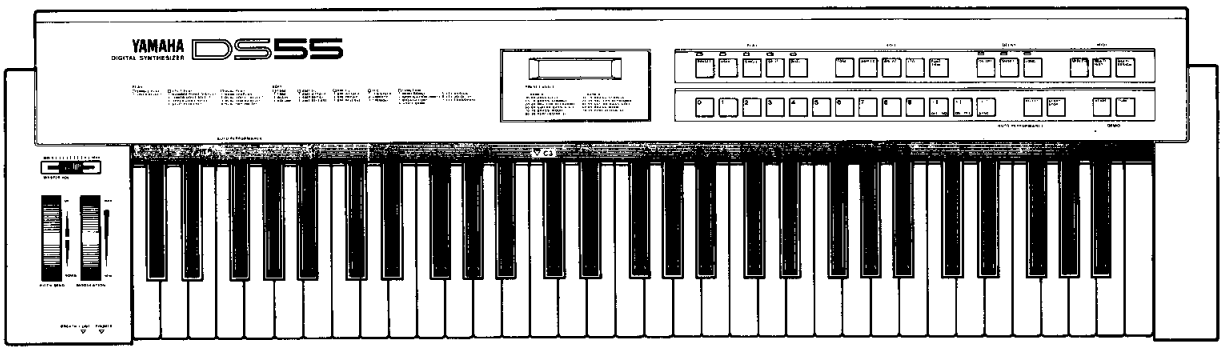
YAMAHA

DS55

DIGITAL SYNTHESIZER
SYNTHETISEUR NUMERIQUE
DIGITAL SYNTHESIZER

OPERATION MANUAL
MANUEL D'INSTRUCTIONS
BEDIENUNGSANLEITUNG



Congratulations!

Your DS55 Digital Synthesizer is a fine example of advanced YAMAHA music technology. It uses the unmatched YAMAHA FM tone generation system to create rich, vibrant simulations of acoustic, electric and electronic instruments — and sounds that are totally different. The DS55 offers 200 outstanding preset voices that you can use immediately. You can also edit the presets using the DS55's easy editing system to create subtle variations or completely original voices. Up to 100 of your original creations can be stored in internal memory for instant recall. The DS55 even has a built-in delay effect that can add extra warmth and ambience to any voice you play. Of course you can play any single voice, but the DS55 also offers a split play mode in which you can play two voices on different sections of the keyboard, and a dual play mode in which two voices can be played simultaneously across the entire keyboard. Perhaps the highlight of the DS55 is its remarkable Auto Performance system. This YAMAHA innovation provides a wide range of beautifully orchestrated accompaniment patterns that you can use for practice or performance. Of course, the DS55 is fully MIDI equipped so it can serve as the center of a sophisticated MIDI music system. For even more convenience, the DS55 will operate from an AC adapter or batteries, so you can play anywhere, anytime.
In order to make the most of the fine performance and many features provided by your DS55, we urge you to read this operation manual thoroughly, and keep it in a safe place for later reference.

CONTENTS

PRECAUTIONS

AVOID EXCESSIVE HEAT, HUMIDITY, DUST AND VIBRATION — Keep the unit away from locations where it is likely to be exposed to high temperatures or humidity —such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust accumulation or vibration which could cause mechanical damage.

AVOID PHYSICAL SHOCKS — Strong physical shocks to the unit can cause damage. Handle it with care.

DO NOT OPEN THE CASE OR ATTEMPT REPAIRS OR MODIFICATIONS YOURSELF — This product contains no user-serviceable parts. Refer all maintenance to qualified YAMAHA service personnel. Opening the case and/or tampering with the internal circuitry will void the warranty.

MAKE SURE POWER IS OFF BEFORE MAKING OR REMOVING CONNECTIONS — Always turn the power OFF prior to connecting or disconnecting cables. This is important to prevent damage to the unit itself as well as other connected equipment.

HANDLE THE CABLES CAREFULLY — Always plug and unplug cables by gripping the connector, not the cord. Also avoid applying excessive force to the cables or connectors during use.

CLEAN WITH A SOFT DRY CLOTH — Never use solvents such as benzine or thinner to clean the unit. Wipe clean with a soft, dry cloth.

POWER SUPPLY — The DS55 must be powered from either an optional YAMAHA PA-3 AC Adapter (the AC input voltage of the adapter supplied depends on the area in which the equipment is sold), a YAMAHA PA-1 or PA-1B AC Adapter, or the specified dry batteries. Attempting to use an AC adapter other than the PA-3, PA-1 or PA-1B can cause serious damage to the DS55.

ELECTRICAL INTERFERENCE — Since the DS55 contains digital circuitry, it may cause interference and noise if placed too close to TV sets, radios or similar equipment. If such a problem does occur, move the DS55 further away from the affected equipment.

BACKUP BATTERY — The DS55 contains a long-life backup battery that retains the contents of its RAM memory locations even when the power is turned OFF. The backup battery will last for approximately 5 years. When the battery finally fails, the contents of the internal RAM memory will be lost. If this happens, have the battery replaced by qualified YAMAHA service personnel. Dot not attempt to replace the battery yourself.

FCC INFORMATION

While the following statements are provided to comply with FCC Regulations in the United States, the corrective measures listed below are applicable worldwide.

This series of YAMAHA professional music equipment uses frequencies that appear in the radio frequency range and if installed in the immediate proximity of some types of audio or video devices (within three meters), interference may occur. This series of YAMAHA professional music equipment has been type tested and found to comply with the specifications set for a class B computing device in accordance with those specifications listed in subpart J of part 15 of the FCC rules. These rules are designed to provide a reasonable measure of protection against such interference. However, this does not guarantee that interference will not occur. If your professional music equipment should be suspected of causing interference with other electronic devices, verification can be made by turning your professional music equipment off and on. If the interference continues when your equipment is off, the equipment is not the source of interference. If your equipment does appear to be the source of the interference, you should try to correct the situation by using one or more of the following measures:

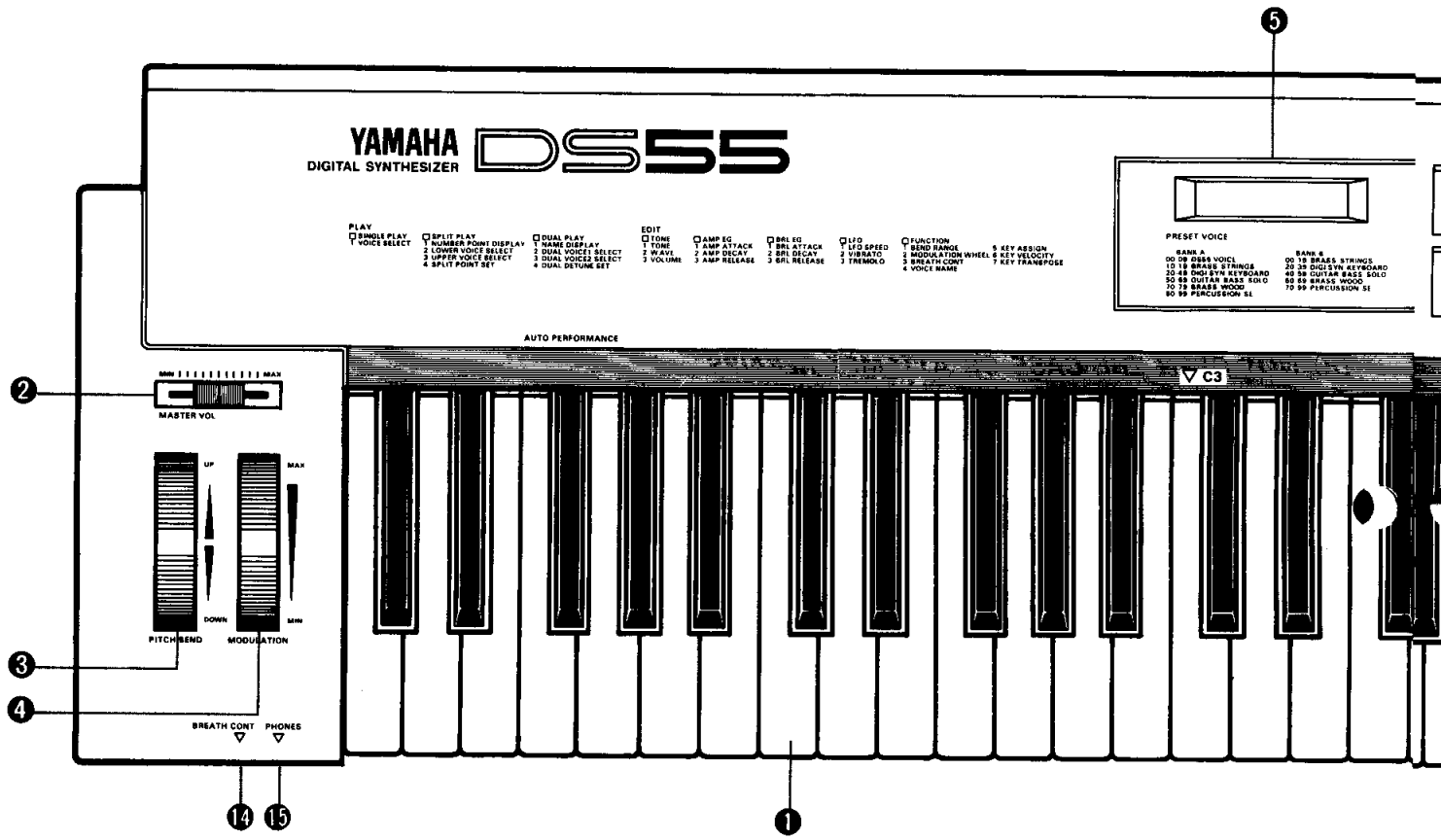
Relocate either the equipment or the electronic device that is being affected by the interference. Utilize power outlets for the professional music equipment and the device being affected that are on different branch (circuit breaker or fuse) circuits, or install AC line filters.

In the case of radio or TV interference, relocate the antenna or, if the antenna lead-in is 300 ohm ribbon lead, change the lead-in to a co-axial type cable.
If these corrective measures do not produce satisfactory results, please contact your authorized YAMAHA professional products dealer for suggestions and/or corrective measures.
If you cannot locate a franchised YAMAHA professional products dealer in your general area contact the Electronic Service Department, YAMAHA Corporation of America, 6600 Orangethorpe Ave., Buena Park, CA 90620, U.S.A.

If for any reason, you should need additional information relating to radio or TV interference, you may find a booklet prepared by the Federal Communications Commission helpful:
"How to identify and Resolve Radio – TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402 – Stock No. 004-000-00345-4.

This information on safety is provided to comply with U.S.A. laws, but should be observed by users in all countries.

DS55 CONTROLS AND CONNECTORS



CONTROL PANEL

❶ Keyboard

The DS55 keyboard is a high-quality 61-key type that features full touch response — i.e. the keyboard can be used to control musical dynamics just as in an acoustic piano.

❷ MASTER VOL Control

The MASTER VOL control adjusts the volume (level) of the signal delivered to the rear-panel OUTPUT jacks. The VOLUME control also adjusts headphone volume when a pair of headphones is plugged into the PHONE jack.

❸ PITCH BEND Wheel

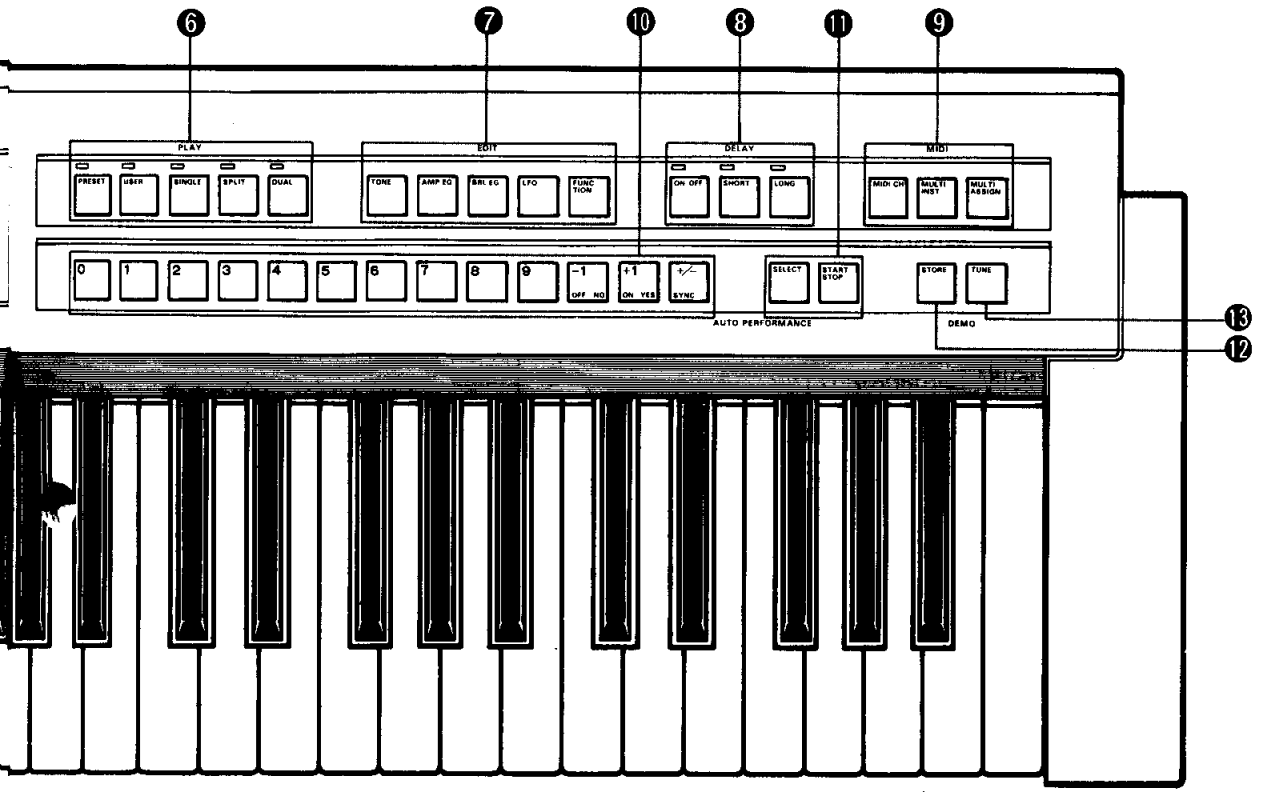
The PITCH BEND wheel offers extra expressive control by allowing you to "bend" notes played on the keyboard. Roll the wheel UP to raise pitch, or DOWN to lower pitch. The amount of pitch bend produced by the PITCH BEND wheel for a specific voice can be programmed using the Pitch Bend Bend Range parameter accessed by the FUNCTION button (see "OTHER VOICE EDITING FUNCTIONS — [FUNCTION button]" on page 14).

