AUTEC

Sushi Maker for Commercial Use

SUSHI MAKER ASM410A Series

Service Manual Ver. 2.02

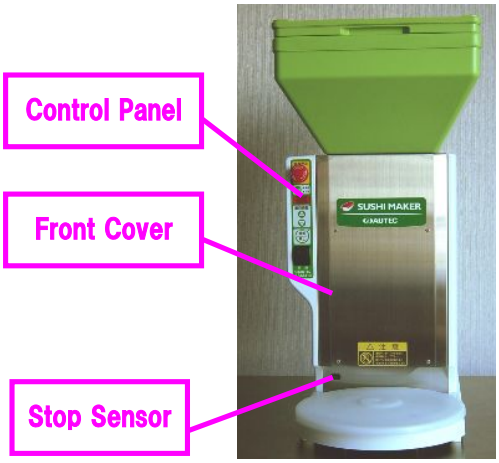
- Before repairing this machine, please read this service manual for instructions and proper operation.
- Repair this machine accompanied by an expert who understands the functions and operation procedure.
- Improper repair may cause failure and breakage.

Table of Contents

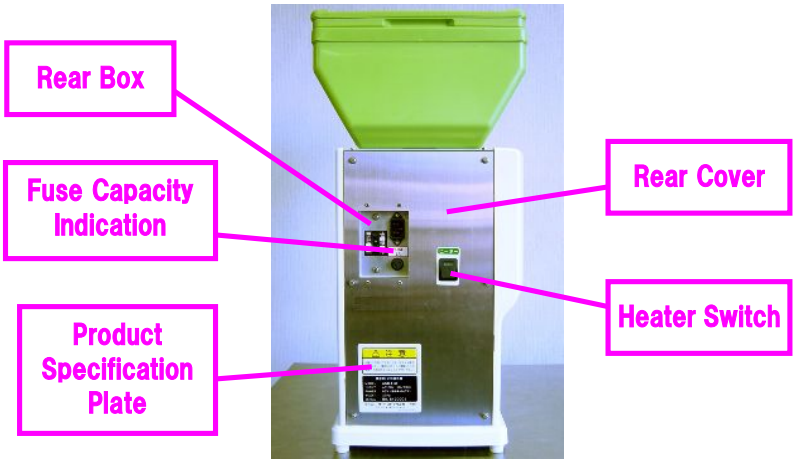
1 Name of Each Component

1.1 Part Names of the Main Unit

[Front side of the Main Unit]



[Rear side of the Main Unit]



※The Front Cover is made of Resin. Some types differ in the form of specification.

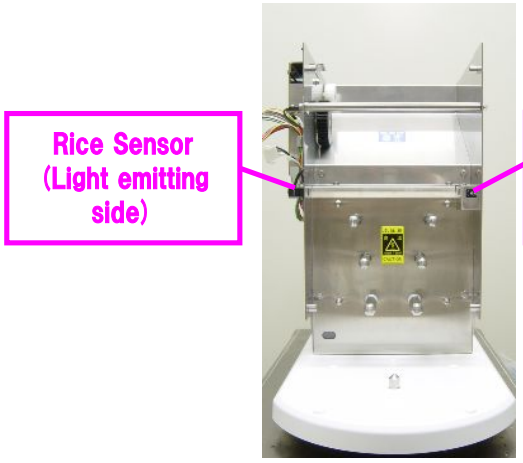
※Some machines do not have a Heater Switch depending on country of use.

[Main Unit L]

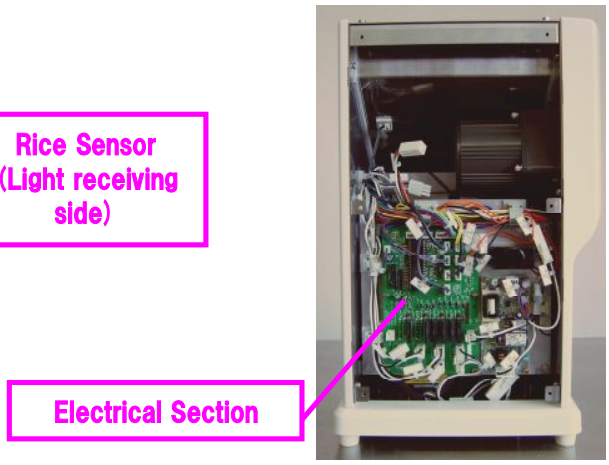
[Main Unit R]

1.2 Part Names of the Main Unit Interior

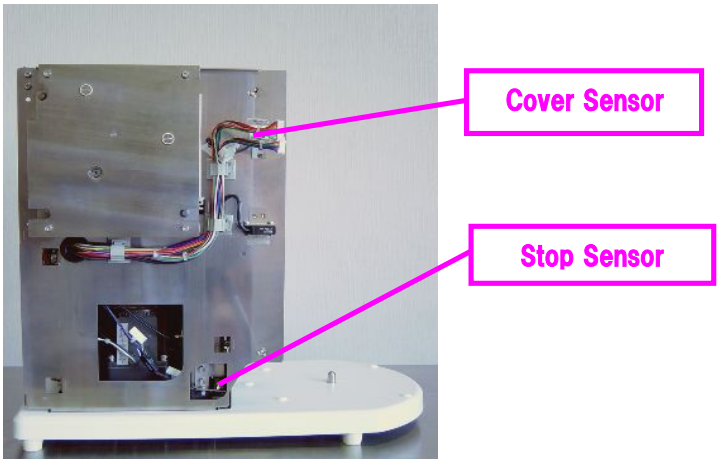
[Inside the Main Unit at the front]



[Inside the Main Unit at the rear]



[Inside the Main Unit L]



[Inside the Main Unit R]

1.3 Version of the product

【※There is the version of this machine depending on shipping period and shipping destination. Please note that the method of maintenance might vary depending on the type】

【ASM410】

Type A：From serial number 6420001～7090044：The setting of frequency can be changed with a control panel.
（Non-countermeasure item against noise）

Type B：From serial number 7100045～8380388：The setting of frequency can be changed on a circuit board.
（Interim item against noise）

Type C：From serial number 8390389～ ：The setting of frequency can be changed with a control panel.
（Countermeasure item against noise, RoHs-compliant）

【ASM410(E)】 Oversea model

Type A：From serial number 7170001～8430076：The setting of frequency can be changed on a circuit board.
（Interim item against noise）

Type C：From serial number 8430077～ ：The setting of frequency can be changed with a control panel.
（Countermeasure item against noise, RoHs-compliant）

【ASM410A、ASM410C】America, Canada Model

Type A：From serial number 7450001～8080021：
No heater. The setting of frequency can be changed on a circuit board.

