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Fisher Scientific

Instruction Manual

Vortex Mixers

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PACKAGE CONTENTS

Fixed Speed, Analog, Digital or Pulsing Vortex Mixer
72" (183cm) power cord
* (1) cup head
* (1) 3" (7.6cm) head
* (1) 3" (7.6cm) rubber head cover
Instruction manual
Warranty card

* These accessories come with all units except the Pulsing Vortex Mixer which is supplied with a 1.5 to 2mL Micro-Tube Holder with built-in cup head.

WARRANTY

Manufacturer warrants this product to be free from defects in material and workmanship when used under normal conditions for two (2) years. Please complete and return the enclosed warranty card. For your reference, make a note of the serial number, date of purchase and supplier here.

Serial No.:_____

Date of Purchase:_____

Supplier:_____

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Installation

Upon receiving the Fisher Vortex Mixer, check to ensure that no damage has occurred during shipment. It is important that any damage that occurred in transport is detected at the time of unpacking. If you do find such damage the carrier must be notified immediately.

After unpacking, place the Vortex Mixer on a level bench or table, away from explosive vapors. Ensure that the surface on which the unit is placed will withstand typical heat produced by the unit. Always place the unit on a sturdy work surface.

The Vortex Mixer is supplied with a power cord that should be plugged into a properly grounded outlet. If the supplied power cord does not meet your needs, please use an approved power cord that suits local codes and electric supply. Replacement of the plug must be made by a qualified electrician.

Maintenance & Servicing

The Vortex Mixer is built for long, trouble-free, dependable service. No lubrication or other technical user maintenance is required. The unit should be given the care normally required for any electrical appliance. Avoid wetting or unnecessary exposure to fumes. Spills should be removed promptly. **DO NOT** use a cleaning agent or solvent on the front panel which is abrasive or harmful to plastics, nor one which is flammable. Always ensure the power is disconnected from the unit prior to any cleaning. If the unit ever requires service, contact your Fisher representative.

Environmental Conditions

Operating Conditions: Indoor use only.

Temperature:	18 to 33°C (64 to 91°F)
Humidity:	20% to 85% relative humidity, non-condensing
Altitude:	0 to 6,562 ft. (2000 M) above sea level

Non-Operating Storage:

Temperature:	-20 to 65°C (-4 to 149°F)
Humidity:	20% to 85% relative humidity, non-condensing

Installation Category II and Pollution Degree 2 in accordance with IEC 664.

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Safety Instructions

Please read the entire instruction manual before operating the Vortex Mixer.

WARNING! DO NOT use the Vortex Mixer in a hazardous atmosphere or with hazardous materials for which the unit was not designed. Also, the user should be aware that the protection provided by the equipment may be impaired if used with accessories not provided or recommended by the manufacturer, or used in a manner not specified by the manufacturer.

Always operate unit on a level surface for best performance and maximum safety.

DO NOT lift the Vortex Mixer by the head. All heads, including cup head, are removable. They can pop off if lifted by them.

CAUTION! To avoid electrical shock, completely cut off power to the unit by disconnecting the power cord from the wall outlet. Disconnect unit from the power supply prior to maintenance and servicing.

Spills should be removed promptly. **DO NOT** immerse the unit for cleaning.

DO NOT operate the unit if it shows signs of electrical or mechanical damage.

Earth Ground - Protective Conductor Terminal

Alternating Current

Standards & Regulations

Henry Troemner LLC hereby declares under it's sole responsibility that the construction of this product conforms in accordance with the following standards:

Safety standards:

IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use. Part I: General Requirements.
IEC 61010-2-051	Part II: Particular requirements for laboratory equipment for mixing and stirring.
UL Std. No. 61010-1	

EMC standards:

IEC45501	IEC6100-3-2/3-3
IEC61000-4-2	IEC61000-4-3
IEC61000-4-4	IEC61000-4-5
IEC61000-4-6	IEC61000-4-11
EN55022A	

Associated EU guidelines:

EMC directive 89/336/EEC
LVD directive 73/23/EEC
Machine directive 98/37/EC

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Fixed Speed Vortexer Mixer Specifications

Overall dimensions (L x W x H):	8 x 4.25 x 5" (20.3 x 10.8 x 12.7cm)
Electrical (50/60 Hz):	120V, 1.2 amps, 150 watts 230V, 0.6 amps, 150 watts
Fuses:	5mm x 20mm, 5 amp quick acting
Speed range*:	3200rpm **
Orbit:	0.194" (4.9mm)
Duty rating:	intermittent duty
Controls:	none
Ship weight:	11.7lbs (5.3kg)

