

ORGANIST'S MANUAL FOR THE PETERSON MASTER STOP PROCESSOR™ MSP-1000™

INTRODUCTION

The Peterson Master Stop Processor™ MSP-1000™ is a revolutionary product for the pipe organ that uses advanced microprocessor technology in a way that truly makes sense. We have placed great emphasis on making this system “comfortable” for organists to use, and allowing access to the greatest number of features possible through simple, even intuitive procedures that do not take a long time to learn.

HOW TO USE THE PETERSON MASTER STOP PROCESSOR

SUMMARY OF CONTROL PANEL FEATURES

Let's begin with a brief description of each of the controls and displays provided on the Main Control Panel of the MSP-1000. This section is intended as a quick reference to help you understand the function of each control. More detailed information about how to use each of these controls is provided in the later sections.

FIGURE 1

1- MODE SELECT ROCKER SWITCH AND INDICATOR LEDS

Pushing the top of this switch puts the system into the Prog(ram) mode of operation. Pushing the bottom of the switch in will put the system into the Edit mode of operation. If the switch is in the center position, with neither the top nor the bottom pushed in, the system will be in the Use, or normal, mode of operation. An indicator LED will be illuminated whenever the organ power is on and the system is not in the Use mode. This switch should *always* be in the Use position unless you are setting memories or checking a crescendo or tutti memory.

2- SET LATCH MODE BUTTON

Pushing this button while holding in the "Set" thumb piston or toe stud will latch the system into the "Set Latch" mode of operation, providing the Mode Select rocker switch (#1) is in the Prog(ram) position. The "Shoe Position" window (#4) must display a number before you engage the Set Latch Mode. The LED built into the button will come on and remain lit until the Set Latch mode button is pushed again, or until the Set Latch mode is automatically canceled. On consoles where no "Set" thumb or toe piston is provided, the Set Latch button serves as a "Set" piston. Please refer to the section on Setting the Crescendo for more details.

3- CRESCENDO LEVEL SELECTOR ROCKER SWITCH AND READOUT

The MSP-1000™ provides four (4) separate crescendo memory levels. Pushing the top of this rocker switch will advance the crescendo memory level number as indicated on the digital readout. Pushing the bottom of the switch will lower the crescendo memory level. A single push on the switch will change the crescendo level by one step, but if the switch is held in, the level will continually step until the switch is released. The count pattern is 1-2-3-4-1-2... when counting up, and 4-3-2-1-4-3... when counting down.

4- SHOE POSITION SELECTOR ROCKER SWITCH AND READOUT

Each crescendo memory level on the MSP-1000™ is divided into sixty (60) shoe positions, each of which may be programmed to turn on any combination of stops. The "shoe position number" digital readout will be lighted whenever the crescendo is active. When the Mode Selector rocker switch (#1) is in the Use position, this digital readout will indicate the actual position of the crescendo shoe. In effect this is the same as indicating how many contacts of a traditional sixty-contact crescendo roller are activated. When the Mode Select rocker switch (#1) is in the Prog or Edit position, the shoe position number is usually determined by this Shoe Position Selector rocker switch. Pushing the top or bottom of this rocker switch will adjust the shoe position number up or down, respectively, and the numbers will begin to sequence automatically if the button is held in for more than about one second. The decimal points on this digital display will flash whenever the system is in the "set-enabled state". If the decimal points of this window (but not the combination action memory level window) are flashing, any changes to the positions of tabs or drawknobs will be set into memory for the current crescendo memory level and shoe position number instantly. If a "Crescendo Disable" control is activated, the shoe position number will indicate where the shoe is but the crescendo will not bring on stops.

5- COMBINATION ACTION MEMORY LEVEL SELECTOR SWITCH AND READOUT

Pushing the top or bottom of this rocker switch will adjust the combination action memory level up or down, respectively. The numbers will begin to sequence automatically if the button is held in for more than about one second. The decimal points on this digital display will flash whenever the combination action part of the MSP-1000™ is in the "set-enabled state". If the decimal points of this window (but not the shoe position number window) are flashing, any changes to the

positions of tabs or drawknobs will be set into any pushed piston's memory instantly. Changing the combination action memory level will automatically change the optional American Programmable Piston Sequencer memory level. *However, the memory level is prevented from changing unless the on/off switch on the Piston Sequencer Control Panel is in the off position.*

STEP-BY-STEP INSTRUCTIONS FOR USING EACH FUNCTION OF THE MASTER STOP PROCESSOR MSP-1000

COMBINATION ACTION PISTONS

1- SELECTING A MEMORY LEVEL

The combination action memory level is indicated on the main control panel as shown in Figure 1. To select a different memory level, push the top of the select switch to go to a higher level, or push the bottom of the select switch to go to a lower level. Hold the switch in to automatically step through the levels. If the count reaches the maximum possible level, the counter will "wrap around" to level #1 automatically. Wrap-around will also occur when counting down. The combination action memory level may not be adjusted when the on/off switch on the optional Piston Sequencer Control Panel is turned on. The memory level of the American Programmable Piston Sequencer is automatically changed with the combination action memory level. NOTE: The organbuilder may choose to program the MSP to automatically change the combination action memory level when the American Programmable or European Piston Sequencer wraps around. This is covered in more detail in the sections on using the Piston Sequencer.

