

YAMAHA

PERSONAL ELECTRONIC PIANO

YPP-15

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Owner's Manual

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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 numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la "CLASS B" prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère des communications du Canada.

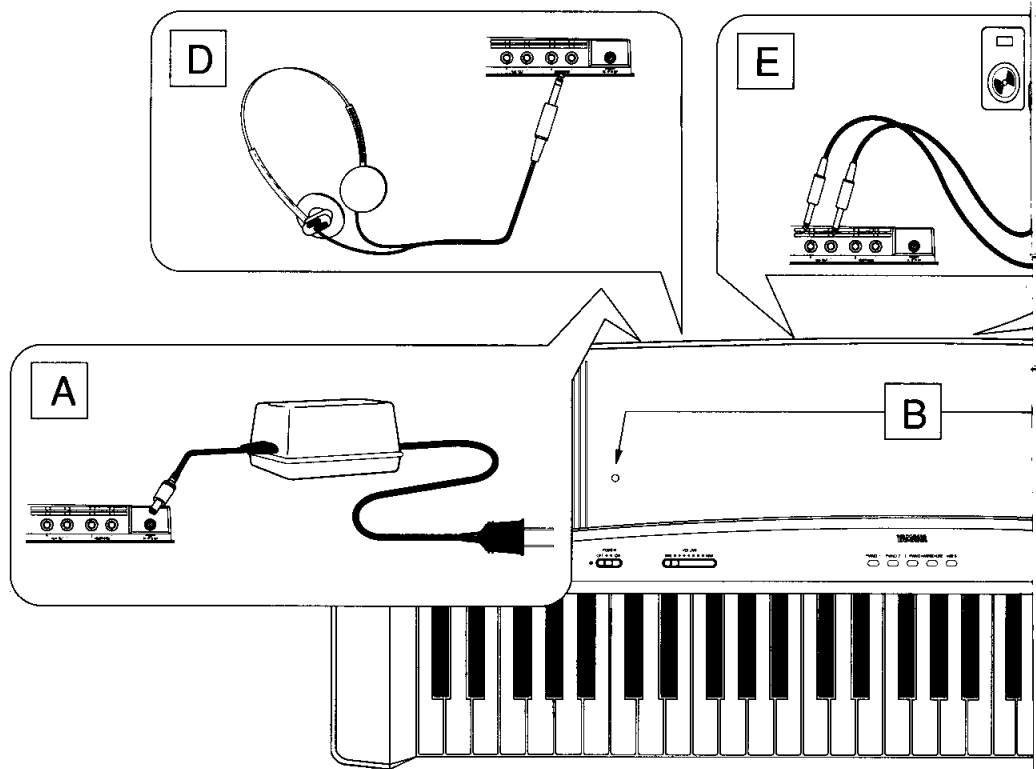
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Congratulations, and thank you for buying the YAMAHA YPP-15. We are sure you will be pleased with the natural sound and easy operation of this keyboard. Features include AWM technology (for a clear, realistic sound), five different voices, touch-sensitive keys and much more. Please read this manual to learn how to best use and enjoy your new instrument. We wish you many years of musical pleasure with your YPP-15.

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1. BEFORE PLAYING



A. Power Supply

The YPP-15 can be used with batteries or a power adaptor connected to AC current.

1) Using Batteries

Remove the Battery Compartment Cover on the underside of the keyboard. Insert 6 batteries (1.5V SUM-1, D-cells, or R20) into the compartment, making sure their direction (+/-) is correct. Replace the cover.

- * Change all batteries at the same time.
- * Use only the batteries listed above. Do not use Ni-Cd or other kinds of batteries.
- * Remove the batteries if the YPP-15 is not going to be used for a long time.

2) Using AC Power

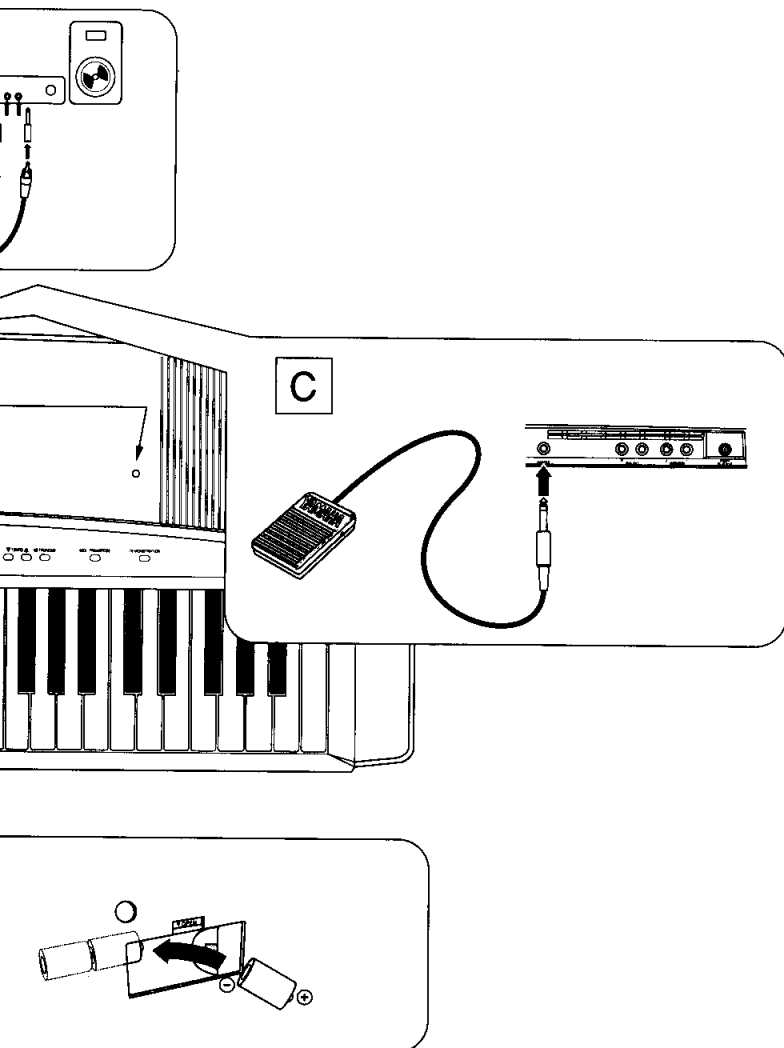
You will need a supplied YAMAHA PA-3 power adaptor. Make sure the YPP-15 is turned off. Connect the adaptor to the DC IN 10-12V jack on the rear panel. Please note that YAMAHA will not be held responsible for any problems caused by using other, unauthorized adaptors.

