My Hauptwerk Experience

From exploration to completion

Hauptwerk© Virtual Pipe Organ Software
(Advanced Edition, Version 3.30)

And

Classic Midi Works Keyboards©
(CMK Config 1.53)
(Latest version Eprom chips)

The complete basic setup with an Ikea Galant Table

Randall Mullin

An Overview

Have you thought of the possibility of purchasing a two manual practice organ for your home? Perhaps you have checked the prices for a new two manual Rodgers or Allen. Well think larger – larger organ that is – and perhaps more than one!! Are you crazy, you say? What would you think if I told you that you could have a three manual practice organ in the corner of a room in your apartment or house for the price of a used Honda Civic? One or more of the "instruments" in your collection could be extremely convincing representations of historic organs. If you have the computing power, you could even play a five manual, 134 rank, concert hall organ on a regular basis. Do I have your attention? Unfortunately, you cannot phone and have your local Hauptwerk salesperson show up with an organ, simply take it out of the box and plug it in for you. HOWEVER, if you have the willingness and perseverance you can make an affordable organ at home a reality. *(There is even a "plan B" for the less adventurous. Read on.)*

Hauptwerk is not merely a practice organ substitute. The recordings made by performers on these "organs", called "sample sets" (a "sample" being a recording of one note), are very difficult to distinguish from recordings of the actual instruments. Words cannot adequately describe playing a French toccata on the sample set of the Ducroquet/Cavaille-Coll from St. Sauveur Cathedral in Aix-en-Provence, France in its 7 second acoustic and releasing the notes on a final tutti chord. Likewise, the simple beauty of playing individual stops or small combinations and hearing the associated tracker action sounds of the 1686/1720 Bosch/Schnitger from Vollenhove, Holland, can almost make you forget that you are playing a midi keyboard.

Last summer, a world-renown concert organist, who has made many recordings of Cavaille-Coll organs and others, visited me and after I guided him to my Hauptwerk setup, and gave him my headphones to put on, I left him alone. A few minutes later, he appeared "wide-eyed" and said, "that is incredible!" He was playing major organ works and improvising organ symphony movements for the next <u>five hours.</u>

Hauptwerk is a computer software program that enables an organist to play digital samples of pipe organs using MIDI keyboards and pedalboard connected to a computer.

The software was originally written in the UK circa 2001 by Martin Dyde, who created his software company named Crumhorn Labs to market the software. The program is being constantly updated and now is at version 3.30. *(For those that may not know, a "crumhorn" is a type of organ reed stop.)* Crumhorn Labs was recently purchased by Brett Milan of Indianapolis, Indiana, USA under the company name Milan Digital Audio.

The availability of the Hauptwerk Virtual Organ software is giving pipe organ enthusiasts, as well as professional musicians and organists, access to organs from all over the world and is also providing a means of preserving at least the sounds of historic organs that are being destroyed either as a result of re-use or demolition of the buildings housing them, or because there are insufficient funds to enable their restoration. *(The last three paragraphs were contributed by Joe Felice, known as* ***jcfelice88keys*** *on the Hauptwerk forum.)*

After I assembled my Hauptwerk "organ," I had so many pieces of paper from so many sources scattered around, that I thought it would be helpful to me to organize this clutter in case I needed it again. I also thought that it might be useful to others, especially those on the fence about starting such a project.

Disclaimer: I do not pretend to be an expert in these matters. All I know is what is compiled in these pages worked for me. What you may find useful about this text is that it contains, in one place, **all** of my basic purchase and setup information, as well as helpful hints I have learned from others. If it can be a help to you, I would be delighted. Should you be looking for expert advice, you might consider doing a search on the Hauptwerk **Forum** http://www.hauptwerk.com/, or contacting either Martin Dyde, creator of the Hauptwerk Virtual Pipe Organ©, or Brett Milan, the owner, at the same address. With questions about Classic Midi Works© keyboards, you would want to contact Darryl Wood at http://www.midiworks.ca/home/index.asp .
Any links to additional products which take you to a reseller are not an endorsement for that reseller, just a link to a description of the product. (Some of the longer links may not work properly when clicked on at the beginning of the link. If that is your experience, click on the end of the link instead or copy the link and paste it into Internet Explorer.) In case it has crossed your mind, I do not have any connection with any of the vendors associated with Hauptwerk, or with Hauptwerk itself.

I placed all of this material in the form of a tutorial and in assembly order, so that anyone interested can quickly see what is involved. This could be most helpful for those with limited or no midi experience (like me). It is designed for use with Hauptwerk© Software and Classic Midi Works Keyboards from Classic Midi Works© in Canada. Although much of the information is Classic Midi Keyboards specific, it can be applied to any midi keyboard setup.

Before I begin, I would like to thank Martin Dyde of Crumhorn Labs, Brett Milan of Milan Digital Studios, Darryl Wood of Classic Midi Keyboards and, especially, my friend David Shoemaker, for answering my many, many questions which helped to make my Hauptwerk setup a dream come true.

Perhaps you stumbled onto the Hauptwerk website like I did, read about it in a periodical, or perhaps a friend told you about it. Hauptwerk is an amazing computer product that is coming of age. Why now? Hauptwerk is extremely computer processor/memory intensive. Luckily, very powerful computers are now available to the general public and are becoming more affordable every year.

How are you at setting up a stereo system? Maybe, I should say, how is your partner at setting up a stereo system? Between the two of you, you could be playing reproductions of one, two, three, four or five manual organs from all over the world captured **note for note,** in the organ's actual room acoustics. You can play a cathedral-sized organ in your small second bedroom and have room to spare for other furniture. How is this possible? Think outside the console and outside the speaker system. Think Ikea© table and high end headphones (stereo speakers are optional!)

Where to start?

Go to http://www.hauptwerk.com the home of Hauptwerk, and notice how the page is laid out. The **Products** link is on the left hand side of the screen. If you click on this link you will see the **Overview** screen which describes the different versions of Hauptwerk and it can take you to the shop where you can purchase Hauptwerk in *basic* or *advanced* versions. You can also download the *free* version *(370 Megabytes)*, or get the physical shipment for $20. You can then experiment with Hauptwerk without paying the full price. Of course there are limitations

(see this documentation) http://forum.hauptwerk.com/viewtopic.php?f=1&t=5024 but you will then be able to discover all of the intricacies of this program.

Which version to consider: basic or advanced?

For a person using Hauptwerk through a simple stereo system or headphones, the most important features to consider are the

1. Pipe and Rank Voicing capability and the
2. polyphony limit.
   There may be some balance issues with individual notes or ranks when played through the stereo system in your room and you will not be able to make adjustments with the basic version. Your polyphony will also be limited to 1024, which will somewhat limit your sample set choices. However, with version 3.30, that limit is essentially doubled from the previous version so many more sample sets can be played using the basic edition. For additional information about the differences between basic and advanced versions go to *http://www.hauptwerk.com/index.php?src=gendocs&ref=Editions&category=Learn_More*

Now let's go back to the home page on the Hauptwerk website http://www.hauptwerk.com. Further to the right you will see the **Forum** link. There is a wonderful Hauptwerk community which will reply to your questions in a very prompt manner. Many times the creator of the program, Martin Dyde, or the owner, Brett Milan, will answer your questions.

You will find all of the documentation in downloadable PDF files by clicking on the **Support** tab in the top right hand corner. Let's return to the **Products** link on the upper left hand side of the page. If you click on that link you will see a list of options in white. If you select the **Demos** link you will be treated to audio and video samples of several of the Hauptwerk Instruments. After that, you might consider clicking on the **Instruments** link**.** Over 80 organs are listed on several scrolling pages.

When you find one you would like to hear, or learn more about, click on the name of the organ. This will bring you to the vendor's web page where you can listen to the many demos available. *(Usually the demos are listed on each vendor's page in the left hand side bar or at the bottom of the screen.)*

If, in addition to the professional recordings you listen to on vendor's sites, you would like to hear the Hauptwerk community "in concert" on these same instruments go to www.contrebombarde.com and sample the hundreds of offerings there. You can also go on www.youtube.com, put "Hauptwerk" in the search field and investigate all of the clips there.

If you want to **locate a Hauptwerk setup near you**, you can register with www.contrebombarde.com *(for free)*, put in your address and use their locator to find the nearest Hauptwerk instrument owned by a member of "the contrebombarde community" nearest you.

An important thing to consider when auditioning a "wet" sample set (i.e., recorded with the actual acoustics of the room) is to find out whether the sample set has *multiple releases* for staccato and legato for *all* notes. Most very recent sample sets have these extra samples, and the newest include even three or more releases. Earlier produced sample sets do not have multiple releases. If a fast toccata (or similar piece) on full organ is not included in the demos of the organ that you are interested in, check with the sample set creator to find out if it contains multiple releases. If it doesn't, you may hear the "bell syndrome" (the organ sounding like little bells when playing in a quick staccato style) on that sample set. Organs recorded "dry" (very close to the pipes) do not have this problem, but require external reverberation.

Now, two questions?

1. Which of these organs would you like to play in your home on a regular basis?
2. How would you be using these organs?

When you revisit the sample set pages after listening to the demos of organs that have impressed you, look on the vendor's site for the computer requirements. They are always listed. It might be that your computer will have to be upgraded with either more memory or more power. Keep in mind that if you are an organist who wants to play difficult toccatas on the tutti of large "wet" sample sets you may want to consider a dedicated computer just for Hauptwerk. To play these "cathedral-sized" organs you should consider 4 processor cores as a minimum. With either 4 or 8 processor cores you will want at least 8 gigabytes of ram. Even if you are not a virtuoso organist, there may be the most extraordinary sample set that will be released next year or the year after. What do you think of building in a little extra power for that possibility? (Larger organs take more ram

to load; large organs in more reverberant buildings (recorded "wet") take more processor power as well.)

As you have discovered, many smaller Hauptwerk sample sets can be played on a computer with 2 gigabytes of ram and many middle-sized organs will work within the 4 gigabyte limit that you find on a standard (32-bit) computer. Although Mac OS X computers using the latest operating system can use the full 4 gigabytes for Hauptwerk and the operating system, 32-bit Windows computers can only use 2.75 gigabytes for one program. With a 64-bit operating system (Mac or Windows), which is necessary for many larger sample sets, you can have 128 gigabytes of ram or more, but you may find incompatibilities with software other than Hauptwerk, although this is becoming less of a problem since more and more home computers are shipping with more than 4 gigabytes of ram. If you invest in a 64-bit computer dedicated to Hauptwerk, your only concern will be finding 64-bit drivers for your additional hardware (i.e., sound card, touch screen, etc.)

To learn more about computer hardware issues, open the **Hauptwerk User Manual.** (Click **Support**, and you will see the downloadable PDF file listed in the middle of the screen.) Download the file, click on the bookmark **Prerequisites** and read all of the requirements for Macs and PCs.

There is even a "Plan B" for the less adventurous: a preconfigured system

If after reading about and hearing Hauptwerk sample sets on line you are "wowed" by the sound, but feel that the assembly and computer configuration are too much for you, **Classic MidiWorks will preconfigure a system for you**, with the sample set(s) that you want so that all you have to do is take the various components out of the boxes, attach the various cables to your computer and midi keyboards/pedalboard and you are ready to go. E-mail Darryl Wood at midisales@organworks.com to discuss the possibilities further.

Another possibility is to have a member of the Hauptwerk community (perhaps someone who lives near you) assemble and configure your instrument for a fee. You could explore this option by leaving a message on the Forum bulletin board.

What do you think? Are you interested in pursuing this further? If not, I hope that you have a new appreciation for this incredible development in the organ

world. However, if you are excited by the possibility of making Hauptwerk fulfill your practice organ requirements and you are ready for the "hands on" experience read on.

To get a complete overview of the set up process, just read this tutorial without the "assignments."

Now it is time to do your homework

1. Go to the **Hauptwerk User Manual** (to be found under the **Support** tab) and print out most of the pages (unless you enjoy reading many pages on a computer screen, which I hate.) *Consider putting these pages in a loose leaf binder for easier reference.* Read it through except the Midi Output and Midi Sequencer sections. You can come back to these later if you need to. You may not understand a lot of this. For me, it was like learning a foreign language, but you will be able to understand enough to find out the capabilities of this astounding program; and you will know where to turn when you have questions.

Even if you didn't print out the entire User Manual**, consider printing out all pages of the Midi Organ Console section.** You will need these channel and program change numbers when you program the Classic Midi Keyboards (or any midi keyboards.)

Note: you will see in these pages instructions for note-on/note-off assignments. You will want most of your pistons to send *program change* messages. This means that you can convert the note numbers that you see listed in the Midi Console Section into program change numbers for assignment purposes, e.g., note 64 becomes program change 64.

