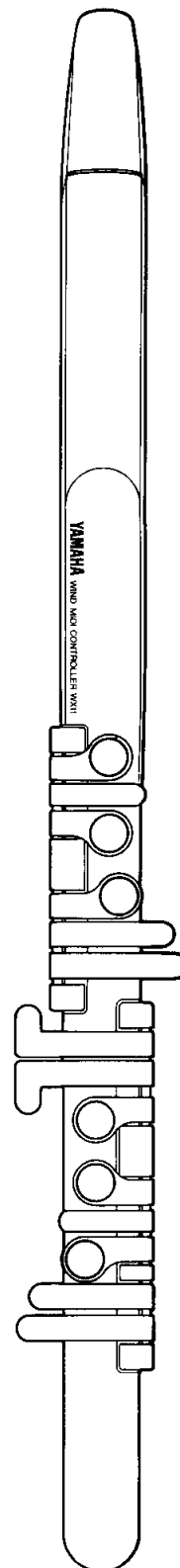


YAMAHA

WX11

WIND MIDI CONTROLLER
CONTROLEUR MIDI A VENT
WIND MIDI CONTROLLER

OPERATION MANUAL
MANUEL D'INSTRUCTIONS
BEDIENUNGSANLEITUNG



Congratulations!

Your YAMAHA WX11 Wind MIDI Controller will give you a whole new world of expressive power and musical scope. While the extensive power and versatility of MIDI control has in the past been limited mainly to keyboard instruments, the WX11 now makes it accessible and exceptionally easy to use for the experienced or beginning wind-instrument player. The WX11 is a beautifully designed, perfectly balanced MIDI controller that plays and responds just like an acoustic wind instrument. If you've played a wind instrument before — particularly a reed instrument, you'll have no difficulty moving into the exciting, expressive world of MIDI control.

To ensure that you make the most of the WX11's extensive performance potential, we urge you to read this operation manual thoroughly, and keep it in a safe place for future reference.

WX11 MAIN FEATURES

- ◆ The WX11 handles and plays almost exactly like an acoustic single-reed wind instrument. Variations in breath and lip (reed) pressure can be used to control volume and the timbre of the sound, and the key configuration conforms to standard Böhm fingering.
- ◆ The WX11 controls an external MIDI tone generator, so you have a virtually unlimited range of voices from which to choose. The fact that the sound is produced electronically also means that you can practice using headphones anywhere, at any time.
- ◆ The WX11 is supplied with a dedicated 5-meter connecting cable that allows plenty of freedom to move around while playing.
- ◆ 5 octave keys allow transposing up by 1, 2, or 3 octaves, or down by 1 or 2 octaves, allowing you to play over a wide 7-octave range.
- ◆ To match the widest possible range of playing styles, the WX11 has 5 different sensitivity settings that can be easily selected at any time.
- ◆ A special Hold key makes it possible to play a pedal tone which is held while other notes are played over it.

Note

The WX11 is designed primarily for use with the YAMAHA WT11 Wind Tone Generator. The simplest, smoothest possible operation is achieved when the WX11 is paired with the WT11. Other MIDI tone generators can be used with the WX11, however, and if you intend to use a tone generator other than the WT11 be sure to read "ALTERNATIVE TONE GENERATORS" on page 11 of this manual.

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PRECAUTIONS

1. 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.

2. AVOID PHYSICAL SHOCKS

Strong physical shocks to the unit can cause damage. Handle it with care.

3. 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.

4. NEVER APPLY EXCESSIVE FORCE TO THE KEYS AND CONTROLS

The WX11 is a precision device, and should be handled like any fine musical instrument. Never apply excessive force to any of its keys or controls.

5. HANDLE THE CABLE CAREFULLY

Always plug and unplug the WX11's connector cable by gripping the connector, not the cord. Also avoid applying excessive force to the cable or connectors during use.

6. CLEAN WITH A SOFT DRY CLOTH

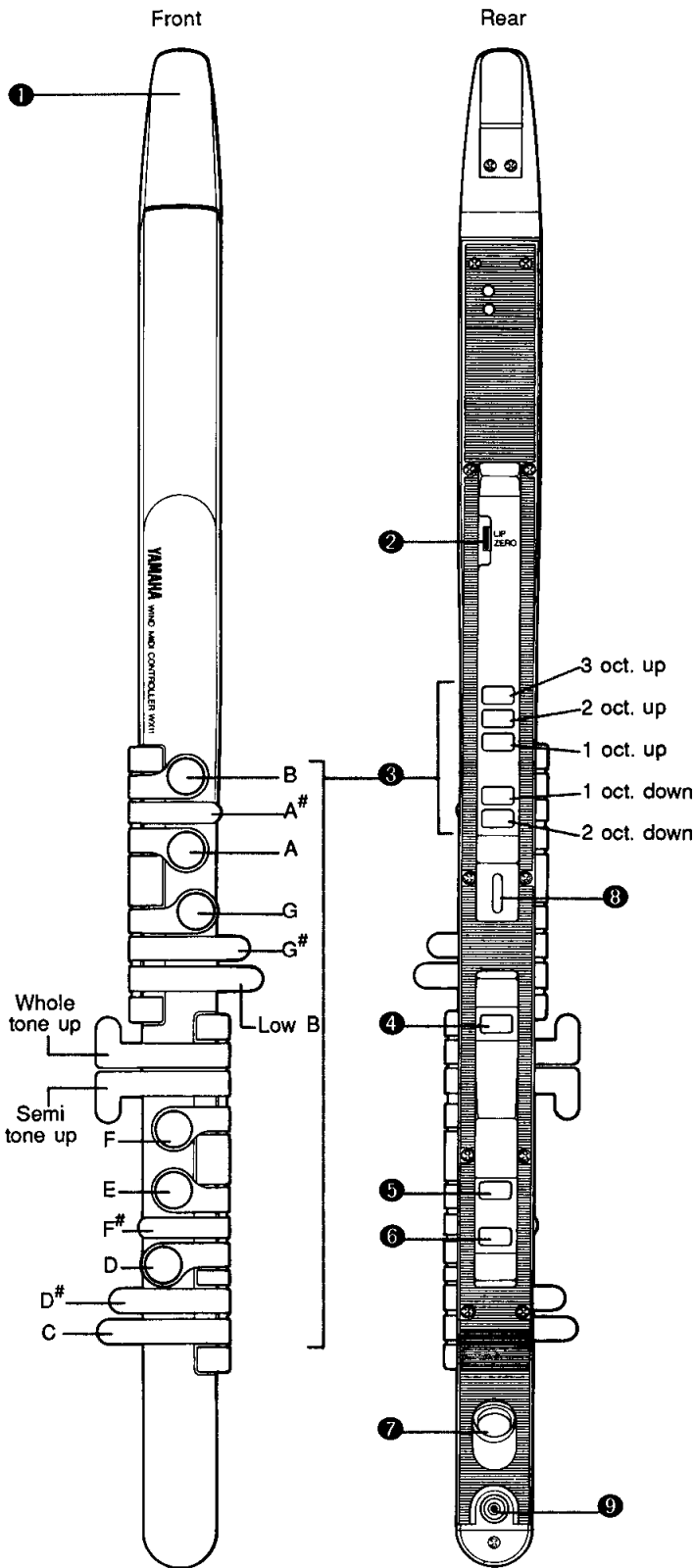
Never use solvents such as benzine or thinner to clean the unit. Wipe clean with a soft, dry cloth.