2- LOCKOUTS

One or more optional lockout keyswitches may be provided to allow an organist to prevent anyone else from tampering with his or her combinations. Each keyswitch may be allocated to a range of combination action, crescendo, and tutti memory levels by the organbuilder using the set-up terminal as described elsewhere in this manual. No setting will be permitted on the current memory level if that keyswitch is in the "locked" position. An automatic lockout feature is also incorporated into the Master Stop Processor™ which prevents setting of combination action pistons when a crescendo, tutti, or Piston Sequencer is active. This prevents accidental inclusion into a piston setting of stops that are not physically in the on position, but which are brought on because a crescendo shoe is advanced or a tutti is latched on. When setting is attempted, but prevented because of one of these lockout conditions, the letters "L.O." flash in the appropriate window on the control panel.

3- SETTING A PISTON

Combination action pistons may be set with the mode selector switch in the Prog(ram), Use, or Edit mode. Check to be sure that the "shoe position number" digital readout is not illuminated, and that no tutti is latched on, and that the Piston Sequencer control panel is turned off. Select the desired combination action memory level. Pistons may now be set in one of the following ways:

A- "Capture" or "set button" method

- 1- Move all tabs or knobs to the desired positions.
- 2- Push and hold the "set" piston. The decimal points on the combination action memory level display will flash to indicate that setting is now possible.
- 3- Push and release the desired piston.
- 4- Release the "set" piston.
- 5- Verify proper setting by pushing the general cancel piston, then the newly set piston to be sure that all desired stops come on.

B- "Tripper" or "hold and set" method

- 1- Push and hold the piston to be set. After a brief delay, the decimal point on the

combination action memory level display will flash to indicate that setting is now possible.

- 2- Move all tabs or knobs to the desired positions.
- 3- Release the piston button.
- 4- Verify proper setting by pushing the general cancel piston, then the newly set piston to be sure that all desired stops come on.

Note that the decimal point will stop flashing after the “set” or other piston has been continuously held for about sixty seconds, and the positions of all tabs and knobs at this moment will be set into memory. Any further changes require that procedure A or B above be repeated.

Important: When all setting is complete, always move the mode selector switch on the main control panel back to the “Use” position.

4- OPERATING THE COMBINATION ACTION PISTONS

To use the combination action pistons normally, first be sure that the mode selector switch on the main control panel is in the Use position. The on/off switch on the optional American Programmable Piston Sequencer Control Panel must be in the off position. Select the desired combination action memory level, and push pistons to recall preprogrammed stop settings. Pistons will be operational even if a crescendo and/or a tutti is engaged.

5- THE RESTORE PISTON

The Master Stop Processor has provisions for a “Restore” piston, which may be used at the organ builder’s discretion. The primary use of the “Restore” piston is to give the organist the ability to quickly undo changes made in error, or the ability to make experimental changes knowing that there is a convenient way to “go back” if desired. If your system has such a piston, it may be used in the following ways:

A- In the Use Mode of Operation:

When the mode select switch on the main control panel is in the Use position, pushing the “Restore” button after any “regular” piston push will return the tabs and drawknobs to the positions they were in *immediately before* the regular piston was pushed.

B- In the Prog(ram) or Edit Mode of Operation:

When the mode select switch on the main control panel is in the Prog or Edit position, pushing the “Restore” button after *setting* any regular piston will return the *memory* for that piston back to the combination that was held for that piston before it was reset.

6- REVERSIBLE PISTONS

Three different types of reversible pistons may be provided when using the MSP-1000. The operation of each type is described below.

A- “Regular” reversible pistons operate tablets or drawknobs and usually reverse the state of at least one tab or knob on alternate pushes of the reversible piston. This type of reversible is often used for inter-manual couplers at unison pitch. It is also common for the corresponding 16’ and/or 4’ couplers to be configured as “off only” reversibles, turning off whenever the same reversible piston push turns the unison pitch coupler off. If no fully reversing stop is designated, stops designated as “off only” will turn off every time the reversible piston is pushed. This provision may be used for a function such as “All Reed Drawknobs Off”.

B- “Blind” reversibles usually turn organ accessories or special features, such as a Zimbelstern or All Swells To Swell, on and off with alternate pushes of the reversible piston. A reversible is called blind if it does

not operate a tablet or drawknob.

C- "Settable" reversible pistons may have one or more tablets and/or drawknobs assigned to them the organist. This assignment may be conveniently changed at any time. These pistons then act as fully reversing "regular" reversibles affecting the assigned stop controls. The assignment of stops to a settable reversible will not change automatically when a new combination action memory level is selected. Assignment of stop controls to a settable reversible piston is made with the mode selector switch in Prog, Use, or Edit position as follows:

- 1- Push and hold the settable reversible piston. The tabs or drawknobs currently assigned will move to the opposite states.
- 2- AFTER 1 SECOND, change the state of all tablets and/or drawknobs that should be controlled the settable reversible piston. If a tab is on, turn it off; if it is off, turn it on. Remember to change the state of the stop controls that were already assigned to the settable reversible piston, if they are to be included in the new assignment. (Note: If no changes are to be made in the assignment of stop controls to the settable reversible piston, do not change the state of any tabs or knobs).
- 3- Release the settable reversible piston.
- 4- Verify that pushing the settable reversible piston changes the state of the desired stop controls.