❹ MODULATION Wheel

Another DS55 expression control, the MODULATION WHEEL makes it possible to apply varying degrees of vibrato, tremolo or wow-wow effect to the voice being played. Whether the MODULATION WHEEL controls vibrato, tremolo or wow-wow for the selected voice is determined by the Modulation Wheel parameter accessed by the FUNCTION button (see "OTHER VOICE EDITING FUNCTIONS — [FUNCTION button]" on page 14).

❺ Liquid Crystal Display

This 16-character x 2-line LCD (Liquid Crystal Display) serves as the DS55's information and human interface center. It displays the number and name of selected voices, editing functions and values,



and all other information you need for smooth, simple operation.

⑥ PLAY MODE Buttons

The PLAY MODE buttons — PRESET, USER, SINGLE, SPLIT and DUAL — allow selection of the DS55's various voice banks and play modes.

Details on page 6

⑦ EDIT Buttons

The TONE, AMP EG, BRL EG, LFO and FUNCTION buttons in the EDIT group provide access to all functions and parameters required for voice editing. The editing parameters are separated into logically related groups, and editing procedures have been made simpler than ever so you can easily create new voices.

Details on page 11

⑧ DELAY Buttons

The ON/OFF, SHORT and LONG buttons control the DS55's internal delay system, allowing you to add delay effects to any voice for extra depth and ambience.

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⑨ MIDI Buttons

The DS55's many MIDI functions are accessed by the MIDI buttons. In addition to general channel and mode selection, the DS55 has a MIDI-controllable multi-instrument mode that can be accessed and controlled via the MIDI buttons.

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⑩ Data Entry Buttons

The number buttons (0 through 9) and the –1 and +1 buttons are used for voice selection and data entry when required by any of the DS55's editing or other functions.

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⓫ AUTO PERFORMANCE Buttons

The AUTO PERFORMANCE SELECT and START/STOP buttons provide access to the DS55's most remarkable feature — the auto accompaniment function.

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⓬ STORE Button

The STORE button accesses both the DS55's memory protection and data storage functions, allowing voices you have edited to be stored in any of the 99 available user memory locations.

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⓭ TUNE Button

The TUNE button accesses the MASTER TUNE function, allowing you to tune the DS55 to match other instruments or recorded material.

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⓮ BREATH Jack

The BREATH jack accepts one of YAMAHA's original breath controllers (BC1 or BC2), allowing wind-instrument breath and tongueing techniques to be used for the application of various effects.

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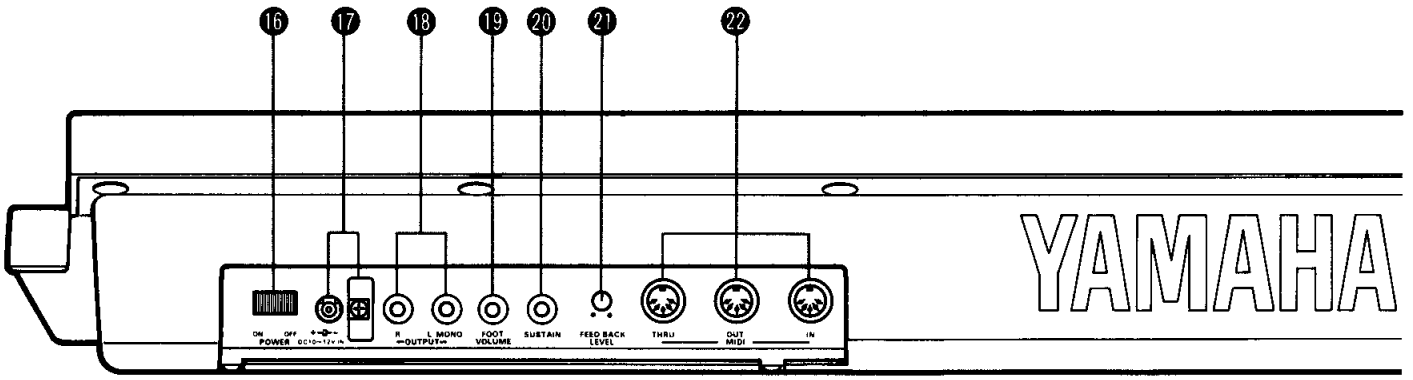
⓯ PHONE Jack

A standard pair of stereo headphones can be plugged in here for private practice or late-night playing.



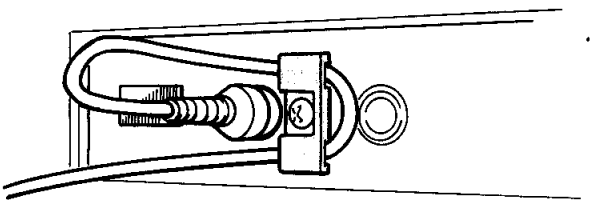
REAR PANEL

⓰ POWER Switch

Slide to the ON position to turn power ON, and to the OFF position to turn power OFF. When the power is turned ON a brief greeting will appear on the DS55's LCD, then the SINGLE PLAY mode (see "THE SINGLE PLAY MODE on page 6) will be automatically selected and you're ready to play.

⓱ DC(10—12V)IN Jack and Cable Clip

The DC output cord from an optional YAMAHA PA-3 AC Adapter or PA-1/PA-1B AC Adapter should be plugged in here when the DS55 is to be operated from AC power. The AC adapter cord can be clipped into the cable clip located next to the DC(10—12V)IN jack as shown below, to prevent accidental unplugging of the cord during use.



⓲ L/MONO & R OUTPUT Jacks

These two monaural 1/4" phone jacks deliver the stereo output signal from the DS55 to subsequent amplification or mixing equipment. These jacks can be connected directly to the inputs of a keyboard amplifier, recording equipment or a mixing console. Since the DS55 SPLIT and DUAL PLAY modes offer true stereo sound, we recommend

connecting both output jacks to the corresponding inputs of a stereo or two-channel sound system in order to get the best possible sound. If this is not possible, connect only the L/MONO OUTPUT jack to the amplification equipment used.

⑲ SUSTAIN Jack

This jack accepts an optional YAMAHA FC-4 or FC-5 footswitch which functions as a sustain pedal when connected. The sustain pedal functions in the same way as a damper pedal on an acoustic piano — when the pedal is pressed notes played have a long sustain. Releasing the pedal immediately stops (damps) any sustained notes.

⑳ FOOT VOLUME Jack

The FOOT VOLUME jack accepts an optional YAMAHA FC-7 Foot Controller which permits foot volume control for extra expressive capability.

㉑ FEEDBACK LEVEL Control

This control makes it possible to adjust the overall "length" of the DS55's delay effects to match your music.

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㉒ MIDI IN, OUT & THRU Connectors

The MIDI IN connector receives MIDI data from an external MIDI device (such as another MIDI keyboard or a MIDI sequencer) which can be used to control the DS55. The MIDI THRU connector re-transmits any data received at the MIDI IN connector, allowing "chaining" of several MIDI instruments or other devices. The MIDI OUT connector transmits MIDI data generated by the DS55 (e.g. note and velocity data produced by playing the DS55 keyboard).
More details on MIDI are given in "MIDI FUNCTIONS" on page 21.

BOTTOM PANEL

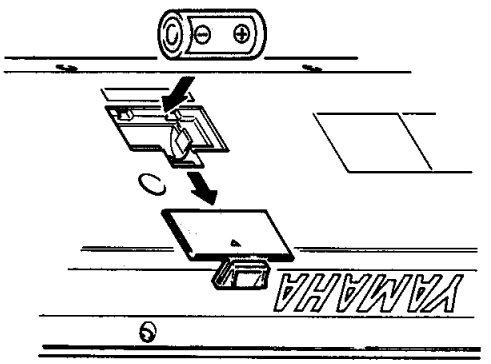
㉓ Battery Compartment

If you intend to use battery power (which makes the DS55 very portable and convenient), six 1.5V SUM-2, R-14 or equivalent alkaline batteries (sold separately) must first be installed in the DS55 battery compartment.

1. Open the battery compartment cover located in the center of the instrument's bottom panel.
2. Insert the six batteries, being careful to follow the polarity markings (+, –) on the inside of the compartment.
3. Replace the compartment cover, making sure that it locks firmly in place.

Caution:

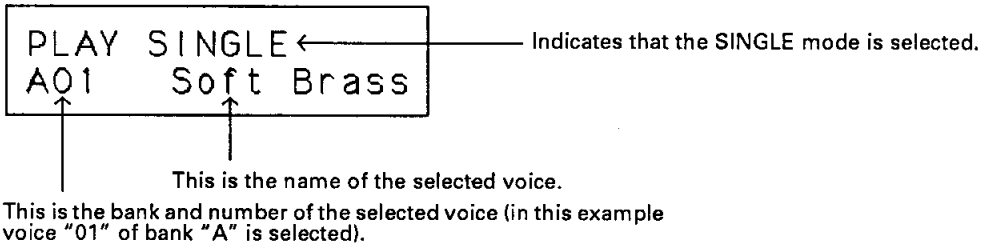
- When the batteries run down, replace them with a complete set of six new batteries. NEVER mix old and new batteries.
- To prevent possible damage due to battery leakage, remove the batteries from the instrument if it is not to be used for an extended period of time.



THE PLAY MODES, TUNING & DELAY

THE SINGLE PLAY MODE

This is the DS55's "normal" play mode in which you can play a single selected voice on the keyboard. The SINGLE PLAY mode is always selected automatically when the POWER switch is turned ON. The SINGLE PLAY mode can also be selected from any other mode by pressing the SINGLE button in the PLAY MODE group. When the SINGLE PLAY mode is selected, the LED above the SINGLE button will light and a display similar to the one shown below will appear on the LCD. Up to 8 notes can be played simultaneously in the SINGLE PLAY mode.



The Preset and User Voice Banks

The DS55 has two PRESET voice banks (bank A and bank B), each containing 100 (00 through 99) different preset voices (a total of 200 voices). The preset voices are stored in ROM (Read Only Memory) and cannot be edited or changed in any way. The DS55 also has a USER voice bank (bank U) which has 100 RAM (Random Access Memory) locations into which you can store edited versions of the preset voices.

■ *BANK A*

No.	PERFORMANCE NAME	No.	PERFORMANCE NAME	No.	PERFORMANCE NAME	No.	PERFORMANCE NAME
00	Elegant	25	FloatChime	50	Guitar 1	75	Sax 1
01	SoftBrass	26	Daybreak	51	Guitar 2	76	Sax 2
02	WideString	27	5th	52	E.Guitar	77	Oboe
03	Cosmic	28	SandBell	53	Harp	78	Clarinet
04	LargePipes	29	Suspense	54	Koto	79	Flute
05	SynString 1	30	Fog	55	Marimba	80	Recorder
06	FolkGuitar	31	HuskyVoice	56	Violin 1	81	Harmonica
07	Piano 1	32	Swirlies	57	Cello 1	82	Whistle
08	E. Piano 1	33	HuskyChoir	58	CelloEns.	83	Castanet
09	DistGuitar	34	PluckBrass	59	UpriteBass	84	Triangle
10	SoftString	35	AngelChoir	60	E.Bass 1	85	BellTree
11	SynString 2	36	FluteVoice	61	E.Bass 2	86	Referee
12	RichString	37	SmallPipes	62	SynBass 1	87	SteelDrum 1
13	SynBrass 1	38	E.Organ 1	63	SynBass 2	88	SteelDrum 2
14	SynBrass 2	39	E.Organ 2	64	SynBass 3	89	GuiRoach
15	SynBrass 3	40	Piano 2	65	SynBass 4	90	Zap!
16	BrethBrass	41	E.Piano 2	66	Bass	91	Shwhap!
17	SoftEns.	42	WireBrass	67	NasalLead	92	Poundwood
18	WarmEns.	43	EasyClav	68	SolidLead	93	OilDrum
19	OrchesEns.	44	FunkyClav	69	ClariLead	94	SynSnare 1
20	Sunbeam	45	Harpsichrd	70	Trumpet 1	95	DragonHit
21	Shimmer 1	46	Vibe	71	TightBrass	96	DuneHit
22	SoftCloud	47	Celeste	72	Trombone 1	97	Warp
23	Bamarimba	48	TubeBell	73	Horn 1	98	ModernTele
24	Sandarimba	49	MusicBox	74	Horn 2	99	Encore

■ *BANK B*

No.	PERFORMANCE NAME	No.	PERFORMANCE NAME	No.	PERFORMANCE NAME	No.	PERFORMANCE NAME
00	MultiMoon	25	Shimmer 2	50	FletlessB.	75	WoodBlock
01	BrassEns.	26	SandTube	51	BrassLead	76	Bongo
02	SynBrass 4	27	SpaceEcho	52	FatLead	77	HandDrum
03	SynBrass 5	28	DigitalPop	53	SaxLead	78	Cuica
04	SynBrass 8	29	Upright	54	RaspLead	79	SteelDrum 3
05	Brass 1	30	Grand PF	55	ToughLead	80	BassDrum
06	Brass 2	31	HonkyTonk	56	AnasynLead	81	Snare
07	Brass 3	32	ToyPiano	57	Wow	82	Cymbal
08	Strings 1	33	Rose	58	ProfetStab	83	Slap
09	Strings 2	34	WirePiano	59	TootyFloot	84	Timpani
10	Violin 2	35	NasalClav	60	Trumpet 2	85	Tom
11	Cello 2	36	E.Organ 3	61	Trombone 2	86	SynTom
12	Pizzicato	37	E.Organ 4	62	Flugelhorn	87	Tompany
13	TremString	38	E.Organ 5	63	MuteTrumpet	88	Kick & HH
14	SynString 4	39	Accordion	64	PanFlute	89	SynSnare 2
15	SynString 5	40	LeadGuitar	65	Bassoon	90	SynPerc. 1
16	SynEns. 1	41	FuzzGuitar	66	Calliope	91	SynPerc. 2
17	SynEns. 2	42	MuteGuitar	67	WoodEns. 1	92	SpaceBell
18	SynVoice	43	Banjo	68	WoodEns. 2	93	Bell
19	DigitalVox	44	E.Sitar	69	Piccolo	94	GameSound1
20	Aqua	45	Shamisen	70	Glocken	95	GameSound2
21	MusicSaw	46	SoftHarp	71	Xylophone	96	Alarm
22	DolbyDream	47	E.Bass 3	72	Gong	97	Thunder
23	DigiEns.	48	SynBass 5	73	CowBell	98	WhiteNoise
24	MetalTwang	49	SynBass 6	74	AgogoBell	99	ClashClap

Selecting Voices

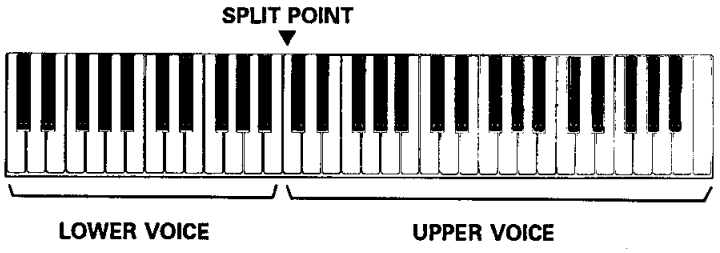
1. Press the PRESET button to select the PRESET voice banks (the LED above the PRESET button will light), or the USER button to select the USER voice bank (the LED above the USER button will light).