7. POWER SUPPLY

The WX11 normally receives the required power from its companion WT11 Wind Tone Generator, so no separate power supply is required. If you intend to use the WX11 with a MIDI tone generator other than the WT11, however, the optional BT7 MIDI/Power Pack is required.

WX11 KEYS & CONTROLS

Front View / Rear View



1 Mouthpiece

The WX11 mouthpiece is a single-reed type that is similar to conventional saxophone or clarinet mouthpieces. The mouthpiece can be removed for cleaning and maintenance, but it should only be removed when necessary.

2 Lip Zero Control

As in any acoustic reed instrument, the pitch of the sound produced by the WX11 can be varied according to the "bite," or lip pressure, applied to the reed. This recessed trimmer control is used to adjust the "Lip Zero" point, or the normal playing pressure at which no pitch bend is produced.

3 Keys & Octave Keys

The WX11 keys conform to standard Böhm fingering. The octave keys allow transposing up by 1, 2, or 3 octaves, or down by 1 or 2 octaves.

4 Setup Key

The Setup key is used in conjunction with the octave keys to select one of the WX11's 5 sensitivity settings. See "Setting Sensitivity" on page 7 for details. The Setup key is also used to select the WX11's "tight lip" or "loose lip" playing mode when the system power is initially turned ON. See "Selecting the 'Loose Lip' or 'Tight Lip' Playing Mode and Adjusting Lip Zero" on page 8 for details.

5 Hold Key

The hold key offers a function that is not available on acoustic instruments: the capability to produce a "pedal" tone which is held while you play other notes over it. See "Using the Hold Key" on page 9 for details.

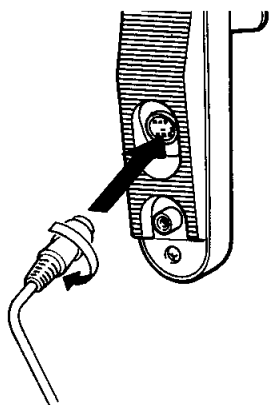
6 Program Change Key

Used in conjunction with the octave keys, the program change key allows selection of programs (voices or performance combinations) 1 through 5 on the WT11 Wind Tone Generator or other MIDI-compatible tone generator. See "Selecting Performance Combinations from the WX11" on page 6 for details.

7 Output Connector

The special connecting cable supplied with the WX11 is connected here. The end of the cable with the rotating screw ring connects to the WX11, while the other end connects to the WT11 Wind Tone Generator. If you use the WX11 with the optional BT7 MIDI/Power Pack and a tone generator other than the WT11, the BT7 cable can be connected directly to the WX11, or the supplied WX11 cable can be used as an extension cable.

Align the cable connector with the connector on the WX11 and insert firmly. Then press the screw ring inward and rotate it clockwise until it firmly screws into place.



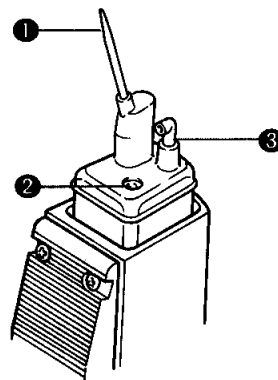
8 Strap Ring

The strap ring accepts the neck strap supplied with the WX11 for comfortable playing. Simply hook the strap onto the strap ring.

9 Drain Hole

Moisture from the player's breath and condensation drain from this opening.

Mouthpiece Interior



1 Lip Sensor Cantilever

The lip sensor cantilever mechanically transfers pressure applied to the reed to the lip sensor contained in the rubber housing. Exercise the greatest caution when handling the WX11 with the mouthpiece removed, since excess pressure applied to the cantilever can damage the mechanism.

2 Breath Release Aperture

Breath pressure applied to the mouthpiece is released via this aperture, simulating the playing "feel" of an acoustic wind instrument.

3 Pressure Sensor Aperture

The WX11's breath sensor — the device that senses the "strength" of breath applied to the mouthpiece — is located below this aperture.