7- PEDAL PISTON COUPLERS

The Master Stop Processor has provisions for "Pedal Piston Coupling", which allows pedal division tablets or drawknobs to be included in the registrations recalled by divisional pistons for one or more manuals when a switch is activated or a blind reversible is engaged. If this feature is to be utilized, the organ builder may use the Set-Up Terminal to determine one of two operating configurations.

A- The first configuration may be thought of as connecting each manual divisional piston to the pedal divisional piston with the same number. When the pedal piston coupler switch is activated, pushing a manual divisional piston such as Swell #2 will recall the registration set in that manual divisional piston's memory, and also the registration set in memory for the pedal divisional piston with the same number (Pedal #2). The same registration of Swell stops will be recalled from the Swell piston whether the pedal piston coupler switch is on or off. The same registration of Pedal stops will be recalled from the Pedal divisional piston and the Swell divisional piston when the pedal piston coupler switch is on. The pedal division registrations may only be set from the Pedal divisional pistons (Pedal #2). Note that the coupling only occurs in one direction- that is, pushing a pedal divisional piston will not recall the registration of a manual division's stops even though the pedal piston coupler is activated. If there are fewer Pedal divisional pistons than manual divisional pistons, the excess manual pistons will bring on only manual registrations even though the pedal piston coupler switch is on, since there will be no correspondingly numbered Pedal divisional piston.

B- In the second configuration, "New Pedal Memories" are called into use for each manual divisional piston. The registrations set into Pedal divisional pistons will remain totally independent from those of any manual divisional piston. When the pedal piston coupler switch is activated, the tablets and drawknobs of the Pedal division will join the tablets and drawknobs of a particular manual division to form a new "manual + pedal" division such as "Swell-Pedal". Registrations for this new division will be controlled by the manual's divisional pistons (Swell pistons in our example). The same memory will be used for the registrations of manual stops whether the pedal piston coupler switch is on or off. For example, registrations of Swell stops programmed into the "Swell-Pedal" divisional pistons when the pedal piston coupler switch is on will be recalled by the same pistons after the pedal piston coupler switch is turned off, but when the coupler switch is turned off, the Pedal tablets and drawknobs will no longer respond to the Swell divisional pistons.

8- MANUAL TRANSFER

The MSP-1000 has provisions for a Manual Transfer stop tablet or blind reversible piston. This control may be wired to a Peterson OrgaPlex Master Coupler with an optional Manual Transfer Board to exchange or transfer the Great and Choir keyboards. This is useful when playing some European literature. When the Manual Transfer function is engaged, the Great and Choir divisional pistons will follow the transferred manuals. Intermanual coupler reversibles such as Great to

Pedal and Choir to Pedal will also be transferred so they will stay with the appropriate manuals. When the Piston Sequencer is used, the organbuilder may use the Set-Up Terminal to specify whether any "Next" or "Previous" pistons under the Great and Choir manuals should transfer.

THE CRESCENDO SYSTEM

1- SELECTING A MEMORY LEVEL

The crescendo memory level is indicated on the main control panel as shown in Figure 1. To select a different memory level, push the top of the select switch to go to a higher level, and push the bottom of the select switch to go to a lower level. Hold the switch in to automatically step through the levels. The count will automatically "wrap around" from #4 to #1 when counting up, and from #1 to #4 when counting down.

2- LOCKOUTS

One or more optional lockout keyswitches may be provided to allow an organist to prevent anyone else from tampering with his or her memory settings. Each keyswitch may be assigned to a range of combination action memory levels, and one or more crescendo and tutti levels if desired. No setting will be permitted when this keyswitch is in the "locked" position. When setting of a crescendo is attempted, but prevented because of this lockout circuit, the letters "L.O." are displayed in the "crescendo shoe position" window on the main control panel.

3- SETTING

Before setting a crescendo, check to be sure that no tutti is latched on, that the Piston Sequencer control panel is turned off, and that the lockout keyswitch for the current crescendo memory level, if included, is not in the "locked" position. If a crescendo disable control has been provided, be sure this is not activated. Select the desired crescendo memory level. A crescendo may now be set in one of the following ways:

A- "Prog(ram) Mode" method

- 1- Move the mode select switch to the Prog position.
- 2- Use the "shoe position selector" switch to display the shoe position that you intend to set.
- 3- Put the tabs or drawknobs into the desired positions.
- 4- Push and release the "set" button to capture the setting into memory. If the console has no "set" button, the "Set Latch" mode button on the control panel may be used as a "set" button.
- 5- Verify proper setting by changing the shoe position number with the "shoe position selector" switch, and then changing it back and listening to be sure that all desired stops can be heard.

B- "Edit Mode" method

- 1- Move the mode select switch to the Edit position.
- 2- Use the "shoe position selector" switch to display the shoe position that you intend to set.

If this switch does not change the displayed shoe position number, your Master Stop Processor™ has been configured by your organ technician to have this function controlled by the crescendo shoe. In this case, use the shoe to display the desired shoe position number. The tabs or knobs will move to the positions that have been previously set into each crescendo shoe position's memory. The decimal point after the shoe position number will flash, indicating that setting is now possible.

- 3- Move the tabs and knobs into the desired positions.
- 4- Repeat these steps for each crescendo shoe position that is to be set.

