

GX236 (i/e)
GeniSys™ Series w/ApexPlus™ Technology
(includes Drawknob series instruments)

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The GeniSys™ Overview Guide is available for download from the Allen Organ Company website at: <https://www.allenorgan.com/support/manuals-and-guides.html>. Enter this link into your browser and then click on the appropriate link to download the associated manual.

An online version of the GeniSys Display Operation guide is also available at: <https://www.allenorgan.com/genisys/index.html>.

Your Allen Organ Warranty should be completed using the online Warranty registration tool at: <https://www.allenorgan.com/warrantyreg/frmregwarranty.html>. Please complete all required fields and click the link at the bottom of the page to submit the warranty registration.

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Contents

I.	GENISYS™ DISPLAY.....	1
II.	ORGAN STOPS.....	1
III.	STOP CONTROLS.....	3
IV.	SPECIALIZED STOP CONTROLS.....	5
V.	GENISYS VOICES™ (<i>optional</i>).....	6
VI.	DIGITAL ZIMBELSTERN (<i>optional</i>).....	6
VII.	KEYBOARDS.....	6
VIII.	ILLUMINATED MUSIC RACK.....	6
IX.	LUMITECH™ CAPTURE.....	7
X.	EXPRESSION SHOES.....	7
XI.	SETTING CAPTURE REGISTRATIONS.....	7
XII.	REVERSIBLE PISTONS.....	9
XIII.	TUTTI I/II.....	9
XIV.	PISTON SEQUENCER.....	10
XV.	USB MEMORY PORT.....	10
XVI.	STOPLIST LIBRARY.....	10
XVII.	ARTISTIC REGISTRATION.....	11
XVIII.	TRANSPOSER.....	14
XIX.	ACOUSTIC PORTRAIT™.....	15
XX.	INSTALLATION, VOICING, AND CARE OF THE ORGAN.....	16
XXI.	SAFETY INFORMATION.....	17
	APPENDIX A: MIDI IMPLEMENTATION CHART.....	18
	APPENDIX B: HYMN PLAYER Song List.....	19
	APPENDIX C: GENISYS™ VOICES SOUND LIST.....	20
	APPENDIX D: VISUAL KEY RANGE CHART.....	22
	APPENDIX E: GNU PUBLIC LICENSE INFORMATION.....	23

I. GENISYS™ DISPLAY

GeniSys™ model GX236 contains a multi-function color touch screen display. GeniSys™ Display displays and controls a variety of features and functions which are accessed and changed just by touching the screen.

Please reference the online GeniSys™ Display tutorial which can be easily accessed using a personal computer (PC or MAC), tablet or Smart Phone (Android or iPhone) at: <http://www.allenorgan.com/genisys>

In addition, more in-depth descriptions about the features and functions within the GeniSys™ Display is available within the GeniSys™ Overview manual. Reference the Owner's Manual section located on the Allen Organ website at: www.allenorgan.com



Important!: Only a light touch is needed to select the buttons on the GeniSys™ Display touch screen. Use only the tip or pad of your finger to touch the screen. Do NOT use any sharp objects such as a fingernail, pencil/pen tip, etc. to touch the screen as this could scratch and irreparably damage the touch screen display.

II. ORGAN STOPS

PITCH FOOTAGE

The number appearing on each stop, along with its name, indicates the “pitch” or “register” of the particular stop. Organs can produce notes of different pitches from a single playing key. When this sound corresponds to the actual pitch of the played key, the stop is referred to as being of 8' (eight foot) pitch; therefore, when an 8' stop is selected and Middle C is depressed, the pitch heard is Middle C. If the sounds are an octave higher, it is called 4' or octave pitch. If two octaves higher, it is called 2' pitch. A stop sounding three octaves higher is at a 1' pitch. Similarly, a 16' stop sounds an octave lower and a 32' stop two octaves lower.

Stops of 16', 8', 4', 2' and 1' pitch all have octave relationships, that is, these whole numbered stops all sound at octaves of whatever key is depressed. Non-octave pitches are also used in organs. Their footage numbers contain a fraction and they are referred to as *Mutations*. Among these are the $2\text{-}2/3'$ *Nasard*, $1\text{-}3/5'$ *Tierce*, $1\text{-}1/3'$ *Quintflöte* and $2\text{-}2/3'$ *Twelfth*. Because they introduce unusual pitch relationships with respect to the 8' tone, they are most effective when combined with other stops and used either in solo passages or in small ensembles of flutes.

TONAL FAMILIES

1. Flues

Organ tones divide into two main categories: *flues* and *reeds*. In pipe organs, flue pipes are those in which the sound is set in motion by wind striking directly on the edge of the mouth of the pipe. Flues include principal, flute and string tones. Compound stops and hybrid stops are variations within these three stop families.

The term “imitative” means that the organ stop imitates the sound of a corresponding orchestral instrument; for example, an imitative 8’ Viola stop sounds like an orchestral viola.

<u>Principal Voices</u> Principal, Diapason, Octave, Fifteenth, Quinte	Characteristic organ tones, not imitative of any orchestral instruments. Usually present at many pitches and in all divisions. Rich, warm and harmonically well developed.
<u>Flute Voices - <i>Open</i>:</u> Harmonic Flute, Koppelflöte, flute mutation stops <u>Flute Voices - <i>Stopped</i>:</u> Holzgedackt, Bourdon, Lieblichgedackt, Rohr Bourdon	Lesser harmonic development than Principals. Open flutes are somewhat imitative; stopped flutes are not. Present at all pitch levels and in all divisions.
<u>String Voices</u> Gamba, Salicional, Viole Céleste	Mildly imitative and brighter harmonic development than Principals. Usually appear at 8’ first; can be 4’ & 16’ ranks.
<u>Compound Voices</u> Mixture, Fourniture	Voices produced by more than one rank sounding simultaneously. Best registered with other stops.
<u>Hybrid Voices</u> Erzähler, Spitzflöte	Voices that combine the tonal characteristic of two families of sound, e.g., flutes and principals, or strings and principals.

2. Reeds

In *reed* pipes, a metal tongue vibrates against an open flattened side of a metal tube called a shallot. The characteristic sounds of different reeds are produced through resonators of different shapes. The family of reeds subdivides as follows:

<u><i>Chorus or Ensemble:</i></u> Double Trumpet, Tromba, Posaune, Clarion, Bombarde <u><i>Solo:</i></u> Hautbois, Clarinet, Krummhorn	Voices of great harmonic development; some are imitative of their orchestral counterparts.
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III. STOP CONTROLS

PEDAL ORGAN

Contre Violone 32'	String tone at 32' pitch. This stop is smooth and much less assertive rounding out the lower end of a string ensemble.
Diapason 16'	The 16' member of the Pedal Principal chorus. Strongest pedal flue stop.
Bourdon 16'	Stopped flute tone of weight and solidity.
Violone 16'	Soft string tone at 16' pitch.
Bourdon Doux 16' (Swell)	Softer stopped flute of delicacy and definition. Useful where a soft 16' pitch is required. <i>**Expressed with the Swell division.</i>
Octave 8'	8' member of the Pedal Principal chorus.
Gedackt 8'	Stopped flute tone of 8' pitch, useful in adding clarity to a pedal line in combination with the Bourdon 16' or Lieblich Bourdon 16'.
Choralbass 4'	Pedal 4' principal tone.
Mixture IV	Compound stop of Principal tones. One pedal produces four distinct pitches at octave and fifth relationships to the pedal being pressed. Used to crown the Pedal Principal chorus.
Bombarde 16'	A strong Pedal reed that lends strength and "snarl" to the Pedal line.
Trompette 8'	A reed stop of rich harmonic development. May also be used as a solo voice.
Clarion 4'	A bright chorus reed. Also usable as a solo voice.

