



ELECTRICAL ANALYSIS LMED TP

BARRIER MACHINES

LMED-16-22-35-50-66 TP

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1. INTERNAL ELECTRIC COMPONENTS

1.1. Transformer (TR1):



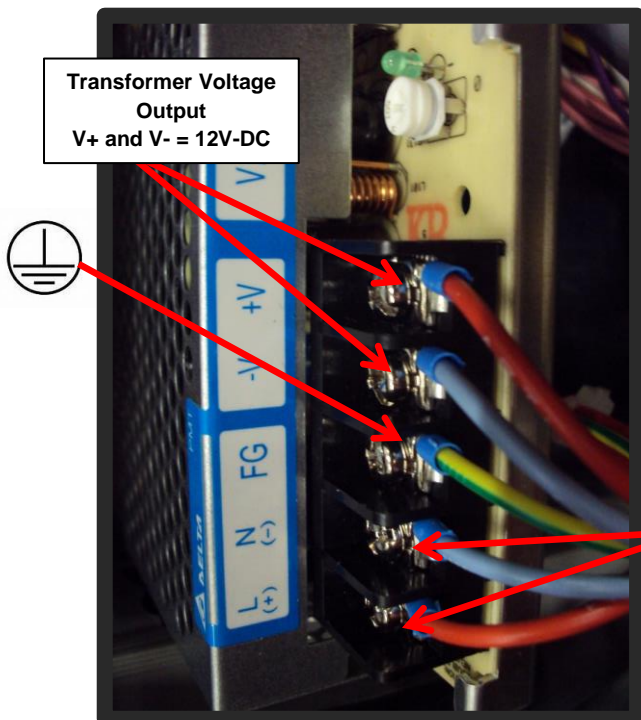
This transformer feeds BPS (Clean door coil) and BPP (Dirty door coil) coils to door safety.

Name	Connection	Wire Color
Transformator Voltage Input 230 V-AV	L	Red
	N	Blue
	PE	Green/Yellow
Transformator Voltage Output 24 V-DC	+	Red
	-	Blue
	-	Green/Yellow



Transformer Voltage Input
L and N = 230 V-AC

1.2. Transformer (TR2):

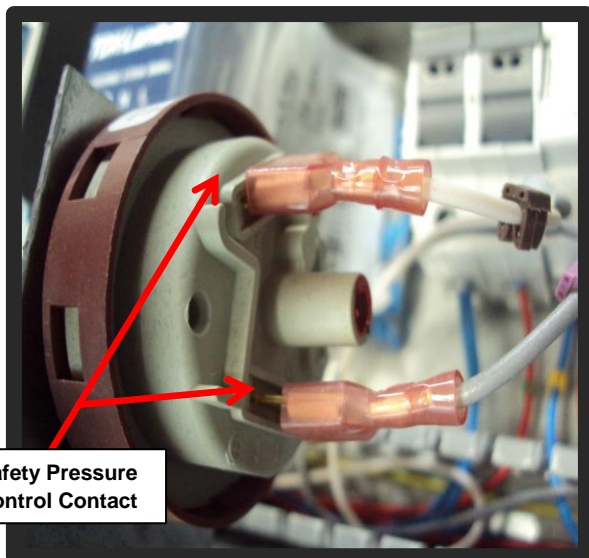


This transformer feeds principal card ET (CN 11 connexion).

Name	Connection	Wire Color
Transformator Voltage Input 230 V-AV	L	Red
	N	Blue
	FG	Green/Yellow
Transformator Voltage Output 12 V-DC	V+	Red
	V-	Blue
	FG	Green/Yellow

Transformer Voltage Input
L and N = 230 V-AC

1.3. Safety Pressure Control (PRS):



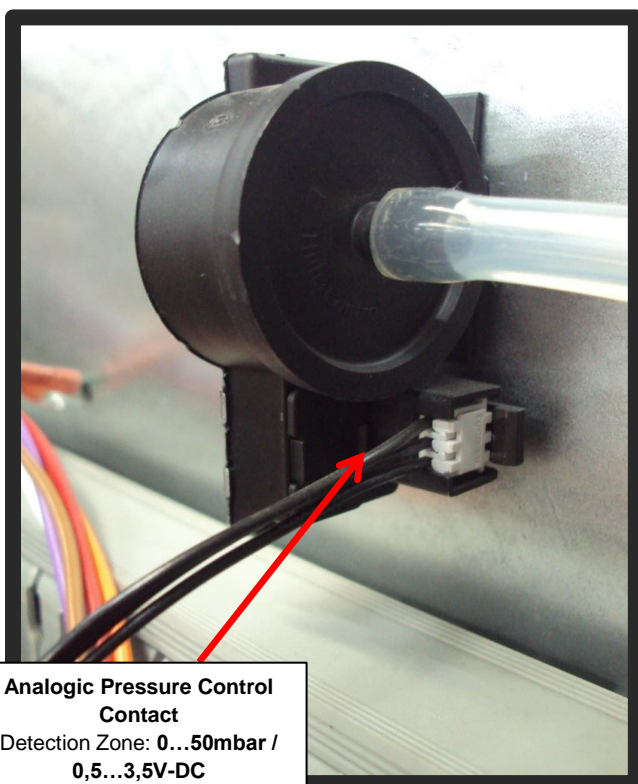
Safety Pressure Control Contact

Safety contact in serial with heating contactor coil control (CH1) or steam valve (EVV)

- Water < 30mm: No heated
- Water > 30mm: contact closed (active heating)

Name	Connection	Wire Color
Safety Pressure Control Contact	L	Purple
	N	White

1.4. Analogic Pressure Control (PRA):



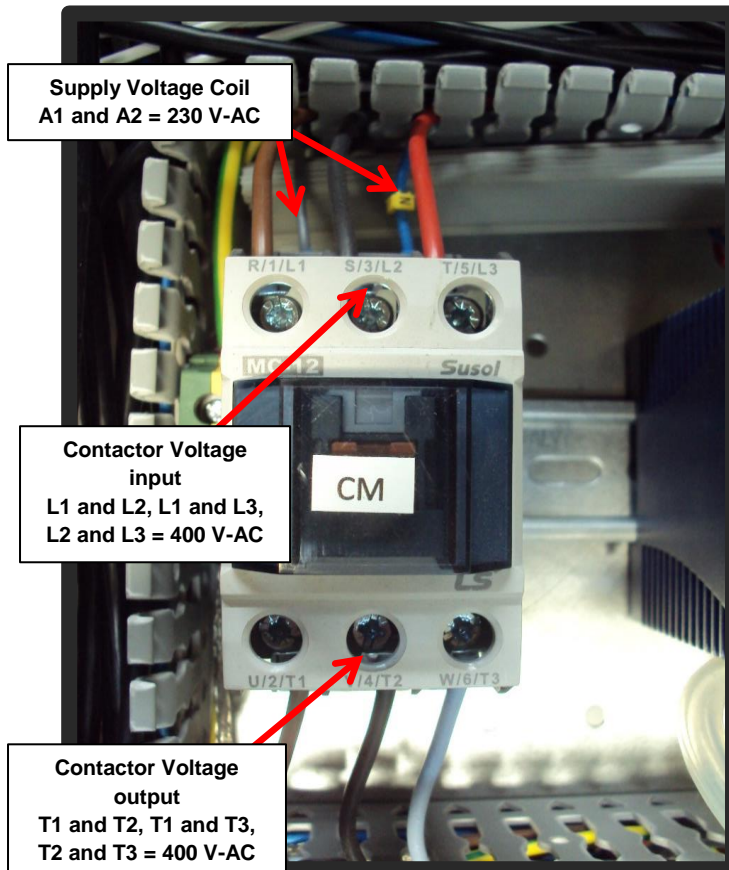
Analogic Pressure Control Contact
Detection Zone: 0...50mbar / 0,5...3,5V-DC

-This analogic pressure control allows to precisely know the water level in tank.

-Between purple wire (+) and white wire: the analogic voltage depends of water level (0,5...3,5V-DC).

