

# **Service Manual**

# Tumble dryer

T5130, T5130C

**Type N1130** 



438 9038-30/EN 2012.02.24

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The manufacturer reserves the right to make changes to design and component specifications.

## **1 Safety Precautions**

# $\underline{\land}$

<u>/!</u>

The machine is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the machine.

The machine is not to be used if industrial chemicals have been used for cleaning.

Do not dry unwashed items in the machine.

Items that have been soiled with substances such as cooking oil, acetone, alcohol, petrol, kerosene, spot removers, turpentine, waxes and wax removers should be washed in hot water with an extra amount of detergent before being dried in the machine.

Items such as foam rubber (latex foam), shower caps, waterproof textiles, rubber backed articles and clothes or pillows fitted with foam rubber pads should not be dried in the machine.

Fabric softeners or similar products should be used as specified by the fabric softener instructions.

The final part of a drying cycle occurs without heat (cool down cycle) to ensure that the items are left at a temperature that ensures that the items will not be damaged.

Remove all objects from pockets such as lighters and matches.

WARNING. Never stop the machine before the end of the drying cycle unless all items are quickly removed and spread out so that the heat is dissipated.

Adequate ventilation has to be provided to avoid the back flow of gases into the room for appliances burning other fuels, including open fires.

Exhaust air must not be discharged into a flue which is used for exhausting fumes from appliances burning gas or other fuels.

The machine must not be installed behind a lockable door, a sliding door or a door with a hinge on the opposite side to that of the machine.

If the machine has a lint trap this has to be cleaned frequently.

The lint must not be accumulated around the machine.

DO NOT MODIFY THIS APPLIANCE.

Gas heated tumble dryer:

Before installation, check that the local distribution conditions, nature of gas and pressure and the adjustment of the appliance are compatible.

The machine is not to be installed in rooms containing cleaning machines with perchloroethylene, TRICHLOROETHYLENE or CHLOROFLUOROCONTAINING HYDROCARBONS as cleaning agents.

If you can smell gas:

- · Do not switch on any equipment
- · Do not use electrical switches
- · Do not use telephones in the building
- Evacuate the room, building or area
- Contact the person responsible for the machine

# $\underline{\hat{\mathbf{N}}}$

All external equipment which is connected to the machine must be CE/EMC-approved and connected using an approved shielded cable.

In order to prevent damage to the electronics (and other parts) that may occur as the result of condensation, the machine should be placed in room temperature for 24 hours before being used for the first time.



Servicing shall be carried out only by authorized personnel.

# 2 Technical data

## 2.1 Drawing



1	Operating panel
2	Door opening, ø 370 mm
3	Electrical connection
4	Exhaust connection
5	Condense connection

	Α	В	С	D	E	F	G	Н
mm	595	735	850	80	80	100	200	235

	I	J	К
mm	115	300	70

## 2.2 Technical data

		T5130	T5130C
Weight, net	kg	54	57
Drum volume	litres	130	130
Drum diameter	mm	575	575
Drum depth	mm	500	500
Drum speed	rpm	53	53
G-factor, max.		0.9	0.9
Rated capacity, filling factor 1:22 (Max. load)	kg	6	6
Heating: Electricity	kW	5.1	3.0
	kW	3.2	
Airborne sound level	dB(A)	70	70

## 2.3 Connections

		T5130	T5130C
Air outlet	⊘ mm	100	—
Condensate outlet		-	1/2"
			ISO 7/1–Rp1/2

# **3 Machine presentation**



1	Sensors and overheating thermostats
2	Door
3	Motor
4	Heating unit
5	Drum
6	Control panel with program unit
7	I/O modules

#### After a repair has been made

Whenever a repair has been made, a function check must be performed before the machine can be used again.

# **4** Function check



A function check must be made when the installation is finished and before the machine can be ready to be used.

#### Check the automatic stop of the machine

- · Start the machine.
- · Check if the micro switches are working properly:

The machine must stop if the door is opened.

# Check the direction of rotation (only on machines with 3–phase power supply, marine installation)

Demount the top panel and start a program. Check that the drum rotation is clockwise.



If the direction is wrong, swop two of the three phases to the left on the connection terminal.





#### Check the heat

- Let the machine work for five minutes on a program with heat.
- Check that the heating is working by opening the door and feel if there is heat in the drum.

#### Ready to use

If all tests are OK the machine is now ready to be used.

If some of the tests failed, or deficiencies or errors are detected, please contact your local service organisation or dealer.

## **5** Sensors and overheating thermostats

#### 5.1 Inlet air

#### 5.1.1 Overheating thermostat

#### **Description T5130**

There are two inlet overheating thermostats. One is placed at the back of the machine and one is placed on the bottom of the machine on the heating element.

The inlet overheating thermostat opens in the event of overheating and shuts off the machine.

#### **Description T5130C**

The inlet overheating thermostat is placed at the back of the machine.

The inlet overheating thermostat opens in the event of overheating and shuts off the machine.

