



Service Manual



SAFETY CONSIDERATIONS

These safety measures must be followed to ensure the safe servicing of this machine:

Servicing is to be done by qualified service personnel only

These service instructions are for use by qualified service personnel who fully understand the potential hazards involved. To avoid any possible danger, do not perform any service procedures unless qualified to do so.

Perform only the specified service procedures

To ensure personal safety, do not perform any service procedures which are not specifically mentioned in this service manual.

Properly ground machinery

This machine is a Class 1 and requires protective grounding for safe operation. To avoid any potential electrical shock, securely connect the protective ground wire to the main grounding provision.

Avoid servicing while power is being supplied

Machine servicing while power is being supplied and covers or enclosures are opened or removed should be avoided as much as possible. When servicing cannot be performed by any other means, service personnel should take precautions against the danger of electrical shock or other potential hazard involved.

Take precaution against residual electrical charge hazard

Capacitors inside the machine may still hold an electrical charge even after power is disconnected.

Use same type fuses and components for replacement parts

To avoid the potential hazards involved, do not replace fuses or components with types other than those specified in the parts list for this machine.

WARNING! Power supply to the machine is disconnected only when the electrical plug is removed from the electrical outlet. For protection against electrical shock, remove plug before performing any servicing to the machine.

The following symbols are used to alert service personnel of potential danger or special circumstances related to the safe and proper servicing of this machine:

| A WARNING! | Precautions which must be followed to prevent the possibility of death or serious injury. |
|------------|---|
| MCAUTION! | Precautions which must be followed to prevent the possibility of light or moderately severe injury to personnel or damage to the equipment. |
| NOTE: | Important information for the maintenance of this machine. |

You can help improve this manual by calling attention to errors and recommending improvements. Please express your comments to the nearest Ishida Company representative.

Thank you!

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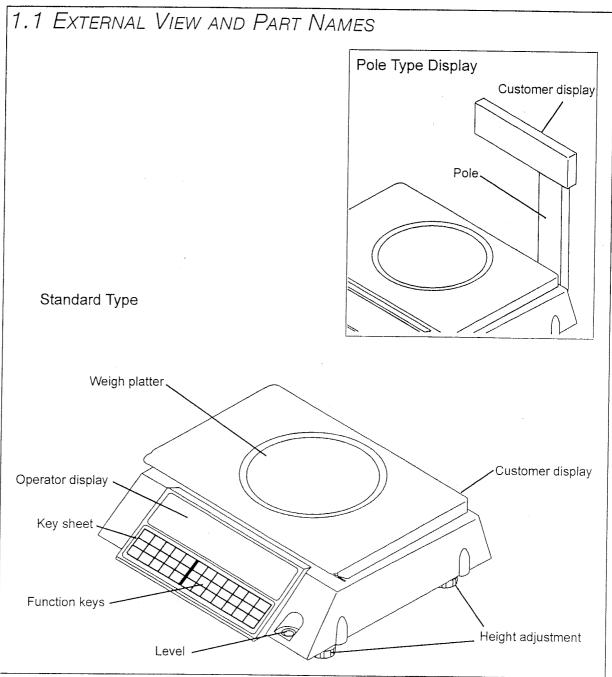
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Chapter 1 Overview

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1.2 Special features

This scale features a compact design and a display allowing customers to view product weighing and total price. For locations which cover the customer display, models with displays mounted on poles are also available.

Machine improvements make maintenance simple and easy. Because the software loaded in the NOVA-II contains code settings for each country, changing scale settings is as easy as entering a number.

1.3 MODEL TYPES

The different models of the NOVA-II series and their respective specifications are listed below. Specifications are set according to the requirement of the country in which they are used.

(1) SPECIFICATIONS BY TYPE

Kilogram specifications for regular and pole type models.

| Model | Maximum weight | Minimum graduation | Load cell (capacity s | setting) | Output setting | Standards |
|---------|-------------------|-----------------------|--------------------------|----------|-------------------|-----------|
| | 6 kg | 0.002 kg | C2G1-10K | 10 kg | 2mV/V | OIML |
| NOVA-II | O Ng | 0.002 kg | C2X1-10K | 10 kg | 2mV/V | N/A |
| | 15 kg | 0.005 kg | C2G1-25K | 25 kg | 2mV/V | OIML |
| NOVA-II | 10 119 | | C2X1-25K | 25 kg | 2mV/V | N/A |
| NOVA-II | 30 kg | 0.010 kg | C2G1-60K | 60 kg | 2mV/V | OIML |

Pound specifications for regular and pole type models.

| Model | Maximum weight | Minimum graduation | Load cell (capacity s | setting) | Output setting |
|---------|-------------------|-----------------------|--------------------------|----------|-------------------|
| NOVA-II | 15 lbs | 0.005 lbs | C2G1-10K | 10 kg | 2mV/V |
| NOVA-II | 30 lbs | 0.010 lbs | C2G1-25K | 25 kg | 2mV/V |
| NOVA-II | 60 lbs | 0.020 lbs | C2G1-60K | 60 kg | 2mV/V |

(2) REFER TO THE CHART ABOVE FOR LOAD CELL IN USE

C2G1 type.....is used for countries requiring OIML approval or using OIML standards. C2X1 type.....is used for all other countries.