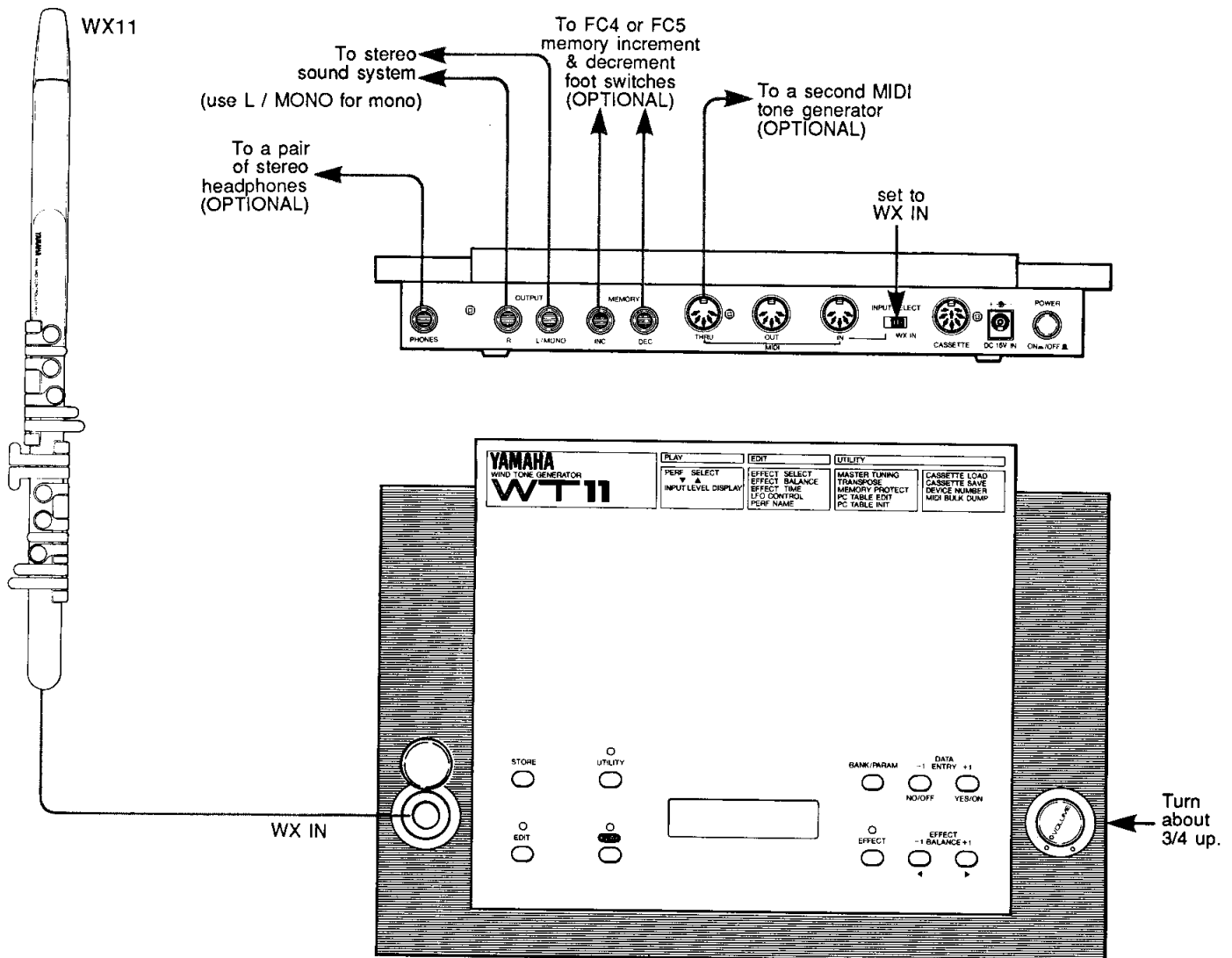
SETUP & OPERATION (With the WT11 Wind Tone Generator)

Setting Up

The WX11 is designed primarily for use with the YAMAHA WT11 Wind Tone Generator, and you will obtain the easiest, smoothest operation by using this combination. The WT11 is a high-performance FM tone generator that comes pre-programmed with 96 performance memory locations (combinations of voices and effects) created specifically for the WX11. It also includes a range of high-quality digital effects that you can use to create your own performance combinations. Here's how your WX11/WT11 system should be set up:

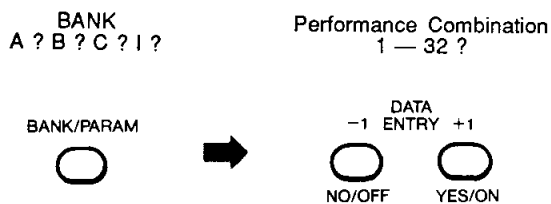
The simplest possible system requires no more than the WX11, the WT11 and a sound system. A stereo sound system will provide the best sound, but a mono sound system (such as an instrument amplifier) can be used as an alternative. If you use a mono sound system, use the L/MONO OUTPUT jack from the WT11 (when only the L/MONO OUTPUT jack is connected,

the L/MONO and R OUTPUT signals are mixed and delivered via the L/MONO jack). More control versatility is provided by connecting a pair of optional YAMAHA FC4 or FC5 footswitches to the WT11's MEMORY INC and DEC jacks. These footswitches can be used to select different performance combinations while playing. It is also possible to connect the WT11's MIDI THRU connector to a second MIDI tone generator, allowing the WX11 to control two tone generators at once. In this case, the outputs of the WT11 and the second tone generator should be fed to an audio mixer which in turn feeds the sound system. For private or late-night practice, a pair of headphones can be plugged into the WT11 PHONES jack. Although not shown in the diagram, the WT11's AC power adapter must be plugged into an appropriate AC wall outlet, and the adapter's output cable connected to the WT11 DC 15V IN jack.



Turn ON the WT11 and Play

1. Turn ON the rear-panel POWER switch. For a few seconds after the POWER switch is turned ON, all the panel LEDs will light and “ * YAMAHA WT11 * ” will appear on the LCD display panel. After this, the mode that was active when the power was last turned OFF will be automatically re-selected and the WT11 is ready for operation.
2. If an LED indicator **other** than the PLAY LED is lit, press the PLAY button to enter the play mode. At this point you should be able to play the WX11 and produce some sound — assuming that your system is properly set up as described above. If nothing happens, check all connections and controls again (Is your sound system turned ON? Is the volume control turned up? Is the WT11 INPUT SELECT switch set to WX IN?).
3. To select and try out the many performance combinations provided by the WT11, use the BANK button to select any of the available memory banks (A, B, C or I), and then use the DATA ENTRY +1 and -1 buttons to select any of the 32 performance combinations contained in each bank.



Note:

Do not apply breath pressure to the WX11 when turning the system power ON, and do not press the setup key while playing.

Note:

Although the bare essentials of WT11 operation are described here, the WT11 offers a wide range of features and you should most definitely read the WT11 Operation Manual thoroughly in order to make full use of its performance potential.

General Operation

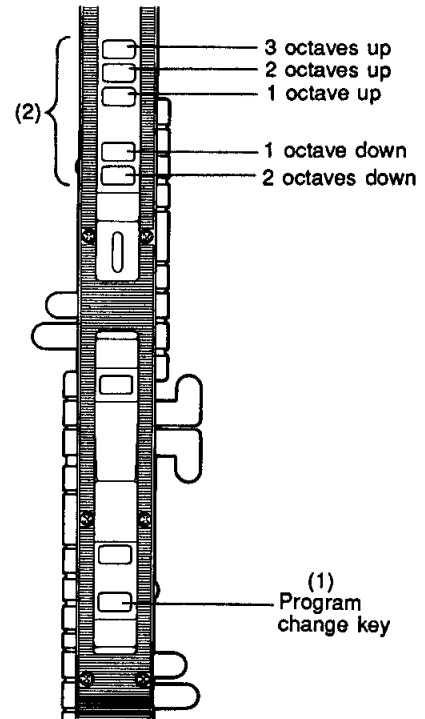
A Word About Fingering

Standard saxophone fingering can be used with the WX11 with no modifications. Since the WX11 uses electronic switches rather than valves, however, very slight key pressure is all that is required to change notes. If you're used to playing a sax or clarinet, this may take a while to get used to, but you'll find the WX11 easier and smoother to play in the long run. The WX11 does feature a few improvements which can significantly facilitate fingering in many cases. The trill keys, for example, can be used with all notes rather than a limited few, to provide semi-tone or whole-tone trills wherever necessary. In the same way, the low B key can be used to flatten other notes as required. The 5 octave keys also provide the advantage of being able to use standard fingering over an extremely wide range — from 2 octaves below to 3 octaves above normal pitch. Refer to the enclosed WX11 Fingering Chart for details.

