SIMPSON
A Norican Technology

Operating Instructions

Rapid Sand Washer

Model 42119

Type:	Rapid Sand Washer
Model:	42119
Part No.:	0042119-1A 0042119-2A
Serial Number:	

Name and address of manufacturer:

Simpson Technologies
2135 City Gate Lane Suite 500
Naperville, IL 60563

For other Simpson Technologies offices around the world and for our contact information please visit us on the internet at simpsongroup.com on the Contacts page.

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1 Introduction

Congratulations, you have just purchased an extremely reliable sand testing instrument that is backed by the professional technical support and years of proven sand technology experience of Simpson Technologies .

This laboratory equipment is constructed of quality materials and is the result of unsurpassed craftsmanship. The Rapid Sand Washer should be operated only when it is in perfect condition, in accordance with its designed purpose and while aware of possible hazards. Observe the safety instructions in Section 2 and operating instructions in Section 5.

1.1 Application and Designated Use

The Rapid Sand Washer, Model 42119, is used to prepare a sand sample for the AFS Clay Tester, Model 42131. Using high speed agitation, this instrument scrubs adhering clay from sand grains. The unit consists of a high-speed agitator, timer and stand.

Any other application outside the intended usage will be regarded as use not in accordance with its purpose, and, therefore, the manufacturer / supplier will not be held liable for any damage that might arise hereunder. The risk in this case will be exclusively that of the User.

1.2 Organizational Measures

The operating instructions should be readily available at the place of operation. In addition to the operating instructions, the general legal regulations or other mandatory rules for prevention of accidents and environmental protection should be made known and be observed!

The personnel instructed to use this apparatus, before beginning work, should have studied and fully understood these Operating Instructions, in particular the "Safety" chapter.

No modifications, extensions or changes of design of the device that would impact safety requirements should be put into effect without prior consent of the supplier! Spare parts must conform to the technical specifications defined by the manufacturer. This is always guaranteed when using original spares.

2 Safety

NOTICE *Before operating and/or performing maintenance or repair on Simpson Technologies designed and/or manufactured equipment, it is required that all personnel have read and understood the entire Operating Instructions manual. If any questions exist, you must contact your supervisor or Simpson Technologies before taking further action.*

If properly operated and maintained, your Simpson Technologies supplied equipment can provide many years of dependable and safe operation. Please follow all recommended safety, operating, and maintenance instructions. Furthermore, the introduction of any non-Simpson Technologies manufactured and/or approved parts to the equipment may create a hazardous situation. Never alter the equipment without prior consultation with Simpson Technologies .

DO NOT use this machine for purposes other than that for which it was intended. Improper use could result in death or serious injury.

2.1 Safety Signs and Labels

Simpson Technologies has incorporated the ANSI Z535.6 / ISO 3864-1-2 safety symbol only label format on all of its laboratory equipment.

The harmonized ANSI Z535.6 format became an established safety label format since it not only fully meets the current ANSI Z535 standards, but also incorporates ISO 3864-2 symbology and hazard severity panel and thus, can be used for both the U.S. and international markets.

2.1.1 Safety Alert Symbols

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. OBEY all safety messages that follow this symbol to avoid possible injury or death.

***DANGER!** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.*

The safety alert symbol used without a signal word to call attention to safety messages indicates a potentially hazardous situation which, if not avoided, could or may result in death or minor injury.

NOTICE indicates information used to address practices not related to personal injuries but may result in property damage.

This symbol indicates information containing important instructions concerning the use of the machine or directions for further procedures. Ignoring this information can lead to malfunction of the machine.

2.1.2 Safety Symbol Labels

ELECTRICAL SHOCK / ELECTROCUTION
(STC #217958)

This label is located on the right side of the base unit next to electrical power receptacle.

With any panels removed, the electrical terminals are exposed. A hazardous voltage is present, can cause electric shock or burn, and will result in serious injury. Follow Lockout and Tagout procedures before servicing.

CUTTING OF FINGERS / ROTATING BLADE
(STC #217979)

This label is located on the Heating Block Assembly

The Hot Shell Tensile Accessory heating plates and adjoining parts are extremely hot and should not be touched unless protective gloves are worn. Follow Lockout and Tagout procedures and al- low surface to cool before servicing.

