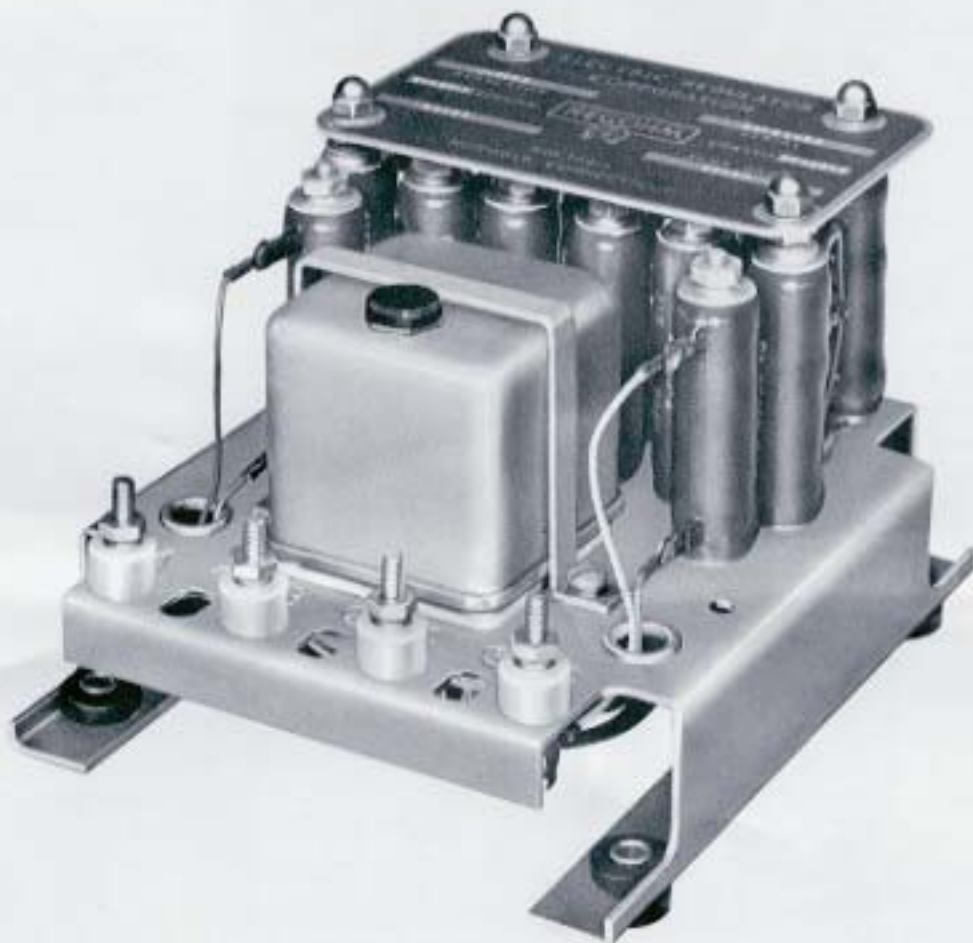


Electric Regulator Corporation continues to supply
the REGOHM voltage regulator
New (not rebuilt) Regohms are available from stock.
In the USA or Canada call our toll free number 1-800-458-6566
International customers call 760-438-7873
or e-mail, sales@electircregulator.com
Fax 760-438-0437

For your convenience is the user's manual for
the Regohm size 1 and 2 voltage regulators.

