

Whirlpool Europe Consumer Services

AVM 870

Service Manual MICROWAVE Combi AVM 870

Model

Version

AVM 870 stainl 8538 870 01081

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This documentation is only intended for qualified technicians who are aware of the respective safety regulations. Date: 25.08.1993 Document-No.: 4812 714 10155 Register Nr.:



INTRODUCTION

Before leaving the factory each oven is carefully checked. It must however, be installed and used correctly.

Despite all the steps taken to make the oven safe, the safety is dependent on the correct installation and the fact the user understands how to use and maintain the oven.

The information in this section should be used as a reminder that the oven is safe and that anyone who uses it must first read the instructions for use in order to be able to use the oven correctly and obtain the best results.

SAFETY

To avoid injury to yourself and damage to the appliance always work to the following rules when servicing an oven.

- Always disconnect the plug from the mains before starting work. If there is no plug switch-off the electricity supply at the control box.
- When you have finished servicing an oven before you reconnect it to the mains, make sure that:
 - all the internal connections are correct
 - the wires are insulated and not touching the door or the cabinet or anything sharp
 - all the earth connections are electrically and mechanically sound
 - do not modify or anyway interfere with the safety devices built-in to the oven
 - make sure that each replacement part you use conforms to the manufacturer's specifications
- Do not start a repair if you have any doubt as to your ability to complete it.

CAUTION - MICROWAVE RADIATION

PERSONNEL SHOULD NOT BE EXPOSED TO THE MICROWAVE ENERGY WHICH MAY RADIATE FROM THE MAGNETRON, WAVEGUIDE OR ANTENNA IF THEY ARE IMPROPERLY USED OR CONNECTED. ALL INPUT AND OUT-PUT MICROWAVE CONNECTIONS, WAVEGUIDES, FLANGES AND GASKETS MUST BE SECURE. NEVER OPERATE THE DEVICE WITHOUT A MICROWAVE ENERGY ABSORBING LOAD ATTACHED. NEVER LOOK INTO AN OPEN WAVEGUIDE OR ANTENNA WHILE THE DEVICE IS ENERGIZED. NEVER OPERATE AN OVEN WITH CABINET OFF WITHOUT MEASURING THE MICROWAVE LEAKAGE AROUND MAGNETRON AND VISIBLE MICROWAVE CONNECTIONS (WELDING JOINTS).

Do not operate the oven if the following conditions exist:

- The door does not close firmly against the door support because of the door being warped or the hinges damaged.
- The door trims or seals are damaged.
- If there is any visible damage to the oven.
- If the door does not close properly.

Avoid operating the oven if known components in the interlock system, oven door or microwave generating assembly are known defective. They must be replaced.

WARNING - HIGH VOLTAGE

IT IS POSSIBLE TO COME IN CONTACT WITH LETHAL HIGH VOLTAGE WHEN WORKING WITH HV TRANSFORMER, HV CAPACITOR, AND MAGNETRON. THEREFORE NEVER TRY TO MEASURE THE HIGH VOLTAGE. ALWAYS TAKE UTMOST CARE WHEN PERFORMING ELECTRIC MEASUREMENTS INSIDE THE OVEN.

2. PHYSICAL REQUIREMENT

2.1 Electrical

Measured at an ambient temp. of 25°C, 230V and 1 liter load

Operating voltage:	207-244V
Performance within spec.:	210-244V
Test voltage (safety requirements):	207-244V

2.1.1 Rated Input Voltage:

	207-244V (230V)
(HD 270 S1)	216-254V (240V)

- 2.1.2 Rated frequency: 50 Hz
- 2.1.3 Phases: Single phase
- 2.1.4 Rated Input Power: - MWO: 3200W cold oven 3100W after 10 min operation
- 2.1.5 Rated Input Current: - MWO: 14.5A cold oven 13.5A after 10 min operation
 - Blower, lamp, mains filter + el.nik: 0.7A
- 2.1.6 **Peak current**: Max. 20A with duration of <3 ms Max. 40A with a duration of <10 ms
- 2.1.7 Fuse: UK 35A (D, PH) UK 35A (S, PH) CH+DK 16A (D, PH) S 16A (D, PH)

Internal Fuse marking: T10A Special

2.1.8	MW Output Power: (acc. to IEC 705)	1700W ±10% (without any utensils in the cavity)
2.1.9	MW Power regulation:	Switching on/off.+ cycling Cycle time 40 s. 4 levels available, 1700W, 850W, 425W continuos and 200W
2.1.10	Timer:	15 min.

