

VERDERFLEX®

Peristaltic Cased Tube Pump

Operating Manual

Vantage 5000

Version 1.0v-05/2016

Print-No. 01



VERDER
passion for pumps

Version 1.0v-05/2016
Print-No. 01

Vantage 5000



The information in this document is essential for the safe operation and servicing of Verderflex[®] Vantage 5000 family of pumps. This document must be read and understood thoroughly prior to installation of unit, electrical connection and commissioning.

Table of Contents

1. About this Document		9. Job Files	
1.1	Target Groups	9.1	Edit Job Files
1.2	Warnings and Symbols used in the Manual	9.1.1	Delivery Setup
1.3	Warnings and Symbols used on the Pump	9.1.2	Pump Setup
2. Safety		9.1.3	Mode Setup
2.1	Intended use	9.1.3.1	Batch/Dose Mode
2.2	General Safety Instructions	9.1.3.2	Memory Mode
2.2.1	Product Safety	9.1.4	Real Time Clock Mode (RTC) Setup
2.2.2	Obligation of the Operating Company	9.1.5	Log Setup
2.3	Specific Hazards	10. Calibration	
2.3.1	Hazardous Pumped Liquids	10.1	Calibration Procedure
3. Transport, Storage and Disposal		11. Settings	
3.1	Transport	12. Users/Passcodes	
3.1.1	Unpacking and Inspection on Delivery	12.1	Users/Passcodes - an Overview
3.1.2	Lifting	12.2	Users/Passcodes Setup
3.2	Storage Conditions	12.3	Passcode Request ON
3.3	Interim Storage After Using the Pump	13. Remote Control	
3.4	Interim Storage Before Using the Pump	14. Logs / History	
3.5	Disposal	15. Vantage 5000 software update process	
4. Layout and Function		15.1	Introduction
4.1	Design Details of Vantage 5000	15.2	Equipment
4.2	Vantage 5000 - an overview	15.3	Glossary
4.3	Layout	15.4	Procedure
4.3.1	Vantage 5000 Exploded View - Continuous Tube	16. Inspections, Maintenance and Repairs	
4.3.2	Vantage 5000 Exploded View - Tube Element	16.1	Inspections
5. Installation and Connection		16.2	Maintenance
5.1	Electrical Installation	16.2.1	Cleaning the Pump
5.1.1	Preparing for Installation	16.2.2	Maintenance Schedule
5.1.1.1	Checking the Ambient Conditions	16.3	Repairs
5.1.2	Connecting to a Power Supply	16.3.1	Returning the Pump to the Service Centre
5.1.3	Protective Earthing/Grounding	16.4	Ordering Spare Parts
5.1.4	Electrical Isolation	17. Troubleshooting	
5.2	Installing the Tube	17.1	Pump malfunctions
5.2.1	Vantage 5000 - Tube Options	18. List of Figures and Tables	
5.2.2	Installing the Continuous Tube	18.1	List of Figures
5.2.3	Installing the Tube Element	18.2	List of Tables
6. User Interface - an overview		19. Declaration of Conformity	
7. Home Screen		20. Declaration of Incorporation	
7.1	Flow Mode		
7.2	Batch Mode		
7.3	Dose Mode		
7.4	Users/Passcodes		
7.5	Remote Control		
7.5.1	4-20mA Mode		
7.5.2	0-10V Mode		
7.5.3	Proportional Flow Mode		
8. Main Menu			

Table of contents (continued)

1. **Appendix A**
Pump Specification
2. **Appendix B**
Spare Parts Replacement
3. **Appendix C**
Ordering Information
4. **Appendix D**
Remote Control Options
5. **Appendix E**
25 WAY Remote I/O Connector
6. **Appendix F**
Breakout Box
7. **Appendix G**
Error Codes and Description
8. **Appendix H**
Formatting the USB drive
9. **Appendix I**
Standards

1. About this Document

The Verderflex Vantage 5000 range of peristaltic pumps have been developed according to the latest technology and subject to continuous quality control. These operating instructions are intended to facilitate familiarisation with the pump and its designed use. This manual will act as a guide for operating the pump. You are advised to follow these guidelines to operate the pump correctly. These operating instructions do not take local regulations into account; the operator must ensure that such regulations are strictly observed by all, including the personnel responsible for installation.

1.1 Target Groups

Target Groups	Duty
Operating Company	<ul style="list-style-type: none"> ▶ Keep this manual available at the operating site of the pump. ▶ Ensure that personnel read and follow the instructions in this manual and any other applicable documents, especially all safety instructions and warnings. ▶ Observe any additional rules and regulations referring to the system.
Qualified personnel, fitter	<ul style="list-style-type: none"> ▶ Read, observe and follow this manual and the other applicable documents, especially all safety instructions and warnings.

Table 1 Target Groups

1.2 Warnings and Symbols Used in the Manual

Warning	Risk Level	Consequences of disregard
 DANGER	Immediate risk	Death, serious bodily harm
 WARNING	Potential acute risk	Death, serious bodily harm
 CAUTION	Potential hazardous situation	Potential damage to the pump
Note	For information	Possible incorrect use / maintenance of pump

Table 2 Warnings Used in the Manual

Symbol	Meaning
	Safety warning sign in accordance with DIN 4844 - W9 <ul style="list-style-type: none"> ▶ Take note of all information highlighted by the safety warning sign and follow the instructions to avoid injury or death.
▶	Instruction
1., 2.,	Multiple-step instructions
✓	Precondition
→	Cross-reference
	Information

Table 3 Symbols Used in the Manual

1.3 Warnings and Symbols Used on the Pump

Warnings and Symbols	Meaning
	Safety Warning
	Warning of Dangerous Electrical Voltage
	Protective Earth (Ground)
	Pinch Point/Entanglement Hazard
 	Waste Electronic and Electrical Equipment (WEEE)
	USB 2.0

Table 4 Warning and Symbols Used on the Pump

2. Safety

 The manufacturer does not accept any liability for damage resulting from disregard of this documentation.

2.1 Intended use

- ▶ Only use the pump to handle fluids compatible with the fitted tube (→ Appendix A)
- ▶ Adhere to the operating limits
- ▶ Consult the manufacturer regarding any other use of the pump.

Prevention of misuse (examples)

- ▶ Note the operating limits of the pump with regard to temperature, pressure, flow rate and motor speed (→ Appendix A)
- ▶ Do not operate the pump with any inlet/outlet valves closed
- ▶ Only install the pump as recommended in this manual. For example, the following are not allowed:
 - Running the pump with tube that is not compatible with the fitted rotor
 - Insert any items into contact with moving parts
 - Installation in the immediate vicinity of extreme hot or cold sources (→ Appendix A)
 - Running pump in explosive atmosphere

2.2 General Safety Instructions

 Observe the following instructions before carrying out any work.

2.2.1 Product Safety

- These operating instructions contain fundamental information which must be complied with during installation, operation and maintenance. Therefore this operating manual must be read and understood both by the installing personnel and the responsible trained personnel / operators prior to installation and commissioning, and it must always be kept easily accessible within the operating premises of the machine.
Not only must the general safety instructions laid down in this chapter on “Safety” be complied with, but also the safety instructions outlined under specific headings.
- Operate the pump only if it and all associated systems are in good functional condition.
- Only use the pump as intended, be fully aware of safety and risk factors involved and the instructions in this manual.
- Keep this manual and all other applicable documents complete, legible and accessible to personnel at all times.
- Refrain from any procedure or action that would pose a risk to personnel or third parties.
- In the event of any safety-relevant faults, shut down the pump immediately and have the malfunction corrected by qualified personnel.
- The installation of the pump must comply with the requirements of installation given in this manual and any local, national or regional health and safety regulations.

2.2.2 Obligation of the Operating Company

Safety-conscious operation

- Ensure that the following safety aspects are observed and monitored:
 - Adherence to intended use
 - Statutory or other safety and accident-prevention regulations
 - Safety regulations governing the handling of hazardous substances if applicable
 - Applicable standards and guidelines in the country where the pump is operated
- Make personal protective equipment available pertinent to operation of the pump.

Qualified personnel

- Ensure that all personnel tasked with work on the pump have read and understood this manual and all other applicable documents, including the safety, maintenance and repair information, prior to use or installation of the pump.
- Organize responsibilities, areas of competence and the supervision of personnel.
- Have all work carried out by specialist technicians only.
- Ensure that trainee personnel are under the supervision of specialist technicians at all times when working with the pump.

Warranty

The warranty is void if the customer fails to follow any Instruction, Warning or Caution in this document. Verder has made every effort to illustrate and describe the product in this document. Such illustrations and descriptions are however, for the sole purpose of identification and do not express or imply a warranty that the products are merchantable or fit for a particular purpose, or that the products will necessarily conform to the illustration or descriptions.

Obtain the manufacturer's approval prior to carrying out any modifications, repairs or alterations during the warranty period. Only use genuine parts or parts that have been approved by the manufacturer.

For further details regarding warranty, refer to terms and conditions.

2.3 Specific Hazards

2.3.1 Hazardous Pumped Liquids

Follow the statutory safety regulations when handling hazardous pumped liquids (e.g. hot, flammable, poisonous or potentially harmful).

Use appropriate Personal Protective Equipment when carrying out any work on the pump.

3. Transport, Storage and Disposal

3.1 Transport

 Always transport the pump in a horizontal position and ensure that the pump is securely packed in the box.

3.1.1 Unpacking and Inspection on Delivery

1. Report any transport damage to the manufacturer/distributor immediately.
2. Retain the packing if any further transport is required.

3.1.2 Lifting

 **CAUTION**

Pump damage caused by lifting

- ▶ Do not lift the pump by the Screen Module or the Pump Head as shown in the following illustration.

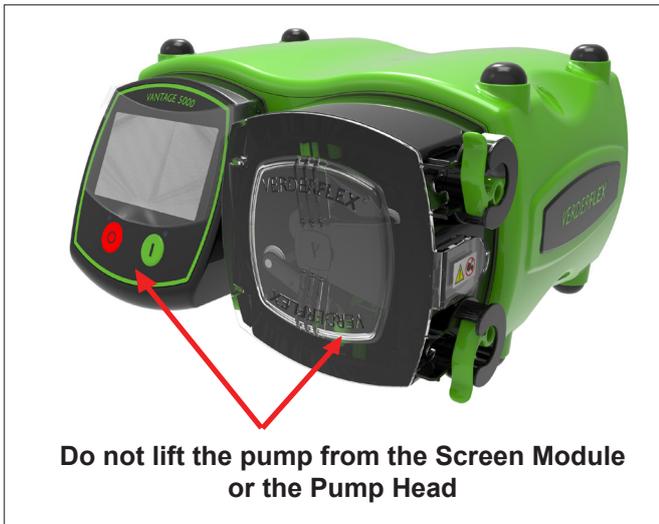


Figure 1 Lifting the pump

3.2 Storage Conditions

Make sure the storage location meets the following conditions:

- Dry, humidity not to exceed 80%, non-condensing
- Out of direct sunlight
- Frost-free; temperature range -40° to +70°C
- Vibration-free
- Dust-free

Tubing should be stored as supplied in their wrapper and should be stored away from direct sunlight and at room temperature.

3.3 Interim Storage After Using the Pump

- ▶ The tube should be removed from the pump.
- ▶ The pumphead should be washed out, allowed to dry and any external build up of product removed.

3.4 Interim Storage Before Using the Pump

 **CAUTION**

Pump damage caused by interim storage

- ▶ Allow the pump to reach ambient temperature before use.
- ▶ Please observe the storage recommendations and use-by dates which apply to tubing you may wish to bring into service after storage.

3.5 Disposal

With prolonged use, pump parts can be contaminated by hazardous pumped liquids to such an extent that cleaning may be insufficient.

 **WARNING**

Risk of poisoning and environmental damage by the pumped liquid

- ▶ Use suitable personal protective equipment when carrying out any work on the pump.
- ▶ Prior to disposal of the pump:
 - Collect and dispose of any leaking pumped liquid in accordance with local regulations.
 - Neutralize residues of pumped liquid in the pump.
- ▶ Dispose of the pump and associated parts in accordance with local regulations.

4. Layout and Function

 The medium to be pumped does not come into contact with any moving parts and is totally contained within the tube. A roller passes along the length of the tube, compressing it. This motion forces the contents of the tube directly in front of the roller to move forward along the length of the tube in a 'positive displacement' peristaltic movement. In the wake of the roller's compressing action, the natural elasticity of the tube material causes the tube to recover and regain its round profile. This creates suction pressure which refills the tube.

4.1 Design Details of Vantage 5000

 The Verderflex Vantage 5000 range of tube pumps, provide a balanced selection of simple to operate peristaltic pumps. The range offers the customer pump choices that are simple by design, with touchscreen interface and 4000:1 turndown ratio with the stepper drive.

4.2 Vantage 5000 - an overview

- A. SCREEN PROTECTOR
 - Gently pull up the screen protector to touch the screen.
 - Gently push the screen protector down after selecting the functions.
- B. SCREEN MODULE
 - Presents information to the user about the status of the pump.
 - Accepts and implements the operators control instructions using the touchscreen.
 - Use a suitable stylus or finger to select the functions. (→ 6 User Interface - overview)
- C. STOP BUTTON
 - Stops the pump.
 - RED LED illuminated when the pump is stopped
 - FLASHING RED indicates an alarm or fault mode.
- D. START BUTTON
 - Starts the pump.
 - GREEN LED illuminated when the pump is running.
 - FLASHING GREEN LED indicates the pump is paused.
- E. PUMP DOOR
 - Must be closed for the pump to run.
 - When opened during the operation, the pump will stop and the red led will flash.
- F. CONTINUOUS TUBE CLAMP
 - Clamps the loose tube in place or locate the tube assembly on fixed element pumps.
- G. CONTINUOUS TUBE



Figure 2 Key Parts of the Pump

4.2 Vantage 5000 - an overview (continued)

- H. BREATHER POINT (do not cover)
 - I. ON/OFF SWITCH
 - Turns the pump ON or OFF.
 - J. EARTH POINT (M4x0.7 Pitch)
 - K. NAME PLATE
 - Part Number
 - Model of Pump
 - Serial Number
-  When requesting spares, the part number and serial number should always be quoted.
- L. POWER CABLE
 - M. M12 COMMS CONNECTOR (where fitted)
 - For digital RS485 and FIELDBUS communications.
 - N. 25WAY REMOTE I/O CONNECTOR (where fitted)
 - Connection for footswitches, 0-10V DC & 4-20 mA remote controls.
 - Provides connection for opto isolated BREAKOUT BOX modules.
 - O. USB 2.0 SOCKET CONNECTOR
 - Pump can be backed up to USB memory.
 - Pump programs can be loaded.
 - Pump firmware can be updated.

