

11/2016



# CALFLUSH-2017



**User Manual**

Model – CALFLUSH 2016



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## **1.1 General information for users**

### **1.2 CE conformity statement**

#### **Calmag (Yorkshire) Limited**

Riverview Buildings, Bradford Road, Riddlesden, Keighley,  
West Yorkshire BD20 5JH

#### **DECLARES**

This product CALFLUSH-2016 has been designed and constructed in accordance with the following European directives (including all applicable amendments):

*Directive 2006/42/EC: Machine*

*Directive 2014/35/UE: Low Voltage*

*Directive 2014/30/UE: Electromagnetic Compatibility*

*Directive 2011/65/EC: RoHS 2*

We also declare that the electrical equipment of the product conforms to the following standards:

CEI-EN 60034-1: Rotating electrical machines. Part 1: Rating and performance.

### **1.3 Guarantee terms and conditions**

*Conditions:*

Calmag guarantees any parts of the equipment in case of production defects, provided that the warranty information is completed and logged in its entirety and accompanied by a document proving the date of purchase (invoice, etc.).

*Limits:*

The warranty is limited to the supply or repair of defective parts or materials that must be returned at the customers cost to the local merchant's address. The warranty does not cover damage resulting from misuse, inappropriate use of chemicals, and normal wear due to usage.

**The guarantee is void in case of disregard to maintenance and safety instructions in this manual.**



Tel: 01535 210320 Fax: 01535 210320

Web: [www.calmagltd.com](http://www.calmagltd.com)

E-mail: [sales@calmagltd.com](mailto:sales@calmagltd.com)

## 1.4 General and safety warnings

*Essential to read these instructions prior to use:*

This equipment complies with current safety standards. However, improper use can cause damage to persons and/or properties.

Before using the pump for the first time, read this instruction booklet, as it contains important information on safety, operation and maintenance of the machine. In this way you avoid any risks to people and potential property damage.

The manual is intended both for users and pump technical maintenance professionals as indicated. Before performing any operations, both users and qualified repairers must carefully read the instructions contained in this publication.

Users can only carry out relevant operations described in this manual and must not attempt any extraordinary maintenance which is strictly the duty of qualified technicians. Failing to comply with these warnings may result in guarantee being void. Keep these instructions and make sure that are read by all users.

*Technical safety:*

In case of descaling operations in combination with acidic products, start the pump only when it is connected to the equipment to be descaled. Moreover, avoid pump transport and handling with the acid inside the tank.

Before installing the machine, check that there is no visible damage. Do not install or operate the pump if any damage is detected.

Start the pump only when it is connected to the system to be descaled.

The electrical safety is only ensured if the machine is connected to a power supply that conforms with the EU safety standards and suitable for technical features as in this manual. If in doubt do not start the machine and seek advice from an electrical professional.

Calmag will not be held liable for damages due to the interruption or even absence of the protective conductor.

Incorrect repairs may expose you to hazards that are not predictable, for which the manufacturer assumes no responsibility. Any repairs can be made only by authorised Calmag technicians or approved professional installers, otherwise any damage due to failures of non-compliance will void the warranty.

In case of failure of the wiring system, disconnect the pump from the system and set the switch to OFF position.

Replace any faulty or defective parts with original parts, whereby Calmag will continue to guarantee the full compliance with the quality standards required.

Use personal protective equipment (PPE):

- use acid-resistant goggles (in case of descaling operations);
- use acid-resistant gloves (in case of descaling operations);
- wear safety shoes (to prevent electrocution).

*Symbols used:*



indicates a warning, a note of key functions, or useful information. Give full attention to blocks of text indicated by this symbol



indicates that a manual adjustment may also include the use of portable equipment or tools



risk of danger for the user



prohibited

*Correct usage:*

The CALFLUSH-2016 power flushing pump is built and designed to offer the user reduced weight and dimensions and safety performance, combined with high flow rate capabilities. It is fitted with handy wheels for easy movement, handling and positioning.

The pump is suitable for cleaning, restoring and desludging of heating and cooling systems, both conventional and underfloor of any type of plastic and metal, and systems that are clogged with sludge, limescale, swarf and/or corrosion.

