

WATER METER WM45

IMPORTANT SAFETY INSTRUCTIONS
SAVE THESE INSTRUCTIONS

TABLE OF CONTENT

DESCRIPTION	PAGE
General information	1
Description	2
Technical features	2
Installation	3
Operating instructions	4
Manual operation	4
Operation with 80 programs	5
Use of external probe	5
Special functions	5-6
Error messages and corrective actions	7-8
Operation interruption	9
Maintenance instructions	9
Spare parts	10
Warranty	11

1
STATEMENT

THE MANUFACTURER DECLINES ALL RESPONSABILITY FOR ANY DAMAGE CAUSED BY AN UNPROPER USE OF THE MACHINE AND/OR IN ENVIRONMENTAL CONDITIONS OUT OF THE ALLOWED RANGE.

WARNING !

- 1) **BEFORE BEGINNING THE USE OF THE MACHINE READ CAREFULLY THIS WHOLE MANUAL.**



**THE OPERATION LISTED BELOW CANNOT BE PERFORMED BY THE USER.
A LICENSED INSTALLER INTERVENTION IS NEEDED.**

- a) **ELECTRICAL CONNECTIONS**
- b) **HYDRAULIC CONNECTIONS**
- c) **INSTALLATION**
- d) **OPEN THE MACHINE**
- e) **REPAIR WITH OR WITHOUT DISASSEMBLY**
- f) **SET-UP AND ADJUSTEMENT PROCEDURES**



IN ALL THE CASES EVIDENCED WITH THIS SYMBOL IN THE TEXT OF THIS MANUAL AN INTERVENTION OF A LICENSED INSTALLER IS REQUIRED.



THE OPERATION EVIDENCED WITH THIS SYMBOL IS STRICTLY FORBIDDEN.

- 5) **IN CASE OF SUPPLY OF HOT WATER TO THE MACHINE, THE TEMPERATURE MUST NOT BE HIGHER THAN 65°C (150°F).**

- 6) **THIS EQUIPMENT IS TO BEN INSTALLED WITH ADEQUATE BACKGLOW PROTECTION TO COMPLY WITH FEDERAL, STATE OR LOCAL CODES HAVING JURISDICTION.**

1.0GENERAL INFORMATION


This machine is a Doser-Mixer for the control of quantity and temperature of the water to be delivered into the bread kneading machines, in small and larger industry.

The quantity control is carried out with an advanced microprocessor electronics, while temperature is regulated by means of a thermostatic mixer and controlled with the same electronics.

It is a model suitable for the batch of large (up to 999,9 L or 999,9 Lb or 99 Lb and 15 oz) and small quantities (under 5L or 10Lb).

1. DESCRIPTION

(see figure no. 6 page 3)

1. Ball gate valves
2. 'O' ring gasket type unions to facilitate installation
3. Stainless steel double mesh filters for water impurities
4. Non return valves
5. Temperature regulation knob
6. External probe
7. Supply plug with fuse and spare and plug for the pump control, with fuse and spare
8. Display for the internal electronic thermometer and the set temperature
9. Display for the external electronic thermometer and the programs
10.  key to move from temperature to quantity and vice versa
11. **STOP/C** and **START** keys
12. Delivery hose
13. By-pass connection
14. Series of function control lights
15. Membrane keyboard for the data entry
16. Display showing litres selected, litres still to be delivered (during the dosing), or already delivered (after pressing STOP).

1.1 TECHNICAL FEATURES

Features

Supply tension (see equipment rating plate)	230 Volt A.C. or 110Volt A.C. \pm 10%
Frequency	50/60Hz
Power	25VA
Hydraulic connections	1/2"
By-pass water outlet	16mm
Max. inlet water temperature	65°C
Inlet water pressures	Max.: 75 PSI Min.: 15 PSI Max. pressure ratio between the 2 inlets: 1:5
Temperature control	Setting range 2 - 60°C Measure precision: \pm 0.3°C Mixing precision: \pm 1°C
Dosing control	Max. dosage quantity: 999.9L Min. dosage quantity: 100g Precision: \pm 1% (over 5L)
Water delivery	At 15 PSI and 20°C: 18litres/min At 75 PSI and 20°C: 40litres/min
Supply fuse	250V – 630mA delayed
Pump remote control fuse	250V 6.3A delayed

2. INSTALLATION



WARNING: THE INTERVENTION OF A LICENSED INSTALLER IS NEEDED

- In case of hard water (with high lime scale content = hardness in French degrees higher than 25 – 30, or 250 – 300ppm) it is necessary to employ an ion exchange water softener. This unit must be calibrated so as to maintain a residual hardness ranging between 50 – 100ppm. The use of electronic water softeners is not advised, since their efficacy has not been proved yet.
- Fix the doser-mixer on the wall at a height from the floor of 1350 – 1550mm, using the four wall plugs supplied. The 90° wall plug hook is supplied to provide support for the water delivery outlet elbow.

