Publication: SA9000H0C

Installation, Operating and Maintenance Instructions

Water Separation Instrument

(WSI)

SA9000-0

SetaAnalytics

THE QUEEN'S AWARDS FOR ENTERPRISE
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D2 INCORPORATED
Precision Industrial System
SENSOR MANUFACTURER

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Regulatory conformance

This instrument conforms to the following directives and standards:

- **2006/95/EC** - EC Low voltage directive.
- **2011/65/EU** - Restriction of the use of certain hazardous substances (RoHS) in electrical and electronic equipment directive.
- **BS EN 61010-1:2010** - Safety requirements for electrical equipment for measurement, control, and laboratory use. General requirements.
- **BS EN 61326** – Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements.

This instrument is CE tested and marked.

Stanhope-Seta operates in conformance with waste electrical and electronic equipment (WEEE) directives, (registration WEE/AD0054TQ) and will provide advice on disposal of Seta instruments on request.

Quality assurance

All parts and sub-assemblies are checked against test procedures and specifications before final assembly.

This instrument has been fully tested, validated and calibrated by Stanhope-Seta in accordance with an ISO9001 quality assurance system.

This instrument has been subjected to PAT (Portable Appliance Test) tests for electrical safety.

A quality assurance certificate is supplied with this instrument.

Scope of this manual

This is the instruction manual for the SA9000-0 Water Separation Instrument (WSI). It details operation of the instrument as well as basic maintenance and calibration procedures.

This manual does not describe sampling and test methods except where it directly affects the operation of the instrument. Always refer to the relevant test methods and standards.

Stanhope-Seta believes that this handbook is accurate at the time of writing but its contents may be subject to change. Stanhope-Seta accepts no liability for errors and omissions in this document. If you have any questions or comments regarding the handbook content, contact Stanhope-Seta.

Equipment identification

The model number and serial number of the instrument are marked on an identity plate mounted on the back of the instrument. The power supply voltage and frequency are marked on the left side of the instrument. The firmware version, software version and date are shown on the About screen. Section 4.7 explains how to access the About screen.

This information must be quoted in any technical query, or when ordering accessories and spare parts.

Warning symbols

This document uses the following notation:

DANGER – Non-observance can result in death, serious injury or major environmental damage.

CAUTION – Non-observance can result in damage to the instrument, failure of the test or spillage.

NOTE – Notes are used to provide supplementary information.

Safety

Read this manual before installing or operating this instrument.

Do not install or operate this instrument unless you are trained to do so.

Always wear safety glasses and protective clothing when operating this instrument.

Use this instrument only as described in this manual. The intrinsic protection of the unit may be impaired if it is not used as described.

Comply with any applicable local and national health and safety regulations when installing or operating this instrument.

Comply with any applicable local and national health and safety regulations when storing, handling and disposing of samples.

Do not modify the instrument in any way as this may result in injury or damage to the equipment and will invalidate the warranty.

You must only carry out the repairs described in this handbook. A Stanhope-Seta representative must carry out any other servicing and repairs.

Always isolate the electrical power supply before moving or maintaining the unit. Failure to do so may result in death or serious injury.

The instrument is suitable for indoor use only. Check that the environmental conditions of the laboratory are within the limits given in section 1.

Use only the accessories and spares that are designed for use with the instrument. Refer to section 9 for a list of compatible accessories.

You are responsible for the safety of any external system to which the instrument is connected. External systems may include but are not limited to instrument air systems, water supplies, computer networks and laboratory information systems (LIMS).

Always handle samples in accordance with the manufacturer's instructions. This instrument is used to test materials that may be flammable, toxic or give off vapours and fumes. Use vapour extraction facilities and eliminate ignition sources.

Carry out a risk assessment before using this equipment.

Contents

1 Overview

1.1 Technical specification

Water Separation Instrument	
Sample size	220 ml ±10 ml
Measurement range	0 to 100 water separation index
Temperature range	18˚C to 29˚C
User interface	Colour LCD touchscreen
Data storage	Internal data storage and USB connection
Connectivity	USB mini 5B for data download USB type A for barcode reader (optional)
Noise	<80 dB(A)
Voltage	85-264 Vac, 50/60 Hz, auto-sensing power supply
Power consumption	30 W
Current	0.27 A (110 W)
IP Rating	IP 11
Fuse	6.3 A (T), antisurge, glass bodied
Size: (H × W × D)	380 × 310 × 350 mm
Weight	8 kg

1.2 Conformance to test methods

The Water Separation Instrument (WSI) meets the requirements of the following standards and test methods:

- ASTM D1655 and ASTM D8073
- IP 624
- ATA 103
- Jig Bulletin 121

1.3 Product description

1.3.1 Introduction

The Water Separation Instrument is a fully automatic and compact bench top / portable instrument. The instrument measures how effectively a fuel sample releases entrained and emulsified water when pumped through a water coalescing filter. The WSI displays the measured water separation index. Results can range from 0.0 to 100.0. A high water separation index, such as 100.0, indicates the test specimen coalesces easily and is relatively free of surfactants.

The WSI is operated via a touchscreen user interface that steps you through the testing procedure. The instrument consists of a sonicator, temperature probe, filter cartridge, dye detector and dyed water, solvent and test specimen pumps. Before each test the WSI flushes the instrument with the test specimen, primes the instrument and primes the filter. When the test starts the unit pumps dyed water into the test specimen and emulsifies the solution with the sonicator. After a specific time the emulsion is pumped through a particulate filter, the dye detector and into the waste container to provide a reference value. Once a reference value is acquired, the emulsion is diverted through a filter cartridge to remove the dyed water before it passes through the detector again and a new set of readings are taken. The water separation index is calculated from the reference value and subsequent readings. Results display on the screen.

Test results are stored on the WSI or you can save the results onto a computer.

1.3.2 Instrument layout

Figure 1: Front view

1	LCD touchscreen display	2	Filter cartridge
3	Cartridge locking handle	4	Water delivery hose
5	Probe holder	6	Vapour ring
7	Test beaker	8	Test beaker tray
9	Test beaker holder		

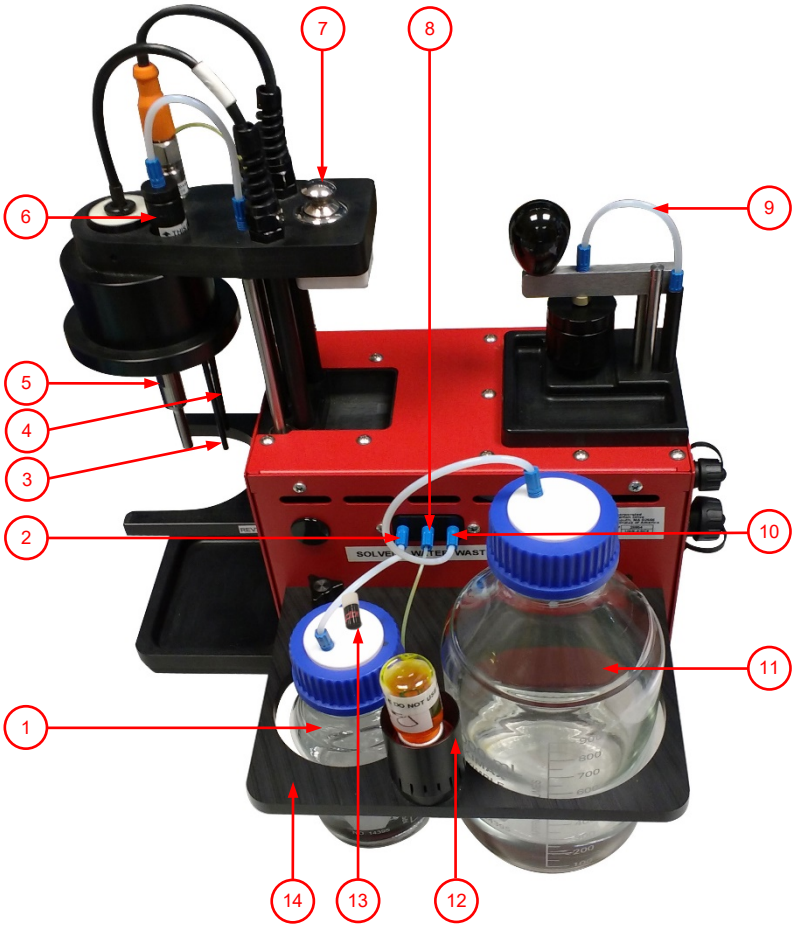
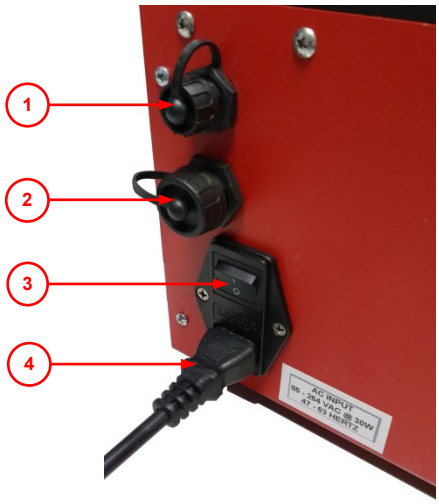
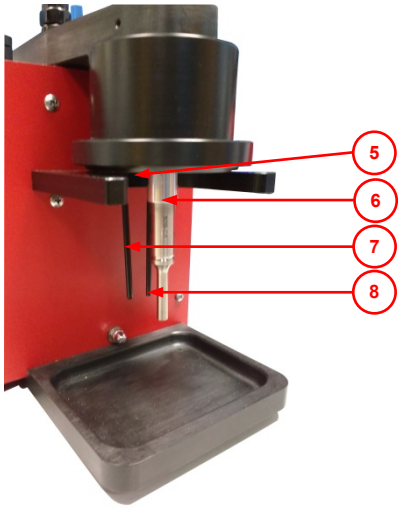


Figure 2: Rear view

1	Solvent bottle	2	Solvent tubing connector
3	Sample inlet tube	4	Temperature probe
5	Sonicator	6	Particulate filter
7	Sonicator release button	8	Dyed water tubing connector
9	Filter cartridge tubing	10	Waste container tubing connector
11	Waste bottle	12	Dyed water bottle
13	Vapour vent	14	Bottle holder



Left side view



Right side view

Right side close up view

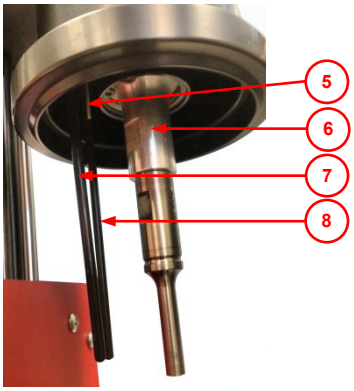


Figure 3: Left and right side views

1	USB port (USB mini 5B port)	2	USB port (USB type A port)
3	On/off power switch	4	Mains power input and 6.3 A fuse
5	Dyed water outlet needle	6	Sonicator
7	Temperature probe	8	Sample inlet tube

Figure 4: Barcode reader assembly

1	Barcode reader	2	Barcode reader neck and holder
3	Barcode reader base		

1.3.3 Control system

1.3.3.1 Dyed water flow control

The instrument controls the amount of dyed water that is pumped into the test sample.

1.3.3.2 Test sample volume control

The instrument controls the volume of test sample that is pumped through the instrument.

1.3.3.3 Sample emulsion control

The instrument controls the speed at which the sonicator emulsifies the test sample.

2 Installation

2.1 Unpacking

Open the packaging carefully as it contains glassware.

- Check the condition of the packaging and photograph any damage.
- Check the Shock Watch, if fitted, and photograph if the indicator is red.
- Retain all packaging for future use in shipping or for long-term storage of the instrument.
- Check the instrument visually for damage, particularly if the packaging is damaged. Photograph any areas of concern.
- Check that the operating voltage and frequency marked on the label on the left of instrument match the local power supply.
- Check the contents against the packing list enclosed.
- Contact Stanhope-Seta or our agents at the earliest opportunity to report any damage, shortfall or problems with compatibility to local power supply.

NOTE – The instrument may show signs of use. This is due to pre-delivery calibration and testing.

2.2 Location

Locate the instrument:

- On a flat, non-flammable, level surface that can support the weight of the instrument and any accessories.
- Where the ventilation slots in the base and back of the unit are clear from obstruction.
- Where the mains plug and switch are easily accessible during use.
- In a draft-free, well-ventilated environment with fume extraction facilities.
- In a well-lit area with a stable temperature.

2.2.1 Operating conditions

The instrument is designed to operate in the following conditions:

Ambient temperature range	5 to 40 °C
Altitude above sea level	Up to 2000 m
Operating environment	Indoor use only
Maximum relative humidity (RH)	80% RH up to 31 °C decreasing linearly to 50% RH at 40 °C

2.3 Utilities

2.3.1 Power supply

Only connect this instrument to a power supply with a safety earth (ground) terminal.

Only use the power cable supplied with the instrument. Use of any other power cable could damage the instrument.

The Water Separation Instrument has an autosensing power supply supporting:

- 85-264 Vac, 50/60 Hz

The label on the left of the instrument shows the unit's operating voltage and frequency.

2.4 Initial set up

This section gives instructions detailing how to set up the instrument for the first time or after a period of storage.

2.4.1 After transportation or storage

After transportation or storage in cold or humid conditions, condensation may form inside the instrument.

Leave the instrument to stand for two hours at room temperature before using it, to allow any condensation to evaporate. Failure to do so may damage the instrument.