2.1.11 Timer accuracy: See functional requirements

Technical data

4812 714 50039

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2.1.12	Mains cord:	All cords fit with receptacles for connection to mains filter. No plug for wall socket.
2.1.13	Mains filter:	Separately approved by SEV or VDE and SEMKO.
2.1.14	HT-capacitor:	Separately approved in Germany
2.1.15	Cavity lamp:	Long life 2000 hrs halogen lamp, 240V 10W Not replaceable by customer.
2.1.16	Radio interference::	See Quality requirements
2.1.17	Microwave leakage:	See Quality requirements
2.1.18	Immunity:	
	- Asymmetrical	
	Low energy pulses	1.25kV
	Medium energy pulses	1.25kV
	High energy pulses	1.25kV
	- Symmetrical	
	Low energy pulses	1.0kV

1.0kV

1.0kV

10ms

(<10 ms no stop >10 ms no damage)

15Kv (150pF/150Ω)

-----"CESPECIFICATION: AVN

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Medium energy pulses

High energy pulses

2.1.19 Mains interruption:

2.1.20 ESD:

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2.2 Mechanical

2.2.1 Physical properties

Weight	Gross 66.0 kg Net 61.5 kg
Outer dimensions:	597x662x468/518 (WxDxH) height depending on mounting of bottom runners)
Dept. without handle (mm):	628
Cavity dimensions gross: net:	535x348x201 (37.4 1) 535x348x187 (34.8 1)
Door opening:	505x201
Box dimension, package:	785x699x630
Built in dimension:	595x450
Box dimension, package:	625x405x485
Max. allowed G-force on product:	40g

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PRO-2000 Professional Microwave Ovens FUNCTIONAL DESCRIPTION

1. Power On

2. Short Form Cooking Instruction

- 2.1Manual Setting2.2Memory Cooking
- 2.3 Multiply Function
- 2.4 Cooking Finished

3. Programming Mode

3.1 Programming Started

4. Diagnostic Mode

- 4.1 Total Cooking Time
- 4.2 Number of Door Openings *
- 4.3 Number of Starts
- 4.4 Fault Codes
- 4.5 Buzzer Volume
- 4.6 Key Beep
- 4.7 Disabling of Manual Timer
- 4.8 Option Number Display
- 4.9 Real Time Setting

5. Test Mode

5.1	Enter Test Mode
5.2 - 5.27	Various Tests
5.28	Programming the EEPROM to Factory Default Values
5.29	Factory Default Values
5.30	Output Power

6. Cooking Time Table

- 7. Time Out
- 8. Multiple Portions

1 Power On

At power on the oven will normally go to stand by, and a ":" will be displayed.

Programming, diagnostic, and test mode are also entered when power is switched on.

If power is turned on while

the POWER1 and the PROGR3 buttons are pressed	The oven enters programming mode. A "P" is displayed
the PROGR3 and the PROGR7 buttons are pressed	The oven enters diagnostic mode. A "d" is displayed
the door is open and the STOP buttons is pressed	The oven enters test mode.

2. Short Form Cooking Instruction

When the oven is in stand by, time will be displayed if the real time clock is set, otherwise ":" will be displayed. Cooking can be started either manually, or by loading time and power from memory.

