

# ORGANWORKS TUTORIAL

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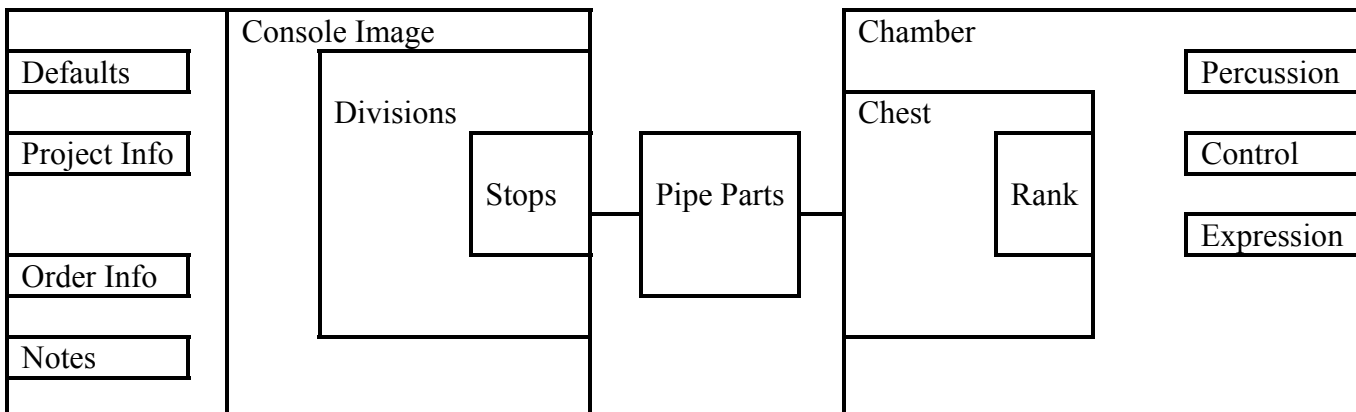
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## Overview

OrganWorks (OW) is a graphical database designed to provide all the information that the engineers at Classic Organ Works (COW) need to prepare a control system. There are several areas within an OrganWorks data file where information is stored. These are:

1. *Console Image*: This is a pictorial representation of the console. The location and names of stops, how many manuals, the location and types of pistons, number and type of shoes, and the configuration of control interfaces.
2. *Divisions & Stops*: This area has the complete list of all the divisions (including floating) and which stops are in which division. Non-coupling stops are treated like floating divisions for engineering purposes.
3. *Pipe Chambers*: This area contains a list of all the chambers in the organ, which chests are in which chambers and the ranks on those chests. This area also contains information on expression engines, percussions and control outputs (e.g. tremulants). The definition of a chamber in OrganWorks is slightly different than it is for organ builders. In OrganWorks, the quantity of chambers refers to the quantity of Pipe Control Computers (PCC) that are required. In a building there may be two adjacent chambers, but if all the drivers are in a single location such that the distance between the PCC and any given driver board does not exceed 6ft, then only one PCC is required and so only one chamber is listed in OrganWorks.
4. *Pipe Parts*: This area, accessed through *Divisions & Stops*, documents those pipes that a particular stop will play at any given time. For example, a Pedal Resultant 32' stop plays at Unison on a 16' rank and also at a Fifth (usually on the same rank) from keys 1-12. From keys 13 to 32, only one pipe is played starting again at Pipe-1 (i.e. at 16' pitch). *Pipe Parts* contains the list of each of these three components.
5. *Project Information*: This is where customer and builder details are stored for reference, along with some basic configuration information such as whether the stops, pistons and keyboards are matrix- or parallel-wired.
6. *Project Defaults*: Master defaults for a particular organ are stored in this section, such as manufacturer's names, type of controls, what information to include on summary sheets and console configuration.
7. *Project Order Info*: This is where the various components to be ordered are recorded, for example, is Classic Organ to supply linear transducers or an AC Control Unit?
8. *Notes*: This is a catch-all scratch pad. This is where you can record information about who originally created the file, summaries of any changes (who, when, why) and descriptions of any unusual items that have not been fully documented elsewhere.

An OrganWorks file may be envisaged as follows:



There are several ways to access this information and manipulate the file. In addition to the standard *Windows*® menu bar, there are also two toolbars displayed below the menu bar across the top of the application window. These toolbars provides quick mouse access to many tools used in OrganWorks.

You can add items to the project in several different ways, and each of these will be addressed at least once during the tutorial:

- **Click** on one of the items in the *Console Toolbar*
- **Copy** an existing item on the console.
- While viewing a list of items from *Console Items Menu*, add an item by clicking on the **Add** button at the top of the list.
- **Copy** an existing item from an item list.
- Under the **Project Menu**, select *Add Items* and then the desired item.
- While editing a list box you may **Copy-and-Paste** items into the list using CTRL+C then CTRL+V. You may also paste items onto the console using CTRL+V or the Paste Command in the *Edit Menu*.

Details of all these are also available in the *OrganWorks Help* section. You may double-click on any console item and then select the Help button in the resulting screen whereupon an appropriate Help screen will appear. In many cases, the Help screen will contain diagrams.

New items are usually placed near the center of the visible screen or in an appropriate part of the console such as a piston rail but, if no space is available there, they are placed in the top left hand corner of the console. Either way, they may be dragged to where they are wanted.

Placing the cursor over an item will reveal its name at the lower left corner of the main window.

The F9 and F10 keys on the keyboard zoom out and in of the display, respectively. The magnification is shown at the bottom-right of the window along with some other information.

## Tutorial 1, New Project, Project Wizard

The purpose of this tutorial is to familiarize a new user with starting a new OW project. If a projects exists that is similar to the one you wish to create, that file may be copied and modified. For now we are assuming you are starting from scratch and that your knowledge of organs is minimal. For this group of tutorials to function properly, the Global Preferences need to be set. These are a set of defaults that get applied to the project. A window may pop up that says: *There are no projects in the project directory. Do you want to start a new project?* Click on **YES**.

1. Double-click on the OW icon on your desk top (or select it from the *Run* menu). A blank window opens.
2. In the top left corner there is a button that looks like a blank piece of paper with one corner turned down. This is the **NEW** button (or you can select New from the Menu). Click on it.
3. A window will come up called *Edit Project Info*. Fill it out as follows:

*Project Code:* Type **Sample1**.

*Classic Job No:* Leave blank, this number is assigned by COW

*Date Required:* Enter the desired delivery date using the 'yyyy-mm-dd' format.

*Description:* Brief description of console: Type **Two-manual rocker tab**.

*Client:* Click on **Client** tab and enter contact information for final customer (usually a church).

*Distributor:* Click on **Distributor** and enter contact information for the COW distributor or agent. If the builder is purchasing the control system directly from COW this field may remain blank.

*Builder:* Click on **Builder** and enter contact information for the organ builder (You?).

*Organ:* Click on **Organ**. Select the **Rebuild** button under *Misc* then type **Wicks** in the *Original Builder* field. Click on *Rockers on Nameboard*. Change the number **1** in the *Crescendo Memories* field to **2** (as this tutorial organ will have two independent Crescendo memories). Leave the quantity of Registration Memories at **99**. Leave the rest as they are.

*Technical:* These parts supply instructions to Classic and have no other purpose in the OrganWorks file. Click on the various buttons in this section to see how they work, then leave them at the following settings:

Pistons **Matrix Wired**  
 Keyboard **Matrix or Optical Wired**  
 Pedal Board **Matrix Wired**  
 Drawknobs **Matrix Wired**  
 Rocker Tabs **Matrix Wired**, Resistance **25**, Voltage **12**

4. A window may come up asking if you want to add a new keyslip. Click on **Yes** and it will go away.
5. Click on **OK**. This will take you to the *OrganWorks New Project Wizard* screen.
6. For this tutorial we are creating a standard rocker tab console, so select **A rocker/tongue tab style console with stop tabs located on the name board** and under *Stop Style* select **Rocker**. Click on the **Next** button.
7. You are now in the window where you can specify the quantities of divisions, manuals and stops. The Wizard will create a rough arrangement that you can later modify. If you have three divisions (Great, Swell & Pedal), but each has a different quantity of stops, simply enter the largest quantity of divisions (3). The

- quantity of *Manuals* should stay at **2**. Leave the *Pedals* box checked. For this tutorial we will change *Stop Tabs/Division* to **7**. Click on the **Next** button.
8. Now you specify how many General and Divisional pistons you want. For now, enter **4** for each of the three available values. We will leave the check boxes checked. Click the **Next** button.
  9. This next window is for specialized features not always used in every organ. Click on the **MIDI Info** button just to see what it looks like, then **Cancel** to get out. The organ we are creating will have chimes with five volume relays so check off the **Chimes Rotary Volume Switch**. The quantity of volume stages will be set elsewhere later. Click the **Next** button.
  10. You may now specify if you want tremulants on every manual division and what basic couplers there should be. Select **Intra-manual, 16'**, **Unison Off, 4'** and **Inter-manual 8' and 4'**. Leave the **Inter-manual 16'** blank. We will add a Swell Tremulant manually in another tutorial. Click on the **Next** button.
  11. The window says *Complete*. Click on **Finish**.

