

The band generator is used to produce very high DC voltages with low amperage, which makes experiments with the generator harmless.

### User tips

From time to time we experience some misconceptions about the band generator, hence this little section.

The band may not – **under any circumstances** – touch the fine mesh at the bottom or the serrated electrode in the dome. The electrons are transmitted through corona discharges. If they touch, metal particles that would destroy the bands insulating ability, might rub off.

The dome must be kept scrupulously clean. A single hair or a piece of dust stuck to the dome for instance will result in a significant drop in voltage. The tip of the hair is the base of a corona discharge - this corona discharge can be felt as a "cold wind" on the palm if you move it around the dome with a distance to the dome of about 15-20 cm. This is a sure sign that the dome needs to be cleaned. It is also possible to see the corona discharge as a bright

point on the dome if the experiment takes place in a darkened room.

Humidity is a general problem for a band generator. The columns must be kept clean and dry to avoid leakage currents along the surfaces.

The band must be kept clean and dry. During operation the band is also electrically charged, which means it will attract dust and hair that can cause discharges from the dome down onto the band. Avoid any oil or grease (including natural finger grease) on the band - especially on the back. Wear gloves when handling the band.

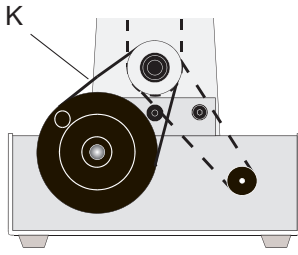
If the relative humidity is between 50-100% it may be a good idea to use a hair dryer to remove moisture formation from the surface of the band generator.

Avoid storing the band generator in places with large amounts of sunlight. The rubber band tends to get degraded and conductive, by prolonged sunlight. Vapors from chemicals also have a degrading effect on the rubber band. Protection cover No. 3700.10 should be applied when not in use.

### Description

The generator is equipped with a hollow metal conductor dome (A) with a diameter of 220 mm. The dome is fitted with a plug (I) for peripheral connections. The capacitance of the dome is approx. 15 pF. The dome is two-split, and the top half is easily removed for inspection of the dome's internals.

The static electricity is generated by the rubber band (G) and the two band reels (F and H). The upper band roll (H) is made of polyethylene, and the lower (F) is made of Teflon. The lower roller is operated via a rubber belt driven by a crank or a continuously variable motor. The motor connects to 230 V AC (E). The switch (D) turns it on/off and the control knob (C) regulates the speed. At max speed the charging current is approx. 6  $\mu$ A.



If you want to drive the belt manually, the drive belt (K) is moved from the pulley on the motor, to the crank pulley instead.

The generator is fitted with a plug to be used for grounding or

connection for a rod mounted conductor sphere (No. 3705.00).

### Maintenance

The dome (A) and band reels (H + F) is cleaned with a clean cloth or damp chamois. If very dirty, benzine (petroleum ether) can be used as well.

The columns (B) are also cleaned with a clean cloth or damp chamois. Hardened stains can be removed gently with isopropyl alcohol.

The band is cleaned with benzine. Be careful to get the dirt and grease removed properly, not just smeared.

### Removing the band

1. Remove the drive belt from the motor, loosen the hexagon-head screw (F) in the lower band roll and pull the shaft out of the bearings. The belt pulley can now be removed.
2. Remove the dome's upper half.
3. Remove the serrated electrode by unscrewing the two chromed thumbscrews (J). The upper band roll can now be lifted clear.

### Assembly

1. Start by mounting the upper band roll along with the band.
2. Then tighten the band with the lower roller as it is being set in place. Note that the shiny side of the band should face toward the rollers!
3. The serrated electrode and upper part of the dome can now be mounted.

### Technical data

Dome diameter:	220 mm.
Spark Length:	80-100 mm.
Operating voltage:	230 volts AC.
Total Height:	560 mm.
Width:	195 mm.
Depth:	195 mm.

### Spare parts

- No. 3700.01 Replacement Band.
- No. 3700.02 Drive belt for band generator.
- No. 8870.00 Talc.
- No. 3700.10 Protection cover for band generator.

### Optional accessories

- No. 3705.00 Conductor sphere on rod, Ø 100 mm
- No. 0006.00 Retort Stand Base, tripod.
- No. 4430.00 Electric whirl.

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.