INSTRUCTION MANUAL

SIZE 1 AND SIZE 3 REGULATORS



REGOHM VOLTAGE REGULATOR

REGOHM



ELECTRIC REGULATOR CORPORATION • NORWALK, CONNECTICUT

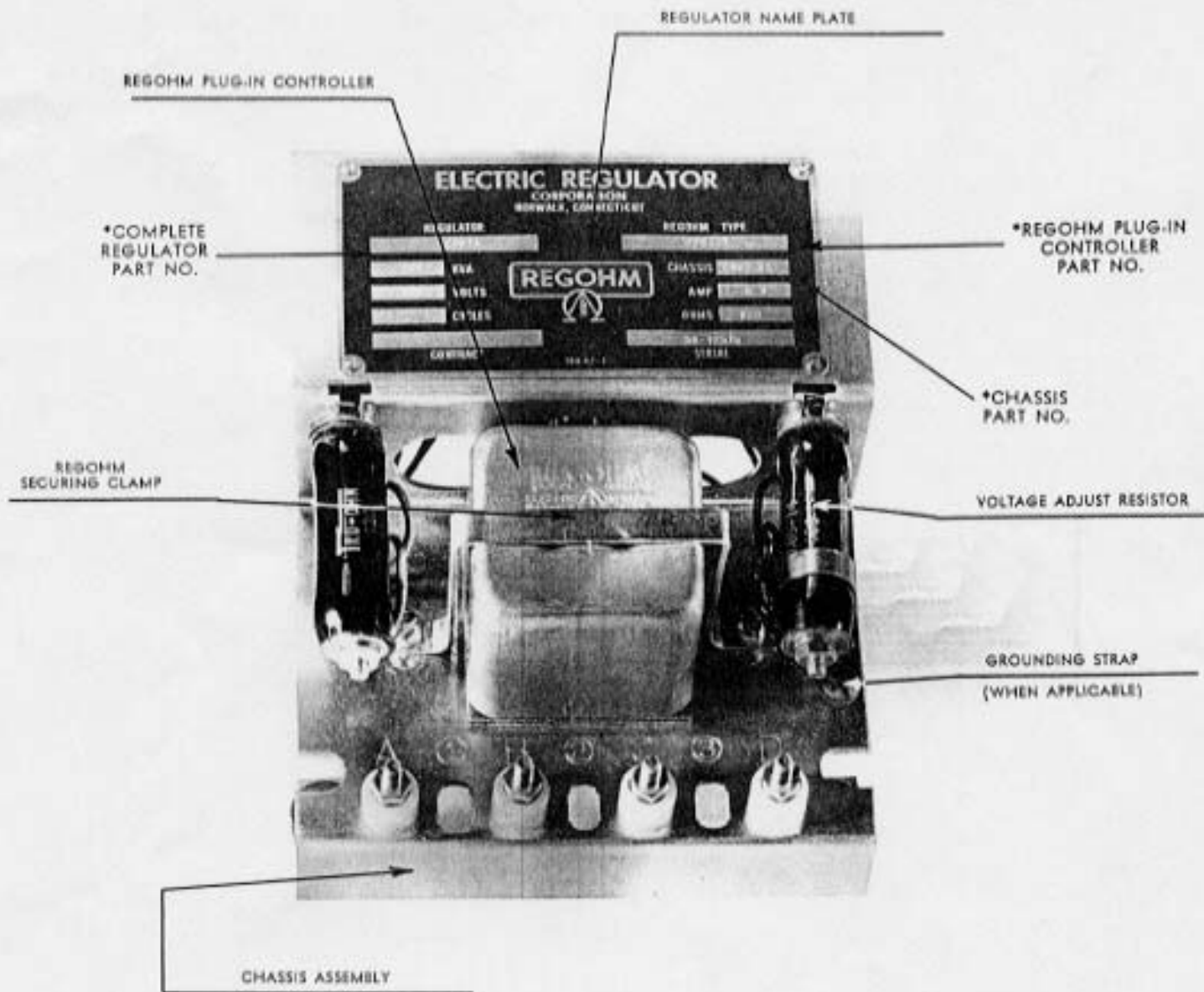


FIGURE 1

*COMPLETE REGULATOR OR COMPONENT PART REORDERING INFORMATION.