SWELL ORGAN

Geigen Diapason 8	A diapason/string hybrid type tone that is more diapason than string and blends well with other stops.
Rohr Bourdon 8'	Stopped Flute tone of moderate harmonic development. Provides the 8' member of the Swell Flute chorus and is useful by itself or with other flutes and mutations in creating solo voices.
Salicional 8'	Full bodied string tone.
Voix Celeste 8'	String tone, slightly detuned, used with the Viole 8' to create a warm String celeste.
Prestant 4'	Bright 4' Principal tone.
Flute 4'	Common flute voice that works well in ensembles of flutes or strings, or as a solo voice.
Nasard 2-2/3'	Flute mutation that sounds one octave and a fifth above the keys played. Always used with other stops (usually beginning with 8') for coloration.
Octavin 2'	A delicate, harmonic type flute at 2' pitch.
Tierce 1-3/5'	Flute mutation that sounds a seventeenth (two octaves and a third) above the keys played. Use mainly with 8' stops or flute ensembles.

Plein Jeu IV	Compound stop, or mixture comprised of Principal tones. Each note played produces four distinct pitches at octave and fifth relationships to the key being pressed. The mixture should never be used without stops of lower pitches. The Plein-Jeu IV is typically added to Diapason or Flute ensembles, or to a reed chorus.
Basson 16'	Chorus reed tone at the 16' pitch level, designed to supplement the other chorus reeds. Also usable as a distinctive solo reed.
Trompette 8'	Chorus reed stop of rich harmonic development. Can also be used as a solo voice.
Hautbois 8'	Solo reed with the pungent nasal timbre of an Oboe
Festival Trumpet 8' (nc)	Very bright, fiery and edgy reed. Useful as a solo stop. <i>**Does not couple.</i>
Celesta (Swell)	Sound similar to that of a Glockenspiel, but with a much softer and subtle timbre.

GREAT ORGAN

Violone 16'	String tone at 16' pitch.
Diapason 8'	Foundation stop of the Great principal chorus.
Gemshorn 8	Flute/string style hybrid stop that could almost be considered very close to a foundation type of tone, but with more flute color.
Harmonic Flute 8'	Open flute of considerable harmonic development. An excellent solo stop.
Flute Dolce Celeste II 8'	Two soft flute sounds, one slightly detuned from the other to create a warm, shimmering sound.
Octave 4'	The 4' member of the Great Principal chorus.
Spire Flute 4'	Flute/string style hybrid stop with a reedy and/or breathy style tone that blends very well with other stops.
Fifteenth 2'	An open metal stop that produces foundation tone at the 2' pitch level. Also the 2' member of the Great Principal chorus.
Cymbale III	Compound stop of principal tones. One key produces three distinct pitches at octave and fifth relationships to the key being pressed. The Mixture III should never be used alone. It is typically added to Diapason or Flute ensembles after the Mixture IV.
Mixture IV	A compound stop of principal tones. Four notes in octave and fifth relationships sound together when a single key is depressed. As pitches progress upward, they "break" back to the next lower octave or fifth. Used to cap the Great principal chorus, adding brilliance and pitch definition throughout the entire compass.
Tromba 8'	Chorus reed stop of rich harmonic development. Can also be used as a solo voice.
Krummhorn 8'	The tone quality of the shawm, a medieval ancestor of the clarinet, is the basis for this light, bright, nasal reed. It can be used alone as a solo or combined with light flutes for a somewhat rounder reed solo effect.

Festival Trumpet 8' (nc)	Very bright, fiery and edgy reed. Useful as a solo stop. <i>**Does not couple.</i>
Chimes	Typical Tubular Chimes.
Celesta (Sw)	Sound similar to that of a Glockenspiel, but with a much softer and subtle timbre. <i>**Expressed with the Swell division.</i>

IV. SPECIALIZED STOP CONTROLS

Some organ stop controls do not turn voices on/off, but instead turn on/off console functions such as outlined in this Section.

Great to Pedal	Connects all Great stops to the Pedal.
Swell to Pedal	Connects all Swell stops to the Pedal.
Swell to Great	Intermanual coupler connecting all Swell stops to the Great manual.
Swell Unison Off	Turns off stops only within the Swell Division at unison pitch. Note: Stops coupled into the Swell from other divisions will play from the Swell manual at unison pitch. Also, Swell Division stops coupled to other manuals or the pedalboard will play at unison pitch.
MIDI on Pedal	Opens MIDI channel to the Pedal.
MIDI on Swell	Opens MIDI channel to the Swell
MIDI on Great	Opens MIDI channel to the Great.
Tremulant (Swell, Great)	This stop provides a vibrato effect, natural in the human voice and wind instruments.
Tremulants Full	When activated with one or more of the organ's tremulants, it causes the tremulants to become much deeper than normal classical tremulants. Very useful for Gospel music. Also known as "Vibrato."
Melody Coupler	When playing on the Great manual, the highest key played on the Great will automatically play all stops drawn on the Swell, in addition to those drawn on the Great. By choosing a Swell stop, such as the Festival Trumpet, the melody played by the top note on the Great is accentuated.
Bass Coupler	Similar to the Melody coupler, however, in this case the lowest note played on the Great will also play all stops drawn in the Pedal Division. This allows voices normally played from the pedalboard to be heard without using the pedalboard.
Alternate Tuning	When activated, the organ's tuning will change to the alternate tuning selected from within the GeniSys™ Display. See the GeniSys™ Display tutorial for instructions on how to change Alternate Tunings.
Swell Mains Off	Used in conjunction with the Swell Antiphonal stop control. This stop disables the Swell division's main speakers.
Swell To Antiphonal	Causes the organ to speak from the Swell Antiphonal speakers (if so equipped). The organ will speak from both Antiphonal and Main divisions unless the Swell Mains Off stop is also turned on.

Gt-Pd Mains Off	Used in conjunction with the Gt-Pd Antiphonal stop control. This stop disables the Great/Pedal division's main speakers.
Gt-Pd To Antiphonal	Causes the organ to speak from the Great/Pedal Antiphonal speakers (if so equipped). The organ will speak from both the Great/Pedal Antiphonal and Main divisions unless the Gt-Pd Mains Off stop is also turned on.

