

AFTER
SALES
SERVICE

FAGOR



TECHNICAL STUDY

Technical
Documentation

PRODUCT:

Washing machines

RANGE:

Elegance 99



Date: 01/06/2000

Document No.: 1145



This document is for use by all persons providing the technical assistance service (T.A.S.). Its aim is to facilitate product repair. It provides back-up documentation describing the use of equipment.

The following safety warnings are given in this manual:



Electrical hazard: Identifies possible electrical risks which could permanently damage the appliance.



Warning: Identifies information or circumstances which may cause personal injury or death.



Important: Identifies vital information for understanding the product.

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1- Warnings and precautions

This study should only be used by properly qualified technical personnel who have technical skills, knowledge applicable to the product and suitable tools to repair it.

Electrical appliances must be switched off and unplugged from the mains supply when being repaired.

Before servicing the appliance, checks should be made for earth continuity and insulation resistance.

Precautions should be taken for personal safety to protect against accidents caused by sharp edges of metal and plastic parts.

After servicing, the appliance must be checked again for electrical safety (earth, electrical safety).

Checks should also be made to ensure that there are no leaks in seals, gaskets and water pipes once the repair has been completed.

2- Features

The new Fagor Elegance range Spin washing machines offer the following features:

Spin Washing System

Temperature selector (the adjustable thermostat disappears)

Safety Thermostat + NTC (variable thermostat)

Motor pump with filter and thermal protector

Electronic module incorporating motor reverse, temperature control and timer supply

New water distributor cams

New motors

New pressure switch (adjusted to the load and energy consumption)

180° hatch door

Crease guard switch

No spin drying switch

Extra rinse switch

Speed reduction switch

Detergent consumption reduction system

3- Operation

3.1- General description

The Spin washing machines have a Spin System washing system. In the normal programmes every certain amount of time these machines go into a high wash speed (300 r.p.m). They increase speed for about two seconds to 300 r.p.m at 2-minute intervals.

These are the most important aspects of the spin circuit:

Times for each programme position

These times are not just the programmer times, the module or electronic circuit times (Spin) also have to be added.

If a programmer position is 5 minutes and the electronic circuit (Spin) is set to 10 minutes, the programmer will advance after 15 minutes.

The electronic circuit (Spin) may not supply the programmer timer for the following reasons:

It is waiting for the pressure switch to trip or be reset (intake of water or draining)

It is waiting for the water to reach a temperature (heating)

It is waiting for a certain amount of time to pass (Motor spin)

When any of the above conditions are met, the spin circuit will close the timer, and the time for that programmer step will start to count down.

The machine is started in the normal way:

Programme selection

Temperature selection

Options selection

Start wash by pressing start button

Technical specifications of the timer

Rated voltage	220V - 240V			
Rated frequency	50 Hz			
Operating temperature	85 °C			
No. of pulses	60			
Step times	6 seconds	2.5 minutes	5 minutes	
Resistance contacts	16 (4) Amp			
Spin drying contacts	4 (4) Amp			
Rest of contacts	2 (2) Amp			
No. of contacts	6			
Manufacturers	Elbi	Copreci		
Unified for washing machines	700 r.p.m.	900 r.p.m.	1100 r.p.m.	1300 r.p.m.
Reference	L20F02716	L20F02716	L20F02716	L20F02716

Programmes	1 Prewash	2 Wash	3 Rinses	4 Spin drying
Temperature	30 °C	90 °C	3 Rinses + 1 Extra	On a ramp
Time	135 minutes	120 minutes	40 minutes	8 minutes

Programmer contact connections

B3	B4	Crease guard
	B5	Heating element
B1	B2	Door lock
C1	C2	Electrically operated valve
	C3	Drain pump
C3	C4	Extra rinse
	C5	Second Level (Rinse)
A3	A4	Code 2 (11) Module
	A5	Code 3 (10) Module
A3	A2	Code 4 (9) Module
	A1	Code 5 (8) Module

Spin module technical specifications (for cold water)

Rated voltage	220 V - 240 V	
Rated frequency	50 Hz	
Operating temperature	0-85° C	
Maximum relative humidity	90 %	
Connectors	13 contacts	8 contacts
Manufacturers	Copreci	Elbi
Unified for washing machines	LB6N03618	

13-contact connector connections

8-contact connector connections

Contact	Position	Contact	Position
1	A3 Programmer	1	11 pressure switch (supply)
2	N.T.C.	2	Motor Rotor
3	Temperature Selector	3	Motor Rotor
4	Temperature Selector	4	Motor Stator
5	N.T.C.	5	Motor Stator
6	No Spin Drying	6	12 Pressure switch
7	Spin Drying Selection	7	Programmer Timer motor
8	A3-A1 Programmer	8	Empty
9	A3-A2 Programmer		
10	A3-A5 Programmer		
11	A3-A4 Programmer		
12	Tachogenerator		
13	Tachogenerator		

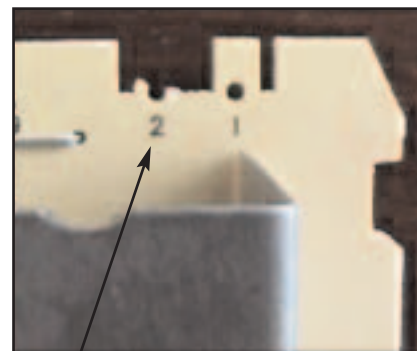
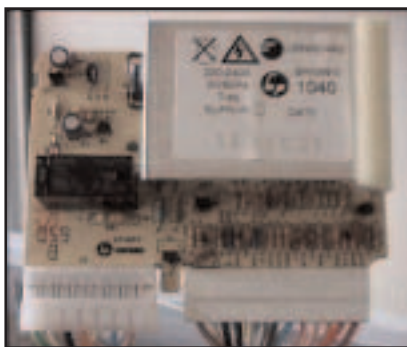


Fig. 2
Pins No. 1 v No. 2

Adapting the module (Fig. 2)

700 r.p.m.	900 r.p.m.	1100 r.p.m.	1300 r.p.m.
Cut pins Numbers 1 and 2	Cut pin Number 2	Cut pin Number 1	Do not cut any pins

