

5. DIAGNOSTIC TEST

DIAGNOSTIC TEST FOR C-15

0. «Start-up of Test Mode»

Connect a MIDI cable with the MIDI IN/OUT, power on the system while holding down both the MIDI/TRANSPOSE and PIANO switches and the test mode will start.

Once the test mode has started, an LED on the panel goes on and off in the following sequence:

MIDI/TRANSPOSE, PIANO, E.PIANO, HARPSI, VIBES, ORGAN

The operating switches on the test mode are as follows:

MIDI/TRANSPOSE: Moves from the test mode to the normal mode.

ORGAN: Returns to the last check.

PIANO: Proceeds to the next check.

1. «Internal check»

Once the test mode has started up correctly, the following checks are made automatically:

1) MAIN ROM WRITE/READ CHECK

If an error is found in this check, the PIANO LED goes on and off. Check the SYSTEM ROM (IC5).

2) WAVE ROM READ CHECK

If an error is found in this check, the MIDI/TRANSPOSE LED and the LED which relates to each IC go on and off.

IC NO.	IC9	IC11
LED NAME	PIANO	E.PIANO

3) MIDI IN/OUT CHECK

A loop test for the MIDI IN/OUT is made in this check.

If an error is found, the E.PIANO LED goes on and off.

4) TG VOICE CHECK

If a voice error in the IC17 is found, the HARPSI LED goes on and off.

2. <<Checks of Panel Switch>>

1) PANEL SWITCH ALL OFF CHECK

If the internal check has been completed normally, the test automatically moves to this check.

At this time, remove the MIDI cable connected to the MIDI IN/OUT.

Make sure that the LEDs of all the switches on the panel are unlit.

If any switch is set to ON, an LED for the switch lights up and the test mode stops.

2) PANEL SWITCH ON/OFF CHECK

If the PANEL SWITCH ALL OFF CHECK has been completed normally, the test moves to this check automatically.

In this check step, successively press the switches whose LEDs go on and off to check their operations.

Make sure that the MIDI/TRANSPOSE LED goes on and off, then press the MIDI/TRANSPOSE SW. And an LED for the next switch will go on and off.

The sequence of the switches to be checked is as follows:

MIDI/TRANSPOSE, PIANO, E.PIANO, HARPSI, VIBES, ORGAN

Once the HALL switch check has been completed, the test proceeds to the next check automatically.

3. <<Pedal Check>>

This check is made in a status that the stand pedal is connected to the product.

If this check is not required, press the PIANO switch to proceed to the next check.

1) PEDAL ALL OFF CHECK

This check is used to make sure that all the pedals are in the OFF status.

If any switch is in the OFF status, an LED lights up and then the test mode stops.

The pedals correspond to the following LEDs:

SOFT/SOSTENUTE=PIANO, DAMPER=HARPSI

2) PEDAL ON/OFF CHECK

If the PEDAL ALL OFF CHECK is over, the LEDs for the PIANO and HARPSI go on and off.

When a pedal corresponding to the LED is operated, the LED changes from the 'going on and off' to 'lighting' status. If you set the pedal to OFF, make sure that the LED goes out.

If two pedals are in the ON status simultaneously, a related LED lights up and then the test mode stops.

4. «KEYBOARD check»

When the test moves to the KEYBOARD check, the PIANO LED will light up.

Press all the keys with moderate strength one by one from the highest KEY (C8).

The error messages in this check are as follows:

- 1) If the key stress is unfit, the VIBES LED lights up and a warning sound is issued.
- 2) If a key with a lower tone than that of the key to be checked is pressed, the PIANO LED lights up and a warning sound is issued.
- 3) If a key with a higher tone than that of the key to be checked is pressed, the ORGAN LED lights up and a warning sound is issued.

Unless the check is made correctly, the test can never proceed to the next key check. Once all the keys have been checked, the test moves to the TG check automatically.

5. 《TG check》

When the test moves to the TG check, the E.PIANO LED lights up.

- * In this check, because of a too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

In addition, if a test waveform from the headphone is checked, set the master volume at 0 once and then make this check.

The check is made by connecting an oscilloscope with the AUX OUT L/R.

- 1) If you press the A0 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT L.
- 2) If you press the B0 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT R.
- 3) If you press the C1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES L.
- 4) If you press the D1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES R.

If an abnormal condition is found in the check, examine the IC17 and then its peripheral circuit.

If the TG check is over, press the PIANO switch to proceed to the next check.

6. 《AUX IN check》

If the test moves to the AUX IN check, the HARPSI LED lights up.

The check is made by connecting an oscilloscope with the AUX OUT L/R. Connect the oscillator to the AUX IN L/R on the rear panel.

- 1) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN L on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT L is a SIN wave of 1KHz/1.2Vp-p.

- 2) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN R on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT R is a SIN wave of 1KHz/1.2Vp-p.

If the check is over, press the PIANO switch to proceed to the next check.

7. 《Residual Noise》

If the test moves to the residual noise check, the VIBES LED lights up.

The check is made by connecting a noise meter with the AUX OUT L/R and PHONE.

- 1) Make sure that the residual noise of AUX OUT L is -82dBm or less.
- 2) Make sure that the residual noise of AUX OUT R is -82dBm or less.
- 3) Make sure that the residual noise of PHONES L is -70dBm or less.
- 4) Make sure that the residual noise of PHONES R is -70dBm or less.

If the check is over, press the PIANO switch to proceed to the next check.