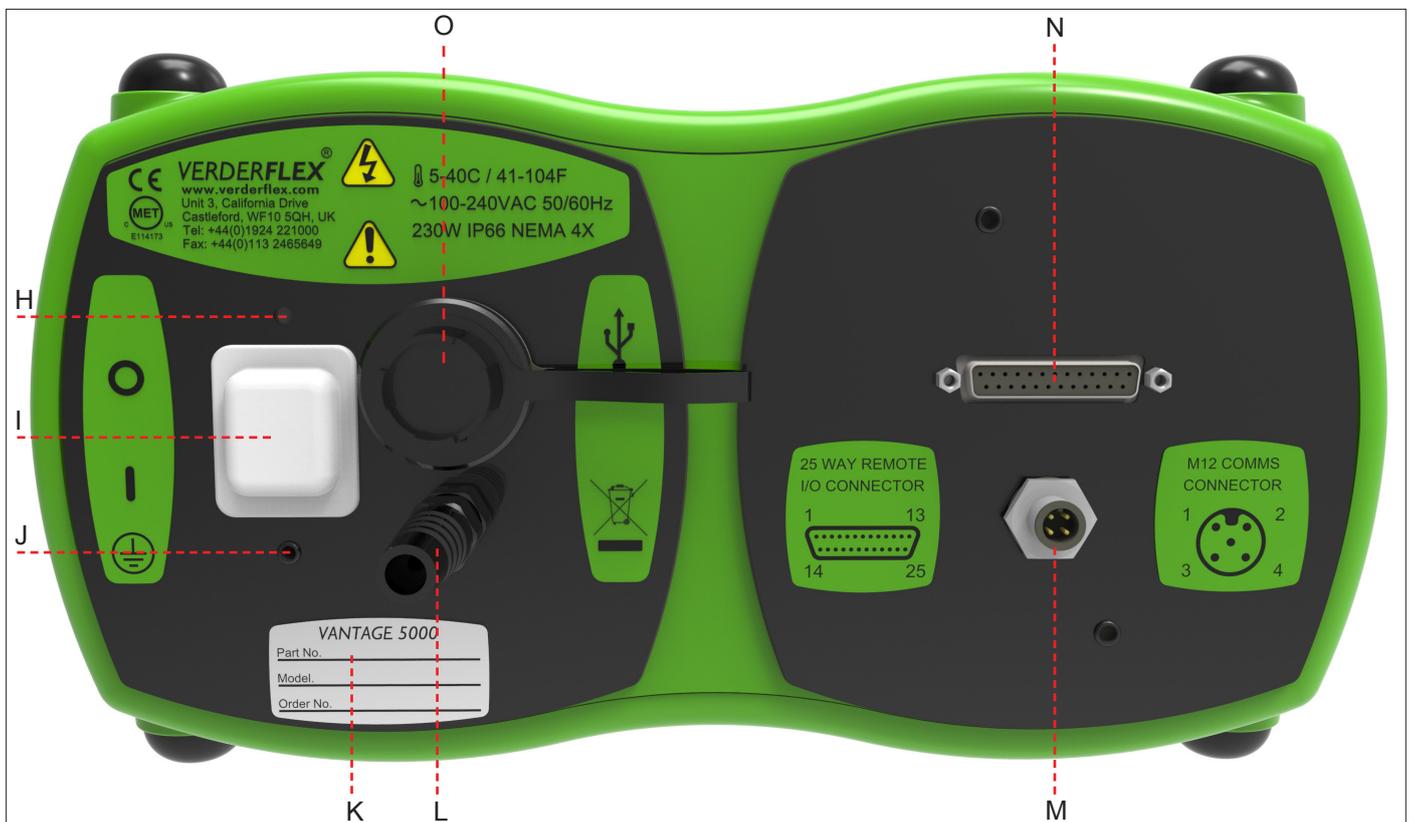


Figure 3 Back of the Pump

4.3 Layout

4.3.1 Vantage 5000 Exploded View - Continuous Tube



Figure 4 Vantage 5000 Exploded View - Continuous Tube

1	Bearing Strut	3.2	Horizontal Guide Rollers	6	Pump Door
2	Continuous Tube	3.3	Main Rollers	7	Pump Head
3	Rotor Assembly	4	Screen Protector	8	Tube Clamp
3.1	Vertical Guide Rollers	5	Screen Module	9	Pump Body

4.3.2 Vantage 5000 Exploded View - Tube Element

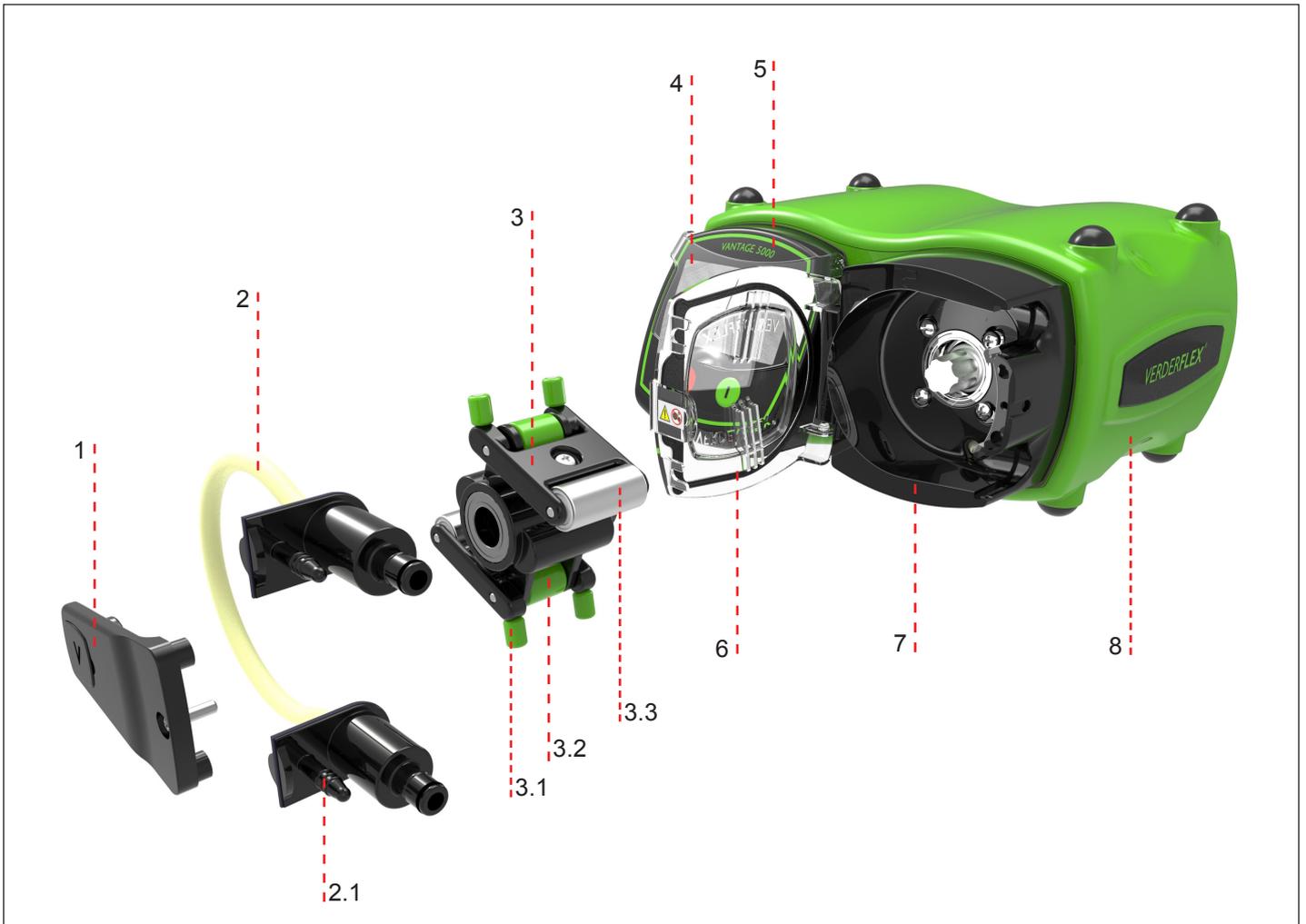


Figure 5 Vantage 5000 Exploded View - Tube Element

- | | | | | | |
|-----|----------------|-----|--------------------------|---|---------------|
| 1 | Bearing Strut | 3.1 | Vertical Guide Rollers | 5 | Screen Module |
| 2 | Tube Element | 3.2 | Horizontal Guide Rollers | 6 | Pump Door |
| 2.1 | Drain Port | 3.3 | Main Rollers | 7 | Pump Head |
| 3 | Rotor Assembly | 4 | Screen Protector | 8 | Pump Body |

Note

The tube element is supplied with the drain port as shown in *Figure 5*.

If the customer wishes to use this feature, then the tip of the bottom drain port can be removed.

Cut 1-2 mm off with the tip to open the port and affix suitable tubing to a banded area.

5. Installation and Connection

CAUTION

Material damage due to unauthorized modification on pump

- ▶ Unauthorized modification will invalidate the warranty.

5.1 Electrical Installation

CAUTION

Failure to follow safe and proper electrical installation practices may result in pump malfunction or dangerous operation

- ▶ Make sure the pump is installed correctly.
- ▶ The pump is supplied with a pre-fitted mains lead which is not a user-replaceable part.
- ▶ The mains lead may have a fuse fitted (country dependant)
- ▶ The fuse should be replaced with an identical fuse in the event of the fuse blowing.
- ▶ The pump is protected by a mechanical overload switch built into the power switch.

5.1.1 Preparing for Installation

5.1.1.1 Checking the Ambient Conditions

1. Make sure that the operating conditions are corrected (→ Appendix A).
2. Make sure the required ambient conditions are fulfilled (→ Appendix A).

5.1.2 Connecting to a Power Supply

DANGER

Isolate power supply from the pump before performing the installation.

1. The pump must be installed by a qualified individual if it is to be permanently wired in place.
2. The pump must not be used if there is visible damage to the mains cable or plug.
3. The pump must be positioned so that the disconnect device is easily accessible.
4. The pump cable must be free from strain and the pump weight must not be supported by the mains cable.
5. All cabling used to connect to the pump must be 0.75mm² CSA minimum.

Wire colours are shown in the following table:

Conductor Name	European Colouring	American Colouring
Live	Brown	Black
Neutral	Blue	White
Earth (Ground)	Green/Yellow	Green

Table 5 Conductor colour coding

Note

We advise customers to consider using a commercial surge suppression system for installations where there is a risk of excessive electrical noise.

5.1.3 Protective Earthing/Grounding

CAUTION

Failure to earth the pump correctly can result in hazardous voltages being present on the pump body

- ▶ The pump is designed to be permanently earthed and **MUST** be connected as such.
- ▶ By default, the earth connection is made through the earth pin on the mains lead.
- ▶ If the mains lead is of a “bare end” type, the earth cable (denoted by a Green/Yellow marking) must be wired to the earth.
- ▶ If an Earth/Ground is unavailable from the mains plug, there is an earthing stud provided on the back of the pump (→ Figure 3) and this should be used in place of the earth from the mains plug.

Note

Make sure the ground loop is not created through using both a cable earth and the earthing stud.
If in any doubt, please contact a qualified electrician.

5.1.4 Electrical Isolation

1. The mains plug is the disconnection device for the pump and is used for isolation from the mains.
2. The mains plug should therefore be readily accessible in order to use as a disconnection device.
3. To isolate the pump, the mains plug is to be removed from the wall outlet.

5.2 Installing the Tube

DANGER

- ▶ Isolate power supply from the pump before performing the operations.

CAUTION

- ▶ Make sure the tube is compatible with the rotor assembly.
- ▶ Before using a new tube assembly, make sure the pump is run in the counter-clockwise direction for 1 minute.

5.2.1 Vantage 5000 Pump Tube Options

	
1. Continuous Tube	2. Tube Element

Table 6 Vantage 5000 Pump Tube Options

Note

The tube element is supplied with the drain port as shown in *Table 6 (2. Tube Element)*.

If the customer wishes to use this feature, then the tip of the bottom drain port can be removed.

5.2.2 Installing the Continuous Tube



DANGER

- ▶ Isolate power supply from the pump before performing the operations.



CAUTION

- ▶ Make sure the tube is compatible with the rotor assembly.
- ▶ Before using a new tube assembly, make sure the pump is run in the counter-clockwise direction for 1 minute.

1. Open the pump door and push down the tube clamp.
2. Insert the tube.
3. Rotate the rotor assembly using the vertical guide rollers in a counter-clockwise direction.
3. Place the tube behind the vertical guide rollers and continue to turn the rotor assembly in a counter-clockwise direction.
4. When performed correctly the main rollers will compress the tube.
5. Release the tube clamp to lock the tube. Push up the lower tube clamp and insert the tube.

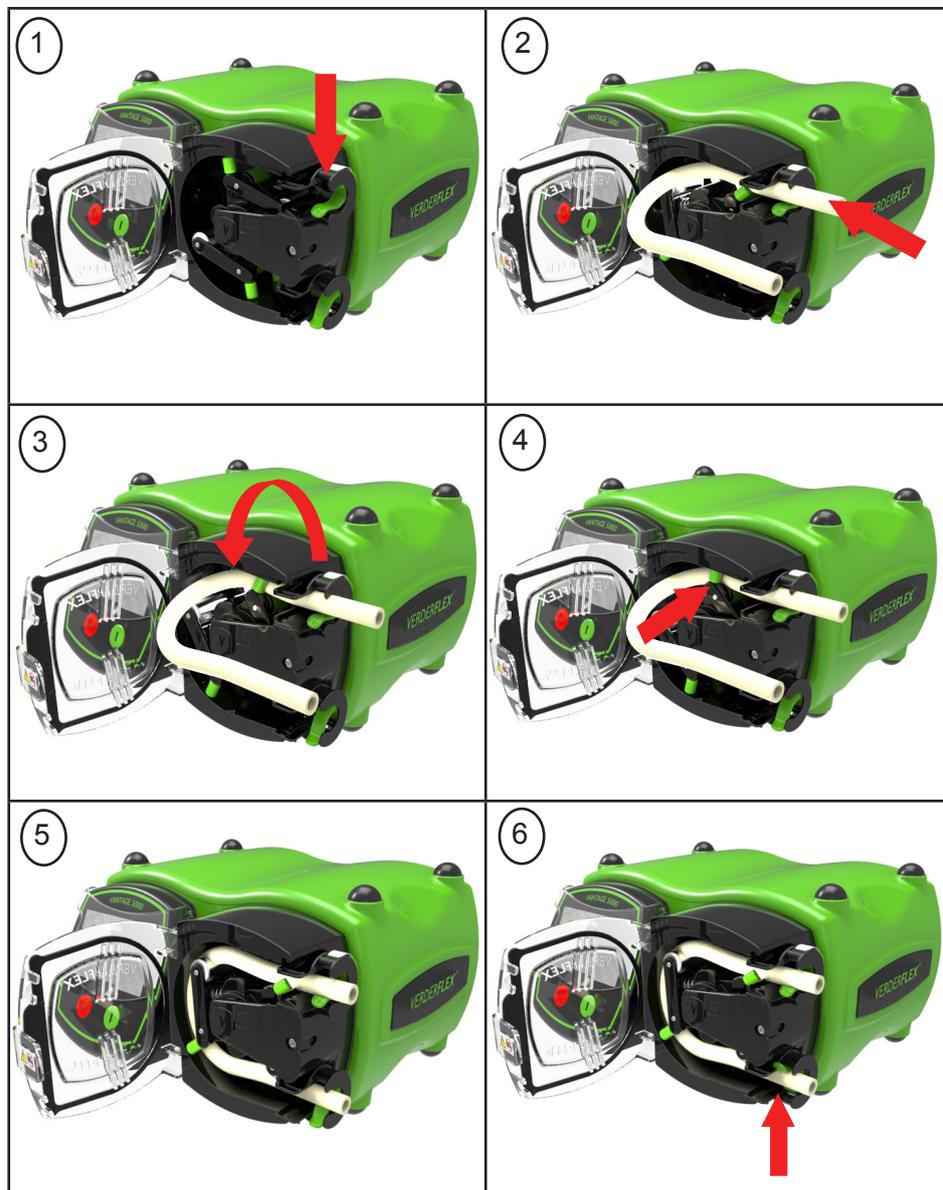


Figure 6 Installing the Continuous Tube

5.2.3 Installing the Tube Element



DANGER

- ▶ Isolate power supply from the pump before performing the operations.



CAUTION

- ▶ Make sure the tube is compatible with the rotor assembly.
- ▶ Before using a new tube assembly, make sure the pump is run in the counter-clockwise direction for 1 minute.

1. Open the pump door.
2. Slide the tube element housing into the pump head.
3. Rotate the rotor assembly using the vertical guide rollers in a counter-clockwise direction.
4. Place the tube behind the vertical guide rollers and continue to turn the rotor assembly in counter-clockwise direction.
5. When performed correctly the main rollers will compress the tube element.
6. Slide the lower tube element housing into the pump head.

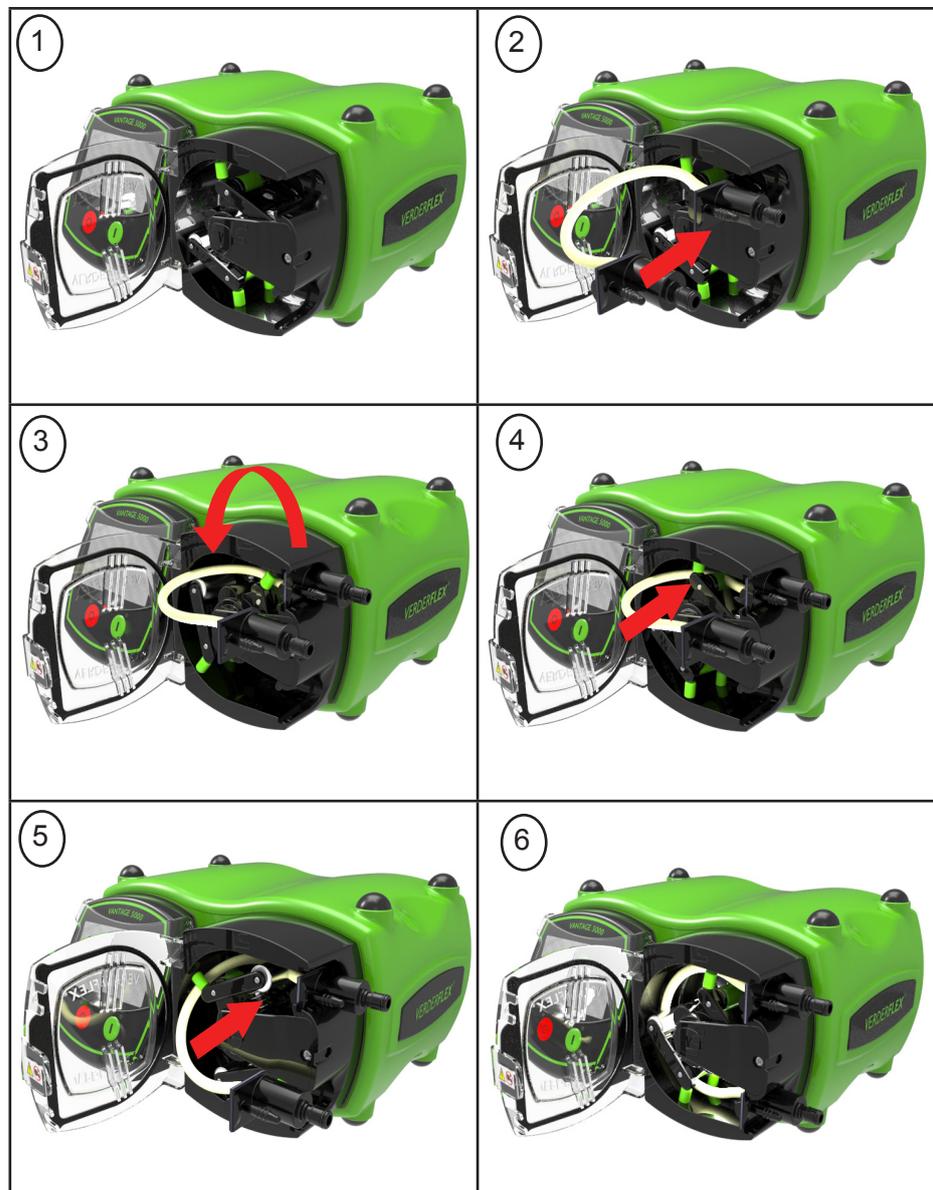


Figure 7 Installing the Tube Element

6. User Interface - overview

 This manual is a representation of the features and functions in the Vantage 5000.