B. Setting the Music Stand

Insert both ends of the supplied Music Stand into the 2 holes located on the front panel next to the speakers.

C. Using the Foot Switch

Connect the supplied foot switch to the DAMPER jack on the rear panel. If you depress the Foot Switch while playing, you can sustain the sound.



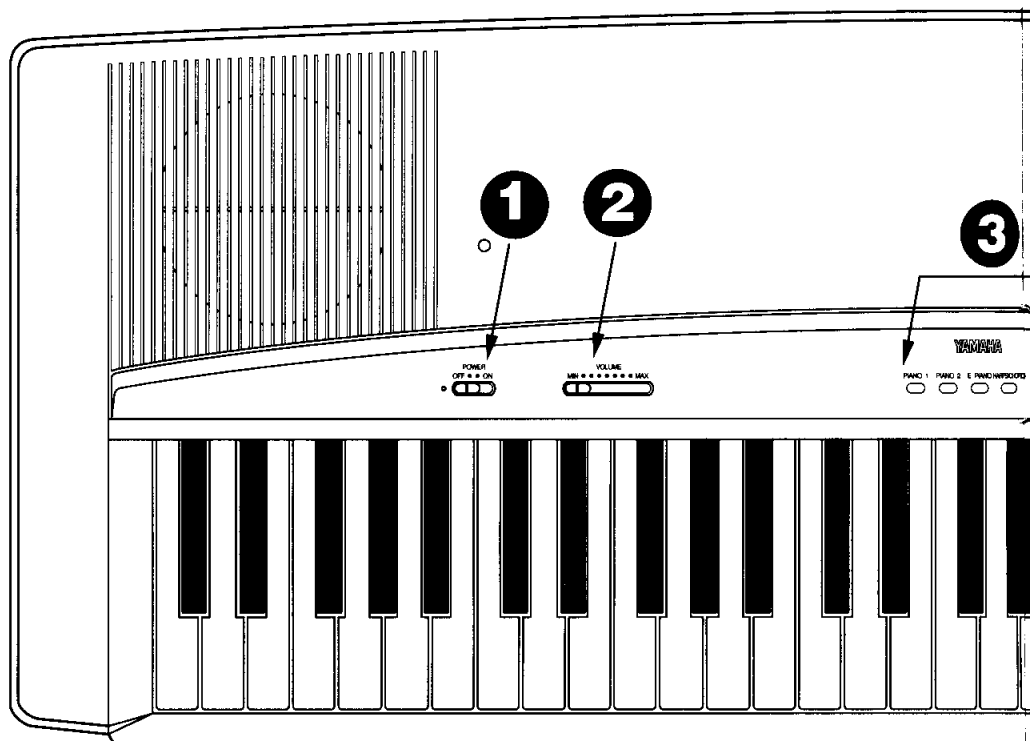
D. Using Headphones

There are 2 HEADPHONES jacks on the rear panel of the YPP-15. Connecting your headphones to the HEADPHONES jack(s) turns off the speakers, so 1 or 2 people can practise and listen without disturbing anybody else.

E. Connecting YPP-15 to another Audio System

If you want more volume, connect the L/R AUX. OUT jacks of the YPP-15, using suitable cables, to the inputs of a stereo, keyboard amplifiers or a similar device. If the device is monoaural, use the Left (L) AUX. OUT jack of the YPP-15.

2. PLAYING



A. Basic Playing Operation

1) Power

When all the necessary connections have been made, turn on the POWER switch (1).

2) Volume

Adjust the volume with the VOLUME slider (2). This slider controls the speakers' and headphones' volume, as well as the output level of the AUX. OUT Jacks.