Do not place other machines below the DOSER-MIXER.

- Arrange the water inlet tubing as shown in the lay-out diagrams, figures 2-3-4-5, mounting the ball gate valves (1) at the end of the pipes (black lever = cold on the right and red lever = warm on the left).
- With reference to the figure 4, it is advisable to use the pre-assembled group: Three way connection kit, code 3801205.
- Connect ball gate valves to the doser-mixer by means of the "O" ring gasket type unions (2).
- Insert the delivery hose (12) into the housing.
- Connect the by-pass (13) to a drain by means of a copper pipe with 16mm external diameter.
- Connect the proper power supply (see equipment rating plate near the plug 7), monophasic 50 or 60Hz, using the supplied flying socket, fitted with a three core cable min. section 3x1mm². An external switch is helpful.
- For the eventual pump remote control, use the supplied flying socket to connect the remote control switch if the pump(s). The use of such a pump is necessary when one of the two inlet pressures is less than 15 PSI, for example when using unpressurized water heaters or refrigerators.

NOTICE: in the case of water chiller equipped with a surge tank with pressure switch, this must be by-passed and the pump must be controlled directly by the Doser, through a power relay.



The plug on the device has the following wiring diagram (clean control):

3. OPERATING INSTRUCTIONS


Switch on the doser-mixer using the external switch (or by plugging in the flying socket).

The first displays appearing at the switching on refer to the self-test. The displays show the numbers from 0 to 9, the microprocessor software version, then the data regarding the last discharge.

3.1 MANUAL OPERATION


- Press **P00** on the keyboard (the yellow Manual led lights up and the decimal point of the litres flashes), then select the required water quantity. If only the quantity has to be stored, press **START**. If the operator needs to store also the temperature, press the key  : the flashing moves to the decimal point of the temperature, which can be set. In case of error, in the litres or in the temperature, press **STOP/C** key and reselect.
- Press the **START** key: the display 8 shows the actual discharge temperature and the display (16) indicates the decreasing litres.
- To manually stop delivery at any time press the **STOP/C** key. In the display (16) the quantity if delivered water flashes; to resume the dosage, press again the **START** key; otherwise pressing again the **STOP/C** key the memory is cancelled and a different quantity can be set.
- Adjust the water temperature using the knob (5), checking it on the electronic thermometer (8). In case of correction, wait a few seconds before intervening, so as to allow the temperature to stabilize.
- To obtain the same water dosage in successive operations, simply press the **START** key, as the doser-mixer is provided with a memory. In the case of power failure during dosing the data are not lost; when power is restored simply repress the **START** key to complete the dosing operation (see page 20 par.3.5.3).
- To modify quantity and/or temperature in memory, press directly the  key and proceed as for the first data entry.
- To ensure optimum operation the warm water temperature must be at least 10°C higher than the required delivery water temperature and the cold water should be at least 3°C lower. Low temperatures (under 10° - 15°C) may be obtained only using a refrigerator.
- The doser-mixer is equipped with a valve for manual delivery of pre-mixed water (by-pass). This valve can be used both for discharging possible backwater in the pipes, when the doser is switched on for the first time every day, and for water delivery during power failure or in the event of dosing solenoid valve failure.

NOTES:

- 1) The by-pass function light never switches on in this machine version, and the RUN function light is on during the whole discharge.
- 2) The stored temperature appears only when a recipe is recalled, or when the key for the quick modification is pressed, and remains for 6"; then the  display shows the actual internal probe temperature.

3.2 OPERATION WITH 80 PROGRAMS

3.2.1 Initial recipes setting

Set the program number (ex.: **P01**, **P02** etc.) appearing on the lower display (9) (**PROGR.** lights up) and then the desired water quantity, appearing on the upper display (16). To store also the temperature, press  key and proceed as for manual operation. It is possible to exit from a recipe setting dosing the recipe itself (press **START**), setting a new recipe (press **P...**). or automatically after 10 seconds: in all these cases the recipe is stored.

