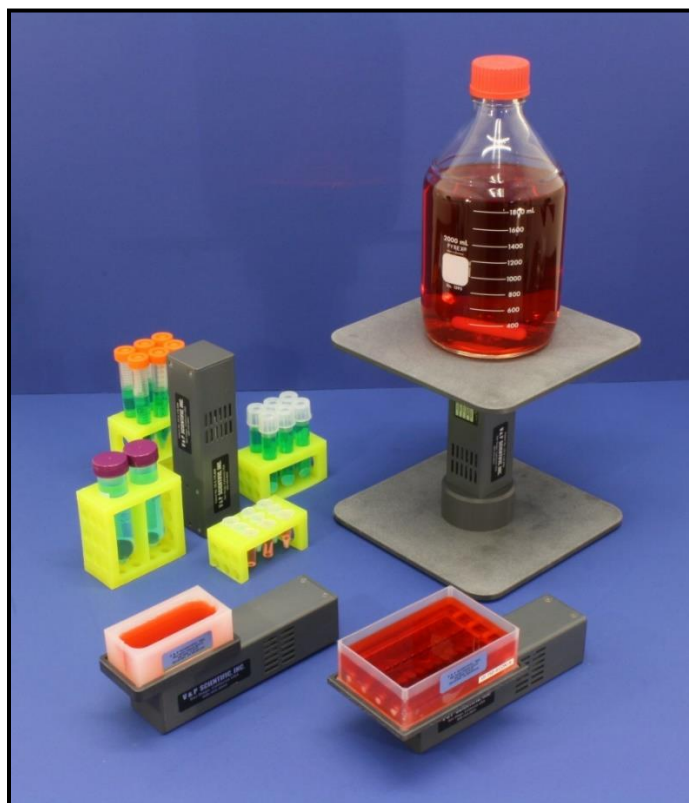


**OPERATING INSTRUCTIONS FOR
MAGNETIC TUMBLE STIRRER FOR MULTIPLE USES
VP 710D3 Multi *Stirrus*
*US Patent # 6,176,609**



WARNING!!!!

- Be advised that the Magnetic Tumble Stirrer has very strong magnetic fields coming from a very strong Neodymium Iron Boron drive magnet.
- **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 Magnetic Tumble Stirrer's magnetic fields.
- Do not operate the Magnetic Magnetic Tumble Stirrer in the close proximity to thick pieces of aluminum or ferromagnetic material. See page 3.
- **Operating the Magnetic Tumble Stirrer for extended periods of time or with challenging loads or both is not recommended. See page 4.**

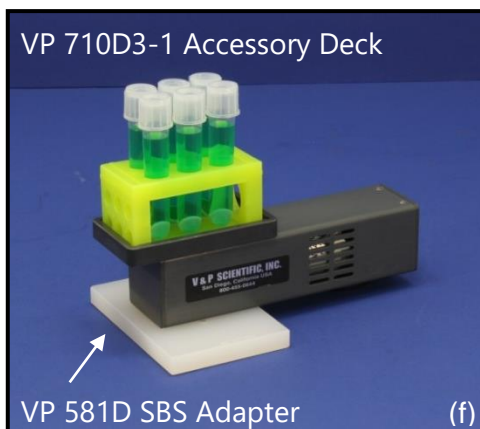
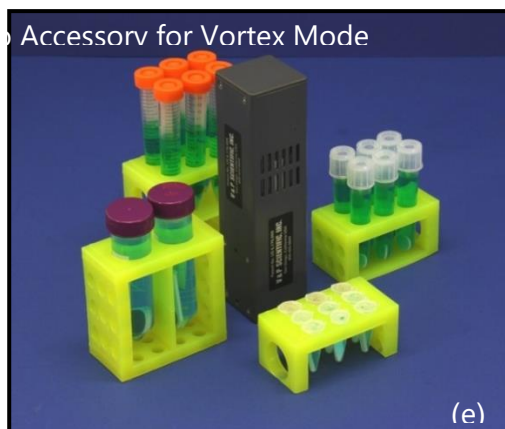


Figure 1. The multiple stirring capabilities of the VP 710D3 Magnetic Tumble Stirrer: (a) VP 710D3-3 accessory deck and base is for mixing in conventional stirring mode with containers on top. (b) VP 710D3-4 accessory stand kit is used to mix in a syringe while on a syringe pump.