Name	Connection	Wire Color
Analogic Pressure Control Contact	+	Purple
		White
	-	Yellow
	N	Blue

1.5. Motor Contactor (CM):

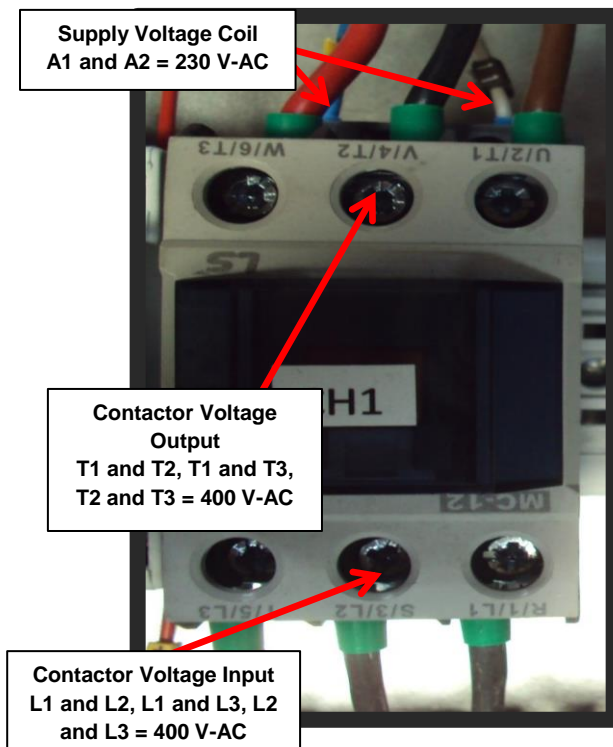


Name	Connection	Wire Color
Contactor Voltage input	L1	Brown
	L2	Black
	L3	Red
Contactor Voltage output	T1	Brown
	T2	Black
	T3	Red
Supply Voltage Coil	A1	Black
	A2	Blue

- The contactor is active if the 2 doors are closed and allows to drum rotation.
- The contactor is active if « active machine ».

Cycle Phase	Voltage
Prewashing	60 V-AC
Washing	50 V-AC
Rinsing	56 V-AC
Spinning	128 V-AC
	240 V-AC
	400 V-AC

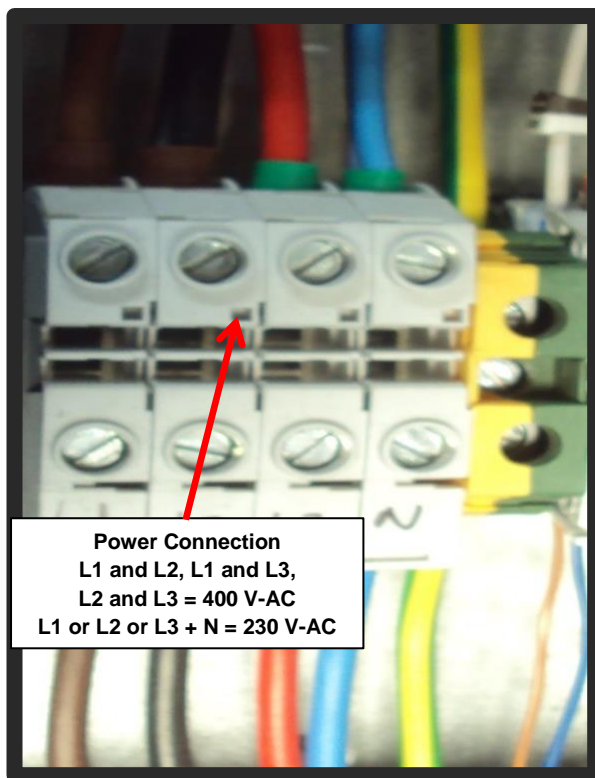
1.6. Electric Heating Contactor (CH1):



-If heating is commanded, coil is active (PRS contact does it closed).

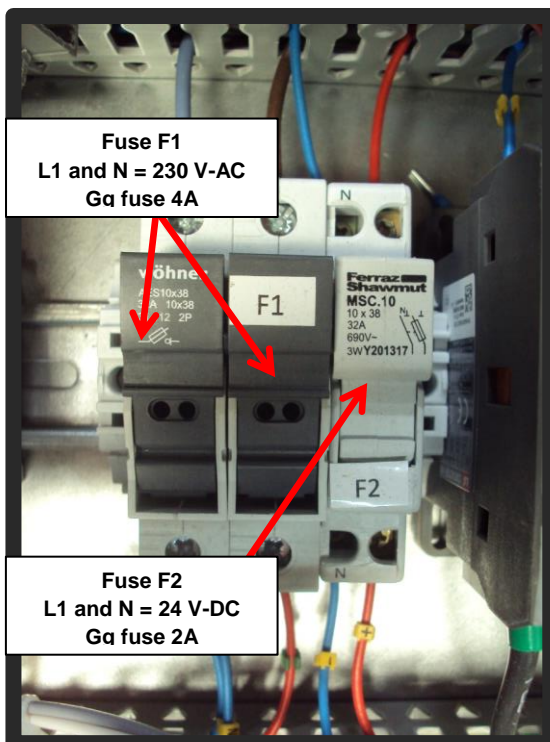
Name	Connection	Wire Color
Contactor Voltage input	L1	Brown
	L2	Brown
	L3	Brown
Contactor Voltage output	T1	Brown
	T2	Black
	T3	Red
Supply Voltage Coil	A1	White
	A2	Blue

1.7. Power Connection:



Name	Connection	Wire Color
Input Voltage	L1	Brown
	L2	Black
	L3	Red
	N	Blue
Output Voltage	L1	Brown
	L2	Black
	L3	Red
	N	Blue

1.8. Fuse (F1 et F2):



Name	Connection	Wire Color
F1 Fuse Input	L1	Brown
	N	Blue
F1 Fuse Output	L1	Red
	N	Blue
F2 Fuse Input	+24 V	Brown
	0 V	Blue
F2 Fuse Output	+24 V	Red
	0 V	Blue

- Command is assured by F1 fuse (4A).
- Safety door coils are assured by F2 fuse (2A) backing of TR1.

2. EXTERNAL ELECTRIC COMPONENTS

2.1. Main Switch:

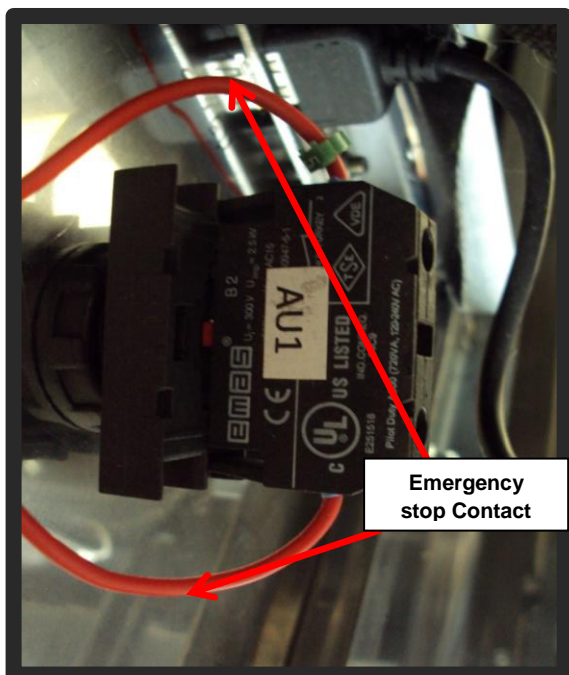


Name	Connection	Wire Color
Main Switch Input Voltage	L1	Black
	L2	Black
	L3	Black
	N	Blue
	PE	Green/Yellow
Main Switch Output Voltage	T1	Brown
	T2	Black
	T3	Red
	N	Blue
	PE	Green/Yellow

Composed voltage: (L + L) = 400 V-AC

Simple voltage: (L + N or PE) = 230 V-AC

2.2. Emergency Stop (AU1 et AU2):



-Function: Command disconnection.

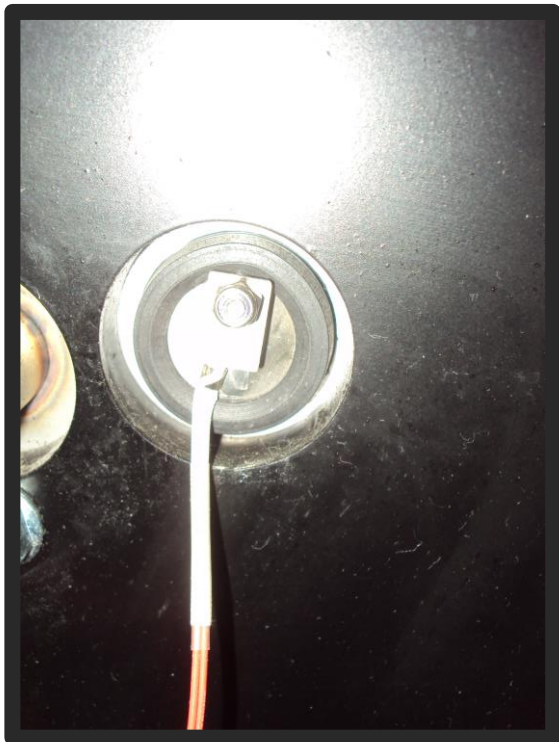


Power still active! (Inverter, CH).

Name	Connection	Wire Color	N° Wire
Emergency stop Contact	L1 (F1)	Red	5
	Connection CP	Red	CP

- 1 emergency stop dirty side,
- 1 emergency stop clean side.