#### **Resetting T5130**

Disconnect the power to the machine.

Press the reset button (A) on the overheating thermostat.



### Resetting — T5130C

Disconnect the power to the machine.

Press the reset button (A) on the overheating thermostat.



#### Replacement of overheating thermostat T5130

Disconnect the power to the machine.

Demount the casing over the rear panel.

Demount the cover panel over the overheating thermostat.

Disconnect the overheating thermostat and remove it. Connect the new overheating thermostat.



Remount the cover panel over the overheating thermostat and the rear panel.

#### Replacement of overheating thermostat T5130C

Disconnect the power to the machine.

Demount the casing over the rear panel and the plastic cover. Disconnect the air channel panel.

Disconnect the overheating thermostat and remove it. Connect the new overheating thermostat.

It is recommended to replace the complete heating element cover with the overheating thermostat on.



#### 5.1.2 Heating sensor (PT100)

#### Description

The heating sensor is placed at the back of the machine.

The heating sensor measures the temperature in the inlet air and the signal is returned to the CPU.

The CPU turns the heating unit off when the inlet air thermistor indicates that the required temperature has been reached.

#### Replacement of heating sensor (PT100)

Disconnect the power to the machine.

Disconnect the heating sensor and remove it. Connect the new heating sensor and put it in position. Make sure the sensor gets all the way down.



#### 5.2 Outlet air

#### 5.2.1 Overheating thermostat

#### **Description T5130**

The outlet overheating thermostat is placed on the bottom of the machine on the outlet air flow. The overheating thermostat ensures that the machine does not overheat during program operation. The overheating thermostat opens automatically and has to be reset manually.

#### **Description T5130C**

The outlet overheating thermostat is placed behind the door switch.

The overheating thermostat ensures that the machine does not overheat during program operation.

The overheating thermostat opens automatically and has to be reset manually.

#### Resetting T5130

Disconnect the power to the machine.

Demount the rear panel and the cover panel at the air outlet.

Press the reset button (A) on the overheating thermostat.



Remount the cover panel at the air outlet and the rear panel.

### **Resetting T5130C**

Disconnect the power to the machine.

Open the door and demount the door switch.

Press the reset button (A) on the overheating thermostat.



Remount the door switch.

#### Replacement of overheating thermostat

Disconnect the power to the machine.

Demount the rear panel.

Disconnect the overheating thermostat and remove it. Connect the new overheating thermostat.



Remount the rear panel.

#### Replacement of overheating thermostat — T5130C

Disconnect the power to the machine.

Open the door and demount the door switch. Disconnect the overheating thermostat and remove it. Connect the new overheating thermostat.



Remount the door switch.

#### 5.2.2 Heating sensor (NTC-sensor)

#### **Description T5130C**

The heating sensor is placed next to the outlet overheating thermostat behind the door switch.

The heating sensor measures the temperature in the outlet air and the signal is returned to the PCB.

The PCB turns the heating unit off when the outlet air thermistor indicates that the required temperature has been reached.

#### Replacement of heating sensor (NTC-sensor) T5130C

Disconnect the power to the machine.

Open the door and demount the door switch. Disconnect the heating sensor and remove it. Connect the new heating sensor.



Remount the door switch.

# 6 Door

## 6.1 Door switch

The door switch (A) ensures that the machine stops automatically if the door is opened during operation.

If the machine does not stop when the door is opened or if the door is closed and the error code **DOOR IS OPEN** is displayed (and the machine is unable to start), for example, the door switch needs to be replaced.



#### **Replacement of door switch**

Disconnect the power to the machine.

Demount the top panel.

Cut the cable tie holding the door switch cable.

Open the door and demount the door switch and the door switch cable and mount the new one.



Remount the top panel.

### **Replacement of door magnets**

Remove the magnet to be replaced and mount the new one.



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### 6.2 Reversing the door

Disconnect the power to the machine.

Demount the lower hinge and lift off the door.

#### Note!

#### Make sure to hold the door in position when loosening the hinge mounting.

Demount the upper hinge.



Demount the cover screws on the other side and mount them where the hinges was. Mount the hinges on the other side where the cover screws was. Mount the lower hinge soft, with one screw first, in order to make it easier to place the door back in position.



Demount the door handle and remount the screws. Mount the door handle on the opposite side using the existing scews.

Remove the upper and lower pivot and mount them at the opposite side.



Demount the locking panels by loosening the barb with a screwdriver.

Press out the locking panels, swap them over and press into position.



Mount the door on the other side. Push the door and the top pivot into the upper hinge and then adjust the lower pivot into the lower hinge. Mount the remaining screw when the lower pivot is in correct position. Tighten the screws.

Connect the power to the machine.

Test run the machine.

# 7 Motor

## 7.1 Replacement of motor

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel. On condense machines: Pull out the hose to the drain from its upper connection.

Loosen the belt around the drum.



Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.

Carefully put the drum package on the floor witht the rear panel facing upwards.