(c) VP 710D3-1 accessory deck for Tumble Stirring a VP 756B Bubble Paddle Reservoir for dispensing particulate solutions with 8 pipet tips. (d) VP 710D3-2 accessory deck for Tumble Stirring a VP 750-ECON-6 Bubble Paddle Reservoir for dispensing with 96 pipet tips. (f) No accessory needed for using VP 710D3 Tumble Stirrer in "vortex" mode, just stand unit on the magnet end. (g) VP 710D3-1 accessory deck for rack of tubes. VP 581D SBS Adapter attached under the VP 710D3 allows for placement on Automated Liquid Handlers.

SET-UP

MAGNETIC TUMBLE STIRRER INSTALLATION

Caution

Operating the Magnetic Tumble Stirrer in close proximity (within 25 mm) of 3 mm or thicker pieces of ferromagnetic deck materials or 12 mm or thicker pieces of aluminum deck materials, or both, is not recommended.

We recommend that the Magnetic Tumble Stirrer be installed as far away from ferromagnetic material as possible. The closer and larger the magnetic material is to the Magnetic Tumble Stirrer, the greater the torque that is required and the slower the maximum speed will be.

Placement on a sturdy bench top or table is also recommended. However, thick (12 mm) aluminum table tops or robot decks, as well as racks or holders, should be avoided if possible. Although aluminum is not magnetic, it will cause a drag on a magnetic field due to eddy currents formed when magnetic flux lines pass through the aluminum. A large mass of aluminum will cause a significant drag and result in undue strain on the motor. This strain causes the motor to overheat (>60°C) which could burn out the motor. This is not covered under V&P Scientific, Inc.'s warranty for this product (see page 3).

OPERATION

OPERATING THE CONTROL

The control unit for the stirrer has an ON/OFF power switch and a speed control knob. Place the power switch in the ON position (I) and adjust the speed control knob to change the operating speed of the Magnetic Tumble Stirrer. The speed control for the Stirrer is designed to control the speed and to gradually take the unit from the OFF position to the set speed in a gradual acceleration. The speed control knob should **not** be used to stop the motion of the Magnetic Tumble Stirrers. To stop the Magnetic Tumble Stirrer, always turn the power switch to the OFF position (O).

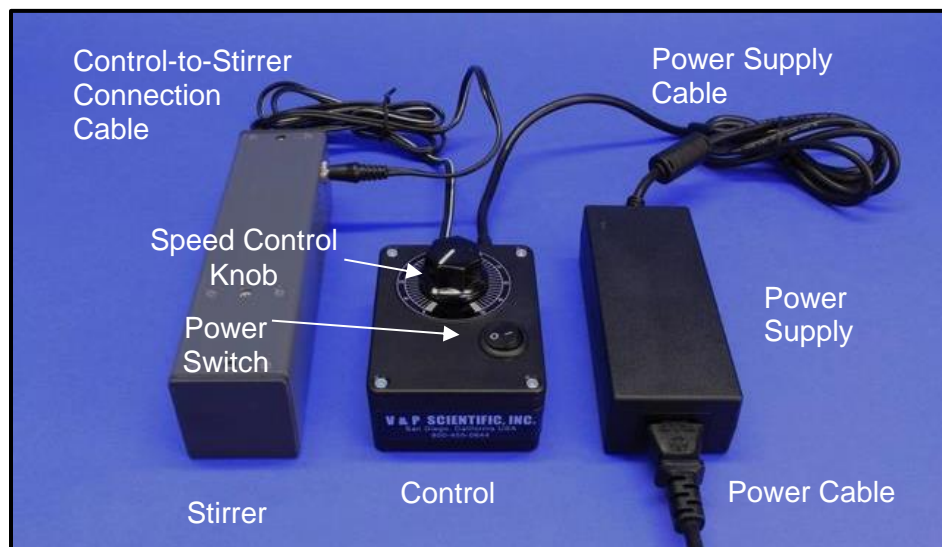


Figure 2. VP 710D3 Magnetic Tumble Stirrer with Control Unit and Power Supply.