If you are listening to the organ as you set the crescendo using the Program mode method, keep in mind that until you push the set piston, you may be hearing some stops previously set into the crescendo memory of interest. These stops will stop sounding when the set piston is pushed, unless their tabs are physically in the on position at that moment. Although there are times when the Prog mode method is useful, we recommend using the Edit mode method for setting the crescendo whenever possible to avoid confusion.

A special “set latched” function is provided on the Master Stop Processor to facilitate quickly and conveniently setting memory for each crescendo shoe position in an ascending order when any existing settings are to be ignored and overwritten. When using this “set latched” method, setting is achieved as in the Edit mode without pushing the “set” piston each time, but as in the Prog mode the tabs do not move to “read out” previous memory settings. The procedure for using the “set latched” method is as follows:

- C- “Set Latched” method
 - 1- Move the mode select switch to the Prog(ram) position.
 - 2- Use the “shoe position selector” switch to display the first shoe position that you intend to set--usually Number 1.
 - 3- Press and hold the “set” piston.
 - 4- Momentarily press the “set latch” button on the control panel. A light on this button will latch on. If the console has no “set” piston, just press and hold the “set latch” button for about two seconds to latch it on. Disregard steps 3 and 5.
 - 5- Release the “set” piston.
 - 6- Move all tabs or drawknobs into the desired positions.
 - 7- Advance the “shoe position number” to the next higher number, and then turn on or off tabs as required for this next shoe position.
 - 8- Repeat these steps until all shoe positions are set.
 - 9- “Unlatch” the set button by momentarily pushing the “set latch” button, by pushing the bottom of the “shoe position selector” switch to count down, or by advancing the shoe position number upward past position number 60 so as to “wrap around” to blank the display window.
 - 10- Verify proper setting by blanking the shoe position number window with the “shoe position selector” switch, and then stepping through all positions and listening to be sure that all desired stops can be heard.

Important: When all setting is complete, always move the mode selector switch on the main control panel back to the Use position.

4- OPERATING THE CRESCENDO

To use the crescendo shoe normally, first be sure that the mode selector switch on the main control panel is in the Use position. Select the desired crescendo memory level, and move the crescendo shoe as desired to recall preprogrammed stop settings. The stop tabs/drawknobs will not move as the crescendo shoe position is changed. Additional stops may be turned on by hand or with a combination action or tutti piston. A piston push may move stop tabs or drawknobs to the off position, but those stops will continue to sound if the crescendo calls for them to be on. Activating a Crescendo Disable switch or reversible piston will prevent the crescendo system from bringing on stops, but will allow the shoe’s position to be displayed on the LED readouts.

THE TUTTI (SFORZANDO) SYSTEM

1- SELECTING THE DESIRED TUTTI MEMORY LEVEL

On Master Stop Processor™ systems where multiple tutti capacity has been purchased, there are several possible configurations. The organ manufacturer or technician may select the configuration that is deemed most convenient for his or her client.

A- In some cases, up to four separate tutti pistons are provided on the keyslip and/or on toe studs. No separate memory level adjustments are provided for in this case.

B- A single tutti button may be provided, along with a small tutti select control panel that has four push buttons, four tutti level indicator lights, and a "tutti active" indicator light on it. This control panel allows selection of which tutti memory level(s) are accessed by the single thumb piston and/or toe stud.

C- A single tutti button may be provided, and the system configured to automatically select a separate tutti memory level as the combination action memory level is selected. Thus the total number of tutti levels provided will be the same as the total number of combination action memory levels.

When configuration A or B is selected, the organ builder may also choose to have "multiple levels active". If this is chosen, more than one tutti memory level may be "on" at once. Any stop that would be brought on by any active level will come on when the tutti thumb piston or toe stud is engaged. To avoid confusion when setting, only one tutti level may be active when the mode select switch is in the Prog or Edit position.

2- LOCKOUTS

One or more optional lockout keyswitches may be provided to allow an organist to prevent anyone else from tampering with his or her memory settings. Each keyswitch may be assigned to a range of combination action memory levels, and one or more crescendo and tutti levels if desired. No setting of affected memory levels will be permitted when this keyswitch is in the "locked" position. When setting of a tutti is attempted, but prevented because of the lockout keyswitch, the letters "L.O." are displayed on the control panel in both the crescendo shoe position number and combination action memory level windows.

3- SETTING A TUTTI PISTON

- 1- Check to be sure that the "shoe position number" digital readout (Fig.1, #4) is not illuminated.
- 2- Select the desired combination action/tutti memory level, if applicable (Fig.1, #5).
- 3- Tutti pistons may now be set in one of the following ways:

A- If the existing tutti memory is to be modified--

- 1- Move the mode selector rocker switch (Fig.1, #1) into the Edit position.
- 2- Momentarily push the tutti level select button for the memory level that is to be set. If you do not have a tutti level select panel, momentarily push the tutti piston. Tabs/knobs will physically move to the positions previously set into memory.
- 3- Move all tabs or knobs to the desired new positions.
- 4- Press the tutti level select button or tutti piston to disengage the tutti.

B- If the existing tutti memory setting is to be destroyed--

- 1- Move the mode selector rocker switch (Fig. 1, #1) into the Program position.
- 2- Momentarily push the tutti level select button or tutti piston to be set.
- 3- Move all tabs or knobs to the desired positions.
- 4- Momentarily push and hold the "set" piston. If the console has no set piston, use the "set latch" button (Fig.1, #2) on the control panel instead.

