

S/M No. : DUD1213001

# Service Manual

## Drum Washing Machine

**Model: D-UD1213EPB**

DAEWOO

### ✓ Caution

: In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center (<http://svc.dwe.co.kr>).

**DAEWOO**   
ELECTRONICS

Apr. 2008

# DRUM WASHING MACHINE SERVICE MANUAL

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# 1. WHAT IS DRUM WASHING MACHINE?

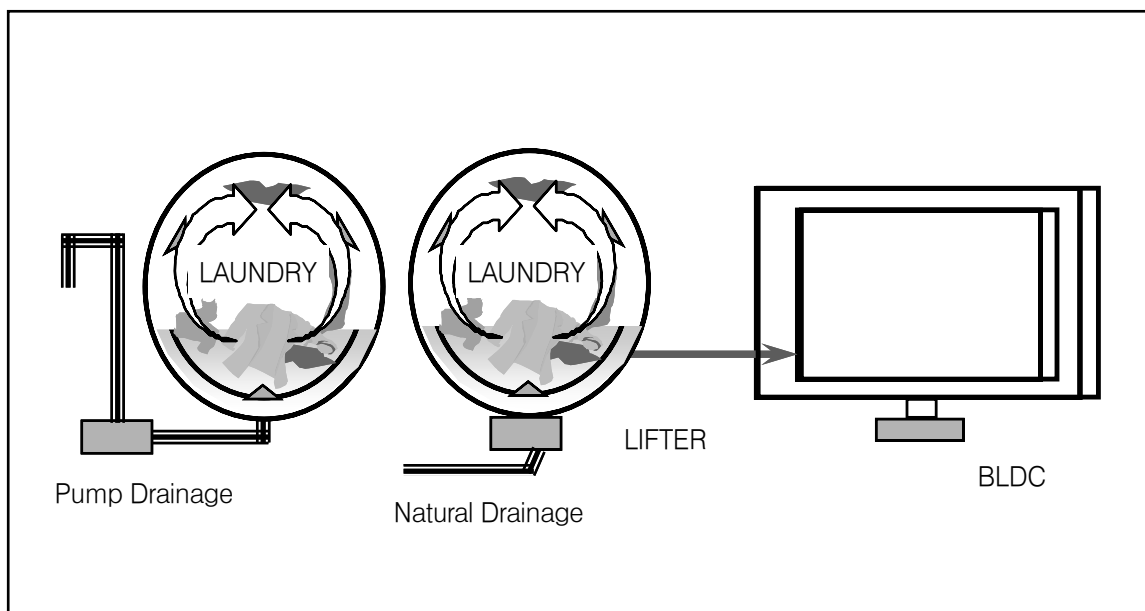
## 1. Drum Washing Machine

Water consumption is reduced by using the power of the laundry falling (free-fall) created when rotating the drum. With temperature control system, this drum washing machine saves energy and improves washing performance at the same time.

## 2. Key Features

- ◆ **Waist Care**  
Designed by the waist, and the most comfortable angle eject into the laundry is convenient and easy to manipulate.
- ◆ **The World's First Steam White Course**  
The Steam White Course save more 50 percent of Electricity, Water, Time than previous White Course.
- ◆ **Star Drum**  
Using Star Drum is able to higher Washing Performance and Minimal damage of laundry, water consumption.
- ◆ **The biggest capacity with compact size**  
12 Kg Capacity enable to wash bigger laundry.
- ◆ **Simultaneous supply of cold and hot water**  
As cold and hot water is supplied at the same time heating time and energy is saved.
- ◆ **Luxury Audio Dial**  
Using the advanced Audio Dial is luxury design of exterior.
- ◆ **The World's First Shoes Course** Enable to wash shoes.
- ◆ **DD inverter motor**  
The direct-drive type of which motor is directly connected to drum without an interim chuth, significantly reduces noise and vibration.
- ◆ **Self-Cleaning Course of Drum.**  
Enable to Self-Cleaning of Drum.
- ◆ **Digital Condensing Dry System.**  
Condensing Dry System with saveing energy.
- ◆ **For pump drainage,** the powerful pump speeds up drainage process.

### 3. Power System



- DD Control: Direct drive type of direct connection between drum and motor
- Rotation by powerful high-performance BLDC motor
- Pump drainage type for built-in installation and Natural drainage

## 4. Major Functions

### ① Washing

When rotating drum after putting in the laundry and detergent into the drum, the laundry are rotated by protrusions (lifters) attached inside the drum.

Washing is carried out with bending and impact actions generated by falling of the laundry to the bottom part of drum.

### ② Rinsing

Rinsing cleanly washes out detergent and dirt removed from the laundry after washing cycle.

### ③ Spin-drying

Weak, standard and strong spin cycle can be selected according to types of fabrics to be washed. spin-wringing is carried out by rotation (the centrifugal force) of drum according to the designated speed.

### ④ Drainage

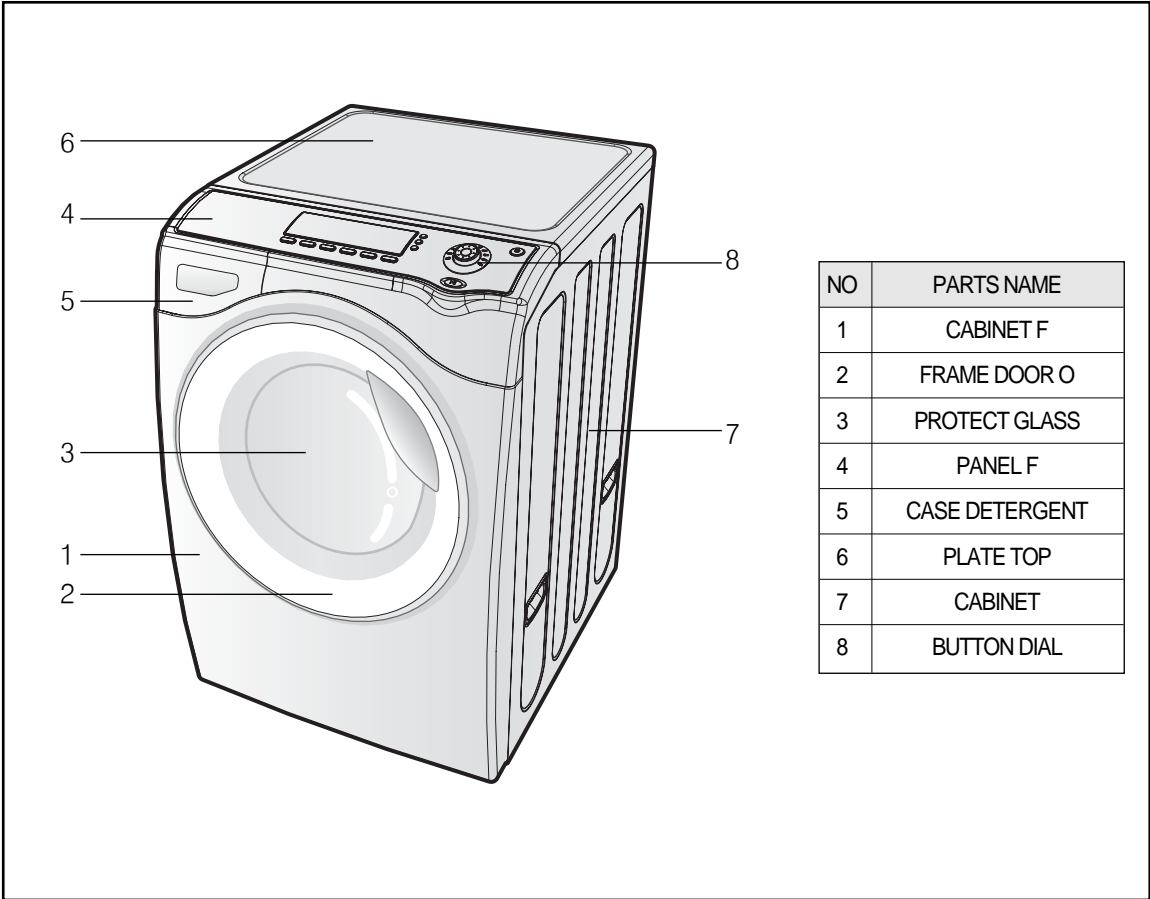
Pump Drainage: Powerful pump for built-in installation and application of filter to remove foreign substances

Natural Drainage: Applied Natural Drainage as the same pullsator.

# 2.WASHER SPECIFICATION

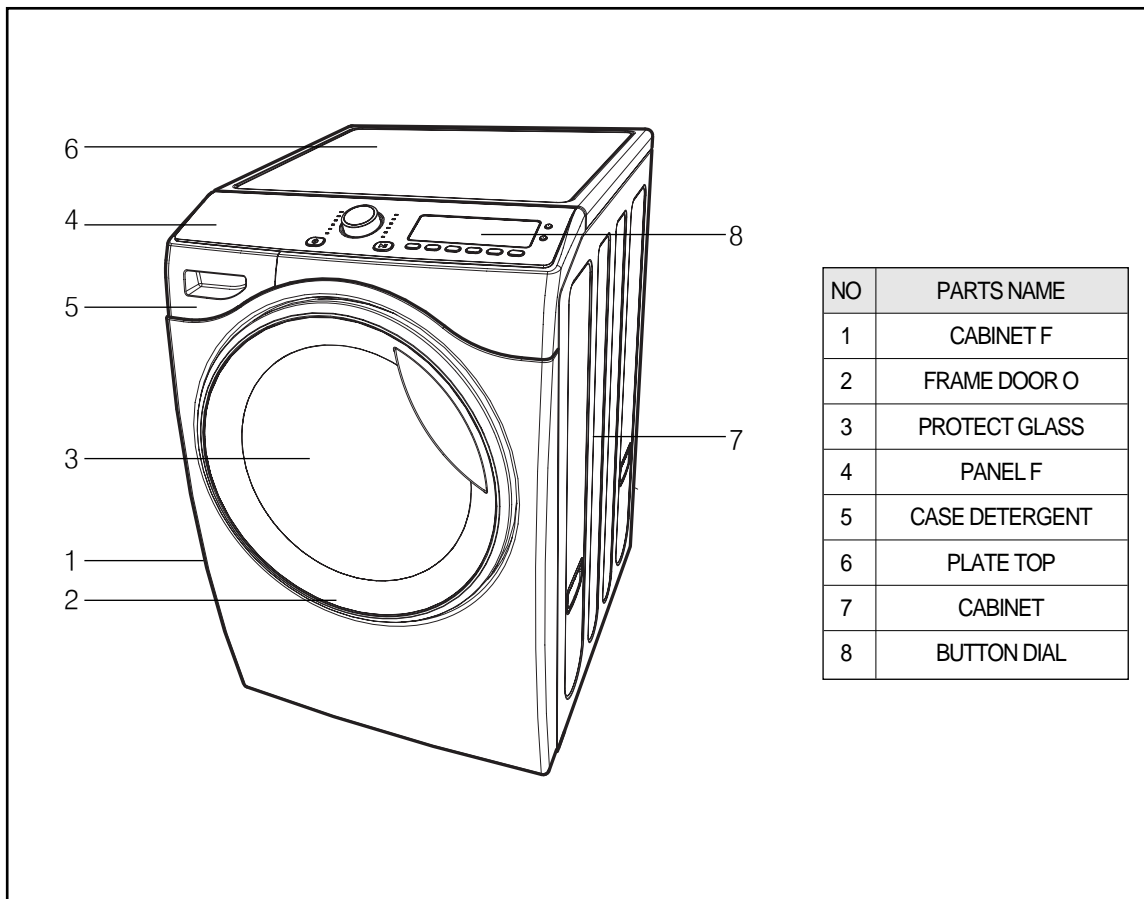
## 1. Product Specification

### ① T125's series



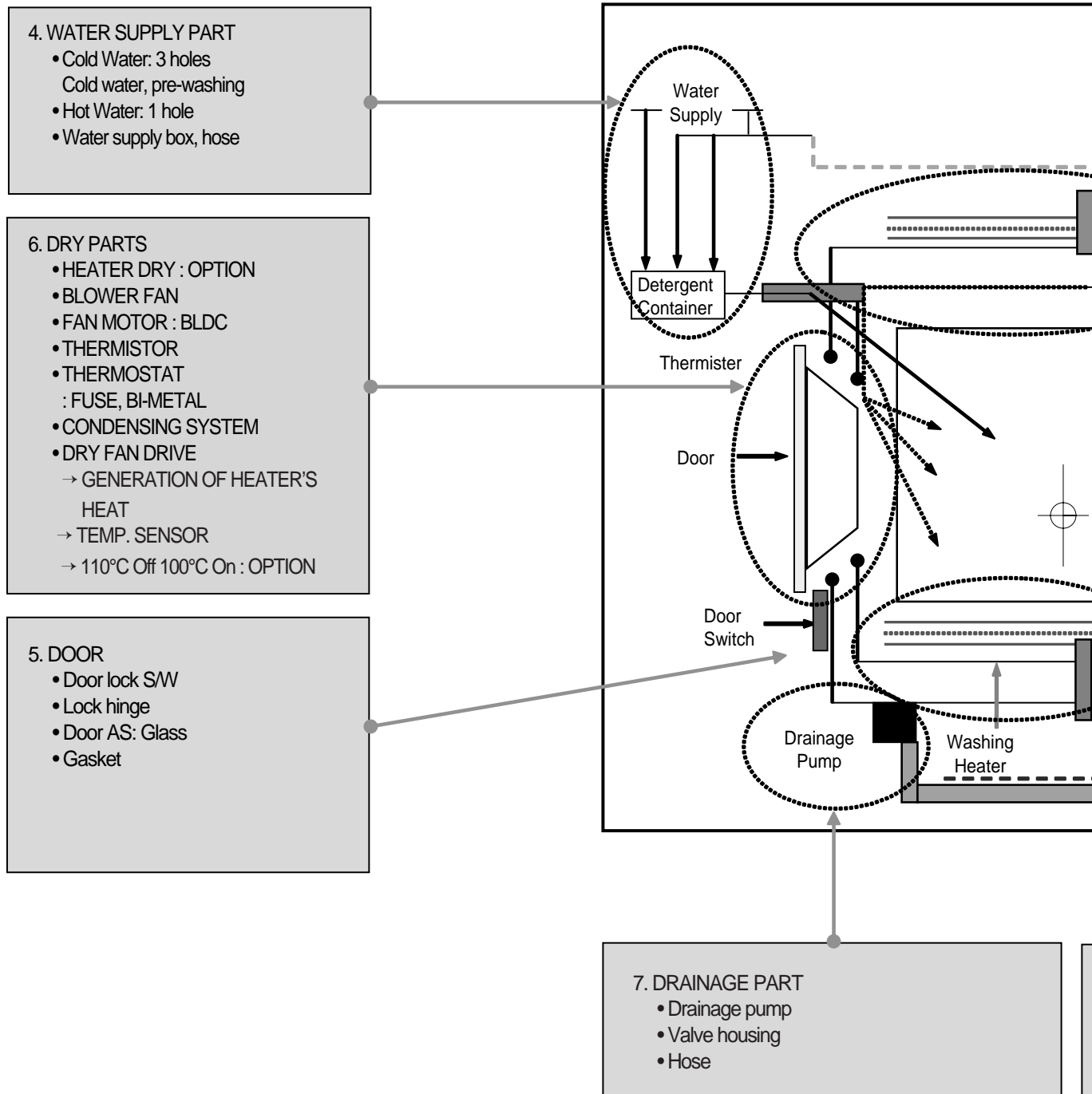
|                          |         |                                     |
|--------------------------|---------|-------------------------------------|
| DIMENSION(WxDxH)         |         | 630mm(W) x 792mm(D) x 976mm(H)      |
| MACHINE WEIGHT           |         | 82 kg                               |
| WATER CONSUMPTION        |         | WASH 91 ℓ / DRY 51 ℓ                |
| WASHING CONSUMPTION      |         | 31 ℓ                                |
| POWER SOURCE             |         | 230V/50Hz, 110V/60Hz, 127V/60Hz     |
| POWER CONSUMPTION        | WASHING | 200W (Heating ) ~ 2000W             |
|                          | DRY     | 1200W ~ 2100W                       |
| CAPACITY                 | WASHING | 12 kg                               |
|                          | SPIN    | 12 kg                               |
|                          | DRY     | 7 kg                                |
| WASHING TYPE             |         | DRUM TYPE                           |
| DRY TYPE                 |         | Digital condensing dry system       |
| OPERATION WATER PRESSURE |         | 29kPa ~ 784kPa(0.3kgf/cm²~8kgf/cm²) |

## ② T123's series

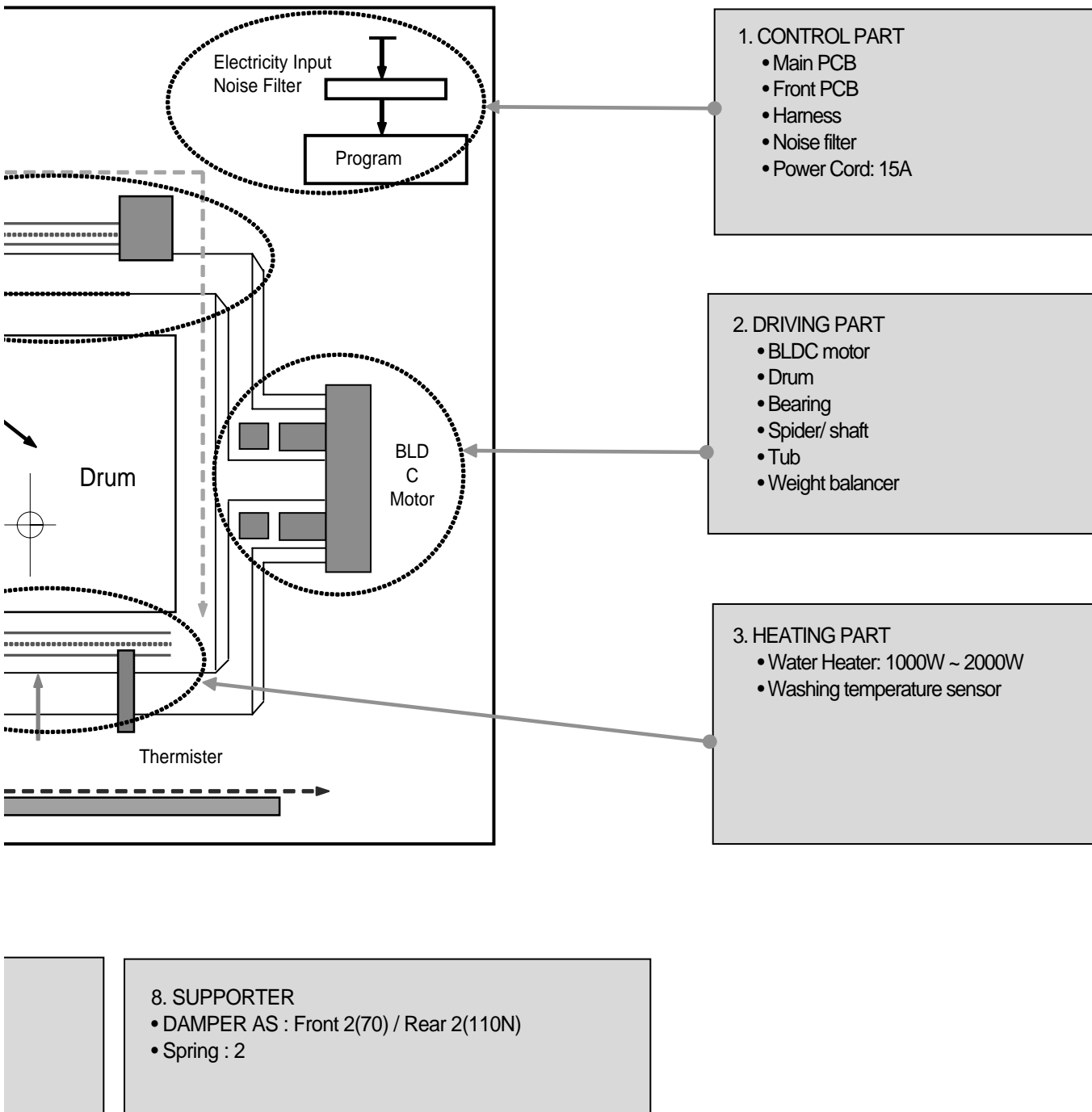


|                          |         |   |
|--------------------------|---------|---|
| DIMENSION(WxDxH)         |         | 630mm(W) x 792mm(D) x 976mm(H)                                |
| MACHINE WEIGHT           |         | 82 kg   |
| WATER CONSUMPTION        |         | WASH 91 ℓ / DRY 51 ℓ  |
| WASHING CONSUMPTION      |         | 31 ℓ  |
| POWER SOURCE             |         | 230V/50Hz, 110V/60Hz, 127V/60Hz                               |
| POWER CONSUMPTION        | WASHING | 200W (Heating ) ~ 2000W                                       |
|                          | DRY     | 1200W ~ 2100W   |
| CAPACITY                 | WASHING | 12 kg   |
|                          | SPIN    | 12 kg   |
|                          | DRY     | 7 kg  |
| WASHING TYPE             |         | DRUM TYPE   |
| DRY TYPE                 |         | Digital condensing dry system                                 |
| OPERATION WATER PRESSURE |         | 29kPa ~ 784kPa(0.3kgf/cm <sup>2</sup> ~8kgf/cm <sup>2</sup> ) |