3) Selecting Voices

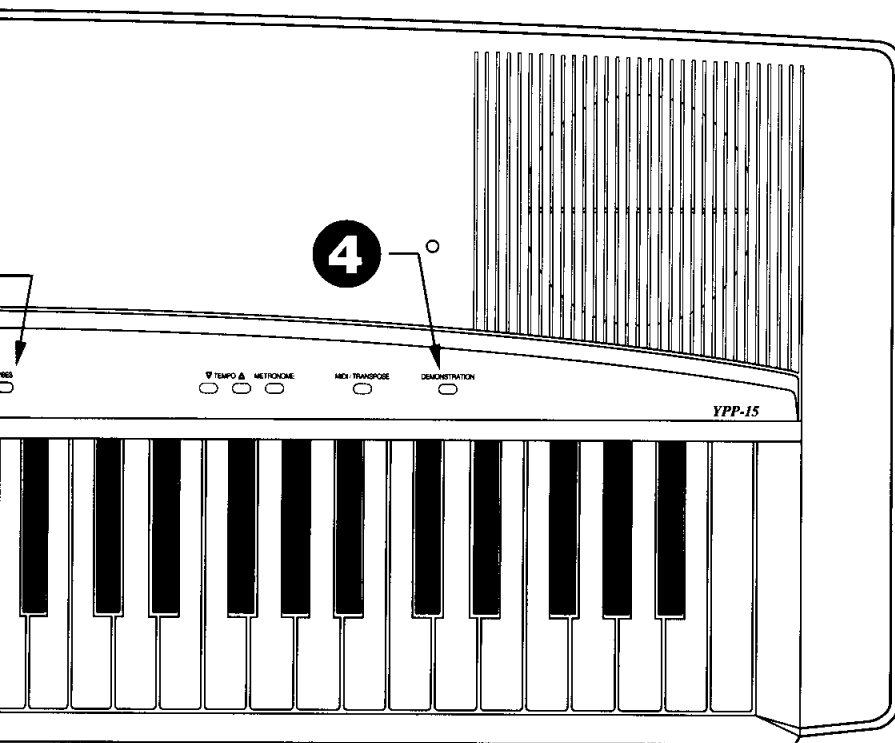
Select the sound you wish to play by pressing one of the 5 Voice Select buttons (3).

* When the YPP-15 is first turned on, PIANO 1 is automatically selected.

4) Playing

Normally you can play up to 16 notes simultaneously except for PIANO 2 which can be played up to 14 notes at a time. While depressing the foot switch connected to the DAMPER jack, you can play up to 28 notes with any voice.

* The tone of some voices may change slightly at one or more points on the Keyboard. This is due to the way in which the voice waveforms were initially sampled and is normal.



B. Demonstration Play

1) Listening to the Demonstration

The YPP-15 has a demonstration song for each voice. Press the yellow DEMONSTRATION button (4), and the demonstration song for each voice will be played in order from PIANO 1 to VIBES. This sequence is repeated indefinitely.

- * During demonstration play, the Metronome function will not be available.
- * The demonstration songs are not output as MIDI performance messages (See section 4, MIDI).

2) Stopping the Demonstration

To stop the performance, press the DEMONSTRATION button again.

3) Playing Individual Demonstration Songs

If you wish to play the Demonstration Songs individually, first press the DEMONSTRATION button. While holding it down, press one of the Voice Select buttons. The song corresponding to the selected voice will be played once. If you wish to stop the performance, press the DEMONSTRATION button again.

3. PLAYING TIPS & FEATURES

A. Touch Sensitivity

The YPP-15 is Touch Sensitive, which means that the sound changes according to the player's touch. If you play harder, the attack (initial phase of the sound) changes, and the notes sound louder. There are 3 levels of touch response, soft, medium and loud. To adjust the sensitivity range, press and hold the B5 and C6 keys, then press one of Voice Select buttons PIANO 1 (Range 1), PIANO 2 (Range 2), E. PIANO (Range 3).

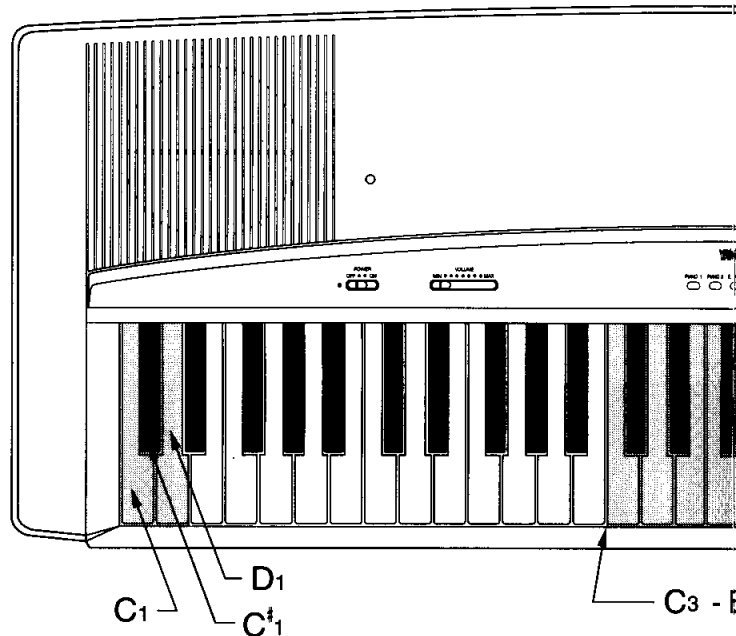
* When the YPP-15 is turned on, the sensitivity range 2 is automatically selected.

We recommend that you practise fine-tuning your touch on the YPP-15, so as to achieve maximum dynamic control and musical expression.

B. Using the Metronome

To activate the metronome, press the METRONOME button (5). The initial tempo, after the instrument has been turned on, is always 120 beats per minute. The two TEMPO buttons (6) are used to adjust the tempo. To increase the tempo, press the TEMPO ▲ button, and hold it down until the desired speed is reached. To decrease the tempo, follow the same procedure with the TEMPO ▼ button. Pressing both TEMPO buttons at the same time brings the tempo back to 120. The range of the Metronome is from 40 to 280 beats per minute. To turn off the metronome, press the METRONOME button again.

You can use the metronome to tighten your playing, rhythmically, or to practise a musical selection at different speeds.



