

Table of Content

1.HARMONISED STANDARDS	2
2.RISK ANALYSIS	3
2.1.General Risk Analysis	5
2.2.Risks Related to the Machine and Measures Taken	5
2.3.Machine Interruptions in Emergency Cases	5
3. DEFINITION OF THE MACHINE	7
3.1.Sections of the machine.....	7
3.2. Commissioning/operating the machine.....	8
4.MAINTENANCE AND CLEANING	13
5. IMPORTANT WARNINGS	14
6. POTENTIAL PROBLEMS AND SOLUTIONS	15
7.ELECTRICAL EQUIPMENT AND P&ID DIAGRAM	17

1.HARMONISED STANDARDS

TS EN ISO 12100 :	Safety in machines – Risk assessment and risk mitigation
TS EN 1037+A1 :	Safety in machines- Prevention of unexpected start-up
EN ISO 14121-1 :	Safety in machines - Risk assessment principles
EN 60204-1 :	Safety in machines - Electrical installation in machines
TS EN ISO 13849 :	Safety in Machines - Safety Components of Control Systems

2.RISK ANALYSIS

POTENTIAL RISK	RISK AREA	MEASURE TAKEN	PREVENTIVE ACTIONS
MECHANICAL HAZARDS			
<ul style="list-style-type: none"> Crushing Tripping Collecting and rotating coiling hazard components are interfered with during the operation of the machine 	<ul style="list-style-type: none"> Washing machine body 	<ul style="list-style-type: none"> Moving section is covered with fixed enclosures Emergency STOP buttons are available for emergency stop function. 	<ul style="list-style-type: none"> Durability of enclosures must be inspected visually at 3 month intervals.
ELECTRICAL HAZARDS			
<ul style="list-style-type: none"> Personnel's (direct) contact with live components. Personnel's (indirect) contact with live components in case of 	<ul style="list-style-type: none"> Electrical panel 	<ul style="list-style-type: none"> Areas, which are under electrical shock, are marked with labels. Residual current relay was used. Grounding infrastructure was set up. 	<ul style="list-style-type: none"> Labels must be inspected at 3 month intervals to ensure that there is no rupture or tearing; otherwise, labels must be replaced. Suitability of grounding must
HAZARDS RESULTING FROM IGNORING ERGONOMIC PRINCIPLES IN MACHINE DESIGN			
<ul style="list-style-type: none"> Unhealthy posture or exerting excessive effort. Inadequate lighting in the environment. Inadequate design, placement or 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> This type of criteria were taken into account in machine design. 	<ul style="list-style-type: none"> Whether any additions were made to original design of the machine must be checked on an annual basis.
<ul style="list-style-type: none"> Interruption/failure of control system risk 		<p>If control system is disconnected, the machine stops, and operator must press on "System Start" button in order to restart the machine.</p>	

Technical File

<ul style="list-style-type: none"> Failure risk in power supply 	<ul style="list-style-type: none"> Missing phase in any section 	<ul style="list-style-type: none"> "Thermal Failure" is activated and the system fails to operate during start-up procedures. 	
<ul style="list-style-type: none"> Mechanical risks for operators 	<ul style="list-style-type: none"> Washing machine body 	<ul style="list-style-type: none"> Moving section is covered with fixed enclosures Emergency STOP buttons are available for emergency stop function. 	<ul style="list-style-type: none"> Durability of enclosures must be inspected visually at 3 month intervals.
<ul style="list-style-type: none"> Inadequate mechanical resistance- 	<ul style="list-style-type: none"> No 	<ul style="list-style-type: none"> This type of criteria were taken into account in machine design. 	<ul style="list-style-type: none"> Whether any revisions were made to original design of the machine must be checked on an

2.1.General Risk Analysis

Design: Project designing was made in a manner that risks on the environment and user is prevented during the transport of the machine, equipment-consumable material replacement procedures and operation of the machine.

Surfaces, edges and corners: These sections were designed in a manner that they do not restrict the movements of or impose any danger on the user.

Electricity : As a result of inspections and observations, it was determined that any electricity charging does not occur during the operation of the machine.

Fire : No section of the machine is under fire risk.

Explosion : No section of the machine is under explosion risk.

Dust and similar wastes : No risk was observed during machine operation.

Balance : No aspect, which may disturb internal or external balance, was observed during machine.

2.2.Risks in the machine and measures taken

2.2.1.Crushing Squeezing Risk :The machine is equipped with 1 moving drum.
Measures taken against risks related to this component are as follows.

- **Emergency Stop Buttons :** There are 2 emergency stop buttons on the machine. Machine is stopped by pressing one of these buttons in case of any emergency situation. When emergency stop button is pressed, safety relay is pulled and machine is stopped by switching off power supply.
- **Enclosures :** Moving parts are within machine's upper cabinet. Side sections of the machine are covered in a manner that hand and finger access to moving parts is prevented.

2.2.2.Electric Shock Risk : Machine is operated with 380V power supply. Life threatening risks occur as a result of electric shock.

Suitable marking : Warning signs are attached on all electrical panels.

Control equipment : Control equipment other than the panel such as button, valve etc., were selected according to 24 V operating voltage.

2.3.Machine Interruptions in Emergency Cases

Machine operation is stopped by means of safety relays when emergency stop buttons are pressed.
When machine stops in case of emergency :

In pneumatic system:

- Air in the system is relieved with the valve used in air conditioning group. Pressure in the pneumatic hoses and connections of the machine is completely drained.

In electrical system :

First of all, whether Emergency Stop Button, the most important safety equipment, is in working condition, is checked by means of the safety relays in the panel

When Emergency Stop is pressed ;

- Power supply to control equipment is deactivated.
- Power supply to engines is switched off.

3. Definition of the Machine

S-jet industrial part washing machine:

Station: Washing-Rinsing-Drying

Total Electric power:70 KW

3.1.Sections of the machine

Section	Tank Capacity	Operating Temperature	Water to be used	Chemical additive
Washing	500-570 liter	55-65 C	Chemical-added water	3% of tank water volume is added.
Rinsing	500-570 liter	55-65 C	Water	---
Drying	---	80-90 C	---	---