2.3. NTC Probe Sensor:

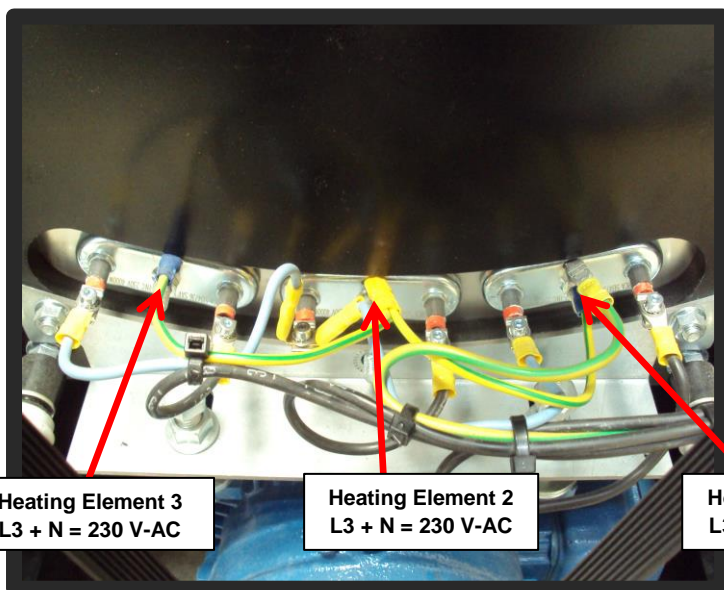


This probe sensor measuring water temperature in tank on a range of +20...+95 Celsius degrees.

+20°C = 56 kH

Temperature	Ohmic Value
20°C	56 kH
30°C	35 kH
40°C	25,3 kH
50°C	19,8 kH
60°C	12,3 kH
70°C	8,5 kH
80°C	5,8 kH

2.4. Heating Elements:



Heating Element 3
L3 + N = 230 V-AC

Heating Element 2
L3 + N = 230 V-AC

Heating Element 1
L3 + N = 230 V-AC

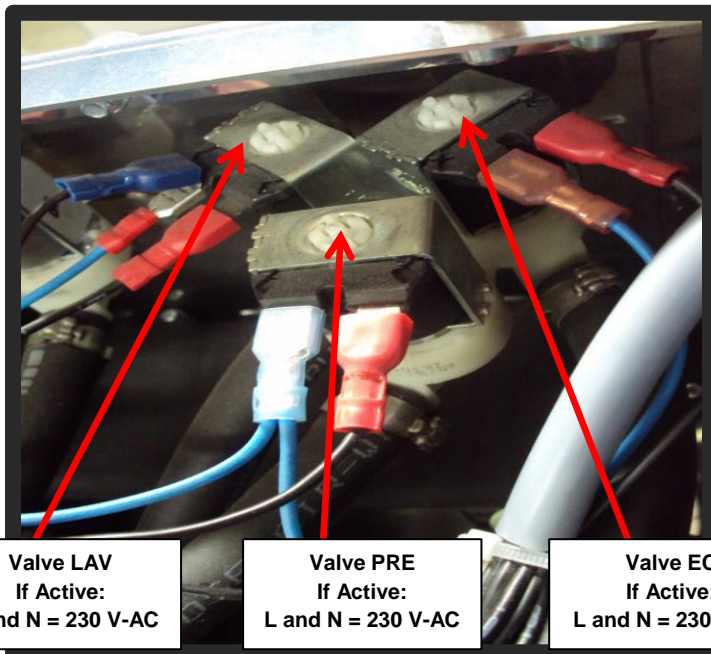
Composed voltage: (L + L) = 400 V-AC

Simple voltage: (L + N or PE) = 230 V-AC

Name	N° Wire	Connection	Wire Color
Heating Element	1	T1	Black
	2	T2	Black
	3	T3	Black
	N° Wire	N	Blue
	PE	PE	Green/Yellow

-  Star connection (Standard)

2.5. Valves (EC, PRE, LAV):



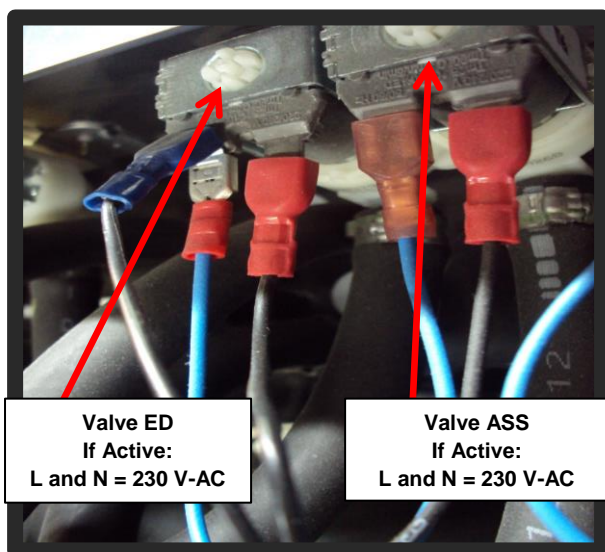
EC: Hot water supply.

PRE: Prewash tank product supply (Hot water).

LAV: Wash tank product supply (Hot water).

Name	Type	Wire Color	Connection	N° Wire
Valve EC	L	Black	15	9
	N	Blue	N	1
Valve PRE	L	Black	12	2
	N	Blue	N	1
Valve LAV	L	Black	16	6
	N	Blue	N	1

2.6. Valves (ED, ASS):

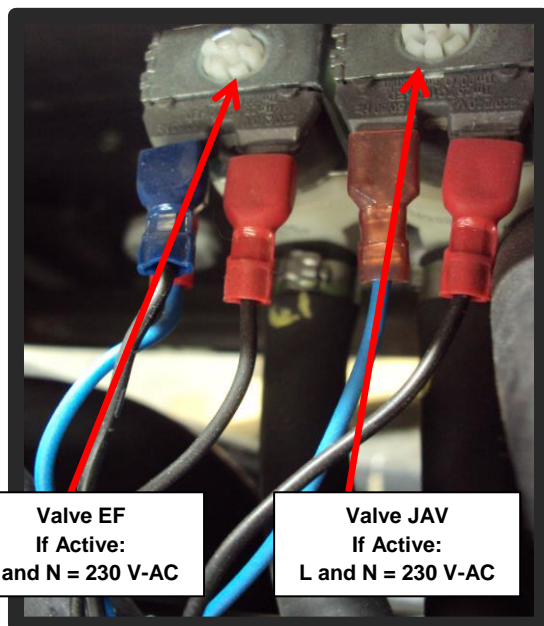


ED: Soft water supply.

ASS: Softener tank product supply (Soft water).

Name	Type	Wire Color	Connection	N° Wire
Valve ED	L	Black	10	5
	N	Blue	N	1
Valve ASS	L	Black	18	3
	N	Blue	N	1

2.7. Valves (EF, JAV):

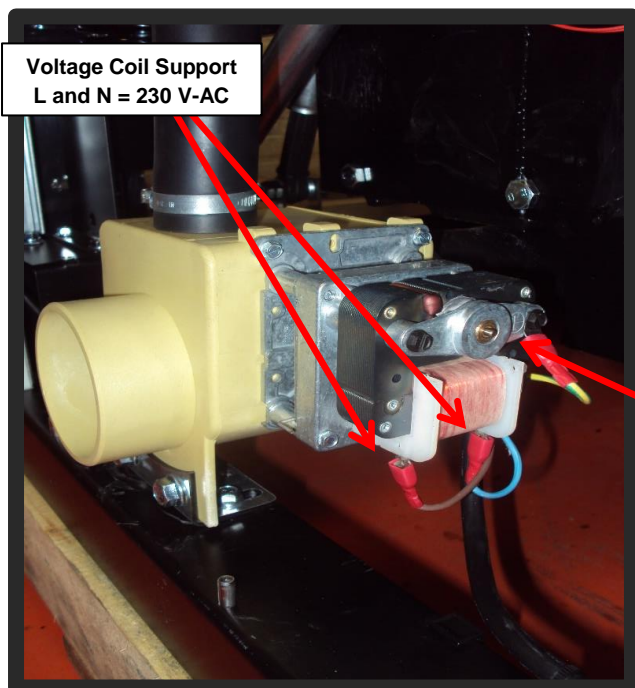


EF: Cold water supply.

JAV: Bleach tank product supply (Cold water).

Name	Type	Wire Color	Connection	N° Wire
Valve EF	L	Black	12	7
	N	Blue	N	1
Valve JAV	L	Black	14	4
	N	Blue	N	1

2.8. Drain Valve:

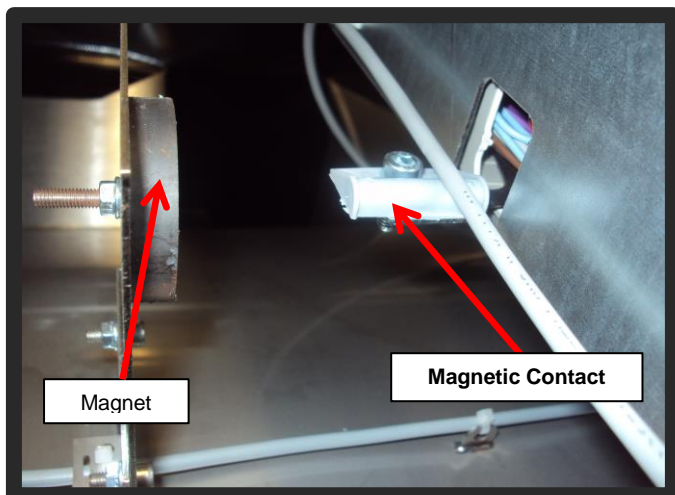


Name	Connection	Wire Color
Drain Valve	X8	Red
	N	Blue
	PE	Green/Yellow

-Voltage between L and N: 230 V-AC, if drain request or necessary.