2.4.2 Assembling the WSI

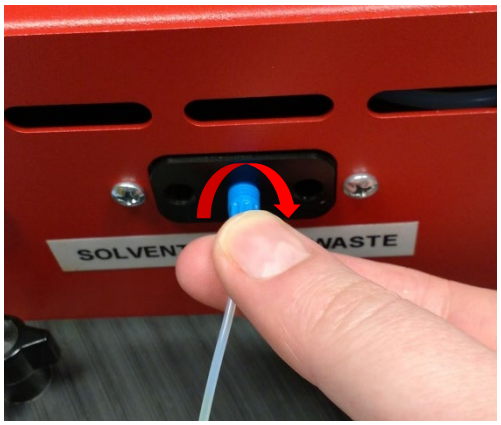
The following components are removed from the Water Separation Instrument for shipping. You need to attach them to the WSI before use.

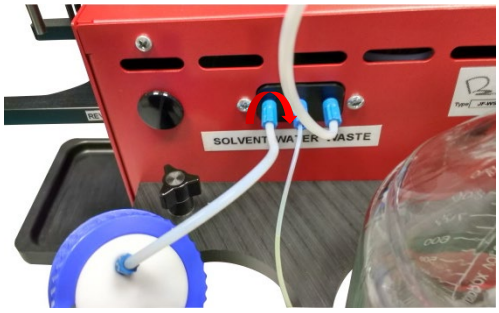
- Bottle holder
- Waste bottle cap and tubing
- Solvent bottle cap and tubing
- 1000 ml waste bottle
- 250 ml solvent bottle

You also need a 10 ml dyed water bottle supplied in the WSI starter kit (SA9001-0).

To assemble the WSI:

1.	Place the WSI on a bench with the LCD touchscreen facing away from you.		
2.	Attach the bottle holder to the rear of the WSI as follows:		
	2.1	Remove the thumbscrews on the rear of the WSI.	

	2.2	Place the bottle holder on the ledge at the back of the WSI. Make sure the dyed water bottle holder is facing up and the screw holes are in line with the screw holes of the WSI.	
	2.3	Screw in the two thumbscrews until the bottle holder is secure.	
3. 	Carefully screw the blue connector on the end of the dyed water tubing into the centre port on the rear of the instrument. Turn the connector clockwise until it is finger tight. **Take care not to detach the olive on the end of the waste tube. The olive ensures a leak tight seal.**		 
4.  	Carefully screw the blue connector on the end of the waste bottle cap tubing into the waste outlet port (to the right of the dyed water inlet). Turn the connector clockwise until it is finger tight. **NOTE** – The waste bottle cap has shorter tubing than the solvent container cap. **Take care not to detach the olive on the end of the waste tube. The olive ensures a leak tight seal.**		

5.	Place the 1000 ml waste bottle into the right hole of the bottle holder.	
6.	Screw the waste bottle cap onto the 1000 ml waste bottle.	
7.  	Carefully screw the blue connector on the end of the solvent bottle cap tubing into the solvent inlet port (to the left of the dyed water inlet). Turn the connector clockwise until it is finger tight. **NOTE** – The solvent bottle cap has longer tubing than the solvent container cap. The tubing also extends to the bottom of the solvent bottle. **Take care not to detach the olive on the end of the waste tube. The olive ensures a leak tight seal.**	 
8. 	Place the 250 ml solvent bottle into the right hand hole of the bottle holder. **NOTE** – Make sure the tubing reaches the bottom of the solvent container.	
9.	Screw the solvent bottle cap onto the 250 ml solvent bottle.	

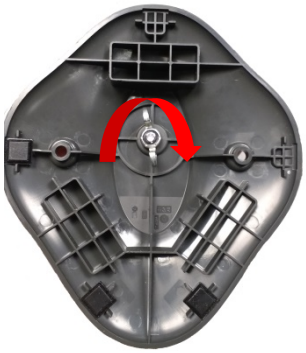
10.	Screw the vapour vent into the solvent bottle.	
11.	Turn the dyed water bottle upside down and firmly press the bottle onto the needle of the dyed water bottle holder. Make sure the needle has fully penetrated the seal of the bottle.	
12.	Turn the WSI so the LCD display faces forward.	

2.4.3 Assembling the barcode reader assembly

To assembly the barcode reader assembly:

NOTE – The barcode reader is an optional feature. If you do not have a barcode reader, you do not need to complete the following steps.

1.	Remove the wing nut from the threaded bolt at the end of the assembly neck.	

2.	Place the threaded bolt through the hole in the base.	
3.	Screw the wingnut back on to the threaded bolt to secure the base.	
4. 	Adjust the neck so the barcode reader sits securely on the holder of the assembly. **NOTE** – You can twist the neck to any angle to hold the barcode reader securely.	

2.4.4 Connecting the power supply

To connect the mains power supply for the Water Separation Instrument:

Only use the power cable supplied with the instrument. Use of any other power cable could damage the instrument.

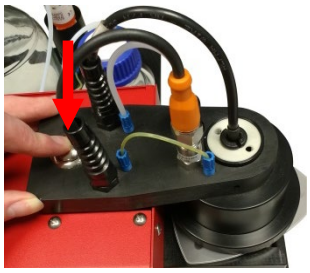
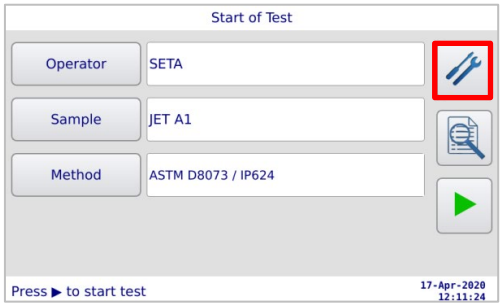
1.	Connect the mains cable to the socket on the left of the instrument.	

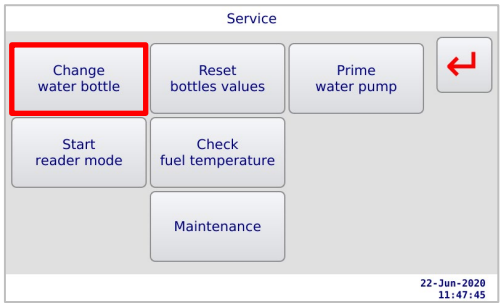
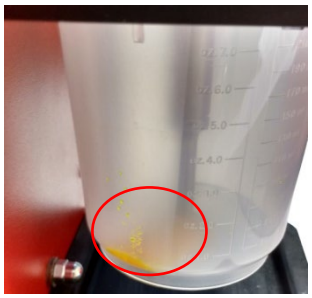
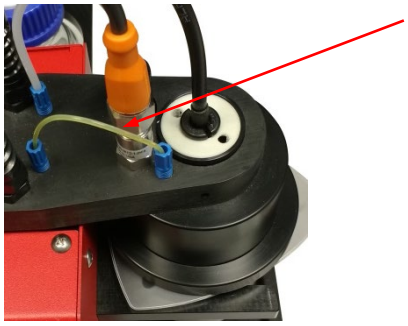
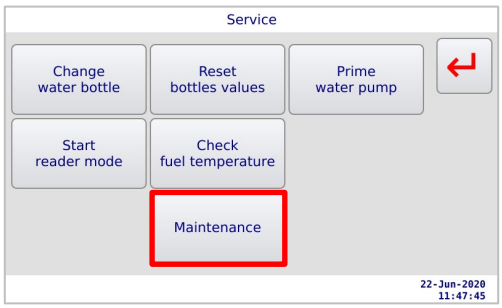
2.4.5 Priming the instrument ready for use

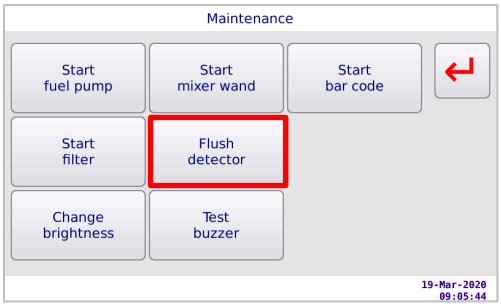
You must prime the Water Separation Instrument before using it for the first time.

To prime the instrument:

1.	Switch on the WSI using the on/off switch.		
2.	Place an empty test beaker on the test beaker holder as follows:		
	2.1	Press the sonicator release button to lift the sonicator arm.	

	2.2	Place the empty test beaker in the test beaker holder. **NOTE** – One of the beaker ears should point away from the instrument.	
	2.3	Push and hold down the sonicator arm.	
	2.4	Press the sonicator release button to lock the sonicator arm in place.	
3.	Fill the solvent bottle as follows:		
	3.1	Unscrew and remove the bottle cap.	
	3.2	Remove the solvent bottle from the bottle holder.	
	3.3	Fill the solvent bottle with laboratory grade (>99% pure) Isopropyl Alcohol (also known as Propan-2-ol or IPA).	
	3.4	Place the solvent bottle into the bottle holder	
	3.5	Screw the cap back onto the solvent bottle.	
4.	Press .		

5.	Press **Service**.	
6.	Press **Change water bottle**.	
7.	Check that dyed water is visible at the bottom of the test vessel. If dyed water is not visible, press **Change water bottle** again. **NOTE** – If dyed water does not reach the test beaker after pressing **change water bottle** multiple times, manually prime the dyed water system, refer to section 2.4.5.1.	
8.	If you can see bubbles in the water delivery hose on the top of the sonicator arm, press **Change water bottle** again. **NOTE** – If you can't see any dyed water, manually prime the dyed water system, refer to section 2.4.5.1.	
9.	Press **Maintenance**.	

10.	Press **Flush detector**.	
11.	Check that solvent reaches the waste bottle. If solvent does not reach the waste bottle, press **Flush Detector** again. **NOTE** – If solvent does not reach the waste beaker after pressing **Flush detector** multiple times, refer to section 6.	
12.	Press ↵ to return to previous screens.	
13.	The WSI is ready for use.	

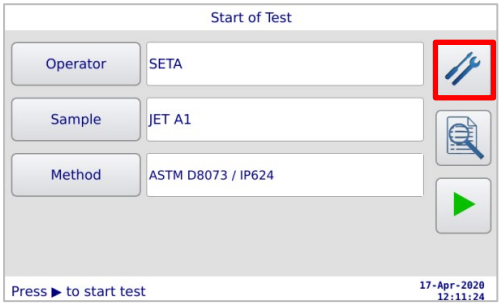
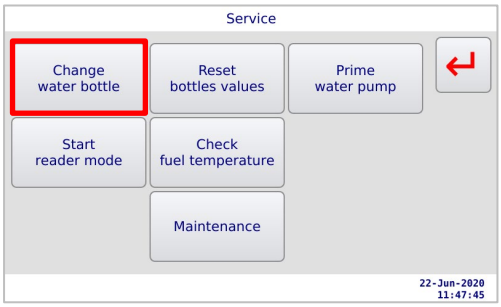
2.4.5.1 Manually priming the dyed water system

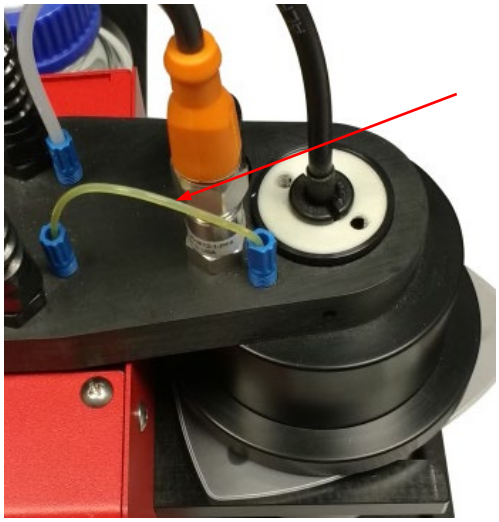
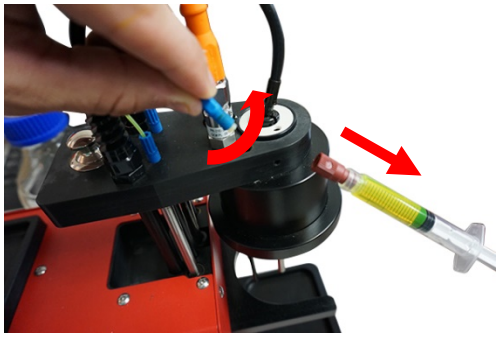
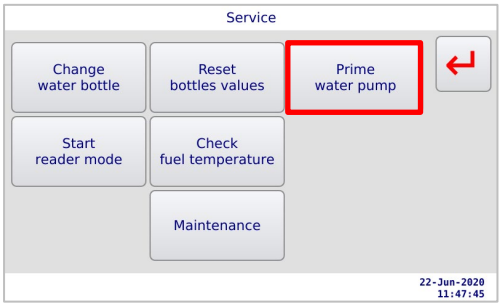
NOTE – You should only complete this procedure if you were unable to prime the dyed water system in section 2.4.5.

Before the WSI is transported, the dyed water system is pumped dry to prevent damage during transportation. As the system is filled with air, the instrument may not be able to pump dyed water upon first use. If the pump does not prime, manually prime the dyed water system using the syringe assembly (SA9001-005) provided in the start-up kit (SA9001-0).

To manually prime the dyed water system:

1.	Switch on the WSI using the on/off switch.	
2.	If you have not already done so, firmly press the bottle onto the needle of the dyed water bottle holder. Make sure the needle has fully penetrated the seal of the bottle.	
3.	Unscrew the water delivery hose from the top of the sonicator arm.	

4.	Screw the syringe assembly onto the end of the water delivery hose until finger tight.	
5.	Press  .	
6.	Press **Service** from the Tools and Settings menu.	
7.	Press **Change water bottle** while you gently pull on the plunger of the syringe.	 

8.	If you can see bubbles in the water delivery hose on the top of the sonicator arm, press **Change water bottle** again.	
9.	When the instrument stops pumping, unscrew the syringe assembly from the end of the water delivery hose.	
10.	Screw the water delivery hose into the top of the sonicator arm.	
11.	Place a paper towel onto the drip tray and press **Prime water pump** to fill the dyed water outlet tube.	