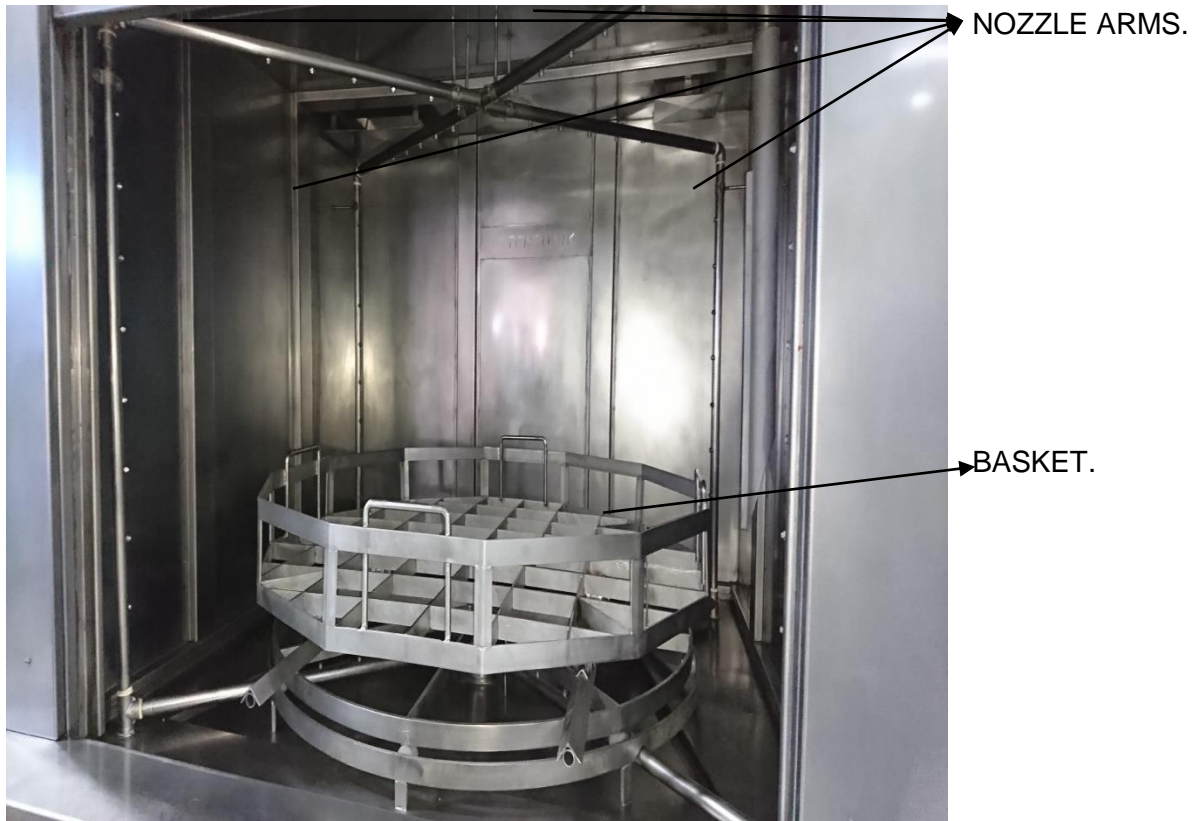
3.2. Commissioning/operating the machine

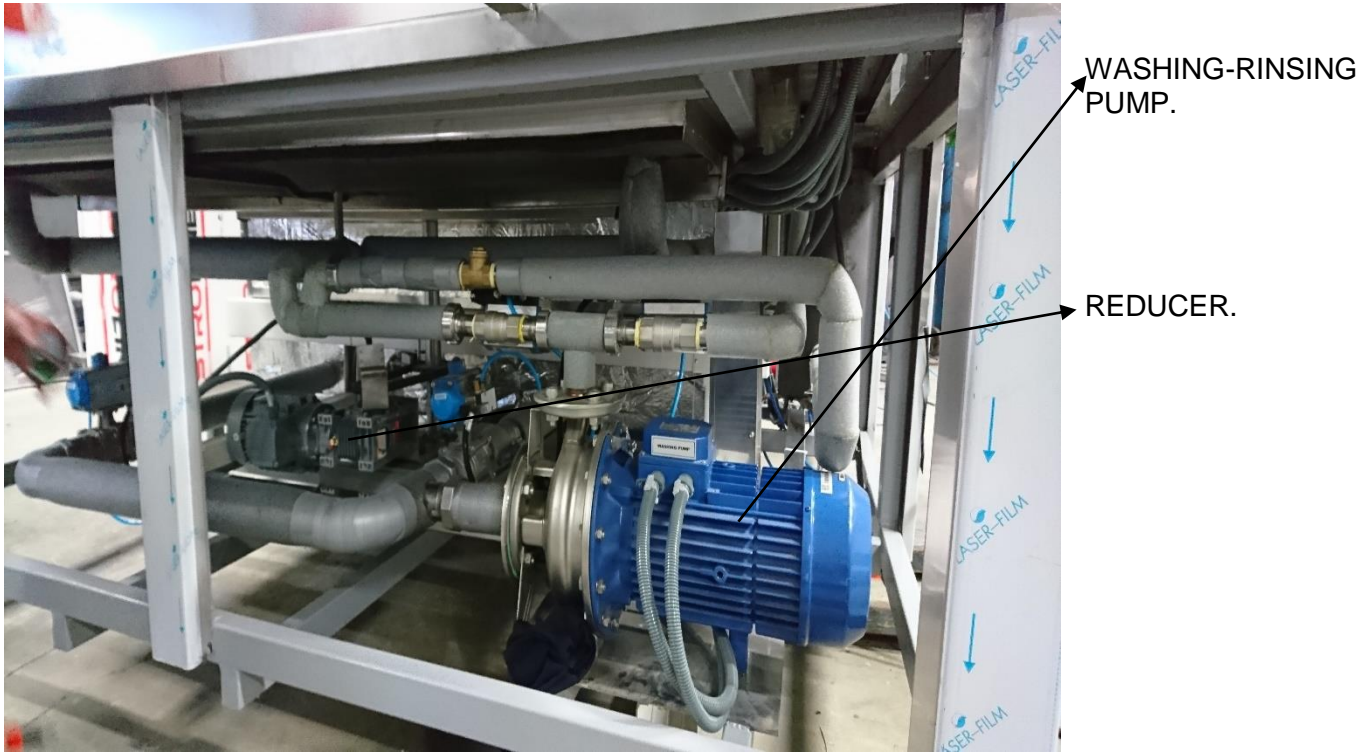
CAUTION - Make sure that following connections are made before machine is commissioned.

-Machine's electrical connection;