8. 《Speaker Check》

If the test moves to the speaker check, the ORGAN LED lights up.

- 1) Press the AO key to make sure that the sound is heard through the middle-pass speaker L.
- 2) Press the BO key to make sure that the sound is heard through the middle-pass speaker R.

If the check is over, press the PIANO switch to move from the test mode to the normal mode.

DIAGNOSTIC TEST FOR C-25

0. «Start-up of Test Mode»

Connect a MIDI cable with the MIDI IN/OUT, power on the system while holding down both the MIDI/TRANPOSE and PIANO switches and the test mode will start.

Once the test mode has started, an LED on the panel goes on and off in the following sequence:

MIDI/TRANPOSE, PIANO, E.PIANO, HARPSI, VIBES, ORGAN

The operating switches on the test mode are as follows:

MIDI/TRANPOSE: Moves from the test mode to the normal mode.

ORGAN: Returns to the last check.

PIANO: Proceeds to the next check.

1. «Internal check»

Once the test mode has started up correctly, the following checks are made automatically:

1) MAIN ROM WRITE/READ CHECK

If an error is found in this check, the PIANO LED goes on and off. Check the SYSTEM ROM (IC5).

2) WAVE ROM READ CHECK

If an error is found in this check, the MIDI/TRANPOSE LED and the LED which relates to each IC go on and off.

IC NO.	IC9	IC11
LED NAME	PIANO	E.PIANO

3) MIDI IN/OUT CHECK

A loop test for the MIDI IN/OUT is made in this check.

If an error is found, the E.PIANO LED goes on and off.

4) TG VOICE CHECK

If a voice error in the IC17 is found, the HARPSI LED goes on and off.

2. «Checks of Panel Switch»

1) PANEL SWITCH ALL OFF CHECK

If the internal check has been completed normally, the test automatically moves to this check.

At this time, remove the MIDI cable connected to the MIDI IN/OUT.

Make sure that the LEDs of all the switches on the panel are unlit.

If any switch is set to ON, an LED for the switch lights up and the test mode stops.

2) PANEL SWITCH ON/OFF CHECK

If the PANEL SWITCH ALL OFF CHECK has been completed normally, the test moves to this check automatically.

In this check step, successively press the switches whose LEDs go on and off to check their operations.

Make sure that the MIDI/TRANPOSE LED goes on and off, then press the MIDI/TRANPOSE SW. And an LED for the next switch will go on and off.

The sequence of the switches to be checked is as follows:

MIDI/TRANPOSE, PIANO, E.PIANO, HARPSI, VIBES, ORGAN, ROOM, HALL

Once the HALL switch check has been completed, the test proceeds to the next check automatically.

3. «Pedal Check»

This check is made in a status that the stand pedal is connected to the product.

If this check is not required, press the PIANO switch to proceed to the next check.

1) PEDAL ALL OFF CHECK

This check is used to make sure that all the pedals are in the OFF status.

If any switch is in the OFF status, an LED lights up and then the test mode stops.

The pedals correspond to the following LEDs:

SOFT/SOSTENUTE=PIANO, DAMPER=E.PIANO

2) PEDAL ON/OFF CHECK

If the PEDAL ALL OFF CHECK is over, the LEDs for the PIANO and E.PIANO go on and off.

When a pedal corresponding to the LED is operated, the LED changes from the 'going on and off' to 'lighting' status. If you set the pedal to OFF, make sure that the LED goes out.

If two pedals are in the ON status simultaneously, a related LED lights up and then the test mode stops.

4. <<KEYBOARD check>>

When the test moves to the KEYBOARD check, the PIANO LED will light up.

Press all the keys with moderate strength one by one from the highest KEY (C8).

The error messages in this check are as follows:

- 1) If the key stress is unfit, the VIBES LED lights up and a warning sound is issued.
- 2) If a key with a lower tone than that of the key to be checked is pressed, the PIANO LED lights up and a warning sound is issued.
- 3) If a key with a higher tone than that of the key to be checked is pressed, the ORGAN LED lights up and a warning sound is issued.

Unless the check is made correctly, the test can never proceed to the next key check. Once the all the keys have been checked, the test moves to the DSP check automatically.

- 1) If you press the A0 key, make sure that a test waveform with the lower 4 bits of IC17 boosted by the DSP is output from the AUX OUT L. This waveform includes many noises because it is generated from being boosted by the DSP.

However, this is not a trouble except if the waveform is distorted extremely.

- 2) If you press the B0 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT L.
- 3) If you press the C1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT R.
- 4) If you press the D1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES L.
- 5) If you press the E1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES R.

If an abnormal condition is found in the check, examine the IC17 and then its peripheral circuit.

If the TG check is over, press the PIANO switch to proceed to the next check.

7. <<AUX IN check>>

If the test moves to the AUX IN check, the VIBES LED lights up.

The check is made by connecting an oscilloscope with the AUX OUT L/R. Connect the oscillator to the AUX IN L/R on the rear panel.

- 1) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN L on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT L is a SIN wave of 1KHz/1.2Vp-p.

- 2) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN R on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT R is a SIN wave of 1KHz/1.2Vp-p.

If the check is over, press the PIANO switch to proceed to the next check.

5. <<DSP check>>

If the test moves to the DSP check, the E.PIANO LED lights up.

- * In this check, because of too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

This check is for the test waveform of DSP (IC22).