You should now have a picture of a rocker tab console with two manuals and pedals. It is very plain, having only four toe studs, no names on any stops (all at 8' and not in complete rows), and no control panel, but this is the foundation for a good OrganWorks file. Select '*File*' and '*Save as*' and Save this renamed file (as **Sample1**) in a place you will be able locate for the next tutorials.

**Click** on the *Help Menu* and explore its contents. You can return to the Sample1 file and adjust it in accordance with what you find or even make another sample file. Save the file. You may do this by one of the following methods :

- Selecting File from the Menu bar and selecting **Save**
- Typing **CTRL+S**
- **Click** on the icon which looks like a computer disk on the top row of tools. This is the Save button.

You may now close this file or proceed to the next tutorial.

## Tutorial 2, Project Defaults

This part of the tutorial is to set all the standard parameters that will be used for the various items.

1. Open the *Sample1* file if not already open.
2. Under the *File* menu, select *Preferences*. A window will open named *New Project Preferences* with the 'Stops' tab active. Using the drop-down list change the *Manufacturer* to **Syndyne** and the *Stops* to **Pipe, Traditional**. *Rocker* should be shown as selected. Leave the *Auto Chamber Mode* unchecked.
3. Click on the next tab, *Inter-manual couplers* and select: **Syndyne, Rocker, Traditional**.
4. Click on the Intra-manual couplers and select: **Syndyne, Rocker, Traditional**. Note that the sample is Black with white lettering. This would be normal for tongue tabs but rocker tabs are white like the stops, so change the *Tab Colour* to **White** and the *Text Colour* to **Black**.
5. Click on the next tab, *Control Tabs* and select: **Syndyne, Rocker**.
6. Click on the next tab, *Keyboards* and select the makers: Type in **Wicks** for the *Manufacturer* and *Pedalboard* if not already Wicks. Select **Wooden Core Keys**. Leave 2<sup>nd</sup> Touch unchecked.
7. Now click on *Pistons* and select *Thumb pistons* **Round**. Select a manufacturer, e.g., **Klann**. Select a toe piston type, e.g., **OSI**.
8. Click on *Control Pistons* and select **Round, Lighted**. Select a manufacturer, e.g., **Klann**.
9. Ignore the next two tabs and click on *Summary*. Look at it but do not change anything. This window controls how the Summary will print out.
10. Click on the *View* tab and using the drop-down list set the *Snap* for vertical and horizontal to '¼ item height' if it is not already selected. This allows for tidy placement of new items in the layout. Incidentally, the Snap On or Off state is not too obvious at the icon but when On it will say SNAP at the lower right of the screen.
11. Click on *General*. Look but do not change anything.
12. Select the '**OK**' button. Not all the parameters have been set, but that is OK. They may be changed later.
13. Save the file.

The screen will show the rough console. Next, we add some pipe information.

## Tutorial 3, Chest Information

This part of the tutorial will show you how to create chambers and chests. The next part will cover special circumstances such as C/C# splits, doubled magnets and low-resistance magnets.

*As far as OrganWorks is concerned, there are only two types of chests:*

1. *Direct electric, such as **Unit**, **Offset & Borrow** with a single rank of pipes and*
2. *Matrixed, with separate stop and key data such as **Pitman**, **Ventils** and **Sliders** with several ranks on the same chest.*

### Creating a Chamber

First we have to define a chamber in which to place the chest(s). This will be called a *Main* Chamber:

1. Open the file that you created. (**Sample1.owp**)
2. Place your pointer on the area below the manuals and **Right Click**. A pop up menu will appear.
3. Select **Pipe Chambers...** a window will appear called *Add New Chamber*.
4. The word *Left* currently appears in the field called *Name*. Retype the content of this field to be **Main**.

### Pitman (Main) Chests

1. Now we will create a two-rank Pitman (matrixed) chest in this chamber as typically used in older organ rebuilds. Under *Pipe Chests* click **Add**. A new window will come up called *Add New Chest*.
2. Using the drop-down list in the *Name* field change *Swell Main* to **Great Main**.
3. Change the value in *Key Actions* to **73** (Normally 61 keys but 73 allows for octave coupling).
4. Set *Coil Voltage* to **12**.
5. Set *Coil Resistance* to **90**.
6. Now to specify the ranks that will be on the Great Main chest. Two ranks will be added. The first (Flote 8') will be a normal rank starting at the first pipe but the second (Principal 16') will not have a bottom octave here as it will be elsewhere on an offset chest. In the *Ranks* field click on **Add**. A new window will pop up called *Add New Rank*.
7. Using the drop-down field under *Name* change the rank to **Flote** (or select Flute in the drop-down list and modify it to Flote. Flote does not appear in this list, which is why you need to change it). Note that the stop family is *Flute*.
8. Ensure *Pitch* is **8'**.
9. Change *Last Pipe* to **73**.
10. Click **Next**. (There is no need to click on OK to return to the chest before adding more ranks to a main chest. It need only be done after the last rank.)
11. Change the *Stop Family* to **Diapason**.
12. In the *Name* field, type in the word **Principal**.
13. Using the drop down list, change the *pitch* to **16'**.
14. Enter the value **13** in the field *First Pipe*. Leave Last pipe at **73**. (Thus, the pipe range is 13-73, not 1-73 as previously.)
15. Click on **OK**. This will take you back at the *Add New Chest* window where you can see the two ranks you just added. If a window comes up to say that there is a duplicate name, simply change the name by adding 1 to it. If this then appears in the chest list, select it and delete it.

16. Click **OK** to take you to the *Add New Chamber* window where you will see that “Great Main” chest has been added.
17. Click **OK**. You now see a window called *Chambers:Sample1* and the ‘Main’ chamber is listed (the window may be restricted in width so that the full title is not apparent).
18. Click **OK**. Now you are back at the image of the console. Save the work you have done so far. The bottom octave of pipes is not present on this chest (perhaps, because they are too large). The chest will have these 12 holes blanked off.

### Adding an Offset Chest

1. **Right Click** on the brown area of the console.
2. Select **Pipe Chambers** from the pop up list.
3. **Double-Click** on the word *Main*. The active window is now *Edit Pipe Chamber Info*.
4. In the previous section, the Principal in the Great Main chest had only pipes 13-73, we will now add the 1-12 offset. Click on **Add** in the *Pipe Chests* area.
5. Type the word **Principal Offset** where it currently says ‘*Swell Main*’.
6. Using the drop-down list select **Unit** under *Type*. Key Actions should be **12**.
7. Set *Coil Voltage* to **12** and *Coil Resistance* to **90**.
8. **Double-click** on the line *Principal Offset:8':1-61*. A new window opens called *Edit Pipe Chest Rank Info*.
9. Change *Stop Family* to **Diapason**. Change *Last Pipe* to **12** and *Pitch* to **16'**.
10. Click on **OK**. You are now back in the *Add New Chest* window. Notice that *Key Actions* has been greyed out but the value inside the window still says 61. It will change after clicking OK. The entry for the Diapason in *Ranks* has been modified to say *Principal Offset:16':1-12*.
11. Click **OK** (twice if necessary). You are now in *Edit Pipe Chamber Info*. You can see that *Principal* has been added to the list of Chests. If you double-click you will see that the greyed out 61 now says 12.
12. Click on **OK** several times return to the console picture. Save your work.

### Adding a Unit Rank

1. From the menu bar at the top select **Project** then **Pipe Chambers**. This is simply a different method from right-clicking to access *Pipe Chambers*.
2. **Double-Click** on the word *Main*. The active window will now be *Edit Pipe Chamber Info*.
3. We will now add a unit rank which will eventually be used by several stops in the organ. Click on **Add** in the *Pipe Chests* area.
4. Select the words **Unit Trumpet** from the drop down list under *Chest Name*. Delete the word *Unit*.
5. Set *Coil Voltage* to **12** and *Coil Resistance* to **30**.
6. Click on **Add**.
7. Change *Stop Family* to **Reed**, scroll down *Name* to **Trumpet**, *Pitch* to **16'** and *Last Pipe* to **85**. Click **OK**. It will show as *Trumpet: 16'. 1-85*.
8. Make a note in the *Other Info* area: ‘**Trumpet is 30 Ohms**’.
9. Click on **OK** to return to *Edit Pipe Chamber Info*.
10. If you wish you can re-arrange the ranks in the list by dragging their names. Save your work.



