

KH970
SERVICE MANUAL

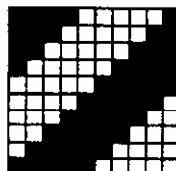
KH970 TEST PATTERNS

THE KH970 HAS FOUR BUILT-IN NEEDLE SELECTION TEST PATTERNS. 881,882,883 & 884 (see diagram below).

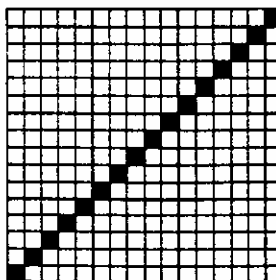
Pattern 1 : 1 x 1 alternative needle selection



Pattern 2 : 5 x 5 alternative needle selection



Pattern 3 : 1/16 needle selection



Pattern 4 : 1/5 to 5/5 needle selection



PROCEDURE FOR KNITTING TEST PATTERNS.

1. FROM THE MAIN MENU, USING DIRECTION KEYS, SELECT PATTERN POSITIONING PROGRAM.  PRESS STEP.

2. SELECT STITCH PATTERN PROGRAMMING & POSITIONING.  PRESS STEP.

3. SELECT KNITTING CARRIAGE. PRESS STEP.

4. SELECT ALLOVER PATTERNING. PRESS STEP

5. ENTER PATTERN NUMBER. 881,882,883 OR 884. PRESS STEP.

6. CONFIRM CENTER POSITION OFFERED BY PRESSING STEP.

7. SCREEN APPEARS SHOWING PATTERN CHOSEN. PRESS STEP TO RETURN TO MAIN MENU.

8. SELECT KNITTING SCREEN.  PRESS STEP.

9. BRING FORWARD 40 NEEDLES EITHER SIDE OF ZERO, TAKE CARRIAGE OUTSIDE THE LEFT OR RIGHT SENSOR & SELECT KCIL. MOVE CARRIAGE OVER NEEDLES TO CHECK FOR CORRECT NEEDLE SELECTION.

CB-1 TEST PROGRAM

The CB-1 has a built in TEST PROGRAM in order to check the machine as follows;

- TEST C: Checking the SRAM on the CB-1
- TEST 0: Checking the ROM on the CB-1
- TEST 1: Checking the Keys on the CB-1
- TEST 2: Checking the Display (LCD) on the CB-1
- TEST 3: Checking the Cartridge
- TEST 4: Checking the Floppy Disc Drive
- TEST 5: Checking the Carriage type
- TEST 6: Checking the Needle Number Indication

How to start the TEST PROGRAM.

- 1) Turn the power switch off.
- 2) Connect the CB-1 to the KM.
- 3) Turn the power switch on while pushing "STEP" key and "DOWN" key.
- 4) After the buzzer sounds, "(((TEST)))" will be indicated on the display.

(((TEST)))	
CB VER. 01.00	- Version of CB-1
KH VER. 1.1	- Version of KM body
KH TYPE. 01	- Type of KM (KH-970)

When the CB-1 is not connected to the KM, the display will be as follows;

(((TEST)))
CB VER. 01.00
KH VER. 0.0
KH TYPE. 00

When the "☐" mark appears on the LCD. There is inferior correspondence between the CB-1 and the KM body. See checking the MD cable for the 970. If there is no problem with the cable, replace the Main PC board assembly and repeat test program. If the same problem occurs, replace the Control PC board.

Select the test item.

After checking the Version and Type of KM, push the "STEP" key. The test screen will appear as follows.

0 ROM	4 FB
1 KEY	5 KLG
2 LCD	6 POS
3 CART	C RAM

TEST PROCEDURE.

TEST 1 (C RAM): Checking the SRAM on the CB-1.

This is to check the SRAM on the Control PC board assembly.
Push the "C" key. The screen will show.

/ SRAM /
ON BOARD
CHECK

If there is no problem, the CB-1 will beep & return to the test screen.

After checking TEST 1, all data in the CB-1 is cleared. (the data of pattern creation, garment creation, position program, language etc.) Turn power off & on. Then select language.