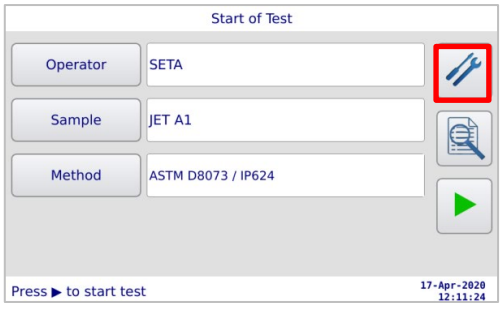
12.	Press ↵ to return to previous screens.	

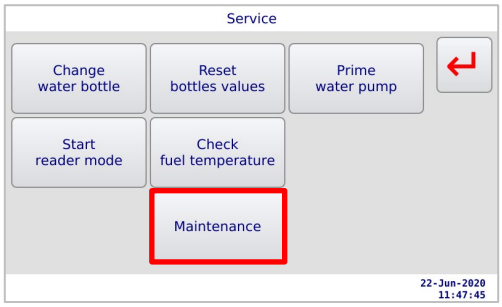
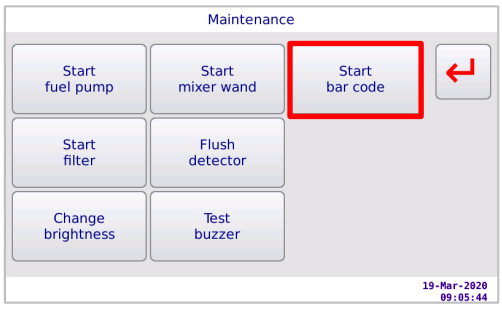
2.4.6 Testing the barcode reader

NOTE – The barcode reader is an optional feature. If you do not have a barcode reader, you do not need to complete the following steps.

You must test the barcode reader before you use it for the first time.

To test the barcode reader:

1.	Plug the barcode reader into the USB port on the WSI.	
2.	Switch on the WSI using the on/off switch.	
3.	Press .	

4.	Press **Service**.	
5.	Press **Maintenance**.	
6.	Press **Start bar code**.	
7.	Scan a barcode.	
8.	Check that a barcode number displays at the bottom of the screen. **NOTE** – When scanning a barcode that is more than 14 characters long, only the last 14 characters will be used by the system.	
9.	Press **Stop bar code** when you have finished testing the barcode reader.	
10.	Press ↵ to return to previous screens.	

3 User interface

The Water Separation Instrument has a simple user interface. You can navigate through the interface using the touchscreen.

3.1 Navigation

3.1.1 Touchscreen

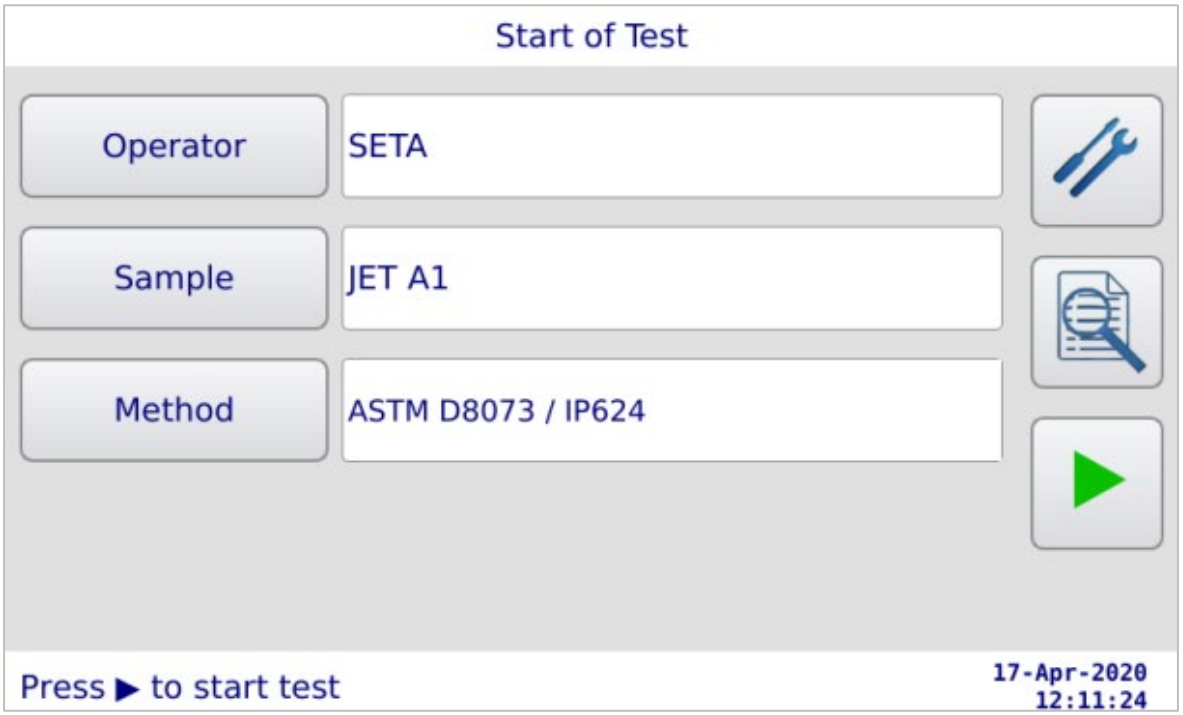


Figure 5 shows the **Start of Test** screen. You run tests, access settings, and maintenance screens from here.

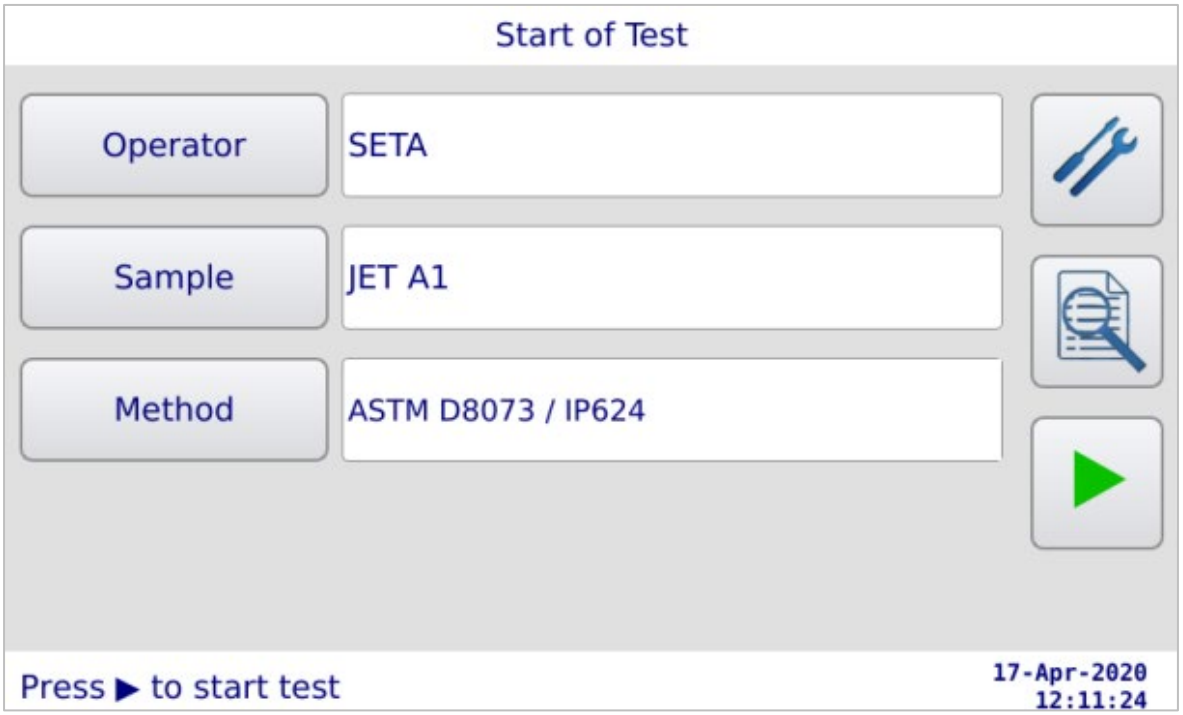


Figure 5: Start of Test

3.1.2 User interface map

Figure 6 shows a map of the user interface.

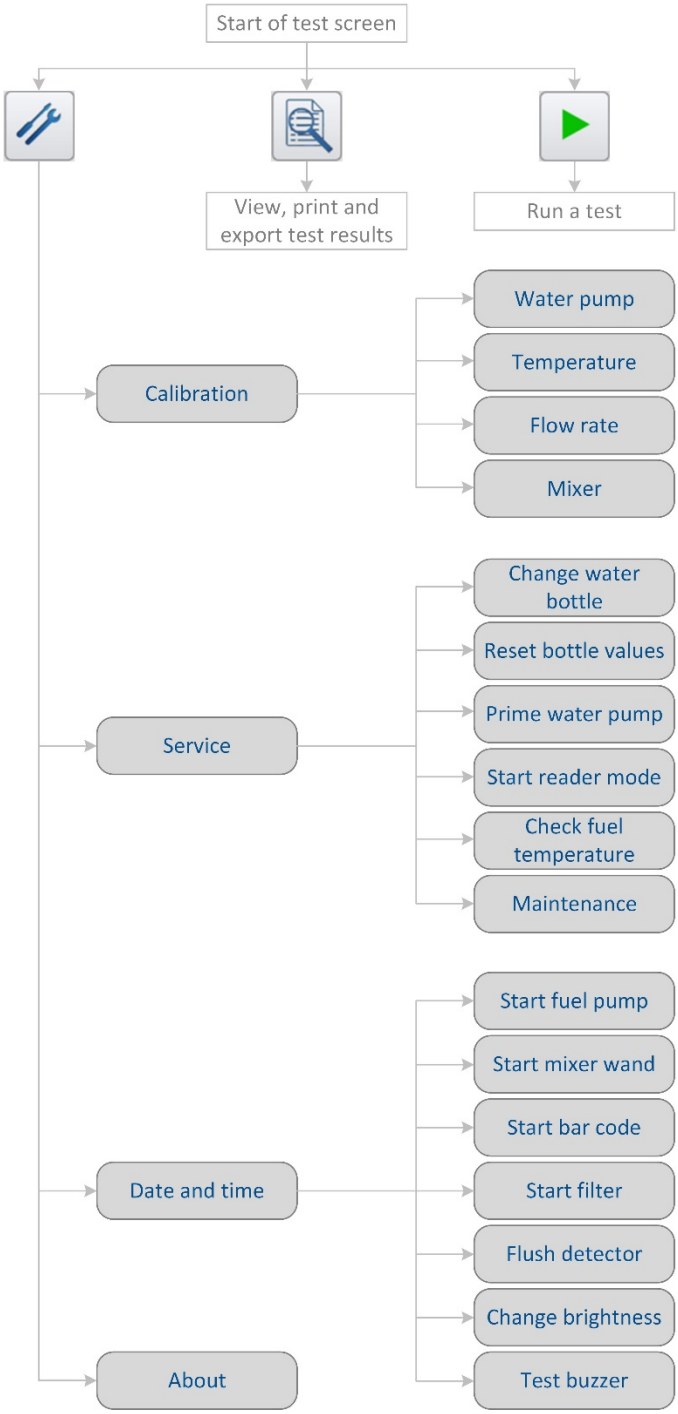
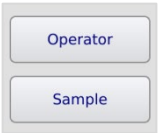


Figure 6: User interface map

3.1.3 Data entry

You can enter data in the following ways.

Data field		Press to enter a value. A keyboard displays. Press ✓ on the keyboard to confirm an entry.

4 Operation

4.1 Preparing the sample

To prepare the sample:

Prepare the sample in accordance with the test method. Failure to do so will affect the accuracy of the test.

1.	Prepare the sample in accordance with the test method.

4.2 Preparing the instrument

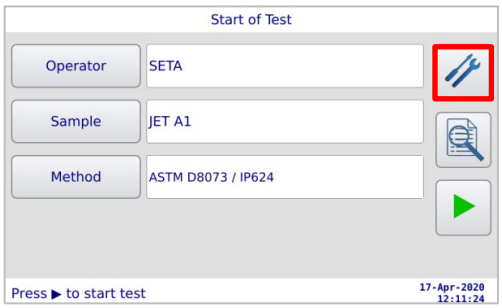
Check that the Water Separation Instrument is set up as described in section 2.4 before you run a test.

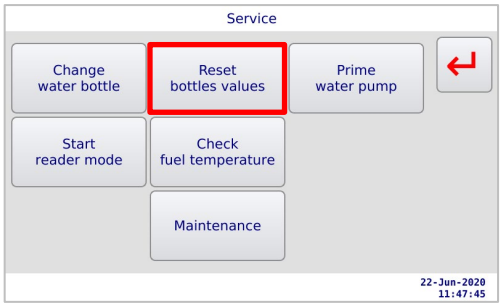
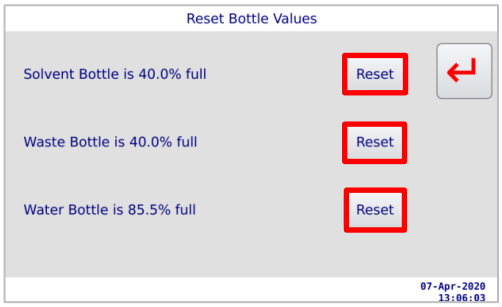
4.2.1 Checking fluid levels

Check fluid levels and make sure the test beaker is empty and clean before you run a test. Failure to do so will affect the accuracy of the test.

To check fluid levels:

1.	Make sure the solvent bottle with laboratory grade (>99% pure) Isopropyl Alcohol (also known as Propan-2-ol or IPA).	
2.	Empty the waste bottle.	

3.	Check the dyed water bottle contains enough dye to cover the needle.	
4.	Switch on the WSI using the on/off switch.	
5.	Press  .	
6.	Press **Service**.	