## Tutorial 4, Rank Information

This part of the tutorial will show you how to handle special ranks such as C/C# splits, doubled magnets and low-resistance magnets.

### Adding C/C# Split Ranks

A C/C# split rank is one in which the pipes are laid out diatonically instead of chromatically. The largest pipes may be at the ends or in the centre. Either way, the rank wiring can be simplified by specifying this fact and some idea of the actual layout should be written in the Notes section of OrganWorks. In the case of a split between two chambers, each half will produce alternate notes. The actual implementation will be done by the Classic engineer so all you need to do is specify what is wanted.

There are two ways to enter C/C# splits: 1. When both sides are in the same chamber and 2. When they are in different chambers.

#### A. In the Same Chamber

1. From the *Edit Pipe Chamber Info* window of the *Main* chamber, click on **Add** in the *Pipe Chests* area.
2. Type the word **Dulciana C/C#** where it currently says *Swell Main*.
3. Using the drop-down list, select **Unit** under *Type*.
4. Set *Coil Voltage* to **12** and *Coil Resistance* to **90**.
5. **Double-Click** on the line *Dulciana C/C#:8':1-61*. A new window opens called *Edit Pipe Chest Rank Info*.
6. Change *Stop Family* to **String**.
7. **Delete** the part of the stop name that says C/C#.
8. Click on **OK**, and **OK**. You have now documented a C/C# chest that is all in the same chamber. The actual disposition of the pipes will be done by a Classic engineer upon seeing this information in the *Edit Pipe Chamber Info* list.
9. Click **OK** a third time, until you are at the window *Chambers:Sample1*.

#### B. In Different Chambers

1. Click **Add** to create a second chamber. The window *Add New Chamber* that you have seen previously will open.
2. From the *Name* field, select **Gallery** from the drop-down list.
3. We will now add a unit rank that will be the C#-side of a unit chest. Click on **Add** in the *Pipe Chests* area.
4. Type the word **Mixture C#** where it currently says *Swell Main*.
5. Using the drop-down list, select **Unit** under *Type*.
6. Set *Coil Voltage* to **12** and *Coil Resistance* to **90**.
7. **Double-Click** on the line *Mixture C#: 8': 1-61*. A new window opens called *Edit Pipe Chest Rank Info*.
8. Change *Stop Family* to **Mixture**. Change *First Pipe* to **2** and *Last Pipe* to **60** and delete the **C#** portion from the *Name*. A C# rank has only the even-numbered pipes, therefore you do not specify 1 or 61.
9. Continue to click on **OK** until you are back at the window *Chambers:Sample1*. As you can see, the *Gallery Chamber* has been added.

10. We will now add the C-side of the Mixture rank. **Double-Click** on *Main* to get to *Edit Pipe Chamber Info*.
11. Click on **Add** in the *Pipe Chests* area.
12. Type the word **Mixture C** where it currently says *Swell Main*.
13. Using the drop-down list, select **Unit** under *Type*.
14. Set *Coil Voltage* to **12** and *Coil Resistance* to **90**.
15. Double-Click on the line *Mixture C: 8': 1-61*. A window opens called *Edit Pipe Chest Rank Info*.
16. Change *Stop Family* to **Mixture**. Check that *First Pipe* is **1** and *Last Pipe* is **61** and delete the **C** portion from the *Name*.
17. Continue to click on **OK** until you are back at the picture of the console. Save your work.

### Identifying Low-resistance Magnets

In the previous examples we have set the *Coil Resistance* to either **30** or **90Ω**. In most cases the resistance will remain constant throughout the rank, however on some ranks the Bass pipes may be different with larger magnets of lower resistance. This needs to be documented as different pipe driver boards have different driving capabilities.

1. **Right-Click** on a vacant area of the console.
2. Select *Pipe Chambers* from the pop up list.
3. **Double-Click** on the word *Main*. The active window is now *Edit Pipe Chamber Info*.
4. **Double-Click** on the *Trumpet Rank*.
5. Put the cursor on the white space below *Other Info* and type **Pipes 1-8 are 22 Ohms**.
6. Click on **OK**, until you return to the console picture. Save your work.

This information is now there as a reminder to the system designer that something special has to be done with these particular pipes.

### Identifying Double Magnets

Sometimes the bass notes of a rank actually have two magnets. They may need to be driven by separate outputs or perhaps a double output. The fact needs to be noted for the system designer.

1. **Right-Click** on a brown area of the console.
2. Select *Pipe Chambers* from the pop up list.
3. **Double-Click** on the word *Main*. The active window is now *Edit Pipe Chamber Info*.
4. **Double-Click** on the *Principal Offset Rank*.
5. Put the cursor on the white space below *Other Info* and type **Pipes 1-5 have 2 magnets per pipe**.
6. Click on **OK**, until you return to the console picture. Save your work.

## Tutorial 5, Stop Information

This part of the tutorial will teach you how to create, delete, rename and move stops.

### Adding Stops

There are two main ways that a stop may be added from the *Edit Division Info* window by using the tool bar. In addition, you can **Copy-and-Paste** stops within a division.

#### *Method A (for a new stop within a division)*

1. Access the *Edit Division Info* window using any of the methods previously used (**Right-click**, *Divisions and Stops*, **Double-click** on *Great*). You will see a list of seven 8' stops plus Chimes.
2. Click **Add**. A window called *Add New Stop to Great: Blank: 8'* will open.
3. Set the following parameters:
  - *Stop Family* = **String**
  - *Stop Name* = **Dulciana**
  - *Pitch* = **8'**
4. If you have more stops to add you could select the **NEXT** button and continue until all the new stops have been entered, then just click **OK** twice to return to the console image.
5. Otherwise just click **OK**. You will see that *Dulciana: 8'* has been added to the end of the stop list.

#### *Method B (for a new stop on any division)*

1. **Left-click** on the *Add a Rocker Tab* tool. This is on the bottom row of the tools third from the left. It looks like a rocker tab with the words *Swell to Great* inside it. A new window opens called *Select a Rocker Type*.
2. To add a stop, **Double-Click** on *Stop* and select **OK**. A new window opens called *Select a Stop Division*.
3. In this example, we will add it to the Great, so select **Great** by double-clicking.
4. Set the following parameters:
  - *Stop Family* = **Mixture**
  - *Stop Name* = **Mixture**
  - *Pitch* = **II**
5. Select **OK**. Now you will see that two stops have been added to the console picture.

### Deleting Stops

There are several ways in which a stop may be deleted. Zoom in (F10) so that you can read the stop names (the magnification is shown at the lower right of the screen).

1. **Left-click** on the *Gt 5:8'* stop to highlight it and hit *Delete* on your keyboard.
2. **Left-click** on the *Gt 6:8'*, **Right-Click** to bring up a menu, Select **Delete**.
3. Go into *Edit Division Info* as seen in the above examples (**double-click** on the *Great Division*), **highlight** *7:8'* then **click** on the **Delete** button.
4. Click on **OK** and you will see that these stops have gone from the console picture.

**Re-naming Stops***Method A*

1. Using the F10 key, zoom in on the console picture so you can more easily see the stop names on the *Great* division.
2. As you can see, there is a series of rocker tabs numbered 1-4 as well as Chimes and some couplers. This was determined when we originally created the file using the Wizard with seven stops but some have just been deleted. You specified 7 stops for each division, but did not detail what those stops were called. We will do this now.
3. **Double-Click** on Rocker Tab #1. A new window will open called *Edit Stop Info:1:8'*
4. Select **Diapason** under *Stop Family*.
5. Using the drop-down list for *Stop Name*, select **Diapason**.
6. Using the drop-down list for *Pitch*, select **16'**.
7. Select **OK** (you can select **Next** to rename another stop).

This rocker tab has now been re-named *Diapason 16'*.

*Method B*

1. **Left-Click** on the brown area of the console just below the label for the *Great* division. A grey area will be highlighted. This is the division area for the Great.
2. **Double-Click** on the *Great* division area. A new window will open called *Edit Division Info*. The *Diapason* that you just edited is listed in the *Stops* area along with all the other stops for the Great.
3. **Double-Click** on Rocker Tab #2, *2:8'*. This is another way to access the window *Edit Stop Info* as seen in the previous example.
4. Set the following parameters:
  - *Stop Family* = **Flute**
  - *Stop Name* = **Flote** (Select Flute and modify it)
  - *Pitch* = **8'**
5. Select **OK** and **OK** again, until you are back at the picture of the console. The *Flote 8'* has been edited.