Type B：From serial number 8160022～ ：
With heater. The setting of frequency can be changed on a circuit board.

Type C：From serial number *********～ ：The setting of frequency can be changed with a control panel.
（Countermeasure item against noise, RoHs-compliant）

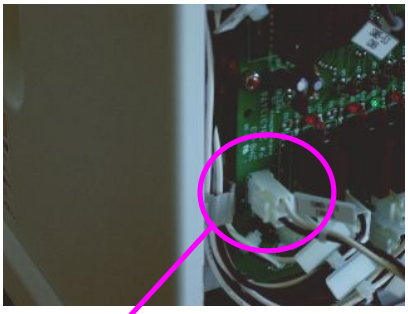
2 Basic Disassembly

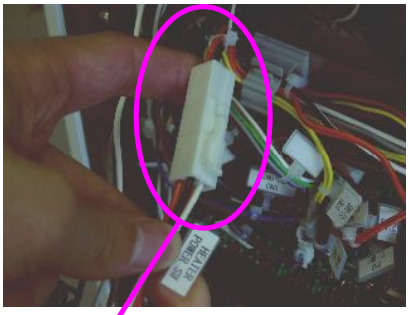
2.1 How to Disassemble the Rear Cover

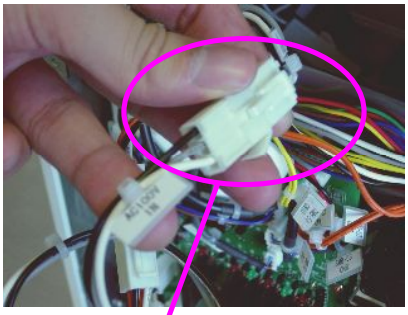
[Tool used: Box Wrench (7 mm)]

① Remove the Screws [Coarse Thread B S2 M4x8] + [Washer 4mm] (x6) that install the Rear Cover using a Box Wrench (7 mm).

② Remove the Rear Cover. At the same time, remove the Circuit Board Connector (SMB-53 CN16) (x1) and the Link Connectors (x2) for the internal wires.







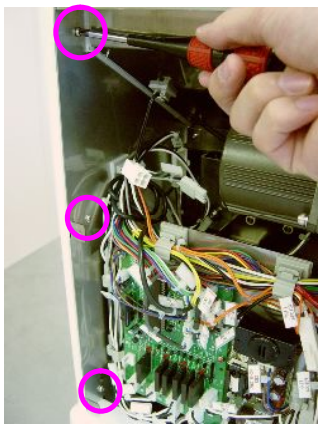
2.2 How to Disassemble the Side Cover R

[Tool used: (+) Screwdriver (large)]

① Remove the Rear Cover. -> 2.1

② Remove the Screws [Pan Head B Tight 4x16] (x2) in the Boss located inside the Main Unit on the right-hand side using a (+) Screwdriver (large).

③ Remove the Screws [Pan Head B Tight 4x10] (x3) inside the Main Unit's rear side on the right-hand side using a (+) Screwdriver (large).



④ Remove the Side Cover R.

* Note: The Cover may be snagged internally and be difficult to remove. Under such circumstances, do not pull the Cover forcefully, but rather, remove it while pressing outwardly to spread it.

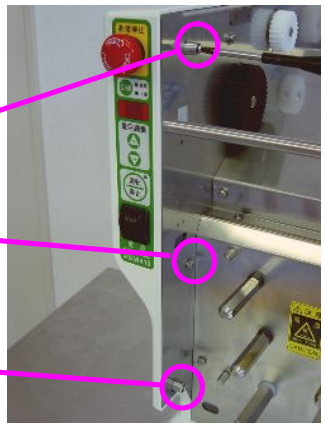
* Note: While installing the Side Cover R, be aware that over-tightening the Screws may damage the Side Cover R. <Tightening torque: 50 cN·m>

2.3 How to Remove the Side Cover L

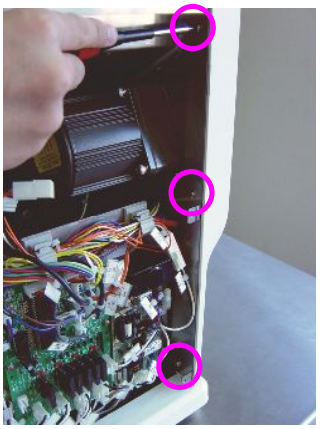
[Tools used: (+) Screwdriver (large), Spanner (7 mm)]

① Remove the Rear Cover. -> 2.1

② Remove the Screw [Pan Head B Tight 4x16] (x1) and the Screw [Round Head S2 M4x16] (x1) in the Boss located inside the Main Unit on the left-hand side using a (+) Screwdriver (large). At the same time, remove the Screw [Coarse Thread B S2 M4x8] + [Washer 4mm] (x1) using a Spanner (7 mm).



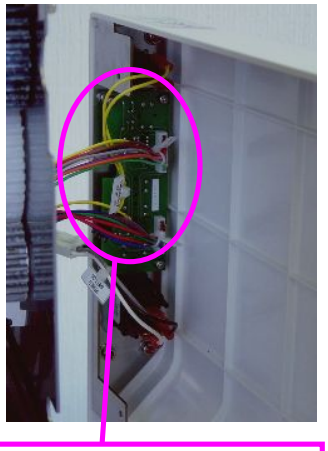
③ Remove the Screws [Pan Head B Tight 4x10] (x3) inside the Main Unit's rear side on the left-hand side using a (+) Screwdriver (large).



④ Remove the Side Cover L. At the same time, remove the Circuit Board Connectors (x2) and the Link Connectors (x2) for the internal wires.

Side Cover L

Link Connector



Circuit Board Connector

* Note: The Cover may be snagged internally and be difficult to remove. Under such circumstances, do not pull the Cover forcefully, but rather, remove it while pressing outwardly to spread it.