Warning: recipe numbers from 1 to 9 must always be set using the format: 01, 02, etc...

3.2.2 With recipes already programmed:

To recall a recipe, enter the desired number (for example P28), which is shown for 3 seconds on the lower display (9), while the upper displays show the relevant quantity and temperature.

Press **START** to carry out the dosing.

If modifications are required, set the new quantity and/or temperature as explained above.


To stop water delivery manually at any time press the **STOP/C** key. After that on the display (16) the delivered water quantity flashes; to resume dosing press again the **START** key, otherwise, pressing the **STOP/C** key, the quantity is cleared and it is possible to set a new quantity.

3.3 USE OF EXTERNAL PROBE

The equipment is fitted with an auxiliary precision electronic thermometer with a mobile probe (6), usable at distances up to 5 metres.

Temperature readout on the display is continuous (9), except when the program number appears.

3.4 SPECIAL FUNCTIONS

- With the double pressure of the **P** key, the device shows the succession of the recipes stored in memory.
- Holding the  key for 10", the total amount of m³ delivered by the machine (with a decimal number) is indicated: see example in Figure 9.

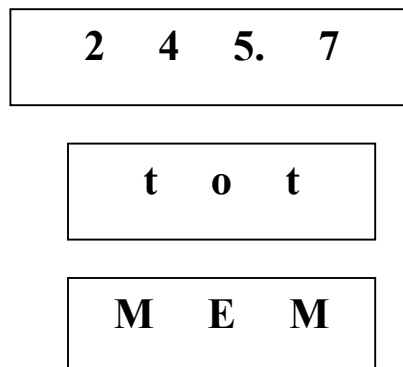


Figure -9

By pressing the **STOP/C** key, will appear the number of times the electrovalve has been opened (see fig. 10), divided into 10.

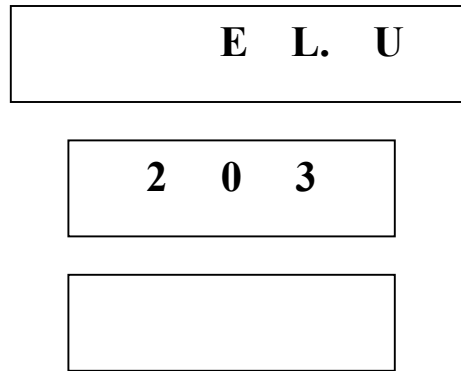


Figure -10

Pressing the **STOP/C** key, the normal visualization is restored.

NOTE: The totalizers go automatically to zero when they reach respectively 999,9m³ and 9990 times (visualized: 999).

- To prevent from modifying the recipes, it is possible to protect the setting and modification operations, pressing the **P** key for 5"; the display indicates the wording as in Figure 11, in which the code 147 has to be entered.

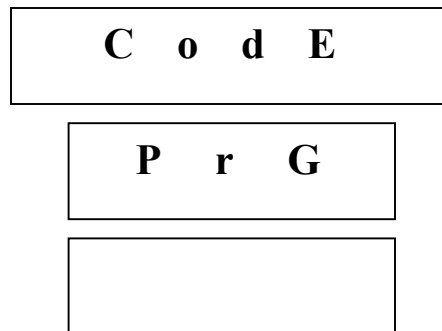


Figure -11

Then, pressing the **P** key, the display indicates the wording as in Figure 12:

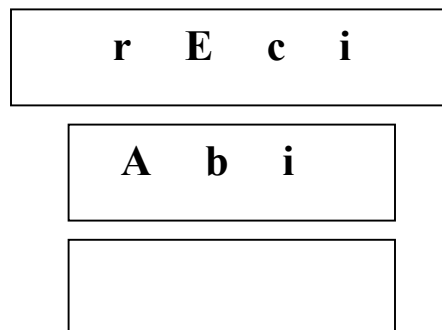


Figure -12

Pressing the **1** key, the wording **diS** appears, indicating that the recipe programming is disable; pressing the **2** key, the wording **Abi** appears, indicating that the recipe programming is enabled.

Pressing **P** the normal visualization is restored.