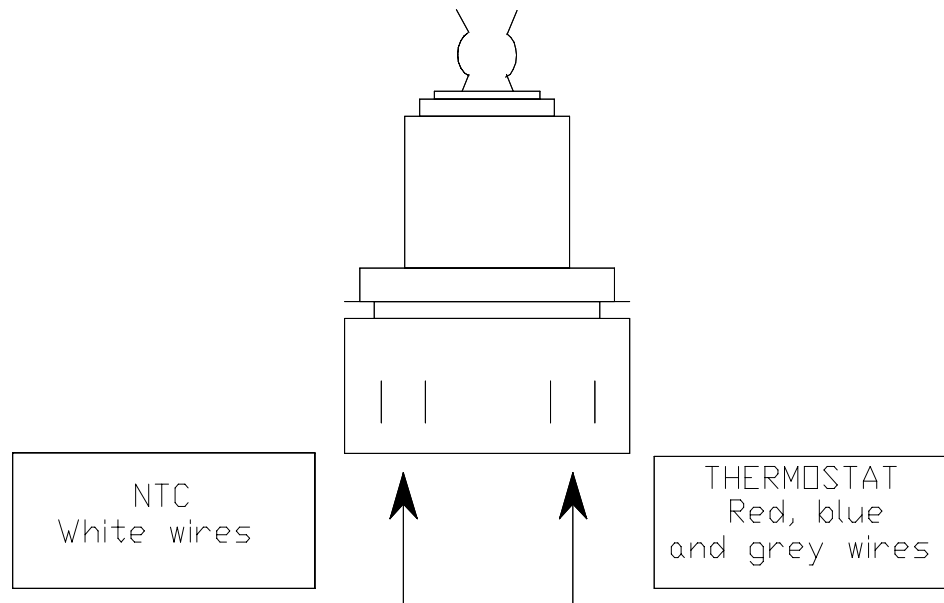
The programmer timer is supplied by the Spin module

Just like the programmer the module has some step times that oscillate between 19 seconds 5 minutes 10 minutes 15 minutes and 30 minutes

Safety Thermostat Technical Specifications

Contact resistance	16 (4) aMP
Contact normally	Closed
Trip temperature	96° C
Reset temperature	50° C
Supplier	Zertan
Reference	L36R000A5

Note: As a safety measure whenever the safety thermostat trips it should be replaced with a new one.



N.T.C Technical Specifications (Values to be obtained in Kilohms)

Water temperature	< 30°C	30°C	35°C	40°C	57°C	60°C	80°C	90°C	> 90°C
Resistance values	> 42K	39K	31K	26K	13K	11K	5K	4K	< 3,5K

Temperature Selector Technical Specifications (Values to be obtained in Kilohms)

Temperature selected	Cold	30°C	40°C	50°C	60°C	70°C	80°C	90°C
Values obtained	80K	70K	60K	50K	40K	30K	20K	10K

When the signal received by the N.T.C. Module or the Temperature Selector are 0 or infinite values, the washing machine will complete the programme without carrying out any heating.

This fault mode is detected when in the heating positions, the programmer only supplies the heating element for 8 seconds.

The joint function of the temperature selector and the N.T.C is the same as that carried out by the adjustable thermostat in other washing machine ranges.

Speed Selector Technical Specifications (Values to be obtained in Kilohms)

Position		1	2	3	4	5	6
Resistance Value 5%		60K	50K	40K	30K	20K	10K
Washing machine model according to revolutions	850 r.p.m.	850	700	600	500	400	0
	1000 r.p.m.	1000	850	700	500	400	0
	1250 r.p.m.	1250	1050	850	650	450	0

Door locking system

The Fagor Elegance 99 washing machine range has two types of door locking system

Mechanical opening (current door locking system)

Remote opening (with an opening button on the control panel)

The wiring connection for the current door locking system has not changed. However, special care needs to be taken with the remote opening connections, paying special attention to the colours marked on the door locking device which have to coincide with the colours of the wires.

Connection guide

	BROWN WIRE	RED WIRE	WHITE WIRE
Mechanical Opening	L	N	C
Remote Opening	3	1	2

Electrically operated valve

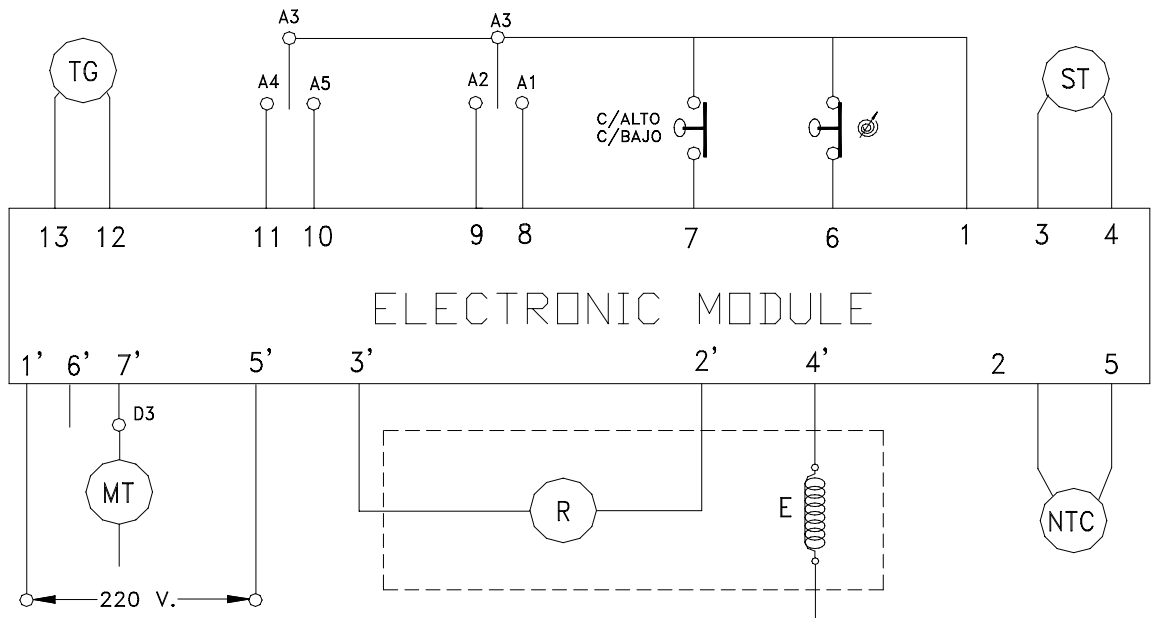
Special care is only necessary with Spin washing machines with a hot water intake.