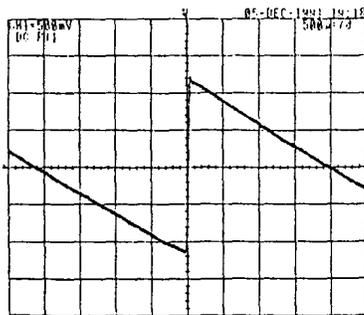
The check is made by connecting an oscilloscope with the AUX OUT L/R.

- 1) If you press the A0 key, a test waveform for the IC22 is output from the AUX OUT L.
- 2) If you press the B0 key, a test waveform for the IC22 is output from the AUX OUT R.
- 3) If you press the C1 key, a test waveform is output from the AUX OUT L/R alternatively.

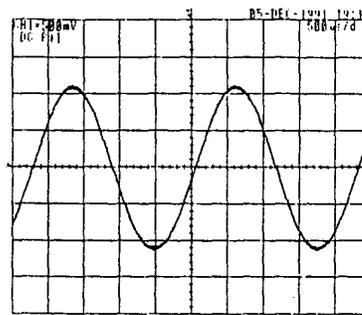
This check is made for the D_RAM of DSP.

If any abnormal condition is found in the check, examine the IC for each related item and then its peripheral circuit.

If the check is over normally, press the PIANO switch to proceed to the next check.



DSP test waveform



TG test waveform

6. <<TG check>>

When the test moves to the TG check, the HARPSI LED lights up.

- * In this check, because of a too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

In addition, if a test waveform from the headphone is checked, set the master volume at 0 once and then make this check.

The check is made by connecting an oscilloscope with the AUX OUT L/R.

8. 《Residual Noise》

If the test moves to the residual noise check, the ORGAN LED lights up.

The check is made by connecting a noise meter with the AUX OUT L/R and PHONE.

- 1) Make sure that the residual noise of AUX OUT L is -82dBm or less.
- 2) Make sure that the residual noise of AUX OUT R is -82dBm or less.
- 3) Make sure that the residual noise of PHONES L is -70dBm or less.
- 4) Make sure that the residual noise of PHONES R is -70dBm or less.

If the check is over, press the PIANO switch to proceed to the next check.

9. 《Speaker Check》

If the test moves to the speaker check, the ROOM LED lights up.

- 1) Press the A0 key to make sure that the sound is heard through the middle-pass speaker L.
- 2) Press the B0 key to make sure that the sound is heard through the middle-pass speaker R.

If the check is over, press the PIANO switch to move from the test mode to the normal mode.

DIAGNOSTIC TEST FOR C-35

0. «Start-up of Test Mode»

Connect a MIDI cable with the MIDI IN/OUT, power on the system while holding down both the MIDI/TRANPOSE and SPLIT switches and the test mode will start.

Once the test mode has started, an LED on the panel goes on and off in the following sequence:

MIDI/TRANPOSE, SPLIT, PIANO, E.PIANO, HARPSI, VIBES, ORGAN, STRINGS, ROOM, HALL, CHORUS, BRIGHT, SOFT, TRACK1(R), TRACK1(G), TRACK2(R), TRACK2(G), START/STOP, RESET, REPEAT, METRONOME

The operating switches on the test mode are as follows:

MIDI/TRANPOSE: Moves from the test mode to the normal mode.

STRINGS: Returns to the last check.

PIANO: Proceeds to the next check.

1. «Internal check»

Once the test mode has started up correctly, the following checks are made automatically:

1) MAIN ROM WRITE/READ CHECK

If an error is found in this check, the PIANO LED goes on and off. Check the SYSTEM ROM (IC5).

2) WAVE ROM READ CHECK

If an error is found in this check, the MIDI/TRANPOSE LED and the LED which relates to each IC go on and off.

IC NO.	IC13	IC15	IC10	IC12
LED NAME	PIANO	E.PIANO	HARPSI	VIBES

3) MIDI IN/OUT CHECK

A loop test for the MIDI IN/OUT is made in this check.

If an error is found, the E.PIANO LED goes on and off.

4) TG VOICE CHECK

If a voice error in the IC17 is found, the HARPSI LED goes on and off.

5) KSP CHECK

If an error is found in this check, the VIBES LED goes on and off.
Examine both the IC1 (M37450M4) and IC2 (UPD70325GJ-10-5BG).

2. «Checks of Panel Switch & TEMPO VOLUME»

1) PANEL SWITCH ALL OFF CHECK

If the internal check has been completed normally, the test automatically moves to this check.

At this time, remove the MIDI cable connected to the MIDI IN/OUT.

Make sure that the LEDs of all the switches on the panel are unlit.

If any switch is set to ON, an LED for the switch lights up and the test mode stops.

2) PANEL SWITCH ON/OFF & TEMPO VOLUME CHECK

If the PANEL SWITCH ALL OFF CHECK has been completed normally, the test moves to this check automatically.

In this check step, successively press the switches whose LEDs go on and off to check their operations.

Make sure that the MIDI/TRANPOSE LED goes on and off, then press the MIDI/TRANPOSE SW. And an LED for the next switch will go on and off.

The sequence of the switches to be checked is as follows:

MIDI/TRANPOSE, SPLIT, PIANO, E.PIANO, HARPSI, VIBES, ORGAN, STRINGS,
ROOM, HALL, CHORUS, BRIGHT, SOFT

If the SOFT switch check is over, a green LED for the TRACK1 goes on and off automatically. Then, the test moves to the TEMPO VOLUME check.

In this check step, you can make the check with a bar-graph which is constructed with the LEDs for the MIDI/TRNSPOSE, SPLIT, E.PIANO, HARPSI, VIBES, ORGAN, and STRINGS.