2. Go to www.midworks.ca Look at the different keyboard configurations and at the piston layout on the Classic Keyboards. You can choose no pistons, square (CMK) pistons, or round (CMK Pro) pistons. The square ones are less expensive, but they do make a slight sound when you press them – like the sound that buttons make on the typical midi keyboard. The round (CMK Pro) pistons are completely silent. You say, 'what will I ever do with all of those pistons?' Welcome to the world of midi, where any one of these pistons can be a general, divisional, reversible, a stop, or even a menu command.
If you want to check out the competition in the midi hardware field, go to this Hauptwerk page and follow the links.
http://www.hauptwerk.com/index.php?src=gendocs&ref=MIDIHardware&category=Support

Now is a good time to take out all of the pages from the *Midi Organ Console* section of the User Guide that you printed out. You will need these pages to create a piston assignment spreadsheet. Here is the layout that I came up with for my four manual Hauptwerk setup that fits in the corner of my bedroom. Keep in

mind that each sample set controls the number of General and Divisional pistons that you can access from your pistons so it doesn't do you any good to program 40 Generals if none of your sample sets has that many.

If you decide on 20 generals in your layout (quite a few sample sets have that many) and you purchase a sample set with 30 or more generals and no divisionals, you can assign additional generals to the divisionals in your layout for that particular organ by doing so in the *Organ/Connect Switch (midi) Inputs to Organ Switches* dialog.

As you are assigning channel and program change numbers double check to eliminate any unwanted duplicate assignments. *(This spreadsheet is divided into two halves for space reasons. The number following the comma is the program change number.)*

Previous	Gen 11	Gen 12	Gen 13	Gen 14	Gen 15	So/Pd	Solo 1	Solo 2	Solo 3	Solo 4	Solo 5
Ch7, 39	Ch7, 11	Ch7, 12	Ch7, 13	Ch7, 14	Ch7, 15	Ch8, 89	Ch5, 1	Ch5, 2	Ch5, 3	Ch5, 4	Ch5, 5
Next	**Gen 6**	**Gen 7**	**Gen 8**	**Gen 9**	**Gen 10**	**Sw/Pd**	**Sw. 1**	**Sw. 2**	**Sw. 3**	**Sw. 4**	**Sw. 5**
Ch7, 38	Ch7, 6	Ch7, 7	Ch7, 8	Ch7, 9	Ch7, 10	Ch8, 79	Ch3, 1	Ch3, 2	Ch3, 3	Ch3, 4	Ch3, 5
Current	**Gen 1**	**Gen 2**	**Gen 3**	**Gen 4**	**Gen 5**	**Gt/Pd**	**Gt. 1**	**Gt. 2**	**Gt. 3**	**Gt. 4**	**Gt. 5**
Ch7, 40	Ch7, 1	Ch7, 2	Ch7, 3	Ch7, 4	Ch7, 5	Ch8, 74	Ch2, 1	Ch2, 2	Ch2, 3	Ch2, 4	Ch2, 5
Set	**Gen 16**	**Gen 17**	**Gen 18**	**Gen 19**	**Gen 20**	**Ch/Pd**	**Ch. 1**	**Ch. 2**	**Ch. 3**	**Ch. 4**	**Ch. 5**
Ch7, 56	Ch7, 16	Ch7, 17	Ch7, 18	Ch7, 19	Ch7, 20	Ch8, 84	Ch4, 1	Ch4, 2	Ch4, 3	Ch4, 4	Ch4, 5

Solo 6	Solo 7	Bank 1	Bank 2	Bank 3	Bank 4	Bank 5	Next
Ch5, 6	Ch5, 7	Ch7, 29	Ch7, 30	Ch7, 31	Ch7, 32	Ch7, 33	Ch7, 38
Sw. 6	**Sw. 7**	**Bank 6**	**Bank 7**	**Bank 8**	**Seq 1**	**Seq 2**	**Exit Hauptwerk**
Ch3, 6	Ch3, 7	Ch7, 34	Ch7, 35	Ch7, 36	Ch7, 41	Ch7, 42	Ch7, 101
Gt. 6	**Gt. 7**	**Org 1**	**Org 2**	**Org 3**	**Org 4**	**Org 5**	**Unload Organ**
Ch2, 6	Ch 2, 7	Ch7, 21	Ch7, 22	Ch7, 23	Ch7, 24	Ch7 25	Ch7, 102
Ch. 6	**Ch. 7**	**Org 6**	**Org 7**	**Org 8**	**Record**	**Stop Rec.**	**Cancel**
Ch4, 6	Ch4, 7	Ch7, 26	Ch7, 27	Ch7, 28	Ch7, 65	Ch7, 66	Ch7, 64

Combination Files

You may have an *unlimited* number of combination files for each sample set. Each combination file is organized into two sections. This first section allows you to capture all of the pistons found in the sample set, like memories on a pipe or digital organ.

(Exemplum Organum Virtual Console for St. George's Casavant)

As you can see above, the St. George's Casavant has 15 Generals and five Divisionals per division. You could access any number of these combination files by selecting them from a list with your mouse. You could name one set "Vierne Symphonie VI," one "Mendelssohn Sonata I," and one "December program, first half." Hauptwerk also allows you to capture 8 complete settings, called "banks," for quick midi access through pistons (called *standby combination files*) for each sample set.

The second section of the Combination File, which is really a subset of the first section, is called the **Registration Sequencer.** The Registration Sequencer ("Seq" on my piston layout) records the equivalent of 512 ADDITIONAL generals in 8 banks (each bank assignable to a piston) in **each** Combination File. So, for example, a combination file you name "Mendelssohn Sonata I" would cover all of the pistons you have available in that sample set, plus 512 additional sequencer settings affecting all of the organ controls - like general pistons. The thing to consider with the Registration Sequencer is that the combinations are not

accessible by individual pistons. They are recorded in order into "frames" shown at the bottom of the sample set screen.

However, you can access them through Current (Reactivate), Next (Increment) and Previous (Decrement) pistons/toe studs. *(See the first spreadsheet picture for an example.)*

One way to utilize both sections of a Combination File can be illustrated by my setting for the Reubke Sonata on the E. M. Skinner sample set. The E. M. Skinner has only 10 generals. I decided to use these for the first and last sections of the piece and use 18 sequencer settings for the slower middle sections. This saved me from changing combination files in the middle of a piece (which is certainly possible, but because of the Registration Sequencer, unnecessary.)

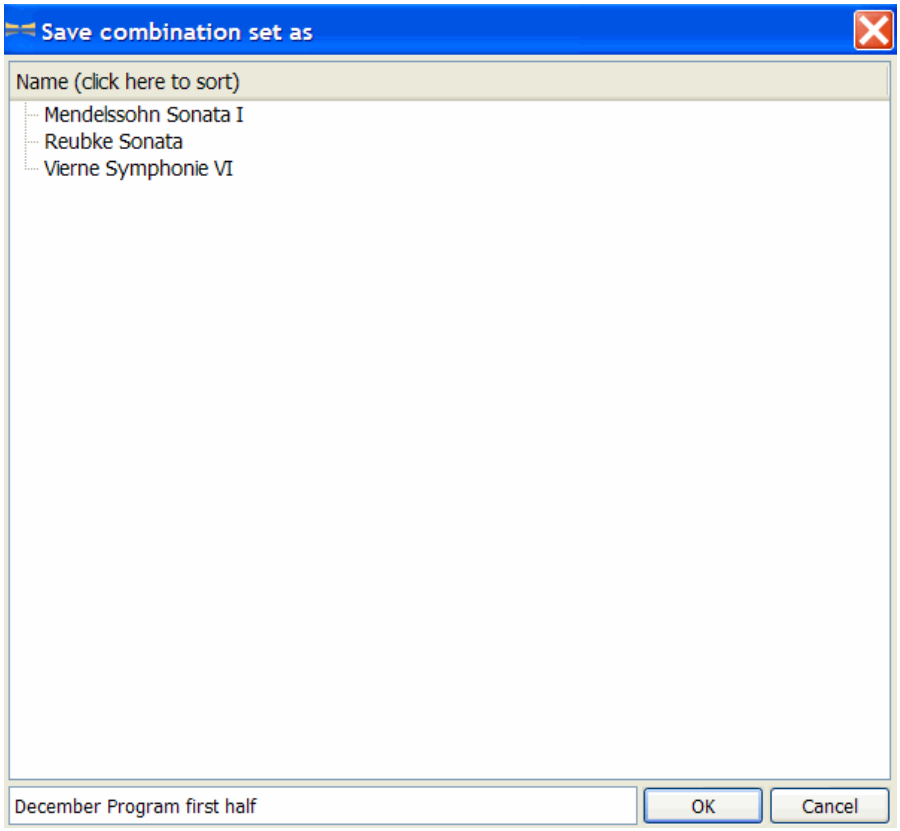
As you can see, you don't have to worry about running out of pistons with Hauptwerk.

***Helpful hint**: Some early historic organ sample sets do not include pistons. With these organs the Registration Sequencer is your only option for automating registration changes. If you leave Frame 001 without any stops assigned to it, and you assign Sequencer Bank 1 to a piston, you can use that piston as the general cancel piston for those sample sets.*

The easy way to set up a combination file:

Do this as if you were creating a Microsoft Word© document.

1. **Go to the menu: "Combinations/Save combination set as…"**



2. **Type in a name for the file (e.g. December Program first half) and click OK.** ***(Your typing appears at the bottom of the dialogue screen.)***
3. **Set your pistons for that piece (those pieces).**
4. **Set any Registrational Sequencer frames that you would like in addition to the pistons available in the sample set.**
5. **Then GO BACK to the menu: "Combinations/Save combination set as…" and select the name (e.g. December Program first half) from the list at the top and choose OK.**
   (There is no Save command for combinations, only Save As. So you are essentially replacing the file every time you make changes and choose Save as…
6. **When you play pieces with saved combinations, just select the name from the "Load Combination file" menu and you will have all of those pistons available to you. Just remember that if you make changes to the file use the "Save combination set as" to save those changes, otherwise they will be lost when you change sample sets or quit the program.**

Now, you make it a reality!

After you have decided on the proper computer and midi keyboards, there are several other things to consider.

Your Hauptwerk shopping list:

1. **The Pedalboard.** Yes, you can get a used pedalboard, but then you have to *midify* it by adding reed switches. Otherwise, you can get a Classic Midi Works pedalboard and then can consider their swell shoes. *(For a pedalboard light, there are all sorts of under-the-counter plug-in light fixtures available in the states at Lowe's and Home Depot. Should you need it, there are lots of possibilities to choose from.)*

2. **Swell Shoes and Toe Studs.** First, I should mention that you can get fine looking and feeling swell shoes from Classic Midi Works. *(If you want to buy Classic Midi Works' Swell Shoes – make sure that you **buy their pedalboard**. The Swell shoes are specifically designed for it and may not work on any other.)* However, if the feel of the swell shoes is not that important to you, but you would like to have a few toe studs, you can get two swell pedals thrown in with the extremely reasonable Behringer foot controller FCB1010.
   http://www.behringer.com/EN/Products/FCB1010.aspx
   Thank the guitarists of the world for the toe controllers that are on the market today. *If you want to buy toe stud bolsters with studs (like on a pipe or digital organ) from an organ service man it is certainly possible, but you may be shocked at the expense.* The trick is figuring how to mount these toe controllers so that you can easily access them from the pedalboard. See examples in the Midi Gallery pages on the MidiWorks website.
   http://www.midiworks.ca/gallery/index.asp

3. OK, so you want the Classic Swell Shoes, and don't want swell shoes combined with your toe studs. There is another option which you can consider -- from another guitar accessory source: Rocktron.
   http://www.8thstreet.com/product.asp?ProductCode=20142&Category=MIDI_Controllers. Although the *All Access* is considerably more expensive than the Behringer, it is far easier to program, and it can do anything you ever dreamed of doing with a toe stud. (The Behringer offers you 10 banks of 10 toe studs and the Rocktron offers you 12 banks of 15 toe switches. Try finding that in a toe stud bolster! Even though the

Rocktron switches don't look like toe studs, they perform well. Again, the secret is in the mounting. To see how I mounted it go to: http://www.randallmullin.com/my_hauptwerk_pictures.htm

Beware: *Some toe controllers, like MidiBuddy, only allow you to program all of the toe studs to a single channel, set by tiny dip switches. This would limit you to all Generals, all Pedal pistons, all couplers, etc. In contrast, the All Access allows each toe switch to be programmed to any channel, which can be easily changed.*

4. **A Touchscreen.** This is how you control the stops on your Hauptwerk organ (unless you want to click them with the mouse or assign all of your individual stops to pistons (yes, it can be done for smaller instruments.) *I should also mention that Hauptwerk is capable of controlling actual mechanical drawknobs and stop keys, but that is beyond the scope of this tutorial.* Make sure that the touchscreen manufacturer has drivers for your computer. If you need more than 4 Gigabytes of memory, you need a 64-bit computer. At present Keytec *Magic Touch, 3 M* and Elo offer 64-bit PC drivers. 19" screens are wonderful, but 17" will also work well for smaller organs. Hauptwerk version 3 allows for multiple displays, so the left stop jamb could be assigned to one screen and the right jamb, another. Just make sure that the drivers for your touchscreen work with multiple displays, if you need this feature.