Analog Vortexer Mixer Specifications

Overall dimensions (L x W x H):	8 x 4.25 x 5" (20.3 x 10.8 x 12.7cm)
Electrical (50/60 Hz):	120V, 1.2 amps, 150 watts 230V, 0.6 amps, 150 watts
Fuses:	5mm x 20mm, 5 amp quick acting
Speed range*:	300 to 3200rpm **
Orbit:	0.194" (4.9mm)
Duty rating:	intermittent duty
Controls:	auto/off/on rocker switch, speed knob: variable 1 to 10 dial marks
Ship weight:	11.7lbs (5.3kg)

Digital & Pulsing Vortexer Mixer Specifications

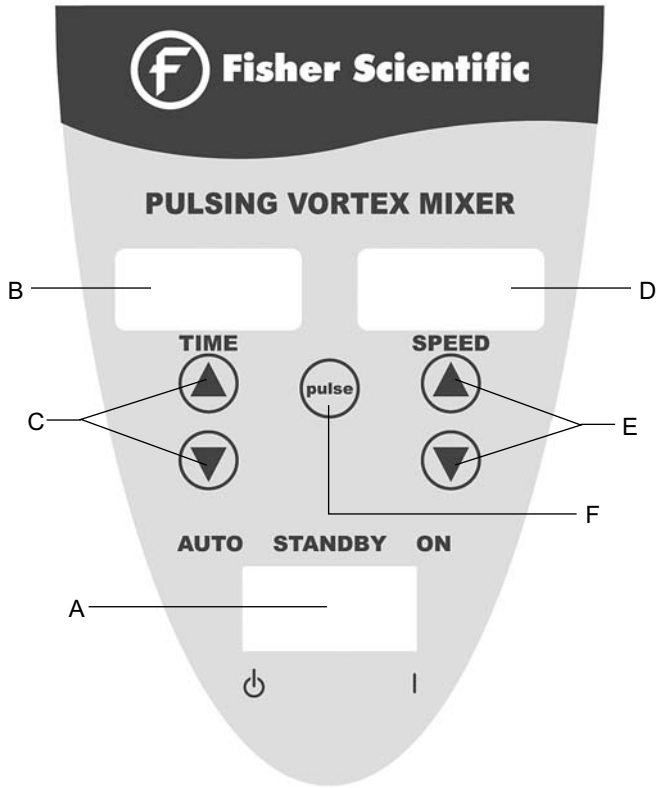
Overall dimensions (L x W x H):		8 x 4.25 x 5" (20.3 x 10.8 x 12.7cm)
Electrical (50/60 Hz):		120V, 1.2 amps, 150 watts 230V, 0.6 amps, 150 watts
Fuses:		5mm x 20mm, 5 amp quick acting
Speed range*,	**on mode:**	500 to 3000rpm **
	auto mode:	1000 to 3000rpm **
	pulse mode:	3000rpm **
Timer:		1 second to 9999 minutes (increased in 1 second increments)
Orbit,	**Digital unit:**	0.194" (4.9mm)
	Pulsing unit:	0.098" (2.5mm)
Duty rating:		intermittent duty
Controls:		see page 5
Ship weight:		11.7lbs (5.3kg)

** Maximum speed will vary depending on accessory being used.*

*** 230V units maximum speed: 2500rpm*

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DIGITAL & PULSING VORTEX MIXER CONTROL PANEL



The front panel of the Digital/Pulsing Vortex Mixer contains all the switches, controls and displays needed to operate the unit.

A. 3-way rocker switch: Auto/standby/on rocker switch starts/stops the vortexing function.

B. Time display: Displays accumulated time (continuous mode) or how much time is remaining (timed mode). The display range is from 0 to 9,999 minutes in one (1) second increments. The display will indicate minutes and seconds until the timer reaches 99 minutes and 59 seconds (99:59), then the display will automatically display minutes up to 9,999.

C. Up/down arrows for set-point control.

D. Speed display: Displays the speed of the Vortex Mixer.

E. Up/down arrows for set-point control.

F. Pulse button: Starts the pulsing mode.

* Same controls for the Digital Vortex Mixer but without the 'pulse' button.

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Vortex Mixer Introduction

Your Vortex Mixer is ready for most one-handed applications. The Vortex Mixer operates by mixing tubes just prior to testing.

