How to build a degausser to remove magnetism



Degaussers can be used to remove magnetism from car tires, metal beds and other places where it can be a problem for sensitive people. This article shows how to build your own at a moderate cost.

Keywords: degauss, how to, build degausser, de-magnetize, magnetism, how degausser works

How the degausser works

Steel and a few other metals can become magnetized, while aluminum, copper, stainless steel, plastic and most other materials cannot. Magnets can affect sensitive people, such as when sleeping on a steel bed, or when the steel belts in automobile tires spin around.

Magnetization can be removed by a degausser, which works by sending out a very strong alternating magnetic field. This degausser alternates the magnetic field 50 or 60 times a second, depending on the country.

When the degausser is turned on, it must be at least 100 cm (3 ft) away from the steel it is to demagnetize. The coil is then slowly moved towards the metal in a fluid motion. As the coil gets closer, the metal's magnetization changes direction

100 or 120 times a second. As the coil is then slowly removed again, the magnetization becomes weaker and weaker, for each change in direction of the current.

If the coil is moved abruptly, or held steady in one place, it can create a magnetic hot spot. It is vitally important to move the coil in steady and fluid motions, without any jerky movements.

Alternating current

The degausser works with alternating current (AC) in the coil. It will not work with direct current (DC). If you try to put DC current on the coil, it will overheat rapidly and destroy itself. It may cause a fire.

No part of this system uses DC electricity.

If you are not sure about the difference between AC and DC, do not proceed without assistance from someone who does.

Warning

This is a simple project, which requires basic electronic skills. If these instructions are not sufficient, please do not attempt this project: It is possible to get killed by electroshock or start a fire if basic precautions are not heeded or the instructions are not followed.

People who are electrically sensitive should not operate, or be near, this equipment when it is turned on.

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The components



For safety, this degausser runs at 12 volt AC in the coil. The basic parts are:

coil (minimum 1 millihenry air-core, higher inductance is better) transformer 230/12 or 120/12 volt plastic box to contain transformer electrical cords (2) wire nuts (4), or similar electrical tape

You will also need a soldering iron.

The coil

It is essential to use a high-inductance air-core coil with a heavy-duty wire. In this example, a 12 millihenry (mH) coil with 18 AWG wire is used. It was purchased from Parts Express (<u>www.parts-express.com</u>), which specializes in components for high-quality audio equipment. Coils of this type can be difficult to find from regular electronics stores, look at websites catering to do-it-yourself builders of audio speakers.

Do not use a coil with a metal core.

The transformer

The transformer is a 3 amp 120/12 volt model from Radio Shack. Such transformers are widely available from electronic component stores (such as DigiKey). People in countries with 230 volt electricity will need a 230/12 volt transformer. The output voltage and amperage can be a little different than the one used here.

There is sometimes confusion about what a transformer is, which has caused people problems ordering one. A true transformer takes one voltage of AC electricity and changes it into another voltage of AC electricity. It does nothing else (with a few exotic exceptions few people will ever encounter).

A transformer does not generate DC electricity. A transformer is always pure AC.

A convertor cannot be used instead of a transformer, as it generates DC electricity. It may catch fire if you try.

The word "transformer" is commonly misused, which can cause confusion. A power supply used to always contain a transformer, so people colloquially have called a power supply a "transformer." But a power supply does more than changing the voltage and usually turns it into DC electricity, which won't work here.

One confused person kept trying to find an "AC/DC transformer" and, of course, couldn't find any.

Assembly

Drill a hole in each end of the plastic box, and stick a cable in through each hole. Put a knot on both cables, so they cannot be pulled out again.

Find out which side of the transformer is the primary (higher voltage) and solder the leads to the cable for the electrical wall socket.

On the low-voltage secondary side, identify which two leads are for 12 volts. Some transformers have multiple loads or terminals that allow for multiple voltages, such as 6 and 12 volts. The transformer should come with basic instructions. Solder the connection for the 12 volt AC output to the cable going to the coil.

Use wire nuts, electrical tape or other measures to ensure the exposed leads do not short out.

Then solder the coil onto the other end of the 12 volt cable. The coil should be wrapped with electrical tape, to protect the very thin insulation on the windings. Otherwise they will wear off and possibly short out.

This is a very simple project, but requires basic electronic skills. If these instructions are not sufficient, then please do not attempt this project, as you can harm yourself.



The transformer has been soldered and just needs the exposed leads to be protected by wire nuts, before mounting in the black plastic box.



Transformer box ready to be closed.



The coil has been soldered to the 12 volt cable.



The coil has now been covered in protective electrical tape.

Warnings

Someone who is electrically sensitive should not use a degausser, and should stay at least 15 ft / 5 m away when it is on.

The degaussing coil and the transformer will get hot after a few minutes. This is normal. Simply unplug the degausser and let it cool down, before continuing the work.

Heat Problems

If the coil heats up too fast, try to run it at 6 volts instead. Reducing the voltage by half will also reduce the magnetic field by half, but the heat loss will be just a quarter.

If the transformer gets too hot install one with a higher amperage rating.

Using the degausser

There is a detailed article about degaussing car tires in the car section of this web site: <u>www.eiwellspring.org/vehicle.html</u>.

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