

(19)



(11)

EP 2 177 147 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

21.04.2010 Bulletin 2010/16

(51) Int Cl.:

A47L 15/44^(2006.01)

A47L 15/46^(2006.01)

(21) Application number: **09170009.6**

(22) Date of filing: **11.09.2009**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK SM TR**

Designated Extension States:

AL BA RS

(30) Priority: **20.10.2008 TR 200807861**

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(54) **Method for opening a detergent chamber**

(57) With the dishwashing operation method of the subject matter of the invention, under normal circumstances, in order that the detergent chamber lid opens, whether the water pressure in the washing mechanism is at the desired level or not is checked while a washing program is being executed, provided that the water temperature and required duration (lid opening time) are appropriate. The control unit determines whether the cham-

ber lid opens or not in accordance with the data that are received by the pressure gauge and transmitted to the control unit. Since that the water pressure is not at a sufficient level is an indicator that there is not enough water to carry out washing process with detergent, the opening of the lid is prevented.

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Description

Technical Field

[0001] This invention relates to a method which is applied in order to ensure opening of the detergent chambers in dishwashers under appropriate conditions.

Prior Art

[0002] As known, when the determined time and temperature is reached in the course of washing step, the standard detergent chamber used in the dishwashers opens its lid and enables the detergent therein to flow into the machine. However, in most cases, the opening of the chamber lid is not sufficient to enable all the detergent to flow into the machine. The water sprayed by the washing sprinklers also reaches the detergent chamber and soaks all the detergent in the chamber, enabling it to flow into the water in the machine.

[0003] In the state of art, the opening of the detergent chamber in the dishwashers operates independently from the hydraulic system (washing mechanism). The detergent chamber remains closed for a fixed period of time of the washing step and it opens when the determined duration elapses. Even in the case that there is insufficient water or no water in the machine due to any reason; the detergent chamber is able to open independently from the hydraulic system. Hence, the detergent in the chamber gathers moisture due to water vapour in the machine and stiffens and sticks to the chamber.

[0004] Apart from the standard detergent chambers, a method for dispensing detergent into the machine is disclosed in a published patent application no. W02008095109, according to the state of art. A washing machine using a detergent pumping unit is disclosed in the application no. DE4014359, and a unit using solid detergent instead of powder is disclosed in the application no. W00178572.

Brief Description of Invention

[0005] In this invention, opening of the detergent drawer operates depending on the hydraulic system (washing mechanism) as well as the water temperature and time determined for the selected washing program by the control unit of the dishwasher. Thus, in case that there is no water in the system due to any reason, the lid does not open even if it is time to open, resolving the relevant problem. Therefore, the activation of the detergent chamber of the machine is prevented when there is no water in the system. With the operation method of the machine according to present invention, the detergent chamber is duly activated provided that the washing pump is operating and the pressure gauge unit in the washing mechanism has sent the control unit the data that the water pressure is at a sufficient level.

Aim of Invention

[0006] The aim of this invention is to ensure the opening of the detergent chambers of the dishwashers by associating it with the time, water temperature in washing program and water pressure in the washing mechanism.

[0007] Another aim of the invention is to make the method for opening the detergent chamber applicable in the currently-used dishwashing machines without any change in the structure of the machine.

[0008] A further aim of the invention is to ensure the opening of the detergent chamber with an easily-applicable, cost-effective and a reliable method.

Disclosure of Invention

[0009] As known, during a standard wash program, the detergent chamber provided in the dishwashers opens its lid and enables the detergent to flow into the machine when the determined time and temperature is reached in the course of washing step.

[0010] As above-mentioned, in case that the lid opens when there is not sufficient water in the machine, the detergent is affected by the water vapour in the machine and sticks to the chamber. With this invention, it is aimed that the opening of the detergent chamber of a machine under those circumstances is prevented.

[0011] As known again, the hydraulic system (or washing mechanism) of the dishwashers operates as follows. Before the beginning of the wash, the water taken in the machine from the mains fills in the pool at the bottom of the machine. To this end, there is provided a mains water inlet on the pool. After a certain amount of water is taken in, mains water is cut off; then the water in the pool is absorbed by a pump connected to a connecting pipe channel in the pool; and then it is carried through the heater by the interconnection pipe. Heated water is directed to at least one sprinkler pipe that is connected to the lower sprinkler and upper sprinkler on the pool part. The wash is performed when the water reaches the lower sprinkler and upper sprinkler with the pressure of the pump. The water temperature is measured by a thermometer unit which is provided in the machine and related with the control unit again.

[0012] In some dishwashers, as well as these parts, pressure gauge units are provided in the washing mechanism. These units are related to the control unit of the machine and they convey the data on the working conditions of the machine to the control unit.

[0013] For instance, the data whether the water pressure is at a desired level or not may be used by the machine as an indicator of whether the washing steps carried out by the control unit operate properly or not.

[0014] With the operating method for dishwashers according to the subject matter of the present invention, making use of the current structures of the said machines, it is ensured that the detergent chamber lid is opened at the right time.

[0015] Under normal circumstances, in order that the detergent chamber lid opens, whether the water pressure in the washing mechanism is at the desired level or not is checked while a washing program is being executed, provided that the water temperature and required duration (for lid opening) are suitable. 5

[0016] The control unit determines whether the chamber lid should open or not in accordance with the data that are received by the pressure gauge and transmitted to the control unit. Since that the water pressure is not at a sufficient level is an indicator that there is not enough water to carry out washing process with detergent, the opening of the lid is prevented. 10

[0017] In other words, with the method of the present invention; provided that the lid opening time, water temperature and water pressure reach the minimum limit values predetermined by the control unit, the detergent chamber lid opens. 15

[0018] In addition to the appropriateness of the washing water temperature and the opening time of the lid, in the cases where the water pressure is also sufficient, the control unit enables the lid to open and starts washing process with detergent. 20

[0019] With this operation method, whether the machine has sufficient washing water or not is understood, and the opening of the detergent chamber lid of the machine is enabled only under appropriate conditions. 25

Claims 30

1. A method for dishwashing operation **characterized in that** the detergent chamber lid of the machine opens depending on the washing water temperature that is measured by a thermometer unit in the machine, lid opening time of the program step performed by the control unit and washing water pressure that is measured by the pressure gauge unit provided in the machine. 35
2. A method according to Claim 1 **characterized in that** detergent chamber lid opens provided that the lid opening time, water temperature and water pressure reach the minimum limit values predetermined by the control unit. 40 45
3. A dishwasher applying any of the methods according to the preceding claims. 50

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 2008095109 A [0004]
- DE 4014359 [0004]
- WO 0178572 A [0004]