peterson MIDI Resource System

INSTALLATION INSTRUCTIONS

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petersonMIDIResourceSystem™

INSTALLATIONINSTRUCTIONS

INTRODUCTION

When a complete pipe organ control system including switching, combination action and MIDI is purchased from Peterson, these sub-systems will be provided to you with nearly all of the wiring already done. Our ability to interface various systems together, and with the rest of the organ, is usually only limited by a lack of complete or accurate information provided to us. When some equipment from another manufacturer is being used, or in the case of rebuilds where parts of the original console are being reused, we will make every effort to provide Aour part@ of the job in a way that is convenient for you to connect to the existing components.

A section of this manual called "SUMMARY OF NOTES & WARNINGS REGARDING LAYOUT, WIRING, AND USE" begins on the next page. We strongly recommend that you read that section before beginning work.

A troubleshooting guide may be found near the end of this manual, which will be useful should any trouble occur. If you have difficulty with the installation, configuration, or testing procedures, or have questions after reading the appropriate section of this manual, please contact the factory for assistance.

Following is a list of the steps required to install, wire, and test the MIDI Resource System™. You will likely find that many of these steps have already been completed when the MIDI system is purchased along with other Peterson products. Each of these procedures is explained in detail later in this manual. After carefully unpacking the MIDI Resource System™ and checking for any obvious shipping damage, proceed as follows:

1. Select a suitable location and mount the MIDI Resource System™ base system, DC encoders if applicable, and other circuitry.
2. Mount any panels such as the MIDI Resource System™ main control panel, advanced features control panel, and MIDI port plate if these have been purchased.
3. Make all necessary wiring connections to the top of the Minimum I/O board to implement various options.
4. If the MIDI Resource System is being installed in an organ that uses OrgaPlex™ couplers or switching, make all necessary wiring connections to Serial In and Serial Out pins.
5. If the organ does not use OrgaPlex™ couplers or switching, wire all keys to DC Encoders. The DC Encoders will be provided with prewired cables to connect them into the MIDI Resource System™ mother board.
6. Wire all stop controls and/or pistons that will be used with the MIDI Resource System™. In a basic MIDI Out system this is limited to the stop control to turn on MIDI for each manual. In a complete MIDI In/Out system, this may also include stops or pistons that will be used as MIDI presets to send patch changes, and also the organ's Aregular@ stops and/or pistons that will be encoded for use in recording performances via a sequencer or personal computer.
7. Make all necessary power connections to the Class 2 transformer or Peterson Console AC Control System, organ rectifier, and OrgaPlex™ power supply if applicable.
8. If expression shoes are to be connected to the MIDI system, wire contacts to the Shoe Encoder board, or wire each shoe potentiometer directly to the MIDI Resource System™ mother board.
9. If transposing of MIDI voices is desired, connect the transposer switch or Peterson Digital Transposer Assembly to the transposer connector on the MIDI Resource System™ mother board.
10. If MIDI preset pistons are to be used and multiple memory levels are desired, connect a rotary switch, Digital Memory Level Selector Assembly, or pins on the Peterson Master Stop Processor™ Control board and Special Functions board to the MIDI Resource System™'s Minimum I/O board.
11. Connect standard MIDI cables between the ports (MIDI sockets) on the MIDI Resource System™ and a sound module or synthesizer.
12. Follow the Initial Test Instructions to verify basic operation of the system.

13. If a MIDI Resource System™ main control panel is installed or available, follow the step-by-step diagnostic test and set-up procedure later in this manual. This causes the system to check its own operation.
14. Follow the Configuring and Initializing instructions to calibrate the expression shoe range and tuning pot and to assign stops to allow for compatibility with other MIDI equipped organs.

SUMMARY OF NOTES & WARNINGS REGARDING LAYOUT, WIRING, AND USE

Following is a compilation of the advisories included throughout this instruction manual, organized here by category. We recommend that you read these over before starting your installation to become familiar with these important details.

Regarding mounting, layout, and cable routing:

*When choosing a location for mounting the MIDI system, keep in mind the routing of cables and accessibility for ease of working on the system.

*If a MIDI Resource System™ is used in the same console with a Master Stop Processor™, arrange these two base systems with as much separation as possible; never less than two feet apart.
*Avoid routing the control panel cable, key or stop encoder cables next to any A.C. wires or cables that carry high current, such as to magnet coils. If this can't be avoided, keep the cables in separate bundles; never tie them tightly together. The supplied cable is 8' long and cannot be lengthened, so arrange the location of the base system relative to the control panel accordingly.

Regarding power requirements, polarities, wiring, and pin alignment:

*The organ rectifier voltage should be 11-18 VDC. This voltage must not drop below 9 VDC during normal operation. This would include any ripple at full load conditions.
*Reversal of the polarity of organ rectifier feed wires will cause damage. The size of these feed wires should be #22 - #18 AWG.
*The supplied plug-in Class 2, 9VAC, 15.3 VA (1.7 Amp) transformer must be plugged into an unswitched outlet. Alternately, the 9VAC may be supplied by a Peterson Console A.C. Control (CACC) System. The terminals to be used for the MIDI Resource System™ are labeled on the CACC. These wires must be polarized. The supplied zip cord has silver and copper wires. Connect the silver side to the AC2 terminal (yellow dot) on the MIDI Resource System™ and to the CACC MIDI terminal that is common with the OrgaPlex™ (yellow dot). The OrgaPlex™ AC should also be connected with the silver conductor to the terminals of the CACC and OrgaPlex™ Power Supply that also have the yellow polarizing dots. Improper polarization of these wires may prevent proper powerdown of the equipment.
*A lockout circuit to prevent setting of MIDI pistons or preset stops is factory set for a positive lockout switch common. It may be switched to negative by moving a jumper and changing a setting in diagnostics. If the jumper and diagnostics setting don't match, setting will be prevented.
*When plugging daughter boards onto the mother board, pay careful attention to match the assembly numbers and align the keying pins as they are reinstalled. Most of the subassemblies use finer pitch edge/ wafer connectors and it is particularly important to be sure of pin alignment before fully pushing the board in place. Bent pins will cause problems.
*Please read the entire section entitled "INITIAL TEST OF MIDI Resource System™ AFTER INSTALLATION" before applying power.

Regarding interface of the MIDI Resource System with other equipment:

*When an OrgaPlex™ switching system incorporates a digital transposer, a Transposer Interface board (#404370) that shares the Digital Transposer Control Panel should be connected as shown in Figure 9B. Do not operate the MIDI Resource SystemJ with the Transposer Interface installed unless it is connected to the OrgaPlexJ Digital Transposer, as this could cause intermittant malfunctions.

*If a manual transfer is being used, do not include its stop control on the MIDI Encode/ Decode Stops Junction. Also, if coupled data is used for the MIDI=s input, do not include these coupler stops in the MIDI Encode/ Decode Stop Junction.

*In some cases it may be desirable to have both D.C. encoded stops and OrgaPlex™ serial stops connected to the MIDI Resource System™. A sample wiring diagram is shown in Figure 5. If this wiring scheme is employed it is important that the DC encoded stops and the OrgaPlex™ serial stops do not overlap. Figure 7 shows the relationship of these inputs (and outputs).

*The keyboard serial outputs connect to their corresponding data lines in the OrgaPlex™ system. Refer to Figure 3C for an Original OrgaPlex™ system and to Figure 3B for an OrgaPlex Master Coupler™ system. The preferred connection point on the Master Coupler™ is the Player Interface connector. This arrangement allows 'MIDI In' data (from a sequencer/ player) to be coupled. The ANX@ strobe and OrgaPlex™ clock must also be wired from the Master Coupler™ output connectors to the MIDI Resource System™'s output connector(s). Note that the Division/Matrix boards #404698 and the Master Coupler™ mother board #404697 must both be revision AE@ or later. If the suffix letter for the part number on your Division/Matrix or Mother boards precedes this, contact the Peterson factory for an exchange. Also, the Main Keyscan board #404686 must have the 14.4 kHz clock. Check resistor R14 to be sure its value is 1.5K Ohms.

*If a MIDI Resource System™ uses coupled data from a Master Coupler™ or if the Master Coupler™ includes a Manual Transfer; the coupler stop controls and/or manual transfer control must not be recorded (do not wire to MIDI stop encoder inputs). If these are recorded, double coupling and/or transferring will occur.

Regarding stop assignments and the Diagnostics mode:

*MIDI coupler stop controls must always be assigned, even if no other stops are assigned. These MIDI coupler stops all use the assign value "35" for their respective division.

*MIDI Resource System™ installations that do not incorporate MIDI coupler stops (in other words, where MIDI is controlled locally via the sound module) should not have their stops assigned. Un-assigned systems default to outputting key data without the need for stop controls. Entering the Assign Mode, even if stops aren't assigned, will defeat this feature. In the event that it is desired to assign stops for record/play purposes, with this type of installation, "blind controls" will need to be used. These "blind controls" simply use any available (unused) stop encoder input. Activate this input with a "hot" lead for assigning purposes. Once all the stops have been assigned, permanently connect these blind control inputs to organ positive. This is the equivolent of an always-on stop. If these blind controls are connected to positive before assigning is finished; the "E EE EEE" error message will be displayed when trying to assign other stops.

*After all the stops and pistons have been assigned, it is a good idea to switch to the Assign Show mode and examine each stop to be sure they are programmed. Any that show A- -- ---@ were overwritten from a duplicate setting. Choose a new value and reprogram that stop. This should be done even when only the MIDI coupler stops have been assigned. Unassigned stops that show "- -- ---" will not record or play back! Finally, turn off the Assign Stops dip switch and again reset the MIDI Resource System™ by turning the organ power off and on as above, to return to normal operation.

*In Diagnostics Mode "Piston Test (4)" the default "do can" indicates that blank pistons will cancel the MIDI Instrument. Pressing Send/ Receive toggles the display to "no can" which indicates blank pistons will not affect the MIDI instrument. The displayed cancel mode will become active when switching back to the normal Use Mode or another diagnostic. In some installations, during record/playback, it may be noticed that some held notes will appear to go dead when a piston is pressed. If this occurs; simply change to the "no can" setting.

Regarding operation of the MIDI Resource System:

*If the transposer is used when making a MIDI sequence, it should be returned to neutral on playback or double transposing will occur.
*Some sound modules may not support sostenuto or certain other features available on the MIDI Resource System.

*Please review the Application Notes section on Page **20**

MOUNTING

The MIDI Resource System™ is supplied as a base system with desired optional assemblies ready to mount in an organ console (See Figure 1). When choosing a location, keep in mind the routing of cables and accessibility for ease of working on the system. Also, if a MIDI Resource System™ is used in the same console with a Master Stop Processor™, arrange these two base systems with as much separation as possible; ***never less than two feet apart***. Temporarily remove any plug-in subassemblies (daughter boards) that may be in the way of mounting holes. Mount the base system (mother board) with the twelve supplied #6 x 1-1/4" screws. Replace any removed subassemblies paying careful attention to match the assembly numbers and align the keying pins as they are reinstalled. Most of the subassemblies use finer pitch edge/wafer connectors and it is particularly important to be sure of pin alignment before fully pushing the board in place. *Bent pins will cause problems*.

If the optional control panel assembly was purchased, choose a convenient location on the name board or side jamb. Use the template provided (See Figure 2B) to mark and then cut the required clearance hole. Remove the AU@ bracket from the back of the control panel assembly and then remove the protective paper from the adhesive transfer tape on the back side of the front panel. Carefully align the control panel in the clearance hole and press in place. Install the supplied brads in each corner of the control panel. Replace the AU@ bracket on the back of the control panel and tighten in place.

A cable is supplied with the control panel to connect it to the MIDI Resource System™ mother board (See Figure 4). Route this cable in a convenient way but avoid routing it next to any A.C. wires or cables that carry high current, such as to magnet coils. If this can't be avoided keep the cables in separate bundles; never tie them tightly together. The supplied cable is 8' long and cannot be lengthened, so arrange the location of the base system relative to the control panel accordingly.

WIRING

EXTERNAL D.C. CONTROLS

The following control inputs are located on the connectors on top of the Minimum I/O board #404586 (See Figure 6). These inputs are activated by switches and/or piston buttons that apply organ positive voltage (11-18 VDC) through their contacts to these pins. These controls are optional and some require installation of other optional modules on the MIDI Resource System™ mother board before they can be used. A brief description of each pin follows.

1. **Memory Select A** - See AMemory Select Switch@ section below.
2. **Memory Select B** - See AMemory Select Switch@ section below.
3. **Memory Select C** - See AMemory Select Switch@ section below.
4. **Memory Select D** - See AMemory Select Switch@ section below.
5. **Memory Select E** - See AMemory Select Switch@ section below.
6. **Lock-Out** - Prevents setting of MIDI pistons/preset stops. Can be wired to the combination action lock-out. Please refer to the note on Figure 6 for details. Version "F" or later Minimum I/O boards (404686F) allow selecting positive or negative for the lock-out input. This requires setting the "Lock-Out Select" program jumper to HI or LOW for positive or negative lock-out respectively **and** selecting "LO LO" or "LO HI" in the Diagnostic/Set-Up Mode (see "Diagnostic/Test section letter "H"). The factory setting is for positive lock-out. NOTE: If the jumper and diagnostic setting do not match, the system will be locked out and setting of MIDI pistons/stops will be prevented.
7. **Set** - Saves control panel settings on piston or preset stop that is active when in the Program Mode and when this input is activated. Can be wired in parallel with the combination action set button input so the same piston is used for MIDI and combination action setting.
8. **Cancel** - MIDI Cancel clears MIDI voices on all channels. Also used to erase piston and preset stop memories when in the Program Mode. Can be wired in parallel with the combination action general cancel piston input. See Figures 6 and 10A.
9. **Start** - Used to control any MIDI Areal time@ device attached to the MIDI output port. Can be a piston button, or the Advanced Feature Control Panel may be used.

10. **Stop** - Used to control any MIDI real time device attached to the MIDI output port. Can be a piston button, or the Advanced Feature Control Panel may be used.
11. **No Connection.**
12. **Organ Positive** - Current limited output that can be used as a common for these D.C. Inputs.
13. **Continue** - Used to control any MIDI AReal Time@ device attached to the MIDI output port. Can be a piston button, or the Advanced Feature Control Panel may be used.
14. **Transfer** - When connected to organ positive, will send an Enable General MIDI message on power up after 8 second delay.
15. **All Stops Off** - Used to disable stops on playback of incompatible files.
16. **Auto Resend** - Enables periodic resending of organ data to the sequencer. Can be wired to Astart@ button to provide stop registration Aqueing@.
17. **Tremolo** - This allows the user to turn on the tremolo (or vibrato) function on the voice module connected to the MIDI Instrument Output port. Can be wired to the organ's tremolo stop control.
18. **Sustain** - Causes the sustain (or sostenuto) to be activated on the voice module connected to the MIDI output port.
19. **Mode** - When connected to organ positive, will enable MIDI coupler key data (on default channel) even if no patch is sent.
20. **Basic Channel Select** - When connected to organ positive, will transmit a General MIDI (GM) message on the instrument out during power-up.

KEYBOARDS

If the MIDI Resource System™ is being used on an organ that requires D.C. keying for the existing relay, D.C. Key Encoders can be provided for positive keying only. Refer to Figure 3A for a typical layout and wiring diagram for this type of system. These D.C. Key Encoders for 61 and 32 notes, #404687 and #404688 respectively, will be supplied with a Key Junction to which the key contacts are to be wired. Cables from the D.C. Key Encoders to the MIDI Resource System™ mother board will be supplied. A Keyboard Interface board #404588 is also required on the MIDI Resource System™. Information about keying inputs for the MIDI Resource System™ when used with Peterson OrgaPlex Master Coupler™ or original OrgaPlex™ system is illustrated in Figures 3B and 3C, and is explained in the section entitled AOrgaPlex™ Serial Inputs@. NOTE: Encoder cables should not be bundled with high current magnet cables or 110 VAC wiring.

STOP CONTACTS

If organ stop controls are to be connected to the MIDI Resource System™ for a complete MIDI In/Out system, the organ stop control contacts should be wired to a Stop Junction. This Stop Junction may be provided as a part of the MIDI Resource System™, OrgaPlex™ switching system, combination action, or mounted separately within the console. A pre-wired cable from this stop junction can be supplied to plug onto the OrgaPlex™ system or combination action and connect to the stop controls.

D.C. Encoders (originally developed as OrgaPlex™ key encoders) are required and are available in 72, 61, 48 and 32 input sizes that plug onto the stop junction(s). Cables are provided for interconnection from the D.C. Encoders to the MIDI Resource System™ (See Figure 4). D.C. Encoders can be wired where the commons connected to the Agroup@ connector on the MIDI Resource System™'s mother board are connected as follows: A-D to one 48 input board and E-H to another 48 input board. This arrangement permits up to 96 inputs on the Stops Input A (see Figure 7 for relationship of encoders). In some cases two 61 input encoders can be wired to the Agroup@ commons as follows: A-E to the first encoder and F-H plus A&B (of Stops Input B) to the other encoder (The 61st pins are not used). This arrangement permits up to 120 inputs on the Stops Input A and B inputs (See Figure 7 for relationship of encoders). NOTE: encoder cables should not be bundled with high current magnet cables or 110 VAC wiring.

MIDI stop or coupler controls (MIDI On a division, MIDI To a division, or MIDI On/Off) should be included on these stop inputs to ensure proper playback from a sequencer. Also, if these stop controls are assigned (see stop control assignment section) #35 in their respective divisions and if the MIDI coupler inputs on the Master CouplerJ are wired to organ positive; key data will be sent to the sequencer regardless of whether stops are on. Data to the instrument output is controlled by these (#35) inputs. This has the advantage of being able to make organ-only recordings without the MIDI stops being on.

For MIDI In to control organ stops a Serial Output board (#404590) and a Demultiplexer of the appropriate number of circuits are required. The Demultiplexer can be a "coupler" type that will plug onto a row of the stop junction (See Figure 4). Use the "NX" strobe for Demultiplexers connected to the MIDI stop outputs. A 1.5 K resistor must be attached between pins 1 and 4 (see detail on Fig. 4). This is normally installed by Peterson. **NOTE:** If a ***manual transfer*** is being used, ***do not include*** its stop control on the ***MIDI Encode/Decode Stops*** Junction. Also, if coupled data is used for the MIDI's input, do not include these coupler stops in the MIDI Encode/Decode Stop Junction.

MIDI PISTONS or MIDI PRESET STOPS

Pistons buttons or stop controls can be connected to the MIDI Resource System™ to provide a complete MIDI In/Out system and/or for use as MIDI presets (for sending MIDI "patch" changes). These options require the Piston/Stop Input board #404587. Note: patch programmable MIDI stop controls are not the same as the MIDI coupler (on/off) controls.

Either piston presets **or** stop presets must be selected as the means for sending MIDI "patch" changes. A given system cannot have both. This choice is made in the Configuring and Initializing section. If stop presets are selected, organ pistons (not MIDI pistons) may be wired to the piston inputs, and will be recognized by the system.

The pistons or MIDI stop contacts should be wired to separate junctions. These junctions may be optionally a part of the MIDI Resource System™, combination action, or mounted separately within the console (See Figures 4 and 11).

D.C. Encoders (same as OrgaPlex™ key encoders) are required and are available in 72, 61, 48, 32 and 2x8 input sizes that will plug onto these piston and MIDI stop junctions. Cables are provided for interconnection from the D.C. Encoders to the MIDI Resource System™.

A Maximum of 24 general pistons (one of which can be used as a tutti) and 48 divisionals can be accommodated by the MIDI Resource System™. The first 24 positions of the piston D.C. Encoder are used for the generals and tutti. The next 48 are used for the divisionals. Other than this the order is not important. Divisional pistons can be assigned (see Application Note #4 later in the instruction manual).

Twenty four MIDI preset stops at unison or 8' pitch are available (refer to Figure 4 for wiring order). Additionally, four 16' stops, four 4' stops, 8' and 4' Melody Stops and 16' and 8' Bass Stops are also available. These stop control inputs can be any of the 288 available stop inputs in Channels A, B and C. The appropriate number from the Peterson "Universal Stop List" is then assigned with the MIDI Resource System™ in "ASSIGN" mode (see "Stop Control Assignments" on pages 12 and 18 of the Operating Instructions). The Melody Stops sound only the highest note being played and the Bass Stops sound only the lowest note being played.

POWER

Connect organ rectifier feed wires to the barrier terminals on the MIDI Resource System™ mother board (see Figure 4). Observe the polarity as marked. ***Reversal of the polarity will cause damage***. Connect positive to the "ORG+" terminal and negative to the "NEG" terminal. The size of these feed wires should be #22 - #18 AWG.

The organ rectifier voltage should be 11-18 VDC. ***This voltage must not drop below 9 VDC*** during normal operation. This would include any ripple at full load conditions. The Peterson "Power Supply Fault Detector" can be used to test the rectifier voltage. Also refer to the "Organ Rectifier and Feed Wire Sizes" section in the combination action and OrgaPlex™ manuals, or contact Peterson for a copy of these documents.

