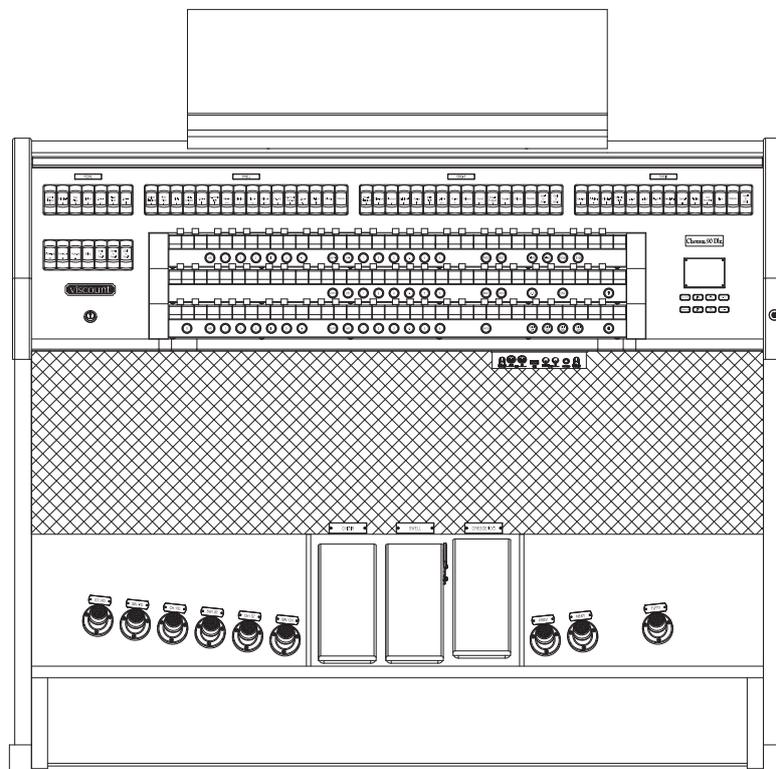


# viscount

## Chorum



---

User Manual

- English

---

Ver. USA - 1.1

# IMPORTANT SAFETY INSTRUCTIONS

WARNING: READ THIS FIRST!

\*\*\*

AVIS IMPORTANT!



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



Ce symbole sert pour avertir l'utilisateur qu'à l'intérieur de ce produit sont présents éléments non isolés soumis à "tensions dangereuses" suffisants à créer un risque d'électrocution.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



Ce symbole sert pour avertir l'utilisateur qu'à l'intérieur de la documentation de l'appareil sont présentes importantes instructions pour l'utilisation correcte et la manutention de l'appareil.

**WARNING**  
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK:  
DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE  
AND OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES,  
SHOULD NOT BE PLACED ON THIS APPARATUS.  
DO NOT REMOVE COVER (OR BACK)  
NO USER-SERVICEABLE PARTS INSIDE  
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL

**ATTENTION**  
AFIN D'ÉVITER LES RISQUES DE FEU OU SCHOCK ÉLECTRIQUE:  
N'EXPOSEZ PAS CET INSTRUMENT À PLUIE OU HUMIDITÉ  
NE PAS OUVRIR LE COUVERCLE (OU PANNEAU ARRIÈRE)  
L'UTILISATEUR NE PEUT EFFECTUER AUCUNE RÉPARATION  
POUR TOUTE RÉPARATION ÉVENTUELLE, FAIRE APPEL À  
UN PERSONNEL QUALIFIÉ

## "INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS"

### WARNING:

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.  
When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



NOTE: The socket-outlet shall be installed near the equipment and shall be easily accessible. To completely disconnect this apparatus from the AC MAINS, disconnect the power supply cord plug from the AC receptacle.

SAVE THESE INSTRUCTIONS

\*\*\*

INSTRUCTIONS À CONSERVER

# TABLE OF CONTENTS

<b>1. Important notes</b> .....	<b>2</b>
1.1 Looking after the product.....	2
1.2 Notes about the manual.....	2
<b>2. General description</b> .....	<b>4</b>
<b>3. Switching on and main video page</b> .....	<b>12</b>
3.1 The Main Menu.....	13
<b>4. Volume settings (Volumes function)</b> .....	<b>14</b>
<b>5. Instrument general settings (Settings menu)</b> .....	<b>15</b>
5.1 Selecting reverb type (Reverb parameter).....	16
5.2 Adjust equalizers (Equalizers functions).....	17
5.3 Channeling signals on the audio outputs (External Outputs function) .....	19
5.4 MIDI settings (MIDI functions).....	19
5.5 Regulating the notes velocity (Velocity Sens. function) .....	22
5.6 Combinations operating functions (Combinations function) .....	23
5.7 Saving the Program Change MIDI messages in the combinations (Combination PRG function) .	24
5.8 Security lock against unwanted changes (Security function).....	24
5.9 Configuring the volume potentiometer and adjusting the display contrast (Controls function) .....	26
5.10 Restoring factory settings (Factory Settings function).....	26
5.11 Upgrading the operating system (Op. Sys. upgrade function).....	27
<b>6. Pprogramming organ styles (Style menu)</b> .....	<b>30</b>
6.1 Adjusting the tremulants (Tremolos function) .....	31
6.2 Regulating the volume of each voice (Voices Volumes function) .....	31
6.3 Selecting the orchestral voices (Orchestra function) .....	32
<b>7. Saving the organ configuration to files (File function)</b> .....	<b>33</b>
7.1 Informations concerning the USB pen.....	33
7.2 Loading organ combinations and/or settings (File Load function) .....	34
7.3 Saving as file of organ combinations and/or settings (File Save function) .....	35
<b>8. Playing and recording of musical sequences (Sequencer)</b> .....	<b>37</b>
8.1 Playing back a songs (Play mode) .....	37
8.2 Recording a songs (Record mode).....	39
8.3 Overdubbing a songs (Overdub mode) .....	41
<b>9. Stop local off</b> .....	<b>44</b>
<b>10. Appendix</b> .....	<b>44</b>
10.1 Demonstration songs .....	44
10.2 Temperament.....	44
10.3 Temperaments of the Chorum organs.....	46
10.4 Content of the .set, .cmb, .sts, .sta and .all files .....	51
10.5 What MIDI is .....	52
10.6 Detailed MIDI implementation .....	54

# 1. IMPORTANT NOTES

## 1.1 LOOKING AFTER THE PRODUCT

- Do not apply excessive force to the organ's structures or the controls (knobs, stops, push-buttons, etc.).
- When possible, do not place the instrument close to units which generate strong interference, such as radios, TVs, computer videos, etc.
- Do not place the organ close to heat sources, in damp or dusty places or in the vicinity of strong magnetic fields.
- Do not expose the instrument to direct sunlight.
- Never insert foreign bodies inside the instrument or pour liquids of any kind into it.
- For cleaning, use only a soft brush or compressed air; never use detergents, solvents or alcohol.
- Always use good quality screened cables for connection to amplification or diffusion systems. When disconnecting cables from sockets, always take hold of the connector and not the cable itself; when winding cables, do not knot or twist them.
- Before making the connections ensure that the other units (especially amplification and diffusion systems) you are about to connect are switched off. This will prevent noisy or even dangerous signal peaks.
- Connect the net cable to an earthed socket.
- Check that the voltage corresponds to the voltage shown on the serial number plate of the organ.
- If the organ is to be out of use for lengthy periods, disconnect the plug from the power socket.

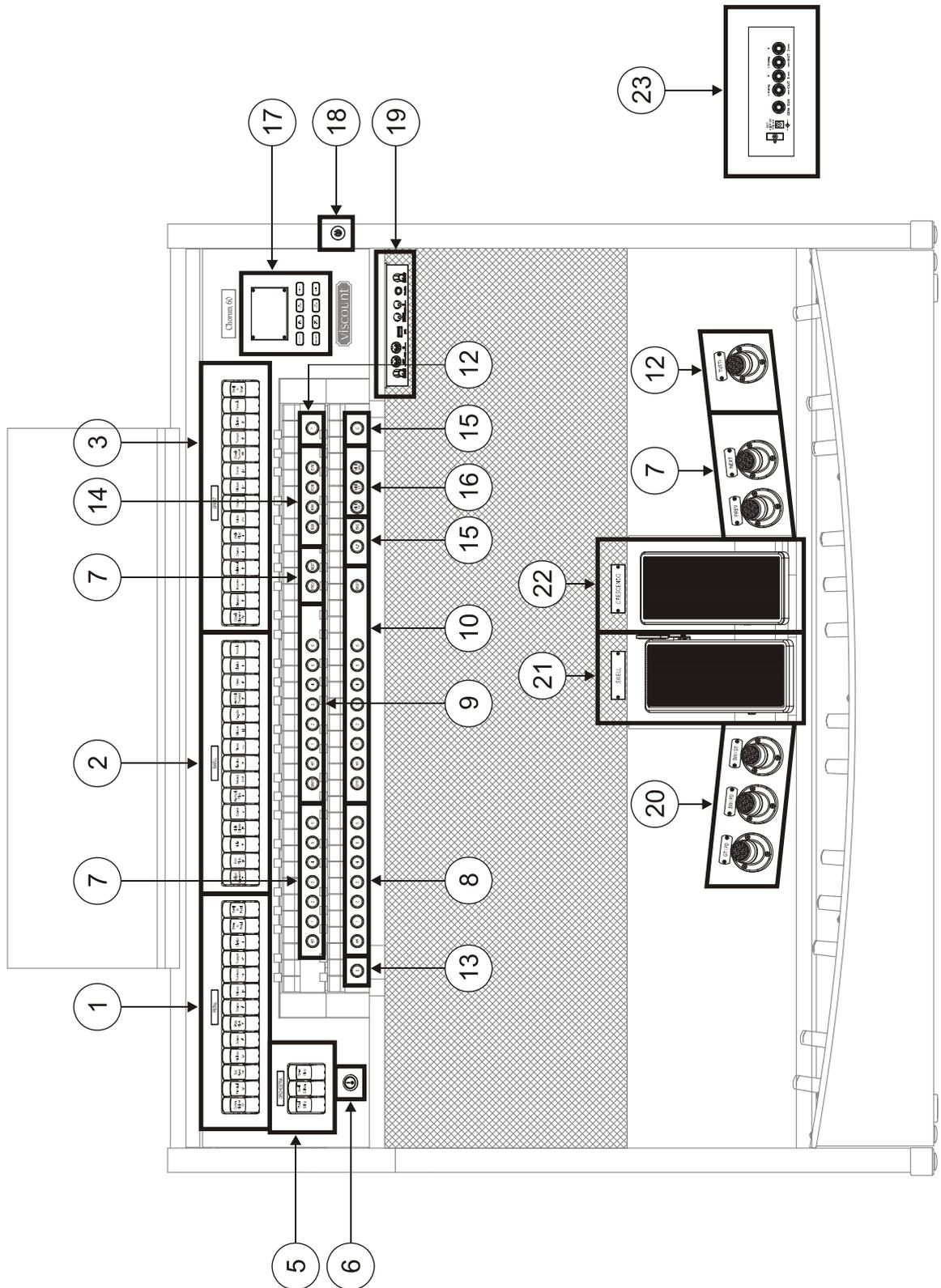
## 1.2 NOTES ABOUT THE MANUAL

- Take good care of this manual.
- This manual is an integral part of the instrument. The descriptions and illustrations in this publication are not binding.
- While the instrument's essential characteristics remain the same, the manufacturer reserves the right to make any modifications to parts, details or accessories considered appropriate to improve the product or for requirements of a constructional or commercial nature, at any time and without undertaking to update this publication immediately.
- All rights reserved; the reproduction of any part of this manual, in any form, without the manufacturer's specific written permission is forbidden.
- All the trademarks referred to in this manual are the property of the respective manufacturers.

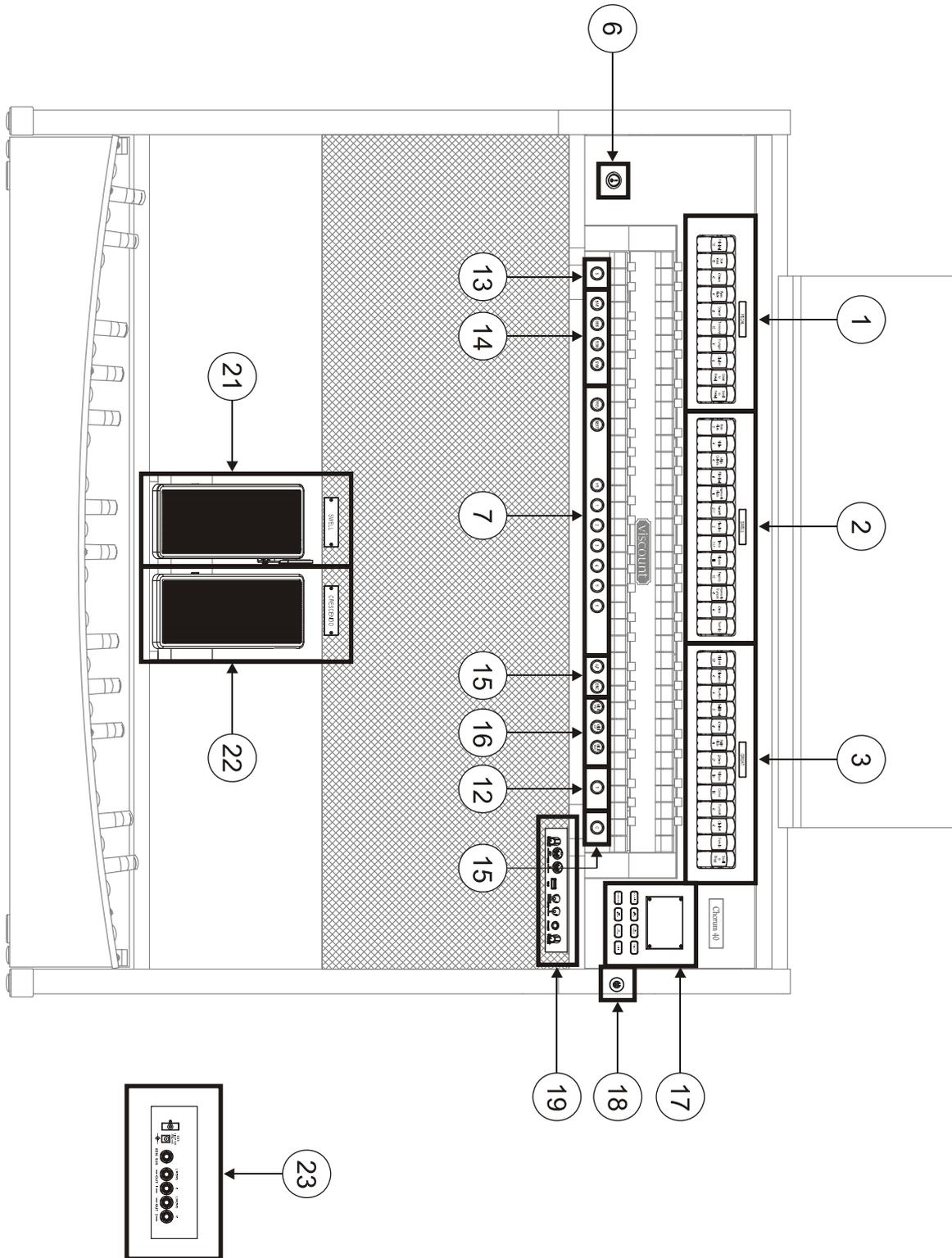
- Read all the information carefully in order to obtain the best performances from your product and waste no time.
- The codes or numbers in square brackets ([ ]) indicate the names of the buttons, sliders, trimmers and connectors on the instrument. For example, [ENTER] refers to the ENTER button.
- Illustrations and screens showed are for information purposes only and may differ from your product.
- The instructions provided in this manual only concern the instrument's operating system version that was up to date when the document was released. Therefore, such instructions might not describe faithfully your current operating system release.  
Please, visit the website [www.viscountinstruments.com](http://www.viscountinstruments.com) to check for the newest operating system release and manual.



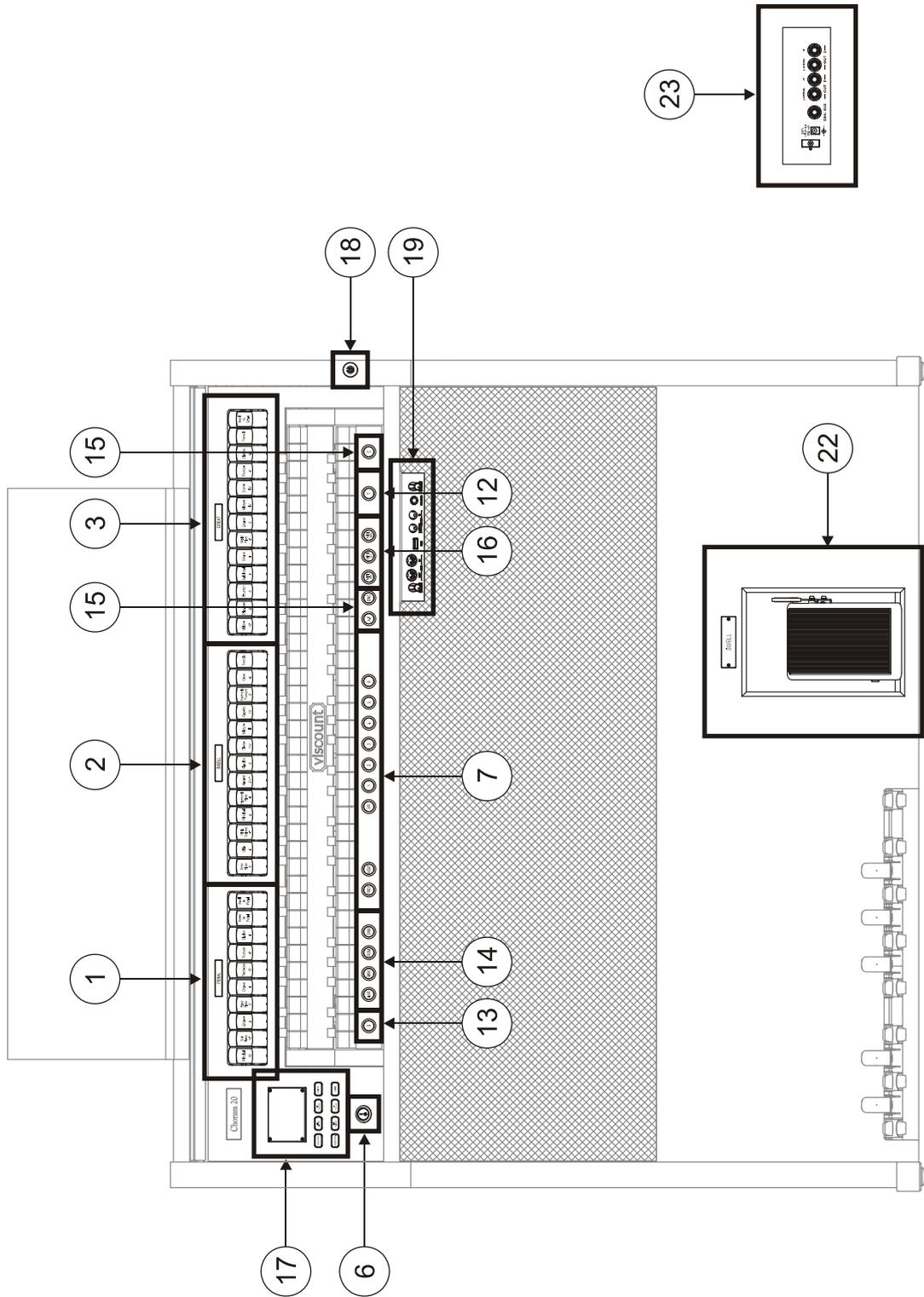
# Chorum 60



# Chorum 40



# Chorum 20



**1. PEDAL section.**

Contains pedal stops and manual-pedal couplers. The couplers available are:

- [Great to Pedal]
- [Swell to Pedal]
- [Choir to Pedal] (only three-manual models)

**2. SWELL section.**

Contains stops and tremulant of Swell.

