TH-201/TH-301
Theatre Models

<u>IMPORTANT!</u> Organs which contain GeniSys™ technology no longer include the GeniSys™ Controller Guide within the model specific Owner's Manual. The correct GeniSys™ Controller Guide must be downloaded and/or printed separately. Please check the CODE version of the software installed within the organ to determine which version of the GeniSys™ Controller Guide is required. The CODE version is briefly displayed within the GeniSys™ Controller's LCD display when the organ starts up.

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ALLEN ORGAN COMPANY

For more than sixty years--practically the entire history of electronic organs-- Allen Organ Company has built the finest organs that technology would allow.

In 1939, Allen built and marketed the world's first electronic oscillator organ. The tone generators for this instrument used two hundred forty-four vacuum tubes, contained about five thousand components, and weighed nearly three hundred pounds. Even with all this equipment, the specification included relatively few stops.

By 1959, Allen had replaced vacuum tubes in oscillator organs with transistors. Thousands of transistorized instruments were built, including some of the largest, most sophisticated oscillator organs ever designed.

Only a radical technological breakthrough could improve upon the performance of Allen's oscillator organs. Such a breakthrough came in conjunction with the United States Space Program in the form of highly advanced digital microcircuits. In 1971, Allen produced and sold the world's first musical instrument utilizing digitally sampled voices!

Your organ is significantly advanced since the first generation Allen digital instrument. Organs with GeniSys™ technology are the product of years of advancements in digital sound and control techniques by Allen Organ Company. GeniSys™ represents the apex of digital technology applied to exacting musical tasks. The result is a musical instrument of remarkably advanced tone quality and performance.

Congratulations on the purchase of your new Allen Organ! You have acquired the most advanced electronic organ ever built, one that harnesses a sophisticated custom computer system to create and control beautiful organ sound. Familiarize yourself with the instrument by reading through this booklet.

Contents

I. 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 *2-2/3' Nasard*, *1-3/5' Tierce*, *1-1/3 Quintflöte* and *2-2/3 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.

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:

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UNIFICATION

In theatre organs, and occasionally in classical organs, the system of "unification" was used. This allowed the same "rank" of pipes to be used at multiple pitches and on several manuals. Unification was the system theatre organs used to have large numbers of stops on the console with relatively few ranks of pipes as compared to a classical organ. For example, a Tibia Clausa rank may be drawn at 16', 8', 5 1/3', 4', 2 2/3', 2', and 1 3/5' on a given manual and then still have some or all of those pitches duplicated on other manuals. In most classical organs, one rank would have one stop key on the console; however, in a theatre organ one rank could have many stop keys controlling it. Allen Theatre Organs are unified in the authentic theatre organ style.

II. RANKS

Note: *This Section includes a general listing of Ranks found on Theatre organs. Not all of these Ranks are included in every theatre organ model.*

Tuba Mirabilis	Very powerful Tuba sound. 16' stop usually called Bombarde.
English Post Horn	Bright, brassy reed stop. Sometimes named "Post Horn" or "English Horn" on a theatre organ.
Ophicleide	Loud, brassy reed sound with that contains both fundamental and overtones (similar to that of a Posaune).
Diaphone	Similar to a reed, but in a class by itself. The Diaphone employs a beating pallet to help produce its unique tone. The Diaphone is a full, smooth and weighty type tone. Used only in 16' pedal rank.
Brass Trumpet	Useful as a smooth solo voice or chorus reed.
Tuba Horn	A mellow solo reed that is also useful in providing ensemble development without being overpowering. Notice how the bottom octave of the 16' Ophicleide becomes more powerful as you approach bottom 'C.'
Dolce	Soft "hybrid" stop – part string and part diapason sounding. Very effective for the softest combinations. (E. M. Skinner)
Dolce Celeste	The matching celeste for the Dolce.
Open Diapason	Foundation stop that adds fullness to the ensemble. The 16' stop is usually called "Diaphone" because the bottom octave of the 16' is a metal Diaphone sound. This lends power and a good pitch sense to the pedal.
Tibia Clausa	The "foundation" rank of the theatre organ. This rank, coupled with its distinctive tremulant, is one of the main ingredients of a theatre organ.
Clarinet	Imitative solo reed that can also be used as an ensemble stop.
Saxophone	More developed version of the Vox Humana that works well when used in combination with Tibia stops.
Violin (2rks)	Imitative string and celeste in the solo chamber. These were special strings to George Wright. They were very early Wurlitzer, and very bright.
Orchestral Oboe	Solo reed with a pungent nasal timbre somewhat imitative of its orchestral counterpart.
Vox Humana	Voice originally intended to imitate the human singing voice, but really sounds more like a goat! Used with the Tibia Clausa for the traditional theatre organ sound.
Concert Flute	Typical wood open flute of the 1920's.