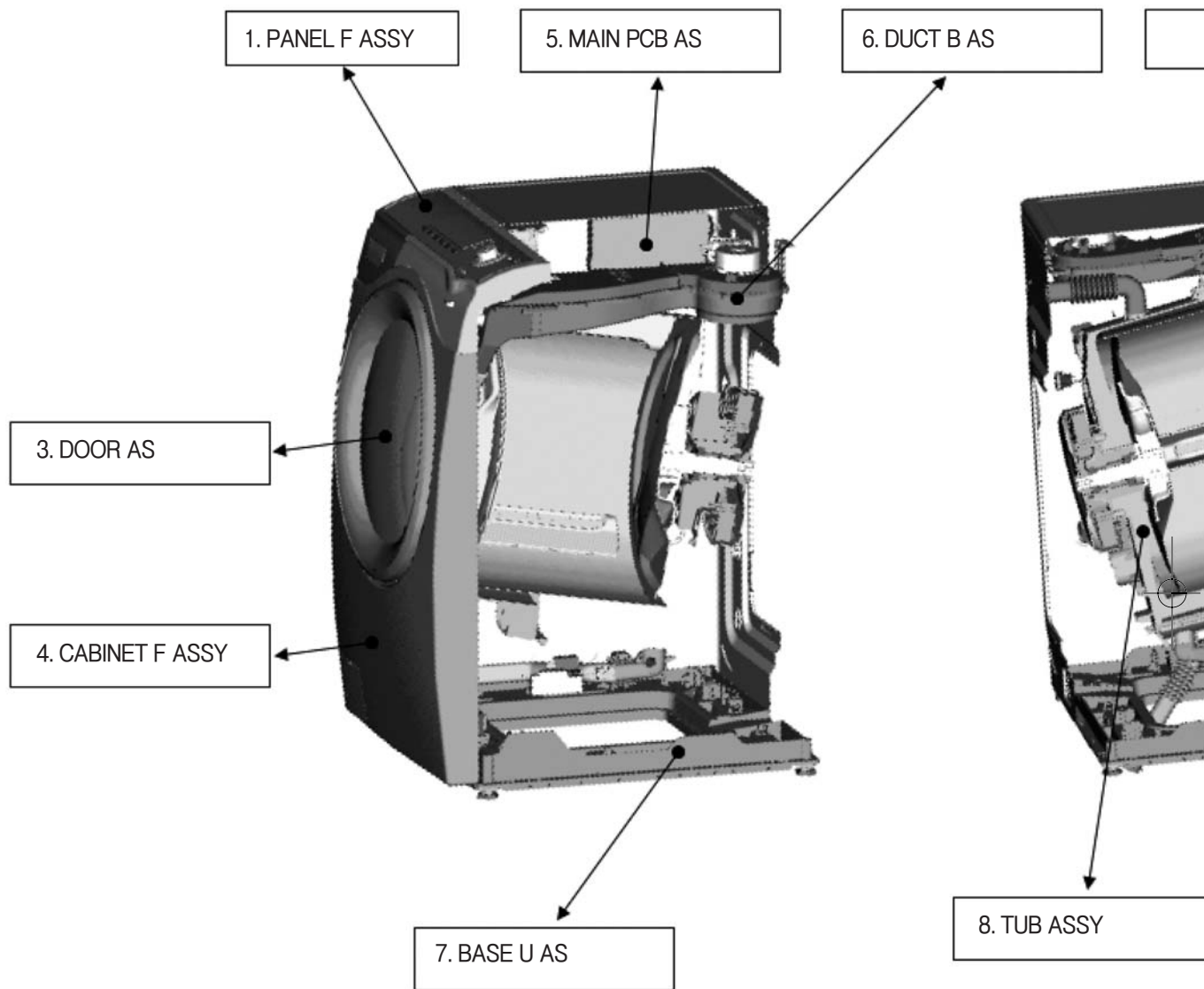
### 3. OPERATING MECHANISM DIAGRAM

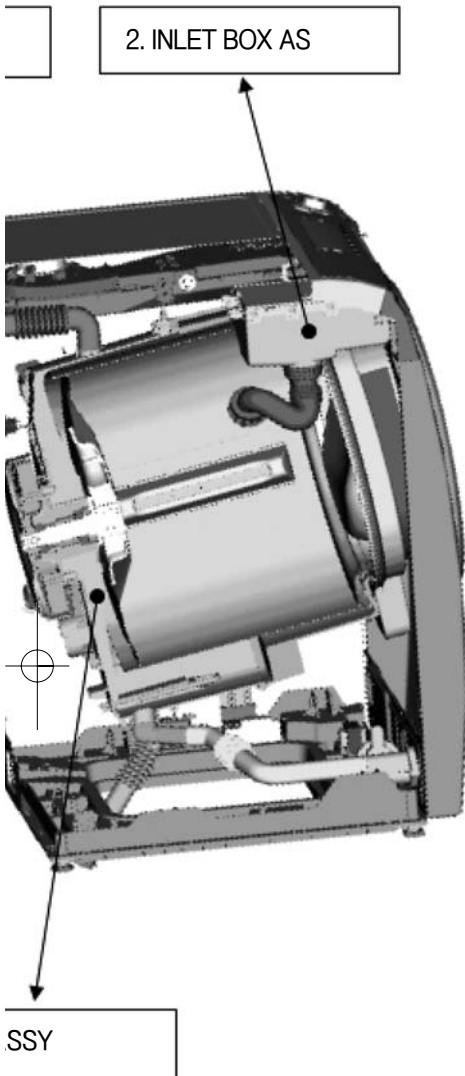






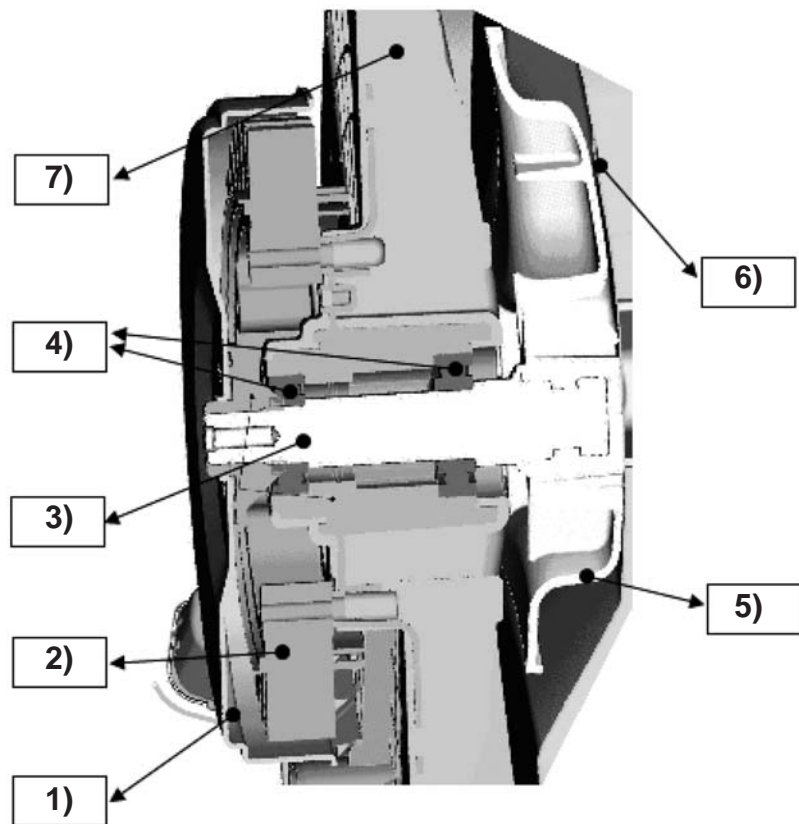
## 4. EACH PART OF DRUM WASHING MACHINE





\* TUB ASSY

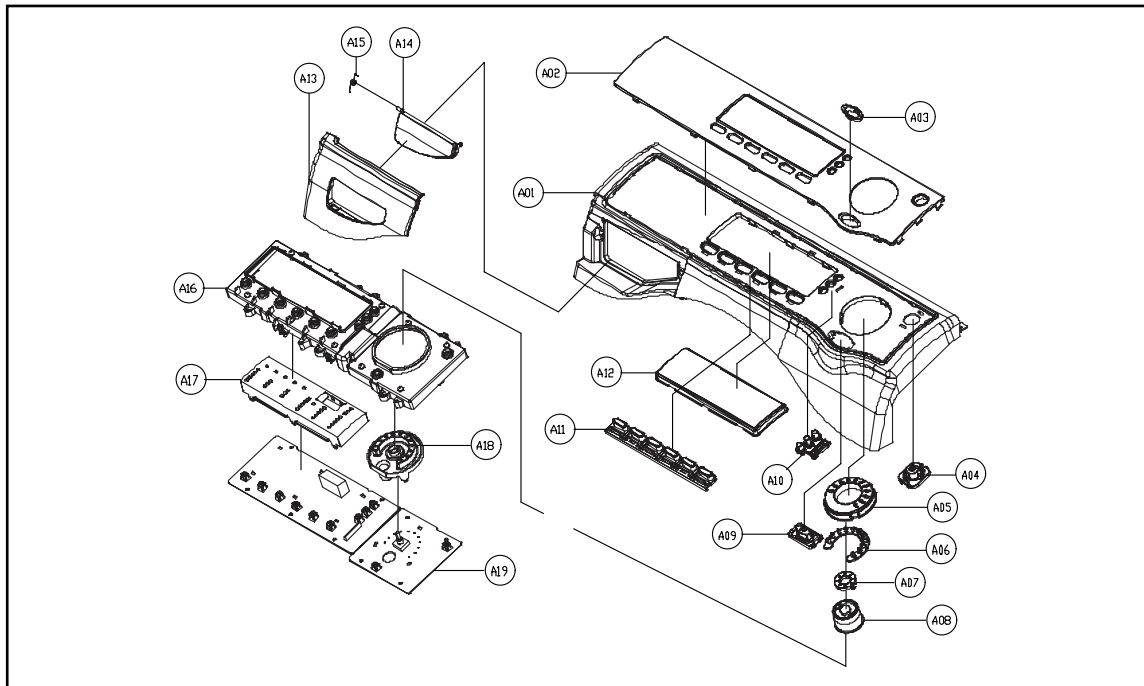
- 1) BLDC ROTOR
- 2) BLDC STATOR
- 3) SHAFT
- 4) BEARING
- 5) SPIDER
- 6) DRUM
- 7) TUB



## 5. PARTS LIST BY ASS'Y

### 1. PANEL F AS

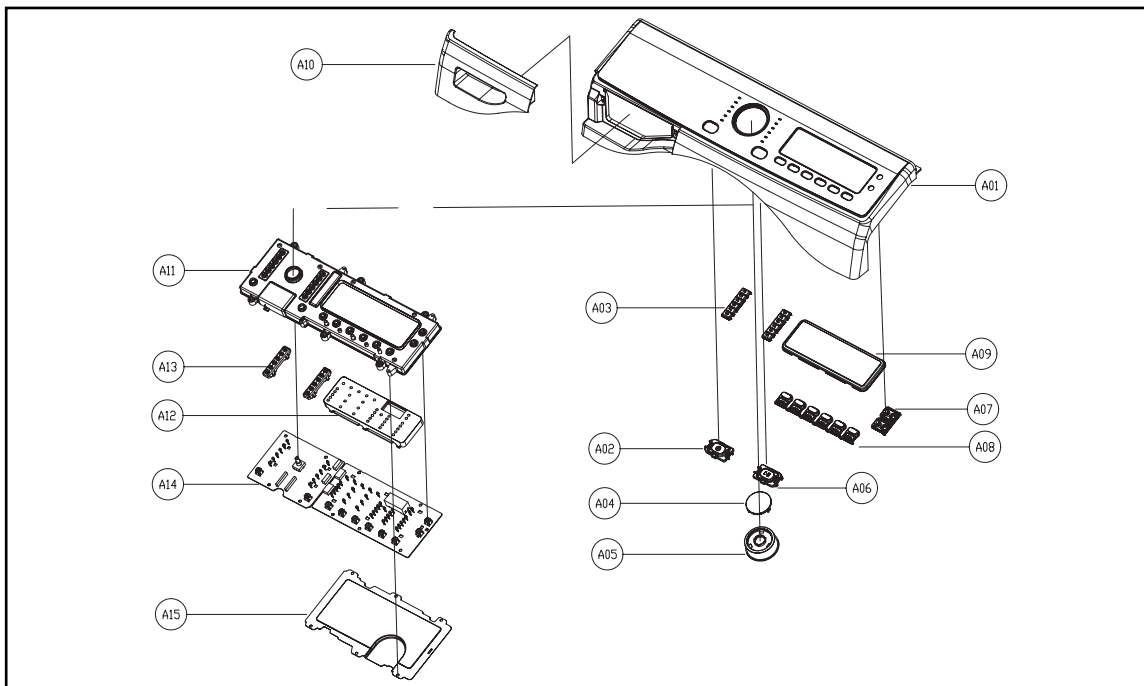
#### ① T125's series



| No. | PARTS NAME         | CODE       | SPECIFICATIONS           | Q'TY | REMARK |
|-----|--------------------|------------|--------------------------|------|--------|
| A01 | PANEL F OUTER      | 3614287900 | ABS                      | 1    |        |
| A02 | PANEL F INNER      | 3614288000 | ABS                      | 1    |        |
| A03 | DECORATOR START    | 3611686300 | ABS                      | 1    |        |
| A04 | BUTTON POWER       | 3616637100 | ABS                      | 1    |        |
| A05 | DECORATOR COURSE   | 3611686200 | ABS                      | 1    |        |
| A06 | WINDOW COURSE      | 3615505700 | Trans parency ABS        | 1    |        |
| A07 | BUTTON DIAL IN     | 3616637300 | ABS                      | 1    |        |
| A08 | BUTTON DIAL OUT    | 3616637500 | Trans parency            | 1    |        |
| A09 | BUTTON START       | 3616637600 | ABS                      | 1    |        |
| A10 | BUTTON RES         | 3616637200 | ABS                      | 1    |        |
| A11 | BUTTON FUNCTION    | 3616637700 | ABS                      | 1    |        |
| A12 | WINDOW DISPLAY     | 3615505600 | Trans parency ABS        | 1    |        |
| A13 | CASE HANDLE        | 3611146800 | ABS                      | 1    |        |
| A14 | HANDLE CAP         | 3612611300 | ABS                      | 1    |        |
| A15 | SPRING CASE HANDLE | 3615116000 | SUS 304, D=0.6           | 1    |        |
| A16 | CASE PCB F         | 3611146700 | HIPS                     | 1    |        |
| A17 | HOLDER LED         | 3613054000 | ABS                      | 1    |        |
| A18 | HOLDER LED COURSE  | 3613053900 | ABS                      | 1    |        |
| A19 | PCB AS             |            | DWD-T120R FRONT PCB ASSY | 1    |        |

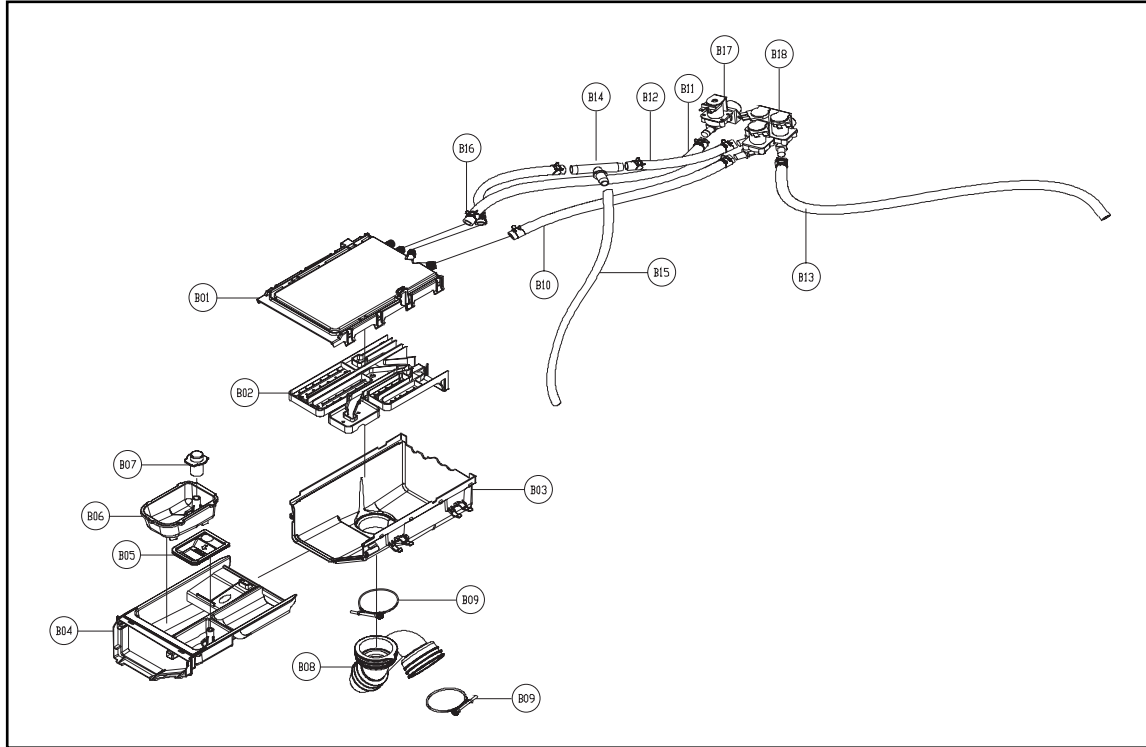
## 1. PANEL F AS

### ② T123's series



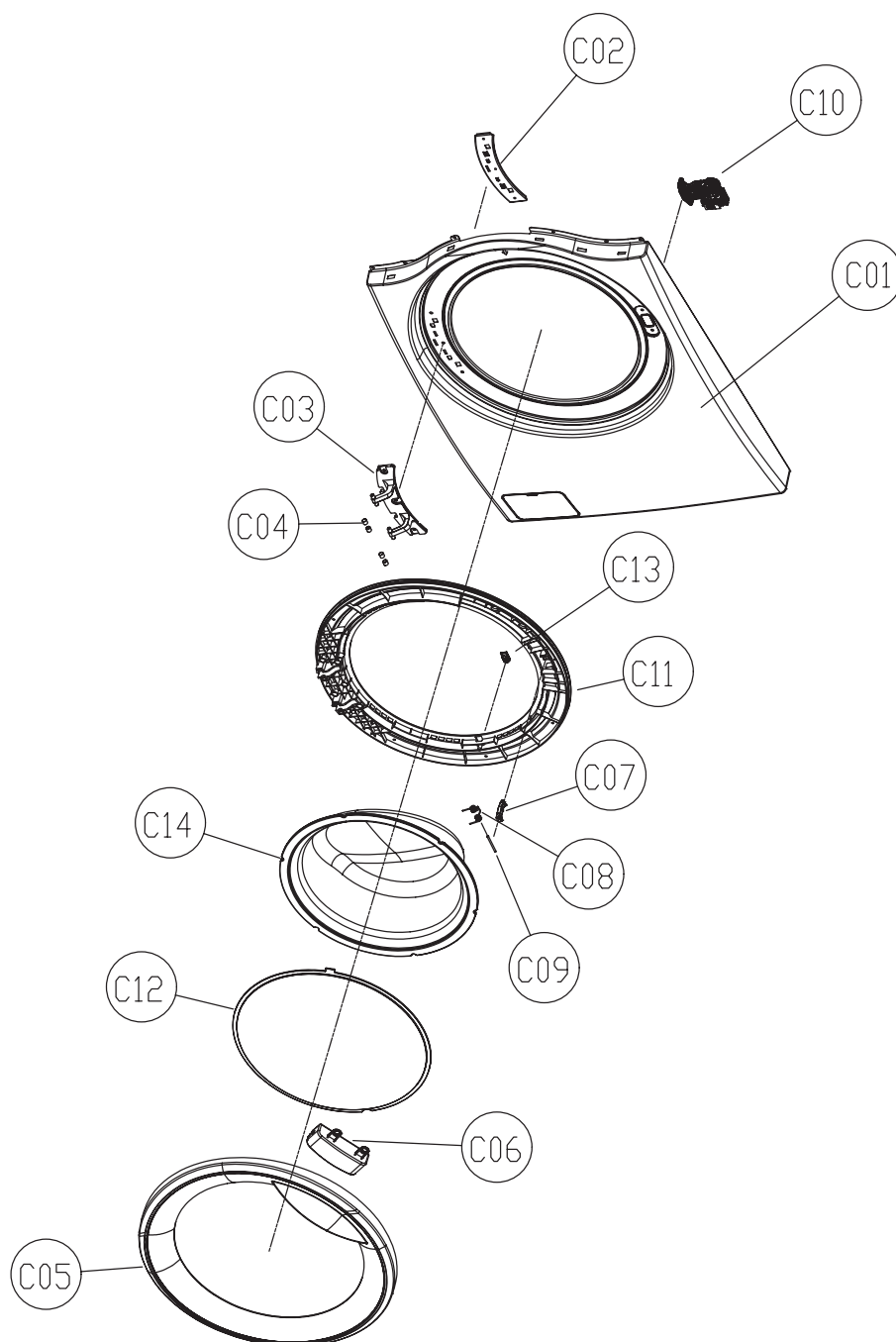
| No. | PARTS NAME          | CODE       | SPECIFICATIONS       | Q'TY | REMARK |
|-----|---------------------|------------|----------------------|------|--------|
| A01 | PANEL F             | 36142T1400 | ABS                  | 1    |        |
| A02 | BUTTON POWER        | 3616638500 | ABS                  | 1    |        |
| A03 | WINDOW COURSE       | 3615506600 | ABS                  | 2    |        |
| A04 | KNOB DIAL IN        | 3613406400 | ABS                  | 1    |        |
| A05 | KNOB DIAL OUTER     | 3613406500 | ABS                  | 1    |        |
| A06 | BUTTON START        | 3616638600 | ABS                  | 1    |        |
| A07 | BUTTON RES          | 3616638700 | ABS                  | 1    |        |
| A08 | BUTTON FUNCTION     | 3616638400 | ABS                  | 1    |        |
| A09 | WINDOW DISPLAY      | 3615506500 | ABS                  | 1    |        |
| A10 | CASE HANDLE         | 36111T1400 | ABS                  | 1    |        |
| A11 | CASE PCB F          | 36111T1300 | HIPS                 | 1    |        |
| A12 | HOLDER LED FUNCTION | 3613055000 | ABS                  | 1    |        |
| A13 | HOLDER LED COURSE   | 3613054900 | ABS                  | 2    |        |
| A14 | PCB AS              |            | DWD-T123R FRONT PCB  | 1    |        |
| A15 | PROTECTOR PCB       | 3618304800 | SECC 0.6T, DWD-T110R | 1    |        |

## 2. INLET BOX AS



| No. | PARTS NAME             | CODE       | SPECIFICATIONS                          | Q'TY | REMARK |
|-----|------------------------|------------|---|------|--------|
| B01 | NOZZLE TOP             | 3618105400 | PP                                      | 1    |        |
| B02 | NOZZLE UNDER           | 3618105500 | PP                                      | 1    |        |
| B03 | INLET BOX              | 3617510900 | PP                                      | 1    |        |
| B04 | CASE DETERGENT         | 3611146400 | PP                                      | 1    |        |
| B05 | CAP SOFTENER           | 3610918300 | PP                                      | 1    |        |
| B06 | CASE LIQUID            | 3611147900 | PP                                      | 1    |        |
| B07 | CAP LIQUID             | 3610918000 | PP                                      | 1    |        |
| B08 | HOSE INLET             | 3613272000 | EPDM, "U" TRAP                          | 1    |        |
| B09 | CLAMP AS               | 3611203200 | ID=60, WIRE+GUIDE+BOLT+NUT              | 2    |        |
| B10 | HOSE WATER SUPPLY      | 3613270900 | EPDM ID9.5 OD14.5, L=320mm              | 1    | Combo  |
|     |                        |            | EPDM ID9.5 OD14.5, L=370mm              | 1    | Wash   |
| B11 | HOSE WATER SUPPLY      | 3613270900 | EPDM ID9.5 OD14.5, L=355mm              | 1    |        |
| B12 | HOSE WATER SUPPLY      | 3613270900 | EPDM ID9.5 OD14.5, L=170x2              | 2    |        |
| B13 | HOSE WATER SUPPLY      | 3613270900 | EPDM ID9.5 OD14.5, L=460mm              | 1    |        |
| B14 | PIPE JOINT(HOSE INLET) | 3614413300 | PP                                      | 1    |        |
| B15 | HOSE WATER SUPPLY      | 3613270930 | EPDM ID8.5 OD12.5, L=530mm              | 1    |        |
| B16 | CLAMP HOSE             | 3611205800 | 100H, ID=13.8 W=10.0 0.9T               | 8    |        |
| B17 | VALVE INLET            | 3615415700 | 100~130V 1-WAY HOT PP-BRACKET           | 1    |        |
|     |                        | 3615414800 | HOT, 220~240                            | 1    |        |
| B18 | VALVE INLET            | 3615415070 | 100~130V, 3-WAY                         | 1    |        |
|     |                        | 3615415050 | 220~240V, 3WAY, RINSE GUIDE, PP/BRACKET | 1    |        |
|     |                        | 3615414900 | 220~240V, 2WAY, PP/BRACKET              | 1    |        |

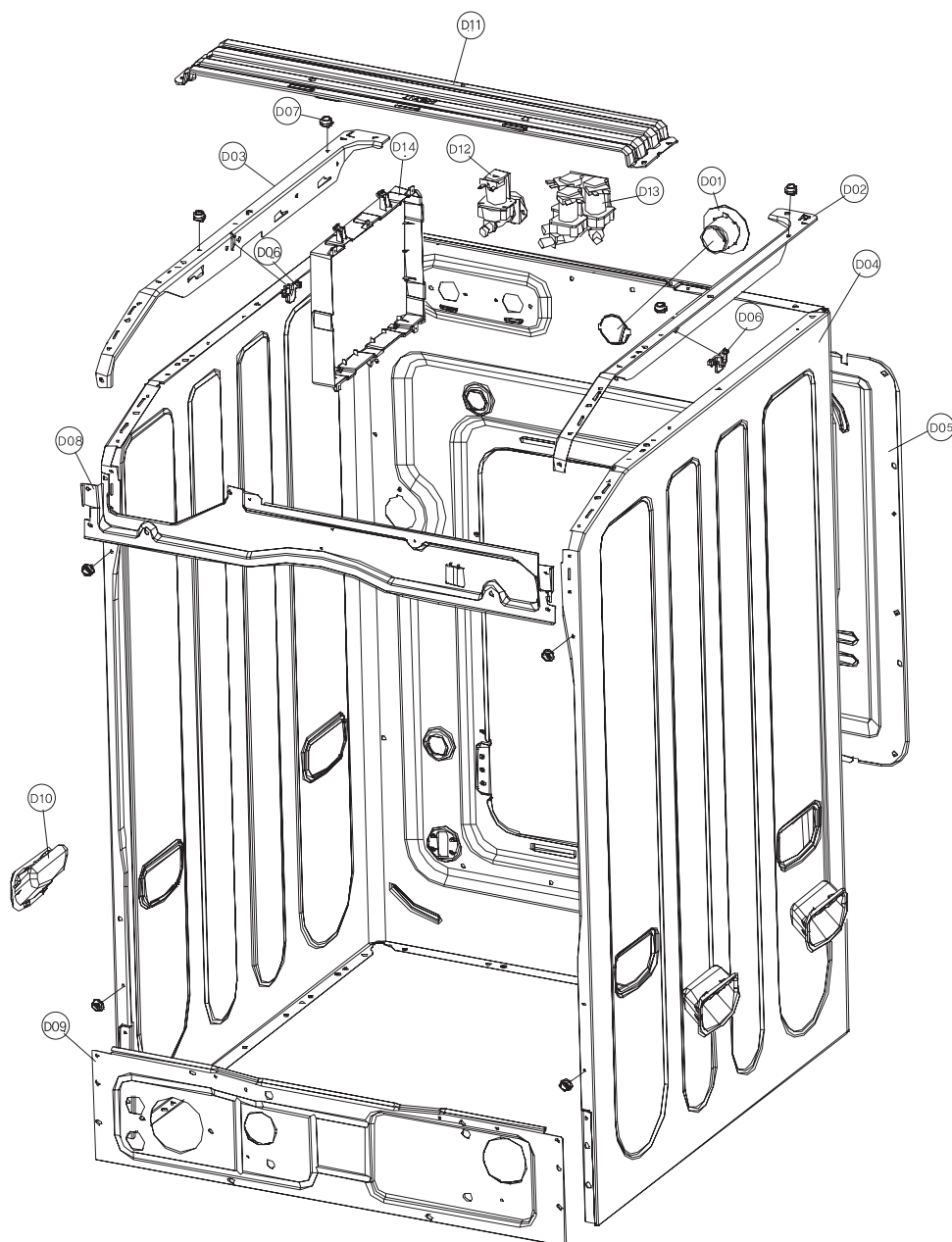
### 3. CABINET F ASSY



| No. | PARTS NAME          | CODE       | SPECIFICATIONS        | Q'TY | REMARK |
|-----|---------------------|------------|-----------------------|------|--------|
| C01 | CABINET F           | 3610813000 | SECD 0.8 t            | 1    |        |
| C02 | PLATE HINGE SUPPORT | 3614539800 | SPG 0.8 t             | 1    |        |
| C03 | HINGE DOOR          | 3612903800 | AL                    | 1    |        |
| C04 | CAP HINGE DOOR      | 3610916500 | POM                   | 4    |        |
| C05 | FRAME DOOR O        | 3612209900 | ABS, CR               | 1    |        |
| C06 | HANDLE COVER        | 3612611500 | ABS                   | 1    |        |
| C07 | HOOK DOOR           | 3613100900 | ZNDC                  | 1    |        |
| C08 | SPRING HOOK         | 3615115400 | SUS304                | 1    |        |
| C09 | HOOK SHAFT          | 3613101000 | SUS, D=3.0            | 1    |        |
| C10 | SWITCH DOOR LOCK    | 3619047210 | DL-S1 125V 16A        | 1    |        |
|     |                     | 3619047200 | DL-S1 250V 16A BITRON |      |        |
| C11 | FRAME DOOR I        | 3612209800 | PP                    | 1    |        |
| C12 | PROTECTOR GLASS     | 3618304300 | PC                    | 1    |        |
| C13 | STOPPER DOOR        | 3615202400 | ABS                   | 1    |        |
| C14 | DOOR GLASS          | 361A110600 | GLASS                 | 1    |        |

