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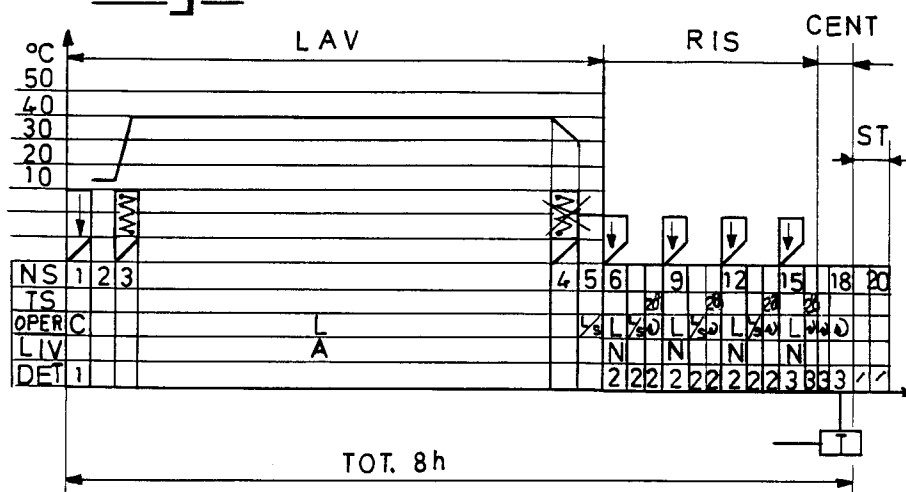
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I-20131 Milano (IT)(54) **Universal washing cycle for washing machines.**

(57) A washing cycle for washing machines is described, which allows washing equally well and without any damage fabrics of any type, resistant, mixed, delicate, very delicate. The cycle has a dura-

tion of at least six hours, preferably eight or more hours, and a temperature of the washing water substantially not higher than 40 ° C.

Fig.1**EP 0 546 606 A1**

The present invention relates to a new washing cycle for washing machines, which allows washing equally well and without any damage fabrics of any type, resistant, mixed, delicate, very delicate.

Current washing cycles for laundry washing machines normally provide, in succession, for a pre-wash step, a step of washing with hot water for a given variable time and several steps of rinsing with cold water alternated with discharges and centrifugations.

The new washing habits create greater special-ist conditions of use of laundry washing machines.

In particular, the most important phenomenon of the past few years is represented by low-temperature washing, consequent upon the textile evolution under way, that has originated the production of several fabrics based on synthetics.

A substantial specialisation of washing cycles has thus taken hold, defined according to the features of the fabrics to be washed, that is, resistant, mixed, delicate, very delicate.

These washing cycles or programmes are not always effective because they are obtained as the partialisation of the main cycle, thus with times that are reduced with respect to normal ones.

The user is also forced, in the formation of the various loads, to take special care as regards:

- the quality of the fabric, observing the label indicating the temperature and the fabric's composition or else trusting his own experience;
- the degree of dirt and the quantity of the load.

The environmental commitment also exposes the need to reduce consumption substantially, not only of electricity but also of detergents, while still maintaining a high washing capacity.

The object of the present invention is that of accomplishing a washing cycle that allows washing equally well fabrics with very different features (resistant, mixed, delicate, very delicate) without damaging the fabrics themselves and, in addition, accomplishing an appreciable saving in consumption, both of electricity and of detergents.

According to the invention such object has been attained with a washing cycle for washing machines, essentially laundry washing machines but without a priori excluding dishwashers, characterized in that it has a duration of at least six hours and a temperature of the washing water substantially not higher than 40 ° C.

Put in other words, the present invention consists in a new washing cycle that, by combining a long duration with a low temperature (referred to current washing cycles), allows the perfect washing, with no damage and with low energy and detergent consumption, fabrics of any type, from the resistants to the mixed, to the delicates, to the

very delicates.

Preferably the overall duration of the cycle is chosen of eight hours or more, so as to allow the execution of the cycle at night or, as an alternative, during the hours one is away from home and at work.

The washing cycle according to the invention thus becomes well-suited to domestic needs and, if executed at night, has an energy cost that is especially low.

The features of the present invention shall be better understood through the following detailed description of two of its embodiments illustrated as non-limiting examples in the enclosed drawings, wherein:

Fig. 1 shows a first example of a washing cycle according to the invention;

Fig. 2 shows a second example of a washing cycle according to the invention.