**3. GREAT section.**

Contains stops, couplers and tremulant of Great.

- [Swell to Great]
- [Choir to Great] (only three-manual models)

**4. CHOIR section (only three-manual models).**

Stops, manual couplers and tremulant for Choir. The couplers available are:

- [Swell to Choir]

**5. Sezione ORCHESTRA.**

Contains the orchestral voices. It is possible to select the voice activated by each stops. For further information read par. 8.4.

With models that do not have the orchestral tabs, it is necessary to activate the orchestra voices using the functions described in par. 6.2. A document with the list of stops that can be assigned to orchestra voices can be downloaded from the website [www.viscountinstruments.com](http://www.viscountinstruments.com). The document contains the list for each model of the series.

**6. Power switch.**

Instrument on/off switch.

**7. General combinations.**

- [1] / [6]: pistons to recall the combinations saved in the selected memory bank (see [PREV] / [NEXT] point). These combinations can be modified. To do so, follow the procedure described at point 13.
- [HR]: restores the voice setup prepared in manual mode before a memory was recalled.
- [PREV.] / [NEXT]: general combinations sequencers. [PREV.] displays them in descending order, [NEXT] in ascending order. Keeping pressed the [S] thumb piston and acting these commands it is also possible to select the memory bank.

**8. Pedal pistons.**

- [1] / [6]: pedal divisional combinations. These combinations can be modified. To do so, follow the procedure described at point 13.
- [HR]: restores the voice setup prepared in manual mode before a memory was recalled, when the piston is on.

**9. Swell pistons.**

- [1] / [6]: Swell divisional combinations. These combinations can be modified. To do so, follow the procedure described at point 13.
- [HR]: restores the voice setup prepared in manual mode before a Swell memory was recalled, when the piston itself is on.
- [SW/PD]: Swell to Pedal coupling.

**10. Great pistons.**

- [1] / [6]: Great divisional combinations. These combinations can be modified. To do so, follow the procedure described at point 13.
- [HR]: restores the voice setup prepared in manual mode before a Great memory was recalled, when the piston itself is on.
- [GT/PD]: Great to Pedal coupling.
- [SW/GT]: Swell to Great coupling.
- [CH/GT] (only three-manual models): Swell to Great coupling.

**11. Choir pistons (only three-manual models).**

- [1] / [6]: Choir divisional combinations. These combinations can be modified. To do so, follow the procedure described at point 13.
- [HR]: restores the voice setup prepared in manual mode before a memory for Choir was recalled.
- [CH/PD]: Choir to Pedal coupling.
- [SW/CH]: Swell to Choi coupling.

**12. [T] or [TUTTI] piston.**

Piston or toe piston (where available) that recalls Tutti. The Tutti can be modified, for further information read point 13.

**13. [S] piston.**

To save a combination or the Tutti, after setting up the voices, press and hold the [S] piston; then press the piston corresponding to the combination you wish to save.

To save a Crescendo step, select it through the Crescendo pedal, press and hold [S], and then press the general memories [HR] piston. To copy the content of one step to another, first select the step you wish to copy, then press and hold the [S] piston, select the step in which you wish to paste the content, and finally press the general memories [HR].

Organ Styles, tremulant Speed and Depth and orchestra voices can be saved to any divisional and general combination or Tutti. This allows a wider range of different combinations, adjusting the sound to play different songs.. To use these functions, first you have to set the saving options through the COMBINATIONS function, described in par. 5.6.

**N.B.**

*If the [S] piston LED light is off, this means that the SECURITY function for the combinations (see par. 5.8) is active. In this case it is not possible to modify combinations, Tutti and the Crescendo.*

**14. Style pistons.**

Here are the style pistons for the selection of the organ style (see also chapt. 6).

- [BAR]: baroque
- [BRK]: barock
- [ROM]: romantic
- [SYM]: symphonic

After the selection, if the display shows the main video page (see chap. 3), a pop-up message appears for a few seconds, showing the Style name.

## 15. General organ controls.

These are the controls that are not dedicated to a single section, but affect the whole instrument.

- [ENC]: when the Enclosed function is active, the main volume can be controlled through the expression pedal [SWELL].
- [A.P]: enables the Automatic Pedal which allows the pedal voices to be played on Great. In this case, the organ's pedal board is deactivated and the voices become monophonic, with priority to the lowest note.
- [C]: Cancel piston. Turns off all stops, tremulants, couplers and all other pistons on the manuals, then deletes and turns on the general and divisional HR. In case you have chosen to save into combinations the status of [ENC], [A.P] and MIDI pistons (see COMBINATIONS function in the par. 5.6), these are not turned off by Cancel.

## 16. MIDI Pistons.

These controls, provided for each manual and the pedal board, allow transmission of the note MIDI codes on the MIDI [OUT] port to be enabled and disabled. All the instrument's other MIDI messages will continue to be transmitted, even with the MIDI control off.

## 17. Control and programming section.

The buttons and the display in this sections allow the user to program and set up the instrument and the sequencer.

- [VOLUMES]: access the video page for all the volumes of the instruments.
- [SEQUENC.]: access the video pages for the use of the internal sequencer of the instrument.
- [FIELD ▲] and [FIELD ▼]: buttons used to move the cursor, identified by the field in reverse. [FIELD ▲] moves it in the field above or the previous field, [FIELD ▼] in the field below or the next field.
- [VALUE +] and [VALUE -]: buttons which regulate the values of the parameters, whether they are numerical or alphanumerical. [VALUE +] increases, [VALUE -] decreases.
- [EXIT] and [ENTER]: access and quit the display screens and menus, or confirm or cancel prompts made by the system. [ENTER] accesses menus/screens and confirms, [EXIT] quits menus/screens and cancels.

## 18. Roll top lock. (where available).

## 19. Forward connection panel.

In this panel you can find the most frequently used connections and controls.

- [MASTER VOLUME]: regulates the main volume.
- [MIDI OUT]: it is the MIDI connector that transmits MIDI data generated by the organ.
- [MIDI IN]: it is the MIDI input to receive data sent from an external MIDI device.
- [USB]: USB drive connector (drive not included with the instrument), where the organ settings and songs recorded with the internal sequencer can be saved.
- [INPUT]: line inputs which allow other instruments to be played using the organ's internal amplification. If the source is monophonic use the [L/MONO] connector only.
- [PHONES]: jack socket to which a headphone set can be connected. With headphones connected, the organ's internal amplification is cut off.
- [REVERB VOLUME]: regulates the volume of the reverb effect.

### N.B.

- *For further information about the MIDI interface, read par. 5.4, 10.5 and 10.6.*
- *For further information about the USB devices, read par. 7.1.*

**20. Coupler controls.**

Toe pistons to enable and disable the couplers.

**21. [CRESCENDO] pedal.**

With this pedal you can select the Crescendo level. These levels activate a fixed set of stops, linked with an equal number of loudness, from *pianissimo* to *fortissimo*.

The currently selected level is displayed on the main video page inside the "CRESC." or "CRESCEN." box.

The Crescendo controls all the registers, and modifies the stops configuration. Each level of the crescendo can be programmed. To save the Crescendo configuration, see point 13.

**22. Expression pedals.**

The expression pedals control at every time the volume of one or more sections, and can be used to obtain the most diverse dynamic effects:

- [SWELL]: continuous control of Swell volume.
- [CHOIR] (only three-manual models): continuous control of Choir volume.

One of the pedals is actually equipped with a leverage system and can be used to control the sustain effect for Orchestral voices.

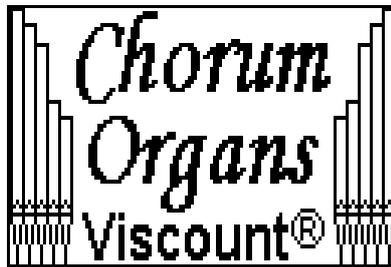
**23. Rear connections.**

On the rear of the organ, there are various sockets to connect it to an external speaker system.

- [GEN. SUB] (General Sub-Woofer): dedicated output for the connection with low-frequency speakers (sub-woofers). These outputs also has dedicated level and equalization controls (see par. 4 and 5.2).
- [EXT. +12V DC]: +12 Volt can be obtained from these connectors to switch-on any VISCOUNT speaker connected to the [OUT 1] and [OUT 2] outputs.
- [OUT 1] and [OUT 2]: Jack line outputs with the organ stereo signal, based on the settings of the video page described in par. 5.3. These outputs also has dedicated level and equalization controls (see par. 4 and 5.2).

### 3. SWITCHING ON AND MAIN VIDEO PAGE

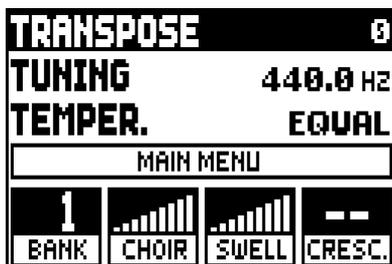
After switching on the instrument, the display shows the introduction page,



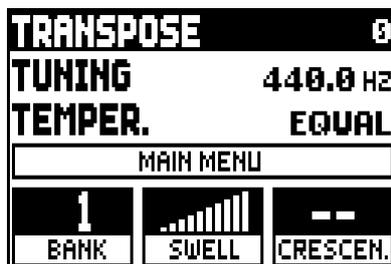
then, the current version (**Release**) of the operating system,



the main video page appears in a few seconds,



Models with two expression pedals and the [CRESCENDO] pedal



Models with one expression pedal and the [CRESCENDO] pedal



Models with one expression pedal

On the top of this video page are the following parameters:

- **TRANSCOPE:** set the transposer.
- **TUNING:** fine tuning of the pitch, indicated as the frequency of A3 (an 8' pipe).
- **TEMPER.** (Temperament): selector for setting historical temperaments of various periods (for a description of temperaments, see par. 10.2 and 10.3).

Here, as in all video pages, use the [FIELD ▲] and [FIELD ▼] buttons to move the cursor. When selected by the cursor, fields invert colour.

To set the value of a parameter, select it with the cursor, then press use [VALUE +] and [VALUE -]. Some parameters have a central range value (e.g. -6 / 0 / +6); to modify the central value, press simultaneously the VALUE buttons. This will select the central value.

The display field **MAIN MENU** allows to access the main menu with all the organ configurations. To enter the menu, place the cursor on this field and press [ENTER].

To return to the main video page from the MAIN MENU, press [EXIT].

- In the lowest part of the video page there are 2, 3 or 4 boxes (according to the model in use) that indicate:
- **BANK:** the current memory bank, selected through the pistons [S] and [PREV] or [NEXT];
  - **CRESC.:** the currently selected Crescendo step;
  - **SWELL:** Swell expression level;
  - **CHOIR:** Choir expression level;
  - **GRT/P or GRT/PED:** Great and Pedalboard expression level (see the CRESC/EXPR parameter at chap. 5).

#### NOTES

- *When the instrument is switched on, its transposition value is set to zero.*
- *Transposition does not have any effect on playback of songs with the internal sequencer (unlike recording, where the notes are acquired with the current transposition). A specific transposer is provided for this purpose (see chap. 8).*
- *If after the power on the system displays the error message “**OP.SYS FAILURE PLEASE INSERT USB PEN WITH RELEASE FILE**”, please insert the USB drive with the update file in the [USB] connector under the manuals, then press [ENTER] and execute the update as described in the par. 5.11.*
- *If after the power on the system displays the error message “**RELESE CHECKSUM ERROR**”, contact the technical support at [service@viscount.it](mailto:service@viscount.it) reporting the error type as it appears on the second line (**SYSTEM** or **MODEL**) and the numbers in the “**M:**”, “**V:**”, “**S:**” and “**Release**” fields. You will receive the files and information necessary to restore the instrument.*
- *At power up, if you see the message “**PERIPHERALS UPDATE REQUESTED**”, press [ENTER] to perform the required operations to complete the update. If the message was displayed again contact the technical support at [service@viscount.it](mailto:service@viscount.it), specifying the information displayed.*

### 3.1 THE MAIN MENU

The Main Menu contains several lower-level menus with all the settings of the instrument, divided into groups.

Select the **MAIN MENU** field from the main video page. This page will appear:



As in the main video page the cursor is represented by the field with inverted colours. To move it, press the buttons [FIELD ▲] and [FIELD ▼].

Here and in all the following video pages, some fields are used to access different pages. Select one of these fields and press the [ENTER] button to access the corresponding page; when these fields are selected, the name of the button appears on the right side of the field. Instead, when a field represents a parameter that can be adjusted, the display shows the current value. To adjust a value, press the buttons [VALUE +] and [VALUE -].

The fields of the MAIN MENU allow access to the following functions:

- **SETTINGS:** general instrument settings, equalizers, MIDI interface settings, audio outputs settings (rear panel), factory settings reset and operating system update. These functions are described in chapter 5.
- **STYLE:** program organ Styles. This function is described in chap. 6.
- **COMBIN. PRG** (Combination Program Change): add Program Change and Bank Select MIDI messages to combinations. This function is described in chap. 5.7.
- **FILE:** save and load files to and from an USB drive. Settings, Styles and combinations can be saved to an external memory, the procedure is explained in chapter 7.
- **DEMO:** the instrument plays a demo song. This function is described in par. 10.1.

## 4. VOLUME SETTINGS (VOLUMES function)

The **Chorum** organs allow the user to adjust all the volumes, in order to obtain a perfect sound balance among the sections and between internal and external amplifications. To visualize the volume screen, press the [VOLUMES] button:

▶ VOLUMES			
PEDAL	-5dB	OUT 1	MAX
CHOIR	-11dB	OUT 2	-12dB
GREAT	MAX	SUB	MAX
SWELL	-5dB	INPUT	-30dB

Three-manual models

▶ VOLUMES			
PEDAL	MAX	OUT 1	MAX
GREAT	MAX	OUT 2	-8dB
SWELL	-7dB	SUB	-11dB
		INPUT	-30dB

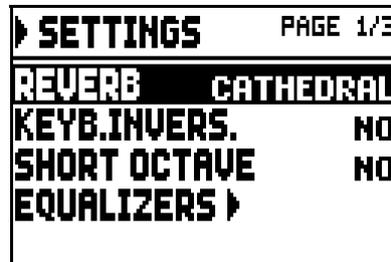
Two-manual models

- **PEDAL:** Pedal divisional volume.
- **CHOIR:** Choir divisional volume.
- **GREAT:** Great divisional volume.
- **SWELL:** Swell divisional volume.
- **OUT 1:** volume of the two [OUT 1] outputs on the rear panel.
- **OUT 2:** volume of the two [OUT 2] outputs on the rear panel.
- **GEN.SUB:** volume of the [GEN. SUB] output on the rear panel.
- **INPUT:** volume of the signal received by the [INPUT] connectors under the manuals.

To return to the previous video pages, press [VOLUMES] or [EXIT] or wait five seconds.

## 5. INSTRUMENT GENERAL SETTINGS (SETTINGS menu)

To access the SETTINGS menu, containing all the configuration options, select the **SETTINGS** field from the MAIN MENU; the following page will appear:



Use the [FIELD ▲] and [FIELD ▼] buttons to move the cursor and scroll through all the fields:



Models with 2 or 3 pedals

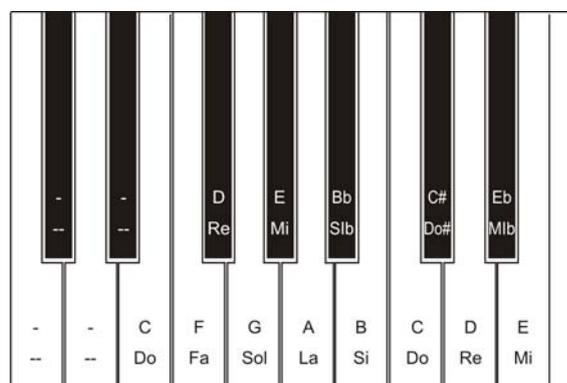


Models with one pedal



The following functions are available:

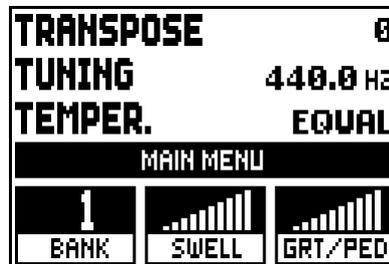
- **REVERB:** select the ambient, in order to simulate the reverb situation. The options span from a large church, full of acoustic reflections and with a strong reverb, to small rooms with a shorter and softer reverb. A detailed description of the reverb effect can be found in par. 5.1.
- **KEYB.INVERS.** (Keyboard Inversion): select **YES** to invert keyboards; as a consequence Great stops are played with the Choir (in the three-manual models) or Swell (in the two-manual models) and vice versa. To deactivate the function, select **NO**.
- **SHORT OCTAVE:** select **YES** to activate the short octave on the first octave of pedalboard and manuals; this is necessary to play partituras written for ancient organs (between XVI and XVIII century) where the first octave consisted of these notes:



To deactivate this function, select **NO**.

- **EQUALIZERS:** set up equalizer, internal amplification and rear panel outputs. These functions are described in par. 5.2.
- **EXT. OUTPUTS** (External Outputs): select the audio signal of the [OUT 1] and [OUT 2] outputs (rear panel). This function is described in par. 5.3.
- **MIDI:** MIDI interface settings. These functions are described in par. 5.4.