Selecting Performance Combinations from the WX11

We briefly described how performance combinations can be selected using the WT11 controls in the previous section, but you can also select performance combinations directly from the WX11. The WX11 is capable of transmitting MIDI program change numbers (the data that is used to select voices on tone generators and synthesizers) 0 through 4, allowing you to select voices or performance combinations 1 through 5 on a tone generator or synthesizer. The fact that you can only transmit 5 program change numbers is really not a limitation when using the WX11 with the WT11 or any other YAMAHA tone generator that allows "program change assignment," since this handy function allows you to assign any memory location in the tone generator to any program change number. You could select voice or performance combination number 16, for example, when you transmit program change number 1.

To select a performance combination hold the WX11 program change key (1) and press the octave key (2) corresponding to the program change number you wish to send:



KEY	PROGRAM CHANGE NUMBER*
3 octaves up	1
2 octaves up	2
1 octave up	3
1 octave down	4
2 octaves down	5

* Actually, the MIDI program change numbers transmitted are 0 — 4, but these correspond to memory locations 1 — 5 on most equipment.

Setting Sensitivity

The WX11 has 5 different sensitivity settings that you can choose to match your playing requirements. The different sensitivity settings provide different combinations of wind gain (the amount of breath pressure required to produce a given volume of sound) and lip gain (the amount of lip or reed pressure required to produce a given change in pitch). You should try all the available settings and select the one that you feel most comfortable with.

The 5 possible sensitivity settings are: SOFT, MEDIUM SOFT, MEDIUM, MEDIUM HARD and HARD. The MEDIUM setting is automatically selected when the WX11 system power is initially turned ON.

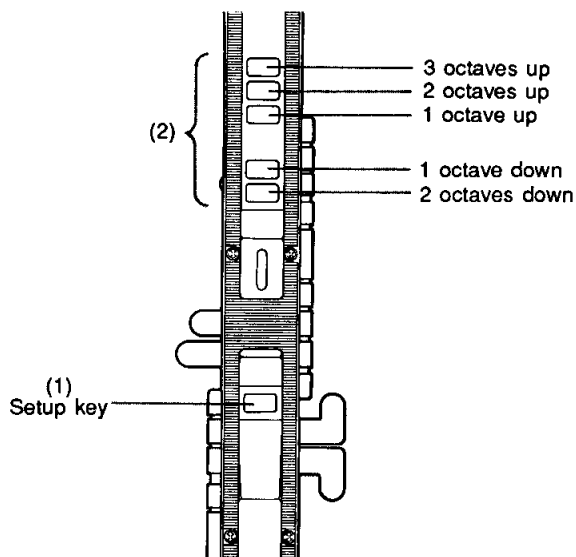
1. After the system power has been turned ON, hold down the WX11 setup key (1) and press the octave key (2) corresponding to the desired sensitivity setting*:

KEY	SENSITIVITY
3 octaves up	SOFT
2 octaves up	MEDIUM SOFT
1 octave up	MEDIUM
1 octave down	MEDIUM HARD
2 octaves down	HARD

2. Release the octave key and then the setup key.

* Sensitivity settings can only be selected while **no** breath pressure is applied to the WX11 mouthpiece.

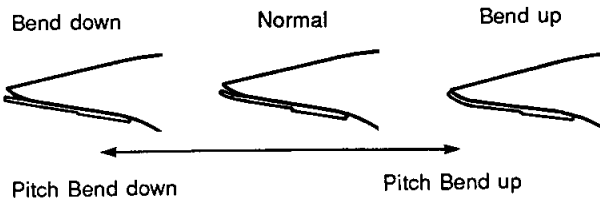
* The setup key also has a “wind zero reset” function that resets the no-wind (no-breath) status of the wind sensor. If temperature extremes or other unusual circumstances cause the WX11 to continually produce sound even when no breath pressure is applied, simply press the setup key.



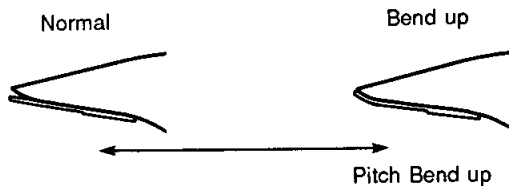
Selecting the “Loose Lip” or “Tight Lip” Playing Mode and Adjusting Lip Zero

The WX11 has two basic playing modes: Tight Lip and Loose Lip. The tight lip mode, which is the way most acoustic single-reed instruments are played, simply means that a certain amount of bite (lip pressure) is applied to the reed when playing at normal pitch. Increased pressure on the reed raises pitch, and decreased pressure on the reed lowers pitch. In the loose lip mode, however, no pressure (or very slight pressure) is applied to the reed when playing normally. Pressure applied to the reed causes an increase in pitch. Thus, in the loose lip mode only upward pitch bend can be applied, but the amount of upward pitch bend that can be applied is greater than that available in the tight lip mode. In the tight lip mode increasing lip pressure can raise pitch over approximately 50% of the total pitch range, while decreasing lip pressure can lower pitch over approximately 25% of the total pitch range. In the loose lip mode increasing lip pressure can raise pitch over 100% of the total pitch range.

• Tight Lip mode



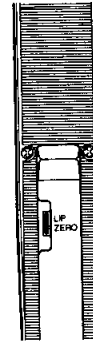
• Loose Lip mode



In the WX11 the tight lip mode is the “normal” playing mode, and is selected automatically when the WX11 system power is turned ON. The loose lip mode can be selected simply by holding down the WX11 setup switch while turning on the system power.

■ Lip Zero Adjustment

The lip zero adjustment will vary depending on whether you have chosen the loose lip or tight lip playing mode. In the tight lip playing mode the lip zero control should be adjusted to provide an intermediate pitch (halfway between the lowest and highest pitch of the pitch bend range) when the reed is bit and breath is applied to the mouthpiece as when playing normally. If you selected the loose lip mode, the lip zero control should be adjusted to produce the lowest pitch while the reed is not bit (or only slight lip pressure is applied) and breath is applied to the mouthpiece.