*Method C*

1. Go to *Project* on the menu bar and select **Divisions & Stops**. A new window will open called *Divisions: Sample1*.
2. Highlight *Great* and click on **Properties**. The *Edit Division Info* window is now open.
3. Highlight *3:8'* and click on **Properties**. This is another way to access the window *Edit Stop Info* as seen in the previous examples.
4. Set the following parameters:
  - *Stop Family* = **Reed**
  - *Stop Name* = **Trumpet**
  - *Pitch* = **16'**
5. Click on **Next**. You now have the *Edit Stop Info: 4:8'* window.
6. Set the following parameters:
  - *Stop Family* = **Reed**
  - *Stop Name* = **Trumpet**

- *Pitch = 8'*
7. Select **OK** until you are back at the picture of the console. Both *Trumpet 16'* and *Trumpet 8'* have been edited.
  8. You can optionally change the colour of the stop text to Red to indicate a Reed stop.

### Moving and Aligning Stops

In addition to specifying the names of stops, you also need to show where the stops are located on the console. Presently, the various rocker tabs associated with the Great are not placed where they should be. There are four ways that stops can be moved:

1. The first method of moving stops is to *Drag* them individually.
  - Move the pointer over the *Swell to Great 4'* rocker tab.
  - **Click and hold down** the left mouse button.
  - **Drag** the mouse until the outline that appears is well to the right of the *Great to Great 8'* rocker tab.
  - Similarly drag all the other couplers to the right end of the row.
2. The stops may be aligned to each other as a contiguous group and there are several alignment tools on the tool bar. This example will show one, the others work similarly:
  - Using your mouse, outline all the Great rocker tabs by left-clicking and holding the mouse button above and to the left of the tabs. Drag the mouse until the box that appears surrounds them all (but excludes the Great name). The nine rocker tabs will turn blue, with a red line around one of them.
  - In this case we want the *Diapason 16'* to be the reference tab to which we align all the other tabs, so, if necessary, **Click** on the *Diapason 16'*. This tab then has the red line.
  - Find the tool called *Align Bottomwise* and **Click** on it. All the rocker tabs that were in blue now line up along their bottom edge, using the *Diapason 16'* as the reference.
3. Stops not in a contiguous group may also be aligned as long as you can draw a box around them. One item within the box, not necessarily a stop, will have the red line to which all enclosed items will be aligned. If not a stop, select the one you want to be the reference. The fifth alignment tool on the same toolbar row as the *Align Bottomwise* tool is a tool called *Align to Snap Grid* (it has nine small circles). When this tool is on, OW creates an invisible grid on the console to which any console items you then move will automatically align. Using the *Drag* method (1), move the rocker tabs in the Great so that they line up with no spaces between them. Try with *Snap* both on and off. The size of the grid can be modified, but this was covered in the *Project Defaults* part of the tutorial.
4. You can also move stops individually or as a group so that they do not fit to the grid, should you want them to be in a particular place. In this case, select the stop or group as above and then choose the tool icon second from the right (with multiple dots). This turns *Snap* on or off. You can then position the stop/group accurately. It will stay put if you turn the *Snap* on again provided that you deselect the stop/group first by clicking elsewhere on the console.
5. Now you can tidy up the stop layout by dragging each stop to where you want it. Be sure to fit the division area to totally enclose the stop group. There is a check box in *Edit Division Info* for *Re-order Stops on Console*. Explore this but note that it may do odd things.
6. You can also re-arrange stops by dragging them in the *Edit Division Info* list.
7. You can optionally make all the couplers have white lettering on a black background.

## Tutorial 6, Pipe Parts

This portion of the tutorial covers the connecting of stops on the console to the appropriate pipes. Pipe Parts are the individual parts within a Pitman (matrixed) chest or unit rank when the chest/rank may be played from several sources. This includes: main chest, units, single stop using multiple ranks, multiple stops using a single rank and C/C# splits. This primarily involves a new window called *Edit Pipe Chest Parts*. There are several fields in this window:

1. *Name*: You will usually not need to change this as it updates automatically.
2. *Chamber*: The drop-down list has all the currently available chambers. In this file you could select from *Main* or *Gallery*. If you need to add a new chamber (should the one you want not currently exist), you can click on the *Add Chambers* button and proceed as you did in the earlier tutorial to *Add New Chamber*.
3. *Chest Name*: A list of all the chests within the currently selected chamber. As with *Chamber*, if the Chest you needed does not currently exist you can add it using the *Add Chest* button and by following the procedures previously covered.
4. *Rank Name*: This is the name of the rank(s) on the currently selected chest. In the case of Unit chests the rank name will usually be the same as or a variation of the chest name. For main chests (i.e. matrixed or Pitman) there will usually be multiple ranks listed. As with *Chamber* and *Chest Name* if the rank you need does not exist you may use the *Add Rank* button.
5. *First/Last Keyboard. Note*: This defines the range of notes on the manual (or pedalboard) to which you are referring. Normally it will be 1 to 61 (or 32).
6. *First/Last Pipe*: Here is where you define the range of pipes to be played. For a Unit rank this would normally start at 1 unless you consider a bottom-octave offset unit to be part of the same rank.
7. *C/C# Split*: Check this box if the rank is to play alternate notes C/C#.

### Connecting to a Main Chest

By a main chest we are referring to any chest where the stop and key actions are separate and the chest has multiple ranks on it. This includes Matrix, Pitman, Slider, Universal and Ventil chests. Note that a rank on this kind of chest *cannot* be played from more than one stop. Therefore each rank name will appear only once.

1. Access the *Edit Stop Info* window for the *Flote 8'*.
2. **Left-Click** on the button *Edit Parts*. A new window will open called *Flote: 8' Parts*.
3. **Double-click** on *Flote: 8': 1-73: Pipe* and set the following parameters:
  - *Chamber*: **Main**
  - *Chest Name*: **Great Main**
  - *Rank Name*: **Flote: 8': 1-73** (Use the drop-down box)
  - *First Keyb Note*: **1**
  - *Last Keyb Note*: **73** (this allows for an octave coupler even though the keyboard has only 61 keys)
  - *First Pipe*: **1**
  - *Last Pipe*: **73**
5. Select **OK** and **OK** again to return to the *Edit Stop Info: Flote: 8'* window.

### Single Stop Plays from Multiple Locations

In this section we will demonstrate a single bottom octave offset (unit) from a main chest, but the same principle applies to all situations.

1. Access the *Edit Stop Info* window for the *Diapason 16'*. (Double-click on the stop in the picture).
2. **Left-Click** on the button *Edit Parts*. A new window will open called *Diapason: 16' Parts*.

3. **Click** on *Add Pipe*. A new window will open asking “*Add Diapason Rank to Great Main Chest?*”. We don't want to do this, we want a separate offset rank. **Click** on *No*.
4. In *Add New Pipe Part, Chest Names*, select **Principal Offset** from drop-down list. Click **OK**.
5. Set the following parameters:
  - *Chamber:* **Main**
  - *Chest Name:* **Principal Offset** (Use the pull-down box)
  - *Rank Name:* **Principal Offset: 16': 1 - 12**
  - *First Keyb Note:* **1**
  - *Last Keyb Note:* **12**
  - *First Pipe:* **1**
  - *Last Pipe:* **12**
6. Select **OK**, to return to *Edit Stop Info., Diapason 16'*. Select *Edit Parts*.
7. We now have to adjust the Pitman chest pipe range. **Double-click** on *Diapason: 16' 1-61: Pipe*.
8. Set the following parameters:
  - *Chamber:* **Main**
  - *Chest Name:* **Great Main**
  - *Rank Name:* **Principal 16': 13 - 73**
  - *First Keyb Note:* **13**
  - *Last Keyb Note:* **73**
  - *First Pipe:* **13** (It may not change until Last Pipe has been set).
  - *Last Pipe:* **73**

9. Select **OK** and **OK** again to return to the console picture.

Note that although a Main chest rank normally starts at 1, this one starts at 13. On such a chest with an offset, the bottom 12 notes will probably be blocked off (starting at a number other than 1 may flag an error or warning message in Diagnostics).

### Multiple Stops Play a Single Rank

If a chest is direct electric (Unit), then more than one stop on the console can play it. This example shows a 73-pipe Trumpet rank played at both 16' and 8' pitches from two stops.

1. Access the *Edit Stop Info* window for the *Trumpet 16'*. (**Double-click** on the *Trumpet: 16'* stop)
2. **Left-Click** on the button *Edit Parts*. A new window will open called *Trumpet: 16' Parts*.
3. **Double-Click** on the line *Trumpet: 16' 1-61: Pipe*. A new window will open called *Edit Pipe Chest Parts*.
4. Set the following parameters:
  - *Chamber:* **Main**
  - *Chest Name:* **Trumpet** (Use the pull-down box)
  - *Rank Name:* **Trumpet: 16': 1 - 85**
  - *First Keyb Note:* **1**
  - *Last Keyb Note:* **61**
  - *First Pipe:* **1**
  - *Last Pipe:* **61**
5. Select **OK** and **OK** again to return to the *Edit Stop Info* window.
6. Click the **Next** button to access the *Edit Stop Info* window for the *Trumpet 8'*.
7. **Left-Click** on the button *Edit Parts*. A new window will open called *Trumpet: 8' Parts*.
8. **Double-Click** on the line *Trumpet: 8': 1-61: Pipe*. A new window will open called *Edit Pipe Chest Parts*.