*When there is a problem, the screen will show.

```
/// ERROR ///  
ON BOARD  
ADDRESS #####
```

Replace the Control PC board.

TEST 2 (0 ROM): Checking the ROM on the CB-1.

This is to check the ROM on the Control PC board assembly.

Push the "0" key. The screen will show.

```
/ PROM TEST /  
BANK # CHECK
```

The Bank will count up to 7. If there is no problem the CB-1 will return to the test screen.

*When there is a problem, the screen will show.

```
/ PROM TEST /  
BANK % CHECK  
CHECKSUM #####
```

Replace the PROM control assembly or the Control PC board.

TEST 3 (1 KEY): Checking the keys on the CB-1.

This is to check the keys on the Control PC board assembly.

Push the "1" key. The screen will show

```
/ KEY TEST /  
1 KEY
```

According to what appears on the screen, push the corresponding key. When the key is pushed and there is no problem with the circuit, the next key to push will appear.

After pushing the "RIGHT" key, the CB-1 will return to the test screen.

*When there is a problem, the screen will show

```
/ KEY TEST /  
%%% KEY  
KEY ###
```

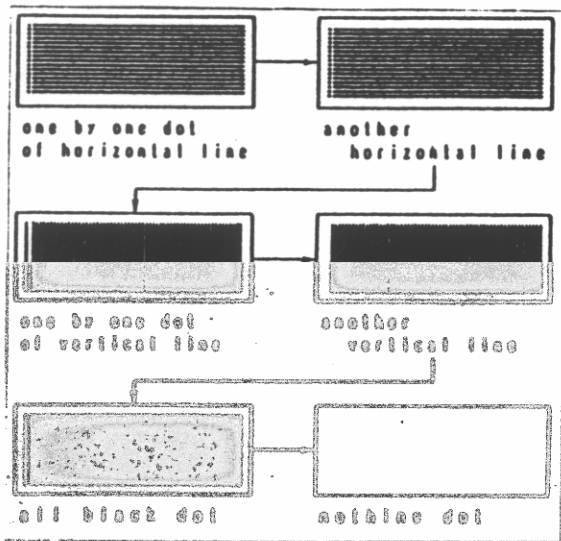
Replace the Control PC board.

Note: The keys have to be pushed in the order the screen shows. If not the test will not be performed correctly.

TEST 4 (2 LCD): Checking the LCD on the CB-1.

This is to check the line on the LCD.

Every time a key is pushed the screen will change as follows.



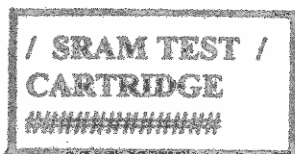
*When there is a problem, check the connector of the LCD unit assembly. If the connector is ok, replace the LCD unit assembly.

TEST 5 (3 CART): Checking the Cartridge.

This is to check the connection of the Cartridge with the CB-1.

Note: Do not insert the cartridge with the power on. The data in the Cartridge will be damaged.

Push the "3" key. The screen will show.



"#####" Appears as follows

- | | |
|------------------|---|
| "NO CARTRIDGE" | No cartridge in the slot. |
| "PPD110 - KH900" | Set for mode KH900 by PPD120. |
| "PPD110 - KH940" | Set for mode KH940 or KH965i by PPD110 or PPD120. |
| "MOYOU" | Stitch Pattern Cartridge EXTRA'S. |
| "NOT FORMAT" | Cartridge not formatted. |
| "OTHER" | Other Cartridges. |

*When there is a problem, ie. correct information is not shown. Replace the control PC board assembly.

TEST 6 (4 FB): Checking the Floppy Disc Drive.

*Note: Before checking, connect CB-1 to FB-100 with the power off.

Push the "4" key. According to the floppy disc, the screen will show.

TEST PROCEDURE.

- (1) On the K carriage, set the row counter tripper to working position & change knob to "KC(1)".
- (2) Set all needles to A position.
- (3) Move the K carriage from outside the left or right sensor and passed the row counter trigger.
- (4) Repeat the process from the opposite direction.
- (5) The same test can be done with the Lace & G-carriage.

If there is no problem, the screen will show

((KLG TEST))
K 0000 0 0000
L 0000 0 0000
G 0000 0 0000

*When there is a problem.