Traps and Percussions are imitative of their orchestral counterparts.

COUPLERS

Couplers couple one manual to another, or in other cases (depending on model) couplers may also couple within a manual at octave related pitches. This enlarges the use of the organ.

Note*: This Section includes a general listing of controls found on Theatre organs. Not all of these controls are included in every theatre organ model.*

Acc. Traps On Pedal	Couples the Accompaniment traps to Pedal.
Acc. Violins > Dolces	Changes the Accompaniment Violins to Dolces.
Chrysoglott > Wood Harp	Changes the Chrysoglott into a wood harp.
Melody Coupler	When used with an appropriate solo stop, such as a Solo reed, this feature will automatically key the highest note played on the Great keyboard allowing accentuation of the melody.

SOLO STAB™

(TH-301 Only)

Solo Stab™ is a feature on the TH-301 which provides an effect similar to that of a 2nd Touch manual. The Solo Stab™ feature is actuated by a piston button located on the Great manual piston rail. Solo Stab™ allows the organist to "mimic" the effect of 2nd Touch by coupling stops from the Solo manual to the Great manual only while the piston button is pressed. Therefore, accents can be easily played on the Great manual by using louder stops registered on the Solo division thereby triggering the Solo Stab™ piston button quickly.

MIDI

MIDI couplers are available on all manuals. These couplers open a MIDI channel to the specific division.

DIVISION	MIDI Channel
Great (TH-301 Only)	1
Accompaniment	2
Pedal	3
Solo	4 (TH-201 = Ch1)
General Pistons	8
Traps	10

TREMULANTS

Allen Theatre organs have the most advanced authentic sounding tremulant system in the world today. In addition to digitally sampling the individual ranks without tremulant, Allen also sampled individual ranks with tremulants on. When more than one rank is on the same tremulant system in a pipe organ the tremulant sound that results from the playing of the pipes is not identical from rank to rank. Each rank "reacts" to the varying supply of wind (tremulant) differently. With this in mind, Allen sampled each rank with tremulant "on" to reproduce the authentic tremulant sound you hear. As a result, even stops that are "ganged" together on one tremulant stop or tremulant motor will have a different tremulant sound. This Sampled Waveform Tremulant™ technology contributes to the huge ensemble sound.

III. EXPRESSION SHOE

The organ's expression pedal (called a "shoe") controls the overall expression of the organ. The expression shoe is also equipped with a foot switch (right side mounted) to control MIDI Sustain and Sostenuto. See the GeniSys™ Controller guide for additional information on the adjustments and settings for the MIDI Sustain and Sostenuto functions.

IV. SETTING PISTONS

SETTING GENERAL PISTONS

Your Allen Organ's capture system lets you set stop registration combinations in each of its available memories. Each Allen Organ model has different piston layouts to accommodate organ size. The maximum number of available capture memories on both the TH-201 and TH-301 is 20.

To set a capture combination:

- First, select the stops you wish to save.
- Press and hold the SET Piston.
- Press and release the desired GENERAL piston.
- Finally, release the SET Piston.

Remember, the General pistons are customarily set from soft to loud using graduated stop combinations. The pistons you have set "remember" the registration combinations you have assigned to each of them. Each time a General piston is pressed, the registration assigned to it is activated. You may change stop registration combinations at any time by repeating the above procedures. For more advanced information on setting capture combinations in multiple memories see the GeniSys™ Controller guide.

SETTING DIVISIONAL PISTONS

If your Allen Organ has Divisional pistons in addition to General pistons. The piston setting process in each case is the same as SETTING GENERAL PISTONS described above. However, only divisionally related stops can be set on Divisional pistons.

The MIDI stops can be set on either Divisional or General pistons. The intermanual couplers can only be set on General Pistons. These rules can be modified if you wish to reconfigure the pistons. See the GeniSys™ Controller guide for additional information relating to reconfiguring pistons.

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 shoes, are set in the same manner as thumb pistons. The toe studs to the left of the expression shoe(s) are duplicates of the General pistons, while the toe studs to the right of the expression shoe(s) 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 number.
- Finally, release the SET button.