9. Set the following parameters:
  - *Chamber:* **Main**
  - *Chest Name:* **Trumpet**
  - *Rank Name:* **Trumpet: 16': 1 - 85**
  - *First Keyb Note:* **1**
  - *Last Keyb Note:* **61**
  - *First Pipe:* **13** (i.e., it starts an octave higher) Note: It may not change, do the Last Pipe first.
  - *Last Pipe:* **73** (i.e., it ends an octave higher)
10. Select **OK** until you reach the console image.
11. Save your work.

### C/C# Splits

Unit chests may also be split C/C# with each half being either in the same chamber or different chambers. The method to do each is similar but there are some small differences.

#### Same Chamber

If both halves are in the same chamber you do not create separate chests for each, just label a single chest as C/C#. This information will be picked up by the Classic engineer and dealt with appropriately. We have already done this in Tutorial 4.

1. Access the *Edit Stop Info* window for the *Dulciana 8'*.
2. **Left-Click** on the button *Edit Parts*. A new window will open called *Dulciana: 8' Parts*.
3. **Double-Click** on the line *Dulciana:8': 1-61: Pipe*. A new window will open called *Edit Pipe Chest Parts*.
4. Set the following parameters:
  - *Chamber:* **Main**
  - *Chest Name:* **Dulciana C/C#**
  - *Rank Name:* **Dulciana: 8': 1 - 61**
  - *First Keyb Note:* **1**
  - *Last Keyb Note:* **61**
  - *First Pipe:* **1**
  - *Last Pipe:* **61**
5. Check off C/C# Split. You can ignore the options of C Side or C# Side.
6. Select **OK** and **OK** again to return to the *Edit Stop Info* window.

#### Different Chambers

If the C and C# sides are in different chambers you must create separate chests for each. We have already done this in Tutorial 2. Occasionally while working with a Mixture rank you will get the warning saying *Un-recognizable pitch in stop*. Select **OK** and ignore it.

1. Access the *Edit Stop Info* window for the *Mixture II*.
2. **Left-Click** on the button *Edit Parts*. A new window will open called *Mixture: II Parts*.
3. **Double-Click** on the line *Mixture:II: 1-61: Pipe*. A new window will open called *Edit Pipe Chest Parts*. A window may appear stating that there is an unrecognizable pitch in *Stop Mixture: II 1-61: Pipe*. Just ignore it and click on **OK**.
4. Set the following parameters:
  - *Chamber:* **Main**
  - *Chest Name:* **Mixture C**
  - *Rank Name:* **Mixture: 8': 1 - 61**
  - *First Keyb Note:* **1**



- *Last Keyb Note:* **61**
  - *First Pipe:* **1**
  - *Last Pipe:* **61**
5. Check off **C/C# Split** and **C Side**.
  6. Select **OK** to return to the *Mixture: II Parts* window.
  7. Click **Add**, and select **Pipe** (or you could copy-and-paste). Again ignore the un-recognisable pitch warning.
  8. In the *Add New Pipe Part* window set the following parameters
    - *Chamber:* **Gallery**
    - *Chest Name:* **Mixture C#**
    - *Rank Name:* **Mixture 8': 2-60**
    - *First Keyb Note:* **2**
    - *Last Keyb Note:* **60**
    - *First Pipe:* **2**
    - *Last Pipe:* **60**
  9. Check off **C/C# Split** and **C# Side**.
  10. Select **OK** until you reach the console image.
  11. Save your work.

### Multiple Parts

Sometimes a single rank will need to play multiple pitches depending on which key you press. For example, a Resultant 32' will play both a 16' pipe at Unison and a Quint 10 2/3' at the same time from keys 1-12. From key 13 up the pipe played reverts to pipe 1 (up to 20) at 16' pitch. *This can only be done with a Unit rank.* The following example shows how to create a Resultant 32' stop:

1. **Double-click** on the rocker tab in the Pedal area called *1:8'*.
2. Set the following parameters:
  - *Stop Family* = **Flute**
  - *Stop Name* = **Resultant** (Type it)
  - *Pitch* = **32'**
3. **Click** on *Edit Parts*.
4. **Double-click** on the listed part *Resultant: 32': 1-32: Pipe*. The *Edit Pipe Chest Part* window will open.
5. The chest/rank that the Resultant will play does not yet exist so **click** on *Add Chest*. The window *Add New Chest to Main Chamber* will open. This is the same window as seen in Tutorial 3.
6. Set the following parameters:
  - *Chest Name* = **Gemshorn** (Type it)
  - *Type* = **Unit**
  - *Key Actions* = **32**
  - *Coil Voltage* = **12**
  - *Coil Resistance* = **100**
7. **Double-click** on the line *Gemshorn: 8': 1-61*.
8. Set the following parameters:
  - *Family* = **Diapason**
  - *Name* = **Gemshorn**

- *Pitch* = **16'**
  - *First Pipe* = **1**
  - *Last Pipe* = **32**
9. Click **OK** until you are back at the window *Edit Pipe Chest Part*.
  10. Set the following parameters for the 1-12 Unison (Bass) portion:
    - *Chamber* = **Main**
    - *Chest Name* = **Gemshorn** (from the drop-down list)
    - *Rank Name* = **Gemshorn: 16': 1-32**
    - *First Key* = **1**
    - *Last Key* = **12**
    - *First Pipe* = **1**
    - *Last Pipe* = **12**
  11. Go up to the *Name* line and after the word *Pipe type Bass* (or **B**). If you do not do this, OrganWorks will think this is a duplicate entry as the key range is the same and it will ignore the second entry.
  12. Click **OK**
  13. Click **ADD**. Select **Pipe**
  14. Set the following parameters for the 1-12 *Quint* portion (7 semi-tones up):
    - *Chamber* = **Main**
    - *Chest Name* = **Gemshorn**
    - *Rank Name* = **Gemshorn: 16': 1-32**
    - *First Key* = **1**
    - *Last Key* = **12**
    - *First Pipe* = **8**
    - *Last Pipe* = **19**
  15. Go up to the *Name* line and after the word *Pipe type Quint* (or **Q**). If you do not do this, OrganWorks will think this is a duplicate entry as the key range is the same and it will ignore the second entry.
  16. Click **OK**
  17. Click **ADD**. Select **Pipe**
  18. Set the following parameters for the 13-32 Treble portion:
    - *Chamber* = **Main**
    - *Chest Name* = **Gemshorn**
    - *Rank Name* = **Gemshorn: 16': 1-32**
    - *First Key* = **13**
    - *Last Key* = **32**
    - *First Pipe* = **1**
    - *Last Pipe* = **20**
  19. Type **Treble** (or **T**) after the *Name*.
  20. Click **OK** until you are back at the console image.
  21. Save your work.

It is possible to define Mixtures in a similar manner by having, say, three different pitches played by the same key and the break-back points can be custom made.

## Tutorial 7, Percussions

Tuned percussion stops, such as a Chimes, are handled similarly to pipe stops, but there are a few differences.

### Tuned Percussions (Chimes)

1. Go to *Edit Pipe Chamber Info* for the *Main Chamber*.
2. In the *Percussion* area, click on **Add**.
3. Select **Chimes** from the drop-down list under *Name*.
4. **Check** off the boxes *Tuned Multiple*, *Volume*, and *High Power AC/DC*.
5. Set *First* and *Last* to **1** and **25**.
6. Set the number of *Stages* (Volume) to **5**.
7. Set *Voltage* to **24** and *Resistance* to **5**.
8. Click on **OK** until you are back at the console.
9. Access the *Edit Division Info* window for the *Great*.
10. Double-click on **Chimes**.
11. Set the following parameters:
  - Stop Family = **Percussion**
  - Stop Name = **Chimes**
  - Pitch = **None** (not 0)
12. Select **Edit Parts**.
13. Highlight the line *Chimes: None* and **delete** it (it is currently a Pipe part but must be Percussion).
14. Select **Add**, a new window will open called *Select a Part Type*.
15. Select **Percussion**. A new window will open called *Edit Percussion Part Info*.
16. From the *Chambers* drop-down list select **Main**.
17. From the *Percussion* drop-down list select **Chimes**.
18. **Check** off the *Tuned* box.
19. Set *First Chamber Note* to **20** (i.e., key G2)
20. Set *Last Note* to **44** (i.e., key G4).
21. Click on **OK** until you are back at the console.
22. Save the file.

## Tutorial 8, Pistons & Toe Studs

The purpose of this part of the tutorial is to familiarize yourself with creating, editing and deleting pistons and toe studs. In Organ Works these two things are basically the same. Toe Studs are just pistons that look different.