READ AND UNDERSTAND ALL SERVICE MANUAL INSTRUCTIONS (STC #214042)

This label is located on the top panel, to the right and near the front of the control cabinet.

Before operating and/or performing any maintenance or repair on Simpson Technologies designed and/or manufactured equipment, it is required that all personnel read and understand the entire Operating Instructions manual. All protective guards shall be installed, and all doors and panels closed before operating the equipment. If any questions exist, you must contact your Super- visor or Simpson Technologies before taking further action. Follow Lockout and Tagout procedures before servicing.

2.2 Safety System Procedure

Whenever performing any type of maintenance or repair, whether in the form of cleaning, inspection, adjustment or mechanical maintenance, the equipment must be rendered into ***Zero Mechanical State (ZMS)****.*

Prior to any maintenance (routine or otherwise) or repair of equipment, a safety procedure should be established and maintained. This procedure should include training of personnel; identification and labeling of all equipment which is interlocked mechanically, electrically, through hydraulics, pneumatics, levers, gravity or otherwise; and a listing of the established lockout procedures posted on each piece of equipment.

"Lockout and Tagout" refers to specific practices and procedures to safeguard personnel from the unexpected energizing of machinery and equipment, or the release of hazardous energy during service or maintenance activities. This requires, in part, that a designated individual turns off and disconnects the machinery or equipment from its energy source(s) before performing service or maintenance, and that the authorized employee(s) lock or tag the energy-isolating device(s) to prevent the release of hazardous energy and take steps to verify that the energy has been isolated effectively.

2.2.1 Lockout and Tagout Devices

When attached to an energy-isolating device, both lockout and tagout devices are tools used to help protect personnel from hazardous energy. The lockout device provides protection by holding the energy-isolating device in the safe position, thus preventing the machine or equipment from becoming energized. The tagout device does so by identifying the energy-isolating device as a source of potential danger; it indicates that the energy-isolating device and the equipment being controlled may not be operated until the tagout device is removed.

2.2.2 Glossary:

Authorized Person(s) - Personnel who have been designated by his/her department to perform maintenance or service on a piece(s) of equipment, machinery or system, and are qualified to perform the work through proper training on the Lockout/Tagout procedures for the equipment, machinery or system.

Lockout - The placement of a lockout device on an energy isolating device, in accordance with an established procedure, to ensure that the energy isolating device and the equipment being controlled cannot be operated until the lockout device is removed.

Lockout Device - Any device that uses positive methods, such as a lock (either key or combination type), to hold an energy isolating device in a safe position, thereby preventing the energizing of machinery or equipment. When professionally installed, a blank flange or bolted slip blind are considered equivalent to lockout devices.

Tagout - The placement of a tagout device on an energy isolating device, in accordance with an established procedure, to indicate that the energy isolating device and the equipment being controlled may not be operated until the tagout device is removed.

Tagout Device - Any prominent warning device, such as a tag and a means of attachment that can be securely fastened to an energy isolating device in accordance with an established procedure. The tag indicates that the machine or equipment to which it is attached is not to be operated until the tagout device is removed in accordance with the energy control procedure.

Zero Mechanical State - The mechanical potential energy of all portions of the equipment or machine is set so that the opening of pipes, tubes or hoses, and the actuation of any valve, lever or button, will not produce a movement which could cause injury.

3 Short Description & Specifications

3.1 Description

The Rapid Sand Washer, Model 42119, uses high speed agitation to scrub adhering clay from sand grains. The unit consists of a high-speed motor agitator assembly, timer, base and also includes a 1000ml beaker.

A molding sand sample to be tested in the AFS Clay Tester, Model 42131, must first be prepared in the Rapid Sand Washer. To assure correct and repeatable test results from the AFS Clay Tester, Model 42131, it is extremely important that all clay within the molding sand sample is removed from the sand grains. The agitation cycle performed by the Rapid Sand Washer helps to remove any adhering clay from the sand grains.