- 5- Push the tutti level select button or tutti piston to disengage the tutti.

When the mode select switch (Fig.1, #1) is in the Program or Edit position, the tabs or knobs will move to “read out” the tutti memory whenever a tutti is activated.

Note that the decimal point will stop flashing after the “set” or tutti piston has been continuously held for about sixty seconds, and the positions of all tabs and drawknobs at this moment will be set into memory. Any further changes require that one of the setting procedures above be repeated.

Important: Always be sure to move the mode select switch back to the Use position when setting has been completed.

4- OPERATING THE TUTTI SYSTEM

To use the tutti pistons normally, first be sure that the mode selector switch on the main control panel is in the Use position. It may also be necessary for the on/off switch on the optional American Programmable Piston Sequencer Control Panel to be in the off position. Select the desired tutti memory level(s), if applicable, and push tutti pistons as desired to recall preprogrammed stop settings. Tutti pistons will be operational even if a crescendo is engaged. To turn off a tutti, push the tutti piston a second time or push general cancel. If the Master Stop Processor is so configured, pushing one button on the tutti level select panel will cancel any other tutti level that is on. An alternate configuration allows more than one tutti level to be active at once, and in this case pushing one tutti select button a second time will not cancel other tutti levels on at the same time. Similarly, if the console has more than one Tutti piston instead of a tutti memory level select panel, pushing any tutti piston may cancel any other one that is active, or more than one may be active at once, depending on how the system is configured by your organ technician. Pushing general cancel will always turn off all tuttis but will not affect the tutti levels that have been selected.

THE PETERSON PISTON SEQUENCER

INTRODUCTION

A “Piston Sequencer” option may be provided with the Peterson MSP-1000 . The purpose of a Piston Sequencer is to allow a series of combination action pistons to be activated, in order, by pushing a single button each time a registration change is required. If this option is provided, the organ technician may configure it in one of two ways; the American Programmable Piston Sequencer or the European Piston Sequencer. When the **American Programmable Piston Sequencer** is chosen, a list of pistons can be stored in memory in any order desired, and will be activated in order each time the “advancing” or “Next” button is pushed. Pistons of virtually any function at all may be included in this list. **The European Piston Sequencer** “remembers” the piston number of the most recently activated general piston, and will activate the next higher numbered general piston whenever the “Next” button is pushed. A “Previous” button on the control panel is provided for both American Programmable and European Piston Sequencer use so you may step backwards through the series of piston numbers.

Many organists find it much more convenient to use a Peterson Piston Sequencer than to worry about properly identifying and pushing thumb pistons at various locations on the console, especially when concentrating on the many other aspects of performing. This convenience may be enhanced by duplicating the “Next” and “Previous” buttons of the Piston Sequencer Control Panel on one or more thumb pistons. You may have designated pistons engraved “Next” and “Previous” located in a convenient location. However, an exclusive feature of the Peterson system that we have found to be very popular with organists is our “Any Piston Previous/Next” provision, which allows *regular pistons to be automatically redesignated* as “Next” or “Previous” pistons whenever the Piston Sequencer is on. For example, the organ technician can designate all numbered pistons to serve as “Next” pistons instead of their regular functions any time the Piston Sequencer is on. This way you may push any numbered piston on the console to get the next piston in the programmed

sequence (American Programmable) or the next General piston (European Piston Sequencer). **To avoid confusion, pistons such as cancel, tutti, reversible, “Restore”, and “Previous” may never be redesignated, and general pistons may not be redesignated when the Piston Sequencer is configured in the European mode.**

For clarity, the details of using the American Programmable and European Piston Sequencers are described separately below.

THE AMERICAN PROGRAMMABLE PISTON SEQUENCER

DETAILS OF OPERATION

As explained briefly above, the American Programmable Piston Sequencer is a feature of the Master Stop Processor™ which allows a sequence or list of standard combination action piston pushes to be stored in memory in any desired order. Any piston may be included in the sequence as many times as you wish. Each time a button labelled “Next” is pushed, the next combination action piston in the stored sequence is, in effect, “pushed”. This causes the tabs and drawknobs to move just as they would if the piston was physically pushed by the organist.

The Peterson American Programmable Piston Sequencer allows you to program any combination of pistons into each sequence, including generals, divisionals, and specialty pistons such as reversibles, cancels, tuttis, and even the “Restore” piston. A special LED digital readout on the Piston Sequencer Control Panel displays the sequence position number, and also a five character description of the most recent “piston push”. For example, if the display reads:

10 GRT 05

...then you will know that you have activated the tenth piston in the sequence, which is Great divisional piston number five. You may manually move tabs and drawknobs at any time. You may also operate the crescendo, and any pistons including tuttis at any time (except those “regular” pistons that are designated to act as “Next” or “Previous” buttons when the Piston Sequencer is on). Sequences of up to 99 piston pushes may be entered on each combination action memory level.