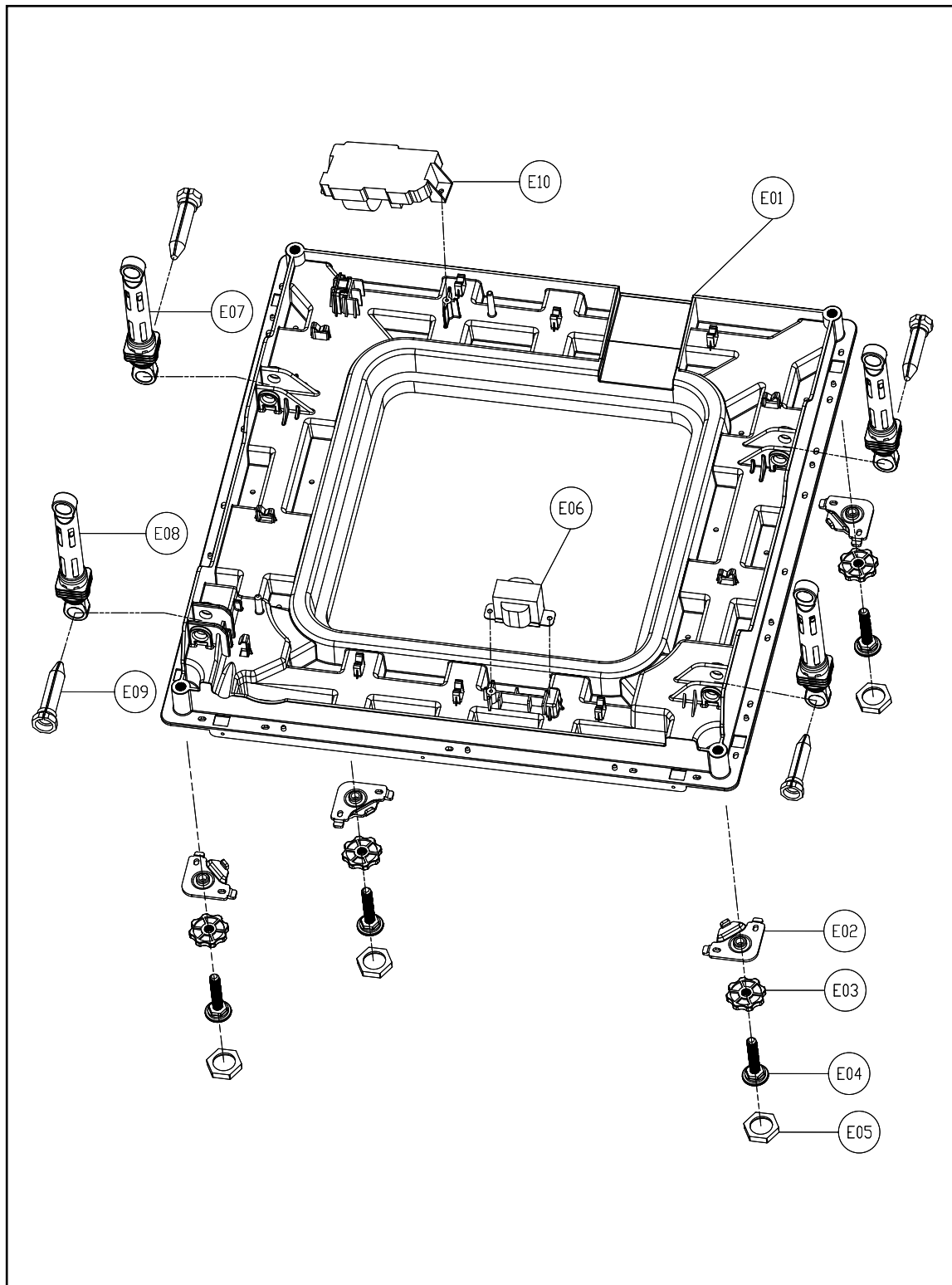


#### 4. CABINET ASSY



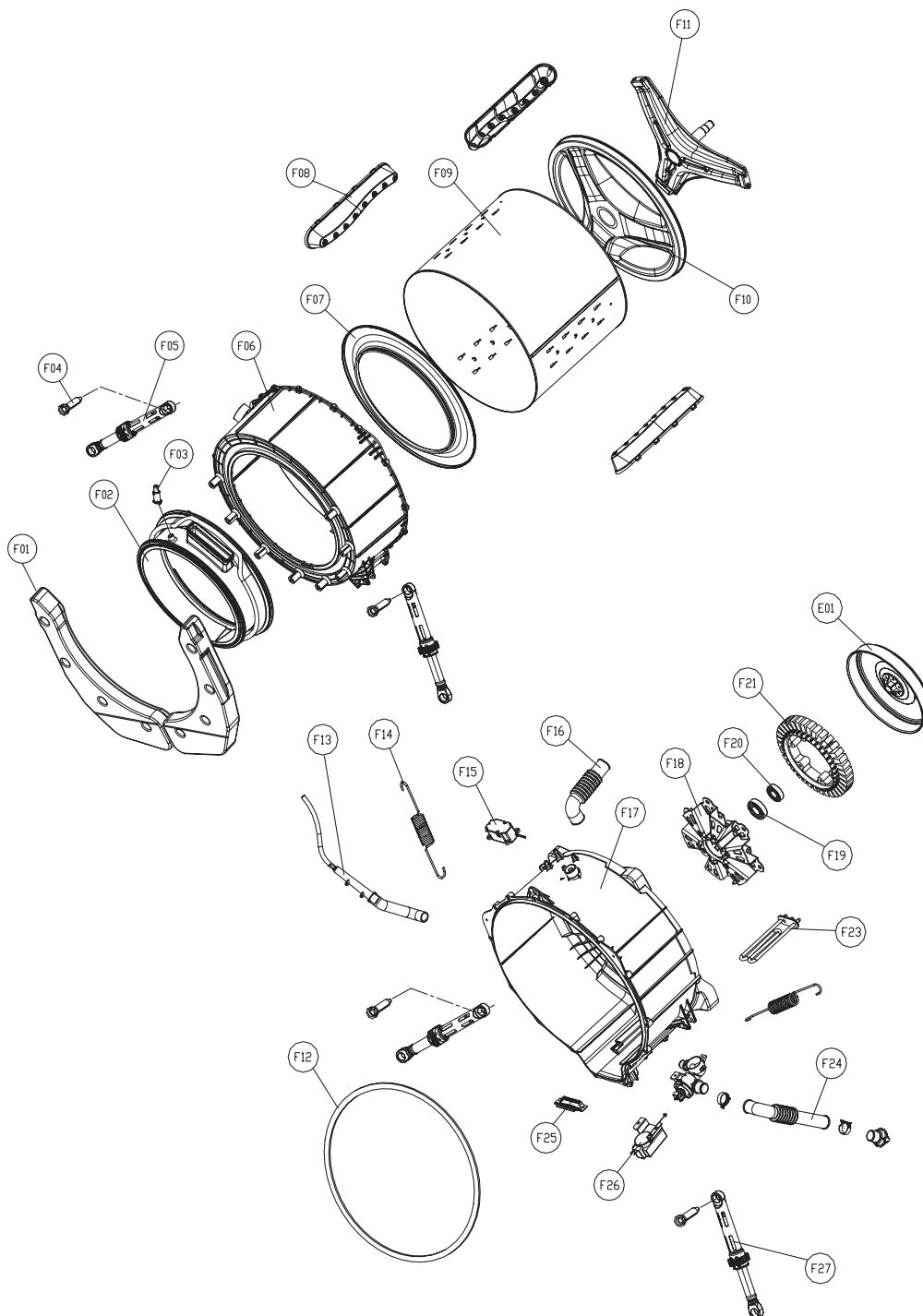
| No. | PARTS NAME     | CODE       | SPECIFICATIONS                         | Q'TY | REMARK |
|-----|----------------|------------|--|------|--------|
| D01 | NOZZLE AIR     | 3618103110 | PP, DWD-100DR                          | 1    |        |
| D02 | FRAME TOP R    | 3612209300 | GI 1.6 t                               | 1    |        |
| D03 | FRAME TOP L    | 3612209400 | GI 1.6 t                               | 1    |        |
| D04 | CABINET        | 3610812900 | SGCC 0.8 t                             | 1    |        |
| D05 | COVER BACK AS  | 3611425540 | COVER BACK + PAD CABINET               | 1    |        |
| D06 | STOPPER SPRING | 3615202200 | POM, DWD-100DR                         | 2    |        |
| D07 | FIXTURE PLATE  | 3612008000 | POM, 130RP                             | 8    |        |
| D08 | FRAME UPPER    | 3612209500 | SBHG, 1.2 t                            | 1    |        |
| D09 | FRAME LOWER    | 3612204200 | SBHG, 1.2 t                            | 1    |        |
| D10 | HANDLE CABINET | 3612608100 | PP, DWD-100DR                          | 4    |        |
| D11 | FRAME COVER    | 3612209600 | SBHG, 1.2 t                            | 1    |        |
| D12 | VALVE INLET    | 3615415700 | 100~130V 1-WAY HOT PP-BRACKET          | 1    |        |
|     |                | 3615414800 | HOT, 220~240                           |      |        |
| D13 | VALVE INLET    | 3615415070 | 100~130V, 3-WAY                        | 1    |        |
|     |                | 3615415050 | 220~240V, 3WAY, RINSE GUIDE, PP/BACKET |      |        |
|     |                | 3615414900 | 220~240V, 2WAY, PP/BACKET              |      |        |
| D14 | CASE PCB MAIN  | 3611146200 | HIPS, DWD-T110R                        | 1    |        |

## 5. BASE U AS



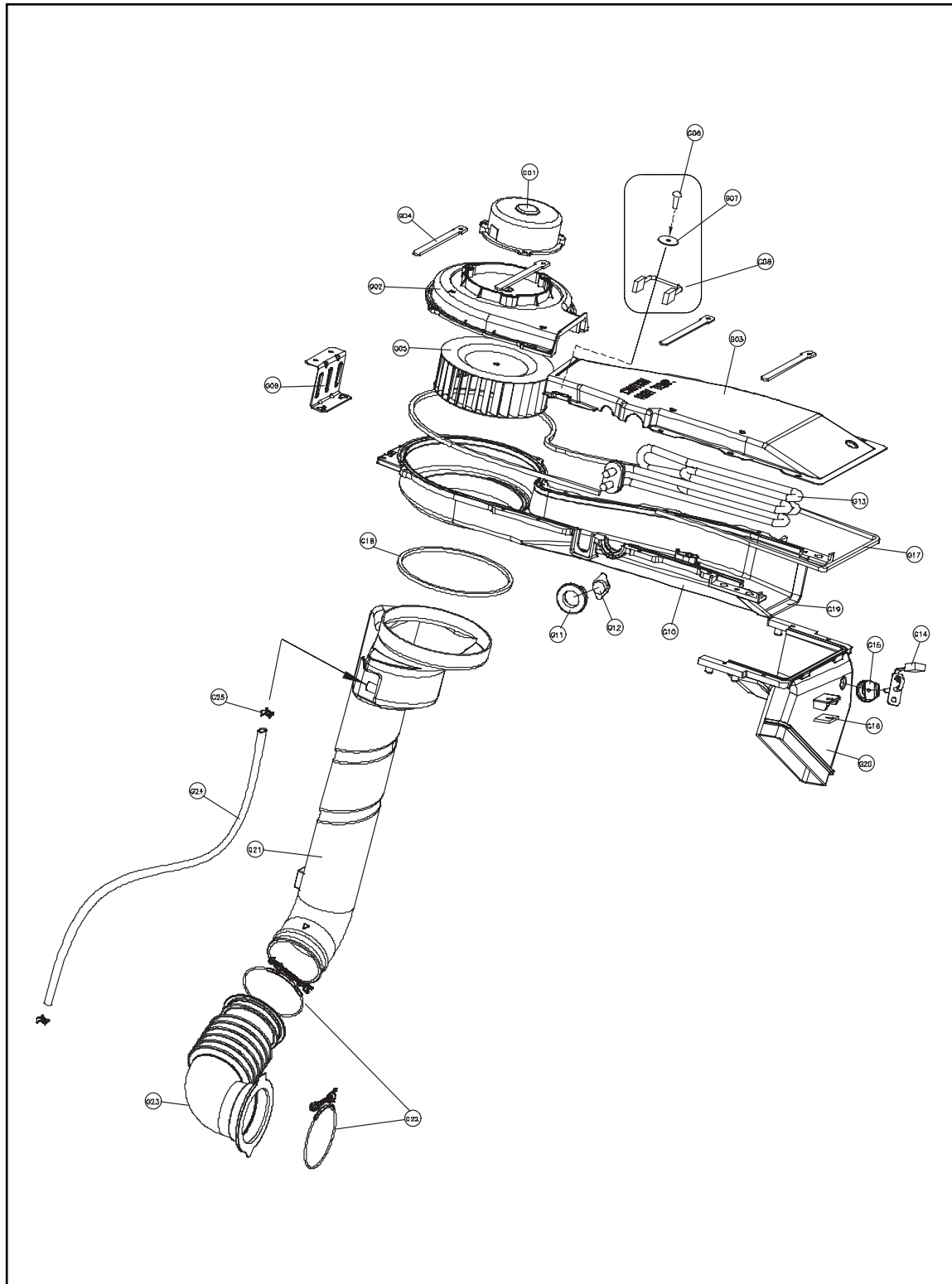
| No. | PARTS NAME       | CODE       | SPECIFICATIONS                                | Q'TY | REMARK |
|-----|------------------|------------|---|------|--------|
| E01 | BASE U           | 3610393200 | PP, DWD-T120R                                 | 1    |        |
| E02 | SUPPORTER LEG    | 3615303600 | PO+, 3.0T                                     | 4    |        |
| E03 | FIXTURE LEG      | 3612006400 | ABS, DWD-100DR                                | 4    |        |
| E04 | SPECIAL BOLT     | 3616029000 | 10 X 1.25, 51MM                               | 4    |        |
| E05 | FOOT             | 3612100600 | BUTYL, DWD-100DR                              | 4    |        |
| E06 | REACTOR          | 52G043J002 | DWD-100DR, 4A                                 | 1    |        |
| E07 | DAMPER FRICTION  | 361A700150 | 110N AKS ST=170-260 DL=197.5 LOW NOISE        | 2    |        |
| E08 | DAMPER FRICTION  | 361A700110 | 70N AKS ST=170-260 DL=197.5 LOW NOISE         | 2    |        |
| E09 | DAMPER PIN       | 361A700200 | AKS D=14.5                                    | 4    |        |
| E10 | EMI FILTER(K19B) | 3611909300 | DWLF-K19(B110),X0.47U.Y1000P.VAR471K.NON FUSE | 1    |        |

## 6. TUB ASSY



| No. | PARTS NAME         | CODE       | SPECIFICATIONS           | Q'TY | REMARK |
|-----|--------------------|------------|--------------------------|------|--------|
| F01 | BALANCER WEIGHT    | 3616109000 | DWD-T120R                | 1    |        |
| F02 | GASKET DRY         | 3612323900 | EPDM                     | 1    |        |
| F03 | NOZZLE SHOWER      | 3618104000 | PP, DWD-100DR            | 1    |        |
| F04 | DAMPER PIN         | 361A700200 | AKS D=14.5               | 4    |        |
| F05 | DAMPER FRICTION    | 361A700110 | AKS, 70N                 | 2    |        |
| F06 | TUB FRONT          | 3618829800 | FRPP, DWD-T120R          | 1    |        |
| F07 | DRUM FRONT         | 3617003101 | SUS, 0.5T                | 1    |        |
| F08 | LIFTER WASH        | 361A400600 | PP NANO-SILVER           | 3    |        |
| F09 | DRUM CENTER        | 3617003010 | SUS, 0.6T                | 1    |        |
| F10 | DRUM REAR          | 3617003210 | SUS, 0.6T                | 1    |        |
| F11 | SPIDER AS          | 361A300200 | SPIDER(ALDC)+SHAFT(S45C) | 1    |        |
| F12 | GASKET TUB         | 3612324300 | L=1810                   | 1    |        |
| F13 | AIR TRAP AS        | 3610AAR120 | DWD-T120R                | 1    |        |
| F14 | SPRING SUSPENSION  | 3615115800 | DWD-T120R                | 2    |        |
| F15 | UNIT BUBBLE PUMP   | 3612802410 | 230V                     | 1    |        |
|     |                    | 36189L4G00 | 100V~130V                | 1    |        |
| F16 | HOSE AIR           | 3613266300 | EPDM                     | 1    |        |
| F17 | TUB REAR           | 3618829700 | FRPP, DWD-T120R          | 1    |        |
| F18 | BEARING HOUSING    | 3616304600 | ALDC                     | 1    |        |
| F19 | BEARING INNER      | 3616303100 | 6206Z                    | 1    |        |
| F20 | BEARING OUTER      | 3616303200 | 6205Z                    | 1    |        |
| F21 | UNIT STATOR BLDC   | 36189L4800 | 36SLOT                   | 1    |        |
| F22 | UNIT ROTOR BLDC    | 36189L4900 | MAGNET24                 | 1    |        |
| F23 | HEATER WASH        | 3512802400 | 220V 2000W               | 1    |        |
|     |                    | 3612802410 | 230V 2000W               | 1    |        |
|     |                    | 3612802440 | 100-130V 1000W           | 1    |        |
|     |                    | 3612802430 | 110V 1000W               | 1    |        |
| F24 | HOSE DRAIN I       | 3613266100 | EPDM                     | 1    |        |
| F25 | FIXTURE HEATER     | 3612009300 | SUS0.7T                  | 1    |        |
| F26 | DRAIN MOTOR        | 3619TAK00  | 110V                     | 1    |        |
| F27 | DAMPER FRICTION    | 361A700150 | AKS                      | 2    |        |
| F28 | UNIT DRAIN PUMP AS | 36189L5K30 | 220-240V / 50Hz          | 1    |        |
|     |                    | 36189L5710 | 110-127V / 60 Hz         | 1    |        |

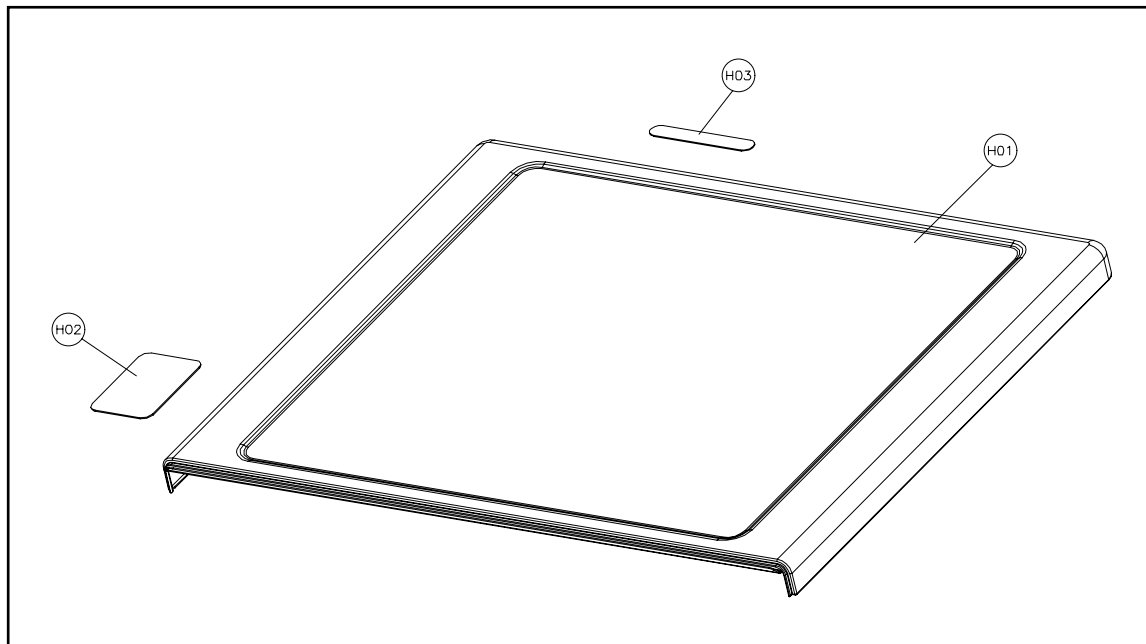
## 7. DUCT B AS + DUCT PIPE AS



| No. | PARTS NAME          | CODE       | SPECIFICATIONS                    | Q'TY | REMARK |
|-----|---------------------|------------|-----------------------------------|------|--------|
| G01 | UNIT FAN MOTOR      | 36189L3Z20 | ISM-7780 6DWWA 24V.               | 1    |        |
| G02 | COVER DUCT          | 3611428700 | ALDC                              | 1    |        |
| G03 | DUCT B UPPER        | 361A202100 | ALCOST 0.5T                       | 1    |        |
| G04 | CLAMP CORD          | 3611203330 | DABE-2, A=9, B=5,3, L=105         | 3    |        |
| G05 | FAN AS              | 3611885900 | DI33 FAN                          | 1    |        |
| G06 | SCREW TAPPING       | 7122400811 | T2S TRS 4x8                       | 1    |        |
| G07 | SPECIAL SCREW AS    | 3616030100 | TAPTITE P, TRS 4*16, WASHER       | 1    |        |
| G08 | FUSE TEMPERATURE    | 361A800120 | 128°C(G4A0115C) 15A 250V          | 1    |        |
| G09 | FRAME HEATER FRANGE | 3612209700 | SBHG 1.2t                         | 1    |        |
| G10 | DUCT B LOWER        | 361A202200 | AL, 3t                            | 1    |        |
| G11 | PACKING THERMOSTAT  | 3614009900 | SILICON                           | 1    |        |
| G12 | SWITCH THERMOSTAT   | 3619046500 | ON 120°C OFF 150°C 230V           | 1    |        |
| G13 | HEATER DRY          | 3612800900 | 220V 2100W                        | 1    |        |
|     |                     | 3612801400 | 230V 2100W                        | 1    |        |
|     |                     | 3612802100 | 120V 1200W                        | 1    |        |
|     |                     | 3612801300 | 110V 1200W                        | 1    |        |
| G14 | THERMISTOR DRY      | 361AAAAC30 | R40=26.065Ω, R90=4.4278Ω          | 1    |        |
| G15 | PACKING RUBBER      | 3614009800 | SILICON                           | 1    |        |
| G16 | CUSHION DRY         | 3611570500 | NBR, 20 x20 x 3T                  | 2    |        |
| G17 | GASKET SEAL A       | 3612324200 | EPDM FOAM, DIA=5, L=1335          | 1    |        |
| G18 | GASKET SEAL B       | 3612320810 | EPDM FOAM, L=412, 4.9 x 4.4 x 4.8 | 1    |        |
| G19 | GASKET INLET        | 3612323800 | EVA, 10 x 211 x 1T                | 1    |        |
| G20 | DUCT GUIDE          | 361A202300 | AL, 3T                            | 1    |        |
| G21 | DUCT AS             | 361A200850 | T120R                             | 1    |        |
| G22 | CLAMP AS(DUCT)      | 3611203700 | DUCT                              | 2    |        |
| G23 | BELLOWS DUCT        | 3616403000 | EPDM                              | 1    |        |
| G24 | HOSE WATER SUPPLY   | 3613270900 | T120R                             | 1    |        |
| G25 | CLAMP SPRING        | 3611203800 | ID=15.5, T=0.6, B=10              | 2    |        |