INPUT VOLTAGE :380V,50HZ,3PHASE AC TOTAL
POWER : 70 KW

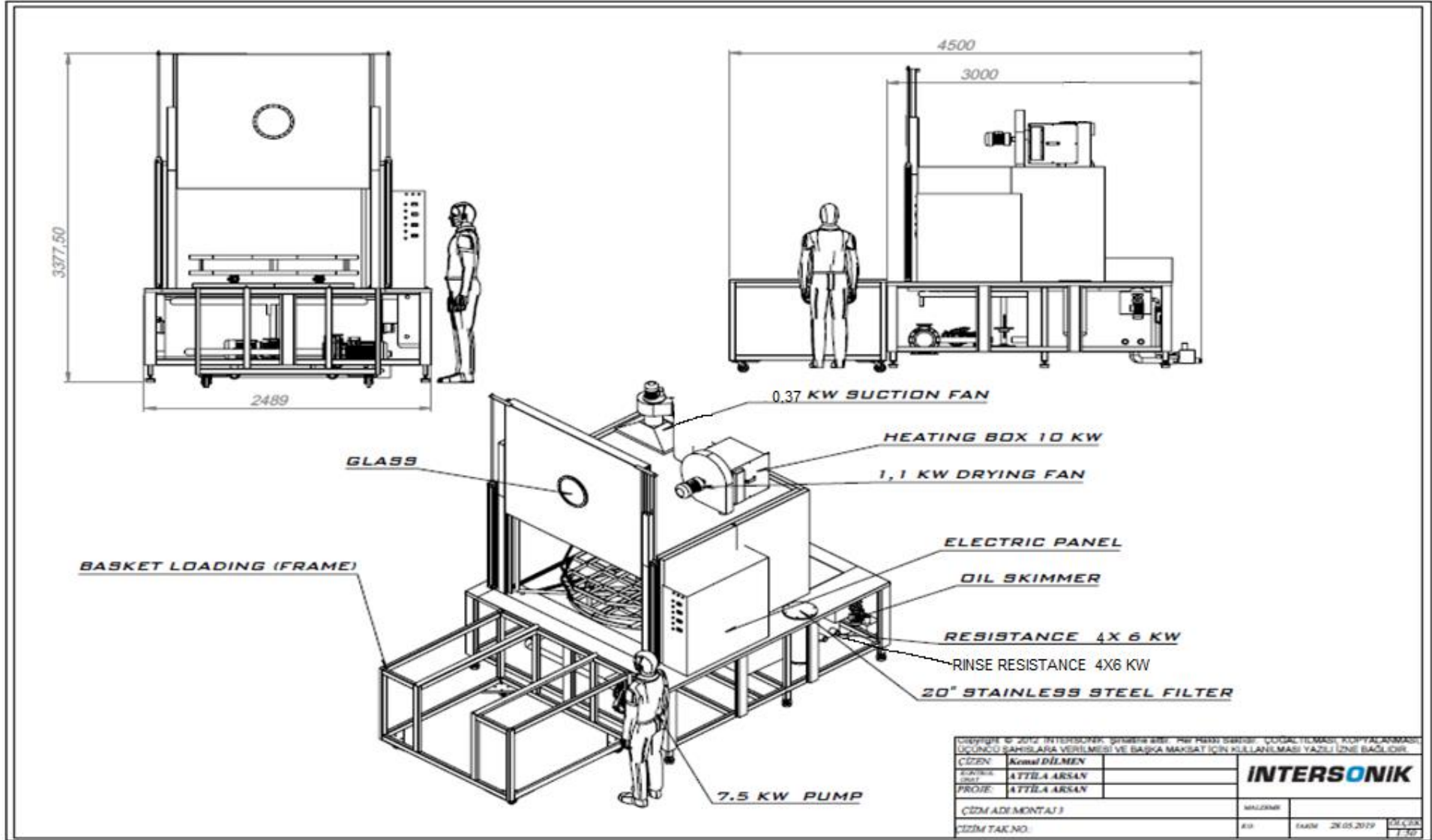
- 1.Main Switch opens via machine electrical panel
- 2.Automatic filling valves of tanks are opened and filled with water
- 3.Chemical addition should be done according to the vendor's recommendation
- 4.The entire heating system is switched on and the liquid must be allowed to reach the desired temperature
- 5.The parts to be washed are loaded into the basket cart and the basket is left in the machine
- 6.Once all tanks have reached the desired operating temperature, the entire system is activated via the control panel
- 7.The system is started via the control panel
- 8.The parts are taken through the washing, rinsing and drying stages respectively and taken from the discharge section.







MESH FILTER.
(WASHING-RINSING
TANKS)



4. Maintenance and Cleaning

S-JET MACHINE MAINTENANCE TYPE			
NU	Period	Maintenance Type	Maintenance Explanation
1	N	LIQUID EXCHANGE	If the pollution rate is increased, the liquid mixture in the tank is replaced with a new one, the measurements of the chemical solution in the washing-degreasing tank measurements are made with refractometer.
2	FE	RESISTANCE CLEANING	In order to avoid heat loss with each fluid change, resistors should be cleaned from dirt on them with compressed air and clean water. If necessary, the surfaces on which the measurements was made on should be replaced.
3	W-1	CLEANING OF LIQUID LEVEL SENSOR	The liquid level sensors must be cleaned with a clean cloth after each fluid change and in one week period.
4	FE	TANK INNER CLEANING	With each fluid change, the inside of the boiler and the pump suction part should be cleaned from dirt and filth and no foreign matter should be allowed into the pump.
5	3M-1	ACTUATED VALVE CLEANING	Actuated valves should be cleaned with compressed air from sawdust, chips and dirt.
6	M-1	REDUCER-GEAR MAINTENANCE	The gear unit and chain on the machine must be lubricated and greased.
7	3M-1	OILING PNEUMATIC PISTON SHAFT	Lubrication of the shafts of the pneumatic piston cylinders on the machine must be performed in order to operate silently and adequately.
8	D-1	MESH FILTER CLEANING	The mesh filters should be cleaned with clean water and compressed air, by taking them out from their place and all pores have to be opened.
9	3M-1	NOZZLE CLEANING	For an effective washing process, the nozzle arms are removed and the nozzle parts and arms are cleaned with the help of compressed air.
10	W-1	PIPE CIRCUIT CONTROL	All pipe circuits and valves on the machine should be visually inspected and if there are water leaks they should be eliminated.
11	M-1	AIR CIRCUIT CONTROL	To make sure that there is not an air leakage in the air circle of the actuated pneumatic, valves and pistons circles they all have to be checked.
12	Y-1	CALIBRATION	All manometers and thermometers on the machine should be calibrated.
13	3M-1	PUMP SEALING ELEMENTS CONTROL	The centrifugal pumps on the machine should be checked, if there is water leakage, the gasket or packing should be replaced.