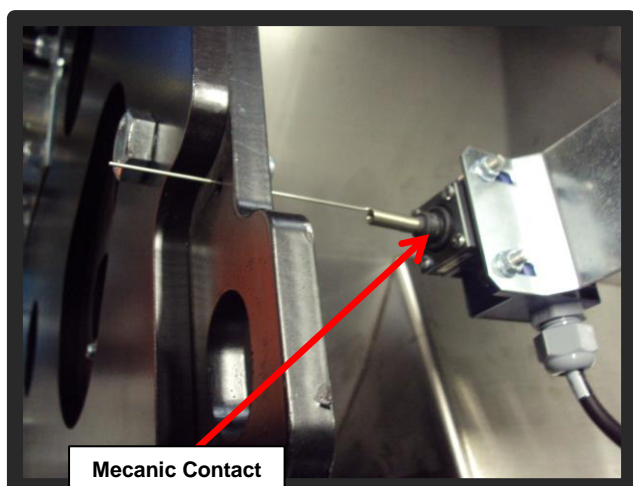
2.9. Magnetic Unbalance Contact (16/22/50/66):



Name	Connection	Wire Color
Magnetic Unbalance Contact	19	Brown
	21	Blue

- Magnetic contact NC.
- Opens in case of unbalance during spinning.

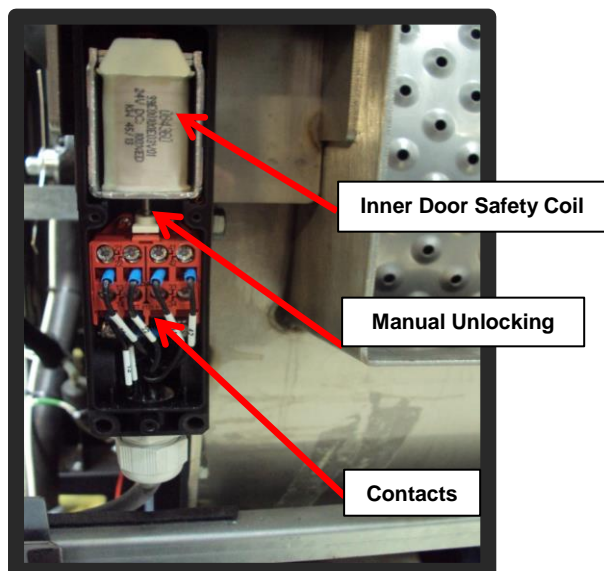
2.10. Mecanic Unbalance Contact (35/50/66):



Name	Connection	Wire Color
Mecanic Unbalance Contact	20	Brown
	22	Blue

- Magnetic contact NC.
- Opens in case of unbalance during spinning.

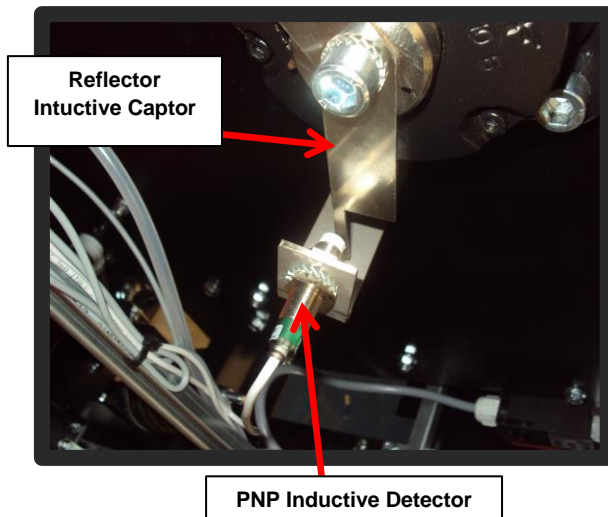
2.11. Door Safety Switch:



Name	N° Wire	Connection (Clean Door)	Connection (Dirty Door)
Door Safety Switch	21	C2	C4
	22	C2	BPS-
	13	X1	C4
	14	C1	C2
	41	X1	C1
	42	C2	C2
	E1	BPP-	C3
	E2	34	C2

- Doors unlocking if machine active.

2.12. Position Detector (Inductive PNP):

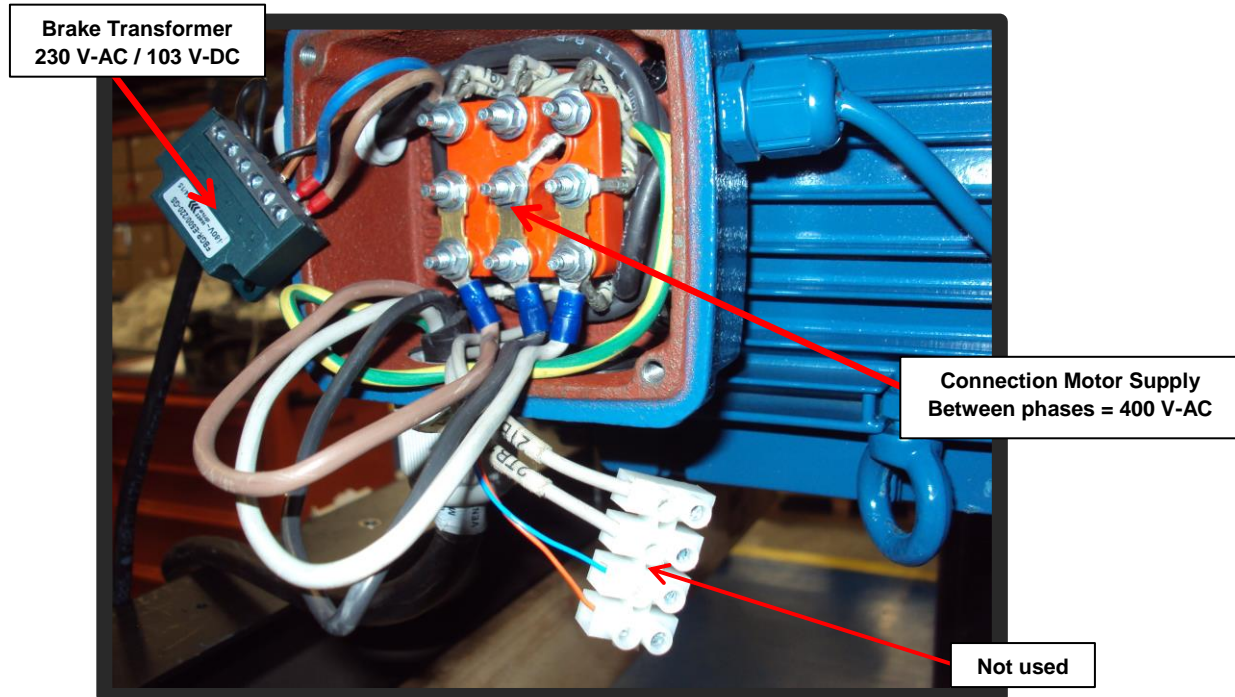



Name	Connection	Wire Color
Position Detector	-	Blue
	DT	Black
	+	Brown

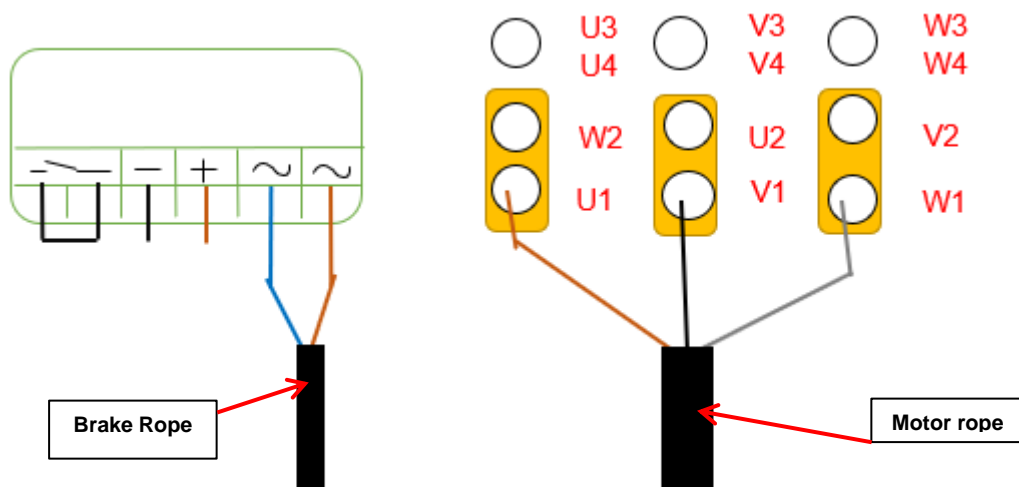
-12 V-DC between + and – permanently.