CAUTION

► The user must use a suitable stylus or finger.

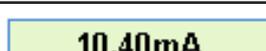
Symbols	Meaning	Examples
	A box with a BLUE outline indicates an editable value	
	A box with a BLUE outline and an arrow indicates a selection from a list	
	A shape filled in DARK GREEN indicates a selectable button	
	A shape coloured LIGHT GREEN indicates read-only value and is there for information	
	A shape coloured 'GREYED OUT' indicates a usually editable field which can no longer be edited due to the current conditions of the pump setup.	

Table 7 Symbols used for software

The following icons are used throughout this document:

Icons	Definition	Icons	Definition	Icons	Definition
	Lock / Unlock		Go Back / Cancel		Import
	Main Menu		Home		Export
	Start Button		Job Files		Clear Job
	Stop Button		Calibration		Copy
	Pumping Direction		Settings		YES / Accept
	Pump Paused		Users / Passcodes		NO / Cancel
	Information		Remote Control		Delete Characters
	Fault		Logs / History		25Way Remote I/O Connector
	Warning		Activate		Real Time Clock Enabled
	Accept		Edit		Remote Control Enabled

Table 8 Icons used for software

7. Home Screen

7.1 Flow Mode

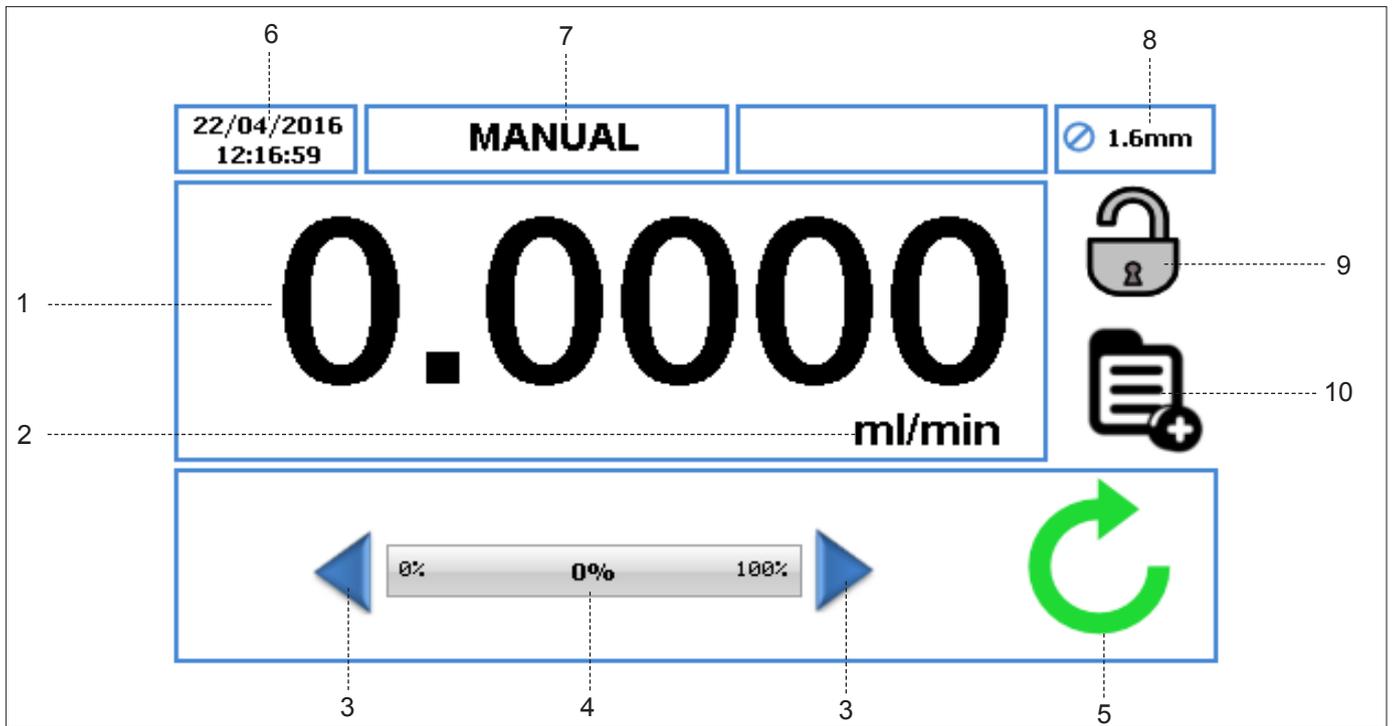


Figure 8 Flow Mode Home Screen

1. Displays the flow rate of the pump. The user can change the flow rate in (→ 9.1 Edit Job Files).
2. Displays the unit of flow rate. The user can change the units of flow rate in (→ 9.1 Edit Job Files).
3. Increment/Decrement arrow will increase/decrease the flow rate **only** in the 'Manual' Job File. It can either be pressed once which will increment/decrement the flow rate in steps, or held down, which will gradually increase/decrease the flow rate. It is a temporary change on the Home Screen and does not change the flow rate in the Job File Menu. (→ 9.1 Edit Job Files)
4. The flow rate indicator displays the current flow rate as a percentage of the maximum available flow rate.
5. Pump Status symbols:
 - a.  Displays the direction of rotation and RPM (if the pump is running). In 'Manual' Job File only, the direction of rotation can be changed by touching the symbol on the Home Screen.
 - b.  Indicates the pump is in pause mode, where there is a program active but the pump is temporarily paused.
6. Displays the current time and date as specified in the (→ 11 Settings). It is a read-only display.
7. Displays the current Activated Job File. The user can change the name of the Job File in (→ 9.1 Edit Job Files). It is a read-only display and will be displayed on every screen.
8. Displays the Tube Size, as defined in the currently activated Job File.
9. LOCK/UNLOCK
 - a. LOCK touchscreen, when pressed the back-light dims and the screen locks. This avoids accidental key presses.
 - b. UNLOCK touchscreen.
10. Main Menu allows the user to access the main menu. (→ 8 Main Menu)

7.2 Batch Mode

When the pump is set to run in BATCH mode (→ 9.1.3.1 Batch/Dose Mode), the Home Screen will be as per *Figure 9*.

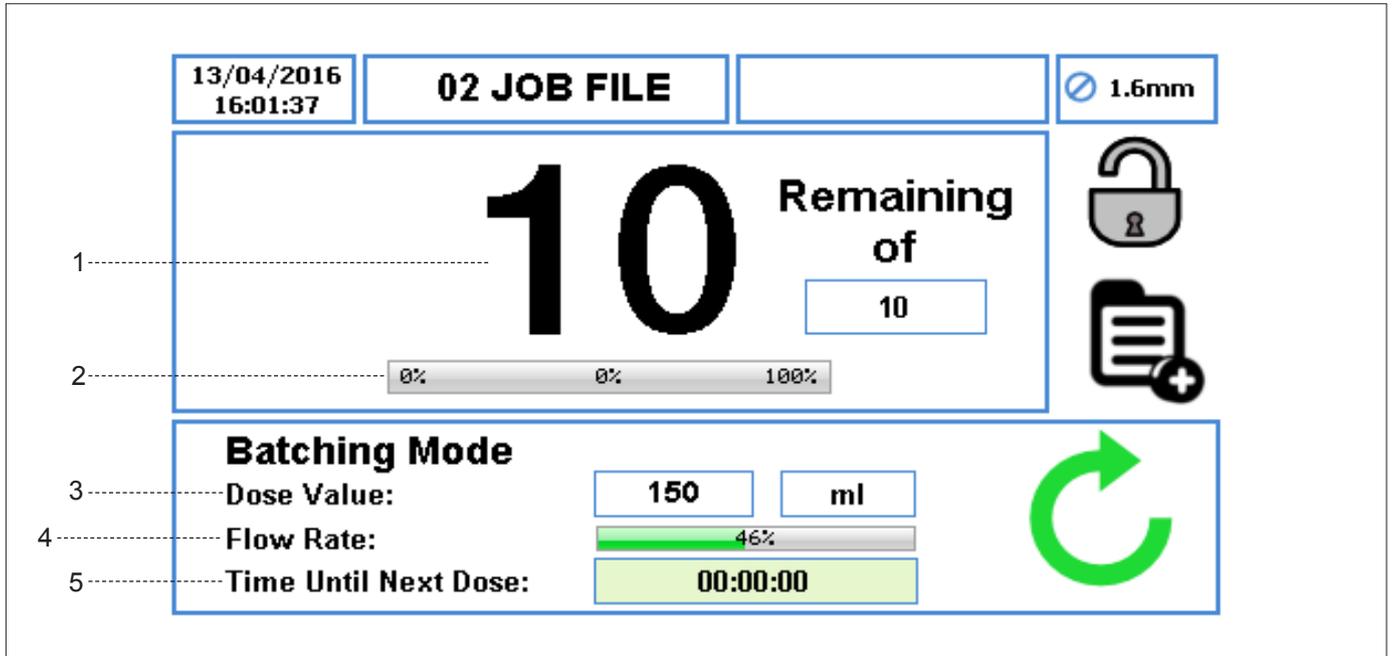


Figure 9 Home Screen - Batch Mode

1. It displays the total number of batches, also the number of remaining batches; the flow rate is not shown.
2. The percentage of the current batch progress.
3. The dose value and the unit of measure.
4. The percentage of maximum available flow rate.
5. The time until next dose.

Note

- ▶ When the pump is running in batch mode, pressing the STOP button, the pump will be temporarily paused as per *Figure 10*.

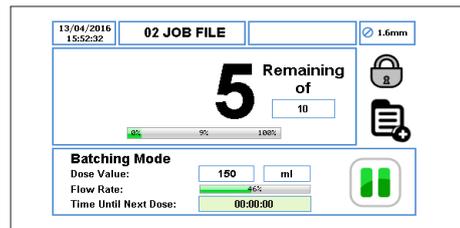


Figure 10 Home Screen - Pause Mode

- ▶ When the pump is running in batch mode, pressing twice the STOP button, the number of batches will be reset as per *Figure 11*.

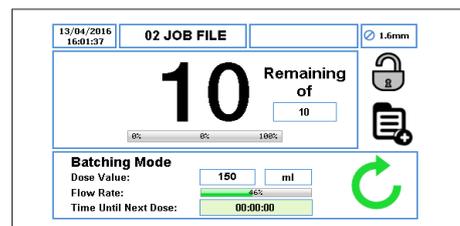


Figure 11 Home Screen - Reset Number of batches

7.3 Dose Mode

When the pump is set to run in DOSE mode (→ 9.1.3.1 Batch/Dose Mode), the Home Screen will be as per Figure 12.

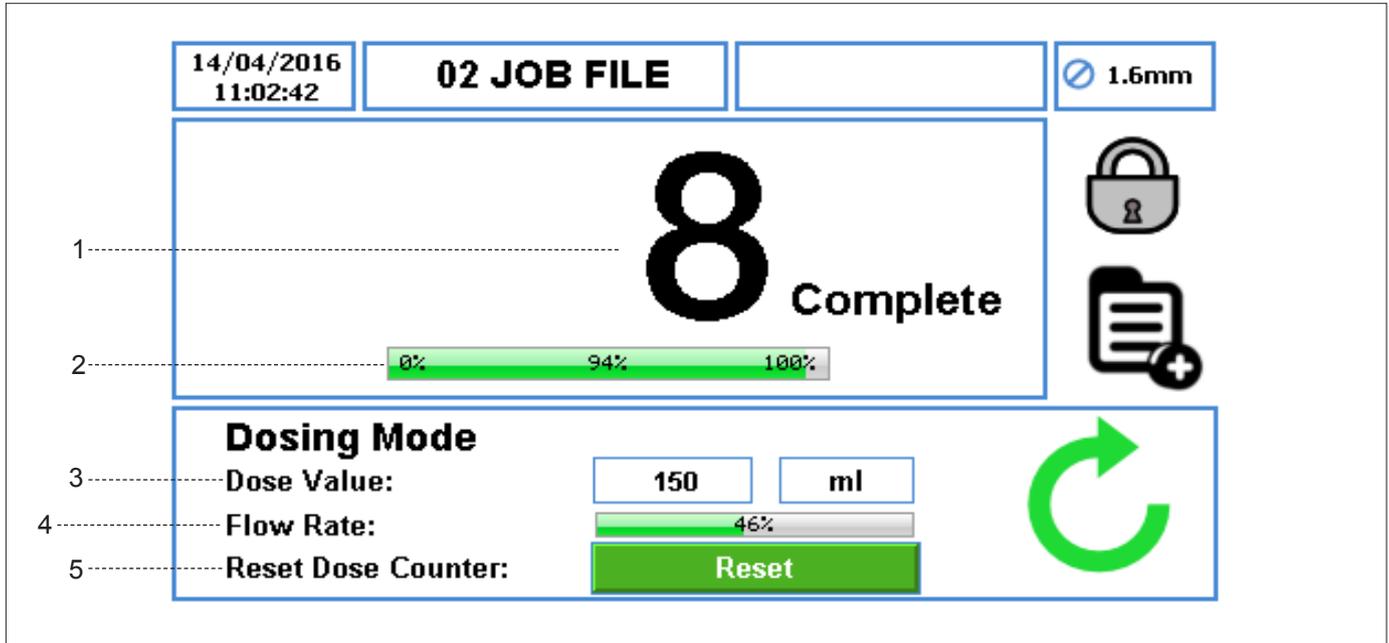


Figure 12 Home Screen - Dose Mode

1. It displays the number of completed doses; the flow rate is not shown.
2. The percentage of the current dose progress.
3. The dose value and the unit of measure.
4. The percentage of maximum available flow rate.
5. The reset icon resets the dose counter to zero. This can only be pressed if the pump is stopped. When this icon is pressed, the user will be prompted to confirm the selection as per Figure 13.

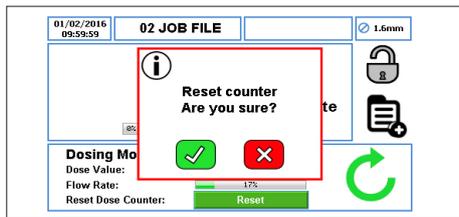


Figure 13 Home Screen - Reset Dose Counter

Note

When the pump is set to run in DOSE/BATCH mode, with (→ 9.1.4 Real Time Clock (RTC) Setup), the icon  will be shown as per Figure 14.

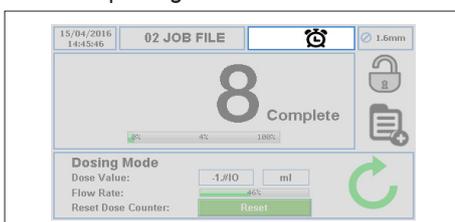


Figure 14 Home Screen - Real Time Clock (RTC) Enabled

Note

- ▶ When the pump is running in dose mode, pressing the STOP button, the pump will be temporarily paused as per Figure 15.

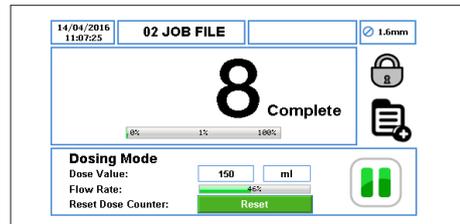


Figure 15 Home Screen - Pause Mode

- ▶ When the pump is running in dose mode, pressing twice the STOP button, the number of completed doses will be reset as per Figure 16.

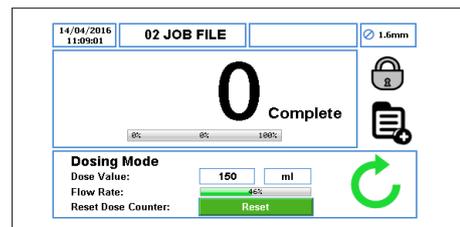


Figure 16 Home Screen - Reset Number of doses

7.4 Users/Passcodes

When the pump is set with a passcode request ON (→ 12.1 Users/Passcodes Setup), the user will be prompted as per *Figure 17*.