OPERATING TIPS

These units are not intended for continuous use over extended periods of time. A built-in temperature sensor will prevent the unit from over-heating by shutting the motor down. If this occurs, allow the motor to cool down and the unit will be able to resume normal operation. Decrease the duration of the time unit is used between rest periods.

See page 8-9 for 'Head/Accessory Installation Instructions'.

Fixed Speed Vortex Mixer Operating Instructions

The Fixed Speed Vortex Mixer runs only at 3200rpm (2500rpm for 230V).

1. Plug the power cord into a properly grounded outlet. The unit is now on and in a standby mode.
2. The vessel you are using must be pushed down on the head attachment to achieve motion. To get the desired mix, vary the angle of contact and pressure against the head.
3. The mixer will return to standby mode when the vessel is lifted off the head.
4. The unit can become warm to the touch with constant use. There is nothing wrong with it. At high performance settings the motor (UL recognized component) simply puts out more heat. **IMPORTANT:** **DO NOT** use large accessories on the Fixed Speed Vortex Mixer. This unit is designed for use with cup head or 3" (7.6cm) head with 3" (7.6cm) rubber head cover only.
5. To completely cut off power to the unit, disconnect the power cord from the wall outlet.

Analog Vortex Mixer Operating Instructions

1. Make sure the 3-way rocker switch is in the center, off position. Plug the power cord into a properly grounded outlet.
2. For continuous operation, push the rocker switch to the right, on position. For intermittent/touch operation, push the rocker switch to the left, auto position.
3. In either case, turn the speed knob to 1. In the on position, you will see the head in motion immediately. In the auto position, the vessel you are using must be pushed down on the head attachment to achieve motion. To get the desired mix, vary the speed, using the speed knob, and/or vary the angle of contact and pressure against the head.
4. When finished with either continuous or intermittent operation, return rocker switch to the center, off position.
5. The continuous, on mode is for the larger accessories. In continuous on mode, **DO NOT** run the unit above 900rpm (analog speed setting of approximately 5).
6. The intermittent, auto mode is intended for short mixing times of one (1) minute or less at full speed. A rest period of two (2) minutes is recommended to minimize the possibility of overheating the motor. The unit can become warm to the touch with constant use. There is nothing wrong with it. At high performance settings the motor (UL recognized component) simply puts out more heat. **IMPORTANT:** When using larger accessories (Insert Retainer with foam inserts or Ampule Tube Holders), **DO NOT** run the unit above 900rpm, (analog speed setting of approximately 5). **UNIT DAMAGE WILL OCCUR.**
7. To completely cut off power to the unit, disconnect the power cord from the wall outlet.

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Digital & Pulsing Vortex Mixer Operating Instructions

1. Make sure the 3-way rocker switch is in the center, standby position. Plug the power cord into a properly grounded outlet. The unit is now on and in a standby mode.

2. For continuous operation, push the rocker switch to the right, on position. For intermittent/touch operation, push the rocker switch to the left, auto position.

3. In either case, set the speed. In the on position, you will see the head in motion immediately. In the auto position, the vessel you are using must be pushed down on the head attachment to achieve motion. To get the desired mix, vary the speed, using the speed up/down arrows, and/or vary the angle of contact and pressure against the head.

   Setting speed:
   To set the speed press the up/down arrows below the speed display until you reach the desired speed.
   - Speed while running in the on position is 500 to 3000rpm (500 to 2500rpm for 230V).
   - Speed while running in the auto position is 1000 to 3000rpm (1000 to 2500rpm for 230V).
   - Speed while running in the pulse mode is 3000rpm, running for 30 seconds, resting 10 seconds (2500rpm for 230V).

   Setting time:
   Time operation works in both auto and on positions.
   - To run in timed mode (programmed time), start by pressing the rocker switch to the left, auto position. Press the up/down arrows below the time display until you reach the desired time. While running unit in timed mode, the time display will show time remaining, counting down to zero (0:00).
   - To run in continuous mode (accumulated time), reset the timer to zero (0:00) before running. Time display will show the accumulated time and run until you press the rocker switch to the center, standby position.

   Pulse operation: (for Pulsing Vortex Mixer only)
   - Set the time if desired.
   - Move the rocker switch to the right, on position. Press the pulse button, in the center of the front panel. The speed display will show "PULSE". The unit will run at 3000rpm, cycling a run time of 30 seconds, followed by a resting time of 10 seconds. The unit will continue vortexing until the timer reaches zero (0:00) or you stop the unit by moving the rocker switch to the center, standby position.