The structure is made of impact-resistant reinforced polyethylene single tank, with vertical axis pump and reinforced recirculation hoses. Three-way valve for rapid mode exchange is used with a flow inversion device for optimum desludging efficiency and PVC fittings for durability.

The power flushing pump is simply connected into the central heating system, either across the standard circulator pump couplings, across the tails of one radiator, or wherever most practicable. The powerful flow will dislodge and mobilize deposits and corrosion which resist traditional system cleaning methods. Once the corrosion and sludge deposits have been loosened and mobilized, fresh clean water is forced through the central heating system, pushing the contaminated water out through the dump outlet to waste.

The pump can also be used for the addition of additives (ABSOLUTELY ORGANIC SOLVENT FREE AND ALCOHOL) and anti-freeze fluids in heating and cooling systems.

The Calmag pumps achieve their best performances using the chemical products manufactured by Calmag, especially for the descaling products that are of an acid base. When used the safety requirements indicated on the packaging and on the safety data sheet must be followed and adhered too. Wear protective gloves and apron. Wear appropriate glasses, making sure that the area, during the operation, is well ventilated.

Do not expose pump to strong heat, lamps and open flames. Do not leave the CALFLUSH-2016 unattended while working.



Tank lid must be loosened, during descaling operation, in order to allow correct tank venting.



Before inserting the plug into the mains supply check that the switch is off. Also make sure that pump body is correctly tightened to the tank and all the hydraulic connections are in order.



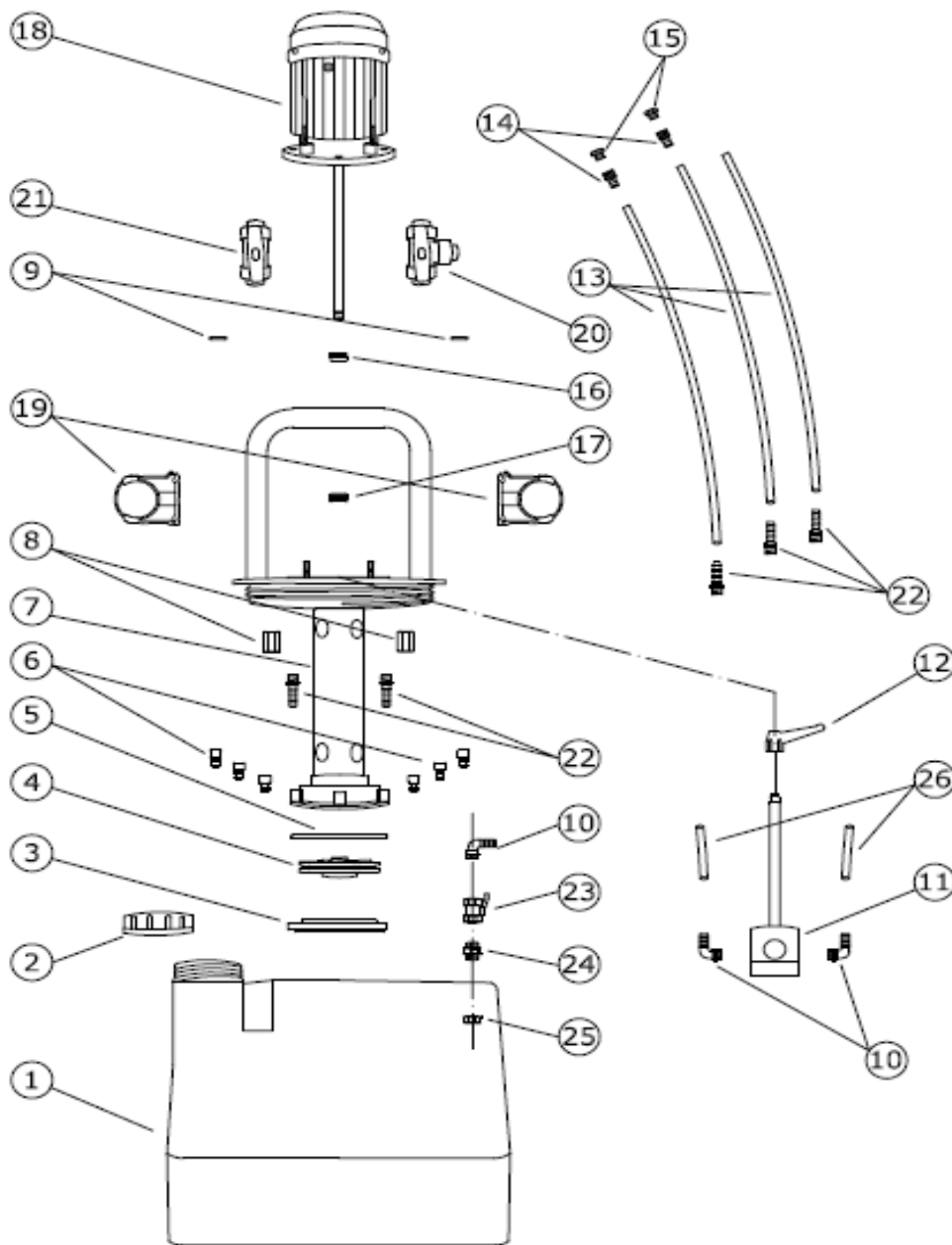
Maximum operational time (continuously) should not exceed 2 hours. Please allow 1/2 hour before resuming operations.