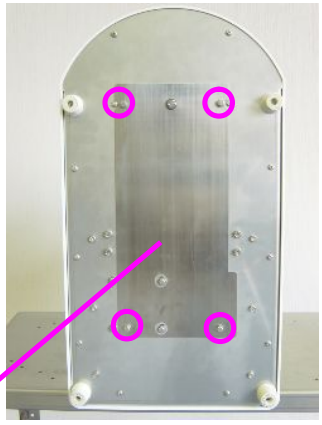
* Note: While installing the Side Cover L, be aware that over-tightening the Screws may damage the Side Cover L. <Tightening torque: 50 cN·m>

2.4 How to Remove the Bottom Plate

[Tool used: Box Wrench (7 mm)]

① Turn over the machine so that the rear side of the Main Unit touches the work surface.

② Remove the Bottom Plate by removing the Screws [Coarse Thread B S2 M4x8] + [Washer 4mm] (x4) that fix the Bottom Plate using a Box Wrench (7 mm).



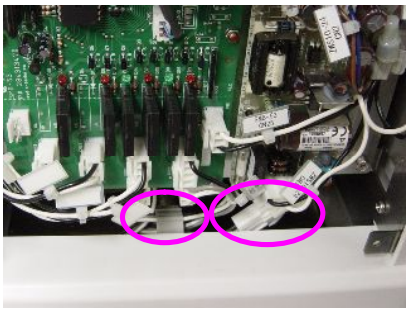
Bottom Plate

2.5 How to Disassemble the Main Unit Base

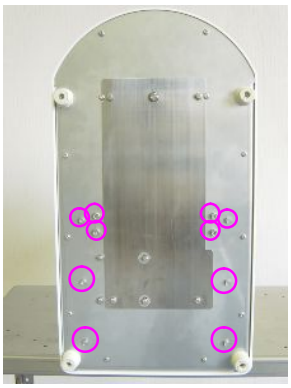
[Tool used: (+) Screwdriver (large)]

① Remove the Rear Cover. -> 2.1

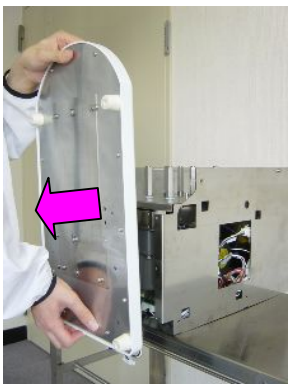
② Remove the Link Connector of the Turntable Motor and remove the Clamp.



③ Turn over the machine so that the rear side of the Main Unit touches the work surface. Remove the Screws [Upset S2 M4x8] (x6) and the Screws [Upset S2 M5x10] (x4) that fix the Main Unit Base using a (+) Screwdriver (large).



④ Remove the Main Unit Base.

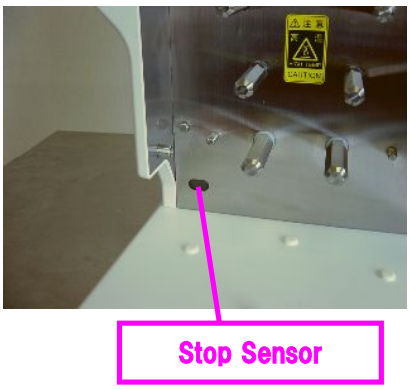


3 Parts Replacement

3.1 How to Adjust the Stop Sensor Sensitivity and Replace It

[Parts replaced: P#2899-01430 Stop Sensor ASSY/600]

[Tools used: (+) Screwdriver (large), Trimmer Adjuster]



<<How to Adjust Sensitivity>>

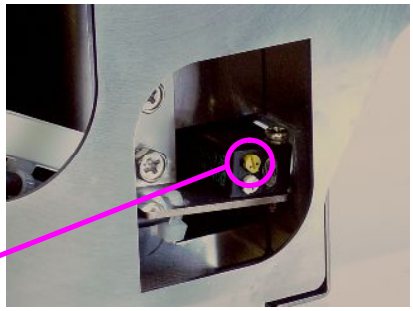
① Remove the Rear Cover. -> 2.1

② Remove the Side Cover L. -> 2.3

③ Turn the Sensitivity Adjuster Screw (yellow) using the Trimmer Adjuster.

- Turning clockwise **increases** sensitivity.
- Turning counterclockwise **decreases** sensitivity.

Adjust sensitivity to a level so that the front rice ball can stop in a position where it does not come in contact with the Front Cover, making it easier to remove rice balls during CONTINUOUS MODE.

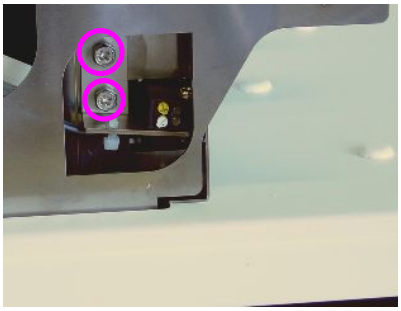


* Note: Note that if sensitivity is increased excessively, the machine may not operate normally by mistakenly sensing objects such as the operator standing in front of the machine.

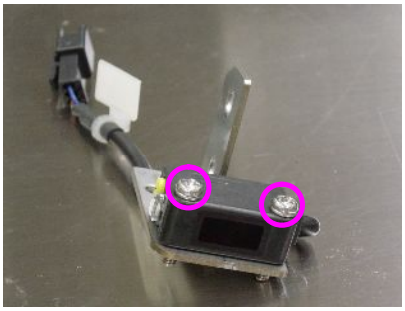
* Note: Do not touch the white Adjuster Screw, which is for changing the sensor operation modes. If it is touched and moved, turn it clockwise to maximum.

<<How to Replace the Sensor>>

① Remove the Screws [Upset S2 M4x8] (x2) for the Stop Sensor ASSY using a (+) Screwdriver (large). At the same time, remove the Link Connector of the Sensor Cord and then remove the Stop Sensor ASSY.



② Remove the Screws [Round Head S2 M3x16] (x2) for the Stop Sensor using a (+) Screwdriver (large) and replace the Stop Sensor.