4. When finished with either continuous, intermittent or pulse operation, return rocker switch to the center, standby position.

5. The continuous, on mode is for the larger accessories. In continuous on mode, **DO NOT** run the unit above 900rpm.

6. The intermittent, auto mode is intended for short mixing times of one (1) minute or less at full speed. A rest period of two (2) minutes is recommended to minimize the possibility of overheating the motor. The unit can become warm to the touch with constant use. There is nothing wrong with it. At high performance settings the motor (UL recognized component) simply puts out more heat. **IMPORTANT**: When using larger accessories (Insert Retainer with foam inserts or Ampule Tube Holders), **DO NOT** run the unit above 900rpm. **UNIT DAMAGE WILL OCCUR.**

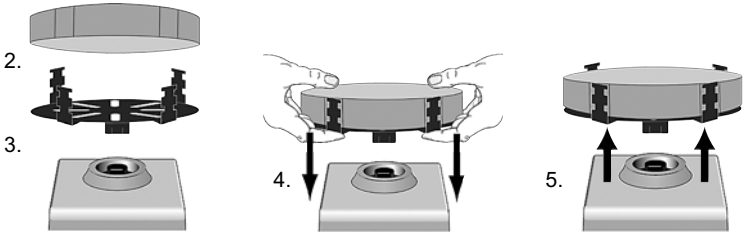
7. To completely cut off power to the unit, disconnect the power cord from the wall outlet.

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HEAD/ACCESSORY INSTALLATION INSTRUCTIONS

Installing the cup head, 3" head or other head attachments:

1. Move the 3-way rocker switch to the center, off/standby position. For the Fixed Speed Vortex Mixer disconnect the power cord from the wall outlet.
2. If using an Insert Retainer with tube holder, insert foam tube holder into Insert Retainer by lining up the recessed notches of the foam with the fingers of the retainer. Push foam to the bottom of the retainer.
3. Place head on post of the unit, aligning the flat "alignment mark" inside of the head mounting hole with the flat "alignment mark" on the post.
4. Press center of head down firmly until it snaps into place. **DO NOT** use a 3" head without the 3" rubber head cover. Add samples to attachments after the head is secured onto the Vortex Mixer. Be sure samples are secure before turning unit on.
5. To remove an installed head, hold the Vortex Mixer housing with one hand and firmly pull the head straight up. Larger heads may require using both hands to force head off post. Remove samples before removing attachments.



Installing Vessel Harness':

1. Install Insert Retainer without foam tube holder onto Vortex Mixer.
2. Stretch vessel harness elastic bands over opposite fingers of the Insert Retainer. Place bands on either upper or lower notches of the retainer.
3. Place sample in center of the harness bands. Be sure sample is secure before turning unit on.

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HEAD/ACCESSORY INSTALLATION INSTRUCTIONS

Installing Single Tube Holder:

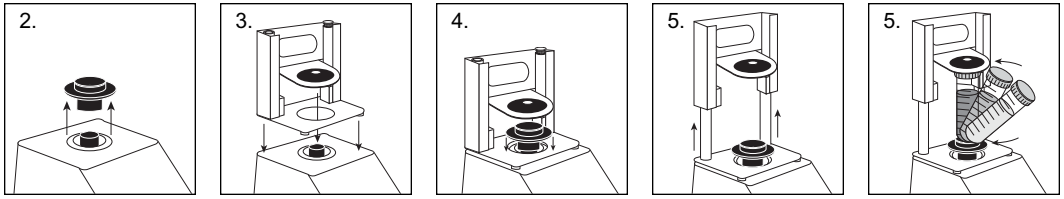
1. Move the 3-way rocker switch to the center, off/standby position. Single Tube Holder should **NOT** be used on the Fixed Speed Vortex Mixer.

2. Remove cup head, or any other accessory from the Vortex Mixer.

3. Align the base plate of the Single Tube Holder over the post of the Vortex Mixer with the two Single Tube Holder alignment posts at the back of the unit. Lower Single Tube Holder onto Vortex Mixer, the magnets will hold the Single Tube Holder in place. To realign this attachment, pull up from the handle until the magnets release, check the alignment and place again.

4. Now that the Single Tube Holder is in place, attach the cup head on the post of the unit, aligning the flat "alignment mark" inside of the head mounting hole with the flat "alignment mark" on the post.

