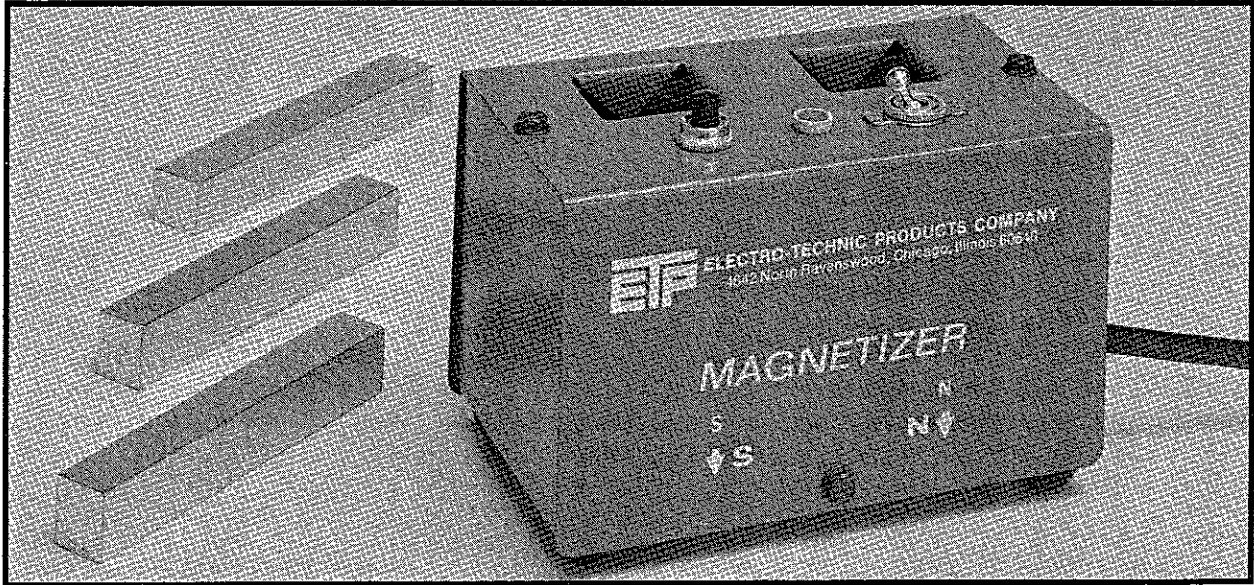




ELECTRO-TECHNIC PRODUCTS INC.

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OPERATING MANUAL Model 28000 Magnetizer



SECTION 1 - GENERAL INFORMATION

- 1.1.1 The High Strength Magnetizer is designed to remagnetize horseshoe and bar magnets which have become demagnetized during use. It produces a very strong magnetic field to magnetize cobalt alloy (for example, Alnico), and other similar metals. It can also be used to magnetize other ferromagnetic materials such as iron, and alloys of iron containing nickel and cobalt.
- 1.1.2 It uses a silicon-controlled-rectifier circuit to provide a minimum of 100 A of current during each half cycle of the power line frequency. The large current energizes two coils which produce the magnetic field required for magnetization. Because of the large field generated, only a short period of time is required to magnetize the magnets. The separation of the two rectangular coils and the coil well opening is sufficiently large for most magnets.
- 1.1.3 The Magnetizer is housed in a durable metal chassis with nonskid rubber feet. It has an On/Off Switch, momentary Switch and Pilot Light. Instructions are printed on the rear of the chassis, and the magnetic polarity for each well, N for north, and S for south, are indicated on the front panel.
- 1.1.4 The Model 28000 Magnetizer operates from 115 V, 50/60 Hz, and has a 6 ft. (1.8 m) line cord with US type plug. The Model 28000V Magnetizer is identical, except that operation is from 230 V, 50/60 Hz, and is equipped with a 230 V US plug. The Model 28000VE is for operation from 220 V, 50 Hz, and is equipped with a European "Schuko" line cord plug.
- 1.1.5 Included with these models is a set of three soft-iron keepers for use with either short horseshoe magnets, or with bar magnets.