- **VEL. SENS.** (Velocity Sensitivity): calibrate the velocity of the manuals and pedalboard when using Orchestra stops or transmitting MIDI note messages. This function is described in par. 5.5.
- **COMBINATIONS:** customize combinations in a dedicated video page. These functions are described in par. 5.6.
- **CRESC/EXPR** (Crescendo/Expression Pedal): select the operating mode of the [CRESCENDO] pedal. It can be used for the Crescendo or to control the volume of Great and Pedalboard. In this case the Main Page shows:



- **SECURITY:** set the code to lock out the organ to prevent modifies at the instrument settings, combinations, Tutti and Crescendo. These functions are described in par. 5.8.
- **CONTROLS:** configuration of the [MASTER VOLUME] potentiometer and display contrast adjustment. This function is described in par. 5.9.
- **FACTORY SETT.** (Factory Settings): restores the factory settings. These functions are described in par. 5.10.
- **SYSTEM:** operating system information and update. These functions are described in par. 5.11.

To access a function, place the cursor on the field by using the buttons [FIELD ▲] and [FIELD ▼], then press [ENTER]. To leave the SETTINGS menu, press [EXIT].

## 5.1 SELECTING REVERB TYPE (REVERB parameter)

Reverberation is the result of a series of sound reflections in a closed environment. Order and value of each reflection depend on many factors of the environment, such as the size of the room, the number and material of the objects inside the room, the listener's position and so on. The digital processors of the **Chorum** organs can recreate artificially the complex factors affecting the reverberation of a real pipe organ, generating the right reverberation to complete an already excellent sound quality.

The **REVERBER** parameter in the SETTINGS menu allows to select the kind of reverberation, ranging from great cathedral – with wide reflections - to small churches with short and soft reverberation. There is a total of eight styles.

Please note that the [MASTER REVERB] potentiometer is placed under the manual. Use the potentiometer to adjust the reverb effect level.

The reverb styles are typical reverberation of a:

- **CATHEDRAL:** typical reverberation of a cathedral
- **BASILICA:** typical reverberation of a Basilica
- **GOTHIC CHURCH:** typical reverberation of a gothic church
- **BAROQUE CHURCH:** typical reverberation of a baroque church
- **ROMANIC CHURCH:** typical reverberation of a romanic church
- **MODERN CHURCH:** typical reverberation of a modern church
- **PARISH:** typical reverberation of a parish
- **CAPPELLA:** typical reverberation of a chapel

Press [EXIT] to exit the video page and save the new settings.

### N.B.

*The internal reverberation also affects the signal from the [INPUT] ports located under the manuals.*

## 5.2 ADJUST EQUALIZERS (EQUALIZERS functions)

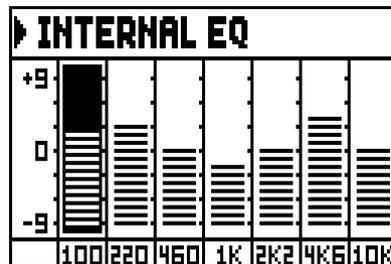
The **Chorum** organs are equipped with three graphic equalizers, one for the sound of the internal speakers, and the other two for the audio output pairs [OUT 1] and [OUT 2] on the rear panel, and a low-pass equalizer dedicated to the [GEN. SUB] output. The sound generated by the instrument can be calibrated through the equalizers, in order to adapt to the environment and to the player's needs and personal taste. To access the calibration page, select the **EQUALIZERS** field under the SETTINGS menu. The following video page will appear:



the page contains the following fields:

- **INTERNAL:** graphic equalizer for the internal amplifier (and therefore for the internal speakers).
- **OUT 1:** graphic equalizer for the [OUT 1] output pair, on the rear panel.
- **OUT 2:** graphic equalizer for the [OUT 2] output pair, on the rear panel.
- **SUB CROSSOVER:** low-pass filter equalizer for the [GEN. SUB] output.

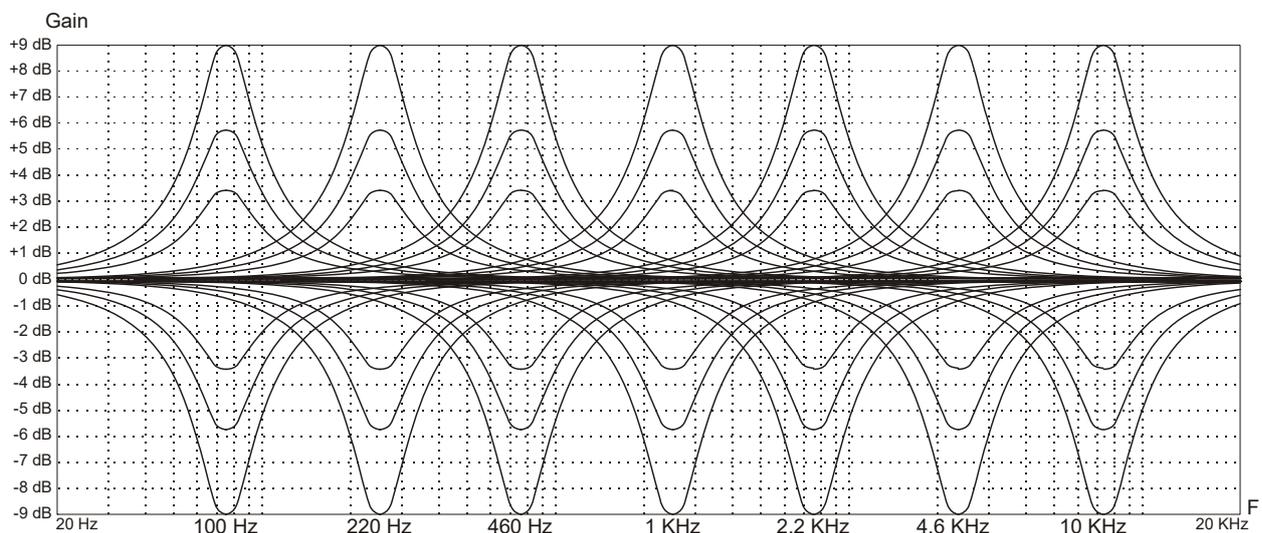
This is the graphic equalizers calibration page:



In the lower part of the screen there are the seven central band frequencies. To move the cursor from one band to the other, use the buttons [FIELD ▲] e [FIELD ▼].

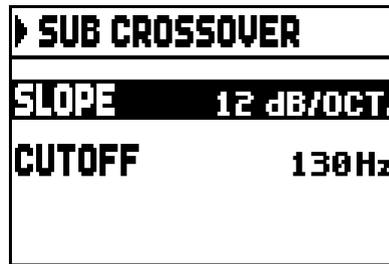
Each band can be modified, using the buttons [VALUE +] and [VALUE -] from +9 dB (maximum signal gain) to -9 dB (maximum signal dampening). The level of gain or attenuation is graphically represented and can be compared to the grading scale on the left side of the screen.

The following graph shows how the graphic equalizers works.



As mentioned before, the rear audio output [GEN. SUB], intended for low-frequency sub-woofer audio systems, is equipped with a low-pass equalizer, where the user can adjust the slope and the cutoff frequency.

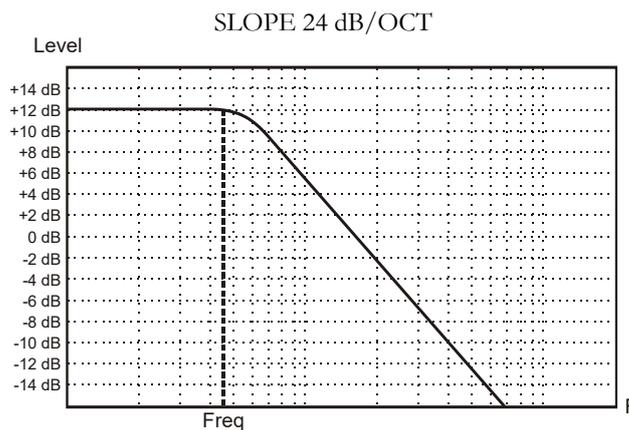
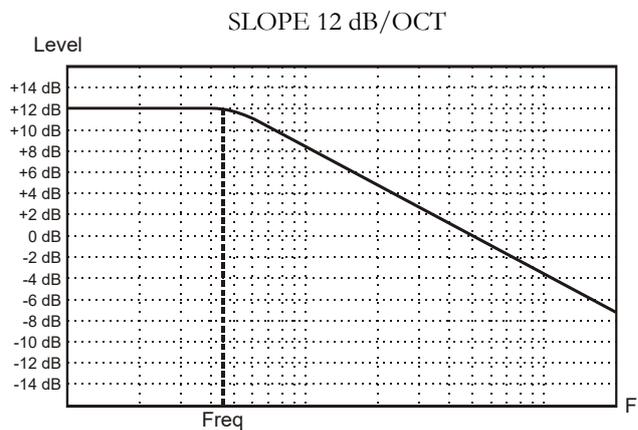
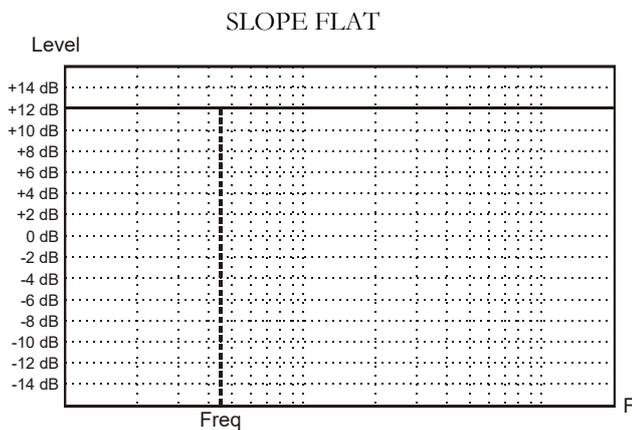
Its video page is the following:



The parameters that can be customized are:

- **SLOPE:** sets the filter slope to **FLAT** (filter disabled), **12dB/oct** or **24dB/oct**. The higher the slope, the faster (as the frequency increases) the signal is filtered.
- **FREQ:** adjusts the cutoff frequency of the filter, ranging from **80** to **300** Hz.

The following graphs show how this equalizer works.



In all the equalizers, press [EXIT] to exit the video page and save the new settings.

**N.B.**

*The equalizers also affect the signal from the [INPUT] ports located under the manuals.*

### 5.3 CHANNELING SIGNALS ON THE AUDIO OUTPUTS (EXTERNAL OUTPUTS function)

**Chorum** has one more interesting function: it allows the user to select the sound source transmitted through the rear panel outputs. Thanks to this function, the external loudspeakers can be placed so as to simulate the actual position of the windchest in a pipe organ or choose whether outputs should transmit only the reverberated signal.

To access this function page, select the **EXT. OUTPUTS** field under the **SETTINGS** menu:

EXTERNAL OUTPUTS		
	OUT 1	OUT 2
PEDAL	▼	▼
CHOIR	▼	▼
GREAT	▼	▼
SWELL	▼	▼
REVERB	▼	▼
INPUT	▼	▼

Three-manual models

EXTERNAL OUTPUTS		
	OUT 1	OUT 2
PEDAL	▼	▼
GREAT	▼	▼
SWELL	▼	▼
REVERB	▼	▼
INPUT	▼	▼

Two-manual models

The two columns clearly represent the two audio outputs, [OUT 1] and [OUT 2].

To move the cursor, use the [FIELD ▲] and [FIELD ▼] buttons.

To select the sound source press [VALUE +]. A checkmark will appear on the selected field(s).

Use the [VALUE -] button to delete the checkmark and deselect the sound source.

To quit the page and save the current settings, press [EXIT].

#### N.B.

*The reverberated signal (**REVERB** field) always contains all organ sections and the signal from the [INPUT] ports located under the manuals.*

### 5.4 MIDI SETTINGS (MIDI functions)

#### NOTE

*For further information about the MIDI interface, see par. 10.5 and 10.6.*

To access the MIDI interface settings of the organ, select the **MIDI** field under the **SETTINGS** menu. This first video page will appear:

MIDI	
CHANNELS ▶	[ENTER]
FILTERS ▶	
NOTES TO COUPL.	YES
OUT MODE	OUT

containing the following fields:

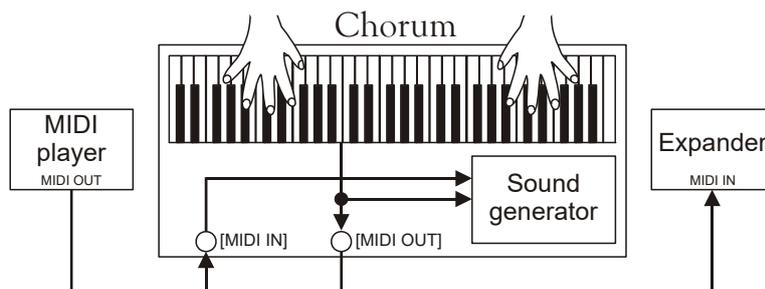
- **CHANNELS:** set up the receiving and transmitting MIDI channels.
- **FILTERS:** set up the MIDI filters for data reception and transmission.
- **NOTES TO COUPL. (Note to Couplers):** this control allows to select the notes to send through MIDI.

Select **YES** to send both the notes actually played on the manuals and the ones resulting from the coupling controls. For example, by playing on the pedalboard while the coupling GT/PD is active, notes from the pedalboard will be transmitted both on the pedalboard MIDI Channel **and** on the Great MIDI Channel.

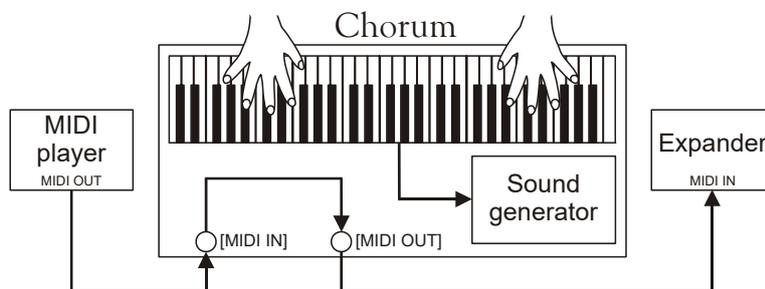
Select **NO** to send **only** the notes physically played (in this example, notes will be transmitted only on the pedalboard channel).

- **OUT MODE:** select the operating mode of the [MIDI OUT] port. The following modes can be selected:

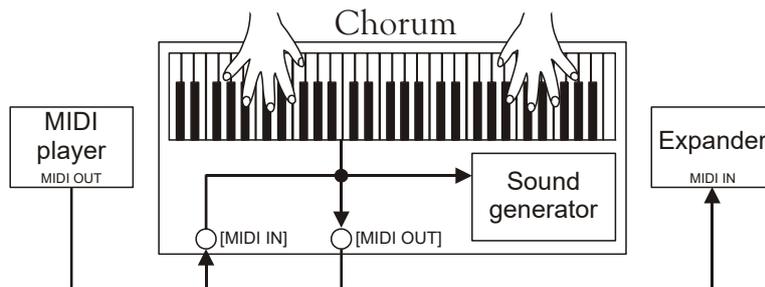
- **OUT:** standard operating mode, MIDI data is transmitted after the organ senses an action (e.g. when keys are played, stops selected, volume and expression pedals used, combinations recalled etc...).



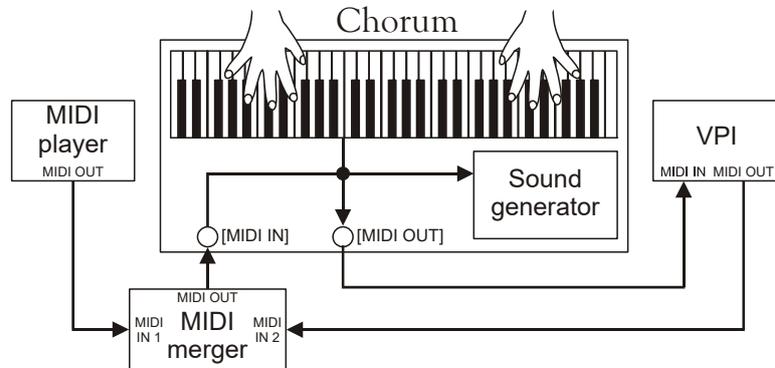
- **THRU:** the [MIDI OUT] port transmits only MIDI data received by the [MIDI IN] port and does not transmit any data about the actions applied on the organ. Use this option when the organ is part of a MIDI system; the instrument connected to the MIDI output of the organ does not respond to any action applied to the **Chorum** itself, but only receives the data from the instrument sending data to the **Chorum** [MIDI IN] port.



- **OUT+THRU:** the [MIDI OUT] port transmits MIDI data about actions applied to the organ, and the data received through the [MIDI IN] port. Use this function when the organ is part of a MIDI system; the receiving instrument will respond to data generated by the **Chorum** and also to data from the instrument connected to the [MIDI IN] port.



- **PIPE:** the [MIDI OUT] port transmits MIDI data after actions applied to the organ and also the data received through the [MIDI IN] port. If a **Chorum** combination is recalled by a MIDI Program Change message received from an external device (for more information read par. 10.6) such as a MIDI sequencer, **Chorum** will transmit the content of the combination (stops, couplers, tremulants) to the [MIDI OUT] port. Always use this mode when **Chorum** is connected to a digital pipe interface **VPI (Viscount Pipe Interface)**, to ensure a complete compatibility between the two devices.



**SELECTING THE INPUT AND OUTPUT CHANNELS (MIDI CHANNELS function)**

The organ can send out and receive MIDI messages on a single channel for each section. To set the MIDI channels, select the **CHANNELS** field in the MIDI menu. The following page will appear:

▶ MIDI CHANNELS		
	TX	RX
PEDAL	4	4
CHOIR	3	3
GREAT	2	2
SWELL	1	1

Three-manual models

▶ MIDI CHANNELS		
	TX	RX
PEDAL	4	4
GREAT	2	2
SWELL	1	1

Two-manual models

The column on the left lists the organ sections; for each section a channel from the **TX** (transmission channel) and **RX** (receiving channel) can be assigned. Press [EXIT] to leave the screen and save the settings. **OFF** mode disables the transmission and/or reception of all MIDI messages for the selected organ section.

To quit the page and save the current settings, press [EXIT].