Shut firmly with supplied stoppers pump hoses when finished operations and disconnect pump, in order to prevent chemicals spillage.

## 2.0 Technical data

Model	CalFlush 2016
Single phase electric motor	230 V-50 Hz
Weight	11 Kg
IP Protection	IP 55
Max. flow rate	72 l/min
Head	15 metre
Connections (in/out)	3/4"
Tank capacity	30 litres
Min/max. temp.	5 / 70 °C
Power	0.50 hp / 0.370 kW
Dimensions	(H) 630 mm (L) 350 mm (D) 350 mm

### 3.0 Exploded view



- 1 - TANK
- 2 - TANK LID
- 3 - IMPELLER COVER
- 4 - IMPELLER
- 5 - O-RING 117.07 x 3.53 mm
- 6 - PLASTIC SCREW M6 x 20 mm
- 7 - PUMP BODY
- 8 - PLASTIC NUT
- 9 - FAIRLEAD FG 216
- 10 - JOINT ELBOW 8131 1/2" x 20 mm
- 11 - FLOW INVERTER
- 12 - KIT DIRECTIONAL VALVE LEVER
- 13 - HOSE 19x26
- 14 - JOINT 8120 3/4" x 19
- 15 - LID M. 8200 3/4"
- 16 - FAIRLEAD FG 028
- 17 - OIL SEAL

- 18 - MOTOR
- 19 - HOSE HOLDER D. 75 mm
- 20 - 3-WAY BALL VALVE 3/4"
- 21 - 3-WAY BALL VALVE 3/4"
- 22 - JOINT 8130 3/4" x 20
- 23 - BALL VALVE PVC 3/4"
- 24 - NIPPLE PVC NFV 3/4"
- 25 - JOINT 3/4"
- 26 - PUMP/TANK CONNECTION HOSE