1.2 Packing List

1.2.1 Remove from the packing materials. Report any shortages immediately.

Quantity	Part/Model No.	Description
1		Magnetizer, Model 28000, 28000V, or 28000VE
1	38183	Keepers, Set of 3
1	085-0031-3	Instruction Manual

1.3 Specifications

Coil Current	100 A peak minimum (half cycle)
Magnetization Field	At least 7 kilogauss peak
Operating Duration	Intermittent only
Input Voltage	115 V, 50/60 Hz (28000) 220 V, 50/60 Hz (28000V and VE)
Coil Separation	2¼ in. (57 mm)
Coil Well Opening	7/8 x 1 in. (22 x 25 mm)
Overall Dimensions (h x w x d)	3¼ x 5½ x 3⅞ in. (95 x 140 x 80 mm)
Shipping Weight	4¾ lbs. (2.2 kg)

1.4 Warranty Repair/Replacement Information

- 1.4.1 Forward the instrument postpaid to the factory or distributor, along with a copy of the invoice for warranty verification. The instrument is coded as to date of manufacture.
- 1.4.2 Electro-Technic reserves the right to repair or replace any instrument for warranty repair.
- 1.4.3 Instruments found to be out of warranty will be repaired for a minimal labor and parts charge, unless directed to do otherwise. If it is determined that repair costs will exceed the cost of a new instrument, the customer will be advised.
- 1.4.4 Parts for discontinued models will be made available wherever possible for a minimum period of five years after the model has been discontinued.

SECTION 2 - INSTALLATION

- 2.1.1 The instrument is designed for operation from either 115 or 230 V, 50/60 Hz, as marked on the instrument. With the Power Switch in the OFF position, connect the line cord to its matching power line receptacle. This provides power properly polarized and grounded. Operation in any other way will result in a potential shock hazard and may affect the performance of the instrument.

SECTION 3 - OPERATION

3.1 Operation Controls

- 3.1.1 Power ON/OFF Switch. Located on the top, right side. In the ON position, the Pilot Light indicator shows power connection.
- 3.1.2 Momentary Switch. Located on the top, left side. When pressed, the circuitry is energized. Release deenergizes the circuitry.

3.2 Operation

- 3.2.1 The type and length of the magnet to be magnetized will determine how the magnet keepers will be used. It is necessary to provide a magnetic circuit path from one Magnetizer coil to the other. This magnetic circuit path will establish a high magnetic flux density through the entire circuit. The magnet will make up part of this circuit, the keepers will complete the circuit.
- 3.2.2 It may be desired to establish the polarity of the magnet to be remagnetized. Most magnets are marked with a "N" for north pole, and "S" for south pole. If the magnet is not marked, establish polarity by using a good reference magnet for which the polarity is known. Hold the N pole to the pole of the unknown magnet which repels the reference magnet. This is the N pole of the unknown magnet, as like poles repel each other; unlike poles attract. To verify, find the S pole of the unknown magnet with the test magnet.

3.2.3 The Convention Concerning MAGNETIZER POLARITY

The convention for marking polarity for compass needles is to mark the pole seeking the Earth's north magnetic pole with a "N". That way sailors are not confused when directed to steer a course. The convention for marking bar magnets is such that a compass needle will point in the direction of the lines of flux as though they were traveling from the "N" pole to the "S" pole. This places the "N" at the end of the bar that if suspended as a compass needle will point north. Relative to the Earth's magnet field, a north seeking pole has to be the south pole of the bar. Opposite poles attract. Even so, the convention is to mark it "N".

The Model 28000 Magnetizer is marked with a "N" on the right side and a "S" on the left. When operated, the magnet produced causes a compass needle's north seeking pole to point to the end placed into the "N" cavity. A magnet produced by the magnetizer if suspended by a string would point the end marked "N" to the south which is exactly opposite to the convention.

