuba 16' appear on the Choir, allowing them both to be used more easily as solo stops. One additional benefit of this is that the Choir sub and super-octave couplers may be used and the division even coupled back to the Great to achieve reed tone at varying pitches, should this be desired. The Separate Rank facility allows the Choir Trompette to be voiced separately without affecting the Great instance of this stop – volume and tone sliders have been provided, although Hauptwerk's voicing tools do of course provide far more flexible control.

There is also an appearance of the Swell Bordun on the Pedal Organ, allowing for a soft enclosed 16' stop to accompany the quietest registrations.

### **Basscouplers**

Basscouplers offer a way of playing the pedal organ from the manuals. The basscoupler is intelligent in that only the lowest manual note sounds on the pedal, meaning that only one note is played at a time, giving a far more musical result than a simple "Pedal to Manual" coupler. Rather than providing separate stop controls for basscouplers, there is a switch on the Settings screen which allows the standard manual to pedal couplers also to operate the appropriate basscoupler. For example, with the "Pedal couplers activate Basscouplers" switch on, drawing Swell to Pedal would also activate the Swell basscoupler.

### **32 note pedal compass**

Although the Armley Schulze has a full 61 note manual compass, the pedals are only 30 notes. Two extra notes have been provided for those with 32 note pedalboards.

### **Swell Cymbel alternate composition (Settings screen)**

This stop has a noticeable octave break back at middle C. Whilst it's not an uncommon feature for the style and period, it can nonetheless be problematic in polyphonic music, especially where (for example) a fugal subject straddles this boundary. The alternate composition feature attempts to help solve this problem by moving the break to a less noticeable part of the compass.

ALT 1 - (Alternate Composition 1): This moves the break down an octave to tenor C, meaning that all notes above this point contain harmonics from the 16' series.

ALT 2 - (Alternate Composition 2): This moves the break up two octaves to top C, effectively removing the 16' harmonics from this stop for the majority of its compass and thus reducing or even eliminating the need for the Swell Bordun 16' to be drawn as well.

When employing these alternate compositions (specifically ALT 2), it may be felt that the Cymbel is too loud and/or bright. To help address this, simple sliders allowing adjustment of volume and tone of this stop have been provided. Once the desired sound has been created, it is possible to store the values of these sliders by pressing the "Save Vol. & Tone Settings" button on the Settings screen. There are separate memories for ALT 1, ALT 2 as well as the standard Cymbel composition and the sliders automatically move to the stored values when the Cymbel composition is changed by means of the ALT buttons.

Incidentally, to return to the standard Swell Cymbel composition, simply ensure that both Alternate Composition switches are off. Note that the option to store the state of these ALT switches within the combination memory is also available (although the general cancel piston will not affect these switches).

### **Swell Gamba alternate bass (Settings screen)**

As per the real instrument, by default the Swell Gamba uses the pipes of the Geigen Principal for its bottom octave. Although tonally this is a reasonable match, the scale of the Geigen Principal means that the overall volume may be considered to be too high for some music. When enabled, the Swell Gamba alternate bass option uses the Salicional and Flauto Traverso pipes together to provide the Gamba bottom octave instead of the Geigen Principal. The volume of this combination is perhaps a better match for the rest of the Gamba pipework, even if the string tone is to some degree compromised.

### **Echo division enclosed**

The Echo Organ has been placed in a virtual enclosure, allowing its sounds to become even more gentle.