SUMMARY OF PISTON SEQUENCER CONTROL PANEL FEATURES

1-ON/OFF SWITCH

Push the bottom of this rocker switch to turn off the Piston Sequencer, and push the top of the switch to turn it on. This will automatically reset the sequence position number to zero; in other words, the system will be reset to the beginning of the sequence. The programmed sequence will be retained in memory even when this switch is turned off. If this switch is left in the “on” position, the current sequence position number will be retained even if the main organ power (rectifier) is turned off. The combination action memory level (and thus the Piston Sequencer memory level) may not be manually changed unless this switch is in the “off” position.

FIGURE 2

2- SEQUENCE POSITION NUMBER WINDOW

The number of the current position in the sequence is displayed here. This may be any number from 0 to 99, inclusive, since there are 99 possible “piston pushes” in each sequence. A zero digit displayed here indicates that the first piston push in the sequence has not yet been made. The digit(s) in this window will flash when the “set” button is held in, indicating that setting is possible.

3- PISTON NAME WINDOW

The five characters displayed in this window describe the piston that was most recently “pushed” by the Piston Sequencer. Lists of the abbreviations used are provided as Figures 3 and 4 in this manual.

4- DELETE BUTTON

Pushing this button will remove the currently displayed piston from the sequence, and adjust the sequence position numbers of all pistons later in the list. Note that this button will only work if the mode selector switch on the main control panel is in the Prog or Edit position.

5- INSERT BUTTON

Momentarily pushing this button will prepare the Piston Sequencer for additional piston pushes to be inserted into the list before the currently displayed piston. The first new piston inserted will be given the sequence position number currently displayed, and the sequence position numbers of all pistons later in the list will be adjusted. After pushing the “insert” button, hold the “set” button in while pushing the pistons to be inserted in order. Note that this button will only work if the mode selector switch on the main control panel is in the Prog or Edit position. If the console does not have a “Set” button, use the “Set Latch” button on the main MSP-1000™ control panel.

6- PREVIOUS BUTTON

In the American Programmable Piston Sequencer configuration, pushing this button will lower the sequence position number by one. If the mode selector switch is in the Use position, the piston assigned to this new position number will be activated. Otherwise, only the displays will change. This button may be duplicated with one or more piston buttons elsewhere on the console. The organbuilder may have configured the system to automatically lower the Combination Action and Piston Sequencer memory level if the Previous button is pushed when the current position in the sequence is “1”, causing the count to “wrap around” to position “99”.

7- NEXT BUTTON

In the American Programmable Piston Sequencer configuration, pushing this button will raise the sequence position number by one. If the mode selector switch is in the Use position, the piston assigned to this new position number will be activated. Otherwise, only the displays will change. This button may be duplicated with one or more piston buttons elsewhere on the console. The organbuilder may have configured the system to automatically raise the Combination Action and Piston Sequencer memory level if the Next button is pushed when the current position in the sequence is "99", causing the count to "wrap around" to position "1".

STEP-BY-STEP INSTRUCTIONS FOR USING THE PETERSON AMERICAN PROGRAMMABLE PISTON SEQUENCER

1- SELECTING A MEMORY LEVEL

The Piston Sequencer memory level is automatically adjusted with the combination action memory level. To select a different memory level, first turn off the on/off switch on the Piston Sequencer control panel. Then push the top of the combination action memory level select switch to go to a higher level, or push the bottom of the select switch to go to a lower level. Hold the switch in to automatically step through the levels. If the memory level reaches the maximum possible number, the counter will "wrap around" to level #1 automatically. Wrap-around will also occur automatically when counting down. When the desired memory level has been selected, you may turn on the on/off switch on the Piston Sequencer Control Panel. The sequence position number will automatically be reset to position 0.

2- LOCKOUTS

One or more optional lockout keyswitches may be provided to allow an organist to prevent anyone else from tampering with his or her memory settings. No setting will be permitted on the affected memory levels when this keyswitch is in the "locked" position. When setting of the Piston Sequencer is attempted, but prevented because of the lockout keyswitch, the letters "L.O." are displayed on the Piston Sequencer Control Panel.

3- SETTING A PISTON SEQUENCE

Before setting a piston sequence, move the mode selector rocker switch into the Prog(ram) position. Select the desired Combination Action/ Piston Sequencer memory level, and then turn on the on/off switch on the Piston Sequencer Control Panel. Setting and modifying the piston sequence are then accomplished in the following ways:

- A- Creating a Piston Sequence
 - 1- Push and hold the "set" piston. The piston sequence position number will flash for as long as the set button is held in, indicating that setting is possible.
 - 2- Push pistons in the desired order. Be sure to push the piston buttons firmly so the contacts make. After each piston push is "seen" by the system, the sequence position number that is displayed will advance.
 - 3- When the complete sequence has been entered, release the "set" piston.
 - 4- To check the newly entered sequence of pistons, turn the on/off switch on the Piston Sequencer control panel off and then back on to reset the sequence position number to zero, then advance

through the sequence by pushing the “Next” button. For each sequence position number, the designated piston will be indicated in the large display window.

B- Inserting Steps into the Sequence

- 1- Use the “Next” or “Previous” buttons on the Piston Sequencer Control Panel to display the sequence position number that should be inserted. *For example, if you wish to add a new step as number 5, display sequence position number 5.*
- 2- Momentarily push the “insert” button on the Piston Sequencer Control Panel.
- 3- Push and hold the “set” piston.
- 4- Momentarily push the new piston(s) that should be inserted into the sequence, in order.
- 5- Release the “set” piston.
- 6- Check the new sequence pattern.

