

SAMSUNG

WASHING MACHINE

F1015JGB/YLP

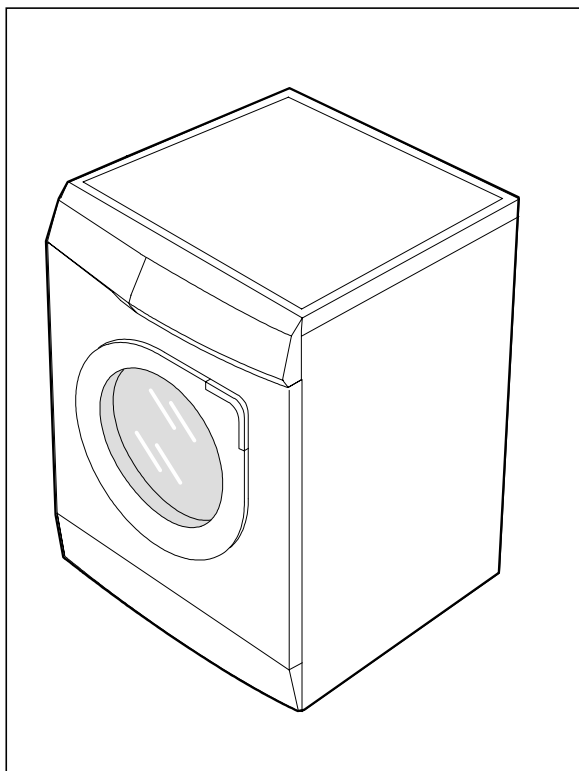
F1015JGE/YLP

F1015JGP/YLP

F1015JGS/YLP

SERVICE *Manual*

WASHING MACHINE



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Caution for the safety during servicing

1. Do not allow the customer to repair the product.

⚠ The person may be injured or the product life may be shortened.

2. Execute A/S after unplugging the power supply unit.

⚠ Be care of the electric shock.

3. Do not plug several plugs in the same outlet.

⚠ It may cause the fire due to overheat.

4. Check the damage, pressing or burning of the power plug or outlet.

⚠ Replace it promptly if it has problem.(may cause the electric shock or fire)

5. Do not clean the main body with the water.

⚠ It may cause the electric shock and fire and shorten the product life)

6. The wiring of the harness shall be free from the moisture and tightened during serving.

⚠ It shall not be deviated by certain impact.

7. Remove any dust or filth on the housing section,wiring section,connection section during servicing.

⚠ Protect the cause of the fire such as the tracking,and etc.

8. Check any mark of the moisture on the electrical parts, harness section and etc.

⚠ Replace the parts or remove the moisture.

9. Check the assembly status of the parts after servicing.

⚠ Maintain the status before servicing.

10. Pull out the power cord with holding the plug.

⚠ Be care of the electric shock and fire when the cord is damaged.

11. Unplug the power plug from the outlet when the wash machine is not used.

⚠ Be care of the electric shock and fire due to the strike of the lightening.

12. Do not use or store the spray or flammable materials(including gasoline,alcohol and etc.) around the wash machine.

⚠ Be care of the explosion or fire due to the electric spark.

13. Do not put the bowl of water or wet laundry on the wash machine.

⚠ If the water is penetrated to the wash machine, this may cause the electric shock or fire.

14. Do not install the wash machine in the place where the snow or rain falls.

⚠ It may cause the electric shock and fire and shorten the product life.

15. Do not push the control buttons with the awl,pin, or sharp materials.

⚠ It may the electric shock and trouble.

16. Check the wash machine is leveled horizontally and installed properly on the floor.

⚠ The vibration may shorten the product life.

17. Joint the wire by the connector correctly.

⚠ When the wire is jointed by the tape, this may cause the fire due to the tracking.

18. When the wash machine is to be laid for the service, put the pad on the floor and lay the product at side slowly.

⚠ If the wash machine is laid front, the relay may be damaged by the tub.

19. When the wash-heater is replaced, check it is inserted in the bracket-heater and screw the nut.

⚠ If the wash--is not inserted in the bracket-heater properly, this may cause the noise and leakage since it is contacted to the drum.

1. Specifications

TYPE	FRONT LOADING TYPE		
DIMENSION	W 598mm X D 404mm X H 844mm		
WATER PRESSURE	50 kPa ~ 800 kPa		
WEIGHT	65 kg		
WASH and SPIN CAPACITY	4.5 kg (DRY LAUNDRY)		
POWER CONSUMPTION	WASHING	220 V	70 W
		240 V	70 W
	WASHING and HEATING	220 V	1800 W
		240 V	2100 W
	SPIN	MODEL	F1015J
		230 V	220W
	PUMPING		34 W
WATER CONSUMPTION	43 ℓ (STANDARD COURSE)		
SPIN REVOLUTION	MODEL		F1015J
	rpm		1000

2. Safety Devices

※ We adapt 5 safety devices for users to use this wash machine safely.

1) Balancing device (ASSY-Main PCB)

→ When the laundry is out of balance, to prevent the noises and vibrations, the unbalance detecting sensor helps the laundry laid even and continue the dehydrating process.

2) Anti-over water supply device

→ Because water supply valve is broken, once water is supplied to the 2/3 level of the door, the water supplied is drained automatically, Over -flow error (E3) is displayed on the panel

3) Temperature-regulating device(thermistor)

→ To prevent over-heating over the temperature setted up, THERMISTOR senses the temperature of the machine continuously and helps the wash machine to work at the temperature given by users.

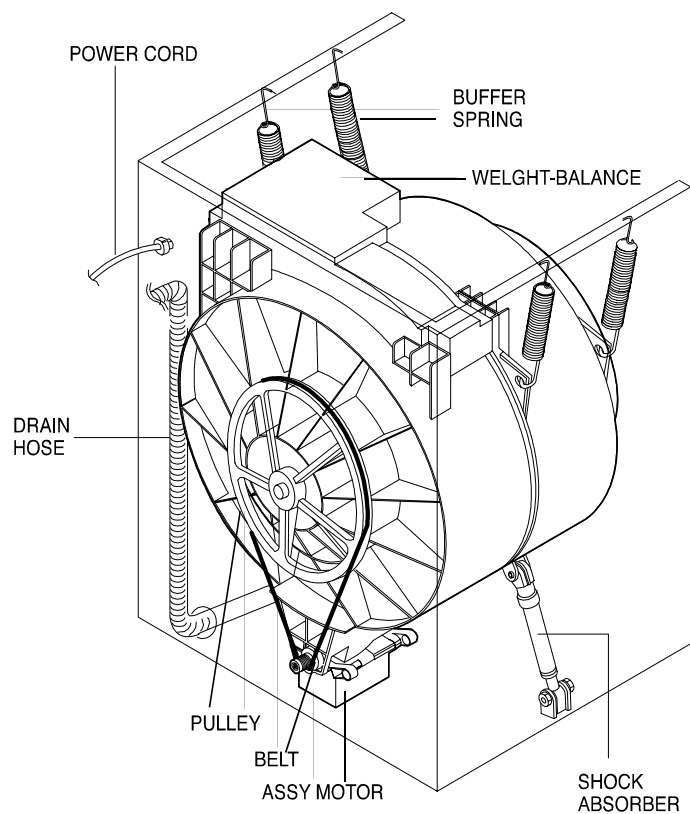
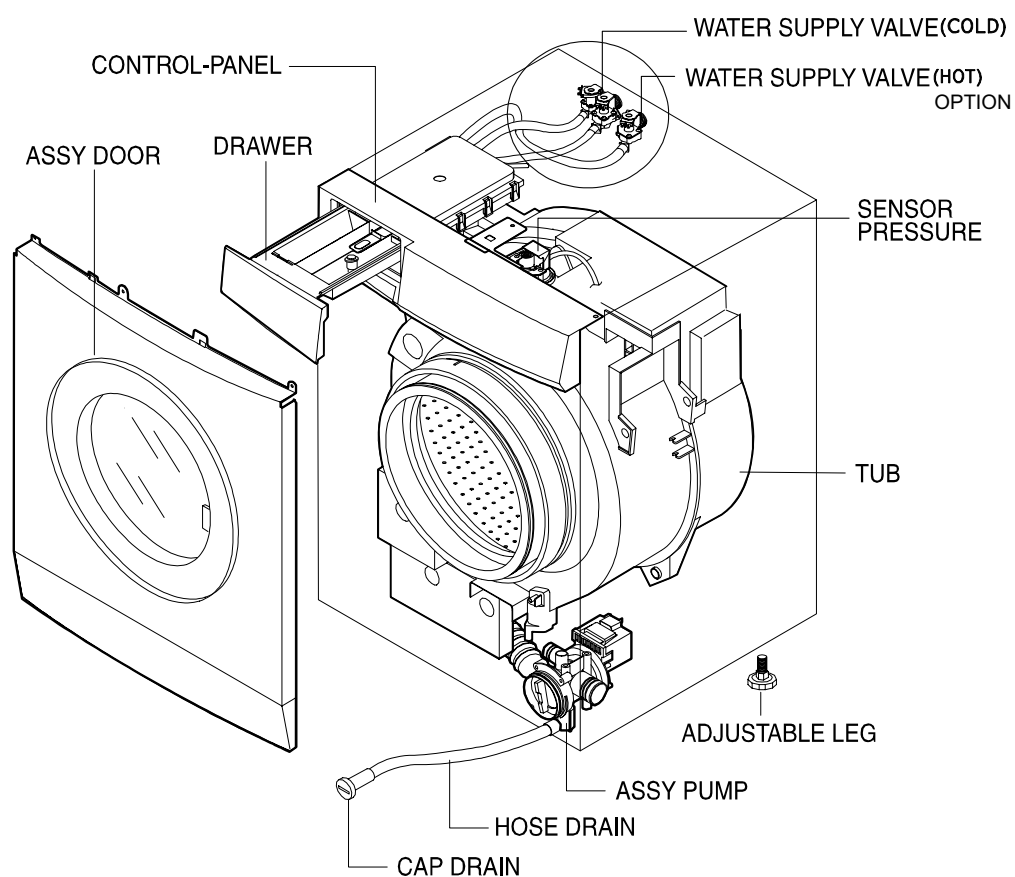
4) Overheating- controlling system

→ Under the circumstances of THERMISTOR inferiority or abnormal condition, if wash-heater is overheated, automatically, assy -thermal fuse cuts off the power supply to protect the machine to keep it safe.

5) Delicate clothing safeguard function(ASSY-Main PCB)

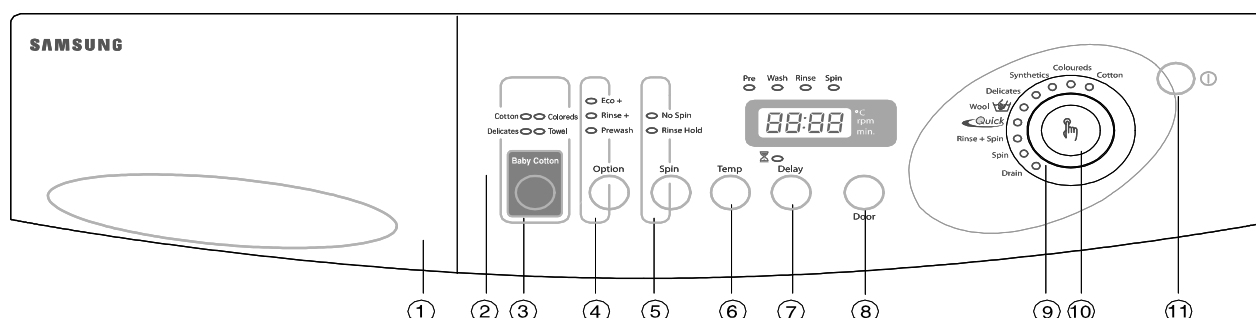
→ To protect the clothings which is weak to high temperature, the wash machine senses the temperature inside the washing tub. if the temperature rises over 50℃ wool washing course and Delicate washing course display abnormal water temperature on the panel , after draining the water.

3. Overview of the Washing Machine



4. Overview of the control panel

F1015J



1. Detergent dispenser

2. Display panel

Displays the remaining wash cycle time and error messages.

3. Baby cotton button

Press the button to select one of the three available Baby Cotton programs.

Cotton(Underwear) → Coloureds → Delicates → Towel

4. Option button

Press the button repeatedly to cycle through the available partial wash options

{Eco+ → Rinse+ → Prewash → (Eco+ + Rinse+) → (Rinse+ + Prewash) → Cancel → Eco+}.

Note : Prewash/Eco+ is available only with Baby Cotton(Cotton, Coloureds, Delicates, Towel), Cotton, Coloureds, Synthetics or Delicate programs.

5. Spin selection button

Press the button repeatedly to cycle through the available spin speed options.

F1015J	no, rh, 400, 600, 800, 1000 rpm	<i>no: no spin, rh: rinse hold</i>
---------------	---------------------------------	--

When pressing this button during operation, you can see the selected spin speed in the display panel.

6. Temperature selection button

Press the button repeatedly to cycle through the available water temperature options (cold water, 30 C, 40 C, 60 C and 95 C). When pressing this button during washing, you can see the selected temperature in the display panel.

7. Delay (Start) button

Press the button repeatedly to cycle through the available delayed start options (from 1 hour to 24 hours in one hour increments).

8. Door (Open) button (F1015J)

Press to open the washing machine door.

Note: You cannot open the door until you press ⓪ (On/Off).

9. Fuzzy Control dial

Turn the dial to select one of the nine available wash programs.

Cotton, Coloureds, Synthetics, Delicates, Wool, Quick, Rinse+Spin, Spin, Drain
--

10. Start/Pause button

Press to pause and restart programs.

11. ⓪ (On/Off) button

Press once to turn the washing machine on, press again to turn the washing machine off.

If the washing machine power is left on for longer than 10 minutes without any buttons being touched, the power automatically turns off.

5. Main function

1) Auto power S/W off function

- After power on, the auto power S/W off function automatically switches power off for you if you do not press selection button for 10 minutes
- After selecting the function, the auto power S/W off function automatically switches power off for you if you do not press start/pause button for 10 minutes
- until 5 minutes past, After finishing the last function, the auto power S/W off function automatically switches power off for you if you do not re-select the course button or manual button

2) Door open function

- Door just can be opened at water level 23.80 KHz over, water temperature 55℃ below, motor off, if power is off door is not opened (only auto-door model)
- If door is open during the operating, all operating is halted, and door error message will be displayed (2-digit panel displays "Ed" 4-digit panel displays "door") and error melody will coming out
- Door open error can be cleared by closing the door. the operating keeps going on

3) Rinse hold function

- If rinse hold function selected, the operating is finished , the machine do not drain the water after last rinse

4) No spin function

- If no spin function selected, the operating is finished after last rinse

5) Drain function

- Drain function is over, after pumping out the water for 2 minutes , without motor rotating

6) Pre-washing function

- Pre-washing function can be selected ,when you choice the following mode; cotton, coloreds, synthetics, delicates, baby cotton
- Water level/reverse time is the same with the selected course
- Pre-washing takes about 15 minutes

7) Rinse+ function

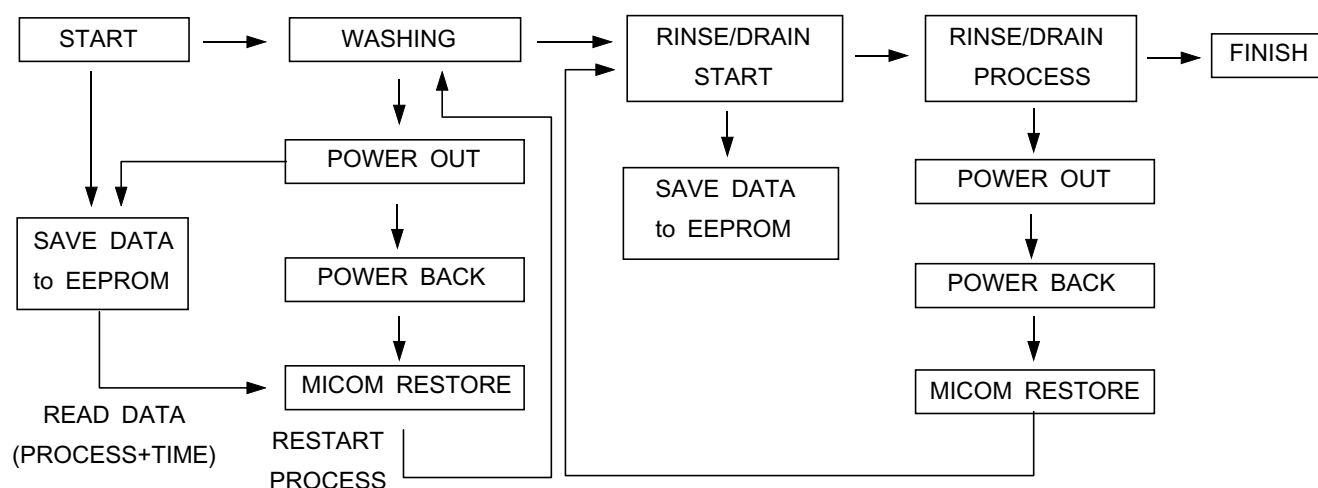
- This function practises rinse process once more

5. Main function

8) Power-out compensation function

- If power is out on selected process, the process before power out is stored to EEPROM, once power is back the process before power out continues.
- When power is back, washing process starts from the process at the point of the power out, rinse/drain process starts from the initial process.