* Note: When the Stop Sensor is newly installed, turn the white Adjuster Screw clockwise to maximum.
* Note: While installing the Stop Sensor, be aware that over-tightening the Screws may damage the Stop Sensor. <Tightening torque: 50 cN·m>

3.2 How to Adjust the Rice Sensor Sensitivity and Replace It

[Parts replaced: P#2899-01600 Rice Sensor ASSY/600B]
[Tool used: (+) Screwdriver (large), Trimmer Adjuster]

Rice Sensor (Light emitting side)

Rice Sensor (Light receiving side)

<<How to Adjust Sensitivity>>

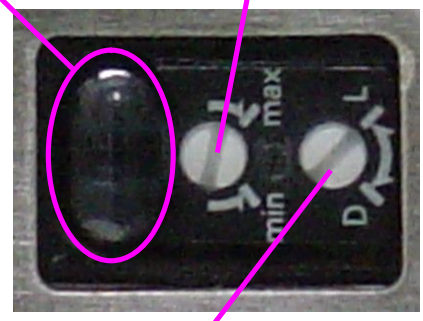
① When adjusting the sensitivity of the light receiving side's Rice Sensor (Main Unit R), turn the Sensitivity Adjuster Screw for the light receiving side's Rice Sensor using the Trimmer Adjuster.

- Turning clockwise increases sensitivity.
- Turning counterclockwise decreases sensitivity.

Hold your hand approximately between the light emitting side's Rice Sensor and the light receiving side's Rice Sensor to check that the Sensor Lamp of the light receiving side's Rice Sensor operates based on the premise "Only the green lamp lights up when the hand is held over" and "Both the orange and green lamps light up when the hand is moved away."

Sensor Lamp

Sensitivity Adjuster Screw



Sensor Operation Change Mode

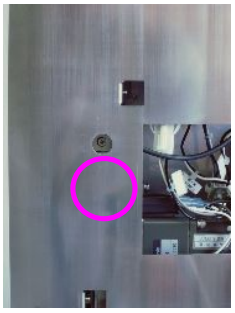
* Note: Be aware that if sensitivity is incorrectly adjusted, the machine may not operate normally and moreover, the amount of rice may not be stabilized.
* Note: Do not touch the Sensor Operation Change Mode. If it is touched and moved, set it to the "L" side.

<<How to Replace the Sensor>>

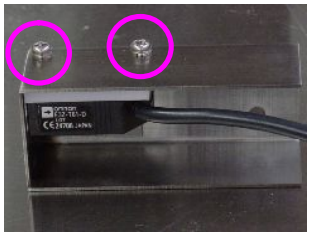
Light receiving side: ① Remove the Rear Cover. -> 2.1

② Remove the Side Cover R. -> 2.2

③ Remove the Screw [Upset S2 M4x6] (x1) that fixes the Rice Sensor R-ASSY using a (+) Screwdriver (large). At the same time, pull out the Sensor Cord from the Circuit Board (CN6).



④ Pull out the Rice Sensor R-ASSY toward the Main Unit's front direction. Then, remove the Screws [Round Head S 2 M3x1 6] (x2) for the Rice Sensor using a (+) Screwdriver (large) and then replace the light receiving side's Rice Sensor.

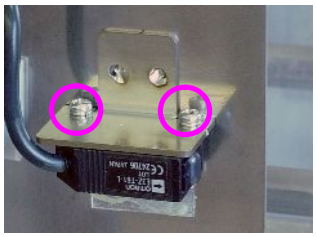


* Note: When the light receiving side's Rice Sensor is replaced, check that the Sensor Operation Change Mode is at the "L" side.

Light emitting side: ① Remove the Rear Panel. -> 2.1

② Remove the Side Cover L. -> 2.3

③ Remove the Screws [Round Head S2 M3x1 6] (x2) for the Rice Sensor using a (+) Screwdriver (large). At the same time, pull out the Sensor Cord from the Circuit Board (CN12) and then replace the light emitting side's Rice Sensor.

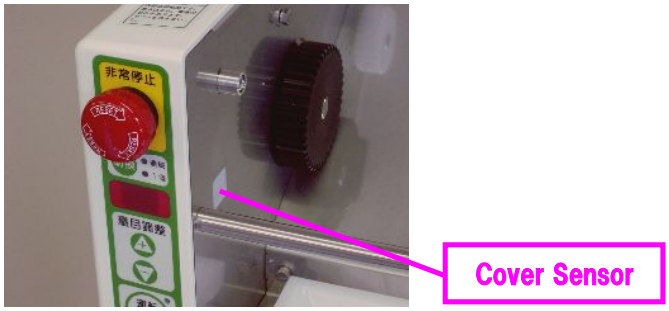


* Note: While installing the light receiving side's Rice Sensor and the light emitting side's Rice Sensor, be aware that over-tightening the Screws may damage the Rice Sensors. <Tightening torque: 50 cN·m>

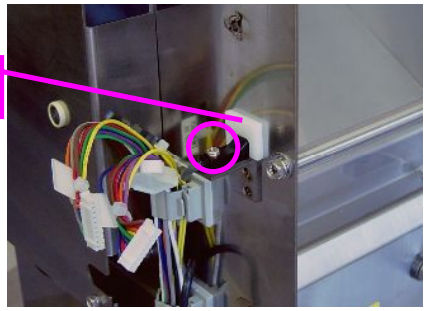
3.3 How to Replace the Cover Sensor

[Parts replaced: P#2899-02040 Cover Sensor ASSY/410]

[Tool used: (+) Screwdriver (large)]



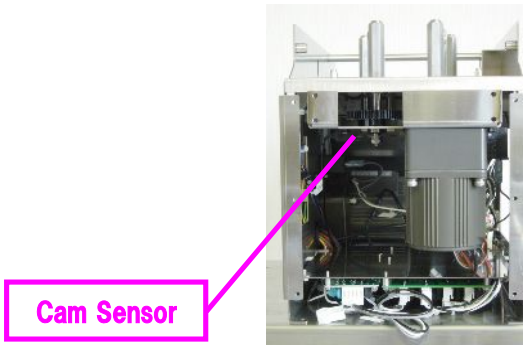
① Remove the Rear Cover. -> 2.1
② Remove the Side Cover L. -> 2.3
③ Remove the Screw [Round Head S2 M3x8] (x1) for the Cover Sensor using a (+) Screwdriver (large). At the same time, remove the Link Connector and replace the Cover Sensor.



* Note: While installing the Cover Sensor, be aware that over-tightening the Screws may damage the Cover Sensor. <Tightening torque: 50 cN·m>
* Note: While removing the Cover Sensor, be careful not to lose the white Sensor Cover, which comes off together with the Cover Sensor. Also, when installing the Sensor, set the Sensor close to the Sensor Cover.