2.1 Manual Setting

To set time and power manually, follow these steps:

- * Set the desired time by turning the timer knob. Time will be set according to the cooking time table (see under 5), and the maximum time is 15 min. Power will be set to the highest level, and will be indicated by a blinking LED. The lamp and fan will be turned on.
- Power may now be set to required level by pressing a POWER button.
- * If the door is closed, the oven may now be started by pressing the START-button. When the oven is cooking, the power LED is continuously on.
- Time and power can not be changed while the oven is running.
- * If cooking is interrupted by opening the door, the power LED will start blinking. Time and power may now be changed.

When cooking is finished, the oven beeps three times and the display starts blinking. Blinking stops after 30 seconds, or if the door is opened. The lamp and fan are on for 30 seconds after finished cooking.

2.2 Memory Cooking

To start cooking by loading time and power from a preset memory, follow these steps:

- * Press the desired PROGRAM button. Time and power will be loaded from memory and displayed. The power LED will be continuously on, and the program LED will be blinking.
- * Release the PROGRAM button. If the door is closed, the oven will now start cooking.

If cooking has been interrupted by opening the door, the LED indicating the selected program will start blinking. The oven may be started again in one of the following ways after closing the door:

- * Press the start button. If more than one item of food has been selected (see 2.3 below) the total number of items will be displayed for 1.5 seconds. The oven will start cooking again with the displayed time and power.
- * Press the button at the blinking LED and release it again immediately. The oven will start cooking again with the displayed time and power.
- * Press the button at the blinking LED and hold it for 3 seconds. time and power will again be loaded from memory, and when the button is released the oven will start cooking.
- * Press any other PROGRAM button. Time and power will be loaded from memory, and when the button is released the oven will start cooking.

2.3 Multiply Function

Cooking time that has been loaded from memory may be recalculated for more than one item of food.

- * Press the selected PROGRAM button while the oven is cooking. For each time the button is pressed, the time for one more item of food will be added to the cooking time. The total number of items will be displayed for 1.5 seconds after the button is released.
- * The total number of items may be checked by pressing any other button except for the STOP button.
- * If the oven is started by the START button after interruption, the total number of items will be displayed for 1.5 seconds.

The number of items is limited to 8, and it is also restricted by the maximum total cooking time. When the number of portion is limited, this will be indicated by 5 short beeps.

2.4 Cooking finished

After finished cooking, the oven beeps 3 times, and the display starts blinking. The blinking stops after 30 seconds, or if the door is opened, whichever comes first.

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3 **Programming Mode**

When programming mode has been entered a "P" is displayed. As soon as the manual timer knob is turned, cooking time will be displayed, and the power level will be set to 3 (highest power level).

If the STOP button is pressed, or if 30 seconds have passed without any operation, the oven will go to normal operation.

3.1 Programming Started

If the oven is in programming mode, and time and power is displayed and

the TIMER-knob is turned clockwise	The cooking time will be incremented in steps according to the cooking time table (see under 5)
the TIMER-knob is turned anti- clockwise	The cooking time will be decremented in steps according to the cooking time table.
a POWER button is pressed	The power level will be set, and indicated by a blinking LED.
a PROGRAM button is pressed	If cooking time is displayed, time and power will be stored in the selected memory. Storage is confirmed by 4 short beeps.
the START button is pressed	No action
the STOP button is pressed	The oven leaves programming mode and is ready for operation.

4 Diagnostic Mode

When the diagnostic mode has been entered a "d" is displayed. If the STOP button is pressed, or if 30 seconds have passed without any operation, the oven will go to normal operation.

4.1 Total cooking time

If the POWER 3 button is pressed, the total cooking time is displayed. The largest number of hours that can be recorded is 9999. When power is turned off, these data are stored in the non-volatile memory.

4.2 Number of Door openings

If the POWER 2 button is pressed, the total number of door openings divided by ten is displayed (e.g. 753 is displayed as 75). The largest number of door openings that can be recorded is 99999. When power is turned off, these data are stored in non-volatile memory.

4.3 Number of Starts

If the POWER 1 button is pressed, the total number of starts divided by ten is displayed (e.g. 753 is displayed as 75). The largest number of starts that can be recorded is 99999. When power is turned off, these data are stored in the non-volatile memory.