POWER-OUT COMPENSATION FUNCTION PROCESS



9) Water heater Error function

- ① This function starts working, when the heater works abnormally.
(this function begins sensing the heater 2 minutes later, after the heater operating)
- ② The value of the initial thermistor(A1) is compared with that of the thermistor(A2) in 2 minutes ($Y=A2-A1$)
- For 10 minute the variance of temperature(Y) is less than 2°C "E5" message is displayed on the panel.
- ③ The value of the initial thermistor(A1) is compared with that of the thermistor(A2) in 11 minutes ($Y=A2-A1$)
- For 1 minute the variance of temperature(Y) increases more than 7°C (0.3V) "E6" message is displayed on the panel.
- ④ At this time heater, Error "E5 (heater do not work), E6(overheated)" is displayed and all working process off
- ⑤ The heater operating continues during heating hours, if washing hour is left over, the residual washing process keeps going without heating.

5. Main function

10) Fuzzy washing function (weight-sensing)

After finishing initial water supply, when the fall of the water level needs supplementary water supply, Sensing function perceives the weight with the supplementary water supply numbers and starts to work. Under the course of Cotton, or Coloureds, if the supplementary water supply numbers become 3 - 4 times the function is going at default condition (high water level), if 1-2 below that is going at middle level, if 0 below low water level, heating hours and rinse hours depend on the above data.

ECO PRE mode is selected, the process going on at default condition.

	Washing hours		Rinse water level
	Cotton	Coloureds	
High	Default	Default	Default
Middle	Default-12 min	Default-7min	23.30KHZ
Low	Default-25 min	Default-15min	23.70KHZ

※After sensing weight, above hours is decreased from above default hours

11) Bubble -detecting function

At the each condition of washing&dehydrating , rinse&dehydrating , hydrating, bubble -detecting function works, this function works 5times normally, if the function detects bubbles at 6 times , the bubble-detecting function stops and go on to the next process.

- The bubble-detecting function during washing & dehydrating to rinse & dehydrating

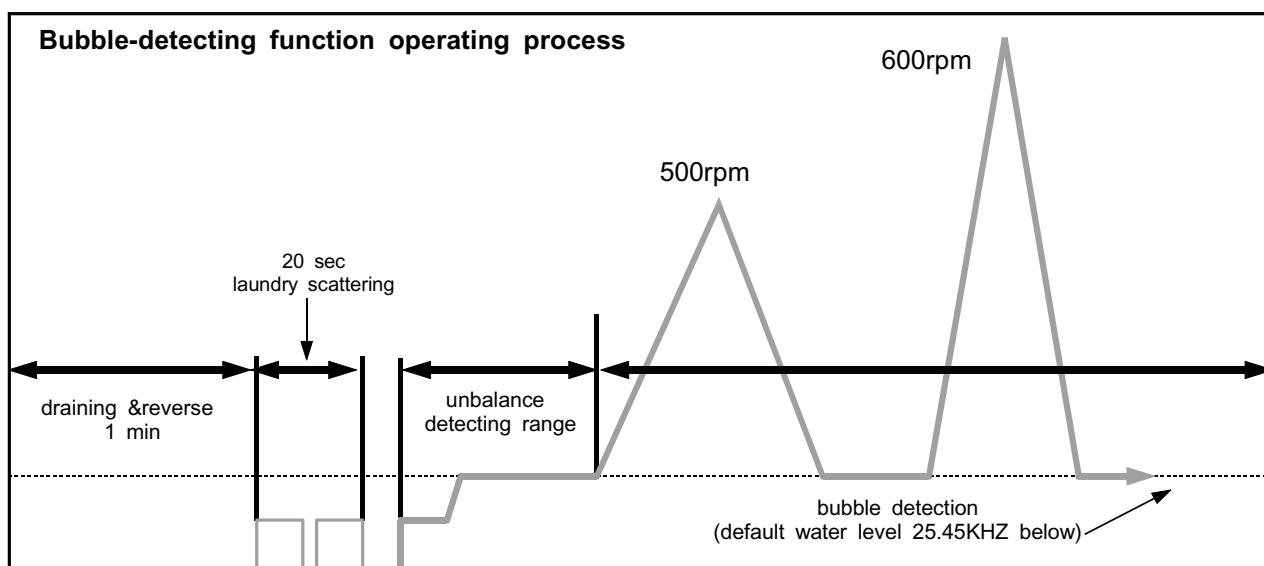
after 2 times instant dehydrating and before main dehydrating, if the water level is under 25.45KHZ, Bubble

→ Detecting function thinks there are bubbles and add the bubbles-removing rinse, needing hours are above hours and 8 min 40 sec.

→ The bubble-detecting function during single hydrating process

after 2 times instant dehydrating and before main dehydrating , if the water level is 25.45KHZ below or during main dehydrating, water level data is 23.80KHZ below Bubble-detecting function thinks there are bubbles and add the bubbles-removing rinse 1 times, needing hours are above hours and 5 min 55 sec.

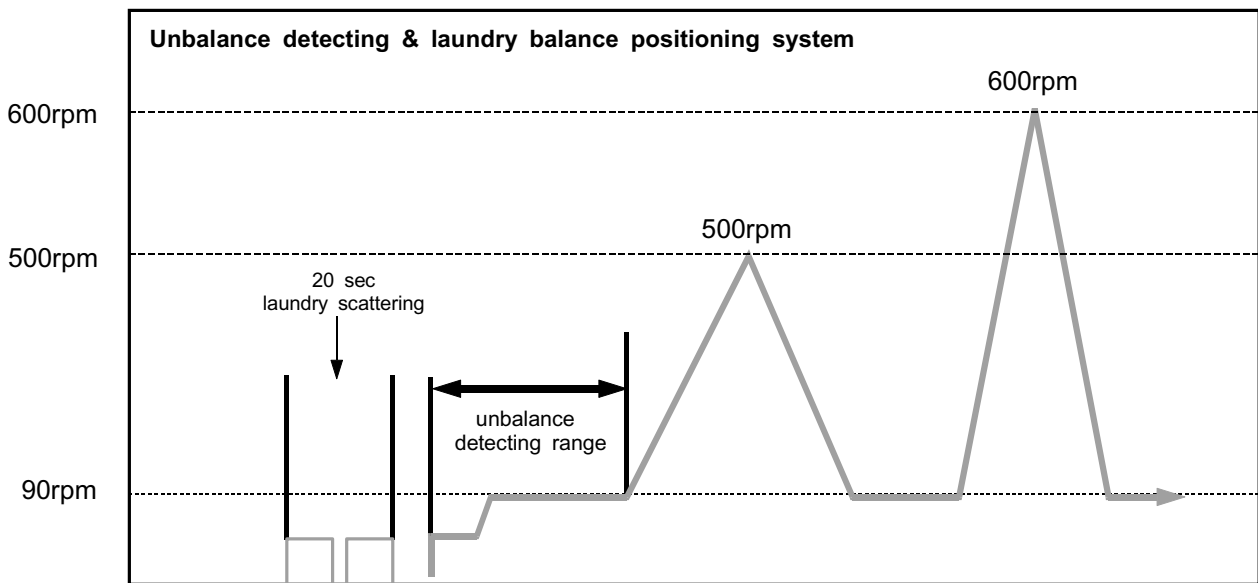
Bubble-detecting function operating process



5. Main function

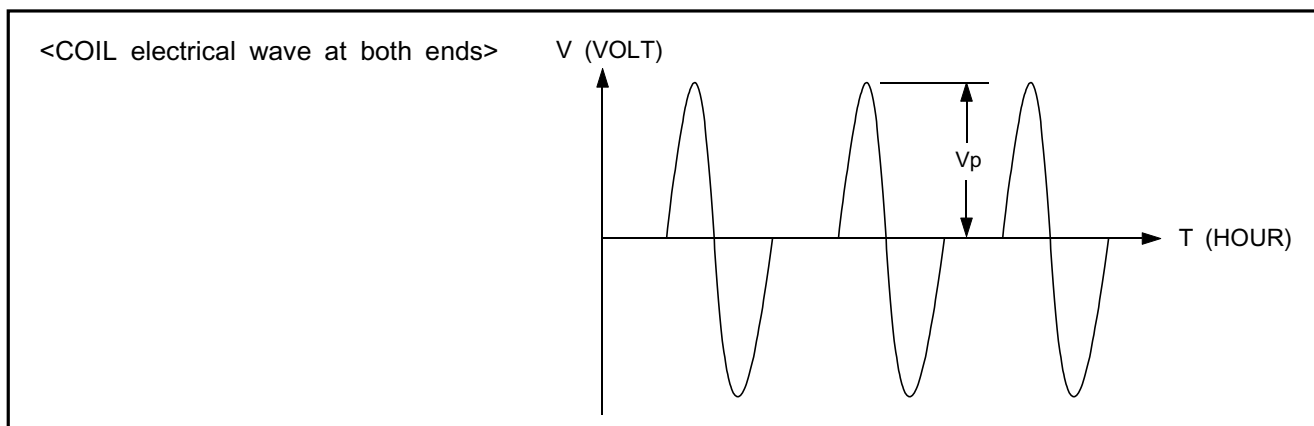
12) Unbalance detecting & laundry balance positioning system

- ① Just before the hydrating process and just after reversal rotation for balancing laundry position, this function is carried out
- ② The initial 6 sec is the period of reversal rotation for balancing laundry position , Drum rotates 50rpm for initial 6 sec
- ③ Next 10 sec, the rotation increases the speed from 50 rpm to 90 rpm slowly
- ④ During the next 18 sec, drum rotates at the speed of 90 rpm, the sensor decides the degree of laundry unbalance with TACHO data which is attached to motor
- ⑤ If the degree of unbalanced laundry is over 6 times to default value, laundry balancing system carries out feed back process 6 times



13) R.P.M control

The rotating motor enables the magnetics(i.e generator) to generate magnetic flux in proportion to r.p.m, magnetic flux induced by coil sensor in the opposite side produces the wave like the figure below to $d\Phi/dt$ and via rectangular wave generating circuit, the waves reaches MICOM and micom controls r.p.m with the pulse, count and cycle inputted by program.



6. Technical point

1) Motor on/off time at each course

unit:sec

Course	Washing				Rinse				Motor r.p.m
	Cw	Off	Ccw	Off	Cw	Off	Ccw	Off	
Cotton	13	3	13	3	10	5	10	5	50
Coloureds	11	4	11	4	10	5	10	5	50
Synthetics	7	8	7	8	7	8	7	8	40
Delicates	5	10	5	10	5	10	5	10	30
Wools	2	58	2	58	2	28	2	28	25
Quick	12	3	12	3	10	5	10	5	45

※ Motor on/off time is measured in cold water, in heating time motor on/off time is 10 sec on and 5sec off in the cotton course, beside cotton course, in the other course motor on/off time is the same with that of cold water use.

2) Final dehydrating r.p.m at each course

unit:rpm

Course \ Model	F1015J
Cotton	1000
Coloureds	1000
Synthetics	800
Delicates	600
Wools	400
Quick	1000

※ You can change the r.p.m to the above a table by use spin button under no spin situation.

3) The water supply control at each process cycle

Process cycle \ Model	F1015J
Washing	Cold water 5L/min / cold 10L/min
Rinse	Cold 10L/min
Final rinse	Cold water 5L/min + cold 10L/min

6. Technical point

4) The water level data at each course

unit:Khz

Course	Water level	Default water level(khz)	Supplemetary water START(Khz)	Supplemetary water end(khz)
Cotton	Washing	23.60	24.20	23.90
	Rinse	23.00	24.20	23.90
Coloureds	Washing	23.60	24.20	23.85
	Rinse	23.00	24.20	23.90
Synthetics	Washing	23.60	24.20	23.90
	Rinse	23.10	24.20	23.90
Delicates	Washing	23.25	23.00	23.70
	Rinse	23.00	24.20	23.90
Wools	Washing	23.00	23.00	23.70
	Rinse	23.80	23.80	23.50
Quick	Washing	23.60	24.20	23.90
	Rinse	23.10	24.20	23.80

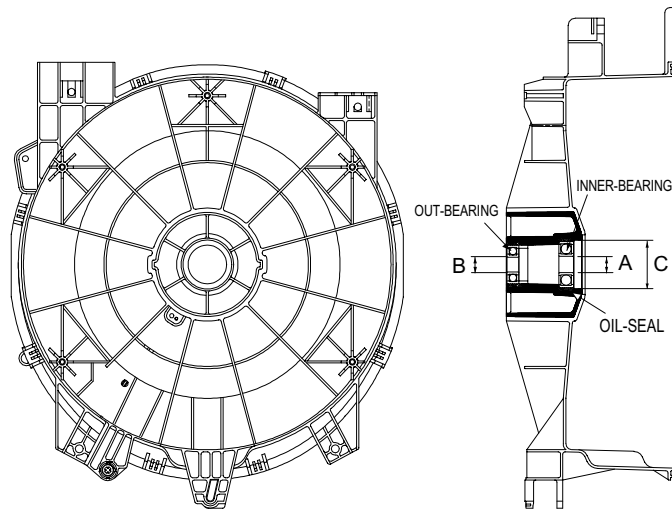
5) The other water level data

unit:Khz

The water data unter each conditon		
1st water supply (only preparation)	24.60	1st water supply level to washing tub
Overflow error	20.50	The water supplied reach 2/3 of door
Bubble detectingatwashing/rinse/dehydrating	25.45	Bubble -detecting water level
Bubble detecting rinse water level	21.60	The water level which can detect bubbles
Water level which can open door	23.80 over	It is possible to open the door
Water level which can drive heater	24.50	Safety water level of wash heater
Water level which can reset the drain	24.50	The water level can be detected after 1st draining

※ If water level is 15KHZ below or 30 KHZ above , sensor-pressur is out of order so needs changing.

