

BX PLATFORM (B7S-BLED)

HEAT PUMP DRYER

SERVICE HANDBOOK



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3. Technical Specification:

3.1. Product Definition:

- 3.1.1. Manufacturer : Arçelik A.Ş.
Çerkezköy - Tekirdağ / TÜRKİYE
- 3.1.2. Model : Beko DPY (7/8)(2/4/5)0(3/4/5/6/7)
- 3.1.3. Capacity (kg) : 7/8/9
- 3.1.4. Programs (Qty) : 14 sensor controlled program
1 timed program
1 ventilation program (compressor off)

3.2. Dimensions:

	UNPACKED			PACKED		
	HEIGHT	WIDTH	DEPTH	HEIGHT	WIDTH	DEPTH
54 cm	846	595	530	880	650	585
60 cm	846	595	598	880	650	660

3.3. Package:

- 3.3.1. Material : PE bag (Shrink-pack)
- 3.3.2. Supporter : Polystrofoam / Wood

3.4. Weight:

- 3.4.1. Unpacked (kg) : 50,5 / 51,5 (with plastic door)
52,5 / 53,5 (with glass door)
- 3.4.2. Packed (kg) : 52,5 / 53,5 (with plastic door)
54,5 / 56 (with glass door)

3.5. Working Condition:

- 3.5.1. Temperature
Min. room temperature : 5° C
Max. room temperature : 35° C
- 3.5.2. Humidity : %95 RH

3.6. Electrical Specification:

- 3.6.1. Voltage (V / Hz) : 230-240 / 50
- 3.6.2. Power (W) : 800 / 900
- 3.6.3. Current (A) : 4

3.7. Power Cord:

- 3.7.1. Type : 3 x 1.5 mm² or 3x1.0mm² cord copper wire

3.7.2. Insulation : H05V2V2-F 3G1,5mm² / H05V2V2-F 3G1 mm²
H05VV-F 3G1,5mm² / H05VV-F 3G1 mm²

3.7.3. Plug : Earthed, PVC moulded

3.7.4. Length (m) : 1,5 m

3.8. Motor (Used in HP Dryer with A+++ Energy Class):

3.8.1. Type : Brushless Direct Current (BLDC) Motor

3.8.2. Power (W) : max. 250

3.8.3. Motor speed (rpm) : 2800-3000

3.8.4. Drum speed (rpm) : 54-57

3.8.5. Insulation : F

3.8.6. Run capacitor : NA (Not Available)

3.9. Motor (Used in HP 54 cm A+ 7 kg Energy Class):

3.9.1. Type : 1 phase induction (Asynchronous) Motor

3.9.2. Power (W) : max. 250

3.9.3. Main Winding (ohm) : 25,5±5%@ 25C

3.9.4. Auxillary Winding(ohm) : 28±5%@ 25C

3.9.5. Motor speed (rpm) : 2850

3.9.6. Drum speed (rpm) : 53 ± 2

3.9.7. Insulation : F

3.9.8. Run capacitor : 9 µF ± %5

3.10. Motor (Used in HP Dryer with Eco A+++ / Super Eco A++ / 54cm A++ Energy Class):

3.10.1. Type : 1 phase induction (Asynchronous) Motor

3.10.2. Power (W) : max. 250

3.10.3. Main Winding (ohm) : 19,5±5%@ 250C

3.10.4. Auxillary Winding(ohm) : 19,5±5%@ 250C

3.10.5. Motor speed (rpm) : 2900

3.10.6. Drum speed (rpm) : 53 ± 2

3.10.7. Insulation : F

3.10.8. Run capacitor : 9 µF ± %5

3.11. Pump :

3.11.1. Manufacturer / Type : Ascoll / Synchronous

3.11.2. Power (W) : 9

3.11.3. Voltage / Frequency : 220 – 240 V / 50 Hz

3.11.4. Flow Rate (l / min) : 2,4

3.11.5. Head (m) : 0,7

- 3.11.6. Revolution Speed (rpm) : 3000
 3.11.7. Winding Resistance (ohm) : $956 \pm \%8$

3.12. Pump :

- 3.12.1. Manufacturer / Type : Hanyu / Synchronous
 3.12.2. Power (W) : 13
 3.12.3. Voltage / Frequency : 220 – 240 V / 50 Hz
 3.12.4. Flow Rate (l / min) : 2,4
 3.12.5. Head (m) : 0,7
 3.12.6. Revolution Speed (rpm) : 3000
 3.12.7. Winding Resistance (ohm) : $976 \pm \%8$

3.13. Compressor (Used in HP Dryer with A+++ Energy Class):

- 3.13.1. Manufacturer / Model : LG / EA078PAB
 3.13.2. Type : 1 phase asynchronous
 3.13.3. Power (W) : 430
 (71°C condensation temperature / 23°C evaporation temperature)
 3.13.4. Cooling Capacity (W) : 1530
 (71°C condensation temperature / 23°C evaporation temperature)
 3.13.5. Current (A) : 2,05
 3.13.6. Main Winding (ohm) : $11,01 \pm \%7$
 3.13.7. Auxillary Winding (ohm) : $6,78 \pm \%7$
 3.13.8. Insulation Class : E
 3.13.9. Capacitor : $25 \mu\text{F} \pm \%5$
 3.13.10. Refrigerant Type / Amount : R134a / 450gr

3.14. Compressor (Used in HP Dryer with Super Eco A+ / A++ Energy Class):

- 3.14.1. Manufacturer / Model : GMCC RJSN82V2
 3.14.2. Type : 1 phase asynchronous
 3.14.3. Power (W) : 318
 (54,4°C condensation temperature / 7,2°C evaporation temperature)
 3.14.4. Cooling Capacity (W) : 970
 (54,4°C condensation temperature / 7,2°C evaporation temperature)
 3.14.5. Current (A) : 1,45
 3.14.6. Main Winding (ohm) : $10 \pm \%7$
 3.14.7. Auxillary Winding (ohm) : $11,5 \pm \%7$
 3.14.8. Insulation Class : E
 3.14.9. Capacitor : $15 \mu\text{F} \pm \%5$
 3.14.10. Refrigerant Type / Amount : R134a / 300 gr

3.15. Compressor (Used in HP Dryer with 54cm A+ Energy Class):

- 3.15.1. Manufacturer / Model : LG / EAB078PMA
- 3.15.2. Type : 1 phase asynchronous
- 3.15.3. Power (W) : 457
(71°C condensation temperature / 23°C evaporation temperature)
- 3.15.4. Cooling Capacity (W) : 1561
(71°C condensation temperature / 23°C evaporation temperature)
- 3.15.5. Current (A) : 2,1
- 3.15.6. Main Winding (ohm) : 10,77 ± %7
- 3.15.7. Auxillary Winding (ohm) : 10,20 ± %7
- 3.15.8. Insulation Class : E
- 3.15.9. Capacitor : 20 µF ± %5
- 3.15.10. Refrigerant Type / Amount : R134a / 225 gr

3.16. Compressor (Used in HP Dryer with 54cm A++ Energy Class):

- 3.16.1. Manufacturer / Model : LG / EA078PAB
- 3.16.2. Type : 1 phase asynchronous
- 3.16.3. Power (W) : 430
(71°C condensation temperature / 23°C evaporation temperature)
- 3.16.4. Cooling Capacity (W) : 1530
(71°C condensation temperature / 23°C evaporation temperature)
- 3.16.5. Current (A) : 2,05
- 3.16.6. Main Winding (ohm) : 11,01 ± %7
- 3.16.7. Auxillary Winding (ohm) : 6,78 ± %7
- 3.16.8. Insulation Class : E
- 3.16.9. Capacitor : 25 µF ± %5
- 3.16.10. Refrigerant Type / Amount : R134a / 300 gr

3.17. Compressor (Used in HP Dryer with 54cm A+++ Energy Class):

- 3.17.1. Manufacturer / Model : GMCC / RJSN68V3
- 3.17.2. Type : 1 phase asynchronous
- 3.17.3. Power (W) : 250
(54,4°C condensation temperature / 7,2°C evaporation temperature)
- 3.17.4. Cooling Capacity (W) : 795
(54,4°C condensation temperature / 7,2°C evaporation temperature)
- 3.17.5. Current (A) : 1,15
- 3.17.6. Main Winding (ohm) : 12,71 ± %7
- 3.17.7. Auxillary Winding (ohm) : 11,33 ± %7
- 3.17.8. Insulation Class : E
- 3.17.9. Capacitor : 10 µF ± %5
- 3.17.10. Refrigerant Type / Amount : R134a / 320 gr

3.18. Compressor (Used in Eco A+++ HP Dryer):

- 3.18.1. Manufacturer / Model : GMCC/ RJSN68V2
- 3.18.2. Type : 1 phase asynchronous
- 3.18.3. Power (W) : 268
(71°C condensation temperature / 23°C evaporation temperature)
- 3.18.4. Cooling Capacity (W) : 805
(71°C condensation temperature / 23°C evaporation temperature)
- 3.18.5. Current (A) : 1,25
- 3.18.6. Main Winding (ohm) : 12,5 ± %5
- 3.18.7. Auxillary Winding (ohm) : 9,74 ± %5
- 3.18.8. Insulation Class : E
- 3.18.9. Capacitor : 15 µF ± %5
- 3.18.10. Refrigerant Type / Amount : R134a / 530 gr

3.19. Compressor Cooling Fan:

(Used in HP Dryer with A+++ & A++ & A+ Energy Class)

- 3.19.1. Manufacturer / Model : NMB & MAT 4715MS – 23T – B50
- 3.19.2. Type : Shaded Pole Asynchronous
- 3.19.3. Power (W) : 15
- 3.19.4. Winding Resistance (ohm) : 675
- 3.19.5. Rotational Speed (rpm) : 2600 / 2900
- 3.19.6. Insulation Class : B

3.20. Compressor Cooling Fan:

(Used in HP Dryer with A++ Energy Class)

- 3.20.1. Manufacturer / Model : X-Fan & RAH1238S1
- 3.20.2. Type : Shaded Pole Asynchronous
- 3.20.3. Power (W) : 26
- 3.20.4. Winding Resistance (ohm) : 735
- 3.20.5. Rotational Speed (rpm) : 2600 / 3000
- 3.20.6. Insulation Class : B

3.21. Door & Compressor NTC:

- Door & Compressor NTC (ohm) : 12.000 ohm @ 25°C

3.22. Body:

- 3.22.1. Material : Sheet metal
- 3.22.2. Finish : Acrylic powder paint

3.23. Drum:

- 3.23.1. Material : Stainless Steel - Aquawave

3.23.2. Volume (lt)	: 118
3.23.3. Drum speed (rpm)	: 54-57
3.23.4. Front door opening (mm)	: 395x320
3.23.5. Process air flow (m3/h)	: 315
3.23.6. Maximum loading Capacity:	
Cotton(kg)	: 7 / 8
Delicate, Synthetic (kg)	: 3,5 / 4
3.24. Control System Specifications:	
3.24.1. Door Switch	: 250 V, 3 (1)A or 16(4)A
3.24.2. Suppression Filter	: 0,47 μ F(X2) + 0,68 Mohm + 2x0,027 μ F(Y2) + 2x1 mH
3.24.3. Program Timer	: Electronic controller 220-240V,50Hz