V. GENISYS VOICES™ *(optional)*

GeniSys™ Voices is a set of over 260 classical and contemporary style voices, including eight drum kits and various special effect voices, which can be assigned and activated by designated stop controls within each division of the organ. Each division contains up to two GeniSys™ Voice stop controls. The stop controls are programmed within the multi-function GeniSys™ Display and those voices assigned may be easily viewed at any time. In addition to selecting a voice for a stop control's position, the voice's gain (volume), tuning, pitch and key range or key split may also be adjusted.

All voice settings are retained when the organ is turned off. GeniSys™ Voices expands the organ's sound capabilities by offering literally dozens of many different and creative sound configurations. Programmed combinations is all dependent on the requirements of the music and the creativity of the organist.

GeniSys™ Voices can also couple between Divisions for even more versatility!

See the GeniSys™ Display tutorial about instructions on GeniSys™ Voices.

VI. DIGITAL ZIMBELSTERN *(optional)*

The GeniSys™ model GX236 offers a digital multi-bell Zimbelstern which may be activated by an optionally installed toe stud. In addition, an optional AC relay may be installed in lieu of the digital counterpart so a mechanical Zimbelstern may be used instead. Contact your local Allen Organ representative for more information about this optional feature. ***Mechanical Zimbelstern must be purchased and obtained locally.*

VII. KEYBOARDS

The GeniSys™ model GX236 utilizes industry standard keyboards with velocity sensitivity for the best economical alternative option in playability and control. **Note:** Velocity sensitivity cannot be disabled.

Optional deluxe Allen keyboards offer a better feel utilizing a traditional wooden key action as well as the ability to adjust the key tension.

VIII. ILLUMINATED MUSIC RACK

Using advanced LED technology, the organ's music rack produces a light that is soft and even yet bright enough to view printed music at various angles as well as being cool to the touch. As a bonus, the underside of the music rack desk allows the light to illuminate the organ's keyboards. An integrated dimmer control has been incorporated into the side of the music rack desk which allows the organist to continuously adjust the overall light intensity smoothly over the range of the dimmer control. For convenience, the music rack light will automatically turn "on" with the organ's power switch.

IX. LUMITECH™ CAPTURE

State-of-the-art LED technology is incorporated into Allen's exclusive Lumitech Capture System. LED's not only require less power, but last about 10-times longer than incandescent bulbs for the ultimate in reliability. Manually pressing the upper or lower portion of a Lumitech stop control will "toggle" the on or off status of the stop. When the stop is lit, the labeled function of the stop control is activated. The "Self Check" feature within the GeniSys™ Display can be performed at any time to test the organ's capture system as well as the LED indicators.

Allen's optional deluxe moving capture system utilizes mechanical drawknob and rockertab stop controls which offer a more traditional look and feel similar to that of a real pipe organ console.

X. EXPRESSION SHOES

The organ's control pedals (called "shoes") control expression and Crescendo.

- The left shoe expresses the Great and Pedal Divisions.
- The middle shoe expresses the Swell Division.
- The right-most shoe is the Crescendo shoe. It is a master Crescendo for all divisions. It gradually adds stops as it is opened/depressed. Sequential green, yellow and red lights on the GeniSys™ Display illustrates relative pedal position. Indiscriminate use of the Crescendo, in lieu of careful registration, should be avoided.

The Crescendo B thumb piston is associated with the Crescendo shoe. Crescendo B accesses a second set of Crescendo registrations that can be different from the standard Crescendo registrations. See the GeniSys™ Display tutorial about accessing the Crescendo B programming section.

XI. SETTING CAPTURE REGISTRATIONS

Your Allen organ's capture system lets the organist set stop registrations within each of its available capture memories. The GeniSys™ GX236 model contains a set of General pistons, located under the left side of the Swell and Great manuals, as well as a set of Divisional pistons for each manual division centrally located under both the Swell and Great manuals. On GX236 models with internal speakers, "i" version", there is a set of six (6) toe studs, located to the right of the organ's Crescendo shoe for the Pedal division and as a convenience to the organist, a set of six (6) General division (Gen-5 thru Gen-10) toe studs are located to the left of the organ's Great-Pedal Expression shoe. On GX236 models without internal speakers, "e" version, the number of General division toe studs increases to ten (10).

General toe studs, when pressed, will activate the same stop registration programmed on the same number General piston. As a convenience, the GeniSys™ Display will indicate the last piston pressed underneath the expression/crescendo bar graph displays.

SETTING GENERAL PISTONS

General pistons will affect all stops in any division. Any stop turned on will be set within a General piston registration. To set a General piston:

- ❑ First, turn on any stops you wish to save within a registration.
- ❑ Press and hold the **SET** Piston.
- ❑ Press and release the desired GENERAL piston.
- ❑ Finally, release the **SET** Piston.

Note: *General pistons are customarily set from soft to loud using graduated stop combinations.*

SETTING DIVISIONAL PISTONS

Divisional pistons are different in that they only affect the stops of a single division. For example, only the Swell stops can be programmed onto a Swell divisional piston. Any Great stops turned on while selecting or setting a Swell divisional piston will be unaffected or changed. To set a Divisional piston:

- ❑ First, only turn on stops within a single division you wish to save within a registration.
- ❑ Press and hold the **SET** Piston.
- ❑ Press and release the desired DIVISIONAL piston.
- ❑ Finally, release the **SET** Piston.

The pistons, General or Divisional, which have been set “remember” the registrations which have been assigned to each of them. Each time a given piston is pressed, the registration assigned to it is activated. Stop registrations may be changed at any time by repeating the above procedures.

SETTING TOE PISTONS (STUDS)

Stop registration combinations may be set and drawn by toe studs, as well as by pistons. Toe studs, located on each side of the Expression and Crescendo shoes, are set in the same manner as thumb pistons. The toe studs on the left are duplicates of General pistons. The toe studs on the right are Pedal Divisional toe studs.

To set a Pedal Divisional Toe Stud...

- ❑ Select the desired Pedal stops.
- ❑ Hold the SET button, and momentarily press the desired Pedal toe stud.
- ❑ Finally, release the SET button.

When you set a General Piston, that combination is set automatically on the toe stud of the same number. That is, setting General Piston #8 also places its combination on General toe stud #8.

RECALL “R” PISTON

The “R” or Recall piston recalls the last registration setting prior to using any General or Divisional piston. For example;

- ❑ Press a General or Divisional piston/toe stud. The stop registration programmed on that particular piston/toe stud will appear.
- ❑ Manually register additional stops to the current stop registration.
- ❑ Now, press a different General or Divisional piston/toe stud. The stop registration programmed on that particular piston/toe stud will appear.
- ❑ Press the “R” piston. The previous stop registration, including those stops registered manually, will re-appear.

What happens is the capture system takes a “snapshot” of the current stop registration and stores it within the Recall piston memory before it actually changes to the new stop registration selected. Then, when the “R” piston is pressed, the capture system “recalls” the previous registration stored before the last piston/toe stud selection was made.