4.4 Fault Codes

If the DEFROST button is pressed, the latest fault code is displayed. The fault codes are listed in the service manual.

4.5 Buzzer Volume

If the PROGRAM 1 button is pressed, the buzzer is set to high volume.

If the PROGRAM 1 button is pressed again, the buzzer is set to low volume.

4.6 Key Beep

If the PROGRAM 2 button is pressed, key beep is turned on.

If the PROGRAM 2 button is pressed again, key beep is turned off.

4.7 Enabling/Disabling of Manual Timer

If the PROGRAM 3 button is pressed, the manual timer is enabled.

If the PROGRAM 3 button is pressed again, the manual timer is disabled.

4.8 Option Number Display

If the PROGRAM 5 button is pressed, the option number is displayed. The option number depends on the version of the oven (maximum MW power) and is set by diodes on the control board. The available options are described in the service manual.

4.9 Real Time Setting

A real time clock is available. It can only be used, however, if the oven is always turned on. The clock must be set every time power has been turned off.

If the PROGRAM 8 button is pressed, the colon will be displayed, and the hours digits will start blinking.

The hours may now be set by turning the timer knob.

When the PROGRAM 8 button is pressed again, the minutes will start blinking.

The minutes may now be set by turning the timer knob.

When the PROGRAM 8 button is pressed again, the oven will display a "d".

When the stop button is pressed, the oven goes to normal operating mode.

4.10 Fault codes

- E0 No fault
- E1 Relay 1010 cannot be syncronized
- E2 Relay 1009 cannot be syncronized
- E3 Write to EEPROM was unsuccessful
- E4 Relay 1010 short-circuited
- E5 Relay 1010 interrupted
- E6 Relay 1009 short-circuited
- E7 Relay 1009 interrupted

When pressing PROGRAM 5 a code will tell what oven type the control card is intended for:

Code:

- O1 AVM 880 with current transformer
- O2 AVM 880 without current transformer
- O3 AVM 870 with current transformer
- O4 AVM 870 without current transformer
- O5 AVM 860 with current transformer
- O6 AVM 860 without current transformer

Diagnostic mode is terminated by pressing the STOP button

5.0 Test Mode

The microprocessor also contains a test program which will test the most vital microprocessor functions and the function of the FTD display.

5.1 Enter Test Mode:

If power is turned on while the door is open and the STOP button is pressed, the oven will enter Test Mode. The display will show '88:88' and all LEDs are lit.

5.11	The door is closed.	Everything is turned off.
5.12	Turn the timer knob clockwise.	The LED for program 3 is lit. The buzzer beeps. '8' is shown in the first display digit.
5.13	Turn the timer knob anti-clockwise.	The LED for program 5 is lit. The buzzer remains silent. '8' is shown in the 3rd display digit. The fan/lamp relay is activated.
5.14	Push POWER 3 for minimum 0.5 sec.	The LED for power 3 is lit. The buzzer beeps. The illumination of the cavity is lit. The fan starts. '8' is shown in the display digit 3.
5.15	Push POWER 2	The LED for power 2 is lit. If the fan/lamp have been switched-off for about 5 sec., the relay for power level will be activated. '8' will be shown in the display digit 2.
5.16	Push POWER 1	The LED for power 1 is lit. The left main relay will be activated (1009). '8' will be shown in the display digit 1.
5.17	Push DEFROST	The LED for defrost is lit. The left pre-magnetizing relay will be activated. (1007). '8' will be shown in the display digit 4.

