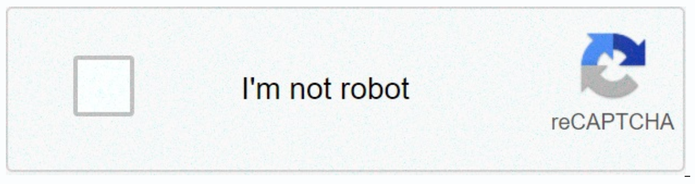

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Diy mini van de graaff generator

Mini van De Graaff generator is a complete Van de Graaff system consisting of a high speed charging roller motor that charges removable combs and vdg storage balls running from 12V power supply (both external power supply and battery) and completely safe to use, because even if the output voltage is high. But this small electrical current device can be very small. The cost is smaller than you can walk across the carpet on a dry day. And you can use the Mini Van de Graaff for a number of experiments : Franklin's bells, rice jumping, electric wind, table tennis, cyclotron ball, see the resources section for more details. The Mini Van De Graaff series is designed for children (or adults) to learn about static electricity by creating a working device. This can be persuasive in the debate about separating cost, charging contacts, and tribo-electric VDG scales are easy to create and separate. Changes to the device can be made to study the changing effects that combs and charging rollers do. This kit has been made to be easily treatable, so if after using your Van De Graaff for a long time, showing signs of wear, there is a Van de Graff maintenance kit to restore Van De Graaff back to its original glory. Output voltage 30,000 to 40,000V high 150mm (6) top ball diameter: 65mm top ball: Stainless steel polished Van De Graff generator is a device that can generate millions of volts of electricity that you can generate in the afternoon, possibly from the parts you have in the trash can. This is not the fact that the hacker's notice escapes for decades, and so we've seen several versions of Van De Graaff built over the years, so there's a high-pressure hacker [Jay Bowles], but he still thinks he can bring something new to the table. The focus of his latest creation is not only to produce one of the most polished and professional versions of this high-voltage electrical device, but also make it accessible for others by maintaining a simple and affordable design. The end result is a 40,000-volt Van De Graaff generator powered by two AA batteries and can be put in the palm of your hand. Simply put, the Van De Graaff generator generates static electricity from the friction of two metal combs rubbing against a moving belt called the triboelectric effect. The belt is stretched between the two combs and through an insulating pipe, which acts as an electron pump from side to side. The result is a lot of costs built on the positive side. The Van De Graaff generator, which is all willing to send sparks fired out to whatever negative charge objects get close enough. The video after the break guides the audience through the process of turning this principle into a practical device, which shows that it's very simple. Common hobby motors are used to keep the belt going, in this case it is only a wide rubber band, and the remaining components are easily sourced or fabricated. Even for what is the most complex element of self-combing creation, [Jay] doesn't use anything more exotic than aluminum foil tape and a piece of stranded wire. When combined with a purpose-made acrylic base and metal sphere (instead of soda or other upcycled objects), the end result not only creates a healthy spark, but looks good, although the fit and final finish are not important, but you can always create one thing from what you find in the trash. When I was younger, I spent hours watching Bill Beaty's static web page at that time, I didn't have any real success trying to create his high-voltage conflict, and so my attention was so obsessed. Many years later, I saw someone online using soda, able to be a collector for their Van de Graaff generator, and all my childhood memories of fusing with styrofoam and foil came running back. I sparked my first afternoon after a quick stop at our local excess shop. This is a simple design that I came up with after consulting several tutorials. Using this device, I created a 3-inch thick and bright spark and a 6-inch-long spark, holding your finger close in a dark room and you'll see a blue corona eerie around your fingertips. This one uses a triboelectric effect, where some materials are charged by contact with other materials, such as when you rub a balloon with your hair. During use, the motor and rollers at the bottom of the generator drive the rubber belt around the glass roller at the top, which creates a negative charge on the belt. The metal brush transfers this charge to the soda, which can hold a large amount of charge because it is both hollow and conductor. The belt, meanwhile, runs out of electrons free and needs to be filled, and therefore the second brush at the bottom pulls overhead from what is connected. Simple homemade Van de Graaff generator in two previous projects, we stole high voltage from the television set to propel our high-pressure motor. In this project we will build a device that can generate 12,000 volts of empty soda