When the MIDI Resource System™ is used with an OrgaPlex™ switching system, wire the 9 volt D.C. from the OrgaPlex™ Logic Power Supply Regulator board #404674 to the MIDI Resource System™ mother board's barrier terminals. Connect positive to the "+9V" terminal and negative to the "NEG" terminal. Note that this "NEG" terminal is the reference (common) for both the organ rectifier and OrgaPlex™ 9 VDC voltages. The size of these feed wires should be #22 - #18 AWG. If the Serial Outputs for OrgaPlex™ are not used, the 9 Volt supply

board does not need to be wired.
The supplied plug-in Class 2, 9VAC, 15.3 VA (1.7 Amp) transformer should be wired to the AC1and AC2 terminals on the MIDI Resource System™ mother board's barrier terminals. A clear-coated pair of wires with lugs on the end will be provided to connect to the secondary screws of the transformer and to the barrier terminals. The Class 2 transformer ***must be plugged into an unswitched outlet***. The MIDI Power Module board has its own cut-out relay operated from the organ rectifier. Alternately, the 9VAC may be supplied by a Peterson Console A.C. Control (CACC) System. The terminals to be used for the **MIDI Resource System™** are labeled on the CACC. ***Caution, these wires must be polarized.*** The supplied zip cord has silver and copper wires. Connect the silver side to the AC2 terminal (yellow dot) on the MIDI Resource System™ and to the CACC MIDI terminal that is common with the OrgaPlex™ (yellow dot). The OrgaPlex™ AC should also be connected with the silver conductor to the terminals of the CACC and OrgaPlex™ Power Supply that also have the yellow polarizing dots. Improper polarization of these wires may prevent proper powerdown of the equipment.

EXPRESSION SHOES

The organ's expression shoes can be connected to the MIDI Resource System™ to provide expression on the MIDI voices. Refer to Figure 6 for wiring diagrams.

If desired, a potentiometer can also be connected on this input connector to adjust the tremolo (vibrato) depth of the synthesizer or voice module being used. This potentiometer should have a value between 1K and 10K Ohms. Connect organ positive and negative to the Apot@ ends (negative on the CCW end) and the wiper to the ATrem@ input. Refer to Figure 1 for the wiring order of these inputs. If the organ voltage has poor regulation, the voltage from the "pot" will be unstable as well. This can be improved by using a diode and an electrolytic capacitor to hold the voltage more stable. The OrgaPlex™ 9v supply could also be used, but will limit the range.

For wire or reed switch contacts, use a D.C. Encoder #404687 that plugs onto one row of a two row Auxiliary Junction board #400674. *Note: The Expression board #404592 is not required for this method.* The other row should be wired to the organ's expression shoe(s) contacts. Inputs are available for Pedal, Choir, Great, Solo and AAll@. The order of these inputs and the order of the stage numbers can be found in Figure 6. A prewired cable is provided for connection from the D.C. Encoder to the MIDI Resource System™ mother board. The "All" input affects <u>all</u> but the Swell division.

One shoe can wire to more than one of the MIDI Resource System™'s expression shoe inputs. If there is only one expression shoe, the AAll@ input will affect the volume of all the keyboards playing through MIDI channels. If there are Swell and Choir expression shoes, for example, the Swell shoe contacts could wire to the Pedal and Swell inputs and the Choir shoe contacts could wire to the Choir, Great and Solo inputs. Thus each shoe would affect the MIDI volume of more than its own division. Expression values sent on the MIDI outputs have been predetermined in the software; however, the minimum value (lowest volume) can be selected using diagnostic "n" (see Page 10).

Alternately, a A2 x 8 Encoder@ #404372 can plug directly onto the MIDI mother board's D.C. Expression Input connectors. Pins 1-8 are used for the "All" input and pins 9-16 are for the Swell. This is particularly useful when only one or two shoes are required. Typically the Choir shoe connects to the "All" (except Swell) and the Swell shoe connects to the Swell input. A single shoe would be connected with the "All" and Swell pins wired (see Figure 11).

OrgaPlex™ SERIAL INPUTS

Keyboard data from Peterson OrgaPlex™ switching systems can be connected to the MIDI Resource System™ in the serial data format requiring only one wire per keyboard. As many as seven keyboards can be connected in this manner. The order of these inputs is assigned and to maintain compatibility with other installations this order should be observed. The available keyboards are:

INPUT #	CLASSICAL	THEATER
1.	Swell	Solo
2.	Great	Great
3.	Choir	Accomp
4.	Pedal	Pedal

5.	Solo (top of 4)	Bombarde
6.	Antiphonal	Accomp 2nd
7.	Echo	Great 2nd

When an OrgaPlex Master Coupler™ is being used in the installation of interest, keyboard wiring may be accomplished in one of several ways.

If MIDI ***to*** a manual (at 8') is required, install the MIDI Option Interface board #404595 onto the Master Coupler™ mother board and then plug in the supplied cable from the MIDI Option Interface board to the MIDI Resource System™ mother board (refer to Figure 3B). OrgaPlex™ clock, ANX@ strobe and data lines are included in this cable. This arrangement requires the MIDI coupler stop control inputs, located in the stop junction row of the Master Coupler™, to be wired to organ positive (always ON). Stop control is acheived via Stop Control Assignments (see the "Stop Control Assignment" section for details.

If MIDI ***on*** a division is required, it is necessary to install a Straight Stop Gate board #404711 on a Coupler/Unit mother board #404605 in order to provide the stop control(s). A data input pin (left side) on the Straight Stop Gate should be wired to a division's coupled data line and the corresponding output pin (right side) would go to the MIDI Resource System™'s OrgaPlex™ input. The stop control input (top) associated with that Straight Stop Gate circuit would wire to its respective stop control. The ANX@ strobe and OrgaPlex™ clock must also be wired from the Master Coupler™ output connectors to the MIDI Resource System™'s input connector. Refer to Figure 3B. **Warning**:*This arrangement is not recommended* because the additional data caused by coupling will tend to slow down the MIDI output and may cause noticeable delays upon playback when many notes are played.

When an Original OrgaPlex™ system is being used in the installation of interest, keyboard wiring is accomplished by installing the MIDI Isolation board #404596 between the Keyscan Base mother board and the Coupler/Unit mother boards and plugging in the supplied cable from the MIDI Isolation board to the MIDI Resource System™ mother board (Refer to Figure 3C). OrgaPlex™ clock, ANX@ strobe and data lines are included in this cable. Depending on the connection point chosen above, the Octave Select step in diagnostics may need to be changed. MIDI **on** and MIDI **to** connections play an octave lower with respect to the player or original connections. Refer to the diagnostics section if this needs to be changed.

Organ stop controls can also be connected via the serial inputs, however D.C. Stop Encoders are still required and a second Serial Input board #404589 may be required as well. So unless the stops must be encoded for another reason, consider wiring the stops as described in the Stop Contacts section above. Figure 5 shows connections for stops encoded using a Master Coupler™. Figure 1 shows the wiring order (names) of the OrgaPlex™ serial inputs. SC1 data would connect to the MIDI Resource System™'s AStops A@ input and SC2 would connect to the AStops B@ input. If the AStops B@ input is required, the second #404589 and #404590 are also required.

In some cases it may be desirable to have both D.C. encoded stops and OrgaPlex™ serial stops connected to the MIDI Resource System™. A sample wiring diagram is shown in Figure 5. If this wiring scheme is employed ***it is important that the DC encoded stops and the OrgaPlex™ serial stops do not overlap***. Figure 7 shows the relationship of these inputs (and outputs).

OrgaPlex™ SERIAL OUTPUTS

These outputs of the MIDI Resource System™ provide OrgaPlex™ compatible serial data that can be connected into the OrgaPlex™ system allowing the MIDI In to Asequence@ (play) the organ's keys. Stops and shades can be connected via these outputs as well, but require a Demultiplexer board to convert from serial back to D.C. outputs. Refer to Figure 3 and to the Serial In section for available manual names.

A total of seven keyboards and the first 96 stops can be accommodated by one Serial Output board #404590. A second Serial Output board is required if there are more than 96 stops. The second Serial Output board allows an additional 192 (288 total) stops. Expression shoe outputs are included in the stop output data as well, as explained below.

The keyboard serial outputs connect to their corresponding data lines in the OrgaPlex™ system. Refer to Figure 3C for an Original OrgaPlex™ system and to Figure 3B for an OrgaPlex Master Coupler™ system. The preferred connection point on the Master Coupler™ is the Player Interface connector. This arrangement allows MIDI In data (from a sequencer/player) to be coupled. The ANX@ strobe and OrgaPlex™ clock must also be wired from

the Master Coupler™ output connectors to the MIDI Resource System™'s output connector(s). ***Note that the Division/Matrix boards #404698 and the Master Coupler™ mother board #404697 must both be revision AE@ or later. If the suffix letter for the part number on your Division/Matrix or Mother boards precedes this, contact the Peterson factory for an exchange.*** Also, the Main Keyscan board #404686 must have the 14.4 kHz clock. Check resistor R14 to be sure its value is 1.5K Ohms.

|**Warning**: If a MIDI Resource System™ uses coupled data from a Master Coupler™ or if the Master Coupler™ includes a Manual Transfer; the coupler stop controls and/or manual transfer control must not be recorded (do not wire to MIDI stop encoder inputs). If these are recorded, double coupling and/or transferring will occur.

Figure 4 shows typical wiring connections for Demultiplexers as used for stops. OrgaPlex™ clock and strobes must also be connected to the Demultiplexers. Use the ANX@ strobe for keyboards and for stops/shade Demultiplexers. See the detail on Figure 4.

Expression shoe OrgaPlex™ serial outputs share data lines with AStops A@ and AStops B@ outputs. Figure 7 shows the relationship of the expression outputs to the stops. Separate Demultiplexers can be used for the expression shoes by using the ANXD@ strobe derived by using a special ANXD@ Strobe Register. In this case a 32 note Demultiplexer (connected to the AStops A@ data line) will decode expression outputs (8 stages each) for AAll@, Swell, Great, and Choir. This is usually all that is required, however Solo and Pedal outputs can be decoded in a similar fashion by connecting to the AStops B@ data line and again using the ANXD@ strobe.

Pistons may be operated through the encoded stop inputs and stop serial outputs if it is desired to have the pistons move the stops (via the combination action) on playback. However, a preferred way is for stops to be activated directly using a MIDI System Exclusive (SYSEX) coding that includes provisions for pistons. This MIDI System Exclusive provides stop compatibility with other organs having the Peterson MIDI Resource System™. Because wiring pistons to encoded stop inputs and stop serial outputs would not provide for this compatibility between organs, this should only be done if compatibility is not required.

CLOCK/STROBE JUNCTION

When the MIDI Resource System™ is being used with a non Orga-Plex™ System (D.C. Encoded Player only system) the optional Clock/Strobe Junction board (#404374) will be used to provide the required +9 VDC, clock and strobe signals. The Clock/Strobe Junction board plugs onto the MIDI Mother Board (#404598) in the place where the second Serial Input board would normally be plugged in (see Figure 12). This 'slot' is just below the M68K uP. board.

A twelve pin wire wrap connector (factory supplied cable) on the (right) vertical edge is used to connect to the serial output data lines of this board to the MIDI Mother board. Also, (on factory wired systems) organ positive is connected to the top pin (furthest from the mother board) of this 12 pin connector and the second pin supplies the +9v to the (5th lug) of the Power Barrier Terminal on the MIDI Mother board. (For a non-factory wired installation, these connections must be made.)

Modular data cables then connect from the top of the Clock/Strobe Junction board to each of the required De-Multiplexers. The order of the modular plugs on the top of this board (left to right) is: Swell, Great, Choir, Pedal, Solo, Stops 'A', Stops 'B' and Stops 'C'. Smaller organs may not require some of these outputs, however, the same order will be used and some jacks will simply be skipped. (Other configurations for an additional manual can be accommodated-- contact the factory for details.)

TRANSPOSER

If your relay system incorporates a transposer, the MIDI Resource System™ Transposer Input should be connected so that MIDI data will transpose as well. If the relay's transposer switch uses a positive D.C. voltage to select the transposer step, an optional D.C. Encoder can be used on the MIDI Resource System™'s Transposer input. In this case connect a wire from each of the transposer switch terminals to the MIDI Resource System™'s Transposer D.C. Encoder input connector (See Figures 1 and 3). The +6 through +1 pins are used for the sharp positions and the -1 through -6 pins are used for the flat positions.

If something other than a D.C. switched transposer system is used (which is the case with OrgaPlex™ systems) a separate pole Agang@ on the transposer switch is required. (Multiple pole gang switches and transposer interface are available from Peterson.) In this case install the Transposer Interface board #404339, transposer switch and 2 x 8 D.C. Encoder board #404372 as shown in Figures 9B and 11.

When an OrgaPlex™ switching system incorporates a digital transposer, a Transposer Interface board (#404370) that shares the Digital Transposer Control Panel should be connected as shown in Figure 9B. ***Do not operate the MIDI Resource SystemJ with the Transposer Interface installed unless it is connected to the OrgaPlexJ Digital Transposer, as this could cause intermittant malfunctions.***

NOTE: If the transposer is used when making a MIDI sequence, it should be returned to neutral on playback or double transposing will occur.

MEMORY SELECT SWITCH

If MIDI pistons are employed, two methods of selecting memory levels of MIDI presets are available. These methods provide compatibility with Peterson Duo-Set™ and MSP-1000™ type combination actions and allow the existing combination action memory select switch to also be used for the MIDI Resource System™. The type of compatibility desired (MSP or Duo-Set) is selected on the dip switches on the Minimum I/O board #404586. Refer to Figure 6 and the AConfiguring and Initializing@ section below. Wire the memory select switch inputs A-E as described below for the desired type system compatibility.

Duo-Set™ - The memory select lines A through E of the MIDI Resource System™ parallel the existing memory select lines B,C,D,E,and F of the combination action, respectively. If a digital or rotary memory select is used without a Diode Isolation board, isolation diodes must be installed between the Memory Select Switch outputs and the combination action mother boards. Cathodes (banded ends) of these diodes should be toward the combination action terminals. See Figures 6 and 10A.

MSP-1000™ - ***(MSP software rev. 3/13/02 or later)***. The MIDI Resource System™ Minimum I/O Board (Min I/O) pin # 1 (up) should be wired to MSP-1000's Special Functions Board (SPF) pin #6. Min I/O pin #2 (down) should be wired to SPF pin #5. Min I/O pin #3 (increment) should be wired to SPF pin #7. Min I/O pin # 4 (memory level = 1) should be wired to SPF pin #8. The E input is used only if an up/down memory select other than the MSP (such as the Advanced Feature Control Panel) is to be used. Wire this terminal to organ positive in this case. These inputs can optionally wire to the Advanced Feature Control Panel or other memory select switch (rotary or digital) independent of the combination action. See Figures 6 and 10B.

Be sure to select the proper combination action type in the configuring and initializing section. Also, in the case of an MSPJ, the MIDI Option must be selected using the MSPJ set-up terminal. MSPJ's installed prior to 12-14-1993 will require a new software IC to implement this feature. Additionally, with an MSPJ, be sure to select memory level #1 to synchronize the two systems when first testing the installation.

MIDI CABLES

Connecting MIDI devices to the MIDI Resource System™ is done through standard MIDI cables with 5 pin DIN plugs. Three receptacles or ports are provided on the side of the Minimum I/O board #404586 for MIDI In, MIDI Sequencer Out, and MIDI Instrument Out. Optionally, a remotely mountable engraved plate with extender cables can be provided allowing the MIDI In/ Out ports to be located under the keybed or on the console's back panel for easier access by the organist.

The MIDI In port of the MIDI Resource SystemJ connects to the MIDI Out port of a sequencer, keyboard controller or synthesizer. The MIDI Sequencer Out port connects to the MIDI In port of the desired sequencer or personal computer. The MIDI Instrument Out port connects to the MIDI In port of the desired synthesizer or sound module. When multiple MIDI devices are desired in the system, optional Amergers@ may be required. See Figure 8 for some examples of how the MIDI In, Sequencer Out and Instrument Out ports would be used to interconnect MIDI devices such as sound modules, a sequencer and/or a personal computer.

Further help with connecting multiple MIDI devices may be found in the instruction manual(s) of the MIDI devices being connected. You may also contact our factory for details or assistance in connecting your particular devices.

TESTING

INITIAL TEST OF MIDI Resource System™ AFTER INSTALLATION

PLEASE READ THIS SECTION BEFORE APPLYING ANY POWER!

It is suggested that once you have installed and wired your MIDI Resource System™ you use the following procedure for testing its operation.

First, turn on the organ rectifier and check to see that the relay on the MIDI Power Module clicks in, and that the control panel and the green LEDs on the other modules in the MIDI Resource System™ light. ***IF THEY DO NOT LIGHT, REMOVE THE ORGAN POWER IMMEDIATELY*** and confirm the polarity of the power connections before proceeding. If rapidly changing numbers appear on the control panel at this time, do not be concerned. This indicates that the microprocessor has detected a difference in the EEPROM memory or system configuration from the last time it was tested at the factory and is initializing its memory. This initialization process takes about 1 minute to complete, so if this occurs, be patient and wait for the display to flash Adone@. When all A0s@ are displayed the system is ready for testing. The Troubleshooting section of this manual describes the operation of the individual LED indicators for each subassembly on the MIDI Resource System™.

DIAGNOSTICS and TESTING

The MIDI Resource System™ can be tested using its built-in diagnostics if a control panel is attached. If a particular organ console does not have a control panel installed it may be desirable to temporarily plug one in for testing purposes.

To access these diagnostics, turn off all of the power, push down the top of DIP switch #12 on the Minimum I/O board #404586 (see Figure 1), then turn the power back on. The control panel rocker switches and LED readouts now have the following functions; *(Note: normal MIDI functions do not operate in this mode.)*

- The Off/On/ANO rocker switch selects the diagnostic function (Up/Down) .
- The Channel Up/Down switch selects the channel or manual.
- The Program Up/Down switch sets variables.
- The Send/Receive switch is used to confirm or initiate some functions.
- The Manual Number window displays the number of the selected diagnostic function.
- The Channel Number window displays the channel (or manual) number.
- The Program Number window displays variables for each diagnostic.

As an aid in finding the desired diagnostic, a prompt (abbreviated name) will be displayed briefly as each diagnostic is entered. These will use upper and lower case letters to allow their display in the 7 segment read-outs. It is highly recommended that each of these tests be performed for all of the installed and wired options. The MIDI Resource System™ displays dashes for any diagnostic that it senses as not being applicable. The Diagnostics Mode may also be entered by holding up the Program, Channel Up, Program Up and Send buttons on the control panel while the power is turned on.

The following diagnostic tests are available:
Note: The characters in [brackets] are the prompt that is flashed when the diagnostic number is selected.

0. **Revision number** of the software being used is displayed. For example: 1.54 in the Program Number window is for Version 1.54 software.
1. **RAM test [rt]** writes and reads to random access memory locations. The word APass@ or AFail@ will appear in the Program window to indicate passing or failing the test. If this test fails, contact the factory. A quick test is initiated by pressing Send and a comprehensive test (3 minutes) is initiated by pressing Receive.
2. **Tuning potentiometer test [tune]** reads out 180-0 in the Program window as the tuning knob on the control panel is rotated from full CCW to full CW. The actual range may be different due to tolerances and the adjustment of the trimmer pot on the Control Panel Interface board

#404594.

3. **Expression Shoe test [E Shoe]** - Now obsolete, use "N" below.
4. **Piston and Preset Stop test [PIStOn]** displays a value 1-96 for each piston or pre-stop that is activated. 1-24 are for generals (and tutti) pistons, 25-67 are for divisionals, and 72-96 are the preset stops. Also note the mnemonic "no can" or "do can" is displayed momentarily. This indicates that blank (unprogrammed) pistons do not cancel or do cancel MIDI instruments (sounds). This can be changed by pressing the send/receive switch. The factory default setting is Ado can@.
5. **D.C. Control Input test [dc]** displays 1-18 as each pin on the top of the Minimum I/O board is activated with organ positive. Number 1 is the left most pin (as viewed from the component side). Pins 11 and 12 of the twelve pin connector are not used.
6. **Keyboard Input test [61n]** (for D.C. encoded inputs) displays values 1-61 as each key is pressed. The manual number of the keyboard being played will display in the Channel window. 1=Swell 2=Great, 3=Choir, 4=Pedal, 5=Solo (top of 4).
7. **Serial 1 - OrgaPlex™ input test [Ser 1]** for the first board displays a value 1-132 depending on the key (or stop) being activated. 132 = the lowest key C1 and 72 = the highest key C6 of the keyboard. The Channel window displays which serial input is being used. The appropriate AMDI to@ or AMIDI on@ a division stop control must be turned on if applicable.
8. **Serial 2 - OrgaPlex™ input test [Ser 2]** for the second board displays a value 1-132 depending on the key (or stop) being activated. 132 = the lowest key C1 and 72 = the highest key C6 of the keyboard. The Channel window displays which serial input is being used. The appropriate AMIDI to@ or AMIDI on a division@ stop control must be turned on if applicable.
9. **Stop Input test [StOPS]** (for D.C. encoded stops) displays 1-96 in the Program window for each stop activated. The Channel window displays which Abank@ of stops A(1), B(2) or C(3) is being tested.

a. **Display (readout) test** lights all the segments and decimal points of the control panel displays. This would appear as 8. 8.8. 8.8.8.
b. **Erase EEPROM [EE Clr]** will clear all programmed values (pistons, preset stops and assigned stops for a AMemory Transfer@) and restore factory settings if the Send button is activated while in this diagnostic.

C. **MIDI In test [In]** will display the MIDI channel and MIDI note number for key on/off data received on the MIDI Input. MIDI note number 60 = middle C (C3).

d. **Octave Select [Oct]** will shift MIDI In and Out data up or down an octave. AORIG@ is the default for OrgaPlex™ systems wired ahead of any couplers. ACPLR@ would be used when the data is derived from coupled data on Master Coupler systems.

E. **MSP Maximum Memory Level [SP end]** Use Program Up/Down to set the MIDI Resource System™ to match the maximum number of memory levels used by the MSP-1000™ system.

F. **Test Song [Song]** will play a test song on the channel selected in channel number.

H. **Memory Level [LEUEL]** displays the current memory level. Also note the mnemonic "LO LO" or "LO HI" is displayed momentarily. This indicates the lock-out polarity. "LO LO" is for lock-out low (negative lock-out) and "LO HI" is for lock-out high (positive lock-out). The current selection is changed by pressing "Send" or "Recv". Note: A program jumper on the Minimum I/O board #404686 must be set to match.