Make sure that eight LEDs light up with the TEMPO VOLUME set to FAST and that they go out with it set to SLOW.

If the TEMPO VOLUME check is over and then you press the TRACK1 switch, make sure that a green LED for the TRACK2 goes on and off.

If you press the TRACK2 switch, make sure that a red LEDs for the TRACK1 and TRACK2 go on and off.

The sequence of the switches to be checked is as follows:

TRACK1, TRACK2, RECORD, START/STOP, RESET, REPEAT, METRONOME

Once the METRONOME switch check has been completed, the test proceeds to the next check automatically.

3. 《Pedal Check》

This check is made in a status that the stand pedal is connected to the product.

If this check is not required, press the PIANO switch to proceed to the next check.

1) PEDAL ALL OFF CHECK

This check is used to make sure that all the pedals are in the OFF status.

If any switch is in the OFF status, an LED lights up and then the test mode stops.

The pedals correspond to the following LEDs:

SOFT=ROOM, SOSTENUTE=HALL, DAMPER=CHORUS

2) PEDAL ON/OFF CHECK

If the PEDAL ALL OFF CHECK is over, the LEDs for the ROOM, HALL and CHORUS go on and off.

When a pedal corresponding to the LED is operated, the LED changes from the 'going on and off' to 'lighting' status. If you set the pedal to OFF, make sure that the LED goes out.

If two pedals or more are in the ON status simultaneously, a related LED lights up and then the test mode stops.

4. <<KEYBOARD check>>

When the test moves to the KEYBOARD check, the PIANO LED will light up.

Press all the keys with moderate strength one by one from the highest KEY (C8).

The error messages in this check are as follows:

- 1) If the key stress is unfit, the VIBES LED lights up and a warning sound is issued.
- 2) If a key with a lower tone than that of the key to be checked is pressed, the PIANO LED lights up and a warning sound is issued.
- 3) If a key with a higher tone than that of the key to be checked is pressed, the STRINGS LED lights up and a warning sound is issued.

Unless the check is made correctly, the test can never proceed to the next key check. Once the all the keys have been checked, the test moves to the DSP check automatically.

5. <<DSP check>>

If the test moves to the DSP check, the E.PIANO LED lights up.

- * In this check, because of too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

This check is for the test waveform of DSP (IC20, 22).

The check is made by connecting an oscilloscope with the AUX OUT L/R.

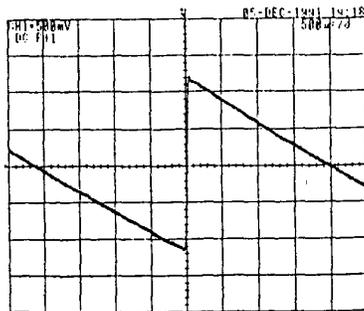
- 1) If you press the A0 key, a test waveform for the IC22 is output from the AUX OUT L.
- 2) If you press the B0 key, a test waveform for the IC22 is output from the AUX OUT R.
- 3) If you press the C1 key, a test waveform is output from the AUX OUT L/R alternatively.

This check is made for the D_RAM of DSP.

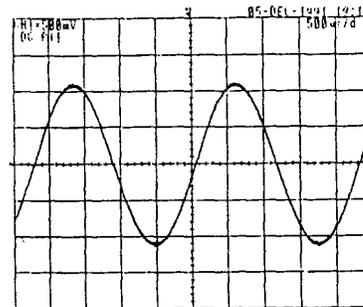
- 4) If you press the D1 key, a test waveform for the IC20 is output from the AUX OUT L. (S00)
- 5) If you press the E1 key, a test waveform for the IC20 is output from the AUX OUT R. (S00)
- 6) If you press the F1 key, a test waveform for the IC20 is output from the AUX OUT L. (S01)
- 7) If you press the G1 key, a test waveform for the IC20 is output from the AUX OUT R. (S01)

If any abnormal condition is found in the check, examine the IC for each related item and then its peripheral circuit.

If the check is over normally, press the PIANO switch to proceed to the next check.



DSP test waveform



TG test waveform

6. <<TG check>>

When the test moves to the TG check, the HARPSI LED lights up.

- * In this check, because of a too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

In addition, if a test waveform from the headphone is checked, set the master volume at 0 once and then make this check.

The check is made by connecting an oscilloscope with the AUX OUT L/R.

- 1) If you press the A0 key, make sure that a test waveform with the lower 4 bits of IC17 boosted by the DSP is output from the AUX OUT L. This waveform includes many noises because it is generated from being boosted by the DSP. However, this is not a trouble except that the waveform is distorted extremely.
- 2) If you press the B0 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT L.
- 3) If you press the C1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT R.
- 4) If you press the D1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES L.
- 5) If you press the E1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES R.

If an abnormal condition is found in the check, examine the IC17 and then its peripheral circuit.

If the TG check is over, press the PIANO switch to proceed to the next check.

7. «AUX IN check»

If the test moves to the AUX IN check, the VIBES LED lights up.

The check is made by connecting an oscilloscope with the AUX OUT L/R. Connect the oscillator to the AUX IN L/R on the rear panel.

- 1) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN L on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT L is a SIN wave of 1KHz/1.2Vp-p.

- 2) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN R on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT R is a SIN wave of 1KHz/1.2Vp-p.

If the check is over, press the PIANO switch to proceed to the next check.