and rubber bands. This device, called the Van de Graaff Science Museum generator and research facility, has a large version that generates potential in hundreds of thousands of volts. Our more modest but still capable. Draw 1/2 inch sparkle from soda can my finger Sparks are harmless and similar to the jerks you can get from door knobs after polishing the feet on the carpet. To create a used you need: a small soda can nail a small 1/4 inch rubber band by 3 or 4 inches A 5x20 mm GMA-Type electric fuses, GMA type (e.g. Radio Shack #270-1062 or #270 1061) Small DC motor (e.g. Radio Shack #273-223), battery clip (Radio Shack #270-324) battery holder (Radio Shack #270-324) Shack #270-382) foam cup (paper cup will work with) hot glue gun (or regular glue if you don't mind waiting), two 6-inch long electrical cables (e.g. from extension cables) two pieces of 3/4 inch PVC plumbing pipe each. About 2 or 3 inches long, one 3/4 inch double PVC, one 3/4 inch PVC T connects some electrical tape blocks of wood that sound like a lot of stuff, but take a look at the step-by-step photos below, and you'll find that all can be easily gathered together in the evening, once all the pieces are assembled. We'll start at the bottom and find a way up. Click on the image for the larger image, the first thing to do is to cut the 2 to 3 inch long piece of 3/4 inch PVC pipe and glue it to the wooden base. This piece will hold the generator up and allow us to remove it to replace the rubber band more easily or make adjustments. The PVC T connector holds a small motor, the motor fits itself too, so we wrap the paper or tape around to fit. The shaft of the motor can be bare, but the generator will work a little better if done fatter by wrapping the tape around or (better). Place a plastic rod with a hole in the middle onto the shaft to act as a pulley for the rubber band. Next, we drill a small hole on the side of the PVC T connector under the makeshift pulley on the motor. This hole is used to hold. The lower brush, which is a little of the stranded wire at the end, almost touches the rubber band on the pulley, as the picture shows that the stranded wire is held in place with electrical tape or tape or other glue. Now the rubber band is placed on the pulley and allowed to hang on top of the T connector, click on the image for the next large image, cut another 3 or 4 inch pieces of 3/4 inch PVC plumbing pipe. Use small nails to hold rubber bands in places, as in the photo below. The length of the PVC pipe should be enough to fit the rubber band. The rubber band should not be stretched too tightly, as the resulting friction prevents the motor from rotating properly and increases wear on the parts. Click on the picture for a large photo, cut the foam cup about an inch from the bottom and cut the hole 3/4 inch diameter carefully in the middle. of cups Click on the image for the larger image, now drill three holes near the top of the PVC union joints. The third hole is between the other two holes and will hold. The top brush, which, like the bottom brush, almost taps the rubber band. The top brush is tapped on the PVC union joints and the joints are placed on a 3/4 inch pipe above the foam cup neck. Bare the top brush (so there is no insulation) and twist it so that each wire is separated. You can solder the tip for free if you want, but not necessarily. The free end of the top brush is rolled up inside an empty soda can be done when we are done and connect the soda with electricity with the top brush. Click on the image for the larger image, we need a small glass tube to act as both a low friction top pulley and as a triboelectric reinforced rubber band to create static electricity by rubbing. Glass is one of the best materials to be rubberd to generate electricity. We get the tube segregated by a small electric fuse. The metal tip of the fuse comes out easily if heated with soldering or matching steel. Soldering inside them drops out when they come out, so be careful. The glass, metal lid and molten solder are quite hot and will inflate the skin if you touch them before they cool. Save metal hats - we'll use them on future projects! Click on the image for the larger picture, the resulting glass tube has a nice straight even edge, which is a polished light. For you, so there is no sharp mirror and no uneven edges to catch on PVC and break the glass. The next step is a little tricky. Small nails are placed through one of two holes in the PVC union joints, and a small glass tube is placed on the nail. Then the rubber band is placed on the glass tube, and the nail is placed in the second hole. The rubber band is on the glass tube, which is free to rotate around the nail. Click on the picture for the larger picture, now we glue the foam neck in place on the PVC pipe. I prefer to use a hot glue gun for this, since the glue can be placed on a thick to stabilize the collar and set it quickly and do not melt the foam. Click on the image for the larger image at At this point, we are ready for naked soda.