If the buzzer does not sound when the carriage passes the L & R sensors or the row counter. Adjust the mounting position (left & right, front & rear) of the main PC board assembly or left position PC board.

	<u>Left position sensor</u>	<u>Right position sensor</u>
1000	Leans toward the inside	Leans toward the inside
0100	Leans toward the outside	Leans toward the outside
0010	Leans toward the front side	Leans toward the front side
0001	Leans toward the rear side	Leans toward the rear side

If the adjustments do not remedy the problem, change the relevant part ie. Main PC board or Left position sensor.

TEST 8 (6 POS): Needle Number Indication.

This is to check the needle number indication of the carriage.
Push the "6" key. The screen will Show.

((POS TEST))
L100

When the K carriage passes from outside of the right or left position sensor, the carriage position will appear on the screen.

TEST PROCEDURE.

- (1) On the K carriage, set the change knob to "KC (1)".
- (2) Set all needles to A position.
- (3) Pass the K carriage from outside of the right or left position sensor, operate a few times at high speed between the right and left position sensors.
- (4) Set the K carriage to the centre of the needle bed. If the screen shows between L3 & R3 there is no problem.
- (5) Push the "STEP" key to return to test screen.

*When there is a problem.

Check TEST 7 (5 KLG). If there is no problem on TEST 7, replace the Main PC board.

CHECKING THE SOLENOID UNIT.

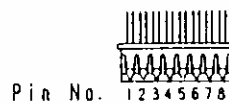
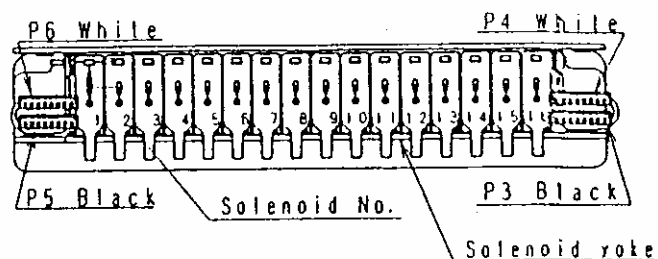
1. Turn power switch off and disconnect the connectors P3,P4,P5 & P6 on the main PC board.
2. Measure the resistance of each solenoid. Refer to list & diagram below.
3. The resistance should be within 137~192 ohms. If the resistance is incorrect, replace the solenoid unit assembly.
4. The solenoid numbers are 1 to 16 from left to right.

P6, WHITE. Orange & White = Solenoid 1
Red & White = Solenoid 2
Blue & White = Solenoid 3
Yellow & White = Solenoid 4

P5, BLACK. Orange & Black = Solenoid 5
Red & Black = Solenoid 6
Blue & Black = Solenoid 7
Yellow & Black = Solenoid 8

P3, BLACK. Orange & Black = Solenoid 9
Red & Black = Solenoid 10
Blue & Black = Solenoid 11
Yellow & Black = Solenoid 12

P4, WHITE Orange & White = Solenoid 13
Red & White = Solenoid 14
Blue & White = Solenoid 15
Yellow & White = Solenoid 16



CHECKING THE FUSE.

THE CB-1 HAS A FUSE SOLDERED ONTO THE MAIN PC BOARD. IF AFTER CHECKING THE AC ADAPTER THERE IS NO POWER TO THE CB-1, THE FUSE MAY HAVE BLOWN ON THE MAIN PC BOARD.

1. REMOVE CB-1 LOWER CASE

2. MEASURE THE RESISTANCE OF TERMINAL JW23 (see diagram below), IF THE RESISTANCE IS 0 ohms THE FUSE IS OK. IF THE RESISTANCE IS ∞ ohms, THE FUSE HAS BLOWN.

3. DE-SOLDER THE BLOWN FUSE AND REPLACE WITH NEW ONE (2amp BUS FUSE).

4. IF THE FUSE IS OK, AND THERE IS STILL NO POWER. REPLACE THE MAIN PC BOARD.

AFTER REPLACING THE MAIN PC BOARD, RUN THROUGH THE TEST PROGRAM AGAIN.