Disconnect the earth cable and the motor cable.



Carefully tilt the machine backwards and remove the four screws under the machine.

Remove the motor with the fan.



Demount the fan from the motor by looseing the set screw. The set screw can be accessed through a hole in one of the blades.



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Mount the fan on the new motor and mount the new motor with the fan in the machine.

Fasten the four screws under the machine.

Carefully put the new drum package back in the machine.

Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Fasten the belt. Rotate the drum to make sure that the belt is in position.

Mount the air channel panel. On condense machines: Refit the hose before mounting the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.

#### Other replacing parts on the transmission

It is possible to change single parts by the motor.



## 7.2 Replacement of the belt around the motor pulley

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel. On condense machines: Pull out the hose to the drain from its upper connection.

Loosen the belt around the drum.



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Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.





Remove the belt (A) and put the new belt in position.

Carefully put the drum package back in the machine.

Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Fasten the belt. Rotate the drum to make sure that the belt is in position.

Mount the air channel panel. On condense machines: Refit the hose before mounting the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.

## 7.3 Replacement of fan

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel. On condense machines: Pull out the hose to the drain from its upper connection.

Loosen the belt around the drum.



Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.

Carefully put the drum package on the floor witht the rear panel facing upwards.



Disconnect the earth cable and the motor cable.



Carefully tilt the machine backwards and remove the four screws under the machine.



Remove the motor with the fan.

Demount the fan from the motor by loosening the set screw. The set screw can be accessed through a hole in one of the blades.



Use a puller to remove the fan from the motor.

Mount the new fan on the motor. Make sure the air cover and the pressure spring gets in position.

Mount the motor with fan in the machine.

Fasten the four screws under the machine.

Carefully put the new drum package back in the machine.

Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Fasten the belt. Rotate the drum to make sure that the belt is in position.

Mount the air channel panel. On condense machines: Refit the hose before mounting the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.
# 7.4 Replacement of fan motor

## T5130C

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the plastic cover and the air channel panel.

Disconnect the fan motor and replace the fan motor with the new one and connect it.



Mount the air channel panel and the plastic cover.

Connect the overheating thermostat and the heating sensor.

Mount the cover panel at the air outlet and the casing over the rear panel.

# 8 Heating unit, electric

# 8.1 General

Spare part number, effect and voltage are printed on each heating element.

# 8.2 Replacement of heating element

### T5130

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel.

Loosen the belt around the drum.



Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.

Carefully put the drum package on the floor witht the rear panel facing upwards.



Carefully tilt the machine backwards and remove the three screws under the machine to release the lower element cover panel.

Disconnect the wires, demount the cover panels and remove the heating element.



Connect the new element. Reconnect the wires as before, use the electric schematic supplied with the machine.

Mount the element unit back in the machine and fasten the three screws under the machine.

Carefully put the drum package back in the machine.

Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Fasten the belt. Rotate the drum to make sure that the belt is in position.

Mount the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.

#### T5130C

Disconnect the power to the machine.

Demount the casing over the rear panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the the plastic cover and the air channel panel.

Unscrew the screws to the heating element cover. Disconnect the wires and remove the heating element.



Connect the new element. Reconnect the wires as before, use the electric schematic supplied with the machine.

Mount the air channel panel and the plastic cover.

Connect the overheating thermostat and the heating sensor.

Mount the casing over the rear panel.

# 9 Drum

# 9.1 Replacement of drum

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel. On condense machines: Pull out the hose to the drain from its upper connection.

Loosen the belt around the drum.



Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.

Carefully put the drum package on the floor witht the rear panel facing upwards.



Remove the bolt and washer from the bearing to release the drum. Remove the rear panel from the old drum. Mount the rear panel with with the bearing on the new drum.



Carefully put the new drum package back in the machine.

Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Fasten the belt. Rotate the drum to make sure that the belt is in position.

Mount the air channel panel. On condense machines: Refit the hose before mounting the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.

# 9.2 Replacement of bearing

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel. On condense machines: Pull out the hose to the drain from its upper connection.

Loosen the belt around the drum.



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Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.

Carefully put the drum package on the floor witht the rear panel facing upwards.





Remove the screws, bolt and washer on the bearing. Remove the bearing and mount the new one.

Carefully put the new drum package back in the machine.

Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Fasten the belt. Rotate the drum to make sure that the belt is in position.

Mount the air channel panel. On condense machines: Refit the hose before mounting the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.

# 9.3 Replacement of the belt around the drum

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel. On condense machines: Pull out the hose to the drain from its upper connection.

Loosen the belt around the drum (A).



Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.



Remove the belt from the outer drum.

Put the new belt temporarely in position on the outer drum and carefully put the drum package back in the machine.



Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Rotate the drum to make sure that the belt is in position.

Mount the air channel panel. On condense machines: Refit the hose before mounting the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.

# **10 Control panel**

# 10.1 Program unit

# 10.1.1 Description

The program unit is electronic and comprises a circuit board containing microprocessor, program memory, serial interface to the motor, I/O boards etc.