### Renaming Pistons

This organ (Sample1) currently has four General pistons and four Pedal pistons (at the left end of the great manual). We will start by changing the Pedal pistons to extra Generals.

1. **Double-click** on the Pedal 1 piston. Pedal 1 currently displays as a piston with just a **1** in it. When your pointer is over the piston, look in the bottom left corner of your screen, the full name of the piston will appear there (it is the same actual name, not the same relabelled name).
2. Using the drop-down list under *Function* select **General**. As you can see the *Name* and *Label* for the piston have automatically changed to the next available General, which is 5.
3. Click **Next**
4. Repeat steps 2 and 3 for the remaining three Pedal pistons. (you can go up to 32 generals or 16 divisional pistons).
5. Click **OK**

### Adding Pistons

There are three methods of adding pistons. We will add one more piston each to the Swell and Great divisionals using two of these methods.

1. Method-1: From the tool bar **Click Add a Piston** (fifth from the left on the bottom row).
2. Select *Divisional* from the *Function* drop-down list.
3. Select *Swell* from the *Settings/Division* field that appears.
4. *Name* and *Label* automatically set themselves to 05. Click **OK**
5. A new piston highlighted blue has appeared on the console. **Drag** it to the *Swell* keyslip to the right of the *Swell 4* divisional.
6. Method-2: Hold down the *Ctrl* key on your keyboard then **Click-and-hold** the left mouse button on the *Great 1* divisional piston.
7. **Drag** your mouse until the little + symbol appears
8. **Release** the key and button.
9. **Drag** the new piston to the *Great keyslip* next to the *Great 5 divisional*.
10. **Double-click** on this new piston. You will see that all the parameters for *Great 6* have already been set.
11. The third method of adding a similar piston is by **Copy-and-Paste**.

Examine the various piston types in the drop-down Function list and Settings. Refer to the Help Menu if you need explanations of the various types.

*Tip: Thumb Pistons can be spaced more accurately if you change the View settings to 1/3 Item Width in Project Defaults.*

**Adding Toe Studs**

The procedure to add toe studs is practically the same as for adding pistons. We will add Great-to-Pedal and Swell-to-Pedal reversible toe studs.

1. **Click** on the *Add Toe Stud* tool (fourth from left, in the bottom row). The *Add New Toe Stud* window opens.
2. Under *Function* select **Coupler Reversible**. A blank section in the *Settings* window is now shown.
3. Under *Settings* choose **Great to Pedal: 8'**
4. **Click** on the *NEXT* button. The function *Coupler Reversible* did not change, but a **1** was added to the end of the name. This is because you cannot have duplicate names and this is now a new Toe Stud.
5. Under *Settings* change settings to **Swell to Pedal:8'**.
6. Click **OK**.
7. Two new toe studs have been added. Drag them to the right of the expression shoes.
8. Save the file.

See also Tutorial-11 for Control Pistons.

## Tutorial 9, Control Panels

The purpose of this part of the tutorial is to familiarize yourself with creating control panels. These are simply specialized layouts of pistons. There are two basic types of control panel, Alpha-numeric and numeric. Pick one or the other for this tutorial.

### Creating an Alpha-numeric Control Panel

Control Panels can come in any shape or size which is why Organ Works does not have a special function to add a control panel. To create a control panel of any sort you place the individual components and specify the manufacturer and location. For the purposes of this tutorial we will add a CTRL-3/10. This is a control panel using 10 Eao pistons and a VFD-1 (Vacuum-fluorescent display). This type of panel is mandatory if the organ is going to use the built-in sequencer (player).

1. **Click** on the eighth button in the tool bar called **Add Numeric Display**, the window *Add New Numeric Indicator* will open.
2. Under *Display Digits* select **VFD**.
3. **Check** off *Centre* and *Top*.
4. Click **OK**.
5. **Drag** this new component to the right of the manuals, about halfway up.
6. **Create** three new pistons for **PLAY**, **PAUSE/FILE** and **RECORD**. These do not exist so select the fifth tool on the toolbar, *Add a Piston*, select *Special Function* and type the name **PLAY** in *Settings*. Give it the following parameters:
  - *Function* = **PLAY**.
  - *Name* = **PL**
  - *Label Override* = **Yes**
  - *Label* = **PLAY**
  - *Manufacturer* = **Eao**
  - *Style* = **Square, Lighted, Control**
7. Click **OK** and **drag** the new piston to the control panel you are creating. Place it under the display.
8. Repeat for **PAUSE/FILE**. Make sure that you press Return before the slash so that the name will occupy two lines otherwise it will not be readable.
9. Make another piston for **RECORD** but this time copy **PLAY**, paste it and modify it.
10. **Drag** existing pistons from the keyslips so that they appear in the following order:

UP	Memory	Trans- poser	Reg Seq	SETUP
DOWN	PLAY	PAUSE/ FILE	RECORD	MIDI Reg. Off

11. Line up the pistons so that they are centered just below the display. You may have to turn off the *Snap* tool to accomplish this. At this time some will be *Round*.

12. Go into the *Edit Piston Info* window for each piston on the control panel (double-click on that piston) and **set the following parameters** if not already set by the defaults:
  - *Manufacturer* = **Eao**
  - **Square**
  - **Control Piston**
  - **Lighted** (except for UP and DOWN).
13. To add a bezel to this control panel, **left-click** on a brown area, select **Add Items** and **Add a Label...** A new window will open called *Add New Console Label*.
14. Set the following parameters;
  - *Label Name* = **Control Panel**
  - *Label Text* = **Control Panel** (it will fill itself in)
  - *Vertical Position* = **Bottom**
  - *Horizontal Position* = **Centre**
15. **Click** on the button *Label Colour*.
16. Select the lighter shade of yellow (top row second from left) for a brass panel or Black for an anodised one.
17. Click **OK** and **OK** again.
18. **Drag** the new small label over to where the control panel switches are and place it so that one corner is roughly where you want it.
19. **Click on the label** so that it is highlighted (red line around it)
20. Position your mouse over the opposite corner so that a single line with an arrow on each end appears. **Hold down the left mouse button and drag** until the outline surrounds the control panel. You may have to resize it a few times from different corners to get it to fit around the display and switches without being too large. You may also have to temporarily turn off the *Snap* function (see Tutorial 4).
21. **Click** on a vacant area of the console. As you see the label now covers the control panel.
22. **Click** on the label and select the tool button *Send to Back* (Menu, Layout, Order). **Click** in a vacant area. This will make the label appear behind the pistons and display, but the label is still the principal part. If you clicked on a piston it would actually be the label you selected.
23. **Click** outside the label and drag to make a rectangle including the display and switches but *not* the label name. Select *Send to Front*. Now you can select individual switches.

**Creating a Numeric Control Panel**

For the purposes of this tutorial we will now create a CTRL-1/10 as an alternative to the CTRL-3/10 with the vacuum-fluorescent display. This is a control panel using 10 Eao pistons and a DB-6 (3-pair numeric display).

1. **Click** on the button on the tool bar called **Add Numeric Display**, the window *Add New Numeric Indicator* will open.
2. Under *Number of Displays*, select **3**.
3. Under display digits select **2** (or **VFD**).
4. **Check** off the following functions and positions:

Function	Position			Label	
				Top	Bottom
Crescendo			x	x	
Memory	x			x	
SetUp			x		x
Transposer		x		x	
Reg. Seq.		x			x

5. Click **OK**.
6. **Drag** this new component to the right of the manuals, about halfway up.
7. It could be convenient to have two ALT pistons on the console for easy access, one being on the control panel when it *must* be in the lower-right position. **Create** a new **ALT** piston (via *Add a Piston*), ALT is a *Special Function*. ALT is already in use so does not appear in the *Settings* list. Type it as **ALT1** in both *Settings* and *Name*. Click on Manufacturer as **Eao, Square, Control Piston**. Put this new piston under the display you just created.
8. **Double-click** on the new *ALT* piston
9. Check off *Label Override* in the window and delete the **1** after the name. OrganWorks requires a unique name for each piston but the label can say anything you wish. Therefore, the first ALT's name is just ALT, this new piston is ALT1, but the labels are the same.
10. Click on **OK** to close the window.
11. Click on a vacant area so that the ALT piston is no longer highlighted and zoom in via **F10**.
12. **Drag** existing pistons from the keyslips so that they appear in the following order:

UP	Memory	Trans- poser	SETUP	Alt Cresc
DOWN	MIDI Reg Off	Reg Seq	Multi MIDI	ALT



13. In Part-1 of the tutorial we specified that there would be two Crescendo memories. The *Alt Cresc* piston to select the alternative second one does not exist so select **Add a Piston** and give it the following parameters:
  - *Function* = **Cresc. Sel.**
  - *Name* = **CS01**
  - *Label Override* = **Yes**
  - *Label* = **Alt Cresc**
  - *Manufacturer* = **Eao**
  - *Style* = **Square, Lighted, Control**
14. Click **OK** and **drag** the new piston to the control panel you are creating.
15. Line up the pistons so that they are centered just below the display. You may have to turn off the *Snap* tool to accomplish this. At this time some will be *Round*.
16. Go into the *Edit Piston Info* window for each piston on the control panel (double-click on that piston) and **set the following parameters** if not already set by the defaults:
  - *Manufacturer* = **Eao**
  - **Square**
  - **Control Piston**
  - **Lighted** (except for UP, DOWN and ALT).
17. To add a bezel to this control panel, **left-click** on a vacant area, select **Add Items** and **Add a Label...** A new window will open called *Add New Console Label*.
18. Set the following parameters;
  - *Label Name* = **Control Panel**
  - *Label Text* = **Control Panel** (it will fill itself in)
  - *Vertical Position* = **Bottom**
  - *Horizontal Position* = **Centre**
19. **Click** on the button *Label Colour*.
20. Select the lighter shade of yellow (top row second from left) for a brass panel or Black for an anodised one.
21. Click **OK** and **OK** again.
22. **Drag** the new small label over to where the control panel switches are and place it so that one corner is roughly where you want it.
23. **Click on the label** so that it is highlighted (red line around it)
24. Position your mouse over the opposite corner so that a single line with an arrow on each end appears. **Hold down the left mouse button and drag** until the outline surrounds the control panel. You may have to resize it a few times from different corners to get it to fit around the display and switches without being too large. You may also have to temporarily turn off the *Snap* function (see Tutorial 4).
25. **Click** on a brown area. As you see the label now covers the control panel.
26. **Click** on the label and select the tool button *Send to Back* (Menu, Layout, Order). **Click** in a vacant area. This will make the label appear behind the pistons and display, but the label is still the principal part. If you clicked on a piston it would actually be the label you selected.

27. **Click** outside the label and drag to make a rectangle including the display and switches but *not* the label name. Select *Send to Front*. Now you can select individual switches.

You would normally create only one of the foregoing panel types. You will note that the Alternative Crescendo mentioned in the Numeric panel did not appear on the Alpha-numeric one as there is insufficient room. If you really want the second Crescendo on the Alpha-numeric panel, you could leave the UP and DOWN switches on the keyslips and fit Multi-MIDI on the panel.

There are many ways to create control panels and these two are relatively standard. You are limited to 10 switches on such a panel. If you need more, Classic can provide push-button-only control panels up to 2x8 (stackable to make longer rows) and the display would then be a stand-alone device. There are other switch arrangements up to 4x4.

The following panel is an example of a 3x3 push-button-only panel used to select MIDI stops by push-on/push-off lighted switches.

### MIDI Panels

This type of panel is a variation of a push-button control panel without a display.

1. **Create** a new piston from *Special Function* list. Use *Adjustable Reversibles* or *Effects* as there is no MIDI type in the list and you can have only up to eight *Lighted Reversibles* (some of which may already be in use for other functions such as Zimblestern).
2. Check off *Label Override* in the window and **type** the name to be **Swell MIDI-1, Eao**. OrganWorks requires a unique name for each piston but the label can say anything you wish.
3. Click on **OK** to close the window and return to the console view.
4. **Drag** the new piston to the left side of the console.
5. **Copy-and-paste** the piston eight times.
6. **Change** the names and **align** the pistons in a block as below by dragging:

Swell MIDI-1	Swell MIDI-2	Swell MIDI-3
Great MIDI-1	Great MIDI-2	Great MIDI-3
Pedal MIDI-1	Pedal MIDI-2	Pedal MIDI-3

7. To add a bezel to this control panel, left-click on a vacant area, select *Add Items* and *Add a Label*. A new window will open called *Add New Console Label*.
8. Set the following parameters;
  - *Label* = **MIDI**
  - *Vertical Position* = **Bottom**
  - *Horizontal Position* = **Centre**
9. **Click** on the button *Label Colour*.

10. Select the lighter shade of Yellow (top row second from left) for a brass panel or Black for an anodised one.
11. Click **OK** and **OK** again.
12. **Drag** the new small label over to where the MIDI control panel is.
13. **Click on the label** so that it is highlighted (red line around it)
14. Position your mouse over the bottom left corner so that a single line with an arrow on each end appears. **Hold down the left mouse button and drag** it until the outline surrounds the control panel. You may have to resize it a couple of times from different corners to get it to fit around the buttons without being too large.
15. **Click** on a brown area. As you see the label now covers the control panel.
16. **Click** on the label and select the tool button *Send to Back*. This will make the label appear behind the pistons and display, but the label is still the principal part. If you clicked on a piston it would actually be the label you selected.
17. **Click** outside the label and drag to make a rectangle including the display and switches but *not* the label name. Select *Send to Front*. Now you can select individual switches.
18. Go into the *Edit Piston Info* window for each piston on the control panel (double-click on that piston) and **set the following parameters** if not already set by the defaults:
  - *Manufacturer* = **Eao**
  - **Square**
  - **Control Piston**
  - **Lighted**

*Note: MIDI panel switches are actually used as stops though controlled as though they were pistons. They do not need any MIDI parameters setting (in Project Defaults) as they can be individually set when the organ is working.*

## Tutorial 10, Couplers

The purpose of this tutorial part is to cover the various types of couplers.

### **Coupler Types**

#### *TO Couplers*

'To' couplers are the basic type and simply add a division to a manual. There is no further coupling. For example, if the Swell was coupled to the Great and then the Great was coupled to the Pedal, the Swell would *not* be coupled through to the Pedal.

#### *ON Couplers*

'On' couplers take a division and put it on another division, where it will continue to couple through. For example, if the Swell was coupled to the Great and then the Great was coupled to the Pedal, the Swell *would* couple through to the Pedal.

#### *Through*

Used when a division does not have an associated manual but does have Sub and Super couplers. For example, a floating Echo division has the Echo 4' coupler on and an Echo-to-Swell 8' coupler. Any Echo stops on would play on the Swell at both 8' & 4'.

#### *Unison Off*

This is simply a coupler that uncouples the normal (unison) 8' pitch when on. It renders the keyboard silent unless some other coupler is in use.

#### *Auto Pedal*

The Auto Pedal function allows the organist to obtain the foundation bass tone usually associated with the pedalboard without actually playing the pedals. When this function is turned ON, the lowest note played in the lowest three octaves of the Great manual will sound the corresponding note in the pedalboard on any of the Pedal division stops.

#### *Auto Solo*

The Auto Solo function allows the organist to reinforce the melody line without using two keyboards. Activating Auto Solo-to-Great would couple a corresponding note on the Swell division (for example) to the highest note *and only the highest note* being played on the Great keyboard. A single stop may be optionally used instead of a division.

#### *Sustain*

This feature causes all notes played after it is activated, to sustain until it is released.

#### *Sostenuto*

This feature causes all notes ON when it is activated, to sustain until it is released. Notes played after activation do not sustain.

#### *Pizzicato*

A pizzicato coupler momentarily couples a key from another manual, to the key on the manual being played.

### Adding a Coupler

Look at the Great division area, there are couplers for *Swell-to-Great 8'* and *Swell-to-Great 4'*, we will now add a *Swell-to-Great 16'* coupler (the normal type).

1. **Click** on the *Add a Rocker Tab* button the toolbar. A window called *Select a Rocker Type* will open.
2. Select **Coupler**, a new window will open called *Add New Coupler Tab*.
3. Select **Swell** from the drop-down list under *From Division*.
4. Select **Great** from the drop-down list under *To Keyboard*.
5. Select **16'** from the drop-down list under *Pitch*.
6. Change the *Manufacturer* to **Syndyne**.
7. Select **OK**.
8. **Drag** the rocker tabs so that this new *Swell to Great 16'* is to the left of *Swell to Great 8'*.

Other types of couplers can be added in the same manner.

## Tutorial 11, Controls

The purpose of this tutorial part is to cover control stops such as tremulants.

### Tremulants

1. Click on the *Add a Rocker Tab* button the toolbar. A window called *Select a Rocker Type* will open.
2. Select *Control*. (double-click).
3. Change the field *Name/Function* to **Tremulant**.
4. Check *Apply to Specific Division*.
5. Select *Swell* from drop-down list.
6. Check **OK** and move this tab beside the rocker tab *7:8'* in the *Swell division* area. You will probably have to move the couplers and adjust the division outline size to include all Swell stops.
7. Go to *Edit Pipe Chamber Info* for the *Main Chamber*.
8. In the section called *Tremulants*, click on **Add**
9. Select **Swell: Tremolo** from the drop down list under *Control Tab*.
10. **Type** in the *Name* as **Swell**.
11. Click on **All Chests**.
12. Highlight *Great Main* and *Gemshorn* (Ctrl-click). Click on **Remove** (You do not want to tremulate the Great stops).
13. Click on **OK** until you are back at the console image.