C. Transposition

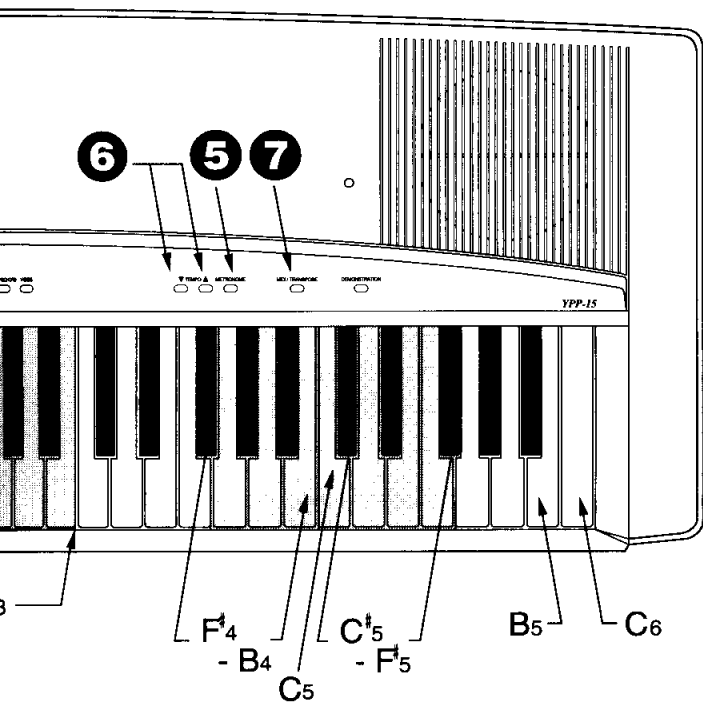
The overall pitch of the YPP-15 can be transposed up or down as far as 6 semitones. Transposition occurs in 100 cent (1 semitone) steps.

You can use the Transposition function to play a passage of music in several different keys, without actually changing the notes you play. Similarly, if you have to do some playing (for instance, accompanying or improvising) in a difficult key, you can transpose the YPP-15 to that key, so that the played C major scale (i.e. the white notes) will sound like a scale in that key.

1) Raising the Pitch

To raise the overall pitch of the YPP-15, press the MIDI/TRANPOSE button (7). While holding it down press one of the C#5 to F#5 keys (shown in the Front Panel Diagram).

PRESSED KEY	C#5	D5	D#5	E5	F5	F#5
TRANSPOSED KEY (i.e. actual pitch of played C)	C#	D	D#	E	F	F#



2) Lowering the Pitch

To lower the overall pitch of the YPP-15, press the MIDI/TRANPOSE button. While holding it down, press one of the F[#]₄ to B₄ keys (Shown in the Front Panel Diagram).

PRESSED KEY	F [#] ₄	G ₄	G [#] ₄	A ₄	A [#] ₄	B ₄
TRANSPOSED KEY (i.e. actual pitch of played C)	F [#]	G	G [#]	A	A [#]	B

3) Returning to the Standard Pitch

To bring the YPP-15 back to the standard pitch (Key of C), press the MIDI/TRANPOSE button, and while holding it down, press the C₅ key. Or, you can turn off the POWER switch, then turn it on again after a few seconds.

D. Fine Tuning

This function is very useful if you are playing in a band or other ensemble. It allows you to tune your instrument with the others. The YPP-15 can be fine-tuned up or down up to a quarter tone (+/-50 cents). You can also use the Fine Tuning function in conjunction with the Transposition function, in either order.

1) Raising the Pitch

While holding down both the C₁ and D₁ keys, press any one of the C₃ to B₃ keys. Each time a key is pressed, the pitch will be raised, up to a maximum of 50 cents.

2) Lowering the Pitch

While holding down both the C₁ and C[#]₁ keys, press any one of the C₃ to B₃ keys. Each time a key is pressed, the pitch will be lowered, up to a maximum of 50 cents.

3) Returning to the Standard Pitch

While holding down the C₁, C[#]₁ and D₁ keys simultaneously, press any one of the C₃ to B₃ keys. Or, you can turn off the POWER switch, then turn it on again after a few seconds.

4. MIDI

A. What is MIDI?

The YPP-15 is MIDI-equipped keyboard. MIDI (Musical Instrument Digital Interface) is a worldwide standard for communicating performance information between electronic musical instruments. With MIDI, the YPP-15 can control, and be controlled by, other MIDI-equipped instruments, such as synthesizers, sequencers and drum machines.

In a simple MIDI setup between two instruments, the instrument which is controlling is called the Master, and the instrument being controlled is called the Slave (Diagram A). You can also set up the two instruments so that they control each other, i.e. both machines are simultaneously Masters and Slaves (Diagram B). To connect the YPP-15 to another MIDI-equipped instrument, use the MIDI-IN or MIDI-OUT jacks on the rear panel, and join the instruments as shown in Diagram A or B.

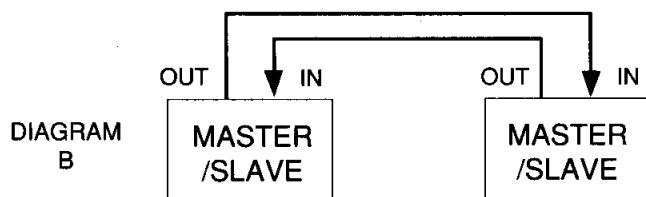
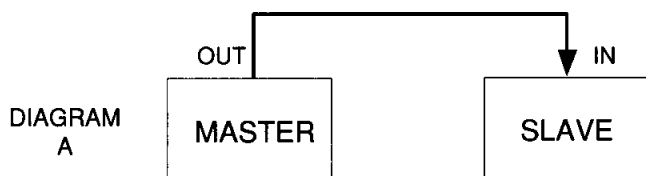
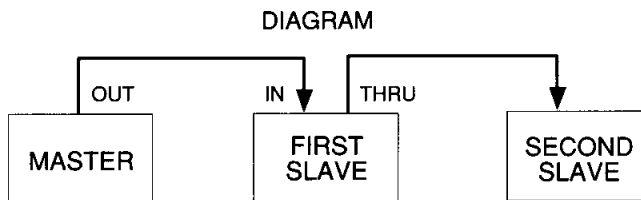


Diagram A depicts a "One-Way" connection, and Diagram B depicts a "Hand-Shaking" connection. All the following MIDI explanations will relate to these terms, as well as to the terms Master and Slave. So please be clear about all of these concepts before proceeding.