The program unit receives its power from a separate power supply unit.



The program unit receives information from the I/O boards about input like temperature sensors, RMC, vacuum, door status etc, and output like drum, fan and heat control.

### 10.1.2 Connections

The program unit board has the following connections:

Board connector	Function	
M-COM	Communication, motor control (not used)	
D-BUS	Databus	
D-BUS	Databus	
ТАСНО	Tachometer (not used)	
COIN	Coin meter (coin 1, coin 2, blocking)	
EMERG / INP 1	Input	
FREE / INP 2	Free program (key switch) / Input	
RS 232	Serial communication	
ENC	Control knob (pulses)	
USB TYPE B	Connection for software / service download	
PIN CONNECTOR	Panel sign connector	



# 10.1.3 Replacement of program unit

Disconnect the power to the machine.

Demount the top panel.

### Demount the control knob

Insert a screwdriver in the upper hole.



Gently push the screwdriver inwards and turn the control knob counter-clockwise until the screwdriver goes further in.



Continue turning a quarter of a turn until it is possible to remove the control knob.



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### Demount the cover ring

When the control knob is removed, insert the screwdriver in the lower hole and press gently. Turn the cover ring counter-clockwise until it is possible to remove the cover ring.



## Demount the program unit

Demount the CPU and disconnect the cables.



### Mount the new program unit

Mount the new CPU. Make sure that the guide pins (A) are in position.



Connect the cables.

### Mount the cover ring and the control knob

Mount the cover ring and rotate it clockwise until it is in position.

Rotate the inner knob until the locking device is pointing downwards.

Insert the screwdriver and press the locking device.



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Mount the control knob on the inner knob. Continue to press with the screwdriver and turn the control knob clockwise until it stops when it is in position.



# 10.2 Control knob

### 10.2.1 Replacement of control knob

Disconnect the power to the machine.

Insert a screwdriver in the upper hole.



Gently push the screwdriver inwards and turn the control knob counter-clockwise until the screwdriver goes further in.





Continue turning a quarter of a turn until it is possible to remove the control knob.

#### Cover ring

When the control knob is removed, insert the screwdriver in the lower hole and press gently. Turn the cover ring counter-clockwise until it is possible to remove the cover ring.



Mount the new cover ring and rotate it clockwise until it is in position.

Rotate the inner knob until the locking device is pointing downwards.

Insert the screwdriver and press the locking device.



Mount the new control knob on the inner knob. Continue to press with the screwdriver and turn the control knob clockwise until it stops when it is in position.



# 11 I/O modules

# 11.1 General

The machine can be equipped with either one or two I/O modules:

- I/O module type 81 is always installed in the machine at delivery. It controls internal machine functions and outputs to heating, motors etc.
- I/O module type 2 is installed as an option. It controls the external functions and inputs from payment and booking systems etc.

The functionality of I/O module inputs and outputs is depending on the parameter software downloaded to the machine's program device. The function options for the I/O modules are indicated by a letter in the program designation for each module.

### Machine fitted with two I/O modules

6G82 LG1 EL T5130 81O 2J

810 = Function options I/O module type 81 (internal functions).

2J = Function options I/O module type 2 (external functions).

### Machine fitted with one I/O module

6G82 LG1 EL T5130 81O 2j

810 = Function options I/O module type 81 (internal functions).

2j = The letter that appears in lower case means that the machine is not fitted with I/O module type 2 but the downloaded parameter software is I/O module type 2 enabled.

### Location

The parameter software installed in the machine's program device on delivery is specified at the front and back of the machine.

Using this article number, you can find the program designation and thereby identify I/O module function options on the web.



# 11.2 Replacement of I/O module

I/O module type 81 and I/O module type 2 are installed in the same way. If the machine has I/O module type 2, it is located on I/O module type 81. The illustration shows replacement of I/O module type 81.

Disconnect the power to the machine.

Demount the top panel.



Remove the plastic cover and the electrical connections on the module. (Note the position of the connections).

Remove the module by lifting it upwards.



Insert the new module and make sure it is in position.

Connect the electrical connections in the same way as before and mount the plastic cover.

If both I/O module type 81 and I/O module type 2 is to be replaced it is recommended to fit the modules together before mounting in the machine.



Remount the upper rear panel. Connect the power to the machine.

# 11.3 External connections to I/O module type 2

#### Inputs

The signal level may be 5 - 24V DC/AC or 100 - 240V AC. At 5 - 24V, the signal reference must be connected to 3 and at 100 - 240V to 4.

### Note!

### Do not mix potentials on the inputs.

Connecting excessive voltage (> 24V) to connection 3 may damage the I/O modules.



# 11.4 Circuit diagram of function options for I/O module type 2

# 11.4.1 Central payment (2J)

To start the machine from a central payment system, the payment system must transmit a start pulse to the machine. The start pulse can be either 230V or 24V. In order to receive a feedback signal once the machine has started, 230V or 24V must be connected to connection 19. The feedback signal on connection 18 remains active (high) during the entire program.