Helpful hint: *If you want to position your touchscreen on the opposite side of your table from your computer, order an extender cable for the touch interface and an extender cable for the video interface when you order your touch screen.*

Helpful hint No. 2: *Most touchscreens are housed in typical flat screen monitor housing. When you touch the screen, the housing will move. If you position your screen so that the top edge touches a wall (or in my case the edge of a picture frame) the screen will not move and the effect of turning on and off stops will seem more solid, more realistic.*

5. **A professional Soundcard with ASIO.** There are several things to consider here. How many channels of audio do you want? How much ram are you using? Using more than 4 Gigabytes requires a 64-bit computer. E-MU, Focusrite, M-Audio, Motu and RME provide 64-bit drivers for their PC cards now. Check out the **Prerequisites** bookmark in the Hauptwerk User Manual for the latest information

6. **The bench.** Many times you can find a bench by contacting an organ service person in your area. They love collecting old parts from organs that are being thrown out. Perhaps you will be lucky and get one for free, like I did. (If you have no luck in your search, you can also get a bench from Classic Midi Works.

7. **An Ikea Galant 63" Table.** This table has telescoping legs allowing you to adjust the height to the proper AGO specifications. It also offers enough room between the legs to fit a standard AGO pedalboard and it is very stable, with no sideways movement encountered in many rack setups.
http://www.ikea.com/us/en/catalog/products/S29806818?ddkey=ProductDisplay

   Classic Midi Works also sells a console/table which you may find more aesthetically pleasing. Here is the link:
http://www.midiworks.ca/products/product_details.asp?productid=116&categoryid=22&category=

8. **A Music Stand.** Check out this site for beautiful craftsmanship. *http://www.misterstandman.com/desktop.htm* I got my stand from Misterstandman and I am thrilled with it. Have a look: *http://www.randallmullin.com/my_hauptwerk_pictures.htm* *(Also see below.)* What does the stand sit on, you say:

9. **A keyboard enclosure.** You could have one made by a local furniture builder like I did. *http://www.randallmullin.com/my_hauptwerk_pictures.htm* (Kent Allman also builds enclosures at *www.allmanmusic.com*)**.**

   For a more "console like" approach take a look at *http://www.milandigitalaudio.com/masterworks-midi-console-options.htm*. Classic Midi Works has this to offer: *http://www.midiworks.ca/products/product_details.asp?productid=114&categoryid=22&category* and *http://www.classicorgan.com/hauptwerk.htm* and *http://www.midiworks.ca/products/product_results.asp?categoryid=22*

   To save money you can build **an inverted U plywood stand** (think a higher and longer breakfast in bed tray – high enough for the manuals and deep enough to support your music stand. For an example see:

http://www.randallmullin.com/my_hauptwerk_pictures.htm and

10. **A music light.** The goose neck variety can be found at any music store that sells spinet pianos or in flea markets.

11. **Headphones.** This is one of the most important parts of the equation. Don't even think of skimping here. You need professional headphones. The ones most highly recommended are AKG-K701's. You can find these on Ebay for less than $300.

12. **Headphone amplifier.** Of course you can hook your headphones up to the headphone output on your stereo amp, but will it give you a separate volume control for the headphones? Will it be conveniently located to the "organ"? To get the biggest sonic bang for your buck, consider a DAC-1 from Benchmark. It is an expensive, but excellent product which is connected to the digital output of your sound card and contains a pass through to the speaker amp.
http://www.sweetwater.com/store/detail/DAC1/
Brett Milan from Milan Digital Studios recommends the reasonably priced *Presonus HP4*.
http://www.presonus.com/products/Detail.aspx?ProductId=20 (Two other products that I have encountered which worked well in a small setup are the Kramer *Personal Stereo Amplifier*
http://www.kramerelectronics.com/indexes/item.asp?desc=50
which does not contain digital connections, but is reasonably priced and small; and the Aphex Headpod 454.
http://www.sweetwater.com/store/detail/HeadPod

13. **Speakers**. You can get tired of the phones on your ears after a while. Placing the speakers at ear level will have a considerable effect on whether listening to them is a rewarding experience. You may want to consider tower speakers or book shelf speakers on stands for this reason. *Behringer "Truth"* speakers have been given good recommendations as an economical solution in the Hauptwerk Forums. *Definitive* tower speakers are more expensive, but are quite impressive and recommended by Darryl Wood of Classic Midi Works. I am using two *Thiel* towers which produce a warm sound that envelopes the listener and can be unobtrusive in a small space. I also use a 12" *Definitive Super Cube III* subwoofer, which, according to its

specs, goes down to 16 hz (32′ low C). "*For a subwoofer to produce the sound of 16 hz, you will need a room at least 6 meters in length." (From* ***PeterB*** *on the Hauptwerk forum.)* Professional headphones can put you at the console of one of these organs. Most speaker systems can only put you in the room, if you are lucky.

14. **A megastrip** is needed to attach all of your plugs from the computer, keyboards**,** pedalboard, toe controller, amplifier, light, etc. Check this out. *http://www.tripplite.com/products/product.cfm?productID=194***.** It fits conveniently right in front of the pedalboard. *(It might be helpful in placement of the organ to know that Tripp Lite 16 outlet strip comes with a* ***15′ long cord****.)*

Helpful hint: *Would you like to avoid a computer start up each time you want to play? Have your computer become active immediately by just touching the touch screen (or clicking the mouse or a key on the computer keyboard.) Plug your computer into a separate outlet from all the rest of the equipment. When you are not playing put the organ in Standby (In the Start/Turn off Computer menu) and turn off the megastrip. All of your other equipment will be turned off and the computer will remain on, but in standby mode, ready to come to life when you turn on the strip and touch the screen.*

Odds and Ends

1. **A friend** to help with keyboard assembly and to move the pedalboard and keyboards into place is a great asset.
2. **A screwdriver set** (the rachet type is preferable): one that includes square, philips, and flat bits.
3. **A Mini screwdriver set.** If you are installing a four manual Classic Keyboard setup, you will need to have one of those very small regular and philips head screwdriver sets for the tiny screws on the back of the keyboard.
4. **Wire Strippers**. This is especially useful if you are assembling a stereo system in conjunction with Hauptwerk. Speaker wires can be a "bear" to "strip" using a conventional kitchen knife or scissors. Also, if you are assembling a four manual stack, it is helpful to have this for the expression shoe wires.
5. **An On/Off** switch to plug your Tripp Lite strip into. *(You will not want to climb over the pedalboard every time you want to turn on/off the organ.)*
6. **Or, A Remote Switch** to place on your table/console.
   See: http://catalog.belkin.com/IWCatProductPage.process?Product_Id=459516 (manufacturer's description) or:
   http://www.jr.com/belkin/pe/BKN_BG108000_hy_04/ (good price at J&R) *(submitted by George S Mathison).*
7. **An extra midi cable** for creating the loop necessary to program your Classic Keyboards. You will not need it after programming (unless you are using a toe controller.)
8. **Masking tape** for anchoring the extra expression shoe wires to the brackets.
9. **Cloth or Naugahide** for your Ikea table top
10. **Heavy Fabric:** To dress up the "organ" a little, you might consider a piece of heavy fabric (tapestry-like) to hang from the back of the table. It will hide the power strip and almost all of the wires. After applying a Velcro strip on the back of the top of the table, sew on the other half of the Velcro onto the fabric. Choosing a heavy fabric will guarantee that it will hang straight.

The packages have started to arrive now.
What to do and how to do it.

Table Set up

1. Set up the Ikea table. Follow the instructions to assemble and then turn the assembled table upside down. Set the legs to exactly 32.5" (the AGO recommended height) from the table top to the tip of the legs. Now position the table where you will want your new "organ" to reside. (Leave room so that you can walk behind it during the installation process.)

2. Find a piece of thick cloth or Naugahide to put on the table. This should be at least the size of the bottom brackets of the keyboard, however you can cover the entire table with it. This will eliminate vibrations and knocking sounds that you may encounter if you put the keyboards directly on the table. You can also use the extra cloth for a surface to act as a mouse pad. Mice don't like hard finishes like glass or a wooden/laminate table top. *(Yes, you will need to have access to the mouse and, initially, the keyboard.)*

Computer Set up

For specific information regarding memory saving measures on a PC, as well as to learn a way to have your PC turn on when your Tripp Lite Strip is turned on, see the Appendix.

3. **Antivirus/Firewall:** Disable any antivirus/firewall software *(**only** if you do not have any internet connection.)*

   Sounds: In Start/Settings/Control Panel/Sound and Audio Devices/Sound Scheme select *No Sounds*.

   Monitor Power mode: In Start/Setting/Control Panel/ Power Options/ Turn monitor off (set this to "Never.")

   Screen Saver: Right click on the desktop screen and choose *Properties*. Click on the *Screen Saver* tab and choose "none." *There is nothing more annoying while you are playing than to look over at the sample set screen to add a stop, only to find it gone.*

Keyboards Set up

4. Open the keyboard boxes and line up the keyboards in a row on your living room floor. Remove any swell pedals that may have been packed with the keyboards and set them aside. One box will say "top keyboard." Put that in a special place. Line up your keyboard brackets with the keyboards and screw them into the keyboards following instructions in the Classic Keyboard Manual. After assembly, and after you have placed your cloth/naugahide on the table, center the keyboard stack on the Ikea table with the white key fronts overhanging. (The piston rail should be flush with the table edge.)

Pedalboard Set up

5. Put the pedalboard box flat on the floor and open the box from both ends. Push from one end to extract the pedalboard from the other end of the box.

6. Unwind the three colored wires from each expression pedal.
   Now look at the top of the pedalboard. There is a multipronged connector near the midi and power outlets. Remove the tape from that. *(If you don't see it, you will have to unscrew the cover on the top of the pedalboard and adjust it so that the wires fit through the slot on the cover.)*
   Note for future reference that one edge of the multipronged connector is black. Look at the connectors on each of the expression pedals. One edge is also black.
   You will attach the expression shoes by loosening the top and bottom brackets and slipping the shoes under the pedalboard and over the top lip. Tighten the screws.

7. **Note:** AGO specifications require that the **Swell division shoe be placed between middle E and F on the pedalboard. You will attach this first.** The Crescendo pedal goes to the right of the swell pedal. *(If you want your crescendo pedal to be raised slightly from the other pedals, there is a separate screw hole on each side mid way up the bracket assembly. You can unscrew the screws from the upper holes and screw them into the bottom holes.)*

   The Choir shoe goes to the left of the Swell expression shoe. If you have a four manual stack with a Solo expression pedal it will go to the left of the

Choir pedal. Allow about ¾″ between each shoe facing edge.

Attach the connectors on the shoes to the multipronged connector on the top of the pedalboard. The connector will only handle three shoes. *If you have a fourth shoe, see directions below.* Attach the Crescendo Shoe first to the multipronged connector **lining up the black edge** of the Crescendo connector **with the black edge** of the multipronged connector. Use the first three pins to connect this.

For the Swell Division Shoe, **skip one pin** in the multipronged connector and attach the Swell connector (with the black side facing the black side of the multipronged connector.)

For the Choir Shoe, **skip one pin** in the multipronged connector and attach the black side of the choir connector facing the black side of the multipronged connector. You should have one pin left over. All of the black edges are pointing in the same direction.

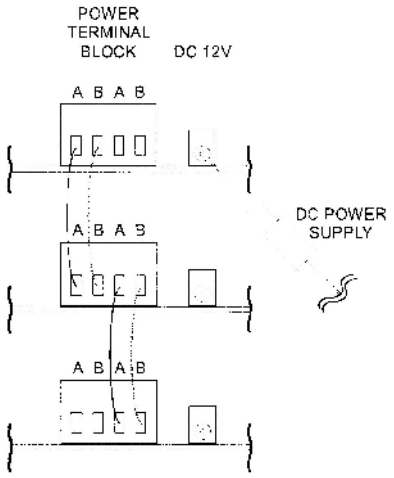
Helpful hint: *Get a piece of masking tape and tape the excess wire to the back of each shoe so that it is not visible. There is enough wire clutter without having all of the small wires to deal with.*

Now is the time to position the Pedalboard equidistant from the legs under the Ikea table. Drop a tape measure from the front of the white keys on the lowest manual straight down to the white notes on the pedalboard. The height from the edge of the white key on the manuals to the top of the white key on the pedals should be 29.5″
Note the position on the pedalboard. Now measure from that drop point on the white pedal keys to the front of the black pedal key. There should be between 8.5″ and 10″.

For a Solo shoe, the attachment has to be made to the back of the Solo Manual. Remove the connector from the three Solo shoe wires, by cutting it off. Remove about a half inch of shielding from each wire and connect them to Input One on the back of the Solo Manual with the mini screwdriver that you bought. Attach like this: Red "+", Black "-", Yellow "o".

Keyboards Set up (Part B)

8. Attach the power connector wires using Black wires for A and Red wires for B and plug in the Power cord to the bottom manual. This allows up to three keyboards to be powered by one "wall wart" style plug.