## 8. PLATE TOP ASSY



| No. | PARTS NAME    | CODE       | SPECIFICATIONS               | Q'TY | REMARK |
|-----|---------------|------------|------------------------------|------|--------|
| H01 | PLATE TOP     | 3614539900 | SECC 1.2T                    | 1    |        |
| H02 | LABEL CAUTION | 3613553830 | PVC, SILK                    | 1    |        |
| H03 | LABEL INSTALL | 3613555700 | ART+OPP, WATER VALVE STICKER | 1    |        |

## 6. CONTROL PART FUNCTION SPECIFICATION

### 1. SEQUENCE CHART

| Division                        |                       | Time   | Normal |        | Heavy Stain | Whites |        |  |
|---------------------------------|-----------------------|--|--------|--------|-------------|--------|--------|--|
|                                 |                       |  | Small  | Middle | Middle      | Small  | Middle |  |
| P<br>R<br>E<br>W<br>A<br>S<br>H | Sensing               | 20sec  |        |        |             |        |        |  |
|                                 | Water Supply          | 2min   |        |        | ■           |        |        |  |
|                                 | Pre. Wash             | 10min  |        |        | ■           |        |        |  |
|                                 |                       | 8min   |        |        | ■           |        |        |  |
|                                 | Drain                 | 1min   |        |        | ■           |        |        |  |
|                                 | Balancing Spin        | 2min   |        |        | ■           |        |        |  |
|                                 | Mid. Spin             | 3min   |        |        | ■           |        |        |  |
| W<br>A<br>S<br>H<br>I<br>N<br>G | Sensing               | 20sec  | ■      | ■      |             | ■      | ■      |  |
|                                 | Water Supply          | 2min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Washing1<br>(Heating) | 90min  |        |        |             | 75min  | 85min  |  |
|                                 |                       | 80min  |        |        |             |        |        |  |
|                                 |                       | 35min  |        | 32min  |             |        |        |  |
|                                 |                       | 30min  | 27min  |        | ■           |        |        |  |
|                                 |                       | 25min  | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Washing2              | 40min  | ■      | ■      |             |        |        |  |
|                                 |                       | 25min  | ■      | ■      | ■           | ■      | ■      |  |
|                                 |                       | 20min  |        |        |             |        |        |  |
|                                 |                       | 15min  | ■      | ■      | ■           | ■      | ■      |  |
| R<br>I<br>N<br>S<br>E           | Drain                 | 1min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Balancing Spin        | 2min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Mid. Spin             | 3min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Water Supply          | 2min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Rinse 1               | 3min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Drain                 | 1min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Balancing Spin        | 2min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Mid. Spin             | 3min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Water Supply          | 2min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Rinse 2               | 3min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Drain                 | 1min   |        |        | ■           | ■      | ■      |  |
|                                 | Balancing Spin        | 2min   |        |        | ■           | ■      | ■      |  |
|                                 | Mid. Spin             | 3min   |        |        | ■           | ■      | ■      |  |
|                                 | Water Supply          | 2min   |        |        | ■           | ■      | ■      |  |
|                                 | Rinse 3               | 3min   |        |        | ■           | ■      | ■      |  |
| S<br>P<br>I<br>N                | Drain                 | 1min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Balancing Spin        | 2min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 | Main Spin             | 7min   | ■      | ■      | ■           | ■      | ■      |  |
|                                 |                       | 5min   |        |        |             |        |        |  |
|                                 |                       | 3min   | ■      | ■      | ■           | ■      | ■      |  |
| END                             | Crease care           | 60sec  | ■      | ■      | ■           | ■      | ■      |  |
|                                 | End                   | 10sec  | ■      | ■      | ■           | ■      | ■      |  |
| Remain Time Display             |                       |  | 1:42   | 1:47   | 1:59        | 2:26   | 2:36   |  |
| NOTE                            |                       | 1. In the Heavy Stain Course, Prewash is included as Default.<br>2. Default Setting Times of Rinse in the Normal Course are two times.<br>3. If Choose the Normal Course and 40℃,Heating Time Included 7 min.<br>about heater does not working.<br>4. According to Water Temperature, Wash Time is changed.<br>5. In the Normal Course, the laundry is perceived as full, washing time is added 1 hour |        |        |             |        |        |  |

| Division            |                       | Time  | Delicate | Quick 30                | Blanket | Sports Shoes | Tub Cleans | Air Wash |
|---------------------|-----------------------|---|----------|-------------------------|---------|--------------|------------|----------|
|                     |                       |   | Small    | Small                   | Middle  | Small        | High       |          |
| WASHING             | Soak                  | 30min   |          |                         |         |              | ■          |          |
|                     | Water Supply          | 2min  | ■        | ■                       | ■       | ■            | ■          |          |
|                     | Washing1<br>(Heating) | 60min   |          |                         |         |              |            |          |
|                     |                       | 50min   |          |                         |         |              |            |          |
|                     |                       | 35min   |          |                         |         |              |            |          |
|                     |                       | 30min   |          |                         |         |              |            |          |
|                     |                       | 20min   |          |                         |         | ■            |            |          |
|                     | Washing2              | 25min   |          |                         | ■       | ■            |            |          |
|                     |                       | 20min   | 15min    | 8min                    | ■       | ■            | 10min      |          |
|                     |                       | 15min   | ■        | ■                       | ■       | ■            | ■          |          |
| RINSE               | Drain                 | 1min  | ■        | ■                       | ■       | ■            | ■          |          |
|                     | Balancing Spin        | 2min  | ■        | ■                       | ■       |              | ■          |          |
|                     | Mid. Spin             | 3min  | ■        | ■                       | ■       | ■            | ■          |          |
|                     | Water Supply          | 2min  | ■        | ■                       | ■       | ■            | ■          |          |
|                     | Rinse 1               | 3min  | ■        | ■                       | ■       | ■            | ■          |          |
|                     | Drain                 | 1min  | ■        | Rinse 1<br>Water supply | ■       | ■            | ■          |          |
|                     | Balancing Spin        | 1min  | ■        |                         | ■       |              | ■          |          |
|                     | Mid. Spin             | 3min  | ■        |                         | ■       | ■            | ■          |          |
|                     | Water Supply          | 2min  | ■        |                         | ■       | ■            | ■          |          |
|                     | Rinse 2               | 3min  | ■        |                         | ■       | ■            | ■          |          |
|                     | Drain                 | 1min  |          |                         | ■       |              |            |          |
|                     | Balancing Spin        | 2min  |          |                         | ■       |              |            |          |
|                     | Mid. Spin             | 3min  |          |                         | ■       |              |            |          |
|                     | Water Supply          | 2min  |          |                         | ■       |              |            |          |
|                     | Rinse 3               | 3min  |          |                         | ■       |              |            |          |
| SPIN                | Drain                 | 1min  | ■        | ■                       | ■       | ■            | ■          |          |
|                     | Balancing Spin        | 2min  | ■        | ■                       | ■       |              | ■          |          |
|                     | Main Spin             | 7min  | ■        | ■                       | ■       |              | ■          |          |
|                     |                       | 5min  | ■        | ■                       | ■       | ■            | ■          |          |
|                     |                       | 3min  | ■        | ■                       | ■       | ■            | ■          |          |
| DRY                 | Crease care           | 60sec   |          |                         |         | ■            | ■          |          |
|                     | Dry                   | 100min  |          |                         |         |              |            |          |
|                     |                       | 30min   |          |                         |         | ■            | ■          | ■        |
|                     | Cooling               | 5min  |          |                         |         | ■            | ■          | ■        |
|                     | End                   | 10sec   |          |                         |         | ■            | ■          | ■        |
|                     | Crease care           | 30min   |          |                         |         |              | ■          |          |
| END                 | Crease care           | 60sec   |          | ■                       | ■       |              |            |          |
|                     | End                   | 10sec   | ■        | ■                       | ■       | ■            |            |          |
| Remain Time Display |                       |   | 49       | 32                      | 1:11    | 1:47         | 1:51       | 35       |
| NOTE                |                       | 1. In the Drum Drying Course, Dry is included as Default.<br>2. Crease care Course runs until pull out the laundry.<br>3. In the Shoes Course Crease care isn't included as Default<br>4. Spin of Shoes course isn't same default Spin Sequence |          |                         |         |              |            |          |

| Division                        |                        | Time  | Eco-Steam | Normal Steam | Strong Steam | Baby Care | Steam Wash |        | Memory |
|---------------------------------|------------------------|---|-----------|--------------|--------------|-----------|------------|--------|--------|
|                                 |                        |   | Small     | Small        | Middle       | Middle    | Small      | Middle |        |
| S<br>T<br>E<br>A<br>M           | Sensing                | 20sec   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Steam Water Supply     | 1min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Steam Heating          | 20min   |           |              | ■            | ■         | ■          | ■      |        |
|                                 |                        | 15min   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Stream Washing         | 25min   |           |              |              | ■         | ■          | ■      |        |
|                                 |                        | 15min   |           |              | ■            | ■         | ■          | ■      |        |
|                                 |                        | 10min   |           | ■            | ■            | ■         | ■          | ■      |        |
|                                 |                        | 7min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Finishing Water Supply | 1min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Finishing Washing      | 25min   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
| W<br>A<br>S<br>H<br>I<br>N<br>G | Soak                   | 30min   |           |              |              |           |            |        |        |
|                                 | Water Supply           | 2min  |           |              |              |           |            |        |        |
|                                 | Washing1<br>(Heating)  | 60min   |           |              |              |           |            |        |        |
|                                 |                        | 50min   |           |              |              |           |            |        |        |
|                                 |                        | 35min   |           |              |              |           |            |        |        |
|                                 |                        | 30min   |           |              |              |           |            |        |        |
|                                 |                        | 15min   |           |              |              |           |            |        |        |
|                                 | Washing2               | 25min   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 |                        | 20min   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 |                        | 15min   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
| R<br>I<br>N<br>S<br>E           | Drain                  | 1min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Balancing Spin         | 2min  |           |              |              |           |            |        |        |
|                                 | Mid. Spin              | 3min  |           |              |              |           |            |        |        |
|                                 | Water Supply           | 2min  |           |              |              |           |            |        |        |
|                                 | Rinse 1                | 3min  |           |              |              |           |            |        |        |
|                                 | Drain                  | 1min  |           |              |              |           |            |        |        |
|                                 | Balancing Spin         | 2min  |           |              |              |           |            |        |        |
|                                 | Mid. Spin              | 3min  |           |              |              |           |            |        |        |
|                                 | Water Supply           | 2min  |           |              |              |           |            |        |        |
|                                 | Rinse 2                | 3min  | ■         | ■            | ■            |           | ■          | ■      | ■      |
|                                 | Drain                  | 1min  |           |              |              |           |            |        |        |
|                                 | Balancing Spin         | 2min  |           |              |              |           |            |        |        |
|                                 | Mid. Spin              | 3min  |           |              |              |           |            |        |        |
|                                 | Water Supply           | 2min  |           |              |              |           |            |        |        |
|                                 | Rinse 3                | 3min  |           |              |              |           |            |        |        |
|                                 | Drain                  | 1min  |           |              |              |           |            |        |        |
|                                 | Balancing Spin         | 2min  |           |              |              |           |            |        |        |
|                                 | Mid. Spin              | 3min  |           |              |              |           |            |        |        |
|                                 | Water Supply           | 2min  |           |              |              |           |            |        |        |
|                                 | Rinse 4                | 3min  |           |              |              |           |            |        |        |
| S<br>P<br>I<br>N                | Drain                  | 1min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Balancing Spin         | 2min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | Main Spin              | 7min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 |                        | 5min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 |                        | 3min  | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
| END                             | Crease Care            | 60sec   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
|                                 | End                    | 10sec   | ■         | ■            | ■            | ■         | ■          | ■      | ■      |
| Remain Time Display             |                        |   | 1:47      | 1:50         | 2:00         | 2:32      | 2:10       | 2:10   | 1:47   |
| NOTE                            |                        | 1. Memory course is as same as add one rinse to eco-steam course.<br>2. Baby course and Steam White course work steam washing 25 minutes<br>3. 4 times rinse in the Baby Course |           |              |              |           |            |        |        |

## 2. Skill of each Sequence

### 2-1. Washing Sequence

#### 1) Washing Sequence part

| Course \ part | LOAD SENSING | Water Level    | Time           |                |
|---------------|--------------|----------------|----------------|----------------|
|               |              |                | HEATING        | Washing        |
| Main          | O            | Decision Level | Decision Level | Decision Level |
| Pre           | O            | Decision Level | X              | 8 or 10 min    |
| Soak          | O            | High           | X              | 30min          |

- ① Prewash and Soak working previous main washing.
- ② Decision Level' decide Water Level and Time to Load Sensing in Normal, White, Eco-White Course.
- ③ Soak consist of water supply and washing, after this, start main washing.
- ④ Heater does not working in prewash and soak course.

#### 2) Washing Time

| Course       |        | part   | Water Level | HEATING Time | Washing Time | Total Washing Time |
|--------------|--------|--------|-------------|--------------|--------------|--------------------|
| Normal       | 30℃    | Small  | 20min       | 25min        | 45min        |                    |
|              |        | Middle | 25min       | 25min        | 50min        |                    |
|              | 40℃    | Small  | 20min (+7)  | 40min        | 67min        |                    |
|              |        | Middle | 25min (+7)  | 40min        | 72min        |                    |
|              | 60℃    | Small  | 30min       | 25min        | 55min        |                    |
|              |        | Middle | 45min       | 25min        | 70min        |                    |
| Whites       |        | Small  | 75min       | 25min        | 100min       |                    |
|              |        | Middle | 85min       | 25min        | 110min       |                    |
| Steam Wash   | 30,40℃ | Small  | 25min       | 25min        | 50min        |                    |
|              |        | Middle | 25min       | 25min        | 50min        |                    |
|              | 60℃    | Small  | 30min       | 25min        | 55min        |                    |
|              |        | Middle | 30min       | 25min        | 55min        |                    |
|              | 90℃    | Small  | 50min       | 25min        | 75min        |                    |
|              |        | Middle | 50min       | 25min        | 75min        |                    |
| Heavy Stain" | 30,40℃ | Middle | 30min       | 25min        | 55min        |                    |
|              | 60℃    | Middle | 50min       | 25min        | 75min        |                    |
| Delicate     |        | Small  | X           | 15min        | 15min        |                    |
| Quick 30     |        | Small  | X           | 8min         | 8min         |                    |
| Blanket      |        | Middle | X           | 25min        | 25min        |                    |
| Sports shoes |        | Small  | 20min       | 20min        | 40min        |                    |
| Baby Care    | 30,40℃ | Middle | 25min       | 25min        | 50min        |                    |
|              | 60℃    | Middle | 30min       | 25min        | 55min        |                    |
|              | 90℃    | Middle | 50min       | 25min        | 75min        |                    |
| Air Wash     |        | X      | X           | X            | X            |                    |
| Tub Cleans   |        | High   | X           | 10min        | 10min        |                    |

- ① Washing Heater isn't reworking after reach decision temperature.
- ② Normal Course + 40℃ include 7 min that heater does not working.
- ③ If Set up Normal + 40℃ then main washing time is 40 min.
- ④ If LS value is more than 360, 1 hour add in Washing Time.

### 3) Electric Current Time of Washing Motor

| <div>part</div> <div>Course</div> | Water Temperature | MOTOR TIME On/OFF (sec) |         |              |        |             | Speed    |
|-----------------------------------|-------------------|-------------------------|---------|--------------|--------|-------------|----------|
|                                   |                   | Water Supply            | Washing |              | Soak   | Crease Care |          |
|                                   |                   |                         | Heating | Main Washing |        |             |          |
| Normal                            | 0~40℃             | 5/10                    | 10/10   | 18/6         | 15/180 | 10/5        | 45 r.p.m |
|                                   | 60℃               | 5/10                    | 10/10   | 10/10        | 15/180 | 10/5        | 45 r.p.m |
| Whites                            | 95℃               | 5/10                    | 10/15   | 7/15         | 15/180 | 10/5        | 45 r.p.m |
| Steam Wash                        | 30~40℃            | 5/10                    | 10/10   | 10/10        | 15/180 | 10/5        | 45 r.p.m |
|                                   | 60℃               | 5/10                    | 10/10   | 10/10        | 15/180 | 10/5        | 45 r.p.m |
|                                   | 95℃               | 5/10                    | 10/15   | 7/15         | 15/180 | 10/5        | 45 r.p.m |
| Heavy Stain                       | 0~40℃             | 5/10                    | 18/7    | 10/5         | 15/180 | 10/5        | 45 r.p.m |
|                                   | 60℃               | 5/10                    | 18/7    | 10/7         | 15/180 | 10/5        | 45 r.p.m |
| Delicate                          | Cold              | X                       | X       | 2/15         | X      | X           | 45 r.p.m |
| Quick 30                          | Cold              | 5/10                    | X       | 18/6         | X      | 10/5        | 45 r.p.m |
| Blanket                           | Cold              | 5/10                    | 10/10   | 10/7         | X      | 10/5        | 45 r.p.m |
| Sports shoes                      | 0~40℃             | 5/10                    | 10/10   | 10/7         | 15/180 | 10/5        | 45 r.p.m |
| Baby Care                         | 30~40℃            | 5/10                    | 10/10   | 10/10        | 15/180 | 10/5        | 45 r.p.m |
|                                   | 60℃               | 5/10                    | 10/10   | 10/10        | 15/180 | 10/5        | 45 r.p.m |
|                                   | 95℃               | 5/10                    | 10/15   | 7/15         | 15/180 | 10/5        | 45 r.p.m |
| Tub Cleans                        | Cold              | 5/10                    | X       | 10/30        | X      | 10/5        | 45 r.p.m |

- ① It works decision cycle
- ② If Motor Restriction occur by overload, Motor try to rework opposite direction.
- ③ While Water Supply, Motor Stir proceed ON first.
- ④ Crease Care is process of removal laundry that stick to drum. It works after Spin Sequence.
- ⑤ Electric Current Time of Washing Motor ON/OFF Time is finishing washing of Steam White and Baby Course.
- ⑥ Each Time of Electric Current Time of Washing Motor of Steam White and Baby Course is 10/5, 18/6.

### 4) Re-Water Supply

- ① It works if water level is lower than decision level
- ② Motor stopped while Re-Water Supply
- ③ While Wash Sequence Re-Water Supply works 15 times.
- ④ If Water Level is lower than RESET Level, Display IE and Heater off.

## 2-2. Rinse Sequence

### 1) Water Supply Sequence

| part<br>Water Level | level height (mm) | KHz   | etc                   |
|---------------------|-------------------|-------|-----------------------|
| High                | 240               | 22.96 | Add Rinse water level |
| Mid                 | 225               | 23.18 | Rinse water level     |

- ① Only cold water supply in Rinse Sequence
- ② In last Rinse Sequence, use fabric conditioner by open water valves.

### 2) Re-Water Supply

- ① After 1 min in Rinse Sequence, check water level and work Re-Water Supply.

### 3) Rinse Sequence

| part<br>Water Level | Water Temp | Rinse Time | Mid. Spin | Mid. Spin r.p.m | MOTOR On/OFF (sec) |              |       |
|---------------------|------------|------------|-----------|-----------------|--------------------|--------------|-------|
|                     |            |            |           |                 | rpm                | water supply | rinse |
| Normal              | Cold       | 3min       | 3min      | mid             | 45 r.p.m           | 5/10         | 10/5  |
| Whites              | Cold       | 3min       | 3min      | weak            | 45 r.p.m           | 5/10         | 10/5  |
| Steam Wash          | Cold       | 3min       | 3min      | weak            | 45 r.p.m           | 5/10         | 10/5  |
| Heavy Stain         | Cold       | 3min       | 3min      | mid             | 45 r.p.m           | 5/10         | 10/5  |
| Baby Care           | Cold       | 3min       | 3min      | weak            | 45 r.p.m           | 5/10         | 10/5  |
| Sports shoes        | Cold       | 3min       | 3min      | weak            | 45 r.p.m           | X            | 10/5  |
| Delicate            | Cold       | 3min       | 3min      | weak            | 45 r.p.m           | X            | 2/20  |
| Quick 30            | Cold       | 3min       | 3min      | mid             | 45 r.p.m           | 5/10         | 10/5  |
| Blanket             | Cold       | 3min       | 3min      | weak            | 45 r.p.m           | 5/10         | 10/5  |
| Tub Cleans          | Cold       | 3min       | 3min      | weak            | 45 r.p.m           | 5/10         | 10/5  |

### 4) Drain

- ① Before Drainage Sequence, Water Temp. is dropped by cold water supply.
- ② After Drainage Sequence, Drain Motor is still ON

### 5) Mid. Spin

- ① Mid Spin is performed to decision r.p.m. If it can't R-Spin while performed 20 times, pass to next sequence.
- ② In Shoes Course, does not working B-Spin.

## 2-3. Spin Sequence

- 1) Drain
  - ① It follows Drainage Sequence.
- 2) Balance Spin
  - ① If Unbalance Check pass, Start R-Spin.
  - ② B-Spin is Until Unbalance check section, 350 r.p.m
- 3) R(Real) Spin
  - ① From end of B-Spin to end of Spin Sequence is R Spin.
  - ② r.p.m is affected by sequence
- 4) Shoes Spin
  - ① Balace Spin does not working.

## 2-4. End

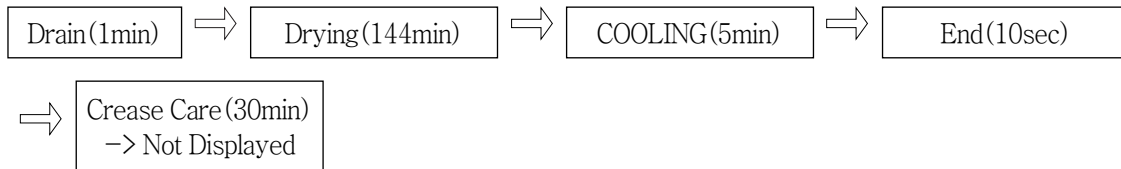
- 1) Crease Care
  - ① Crease Care is process of removal laundry that stick to drum. It works 30sec ,after Spin Sequence.
  - ② Wool and Shoes course don't work crease care
- 2) End
  - ① After 10 sec power off ,alamed END.
  - ② If drying sequence added, work drying sequence.
  - ③ After END , door unlock.



## 2-5. Drying Sequence

1) consist of drying sequence.

ex) select normal drying (Total spend time 2:30)



2) Drying Spin

| Course      | Drying Spin | Etc                              |
|-------------|-------------|----------------------------------|
| Normal      | MAX         | All course performance Max spin. |
| Whites      | MAX         |                                  |
| Steam Wash  | MAX         |                                  |
| Heavy Stain | MAX         |                                  |
| Quick 30    | MAX         |                                  |

① All course performance Max spin.

3) Crease Care

① Crease Care proceed 60 sec.

4) Electric Current Time of Dry Sequence.

|            | Crease Care | Drying | COOLING | Wrinkle Free | Time | Heater Off/On Temperture(℃) |
|------------|-------------|--------|---------|--------------|------|-----------------------------|
| Low        | 10/5        | 15/5   | 10/10   | 10/50        | 110  | 70/60                       |
| Low(Shoes) | 10/5        | 2/30   | 2/30    | X            | 36   | 70/60                       |
| Iron       | 10/5        | 15/5   | 10/10   | 10/50        | 60   | 105/95                      |
| Normal     | 10/5        | 15/5   | 10/10   | 10/50        | 150  | 105/95                      |
| Strong     | 10/5        | 15/5   | 10/10   | 10/50        | 200  | 105/95                      |

5) Drying V/V working

① It work from the after 20sec, In Drying Sequence to End of Drying Sequence.

6) COOLING

① Fan motor and Main motor work at once during Cooling Sequence.

② Temp. of Drum is less than 50℃ finish Cooling Sequence.

③ Cooling time is total 5 min.

## 7) Drying Heater working

- ① Drying Heater work until End of Drying Sequence.
- ② Shoes Course : 70℃ OFF / 60℃ ON
- ③ Air Course : 80℃ OFF / 70℃ ON

## 8) Crease Care

- ① Crease Care performance after Drying Sequence for 30 min.
- ② Only Motor work during Wrinkle Free

**2-6. Steam Sequence**

## 1) Steam water supply

- ① Water Supply time is 1 min., 2 times, in Steam Sequence.

