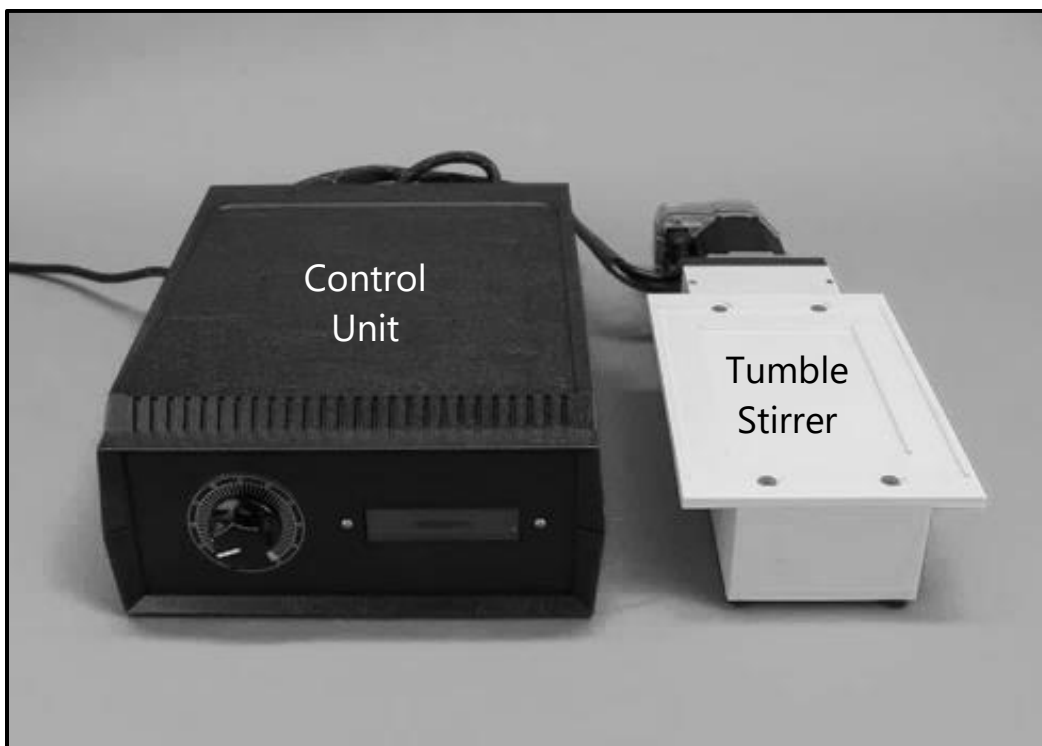


OPERATION MANUAL FOR
VP 710C5 SERIES
ALLIGATOR TUMBLE STIRRERS
*US Patent # 6,176,609



WARNING!!!!

- Be advised that the Magnetic Tumble Stirrer has very strong magnetic fields coming from a 48 MGO 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 Tumble Stirrer in the close proximity to large pieces of aluminum or ferromagnetic material. For more information see TUMBLE STIRRER INSTALLATION section.