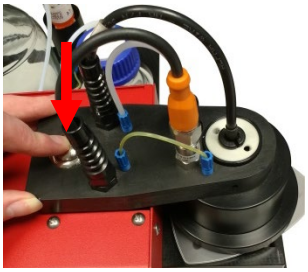
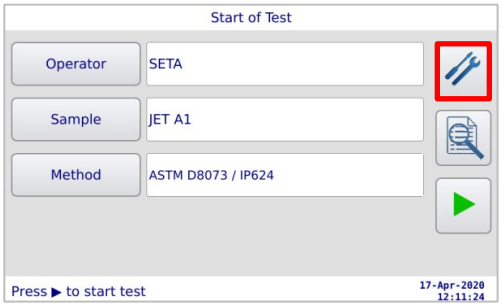
7.	Press **Reset bottle values**.	
8.	If you filled the solvent bottle, emptied the waste bottle or replaced the water bottle at the start of this procedure, press **Reset** for the bottle you altered. **NOTE** – When you press Reset, the bottle values reset to the following: • Waste bottle – 0.0% • Water bottle – 100.0% • Solvent bottle – 100.0%	
9.	Press ↵ to return to previous screens.	

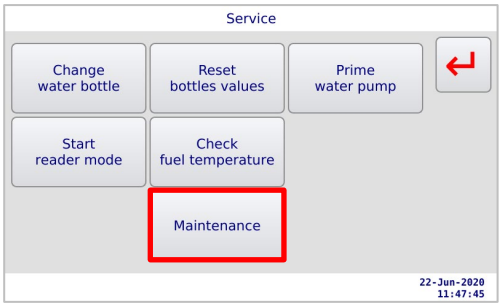
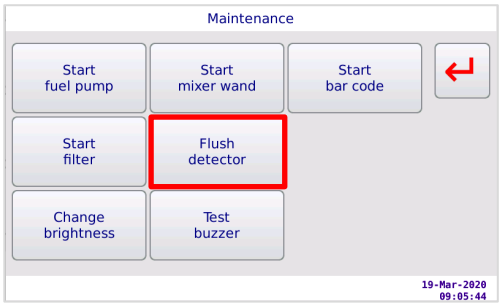
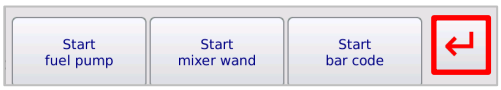
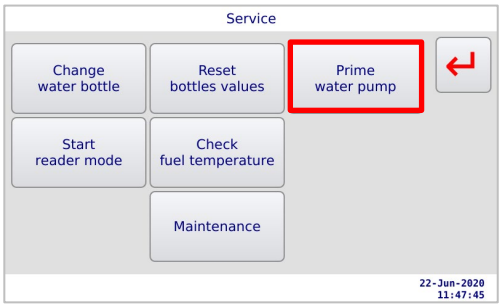
4.2.2 Flushing the instrument

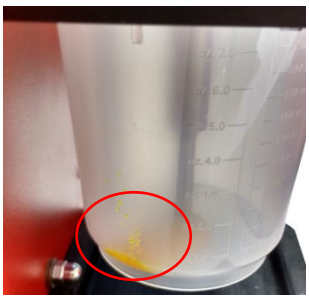
Flush the instrument to fill all internal tubing with clean solvent and dyed water before you run a test. Failure to do so will affect the accuracy of the test.

To flush the instrument:

1.	Switch on the WSI using the on/off switch.	

2.	Place an empty test beaker on the test beaker holder as follows:		
	2.1	Press the sonicator release button to lift the sonicator arm.	
	2.2	Place the empty test beaker in the test beaker holder. **NOTE** – One of the beaker ears should point away from the instrument.	
	2.3	Push and hold down the sonicator arm.	
	2.4	Press the sonicator release button to lock the sonicator arm in place.	
3.	Press .		
4.	Press **Service**.		

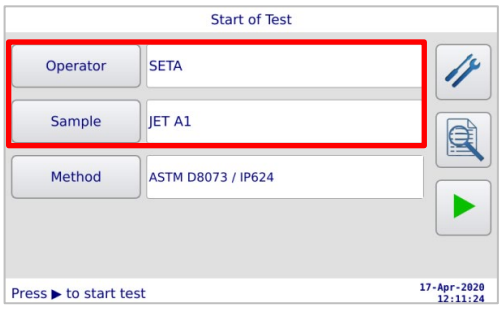
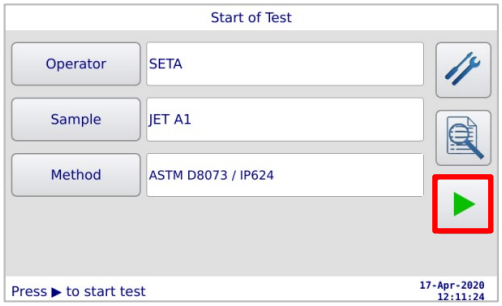
5.	Press **Maintenance**.	
6.	Press **Flush detector**.	
7.	Check that solvent reaches the waste bottle. If solvent does not reach the waste bottle, press **Flush detector** again.	
8.	Press ↵ to return to the Service menu.	
9. 	Press **Prime water pump**. **NOTE** - Approximately 0.6 ml of dyed water is dispensed into the test beaker.	

10.	Check that dyed water is visible at the bottom of the test vessel. If dyed water is not visible, press **Prime water bottle** again.	
11.	Press ↵ to return to previous screens.	
12.	Remove and empty the test beaker.	
13.	The WSI is now ready to run a test.	

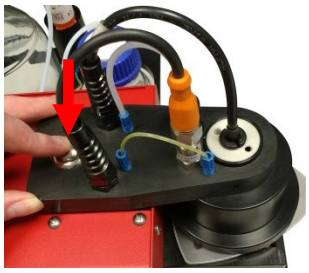
4.3 Running a test

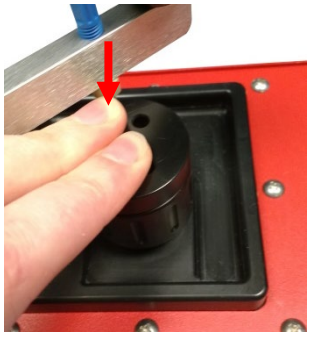
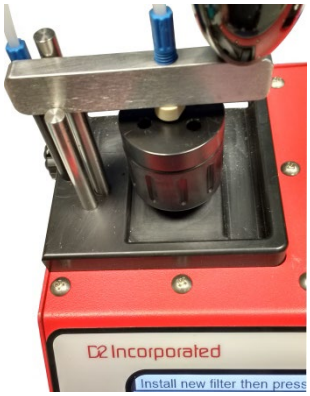
To run a test:

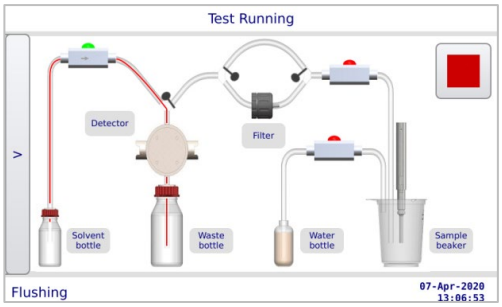
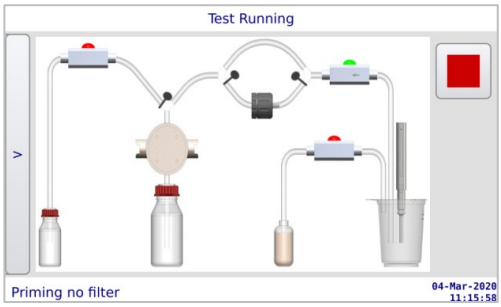
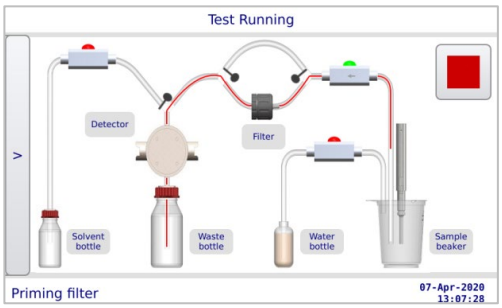
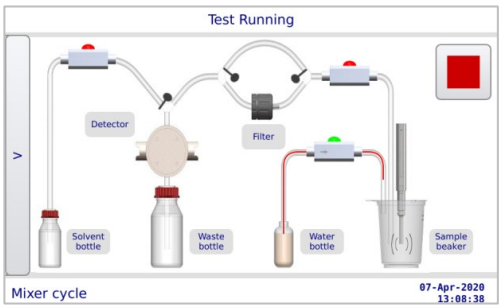
You must prepare the sample and instrument by following the steps in sections 4.1 and 4.2. Failure to do so will affect the accuracy of the results.

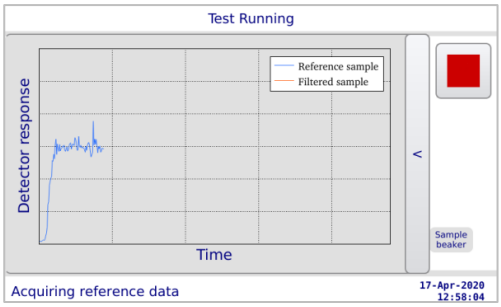
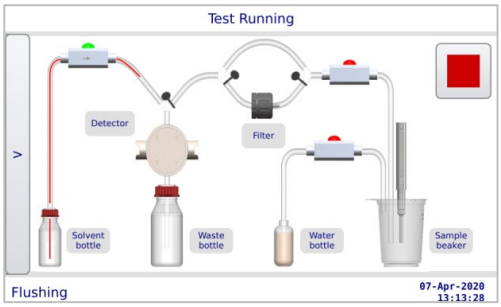
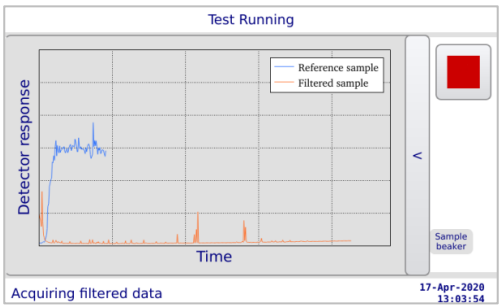
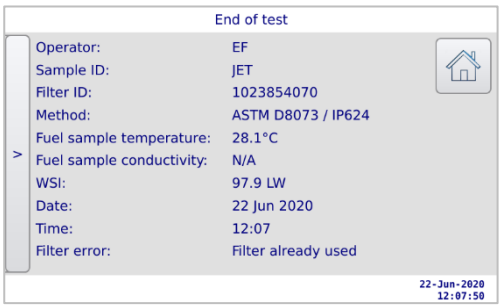
1.	Press the Operator field and enter your name.	
2.	Press the Sample field and enter a sample description. **NOTE** – If the barcode reader is connected to the USB port, you can scan the sample ID.	
3.	Press ▶.	

4.	Add fuel to the test beaker as follows:		
	4.1	Press the sonicator release button to lift the sonicator arm.	
	4.2	Use a lint free cloth to wipe the sonicator, sample inlet tube and temperature probe to remove sample residues from other tests.	
	4.3	Gently tumble the test specimen in its original container from end-to-end five times.	
	4.4	Pour 220 ml ±10 ml of the test specimen into a clean test beaker. **NOTE** – You can use the markings on the test beaker as a guide for measuring the test specimen volume.	

	4.5	Place the test beaker on the test beaker holder. **NOTE** – One of the beaker ears should point away from the instrument.	
	4.6	Press **Next**.	
5.	Lock the sonic wand into place as follows:		
	5.1	Push and hold down the sonicator arm.	
	5.2	Press the sonicator release button to lock the sonicator arm in place.	
	5.3	Press **Next**.	
6.	Install a new filter as follows:		
	6.1	Lift up the cartridge locking handle and push it away from you.	

	6.2	Remove the old filter catridge.	
	6.3	Install a new filter cartridge.	
	6.4	Press down firmly on the new filter cartridge to ensure that the taper on the bottom of the cartridge locates securely in the filter port.	
	6.5	Lift the filter locking handle up, pull it towards you and release it so the tip of the filter tubing fits into the centre hole of the filter cartridge. **NOTE** - Make sure you engage the tip of the filter tubing with the hole in the filter cartridge.	
	6.6	Press **Next**.	
	NOTE - When the test begins, the following sequence occurs automatically:		

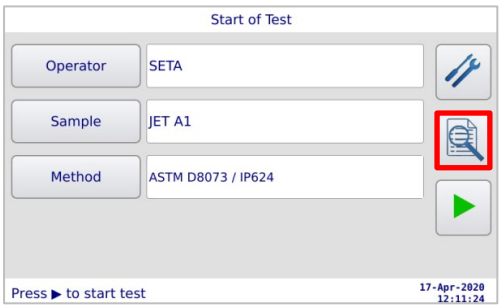
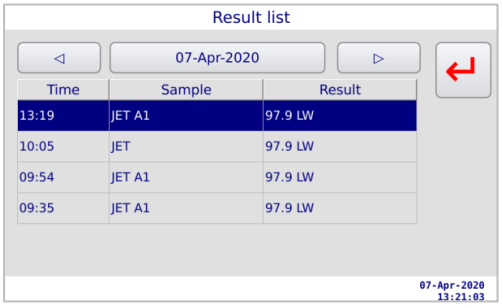
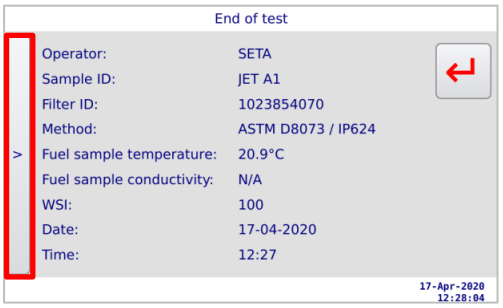
	Test specimen is flushed through the sysyem to purge the previous sample.	
	The instrument is primed.	
	The filter is primed.	
	Dyed water is added to the test specimen. The sonicator cycles on and off to form an emulsion test specimen.	 