## 2) Steam Heating

- ① In order to increase water temp. , heater work.
- ② Steam Heating Temperture.

| Course | Temperture | Time  |
|--------|------------|-------|
| Eco    | 70℃        | 15min |
| Normal | 75℃        | 15min |
| Strong | 90℃        | 20min |

## 3) Steam Washing

- ① This sequence is enable to maximum effect of steam and maintain water temperature.
- ② Steam Washing Time

| Course | Time  | Heater On/Off temperature |
|--------|-------|---------------------------|
| Eco    | 7min  | 70℃/75℃                   |
| Normal | 10min | 75℃/80℃                   |
| Strong | 15min | 90℃/95℃                   |
| Strong | 25min | 90℃/95℃                   |

## 4) Finishing Steam Water Supply

- ① Same the normal water supply.
- ② Water Supply spend 1 min.

## 5) Finishing Steam Wash

- ① It works if can't reach decision temp. of Main Washing
- ② spend 25 minutes.

## 6) Main Washing

- ① Same the normal washing

### 3. Main Function of PCB Program

#### 3-1. LOAD SENSING

##### 1) Deciding the water level

- ① Normal, White, Eco-White Course will be followed by this process.
- ② Check the water level with dry laundry at the starting wash.
- ③ Check the water level by using motor output data during 20 sec, 65rpm.

##### 2) Deciding Spin Starting Step.

- ① Check after finishing washing step with wet laundry.
- ② Checking by using motor output data during 20 sec, 65 rpm.
- ③ The Decided data is different depending on loading condition.

#### 3-2. Balance Spin

##### 1) Motor running during balance spin

- ① Spreading the laundry : Rotating the same 45 rpm with left and right direction alternatively.
- ② Unbalance checking point : first step, check the U.B at 95 rpm, 160 rpm second step, check the U.B at 95 rpm 350 rpm.  
Third step at 300 rpm. If the unbalance data is over the criterion  
This process will be repeated.
- ③ After drain, check the unbalance data again. This is so-called balance spin step.

##### 3) Property of balance spin

- ① Conducting 20 times maximum.
- ② If the washer can not pass balance spin step during 20 times, then water will be supplied.
- ③ If the washer can not pass 20 times of balance spin, UE error mode will be displayed on '18:88'

### 3-3. DOOR S/W

#### 1) The working principle of Door S/W

- ① Door Locking  
Bimetal on (3 sec) --> solenoid (supply 20msec pulse 2 times)
- ② Door Unlocking  
Bimetal off --> solenoid(supply 20msec pulse, until lock)
- ③ After door locking all parts can work normally.
- ④ After pressing power button, if the temperature of wash thermistor is over 55℃ or the water level is over the safety level, the door will be locked.
- ⑤ The door will be unlocked immediately after all processes are finished.
- ⑥ The door can be opened during processing if there is no problem to unlock.

#### 2) DOOR OPEN SYSTEM

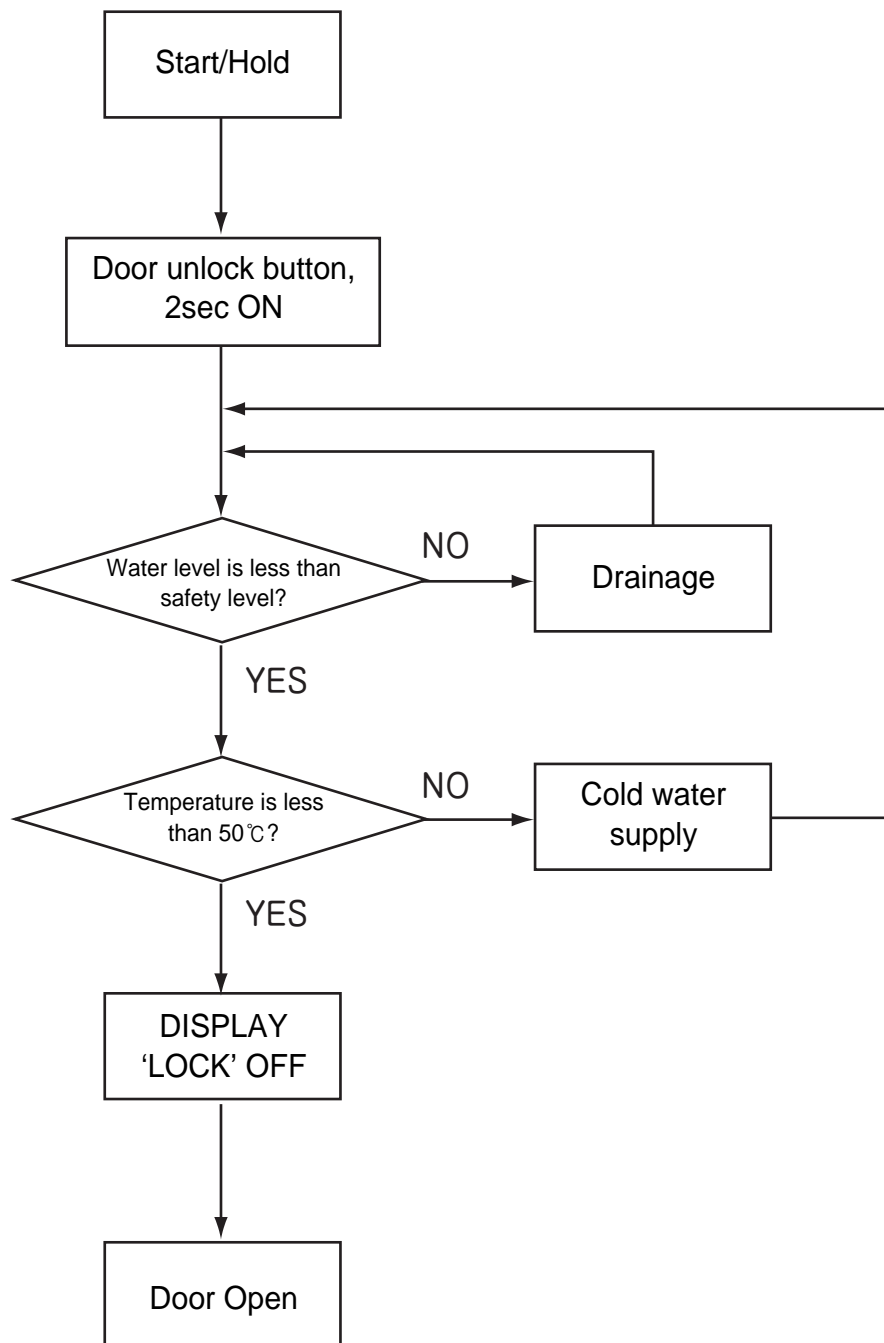
- ① If add the laundry during washing, press the door unlock button.
- ② Door open sequence at abnormal condition.

### 3-4. Child Lock

- ① Press the "Spin" and "Condensing Dry" button simultaneously during processing.
- ② Under the Child Lock function, only power button is working.
- ③ During Child Lock function, CHL will be displayed on '18:88'
- ④ In order to unlock Child Lock mode, press "Spin" and "Condensing Dry" simultaneously.

### 3-5. The sequence of drain

- ① If the checking time to reset point is below 1 min, the remaining drain time is 30 sec.
- ② If the checking time to reset point is over 1 min, the remaining drain time is 2 min.
- ③ If the checking time to reset point is over 10 min, OE signal will be appeared on PCB.
- ④ If the temperature is over 50℃ , the water will be supplied to high water level, then the drain will start.



## 5. TEST MODE

### 5-1. Testing Mode

PCB and other electronic parts will be tested without water supply whether they are normal or not.

#### 1) Process

press power button --> press "SPIN" button 3 times with pressing "WASH" button --> 'L d' will be shown on LED -->

Whenever pressing "TEMP" button 1 time, below process will be occurred.

MICOM Ver. --> L C (Lock Closed) --> run (count) --> b1, b2, b3, b4, b5, b6, b7

--> F (Fan Motor) --> H (Hot V/V)

--> C (Cold V/V) --> P (prewashing V/V) --> d (dry V/V) --> bb (bubble)

--> dr (drain motor) --> L O (Lock S/W Open)

#### 2) More details

1 When turn on 'LOCK' signal, all process is conducting normaly.

2 When working starts, the PCB displays all the sensor conditions.

3 In this case, BLDC Motor is not tested. In order to test it, select spin or rinse.

### 5-2. Continous testing mode

#### 1) Process

after pressing "WASH", "RINSE", "SPIN" button simultaneously, press "POWER" button.

ALL LED On --> SPIN button --> ALL LED off

--> L C (Lock Close) --> r (Motor right) --> L (Motor Left)

--> F (Fan Motor) --> H (Hot V/V) --> C (Cold V/V) --> b (Pre whsh V/V) --> d (dry V/V)

--> bb (bubble) --> h1 (Wash heater) --> h2 (Dry heater) --> dr (Drain motor On)

--> L O (Lock S/W Open)

#### 2) More tails

1 LED test can be done with all LED On.

2 All sensor conditions will be shown on PCB during processing.

## 6-1. Error Display

### 6-1. IE (Input Error) - Error in water supply

#### 1) Conditions of Occurrence

- ① In case the designated water level is not reached in 5 minutes during water supply or re-supply

2) All LEDs are turned off and 'IE' blinks in 18:88 display.

3) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

4) Error display is cleared when turning off/ on power.

### 6-2. OE (Output Error) - Error in drainage

#### 1) Conditions of Occurrence

- ① In case water level does not reach reset point in 10 minutes after drainage starts

2) All LEDs are turned off and 'OE' blinks in 18:88 display.

3) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

4) Error display is cleared when turning off/ on power.

### 6-3. UE (Unbalance Error)

#### 1) Conditions of Occurrence

- ① In case main spin-drying is not reached within 20 cycles of balance spin-drying
- ② In case balance spin-drying fails during interim spin-drying, UE occurs as the cycle moves to the next process.

2) All LEDs are turned off and 'UE' blinks in 18:88 display.

3) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

4) Error mode is cleared by opening door and organizing the laundry in spin-dry chamber, closing door and pressing start/ temporary stop button. Then, spin-drying begins again.

---

#### **6-4. LE (Lock Error) - Door opening error**

##### 1) Conditions of Occurrence

- ① When intending to begin cycle by pressing start/ temporary stop button while door is opened

2) All LEDs are turned off and 'LE' blinks in 18:88 display.

3) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

4) Error display is cleared when turning off/ on power.

#### **6-5. E1 - Water level detection error**

##### 1) Conditions of Occurrence

- ① In case water level is below reset or overflow is detected in line test mode

2) Water supply motor is kept on until water level falls below reset.

3) All LEDs are turned off and 'E1' blinks in 18:88 display.

4) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

5) Error display is cleared when turning off/ on power.

#### **6-6. E2 - Overflow error**

##### 1) Conditions of Occurrence

- ① In case water level in water tank is above overflow level due to continuous operation of water supply valve

2) Water supply motor is kept on until water level falls below reset.

3) All LEDs are turned off and 'E2' blinks in 18:88 display.

4) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

5) Error display is cleared when turning off/ on power.



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### **6-7. E4 - Water leakage during washing**

#### 1) Conditions of Occurrence

- ① In case water level falls below re-supply even after 15 times of re-supply prior to finishing of water heating

2) All LEDs are turned off and 'E4' blinks in 18:88 display.

3) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

4) Error display is cleared when turning off/ on power.

### **6-8. E9 - Abnormalities in water level sensor**

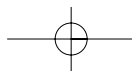
#### 1) Conditions of Occurrence

- ① In case water level frequency is of 15KHz or lower and 30KHz or higher during cycle due to abnormalities in water level sensor, etc.

2) All LEDs are turned off and 'E9' blinks in 18:88 display.

3) Error buzzer alarm is sounded for 10 seconds per every 10 minutes.

4) Error display is cleared when turning off/ on power.



## 6-9. Motor-related Error

### 1) E5 (DC-Link High Voltage) Error

- ① In case DC-link voltage to IPM increases to 450V or higher
- ② Motor operation is stopped and 'E5' is shown in display window.
- ③ Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ④ Error display is cleared when turning off/ on power.

### 2) E6 (EMG) Error

- ① In case current detected with EMG port is of 20A or higher
- ② Motor operation is stopped and 'E6' is shown in display window.
- ③ Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ④ Error display is cleared when turning off/ on power.

### 3) E7 (Direction) Error

- ① In case signal of Hall IC is different from the predicted signal according to direction of rotation
- ② Motor operation is stopped and 'E7' is shown in display window.
- ③ Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ④ Error display is cleared when turning off/ on power.

### 4) E8 (Initial Operation Fail) Error

- ① In case input signal of Hall IC is abnormal due to problems in motor connection, etc.
- ② Motor operation is stopped and 'E8' is shown in display window.
- ③ Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ④ Error display is cleared when turning off/ on power.

## 6-10. Error in Temperature Sensor

### 1) H2 Error - Washing temperature sensor open/ short

- ① In case washing temperature sensor is defective or not connected
- ② Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ③ Error display is cleared when turning off/ on power.

### 2) H4 Error - Washing temperature sensor overheating

- ① In case temperature detected by washing temperature sensor is 95℃ or higher
- ② Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ③ Error display is cleared when turning off/ on power.



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3) H5 Error - Water temperature error in wool/ delicate course

- ① In case water temperature in wool/ delicate course is 45℃ or higher
- ② Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ③ Error display is cleared when turning off/ on power.

4) H6 Error - Abnormality in washing heater

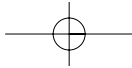
- ① Within 15 minutes after heater operation begins;  
In case standard temperature is of 42℃ or lower: If temperature does not increase by 2℃ or more In  
case standard temperature is higher than 42℃: If temperature does not increase by 1℃ or more
- ② If temperature falls below standard temperature by 2℃ or more due to re-supply of water, etc.,  
standard temperature is reset as the current temperature and error check time of 15 minutes is reset.
- ③ Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ④ Error display is cleared when turning off/ on power.

5) H8 Error - Washing heater overheating

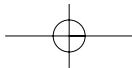
- ① In case washing heater temperature increases by 5℃ or more within 30 seconds when there is no  
water in tank, etc.
- ② Error buzzer alarm is sounded for 10 seconds per every 10 minutes.
- ③ Error display is cleared when turning off/ on power.

## 7. ELECTRONIC FIELD PARTS LIST AND SPECIFICATION

| NO | PART NAME        | Rating(V/Hz) | PART CODE  | BOM DESCRIPTION                                    |
|----|------------------|--------------|------------|--|
| 1  | VALVE INLET      | 100-130V     | 3615415070 | 100~130V,3WAY,RINSE GUIDE유,PP/BACKETVAL            |
|    | VE INLET         | 100-130V     | 3615415700 | 100-130 1-WAY HOT PP-BRACKET                       |
|    | VALVE INLET      | 220-240V     | 3615414800 | 220-240V 1-WAY HOT PP-BRACKET                      |
|    | VALVE INLET      | 220-240V     | 3615415050 | 220~240V,3WAY,RINSE GUIDE유,PP/BACKET               |
|    | VALVE INLET      | 220-240V     | 3615415060 | 220~240V,3WAY,RINSE GUIDE유,NYLON/BACKET,VDE        |
| 2  | SENSOR PRESSURE  | 5V           | 3614825200 | 5V DRUM,DN-DD01,DL-DW01,INLET 90                   |
| 3  | CORD POWER AS    | 220-240V     | 3611339340 | H05VV-F 1.5SQ 250V16A FERRITE                      |
|    | CORD POWER AS    | 220-240V     | 3611339930 | H05VV-F 1.5SQ 250V16A EU-2P FERRITE                |
|    | CORD POWER AS    | 100-130V     | 3611340410 | UL.SJT 16AWG 125V 13A, #1806 3P CONN               |
|    | CORD POWER AS    | 100-130V     | 3611339810 | BSMI 2.0SQ 2C 125V 15A TAIWAN                      |
| 4  | UNIT BUBBLE PUMP | 220-240V     | 3612802410 | 220-240V   |
|    | UNIT BUBBLE PUMP | 100-130V     | 36189L4G00 |  |
| 5  | HARNESS AS       |              | 3612797800 | Combo Non Pump , Full option                       |
|    | HARNESS AS       |              | 3612797810 | Combo Non Pump , Cold Only                         |
|    | HARNESS AS       |              | 3612797820 | Combo Non Pump , Cold Only , Non Bubble            |
|    | HARNESS AS       |              | 3612797830 | Wash Non Pump , Full option                        |
|    | HARNESS AS       |              | 3612797840 | Wash Non Pump , Non Bubble                         |
|    | HARNESS AS       |              | 3612797850 | Wash Non Pump , Cold Only                          |
|    | HARNESS AS       |              | 3612797860 | Wash Non Pump , Cold Only , Non Bubble             |
|    | HARNESS AS       |              | 3612797870 | Combo Pump, Full option                            |
|    | HARNESS AS       |              | 3612797900 | Combo Pump, Non Bubble                             |
|    | HARNESS AS       |              | 3612797910 | Combo Pump, Cold Only                              |
|    | HARNESS AS       |              | 3612797920 | Combo Pump, Cold Only , Non Bubble                 |
|    | HARNESS AS       |              | 3612797930 | Wash Pump , Full option                            |
|    | HARNESS AS       |              | 3612797940 | Wash Pump , Non Bubble                             |
|    | HARNESS AS       |              | 3612797950 | Wash Pump , Cold Only                              |
|    | HARNESS AS       |              | 3612797960 | Wash Pump , Cold Only, Non Bubble                  |
| 6  | HARNESS EARTH    | All          | 3612793410 | GN/YW AWG18 FERRITE Ø29                            |
| 7  | FUSE TEMPERATURE | 15A 250V     | 361A800120 | 128℃ DF-128S 15A 250V VDE                          |
| 8  | SWITCH DOOR LOCK | 100-130V     | 3619047200 | DL-S1.250V16A.BITRON                               |
|    | SWITCH DOOR LOCK | 220-240V     | 3619047210 | DL-S1.125V16A.BITRON                               |
| 9  | HEATER WASH      | 220-240V     | 3612802400 | 220V 2KW.1R0A721001.RW8TF.IRCA                     |
|    | HEATER WASH      | 220-240V     | 3612802410 | 230V 2KW.1R0A721002.RW8TF.IRCA                     |
|    | HEATER WASH      | 100-130V     | 3612802440 | 120V 1KW.1R0A721005.RW8TF1PE.IRCA                  |
|    | HEATER WASH      | 100-130V     | 3612802430 | 110V 1KW.1R0A721004.RW8TF.IRCA                     |
| 10 | HEATER DRY       | 220-240V     | 3612800900 | 220V 2100W 23.05OHM 6.1W/SQ INCOLOY800 1R1A034001  |
|    | HEATER DRY       | 220-240V     | 3612801400 | 230V 2.1KW 25.19OHM 6.1W/SQ INCOLOY800 1R1A034002  |
|    | HEATER DRY       | 100-130V     | 3612802100 | UL120V/1.2KW12OHM3.5W/SQ.INCOLOY800.RA8.1R1A034006 |
|    | HEATER DRY       | 100-130V     | 3612801300 | 110V 1.2KW 10.08OHM 3.5W/SQ INCOLOY800 1R1A034005  |



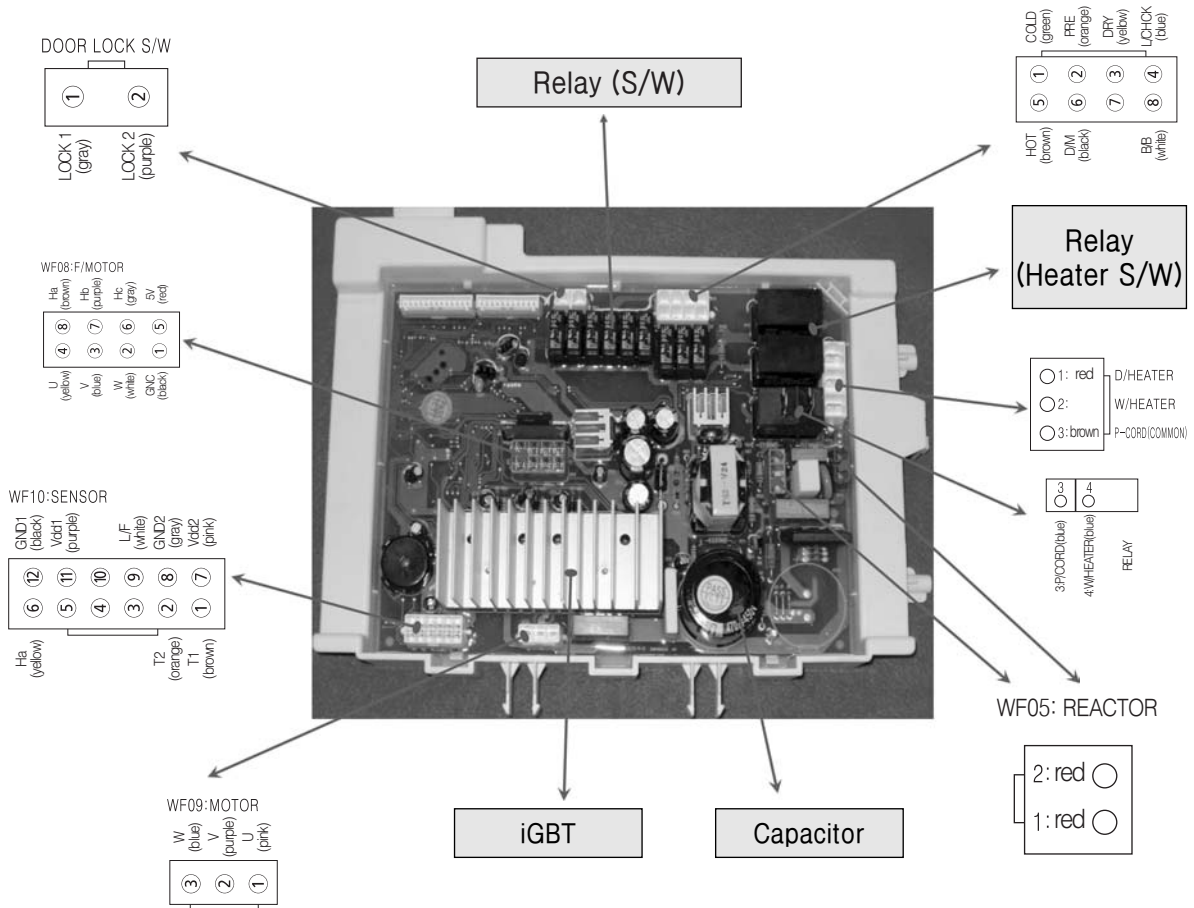
|            | Classification |      | SPEC  |
|------------|----------------|------|---|
|            | Combo          | Wash |   |
| ETVAL      | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
| ET         | ○              |      |   |
| ACKET,VDE  | ○              |      |   |
|            | ○              | ○    |   |
|            | ○              | ○    | LP-496L,KTL SU1001-4001 227 IEC 53  |
|            | ○              | ○    |   |
|            | ○              | ○    |   |
|            | ○              | ○    |   |
|            |                |      |   |
|            |                |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              | ○    |   |
|            | ○              |      | FUSE 128℃ DF-128S 15A/250V, TUBE SRGT(ID-Φ5)WH, L/W UL1015 AWG18 105℃600V |
|            | ○              | ○    |   |
|            | ○              | ○    | PA66 25% GF V0, MICOW S/W(BI-M) 16A 250V, SOLENOID 230V 130Ω, PTC HEATER  |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
|            | ○              |      |   |
| R1A034001  | ○              |      |   |
| R1A034002  | ○              |      |   |
| IR1A034006 | ○              |      |   |
| R1A034005  | ○              |      |   |



| NO | PART NAME          | Rating(V/Hz) | PART CODE  | BOM DESCRIPTION                                 |
|----|--------------------|--------------|------------|---|
| 11 | SWITCH THERMOSTAT  | 100-250V     | 3619046500 | ON120℃ OFF150℃ 230V 15A VDE                     |
| 12 | UNIT STATOR BLDC   | 28T          | 36189L4800 | Φ265X28H,36SLOT,2SNESOR,3254D02000              |
|    | UNIT STATOR BLDC   | 28T          | 36189L4830 | Φ265X28H,36SLOT,2SNESOR,3254D02000, 28T AL COIL |
|    | UNIT ROTOR BLDC    | 28T          | 36189L4900 | MAGNET24,SERRATION,WR1238F001                   |
| 13 | THERMISTOR WASH    | All          | 361AAAAB10 | R25=1.704kΩ R80=11.981kΩ                        |
| 14 | THERMISTOR DRY     | Dry          | 361AAAAC30 | R40=26.065kΩ,R90=4.4278kΩ                       |
| 15 | UNIT FAN MOTOR     | Dry          | 36189L3Z00 | ISM-77806DWWA 24V,CW,8P,14W                     |
| 16 | FAN AS             | Dry          | 3611886100 | D133*46L,PPGF30%,HANYU                          |
| 17 | DRAIN MOTOR        | 220-240V     | 36196TAJ00 | SV-MX7T20D 220-50/60 ST23(56.5)                 |
|    | DRAIN MOTOR        | 100-130V     | 36196TAK00 | SV-HJ7T20D 100-110V ST23(56.5)                  |
| 18 | DAMPER FRICTION    | 12kg All     | 361A700110 | 70N AKS ST=170-260 DL=197.5 LOW NOISE           |
|    | DAMPER FRICTION    | 12kg All     | 361A700150 | 110N AKS ST=170-260 DL=197.5 LOW NOISE          |
|    | DAMPER PIN         | 12kg All     | 361A700200 | AKS D=14.5                                      |
| 19 | EMI FILTER(K19B)   | 12kg All     | 3611909300 | DWLF-K19,X0.47U.Y1000P.VAR471K.NON-FUSE         |
| 20 | UNIT DRAIN PUMP AS | 220-240V     | 36189L5K30 | AL.220-240/50 B20-6 30W 11KG                    |
|    | UNIT DRAIN PUMP AS | 100-130V     | 36189L5710 | 40W 110-127V/60HZ DRUM(11KG-FILTER) CU          |