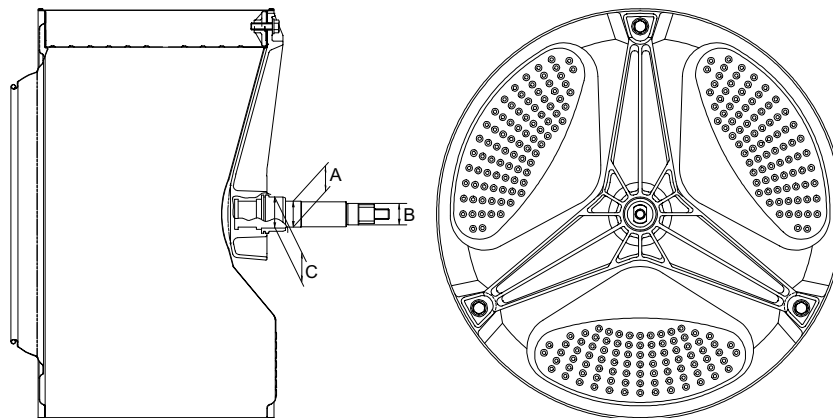
10-6 ASSY-TUB BACK



(unit : mm)

TYPE	INNER-BEARING(A)	OUT-BEARING(B)	OIL-SEAL(C)	Assy-Housing Bearing(D)	Assy-Tub Back	REMARK
I	ø 20	ø 17	ø 24.3	DC97-00125A	DC97-00214K	

10-7 ASSY- DRUM

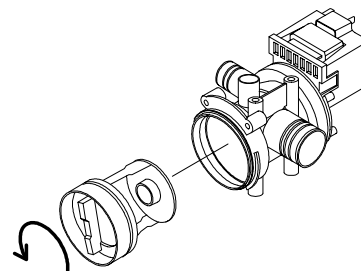


(unit : mm)

TYPE	(A)	(B)	(C)	CODE-NO.	REMARK
I	ø 20	ø 17	ø 25	DC97-01463C	Lifter type

10-8 ASSY-PUMP DRAIN

- 1) Capacity : AC 230V 34W
- 2) Location : Front bottom(R)
- 3) Resistance : 15Ω ~ 18Ω



12. Setting up a wash machine.

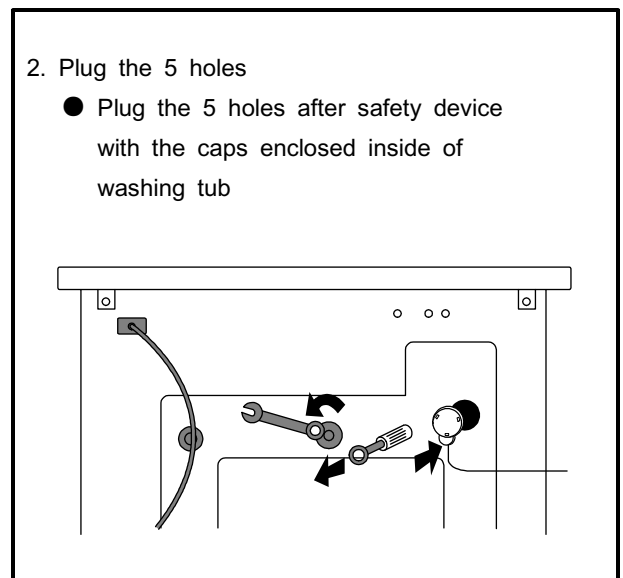
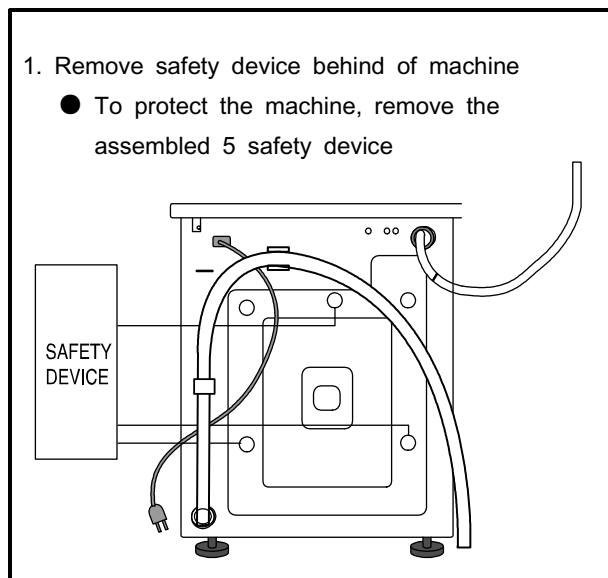
12-1 Remove the safety device for carriage

- 1) Remove 5 safety device volts with a enclosed wrench for safety device remove
- 2) Plug the 5 holes with 5 caps after removing the 5 safety device volts.

* Take care of 5 safety device volts and a wrench , you need these when you move wash machine safely.

Caution

You must remove safety device before use , if not, you have much vibration or much load can be impacted on the machine.



12-2 Install the wash machine on the leveled place.

With the water level adjustment device, adjust the 4 adjustment legs to install the machine leveled on the right, left, front and rear side. machine's install condition and size is following.

12-2-1 Initial assembled condition (ass'y cover top)

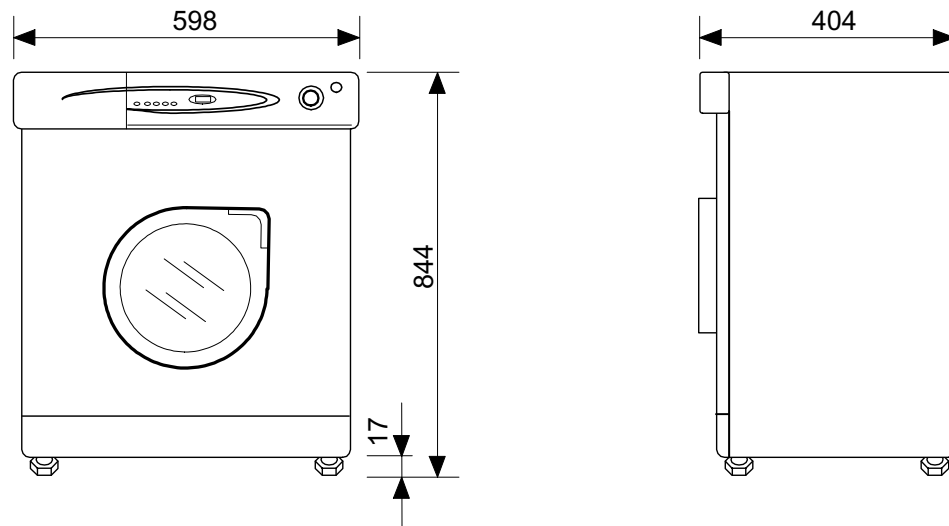
- 1) Adjustment legs are stick to the bottom of the machine, when the machine comes out of factory. this condition is ideal for vibration and noise.
- 2) When you install the machine initially or move the machine in use, unscrew the 4 legs to the left and place the machine level and spin the locking nuts and tighten it strongly.



12. Setting up a wash machine.

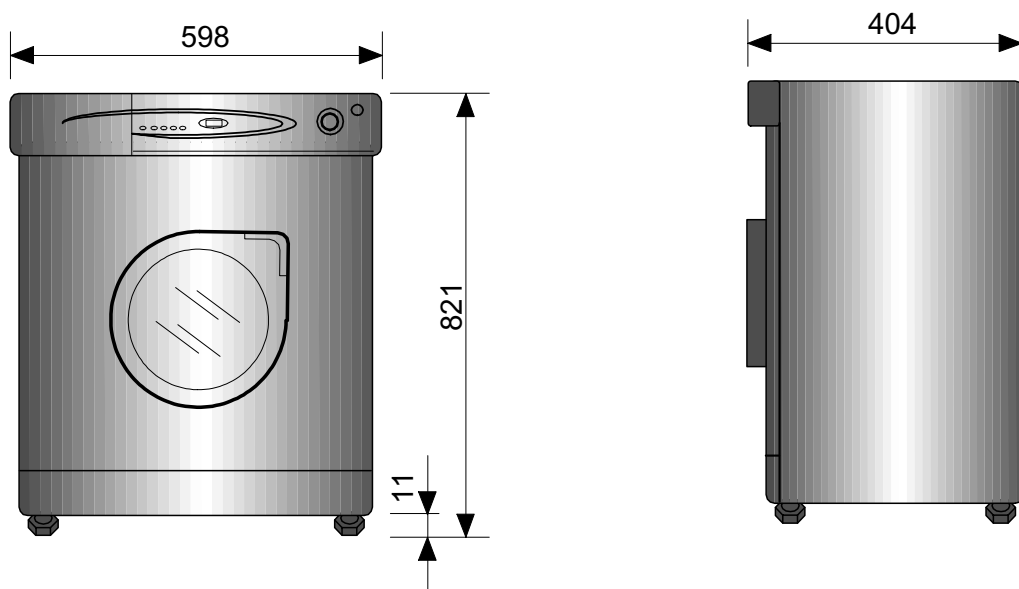
- 3) Even though adjustment legs came out all the way, if machine is not leveled, prop up the machine with the wood or brick to make it even.

(Do not use fragile material or slippery material such as laminated paper)



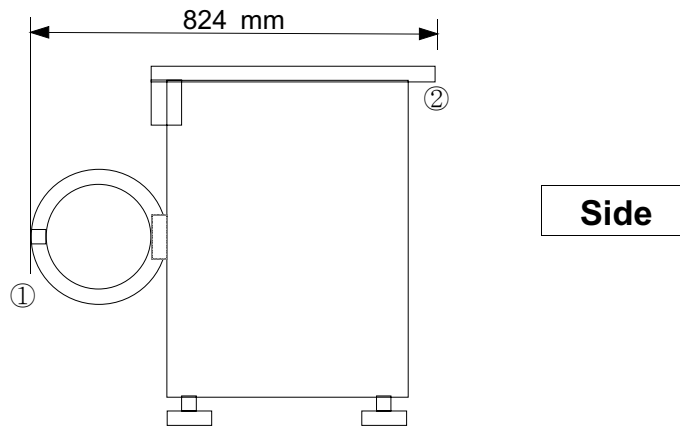
12-2-2 The condition of setting up sink(Disassembled Ass'y- Cover Top)

- 1) Spin the adjustment leg to the left and remove them from the front and rear side of the machine.
- 2) Remove the 4 locking nuts from adjustment legs, and put only adjustment legs back where those were.
- 3) After removing the fixing screws(each on right, left side) from the machine which is behind ass'y- cover top, disassemble the assy-cover top.
- 4) Install the sink.

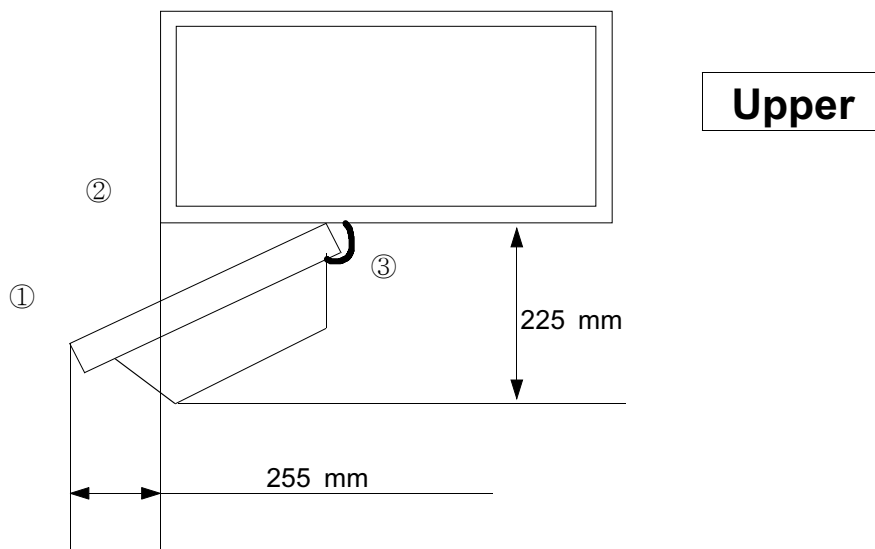


12. Setting up a wash machine.

12-3. Door Opening Dimension(Slim Model)



- (When The Door Vertically Open)
The distance between door① and the rear side② is 824mm



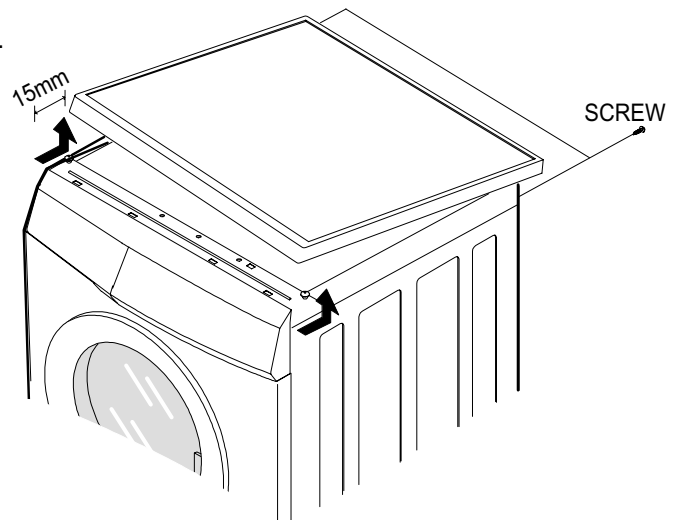
- (When the door extremely open ※)
The distance between the door edge(①) and the left side of washing machine(②) is 255mm

※ Maximum door angle(③) is 170°

13. Assemble and Disassemble

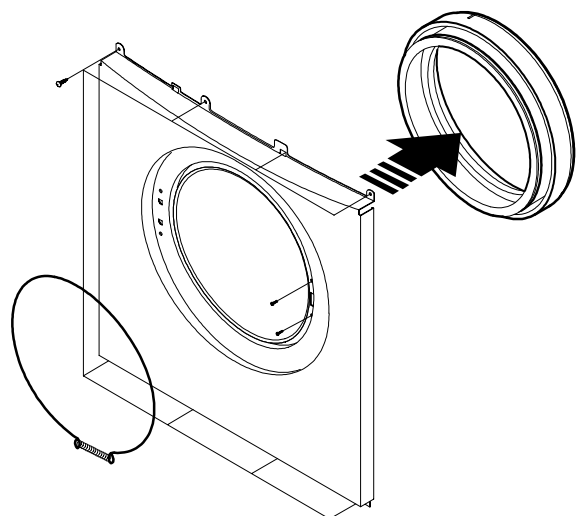
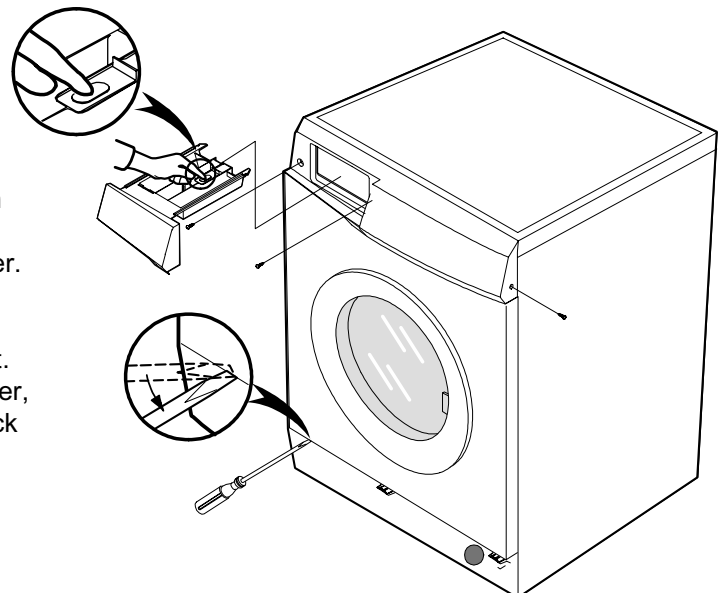
1. ASS'Y-COVER TOP

- 1) Remove two screws fixing the top-cover on back side.
- 2) Push the top-cover back about 15mm and pull it up.
- 3) It's possible to exchange and service Assy-Panel (PCB), the pressure-sensor, the noise-filter, the water valve and trans(option).