## 7. In use – some suggestions and considerations

As has been discussed, the organs of Schulze were highly influential to the organ builders of England in the latter half of the 19<sup>th</sup> century. In true German romantic tradition, this instrument sets the flue chorus at its heart, but – unlike quite a few of its continental contemporaries – a reasonable variety of chorus reeds are provided. Indeed, for a builder who was noted for his innovations and developments in flue pipework, the reeds at Armley are of a uniformly excellent quality and expand the range of suitable repertoire significantly. For example, whilst it would be expected that the German late classical and romantic music of the likes of Mendelssohn, Rheinberger, Liszt and even Reger would sound good on this instrument, much of the French romantic period works well too. Although the Schulze sound is quite some way from that of a Cavaille-Coll, most of the basic constituents of that style of organ are present nonetheless. English romantic repertoire is also reasonably well catered for, albeit the sounds of later Willis and twentieth century Harrison have moved some distance away from mid Victorian Schulze. Music from earlier periods can be successful, although the lack of mutations inevitably means that not all baroque music can be performed authentically.

The four manual divisions have what can be described as “terraced dynamics”, with the Great containing the loudest stops, whilst the Swell, Choir and Echo have progressively quieter sounds. The Pedal underpins each division very effectively and even the quietest stops of the Echo are generally not overpowered by the Pedal 16' Sub Bass. If a quieter 16' tone is desired, there are coupling options on Swell, Choir and Echo. During the latest rebuild, the Choir and Echo divisions were moved to the same level as the Great, thus allowing the more delicate sounds contained here to be heard more effectively. The Swell is situated above the Great and speaks out clearly into the Chancel – the highly efficient enclosure allows for considerable dynamic changes to be employed. The dynamic balance between the divisions can be easily adjusted by means of the level sliders on the Settings screen. In particular, the very flexible Echo Organ can benefit from being boosted, especially when used as an enclosed division in the Enhanced set.

Despite its romantic leanings, each manual has a proper chorus based on a 16' pitch – the Great Mixtur, Swell Cymbel and Choir Cornett all have harmonics from the 16' series sounding in the treble of their compass and so require an appropriate 16' manual stop to be drawn for these stops to “make sense” harmonically. Despite this, the Schulze Principal chorus work is noted for its brilliance and power ... nowhere is this more evident than the famous Great Mixtur V, which has been described as being like “canned lightning”. Indeed, so impressed was Arthur Harrison when he first visited Armley in the early twentieth century, he noted the composition of this stop accurately for future reference.

Possibly the finest stops at Armley though are the flutes – on every division there are flute families at 16', 8' and 4' pitch and there is a real contrast between the different families. The families of strings are no less impressive, with excellent options on the Swell for French music (especially the keen sounding Gamba) to the rather quirky Cello und Violone on the Choir, whose chuffy starting transient is meant to sound like the attack of bow on string. On the Echo division, the Vox Angelica is tuned flat from tenor C upwards and is designed to beat with the Echo Oboe. Possibly the most flexible stop on the Swell is not a Schulze stop at all – the Rohr Flöte was replaced with a Celeste probably by Abbott and Smith in or around 1900. Whilst it's probably at its best when combined with the Salicional, when added to the Gamba a French sounding Voix Celeste is the result, whilst Celeste and Flauto Traverso 8' gives a very pleasant Unda Maris effect. Note that on the real instrument the stop knob still retains the Rohr Flöte legend – this is the case with the sample set as well (albeit the Enhanced set does re-engrave the stop knob to the more appropriate “Voix Celeste”!)

Whilst individual registers can and do sound very impressive, Schulze's strength as a voicer was in his ability to allow different stops to blend with one another, producing a great variety of new sounds. Trying combinations of stops at different pitches is often very rewarding and the various octave/sub-octave/unison off couplers on the Enhanced set help facilitate this. The chorus reeds can also give good service as solo reeds with the Great Trompette being a very good example. When carrying out his restoration work in 1905, J.J Binns was largely conservative in that he respected the voicing traditions of Schulze and made no tonal alterations, save for a raising of the overall pitch (this was partially reversed during the work in 2004). However, his installation of tremulants to Swell, Choir and Echo have further enhanced the romantic credentials of the organ. Of course, use of these is entirely optional and, whilst the typical Binns style may be a little fast for some tastes, there's no doubting the additional possibilities they present.