# 11.4.2 Central payment (2J)

The central payment or booking system shall transmit an active (high) signal to the machine once permission has been granted to start the machine. The signal must remain active (high) during drying. The signal can be either 230V or 24V. In order to receive a feedback signal once the machine has started, 230V or 24V must be connected to connection 19. The feedback signal remains active (high) during the entire program.



# 11.4.3 External coin meter/Central payment (2K)

The signal received from external coin meters must be a pulse.



# 11.4.4 Price reduction (2K)

By maintaining an activated (high) signal on connection 5 ("Price red"), the price of the program can be reduced. This function has a number of uses, including providing reductions during a specific period of the day. Whilst the signal remains active (high), the price of the program is reduced by the percentage entered in the price programming menu.



# **12 Troubleshooting**

## 12.1 General

The troubleshooting section is used to trace errors in the machine to a defective component or unit.

There is a memory in the CPU that will save the selected program for 10 minutes in the case of power failure.

The machine will restart in pause mode if the power is turned on again within this time. For very short power failure (less than 10 seconds) the machine will restart automatically.

### Safety regulations

Troubleshooting may only be carried out by authorised personnel.

Take care during all work on the machine while the power is on.

# $\underline{\land}$

Take care when measuring the motor control system since all components have a potential difference of approximately 300V in relation to protective earth and neutral. The components will contain dangerous voltages when the green LED on the motor control board is on. The motor control system will remain live for 30-60 seconds after cutting the power to the machine and the motor has stopped running.

#### Measurements

For information on measuring points, components and voltages, please refer to the electric schematic supplied with the machine.

### 12.2 Error code

An error in the program or in the machine is indicated on the display by an error code and a descriptive text.

The error codes are divided into different groups called "Major" comprising different error codes called "Minor".

The errors will be displayed as for example 12:15 NO VACUUM.

The following is a description of all Major groups followed by a description of each error code.

Error	code	Text
Major	Minor	
MAIN COMMON	11	REAL TIME CLOCK OUT OF ORDER
10	13	INITIALIZING FAILED

Error code		Text
Major	Minor	
MAIN DRYER	1	O.H. THERMOSTAT - INLET AIR
12	2	O.H. THERMOSTAT - OUTLET AIR
	3	INLET AIR SENSOR OPEN
	4	INLET AIR SENSOR SHORT CIRCUITED
	5	OUTLET AIR SENSOR OPEN
	6	OUTLET AIR SENSOR SHORT CIRCUITED
	8	CONDENSE WATER CONTAINER IS FULL
	11	DRYING ERROR WITH RMC PROGRAM
	12	DRYING ERROR WITH AUTOSTOP PROGRAM
	13	DRYING ERROR WITH TIME PROGRAM
	14	GAS ERROR PRESS GAS REST BUTTON
	15	NO VACUUM
	16	VACUUM SWITCH SHORTED
	253	JUMPER 1
	254	JUMPER 2
	255	JUMPER 3

Error	code	Text
Major	Minor	
DRUM MOTOR COMMON	1	O.H. DRUM MOTOR
20		

Error	code	Text
Major	Minor	
FAN MOTOR COMMON	1	O.H. FAN MOTOR
30		

72
Error code		Text
Major	Minor	
INTERNAL COM.	1	I/O BOARD MISHMASH
40	21	I/O COMMUNICATION

Error	code	Text
Major	Minor	
EXTERNAL COM. PAYMENT	22	NO CBT COMMUNICATION
51		

Error	code	Text
Major	Minor	
EXTERNAL COM. CMIS	1	CMIS COMMUNICATION ERROR
52		

## 12.3 Description of error codes and causes

## MAIN COMMON

## **10:11 REAL TIME CLOCK OUT OF ORDER**

The real time clock is used by the CPU, measuring time, power failure, error codes, etc.

The error code is activated if there is a time out in the communication with the internal real time clock in the CPU or if the data sent to/from the real time clock is incorrect.

The error can only be removed by turning of the power to the machine for 30 seconds.

#### **10:13 INITIALIZATION FAILED**

The CPU has an internal time limit for initialization of the system.

The error code is activated if 15 seconds has expired during start up and the hardware still is not initialized.

Press the control knob/start button to retry.

## MAIN DRYER

## 12:1 O.H. THERMOSTAT - INLET AIR

The error code is activated if the protection thermostat for inlet air has trigged due to overheating. The overheating thermostat for inlet air will be trigged at 195 °C.

The overheating thermostat for inlet air needs to be mechanically restored.

When the overheating thermostat for inlet air is restored it is possible to reset the error code from the timer by a short press on the control knob/start button and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error code can be trigged if:

- The inlet air sensor has stopped operating correctly.
- The fan has stopped operating.
- The airflow is obstructed, by lint, overload, etc.