Using the Hold Key

■ The WT11 Lip Zero Bar Graph

The WT11 makes the job of adjusting lip zero much easier by providing a special lip zero bar graph function. Press the WT11 UTILITY button once to call this function. The display will look something like this:

U: 440.0Hz I

The vertical bar to the right of the display represents the central (normal) pitch in the tight lip mode, or the lowest (also normal) pitch in the loose lip mode. When lip pressure is applied to the mouthpiece (or released in the tight lip mode) a bar graph will move to the left or right of the vertical bar, indicating the amount and direction of pitch bend applied.

U: 440.0Hz I

- Normal pitch (loose or tight lip mode)

U: 440.0Hz ■ I

- Downward pitch bend (tight lip mode)

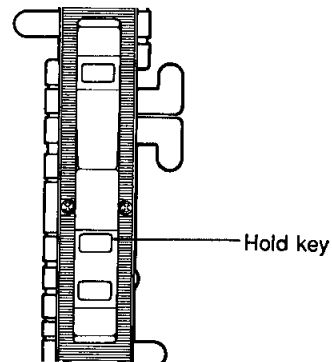
U: 440.0Hz I ■■

- Upward pitch bend (loose or tight lip mode)

After adjusting lip zero using the WT11 lip zero bar graph, you can return to the play mode simply by pressing the PLAY button.

Caution

The display will appear at center position immediately after the WT11 power is turned ON. To display the actual lip status, move the WX11 reed (as in bending pitch) after turning the power on to send some MIDI pitch bend data to the WT11. If, however, the lip zero control is set to or near either of its extreme positions, moving the reed may not cause transmission of the required pitch bend data.



The hold key makes it possible to produce a pedal tone over which other notes can be played. To produce a held tone, simply press the hold key while playing the note to be held. The note will be held even after you release the hold key, and you can play other notes over the held tone in the normal way. To stop the held tone, simply press the hold key while no breath is applied to the mouthpiece (no note is being played).

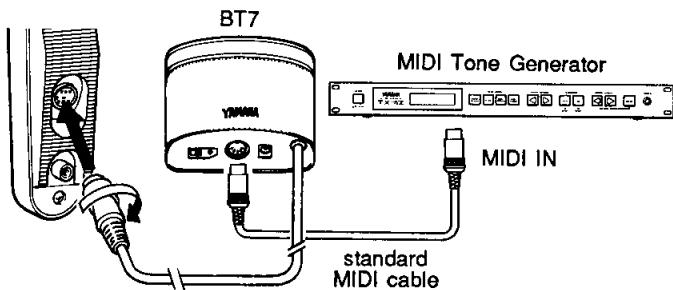
ADDITIONAL INFORMATION

The hold sound produced will vary according to the tone generator's breath control parameter settings. If both the breath control EG bias (BC EG Bias) and EG Bias sensitivity (EBS) are set to maximum, the held note will be heard only when breath is applied. The hold sound will begin to be heard even when no breath is applied as these values are lowered.

* None of the WT11 preset performance combinations have the EBS parameters set to maximum, so held notes sound even when no breath pressure is applied.

ALTERNATIVE TONE GENERATORS

Since the WX11 produces standard MIDI output, it can be used with tone generators other than the WT11. If you intend to use a tone generator or MIDI synthesizer other than the WT11, however, you will need to purchase the optional YAMAHA BT7 MIDI/Power pack. The BT7 both supplies the necessary power to the WX11 (from batteries or an AC adapter) and provides output via a standard MIDI OUT connector which can be connected to your tone generator or synthesizer using a standard MIDI cable.



With the BT7 MIDI/Power Pack, the WX11 can be used with the following devices:

- A MIDI synthesizer.
- A MIDI tone generator.
- A MIDI sampler.
- A MIDI rhythm machine.
- A MIDI piano or electronic organ.

In any of the above cases, the device used must have the following capabilities:

- Reception on MIDI channel 1 (the WX11 transmits only on MIDI channel 1)
- Reception of MIDI NOTE ON/OFF messages.
- Reception of MIDI BREATH CONTROL messages.
- Reception of MIDI PROGRAM CHANGE messages.
- Reception of MIDI PITCH BEND messages.
- A polyphonic play mode (if you intend to use the WX11's hold key function). For the hold function to work properly, the voice (or voices) played on the tone generator used must be capable of at least 3-note polyphony (e.i. at least three notes can be played simultaneously).

You will probably have to set up your synthesizer, tone generator or other device to operate properly with the WX11 according to the above conditions. Refer to your tone generator's operation manual for details.

Appropriate Settings for the YAMAHA TX81Z or TX802 Tone Generators

If you will be using the WX11 with the YAMAHA TX81Z or TX802 tone generator, the following settings will help you to achieve optimum operation. These are only guidelines, however, and you should experiment with the various parameters in order to achieve the desired sound.

1. Pitch Bend Range

The WX11 generates MIDI pitch bend messages according to the lip pressure applied to the reed. It is necessary to set the Pitch Bend Range parameter of the receiving tone generator to an appropriate value (from 1, for a semitone, to 12, for an octave). If the Pitch Bend Range value is set to zero, no pitch bend will occur when pressure is applied to the WX11 reed.

TX81Z

```
e1111 FUNCTION
P Bend RANGE = 2
```

TX802

```
Pitch bend ► Range >Step
                2    0
```

2. Breath Controller Settings

- Breath Controller Pitch Modulation Range

TX81Z

```
e1111 FUNCTION
BC Pitch = 0
```

TX802

```
Breath ctrl ► Pmod >Amod >EGbias >Pbias
                0    0    99    0
```

If Pitch Modulation Range is set to a value other than zero, vibrato will be controlled by breath pressure.

• **Breath Controller Amplitude Modulation Range**

TX81Z e1111 FUNCTION
BC Amplitude = 0

TX802 Breath ctrl >Pmod ▶Amod >EGbias >Pbias
0 0 99 0

If Amplitude Modulation Range is set to a value other than zero, tremolo will be controlled by breath pressure.

• **Breath Controller EG Bias Range**

TX81Z e1111 FUNCTION
BC EG Bias = 99

TX802 Breath ctrl >Pmod >Amod ▶EGbias >Pbias
0 0 99 0

This value should be set to 99 since we mainly want to control volume and timbre using breath pressure.