4. General Working Principle:

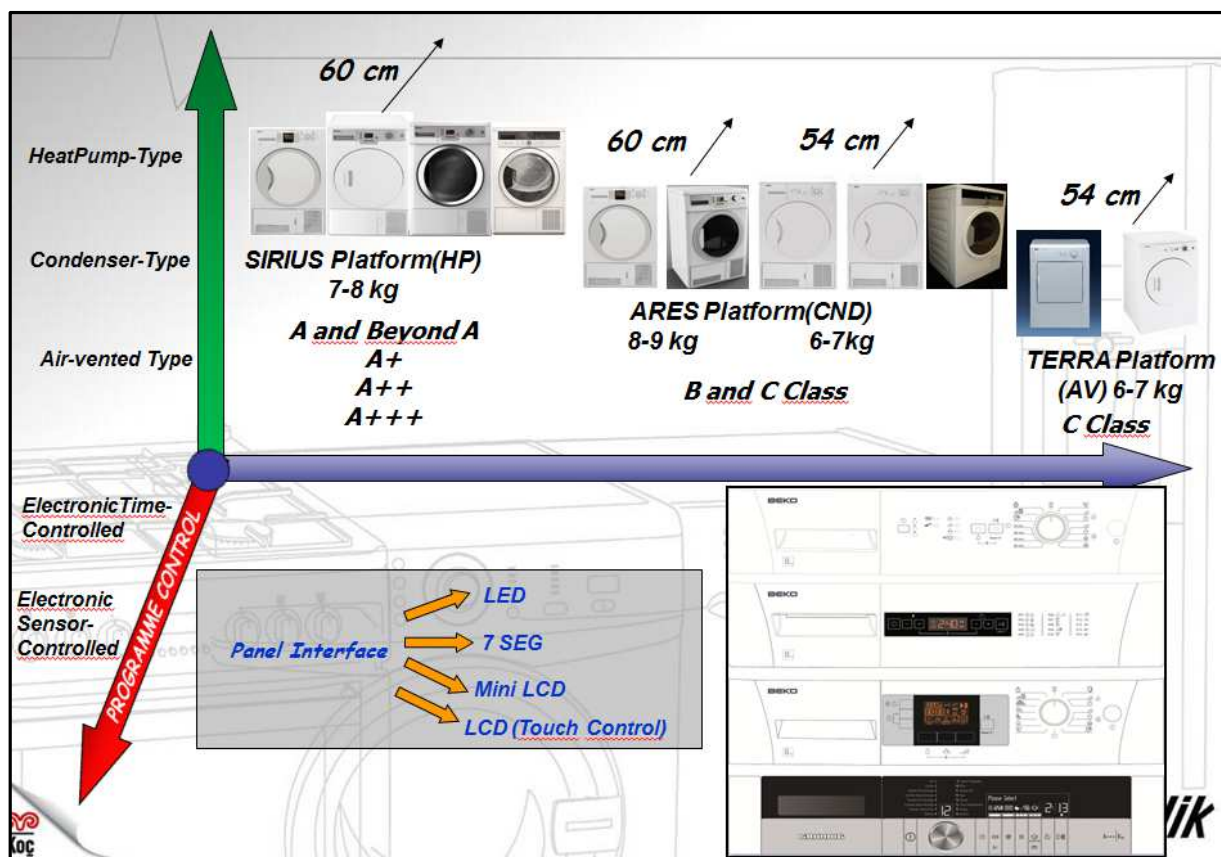
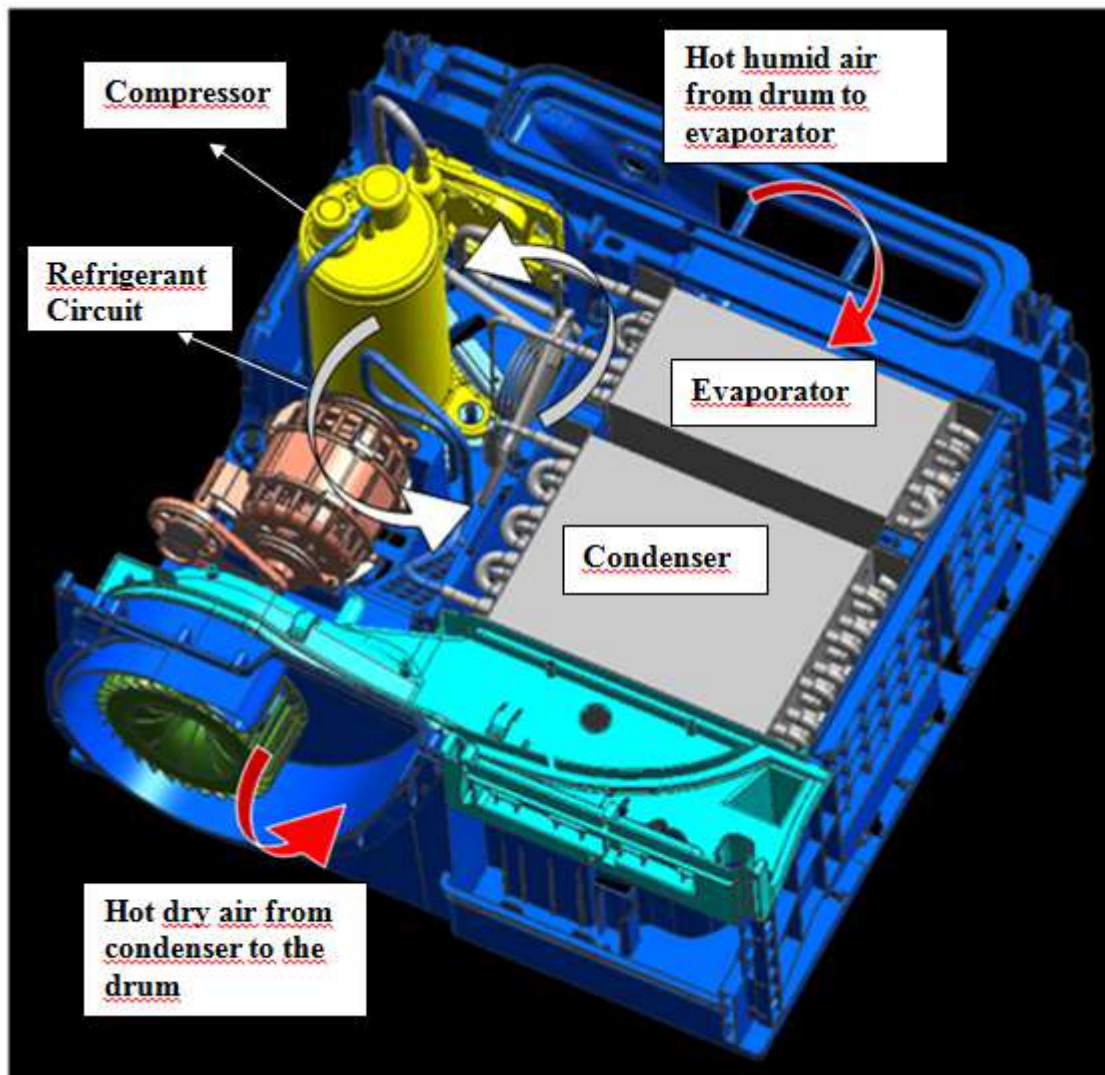


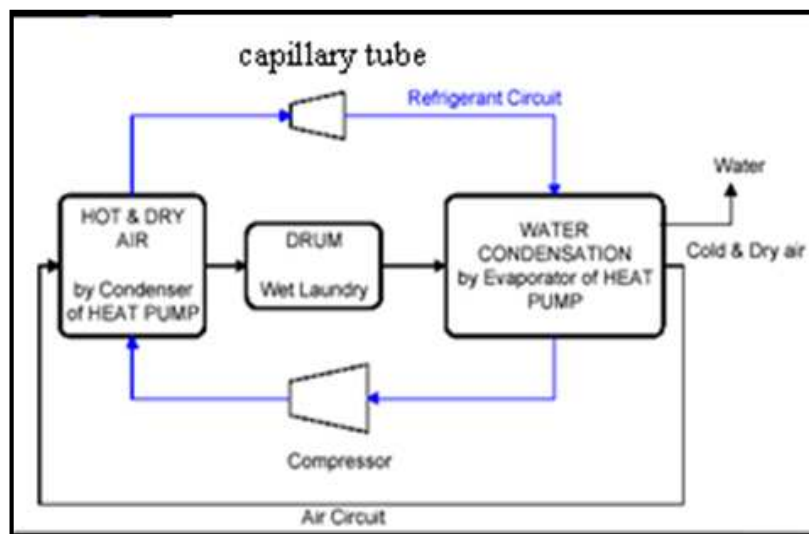
Figure 8.1. Tumble Dryer Product Specification

4.1. Heat Pump Dryer Working Principals:

The heat pump system is consisted of a compressor that pumps the refrigerant which transports the heat energy (**refrigerant circuit in the picture below**). The refrigerant is in vapor phase when it enters the hot heat exchanger so called condenser. The hot refrigerant is used to heat up the air by the condenser of the heat pump system. By giving its heat energy, the refrigerant cools down so that it is condensed, and leaves the condenser in liquid phase. The temperature of the refrigerant in the condenser of the heat pump system is decreasing

from 90°C to 60°C in normal room conditions. After leaving the condenser, the refrigerant passes through a capillary tube that makes the refrigerant temperature even less, around 25°C. Then the refrigerant enters the cold heat exchanger so called evaporator. The refrigerant in the evaporator cools down the humid and hot air and the liquid refrigerant becomes vapor after getting energy and heating up to 35° C when it leaves and reenters the compressor. Besides that, the humid and hot air condenses in the evaporator, the water is collected and pumped to the water tank.





Since the temperature of the air that is used to dry the laundries is maximum around 70°C, the air leaves the drum at 45°C, which are almost half of the temperature of the air used in conventional. Due to air vented and condenser dryers, the heat pump dryers are more safer and gentile to laundry compared to conventional dryers. There are much lower risk of hot air injury when you open the door of the dryer while it is working to put extra items in it. The temperature of the cabinet is also much lower. Better drying efficiency within similar program times with lower temperatures is a visible indicator of the energy efficiency of the system.

4.2. Components Related to the Drying Cycle

4.2.1. Temperature Sensor (NTC) :

Two NTC temperature sensor are used on electronic controlled dryers, one is located after the door filter in air suction channel, other is located on the copper tube at the outlet of the condenser. As the temperature of the surrounding of NTC increases, its resistance decreases. At fixed temperature NTC will always have a specified resistance within the tolerance. With the aid of this principle it operates until the desired temperature is reached.



Figure 8.2. NTC located on the outlet of the condenser September' 17



Figure 8.3. NTC located after the door filter in air suction channel

4.2.2. Humidity Sensor :

Humidity level will be measured by the resistance of clothes. With this property of the humidity sensor, it is possible to check and control the humidity level precisely. It is driven by microcontroller.

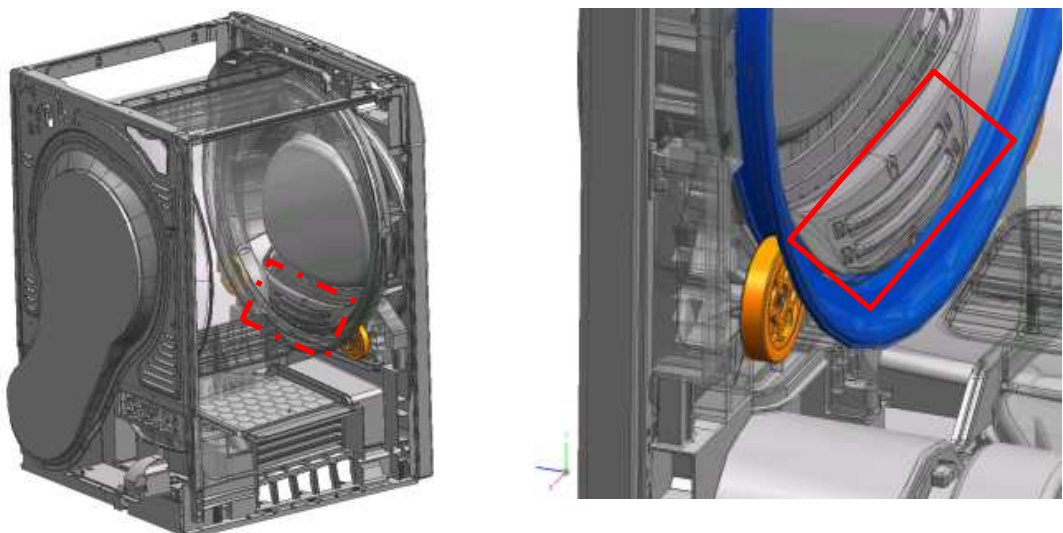


Figure 8.4. Humidity Sensor

4.2.3. Compressor (Rotary):

Heat pump system gets its energy from compressor. Rotary type compressor pressurizes the refrigerant and circulates it in heat exchangers. Compressor electrical input power is between 400W and 700 W due to the working conditions. Compressor has an overload protector which is sensitive both for Temperature and Current. The compressor has 1 phase asynchronous motor. *The technical specifications of the related compressors are given in the section 4.*

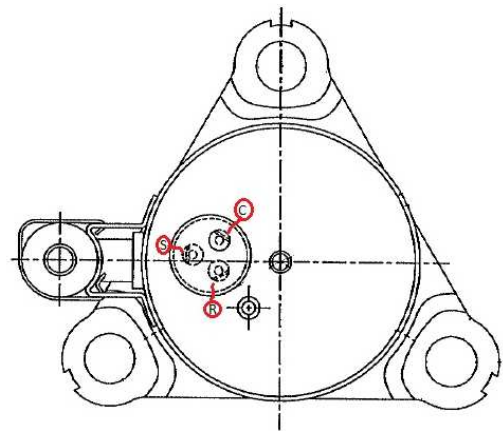


Figure 8.5. Rotary Type Compressor

4.2.4. Door Lock:

Locking and unlocking mechanism of the door lock used in the dryer is a mechanical type of the door lock. When the door pushed, the door is locked and closed. When the pull from the handle of the door, it will be opened with a suitable force. This mechanism is designed such that if a child is locked inside the dryer, the door can be opened from inner side. Especially, door lock and hinge should be checked if there is a locking problem.

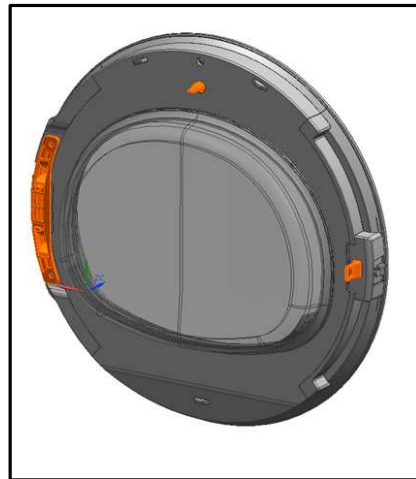


Figure 8.6. Door Lock

4.2.5. Door Microswitch:

The current is sent to electronic card and motor by the door switch. By this way when door is opened due to any reason, motor stops automatically. However because of EN&IEC safety rules, when the door is closed again, motor does not start. It is necessary to press start/pause button to restart dryer.

4.2.6. Motor:

Tumble and fan are driven by 1 pole induction motor. Motor rotates at 2750 rpm and has a 9 μ F capacitor. Asynchronous motor is controlled by two relays. One of them is for direction, other one is for energy. Two relays are embedded on the control panel. Asynchronous motor is used in the models of energy class A+ and A++ (A-50%).

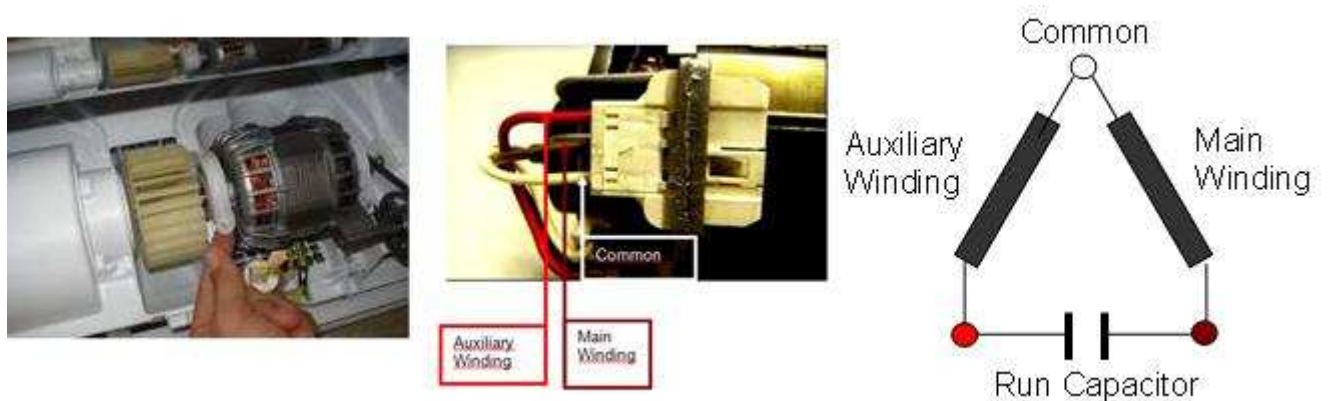


Figure 8.7. Asynchronous Motor

In the heat pump models with energy class of Eco A++, A+++ and A+++ -10% the drum and fan are driven by brushless direct current (BLDC) motor. This motor communicates with the electronic board by the aid of the motor communication port.