2. FRAME FRONT

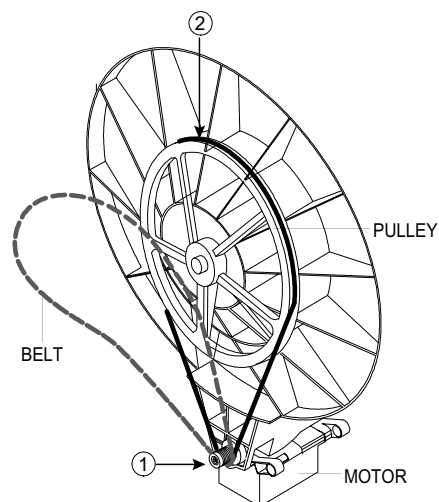
- 1) Remove the top-cover and the ass'y drawer.
- 2) Remove two screws fixing the control-panel on front side and the screw on right side.
- 3) Remove the cover-front(L) by using the (-)driver.
- 4) Part the diaphragm and the wire diaphragm away from the frame-front.
- 5) Remove the eight screws fixing the frame-front.
- 6) It's possible to exchange and service the heater, the pump, the shock-absorber and the door lock s/w.



13. Assemble and Disassemble

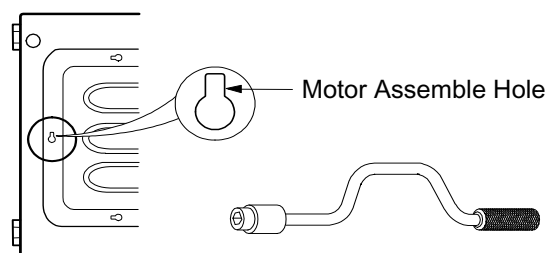
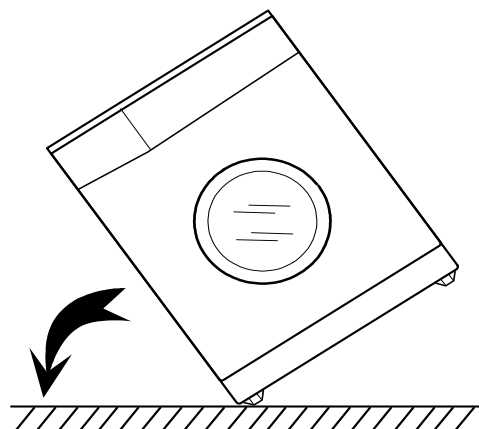
3. BELT

- 1) Remove the top-cover.
- 2) Disassemble and assemble the belt.
- 3) Check the belt is located at center of the motor-pulley.
<When assemble the belt>
Hook the belt on the motor pulley 1) and place it around the pulley 2).



4. MOTOR

- 1) Lay down the washer on left side.
- 2) Remove the wire housing from the motor.
- 3) Remove the bolt fixing the motor with the box drive on back side.
- 4) Remove the motor.



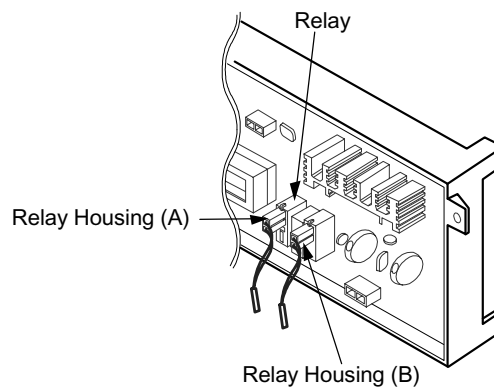
5. How to Assemble the RELAY Housing.

<CAUTION>

Insert the Relay Housing to the Relays on the opposite direction each other.

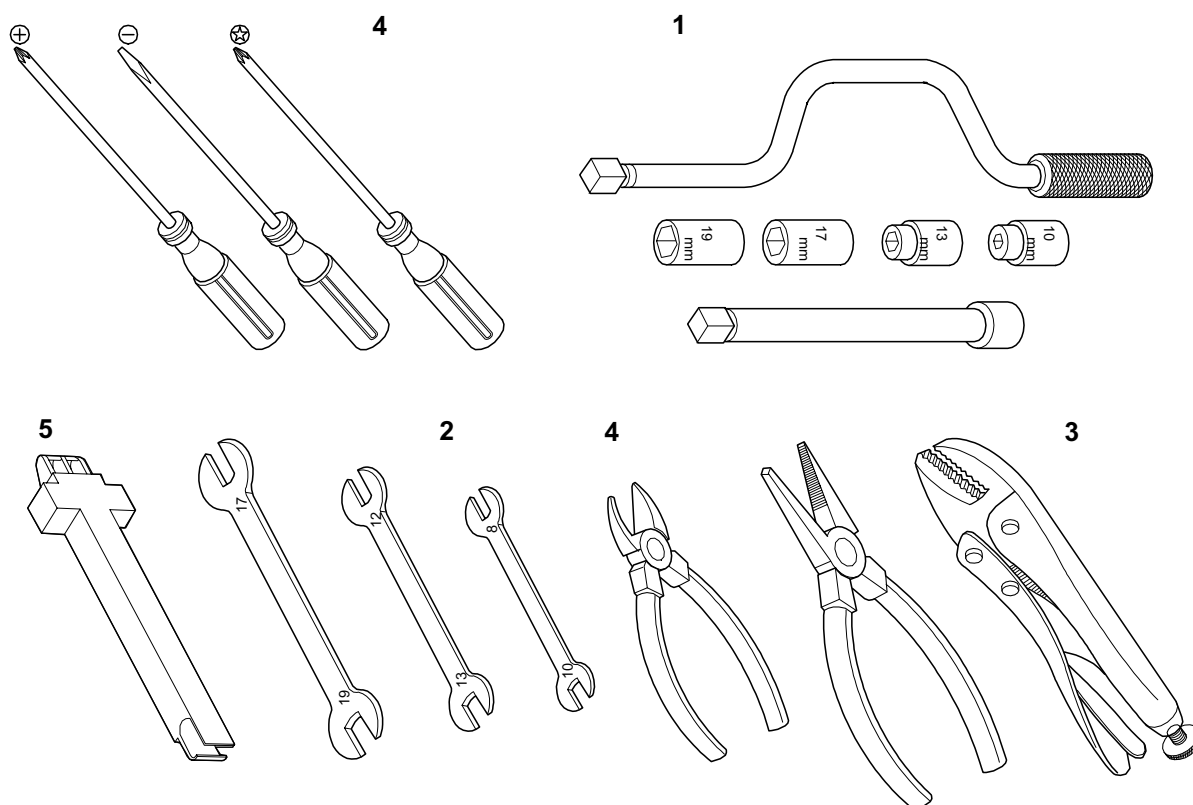
[Relay Housing Color]

A	B
WHITE	BLUE



14. Tools for Disassembly and Assembly

NO.	TOOL		
1	Box driver	10mm 13mm 17mm 19mm	Heater (1) Motor (1), Balance (5) 2 holes of each left and right of the shock absorber 1 Pulley hole
2	Double-ended spanner	10, 13 17,19mm	Replaceable for the box driver. Since the bolt runs idle when the box driver is used, use the box driver 17mm.
3	Vice pliers		Tool to protect the idle and abrasion of the bolt for the box driver.
4	Other(Driver, Nipper, Long nose)		General tools for the after service.
5	JIG for the Tub		1 (Disassemble and Assemble)



7. General Error Function

When an error occurs, this function starts to keep generating error melody sounds and displays error indicators as shown in the followings per corresponding error by blinking in 0.5sec interval until the error status is completely cleared out. In this case, all the driving devices are turned off until the error is cleared out.

1. WATER SUPPLY ERROR

- Display shows 'E1'.
- Water Supply Error occurs when water level frequency does not show changes more than 100Hz or water is not supplied up to the water level presetting for 20 min or more at the time of initial water supply.
- The error status can be cleared by turning POWER S/W OFF and resuming the POWER ON initial status.

2. WATER DRAIN ERROR

- Display shows 'E2'.
- In case the water level frequency is 24.5KHz or less in the initial phase of UNB-detecting cycle.
- Water Drain error can be cleared by turning POWER S/W OFF and resuming the POWER ON initial status.

3. OVER-FLOW ERROR

- Display shows 'E3'.
- Over-Flow error occurs when the water level is in abnormal operation. It can be cleared by turning POWER S/W OFF. Water is drained prior to POWER S/W OFF and it is forced to be drained for 2 min if a frequency of more than 24.5 KHz is detected.

4. DOOR OPEN ERROR

- Display shows 'door', 'Ed'
- Door Open error can be cleared by closing the door.

5. UNBALANCE ERROR

- Display shows 'E4'.
- Laundry load is unbalanced; loosen any tangled laundry.
- If only one item of clothing needs washing, such as a bathrobe or jeans, the final spin result might be unsatisfactory and an "E4" error message will be shown in the display window.
- Unbalance error is cleared by POWER S/W OFF and by resuming the POWER ON initial status.

6. WATER HEATER ERROR

- Display shows 'E5,E6'.
- In case the water temperature rises by 7°C or more in 1 min. or by 2°C less in 10 min after heating is started.
- It can be cleared by turning POWER S/W OFF.

7. ASS'Y PRESSURE S/W ERROR

* Generated Frequency Signal of WATER LEVEL(W/L) S/W (KHz)

Level	Low Level	High Level
Abnormal W/L Frequency	30.00 KHz	15.00 KHz

- If the same signal as the above table is detected for more than 5 seconds, it is a PRESSURE S/W Error.
- When the error occurs, water drain pump will operate for 3 min. and then turn off the water drain pump. Then the display shows 'E7' indicating a pressure s/w error indicator.

8. ABNORMAL WATER TEMPERATURE ERROR

Course	Water Temp
Delicate	50°C or more
Wool	50°C or more

- In case the water temperature is 50°C or more in Delicate and Wool course.
- At the time of initial water supply, if the water temperature is not appropriate, water starts to be drained and it is forced to be drained for 2 min when the abnormal frequency of 24.5KHz is detected.
- Display shows 'E8'.
- This error can be cleared by POWER S/W OFF.

9. WATER LEAKAGE ERROR (E9)

- Water Leakage error occurs when water is drained naturally after washing program starts.

7. General Error Function

10. Tacho Error

- This error occurs in case motor thaco is out of order or tacho signals inputted are fewer than 2
- "EA" displayed
- This error can be cleared by power s/w off

11. Motor Triac short Error

- This error occurs in case over 300 per 1 sec tacho signals are inputted power S/w should be off.
- "Eb" displayed.
- This error can be cleared by power s/w off

12. Thermistor error

- This error occurs, when Thermistor circuit is abnormal or the detected electrical volt is 0.2v below or 4.5v over
- "Ec" displayed
- This error can be cleared by power s/w off

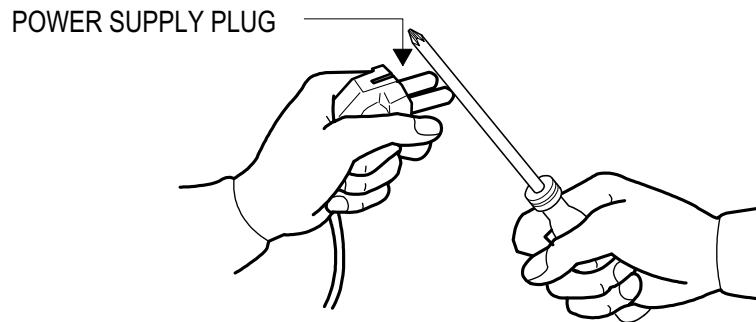
8. Trouble Diagnosis

- As the micom wash machine is configured of the complicate structure, there might be the service call. Below information is prepared for exact trouble diagnosis and suitable repair guide.

Caution for the Repair and Replacement

Please follow below instruction for the trouble diagnosis and parts replacement.

- 1) As some electronic components are damaged by the charged static electricity from the resin part of wash machine or the human body, prepare the human body earth or remove the potential difference of the human body and wash machine by contacting the power supply plug when the work contacting to PCB is executed.



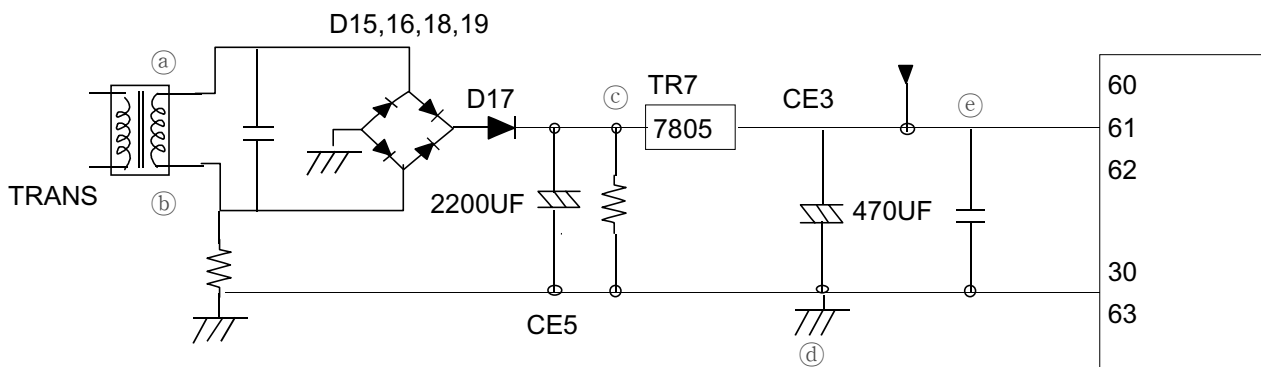
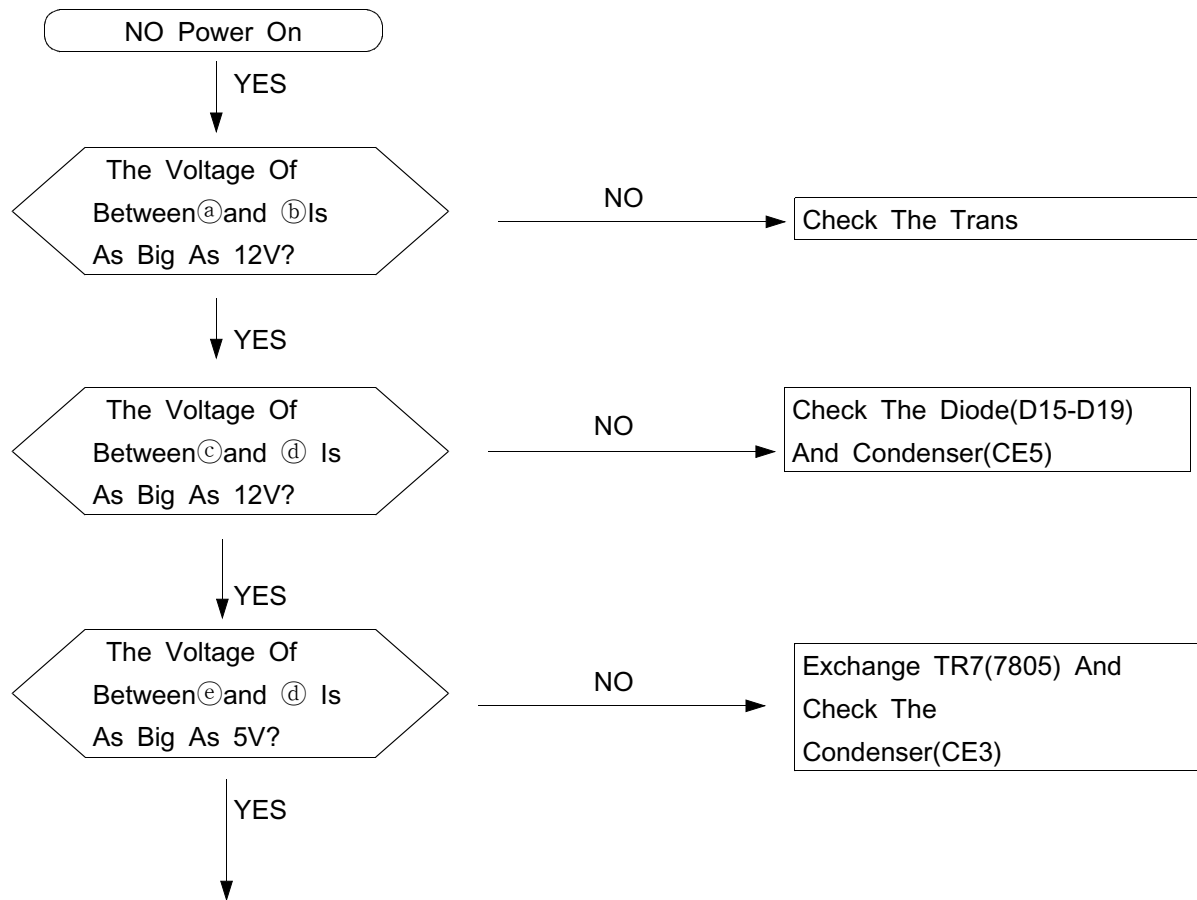
- 2) Since AC220~240V is applied to the triac T1 and T2 on P.C.B, the electric shock may occur by touching and be careful that the strong and weak electricity are mixed.
- 3) As the P.C.B assembly is designed for no trouble, do not replace the P.C.B assembly by the wrong diagnosis and follow the procedure of the trouble diagnosis when the micom is not operated normally.