The outer appearance and installation are the same for both load cells; however, the notch size is different.

The 30kg type uses a C2G1-60K load cell. Because the shape and installation of the C2G1-60K are different from the C2G1-10K and C2G1-25K, the base has been changed and a base reinforcement board has been added.

1.4 Main Board Variations (PK-200)

- •The main board is different for each model type.
- •It is necessary to be careful when replacing circuit boards.
- •Each board differs according to its maximum weigh capacity and voltage usage (AC100-120V/AC200-240V). Since an incorrect voltage setting can cause serious damage to the main board, it is necessary to insure that the proper voltage is being used.

See Chapter 4.4 Replacing Main Board (PK-200).

Chapter 2

Setup

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2.1 SETUP GUIDELINES

2.1.1 Confirmation of Package Contents

- •Open and unpack the contents of the box.
- •Confirm that all necessary items were included and nothing is missing.

2.1.2 Scale Environment

- •Place the scale on a flat, level surface.
- •Place in a location protected against exposure to water or other liquids.
- •Avoid placing in a location which receives direct sunlight.
- •Place in a location which is unaffected by wind.
- •Insure that there is sufficient space to setup scale.
- •Connect the plug to the nearest and most accessible electrical outlet. Be sure that the cord is not pinned between anything and receives no heavy pressure or force.
- •Install plug to an outlet with a short-circuit breaker.

2.1.3 Machine Setup

- •Place the scale on a flat surface and adjust the height adjustment feet until the air bubble in the level is aligned in the center of the circle. (Refer to Chapter 1.1 External View and Part Names)
- •Insert electrical plug into electrical outlet.
- Explain operation of scale to user.

Chapter 3

Test Mode

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3.1 SETTING ADJUSTMENTS

The test mode is used to check the hardware as well as entering the country code, span adjustment, and zero adjustment. The C1-C8 modes and preset key settings are enabled and can be adjusted in this mode.

3.2 Test Mode Menu

- 1. In C1 mode, the settings for country code, maximum weight capacity, zero adjustment, span can be entered in this mode.
- 2. In C2 mode, key functions are checked.
- 3. In C3 mode, display check 1 is performed.
- 4. In C4 mode, display check 2 is performed.
- 5. In C5 mode, the program number is checked.
- 6. In C6 mode, E2PROM clear and initial settings are performed.
- 7. In C7 mode, country specifications and individual settings for weighing conditions (1-48) can be entered in this mode.
- 8. In C8 mode, E2PROM data (address numbers 0-127) can be confirmed (but not changed).
- 9. Preset key setting

This performs the settings for the following operations:

- •Unit price setting
- •Tare setting

(Keyboard tare setting is not available in countries.)

3.3 STARTING AND STOPPING TEST MODE

The procedure for starting and stopping the test mode is listed below:

- 3.3.1 Starting Test Mode
 - 1. Press the **ON/OFF** key.
 - 2. Immediately press the #1 key.

A CAUTION!

•To enter test mode, press the **ON/OFF** key when the machine is turned OFF. A buzzer will sound while the scale is initiating its start up program. It is at this time when the test mode can be activated by pressing the #1 key. When the scale has completed its start up program and entered standard operating mode, test mode is inaccessible. To access test mode, turn the machine off and restart by pressing the **ON/OFF** key and then the #1 key.

•Should the program not run test mode, refer to the procedure steps and repeat.

The test mode initial screen is shown below. Notice that [appears on the display.



- 3.3.2 Stopping Test Mode
 - 1. Press the **ON/OFF** key.
 - 2. The scale enters standard operating mode.

3.4 KEY FUNCTION LAYOUT

Key function layouts are shown below. Us the layout corresponding to the layout of the scale you are servicing.

