IMPORTANT SAFETY AND INSTALLATION INSTRUCTIONS

WARNING - Whenusing electric products, basic precautions should always be followed, including the following:

1. Read all the instructions before using the product and refer to "Assembly Instructions" (where applicable) to ensure correct installation.

2. To reduce the risk of injury, close supervision is necessary when a product is used near children.

3. Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimmimg pool, or the like.

4. This product should be used only with a cart or stand that is recommended by the manufacturer.

5. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.

6. The product should be located so that its location or position does not interfere with its proper ventilation.

7. The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat.

8. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

9. This product may be equipped with.a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.

10. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.

11. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

12. The product should be serviced by qualified service personnel when:
- **a**. The power-supply cord or the plug has been damaged; or
- **b**. Objects have fallen, or liquid has been spilled into the product; or
- **c**. The product has been exposed to rain; or
- **d**. The product does not appear to operate normally or exhibits a marked change in performance; or
- **e**. The product has been dropped, or the enclosure damaged.

13. Some electronic products have benches that are either a part of the product or supplied as optional accessory. Make sure that the bench is well assembled and stable before using it.

14. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

15. **WARNING** - Do not place objects on product power cord or place it in a position where anyone could trip over, walk on or roll anything over it. Do not allow the product, or its bench, or its pedal board to rest on or to be installed over power cords of any type. Improper installations of this type create the possibility of fire hazard and/or personal injury.

16. Electromagnetic interference (RFI). This electronic product utilizes digital sampled wave processing tecnology (S.W.P.) that may adversely affect radio/tv reception. Read FCC information inside back cover for additional information.

SAVE THESE INSTRUCTIONS

SAFETY INSTRUCTIONS FOR UNITED KINGDOM ARE PRINTED OVERLEAF

SPECIAL POWER CABLE AND PLUG CONNECTING INSTRUCTIONS FOR INSTRUMENTS USED IN THE UNITED KINGDOM.

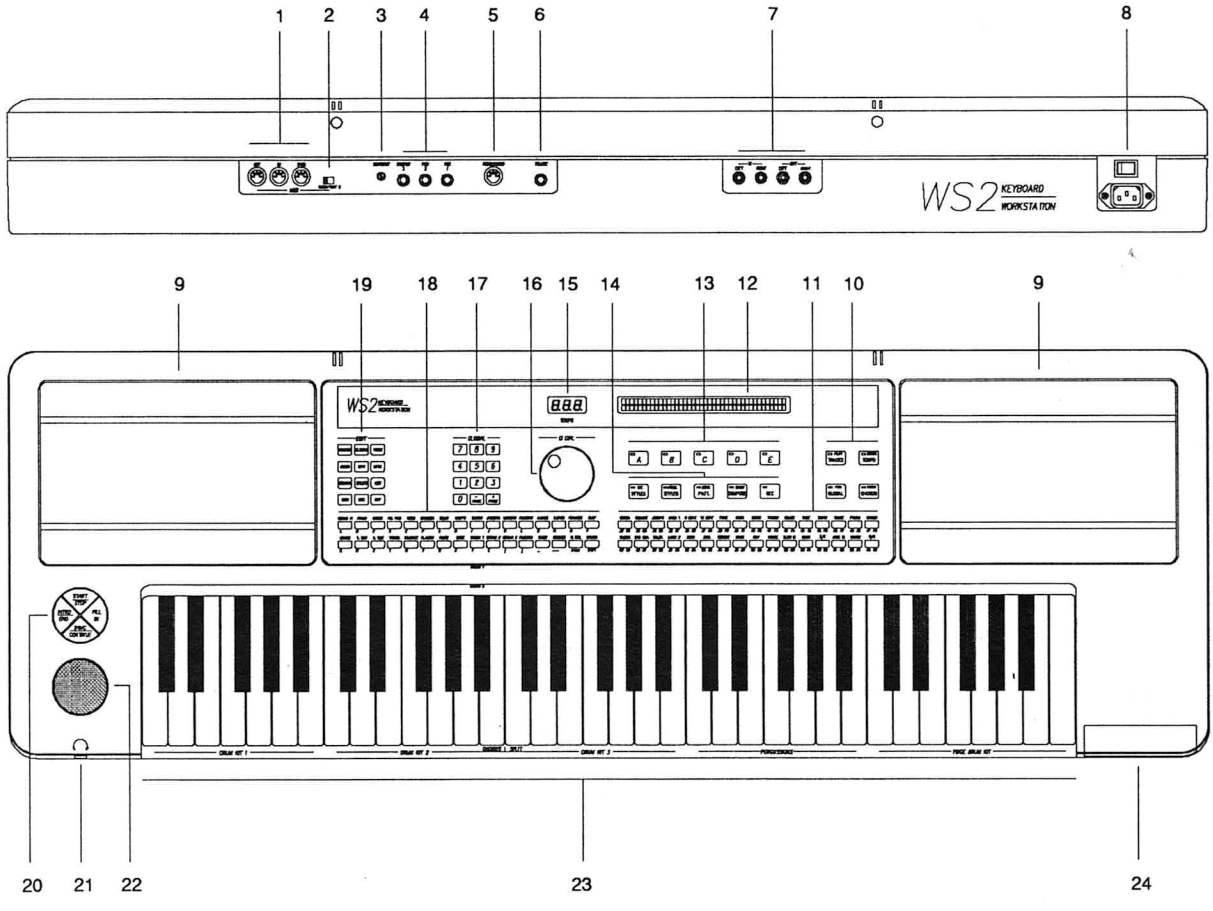
ATTENTION : This instrument must be connected to earth via the green/yellow wire in the power cable.

The three internal wires of the power supply cable have sleeving of different colours which can be used for identification as shown in the table below. When you connect the wires to the plug, refer to this table and connect each of the three wires to the respective terminal on the plug.

3 WAY CABLE		PLUG
WIRE	COLOUR	MARKING ON TERMINAL
LIVE	BROWN	Red or letter L
NEUTRAL	BLUE	Black or letter N
EARTH	GREEN/YELLOW	Green, Green/Yellow, letter E or ⏚

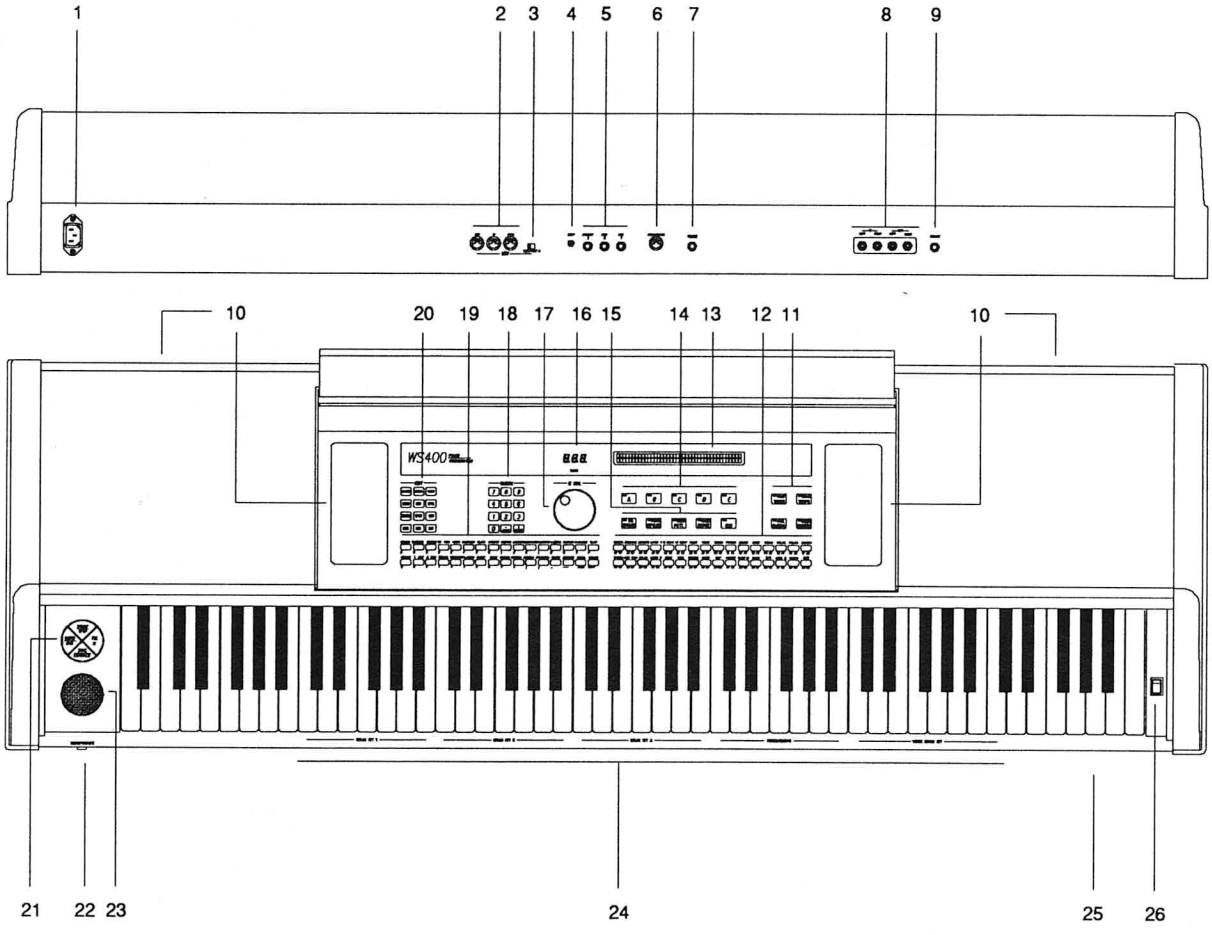
CONTROL LOCATIONS WS 2

1. MIDI SOCKETS.
2. MIDI THRU SOCKET FUNCTION SELECTOR (MIDI THRU / OUT 2).
3. CONTRAST (Brilliance control for main display).
4. SOCKETS for OPTIONAL PEDALS.
5. SOCKET FOR OPTIONAL PEDALBOARD.
6. SOCKET FOR OPTIONAL VOLUME PEDAL.
7. STEREO AUDIO INPUT / OUTPUT SOCKETS.
8. ON / OFF SWITCH - POWER CABLE CONNECTION SOCKET.
9. LOUDSPEAKERS.
10. SEQUENCER CONTROLS.
11. AUTOMATIC INTERNAL ARRANGEMENTS.
12. LIQUID CRYSTAL ALFANUMERIC DISPLAY - ILLUMINATED (Programming).
13. POLYPHONIC SECTIONS A - B - C - D - E.
14. SEQUENCER SECTIONS.
15. DISPLAY (Tempo).
16. ALPHA DIAL (For control of parameters).
17. GLOBAL SECTION.
18. VOICE SECTION.
19. EDIT SECTION (Programmable).
20. RHYTHM CONTROL BUTTONS (Start / Stop, Intro / End, Sync / Continue, Fill In).
21. HEADPHONE SOCKET.
22. PITCH / MODULATION BALL.
23. PERCUSSION INSTRUMENT KEYS (5 Separate sets).
24. OPTIONAL DISK DRIVE LOCATION.



CONTROL LOCATIONS WS 400

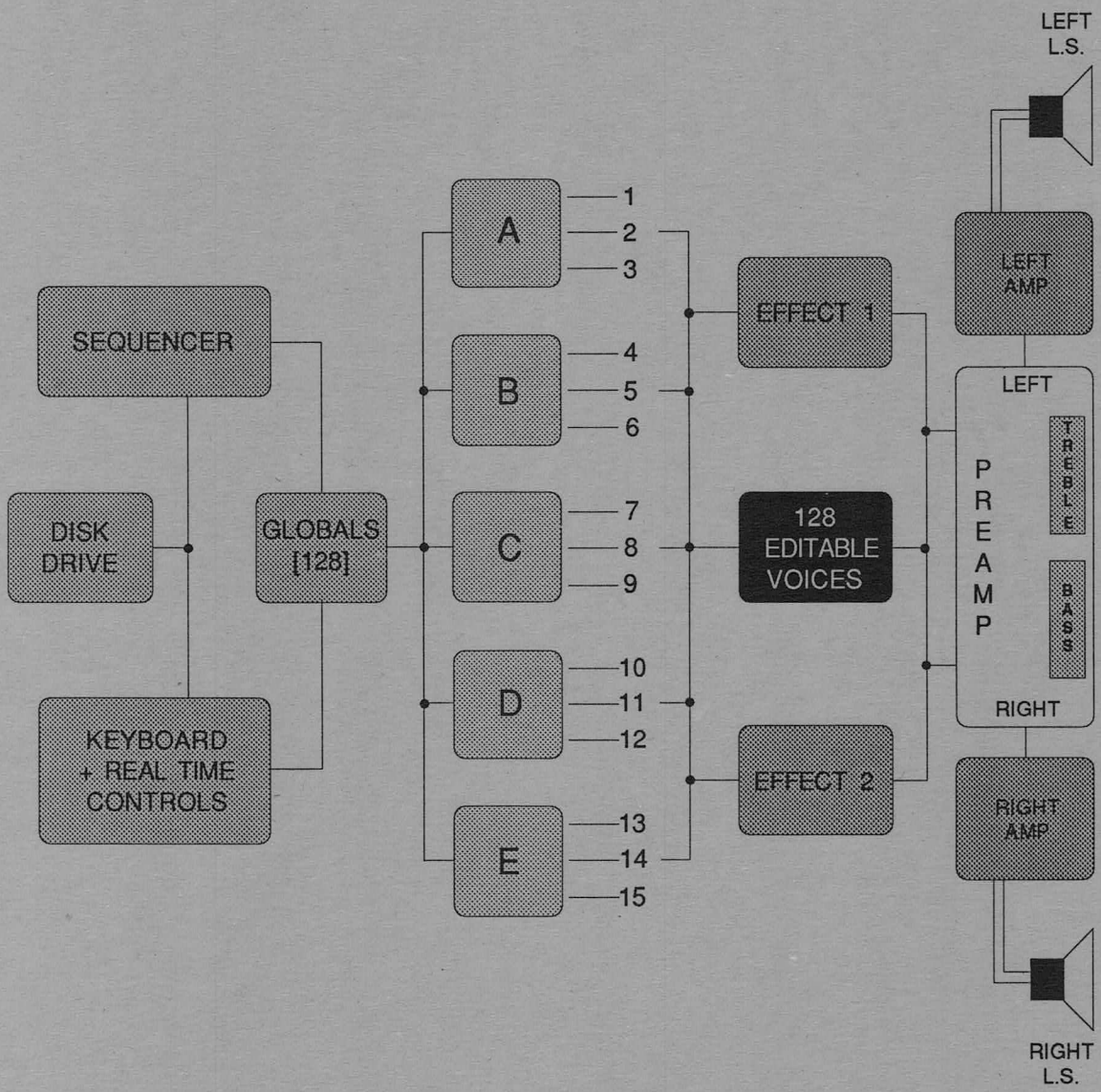
1. POWER CABLE CONNECTION SOCKET.
2. MIDI SOCKETS.
3. MIDI THRU SOCKET FUNCTION SELECTOR (MIDI THRU / OUT 2).
4. CONTRAST (Brilliance control for main display).
5. SOCKETS for OPTIONAL PEDALS.
6. SOCKET FOR OPTIONAL PEDALBOARD.
7. SOCKET FOR OPTIONAL VOLUME PEDAL.
8. STEREO AUDIO INPUT / OUTPUT SOCKETS.
9. SOCKET FOR CONNECTION OF LOUDSPEAKERS.
10. LOUDSPEAKERS.
11. SEQUENCER CONTROLS.
12. AUTOMATIC INTERNAL ARRANGEMENTS.
13. LIQUID CRYSTAL ALFANUMERIC DISPLAY - ILLUMINATED (Programming).
14. POLYPHONIC SECTIONS A - B - C - D - E.
15. SEQUENCER SECTIONS.
16. DISPLAY (Tempo).
17. ALPHA DIAL (For control of parameters).
18. GLOBAL SECTION.
19. VOICE SECTION.
20. EDIT SECTION (Programmable).
21. RHYTHM CONTROL BUTTONS (Start / Stop, Intro / End, Sync / Continue, Fill In).
22. HEADPHONE SOCKET.
23. PITCH / MODULATION BALL.
24. PERCUSSION INSTRUMENT KEYS (5 Separate sets).
25. OPTIONAL DISK DRIVE LOCATION.
26. ON / OFF SWITCH



ALPHABETICAL INDEX

NOTE : This index will enable you to quickly find all the various points regarding the functions, controls, programming operations etc. of the instrument not directly mentioned on the main section cards. For example, if you want information regarding the TRANSPOSER, not to be found in the main titles, you will see that you must consult the GLOBAL or STATUS sections.

ALPHABETICAL INDEX continued


LEFT
L.S.
LEFT
AMP
SEQUENCER
A
1
2
3
EFFECT 1
B
4
5
6
LEFT
PREAMP
TREBLE
BASS
RIGHT
DISK
DRIVE
GLOBALS
[128]
C
7
8
9
128
EDITABLE
VOICES
D
10
11
12
KEYBOARD
+ REAL TIME
CONTROLS
EFFECT 2
RIGHT
AMP
E
13
14
15
RIGHT
L.S.

INTRODUCTION

As far as **GENERALMUSIC** is concerned there is no difference between the functions of instruments such as a Digital Piano and any other keyboard, just as there is no difference between the requirements of a piano keyboard player and a player of other types of keyboard. For this reason we have employed the same generation centre for both models of the WS series which we have called: Keyboard Workstation and Piano Workstation. The substantial difference between the **WS** instruments and other existing keyboards on the market, lies in the fact that the others are evolutions or updates of the Home Keyboard concept whereas the **WS 2 Keyboard Workstation** and **WS 400 Piano Workstation** are really something new in the Home Keyboard and Digital Piano fields. The **WS 2** and **WS 400** give the best of two worlds, with an advanced synthesis of the professional functions of a Workstation combined with the ideal simplicity of use of a Home Keyboard or Digital Piano. For this reason, although designed for simple and immediate use, thanks to their flexibility they are also ideal for more advanced musicians, who will find in the **WS 2** and **WS 400**, besides the built in amplification, top quality sounds and the professional functions to which they are used to.

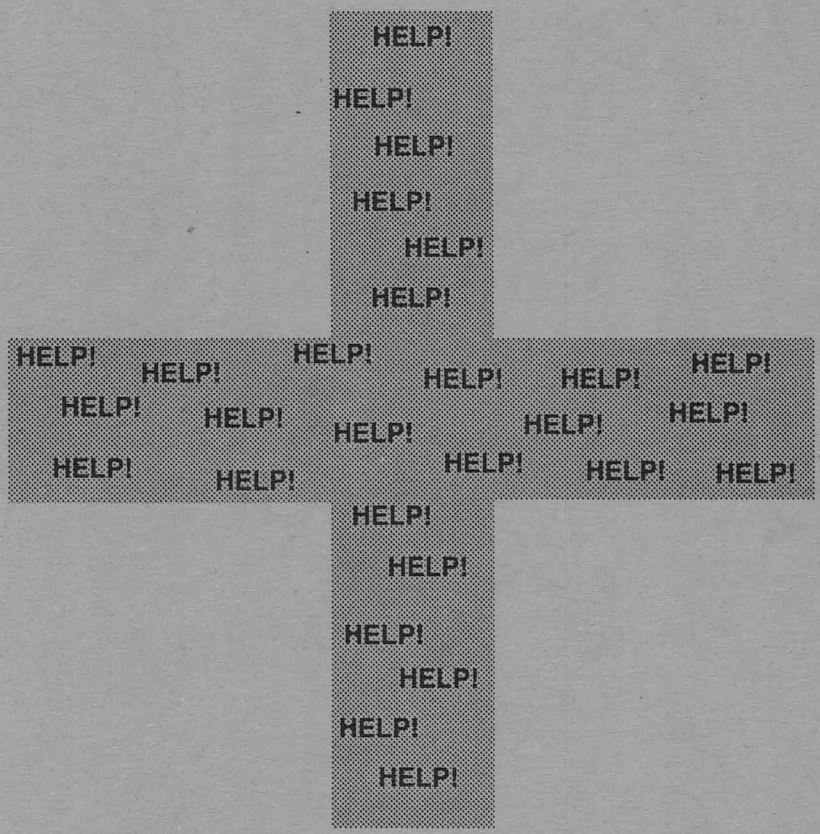
WS 2 and **WS 400** are easy instruments to use, having been designed with a great deal of attention to the ergonomics. The layout of the WS instruments enables a great deal of information to be absorbed in a very easy way, because all the manual operations and the visual control have been confined to a limited area on the control panel. The man/machine interfacing is the most evolutionary in instruments of this category:

- big 'easy to read' display
- soft keys
- alpha dial
- pitch ball

STRUCTURE AND SOUND GENERATION

La **WS 2 / WS 400** is composed of a group of elements which represent the functions of several incorporated units. The A - B - C - D and E sections correspond to 5 perfectly equivalent expanders. While in traditional instruments some sections are strictly assigned to specific functions (Drums, Bass, Accompaniment etc.) in the WS designs the 5 sections have free access to a data base with 128 editable sounds, referred to as VOICES.

Each VOICE is made up of 5 parts: Timbre, ADSSR, Modulation, Skew and Special (Dynamic Switch). A Timbre is a sound source obtained by using various tecniques of synthesis (pure PCM, multi-loop, single wavetable, crossfade loops, etc.), and forms the basis for Voice construction.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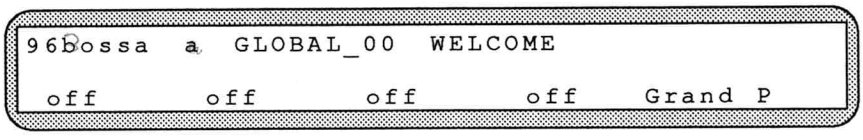
HELP!

GETTING STARTED

a. Connect the power cable supplied with the instrument to the socket on the back panel (see IN/OUT section of manual), then plug this into an A.C. power outlet socket of the correct voltage (see label on underside of the instrument).

b. Turn the instrument 'On' by pressing the switch.

c. After a few seconds the display will show the following:



From this moment the **WS** is operative !!!

BEGIN PLAYING:

* **VOICES** - Selecting the required voice.
* **GLOBALS** - Pressing the **PAGE +** e **PAGE -** buttons.
* **INT. STYLES** - Selecting an appropriate Rhythm.
* **DEMO** - Pressing **CHAIN COMPOSE**, **JUKEBOX** and then **START/STOP**.

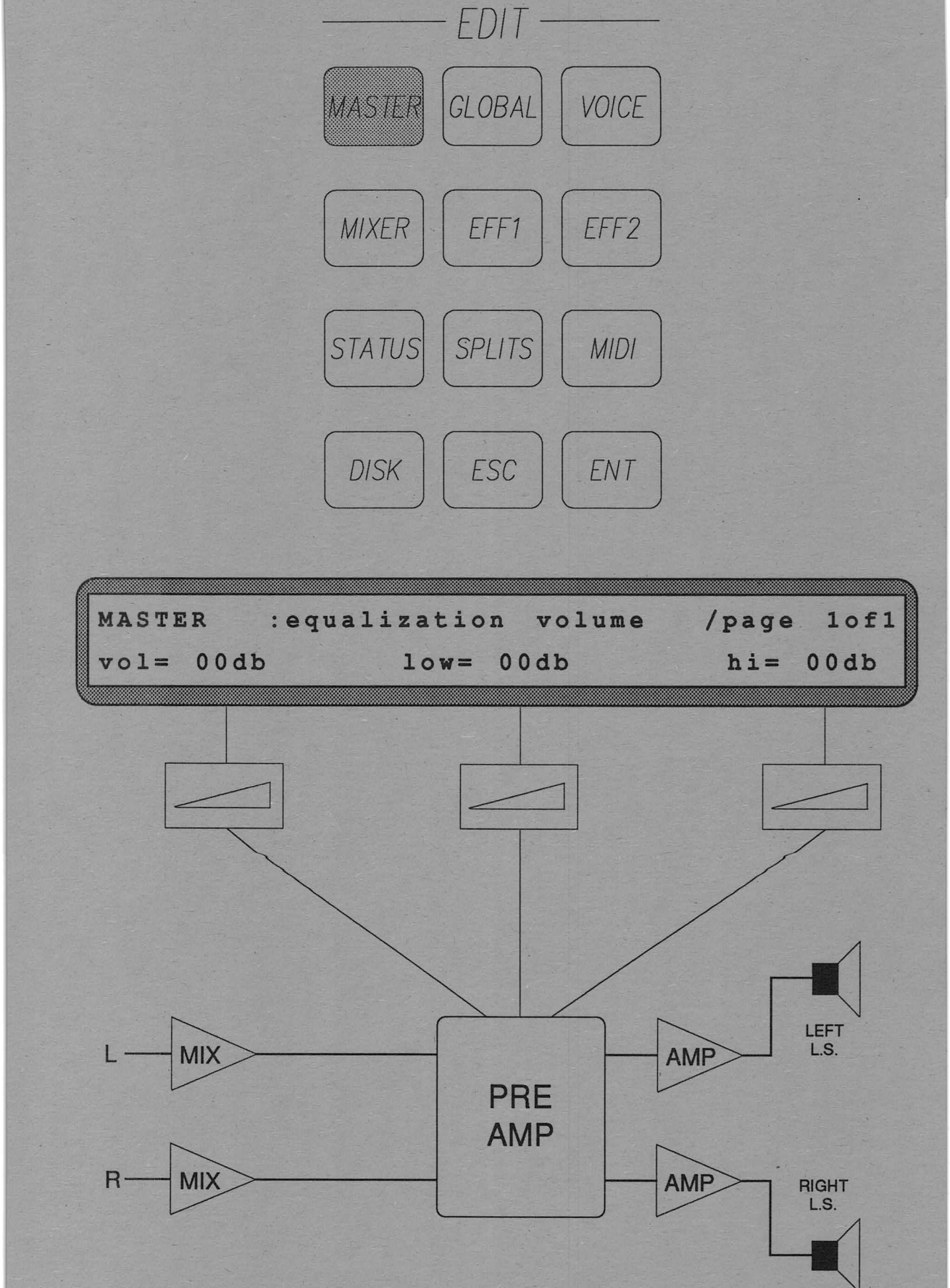
THE FIRST IMPACT WITH THE WS WILL BE VERY SURPRISING.

NOTE 1: It is advisable to try all 128 VOICES available, activating only one section (for example E), then disactivating the others (OFF). To select the VOICES not available on the front panel, see **VOICE** chapter further ahead. Check that the SPLIT of the section selected, in this case E, is positioned on A0 - C8 to obtain the full keyboard length.

NOTE 2: Carefully consult this operating manual and keep it in a safe , handy place ready to be used at any time.

BEFORE CALLING TECHNICAL ASSISTANCE

PROBLEM	REMEDY
The WS does not play over the entire keyboard:	Control the SPLIT extensions in all the sections.
No sound is heard:	Control that the MASTER VOLUME is advanced from the zero point.
The tonality of the sound is strange:	Verify that the 5 sections A B C D E , in the 2nd and 3rd pages of the GLOBAL menu, are all positioned on 00.
Effects 1 and 2 are not heard:	Activate the relative sections (ON).
The selected effect is not active:	Press **ENT.** after selecting the effect.
The PITCH MODULATION BALL does not work in all sections (A B C D E):	Activate the relative sections (ON).
The sound is heard to be coming from only one loudspeaker:	Select the **CENTRE** function for the relative sections in page 2 of the MIXER menu. (see **MIXER** further ahead).
It is not possible to make any type of recording:	The recording space in the memory of the WS is full. Cancel some data or transfer the contents to a disk.
MIDI The instrument is not capable of receiving MIDI messages:	Control that the cable connections have been made satisfactorily.
It is not possible to make a syncronization:	Select that the EXTERNAL CLOCK mode has been selected if this is not so.
Pressing the **START/STOP** button the rhythm does not start:	Control that the sections are not 'OFF' or empty; also check that the EXTERNAL CLOCK mode has not been selected.


EDIT
MASTER
GLOBAL
VOICE
MIXER
EFF1
EFF2
STATUS
SPLITS
MIDI
DISK
ESC
ENT
MASTER :equalization volume /page 1of1
vol= 00db low= 00db hi= 00db
L
MIX
R
MIX
PRE
AMP
AMP
AMP
LEFT
L.S.
RIGHT
L.S.

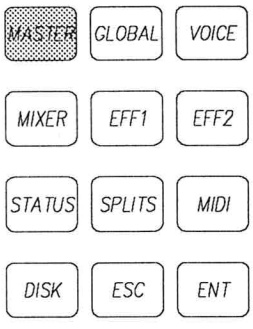
MASTER

DESCRIPTION

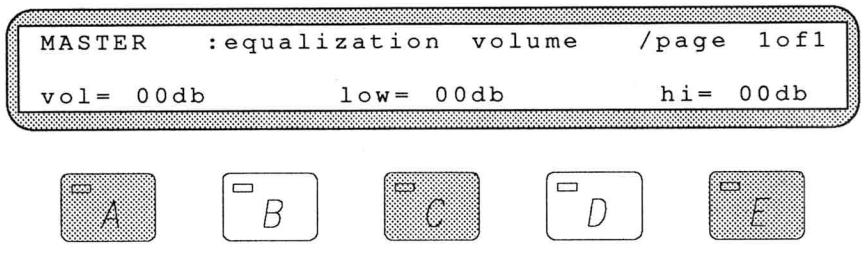
The **MASTER** is the "Control Centre" of the digital pre-amplifier of the **WS**.

MASTER : Overall volume control. (-68dB +10dB)
LOW : Bass tone control (- 12 + 12 dB at 80 Hz).
HI : Treble tone control (- 12 +12 dB at 5 KHz).

EDIT



Press **MASTER** in the EDIT section, when the display will show the following menu:



OPERATING PROCEDURE

To vary the OVERALL VOLUME of the instrument:

1. Press button **A** under the display.
2. Turn the **ALPHA DIAL** until the required volume is obtained.

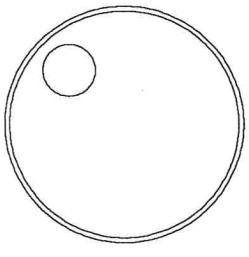
To vary the **BASS** tones:

1. Press button **C**.
2. Turn the **ALPHA DIAL** until the required BASS tone level is obtained.

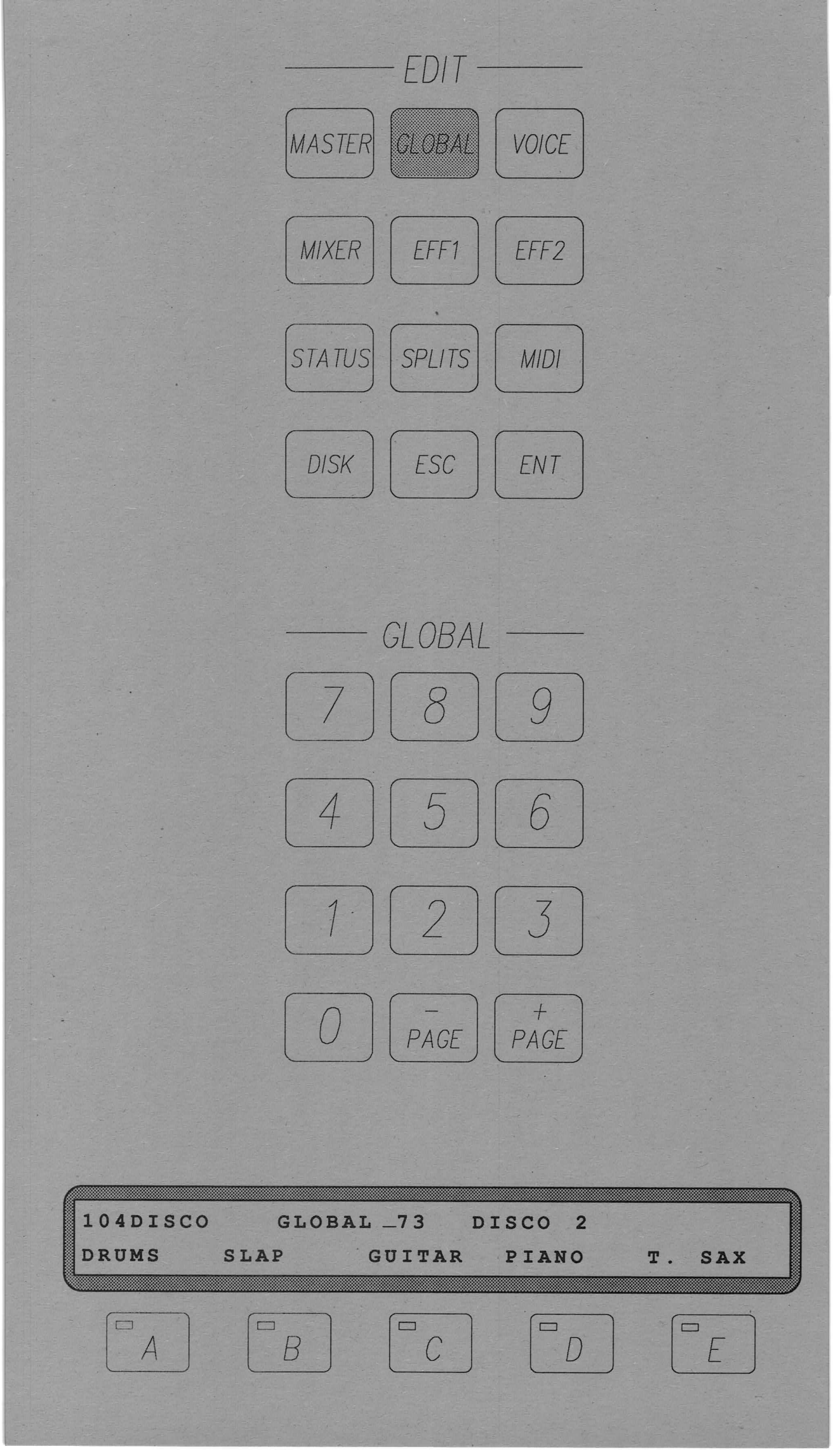
To vary the **TREBLE** tones:

1. Press button **E**.
2. Turn the **ALPHA DIAL** until the required TREBLE tone level is obtained.

α DIAL



WARNING - You are advised not to use an eccessive level of BASS **tones (more than 4 db) when the** OVERALL VOLUME **control is near to it's maximum level. On the contrary, when the** OVERALL VOLUME **is at a low level, you should increase the level of the** BASSES **to compensate for the physiological loss of sensitivity at these frequencies.**


EDIT
MASTER
GLOBAL
VOICE
MIXER
EFF1
EFF2
STATUS
SPLITS
MIDI
DISK
ESC
ENT
GLOBAL
7
8
9
4
5
6
1
2
3
0
- PAGE
+ PAGE
104DISCO GLOBAL _73 DISCO 2
DRUMS SLAP GUITAR PIANO T. SAX
A
B
C
D
E

GLOBAL

DESCRIPTION

This function incorporates 128 programmable GLOBAL PRESETS. Any panel set up can be memorized by means of each of these. A SEVEN PAGE DISPLAY for each GLOBAL allows all the main controls of the instrument to be immediately programmed, and furthermore: MIDI (8 simultaneous channels), MIXER, EFF. 1/2, SPLITS. All these parameters can be independently memorized in each of the 128 GLOBAL PRESETS. They are sub-divided into 4 groups of 32 as follows:

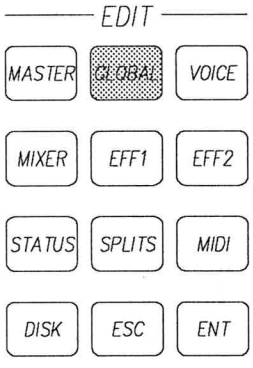
00 - 31 - REAL TIME (Direct call up).
32 - 63 - SONG PATT. (Recalled by the relative functions of the SEQ.).
64 - 95 - PROG. STYLES (Programmable Arrangements).
96 - 127 - INT. STYLES (Internal Arrangements).

To memorize a panel set-up by means of a GLOBAL:

1. Press **ENT** in the EDIT section.

2. Turn the **ALPHA DIAL** to select the desired GLOBAL.

3. Repress **ENT**.



PROGRAMMING PROCEDURE

Select the 7 pages of the GLOBAL function displays as follows:

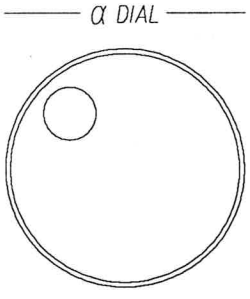
1. Press **GLOBAL** in the EDIT section.

2. Press **PAGE+** to advance the display to the next page. (Press **PAGE-** to show the previous page display).

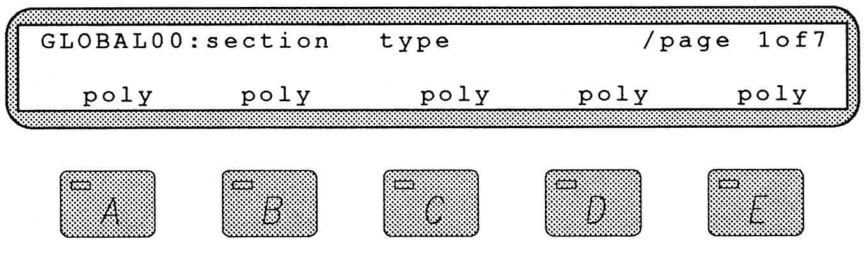
To modify the state of the parameters of a GLOBAL:

1. Press the corresponding button **(A - E)**.

2. Turn the **ALPHA DIAL** to select the desired value or state.



PAGE 1 (SECTION TYPE)



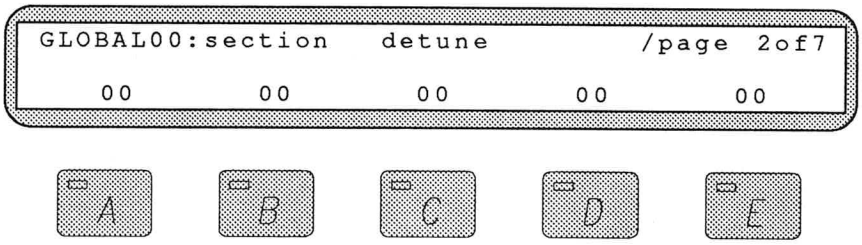
SECTION TYPE enables you to select the working mode of the keyboard, section by section (poly, mono L or mono R).

POLY controls a specific section polyphonically. (When only one section is activated in **POLY**, the keyboard can be played with16 note polyphony).

MONO L. : The specific section is controlled monophonically, playing **the extreme left hand note only.**

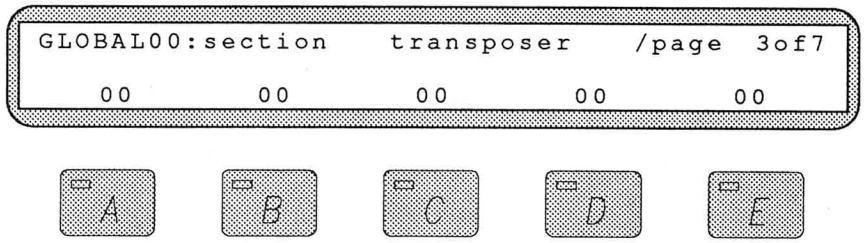
MONO R. : The specific section is controlled monophonically, playing **the extreme right hand note only.**

PAGE 2 (SECTION DETUNE)



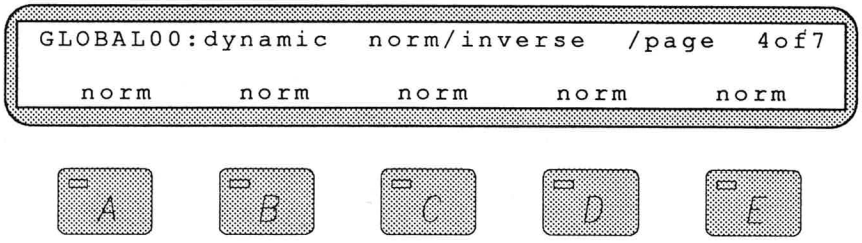
SECTION DETUNE controls the DETUNE for each section (+ 32 to - 32).

PAGE 3 (SECTION TRANSPOSER)



SECTION TRANSPOSER performs the individual transposition of each section in steps of one semitone. (-24 +24

PAGE 4 (DYNAMIC NORM / INVERSE)

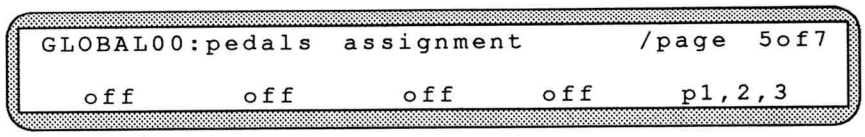


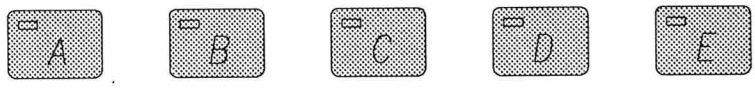
DYNAMIC NORM / INVERSE controls the dynamics of the keyboard for each section.

NORM : Each specific section plays from soft to loud (normally) when **NORM** is selected.

INVERSE : Each specific section plays from loud to soft (inversally) when **INVERSE** is selected.

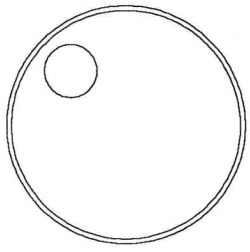
PAGE 5 (PEDALS ASSIGNMENT)





PEDALS ASSIGNMENT controls the pedal assignment (P1, P2, P3) section by section. By selecting the following combinations with the ALPHA DIAL the various pedals can be activated and disactivated **in the specific sections**.

α DIAL



OFF : The functions of **P1, P2, and P3** are disactivated.

P1 : The function of **P1** is active.

P2 : The function of **P2** is active.

P1, P2 : The functions of **P1 and P2** are active.

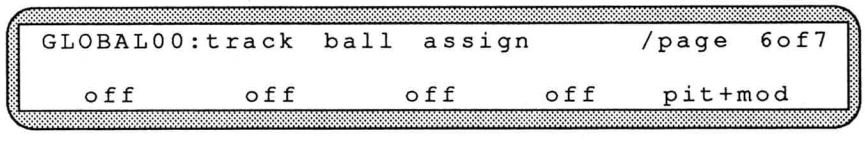
P3 : The function of **P3** is active.

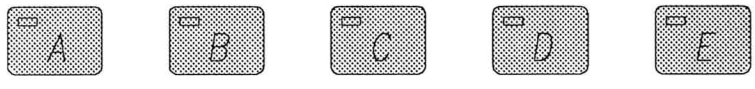
P1, P3 : The functions of **P1 and P3** are active.

P2, P3 : The functions of **P2 and P3** are active.

P1, P2, P3 : The functions of **P1, P2 and P3** are active.

PAGE 6 (TRACK BALL ASSIGN)





TRACK BALL ASSIGN, by means of the ALPHA DIAL activates the PITCH and MODULATION functions in the specific sections, as seen below:

NOTE: The frequency range of the **PITCH** (GLISSATO) and **MODULATION** (VIBRATO) is fixed.

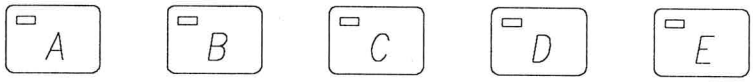
OFF : The **PITCH** and **MODULATION** functions are disactivated.

PITCH : The **PITCH** function is active.

MOD. : The **MOD.** function is active.

PIT+ MOD. : The **PITCH** and **MOD.** functions are active.

PAGE 7 (CHANGE GLOBAL NAME)



NOTE 1: Up to 7 characters can be used to write a name.

CHANGE GLOBAL NAME enables you to assign a name to a specific GLOBAL.

PROCEDURE

To write the name of a GLOBAL on the display:

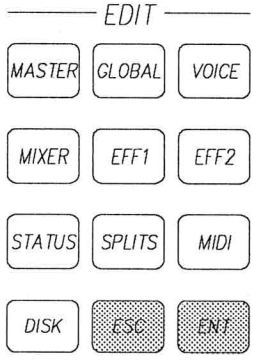
1. Use the 32 Voice selection buttons, marked with the letters of the alphabet.
2. To obtain CAPITALS, keep the button marked **SHIFT** pressed down.
3. To correct any errors, press the button marked with an arrow.

NOTE 2 : It may be necessary to press **ESC** before **ENT**, in a case where you are in an internal programming page in a particular part of the programming.

TO SAVE

To save a GLOBAL, after having written a new name:

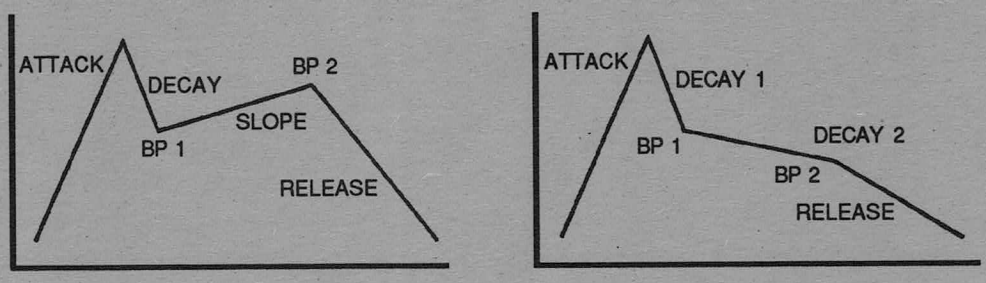
1. Press **ESC** (ESCAPE), if necessary.
2. Press **ENT** (ENTER).
3. Select the GLOBAL number desired, with the **ALPHA DIAL**.
4. Repress **ENT** (ENTER).




```
VOICE16  :voice  name  :Brass        /  ESCAPE
[TABLES][ADSSR  ][  MOD.  ][SKEW  ][SPECIAL]
```

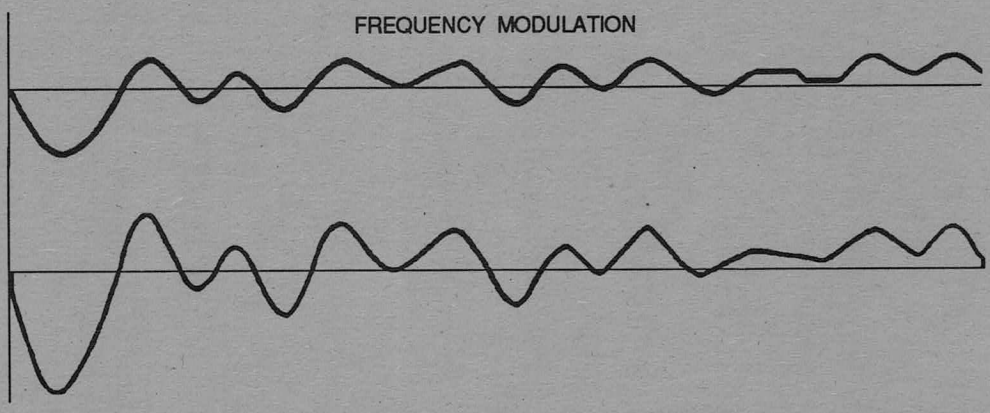
TIMBRE = 64 TIMBRES

ADSSR =

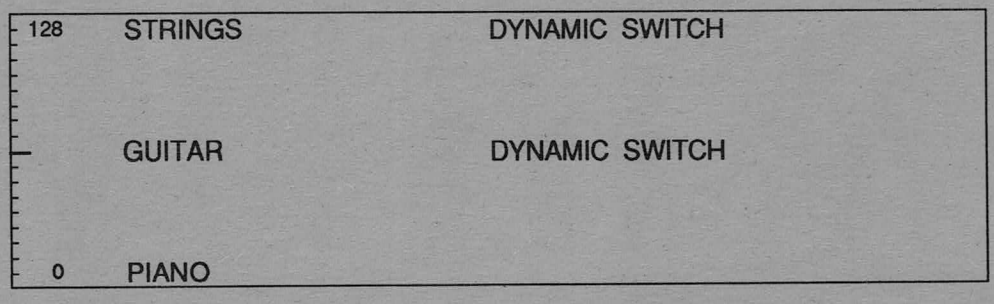


MOD. =

SKEW =



SPECIAL =



VOICE

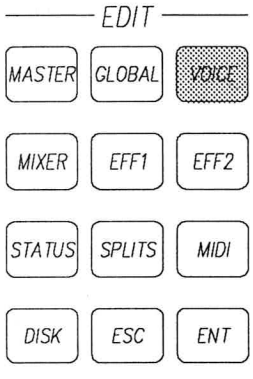
DESCRIPTION

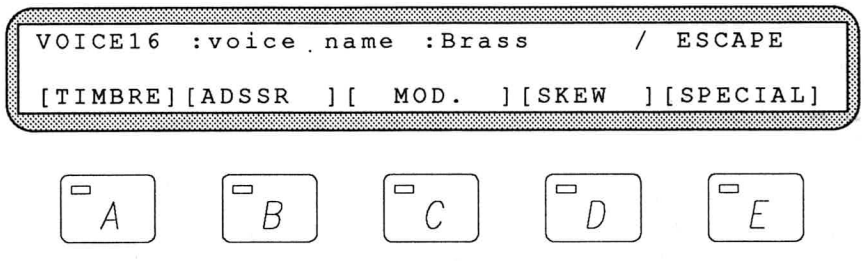
The WS has 128 VOICES, 32 of which can be selected directly from the control panel by means of the respective buttons marked with the name of the voices.The others are selected by turning the ALPHA DIAL, while simultaneously pressing the button marked A. DIAL, on the extreme right hand side of the buttons,

The selected timbre will be assigned to the section shown flashing on the display. Repressing the relative button of an already flashing section will stop this flashing and show 'OFF' in that position. The previous section to the one just disactivated will be automatically activated to accept a change in the voice and the relative cursor will start flashing.

VOICE EDIT

The VOICE function permits modifications in the voice to be made. To enter the VOICE mode, press **VOICE** in the EDIT section (see design on the left). On entering this mode, the display shows 5 EDITING sections TIMBRE - ADSSR - MOD. - SKEW - SPECIAL, as shown below, each one containing the respective parameters for that section.





EDITING PROCEDURE

The same basic procedure is used to edit all the parameters in the various EDITING sections.

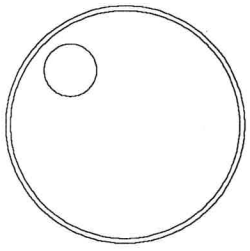
TIMBRE

The TIMBRE section of the ROM memory of the WS contains all the sound samples, tables, PCM sections (Pulse Code Modulation), special waveforms, for the basic sound generation and their envelopes. In effect, the TIMBRE is the only part of the WS that cannot be modified completely, in that it is permanently memorized in the 2 Megabyte ROM. By pressing, therefore button **A** (TIMBRE), after entering into the VOICE / EDIT mode, it is possible, by turning the **ALPHA DIAL**, to run through all the Timbres of the WS while maintaining unvaried the other 4 macroparameters (ADSSR - MOD. - SKEW - SPECIAL) which make up the VOICE. If, for example, you start with a Vibes voice which uses a percussive type of envelope, by modifying the TIMBRE to **Flute** or **Sax**, you can obtain a Percussive Flute or Sax voice.
This is a very quick and convenient way to modify or construct new

voices using ready made parameters coming from other voices.

With the display showing as on the previous page, select the voice to be edited by means of the **ALPHA DIAL**, then press **button A** to select the TIMBRE display as shown below. It is now possible to programme the three parameters in the TIMBRE function as follows:

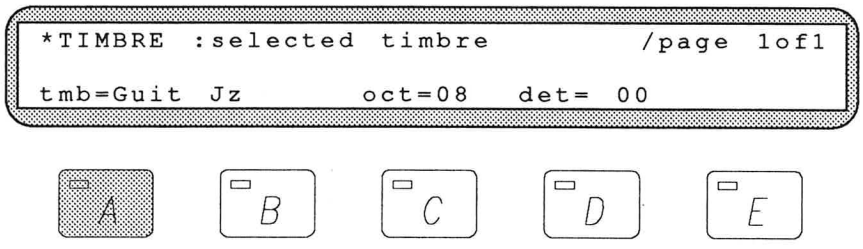
α DIAL



NOTE 1: A complete table of the basic TIMBRES can be found in the **EXTRA INFO** section (Technical Specification).

TIMBRE

1. Repress **button A**; the display will now show:



2. Select the TIMBRE by means of the **ALPHA DIAL** (see note 1).

You can now proceed with the programming of the other parameters shown in this display as follows:

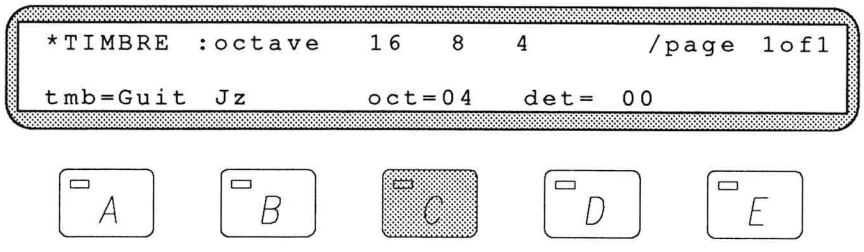
OCTAVE

To programme OCTAVE do as follows:

NOTE 2 : The reference footage of an 88 note piano is 8'.

NOTE 3 : All changes made in the various parameters can be memorized individually or collectively by twice pressing **ENT**, in the EDIT section, at any stage in the procedure .

1. Press **button C** corresponding to OCTAVE. The display will change to:



16' - 8' and 4' are numbers that refer to the length of an organ pipe, expressed in feet, and is inversely proportional to the frequency of the note produced. When referred to a modern instrument, these numbers refer to the pitch of the note in relation to the ottave played. This means that, with respect to an 8' pitch, when you select 4', the sound will be **raised** by one octave, whereas the selection of a 16' pitch will cause the sound to be **lowered** by one octave.

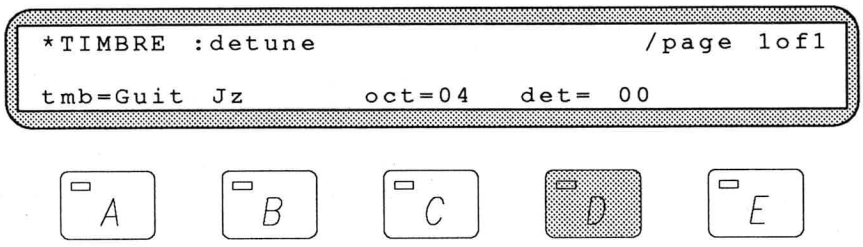
2. Select the required OCTAVE (footage 16', 8' or 4') by turning the **ALPHA DIAL.**

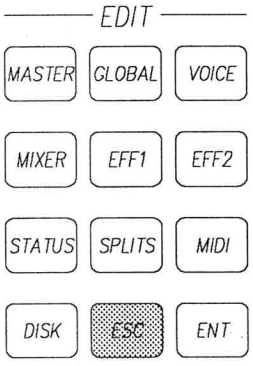
DETUNE

This parameter enables you to programme the frequency offset of the

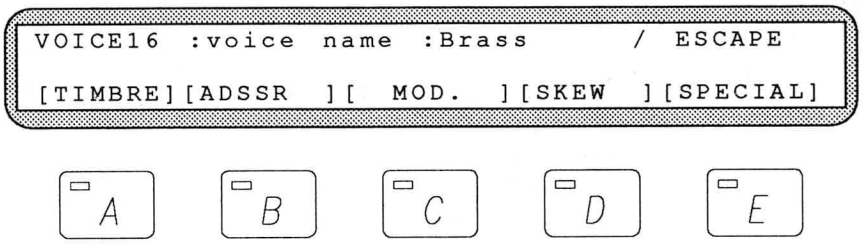
two oscillators used in the sound generation in symmetrically opposed-steps.
To programme the DETUNE of the oscillators, follow this procedure :

1. Press **button D** corresponding to DETUNE. The display will show as below:



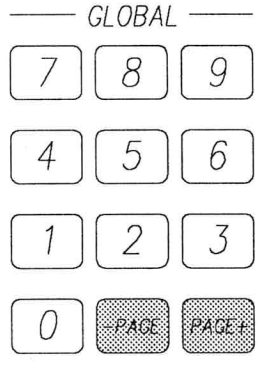


2. Change the DETUNE value with the **ALPHA DIAL.**
Having programmed the parameters in the TIMBRE function, press **ESC** in the EDIT section (see left) to return to the main VOICE menu as below:



You can proceed with the programming of the remaining four functions in the VOICE menu. With the display as above, press **button B** under the display to open the ADSSR pages of parameters.

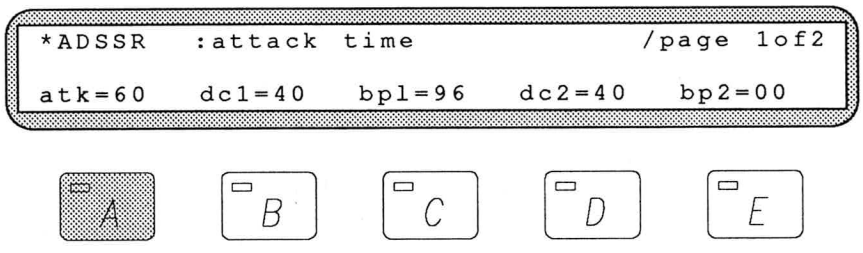
NOTE 1: Select the relative page of the ADSSR display, **PAGE 1** (Attack, Decay 1, Break Point 1, Decay 2, Break Point 2) or **PAGE 2** (Release, Envelope Tracking, Dynamic Sensitivity, Voice level) as necessary, using the **PAGE-** and **PAGE +** buttons (in the GLOBAL section), then select the parameter to be modified by means of the **A B C D E** buttons under the display (see design below).



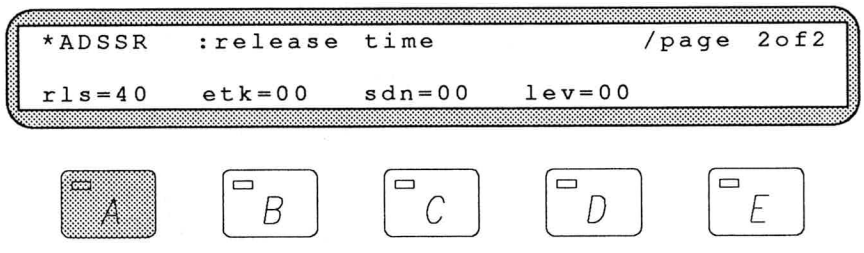
ADSSR

The ADSSR parameters are featured on a two page display, called page 1 of 2 and page 2 of 2 as shown below (see note on left for selection):

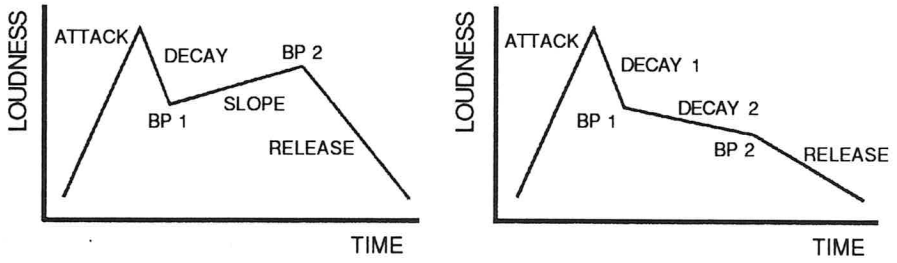
Page 1 (ATTACK TIME selected in this example)



Page 2 (RELEASE TIME selected in this example)

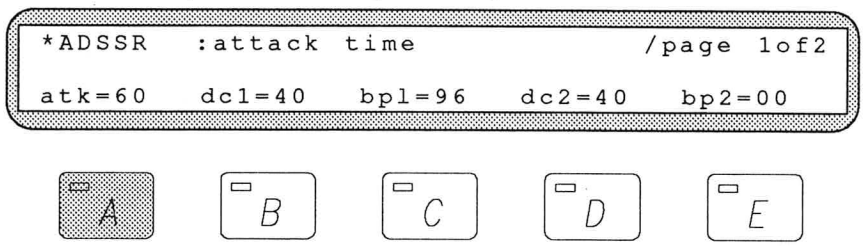


The ADSSR defines and controls the formation of the sound over a period of time and consists of various sections and 'Break Points', all of which are completely programmable. To modify the values, use the normal procedure of selecting the required parameter by means of the 5 buttons **A B C D E** and then vary the value by turning the **ALPHA DIAL**.

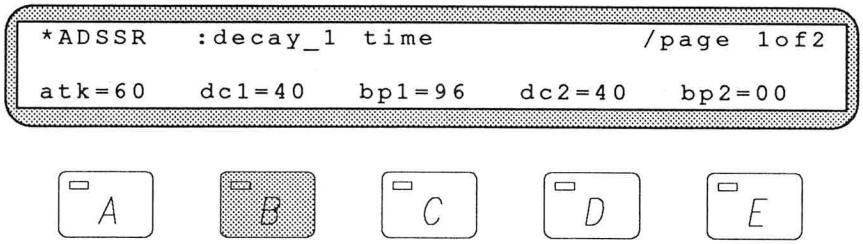


Although the ATTACK, DECAY, SLOPE (all on page 1) and RELEASE (page 2) along with the relative BREAK POINTS 1 and 2 are the principal parameters of the 'ENVELOPE', there are some general controls that can be selected from **PAGE 2** of the ADSSR display, these are respectively: ENVELOPE TRACKING, DYNAMIC SENSITIVITY and VOICE LEVEL and will be dealt with later.
In all the following displays, selected by pressing the relative button (A B C D E) after having selected the relevant page, the name of the parameter ready to be programmed will be shown on the top line after the heading ADSSR.The value of the parameter to be modified will be flashing on the bottom line and this can be changed by means of the **ALPHA DIAL**.

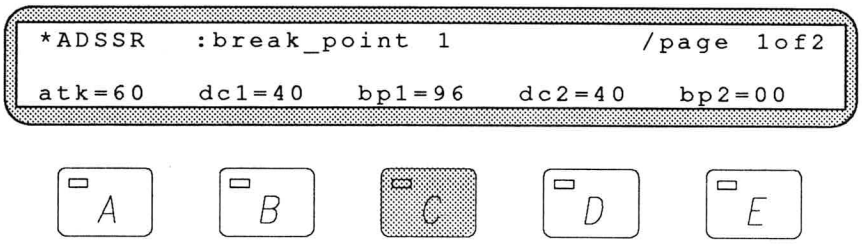
ATTACK TIME (Button **A** - Page 1 of 2)



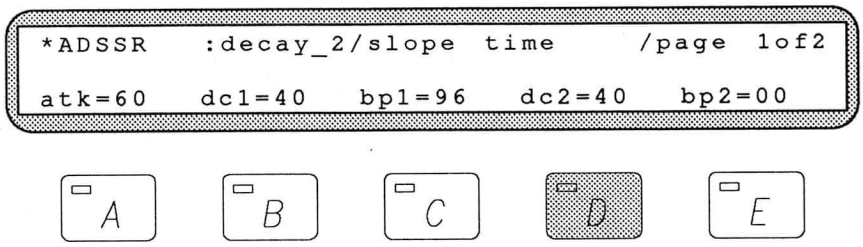
DECAY 1 TIME (Button **B** - Page 1 of 2)



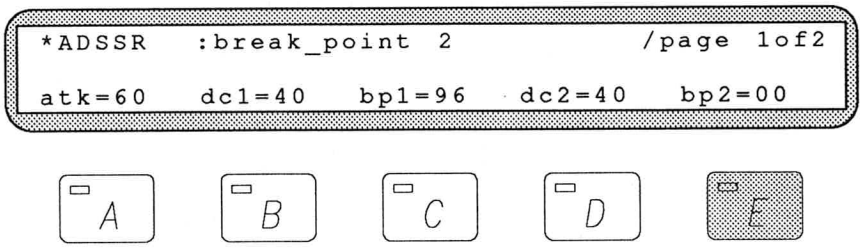
BREAK POINT 1 (Button **C** - Page 1 of 2)



DECAY 2 / SLOPE TIME (Button **D** - Page 1 of 2)

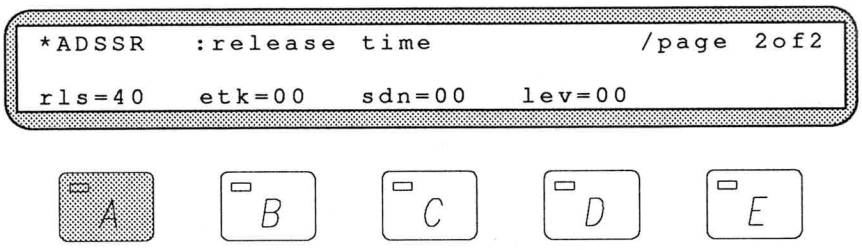


BREAK POINT 2 (Button **E** - Page 1 of 2)

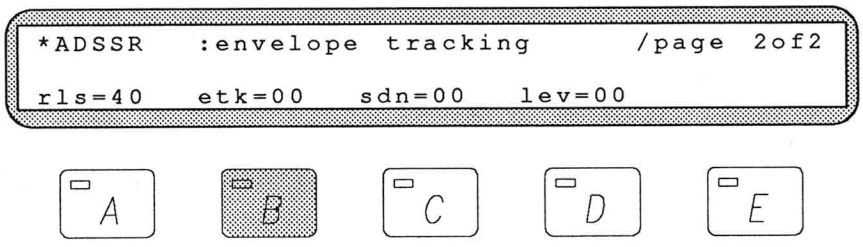


Press **PAGE +** in the GLOBAL section to proceed to the display below:

RELEASE TIME (Button **A** - Page 2 of 2)

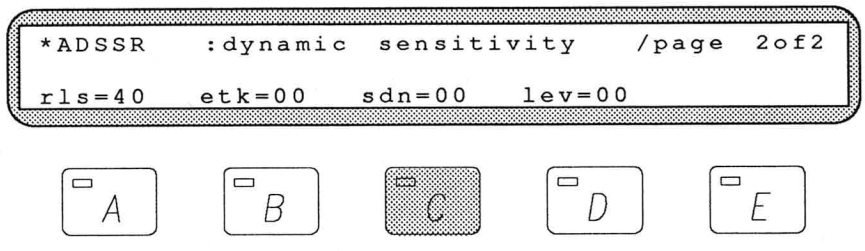


ENVELOPE TRACKING (Button **B** - Page 2 of 2)



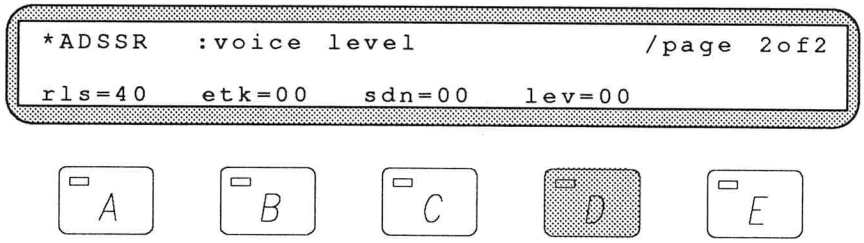
This parameter compresses the envelope according to the pitch of the note played. When a medium envelope is programmed for a PIANO, for example, this will be shortened in the high pitch range and lengthened in the low pitch range, exactly as in the real instrument.

DYNAMIC SENSITIVITY (Button **C** - Page 2 of 2)



Controls the DYNAMIC SENSITIVITY of each single VOICE.

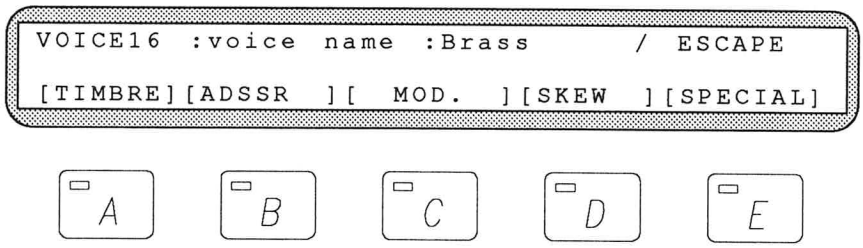
VOICE LEVEL (Button **D** - Page 2 of 2)



Controls the VOLUME of each single VOICE.

Having concluded the ADSSR programming with Voice Level, you can now proceed to the next function in the VOICE menu as follows:

Press **ESC** to return to the main VOICE menu as shown below:



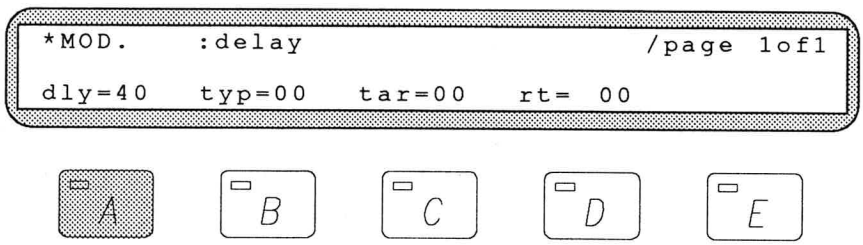
MODULATION

The sound of many natural instruments and the human voice is frequently embellished by modulation of the frequencies (VIBRATO). The purpose of the MODULATION parameter is to reproduce this natural effect by means of a series of controls.
Press **button C** to visualize the MODULATION display, shown below, and thereby programme the relative parameters.

DELAY

The VIBRATO effect can be delayed by a variable time period by means of this parameter.

1. Press **button A** to select the DELAY parameter of the MODULATION function.



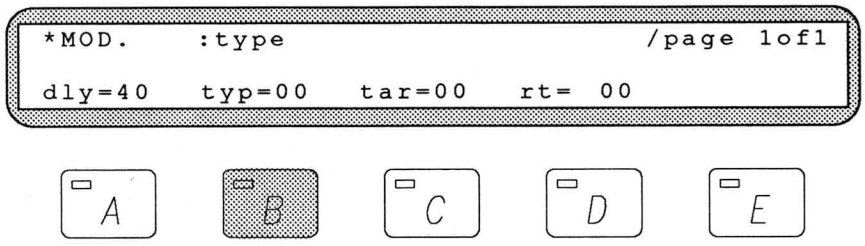
2. Vary the amount of DELAY by means of the **ALPHA DIAL**.

TYPE

Used to select the type of waveform used for the modulation. For

a normal VIBRATO you are advised to select the 01 type.

1. Press **button B** to select the TYPE of modulation waveform, the display will show as below:

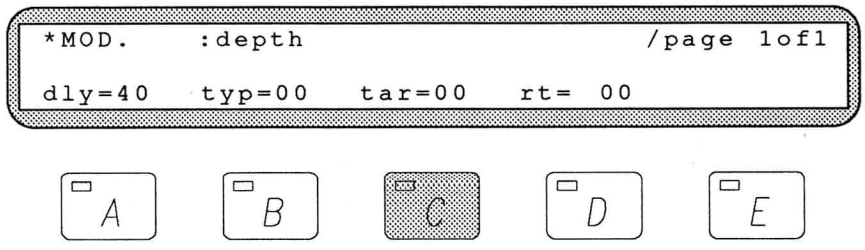


2. Select the waveform, from the four types available, by turning the **ALPHA DIAL** (These will be seen on the display).

DEPTH

Controls the modulation amplitude (Depth).

1. Press **button C** to modify the DEPTH of modulation. The display will now show:

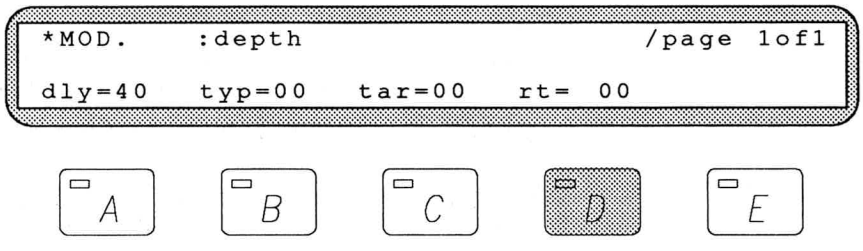


2. Turn the **ALPHA DIAL** to set the DEPTH of modulation required.

FREQUENCY

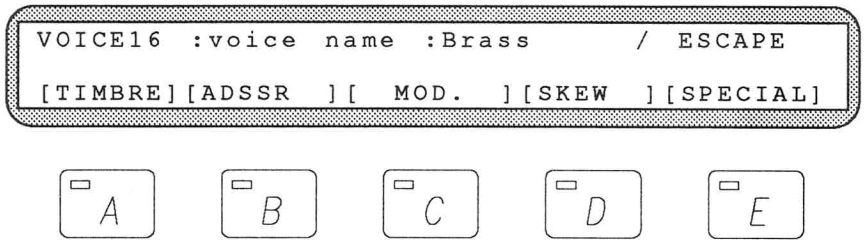
Controls the modulation frequency (Speed).

1. Press **button D** to change the FREQUENCY (speed) of the modulation and change the display to:



2. Adjust the FREQUENCY to your choice with the **ALPHA DIAL**.

Leave the MODULATION function programming mode, by pressing **ESC** in the EDIT section, to return to the main VOICE menu once again, as at the top of the following page.

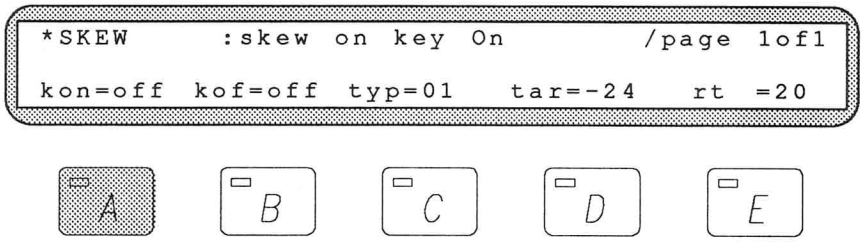


SKEW

In many wind instruments (Trumpet, Trombone, Horn etc.), a very evident frequency modulation can be heard at the beginning of the sound, this disappears rapidly or is controlled by the vibrato. It is possible, by means of a series of parameters, to reproduce this phenomenon during both the attack (SKEW ON - KEY ON) and release (SKEW ON - KEY OFF) phases. To programme the SKEW function, press **button D** with the above display showing and this will then change to that shown below:

SKEW ON KEY ON

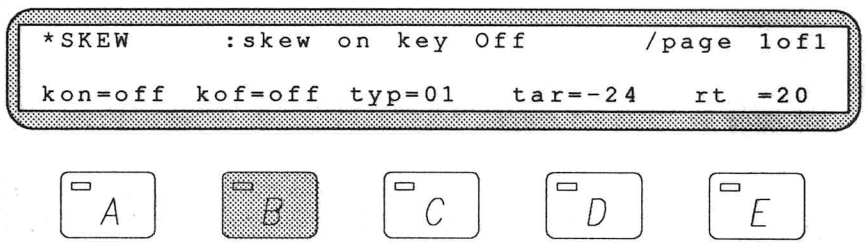
1. Press **button A** to activate the SKEW effect on the Key On. This means the moment that you press the key on the keyboard. The display will show as follows:



2. The Key On Skew effect can now be activated or disactivated by turning the **ALPHA DIAL**. The state will be shown on the bottom line of the display in the position corresponding to **button A**. This will read **kon = off** or **kon = on**, according to whether it is activated or not.

SKEW ON KEY OFF

1. Press **button B** to activate the SKEW effect on the Key Off. This means the moment that you release the key on the keyboard. The display will show as follows:

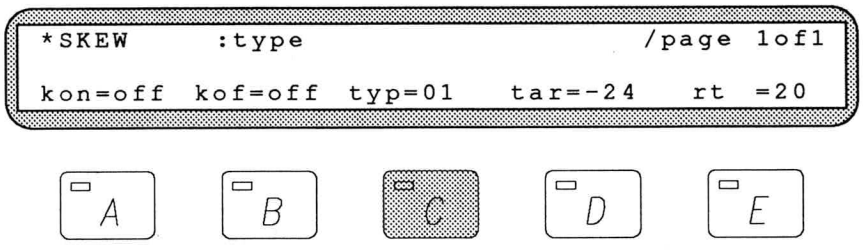


2. The Key Off Skew effect can now be activated or disactivated by turning the **ALPHA DIAL**. As for the Key On Skew effect, the state will be shown on the bottom line of the display in the position corresponding to **button B**.

TYPE

As in the Modulation function, you can select the type of waveform that controls the SKEW from the four available.

1. Press **button C** and the display will change to:

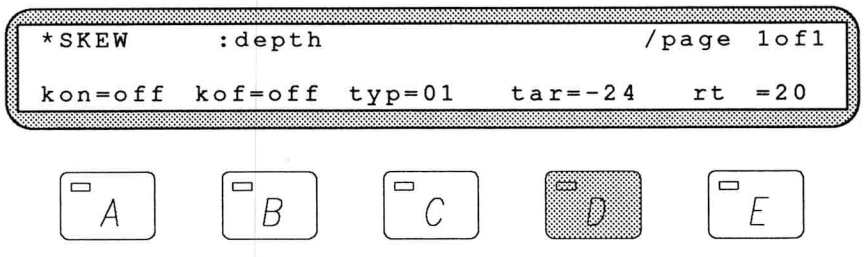


2. You can now, by means of the **ALPHA DIAL**, select the type of waveform used for the SKEW effect (this will be shown on the display).

DEPTH

This parameter controls the amplitude of the oscillator and in turn, the SKEW effect

1. Press **button D** to set the DEPTH of the effect, the display will show as follows.



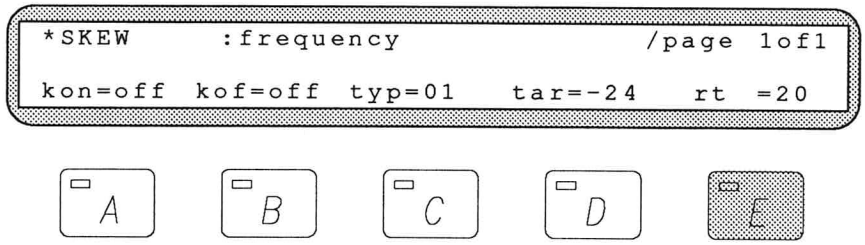
2. Turn the **ALPHA DIAL** to set the required DEPTH.

Continued overleaf.

FREQUENCY

This parameter enables the speed of the SKEW effect to be varied.

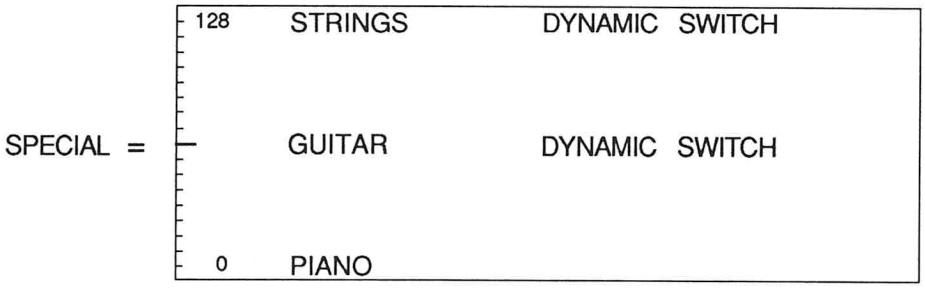
1. Press **button E** to change the display to:



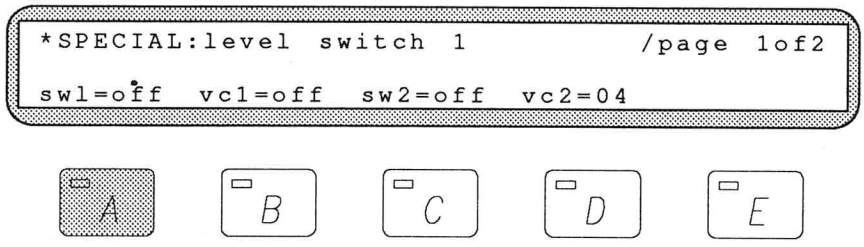
2. Adjust the oscillator frequency with the **ALPHA DIAL**. The frequency reference number will be seen on the right hand side of the bottom line of the display, above button E.

SPECIAL

It is possible to ask the WS to radically change the VOICE according to the dynamics of the keyboard. You can construct presets up to three voices, establishing both the name and the dynamic level that you want the switching to occur. This is extremely useful in such cases where more than one timbre of the same type has been used at different dynamic levels, as is the case with the GRAND PIANO.
In the example below, as well as the PIANO, two level switches have been programmed to play GUITAR and STRINGS at the respective dynamic levels of the keyboard. These levels and relative voices can be programmed by selecting the following displays, then setting the level and voice required by means of the **ALPHA DIAL**.



LEVEL SWITCH 1

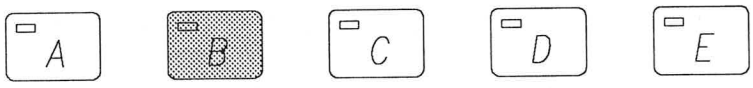


With the main VOICE menu display showing, press **button E** to show the SPECIAL display, as above, then press **button A** which will enable the operating level of LEVEL SWITCH 1 to be set by the **ALPHA DIAL**.

VOICE 1 RECALL

```
*SPECIAL:voice 1 recall          /page 1of2

sw1=off  vc1=off  sw2=off  vc2=04
```



1. Press **button B** to show the above display.

2. The voice to be inserted at the dynamic level programmed in the last parameter (LEVEL SWITCH 1) can now be recalled by means of the **ALPHA DIAL**; the number of this voice will be shown on the bottom line of the display, above button B.

LEVEL SWITCH 2

```
*SPECIAL:level switch 2          /page 1of2

sw1=off  vc1=off  sw2=off  vc2=04
```

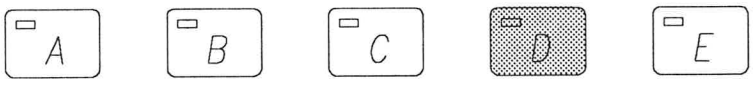
1. Press **button C** to programme this function.

2. As for Level Switch 1, this second switch can be programmed at a specific dynamic level by means of the **ALPHA DIAL**.

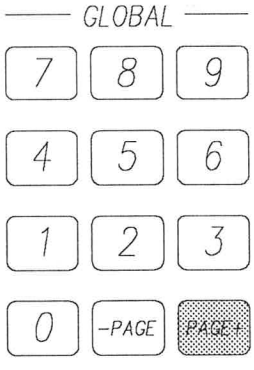
VOICE RECALL 2

```
*SPECIAL:voice 2 recall          /page 1of2

sw1=off  vc1=off  sw2=off  vc2=04
```



1. Press **button D** to show the above display.
2. The voice to be inserted at the dynamic level programmed in the last parameter (LEVEL SWITCH 2) can now be recalled by means of the **ALPHA DIAL**; the number of this voice will be shown on the bottom line of the display, above button D.



To give a name to a modified voice, do as follows:

1. Press **PAGE +** in the GLOBAL section to go to page 2 of the SPECIAL menu, as shown below:

```
*SPECIAL: change voice name      /page 2of2

 old_name = -------     new = -------
```

cont'd overleaf

The display shows the original name and asks you what the new name is?

2. Write the new name in the usual way (see GLOBAL section, display - page 7) for instructions.

Having finished the VOICE function programming, you can save any changes made by pressing **ENT** in the EDIT section. **Remember that all changes can be memorized at any time in the programming procedure by pressing** ENT. The **ENT** button will have to be pressed twice as the display asks you 'Are you sure'; to confirm your decision, press the **ENT** button in the EDIT section a second time.

KEYBOARD PERCUSSION INSTRUMENT LOCATION

DRUM KIT 1

C1

C^2	BD - GATE
$C\#^2$	SNARE NOISE
D^2	SD 1
$D\#^2$	SD 2
E^2	TOM ROOM 1
F^2	TOM ROOM 2
$F\#^2$	CABASA
G^2	TOM ROOM 3
$G\#^2$	TAMBOURINE SHORT(1st Lev.) - TAMBOURINE LONG (2nd Lev.)
A^2	TOM ROOM 4
$A\#^2$	COWBELL
B^2	RIMSHOT

DRUM KIT 2

C2

C^3	BD - JAZZ
$C\#^3$	BRUSH 1 (1st Lev.) - BRUSH 2 (2nd Lev.)
D^3	SD 3 (1st Lev.) - SD 4 (2nd Lev.)
$D\#^3$	SD 5
E^3	TOM 1
F^3	TOM 2
$F\#^3$	HH CLOSED 1 (1st Lev.) - HH CLOSED 2 (2nd Lev.)
G^3	TOM 3
$G\#^3$	HH FOOT 1
A^3	BLOCK 1 (1st Lev.) - CLAVES (2nd Lev.)
$A\#^3$	HH OPEN 1
B^3	CLAPS

DRUM KIT 3

C3

C^4	BD DRUM 1
$C\#^4$	RIDE
D^4	SD 6
$D\#^4$	RIDE CUP
E^4	EL. TOM 1
F^4	EL. TOM 2
$F\#^4$	SPLASH
G^4	EL. TOM 3
$G\#^4$	CRASH 1
A^4	VIBRA SLAP
$A\#^4$	CRASH 2
B^4	BELLS

KEYBOARD PERCUSSION INSTRUMENT LOCATION continued

PERCUSSION

C4

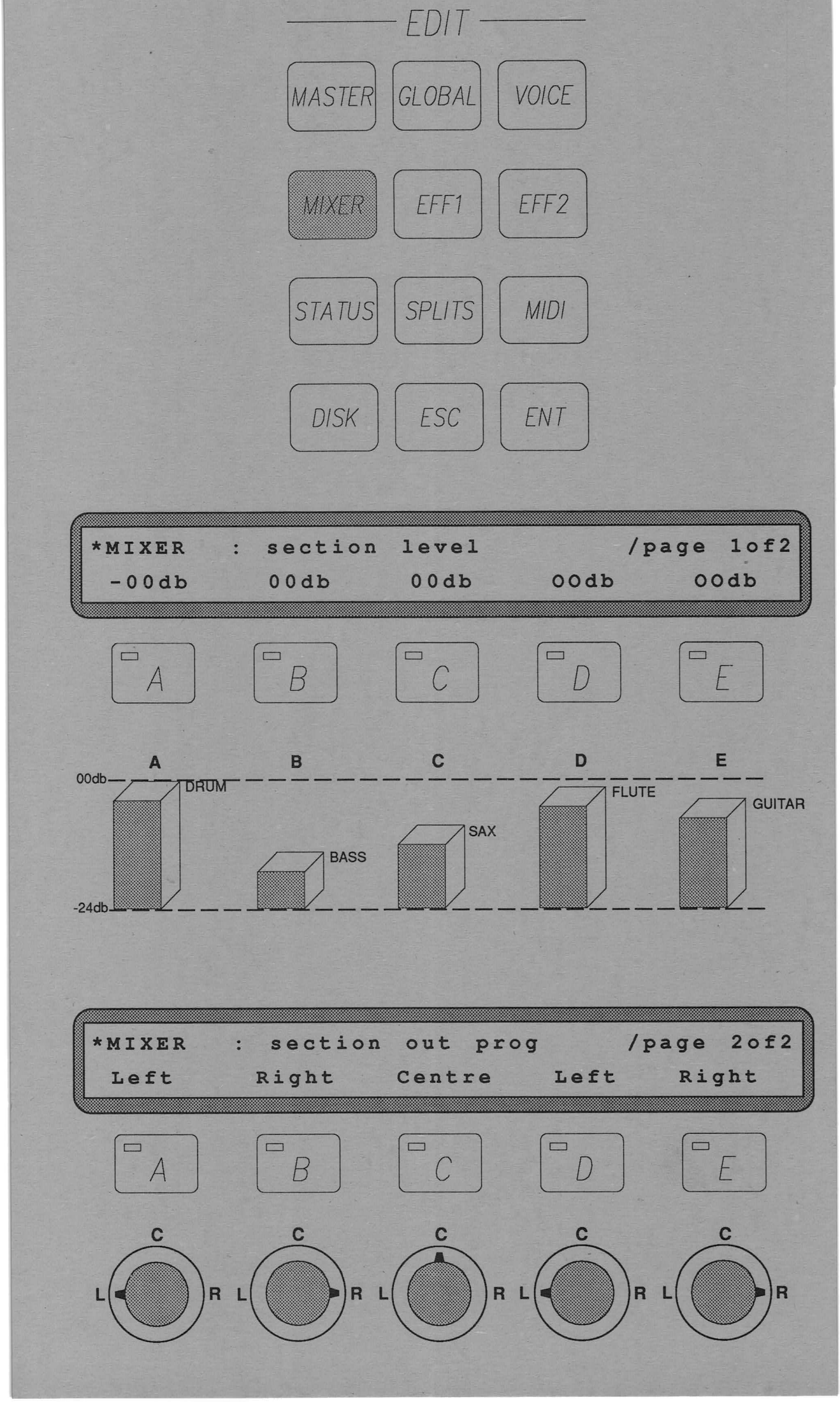
C^5	BONGO HIGH
$C\#^5$	BONGO LOW
D^5	CONGA HIGH (1st Lev.) - CONGA SLAP (2nd Lev.)
$D\#^5$	CONGA LOW
E^5	TUMBA
F^5	GUIRO
$F\#^5$	QUICA 1 (1st Lev.) - QUICA 2 (2nd Lev.)
G^5	TIMBALE HIGH
$G\#^5$	TIMBALE LOW
A^5	AGOGO LOW (1st Lev.) - AGOGO HIGH (2nd Lev.)
$A\#^5$	TRIANGLE
B^5	WHISTLE

VOICE DRUM KIT

C5

C^6	VOX BD
$C\#^6$	WHIP LASH
D^6	VOX OH
$D\#^6$	VOX SNARE 1
E^6	VOX SNARE 2
F^6	VOXTOM 1
$F\#^6$	VOX HH 1
G^6	VOX TOM 2
$G\#^6$	VOX HH 2
A^6	VOX CORK POP 1
$A\#^6$	VOX CORK POP 2
B^6	VOX TIP TAP
C^7	VOX HAA

C6


EDIT
MASTER
GLOBAL
VOICE
MIXER
EFF1
EFF2
STATUS
SPLITS
MIDI
DISK
ESC
ENT
*MIXER : section level /page 1of2
-00db 00db 00db 00db 00db
A
B
C
D
E
A B C D E
00db
-24db
DRUM
BASS
SAX
FLUTE
GUITAR
*MIXER : section out prog /page 2of2
Left Right Centre Left Right
A
B
C
D
E
C
L
R

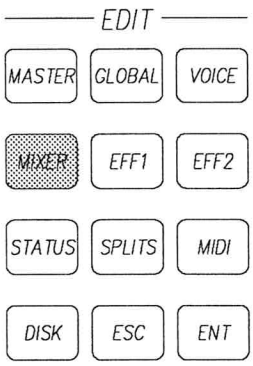
MIXER

DESCRIPTION

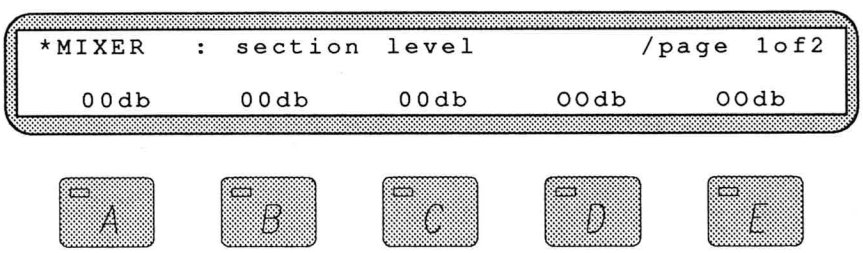
MIXER : This function provides independent volume control of the separate sections.

SECTION LEVEL : Level of the sections A - B - C - D - E (from 00 dB to - 24 dB).

SECTION OUT PROG : Possibility to direct the sound to a specific channel (LEFT - RIGHT - CENTRE - MUTE).



Press the **MIXER** button, in the EDIT section, to visualize the following display:



NOTE 1: The **MIXER** settings will be memorized separately in each of the programmable 128 GLOBAL PRESETS.

NOTE 2: The selection of **MUTE** will silence that specific section, while maintaining unvaried, the assignment of the effects. This is particularly useful when using effects such as **ROTARY,** where the direct sound is eliminated to give a better overall effect. In effect with **MUTE** activated, the effect changes from a parallel to a series connection.

PROCEDURE

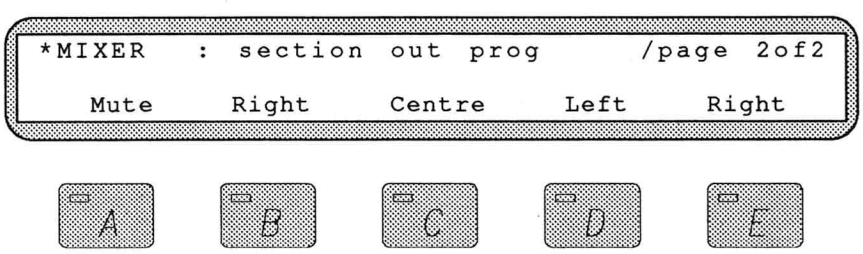
1. To adjust the VOLUME **of a single section:**

a) Press the button relative to the section required **(A B C D E).**

b) Turn the **ALPHA DIAL** to obtain the appropriate volume.

2. To direct one or more sounds to a specific channel:

a) Press the **PAGE +** button in the GLOBAL section to go to page 2 of the MIXER menu, as shown below.

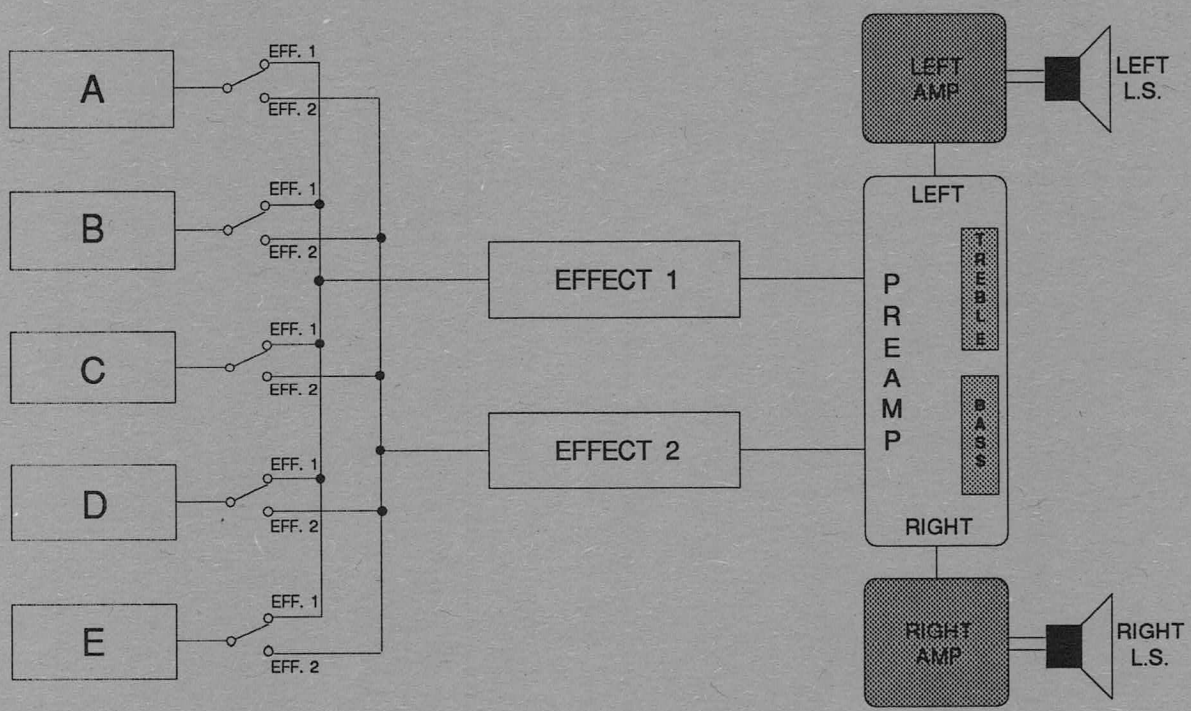


b) Recall the sections individually by means of the 5 relative buttons (A B C D E).

c) Programme one of the four functions (Right - Centre - Left - Mute) in each of the sections, with the **ALPHA DIAL.**


```
EFFECT _1:Delay 1  -Enable          /page 1of2
   on       off       off       off       on
```

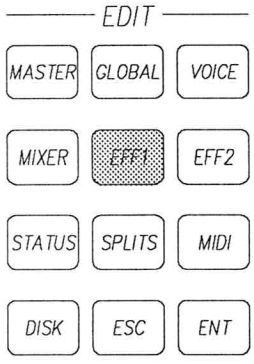
```
EFFECT _2:Concert  -Enable          /page 1of2
  off       off       off       off       on
```



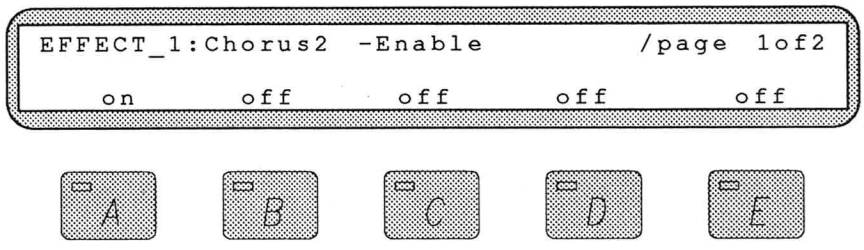
EFFECT 1

DESCRIPTION

EFFECT 1: This function incorporates 16 different types of digital effects which can greatly improve the sound quality of the 128 voices available. The 5 sections can also be sent separately to the two effects processors (EFF. 1/2). The EFFECTS sections are completely editable and then memorizable in 128 presets called GLOBALS.



Press button **EFF. 1** in the EDIT section to show the following display:



PROCEDURE

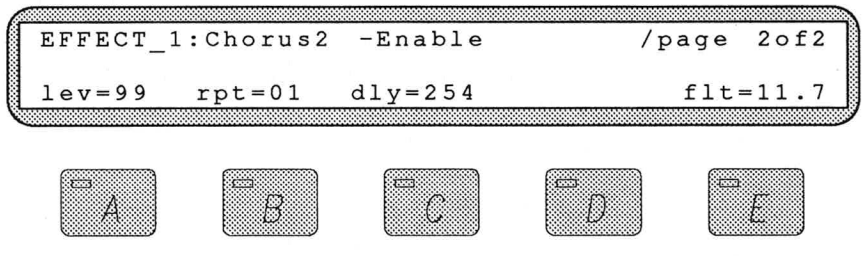
TO activate EFFECT 1 in one section:

1. Turn the **ALPHA DIAL** to select the desired effect.
2. Press **ENT** (ENTER) in the EDIT section to obtain the effect.
3. Press one of the 5 buttons marked with the letters A B C D E (for example A), then turn the **ALPHA DIAL** until the word 'on' shows in the display above the respective button.

NOTE: Use the same method for the other sections **(B - C - D - E).**

HOW TO MODIFY AN EFFECT

Select the second page of EFF. 1 by pressing the **PAGE +** in the GLOBAL section, the display will now change to:



The DELAY 1, DELAY 2, PAN ECHO **and** DUBBING **effects can be modified by means of the following parameters, :**

LEVEL : Indicates the output volume of the effect.

EFFECT 1 continued

REPEAT : Controls the number of repetitions produced by the effect .

DELAY : Sets the time delay of the effect, measured in milliseconds.

LOW FLT / BYPASS : This parameter when activated (LOW FLT), gives the effect more or less brightness. When BYPASS is selected, no variation of the effect is obtained.

The CHORUS 1 **and** CHORUS 2 **effects can be modified by means of the following parameters:**

LEVEL : Indicates the output volume of the effect.

FREQUENCY MOD. : Sets the modulation speed.

DEPTH : This parameter controls the amplitude of the effect.

LOW FLT / BYPASS : This parameter when activated (LOW FLT), gives the effect more or less brightness. When BYPASS is selected, no variation of the effect is obtained.

The FLANGER 1 **and** FLANGER 2 **effects can be modified by means of the following parameters:**

LEVEL : Indicates the output volume of the effect.

FEEDBACK : Controls the feedback level, which when increased gives more colour to the sound.

DEPTH : This parameter controls the depth of the effect.

FREQUENCY MOD. : Sets the modulation speed.

INIT DELAY : This parameter varies the initial delay, with conseguent effect on the timbre.

The **ENSEMBLE, PHASER 1, PHASER 2** and **PHASER 3** effects can be modified by means of the same parameters, except **INIT DELAY** which has a preset value.

The ROTARY 1 **and** ROTARY 2 **effects can be modified by means of the following parameters:**

LEVEL : Indicates the output volume of the effect.

FEEDBACK : Controls the feedback level, which when increased gives more colour to the sound.

SPEED : This parameter controls the time taken for the gradual change between the slow and fast speeds of the ROTARY effect, imitating the system used in the past for the amplification of electro-magnetic organs.

The FLA. / DEL. **and** PAN MIX **effects can be modified by means of the following parameters:**

LEVEL : Indicates the output volume of the effect

DELAY : Sets the time delay of the effect, measured in milliseconds.

DEPTH : This parameter controls the depth of the effect.

FREQUENCY MOD. : Sets the modulation speed.

PROCEDURE
For modifying an effect:

1. Press the button marked with the letter corresponding to the parameter to be modified (for example A).
2. Set the value desired with the **ALPHA DIAL**. Proceed in the same way for all the other parameters.

HOW TO MEMORIZE
After having modified one or more parameters, proceed as follows:

1. Press **ENT** in the EDIT section.
2. Check in which GLOBAL number (from 00 to 128) you want to assign the new set up, recalling this by means of the **ALPHA DIAL**.
3. Repress **ENT**.

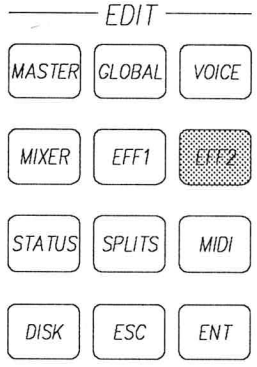
NOTE 1: Each time you select a different effect **(DELAY 1, DELAY 2, PAN ECHO etc.)** by pressing **ENT**, this is memorized with the original parameters set by the factory.

NOTE 2: Each GLOBAL memorizes one type of effect and all the eventual relative modifications. Therefore as many as 128 effects are available, together with the respective GLOBALS.

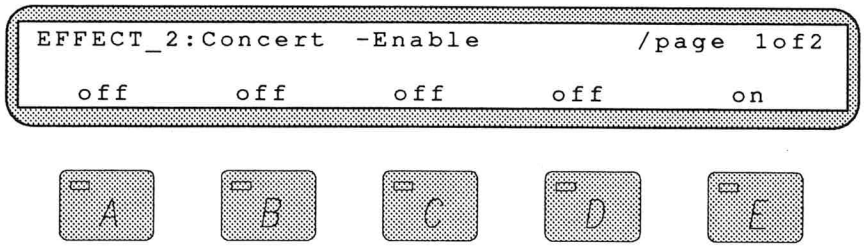
EFFECT 2

DESCRIPTION

EFFECT 2 : 16 different digital reverberation effects are incorporated in this function. Reverberation is an ambiental acoustic effect, caused by the reflection of the sound waves on the surrounding surfaces adjacent to the sound source.



Press button **EFF. 2** in the EDIT section to show the following display:



PROCEDURE

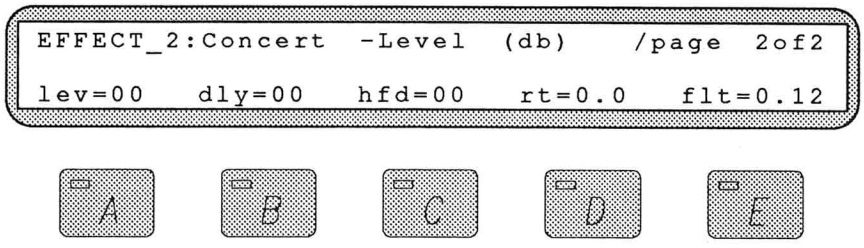
TO activate EFFECT 2 in one section:

1. Turn the **ALPHA DIAL** to select the desired effect.
2. Press **ENT** (ENTER) in the EDIT section to obtain the effect.
3. Press one of the 5 buttons marked with the letters A B C D E (for example A), and turn the **ALPHA DIAL** until the word 'on' shows in the display above the respective button.

NOTE: Use the same method for the other sections **(B - C - D - E).**

HOW TO MODIFY AN EFFECT

Select the second page of EFF. 2 by pressing the **PAGE +** in the GLOBAL section, the display will now change to:



The HALL, CONCERT, CHURCH, VOCAL, PLATE, S. ROOM, M.ROOM **and** L. ROOM **effects can be modified by means of the following parameters:**

LEVEL : Indicates the output volume of the effect.

INIT DELAY : This parameter varies the initial delay of the effect.

RATE FREQ. : Controls the decay of the high frequencies. The higher the value set, the faster the decay at these frequencies.

REV TIME : Controls the length of the effect in seconds.

FLT : Filter. This gives the effect more or less brightness.

The EARLY 1, EARLY 2, EARLY 3, STEREO 1, STEREO 2, STEREO 3, STEREO 4 **and** STEREO 5 **effects can be modified by means of the following parameters:**

LEV : Level. Indicates the output volume of the effect.

RSZ : Room Size. Controls the time intervals existent between the first reflections, directly proportional to the size of the room.

DCY : Decay. Proportionally controls the level of the reflections.

DIFF : Diffusion. Creates a halo in the final part of the effect, according to the preset selected.

FLT : Filter. This gives the effect more or less brightness.

PROCEDURE
For modifying an effect:

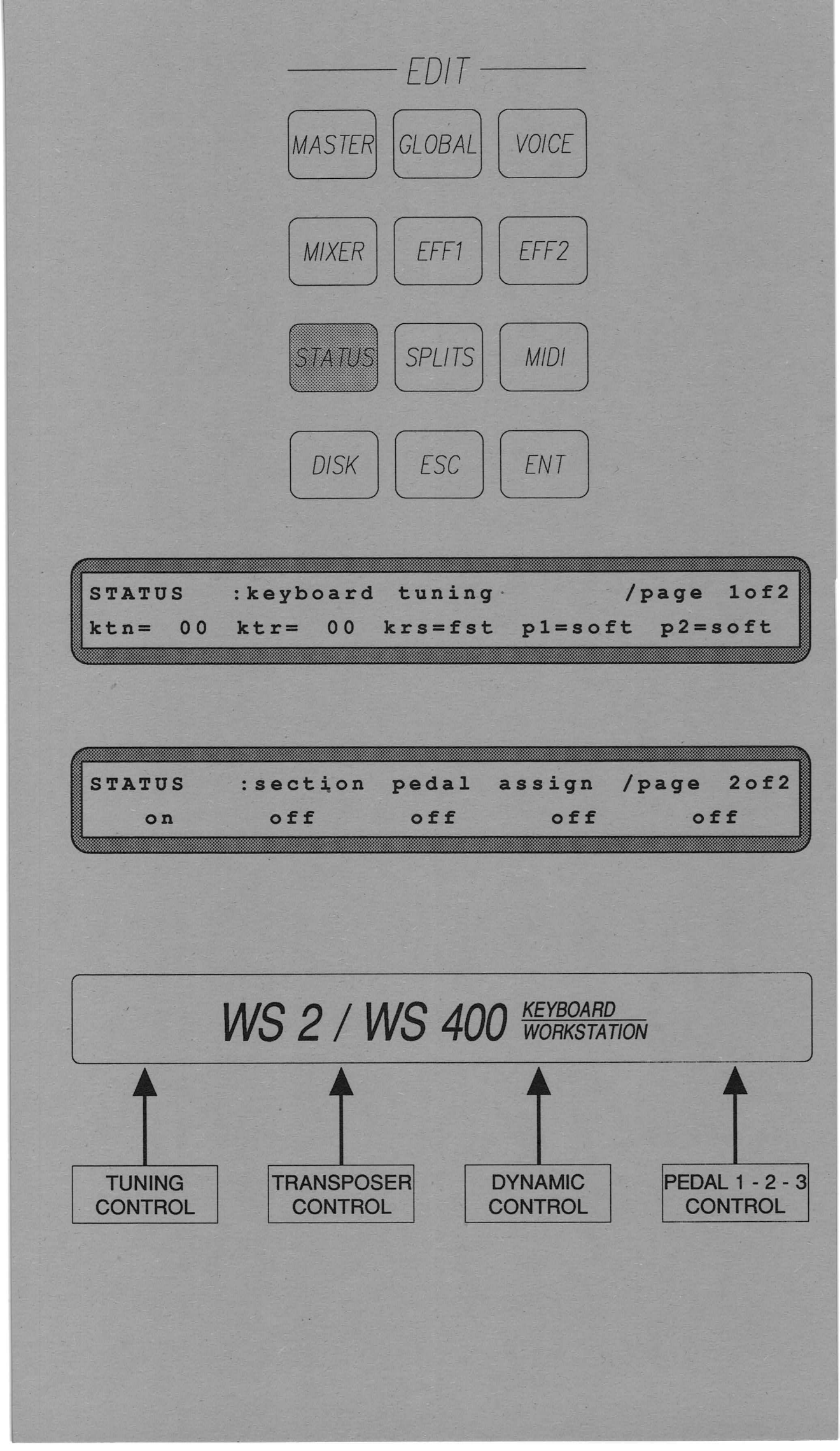
1. Press the button marked with the letter corresponding to the parameter to be modified (for example A).
2. Set the value desired with the **ALPHA DIAL**. Proceed in the same way for all the other parameters.

HOW TO MEMORIZE
After having modified one or more parameters, proceed as follows:

1. Press **ENT** in the EDIT section.
2. Check in which GLOBAL number (from 00 to 128) you want to assign the new set up, recalling this by means of the **ALPHA DIAL**.
3. Repress **ENT**.

NOTE 1: Each time you select a different effect **(HALL, CONCERT, CHURCH etc.)** by pressing **ENT**, this is memorized with the original parameters set by the factory.

NOTE 2: Each GLOBAL memorizes one type of effect and all the eventual relative modifications. Therefore as many as 128 effects are available, together with the respective GLOBALS.


EDIT
MASTER
GLOBAL
VOICE
MIXER
EFF1
EFF2
STATUS
SPLITS
MIDI
DISK
ESC
ENT
STATUS :keyboard tuning /page 1of2
ktn= 00 ktr= 00 krs=fst p1=soft p2=soft
STATUS :section pedal assign /page 2of2
on off off off off
WS 2 / WS 400 KEYBOARD WORKSTATION
TUNING CONTROL
TRANSPOSER CONTROL
DYNAMIC CONTROL
PEDAL 1 - 2 - 3 CONTROL

STATUS

DESCRIPTION

A group of general controls used to personalize the basic functions. STATUS comprises, Overall Tuning, Overall Transposition, the General Dynamic Response of the keyboard and the assignment of the relative functions to the two programmable pedals.

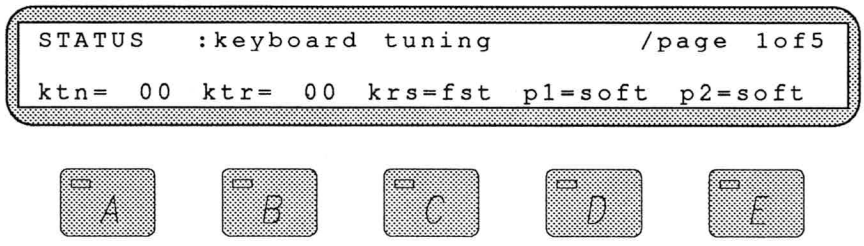
NOTE 1: To programme the **Ktn, Ktr, Krs** and **P1 / P2** functions, refer to **page 1** of the STATUS menu.

NOTE 2: To programme the **PEDAL ASSIGN** functions, refer to **page 2** of the STATUS menu.

Ktn : Keyboard tuning (- 32 + 32 hundredths of a tone).
Ktr : Keyboard transposer.
Krs : Keyboard response (Dynamic response - slow, medium or fast).
P1/P2 : Pedal 1/2 assign (Assignable functions to the optional pedals P1/P2: Soft, Sostenuto, Global+, Global -, Start/ Stop, Intro, Fill/In, Sync, Continue).

Pedal Assign section: Individual assignment of the Volume Pedal.

Press **STATUS** in the EDIT section and the display will change to:



KEYBOARD TUNING

To modify the overall tuning of the instrument:

1. Press **button A** under the display.
2. Turn the **ALPHA DIAL** until you obtain the desired tuning. The Keyboard Tuning function is used above all to tune the WS to other instruments.

To programme a Transposition:

1. Press **button B.**
2. Turn the**ALPHA DIAL** until you obtain the Transposition required. The Keyboard Transposer can modify the overall tuning of the instrument up to a maximum of - 7 / + 5 semitones.

To modify the dynamic response:

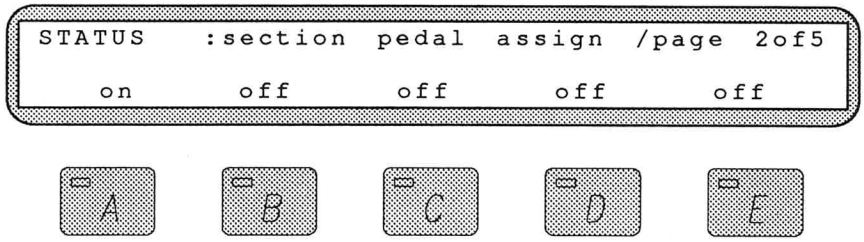
1. Press **button C.**
2. Turn the **ALPHA DIAL** until you obtain one of the dynamic curves available(Slow - Med - Fast).

To assign to pedals P1 e P2 one of the available functions:

1. Press **button D** to activate P1 or **E** to activate P2.
2. Turn the **ALPHA DIAL** to select the desired function.

FUNCTIONS ASSIGNABLE TO PEDALS 1 AND 2

Press **PAGE +** in the GLOBAL section for access to **page 2** of the STATUS menu as shown below.



SOFT = Decreases the dynamic response of the keyboard by about 6 dB.

SOSTENUTO = Activates the DAMPER effect (lengthening the sound), only on the keys pressed before pressing the pedal. Further notes can be played without being influenced by the effect.

GLOBAL+ = Used to move **forwards** to the next GLOBAL in numerical order starting from the one at present in use.

GLOBAL- = Used to move **back** to the last GLOBAL in numerical order starting from the one at present in use. Example: Present GLOBAL = 20, by pressing the pedal programmed for this function, GLOBAL 19 will be recalled.

START/STOP = Starts and stops the SEQUENCER (STYLES, SONG PATT., CHAIN COMPOSE).

FILL = Drum break. Each rhythm has a different FILL.

END = Plays the ending to a rhythm, including the arrangement if activated. Each rhythm has a different END (Ending)

SYNC = Programmes the instrument for a 'start' syncronized with a touch on the keyboard. After having activated this function, by pressing the relative pedal, you just have to play the WS on the left hand part of the keyboard and the rhythm will start immediately. Pressing the SYNC pedal again will stop the rhythm, waiting for a new start command. This function is active when using the INT. and PROG. STYLES.

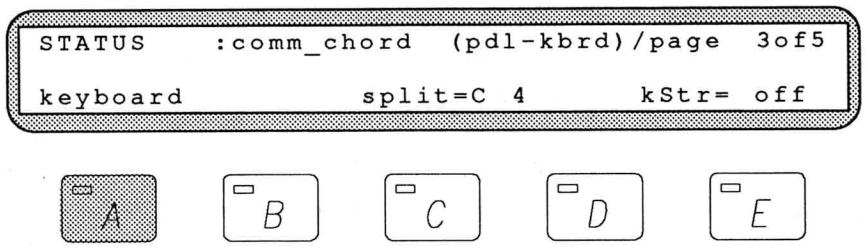
CONTINUE = Continues the rhythm and sequence from the exact point at which it was stopped.

DAMPER = This effect is permanently assigned to the third pedal on the right. This function allows the sound of all the notes to be maintained. The DAMPER is not programmable.

NOTE: The **DAMPER** works by memorizing the notes played on the keyboard, sometimes called HOLD in some instruments. This determines the fact that when using the DAMPER with non percussive timbres such as BRASS, ORGANS etc., you obtain an infinite lengthening of the note which does not decay as the notes of a piano, but remains unaltered until you release the pedal.

CHORD/COM. SPLIT

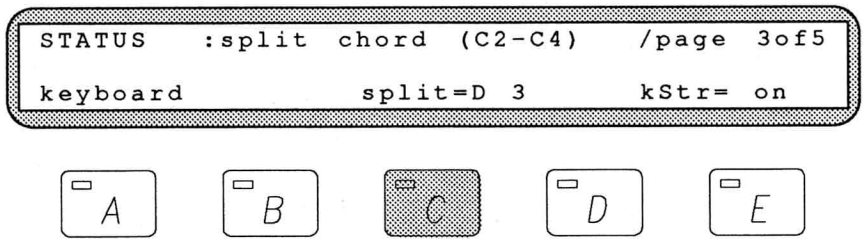
Memorizes the division point on the keyboard, on the left of which you can play recognized and memorized chords for the playing of the STYLES. It is also possible to transfer this function to the optional pedalboard.



Button **A** will be selected by default when this page of the STATUS menu is selected by pressing **PAGE +** in the GLOBAL section.

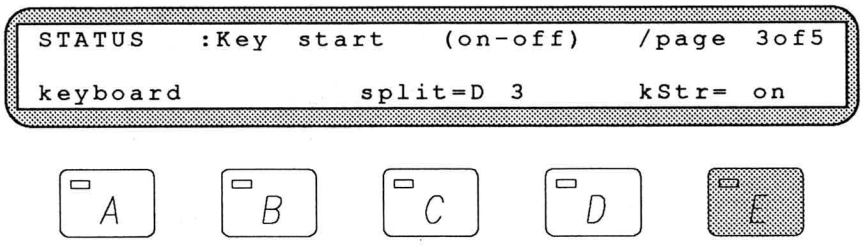
1. Turn the **ALPHA DIAL** to select the **Keyboard** or **Pedalboard** for the accompaniment playing.

2. Press **button C** to show the SPLIT CHORD display as below:



3. Turn the **ALPHA DIAL** to set the SPLIT point on the keyboard. This can be set from **C^2 - C^4**, and the point selected is shown on the bottom line of the display, above button C.

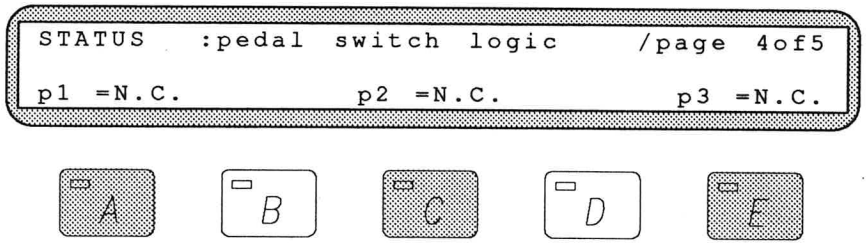
4. Press **button E** to select the KEY START function when the display will show as below:



5. Turn the **ALPHA DIAL** to select:
   a. **kStr = on** (Touch Start - in this mode the accompaniment starts each time a key is played in the range of the keyboard set by the last function (SPLIT CHORD).

   b. **kStr - off** (Memory - in this mode the accompaniment continues to play when the key is released).

Now press **PAGE +** in the GLOBAL section to change the display to page 4 (PEDAL SWITCH LOGIC) as shown below:



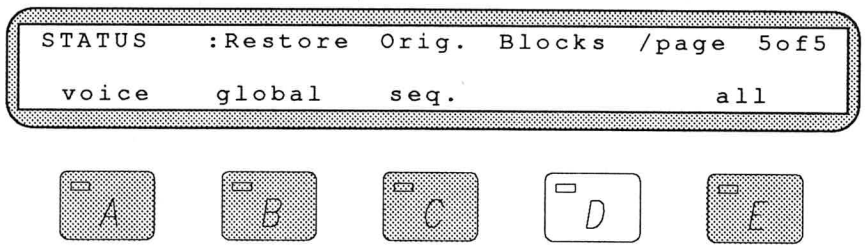
This function enables the adaption of pedal switches to the instrument whether they are of the contacts normally **OPEN** or normally **CLOSED** type.

NOTE 1: Remember to memorize all the changes that you make, either singly or collectively, by twice pressing **ENT** in the EDIT section.

1. Press the button corresponding to the pedal to be adapted, **A** - P1, **C** - P2 or **E** - P3.

2. Turn the **ALPHA DIAL** to select the pedal state.

Press **PAGE +** to change the display to page 5 (RESTORE ORIG. BLOCKS) as shown below:

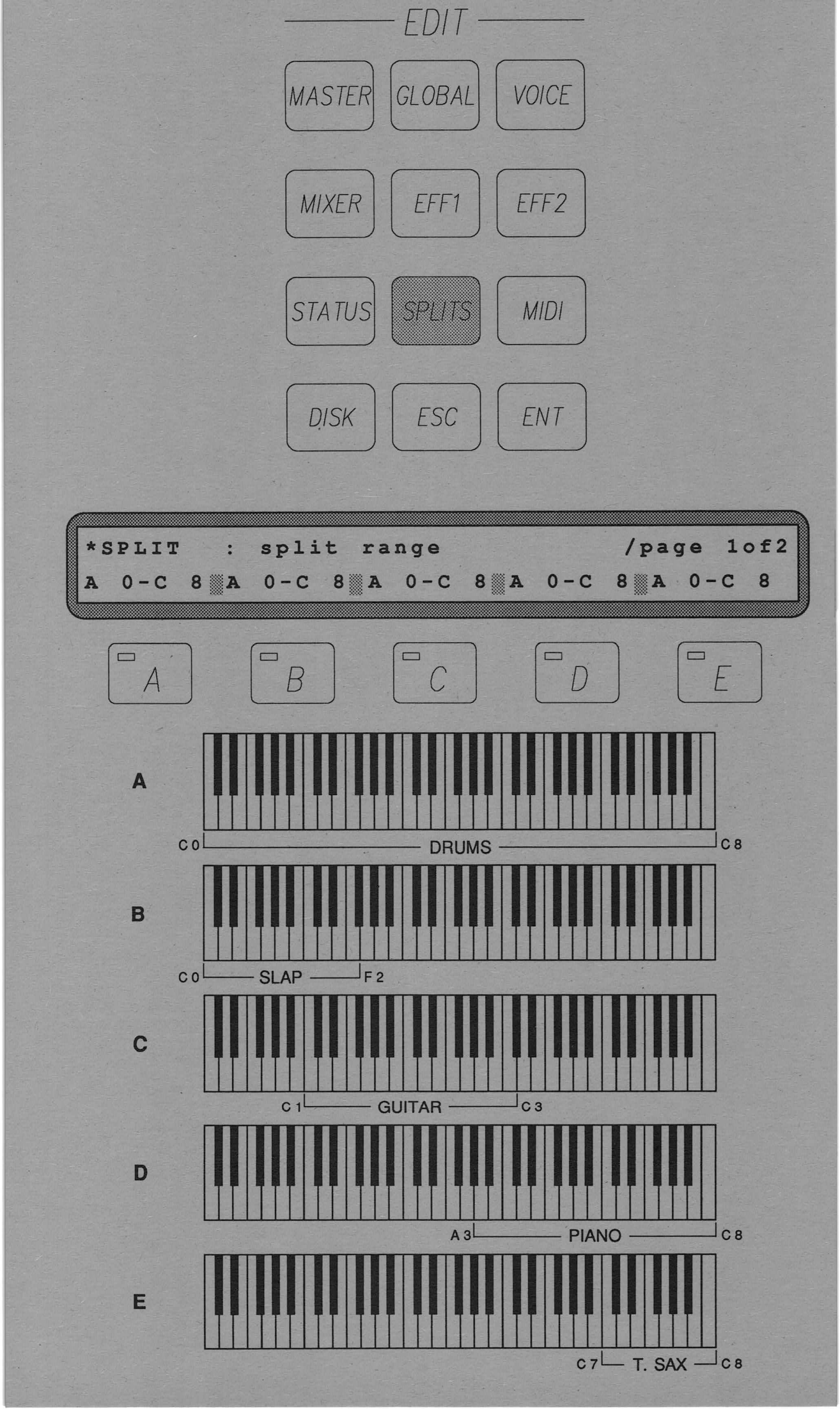


The RESTORE ORIG. BLOCKS function enables the instrument's original programme to be restored to one or all of the sections, VOICE, GLOBAL, SEQ. if required after making modifications and before pressing the ENT button to make these changes definite.

To restore one or all of the original programmes:

1. Press one of the buttons, **A B C** or **E**.

2. Press **ENT** in the EDIT section.


EDIT
MASTER
GLOBAL
VOICE
MIXER
EFF1
EFF2
STATUS
SPLITS
MIDI
DISK
ESC
ENT
*SPLIT : split range /page 1of2
A 0-C 8 A 0-C 8 A 0-C 8 A 0-C 8 A 0-C 8
A
B
C
D
E
A
C0
DRUMS
C8
B
C0
SLAP
F2
C
C1
GUITAR
C3
D
A3
PIANO
C8
E
C7
T. SAX
C8

SPLITS

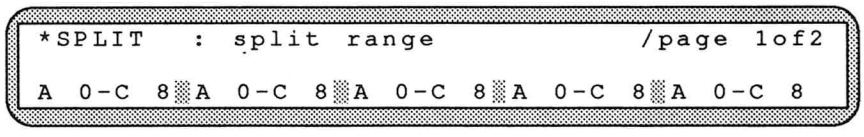
DESCRIPTION

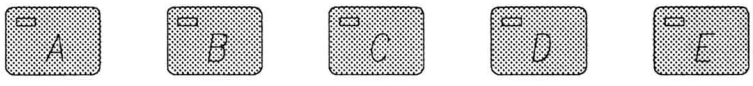
SPLITS : Division points of the keyboard, programmable section by section.

SPLIT RANGE : SPLIT control of the various sections: A - B - C - D - E (da A0 a C 8).

CROSS SPLIT ASSIGN : Extreme points of the SPLIT which gradually increase and decrease in level, within a range of 6 notes.

Press **SPLITS** in the EDIT section to show the following display:





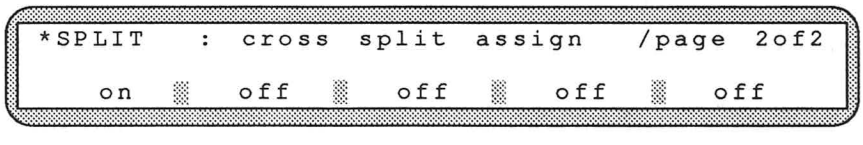
PROCEDURE

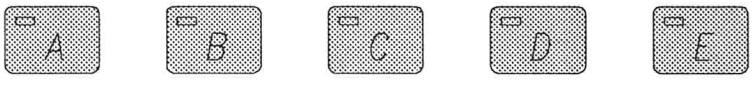
1. To set the length (SPLIT) of each section of the keyboard:

a) Press one of the buttons marked with the letters A B C D E (A for example).
b) Turn the **ALPHA DIAL** until the **lower limit** of the SPLIT is shown on the display above the button selected (the extreme left note).
c) Repress **button A.**
d) Turn the **ALPHA DIAL** to set the **upper limit** of the SPLIT (the extreme right note of the desired split).

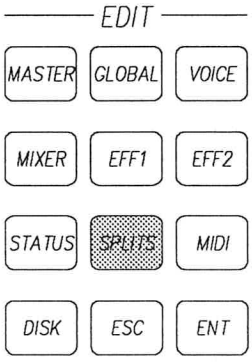
1. To assign the CROSS SPLIT function:

a) Press **PAGE +** in the GLOBAL section for access to **page 2** of the SPLIT menu.





b) Select the section of the keyboard that you are interested in, by means of the 5 buttons **A B C D E.**
c) Turn the **ALPHA DIAL** to show **'on'** above the button selected.

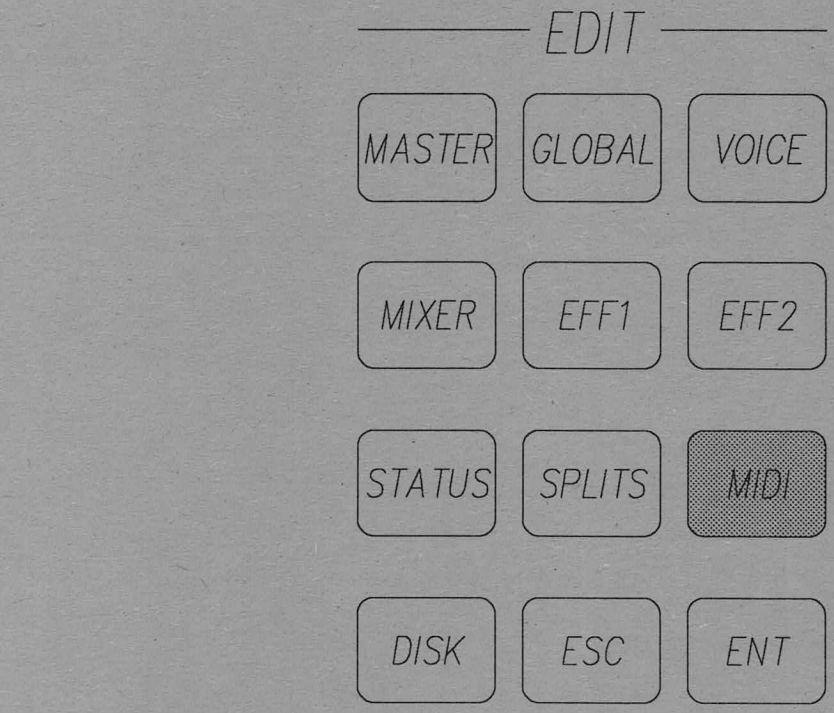


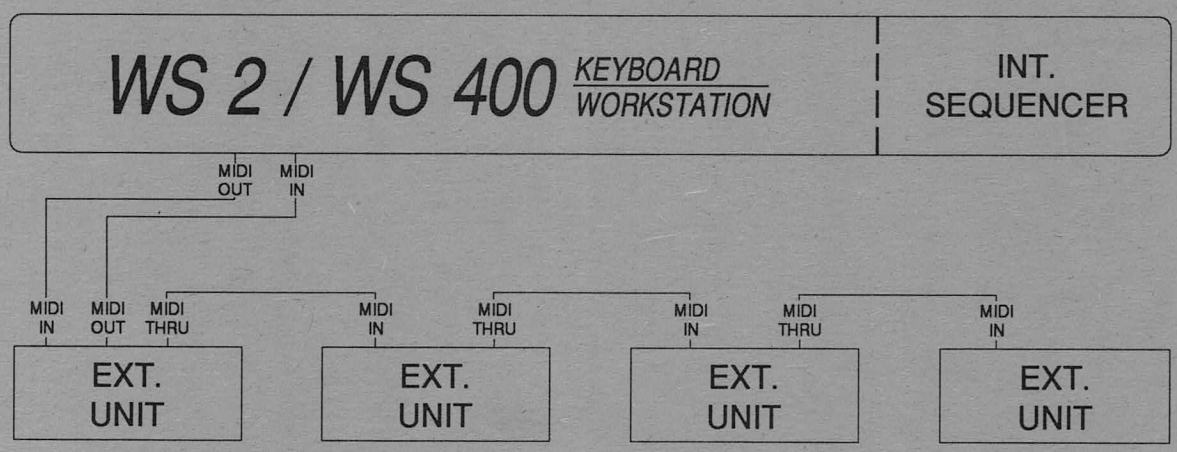
NOTE 1: For all the sections, proceed exactly as for section **A** used in the example.

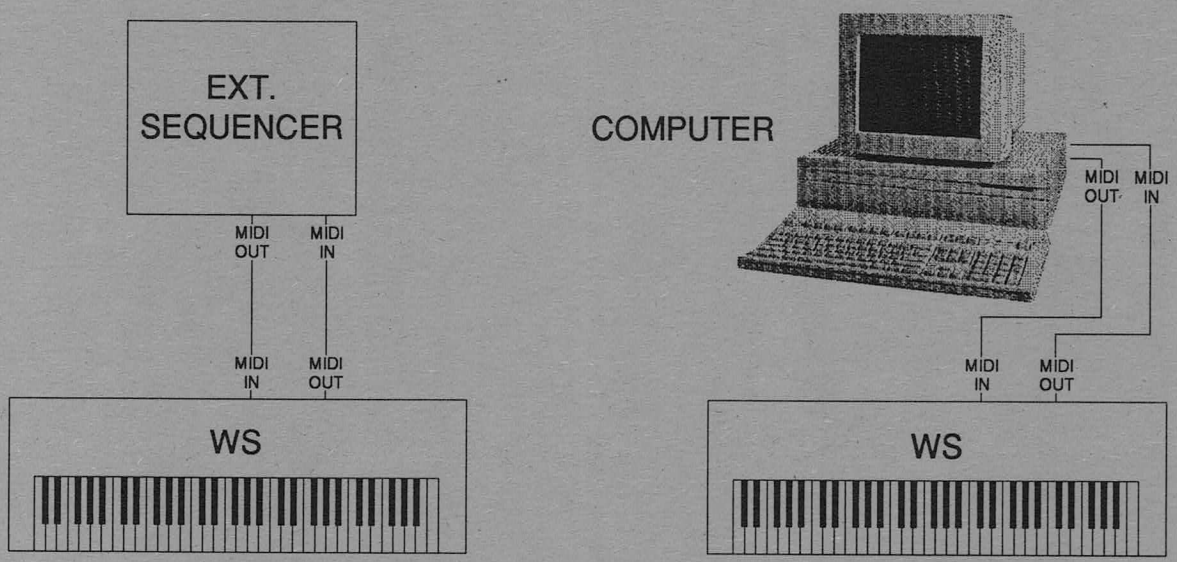
NOTE 2: It is possible to set the SPLIT points of the keyboard in a much easier way, by simply pressing the corresponding **Upper** and **Lower** key of the SPLIT length required, instead of turning the ALPHA DIAL, as in the procedure on the right.

NOTE 3: By turning the **ALPHA DIAL** further after reaching the extreme point of the keyboard (A0 - C8), the control of that specific section will be tranferred to the optional pedalboard.

NOTE 4: All the SPLIT POINTS can be memorized independently for all the 128 GLOBAL PRESETS.


EDIT
MASTER
GLOBAL
VOICE
MIXER
EFF1
EFF2
STATUS
SPLITS
MIDI
DISK
ESC
ENT


WS 2 / WS 400 KEYBOARD WORKSTATION
INT. SEQUENCER
MIDI OUT
MIDI IN
MIDI IN
MIDI OUT
MIDI THRU
EXT. UNIT
MIDI IN
MIDI THRU
EXT. UNIT
MIDI IN
MIDI THRU
EXT. UNIT
MIDI IN
EXT. UNIT


EXT. SEQUENCER
MIDI OUT
MIDI IN
MIDI IN
MIDI OUT
WS
COMPUTER
MIDI OUT
MIDI IN
MIDI IN
MIDI OUT
WS

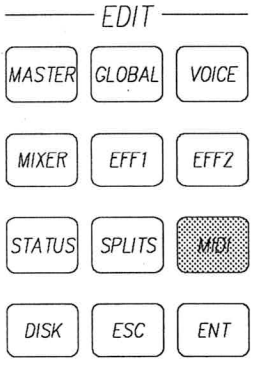
MIDI

DESCRIPTION

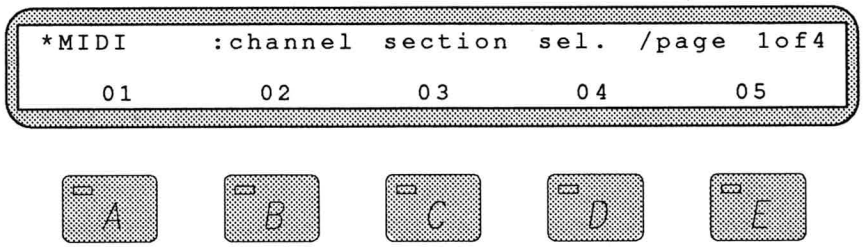
MIDI : "**M**USICAL **I**NSTRUMENT **D**IGITAL **I**NTERFACE" is an international standard which permits musical instruments and computers (with MIDI inputs and outputs), to communicate with each other by means of digital codes. The WS, being a 5 section polytimbral keyboard, can use up to 8 separate MIDI channels simultaneously both in reception and in transmission. The 8 MIDI channels are distributed as follows:

A CH MIDI	**B** CH MIDI	**C** CH MIDI	**D** CH MIDI	**E** CH MIDI	**EFF. 1** CH MIDI	**EFF. 2** CH MIDI	**COMMON** CH MIDI

All the MIDI parameters can be selected by means of the 4 page display, the pages being recalled in succession with the **PAGE +** and **PAGE -** buttons of the GLOBAL section.



Press the **MIDI** button in the EDIT section for access to **PAGE 1** of the MIDI display shown below, **CHANNEL SECTION SEL.** :



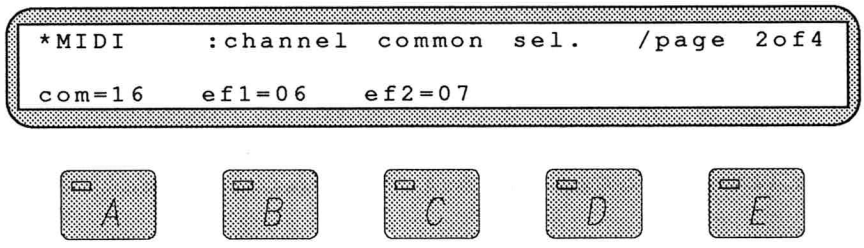
This function sets the MIDI reception and transmission channel for each section (1-16).

PROCEDURE
To select a MIDI channel:

1. Press the button **A B C D E** corresponding to the section desired.

2. Set the MIDI channel (1-16) with the **ALPHA DIAL**. The sections receive the MIDI notes independently from the internal SPLITS.

Press the **PAGE+** button for access to **PAGE 2** of the MIDI display.



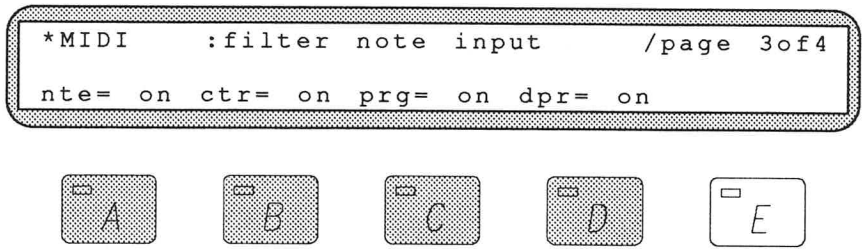
CHANNEL COMMON SEL: This function defines the COMMON MIDI CHANNEL both in reception and transmission (1-16). The COMMON CHANNEL operates on the entire keyboard and provides a simple means of communication for all the sections, by means of a single MIDI channel. The notes received on the COMMON CHANNEL will be logically distributed to the sections according to the internal SPLITS.

CHANNEL EFFECT 1 SEL: This function defines the MIDI reception channel for EFFECT 1 (1-16).

NOTE : Use the same operating procedure as for **PAGE 1** of the MIDI display.

CHANNEL EFFECT 2 SEL: This function defines the MIDI reception channel for EFFECT 2 (1-16).

Press **PAGE +** for access to **PAGE 3** of the MIDI display:



INPUT FILTER NOTE : This parameter activates the input filter of the notes.

INPUT FLT. CONTR. SONG : This parameter activates the input filter of the SONGS SELECT controls.

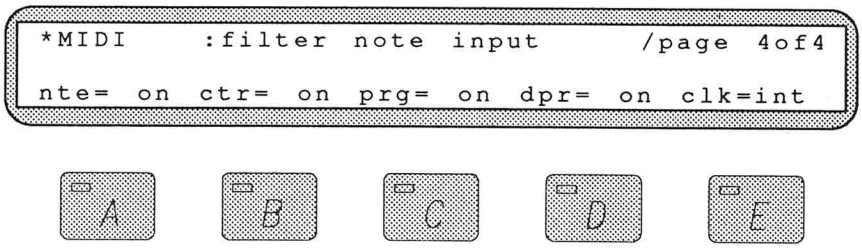
INPUT FILTER PROGRAM : This parameter activates the PROGRAM CHANGE input filter.

INPUT FILTER DAMPER : This parameter activates the input filter of the pedal DAMBER.

PROCEDURE
To activate the input filter of the various sections:

1. Press the button corresponding to the section **A - B - C - D**.
2. Turn the **ALPHA DIAL** until the word **'on'** appears on the display above the button selected in point **1**.

Press **PAGE+** for access to **PAGE 4** of the MIDI display:



OUTPUT FILTER NOTE : This parameter activates the output filter of the notes.

OUTPUT FLT. CONTR. SONG : This parameter activates the output filter of the SONGS SELECT controls.

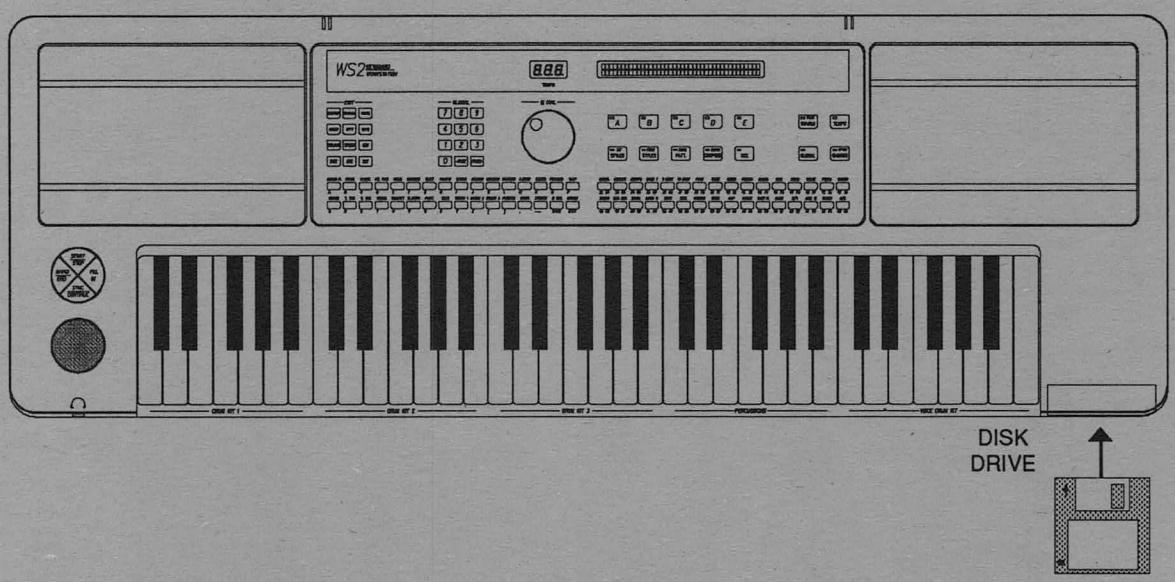
OUTPUT FILTER PROG. : This parameter activates the PROGRAM CHANGE output filter.

OUTPUT FILTER DAMPER : This parameter activates the output filter of the pedal DAMPER.

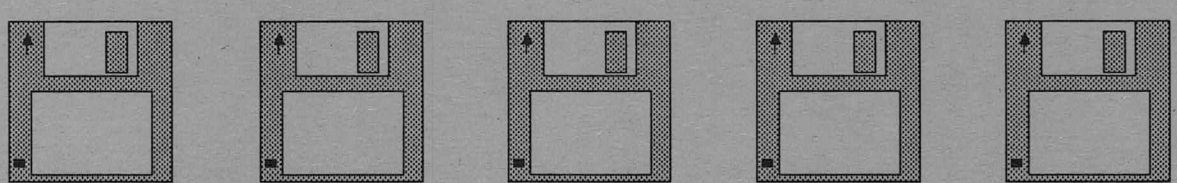
EXT. / INT. CLOCK : This parameter activates the External or Internal Clock, necessary for the synchronization (external or internal) via MIDI with other MIDI units.

NOTE : Use the same operating procedure as for **PAGE 3** of the MIDI display.

EDIT



WS - DATA BANK



VOICES GLOBALS STYLES PATTERNS SONGS

DISK

DESCRIPTION

The optional DISK DRIVE uses exclusively 3.5 inch, DS. 1 MegaByte 135 TPI micro disks (each disk can memorize more than 10 complete DUMPS). The DISK UNIT can be installed in the WS by carefully following the mounting instructions included with the unit.
This unit expands the enormous possibilities of the WS and enables you to create a library of VOICES, GLOBALS, STYLES, PATTERNS and SONGS. Pre-recorded disks will also be available from **GENERALMUSIC**.

OPERATING PROCEDURE

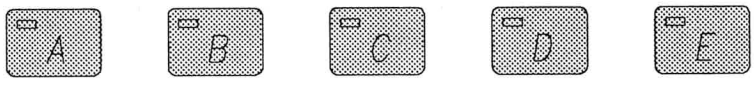
Pressing **DISK** in the EDIT section when the DISK UNIT is not installed in the WS will show the following display:

```
* * DISK  DRIVER  NOT  INSTALLED * *
please refer to owner's manual    / ESC
```

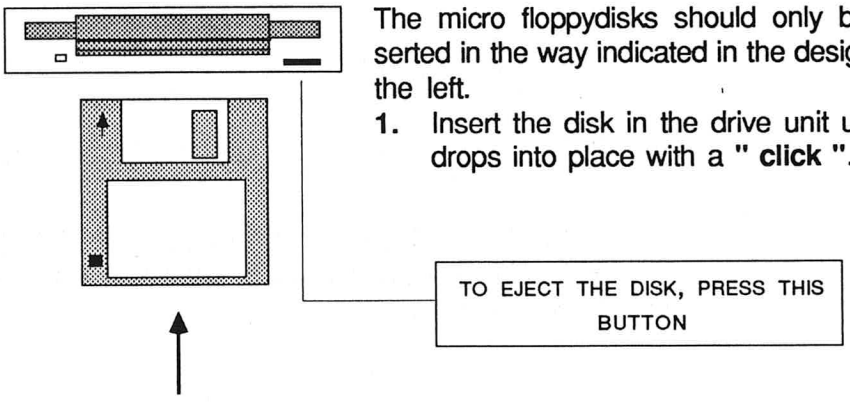
Press **ESC** in the EDIT section to come out of the DISK mode.

If the WS is fitted with the DISK UNIT, the display will show as follows:

```
DISK:      select  function          / ESC
[ DIR  ][ LOAD ][SAVE ][ ERASE ][FORMAT]
```



HOW TO INSERT THE MICRO DISKS



The micro floppydisks should only be inserted in the way indicated in the design on the left.

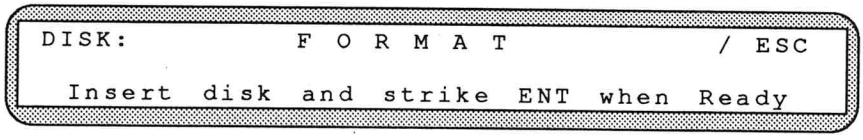
1. Insert the disk in the drive unit until it drops into place with a **" click "**.

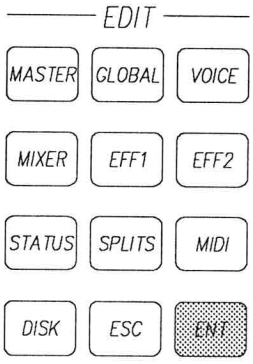
ATTENTION: The formatting process will erase all the memorized contents of the disk.

FORMAT

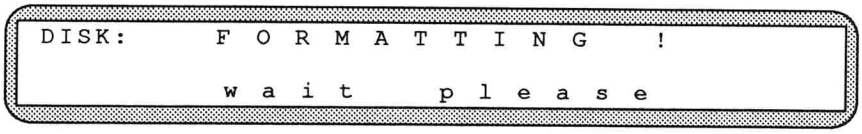
To perform the formatting procedure of a new disk, do as follows:

1. Press **button E** under the display and the following message will show on the display:



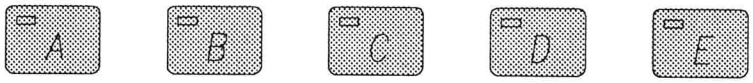


At this point, insert the disk to be formatted and press **ENT** in the EDIT section, the display will now show the following message:

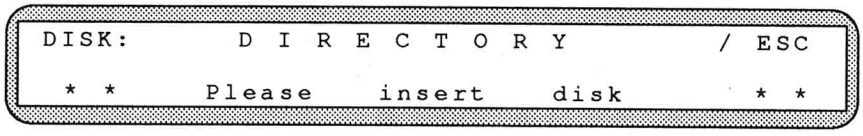


If the disk is not suitable, the display will show:

Press **ESC** in the EDIT section and change the disk to a suitable type. If all is O.K., after a short time the display will return to that below:



At this point you are ready to work with the disk. If you press any of the four buttons under the display corresponding to DIR, LOAD, SAVE or ERASE when a disk is not inserted, and then select **voice**, **global**, **seq.** or **all** with buttons **A**, **B**, **C** or **E**, the display will give the following message:



Buttons **A**, **B**, **C** and **D** corresponding to DIR (DIRECTORY), LOAD, SAVE and ERASE activate a second page for the programming of the following sections:

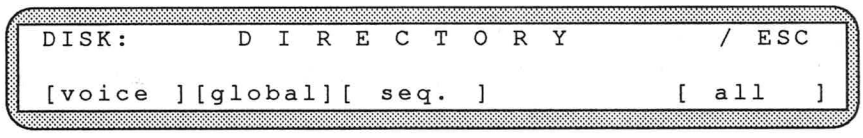
VOICE: Saves or loads all the VOICES.
GLOBAL: Saves or loads all the GLOBALS.
SEQ.: Saves or loads all the STYLES, SONGS, PATTERNS.

NAME

Each file has a name, that can be inserted in the normal way, with an extension of 3 letters that indicate the type:
EXAMPLE:
GENERAL - VCE = VOICES in the GENERAL group.
GENERAL - GLO = GLOBALS in the GENERAL group.
GENERAL - SEQ = STYLES, SONGS, PATTERNS, CHAIN in the GENERAL group.
GENERAL - ALL = COMPLETE DUMP of the GENERAL group.

DIRECTORY

Pressing **DIR (A)**, will show the display for the selection of the groups - VOICES / GLOBALS / SEQ / ALL as below:



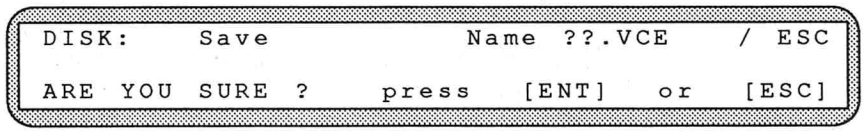
After selecting the required group by pressing **A**, **B**, **C** or **E**, turn the **ALPHA DIAL** to visualize the whole contents of the DISK in alphabetical order in that specific group.

LOAD

Pressing **LOAD (B)**, will show the display for the selection of the groups - VOICES / GLOBALS / SEQ / ALL as shown above but with the title, **LOAD FILE**.
After selecting the required group by pressing **A**, **B**, **C** or **E**, turn the **ALPHA DIAL** to visualize the whole contents of the DISK in alphabetical order in that specific group.
Select, with the ALPHA DIAL, the FILE to be loaded then press **ENT** in the EDIT section to complete the operation.

SAVE

Pressing **SAVE (C)**, will show the display for the selection of the groups - VOICES / GLOBALS / SEQ / ALL as shown above, but with the title **FILE SAVE**. After selecting the required group by pressing **A**, **B**, **C** or **E**, turn the **ALPHA DIAL** to visualize the whole contents of the DISK in alphabetical order in that specific group.
Having selected the FILE to be saved by means of the ALPHA DIAL, press **ENT** in the EDIT section and the following display will appear:



NOTE 1 : If you use a damaged disk, a message on the display will warn you of this.

NOTE 2 : It is not possible to save and/or load single VOICES, GLOBALS, STYLES etc., but only complete files.

NOTE 3 : Further information on the DISK DRIVE can be found in the **EXTRA INFO** section further ahead.

NOTE 4: With no disk inserted in the drive, when you select a section in any of the procedures on the right, the display will read "Please insert disk".

Repress **ENT**, to confirm your decision to save the file. After a few moments, when the display will show:

```
DISK:      Saving            ___.VCE    / ESC
              w a i t    p l e a s e
```

The SAVE operation will have been completed and the display will then return to the last one visualized before commencing this procedure.

If, during the SAVE operation the following display appears, this means that you must change disks or erase some files, as what you are trying to save on the inserted disk is too much for the remaining free memory capacity.

```
DISK:       F I L E    S A V E          / ESC
 * *   Insufficient  disk  space          * *
```

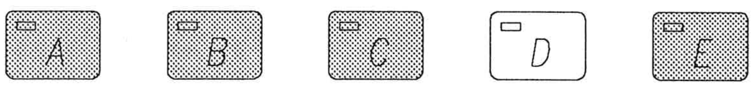
Press **ESC** in the EDIT section and change disks or proceed to the ERASE section following the relative procedure to cancel some unwanted files to make some room on the disk.

ERASE

NOTE: Each function, **DIR**, **LOAD**, **SAVE**, **ERASE** or **FORMAT** can only be recalled when the main DISK menu is seen on the display.

Pressing **ERASE (D)**, will show the display for the selection of the groups - VOICES / GLOBALS / SEQ / ALL as shown below.

```
DISK:       F I L E    E R A S E       / ESC
[voice ][global][ seq. ]          [ all   ]
```



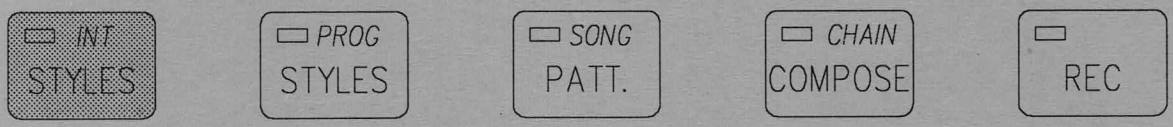
1. Select the group or groups of files by pressing **A**, **B**, **C** or **E**.

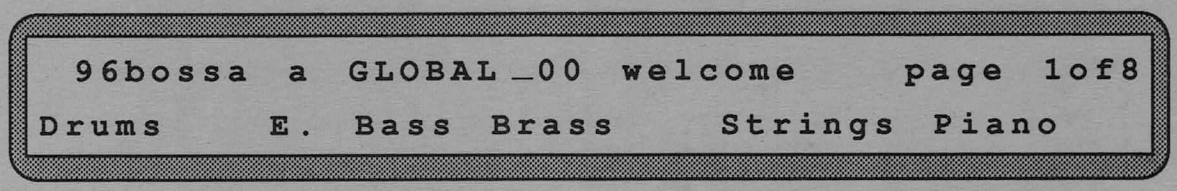
2. Select the FILE to be erased in that group, by means of the **ALPHA DIAL**. These will be shown in alphabetical order on the display as the Alpha Dial is turned.

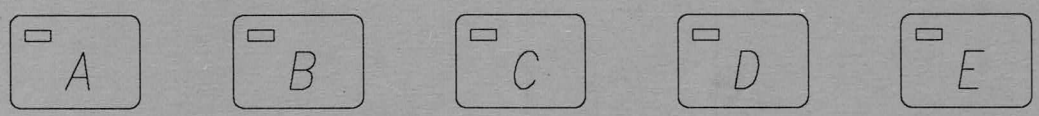
2. Press **ENT** in the EDIT section to erase the selected file and the display will change to:

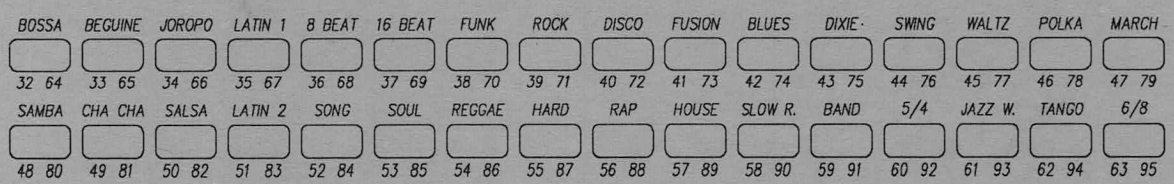
```
DISK:     Erase           Name ??.VCE    / ESC
ARE YOU SURE ?   press   [ENT]   or   [ESC]
```

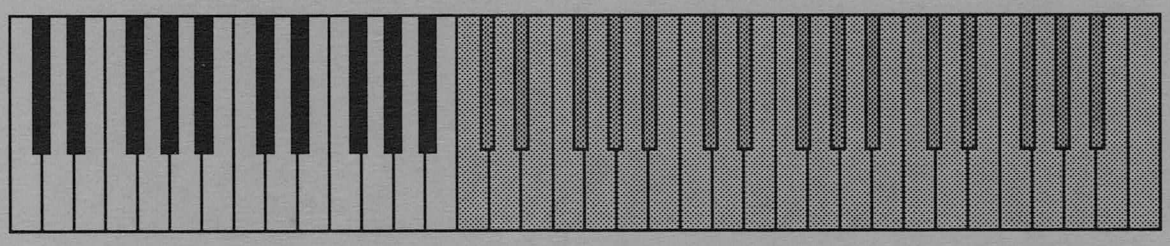
Repress **ENT**, to confirm your decision to erase the file or **ESC** if you are not sure.











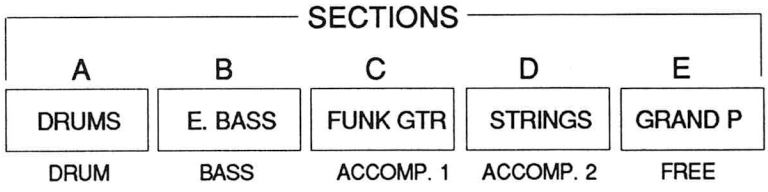
PROGRAMMABLE SPLITS

INT. STYLES

DESCRIPTION

INT. STYLES: The rhythm unit of the WS uses 5 groups of digitally sampled sounds. 64 dynamic percussive instruments, are used to create the 32 different INTERNAL STYLES. The INTERNAL STYLES occupy a part of the internal memory from MIDI location 96 (Bossa) to MIDI location 127 (Country), and are normally made up of 4 polyphonic sections (A -B -C -D) + another free section (E) that can be used in 'Real Time' when the arrangements are playing. The 5 sections are distributed as follows:

EXAMPLE OF DISCO STYLE



Each STYLE automatically sends 5 appropriate voices to the relative sections (A, B, C, D, E), which can be substituted with any of the 128 voices available. A GLOBAL PRESET corresponds to each STYLE which also recalls the voices for the sections left free, if the FULL GLOBAL function is activated (see SEQ. CONTROLS). Each STYLE is made up of 6 PATTERNS: INTRO - FILL - END - MAJOR - MINOR - 7th.

STYLES / SPLIT: The SPLIT point on the keyboard, when the INTERNAL STYLES are used, is positioned at B^3. This, however can be changed to any other point on the keyboard as far as the STYLES are concerned (this split is common for **all** 32 STYLES).

CHORD RECOGNITION: The INTERNAL STYLES function gives automatic accompaniments based on the recognition of the chords played. In effect, playing one note will produce a MAJOR chord. All the other chords will be recognized by playing two or more notes. The recognized chord will be used as a basis of a musical arrangement suitable for the selected rhythm. The recognized chords are as follows: MAJOR, MINOR, MAJOR 7th, MINOR 7th, $5th^+$, DIMINISHED, MINOR 7th FLAT 5th, FOURTH, SEVENTH (NINTH).
The Major chords are recognized by playing only one note. The minor and sevenths are recognized when playing two or more notes. The other chord recognition is achieved by playing three or four notes. The Major, minor and seventh chords generate three completely different arrangements, written to link with each other according to statistic musical and harmonic rules. All the automatic arrangements of the WS also activate the "MEMORY", enabling the memorization of the chord section of the keyboard.

NOTE : The name of each recognized chord is indicated in the top left hand corner of the display.

PROCEDURE
To select an INT. STYLE:

NOTE : To start only the RHYTHM, refer to points **2** and **3.**

1. Press **INT. STYLES**.

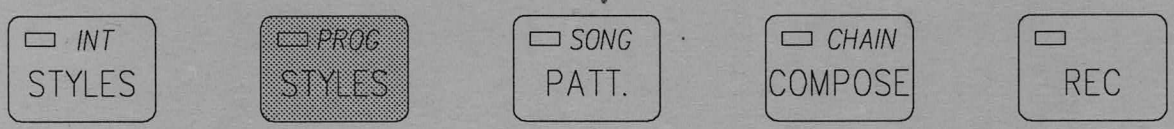
2. Press one of the **32 STYLES**.

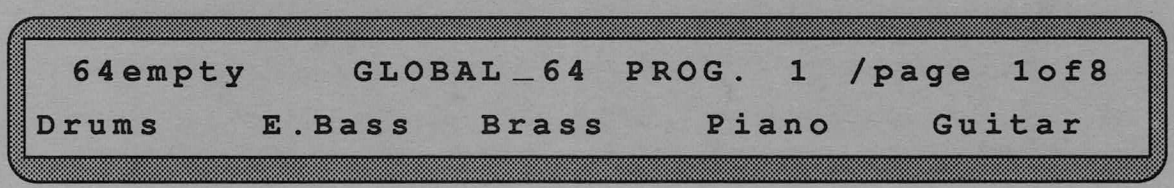
3. Press **START / STOP** to start the selected **STYLE**.

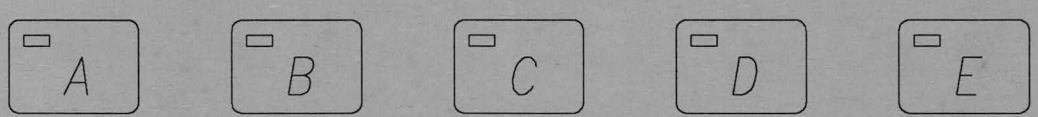
The passage between the various STYLES is immediate.
For the START/STOP, FILL IN, INTRO, END and SYNC/CONTINUE controls, refer to the **MANUAL CONTROLS** section.

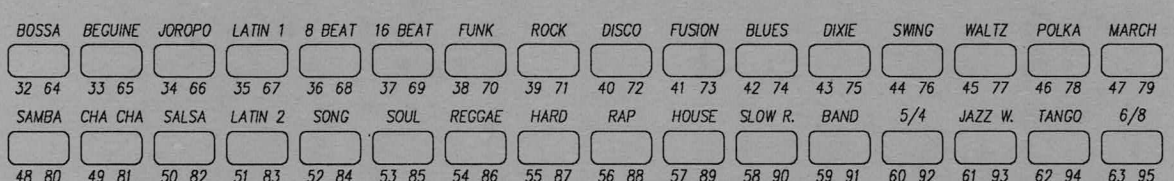
32 INTERNAL STYLES

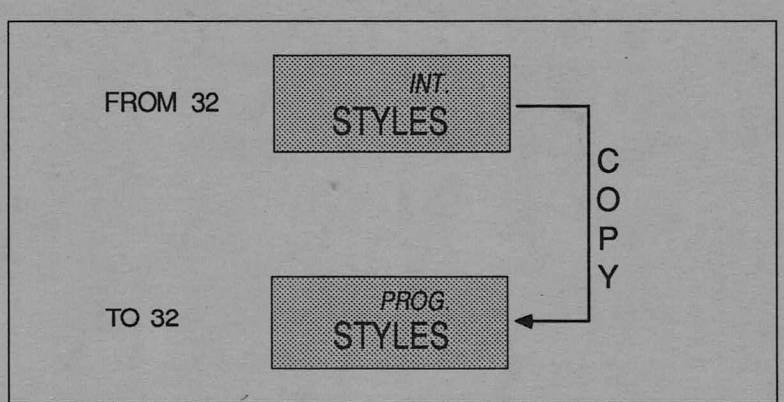
1.	BOSSA	**17.**	SAMBA
2.	BEGUINE	**18.**	CHA CHA
3.	JOROPO	**19.**	SALSA
4.	LATIN 1	**20.**	LATIN 2
5.	8 BEAT	**21.**	SONG
6.	16 BEAT	**22.**	SOUL
7.	FUNK	**23.**	REGGAE
8.	ROCK	**24.**	HARD
9.	DISCO	**25.**	RAP
10.	FUSION	**26.**	HOUSE
11.	BLUES	**27.**	SLOW R.
12.	DIXIE	**28.**	BAND
13.	SWING	**29.**	5/4
14.	WALTZ	**30.**	JAZZ W.
15.	POLKA	**31.**	TANGO
16.	MARCH	**32.**	COUNTRY

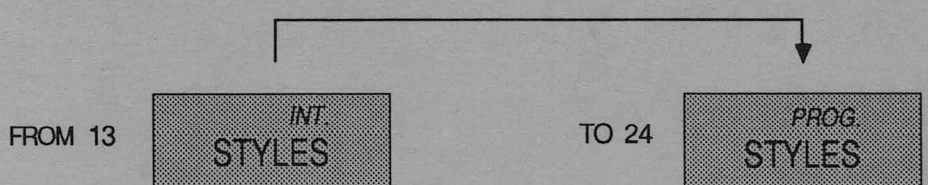












COPY EXAMPLE

PROG. STYLES

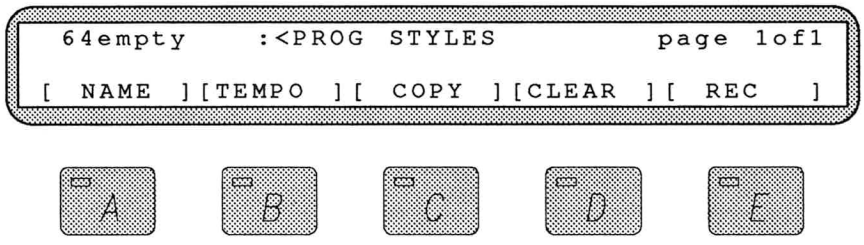
DESCRIPTION

PROG. STYLES: The rhythm unit of the WS uses 5 groups of digitally sampled sounds. The 64 dynamic percussive instruments, can be used to programme the 32 different STYLES. The PROG. STYLES occupy a part of the internal memory from MIDI location 64 to MIDI location 95. They enable the complete programming of the rhythms and the arrangements with a maximum length of four bars and the assignment of the PROGRAM CHANGE to all sections. Another characteristic of this function is the possibility to copy the entire INT. STYLES into the PROG. STYLES, permitting an eventual change in the INT. STYLES which can be personalized according to your choice and necessity. A GLOBAL is coupled to each STYLE.

PROCEDURE
To programme a STYLE:

1. Press **PROG. STYLES**.

2. Press **REC.**, the display will show:



3. Select the required function by pressing the relative button **A**, **B**, **C**, **D** or **E**.

4. Modify the relative parameters in question with the **ALPHA DIAL**.

A (NAME): Used for writing the name of the programmed STYLE.

B (TEMPO): Used to set the TEMPO of the respective STYLE.

C (COPY): To copy the STYLES (INT. / PROG.).

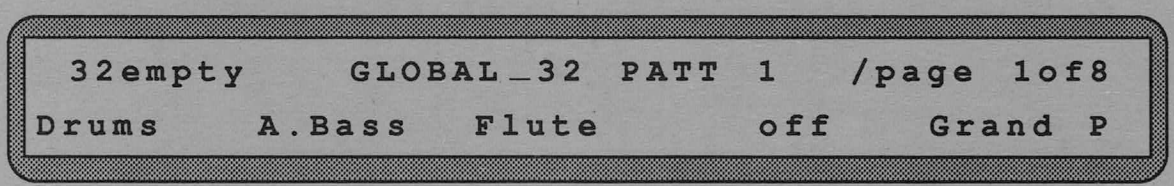
D (CLEAR): Used to completely cancel a STYLE.

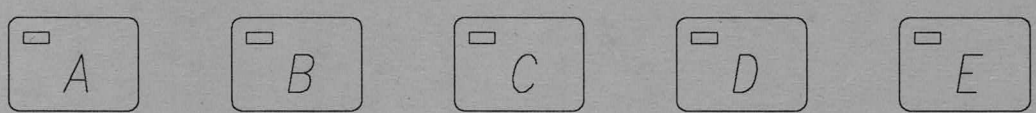
E (REC): Used for recording the basic structure of the STYLES from the keyboard.

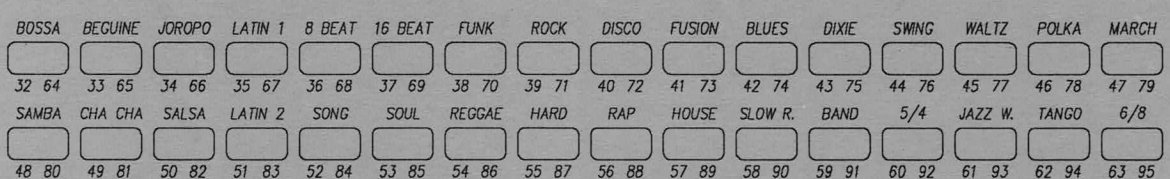
NOTE 1: The passage between one section and another is made by pressing **ESC.**

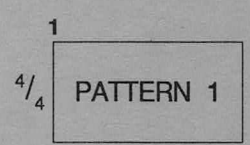
NOTE 2: The procedure for the use of some functions such as QUANTIZE, is the same as for several parts of the **SEQUENCER**. You should therefore refer to the procedure for **SONG PATTERN**.

NOTE 3 : The STYLES can also be loaded from DISK. Refer to the relation section for this procedure.

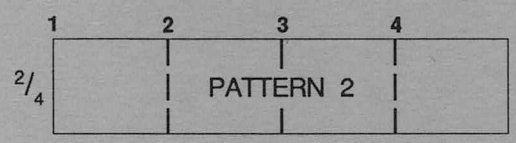




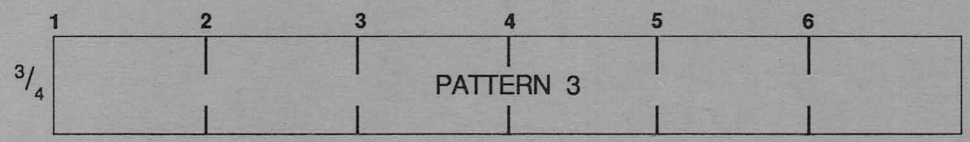




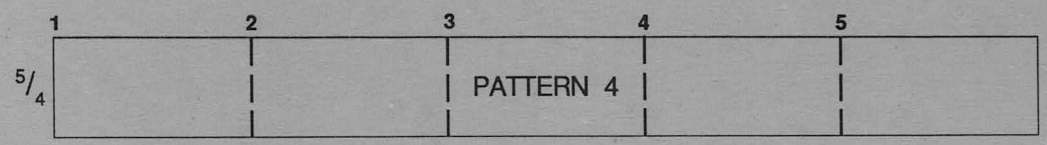
LEN = 1



LEN = 4



LEN = 6



LEN = 5

SONG PATTERN

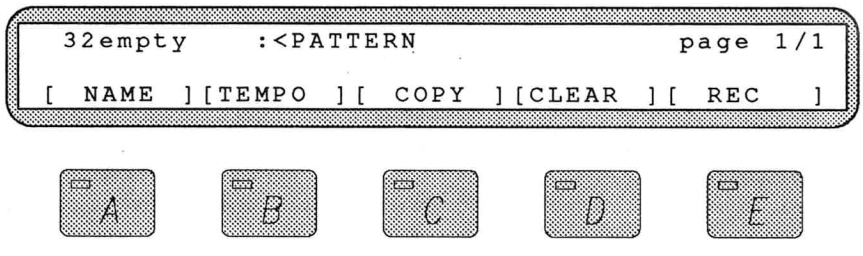
DESCRIPTION

SONG PATT. : By means of this function it is possible to programme up to 32 complete songs (rhythms, bass, accompaniment etc.), using the five sections (A - B - C - D - E) of the WS. The length of the song can be between 1 and 99 musical bars, or of an infinite number of bars, thereby enabling, complicated and simple configurations.
The SONG PATTERNS occupy a part of the internal memory from MIDI locations 32 to 64.
SONG PATTERNS enable the use of all the most important functions that the sequencer has, such as: COPY, CLEAR, NAME, TEMPO, QUANTIZE, AUTO PUNCH IN.

PROCEDURE
To programme a PATTERN:

1. Press **SONG PATT.**

2. Press **REC.**, the display will show:



3. Select the required function by means of the buttons **A**, **B**, **C**, **D** or **E**.

NOTE 1: The passage between one section and another is made by pressing **ESC.**

4. Modify the relative parameters with the **ALPHA DIAL.**

A (NAME): Used for writing the name of the programmed PATTERN. Proceed as in all the other functions of the WS where name writing is required.

B (TEMPO): Used to set the initial TEMPO of the PATTERN.

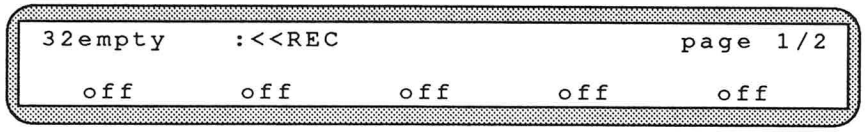
C (COPY): This function is used to copy the PATTERNS between each other (32 / 63).

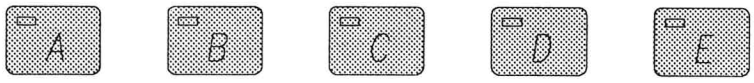
D (CLEAR): To completely cancel a PATTERN.

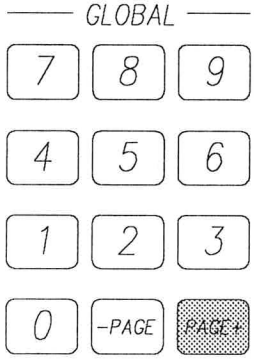
E (REC): Used for recording and obtaining access to the page containing the controls used for the activation of the tracks.

REC. (RECORD)

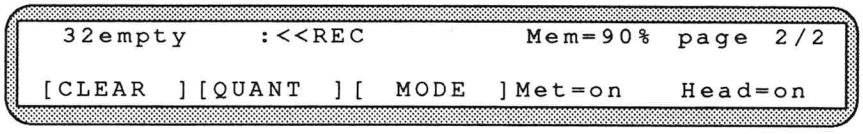
Press **button E**, corresponding to REC (see display on last page), to open page 1 of the 2 page display of the RECORD functions:

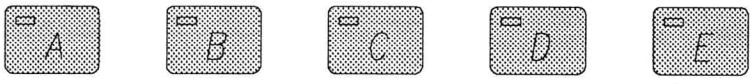






By means of this display and the 5 buttons **A, B, C, D** and **E** it is possible to activate/disactivate the 5 polyphonic sections.
Press **PAGE+** in the GLOBAL section to show page 2 of the display:





CLEAR

Used for respectively cancelling A, B, C, D, E, COMMON, CHORDS (Second page).

PROCEDURE

1. With the display showing as above, press **CLEAR** and then select the track to be erased, by pressing the corresponding button **A, B, C, D or E**.

2. Press **ENT**; the display will show the following message:

3. Repress **ENT**. to cancel the selected track or **ESC.** to leave the CLEAR operation.

QUANTIZE

This function is used to respectively quantize the tracks **A, B, C, D**, and **E**. In effect the QUANTIZE function adjusts any musical structure (also when recorded in an incorrect manner) according to the division that you select, and automatically puts this in time.

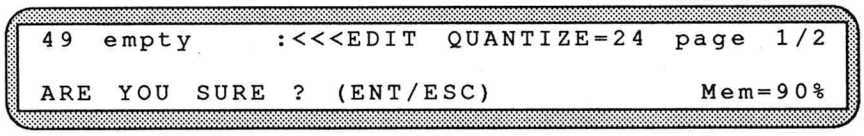
NOTE : By selecting the second page of the QUANTIZE display, it is possible to set the quantization for the COMMON / CHORDS tracks. The quantization of the COMMON and CHORDS tracks is normally used for high level functions and is not absolutely necessary when the COMMON / CHORDS tracks are recorded. However, the same procedure as for the tracks A, B, C, D, and E should be used.

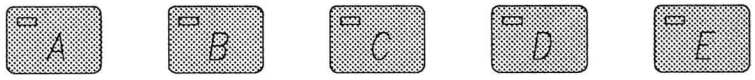
PROCEDURE

1. With the display showing page 2 of 2, press **QUANTIZE** and then select the type of quantization required by means of the **ALPHA DIAL**.

2. Select the required track by pressing **A**, **B**, **C**, **D** or **E**.

3. Press **ENT**; the display will show the following message:





4. Repress **ENT**. to memorize the quantization for the selected track or **ESC.** to leave the QUANTIZE operation.

MODE

Used to establish the operating mode of the musical parts to be recorded:

TIME: Controls the musical division of the beat.

LEN: Controls the length of the PATTERN (from 01 to 99 bars) or infinite (indicated by relative symbol).

PUN: By means of the PUNCH function, it is possible to insert a correction during the programming of the PATTERN. This function permits an immediate correction of the wrong track, starting from the exact point at which the recording is activated.

PROCEDURE

To activate the PUNCH function:

1. Press **REC**.

2. Press **button E**, corresponding to the REC. section (visualized on the display).

3. Press **PAGE+**.

4. Press **button C**, corresponding to the MODE section (visualized on the display).

5. Position the cursor on **PUN**, by pressing **button D**.

6. Turn the **ALPHA DIAL** until 'ON' appears on the display.

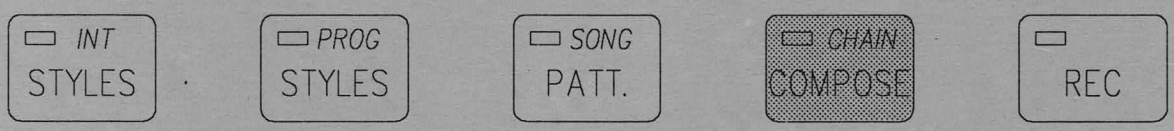
MET: By activating this function ('on' in the display), a metronome will be available.

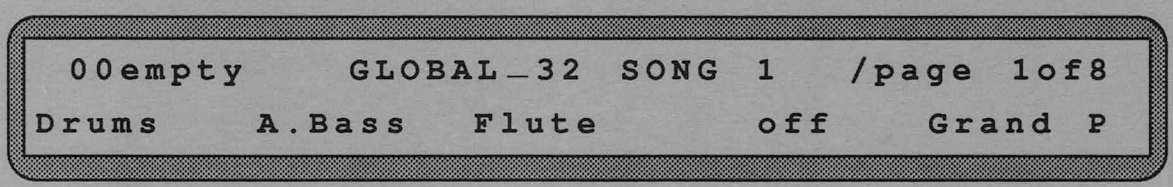
HOW TO ACTIVATE THE METRONOME

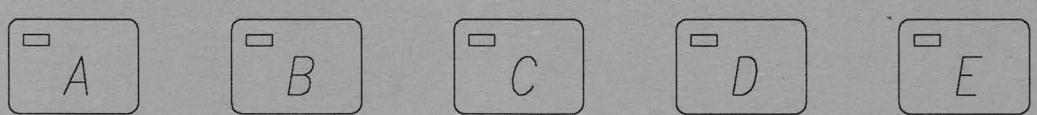
1. Press **button D** corresponding to MET in the bottom line of the display.

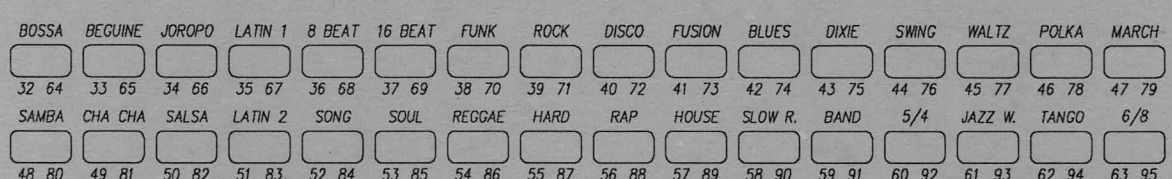
2. Turn the **ALPHA DIAL** until **'on'** is shown in this section of the display.

MEM: Indicates the amount of MEMORY available in the WS.









SONG 1	PATT. 1	PATT. 2	PATT. 1	PATT. 3	PATT. 4	PATT. 5	PATT. 2	PATT. 6	PATT. 3	PATT. 3

SONG 2	PATT. 7	PATT. 8	PATT. 9	PATT. 2	PATT. 8

SONG 3	PATT. 10	PATT. 11	PATT. 2	PATT. 3	PATT. 12	PATT. 14	PATT. 13	PATT. 3

SONG 4	PATT. 15	PATT. 16	PATT. 17	PATT. 12	PATT. 18	PATT. 19	PATT. 20	PATT. 2	PATT. 4

CHAIN COMPOSE EXAMPLES

CHAIN COMPOSE

DESCRIPTION

CHAIN COMPOSE : Links the PATTERNS to form SONGS (up to four) and the SONGS into a musical programme. The SONGS eventually programmed can be recalled in succession by means of the JUKEBOX function.

PROCEDURE

To link the PATTERNS together:

1. Press **CHAIN COMPOSE.**
2. Select one of the 4 buttons **A, B, C** or **D,** corresponding to the four 4 SONGS available.
3. Press **REC.**
4. Select the PATTERN desired, using the 32 rhythm buttons, the valid numbers of which, in this case are those from 32 to 63.
5. Press **ENT.**
6. Establish how many times the selected PATTERN will have to be repeated (Loop), using the **ALPHA DIAL** (from 01 to 99 MAX).
7. Press **PAGE+** (selection of the 32 parts); "PART 2" will appear on the display, this indicating the second of the 32 parts, then proceed as in points 3, 4, 5 above.
8. Press **ESC,** then start the composition by pressing **START/STOP.**

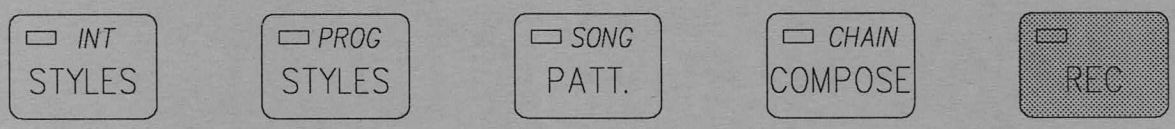
To recall the SONGS in succession:

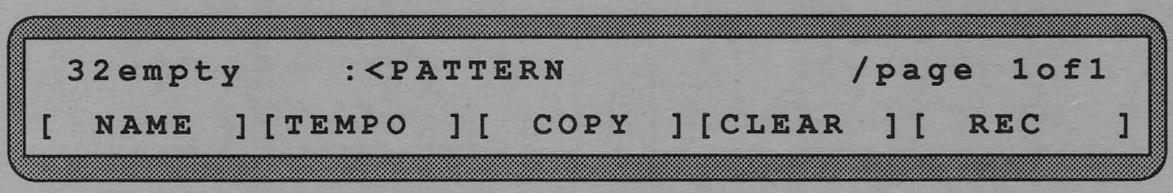
1. Press **CHAIN COMPOSE.**
2. Press **JUKEBOX.**
3. Press **START/STOP.**

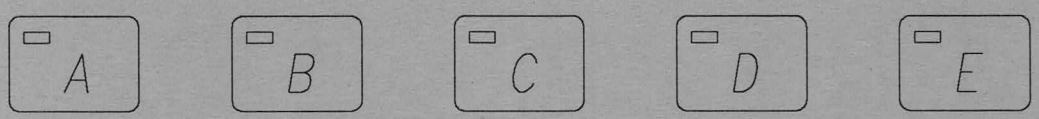
NOTE 1: When the "LOOP" function corresponds to the number 00, the word "NULL" will be seen on the display in place of "PART".
This condition indicates that the PATTERN has not been assigned to one of the 32 PARTS. In this case although the pattern will not be performed, the parameters will remain in the memory.

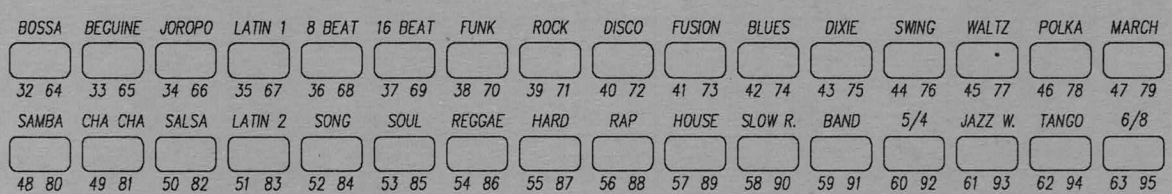
NOTE 2: To give a NAME to the composition, use the 32 buttons corresponding to the letters of the alphabet.

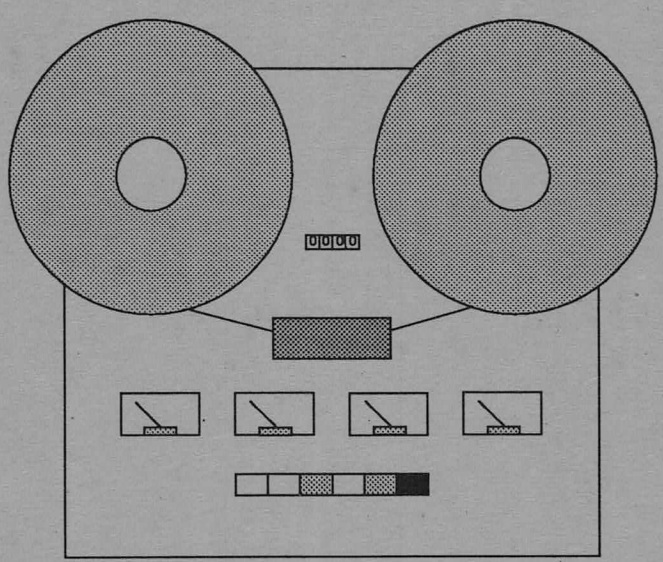
NOTE 3: When the WS is delivered, the **JUKEBOX** function contains a complete DEMO.


INT
STYLES
PROG
STYLES
SONG
PATT.
CHAIN
COMPOSE
REC


32empty :<PATTERN /page 1of1
[NAME][TEMPO][COPY][CLEAR][REC]


A
B
C
D
E


BOSSA 32 64
BEGUINE 33 65
JOROPO 34 66
LATIN 1 35 67
8 BEAT 36 68
16 BEAT 37 69
FUNK 38 70
ROCK 39 71
DISCO 40 72
FUSION 41 73
BLUES 42 74
DIXIE 43 75
SWING 44 76
WALTZ 45 77
POLKA 46 78
MARCH 47 79
SAMBA 48 80
CHA CHA 49 81
SALSA 50 82
LATIN 2 51 83
SONG 52 84
SOUL 53 85
REGGAE 54 86
HARD 55 87
RAP 56 88
HOUSE 57 89
SLOW R. 58 90
BAND 59 91
5/4 60 92
JAZZ W. 61 93
TANGO 62 94
6/8 63 95

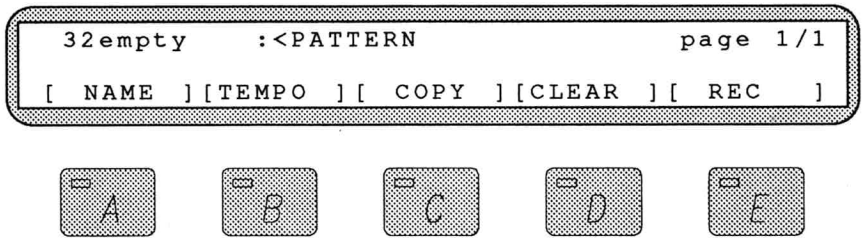


REC (RECORD)

DESCRIPTION

REC. (RECORD): This control enables the recording of the following functions: PROG. STYLE, SONG PATT., CHAIN COMPOSE, TRACK TEMPO, COMM. CHORDS.

PROCEDURE (SONG PATT.)
Pressing **REC.** will automatically activate the SONG PATTERN function and show the following display :



If you want to start a recording immediately:

1. Press **REC.** (as mentioned above).
2. Press **button E**, corresponding to REC. on the display.
3. Activate one or more sections by pressing the buttons from **A** to **E** (pressing the relative button twice to activate the section in the **RECORD** mode).
4. Press **START/STOP** and at the same time start to play the WS.

N.B. - The led indicators on the five buttons A, B, C, D and E, have 3 operating conditions:

1. **ON:** When the led is 'ON', the recorded section is in the PLAY mode.
2. **OFF:** When the led is 'OFF', the recorded section cannot be played because it is disactivated .
3. **FLASHING:** When the led is flashing, the section is activated in the RECORD mode.

HOW TO CHANGE TEMPO IN EACH INT. STYLE
Each INTERNAL STYLE is coupled to an appropriate TEMPO.

To modify the TEMPO programming of each STYLE:

1. Press **INT. STYLES**.

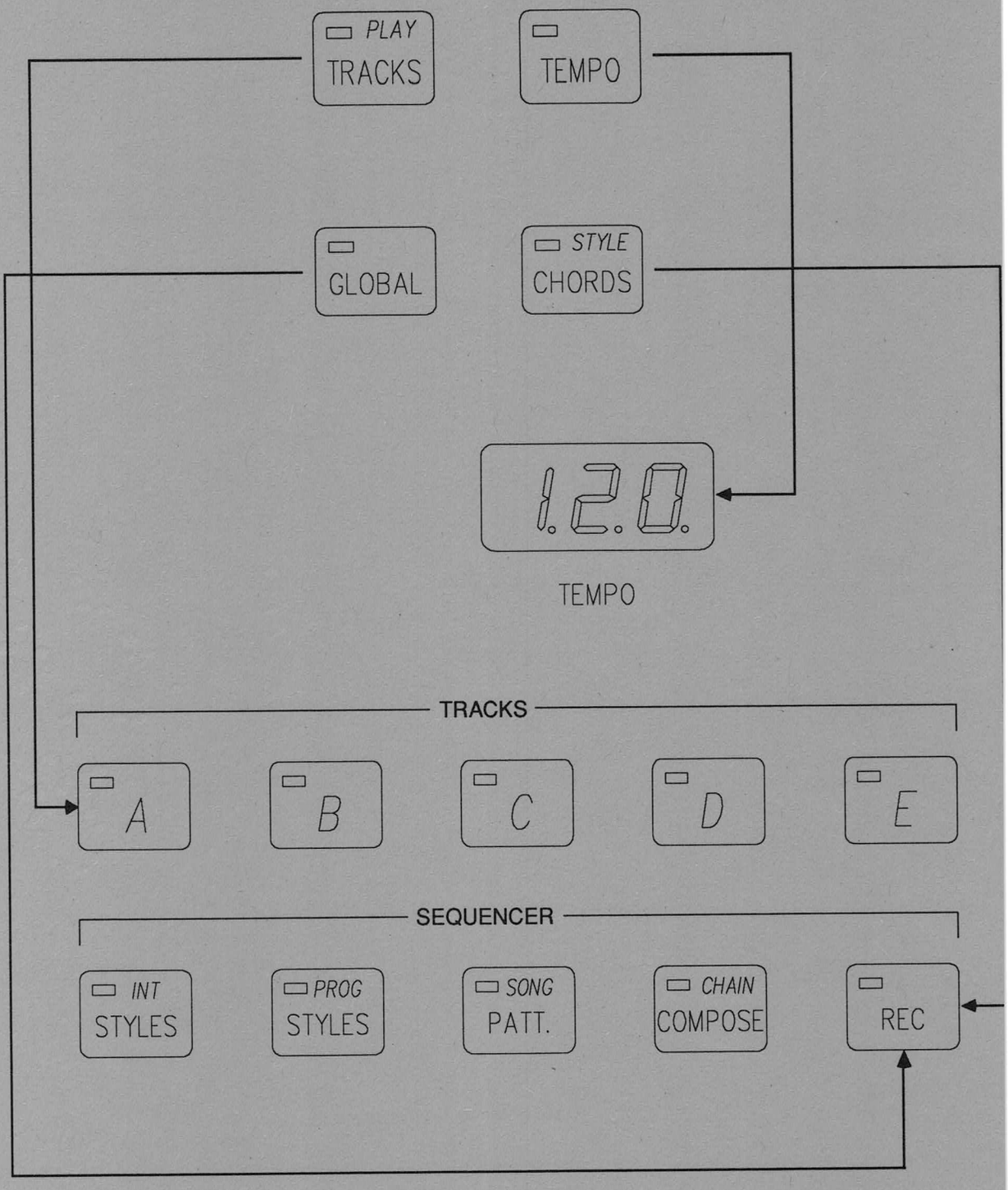
REC. continued

2. Press **REC.**

3. Select the INT. STYLES desired.

4. Control the TEMPO with the **ALPHA DIAL.**

5. Repress **REC.**, or **ESC** (ESCAPE).
   The TEMPO function will be memorized automatically.


PLAY
TRACKS
TEMPO
GLOBAL
STYLE
CHORDS
120
TEMPO
TRACKS
A
B
C
D
E
SEQUENCER
INT
STYLES
PROG
STYLES
SONG
PATT.
CHAIN
COMPOSE
REC

SEQ. CONTROLS

DESCRIPTION

By means of the four PLAY TRACK, TRACK TEMPO, FULL GLOBAL and COMM. CHORDS controls, several functions are available to simplify the use of the WS. When the instrument is turned 'ON', these four controls will be automatically activated.

PLAY TRACK: PLAY TRACK = OFF: The selected tracks will always be active. PLAY TRACK = ON: The tracks will be recalled automatically for each STYLE or PATTERN selected.

TRACK TEMPO: By means of this control, it is possible to programme a different TEMPO for each musical part.

FULL GLOBAL: FULL GLOBAL = OFF: The selected GLOBALS operate only on the sections assigned to the Sequencer (INT. STYLES, PROG. STYLES, SONG PATT. and CHAIN COMPOSE). FULL GLOBAL = ON: The selected GLOBALS work on all the sections, also organizing the timbres on the right hand.

COMM. CHORDS: The COMMON CHORDS control permits the recording of the chords according to the notes played on the part of the keyboard dedicated to the arrangements. This control can only be used with the SONG STYLES. COMM. CHORDS is a track which records and transmits all the information on the COMMON MIDI CHANNEL: INTRO - FILL - END - STYLE SELECT - NOTE COMMON.

TRACK TEMPO PROGRAMMING

TO PROGRAMME THE TRACK TEMPO IN PROG. STYLES:

1. Press **PROG. STYLES**.
2. Press **REC.**
3. Press **button B**, corresponding to TEMPO (visualized on the display).
4. Select the PROG. STYLE desired.
5. Control the TEMPO with the **ALPHA DIAL**.
6. Press **ESC.** in the EDIT section **twice**. The TEMPO will be memorized automatically.

TO PROGRAMME TRACK TEMPO IN SONG PATT:

1. Press **SONG PATT.**
2. Refer to points 2 - 3 - 4 - 5 - 6 in PROG. STYLES procedure on the previous page.

TO PROGRAMME TRACK TEMPO IN INT. STYLE:

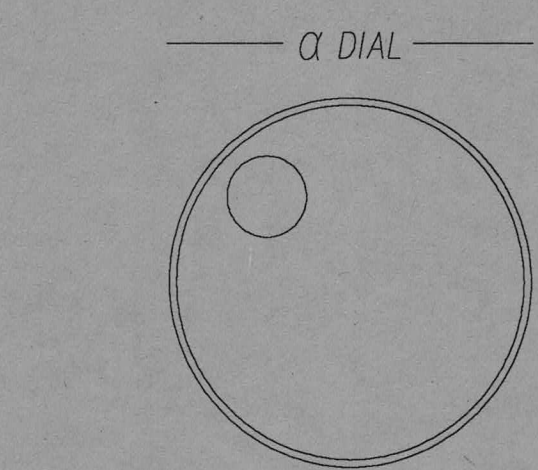
1. Press **INT. STYLES.**
2. Refer to points 2 - 3 - 4 - 5 - 6 in PROG. STYLES procedure on the previous page.

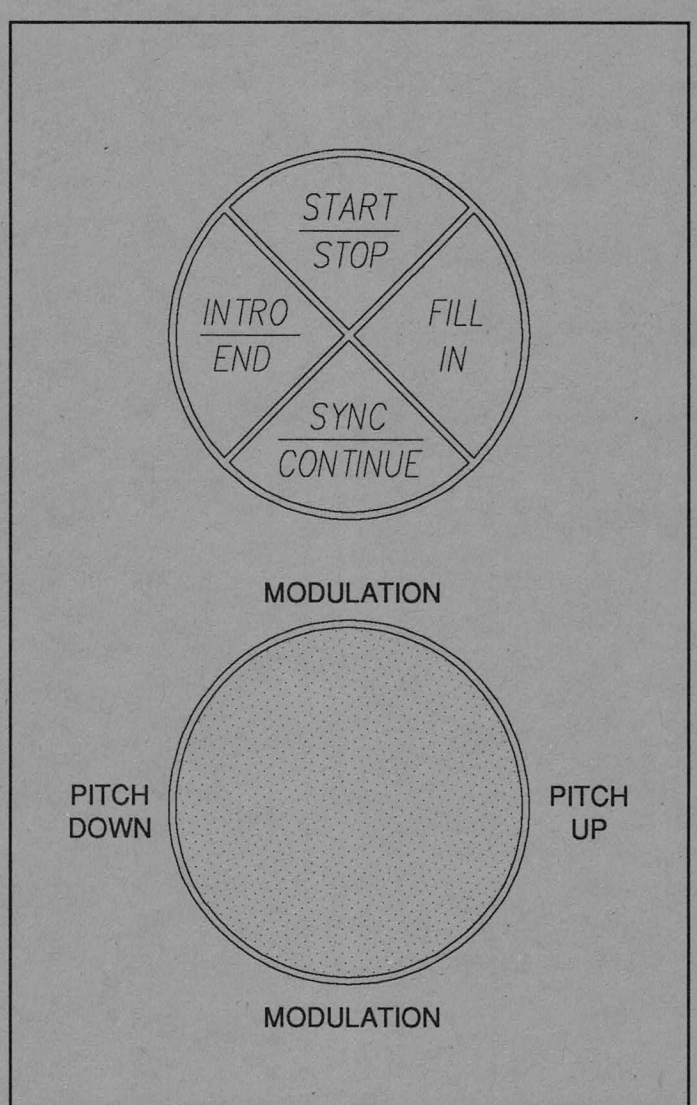
TO PROGRAMME TRACK TEMPO IN COMMON CHORDS:

1. Press **SONG PATT.**
2. Press **REC.**
3. Press **button E** corresponding to the REC. section (visualized on the display).
4. Select **INT. STYLES** or **PROG. STYLES** (if necessary).
5. Select the STYLES desired.
6. Press **COMM. CHORDS** (until it stops flashing).
7. Carry out the recording of the chords by playing on the keyboard in the part programmed to recognize the chords and then press **START/STOP.**
8. Repress **START/STOP** immediately after finishing the recording of the chords.
9. Press **REC.** to disactivate the CHORDS track from the record mode.

NOTE 1: The chord programming can be done on the optional pedalboard, using the procedure on the right (see **SPLITS** section **NOTE 3**)

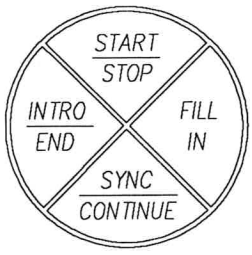
NOTE 2: All the notes played on the **COMMON CHORDS** track can be transmitted via MIDI to an external unit on the **COMMON MIDI CHANNEL (1 - 16)**


α DIAL


START
STOP
INTRO
END
FILL
IN
SYNC
CONTINUE
MODULATION
PITCH
DOWN
PITCH
UP
MODULATION

MANUAL CONTROLS

DESCRIPTION



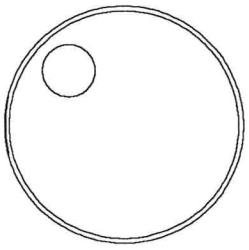
START/STOP: Pressing this button the first time, will start a STYLE. Repressing, will stop the STYLE.

FILL IN: Pressing this button while a STYLE is playing will play a characteristic 'Drum Break'.

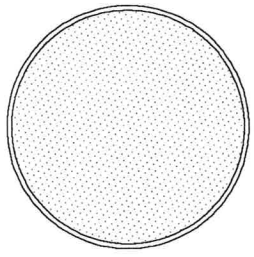
SYNC/CONTINUE: Pressing SYNC/CONTINUE will suspend the playing of the STYLE until you press a key on the automatic arrangements section of the keyboard, when it will continue playing from the exact point that it was stopped at.

INTRO/END: Pressing this button for the first time will play an introduction in the STYLE selected. Pressing it during a performance will play an ENDING complete with the arrangement. The INTRO/END functions are completely programmable.

α DIAL



ALPHA DIAL: By means of the ALPHA DIAL, it is possible to control all the functions of the instrument. Using this control you will be able to quickly select the numerous parameters available.



PITCH/MODULATION: The WS is equipped with a PITCH/MODULATION BALL, positioned on the extreme left of the panel. With this control you will be able to add GLISSATO (PITCH) and VIBRATO (MODULATION) effects to the voices, to each respective section. The PITCH and MODULATION effects can be programmed in the 5 sections in 4 ways:

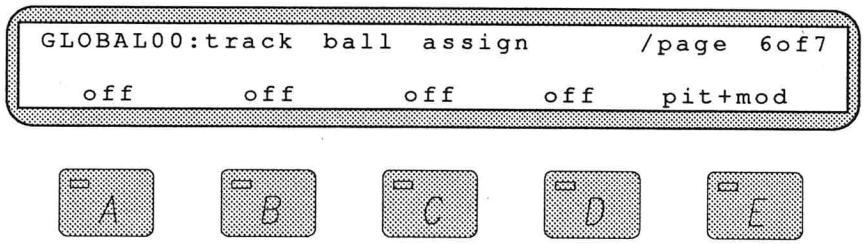
1. **OFF:** The section in use is disactivated from the PITCH /MODULATION effects.
2. **PITCH:** The section in use is activated with the PITCH effect.
3. **MOD:** The section in use is activated with the MODULATION effect.
4. **PIT+MOD:** The section in use is activated with both PITCH and MODULATION.

NOTE: By means of the **PITCH/MODULATION BALL**, it is possible to control the **SLOW/FAST** functions of the **ROTARY** effect (see ROTARY in the **EFF. 1** section).

PROCEDURE
To obtain PITCH/MODULATION effects:

1. Press **GLOBAL**, in the EDIT section.

2. Press **PAGE+** in the GLOBAL section to select this page (6 of 7):



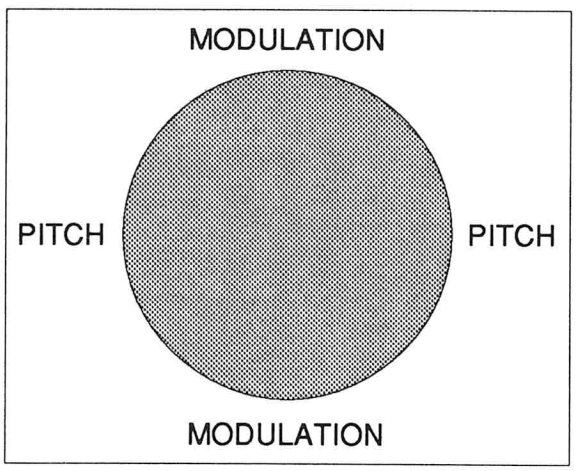
3. Activate the required section by pressing the relative button (**A**, **B**, **C**, **D** or **E**). The section will flash in the display.

4. Select one of the four modes available (off, pitch, mod, pit + mod), by turning the **ALPHA DIAL**.

HOW TO USE THE PITCH/MODULATION BALL

NOTE 1: To activate the two speeds, **SLOW/ FAST** of the **ROTARY** effect, move the PITCH/ MODULATION BALL in a North/South direction towards either of the words MODULATION in the design on the right.

NOTE 2: Move the PITCH/MODULATION BALL in the required direction while playing.

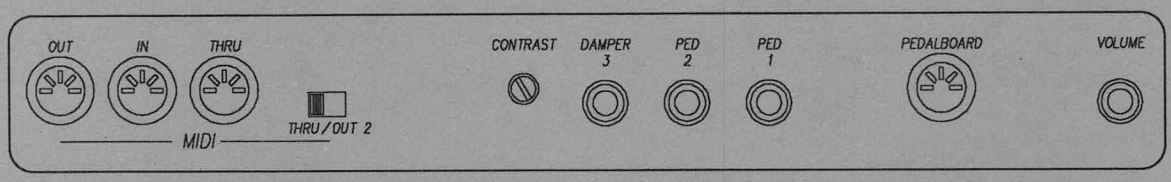


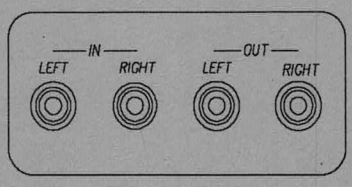
HOW TO SAVE

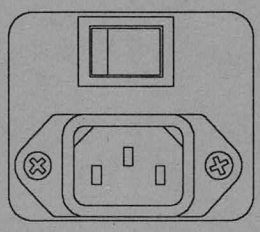
1. Press **ENT** in the EDIT section.

2. Select the GLOBAL number desired, with the **ALPHA DIAL**.

3. Repress **ENT**.


OUT
IN
THRU
MIDI
THRU / OUT 2
CONTRAST
DAMPER 3
PED 2
PED 1
PEDALBOARD
VOLUME


IN
LEFT
RIGHT
OUT
LEFT
RIGHT



IN / OUT

DESCRIPTION

Several external controls, for many useful functions, can be connected to the numerous sockets on the back panel of the WS. In fact, thanks to various optional accessories, many functions can be externally controlled very easily. The back panel contains also: MIDI sockets, input and output sockets etc.

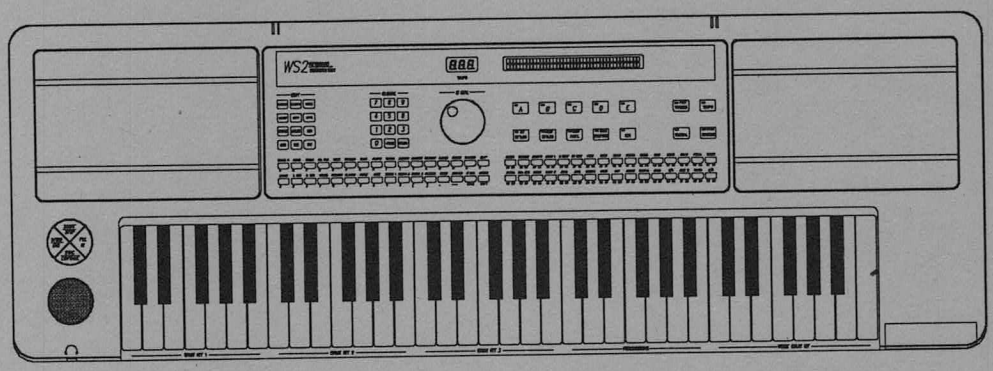
The back panel of the WS is composed of the following:

NOTE: Use only DIN standard MIDI cables for the various connections.

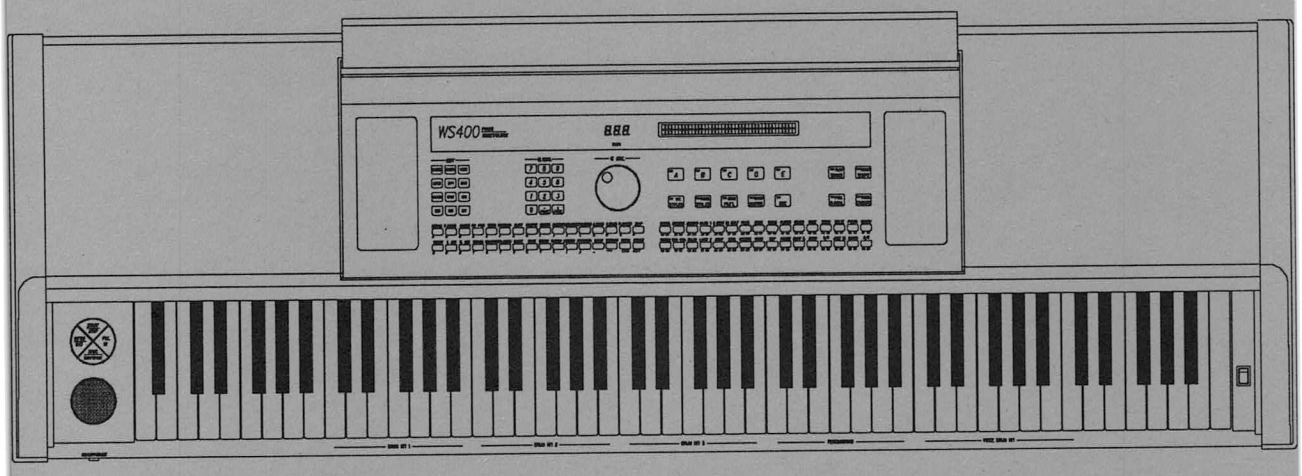
1. **MIDI OUT**: All MIDI compatible instrument can be controlled by connecting to this socket.
2. **MIDI IN**: Other MIDI compatible instruments can be used to control the WS by connecting to this socket.
3. **MIDI THRU**: This socket is used to enable more MIDI connections, using several MIDI compatible instruments.
4. **THRU/OUT 2**: By means of this switch you can select the function of the MIDI THRU socket. In effect, the switch enables the THRU or MIDI OUT 2 function when placed in the respective positions.
5. **CONTRAST**: This control is the brightness control for the display on the front panel.
6. **DAMPER (3) - PED (2) - PED (1)**: By means of these sockets it is possible to connect the 3 optional pedal switches to the WS.
7. **PEDALBOARD**: It is possible to connect the optional pedalboard to this socket. Push the male connecting plug firmly into the female socket marked PEDALBOARD (see note 3 in the SPLITS section).
8. **VOLUME**: A Volume Pedal (optional) can be connected to this socket.
9. **IN (LEFT/RIGHT)**: These sockets enable you to connect other instruments to the amplification system in the WS and listen to them through the WS's loudspeakers.
10. **OUT (LEFT/RIGHT)**: These audio output sockets enable the connection of the WS to an external amplifier or mixer.
11. **POWER SUPPLY SOCKET**: Enables the connection of the WS to a suitable power outlet socket by means of the power connecting cable supplied (see HELP section).

HEADPHONES

By inserting a pair of headphones **(8 / 30 ohms)** into the socket near to the PITCH MODULATION BALL on the left hand side of the WS, you will be able to play without disturbing others and without being disturbed. The internal loudspeakers of the WS will automatically be disconnected when you plug in the headphones.



WS 2



WS 400

GENERAL INFORMATION

PRECAUTIONS

This instrument must not be exposed to:

1. Direct sunlight
2. High temperature or humidity.
3. Dust or sand.
4. Excessive vibrations.

POWER SUPPLY

The WS operates only on **ALTERNATING CURRENT (A.C.)**. Eventual use in a country where the voltage is different to that indicated on the label on the bottom of the instrument, will require changes to be made to the instrument. These can only be made by a qualified and authorized **GENERALMUSIC** technician.

INTERFERENCE

The WS uses microprocessor based technology which can cause interference to radio and TV apparatus. If this should occur, place the instrument further from the radio or television set concerned.

HANDLE WITH CARE

Even though the WS has been designed according to the highest standards of quality, eccessive knocks can cause damage to keys and knobs etc.

CLEANING

To clean the external parts of the WS, use only a soft, dry cloth. **Never use petrol, alcohol or other solvents as these will cause damage to the surface finishes and panels.**

FLOPPY DISKS

When handling floppy disks, follow these precautions:

1. Do not leave disks near to loudspeakers, television sets or other electrical apparatus which generate high magnetic fields which can cause the cancellation of the memorized data.

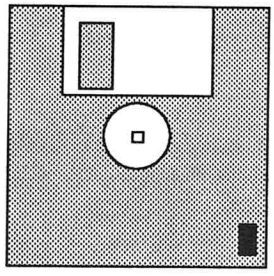
2. Avoid storing disks in extremely hot or cold places or where they can come into contact with smoke or dust.

3. Never leave disks in direct sunlight.

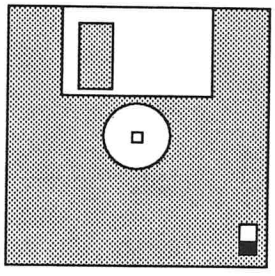
4. Never bend disks or put pressure onto them.

5. Never try to open the metallic protection shutter.

N.B. - As all cassettes, micro floppy disks also have a protection system. When the window is open, the MEMORY PROTECT function will not permit any type of recording to be made onto the disk. To turn off the MEMORY PROTECTION of a protected disk, move the plastic slider to close the window, thereby enabling normal data recording to be made on the disk (refer to designs below).



UNPROTECTED
(a)



PROTECTED
(b)

INITIALIZATION - WS

Thanks to the " MEMORY PUFF " function, it is possible to carry out a MASTER RESET of the whole instrument. This operation will completely cancel all the programming done in the WS.
NOTE : You are advised not to use the MEMORY PUFF function too frequently to avoid unpleasant cancellations.

MEMORY PUFF PROCEDURE
To activate the MEMORY PUFF function (initialization), **SIMULTANEOUSLY** press the first four voices called GRAND P. - PIANO - RHODX - FM. PNO together with the last four voices called CHOIR - STRINGS - A. DIAL - DRUMS.

TECHNICAL SPECIFICATION

- 2 Megabytes of PCM samples and waveforms.
- 128 User programmable voices, complete with multi-sampled Grand Piano.
- 128 User programmable GLOBAL presets.
- 2 User programmable Digital Effects Processors with 128 Reverberations + 128 other effects (Chorus, Flanger, Delay, Phaser).
- Dynamic 61 note lightly weighted keyboard (WS 2).
- Dynamic 88 note weighted keyboard (WS 400).
- 5 Splits / 5 Layers / 3 level Dynamic Switch.
- High level user interface for Real-Time performances, including Pitch Ball, Pedalboard and programmable Function pedals.
- 32 Internal Styles ; up to 32 User programmable Styles.
- 64 percussion sounds divided into 5 Drum sets:
  Rock - Dance - Jazz - Ethnic - Human.
- Multi Track Sequencer with professional editing for:
  Real-time, Songs, Style Songs, Pattern Songs.
- Chain Compose function.
- Optional 3.5" Disk Drive (up to 10 complete dumps of Voices, Globals, Styles, Patterns, Songs, on each disk).
- Pre-programmed disks available.
- 20 W + 20 W stereo amplification (WS 2), 40 W + 40 W stereo, 3 way, 6 speakers (WS 400).
- MIDI IN/OUT/THRU (Out /Thru Switch) AUX IN/OUT LEFT/RIGHT.
- Digital Pre-amplifier.
- Dimensions **WS 2** (H x L x D) mm. 120 x 1090 x 370.
- Dimensions **WS 400** (H x L x D) mm. 842 x 1440 x 470.

TIMBRE MENU WS 2 / WS 400

Accordion	Choir	Harmonica	Pulse
Banjo	Flugelhorn	Horns	Rhodx ff
Bass - Acoustic	Flute	Harp	Rhodx pp
Bass - Electric	FM Piano ff	Harpsichord	Saw + Pulse
Bass - Flanged	FM Piano mf	Marimba	Sawtooth
Bass - Pick	FM Piano pp	Muted + Horn	Sax - Soprano
Bass - Slap	Grand ff	Muted	Sax - Tenor
Bells	Grand mf	Oboe	Sinus + Horn
Brass ff	Grand pp	Organ 1	Sinus + Pulse
Brass pp	Guitar - Acoustic	Organ 2	Sinus + Muted
Clarinet + Brass	Guitar - Funky	Organ 3	Sinus
Clarinet + Organ	Guitar - Jazz	Organ 4	Strings
Clarinet + Pulse	Guitar - Lead	Organ 5	Trombone
Clarinet	Guitar - Pick	Piano ff	Trumpet
Clavinet	Harmonica + Acc.	Plectra	Vibes
Cluster	Harmonica + Sinus	Pulse + Organ	Violin

OPTIONAL ACCESSORIES

WS SINGLE SWITCH	WS 2
WS MULTI SWITCH	WS 2
WS DYNAMIC PEDALBOARD	WS 2
VOLUME PEDAL	WS 2
3.5 DISK DRIVE SOFTWARE	WS 2 / WS 400
WS HOME STAND	WS 2
WS STAGE STAND	WS 2
WS 2 CARRYING BAG	WS 2
WS 400 CONTROL PEDALBOARD	WS 400
PIANO BENCH / KEYBOARD BENCH	WS 2 / WS 400

MANUFACTURER
GeneralMusic s.p.a.

MODEL
WS 2 / WS 400

Data : 17/05/1990
Version : 1.0

MIDI Implementation Chart

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1 - 16	1 - 16	
	Changed	1 - 16	1 - 16	
Mode	Default	Mode 3	Mode 3	
	Messages	X	X	
	Altered	**********	X	
Note Number		21 - 108	21 - 108	**For WS 400**
		36 - 96	21 - 108	**For WS 2**
	True Voice	**********	21 - 108	
Velocity	Note ON	O 9nH v= 1-127	O 9nH v=1-127	
	Note OFF	X 9nH v= 0	X	
After Touch	Key 's	X	X	
	Ch 's	X	X	
Pitch Bender		O	O	128 steps (MSB)
Control Change	01	O	O	Mod. Wheel
	06	O	O	Data entry MSB
	07	O	O	Main volume
	64	O	O	Damper pedal
	66	O	O	Sosten. pedal
	67	O	O	Soft pedal
	96	O	O	Data increment
	97	O	O	Data decrement
	111	O	O	(1)
	112	O	O	(1)
Program Change		O (0 - 127)	O (0 - 127)	
	True #	**********	(0 - 127)	
System Exclusive		O	O	
System Common	Song. Pos.	X	X	
	Song. Sel.	O (0 - 127)	O (0 - 127)	
	Tune	X	X	
System Real Time	Clock	O	O	
	Commands	O	O	Start/Stop Continue
Aux Message	Local ON/OFF	O	O	
	All Notes OFF	O	O	
	Active Sense	O	O	
	Reset	X 0	O	

NOTES : (1) GeneralMusic reserved Control Change

Mode 1 : OMNI ON, POLY
Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY
Mode 4 : OMNI OFF, MONO

O : Yes
X : No

NOTES :

NOTES

NOTES