-12 V-DC between DT and – during detection.

2.13. Brake Motor (16 – 22):



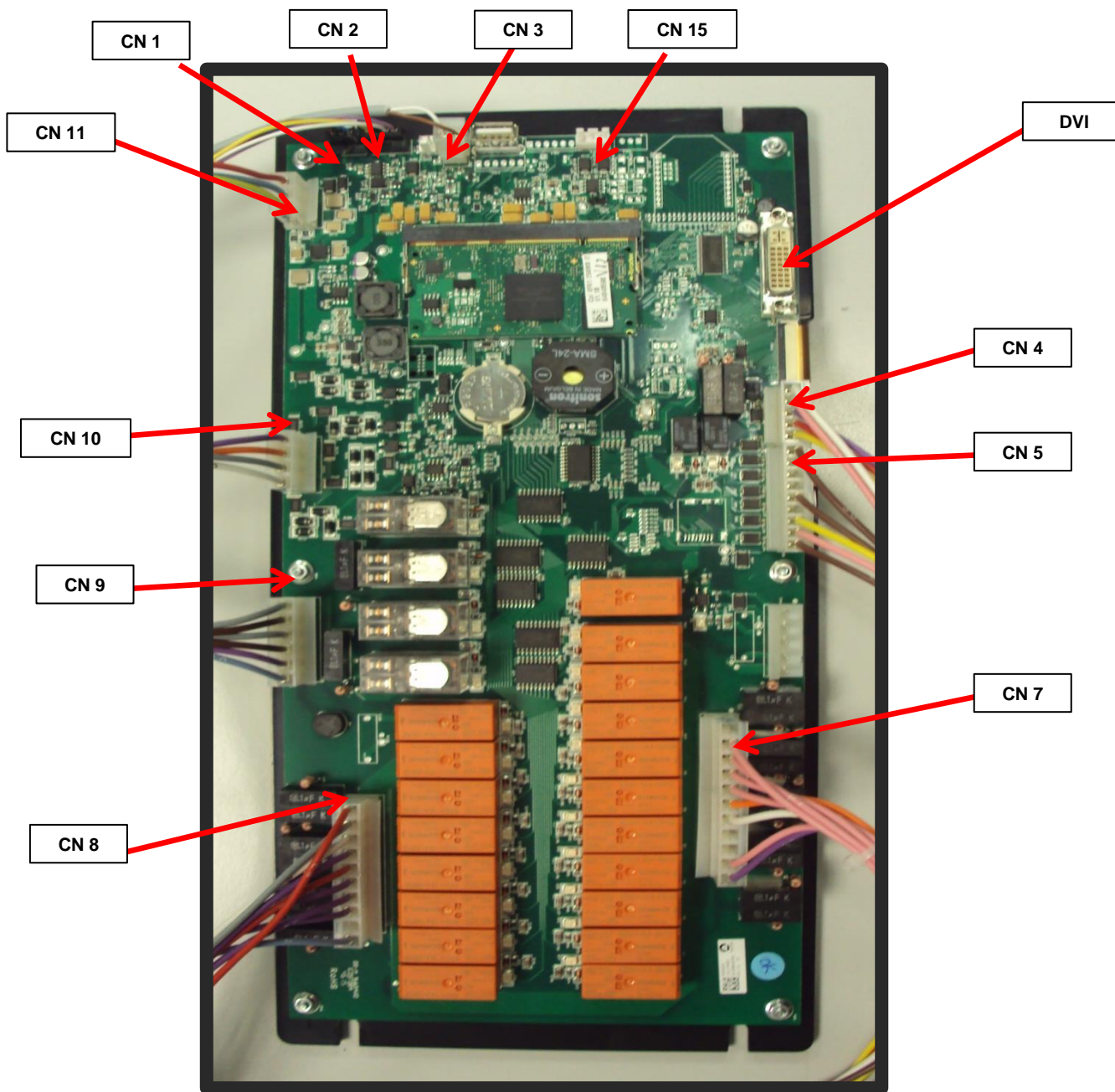
-  Connexion triangle (Standard 16/22)
Star Connexion (Standard 35/50/66)



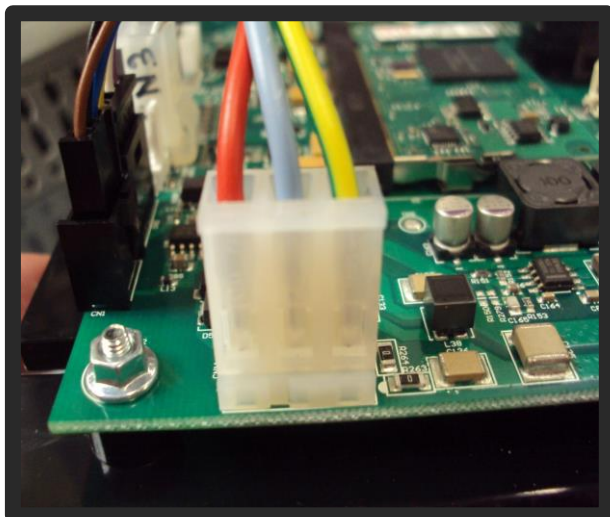
Connecting Procedure:

- 1) Connect motor wire (brown U1, black V1, Grey W1),
- 2) Pairing motor according to machine type (above Triangle),
- 3) Cancel 2 existing black brake wire (1 wire between « ~ » transformer and « U1 » and 1 wire between « ~ » transformer and « W2 »),
- 4) Connect 2 brake wire (Blue and brown Marron) on transformer connections « ~ ».

3. MAIN CARD EASY TOUCH



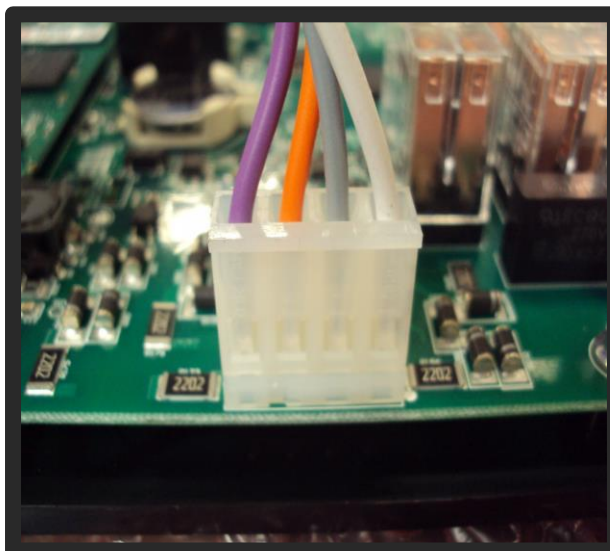
3.1. CN 11 Plug:



- This card supplies all the card in 12 V-DC.

Name	Connection	Wire Color
CN 11 Plug	+	Red
	-	Blue
	PE	Green/Yellow

3.2. CN 10 Plug (Door Safety Switch):



Name	N° Wire	Connection	Wire Color
CN 10 Plug	C1	C1	Purple
	C2	C2	Orange
	C3	C3	Brown
	C4	C4	Grey

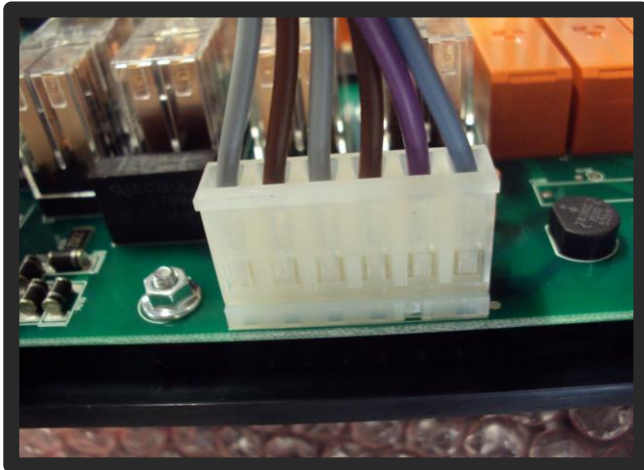
- C1: } Dry contact (0 V if clean door is open)
- C2: }
- C3: } Dry contact (0 V if dirty door is open)
- C4: }

21 – 22 NC: If doors are closed, contact close

13 – 14 NO: If doors are open, contact open

State Rest: Doors closed (Dirty and clean sides)

3.3. CN 9 Plug (Unlocking Safety Doors):



Name	Connection	Wire Color
CN 9 Plug	BPS	Grey
	44	Brown
	BPP	Grey
	34	Brown
	+ 24 V	Purple
	0V	Blue