The user can access the pump as follows:

- ▶ Touch the icon  to unlock the Home Screen and enter the passcode.

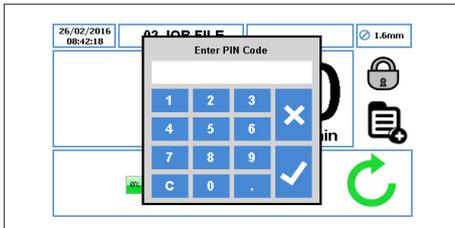


Figure 17 Home Screen - Enter Passcode

- ▶ Press “✓”, the user will have relevant access. (→ Users/Passcodes)

Press “x” to abandon passcode access.

An incorrect passcode will prompt the user as per *Figure 18*:

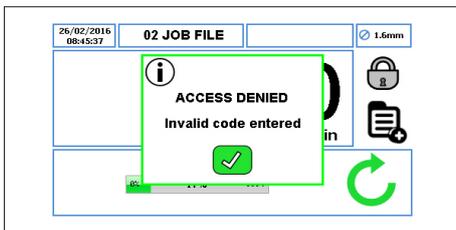


Figure 18 Home Screen - Enter Invalid Passcode

7.5 Remote Control

7.5.1 4-20mA Mode

When the pump is set up to run in 4-20mA mode (→ Appendix D), the Home Screen will be as per *Figure 19*:

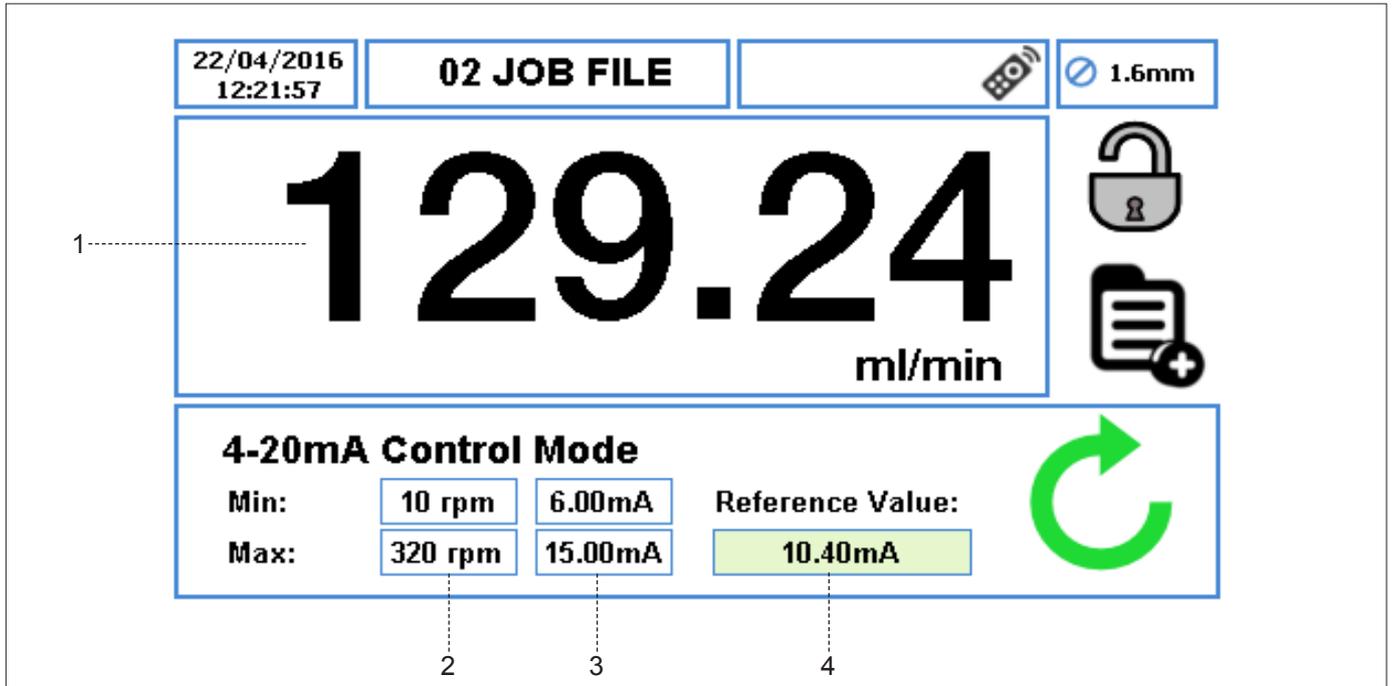


Figure 19 Home Screen - 4-20mA Mode

1. It displays the flow rate and the units of flow rate for the Activated Job File. (→ 9 Job Files)
2. The value of minimum and maximum speed references.
3. The value of minimum and maximum current references.
4. The actual 4-20 mA input.

Note

When the pump is set to run in remote control (→ 13 Remote Control), the icon  will be shown as per *Figure 20*.

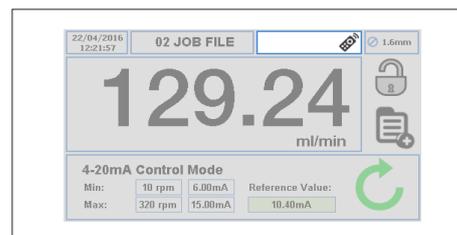


Figure 20 Home Screen - Remote Control Enabled

7.5.2 0-10V Mode

When the pump is set up to run in 0-10 V (→ Appendix D), the Home Screen will be as per *Figure 21*:

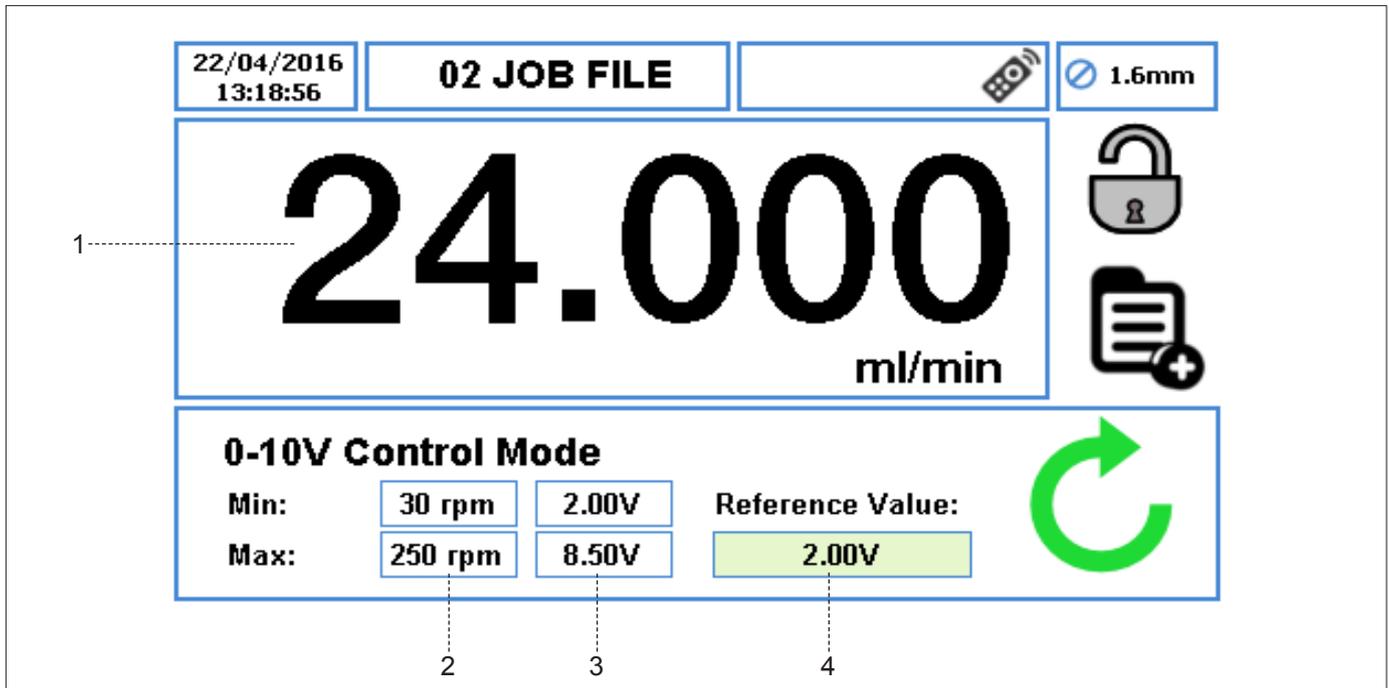


Figure 21 Home Screen - 0-10V Mode

1. It displays the flow rate and the units of flow rate for the Activated Job File. (→ 9 Job Files)
2. The value of minimum and maximum speed references.
3. The value of minimum and maximum voltage references.
4. The actual 0-10V input.

Note

When the pump is set to run in remote control (→ 13 Remote Control), the icon  will be shown as per *Figure 22*.

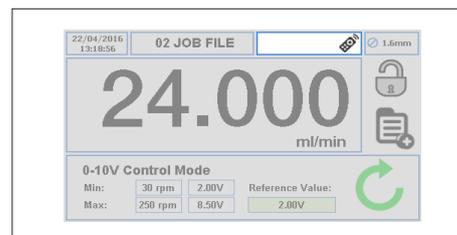


Figure 22 Home Screen - Remote Control Enabled

7.5.3 Proportional Flow Mode

When the pump is set up to run in proportional flow mode (→ Appendix D), the Home Screen will be as per *Figure 23*:

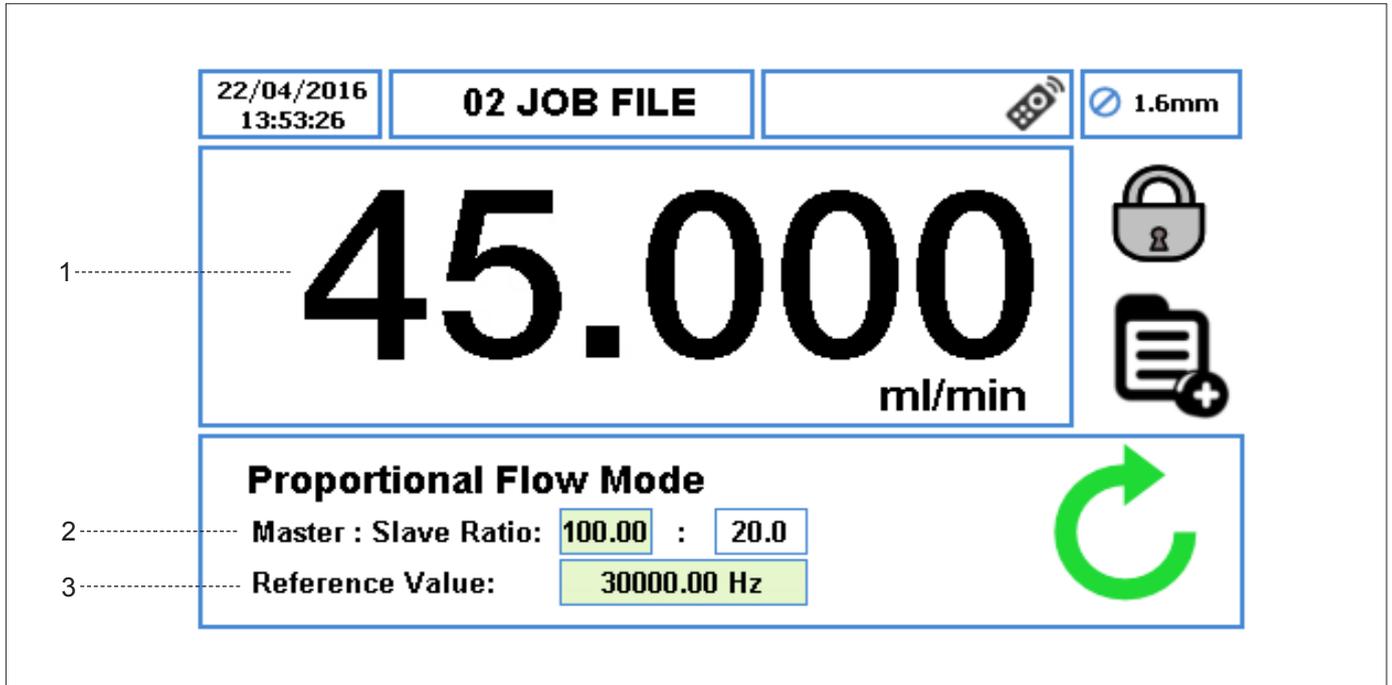


Figure 23 Home Screen - Proportional Flow Mode

1. It displays the flow rate and the units of flow rate for the Activated Job File. (→ 9 Job Files).
2. The ratio of master pump to slave pump speed.
3. The actual slave input frequency.

Note

When the pump is set to run in remote control (→ 13 Remote Control), the icon  will be shown as per *Figure 24*.

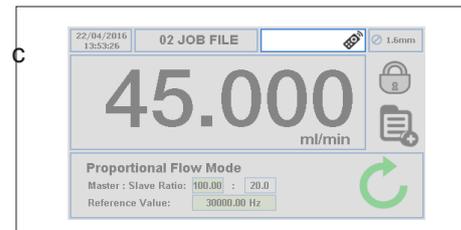


Figure 24 Home Screen - Remote Control Enabled

8. Main Menu

To access the main menu, touch the icon  as indicated in *Figure 8*, item 10.

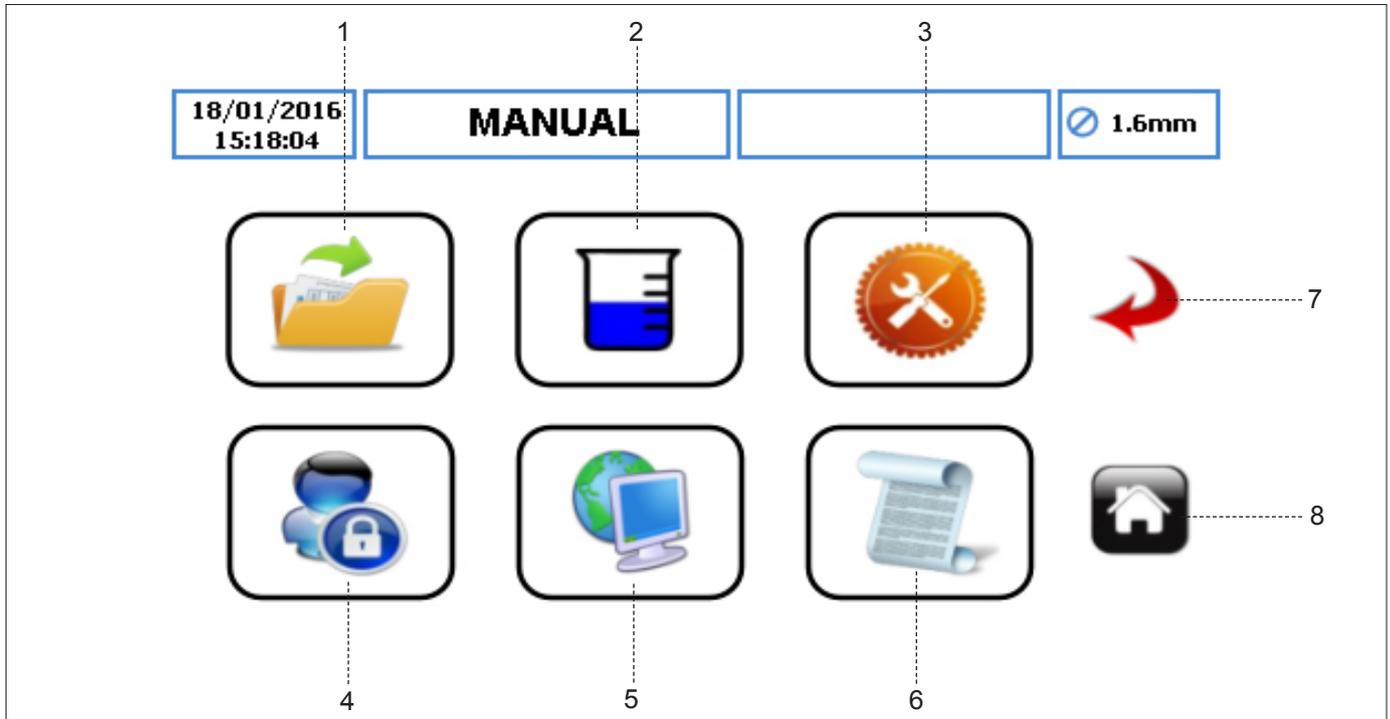


Figure 25 Main Menu

1. JOB FILES – touch the icon to access the Job File Menu.
2. CALIBRATION – touch the icon to access the Calibration Menu.
3. SETTINGS – touch the icon to access the Settings Menu.
4. USERS/PASSCODES – touch the icon to access the Users/ Passcodes Menu.
5. REMOTE CONTROL – touch the icon to access the Remote Control Menu.
6. LOGS/HISTORY – touch the icon to access the Logs/ History Menu.
7. GO BACK/CANCEL – touch the icon to cancel the current action and return to the previous screen.
8. HOME – touch the icon to return to the Home Screen.