5,18	Push PROGRAM 1	The LED for program 1 is lit. The right main relay will be activated (1010). '8' will be shown in the display digit 3.
5.19	Push PROGRAM 2	The LED for program 2 is lit The right pre-magnetizing relay will be activated (1008). '8' will be shown in the display digit 2.
5.20	Push PROGRAM 3	The LED for program 3 is lit. The buzzer beeps weakly. '8' is shown in the display digit 1.
5.21	Push PROGRAM 4	The LED for program 4 is lit. The buzzer will beep loud. ' '8' is shown in the display digit 4.
5.22	Push PROGRAM 5	The LED for program 5 is lit. The fan/cavity lamp will be activated. '8' will be shown in the display digit 3
5.23	Push PROGRAM 6	The LED for program 6 is lit The relay for power level (1006) will be activated. '8' is shown in the display digit 1.
5.24	Push PROGRAM 7	The LED for program 7 is lit. The left main relay will be activated (1009). '8' is shown in the display digit 1.
5.25	Push PROGRAM 8	The LED for program 8 is lit. The left pre-magnetizing relay will be activated. (1007). '8' will be shown in the display digit 4.
5.26	Push START	The right main relay will be activated. (1010). '8' will be shown in the display digit 3.
5.27	Push STOP	The test mode is terminated.

5.28 Programming the EEPROM to factory default values:

While being in test mode push consecutively START - POWER 3 - PROGRAM 4 in row. Within 5 sec. the EEPROM is the programmed into factory default values. If the programming was successful, the LED for power 1 is lit and the buzzer will beep 9 times.

5.29 Factory default values:

The following combinations of time and power are the default values pre-programmed in the EEPROM

	AVM 860	AVM 870	AVM 880
Program			
1	Power 3: 0' 30"	Power 3: 0' 25"	Power 3: 0' 30"
2	Power 3: 0' 50*	Power 3: 0' 30"	Power 3: 0' 50"
3	Power 3: 1' 15"	Power 3: 0' 50"	Power 3: 1'00"
4	Power 3: 0' 30"	Power 3: 1'00"	Power 3: 1' 30"
5	Power 3: 1' 45"	Power 3: 1' 15"	Power 3: 1' 45"
6	Power 3: 2' 15"	Power 3: 1' 30"	Power 2: 0' 30"
7	Power 3: 2' 45"	Power 3: 2' 00"	Power 2: 1' 15"
8	Power 3: 3' 30"	Power 3: 2' 30"	Power 2: 1' 30"

5.30 Output Power

AVM 860	AVM 870	AVM 880
Power 3: 1300 W	Power 3: 1700 W	Power 3: 2100 W
Power 2: 650 W	Power 2: 850 W	Power 2: 1050 W
Power 1: 425 W	Power 1: 425 W	Power 1: 525 W
Defrost: 200 W	Defrost: 200 W	Defrost: 200 W

6. Cooking Time Table

The following timer increments can be used in manual cooking or when programming:

From	То	Increment
5 sec	3 min	5 sec
3 min	5 min	10 sec
5 min	8 min	15 sec
8 min	12 min	30 sec
12 min	15 min	60 sec

- 24

7. Time Out

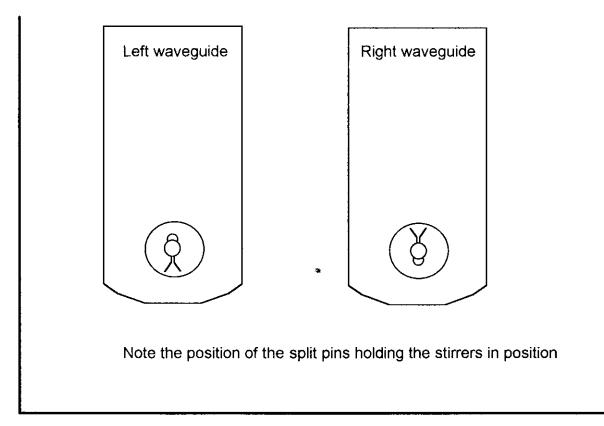
If the door is left open, the fan and lamp will be switched off after 10 minutes.

8. Multiple Portions

The maximum programmable number for multiple portions is 8

Positioning of the microwave stirrers.