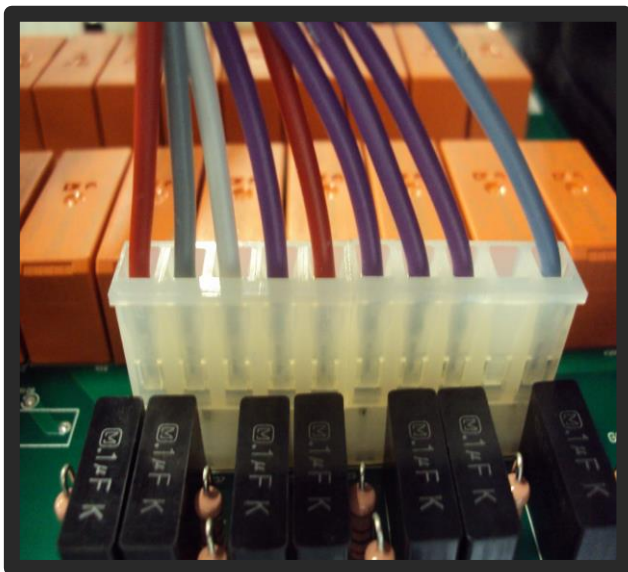
BPS: }
44: } 24 V-DC to unlock dirty door

BPP: }
34: } 24 V-DC to unlock clean door

+ 24 V: }
0 V: } Supply by TR1

24 V-DC pour déverrouiller porte

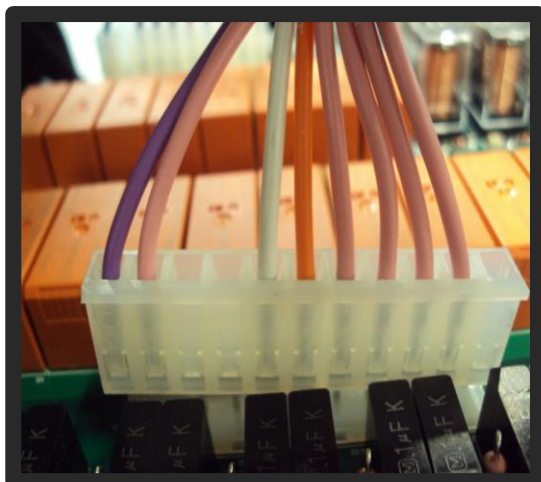
3.4. CN 8 Plug (Output Activations):



Name	Connection	Wire Color
CN 8 Plug	C4	Red
	X08	Grey
	X8	Black
	11	Purple
	CM	Red
	X15	Purple
	X13	Purple
	X10	Purple
	N	Blue

- C4: Phase 230 V-AC (If door is close)
- X08: Drain 2
- X8: Drain 1 (230 V-AC)
- 11: Contactor coil CH (230 V-AC)
- CM: Contactor coil CM (230 V-AC)
- X15: Valve EC (230 V-AC)
- X13: Valve EF (230 V-AC)
- X10: Valve ED (230 V-AC)
- N: Neutral

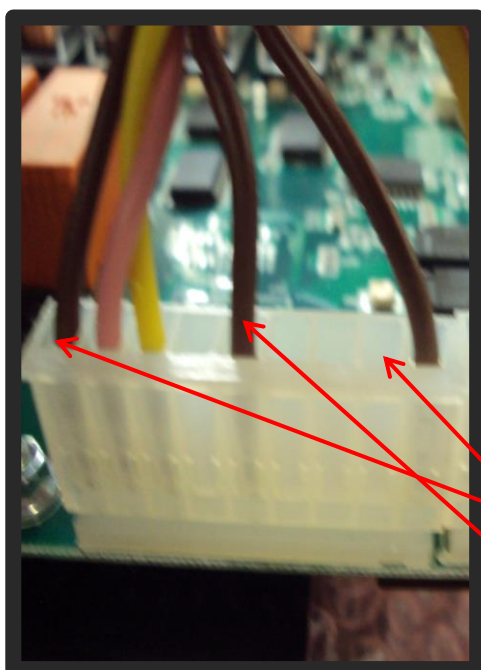
3.5. CN 7 Plug (Output Activations):



Name	Connection	Wire Color
CN 7 Plug	X12	Purple
	X16	Pink
	X14	White
	X18	Red
	P5	Pink
	P6	Pink
	P7	Pink
	P8	Blue

- X12: Valve PRE (230 V-AC)
- X16: Valve LAV (230 V-AC)
- X14: Valve JAV (230 V-AC)
- X18: Valve ASS (230 V-AC)
- P5: } External products tank
- P6: } (additional) 230 V-AC
- P7: }
- P8: }

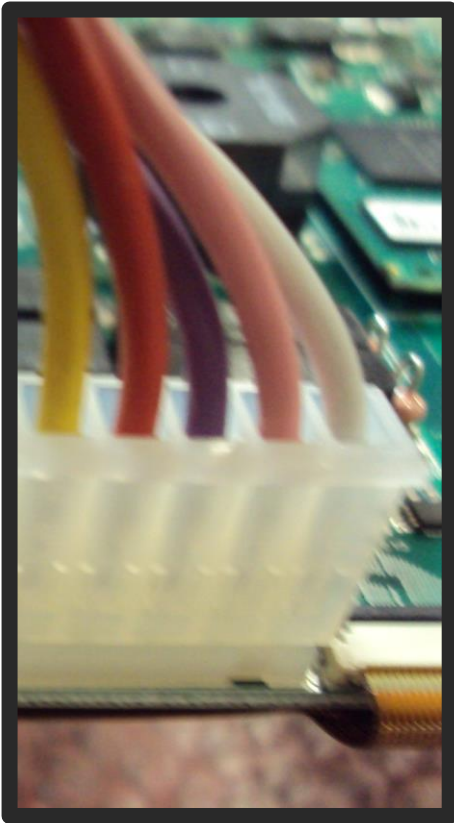
3.6. CN 5 Plug:



Name	N° Wire	Connection	Wire Color
CN 5 Plug	36	RB (Inventor)	Brown
	19	BAL 1	Pink
	35	SPT 1	Yellow
	36	RB (Inventor)	Brown
	36	RB (Inventor)	Brown

- 19: Unbalance dry contact + inventor contact (electronic unbalance)
- 35: Inner safety door
- 36: common (brown) x2 wire
- 36: Determined machine type (brown) x1 wire

3.7. CN 4 Plug:



Name	N° Wire	Connection	Wire Color
CN 4 Plug	37	DCM	Yellow
	38	M2	Red
	39	M1	Purple
	40	AM	Pink
	41	ACM	White

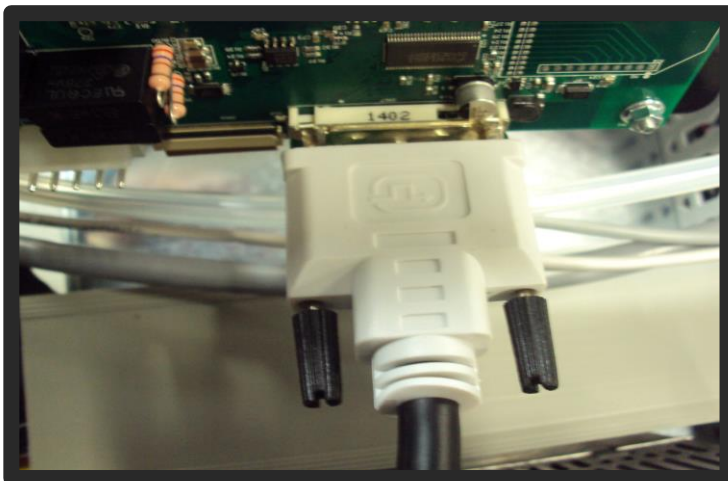
- 37: Common

- 38: }
- 39: } March

- 40: } Analogic voltage 0-10 V-DC
- 41: } which determined rotation

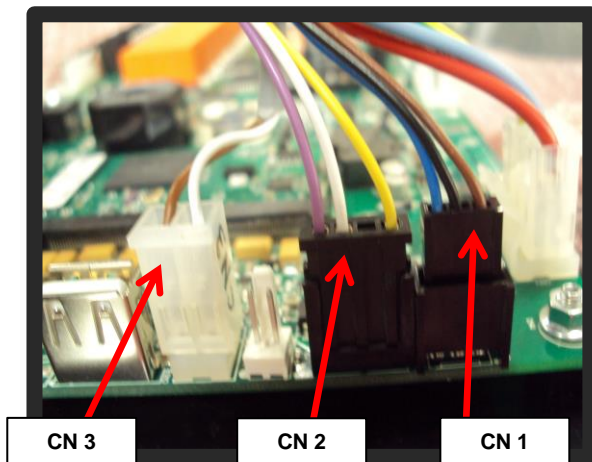
* see inventor: page 18

3.8. DVI Plug:



This plug connects dirty side screen (Easy Touch), to clean side screen (not tactile).