Note: General piston toe studs, will recall registration combinations of the same General piston number. That is, setting General piston #3 also places its combination on General toe stud #3.

Important! The organ's capture system will not operate for approximately six seconds after the organ is turned on.

RECALL 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 that 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.

SOUND EFFECT PISTONS

In addition to playing their respective sounds, these pistons will output on MIDI Channel 10 (General MIDI Drum sets) with a particular key (trigger note).

V. 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, and 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 sound without covering it.

Most 8’ reed stops make interesting solo voices. The addition of a 4’ Tibia or a Tibia mutation (e.g., Twelfth or Tierce) to a light reed such as the Clarinet or Orchestral Oboe colors the sound further and increases its volume slightly. Adding an 8’ Tibia to a reed will add body to the sound.

In creating registrations of your own, remember these three simple rules: (1) Seek tonal contrast between solo and accompaniment; (2) Be sure the solo is louder than the accompaniment; (3) Choose a solo whose character is appropriate to the specific piece.

ENSEMBLE REGISTRATIONS

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.

Ensembles are created by combining stops. Two factors to be considered are: tone quality and pitch. Ensembles begin with a few stops at 8’ pitch and expand “outward” in pitch as they build up. New pitches are usually added in preference to additional 8’ stops.

Ensembles are generally divided into three tonal groupings or “choruses”:

- The Tibia Clausa chorus is the most fully developed with representation in various divisions of the organ and at every pitch from 16’ (Tibia) through 1’ (Fife). Lighter stops can be added to the basic 8’ and 4’ Tibia combinations and then the Diapasons, Strings and Tubas can be added to fill out an ensemble registration.
- The Reed stops include those reed tones designed to be used in the ensemble buildup. Not all reed voices are ensemble tones. An Oboe, for example, is usually a solo stop. The various Trumpets, Horns, and Vox Humana’s 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 glossary in the preceding section.

The Pedal ensemble is created in much the same way as the manual ensembles, with the Pedal 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. Many times in more rhythmic pieces you will want to have a predominantly 8’ sound in the pedal.

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:

Theatre Organ Registration:

Strony, Walter. *Theatre Organ Registration*

Classical/General Organ Registration:

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.

VI. TRANSPOSER

The organ can perform the difficult task of transposing, while allowing the organist to play in the noted key. Operation of the Transposer is controlled from within the GeniSys™ Controller *(please refer to the GeniSys™ Controller Guide for Transposer operation instructions)*. The key can be raised a maximum of five half steps and lowered a total of seven half steps.

A red indicator light will illuminate on the GeniSys™ Controller panel whenever the Transposer is not within the neutral or "0" position. This is to warn the organist that the instrument is not ready to play in the same key as when in the Neutral or "0" 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.

VII. ACOUSTIC PORTRAIT™

Allen Organ is 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 advanced processors (DSP) and patented low-latency convolution algorithms, Acoustic Portrait™ reproduces the true acoustic response of each original room with stunning realism! Allen Theatre organs feature 10 different Acoustic Portraits™ pallets, ranging from intimate rooms to cavernous cathedrals.

The switch labeled ACOUSTICS, located on the GeniSys™ Controller panel, must be switched "ON" to hear the selected Acoustic Portrait™. When the Acoustic Portrait™ function control is displayed within the GeniSys™ Controller *(see the GeniSys Controller guide for more information)*, the overall Acoustic Portrait™ GAIN (volume) may be adjusted as well as the ability to select a different Acoustic Portrait™ pallet. The selected Acoustic Portrait™ GAIN value, measured in dB (decibels), is displayed within the GeniSys™ Controller window. The range of control for each Acoustic Portrait™ is from +6dB to minus 35dB. Minus 35dB is the least amount of gain while +6dB is the maximum amount of gain available.

Note: When changing to a different Acoustic Portrait™, the new selection will automatically load in 3 seconds.

VIII. CLASSICAL VOICING

Allen Theatre organs include a second set of Classical voices in addition to the normal Theatrical voicing set. The Classical specification is comprised of pipe samples from the world's finest examples of organ-building. The touch of a button changes the entire Theatre organ specification to a Classical voicing specification. For more advanced information on changing/switching between the different voicing suites, see the GeniSys™ Controller guide.