If the drive chain for any reason is taken off, changed or adjusted, it is most important that the two microwave stirrers are placed in the position as indicated below:

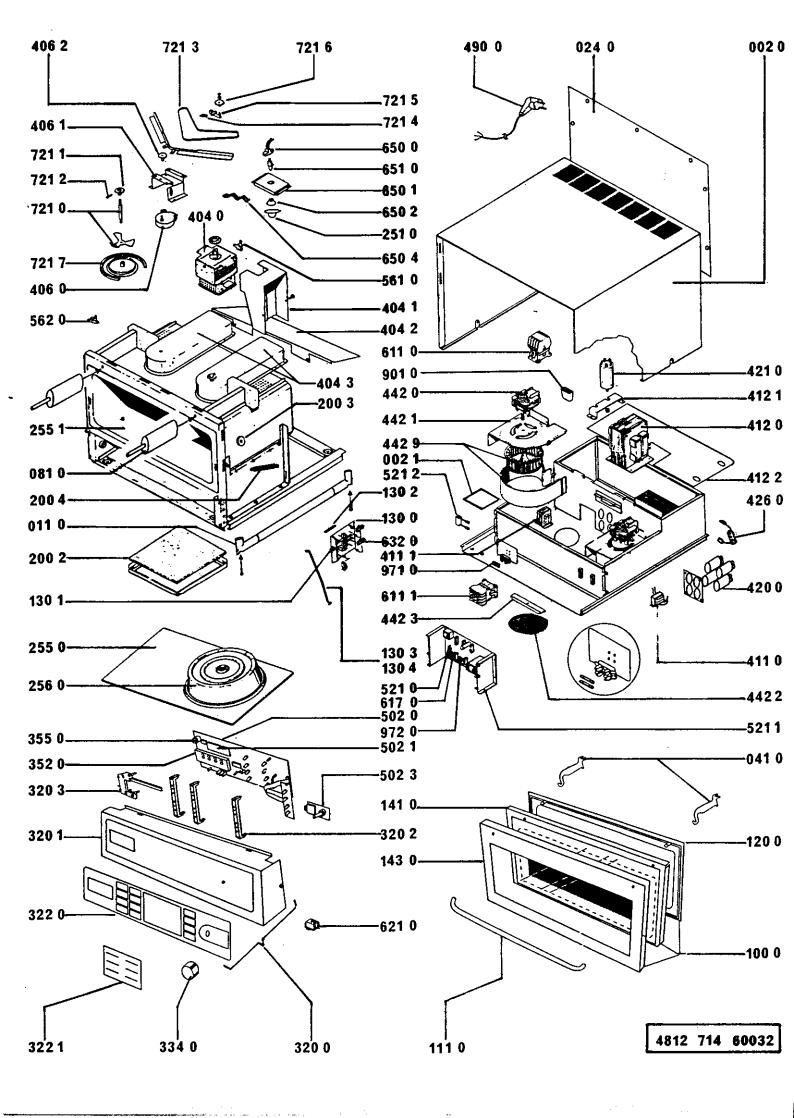


SERVICE

Whirlpool Europe Customer Services

Model Service No. Version		AVM 870/stainl 853887001081 8538 870 01081			
Pos. No.	12 NC Code	Description	from	to	
002 0	4819 440 59528	Cabinet			
002 1	4819 440 59526	Cover			
011 0	4819 462 79586	Foot			
024 0	4819 310 88485	Panel, rear			
041 0	4819 404 7 80 53	Hinge (Balance arm)			
081 0	4819 462 48382	Shock absorber			
100 0	4819 440 59532	Door cpl. AVM 870			
111 0	4819 498 58459	Grip door			
120 0	4819 459 48558	Frame Descine misses with shee			
130 0	4819 464 18113	Bearing microswitsches			
130 1	4819 462 38676	Bearing			
130 2	4819 492 68657	Spring			
1303	4819 404 78544	Bracket			
1304	4819 404 78545	Ноор			
141 0	4819 450 69529	Inner glass			
143 0	4819 459 48563	Door frame outer AVM 870			
200 2	4822 480 40112	Filter,air			
200 3	4819 528 78071	Wheel			
200 4	4819 462 98656	Spring			
251 0	4819 381 18151	Lamp glass 🎽			
255 0	4819 418 78842	Plate, bottom			
255 1	4819 462 78511	Bracket			
256 0	4819 418 49579	Cap,protect.			
320 0	4819 453 49369	Panel,control cpl.			
320 1	4819 453 49368	Panel,control			
320 2	4819 464 18114	Bracket			
320 3	4819 404 78547	Bracket			
322 0	4819 466 98749	Display chart			
322 1	4819 466 98748	Recipe guide			
334 0	4819 412 58288	Knob, timeswitch			
352 0	4819 214 78381	Display			
355 0	4819 280 18019	Buzzer			
404 0	4819 131 58025	Magnetron			
404 1	4819 310 88184	Air guide			
404 2	4819 466 98747	Plate			
404 3	4819 462 38674	Guide,wave			
406 0	4819 361 18321	Motor Antenna			
406 1	4819 404 78539	Plate, mounting			
406 2	4822 522 31184	Nut			
411 0	4819 148 68059	Transformer			
411 1	4819 148 68062	Transformer			
