OPERATION AND CARE MANUAL FOR
V&P SCIENTIFIC VORTEX LATERAL TUMBLE STIRRER:
VP 708A and VP 708ACE
US Patent #7,484,880

WARNING!!!!!

• Be advised that Vortex Lateral Tumble Stirrers, VP 708A and VP 708ACE, have very strong magnetic fields coming from a 48 MGO Neodymium Iron Boron magnetic cylinder.
• People with pacemakers should not get closer than 24 inches.
• Remove all magnetic influenced tools and objects from the immediate area to prevent them from being pulled onto the magnet or from striking anyone as the objects are pulled towards the magnet.
• Keep credit cards, watches and other magnetic sensitive items at least 24 inches from the Tumble Stirrer’s magnetic fields.

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OPERATION

We recommend that the Vortex Lateral Tumble Stirrer is installed as far away from ferromagnetic material as possible. The closer and larger the magnetic material is to the Tumble Stirrer, the greater the torque that is required and the slower the maximum speed will be. Also, although aluminum is not magnetic it will cause a drag on the magnetic field because eddy currents are created in the aluminum when magnetic lines of flux pass through it. A larger mass of aluminum will cause a greater drag and more heat will be generated by the eddy current.

INITIATION

The VP 708A is driven by a powerful 90 watt brushless motor and amplifier. The top speed is set at the factory to 1550 RPM without a load. The actual top speed will be dependant on the load. Use the following procedures to start the motor and adjust speed.

1. Make sure the Engage Button is IN (this is the “disengaged” position and will appear white when the power is on).
2. Turn the AC Power Switch ON. The LED display will illuminate and display “Cub 5” then “UEr 1.0” and then “0”.
3. Press the Engage Button. It will pop out, turn red and engage the motor. The magnetic cylinder will begin to rotate.
4. To increase the speed, turn the Speed Control Knob clockwise. Turn counter clockwise to decrease the speed. Speed in RPM is registered on the digital display. When the Speed Control Knob is turned all the way down (counter clockwise), the magnetic cylinder will still spin at about 40 RPM. This is normal.

PLATE PLACEMENT

The VP 708A was designed to accommodate three microplates per platter, with 9 Platters total on the deck. A total of 21 standard microplates with stir elements can be stacked on the deck and stirred.

NOTE: Depending on the type of plate and type of stir element being used, certain bottom positions may not be useable as the stir elements might be pulled out of the wells. For example, while a standard height plate might not work, a deep well plate would. The unit is shipped with the lowest Platter in the recommended position for a standard plate (with three Spacer Discs under the Platter.

The configuration of the Vortex Lateral Tumble Stirrer can easily be changed to fit your application/plates/tubes by simply removing the three Wing Nuts on the top of the stirrer and gently removing the polycarbonate Retaining Plate by lifting straight up. The Retaining Plate locks the Platters in position and also serves to stabilize the Magnetic Cylinder Housing. When removing the Retaining Plate, use care not to damage the rubber O-ring. Individual plate Platters can be removed and replaced with additional Spacer Discs to achieve the clearance required by your taller microplates or tubes.

DO NOT operate the unit without the Retaining Plate securely in position.

OPERATING SPEED

The operating speed of the Vortex Lateral Tumble Stirrer is application dependent and needs to be determined empirically. Once the optimal stirring speed has been determined, note the
number on the display or leave the speed set to that number when disengaging the clutch (using the Engage Button) to power down. Factors to consider in determining optimal stir speed are the fragility of the objects being stirred, size, shape and depth of the microwells, composition of the microplate (polypropylene or polystyrene), volume and viscosity of the liquid and the type of Stir Disc, Stir StiX or Stir Bar used (such as whether they are stainless steel, Alnico or Samarium Cobalt as well as the shape). To stir very viscous solutions, start at a low speed, and then ramp up slowly to the desired RPM.

In general, stirring microbial cultures works best at low speeds. Stirring to re-solubilize extracts or to stir in deep well microplates requires high speed. Again, the speed of stirring needs to be determined empirically for each particular application.

CARE

When not in use, push in the Engage Button to the IN position (it turns white), then turn the Power Switch OFF.

Do not place the unit in chambers with temperatures above 40°C.

The Vortex Stirrer motor is a brushless motor and requires no maintenance.

Extra fuses (3.15A 250V) have been provided in the rare event that they blow. The fuse receptacle is in the back near the outlet connector.

If technical assistance is required, contact:
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Phone: 858-455-0643
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WARRANTY
V&P Scientific, Inc. warrants this product to be free from defects in material and workmanship when used under normal laboratory conditions for one year. This warranty begins from the date of delivery by V&P Scientific.

In the event this product fails under normal laboratory conditions within the specified period of time because of a defect in material or workmanship, V&P Scientific will, at its option, repair or replace the product. Damage to the product caused by user negligence is not covered.

Please keep the special shipping carton in case the unit needs to be shipped back to V&P Scientific. Please contact V&P Scientific at the address below for return authorization and shipping instructions.

This warranty is made in lieu of other warranties expressed or implied including the warranties of merchantability and fitness for a particular purpose. V&P Scientific shall not be liable for loss or damages arising from the use of these products nor for consequential damages of any kind.
SPECIFICATIONS AND CAUTIONS
The VP 708A series Vortex Lateral Tumble Stirrers are driven by a Maxon EC 90 Flat brushless motor rated at 557mNm of torque and controlled by a Maxon 1-Q-EC Amplifier rated at 5 amps continuous output (manufactured by Maxon Precision Motors). This motor was selected primarily because of its ruggedness and reliability. If the equipment is used in a manner not specified by V&P SCIENTIFIC, INC., the protection provided by the equipment may be impaired.

The use of motor controls, like that of all utilization of concentrated power, is potentially hazardous. The degree of hazard can be greatly reduced by proper design, selection, installation, and use, but all hazards cannot be completely eliminated.

The following safety precautions must be observed during all phases of installation, operation, service, and repair of this motor control product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture and intended use of the products. V&P Scientific assumes no liability for the customer’s failure to comply with safety requirements and practices.

Note the following WARNINGS and CAUTIONS associated with the Vortex Lateral Tumble Stirrer. A WARNING will highlight a procedure, which presents potential danger to people, and a CAUTION will highlight a possible danger to equipment. Both types of instructions must always be followed.

<table>
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<tr>
<th>WARNING</th>
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<tr>
<td>• Do not touch the amplifier or components on the PCB right after turning off the power. Wait until the power indicator turns off or at least seven minutes.</td>
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<tr>
<td>• Do not attempt to wire circuitry while power is on. Do not attempt to examine the components and signals on the PCB while operating.</td>
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<tr>
<td>• Do not attempt to disassemble or modify internal circuitry, wiring, or components.</td>
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<tr>
<td>• The grounding terminal must be grounded properly with 200V class type III standard.</td>
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<tr>
<td>• Do not remove the cover of the motor case when the power is ON to avoid personnel injury caused by electrical shock.</td>
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<tr>
<td>• Do not attempt a dielectric strength test to internal components. They are sensitive semiconductor-devices vulnerable to high voltages.</td>
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<tr>
<td>• Do not connect the output terminals to an AC power outlet.</td>
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<tr>
<td>• Do not disconnect motor during operation. Otherwise, overcurrent breakdown may result.</td>
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APPENDIX
Instructions for Red Lion Digital Display and Power Supply.