3.2 Specifications, Dimensions and Weights (Approximate)

Specifications	Rapid Sand Washer (Model 42119)
Length	305 mm (12 in.)
Width	216 mm (8.5 in.)
Height	216 mm (8.5 in.)
Weight	5.5 kg (12 lbs.)
Power	120-220V; 50-60Hz

4 Unpacking and Installation

4.1 Unpacking

NOTICE

Your new Laboratory Equipment has been thoroughly inspected before being shipped to your plant. However, damage can occur in route, so it is wise to inspect all equipment on arrival. Notify both the carrier and Simpson Technologies of any damage at once. Damage should be noted on the shipper's receipt before signing for receipt of the shipment.

The Rapid Sand Washer, Model 42119, is shipped assembled into one piece. The assembly is made up of three separate pieces that can be taken apart to facilitate loading and unloading of the sand sample. The assembly consists of the base unit, motor agitator assembly and a 1000ml beaker (Figure 1).

ONLY authorized personnel may unload and install this equipment. Before unloading and installing this equipment read and understand the entire Operating Instructions manual.

1. Carefully remove apparatus from the packing crate and place it on stable bench.
2. Once removed from the crate, proceed by taking off any protective wrap and unpackage the included accessories.
3. The packaging remains the property of the Customer and may be used for returning the apparatus if some repair is required.

4.2 Components

Your Rapid Sand Washer is shipped with the following accessories and installation components:

- Rapid Sand Washer
- Power cord
- 1000 ml beaker

If any of the above components are missing, contact your local Simpson Technologies office.

NOTICE *Do not store the device in the open and unprotected from atmospheric conditions. If this instruction is not followed, claims under guarantee will no longer be considered.*

4.3 Installation

The installation of the apparatus is the responsibility of the Client to include procuring and preparing the material required for this purpose.

The Rapid Sand Washer must be installed on a level, firm and stable working surface that is securely attached to the floor. The machine can be leveled by making adjustments to the four adjustable rubber feet located at each bottom corner of the washer.

The Rapid Sand Washer would likely be occupied by one operator at a time. It is designed to be used in a foundry sand laboratory, with its operation display and control buttons placed at an ergonomically correct level to allow the operator to comfortably handle the sand sample as well as the control buttons.

4.4 Electrical Power Connection

Electrical Requirements: 100 – 240 Volts, 50-60 Hz + Ground (5Ω or less).

Connect the equipment to a ground electrical outlet.

The Hot Shell Tensile Accessory can be manufactured to accept 110 Volt, 50-60 Hz or 220 Volt, 50-60 Hz electrical power. Refer to the specification name plate located on the back side of the Control Panel to verify the electrical requirements.

Before connecting this equipment to power, verify that the voltage marked on the serial number nameplate is the same as the electrical outlet to be used for the machine. Outlet must be properly grounded! Failure to follow safety procedures could result in serious injury.

1. Verify the voltage on the specification plate located on the back of the Rapid Sand Washer. Connect the power cable supplied with the Rapid Sand Washer into the power plug receptacle located on the right side of the base unit (Figure 4, Item 3).

Some areas may require an electrical plug that is not supplied with the power cord to properly conform to the specific electrical outlet. These special electrical plugs will need to be purchased separately by the customer.

2. Verify the proper voltage of the electrical outlet before plugging the power cord into the outlet. Connect power cord to the AC electrical outlet that is free of disturbances/ fluctuation and is properly grounded.

NOTICE

It is highly recommended that a voltage stabilizer/filter (line conditioner) is installed between the electrical outlet and the inlet of the Rapid Sand Washer. This device will help to ensure the proper performance of the sand washer.

4.5 Airborne Noise Emission

The equivalent continuous A-weighted sound pressure level at the workstation does not exceed 70db(A).

5 Operating Instructions

For more information on how to use and care for your Simpson Analytics equipment and accessories visit our Simpson Technologies channel on YouTube and search our library of videos. Subscribe to our channel to keep updated on new releases.

5.1 Preparing the Sand Sample

1. Prepare a representative sample of the molding sand to be tested and reduce it to approximately 100 grams.
2. Dry this sample in an oven at 105oC (220oF) for one hour or to a constant weight. Make certain that the sand is spread in a thin layer to facilitate water evaporation.
3. After a constant weight is reached, cool the sample in a desiccator to room temperature.
4. From the cooled sample, weigh out approximately 50 grams.
5. Transfer the 50-gram sample to the 1000 ml beaker. Be careful not to lose any material. Add 450 ml of tap water (or better, distilled water) at room temperature and 50 ml of 2% sodium pyrophosphate solution (Na4P2O7 •10H2O).
6. Place the 1000ml beaker containing the sand sample and sodium pyrophosphate solution into the rubber lined hole in the base stand.
7. Gently place the motor agitator assembly (Figure 1, Item 2) into the 1000ml glass beaker. The rubber seal on the motor agitator unit will fit into the beaker sealing it.