XII. REVERSIBLE PISTONS

The GeniSys™ model GX236 is equipped with several Reversible pistons for the intermanual coupler stops. Reversible pistons, when pressed, “toggle” the state of a coupler stop. For example, if the coupler stop is turned off, pressing the associated Reversible piston for that stop will turn the stop on. The same is true in reverse, if the coupler stop is turned on, pressing the associated Reversible piston for that stop will turn the stop off.

XIII. TUTTI I/II

The Tutti I and II pistons are sets for full organ registrations. Tutti II has a larger, louder registration than Tutti I. The Tuttis are turned on and off by the pressing piston buttons labeled TUTTI I or TUTTI II. The pistons are “toggled” meaning that pressing them a second time reverses the ON or OFF setting of the corresponding Tutti. Only one Tutti may be turned ON at a time. Pressing the other Tutti piston that is not turned ON will turn OFF the Tutti that was ON and turn ON the Tutti that was OFF. The *Cancel* piston button will turn OFF the Tuttis.

The GeniSys™ Display will indicate when either Tutti has been selected. A second set of Tuttis can be programmed by the organist. Like the Crescendo, indiscriminate use of Tuttis should be avoided. See the GeniSys™ Display tutorial about accessing the Crescendo B programming section.

XIV. PISTON SEQUENCER

The GeniSys™ model GX236 includes a multi-function Piston Sequencer. The Piston Sequencer allows the organist to step through a sequence of programmed registrations using the “Next” and “Prev” piston buttons (*or toe studs, if so equipped*). There are four modes of operation available:

OFF: The Piston Sequencer is disabled. The "Next" and "Prev" pistons/toe studs will not function.

SIMPLE STEPPER: This mode allows the organist to step sequentially through the available General pistons of a single capture memory level.

ADVANCED STEPPER: This mode allows the organist to step sequentially through the available General pistons of all capture memory levels.

CUSTOM: This mode allows the organist to sequentially step through a user programmed piston sequence of any available piston and capture memory level. Piston Sequence memory allows 512 steps allocated to a maximum of 99 sequences. See the GeniSys™ Display tutorial about accessing the Piston Sequencer programming section.

XV. USB MEMORY PORT

GeniSys™ model organs contain a USB memory port for a USB memory device. A variety of data is stored on the USB memory device the organ uses for various functions. The factory supplied USB memory device is formatted to contain the pre-programmed MIDI files used for both the Hymn Player and Performance Player as well as the factory preset registration settings for GeniSys™ Voices.

The USB memory device contains a sub-directory named “work”. This sub-directory is required for the Recorder feature as this is the location of where the user-recorded MIDI files are stored. Hundreds of user-recorded MIDI songs can be recorded on the factory supplied USB memory device without exceeding the available memory on the USB memory device. However, if a non-factory USB memory device is used, the “work” directory needs to be created on the USB memory device or the Recorder function will not operate correctly.

Note: If a non-factory USB memory device is used, the Hymn Player, Performance Player features will be disabled and the GeniSys™ Voices factory preset files will not be available.

XVI. STOPLIST LIBRARY

GeniSys™ model GX236 contains six (6) Classical voicing suites and three (3) Theatre voicing suites as standard stop lists for total of nine (9) voicing suites.

Classic Voicings: Classic Allen, English Cathedral, Cavallé Coll, Schlicker, Arp Schnitger and Aeolian-Skinner.

Theatre Voicings: Wurlitzer, Barton and Morton

Voicing suites are selected using the GeniSys™ Display. See the GeniSys™ Display tutorial about accessing and changing the current Stopl原因 Library.

XVII. ARTISTIC REGISTRATION

(Trained organists might not need to review this section.)

Organ registrations fall into two broad categories; *solo combinations* and *ensembles*. A solo combination is one in which a melody is played on one keyboard, the accompaniment on another keyboard. The pedal often provides a light bass line. Almost any stop or combination of stops will sound good as a solo voice. A contrasting tone quality should be chosen for the accompaniment, so that the accompaniment is softer than the solo voice. The Pedal stops must provide a foundation for the solo and accompaniment without covering them.

Most 8' reed stops make interesting solo voices. The addition of a 4' flute or a flute mutation (e.g., Nasard or Tierce) to a reed such as the Trompette colors the sound further and increases its volume slightly. Adding an 8' flute to a reed adds body to the sound.

Flutes can be used alone or in combinations as solo voices. One special combination of flutes that creates an appealing and historically significant solo combination is the Cornet (pronounced kor-NAY). The Cornet is created by using the following Swell stops: Rohr Bourdon 8', Traverse Flute 4', Nasard 2-2/3', Piccolo 2' and Tierce 1-3/5'. This solo combination, widely used for Baroque organ music, is just as appropriate for some modern music. Useful variations of the Cornet may be achieved by eliminating the 4', the 2', or even both.

When choosing stops for a solo voice, it is not always necessary to include an 8' stop; for example, since the 4' flute has a tone quality different from that of the 8' flute, the 4' flute can be used as an independent solo voice. By playing a solo voice an octave lower than written, the notes sound at the correct pitch. In similar fashion, a 16' stop can be selected and the notes played an octave higher than written. Tonal variety is gained, because each stop has its own tone color. For accompaniment, the most desirable voices are the 8' flutes or strings on each manual. Celestes often make effective accompaniments. The correct choice depends on the volume of the solo tone (a soft solo voice requires the softest accompaniment stop), the element of contrast, and the location of the solo stop. A bright, harmonically rich solo reed, for example, can be accompanied by either a string or flute, though the flute often contributes greater interest because of its greater contrast. Try to seek a "natural" balance of volume between solo and accompaniment.

SUGGESTED SOLO REGISTRATIONS

CHIMES SOLO

Swell: Rohr Bourdon 8' or Salicional 8', Voix Celeste 8'
Great: Chimes
Pedal: Bourdon Doux (Sw) 16', Swell to Pedal 8'
Play solo on Great and accompaniment on Swell

SOLO CORNET COMBINATION

Swell: Rohr Bourdon 8', Flute 4', Nasard 2-2/3', Piccolo 2', Tierce 1-3/5'
Great: Salicional 8' or Salicional and Voix Celeste 8'
Pedal: Bourdon Doux (Sw) 16', Gedackt 8'
Play solo melody on Swell and accompaniment on Great

FESTIVAL TRUMPET SOLO

Swell: Festival Trumpet 8'
Great: Diapason 8', Gemshorn 8', Octave 4', Fifteenth 2', Mixture IV
Pedal: Contre Violone 32', Diapason 16', Octave 8'
Play melody on Swell and accompaniment on Great.

These few combinations demonstrate basic techniques of solo registration. In creating registrations of your own, remember these three simple rules:

- ❑ Seek tonal contrast between solo and accompaniment.
- ❑ Be sure the solo is louder than the accompaniment.
- ❑ Choose a solo whose character is appropriate to the specific piece.

ENSEMBLE REGISTRATIONS

Volumes have been written on the subject of ensemble registration. Following is a summary of the major points.