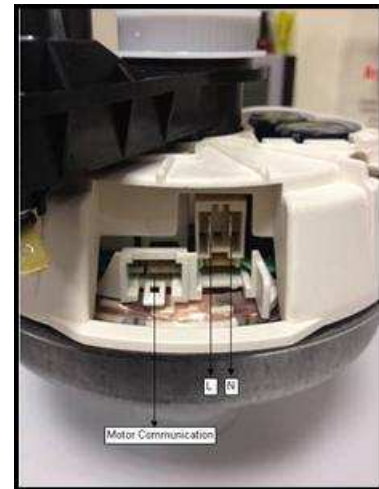


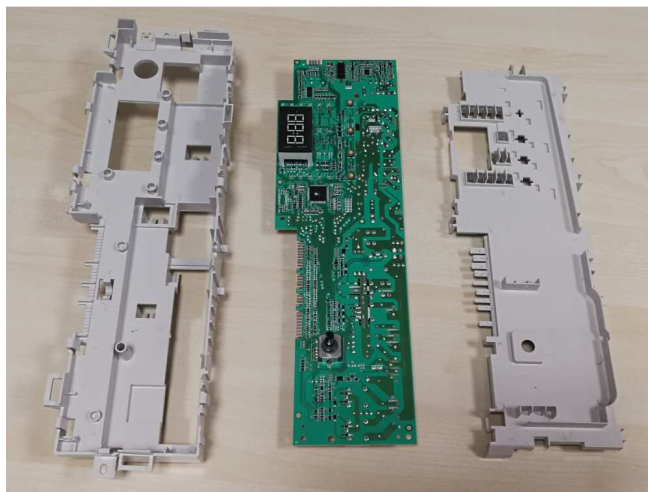
Figure 8.8. BLDC Motor

5. Electronic Components:

5.1. Electronic Card Assembly:



Figure 5.1. Electronic Card Assembly

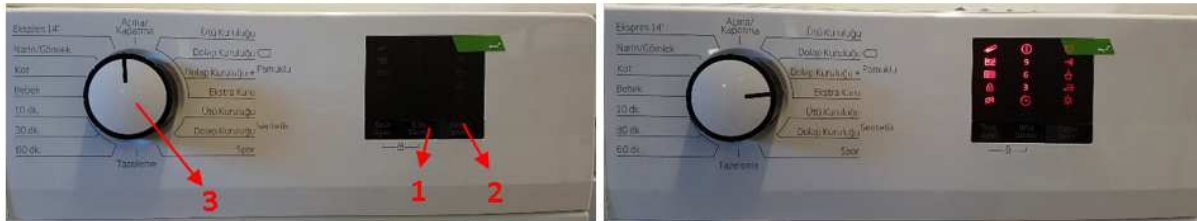


Electronic Card (Mono Models)

BX Tumble dryers have electronic card assembly which shown above Picture. Firstly Electronic card is mounting the card holder, then card holder cover is attached to the electronic card assembly.

6. Service Test Program BLED:

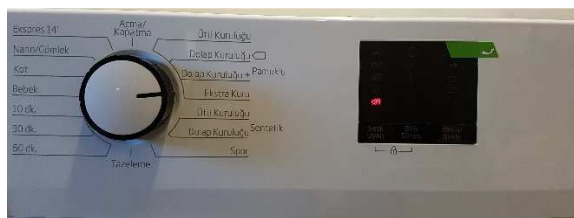
Step 1: Press “Ending In(1)” and “Start/Pause(2)” button, then turn the “On/Off Program Selection Knob(3)” 90 degrees in clockwise direction within 2 seconds. These combination will start service test program and all leds blink. In this program “Start/Pause” button is used to pass other steps. Blinking of “Sound Warning Led” means that the step is OK and it is allowed to pass to the next step.



Step 2: “Start/Pause” button is pressed. All leds light on and service test program waits another “Start/Pause” press.

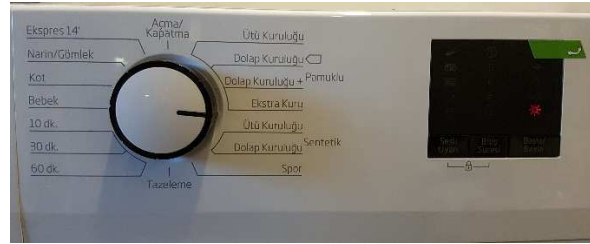


Step 3: “Start/Pause” button is pressed. The door and heater NTC are checked in this step. If there is no short or open circuit sensation error, “Sound Warning Led” blinks and it is allowed to pass to next step.

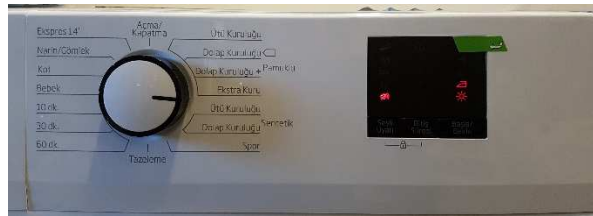


If NTC and voltage error occurs, “Sound Warning Led” does not blink, “Clean Condenser Led” blinks and it is not allowed to pass to the next step.

Step 4: “Start/Pause” button is pressed. “Drying Led” lights on. Compressor cooling fan starts to work. “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



Step 5: “Start/Pause” button is pressed. “Iron Drying Led” lights on. If the model is tank-up, the pump activates. If the socket of the overflow micro switch is not connected, “Tank Full Led” blinks. If it is connected, “Sound Warning Led” blinks and it is allowed to finish the service test program.



Important Note: If “Tank Full Led” blinks, the overflow micro switch and cables have to be checked.

Step 6: “Start/Pause” button is pressed. “Cupboard Drying Led” lights on. Motor rotates in clockwise direction. After 3 seconds, “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



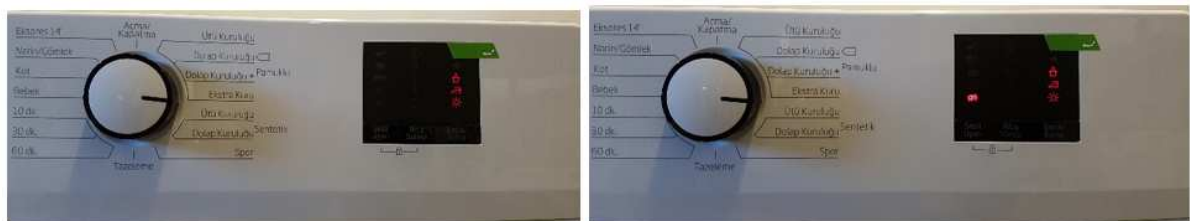
Step 7: “Start/Pause” button is pressed. Motor continues to rotate in clockwise direction. “Clean Filter Led” starts to blink for humidity sensor short circuit control. Open the door of tumble dryer and make the sensor short circuit by touching the sensor plate. If short circuit control of humidity sensor is OK, “Clean Filter Led” stops to blink, “Sound Warning Led” starts to blinks and it is allowed to pass to the next step.



Important Note: At the step 5, the sensor plate needs to be short circuit in 10 seconds, otherwise short circuit error occurs. In this situation below steps must be followed:

1. Dryer must be switched off and service test have to be restarted.
2. If the same error is seen in second trial, a problem may be in humidity sensor cables and sockets. Please check humidity sensor cables and sockets.
3. A problem may be in humidity sensor.
4. If there is not a problem in above parts, a problem may be in main board.

Step 8: “Start/Pause” button is pressed. All components stop. After 3 seconds, “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



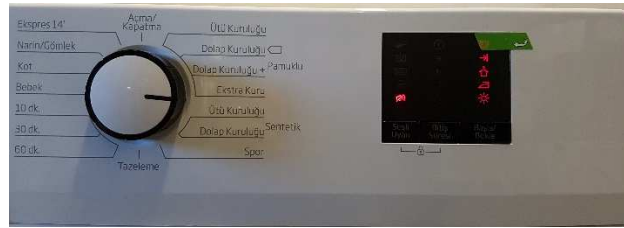
Step 9: “Start/Pause” button is pressed. Motor continues to rotate in clockwise direction. If humidity sensor is open circuit, “Sound Warning Led” starts to blink and it is allowed to pass to the next step. If the sensor is not open circuit, “Clean Filter Led” starts to blink and it cannot be passed to the next step till the sensor is open circuit.



Step 10: “Start/Pause” button is pressed. “End Led” lights on. Compressor starts to work. If the compressor NTC value reaches the 50-55 °C, “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



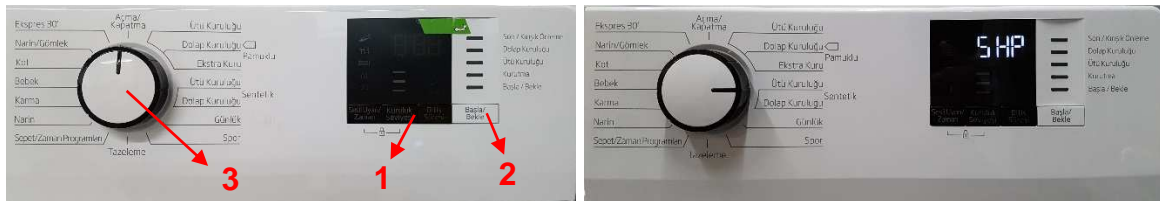
Step 11: “Start/Pause” button is pressed. “Anti-Creasing Led” lights on. Motor start to rotate in counter-clockwise direction. “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



Step 12: “Start/Pause” button is pressed. The service test program will be exited.

7. Service Test Program BLED:

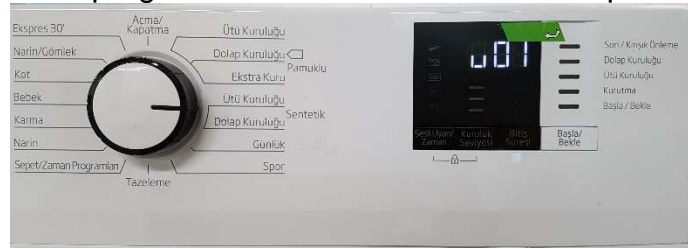
Step 1: Press “Dryness Level(1)” and “Start/Pause(2)” button, then turn the “On/Off Program Selection Knob(3)” 90 degrees in clockwise direction within 2 seconds. These combination will start service test program. In this program “Start/Pause” button is used to pass other steps. Blinking of “Sound Warning Led” means that the step is OK and it is allowed to pass to the next step.(SHP : Service Test – Heat Pump Type)



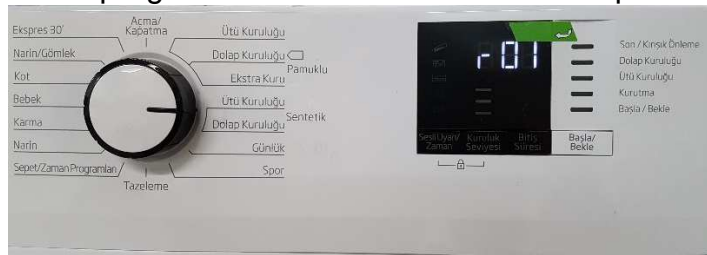
Step 2: “Start/Pause” button is pressed. All leds blink and service test program waits another “Start/Pause” press.



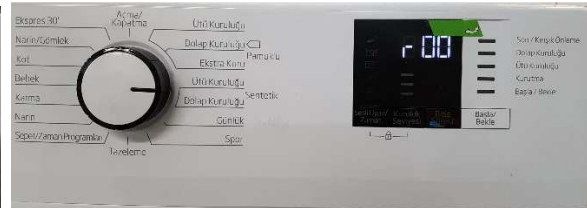
Step 3: “Start/Pause” button is pressed. Version of main software is shown on display and service test program waits another “Start/Pause”press.



Step 4: “Start/Pause” button is pressed. Revision of main software is shown on display and service test program waits another “Start/Pause”press.



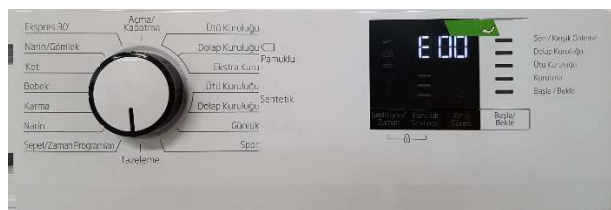
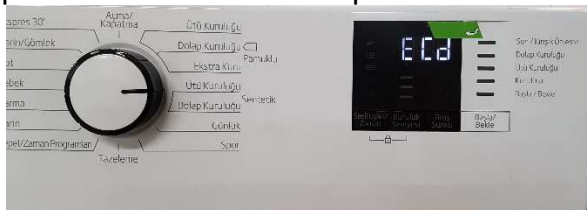
Step 5: “Start/Pause” button is pressed. Revision of parametric software and its number are sequentially shown on display and service test program waits another “Start/Pause”press.



Step 6: “Start/Pause” button is pressed. All leds light on and service test program waits another “Start/Pause”press.

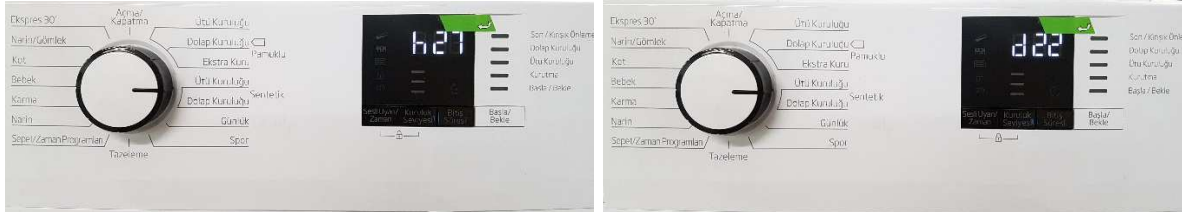


Step 7: “Start/Pause” button is pressed. The last error codes are shown on display. In this section, this error codes could be deleted by service technician with “On/Off Program Selection Knob”. Knob have to get position 180 degree according to initial position as shown in the picture.



Step 8: “Start/Pause” button is pressed. The door and compressor NTC are checked in this step. If there is no short or open circuit sensation error, door NTC value and compressor NTC value are sequentially shown on display and it is allowed to pass to next step.

Door NTC Open Circuit : “d:OC” is shown on display
Door NTC Short Circuit : “d:SC” is shown on display
Compressor NTC Open Circuit : “h:OC” is shown on display
Compressor NTC Short Circuit : “h:SC” is shown on display



If NTC and voltage error occurs, it is not allowed to pass to the next step.

Step 9: “Start/Pause” button is pressed. “F On” appears on display. The compressor cooling fan starts to work. “Sound Warning Led” starts to blink and it is allowed to pass to the next step.