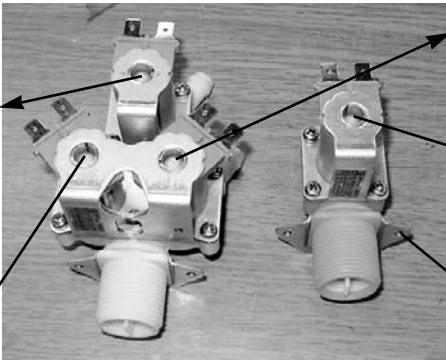
|             | Classification |      | SPEC  |
|-------------|----------------|------|---|
|             | Combo          | Wash |   |
|             | ◎              |      | NT-103NA(5XV)F150-120, $\pm 5^{\circ}\text{C}$  |
|             | ◎              | ◎    | Vm 310VDC, Vcc5V, 2SENSOR   |
| 28T AL COIL |                |      | STATOR: CLASS B, 36SLOT T28, AIR GAP 1mm, ROTOR : $\phi 265 \times 28\text{H}$ , Magnet24 |
|             |                |      | OUTPUT WASH 145W, TORQUE 300Kgf.cm(at45RPM),  |
|             | ◎              | ◎    |   |
|             | ◎              |      | CHIP KCD263H399F, B25/85=3992K $\pm 2\%$ , L/W UL1007 AWG24 L=450, MG621164(KET)          |
|             | ◎              |      | 3 $\phi$ BLDC, MAGNET8, Vm24V(7~28V) Vcc5V,   |
|             | ◎              |      |   |
|             | ◎              |      |   |
|             | ◎              |      |   |
|             | ◎              | ◎    | DAMPER(70N)   |
| SE          | ◎              | ◎    | DAMPER(110N)  |
|             | ◎              | ◎    | -   |
| FUSE        | ◎              | ◎    | -   |
|             |                |      |   |
| CU          |                |      |   |

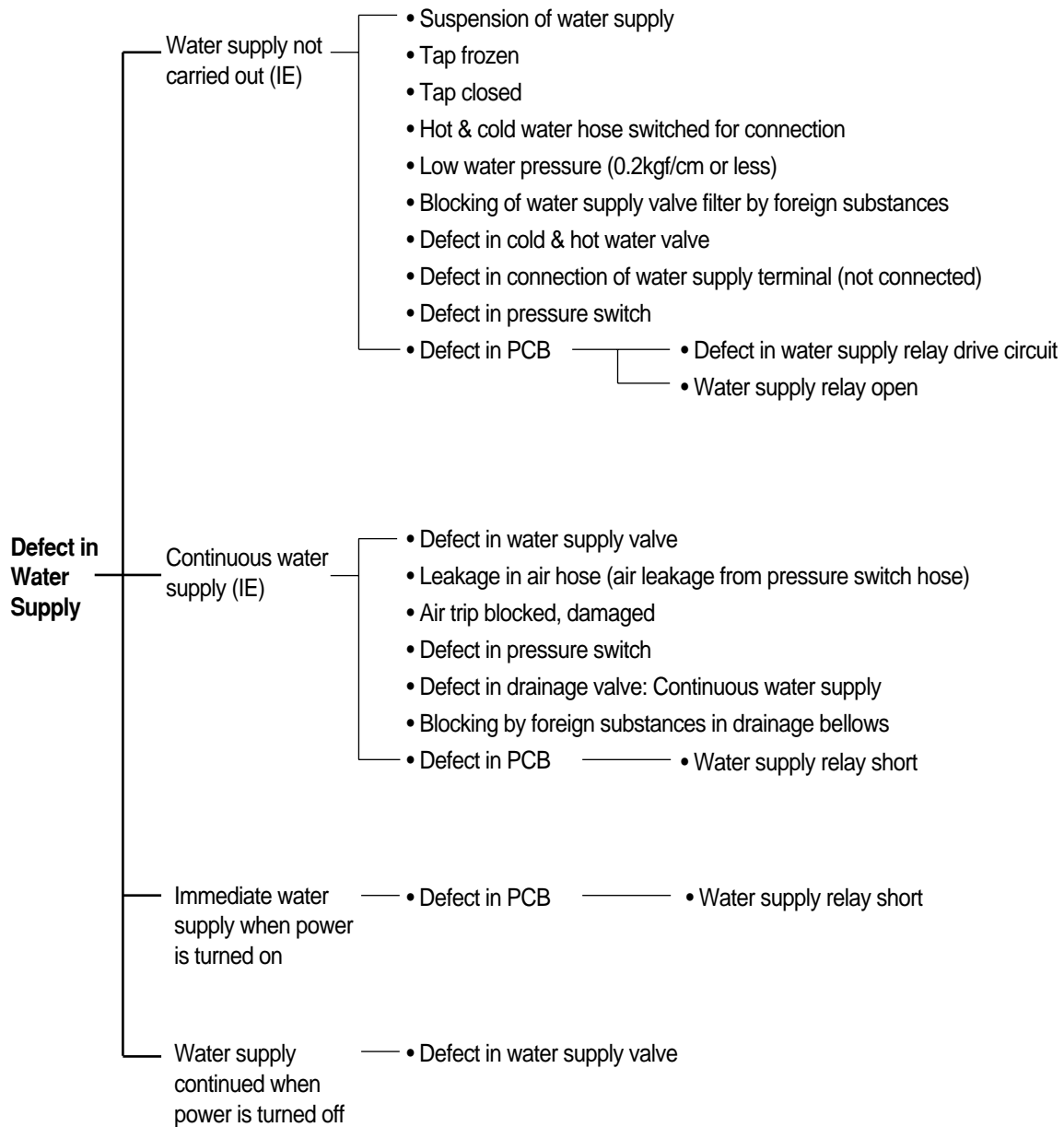
## 1. PCB PIN





## 2. VALVE INLET

| Classification                              | 3-hole Valve and Hot Water Valve  |   |   |  |                |
|---|---|---|---|--|----------------|
| Code  | 3-hole: 3615415070, 3615415050, Hot Water: 3615415700, 3615414800                   |   |   |  |                |
| Color                                       | Gray  |   |   |  |                |
| Coil Resistance                             | 4320 ~ 5280 $\Omega$  |   |   |  |                |
| Use   | Supplying water for washing/ pre-washing and bleach                                 |   |   |  |                |
| Appearance<br>Structure                     |  |   |   |  |                |
| Symptoms of Breakdown                       | Detailed Symptoms   | Cause                                       | Diagnosis of Defect   | Solution   | PCB Error Mode |
| Water not supplied                          | Water supply not carried, only noise is heard                                       | Water tap not opened                        | Check for tap opening.  | Open water tap.                                      | "IE"           |
|   |   | Coil short                                  | Check if resistance between water supply valve terminals is within 4320~5280 $\Omega$ .                       |  | "IE"           |
|   |   | Excessive foreign substances in SUS filter  | Remove water supply hose and check for foreign substances in filter.  | Clean out foreign substances from inside the filter. | "IE"           |
|   |   | Foreign substances in valve                 | -   | Replace water supply valve.                          | "IE"           |
|   | Water supply not carried out without noise  | Connector loosened                          | Visually check connector connection status.   | Administer re-insertion.                             | "IE"           |
|   |   | Coil short                                  | Check if resistance between water supply valve terminals is within 4320~5280 $\Omega$ .                       | Replace water supply valve.                          | "IE"           |
|   |   | Wiring short                                | Wiring short -> Conduction test   |  | "IE"           |
| Water is continuously supplied (inside tub) | Continuous water supply in power 'on' state   | Defect in water level sensor                | Refer to water level sensor defect check method.  | Replace water level sensor.                          | "E2"           |
|   |   | Defect in pressure hose                     | Check for blocking of holes in pressure hose.   | Replace defect parts.                                | "E2"           |
|   | Continuous water supply in power 'off' state  | Defect in water supply valve                | -   | Replace water supply valve.                          | -              |
| Others                                      | Water leakage through sides   | Defect in water supply valve assembly, etc. | Floater restraint, loosening -> S/W not working<br>Check for leakage through the sides of water supply valve. | Replace water supply valve.                          | -              |



| Symptoms of Breakdown        | Inspection Spot                      | Inspection Method   | Inspection Result   | Problem Identified  | Repair Method  |
|------------------------------|--------------------------------------|---|---|---|--|
| Water supply not carried out |                                      | 1) Suspension of water supply<br>2) Water tap locked<br>3) Cold-hot water hose incorrectly connected<br>4) If no defect is found, dismantle water supply hose and check water supply valve filter.  | - Cold/ hot water hose switched<br>- Large amount of rust, sand and dust, etc.  | - Defect in cold/ hot water hose assembly<br>- Defect in cleaning of water supply filter (blocked)                | - Assemble cold/ hot water hose correctly.<br>- Clean water supply filter.   |
|                              | Water supply valve                   | 1) Measure coil resistance in water supply valve.<br>2) Remove top cover and visually check for separation of water supply valve terminal connector and wiring short/ connection status.<br>3) In case water valve operation sound is heard, but water supply is not carried out, check for blocking of water supply valve or restraint on plunger. | - 5.3kW or higher<br><br>- Connector loosened/ not inserted<br><br>- Electric wire short<br>- Sound and defect in water supply due to foreign substances in bellows | - Coil short<br><br>- Connection defect<br><br>- Electric wire short<br>- Structural defect in water supply valve | - Replace water supply valve.<br>- Try reconnection or remove elements of connection defect.<br><br>- Try reconnection or remove elements of connection defect.<br>- Replace water supply valve. |
|                              | Pressure Switch                      | 1) Check for 'E9' in display window.  | - E9  | - Loosening of pressure S/W terminal or electric wire short<br>- Defect in pressure S/W                           | - Connect terminal of pressure S/W.<br>- Connect terminal of PCB.<br>- Replace pressure S/W.   |
| Water supply not carried out | PCB                                  | 1. Check PCB pin connector insertion status.<br>2. Power is supplied to water supply valve terminal, but water supply is not administered.  | Electric wire easily loosened when tugged<br>PCB water supply circuit open, damaged (water supply relay operation not carried out)                                  | Pin connector housing not inserted<br>Defect in water supply circuit  | Completely insert connector housing.<br>Replace PCB.   |
| Continuous water supply      | PCB                                  | 1. Immediate supply when power is turned on   | PCB water supply circuit or relay short (continuous conduction to valve)  | Water supply relay short  | Replace PCB.   |
|                              | Water supply valve                   | 1. Check if water supply is continuously carried out even if power is not on.   | Water supply bellows blocked/ deformed  | Defect in water supply valve  | Replace water supply valve.  |
|                              | Drainage drive motor (valve housing) | 1. Check for normal operation of water supply valve/ water supply status.<br>2. Check if water is drained through drainage hose.<br>3. Check for foreign substances inside valve housing.<br>4. Check for foreign substances in drive motor wire.<br>5. Forcefully restore SUS wire.  | - Not closed due to foreign substances inside drainage housing<br>- Wire caught by foreign substances outside drive motor<br>- Forced restoration not possible      | - Foreign substances in valve housing<br>- Foreign substances<br>- Defect in drive motor restoration              | - Remove foreign substances.<br>- Remove foreign substance.<br>- Replace drive motor.  |

### 3. Water Level Sensor

#### 1) Spec. of Water Level Sensor

|       | HEATER SAFETY | STEAM  | RESET | LOW  | MID   | RINSE | ADD WATER | OVERFLOW |
|-------|---------------|--------|-------|------|-------|-------|-----------|----------|
| (kHz) | 24.55         | 24.736 | 25.2  | 23.2 | 23.75 | 23.18 | 22.96     | 22.6     |

O/F: Forced drainage is necessary as water level is high. When this level is reached, water supply must be stopped and drainage must be forcefully administered.

#### RESET :

1. Spin-drying begins  
30sec after drainage level reset is reached.

2. Heater operation level

Low: Small load of laundry, therefore considered to be water level of 'low'

Medium: Large load of laundry

Medium High: Water level for rinsing

Safety: Door open possible  
Door opened only when water level is below safety level

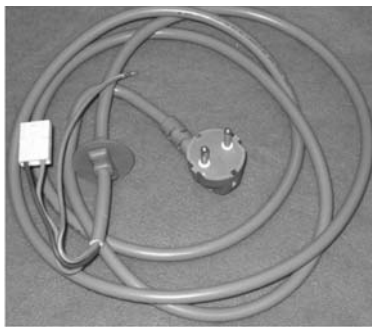
#### 2) Breakdown Analysis

| Symptoms                | Detailed Symptoms                                   | Cause                            | Diagnosis                                   | Solution                   | PCB Error Mode |
|-------------------------|---|----------------------------------|---|----------------------------|----------------|
| Continuous water supply | Water valve normal                                  | Defect in pressure sensor hose   | Check for holes.                            | Replace hose.              | "E2"           |
|                         |   | Blocking of pressure sensor hose | Visual checking                             | Remove foreign substances. | "E2"           |
| "E9"                    | Occurrence in water level sensor<br>30kHz or higher | Connector loosened               | Visually check connector connection status. | Administer re-insertion.   | "E9"           |
|                         |   | Wiring short                     | Wiring short -> conduction test             |                            | "E9"           |

## 4. POWER CORD

### 1) Specification

| Classification | Rated    | Cord Thickness | Color | Code       | Type      | Length | Remarks |
|----------------|----------|----------------|-------|------------|-----------|--------|---------|
| DEC            | 250V/15A | 1.5sq          | Gray  | 3611339340 | LP-31 SJT | 2.3m   | -       |
| DEC            | 125V/13A | 1.5sq          | Gray  | 3611340410 | ULSJT     | 2.3m   | -       |
| DEC            | 250V/16A | 1.5sq          | Gray  | 3611339930 | EU-2P     | 2.3m   | -       |
| DEC            | 125V/15A | 2.0sq          | Gray  | 3611339810 | BSMI      | 2.3m   | -       |



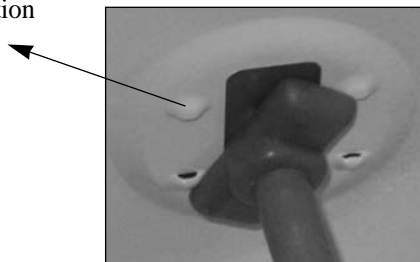
### 2) Assembly

4 embossed parts in cabinet

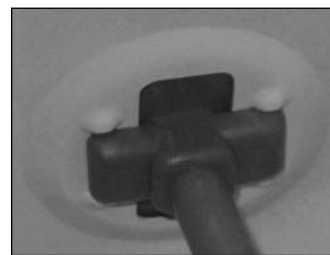
-> To prevent loosening after assembly

-> SS: 2 special screws

-> LG: Forced indentation



[Before]

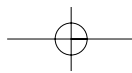


[After]

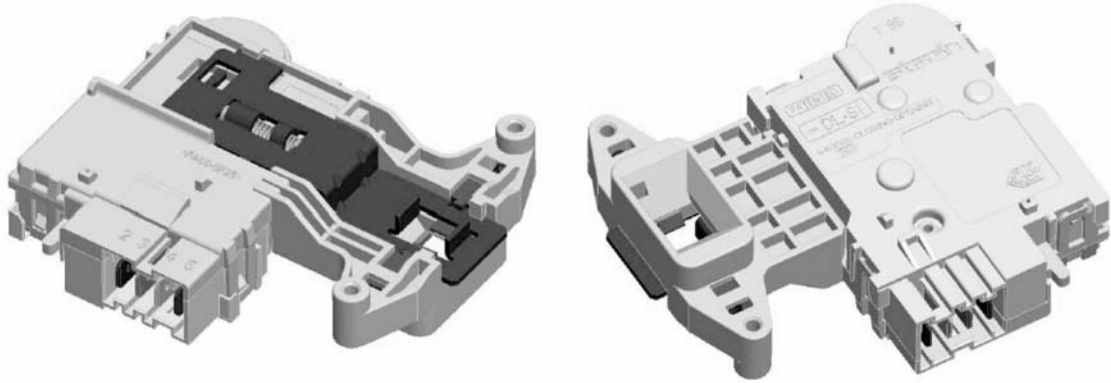
### . CONNECTOR

-> #1806 Housing 3P Used: Using both ends only and not the hole in the middle (materials highly resistant to flame)

-> To prevent fire caused by high current

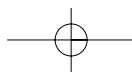
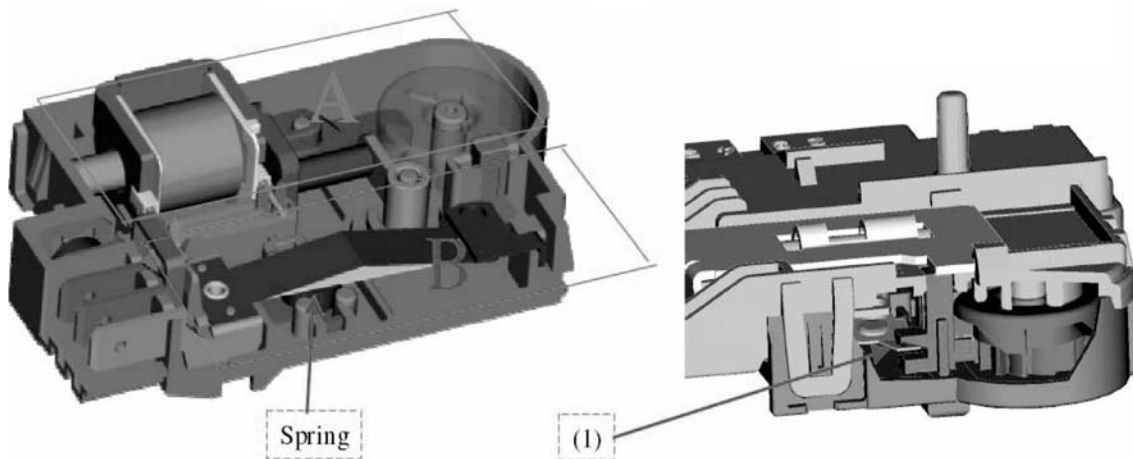


## 5. DOOR LOCK SWITCH



| PART CODE  | DESCRIPTION                            |
|------------|--|
| 3619047200 | DOOR LOCK DL-S1 250V PTC-SOLENOID TYPE |
| 3619041210 | DOOR LOCK DL-S1 125V L6A BITRON        |

### 1) DOOR LOCK S/W

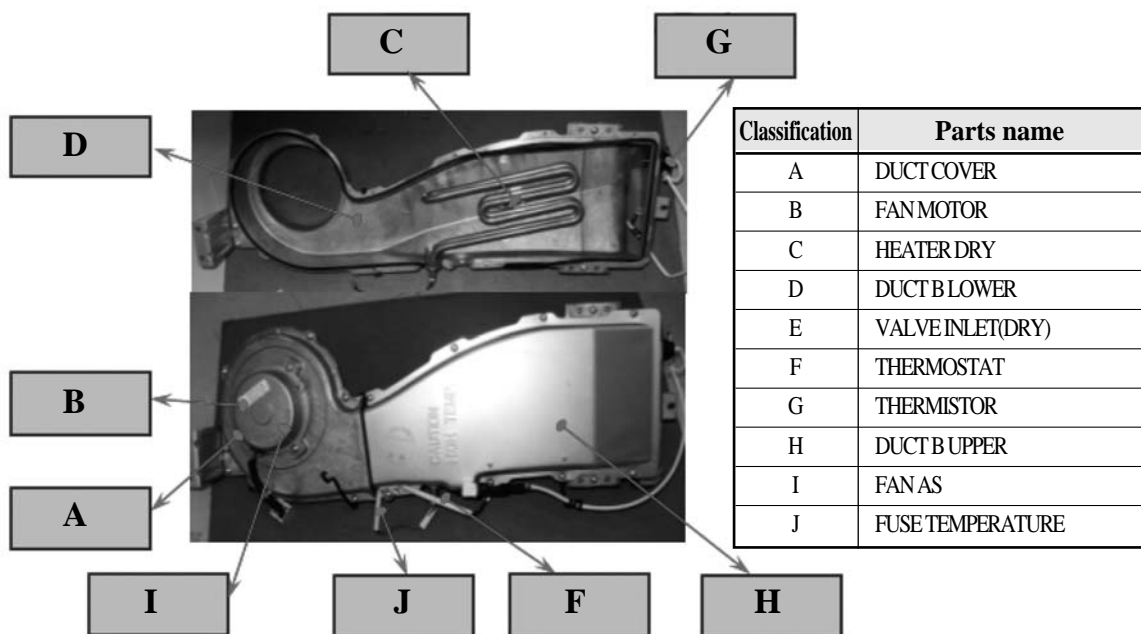
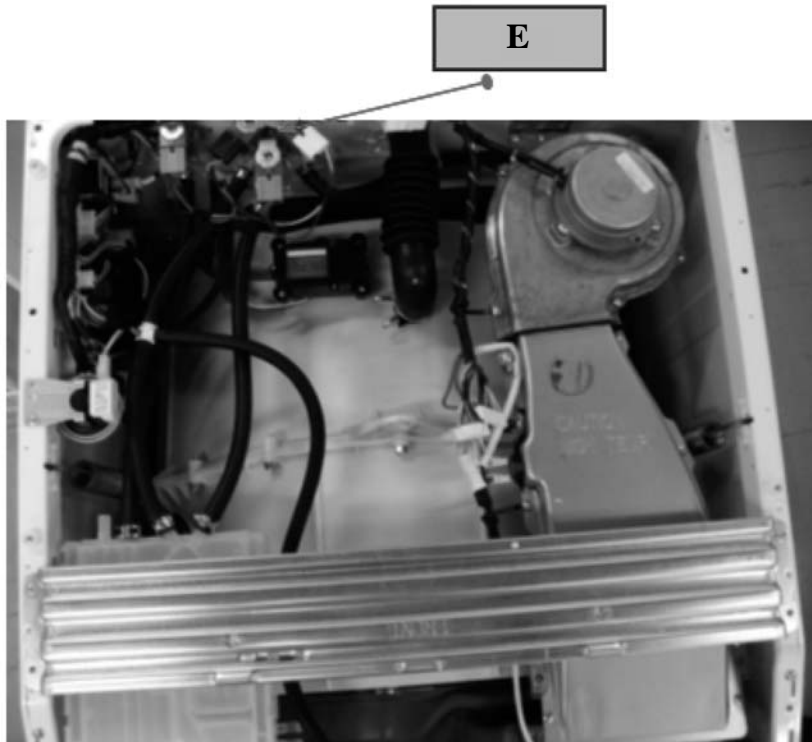


#### 4) Diagnosis of Defect

| Symptoms            | Detailed Symptoms  | Cause   | Diagnosis of Defect  | Solution                              | Error Mode |
|---------------------|--|---|--|---------------------------------------|------------|
| Ticking noise       | Tick' during initial operation and 'tick-tick' during temporary suspension: 'DF' type only | Normal noise  | Normal sound generated during solenoid operation when 'sliding CAM' is locked/ unlocked to close or open door. |                                       | —          |
| LE'                 | Continuous occurrence of 'tick' noise and 'LE': 'DF' type only                             | Connector loosened  | Visually checking connector connection status  | Insert connector.                     | "LE"       |
|                     |  | Terminal loosened from connector  | Referring to door lock S/W dismantling and checking methods below  | Insert connector. S/W 4 or 5 terminal | "LE"       |
|                     |  | Door not completed closed   | -  | Completely close door.                | "LE"       |
|                     |  | Abnormality in hook of door   | -  | Replace door AS.                      | "LE"       |
|                     |  | Defect in catch CAM operation   | Occurrence of continuous 'tick' noise unlike normal sound  | Replace door S/W.                     | "LE"       |
|                     | 1. 'LE' occurrence without 'tick' noise in 'DF' type                                       | Connector loosened  | Visually checking connector connection status  | Insert connector.                     | "LE"       |
|                     |  | Terminal loosened from connector  | Referring to door lock S/W dismantling and checking methods below  | Insert terminal. S/W 2 or 3 terminal  | "LE"       |
|                     |  | Breaking of solenoid coil   | Referring to picture below   | Replace door S/W.                     | "LE"       |
| Door does not open. | Power failure, forced power off during operation   | PCB MICOM' cannot open door in case of power failure or forced power S/W off during operation. Door can be opened in the max. of 5min.  |  |                                       |            |
|                     | No power failure and power on  | Water in drum   | Checking if water level is higher than safety level  | Door opens after drainage.            | —          |
|                     |  | Inside the drum hot   | Prevention of door opening to prevent burn caused by hot laundry after drying                                  |                                       |            |
|                     | Others   | Door does not open normally in case of loosening of connector/ terminal and breaking of solenoid coil during operation. Administer measures after test according to the following method. |  |                                       |            |

