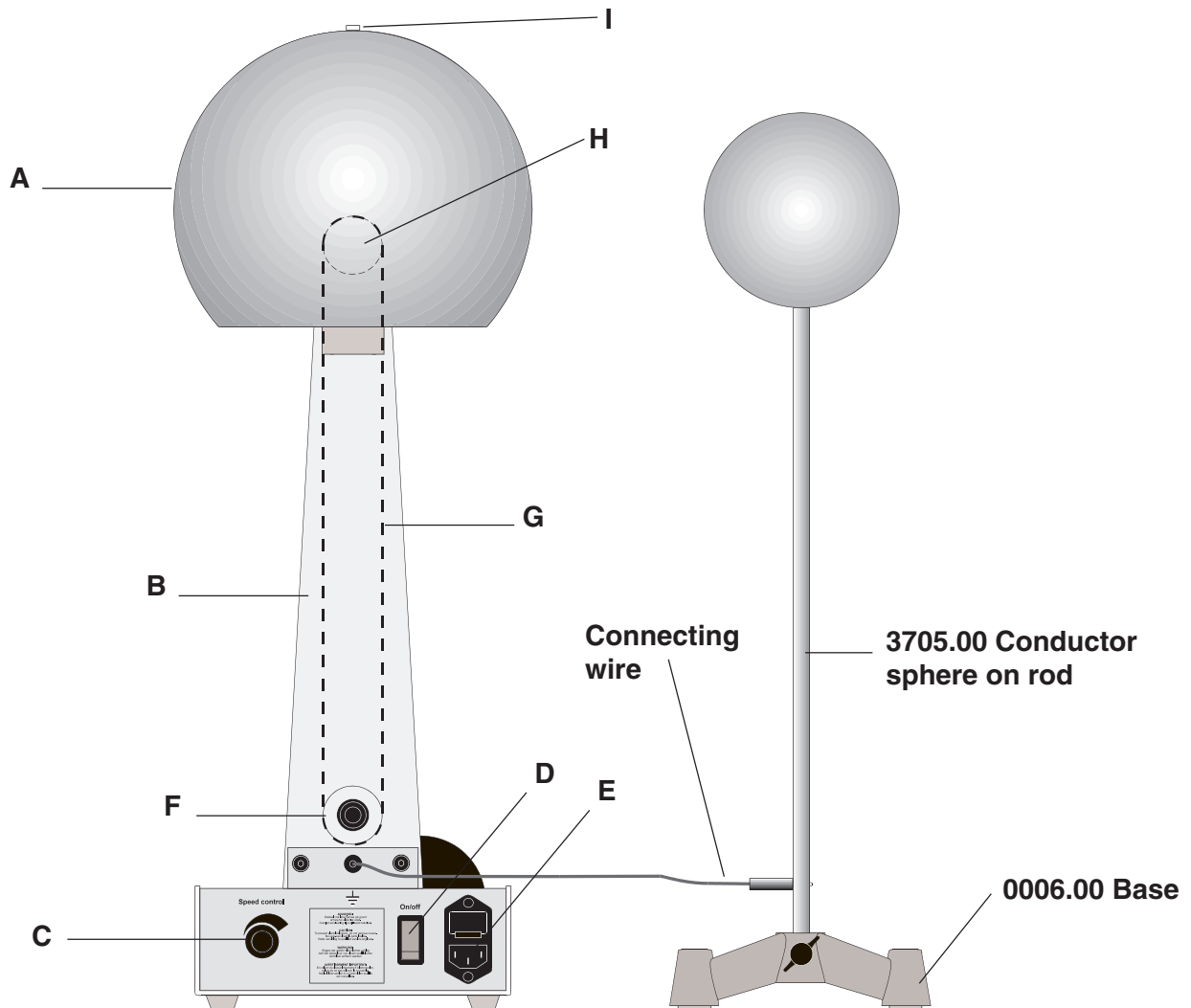


Instruction manual for Van de Graaff generator no. 3700.50

30.10.97

Ae 3700.50



Van de Graaff Generator with Motor

The Van de Graaff Generator is an electrostatic machine for the production of very high DC voltages with low current intensity, making tests with the Van de Graaff generator completely harmless.

The generator is provided with a conductor sphere (A) with diameter of 220 mm. The sphere is equipped with a 4 mm. dia. bush (I) for connection to other equipment through a wire with banana plug. The capacity of the sphere is approx. 15 μF . The conductor sphere is installed on two insulators (B) of plexiglass.

The static electricity is made by the rubber band (G) and two rollers (H and F), manufactured from respectively polyethylen (PE) and plexiglass (PMMA). The lower roller can be driven by a rubber belt by an infinitely variable motor or by hand. The current produced can be varied (approx. 6 μA).

The motor should be connected to 230/110 V AC (E). It is turned on by means of the switch (D) and the motor speed is controlled with the control knob (C). The generator is equipped with a frame bush, which may be used for earth connection or connection to the conductor sphere (No. 3705.00).

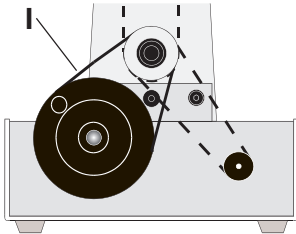


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The quality of the Van de Graaff generator depends on the condition of the generator and on the air humidity. The sphere and band should be kept absolutely free of dust and dirt, the same applies to the two vertical insulators.

When storing do not place the Van de Graaff generator at places with much light, as the rubber band might get conductive when influenced by light for a longer period. Chemicals as well have a bad influence on the rubber-band. Protection cover no. 3700.10 is recommended.



The Van de Graaff generator can be operated manually or by motor depending on the placement of the driving belt.

Cleaning and adjusting the Van de Graaff Generator Catalog no. 3700.00

Dismounting:

- 1) Remove the dome simply by lifting it up. The dome fits quite tight, hence it might be necessary to inflict a slight blow upwards on it with the palm of your hand. But be carefull not to damage the dome.
- 2) Loosen the Allen-screw in the lower roller, remove the black drive-belt and pull out the spindle. Roller and belt can now be removed.
- 3) Unscrew and remove the top spindle and roller.

The generator is now ready for cleaning. Use an ordinary window cleaning remedy (ammonia water in alcohol) for cleaning the rollers and the acrylic pillars. Wash the belt in a weak solution of household detergent and dry it. When the belt is dry, it must be powdered with e. g. talc powder.

Remounting:

Remount the belt and the top roller, tighten the belt and remount the lower roller. N.B. it is of the utmost importance to have the smooth side of the belt inwards against the rollers. Clean the belt for powder immediately after remounting it, use a cloth wetted with acetone (pay close attention while using acetone). As acryl (the pillars and rollers) isn't resistant to strong organic solvents. Adjusting it to be flush is done by means of the two plastic screws on top of the pillars.

Your generator should now be in full working condition, if not the procedure should be repeated all over again. If However the length of the spark is too short the reason may be a continuous discharging of the dome. The discharging can be caused either by dirt on the dome surface or that the dome is not flush with the cover plate. The easiest way of detecting the cause of the discharge is to start the generator in a dark room. The humidity of the air may also influence the length of the spark.

If the Van de Graaf generator does not work, the reasons may be

- 1) Sphere, insulator or band are dirty.
- 2) The band is conductive.

In first case clean the sphere (A), the band rollers (H + F), and the insulators (B) with a clean rag or a firmly wrung wash leather. In case they are very dirty purified petrol may be used. The band is cleaned with petrol and if very dirty with acetone. In case this does not help, you may powder the band with talc powder, whereafter it is carefully dusted. When cleaning the band the dissolved dirt on the internal side of the band will stick to the rollers, therefore they should also be cleaned.

In case number two the band should be replaced. Please note that replacement of the band takes normally place after 5 to 10 years use, and only after a careful cleaning of the remaining parts. When replacing the band remount sphere (A) by displacing it vertically upwards. Upon this remove the upper shaft, equipped with a slot in the end for a screwdriver. The upper roller is removed and the band is pulled aside, in order to loosen the unbraco screw in the middle of the lower roller. Upon this the lower shaft can be pulled out and the old band removed.

When installing the new band proceed in the opposite order. When installing the sphere, remember to press it down so far that the lower edge will flush with the lower edge of the round disc.

Technical Data:

Diameter of the sphere :	220 mm.
Spark length :	80 - 100 mm.
Operation voltage :	230 or 110 Volt AC
Total height :	560 mm.
Width :	195 mm.
Depth :	195 mm.

Spares:

- No. 3700.01 Band for Van de Graaf Generator
- No. 3700.02 Driving belt for the Van de Graaf Generator
- No. 8870.00 Talc powder

Optional Extras:

- No. 3705.00 Conductor sphere, dia 100 mm on rod
- No. 0006.10 Base plate for conductor sphere
- No. 3700.10 Protection cover for Van de Graaff Generator.



When using this Van de Graaff generator electromagnetic signals are created, which can disturb other electronic equipment, e.g. gauges, communication equipment and computers. Apply only the Van de Graaff generator in places, where such equipment will not be disturbed.