In Fig.s 1 and 2 there are shown respective diagrammes of washing cycles for laundry washing machines according to the invention, that show along the x-axis the times of execution of the cycle and along the y-axis the temperature of the water inside the container. Each interval between one vertical line and the other represents one step of the timer.

In the abovementioned diagrammes the numbers contained in the different squares of the horizontal band DET indicate the different types of detergents (1 = normal detergent; 2 = bleach; 3 = softener) withdrawn during the cycle, the letters A and N of the horizontal band LIV indicate the high and normal water levels, respectively, the letters C, L and S and the @ symbol in the horizontal band OPER indicate loading, operation, unloading and slow centrifugations (say, 120 rpm), respectively, the number in the horizontal band TS indicates the time necessary for the timer to go from one position to the other and the numbers in the squares of the horizontal band NS indicate, lastly, the progressive numbering of the timer steps. The vertical arrow indicates the loading of water in the container, the electrical resistance sign indicates that an electrical resistance for heating the water has been switched and the crossed electrical resistance sign indicates that the same electrical resistance has been switched off. LAV indicates the washing step, RIS indicates as a whole the rinsing steps that alternate with discharges and slow centrifugations, CENT a final slow centrifugation (say, 120 rpm), that may possibly be excluded with a pushbutton T and with ST the step wherein the machine stops at the end of the cycle. There is also indicated, as an example, the time in hours of the total execution of the cycle.

As can be seen, the cycle of Fig. 1 refers to the hypothesis of a washing time obtained with just

one timer step for an overall total of twenty steps for the entire washing cycle.

The cycle of Fig. 2, on the other hand, refers to a more traditional hypothesis of a washing time obtained with several timer steps, more precisely eight steps for an overall total of twentyeight steps for the entire cycle.

In both cases, after an initial loading of water at the normal mains temperature the water is heated to the desired washing temperature, which according to the invention is chosen so as not to be higher than 40 °C; for example, it can be equal to 37 °C, which is man's normal body temperature. The desired temperature is set on a suitable thermostat.

With one or more steps of the timer, as already said, the execution of the washing cycle at said temperature is then obtained, that ends with the exclusion of the heating resistance and with the discharge of all the washing water.

There follow a series of rinsing steps, each consisting of loading water at the normal mains temperature, of an operating time with the final discharge of water and of centrifugation at low speed.

Lastly there is a final centrifugation, that can possibly be excluded with the pushbutton T, with the stoppage of the machine at the end of the cycle.

As already said, it has been possible to observe that the combination of a comparatively low washing temperature (not higher than 40 °C) with a total cycle time (at least 6 hours) that is very much higher than normal allows an effective washing to be obtained of any type of fabric without any danger of damaging the fabric and with an extremely low consumption of energy and of detergent.