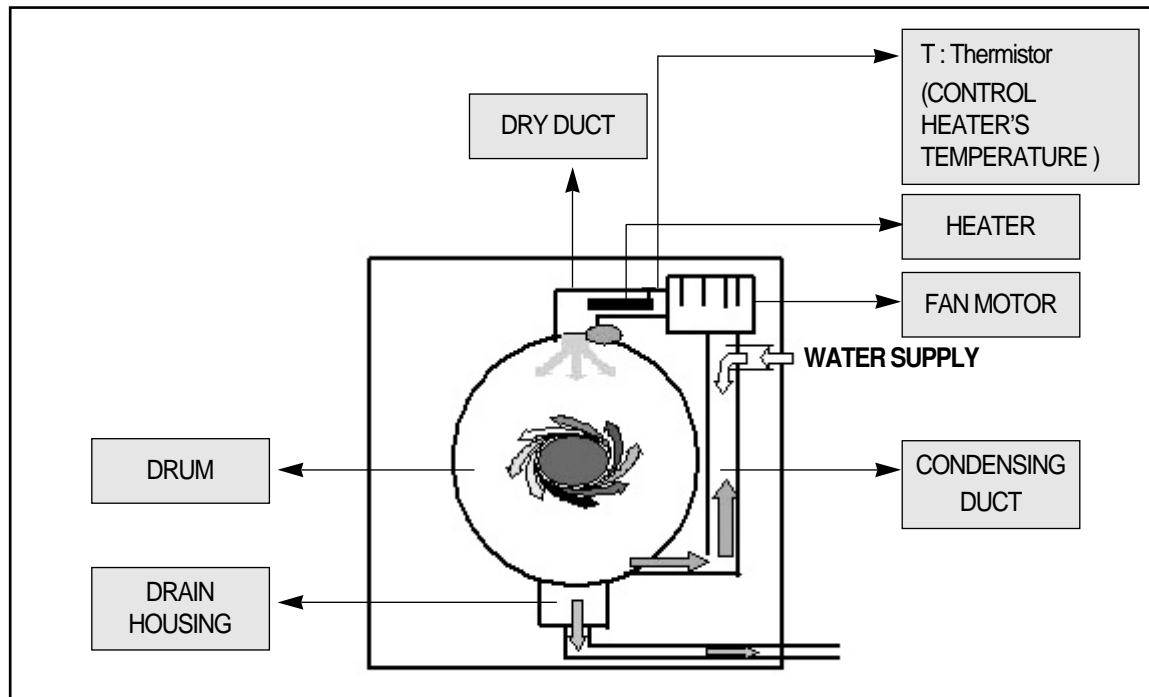
## 1. Heater

### 1) Spec of Heater of Washing Machine





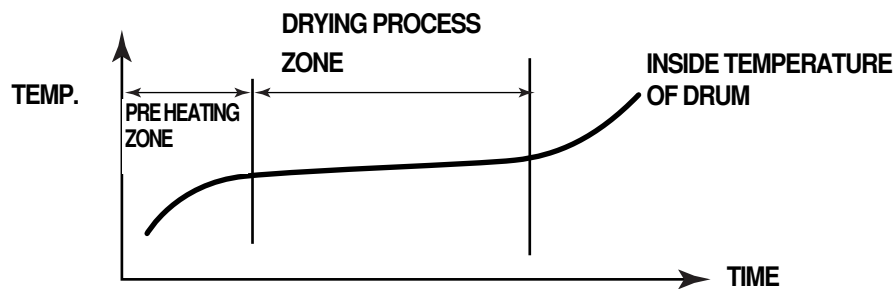
## 2) Dry Function Diagram



While rotating DRUM, DRY HEATER apply heat to air and FAN blows it into DRUM evaporating water in the laundry.

- Evaporated water is sucked into CONDENSING DUCT, and condensed in DUCT contacting WATER SUPPLY (condensed water is extracted through DRAIN HOUSING).
- Dry function is performed by continuous repetition of evaporating and condensing circulation as above.

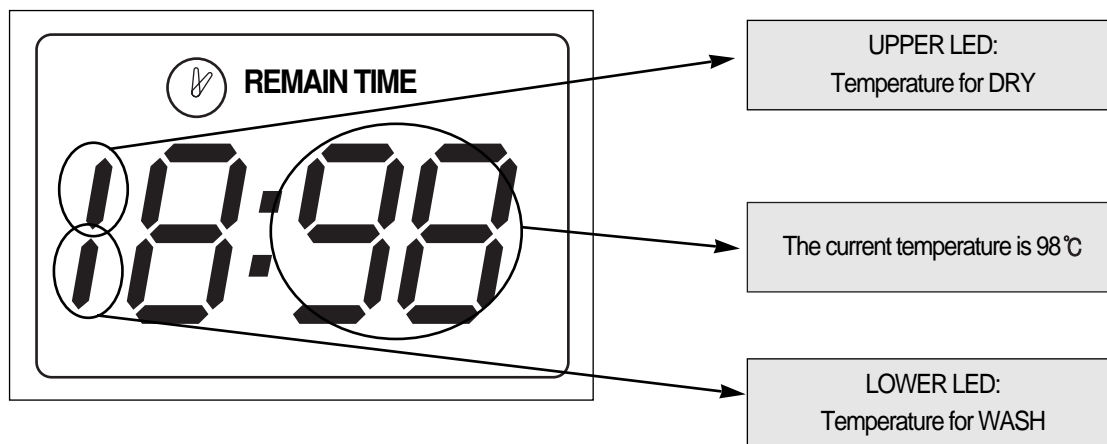
## 3) Temp- Time Graph During Dry Cycle



#### 4) Dry Course

| COURSE         | DRY COURSE  |
|----------------|---|
| LOW TEMP.      | Heater control temperature is 60°C On/70°C Off<br>Drying Time is 110min according to Load Sensing Data                                  |
| IRON           | Heater control temperature is 95°C On/105°C Off, with good condition for ironing<br>Drying Time is 60min according to Load Sensing Data |
| Cupboard       | Heater control temperature is 95°C On/105°C Off, drying time is 150 min   |
| STRONG         | Heater control temperature is 95°C On/105°C Off, drying time is 200 min   |
| SELECTING TIME | Heater control temperature is 95°C On/105°C Off, customer can select the drying time out of 1:00, 1:30, 2:00                            |

In order to check the drying temperature during process going on : --> press the "DRY" button, the display shows as below.



## 5) TROUBLE SHOOTING OF DRY SYSTEM

### ◆ HEATER DRY

Function : heating the air during dry

- FAILURE MODE : \* "H7" - The air cannot be heated to 10°C during 2 min.
- CHECKING METHOD : \* Check the resistance of heater coil and replace with new one.

### ◆ Thermistor

Function : sensing the air temperature.

- FAILURE MODE : \* The air cannot be heated even though water is supplied.
  - \* "H1" - shot or cut-off
  - \* "H3" - air temp. is reached over 150°C
- CHECKING METHOD : \* Check the resistance of thermistor, replace with new one.

### ◆ FUSE TEMPERATURE

function : protecting from the fire hazard or overheating, if the temp., rises over 128°C, power supply will be cut-off.

- Pictures



- FAILURE MODE : Dry is not performed.
- CHECKING METHOD : Check if fuse is short, and replace with new one.

### ◆ SWITCH THERMOSTAT(BIMETAL)

function : control the duct temperature, if the temp reached over 150°C, all power supply will be cut. and if the temp go down 120°C the power will be ON.

protecting overheating by cutting off heater power supply if the temperature rises over 150°C, and reoperating heater by connecting heater power supply if the temperature falls under 120°C.

#### • OPERATING TEMPERATURE

|                       |             |
|-----------------------|-------------|
| OPEN TEMPERATURE(OFF) | 150°C ± 5°C |
| CLOSE TEMPERATURE(ON) | 120°C ± 5°C |

#### • PICTURE



### ◆ UNIT FAN MOTOR

function : circulating the inside air during dry process.

#### • SPEC

| ITEMS             |             | SPEC       |
|-------------------|-------------|------------|
| RATING VOLTAGE    |             | 24V        |
| RPM               | MOTOR       | 3700 ± 10% |
|                   | DUCT FAN AS | 1900 ± 10% |
| ROTAING DIRECTION |             | CW         |

#### • PICTURE



• FAILURE MODE : \* E3 shown : FAN MOTOR cannot work.

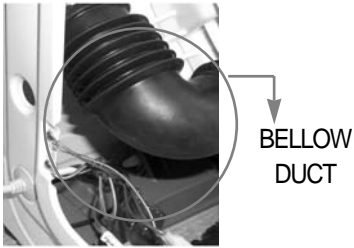
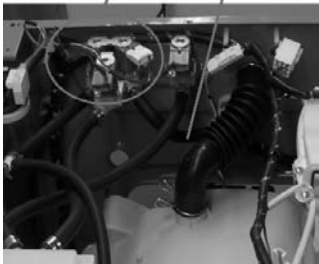
• CHECKING METHOD : Check the FAN MOTOR is short, and replace with new one.

## 6) LACK OF DRY PERFORMANCE

• Situation : after drying, the clothes still get wet.

- cause)    ➤ The laundry amount is more than the recommendation capacity 7.0kg.  
             ➤ Condensing cold water is not supplied.  
             ➤ Clogging Bellows Duct results in poor air circulation.

checking method)

| part name                    | checking point  | checking results                 | jurge   | repair method         |
|------------------------------|---|----------------------------------|---|-----------------------|
| BELLOWS DUCT                 |   | clogging bellows duct            | heater was overheated owing to poor air circulation | clean the bellow duct |
| VALVE INLET +Condensing HOSE |  | no water supply from inlet valve | VALVE INLET connector slipped out                   | connect normally      |
|                              |   |                                  | VALVE INLET broken                                  | replace valve inlet   |
|                              |   |                                  | ill-connection of condensing hose to duct pipe      | connect normally      |

• Situation after drying, the clothes was soaked and hot.

- cause)    ➤ The dry is done from bad spin performance because of unbalance.  
             ➤ no spin was done before the dry had started.

• Situation : PCB shows "H1" or "H3".


- cause)    ➤ Thermistor is broken.  
             ➤ Thermistor is short or cut-off.

countermeasures)    ➤ replace the Thermistor.

• Situation : PCB shows "H7".

cause)      ➤ Dry heater is cut-off.  
                  ➤ Fuse temp. is cut-off.

repaire method)      ➤ replace the Dry heater.  
                              ➤ replace the Fuse temp.

| checking point   | part name    | checking results                | repaire method                |
|--|--------------|---------------------------------|-------------------------------|
|  | HEATER       | dry Heater is short or cut-off. | replace the dry Heater.       |
|  | SENSOR TEMP. | Thermistor is short or cut-off. | replace the Thermistor.       |
|  | FUSE TEMP.   | FUSE TEMPERATURE is cut-off.    | replace the FUSE TEMPERATURE. |

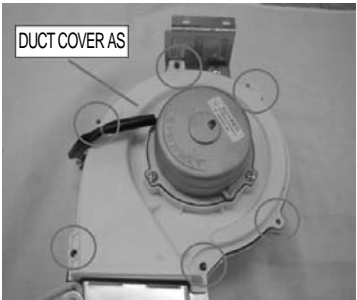
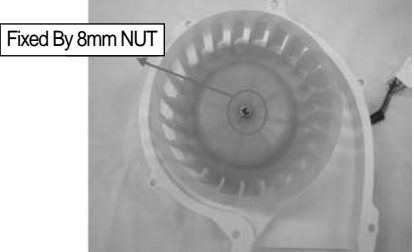
• situation : PCB shows "E3".

cause)

☞ FAN MOTOR can not work.

countermeasures)

☞ Replace the Fan Motor.

| part name | checking results  | repair method     | disassemble process of Fan Motor   |
|-----------|-------------------|-------------------|--|
| FAN MOTOR | fan motor failure | replace fan motor | <p>① Disassemble Duct Cover As from Duct B As (Screw 4EA)</p>  <p>② Disassemble FAN AS From Duct Cover As (Fixed by 8mm NUT)</p>  <p>③ Disassemble the FAN MOTOR(SCREW 3EA)</p> |

Remarks) control times of each parts during dry process

| parts       | Control time        |
|-------------|---------------------|
| MOTOR       | 15 sec On, 5sec Off |
| DRAIN MOTOR | Continous working   |
| FAN MOTOR   | Continous working   |
| DRY HEATER  | 95°C On, 105°C Off  |
| INLET VALVE | 30sec On, 5sec Off  |

**Washing Heater Temp. Sensor Table**R25 : 11.981K $\Omega$   $\pm$  4.04%R80 : 1.704K $\Omega$   $\pm$  3%B25/100 : 3760K  $\pm$  1%

| TEMP | MIN        | NORMAL     | MAX        | TEMP | MIN        | NORMAL     | MAX        | TEMP | MIN        | NORMAL     | MAX        | TEMP | MIN        | NORMAL     | MAX        |
|------|------------|------------|------------|------|------------|------------|------------|------|------------|------------|------------|------|------------|------------|------------|
| ℃    | K $\Omega$ | K $\Omega$ | K $\Omega$ | ℃    | K $\Omega$ | K $\Omega$ | K $\Omega$ | ℃    | K $\Omega$ | K $\Omega$ | K $\Omega$ | ℃    | K $\Omega$ | K $\Omega$ | K $\Omega$ |
| -40  | 282.914    | 298.650    | 314.387    | 0    | 34.352     | 35.975     | 37.599     | 40   | 6.403      | 6.653      | 6.903      | 81   | 1.603      | 1.653      | 1.703      |
| -39  | 266.642    | 281.416    | 296.191    | 1    | 32.776     | 34.318     | 35.861     | 41   | 6.169      | 6.409      | 6.648      | 82   | 1.555      | 1.603      | 1.652      |
| -38  | 251.432    | 265.311    | 279.190    | 2    | 31.284     | 32.749     | 34.214     | 42   | 5.946      | 6.176      | 6.405      | 83   | 1.508      | 1.556      | 1.603      |
| -37  | 237.208    | 250.252    | 263.296    | 3    | 29.869     | 31.262     | 32.655     | 43   | 5.732      | 5.952      | 6.172      | 84   | 1.463      | 1.510      | 1.556      |
| -36  | 223.900    | 236.165    | 248.430    | 4    | 28.528     | 29.852     | 31.177     | 44   | 5.527      | 5.738      | 5.949      | 85   | 1.419      | 1.464      | 1.509      |
| -35  | 211.440    | 222.978    | 234.516    | 5    | 27.256     | 28.516     | 29.776     | 45   | 5.320      | 5.523      | 5.725      | 86   | 1.377      | 1.421      | 1.465      |
| -34  | 199.683    | 210.537    | 221.392    | 6    | 26.044     | 27.242     | 28.440     | 46   | 5.131      | 5.325      | 5.518      | 87   | 1.336      | 1.379      | 1.422      |
| -33  | 188.669    | 198.885    | 209.101    | 7    | 24.893     | 26.033     | 27.174     | 47   | 4.949      | 5.135      | 5.321      | 88   | 1.297      | 1.339      | 1.381      |
| -32  | 178.347    | 187.967    | 197.587    | 8    | 23.801     | 24.887     | 25.972     | 48   | 4.774      | 4.953      | 5.131      | 89   | 1.259      | 1.300      | 1.342      |
| -31  | 168.668    | 177.731    | 186.793    | 9    | 22.764     | 23.798     | 24.831     | 49   | 4.607      | 4.778      | 4.950      | 90   | 1.222      | 1.262      | 1.302      |
| -30  | 159.588    | 168.129    | 176.670    | 10   | 21.780     | 22.764     | 23.748     | 50   | 4.443      | 4.608      | 4.772      | 91   | 1.186      | 1.226      | 1.265      |
| -29  | 150.999    | 159.049    | 167.099    | 11   | 20.836     | 21.773     | 22.710     | 51   | 4.289      | 4.447      | 4.605      | 92   | 1.152      | 1.191      | 1.229      |
| -28  | 142.937    | 150.527    | 158.117    | 12   | 19.939     | 20.832     | 21.725     | 52   | 4.141      | 4.292      | 4.444      | 93   | 1.119      | 1.157      | 1.194      |
| -27  | 135.366    | 142.526    | 149.685    | 13   | 19.087     | 19.938     | 20.788     | 53   | 3.999      | 4.144      | 4.290      | 94   | 1.087      | 1.124      | 1.161      |
| -26  | 128.253    | 135.009    | 141.766    | 14   | 18.277     | 19.088     | 19.899     | 54   | 3.862      | 4.002      | 4.142      | 95   | 1.057      | 1.093      | 1.129      |
| -25  | 121.566    | 127.945    | 134.324    | 15   | 17.506     | 18.279     | 19.052     | 55   | 3.722      | 3.856      | 3.990      | 96   | 1.027      | 1.063      | 1.098      |
| -24  | 115.230    | 121.252    | 127.274    | 16   | 16.770     | 17.507     | 18.244     | 56   | 3.595      | 3.723      | 3.852      | 97   | 0.999      | 1.033      | 1.067      |
| -23  | 109.271    | 114.959    | 120.647    | 17   | 16.069     | 16.772     | 17.475     | 57   | 3.473      | 3.596      | 3.720      | 98   | 0.971      | 1.005      | 1.038      |
| -22  | 103.665    | 109.039    | 114.413    | 18   | 15.402     | 16.072     | 16.743     | 58   | 3.355      | 3.474      | 3.593      | 99   | 0.944      | 0.977      | 1.010      |
| -21  | 98.387     | 103.467    | 108.547    | 19   | 14.767     | 15.407     | 16.046     | 59   | 3.243      | 3.357      | 3.471      | 100  | 0.918      | 0.950      | 0.982      |
| -20  | 93.416     | 98.220     | 103.024    | 20   | 14.162     | 14.773     | 15.383     | 60   | 3.133      | 3.243      | 3.353      | 101  | 0.893      | 0.924      | 0.955      |
| -19  | 88.603     | 93.141     | 97.679     | 21   | 13.576     | 14.158     | 14.741     | 61   | 3.029      | 3.135      | 3.240      | 102  | 0.868      | 0.899      | 0.930      |
| -18  | 84.072     | 88.361     | 92.649     | 22   | 13.018     | 13.574     | 14.130     | 62   | 2.929      | 3.030      | 3.132      | 103  | 0.845      | 0.875      | 0.905      |
| -17  | 79.806     | 83.860     | 87.914     | 23   | 12.486     | 13.017     | 13.548     | 63   | 2.833      | 2.930      | 3.028      | 104  | 0.822      | 0.851      | 0.881      |
| -16  | 75.788     | 79.622     | 83.456     | 24   | 11.980     | 12.487     | 12.993     | 64   | 2.740      | 2.834      | 2.928      | 105  | 0.799      | 0.827      | 0.856      |
| -15  | 72.000     | 75.628     | 79.255     | 25   | 11.497     | 11.981     | 12.465     | 65   | 2.654      | 2.744      | 2.835      | 106  | 0.777      | 0.805      | 0.833      |
| -14  | 68.408     | 71.840     | 75.272     | 26   | 11.037     | 11.499     | 11.962     | 66   | 2.569      | 2.656      | 2.743      | 107  | 0.756      | 0.784      | 0.811      |
| -13  | 65.021     | 68.270     | 71.518     | 27   | 10.598     | 11.040     | 11.482     | 67   | 2.487      | 2.571      | 2.654      | 108  | 0.736      | 0.763      | 0.790      |
| -12  | 61.825     | 64.902     | 67.978     | 28   | 10.179     | 10.601     | 11.024     | 68   | 2.408      | 2.489      | 2.569      | 109  | 0.716      | 0.743      | 0.769      |
| -11  | 58.810     | 61.724     | 64.637     | 29   | 9.780      | 10.183     | 10.587     | 69   | 2.333      | 2.410      | 2.487      | 110  | 0.697      | 0.723      | 0.749      |
| -10  | 55.963     | 58.724     | 61.485     | 30   | 9.400      | 9.786      | 10.172     | 70   | 2.258      | 2.332      | 2.407      | 111  | 0.679      | 0.704      | 0.729      |
| -9   | 53.214     | 55.829     | 58.443     | 31   | 9.036      | 9.405      | 9.775      | 71   | 2.187      | 2.259      | 2.331      | 112  | 0.661      | 0.686      | 0.710      |
| -8   | 50.620     | 53.097     | 55.573     | 32   | 8.688      | 9.042      | 9.395      | 72   | 2.119      | 2.188      | 2.257      | 113  | 0.644      | 0.668      | 0.692      |
| -7   | 48.171     | 50.517     | 52.864     | 33   | 8.356      | 8.695      | 9.033      | 73   | 2.054      | 2.120      | 2.187      | 114  | 0.627      | 0.651      | 0.674      |
| -6   | 45.857     | 48.081     | 50.305     | 34   | 8.039      | 8.363      | 8.686      | 74   | 1.991      | 2.055      | 2.119      | 115  | 0.610      | 0.634      | 0.657      |
| -5   | 43.670     | 45.779     | 47.889     | 35   | 7.737      | 8.047      | 8.357      | 75   | 1.928      | 1.990      | 2.051      | 116  | 0.595      | 0.617      | 0.640      |
| -4   | 41.594     | 43.594     | 45.594     | 36   | 7.448      | 7.744      | 8.041      | 76   | 1.869      | 1.928      | 1.988      | 117  | 0.579      | 0.602      | 0.624      |
| -3   | 39.630     | 41.528     | 43.425     | 37   | 7.170      | 7.455      | 7.739      | 77   | 1.812      | 1.869      | 1.927      | 118  | 0.565      | 0.586      | 0.608      |
| -2   | 37.773     | 39.574     | 41.375     | 38   | 6.905      | 7.178      | 7.450      | 78   | 1.758      | 1.813      | 1.868      | 119  | 0.550      | 0.572      | 0.593      |
| -1   | 36.016     | 37.725     | 39.435     | 39   | 6.652      | 6.912      | 7.173      | 79   | 1.705      | 1.758      | 1.811      | 120  | 0.536      | 0.557      | 0.578      |