3.9. CN 1 + 2 + 3 Plugs:



Name	N° Wire	Wire Color
CN 1 Plug	-	Blue
	DT	Black
	+	Brown
CN 2 Plug	-	Purple
		White
	+	Yellow
CN 3 Plug	X1	Brown
	X2	White

- CN 1 (Position Captor):

-: Common

DT:

+: 12 V-DC

12 V-DC between + and – continuously,
If detection, 12 V-DC between – and DT.

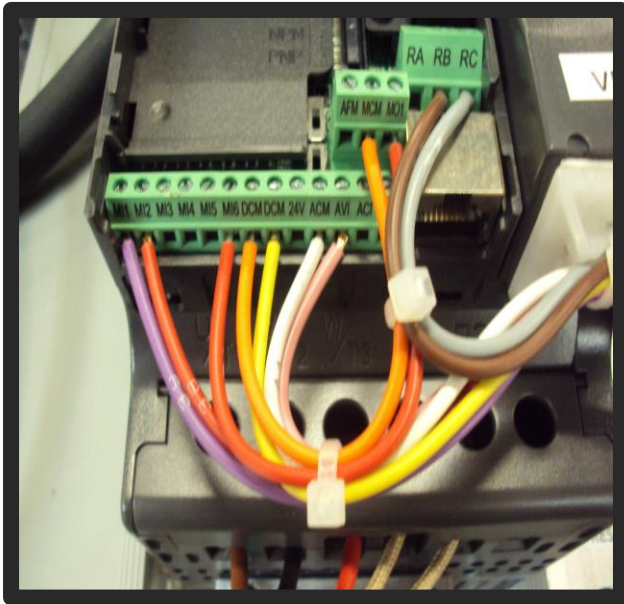
- CN 2 (Analogic Pressure Control):

-: } Analogic pressure control supply
+: }

- CN 3 (NTC Probe Sensor):

X1: } NTC Probe Sensor
X2: }

4. FREQUENCY INVERTER



Inverter Connection	Nº Wire	Connection	Wire color
MI1	39	CN 4	Purple
MI2	38	CN 4	Red
MI6	42	MCM	Red
DCM	45	CN 4	Orange
DCM	37	CN 4	Yellow
ACM	41	CN 4	White
AVI	40	CN 4	Pink
MCM	45	Inverter	Orange
M01	42	Inverter	Red
RB	36	CN 5	Brown
RC	21	BAL 2	Grey

- MI1: } Sense of rotation
- MI2: }
- MI6:
- DCM: } Common
- DCM: }
- ACM: } Washing speed by principal card ET: 5V = 500 rpm/min
- AVI: } 10V = 1000 rpm/min
- MCM: }
- M01: }
- RB: } - Electronic unbalance contact.
- RC: } - If active: spin is stopped

Voltage Between ACM and AVI	Inverter Frequency	Cycle Phase	Between 24V and MI1	Between 24V and MI2
0,475 mV	7,9 Hz			
0,816 mV	13,6 Hz			
1,03 mV	17,5 Hz			
1,329 mV	22,2 Hz			
4,6 mV	77,3 Hz			
10,05 mV	168 Hz	Turning Up	24 VDC	24 VDC
80 °C	5,8 kHz	Turning Down	24 VDC	0 V
		Stop	0 V	0 V

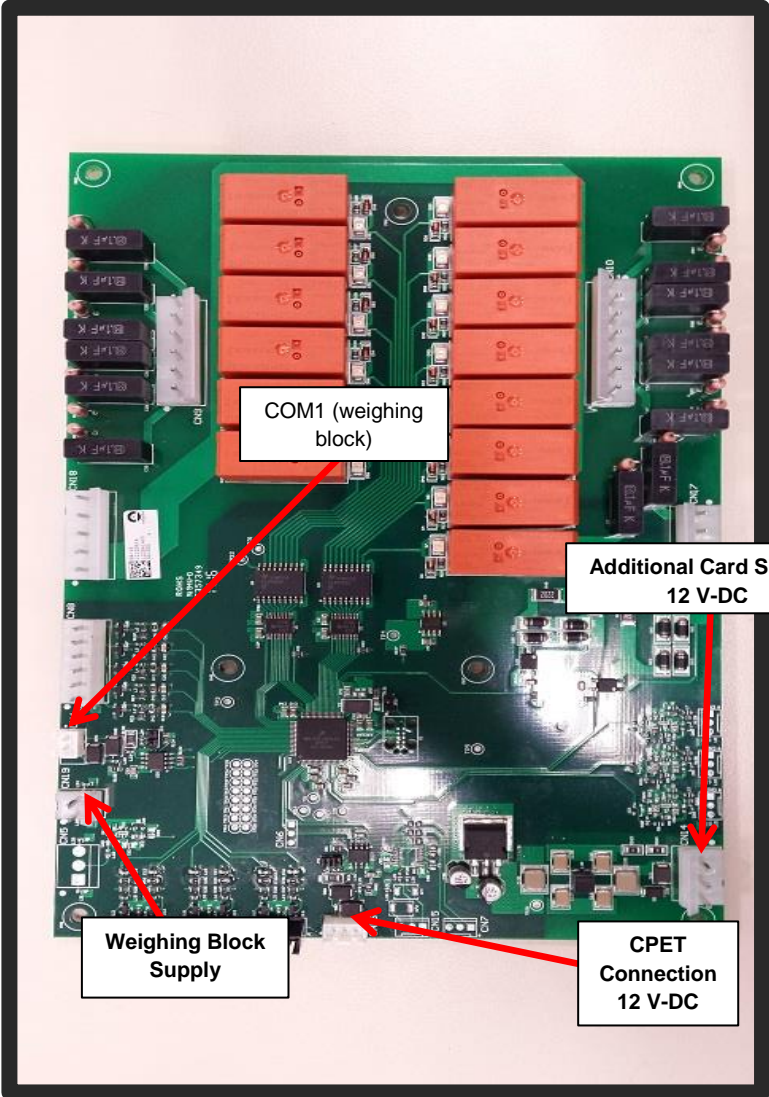
*Barrier 16 – 22

*Viewpoint dirty side

5. AUXILIAR CARD DESCRIPTION (WEIGHING SYSTEM)

Name	Connection	Wire Color
Weighing Card Supply	12 V-DC	Red
	GND	Black
	PE	Green/Yellow

Name	Connection	Wire Color
CPET Connection		Green/Yellow
		White
		Brown





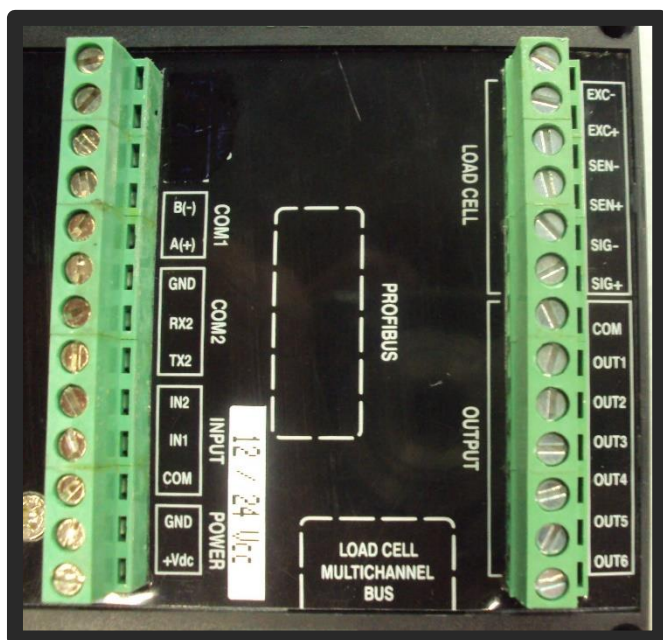
Weighing Block (IPE 50)

Name	Weighing Block Connection	Wire Color
Weighing Block Supply	+VdC	White
	GND	White

Name	Weighing Block Connection	Wire Color
COMP 1 Weighing Block	B(-)	Green
	A(+)	Purple