Aluminum pop-up daddy is good for high voltage because they have good rounded edges, which reduces Carefully release the corona with a sharp knife, carefully cut the top of the soda. Leave a nice pleated edge and cut close to the sides of the can to leave very little on the way. Sharp edges You can smooth the cutting edge by stirring it with metal tools such as screwdrivers, pressing outside while you stir to flatten the sharp edges. Tuck the free end of the wire, brush the top into the pout and back the plop over the top of the device until it is placed on the foam neck. Click on the image for the larger image, the final step is to attach the battery. I prefer soldering the battery clip to the motor connector, then clip this onto a nine-volt battery or a battery holder for two AA batteries, the nine-volt battery works, but it runs the motor too fast, making it very noisy and vulnerable to glass tube rupture. However, it makes the voltage slightly higher until the device is cracked. Click on the image for the larger image to use the Van de Graaff generator, just clip the battery to the battery clip. If the brush is very close to the end of the rubber band, But do not touch, you should feel the sparkle from soda if you bring your finger close enough. Helps to fasten the free end of the bottom brush with the other hand while doing this. Click on the picture for the larger image to use our generator to power the bell of Franklin that we created in the previous part of the book, the wire clip brushed below with one. Other pop-tops of Franklin bells should start jumping between soda buckets. It might take a little bit of momentum to get started. Click on the image for a bigger image, how to do that? You may have balloons rubbing on your hair once and then making a balloon next to the wall. If you've never done this, try it! The Van de Graaff generator uses this trick and the other two to create the high voltage needed to make sparks. The first tip when the balloon touches your hair, the molecules of rubber touch the hair molecules. When they touch the molecules, the rubber attracts electrons from the hair molecules. You take the balloon out of your hair, some of those electrons are with the balloon, making it costly. Special electrons on the balloon repel the electrons in the wall, pushing them back from the surface. The wall positively attracts a negative balloon that is strong enough to make it stick to the wall. If you gather different materials and touch them with each other, you can find out which materials are left negative and are positively charged. Then you can use a couple of these objects and place them in order in a list from the most positive to the most negative. The item is called the Triboelectric Series, the prefix Tribo refers to the Rub Triboelectric Series. Plus (the item at the end loses electrons) Asbestos Rabbit Wool Glass Fiber Nylon Wool Cotton Cotton Rubber Solid Rubber Synthetic Polyester Styrofoam Orlon Saran Polyethylene Polyethylene Polypeline Vinyl Chloride (PVC Pipe) Teflon silicone rubber is mostly negative (the item at this end steals electrons). Our Van de Graaff generator uses glass tubes and rubber hoses. The rubber band stole the electrons from the glass tube, leaving the glass to charge positively, and the rubber band had an erasing charge. The second trick is to charge the triboelectric as the first tip. The second trick involves a wire brush. When metal objects are brought near objects for a fee, something very interesting happens. Charged objects cause electrons in metals to move. If the object is charged negatively, it pushes the electron away. If it is charged positively, it pulls the electron that way. Because, as well as repelling the charge and electrons have the same charge, electrons try to stay as far away from other electrons as possible. If a metal object has a sharp point in the electron, the point is pushed by all the other electrons in the rest of the object. If there are enough special electrons on the metal, they can push the electrons out of the spot and into the air. Electrons land on air molecules, causing negative ions. Negatively charged air is expelled from the metal with a negative charge, and a small wind of the charged air blows away from the metal. This is called corona emissions because the dim light that gives out looks like a crown. The same thing happens, on the contrary, if the metal has too few electrons (if it is charged positively). At that point, all positive charges in the metal pull all the electrons out of the point, leaving them with a very high charge. Air molecules that hit metal points lose their electrons to tensile strength from the positive end of sharp spots. Air molecules are now positive and are expelled from positive metals. The third tip is another tip that the Van de Graaff generator uses. We said earlier that all electrons have the same cost, and so they all try to get as far from each other as possible. The third trick using soda can be to take advantage of this properties of electrons in an interesting way. If we allow soda to charge electrons, they will all try to get as far away from each other as possible. This affects the entire electron crowd on the outside of the flaperon. Any electron on the inside of the flaperon will feel the thrust of all other electrons and will move. The outer electrons feel pushed from the strut, but they don't feel any push from the air around the strut, which doesn't charge, which means we can put the electrons on the inside of the strut and they'll be pulled outwards. We can add as many electrons as we like on the inside of the flaperon, and they are always pulled outside. Put all three techniques together, so now let's take a look at the Van de Graaff generator with all three of our techniques in mind. The motor moves the rubber band around the rubber band, loops over the glass tube and steals electrons from the glass. The rubber band is much larger than the glass tube. Electrons stolen from glass are distributed all over the rubber bands. On the other hand, the glass is small. The negative cost that shifts over the rubber band is weak compared to the positive charge that focuses on a small glass tube. A strong cation on the glass attracts electrons