*N: NECESSITY

*D:DAILY

*W:WEEKLY

*FE: FLUID EXCHANGING

*M:MONTHLY

*Y:YEARLY

WARNING: POWER SHOULD BE DISCONNECTED BY MAIN SWITCH WHEN MACHINE MAINTENANCE

5. Important warnings

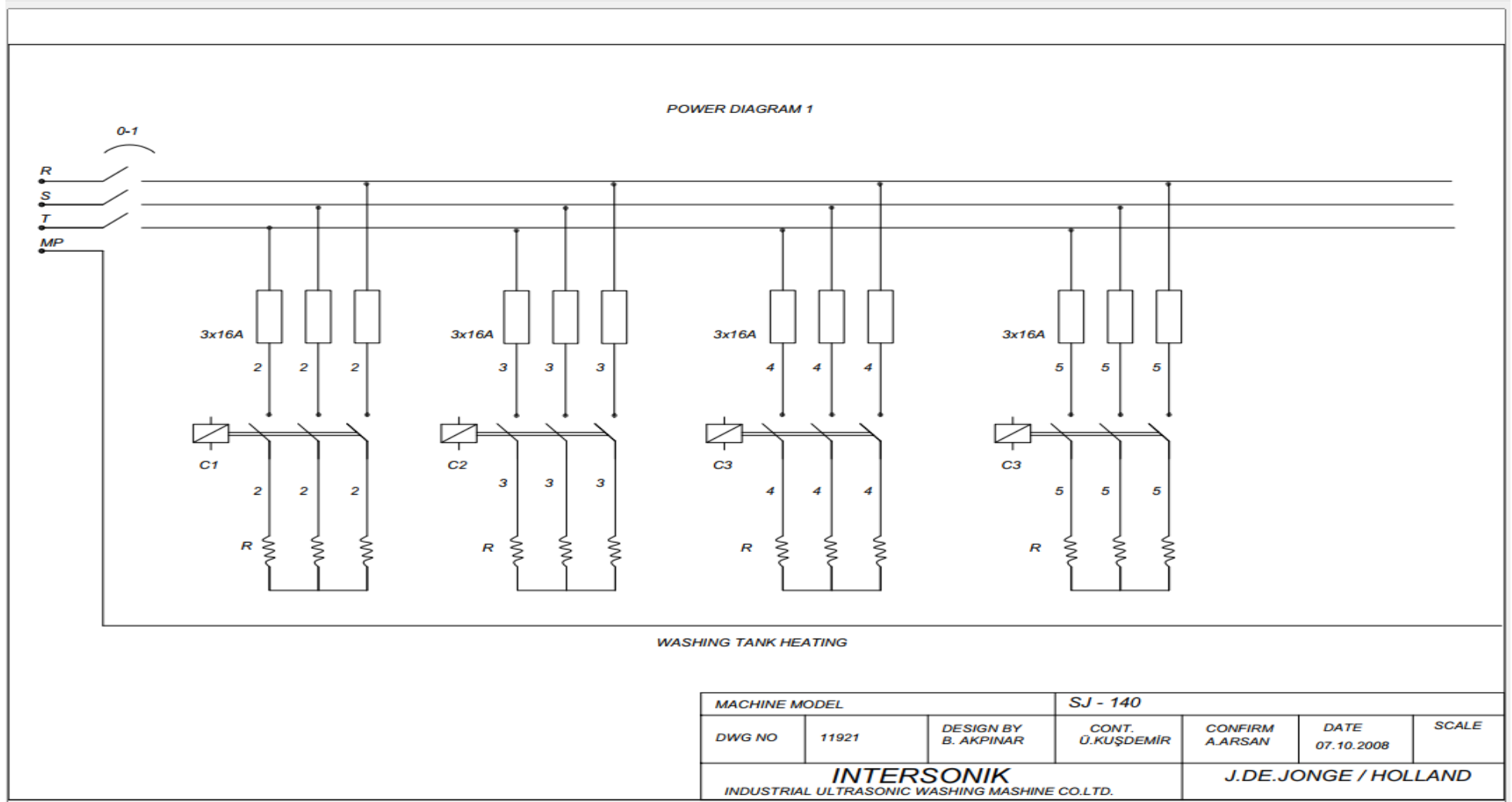
- Read the warnings in this instruction carefully.
- Machine must be kept away from humid, dusty areas or environments with acid fumes.
- Washing machine must be at least 800 mm distant to the wall from both side before it is commissioned.
- Machine must be operated by a qualified personnel, and heat resistant gloves and goggles must be used.
- Our company is not responsible for problems resulting from voltage changes in the area.
- Boilers of the washing machine, which operate with water, must be refilled by taking the specified water levels into account. Operating machine before reaching this level must be strictly avoided.

6. POTENTIAL PROBLEMS AND SOLUTIONS

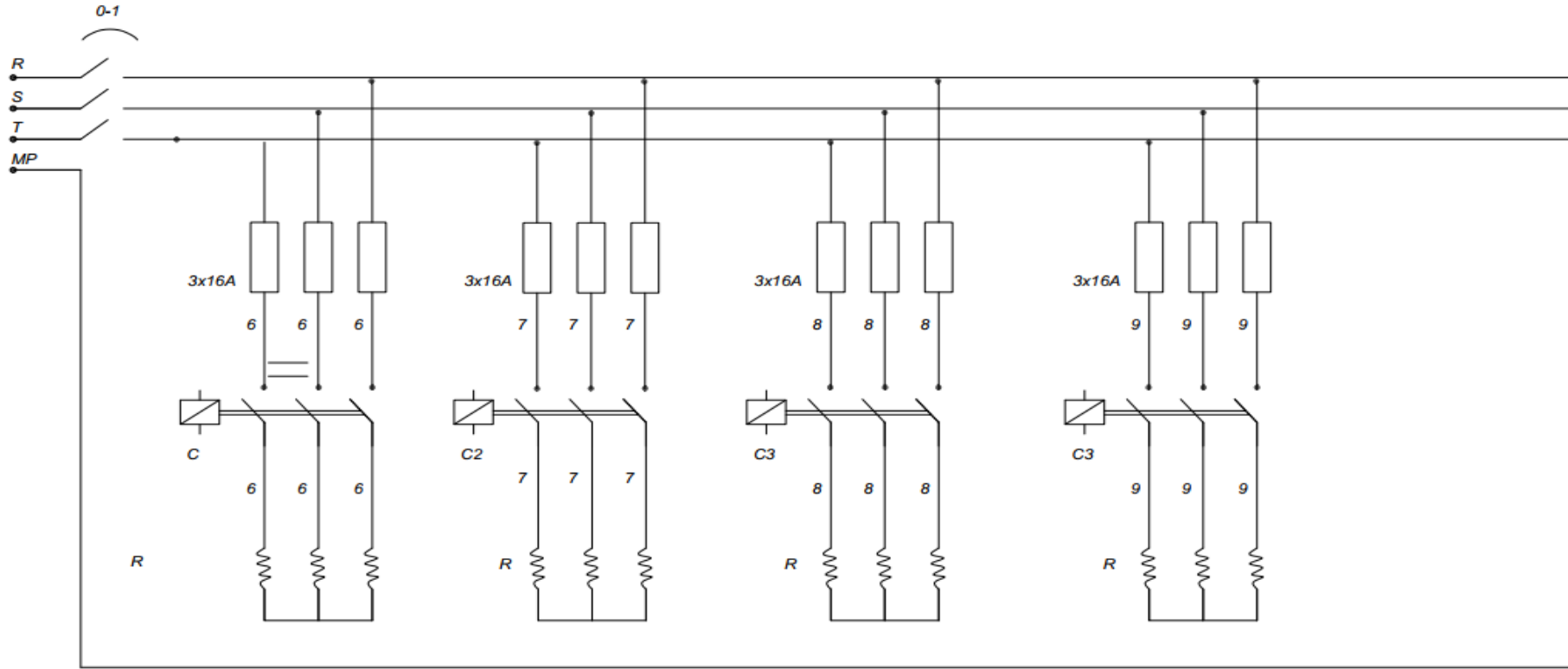
<u>NU</u>	<u>PROBLEM</u>	<u>MACHINE</u>	<u>CAUSE</u>	<u>SOLUTION</u>
1.	No heating or inadequate heating	S-JET	1.Heater resistances are broken	Check, replace
			2. Thermostat is broken down.	Check, replace
			3. Thermostat sensor is broken down.	Check, replace
			4. Relay may be broken down.	Check, replace
			5.Resistance connection and Cable problem may be present.	If there is any problem in resistance connection and cable, change.
2.	Overheating	S-JET	1. Thermostat sensor may be broken or displaced from the side.	Check, replace
			2.Indicator and thermostat may be broke down.	Check, replace
			3.Relay bay be stuck.	Check.
			4.Thermostat problem.	Check parameter adjustment, replace.
			5.Thermocouple's displacement from the boiler	Check thermocouple boiler connection equipment.
			6.Contacto'r's contacts are stuck.	Replace with the new one.
3.	Washing quality decreased.	S-JET	1.Liquid temperature	Check.
			2.Washing chemical concentration	If it is missing, refill; if tank is contaminated, replace it.
			3.Chemical change	INTERSONIC is not responsible for results, if chemicals are changed without consulting INTERSONIC.