	The system acquires reference data.	
	The instrument flushes again.	
	The system acquires filtered data.	
	Final results display.	
	NOTE - Check that less than 50 ml of test specimen remains in the test beaker. More than 50 ml of test specimen in the test beaker indicates one of the following problems: • There is an air leak. See section 6 to remedy an air leak. • The particulate filter is blocked. See section 7.6.3 to unblock the particulate filter. • The fuel volume requires calibration.See section 5.3 to calibrate fuel volume.	

4.4 Viewing test results

The WSI saves test results to its internal memory.

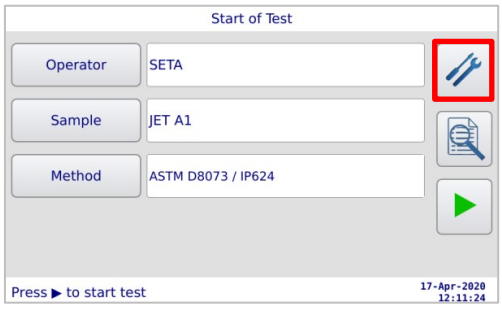
To view test results:

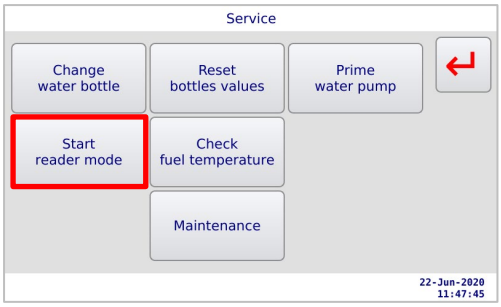
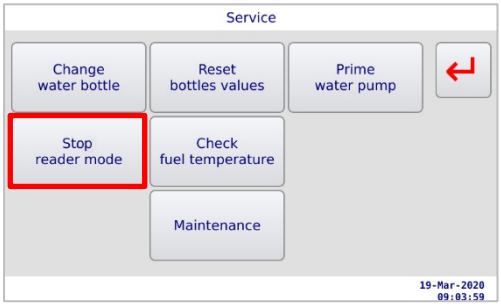
1.	Press .	
2.	Press a result to view it.	
3.	Press the arrow on the left of the screen to view result on a graph.	

4.5 Saving test results to a computer

You can view files on a computer and save results to a computer. The WSI appears as an external device on your computer. When you open the WSI as a device on your computer, you can view results files and save them onto your desktop. Results open as txt. files, these can be imported into other applications.

To save test results to a computer:

1.	Plug the mini B end of a mini B USB cable into the USB mini port.	
2.	Plug the other end of a mini B USB cable into a USB port on your computer.	
3.	Press  .	
4.	Press **Service**.	

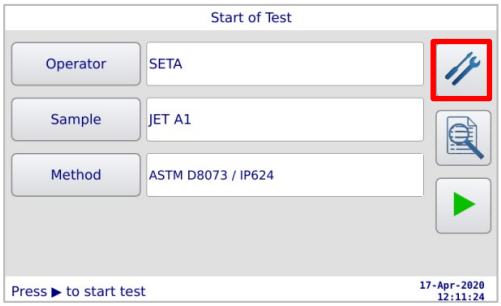
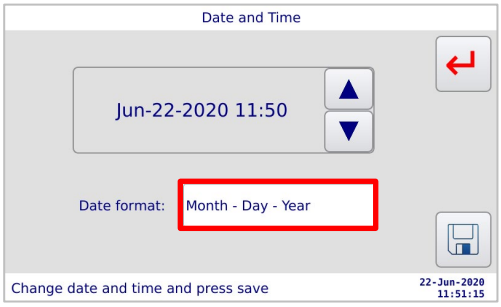
5.	Press **Start reader mode**. **NOTE** – Your computer should recognise the WSI and prompt you to view files.	
6.	Select the WSI on your computer to view files. **NOTE** - Results save in the RESULTS folder.	
7.	Select the RESULTS folder on your computer. **NOTE** - File names are presented in the following format: Instrument ID_ date_ time_ sample ID	
8.	Select a results file on your computer to view it. **NOTE** – Each file contains the following information: • Raw data • Calibration constants • Settings • User entry data • Intermediate computed results • Final results	
9.	Save the file to a location on your desktop.	
10.	Press **Stop reader mode**.	
11.	Press ↵ to return to previous screens.	

4.6 Changing settings

4.6.1 Setting the date and time

In addition to setting the date and time on your instrument, you can change the way you view the day/month.

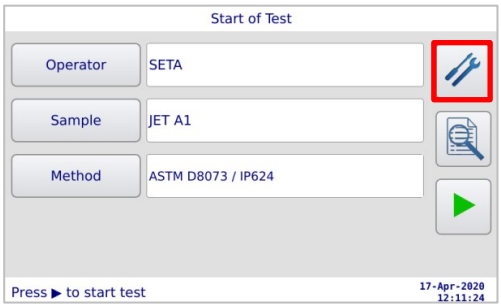
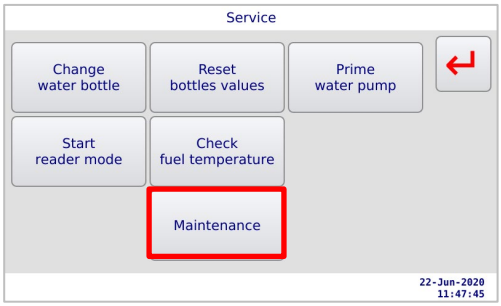
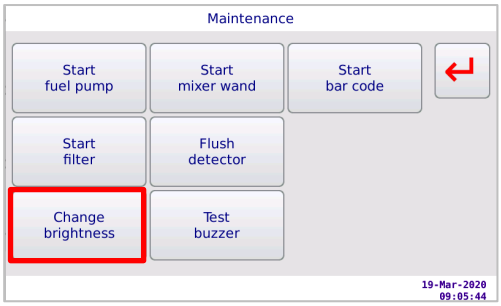
To set the date and time:

1.	Press .	
2.	Press **Date and time**.	
3.	Press any of the following: • Day • Month • Year • Hours • Minutes Use the arrow buttons to change the stored value.	
	**NOTE** – Press the **Date format** box if you want to change the way you view the month/day.	
4.	Press .	

5.	Press ↵ to return to previous screens	

4.6.2 Adjusting the screen brightness

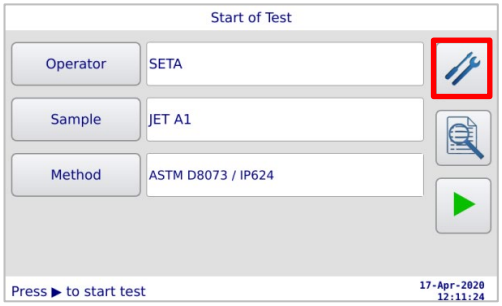
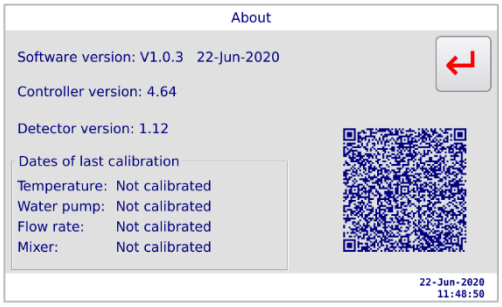
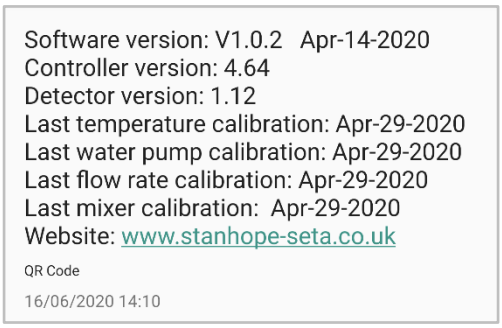
To adjust the brightness of the screen:

1.	Press 🔧.	
2.	Press **Service**.	
3.	Press **Maintenance**.	
4.	Press **Change brightness** to change the brightness to various levels.	
5.	Press ↵ to return to previous screens.	

4.7 Checking software and firmware versions

You can check the software and firmware versions installed on the Water Separation Instrument.

To check software and firmware versions:

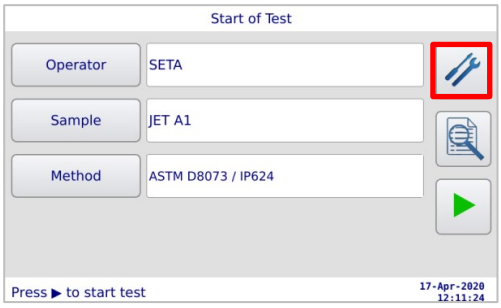
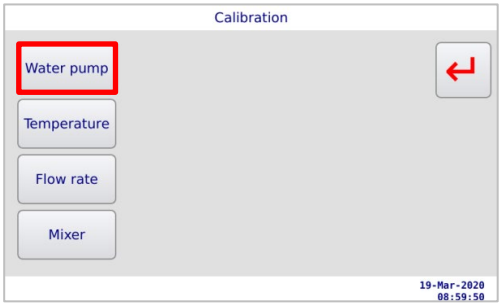
1.	Press on the main Start of Test screen.	
2.	Press **About** to display the software version, controller version and detector version.	 
	NOTE – You can also view the data on your smartphone or tablet by scanning the QR code. The display format may vary depending on the app and device used.	
3.	Press ↵ to return to previous screens.	

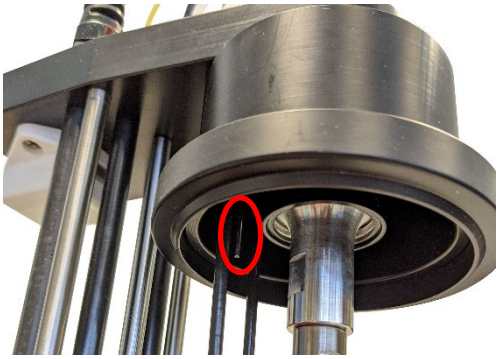
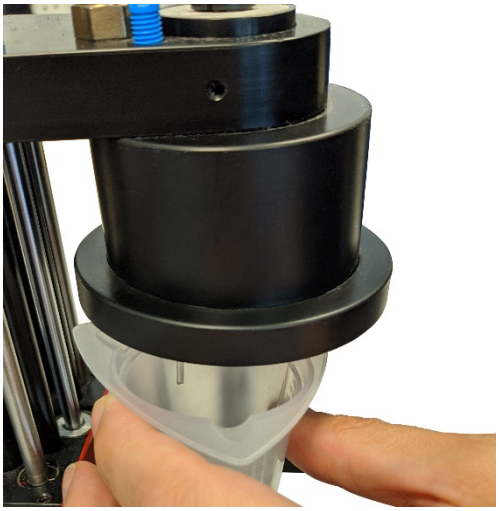
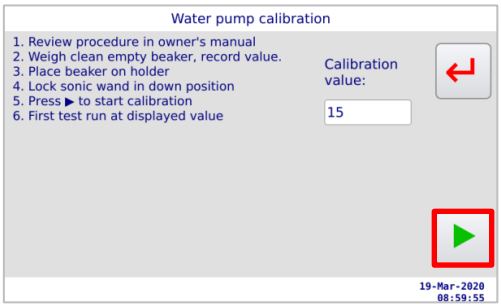
5 Calibration and verification

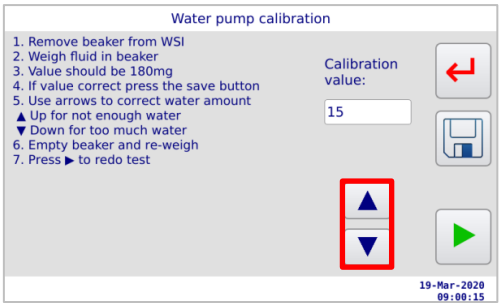
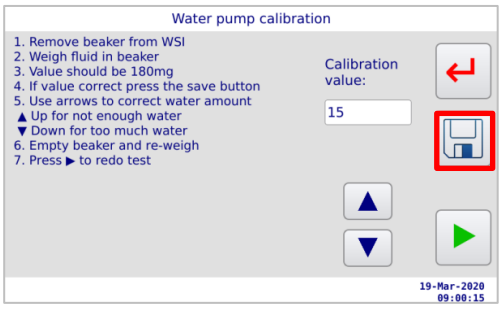
5.1 Water pump calibration

The water pump pumps dyed water into the sample cup. You must calibrate the water pump at least every 6 months.

To calibrate the water pump:

1.	Press  .	
2.	Press **Calibration**.	
3.	Press **Water pump**.	
4.	Weigh a clean test beaker in milligrams and record the value. **NOTE** – We recommend that you use a small test beaker.	

5.	Hold the beaker under the dyed water outlet needle.	 
6.	Press ▶. **NOTE** – Water is pumped three times into the test beaker.	
7.	Once the water has stopper pumping, weigh the test beaker again.	
8.	Subtract the original value from the new value to calculate the mass of dyed water in the beaker.	
9.	To comply with the test method, convert the results from mg to ml using the following equation: $$Volume\ (ml) = \frac{Mass\ (mg)}{2994}$$	
10.	If the calculated value falls within the range specified by the test method, continue to step 11. If the calculated value does not fall within the range specified by the test method, perform the following steps:	

		NOTE - The number displayed has no units but represents the quantity of dyed water that is pumped. It has an arbitrary value that you need to adjust to obtain the correct mass of dyed water in the beaker.	
	10.1	Use the up/down arrows to adjust the quantity of dyed water that is pumped. • Press the up arrow to increase the value. • Press the down arrow to decrease the value.	
	10.2	Empty, clean and reweigh the test beaker.	
	10.3	Repeat steps 5-10. **NOTE** – This is an iterative process. You may have to repeat it multiple times.	
11.	Press 💾.		
12.	Press ↵ to exit calibration.		