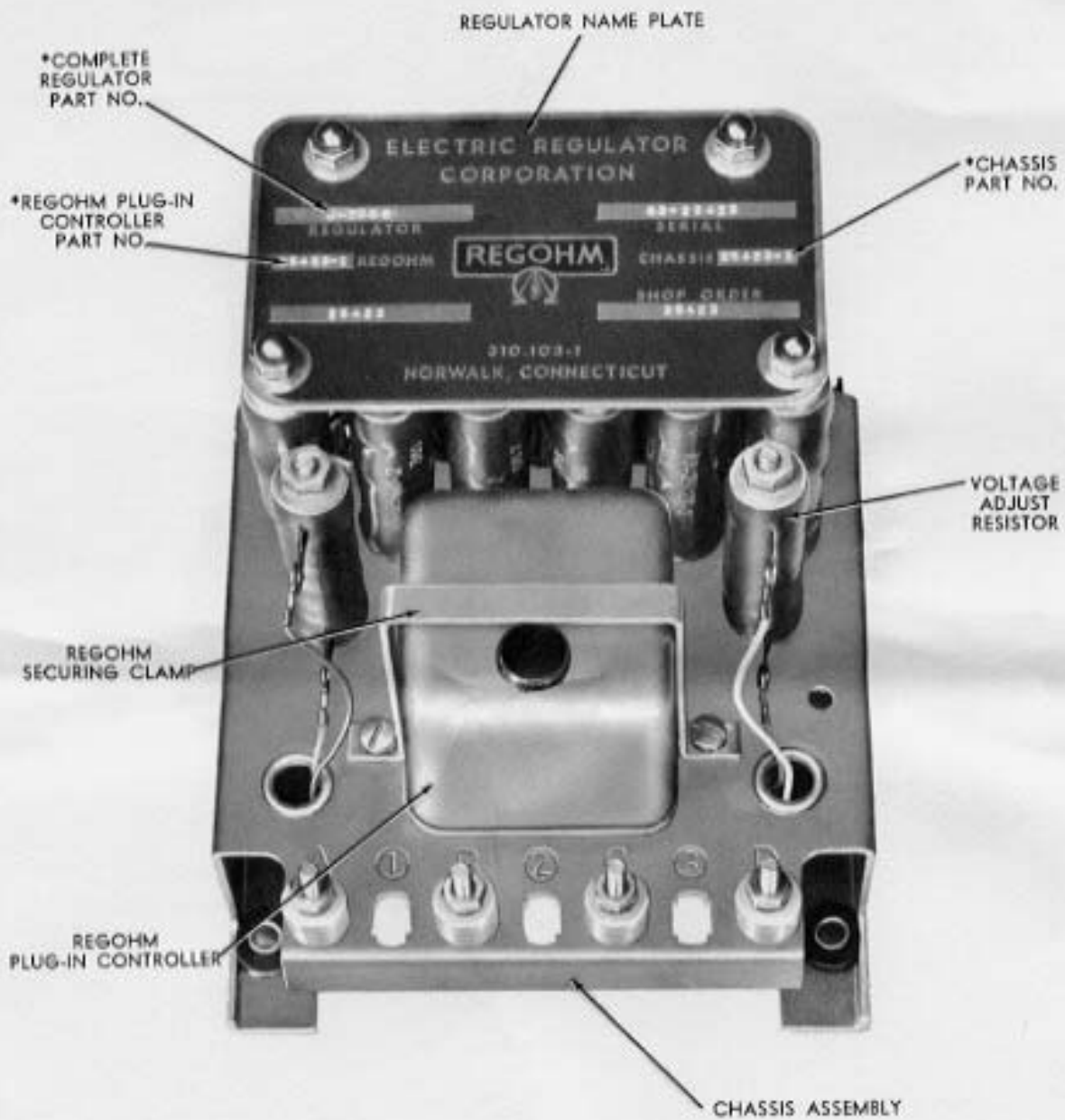


FIGURE 1

*COMPLETE REGULATOR OR COMPONENT PART REORDERING INFORMATION.

REGOHM VOLTAGE REGULATOR

GENERAL DESCRIPTION

The REGOHM VOLTAGE REGULATOR is used with generators and other types of electrical equipment to maintain constant output voltage. Essentially, it acts as an automatic rheostat.

REGOHM Regulators are available for DC as well as AC of high and low frequencies. They can be used for exciter field and main field control.

The regulating equipment consists of the controlling

element, the REGOHM, in a separate housing which plugs into a chassis on which are mounted a set of control resistors. In addition, an external voltage adjusting rheostat is supplied. The control resistors are designed to meet the requirements of each type of application with which they are used. In general, the resistance taper used for one application may not be used for others unless the characteristics are similar.

DETAILED DESCRIPTION

The REGOHM VOLTAGE REGULATOR consists of three elements: a voltage sensitive solenoid, a contact finger assembly and a set of control resistors. The voltage sensitive solenoid consists of a magnetic coil and a magnet circuit closed through a moving armature, which is connected to a push bar. The lower edge of the push bar is biased so that the fingers, which are set approximately parallel to the base, are pushed off their contacts one at a time in sequence. These fingers, in turn, are connected to pins which plug into corresponding socket terminals on the chassis assembly.