9. Attach the midi cables like so:

   (for a three manual and pedal setup)
   Pedal Midi Out to Swell Midi In
   Swell Midi Out to Great Midi In
   Great Midi Out to Choir Midi In
   Choir Midi Out to Computer Midi In

   (For a four manual setup you can use this order:)
   Pedal Midi Out to Solo Midi In
   Solo Midi Out to Swell Midi In
   Swell Midi Out to Great Midi In
   Great Midi Out to Choir Midi In
   Choir Midi Out to Computer Midi In

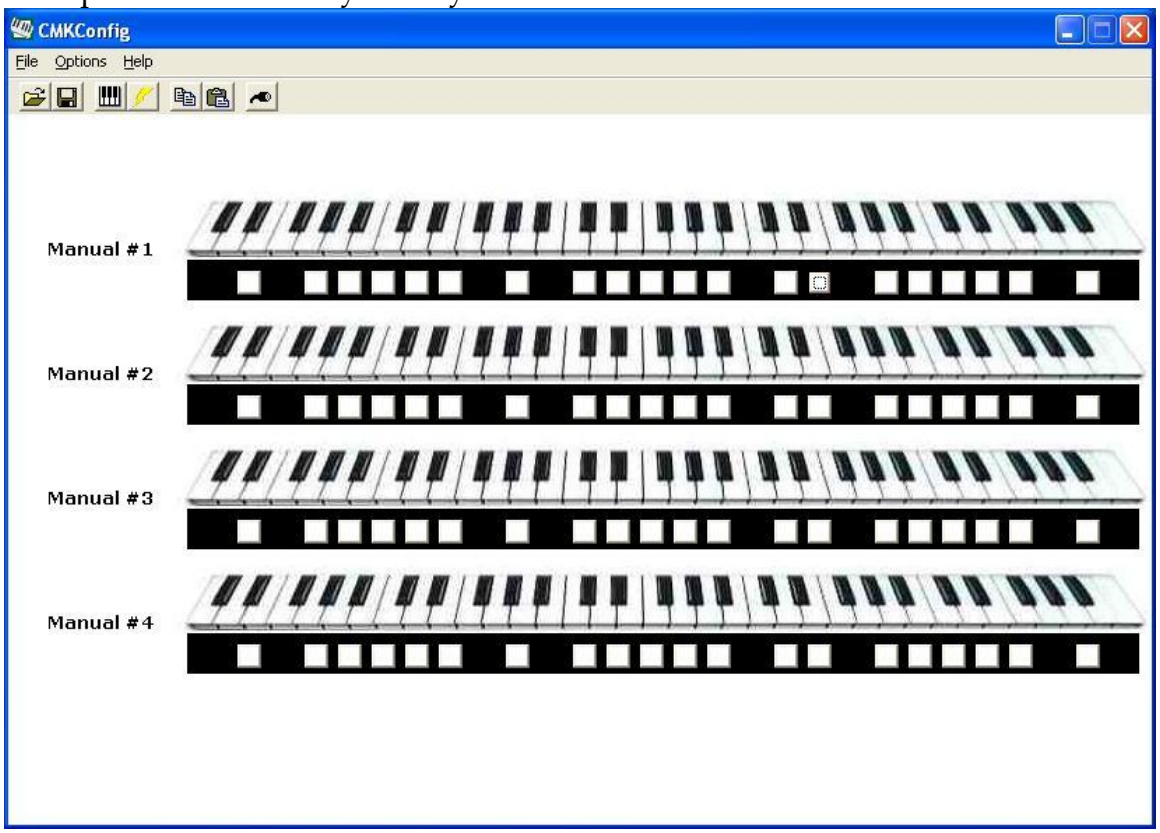
   Now get out that extra midi cable that I told you about and plug it into the midi in on the Pedalboard. Plug the other end into the midi out on the computer card.
   Note: as soon as you have programmed your midi keyboards with their software **unplug this cable from the computer**. **Leaving it attached will cause problems with the Hauptwerk Software.**

Keyboards Programming (don't worry, it's easy)

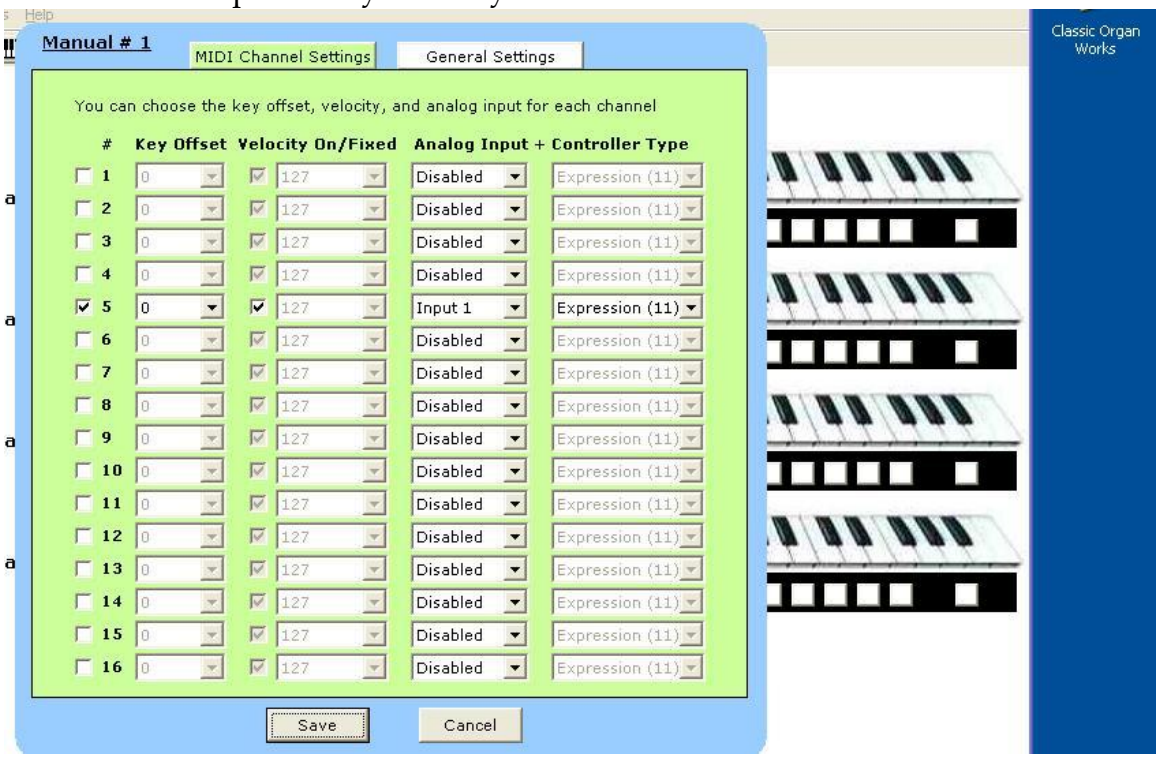
Find the Classic Midi Works Keyboard setup disk. *(If you have a 64-bit computer, and the program doesn't load, cancel auto install and use the open command to open the disk and find the file **msvbvm50**. Double click on it to decompress it and put the decompressed file (msvbvm50.ddl) into the C/Windows/System folder and restart the computer. Now you can use auto install.)*
If you don't have a 64-bit system, the disk will start automatically and click on the **CMK Config** link. This should install the program on your hard drive. You might want to consider putting a shortcut for CMK Config on your desktop for future reference.

10. Now is the time to bring out that spreadsheet with all of your piston assignments, channel and program changes on it.

    Start the CMK Config program and choose the top option "Load Current Settings from the CMK." If it finds your keyboards successfully, you will see a picture with all of your keyboards on the screen.



Click on a note on the top keyboard and use Hauptwerk's designation of channels for the keyboards:
Solo is Channel 5,
Swell is Channel 3,
Great is Channel 2,
and Choir is Channel 4.
(The pedalboard will be Channel 1, but that is configured separately.)
Assign the channels by checking (ticking) the box next to the Channel number, then choose Input I, and make sure that you see Expression (11) listed to the right *(see Appendix for more information)*. Disable and un-check (un-tick) any other channels in the list.
This is the example for my Solo keyboard.



Click on a note on each keyboard in sequence and follow the same instructions for setting the other keyboard's channels. In each dialog page choose "Save." If you decide to use other channels for these, keep in mind that all of the divisional pistons already come configured for these channels in Hauptwerk. If you change the channels you will have to remap all of them in Hauptwerk, an unnecessary pain.

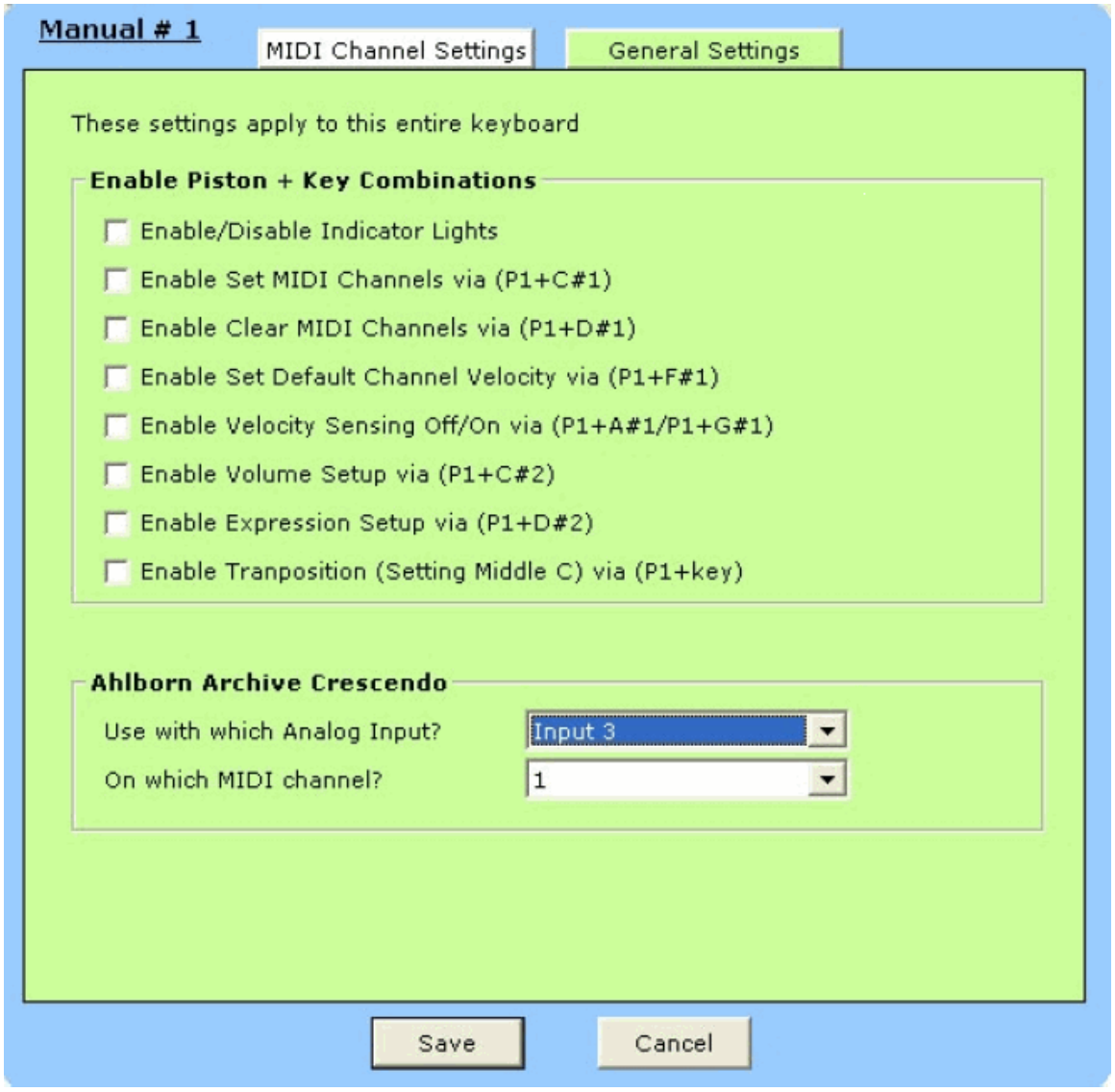
The General Settings Tab

The Light Show

When you have finished assigning channels, click on the **General Settings tab** seen below. The top item listed is "enable/disable Indicator lights." If you want to eliminate the "light show," this is the place. Un-check (un-tick) it. **This is a new feature with CMK Config 1.5 from Classic Midi Works.**

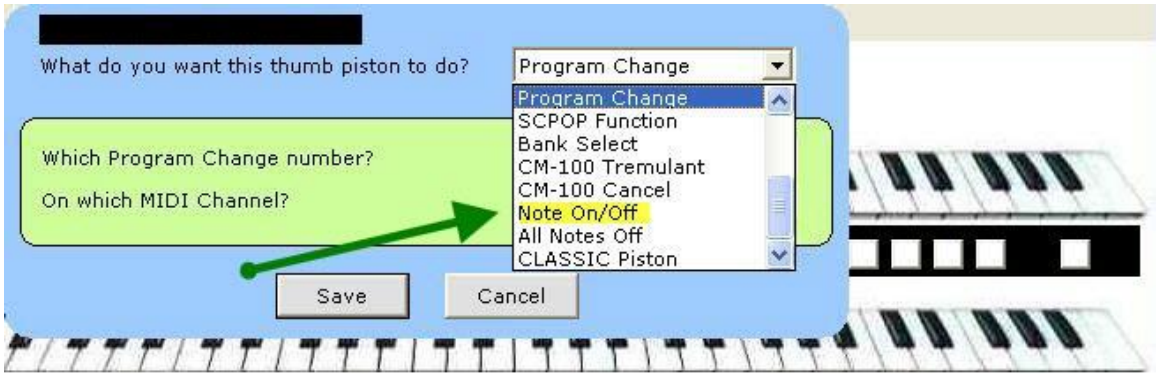
Transposition and Channel changing surprises?