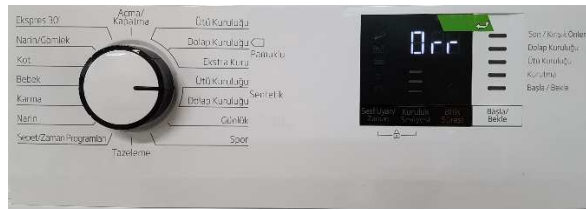


Step 10: “Start/Pause” button is pressed. “P on” appears on display. The pump activates. If the socket of the overflow micro switch is not connected, “Tank Full Led” blinks. If it is connected, “Sound Warning Led” blinks and it is allowed to pass to the next step.

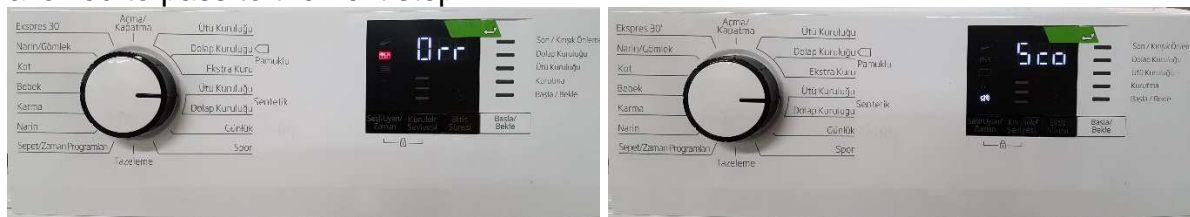


Important Note: If “Tank Full Led” blinks, the overflow micro switch and cables have to be checked.

Step 11: “Start/Pause” button is pressed. “Drr” appears on display. Motor rotates in clockwise direction. After 3 seconds, “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



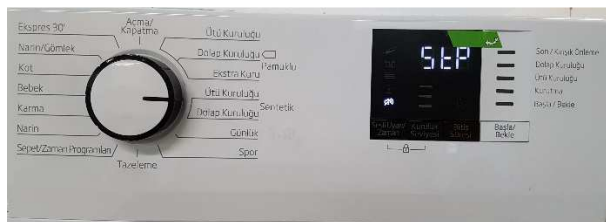
Step 12: “Start/Pause” button is pressed. Motor continues to rotate in clockwise direction. “Clean Filter Led” starts to blink for humidity sensor short circuit control. Open the door of tumble dryer and make the sensor short circuit by touching the sensor plate. If short circuit control of humidity sensor is OK, “Clean Filter Led” stops to blink, “Sound Warning Led” starts to blinks, “Sco” appears on display and it is allowed to pass to the next step.



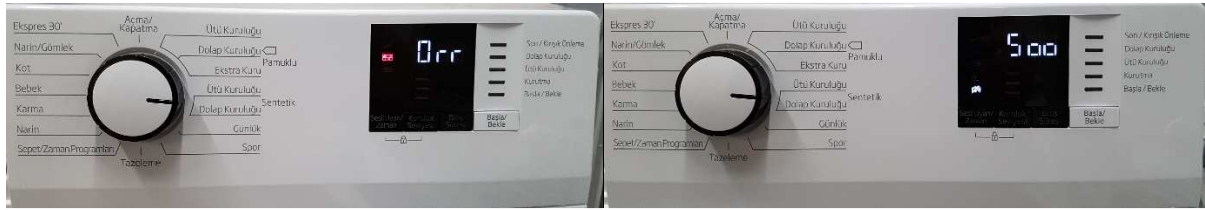
Important Note: At the step 10, the sensor plate needs to be short circuit in 10 seconds, otherwise short circuit error occurs. If error occurs “ScE” appears on display. In this situation below steps must be followed:

1. Dryer must be switched off and service test have to be restarted.
2. If the same error is seen in second trial, a problem may be in humidity sensor cables and sockets. Please check humidity sensor cables and sockets.
3. A problem may be in humidity sensor.
4. If there is not a problem in above parts, a problem may be in main board.

Step 13: “Start/Pause” button is pressed. All components stop. “StP” appears on display. After 3 seconds, “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



Step 14: “Start/Pause” button is pressed. “Drr” appears on display. Motor starts to rotate in clockwise direction. If humidity sensor is open circuit, “Sound Warning Led” starts to blink and it is allowed to pass to the next step. If the sensor is not open circuit, “Clean Filter Led” starts to blink and it cannot be passed to the next step till the sensor is open circuit.



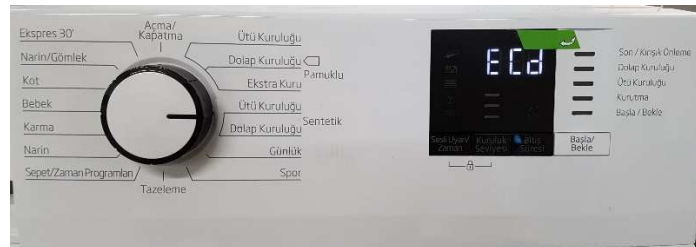
Step 15: “Start/Pause” button is pressed. “Crn” appears on display. Compressor starts to work. After that, compressor NTC value appears on display and the value starts to increase. If the compressor NTC value reaches the 50-55 °C, “C on” appears on display, “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



Step 16: “Start/Pause” button is pressed, “rLL” appears on display. Motor starts to rotate in counter - clockwise direction. “Sound Warning Led” starts to blink and it is allowed to pass to the next step.



Step 17: “Start/Pause” button is pressed. The last error codes are shown on display. In this step, error codes cannot be deleted. It is allowed to finish the service test program.



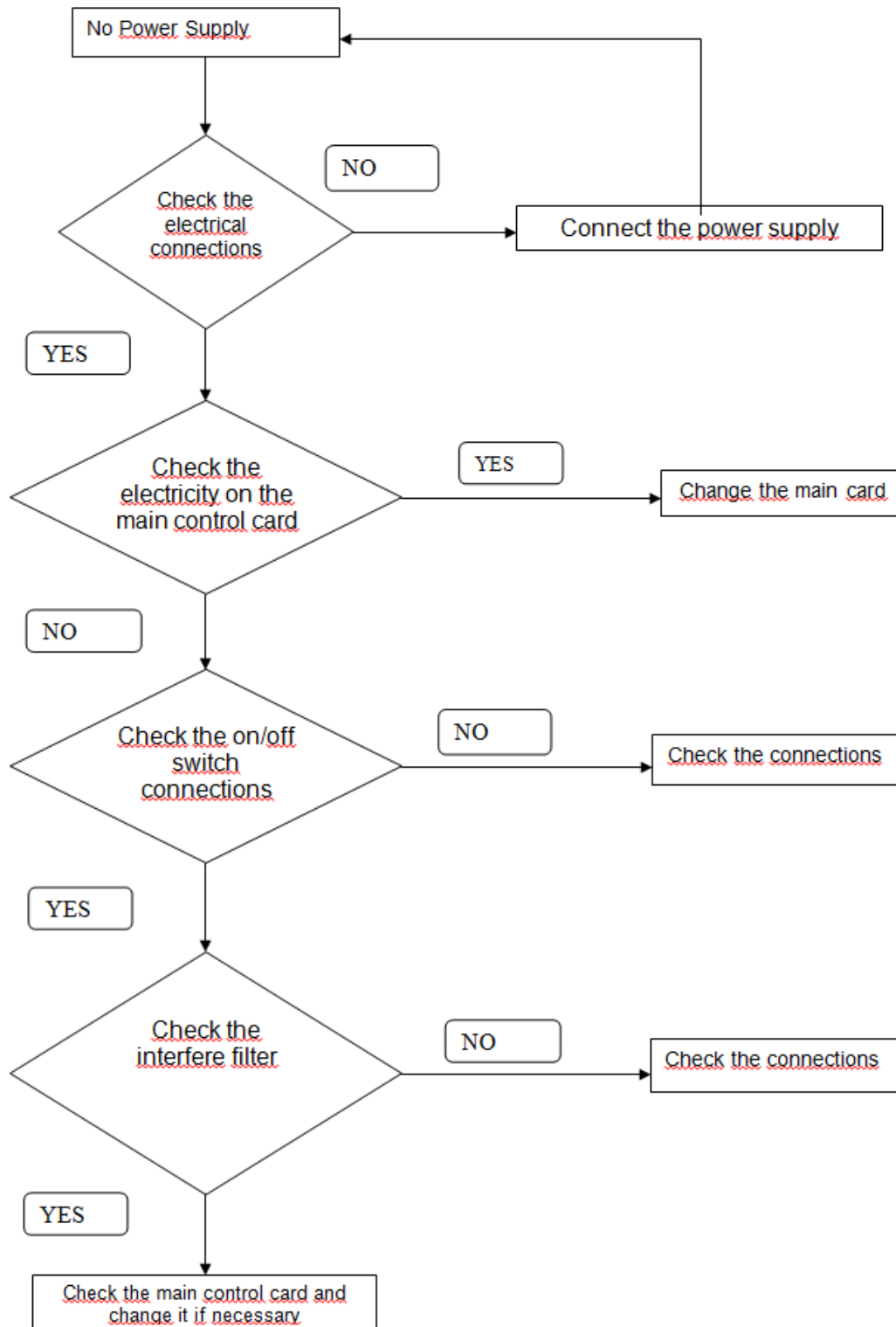
Step 18: “Start/Pause” button is pressed. The service test program will be exited.

Error Codes:

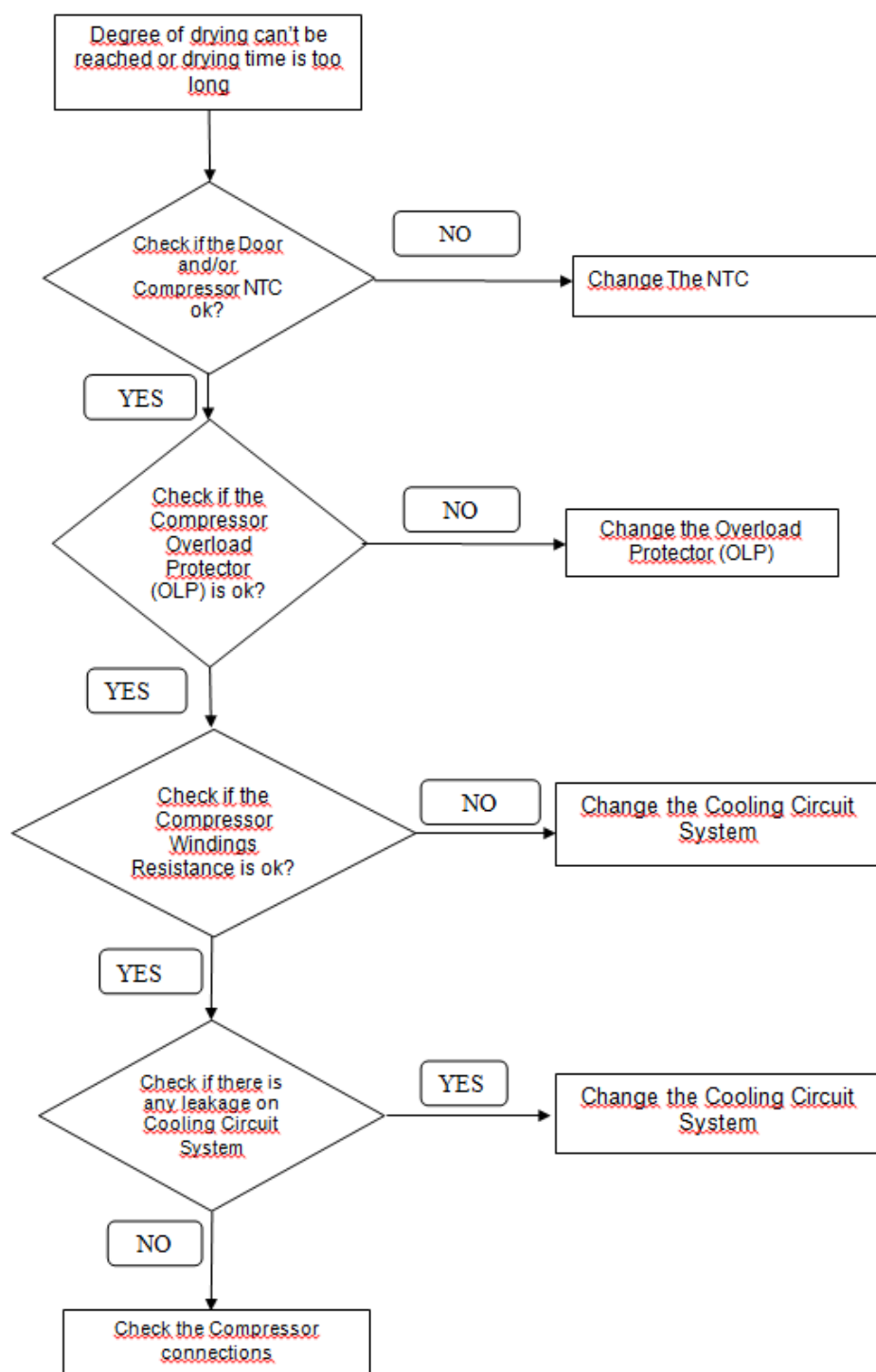
Error Codes Definition
E 00 : No error
E 01 : Door Opened While Running
E 02 : Tank Full
E 03 : Drum Empty
E 04 : Start While Door Open
E 05 : Maximum Time
E 06 : Door NTC: Open Circuit
E 07 : Door NTC: Short Circuit
E 08 : Door NTC: Overheat
E 09 : Compressor NTC: Open Circuit
E 10 : Compressor NTC: Short Circuit
E 11 : Compressor NTC: Overheat
E 12 : Belt Broken
E 13 : Filter Blocked
E 14 :
E 15 :
E 16 : Low Voltage (Lower than 165V)
E 17 : High Voltage (Higher than 265V)
E 18 : BLDC Communication Error (for tumble dryer with BLDC motor)
E 19 : BLDC System Pause (for tumble dryer with BLDC motor)
E 20 : BLDC RPM Tolerance (for tumble dryer with BLDC motor)
E 21 : BLDC Minimum RPM (for tumble dryer with BLDC motor)
E 22 : BLDC Reenergized (for tumble dryer with BLDC motor)
E 23 : BLDC Abnormal Voltage (for tumble dryer with BLDC motor)
E 24 : BLDC Overheat (for tumble dryer with BLDC motor)
E 25 : BLDC Locked Rotor (for tumble dryer with BLDC motor)
E 26 : BLDC Overspeed (for tumble dryer with BLDC motor)
E 27 : BLDC Overcurrent (for tumble dryer with BLDC motor)
E 31 : Combined Filter Not Mounted (for combined filter models)