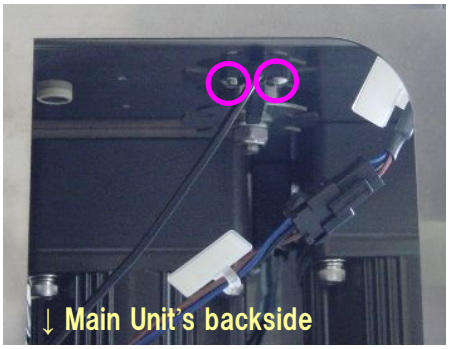
3.4 How to Replace the Cam Sensor

[Parts replaced: P#2899-01620 Shutter Sensor ASSY/600B]
[Tool used: (+) Screwdriver (small)]



* Note: View seen from the Main Unit Base side

① Remove the Rear Cover. -> 2.1
② Remove the Side Cover L. -> 2.3
③ Remove the Main Unit Base. -> 2.5
④ Remove the Screws [TRUSCO M3x8] (x2) for the Cam Sensor located in the Main Unit on the left-hand side using a (+) Screwdriver (small). At the same time, remove the Link Connector and then replace the Cam Sensor.



* Note: While installing the Cam Sensor, be aware that over-tightening the Screws may damage the Cam Sensor. <Tightening torque: 50 cN·m>

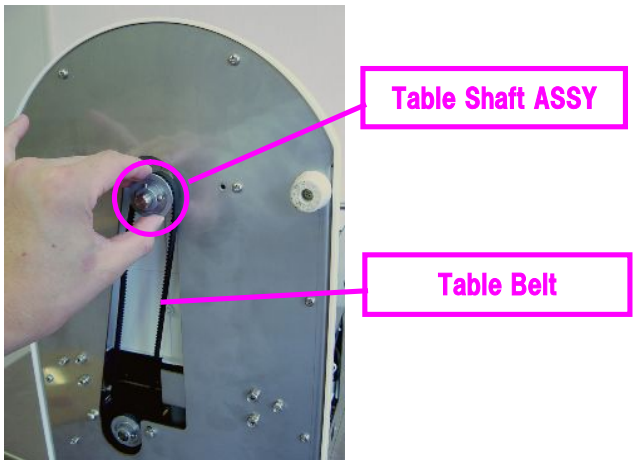
3.5 How to Replace the Table Belt

[Parts replaced: P#2849-06730 Timing Belt 537-3M-6]

[Tool used: Box Wrench (7 mm)]

① Remove the Bottom Plate. -> 2.4

② Pull out the Table Shaft ASSY.



Enlarged view of Table Shaft ASSY

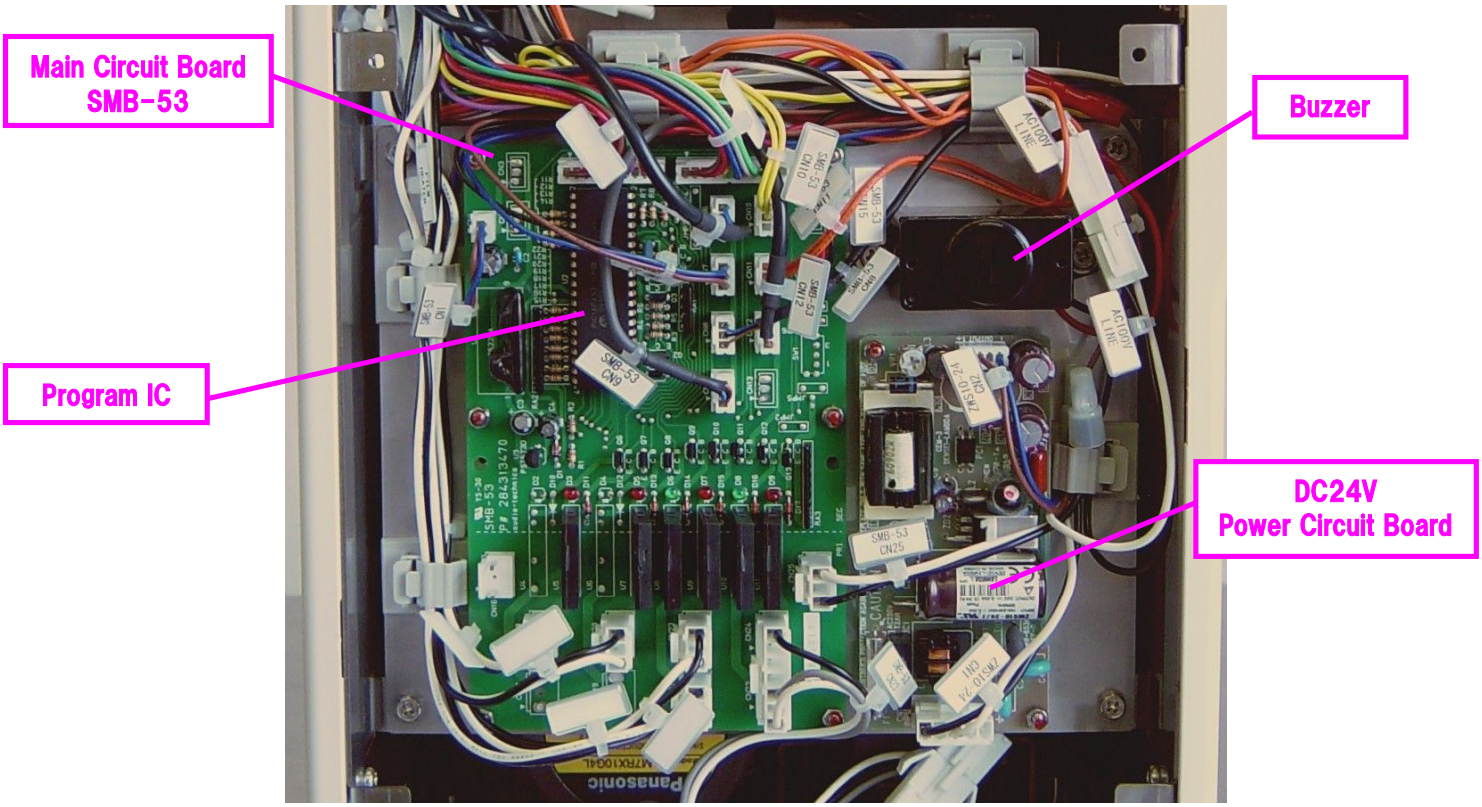
③ Remove the old Belt to replace the Table Belt.