IX. REAL XPRESSION™

Your Allen Organ is equipped with Real Xpression™. Real Xpression™ not only changes the organ's volume, but also its response. This is the same thrilling feeling you get when you hear a pipe organ really open up. Real Xpression™ faithfully recreates how expression shutters affect a pipe organ's sound.

X. 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

Allen Organs present unprecedented accuracy in the scaling and voicing of each note of every stop. Final adjustments in scaling and voicing involve procedures that are best left to an expert. These adjustments are normally a part of the installation, and once done, should not require any changes. If the organ is moved to a new location or major changes/renovations are made to the acoustical properties of the room the organ resides in, the instrument may need to be tonally finished again. Please contact your local Allen Organ representative for more details.

SOPHISTICATED FLASH MEMORY TECHNOLOGY

Voicing and scaling settings are stored within the Allen organ's internal Flash Memory system. Organ's equipped with Flash Memory Technology eliminates the need for batteries.

CARE OF THE ORGAN

Your Allen Organ constitutes a major advance in long-term maintenance-free operation. There are 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.

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!!

XI. SAFETY INFORMATION

USA ONLY

CAUTION

Never plug the instrument into any current source other than 110 to 120 volts, 50/60 Hertz alternating current (AC). A verified grounded outlet is essential to proper operation and protection of the instrument. Proper polarity should be checked with an AC circuit analyzer before connecting the organ.

Do not change the cable plug or remove the ground pin or connect with a two-pole ground lift adapter.

If you are in doubt about your electrical connection, consult your local electrician or power company.

In facilities where circuit breakers are turned off between uses (as 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.

It is important that you read and comply with all instructions and labels that might be attached to the instrument.

INTERNATIONAL ONLY

CAUTION

Do not plug the instrument into any current source other than that stated by the selling dealer. Proper polarity should be checked with an AC circuit analyzer before connecting the organ.

Do not change the cable plug or remove the ground pin (if applicable).

If you are in doubt about your electrical connection, consult your local electrician or power company.

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

Read and comply with all instructions and labels that may be attached to the instrument.

Warning: This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, 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:

Reorient the receiving antenna.
Relocate the organ with respect to the receiver.
Move the organ away from the receiver.
Plug the organ into a different electrical outlet, so that the organ and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio technician for additional suggestions.

CE mark shows compliance with the EMC Directive.

XII. APPENDIX I (Audio, Voicing Charts)

TH-201/TH-301

Rank Name – Theatre	Rank Name – Classic	Slot	Rank	Audio
Posthorn	French Trompette	1	5	R
Tuba Horn	Tromba	1	13	R
Open Diapason	Principal	1	21	L
16' Diaphone (1-12)	Pd Diapason/Mix	1	11	R
Tibia Clausa	Gedackt	1	1	R
16' Tibia (1 - 24)	(same)	1	2	R
Clarinet	Cromorne	1	18	L
Orchestral Oboe	Hautbois	1	9	R
Violin	Viola Pomposa	1	25	L
Violin Celeste	Viola Celeste	1	29	L
Dolce (TH-301)	(same)	1	27	L
Dolce Celeste (TH-301)	(same)	1	30	L
Concert Flute	Harmonic Flute	1	17	L
Vox Humana	Eng. Vox Humana	1	8	R
Ped Violone 16 (TH-301)	(same)	1	26	R
Chrysoglott (TH-301)	(same)	1	6	C
Wood Harp (TH-301)	(same)	1	6	C
Xylophone	Mixture IV	1	22	C
Glockenspiel	Mixture III	1	10	C
Chimes (TH-301)	Carillon	1	14	C
Persian Cymbal	(same)	1	12	C
Snare Drum		1	19	C
Tambourine/Hi Hat (TH-301)		1	20	C
WoodBlk/Cow Bell (TH-301)		1	23	C
Bass Drum (TH-301)		1	24	C
Tap/Brush (TH-301) Cymbal		1	31	C
Tom Tom/Castanets (TH-301)		1	32	C

L = Channel 3, R = Channel 4
C = Both channels
Note: Some small amount of each rank will emanate from each channel.

Tremulant Motors

Trem	Rank	Stop Control
1	Violin, Violin Celeste Dolce, Dolce Celeste (TH-301)	MAIN
2	Open Diapason	MAIN
3	Tuba Horn	MAIN
5	Concert Flute, Clarinet	MAIN
6	Tibia Clausa	TIBIA/VOX
7	Vox Humana	TIBIA/VOX
11	Orchestral Oboe	MAIN

XIII: APPENDIX II (Advanced MIDI Information)

This appendix section is for those advanced in using MIDI.