8. «Residual Noise»

If the test moves to the residual noise check, the ORGAN LED lights up.

The check is made by connecting a noise meter with the AUX OUT L/R and PHONE.

- 1) Make sure that the residual noise of AUX OUT L is -82dBm or less.
- 2) Make sure that the residual noise of AUX OUT R is -82dBm or less.
- 3) Make sure that the residual noise of PHONES L is -70dBm or less.
- 4) Make sure that the residual noise of PHONES R is -70dBm or less.

If the check is over, press the PIANO switch to proceed to the next check.

9. «Speaker Check»

If the test moves to the speaker check, the STRINGS LED lights up.

- 1) Press the A0 key to make sure that the sound is heard through the middle-pass speaker L.
- 2) Press the B0 key to make sure that the sound is heard through the middle-pass speaker R.

If the check is over, press the PIANO switch to move from the test mode to the normal mode.

DIAGNOSTIC TEST FOR C-45

0. «Start-up of Test Mode»

Connect a MIDI cable with the MIDI IN/OUT, power on the system while holding down both the MIDI/TRANPOSE and SPLIT switches and the test mode will start.

Once the test mode has started, an LED on the panel goes on and off in the following sequence:

SPLIT, MIDI/TRANPOSE, PIANO I, ROOM, PIANO II, STAGE, E.PIANO I, HALL, E.PIANO II, ECHO, HARPSI, TREMOLO, VIBES, CHORUS, B/G/D, BRIGHT, ORGAN I, SOFT, ORGAN II, STRINGS, METRONOME, TRACK1(R), TRACK1(G), START/STOP, TRACK2(R), TRACK2(G), RESET, REPEAT

The operating switches on the test mode are as follows:

MIDI/TRANPOSE: Moves from the test mode to the normal mode.

STRINGS: Returns to the last check.

PIANO I: Proceeds to the next check.

1. «Internal check»

Once the test mode has started up correctly, the following checks are made automatically:

1) MAIN ROM WRITE/READ CHECK

If an error is found in this check, the PIANO I LED goes on and off. Check the SYSTEM ROM (IC5).

2) WAVE ROM READ CHECK

If an error is found in this check, the MIDI/TRANPOSE LED and the LED which relates to each IC go on and off.

IC NO.	IC13	IC15	IC10	IC12	IC7	IC9
LED NAME	PIANO I	PIANO II	E.PIANO I	E.PIANO II	HARPSI	VIBES

3) MIDI IN/OUT CHECK

A loop test for the MIDI IN/OUT is made in this check.

If an error is found, the PIANOII LED goes on and off.

4) TG VOICE CHECK

If a voice error in the IC17 is found, the E.PIANOI LED goes on and off.

5) KSP CHECK

If an error is found in this check, the HARPSI LED goes on and off.
Examine both the IC1 (M37450M4) and IC2 (UPD70325GJ-10-5BG).

2. «Checks of Panel Switch & TEMPO VOLUME»

1) PANEL SWITCH ALL OFF CHECK

If the internal check has been completed normally, the test automatically moves to this check.

At this time, remove the MIDI cable connected to the MIDI IN/OUT.

Make sure that the LEDs of all the switches on the panel are unlit.

If any switch is set to ON, an LED for the switch lights up and the test mode stops.

2) PANEL SWITCH ON/OFF & TEMPO VOLUME CHECK

If the PANEL SWITCH ALL OFF CHECK has been completed normally, the test moves to this check automatically.

In this check step, successively press the switches whose LEDs go on and off to check their operations.

Make sure that the MIDI/TRANPOSE LED goes on and off, then press the MIDI/TRANPOSE SW. And an LED for the next switch will go on and off.

The sequence of the switches to be checked is as follows:

MIDI/TRANPOSE, ROOM, STAGE, HALL, ECHO, TREMOLO, CHORUS, BRIGHT,
SOFT, SPLIT, PIANOI, PIANOII, E.PIANOI, E.PIANOII, HARPSI, VIBES,
B/G/D, ORGANI, ORGANII, STRINGS

If the STRINGS switch check is over, an LED for the METRONOME goes on and off automatically. Then, the test moves to the TEMPO VOLUME check.

In this check step, you can make the check with a bar-graph which is constructed with the LEDs for the ROOM, STAGE, HALL, ECHO, TREMOLO, CHORUS, BRIGHT and SOFT.

Make sure that eight LEDs light up with the TEMPO VOLUME set to FAST and that they go out with it set to SLOW.

If the TEMPO VOLUME check is over and then you press the METRONOME switch, make sure that a green LED for the TRACK1 goes on and off.

If you press the TRACK1 switch, make sure that a green LED for the TRACK2 goes on and off.

The sequence of the switches to be checked is as follows:

METRONOME, TRACK1, TRACK2, REPEAT, RECORD, START/STOP, RESET

Once the RESET switch check has been completed, the test proceeds to the next check automatically.

3. «Pedal Check»

This check is made in a status that the stand pedal is connected to the product.

If this check is not required, press the PIANO1 switch to proceed to the next check.

1) PEDAL ALL OFF CHECK

This check is used to make sure that all the pedals are in the OFF status.

If any switch is in the OFF status, an LED lights up and then the test mode stops.

The pedals correspond to the following LEDs:

SOFT=ROOM, SOSTENUTE=STAGE, DAMPER=HALL

2) PEDAL ON/OFF CHECK

If the PEDAL ALL OFF CHECK is over, the LEDs for the ROOM, STAGE and HALL go on and off.