EXP Layout

| PLU 1 | | Ţ | 7 | 10 | 13 | F | TARE | 7 | 8 | 9 | х | ON OFF |
|----------|---|---|---|----|----|----|------|---|---|---|---|-----------|
| 2 | | Ī | 8 | 11 | 14 | sc | С | 4 | 5 | 6 | + | ZERO |
| 3 | 1 | Ţ | 9 | 12 | 15 | 00 | 0 | 1 | 2 | 3 | = | * |

EU Layout

| PLU 1 | 4 | 7 | 10 | 13 | FIX | Т | 7 | 8 | 9 | x | Ф |
|----------|---|---|----|----|-----|---|---|---|---|----|---|
| 2 | 5 | 8 | 11 | 14 | sc | С | 4 | 5 | 6 | + | 0 |
| 3 | 6 | 9 | 12 | 15 | 00 | 0 | 1 | 2 | 3 | 11 | * |

USA Layout

| PLU | 1 | 4 | 7 | 10 | 13 | SAVE | TARE | 7 | 8 | 9 | x | \bigcirc |
|-----|---|---|---|----|----|------|------|---|---|---|-----|------------|
| | 2 | 5 | 8 | 11 | 14 | x4 | C | 4 | 5 | 6 | + | ZERO |
| | 3 | 6 | 9 | 12 | 15 | x2 | 0 | 1 | 2 | 3 | СНС | * |

3.5 Test Mode Settings

Refer to 3.2 Starting and Stopping Test Mode for calling up the test mode initial screen.

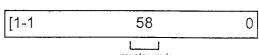
The settings for country code, maximum weight capacity, zero adjustment, span can be entered in this mode.

3.5.1 C1 mode

- ■The settings for country, maximum weight capacity, zero adjustment, span can be entered in this mode.
- (a) Press #1 key.



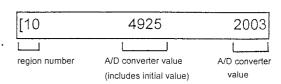
(b) Press the TARE key.



- (c) Enter country code. If there is no change in the country, confirm country code setting, and proceed to step 5.
- (d) Press the **TARE** key. Confirm country code setting.
- (e) Press the TARE key again.

| [1-Z | 6000 | 5 |
|------|------|-----|
| | | 1 1 |

- (f) Enter the weight number for maximum weight capacity. If there is no change, confirm weight number, and proceed to step 8.
- (g) Press the **TARE** key and confirm that the maximum weight capacity is correct.
- (h) Press the **TARE** key. The span adjustment screen appears. Adjust span.



weight number

Span Adjustment

- I. A/D converter initial value
 - (a) Press the ZERO key.The A/D converter initial value is displayed in the unit price column.

| 110 | 2000 | ſ |
|-----|------|---|
| 1.0 | 2000 | _ |

(b) Confirm that the initial value is within 2000±1 count. If it is within 2000±1 count, perform span adjustment. If it is not within 2000±1 count, press the ZERO key again and confirm.

- II. Span adjustment
 - (a) Place the span weight on the platter.
 - (b) Press the **TARE** key. The A/D converter value change is shown in the weight column.

| 10 | 32000 | 30000 |
|----|-------|-------|
| 1 | | |

(c) Confirm that the A/D converter value change is within 30000± 2. If data is within 30000± 2 count, save data as shown in III. Saving data to E²ROM on following page.

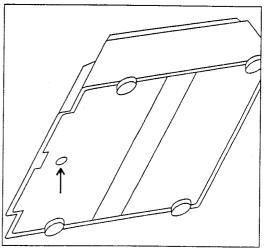
If A/D converter value change is not within 30000 ± 2 , adjust by using the **x** key to increase value and + key to decrease value.

When the value has been adjusted by using the + and x keys, remove the span weight, and repeat procedures I. and II. until values fall in the proper ranges.

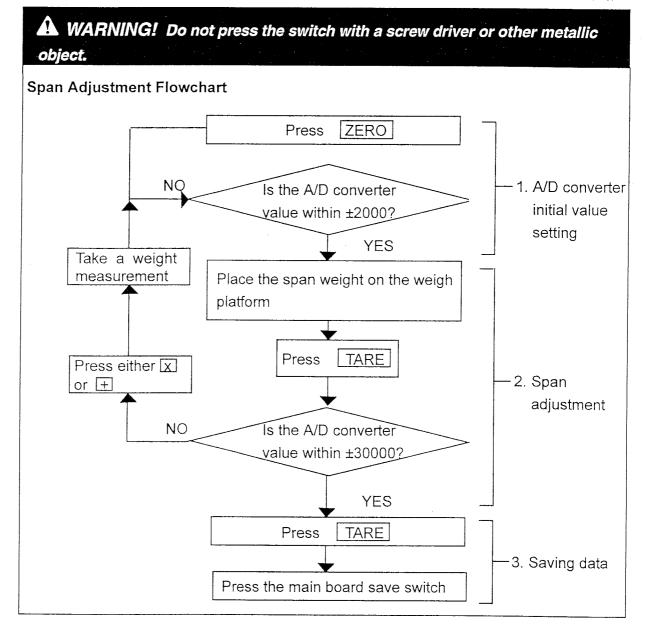
NOTE: Span weight is equal to the capacity weight of the scale.