8-1. Trouble Diagnosis

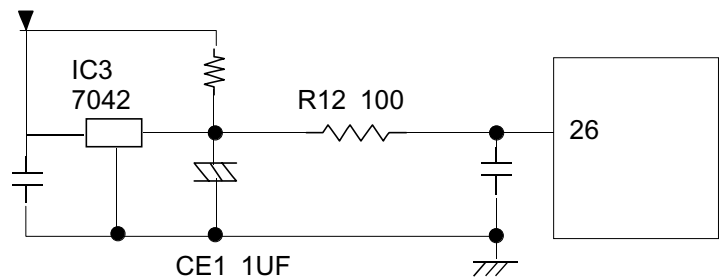
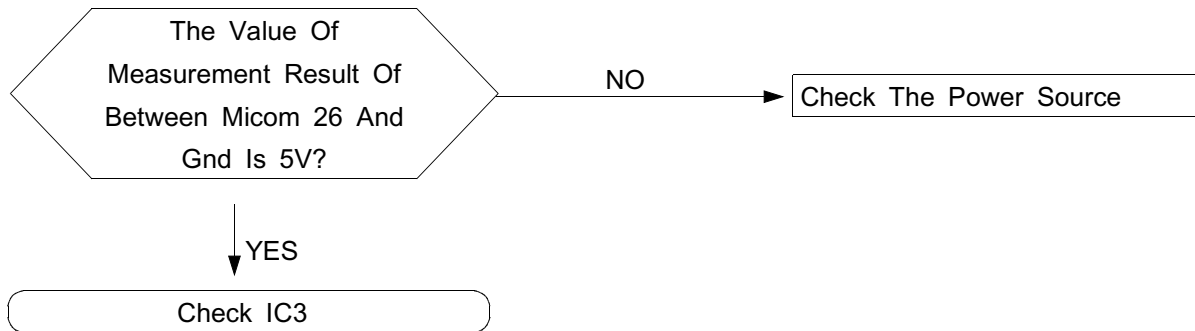
No	Item	Cause and treatment
1	The power is not supplied	- Is the PCB connector connected well? - Is the voltage normal? - Is the power supply plug connected well? - Is the noise filter connected well? - Is the secondary output of the power supply transformation normal? - Is the fuse disconnected? (option) • If above points are not found, the PCB assembly is out of order. Replace it.
2	The water is not supplied.	- Is the knob open? - Did you push START/PAUSE button after selecting the course? - Is the water supply valve connected well? - Is the winding of the water supply valve continuous? - Is the connection and operation of the pressure switch normal? • If above points are not found, the PCB assembly is out of order. Replace it.
3	The wash does not start though the water supply is stopped.	- Is the connection and operation of the pressure switch normal? - Is the pressure switch hose damaged so that the air is leaked? - Is the pressure switch hose bent? - Check the operation of the water level switch. • If above points are not found, the PCB assembly is out of order. Replace it.
4	The drum does not rotate during washing.	- Is the belt connected well? - Is the winding of the motor continuous? (Rotor winding, stator winding, generator) - Is the motor protector normal? • If above points are not found, the PCB assembly is out of order. Replace it.
5	The drum rotates by one direction during washing. (The drum rotates to one direction for SPIN.)	- The PCB assembly is out of order. Replace it. (Inversion relay open trouble)
6	Drainage problem.	- Is the drainage hose bent? - Is the winding of the drainage pump continuous? - Is the drain filter clogged by the waste? • If above points are not found, the PCB assembly is out of order. Replace it.
7	Dehydration problem.	- The unbalance is detected. - Put in the laundry uniformly and start again.
8	Abnormal noise during SPIN.	- Is the pulley nut loosen? - Is the transport safety device removed? - Is the product installed on the level and stable place? (Little noise may be generated during the high-speed SPIN.)
9	Leak breaker or current/leak breaker is down during washing.	<When the leak breaker and current breaker is installed separately> - When the leak breaker is down, check and make the earth of the outlet. - When the current is down, the current is leaked. <Is the breaker down when the leak/current breaker is combined?> - Check the rated capacity of the current and leak breaker. The current breaker may be down due to the lack of the current when the wash machine and other apparatus are used. In this case, execute the cold water wash to check whether the current capacity is lack.
10	The heating is not executed.	- Is the wash heater terminal unplugged? - Is the wash heater normal? - If above points are not found, the PCB assembly is out of order. Replace it.

8-2 . Problem Checking And Method Of PCB

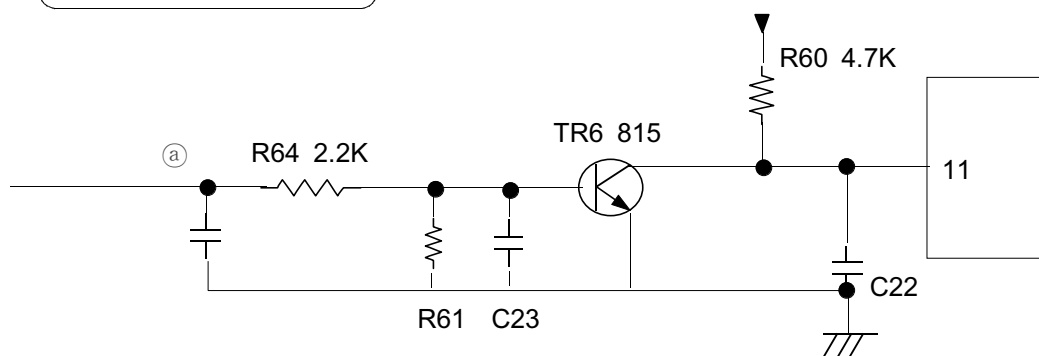
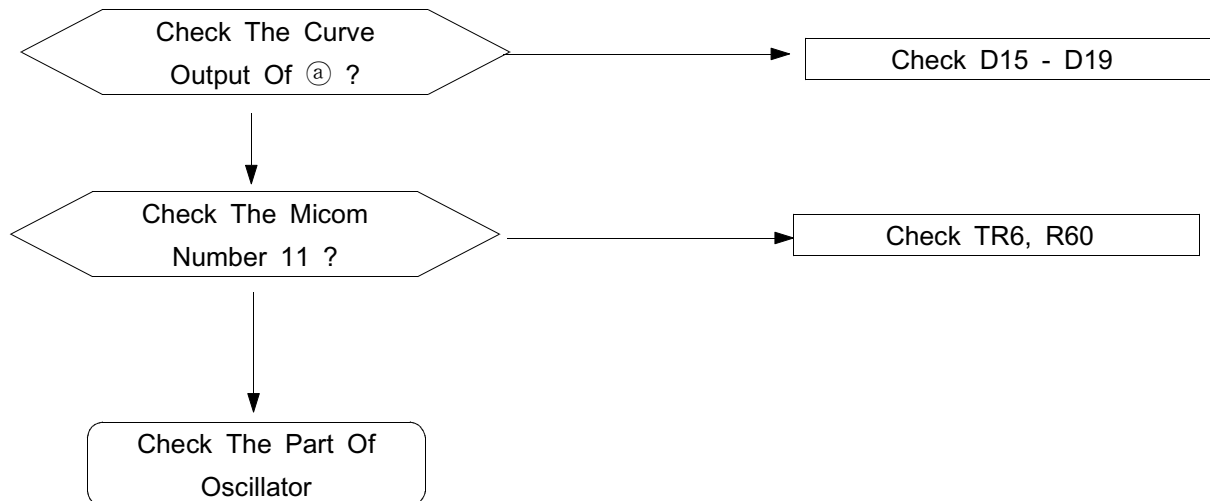
8-2-1 The Part Of Power Source