When a pedal corresponding to the LED is operated, the LED changes from the 'going on and off' to 'lighting' status. If you set the pedal to OFF, make sure that the LED goes out.

If two pedals or more are in the ON status simultaneously, a related LED lights up and then the test mode stops.

4. <<KEYBOARD check>>

When the test moves to the KEYBOARD check, the ROOM LED will light up.

Press all the keys with moderate strength one by one from the highest KEY (C8).

The error messages in this check are as follows:

- 1) If the key stress is unfit, the VIBES LED lights up and a warning sound is issued.
- 2) If a key with a lower tone than that of the key to be checked is pressed, the PIANO LED lights up and a warning sound is issued.
- 3) If a key with a higher tone than that of the key to be checked is pressed, the STRINGS LED lights up and a warning sound is issued.

Unless the check is made correctly, the test can never proceed to the next key check. Once the all the keys have been checked, the test moves to the DSP check automatically.

5. <<DSP check>>

If the test moves to the DSP check, the STAGE LED lights up.

- * In this check, because of too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

This check is for the test waveform of DSP (IC20, 21, 22).

The check is made by connecting an oscilloscope with the AUX OUT L/R.

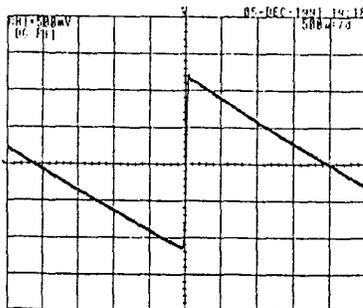
- 1) If you press the A0 key, a test waveform for the IC22 is output from the AUX OUT L.
- 2) If you press the B0 key, a test waveform for the IC22 is output from the AUX OUT R.
- 3) If you press the C1 key, a test waveform is output from the AUX OUT L/R alternatively.

This check is made for the D_RAM of DSP.

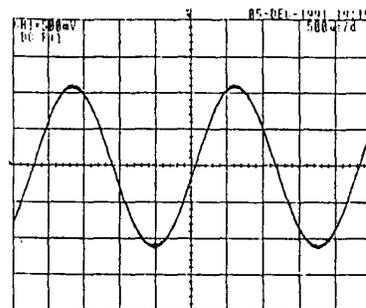
- 4) If you press the D1 key, a test waveform for the IC20 is output from the AUX OUT L. (S00)
- 5) If you press the E1 key, a test waveform for the IC20 is output from the AUX OUT R. (S00)
- 6) If you press the F1 key, a test waveform for the IC20 is output from the AUX OUT L. (S01)
- 7) If you press the G1 key, a test waveform for the IC20 is output from the AUX OUT R. (S01)

If any abnormal condition is found in the check, examine the IC for each related item and then its peripheral circuit.

If the check is over normally, press the PIANO1 switch to proceed to the next check.



DSP test waveform



TG test waveform

6. <<TG check>>

When the test moves to the TG check, the HALL LED lights up.

- * In this check, because of a too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

In addition, if a test waveform from the headphone is checked, set the master volume at 0 once and then make this check.

The check is made by connecting an oscilloscope with the AUX OUT L/R.

- 1) If you press the A0 key, make sure that a test waveform with the lower 4 bits of IC17 boosted by the DSP is output from the AUX OUT L. This waveform includes many noises because it is generated from being boosted by the DSP. However, this is not a trouble except that the waveform is distorted extremely.
- 2) If you press the B0 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT L.
- 3) If you press the C1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT R.
- 4) If you press the D1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES L.
- 5) If you press the E1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES R.

If an abnormal condition is found in the check, examine the IC17 and then its peripheral circuit.

If the TG check is over, press the PIANO1 switch to proceed to the next check.

7. «AUX IN check»

If the test moves to the AUX IN check, the ECHO LED lights up.

The check is made by connecting an oscilloscope with the AUX OUT L/R. Connect the oscillator to the AUX IN L/R on the rear panel.

- 1) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN L on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT L is a SIN wave of 1KHz/1.2Vp-p.

- 2) Input a SIN wave of 1KHz/0.6Vp-p to the AUX IN R on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT R is a SIN wave of 1KHz/1.2Vp-p.

If the check is over, press the PIANO1 switch to proceed to the next check.

8. «Residual Noise»

If the test moves to the residual noise check, the TREMOLO LED lights up.

The check is made by connecting a noise meter with the AUX OUT L/R and PHONE.

- 1) Make sure that the residual noise of AUX OUT L is -82dBm or less.
- 2) Make sure that the residual noise of AUX OUT R is -82dBm or less.
- 3) Make sure that the residual noise of PHONES L is -70dBm or less.
- 4) Make sure that the residual noise of PHONES R is -70dBm or less.

If the check is over, press the PIANO I switch to proceed to the next check.

9. «Speaker Check»

If the test moves to the speaker check, the CHORUS LED lights up.

- 1) Press the A0 key to make sure that the sound is heard through the middle-pass speaker L.
- 2) Press the B0 key to make sure that the sound is heard through the middle-pass speaker R.

If the check is over, press the PIANO I switch to move from the test mode to the normal mode.

DIAGNOSTIC TEST FOR C-55

0. «Start-up of Test Mode»

Connect a MIDI cable with the MIDI IN/OUT, power on the system while holding down both the MIDI/TRANPOSE and SPLIT switches and the test mode will start.