2. If you have selected the PRESET voice banks, you can switch between banks A and B by pressing the PRESET button. If preset bank A is selected, pressing PRESET will select bank B, and vice versa. There is only one USER voice bank ("U") so no further bank selection is possible if USER is selected.

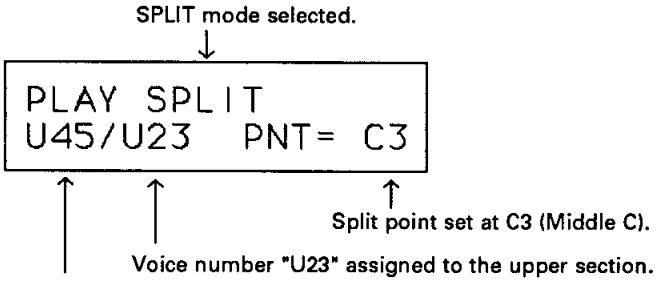
3. Voices within the selected bank can be selected by using either the –1 and +1 buttons or the number buttons (0 through 9). Press the +1 button briefly to increment the voice number by 1, or hold it down for continuous incrementing (release the +1 button when the desired voice number has been reached). The –1 button works in the same way except that it decrements the selected voice number.
   To select a voice using the number buttons, enter the number of the desired voice **in two digits**. To select voice number "07," for example, first press the "0" button (the second digit on the LCD will change to a "?") and then the "7" button. To select voice number 55, press the "5" button twice. The new voice will be selected as soon as the second digit is entered.

THE SPLIT PLAY MODE

The SPLIT PLAY mode allows you to play two different voices from any of the DS55 voice banks on different sections of the keyboard. You could, for example, play a bass voice on the left-hand (lower) section and a piano voice on the right-hand (upper) section of the keyboard. You can also specify the "split point" — the key at which the lower and upper sections of the keyboard are separated. Up to 4 notes can be played simultaneously on the upper and lower sections of the keyboard (a total of 8 notes).

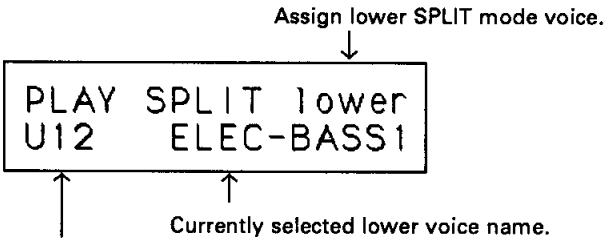


Press the **SPLIT** button in the PLAY MODE group to enter the SPLIT PLAY mode.



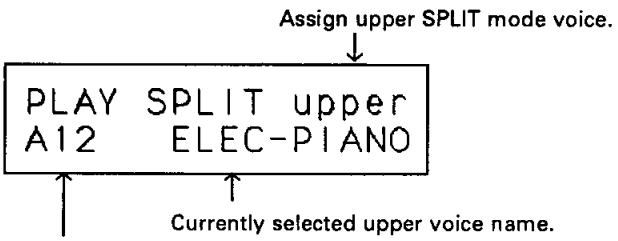
Assigning Voices to the Lower and Upper Keyboard Sections and Specifying the Split Point

After you've selected the SPLIT PLAY mode by pressing the SPLIT button, as described above, pressing the **SPLIT** button again causes a display similar to the following to appear:



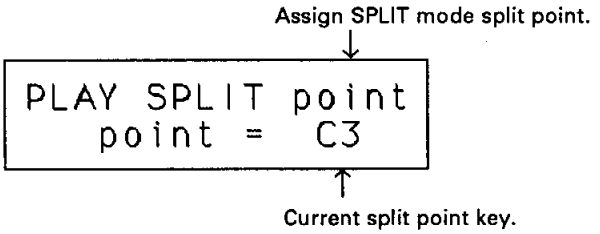
You can now select a new voice for the lower section of the keyboard: select the desired voice bank using the PRESET or USER buttons, then use the –1 and +1 or number (0 through 9) buttons to select a voice as described in "Selecting Voices" on page 7.

After selecting a new lower voice, press the **SPLIT** button again to move ahead to the upper voice assignment display:



You can now select a new voice for the upper section of the keyboard: select the desired voice bank using the PRESET or USER buttons, then use the –1 and +1 or number (0 through 9) buttons to select a voice as described in "Selecting Voices" on page 7.

After selecting a new upper voice, press the **SPLIT** button again to move ahead to the split point display:



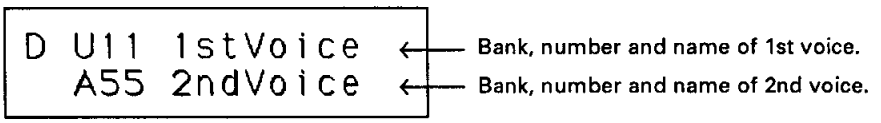
Immediately after this display appears you can select the desired split point by pressing the corresponding key on the DS55 keyboard. This method can only be used once after the split point display has been selected. Further changes to the split point can be made by using the –1 and +1 buttons.

Press the **SPLIT** button again to return to the first SPLIT PLAY display. The voice and split point assignments are stored in the DS55's memory, and will be recalled whenever you enter the SPLIT PLAY mode from any other mode — until new assignments are made.

THE DUAL PLAY MODE

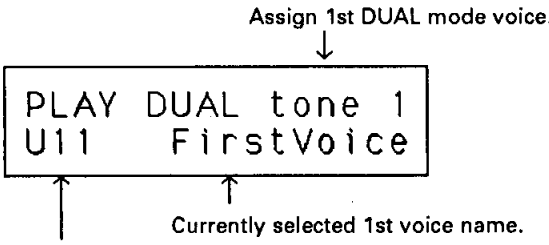
The DUAL PLAY mode allows you to combine and play two voices from any of the DS55 voice banks across the entire keyboard. You can also specify an amount of "detune" between the two voices used, creating a thicker, distinctly "multi-instrument" sound. Up to 4 notes can be played simultaneously in the DUAL PLAY mode.

Press the **DUAL** button in the PLAY MODE group to enter the DUAL PLAY mode.



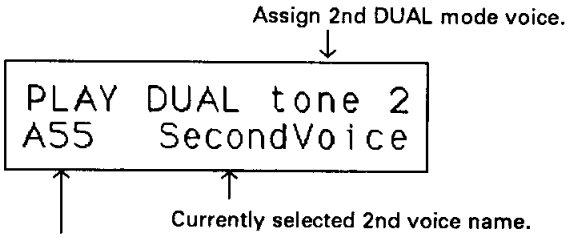
Assigning Dual-mode Voices and Setting Detune

After you've selected the DUAL PLAY mode by pressing the DUAL button, as described above, pressing the **DUAL** button again causes a display similar to the following to appear:



You can now select a new 1st voice for the DUAL PLAY mode: select the desired voice bank using the PRESET or USER buttons, then use the –1 and +1 or number (0 through 9) buttons to select a voice as described in "Selecting Voices" on page 7.

After selecting a new 1st voice, press the **DUAL** button again to assign the 2nd voice:



You can now select a new 2nd voice for the DUAL PLAY mode: select the desired voice bank using the PRESET or USER buttons, then use the –1 and +1 or number (0 through 9) buttons to select a voice as described in "Selecting Voices" on page 7.

After selecting a new 2nd voice, press the **DUAL** button again to move ahead to the detune display:

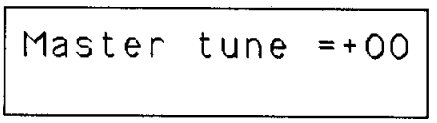
Detune, as the name implies, makes it possible to alter the relative pitches of the two voices used in the DUAL mode. Slight detuning can thicken the overall sound by producing sympathetic "beats" between the two voices. The detune range is from 00 to 7, with a setting of "00" producing no detune effect. The desired detune value can be entered either by using the –1 and +1 buttons, or by pressing the appropriate number button (0 through 7).

Press the **DUAL** button again to return to the first DUAL PLAY display. The voice assignments and detune setting are stored in the DS55's memory, and will be recalled whenever you enter the DUAL PLAY mode from any other mode — until new assignments are made.

MASTER TUNE

There may be situations in which you need to tune the DS55 to other instruments or recorded material — the MASTER TUNE function allows you to do just that.

Press the **TUNE** button to call the MASTER TUNE function:



Tuning can be adjusted over a range of –64 to +63 by using the –1 and +1 buttons, or by directly entering the desired tune value using the number buttons (0 through 9). Remember to enter **two digits** when entering the tune value via the number buttons. The "+/–" button located to the right of the +1 button can be used to change a "+" setting to a "–" one, and vice versa.
A setting of "+00" corresponds to standard concert pitch — i.e. A3 = 440 Hz. "+" settings increase pitch while "–" settings lower pitch. Each increment corresponds to approximately 1.56 cents (one cent is one-hundredth of a semitone).

USING THE DELAY EFFECTS

The DS55 has a built-in delay effect system that can be used to add extra ambience and depth to any of its voices. The delay system is controlled by the three DELAY buttons — **ON/OFF**, **SHORT** and **LONG**. The delay effect can be turned ON or OFF using the ON/OFF button. The SHORT button selects a short delay time, and the LONG button selects a long delay time. The DS55 memorizes the delay settings you make for each voice in the SINGLE PLAY mode (USER memory), so the appropriate settings are automatically recalled each time you select a voice. DELAY settings are also memorized for the SPLIT and DUAL PLAY modes. The overall length of the SHORT and LONG delay effects can be adjusted using the FEEDBACK control on the rear panel. The FEEDBACK control setting affects the entire delay system and is not memorized for each voice.

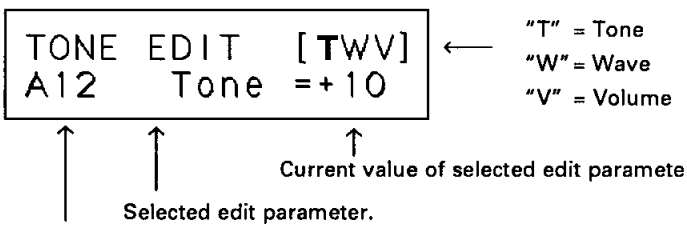
VOICE EDITING & THE STORE FUNCTION

The DS55 offers a range of voice editing parameters that allow you to edit any of its voices — PRESET or USER — to create subtle variations or totally new sounds. You can even give your original creations original titles so you can identify them at a glance.

To edit a voice, simply select it in the normal way, then use any of the editing parameters accessed by the TONE, AMP EG, BRL EG, LFO or FUNCTION buttons (the various editing parameters are described below). Once you're satisfied with the sound you've created, use the STORE function (described on page 16) to store the new voice into one of the 100 USER memory locations. If you do not STORE the new voice into a USER memory location, all your editing work will be lost as soon as you select a different voice or press the SINGLE button. Please note that all editing takes place in a special memory location called the "edit buffer," and that any changes you make are not actually made to the original voice you selected for editing, but to a "copy" of the voice residing in the edit buffer. The contents of the edit buffer are changed each time you select a new voice — that's why you have to STORE an edited voice to a USER memory location if you want to keep it.

Understanding and Using the Edit Function Displays

Each of the DS55's EDIT buttons — TONE, AMP EG, BRL EG, LFO and FUNCTION — provides access to a number of related editing parameters. When you press the TONE button in the EDIT group, for example, the following display will appear:

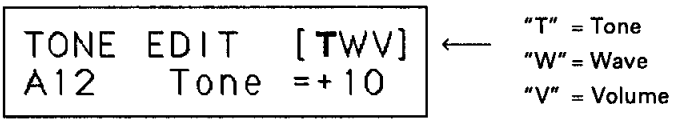


The **TONE** button accesses three editing parameters: Tone, Wave and Volume. These are represented by the three letters inside the square brackets to the right of the top line of the display — [TWV]. When you first press the TONE button, the first of the available parameters will automatically be selected. This is indicated by the fact that the letter "T" within the square brackets is flashing. The other parameters — "W" and "V" — can be selected in sequence by pressing the TONE button. If you press the TONE button again after the last parameter — "V" in this case — is selected, the first parameter will be selected again.