C- Deleting Steps from the Sequence

- 1- Use the Next or “Previous” buttons on the Piston Sequencer Control Panel to display the sequence position number that should be deleted.
- 2- Momentarily push the “delete” button on the Piston Sequencer Control Panel.
- 3- Check the new sequence pattern.

Important: Always be sure to move the mode select switch back to the Use position when setting has been completed.

4- OPERATING THE PISTON SEQUENCER

To use the American Programmable Piston Sequencer, first be sure that the mode selector switch on the main control panel is in the Use position. Remember that a separate piston sequence of up to 99 steps is provided for each combination action memory level. To reset the Piston Sequencer to start at the beginning of the sequence, turn the on/off switch on the Piston Sequencer Control Panel off and then back on again.

Note that if the main organ power switch is turned off, but the Piston Sequencer on/off switch is left in the “on” position, the sequence position number will not be reset. Thus, the organ can be turned off, and upon turning it back on the sequence position will be where it was left.

When the Piston Sequencer is on, the “Next” and “Previous” buttons on the Piston Sequencer Control Panel, and the piston(s) designated for use as “Next” and “Previous” pistons, may be pushed at any time to advance the Piston Sequencer and move the tabs or drawknobs to the positions stored in memory for the combination action pistons thus activated. The crescendo, tutti, and combination action will function normally when the Piston Sequencer is on, except that any pistons designated for use as “Next” or “Previous” buttons for the Piston Sequencer will not operate their primary functions while the Piston Sequencer is on.

THE EUROPEAN PISTON SEQUENCER

DETAILS OF OPERATION

The organbuilder may choose to configure the system as a “European Piston Sequencer” through a procedure with the Set-Up Terminal. When this arrangement is chosen, the piston number of the most recently pushed general piston is “remembered”. Pushing the “Next” button will activate the next higher numbered general piston. Pushing the “Previous” button will activate the next lower numbered general piston. This series of general pistons will automatically “wrap around”.

For example, if you have sixteen general pistons and press general piston number 16, a subsequent push of the “Next” button will activate general piston number 1. The organ technician may optionally configure your European Piston Sequencer to automatically raise or lower the combination action memory level when wrapping up or down, respectively.

When the European Piston Sequencer option is chosen, the “sequence #” window will not light up. The “Division and Piston #” window will indicate the most recently activated general piston, whether activated by an actual piston push or through the Piston Sequencer. The Insert and Delete buttons on the Piston Sequencer Control Panel will not be functional when the European Piston Sequencer is chosen.

EUROPEAN PISTON SEQUENCER CONTROL PANEL FEATURES

1-ON/OFF SWITCH

Push the bottom of this rocker switch to turn off the Piston Sequencer, and push the top of the switch to turn it on. The combination action memory level may not be changed manually unless this switch is in the “off” position.

2- SEQUENCE POSITION NUMBER WINDOW

This window is used only in the “Programmable Piston Sequencer” configuration.

3- PISTON NAME WINDOW

The five characters displayed in this window describe the piston that was most recently activated either by actually pushing a piston or via the Piston Sequencer. The abbreviation “GEN”, for general piston, will be followed by the appropriate piston number. If no general piston has yet been pushed, the word “READY” or a series of dashes will appear in this window.

4- DELETE BUTTON

This button is used only for editing the memory of the American Programmable Piston Sequencer, and thus is not operable when the European Piston Sequencer option is selected.

5- INSERT BUTTON

This button is not used when the European Piston Sequencer option is selected.

6- PREVIOUS BUTTON

In the European Piston Sequencer configuration, pushing this button will activate the next lower numbered general piston. This button may be duplicated with one or more piston buttons elsewhere on the console. The organbuilder may have configured the system to automatically lower the Combination Action memory level if the Previous button is pushed when the piston name window displays “GEN 1”, causing “wrap around” to the highest numbered General piston.

7- NEXT BUTTON

In the European Piston Sequencer configuration, pushing this button will activate the next higher numbered general piston. This button may be duplicated with one or more piston buttons elsewhere on the console. The organbuilder may have configured the system to automatically raise the Combination Action memory level if the Next button is pushed when the piston name window displays the highest numbered General piston, causing “wrap around” to “GEN 1”.

INSTRUCTIONS FOR USING THE PETERSON EUROPEAN PISTON SEQUENCER

1- SELECTING A MEMORY LEVEL

The European Piston Sequencer activates General pistons to provide the registrations that are set on the current combination action memory level. To select a different combination action memory level, use the combination action memory level select switch as described elsewhere in this instruction manual. Remember that it may be necessary to put the on/off switch on the Piston Sequencer control panel in the “off” position before the memory level may be changed. If the highest numbered general piston has been activated, and then the “Next” button is pushed, the combination action memory level may be automatically increased by one count as the Piston Sequencer “wraps around” to general piston number 1. Similarly, pressing the “Previous” button when general piston number 1 has been activated may automatically lower the combination action memory level by one count as the Piston Sequencer wraps around to the highest numbered general piston. (Whether or not the combination action memory level is automatically changed upon wrap-around is left to the discretion of the organ builder or service technician.)