- Free delivery: it is possible to exclude the liter-counter (for example in case of malfunction of the part) by means of the special program P99:

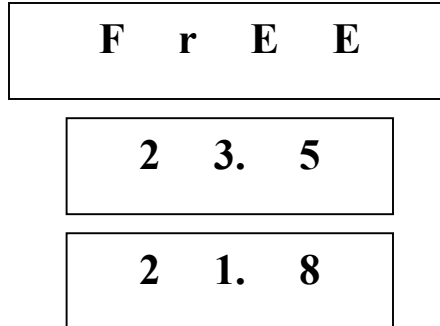


Figure -13

With the **START** and **STOP** keys the electrovalve opens and closes.

3.5 **ERROR MESSAGES AND CORRECTIVE ACTIONS**

All error messages are accompanied by flashing wordings and an intermittent acoustic signalling. The latter one can be stopped with the **STOP** key. Using the **START** key the error message is cancelled and the delivery starts again. On the contrary, the double **STOP** command cancels the delivery. The possible error messages and relevant wordings are listed below.

3.5.1 **Quantity counting error**

After pressing **START**, after 12'' this wording appears:

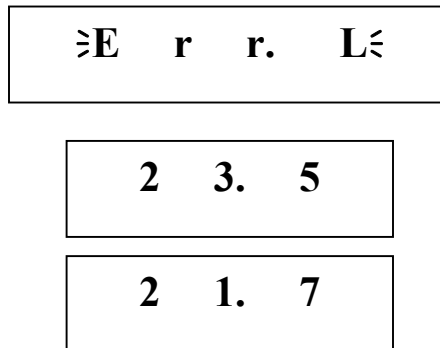





Figure -14

Possible causes:

- A) If no water comes out of the service
- The cocks on the inlets of warm water and/or cold water are not open. Check that both are open and that the connection to the pipes is correct.
 - The inlet filters are obstructed. Clean them.
 - The electrovalve does not open. Contact the service. 

B) If water comes out normally and this message appears, it indicates a malfunction of the litre-counter. Contact the service. 

3.5.2 Probe error

The **PrE** wording appears on the display referred to the damaged or wrongly connected probe. Contact the service for the replacement. 
In the meantime, if the internal probe is broken, use the external probe to check that the temperature is correct.

3.5.3 Tension fall

If there is a tension fall during a water delivery, the device stores the delivered quantity and interrupts the delivery. When tension is restored, the following wording appears:

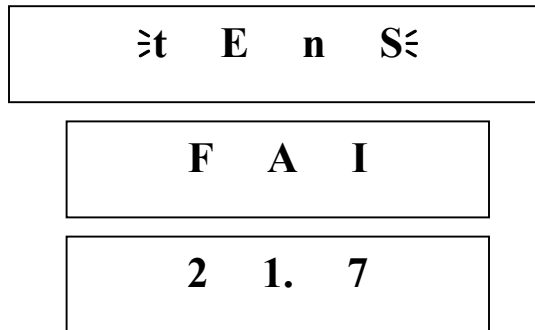


Figure -15

Press **START** to complete the dosage.

3.5.4 Parameter error

If, after the machine switching on, the following message appears on the display:

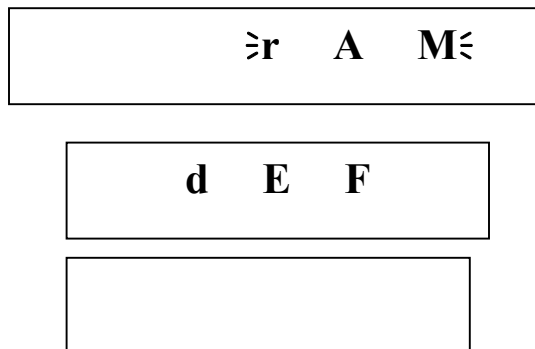


Figure -16

Some incongruous values have been found in the machine parameters. For further information contact the service.