**Day Heater Temp. Sensor Table**R40 : 26.065K $\Omega$   $\pm$  3%R100 : 3.3K $\Omega$   $\pm$  11.1%B40/100 : 4025K  $\pm$  2%

| T(°C) | Rmin   | Rcent  | Rmax   | T(°C) | Rmin   | Rcent  | Rmax   | T(°C) | Rmin  | Rcent | Rmax  |
|-------|--------|--------|--------|-------|--------|--------|--------|-------|-------|-------|-------|
| 0     | 142.55 | 162.21 | 184.12 | 56    | 12.980 | 14.066 | 15.203 | 112   | 2.211 | 2.343 | 2.477 |
| 1     | 135.55 | 154.09 | 174.72 | 57    | 12.520 | 13.557 | 14.643 | 113   | 2.149 | 2.279 | 2.411 |
| 2     | 128.93 | 146.41 | 165.85 | 58    | 12.078 | 13.069 | 14.105 | 114   | 2.090 | 2.217 | 2.347 |
| 3     | 122.68 | 139.17 | 157.48 | 59    | 11.655 | 12.601 | 13.591 | 115   | 2.032 | 2.158 | 2.285 |
| 4     | 116.76 | 132.32 | 149.59 | 60    | 11.248 | 12.153 | 13.097 | 116   | 1.977 | 2.100 | 2.225 |
| 5     | 111.17 | 125.86 | 142.13 | 61    | 10.857 | 11.722 | 12.624 | 117   | 1.923 | 2.043 | 2.166 |
| 6     | 105.87 | 119.74 | 135.09 | 62    | 10.483 | 11.309 | 12.171 | 118   | 1.870 | 1.989 | 2.110 |
| 7     | 100.86 | 113.96 | 128.45 | 63    | 10.123 | 10.913 | 11.736 | 119   | 1.820 | 1.936 | 2.055 |
| 8     | 96.12  | 108.50 | 122.16 | 64    | 9.777  | 10.533 | 11.319 | 120   | 1.771 | 1.885 | 2.002 |
| 9     | 91.62  | 103.32 | 116.22 | 65    | 9.445  | 10.168 | 10.919 | 121   | 1.723 | 1.836 | 1.950 |
| 10    | 87.37  | 98.43  | 110.61 | 66    | 9.125  | 9.817  | 10.535 | 122   | 1.678 | 1.788 | 1.900 |
| 11    | 83.33  | 93.79  | 105.30 | 67    | 8.818  | 9.481  | 10.167 | 123   | 1.633 | 1.741 | 1.852 |
| 12    | 79.51  | 89.40  | 100.27 | 68    | 8.524  | 9.157  | 9.813  | 124   | 1.590 | 1.696 | 1.805 |
| 13    | 75.88  | 85.24  | 95.51  | 69    | 8.240  | 8.846  | 9.474  | 125   | 1.548 | 1.652 | 1.759 |
| 14    | 72.44  | 81.30  | 91.01  | 70    | 7.967  | 8.548  | 9.148  | 126   | 1.508 | 1.610 | 1.715 |
| 15    | 69.17  | 77.56  | 86.74  | 71    | 7.705  | 8.261  | 8.834  | 127   | 1.468 | 1.569 | 1.672 |
| 16    | 66.07  | 74.01  | 82.70  | 72    | 7.452  | 7.985  | 8.533  | 128   | 1.430 | 1.529 | 1.630 |
| 17    | 63.13  | 70.65  | 78.87  | 73    | 7.210  | 7.719  | 8.244  | 129   | 1.393 | 1.490 | 1.590 |
| 18    | 60.34  | 67.46  | 75.24  | 74    | 6.976  | 7.464  | 7.966  | 130   | 1.357 | 1.453 | 1.550 |
| 19    | 57.68  | 64.43  | 71.80  | 75    | 6.751  | 7.218  | 7.699  | 131   | 1.323 | 1.416 | 1.512 |
| 20    | 55.16  | 61.56  | 68.53  | 76    | 6.534  | 6.982  | 7.442  | 132   | 1.289 | 1.381 | 1.475 |
| 21    | 52.76  | 58.83  | 65.43  | 77    | 6.326  | 6.755  | 7.195  | 133   | 1.256 | 1.346 | 1.439 |
| 22    | 50.48  | 56.24  | 62.49  | 78    | 6.125  | 6.536  | 6.957  | 134   | 1.225 | 1.313 | 1.404 |
| 23    | 48.31  | 53.77  | 59.70  | 79    | 5.931  | 6.325  | 6.729  | 135   | 1.194 | 1.281 | 1.370 |
| 24    | 46.25  | 51.43  | 57.05  | 80    | 5.745  | 6.123  | 6.509  | 136   | 1.164 | 1.249 | 1.337 |
| 25    | 44.28  | 49.20  | 54.53  | 81    | 5.565  | 5.927  | 6.297  | 137   | 1.135 | 1.219 | 1.305 |
| 26    | 42.41  | 47.08  | 52.13  | 82    | 5.392  | 5.739  | 6.093  | 138   | 1.107 | 1.189 | 1.274 |
| 27    | 40.63  | 45.07  | 49.86  | 83    | 5.225  | 5.558  | 5.897  | 139   | 1.080 | 1.160 | 1.244 |
| 28    | 38.94  | 43.15  | 47.69  | 84    | 5.064  | 5.383  | 5.708  | 140   | 1.053 | 1.132 | 1.215 |
| 29    | 37.32  | 41.32  | 45.64  | 85    | 4.909  | 5.215  | 5.526  | 141   | 1.027 | 1.105 | 1.186 |
| 30    | 35.78  | 39.58  | 43.68  | 86    | 4.759  | 5.053  | 5.351  | 142   | 1.002 | 1.079 | 1.158 |
| 31    | 34.31  | 37.93  | 41.82  | 87    | 4.615  | 4.896  | 5.182  | 143   | 0.978 | 1.053 | 1.131 |
| 32    | 32.91  | 36.35  | 40.04  | 88    | 4.476  | 4.746  | 5.019  | 144   | 0.954 | 1.028 | 1.105 |
| 33    | 31.58  | 34.85  | 38.36  | 89    | 4.341  | 4.600  | 4.862  | 145   | 0.931 | 1.004 | 1.080 |
| 34    | 30.31  | 33.41  | 36.75  | 90    | 4.212  | 4.460  | 4.711  | 146   | 0.909 | 0.980 | 1.055 |
| 35    | 29.09  | 32.05  | 35.22  | 91    | 4.086  | 4.325  | 4.566  | 147   | 0.887 | 0.958 | 1.031 |
| 36    | 27.93  | 30.75  | 33.76  | 92    | 3.965  | 4.194  | 4.425  | 148   | 0.866 | 0.935 | 1.007 |
| 37    | 26.83  | 29.50  | 32.37  | 93    | 3.849  | 4.068  | 4.289  | 149   | 0.846 | 0.914 | 0.984 |
| 38    | 25.77  | 28.32  | 31.04  | 94    | 3.736  | 3.947  | 4.159  | 150   | 0.826 | 0.893 | 0.962 |
| 39    | 24.76  | 27.19  | 29.77  | 95    | 3.627  | 3.829  | 4.033  |       |       |       |       |
| 40    | 23.80  | 26.11  | 28.57  | 96    | 3.522  | 3.716  | 3.911  |       |       |       |       |
| 41    | 22.87  | 25.07  | 27.42  | 97    | 3.420  | 3.606  | 3.793  |       |       |       |       |
| 42    | 21.99  | 24.09  | 26.32  | 98    | 3.322  | 3.501  | 3.680  |       |       |       |       |
| 43    | 21.15  | 23.15  | 25.27  | 99    | 3.227  | 3.399  | 3.571  |       |       |       |       |
| 44    | 20.34  | 22.25  | 24.27  | 100   | 3.135  | 3.300  | 3.465  |       |       |       |       |
| 45    | 19.57  | 21.39  | 23.31  | 101   | 3.043  | 3.205  | 3.367  |       |       |       |       |
| 46    | 18.84  | 20.57  | 22.40  | 102   | 2.954  | 3.113  | 3.272  |       |       |       |       |
| 47    | 18.13  | 19.78  | 21.53  | 103   | 2.867  | 3.024  | 3.180  |       |       |       |       |
| 48    | 17.46  | 19.03  | 20.69  | 104   | 2.784  | 2.937  | 3.092  |       |       |       |       |
| 49    | 16.81  | 18.31  | 19.90  | 105   | 2.704  | 2.854  | 3.006  |       |       |       |       |
| 50    | 16.19  | 17.62  | 19.13  | 106   | 2.626  | 2.774  | 2.923  |       |       |       |       |
| 51    | 15.60  | 16.96  | 18.40  | 107   | 2.551  | 2.696  | 2.842  |       |       |       |       |
| 52    | 15.03  | 16.33  | 17.71  | 108   | 2.478  | 2.621  | 2.764  |       |       |       |       |
| 53    | 14.48  | 15.73  | 17.04  | 109   | 2.408  | 2.548  | 2.689  |       |       |       |       |
| 54    | 13.96  | 15.15  | 16.40  | 110   | 2.340  | 2.477  | 2.616  |       |       |       |       |
| 55    | 13.46  | 14.60  | 15.79  | 111   | 2.274  | 2.409  | 2.546  |       |       |       |       |

## 7. HEATER

### 1) Spec of Heater of Washing Machine

|                   | WASH       |            |            |            |
|-------------------|------------|------------|------------|------------|
| MAKER             | IRCA       | IRCA       | IRCA       | IRCA       |
| RATED             | 220V       | 230V       | 130V       | 110V       |
| CONSUMPTION POWER | 2000W      | 2000W      | 1000W      | 1000W      |
| PART CODE         | 3612802400 | 3612802410 | 3612802440 | 3612802430 |
|                   | DRYER      |            |            |            |
| MAKER             | IRCA       | IRCA       | IRCA       | IRCA       |
| RATED             | 220V       | 230V       | 120V       | 110V       |
| CONSUMPTION POWER | 2100W      | 2100W      | 1200W      | 1200W      |
| PART CODE         | 3612800900 | 3612801400 | 3612802100 | 3612801300 |

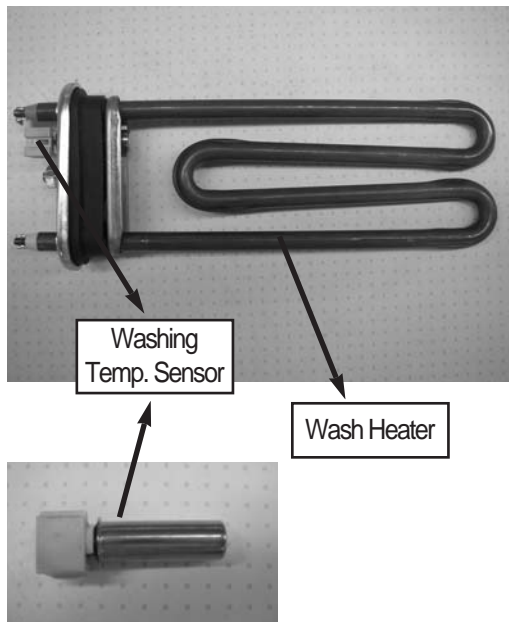
Temp. Fuse of Washing Heater (184°C CUT OFF TYPE)

: Located inside heater to prevent fire, etc. caused by heating without water due to breakdown of water level sensor, etc.

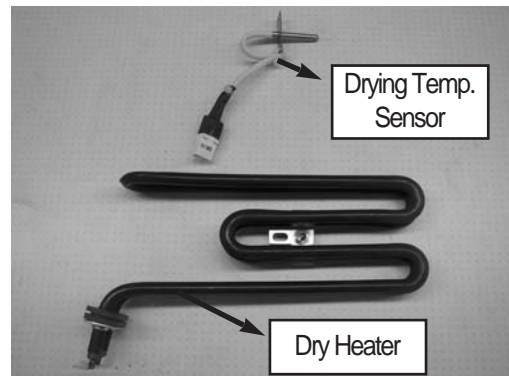
: Cut-off in app. 1min in case of overheating, heater temp. of app. 270°C

: Washing heater must be used under water.

#### ※ Wash Heater



#### ※ Day Heater



## 2) Breakdown Diagnosis

| Breakdown Symptoms                         | Cause                                 | Diagnosis  | Solution                  | PCB Error Mode |
|--|---------------------------------------|--|---------------------------|----------------|
| Washing water not heated (common for drum) | Wiring short                          | Check for short  | Connect the cut-off part. | "H6"           |
|  | Washing heater or temp. fuse short    | Check for short: Normal if 23.3~25.7ohm between both terminals of washing heater | Replace washing heater.   | "H6"           |
|  | Connector/ terminal loosening         | Check for loosening: Common for drum   | Insert terminal.          | "H6"           |
|  | Defect in washing heater temp. sensor | Measuring resistance between both terminals of sensor:                           | Replace temp. sensor.     | "H2"           |
| Overheating of washing water               | Defect in washing heater temp. sensor | Measuring resistance between both terminals of sensor:                           | Replace temp. sensor.     | "H2" or "H4"   |

### Heater Replacement

#### \* How to Replace Washing Heater and Temp. Sensor

1. Dismantling Connector



2. Loosening Earth and Heater Nuts



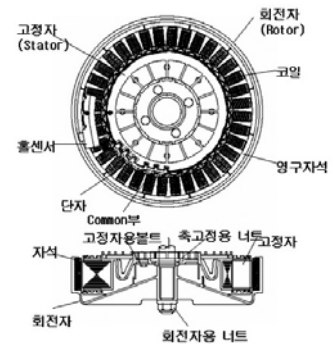
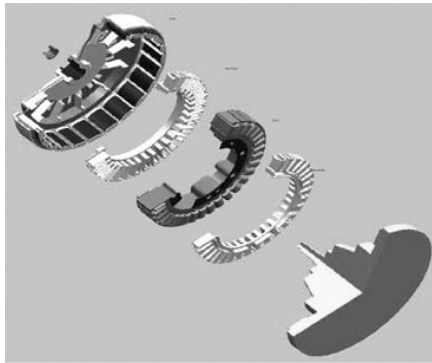
3. Replacing Heater and Temp. Sensor



4. Administer assembly in reverse order and make sure to fasten heater nuts first before the earth nuts.

## 7. HEATER

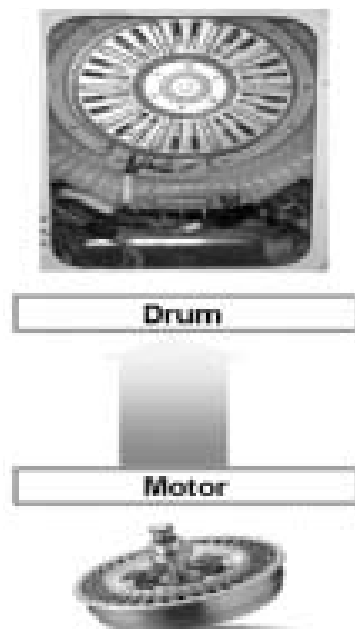
### 1) Structure of BLDC Motor



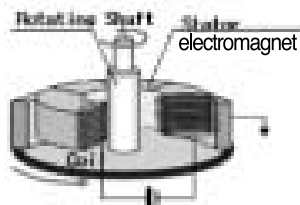
BLDC MOTOR

### 2) Power Transmission System of BLDC Motor

#### Sequence diagram of BLDC MOTOR



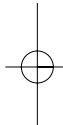
#### Direct Drive Motor



generating high power by rotator  
(a permanent magnet) and stator  
(multiple coils)

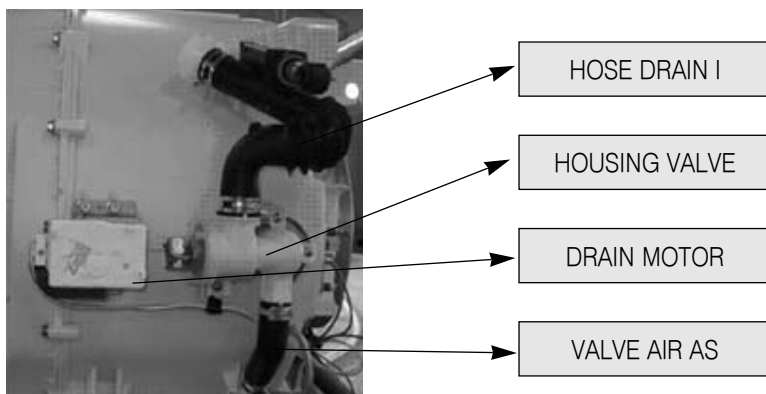
### 3) Specification

| Classification | Item                   | BLDC : DD Motor   |
|----------------|------------------------|---|
| 1. General     | Rated Voltage          | $V_m = 310$ [Vdc], Hall IC Voltage 5 [Vdc]  |
|                | Insulating Structure   | Type B, insulator method  |
|                | External Appearance    | Shaft connection and stator connection structure, Air-gap : 1mm   |
|                | No. of Poles           | 24 poles, Core: 36 slots, Layer: [30mm]   |
| 2. Performance | Consumption Power      | 390[W]±10[%], during washing (picked value)   |
|                | RPM                    | During Washing: 45RPM,<br>During Spin-drying: 1300RPM   |
|                | Output Characteristics | Torque: 300Kgf.cm (washing: 45rpm)<br>Current: 1.5A (washing: 45rpm),<br>2.5A (spin-drying: 800rpm)<br>AC Input Terminal - Washing: 250W <sub>o</sub> ,<br>Spin-drying: 380W <sub>o</sub> |
| 3. Structure   | Stator Resistance      | ø265x30H  |
|                |                        | U(blue) - V(purple) : 13.8Ω[at 75°C]<br>V(purple) - W(pink) : 13.8Ω[at 75°C]<br>W(pink) - U(blue) : 13.8Ω[at 75°C]<br>cf) Motor resistance at ambient temp. of<br>0 ~ 35°C<br>7.04 ~ 8.1Ω |
|                | Rotor                  | Magnet : 24 segments, bracket, serration  |
|                | Hall IC                | 2-sensor Control Type, Top Central Angle:<br>7.5 degrees<br>Signal Error Angle (phase difference):<br>90±5 degrees (based on electric angle)  |



## 9. TROUBLE SHOOTING REGARDING DRAIN

### 1) Structure of Dran Parts by TUB



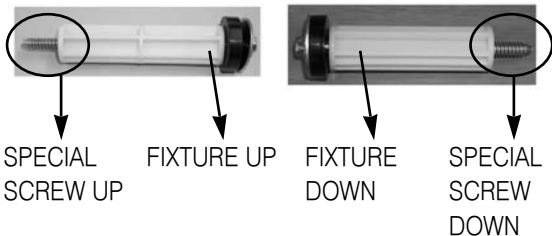
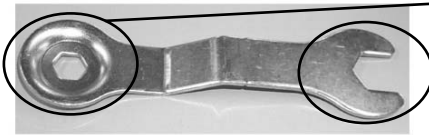
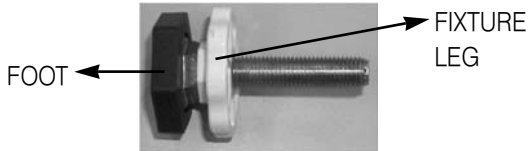
### 2) Checking Methods

- Situation :
  - \* "OE" is shown on PCB.
  - \* Not finishing drain during 10 min.
  - \* The water level can not reach to RESET POINT during 10 min of drain.

| Checking Methods                                       | Replacing methods             |
|--|-------------------------------|
| * Check the hose drain O condition; twisted or frozen. | * replace HOSE DRAIN O        |
| * Check the hose drain O condition, blocked.           | * clean the inside of Filter. |
| * DRAIN MOTOR is broken.                               | * replace DRAIN MOTOR         |

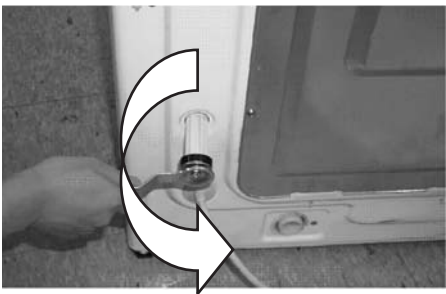
## 10. INSTALLATION GUIDE

### 1) Related Parts and Configuration

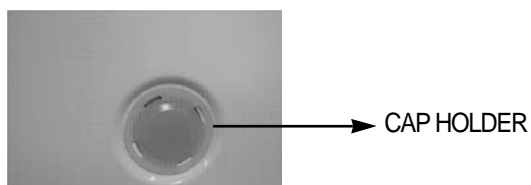
| PARTS NAME          | FIGURES   | REMARKS   |
|---------------------|---|---|
| FIXTURE UP/DOWN AS  |   | FIXTURE UP AS<br>(3612008200)<br>: L= 109mm<br>FIXTURE DOWN AS<br>(3612008300)<br>: L=143mm |
| UNIT SERVICE WRENCH |    | ① Remove Fixture UP/DOWN AS<br>② Adjust Leg   |
| LEG ADJUST AS       |  |   |

### 2) INSTALLATION PROCESS

#### ① Remove the FIXTURE UP/DOWN AS

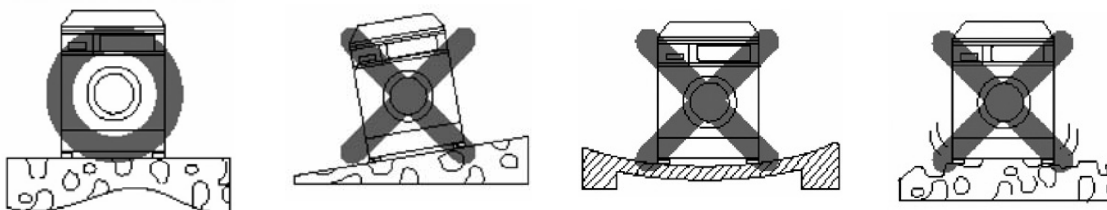
| Removal Method  | Remarks  |
|---|--|
|  | <ul style="list-style-type: none"> <li>☞ Disassemble the FIXTURE UP/DOWN AS by turning CCW direction.</li> <li>☞ Please keep FIXTURE UP/DOWN AS for later use.</li> <li>☞ When fixing FIXTURE UP/DOWN AS, turn it CW direction.</li> </ul> |

#### ② Insert CAP HOLDER(4EA) after removing FIXTURE UP/DOWN AS.







③ Please install the DRUM WASHING MACHINE properly on even and hard floor as below.



④ Adjust the level of washer using LEG ADJUST AS.

| Adjusting Method   | Remarks  |
|--|--|
|  | <p>☞ If turned CW, the LEG ADJUST AS moves the washer upward.</p> <p>☞ If turned CCW, the LEG ADJUST AS moves the washer downward.</p> |

⑤ After adjusting level, fix SPECIAL BOLT.

| Adjusting Method  | Remarks   |
|---|---|
|  | <p>☆ Please fix the SPECIAL BOLT by rotating it CCW in order to prevent washer vibration.</p> |

## 11. ATTENTION POINT WITH SERVICING

| No | Item                              | Part Name             | Checking Point  |
|----|-----------------------------------|-----------------------|---|
| 1  | Replacing Thermistor Dry          | Thermistor Dry        | Keep the Packing from separating (Hold Packing when replacing)<br>Keep the Packing from folding   |
| 2  | Replacing Duct B As & Duct Pipe   | DUCT B AS & DUCT PIPE | Check the sealing between Duct Pipe & Duct B AS   |
| 3  | Replacing & Repairing Inlet Valve | Inlet Valve           | Use only screw M4*8 for fixing Inlet Valve  |
| 4  | Replacing Hose Drain              | Hose Drain            | Keep the sealing condition of Tub O tightly   |
| 5  | Replacing HOSE A,B,C              | HOSE A,B,C            | Check the assembling order between INLET BOX & Hose A,C :<br>Pre Wash-Cold  |
| 6  | Replacing Heater Wash             | Heater Wash           | Unfastening the nut for fixing earth first then unfasten the nut for fixing heater<br>At assembling the heater dry, check if the assembling condition between fixture heater is tight.(little gap on left & right)<br>At fastening the nut for fixing the heater wash, keep the protrusion length of bolt to 10~12mm.<br>(if under 10mm, water can leak, and if over 12mm, fixture heater can deform) |
| 7  | Replacing "Thermistor Wash"       | Thermistor Wash       | Unfasten the Nut for fixing heater, replace the thermistor, and fasten the nut for fixing heater  |
| 8  | Assembling "Hinge Door"           | Hinge Door            | At fastening screw for fixing Door AS, be careful so that scratching at the related parts does not happen<br>: If the scratching happens, it is possible to be claimed about appearance damage  |
| 9  | (Dis)assembling "Door AS"         | Door AS               | Be careful about the up/down direction of Door Glass : Keep the indication point of the part code downward.   |
| 10 | (Dis)assembling "Motor AS"        | MOTOR AS              | To avoid the injury on the hand, grip the rim of the rotor<br>At initiating the assembling operation of the stator, grip the stator and fasten the screw; at unfastening the screw, grip the stator so that it does not fall.   |
| 11 | Damper AS                         | Damper AS             | Fixed 4 Dampers with spring when assemble.  |



S/M NO. :

**DAEWOO ELECTRONICS CORP.**

686, AHYEON-DONG MAPO-GU SEOUL, KOREA

C.P.O. BOX 8003 SEOUL, KOREA

TELEX: DWELEC K28177-8

CABLE: "DAEWOOELEC"

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# ABOUT THIS MANUAL

**VISION CREATIVE, INC.**

충구 남대문로 5가 526

대우재단빌딩 16층

|   |                       |     |
|---|-----------------------|-----|
| 담당  | 이영배 님                 | TEL |
| MODEL   | DWD-T120R(S/M)_드럼업세탁기 |     |
| 접수  | 2008.04.07 (총 72p)    |     |
| 일정  | 1차                    | 6차  |
|   | 2차                    | 7차  |
|   | 3차                    | 8차  |
|   | 4차                    | 9차  |
|   | 5차                    | 10차 |
| 제판  |                       | 인쇄  |
| 규격  |                       |     |
| MEMO  |                       |     |
| 08.04.07-전체신규(73page)   |                       |     |
| 08.04.16-24p, 25p, 26p, 27p, 28p, 29p, 31p, 61p수정_ 신규 8p                                  |                       |     |
| 08.08.11-4p, 5p, 7p, 12p, 14p, 16p, 20p, 22p, 42p, 61p수정_ 신규 10p                          |                       |     |
| 08.08.13-15p, 16p 수정_ 신규 2p   |                       |     |
| 08.10.13-표2, 12p, 14p, 16p, 20p, 22p, 42p, 43p, 45p, 49p, 50p, 62p 수정<br>(페이지 추가)_ 신규 12p |                       |     |

**연락처**

**VISION 담당 방문 수**

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-매뉴얼의 첫장에 이 서식을 작성해주세요-