Once the test mode has started, an LED on the panel goes on and off in the following sequence:

SPLIT, MIDI/TRANPOSE, PIANO I, ROOM, PIANO II, STAGE, E.PIANO I, HALL, E.PIANO II, ECHO, HARPSI, TREMOLO, VIBES, CHORUS, B/G/D, BRIGHT, ORGAN I, SOFT, ORGAN II, STRINGS, METRONOME, TRACK1(R), TRACK1(G), START/STOP, TRACK2(R), TRACK2(G), RESET, REPEAT

The operating switches on the test mode are as follows:

MIDI/TRANPOSE: Moves from the test mode to the normal mode.

STRINGS: Returns to the last check.

PIANO I: Proceeds to the next check.

1. «Internal check»

Once the test mode has started up correctly, the following checks are made automatically:

1) MAIN ROM WRITE/READ CHECK

If an error is found in this check, the PIANO I LED goes on and off. Check the SYSTEM ROM (IC5).

2) WAVE ROM READ CHECK

If an error is found in this check, the MIDI/TRANPOSE LED and the LED which relates to each IC go on and off.

IC NO.	IC13	IC15	IC10	IC12	IC7	IC9
LED NAME	PIANO I	PIANO II	E.PIANO I	E.PIANO II	HARPSI	VIBES

3) MIDI IN/OUT CHECK

A loop test for the MIDI IN/OUT is made in this check.

If an error is found, the PIANOII LED goes on and off.

4) TG VOICE CHECK

If a voice error in the IC17 is found, the E.PIANOI LED goes on and off.

If a voice error in the IC18 is found, the E.PIANOII LED goes on and off.

5) KSP CHECK

If an error is found in this check, the HARPSI LED goes on and off.
Examine both the IC1 (M37450M4) and IC2 (UPD70325GJ-10-5BG).

2. «Checks of Panel Switch & TEMPO VOLUME»

1) PANEL SWITCH ALL OFF CHECK

If the internal check has been completed normally, the test automatically moves to this check.

At this time, remove the MIDI cable connected to the MIDI IN/OUT.

Make sure that the LEDs of all the switches on the panel are unlit.

If any switch is set to ON, an LED for the switch lights up and the test mode stops.

2) PANEL SWITCH ON/OFF & TEMPO VOLUME CHECK

If the PANEL SWITCH ALL OFF CHECK has been completed normally, the test moves to this check automatically.

In this check step, successively press the switches whose LEDs go on and off to check their operations.

Make sure that the MIDI/TRANPOSE LED goes on and off, then press the MIDI/TRANPOSE SW. And an LED for the next switch will go on and off.

The sequence of the switches to be checked is as follows:

MIDI/TRANSPPOSE, ROOM, STAGE, HALL, ECHO, TREMOLO, CHORUS, BRIGHT, SOFT, SPLIT, PIANO I, PIANO II, E.PIANO I, E.PIANO II, HARPS I, VIBES, B/G/D, ORGAN I, ORGAN II, STRINGS

If the STRINGS switch check is over, an LED for the METRONOME goes on and off automatically. Then, the test moves to the TEMPO VOLUME check.

In this check step, you can make the check with a bar-graph which is constructed with the LEDs for the ROOM, STAGE, HALL, ECHO, TREMOLO, CHORUS, BRIGHT and SOFT.

Make sure that eight LEDs light up with the TEMPO VOLUME set to FAST and that they go out with it set to SLOW.

If the TEMPO VOLUME check is over and then you press the METRONOME switch, make sure that a green LED for the TRACK1 goes on and off.

If you press the TRACK1 switch, make sure that a green LED for the TRACK2 goes on and off.

The sequence of the switches to be checked is as follows:

METRONOME, TRACK1, TRACK2, REPEAT, RECORD, START/STOP, RESET

Once the RESET switch check has been completed, the test proceeds to the next check automatically.

3. «Pedal Check»

This check is made in a status that the stand pedal is connected to the product.

If this check is not required, press the PIANO I switch to proceed to the next check.

1) PEDAL ALL OFF CHECK

This check is used to make sure that all the pedals are in the OFF status.

If any switch is in the OFF status, an LED lights up and then the test mode stops.

The pedals correspond to the following LEDs:

SOFT=ROOM, SOSTENUTE=STAGE, DAMPER=HALL

2) PEDAL ON/OFF CHECK

If the PEDAL ALL OFF CHECK is over, the LEDs for the ROOM, STAGE and HALL go on and off.

When a pedal corresponding to the LED is operated, the LED changes from the 'going on and off' to 'lighting' status. If you set the pedal to OFF, make sure that the LED goes out.

If two pedals or more are in the ON status simultaneously, a related LED lights up and then the test mode stops.

4. <<KEYBOARD check>>

When the test moves to the KEYBOARD check, the ROOM LED will light up.

Press all the keys with moderate strength one by one from the highest KEY (C8).

The error messages in this check are as follows:

- 1) If the key stress is unfit, the VIBES LED lights up and a warning sound is issued.
- 2) If a key with a lower tone than that of the key to be checked is pressed, the PIANO LED lights up and a warning sound is issued.
- 3) If a key with a higher tone than that of the key to be checked is pressed, the STRINGS LED lights up and a warning sound is issued.

Unless the check is made correctly, the test can never proceed to the next key check. Once all the keys have been checked, the test moves to the DSP check automatically.

5. <<DSP check>>

If the test moves to the DSP check, the STAGE LED lights up.

- * In this check, because of too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

This check is for the test waveform of DSP (IC20, 21, 22).

The check is made by connecting an oscilloscope with the AUX OUT L/R.