9. Job Files

To access the Job File Menu, touch the icon  as indicated in *Figure 25*, item 1.

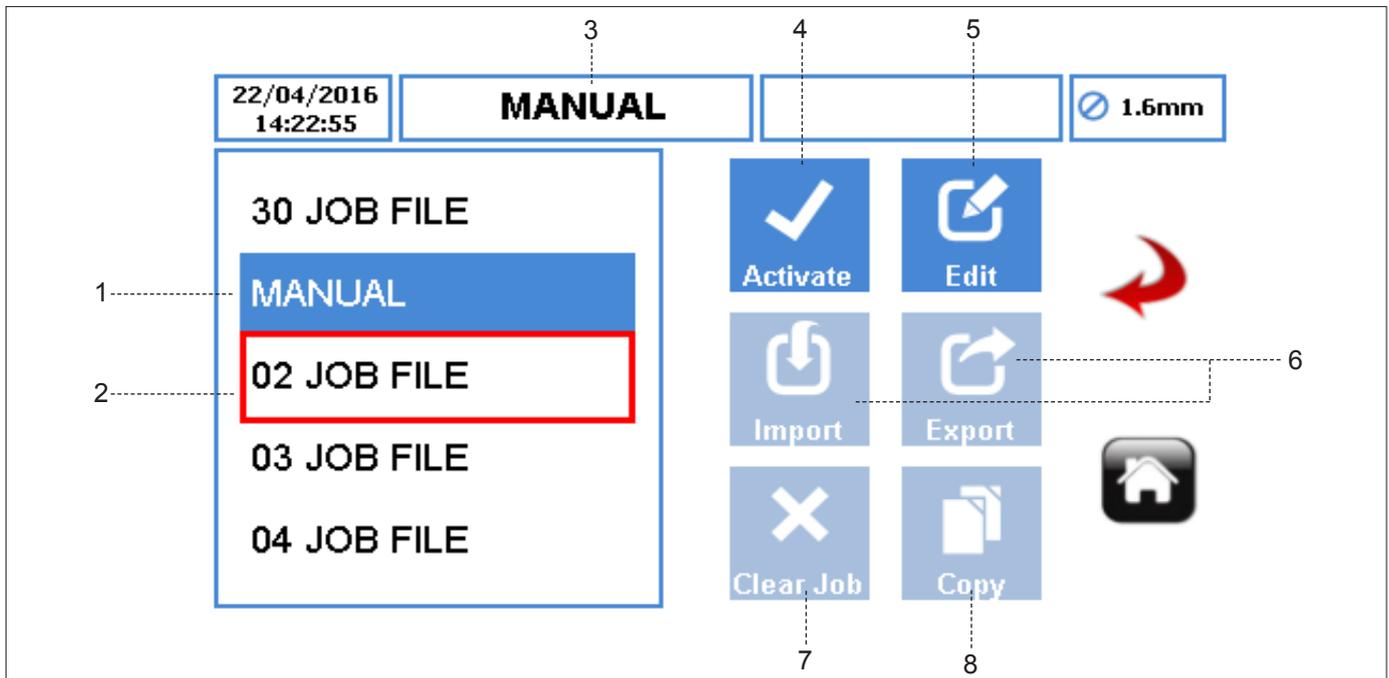


Figure 26 Job Files

Displays the list of Job Files available, the maximum number of Job Files on the pump is 30.

Note

'Manual' is the **DEFAULT** Job File and cannot be renamed.

1. **ACTIVATED JOB FILE** – displays the currently active Job File in blue background.
2. **HIGHLIGHTED JOB FILE** – allows the user to activate/edit/import/export/clear or copy the Highlighted Job File. The user can scroll through the available Job File.
3. **JOB FILE NAME** – displays the name of the Activated Job File.
4. **ACTIVATE ICON** – activates the selected Job File and any changes made. If the pump is running, the activate icon will be 'greyed out'. Once a Job File has been activated, the user will be prompted as per *Figure 27*.

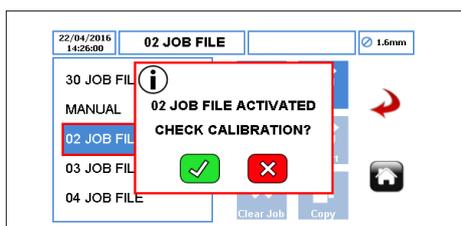


Figure 27 Job File Activated

5. **EDIT ICON** – touch the icon to edit the highlighted Job File. (→ 9.1 Edit Job Files)
6. **IMPORT/EXPORT** – imports/exports Job File(s) via the USB.

7. **CLEAR JOB** – clears all parameters and calibration data from the Highlighted Job File. When the user selects the icon a window as per *Figure 28* will prompt the user to confirm the selection.

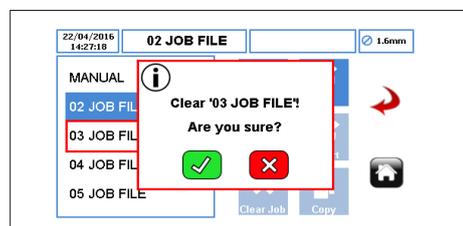


Figure 28 Clear the Job File

8. **COPY ICON** – copies all parameters from an existing Job File (the source) to a Highlighted Job File (the target). Copy icon operates as follows:
 - ▶ Highlight the target Job File.
 - ▶ Touch the icon  and enter the source Job File from where the user would like to copy the parameters.

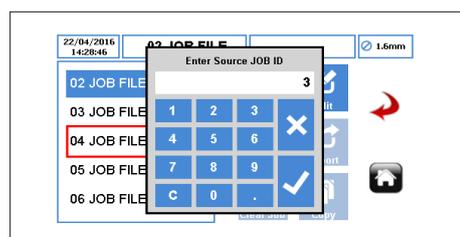


Figure 29 Copying the Job File

- ▶ Press “✓”, all parameters will be copied. Press “x” will abandon the function.
- The user can start another copy of Job File's parameters by following the steps listed previously.

9.1 Edit Job Files

To edit the Job File, select it and touch the icon  as indicated in *Figure 25*, item 5.

9.1.1 Delivery Setup

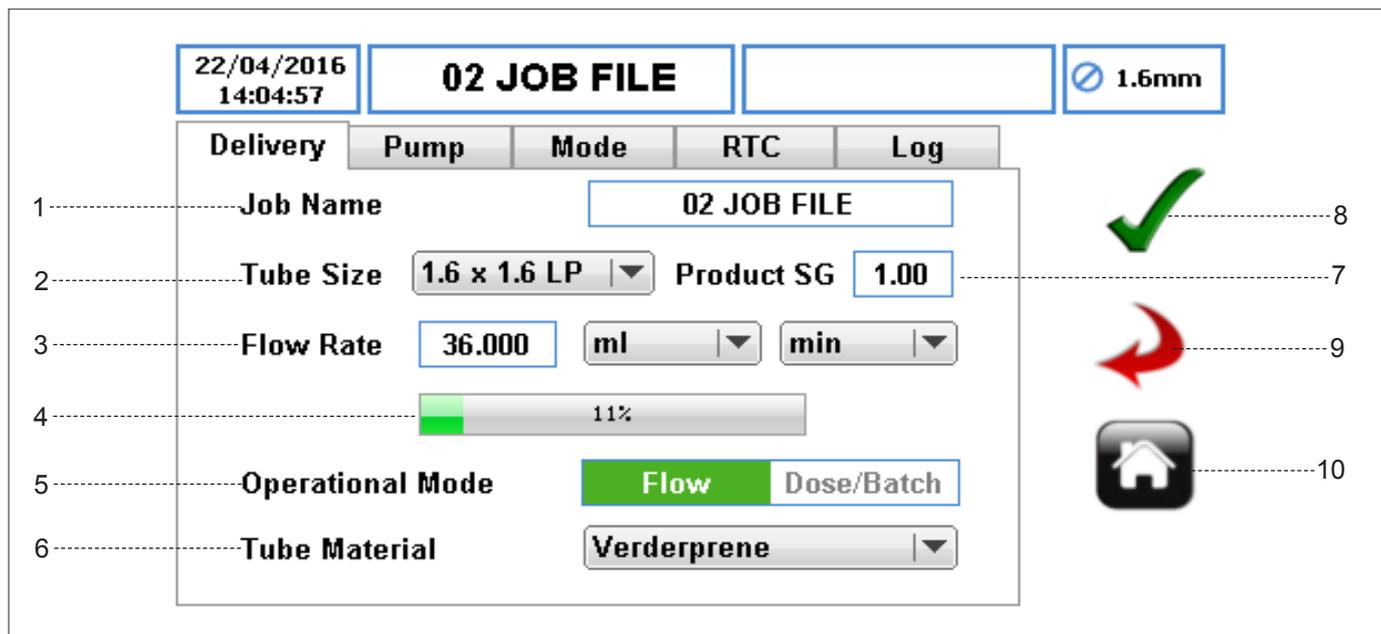


Figure 30 Editing the Job File - Delivery Setup

1. **JOB NAME** – when the box is selected, a full keyboard will appear where the user can enter a new job name of up to 9 characters.

Note

The first 2 digits cannot be edited.

2. **TUBE SIZE** – sets the tube size from a drop-down list.
3. **FLOW RATE** – sets the flow rate, within the limit of selected tube.
 - ▶ **UNIT OF FLOW RATE** – sets the units of flow rate from a drop-down list:
 - a. ml (Millilitre)
 - b. Grams
 - c. Litres
 - d. Pounds
 - e. USG (US Gallons)
 - ▶ **UNIT OF TIME** – sets the units of time from a drop-down list:
 - a. sec (Second)*
 - b. min (Minute)*
 - c. hr (Hour)**

* Only for ml (millilitre) and Grams.
** Only for Litres, Pounds and USG.
4. **FLOW RATE INDICATOR** – displays the current flow rate as a percentage of the maximum available flow rate. It is a read-only value.

5. **OPERATIONAL MODE**
 - a. **FLOW MODE** – set to configure for continuous pumping. It is the default running mode.
 - b. **DOSE & BATCH MODE** – set to configure the pump for either dose or batch mode. When the user selects this option, there will be additional parameters available for the user to set up. (→ 9.1.3 Mode Setup)
6. **TUBE MATERIAL** – selects the tube material from a drop-down list.
 - a. Verderprene
 - b. Silicone
 - c. Viton
 - d. Tygon
 - e. Other
7. **PRODUCT SG (SPECIFIC GRAVITY)** – sets the product specific gravity to calculate the calibration factor. The default is 1.00.
8. **ACCEPT** – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
9. **GO BACK/CANCEL** – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
10. **HOME** – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

9.1.2 Pump Setup

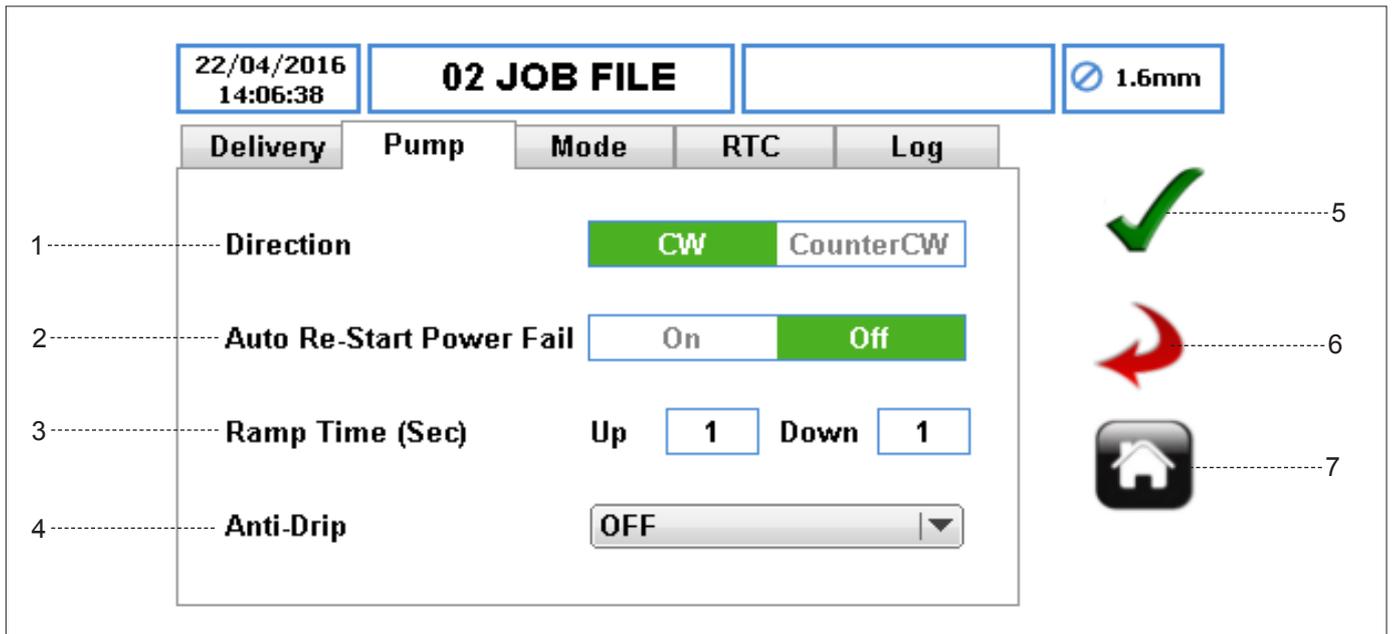


Figure 31 Editing the Job File - Pump Setup

1. DIRECTION – sets the direction of the pump rotation.
2. AUTO RE-START POWER FAIL – when enabled, the pump will automatically restart after a power interruption.

Note

Cannot be used as START/STOP remote control feature. The default is set to OFF.

3. RAMP TIME (SEC) – sets the ramp up and down times in seconds. The default is set to 1, but it can be set to zero.

Note

Ramp down functionality is fixed at 400rpm/second when using the stop button on the front of the pump.

4. ANTI-DRIP – when enabled, the pump will momentary reverse direction after pumping operation, according to the selection. Note this will not function in flow mode. The options are as follows:
 - a. OFF (Default)
 - b. 0.5 rev
 - c. 1 rev

5. ACCEPT – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
6. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
7. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

9.1.3 Mode Setup

9.1.3.1 Batch/Dose Mode

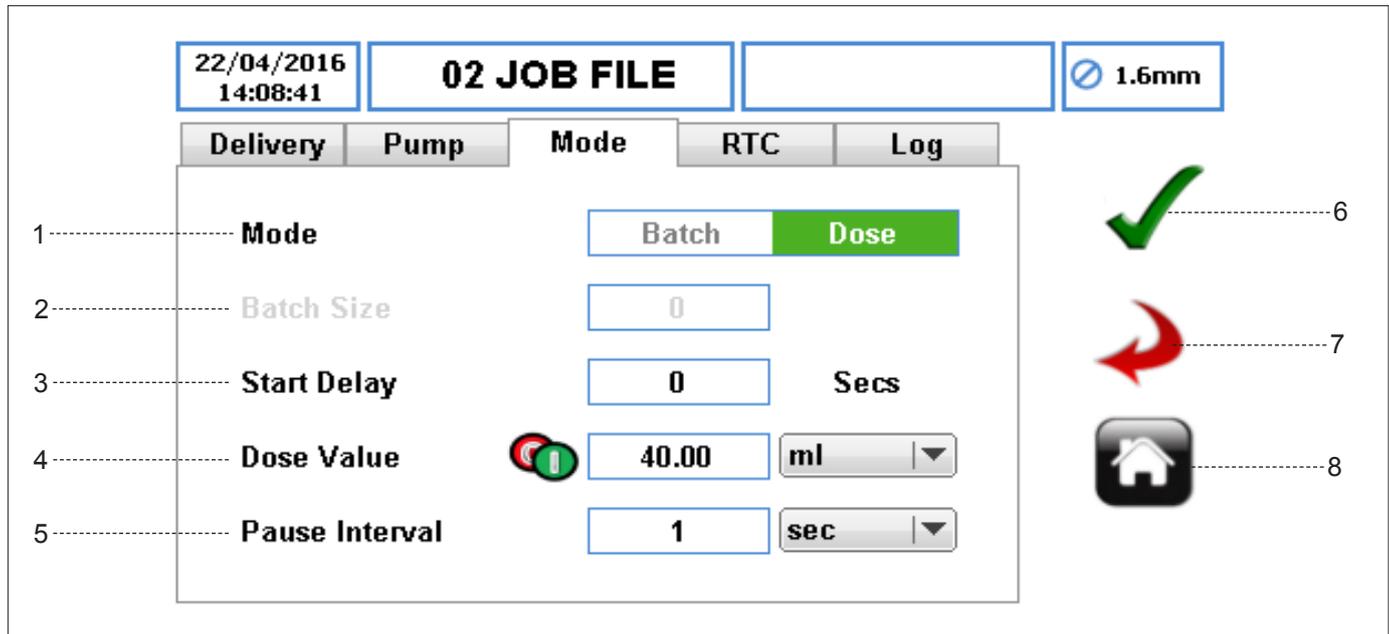


Figure 32 Editing the Job File - Dose/Batch Mode

1. **MODE** – sets either the batch or dose mode, once the ‘**Dose/Batch**’ icon has been selected as indicated in (→ 9.1.1 Delivery Setup)
2. **BATCH SIZE** – sets the number of doses, if batch mode is selected.
3. **START DELAY TIMER** – sets the delay in seconds before the dosing/batching starts. The default is zero.
4. **DOSE VALUE**
 - ▶ **DOSE VALUE** – sets a value of dose from a numeric keypad.
 - ▶ **DOSE VALUE UNITS** – sets the units of dose value from a drop-down list:
 - a. ml (Millilitre)
 - b. Grams
 - c. Litres
 - d. Pounds
 - e. USG (US Gallons)
5. **PAUSE INTERVAL**
 - ▶ **PAUSE INTERVAL TIMER** – sets a value of time delay between each dose.