If the overheating thermostat for inlet air is not trigged, but there still is an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 12:2 O.H. THERMOSTAT - OUTLET AIR

The error code is activated if the protection thermostat for outlet air has trigged due to overheating. The overheating thermostat for outlet air will be trigged at 90°C.

The overheating thermostat for outlet air needs to be mechanically restored.

When the overheating thermostat for outlet air is restored it is possible to reset the error code from the timer by a short press on the control knob/start button and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error code can be trigged if:

· The outlet air sensor has stopped operating correctly.

If the overheating thermostat for outlet air is not trigged, but there is still an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 12:3 INLET AIR SENSOR - OPEN

The error code is activated if the inlet air sensor (PT100) or its wires is open.

If the inlet air temperature in the **SHOW INPUTS** menu show a temperature of 222 °C the inlet air sensor is open.

When the inlet air sensor is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error code can be trigged if:

• The sensor, harness or connector is broken.

The sensor shall measure around 110 Ohm in room temperature, see table. (Measure direct over the sensor).

If the measure of inlet air sensor is OK, but there is still an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

If the input for the inlet air sensor is short circuited, the timer will display the inlet air temperature of 0  $^{\circ}$ C.

Inlet air sensor resistor value	Temperature
100 Ohm	0 °C
107–112 Ohm	20–30 °C
176 Ohm	200 °C

## **12:4 INLET AIR SENSOR - SHORT-CIRCUITED**

The error code is activated if the inlet air sensor (PT100) or its wires is short circuited.

If the inlet air temperature in the **SHOW INPUTS** menu show a temperature of 0 °C the inlet air sensor is short circuited.

When the inlet air sensor is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error can be trigged if:

• The sensor, harness or connector is broken.

The sensor shall measure around 110 Ohm in room temperature, see table. (Measure direct over the sensor).

If the measure of inlet air sensor is OK, but there is still an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

If the input for the inlet air sensor is short circuited, the timer will display the inlet air temperature of 222 °C.

Inlet air sensor resistor value	Temperature
100 Ohm	0°C
107–112 Ohm	20–30 °C
176 Ohm	200 °C

## 12:5 OUTLET AIR SENSOR - OPEN

The error code is activated if the outlet air sensor or its wires is open.

If the outlet air temperature in the **SHOW INPUTS** menu show a temperature of -10 °C the outlet air sensor is open.

When the outlet air sensor is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error code can be trigged if:

• The sensor, harness or connector is broken.

The sensor shall measure around 5 K Ohm in room temperature, see table. (Measure direct over the sensor).

If the measure of outlet air is OK, but there is still an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

If the input for the outlet air sensor is short circuited the timer will display the inlet air temperature of 100 °C.

Outlet air sensor resistor value	Temperature
26.7 K Ohm	– 10 °C
6–3.9 K Ohm	20–30 °C
330 Ohm	100 °C

## 12:6 OUTLET AIR SENSOR - SHORT-CIRCUITED

The error code is activated if the outlet air sensor or its wires is short circuited.

If the outlet air temperature in the **SHOW INPUTS** menu show a temperature of 100 °C the outlet air sensor is open.

When the outlet air sensor is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error code can be trigged if:

• The sensor, harness or connector is broken.

The sensor shall measure around 5 K Ohm in room temperature, see table. (Measure direct over the sensor).

If the measure of outlet air sensor is OK, but there is still an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

If the input for the outlet air sensor is open circuited the timer will display the inlet air temperature of 0 °C.

Outlet air sensor resistor value	Temperature
26.7 K Ohm	– 10 °C
6–3.9 K Ohm	20–30 °C
330 Ohm	100 °C

## **12:8 CONDENSE WATER CONTAINER IS FULL**

The pump will run when a program starts for normally 15 seconds. Then it will run again after normally 3 minutes. The pump will also run if the input for the float is trigged.

The error code is activated if the pump has tried to empty the condense water container without the signal from the float in the condense water container has been deactivated.

When the float in the condense water container is restored it is possible to reset the error code from the timer. The error code is reset from the timer by a short press on the control knob/start button. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error code can be trigged if:

- The condense water container is full and the pump is not operating. Check the pump by activating the **CONDENSER PUMP** menu in the **ACTIVATE OUTPUTS** menu when the machine is in service mode.
- If the pump is running and no water is coming out, the drain is blocked or the float is out of order.
- If water coming out of the hose, it might be partly blocked.

If the pump does not run or if there is no level in the condense water container check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 12:11 DRYING ERROR WITH RMC PROGRAM

The error code is activated if the RMC system does not register that the clothes are dry within the maximum drying time. When the error is trigged the machine will automatically go to the cooling module before the program ends.

The error code is reset from the timer by a short press on the control knob/start button. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

If the clothes are still wet after maximum drying time and the dryer is not overloaded, check that the heating system is working correct by using the **ACTIVATE OUTPUTS** menu when the machine is in service mode.