**FILTERS SETTINGS (MIDI FILTERS function)**

A MIDI filter allows to block a particular message **on all MIDI channels** (if the signal is channelled). The Control Change filter, for example, blocks these MIDI messages in the [MIDI OUT] port, on all MIDI channels of the organ. In the same way, the receiving filter blocks PC on all channels (therefore they are not executed when recalling combinations, Tutti, Crescendo) received from the [MIDI IN] port.

To configure the MIDI filters, select the **FILTERS** field in the MIDI menu.

▶ MIDI FILTERS		
	TX	RX
CONTROL	NO	NO
PROGRAM	NO	NO
SYSEX	NO	NO
REAL TIME	YES	YES

The column on the left will show the MIDI messages that can be filtered:

- **CONTROL:** Control Change
- **PROGRAM:** Program Change
- **SYSEX:** System Exclusive
- **REAL TIME:** Real Time

Through the **TX** and **RX** columns, the state of filters (transmission and reception) can be modified. Select **YES** to activate the filter, **NO** to deactivate it. When a filter is active, the relating MIDI message is not transmitted/received.

Press [EXIT] to leave the screen and save the current settings.

## 5.5 REGULATING THE NOTES VELOCITY (VELOCITY SENS. function)

This function sets the velocity of the notes played with Orchestra stops and transmitted through [MIDI OUT] port, for each section.

▶ VELOCITY SENS.	
<b>PEDAL</b>	<b>98 FIX</b>
<b>CHOIR</b>	<b>NORMAL</b>
<b>GREAT</b>	<b>NORMAL</b>
<b>SWELL</b>	<b>NORMAL</b>

Three-manual models

▶ VELOCITY SENS.	
<b>PEDAL</b>	<b>98 FIX</b>
<b>GREAT</b>	<b>NORMAL</b>
<b>SWELL</b>	<b>NORMAL</b>

Two-manual models

For each section, set a fixed value (**FIXED** from 1 to 127) or three dynamic curves: **SOFT**, **NORMAL** or **HARD**.

Press [EXIT] to leave and save the settings.

### NOTE

*Soft, Normal and Hard curves are not available for the Pedal section.*

## 5.6 COMBINATIONS OPERATING FUNCTIONS (COMBINATIONS function)

The user can choose the set up of general and divisional combinations and Tutti, and the recall mode of divisional combinations. To do so, access the SETTINGS menu and then select the **COMBINATIONS** field.

▶ COMBINATIONS	
SAVE ENC+AP	NO
SAVE MIDI PIST.	YES
SAVE ST/TR/OR	NONE
SAVE COUPL.	GEN+DIV
PISTON CMB	NONE

Models equipped with  
divisional combinations

▶ COMBINATIONS	
SAVE ENC+AP	NO
SAVE MIDI PIST.	YES
SAVE ST/TR/OR	NONE

Models not equipped with  
divisional combinations

The available parameters are:

- **SAVE ENC+AP:** activate (select **YES**) or deactivate (select **NO**) the option to save the status of the [ENC] and [A.P] pistons (see point 15 chapt. 2) to general combinations.
- **SAVE MIDI PIST.:** activate (selezionando **YES**) or deactivate (select **NO**) the option to save the status of the MIDI pistons (see point 16 chapt. 2) to general and divisional combinations.
- **SAVE ST/TR/OR:** save organ Styles, tremulants Depth and Speed values, and orchestra stops with the following options:
  - **NONE:** does not save organ Styles, tremulants parameters, orchestra stops.
  - **STYLE:** save the currently selected organ Style (to select Style see point 14 at chapt. 2) so that it can be recalled by general combinations and Tutti.
  - **TREM:** save the current tremulant Depth and Speed values (to adjust the tremulant values see par. 6.1) so that they can be controlled through general and divisional combinations and Tutti.
  - **ORCH:** save the currently selected orchestra stops (to select them see par. 6.3) so that they can be controlled through general and divisional combinations and Tutti.
  - **TR+OR:** save the tremulant Depth and Speed values (to adjust the tremulant values see par. 6.1) and the currently selected orchestra stops (to select them see par. 6.3) so that they can be controlled through general and divisional combinations and Tutti.
- **SAVE COUPL.** (only for the models equipped with divisional combination): save the status of the couplers to general combinations only (selecting **GENERAL**) or general and divisional combinations (selecting **GEN+DIV**).
- **PIST. COMB.** (Piston Combine, only for models with divisional combinations): synchronize the divisional combinations of Great. The available options are:
  - **NONE:** function not activated.
  - **GRT->PED:** recall a divisional combination of Great to activate the corresponding (same number) Pedalboard combination.
  - **PED->GRT:** recall a Pedalboard divisional combination to activate the corresponding (same number) Great combination.
  - **PED+GRT:** recall a divisional Great or Pedalboard combination to activate the corresponding (same number) combination in the other division.

Press [EXIT] to leave the screen and save the current settings.

## 5.7 SAVING THE PROGRAM CHANGE MIDI MESSAGES IN THE COMBINATIONS (COMBINATION PRG function)

Program Change MIDI messages can recall, in a connected unit, a particular sound or program (patch). Thanks to this function you may select a desired voice from external module (such as an expander) connected to the [MIDI OUT] port.

You can also transmit Bank Select messages MSB (CC n. 0) and LSB (CC n.20) to select stop banks from an external source.

Select the **COMBIN. PRG** field in the MAIN MENU, then press [ENTER]:

▶ COMBINATION PRG			
	PRG	BANK	
		MSB	LSB
PEDAL	OFF	0	0
CHOIR	OFF	0	0
GREAT	OFF	0	0
SWELL	OFF	0	0

Three-manual models

▶ COMBINATION PRG			
	PRG	BANK	
		MSB	LSB
PEDAL	OFF	0	0
GREAT	OFF	0	0
SWELL	OFF	0	0

Two-manual models

The column on the left lists the organ section, and the associated Program Change and MSB and LSB Bank Select messages are shown in the **PRG**, **BANK MSB** and **BANK LSB** columns.

Please note that the MIDI messages of this screen are immediately sent to the corresponding section, and also saved in the general, divisional and Tutti memories. To do so, select the Program Change and Bank Select and fix the desired memory.

This process might prove useful when, using an external expander, you wish to combine a voice from this unit with other stops.

When a MIDI message is not necessary, cancel it by selecting the **OFF** value.

To leave the screen and go back to the MAIN MENU press [EXIT].

## 5.8 SECURITY LOCK AGAINST UNWANTED CHANGES (SECURITY function)

In order to prevent any modification to the organ settings, the SECURITY function should be used. When active, combinations, Tutti, Crescendo steps and Local Off stops cannot be modified. Only the tuning parameters in the Main Page and Organ Style selection will be available.

To recall this function, select the **SECURITY** field in the SETTINGS menu.

▶ SECURITY	
SETTINGS	UNLOCKED
STYLES	UNLOCKED
COMBINAT.	UNLOCKED
SET PASSWORD	▶

in this first screen you can set what you want to block:

- **SETTINGS:** general instrument settings (SETTINGS menu).
- **STYLES:** organ Styles parameters (STYLES menu).
- **COMBINAT.** (Combinations): combinations, Tutti and Crescendo.

To activate one or more lock options select the **LOCKED** field, then press [EXIT] to enter the unlock code (password):



Press [VALUE +] and [VALUE -] to select the characters.

Use the [FIELD ▲] and [FIELD ▼] buttons to move the cursor. Press [ENTER] to save the code, and [EXIT] to abort. The factory setting code is "0000".

When the organ has been successfully locked, the display shows the message **“SECURITY OPTIONS SUCCESSFULLY CHANGED”**.

When a section is blocked, it is possible to enter it, but in this case the following messages will appear:

- **“SETTINGS ARE LOCKED”**: entering the SETTINGS menu;
- **“STYLES ARE LOCKED”**: entering the STYLES menu;

If combinations, Tutti and Crescendo are blocked, the [S] piston light is off.

To unlock the combination save functions, and/or to unlock the settings you need to access the SECURITY function, then unlock the locked options by selecting the **UNLOCKED** field, then press [EXIT] to enter the unlock code. If the password is correct, the message **“SECURITY OPTIONS SUCCESSFULLY CHANGED”** will appear, otherwise **“WRONG PASSWORD RETRY”** that is the system requires the right password to proceed.

Furthermore, the password can be modified while a lock function is already active. To do so, select the **SET PASSWORD** field. Enter the current password to proceed:



and now enter the new password:



the following page confirms that the password has been successfully modified.

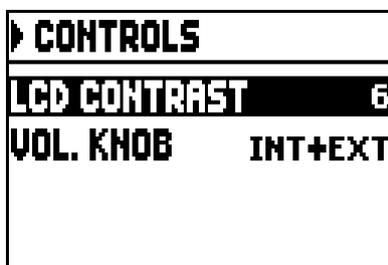


As written on the display, press [EXIT] to return to the SECURITY main page.

## 5.9 CONFIGURING THE VOLUME POTENTIOMETER AND ADJUSTING THE DISPLAY CONTRAST (CONTROLS function)

With this function it is possible to select the operation mode of the [MASTER VOLUME] potentiometer and adjust the display contrast.

To access these settings, select **CONTROLS** in the SETTINGS menu:



- **LCD CONTRAST:** adjust the LCD display contrast.
- **VOL. KNOB:** select the parameter to be controlled by the [MASTER VOLUME] potentiometer, located under the manuals. The available options are:
  - **INTERNAL:** only the internal amplification volume.
  - **INT+EXT:** internal amplification and line outputs volume. Line-out ports are located on the rear panel.

Press [EXIT] to return to the previous page.

## 5.10 RESTORING FACTORY SETTINGS (FACTORY SETTINGS function)

The organ has several options to restore the original (factory) settings. To recall this function select the **FACTORY SETT.** field in the SETTINGS menu:



- **ALL:** all the instrument, i.e. the settings and functions of the SETTING menu, the four organ Styles (in other words the settings of the STYLE menu for all four organ Styles), all combinations, both general and divisional, Crescendo (for models that have it), Tutti, the Local Off status of stops.
- **COMBINATIONS:** all combinations, both general and divisional, Crescendo (for models that have one) and Tutti.

- **STYLE - ALL:** the four organ Styles (i.e. the settings of the STYLE menu for all four organ Styles).
- **STYLE – CURR.:** the currently selected organ Style (i.e. the settings of the STYLE menu for the currently selected Style).
- **SETTINGS:** settings and functions of the SETTINGS menu and the Local Off status of stops.

To restore the factory settings, select one of these five modes and press [ENTER]. The display will show the settings that will be restored and will ask for confirmation.

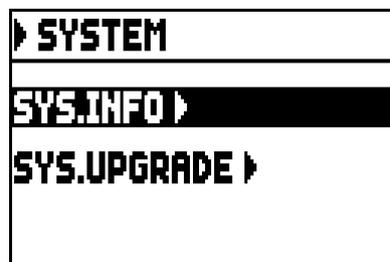


Press [ENTER] again to start the process or [EXIT] to abort it. When the process is complete, the “**FACTORY SETTINGS SUCCESSFULLY RECALLED**” message will appear.

In the previous phase, if the message “**SOME PARAMETERS ARE LOCKED**” is showed please check the SECURITY options (par. 5.8) as it is not possible to proceed with the restore operation.

## 5.11 UPGRADING THE OPERATING SYSTEM (OP. SYS. UPGRADE function)

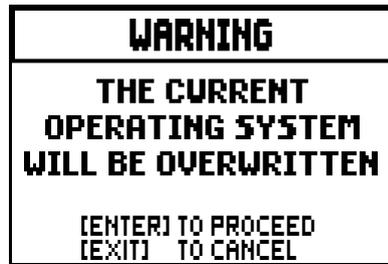
Every time the **Chorum** operating system is updated, the update file will be available on the website [www.viscountinstruments.com](http://www.viscountinstruments.com). First download the file, then copy it to the main (root) folder of an USB drive. Connect the pen drive to the [USB] connector of the instrument, located on the panel under the manuals (see point 19 chap. 2); wait a few seconds then select the **SYSTEM** field under the SETTINGS menu:



now select the **SYS. UPGRADE** field. The system displays the **Chorum** organs update file(s) (different updates can be stored in the same USB pen, when updating select the file you wish to install) on your USB drive:



use the [FIELD ▲] and [FIELD ▼] buttons to select the file you wish to install, then press [ENTER]. The system informs you that the currently running operating system will be replaced with the version on your USB drive.



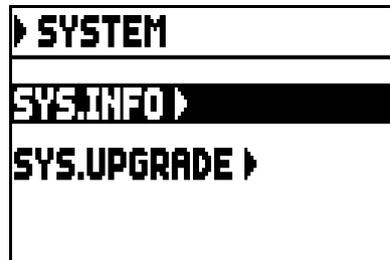
press [EXIT] to abort the operation, or press [ENTER] to proceed with the install procedure: a pop-up will appear on the display that shows the advancement of the operation; when the procedure is complete, the organ will automatically restart.

#### IMPORTANT NOTES

- *The USB drive used for the update must be formatted with FAT or FAT32 file system (not NTFS or other), otherwise the drive will not be recognized by the system.*
- *Do not switch off the organ or disconnect the USB flash drive during the update phase.*
- *If a problem occurs during the update procedure (the instrument suddenly shuts down or the progress bar stops for one minute or longer) try one of these procedures:*
  - *switch on or reboot the instrument while the USB drive is connected, then press [ENTER] when the system requests to complete the update.*
  - *if there is no such request, start the update again, following the procedure described in this paragraph.*
  - *if the system displays the error message “**RELESE CHECKSUM ERROR**” after restarting the system, write an email to the technical assistance service (service@viscount.it) reporting the error type as it appears on the second line (SYSTEM or MODEL) and the numbers in the “M:”, “V:”, “S:” and “Release” fields. You will receive the files and information necessary to restore the instrument.*
- *At power up, if you see the message “**PERIPHERALS UPDATE REQUESTED**”, press [ENTER] to perform the required operations to complete the update.*
- *If the system displays the error message “**FILE LOAD FAILED – USB PEN ERROR**”, delete the update file from your USB drive, then save it again to the pen drive. Should the problem persist, try with a different USB drive.*
- *The system displays the error message “**USB PEN NOT PRESENT**” when accessing the function without a USB drive connected to the instrument, or when the pen drive has not been recognized.*

**VERIFYING THE OPERATING SYSTEM VERSION (SYS. INFO function)**

Use this function to verify the release of the operating system currently running on your instrument, then look for available updates on the website [www.viscountinstruments.com](http://www.viscountinstruments.com). To do so, select the **SYSTEM** field on the display under the **SETTINGS** menu:



now select the **SYS.INFO** field:



The **RELEASE** field indicates the currently installed version, and the organ model is displayed below. Press [EXIT] to return to the previous page.

## 6. PROGRAMMING ORGAN STYLES (STYLE menu)

The Style indentifies the sound configuration of the organ, i.e. the actual voice activated by each stop. The many organ styles allow the musician to use several sound configurations, as if several different instruments were present at the same time in the same place.

**Chorum** organs have four different organ Styles, each one designed after a different musical period: Baroque, Barock, Romantic and Symphonic. As already described at point 14 of chap. 2, Styles can be selected through the dedicated pistons: [BAR], [BRK], [ROM] and [SYM]. On the main video page, each time a Style is selected its name appears on the display. All four styles can be customized: the user can adjust the tuning difference among pipes, tremulant Speed and Depth for each section, stops volume and orchestra voices.

To modify a Style, recall the desired Style, then select the **STYLES** field in the MAIN MENU. The following page will appear:

▶ <b>STYLE</b>	<b>SYMPHONIC</b>
<b>ENSEMBLE</b>	<b>4</b>
<b>TREMOLOS</b>	▶
<b>VOICES VOLUME</b>	▶
<b>ORCHESTRA</b>	▶

The fields on this menu perform the following functions:

- **ENSEMBLE:** level of tiny natural differences in pitch between one organ pipe and another, simulating the tuning error that occurs in the organ's pipes due to wear over time and variations in temperature.  
The values range from 0 (pipes perfectly tuned) to 8 (maximum pitch instability).
- **TREMOLOS:** adjust the speed and depth of the tremulant for each manual (par. 6.1).
- **VOICES VOLUMES:** set the volume for each stop (par. 6.2).
- **ORCHESTRA:** select orchestra voices (par 6.3).

To access a function, use the buttons [FIELD ▲] and [FIELD ▼] to place the cursor on the corresponding field, then press [ENTER].

To quit the STYLE menu, press [EXIT].

### **NB**

*Any divisional or general combination and Tutti can recall the organ Style that was in use when the combination was saved. However in order to save Styles to combinations, the corresponding option of the COMBINATIONS function must be activated. For further information see par. 5.6.*

## 6.1 ADJUSTING THE TREMULANTS (TREMOLOS function)

In a pipe organ it is of the utmost importance that the air pressure remain constant, so as to obtain a steady and sustained sound. However, mechanical devices were introduced to generate periodical variations in the air flow. These variations created the “tremulant” effect on the sound, which made some lead registers (such as Vox Humana) more pleasant, and the tone of the reeds colourful.

Use the [TREMULANT] plates to activate and deactivate the effect.

The speed and depth of the modulation can be adjusted for each Style. To access the setting page, select the **TREMULANTS** field under the **STYLES** menu:

▶ TREMOLOS		
	SPD	DPT
CHOIR	16	19
GREAT	15	20
SWELL	17	21

Three-manual models

▶ TREMOLOS		
	SPD	DPT
GREAT	15	20
SWELL	17	21

Two-manual models

That show the current **SPD** (speed) or **DPT** (depth) and values of the manuals’ tremulant. Press [EXIT] to go back to the **STYLES** menu and save the new settings.

### IMPORTANT NOTE

*Any divisional or general combination and Tutti can recall the tremulant Depth and Speed parameters. To save Depth and Speed to combinations, activate the corresponding option through the **COMBINATIONS** function (see par. 5.6).*

## 6.2 REGULATING THE VOLUME OF EACH VOICE (VOICES VOLUMES function)

The volumes for each single stop can be adjusted in a range of -12 dB to +6 dB, and allows a perfect balance of the overall sound of the organ.

Select the **VOICES VOLUMES** field, in the **STYLES** menu. The display will show the organ sections, select the section that contains the voice you wish to adjust:

▶ VOICES VOLUME	
PEDAL	[ENTER]
CHOIR	
GREAT	
SWELL	

Three-manual models

▶ VOICES VOLUME	
PEDAL	[ENTER]
GREAT	
SWELL	

Two-manual models

Use the buttons [FIELD ▲], [FIELD ▼] and [ENTER] to select the field.

A quick alternative to adjust the volumes is pressing and holding the desired stop for a few seconds. This can be done both on this page or on the volume settings page.