III. Saving data to E2ROM

- (a) After span has been adjusted, remove the span weight from the platter. Then remove weigh platter.
- (b) Press the main board save switch from underneath.
- 9. Press the = key to return to the test mode initial screen.



The save switch is located underneath scale.



| \circ | \vdash | \circ | \sim | ٨ | A | _ | ~ | _ |
|---------|----------|---------|--------|----|---|----|-----|---------|
| .O | .О. | | C2 | I۷ | 4 | () | (] | \cdot |

■Key check can be performed in this mode.

- (a) Press #2 key.
- (b) Press TARE.
- (c) Press the = key to return to the test mode initial screen.

| [2 | , | | 0 |
|----|---|-----|-----------|
| | | *** | key numbe |

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11. | | ON/OFF ke |
|----|----|----|----|----|----|----|----|----|----|-----|----|-----------|
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | |
| 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | |

3.5.3 C3 Mode

- ■Display check 1 can be performed in this mode.
- (a) Press the #3 key.
- (b) Press the TARE key.
 - •This initiates display check #1.
 - •Decimal places are checked at the same time.
- (c) Press the = key to return the machine test mode initial screen.

| | _ | |
|---|---|---|
| 2 | | Q |

3

program number

3.5.4 C4 Mode

- ■Display check 2 can be performed in this mode.
- [4

- (a) Press the #4 key.
- (b) Press the TARE.
 - •This initiates display check.
 - •Decimal places are checked one at a time.
- (c) When the = key is pressed, the machine returns to the test mode initial screen.

[5 987 03762

3.5.5 C5 Mode

- ■This can display the program number.
- (a) Press the #5 key.
- (b) Press the TARE key.
 - •This displays program number.
 - •It is sometimes necessary to change this number when there is a program upgrade.
- (c) When the = key is pressed, the machine returns to the test mode initial screen.

| [| 6 | |
|---|---|--|
| | | |

[6

3.5.6 C6 Mode

- ■This can clear and initialize.
 - (a) Press the #6 key.
 - (b) Press the TARE key.
 - (c) Press the main board save switch as shown in *III. Saving data to E²ROM* on page 3-7.
 - (d) When the = key is pressed, the machine returns to the test mode initial screen.

3.5.7 C7 mode - Setting Specifications

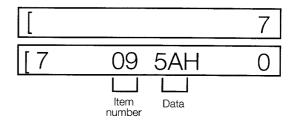
- This can set country specifications and individual settings for weighing conditions.
- (a) Press the #7 key.
- (b) Press the TARE key.
- (c) Select the appropriate item number for settings.
 - Press the TARE key to increase the item number.
 - Press the ZERO key to decrease the item number.

(Item numbers range from 1 to 48).

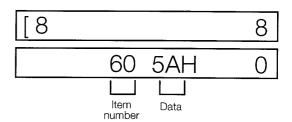
- (d) Press the "★" key to change settings data as needed.
- (e) Press the TARE key to record entry.
- (f) Press the main board save switch as shown in III Saving data to E²ROM on page 3-7.
- (g) Press the **CHG** key to return to the Test Mode initial screen.

3.5.8 C8 mode - Checking Specifications

- This confirms that the E²ROM has not changed. (addresses 0-127).
- (a) Press #8 key.
- (b) Press the **TARE** key.
- (c) Select the appropriate item number.
 - Press the TARE key to increase the item number.
 - Press the ZERO key to decrease the item number.
- (d) Press the **CHG** key to return to the Test Mode initial screen.



Note: x2 and x4 (Fractional Pricing) Address 23: 0 = off, 1 = on



3.5.9 Preset Key Mode

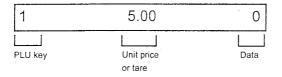
- ■This can set unit price/tare setting.*
 - *Keyboard tare setting is not available in countries.
- (a) Press the **ON/OFF** key and immediately press the desired PLU key.



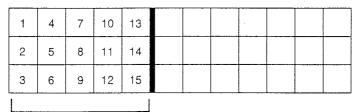
A CAUTION!

•To enter preset key mode, press the ON/OFF key when the machine is turned OFF. A buzzer will sound while the scale is initiating its start up program. It is at this time when the preset key mode can be activated by pressing the desired PLU key. When the scale has completed its start up program and entered standard operating mode, test mode is inaccessible. To access test mode, turn the machine off and restart by pressing the ON/OFF key and then the desired PLU key. •Should the program not run test mode, refer to the procedure steps and repeat.