4 Electrical Features

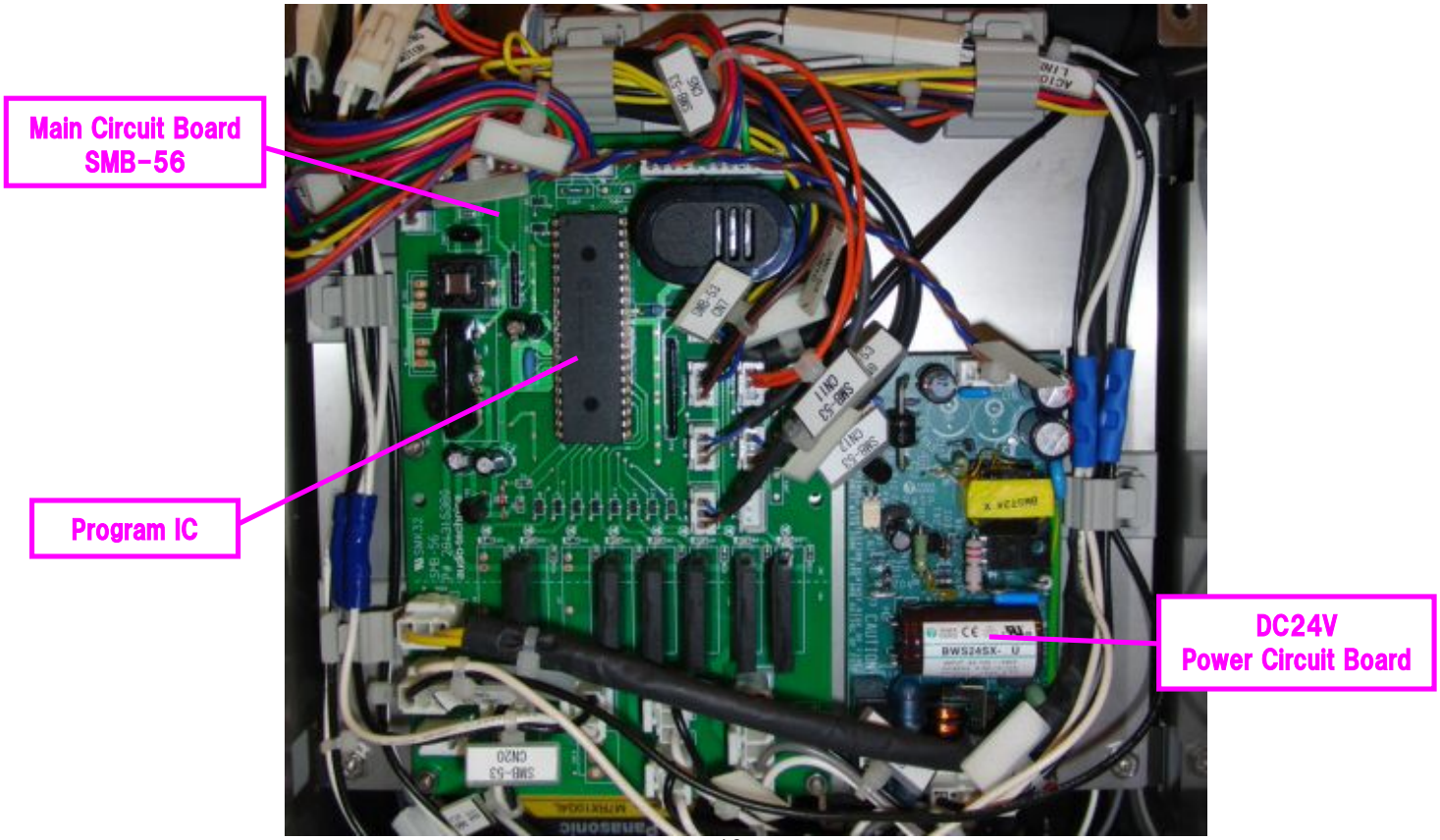
4.1 Part Names and Layout of the Electrical Section

[Inside of the backside of the Main Unit] (Type A, Type B)

※The SMB-56, used for the current version (Type C), will be used for Type A and Type B for replacement.



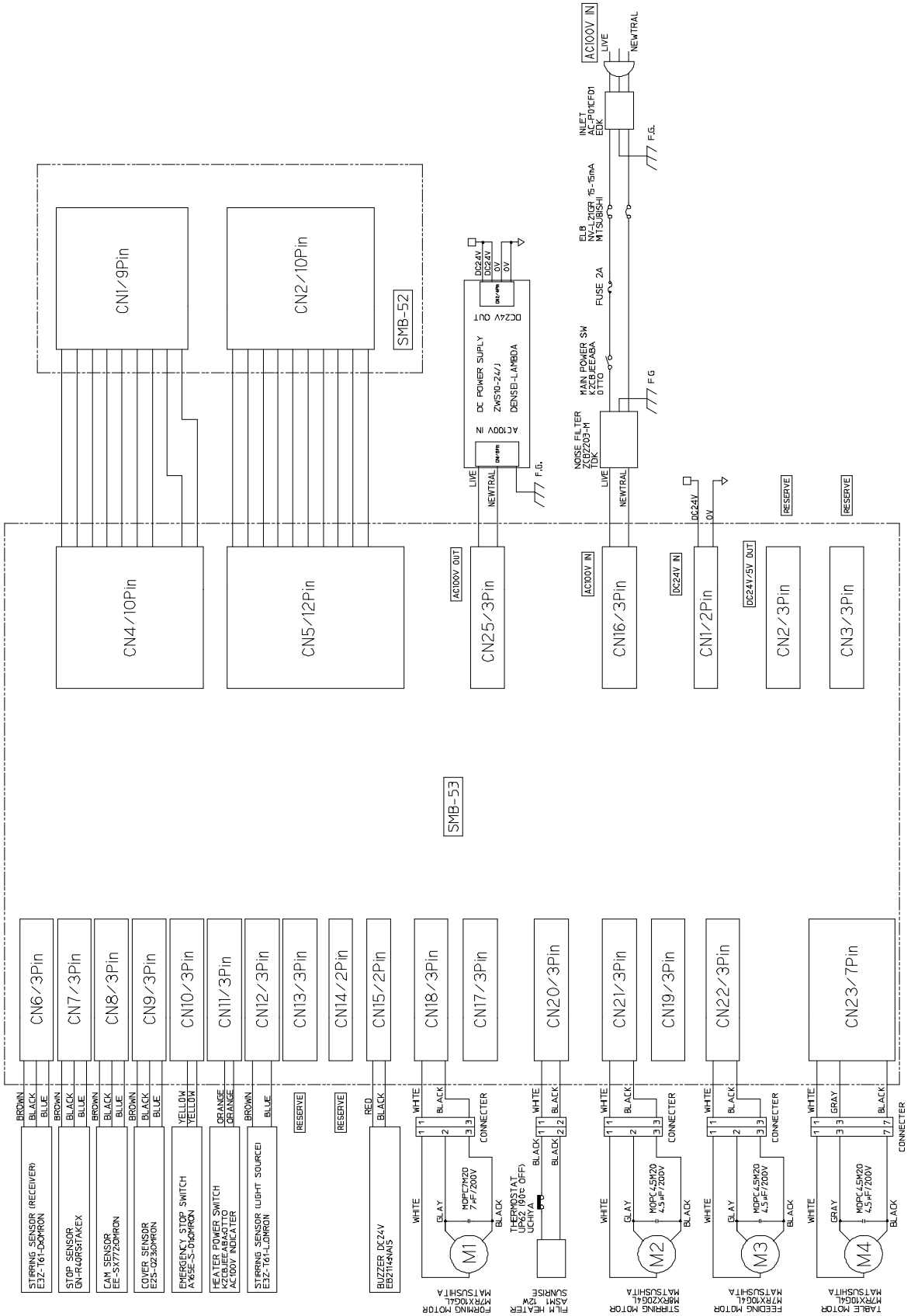
[Inside of the backside of the Main Unit] (Type C)