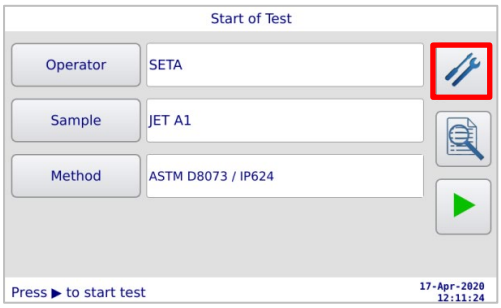
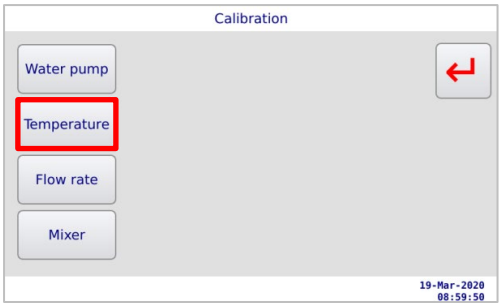
5.2 Temperature calibration

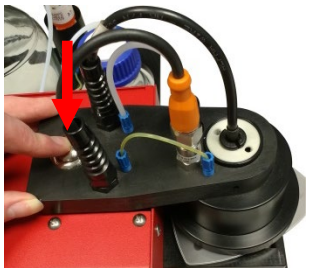
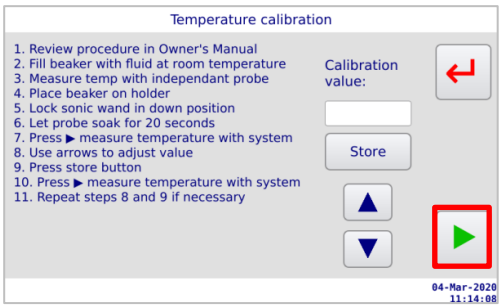
A temperature probe measures the temperature of the sample cup. You must calibrate the temperature probe at least every 6 months.

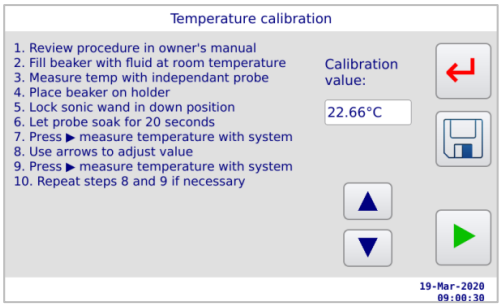
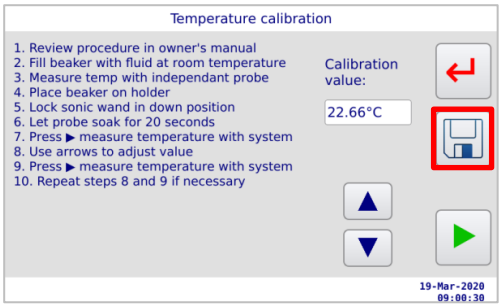
The temperature probe is calibrated using a digital reference thermometer with a 6 mm probe, such as the one listed in section 9.1.1.

To calibrate the temperature sensor:

NOTE – You need a digital reference thermometer.

1.	Press .	
2.	Press **Calibration**.	
3.	Press **Temperature**.	
4.	Fill a clean test beaker with 150 ml of water at room temperature.	
5.	Measure the temperature of the water in the test beaker using a digital reference thermometer with a 6 mm probe.	

6.	Place the test beaker on the test beaker holder as follows:		
	4.1	Press the sonicator release button to lift the sonicator arm.	
	4.2	Place the test beaker in the test beaker holder. **NOTE** – One of the beaker ears should point away from the instrument.	
	4.3	Push and hold down the sonicator arm.	
	4.4	Press the sonicator release button to lock the sonicator arm in place.	
7.	Wait at least 20 seconds for the temperature probe to equilibrate.		
8.	Press ▶.		
9.	If the temperature displayed at the top of the screen matched the temperature measured by the digital thermometer, continue to step 10. If the temperature displayed at the top of the screen does not match the temperature measured by the digital thermometer, complete the following steps:		

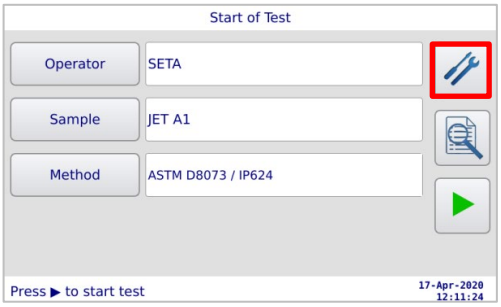
	9.1	Use the arrows to adjust the displayed temperature to match the temperature measured by the digital thermometer.	
	9.2	Press .	
	9.3	Repeat steps 8-9.	
10.	Press ↵ to exit calibration.		

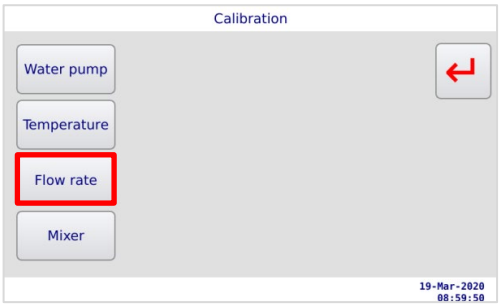
5.3 Flow rate calibration

The WSI controls the amount of fuel that pumps through the instrument. You must calibrate fuel volume at least every 6 months.

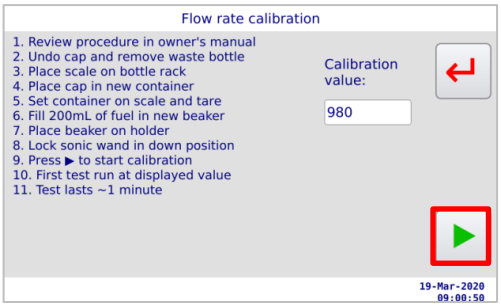
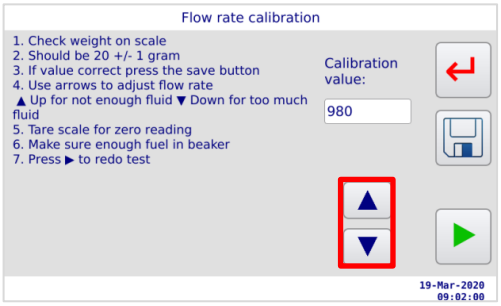
To calibrate fuel volume:

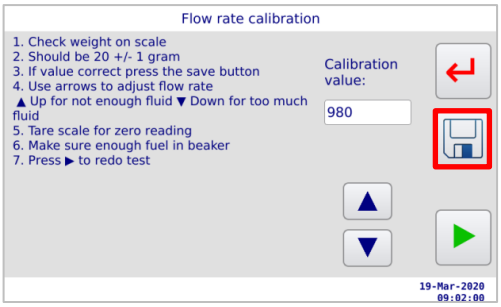
NOTE – You must know the density of your fuel before you begin this procedure. The typical density of Jet A-1 fuel at 15˚C is 0.8 g/cm^3.

1.	Press .	

2.	Press **Calibration**.	
3.	Press **Flow rate**.	
4.	Remove the cap from the waste bottle.	
5.	Remove the waste bottle from the bottle holder.	
6.	Weigh a clean test beaker in grams and record the value. **NOTE** – The onscreen instruction tells you to place a scale on the bottle rack. This is not always practical so we recommend you use the weighing method described below.	

7.	Place the test beaker in the bottle holder where the waste bottle normally sits.		
8.	Place the waste container cap inside the test beaker.		
9.	Pour 200 ml of fuel into a clean test beaker.		
10.	Place the test beaker on the test beaker holder as follows:		
	10.1	Press the sonicator release button to lift the sonicator arm.	
	10.2 	Place the test beaker in the test beaker holder. **NOTE** – One of the beaker ears should point away from the instrument.	
	10.3	Push and hold down the sonicator arm.	
	10.4	Press the sonicator release button to lock the sonicator arm in place.	

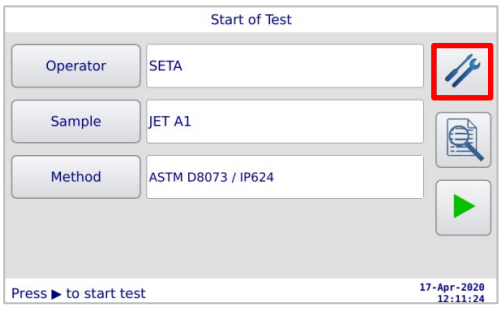
11.	Press ▶. **NOTE** – The instrument runs for approximately 1 minute.	
12.	Remove the test beaker from the bottle holder at the back of the WSI when the pump stops running.	
13.	Weigh the test beaker again.	
14.	Subtract the original value from the new value to calculate the mass of fuel in the beaker.	
15.	To comply with the test method, convert the results from g to ml using the following equation: $$Volume\ (ml) = \frac{Mass\ (g)}{Density\ (\frac{g}{cm^3})}$$	
16.	If the calculated value is within the values specified by the test method, continue to step 17. If the calculated value is not within the values specified by the test method, perform the following steps:	
	NOTE - The number displayed has no units but represents the quantity of fuel that is pumped. It has an arbitrary value that you need to adjust to obtain the correct mass of fuel in the beaker.	
	16.1 Use the up/down arrows to adjust the quantity of fuel pumped. • Press the up arrow if the weight calculated is too low. Press the down if the weight calculated is too high.	
	16.2 Empty and reweigh the test beaker.	
	16.3 Repeat steps 6-16. **NOTE** – This is an iterative process. You may have to repeat it multiple times.	

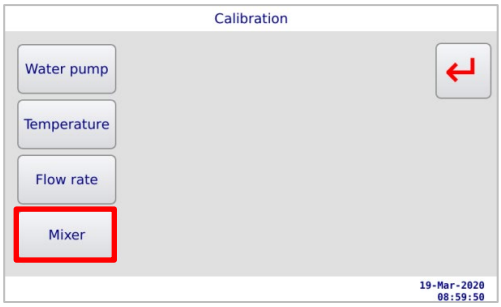
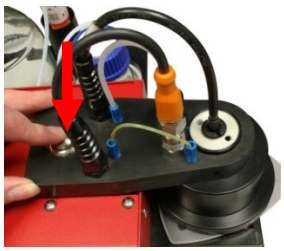
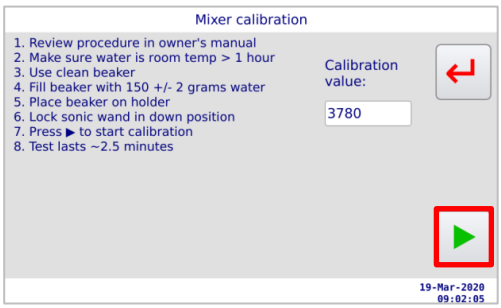
17.	Press .	
18.	Press ↵ to exit calibration.	

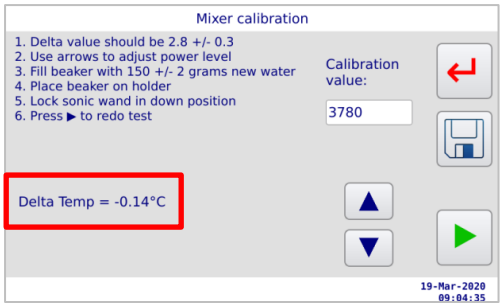
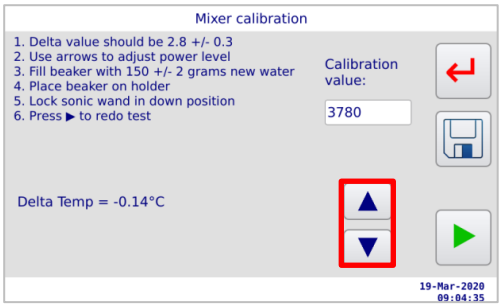
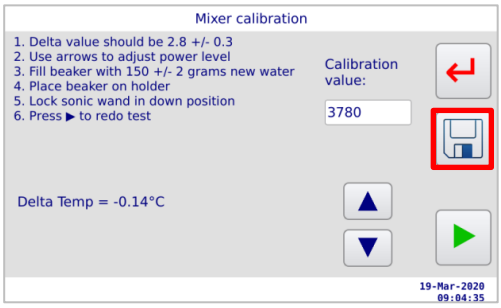
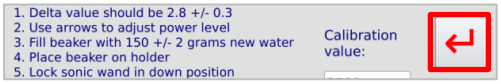
5.4 Mixer calibration

The sonicator mixes the test samples and dyed water into an emulsion. You must calibrate the mixer at least every 6 months.

To calibrate the mixer:

1.	Leave 1000 ml of water to stand until it reaches room temperature. **NOTE** – Check the water is at room temperature using the digital thermometer, such as the one listed in section 9.1.1.	
2.	Press .	
3.	Press **Calibration**.	

4.	Press **Mixer**.	
5.	Fill a test beaker with 150 g ±2 g of room temperature water.	
6.	Place the test beaker on the test beaker holder as follows:	
	6.1 Press the sonicator release button to lift the sonicator arm.	
	6.2 Place the test beaker in the test beaker holder. **NOTE** – One of the beaker ears should point away from the instrument.	
	6.3 Push and hold down the sonicator arm.	
	6.4 Press the sonicator release button to lock the sonicator arm in place.	
7.	Press ▶. **NOTE** – The instrument runs for approximately 2.5 minutes.	