The common wire supplying the two electrically operated valves is blue

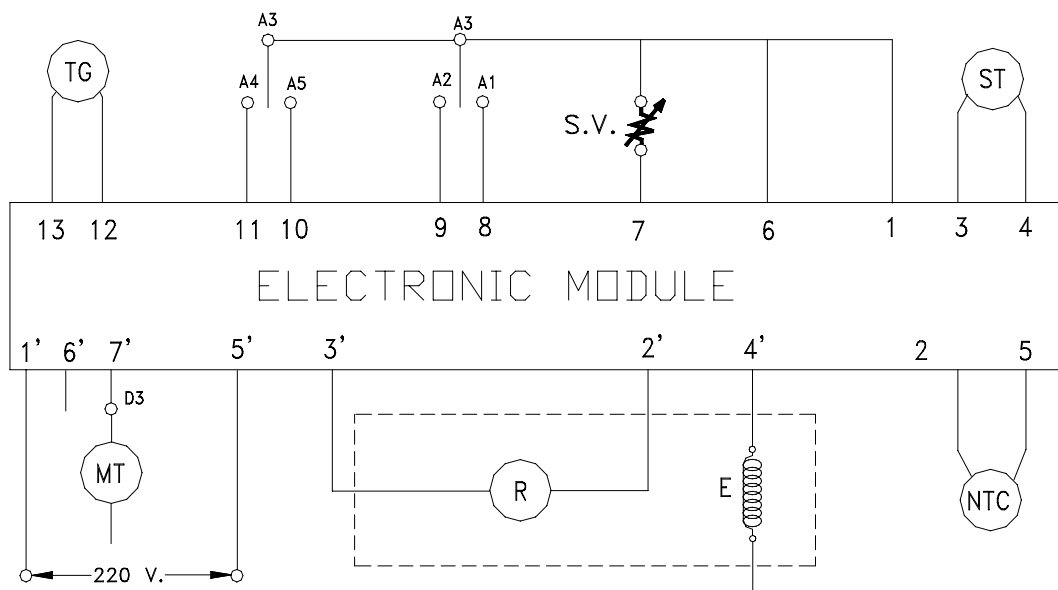
The wires going to the electrically operated valves are connected in the following way:

Electrically operated valve	Wire colour
Cold	White
Hot	Red

Connections for electronic module with spin drying exclusion and selection



Connections for electronic module with speed selector



DESCRIPTION OF THE CIRCUIT COMPONENTS

ST Temperature Selector

TG Tachogenerator (Motor)

NTC Variable resistance (changes value with a variation in the water temperature)

R Washing Machine Motor Rotor

E Washing Machine Motor Stator

MT Programmer (Timer) Motor

 No Spin Drying

SV Speed Selector

3.2- Troubleshooting

Fault detection

If the door locking system jams, the programmer will always stop at step 60.

If the motor pump does not drain enough, the programmer will always stop two positions before reaching any Stop position.

Safety devices

	Fault condition	What the washing machine does	Final situation
Water intake	If pressure switch level 1 does not trip in 8 minutes	The timer continues to be supplied	It will reach the Stop position
Draining	If after 3 minutes of draining the the pressure switch level does not change	The timer will continue to be supplied to the creasguard position if it is activated	If the creaseguard feature is not activated, the programmer will advance to two positions before Stop
Heating	In the heating step if a 5°C increase is not detected in 10 minutes	Advances to the next position	Carries out the programme cold
Motor	If with the motor being supplied, the tacho signal is not received	The motor will rev up for 2 seconds	The programmer will not be supplied and will not advance

Motor Fault Mode

If the motor does not turn in either wash direction, it will not spin dry either

Motor Fault

Module Fault

Wiring Fault

If the motor spin dries and only turns one way during washing (the spin drying direction)

Module Fault

If the motor does not spin dry and only turns one way during washing (opposite to spin drying direction)

Module Fault

Programmer Advance Fault Mode

Does not heat in the heating positions

Does not heat in the heating positions, the module does not supply the programmer timer and the safety thermostat trips.

Does not wash properly if the timer is supplied continuously in addition to not heating. The wash times are shorter.

Does not drain If the timer is supplied continuously in the delicate programmes and in the fast one it will not drain.

The fault in the programmer advance could be caused by

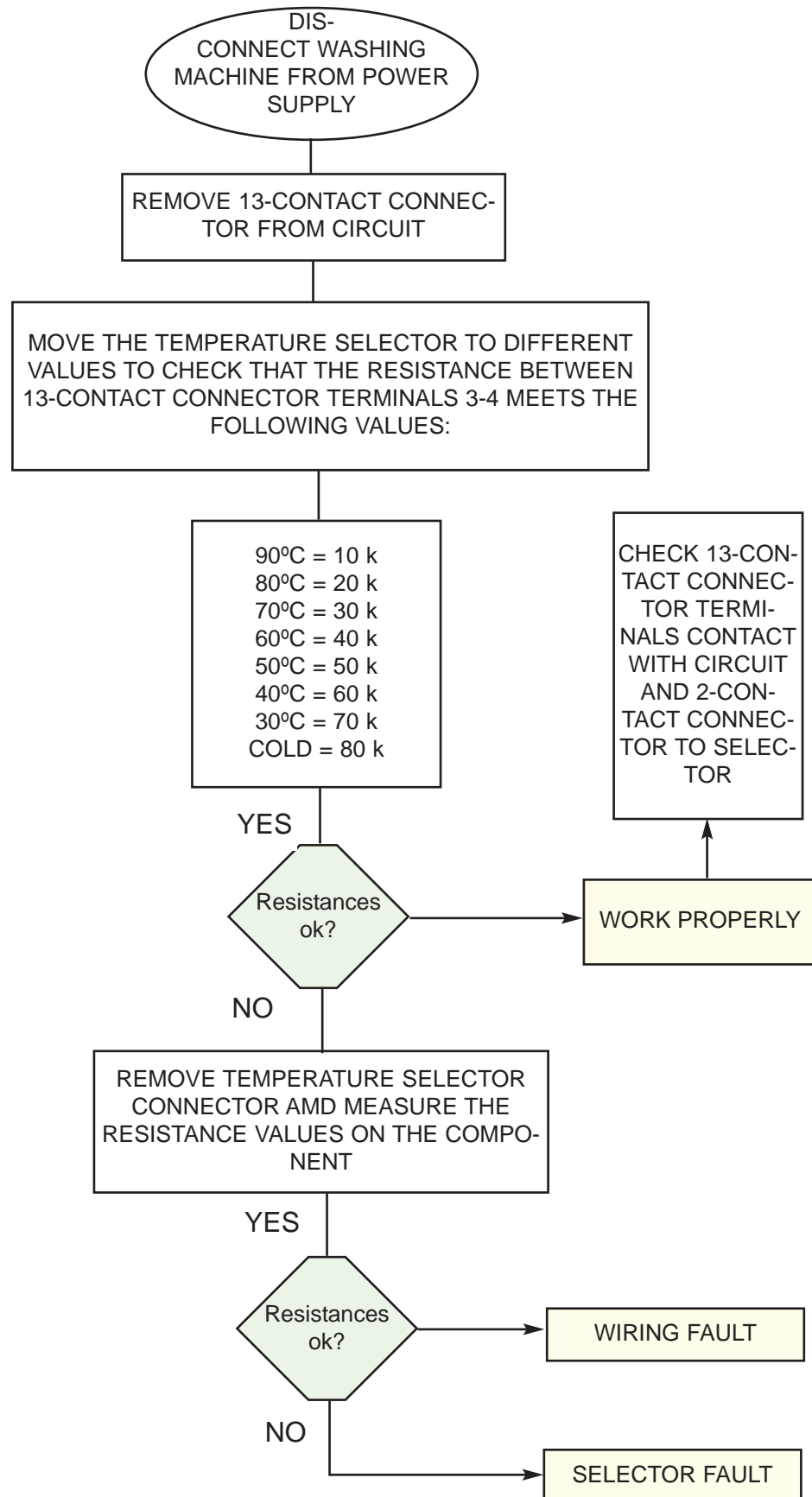
Defective module (the triac supplying the timer has remained open or shortcircuited)