- Ensemble registrations involve groups of stops that are played together, usually, but not always, with both hands on one keyboard. They are characterized by compatibility of tone, clarity, and occasionally power. Such registrations are used in hymn singing, choir accompaniments, and much of the contrapuntal organ literature.
- Two factors are always to be considered: tone quality and pitch. Ensembles begin with a few stops at the 8' and/or 4' pitch and expand "outward" in pitch as they build up. New pitches are usually added in preference to another 8' stop. Ensembles are generally divided into three tonal groupings called "choruses":

The Principal Chorus is the most fully developed with representation in various divisions of the organ and at every pitch from 16' to high mixtures. The Principal Chorus is sometimes called the narrow-scale flue chorus, a reference to the relative thinness of Principal pipes in relation to their length.

The Flute Chorus is also well represented with a diversity of stops at various pitches. Generally speaking, the Flute Chorus is composed of less harmonically developed tones, and is smoother and of lesser volume than the Principal Chorus. The Flute Chorus is sometimes called the wide-scale flue chorus, owing to the generally "fatter" look of Flute pipes as compared to Principals.

The Reed Chorus includes those reed tones designed to be used in the ensemble buildup. Not all reed voices are ensemble tones. A Clarinet, for example, is usually a solo stop. The various Trumpets, Clairons, Bassons, etc., are usually ensemble voices that add brilliance, power, and incisiveness to the sound. If you have questions as to whether a specific reed is a solo or ensemble stop, refer to the stop list in the preceding section.

The Swell Reed Chorus is a special ensemble of Basson 16' and Trompette 8'. It represents an entity important to French organ music and the full ensemble of the organ. These stops create a "blaze" of richly harmonic sounds that tops off both flue choruses.

Another special ensemble combination important in French music is the **Cornet** (described in the section on Solo Registration). This combination can be used with the chorus reeds and mutations to create the "Grand Jeu." The Cornet is also useful in Romantic ensembles, adding weight and thickness to the sound.

SUGGESTED ENSEMBLE COMBINATION REGISTRATIONS:

GREAT ENSEMBLE COMBINATIONS

1. Harmonic Flute 8', Spire Flute 4'
2. Harmonic Flute 8', Spire Flute 4', Fifteenth 2'
3. Diapason 8', Octave 4'
4. Diapason 8', Octave 4', Fifteenth 2'
5. Diapason 8', Octave 4', Fifteenth 2', Mixture IV
6. Diapason 8', Harmonic Flute 8', Octave 4', Spire Flute 4', Fifteenth 2', Mixture IV

SWELL ENSEMBLE COMBINATIONS

1. Rohr Bourdon 8', Salicional 8'
2. Rohr Bourdon 8', Salicional 8' Flute 4'
3. Rohr Bourdon 8', Salicional 8' Flute 4', Octavin 2'
4. Rohr Bourdon 8', Salicional 8' Flute 4', Octavin 2'
5. Rohr Bourdon 8', Salicional 8' Flute 4', Octavin 2', Mixture IV
6. Rohr Bourdon 8', Salicional 8' Flute 4', Octavin 2', Mixture IV, Tromba 8'

The use of the Swell to Great coupler allows these separate ensembles to be combined on the Great manual. It is also possible to combine some of these ensembles within the same division; for example, when the #5 Great and #3 Swell registrations are coupled together and played on the Great, they combine to form a nice round hymn combination.

The Pedal ensemble is created in much the same way as the manual ensembles, starting at 16' pitch instead of 8'. Be careful that the volume of the pedals is not greater than that of the manuals. Although the manual to pedal couplers are useful in bringing clarity to the pedal line, especially on softer registrations, avoid the temptation to rely constantly on one or two 16' stops and a coupler. Please note that the softest stops and flute mutations are normally not used with ensembles.

FULL ORGAN

Due to the immense capabilities of the organ, every stop and coupler on the instrument could be used simultaneously without distortion, if the organ is adjusted properly. In good registration practice, however, the organist would not haphazardly put on every stop on the instrument. For best results, listen and include only those stops that really contribute to the fullness and brilliance of the ensemble. Eliminate soft stops and solo stops that make no purposeful contribution.

This short treatment barely scratches the surface of the fascinating subject of organ registration. For those interested in gaining further insight into this vital area of organ playing, we recommend the following texts:

Audsley, George Ashdown. *Organ Stops and their Artistic Registration*.

Hialeah, FL: C. P. P. Belwin, 1985.

Irwin, Stevens. *Dictionary of Pipe Organ Stops*. 2nd Ed.

New York: Macmillan Books, 1983.

XVIII. TRANSPOSER

Vast computer capability makes it possible to perform the sometimes difficult task of transposing, while allowing the organist to play in the notated key. The GeniSys™ Display controls the operation of the Transposer.

Transposition to any of the twelve musical keys is possible. When the organ is turned ON, the Transposer defaults to the neutral or zero (0) position. The pitch can be raised a maximum of five half-steps or lowered a total of seven half-steps. Be aware that the Transposer's range settings "wrap around" from the plus five half-step setting to the minus seven half-step setting (or vice-versa).

The Transposer button within the GeniSys™ Display will change to a red color any time the Transposer setting is moved from the zero (0) or neutral pitch position.

Why Transpose?

- ❑ Because a song's range does not always suit the vocal range of a particular singer. By adjusting the Transposer, the piece can be sung more comfortably and effectively.
- ❑ Because some instruments are non-concert pitch. A trumpet in B^b, for example, can play the same music as the organist, if the Transposer knob is set two half steps lower.
- ❑ Because hymn singing can sometimes be improved by a more favorable key selection.

XIX. ACOUSTIC PORTRAIT™

Allen Organs are the only digital organs to bring the science of sampling to acoustics! Ordinary electronic reverb is a synthetic imitation of acoustics “applied to” the sound, not created as an integral part of it. Acoustic Portrait™ produces the real thing in exacting detail!

Acoustic Portrait™ begins with a sampling process using impulse responses that measure an actual room’s acoustic properties. These measurements are then stored in the organ's computer memory. Through an advanced real-time mathematical process called “convolution”, the acoustics of the sampled room actually become an integral part of the organ’s sound, producing a noticeably smoother, more natural result than synthetic reverb. Allen engineers have recorded the acoustics of cathedrals and other acoustically desirable buildings throughout the world. With patented low-latency convolution algorithms, Acoustic Portrait™ reproduces the true acoustic response of each original room with stunning realism! Each organ equipped with Acoustic Portrait™ features 10 different Acoustic Portrait selections, ranging from intimate rooms to cavernous cathedrals.

Available Reverb Selections

1. Pipe Chamber
2. Small Theatre
3. Small Church
4. Medium Room 1
5. Medium Room 2
6. Medium Room 3
7. Large Room 1
8. Large Room 2
9. Cathedral
10. Large Cathedral

Acoustic Portrait is controlled within the GeniSys™ Display and must be turned ON to hear the selected reverb selection. The Acoustic Portrait™ selection as well as the gain (volume), measured in dB (decibels), can be accessed and adjusted within the GeniSys™ Display. See the GeniSys™ Display tutorial for instructions on the Acoustic Portrait™ adjustments.