## Note!

## Make sure that the fan is active before turning on the heat.

If the clothes are dry, check the RMC system and harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

- RMC value no load = 0%
- RMC value 100K Ohm between lifter and drum = ~24%
- RMC value system short circuit = 50%

## 12:12 DRYING ERROR WITH AUTOSTOP PROGRAM

The error code is activated if the Auto Stop system does not register that the clothes are dry within the maximum drying time. When the error is trigged the machine will automatically go to the cooling module before the program ends.

The error code is reset from the timer by a short press on the control knob/start button. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

If the clothes are still wet after maximum drying time and the dryer is not overloaded, check that the heating system is working correct by using the **ACTIVATE OUTPUTS** menu when the machine is in service mode.

#### Note!

#### Make sure that the fan is active before turning on the heat.

If the clothes are dry, check the outlet air sensor and harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 12:13 DRYING ERROR WITH TIME PROGRAM

The error code is activated if a time program has continued longer than the maximum drying time without the door has been opened.

When the error is trigged the machine will automatically go to the cooling module before the program ends.

The error code is reset from the timer by a short press on the control knob/start button. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

## 12:14 GAS ERROR PRESS GAS RESET BUTTON

The error code is activated if no flame has been detected by the gas control box. The gas control box trig an input on the timer system, which generates the error code.

The metal probe of the flame sensor generates an electrical current when exposed to the burner's flame. This signal is detected by the ignition control module which, in turn, cuts off the gas valve immediately if the sensor does not indicate flame within 10 seconds. The gas control box does 3 attempts to ignite. The integrity of the sensor's electrical connection is, therefore, critical to proper operation of this system. When the gas control box is in error mode a red LED is active on the gas control box.

The timer sends a reset signal to the gas control box by a short press of the start button or service button (depending on market and segment). When the gas control box receive a reset command it removes the error. The timer will automatically restart the program when the error is removed from the gas control box and when heat is allowed (vacuum needed) the gas control box will try to ignite the gas again. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The gas error can also be reset at the gas control box. The machine will automatically restart when the error is restored.

The error code can be trigged if:

• The gas control box fails to ignite. Check the gas supply and nozzle pressure.

If the gas control box do not have a gas error but the timer does, check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 12:15 NO VACUUM

The error code is activated if the vacuum/pressure switch (normally open) is not trigged within set time, normally 15 seconds.

The error code is reset from the timer by a short press on the control knob/start button. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

The error code can be trigged if:

- The fan is not operating or blows in the wrong direction.
- The airflow is obstructed.
- The vacuum switch sensor or hose is disconnected.
- The lint drawer is open, etc.

Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** and **ACTIVATE OUTPUTS** menus when the machine is in service mode.

## **12:16 VACUUM SWITCH SHORTED**

The error code is activated if the vacuum/pressure switch was already closed when a program was started.

The error code is reset from the timer by a short press on the control knob/start button. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

Check the vacuum switch/pressure sensor, harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 12:253 JUMPER 1

The error code is activated if the jumpers that has trigged the error code is missing.

Jumpers are a by-pass of input not used in the machine. How many jumpers used is depending on configuration. When the jumper is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 12:254 JUMPER 2

The error code is activated if the jumpers that has trigged the error code is missing.

Jumpers are a by-pass of input not used in the machine. How many jumpers used is depending on configuration. When the jumper is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

#### 12:255 JUMPER 3

The error code is activated if the jumpers that has trigged the error code is missing.

Jumpers are a by-pass of input not used in the machine. How many jumpers used is depending on configuration. When the jumper is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and ongoing program will be ended.

Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## DRUM MOTOR COMMON

## 20:1 O.H. DRUM MOTOR

Not valid for washer extractors with MCU.

This error code is activated if the overheating protection for the drum motor has trigged.

The overheating protection is automatically restored. When the overheating protection is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the CPU reset and ongoing program will be ended.

The error code can be trigged if:

• The motor is very warm. Check that the vent holes in the motor are not covered.

If the overheating protection is not trigged, but there is still an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## 20:2 NO MOTOR COMMUNICATION

This error code arises if the first message sent from the CPU to the MCU was not replied to during start up.

#### Action

- Check that there is power reaching the MCU. Check the fuses in the Protection Cable. If one of the components in the Protection Cable is damaged, the cable must be replaced.
- Check that the indicator LED on the MCU is on. The LED can be seen by looking down by the MCU edge connections.
- Check that the communication cable between the CPU board and the MCU is intact and not damaged. Measure also with a reference instrument to see whether there is contact between all the leads in the communication cable.

## **20:3 LOST MOTOR COMMUNICATION**

This error code arises if the communication between the CPU and the MCU has stopped working.

## Action

- Check that there is power reaching the MCU. Check the fuses in the Protection Cable. If one of the components in the Protection Cable is damaged, the cable must be replaced.
- Check that the indicator LED on the MCU is on. The LED can be seen by looking down by the MCU edge connections.
- Check that the communication cable between the CPU board and the MCU is intact and not damaged. Measure also with a reference instrument to see whether there is contact between all the leads in the communication cable.