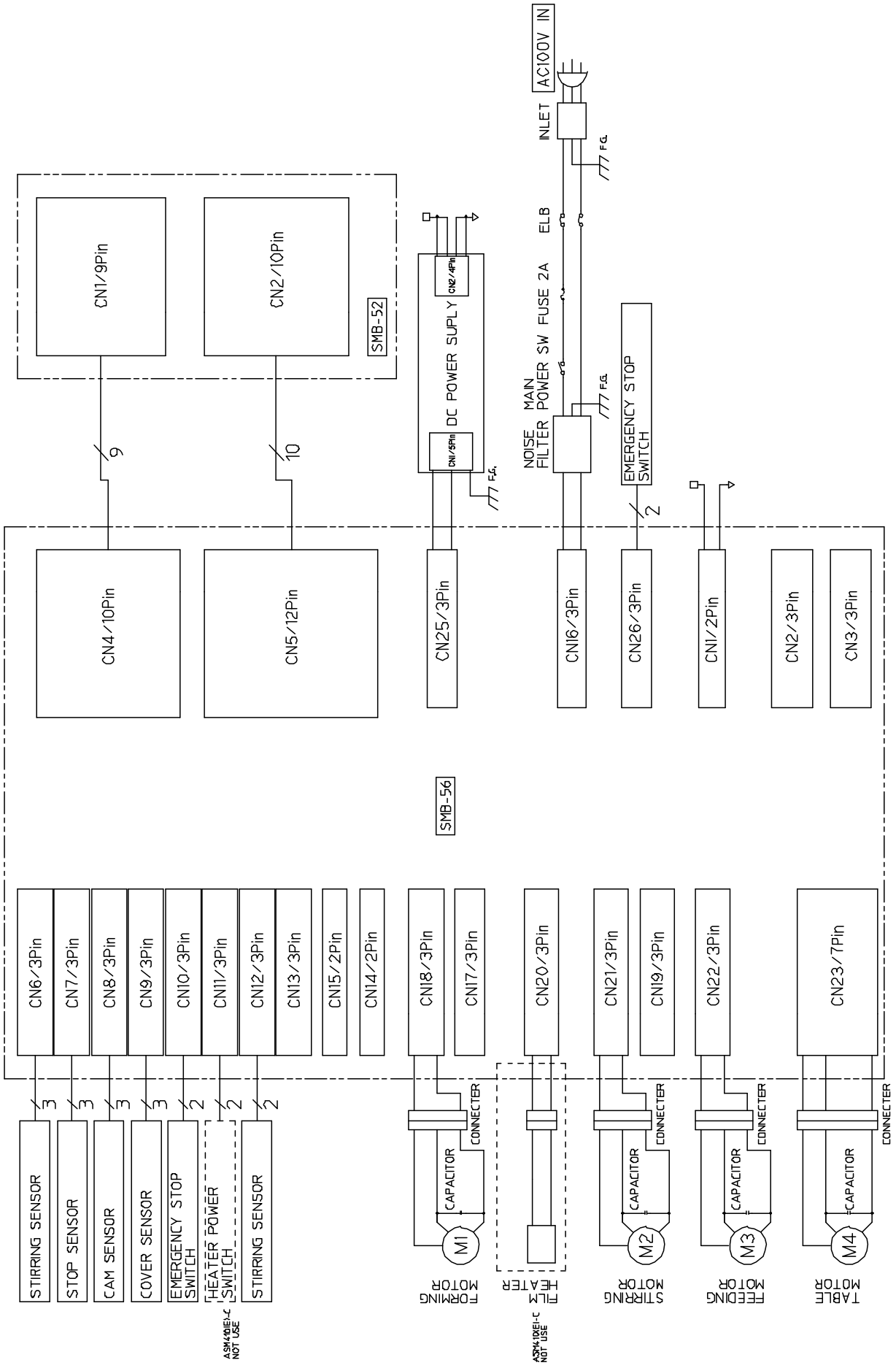
4.2 Wiring Diagram

(For Type A, Type B)

※Although the SMB-53 is used for Type A and Type B, the SMB-56, the main circuit board for the current version, will be used for replacement. The wiring diagram will vary partially.