8. Faults Algorithms:

8.1. Machine Does Not Work:

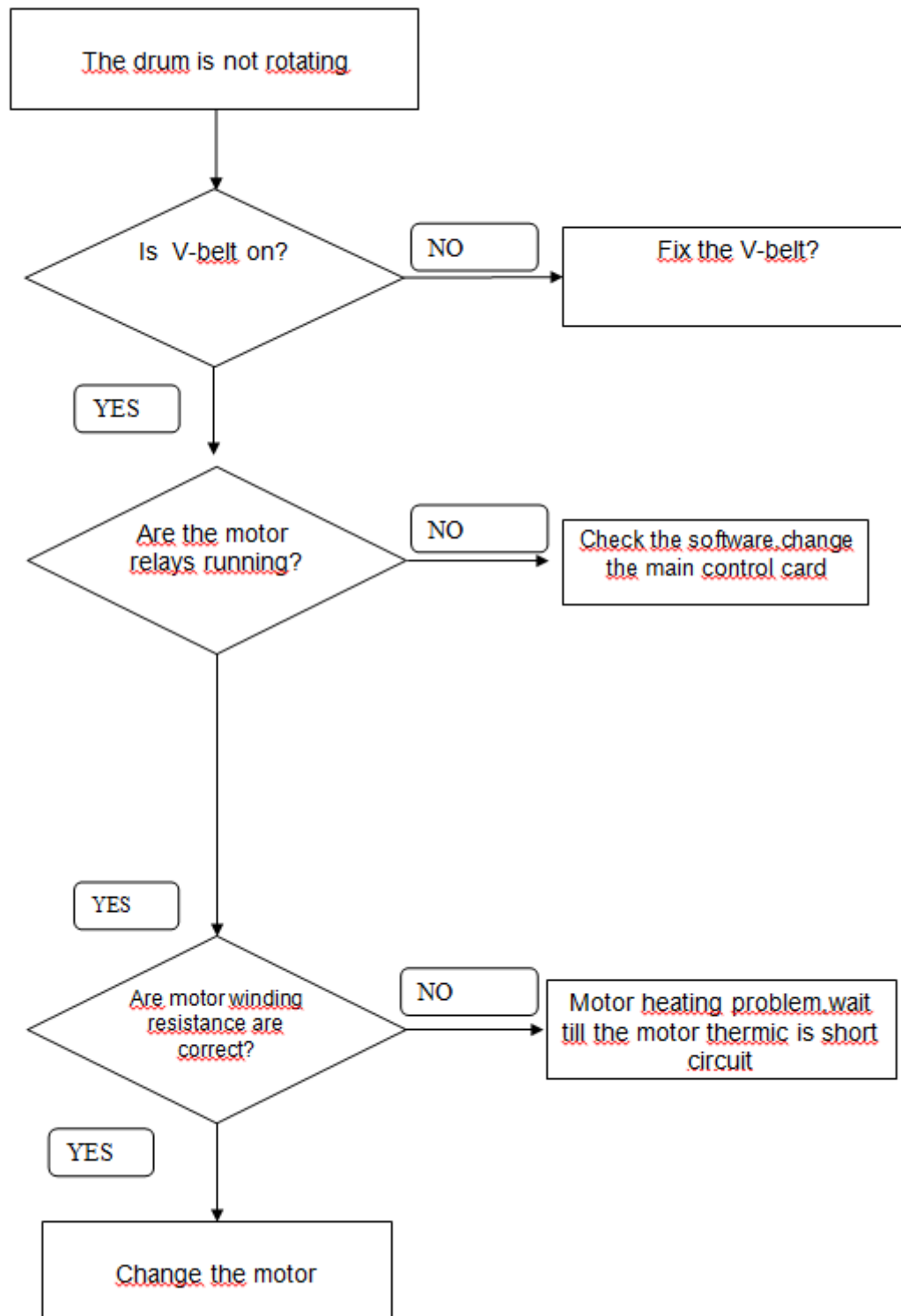


8.2. Degree of Drying can not be reached or drying time is too long:

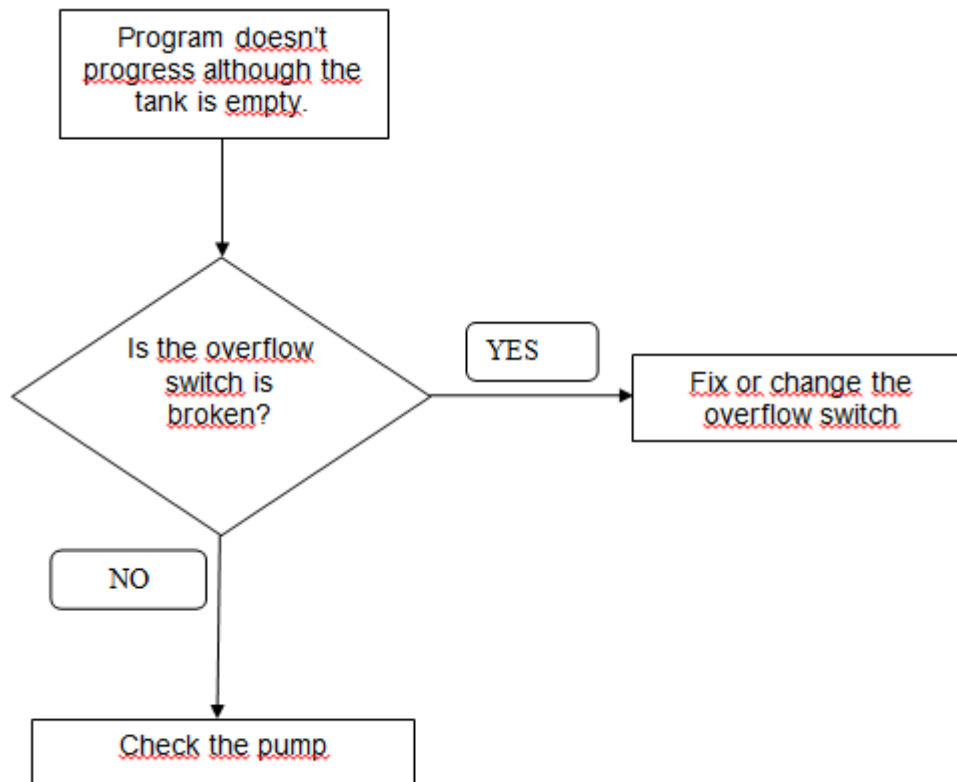


Cooling circuit system includes the compressor, copper tubes and the heat exchangers (condenser and evaporator)

8.3. Drum is not rotating



8.4. Program does not progress although the tank is empty



9. Dismounting Details:

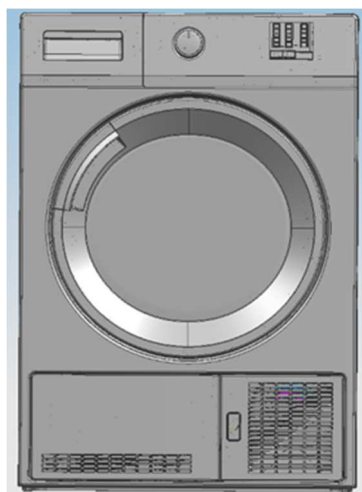


Figure 13.1. General View

9.1. Top Plate:

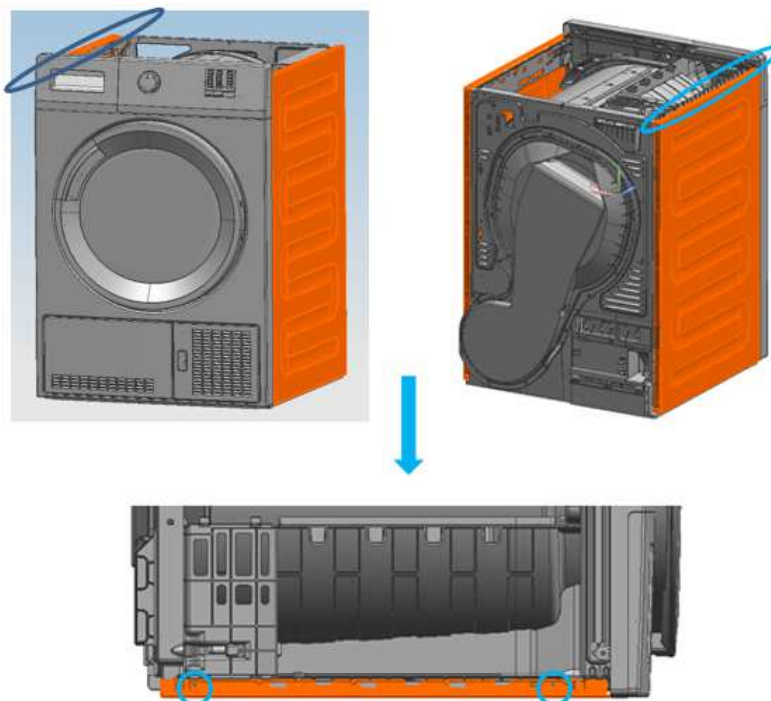


Figure 13.2. Disassembling the top plate

- Unscrew the top plate.
- Pull the top plate towards the rear of the machine.

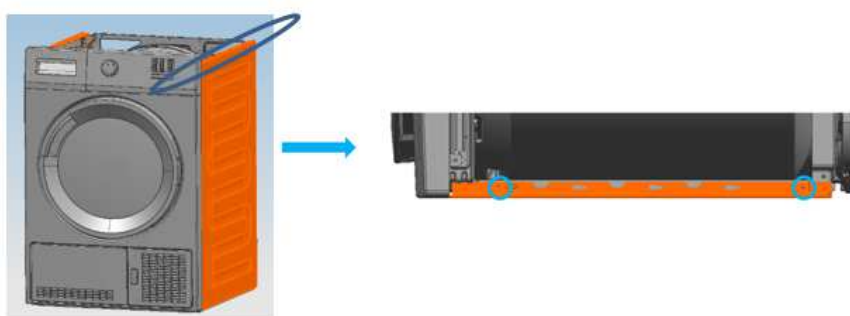
9.2. Side Panel:

4.2.1. Side Panel / Side Support Bracket:



*Figure 9.2. Screws between the side panel and side support bracket
(Water Tank Side)*

- Remove the screws between the side panel and side support bracket.



*Figure 9.3. Screws between the side panel and side support bracket
(Drum Side)*

- Remove the screws between the side panel and side support bracket.

4.2.2. Side Panel / Rear Panel:

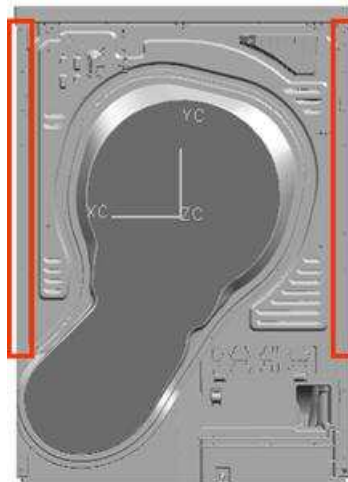


Figure 13.4. Connections between the side panel and the rear panel at the back side of the dryer

- Remove the screws as highlighted in the figure between the side panel and the rear panel.

4.2.3. Side Panel / Plastic Chassis Assembly:

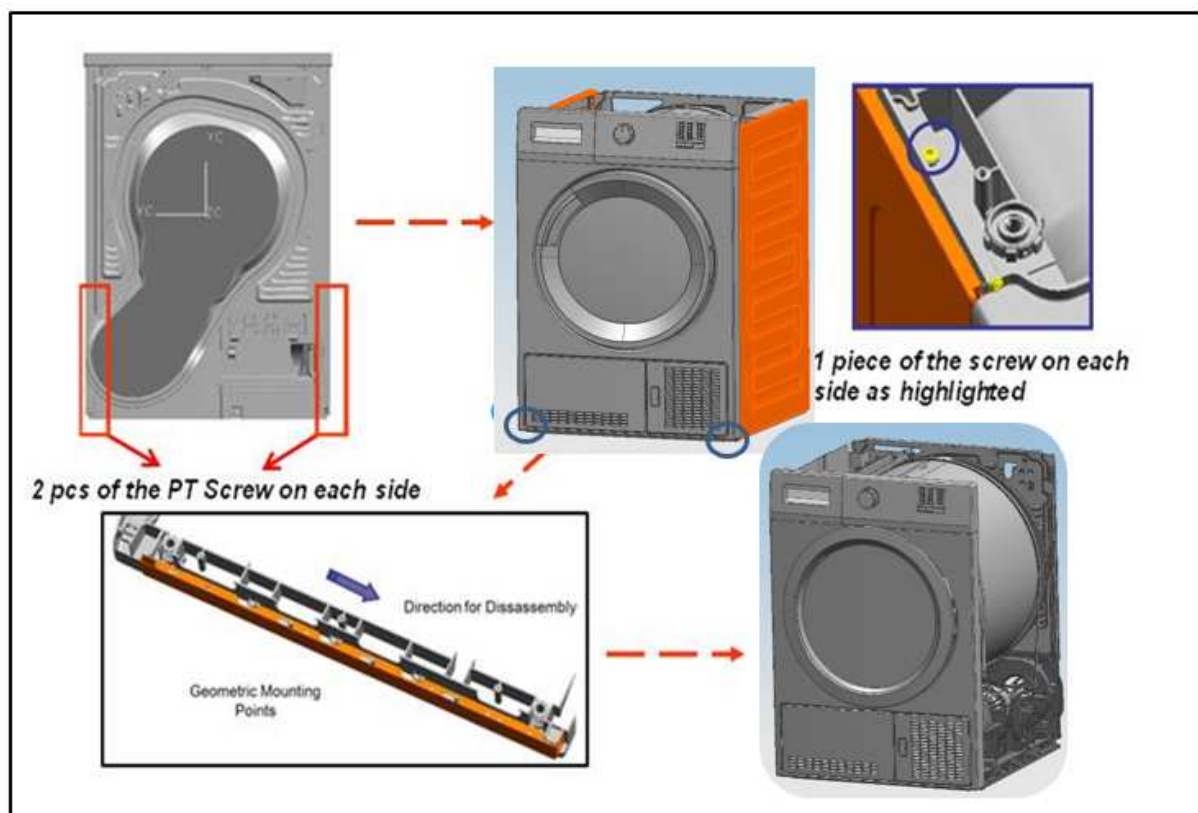


Figure 13.5. Connections between the side panel and the plastic chassis assembly

- Remove the 2 pieces of the PT screw on each side of the dryer as highlighted in the figure between the side panel and the plastic chassis.
- Remove the 1 piece of the screw on each bottom side of the dryer as highlighted in the figure.
- Disassemble the side panels from the geometric mounting points through the direction as shown in the figure.