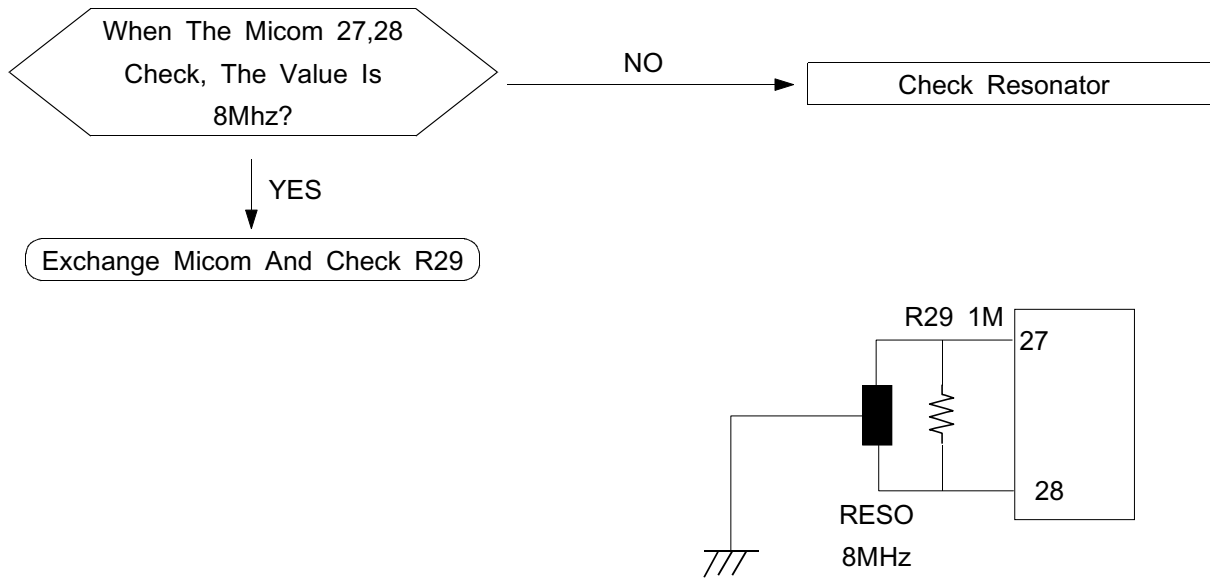
8-2-2. Reset Part



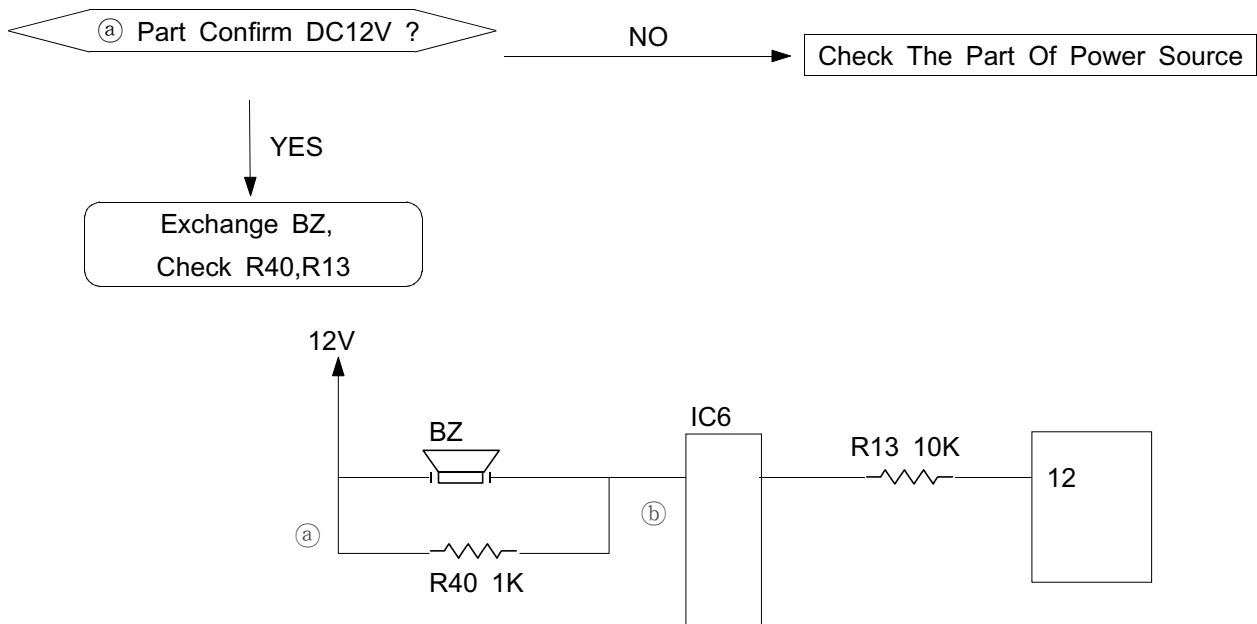
8-2-3. Interrupt Part



8-2-4. Checking The Part Of An Oscillator



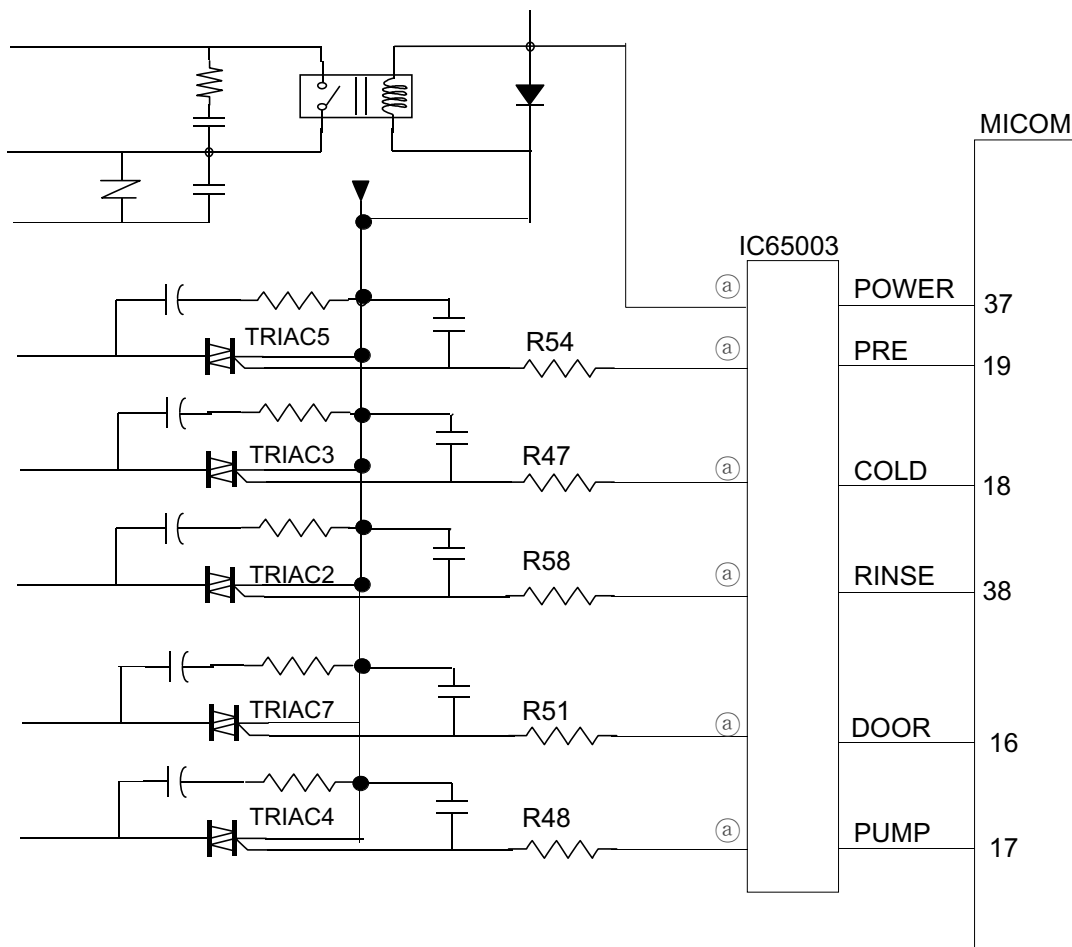
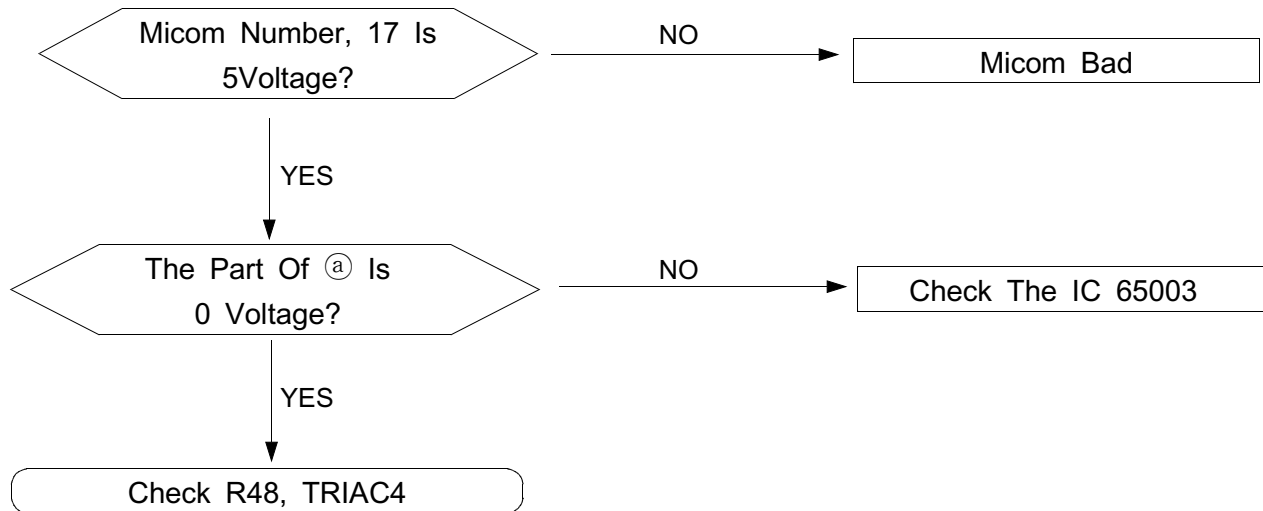
8-2-5. Check The Part Of Buzzer



8-2-6. Driving Part Checking

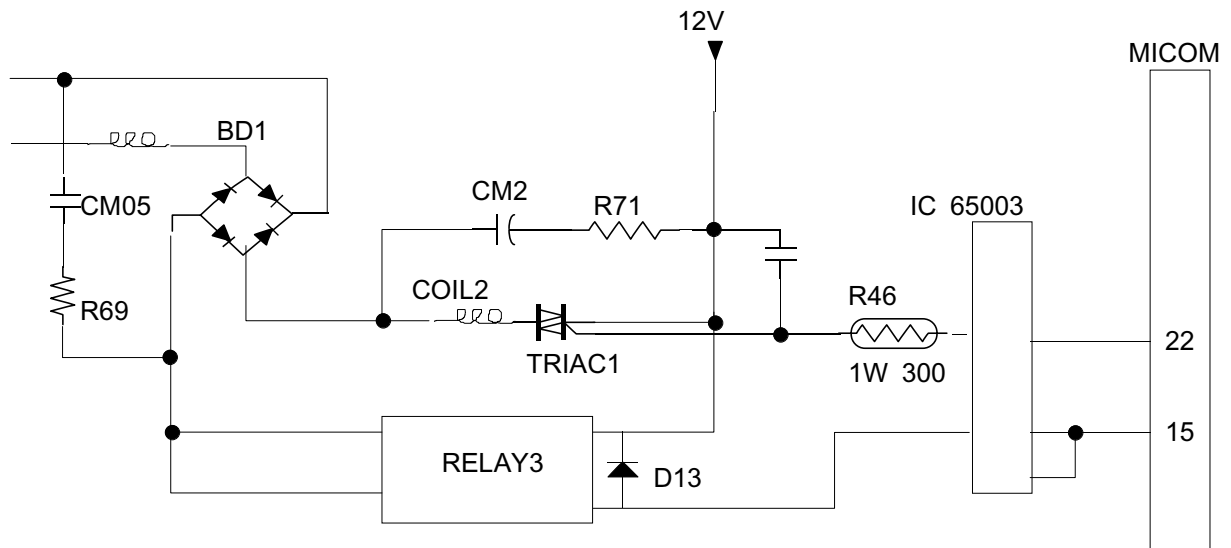
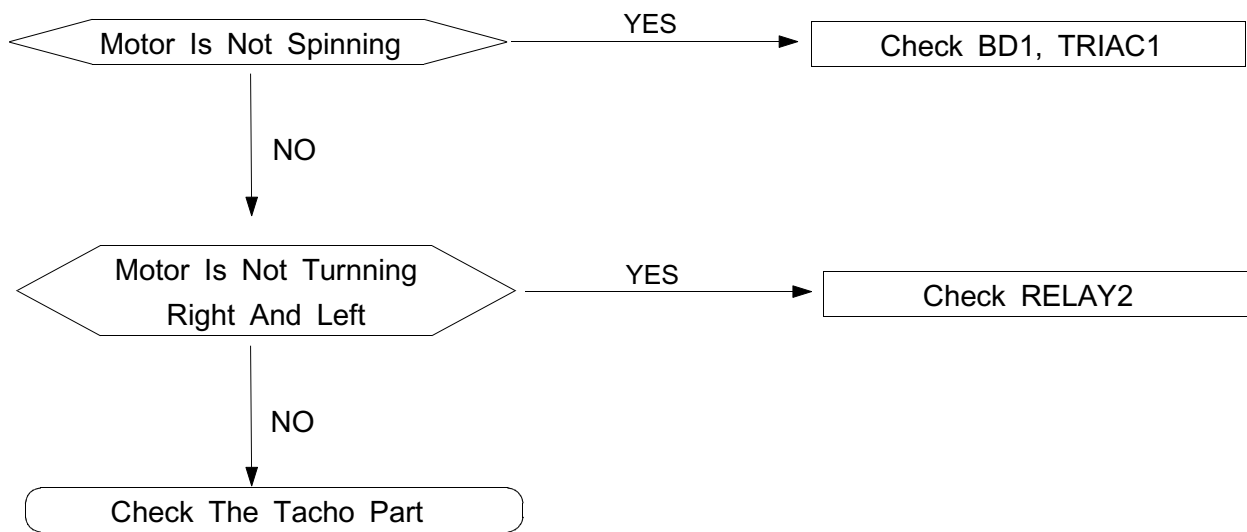
◆ Confirm The Output Of DC5V, When The Every Part Of Micom Number Check, According To The Some Problem Condition

ex) When The Drain Is Not Operating But Pump Motor Is Operating, Check The 5Voltage Of Micom

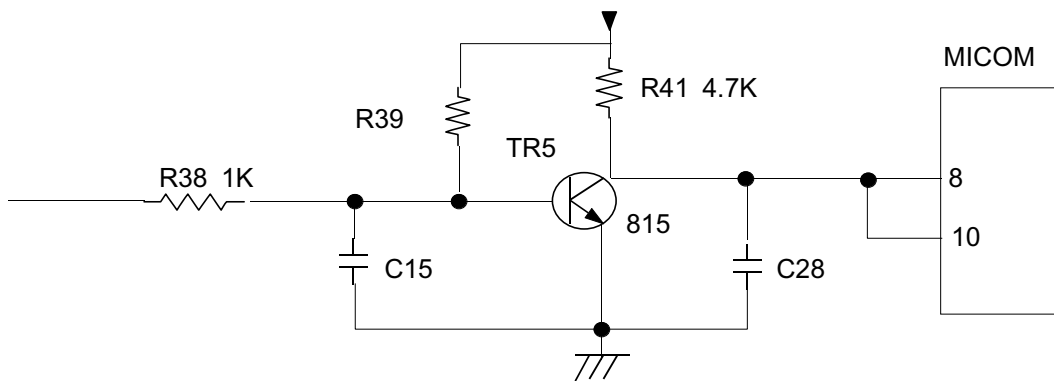
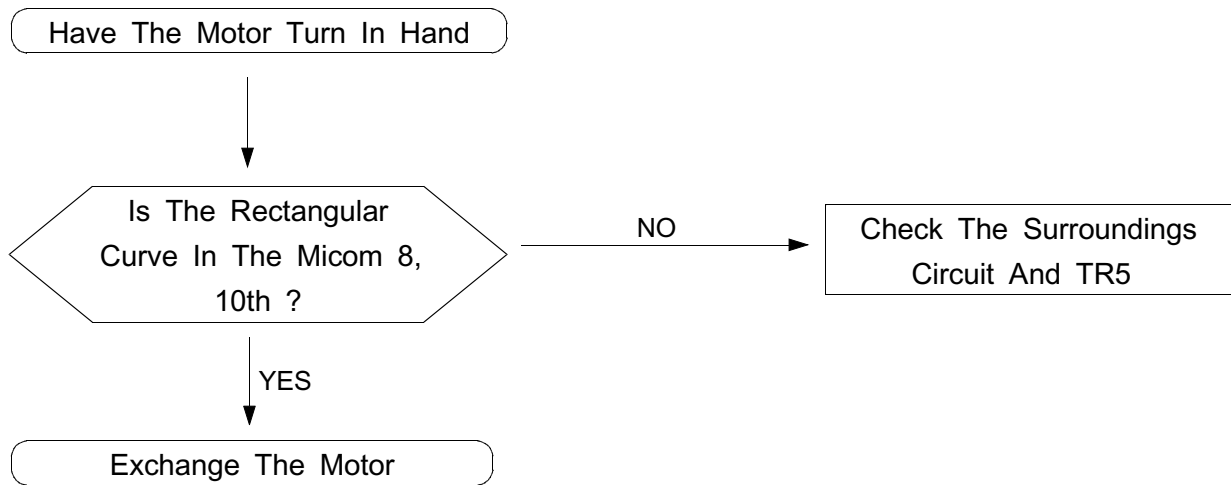


※ Check The Micom 18th In The Above Method When The Cold Water Is Bad

8-2-7. Confirm The Driving Part Of Motor

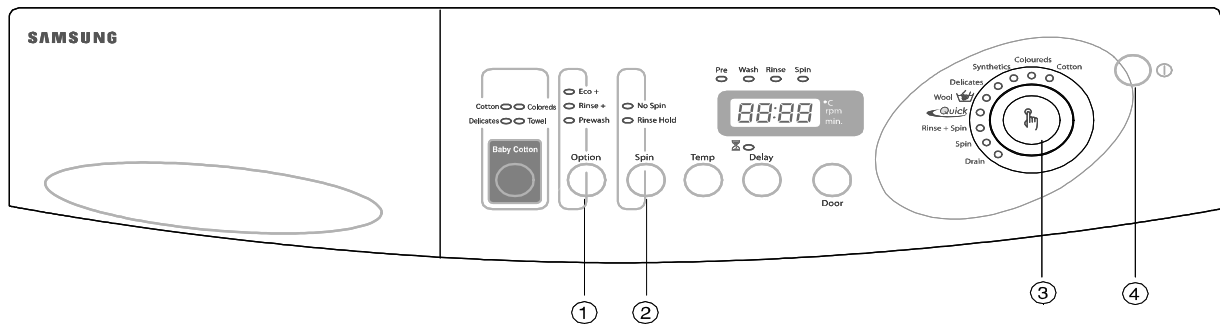


8-2-8. Checking The Tacho Part



9. Test Mode

F1215J/F1213J/F1015J/F1013J



1. Driving Compartment Test Mode

- Hold down "1" and "2" keys simultaneously and then press POWER S/W "4" on.
(Whole lamps turn on and display show "t1" after 3 Seconds.)
- The driving compartment can be tested when you press "3" key right after entering into the initial stage of the TEST MODE.

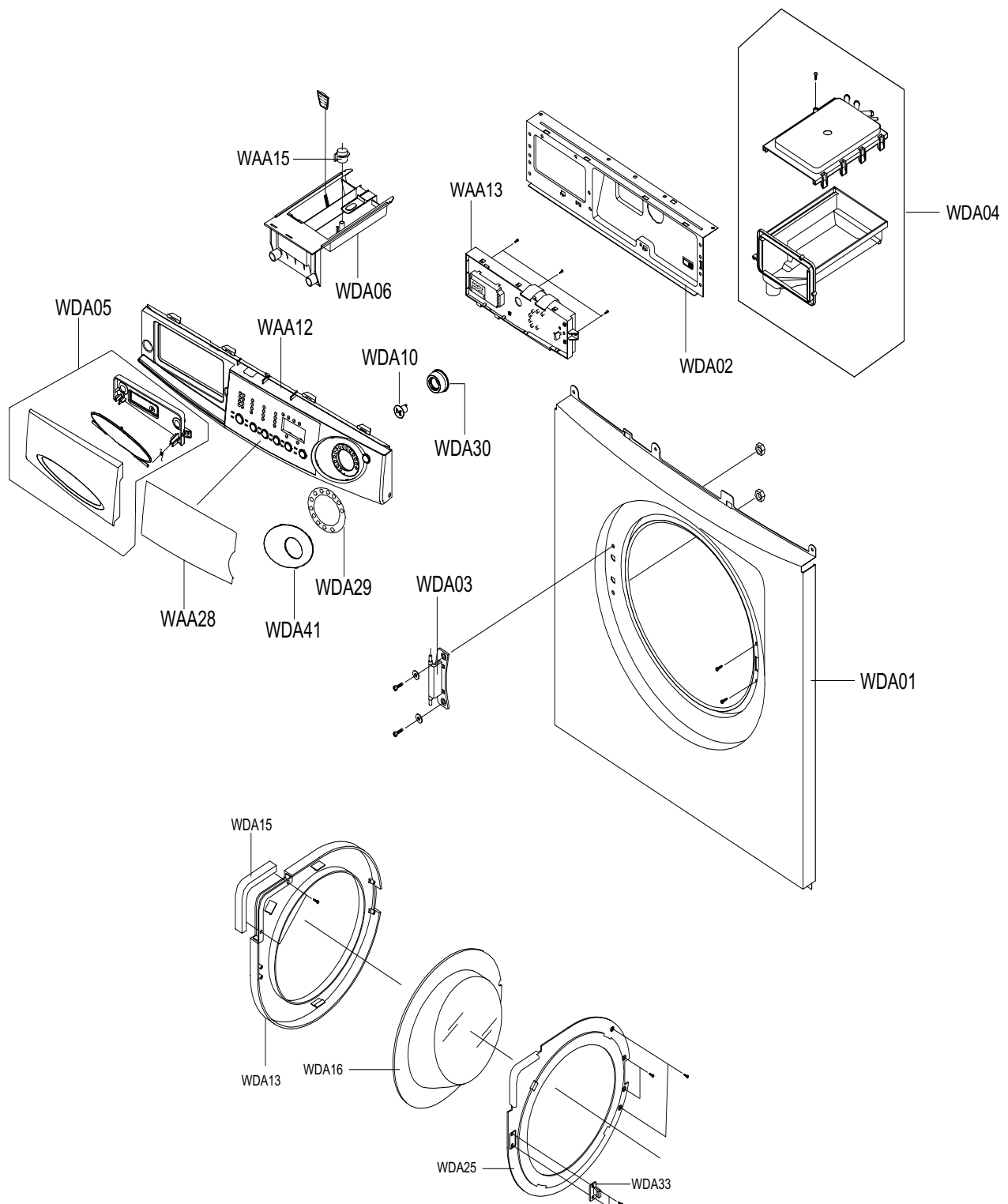
• Driving Compartment Test

Pre-wash VALVE ON(0.3sec) → OFF(0.3sec) → COLD VALVE ON(0.3sec) → [OFF(0.3sec) → HOT VALVE ON (0.3sec) : **OPTION**] → OFF(0.3sec) → Rinse VALVE ON(0.3sec) → OFF(0.3sec) → Pump MOTOR ON(0.3sec) → OFF(0.3sec) → MOTOR Left (0.5sec) → OFF(0.5 sec) → MOTOR Right (0.5sec) → OFF(0.3sec) → HEATER RELAY ON(0.3sec) → OFF(0.3sec) → DOOR OPEN
(Function continues when door is closed)