▶ GREAT		PAGE 1/3
Db1 Diapason 16		+2
Diapason 8		0
Bourdon 8		+4
Salicional 8		0
Octave 4		-5

During the edit the stop will be on and can be played for better, quicker adjustment. Other stops can also be switched on to assess the overall effect of the changes. To quit the function and save the values press [EXIT]. The changes made will be automatically saved in the current organ style.

### 6.3 SELECTING THE ORCHESTRAL VOICES (ORCHESTRA function)

As described in chap. 2, **Chorum** includes a group of orchestra sounds. Depending on the model, these voices are either controlled by dedicated orchestra stops, on the front panel inside the ORCHESTRA section, or by the normal organ stops, that can be assigned to orchestra sounds. A full list of these stops for each **Chorum** model can be found on the website [www.viscountinstruments.com](http://www.viscountinstruments.com).

To select an orchestra voice, access the STYLES menu and then select the **ORCHESTRA** field. The display shows:

▶ ORCHESTRA		
	VOICE	SUS.
PED	STRING 16	NO
CHO	PIANO	YES
GRT	CHIMES	YES
SWL	CELESTA	YES

Three-manual models

▶ ORCHESTRA		
	VOICE	SUS.
PED	STRING 16	NO
GRT	PIANO	YES
SWL	CELESTA	YES

Two-manual models

For each division, in the **VOICE** column you can select the orchestral voice while in the **SUS.** column you can enable or disable the Sustain pedal function.

To quit the function press [EXIT]. The changes made will be automatically saved in the current organ style.

**NB**

*Any divisional or general combination and Tutti can recall orchestra voices; this means that the stops can be used to activate different voices, according to the current combination/Tutti. To save orchestra voices to combinations, the corresponding option must be activated through the COMBINATIONS function (see par. 5.6).*

## 7. SAVING THE ORGAN CONFIGURATION TO FILES (FILE function)

The **Chorum** organs can save the complete organ configuration (or parts of it) to a USB drive. The configuration can then be recalled at any time. The main purpose of this function is to offer an almost unlimited number of configurations; furthermore, a saved configuration can be used on a different organ of the same series. To access the save and load function, select **FILE** on the MAIN MENU. The video page:



contains two functions:

- **LOAD:** load files from a pen drive (par. 7.2).
- **SAVE:** save the organ configuration to a pen drive (par 7.3).

To access a function, place the cursor on the corresponding field using the buttons [FIELD ▲] and [FIELD ▼] then press [ENTER].

To leave the FILE menu press [EXIT].

### 7.1 INFORMATIONS CONCERNING THE USB PEN

When connecting a new or just formatted pen drive to the organ, access to the FILE menu the system will automatically create two directories in the drive: “organ”. Inside this folder, five sub-folders are automatically created. They are:

- “**alls**”: this folder contains the **.all** files, with all the settings and functions of the SETTINGS and STYLE (the four Styles) menus, all general and divisional combinations, Tutti, Crescendo steps, the selected Style and the Local Off status of stops.
- “**combinations**”: this folder contains the **.cmb** files, with all the data on general and divisional combinations, Crescendo steps and Tutti.
- “**settings**”: this folder contains the **.set** files, with all the settings from the SETTINGS menu, the selected Style and the Local Off status.
- “**songs**”: this folder contains the **.mid** files of the songs recorded through the internal sequencer.
- “**styles\_all**”: this folder contains the **.sta** files, with the settings from the STYLES menu regarding all four styles.
- “**styles\_single**”: this folder contains the **.sts** files, with the settings (STYLES menu) of the saved style.

These are system folders to arrange files, and they must not be deleted or renamed, otherwise the saved files will be lost.

For a detailed description on the content of the .all, .set, .sta, .sts and .cmb files, read par. 10.4.

**N.B.**

- Once the USB pen is inserted please wait some seconds before displaying the FILE menu.
- The system displays the error message “**USB PEN NOT PRESENT**” when accessing the FILE functions without a USB drive connected to the instrument, or when the pen drive has not been recognized. Should this happen, check that the pen drive is not damaged and has the correct format.
- To copy files with a computer to a USB drive that has never been used with the organ, it is necessary to create the folders (described above) manually. Files must be placed in the dedicated folder; follow the instructions on the folders and their function.
- Always use USB pens formatted with FAT or FAT32 file system (no NTFS).
- The folders “alls”, “combinations”, “settings”, “styles\_all” and “styles\_single” can contain up to a maximum of 64 files. The “songs” folder can contain up to 256.
- File names cannot be longer than 31 characters (including the file extension).

## 7.2 LOADING ORGAN COMBINATIONS AND/OR SETTINGS (FILE LOAD function)

The **Chorum** organs can save the current configurations. The FILE LOAD function allows to recall into the work memory these configurations and combinations already saved to the USB pen and therefore use them.

To load a file, select the **LOAD** field under the FILE menu:



select what you wish to load:

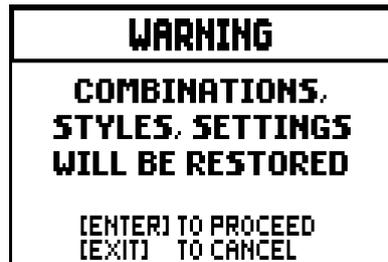
- **ALL:** the complete organ configuration.
- **COMBINATIONS:** all general and divisonal combinations, Tutti, Crescendo steps.
- **STYLE – ALL:** the 4 organ styles.
- **STYLE – CURR.:** a single Style.
- **SETTINGS:** the general organ settings, from the SETTINGS menu.

Once the loading option has been selected, the display shows the corresponding files on the USB drive:



if there are no files for the selected file type, the display shows the message “**NO FILES**”.

Once the file has been selected, press [ENTER], then confirm to proceed:



When the file has been loaded, the message “**FILE SUCCESFULLY LOADED**” will appear.

**N.B.**

- *When a single Style is loaded, it can only replace a Style of the same type (a Baroque Style replaces Baroque, Romantic replaces Romantic etc.). To identify Styles easily, the system always suggests the Style type as file name when saving Styles.*
- *Please keep in mind that when loading a file, all the corresponding information (settings, combinations, Styles etc.) currently in use on the organ will be lost. To avoid it, it is recommended to save the current organ data to a USB drive (see par. 7.3) before loading a file.*
- *The system shows the error message “**FILE LOAD FAILED – INCOMPATIBLE MODEL**” when attempting to load a file saved with a different organ model.*
- *The system shows the error message “**FILE LOAD FAILED – INCOMPATIBLE RELEASE**” when attempting to load a file saved using a more recent version of the operating system.*
- *The error message “**FILE LOAD FAILED – CORRUPTED FILE**” means that the file is damaged.*

### 7.3 SAVING AS FILE OF ORGAN COMBINATIONS AND/OR SETTINGS (FILE SAVE function)

To save settings and combinations into the USB pen drive, select the **SAVE** field under the **FILE** menu:



in this first screen you can select what you desire to save:

- **ALL:** the whole configuration of the organ.
- **COMBINATIONS:** all the general and divisional combination, all the step of Crescendo, the Tutti.
- **STYLE – ALL:** the 4 Organ Style.
- **STYLE – CURR.:** the Organ Style currently selected.
- **SETTINGS:** the general settings under the **SETTINGS** menu.

Once the save option has been selected, the following page appears:

**SAVE ALL PARAMETERS**

**FILE NAME:**

█  
-----

[ENTER] TO SAVE  
[EXIT] TO CANCEL

where it is possible to give a name to the saved file. To select the characters, use the buttons [VALUE +] and [VALUE -], to move the cursor use the buttons [FIELD ▲] and [FIELD ▼]. When the name is complete, press [ENTER] to save the file.

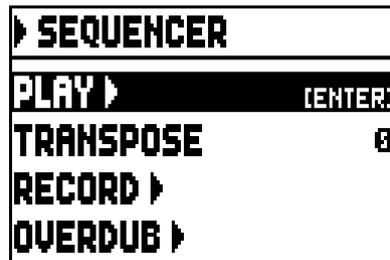
When the saving procedure has been successfully completed, the message “**FILE SUCCESSFULLY SAVED**” will appear.

**N.B.**

- *When a single Style is loaded, it can only replace a Style of the same type (a Baroque Style replaces Baroque, Romantic replaces Romantic etc.). To identify Styles easily, the system always suggests the Style type as file name when saving Styles.*
- *If there is already a file with the same name and extension in the USB drive, you have the option to overwrite that file; the system shows the following message: “**FILE ALREADY EXISTS**”. Now press [ENTER] to proceed or [EXIT] to enter a different name. Please keep in mind that overwritten files will be lost and the data contained within cannot be recovered.*
- *In the case of “**FILE SAVE FAILED**” error, retry the operation. If the error occurs again, check that there is enough space in the USB stick. If the error still occurs, the USB stick could be damaged so try using a different stick or format it with a computer.*

## 8. PLAYING AND RECORDING OF MUSICAL SEQUENCES (SEQUENCER)

The organ is equipped with an internal sequencer (digital recorder). The sequencer can record songs played on the instrument, controls used and MIDI data received through the [MIDI IN] port. Recordings can then be saved on the USB stick as MIDI files (Standard MIDI file, format 1 to 125 beats per minute, 384 ticks per quarter note) and played back at any time. To recall the sequencer press the [SEQUENC.] button beside the display. The screen for selection of the system's three operating modes is displayed:



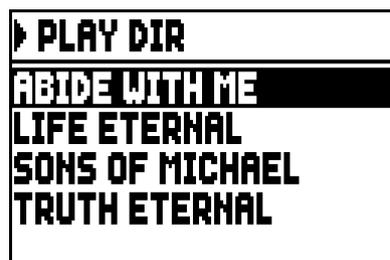
- **PLAY:** playback of the performances saved in the USB pen (par. 8.1).
- **TRANSPOSER:** applies a semitone transposition to the songs played by the sequencer.
- **RECORD:** recording of songs of music (par. 8.2).
- **OVERDUB:** overdub of songs of music (par. 8.3)

### N.B.

- *To copy files with a computer to a USB drive that has never been used with the organ, it is necessary to create the folders (described in the par. 7.1) manually. Files must be placed in the dedicated folder; follow the instructions on the folders and their function.*
- *Always use USB pens formatted with FAT or FAT32 file system (no NTFS).*
- *The .mid files recorded and/or played by the sequencer are saved to the "songs" folder. The folder can contain a maximum of 256 files.*
- *File names cannot be longer than 31 characters (including the file extension).*
- *Transposition set in the Main Page does not have any effect on playback of songs (unlike recording, where the notes are acquired transposed).*

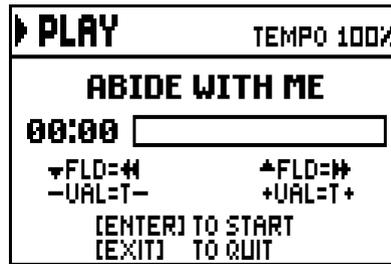
### 8.1 PLAYING BACK A SONGS (PLAY mode)

In the sequencer mode selection screen described above, select the **PLAY** field. The display shows the mid files stored in the USB pen:



if there are no files, the message "NO FILES" will appear.

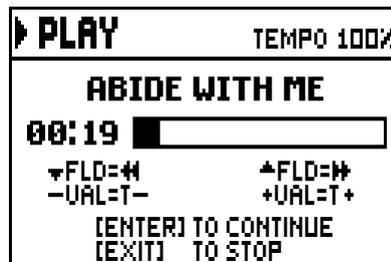
Now select the MIDI file you wish to play back:



The new screen provides information about all the controls necessary for use of the sequencer:

- **[ENTER]**: starts playback of the songs.
- **[EXIT]**: quits the sequencer function.
- **[FIELD ▲]**: fast forward.
- **[FIELD ▼]**: rewind.
- **[VALUE -]**: slow down play speed. It can be seen on top left as percentage (100% in the picture above).
- **[VALUE +]**: increase play speed. It can be seen on top left as percentage (100% in the picture above).

Once the playback of a song has been started, the display changes to:



furthermore, the functions of the buttons **[ENTER]** and **[EXIT]** have changed:

- **[ENTER]**: pause / play the track.
- **[EXIT]**: stop the reproduction.

**[FIELD ▲]**, **[FIELD ▼]**, **[VALUE -]**, **[VALUE +]** keep the functions already described.

#### **N.B.**

- *Once the USB pen is inserted please wait some seconds before selecting the **PLAY** mode.*
- *The system displays the error message “**USB PEN NOT PRESENT**” when selecting the **PLAY** mode without a USB drive connected to the instrument, or when the pen drive has not been recognized. Should this happen, check that the pen drive is not damaged and has the correct format.*
- *The error message “**FILE LOAD FAILED**” means that the file is damaged or bigger than 250 KB (maximum files size that you can play with this sequencer).*

## USING RECORDED AND/OR MODIFIED SONGS WITH DEDICATED SOFTWARE

MIDI files recorded by the internal sequencer can be modified with the most common MIDI editing softwares. This might prove useful to correct errors of the recording or to generally improve the track.

**However, we strongly advice inexperienced users not to do so.**

When modifying a MIDI file, please follow these rules:

- Do not modify the tracks channel. If it necessary, respect the internal sequencer channelling. The sections are channelled as follows:
  - Pedal: 1
  - Choir: 4
  - Great: 2
  - Swell: 3

The internal sequencer also assigns a name to the track while recording, that corresponds to the sections playing a track. Most computer software can read the track names:

- “Pedal” track
- “Choir” track
- “Great” track
- “Swell” track
- “Volumes” track: divisional volumes and expression pedals
- “Stops” track: stops conditions

There are other tracks for internal use and future developments only, that should not be altered.

- Divisional modules are recorded as Control Change 7 events. Expression pedals position as Control Change 11. These Control Change channel are identical to the previous ones.
- The stops settings, together with cancel, enclosed, coupling settings etc. are recorded as System Exclusive. We advice you not to alter these codes. If you wish to add or remove stops from a recording, you should know its exclusive system code. To do so, you should monitor the MIDI OUT port of the organ and, switching on and off a stop, check the MIDI code transmitted. Add or remove this code only from the “Stops” track.
- When saving the MIDI file do not change the resolution of 384 tpqn (tick per quarter note).

The sequencer can also paly non-recorded tracks. Again, keep in mind that:

- The track channelling may not be consistent with the internal sequencer. Reset the channels according to what described above.
- Stop codes might not be present in a MIDI track. In this case we advice you overdub (see par. 8.3) with the desired stop combination.
- Divisional volumes and expression pedals may be lacking from a MIDI track. Again, we advice you overdub the tracks.

## 8.2 RECORDING A SONGS (RECORD mode)

In the sequencer mode video page, select the **RECORD** field. The display will show:



As in Play mode, the screen again carries information about the functions of the buttons:

- **[ENTER]**: pause /restart recording.
- **[EXIT]**: stop recording.

Once recording has started, the functions change to:



- **[ENTER]**: pause /restart recording.
- **[EXIT]**: stop recording.

Press **[EXIT]** to end the session. The display will show the screen allowing the recording just made to be saved:



The functions displayed allow:

- o **SAVE**: saving of the recording as a MIDI file.
- o **PLAY**: playback of the recording before saving it.
- o **OVERDUB**: creation of a new recording to be added to the sequence just acquired (see par. 8.3).
- o **DISCARD AND EXIT**: delete the recording and quit sequencer Record mode.

If the **SAVE** field is selected, the system prompts the user to assign a name to the MIDI sequence about to be saved:



When composing the name, use the **[FIELD ▲]** and **[FIELD ▼]** buttons to move the cursor and **[VALUE +]** and **[VALUE -]** to select the character.

To confirm the name and proceed to save the data, press the **[ENTER]** button; use **[EXIT]** to return to the previous screen, aborting the saving operation.

The message **“FILE SUCCESFULLY SAVED”** confirms that the file has been saved.

If [EXIT] is pressed while in the save screen (i.e. when the recording has been acquired but not saved), the system warns that the recording is about to be lost:



and that [ENTER] must be pressed to confirm that you wish to quit and delete the data acquired, or [EXIT] to return to the save screen.

**N.B.**

- *The system displays the error message “**USB PEN NOT PRESENT**” when trying to save a MIDI sequence without a USB drive connected to the instrument, or when the pen drive has not been recognized. Should this happen, check that the pen drive is not damaged and has the correct format.*
- *In the case of “**FILE SAVE FAILED**” error, retry the operation. If the error occurs again, check that there is enough space in the USB stick. If the error still occurs, the USB stick could be damaged so try using a different stick or format it with a computer.*

### 8.3 OVERDUBBING A SONGS (OVERDUB mode)

The internal sequencer record, play, but also overdub already recorded MIDI tracks. It can be done accessing the OVERDUB function:

- in the Sequencer main page (see the beginning of chapt .8) and selecting a MIDI file;
- at the end of a recording session (see par. 8.2).

The system will ask whether to substitute the settings (stops, coupling, tremulants, MIDI controls, general controls) recorded in the track with the ones currently selected. Press [ENTER] to use the new settings or [EXIT] to leave them as they are.



The system will ask the same question, this time regarding the divisional volumes and expression pedal.



Now the sequencer is ready to overdub:



The screen carries information about the functions of the buttons:

- **[ENTER]**: start recording.
- **[EXIT]**: leave the sequencer.
- **[VALUE -]**: decrease play / recording speed. It can be seen on top left as percentage (100% in the picture above).
- **[VALUE +]**: increase play / recording speed. It can be seen on top left as percentage (100% in the picture above).

As the recording begins, the controls change again:



- **[ENTER]**: pause / start recording.
- **[EXIT]**: stop recording.

[VALUE -], [VALUE +] maintain the functions described above.