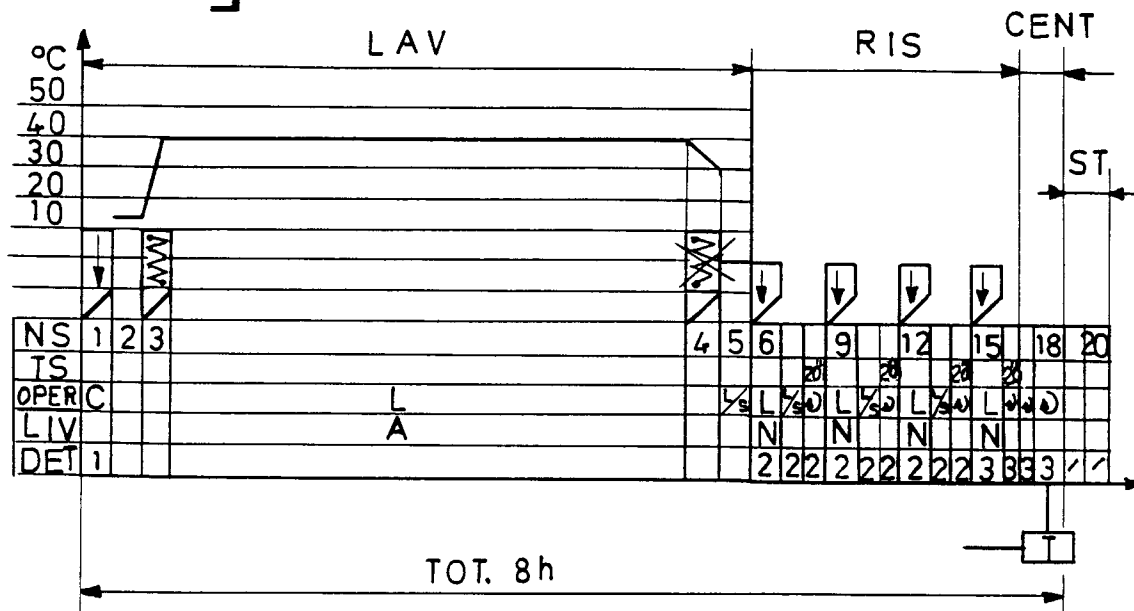
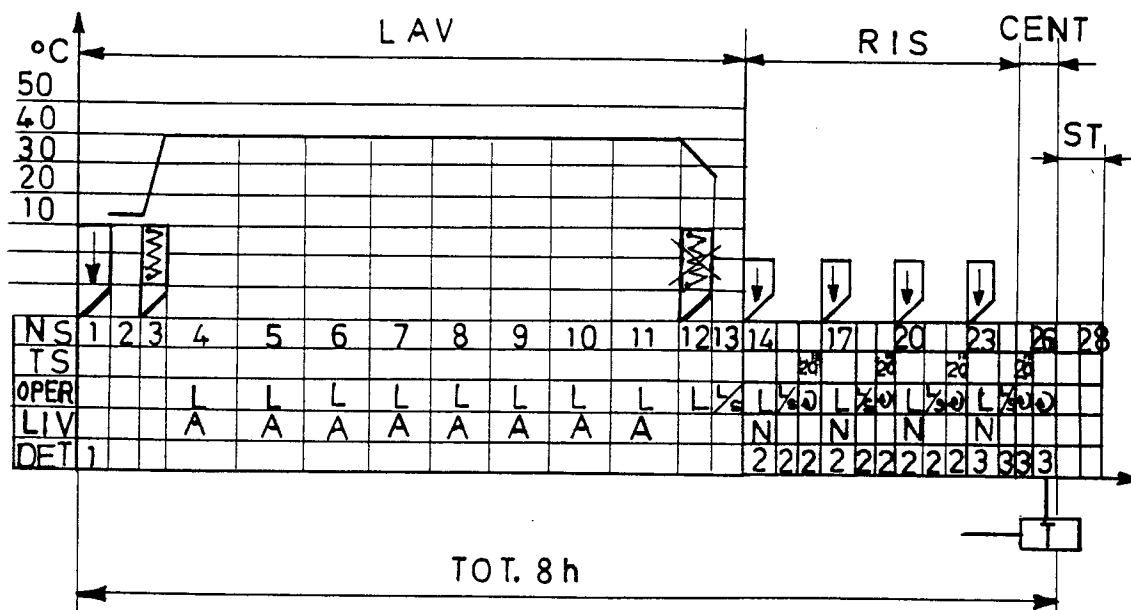
If the cycle time is then also extended up to 8-10 hours, as currently preferred, it is possible for the cycle itself to be executed at night or when there is no one at home with further benefits of a financial nature and in terms of programming domestic activities.

Claims

1. Universal washing cycle for washing machines, characterized in that it has a duration of at least six hours and a temperature of the washing water substantially not higher than 40 °C.
2. Washing cycle according to claim 1, characterized in that it has a duration of eight-ten hours.
3. Washing cycle according to claim 1, characterized in that it operates at a washing tem-

perature of about 37 °C.

4. Washing cycle according to claim 1, characterized in that it includes a washing step comprising loading of the washing water, its heating to said temperature not higher than 40 °C, a washing operation with the washing water kept at said temperature and a discharge of the washing water, and a series of rinsing steps, each consisting of loading water at the normal mains temperature, of an operating time with the final discharge of water and of a centrifugation at low speed.
5. Washing cycle according to claim 4, characterized in that said washing operation is executed with just one timer step.
6. Washing cycle according to claim 4, characterized in that said washing operation is executed with several timer steps.
7. Washing cycle according to claim 4, characterized in that it also comprises a final excludable centrifugation.

Fig.1Fig.2



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 92 20 3673

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 038 671 (SERVIS DOMESTIC APPLIANCES LIMITED) * page 15, line 23 - page 17; claims * ---	1-7	D06F35/00
X	DE-B-1 760 985 (HOLZER PATENT AG) * column 1, line 1 - line 19 * -----	1-3	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			D06F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 MARCH 1993	Examiner COURRIER G.L.A.
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			