5. Lift up on the spring loaded upper portion of the Single Tube Holder and slide a 2.5 to 4.5" (6.4 to 11.4cm) long tube on the cup head so that the tube is aligned in the middle. The 0.5mL Micro-Tube Holder or the 1.5 to 2mL Micro-Tube Holder will also fit into the Single Tube Holder. You are now ready to mix your sample.



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ACCESSORIES



Micro-Tube Holder

Mixes (48) 0.25 to 2mL micro-tubes. Requires Insert Retainer.

Description	Part Number
Micro-Tube Holder (2 pack)	02-215-386
Insert Retainer	02-215-391



Micro-Well Plate Holder

Ideal for mixing 96 well plates or deep well blocks. Requires Insert Retainer.

Description	Part Number
Micro-Well Plate Holder (2 pack)	02-215-387
Insert Retainer	02-215-391



9 to 13mm Tube Holder

Ideal for mixing 5mL culture tubes and micro-vials. Requires Insert Retainer.

Description	Part Number
9 to 13mm Tube Holder (2 pack)	02-215-393
Insert Retainer	02-215-391



14 to 19mm Tube Holder

Ideal for mixing up to (8) 15mL centrifuge tubes. Requires Insert Retainer.

Description	Part Number
14 to 19mm Tube Holder (2 pack)	02-215-394
Insert Retainer	02-215-391



20 to 25mm Tube Holder

Ideal for mixing up to (8) 50mL centrifuge tubes.
Requires Insert Retainer.

Description	Part Number
20 to 25mm Tube Holder (2 pack)	02-215-395
Insert Retainer	02-215-391



Flat Foam Insert

Ideal for custom applications. Can be cut or drilled to fit your specifications. Requires Insert Retainer.

Description	Part Number
Flat Foam Insert (2 pack)	02-215-397
Insert Retainer	02-215-391



Vessel Holder

Mixes Erlenmeyer flasks and media bottles. Requires Insert Retainer.

Description	Part Number
Vessel Harness (2 pack)	02-215-392
Insert Retainer	02-215-391



Micro-Tube Holder, s/s

Mixes up to (12) 1.5 to 2mL micro-tubes. Stainless steel construction.

Part Number
02-215-400



Ampule Tube Holder

Mixes up to 4 storage vials and test tubes.

Description	Part Number
15-17mm Ampule Tube Holder	02-215-398
10-17mm Ampule Tube Holder	02-215-399



Micro-Tube & Micro-Well Plate Holder Kit

Includes: 1 Micro-Tube Holder
1 Micro-Well Plate Holder
1 Insert Retainer

Part Number
02-215-384

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ACCESSORIES



Tube Holder Kit

Includes: (1) 9-13mm Tube Holder
(1) 14-19mm Tube Holder
(1) 20-25mm Tube Holder
1 Flat Foam Insert
2 Vessel Harness'
1 Insert Retainer

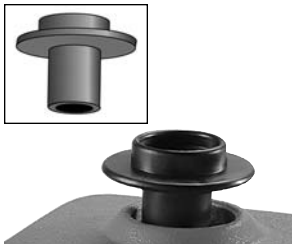
Part Number
02-215-388



3" Rubber Head Cover & 3" Head

Designed for mixing irregular shaped objects.

Description	Part Number
3" Rubber Head Cover	02-215-383
3" Head	02-215-382



Cup Head

Designed for mixing one tube at a time.

Part Number
02-215-380



Single Tube Holder

Single tube, hands free mixing. Easily attaches to the top of any Vortex Mixer with the use of a strong magnetic base. Accepts tubes from 2.5 to 4.5" (6.4 to 11.4cm) in length. Minimum tube diameter of 0.75" (1.9cm).

Part Number
02-215-404

0.5mL Micro-Tube Holder

Mixes (24) 0.5mL micro-tubes. For use with Single Tube Holder.

Part Number
02-215-402

1.5 to 2mL Micro-Tube Holder

Mixes (18) 1.5 to 2mL micro-tubes. For use with Single Tube Holder.

Part Number
02-215-403

Adapter for Vortex-Genie® Mixer*

Adapter plate easily adheres to the Vortex-Genie® Mixer housing so Single Tube Holder (sold separately) can be attached.

Part Number
02-215-405

** The Vortex-Genie® Mixer is a registered trademark of Scientific Industries, Inc.*

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