Note: If you connect more than two instruments, the third instrument becomes the second Slave. To do this, make an additional One-Way connection from the MIDI-THRU jack of the first Slave to the MIDI-IN jack of the second Slave:



At this time, the first Slave simply transmits, from its MIDI-THRU jack, the information received at its MIDI-IN jack. In this way, a Master can control two Slaves simultaneously.

Note: that some MIDI instruments, such as the YPP-15, are not equipped with a MIDI-THRU jack, so are best used as the **final** Slave in a MIDI chain.

* Although MIDI is a uniform standard, different instruments may have different specifications. Making the MIDI connection is not enough. The MIDI instruments or devices must also have the same MIDI functions. If you wish to know about the MIDI functions of a device, refer to its MIDI Implementation Chart. The MIDI Implementation Chart for the YPP-15 is on the last page of this manual.

B. Types of MIDI Information

What kind of information is communicated by MIDI? The most universal is information about the notes being performed (or played back) from the Master. This is called "Note On" message, which includes information about the **key** being depressed (transmitted as MIDI note number), and, in the case of touch sensitive instruments such as the YPP-15, the **velocity** (speed) of depression (transmitted as velocity data). For instance, when the YPP-15 is set up as a Master, playing something on it will activate the sound module of the Slave, and you will hear, simultaneously, the voices of both instruments as you play. If your Slave instrument is equipped to receive the velocity data, the volume, timbre of its voice will also vary according to your performance.

In addition to **Note On** information, the YPP-15 is also equipped to deal with Program Change and Control Change messages.

1) Program Change Message

Program Change message is used to change voices on a Slave instrument. For instance, with the YPP-15 set up as a Master, if you select one of its voices, a Program Change message (including MIDI Program Number) will be transmitted to the Slave. If the Slave has the MIDI capabilities to receive this message, its own voice will be changed according to the MIDI Program Number it has received. Conversely, when the YPP-15 is the Slave, it can receive the message and will automatically select its voice according to the MIDI Program Number from the Master.

The following chart shows the relation between YPP-15 voices and MIDI Program Numbers.

MIDI Program Number	YPP-15 Voice/Voice Select Button
00H	PIANO 1
01H	PIANO 2
02H	E. PIANO
03H	HARPSICHORD
04H	VIBES

* This relation applies to both transmission and reception. MIDI program numbers other than those in the chart cannot be transmitted or received.

Cancelling Program Change Message

Program Change message is automatically available when the YPP-15 is turned on. Though it is a very useful feature, you may sometimes run into a situation where you wish to cancel it. To cancel Program Change message, while holding down the MIDI/TRANPOSE button, press the Voice Select button PIANO 2. To reactivate this message, repeat the same procedure.

2) Control Change Message

Control Change message deals with various aspects of the played sound. For instance, when you're using the YPP-15 as a Master and depress the foot switch, a Control Change message (including MIDI Control Number and a Damper value) will be transmitted to the Slave, so that the the Slave's sound will also be sustained (unless it cannot receive the message). If the YPP-15 is the Slave, it will receive Control Change message instructions from the Master.

The YPP-15, as a Master, can transmit only Damper information (MIDI Control Number 64 in the following chart) As a Slave, however, it can receive a lot more information, as shown in the chart above:

YPP-15 Control Change Message Reception Capabilities

MIDI Control Number	Name	Value
64	Damper	0-63:Off, 64-127:On
122	Local On/Off (*1)	0: Off, 1-127: On
123	All Notes Off (*2)	0
124	Omni Off (*3)	0
125	Omni On (*3)	0

(*1) Local On/Off: Upon reception of a Local Off message, the YPP-15's keyboard will be separated from its internal sound module. See "Example 3" on page 11 for details.

(*2) All Notes Off: As soon as the YPP-15 receives this instruction, all of its notes sounding at that time will be muted.

(*3) Omni Off/On: See the following section, "MIDI Channels", for details.

Cancelling Control Change Message

Normally, Control Change message is automatically available when the YPP-15 is turned on. But you may wish to create a situation where, for example, the Slave YPP-15 sounds are not sustained in tandem with the Master sounds. To cancel the Control Change message, while holding down the MIDI/TRANPOSE button, press the Voice Select button E. PIANO. To reactivate this message, repeat the same procedure.

The above-described Note On, Program Change, and Control Change messages are known as MIDI channel information. That is, these messages are communicated through MIDI channels. So what are MIDI channels? The next section addresses this question.

C. MIDI Channels

There are 16 MIDI channels (1-16). Unless MIDI instruments are set to the same MIDI channel, they cannot communicate MIDI channel information (Note On, Program Change, Control Change, etc.), even if the cables are connected properly. MIDI channels can be likened to television channels, i.e. information from several TV stations is transmitted through the air, so to receive the desired program, you have to select one channel on your TV set.