Have you been playing and found one manual in a different key from the rest? Has the manual unexpectedly changed channels? Use the same General Settings tab as you did to turn the "light show" off and uncheck (untick) all of these "features."



Click on the pistons one by one and assign the Channel and Program numbers that you have listed on your sheet *(again this comes from the Organ Console portion of the Hauptwerk User Guide.)* Save each one.

Now another new feature. When you program the far left piston on the bottom keyboard (the setter button), instead of choosing Program Change, choose Note on/Note off and Event Number 56. ***This will give you a setter button similar to those on pipe organs.***



Note: This is not all saved automatically, even though you have saved each individual piston. Next choose **Write file to CMK Keyboards** from the File Menu. Then go to the File menu and choose **Save As CMK Configuration File** and give it a name and put it on the desktop or wherever you will want to access it.

Now you can quit the program and **unplug that other midi cable from the midi in on the pedalboard and midi out on the computer.** You can also move the table back against the wall (Unless you think there will be more changes in your pistons setup.)

Pedalboard Programming (playing the pedals with your hands!)

11. Your Pedalboard should have been connected previously as stated in the scheme above. The next step is to program the expression pedals and set the the pedalboard channel with your pedalboard onboard computer.

    Locate the set button at the top of the pedalboard, next to the midi in and out. Follow these instructions to program the channel and expression settings for your Crescendo, Swell and Choir Pedals, as well as the channel for the pedalboard.

    To set Crescendo, Swell and Choir Pedals push the set button followed by the listed keys on the pedalboard:

    (Channel assignments)
    Push Set, F#1, F#2, B1, A#2
    Push Set, G#1, F#2, E1, A#2
    Push Set, A#1, F#2, F1, A#2

    (Midi Expression assignments)
    Push Set, F#1, D#2, F1, A#2
    Push Set, G#1, D#2, F1, A#2
    Push Set, A#1, D#2, F1, A#2

    (To Set the Pedal Channel to Channel 1)
    Push Set, C#1, F#2, C1, A#2

Potential Pedalboard Issues

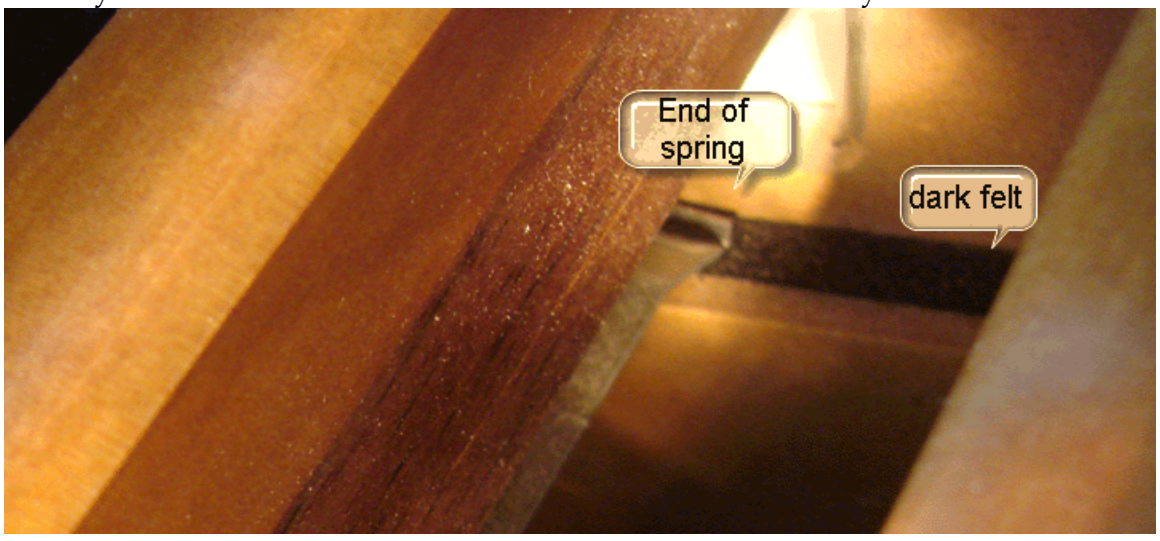
Hang over (of the pedal variety)

Note: Should you encounter pedalboard notes that "hang over," don't play, or only play at the bottom of the key, you may be able to fix this by adjusting the reed switches *(not a big deal.)* These are found under the cover at the black key end of the pedal board. Get your Philips head screw driver, stand the pedal board on the opposite end. Remove the swell shoes and unscrew the cover. The reed switches should be facing you. With the midi cable still attached and the power cord connected, start Hauptwerk

and turn on several pedal stops of your sample set. Play all notes by half step with your hands from bottom to top and then top to bottom and make a list of any problem notes. For the problem notes, unscrew the reed switch screws just enough to allow the plate to be moved slightly up or down. Move the plate slightly, re-screw, then test the problem pedal note and the adjacent ones. If you have adjacent notes hanging, play these, after your adjustment, in as legato a fashion as possible to test for continued hanging. Once you have corrected the problem(s), don't re-cover the reed switches. Put the pedal board down on the floor and place the bench in an appropriate position above it. Play every half step both up and down the pedalboard with your feet in a very legato manner. You might find a problem note this way that you hadn't noticed when playing with your hands. Stand it back up, make adjustments, and then repeat the procedure until any problems have been resolved. *If this does not resolve the problem, you might consider calling Darryl Wood at Classic Midi Works.*

"Sticky" sounding pedals

After you have played your pedalboard for a while you may notice notes that produce a sound which gives you the impression that the note is sticking at the top of the key travel. This is being caused by the movement of the curved end of the spring off of the black felt area at the black key underside end of the pedalboard. First locate the spring by looking directly down between the E and F or B and C. Here is what you will see.



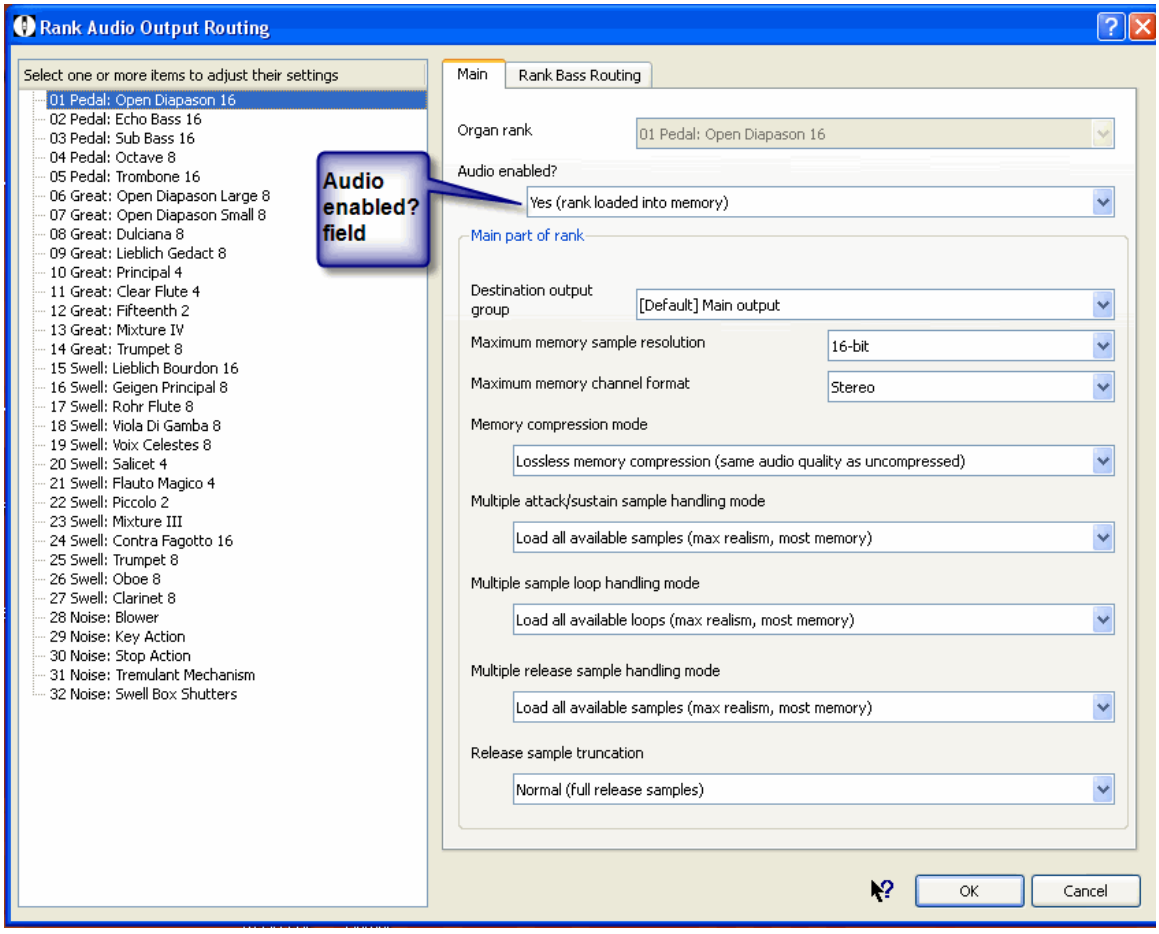
At any hardware store you should be able to locate felt pads. I used ¾" (19mm) square, 2mm thick, pads with adhesive on the back.

Stand the pedalboard up (an assistant is helpful) and face the underside. Locate the area under the end of the spring and apply the pad at a 90° angle with equal parts distributed toward wall and floor.

This should take care of the problem. ***(I cannot tell you how grateful I am to Rob Stefanussen of the Hauptwerk forum for providing me with this solution.)***

Setting up Hauptwerk

First start **Hauptwerk (Stand Alone)** and **install your first sample set** with the menu item *File/Install organ, sample set, temperament, or impulse response*. Follow the instructions that came with your sample set. Then go to *Organ/Load Organ*, find the instrument you just installed in the list and double-click it. *(If you are using the sample set that comes with Hauptwerk, St. Anne Moseley, find it in the list and double click it.)* You will now see this screen.



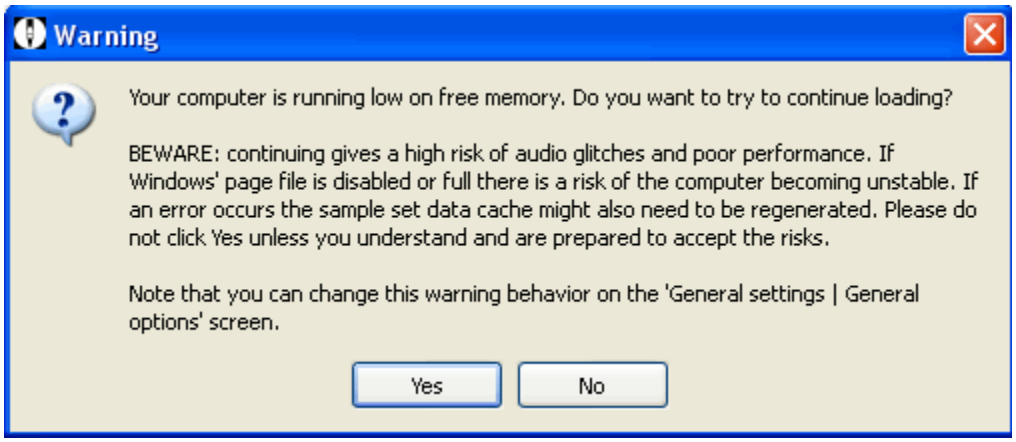
If you have enough memory for the sample sets that you want to load, and the **Audio enabled? Field** says "Yes" for each rank *(click on each rank on the left to check)*, you will be able to leave this page along and click "OK."

Even though this screen can look complex, it shows the extraordinary flexibility that is available in this program. For Hauptwerkians with a "super system," some sample sets allow you to load them in 20-bit or 24-bit resolution for better

sound quality. Check under **Maximum memory sample resolution** drop down menu for this choice.