4.	Filter problem	S-JET	5.Nozzles may be clogged.	Check, replace.
			6. There may be problem in pump or lines.	Check the pump, is engine fan rotating? Check the valves and pipe lines.
			7.Supply power may be low.	Check.
			8.Water contamination.	Change the water according to the amount of material washed, and contamination.
			1.Mesh filters are clogged. 2.Check pump suction filter.	Fine and thick sieve filters must be checked and cleaned on a daily basis.
			3.Check the manometer.	Check
			4.Clogging of pump (body) pipe connections	Remove the pump, clean reservoir and pipe installation.
			5.	Spray rinsing, injection is not functioning.
			2.Valve is closed in pump lines.	Check the valves.
			3.Pump and pipes are clogged with dirt, chip, cloth etc.	Check, clean. Replace the defective parts. Tighten the loose connections.
			4.Actuator valves are not opening.	Check electrical connections.
			5. Pump is broken down.	Check engine fan propeller. Check electrical connection.
			5.Contacto cable and relay connection.	Check.
			6.	OİL SKİMMER
			2. There is swaggering.	Check

7. ELECTRICAL EQUIPMENT AND P%ID DIAGRAM



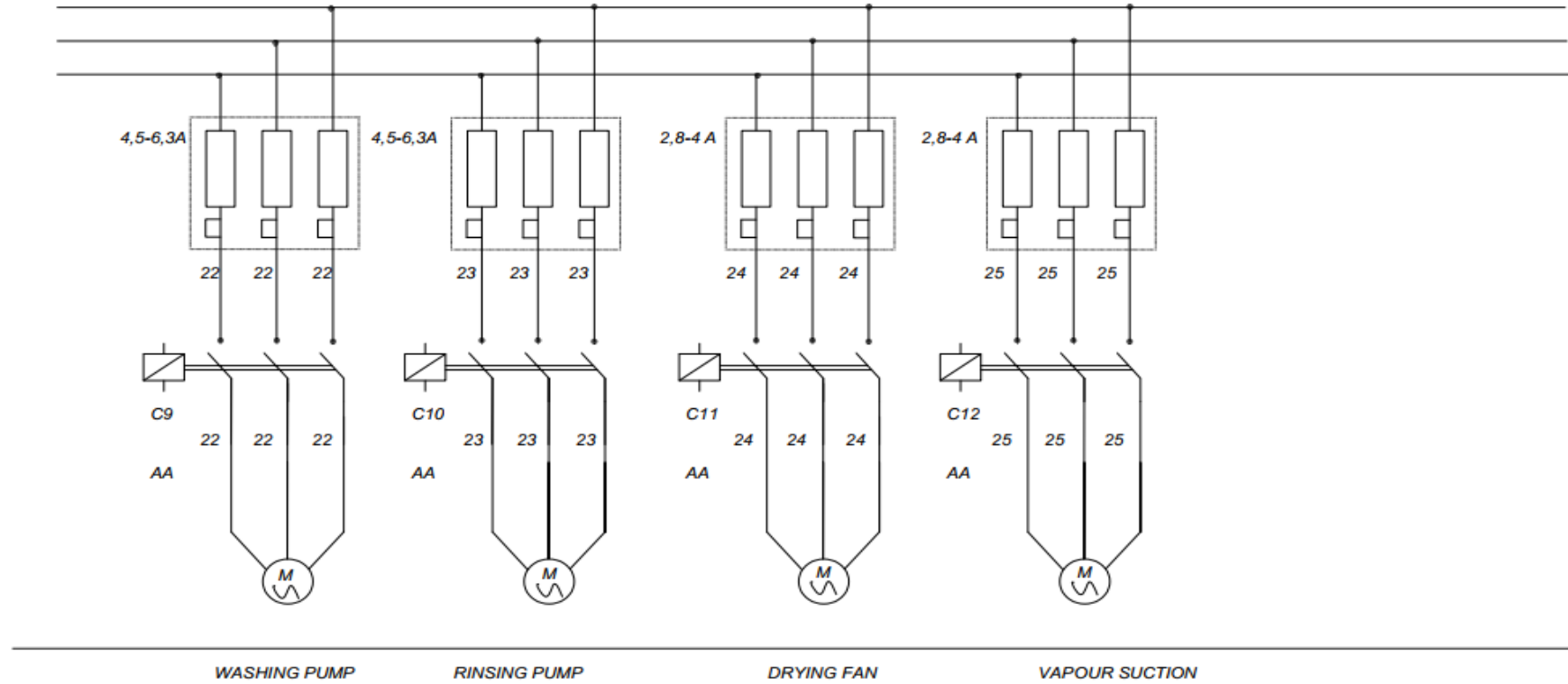
POWER DIAGRAM 2



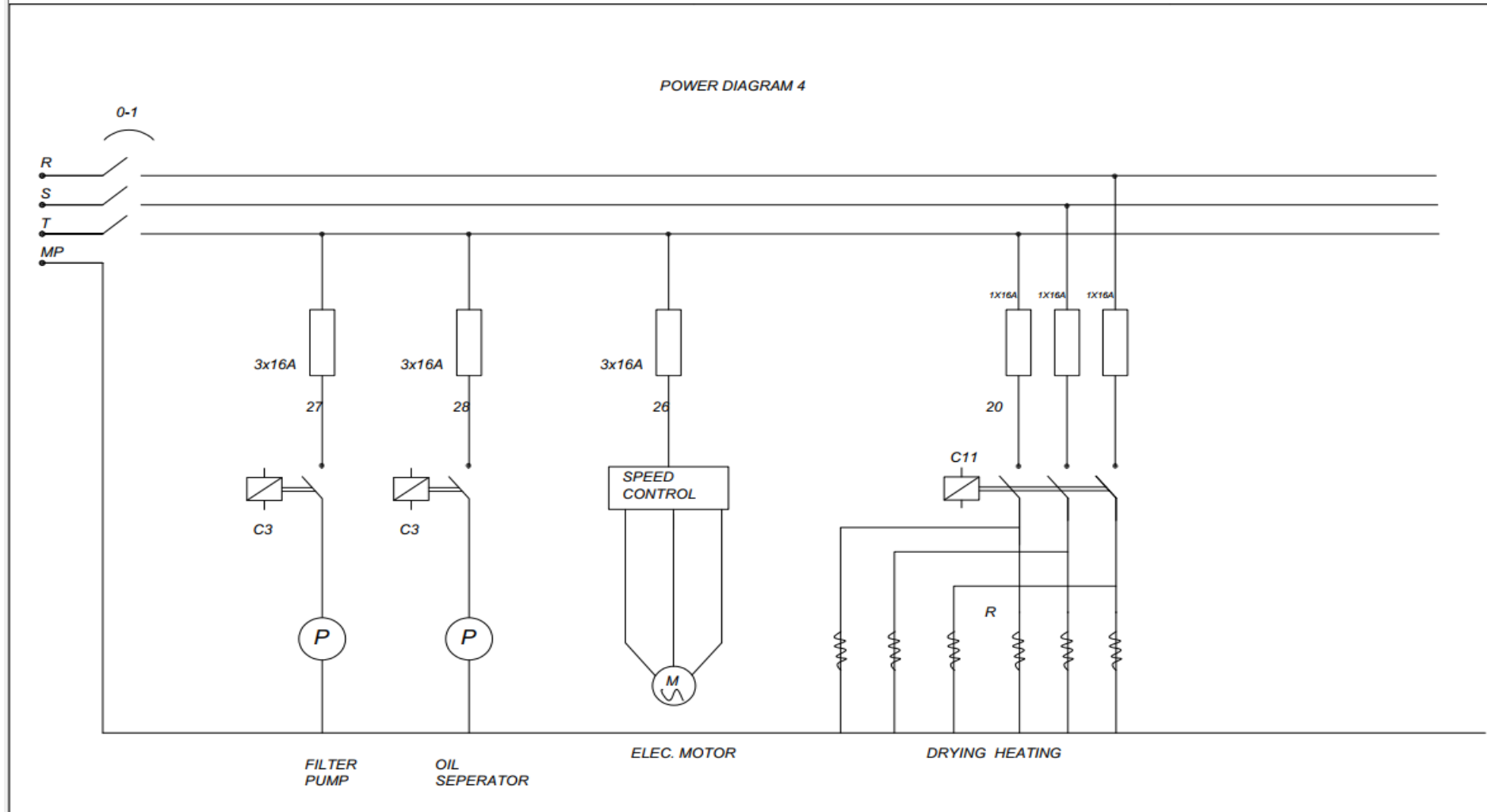
RINSING TANK HEATING

MACHINE MODEL		SJ - 140				
DWG NO	11921	DESIGN BY	CONT.	CONFIRM	DATE	SCALE
		B. AKPINAR	Ü.KUŞDEMİR	A.ARSAN	07.10.2008	
INTERSONİK				J.DE.JONGE / HOLLAND		
INDUSTRIAL ULTRASONIC WASHING MASHINE CO.LTD.						

POWER DIAGRAM 3

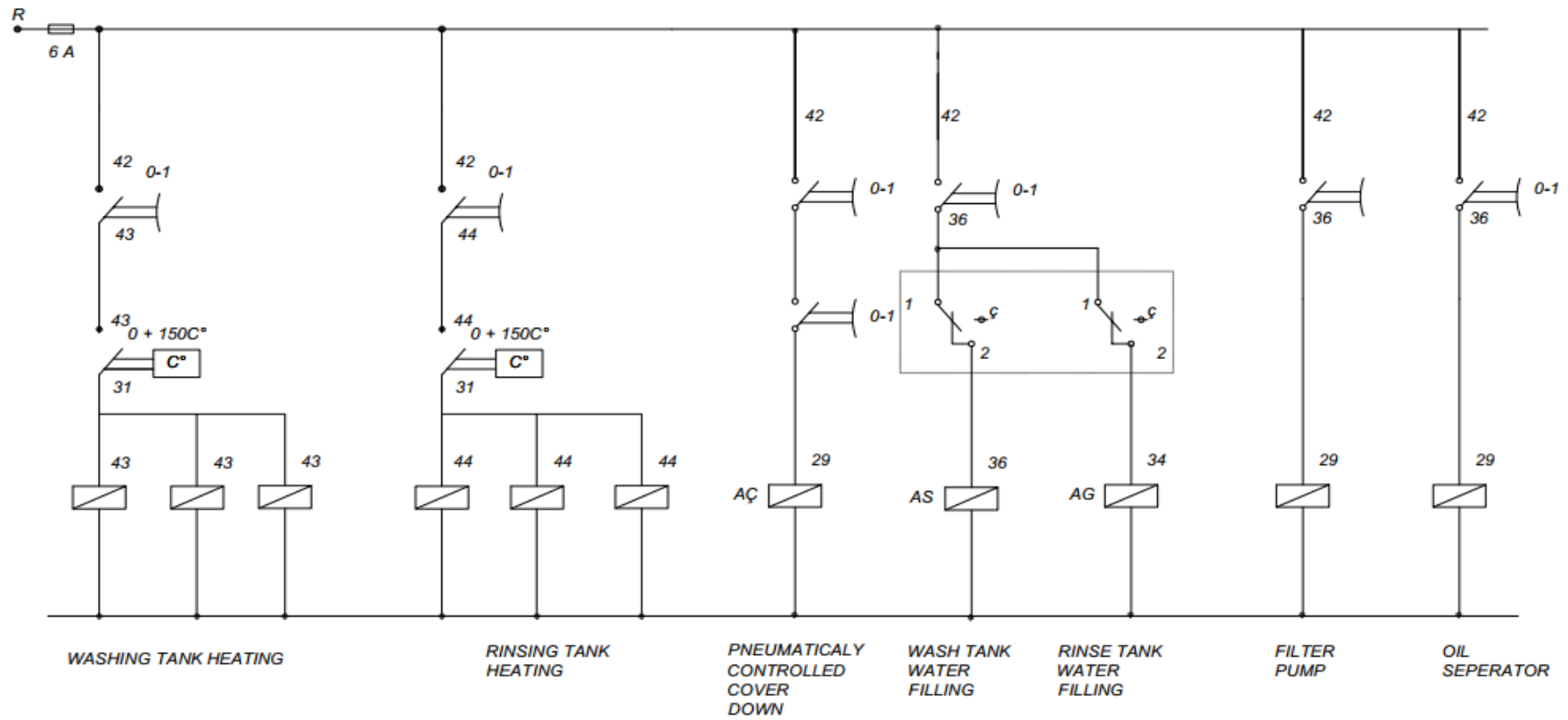


MACHINE MODEL			SJ - 140			
DWG NO	11921	DESIGN BY	CONT.	CONFIRM	DATE	SCALE
		B. AKPINAR	Ü.KUŞDEMİR	A.ARSAN	07.10.2008	
INTERSONIK				J.DE.JONGE / HOLLAND		
INDUSTRIAL ULTRASONIC WASHING MASHINE CO.LTD.						



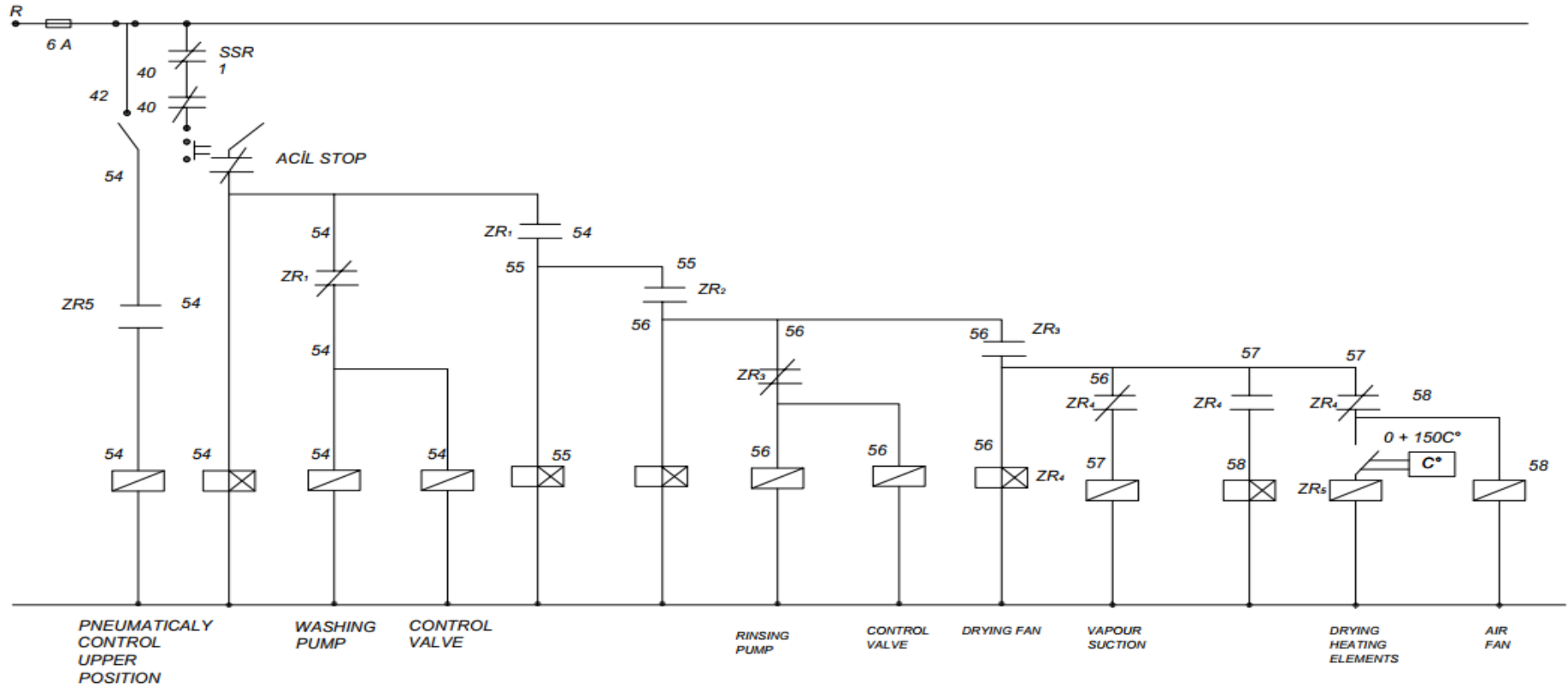
MACHINE MODEL			SJ - 140			
DWG NO	11921	DESIGN BY B. AKPINAR	CONT. Ü. KUŞDEMİR	CONFIRM A. ARSAN	DATE 07.10.2008	SCALE
INTERSONİK INDUSTRIAL ULTRASONIC WASHING MACHINE CO.LTD.				J.DE.JONGE / HOLLAND		