4.2.4. Side Panel and Front Panel Connection:

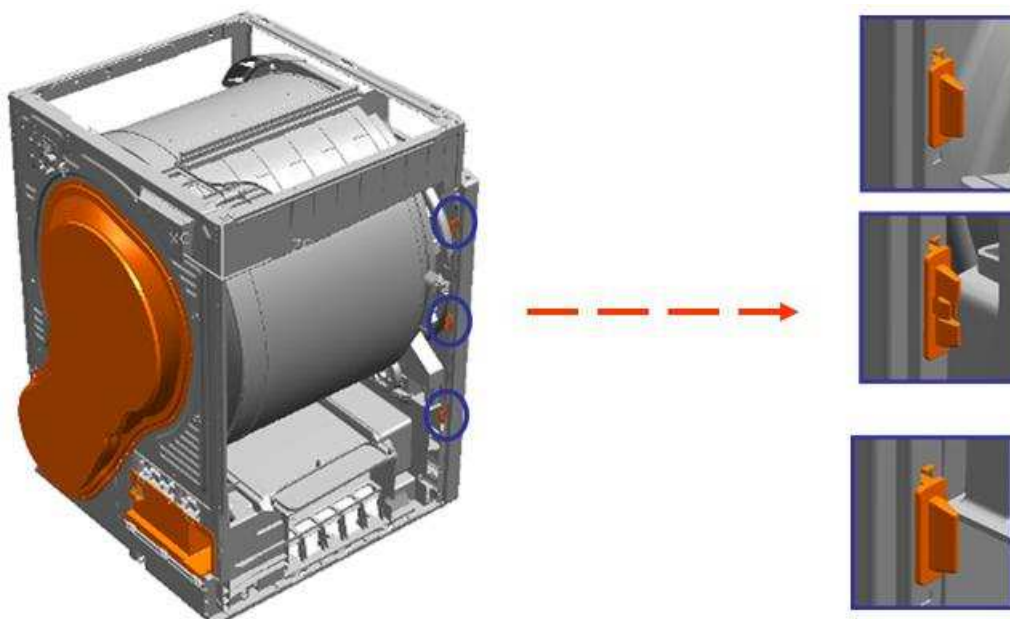


Figure 9.6. Coincident points between the front panel and side panel

- Dismount the coincident points between the front panel and the side panels.

9.3. Plastic Cover Mounting Points:

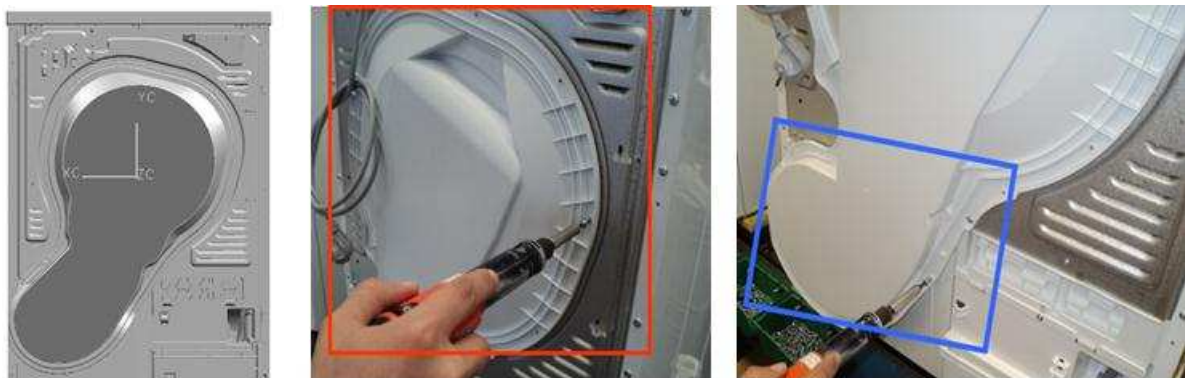


Figure 9.7. Connection points between the plastic cover - rear panel and plastic chassis

- Remove the 10 pieces of sheet screws between the plastic rear cover and the rear panel.
- Remove the 8 pieces of PT screws between the plastic rear cover and the plastic chassis.

9.4. Control Panel Assembly:

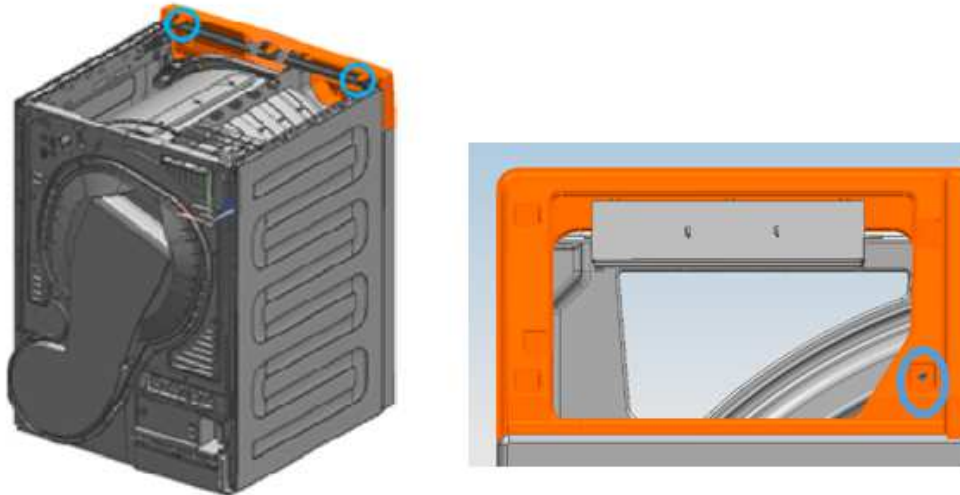


Figure 9.9. Connection points between Control Panel and Tank Housing

Figure 9.8. Connection points between Front Panel Assembly and Support Sheet of Front Panel

- Remove the 3 pieces of sheet screws between the front panel and support sheet of the front panel.
- Remove the PT screws between the control panel and tank housing.

9.5. Support Sheet Brackets:

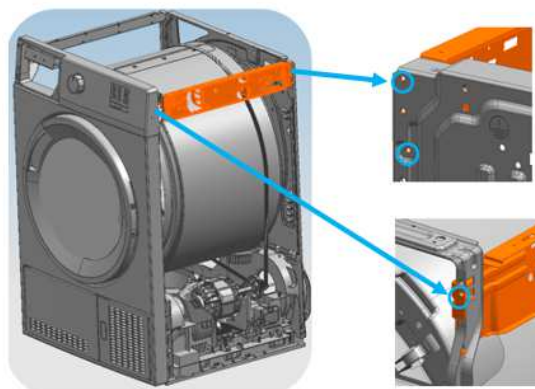


Figure 9.10. Connection points for Support Sheet Brackets on Right Hand Side (RHS)

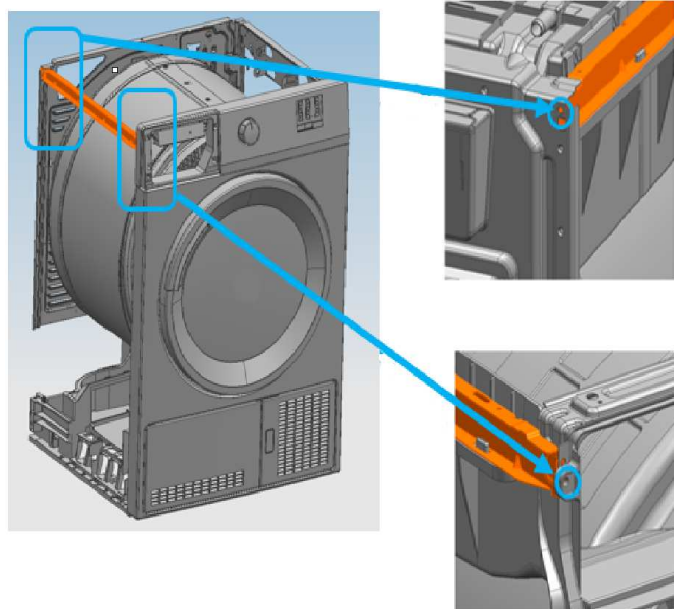


Figure 9.11. Connection points for Support Sheet Brackets on Left Hand Side (LHS)

- Remove the screws on the connection points of support sheet brackets on left and the right hand sides of the dryer.

9.6. Rear Panel Assembly

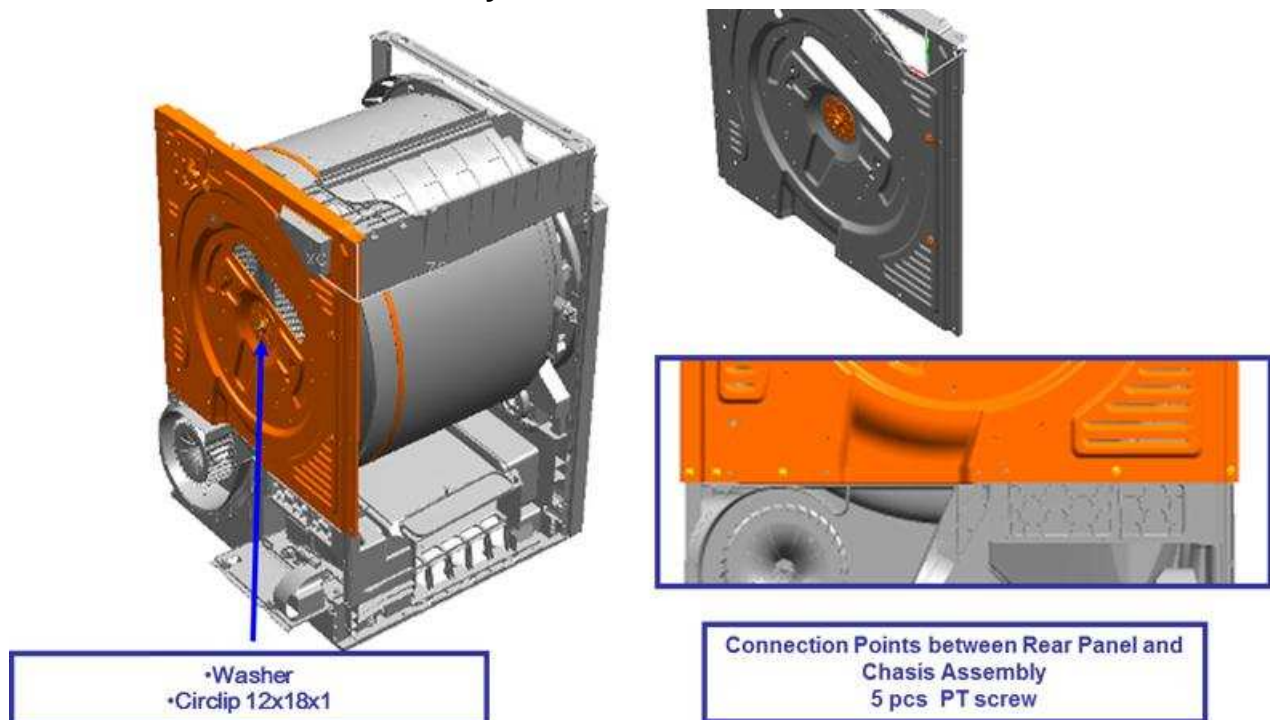


Figure 13.12. Connection points between Rear Panel and Chassis Assembly

Remove 5 pieces PT screws between the rear panel and the chassis assembly.

- Disassemble the washer and the circlip shown in the figure by the aid of a screwdriver.

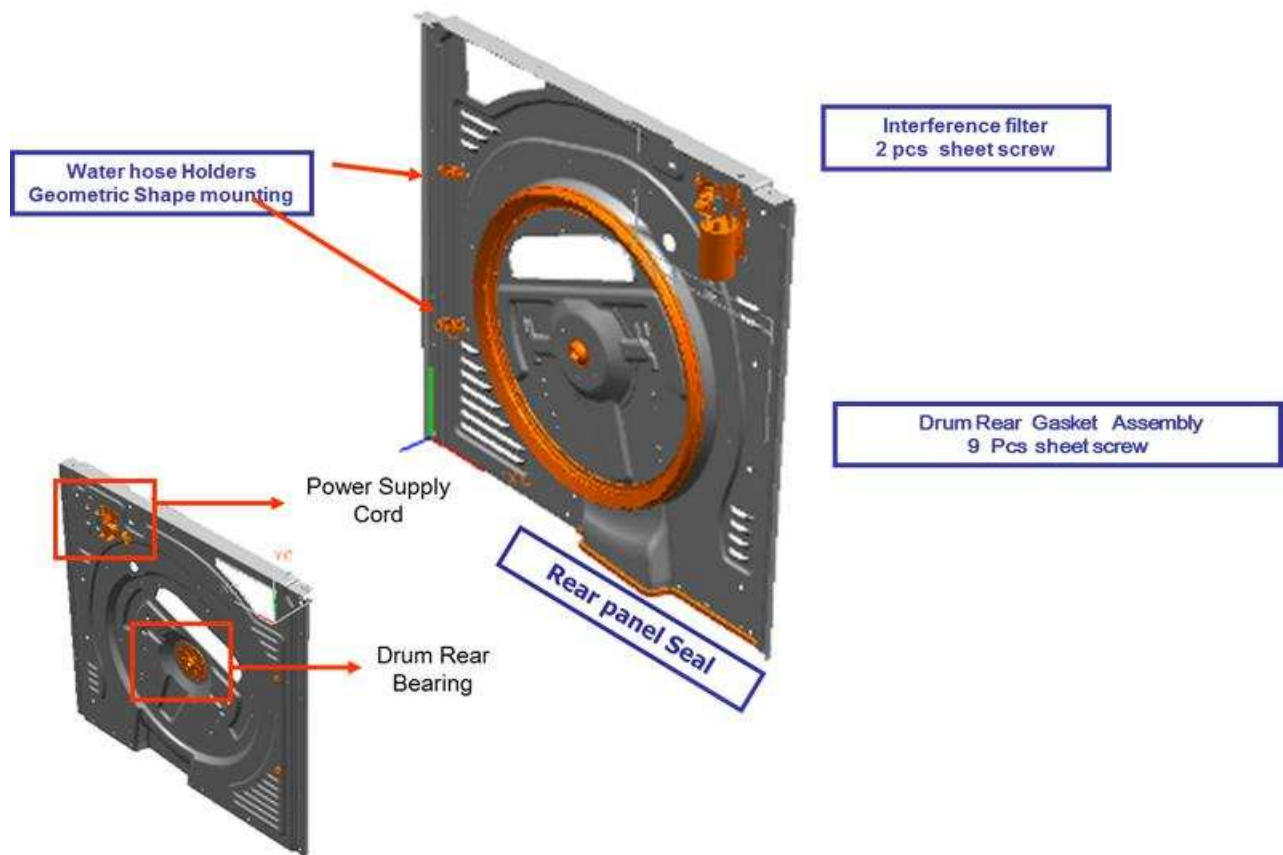


Figure 13.13. Sub-parts on the Rear Panel Assembly

- After removing the PT screws, washer and circlip, dismount the rear panel from the assembly by removing the hoses from the water hose holders located on the rear panel as shown in the figure. Sub-parts shown in the figure above are listed below:
 - Power Supply Cord
 - Drum Rear Bearing
 - Drum Rear Gasket Assembly
 - Interference Filter
 - Water Hose Holders

9.7. Drum Assembly:

- To disassemble the drum assembly:
 - Lift up the drum on the highlighted direction.
 - Pull towards the drum to the backside and remove from the dryer body.
 - By this movement, any interaction between the drum and the plastic chassis is prevented.