Press [EXIT] to quit the recording. The system will ask you to accept the overdubbing:

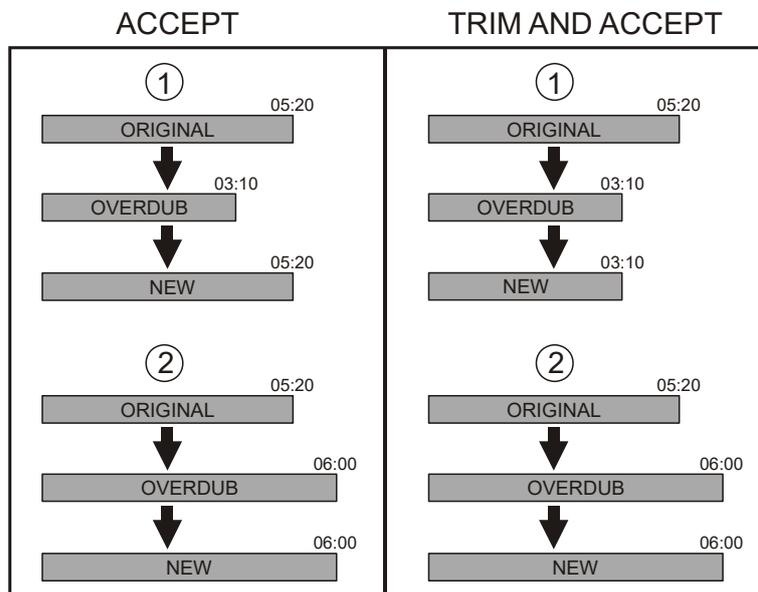


You can choose one of the following options:

- **ACCEPT**: accept the overdubbing. In case the overdub track is shorter than the original songs, it will not be shortened.
- **TRIM AND ACCEPT**: accept the overdubbing. If the overdub track is shorter than the original song, this will be trimmed to end together with the overdubbing.
- **PLAY**: play the song with the overdubbing, so as to assess the track. The changes will not be saved yet.
- **PLAY FROM OVD** (overdub): plays the song, starting from the first event of last overdubbing, so as to assess the track. The changes will not be saved yet.
- **DISCARD**: discards the overdubbing.

Select **ACCEPT** or **TRIM AND ACCEPT** to move to the saving screen. Now it is possible to save the song with a different name.

Selecting **PLAY** or **PLAY FROM LAST OVD** will activate the sequencer play mode. Press [EXIT] to return to the previous screen.



Press [EXIT] to quit the screen. The display will show:



Warning you that the overdubbing will be lost. Press [ENTER] to continue – and therefore discard the recording – or [EXIT] to return to the previous screen.

**N.B.**

- The system displays the error message “**USB PEN NOT PRESENT**” when trying to save a MIDI sequence without a USB drive connected to the instrument, or when the pen drive has not been recognized. Should this happen, check that the pen drive is not damaged and has the correct format.
- The error message “**FILE LOAD FAILED**” means that the file is damaged or bigger than 128 KB (maximum files size that you can overdub).
- In the case of “**FILE SAVE FAILED**” error, retry the operation. If the error occurs again, check that there is enough space in the USB stick. If the error still occurs, the USB stick could be damaged so try using a different stick or format it with a computer.

## 9. STOP LOCAL OFF

Setting a stop in Local Off mode means that it will not be played by the organ's internal sound generation system, but the relative MIDI (System Exclusive code) message will be transmitted, so that it can be turned on and played on a connected instrument.

To set a stop in Local Off mode, while the main screen is on the display, press the [S] (Set) piston, keep it pressed and also press the [C] (Cancel) button. The LEDs of all the stops will light up and the display will show the video page:



To set a voice in Local Off mode, operate its draw-stop or rocker switch so that its light goes out. After setting the setup required, press [S] and [C] together to save it.

Accessing the Local Off setting function after this will trigger display of the status of the stops as follows:

- Light on: stop in Local On mode (plays with internal generation)
- Light off: stop in Local Off status

## 10. APPENDIX

### 10.1 DEMONSTRATION SONGS

The organ has a number of demonstration (demo) tracks to allow you to fully appreciate the quality its sound qualities and/or those of the changes you have made.

To recall playback of the demo tracks, select the **DEMO** field from the menu MAIN MENU.

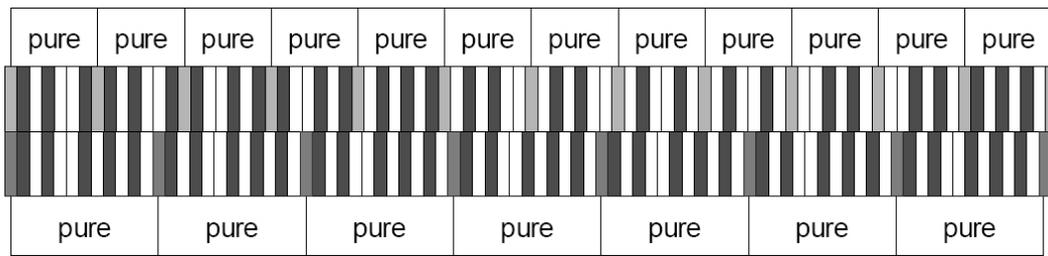
Use the [FIELD ▲] and [FIELD ▼] buttons to select each song of music. Press [ENTER] to start and stop each song. Press [EXIT] to leave the DEMO function.

### 10.2 TEMPERAMENT

Tuning a fixed intonation instrument (e.g. organs) consists of creating a chain of twelve fifths, properly crafted so that at the extremes the interval can be reduced, through division or multiplication, to a perfect octave. A perfect fifth is achieved when two sounds have a frequency ratio of 3:2. If from any sound we calculate twelve ascending perfect fifths, the sound obtained is  $(3/2)^{12}$ . With 7 octaves instead, the result is a  $2^7$  frequency. If we compare these values we find that  $(3/2)^{12}$  is slightly higher than  $2^7$ . Rounding off after the fourth decimal, we find that:

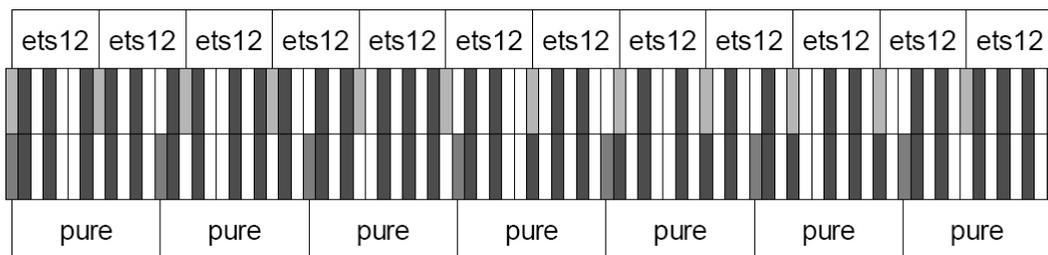
$(3/2)^{12}=129,7463$  , while  $2^7 = 128,0000$ . The ratio between these two value is called Pythagorean comma.

It can be defined as the surplus of twelve perfect fifth compared to seven octaves, both starting from the same sound.

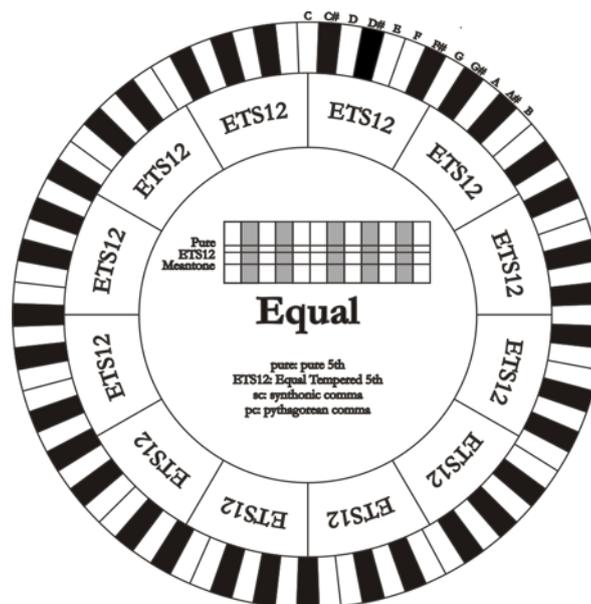


The picture is not in scale (otherwise the comma would be almost invisible) but it gives a graphical understanding of the problem.

Now, dividing the Pythagorean comma in 12 equal parts, and subtracting this value to each pure fifth, the result is a twelve-fifth chain, ending with the same value as seven octaves.



This is the Equal Temperament System (with the comma split in twelve parts).



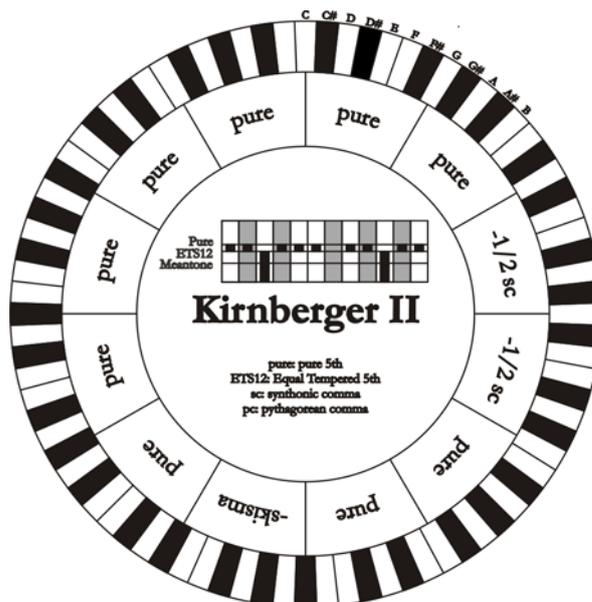
The Pythagorean comma can be split in larger parts and divided among a few (less than 12) fifths. This leads to other temperaments, such as the Werckmeister III, which spreads the comma in four, equal parts, between C-G, G-D, D-A, and B-F#. A very important interval in the history of tuning is the major third. A chain of four pure fifths makes  $(3/2)^4$ . A major third interval is represented by a  $5/4$  ratio. Therefore, rounding off, the frequency of a major third, generated by Pythagorean fifths is 1,2656, while a natural major third is 1,2500. This surplus is called **Syntonic comma**. A series of four fifths, each one reduced by  $1/4$  of Syntonic comma, makes a perfect major third. These fifths are called “meantone”. If a temperament recovers only one syntonic comma, it still needs to compensate the small difference between Pythagorean and syntonic comma. This difference is called **skisma**. For example, the Kirnberger II temperament is based on the syntonic comma. It spreads the comma equally between D-A and A-E and the skisma between F# and C#. A series of three natural major thirds makes a frequency of  $(5/4)^3$ . The difference between that and the octave is called **enharmonic comma**. When a temperament makes up for more than the Pythagorean comma, usually one fifth is much wider than the rest and becomes unusable. It is called the **wolf fifth**.

### 10.3 TEMPERAMENTS OF THE CHORUM ORGANS

In addition to equal temperament, with the **Chorum** organs you can play other temperaments described below.

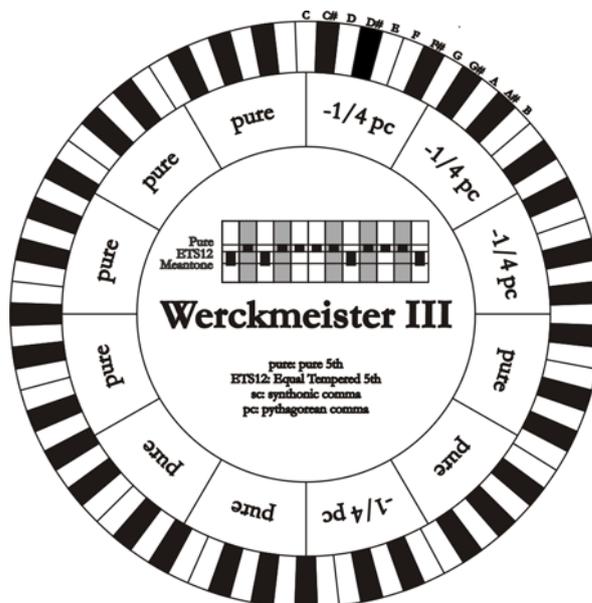
#### KIRNBERGER II (KIRNBERGER2 on display)

Based on two fifths, reduced by half syntonic comma, and one fifth reduced by a skisma. There are three pure majors: C, G, D. Therefore, the major triads on C and G are pure. Same goes with the minor triads, on E and B. The four major thirds on C#, G#, Eb, Bb are Pythagorean. The coexistence of pure and tempered chords gives a peculiar character to this tuning.



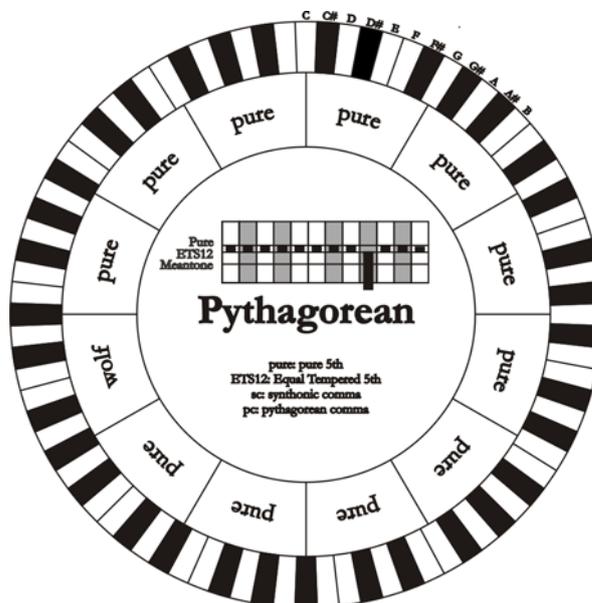
#### WERCKMEISTER III (WERCKMEIST.3 on display)

Based on four fifths, each reduced by 1/4 Pythagorean comma – the others are pure. Creates three Pythagorean major thirds on: C#, F#, G#. As the number of alteration in the piece performed increases, so does the harmonic tension.



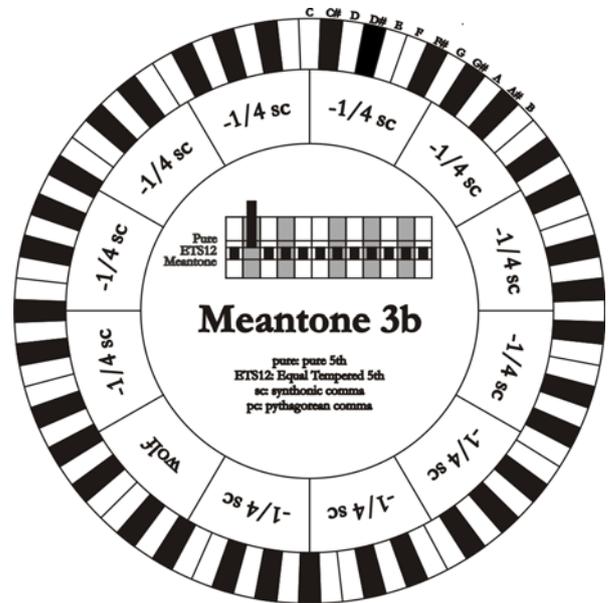
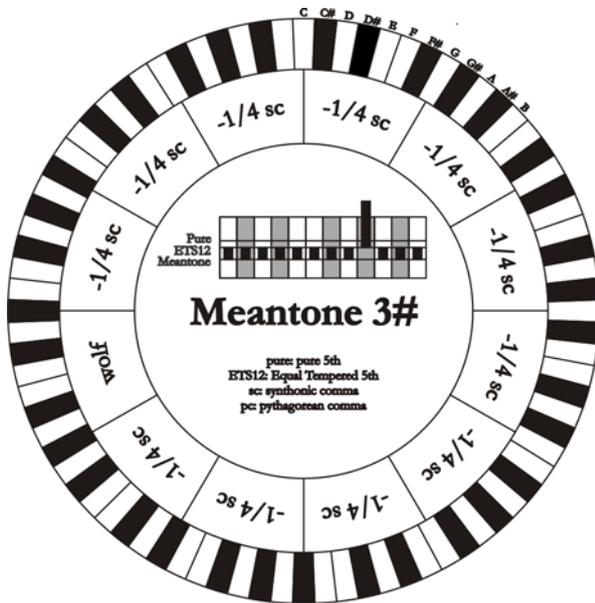
#### PYTHAGOREAN

Based on eleven pure Pythagorean fifths and a wolf fifth on G#. This tuning can be used to play monodies, and music that does not use thirds in general. Most useful for curiosity and educational ends.



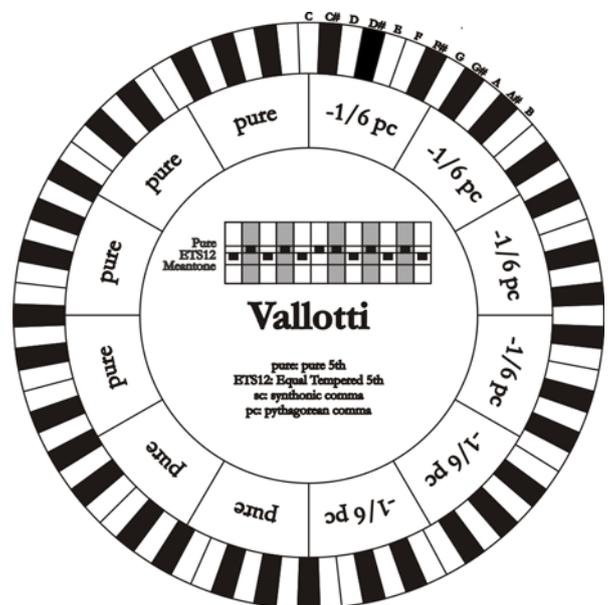
**MEANTONE 3# - MEANTONE 3b**

This tuning is the prototype of all temperaments based on fifths reduced by  $\frac{1}{4}$  of syntonic comma. This generates eight pure major thirds: Eb, Bb, F, C, G, D, A, E. However, the other thirds are unusable (B, F#, G#). The fifths are defined as meantone fifths: shorter than pure fifths but still sounding well. Only one, G#, fills all the gap created by 11 others and becomes a wolf fifth. Tonality with little alterations sound very pleasant. Well characterised chromatic scale. Move the wolf on C# to use the G# key as Ab.



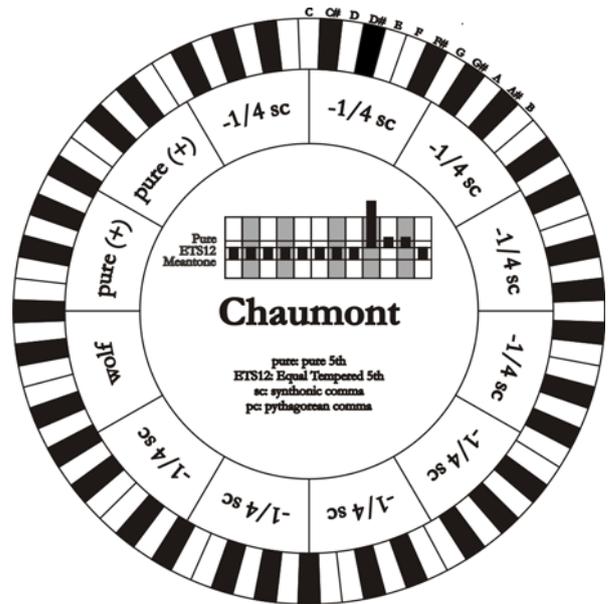
**VALLOTTI**

Based on six fifths, each decreased by  $\frac{1}{6}$  of Pythagorean comma. The others are pure fifths. The major thirds on Eb-B, Bb-E, F-A are equivalent, as the ones on C, G and D. Thirds on F#, C# and G# are Pythagorean instead.