For those using a computer which has a more modest amount of memory installed, you have an abundance of choices.

Should Hauptwerk stop you from loading, with this dialog,

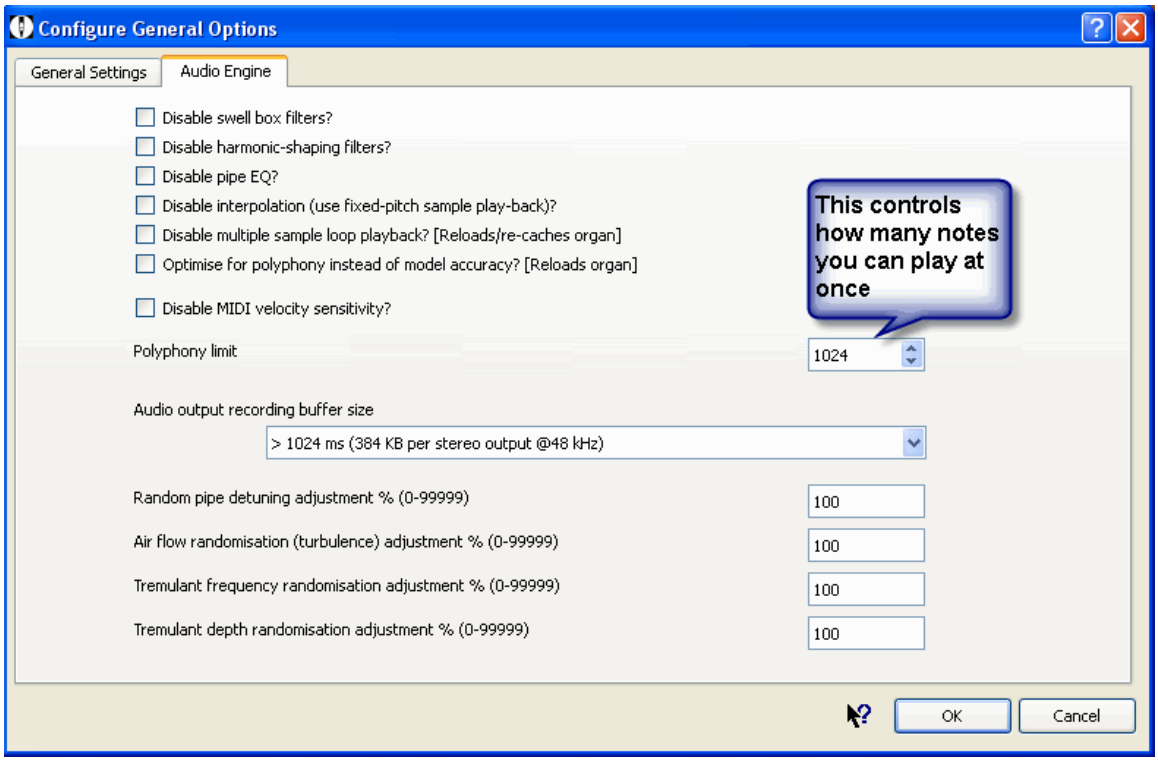


click the "NO" button.

Next you decide how you would like to proceed. To save memory, you can try the "less" options in the drop down lists on the right for some or all of the ranks, or you can turn off complete ranks selecting them on the left, and choosing "NO" in the **Audio enabled** field on the right. With the "less" options on the right you can tell Hauptwerk whether the ranks will load with multiple loops or one; multiple releases, or one. You can also truncate the releases of organs recorded "wet" in live rooms with the **Release sample truncation field**, essentially making them "dry." Then you can apply external reverberation to them. If you would like to make changes for more than one rank at once, you can use the Shift and Control keys to select multiple ranks. For more information investigate the **Loading Instruments** section of the **Hauptwerk User Manual**.

If you are having problems loading even smaller instruments, perhaps now would be a good time to investigate adding more memory to your computer. The prices have fallen dramatically in the last few months. In the beginning of March, as I write this, I went on www.memory.com and investigated the price of "maxing out" my Dell Precision 490. I can currently get 32 gigabytes of ram for $1100! It was $16,000 for that much memory when I first bought my Dell.

Next go to the *General Settings/General Options* menu and click the *Audio Engine* tab. When you see this dialog, look for the **polyphony limit field.** The polyphony limit will probably be set to 1024. *(Polyphony is the number of notes you can play at once without notes dropping out.)* You want this number to be as high as your system will allow without exceeding its limits.



To find out your polyphony limit go to www.hauptwerk.com and click on the **Support** tab in the upper right hand corner. On the left hand side you will then see a white group of links. Click on **Requirements** link and select the **Technical Data** link to a PDF file in the middle of the screen. Go to page 7 and look up the computer which most resembles your own. The polyphony number range is listed there. If you have (2) Duo or Quad core processors, you can double the polyphony listed. You can also go to the **Hauptwerk User Manual**, click on the **Performance Tuning** bookmark, and go to page 163 to read the section entitled "Determining and Limiting Polyphony."

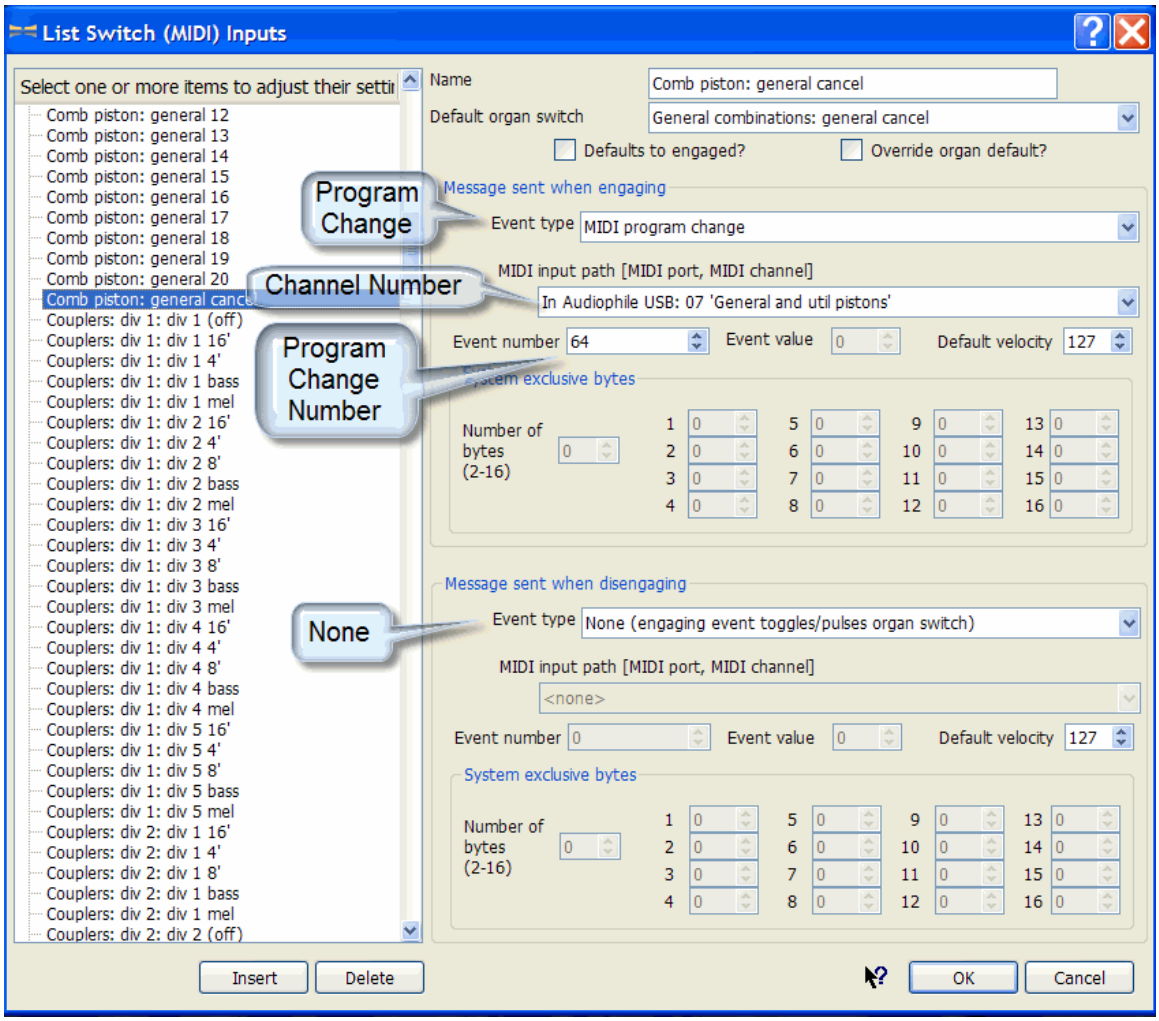
Go back to the Hauptwerk program and type in a number in the middle of this range in the field shown above. Experiment with the number to see how high your polyphony can be set. You will know it is too high or low if notes drop out or other audio glitches occur. (The current polyphony limit is over 30,000.)

Setting up Pistons in Hauptwerk

Program Change Pistons

Program Changes are what you use for the vast majority of your piston settings: Generals, divisionals, reversibles, stops, etc.
For these pistons the "Message sent when engaging" Event Type should be set to "Midi Program Change" and in the bottom part of the screen "Message sent when disengaging" should be set to "None."

Go *to General/Switch (Midi) Inputs*. You will see the following screen.



If you have used Hauptwerk's General and Divisional Piston layout they should already be programmed to work with your sample sets. In general, the two items on this screen that should most concern you are the **MIDI Input Paths**, which is

a list of channels and ports, and the **Event Number,** or Program Change or note on/note off numbers.

Also, check at the beginning of the **MIDI Input Paths** field to make sure that your professional sound card is listed and selected. For example, this dialog shows the *Audiophile USB* as the designation for my M-Audio midi interface/sound card. If your ASIO sound card is not listed, check the following dialog: *General/Audio outputs/ Configure Audio Outputs*. Your card should show up here in the **Audio device** list. If it is not selected, select it. If it does not appear in the list, go to *General/MIDI Input Paths/Configure MIDI Input Paths* and select it for each of the items on the left.

The General Cancel Piston

(pictured above)
In General Settings/List Switch (MIDI) inputs scroll down to *Combination piston: General Cancel.* It is already set to Event number 64. *(Make sure the Message sent when engaging is: Event type "Midi Program Change" and the Message sent when disengaging is: Event type "None.")*
Go to *Organ Settings/Connect Switch List (MIDI) to Organ Switches.*
Select *General Cancel Piston* from the list on the left.
Select *Comb piston: General Cancel* from the input switch list.

Reversibles

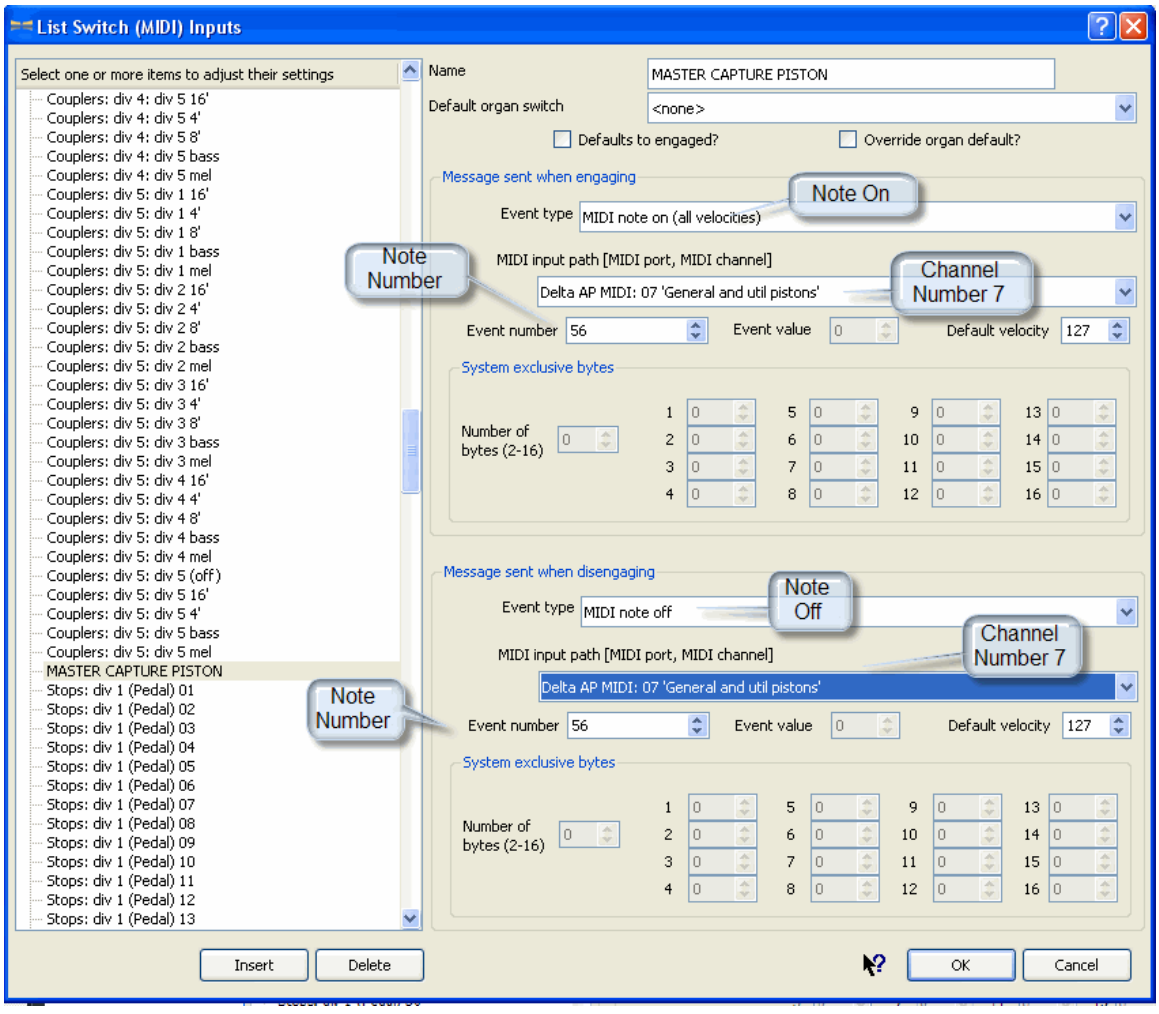
Use this same technique to create Reversibles for Great/Pedal, Swell/Pedal, etc. using their set channels and Program Change numbers. If you have not changed coupler designations in the General/Switch (midi) Inputs Screen just leave this alone and go to Organ/Connect Switch (Midi) Inputs to Organ Switches and choose "Great to Pedal" from the left, choose "div1:div2 8'" from the drop down list on the right. *(Swell to Pedal is div1:div3 8'; Choir to Pedal is div1:div4 8', etc.)*

