

**VAN DE GRAFF
GENERATOR**

Ref. 1080660

INSTRUCTION MANUAL



ISO 9001:2000 Certified Organisation

Introduction:

ARCO Van De Graaff Generator is an electrostatic generator which uses a moving belt to accumulate electric charge on a hollow metal globe on the top of an insulated column, creating very high electric potentials. It produces very high voltage direct current (DC) electricity at low current levels.

Product overview:

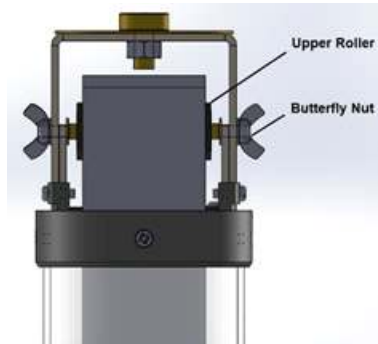
- 1- Hollow metal globe over which the electric charge accumulates.
- 2- Nylon belt which carriage the charge.
- 3- MAINS switch to power ON/OFF.
- 4- Earthing socket of discharger.
- 5- Discharger.
- 6- Earthing socket of power supply / operating unit.

Verification after fuse replacement:

- Connect the MAINS to the apparatus.
- Switch ON the rocker switch mounted on front panel.
- In-built indicator of rocker switch will glow on and apparatus will start working.

2. In case of belt replacement:

- Remove the hollow metal globe.
- Disassemble the upper roller tightened with butterfly nuts and pull out the belt.



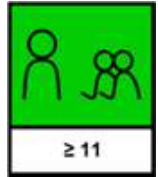
- Rotate the cylindrical acrylic pipe to the clockwise direction, as indicated on the upper panel of the power supply unit.
- Pull out the belt from lower roller as well.
- Insert the new belt over the lower roller and assemble cylindrical acrylic pipe on the upper panel of power supply unit.
- Now, insert another end of new belt over the upper roller and tightened that upper roller with the help of butterfly nuts as previous.

Verification after the belt replacement:

- Place the hollow metal globe.
- Connect the MAINS to the apparatus.
- Switch ON the rocker switch mounted on front panel.
- Belt will start moving on the lower & upper rollers.

Handling Instructions / Precautions:

1. Equipment intended for use in educational establishments by STUDENT OPERATORS at least 11 years old under supervision of the RESPONSIBLE BODY.



2. Student operators in education with special needs must use equipment under strict supervision of responsible body with full safety and precautions.
3. Installation, Cleaning & decontamination also must be done under the supervision of the RESPONSIBLE BODY.
4. Take care for the duty cycle of the apparatus, which is about 10 minutes approx.
5. Read all C & W stickers placed on the apparatus:



Disconnect from MAINS before opening the apparatus.



Ensure proper grounding of the apparatus.



Equipment must be disconnect from the HAZARDOUS LIVE voltage before access.

Use discharge rod to discharge the charged sphere after every use of the Equipment.

Earthing symbol.



Be cautious, Static Electricity exits.



Features:

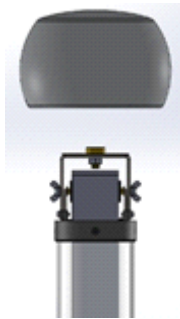
1. Hollow metal globe of 200mm diameter.
2. Spark length of 40mm approx.
3. Duty cycle of the equipment is 10 minutes approx.
4. Easy replaceable nylon belt.

Technical specifications:

Input Voltage	220V AC
Frequency	50-60Hz
Current Rating	0.3A
Power	66W (max.)
Fuse (Primary)	2A
Temperature Range	Room Temperature
Humidity	40% to 60%

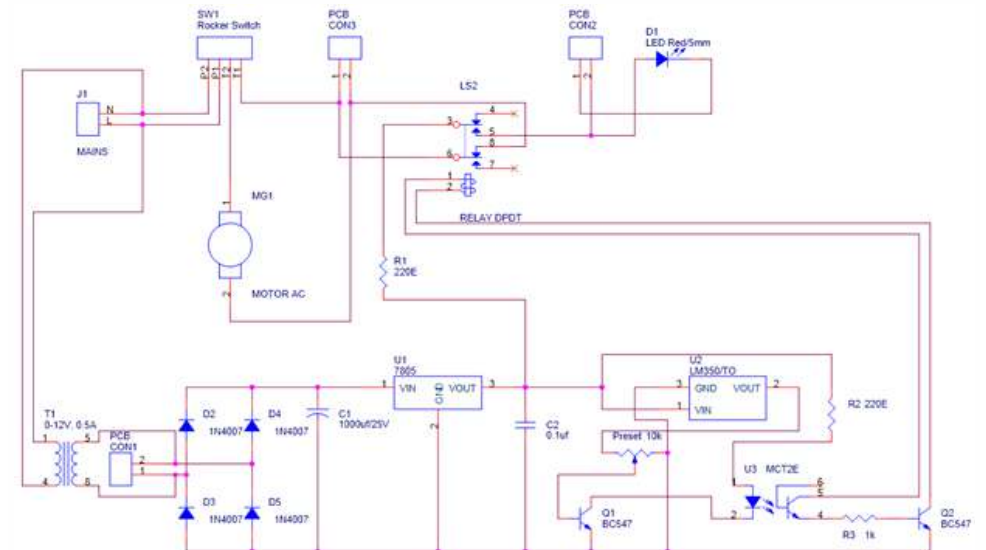
Working procedure:

1. Adjust the hollow metal globe (doom) on the cylindrical acrylic pipe, as shown in the picture below.
2. Connect the earthing socket of discharger to the earthing socket of power supply unit using the connecting lead provided.
3. Plug-in the power cord in the MAINS inlet of the apparatus and connect to the 220V AC.
4. Switch on the MAINS switch.
5. Motor inside the apparatus, will start rotating the nylon belt.
6. As the belt will start rotating, it passes in front of the lower brush, it receives negative charge that escapes from its points due to the influence of the electric field around the lower roller, which ionizes the air at the points.
7. As the belt touches the lower roller, it transfers some electrons, leaving the roller with a negative charge, which added to the negative charge in the belt generates enough electric field to ionize the air at the points of the upper brush.



8. Electrons then leak from the belt to the upper brush and to the terminal, leaving the belt positively charged as it returns down and the terminal negatively charged.
9. The hollow metal globe shields the upper roller and brush from the electric field generated by charges that accumulate at the outer surface of it, causing the discharge and change of polarity of the belt at the upper roller to occur practically.
10. As the belt continues to move, a constant 'charging current' travels via the belt, and the sphere continues to accumulate negative charge until the rate that charge is being lost equals the charging current. The larger the sphere and the farther it is from ground, the higher will be its final potential.

Wiring Diagram & PCB Circuit Connections:



Maintenance:

1. In case of fuse blown:
Disconnect it from MAINS then Replace the fuse with spare fuse of 2A, provided in the in built cartridge of MAINS inlet.
*Fuse NOT be changed by a STUDENT OPERATOR.