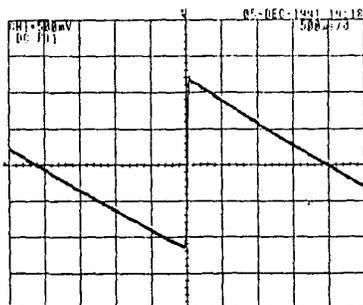
- 1) If you press the A0 key, a test waveform for the IC22 is output from the AUX OUT L.
- 2) If you press the B0 key, a test waveform for the IC22 is output from the AUX OUT R.
- 3) If you press the C1 key, a test waveform is output from the AUX OUT L/R alternatively.

This check is made for the D_RAM of DSP.

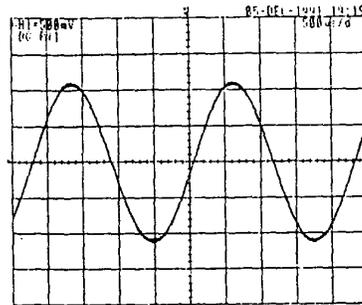
- 4) If you press the D1 key, a test waveform for the IC21 is output from the AUX OUT L. (S00)
- 5) If you press the E1 key, a test waveform for the IC21 is output from the AUX OUT R. (S00)
- 6) If you press the F1 key, a test waveform for the IC21 is output from the AUX OUT L. (S01)
- 7) If you press the G1 key, a test waveform for the IC21 is output from the AUX OUT R. (S01)
- 8) If you press the A1 key, a test waveform for the IC20 is output from the AUX OUT L. (S00)
- 9) If you press the B1 key, a test waveform for the IC20 is output from the AUX OUT R. (S00)

If any abnormal condition is found in the check, examine the IC for each related item and then its peripheral circuit.

If the check is over normally, press the PIANO1 switch to proceed to the next check.



DSP test waveform



TG test waveform

6. <<TG check>>

When the test moves to the TG check, the HALL LED lights up.

- * In this check, because of a too large test waveform output, be sure to start the check after inserting a plug for muting into the headphone jack to prevent any sound from being produced through the speakers.

In addition, if a test waveform from the headphone is checked, set the master volume at 0 once and then make this check.

The check is made by connecting an oscilloscope with the AUX OUT L/R.

- 1) If you press the A0 key, make sure that a test waveform with the lower 4 bits of IC17 boosted by the DSP is output from the AUX OUT L. This waveform includes many noises because it is generated from being boosted by the DSP.

However, this is not a trouble except that the waveform is distorted extremely.

- 2) If you press the B0 key, make sure that a test waveform with the lower 4 bits of IC18 boosted by the DSP is output from the AUX OUT L. This waveform includes many noises because it is generated from being boosted by the DSP.

However, it is not a trouble except if the waveform is distorted extremely.

- 3) If you press the C1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT L.
- 4) If you press the D1 key, make sure that a test waveform for the IC18 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT R.
- 5) If you press the E1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT L and that for the IC18 (880Hz SIN wave/2.3Vp-p) is output from the AUX OUT R.
- 6) If you press the F1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/2.3Vp-p) is output from the AUX OUT L and that for the IC18 (880Hz SIN wave/2.3Vp-p) is output from the AUX OUT R.
- 7) If you press the G1 key, make sure that a test waveform for the IC17 (440Hz SIN wave/10.8Vp-p) is output from the PHONES L.
- 8) If you press the A1 key, make sure that a test waveform for the IC18 (440Hz SIN wave/10.8Vp-p) is output from the PHONES R.

If an abnormal condition is found in the check, examine the IC17 and IC18 and then their peripheral circuits.

If the TG check is over, press the PIANO switch to proceed to the next check.

7. <<AUX IN check>>

If the test moves to the AUX IN check, the ECHO LED lights up.

The check is made by connecting an oscilloscope with the AUX OUT L/R. Connect the oscillator to the AUX IN L/R on the rear panel.

1) Input a SIN wave of 1KHz/0.6p-p to the AUX IN L on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT L is a SIN wave of 1KHz/1.2V.

2) Input a SIN wave of 1KHz/0.6p-p to the AUX IN R on the rear panel.

At this time, make sure that the waveform which is output to the AUX OUT R is a SIN wave of 1KHz/1.2Vp-p.

If the check is over, press the PIANO switch to proceed to the next check.

8. <<Residual Noise>>

If the test moves to the residual noise check, the TREMOLO LED lights up.

The check is made by connecting a noise meter with the AUX OUT L/R and PHONE.

1) Make sure that the residual noise of AUX OUT L is -82dBm or less.

2) Make sure that the residual noise of AUX OUT R is -82dBm or less.

3) Make sure that the residual noise of PHONES L is -70dBm or less.

4) Make sure that the residual noise of PHONES R is -70dBm or less.

If the check is over, press the PIANO switch to proceed to the next check.

9. «Speaker Check»

If the test moves to the speaker check, the CHORUS LED lights up.

- 1) Press the A0 key to make sure that the sound is heard through the middle-pass speaker L.
- 2) Press the B0 key to make sure that the sound is heard through the middle-pass speaker R.
- 3) Press the C1 key to make sure that the sound is heard through the high-pass speaker L.
- 4) Press the D1 key to make sure that the sound is heard through the high-pass speaker R.
- 5) Press the E1 key to make sure that a sound is heard through the low-pass speaker.

If the check is over, press the PIANO1 switch to move from the test mode to the normal mode.