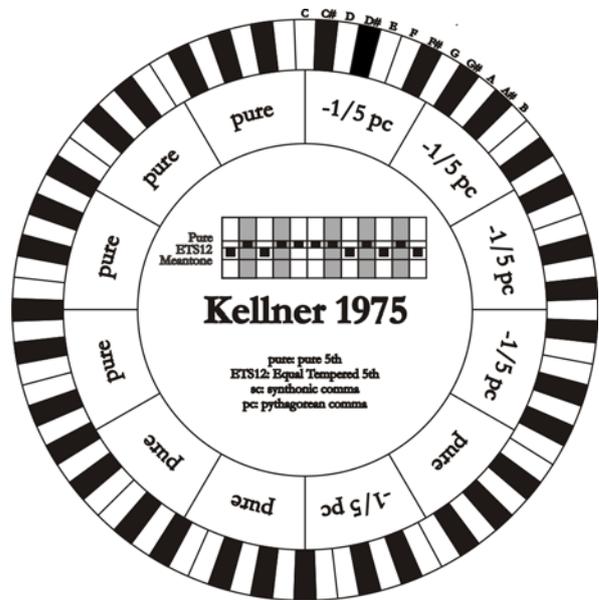
**CHAUMONT**

A meantone temperament; the wolf fifth has been improved by enlarging the fifths on Eb and Bb. There are six pure major thirds: F, C, G, D, A, E. The third major on B, although not very pleasant, can still be used.



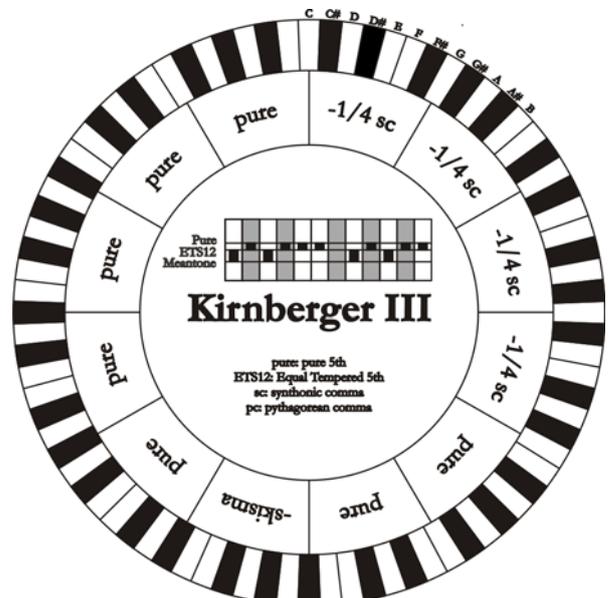
**KELLNER 1975**

This tuning was created by Kellner, who figured out its structure from the symbols on the first page of the “Wohltemperierte Klavier” by Bach, 1722. The tuning is based on five fifths, each reduced of 1/5 of Pythagorean comma. This originates three Pythagorean major thirds, on: C#, F#, G#. None of the thirds is pure. The major third closer to being pure is on C.



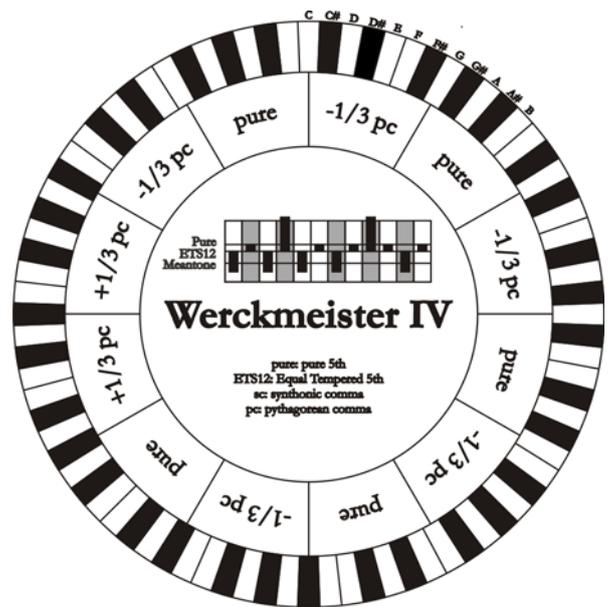
**KIRNBERGER III (KIRNBERGER3 on display)**

Based on four fifths, each one reduced by 1/4 of syntonic comma, and one fifth reduced of the remaining skisma. There is only one pure major third on C. From most to least pure, they are G, D, A and F, Bb, Eb. E, B and F# are equivalent one with the other. Pythagorean major thirds are on C# and G#. Pieces with many alterations are well characterised.



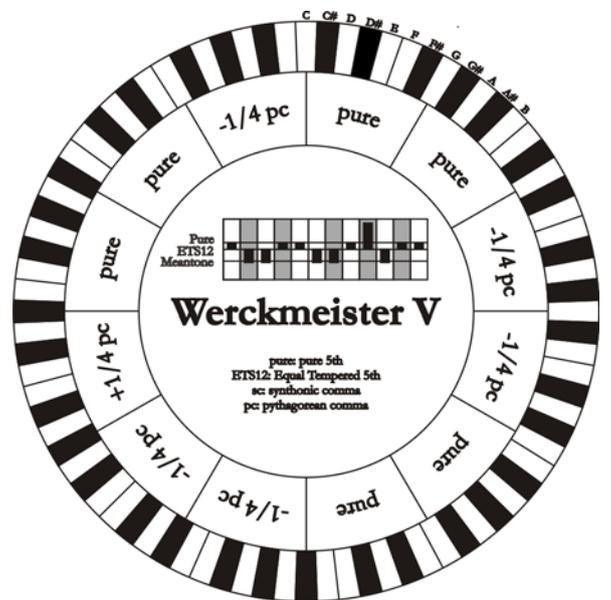
**WERCKMEISTER IV** (WERCKMEIST.4 on display)

Based on five fifths, each *reduced* of 1/3 of Pythagorean comma, and two more thirds *increased* of the same amount. Very pleasant with mostly unaltered tonalities, it becomes “harder” as the alterations increase.



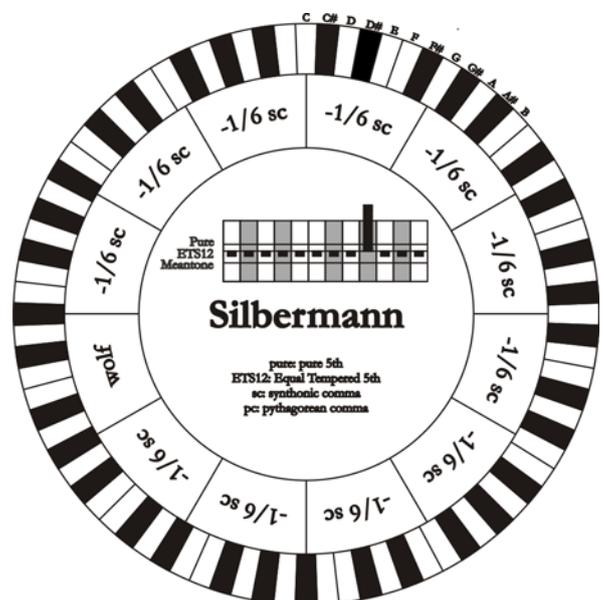
**WERCKMEISTER V** (WERCKMEIST.5 on display)

Based on five fifths *reduced* by 1/5 of Pythagorean comma, and one fifth *increased* of the same amount. This tuning is rarely used as there is no tonality that is much euphonic.



**SILBERMANN**

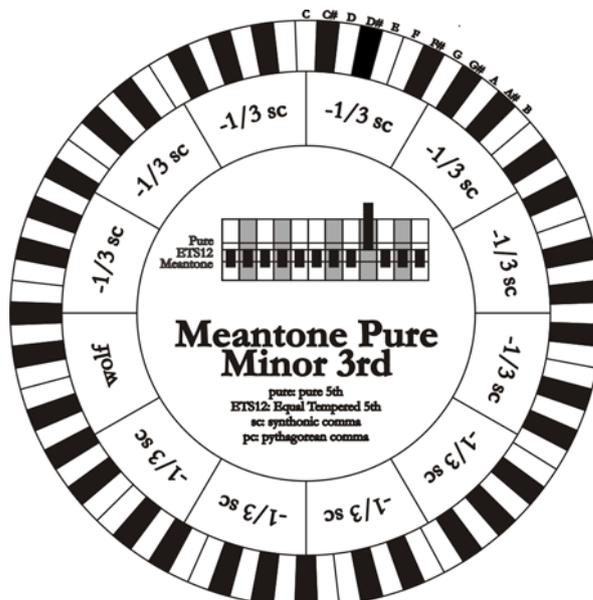
Based on fifths reduced of 1/6 of syntonic comma. Wolf fifth is located on G#. Thirds that in meantone tuning are pure, here are 1/3 syntonic comma wider. The wolf fifth is less prominent, not cacophonous yet not completely acceptable.



**MEANTONE PURE MINOR 3rd (MEANTONE 3M on display)**

This temperament is built with fifths narrowed by 1/3 of syntonic comma. The wolf fifth on G# is very large and completely unusable. The nine minor thirds based on C, G, D, A, E, B, F#, C#, G# are pure.

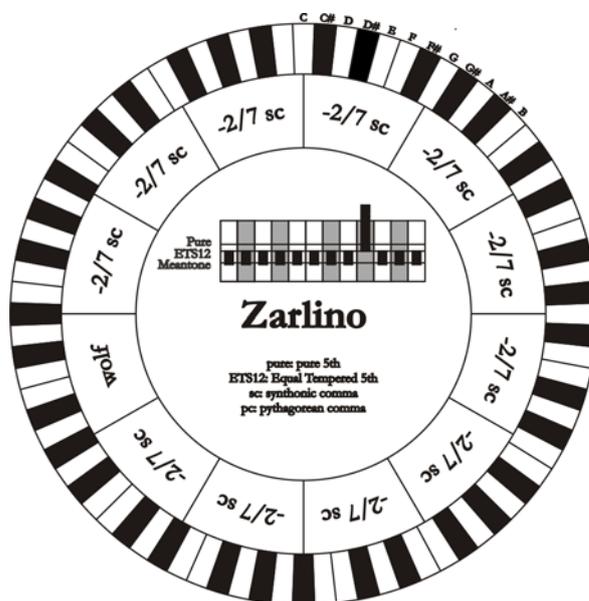
The eight major thirds based on Eb, Bb, F, C, G, D, A, E, are narrower, with respect to the pure, by 1/3 of syntonic comma. Again in this temperament the chromatic scale has a particular character.



**ZARLINO**

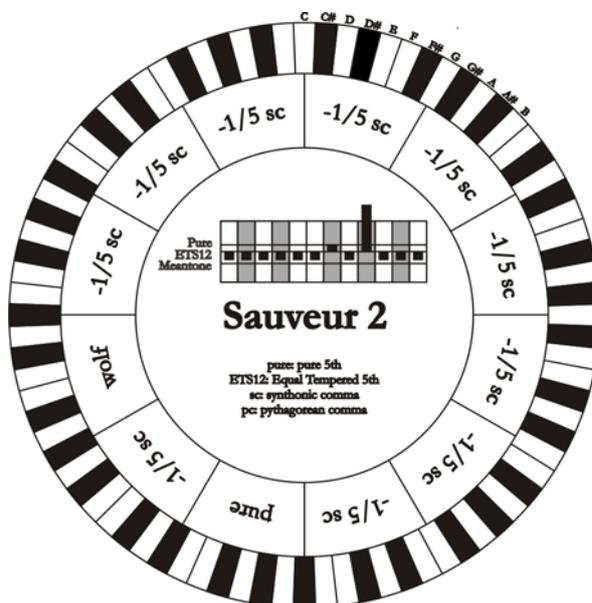
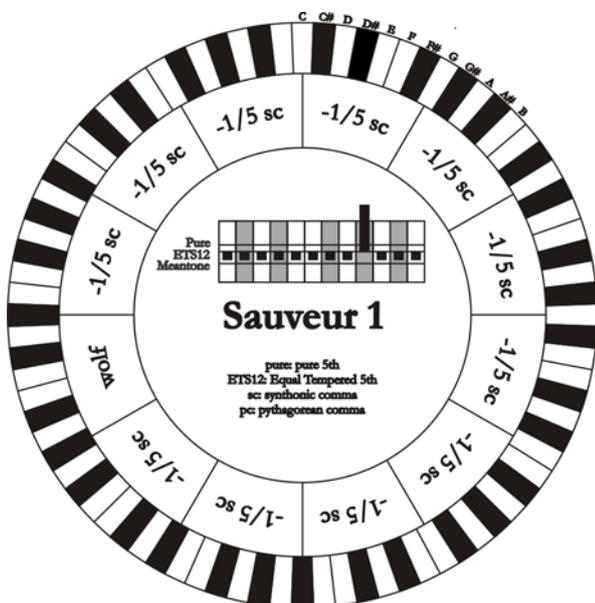
Eleven fifths are reduced by 2/7 of syntonic comma. The wolf fifth, very wide and therefore unusable, lies on G#. Eight third majors are usable and reduced by 1/7 of syntonic comma.

Well characterised chromatic scale.



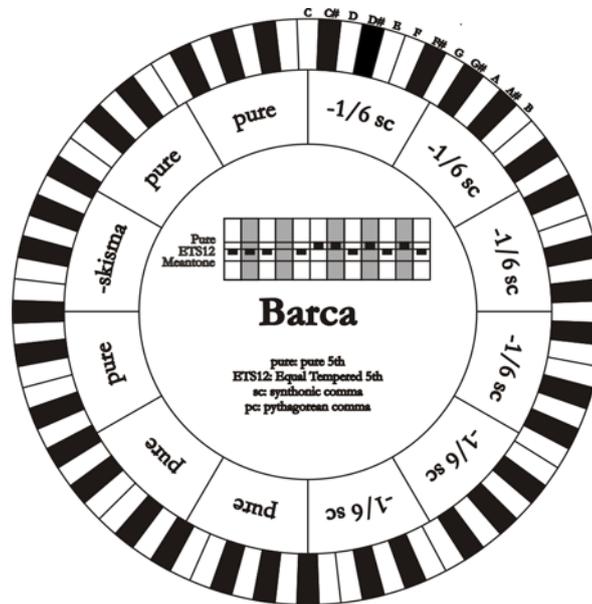
**SAUVEUR 1 - SAUVEUR 2**

The Saviour 1 tuning is based on eleven fifths, reduced by 1/5 of syntonic comma. Wolf fifth lies on G#. In Saviour 2 the fifth on F# is pure. The eight third majors of the meantone are somewhat wider here, so the “wolf” is less prominent. Well tuned tonalities are particularly “warm” and pleasant.



**BARCA**

The Barca temperament is based on six fifths (from C) reduced by 1/6 of syntonic comma each, and one fifth (on Eb) reduced of the remaining skisma. Therefore there are no Pythagorean thirds, and tonalities with many alterations still sound well.



**10.4 CONTENT OF THE .SET, .CMB, .STS, .STA and .ALL FILES**

**FILE .SET**

PARAMETER	POSITION	NOTE
SELECTED STYLE	system data	
Local Off of each stop		
PEDAL	VOLUMES function	
CHOIR	VOLUMES function	in 3-manuals models
GREAT	VOLUMES function	
SWELL	VOLUMES function	
OUT 1	VOLUMES function	
OUT 2	VOLUMES function	
SUB	VOLUMES function	
INPUT	VOLUMES function	
TUNING	Main page	
TEMPER.	Main page	
REVERB	SETTINGS menu	
KEYB. INVERS.	SETTINGS menu	
SHORT OCTAVE	SETTINGS menu	
INTERNAL	SETTINGS menu, EQUALIZER function	
OUT 1	SETTINGS menu, EQUALIZER function	
OUT 2	SETTINGS menu, EQUALIZER function	
SUB CROSSOVER	SETTINGS menu, EQUALIZER function	
PEDAL OUT 1 - OUT 2	SETTINGS menu, EXTERNAL OUTPUTS function	
CHOIR OUT 1 - OUT 2	SETTINGS menu, EXTERNAL OUTPUTS function	in 3-manuals models
GREAT OUT 1 - OUT 2	SETTINGS menu, EXTERNAL OUTPUTS function	
SWELL OUT 1 - OUT 2	SETTINGS menu, EXTERNAL OUTPUTS function	
REVERB OUT 1 - OUT 2	SETTINGS menu, EXTERNAL OUTPUTS function	
INPUT OUT 1 - OUT 2	SETTINGS menu, EXTERNAL OUTPUTS function	
PEDAL TX - RX	SETTINGS menu, MIDI / MIDI CHANNELS function	
CHOIR TX - RX	SETTINGS menu, MIDI / MIDI CHANNELS function	in 3-manuals models
GREAT TX - RX	SETTINGS menu, MIDI / MIDI CHANNELS function	
SWELL TX - RX	SETTINGS menu, MIDI / MIDI CHANNELS function	
CONTROL	SETTINGS menu, MIDI / MIDI CHANNELS function	
PROGRAM	SETTINGS menu, MIDI / MIDI FILTERS function	
SYSEX	SETTINGS menu, MIDI / MIDI FILTERS function	
REAL TIME	SETTINGS menu, MIDI / MIDI FILTERS function	
NOTE TO COUPL.	SETTINGS menu, MIDI function	
OUT MODE	POSITION	

PARAMETER	POSITION	NOTE
PEDALE	SETTINGS menu, VELOCITY SENSE function	
CHOIR	SETTINGS menu, VELOCITY SENSE function	in 3-manuals models
GREAT	SETTINGS menu, VELOCITY SENSE function	
SWELL	SETTINGS menu, VELOCITY SENSE function	
SAVE ENC+AP	SETTINGS menu, COMBINATIONS function	
SAVE MIDI PIST.	SETTINGS menu, COMBINATIONS function	
SAVE ST/TR/OR	SETTINGS menu, COMBINATIONS function	
SAVE COUPL.	SETTINGS menu, COMBINATIONS function	
PISTON CMB	SETTINGS menu, COMBINATIONS function	
CRESC. PED.	SETTINGS menu	if [CRESCENDO] swell is present
LCD CONTRAST	SETTINGS menu	

### FILE .CMB

COMBINATIONS	CONTENT	NOTE
Tutti	all stops, all couplers, all tremulants, tremulants depth and speed*, ENC*, MIDI controls*, AP*, MIDI Program Change and Bank Select, Orchestra voices*, Style*	* recalled if enabled in COMBINATIONS function
all General combinations	all stops, all couplers, all tremulants, tremulants depth and speed*, ENC*, MIDI controls*, AP*, MIDI Program Change and Bank Select, Orchestra voices*, Style*	* recalled if enabled in COMBINATIONS function
all Divisional combinations	all stops, all couplers, all tremulants, tremulants depth and speed*, ENC*, MIDI controls*, AP*, MIDI Program Change and Bank Select, Orchestra voices*, Style*	* recalled if enabled in COMBINATIONS function
Crescendo (16 steps)	all stops, all couplers, all tremulants	

### FILE .STS

PARAMETER	POSITION	NOTE
ENSEMBLE	STYLE menu	
TREMULANTS DEPTH	STYLE menu, TREMOLOS function	
TREMULANTS SPEED	STYLE menu, TREMOLOS function	
VOICES VOLUMES	STYLE menu, VOICES VOLUME function	
ORCHESTRA VOICES	STYLE menu, ORCHESTRA function	

### FILE .STA

CONTENT	NOTE
the same of 4 .sts files	1 for each Style

### FILE .ALL

CONTENT	NOTE
the same of 1 .sta files	
the same of 1 .cmb file	
the same of 1 .set file	
Local Off of each stop	

## 10.5 WHAT MIDI IS

The MIDI interface (Musical Instrument Digital Interface) allows instruments of different makes and kinds to communicate with each other, using this very specific protocol of codes. This allows the creation of systems of MIDI instruments, offering much greater versatility and control than is possible with single instruments. To make this communication possible, all MIDI instruments have two or three 5-pin DIN connectors called:

- **MIDI IN:** The connector through which the instrument receives the MIDI data transmitted by other units.
- **MIDI OUT:** The connector through which the instrument sends the MIDI data it has generated to other units.
- **MIDI THRU:** This connector, not always provided on all instruments, is used for connecting several units in series, since it transmits the MIDI data exactly as they are received by the respective MIDI IN port.

