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(54) **Method for removing scale from a heating element of a washing machine**

(57) The present invention refers to a method for removing scale from a heating element placed in a tub of a washing machine.
The method according to the invention comprises the following steps: (a) turning on the heating element when the tub is empty until a predetermined temperature is reached; (b) flushing said heating element with water drained from the main water supply; (c) draining said water from the tub.

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Description

[0001] The present invention refers to a method for removing scale from a heating element of a washing machine.

[0002] It is known that washing machines are provided with a tub, in which a rotatable drum for receiving articles to be washed is mounted, and with heating elements for heating washing water in the tub. It is also commonly known that after a number of washing cycles calcific substances present in water, like calcium and magnesium, accumulate on the heating elements reducing the heat transfer from heating elements to water and causing sooner or later a heating elements break.

[0003] In order to reduce the formation of scale on heating elements and for prolonging their working efficiency, normally users add decalcifying agents to washing water for softening it. However such agents can causes damages to articles to be washed, especially to delicate clothes.

[0004] The aim of the present invention is therefore to provide a method for the periodical removal of scale from a heating element of a washing machine. In particular, the method should be performed by the washing machine either automatically when scale presence on the heating element is detected or upon a command input by the user.

[0005] Another object of the present invention is to provide a method for removing scale from a heating element of a washing machine that avoids damages to articles to be washed.

[0006] Advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objects and advantages of the invention may be realised and attained as particularly pointed out in the appended claims.

[0007] According to the invention the method for removing scale from a heating element placed in a tub of a washing machine is carried out by turning on the heating elements of the washing machine when the tub is in an empty condition, i.e. when the tub does not contain water. The temperature of the heating element will increase until a predetermined value is reached. Such value is set in order to avoid the heating element to burn out because of low heat transfer due to water absence in the tub.

[0008] After the heating element has reached said predetermined temperature, an amount of water is drained from the main water supply and admitted into the washing tub so as to flush the heating element. Since water, as available from the main water supply, has a temperature quite low in respect to that of the heating element, the latter, and in particular the scale accumulated on it, undergoes an abrupt thermal gradient causing the scale to crack. Scale fragments are drained outside the tub together with the cold water. At the end of the procedure the heating element surface is clean.

[0009] The evaluation of whether or not scale has formed onto the heating element can be made in various known manners. For example the heating element can be provided with a temperature sensor for monitoring the temperature on the heating element surface. If the sensor indicates a quick increasing of the temperature it means that the heat produced by the element is not duly received by the water in the tub because of scale presence on the element surface. Once the presence of scale has been recognised, the method for removing it can be carried out as described above.

[0010] A washing machine can be provided with a control unit programmed for testing the presence of scale onto the heating elements with a method known per se and further programmed for carrying out the steps of the method for removing such scale. The control unit can perform the test after a predetermined number of washing cycles or before starting the washing cycle itself.

[0011] Conclusively it can be stated that the method for removing scale from a heating element placed in a tub of a washing machine according to the present invention allows the user to avoid the use of decalcifying agents preserving the articles to be washed by damages. The method can advantageously be performed without the user's intervention and can be implemented in already existing washing machines simply updating their control unit.

Claims

1. Method for removing scale from a heating element placed in a tub of a washing machine comprising the following steps: (a) turning on the heating element when the tub is empty until a predetermined temperature is reached; (b) flushing said heating element with water drained from the main water supply; (c) draining said water from the tub.

2. A washing machine having a control unit programmed for carrying out the method of claim 1.

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EUROPEAN SEARCH REPORT

Application Number
EP 06 11 5217

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TECHNICAL FIELDS SEARCHED (IPC)

D06F
F24H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 November 2006	Prosig, Christina

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82