Preset key setting



Preset key layout



PLU keys

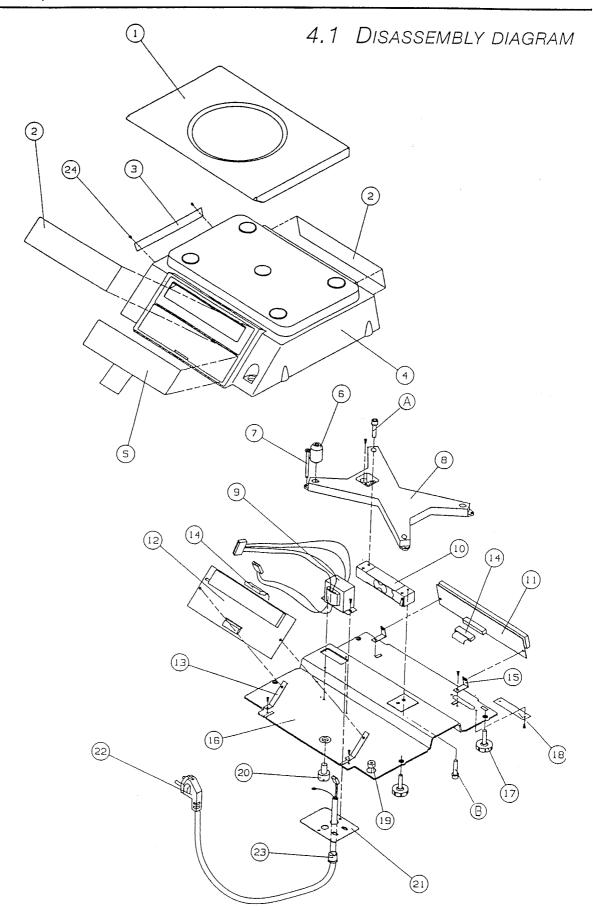
- (b) Setting unit price and tare
 - •Unit price after entering data, press the = key.
 - •Tare after entering data, press the TARE key.

Note: When the tare is set, a triangle will light up in the tare column.

- (c) Repeat steps (a) and (b) to set necessary preset keys.
- (d) After completing setting, press the **ZERO** key. This saves data to E²ROM memory.
- (e) The screen returns to standard operating mode.

Chapter 4

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4.2 PART REPLACEMENT GUIDELINES

- •Refer to disassembly diagram on the previous page when replacing parts.
- •The Replacement Procedure instructions refer to part numbers as written on the disassembly diagram. Verify part and part number by looking at the disassembly diagram.
- •Before replacing any part, make sure you thoroughly understand and follow each step in the order indicated in this manual.

WARNING! Before replacing any part, always disconnect the electrical plug from the outlet. Failure to follow this procedure can cause electrical shock to the operator and/or serious damage to the part or circuitry.

4.3 REMOVING MAIN BODY COVER

| Step | Procedure |
|------|--|
| 1 | Disconnect the electrical plug from the outlet. *Always disconnect electrical plug from outlet. |
| 2 | Remove platter ①. |
| 3 | Press down the tabs and bottom cover in the direction of the arrows. (Figure 1) (Fig.1) bottom view of main cover |
| 4 | Take cover off from the customer side. Note: The cover on the operator side cannot be removed. Always remove cover from customer side. (Figure 2) Be careful not to damage the key sheet connector when removing the cover. (Fig. 2) side view of main cover |
| 5 | Lift the key sheet connector lock up from the main board and remove the key sheet connector. (Figure 3) (Fig.3) key sheet connector (Fig.3) key sheet connector (Fig.3) key sheet connector |
| 6 | To install cover, reverse steps 1-4. |

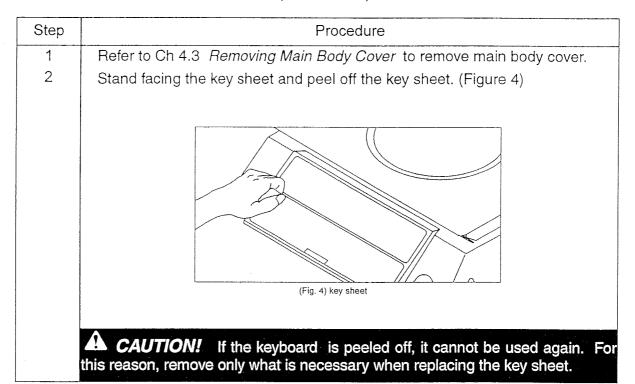
4.4 REPLACING MAIN BOARD (PK-200)