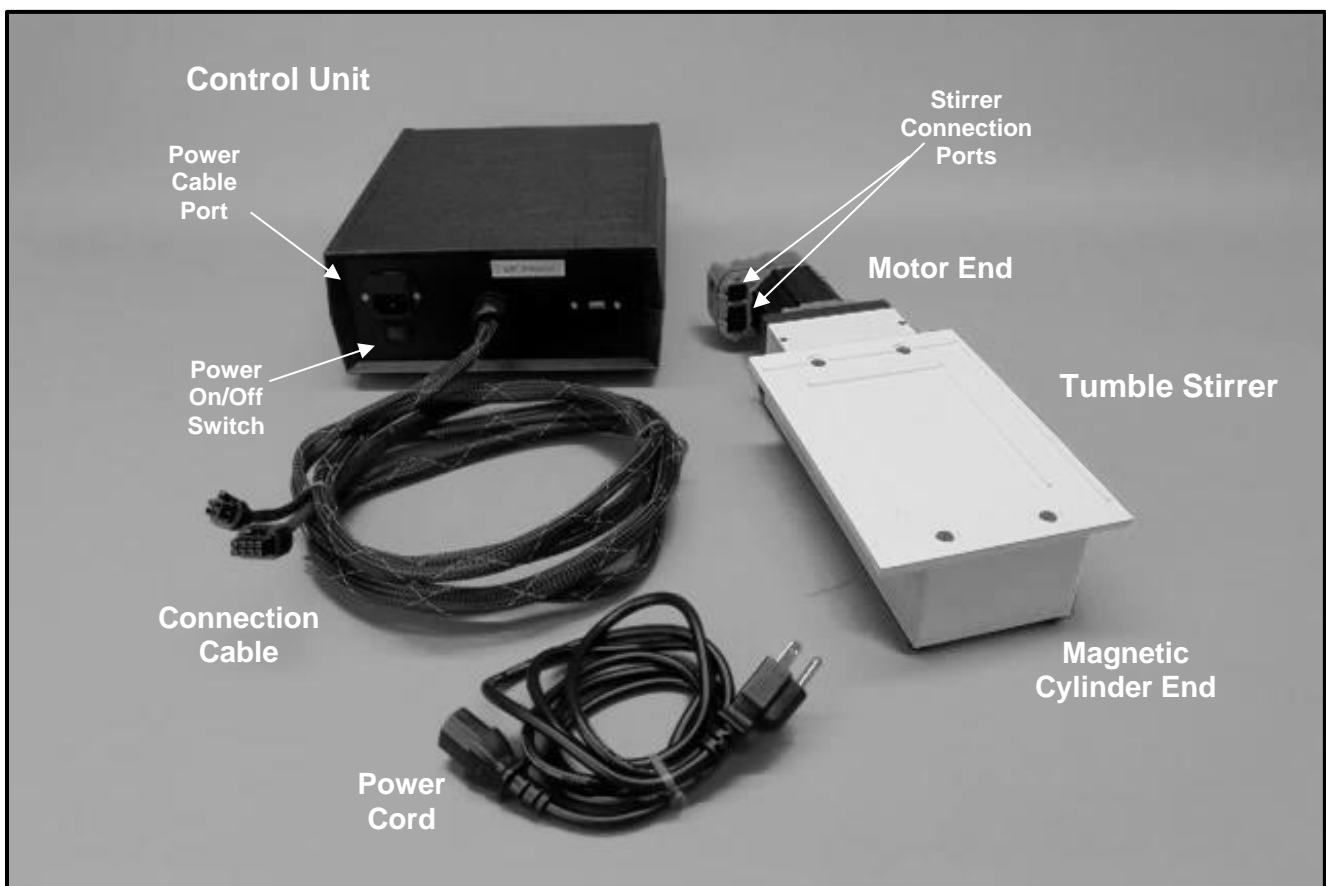
TUMBLE STIRRER INSTALLATION

Caution: Operating the Tumble Stirrer in close proximity of ferromagnetic, aluminum 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 and the faster the magnetic cylinder is spinning, the greater the torque that is required.

Also, large/thick aluminum structures should be avoided. Although aluminum is not magnetic it will cause a drag on the magnetic field due to eddy currents being formed when magnetic flux lines pass through it. The eddy current effect will also cause the aluminum block to heat up. A large mass of aluminum will cause a significant drag and result in greater strain on the motor. This strain can shorten the motor life. This is not covered under V&P Scientific, Inc.'s warranty for this product.

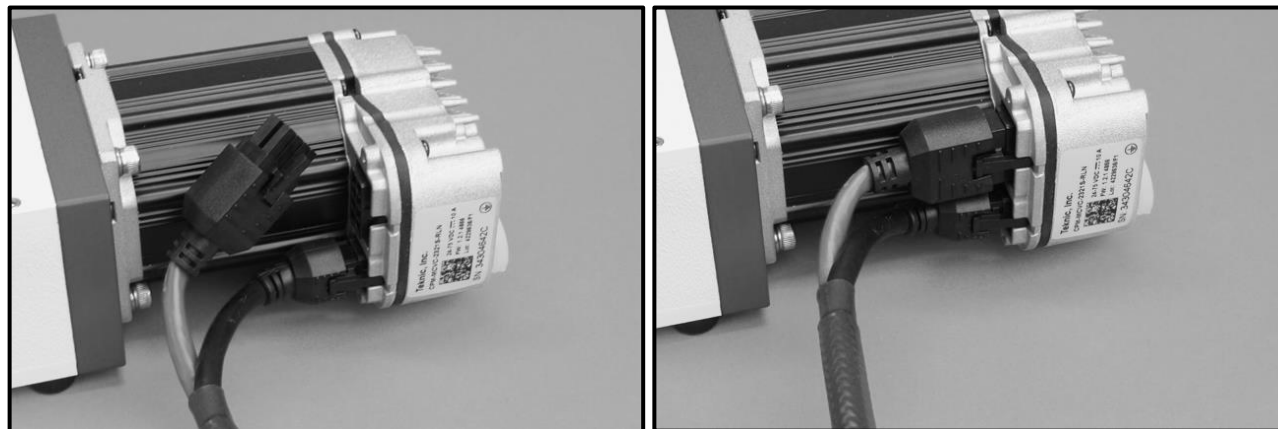
If installing away from these materials is unavoidable, test run parameters before operating instrument without supervision for long periods. The Tumble Stirrer will turn itself off when temperature of the motor exceeds its safety limit of 135°C. If this happens, turn off power supply and allow motor to cool before re-starting. Modify operating speed parameters to prevent over-heating. Repeated over-heating could reduce product longevity.