When the YPP-15 is turned on, both its transmitting and receiving MIDI channels are set to 1. If required, these channels can be reset.

1) Setting a MIDI Transmitting Channel

While holding down the MIDI/TRANSCOPE button, press one of 16 keys from C1 to D#2 according to the table below.

Key	C ₁	C ₁ '	D ₁	D ₁ '	E ₁	F ₁	F ₁ '	G ₁	G ₁ '	A ₁	A ₁ '	B ₁	C ₂	C ₂ '	D ₂	D ₂ '
Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

2) Setting a MIDI Receiving Channel

While holding down the MIDI/TRANSCOPE button, press one of 16 keys from C3 to D#4 according to the table below.

Key	C ₃	C ₃ '	D ₃	D ₃ '	E ₃	F ₃	F ₃ '	G ₃	G ₃ '	A ₃	A ₃ '	B ₃	C ₄	C ₄ '	D ₄	D ₄ '
Channel	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

3) Omni On Mode

If required, the YPP-15 can be set to receive information on all MIDI channels (1-16). This mode is called "Omni On". To set the YPP-15 to this mode, while holding down the MIDI/TRANSCOPE button, press the E4 key. To get out of this mode, either select a specific receiving channel, or turn off the YPP-15, then turn it on again after a few seconds.

Note: If you have several Slaves, all set to OMNI Mode, they will all receive the same instructions, and therefore play the same music. To achieve individual control of the Slaves, that is, to get each one to respond to different instructions and play its own part in an ensemble, you must set the Slaves' MIDI receiving channels individually. When a specific channel is selected, it means the instrument is in **OMNI OFF** Mode.

D. Applications

The following three examples show how several of the YPP-15's MIDI functions can be applied in specific setups. In order to make best use of MIDI, it is important to determine which instruments are most effective as Masters or as Slaves. This will depend on the individual situation. Consulting the MIDI implementation chart of each instrument in your setup will help you to decide in each case. If one instrument has more transmission capabilities than the other(s), it will generally be better suited as the Master. Conversely, instruments with more recognition capabilities will be better Slaves.

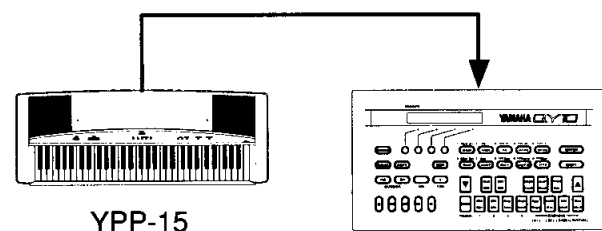
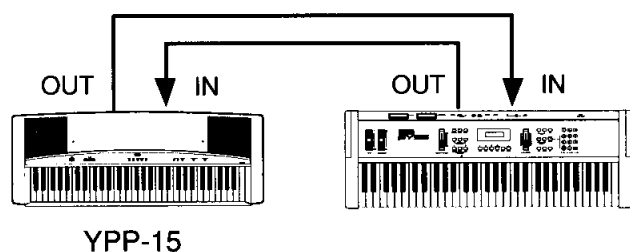
Example 1: Using the YPP-15 with another keyboard or sound module

If you are a MIDI rookie, first, make a Hand-Shaking connection between the two MIDI keyboards. After matching the transmitting and receiving MIDI channels (in both directions), you can use either instrument as Master or Slave. Whichever keyboard you play, you will hear the sounds of both instruments. In addition, the Slave will duplicate the Master's sustain, etc., as long as it is equipped to receive MIDI messages such as Program Change, Control Change, and so on.

* Practising with a Hand-Shaking connection is a good way to learn which instrument will make the better Master or Slave in a One-Way connection.

* If you're connecting the YPP-15 to a MIDI sound module, the latter is best used as a Slave in a One-Way connection.

DIAGRAMS

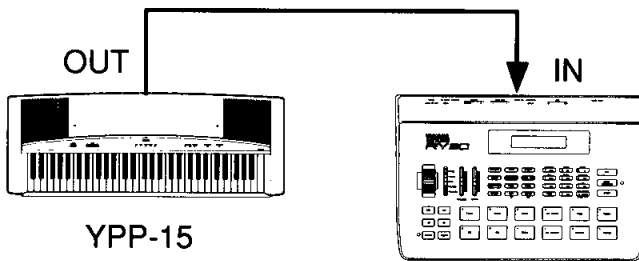


Example 2: Using the YPP-15 with a drum machine

If you have a MIDI-compatible rhythm/drum machine, use it as a Slave of the YPP-15. After matching MIDI channels, play the YPP-15 keyboard. Now you can have various percussion sounds at your fingertips. Playing a key on the YPP-15 will transmit a specific MIDI Note Number to the drum machine, which reproduces the percussion sound corresponding to it.

Here's another idea: If your drum machine includes a melody instrument such as bass or vibraphone, you can access this sound from the YPP-15. First, look up the MIDI receiving channel assigned for controlling the sound. Then, set both instruments to this channel. You can now play the drum machine's melody instrument sound from the YPP-15. If you wish, you can accompany your performance with a rhythmic pattern (start/stopped locally on the drum machine). Your entire performance can be input into the drum machine as rhythm data.

DIAGRAM



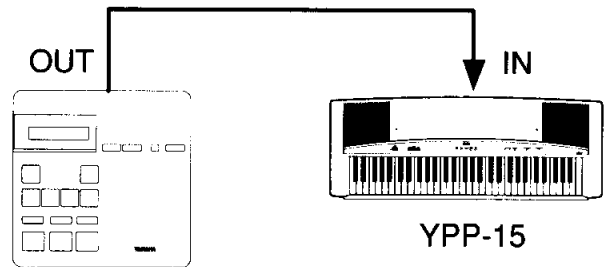
Example 3: Using the YPP-15 with a sequencer (and other keyboards)

Knowing how to use the YPP-15 effectively with a sequencer makes you a MIDI pro!