See Figure 2 showing the correctly assembled Rapid Sand Washer.

Always turn the power switch to the off position whenever the agitator motor assembly is removed from the 1000ml beaker. Failure to follow safety procedures could result in serious injury.

8. Turn the power switch located on the right side of the base unit (Figure 4, Item 1) to the on position.
9. Set the timer for 5 minutes (per AFS [American Foundry Society] Test Procedures).

See Section 5.2 "Setting the Timer" and Section 10.1 for additional information regarding the set-up and operation of the timer.

1. Push the start button located on the front of the base unit (Figure 3, Item 3). The motor agitator will turn on and the timer will start.
2. After the pre-set time has expired, the timer will turn the motor agitator off. Turn the power switch on the right side of the base unit to off position.
3. Remove the motor agitator assembly from the beaker and, using a wash bottle, carefully wash any sand/material adhering to the agitator disk and the three legs back into the beaker.
4. After rinsing clean, completely remove the motor agitator assembly from the beaker and place it on the work bench next to the base unit.
5. Remove the beaker from the base unit and place the motor agitator assembly back into the beaker holder of the base unit between tests.
6. Place the beaker containing the washed sand sample into the AFS Clay Tester as described in the operation manual for the AFS Clay Tester.
7. Always return the empty 1000ml beaker back to the Rapid Sand Washer and assemble the unit as shown in Figure 2 between uses.

Never operate the agitator motor assembly or turn the power switch to the on position if the agitator motor assembly is not securely placed into the 1000ml beaker, properly positioned in the base unit. Failure to follow safety procedures could result in serious injury.

5.2 Setting the Timer

1. Turn the apparatus on by turning on the main power switch.
2. Set the timer to the desired agitation time. To adjust the agitation time, please refer to the timer OEM instructions, Section 10.1.

The 42119 Rapid Sand Washer is used to prepare a foundry molding sand sample for the AFS Model 42131 Clay Tester. This sample requires 5 minutes of running time in the sand washer and 15 minutes OFF time between running cycles to allow the motor to cool down. Any longer running time or shorter OFF times between cycles, the motor may heat up beyond its design intent and may damage the Rapid Sand Washer. HOT SURFACES CAN BURN THE SKIN.

6 Maintenance and Calibration

For more information on how to use and care for your Simpson Analytics equipment and accessories visit our Simpson Technologies channel on YouTube and search our library of videos. Subscribe to our channel to keep updated on new releases.

Before performing any maintenance, turn off the Lock-Out air supply valve, remove the electrical power cord from the wall receptacle and allow the Heating Block Assembly to cool off to ambient temperature. The Hot Shell Tensile Accessory and Electronic Universal Sand Strength Machine must be put into Zero Mechanical State (ZMS). Follow ***Lockout and Tagout*** *procedures before servicing.*

6.1 Cleaning

- Clean any sand or other material built up from the apparatus after each application, ensuring that all sand is removed from the agitator disk and the three stirring legs attached to the agitator motor assembly.
- Clean any loose sand and dust from the Rapid Sand Washer daily.

6.2 Replacing the Agitator Disk

Use caution and the appropriate tools when removing a worn agitator disk. The edges of a worn agitator disk can become extremely sharp due to sand abrasion that occurs during normal operation.

1. Turn the power switch located on the right of the base unit to the off position.
2. Remove the electrical power cord from the wall receptacle.
3. Remove the agitator motor assembly from the base unit. Rotate the agitator motor assembly 180 degrees and locate the worn agitator disk (Figure 5).
4. Using a channel lock pliers, grip the worn agitator disk and rotate the disk counter clockwise while holding the agitator shaft (Figure 5, Item 2).