(Type C)


AC100V IN
INLET
F.G.
ELB
FUSE 2A
SW
MAIN POWER
NOISE FILTER
F.G.
EMERGENCY STOP SWITCH
DC POWER SUPLY
CN2/4Pin
CN1/9Pin
F.G.
SMB-52
CN1/9Pin
CN2/10Pin
9
10
CN4/10Pin
CN5/12Pin
CN25/3Pin
CN16/3Pin
CN26/3Pin
CN1/2Pin
CN2/3Pin
CN3/3Pin
SMB-56
CN6/3Pin
CN7/3Pin
CN8/3Pin
CN9/3Pin
CN10/3Pin
CN11/3Pin
CN12/3Pin
CN13/3Pin
CN15/2Pin
CN14/2Pin
CN18/3Pin
CN17/3Pin
CN20/3Pin
CN21/3Pin
CN19/3Pin
CN22/3Pin
CN23/7Pin
3
3
3
3
2
2
2
STIRRING SENSOR
STOP SENSOR
CAM SENSOR
COVER SENSOR
EMERGENCY STOP SWITCH
HEATER POWER SWITCH
STIRRING SENSOR
ASM40DEI-C NOT USE
CAPACITOR
CONNECTER
M1
M2
M3
M4
TOPPING MOTOR
HEATER
STIRRING MOTOR
FEEDING MOTOR
TABLE MOTOR
ASM40DEI-C NOT USE
CONNECTER

4.3 How to Replace the SMB-53, SMB-56

[Tool used: Box Wrench (5.5 mm)] Although the SMB-53 is used for Type A and Type B, the SMB-56, the main circuit board for the current version, will be used for replacement.

① Remove the Rear Cover. -> 2.1

② Remove all Connectors connected to the Circuit Board SMB-53, SMB-56.

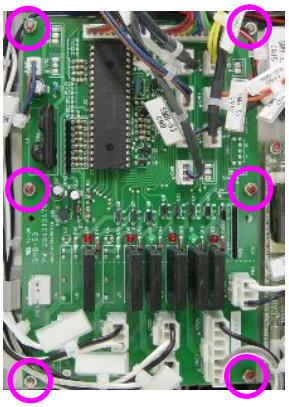
Description of SMB-53, SMB-56 Connections

CN1	DC24V IN/OUT	CN14	Not connected
CN2	Not connected	CN15	Type A, B : Buzzer Type C : Not connected
CN3	Not connected	CN16	AC120V IN
CN4	SMB-52	CN17	Not connected
CN5	SMB-52	CN18	Forming Motor (Center = gray)
CN6	Rice Sensor (light receiving side)	CN19	Not connected
CN7	Stop Sensor	CN20	Heater
CN8	Cam Sensor	CN21	Stirring Motor
CN9	Cover Sensor	CN22	Feeding Motor
CN10	Not connected	CN23	Table Motor
CN11	Heater Switch	CN25	AC120V OUT
CN12	Rice Sensor (light emitting side)	CN26 ※Note1	Type A, B : Short connector Type C : Emergency Stop Switch※Note2
CN13	Not connected		

※Note1 : CN26 is only for SMB-56.

※Note2 : Remove the short connector on the circuit board for Type C.

③ Remove the Nuts [Hexagon Nuts M3] (x6) located on the Circuit Board SMB-53, SMB-56 using a Box Wrench (5.5 mm).



④ Position the replacement Circuit Board and connect each connector using the table in section ② as a reference.

* Note: Be careful not to drop the Nuts and Spring Washers into the Main Unit.

4.4 How to Replace the Power Circuit Board

[Tool used: Box Wrench (5.5 mm)]

① Remove the Rear Cover. -> 2.1

② Pull out all Connectors connected to the Power Circuit Board.

Description of Power Circuit Board Connections (reference)

CN1	AC120V IN (SMB-53, SMB-56)
CN2	DC24V OUT

③ Remove the Nuts [Hexagon Nuts M3] (x2) located on the Power Circuit Board using a Box Wrench (5.5 mm).

④ Position the replacement Circuit Board and connect each Connector using the table in section ② as a reference.

* Note: Be careful not to drop the Nuts and Spring Washers into the Main Unit.

4.5 Description of Internal Functions

- **Initial Setting**

The operation of this machine is controlled by the Program IC mounted on the Main Circuit Board SMB-53, SMB-56.

<<How to Set the Delay Time of the Cam Sensor>>

After initialization, the delay time of the Cam Sensor needs to be set.

① A machine is shipped after fine adjustment has been individually made to the delay time of the Cam Sensor during production. During the Program IC replacement or other such circumstances, take prior note of the setting value of the Cam Sensor delay time.

② Turn the Emergency Stop Switch on and place an object in front of the Stop Sensor to turn it on.

③ If the frequency of the machine is set to 50Hz: Turn ON the Power while pressing the Start/Stop Switch.
If the frequency of the machine is set to 60Hz: Turn ON the Power while pressing the Mode Change Switch.

④ Use “the Rice Amount Adjustment + Switch” and “the Rice Amount Adjustment – Switch to adjust the Cam Sensor delay time to the setting value taken prior note in step ①.

⑤ Turn OFF the Power once.

⑥ Repeat processes ① to ⑤ above two or three times. After confirming that the upper face of the Roller Shaft always stops just before the horizontal position, complete the setting.

* Note: If the Cam Sensor delay setting value cannot be found, the guideline setting are “0.3” for a machine with the frequency set at 50Hz and “0.1” for a machine with the frequency set at 60Hz.

- **How to Switch to Aging Mode**

Aging Mode refers to the running-in operation mode.

① During regular operation, press and hold the Rice Amount Adjustment + Switch and the Rice Amount Adjustment - Switch. A sound "pipipi" beeps and the mode changes to Aging Mode.

② Starting operation by pressing the Start/Stop Switch initiates the machine to start an aging run. During Aging Mode, the Constant Mode Lamp and the Single Mode Lamp light up in turn.

③ To quit Aging Mode, press the Start/Stop Switch.

* Note: During Aging Mode, never load rice, because the stirring operation is not normally provided. Otherwise, the machine may be damaged. Additionally, the Stop Sensor is also cancelled.

- **Cover Sensor Disable Function**

This function disables the sensor function of the Cover Sensor. A makeshift run is possible when the Cover Sensor breaks or under other such circumstances.

① To disable the Cover Sensor function, while pressing the Mode Change Switch with the Power OFF, turn the Power ON and press and hold the Mode Change Switch for three seconds.

* Note: When the Cover Sensor disable function is active, never touch the operating section, because the machine can operate even with the safety cover removed. Otherwise, there is serious danger to persons and the machine.

* Note: Turning OFF the Power once cancels the Cover Sensor disable function.

AUTEC Inc.

Address: 20695 S. Western Avenue, Suite 101, Torrance, CA 90501 U.S.A.
Phone: (310)212-6070 **FAX:** (310)212-5867
E-mail: sales@autecinc.com
Web site: http://www.autecinc.com

audio-technica corporation P#2873-02200C UC101124 Printed in Japan