In **batch mode**, a pause interval **MUST** be entered. The default is 1 second.

In **dose mode**, the pause interval is optional. If no time is entered, pressing the **START** button, only one dose will be performed and the pump will be stopped automatically. Where there is a time interval entered, pressing the **START** button will not start the dosing until the pause interval has elapsed.

 - ▶ **PAUSE INTERVAL TIMER UNITS** – sets units for pause interval from a drop-down list:
 - a. sec (Second)
 - b. min (Minute)
 - c. hr (Hour)

6. **ACCEPT** – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
7. **GO BACK/CANCEL** – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
8. **HOME** – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

9.1.3.2 Memory Dose

Before using the Memory Dose, the user must check that the flow rate, tube size, tube material and 'Dose/Batch' mode have been selected as indicated in (→ 9.1.1 Delivery Setup).

Memory Dose operates as follows:

- ▶ Select the dose value. A keypad will appear as per *Figure 33*.

Note

The dose value must be set to zero before using the memory dose function.

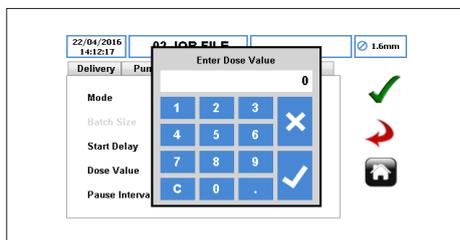


Figure 33 Select the Dose Value

- ▶ Press the START button, the pump will start to dispense. When the required quantity of product has been dispensed, press the STOP button and the Memory Dose Value will be displayed as per *Figure 34*:

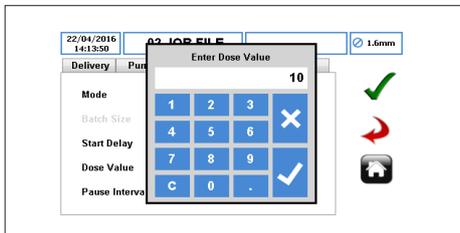


Figure 34 Memory Dose Displayed

- ▶ Press "✓", the value of Memory Dose will display in the dose value box as per *Figure 35*.

Press "x" will abandon the Memory Dose.

The user can start another Memory Dose by following the steps listed previously.

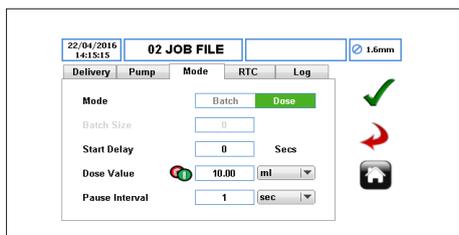


Figure 35 Memory Dose

9.1.4 Real Time Clock Mode (RTC) Setup

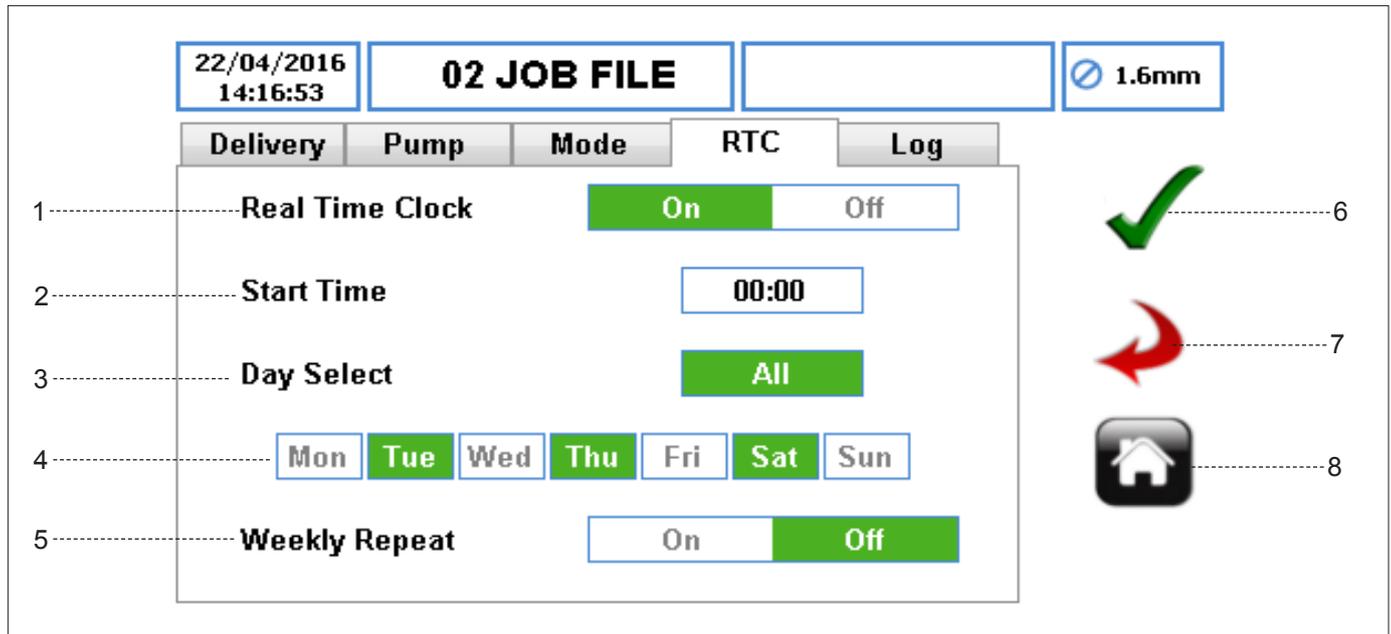


Figure 36 Editing the Job File - RTC Setup

1. REAL TIME CLOCK MODE (RTC) – enables RTC function. If it is selected ON, more parameters will be enabled. If this is selected OFF, the parameters will be 'greyed out'.
The RTC start works by using the pump's time and date to trigger the start signal for the pump. It is the user's responsibility to ensure the date and time is set correctly. (→ 11 Settings)
2. START TIME – sets the time to start the Job File. The user can only enter one time.
3. DAY SELECT (ALL) – sets all days or none for RTC start.
4. DAYS SELECT (SPECIFIC DAYS) – selects individual days for RTC start.
5. WEEKLY REPEAT – sets weekly repeat ON or OFF as required.
6. ACCEPT – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
7. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
8. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

Once the set up is complete, the user must press the START button on the front of the pump to start the dose/ batch mode RTC start. The STOP button can be pressed at any time in which case the pump would no longer start at the allocated time, and will not resume until the START button is pressed again.

9.1.5 Log Setup

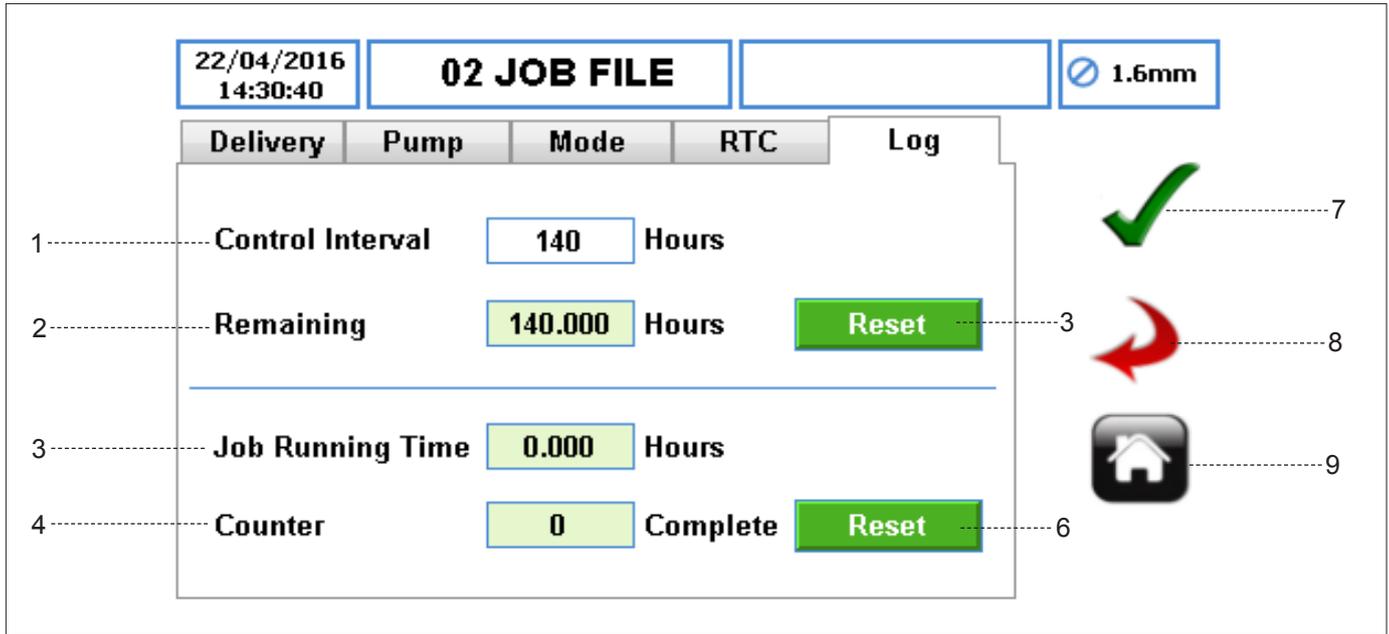


Figure 37 Editing Job File - Log Setup

1. CONTROL INTERVAL – sets a time in hours to trigger the Control interval check. Setting a value of zero will disable this feature. The pump will alert the user once the control interval expires.
2. REMAINING ICON – shows the remaining number of running hours before control interval alarm. It is a read-only value.
3. RESET ICON – resets the remaining number of hours for control interval. Once the icon has been selected, the user will be prompted as per Figure 38.
6. RESET ICON – resets the number of doses/batches which have been completed the Job File. Once the icon has been selected, the user will be prompted as per Figure 39.

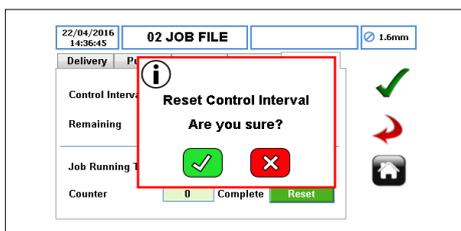


Figure 38 Reset Control Interval

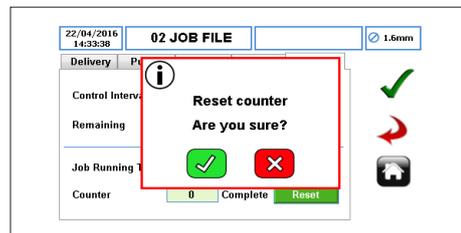


Figure 39 Reset Counter

7. ACCEPT – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
8. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
9. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.
4. JOB RUNNING TIME – shows the total number of running hours for the Job File. If the Job File is changed, it will reset and start again from zero once reactivated. It is a read-only value.
5. COUNTER – shows the number of doses/batches which have been completed since the Job File was activated. It is a read-only value.

10. Calibration

To access the calibration menu, touch the icon  as indicated in *Figure 25*, item 2.

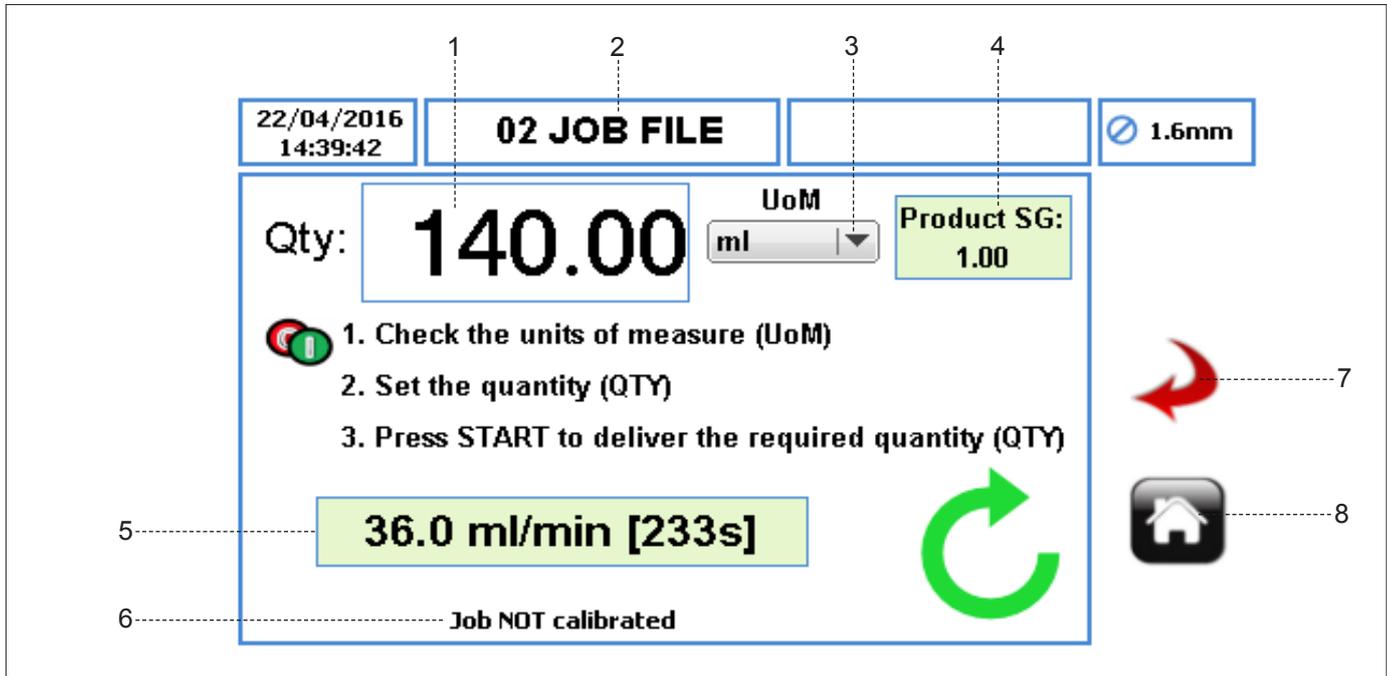


Figure 40 Calibration Menu

1. QUANTITY (QTY) – sets the calibration quantity to be dispensed.
2. JOB FILE NAME – displays the current Activated Job File for Calibration. It is a read-only display and can only be changed in (→ 9 Job Files).
3. UOM (UNIT OF MEASURE) – sets the unit of measure from a drop-down list for the quantity dispensed.
 - a. ml (Millilitre)
 - b. Grams
 - c. Litres
 - d. Pounds
 - e. USG (US Gallons)
4. PRODUCT SG (SPECIFIC GRAVITY) – displays the product specific gravity from the Activated Job File. It is a read-only value and can only be changed in (→ 9.1.1 Delivery Setup).
5. FLOW RATE & CALIBRATION TIME INDICATOR
 - ▶ FLOW RATE – displays the flow rate from the Activated Job File. This is a read-only value and can only be changed in (→ 9.1.1 Delivery Setup).
 - ▶ CALIBRATION TIME – displays the estimated time in seconds for the set quantity to be dispensed.
6. JOB NOT CALIBRATED – will be displayed if NO calibration has been performed for the Activated Job File. When the calibration has been performed, a message will be displayed as follows: “*Last calibrated DD/MMM/YYYY at HH:MM:SS*”.
7. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
8. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

10.1 Calibration Procedure

Calibration operates as follows:

- ▶ Set the Unit of Measure to perform the calibration.
- ▶ Select the quantity field (QTY) as per *Figure 41*.

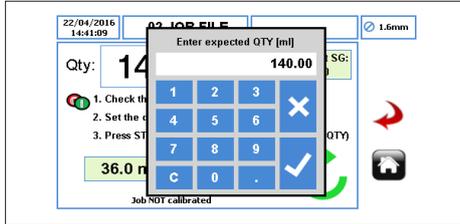


Figure 41 Enter Expected Quantity

- ▶ After the expected quantity is entered, the pump is ready for calibration.
- ▶ Press the START button to start the calibration. The quantity displayed will decrease during the calibration process.
- ▶ Once the pump has delivered the expected quantity, the following message box will appear. Enter the quantity actually delivered as per *Figure 42*.

Note

Be careful to enter the correct dispensed value as this will change pump running speed.