7 Apparatus Layout

Figure 1: Individual Components

Item#	Description
1	Base Unit
2	Motor Assembly
3	1000ml Glass Beaker

Figure 2: Assembled Unit

Figure 3: Control and Power Panels

Item#	Description
1	Control Panel
2	Timer
3	Start Button
4	Power Panel

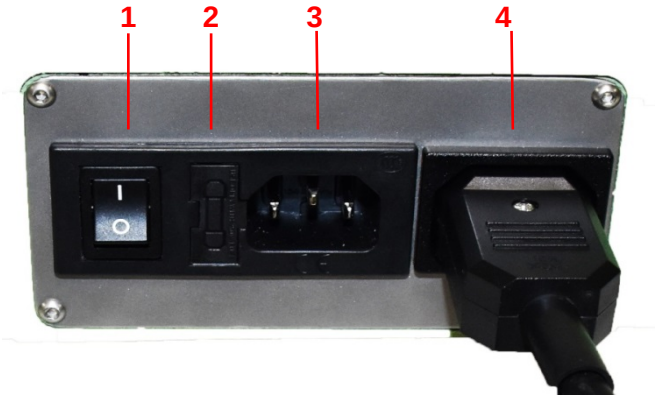


Figure 4: Power Panel

Item#	Description
1	Power Switch
2	Fuse Holder
3	Power Cord Plug Inlet
4	Agitator Motor Assembly Cord Receptacle

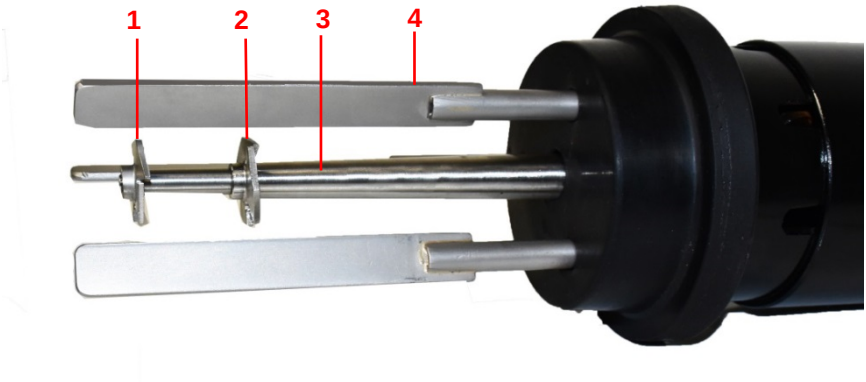


Figure 5: Agitator Disk

Item#	Description
1	Agitator Blade - Lower
2	Agitator Blade – Upper
3	Agitator Shaft
4	Dispersion Baffle (3)

8 Parts List / Ordering Parts / Returns

8.1 Spare Parts List

Simpson maintains a large inventory of common spare parts for all current Simpson Analytics products. The following table provides part numbers for common spare parts for this device. Contact Simpson Technologies with the part number and description when ordering.

Part No.	Description
0045818	1000ml Beaker
0025-121	Agitator Blade – Lower
208906	Agitator Blade – Upper
208905	Dispersion Baffle
208937	Motor Assembly – Multi-tension

8.2 Ordering Replacement / Spare Parts

The source of replacement parts for your Simpson Analytics equipment is just as important as the make of the equipment you purchase. ALWAYS order parts for your Simpson Analytics equipment directly from Simpson Technologies. To find the Simpson office closest to you please visit us on the internet at www.simpsongroup.com on the “Contact Us” page.

Parts may be ordered from the sales department via e-mail at parts@simpsongroup.com: When contacting our sales department to obtain a quotation on replacement parts or service please always include the equipment serial number, the description of the part and the part number. Your Simpson Technologies sales team representative will provide you with a quote on the items with current price and delivery times. When ordering, please always refer to the quote number on your order.

To arrange for calibration support or repair assistance please contact our customer service department at service@simpsongroup.com.

8.3 Returned Goods Policy

Simpson Technologies strives to provide their customers with maximum follow-up support and, in order to offer the most practical flexibility, the following conditions apply to returned goods. Adherence to these procedures will assure the most prompt and efficient service.