4120	4819 148 68061	Transformer HT			
412 1	4819 404 78543	Bracket			
412 2	4819 440 59527	Cap Consider III			
420 0	4819 121 48018	Capacitor HT			
421 0	4819 121 18162	Filter, mains			
426 0	4819 218 38038				
442 0	4819 361 18133	Motor FAN			
442 1 442 2	4819 310 88086 4819 458 28005	Plate,mounting Grille			
442 3	4819 404 78541	Bracket			
442 9	4819 515 28166	Cabinet			
490 0	4819 321 18207	Cable, mains SA Boord printed Control AVM 870			
502 0 502 1	4819 214 78385	Board, printed Control AVM 870			
502 1	4819 209 88026	Microprocessor			

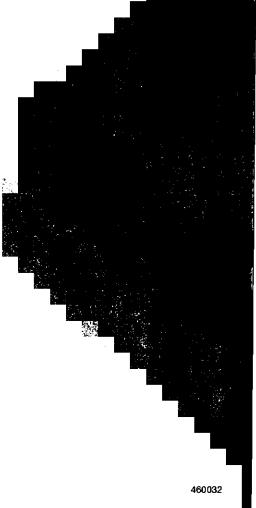
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SERVICE

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Model Service No. Version		AVM 870/stainl 853887001081 8538 870 01081		
Pos. No.	12 NC Code	Description	from	to
502 3	4819 101 48072	Potentiometer		
521 0	4819 214 78382	Board, printed power		
521 1	4819 464 18112	Bracket PCB		
521 2	4819 111 88002	Combination, RC		
521 3	4819 113 88001	Resistor 100 Ohm		
521 4	4819 112 48023	Resistor		
561 0	4819 282 48207	Thermostat		
562 0	4819 282 48202	Thermostat 95 C		
562 1	4819 282 48261	Thermostat 100C	•	
611 0	4819 280 68242	Relay		
611 1	4819 280 68316	Relay		
617 0	4819 280 28005	Relay 48V		
621 0	4819 277 18061	Power switch		
632 0	4819 271 38161	Microswitch		
650 0	4819 255 18184	Base,lamp		
650 1	4819 404 78546	Bracket		
650 2	4819 380 28007	Reflector		
650 4	4819 492 68507	Spring , cavity lamp		
651 0	4819 134 48281	Lamp oven		
721 0	4819 515 28051	Antenna 🛛 💊		
721 1	4822 522 31178	Wheel		
721 2	4819 535 98354	Shaft		
721 3	4822 358 50052	Belt,driving		
721 4	4819 492 38063	Spring		
721 5	4819 417 38109	Ноор		
721 6	4822 522 31177	Wheel,chain		
721 7	4819 462 78677	Cover plate		
901 0	4819 401 18135	Clamp,cable		
971 0	4819 253 38021	Fuse T10A		
972 0	4819 253 38006	Fuse T100mA		