8.	If the delta value displayed at the bottom of the screen is 2.8 ±0.3, continue to step 9. If the delta value displayed is greater or less than 2.8 ±0.3, complete the following steps.	
	NOTE - The number displayed has no units but represents the power level of the sonicator. It has an arbitrary value that you need to adjust to obtain the correct delta value. 8.1 Use the up/down arrows to adjust the power level. • Press the up arrow if the delta value is too low. • Press the down arrow if the delta value is too high.	
	8.2 Repeat steps 5-8. **NOTE** – This is an iterative process. You may have to repeat it multiple times.	
9.	Press 💾.	
10.	Press ↵ to exit calibration.	

5.5 Verification

Verify the performance of the Water Separation Instrument using reference fluid and dispersing agent listed in section 9.1.1, at least once every 6 months.

To verify the instrument:

NOTE – You need a pipette (SA4021-001), reference fluid base (SA9004-0) and dispersing agent (SA9005-0) to perform the following task.

1.	Follow the instructions in section 4.3 and run a test using the reference fluid base (SA9004-0). **NOTE** – The result should be 97.5 to 100 WSI.	
2.	Using the pipette, comply with the value specified in the test method and create a mixture of reference fluid (SA9004-0) and dispersing agent (SA9005-0) by performing the following steps:	
	2.1	Pour 220 ml of reference fluid base into a plastic beaker.
	2.2	Pipette 88 µl (0.088 ml) of dispersing agent into the reference fluid base to create a 0.4 ml/l mixture. **NOTE** – To create a 0.6 ml/l mixture you must use 132 µl (0.132 ml) of dispersing agent. To create a 0.8 ml/l mixture you must use 176 µl (0.176 ml) of dispersing agent
	2.3	Stir the mixture well.
3.	Follow the instructions in section 4.3 and run a test using the reference fluid and dispersing agent mixture.	
4.	Compare the result with the value specified in the test method.	
5.	If either result is outside the specified value, return to step 1 and repeat the verfiication procedure. If the results are consistently outside the specified values, calibrate the instrument.	

6 Troubleshooting

Fault	Cause	Resolution
Erroneous display fault	Random program error	1. Switch off the instrument. 2. Wait 5 seconds. 3. Switch on the instrument. 4. If the problem persists, contact Stanhope-Seta.
Display does not light up when you switch on the instrument.	No power to the instrument	Check that the power supply is connected, available and switched on.
	Fuse has blown	Check fuse and replace if necessary. Refer to section 7.6.2 for details of how to change the fuse.
Water separation index value not as expected	Sample contaminated	1. Check sample for contamination. 2. Clean the test beaker, sonicator, sample inlet tube and temperature probe.
	Poor sample preparation	Prepare a fresh sample in accordance with the test method.
No dyed water flow	Pump is unable to prime	Manually pull dyed water through the instrument. Refer to section 2.4.5.1 for details on manually priming the dyed water.
	Air leak	1. Check the tightness of tube connectors at the rear of the instrument and top of the sonicator arm. 2. Replace a connector if there are signs of a leak. 3. Follow the instructions in section 4.2.2 to flush the instrument.
	Blocked injection tip	1. Check the tip of the dyed water outlet tube. 2. Gently insert a pin into the tip of the tube to clear any blockage. 3. Follow the instructions in section 4.2.2 to flush the instrument.
	Blocked needle port	Replace the needle port if necessary. Refer to section 7.5.1 for details of how to change the needle port.

Fault	Cause	Resolution
More than 50 ml of test specimen remains in the test beaker after running a test.	Air leak	1. Check the tightness of tube connectors at the rear of the instrument and top of the sonicator arm. 2. Replace a connector if there are signs of a leak.
	Blocked particulate filter	Replace the 100 mesh gauze and O-ring if necessary. Refer to section 7.6.3 for details on how to change the 100 mesh gauze and O-ring.
Cannot obtain correct water pump calibration results	Water is lost to the sonicator due to splashing	Follow the calibration instructions described in section 5.1
Error message: "**Filter is missing**"	No filter cartridge	Fit the instrument with a new filter cartridge as described in section 4.3
	Filter cartridge has an invalid Radio Frequency Identity Tag (RFID)	Perform one of the following: • Fit the instrument with a new filter cartridge as described in section 4.3 • Wait for the test to continue automatically. • If the problem persists, contact Stanhope-Seta.
Error message: "**Too much waste**"	There is too much fluid in the waste bottle	1. Empty the waste bottle. 2. Press > **Service > Reset bottle values**. 3. Press **Reset** next to the waste bottle.
Error message: "**Not enough water**"	There is not enough water in the dyed water bottle	1. Replace the dyed water bottle. 2. Press > **Service > Reset bottle values**. 3. Press **Reset** next to the water bottle.
Error message: "**Not enough solvent**"	There is not enough solvent in the solvent bottle	1. Fill the solvent bottle with solvent. 2. Press > **Service > Reset bottle values**. 3. Press **Reset** next to the solvent bottle.

Fault	Cause	Resolution
Error message: “**Communication issue occurred with the filter**”	The firmware is having trouble reading the RFID tag	Do the following: 1. Cancel the test 2. Remove the filter and then place it back on the instrument. 3. Restart the test If the error occurs again it may be an issue with the filter and you should try to use a different one. If the problem persists contact Stanhope-Seta.
Error message: “**Filter provided unexpected code**”		
Error message: “**Filter not changed**”	The filter was not swapped for a new one when prompted	Make sure you use a new filter for every test.
Error message: “**Error retrieving temperature**”	The firmware is having trouble reading the temperature probe or temperature board	Cancel the test and restart the instrument. If the problem persists contact Stanhope-Seta.
Error message: “**Not enough room on SD card**”	The SD card on the instrument is full	You must delete results from the instrument by doing the following: 1. Connect your WSI to a computer. 1. Press > **Service > Start reader mode**. 2. Open the **WSI > Results** folder. 3. Delete any unwanted results from the folder. 4. Press **Stop reader mode**. If the problem persists the SD may need replacing, contact Stanhope-Seta.
Error message: “**Could not open file**”	The firmware is having trouble communicating with the SD card	Cancel the test and restart the instrument. If the problem persists contact Stanhope-Seta.
Error message: “**Error retrieving SD card size**”		
Error message: “**Error initialising SD card**”		

7 Maintenance

You may invalidate your warranty if you do not follow the maintenance procedures provided in this handbook.

7.1 Before each test

7.1.1 Check fluid levels

Check fluid levels by following the instructions in section 4.2.1.

7.1.2 Flush the instrument

Flush the instrument by following the instructions in section 4.2.2.

7.2 Daily maintenance

7.2.1 At the end of each day

At the end of each day, preform the following tasks:

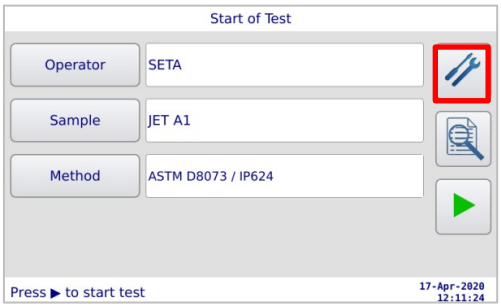
- Flush the instrument by following the instructions in section 4.2.2.
- Wipe the sonicator, temperature probe and sample inlet tube with a lint free cloth.
- Wipe the screen and case with a lint free cloth.

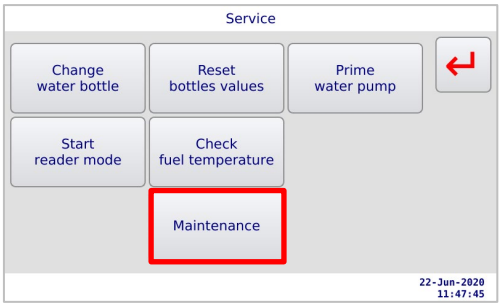
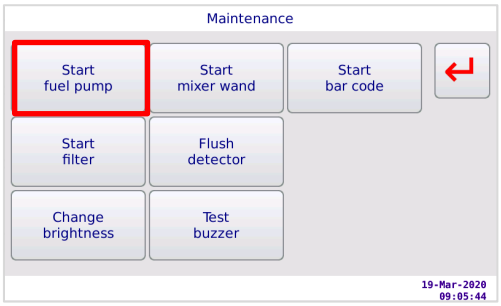
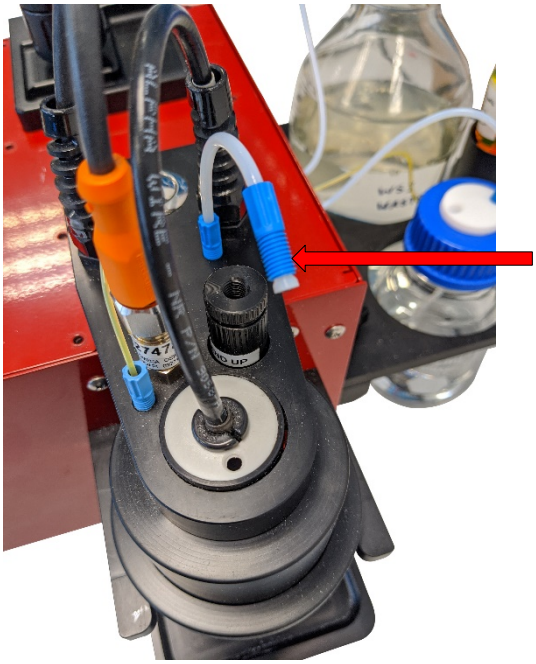
7.2.2 Cleaning the particulate filter

You must clean the particulate filter every 10 tests or so.

To clean the particulate filter:

NOTE – You need laboratory grade IPA and dry compressed air to complete the following task.

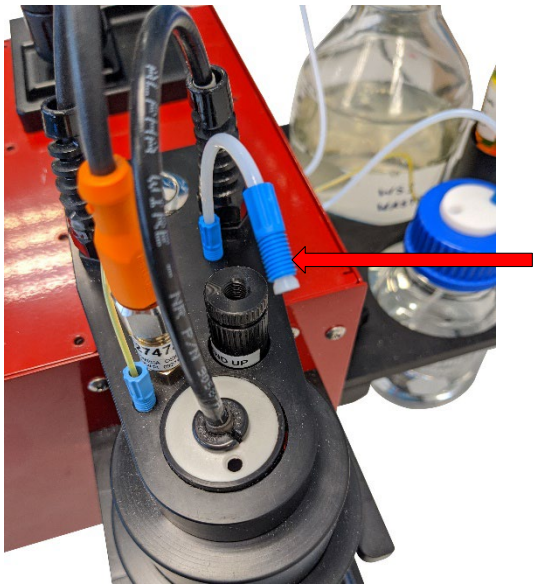
1.	Press .	
2.	Press **Service**.	

3.	Press **Maintenance**.	
4.	Press **Start fuel pump** and run the pump until you no longer see fluid run into the waste bottle, then press **Stop fuel pump**.	
5.	Switch off the instrument.	
6.	Unscrew the connector tubing from the top of the particulate filter.	

7.	Unscrew the particulate filter from the top of the sonicator arm.	
8.	Remove the O-ring from the base of the particulate filter.	
9. 	Inspect the O-ring for damage. **NOTE** – If necessary, replace the O-ring.	
10. 	Unscrew and open the particulate filter. **NOTE** – The image shows an extreme example of water retention on the mesh filter. Large amounts of water retention can affect the results that display on the on-screen graph when running a reference fluid.	

11.	Remove any excess water from the mesh filter using a lint free cloth.	
12.	Rinse the mesh half of the particulate filter twice using lab grade IPA.	
13. 	Dry the particulate filter thoroughly using dry compressed air. **Make sure you remove all trace of IPA.**	
14. 	Inspect the mesh filter for damage. **NOTE** – If necessary, replace the mesh filter.	

15.	Repeat steps 6 and 7 for the other half of the particulate filter.	
16.	Inspect the O-ring on the particulate filter and make sure it is in the correct position. **NOTE** – If necessary, replace the O-ring.	
17.	Tightly screw the two halves of the particulate filter back together.	
18.	Place the O-ring onto the thread that holds the particulate filter. **NOTE** – It is easier to screw the particulate filter onto the O-ring then it is to place the O-ring back inside the particulate filter.	

19.	Screw the particulate filter back onto the instrument.	
20.	Screw the connector tubing back onto the particulate filter.	
21.	Run a test on the instrument as described in section 4.3 using a reference fluid. **Keep an eye on the instrument and make sure there aren't any leaks when you run a test.**	

7.3 Regular maintenance

To check the instrument for signs of wear:

1.	Check the power lead for signs of wear and replace if necessary.
2.	Inspect all external tubing of the WSI and check for the following: • Tube connectors are tight • There are no signs of leakage Replace tubing and connectors if necessary.

7.4 6-monthly maintenance

7.4.1 Calibrate temperature sensor

Calibrate the temperature sensor every six months. Refer to section 5.2 for detailed instructions.

7.4.2 Calibrate water pump

Calibrate the water pump every six months. Refer to section 5.1 for detailed instructions.

7.4.3 Calibrate fuel volume

Calibrate the fuel volume every six months. Refer to section 5.3 for detailed instructions.

7.4.4 Calibrate mixer

Calibrate the mixer every six months. Refer to section 5.4 for detailed instructions.

7.4.5 Verify performance

Verify the performance of the Water Separation Instrument using reference fluid and dispersing agent every six months. Refer to section 9.1.1 for reference fluid details. Refer to section 5.5 for detailed instructions. Refer to the test method for more information on verification requirements.