CONTROL DIAGRAM 1



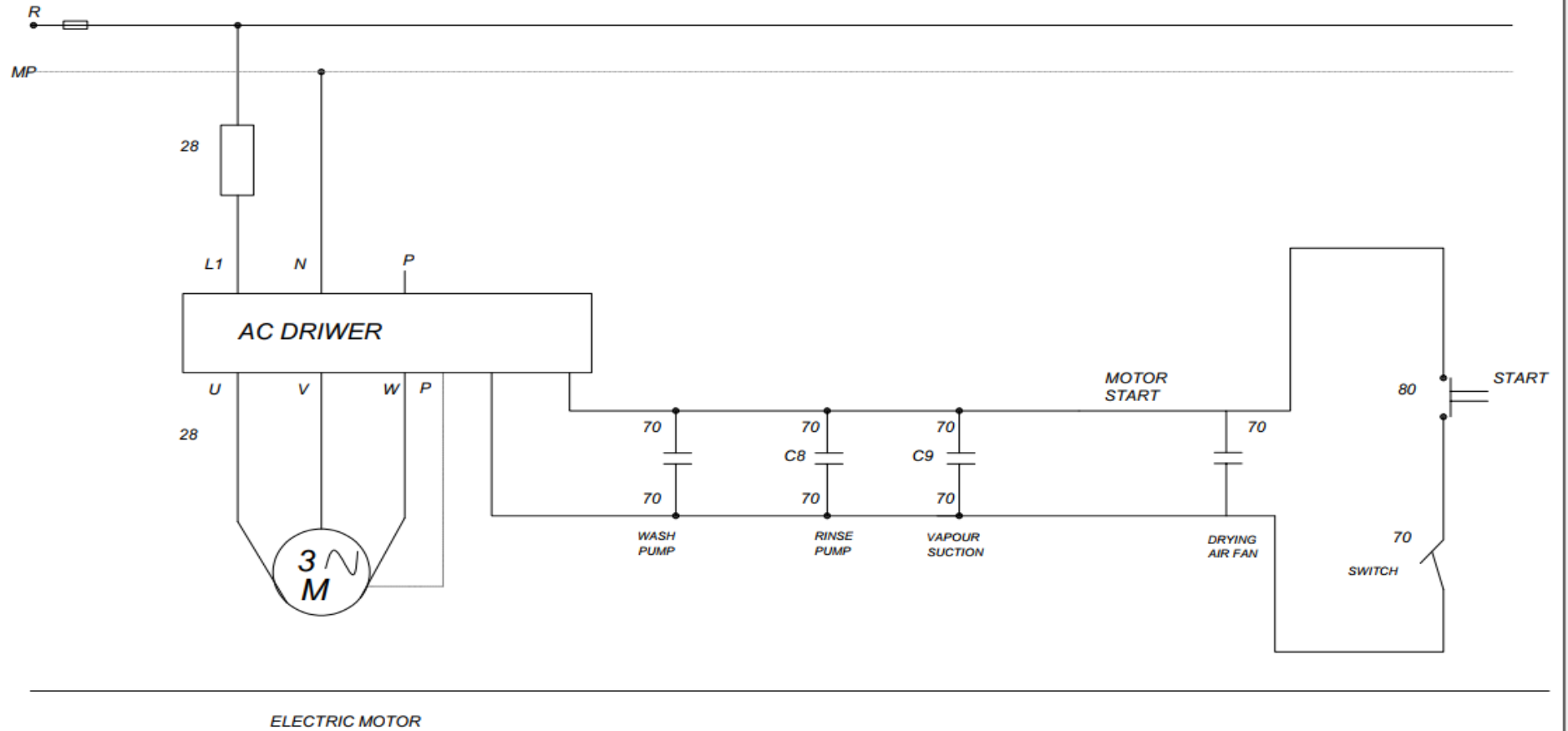
MACHINE MODEL			SJ - 140			
DWG NO	11921	DESIGN BY	CONT.	CONFIRM	DATE	SCALE
		B. AKPINAR	Ü.KUŞDEMİR	A.ARSAN	07.10.2008	
INTERSONIK				J.DE.JONGE / HOLLAND		
INDUSTRIAL ULTRASONIC WASHING MASHINE CO.LTD.						

CONTROL DIAGRAM 2



MACHINE MODEL			SJ - 140			
DWG NO	11921	DESIGN BY B. AKPINAR	CONT. Ü.KUŞDEMİR	CONFIRM A.ARSAN	DATE 07.10.2008	SCALE
INTERSONİK INDUSTRIAL ULTRASONIC WASHING MASHINE CO.LTD.				J.DE.JONGE / HOLLAND		