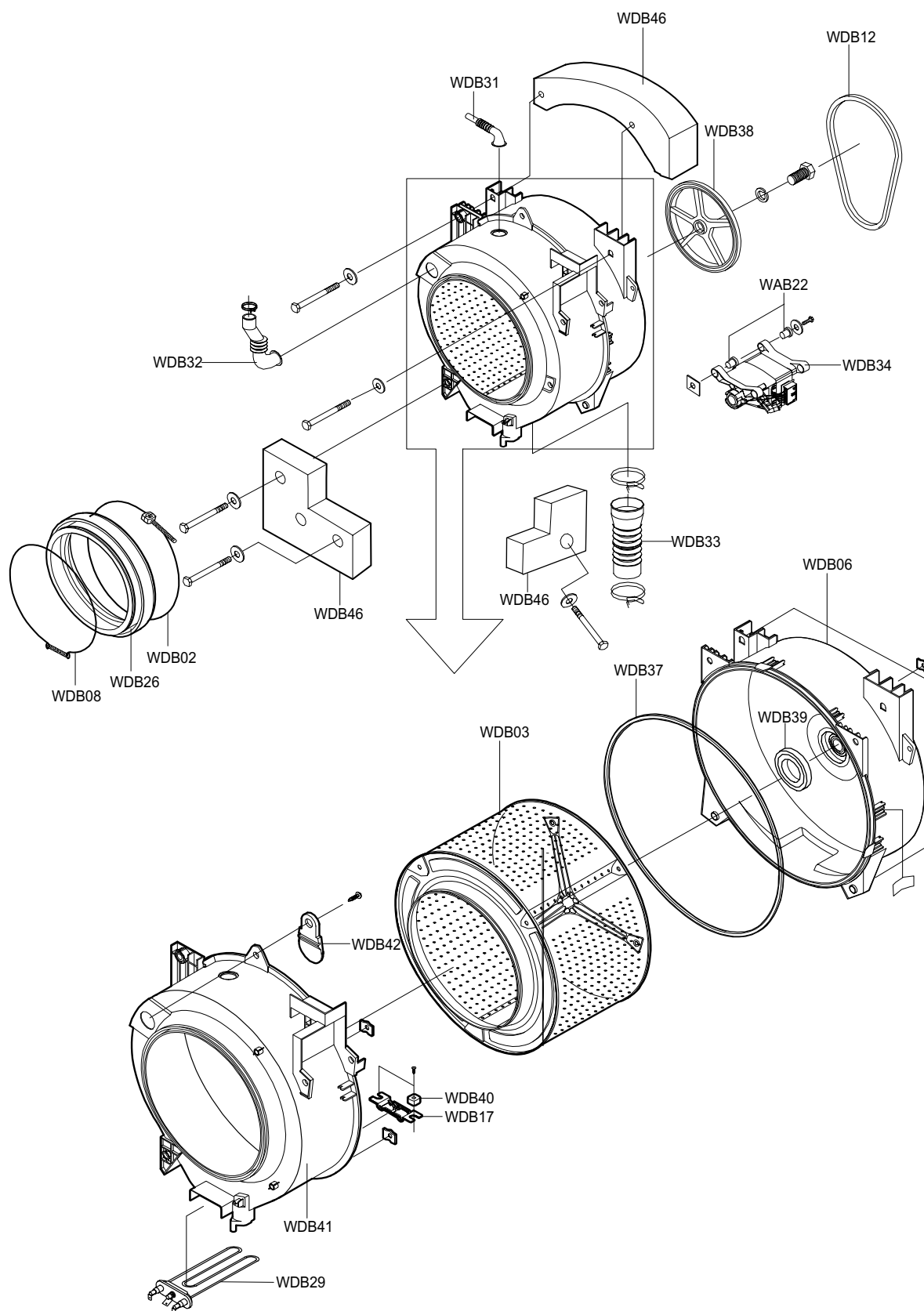
2. THERMISTOR TEST MODE

- Hold down "1" and "2" keys simultaneously and then press POWER S/W "4" on.
(Whole lamps turn on and display show "t1" after 3 Seconds.)
- Press the "1" key and display shows "t2"
- Press the "3" key and display shows the inside temperature of tub.

15. TOP(FRONT) - Exploded View



15. TUB - Exploded View



This exploded view diagram illustrates the assembly of a washing machine. The central component is the main body (WDC03). Key parts shown include:

- Top Panel (WDC01):** The upper front panel, secured with screws.
- Door Panel (WDC28):** The circular door panel, attached to the main body via hinges (WDC14) and a latch (WDC17).
- Base Panel (WDC12):** The bottom front panel, supported by legs (WAC08) and secured with screws (WDC14).
- Internal Components:** Includes the motor (WDC32), pump (WDC33), and various hoses (WAC07, WAC04, WAC10).
- Wiring and Connectors:** Shows the main wiring harness (WAA11, WAB15) and individual connectors (WDC06, WAA37, WDC25, WDC40, WDC19).
- Other Parts:** Includes the detergent drawer (WAC24), the door seal (WDC25), and various fasteners like screws and bolts.

The diagram uses leader lines to identify each part and its corresponding assembly location on the main body.

15. Parts List

LOCATION NO.	CODE NO.	DESCRIPTION	SPECIFICATION	Q'TY	REMARK
WAA11	DC96-00538B	ASSY-M.WIRE HARNESS	F1015J(AUTO),COLD(2W	1	
WAA12	DC97-04491Y	ASSY-PANEL CONTROL	F1015J,BLUE	1	F1015JGB/YLP
WAA12	DC97-04491X	ASSY-PANEL CONTROL	F1015J,GOLD	1	F1015JGE/YLP
WAA12	DC97-04491V	ASSY-PANEL CONTROL	F1015J,IMPERIAL-SILVER	1	F1015JGS/YLP
WAA12	DC97-04491W	ASSY-PANEL CONTROL	F1015J,PEARL/WHT	1	F1015JGP/YLP
WAA13	MF-F1015J-00	ASSY PCB PARTS	MF-F1015J-00	1	
WAA15	DC61-10316B	CAP-RINSE	SEW-740DR,PP(TB-52),-, -, -, WHT,	1	
WAA28	DC64-00517U	INLAY-PANEL	F1015J,PC(T=0.5),-, -, -, BLUE,	1	F1015JGB/YLP
WAA28	DC64-00517R	INLAY-PANEL	F1015J,PC(T+0.5),-, -, -, GOLD, RUSSIA	1	F1015JGE/YLP
WAA28	DC64-00517T	INLAY-PANEL	F1015J,PC(T+0.5),-, -, -, IMPERIAL-SILVER	1	F1015JGS/YLP
WAA28	DC64-00517S	INLAY-PANEL	F1015J,PC(T+0.5),-, -, -, PEARL/WHT, RUSSIA	1	F1015JGP/YLP
WAA37	DC32-30006P	SENSOR PRESSURE	DN-S14(P1291),TERMINAL-T	1	
WAA46	DC62-00024F	VALVE-WATER	B1215J,NYLON66/250TRMN, -, -, N	1	
WAB15	DC96-00530A	ASSY-WIRE HARNESS	F813J,SUB/LOW-RPM	1	
WAB28	DC62-10022K	HOSE-PUMP	S1005J,PP(BB110),ID21,OD26, -, L	1	
WAC07	DC97-00139D	ASSY-HOSE DRAIN(O)	S1005J,PP(BB110)/L182	1	
WAC08	DC97-02079A	ASSY-LEG	S1005J,SLIM/25MM	4	
WAC10	DC96-00146A	ASSY-POWER CORD	P1291~P6091,250V/16A(PV)	1	
WAC11	DC96-00149A	ASSY-PUMP DRAIN	P8091/P6091,220~240V/50H	1	
WAC24	DC64-00434A	SHUTTER	F1215J/F-PJT,PP, -, -, -, WHT, -	1	
WDA01	DC97-00416J	ASSY FRAME FRONT	F1015J/AUTO DOOR, BLUE-2	1	
WDA02	DC97-00417A	ASSY FRAME PLATE(U)	SWF-P12,FRAME-PLATE	1	
WDA03	DC97-00100C	ASSY-HINGE	S1005J,OPEN ANGLE 180DEG	1	
WDA04	DC97-02132C	ASSY-HOUSING DRAWER	S1093~S6093/2-WAY,SL	1	
WDA05	DC97-04842L	ASSY-PANEL FRONT	F1015J,BLUE	1	F1015JGB/YLP
WDA05	DC97-04842K	ASSY-PANEL FRONT	F1015J,GOLD	1	F1015JGE/YLP
WDA05	DC97-04842J	ASSY-PANEL FRONT	F1015J,IMPERIAL-SILVER	1	F1015JGS/YLP
WDA05	DC97-04842H	ASSY-PANEL FRONT	F1015J,PEARL/WHT	1	F1015JGP/YLP
WDA06	DC61-00366A	BODY-DRAWER	SL-600,TB-53, -, -, -, -, -	1	
WDA10	DC64-00250A	BUTTON-ENCODER	-, B1215J,BLUE, -, -,	1	F1015JGB/YLP
WDA10	DC64-00250A	BUTTON-ENCODER	-, B1215J,BLUE, -, -,	1	F1015JGP/YLP
WDA10	DC64-00250D	BUTTON-ENCODER	F1013J,ABS, -, -, GOLD, SPRAY	1	F1015JGE/YLP
WDA10	DC64-00250C	BUTTON-ENCODER	F1013J,ABS, -, -, IMPERIAL-SILVER,	1	F1015JGS/YLP
WDA13	DC61-10682H	COVER-DOOR	F1015J,ABS, -, -, -, -, BLUE,AUT	1	F1015JGB/YLP
WDA13	DC61-10682G	COVER-DOOR	F1015J,ABS, -, -, -, -, GOLD,AUTO-DOOR	1	F1015JGE/YLP
WDA13	DC61-10682D	COVER-DOOR	F1015J,ABS, -, -, -, -, IMPERIAL/SILVER,	1	F1015JGS/YLP
WDA13	DC61-10682F	COVER-DOOR	F1015J,ABS, -, -, -, -, PEARL/WHT,AUTO	1	F1015JGP/YLP
WDA16	DC61-00013A	DOOR-GLASS	GLASS,NTR,SWF-P12	1	
WDA25	DC61-40346A	HOLDER-GLASS	SWF-P12,ABS, -, -, -, -, -	1	
WDA26	DC62-10068A	HOSE-DRAWER	SEW-8092M,SOFT-PVC,ID10, -, -,	2	
WDA29	DC64-00084W	INLAY-ENCODER	F813J/BBLUE,PC(T=0.7), -, -, -	1	F1015JGB/YLP
WDA29	DC64-00084X	INLAY-ENCODER	F813J/GOLD,PC(T=0.7), -, -, -	1	F1015JGE/YLP
WDA29	DC64-00084Y	INLAY-ENCODER	F813J/IMP-SILVER,PC(T=0.7), -, -, -	1	F1015JGS/YLP
WDA29	DC64-00084G	INLAY-ENCODER	SF813J,PC(T=0.7), -, -, -, PEARL/WHT,	1	F1015JGP/YLP