The maximum speed is set at the factory to 1250 RPM with no load and the speed control knob set to 100. Because the load (magnetic resistance) will directly affect speed, it is not possible to accurately relate the dial setting to speed (RPM) in every situation. In general, the speed control knob has to be set to at least 20 to overcome inertia. If the stirrer is placed near a ferromagnetic object, a higher dial setting is required to overcome inertia. Once the optimal stirring speed has been determined, note the position and leave the speed control knob set to that position. ***If needed, the actual RPM can be determined by using the VP 710-RPM, a hand-held device available from V&P Scientific.***

Note: For use of the VP 710D3 for the **Drop-Seq Protocol** (McCarroll Lab at Harvard), please go to the [Drop-Seq](http://mccarrolllab.com/dropseq/) website for details: mccarrolllab.com/dropseq/

OPERATING THE MAGNETIC TUMBLE STIRRER

The optimal operating speed of the Magnetic Tumble Stirrers is dependent upon the particular application to be used and needs to be empirically determined. Factors to consider in determining optimal stir speed are the fragility of the objects being stirred and volume and viscosity of the liquid.

The stirring deck is designed to hold one Bubble Paddle Reservoir in the "portrait" position. V&P offers a variety of Adapter Plates that can be attached to the underside of the Magnetic Tumble Stirrer for placement on robot decks, including the VP 581D Adapter Plate. The Magnetic Tumble Stirrer can be mounted directly onto the robot deck, either above or below and keeping in mind the caution statement above regarding aluminum.

Caution: Operating the Magnetic Tumble Stirrer for extended periods of time or with challenging loads or both is not recommended.

During first time use for a given procedure, monitor the temperature of the Magnetic Tumble Stirrer to make certain that overheating does not occur. If overheating occurs, turn off Magnetic Tumble Stirrer immediately! Once it has been determined that a set of run parameters (load, speed and duration) does not cause overheating (i.e. the motor temperature stays less than 60°C), the unit can be operated without monitoring.

It is recommended that the Magnetic Tumble Stirrer not be run at a speed setting of 100 for more than a few minutes at a time. Long term operation at 100 will cause damage to the motor.

The VP 710D3 Magnetic Tumble Stirrer is designed to be used with V&P's Bubble Paddle Reservoirs in the VP 750, VP 755, and VP 756 series, and it is not intended for stirring microplates or racks of vials or tubes. If the VP 710D3 Magnetic Tumble Stirrer does not appear to be appropriate for the intended application, please contact V&P Scientific for assistance in selecting a different model of Magnetic Tumble Stirrer.

PRODUCT MAINTENANCE

GENERAL PRODUCT CARE

When not in use, turn the power switch off.

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

The deck and case of the Magnetic Tumble Stirrer is made of PVC. To clean the deck wipe down with a cloth and mild detergent followed by a water wipe. **Do not immerse Magnetic Tumble Stirrer or Control in liquid.**

For chemical compatibility of ABS please see the following link for more information:

<http://www.coleparmer.com/techinfo/chemcomp.asp>

The motor of the VP 710D Series Magnetic Tumble Stirrer is a gearhead DC motor.

ADDITIONAL TUMBLE STIRRER SPECIFICATIONS

Equipment Rating	115/230V~, 1.6A, 60/50 Hz
Ambient Environment:	Indoor use
Safety Approval:	CE compliant

SAFETY PRECAUTIONS

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.

WARNING

To avoid personnel injury caused by electrical shock, do not remove the cover of the controller when the power is ON.

CAUTION

Do not disconnect motor during operation. Otherwise, over-current breakdown may result.

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.

If assistance is required, contact V&P Scientific, Inc. at 858-455-0643 or sales@vp-sci.com.