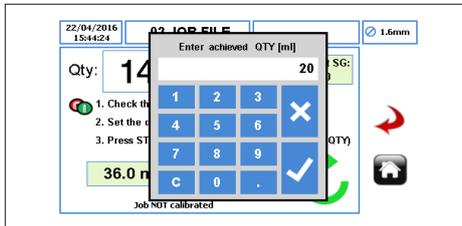


Figure 42 Enter Achieved Quantity

Press “✓” to accept the calibration and the message box will appear as per *Figure 43*.

Press “x” will abandon the calibration and the Job File will not be updated.

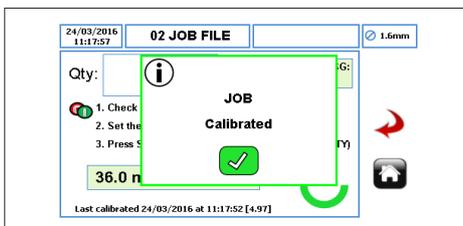


Figure 43 Job Calibrated

The user can start another calibration by following the steps listed previously.

11. Settings

To access the settings menu, touch the icon  as indicated in *Figure 25*, item 3.

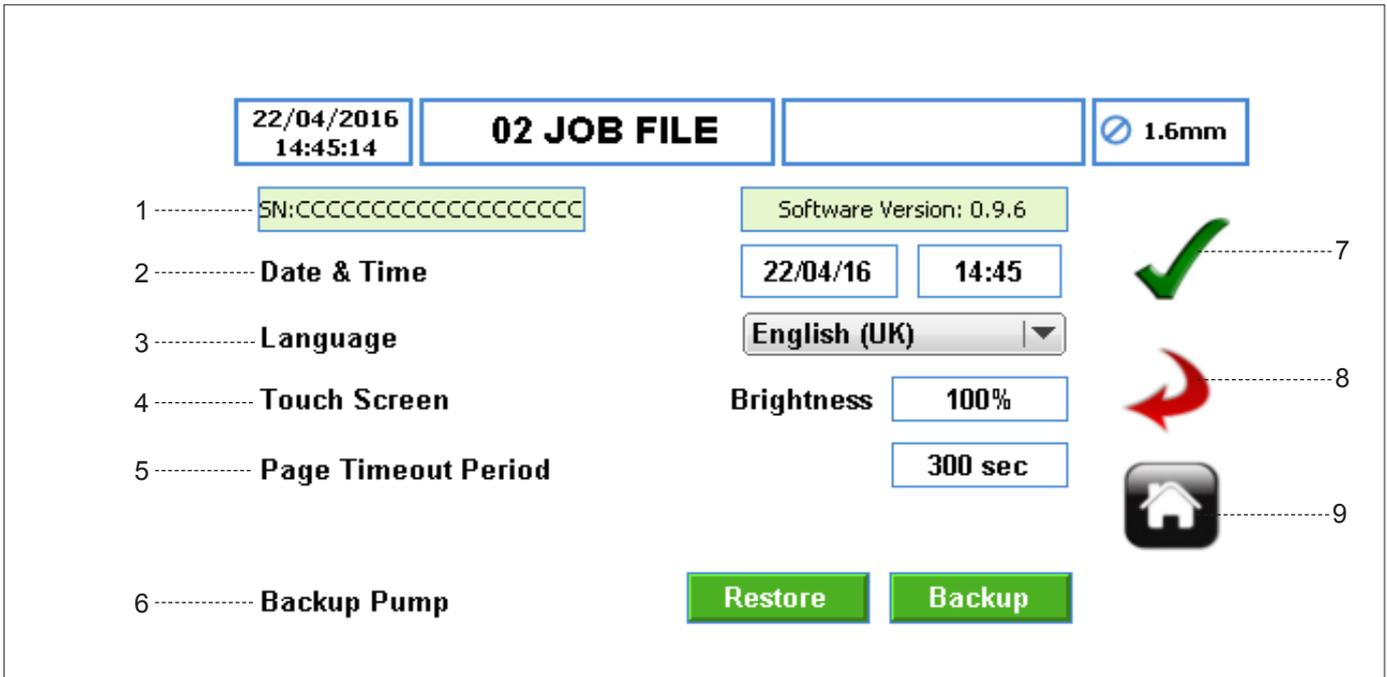


Figure 44 Settings Menu

1. SERIAL NO. & SOFTWARE VERSION – displays the serial number and the software version of the pump.
2. DATE AND TIME – sets the date and time for the pump.
3. LANGUAGE – sets the language for the pump’s software from a drop-down list.
4. TOUCH SCREEN
 - ▶ BRIGHTNESS – adjusts the brightness of the display. The default 100%.
5. PAGE TIMEOUT PERIOD – sets the time in seconds before the screen locks. The default is 300 seconds.
6. BACKUP PUMP – allows the complete pump configuration to be backed up/restored to/from the USB port. This does not include the log/history (→ 14 Logs/History).
7. ACCEPT – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
8. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
9. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

12. Users/Passcodes

12.1 Users/Passcodes - an Overview

Access control is DISABLED by default. Access control can be used to restrict access to pump settings for different users. These settings will not affect the START/STOP buttons.

There are 3 levels of access available on the pump:

- ADMIN – allows access to every setting on the pump.
- SUPERVISOR – allows access to limited settings only.
- OPERATOR – allows read-only access to the pump settings.

Access Level	Admin	Supervisor	Operator
Permitted Settings	Full access: <ul style="list-style-type: none"> • Home Screen Functionality • Job Files Menu • Calibration Menu • Settings Menu • Remote Control Menu • Users/Passcodes Menu • Logs/History Menu 	Full access: <ul style="list-style-type: none"> • Home Screen Functionality • Job Files Menu • Calibration Menu • Logs/History Menu 	Read-only access: <ul style="list-style-type: none"> • Home Screen • Log/History Menu
Restricted Settings	N/A	<ul style="list-style-type: none"> • Cannot access Settings Menu • Cannot access Remote Control Menu • Cannot access Users/Passcodes Menu 	<ul style="list-style-type: none"> • Cannot access Job Files Menu • Cannot access Calibration Menu • Cannot access Settings Menu • Cannot access Users/Passcodes Menu • Cannot access Remote Control Menu • Cannot export Logs/History Menu

Table 9 Access Levels

12.2 Users/Passcodes Setup

To access the users/passcodes menu, touch the icon  as indicated in *Figure 25*, item 4.

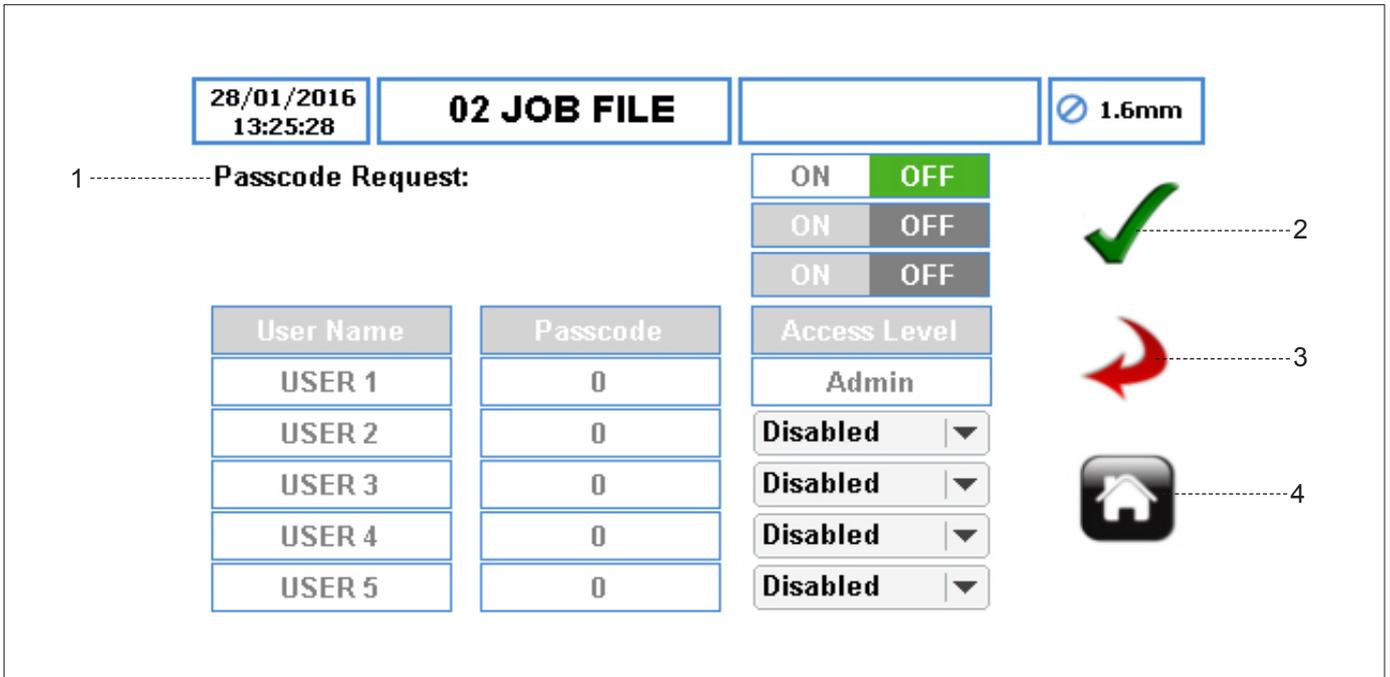


Figure 45 Passcodes Request OFF

1. **PASSCODE REQUEST** – enables the access control settings. When selected ON, an ADMIN passcode must be set. A keypad will appear as per *Figure 46*. If it is selected OFF, all access control will be disabled.
2. **ACCEPT** – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
3. **GO BACK/CANCEL** – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
4. **HOME** – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

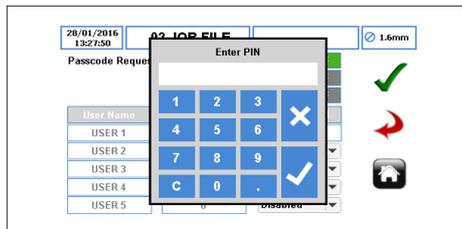


Figure 46 Passcodes Request ON

If the passcode request is set to OFF, the user will be prompted to confirm as per *Figure 47*:



Figure 47 Reset/Clear Passcodes

12.3 Passcode Request ON

When the Passcode Request is set to ON, the ADMIN can request to access control of the pump by supervisor or/and operator access level as per *Figure 48*.

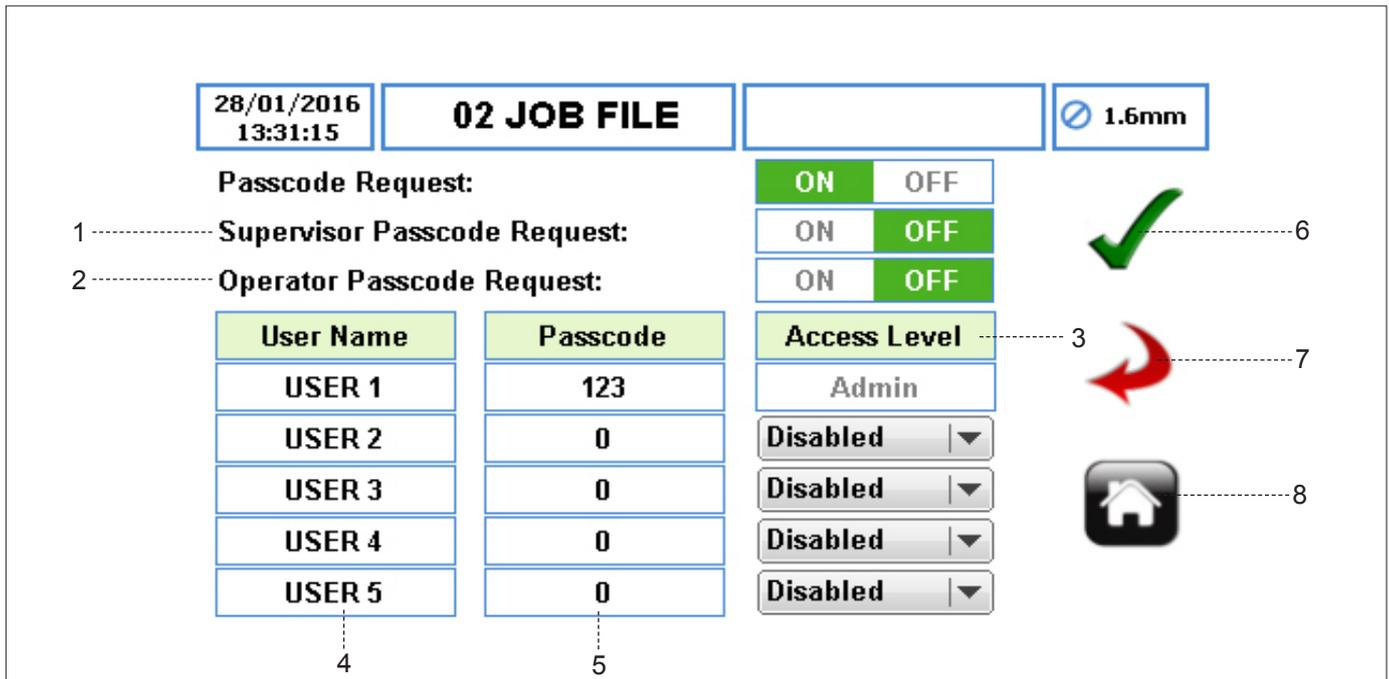


Figure 48 Users/Passcodes Setup

1. SUPERVISOR PASSCODE REQUEST – enables supervisor access level (→Table 9 Access Levels).
2. OPERATOR PASSCODE REQUEST – enables operator access level (→Table 9 Access Levels).
3. ACCESS LEVEL - sets the access level from a drop-down list. The default access level for the first user name is ADMIN and cannot be change.
4. USER NAME – when the box is selected, a full keyboard will appear allowing the user name to be edited. There are 5 users available.
5. PASSCODE – sets the passcode with up to 4 digits.
6. ACCEPT – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
7. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
8. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

Note

Make sure the pump is set with a passcode request ON for supervisor and/or operator. If not, the user will not be able to access pump's main menu from the Home Screen for supervisor and/or operator access level.

13. Remote Control

To access the remote control menu, touch the icon  as indicated in *Figure 25*, item 5.

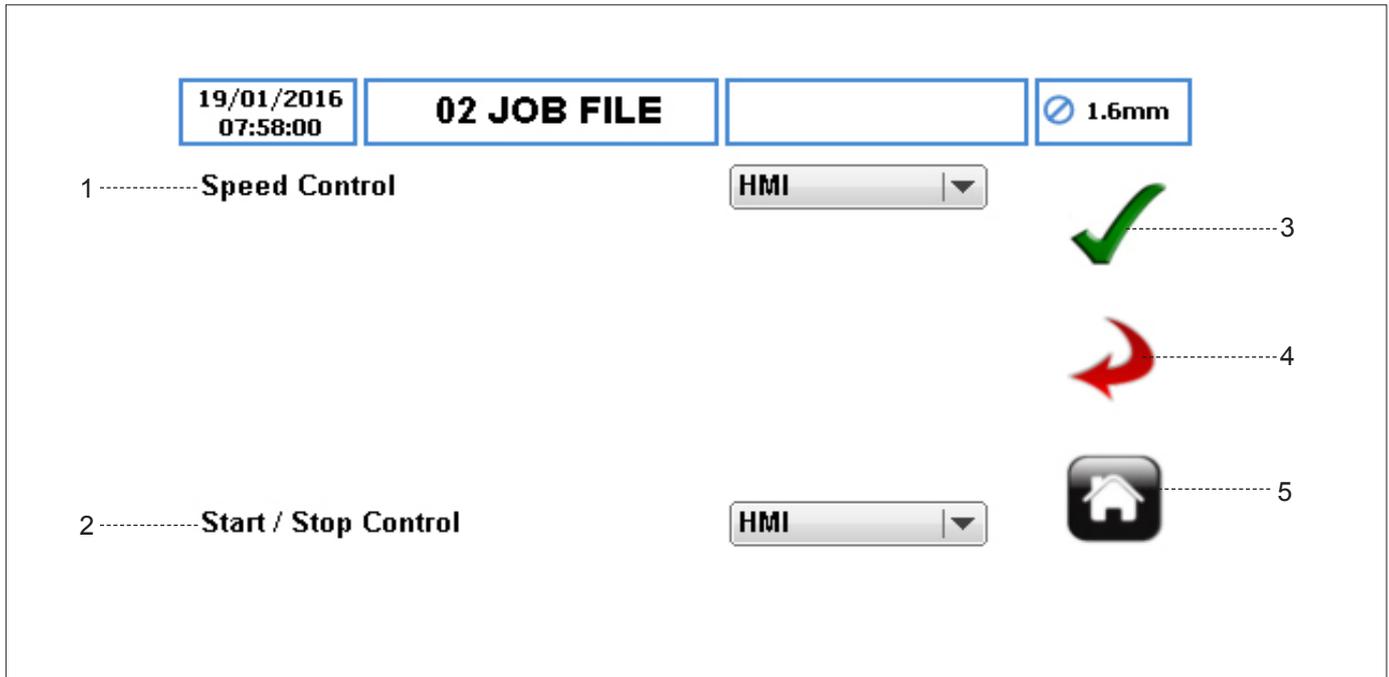


Figure 49 Remote Control Menu

Note

Depending on the pump model, some options for speed control and/or start/stop control may not be selectable. For more information about remote control, see (Appendix D).