This process repeats as many times as you press the TONE button.
All of the other EDIT buttons work in the same way — any of the parameters accessed by an EDIT button can be selected by pressing the same EDIT button repeatedly until the letter representing the desired parameter begins to flash. Once the desired parameter has been selected, its value can be edited by using the –1 and +1 buttons or by directly entering the value using the number buttons (0 through 9). When a parameter is selected that has a range from "–" to "+" values, the "+/–" button located to the right of the +1 button can be used to change a "+" setting to a "–" one, and vice versa.
Once the required edits have been made, you can press another EDIT button to access and edit other parameters, press the STORE button to access the STORE function that allows you to store your creation in a USER memory location, or select any other mode by pressing the appropriate button.

TONE – [TONE button]

The **TONE** button accesses two parameters (Tone and Wave) that change the basic tone or timbre of the voice, and one parameter (Volume) that adjusts the overall volume of the voice.
All of the edit parameters accessed by the TONE button have a range of –10 to +10. A setting of "+00" represents the original value of the selected parameter (i.e. no change). If an exclamation mark (!) appears to the right of the parameter's value, the parameter is set at its limit and cannot be increased or decreased further.



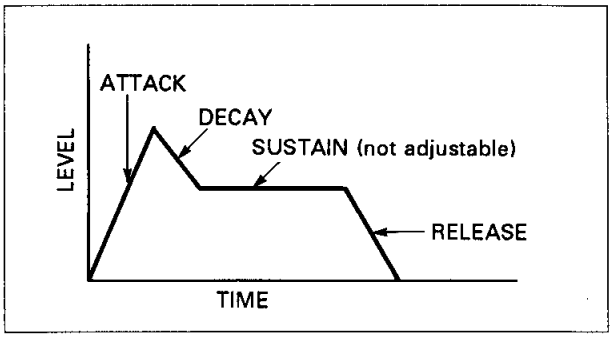
Tone This parameter changes the brilliance of the voice. Brilliance can be increased by setting "+" values, or reduced by setting "–" values.

Wave This parameter actually changes the timbre of the voice by altering its harmonic structure. The audible change produced will depend to a large degree on the original voice data.

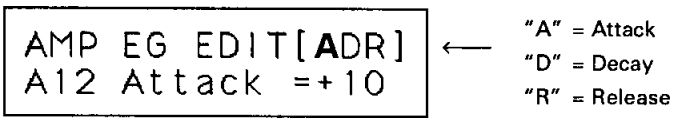
Volume The Volume parameter adjusts the volume of the voice. This is handy since changing the Tone and or Wave values can significantly alter the perceived volume of the voice. Use Volume to set the voice to the required volume level. Volume can be increased by setting "+" values, or reduced by setting "–" values.

AMPLITUDE ENVELOPE — [AMP EG button]

The **AMP EG** button accesses three parameters that shape the "amplitude envelope" of the voice. The amplitude envelope determines how fast the attack of the sound is, how quickly the sound decays after the attack, and how quickly the sound level returns to zero after the note (key) is released. In addition to the tone or timbre of the sound, the amplitude envelope is one of the most important factors in "identifying" a specific voice. A simple graphic representation of an amplitude envelope is given below.



All of the edit parameters accessed by the AMP EG button have a range of –10 to +10. A setting of "+00" represents the original value of the selected parameter (i.e. no change). If an exclamation mark (!) apears to the right of the parameter's value, the parameter is set at its limit and cannot be increased or decreased further.



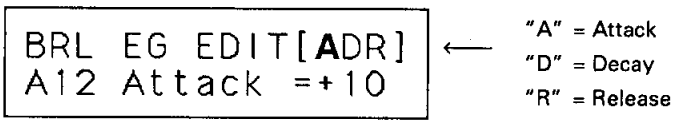
Attack The Attack parameter determines how fast the level of the voice increases from zero to maximum when a key is played. Percussive voices such as piano and harpsichord, for example, have a very fast attack, while strings and flute type voices have a slower, gentler attack. The attack speed can be increased by setting "+" values, or reduced by setting "–" values.

Decay Decay is the amount of time it takes for the sound to fall to the sustain level of the voice after the attack has finished. Some voices have no sustain and will decay to zero before the key is released. The decay speed can be increased by setting "+" values, or reduced by setting "–" values.

Release Release determines the length of time it takes for the level of the voice to fall to zero after a note (key) played is released. With voices that have no sustain (i.e. they decay to zero before the key is released), the release parameter only applies if a key is released **before** the sound decays to zero. The release speed can be increased by setting "+" values, or reduced by setting "–" values.

BRILLIANCE ENVELOPE — [BRL EG button]

The **BRL EG** button accesses three parameters that shape the "brilliance envelope" of the voice. The brilliance envelope has the same parameters as the amplitude envelope, described above. The difference is that the brilliance envelope changes the tone of the voice rather than its level.
All of the edit parameters accessed by the BRL EG button have a range of –10 to +10. A setting of "+00" represents the original value of the selected parameter (i.e. no change). If an exclamation mark (!)appears to the right of the parameter's value, the parameter is set at its limit and cannot be increased or decreased further.



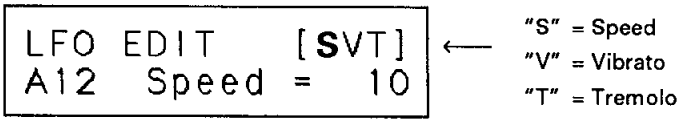
Attack The Attack parameter determines how fast the tone of the voice reaches its maximum brilliance when a key is played. The brilliance attack speed can be increased by setting "+" values, or reduced by setting "–" values.

Decay Decay is the amount of time it takes for the brilliance of the sound to fall to an intermediate level after the attack has finished. The brilliance decay speed can be increased by setting "+" values, or reduced by setting "–" values.

Release Release determines the length of time it takes for the tone of the voice to fall to minimum brilliance after a note (key) played is released. The brilliance release speed can be increased by setting "+" values, or reduced by setting "–" values.

LOW FREQUENCY OSCILLATOR (VIBRATO & TREMOLO)— [LFO button]

The three parameters accessed by the **LFO** button control operation of the internal low-frequency oscillator. The low-frequency oscillator is an oscillator with a frequency range from a few tenths of a second to several seconds, which is used to control slowly varying effects such as tremolo and vibrato. The LFO parameters allow you to control the speed of the LFO, the amount of tremolo (periodic volume variation) it produces, and the amount of vibrato (periodic pitch variation) it produces. Tremolo and vibrato effects can be produced simultaneously.



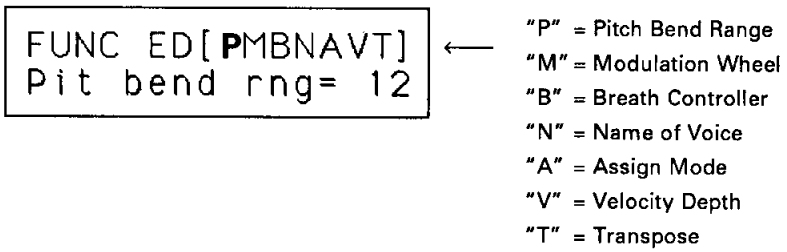
Speed Adjusts the speed of the LFO. LFO speed can be increased by setting "+" values, or reduced by setting "–" values.

Vibrato Sets the depth of the vibrato effect produced by the LFO. Vibrato depth can be increased by setting "+" values, or reduced by setting "–" values.

Tremolo Sets the depth of the tremolo effect produced by the LFO. Tremolo depth can be increased by setting "+" values, or reduced by setting "–" values.

OTHER VOICE EDITING FUNCTIONS — [FUNCTION button]

The parameters accessed by the **FUNCTION** button do not directly affect the basic sound of the voice being edited, but they control a number of important "support" parameters such as how the DS55's controllers (pitch bend wheel and modulation wheel) function, etc.



Pitch Bend Range This parameter determines the pitch range covered by the DS55's pitch bend wheel. The range of this parameter is from 00 to 12, with each increment corresponding to a semitone. A setting of "00" produces no pitch bend even if the pitch bend wheel is moved. A setting of 12 gives a total range of 2 octaves — one up and one down (12 semitones = 1 octave).

Modulation Wheel Function This parameter determines whether the modulation wheel controls vibrato, tremolo or wow-wow. The three possible settings are "vib" for vibrato, "tre" for tremolo, and "wow" for wow-wow. If a modulation wheel function for the selected voice has not been previously selected, "—" appears on the display in place of "vib," "tre," or "wow."

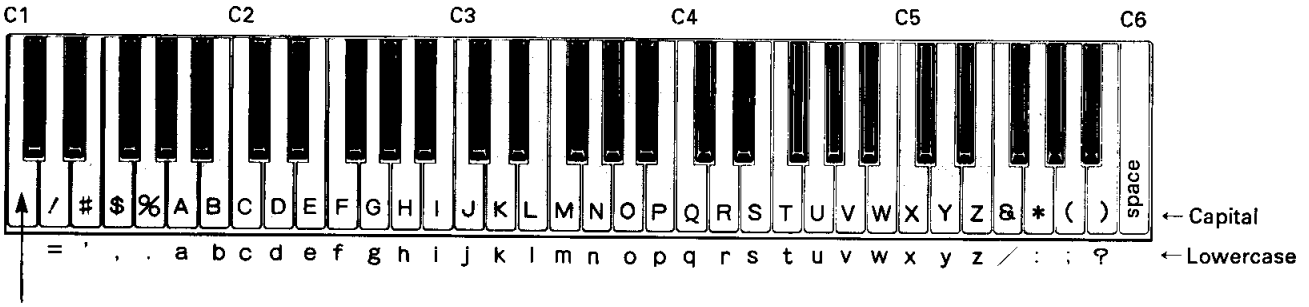
Breath Controller Function The Breath Controller Function can be utilized by plugging a YAMAHA BC1 or BC2 into the BREATH jack. This parameter determines whether a YAMAHA BC1 or BC2 breath controller plugged into the DS55's BREATH jack controls vibrato, tremolo or wow-wow. The three possible settings are "vib" for vibrato, "tre" for tremolo, and "wow" for wow-wow. If a breath controller function for the selected voice has not been previously selected, "—" appears on the display in place of "vib," "tre," or "wow."

Name of Voice

This function lets you create an original title for a new voice you have created, so you can easily identify it later. When the Name function is called, the current name of the voice being edited is shown on the lower line of the LCD, and an underline cursor appears under the first character of the voice name.

```
FUNC ED[PMBNAVT]
NAME: VoiceName
```

The DS55's keyboard (white keys) is then used to enter a new character at the cursor position. Numbers are entered using the number buttons. Refer to the keyboard/character chart below to see which keys correspond to which characters. Note that the C1 key switches from upper to lower case, and vice versa. When upper case is selected, "NAME" to the left of the lower LCD line will be in upper-case characters, while it will appear in lower-case characters when the lower-case mode is selected. When a character has been entered, press a black key on the DS55 keyboard to move the cursor one character to right, ready to enter the next character of your voice name. The –1 and +1 buttons can also be used to move the cursor backward and forward, respectively. Continue entering the required characters (or spaces) until your voice name is complete.



Press C1 (the lowest key) to select lowercase or capital letters.

Press a white key to enter the corresponding character.

Press a black key to move to the next character in the voice name. (You can also use the +/– keys to move through the name.)

Note:

"+" and "–" symbols can be entered using the +/– (SYNC) button — press once for "+" or twice for "–."

Assign Mode

The Assign Mode parameter sets the DS55 for either monophonic (mono) or polyphonic (poly) operation. The polyphonic mode is the one you'll normally use with most voices, since it allows you play up to 8 notes simultaneously. The mono mode is useful for certain types of voices — bass voices and some sound effects — since it can provide a thicker, richer sound.

Velocity Depth

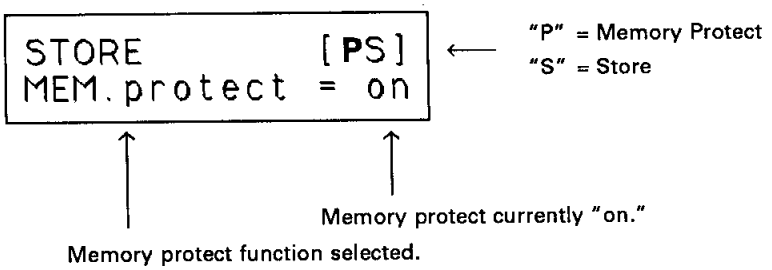
Velocity Depth determines how the DS55 responds to keyboard dynamics (i.e. how hard or fast you play the keys). The Velocity Depth range is from 0 to 7. The higher the setting, the greater the response will be to variations in the way you play the keys. The amount of variation produced will depend on the initial settings of individual voices.

Transpose

The transpose parameter allows you to shift the pitch of the entire keyboard up or down by a maximum of 2 octaves in semitone increments. The range is from –24 to +24. A setting of +4, for example, will raise the pitch of the keyboard by a major third (middle C will have the pitch of E above middle C, etc.).

THE STORE FUNCTION — [STORE button]

The **STORE** button actually accesses 2 functions: Memory Protect and Store. As with the voice editing functions described above, when Memory Protect is off the "P" and "S" functions are alternately selected by pressing the STORE button. Please note that the STORE mode can only be selected from a voice editing mode or the SINGLE PLAY mode.

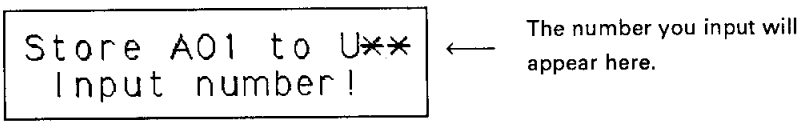


Memory **P**rotect

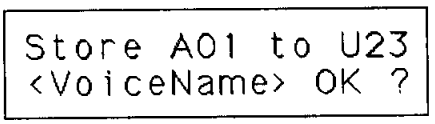
Memory Protect should normally be turned "on" to prevent accidental alteration of data in the DS55 memory. It is turned on automatically whenever the POWER switch is turned ON. Memory Protect must be turned "off," however, whenever you store a voice that you have edited to a new memory location. If you do not turn Memory Protect off, the STORE function cannot be selected. Once you have completed the STORE operation, it's a good idea to turn Memory Protect back on to protect your data. Memory protect can be turned "off" by pressing the –1 button, and "on" by pressing the +1 button.