After you've recorded all the parts of your performance on the sequencer, you'll want to play back your ensemble, with each part matched (via MIDI channels) to the appropriate instrument or sound module. Say you've recorded a two-part ensemble, cello and flute, on MIDI channels 1 and 2, each channel matched to a separate instrument or sound module in your MIDI system (instruments A and B in the Diagram below). When you play back the ensemble, you may wish to experiment with the sounds. Here's one thing you can try: put the YPP-15 (one of the Slaves in your setup) in OMNI ON Mode, and select the voice you wish, say PIANO 1. Thus, the YPP-15 will receive performance data in **both** of MIDI channels 1 and 2, and so will play back both parts in PIANO 1 voice, as a complement to the cello and flute sounds from instruments A and B.

* Another use of OMNI ON Mode is for checking the contents of an unlabelled performance data disk whose MIDI channels are unspecified. After loading the data into the sequencer, transmit it from the sequencer to the YPP-15 in OMNI ON Mode. Regardless of the MIDI channels to which the data was assigned, the YPP-15 in OMNI ON Mode will play it back.

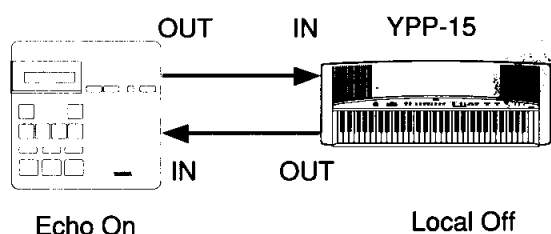
DIAGRAM



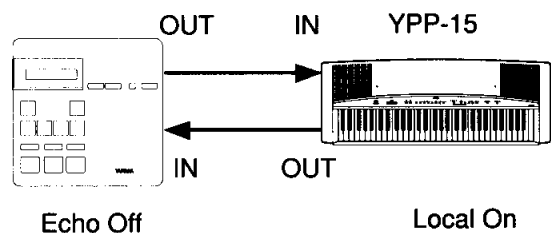
If you set up a Hand-Shaking connection between the YPP-15 and the sequencer, there are two things to be noted:

- * If the sequencer is set to transmit the same MIDI information as received at its MIDI IN jack (This is called "Echo On", "Soft Thru On", etc., depending on the make), set the YPP-15 to "Local Control Off" (*1). If you fail to do this, pressing a single key will sound twice as many notes as in normal play. As a result, it will reduce the polyphonic notes you can play at a time.
- * Conversely, when the sequencer is set to "Echo Off" ("Soft Thru Off", etc.), you cannot play directly from the keyboard if it is in "Local Control On", because the sequencer doesn't retransmit any received MIDI data. In this case, you have to set the YPP-15 to "Local Control On", which enables you to control the sound module from either the keyboard or the sequencer.

DIAGRAMS



or



(*1) Local Control On/Off: Normally, the YPP-15's keyboard is connected to its internal sound module, which means that when you play, a sound is output from the instrument, and when you select a different voice, the sound changes. This state is called "Local Control On". However, if desired, the YPP-15 can be set to "Local Control Off." In this state, the keyboard is disconnected from the sound module, which means that if you play something, a sound will not be produced from the instrument itself, but your performance can be transmitted via MIDI to an external instrument.

- Setting to Local Control Off

While holding down the MIDI/TRANSCOPE button, press Voice Select button PIANO 1. To return the YPP-15 to Local Control On, repeat the same procedure.

One of the most exciting features of the YPP-15 is that it is capable of playing all of its five voices at the same time. This feature is called Multi-timbre, and is most useful when using the YPP-15 as a Slave from a sequencer.

The YPP-15 has two play modes: Normal and Multi-timbre. When the instrument is turned on, it is always in Normal mode, that is, you play a single voice on the keyboard. When in Multi-timbre mode, however, the YPP-15 will act as ten independent sound modules, with all 5 preset voices available for use in an ensemble performance.

- Entering Multi-timbre mode

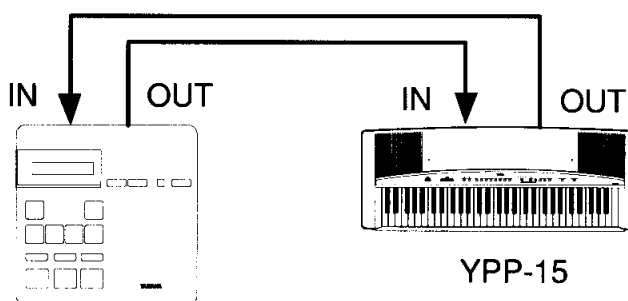
While holding down the MIDI/TRANSCOPE button, press the HARPSICHORD Voice Select button. To exit from Multi-timbre mode, repeat the same operation once again.

Now, try using the YPP-15 in Multi-timbre mode with a sequencer(*).

- * To best use the YPP-15 in Multi-timbre mode, you will need a Master device which can control other devices with different MIDI channels at the same time. This could be a sequencer, MIDI-equipped personal computer, or MIDI master keyboard.

The following diagram relates to a Hand-Shaking connection between a YPP-15 and a sequencer. Try going quickly through the following steps, to become familiar with the use of Multi-timbre mode. The object is to record an ensemble performance of several parts onto the sequencer, then play it back with each part sounding in a different YPP-15 voice.