Wiring fault (wrong, cut wire, not connected properly, bad contact)

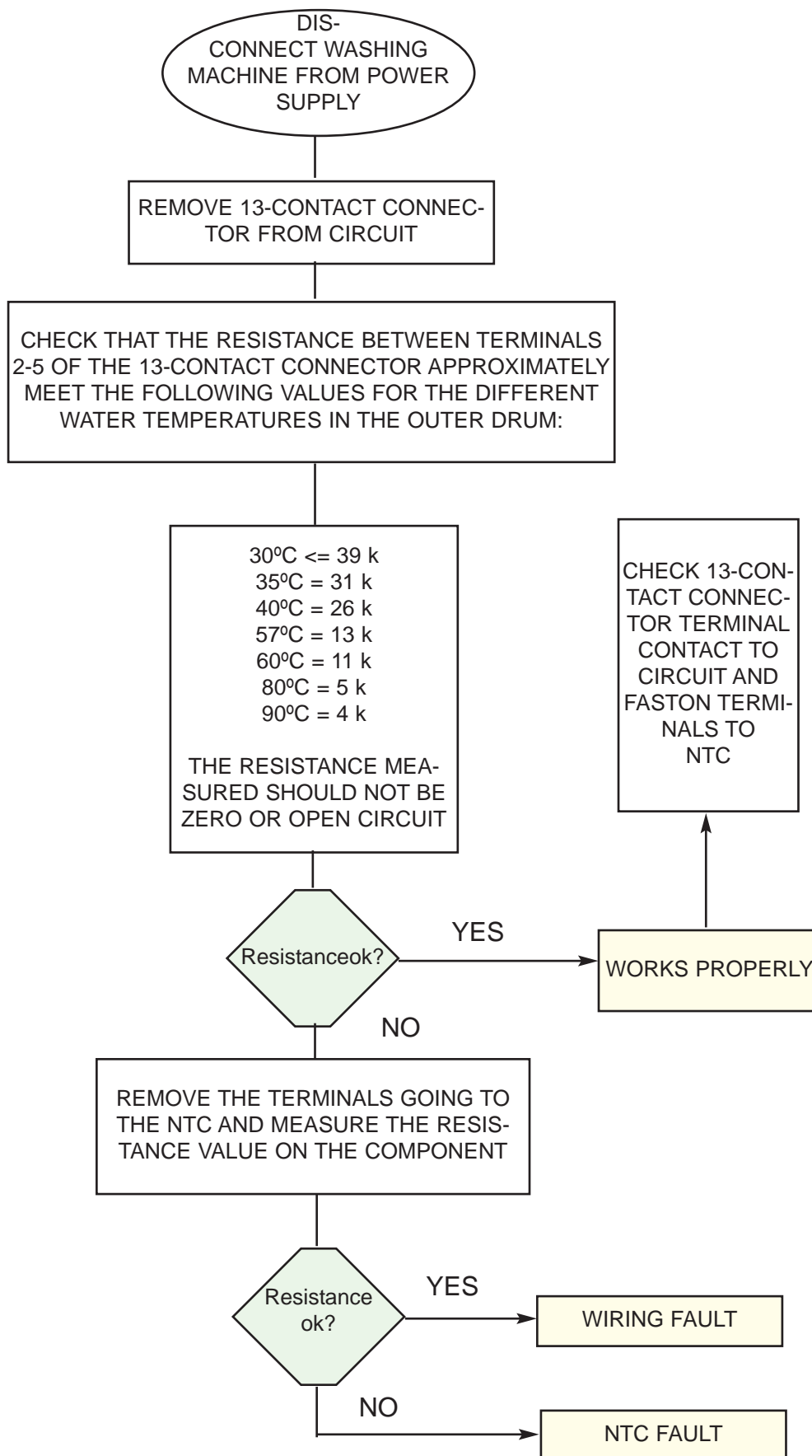
Fault in the module input signals (If the module receives incorrect code signals like pressure switch signal, temperature selected, NTC temperature, spin drying reduction or no spin drying button, it will do the wrong things.

Rubbing or a mechanical element preventing the programmer from advancing when receiving supply