• **Breath Controller Pitch Bias Range**

TX81Z e1111 FUNCTION
BC P. Bias = 0

TX802 Breath ctrl >Pmod >Amod >EGbias ▶Pbias
0 0 99 0

If Pitch Bias Range is set to a value other than zero, pitch bend will be controlled by breath pressure.

3. Sensitivity Settings

• **EG Bias Sensitivity (Amplitude Modulation Sensitivity)**

TX81Z e1111 SENS EDIT
EBS 7 7 7 7

TX802 OP1 sens >Velocity ▶Ams >Pms (all OP)
alg** 111111 0 7 *

This parameter sets the “sensitivity” for volume and timbre control via breath control. Experiment with different values to find the ones that suit your playing requirements.

• **Key Velocity Sensitivity**

TX81Z e1111 SENS EDIT
KVS 0 0 0 0

TX802 OP1 sens ▶Velocity >Ams >Pms (all OP)
alg** 111111 0 7 *

Since volume and timbre will be controlled via breath control, velocity sensitivity should be set to zero.

4. Utility Settings (TX81Z only)

The TX81Z has a utility function which converts incoming after touch messages to breath control data. This function must be turned “off” to allow proper breath control operation.

TX81Z UT MIDI CONTROL
A. TOUCH → BC : off

MIDI AND THE WX11

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 is available with isolated instruments. The WX11, for example, transmits a number of different MIDI "messages" that control different musical parameters. The most basic of these is the MIDI NOTE ON/OFF message, which tells the receiving tone generator or synthesizer to "play" a specific note. The various MIDI messages transmitted by the WX11, and their functions, are described below.

MIDI "Messages" Transmitted by the WX11

The MIDI information (messages) transmitted by the WX11 are as follows:

Note and Velocity Data

This information tells the receiving keyboard or tone generator to play a certain note (specified by the MIDI note number) at a certain dynamic level (specified by the MIDI velocity value). Note and velocity data is transmitted by the WX11 whenever a note is played. The velocity value determines how loud the note is to be played, and depends on the breath pressure applied at the attack of the note.

Program Change Numbers

The WX11 transmits a MIDI program number between 0 and 4 when one of its octave keys is pressed together with the program change key. This normally causes the correspondingly numbered voice or program to be selected on a receiving MIDI device.

Breath Control

This MIDI message is used by the WX11 to control loudness over the duration of a note played. As you change your breath pressure, the loudness of the note changes accordingly.

Pitch Bend

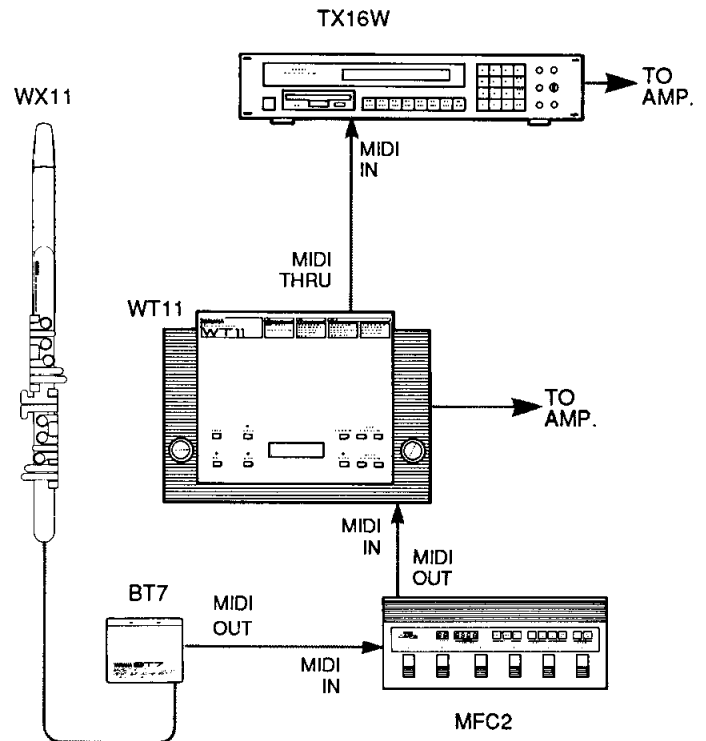
The pitch bend message is used to control the pitch of the note played, depending on the lip pressure applied to the WX11 reed.

Sample MIDI Applications

A System Incorporating the MFC2 MIDI Foot Controller

The YAMAHA MFC2 MIDI Foot Controller can greatly expand the versatility and expressive power of your WX11 Wind MIDI Controller. By simply tapping a bank select footswitch and one of six program select footswitches, you will be able to rapidly recall any of 30 different programs (performance combinations or voices) on a tone generator or synthesizer, offering easy access to a wider range of sounds. In addition, each program number has 6 different parameters which can be programmed to add new functions to the WX11. It is possible to have the WX11 control two different MIDI channels — and thus two different voices — simultaneously but in slightly different ways. A Key Hold footswitch can be used, for example, to hold a note on one channel while you continue to play on the other channel, while wind (volume/timbre) and lip (pitch) data from the WX11 has varying effects on each channel. In this system the two different MIDI channels are used to independently control the WT11 Wind Tone Generator and a TX16W Digital Wave Filtering Sampler.

To use the MFC2 with the WX11, the optional BT7 MIDI/Power Pack must be connected to the WX11, and its MIDI OUT connector must be connected to the MIDI IN connector of the MFC2, the MIDI OUT connector of the MFC2 can then be connected to the MIDI IN connector of your tone generator(s).

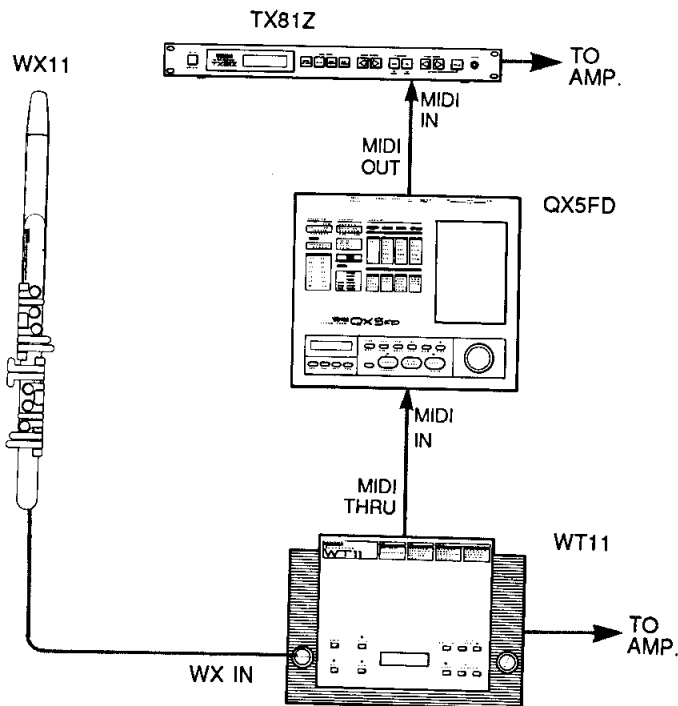


Sequence Recording with the WX11

Like any other MIDI controller — a keyboard, for example — the WX11 can be used to record and overdub music data on a MIDI sequence recorder. The recorded data can then be played back and used to control a tone generator or multiple tone generator system for fully automated performance. Sequenced recordings can also be used as accompaniment while you play “live.”