KEYBOARDS: The keyboards utilized on the TH-201 and TH-301 models will transmit key "velocity" values other than a static value of '64'. Key velocity values are determined by how hard the keys are played. This is similar to the effect of a piano. Valid velocity values of between 1-127 may be transmitted.

Note: A velocity value of '0' is considered a note off event.

MANUAL DIVISIONS:

Manual	MIDI Channel
Solo (TH-201)	1
Solo (TH-301)	4
Great (TH-301 only)	1
Accompaniment	2
Pedal	3
General Pistons	8
Trigger and Traps Pistons	10

MIDI note events contain three pieces of data: 1) MIDI Channel, 2) Note Number, and 3) Velocity (listed here as a value). Use of your favorite sequencer program will list the MIDI data as "MIDI Events". The data can be displayed within a "view MIDI event" window of the sequencer program. For example:

TRACK	TIME	CHANNEL	EVENT	VALUE	DURATION
1	XX:XXX:XX	1	NOTE G5	64	100

This example illustrates that Track 1 contains an Note-On event to be transmitted via MIDI for MIDI channel #1 to play note "G5" with a velocity value of "64" for a duration of "100" ticks (a length measurement used by most sequencer programs).

Note: The length measurement value is dependent on the note resolution setting within the sequencer program and MIDI Song File. The note resolution setting determines the number of TICKS per quarter note.

PISTONS: These are generally listed as "MIDI Program Changes" or "Patch Changes" in MIDI speak and usually correspond to the manual they are attached to. "Patch" events in MIDI begin at "0", but note the first piston in each division is "1". Therefore, by subtracting "1" from each piston number will equal the equivalent MIDI program change number.

Example:

TRACK	TIME	CHANNEL	EVENT	VALUE	DURATION
1	XX:XXX:XX	1	PC	0	
1	XX:XXX:XX	8	PC	9	

The first MIDI event indicates piston #1 was pressed on MIDI channel #1. The second MIDI event indicates General piston #10 was pressed.

Note: There are no duration values tranmitted for MIDI Program Change events.

EXPRESSION: MIDI expression (volume) changes fall under the broad heading of "MIDI Control Changes". MIDI Control Changes can consist of many items from expression (volume), to stops, to sustain, to sostenuto, etc. Each control type has a separate control number value assigned to them to differentiate the type of MIDI Control it is. For example, MIDI volume is assigned a MIDI Control Change value of 7. MIDI Control Change event data will contain 1) MIDI channel, 2) Control type, and 3) a number for the control change "value". In the case of MIDI volume, the control change value could be any number between 0 and 127. Since an organ's volume level never truly goes to "0", the lower limit on an Allen is approximately a value of 20. Expression event data, within a sequencing program, may look similar to this example:

TRACK	TIME	CHANNEL	EVENT	VALUE	DURATION
1	XX:XXX:XX	1	Volume	100	
1	XX:XXX:XX	1	Volume	98	
1	XX:XXX:XX	1	Volume	96	
1	XX:XXX:XX	1	Volume	94	

This brief example illustrates the volume is reducing/lowering on the division assigned to MIDI channel #1.

It is important that any external MIDI devices (MIDI tone generation or sound devices, in particular) connected to the organ respond to the current expression setting. Therefore, it is good practice to move the expression shoes when an organ is first turned on to align the MIDI sound device's volume to the organ.

Note: There are no duration values tranmitted for MIDI Control Change events.

STOPS: Allen organs contain an internal MIDI stop control number system or “map” which allows a MIDI Song File recorded on one Allen organ to be played back on another Allen organ of the same OR different model. If the piston registration changes (i.e. MIDI Program Changes) within the MIDI Song File are converted to transmit the individual MIDI stop control numbers of the individual stops within the organ's various piston registrations, the MIDI Song File could then be used on various model Allen organs without the need to change or reprogram the organ's various capture memory registrations.