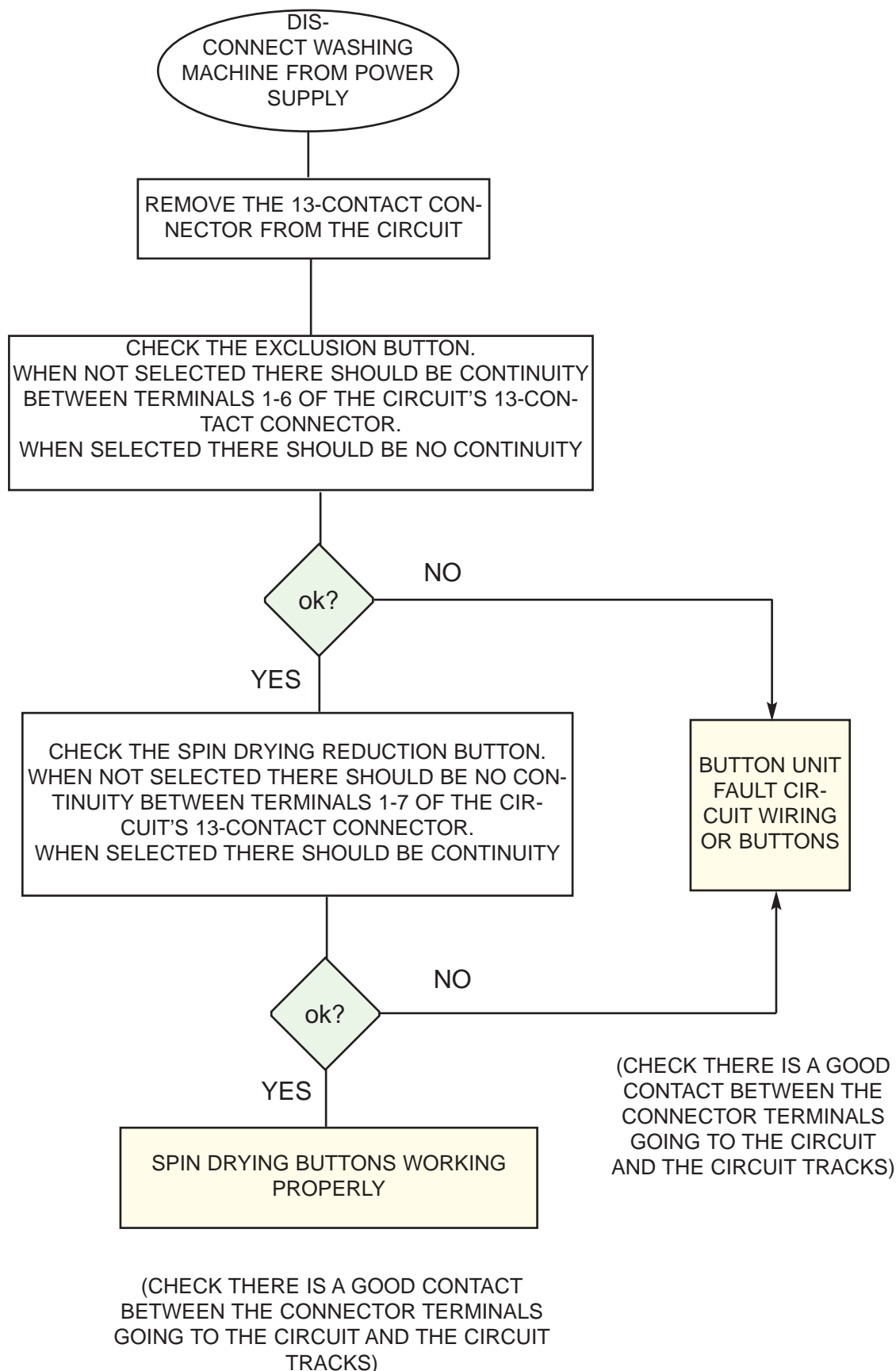
Temperature Selector Fault



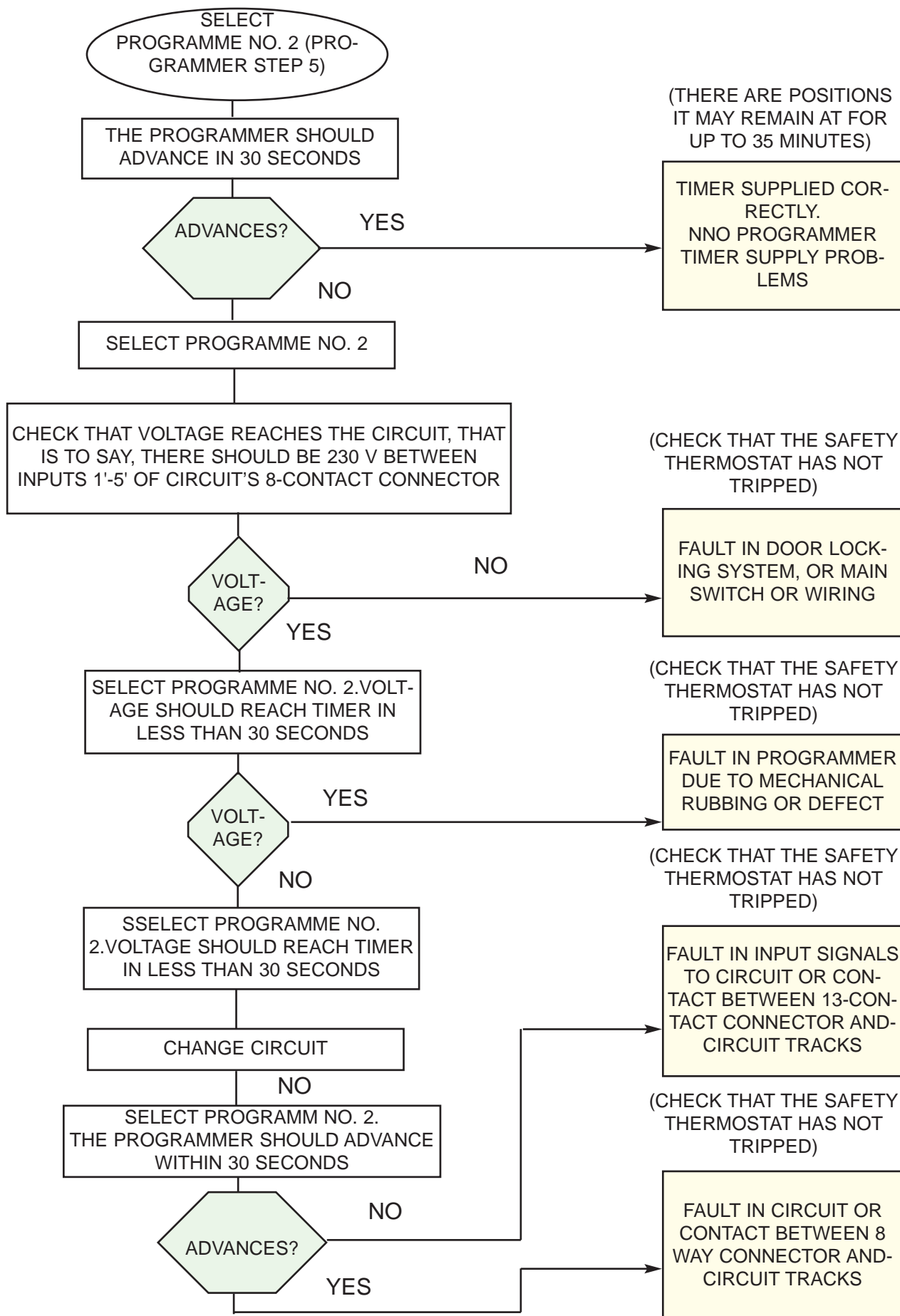
NTC fault



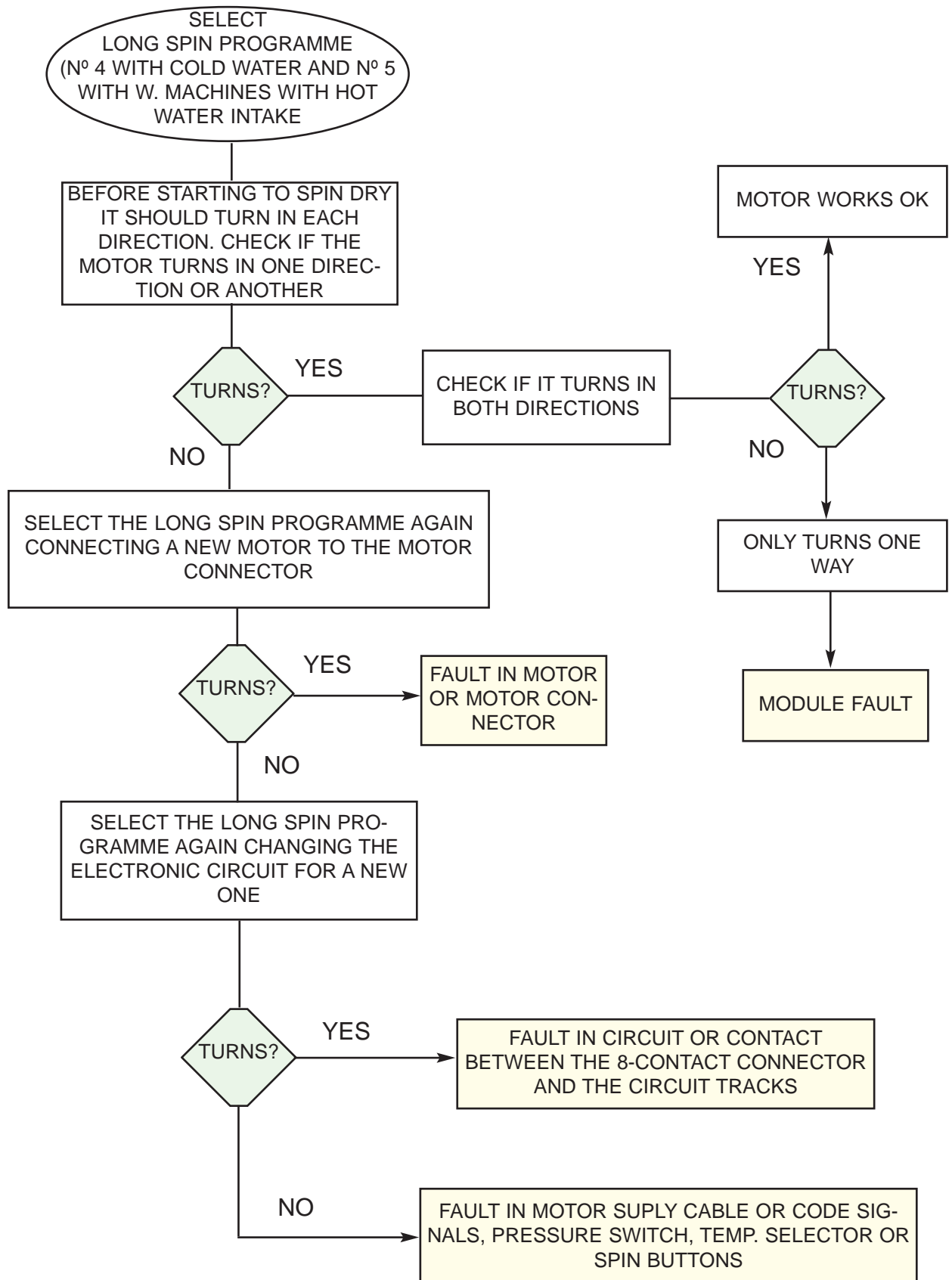