| Step | Procedure |
|------|---|
| 1 | Refer to Ch. 4.3 Removing Main Body Cover to remove main body cover. |
| 2 | Remove the two screws on the main board ①. |
| 3 | Remove the CN3, CN4, CN7, and CN8 connectors. |
| 4 | Remove the load cell cable solder |
| | |
| | A CAUTION! |
| | •Be careful not to break the main board glass display cover when |
| | removing the main board. |
| | •Do not use excessive force and bend the front metal display bracket (3) |
| | when removing the main board. |
| | Be careful not to solder the wrong wire when installing the load cell |
| | cable. |
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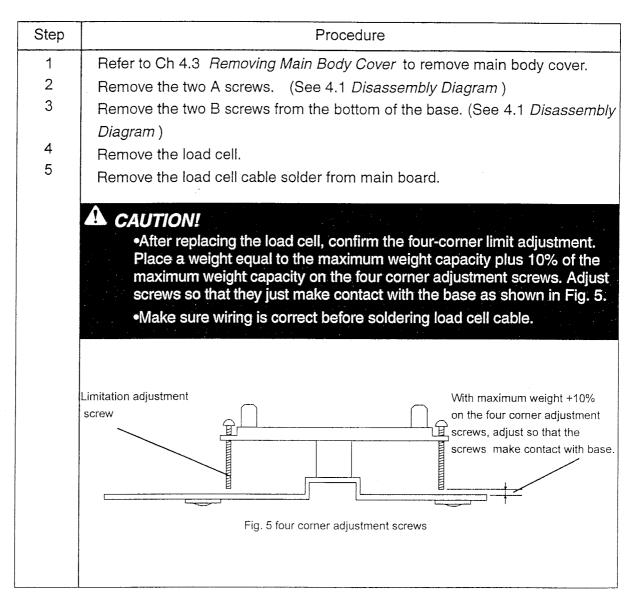
4.5 REPLACING DISPLAY BOARD (PK-201)

| Step | Procedure |
|--|--|
| 1 | Refer to Ch 4.3 Removing Main Body Cover to remove main body cover. |
| 2 | Remove the two display board screws and remove display board ①. |
| 3 | Remove the CN1 connector. |
| | |
| The state of the s | |
| | |
| | |
| | •Be careful not to drop or handle the glass display cover roughly when removing the display board. |
| | •Do not use excessive force and bend the rear metal display bracket ⑤ when removing the display board. |