The logic for doing it this way is that most customers are unaware of the convention, and in the beginning one of our distributors complained when a magnet thus produced caused a compass needle's "N" pole to be attracted to the "S" pole of the magnet. We did some testing and discovered that most inexpensive magnets are made with the polarity reversed. So Electro-Technic bowed to the popular perception even though it is counter to the convention. In all the years and thousands of magnetizers sold, the number of complaints about polarity have been very few.

For some, this may pose a problem. If you have inadvertently magnetized your magnet backwards, and have been inconvenienced by this problem, we apologize. If you want to reverse it, simply magnetize it correctly by placing the magnet pole marked "N" into the "S" cavity of the magnetizer and the magnet produced will be configured in accordance with the convention. The Electro-Technic Magnetizer will easily correct the polarity of any magnet that will fit into the unit.

- 3.2.4 To remagnetize a long horseshoe magnet with the conventional polarity (See Section 3.2.3), insert the N pole into the Magnetizer coil opening marked "N", and the S pole in the "S" coil well. It is important that the ends of the magnet make good contact with the bottom plate of the Magnetizer coils. If the magnet is too short, or the poles cannot be inserted in the coils all of the way, see Section 3.2.5.
- 3.2.5 To remagnetize a short horseshoe magnet with the conventional polarity (See Section 3.2.3), insert two magnet keepers supplied into each Magnetizer coil well. Hold the N pole against the keeper inserted into the Magnetizer coil well marked "N", and the S pole against the keeper inserted into the coil well marked "S". It is important that the keepers make good contact with the base plate of the coils, and that the magnet poles make good contact with the keepers.
- 3.2.6 To remagnetize a bar magnet with the conventional polarity (See Section 3.2.3), it is recommended that two bar magnets of the same length be used at the same time. Insert the N pole of one of the magnets into the Magnetizer coil well marked "N", and the S pole of the other magnet into the coil well marked "S". Take one of the keepers supplied and place it across the tops of the two bar magnets. Make certain that the bar magnets make good contact with the base plate of the coils, and that the keeper makes good contact with both bar magnets. One bar magnet can be magnetized at a time, provided it is the same length as one or two keepers. In that case, follow the procedure above, except place a keeper into either of the Magnetizer coil wells, and the end of the bar magnet into the appropriate coil well.
- 3.2.7 Once the magnets and keepers, if necessary, are in place, turn the Power Switch ON and press the Momentary Switch for a few seconds. The strength of the magnetizing current is sufficiently high so that magnetization of the magnets will occur during this period. Operating the Magnetizer for longer periods will not result in any increased magnetization.

3.3 Troubleshooting

- 3.3.1 If magnets fail to remagnetize, or are weakly magnetized, check to make certain that magnets and keepers make good contact with the Magnetizer coil base plates and with each other, making a complete magnetic circuit. Some magnetic material may not be able to be permanently magnetized. See Section 1.1.1.
- 3.3.2 If magnetic poles are reversed during remagnetization, check to make certain that the correct polarity was followed. See also Section 3.2.3. Also, recheck that good contact is made throughout the magnetic circuit.
- 3.3.3 If one pole of a bar magnet is located in the middle and the opposite poles at either end, make certain that a keeper was used, and recheck that good contact was made throughout the magnetic circuit. If the magnetic circuit was not completed when using a long bar magnet with one half or more of the bar above the coil well, the top half will not be magnetized, and one pole will be located in the middle of the bar.
- 3.3.4 If it is suspected that the polarity of a magnet has been reversed, make certain this is the case. Refer to Section 3.2.3. Reverse polarity can only be the result of reversing the position of the magnet in the Magnetizer. Before using a compass to establish the polarity of a magnet, make certain the compass reads correctly. Sometimes a strongly magnetized magnet held near a compass will reverse the polarity of the compass needle.

3.4 Hazards

- 3.4.1 It is suggested that analog wrist watches, computer disks, magnetic tapes and similar materials sensitive to magnetic fields be kept away from the vicinity of the Magnetizer during its operation.