Spin drying exclusion and reduction button connection fault



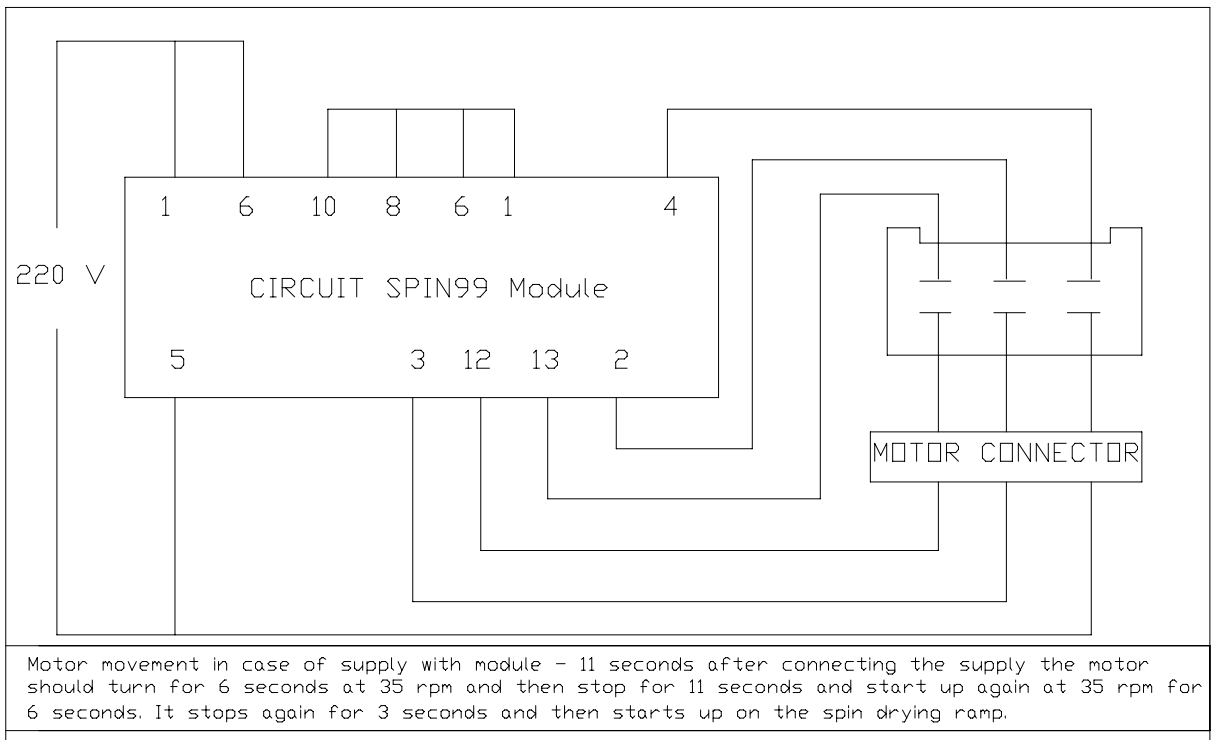
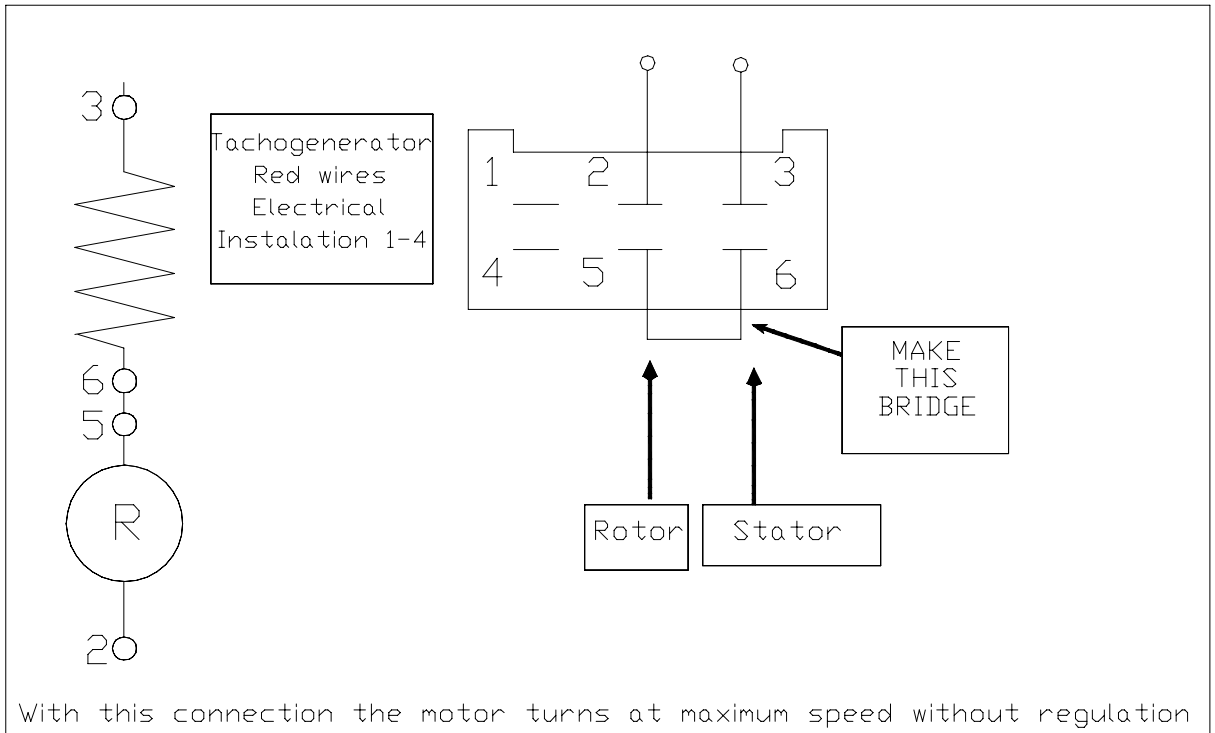
Programmer Fault