J. **Preset Stops [PreStp]** Displays 1-24 in the Program Number window corresponding to the activated stop control.

L. **Auto Resend [Resend]** Use Program Up/Down to set the repetition rate (See Page 14 for details.)

n. **D.C. Expression Shoe Test [dc ESH]** will display the program # value 1-8 indicating the highest shoe stage active and the channel # will display 1 for Swell, 2 for Great, 3 for Choir, 4 for Pedal, 5 for Solo and 6 for All. While in this test, turning on Prog. enables selection of minimum expression value. This value is displayed in Prog. # and send selects new value (55, 31, 15 or 0).

P. **Program Number Base [bASE]** Value in Prog window # 0 or 1 selects program # display 0-127 or 1-128. Pushing the Send button selects a new value.

r. **Board test [brd]** Number displayed in readout indicates the total of currently installed boards. This is primarily for factory use, however, the value displayed here may be useful when calling the factory for trouble shooting assistance.

When finished with the Diagnostics Mode, turn the power off, set DIP switch #12 back in its up position, then turn the power back on to restore normal operation.

ADDITIONAL TESTS

Connect a MIDI tone generating device to the MIDI Instrument Out port of the MIDI Resource System™. Be sure it is in the Omni mode with some voice selected. This mode is usually selected automatically when a MIDI device is first turned on. Refer to the instruction manual of the device you are using if there is any question.

Now play each note of each manual. Write a list of any problems that may be encountered. This will help in determining whether the cause is in the keys, stops, D.C. encoders, etc. As keys are played on each manual the number in the Manual window on the control panel should change indicating which manual is being played. Bear in mind that dead or ciphering notes or stops may be due to contact or wiring defects. Ciphers can be confirmed or discounted by unplugging the appropriate key or stop connector from the MIDI Resource System™. If the problem is found to be in the MIDI Resource System™, repair assistance will be found in the Troubleshooting section.

Next, press the Up and Down buttons for Channel and Program on the control panel. The readout in the corresponding window should change. Now with a new channel and program number showing, press the Send button and play some more keys. A new tone should be heard.

CONFIGURING AND INITIALIZING

To complete the installation the following set-up procedure should be followed to configure and initialize the MIDI Resource System™. Some aspects of the configuration may be made with input from the organist.

MINIMUM I/O DIP SWITCHES

The function of each is briefly described below. Choose the one setting for each that will be used regularly. If uncertain of any particular setting, use the factory defaults, dip switches in the up position. (See Figure 1.)

1. **Channels+8**-Seedescriptiononpage13.
2. **MSBBankSelect**-See Application Note #1, page 17.
3. **Sustain/Sostenuto** - This selects whether the external D.C. control is a sustain or sostenuto. Sostenuto is down. Note: Some sound modules may not support sostenuto.
4. **Volume/Velocity Swell** - Selects whether volume or velocity data is sent for its expression shoe input. Velocity is down. Velocity only affects the volume at the time keys are pressed. This is more realistic with piano or percussive tones.
5. **Volume/Velocity Great** - See #4.
6. **Volume/Velocity Choir** - See #4.
7. **Volume/Velocity Pedal** - See #4.
8. **Volume/Velocity Solo** - See #4.
9. **Assign Stops** - This is only used during set-up. See “Stop Control Assignments” below.
10. **Preset Stops -** Normally presets (patches) are sent by pistons. With this switch on preset stops are selected.
11. **Duo-Set/MSP combination action** - This determines the method used for the MIDI Resource System memory select input lines and should be selected when MIDI pistons will have multiple memory levels available. This DIP switch position is not important if this does not apply. With this DIP switch on, the MSP™ mode is selected, which uses Up/Down type selection. Otherwise the Duo-Set™ mode uses a five line binary selection scheme. Also refer to the “Memory Select” section above. (Be sure to select MIDI Option in MSP™ set-up.)
12. **Diagnostics** - Used only during testing of the MIDI Resource System™. See “Diagnostics and Testing“ above.

TUNING POT TRIMMER

Tuning range is factory set; however if calibration becomes necessary a trimmer potentiometer can be found on the Control Panel Interface board #404591 which

adjusts the A=440 (center) position of the tuning knob on the control panel. Set the tuning knob on the control panel straight up and adjust this pot while listening to the frequency of the tone from the voice module being used compared to a tuner or other standard. Note: some voice modules may not respond to the tuning knob control.

STOP CONTROL and PISTON ASSIGNMENTS

This step should be performed to prepare the MIDI Resource System™ for compatibility with other organs using the Peterson MIDI Resource System™ sequencer (recording) format. This permits pre-recorded sequences of music to be replayed using the proper stop registration. It also permits recording sequences that will then be playable on other instruments, even if their stop lists are not the same. In some cases where stop compatibility is not required it may be desirable to achieve the maximum speed in stop handling (to avoid delays) by using the default sequential stop assignment.

Important: MIDI coupler stop controls must always be assigned, even if no other stops are assigned. These MIDI coupler stops all use the assign value "35" for their respective division. (Also see note and caution at end of this section.)

To assign stops refer to the “Stop List” located at the end of this manual for the stop assignments. Turn on (set down) the Assign Stops dip switch #9 on the Minimum I/O board #404586 (see Figure 1) and turn the organ power off and then back on. This puts the MIDI Resource System™ in it's Assign Stops Mode. Note: normal MIDI functions do not work in this mode. The Assign Stops Mode can also be entered by holding down the Show, Channel Down, Program Down and Receive buttons while the power is switched on.

Next, turn on one stop and use the Program Up/Down buttons to set the program number to the reference (assign) number associated with that stop from the desired “Stop List”. Use the Channel Up/Down to set the division number in the Channel read-out. 1=Swell, 2=Great, 3=Choir, 4=Pedal, 5=Solo, 6=Antiphonal, 7=Echo and 8=generals and intermanual couplers. Example: Great MIDI coupler stop; channel = 2, program # = 35.

Now press the Send button to store the division number and stop number for the stop that is turned on. Repeat this process for every stop control (or at least MIDI coupler stops) on the organ. The values assigned to a stop can be viewed by switching to Show Mode. Turn stops on, one at a time, to see their assigned values.
If “E EE EEE” is displayed when setting, an error has occurred. Usually this means more than one stop is on or the expression shoe is advanced. When “set” is displayed the values have been written to memory. An “S” (looks like 5) is displayed in the Manual window when in the Show Mode of Assign Stops.

To achieve the most "organ like" operation of divisional MIDI preset pistons; the manual # for their division should be assigned. This is done in the "Assign" Mode (also used to assign the #35 MIDI stops). While in this mode; set the channel # to the desired manual/division # (the prog # is ignored for pistons so any value can be used), press and hold the piston and then press "Send". (The display will flash "Set".) Repeat this for each divisional piston. Note: All MIDI preset pistons are initialized to division #8, which is used for general pistons, thus general pistons do not need to be assigned. When in the Assign Mode, Show can be used to review assignments. For pistons, a "P" will appear in the manual window and the Prog# will be the sequential encoder position number.

NOTE: After all the stops and pistons have been assigned, it is a good idea to switch to the Assign Show mode and examine each stop to be sure they are programmed. Any that show “- -- ---” were overwritten from a duplicate setting. Choose a new value and reprogram that stop. This should be done even when only the MIDI coupler stops have been assigned. Unassigned stops that show "- -- ---" will not record or play back! Finally, turn off the Assign Stops dip switch and again reset the MIDI Resource System™ by turning the organ power off and on as above, to return to normal operation.

CAUTION: MIDI Resource System™ installations that do not incorporate MIDI coupler

stops (in other words, where MIDI is controlled locally via the sound module) should not have their stops assigned. Un-assigned systems default to outputting key data without the need for stop controls. Entering the Assign Mode, even if stops aren't assigned, will defeat this feature. In the event that it is desired to assign stops for record/play purposes, with this type of installation, "blind controls" will need to be used. These "blind controls" simply use any available (un-used) stop encoder input. Activate this input with a "hot" lead for assigning purposes. Once all the stops have been assigned, permanently connect these "blind control" inputs to organ positive. This is the equivolent of an always-on stop. If these "blind controls" are connected to positive before assigning is finished; the "E EE EEE" error message will be displayed when trying to assign other stops.

AUTO RESEND

This is an exclusive feature of the Peterson MIDI Resource System™. When enabled, all organ data is re-transmitted to the Sequencer Out port at regular intervals (see Operating Manual for additional information.) This interval can be selected while in diagnostics by switching to the "resend" (j) test. The Program Up/Down buttons select a value 0-19. Zero disables this feature. The values 1-19 are approximately 1/3 to 1/2 second per value. The recommended setting is 10 (about 3-5 seconds.) Caution: faster intervals will use more sequencer memory and disk space.

When activated, data is sent immediately and then at the interval rate. Thus a momentary button could be used with this feature as a “cue” button to send stops and expression when a recording is started.

BLANK PISTON CANCEL MODE

While in diagnostics, enter the Piston Test (4). The current mode is briefly displayed. The default "do can" indicates that blank pistons will cancel the MIDI Instrument. Pressing Send/Receive toggles the display to "no can" which indicates blank pistons will not affect the MIDI instrument. The displayed cancel mode will become active when switching back to the normal Use Mode or another diagnostic. **Note: In some installations, during record/playback, it may be noticed that some held notes will appear to go dead when a piston is pressed. If this occurs; simply change to the "no can" setting.**

CHANNELS +8

If dip switch #1 on the Minimum I/O board is in its normal off (open) position MIDI channels 1-16 can be mapped (assigned) to play from any keyboard to the Instrument Out port channels 9-16 thus allowing MIDI instrument(s) to be sequenced (recorded) along with the organ.

With the +8 dip switch in the ON (closed) position the control panel channel numbers will range from 1-24; 1-16 being the Instrument Out port and 17-24 being 9-16 of the Sequencer Out port. This would allow two MIDI instruments to be connected (one to the Instrument Out and the other to the Sequencer Out) with each being controlled separately for a total of 24 MIDI channels for MIDI instruments. In this case when sequencer playback (MIDI In) data from channels 9-16 is copied to Instrument Out 9-16 and Sequencer Out 9-16 care must be taken in the assignment of MIDI instruments recorded with the organ. This feature is most useful when control of two MIDI instruments is desired in lieu of sequencing ease.

TROUBLESHOOTING BASICS

DESCRIPTION OF PWBA INDICATORS

Light Emitting Diodes (LEDs) are included on each circuit board module. These LEDs indicate various signals on each board and aid in diagnosing any problems. Green LEDs should normally be on and if they are not a potential problem is indicated. Red LEDs should normally be off and if lighted indicate a problem. See Figure 1 for location of indicators. The indicators are:

1. M68k μP. board #404585
   a.-CLK - Green LED monitors the crystal oscillator divided output.
   b.-A1 - Green LED monitors activity on the microprocessor's address 1 (LSB) line.
   c.-D0 - Green LED monitors activity on the microprocessor's data 0 (LSB) line.

2. Minimum I/O board #404586
   a.-MIDI IN - Yellow LED lights when MIDI data is received.
   b.-MIDI Out - Yellow LED lights when data is detected on the MIDI Out port. A program jumper selects Instrument Out or MIDI Out
3. Piston/Stop Input board #404587
   a.-PC2 - Green LED monitors this scan line.
   b.-Scan - Green LED monitors scanning this board.

4. Keyboard Input board #404588
   a.-Scan - Green LED monitors scanning activity on this board.

5. Serial Input board #404589
   a.-CLK - Green LED indicates presence of OrgaPlex™ clock.
   b.-Data - Yellow LED indicates OrgaPlex™ data entering board.
   Brightness varies depending on notes being played. Higher notes are brighter.

6. Serial Output board #404590
   a.-Data - Yellow LED indicates data on the serial 1 output (swell) to the OrgaPlex™ system. Brightness varies like serial in.

7. Control Panel Interface board #404591
   a.-Red LED monitors conversions being made by the A/D converter. This light is normally off. If on, conversions have stopped.

8. Expression Shoe board #404592
   a.-Data - Green LED indicates data from conversions waiting to be read by the microprocessor.

INTRODUCTION TO THE TROUBLESHOOTING GUIDE

In some cases the problem may be in the organ wiring, relay system or combination action system. Some effort to isolate the source of the problem could save time in troubleshooting the wrong system. Usually this can be done by unplugging connectors between systems and if necessary keying with a “hot” lead to help isolate the problem. The troubleshooting tables on the following pages address many specific symptoms. Help can also be found in the installation manual(s) of the other systems.

TROUBLESHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	HOW TO ISOLATE
NOTES DEAD		
A. One note key of the manual is dead on all stops or couplers.	1. Key contact defective or not making.	Using a test wire, short the contact to see if it will play.
	2. On a D.C. encoded system connector or wiring to contact open .	Using a test wire apply Organ + directly to input of D.C. encoder and/or short note pin to octave pin of keyboard connector.
	3. Defective diode on D.C. encoder board.	Using an Ohm meter, measure the diode(s) in question.
B. All of the same kind of note is dead (i.e. all "C" keys.	1. Short or open in note connector wiring to D.C. Encoders.	Test for continuity from note buss on encoder to note connector on mother board. Measure resistance to ground (neg.) of note in question at note connector of mother board. Should be 1K ohm or more.
	2. Minimum !/O assembly #404586 defective. Mother board #404598 defective.	Swap Minimum I/O assembly #404586. Consult factory on suspected mother board problems.
C. Part of all octaves of all keyboards are dead.	1. Minimum I/O assembly #404586 has defective U1.	Swap Minimum I/O assembly #404586 or swap suspected I.C.
D. One entire octave of a keyboard is dead.	1. Wiring from D.C. Encoder common is open.	Test for continuity from octave common on D.C. encoder to octave connector on mother board.
E. All notes of a keyboard are dead	1. U1-4 or U6-9 on the keyboard Int. #404588	Swap I.C. in question with another known good one from another keyboard.
	2. Defective Serial In board #404589	Swap Serial In board #404589.
	3. The Assign Mode was entered but no stops were assigned or there are no MIDI coupler stops to assign.	Enter Diagnostic/Set-up # (letter) "b" EE Clear. Press Send to restore factory settings. Note: All set-up and/or programmed pre-sets will be lost. After clearing, re-program all desired options and pre-sets.
F. When making a recording; Notes being held at the time of a piston press go dead on playback.	1. MIDI pistons are set to cancel ("do can").	Change to "no can" in MIDI diagnostic/set-up #4.

NOTES PLAY WHEN THEY SHOULD NOT		
A. One note ciphers with no keys depressed.	1. Stuck or shorted key contact.	Visually inspect or check with an ohm meter.
	2. Short in key or encoder wiring.	Unplug connector from key contact or unplug cable from D.C. encoder to mother board.

SYMPTOM	PROBABLE CAUSE	HOW TO ISOLATE
B. A single adjacent note "runs".	1. Short in key or encoder wiring. 2. Short in D.C. encoder.	Visually inspect or check with an ohm meter. Unplug connector from key contact or unplug cable from D.C. encoder to mother board.
STOPS DEAD		
A. One stop of a group is dead.	1. Stop contact defective or not making.	Using a test wire, short the contact to see if it will play.
	2. On a D.C. encoded stops, connector or wiring to contact open.	Using a test wire apply organ + directly to input of D.C. encoder and/or short stop pin to group pin of stop connector.
	3. Defective diode on D.C. encoder board.	Using an ohm meter, measure the diode(s) in question.
STOPS DEAD		
B. Dead stops repeat in all groups (i.e. every 12th stop).	1. Short or open in stop connector wiring to D.C. Encoders.	Test for continuity from stop buss on encoder to stop connector on mother board. Measure resistance to ground (neg.) of stop in question at stop connector of dead stops. Should be 1K ohm or more.
	2. Minimum I/O assembly #404586 defective. Mother board #404598 defective.	Swap Minimum I/O assembly #404586. Consult factory on suspected mother board problems.
C. Sections of all stop groups are dead.	1. Minimum I/O # 404586 has defective U1.	Swap Minimum I/O assembly #404586 or swap suspected I.C.
D. One entire group of stops are dead.	1. Wiring from D.C. Encoder common is open.	Test for continuity from octave common on D.C. encoder to octave connector on mother board.
E. MIDI coupler stops don't work.	1. Stops not assigned.	Assign #35 to each MIDI coupler stop from its division.
F. Some stops do not record/play.	1. Stop assignment numbers were overwritten during the assignment procedure.	In Assign Mode use Show to view assign #. If "- -- ---"; a new value must be assigned. See Stop Assign section.
STOPS PLAY		

WHEN THEY SHOULD NOT		
A. One stop stuck on with no stops active	1. Stuck or shorted stop contact.	Visually inspect or check with an Ohm meter.
	2. Short in stop or encoder wiring.	Unplug connector from stop contact or unplug cable from D.C. Encoder to mother board.
B. Adjacent stops “run” (work together).	1. Short in stop or encoder wiring. 2. Short in D.C. Encoder.	Visually inspect or check with an Ohm meter. Unplug connector from stop contact or unplug cable from D.C. Encoder to mother board.

SYMPTOM	PROBABLE CAUSE	HOW TO ISOLATE
UNUSUAL PROBLEMS		
A. Any one or two notes of a rank will play. But, any 3rd (or 4th) note added kills all the notes.	1. Defective Serial Output board #404590.	Swap Serial Output board #404590.
B. Notes stutter or intermittently transpose.	1. MIDI cable too long or picking up interference.	Try shorter cable or re-routing the cable.
	2. Power Module #404594 defective.	With organ power off, carefully remove and exchange the suspected Power Module with a known good one.
	3. Serial input board #404589 defective.	Swap board with a known good one
	4. Serial output board #404590 defective	Swap board with a known good one
	5. Older Main Keyscan on OrgaPlex Master Coupler	Replace with 404686 or change clock resistor
	6. Defective Demultiplexer	Try with one Demultiplexer connected at a time
C. Any 1 or 2 stops will play but any 3rd or 4th stop added kills all the stops.	1. Blown fuse in stops Demultiplexer.	Replace fuse.
	2. Defective stops Demultiplexer.	Swap Demultiplexer with a known good one.

D. System "Hangs Up." MIDI functions cease to operate, up/down buttons have no affect.	1. Organ rectifier voltage drops below 9VDC	Repair or replace rectifier. Increase feed wire size to console. Raise D.C. voltage
	2. Control panel picking up interference	Re-route cable or separate from other cables it runs next to.
E. System goes into diagnostic even if not selected.	1. Transposer Interface installed but not plugged into Digital Transposer Decoder Driver.	Connect cable or remove Transposer Interface card.
	2. Stop and/or Piston Encoders installed but Piston/Stop board #404587 not installed.	Install Piston Stop board #404587.
F. System Re-Initializes (counting sequences) every time power is turned on.	1. Class II transformer plugged into switched outlet.	Move transformer to an unswitched outlet.

SYMPTOM	PROBABLE CAUSE	HOW TO ISOLATE
H. MIDI system appears to be "dead" although some LEDs are on, and system will work in diagnostics.	1. Strobe wiring to Serial out not connected	Visually inspect or use a multimeter to see that serial output strobe pin is connected to the "NX" strobe of the OrgaPlex system.
G. Tuning control and cancel have no effect on any MIDI instrument.	1. MIDI Instrument plugged into the Sequencer Output	Move the cable to the Instrument Output

APPLICATION NOTES:

1. Some sound modules (expanders/synthesizers) use an MSB (most significant byte) Bank Select message, while others use an LSB (least significant byte) Bank Select message. The MIDI Resource System™ with v1.68 or later software allows selecting the type (MSB or LSB) using the #2 (from the left) DIP switch on the Minimum I/O board (#404580). With this DIP switch down, an LSB message is sent. With this DIP switch up (on), an MSB message is sent. (Use MSB with the Korg XD5R.)

2. When layering Bank Select messages on a preset MIDI piston or stop, the Bank Select must be programmed (sent) prior to the Program (voice) Change message for the new bank. Thus, program the bank layer and then the program change on the same piston. If different banks are to be used for each channel, do not send all Bank messages first, but rather alternate Bank and Patch.) Be sure to use the same channel for both. Also note that when a Bank has been changed on a channel-- that channel will remain on that Bank until a new Bank is selected. Thus if you want to switch back to program/voice on that channel that's on another Bank, you must send it's Bank message first. (Do not re-use the same channel on subsequent layers of the same

preset piston/stop.)

3. Bank Select messages are programmed similar to other patches. While in the Program Mode, use the Program Up/Down button to change the control panel display where the program number is below 0 (zero) but above 128. The Program Number will change to a dash, the Manual Number will change to a lower case "b" (for Bank) and the Send light will go off. While on this display, first select the desired Channel using the Channel Up/Down button, then push the Send (or Receive) button to change the Bank Number (which is now displayed in the Program Number window) to the desired Bank Number 1-128. Now press and hold the Set button and then the desired piston. The display will show "Set" to verify the operation. Next, press the Program Up/Down button to exit the Bank position and by the normal means-- a key press (for Manual), Channel selection (same as Bank) and Program selection, followed by Set will add this patch as the next layer. Now when activating this piston the Bank Select will be sent first followed by the program patch.

4. To achieve the most "organ like" operation of divisional MIDI Preset pistons; the Manual # for their division should be assigned. This is done in the "Assign" mode (also used to assign the #35 MIDI stops). While in this mode; set the Channel # to the desired manual/division # (the Prog # is ignored for pistons so any value can be used); press and hold the piston and then press "Send". (The display will flash "Set".) Repeat this for each divisional piston. Note: All MIDI Preset pistons are initialized to division #8, which is used for generals, thus generals do not need to be assigned. When in the Assign mode, Show can be used to review assignments. For pistons, a "P" will appear in the manual window and the Prog # will be the sequential encoder position number.