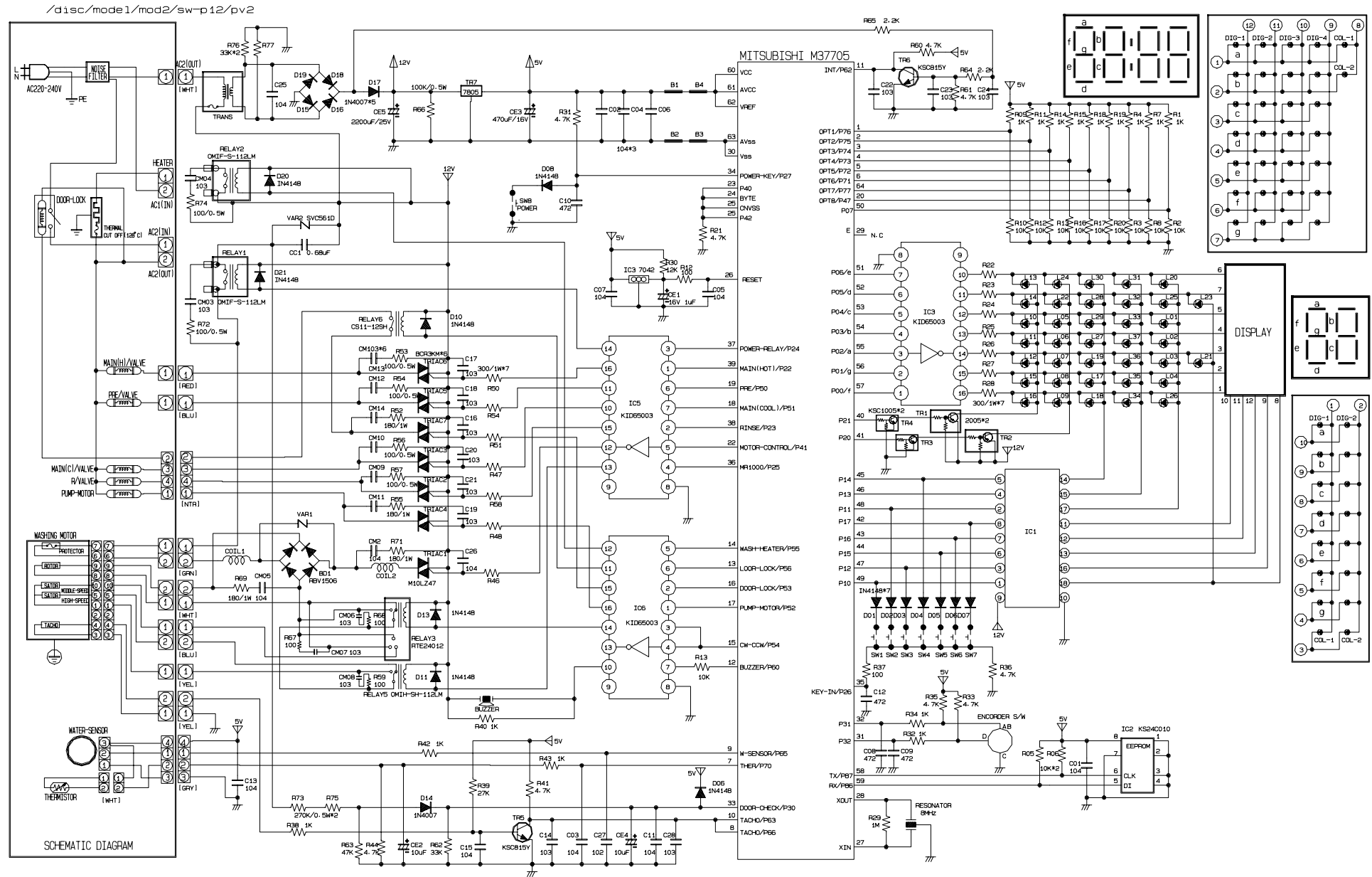
15. Parts List

LOCATION NO.	CODE NO.	DESCRIPTION	SPECIFICATION	Q'TY	REMARK
WDA30	DC64-00262A	KNOB-ENCODER	B1215J,ABS(HG-0760),-, -, -, -	1	
WDA33	DC66-00096A	LEVER-DOOR	;ZND, -, W20, L40, -, -, P1405J, -	1	
WDB02	DC91-12077A	ASSY-CLAMP DIAPHRAGM	SWF-P12,TUB	1	
WDB03	DC97-01463C	ASSY-DRUM	F1215J,F-DRUM/LIFTER-TYPE	1	
WDB06	DC97-00214K	ASSY-TUB BACK	SWF-P8/P6091,LOW-RPM/NO.3	1	
WDB08	DC91-12078A	ASSY-WIRE DIAPHRAGM	SWF-P12,FRAME--FRONT	1	
WDB12	6602-001072	BELT-TIMING GEAR	POLYURETHAN,L1270,J5,ME	1	
WDB17	DC61-40344A	BRACKET-HEATER	SWF-P12,STS430, -, -, -, -, T1	1	
WDB26	DC64-00374A	DOOR-DIAPHRAGM	F1225J,EPDM, -, -, -, -, GRY, -	1	
WDB29	DC47-00006B	HEATER	KAWAI,P-SLIM MODEL,SUS316L, -, -, 23	1	
WDB31	DC62-10303A	HOSE-AIR	-, EPDM, ID24, -, -, L130,BLK,SWF-P1	1	
WDB32	DC62-10305A	HOSE-DRAWER TUB	-, EPDM, ID35, -, -, L158,BLK	1	
WDB33	DC62-00121A	HOSE-FILTER TUB	S1005J,EPDM,ID65, -, -, -, -	1	
WDB34	DC31-00002E	MOTOR-DRUM	HXGN2I.02,SFW-P8, -, 50Hz, -, -, L	1	
WDB37	DC62-40183A	PACKING-TUB	SWF-P12,EPDM, -, -, -, -, BLK, -	1	
WDB38	DC66-10176B	PULLEY	ALDC, -, D297,P1291,ID12.5	1	
WDB39	DC62-00007A	SEAL-OIL	-, NBR(SD25),BLK, -, -, -, P6091/NBU	1	
WDB40	DC61-60496A	SPACER-HEATER	SWF-P12,PBT(GP2301), -, -, -, -	2	
WDB41	DC61-00365B	TUB-FRONT	SL-600,FRPP(GR15%)SAMBAK, -, -, -, -	1	
WDB42	DC62-20311A	VANE-CHECK	SWF-P12,EPDM, -, -, BLK, -	1	
WDB46	DC67-00038A	WEIGHT-BALANCER	F-PJT(40CM),CONCREET, -, -	1	
WDB46	DC67-00042A	WEIGHT-BALANCER	F1215,GC-150, -, -, -, -, 40C	1	
WDB46	DC67-00050A	WEIGHT-BALANCER	F1215,GC-150, -, -, -, -, F-P	1	
WDC01	DC97-00851V	ASSY-COVER TOP	F-PJT/BLUE,WOOD/MDF/SLIM	1	F1015JGB/YLP
WDC01	DC97-00851W	ASSY-COVER TOP	F-PJT/GOLD,WOOD/MDF/SLIM	1	F1015JGE/YLP
WDC01	DC97-00851U	ASSY-COVER TOP	F-PJT/IMP-SILVER,WOOD/MDF/SLIM	1	F1015JGS/YLP
WDC01	DC97-00851X	ASSY-COVER TOP	F-PJT/(PEARL/WHT),WOOD/MDF/SLIM	1	F1015JGP/YLP
WDC03	DC97-00310A	ASSY-PAINT FRAME	F813J,F-PJT(COLD)	1	F1015JGB/YLP
WDC03	DC97-00298A	ASSY-PAINT FRAME	F813J,COLD/F-MODEL	1	F1015JGE(P)/YLP
WDC03	DC97-00311A	ASSY-PAINT FRAME	F813J/IMP-SILVER,COLD/SLIM-MODE	1	F1015JGS/YLP
WDC06	DC61-40345A	BRACKET-PRESSURE	GI or GA,SWK-P12,T1.0, -	1	
WDC12	DC61-10672C	COVER-FRONT(L)	S803JGB, -, -, -, -, BLUE,CIS	1	F1015JGB/YLP
WDC12	DC61-10672D	COVER-FRONT(L)	S803JGE, -, -, -, -, GOLD(EUN BI),CIS	1	F1015JGE/YLP
WDC12	DC61-10672E	COVER-FRONT(L)	S803JGS, -, -, -, -, SILVER,CIS	1	F1015JGS/YLP
WDC12	DC61-10672A	COVER-FRONT(L)	SWF-P12,PP(BJ-730), -, -, -, -, WHT	1	F1015JGP/YLP
WDC14	DC66-60149A	DAMPER-SHOCK	SWF-P12, -, -, 80N,	2	
WDC17	DC64-00120E	DOOR-LOCK S/W	760DR,NYLON, -, WHT, -, -, VDE	1	
WDC19	DC29-00006A	FILTER-EMI	DFC-2712R,P/PV/SLIM,250V,12A,	1	
WDC25	DC62-10311A	HOSE-PRESSURE	-, EPDM, ID13.5, -, -, -, BLK,SW	1	
WDC28	DC66-30160A	LEVER	PE,L335,SWF-P12(ORG)	1	
WDC32	DC61-60180A	SLEEVE-PLUG	NYLON#6,SEW-720DR, -, -, NTR	4	
WDC33	DC61-00708A	SPRING-HANGER	F-PJT,HSWR,CD2.8, -, -, L170,	2	
WDC33	DC61-00708B	SPRING-HANGER	F-PJT,HSWR,CD2.8, -, -, L181,	2	
WDC40	DC97-02106A	ASSY-FIXER TUB	S1005J,SLIM-PJT	5	

15. Screw/Bolt List

CODE NO.	DESCRIPTION	SPECIFICATION	Q'TY	ASSEMBLY LOCATION
DC60-40144A	BOLT-HEX	M10,L41,ZPC2(YEL),SM10C/DAMPER	2	DAMPER+FRAME
6011-001232	BOLT-HEX	D7,L71(39.4),ZPC(YEL),SWRCH18A	1	WEIGHT/L
6011-001422	BOLT-HEX	M10,L20,ZPC(YEL),SWRCH10A	1	
DC60-40140A	BOLT-HEX	WEIGHT-UL/SM10C,HEX,M8,L147,-,ZPC2(YEL),-,-	2	WEIGHT/U
DC60-40141A	BOLT-HEX	SM10C/DAMPER,HEX,M8,L66,-,ZPC2(YEL),-,-	2	DAMPER+TUB
DC60-40005A	BOLT-HEX	M4,L60,ZPC2(YEL),SS41C,-,-,-,-	1	
DC60-50148B	NUT-HEX	SM20C(NYLON),M12,-,-,ZPC3(YEL),-,HEX,P-PROJECT	1	PULLEY
DC60-50153A	NUT-HEX	3,M8,FZY,FE,-	1	FILTER-EMI
DC60-10019B	SCREW MACHINE	RH,+,M5,L12,STS430,SEAL-LOCK	2	HINGE+FRAME
DC60-10019B	SCREW MACHINE	RH,+,M5,L12,STS430,SEAL-LOCK	2	HOLD-GLASS+HINGE
DC60-10023A	SCREW MACHINE	TH,+,D4,L10,ZPC2,TAP-TITE	1	B/K-PRESSURE+FRAME
DC60-10023A	SCREW MACHINE	TH,+,D4,L10,ZPC2,TAP-TITE	1	B/SPRING + EARTH
DC60-20054D	SCREW TAPPING	TH,+,1,D4,L12,STS304,-	2	S/W-DOOR+FRAME
DC60-20054D	SCREW TAPPING	TH,+,1,D4,L12,STS304,-	2	COVER-DOOR
DC60-20140A	SCREW TAPPING	FH,+,1,D4,L20,WHT,HSWR1018	2	LEVER-DOOR
DC60-20030A	SCREW TAPPING	FH,-,1,D4,L12,NTR,-	1	C-PANEL+FRAME
DC60-20049A	SCREW TAPPING	SCM430,2,PH,+,D4,L12,-,-,-,-	5	PCB+C-PANEL
DC60-20054C	SCREW TAPPING	TH,+,1,D4,L12,FE FZY,-	1	CLAMP-HOSE+FRAME
DC60-20054D	SCREW TAPPING	TH,+,1,D4,L12,STS304,-	2	PUMP+FRAME
DC60-20060A	SCREW TAPPING	TH,+,2,D4,L8,FE,FZY	1	E/W(SUB)+FRAME(F)
DC60-20060A	SCREW TAPPING	TH,+,2,D4,L8,FE,FZY	8	FRAME+FRAME-FRONT
DC60-20060A	SCREW TAPPING	TH,+,2,D4,L8,FE,FZY	4	FRAME+PLATE-UPPER
DC60-20138A	SCREW TAPPING	PH,TORX,1,D4,L12,ZPC2,-	1	P/CORD
DC60-20060A	SCREW TAPPING	TH,+,2,D4,L8,FE,FZY	1	
DC60-20054D	SCREW TAPPING	TH,+,1,D4,L12,STS304,-	1	VANE-CHECK
DC60-20049A	SCREW TAPPING	SCM430,2,PH,+,D4,L12,-,-,-,-	1	HOUSING-DRAWER
DC60-20054C	SCREW TAPPING	TH,+,1,D4,L12,FE FZY,-	1	HOUSING-DRAWER
DC60-20136A	SCREW TAPPING	TH,+,2,D5,20,ZPC3,COVER-TOP	2	FRAME(TOP)
DC60-20050C	SCREW TAPPING	-,-,2S,D3,L8,FZY,-	2	B/K+PRE-S/W
DC60-20054A	SCREW TAPPING	TH,+,1,D4,L10,ZPC3,-	2	B/K-C.T
DC60-20054C	SCREW TAPPING	TH,+,1,D4,L12,FE FZY,-	1	
6001-000947	SCREW-MACHINE	TH,+,M4,L10,NTR/WHT,STS304	2	W/V+FRAME
DE60-10022A	SCREW-PH	PH,+,M3,L8,MSWR10,FEFZY,-,-,-,	2	
DC60-30015B	SCREW-SPECIAL	FLANGE,PH,+,D4,L12,ZnFe(YEL),-	2	SHUTTER
DC60-30015B	SCREW-SPECIAL	FLANGE,PH,+,D4,L12,ZnFe(YEL),-	1	TUB+HOSE-PRESS
DC60-30015B	SCREW-SPECIAL	FLANGE,PH,+,D4,L12,ZnFe(YEL),-	2	C/TOP+FRAME
DE60-10012A	SCREW-TAP TITE	TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	H/BEARING+E/W
DE60-10012A	SCREW-TAP TITE	TH,+,3,M4,L10,SWR10,ZPC2,TOOTH	1	P/CORD(E/W)
6002-000161	SCREW-TAPPING	PH,+,2,M4,L8,ZPC(YEL),SM20C	2	DECORATION
6002-000444	SCREW-TAPPING	TH,+,2S,M4,L14,NTR,STS304	2	B/K-HEATER
6002-000445	SCREW-TAPPING	TH,+,2S,M4,L18,NTR,STS304	2	PANEL+FRM+HOUSING-D
DC60-60040A	WASHER-NYLON	-,ID10.5,OD32,T2,-,PBSP-1/2H	1	FIXER
DC60-60025C	WASHER-PLAIN	PVC,ID5.5,OD10,T1,-,-,WHT(SWF-P12)	2	HINGE
DC60-60044B	WASHER-PLAIN	SBC,ID8.4,OD30,T3,-,-,-	1	FIXER
DC60-60044A	WASHER-PLAIN	-,ID10.5,OD30,T3,-,STS304	2	DAMPER+TUB
DC60-60044B	WASHER-PLAIN	SBC,ID8.4,OD30,T3,-,-,-	1	MOTOR
DC60-60044B	WASHER-PLAIN	SBC,ID8.4,OD30,T3,-,-,-	2	WEIGHT/L
DC60-60044B	WASHER-PLAIN	SBC,ID8.4,OD30,T3,-,-,-	2	WEIGHT/U

11-1. PCB CIRCUIT DIAGRAM



11-1. ASSY-PCB Part List

CODE NO.	DESCRIPTION;SPECIFICATION	Q'TY	REMARK
0402-001404	DIODE-BRIDGE;GSIB1560,600V,15A,SIP-4,ST	1	B/D
1103-001203	IC-EEPROM;524C20D21,128x8Bit,DIP,8P,300M	1	IC2
1401-001007	THYRISTOR-TRIAC;10A,800V,20uA,300V/uS,TO	1	TRIAC1
1401-001024	THYRISTOR-TRIAC;2A,800V,20UA,300V/US,TO-	1	TRIAC2
1401-001024	THYRISTOR-TRIAC;2A,800V,20UA,300V/US,TO-	1	TRIAC3
1401-001024	THYRISTOR-TRIAC;2A,800V,20UA,300V/US,TO-	1	TRIAC4
1401-001024	THYRISTOR-TRIAC;2A,800V,20UA,300V/US,TO-	1	TRIAC7
1405-000154	VARISTOR;560V,2500A,17.5x7.5mm,TP	1	VAR1
1405-000154	VARISTOR;560V,2500A,17.5x7.5mm,TP	1	VAR2
2301-000131	C-FILM,PEF;100nF,5%,630V,TP,27.5x12x18.5	1	CM01
2301-000131	C-FILM,PEF;100nF,5%,630V,TP,27.5x12x18.5	1	CM04
2301-001285	C-FILM,MPPF;680NF,10%,275V,BK,31X11X21MM	1	CC1
2401-000711	C-AL;2200uF,20%,25V,GP,TP,16x25,7.5	1	CE5
3501-001156	RELAY-POWER;12VDC,0.53W,16000MA,1FORMA,2	1	RELAY1
3501-001156	RELAY-POWER;12VDC,0.53W,16000MA,1FORMA,2	1	RELAY2
3501-001180	RELAY-MINIATURE;12VDC,400mW,-,2FormC,7mS	1	RELAY3
3711-004297	CONNECTOR-HEADER;BOX,4P,2R,6MM/6.6MM,STR	1	5V
3711-004299	CONNECTOR-HEADER;BOX,4P,1R,2.5MM,STRAIGH	1	RIN
DC13-00040A	PLD-MIT;37705,S1005J,64PIN	1	OTP
DC26-00005B	TRANS-FORMER;450MA,220~240VAC,11VDC,50,6	1	LVT
DC61-00185A	GUIDE-LED;PV2-PJT,ABS,-,-,-,NTR,-	1	G-LED
DC61-00186C	GUIDE-PCB;BIG WASH-PJT,HIPS,-,-,-,NTR,-	1	C-PCB
DC64-00291A	INLAY-GUIDE ENCODER;B1415J,PC,T1.0,-,-,T	1	G-LED
DE07-00035A	LED DISPLAY;P12-3,-,-,8SEG,4DIGIT,46X19X	1	DISP
DE13-20016A	IC-VOLT REGU;KA7805A,TO-220AB,1A,0/125C,	1	TR7
DE27-00006A	COIL-CHOKE;NV2-08730,730uH,-,-,-,-,-,-	1	COIL2
DE30-20016A	BUZZER;CBE2220BA,STICK,-,-,-,-,-,-	1	BZ
DE34-20071A	SWITCH-ROTARY;DC10V,1MA,SH,PA-1005A-003-	1	E/SW
DE39-30145A	LEAD WIRE;120MM,BLK,12P/0.55,-,-,-,-	2	F/WIRE
DE62-30074B	HEAT SINK;AL,L22,W98.5,-,-	1	H/SINK
DE92-01154A	ASSY PCB AUTO;230V50HZ,188,MF-F1215J-00,	1	OPTION

11. PCB Schematic Diagram