XX. INSTALLATION, VOICING, AND CARE OF THE ORGAN

INSTALLATION

Wherever your organ may be situated, careful installation is a prerequisite to successful results. Your Allen representative is well qualified to guide you in planning the finest possible installation. Factory assistance in planning the installation is also available and may, in fact, be sought by your Allen Organ representative.

VOICING

Your organ presents unprecedented accuracy in the scaling and voicing of each note of every stop. Should any parameters be required to be changed, your Allen Organ representative is able to make such changes. Final adjustments in scaling and voicing involve procedures that are best left to an expert. These adjustments are normally part of the installation, and once completed, should not require changes. If the organ is moved to a new location or major changes are made to the acoustical properties of the room the organ resides in, the instrument may need to be tonally finished again.

CARE OF THE ORGAN

Your Allen Organ constitutes a major advance in long-term maintenance-free operation. There is no regular maintenance procedures required and, therefore, no periodic maintenance schedules to be observed.

Reasonable care will keep the instrument looking beautiful for years to come. The wood surfaces may be cleaned using a soft cloth dampened with lukewarm water. A mild solution of lukewarm water and dish detergent may be used to remove fingerprints, etc. Polish dry with a soft cloth. Do not use wax, sprays or oils on the finish. Satin finished surfaces will take on a semi-gloss appearance when waxed and will eventually become yellowed.

Keys and stop tablets should be cleaned in the following manner: Use two clean cloths. Immerse one in clear, lukewarm water and wring it thoroughly damp dry. Loosen the dirt with this cloth, and then polish immediately with the dry cloth. Do not use soap or detergent on keys or stop tablets.

To polish the clear music rack, a furniture wax polish may be sprayed on a soft dry cloth and rubbed on the front of the music rack. Keep the wax off of the wood finishes. This will help keep the music rack clear.

You have purchased a remarkable organ that not only faithfully reproduces the organ traditions of the past but also anticipates the innovations of the future. Should you have questions that are not addressed in this manual, please do not hesitate to contact your local Allen Organ representative.

Welcome to the family of satisfied Allen Organ owners!

XXI. SAFETY INFORMATION

CAUTION

Never plug the instrument into any AC current source other than 110 to 120 volts, 50/60Hz alternating current (AC). **For installations outside of North America:** Do not plug the instrument into any AC current source other than that stated by the selling dealer.

A dedicated AC circuit with a minimum 20A circuit breaker is required for each of the organ's AC power cords. Each AC circuit must contain a verified grounded outlet for the proper operation and protection of the instrument. Proper polarity should be checked by a qualified technician with an AC circuit analyzer before connecting and turning on the organ.

Do not change the AC cable plug or remove the ground pin or use any device that bypasses the ground pin connection to the instrument. If there are questions or concerns about the electrical connection, consult a local electrician or power company.

In installations where circuit breakers are turned off between uses, for example, between worship services, the circuit breaker affecting the organ console AC power should have a guard installed to prevent it from accidentally being switched off.

Safety requires that all instructions and labels attached to the instrument be read and adhered to.

Warning: This equipment generates, uses, and can radiate radio frequency energy and may cause interference to radio communications. It has been type-tested and found to comply with the limits for a Class B Computing Device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. Should this equipment cause interference to radio communications, the user at his own expense will be required to take whatever measures may be necessary to correct the interference. Whether this equipment actually causes the interference to radio communications can be determined by turning the equipment off and on. The user is encouraged to attempt to correct the interference by one or more of the following measures:

1. Reorient the receiving antenna.
2. Relocate the organ with respect to the *receiver*.
3. Move the organ away from the receiver.
4. Plug the organ into a different electrical outlet, so the organ and receiver are on different branch circuits.
5. If necessary, the user should consult the dealer or an experienced radio technician for additional suggestions.

CE mark shows compliance with the EMC Directive.

APPENDIX A: MIDI IMPLEMENTATION CHART

FUNCTION		TRANSMITTED	RECEIVED
Basic Channel	Default	1 – 16	1 – 16
	Changed	1 – 16	1 – 16
Mode	Default	3	3
	Messages	X	X
	Altered	X	X
Note Number		O (1 – 127)	O (1 – 127)
Velocity	Note ON	9nH, v = 1 – 127	9nH, v = 1 – 127
	Note OFF	9nH, v = 0	9nH, v = 0
Aftertouch	Keys	X	X
	Channels	X	X
Pitch Bend		O	O
Control Change	0 (bank select)	O	X
	4 (foot controller) <i>(Crescendo)</i>	O	O
	6 (Data MSB)	O	O
	7 (volume)	O	O
	64 (sustain)	O	O
	66 (sostenuto)	O	O
	98 (NRPN: LSB)	O	O
99 (NRPN: MSB)	O	O	
Program Change		O (1 – 127)	O (1 – 127)
System Exclusive		O	O
System Common		X	X
System Real Time		X	X
Aux Messages		X	X

Mode 1: Omni On, Poly

Mode 3: Omni Off, Poly

Mode 2: Omni On, Mono

Mode 4: Omni Off, Mono

O: Yes

X: No

APPENDIX B: HYMN PLAYER Song List

A Mighty Fortress
Abide with Me
Ah! Holy Jesus
Alas! And Did My Savior Bleed
All Creatures of Our God and King
All Glory, Laud, and Honor
All Hail the Power of Jesus' Name - A
All Hail the Power of Jesus' Name - B
All People That on Earth Do Dwell
All Praise to Thee, My God, This Night
All Things Bright and Beautiful
Alleluia! Sing to Jesus!
Amazing Grace
America
Angels from the Realms of Glory
Angels We Have Heard on High
As with Gladness Men of Old
At the Cross Her Station Keeping
At the Lamb's High Feast We Sing
Away in a Manger - A
Away in a Manger - B
Be Joyful , Mary
Be Thou My Vision
Beneath the Cross of Jesus
Beyond the Sunset
Blessed Assurance, Jesus is Mine!
Blessed Jesus, at Your Word
Blessing and Honor
Blest Be the Tie That Binds
Break Thou the Bread of Life
Breathe on Me, Breath of God
Christ the Lord Is Risen Today
Come, Christians, Join to Sing
Come, Holy Spirit, Heavenly Dove
Come, Thou Almighty King
Come, Thou Fount of Every Blessing
Come, Thou Long-Expected Jesus - A
Come, Thou Long-Expected Jesus - B
Come, Ye Faithful, Raise the Strain
Come, Ye Thankful People, Come
Creator of the Stars of Night
Crown Him with Many Crowns
Doxology (w/Amen ending - 1 verse only)