5. Some organists prefer the MIDI (#35) stops to enable key data to the sound module even if no patch has been sent. This arrangement is made possible by wiring the DC input, pin #19, for MODE (on the Minimum I/O board #404586), to organ positive (pin #12). Systems may include this jumper installed when shipped from the factory; so if it is not desired simply clip the jumper wire.

6. If the Korg X5DR sound module (supplied by Peterson) is used, its General MIDI (GM) voices can be made to automatically be selected by setting the dip switch (on the Minimum I/O board #404586) position #2 ON (up) and wiring a jumper from the DC input for TRNSFR (pin #14)(also on the Minimum I/O board #404586) to organ positive (pin #12). This configuration initializes the Bank Selects to the Korg's "G" bank. Note: There will be about an 8-9 second delay on power up which is required for the Korg to initialize before the MIDI Resource System™ can transmit messages to the Korg.

The preceding guide should enable any organ service person, regardless of his or her familiarity with electronics, to repair nearly any trouble in the MIDI Resource System™ that may develop. If a problem does arise which the repair person is unable to correct, the modular construction of PETERSON systems permits the troublesome module to be isolated by simply unplugging the suspected module and swapping it with one known to be good. If the problem moves with the module, that module is defective. If further assistance is required, call 1-708-388-3311 or toll free 1-800-341-3311.

A simple phone call may save much time and money !

SUPPORT POLICY

Peterson Electro-Musical Products, Inc. will provide any necessary telephone support to aid in the sales, installation, set up/configuration, operation and service of the MIDI Resource System™. This support extends to the interface with Diode Matrix relays, OrgaPlex™ switching system, MSP-1000™ and Duo-Set™ combination actions manufactured by Peterson. This also includes software/ operating questions beyond the scope of the manuals.

We are not able to support other manufacturers' equipment which may be connected to the MIDI Resource System™. To the extent that we are familiar with another manufacturer's equipment, we will do our best to advise on its use with our MIDI interface system. However, due to the large number of MIDI synthesizers, sound modules, sequencers, patch bays, etc. on the market, we cannot support or answer questions on these devices or on their interconnection. We recommend that you direct questions to the manufacturer or distributor of the product of interest.

Note: The Peterson MIDI Resource System™ conforms to the MIDI Manufacturers Association, MIDI 1.0 Specification, Version 4.2 and will operate properly with

other equipment that conforms to this specification (or earlier versions). Some equipment that conforms to this specification nevertheless may not recognize certain MIDI messages such as "Pitch Bend", Master Volume (expression), Sustain, Bank Select, etc.

SOFTWARE LICENSE AGREEMENT

The MIDI Resource System software (firmware) and documentation are owned by PETERSON ELECTRO MUSICAL PRODUCTS, Inc. ("Peterson") and are protected by United States copyright laws and international treaty provisions. Therefore, you must treat the MIDI Resource System software like any other copyrighted material.

You must not copy the software or written materials accompanying the software. The software must not be used in any device other than the MIDI Resource System hardware that it was intended for. You may not reverse engineer, decompile, or disassemble the MIDI Resource System software.

Peterson grants the use of its MIDI Resource System software in the MIDI Resource System hardware that it was supplied with.

Peterson warrants the physical media (EPROM) in which the MIDI Resource System software is contained to be free from defects and shall replace any such defective media free of charge.

Peterson further agrees to provide any licensee of it's MIDI Resource System software with any updated version(s) of the MIDI Resource System software for a period of one year. This upgrade agreement applies to the software only and does not include shipping or installation costs and further requires the return of the software that is being replaced.

LIMITED WARRANTY COVERING MIDI EQUIPMENT

Peterson warrants the MIDI equipment that it manufactures for use in pipe organs to be free from defects in material and workmanship under normal use and service, for a period of ten (10) years from the date of original shipment to the buyer unless otherwise specified in writing. Floppy drives, sequencers, data filers, and other equipment that is distributed by Peterson but not manufactured by Peterson is warranted by its manufacturer. Please contact the factory for details regarding specific products.

Peterson's sole obligation under this warranty shall be that upon return of goods to the Peterson factory, transportation charges prepaid, Peterson will at its option repair or replace any equipment which it deems to contain defective material or workmanship and will return the repaired or replaced equipment to buyer, transportation charges prepaid. Peterson shall have the sole right upon inspection of any item of equipment or part thereof, to determine whether or not the defect is covered by the terms of this warranty.

During the standard warranty period, Peterson will also warrant its equipment in a particular installation against indirect lightning strikes. If the installation is considered to be at high risk to lightning strikes, it is required that certain precautionary installation procedures must be followed. These procedures will be specified in writing by Peterson. It is the responsibility of the buyer to check with Peterson prior to installation as to whether the installation is considered a high risk installation. This warranty is not valid in the case of direct lightning strikes. Peterson generally considers an occurrance of lightning to be a direct strike for this purpose when it results in physical damage to the structure or electrical power system (such as wiring, electrical panel, motors, etc.) of the building. Peterson reserves the right to inspect the installation site, and Peterson's determination as to whether the proper installation procedures were followed will be final. Peterson's sole obligation under this lightning warranty will be the same as listed above in its standard warranty.

This warranty shall not apply to any equipment, or any part thereof, which has been repaired by others in a manner that does not conform with the Peterson standard for quality and/or workmanship; or which has been improperly used, abused, used in an unauthorized manner with components manufactured by another company, altered, damaged, subjected to accident, flood, fire, or acts of God; or on which any serial numbers have been altered, defaced, or removed. Peterson will not be responsible for any dismantling, reassembly, or reinstallation charges.

This warranty is in lieu of all other warranties expressed or implied, including, without limitations, warranty for merchantability and fitness for a particular purpose as well as all other representations made to the purchaser. No person is authorized to give any other warranties or to assume any other liabilities on behalf of Peterson unless made or assumed by Peterson in writing. Peterson will not be liable for any special, indirect, incidental, or consequential damages, including damages claimed in connection with any rescission of this agreement by the buyer.

Peterson's Warranty on MIDI equipment as here in above set forth, shall not be enlarged, diminished, or affected by, and no obligations or liability shall arise or grow out of, Peterson's rendering of technical advice or service. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

PETERSON UNIVERSAL STOP LIST (MAP)

Each physical organ stop control will have a pre-assigned stop name and pitch from the Peterson “Universal Stop List (MAP)”. The stops on any particular organ will be assigned to their corresponding logical bit in the appropriate division stop group, thus making MIDI files interchangeable between organs of any size and stop list. Even files made on a theater organ could be used on a classical organ or vice versa.

Most frequently used stop controls/pitches will be in the first (0) stop subgroup and the least used will be in the 8th subgroup. Subgroups 9-11 are used for “Fast Config.” assignments. Subgroups 12-16 would be used for unique stops/controls that would not likely translate to any another organ specification. Consult Peterson on the use of these un-assigned subgroups to avoid conflicts in compatible files. Channel 7(8) is reserved for encoding general couplers and piston data. A means of masking and/or disabling the piston data should be provided as piston changes are not likely compatible from organ to organ. Piston bits should only be used if compatibility is not required and where visual (or mechanically moving) stop control from a combination action is desired or from an assigned receive program change. An alternate method of encoding/decoding pistons (as stops) using subgroups 12-16 is preferred.

The Universal Stop List (MAP) begins below and is broken down by subgroups showing prioritizing. There are currently 207 stop controls with 296 stop names (including alternates) provided for in this list. These utilize 8 subgroups. Additional stop controls and/or alternate names can be added. There are 17 un-assigned bits in the 1-8 subgroups and most of the bits in subgroups 12-16 for this purpose. Bear in mind that this list is re-used for each of 7 divisions, so a 1358 stop organ could be accommodated. An example/legend is provided at the beginning of the “Universal Stop List (MAP)” below that explains the format used.

Example: 65. 2.09 8' DULCIANA (AEOLINE)