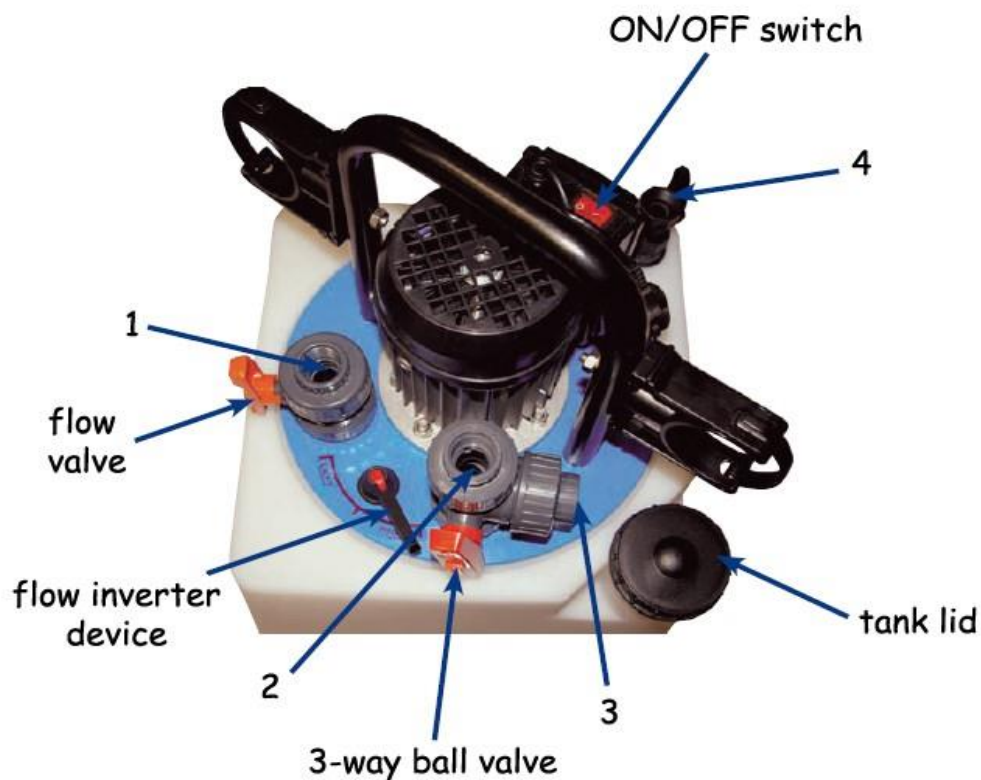
## 4.1 Assembly and usage

### 4.2 Hoses connection

Connect hoses supplied with lid and gasket, to the “xy” nipples.  
Connect the third pipe to the nipple of exhaust.



Connect hoses supplied with lid and gasket to ball valves at position n.1 (flow valve) and at position n.2 (3-way valve – recirculation).



Third hose (without lid and gasket) has to be connected at position number 3 (3-way valve – dump). In order to fill the tank, connect one hose at position number 4 (filling valve).

### 4.3 Power flushing procedure



Check if all connections and hoses are correctly tightened.

Prior to commencing the treatment, it is advisable initially to empty the system and refill it with clean water in order to drain most of the contaminated water away.

Open the clean water inlet and fill the tank to the 3/4 capacity, start the pump and set 3-way valve to the DUMP position (see image on page 9).



*Valve in dump position*



*Valve in circulation position*

After flushing the system adequately, set the valve into CIRCULATION mode (see image above).

With the pump running, add the cleaning chemical agent (for dosage please read technical data sheet/label of product). In order to maximize the cleaning agent distribution, reverse the flow direction by way of the manual lever on the pump, roughly every 10 minutes.

Proceed with cleaning for 4 to 6 hours dependent on the level of contamination (please respect the operational time – see paragraph 1.3). Cleaning can be carried out both with the boiler off and with heating on (preferably on since the heat accelerates the process) without exceeding 70°C as the cleanser could act too quickly and potentially cause clogging. Do not leave the boiler firing continuously.

Once the cleaning operation is completed and with the pump still set on the 3-way valve in DUMP mode, add clean water to make up the water level inside the tank and hence avoid emptying the system.

When the water circulating appears to be perfectly clean with no traces of impurities visible, reset the 3-way valve in the CIRCULATION mode and start adding the corrosion inhibitor in order to prevent any new formation of sludge, limescale and clogging (check the product technical data sheet/label). Keep the circulation going, until the electric conductivity of the water inside the tank settles (check this with a conductivity meter).



After the addition of the inhibitor, disconnect the pump taking care of not spilling chemicals on the ground or things.

**ATTENTION:** In order to prevent the tank from overflowing, it is necessary to balance the flow and return. This can be done by partially shutting either the flow valve (position number 2) or the 3-way valve (position number 3), depending on the flow direction.

It is also suggested to carry out the cleaning by flushing each radiator individually, or section the system, if possible, so as to ensure that the cleaning agent may circulate thoroughly through all the contaminants.



In the case of excessive formation of foam whilst cleaning, switch off the pump and wait until the foam subsides. Dilution of the solution with water may be necessary if foaming persists.

#### 4.4 Descaling procedure

In case of pipework descaling, first check if the minimum flow rate is available for the acidic solution to circulate, otherwise the operation will not be possible.