RETURNS WILL BE CONSIDERED IN THE FOLLOWING SITUATIONS:

- Products ordered in error by customer (subject to a restocking charge).
- Incorrect or defective products shipped to customer.
- The return of existing products for factory repair or upgrade.
- Products ordered correctly but which are unwanted or unsuitable (subject to a restocking charge).
- A Safety Data Sheet (SDS) must accompany material that is sent to Simpson Technologies for testing purposes. Simpson Technologies will NOT authorize the return of hazardous materials.

RETURN PROCEDURE:

- **The customer must obtain a Return Material Authorization Number (RMA#) from Simpson Technologies prior to returning the goods.**
- To obtain an RMA#, the customer should contact the Customer Service department by phone, fax, e-mail to service@simpsongroup.com. The material being returned must be identified and the reason for its return clearly specified. Once approved for return, Simpson Technologies will issue the customer an RMA form to be included with the shipment and with instructions on where and how to ship the goods.
- All returned goods are to be shipped with transportation charges PREPAID, unless otherwise agreed when the RMA# is assigned. If it has been predetermined that return goods are to be shipped COLLECT, Simpson Technologies will specify the desired routing.
- All returned shipments will be subject to inspection upon arrival at Simpson Technologies.
- Material returned without an RMA# may be refused and returned at customer's expense.

9 Decommissioning

*Before doing any work, review the Safety Procedures in Section 2 and **Lockout and Tagout** all the power sources to the machine and peripheral equipment.*

Failure to follow safety procedures could result in serious injury.

Use qualified personnel and follow safety procedures, applicable local policies and regulations in decommissioning the Rapid Sand Washer and peripheral equipment.

Electrical Power: Disconnect the electrical power source and verify there is no power on all components being decommissioned.

WASTE DISPOSAL

The machinery and controls consists of:

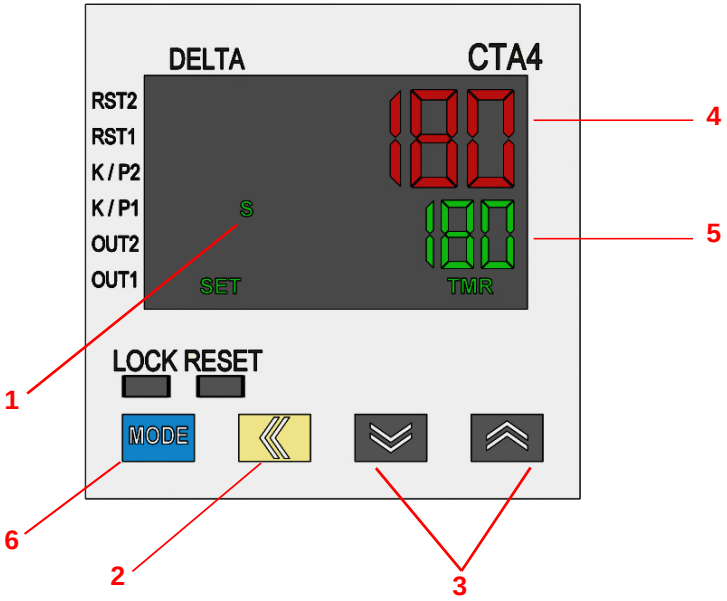
- Iron
- Aluminum
- Copper
- Plastic
- Electronic Components

Dispose of the parts in accordance with the applicable regulations.

10 Commercial Manuals

10.1 Instructions Delta Electronics CTA4 Timer - Adjust Time Setpoint

1. Turn on power switch of the equipment.
2. The time unit for the Timer is in seconds.
3. Press the yellow, left arrow button (Item 2, Figure 6) to enter the set mode. The first digit to the right column on the Set Value Display (Item 5, Figure 6) will begin to flash.
4. Press the UP or DOWN arrow buttons (Item 3, Figure 6) to set the first digit on the selected column.
5. Press the yellow, left arrow button to move the cursor to the next left and use the UP and DOWN arrow buttons to set the desired digit.
6. Repeat this process for as many columns and digits being utilized.
7. Once desired set value time is showing on the display, press the blue MODE button (Item 6, Figure 6) to set the time.
8. The unit is now ready to start.



Item	Description
1	Seconds
2	Left Arrow Button
3	UP and DOWN Arrow Buttons
4	Present Value Display
5	Set Value Display
6	Mode Button

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