AKAI
professional

AX73

PROGRAMMABLE
POLYPHONIC SYNTHESIZER
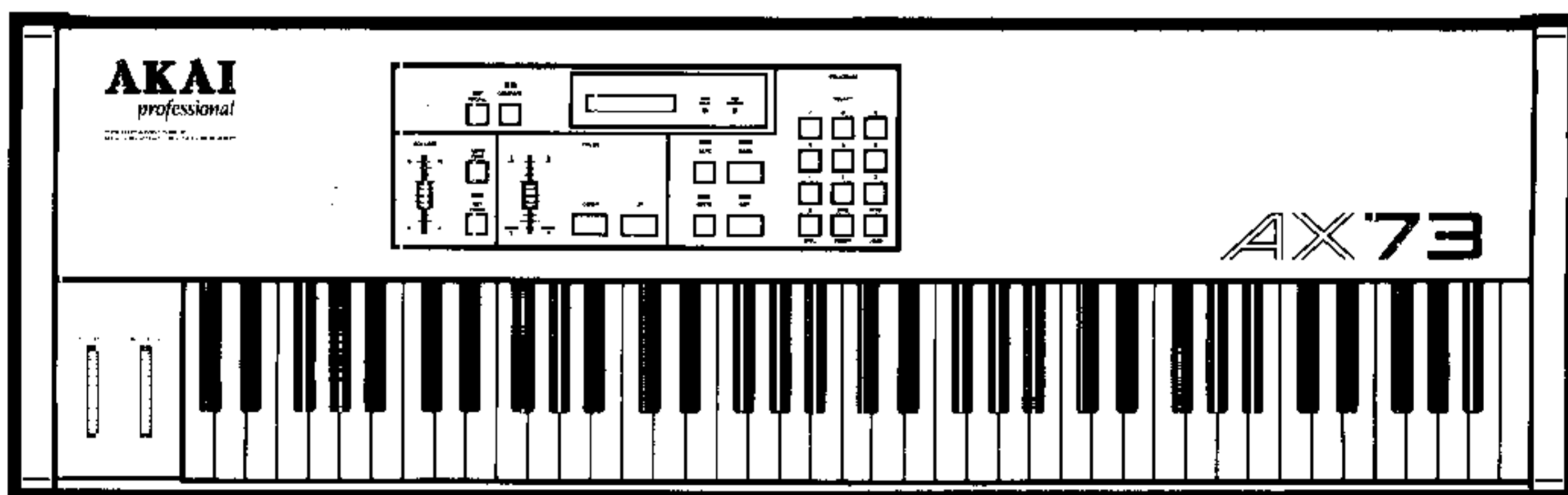
Operator's Manual

Features

Table of contents

The AX73 is a 73-key 6-voice synthesizer which includes the MIDI split function, and can be used in connection with external sound sources to improve your system.

1. Up to 100 types of voice data can be stored in the internal memory.
2. The AX73 can be used as a master key-split keyboard by using the MIDI split function to indicate the split point, dividing the keyboard into an upper key section and lower key section, and assigning different external sound sources to these sections.
3. A sampler input jack (13PIN/DIN) makes it possible to create new sounds by editing sampler voice data or mixing the sampler voice data with internal sound sources.
4. The voice name can be written in up to 12 letters on the display when voice data has been edited.

3
Controls

EDIT RECALL Button
Use this button to recall the last voice data edited when in the Edit mode.

COMPARE Button
Use this button to compare the voice to be preset with the previously set voice when in the Edit mode.

LC Display
Displays the program number voice names and the parameters.

MIDI RECEIVE Indicator
Lights when the MIDI message has been received.

MIDI SPLIT Indicator
Lights when the split function is being used.

BANK Button
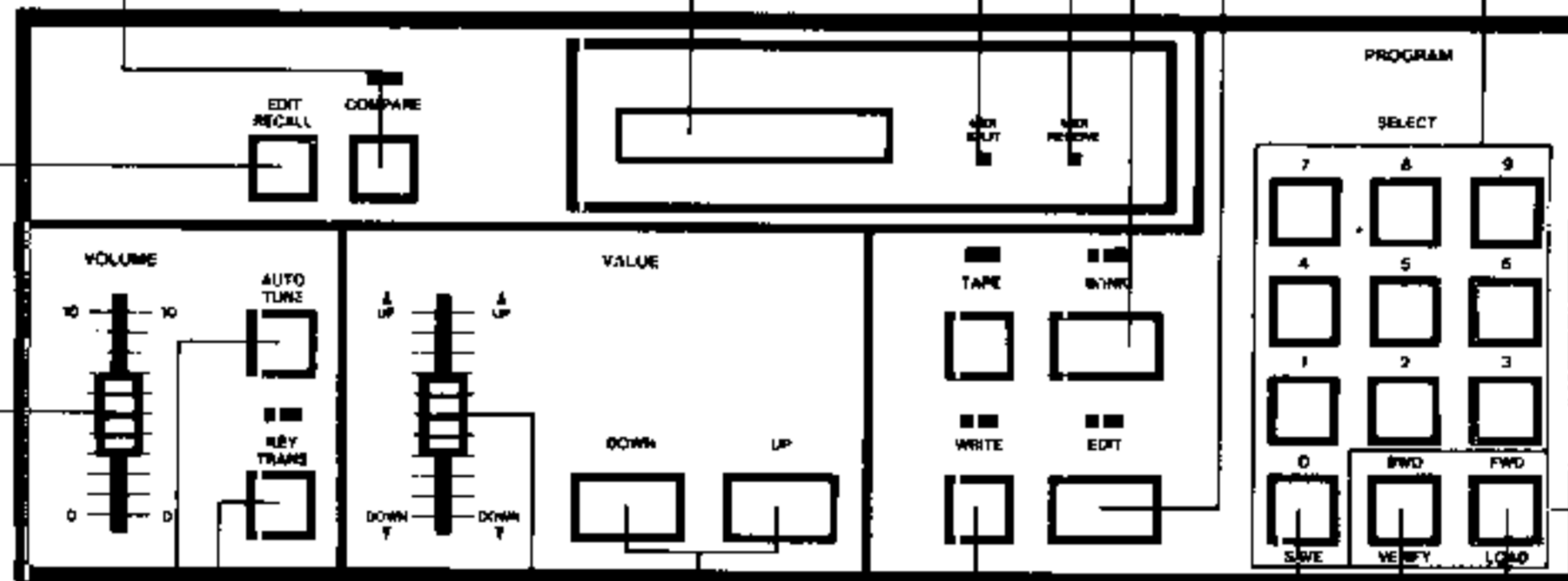Use this button to recall the program number or the parameter.

EDIT Button
Use this button to program new voice data using data stored in the memory bank.

SELECT Button
Use these buttons to select either the program number or the parameter bank number.

FWD/BWD Button
Use these buttons to change the program number or parameters one step at a time.

VOLUME Control
Use this control to adjust the output level. The control can also be used to adjust the volume of the headphones.

AUTO TUNE Button
Press this button to tune all the AX73's VCOs and VCFs and to output the MIDI tuning request message.

KEY TRANS Button
Use this button to transfer the pitch ±1 octave from 3C. To cancel press the button again so that the LED turns off.

VALUE Control
Use this control to perform rough adjustment of the parameter data when in the Edit mode.

WRITE Button
Use this button to store the voice data programmed in the Edit mode in the memory bank.

UP/DOWN Buttons
Use these buttons to change the parameter data one step at a time when in the Edit mode. These buttons are used for fine adjustment of the data.

LOAD Button
Use this button to load the data from a tape into the memory bank.

VERIFY Button
Use this button to check that the memory bank data has been properly recorded on a tape.

SAVE Button
Use this button to save the data in the memory bank onto a tape.

MEMORY PROTECT Switch
Use this switch to protect
the memory bank. Keep it
in the ON position to protect
the memory, except when
writing a program.

PEDAL SUSTAIN Jack
Use this jack to increase
the release time through a
pedal unit.

OUTPUT Jacks
Use these jacks for con-
nection to the input of a
keyboard amplifier or mixer.

PEDAL PROGM UP Jack
Use this jack to increase
the program number one
step at a time through a
pedal unit.

TUNE Control
Use this control to adjust
the pitch of the AX73 to
match other instruments.
The pitch can be changed
by ±50 cents.

CONTRAST Control
Use this control to adjust
the contrast of the display.

POWER Switch

AKAI *professional* **AX73**
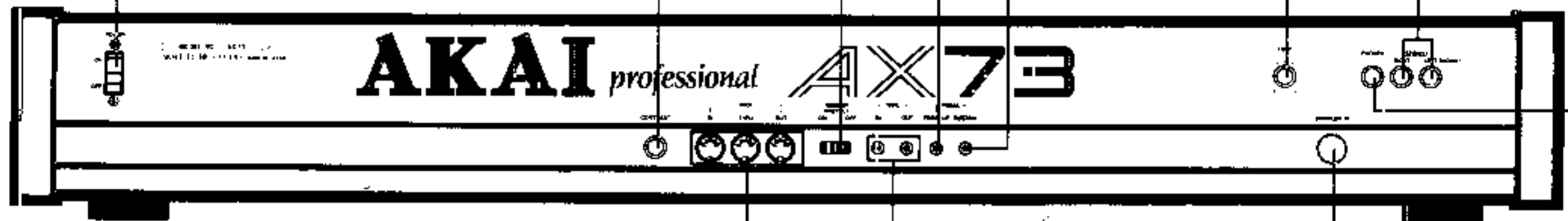
MIDI Jacks (IN/OUT/THRU)
IN Jack:
This jack is used for MIDI
data reception.
OUT Jack:
This jack is used for MIDI
data transmission.
THRU Jack:
This jack is used to output
the data received at the
MIDI IN without modifica-
tion.

TAPE Memory IN/OUT Jacks
These jacks are used to
save the voice data in the
memory banks onto a
cassette tape and to load
the voice data saved on a
cassette tape into the
AX73 memory banks.
IN Jack:
Connect this jack to the
tape recorder's OUTPUT
jack.
OUT Jack:
Connect this jack to the
tape recorder's MIC INPUT
jack.

SAMPLER IN Jack
Connect this jack to an
AKAI sampler (the S612,
for example) to edit the
sampler voices or to mix
the sampler voices to the
AX73's internal sound
sources.

PHONE Jack
Use this jack to listen
through stereo head-
phones.

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Connections

As the AX73 is not equipped with a built-in amplifier or speakers, a separate power amplifier (a keyboard amplifier for example) and instrument speakers are needed.

Before Making Connections
○ Be sure the power is off, or connect the power cord last.
○ Insert the plugs firmly into the jacks. Poor connections will result in noise or distortion.
○ Hold the plug when disconnecting. Pulling on the cord will damage it.

Operation

AUTO TUNE Button   BANK Button

KEY TRANS Button   SELECT Buttons

FWD/BWD Buttons
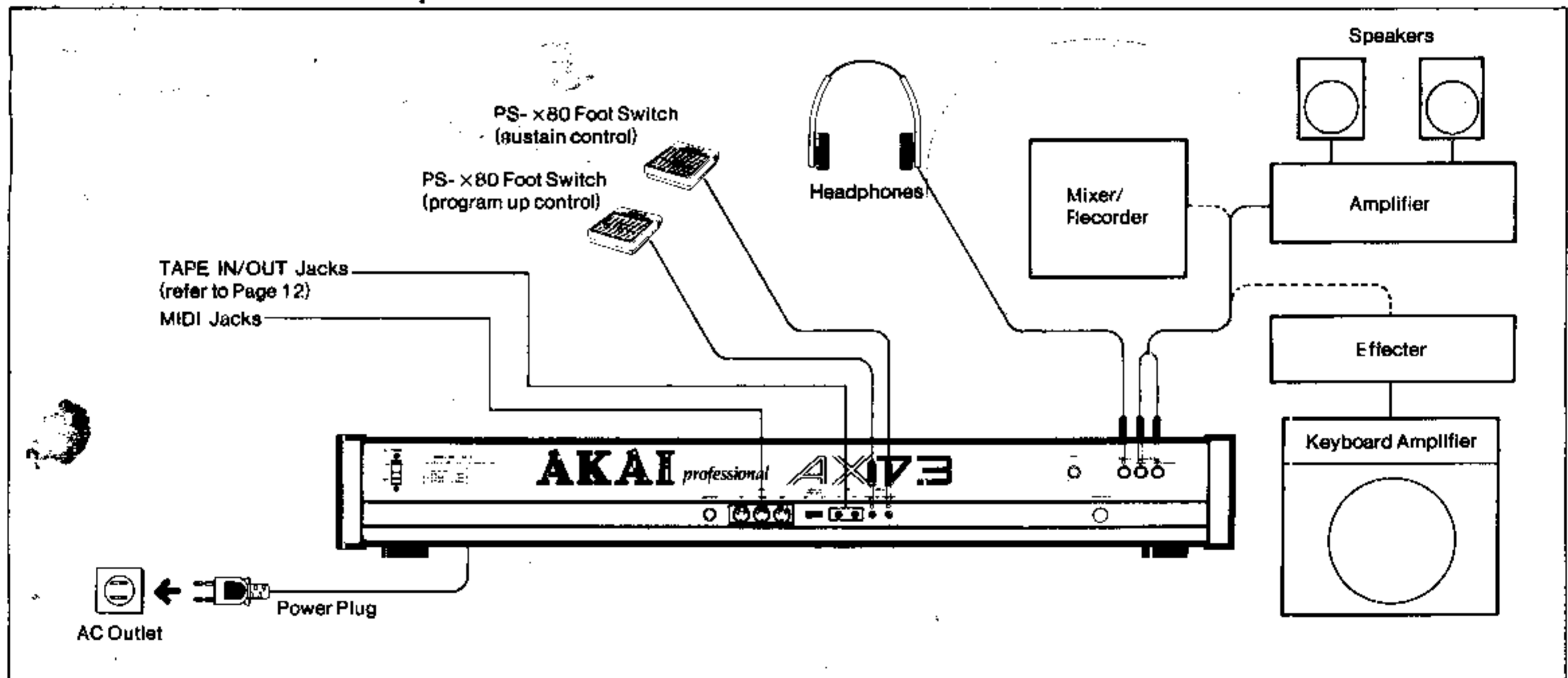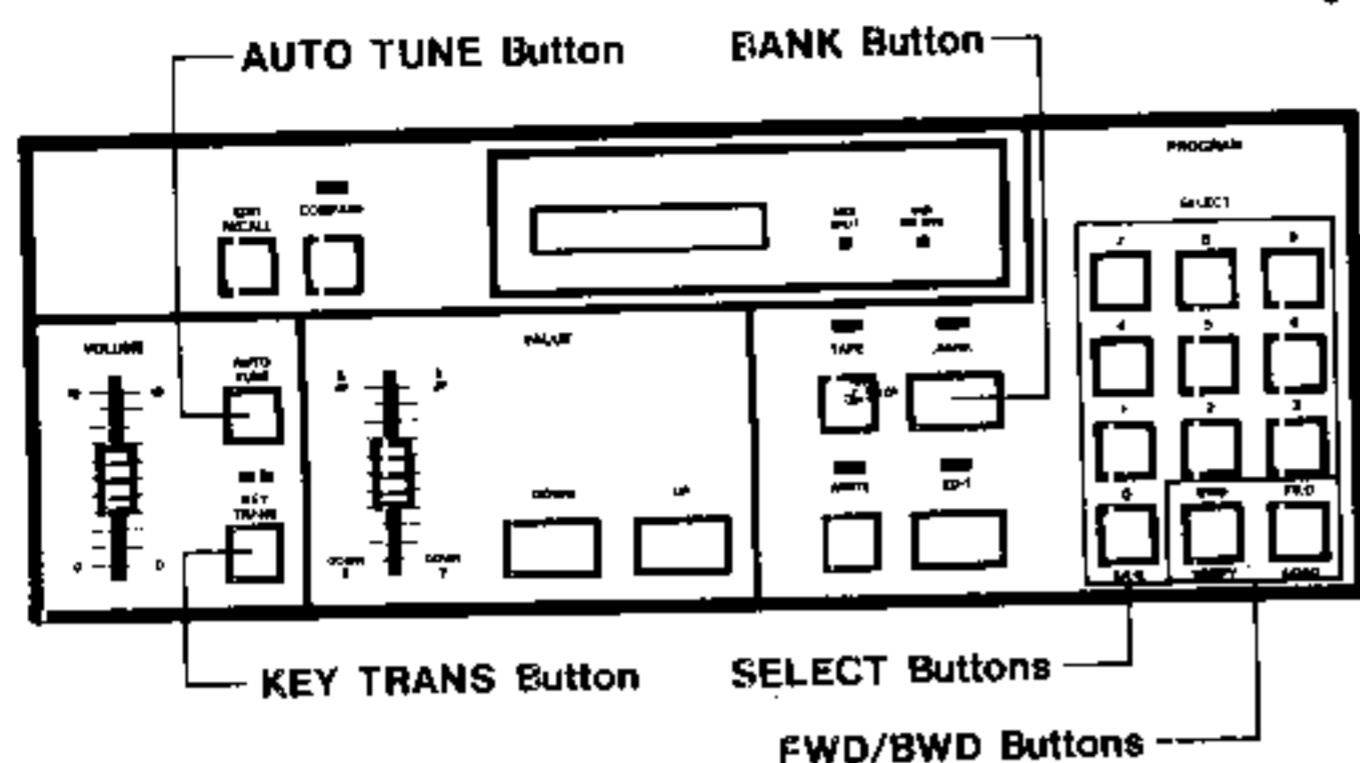
PLAY MODE

● Turn the POWER switch on.
The display will read "**P00:STRINGS 1**".

```
P00:STRINGS  1
```

Program Selection

○ The preset voices consist of ten banks of ten voices each for a total of 100 voices. (Refer to Page 13 for a list of the voices.)
1. Press the BANK button. (The LED will light.)
2. Use the SELECT buttons to choose a program number.
3. The program number can also be changed one step at a time by pressing the FWD/BWD buttons.

TUNE Control

● Use the TUNE control located on the rear panel to adjust the pitch to the same level as other instruments. The pitch can be changed by ±50 cents (±1/4 tone).

AUTO TUNE Button

● Tunes all the AX73's VCOs and VCFs.
● When connected to other MIDI instruments, sends a tune request message to the slave side.
NOTE: This only functions when the instrument on the slave side is equipped with the tune request function.
1. Press the AUTO TUNE button. "**AUTO TUNE**" will appear on the display.
2. Once tuning is completed, the "**AUTO TUNE**" display will go off and the previous display will reappear.
NOTE: The time required for auto tuning on the slave side may differ.

```
《AUTO  TUNE》
```

Pitch Bend Control

● The pitch and the VCF cut off frequency can be made variable.
● The pitch is variable in semi-tone steps up to a maximum of ±1 octave.
* Set the bender using the Edit mode parameters. (Refer to parameters E60 and E61.)

Modulation

○ The LFO modulation can be made variable.
○ The modulation effect for some voices is small.
* Set the modulation using the Edit mode parameters. (Refer to parameters E62 and E40—44.)

Key Transposal

1. Perform the following procedures with the KEY TRANS button depressed. (The LED will light.)
2. Press a key to transpose the keyboard to the corresponding musical key.
3. When the KEY TRANS button is pressed again, the LED turns off, the transposal is cancelled, and the musical key returns to 3C.
4. Press the KEY TRANS button to recall the musical key set in step 2 above.
* The range for key transposal is ±1 octave from 3C. (2C--3C--4C)

Changing the Voice Data Using a Foot Pedal

○ When a pedal unit is connected to the PEDAL: PROGM UP jack on the rear panel, the pedal can be used to change the voice data one step at a time while playing the AX73.

Turning Sustain On and Off Using a Foot Pedal

● Use this function to hold the release time using a pedal unit.

Edit Mode

Edit Mode

- The Edit mode is used to change voice data stored in the memory to create new voice data.

Basic Editing Operation

VALUE Control — BANK Button —

UP/DOWN Buttons —
EDIT Button —
SELECT Buttons —
FWD/BWD Buttons —
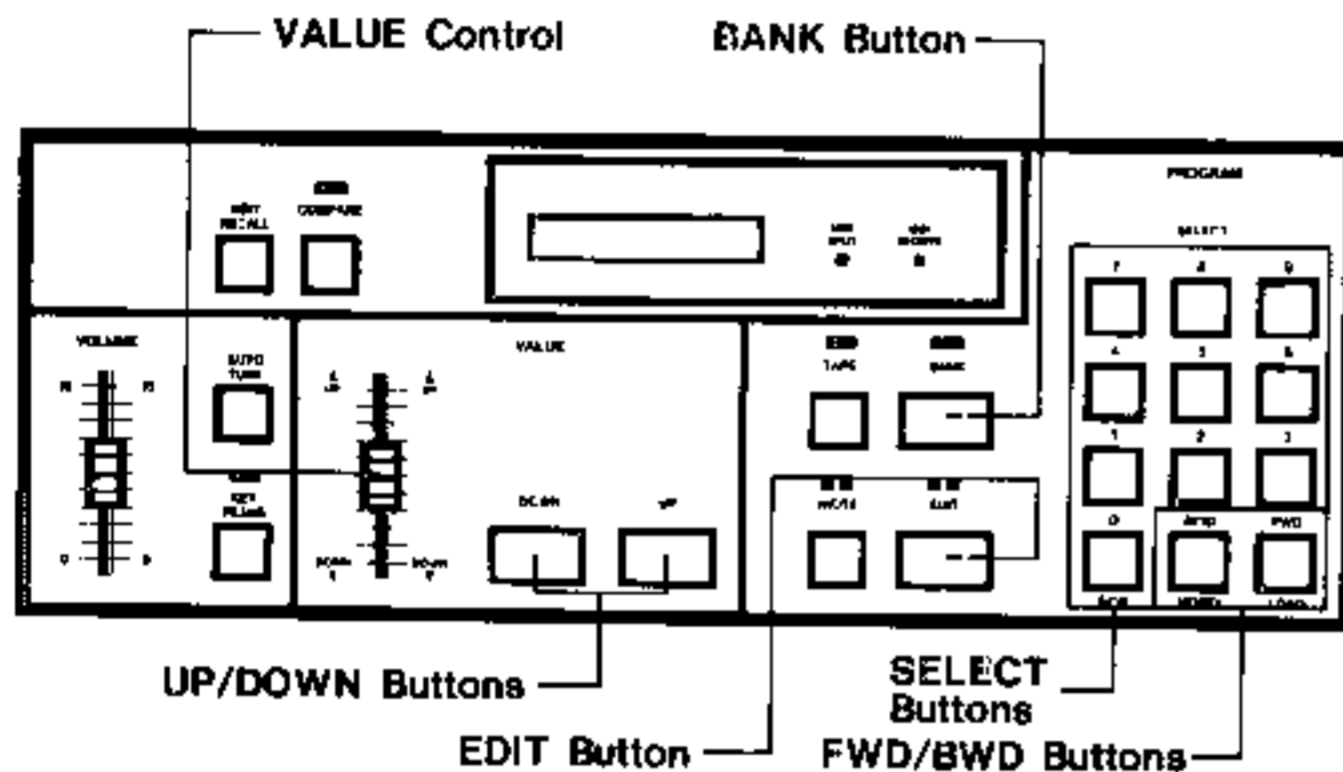
1. Use the BANK button and SELECT buttons to choose the program number.
2. Press the EDIT button. (The LED will light.)
3. Use the BANK button and SELECT buttons to choose the parameter to be changed. The parameters can also be recalled by using the FWD/LOAD and BWD/VERIFY buttons.
4. Input the data by using the slide controller or the UP/DOWN buttons.

VALUE Control
Use this controller for rough adjustment of the data.
UP/DOWN Buttons
Use these buttons to change the data one step at a time. Use the UP button to turn a parameter on and the DOWN button to turn it off.

Program Writing

MEMORY PROTECT Switch (Rear panel)

WRITE Button —
EDIT Button —
BANK Button —
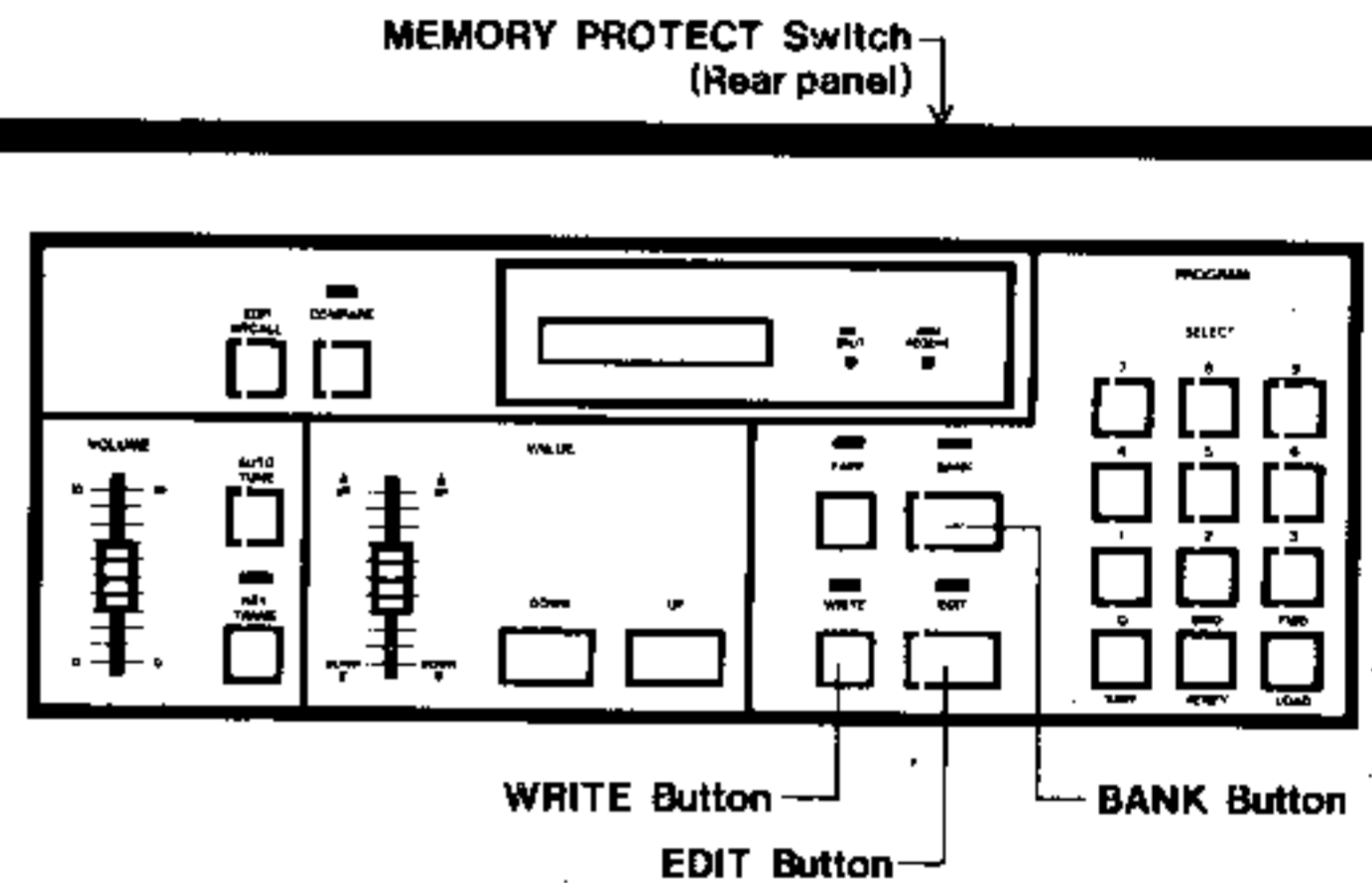
- Programs which have been set can be stored in the memory at program numbers 00—99.

1. Press the EDIT button to set the unit to the Edit mode.
2. Set the MEMORY PROTECT switch (rear panel) to the OFF position.
3. With the WRITE button depressed, press the BANK button (the LED will light), then set the bank number using the SELECT buttons.

```
PROGRAM  NO:--
```

```
PROGRAM  NO:12
```

(Example: Storing at program number 12)

4. When the WRITE button is released, the LED will turn off.
5. Press the EDIT button (the LED will turn off) and set to the Play mode.
   The "→" mark will appear on the display after the program number. This is to protect the voice data stored at this program number. When any SELECT button is pressed, the edited voice is stored at this program number and the previous voice is erased.

Voice Name

```
P00→
```

```
P00:
```
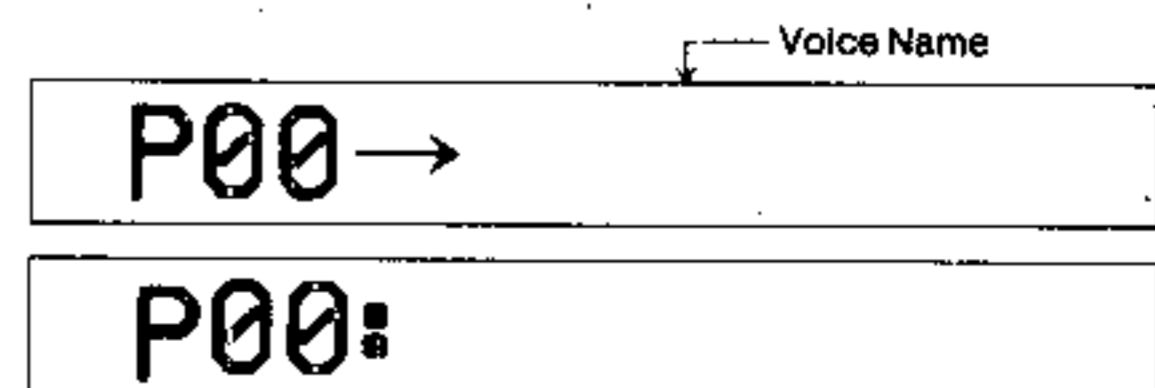
Comparing

- During the Edit mode, the COMPARE button can be used to compare the preset voice with the voice being edited.
- The previous voice can be checked while creating a new sound.

1. Press the COMPARE button. (The LED will light.)
   The unit is set to the voice set before the parameters were changed. The parameter on the display changes from E to C.
2. When the COMPARE button is pressed, the LED will turn off and the unit will return to the edited voice.

```
C00
```

Edit Recall

- Voice data (the last voice data edited) can be recalled by pressing the EDIT RECALL button during the Edit mode. The edit recall function provides convenience for recalling a voice you wish to continue editing in the following instances:
  - When the unit is accidentally set to the Play mode during editing.
  - When the unit is set to the Play mode during editing to compare the voice with other voices in the memory.
  - When the unit is set to the Play mode to search for an unnecessary voice to write edited voice data in the memory.

Setting Voice Names

Edited voice data can be given any name using up to 12 letters.

1. Press the EDIT button. (The LED will light.)
2. Set the MEMORY PROTECT switch (on the rear panel) to the OFF position.
3. Next press the BANK button and use the SELECT buttons to set to parameter E80.

```
E80:_
```

4. Use the UP/DOWN buttons or the VALUE control to set letters A—Z or numbers 0—9.

```
E80:P
```

5. Press the FWD button to move the cursor, then press the UP/DOWN buttons or the VALUE control to set the next letter (or number).
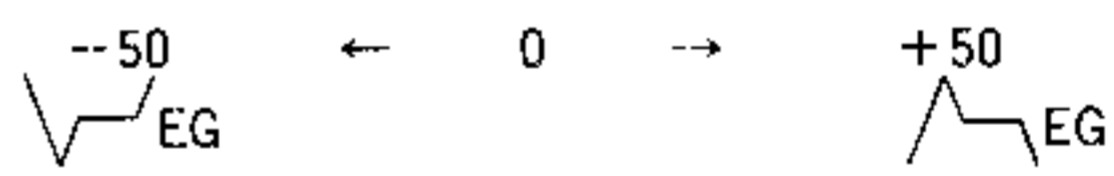
```
E80:PI
```

6. Repeat steps 4 and 5 to set the voice name.

```
E80:PIANO
```

7. Next, with the WRITE button depressed, choose the program number under which you wish to set the voice name. The edited voice data has now been given a name.

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Parameters

Display			
Parameter		Data	Description
E00	VCOaOCT (Octave)	2', 4', 8', 16'	Switches the pitch. 8' is the basic pitch. When set to 16' or 4', the range changes by one octave.
E01	VCOaWF (Wave Form)	Γ, $\wedge$, Π, $\wedge+\wedge$	Switches the output waveform.
E02	VCOaPW	0~100	Sets the pulse width. However, operates at waveform selected by E01.
E03	VCOaPWMS	0~100	Sets the PWM depth depending on the pulse wave set by E02 VCOaPW. (NOTE: When E02 is "0", there is no PWM.) This adjusts the PWM speed.
E04	VCOaEG	0~100	Makes it possible to set EG for the VCOs.
E05	NOISE b	OFF/ON	Pink noise is output when "ON".
E06	SAMPLER b	OFF/ON	When AKAI sampler (S-612, etc.) is connected, it can be used as a sound source for the AX73.
E07	a—b BAL (BALance)	0~100	Adjusts output level balance between VCO(a) and NOISE and SAMPLER(b). When "0", only VCO(a) sound is produced, and when "100", only NOISE and SAMPLER(b) sound is produced.
E10	VCF FREQ (Cutoff FREQuency)	0~100	Adjusts the VCF cut-off frequency.
E11	VCF RESO (RESOnance)	0~100	Allows reinforcement of the cut-off point area determined by E10 VCF FREQ (cut-off frequency).
E12	VCF OWFM (Oscillator Wave Form Modulation)	0~100	Oscillator waveform modulation. Adds modulation from the VCOs to the VCFs depending on the waveform selected by E10.
E13	VCF EG	−50~0~+50	Controls the VCF cut-off frequency by EG signal, and changes the previously set VCF cut-off point. −50 ← 0 → +50
E14	VCF KEYF (KEYboard Follow)	0~100	Changes the cut-off frequency depending on the keyboard position. Adjusts the degree of this change.
E15	VCF VELO (VELOcity)	−50~0~+50	Adjusts the amount of E13 VCF control by the speed at which the key is struck. (NOTE: When VCF EG is "0", VCF VELO effect is "0".)
E16	HPF (High Path Filter)	0~100	Adjusts the amount of low frequency which passes.

E20	EG SEL (Mode SELect)	A≠F,A=F	I. When A≠F, the EG effect acts on VCA for E21—24 and the EG effect acts on VCO and VCF for E25—28. (Refer to I) II. When A=F, the EG effect acts on VCA and VCF for E21—24 and on VCO for E25—28. (Refer to II)
I.			
E21	EGA A (Attack)	0~100	Sets the VCA attack time.
E22	EGA D (Decay)	0~100	Sets the VCA decay time.
E23	EGA S (Sustain)	0~100	Sets the VCA sustain level.
E24	EGA R (Release)	0~100	Sets the VCA release time.
E25	EGOF A	0~100	Sets the VCO and VCF attack time.
E26	EGOF D	0~100	Sets the VCO and VCF decay time.
E27	EGOF S	0~100	Sets the VCO and VCF sustain level.
E28	EGOF R	0~100	Sets the VCO and VCF release time.
II.			
E21	EGAF A	0~100	Sets the VCA and VCF attack time.
E22	EGAF D	0~100	Sets the VCA and VCF decay time.
E23	EGAF S	0~100	Sets the VCA and VCF sustain level.
E24	EGAF R	0~100	Sets the VCA and VCF release time.
E25	EGO A	0~100	Sets the VCO attack time.
E26	EGO D	0~100	Sets the VCO decay time.
E27	EGO S	0~100	Sets the VCO sustain level.
E28	EGO R	0~100	Sets the VCO release time.
E30	VCA LEV (LEVel)	0~100	Sets the Final VCA level.
E31	VCA VELO (VELOcity)	−50~0~+50	Adjusts the degree to which the VCAs are controlled by the strength at which the key is struck.
E40	LFO SEL	OFF,VCO,VCF,VCA	Makes it possible to apply LFO to either the VCOs, VCFs, or VCAs.
E41	LFO WF (Wave Form)	∿,⋀,⋀,⊓, RNDM	Makes it possible to select the LFO waveform.
E42	LFO FREQ (FREQuency)	0~100	Adjusts the LFO change speed.
E43	LFO DP (Depth)	0~100	Sets the depth of frequency modulation.
E44	LFO DEL (DELay)	0~100	Adjusts the time required from when a key is pressed until the effect is produced.
E45	CHORUS	OFF, 1, 2	Applies the stereo chorus effect.

E50	ASSIGN	POLY,DUAL,UNI	Sets to 6 chords in the POLY mode, 3 chords in the DUAL mode, and 1 chord in the UNI (unison) mode.
E51	SOL PORT (PORTament)	0~100	Applies the portamento effect in the DUAL or UNI (unison) modes.
E52	DETUNE	0~100	Applies the effect in the DUAL or UNI (unison) modes. Richness and softness can be added to the sound by slightly changing the VCO frequency.
E60	WH BND O (Pitch BeND Range,VCO)	0~12	Makes pitch variable in semi-tone steps. At "12", the pitch is variable by ±1 octave.
E61	WH BND F (Pitch BeND Range,VCF)	0~100	Makes the cut-off frequency variable.
E62	WH MOD (MODulation level)	0~100	Makes the LFO modulation variable. * When "0", LFO is not applied when the modulation wheel is operated.
E70	MIDI SP (SPlit)	OFF,UPP,LOW	Makes split function selection possible. When UPP (upper), the lower MIDI CH. becomes n+6. When LOW (lower), the upper MIDI CH. becomes n+6. Ex.: When UPP is set for MIDI CH. 2, the lower MIDI CH. is 8.
E71	MIDI SPP (SPlit Point)	1C~7C	Makes it possible to select the split point by pressing a key. The key which has been pressed is indicated on the display.
E72	MIDI CH	1~16	Makes MIDI CH. selection possible. (When E70 is set at MIDI SP UPP, the channel becomes the upper MIDI channel, and when E70 is set at LOW, the channel becomes the lower MIDI channel.)
E73	MIDI PC (Program Change)	ENA,DIS	When set at ENA (enable), the MIDI program change data can be transmitted or received. When set at DIS (disable), the data cannot be transmitted or received.
E80	LABEL	A~Z, 0~9, [SPACE], Etc	Makes it possible to input a voice name in up to 12 letters. The cursor is moved by the FWD/BWD buttons, and the letters are selected by the slide controller or the UP/DOWN buttons. (Refer to Page 8)

* The E72 MIDI CH and E73 MIDI PC are common for all 100 programs.

Tape Interface

SAVE/VERIFY/LOAD

The AX73 is equipped with an input and output jack and tape interface functions making it possible to store the parameters set in the program memory on a cassette tape. The tape interface functions include the save mode for outputting the program parameters and recording them on a cassette tape, the verify mode for checking whether the parameters recorded on the tape are correct, and the load mode for resetting the parameters recorded on the tape back onto the AX73.

The programs can be saved, verified, or loaded either one bank at a time or all at once (0 to 99).

- It is advisable to use the same cassette tape and recorder for both recording and playback.
- Do not subject the cassette recorder to shock or vibration when saving or loading, as this will make it impossible to save or load the parameters correctly.
- It is advisable to save two copies of the same parameters (one for backup) in case for some reason one is destroyed.
- It is not advisable to copy the parameters from one tape recorder onto another, as it is sometimes not possible to make correct copies.

CONNECTIONS

Connect a cassette recorder to the AX73 TAPE IN/OUT jacks.

PROCEDURE

- Saving (Verifying, Loading)
1. Set the connected tape recorder to the record mode (Playback mode for Verifying and Loading).
2. Press the TAPE button. (The LED will light.)

TAPE:SELECT S,V,L

3. Press the SAVE (VERIFY, LOAD) button.
   "TAPE: SAVE ALL" will appear on the display, indicating that it is possible to save all the programs.

TAPE:SAVE ALL

4. To save only one bank, press the UP or DOWN button to select the bank number.

TAPE:SAVE   9

5. Press the SAVE (VERIFY, LOAD) button. "TAPE: SAVE START" will appear on the display, and counting will start after several seconds.

TAPE:SAVE START

6. "SAVE END" will appear on the display when all the data has been saved. (In the verify mode, "GOOD" will be displayed.)

TAPE:SAVE END

If there is an error in the verify mode, change the tape recorder's output level and perform the verify operation several times. If there is still an error, change the tape and save the voice data. Also fill in the data for the parameters on a data sheet. If data is for some reason destroyed, use this data sheet and reset the same voice data.

Voice Chart

Program Number	Voice Name	Program Number	Voice Name
00	STRINGS 1	50	MR BASS
01	BRASS	51	MICRO BASS
02	PIANO	52	MINI BASS
03	SYN CLAV 1	53	PIT BASS
04	CLAVITAR	54	BASS
05	MR BASS	55	STEEL DRUM 1
06	WIND SYN	56	STEEL DRUM 2
07	ELECTRICITY	57	SCREAMER
08	STEEL DRUM 1	58	DUAL
09	PROFIT $	59	LEAD 2
10	PIANO 1	60	VIBE HARP
11	SYN PIANO A	61	SYN HARP 1
12	ELEC PIANO	62	SYN HARP 2
13	SYN PIANO	63	MALLET
14	TOY PIANO	64	CELLESTE
15	PIANO 3	65	OBI KHANOBE
16	ROCKY ROAD	66	MUSIC BOX
17	SYN PIANO	67	STEEL DRUM 1
18	FM PIANO	68	STEEL DRUM 2
19	PIANO 1A	69	HARMONIUM
20	STRINGS 1	70	FUNKY ORGAN
21	CELLO 1	71	FLUTE
22	STRINGS 3	72	RECORDER
23	CELLO BOW	73	ORGAN 1
24	STRGS + HORN	74	ORGAN 2
25	STRINGS 1A	75	PICCOLO
26	STRING FLUTE	76	GLASS ORGAN
27	ORCHESTRA	77	CHURCH ORGAN
28	LOW STRINGS	78	WHISTLE
29	HEAVEN	79	WOODWINDS
30	FRENCH HORN	80	LEAD 1
31	FRENCH HORN 2	81	AHS MALE
32	HIGH HORNS	82	CLAVITAR
33	SYN BRASS 1	83	CELLESTE
34	SYN BRASS 2	84	MUSIC BOX
35	HORNS 1	85	CLASSIC
36	HORNS 3	86	TRUMPET
37	SYN BRASS 3	87	OBI KHANOBE
38	SECTIONAL	88	SYN PIANO A
39	HOPEFULL	89	WOODSYNTH
40	SYN CLAV 1	90	SAMPL + HOLD
41	SYN CLAV 2	91	INDUSTRIAL
42	FANCY CLAV	92	PHASER
43	SYNFUL	93	DEPATCH MODE
44	RUST BELT	94	HEAVEN
45	PHASER	95	CELLO
46	CHAMBER 1	96	STRINGS 1
47	CHAMBER 2	97	HORNS 3
48	HARMONIUM	98	QUINCY $
49	DEPATCH MODE	99	WIND SYN

Specifications

Keyboard: 73-key 6-octave C scale (key velocity)
Voices: 6
Tone generator: VCO (voltage controlled oscillator)
Internal memory: 100 programs
External Memory: Cassette interface
Parameters:
   VCO Section:
      Octave (2', 4', 8', 16')
      Waveform ($\wedge$, $\wedge$, $\sqcap$, $\wedge + \wedge$)
      Pulse width control
      PWM speed control
      EG depth control
      Sampler ON/OFF
      Noise ON/OFF
      A—B balance control
   VCF Section:
      Cut-off frequency control
      Resonance control
      Key follow control
      VCO modulation control
      HPF control
      EG depth and polarity switching (+/−)
      Key velocity control
   EG Section:
      Attack time
      Delay time
      Sustain level
      Release time
      EG switching (VCF, VCA, VCF=VCA, VCA GATE)
   VCA Section:
      Level
      Velocity
   LFO Section:
      LFO switching (VCO, VCF, VCA)
      Waveform ($\wedge$, $\wedge$, $\diagdown$, $\sqcap$, RND)
      Depth control
      Speed control
      Delay control
   Chorus (OFF, 1, 2)
   Key assign (POLY, UNISON)
   Bend: VCO (±1 octave)
   Cut-off frequency (MIN—MAX)
   Modulation depth (MIN—MAX)
   MIDI channel (1—16)
   MIDI split (OFF, 0—6 upper, 6—0 lower)
   MIDI split point

Functions:
   Master level control
   Master tune ON/OFF
   Auto tune control (±50 cents)
   Key transpose ON/OFF
   Memory protect ON/OFF
   LCD contrast control
   Edit control
      Value control volume
      Value UP/DOWN key
      Edit recall ON/OFF
      Compare ON/OFF
      Edit
      Write
      Bank
      Ten key
      FWD/LOAD key
      BWD/VERIFY key
      O/SAVE key
Wheels:
   Pitch bend/cut off frequency wheel
   Modulation wheel
Display:
   LC display, LED
External Jacks:
   MIDI (IN, OUT, THRU)
   Sampler IN (13 PIN/DIN)
   Sustain pedal
   Program UP
   Audio OUT (L (MONO), R)
   Headphone (stereo)
   Tape (LOAD/IN, SAVE/OUT)
Dimensions: 1,152 (W) ×110 (H) ×364 (D) mm
Weight: 15 kg

* For improvement purposes, specifications and design are
  subject to change without notice.

[Programmable Polyphonic Synthesizer]
Model   AX-73   MIDI Implementation Chart   Version :1.0

Function ...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 - 16 1 - 16	1 - 16 * 1 - 16 *	☆ memorized

Mode   Default
              Messages
              Altered
	MODE 3, MODE 4
	
	**************
		MODE 3
		×
		×
			memorized

Note Number : True voice	24 - 96 **************	0 - 127 24 - 120	
Velocity Note ON Note OFF	○ 9nH V=1-127 ○ 9nH V=0 ,8nH	○ ○	
After Key's Touch Ch's	× ×	× ×	
Pitch Bender	○	○	7 bit RESO
Control 1 Change 7 64	○ × ○	○ ○ ○	Modulation wheel Volume Sustain foot sw
Prog Change : True #	○ 0 - 99 **************	○ 0 - 127 0 - 99	
System Exclusive	×	×	
System : Song Pos : Song Sel Common : Tune	× × ○	× × ○	
System :Clock Real Time :Commands	× ×	× ×	
Aux :Local ON/OFF :All Notes OFF Mes- :Active Sense sages:Reset	× ○ × ×	× ○ × ×	
Notes			

Mode 1 : OMNI ON, POLY   Mode 2 : OMNI ON, MONO   ○ : Yes
Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF, MONO   × : no