With the exception of the Bombarde downward extension of the Posaune (on the 57 stop enhanced set), all stops on the Pedal Organ are fully independent; that is, there is no borrowing or unification between similar sounding stops at different pitches. Therefore, for Hauptwerk Advanced Edition users, voicing is available for every note of every Pedal stop. However, there is a degree of unification involved in the bottom octave of some stops on each manual. This is as follows:

GREAT: Hohl Flöte uses the Gedact bottom octave.

SWELL: Gamba uses the Geigen Principal bottom octave (although note the Gamba has an alternate bass option)

CHOIR: Both Orchester Flöte and Harmonica use the Lieblich Gedact 8 bottom octave.

ECHO: Echo Oboe uses the Vox Angelica bottom octave. Dolcan uses the Echo Flöte bottom octave.

Therefore, for these stops, the bottom octave will be greyed out in Hauptwerk's voicing tools.



## 7. Acknowledgements

Finally, grateful thanks go to the following ...

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## ARMLEY SCHULZE 57 STOP SAMPLE SET -- SPECIFICATION

### Great - 61 notes

Sub Principal	16
Bordun	16
Major Principal	8
Gemshorn	8
Hohl Flöte	8
Gedact	8
Hohl Flöte	4
Octave	4
Superoctave	2
Rausch Quinte	II fachs
Mixtur	V fachs
Tuba	16
Trompete	8

*Swell to Great*

*Choir to Great*

*Echo to Great*

### Swell - 61 notes (enclosed)

Bordun	16
Geigen Principal	8
Gamba	8
Salicional	8
*Voix Celeste (tenor C)	8
Flauto Traverso	8
Octave	4
Flauto Traverso	4
Flauto Traverso	2
Cymbel	IV fachs
Horn	8
Oboe	8
Clarine	4
<i>Tremulant</i>	

*Swell octave*

*Swell suboctave*

*Swell unison off*

*Echo to Swell*

\* this stop knob is labelled "Rohr Flöte"

### Choir - 61 notes

Lieblich Bordun	16
Minor Principal	8
Cello und Violone	8
Harmonica	8
Orchester Flöte	8
Lieblich Gedact	8
Lieblich Flöte	4
Octave	4
Piccolo	4
Cornett	II-V fachs
Clarinette	8
<i>Tremulant</i>	

### Choir (continued)

Tuba (Gt)	16
Trompete (Gt)	8

*Choir octave*

*Choir suboctave*

*Choir unison off*

*Swell to Choir*

*Echo to Choir*

### Echo - 61 notes (enclosed)

Tibia Major	16
Vox Angelica	8
Echo Oboe	8
Zart Flöte	8
Dolcan	8
Still Gedact	8
Dolcissimo	4
Echo Flöte	4
Nasard	2 2/3
Flautino	2
Terz	1 3/5
<i>Tremulant</i>	

*Echo octave*

*Echo suboctave*

*Echo unison off*

### Pedal - 30 (32) notes

Sub Bass	32
Open Metal	16
Principal Bass Wood	16
Violon	16
Sub Bass	16
Bordun (Sw)	16
Quinte	10 2/3
Octave	8
Violoncello	8
Flöten Bass	8
Octave	4
Bombarde	32
Posaune	16
Trompete	8

*Great to Pedal*

*Swell to Pedal*

*Choir to Pedal*

*Echo to Pedal*

*Great and Pedal pistons coupled*

*Generals on Pedal foot pistons*

*Generals on Swell foot pistons*

*Basscouplers to Great, Swell, Choir and Echo*

### Reversible pistons

*Great to Pedal, Swell to Pedal, Swell to Great*

### Reversible foot pistons

*Great to Pedal, Swell to Pedal*

*Six (eight) general pistons and general cancel*

*Six (eight) foot pistons to the Pedal Organ*

*Six (eight) pistons each to the Great and Swell Organs*

*Four (eight) pistons each to the Choir and Echo Organs*

*Enhanced set additions are noted in green*