4.6 REPLACING KEYSHEET (PK-209)



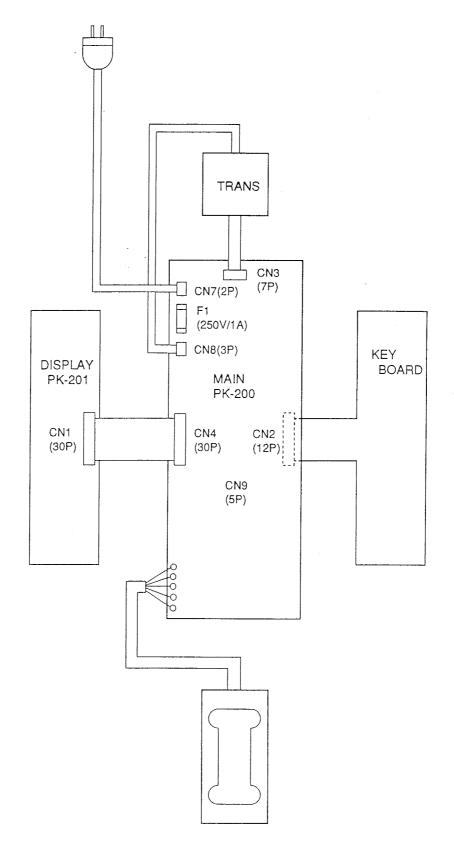
4.7 REPLACING LOAD CELL

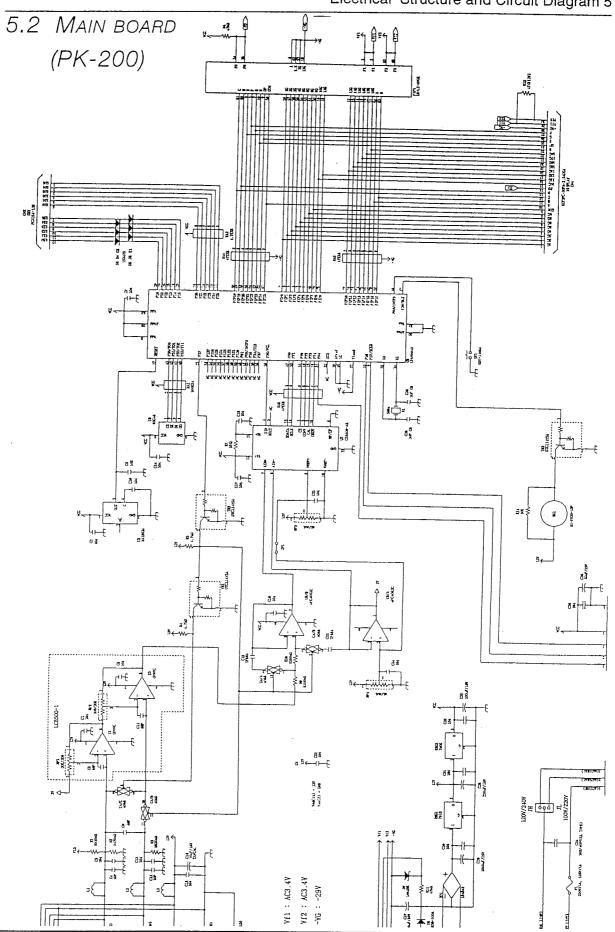


Chapter 5

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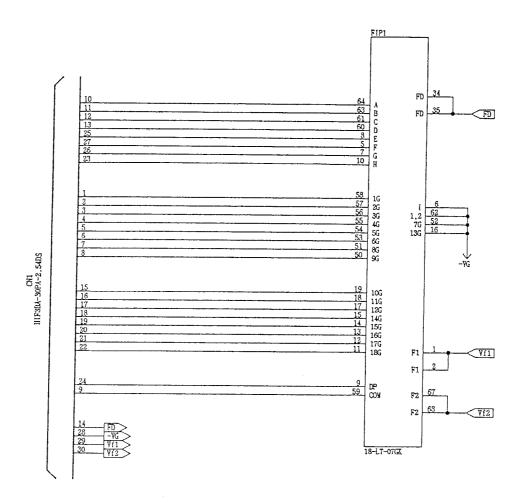
5.1 ELECTRICAL BLOCK DIAGRAM



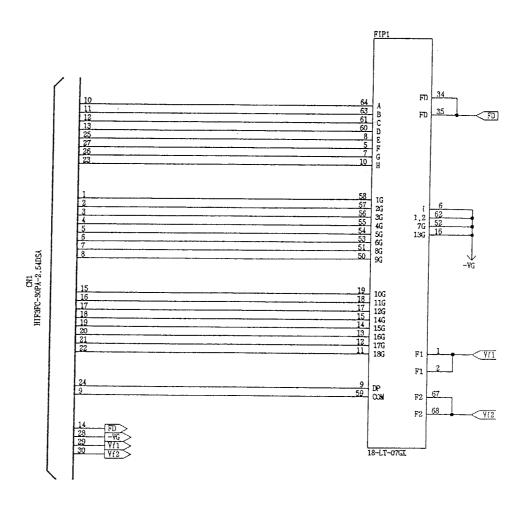


5.3 DISPLAY BOARD (PK-201)

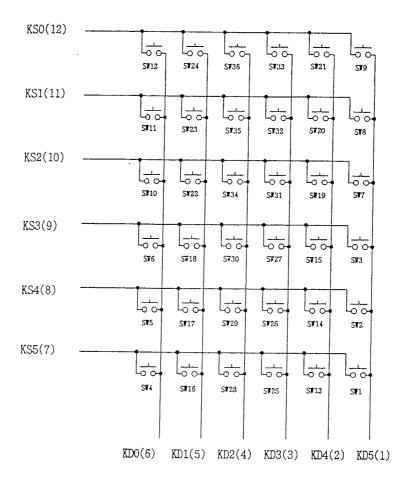
(standard type)



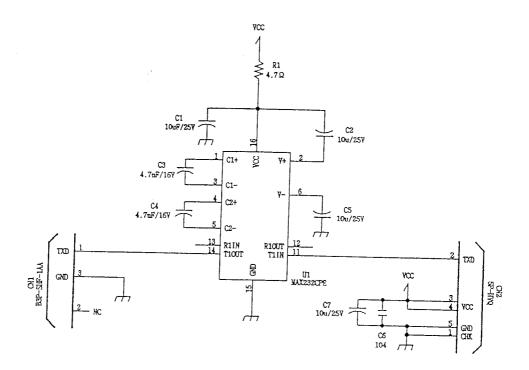
5.4 DISPLAY BOARD (PK-202) (Pole type)