Regulators for use on frequencies other than DC or

50-60 cps are available with built-in rectifiers of the bridge type.

The REGOHM parts are designed and assembled in such fashion that the operation of the regulator is not affected appreciably by changes in ambient conditions or by vibration or shock. Furthermore, the regulator's characteristics are independent of the position in which it is mounted so that the regulated voltage will not change if the regulator is moved. However, the regulator chassis should be mounted to provide for free circulation of air over the resistors.

GUARANTEE INFORMATION

We guarantee to repair or replace F.O.B. our factory, any equipment manufactured by us, found by us to be defective because of material or workmanship, under normal and proper useage, within one year from date of shipment. There will be no other guarantee, warranty, or liability for any damage or expense except as here stated.

The guarantee is voided by: (1) Attempts at repairs, (2) Defects caused by improper operating conditions, accidents, misuse, or negligence, and (3) the alternation or removal of the nameplate.

Guarantee repairs or replacement will be on an F.O.B. factory basis, and no other guarantee, warranty, or liability for any damage or expense will be accepted or may be implied.

If a defective or damaged regulator is received, or if service is required within or outside of warranty, correspondence should be addressed to the Service Department, Electric Regulator Corporation, Pearl Street, Norwalk, Connecticut. As much information as possible should be included concerning the symptoms of difficulty, the application, etc. The more information that is supplied, the faster the service the company can give in handling the request.

In all correspondence concerning this REGOHM Regulator, the part Numbers should always be listed. Without this information, Electric Regulator Corporation may be unable to give prompt and accurate service.

All shipments to the Electric Regulator Corporation should be prepaid, unless a collect shipment has been authorized during correspondence.

MAINTENANCE

No maintenance is required on the REGOHM VOLTAGE REGULATOR. The cover should always be left on the REGOHM.

Do not clean, lubricate or attempt to adjust the mechanism inside the cover. The remainder of the equipment should be kept free of dust, dirt, grease and moisture.

If trouble occurs, check the system circuit and if no fault is observed, substitute a spare regulator and return the old unit to the factory for inspection and repair.

REGOHM VOLTAGE REGULATOR

PRINCIPLES OF OPERATION

As generally used, the regulator acts as an automatic field rheostat which adjusts field current in order to maintain constant output voltage of the generator. In this type of application the contact fingers of the REGOHM rest on the shorting contact bar when the coil is not energized, reducing the resistance in the field circuit to a minimum.

When the magnet coil is energized, the moving armature is attracted to it. This movement is opposed by the reference springs and the armature moves only when the magnetic pull and the pull of the springs are not equal. As the armature moves, it opens or closes fingers, depending upon the direction of motion, increasing or reducing the amount of resistance in the field circuit and thus maintaining a constant output voltage. An example of the operation of the regulator is as follows:

If the generator is operating at rated voltage with full load, the regulator is in equilibrium with a certain

amount of resistance in the field circuit. Should the load suddenly be removed, the output voltage would tend to rise, increasing the coil voltage and moving the armature towards the core. This action would open more fingers and insert more resistance in the field circuit, reducing field current and restoring output voltage to its original value.

The reference springs and the contact fingers are set at the factory. *NO adjustment of these parts should be made in the field.* It is the action of the finger and solenoid combination with this factory-set characteristic that make the REGOHM a sensitive voltage controller.

The regulator is inherently very fast acting. Stabilization is accomplished through the use of an air dashpot (see Figure 2) which may be adjusted to match the time constant of each generator and give optimum speed of response without "hunting."

OPERATING INSTRUCTIONS

Installation connections must be made as shown in the applicable wiring diagram. Terminals "A" and "B" are connected in the field circuit in series with the manual field rheostat, if one is provided. (NOTE: Check terminals "A" and "B" of the regulator chassis to insure that terminal "A" is positive (+) with respect to terminal "B".) Terminal "C" and "D" are connected to the output terminals of the generator in series with the separately mounted line-voltage adjusting rheostat,* supplied with the regulator, or to a potential transformer if required.