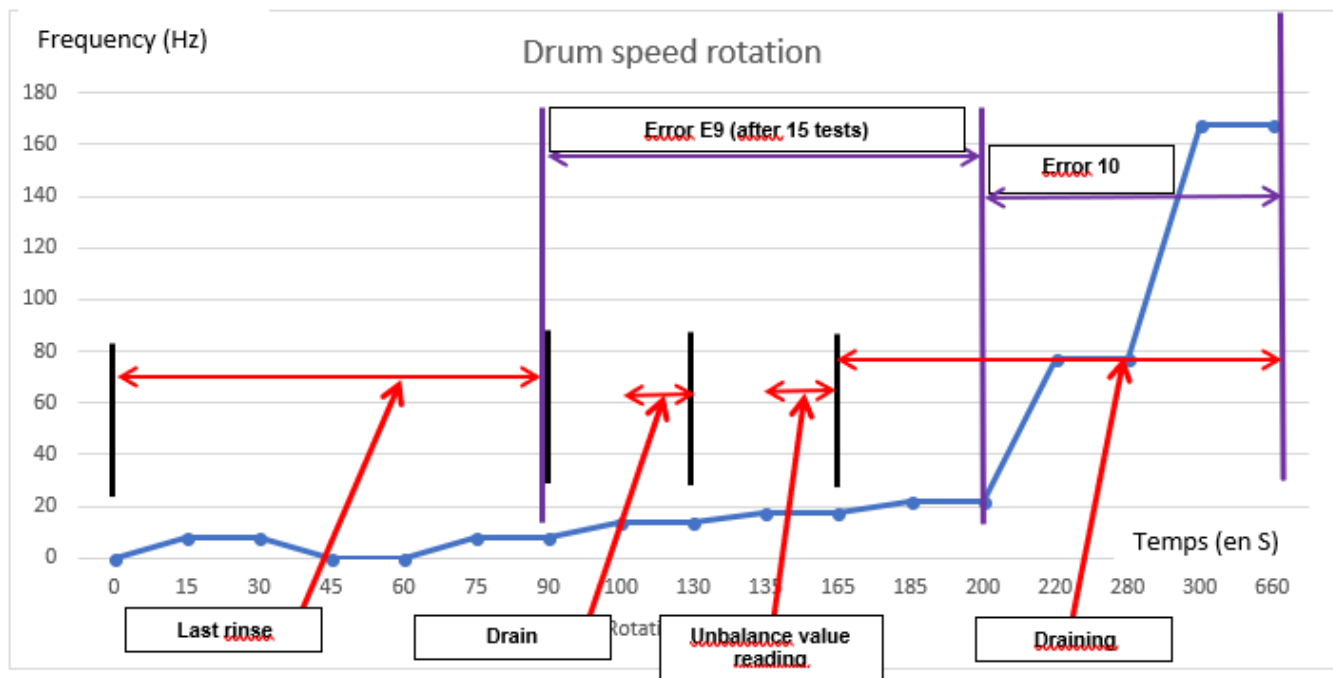
Weighing Foot



Name	N° Wire	Connection	Wire Color
Weighing Foot	Sen+	Sen+	Grey
	Exc+	Exc+	Brown
	Sig+	Sig+	Yellow
	Sig-	Sig-	White
	Exc-	Exc-	Green
	Sen-	Sen-	Pink

6. UNBALANCE DESCRIPTION

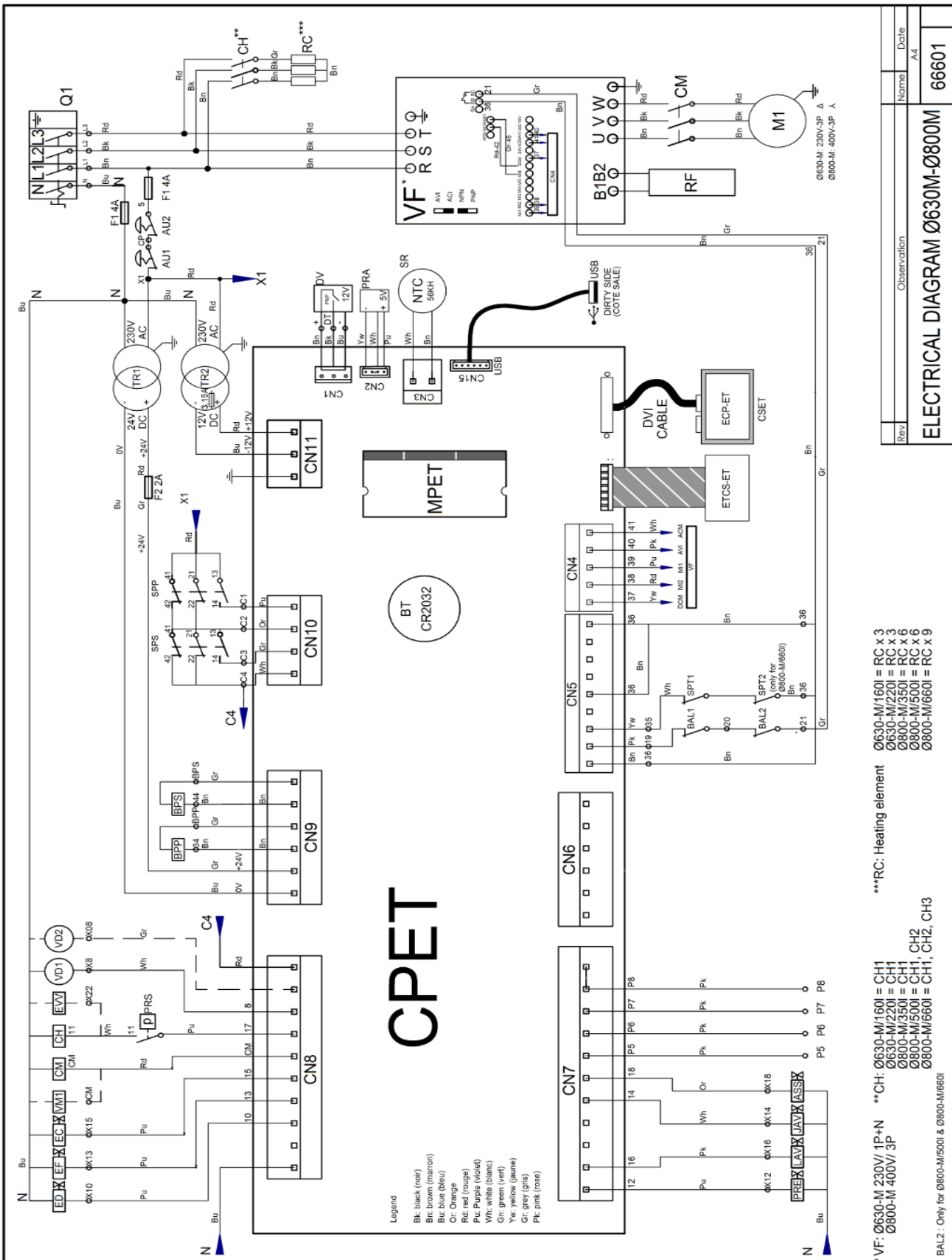
Ø630-16 Exemple



-After the rinse, the inverter reads the value for unbalance from the drum (16 seconds). If the real value is less than the programmed values, the machine begins the spinning. If the real value is bigger than programmed value, the machine stops the spinning attempt (the inverter opens de contact RB/RC) and begins to relocate the clothes properly. The inverter is on serial with the unbalance switch (magnetic/mechanic BAL1, BAL2). If after 15 attempts the machine detects always high values or if the mechanical/magnetic switch is open, the error E9 will appear.

-If the detection phase on the inverter is ok and the unbalance switch is closed (BAL1, BAL2), the machine begins to spin and open the drain valve. During the spinning phase, if the mechanical/magnetic switch (BAL1, BAL2) is open will appear the error E10 (maximum unbalance will appear, and the machine will finish the program).

7. ELECTRICAL DIAGRAM



Rev	Observation	Name	Date
			A4
ELECTRICAL DIAGRAM Ø630M-Ø800M			66601

**VF: Ø630-M 230V/ 1P+N **CH: Ø630-M/160V = CH1
 Ø800-M 400V/ 3P Ø630-M/220V = CH1
 Ø800-M/350V = CH1
 Ø800-M/500V = CH1, CH2
 Ø800-M/660V = CH1, CH2, CH3

 ***RC: Heating element
 BAL2: Only for Ø800-M/500V & Ø800-M/660V

<u>Rep.</u>	<u>Désignation</u>
ASS	Softener
AU1	Emergency switch dirty side
AU2	Emergency switch clean side
BAL1	Unbalance switch 1
BAL2	Unbalance switch 2 (only for Ø800-500-660)
BT	Battery CR2032
BPP	Open/close coil clean side
BPS	Open/close coil dirty side
CH1	Heating contact
CH2	Heating contact
CH3	Heating contact
CM	Motor contactor
CPET	Mainboard Easy Touch
CSET	Auxiliar board Easy Touch
DV	Rotation sensor
EC	Hot water
ECP-ET	TFT Display clean side Easy Touch
ED	Auxiliar water – Soft water
EF	Cold water
ETCS-ET	TFT Display dirty side Easy Touch
EVV	Steam solenoid (Steam heating)
F1	Fusible type gG 4A
F2	Fusible type gG 2A
JAV	Bleach
LAV	Washing product
M1	Drum motor
MPET	Microprocessor module Easy Touch
P5	External dosing pump signal
P6	External dosing pump signal
P7	External dosing pump signal
P8	External dosing pump signal
PRA	Water level sensor
PRE	Prewashing product
PRS	Security thermostat
Q1	Main switch
RC	Heating resistance
RF	Brake resistance
SPP	Security signal clean side
SPS	Security signal dirty side
SPT1	Internal door security drum 1
SPT2	Internal door security drum 2 (for Ø800-660)
SR	Temperature sensor NTC

TR1	Transformer 230VAC/24VDC
TR2	Transformer 230VAC/12VDC
VF	Inverter
VID1	Drain 1
VID2	Drain 2 (option)
VM1	Motor fan (only Ø800)
USB	USB conection