CONTROL DIAGRAM 3

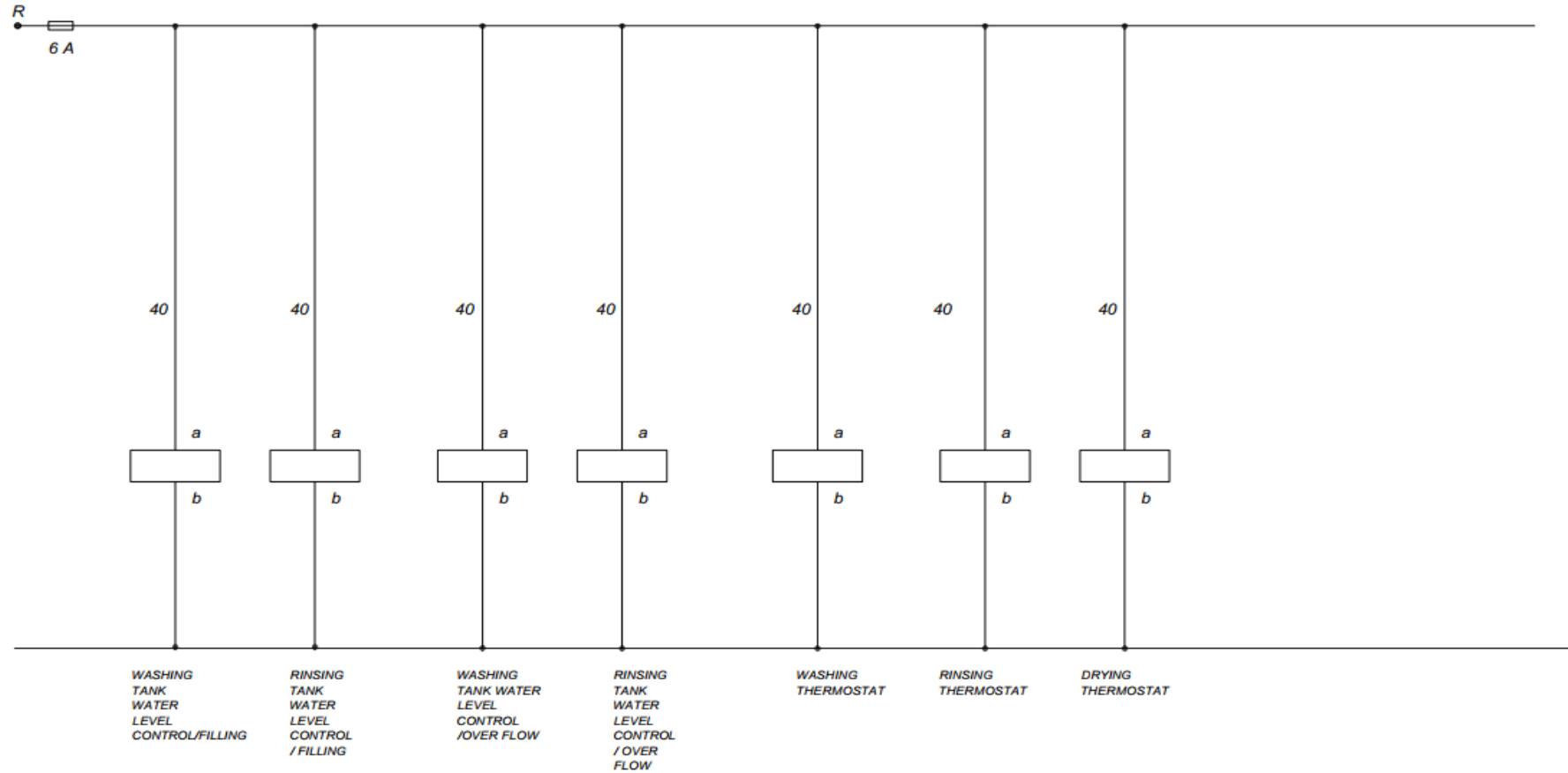


ELECTRIC MOTOR

MACHINE MODEL			SJ - 140			
DWG NO	11921	DESIGN BY B. AKPINAR	CONT. Ü.KUŞDEMİR	CONFIRM A.ARSAN	DATE 07.10.2008	SCALE
INTERSONIK INDUSTRIAL ULTRASONIC WASHING MASHINE CO.LTD.				J.DE.JONGE / HOLLAND		

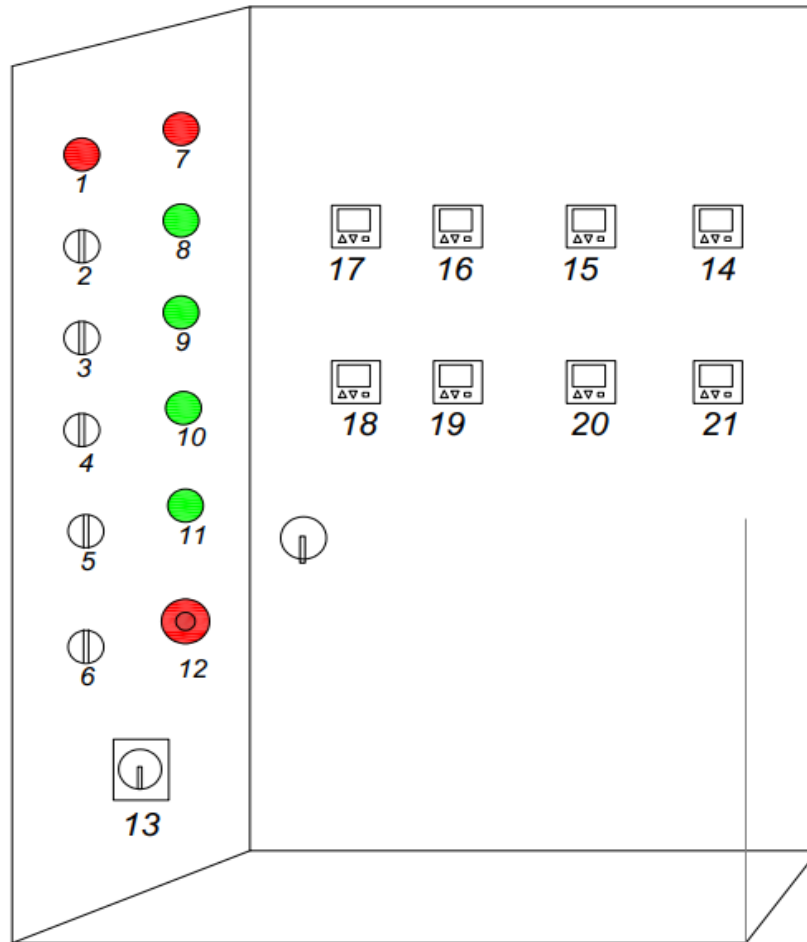
Technical Drawing

CONTROL DIAGRAM 4



MACHINE MODEL			SJ - 140			
DWG NO	11921	DESIGN BY B. AKPINAR	CONT. Ü.KUŞDEMİR	CONFIRM A.ARSAN	DATE 07.10.2008	SCALE
INTERSONİK INDUSTRIAL ULTRASONIC WASHING MASHINE CO.LTD.				J.DE.JONGE / HOLLAND		

CONTROL PANEL



- 1- WASHING TANK FILLING SIGNAL
- 2- WATER FILLING ON/OFF
- 3- WASH HEATING ON/OFF
- 4- RINSE HEATING ON/OFF
- 5- FILTRATION ON/OFF
- 6- OIL SEPERATION ON/OFF
- 7- RINSING TANK FILLING SIGNAL
- 8- 1-0-2 SWITCH
0 MANUAL
1 COVER UP
2 AUTOMATIC
- 9- START 1
- 10- ROTATION MECH
- 11- START 2
- 12- EMERGENCY STOP
- 13- MAIN SWITCH
- 14- WASHING TIMER
- 15- DRIPLING TIMER
- 16- RINSING TIMER
- 17- VAPOUR SUCTION TIMER
- 18- DRYER TIMER
- 19- DRYER TEMP. CONTROL
- 20- RINSING TEMP. CONTROL
- 21- WASHING TEMP.CONTROL