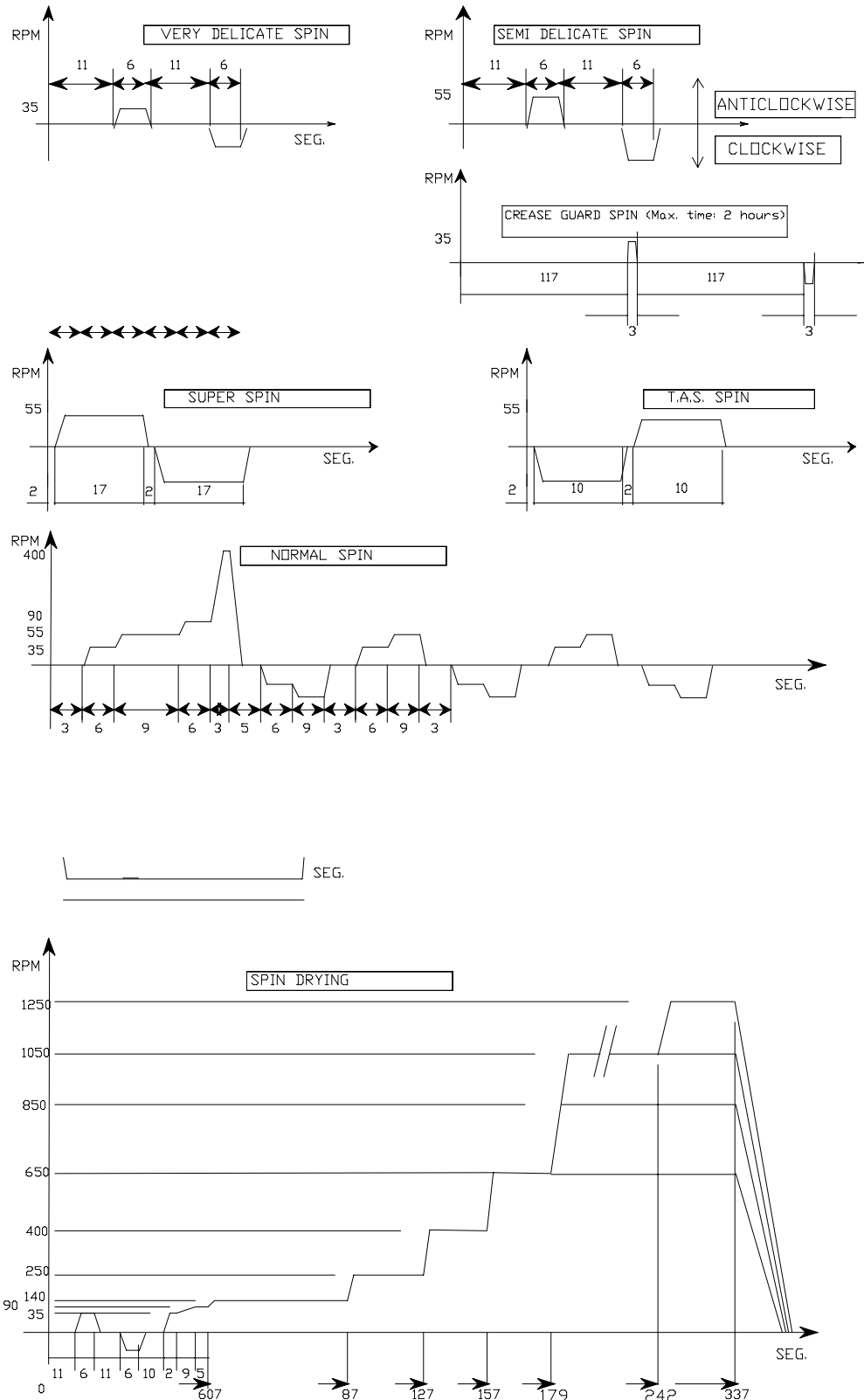
**Motor does not turn, does not spin
dry fault**



Connections to check that high rpm motors work properly



3.3- Spins. SPIN 2001 washing machines



If an imbalance is detected, it will start again without doing the first 26 of the draining and spin drying phase.
 The number of attempts is limited to the programmer step time. The spin drying time indicated in the electronic programmer steps is not reduced by the attempts at spin drying in which an imbalance is detected.
 Spin drying in the Tower, TAS and Running programmes does not include the first 44 seconds of the spin drying cycle.