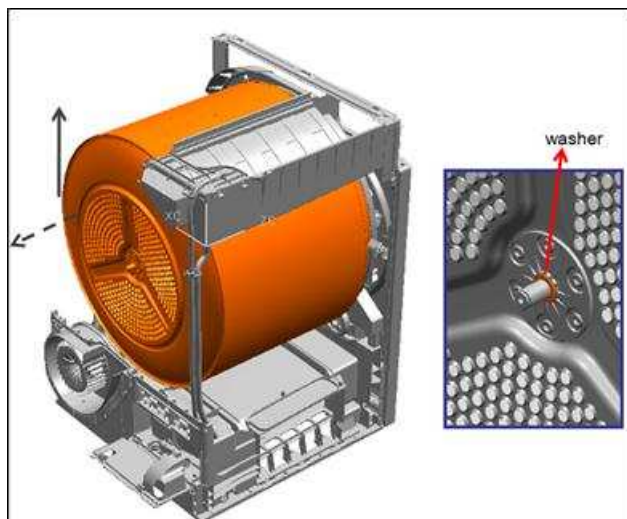


Figure 13.14. Drum Disassembly

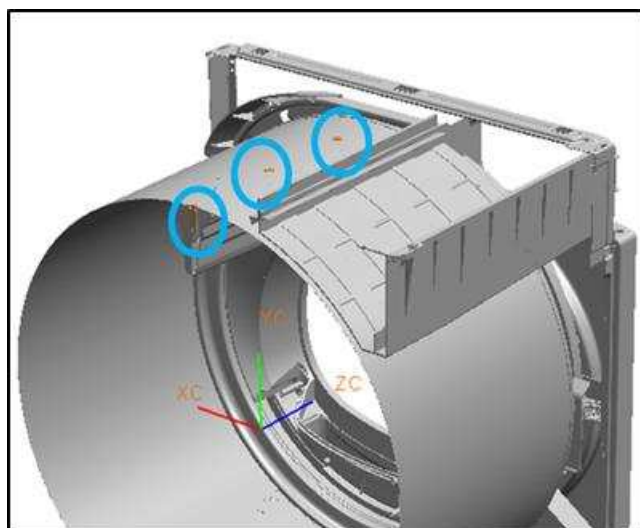


Figure 13.15. Drum Pedals

- Remove the 3 PT screws for each of the drum pedals to dismount them.

9.8. Control Panel Support Bracket:

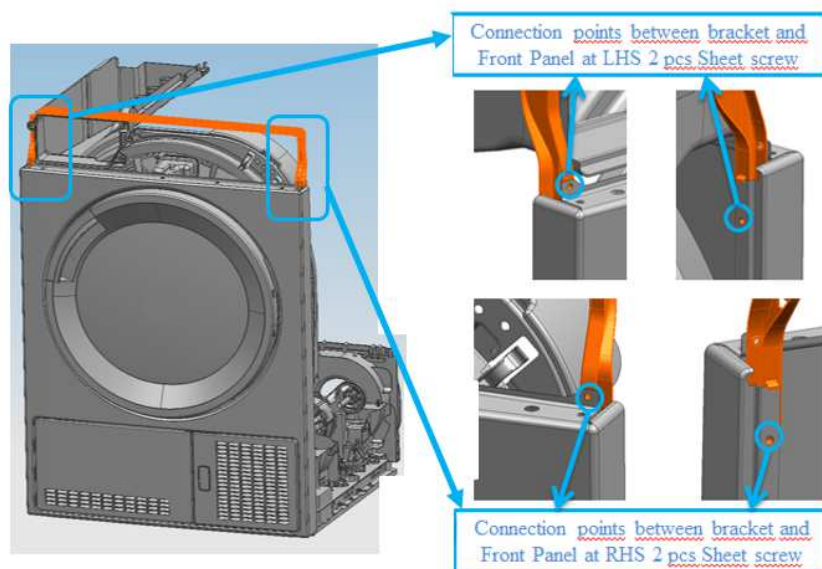


Figure 13.16. Control Panel Support Bracket Disassembly

9.9. Water Tank Housing:

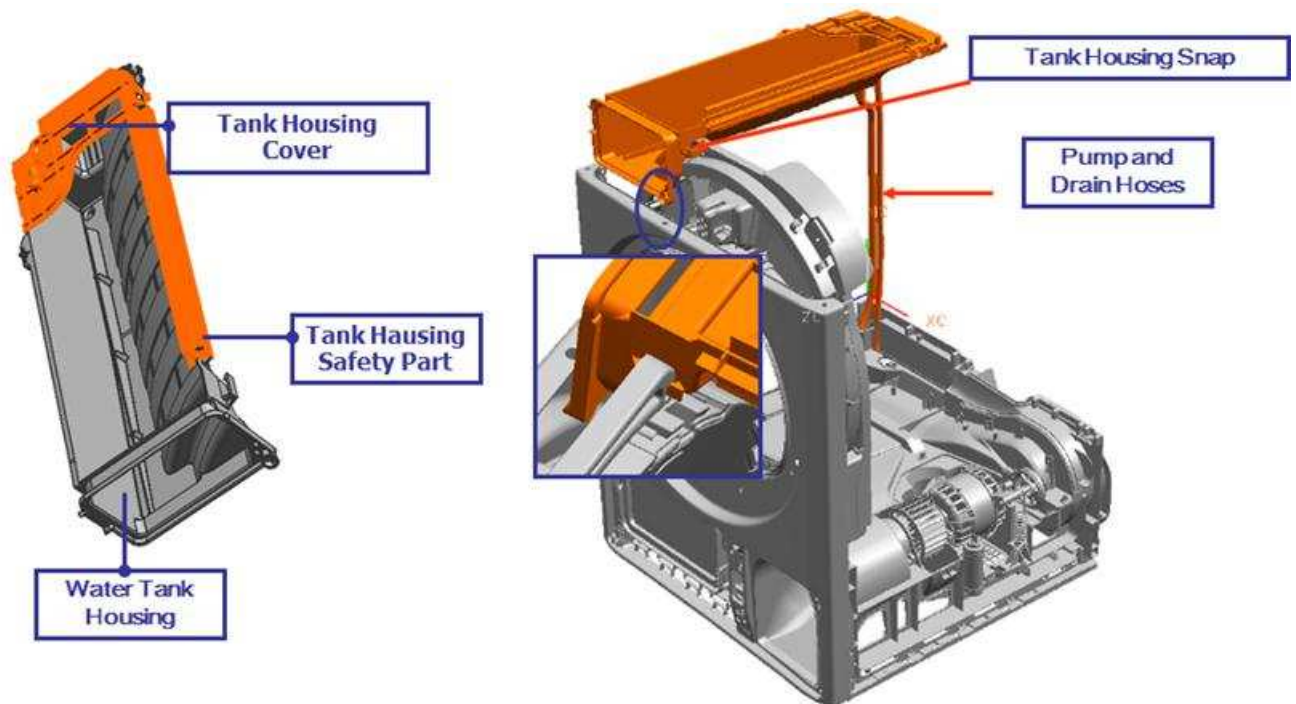


Figure 13.17. Water Tank Housing

- Disassemble the water tank housing due to the details mentioned above figure.
- Water tank housing consists of hose holders, tank housing safety part and the tank housing cover.

9.10. Microswitch and Pump:

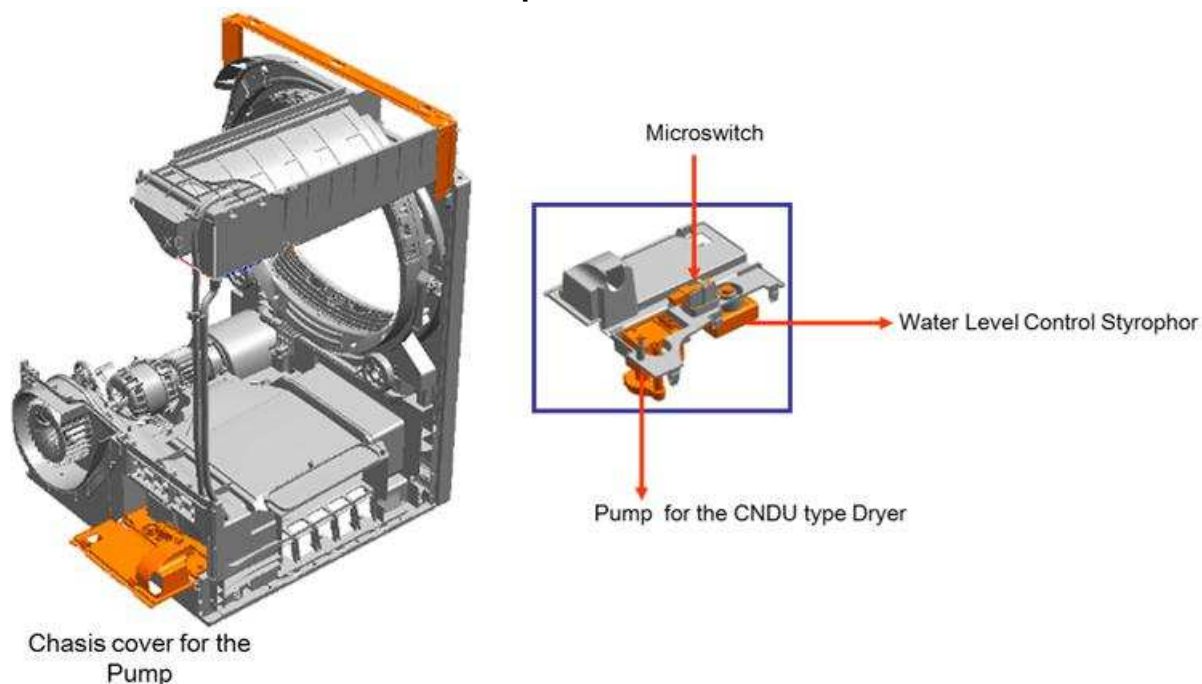


Figure 13.38. Disassembling the pump and the microswitch

9.11. Kickplates:

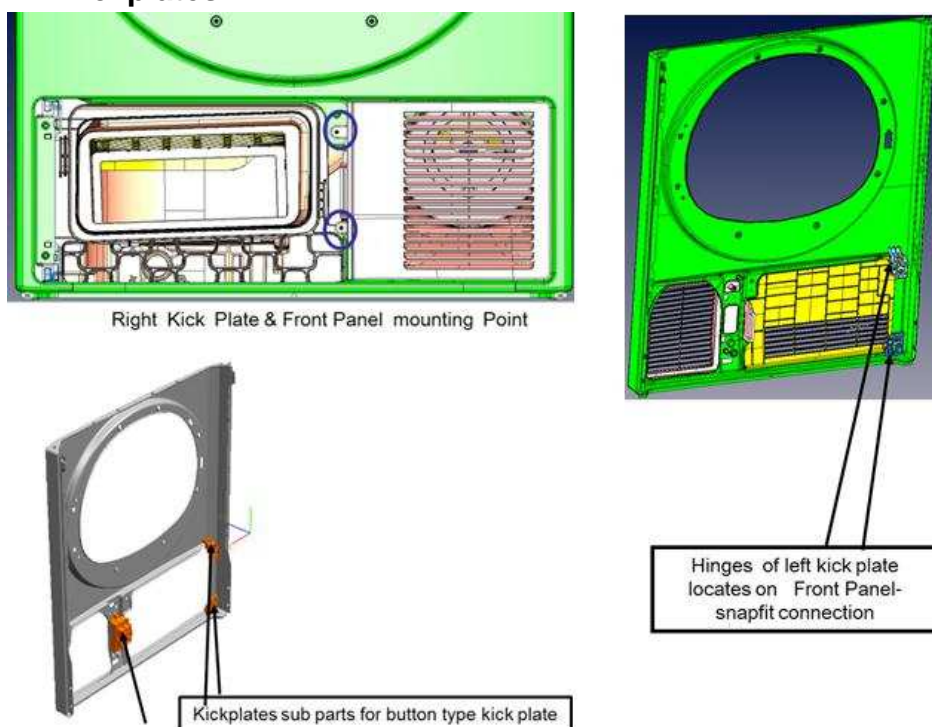


Figure 13.39. Disassembling the kickplate

9.12. Front Panel:

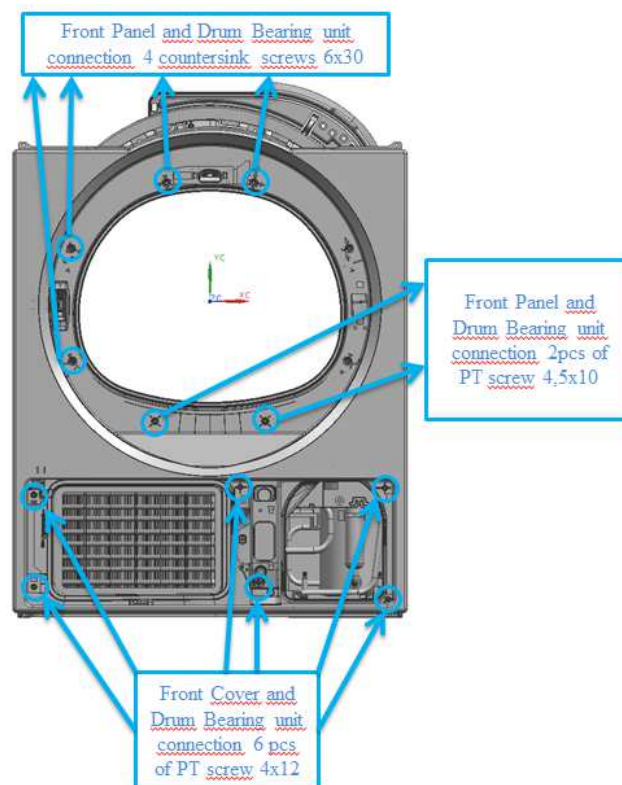


Figure 13.40. Disassembling the front panel

- After disassembling the kickplates, front panel can be dismounted from the dryer by removing the screws shown in the figure above.