2- OPERATING THE EUROPEAN PISTON SEQUENCER

To use the European Piston Sequencer, first be sure that the mode selector switch on the main control panel is in the Use position. *Note that if the main organ power switch is turned off, the memory that holds the most recently activated General piston's number will be reset, and upon turning on the organ power and the Piston Sequencer, the word “READY” will appear in the piston number window. However, if the Piston Sequencer Control Panel is turned off but the organ continues to be used, manual pushes of General pistons will be recorded into this memory, and the most recently pushed piston number will be displayed in the piston number window as soon as the Piston Sequencer Control Panel is turned on again.*

When the Piston Sequencer is on, the “Next” and “Previous” buttons on the Piston Sequencer Control Panel, and the piston(s) designated for use as “Next” and “Previous” pistons, may be pushed at any time to advance the Piston Sequencer and move the tabs or drawknobs to the positions stored in memory for the next higher or next lower numbered general piston. The crescendo, tutti, and combination action will function normally when the Piston Sequencer is on, except that any pistons designated for use as “Next” or “Previous” buttons for the Piston Sequencer will not operate their primary functions while the Piston Sequencer is on.

FIGURE 4A

DIVISION NAME ABBREVIATIONS

GEN	Generals
GT	Great
CH	Choir
SW	Swell
PED	Pedal
POS	Positiv
SOL	Solo
ANT	Antiphonal
ECH	Echo
CEL	Celestial
CPL	Couplers
GGT	Gallery Great
GSW	Gallery Swell
GPD	Gallery Pedal
CGT	Chancel Great
CSW	Chancel Swell
CPD	Chancel Pedal
REC	Recit
BRU	Brustwerk
RPS	Ruckpositiv
ACC	Accompaniment

BOM	Bombarde
HWK	Hauptwerk
G2T	Great 2nd Touch
P2T	Pedal 2nd Touch
A2T	Accomp 2nd Touch
S2T	Solo 2nd Touch
FLT	Flutes
TRM	Trems

FIGURE 4B

PISTON NAME ABBREVIATIONS

BOUR	Bourdon		
ZIMB	Zimbelstern		
BOMB	Bombarde		
PRI32	32' Principal		
POS32	32' Posaunne		
COR32	32' Cornet		
POM32	32' Pommer		
USATZ	Untersatz		
C FAG	Contra Fagotto		
VIOL	Viole		
TREM	Tremolo		
TRAPS	Traps	RST	Restore
REV 1	Reversible #1		
REV 2	Reversible #2		
.	..		
.	..		
REV10	Reversible #10, etc.		
SRV 1	Settable Reversible #1		
SRV 2	Settable Reversible #2		
PPCSW	Pedal Piston Coupler Swell	PPCGT	Pedal Piston Coupler Great
PPCCH	Pedal Piston Coupler Choir		
PPCPO	Pedal Piston Coupler		
Positiv			
PPC1	Pedal Piston Coupler 1		
PPC2	Pedal Piston Coupler 2		
PPC3	Pedal Piston Coupler 3		
ALLSW	All Swells to Swell		
ALLRS	All Reeds Off		
ALLMX	All Mixtures Off		
TUT	Tutti		
NXT	Next		
PRV	Previous		
MANTR	Manual Transfer		

IN CASE OF DIFFICULTY

If the Master Stop Processor™ fails to operate normally, please refer to the following troubleshooting guide before calling the serviceperson or factory for assistance. Your ability to relay information about the exact nature of a problem will be of great help in solving the problem efficiently.

PROBLEM	THINGS TO CHECK
1. Pistons cannot be set.	A. Do the letters “L.O.” appear in any control panel display window(s)? If so, which one(s)?
	B. Do the decimal points in any control panel window flash? If so, which one(s)?
	C. Is the crescendo or tutti activated?
	D. Is any lock-out switch in the lock position?
	E. Are both “capture” and “tripper” modes not working?
2. Pistons are dead.	A. Which piston(s) don't work?
	B. Does the crescendo work correctly?
	C. If a non-working piston is pushed repeatedly, will it work intermittantly?
3. One or a few individual stops won't set.	A. Does the stop speak or remain silent when in the “on” position?
	B. Can the stop be set into memory for the crescendo?
	C. Are the stops that won't set grouped together?
	D. How many stops are affected?
4. Pistons make stops move, but some stops don't fully move to the desired position.	A. Does the proper combination try to come on?
5. Crescendo or Tutti cannot be set.	A. Is the mode select switch in the Prog or Edit position?
	B. Do the letters “L.O.” flash in any control panel windows? If so, which one(s)?
	C. Do the decimal points flash in any control panel windows? If so, which one(s)?
6. Set-Latch button won't latch on when pressed.	A. Is a number displayed in the shoe position window?
	B. Is the mode select switch in the Prog position?
PROBLEM	THINGS TO CHECK

7. Programmable piston sequencer cannot be set.	A. Is the mode select switch in the Prog position?
	B. Do the letters "L.O." appear in any control panel windows? If so, which one(s)?
8. Crescendo shoe indicator advances with shoe but crescendo stops do not turn on.	A. Is Crescendo Disable function activated?
	B. Has crescendo been programmed to bring stops on for the selected crescendo memory level?

If the service person or factory requires additional information, do you have access to a voltmeter?

For additional information about this Master Stop Processor or for service,

Contact: _____

Telephone: _____

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