Store

When you press the STORE button a second time after turning Memory Protect "off," a display similar to the following will appear:



The first voice on the upper line is the one you have edited and will be storing to a new user memory location, and the second (with the flashing asterisks) is the user memory location you specify to which the voice will be stored. Use the number buttons to enter the number of the memory location you wish to store to (enter two digits). When you've entered the second digit, the display will look something like this:



Now press the +1 (YES) button to execute the STORE operation, or the –1 (NO) button to cancel the STORE operation and return to the previous display.

Note:

When you store the voice you've created to a location in the User bank, any voice data previously in that location will be erased.

AUTO PERFORMANCE

The DS55 Auto Performance function provides a range of 43 different Auto Performance sequences that can be used as accompaniment for performance or practice. The 43 Auto Performance sequences are divided into three types — PATTERN CHANGE, KEY SHIFT and ARPEGGIO — as shown in the Auto Performance Sequence list, below. In all cases, the selected Auto Performance sequence is controlled by the keys C1 through C2 (the lowest octave on the DS55 keyboard).

■ Auto Performance Sequence list

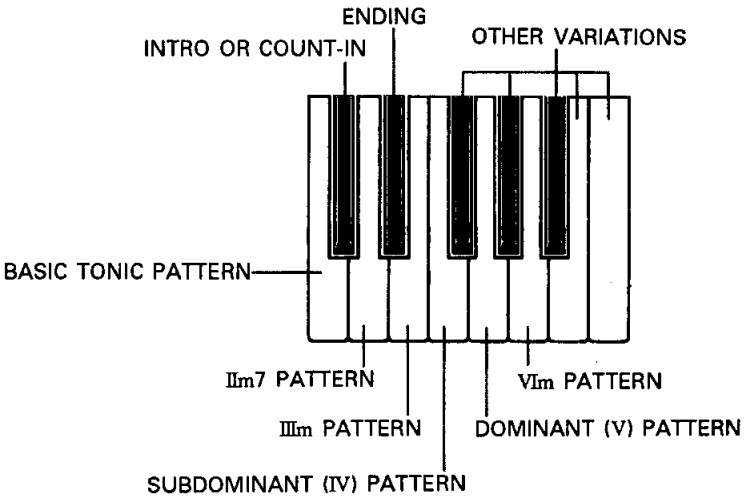
Type	No.	Name	Number of Melody Notes*
PATTERN CHANGE	00	Cruise	1
	01	Latin	1
	02	Swan	1
	03	Oh!Blues	1
	04	Respect	1
	05	Bubble	1
	06	Roadstar	1
	07	Maria	1
	08	LA Night	2
	09	Japan	1
	10	Memories	1
	11	Samba	1
	12	Wendy	1
	13	Fly Away	1
	14	Power pop	1
	15	Salsa	1
	16	I saw H.	1
KEY SHIFT	17	Discoman	2
	18	Metalkid	1
	19	HeilR&R	2
	20	Fusion	1
	21	3 Finger	3

Type	No.	Name	Number of Melody Notes*
KEY SHIFT	22	TV Game	2
	23	SoulKing	1
	24	Dreaming	1
	25	Country	1
	26	Nature	1
	27	Dog walk	1
	28	IceCream	2
	29	Ballade	2
ARPEGGIO	30	Meatball	2
	31	Elec Pop	6
	32	TubeBell	4
	33	Pizz	2
	34	Brastring	2
	35	Syn String	2
	36	Brass	1
	37	E. Piano	1
	38	Harp	2
	39	Syn Brass	2
	40	Tin Perc	2
	41	Nasty	2
	42	Wood Perc	2

** Number of Melody Notes is the number of notes that can be Played simultaneously on the upper octaves of the keyboard while the Auto Performance sequence is Playing. When an Auto Performance sequence is playing, the available melody note(s) have no initial touch response.*

Pattern Change The pattern change sequences provide 13 different patterns (selected by pressing keys C1 through C2) of between 1 and 4 measures in length that can be combined to create entire compositions in a number of different musical styles. The C1 key, for example selects an introduction, the F1 key selects a subdominant pattern, the G1 key selects a dominant pattern, the D#1 key selects an ending, etc. All you need to do is to select and start the desired PATTERN CHANGE sequence, then select the desired patterns by pressing the appropriate keys.

The patterns selected by the low-octave keys generally conform to the diagram below. the "OTHER VARIATIONS" keys select patterns and "turn-arounds" that vary according to the selected Auto Performance Sequence.



A basic 3-chord progression can be constructed with any of these Auto Performance sequences using the C (BASIC TONIC PATTERN), F (SUBDOMINANT PATTERN) and G (DOMINANT PATTERN) keys. Once you get the feel of using these three basic patterns, try adding the other patterns and variations.

Key Shift The Key Shift sequences are all based on a single pattern that can be transposed to any key by pressing the appropriate key (between C1 and C2) on the DS55 keyboard. This is ideal for simple "3-chord" type progressions. The KEY SHIFT patterns are between 1 and 4 measures in length.

Arpeggio Arpeggio, as the name suggests, produces automatic arpeggios when two or more notes are played on the lower octave of the DS55 keyboard. The DS55 automatically creates appropriate arpeggios for the notes or chord played on the keyboard.

LISTEN TO THE DEMONSTRATION SEQUENCES

To hear the type of sound that can be achieved using the DS55 Auto Performance function, try listening to the demonstration sequences provided.

1. While in the SINGLE PLAY mode, press the STORE and TUNE buttons simultaneously. The following display will appear:

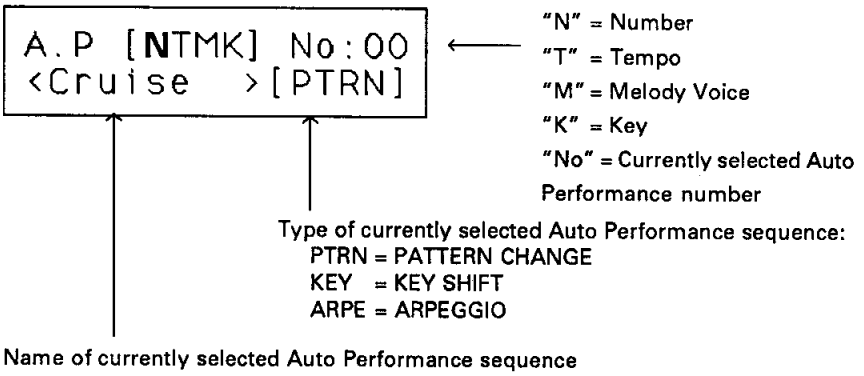
```
Demo song select
Hit tenky 0-9
```

2. Press any of the number keys — 0 through 9 — to hear one of the 10 demonstration sequences. You can switch to another demonstration sequence at any time by pressing a different number button. You can play along on the keyboard (one note at a time) while the demonstration sequence is playing.

3. Press the AUTO PERFORMANCE START/STOP button to stop the demo, then any other mode button to exit from the demonstration mode.

SETTING THE AUTO PERFORMANCE PARAMETERS

Press the AUTO PERFORMANCE SELECT button and the following display will appear:



Pressing the AUTO PERFORMANCE SELECT key selects the Number, Tempo, Melody voice and Key parameters in sequence.

Number When the Number parameter is selected, use the –1 and +1 buttons or the number buttons (0 through 9) to select the desired Auto Performance sequence number.

Tempo When the Tempo parameter is selected, use the +1 and –1 buttons to set the desired tempo (in beats per minute).

Melody Voice When the Melody Voice parameter is selected, select the bank A, bank B or USER voice you wish to use for the melody, following the normal voice selection procedure. When using Auto Performance, you can play a melody or solo line on the upper octaves of the DS55 keyboard using the selected Melody Voice.

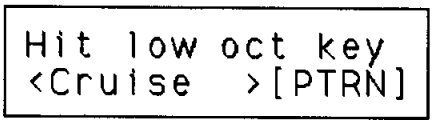
Key When the Key parameter is selected, you can transpose the key of the Auto Performance sequence over a ±6 semitone range (a total of one octave) using the +1 and –1 buttons.

Note:

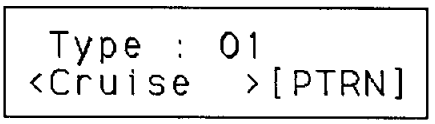
Tempo, Melody Voice and Key are reset to their initial values when a new patern is selected or the Auto Performance mode is exited.

PLAYING THE SELECTED AUTO PERFORMANCE SEQUENCE

Once the desired Auto Performance sequence has been selected and all necessary parameters have been set, press the AUTO PERFORMANCE START/STOP button and the folowing display will appear:

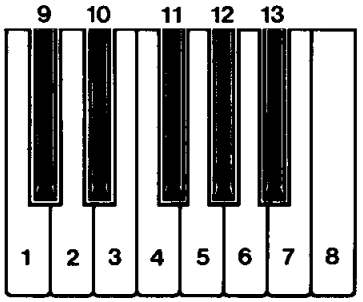


You can now actually start the Auto Performance sequence by pressing any of the lower-octave keys (C1 through C2), or by playing a chord in the lower octave if an ARPEGGIO sequence is selected.

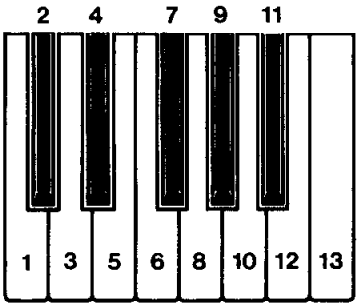


"Type" is the selected pattern type for [PTRN].
"Key" is the selected pattern for [KEY]
"Oct" is the octave range of the arpeggio for [ARPE]

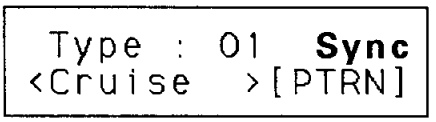
Key (Type) Numbers when [PTRN] is Selected



Key Numbers when [KEY] is Selected



Change patterns (or arpeggios) using the left hand while playing the melody with the right hand. In the case of PATTERN CHANGE and KEY SHIFT patterns, the pattern will normally change after it has played through to the end (1 to 4 measures) once a new key is pressed. If you want the pattern to change immediately a new key is played, press the "SYNC" button after the Auto Performance sequence has been started ("Sync" will appear to the right of the upper line on the LCD). This "Sync" mode can be turned on and off while playing by pressing the "SYNC" button.



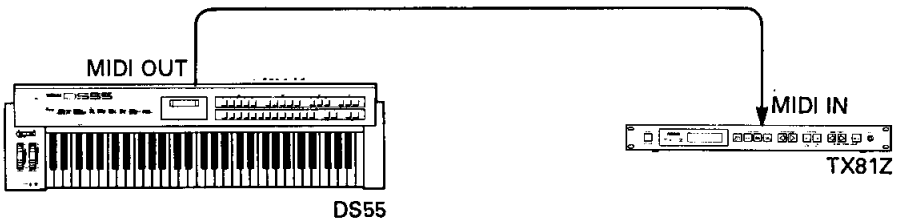
The Auto Performance sequence can be stopped at any time by pressing the AUTO PERFORMANCE START/STOP button. To select a different Auto Performance sequence, press the AUTO PERFORMANCE SELECT key and select as described above.

Note:

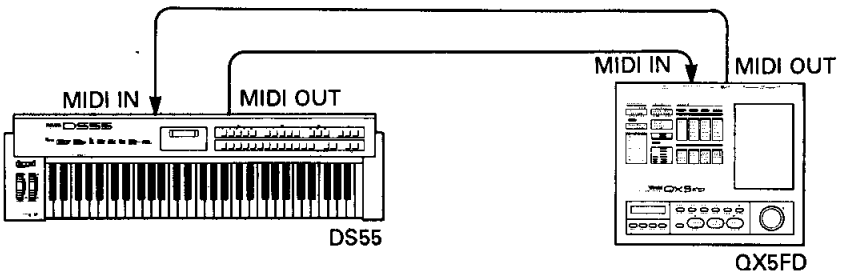
MIDI data cannot be received while an Auto Performance sequence or demonstration is playing.

MIDI FUNCTIONS

MIDI, the Musical Instrument Digital Interface, is a world-standard communication interface that allows MIDI-compatible musical instruments and equipment to share musical information and control one another. This makes it possible to create "systems" of MIDI instruments and equipment that offer far greater versatility and control than are available with isolated instruments. For example, most MIDI keyboards transmit note and velocity (touch response) information via the MIDI OUT connector whenever a note is played on the keyboard. If the MIDI OUT connector is connected to the MIDI IN connector of a second keyboard (synthesizer, etc.) or a tone generator such as the YAMAHA TX81Z FM Tone Generator (essentially a synthesizer with no keyboard), the second keyboard or tone generator will respond precisely to notes played on the transmitting keyboard. The result is that you can effectively play more than one instrument at once, providing thick multi-instrument sounds.



This same type of musical information transfer is used for MIDI sequence recording. A sequence recorder such as the YAMAHA QX5FD Digital Sequence Recorder can be used to "record" MIDI data received from the DS55, for example. When the recorded data is played back, the DS55 automatically "plays" the recorded performance in precise detail.



The examples given above really only scratch the surface. MIDI can do much, much more. The DS55 offers a number of MIDI functions that allow it to be used in even highly sophisticated MIDI systems.

Note:

Always use a high-quality MIDI cable to connect MIDI OUT to MIDI IN terminals. Never use MIDI cables longer than about 15 feet, since cables longer than this can pick up noise which can cause data errors.

USING THE MIDI FUNCTIONS

The **MIDI CH** button accesses 7 different parameters that can be selected and programmed in the same was as the voice editing parameters. The 7 MIDI parameters can be selected in sequence by pressing the MIDI CH button (the letter representing the selected function will flash), and the setting of the selected parameter can be changed by using the –1 and +1 buttons or by directly entering the value. In the case of "MIDI Channel," use the number buttons (0 through 9).

```
MIDI CH[SCOEBAS]
MIDI switch=off
```

←

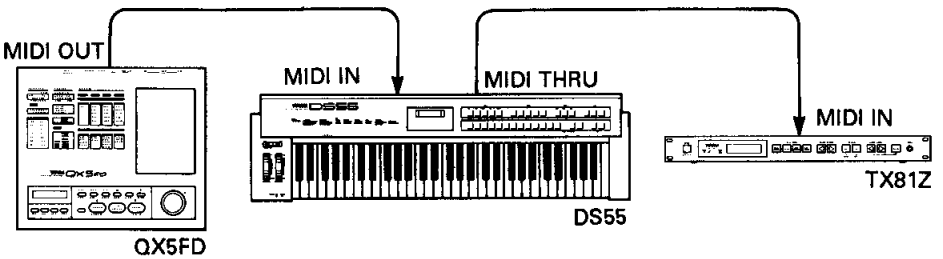
"S" = MIDI Switch
"C" = MIDI Channel
"O" = Omni Mode
"E" = Exclusive
"B" = Bulk Dump (one voice)
"A" = All Data Bulk Dump
"S" = Setup Data Bulk Dump

MIDI **S**witch

This parameter simply turns the DS55's MIDI functions "on" or "off." Turn "on" if you will be using the DS55 with other MIDI devices, or "off" if you do not want the DS55 to respond to external MIDI control or transmit MIDI data. If MIDI Switch is "off," none of the following parameters can be selected.

MIDI **C**hannel

The MIDI system allows transmission and reception of MIDI data on 16 different channels. Multiple channels have been implemented to allow selective control of certain instruments or devices connected in series. For example, a single MIDI sequence recorder could be used to "play" two different instruments or tone generators. One of the instruments or tone generators could be set to receive only on channel 1, while the other is set to receive on channel 2. In this situation the first instrument or tone generator will respond **only** to channel–1 information transmitted by the sequence recorder, while the second instrument or tone generator will respond **only** to channel–2 information. This allows the sequence recorder to "play" two independent parts on the receiving instruments or tone generators.



In any MIDI control setup, the MIDI channels of the transmitting and receiving equipment must be matched for proper data transfer. Use the –1 and +1 or number buttons to set the desired MIDI transmit/receive channel on the DS55.

Omni Mode

The "Omni" receive mode allows reception on all 16 MIDI channels simultaneously. In the Omni mode it is not necessary to match the receive channel of the receiving device to the the transmit channel of the transmitting device. The Omni parameter can be turned "on" or "off." When "off," the DS55 will respond to data on the single MIDI channel selected with the MIDI Receive Channel parameter.

Exclusive

The Exclusive parameter determines whether the DS55 will transmit and receive MIDI System Exclusive Data. System Exclusive Data includes the actual voice data used by the DS55, so this parameter must be turned "on" if you intend to receive voice data from external equipment, or transmit DS55 voice data to other equip

ment (another DS55, compatible tone generator, MIDI data recorder, etc.) using the Bulk Dump functions described below. The Exclusive parameter can be turned "on" or "off." If Exclusive is "off," none of the following parameters can be selected.

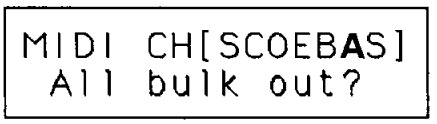
Bulk Dump of One Voice

This function performs a MIDI "bulk dump" of the currently selected voice (i.e. the voice currently residing in the DS55's edit buffer). This means that the data for the currently selected voice is transmitted via the DS55 MIDI OUT connector, and can be received by compatible MIDI equipment such as another DS55, a tone generator such as the TX81Z, or a MIDI data recorder such as the MDF1. A MIDI data recorder can be used to store libraries of voices that you can later reload and use as required (see "RECEIVING VOICE DATA FROM EXTERNAL EQUIPMENT" on page 24).

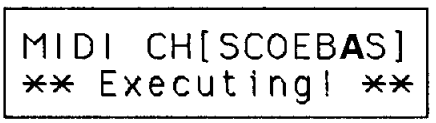
To transmit the current voice as a MIDI bulk dump, after the "Once voice bulk?" display appears, press the +1 (YES) button to execute the bulk dump operation. When the bulk dump has finished, the following display will appear:

All Data Bulk Dump

While the previous function performed a bulk dump of a single voice, All Data Bulk Dump dumps the data for all 100 voices in the USER memory via the DS55 MIDI OUT connector.



Press +1 (YES) in response to the above display to execute the bulk dump. The following display will appear for a few seconds while the bulk dump is in progress:



The following display appears when the bulk dump operation has finished.

Setup Data Bulk Dump

This function performs a MIDI bulk dump of the current "setup status": the currently selected play mode, voice(s), effect settings, etc. This is useful when using the DS55 with a MIDI sequence recorder, since it allows you to record all necessary settings prior to actually recording your performance data. When the se-

quence is played back, the DS55 will be automatically set up with the appropriate voices and effect settings, etc., before playback of the performance data begins.

```
MIDI CH[SCOEBAS]
 Set up bulk?
```

After the "Set up bulk?" display appears, press the +1 (YES) button to execute the bulk dump operation. When the bulk dump has finished, the following display will appear:

```
MIDI CH[SCOEBAS]
** Completed! **
```

RECEIVING VOICE DATA FROM EXTERNAL EQUIPMENT

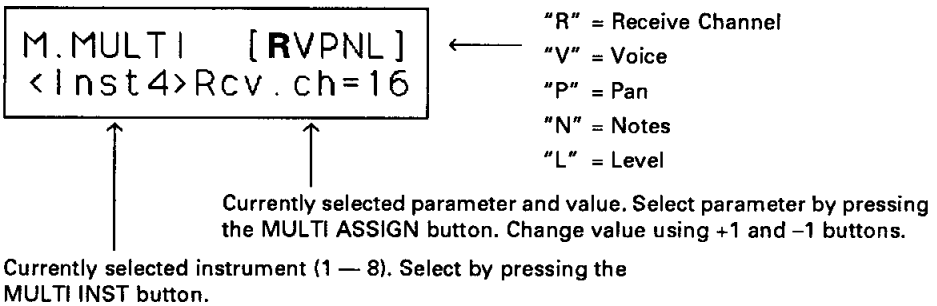
When the DS55 receives a bulk dump from compatible external equipment, it will automatically recognize the bulk dump data and load it into the appropriate memory locations as long as:

1: The MIDI Switch function (MIDI CH button) is "on."
2: The Exclusive function (MIDI CH button) is "on."
3: The Memory Protect function (STORE button) is "off."
4: The MIDI transmit channel or "device number" of the transmitting device is matched to the DS55 MIDI channel.

THE MULTI-INSTRUMENT MODE

The Multi-Instrument mode is a special mode provided by the DS55 which allows it to function as a multi-voice tone generator which can be controlled by a MIDI sequencer or other MIDI device. In the Multi-Instrument mode, the DS55 can provide from 1 to 8 different "instruments" which can be individually controlled on different MIDI channels. The MULTI INST and MULTI ASSIGN buttons allow you to assign DS55 voices to the multi-mode instruments, set the MIDI receive channel, pan position, volume level and number of notes for each instrument. For an example of how the Multi-Instrument mode can be used, see "AN EXAMPLE OF MULTI-INSTRUMENT MODE USE" on page 26.

Press the **MULTI INST** button to enter the Multi-Instrument Mode — a display similar to the following will appear:



You can now select any of the 8 available instruments — <Inst1> through <Inst8> — in sequence by pressing the MULTI INST button. When any instrument is selected, the parameters you select using the MULTI ASSIGN button apply to the currently selected instrument.

Receive Channel This parameter sets the MIDI receive channel for the currently selected instrument. The range is from 1 to 16, and "om" for the omni mode (the omni mode allows reception on all 16 MIDI channels). Use the –1 and +1 buttons, or the number buttons, to select the desired channel.

Voice This parameter assigns one of the DS55's preset or user voices to the currently selected instrument. With the Voice parameter selected, simply select the desired voice using the normal voice selection procedure.

Pan Pan determines whether the current instrument will appear to the left, center or right of the stereo sound field. If "left" is selected, the instrument is delivered via the L/MONO OUTPUT jack only. If "right" is selected the instrument is delivered via the R OUTPUT jack only. If "centr" is selected the instrument is delivered via both OUTPUT jacks.

Note:

If you are using the DS55 with a monaural sound system connected to the DS55 L/MONO OUTPUT jack, the Pan parameter will have no effect.

Notes Determines the maximum number of notes that can be played simultaneously by the currently selected instrument. The maximum number of notes assignable to all instruments used is 8. So if you use all 8 instruments, each can only play 1 note. If you only use 4 of the 8 available instruments, however, a number of Notes assignment possibilities are available. For example:

Inst1	Inst2	Inst3	Inst4
2 notes	2 notes	2 notes	2 notes
1 note	2 notes	3 notes	2 notes
4 notes	2 notes	1 note	1 note

The number of notes you assign to an instrument will naturally depend on that instrument's function. For example, you would normally need to assign several notes to a piano, while one is sufficient for bass.
If Notes is set to "0," that instrument is turned OFF. All other parameter values will appear on the display as "**" and can not be edited.

Note:

If you attempt to add an additional voice in the MULTI-INSTRUMENT mode, it is necessary that the total number of notes used by the existing voices is less than 8.

Level Level sets the volume level for the currently selected instrument. The range is from 00 to 99. A setting of 00 produces no output, while a setting of 99 produces the highest volume level for that instrument. The Level parameter is used to set up the ideal balance between all instruments used.

AN EXAMPLE OF MULTI-INSTRUMENT MODE USE

Here's an example of how you can use the Multi-Instrument mode with a MIDI sequencer such as the YAMAHA QX5FD.
Suppose we want to record a sequence to be played back using a piano voice, bass, and a brass voice for the melody line. We could begin by recording the piano voice on the sequencer with the DS55 MIDI channel set to 1. When the piano track has been recorded, the next step would be to record the bass part with the DS55 MIDI channel set to 2. Finally, record the brass part with the MIDI channel set to 3 (refer to your sequencer's operation manual for recording details).

Now, before playing back the sequence, we must enter the DS55 Multi-Instrument mode and set up the instruments as follows:

Inst1	Rcv.ch=01	Voice=Piano	Pan=centr	Notes=6	Level=99
Inst2	Rcv.ch=02	Voice=Bass	Pan=centr	Notes=1	Level=99
Inst3	Rcv.ch=03	Voice=Brass	Pan=centr	Notes=1	Level=99
Inst4	Rcv.ch=**	Voice=**	Pan=**	Notes=0	Level=**
Inst5	Rcv.ch=**	Voice=**	Pan=**	Notes=0	Level=**
Inst6	Rcv.ch=**	Voice=**	Pan=**	Notes=0	Level=**
Inst7	Rcv.ch=**	Voice=**	Pan=**	Notes=0	Level=**
Inst8	Rcv.ch=**	Voice=**	Pan=**	Notes=0	Level=**

We only recorded 3 parts, so we only need 3 of the 8 available instruments. All others (instruments 4 through 8) are turned OFF by setting their Notes parameter to "0." If we now play back the sequence we recorded, the piano, bass and brass parts will be reproduced simultaneously, creating a full "trio" effect.

USING THE DS55 KEYBOARD TO PLAY IN THE MULTI-INSTRUMENT MODE

When the Multi-Instrument mode is selected, the instrument currently displayed on the LCD can be played via the DS55 keyboard. All other instruments set to the same MIDI channel as the currently displayed instrument will sound simultaneously. This capability can be used to create extra-thick multi-instrument sounds for use in solos, etc. Of course, the Multi-Instrument mode's 8-note limit applies in the same was as it does when controlling the instruments from an external sequence recorder.

ERROR MESSAGES

In the event that something goes wrong or needs attention, one of the following messages may appear on the LCD display.

MIDI data error

This data will appear if unrecognizeable data appears at the MIDI in connector or if the MIDI connections are not made properly. Check all cables and related equipment. This display can sometimes be caused by turning on an external MIDI device connected to the DS55 MIDI IN connector while the DS55 power is on.

MIDI buffer full

Too much MIDI data has been redeived in too short a period of time, causing the DS55 MIDI buffer to become full and overflow. This can be caused by sending extremely complex and/or fast sequences to the DS55 from a MIDI sequencer.

Memory protected

You have attempted to load data into the DS55 via the MIDI interface without turning the memory protect function off. Turn memory protect off and try loading the data again.

CNG backup BATT.

The backup battery which maintains the contents of the DS55's internal memory even when the power switch is turnf off has run low and must be replaced. Do not attempt to replace the backup battery yourself — refer this job to qualified YAMAHA service personnel.

CNG main BATT.

The main batteries used to power the DS55 have run low and must be replaced. See page 5 for battery replacement instructions.

SPECIFICATIONS

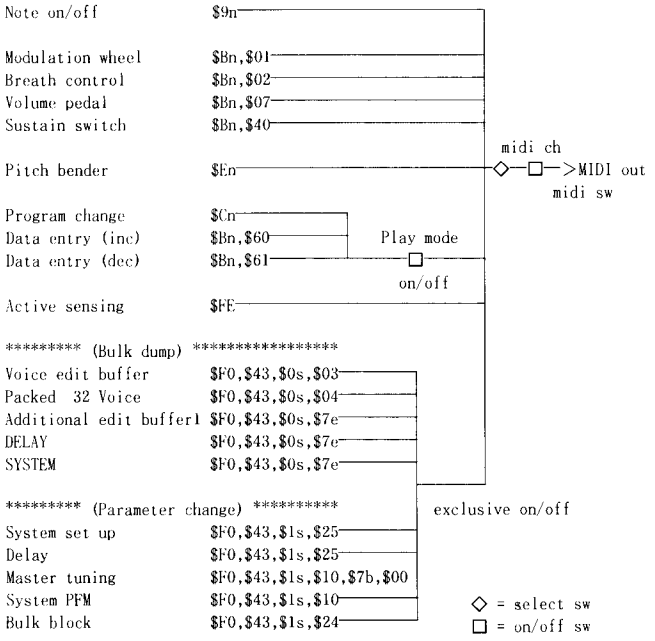
Keyboard	61 keys with initial touch response
Tone Generator	4-operator, 8-algorithm FM
Polyphony	8 notes
Play Modes	SINGLE/SPLIT/DUAL
Preset Voices	200 in two banks (A and B)
User Memory	100 voice memory locations
Controls	Volume, pitch bend wheel, modulation wheel, delay feedback level control(rear panel)
Panel Buttons	PRESET, USER, SINGLE, SPLIT, DUAL, TONE, AMP EG, BRL EG, LFO, FUNC, TUNE, SINGLE/MULTI, CH INFO/ INST, EXCLUSIVE/ASSIGN, 0 — 9, +1/YES, –1/NO, –, SELECT, START/STOP, DELAY ON/OFF, SHORT, LONG.
Display	16-character x 2 line LCD
Front-panel Connectors	PHONES, BREATH CONT
Rear-panel Connectors	OUTPUT L/MONO and R, SUSTAIN, FOOT VOLUME, MIDI IN/OUT/THRU, DC(10-12V)IN
Output Level	OUTPUT: –11 dBm (10 kΩ) PHONES: –5 dBm (150 Ω)
Power Supply	1.5V SUM-2 batteries x 6 (supplied), or optional PA-1, PA-1B or PA-3 AC Adapter
Dimensions (W x H x D)	970 x 270 x 100 mm (38-3/16" x 10-5/8" x 3-15/16")
Weight	6.4 kg (14 lbs 2 oz)

**Specifications and appearance subject to change without notice.*

INDEX

MIDI DATA FORMAT

1. Transmission Conditions



2. Transmission Data

2-1 Channel Information

(1) Channel Voice Message

1) NOTE ON/OFF

STATUS	1001nnnn	(9n)	n=channel number
NOTE No.	0kkkkkkk		k=36(C1)~96(C6)
VELOCITY	0vvvvvvv	(V≠0)	NOTE ON
	00000000	(V=0)	NOTE OFF

2) CONTROL CHANGE

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	0CCCCCCC		
CONTROL VALUE	0VVVVVVV		

------- CONTROL NUMBER ---------

C=1	Modulation wheel	v=0~127
C=2	Breath control	v=0~127
C=7	Foot volume	v=0~127
C=64	Sustain switch	v=0:off,127:on
C=96	Data entry switch inc	v=127:on (Play mode only)
C=97	Data entry switch dec	v=127:on (Play mode only)

3) PROGRAM CHANGE

STATUS	1100nnnn	(Cn)	n=channel number
PROGRAM No.	0ppppppp		p=0~99

4) PITCH BENDER

STATUS	1110nnnn	(En)	n=channel number
VALUE(LSB)	0uuuuuuu		
VALUE(MSB)	0vvvvvvv		

Resolution: 7bit

Transmitted data is shown below.

------- MSB	----	------- LSB	-------	
0000 0000	(00)	0000 0000	(00)	Minimum value
0100 0000	(40)	0000 0000	(00)	Center value
0111 1111	(7F)	0111 1110	(7E)	Maximum value

2-2 System Information

(1) System Realtime Message

1) ACTIVE SENSING

STATUS	11111110	(FE)

(2)System Exclusive Message

1) PARAMETER CHANGE

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0001ssss	(1s)	s=Transmit channel
GROUP NUMBER	0ggggghh		g=Group number
			h=Sub group number
PARAMETER No.	0ppppppp		
DATA	0ddddddd		
EOX	11110111	(F7)	

The 5 parameter group numbers and parameteer numbers used are described below.

Type	g	h	p	Number of Data Bytes
SYSTEM SET UP	9	1	1-5	1
SYSTEM PFM	4	0	0-95	1
DELAY	9	1	6,7	1
MASTER TUNING	4	0	123	2
BULK BLOCK	9	1	7	1

2) BULK DUMP

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Transmit channel
GROUP NUMBER	0fffffff		f=Format number
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
DATA	0ddddddd		
	|		
DATA	0ddddddd		
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

The 2 type of format numbers used are described below.

Type	f	Byte Count
VOICE EDIT BUFFER	3	93
PACKED 32 VOICE	4	4096

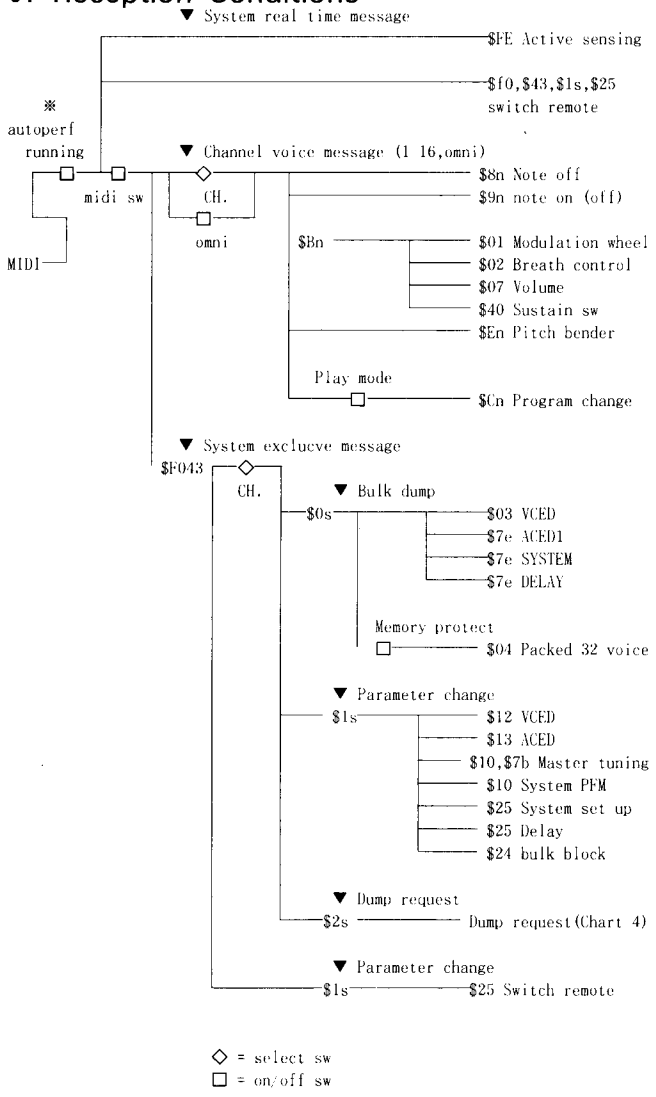
3) UNIVERSAL BULK DUMP

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Transmit channel
GROUP NUMBER	01111110	(7E)	
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
CLASSIFICATION-	01001100	ASCII'L	
NAME	01001101	ASCII'M	
	00100000	ASCII`	
	00100000	ASCII`	
DATA FORMAT-	0mmmmmmm		
NAME	|		
	0mmmmmmm		
DATA	0ddddddd		
	|		
DATA	0ddddddd		
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

The 3 type of format used are described below.

Type	b	m
SYSTEM	122	8054S
DELAY	2	8054DL
ADDITIONAL EDIT BUFFER 1	23	8976AE

3. Reception Conditions



※ MIDI reception is disabled while Auto Performance or Demonstration are running.

4 Reception Data

4-1 Channel information

★A maximum of 8 MIDI receive channels are used in the Multi-instrument Mode.

(1) maximun of 8 MIDI receive channels are used in the Multi-instrument Mode.

1) NOTE OFF

STATUS	1000nnnn	(8n)	n=channel number
NOTE No.	0kkkkkkk		k=0(C-2)～127(G8)
VELOCITY	0vvvvvvv		v is ignored

2) NOTE ON/OFF

STATUS	1001nnnn	(9n)	n=channel number
NOTE No.	0kkkkkkk		k=0(C-2)～127(G8)
VELOCITY	0vvvvvvv	(V≠0)	NOTE ON
	00000000	(V=0)	NOTE OFF

3) CONTROL CHANGE

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	0ccccccc		
CONTROL VALUE	0vvvvvvv		

CONTROL NUMBER

C=1	Modulation wheel	v=0～127
C=7	Foot volume	v=0～127
C=64	Sustain switch	v=0:off,127:on

4) PROGRAM CHANGE

STATUS	1100nnnn	(Cn)	n=channel number
PROGRAM No.	0ppppppp		p=0～127

PRESET/USER selection is carried out by system PFM parameter change.
p= 100～127 is received as 0～27.

5) PITCH BENDER

STATUS	1110nnnn	(En)	n=channel number
VALUE(LSB)	0uuuuuuu		
VALUE(MSB)	0vvvvvvv		

Only the MSB data is operative.
Resolution: 7 bits

MSB

0000 0000	(00)	Minimum value
0100 0000	(40)	Center value
0111 1111	(7F)	Maximum value

4-2 System Information

(1) System Realtime Message

1) ACTIVE SENSING

STATUS	11111110	(FE)

Sensing is begun when this code is received. If no status byte or data is received within 300 milliseconds, the MIDI receive buffer is cleared, and all ON notes and the sustain switch are forced OFF.

(2) System Exclusive Message

1) PARAMETER CHANGE SWITCH REMOTE

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0001ssss	(1s)	s=Recieve channel
GROUP NUMBER	00100101	(25)	
PARAMETER No.	0ppppppp	p=switch number+94(94-127)	
DATA	0ddddddd	d=0:OFF,d=127:ON	
EOX	11110111	(F7)	

Received regardless of receive sw/channel.
All panel switches are controlled.
p=127 is power-on reset.

Refer to "switch remote" in Chart 1.

The following are received only when the receive channel is matched.

2) PARAMETER CHANGE

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0001ssss	(1s)	s=Recieve channel
GROUP NUMBER	0ggggghh		g=Group number h=Sub group number
PARAMETER No.	0ppppppp		
DATA	0ddddddd		
EOX	11110111	(F7)	

The 5 parameter group numbers and parameter numbers used are described below.

Type	g	h	p	Number of Data Byte
SYSTEM SET UP	9	1	1-5	1
SYSTEM PFM	4	0	0-95	1
DELAY	9	1	6,7	1
MASTER TUNING	4	0	123	2
BULK BLOCK	9	1	7	1

3) BULK DUMP
Same as for transmission.

4) UNIVERSAL BULK DUMP
Same as for transmission.

5) DUMP REQUEST

VOICE EDIT BUFFER		(f=3)	
PACKED 32 VOICE		(f=4)	
STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0010ssss	(2s)	s=Receive channel
GROUP NUMBER	0fffffff		f=Format No.
EOX	11110111	(F7)	

6) UNIVERSAL BULK DUMP REQUEST

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0010ssss	(2s)	s=Receive channel
GROUP NUMBER	01111110	(7E)	f=Format No.
CLASSIFICATION-	01001100	ASCII'L	
NAME	01001101	ASCII'M	
	00100000	ASCII' '	
	00100000	ASCII' '	
DATA FORMAT	0mmmmmmm	ASCII	
NAME			
	0mmmmmmm		
EOX	11110111	(F7)	

The 3 types of format used are described below.

Type	m
ACED + VCED	8076AE
DELAY + ACED + VCED	8054DL
DELAY + SYSTEM	8054S

<Chart 1>

*** VCED *** 93 byte voice edit parameter (1 bulk edit format)
para. cng g=4, h=2

	VCED adrress (para.cng)	b7 b6 b5 b4 b3 b2 b1 b0		
edit	0	0 0 0 - - - AR - - -	0-31	
	1	0 0 0 D1R - - -	0 31	
	2	0 0 0 D2R - - -	0 31	
	3	0 0 0 0 - - - RR - - -	1-15	
	4	0 0 0 0 D1L - -	0 15	
	5	0 LS - - -	0-99	
	6	0 0 0 0 0 0 -RS- -	0-3	OP.4
	7	0 0 0 0 0 0 EBS	0-7	
	8	0 0 0 0 0 0 0 0 AME	0 1	
	9	0 0 0 0 0 0 - - KVS	0-7	
	10	0 OUT - - - - -	0-99	
	11	0 0 CRS - - - - -	0-63	(RATIO)
		0 0 - - CRS - - x x	0-63	(FIX)
	12	0 0 0 0 0 0 DET - -	0 6	(center=3)
	13			
	.			OP.2
	.			
	26			
	.			OP.3
	.			
	39			
	.			OP.1
	.			
	52	0 0 0 0 0 0 - - ALG - -	0-7	
	53	0 0 0 0 0 0 - - FBL - - -	0 7	
	54	0 LFS - - -	0-99	
	55	0 LFD	0-99	
	56	0 PMD - - -	0-99	
	57	0 AMD - - - -	0-99	
	58	0 0 0 0 0 0 0 0 SY	0-1	LFO SYNC
	59	0 0 0 0 0 0 0 -LFW -	0-3	
	60	0 0 0 0 0 0 PMS- -	0-7	
	61	0 0 0 0 0 0 0 -AMS-	0-3	
	62	0 0 - - - - - TRPS - - - - -	0-48	(center=24)
function	63	0 0 0 0 0 0 0 0 MO	: MONO	
	64	0 0 0 0 - - - - PBR - -	0-12	
	65	0 0 0 0 0 0 0 0 PM	: PORMOD	
%%%	66	0 - - - - - - - PORT - - - - - - -	0-99	
	67	0 - - - - - - - FC VOL - - - - - -	0-99	
%%%	68	0 0 0 0 0 0 0 0 SU	0-1	sus.(F.SW)
%%%	69	0 0 0 0 0 0 0 0 PO	0-1	por.(F.SW)
%%%	70	0 0 0 0 0 0 0 0 CH	0-1	chorus set 0
	71	0 - - - - - MW PITCH - - - - -	0-99	
	72	0 - - - - - MW AMPLI - - - - -	0-99	
%%%	73	0 - - - - - BC PITCH - - - - -	0-99	
	74	0 - - - - - BC AMPLI - - - - -	0-99	
%%%	75	0 - - - - - BC P BIAS - - - -	0-100	(center0=50)
	76	0 - - - - - BC E BIAS - - - -	0-99	
	77	0 - - - VOICE NAME 1 - -	32-127	
	78	0 - - - VOICE NAME 2 - -		
	79	0 - - - VOICE NAME 3 - -		
	80	0 - - - VOICE NAME 4 - -		
	81	0 - - - VOICE NAME 5 - -		
	82	0 - - - VOICE NAME 6 - -		
	83	0 - - - VOICE NAME 7 - -		
	84	0 - - - VOICE NAME 8 - -		
	85	0 - - - VOICE NAME 9 - -		
	86	0 - - - VOICE NAME 10 - -	.	
%%%	87	0 - - - - - - - PR1 - - - - - -	0-99	PEG
%%%	88	0 - - - - - - - PR2 - - - - - -	0-99	
%%%	89	0 - - - - - - - PR3 - - - - - -	0-99	
%%%	90	0 - - - - - - - PL1 - - - - - -	0-99	(center=50)
%%%	91	0 - - - - - - - PL2 - - - - - -	0-99	
%%%	92	0 - - - - - - - PL3 - - - - - -	0-99	

Parameters marks %%% are format-compatible with the DX11, but do not function in the DS55.

◎ ACED

*** ACED *** 23 byte additional parameters (1 bulk edit format)
para. cng g=4, h=3

NO.(para)		b7	b6	b5	b4	b3	b2	b1	b0	Data	note
0	0	0	0	0	0	0	0	0	FIX	0-1	OP.4
1	1	0	0	0	0	0	- - - FIXRG - -			0-7	0(255Hz) 7(32KHz)
2	2	0	0	0	0	- - - - - FINE - - - - - -				0-15	(7:F=0-3)
3	3	0	0	0	0	0	0 - - - OSW - - - -			0-7	
4	4	0	0	0	0	0	0	- - EGSFT -		0-3	0(off)-3(12dB)
5	5										OP.2
.											
.											
10	10										OP.3
.											
.											
15	15										OP.1
.											
19	19									0(off)	
20	20	0	0	0	0	0	- - - - REV - - - -			0-7	0(off),7(first)
21	21 %%%	0	- - - - - - - - - - FC PITCH - - - - - - - - - -							0-99	
22	22 %%%	0	- - - - - - - - - - FC AMPLI - - - - - - - - - -							0-99	

◎DELAY

*** delay *** 2 byte additional parameters (1 bulk edit format)
para. cng g=9, h=1

0	6	0	0	0	0	0	0	0	sw	0(Off),1(on)
1	7	0	0	0	0	0	0	0	s/l	0(short),1(long)

*** remote switch ***

sw no	g	h	p	switch
0	9	1	94	preset
1			95	user
2			96	single play
3			97	split play
4			98	dual play
5			99	tone edit
6			100	amp eg
7			101	brl eg
8			102	lfo ed
9			103	func ed
10			104	delay on/off
11			105	delay short
12			106	delay long
13			107	midi ch
14			108	multi inst
15			109	multi assign
16			110	tenkey 0
17			111	tenkey 1
18			112	tenkey 2
19			113	tenkey 3
20			114	tenkey 4
21			115	tenkey 5
22			116	tenkey 6
23			117	tenkey 7
24			118	tenkey 8
25			119	tenkey 9
26			120	no(dec)
27			121	yes(inc)
28			122	minus
29			123	auto perf select
30			124	auto perf start/stop
31			125	store
32			126	tune
**			127	power on reset

<Chart 2>

Detail of Bulk Dump Format

★ VCED

f = 3
data size = 93 ($005d)
data format = 7bit binary
total bulk size = 93+8 = 101

f0,43,0n,03,00,5d,<VCED data >,sum,f7

★ VMEM

f = 4
data size = 128x32 = 4096 ($1000)
data format = 7bit binary
total bulk size = 4096 + 8 = 4104

f0,43,0n,04,20,00,<VMEM data >,sum,f7

★ ACED

f=126 LM 8976AE
data size = 23+10 = 33 ($0021)
data format = 7bit binary
total bulk size = 33+8 = 41

f0,43,0n,7e,00,21,LM 8976AE,<ACED data >,sum,f7

★ DELAY

f=126 LM 8054DL
data size = 2+10 = 12 ($000c)
data format = 7bit binary
total bulk size = 12+8 = 20

f0,43,0n,7e,00,0c,LM 8054DL,<DELAY data >,sum,f7

★ SYSTEM

f=126 LM 8054S
data size = 122+10 = 132 ($0084)
data format = 7bit binary
total bulk size = 132+8 = 140

f0,43,0n,7E,00,21,LM 8054S ,<SYSTEM data >,sum,f7

<Chart 3>

◎ VMEM 128 byte

..... <<< VMEM format >>> .....

* adrress	b7	b6	b5	b4	b3	b2	b1	b0	dd (value)	comment
* 0	0	0	0	------ AR ------					0-31	
* 1	0	0	0	------ D1R ------					0-31	
* 2	0	0	0	------ D2R ------					0-31	
* 3	0	0	0	0 ----- RR -----					1-15	
* 4	0	0	0	0 ----- D1L ----					0-15	op4
* 5	0	---------- LS ----------							0-99	
* 6	0	AME --- EBS -- --- KVS --							0-1,0-7,0-7	
* 7	0	---------- OUT ----------							0-99	
* 8	0	0	-------- CRS ---------						0-63 (RATIO)	
*	0	0	--- CRS -----			x	x		0-63 (FIX)	
* 9	0	0	0	--RS-- --- DET ---					0-3,0-6	
* 10										
* .										OP.2
* .										
* 20										
* .										OP.3
* .										
* 30										
* .										OP.1
* .										
* 40	0	SY --- FBL -- -- ALG ---							0-1,0-7,0-7	
* 41	0	---------- LFS ----------							0-99	
* 42	0	---------- LFD ----------							0-99	
* 43	0	---------- PMD ----------							0-99	
* 44	0	---------- AMD ----------							0-99	
* 45	0	--- PMS --- -AMS-- -LFW--							0-7,0-3,0-3	
* 46	0	0 ---------- TRPS -------							0-48	
* 47	0	0	0	0 ----- PBR ----					0-12	
* 48	0	0	0	CH MO SU PO PM					0-1,0-1,0-1,0-1,0-1	
* 49	0	---------- PORT ----------							0-99	
* 50	0	--------- FC VOL ---------							0-99	
* 51	0	--------- MW PITCH -------							0-99	
* 52	0	--------- MW AMPLI -------							0-99	
* 53	0	--------- BC PITCH -------							0-99	
* 54	0	--------- BC AMPLI -------							0-99	
* 55	0	--------- BC P BIAS ------							0-100	
* 56	0	--------- BC E BIAS ------							0-99	
* 57	0	----- VOICE NAME 1 ------							32-127	
* 58	0	----- VOICE NAME 2 ------								
* 59	0	----- VOICE NAME 3 ------								
* 60	0	----- VOICE NAME 4 ------								
* 61	0	----- VOICE NAME 5 ------								
* 62	0	----- VOICE NAME 6 ------								
* 63	0	----- VOICE NAME 7 ------								
* 64	0	----- VOICE NAME 8 ------								
* 65	0	----- VOICE NAME 9 ------								
* 66	0	----- VOICE NAME 10 ------								

adrress	b7	b6	b5	b4	b3	b2	b1	b0	dd	comment
67	PEG PR1									
.										
72	PEG PL3									
73	0	0	EGSFT	FIX	- FIXRG -					OP.4
74	0	-- OSW ---		---- FINE ----						
75										OP.2
.										
77										OP.3
.										
79										OP.1
.										
81	%%%	0	0	0	0	0	---REV----			FUNCTION
82	%%%	0	----- FC PITCH ---------							
83	%%%	0	----- FC AMPLI ---------							
84-89									0	RESERVED
90	0	0	0	0	0	0	SW	S/L		DELAY
91-127									0	RESERVED

*** SYSTEM ***

<< setup >>

para. cng g=4, h=0

No.(para)	b7	b6	b5	b4	b3	b2	b1	b0	Data	note
0 123,0	0	---------- tune ----------							0-127	tune center=64

para. cng g=9, h=1

1	1	0	0	0			midbch		0-16	16:omni
2	2	0	0	0	0		midtch		0-15	
3	3	0	0	0	0	0	0	0 mlock	0-1	mem.protect
4	4	0	0	0	0	0	0	0 midi	0-1	midi on/off
5	5	0	0	0	0	0	0	0 excl	0-1	exclusive on/off

<< PFM >>

para. cng g=4, h=0

6	0	0	0	0	0	NUM of NOTE			0-8		INST1
7	1	0	0	0	0	0	0	-bank-	0-2	voice bank	
8	2	0	Voice Number						0-99		
9	3	0	0	0	Recv. ch				0-16	16(omni)	
10	4	0	LIMIT/L						0-127	0(C-2)-127(G8)	
11	5	0	LIMIT/H						0-127		
12	6	0	0	0	0	DETUNE			0-14	7(center)	
13	7	0	0	NOTE SHIFT					0-48	24 (center)	
14	8	0	VOLUME						0-99		
15	9	0	0	0	0	0	0	OUT ASGN	0-3	0(off),1(L),2(R) 3(L&R)	
16	10	0	0	0	0	0	0	--LFOS-	0-3	0(off),1(1st Inst) 2(2nd Inst),3(vib)	
17	11	0	0	0	0	0	0	0 0	0	reserved(mte)	
18	12										INST2
.											
30	24										INST3
.											
42	36										INST4
.											
54	48										INST5
.											
66	60										INST6
.											
78	72										INST7
.											
90	84										INST8
.											

<< auto performance (Nothing parameter change) >>

102	0	0	0	0	0	※1	SEQ type		0-2	(DS55 0-2)
103	0	0	0	0	0	0	※2	msb	ptn num msb	
104	0	pattern number							ptn num lsb	(DS55 0-255)
105	0	0	0	0	0	0	※3	msb	tempo msb	(DS55 30-180)
106	0	tempo								
107	0	pattern name 1								
108	0	pattern name 2								
.										
114	0	pattern name 8								
115	0	0	0	0	0	0	0	ena	key shift enable	ch 1
116	0	0	0	0	0	0	0	ena		ch 2
117	0	0	0	0	0	0	0	ena		ch 3
118	0	0	0	0	0	0	0	ena		ch 4
119	0	0	0	0	0	0	0	ena		ch 5
120	0	0	0	0	0	0	0	ena		ch 6
121	0	0	0	0	0	0	0	ena		ch 7
122	0	0	0	0	-- original key --				0-11	

ena = key shift enable (1=on)

<< Bulk block (Parameter change only) >>

para. cng g=9, h=0

No.(para)	b7	b6	b5	b4	b3	b2	b1	b0	Data	note
7	0	0	0	0	-bulk block-				0-4	midi bulk block

※1 .... seq type wide reserved
※2 .... pattern number wide reserved
※3 .... tempo wide reserved

<Chart 4>

Dump request messages

★ VCED	f0,43,2n,03,f7
★ VMEM	f0,43,2n,04,f7
★ ACED + VCED	f0,43,2n,7e,LM 8976AE,f7
★ DELAY + ACED + VCED	f0,43,2n,7e,LM 8054DL,f7
★ DELAY + SYSTEM	f0,43,2n,7e,LM 8054S ,f7

note) Ascii number HEX

	L M 8 9 7 6 A E
★ LM 8976AE	4c,4d,20,20,38,39,37,36,41,45
	L M 8 0 5 4 D L
★ LM 8054DL	4c,4d,20,20,38,30,35,34,44,4C
	L M 8 0 5 4 S
★ LM 8054S	4c,4d,20,20,38,30,35,34,53,20

<Chart 5>

Operational Parameter Change

<<< $f0,$43,$1n, ... >>>

g=9, h=1 are DS55 system group niumbers.

□ vced	$12 (g=4, h=2), p=0-92	: vced
□ vced	$12 (g=4, h=2), p=93	: op on/off
□ aced	$13 (g=4, h=3), p=0-22	: aced
★ sysem set up	$25 (g=9, h=1), p=1-5	
★ delay	$25 (g=9, h=1), p=6,7	: on/off, short/long
★ sw remote	$25 (g=9, h=1), p=94-127	
○ bulk block	$24 (g=9, h=0), p=7	: ※1
◇ system PFM	$10 (g=4, h=0), p=0-95	: pced
◇ master tune	$10 (g=4, h=0), p=123	

★= DS55-only parameter
□= Parameters compatible with all 4-operator FM tone generators.
○= Parameters compatible with YS100/200, B200, TQ5
◇= Parameters compatible with TX81z, V2

※1 : data 0 = default (0-31)
1 = 0-24
2 = 25-49
3 = 50-74
4 = 75-99

YAMAHA [Digital synthesizer] Date : 10/19 ,1988
Model DS55 MIDI Implementation Chart Version : 1.0

Function ...	Transmitted	Recognized	Remarks
Basic Default	1 - 16	1 - 16	Memorized
Basic Changed	1 - 16	1 - 16	
Mode Default	3	1, 2, 3, 4	Memorized
Mode Messages	x	x	
Mode Altered	**********	x	
Note Number :	36 - 96	0 - 127	
Note Number : True voice	**********	12 - 107	
Velocity Note ON	o 9nH,v=1-127	o v=1-127	
Velocity Note OFF	x 9nH,v=0	x	
After Touch Key's	x	x	
After Touch Ch's	x	x	
Pitch Bender	o	o 0 - 12 semi	7 bit resolution
Control Change 1	o	o	Modulation wheel
Control Change 2	o	o	Breath control
Control Change 7	o	o	Volume
Control Change 64	o	o	Sustain
Control Change 96	o	x	Data entry +1 *2
Control Change 97	o	x	Data entry -1 *2
Prog Change :	o 0 - 99 *1	o 0 - 127 *2	
Prog Change : True #	**********	0 - 99	
System Exclusive	o	o	Voice parameters
System Common : Song Pos	x	x	
System Common : Song Sel	x	x	
System Common : Tune	x	x	
System Real Time : Clock	x	x	
System Real Time : Commands	x	x	
Aux Mes- : Local ON/OFF	x	x	
Aux Mes- : All Notes OFF	x	x	
Aux Mes- : Active Sense	o	o	
Aux Mes- sages : Reset	x	x	
Notes	MIDI reception is disabled while AUTO PERFORMANCE and DEMONSTRATION are running.		
	*1 SINGLE play mode only		
	*2 Play mode (SINGLE, SPLIT, DUAL) only		

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

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