Note on/Note Off Pistons

This function is available in CMK Config 1.5 and later and requires the latest Eprom chips from Classic Midi Works.
Use this piston set up for the Master Capture Piston and any theater organ effect that acts like a door buzzer, car horn, etc.

Master Capture Piston

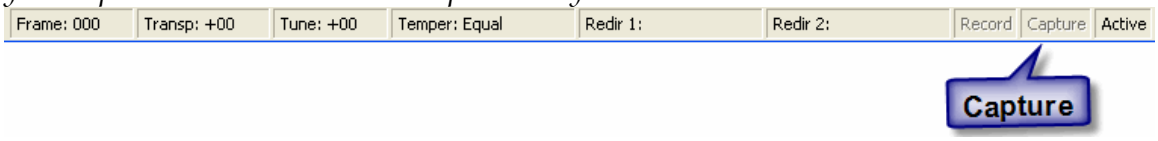
You will need to create a Master Capture piston to use with all of your sample sets.



Click the **Insert button** at the bottom of the previous screen and type that name into the Name field at the top. Consider typing it in all caps so that it stands out from the long list of options on the right. *(As mentioned before, make sure that the*

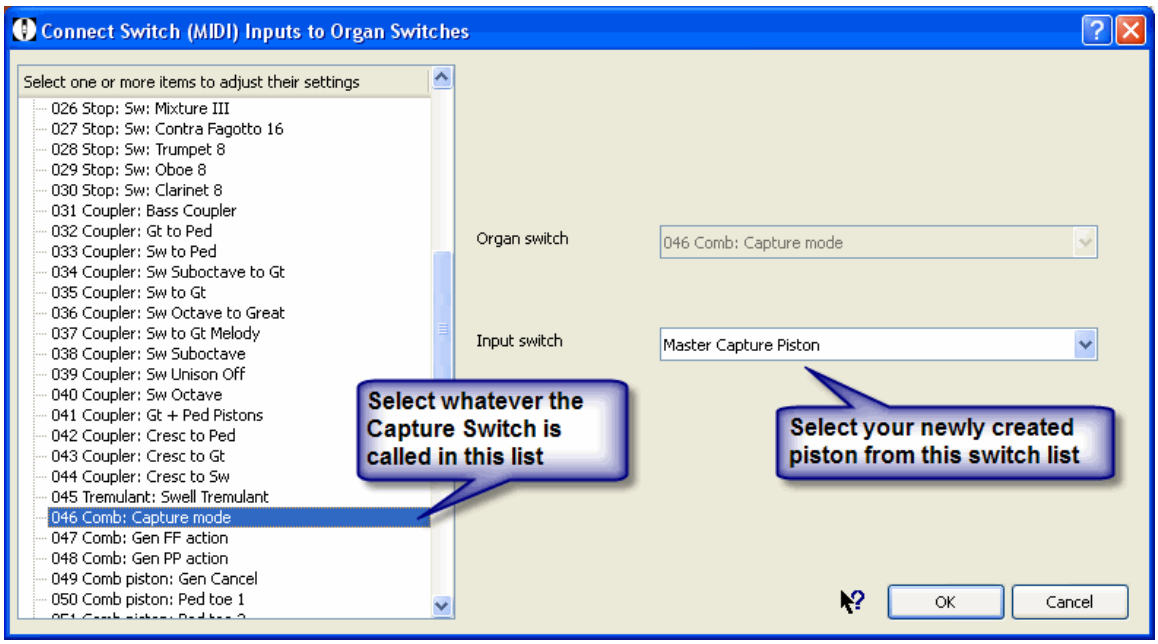
Message sent when engaging is: Event type ***Note On (any velocity)*** *and the Message sent when disengaging is: Event type* ***Note Off****.)* Choose *General and Util Pistons* (which is channel 7) in the Input Paths list and give it the Event Number 56. Copy Event Type, Channel Number and Note Number from the top of the screen and replace as necessary the information at the bottom *(Message sent when disengaging)* so that they match.

Helpful hint: *at the bottom right hand corner of the sample set screens you will see the work "capture" grayed out. When you press your capture piston it will turn black. When you release it (to turn it off) it will turn gray. This is great way to confirm visually that your capture button has been set up correctly.*



Matching up General settings to your specific organ (sample set.)

Now go to the *Organ/Connect Switch (midi) Inputs to Organ Switches* and you will see this screen.



You will use this screen to match up your Master Capture Piston, General Cancel, reversibles, and any other items that you have added to the General

Settings/List Switch (MIDI) Input list to **each** organ (sample set) that you have installed.

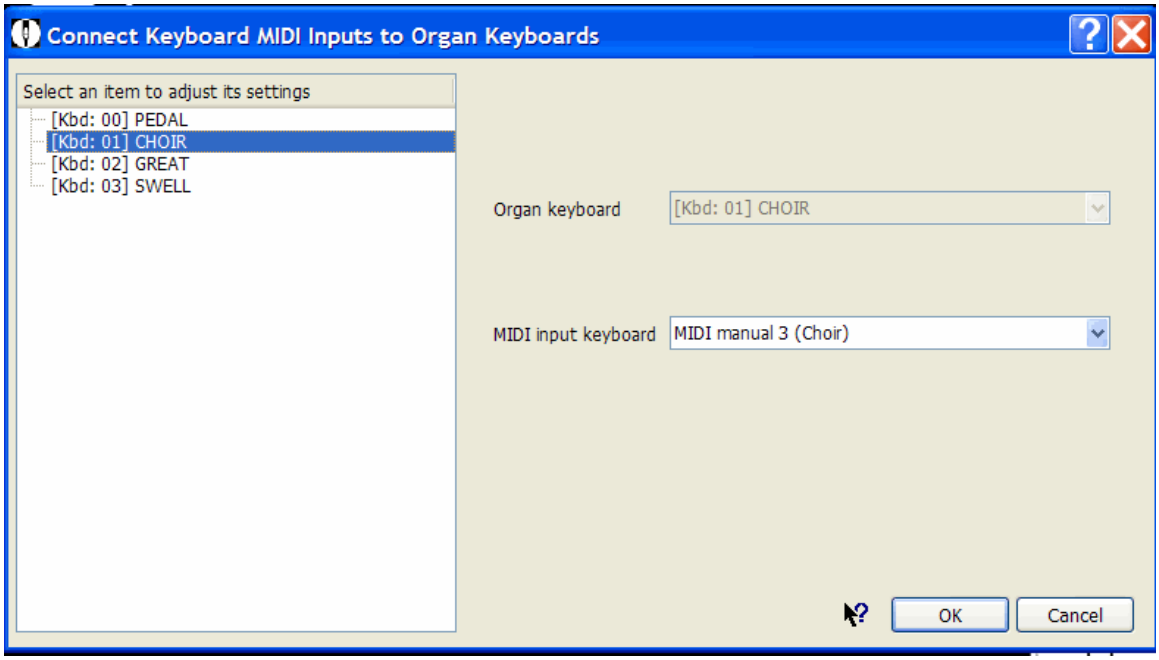
Other things to consider

In *Organ Settings/General Options* you will be given the opportunity of changing the ***Master Level adjust dB*** and the ***Combination set startup mode*** for that sample set.

To assess the proper level in the *Master Level adjust dB* field, open the settings for your professional sound card and maneuver to the VU meter page. Play a loud (full organ) passage on your first sample set and watch the meter(s). You want to bring it close to the yellow markers, but not into the red. You repeat this for each sample set. I am using the RME 9632 card and for all of the sample sets that I own I am able to set this field between "(-)15" and "(-)10" dB. Each sound card has different properties, however. Experiment and make the necessary changes.

You may want your "default" combination set for a particular sample set to load with that sample set. If so, set *Combination set start up mode* to *Load first stand-by combination set.*

Do your midi keyboards match up with the sample set keyboards? Does the Swell play from the Choir keyboard? Choir play from the Great?
Go to: Organ/Connect Keyboard MIDI Inputs to Organ Keyboards.



Not only will you be able to fix keyboard associations here, but ***you can temporarily reassign the keyboards for certain situations***. For example, you have a three manual organ, but you are playing a recital on a two manual organ. To help you prepare for this, you can assign the Great to the bottom keyboard and the Swell to the middle keyboard. How about reassigning the Great and Choir manuals for some French organ literature? It only affects this sample set and you can change it back in five seconds with your mouse.

What is a Re-directable Keyboard?

You have two midi keyboards and you want to play a three manual sample set.
First, you will want to tell Hauptwerk which midi keyboard will be playing the extra sample set manual. Let's say you want the Great Keyboard to play the Positiv as well as the Great on the sample set.

1. Go to General Settings/Re-directable keyboard MIDI inputs
2. Select the Redirectable keyboard 1 on the left side and in the input path drop down menu on the right choose "Keyboards div 2 (Great)"

Now you are going to tell Hauptwerk which extra keyboard in the sample set you want to play on the Great midi keyboard.

3. Go to Organ settings/Connect Re-directable keyboard MIDI inputs to organ keyboards
4. Select Redirectable keyboard 1/Route 1 on the left and then choose the Positiv (usually II) in Organ Keyboard drop down menu on the right.

You have four midi keyboards and you want the Positiv of the sample set to be duplicated on the Solo. *Why would you want to do that? So that you can get use to playing that Trompette en Chamade solo, which is located on the choir manual of a three manual sample set, on the solo keyboard of the four manual pipe organ you are about to play in recital. Is this the ultimate practice organ or what!?!*

First, you will want to tell Hauptwerk which midi keyboard will be playing the duplicate of the sample set manual. As mentioned above, you want the Solo midi Keyboard to play the Positiv on the sample set.

1. Go to General Settings/Re-directable keyboard MIDI inputs
2. Select the Re-directable keyboard 1 on the left side and in the Input paths drop down menu choose "Keyboards div 5 (Solo)"

Now you are going to tell Hauptwerk that you want the Positiv in the sample set to play on the Solo midi keyboard as well as on the Positiv midi keyboard.

3. Go to Organ settings/Connect Re-directable keyboard MIDI inputs to organ keyboards
4. Select Re-directable keyboard 1/Route 1 on the left hand side and then choose the Positiv (usually II) in Organ Keyboard drop down menu on the right.

More General Settings: Continuous Control MIDI Inputs

Check *Continuous Control MIDI Inputs* and make sure that all expression shoes are set to **controller number 11**, otherwise your expression pedals may not work as expected. *(See Appendix for more details.)*

General Settings: Menu functions activated by switch (MIDI) Inputs…
If you would like to assign certain menu commands to midi pistons (or computer keys) here is the place to go to look for the possibilities. Standby organs and combinations, various temperaments, transpositions, pitch alterations *(in case you*

want your Hauptwerk sample set to tune with actual pipes), as well as *Exit Hauptwerk, Shut Down Computer, Unload current organ,* and *start recording* and *stop recording* can be assigned along with many other commands. ***Yes, you read correctly. Hauptwerk does have a built in recorder that produces high quality 32-bit WAV files of your playing.*** You can assign many of these functions to pistons as I have shown on my spreadsheet. But first you have to create these (if they do not already exist) in the *General Settings/Switch (MIDI) inputs* list (just like you did for the Master Capture Piston) and then assign them channel and program change numbers. You can refer to my spreadsheet for channel/program change numbers if these would be helpful to you. ***Note:*** *most of the commands listed above work* ***only*** *if a sample set it loaded.*

Responsiveness (latency)

Are your Hauptwerk organ keyboards responsive enough when you play trills, etc., or conversely, do you want to simulate playing a pipe organ with considerable delay?