LEGEND

```
65   = Assignment number
 2   = Stop Subgroup
09   = Second bit of 2nd byte
8'   = Pitch
DULCIANA   = Stop name
(AEOLINE)  = Alternate stop name(s)
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143. 5.03    64'  GRAVISSIMA (RESULTANT)
196. 6.28    64'  REEED/DIAPHONE

142. 5.02    32'  OPEN DIAPASON (FLUTE OUVERTE)
141. 5.01    32'  PRINCIPAL
208. 7.12    32'  UNTERSATZ (MAJOR BASS)
136. 4.24    32'  CONTRA VIOLONE
 95. 3.11    32'  CONTRA BOURDON
111. 3.27    32'  POSUANE
135. 4.23    32'  CONTRA BOMBARDE (DIAPHONE)
134. 4.22    32'  CONTRA FAGOTTO
195. 6.27    32'  CONTRA BASSOON
 54. 1.26    32'  RESULTANT

 96. 3.12    16'  OPEN DIAPASON (DIAPHONIC DIAPASON, FLUTE OUVERTE)
 10. 0.10    16'  PRINCIPAL (MONTRE)
209. 7.13    16'  PRESTANT
128. 4.16    16'  CONTRA BASS
129. 4.17    16'  VIOLONE
210. 7.14    16'  SUBBASS
 11. 0.11    16'  BOURDON (SUBBASS, TIBIA CLAUSA)
 97. 3.13    16'  GEMSHORN (SPITZFLUTE)
 98. 3.14    16'  GAMBA
138. 4.26    16'  CELLO (VIOLON CELLO)
 12. 0.12    16'  LIEBLICH GEDACKT
 99. 3.15    16'  QUINTATON (ROHR BOURDON, POMMER, FLUTE a CHEMINEE)
130. 4.18    16'  BOMBARDE (OPHECLIEDE)
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131. 4.19 16' TROMBONE (POSAUNE, DIAPHONE, BAZUIN)
137. 4.25 16' TUBA
13. 0.13 16' FAGOTTO (BASSON, HAUTBOIS, OBOE, OBOE HORN)
14. 0.14 16' TRUMPET (TROMPETTE)
132. 4.20 16' DULZIAN (CLARINETCROMONE, KRUMMHORN)
133. 4.21 16' TROMPETTE-EN-CHAMADE
219. 7.23 16' SAXOPHONE
220. 7.24 16' BRASS TRUMPET
221. 7.25 16' ENGLISH POST HORN
108. 3.24 16' VOX HUMANA
109. 3.25 16' RESULTANT

100. 3.16 10 2/3' GROSS QUINTE

113. 4.01 8' STENTORPHONE (GRAND DIAPASON, DIAPHONIC DIAPASON)
57. 2.01 8' OPEN DIAPASON (1st OPEN DIAPASON)
1. 0.01 8' PRINCIPAL (2nd OPEN DIAPASON)
249. 8.25 8' VOCE UMANA (PRINCIPAL CELESTE)
58. 2.02 8' GEIGEN PRINCIPAL (3rd OPEN DIAPASON, VIOLIN DIAPASON)
245. 8.21 8' SUBBASS
59. 2.03 8' FLUTE MAJOR (GROSS FLUTE, SOLO TIBIA CLAUSA, TIBIA CLAUSA)
2. 0.02 8' BOURDON (2nd FLUTE)
60. 2.04 8' FLUTE HARMONIQUE (CONCERT FLUTE, MELODIA, HOHLFLUTE)
61. 2.05 8' GEDACKT (STOPPED DIAPASON, CHIMNEY FLUTE, ROHRFLUTE)
247. 8.23 8' ROHRFLUTE (CHIMNEY FLUTE, SPILLFLOTE, KOPPELFLOTE)
246. 8.22 8' DOPPELFLUTE (DOUBLE FLUTE)
62. 2.06 8' QUINTADE (QUINTADENA)
244. 8.20 8' VIOLONE
3. 0.03 8' VIOLA (VIOL DA GAMBA, VIOL D. ORCHESTRE, GEMSHORN)
4. 0.04 8' VIOLA CELESTE (GEMSHORN CELESTE)
187. 6.19 8' GEMSHORN (SPITZFLUTE)
188. 6.20 8' GEMSHORN CELESTE (SPITZFLUTE CELESTE)
63. 2.07 8' SALICIONAL
64. 2.08 8' VOIX CELESTE
114. 4.02 8' FLAUTO DOLCE (ERZAHLER)
115. 4.03 8' FLUTE CELESTE (ERZAHLER CELESTE)
65. 2.09 8' DULCIANA (AEOLINE)
139. 4.27 8' CELLO (VIOLON CELLO)
140. 4.28 8' CELLO CELESTE
116. 4.04 8' UNDA MARIS (AEOLINE CELESTE, DLOCAN CELESTE)
66. 2.10 8' TUBA (TROMBA, HARMONIC TUBA, TUBA MIRABILIS)
5. 0.05 8' TRUMPET (TROMPETTE, CORNOPEAN, BRASS TRUMPET, BOMBARDE, POSUANE)
6. 0.06 8' OBOE (FAGOT, HAUTBOIS, BASSON, ORCHESTRAL OBOE, OBOE HORN)
67. 2.11 8' HARMONIC TRUMPET (TROMPETTE HARMONIQUE)
68. 2.12 8' FRENCH HORN (CORNO DI BASSETTO, COR D' ORCHESTRE)
250. 8.26 8' CORNO DI BASSETTO (COR D' ORCHESTRE)
117. 4.05 8' ENGLISH HORN (COR D' ANGLAIS)
69. 2.13 8' CLARINET (KRUMMHORN, CROMORNE)
70. 2.14 8' VOX HUMANA (VOIX HUMAINE)
118. 4.06 8' TROMPETTE-EN-CHAMADE (TROMPETTE REAL, FANFARE TRUMPET)
214. 7.18 8' STATE TRUMPET (FESTIVAL TRUMPET)
159. 5.19 8' ENGLISH POST HORN
160. 5.20 8' KRUMMET (KRUMMHORN, KORNET, CROMORNE)
161. 5.21 8' SERPENT
162. 5.22 8' MUSETTE
163. 5.23 8' SOLO VOX HUMANA
164. 5.24 8' SAXOPHONE (BRASS SAXOPHONE)
165. 5.25 8' KINURA
168. 5.28 6 2/5' GRAND TIERCE

71. 2.15 5 1/3' QUINT
119. 4.07 5 1/3' QUINT TROMPETTE

27. 0.27 4 4/7' MUTATION

7. 0.07 4' OCTAVE
72. 2.16 4' PRINCIPAL
73. 2.17 4' PRESTANT

110. 3.26	4'	GEIGEN OCTAVE
8. 0.08	4'	CHIMNEY FLUTE (ROHR FLUTE, KOPPEL FLOTE)
74. 2.18	4'	GEDACKT (SUBBASS, BOURDON, TIBIA)
75. 2.19	4'	SPITZ FLUTE (SPITZ PRINCIPAL, GEMSHORN)
76. 2.20	4'	OPEN FLUTE (NACHTHORN, COR DE NUIT, WALDFLOTE)
77. 2.21	4'	HARMONIC FLUTE (FLUTE TRAVERSO, ZAUBERFLOTE, CONCERT FLUTE, TRAVERSFLUTE)
120. 4.08	4'	FUGARA (VIOLINA)
78. 2.22	4'	SALICET
121. 4.09	4'	CELESTE
79. 2.23	4'	GAMBETTE
166. 5.26	4'	UNDA MARIS
122. 4.10	4'	CELESTINA
80. 2.24	4'	DULCET
85. 3.01	4'	HARMONIC TUBA (HARMONIC CLARION)
9. 0.09	4'	CLARION
86. 3.02	4'	CHALUMEAU (ROHR SCHALMEI)
87. 3.03	4'	OBOE (FAGOT, HAUTBOIS)
124. 4.12	4'	TROMPETTE EN CHAMADE
189. 6.21	4'	KRUMMHORN (CLARINET)
167. 5.27	4'	VOX HUMANA
125. 4.13	3 1/5'	GROSS TIERCE
23. 0.23	2 2/3'	QUINTE (TWELFTH)
88. 3.04	2 2/3'	NAZARD
21. 0.21	2'	PRINCIPAL (FIFTEENTH, SUPER OCTAVE, OKTAVLEIN)
89. 3.05	2'	SPITZ FLUTE (SPITZ PRINCIPAL)
248. 8.24	2'	SPILLFLOTE
22. 0.22	2'	BLOCK FLUTE (PICCOLO)
90. 3.06	2'	HARMONIC PICCOLO
251. 8.27	2'	WALDFLOTE
252. 8.28	2'	REGAL
126. 4.14	2'	KORNET (KRUMMHORN, CROMORNE)
24. 0.24	1 3/5'	TIERCE (TERZ)
29. 1.01	1 1/3'	QUINT (LARIGOT)
127. 4.15	1 1/7'	SEPTIEME
91. 3.07	1'	SIFFLOTE (FIFE)
56. 1.28	8/9'	MUTATION
145. 5.04	2/3'	QUINT
28. 0.28	2/5'	MUTATION
123. 4.11	1/2'	MUTATION
146. 5.05		HARMONICS
147. 5.06		FULL MIXTURE
224. 7.28		GROSS CORNET (GRANDE CORNET)
206. 7.10		GRAND FOURNITURE
30. 1.02		FOURNITURE
55. 1.27		PLEIN JEU
31. 1.03		SHARFF
207. 7.11		TIERCE MIXTURE
92. 3.08		CYMBAL
147. 5.07		ACUTA
32. 1.04		SESQUIALTERA
93. 3.09		CORNET
94. 3.10		SEPTERZ
53. 1.25		II MIXTURE
25. 0.25		III MIXTURE
26. 0.26		IV MIXTURE
211. 7.15		MIXTURE V
212. 7.16		MIXTURE VI
213. 7.17		MIXTURE VII

20.	0.20		TREMULANT I-FAST (PRIMARY OR FIRST)
148.	5.08		TREMULANT II-SLOW
171.	6.03		TREMULANT MAIN A
172.	6.04		TREMULANT MAIN B
173.	6.05		TREMULANT TIBIA
174.	6.06		TREMULANT VOX
175.	6.07		TREMULANT BRASS
176.	6.08		TREMULANT REEDS
187.	6.19		GLOCK RE-IT
188.	6.20		XYLO RE-IT
189.	6.21		MARIMBA RE-IT
15.	0.15	16'	SUB COUPLER
16.	0.16	8'	UNISON COUPLER (UNISON OFF)
194.	6.26	5 1/3'	QUINT COUPLER
17.	0.17	4'	OCTAVE COUPLER
37.	1.09	16'	SOLO TO X
38.	1.10	8'	SOLO TO X
194.	6.26	5 1/3'	SOLO TO X
39.	1.11	4'	SOLO TO X
40.	1.12	16'	SWELL TO X
41.	1.13	8'	SWELL TO X
42.	1.14	4'	SWELL TO X
43.	1.15	16'	GREAT TO X
44.	1.16	8'	GREAT TO X
45.	1.17	4'	GREAT TO X
46.	1.18	16'	CHOIR TO X (POSITIV)
47.	1.19	8'	CHOIR TO X (POSITIV)
48.	1.20	4'	CHOIR TO X (POSITIV)
222.	7.26		PEDAL TO X
152.	5.12		ECHO ON X
153.	5.13		ANTIPHONAL ON X
154.	5.14		POSITIV ON X
190.	6.22	16'	GALLERY GREAT TO X (OR REMOTE)
191.	6.23	8'	GALLERY GREAT TO X (OR REMOTE)
192.	6.24	4'	GALLERY GREAT TO X (OR REMOTE)
193.	6.25	16'	GALLERY SWELL TO X (OR REMOTE)
194.	6.26	8'	GALLERY SWELL TO X (OR REMOTE)
195.	6.27	4'	GALLERY SWELL TO X (OR REMOTE)
196.	6.28	16'	GALLERY PEDAL TO X (OR REMOTE)
197.	7.01	8'	GALLERY PEDAL TO X (OR REMOTE)
198.	7.02	4'	GALLERY PEDAL TO X (OR REMOTE)
199.	7.03	16'	GALLERY CHOIR TO X (OR REMOTE)
200.	7.04	8'	GALLERY CHOIR TO X (OR REMOTE)
201.	7.05	4'	GALLERY CHOIR TO X (OR REMOTE)
34.	1.06	16'	MIDI TO X
35.	1.07	8'	MIDI TO X (MIDI ON/OFF)
36.	1.08	4'	MIDI TO X
49.	1.21	16'	MIDI “A”
50.	1.22	16'	MIDI “B”
102.	3.18	16'	MIDI “C”
103.	3.19	16'	MIDI “D”
18.	0.18	8'	MIDI “A”
19.	0.19	8'	MIDI “B”
104.	3.20	8'	MIDI “C”
105.	3.21	8'	MIDI “D”
51.	1.23	4'	MIDI “A”
52.	1.24	4'	MIDI “B”
106.	3.22	4'	MIDI “C”
107.	3.23	4'	MIDI “D”
81.	2.25	8'	MIDI MELODY
82.	2.26	4'	MIDI MELODY
83.	2.27	16'	MIDI BASS
84.	2.28	8'	MIDI BASS

155.	5.15		MANUAL TRANSFER
223.	7.27		PEDAL DIVIDE
112.	3.28		X SHOE TO SWELL
156.	5.16		ALL SWELLS TO SWELL
157.	5.17		BASS COUPLER
158.	5.18		MELODY COUPLER
169.	6.01		PIZZICATTO COUPLER
170.	6.02		SOSTENUTO
181.	6.13	16'	PIANO
182.	6.14	8'	PIANO
183.	6.15	4'	PIANO
184.	6.16		PIANO SUSTAIN
215.	7.19		REMOTE ORGAN ON/OFF
216.	7.20		REMOTE OCNSOLE ON/OFF
217.	7.21		LOCAL ORGAN ON/OFF
218.	7.22		LOCAL CONSOLE ON/OFF
33.	1.05		CHIMES
149.	5.09		HARP
150.	5.10		CELESTA
151.	5.11		CARILLON
185.	6.17		TOWER CHIMES
177.	6.09		MARIMBA HARP
178.	6.10		CHRYSOLGLOTT
179.	6.11		XYLOPHONE
180.	6.12		GLOCKENSPIEL
186.	6.18		TUNED SLEIGH BELLS
101.	3.17		ZIMBELSTERN
191.	6.23		GONG
192.	6.24		TRIANGLE
212.	7.16		SLEIGH BELLS
200.	7.04		CRASH CYMBAL
201.	7.05		TAP CYMBAL
202.	7.06		BRUSH CYMBAL
214.	7.18		FINGER CYMBAL
203.	7.07		SNARE DRUM
199.	7.03		BASS DRUM
204.	7.08		SNARE DRUM ROLL
205.	7.09		TOM TOM
206.	7.10		TYMPANI
207.	7.11		TAMBORINE
208.	7.12		CASTINETS
209.	7.13		CHINESE BLOCK
210.	7.14		WOOD BLOCK
211.	7.15		SAND BLOCK
197.	7.01		STEAMBOAT WHISTLE
198.	7.02		BIRD WHISTLE
190.	6.22		SIREN
213.	7.17		GLADSTONE AFTERBEAT
225.	8.01		SWELL SHADE 1
226.	8.02		SWELL SHADE 2
227.	8.03		SWELL SHADE 3
228.	8.04		SWELL SHADE 4
229.	8.05		SWELL SHADE 5
230.	8.06		SWELL SHADE 6
231.	8.07		SWELL SHADE 7
232.	8.08		SWELL SHADE 8
233.	8.09		SWELL SHADE 9
234.	8.10		SWELL SHADE 10
235.	8.11		SWELL SHADE 11
236.	8.12		SWELL SHADE 12
237.	8.13		SWELL SHADE 13
238.	8.14		SWELL SHADE 14

239.	8.15		SWELL SHADE 15
240.	8.16		SWELL SHADE 16
241.	8.17		SWELL SHADE 17
242.	8.18		SWELL SHADE 18

The following is a duplicate “Universal Stop List (MAP)” that has been sorted by it's assignment (sysex subgroup) numbers. Use for checking assigned stops.

1.	0.01	8'	PRINCIPAL (2nd OPEN DIAPASON)
2.	0.02	8'	BOURDON (2nd FLUTE)
3.	0.03	8'	VIOLA (VIOL DA GAMBA, VIOL D. ORCHESTRE, GEMSHORN)
4.	0.04	8'	VIOLA CELESTE (GEMSHORN CELESTE)
5.	0.05	8'	TRUMPET (TROMPETTE, CORNOPEAN, BRASS TRUMPET, BOMBARDE, POSUANE)
6.	0.06	8'	OBOE (FAGOT, HAUTBOIS, BASSON, ORCHESTRAL OBOE,OBOE HORN)
7.	0.07	4'	OCTAVE
8.	0.08	4'	CHIMNEY FLUTE (ROHR FLUTE, KOPPEL FLUTE)
9.	0.09	4'	CLARION (Ped. BOMBARDE, pED. POSUANE)
10.	0.10	16'	PRINCIPAL (MONTRE)
11.	0.11	16'	BOURDON (SUBBASS, TIBIA CLAUSA)
12.	0.12	16'	LIEBLICH GEDACKT
13.	0.13	16'	FAGOTTO (BASSON, HAUTBOIS, OBOE, OBOE HORN)
14.	0.14	16'	TRUMPET (TROMPETTE)
15.	0.15	16'	SUB COUPLER
16.	0.16	8'	UNISON COUPLER (UNISON OFF)
17.	0.17	4'	OCTAVE COUPLER
18.	0.18	8'	MIDI A
19.	0.19	8'	MIDI B
20.	0.20		TREMULANT I-FAST (PRIMARY OR FIRST)
21.	0.21	2'	PRINCIPAL (SUPER OCTAVE, OKTAVLEIN)
22.	0.22	2'	BLOCK FLUTE (PICCOLO)
23.	0.23	2 2/3'	QUINTE
24.	0.24	1 3/5'	TIERCE (TERZ)
25.	0.25	III	MIXTURE
26.	0.26	IV	MIXTURE
27.	0.27	4 4/7'	MUTATION
28.	0.28	2/5'	MUTATION
29.	1.01	1 1/3'	QUINTE (LARIGOT)
30.	1.02		FOURNITURE
31.	1.03		SHARFF
32.	1.04		SESQUIALTERA
33.	1.05		CHIMES
34.	1.06	16'	MIDI TO X
35.	1.07	8'	MIDI TO X (MIDI ON/OFF)
36.	1.08	4'	MIDI TO X
37.	1.09	16'	SOLO TO X
38.	1.10	8'	SOLO TO X
39.	1.11	4'	SOLO TO X
40.	1.12	16'	SWELL TO X
41.	1.13	8'	SWELL TO X
42.	1.14	4'	SWELL TO X
43.	1.15	16'	GREAT TO X
44.	1.16	8'	GREAT TO X
45.	1.17	4'	GREAT TO X
46.	1.18	16'	CHOIR TO X
47.	1.19	8'	CHOIR TO X
48.	1.20	4'	CHOIR TO X
49.	1.21	16'	MIDI “A”
50.	1.22	16'	MIDI “B”
51.	1.23	4'	MIDI “A”
52.	1.24	4'	MIDI “B”
53.	1.25	II	MIXTURE
54.	1.26	32'	RESULTANT
55.	1.27		PLEIN JEU
56.	1.28	8/9'	MUTATION

57.	2.01	8'	OPEN DIAPASON (1st OPEN DIAPASON)
58.	2.02	8'	GEIGEN PRINCIPAL (3rd OPEN DIAPASON, VIOLIN DIAPASON)
59.	2.03	8'	FLUTE MAJOR (GROSS FLUTE, SOLO TIBIA CLAUSA, TIBIA)
60.	2.04	8'	FLUTE HARMONIQUE (CONCERT FLUTE, MELODIA, HOHLFLUTE)
61.	2.05	8'	GEDACKT (STOPPED DIAPASON, CHIMNEY FLUTE, ROHRFLUTE)
62.	2.06	8'	QUINTADE (QUINTADENA)
63.	2.07	8'	SALICIONAL
64.	2.08	8'	VOIX CELESTE
65.	2.09	8'	DULCIANA (AEOLINE)
66.	2.10	8'	TUBA (TROMBA, HARMONIC TUBA, TUBA MIRABILIS)
67.	2.11	8'	HARMONIC TRUMPET (TROMPETTE HARMONIQUE)
68.	2.12	8'	FRENCH HORN (CORNO DI BASSETTO, COR D' ORCHESTRE)
69.	2.13	8'	CLARINET (KRUMMHORN, CROMORNE)
70.	2.14	8'	VOX HUMANA (VOIX HUMAINE)
71.	2.15	5 1/3'	QUINT
72.	2.16	4'	PRINCIPAL
73.	2.17	4'	PRESTANT
74.	2.18	4'	GEDACKT (BOURDON, TIBIA)
75.	2.19	4'	SPITZ FLUTE (SPITZ PRINCIPAL, GEMSHORN)
76.	2.20	4'	OPEN FLUTE (NACHTHORN, COR DE NUIT, WALDFLOTE)
77.	2.21	4'	HARMONIC FLUTE (FLUTE TRAVERSO, ZAUBERFLOTE, CONCERT FLUTE, TRAVERSFLOTE)
78.	2.22	4'	SALICET
79.	2.23	4'	GAMBETTE
80.	2.24	4'	DULCET
81.	2.25	8'	MIDI MELODY
82.	2.26	4'	MIDI MELODY
83.	2.27	16'	MIDI BASS
84.	2.28	8'	MIDI BASS
85.	3.01	4'	HARMONIC TUBA (HARMONIC CLARION)
86.	3.02	4'	CHALUMEAU (ROHR SCHALMEI)
87.	3.03	4'	OBOE (FAGOT, HAUTBOIS)
88.	3.04	2 2/3'	NAZARD
89.	3.05	2'	SPITZ FLUTE (SPITZ PRINCIPAL)
90.	3.06	2'	HARMONIC PICCOLO
91.	3.07	1'	SIFFLOTE (FIFE)
92.	3.08		CYMBAL
93.	3.09		CORNET
94.	3.10		SEPTERZ
95.	3.11	32'	CONTRA BOURDON
96.	3.12	16'	OPEN DIAPASON (DIAPHONIC DIAPASON, FLUTE OUVERTE)
97.	3.13	16'	GEMSHORN (SPITZFLUTE)
98.	3.14	16'	GAMBA
99.	3.15	16'	QUINTATON (ROHR BOURDON, POMMER, FLUTE a CHEMINEE)
100.	3.16	10 2/3'	GROSS QUINTE
101.	3.17		ZIMBELSTERN
102.	3.18	16'	MIDI “C”
103.	3.19	16'	MIDI “D”
104.	3.20	8'	MIDI “C”
105.	3.21	8'	MIDI “D”
106.	3.22	4'	MIDI “C”
107.	3.23	4'	MIDI “D”
108.	3.24	16'	VOX HUMANA
109.	3.25	16'	RESULTANT
110.	3.26	4'	GEIGEN OCTAVE
111.	3.27	32'	POSUANE
112.	3.28		X SHOE TO SWELL
113.	4.01	8'	STENTORPHONE (GRAND DIAPASON, DIAPHONIC DIAPASON)
114.	4.02	8'	FLAUTO DOLCE (ERZAHLER)
115.	4.03	8'	FLUTE CELESTE (ERZAHLER CELESTE)
116.	4.04	8'	UNDA MARIS (AEOLINE CELESTE, DLOCAN CELESTE)
117.	4.05	8'	ENGLISH HORN (COR D' ANGLAIS)
118.	4.06	8'	TROMPETTE-EN-CHAMADE (TROMPETTE REAL, FANFARE TRUMPET)
119.	4.07	5 1/3'	QUINT TROMPETTE
120.	4.08	4'	FUGARA (VIOLINA)

121.	4.09	4'	CELESTE
122.	4.10	4'	CELESTINA
123.	4.11	1/2'	MUTATION
124.	4.12	4'	TROMPETTE EN CHAMADE
125.	4.13	3 1/5'	GROSS TIERCE
126.	4.14	2'	KORNET (KRUMMHORN, CROMORNE)
127.	4.15	1 1/7'	SEPTIEME
128.	4.16	16'	CONTRE BASS
129.	4.17	16'	VIOLONE
130.	4.18	16'	BOMBARDE (OPHECLIEDE)
131.	4.19	16'	TROMBONE (POSAUNE, DIAPHONE)
132.	4.20	16'	DULZIAN (CLARINET)
133.	4.21	16'	TROMPETTE-EN-CHAMADE
134.	4.22	32'	CONTRA FAGOTTO
135.	4.23	32'	CONTRA BOMBARDE (DIAPHONE)
136.	4.24	32'	CONTRA VIOLONE
137.	4.25	16'	TUBA
138.	4.26	16'	CELLO (VIOLON CELLO)
139.	4.27	8'	CELLO (VIOLON CELLO)
140.	4.28	8'	CELLO CELESTE
141.	5.01	32'	PRINCIPAL
142.	5.02	32'	OPEN DIAPASON (FLUTE OUVERTE)
143.	5.03	64'	GRAVISSIMA (RESULTANT)
144.	5.04	2/3'	QUINT
145.	5.05		HARMONICS
146.	5.06		FULL MIXTURE
147.	5.07		ACUTA
148.	5.08		TREMULANT II-SLOW
149.	5.09		HARP
150.	5.10		CELESTA
151.	5.11		CARILLON
152.	5.12		ECHO ON X
153.	5.13		ANTIPHONAL ON X
154.	5.14		POSITIV ON X
155.	5.15		MANUAL TRANSFER
156.	5.16		ALL SWELLS TO SWELL
157.	5.17		BASS COUPLER
158.	5.18		MELODY COUPLER
159.	5.19	8'	ENGLISH POST HORN
160.	5.20	8'	KRUMMET (KRUMMHORN, KORNET, CROMORNE)
161.	5.21	8'	SERPENT
162.	5.22	8'	MUSETTE
163.	5.23	8'	SOLO VOX HUMANA
164.	5.24	8'	SAXOPHONE (BRASS SAXOPHONE)
165.	5.25	8'	KINURA
166.	5.26	4'	UNDA MARIS
167.	5.27	4'	VOX HUMANA
168.	5.28	6 2/5'	GRAND TIERCE
169.	6.01		PIZZICATO COUPLER
170.	6.02		SOSTENUTO
171.	6.03		TREMULANT MAIN A
172.	6.04		TREMULANT MAIN B
173.	6.05		TREMULANT TIBIA
174.	6.06		TREMULANT VOX
175.	6.07		TREMULANT BRASS
176.	6.08		TREMULANT REEDS
177.	6.09		MARIMBA HARP
178.	6.10		CHRYSOLGLOTT
179.	6.11		XYLOPHONE
180.	6.12		GLOCKENSPIEL
181.	6.13	16'	PIANO
182.	6.14	8'	PIANO
183.	6.15	4'	PIANO
184.	6.16		PIANO SUSTAIN
185.	6.17		TOWER CHIMES
186.	6.18		TUNED SLEIGH BELLS

187. 6.19 8' GEMSHORN (SPITZFLUTE) (GLOCK RE-IT)
188. 6.20 8' GEMSHORN CELESTE (SPITZFLUTE CELESTE) (XYLO RE-IT)
189. 6.21 4' KRUMMHORN (CLARINET) (MARIMBA RE-IT)
190. 6.22 16' GALLERY GREAT TO X (SIREN)
191. 6.23 8' GALLERY GREAT TO X (GONG)
192. 6.24 4' GALLERY GREAT TO X (TRIANGLE)
193. 6.25 5 1/3' QUINT COUPLER
194. 6.26 5 1/3' SOLO TO X
195. 6.27 32' CONTRA BASSOON
196. 6.28 64' REED/DIAPHONE

197. 7.01 16' GALLERY SWELL TO X (STEAMBOAT WHISTLE)
198. 7.02 8' GALLERY SWELL TO X (BIRD WHISTLE)
199. 7.03 4' GALLERY SWELL TO X (BASS DRUM)
200. 7.04 16' GALLERY PEDAL TO X (CRASH CYMBAL)
201. 7.05 8' GALLERY PEDAL TO X (TAP CYMBAL)
202. 7.06 4' GALLERY PEDAL TO X (BRUSH CYMBAL)
203. 7.07 16' GALLERY CHOIR TO X (SNARE DRUM)
204. 7.08 8' GALLERY CHOIR TO X (SNARE DRUM ROLL)
205. 7.09 4' GALLERY CHOIR TO X (TOM TOM)
206. 7.10 GRAND FOURNITURE (TYMPANI)
207. 7.11 TIERCE MIXTURE (TAMBOURINE)
208. 7.12 32' UNTERSATZ (MAJOR BASS) (CASTANETS)
209. 7.13 16' PRESTANT (CHINESE BLOCK)
210. 7.14 16' SUBBASS - ALT. (WOOD BLOCK)
211. 7.15 V MIXTURE (SAND BLOCK)
212. 7.16 VI MIXTURE (SLEIGH BELLS)
213. 7.17 VII MIXTURE (GLADSTONE AFTERBEAT)
214. 7.18 8' STATE TRUMPET (FESTIVAL) (FINGER CYMBAL)
215. 7.19 REMOTE ORGAN ON/OFF
216. 7.20 REMOTE CONSOLE ON/OFF
217. 7.21 LOCAL ORGAN ON/OFF
218. 7.22 LOCAL CONSOLE ON/OFF
219. 7.23 16' SAXOPHONE
220. 7.24 16' BRASS TRUMPET
221. 7.25 16' ENGLISH POST HORN
222. 7.26 PEDAL TO X
223. 7.27 PEDAL DIVIDE
224. 7.28 GROSS CORNET (GRANDE CORNET)

225. 8.01 SWELL SHADE 1
226. 8.02 SWELL SHADE 2
227. 8.03 SWELL SHADE 3
228. 8.04 SWELL SHADE 4
229. 8.05 SWELL SHADE 5
230. 8.06 SWELL SHADE 6
231. 8.07 SWELL SHADE 7
232. 8.08 SWELL SHADE 8
233. 8.09 SWELL SHADE 9
234. 8.10 SWELL SHADE 10
235. 8.11 SWELL SHADE 11
236. 8.12 SWELL SHADE 12
237. 8.13 SWELL SHADE 13
238. 8.14 SWELL SHADE 14
239. 8.15 SWELL SHADE 15
240. 8.16 SWELL SHADE 16
241. 8.17 SWELL SHADE 17
242. 8.18 SWELL SHADE 18
243. 8.19
244. 8.20 8' VIOLIONE
245. 8.21 8' SUBBASS
246. 8.22 8' DOPPELFLOTE (DOUBLE FLUTE)
247. 8.23 8' ROHRFLUTE (CHIMNEY FLUTE, SPILLFLOTE, KOPPELFLOTE)
248. 8.24 2' SPILLFLOTE
249. 8.25 8' VOCE UMANA (PRINCIPAL CELESTE)
250. 8.26 8' CORNO D' BASSETTO (COR D' ORCHESTE)
251. 8.27 2' WALDFLOTE

252. 8.28 2' REGAL

253. thru 448. UN-ASSIGNED

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FILE: D:WP51\FILES\INS\MIDI_INS.INS

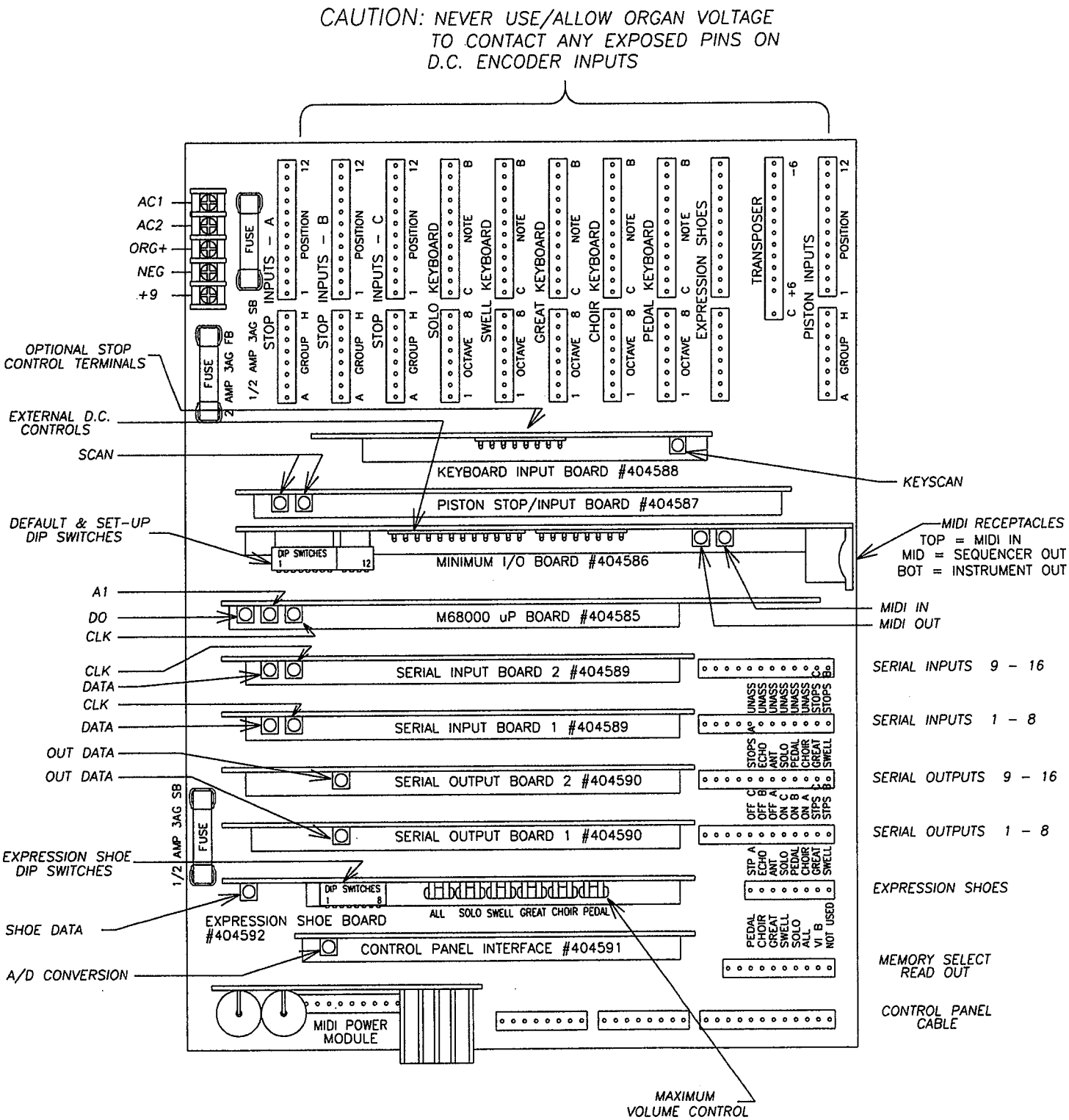

FIGURE 1

REVISED 2–2000

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FIGURE 2A

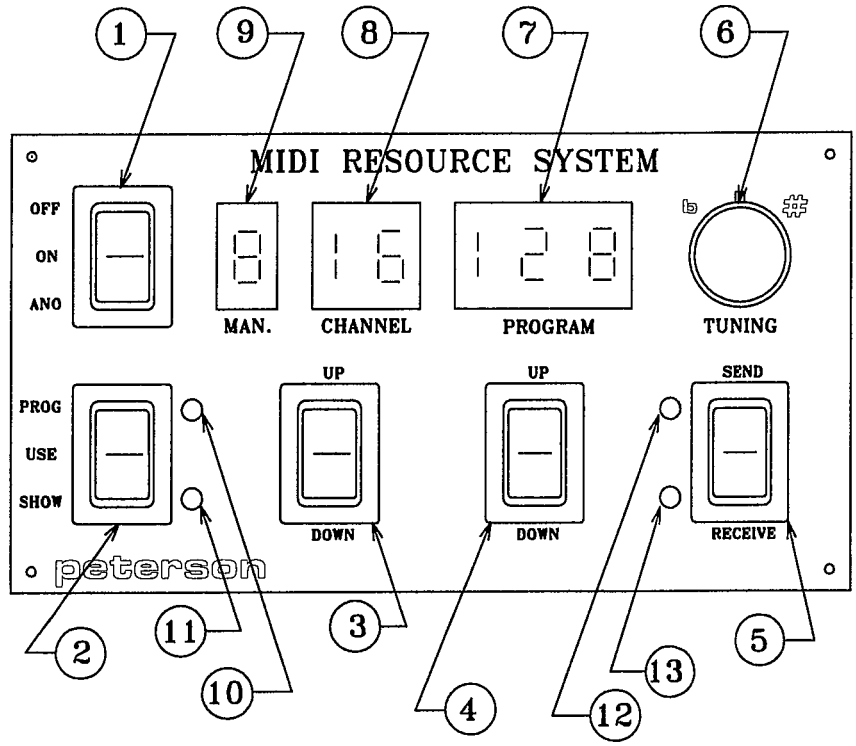

FIGURE 2B

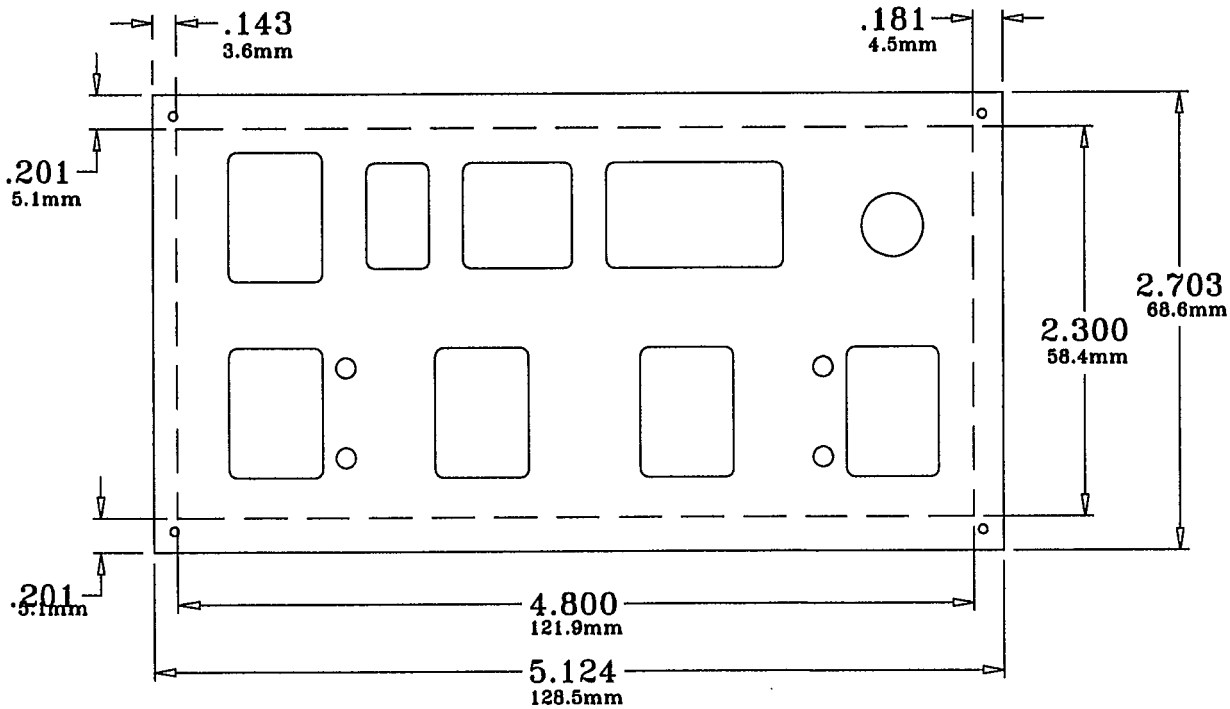

FIGURE 2

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FIGURE 2A

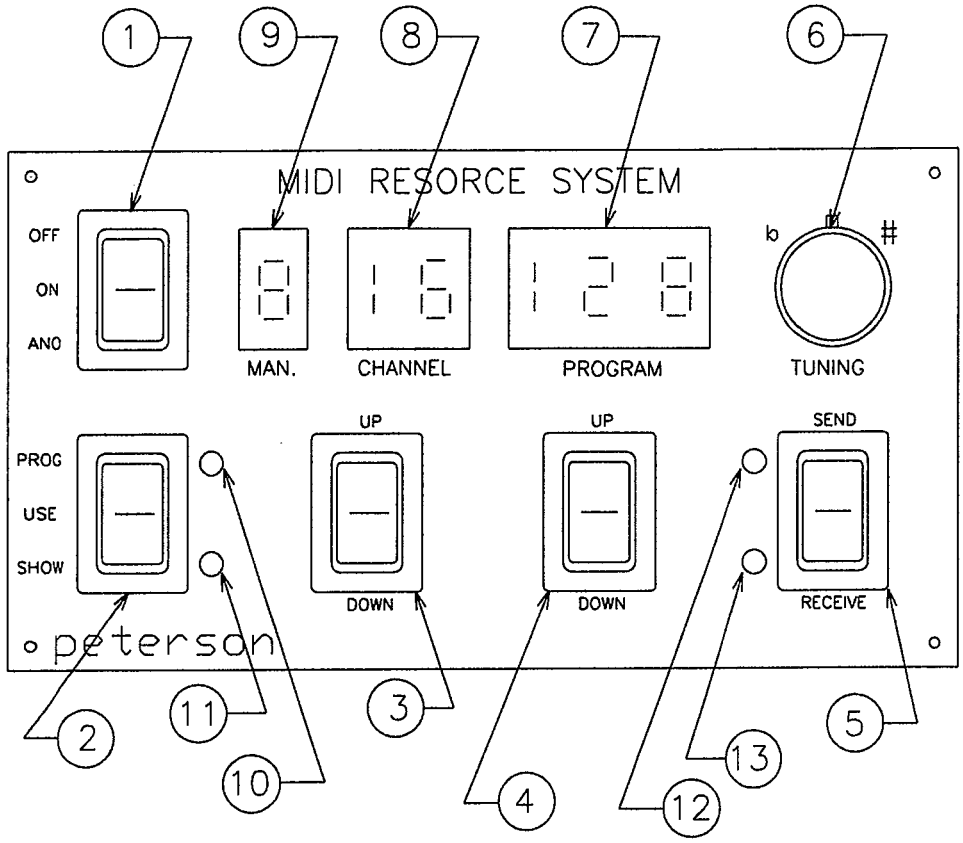

FIGURE 2B

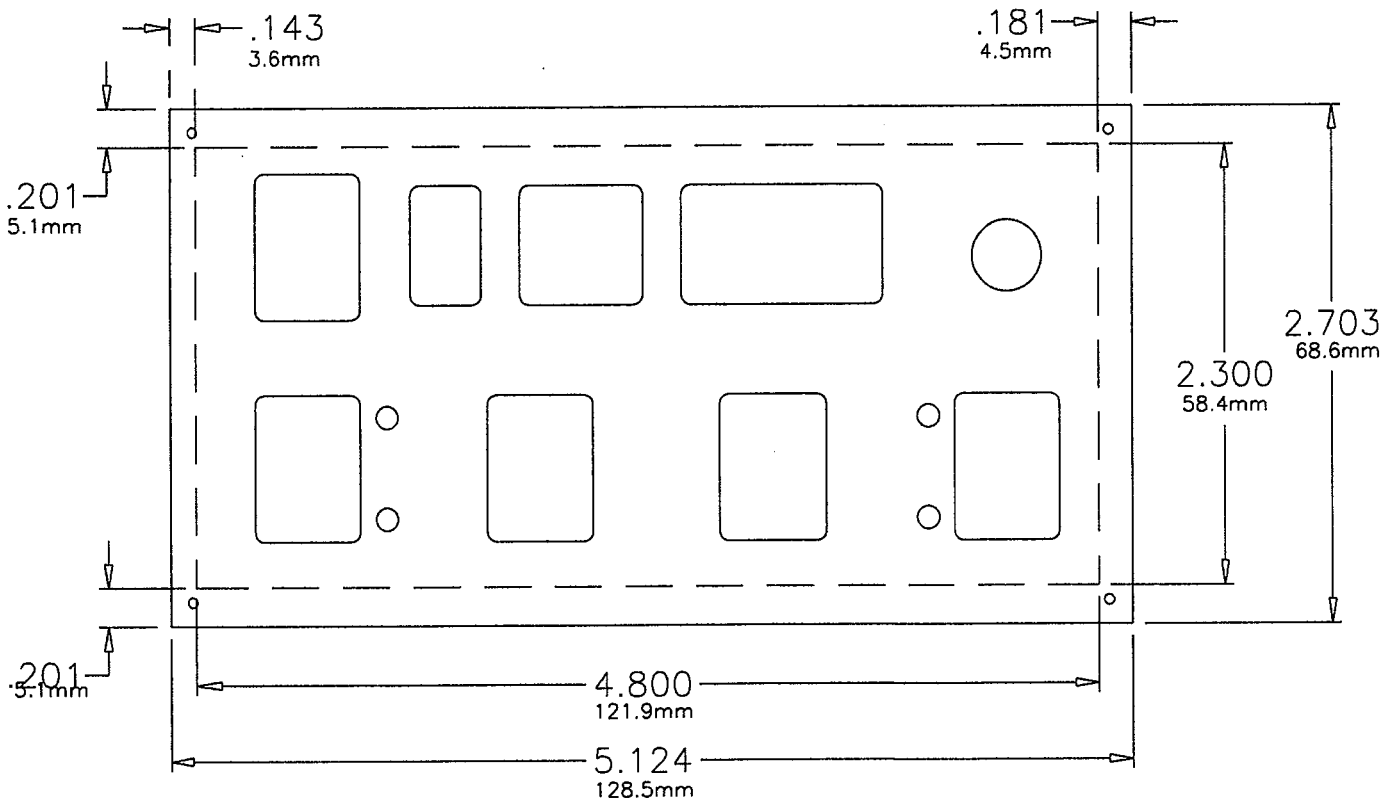

FIGURE 2

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KEYBOARD WIRING

ONLY ONE OF THESE THREE WIRING SCHEMES
ARE USED IN A GIVEN INSTALLATION

FIGURE 3A

WIRING FOR D.C. ENCODED KEYBOARDS
(REQUIRES #404588 KEYBOARD INPUT)

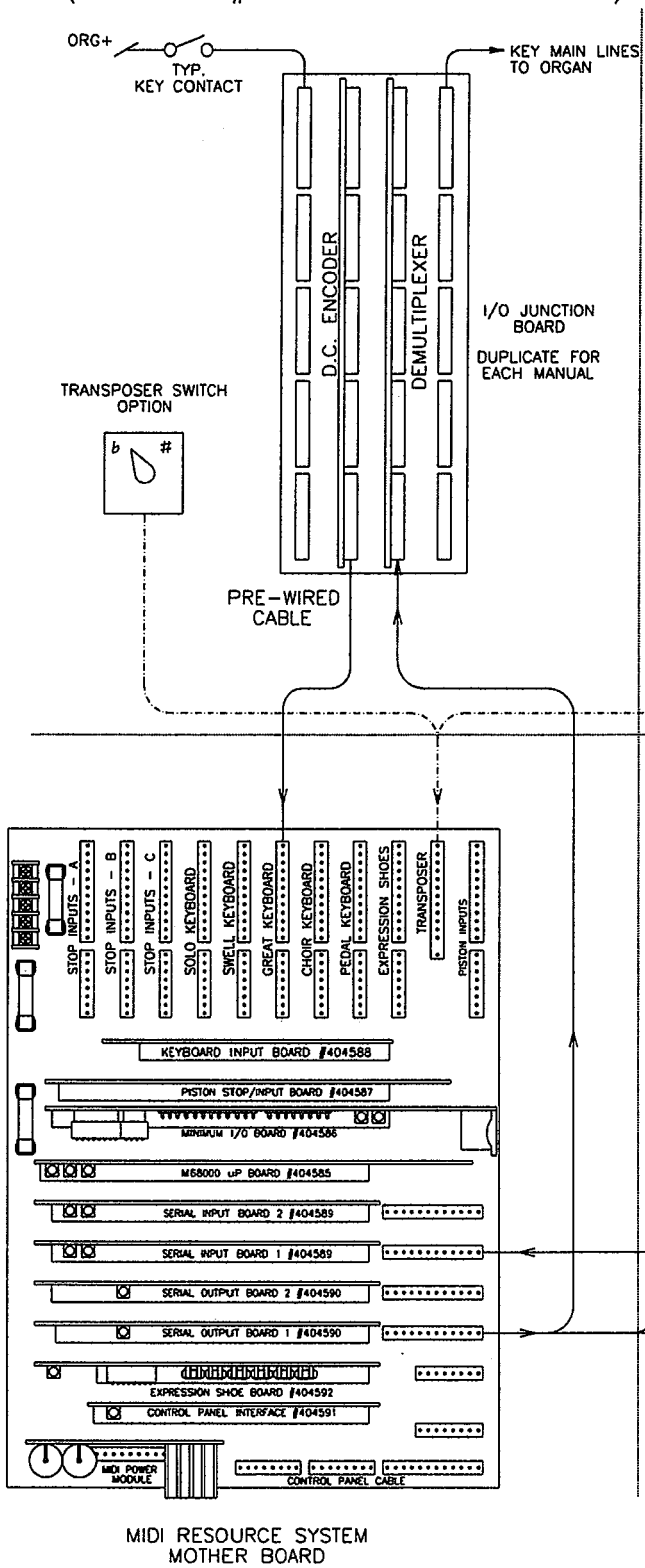

FIGURE 3B

WIRING FOR ORGAPLEX™ MASTER COUPLER
(REQUIRES #404589 SERIAL INPUT BOARD)

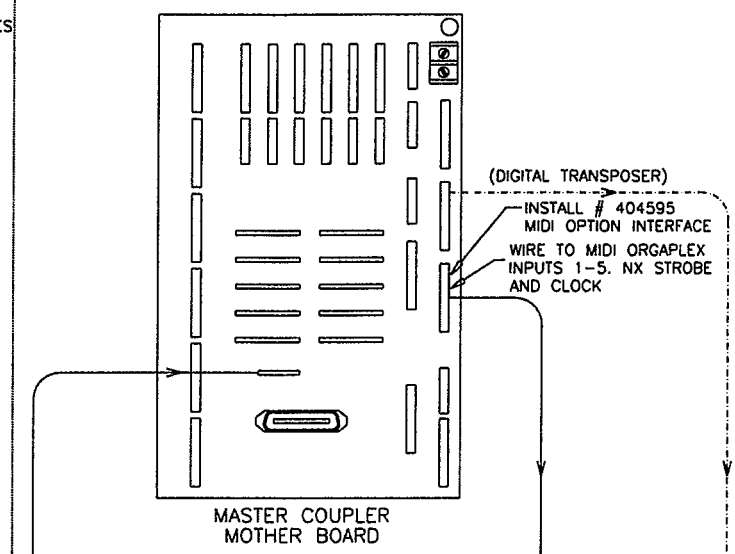

FIGURE 3C

WIRING FOR (ORIGINAL) ORGAPLEX™
(REQUIRES #404589 SERIAL INPUT BOARD)

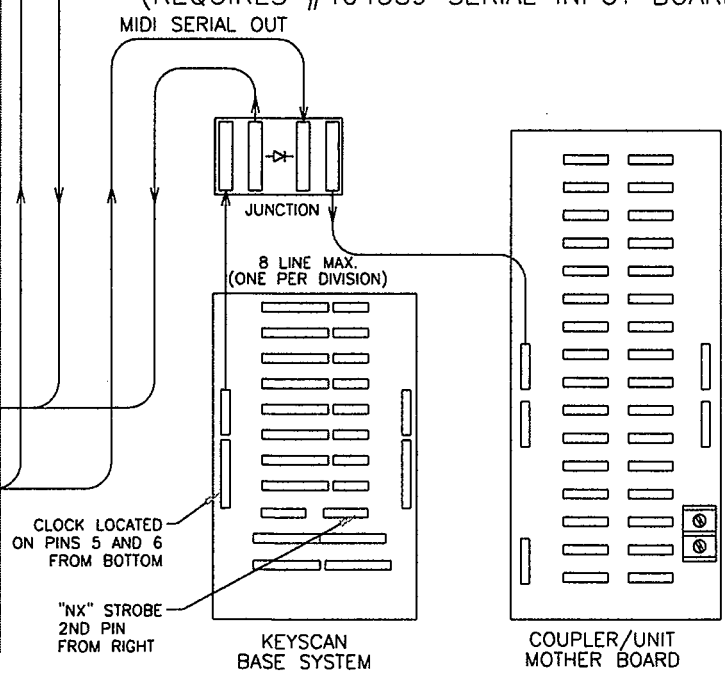

FIGURE 3

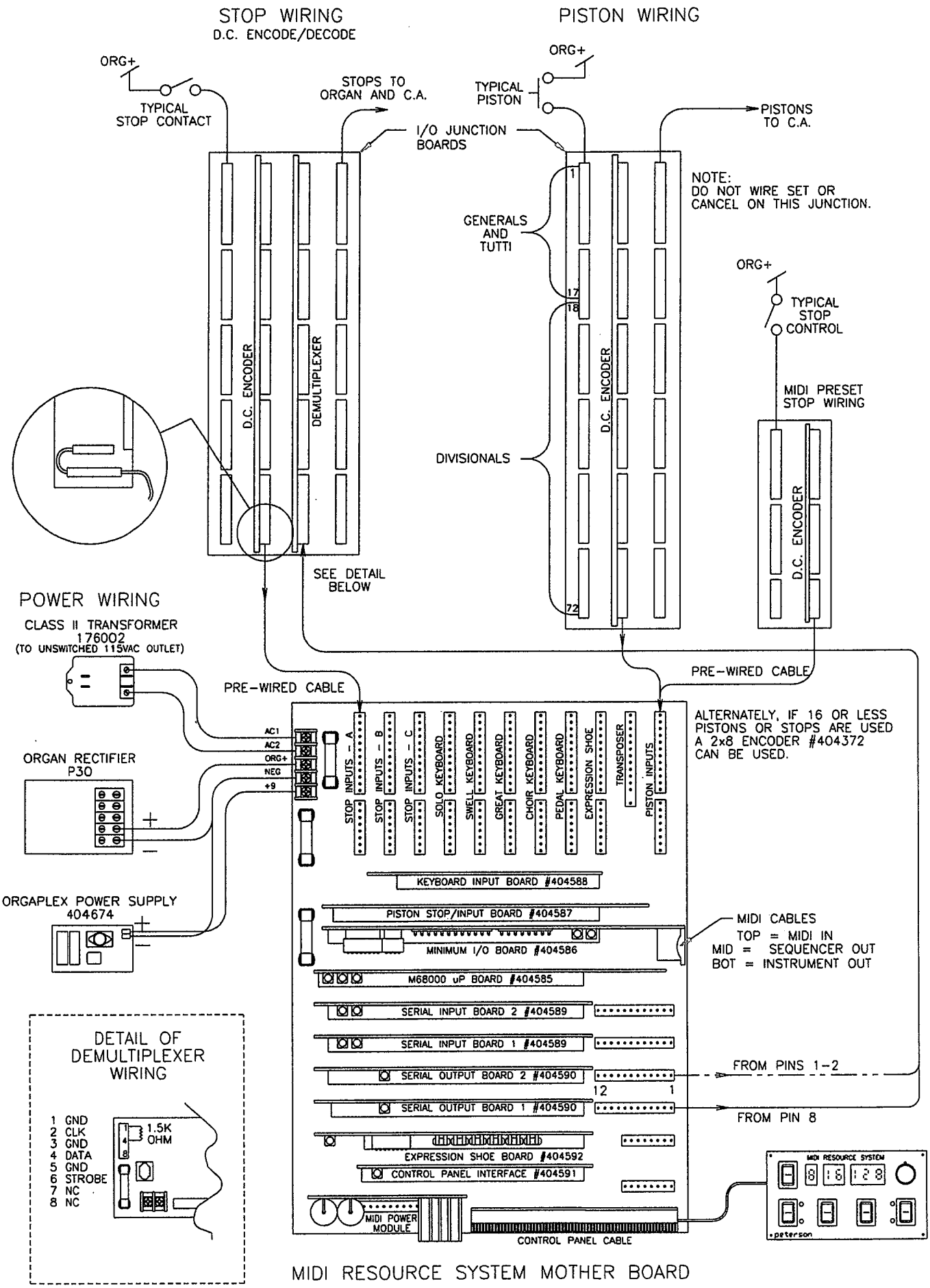

FIGURE 4

REVISED 2-2000

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STOP WIRING FOR MASTER COUPLER
(WITH ENCODER STOPS)

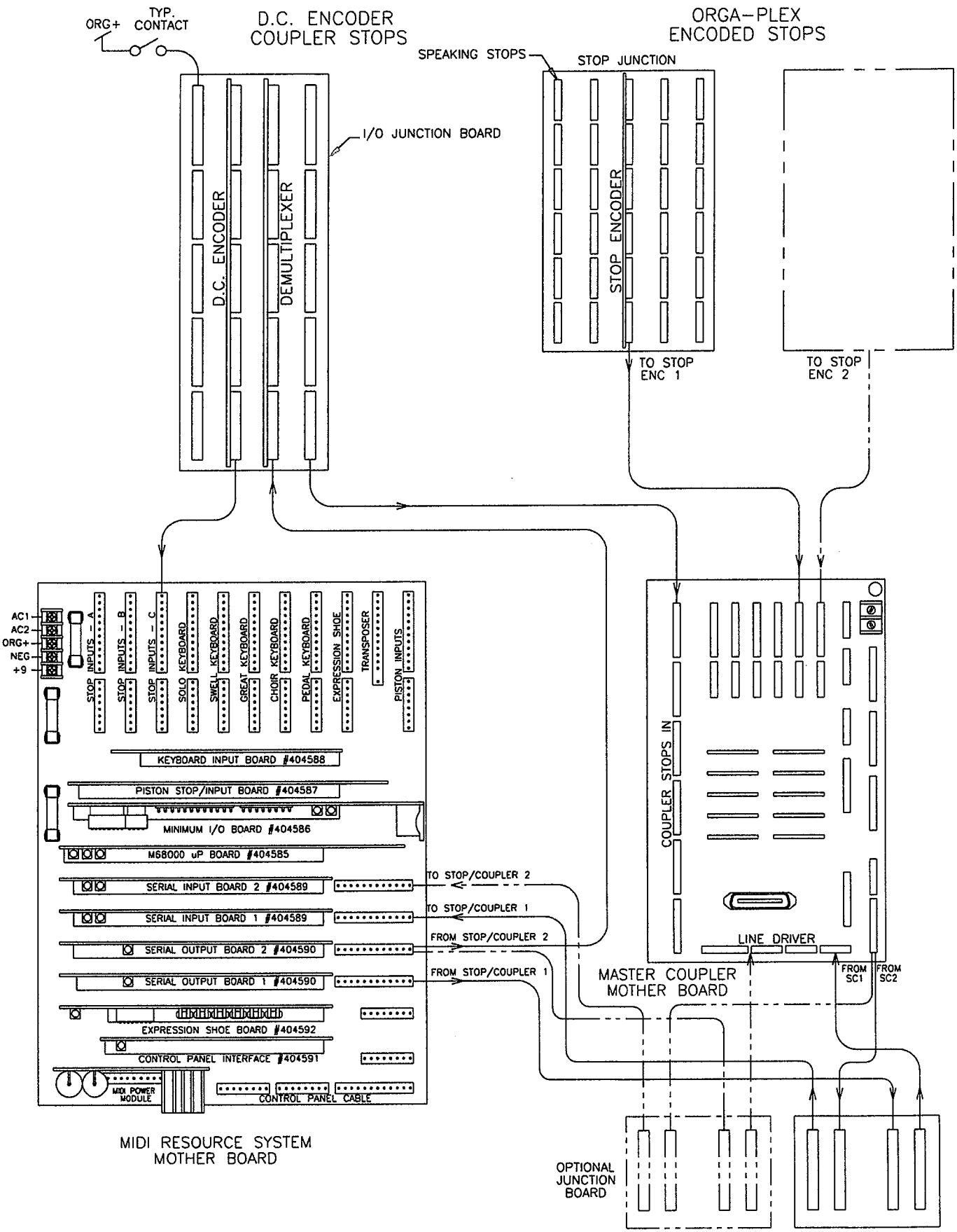
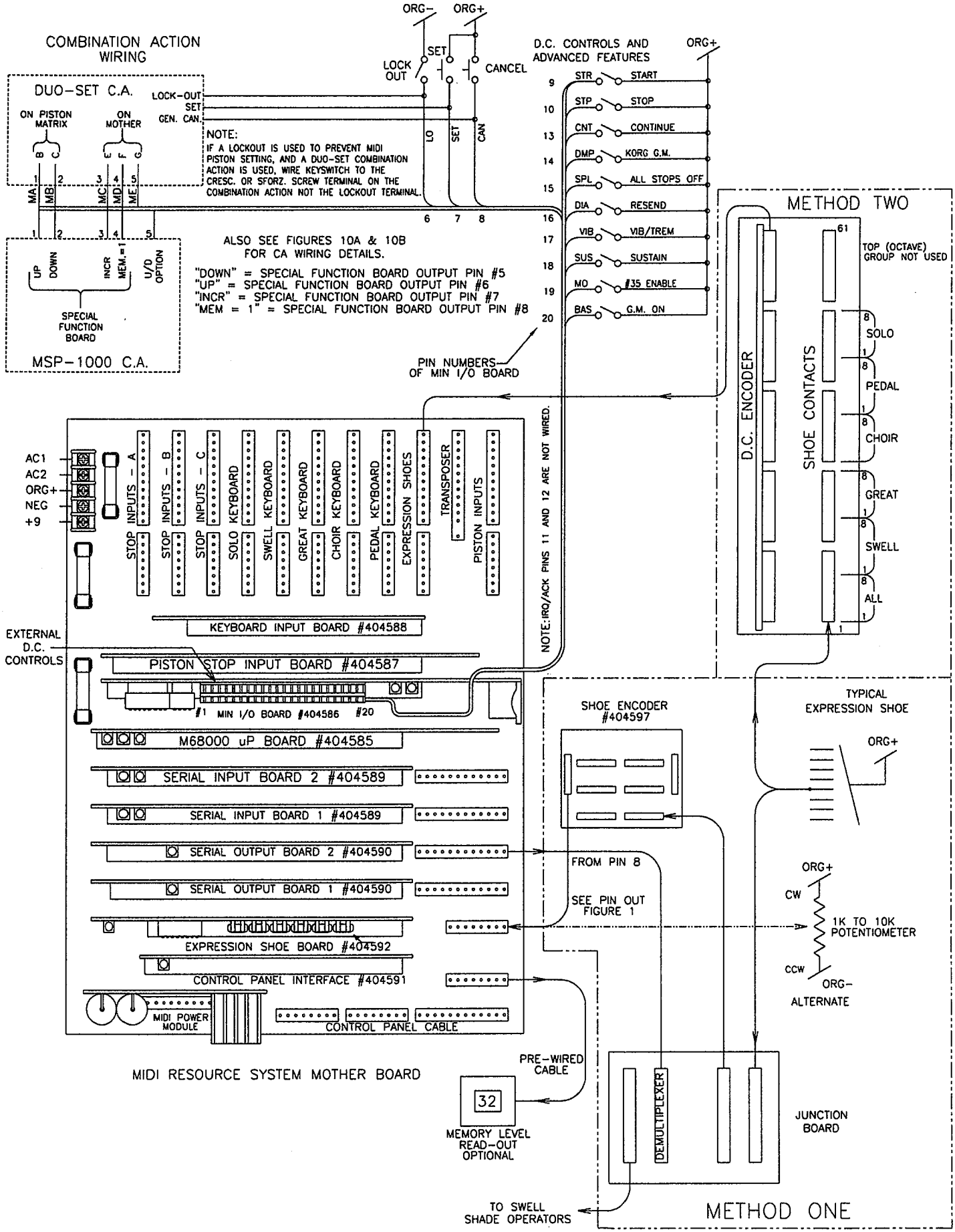


FIGURE 5

REVISED 2-2000

190185

COMBINATION ACTION ADVANCED FEATURES (MINIMUM I/O) AND EXPRESSION SHOE WIRING



REVISED 3-2002

FIGURE 6

190186

RELATIONSHIP OF D.C. ENCODED STOPS, ORGAPLEX SERIAL IN STOPS AND ORGAPLEX SERIAL OUT STOPS

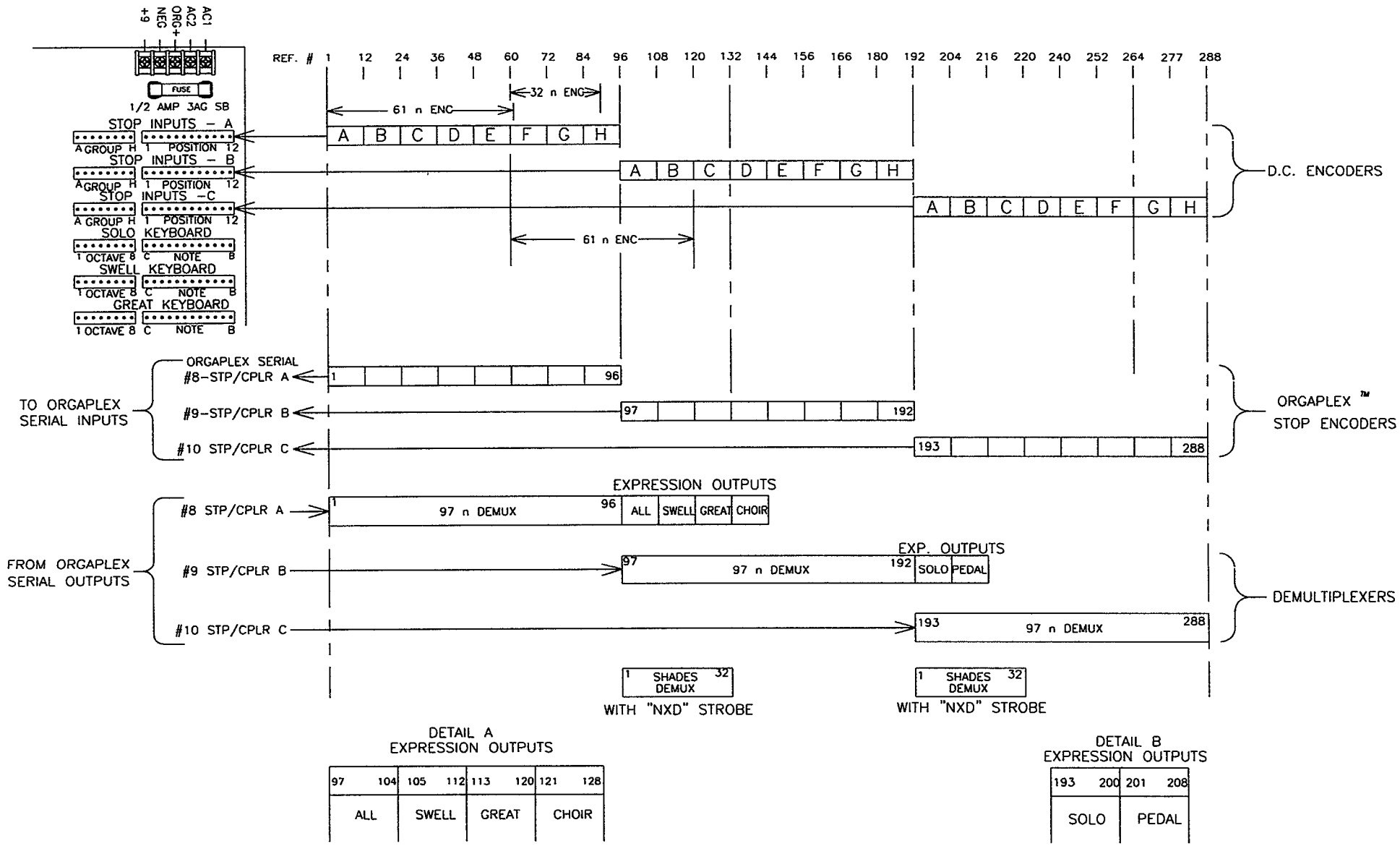


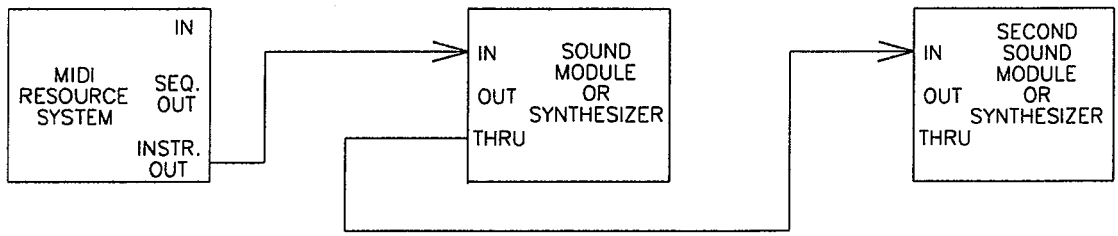
FIGURE 7

REVISED 2–2000

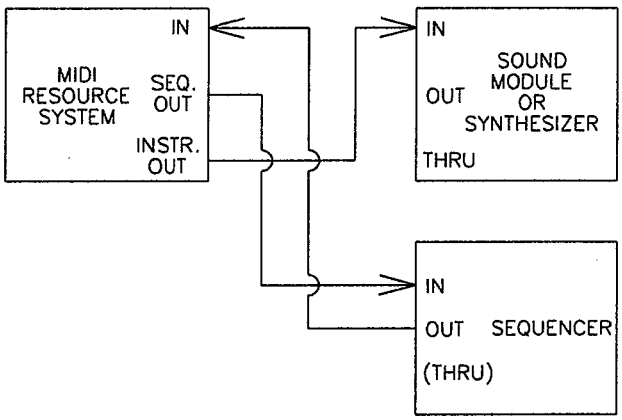
190187

TYPICAL MIDI IN, OUT, AND THRU CABLE CONNECTIONS

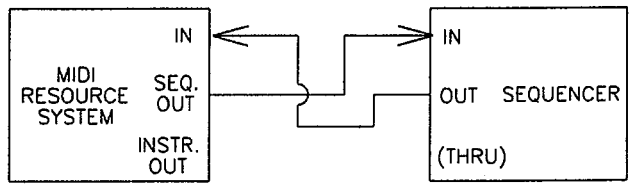
BASIC SYSTEM (PLAYING SOUND MODULE)



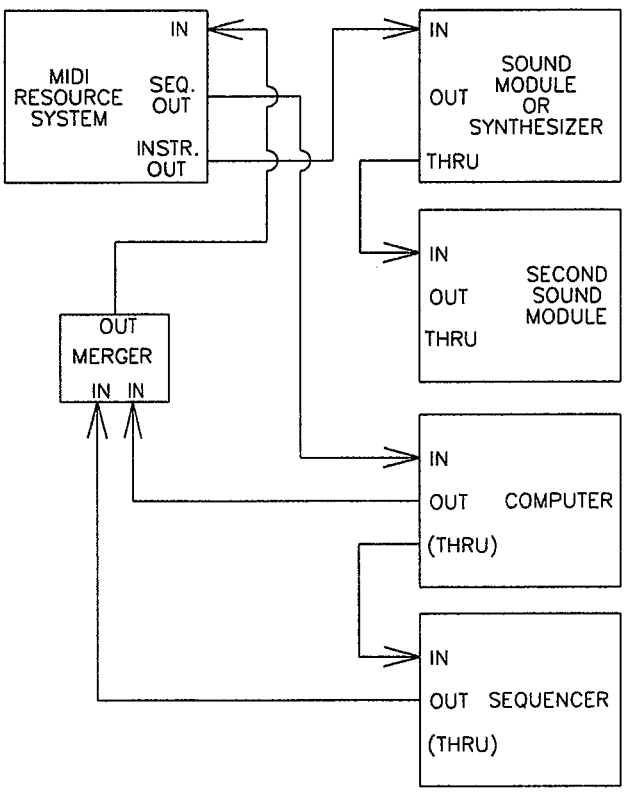
COMBINATION A



BASIC SEQUENCER (ORGAN PLAYER)



COMPLEX COMBINATION B



COMPLEX COMBINATION C

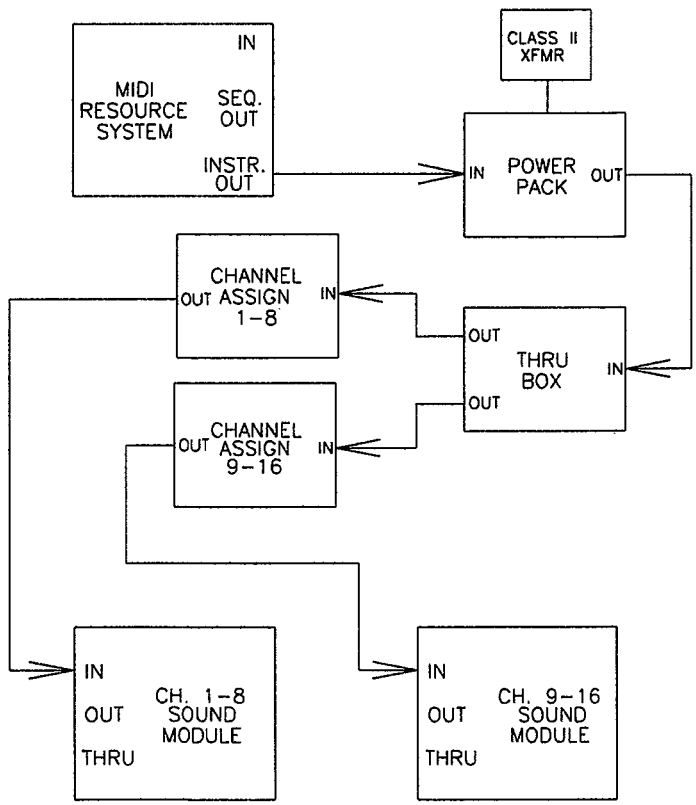
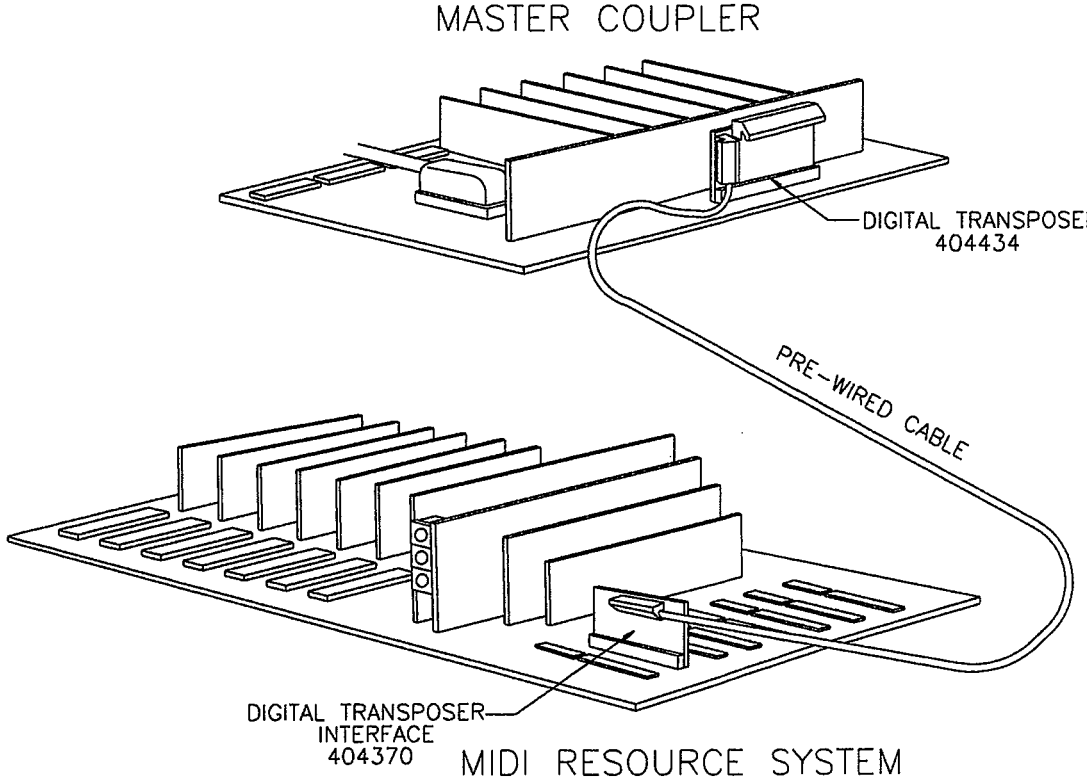


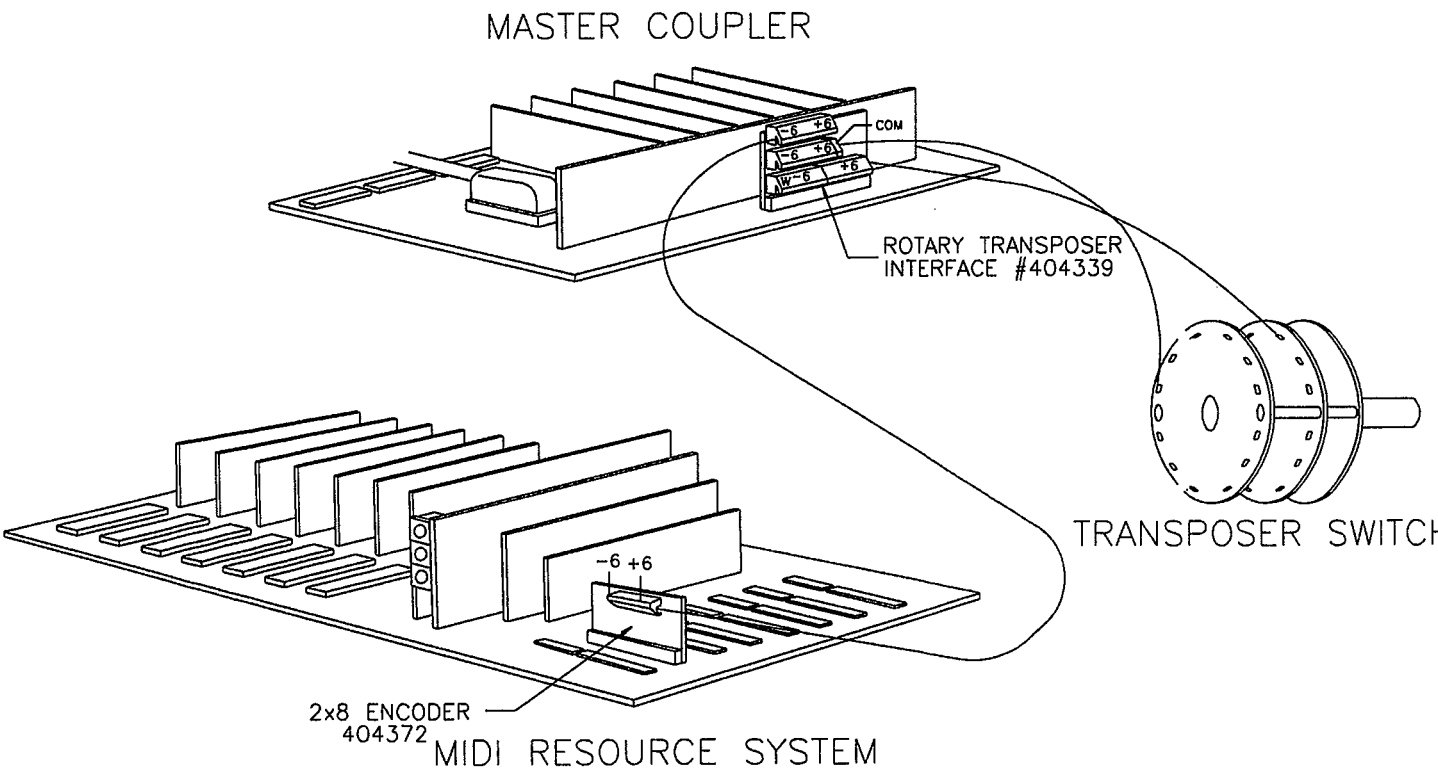
FIGURE 8

REVISED 2-2000

190188

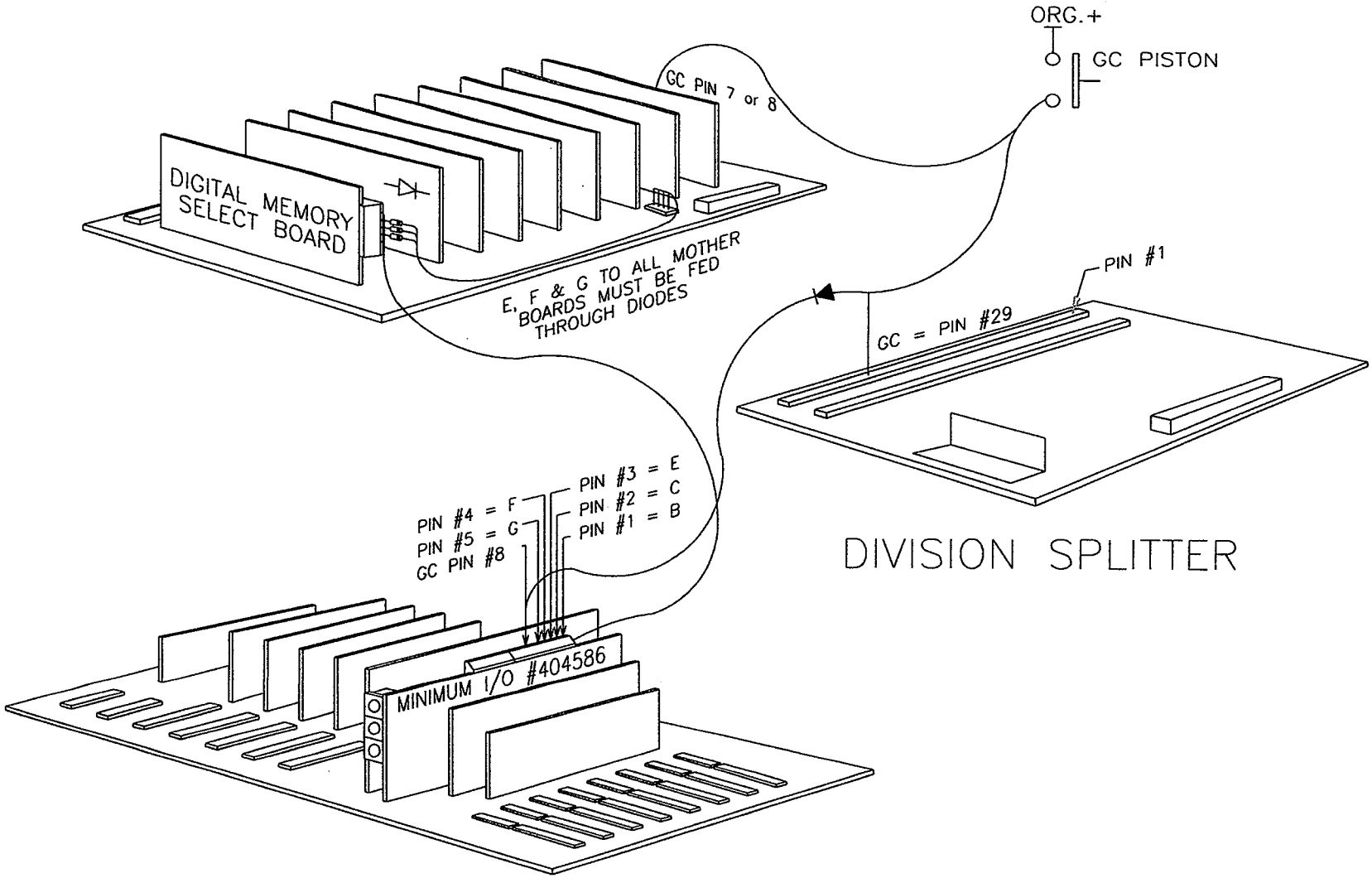


DIGITAL TRANSPOSER INTERFACE
FIGURE 9A



ROTARY TRANSPOSER INTERFACE
FIGURE 9B

MULTI LEVEL DUO-SET CA



DIVISION SPLITTER

MIDI RESOURCE SYSTEM

FIGURE 10A

SEE TEXT PAGE 8

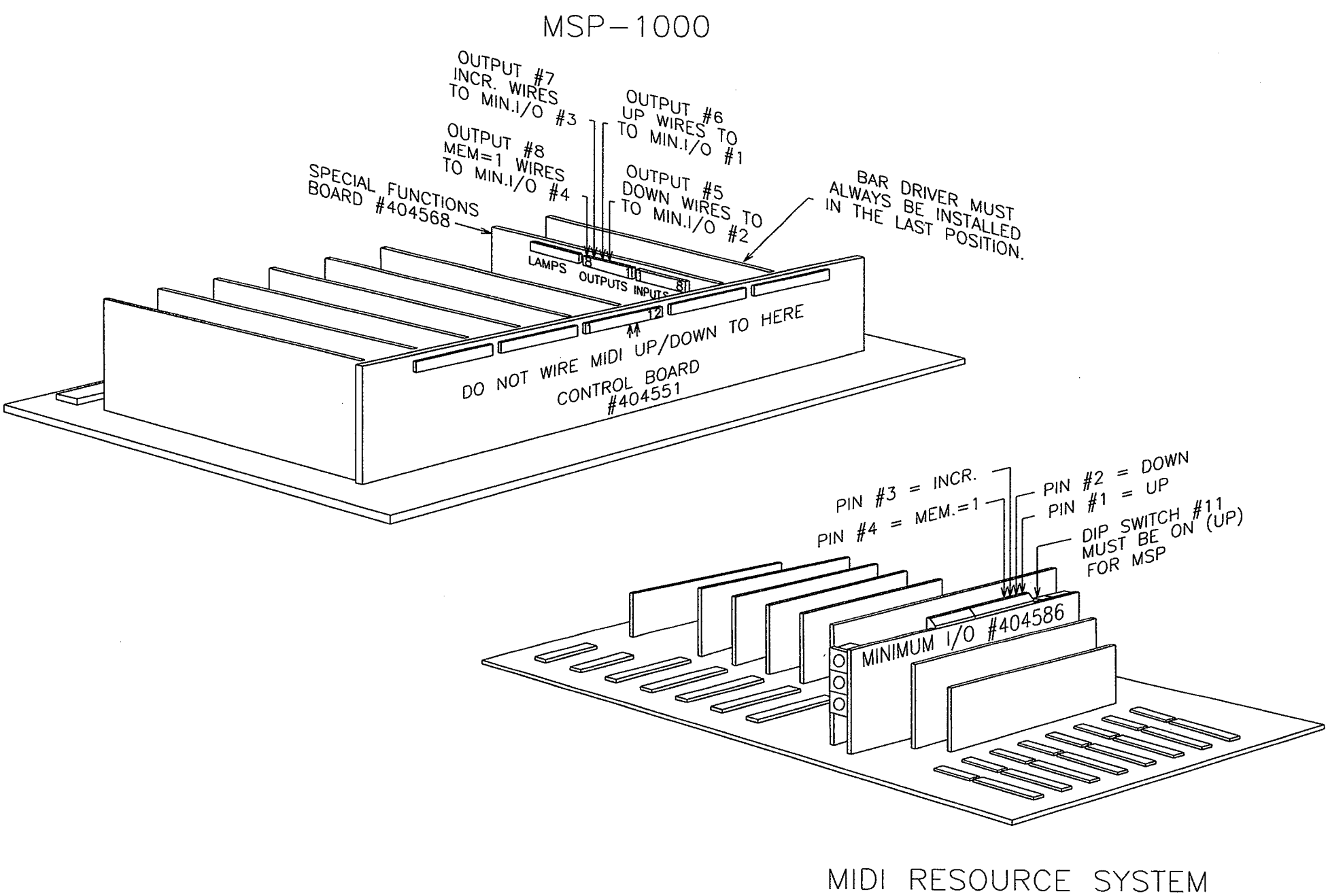
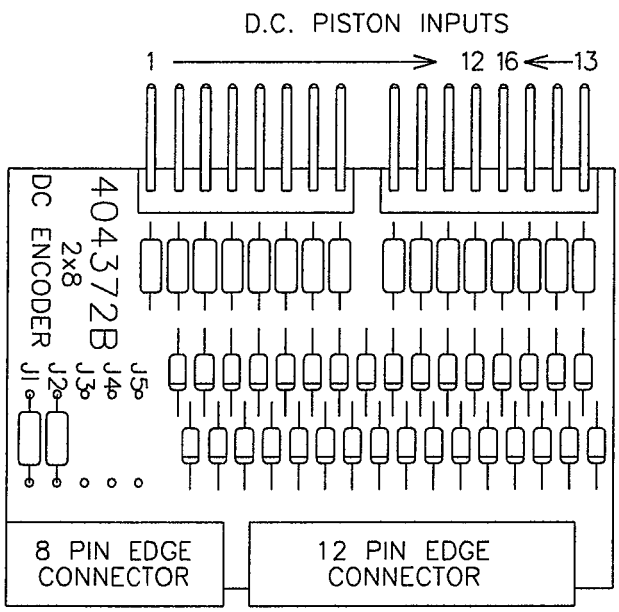


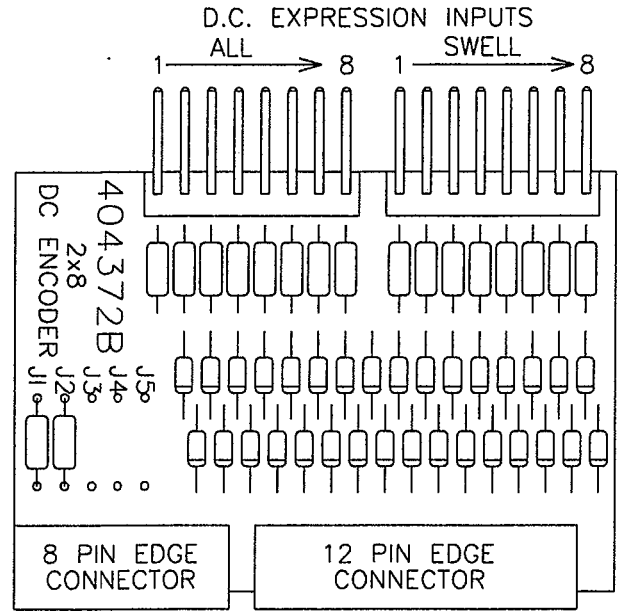
FIGURE 10B

SEE TEXT PAGE 8

PISTON ENCODER

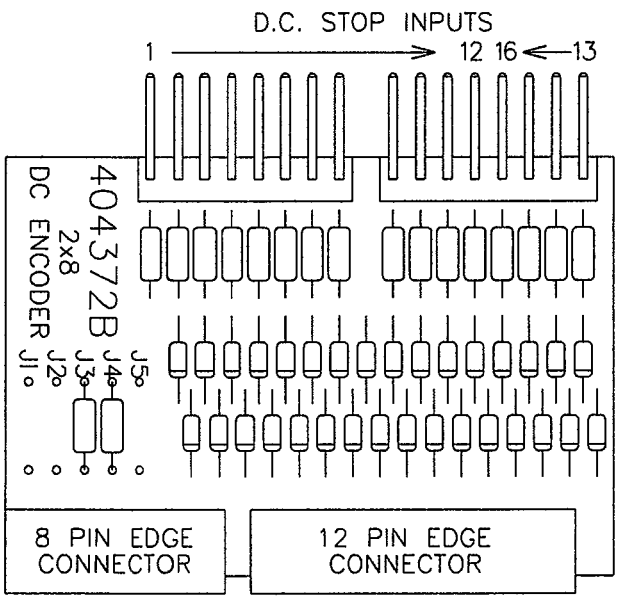


SHOE ENCODER



NOTE POSITIONS
OF J1 – J5

PRESET STOPS



TRANSPOSER

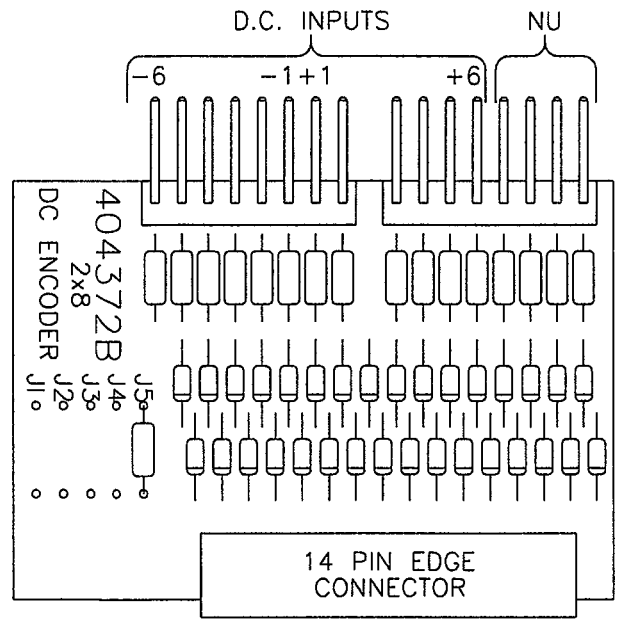


FIGURE 11

REVISED 2-2000

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DC ENCODED PLAYER ONLY SYSTEM

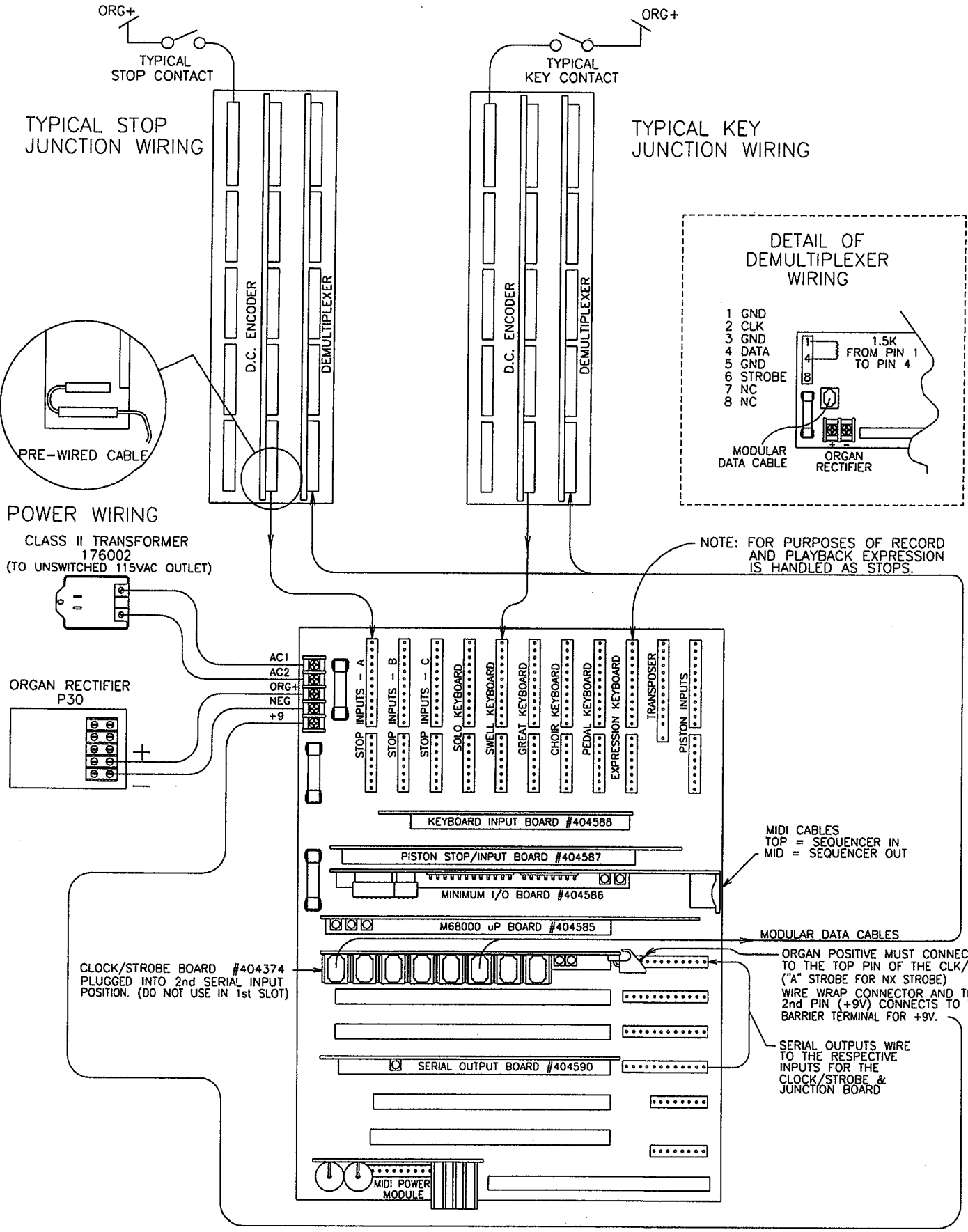

FIGURE 12

REVISED 2-2000

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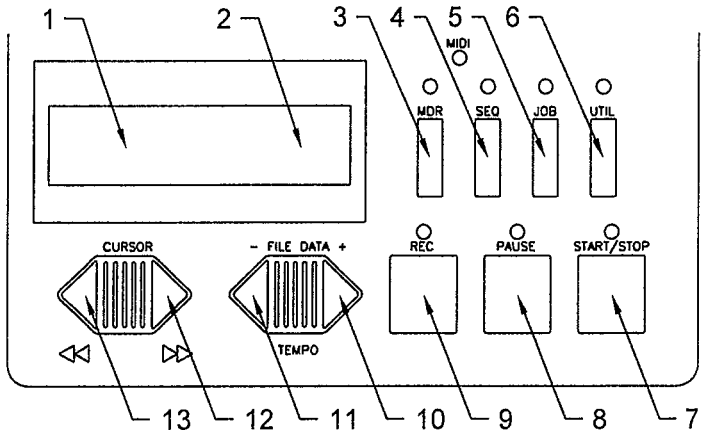
MDF3 QUICK OPERATING GUIDE



PLAY

A.-Insert Disk.
B.-Press "SEQ" #4.
C.-Select song using "FILE DATA +/-" #10-11.
(Song Number/Name displayed at #1)
D.-Press "START" #7.

While Playing

E.-TEMPO can be changed using "FILE/DATA +/-" #10-11.
F.-F.F. REWIND within a song using "CURSOR <> #12-13.
G.-PAUSE by pressing "PAUSE" #8; restart by pressing "PAUSE" again.
H.-STOP by pressing "STOP" #7.

RECORD

A.-Press "SEQ" #4.
B.-Select unused (unnamed) file using "FILE DATA +/-" #10-11.
C.-Press "REC" and "START" #9 + 10 (at same time) to begin recording.
D.-Press "STOP" #7 when finished.

FORMAT Blank Disk

A.-Press "UTIL" #6.
B.-Press "FILE DATA +" #10 four times until display reads "05:FORMAT".
C.-Press "START" #7 twice (display shows progress).

NAMING A SONG

A.-Press "UTIL" #6.
B.-Select "RENAME" using "FILE DATA +/-" #10-11.
C.-Press "START" #7.
D.-Select song to rename using "FILE DATA +/-" #10-11.
E.-Press "CURSUR >" #12 to change first character.
F.-Press "FILE DATA +/-" #10-11 to increment/decrement character.
G.-Press "CURSOR >" #12 to change second character.
H.-Repeat steps E through G until name is as desired.
I.- Press "START" #7 when finished to save name to disk.

REPEAT PLAY (ON/OFF)

A.-Press "JOB" #5.
B.-Select "01 REPEAT PLAY" using "FILE DATA +/-" #10-11.
C.-Press "START" #7.
D.-Select "ALL, 1 or OFF" using "FILE DATA +/-" #10-11.

REFER TO MDF3 MANUAL FOR FURTHER OPERATING INSTRUCTIONS.