7.5 Annual maintenance

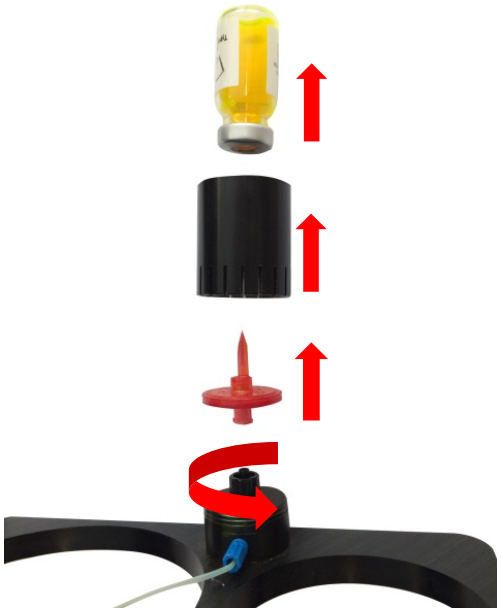
7.5.1 Replace the needle port

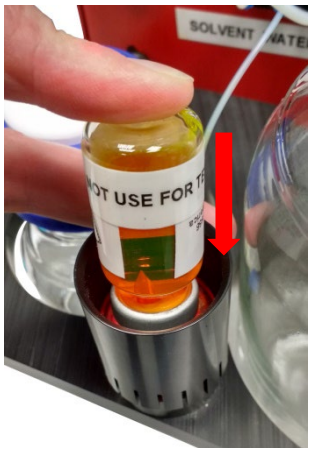
Replace the needle port every year.

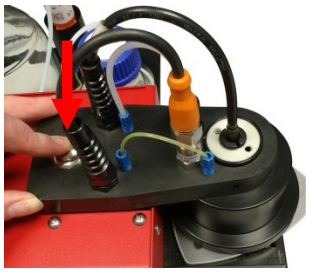
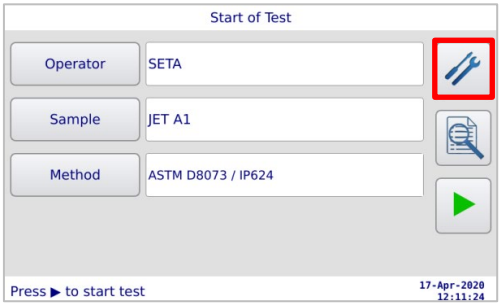
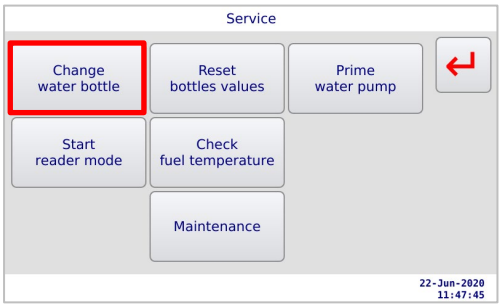
Avoid touching the needle port with bare hands to avoid growth of biological activity.

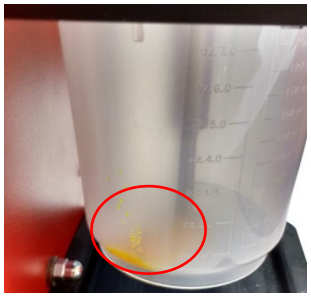
Do not open the sterile packaging the needle ports are stored in until the needle port is required.

To replace the needle port:

1.	Pull the dyed water bottle up off the needle port.	
2.	Pull the black sleeve off the bottle holder.	
3.	Unscrew the needle port to remove it from the bottle holder.	

4.	Screw the new needle port into the bottle holder.	
5.	Push the black sleeve back onto the bottle holder. You will hear a click when it is secure.	
6.	Turn the dyed water bottle upside down and firmly press the bottle onto the needle of the dyed water bottle holder.	
7.	Place an empty test beaker on the test beaker holder as follows:	
	7.1 Press the sonicator release button to lift the sonicator arm.	

	7.2 	Place the empty test beaker in the test beaker holder. **NOTE** – One of the beaker ears should point away from the instrument.	
	7.3	Push and hold down the sonicator arm.	
	7.4	Press the sonicator release button to lock the sonicator arm in place.	
8.	Press  .	
9.	Press **Service**.	
10.	Press **Change water bottle**.	

11.	Check that dyed water is visible at the bottom of the test vessel. If dyed water is not visible, press **Change water bottle** again. **NOTE** – If dyed water does not reach the test beaker after pressing **change water bottle** multiple times, manually prime the dyed water system, refer to section 2.4.5.1.	
12.	Press ↵ to return to previous screens.	

7.5.2 Replacing the solvent vapour vent

The solvent vapour vent minimises evaporation and relieves pressure to ensure the solvent is contained and delivered safely. You must replace the solvent vapour vent annually.

To replace the solvent vapour vent:

1.	Unscrew the old vapour vent from the solvent bottle. Suitably dispose of the old vapour vent.	

2.	Screw the new vapour vent into the solvent bottle.	

7.6 Other maintenance tasks

7.6.1 Cleaning the outside of instrument

Clean the instrument by wiping it with a soft cloth. Use methylated spirits to remove sample residues.

7.6.2 Changing the 6.3 A fuse

The Water Separation Instrument is fitted with a 6.3 A fuse, which is located in the top of the mains power cable socket.

To change the 6.3 A fuse:

Always isolate the electrical power supply before maintaining the instrument, as failure to do so may result in death or serious injury.

NOTE – You need a flat-bladed screwdriver to change the 6.3 A fuse.

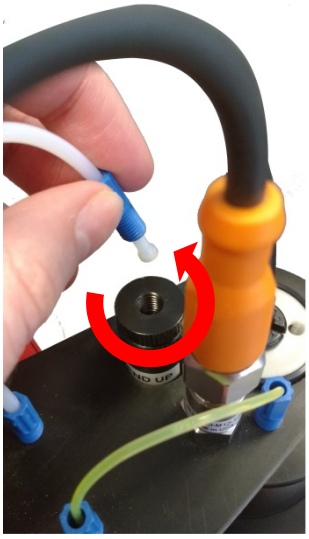
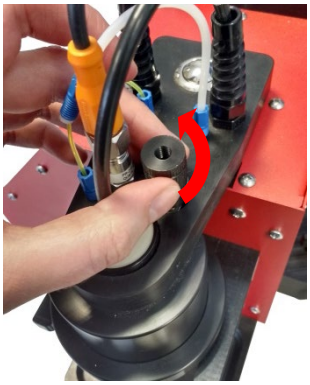
1.	Switch off the WSI using the on/off switch.	
2.	Switch off the power supply and remove the mains power cable.	

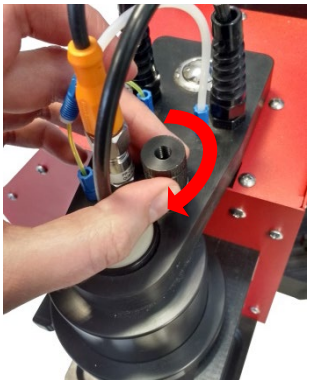
3.	Insert a small, flat-bladed screwdriver into the recess in the bottom of the fuse holder and lever the fuse holder outwards.	
4.	Remove the fuse holder from the instrument.	
5.	Remove the fuse from the fuse holder.	
6.	Fit a new 6.3 A anti-surge fuse in the fuse holder.	
7.	Insert the fuse holder back into the instrument until it clicks into place.	

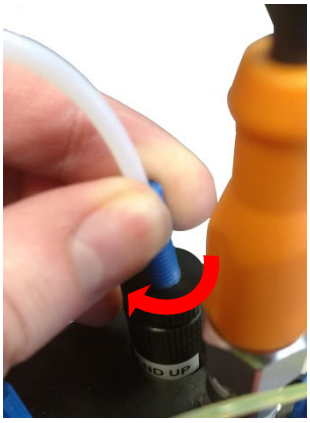
7.6.3 Replacing the gauze and O-ring of the particulate filter

If the particulate filter is blocked, replace the 100 mesh gauze and O-ring.

To replace the gauze and O-ring of the particulate filter:

1.	Unscrew the connector tubing from the top of the particulate filter.	
2. 	Unscrew the particulate filter from the top of the sonicator arm. **NOTE** – You may have to use a significant amount of force to unscrew the particulate filter.	

3.	Unscrew the top from the particulate filter. **NOTE** – You may have to use a significant amount of force to unscrew the top.	
4.	Remove the O-ring from the groove at the top of the filter.	
5.	Remove the 100 mesh gauze screen from the bottom of the particulate filter.	
6.	Remove the small O-ring from the bottom of the particulate filter.	
7.	Check the condition of the small O-ring and replace if necessary.	
8.	Place the small O-ring inside the particulate filter.	
9.	Place a new 100 mesh gauze screen in the particulate filter.	
10.	Place a new O-ring in the groove at the top of the filter.	
11.	Screw the top onto the particulate filter until it is finger tight.	
12.	Screw the particulate filter onto the sonicator arm until it is finger tight.	

13.	Screw the connector tubing to the top of the particulate filter until it is finger tight.	

8 Service and repair

Do not attempt to service or repair the WSI yourself. Stanhope-Seta or an approved representative must service and repair the instrument.

8.1 Returning to the factory

If you need to return the unit to our factory for repair, use adequate packing so it is not damaged in transit. Ideally, use the instrument's original packaging. Damage in transit may result in additional cost and time to rectify. Contact Stanhope-Seta for any help or advice you may need.

9 Accessories and Spares

9.1 Accessories

Part No.	Thumbnail	Description
SA9001-0		WSI Starter kit Includes 5 x filters, 5 x beakers, 1 x syringe and fitting and 1 x WSI dyed water bottle pack.
SA9002-0		IPA Solvent 1000 ml
SA9003-0		Mini USB cable

9.1.1 Calibration and verification

Part No.	Thumbnail	Description
30008-0		Precision plus digital thermometer -199-99 to + 199.99 °C. Resolution 0.01 °C. Accuracy ±0.1°C. Two point UKAS calibration at 55 and 150 °C and 80 mm immersion depth. Factory calibration at 55 and 150°C and 41.3 mm immersion depth. 6 mm × 100 mm probe.
83747-2		Pipette 50 to 250 µl
83748-2		Pipette tips Pack of 200.
99100-2		Analytical balance

Part No.	Thumbnail	Description
SA9004-0		WSI reference fluid base, 97.5 to 100 WSI 500 ml, suitable for two test runs.
SA9005-0		WSI dispersing agent 10 ml

9.2 Spares

Part No.	Thumbnail	Description
SA9000-001		WSI waste bottle 250 ml
SA9000-002		WSI solvent bottle 1000 ml
SA9000-003		Dyed water bottle needle port (sterile)
SA9000-005		Vapour vent for solvent bottle
SA9001-001		WSI Filter kit Pack of 10.
SA9001-002		WSI Beaker kit Pack of 10
SA9001-003		WSI particulate filter replacement kit Pack of 5 mesh gauze, 5 large filter O-rings and 5 small filter O-rings. 100 tests per mesh gauze.

Part No.	Thumbnail	Description
SA9001-004		WSI dyed-water bottle pack
SA9001-005		WSI syringe and fitting
SA9006-0		WSI connector kit Includes connector tubes and fittings for the waste tube, water tube and solvent tube.
SA9009-0		WSI annual service kit Includes sterile dyed water bottle needle port, vapour vent for solvent bottle, fittings, o-rings & mesh filters.

Appendix A. Installation and training checklist

For the Installation and training checklist, see the following pages.

Stanhope-Seta staff and representatives must complete the Installation and training checklist when installing equipment and training users at a customer site.

SetaAnalytics

INSTALLATION AND TRAINING CHECKLIST

Training summary	
Customer:	Location:
Instrument serial number:	Installation date:
Trainer:	Training company:
Operator:	Operator email:
Operator:	Operator email:
Operator:	Operator email:
Operator:	Operator email:
Operator:	Operator email:

Unpacking and physical checks	Completed
Review the condition of the packaging and photograph any damage.	☐
Check the Shock Watch, if fitted, and photograph if the indicator is red.	☐
Unpack the instrument and retain all packaging for future use.	☐
Check the contents for signs of damage and photograph any areas of concern.	☐
Check the contents against the packing list enclosed with the instrument.	☐
Check that the power rating marked on the label on the rear of the instrument matches the local power supply.	☐

Location and installation	Completed
Check that the proposed instrument location meets the requirements given in section 2.2 of the manual.	☐
Review the Safety section of the manual.	☐
Set up the instrument by following the instructions in section 2.4 of the manual.	☐
Make the customer aware of the procedure to manually prime the dyed water system with reference to section 2.4.5.1 of the manual.	☐
Set the date and time by following the instructions in section 4.6.1 of the manual.	☐

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Instrument overview	Completed
Review the applicable test methods listed in section 1.2 of the manual.	☐
Review the instrument layout with reference to section 1.3.2 of the manual.	☐
Demonstrate how to navigate the user interface by reviewing the Main menu with reference to section 3.1.2 of the manual.	☐

Verification and operation	Completed
Run a verification test to demonstrate the instrument operation. Follow instructions in section 5.5 of the manual. Record the test result in the table below. Emphasise that the instrument is supplied pre-calibrated and does not require further initial calibration by the customer.	☐
Allow the user to run multiple tests. Record the test results in the table below.	☐

Test method	Sample ID	Expected result	Actual result	Comments	
					☐

Calibration	Completed
Emphasise that the temperature probe, water pump, fuel volume and mixer must be calibrated every six months, refer to section 5 of the manual.	☐

Maintenance	Completed
Review the maintenance requirements as detailed in section 7 of the manual.	☐
Emphasise the need to replace the O-rings and gauze of the of the particulate filter is it gets blocked, refer to section 7.6.3 of the manual.	☐
Review the available accessories and spares listed in section 9 of the manual.	☐
Make the customer aware that repairs, other than those described in the manual, must be carried out by Stanhope-Seta or factory approved engineers.	☐

Completion	
Operator’s signature:	Date:
Operator’s signature:	Date:
Operator’s signature:	Date:
Operator’s signature:	Date:
Operator’s signature:	Date:
Trainer’s signature:	Date: