

CHICAGO
APPARATUS CO.
CHICAGO 22, ILL.

INSTRUCTIONS FOR USING
CATALOG NO. 12520
WIMSHURST STATIC MACHINE

SCIENTIFIC LABORATORY
EQUIPMENT

INSTRUCTIONS FOR USING
 CATALOG NOS. 12500-10-20
 WIMSHURST STATIC MACHINES

Despite the fact that in every mechanical detail a static machine may be perfect, it may refuse to function for one or more of the following reasons:

Incorrect Assembly

The front and rear plates of a Wimshurst machine must turn in opposite directions. In our Nos. 12500 and 12510 machines this is accomplished by crossing one of the belts, and allowing the other to run straight over the pulley wheels. It is a little or no importance which belt is crossed though the front belt, assuming the side on which the crank is installed to be the front, is made slightly longer to provide for this crossing. In our No. 12520 machine a single belt runs continuously over the pulleys and plate hubs, thereby providing opposite rotation without resort to crossing of the belt.

The direction in which each individual plate rotates determines the position of the neutralizing brush arm. As shown in the diagram this must be in such a position that the brushes are beyond the combs approximately 45° . Therefore the sectors fastened to the plate will pass through the following positions. Starting from the comb on the left and assuming counter clockwise rotation of the plate the sector goes through 45° then under the brush, through 135° and under the comb, through 45° under the brush then through 135° and to its starting place under the comb. This adjustment is the most important on this type of machine and unless it is made correctly no results whatsoever will be obtained.

Excessive Moisture

New machines will sometimes fail to work due to the fact that they are covered with too much moisture. As a rule this moisture comes from the transportation of the machine in a leaky freight car, or the exposure of the packing case to rain or snow at a local station. In such cases the machine should be thoroughly wiped with a soft cloth and in addition allowed to dry out for a number of days. Such a machine will perhaps fail to produce results immediately. As a general rule, however, by charging the sectors with a hard rubber rod that has been excited with a cat skin or silk pad, the machine can be started.

Do not separate the main discharge balls more than a sixteenth of an inch and keep the current breaker on the base entirely closed when first trying out the machine. If a spark is secured with this extremely small gap, continue to operate the machine, gradually increasing the size of the gap. It is impossible to determine the exact position for the neutralizing rods in advance; therefore, they are made adjustable. With a comparatively small spark (one-

half to one inch), the best position of the neutralizing rods can be quickly determined by merely shifting them back or forth through an arc equal to about one-sixteenth of the circumference of the plate. This adjustment should be made while the machine is in operation.

The failure of static machines is usually blamed on the weather. Static plates, with which our Nos. 12500, 12510 and 12520 machines are now equipped, do not attract or absorb moisture and for this reason are not noticeably affected by weather conditions. In most every case that has come to our attention the failure of a machine to work properly is due to the incorrect adjustment of the neutralizing rod and the incorrect adjustment of the collecting combs. Therefore, the greatest care should be exercised in assembling the machine to make sure that these parts are properly placed and properly adjusted. A sector should always come under the neutralizing brush approximately one-eighth of a revolution after it has passed under the collecting comb. This is the most important rule in static machine operation and one that is well worth memorizing.

Machines are frequently sent to us for test and examination with the report that they fail to work. In the many tests which we have conducted in our own laboratory we have found that in the majority of cases the failure of the machine was due to the fact that the neutralizing rods were not properly adjusted, or not placed in the proper position. Of the thousands of machines which we have manufactured in our own shops none has ever failed to work in our own laboratory, and this is due largely to the fact that our own operators are so thoroughly familiar with the importance of placing the neutralizing rods in their proper position. Therefore, make sure that the neutralizing rods are in their proper position, otherwise results of a satisfactory nature are impossible.

Construction Change in No. 12500 Milvay 8" Plate Wimshurst Machine

This machine is now provided with a current breaker on the base. This replaces the secondary discharge balls which were attached to the cross bar in former models. As formerly mounted these discharge balls weakened the cross bar, and it was to overcome this objection that the change was made. With this change all our static machines are now uniform in design. All are provided with current breakers on the base. In using accessory apparatus with our Wimshurst machines follow the directions given in our direction book as outlined for the Toepler-Holtz Machine, and which machine is also provided with a current breaker on the base.

Too Much Dust on Plates

The plates of a new machine just removed from a packing case may be covered with dust from packing materials. The plates of a machine that has stood idle for a long time will usually be found dust covered. Frequently after a machine has been operated for a

while the charged condition of the sectors and plates will attract dust particles in the air and cause a considerable deposit of dust on the plates, especially between the sectors. This condition causes leakage from the sectors and impairs the efficiency of the machine. By removing this dust with either a soft cloth or a camel hair brush or any other soft brush, the machine is promptly restored to its original efficiency. Dust will also accumulate very rapidly on other parts of the machine, such as the discharge rods, collecting combs, etc. Removal of this dust will invariably result in an appreciable increase in the efficiency of the machine.

Collecting combs Out of Adjustment

In No. 12500 Milvay 8" Plate Wimshurst Machine there is no trouble from this source as the collecting combs are of the fixed type. In the No. 12510 12" Machine, and No. 12520 18" Machine, the combs are of the adjustable type. They should be placed as close to the plates as possible, but not so close that when the plates are revolved at high speed, the sectors will strike the teeth of the combs. All collecting combs should be in a horizontal position as shown in the illustration of No. 12520 Machine.

Chain Failing to Make Contact with Inner Coating of Leyden Jars

The chain inside of the Leyden jars must touch the inner coatings, otherwise the jars cannot function. The chain employed and the inside construction of the Leyden jars is such that the chain can not readily become tangled or snarled, in which condition it would fail to make contact with the inner coating, yet in spite of all precautions the chain may become tangled in transit. In such cases the cap of the Leyden jar should be removed and the chain untangled so that it will again make contact with the inner coating. To hold the cap of the Leyden jar securely in place again, apply a little shellac to the edge of the cap that makes contact with the inside neck of the jar.

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