Note: *The Allen MIDI Assistant Librarian program, included with the purchase of the Allen MIDI Assistant, features a MIDI stop control conversion function within the program. See your local Allen Organ dealership representative for more details.*

Individual stops on the organ are handled by specially assigned MIDI stop control numbers. MIDI has a "catchall" for anything not specifically defined by the MIDI standard called "Non-Registered Parameter Numbers" or simply NRPN. NRPN numbers are classified as MIDI stop control changes and use the assigned Control Change number values of 98 and 99. NRPN messages are arranged as 3 byte MIDI events:

- Byte #1: MIDI Control Change #99 is the "high" byte value or MSB and the first MIDI event transmitted.
- Byte #2: MIDI Control Change #98 is the "low" byte value or LSB and the second MIDI event transmitted.
- Byte #3: MIDI Control Change #6 or DATA value is the third MIDI event transmitted. The third byte is the "on and off" byte for the NRPN value figured within the first 2 bytes. MIDI Control Change #6 with a value of 127 turns the stop on, while a value of 0 turns the stop off.

For example, a Tibia Clausa 8' is assigned a MIDI control number value of "40" within the MIDI system map of the organ. The Primary Tibia 8' on any of our organs would be assigned the value of "40". Therefore, any MIDI Song File which transmits a NRPN value of "40" will turn on or off the stop assigned the MIDI stop control number value of "40".

The best way to illustrate this is to display an example (see below). The first MIDI event message packet displayed will turn on the Tibia Clausa 8' on the division assigned to MIDI channel #1. The second MIDI event message packet will turn off the Tibia Clausa 8'.

TRACK	TIME	CHANNEL	EVENT	VALUE	DURATION
1	XX:XXX:XX	1	Control 99	0	
1	XX:XXX:XX	1	Control 98	40	
1	XX:XXX:XX	1	Control 6	127	

TRACK	TIME	CHANNEL	EVENT	VALUE	DURATION
1	XX:XXX:XX	1	Control 99	0	
1	XX:XXX:XX	1	Control 98	40	
1	XX:XXX:XX	1	Control 6	0	

If a MIDI stop control number value is 128 or larger, the number must then be "split" into separate "bytes" using both MSB and LSB byte values because MIDI can only transmit values between 0 and 127.

For example, suppose a stop contains an assigned MIDI stop control number value of 132. The number 132 must be split into separate bytes in order for MIDI to be able use it as a valid MIDI stop control number. The MIDI event message data would look like this:

TRACK	TIME	CHANNEL	EVENT	VALUE	DURATION
1	XX:XXX:XX	1	Control 99	1	
1	XX:XXX:XX	1	Control 98	4	
1	XX:XXX:XX	1	Control 6	127	

TRACK	TIME	CHANNEL	EVENT	VALUE	DURATION
1	XX:XXX:XX	1	Control 99	1	
1	XX:XXX:XX	1	Control 98	4	
1	XX:XXX:XX	1	Control 6	0	

How did the displayed values get computed? The formula to compute the MSB and LSB values is relatively simple:

- First, figure out the MSB value. As a rule, any number value assigned to the MIDI Control #99 (MSB) will be multiplied by 128. Since the MIDI stop control number value is 132, this example is simplified as 128 will divide by 132 one time for a value of 1.
  Note: *Only use the whole number value to the left of the decimal when dividing by 128 as the result. The remainder or numbers to the right of the decimal are dropped.*
  Therefore, MIDI Control #99 (MSB) = 1.
- To find the LSB value, subtract the MIDI stop control number, which in this case is 132, from the computed MSB value (1 x 128 = **128**). In this case, 132 – 128 = **4**. 4 will be the number value entered within MIDI Control #98 (LSB).

- To verify the number values are correct, add the LSB value to the computed MSB value (4 + 128 = 132). 132 is the value of the stop being transmitted so the conversion is correct!

Here is another example with an even larger value MIDI stop control number:

A stop is assigned a MIDI stop control number value of 290. In order to transmit the correct MIDI stop control number, the number is split into two bytes using both MSB and LSB values:

- First, figure the MSB value. 290 divided by 128 = 2 *(remember, only use the whole number value to the left of the decimal as the result, the remainder or the numbers to the right of the decimal are dropped)*. Therefore, MIDI Control #99 (MSB) = 2.
- Figure the LSB value. First, compute the MSB value (2 x 128 = **256**) and then compute the LSB value by subtracting the computed MSB value from the MIDI stop control number (290 – 256 = **34**). Therefore, MIDI Control #98 (LSB) = 34.
- Verify, add the computed MSB value to the LSB value: (256 + 34 = **290**) Conversion is correct!

Important Note: Allen Theatre organ NRPN data is located within the Owner's Manual section of the Allen Organ website at www.allenorgan.com. The NRPN data is supplied as a convenience without user support.