The diagram below shows a simple sequence system using the WX11. The WX11 is connected to the WT11 Wind Tone Generator in the normal way, but the MIDI THRU connector of the WT11 is connected to the MIDI IN connector of a YAMAHA QX5FD MIDI Sequence Recorder and the QX5FD MIDI OUT is connected to a TX81Z tone generator. With this system material recorded on the QX5FD from the WX11/WT11 is played back via the TX81Z while you play along on the WX11 and WT11.

Compact yet extremely powerful, the QX5FD features 8 independent tracks which can each hold up to 16 MIDI channels of recorded music, performance, and system exclusive data. Recording can be carried out in real-time or using the step write mode with full auto-locate and punch-in capability. 32 “macros” allow storage of segments which can later be assembled to form a complete composition. The QX5FD also offers extensive editing capability.



TROUBLESHOOTING

In most cases, problems that **appear** to be caused by equipment malfunction can be traced to human error — wrong settings, improper connections, etc. Before blaming the equipment, refer to the list of problems and possible causes given below. If a problem is persistent, try reducing your system to the bare essentials — i.e. disconnect all peripheral equipment, use headphones instead of an amplifier to monitor the sound, set the simplest possible settings, etc. This way it is easier to isolate and cure elusive faults.

PROBLEM 1, 2 & 3: No Sound, Cannot Select Performance Combinations, or Key Hold does not Work

(POSSIBLE CAUSES)

These problems can generally be traced to faults in the settings or connections of the tone generator you are using. Refer to your tone generator's operation manual.

PROBLEM 4: Sound Level too Low

(POSSIBLE CAUSES)

Is the breath sensor properly adjusted?

Adjust the sensitivity of the WX11 to match your own breath pressure (refer to page 7 of this operation manual for details). Also check your tone generator's settings and connections.

PROBLEM 5: No Pitch Variation

(POSSIBLE CAUSES)

1. Have you properly adjusted the lip sensor controls?

If the controller's lip sensor control(s) have not been properly adjusted, it may be impossible to produce pitch bend. Refer to the lip sensor adjustment instructions on page 8 of this operation manual.

2. Is your tone generator set up properly?

If your tone generator or the selected voice is not set up to respond to pitch bend data, no pitch bend will be produced.

PROBLEM 6: No LFO (Vibrato) Control

(POSSIBLE CAUSES)

1. Have you properly adjusted the lip sensor controls?

If the WT11's LFO control parameter is set to "lip" but the WX11 lip sensor control has not been properly adjusted, it may be impossible to produce LFO control.

2. Is your tone generator set to respond to LFO control?

In the case of the WT11, LFO control must be set to either "brth" (breath) or "lip" for LFO control to be effective. If set to "off," no LFO effect will be produced. Refer to the WT11 operation manual for details.

PROBLEM 7: Sound will not Stop

(POSSIBLE CAUSES)

Is key hold on?

You may have accidentally pressed the key hold key while playing, causing a note to be held continuously. Try pressing the key hold switch a second time.

- * Under very rare circumstances, elevated temperatures can cause continuous sound by affecting operation of the breath sensor. This can be remedied simply by pressing the setup key.

If you've checked all of the above possible causes but still have a problem, have the WX11 examined by your YAMAHA dealer. Explain the problem as clearly as you can as well as the circumstances under which the problem occurs (settings, other equipment used, etc). And don't forget your guarantee card!

CLEANING & MAINTENANCE

Since the WX11 is basically an electronic instrument, it does not require the constant cleaning and maintenance that acoustic wind instruments do — no oil, no changing of valve pads, etc. On the contrary, unnecessary dismantling of the instrument can cause serious damage and will **void the warranty**.

The interior of the instrument is designed to be highly resistant to the effects of saliva and condensation, and can be placed on its side after use with no fear of damage.

After a long period of use, however, you will no doubt want to clean the mouthpiece and reed. This can be accomplished as follows:

■ When cleaning the mouthpiece, remove it completely from the WX11 body (it simply pulls out), and remove the reed by loosening the two screws which attach it to the mouthpiece. The mouthpiece and reed can now be wiped clean with a soft cloth, or washed with a light solution of a neutral detergent and warm (not hot) water.

■ The mechanism inside the mouthpiece — the lip sensor cantilever and the rubber housing — should be wiped clean with a soft cloth. Do not wash this area. Be very careful not to bend or apply excessive force to the cantilever while doing this. Also make sure that no water or other fluids get into the breath sensor aperture or the area around the rubber housing.

■ The mouthpiece can be reinserted into the WX11 body after reattaching the reed. The reed screws should be rotated only until they seat firmly. A little wind-instrument grease can be applied to the outer edge of the rubber housing to ensure a smooth, easy fit.

■ The WX11 body and keys should be cleaned only with a soft, dry cloth.

SPECIFICATIONS

Sensors	Wind Sensor, Lip Sensor	Power Supply	Power received from WT11 via dedicated connecting cable, or from optional BT7 MIDI/Power Pack if WT11 not used.
Keys/Switches	14 key switches, Octave keys (-2, -1, +1, +2, +3), Setup key, Hold key, Program Change key	Dimensions (L x W x D)	596.5 x 65 x 69.4 mm (23-1/2" x 2-1/2" x 2-3/4")
Trim Control	LIP ZERO	Weight	420 g (15 oz)
Terminal	Special format (DC IN + MIDI OUT)	Accessories	Soft Case Cable Polishing Cloth Strap
MIDI Transmit Channel	Channel 1 only		

* Specifications and appearance subject to change without notice.

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CANADA

THIS DIGITAL APPARATUS DOES NOT EXCEED THE "CLASS B" LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE LA "CLASSE B" PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

* This applies only to products distributed by Yamaha Canada Music LTD.