Eternal Father, Strong to Save
Fairest Lord Jesus
Faith of Our Fathers
Fight the Good Fight
For All the Saints
For the Beauty of the Earth
Glorious Things of Thee Are Spoken
Glory Be to the Father
Go to Dark Gethsemane
God of Grace and God of Glory
God of the Ages, Whose Almighty Hand
God Rest You Merry, Gentlemen
God with Hidden Majesty
Good Christian Men, Rejoice
Guide Me, O Thou Great Jehovah
Hark! The Herald Angels Sing
Holy God, We Praise Your Name
Holy Spirit, Truth Divine
Holy, Holy, Holy
How Brightly Beams the Morning Star
How Firm A Foundation
How Great Thou Art
I Am the Bread of Life
I Love Thy Kingdom, Lord
I Sing A Song of the Saints of God
I Sing the Mighty Power of God
Immortal, Invisible, God Only Wise
In Christ There Is No East or West - A
In Christ There Is No East or West - B
In the Cross of Christ I Glory
In the Garden
It Came upon a Midnight Clear
Jesus Christ Is Risen Today
Jesus Loves Me!
Jesus Shall Reign Where'er the Sun
Jesus, Lover of My Soul - A
Jesus, Lover of My Soul - B
Jesus, Priceless Treasure
Jesus, The Very Thought of Thee
Jesus, Thou Joy of Loving Hearts
Joy to the World
Joyful, Joyful We Adore Thee
Just As I Am, without One Plea

Lead on O King Eternal
Let All Mortal Flesh Keep Silence
Lift Up Your Heads, Ye Mighty Gates
Lo, How a Rose E're Blooming
Lord, Speak to Me That I May Speak
Lord, Who Throughout These Forty Days
Love Divine, All Loves Excelling - A
Love Divine, All Loves Excelling - B
More Love to Thee, O Christ
Morning Has Broken
My Country, 'Tis of Thee
My Hope Is Built on Nothing Less
Near to the Heart of God
Now Thank We All Our God
Now The Day Is Over
O Beautiful for Spacious Skies
O Come and Sing Unto the Lord
O Come, All ye Faithful
O Come, O Come Emmanuel
O God, Our Help in Ages Past
O Jesus, I Have Promised
O Little Town of Bethlehem
O Love That Wilt Not Let Me Go
O Master, Let Me Walk with Thee
O Perfect Love
O Sacred Head Now Wounded
O Word of God Incarnate
O Worship the King
O, for a Closer Walk with God - A
O, for a Closer Walk with God - B
O, for a Thousand Tongues to Sing
On Jordan's Bank the Baptist's Cry
Open My Eyes That I May See
Open Now Thy Gates of Beauty
Praise My Soul, the King of Heaven
Praise to the Lord, the Almighty
Rejoice, the Lord Is King
Rejoice, Ye Pure In Heart
Ride On ! Ride On in Majesty
Rock of Ages
Savior, Like a Shepherd Lead Us
See Amid the Winter's Snow
Shall We Gather at the River

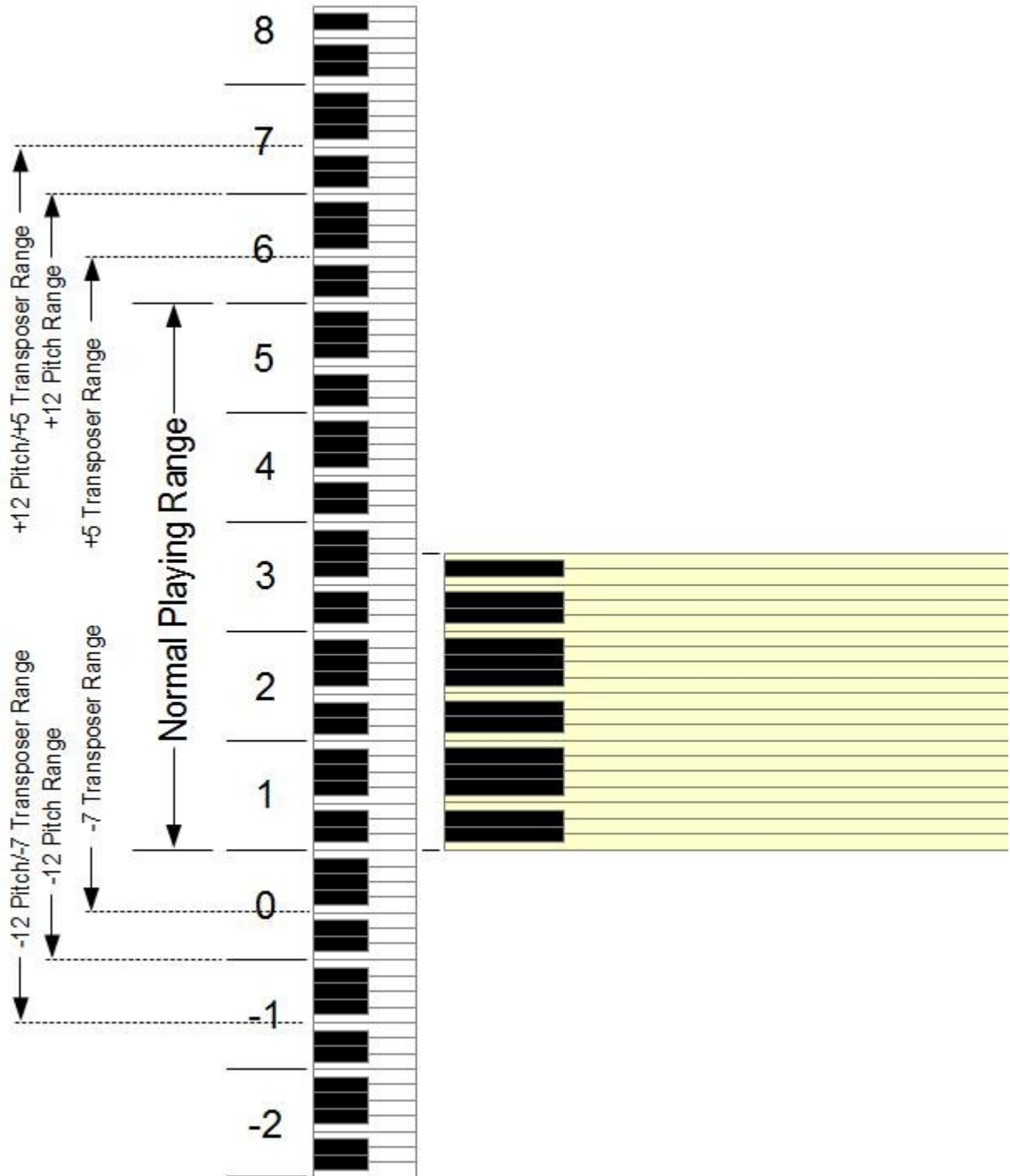
Silent Night, Holy Night
Songs of Thankfulness and Praise
Spirit Divine, Accept Our Prayers
Spirit of God, Descend Upon My Heart
Stand Up and Bless the Lord
Sweet Hour of Prayer
Take My Life
The Church Is One Foundation
The Day of Resurrection!
The First Noel
The King of Love My Shepherd Is
The Lord Is My Shepherd, I'll Not Want
The Old Rugged Cross
The Strife Is O'er
Thine Is the Glory
This Is My Father's World
To God Be the Glory
To Jesus Christ Our Sovereign King
Wake, O Wake, and Sleep No Longer
We Gather Together
We Give Thee but Thine Own
We Three Kings of Orient Are
What Child Is This
What Wondrous Love Is This
When I Survey the Wondrous Cross - A
When I Survey the Wondrous Cross - B
When in Our Music God Is Glorified
When Morning Gilds the Skies
Where Cross the Crowded Ways of Life
While Shepherds Watched Their Flocks - A
While Shepherds Watched Their Flocks - B
Ye Servants of God, Your Master Proclaim
Ye Watchers and Ye Holy Ones