9.13. Drum Front Bearing Unit:

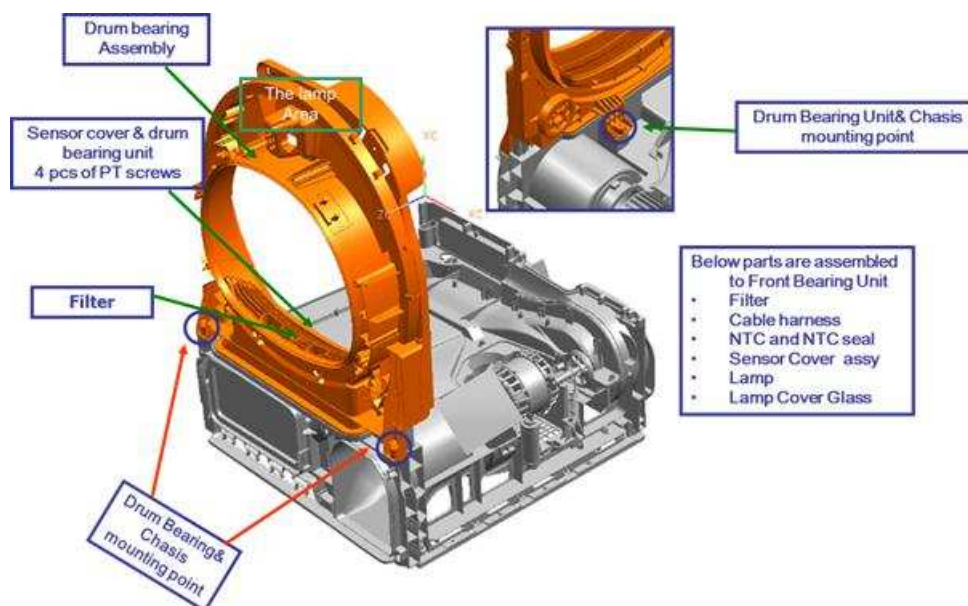
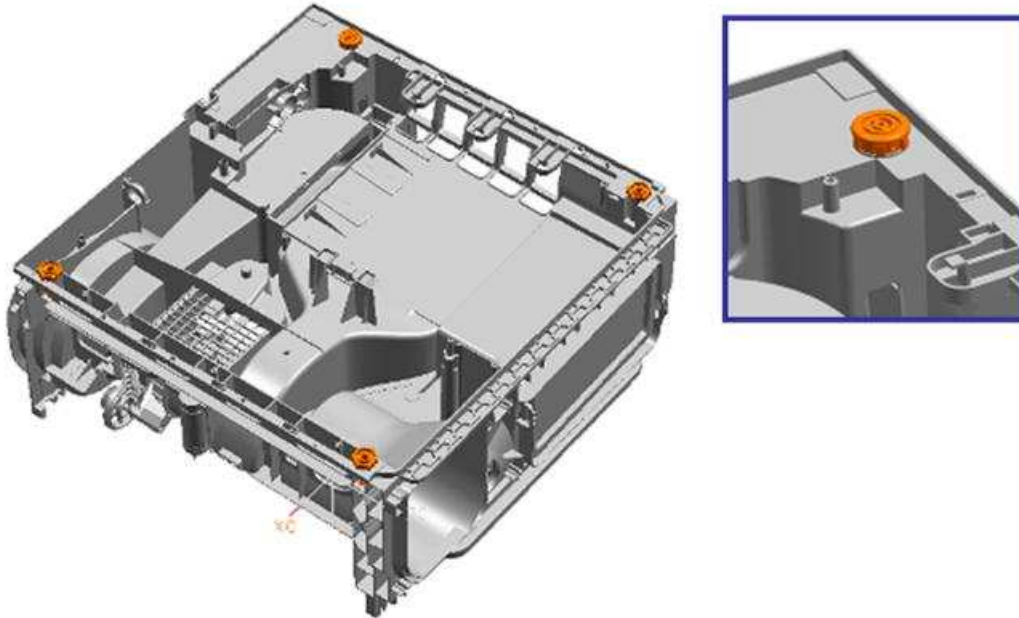


Figure 13.41. Connections of drum front bearing housing

- Disassemble the front bearing housing from the mounting points shown in the figure above.

9.14. Adjustable Feet:



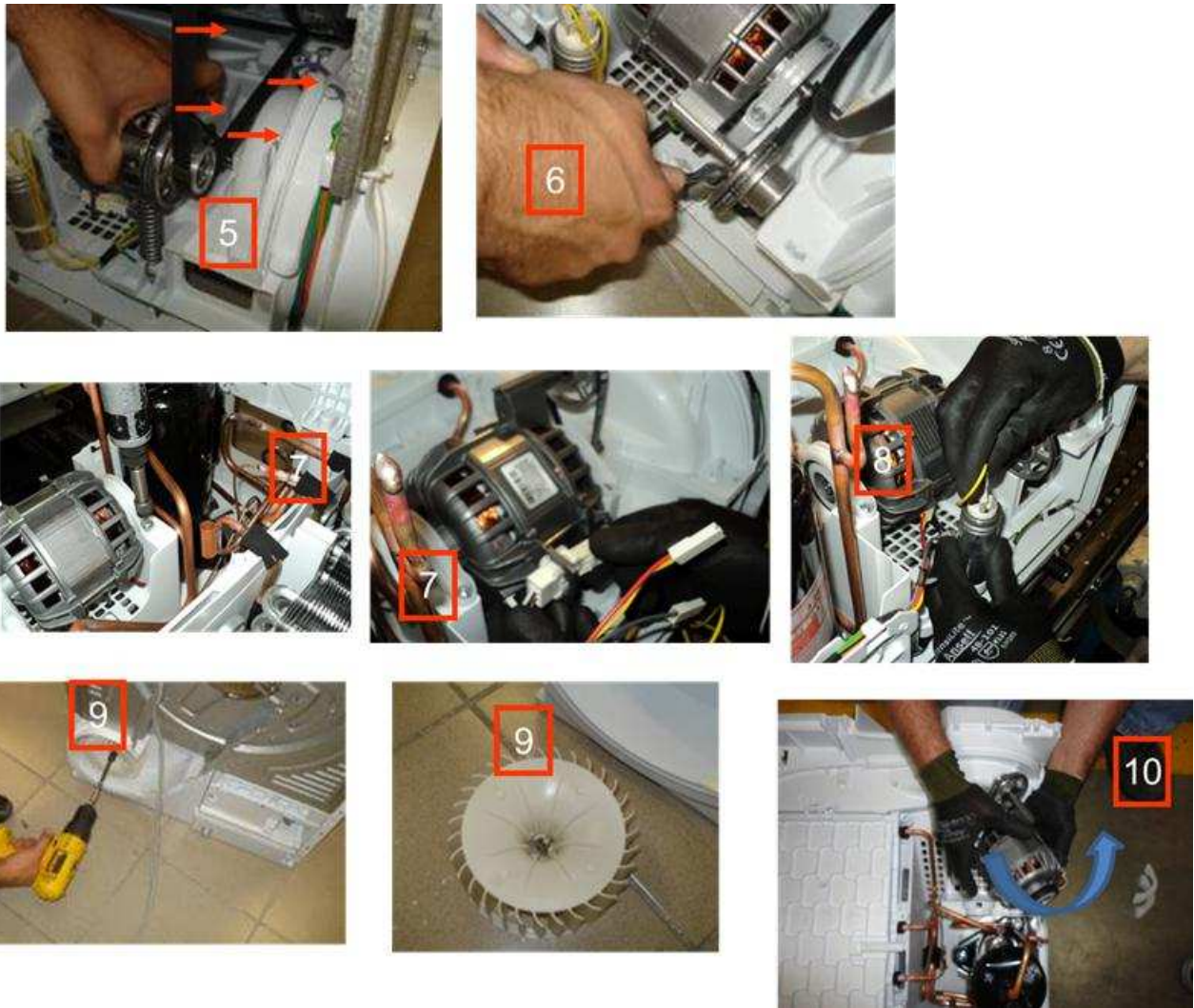
- 4 adjustable feet and their rubber parts are mounted underneath the plastic chassis as shown in the figure above.

9. Service Details for the Components:

9.1. Service Details of the Motor Unit:



- Remove the top plate.
- Remove the rear plastic cover (2).
- Remove the side panel on RHS (3).



- Force the motor assembly to turn it on clockwise direction to loose V-belt (5).
- Take out the tension spring (6).
- Unscrew the 4 pcs of the PT screw as shown on the picture and take out the plastic brackets (7).
- Dismount the motor socket (7).
- Dismount the both capacitors (8).
- Take out the process fan dismounting the mounted nut (9).
- Take out the motor as shown on the picture (10). It is important to take out motor assy through highlighted direction. This will prevent Heat Pump Tube assembly from any impact and damage.

9.2. Service Details of Drum Assembly:



- Remove the top plate (1).
- Remove the side panels on each side (2).
- Remove the rear Plastic Cover (3).
- Remove the plugs and the cables of interference filter (5).



- Take out the bracelets on the main cable harness path (6).
- Remove the drum bearing prevention part (8).
- Remove the circlip and nut as highlighted on picture (9).
- Disassemble hoses (10).

- Drum assembly lifted up direction and pull back slightly (11).



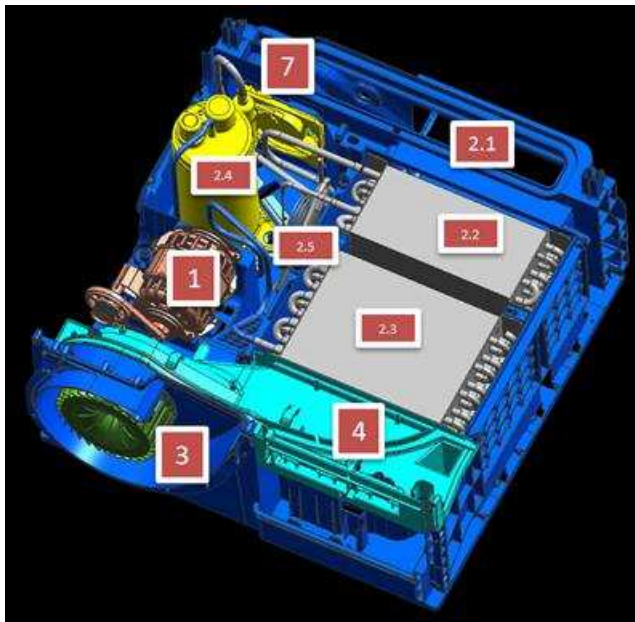
- To re-assemble the drum assy. to the dryer properly, the above pictures should be taken into account.

9.3. Service Details of Door NTC:



- Open left kickplate with or without button.
- Remove the screw on the right kickplate.
- Take out the filter.
- Take out the NTC as shown on picture.

9.4. Base Parts Inside the Plastic Chassis:



1. Motor Assembly
2. Assembly of HP System with Plastic Chassis
 1. Bottom plastic Chasis
 2. Heat Exchanger-Evaparator
 3. Heat Exchanger-Condenser
 4. Compresor Assy.
 5. Tube Assy.
 6. Plastic Cover
3. Process Fan
4. Plastic Air Guiding Part
5. Capacitors
6. Cable Harness
7. Cooling fan of the compressor

9.5. Service Details of Heat Pump System with Plastic Chassis:



- Take out the process fan dismounting the nut and bolt (1)
- Dismount both capacitors unplugging of their sockets (2)
- Unscrew 4 pcs of the PT screws and dismount the plastic brackets (3)
- Disassembly of motor part towards to highlighted direction avoiding any damage possibility on welded tube assembly. Disassembly direction of motor assy. is important interms of preventing tube assembly from any impact (4)



- Remove the highlighted parts respectively which are located in front of the compressor cooling fan (5).
- Unscrew the 2 pcs of PT screw which mounts the compressor cooling fan to the plastic chassis (6).
- Unplug the socket connection of the cooling fan to dismount it from the assembly of HP System (6).
- Change the new assembly of HP system with plastic chassis (7).
- Service user should check the packed assembly of HP system with plastic chassis in terms of including all parts referencing spare part list.
- Assemble each part reversibly as ordered below:
 - Compressor cooling fan (pay attention to assembly direction of part, see picture 6)
 - Highlighted parts (see picture 5)
 - Motor assembly
 - Pay attention to direction of the positioning on Plastic Chasis (Assembly direction of motor assy. is important in terms of preventing tube assembly from any impact (8))



- Assemble plastic brackets (mounting direction of the bracelets is important, see pictures (9)(10))



This side should be at motor side



- Capacitors:
 - Pay attention types of the capacitors (Bigger capacitive capacitor should be at compressor side)
 - Harness



- Cable connection of compressor (Grey cable is at S; red cable is at R; cable of thermic is at C)



Compressor Cable Connection of HP with Energy Classes of A+/A++ (A-50%)/A+++



Compressor Cable Connection of HP with Energy Classes of A++ (A-60%)

- Assemble each part & Assembly reversibly as ordered below:
 - Process Fan
 - Front Bearing Assembly
 - Pay attention to the harness
 - Front panel
 - Door NTC
 - Pump & Microswitch
 - Kick plates
 - Control Panel
 - Front Door Assembly

9.6. Service Details of Pump and Microswitch:



- Remove the highlighted screw.
- Open the cover with pushing snap-fit.
- Remove the highlighted hose.
- It is possible to apply service on microswitch parts on this level.
- It needs to completely remove pump cover to service the pump and water level part.

9.7. Service Details of Control Panel and Drum Lamp:



- Remove the top plate.
- Remove the 3 pcs of the screw that highlighted on picture.
- Remove the additional screw if the dryer is CNDU type.
- Control panel assembly is available to apply service action on this level.

9.8. Service Details of Door Lock System:



- Remove the top plate.
- Remove side panel on LHS.
- Disassemble the plastic housing as shown on the pictures.
- Take out the locking assembly working on inner side as highlighted on the picture.

11.Revision History:

Revision	Date	Summary
00	22.09.2017	Service Handbook