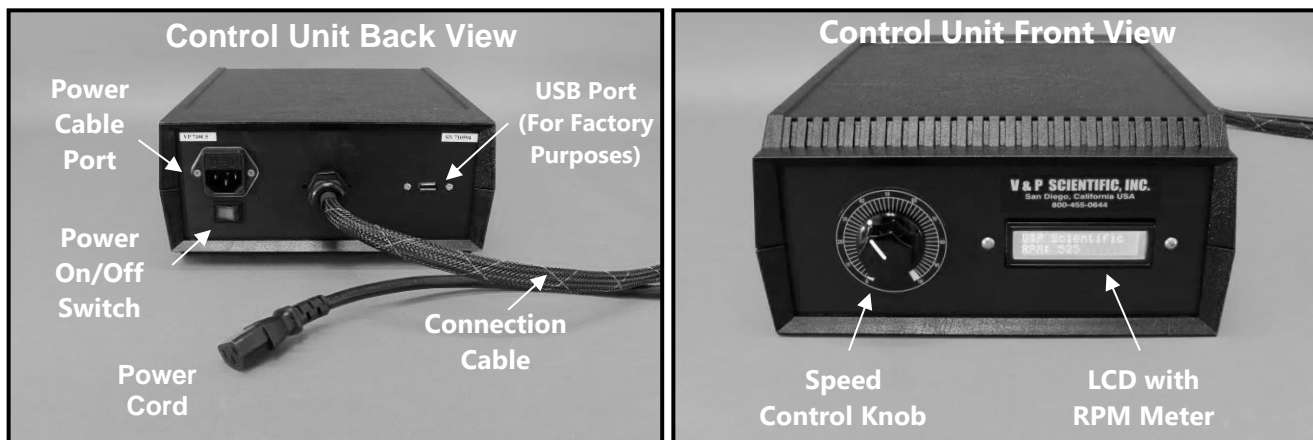
Parts of the VP 710C5 series Tumble Stirrer

Connecting the Control Unit to the Tumble Stirrer:

Attach the connection cable (two plugs, one blue and one black) that transfers power between the Tumble Stirrer and the Control Unit into the connection ports on the motor end of the Tumble Stirrer. Attach the power cord to the Control Unit, then plug into appropriate power outlet.



Plug connection cable to the connection ports on motor end of Tumble Stirrer.



Plug power cord to the power cable port (left). Manual speed control features (right).

TUMBLE STIRRER OPERATION

The control unit for the stirrer has an ON/OFF power switch and a speed control knob. The maximum speed is set at the factory to 1500 RPM with no load. The RPM display is a true RPM reading. Adding a load (magnetic resistance), such as aluminum around the magnetic cylinder end of the Tumble Stirrer, will directly affect speed. The controller is programmed to compensate by adding more power to maintain the same RPM that is set. If there is substantial magnetic resistance, such as aluminum, keep the stirrer speed at no more than 750 RPM.

The optimal operating speed of the Tumble Stirrer 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 application, fragility of the objects (such as cells or beads) being stirred, size, shape, composition of the test tube, vial, bottle or microplate well (glass, polypropylene or polystyrene), depth of the liquid in the container, volume and viscosity of the liquid, and the type of magnetic stir element (bar, disc, custom shape) used.

In general, stirring microbial cultures works best at low speeds. Stirring to resolubilize extracts, or to stir in deep well microplates, requires high speed. The Tumble Stirrer is well suited for either of these types of applications since it can function at minimum and high RPM. Again the speed of stirring needs to be determined empirically for the application. Most tumble stirring applications require a stir speed between 300 – 500 RPM. The VP 710C5 series is capable of a maximum stir speed of 1500 RPM.

PRODUCT MAINTENANCE

General Product Care

- When not in use, turn the power switch off.
- Motor can handle ambient humidity of 0-95%; non-condensing. Motor will tolerate ambient temperature of 0-70°C.
- The deck of the Tumble Stirrer is made of ABS. To clean the deck use a mild detergent followed by wiping dry. Do not submerge any part of the Tumble Stirrer into liquids.
- The motor of the VP 710C5 series Tumble Stirrers is a powerful servo motor designed for high torque and long-term stirring applications.

ADDITIONAL TUMBLE STIRRER SPECIFICATIONS

Equipment Rating	115/230V~, 1.6A, 60/50 Hz
Not to be used with power above this rating	
Ambient Environment:	Indoor use

SAFETY PRECAUTIONS

The use of Magnetic Tumble Stirrer, 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.

V&P Scientific assumes no liability for the customer's failure to comply with safety requirements and practices.

TECHNICAL ASSISTANCE

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

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 above address 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.