DIAGRAM



Step 1: Set the YPP-15 in Multi-timbre mode.

Step 2: Ensure the YPP-15 is set to Local Control On and the sequencer to Echo Off, or the YPP-15 to Local Control Off and the sequencer to Echo On. Remember the notes on page 12.

Step 3: Select a MIDI transmitting channel from 1-10(*) on the YPP-15, then select the voice you desire. You should set the transmitting channel before playing, so that the sequencer will receive all the information, via MIDI channel message, regarding voice, touch, sustain, etc.

* In Multi-timbre mode, the YPP-15's sound module can receive MIDI messages in channels 1-10. MIDI messages in channels 11-16 cannot control the YPP-15's sound module. Additionally, when you enter Multi-timbre mode, preset voices are automatically assigned to MIDI channels, as shown in the following chart:

Channel 1:	PIANO 1
Channel 2:	PIANO 2
Channel 3:	E. PIANO
Channel 4:	HARPSICHORD
Channel 5:	VIBES
Channel 6:	PIANO 1
Channel 7:	PIANO 2
Channel 8:	E. PIANO
Channel 9:	HARPSICHORD
Channel 10:	VIBES

Step 4: Play one of the ensemble parts on the keyboard, pedalling as needed, and record it onto one of the tracks of the sequencer. You may, of course, change voices during play.

Step 5: Repeat Steps 3 and 4 as needed. In each case, select the appropriate MIDI channel (according to the voice desired for that part) before Step 3, and in Step 4, record onto a new track or overdub onto previously recorded tracks.

Step 6: Play back the completed ensemble performance from the sequencer. You will hear the different voices, corresponding to the different parts of the ensemble, played out simultaneously.

MAINTENANCE

- Every once in a while, wipe the cabinet clean with a soft cloth slightly moistened with a diluted soap solution, then wipe it with a dry cloth. Don't use chemically treated cloths or other chemicals like oil, solvents or insecticides.
- Do not expose the unit to direct sunlight, moisture or extremes in temperature. This includes not placing the unit on top of amplifiers, receivers or other heat sources, especially those with temperatures higher than 60°C (140°F).
- Place the unit on a firm, level, vibration-free surface. Do not put anything on top of it.
- Keep the unit away from sources of strong magnetism, and from highly dusty or humid areas.
- Using an unauthorized AC power adaptor may damage the unit.
- Do not remove the unit's cover, as this can cause electric shock. All repairs should be referred to YAMAHA personnel.

YAMAHA IS NOT RESPONSIBLE FOR DAMAGE CAUSED BY IMPROPER USE.

TROUBLESHOOTING

Many "problems" can be solved quite easily. Before calling your YAMAHA dealer, please refer to the following table.

PROBLEM	POSSIBLE SOLUTION
<ul style="list-style-type: none"> • Power does not come on. • Volume is too low, sounds cannot be sustained (held). • No sound. • Distorted sound. • MIDI information is not being transmitted or received. 	<ul style="list-style-type: none"> • Load batteries correctly. • Replace batteries if dead. • If using an AC adaptor, make sure it is firmly connected at both ends. • Replace batteries. • Remove headphones if plugged in. • Replace batteries if dead. • Reset keyboard to "Local Control On" if not in this mode. • Lower the volume. • Check MIDI channels of transmitting and receiving instruments.

SPECIFICATIONS

Keyboard	61 keys (C1-C6) with 3-level Touch sensitivity
Voice Technology	AWM PIANO 1, PIANO 2, E. PIANO, HARPSICHORD, VIBES
Effects	DAMPER (foot) switch
Metronome	METRONOME button, TEMPO buttons
Controls	POWER switch, VOLUME slider, MIDI/TRANSCOPE button, DEMONSTRATION button
Jacks	MIDI IN, MIDI OUT, DAMPER, AUX. OUT L/R, HEADPHONES 1,2, DC IN 10-12V
Amplifier	5.0 W x 1
Speakers	12.0 cm (8Ω) X 2
Power Source	DC 9V (6 batteries, 1.5V SUM-1, R20 or D-cells) AC Power Adaptor PA-3, PA-4 or PA-40
Power Consumption	13 W (when using the AC Power Adaptor PA-3) 15 W (when using the AC Power Adaptor PA-4 or PA-40) 7 W (when using the batteries)
Dimensions	970 mm x 123 mm x 381 mm (WxHxD)
Weight	7.5 kg
Accessories	Music Stand, Foot Switch, AC Power Adaptor PA-3
Optional Items	Keyboard Stand LW-10

(Some optional items may not be available in every region)

* YAMAHA reserves the right to make design and specification changes in the interests of product improvement without prior notice.

Function ...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 1-16	1 1-16	
Mode Default Messages	3 X	3 OMNI ON/OFF X	
Note Number : True Voice	36-96 *****	21-108 21-108	
Velocity Note On Note Off	O 9nH, v=1-127 X 9nH, v=0	O v=1-127 X	
After Key's Touch Ch's	X X	X X	
Pitch Bender	X	X	
Control Change 64	O	O	DAMPER
Program Change : True #	O 0-4 *****	O 0-4 0-4	
System Exclusive	O	O	
System : Song Pos : Song Sel Common : Tune	X X X	X X X	
System : Clock Real Time : Commands	X X	X X	
Aux : Local ON/OFF : All Notes OFF Messages : Active Sense : Reset	X X O X	O O (122-125) O X	
Notes :			

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

O : YES
X : NO

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SERIAL NO:		SERIAL NO:	
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