Disconnect the flow and return of the equipment to be descaled, empty all the water inside, and finally connect the pump with the supplied hoses.

Open the tank and then add half a tank of water (please notice that operational temperature during descaling must never exceed 70 °C).

Connect the pump to the mains and switch it on and slowly start adding the descaling chemical, until the required concentration is obtained. This operation will allow the correct product mix for optimum performance.

Please follow the information on the technical data sheet/label of the product.

In order to maximize the cleaning agent distribution, reverse the flow direction by way of the manual lever on the pump, roughly every 10 minutes.

In the case of excessive formation of foam whilst cleaning, switch off the pump and wait until the foam subsides. Dilution of the solution with water may be necessary if foaming persists.

After the descaling process, drain the acidic solution, flush the descaled equipment thoroughly with water and then with an alkaline solution (neutraliser).

## 5.1 Pump maintenance

### 5.2 Maintenance after powerflushing operations

Calmag suggest the use of the following products in conjunction with the CalFlush 2016 unit:-

- CalCleanser
- CalProtector or CM100
- CalDescaler

Please follow the information on the technical data sheet/label of the product.

NB: The CalFlush 2016 is also suitable for the use anti-freeze fluids. In case of internal leak sealers always flush with plenty of water after operation in order to avoid encrustations, blockages and potential damage.

Important: at the end of working day always carry out a meticulous washing of the pump and filter with clean water for at least 10 minutes, to remove dirt or other impurities and to extend the life of the unit.

Dispose of any discharges whilst conforming with any relevant local regulations.



In some instances of older and compromised systems, a few days after the cleaning operation some leaks may appear. Proceed with the addition of internal leak sealer (example, CalSealer) product (for application and dosage please read the technical data sheet/label of the product) and then look to replace the parts that re leaking as soon as possible.

### 5.3 Maintenance after descaling operations with acidic products

Once the descaling process is over, switch off the pump and unplug from the mains. Wait until the solution inside the descaled equipment has completely returned into the pump tank. Do not leave the pump unattended whilst working.



As for the descaled equipment the pump will also require an acidic solution neutralization. Check that the pH value is between 6,5 and 9,5. For the safe and correct result, we recommend to use an approved neutralizing chemical. Flush the pump body and tank thoroughly with water.

The water produced from the descaling operation and the water used for rinsing, must be disposed of according to local regulations.



**NEVER LEAVE ANY ACIDIC SOLUTION INSIDE THE TANK:** fumes may also seriously damage the pump components.

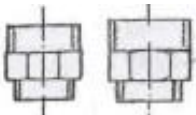
**ATTENTION:** Failing to comply with these warnings will result in the guarantee being void.

## 6.0 Fittings

\* Code 180203002



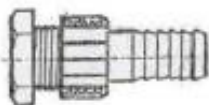
Joint 3/4" (2-off)



Joint 1/2" - 3/4" (2-off)

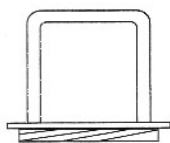
Joint 1" - 3/4" (2-off)

\* Code 180203004



Joint 3/4" x 19 + lid + metallic cable tie (2-off)

\* Code 180206007



A screw lid with handle for pumps

## 7.1 The environment

### 7.2 Packaging disposal

Packaging is devised to protect machine during transport. Materials used have been selected according to the environment respect and ease of disposal, hence being recyclable.

### 7.3 Product disposal

Pursuant to the European Directives 2012/19/EC on the restriction of use of hazardous substances in electric and electronic equipment and on the disposal of waste material. The crossed out wheellie bin symbol applied to the equipment or packaging means that the product should be collected separately from other types of waste at the end of its useful life.



User shall convey machine that has reached the end of its life cycle to an appointed separate collection site for obsolete electric and electronic equipment.

Correct separate collection and the subsequent recycling, treatment and environmentally compatible disposal of discarded equipment is of aid in avoiding possible negative effects for the environment and people's health and facilitates the re-use or recycling of the materials of which the equipment is made.



Illegal disposal of this product on part of the owner will give way to the application of administrative fines as provided by current laws.

**NOTES:**

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