### Zimbelstern

A Zimbelstern on a tab can be added as though it was a Tremulant except that you do not need to specify the division with which it is associated.

If the Zimbelstern is to be controlled by a reversible piston, use this example:

1. **Click** on the *Add a Piston* button the toolbar. A window called *Add New Thumb Piston* will open.
2. Set the following parameters:
  - a. *Function* = **Lighted Reversible**
  - b. *Name* = **LDR02**
  - c. *Label Override* = **YES**
  - d. *Label* = **ZIM**
  - e. *Manufacturer* = **Klann**
  - f. *Style* = **Round, Lighted** (optional)
3. Click **OK** and move the new piston to the lower key slip to the left of General Cancel.

The Zimbelstern piston need not be a lighted type – you can tell that the Zimbelstern is on by hearing it.

### Manual Transfer

The Manual Transfer function is handled similarly to a Zimbelstern. If a reversible piston is used, it needs to be a lighted type but if a tab, then the tab position indicates if it is on or off. Either way, it is important to make a note in the *Notes* section that there is a Manual Transfer function on the organ. Notes should also be included about how various pistons may or may not be inter-changed. It is usual to inter-change 'To' coupler reversibles and divisional pistons for the inter-changed manuals.

There is also the possibility that divisional pistons could become NEXT and LAST controls.

### Miscellaneous Controls

Many other types of control pistons are possible. Here are a few more:

**Next and LAST.** These are pistons used to advance the Registration Sequencer. They are found under *Special Function* in the *Add New Thumb Piston* list.

**Recall.** Takes you back to the previous piston pressed. It is found under *Special Function* in the *Add New Thumb Piston* list. No lamp in this piston.

**All-Swells-to-Swell (ASTS).** This piston electrically joins together the expression shoes so that the Swell one operates all of them. A *Lighted-reversible* is used.

**Settable Tab Reversibles (Adjustable).** These are special pistons that can be programmed to reverse a single tab anywhere on the console. They have their own section in the *Add New Thumb Piston* list. No lamp is necessary.

**Ventils.** Have their own section in *Add New Thumb Piston* list and are lit types.

There are still more.

## Tutorial 12, Expression Shoes

This tutorial part covers the addition of expression shoes and their bargraphs or indicator lights.

### Expression Shoes

There are two basic types of expression shoes: the Crescendo and Swell shoes.

#### *Crescendo Shoe*

The Crescendo Pedal may have 14, 16, 20, 25, 30, 40 or 50 stages. You would not want a large number on a small organ. Any more than 50 stages and there may be a problem with hysteresis. This is where the incremental difference between adjoining stages is so small that the computer finds it difficult to determine which stage is active resulting in jitter whereby some stops may keep turning on and off at random. The stops that get turned on at any stage are entirely configurable, so you do not need a stage per stop and multiple stops may be turned on or off for each level. Using pistons you may also have an Alternate Crescendo configuration.

1. **Double-click** on the *Crescendo Shoe*. A new window called *Edit Expression Shoe Info* opens.
2. Change the number of stages to **16**. Everything else has defaulted to the correct setting.
3. Click **OK**

#### *Swell Shoes*

Swell shoes have two components to them: the actual shoe on the console and the expression engine in the chamber.

1. **Double-click** on the *Swell shoe*. A new window called *Edit Expression Shoe Info* opens.
2. **Check** *Crescendo Pedal* and change the number of stages to **16**. This is not strictly necessary, but it does create a way to double-check if the number of stages is found to be incorrect later. Once you have changed the number of stages, **uncheck** *Crescendo Pedal*.
3. In the field under *Apply to Specific Division* select **Swell**.
4. Click **OK**.
5. Go to the *Edit Pipe Chamber Info* window for the *Main chamber*.
6. In the area called *Expression Controls* click **Add**.
7. Set the following parameters:
  - a. *Name* = **Swell** (Type it)
  - b. *Shoe* = **Swell**
  - c. *Stages* = **16**
8. Under *Affected Chests* click on **All Chests**.
9. Highlight *Great Main* and *Gemshorn* and click on **Remove** (the Swell expression shoe should not affect the Great stops).
10. Click on **OK** until you are back at the console.
11. If there is a Great expression shoe, you can delete it.
12. Save it.



## Bargraphs / Indicators

There are two basic types of bargraphs. The standard bargraph as provided by Classic and a bargraph that the builder may create. When a bargraph is being created by the builder it is shown on the OW file as a series of indicator lights.

### *Classic Bargraph*

The bargraph provided by Classic Organ may be mounted horizontally or vertically. These bargraphs always have 20 stages, so if the expression engine has something other than 20 stages, the control software will divide the stages up evenly. It is also possible to use only 16 stages for the Crescendo and use the top three stages (leaving 17 blank) as a Sforzando indicator.

1. **Click** on the *Add a Bargraph* button the toolbar. A window *Add New Bargraph* opens.
2. Set the following parameters:
  - a. *Expression Shoe* = **Swell**
  - b. *Style* = **Horizontal**
  - c. *Segments* = **20**
3. Select **OK** and move the new bargraph so that it is centered above the top manual.
4. **Click** the *Add a Bargraph* button on the toolbar again
5. Set the following parameters:
  - d. *Expression Shoe* = **Crescendo**
  - e. *Style* = **Vertical**
  - f. *Segments* = **16**
6. Select **OK** and drag this bargraph so it is to the right of the key cheeks beside the control panel.
7. **Click** on the *Add and Indicator* button on the toolbar. A window opens called *Add New Indicator*.
8. Select **SFZ** from the drop-down list.
9. Click on **OK**.
10. The small indicator light which appears is placed where the indicator for the SFZ will be. In this case since the SFZ indicator is being incorporated into the Crescendo bargraph, drag it until it is on top of that bargraph, just under the word Crescendo.

### *Indicator Lights*

In addition to using a series of indicator lights to create a bargraph, indicator lights may also be used for *Crescendo On*, *SFZ*, or anything else where the status of something is to be indicated by a light.

1. **Click** on the *Add and Indicator* button on the toolbar. A window opens called *Add New Indicator*.
2. Enter **Cresc.** in the *Function* field. Change the *Colour* to **Yellow**.
3. Drag the new indicator so it is above the top manual, just above the *General 4* pistons. This will put it to the left of the *Swell* bargraph.
4. Make four copies of this indicator using the copy + drag method. Hold the CTRL key and drag the item until the + sign appears. OW has automatically renumbered the additional indicator lights so they are now **Cresc 0 to 4**. You can rename them if you wish.
5. Block off these five lights and click on *Align Bottomwise* then *Space Equally Across*. They are now in a straight line evenly spaced.

## Tutorial 13, Miscellaneous Controls

The purpose of this tutorial part is to cover various types of controls for miscellaneous functions such as Chimes Volume switches and MIDI panels.

### Switches

1. **Click** on the *Add a Switch* button on the toolbar. A window opens called *Add New Switch*.
2. Select **OK** to add a Power Switch.
3. **Drag** this new Switch so it is below level of the manuals and CTRL on the right.

### Rotary Controls

1. **Click** on the *Add Rotary Control* button on the toolbar. A window opens called *Add New Rotary Control*.
2. Change the function to **Chimes Volume**.
3. Set the *No. of Positions* to **5**.
4. Click **OK**.
5. **Drag** this new rotary control to a space to the left of the Pedal division area.

### MIDI In/Out Panel

This panel contains MIDI Input and Output connectors and may have audio jacks. It has to be made up from individual items as found in the *Add a Console Jack* icon. It is usually position at the left side under the key desk.

### Labels

You can create labels for the Church name and the builder and place them on the music rack. Also place one to the right of the music rack with the project name or number in it. See Tutorial-9 (Control Panels) and follow the same method. The font size would be larger though.

## Tutorial 14, OrganWorks Miscellaneous

The purpose of this tutorial part is to cover the miscellaneous portions of OrganWorks not directly concerned with creating an organ.

### **Miscellaneous**

There are many other items not covered but these should be reasonably self-explanatory.

### **Diagnostic Errors**

Clicking on this icon (the face) will create a list of errors and warnings. You can work your way through the list to fix errors but warnings may not be significant. They tell you about overlapping numbers in pipe parts and other things that may not greatly affect matters but should be thought about.

### **Notes**

Use this area to add notes about anything in the project that is not covered by specific items.

### **Summary**

The Summary displays a list of the organ's features in a format that organ builders can understand. It details quantities of items such as stops and pistons.

This is the end of the tutorial. You should now be able to tackle a real organ with confidence.