Most instruments equipped with MIDI interface transmit MIDI messages which specify, for example,

which note has been played and with what dynamic, by means of the MIDI OUT connector. If this connector is connected to the MIDI IN connector of another MIDI instrument, such as an expander, the second instrument will respond exactly to the notes played on the transmitter instrument.

The same type of information transfer is used for recording MIDI sequences. A computer or a sequencer can be used to record the MIDI data generated by the transmitter instrument. If these recorded data are sent back to the instrument, it automatically repeats the recorded performance.

MIDI is able to transmit a multitude of digital data by means of just one cable, and thus just one connector. This is thanks to the MIDI channels. There are 16 MIDI channels, and in a similar way as for radio communications in which two stations can only communicate if they are tuned to the same frequency (or channel), two MIDI instruments connected together are only able to communicate if the transmitter instrument channel is the same as the receiver instrument channel.

MIDI messages subdivide into channel messages and system messages. The following is a short description of these messages:

### **CHANNEL MESSAGES**

#### **NOTE ON**

This message is transmitted when a note is depressed on the keyboard. Each Note On message contains the following information:

**Note On:** when a key has been struck;

**Note Number:** the key which has been pressed, and therefore the relative note played;

**Velocity:** note velocity (i.e. the force applied when the key was struck).

Note messages are expressed as a number from 0 to 127, with middle C represented by number 60.

#### **NOTE OFF**

This message is transmitted when a key struck previously is released.

When it is received, the sound of the note relating to the key is switched off. Each Note On message contains the following information:

**Note Off:** a key has been released;

**Note Number:** which key has been released;

**Velocity:** velocity (i.e. how fast the note was released).

#### ***N.B.:***

*A Note On message with Velocity=0 is considered equivalent to a Note Off message.*

### **PROGRAM CHANGE**

This message is used to select the programs or sounds of the receiver instrument.

There is also a specific standard called General MIDI which describes which sound should be recalled for each Program Change received. This association is usually described by means of a table included in the user manual of the instrument which adopts the standard.

This message contains the following information:

**Program Change:** voice or program change;

**Program Change Number:** the number of the program or voice to be activated;

### **CONTROL CHANGE**

These are control messages (often associated to trimmers or pedals) used to add expression to the performance, allowing you to set (and control in real time if necessary) voice parameters such as volume (CC n.7) or the position of the swell pedals (CC n.11), etc.

This message contains the following information:

**Control Change:** a controller has been adjusted

**Controller Number:** which controller has been adjusted

**Controller Position:** the position of the controller

## SYSTEM MESSAGES

### SYSTEM EXCLUSIVE

These messages can only be interpreted by an instrument made by the same producer as the transmitter device (in some cases only by the same model). They mainly relate to the instrument's sound generation and programming parameters. The organ uses these messages to control all the internal parameters and for switching the voices on and off.

### REAL TIME

These messages are used for the real-time control of specific modules or functions of a connected instrument. These messages include the Start, Stop, Pause/Continue and Clock commands.

**START:** the sequencer has started to record or play back a MIDI sequence

**STOP:** the sequencer has been stopped

**PAUSE / CONTINUE:** the sequencer has been set in stop status

**CLOCK:** the sequencer speed

### N.B.

*The organ does not transmit / receive the messages described above. They are described for your information only.*

The Real Time messages also include the Active Sensing code, sent to keep the dialogue between two MIDI instruments alive. When the receiver instrument does not receive any MIDI data or the Active Sensing code in a time interval of about 300 milliseconds, it considers the MIDI connection to have been deactivated, so it switches off any notes still active. Remember that the transmission and reception of this message is optional, so not all instruments are equipped to handle it.

## 10.6 DETAILED MIDI IMPLEMENTATION

### CHANNEL MESSAGES

Using default settings, channel messages are sent and received on the following MIDI channels:

- Ch.1: Swell notes or controls
- Ch.2: Great notes or controls
- Ch.3: Choir notes or controls
- Ch.4: Pedal notes or controls

Ch.16 is a reserved channel (system)

#### Note On

Message which is generated when a key is pressed.

Data format: 9nH kkH vvH

n=channel number : 0H-EH (1-15)  
 kk=note number : 1EH-65H (30-101)  
 vv=note on velocity : 01H-7FH (1-127)  
 : 00H (0) Note Off

#### Note Off

Message which is generated when a key is released.

Data format: 8nH kkH vvH  
 9nH kkH 00H

n=channel number : 0H-EH (1-15)  
 kk=note number : 1EH-65H (30-101)

vv=note off velocity : 00H-7FH (0-127)  
 ignored

- This message can be also received as Note On with velocity=0.

#### Control Change

Messages to control volumes, expressions and other system controls.

- **Bank Select MSB (CC 0)**

Controller transmitted in combination of Program Change and Bank Select LSB in order to select a specific bank of sound. It can be transmitted using the COMBIN.

PRG function and when stored in the combinations and Tutti. It also can be received on channel 16 to select the Memory Bank.

Data format: BnH 00H vvH

n=channel number : 0H-EH (1-15)  
 vv=bank MSB number : 00H-7FH (0-127)

- **Volume (CC 7)**

Message which controls the sections volume.

Data format: BnH 07H vvH

n=channel number :0H-EH (1-15)  
vv=volume value :00H-7FH (0-127)

- **Expression (CC 11)**

Message which controls the sections expression.

Data format: BnH 0BH vvH

n=channel number :0H-EH (1-15)  
vv=expression value :00H-7FH (0-127)

- **Bank Select LSB (CC 32)**

Controller transmitted in combination of Program Change and Bank Select MSB in order to select a specific bank of sound. It can be transmitted using the COMBIN. PRG function and when stored in the combinations and Tutti.

Data format: BnH 20H vvH

n=channel number :0H-EH (1-15)  
vv=bank LSB number :00H-7FH (0-127)

- **Sustain (CC 64)**

Message which controls the Sustain / Damper effect.

Data format: BnH 40H vvH

n=channel number :0H-EH (1-15)  
vv=switch :00H (0) off  
(received as 00H-39H)  
:7FH (127) on  
(received as 40H-7FH)

- **All Sounds Off (CC 120)**

Terminates all voices currently on for the specific channel.

Data format: BnH 78H 00H

n=channel number :0H-EH (1-15)

- **Reset All Controllers (CC 121)**

Controllers are set to the default value.

Data format: BnH 79H 00H

n=channel number :0H-EH (1-15)

- This message is transmitted only.

- **All Notes Off (CC 123)**

Terminates all notes currently on for the specific channel.

Data format: BnH 7BH 00H

n=channel number :0H-EH (1-15)

## Program Change

Messages for selecting sounds, timbres or programs in external modules. It also can be received by the organ to recall combinations, Tutti and Crescendo steps.

Data format: CnH mmH

Transmitted:

n=channel number :00-EH (1-15)  
mm=Program Ch. number:00H-7FH (0-127)

Received:

n=channel number :FH (16)  
mm=Program Ch. number:  
00H (0): general HR  
01H-06H (1-6): general combinations 1-6  
10H (16): Pedal HR  
11H-16H (17-22): Pedal combinations 1-6  
20H (32): Great HR  
21H-26H (33-38): Great combin. 1-6  
30H (48): Swell HR  
31H-36H (49-54): Swell combin. 1-6  
40H (64): Choir HR  
41H-46H (65-70): Choir combin. 1-6  
60H (96): Tutti OFF  
61H (97): Tutti ON  
6FH (111): Crescendo -- (OFF)  
70H-7FH (112-127): Crescendo steps 1-16

## ***STANDARD SYSTEM EXCLUSIVE MESSAGES***

- **Device Inquiry**

Instrument information sent after switching on and when a Device Inquiry Request is received.

Data format: F0H 7EH 00H 06H 02H 31H 00H 1CH 20H 00H xxH yyH zzH vvH F7H

F0H: Exclusive status  
7EH: Universal Non Realtime message  
00H: channel  
06H: general information  
02H: device ID reply  
31H: Viscount ID  
00H 1CH: device family code  
20H 00H: device family member code  
xxH yyH zzH vvH: software version  
F7H: End of Exclusive

- **Master Fine Tuning**

Parameter: Tuning

Video page: Main page

Data format: F0H 7FH 7FH 04H 03H vvH nnH F7H

F0H: Exclusive status  
7FH: Universal Realtime message  
7FH: channel (any)  
04H: Sub-ID #1=Device Control message  
03H: Sub-ID #2=Master Fine tuning  
vvH nnH: fine tuning value  
00H 00H: A4=415,3 Hz

00H 40H: A4=440 Hz  
 7FH 7FH: A4=466,2 Hz  
 F7H: End of Exclusive

### • Temperament

Parameter: Temperament

Video page: Main page

Data format: F0H 7EH 7FH 08H 08H 03H 7FH  
 7FH [ss] ... F7H

F0H: Exclusive status  
 7EH: Universal Non Realtime message  
 7FH: channel (any)  
 08H: Sub-ID #1=MIDI Tuning standard  
 08H: Sub-ID #2=scale/octave tuning 1-byte form (Non Real-Time)  
 03H: channel/options byte 1  
 7FH: channel byte 2  
 7FH: channel byte 3  
 [ss]:12 byte tuning offset of 12 semitones from C to B  
 00H: -64 cents  
 40H: 0 cents  
 7FH: +64 cents  
 F7H: End of Exclusive

## ***VISCOUNT SYSTEM EXCLUSIVE MESSAGES***

### • Register on/off

Data format: F0H 31H snH xxH yyH F7H

F0H: Exclusive status  
 31H: Viscount ID  
 sH : switch  
     0H=voice off  
     4H=voice on  
 nH : channel number (0H - EH)  
 xxH: voice id - first byte  
 yyH: voice id - second byte  
 F7H: End of Exclusive

### • Tremulants Speed

Parameter: Spd

Video page: Style/ Tremolos

Data format: F0H 31H 2nH 5AH vvH F7H

F0H: Exclusive status  
 31H: Viscount ID  
 2nH: channel number (s=0H-EH)  
 5AH: tremulants speed  
 vvH: speed value (04H-20H)  
 F7H: End of Exclusive

- This message is transmitted when the Tremulants is switched on.

### • Tremulant Depth

Parameter: Dpt

Video page: Style / Tremolo

Data format: F0H 31H 2nH 5CH vvH F7H

F0H: Exclusive status  
 31H: Viscount ID  
 2nH: channel number (s=0H-EH)  
 5CH: tremulant depth  
 vvH: depth value (04H-20H)  
 F7H: End of Exclusive

- This message is transmitted when the Tremulant is switched on.
- When switched off, the tremulant depth value is trasmitted as 00H

### • Temperament

Parameter: Temper.

Video page: Main page

Data format: F0H 31H 2FH 31H vvH F7H

F0H: Exclusive status  
 31H: Viscount ID  
 2FH: system control  
 31H: temperament  
 vvH: temperament type  
 00H=Equal  
 10H=Kirnberger II  
 11H=Werckmeister III  
 12H=Pythagorean  
 13H=Meantone 3#  
 14H=Vallotti  
 15H=Chaumont  
 16H=Kellner 1975  
 17H=Kirnberger III  
 18H=Werckmeister IV  
 19H=Werckmeister V  
 1AH=Silbermann  
 1BH=Meantone 3b  
 1CH=Meantone 3M  
 1DH=Zarlino  
 1EH=Sauveur 1  
 1FH=Sauveur 2  
 20H=Barca  
 F7H: End of Exclusive

### • Ensemble

Parameter: Ensemble

Video page: Style

Data format: F0H 31H 2FH 32H vvH F7H

F0H: Exclusive status  
 31H: Viscount ID  
 2FH: system control  
 32H: ensamble  
 vvH: ensamble value (00H-08H)  
 F7H: End of Exclusive

- **Tuning**

Parameter: Tuning

Video page: Main page

Data format: F0H 31H 2FH 67H 00H 0nH 0nH  
0nH F7H

F0H: Exclusive status  
31H: Viscount ID  
2FH: system control  
67H: fine tuning  
0nH 0nH 0nH: nibblezed data of tuning value  
    02H 00H 0CH=-50 cents (A=427,47Hz)  
    04H 00H 00H=0 cents (A=440 Hz)  
    05H 0FH 04H=+50 cents (A=452,89Hz)  
F7H: End of Exclusive

- **Cancel**

Data format: F0H 31H 2FH 6CH 00H F7H

F0H: Exclusive status  
31H: Viscount ID  
2FH: system control  
6CH: cancel  
00H: execute cancel  
F7H: End of Exclusive

- **Couplers on/off**

Data format: F0H 31H 2FH 70H vvH F7H

F0H: Exclusive status  
31H: Viscount ID  
2FH: system control  
70H: coupler  
vvH: type and switch  
    00H=SW/PD on  
    10H=SW/PD off  
    01H=GT/PD on  
    11H=GT/PD off  
    02H=CH/PD on  
    12H=CH/PD off  
    03H=SW/GT on  
    13H=SW/GT off  
    04H=CH/GT on  
    14H=CH/GT off  
    05H=SW/CH on  
    15H=SW/CH off  
F7H: EOX

- This message can be only received and recorded by the internal sequencer. It is not transmitted.

## ***SYSTEM REAL TIME MESSAGES***

FEH: Active Sensing

FEH is transmitted every 300 msec. whenever is no other MIDI data being transmitted.

## MIDI IMPLEMENTATION CHART

**Viscount Chorum**  
Classic Organ

Version: 1.0  
Date: 21/03/2016

FUNCTION...	TRANSMITTED	RECEIVED	REMARKS
<b>BASIC</b> Default	1÷15	1÷15	
<b>CHANNEL</b> Changed	1÷15	1÷15	
<b>MODE</b> Default	Mode 3	Mode 3	
Messages	*****	*****	
Altered	*****	*****	
<b>NOTE</b>	30÷101	30÷101	
<b>NUMBER</b> True Voice	36÷96	30÷101	
<b>VELOCITY</b> Note ON	O	O	
Note OFF	O	O	
<b>AFTER</b> Key's	X	X	
<b>TOUCH</b> Ch's	X	X	
<b>PITCH BENDER</b>	X	X	
<b>CONTROL</b> 0	O	O	Bank Select MSB *1
<b>CHANGE</b> 7	O	O	Volume
11	O	O	Expression
32	O	O	Bank Select LSB
64	O	O	Sustain
120	O	O	All sounds off
121	O	X	Reset All Controllers
123	O	O	All Notes Off
<b>PROGRAM</b>	O	O	*2
<b>CHANGE</b> True#			
<b>SYSTEM EXCLUSIVE</b>	O	O	
<b>SYSTEM</b> Song Pos	X	X	
<b>COMMON</b> Song Sel	X	X	
Tune	X	X	
<b>SYSTEM</b> Clock	X	X	
<b>REAL TIME</b> Commands	X	X	
<b>AUX</b> Local On-Off	X	X	
<b>MESSAGES</b> All notes off	O	O	
Active Sense	O	O	
Reset	X	X	

**NOTES:**

\*1: this message can be received on ch.16 only for selecting Memory Bank

\*2: this message can be received on ch.16 only for selecting combinations, Tutti and Crescendo steps.

Mode 1: Omni On, Poly  
Mode 3: Omni Off, Poly

Mode 2: Omni On, Mono  
Mode 4: Omni Off, Mono

O=YES  
X=NO

**Disposition concernant les anciens équipements électriques et électroniques (applicable dans l'Union Européenne et dans d'autres pays européens avec des systèmes de collecte séparés)**



**Dir. 2002/95/CE, 2002/96/CE e 2003/108/CE**

Ce symbole sur le produit ou sur son emballage indique que ce produit ne sera pas traité comme perte ménagère. Au lieu de cela il sera remis au point de collecte dédié pour le recyclage de l'équipement électrique et électronique. En s'assurant que ce produit est trié et jeté correctement, vous contribuerez à empêcher de potentielles conséquences négatives pour l'environnement et la santé humaine, qui pourraient autrement être provoquées par la manutention de rebut inadéquate de ce produit.

La réutilisation des matériaux aidera à conserver les ressources naturelles. Pour des informations plus détaillées sur la réutilisation de ce produit, vous pouvez contacter votre mairie, la société de collecte et tri des rebuts ou le magasin où vous avez acheté le produit.



Ce produit respecte les conditions de EMCD 2004/108/EC et LVD 2006/95/EC.

viscount

**Viscount International S.p.A.**

Via Borgo, 68 / 70 – 47836 Mondaino (RN), ITALY

**Tel:** +39-0541-981700 **Fax:** +39-0541-981052

**Website:** [www.viscountinstruments.com](http://www.viscountinstruments.com)