1. SPEED CONTROL – sets the speed control mode from a drop-down list:
 - a. HMI
 - b. 4-20 mA
 - c. 0-10 V
 - d. Proportional Flow Mode
2. START/STOP CONTROL – sets the start/stop control mode from a drop-down list:
 - a. HMI
 - b. 25 WAY REMOTE I/O CONNECTOR
3. ACCEPT – accepts all changes within the Job File. Changes made on this screen are not saved until this icon is pressed.
4. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
5. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

Note

The default for Speed Control and Start/Stop Control will be set to HMI.

14. Logs / History

To access the logs/history menu, touch the icon  as indicated in Figure 25, item 6.

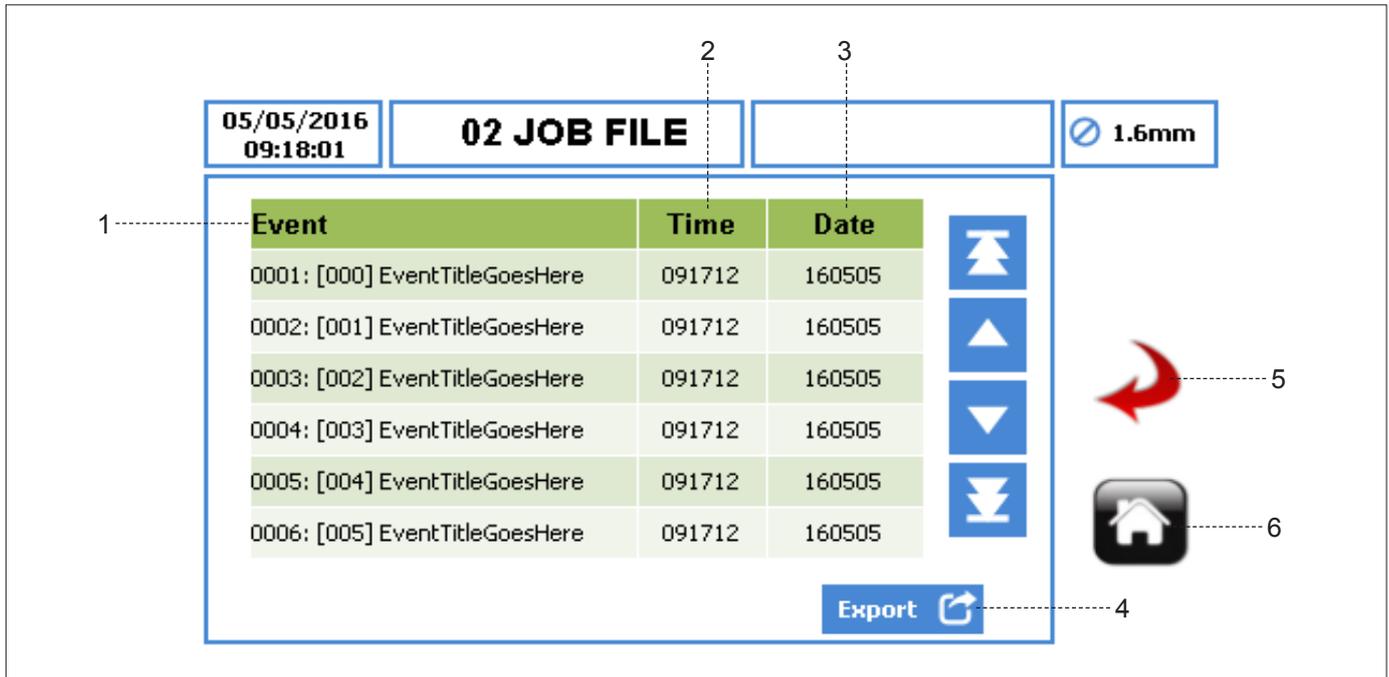


Figure 50 Logs / History Menu

1. EVENT – title of the event that has been recorded.
2. TIME – time the event occurred, in the format HHMMSS.
3. DATE – date the event occurred, in the format YYMMDD.
4. EXPORT – allows the logs/history of the pump to be exported via the USB port in CSV format for detailed analysis (→ Figure 3).
5. GO BACK/CANCEL – cancels any changes and return to the Job File Menu. If the user has made changes, there will be a prompt asking the user if the changes should be saved.
6. HOME – returns the user to the Home Screen. If the user has made changes, there will be a prompt asking if the changes should be saved.

15. Vantage 5000 software update process

15.1 Introduction

This chapter outlines the process for updating the software on the Vantage 5000.

15.2 Equipment

For updating the software on a Vantage 5000 pump the following will be necessary:

- Vantage 5000 pump
- Firmware file
- USB 2.0 memory stick

15.3 Glossary

- File allocation tables (FAT) – MSDOS based file system

15.4 Procedure

Note

Make sure the firmware file is named '**Jupiter.bin**'. Any other name will result in the pump not updating. (e.g '**Jupiter.bin.bin**)

The software update procedure is detailed as follows:

1. Turn OFF the Vantage 5000 pump using the OFF switch on the back of the pump.
2. Hold down the red 'STOP' button and switch ON the pump using the switch ON the back of the pump.
3. The pump should now have a flashing red LED and a solid green LED displayed on the user keypad. Release the red 'STOP' button.
4. Insert the USB drive into the back of the pump. The pump will detect the USB drive.
5. If the pump is in the updating process, the green LED will turn solid and the red LED will switch OFF.
6. Wait for the green LED to switch OFF and the red LED to switch ON. This can take about a minute to complete.

Note

This may take about a minute to complete.

7. Press the red 'STOP' button and the pump will start into normal operation. Check the software version to verify that the new software has been installed. (→ 11 Settings)

Note

The pump has now been updated to the latest version of the pump software.

8. Switch the pump OFF and then ON again. Follow the instructions displayed on the screen to calibrate the touchscreen.

16. Inspection, Maintenance and Repairs

DANGER

Risk of injury due to running pump!

- ▶ Do not carry out any repair/maintenance work on a pump in operation.
- ▶ Always follow the safety procedures for handling the product being pumped. If the tube has ruptured, the pump head and rotor assembly may be contaminated and/or the pump head may be pressurized.
- ▶ Decontaminate before handling as per local safety regulations.
- ▶ Appropriate measures must be taken to relieve any pressure build up.

DANGER

Risk of electrocution!

- ▶ Have all electrical work carried out only by qualified electricians.

16.1 Inspections

 The inspection intervals depend on the pump operating cycle.

1. Check at appropriate intervals:
 - Normal operating conditions unchanged
2. For trouble-free operation, always ensure the following:
 - No leaks
 - No unusual running noises or vibrations
 - Tube in position

16.2 Maintenance

 These pumps are generally maintenance free and any work should normally be limited to periodic inspections and cleaning; these may be more frequent in dusty, humid and/or hot conditions.

The pump motor is lubricated for life and should not require attention. Rotor assembly components will wear and may need replacing. Pump tubing will not last forever; establish suitable tube replacement schedule to prevent inconvenient tube failure.

The Vantage 5000 contains no user serviceable parts and is factory sealed to confirm integrity. Pump warranty will be invalidated if the seal is broken.

16.2.1 Cleaning the pump

NOTE

1. Clean contaminates from the pump head.
2. Clean the tube carefully to remove chemicals.

16.2.2 Maintenance schedule

NOTE

Control interval can be used to help with planned preventive maintenance (PPM). (→ 11 Settings)

Task	Frequency	Action
Check pump for leaks and damage	<ul style="list-style-type: none"> – Before pump start up – Daily visual inspection – Scheduled intervals during operation 	<ul style="list-style-type: none"> ▶ Repair leaks and damage before operating the pump ▶ Replace components as necessary. Clean up any spillage.
Check pump for unusual temperatures or noise in operation	<ul style="list-style-type: none"> – Daily visual inspection – Scheduled intervals during operation 	<ul style="list-style-type: none"> ▶ Check pump for damage. Replace worn components.
Replace tube element	<ul style="list-style-type: none"> – After inspection when required – When flow has dropped by 25% of original value – When the tube is burst/damaged – In line with user defined planned preventive maintenance (PPM) intervals 	<ul style="list-style-type: none"> ▶ Replace tube (→ Appendix B)
Check pump head and rotor assembly	<ul style="list-style-type: none"> – Annually – On replacing the tube 	<ul style="list-style-type: none"> ▶ Worn and damaged surfaces give rise to premature tube failure ▶ Replace worn components. ▶ Check bearing play and function.

Table 10 Maintenance Schedule

16.3 Repairs

There are no user serviceable parts inside the pump.
Repairs can only be carried out by the manufacturer or authorised service centre.

16.3.1 Returning the pump to the service centre

- ▶ Completely emptied and decontaminated.
- ▶ Pump cooled down.
- ▶ Tube removed.

Obtain prior authorisation and returns advice number (for tracking purposes) before return of the pump.

- ▶ Enclose a completed return of goods form when returning pumps or components to the manufacturer.

16.4 Ordering spare parts

 For trouble free replacement in the event of faults, we recommend keeping spare parts available on site.

The following information is mandatory when ordering spare parts (→ Name plate):

- Pump model
- Year of manufacture
- Part number / Description of part required
- Serial number
- Quantity

17. Troubleshooting

17.1 Pump malfunctions

If malfunctions occur which are not specified in the following table or cannot be traced back to the specified causes, please consult the manufacturer.

Possible malfunctions are identified and respective cause and solution are listed in the table.

Problem	Cause	Solution
Low Flow / Low Discharge Pressure	Ratio of inner diameter/wall thickness too large for the application (tube too 'soft').	Use thicker wall tube with the same inner diameter. This will require a different rotor assembly.
		Run pump slower with larger inner diameter tube.
	Viscosity too high.	Run the pump slower.
		Use thicker wall tube. This will require a different rotor assembly. Revise pipework.
	Suction lift too high, resulting in tube not fully returning to fully round.	Use thicker wall tube with the same inner diameter. This will require a different rotor assembly.
		Suction line too long or linear diameter too small. Revise pipework.
	Tube wall thickness does not match the specifications of the rotor assembly.	Purchase appropriate rotor assembly or change tube wall thickness.
	Discharge pressure too high, causing excessive backflow.	Rotor assembly will discharge more pressure in the clockwise direction.
		Reduce discharge pressure. Revise pipework.
	Using non-standard tubing.	Use Verderflex approved genuine tubing.
Tube blockage.	Check tube for obstructions.	
Pump needs calibrating for application.	Perform calibration under application conditions.	
Tube walks through pump head	Tube not installed correctly.	Check installation of tube.
	Tube wall thickness does not match the specifications of the rotor assembly.	Purchase appropriate rotor assembly or change tube wall thickness.
Premature tube failure	Tube wall thickness does not match the specifications of the rotor assembly.	Purchase appropriate rotor assembly or change tube wall thickness.
Excessive noise	Tube wall thickness does not match the specifications of the rotor assembly.	Purchase appropriate rotor assembly or change tube wall thickness.

Table 11 Pump Troubleshooting List

18. List of Figures and Tables

18.1 List of figures

Figure 1	Lifting the pump	3.1.2
Figure 2	Key Parts of the Pump	4.2
Figure 3	Back Plate of the Pump	4.2
Figure 4	Vantage 5000 Exploded View - Continuous Tube	4.3.1
Figure 5	Vantage 5000 Exploded View - Tube Element	4.3.2
Figure 6	Installing the Continuous Tube	5.2.2
Figure 7	Installing the Tube Element	5.2.3
Figure 8	Flow Mode Home Screen	7.1
Figure 9	Home Screen - Batch Mode	7.2
Figure 10	Home Screen - Pause Mode	7.2
Figure 11	Home Screen - Reset Number of Batches	7.2
Figure 12	Home Screen - Dose Mode	7.3
Figure 13	Home Screen - Pause Mode	7.3
Figure 14	Home Screen - Reset Number of Doses	7.3
Figure 15	Home Screen - Reset Dose Counter	7.3
Figure 16	Home Screen - Real Time Clock (RTC) Enabled	7.3
Figure 17	Home Screen - Enter Passcode	7.4
Figure 18	Home Screen - Enter Invalid Passcode	7.4
Figure 19	Home Screen - 4-20mA Mode	7.5.1
Figure 20	Home Screen - Remote Control Enabled	7.5.1
Figure 21	Home Screen - 0-10V Mode	7.5.2
Figure 22	Home Screen - Remote Control Enabled	7.5.2
Figure 23	Home Screen - Proportional Flow Mode	7.5.3
Figure 24	Home Screen - Remote Control Enabled	7.5.3
Figure 25	Main Menu	8
Figure 26	Job Files	9
Figure 27	Job File Activated	9
Figure 28	Clear the Job File	9
Figure 29	Copying the Job File	9
Figure 30	Editing the Job File - Delivery Setup	9.1.1
Figure 31	Editing the Job File - Pump Setup	9.1.2
Figure 32	Editing the Job File - Dose/Batch Mode	9.1.3.1
Figure 33	Select the Dose Value	9.1.3.3
Figure 34	Memory Dose Displayed	9.1.3.3
Figure 35	Memory Dose	9.1.3.3
Figure 36	Editing the Job File - RTC Setup	9.1.4
Figure 37	Editing the Job File - Log Setup	9.1.5
Figure 38	Reset Control Interval	9.1.5
Figure 39	Reset Counter	9.1.5
Figure 40	Calibration Menu	10
Figure 41	Enter Expected Quantity	10.1
Figure 42	Enter Achieved Quantity	10.1

18.1 List of figures (continued)

Figure 43	Job Calibrated	10.1
Figure 44	Settings Menu	11
Figure 45	Passcodes Request OFF	12.2
Figure 46	Passcodes Request ON	12.2
Figure 47	Reset/Clear Passcodes	12.2
Figure 48	Users/Passcodes Setup	12.3
Figure 49	Remote Control Menu	13
Figure 50	Logs/History Menu	14

18.2 List of tables

Table 1	Target Groups	1.1
Table 2	Warnings Used in the Manual	1.2
Table 3	Symbols Used in the Manual	1.2
Table 4	Warnings and Symbols Used on the Pump	1.3
Table 5	Conductor Colour Coding	5.1.2
Table 6	Vantage 5000 Pump Tube Options	5.2.1
Table 7	Symbols Used for Software	6
Table 8	Icons Used for Software	6
Table 9	Access Levels	12.1
Table 10	Maintenance Schedule	16.2.2
Table 11	Pump Troubleshooting List	17.1
Table 12	Declaration of Conformity	19
Table 13	Declaration of Incorporation	20

19. Declaration of Conformity

<p>Description Verderflex Vantage 5000</p> <p>Conformity VERDER Ltd., declares that when the pump is used as a stand-alone pump it complies with:</p> <ul style="list-style-type: none"> • Machine Directive (2006/42/EC) • Electro-Magnetic Compatibility Directive (2014/30/EC) • Low Voltage Directive (2014/35/EC) <p>Standards VERDER Ltd., declares that the pump is conformance with the following harmonised standards and directives:</p> <ul style="list-style-type: none"> • Safety of Machinery-Electrical equipment of machines (BS EN 60204-1) • Safety requirements for electrical equipment for measurement, control and laboratory use (BS EN 61010-1) • Safety of machinery-Basic concepts, general principals of design (BS EN ISO 12100-1 and BS EN ISO 12100-2) • Degrees of protection provided by enclosures (IP code) (BS EN 60529) • Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments (BS EN 61000-6-1) • Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments (BS EN 61000-6-3) 		
Manufacturer		VERDER Ltd. Unit 3 California Drive Castleford WF10 5QH UK
Date: 01/ 04/ 2016	Company stamp / signature:  David Sampson Head of Development/Construction	Company stamp / signature:  David Hoyland Head of Quality

Table 12 Declaration of Conformity

20. Declaration of Incorporation

<p>Description Verderflex Vantage 5000</p> <p>Incorporation VERDER Ltd., declares that if the pump is to be installed into a machine or is to be assembled with other machines for installations in accordance with the Machine Directive (2006/42/EC), it shall not be put into service until the relevant machinery has been declared in conformity.</p> <p>Standards VERDER Ltd., declares the following harmonised standards have been applied and fulfilled:</p> <ul style="list-style-type: none"> • Safety of Machinery (BS EN ISO 12100) • Safety of Machinery – Electrical Equipment of Machines (BS EN 60204-1) <p>We hereby declare the technical documentation is compiled in accordance with Annex VII(B) of the Directive.</p>		
<p>Manufacturer</p>	<p>VERDER Ltd. Unit 3 California Drive Castleford WF10 5QH UK</p>	
<p>Date: 01/ 04/ 2016</p>	<p>Company stamp / signature:</p>  <p>David Sampson Head of Development/Construction</p>	<p>Company stamp / signature:</p>  <p>David Hoyland Head of Quality</p>

Table 13 Declaration of Incorporation