APPENDIX C: GENISYS™ VOICES SOUND LIST

Grand Piano	001	Harmonica	023	Muted Trumpet	060
Grand Piano	001A	Tango Accordion	024	French Horn	061
Grand Piano	001B	Ac Guitar Nylon	025	Brass Section	062
Grand Piano	001C	Ac Guitar Steel	026	BrassEnsemb	062A
Grand Piano	001D	El Guitar-Jazz	027	Synth Brass 1	063
Piano Resonance	001E	El Guitar-Clean	028	Synth Brass 2	064
OctavPiano 16-4	001F	El Guitar-Muted	029	Soprano Sax	065
Piano 16	001G	Ovrdrive Guitar	030	Alto Sax	066
Bright Piano	002	Distortd Guitar	031	Tenor Sax	067
Bright Piano-XL	002A	Guitar Harmoncs	032	Baritone Sax	068
Bright Piano-L	002B	Acoustic Bass	033	Oboe	069
Bright Piano-M1	002C	Acoustrc BassSub	033A	English Horn	070
Bright Piano-M2	002D	Finger Bass	034	Bassoon	071
El Grand Piano	003	Finger BassSub	034A	Clarinet	072
Honky-Tonk	004	Picked Bass	035	Piccolo	073
El Piano 1	005	Picked BassSub	035A	Flute	074
EPiano Tines-XL	005A	Fretless Bass	036	Recorder	075
Epiano Tines-L	005B	Fretlss BassSub	036A	Pan Flute	076
El piano FM-L	005C	Slap Bass 1	037	Blown Bottle	077
Epiano-FM-Soft	005D	Slap BassSub	037A	Shakuhachi	078
El Piano 2	006	Slap Bass 2	038	Whistle	079
Harpsichord	007	Synth Bass 1	039	Ocarina	080
Harpsichord-XL	007A	Synth Bass 1Sub	039A	Lead1-square wv	081
Harpsichord-L	007B	Synth Bass 2	040	Lead2-saw2th wv	082
Harpsichord-M1	007C	Synth Bass 2Sub	040A	Lead3-Calliope	083
Harpsichord-M2	007D	Violin	041	Lead4-Chiff	084
Harpsichord 8-4	007E	8va Violin	041A	Lead5-Charang	085
Harpsichord16-8	007F	Viola	042	Lead6-Voice	086
Clavinet	008	Cello	043	Lead7-5ths	087
Celesta	009	Cello Ensemble	043A	Lead8-bass+lead	088
Glockenspiel	010	Contrabass	044	Fantasia	089
Chrysoglott	010A	Tremolo Strings	045	Warm	090
Orchestra Bells	010B	Pizzcato Strngs	046	Polysynth	091
Handbells	010C	Orchestral Harp	047	Choir	092
Music Box	011	Timpani	048	Bowed	093
Vibraphone	012	String Ensemb 1	049	Metallic	094
Vibraphone-L	012A	String Ensemb 2	049A	Halo	095
Vibraphone-M	012B	String Ensemb 3	049B	Sweep	096
Vibraharp	012C	String Ensemb 4	049C	Rain	097
Marimba	013	Slow Strings 1	050	Soundtrack	098
Marimba 2	013A	Slow Strings 2	050A	Crystal	099
Xylophone	014	Slow Strings 3	050B	Atmosphere	100
Wood Harp 8	014A	Synth Strings 1	051	Brightness	101
Wood Harp 4	014B	Synth Strings 2	052	Goblins	102
Tubular Bell	015	Choir Aahs	053	Echoes	103
Chimes	015A	Choir-L-S	053A	Sci-Fi	104
Carillon	015B	Choir-M	053B	Sitar	105
Dulcimer	016	Voice Oohs	054	Banjo	106
Drawbar Organ	017	Synth Voice	055	Shamisen	107
Percuss Organ	018	Orchestra Hit	056	Koto	108
Rock Organ	019	Trumpet	057	Kalimba	109
Organ	020	Bugle	057A	Bag Pipe	110
Reed Organ	021	Trombone	058	Fiddle	111
Accordion	022	Tuba	059	Shanai	112

Tinkle Bell	113	4 Engl Octave	148	8 Clarinet	183
Agogo	114	4 Harmonic Flt	149	8 Schalmei	184
Steel Drums	115	4 Virole	150	8 Vox Humana A	185
Woodblock	116	2 Piccolo	151	8 Vox Humana B	186
Taiko Drum	117	1 1/3 Larigot	152	4 Klarine	187
Melodic Tom	118	1 1/7 Septieme	153	4 Clarion	188
Synth Drum	119	1 Fife	154	4 Schalmei	189
Reverse Cymbal	120	Zimbel III	155	2 Zink	190
Fret Noise	121	Cymbale III	156	Organ – MF	191
Breth Noise	122	Mixture IV	157	Organ – F	192
Seashore	123	Grand Mixt IV	158	Organ – FF	193
Bird Tweet	124	Sesquialtera II	159	Organ – FFF	194
Phone Ring	125	Cornet V	160	8-4 Flute	195
Helicopter	126	32 Posaune	161	8-2 Flute	196
Applause	127	16 Posthorn	162	Tibia 8	197
Gunshot	128	16 Posaune	163	Tibia-Vox 8	198
32 Violone	129	16 Tuba	164	Tibia/Vox 8-4	199
16 Diapason	130	16 C Trumpet	165	Tiba 16-8-4	200
16 Diaphone	131	16 Clarinet	166	Bell Tree	201
16 Gamba	132	16 Dulzian	167	Snare Roll	202
16 Bourdon	133	16 Rankett	168	Cymbal Roll	203
16 Quintaden	134	16 Musette	169	Crash Cymbal	204
10 2/3 Quint	135	16 Vox Humana A	170	Thunder	205
8 Principal	136	16 Vox Humana B	171	Cannon	206
8 Engl Diapason	137	8 Festival Trpt	172	Drums- Standard	207
8 Bourdon	138	8 Posthorn	173	Drums- Room	208
8 Quintadena	139	8 Tuba	174	Drums- Power	209
8 Gedackt	140	8 Trumpet	175	Drums- Electric	210
8 Harmonic Flt	141	8 Trompette	176	Drums- TR808	211
8 Virole Celeste	142	8 Cromorne	177	Drums- Brush	212
8 Flute Celeste	143	8 Rankett	178	Drums- Orchstrl	213
8 Dulcn Celeste	144	8 Musette	179	Drums- SFX	214
5 1/3 Quinte	145	8 Krumet	180		
5 1/3 Quint	146	8 Cor Anglais	181		
4 Octave	147	8 French Horn	182		

APPENDIX D: VISUAL KEY RANGE CHART



APPENDIX E: GNU PUBLIC LICENSE INFORMATION

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