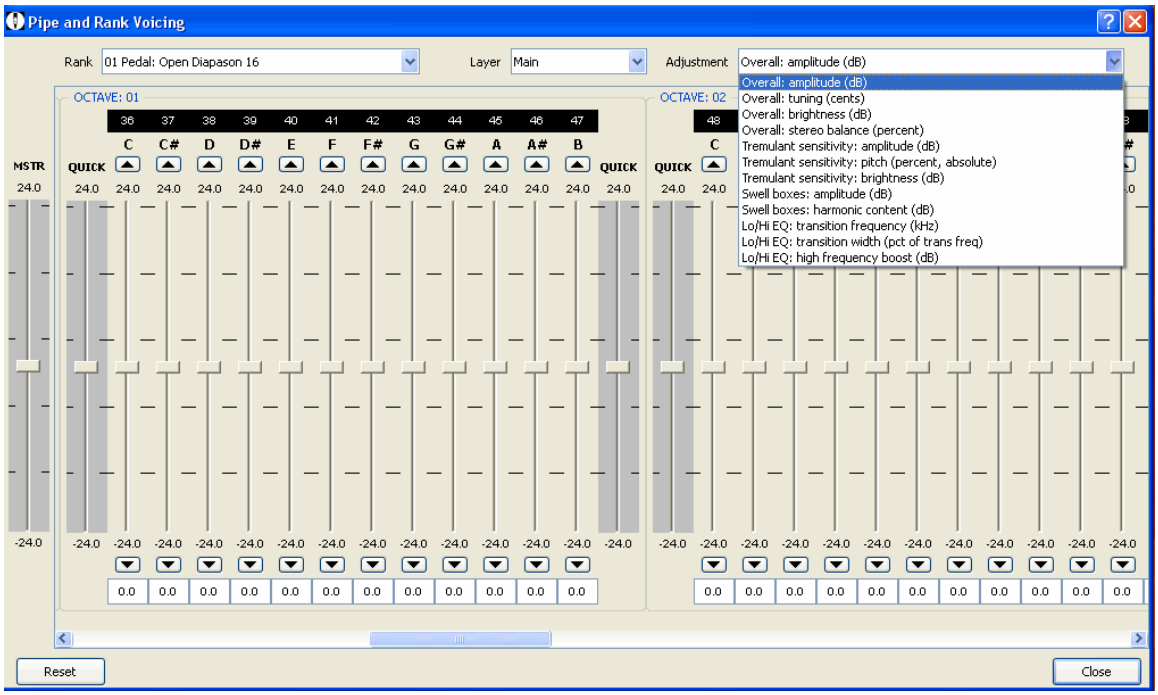
Go to **General Settings: Configure Audio Outputs** and look at the **Buffer Size** drop down. It is probably set to 1024 (23ms.) Hold down the mouse on the arrow to the right and look at all of the settings available. Look for the button **Show device Control Panel** and push the button. This will give a list of speeds for the buffer. The lowest number listed is the lowest number that your sound card can handle. It will give you the most responsive touch. The E-mu 0404 can be set as low as 9ms. I set the number in Configure Audio Outputs dialog to the same number as in the sound card control panel. My new RME 9632 sound card can go down to 3ms. Just changing the settings from 9ms to 6ms made a tremendous difference in the responsiveness to me. The down side is that this responsiveness takes away slightly from your polyphony. **If your processors are not that speedy, you might want to stick with the default.** You can always try it out. If the sound breaks up, you know that you have gone too far. On the other hand, to simulate a sluggish pipe organ choose a number that is much higher.

Would you like two completely different setups for the same sample set?

Why would you want to do this?

1. You have just bought a five manual sample set and your current computer can't load all of the ranks at once. You could have a foundations setup with mostly principals and reeds and a solo/softer ensemble setup. Or you want to load the entire organ with its original acoustics, but also load it with truncated releases and add reverberation to it through external hardware.

2. For fun you have decided to turn the Positiv trompette of a sample set into a "trompette en chamade" or retune the celeste ranks more to your liking with the Hauptwerk **Pipe and Rank voicing controls**, but you want the sample set to remain as it was originally voiced for the majority of your practice.



3. Have you bought so many sample sets that you can't access them all through menu piston assignments?

To do any of the above use **Hauptwerk (for midi)** for your "exceptional" settings instead of **Hauptwerk (stand alone).** *Hauptwerk gives you two different*

icons on your desktop when it is installed and you can use each as a separate program for accessing your sample sets.

How do you connect Hauptwerk to an Audio System?

Higher quality answers are given first, giving priority to headphones and taking for granted a high end sound card with good digital/analog conversion

1. Digital out from Sound Card **to** Headphone amp *(see discussion on headphone amplifiers on page 13)*
   Headphone amp pass through **to** Speaker amp

2. Digital out from Sound Card **to** Headphone Amp
   Analog out from Sound Card **to** Speaker Amp

3. Digital out from Sound Card **to** Speaker Amp
   Headphones connected **to** Speaker Amp

4. Analog out from Sound Card **to** Speaker Amp
   Headphones connected **to** Speaker Amp

With External Hardware Reverberation

Sound Card Digital Out **to** Reverberation Unit *(e.g., Lexicon MX200)* **to** Headphone Amp or Speaker Amp *(using list above*.)

With Software Reverberation *(from the **Hauptwerk Forum**.)*

micdev Member Joined: 09 Feb 2008 Posts: 535 Location: Canada	Posted: Sun Feb 15, 2009 5:25 pm Post subject: quote And if you go wit a sofware solution Hauptwerk Stand-Alone -> Reaper -> VST effect plug-in -> Sound card -> speakers or with the VSTi version of HW VST Host (i.e Sonar etc) hosting HW VSTi and VST effect plug-in -> Sound card -> speakers

A splendid tutorial by "micdev" on a Software Reverberation solution is located here http://forum.hauptwerk.com/viewtopic.php?f=1&t=3640

A quick word about multiple channel audio systems

Yes, you can take Hauptwerk "on the road" *(sample set licenses permitting)* with hundreds of speakers, or give yourself the surround sound system of your dreams. Hauptwerk will support multiple sound cards with multiple channels of audio on each card. It will allow you to allocate ranks, or portions of ranks in many different ways. To read a thorough discussion of this amazing flexibility click on the **Audio Routing and multi-channel audio** bookmark in the **Hauptwerk User Manual** and have a look at Brett Milan's tutorial. *http://www.hauptwerk.com/clientuploads/documentation/Tutorials/Hauptwerk-3-Tutorial-ConfiguringBasicAudioOutput.pdf*

A few final suggestions:

1. Hauptwerk expects the *expression pedals to be **open*** when you load a sample set. You can easily get in the habit of leaving the pedals open when you finish practicing or when changing sample sets.
2. If you have just installed/upgraded a sample set, or changed it's rank routing options, or changed your audio output configuration, or upgraded/uninstalled (but not installed) another sample set, or have just upgraded Hauptwerk from an older version (e.g. pre-v3.10) that used a different cache format) then it will be slow to load for that one time only, and should load from cache (very fast) thereafter. *(from Martin Dyde on the forum)*
3. If you put your computer in "standby" mode with an organ loaded, the the organ may be silent when the computer is awakened. Should this happen select *Deactivate Midi and Audio* from the *Functions* menu and then select *Reactivate Midi and Audio* from the same menu.
4. To playback WAV files made on the built in recorder in Hauptwerk, exit Hauptwerk first or you will get an error message from your media player.
5. Don't delete combination files which Hauptwerk expects to find when loading an organ (i.e., either last combination file used or first standby combination, depending on your choice in the *Organ/General Option*s dialog.) It will cause problems the next time you try to load the organ.
6. Consider giving recognizable names to your combination files with the keyboard. I installed a small update to one of my sample sets and the process kept all of my combination files, but wiped out the stand by combination slots. It was not worth it trying to figure out what automatically named combination file was set for which piece, since I had not written down all of those long automatic names.

7. When Hauptwerk is not loaded, consider backing up one of the following: (*each subsequent suggestion takes up less disk space)*
   a) the entire *Hauptwerk 2 folder*, which is normally placed on the root directory of the C Drive. This will back up all of your sample set files, your recordings, your combinations and voicing changes.
   b) If not that, consider *Hauptwerk 2\HauptwerkUserData*. ***(This is also available through a menu option on Hauptwerk version 3.1 and later.)***
   c) If not that, find out the ID number for each organ by investigating the contents of the following Organ Combinations folders and back up the appropriate folders *Hauptwerk2\HauptwerkUserData\Organ Combinations \Organ ID000???* for all of your piston\Registration Sequencer assignments and *Hauptwerk 2\HauptwerkUserData\Organ Config-StandAlone\OrganID000???-Config.OrganConfig.Hauptwerk.xml* for your voicing settings.

   My Hauptwerk computer died and I was so thankful that I had backed up that Hauptwerk 2 Folder on the root directory of C Drive to an external hard drive using XP Backup, which is either loaded on XP machines or found on the XP System Disc that came with the computer. It took me 1 ½ hours to make a back up file of the 43 gigabytes of data and 30 minutes to restore it to my new computer.

Other resources for Hauptwerk information:

"micdev," on the Hauptwerk Forum is compiling a very thorough resource for Hauptwerk, Pipe Organs, and related issues. http://www.inspiredacoustics.com/wiki.This is an impressive resource for all organists. Take a look, if you haven't already.

I think you will agree with me that Hauptwerk is an incredible gift to the organ world. And, because it is a software program, it may change beyond your current imaginings, in just a few years.

It is a very exciting time to be an organist.

Good luck with your own Hauptwerk experiences!

My Hauptwerk setup
4 Classic Midi Works (Pro) Keyboards
Classic Midi Works Pedalboard
4 Classic Midi Works Expression shoes
Rocktron: *All Access* Foot Controller

Dell Workstation 490
(2) Quad Core 5355 Processors @ 2.66 ghz
32 Gbytes of ram (8 dimms)
1 Terabyte Seagate Barracuda 7200 rpm drive
Keytec *Magictouch* 19″ Touchscreen
RME HDSP 9632 Sound Card
Sonar 8 Studio Edition
Voxengo Pristine Space
Benchmark DAC-1 Headphone amplifier
AKG K701 Headphones
(2) Thiel CS 1.6 tower style loudspeakers
(1) Definitive Supercube III Subwoofer
Rotel RA-1062 Integrated Amplifier (60 watts per channel)

Free organ bench
Ikea Galant 63″ Table

Randall Mullin's Hauptwerk Setup Pictures
http://www.randallmullin.com/my_hauptwerk_pictures.htm
Randall Mullin's Hauptwerk Page http://www.randallmullin.com/hauptwerk_page.htm

Appendix

Expression (11) or Volume (7) continuous controller for swell shoes?
You may have noticed that Hauptwerk recommends channel 7 for the swell shoes. However, Classic Midi Keyboards states the following in their User Manual:

> **Expression Shoe Functions**
> Each manual has three Analog Inputs that can be configured for either Expression or Volume Control. To select these functions, click on the drop-down menus and set the shoe functions as desired.
> The Analog Inputs are used for either an expression shoe or a volume control. Volume would typically be used for an Ahlborn Archive module ***while Expression would be used for Hauptwerk.***
> ***Volume sets the overall maximum loudness while Expression varies volume level from a minimum up to that overall level***. Other MIDI sound generators may use either. Consult their manuals for details.

For those with Windows PCs <u>which are dedicated to Hauptwerk</u> and who are concerned about limited memory, consider the following:

Bios Settings: (As your computer is starting up, press the assigned bios F key (it is F2, on my machine) repeatedly in an on/off fashion. That will take you to the bios settings.

Click on **OnBoard Devices** and turn the following settings **off** unless you are using them: Integrated NIC, Integrated Audio, LPT Port, Serial Port 1, Serial Port 2, PS/2 Mouse Port.

Instant On: Also in Bios settings choose **Power Management**, AC Recovery and set it to "on". This will start the computer when you turn on the Tripp Lite Strip.

Further information from my friend David Shoemaker:

The three additional services I know that are not helpful to Hauptwerk and that are disabled on all my Vista machines are: **Ready Boost, Windows Search**, and **Superfetch**.

Here is an article, of services that are normally not needed unless you're using the computer on the Internet or in a corporate situation.

http://www.mydigitallife.info/2007/04/06/optimize-vista-by-disabling-unused-unneeded-or-unnecessary-windows-services/

Brett Milan has this guide for windows from the forum, that may provide their recommended settings for Vista and XP
http://milandig2.ipower.com/downloads/docs/Other-operating-system-and-PC-optimizations-and-diagnostics.pdf