* Ceci ne s'applique qu'aux produits distribués par Yamaha Canada Music LTD.

FCC INFORMATION (U.S.A.)

IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

IMPORTANT:

When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

NOTE:

This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the user's manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

- Relocate either this product or the device that is being affected by the interference.
- Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.
- In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave, Buena Park CA, 90620

- This applies only to products distributed by Yamaha Corporation of America.

MIDI DATA FORMAT

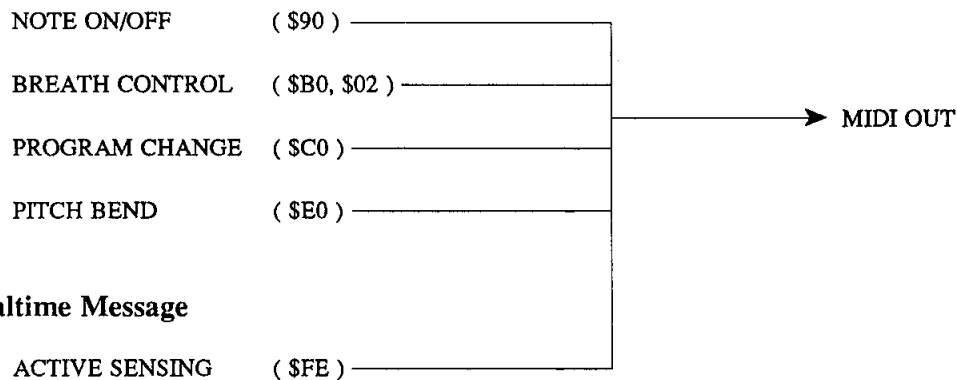
1. MIDI Transmission Conditions

1-1. MIDI Channel

All MIDI messages are transmitted on channel 1.

1-2. MIDI Output Messages

Channel Messages



2. Channel Messages

2-1. NOTE ON/OFF

STATUS	10010000	\$90 ; NOTE ON
NOTE No.	0nnnnnnn	n = 22(B ^b -1) — 110(D7)
VELOCITY	0vvvvvvv	v = 0 : NOTE OFF v = 1 : 1—127 : NOTE ON

2-2. CONTROL CHANGE

STATUS	10110000	\$B0 ; CONTROL CHANGE
CONTROL No.	00000010	\$02 ; Breath Control
DATA	0ddddd	d = 0 — 127

2-3. PROGRAM CHANGE

STATUS	11000000	\$C0 ; PROGRAM CHANGE
PROGRAM No.	00000ppp	p = 0 — 4

2-4. PITCH BEND

STATUS	11100000	\$E0 ; PITCH BEND
DATA(LSB)	01111111	
DATA(MSB)	0mmmmmmm	7-bit resolution

* LSB Data

lsb = \$00 when msb < \$40

lsb = (msb - \$40) x \$02 when msb ≥ \$40

2-5. REALTIME MESSAGE

ACTIVE SENSING

Active sensing is transmitted every 150 milliseconds.

STATUS	11111110	\$FE ; MIDI active sensing
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Function ...	Transmitted	Remarks
Basic Default	: 1	
Channel Changed	: x	
Mode Default	: x	
Mode Messages	: x	
Mode Altered	: *****	
Note	: 22 - 110	
Number : True voice	: *****	
Velocity Note ON	: o 9nH, v=1-127	
Velocity Note OFF	: x 9nH, v=0	
After Key's	: x	
Touch Ch's	: x	
Pitch Bender	: o	: 7 bit resolution
	: 2 : o	: Breath control
Control		
Change		
Prog	: o 0 - 4	
Change : True #	: *****	
System Exclusive	: x	
System : Song Pos	: x	
System : Song Sel	: x	
Common : Tune	: x	
System : Clock	: x	
Real Time : Commands	: x	
Aux : Local ON/OFF	: x	
Aux : All Notes OFF	: x	
Mes- : Active Sense	: o	
sages:Reset	: x	
Notes		

FINGERING CHART / TABLATURE / GRIFFTABELLEN

NORMAL PITCH

HAUTEUR NORMALE

NORMALE TONLAGE

The fingerings shown in this chart are the basic WX11 fingerings, including standard Böhm fingering and new features added by the WX11. Octave keys can be combined with these fingerings.

Les doigtés montrés sur cette tablature sont les doigtés de base du WX11, comprenant le doigté standard de Böhm et les nouvelles caractéristiques propres au WX11. Les touches d'octave peuvent être combinées avec ces doigtés.

Die in dieser Tabelle gezeigte Griffanordnungen stellen die grundlegenden Griffe für den WX11 dar und enthalten die Böhm-Grifftechnik sowie spezielle Griffanordnungen für den WX11. Die Oktavtasten können für bei diesen Griffen verwendet werden.

Shaded keys are fingered.

Les touches en ombré sont jouées.

Die schraffierten Tasten sind auf Fingerged gestellt.

This section of the chart displays musical notation and fingering diagrams for notes A# (Bb), B, C, C# (Db), D, D# (Eb), E, F, F# (Gb), G, and G# (Ab). Each note is represented by a treble clef staff with a single note. Below the staff, a vertical grid of circles and rectangles represents the keys on the instrument. Solid black circles and rectangles indicate which keys are to be fingered for that note. Some keys are shaded with diagonal lines, indicating they are also fingered. Dashed vertical lines separate the diagrams for each note.

This section of the chart displays musical notation and fingering diagrams for notes G# (Ab), A, A# (Bb), B, C, and C# (Db). Each note is represented by a treble clef staff with a single note. Below the staff, a vertical grid of circles and rectangles represents the keys on the instrument. Solid black circles and rectangles indicate which keys are to be fingered for that note. Some keys are shaded with diagonal lines, indicating they are also fingered. Dashed vertical lines separate the diagrams for each note.

OCTAVE TRANSPOSE

The fingerings shown in this chart all produce notes an octave above the normal WX11 pitch. These fingerings can be combined with the octave keys.

TRANSPOSITION A L'OCTAVE

Les doigtés montrés sur cette tablature produisent tous des notes une octave au-dessus de la hauteur normale du WX11. Ces doigtés peuvent être combinés avec les touches d'octave.

OKTAVEN-TRANSPONIERUNG

Die in dieser Tabelle gezeigten Griffe erzeugen Noten, die um eine Oktave über der normalen Tonlage des WX11 liegen. Diese Griffe können mit den Oktavtasten zusammen verwendet.

8va

G# (Ab)

8va

8va

YAMAHA