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Model AVM 870/stainl Service No. 853887001081 Version 8538 870 01081				
Pos. No.	12 NC Code	Description	from	to
483 1	4819 320 58201	Cable harness		
483 2	4819 320 58206	Cable harness		
484 1	4819 320 58199	Cable harness		
484 2	4819 320 58202	Cable harness		
484 3	4819 320 58203	Cable harness		
484 4	4819 320 58204	Cable harness		
484 5	4819 320 58205	Cable harness		
484 6	4819 320 58207	Cable harness		
484 7	4819 320 58208	Cable harness		
484 8	4819 321 18208	Cable harness		
484 9	4819 321 18209	Cable harness		

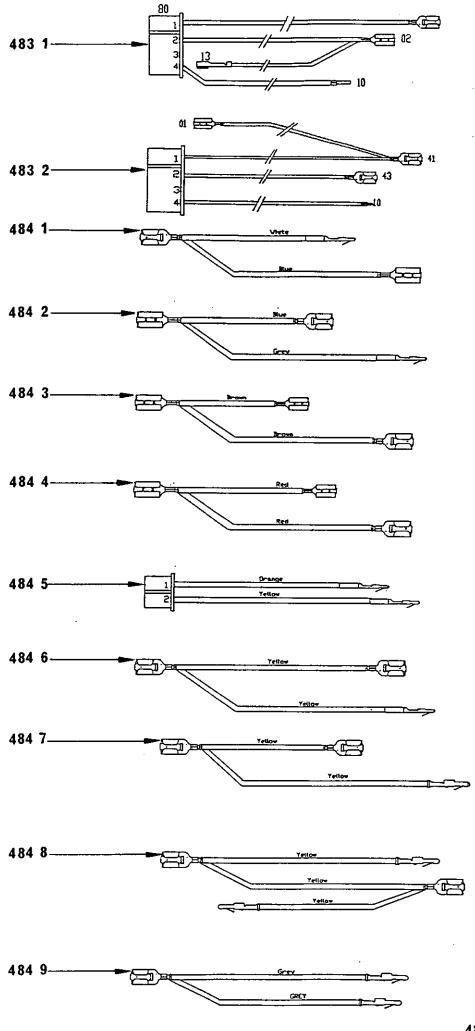


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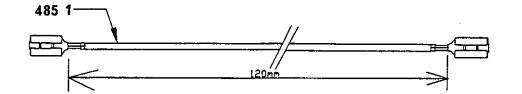
Model Service No Version		AVM 870/stain! 853887001081 8538 870 01081		
Pos. No.	12 NC Code	Description	from	to
485 1	4819 320 28015	Cable HT		
485 2	4819 320 28016	Cable HT		
485 3	4819 320 28017	Cable HT		
485 4	4819 320 28018	Cable HT		
485 5	4819 320 28019	Cable HT		
485 6	4819 320 28021	Cable HT		
485 7	4819 320 28022	Cable HT		

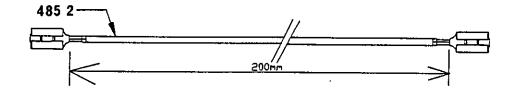
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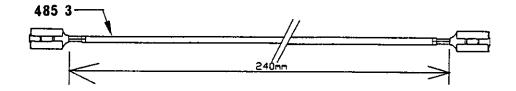


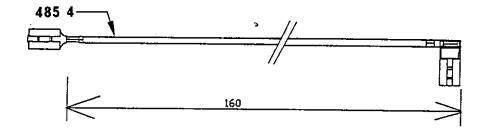
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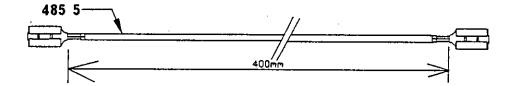


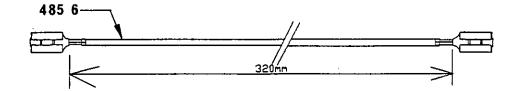


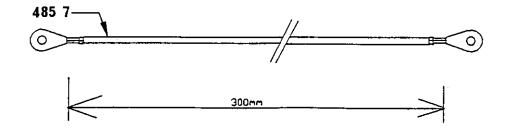




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