It is anyway possible to restart the machine with the standard settings:

- Press contemporaneously the keys 2 and 6 for 5 seconds: the device restores the default values and restarts automatically. While holding the keys, the display shows the menu of figure 17 and indicates that the standard values are being setting (manual by-pass)

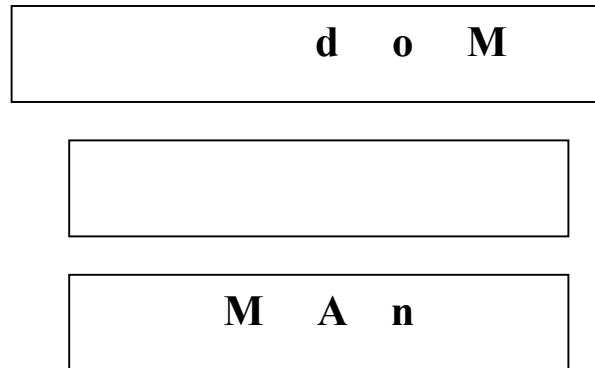



Figure -17

3.6 OPERATION INTERRUPTION

If, with tension available, all displays remain off, it means that the electrical supply does not reach the main board, or this latter is damaged.

Possible causes:

- A) Over-tension and/or supply fuse failure. Open the fuse housing next to the supply plug, take out the spare fuse and replace the damaged one.
- B) Damage to the actuators board or the main board. Contact the service 

4. MAINTENANCE INSTRUCTIONS

To assure a long working life of the internal parts of the device, are necessary following periodic checks:

1. Clean the filters (3) regularly, particularly if the water contains a high quantity of lime-scale.
2. When switching off the doser-mixer, set always the temperature regulation knob (5) to its mid position, to allow a minimum number of moves in the mixer valve, particularly when deliveries at the same temperature are carried out.
3. To clean the external surface of the doser-mixer, use a soft sponge and water or a neutral detergent; for more resistant grime, use alcohol or turpentine.

4.1 SPARE PARTS



IT IS STRICTLY FORBIDDEN TO USE NOT ORIGINAL SPARE PARTS !

Figure –7 on page 4 shows the machine overview indicating the various components of the device and, here following, Table 2 lists their description with relevant spare parts code numbers.

POS.	DESCRIPTION	CODE – 230V	VARIANTS – 110V
1	Cover with keyboard and electronics	3811032	/
2	Regulation knob	3801208	/
3	External temperature probe	3812511	/
4	Actuators and supply board	3811534	3811537
5	Thermostatic element	4400351	/
6	2 Wires liter counter	3801007	/
7	Internal probe	3812522	/
8	Electrovalve group with coil	3801127	3801129
9	Electrovalve coil	4400405	4400406
10	Filter – No return valve assembly	3801230	/
11	Hot water ball gate valve (red)	3801229	/
12	Cold water ball gate valve (black)	3801228	/
---	Electrovalve internal kit	4400451	/
---	Main supply FAST fuse F 315mA L 250V	4400606	/
---	Pump control FAST fuse F 6,3A L 250V	4400608	/
---	Ø delivery hose 16 mm	3801209	/

LIMITED WARRANTY
(Continental United States Of America And Canada Only)

Doyon Equipment Inc. guarantees to the original purchaser only that its product are free of defects in material and workmanship, under normal use.

This warranty does not cover any light bulbs, thermostat calibration or defects due to or resulting from handling, abuse, misuse, nor shall it extend to any unit from which the serial number has been removed or altered, or modifications made by unauthorized service personnel or damage by flood, fire or other acts of God. Nor will this warranty apply as regards to the immersion element damaged by hard water.

The extent of the manufacturer's obligation under this warranty shall be limited to the replacement or repair of defective parts within the warranty period. The decision of the acceptance of the warranty will be made by Doyon Equipment service department, which decision will be final.

The purchaser is responsible for having the equipment properly installed, operated under normal conditions with proper supervision and to perform periodic preventive maintenance.

If any parts are proven defective during the period of one year from date of purchase, Doyon Equipment Inc. hereby guarantees to replace, without charge, F.O.B. Linière, Quebec, Canada, such part or parts.

Doyon Equipment Inc will pay the reasonable labor charges in connection with the replacement parts occurring within one year from purchase date. Travel over 50 miles, holiday or overtime charges are not covered. After one year from purchase date, all labor and transportation charges in connection with replacement parts will be the purchaser's responsibility.

Doyon Equipment Inc. does hereby exclude and shall not be liable to purchaser for any consequential or incidental damages including, but not limited to, damages to property, damages for loss of use, loss of time, loss of profits or income, resulting from any breach or warranty.

In no case, shall this warranty apply outside Canada and continental United States unless the purchaser has a written agreement from Doyon Equipment Inc