in the wire on the top brush. These electrons spew from a sharp point in the brush and recharge the air, the air is expelled from the wire and attracts the glass, but the charged air can not go to the mirror because the rubber band is on the way. The charged air molecule hit the rubber and transfer the electron to it. The rubber band travels down to the brush below. Electrons in rubber push on electrons in the wire of the brush below. Electrons are pushed out of the wire and are large objects that we attach to wire ends, such as earth or individuals. The sharp points of the brush below are now positive and they pull electrons out of any air molecule that touches them. When they hit the tires, they get their electrons back and the tires and air both lose their cost. The rubber band is now ready to go back and steal more electrons from the glass tube. The top brush connects to the inside of the soda. It is positively charged and attracts electrons from the pan. The positive charge in can be moved apart (they have the same cost, so they repel, as well as electrons). The positive charge collected outside of the plop out of the neutral atoms of the inner plop as they are ready to donate more electrons. The result is an electron transfer from soda can go down to the ground using a rubber band like a conveyor belt. It doesn't take long for soda to lose so many electrons that it becomes 12,000 volts plus more than the ground. When it can get very positive, it finally costs enough to steal electrons from the air molecules that strike the drone. This happens most at any sharp point on it. If it can be a perfect sphere, it will be able to reach a higher voltage, since there will be no place where the charger is more concentrated than anywhere else. If the sphere is larger, a higher voltage may reach before it begins to steal electrons from the air, because larger spheres do not. Sharper, smaller voltage The place on our soda can be that the most sharp curve is where the most accumulated charge and where the electrons are stolen from the air. Ion ions air in an electric field of about 25,000 volts per inch. Ion air uses electricity like a power cord. You can see the ion air that carries electricity because it is so hot it emits light. Since our generator can draw sparks that are about half an inch long, we know that we are building about 12,500 volts. Try using a different type of rubber band. Some are slightly conductive, which at 12,000 volts means enough conductivity to leak all the currents you carefully build up. There is a supply of many different kinds of rubber bands to try. Make sure everything is very clean. Dirt and grease can carry a little electricity, and that will be enough to cause the device to fail. Make sure that the metal's top brush can be thin with a plastic coating inside, scraping it out (or burn it out) to make a better connection. Make sure that there are no sharp points protruding outside can it ok to have a sharp pointing inside the can from the intersection of the top. Make sure the brush does not touch the rubber band. This puts a copper coating on the rubber and makes it an electrical medium. Make sure you have a good ground connection. Make sure the motor is rotating fast. Check out our message board for more ideas and make sure to search for VDG and rubber bands to get all the text, since people can't spell Van de Graaff, you might want to try spelling out some fun words with the Van de Graaf generator, one of the fun things to do with the Van de Graaff generator is to show that such a costly repellent. Then we tape the ends of the paper together at one end and the tape ends on the Van de Graaf generator, the result will look like long hair cascading into a soda can. As a result, raising hair. The strips begin to stand out straight from the can, such as the hair on the back of the frightened cat. Click on the image for the movie, the high pressure ion motor, this motor is very easy to create and go together in minutes. What you need is A piece of small metal cap wire from the fuse that we separated in the previous project and some sheet cellophane tape. The motor generates an ion wind that rotates around like a helicopter. Click on the image for a larger image before using one piece of wire (a stretched paper clip is made) and cut the ends at an angle to sharpen them, bending the other end into rough or triangular loops, so the wire will stand up with sharp points facing upright. Small tape It helps to fasten it on a table or a wooden block. Click on the image for a large image, the armature (rotating part) is made of other pieces of wire and metal caps that we save when we separate the fuse. By cutting the ends diagonally like we do with the base wire, bent the wire into the S-pointed shape of the wire should point to 90 degrees from the middle of the wire. Click on the image for the larger image, attach the metal cap to the center of the wire with tape. Place the lid on the tip of the base wire and bend the S-shaped end of the armature wire down, so it will be easily balanced at the point of the base wire. A high voltage source can be a Van de Graaff generator or just two square feet of aluminum foil pressed against the front of your television set, just as we did in previous projects. When the high voltage is turned on, the armature begins to rotate in a direction away from the sharp point. Van de Graaff generators may need good ground or earthen ones. The television will give the motor a good kick every time it turns on or off and on or off every second to get it rotated quite quickly. How did he do that? The motor operates by ionizing the air and then pushing it against the ion air. As we have described in previous projects, the electrical charge is concentrated by sharp spots. The sharp spots at the tip of the armature are so concentrated that the air around the dots is charged as well, as the air is charged with the same charge as the two wires to repel each other. You can feel the small wind coming from a sharp spot. When the wire pushes on the air, charging them both, moving away from each other. The air blows away and the wire rotates. Next: Tracks in 10 minutes My other website: Send a letter to Simon Quellen Field sfield@scitoys.com > Google