5.5 KEY SHEET (PK-209)

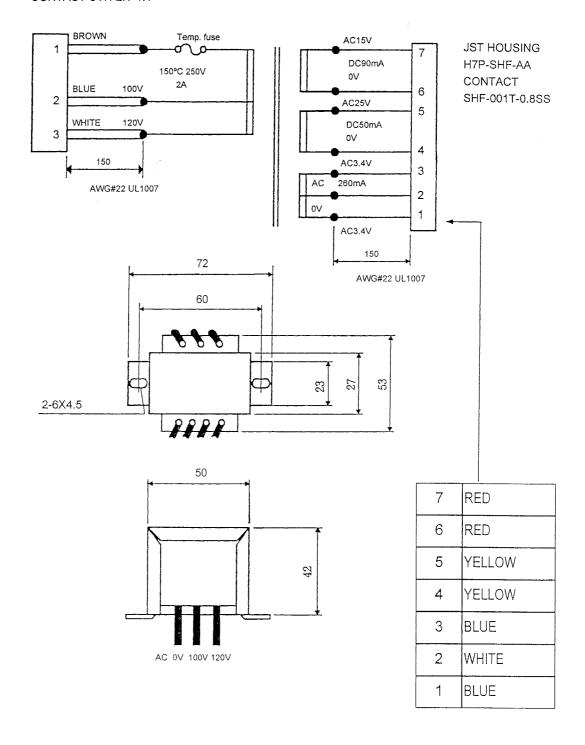


5.6 RS-232C (PK-203) (option)



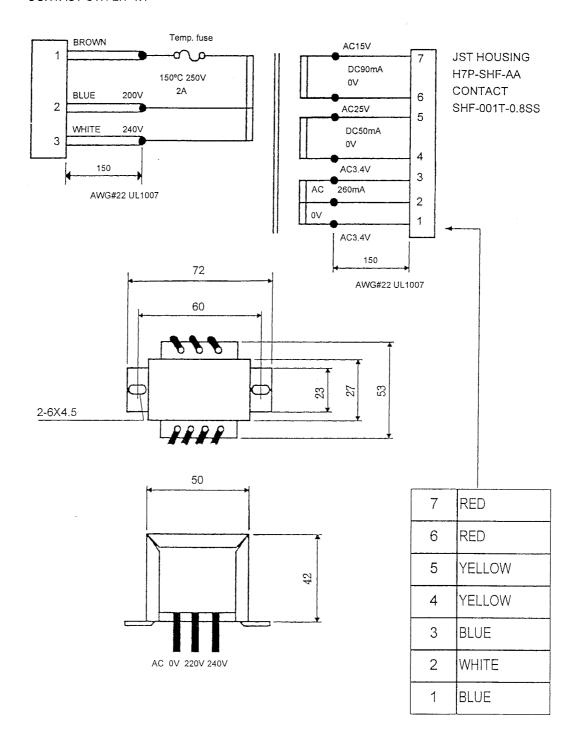
5.7 ELECTRICAL POWER TRANSFORMER (AC 100-120V type)

HOUSING VHR-3N CONTACT SVH-2IT-1.1



5.8 ELECTRICAL POWER TRANSFORMER (AC 200-240V type)

HOUSING VHR-3N CONTACT SVH-2IT-1.1



Chapter 6

Troubleshooting

| 6.1 | No display | 6-2 |
|-----|------------------------|-----|
| 6.2 | Overrides to test mode | 6-2 |
| 6.3 | No weighing operation | 6-2 |
| 6.4 | Improper display | 6-3 |
| 6.5 | Unstable weight | 6-3 |
| 6.6 | No buzzer | 6-4 |
| 6.7 | No key function | 6-4 |

6.1 No DISPLAY

•When the display doesn't come up even when the ON/OFF key is pressed:

Is the machine plugged into the same rated AC outlet?

Has the fuse gone out?

Are the CN7, 8, and 13 connectors attached to board (PK-200)?

Is the CN2 key connector attached?

Related parts:

fuse

transformer

PK-200 board

REG1 (7812), REG2 (7805), U5 (CPU), X1 (5.00Mhz), U2 (M51953)

key unit

6.2 Overrides to Test Mode

•When the scale enters test mode soon after being turned ON:

Related parts:

PK-200 board

U6 (93C46)

6.3 No Weighing Operation

•When the weighing operation doesn't come up after being turned on, and the operation error buzzer continues to sound:

Is there anything on the platter?

Is the main body unstable?

Related parts:

Load cell

PK-200 board

U-1, U3 (OP-07), U8 (4062), U7 (CS5509)

6.4 IMPROPER DISPLAY

•When only the customer's display is operating improperly:

Is the display cable securely fastened?

Related parts:

customer display board

display cable

•When only the operator's display is operating improperly:

Related parts:

PK-200 board

FIP 1 (18-LT-07GK)

•When both displays are operating improperly:

(display brightness is abnormal)

Related parts:

PK-200 board

D7 (1N5235), D8 (1SR35-100A), U5 (CPU)

•When data is not being properly displayed:

(doesn't light up, doubling)

Related parts:

PK-200 board

U5 (CPU)

6.5 Unstable weight

•When the weight amount is unstable:

Is the main body stable?

Is the machine being affected by wind?

Related parts:

Load cell

PK-200 board

U-1, U-3 (OP-07), U8 (4062), U7 (CS5509)

6.6 No BUZZER

•When the buzzer doesn't sound:

Related parts:

PK-200 board BZ1 (HI-PO20-15P), TR3 (DTC14)

6.7 No KEY FUNCTION

•When data cannot be entered using ten key:

Is the PK-200 board connector securely fastened?
Related Parts:

Key unit PK-200 board U5 (CPU)