## FAN MOTOR COMMON

#### 30:1 O.H. FAN MOTOR

The error code is activated if the overheating protection for blower motor has trigged.

The overheating protection is automatically restored. When the overheating protection is restored the error code is automatically reset and the ongoing program will continue. A long press on the control knob/start button will make the timer reset and the ongoing program will be ended.

The error code can be trigged if:

• The motor is very warm. Check that the vent holes in the motor are not covered.

If the overheating protection is not trigged, but there is still an error code:

• Check the harness, connectors and functions by reading the electrical schematic and by using the **SHOW INPUTS** menu when the machine is in service mode.

## INTERNAL COM.

## 40:1 I/O BOARD MISHMASH

The error code is activated if wrong I/O board is adressed to wrong position in the machine.

After addressing of I/O boards the CPU reads the type of board in every position. If there is a mishmash between what the CPU reads and what the software expect on any address the error code will be displayed.

Readdress all I/O boards. Use the electric schematic to find correct I/O board to address.

## 40:2 I/O INTERLOCK

The program unit has read from the I/O board that the interlock is not active.

The reason for interlock failure can be a problem with the hatch lock, damaged motor supply cables or the I/O board with interlock voltage etc. The most probable error source is the I/O board.

## 40:21 I/O COMMUNICATION

The error code is activated if the CPU no longer communicate with one or more I/O boards.

There is an internal data bus between the different I/O boards in the machine with information about inputs, outputs, etc. that the CPU use to control the machine. The error code is activated if the CPU has lost communication with one or more I/O boards. The error will also be activated if the service button is pressed on the wrong I/O board during configuration of I/O boards. If there is communication between the I/O board and CPU the LED next to the service button will flash. If there is no communication to the I/O board but power, the LED will light when the button is pressed on the I/O board.

Check that all I/O boards are configured in **I/O CONFIGURATION** menu when the machine is in service mode.

If all I/O boards present in the list check the LED and harness, connectors and functions by reading the electrical schematic.

## **EXTERNAL COM. PAYMENT**

#### **51:22 NO CBT COMMUNICATION**

Machine with payment system using serial communication to machine. Serial communication with payment system interrupted.

Check network cable between machine and payment system.

Check that payment system is operational.

To reset machine to working state without repairing payment system, use Reset CBT communication in service mode. (Requires password).

# **EXTERNAL COM. CMIS**

## **52:1 CMIS COMMUNICATION ERROR**

Communication between machine and network computer has been interrupted.

Check network cable between machine and network.

Check that CMIS on network computer is operational.

The machine can be operated but statistics could be affected and data could be lost.

# **13 Maintenance**

# 13.1 Clean the fan, the exhaust duct and the fresh-air intake to the room

Check that the following are not clogged by lint and dust or otherwise blocked and clean with a vacuum cleaner:

- The fan. Be careful not to damage the fan.
- Exhaust duct.
- Fresh-air intake to the room.

Check that the exhaust system connections are tight.

# 13.2 Clean the glide surface for the RMC graphite collectors

Clean the glide surface for the RMC graphite collectors on the outside of the drum (A).



# 13.3 Clean the area around the drum

Disconnect the power to the machine.

Demount the top panel.

Remove all lint around the drum and in the area over the drum with a vacuum cleaner.



# 13.4 Clean the motor

Disconnect the power to the machine.

Demount the casing over the rear panel and the cover panel at the air outlet.

Demount the top panel.

Disconnect the overheating thermostat and the heating sensor and push the connections into the hole.



Demount the air channel panel. On condense machines: Pull out the hose to the drain from its upper connection.

Loosen the belt around the drum.



Unscrew the four screws at the panel around the heating element.

Demount the cover panel to the electrical connections and disconnect all wires.



Unscrew the rest of the screws on the panel.

Disconnect the RMC and cut the cable ties. If there is a "FREE" connection, disconnect it.

At the front of the machine: Open the door and remove the two plugs. Loosen the screws counter clockwise until they stop to release the support rollers.

Remove the complete drum package with the rear panel by lifting in the drum belt.

Carefully put the drum package on the floor witht the rear panel facing upwards.



Disconnect the earth cable and the motor cable.



Clean the motor and the fan with a vacuum cleaner.

Also clean the area around the motor and fan and other areas if needed.



Remount the motor.

Tighten the four screws under the machine.

Carefully put the new drum package back in the machine.

Fasten the support rollers at the front of the machine.

Connect the RMC and the "FREE" connection if disconnected.

Connect the wires and mount the cover panel to the electrical connections.

Fasten the four screws at the panel around the heating element and the rest of the screws on the panel.

Fasten the belt. Rotate the drum to make sure that the belt is in position.

Mount the air channel panel. On condense machines: Refit the hose before mounting the air channel panel.

Connect the overheating thermostat and the heating sensor.

Mount the top panel, the cover panel at the air outlet and the casing over the rear panel.

# 13.5 Check the belt

Check that both of the belts are not worn out. Replace if necessary.





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