3.4- Wash programs

CONTROLADOR DE PROGRAMACION		SPIN 99 AGUA FRIA												
Programa 1 (PRELAVADO)														
1	Inicio	30°C	40°C	50°C	60°C	70°C	80°C	90°C						
2	Fin	Calentamiento: hasta 30°C sin agitación												
3	Inicio	Calentamiento: hasta 30°C sin agitación												
4	Fin	Calentamiento: hasta 30°C sin agitación												
5	Inicio	Calentamiento: hasta 40°C sin agitación												
6	Fin	Calentamiento: hasta 40°C sin agitación												
7	Inicio	Calentamiento: hasta 50°C sin agitación												
8	Fin	Calentamiento: hasta 50°C sin agitación												
9	Inicio	Calentamiento: hasta 60°C sin agitación												
10	Fin	Calentamiento: hasta 60°C sin agitación												
11	Inicio	Calentamiento: hasta 70°C sin agitación												
12	Fin	Calentamiento: hasta 70°C sin agitación												
13	Inicio	Calentamiento: hasta 80°C sin agitación												
14	Fin	Calentamiento: hasta 80°C sin agitación												
15	Inicio	Calentamiento: hasta 90°C sin agitación												
16	Fin	Calentamiento: hasta 90°C sin agitación												
17	Inicio	Calentamiento: hasta 35°C sin agitación												
18	Fin	Calentamiento: hasta 35°C sin agitación												
19	Inicio	Calentamiento: hasta 45°C sin agitación												
20	Fin	Calentamiento: hasta 45°C sin agitación												
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22	Fin	Calentamiento: hasta 55°C sin agitación												
23	Inicio	Calentamiento: hasta 65°C sin agitación												
24	Fin	Calentamiento: hasta 65°C sin agitación												
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26	Fin	Calentamiento: hasta 75°C sin agitación												
27	Inicio	Calentamiento: hasta 85°C sin agitación												
28	Fin	Calentamiento: hasta 85°C sin agitación												
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96	Fin	Calentamiento: hasta 75°C sin agitación												
97	Inicio	Calentamiento: hasta 85°C sin agitación												
98	Fin	Calentamiento: hasta 85°C sin agitación												
99	Inicio	Calentamiento: hasta 95°C sin agitación												
100	Fin	Calentamiento: hasta 95°C sin agitación												

EN LAS POSICIONES QUE SE INDICAN QUE AVANZA, ESTA UNO S 5. SEGUNDO'S

W: al Nivel N1 del presatratador (sin agua)
 N1: al Nivel N1 del presatratador (sin agua)
 N2: al Nivel N2 del presatratador (sin agua)
 N2: al Nivel N2 del presatratador (sin agua)

Tip: de agitación en entrada agua según c/d
 Agitación: Extracción: 00 y 80
 Agitación: Detección en c/d: BA
 Agitación: No: BA
 Sin agitación: en 15, 20, 30, 40, 50 y 60

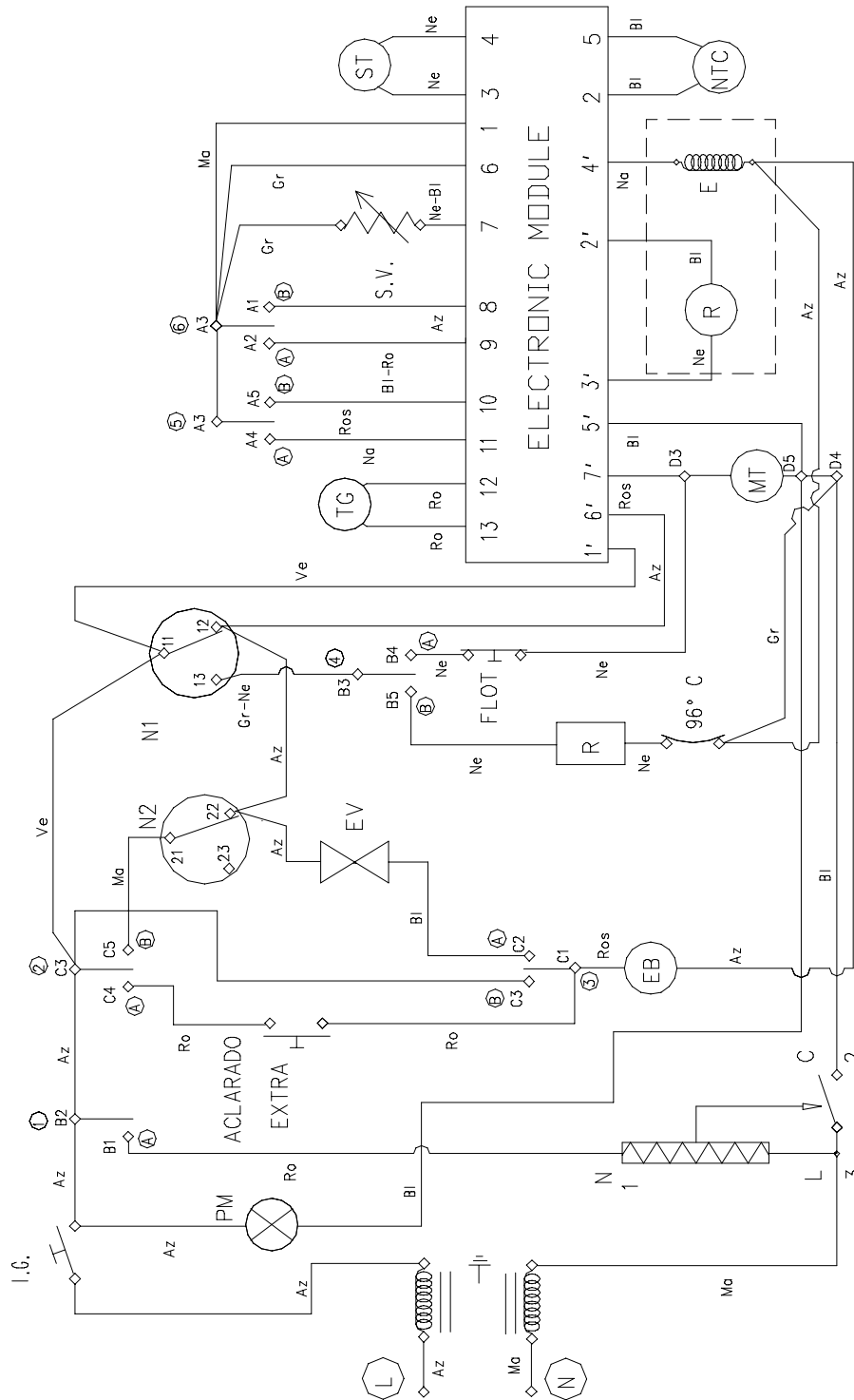
EN LAS POSICIONES QUE SE INDICAN QUE AVANZA, ESTA UNO S 5. SEGUNDO'S

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 N2: al Nivel N2 del presatratador (sin agua)

Tip: de agitación en entrada agua según c/d
 Agitación: Extracción: 00 y 80
 Agitación: Detección en c/d: BA
 Agitación: No: BA
 Sin agitación: en 15, 20, 30, 40, 50 y 60

3.5 - Diagrams

THEORETICAL ELECTRICAL DIAGRAM





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