When the regulator is first put into service, the following procedure should be observed:

- (1) Check all circuit connections.
- (2) Start machine with rheostat "M" in maximum resistance position, and rheostat "R" in middle position.
- (3) Cut out rheostat "M" slowly until regulator starts to control.
- (4) Adjust rheostat* "R" for desired output voltage and set rheostat "M" to zero position. If desired adjustment range is not achieved, reset voltage adjusting resistor on control panel.
- (5) Loosen dashpot adjusting allen head screw (see Figure 2) until hunting starts. Then tighten allen head screw until hunting just stops. NOTE: This adjustment must be made at once and the system not allowed to

hunt, otherwise, damage may occur to the REGOHM fingers.

The Dashpot adjusting allen head screw is used to provide maximum stability of the machine consistent with meeting the speed of response in the specification.

IMPORTANT: This is the only adjustment that may be necessary. No adjustment of springs or contact fingers should ever be made.

(6) When the regulator is controlling properly, the output voltage may be varied by adjusting the line-voltage rheostat.

(7) Abnormal operation should be tested by complete regulator substitution to determine whether difficulty is in the machine system, panel wiring, or in the regulator.

Once this procedure has been followed, the generator may be restarted as often as desired without repeating the procedure. However, care should be taken that the manual field rheostat is in the zero resistance position.

NOTE: E.R.C. is not responsible for regulator performance if adjustments other than on the dashpot adjusting allen head screw are made on the REGOHM. No replacement of parts of regulator components may be made except at the factory. Spares consist of complete REGOHM plug-in elements, resistor chassis, or rheostats.

* The voltage adjusting rheostat "R" mounted externally may be set to operate at the proper range by adjusting the slide resistor on the right side of the REGOHM when supplied. This slider has been set at the factory and will usually be found to be at the proper setting.

REGOHM VOLTAGE REGULATOR

INSTRUCTIONS FOR REMOVAL AND INSTALLATION OF THE REGOHM AND ITS COVER

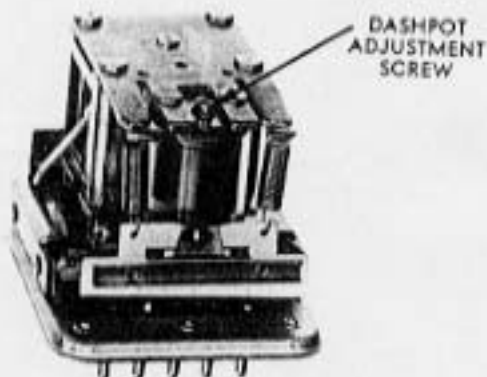
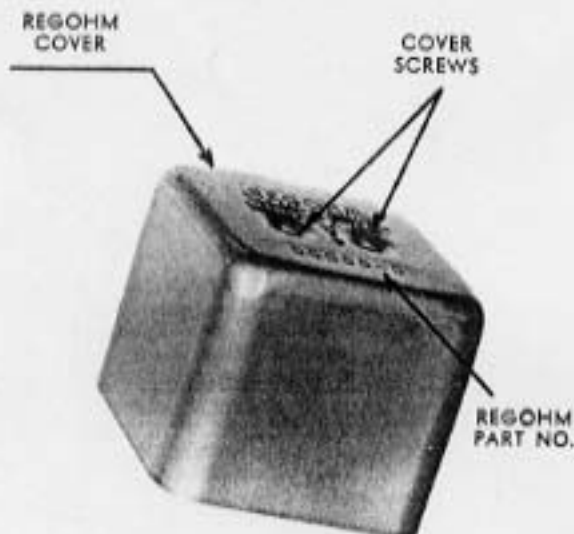


FIGURE 2

PROCEDURE I — REMOVAL OF REGOHM FROM ITS MOUNTING SOCKET

- A. Remove the securing clamp (as illustrated in Figure 1) by loosening the two screws and lifting up and out.
- B. Carefully remove the REGOHM from its socket as you would remove a vacuum tube.

PROCEDURE II — INSTALLING THE REGOHM IN THE CHASSIS SOCKET

- A. Be sure the REGOHM to be installed is of the correct type. This can be determined by comparing the the REGOHM Part number shown on the top of the REGOHM cover with the number shown on the Chassis nameplate. (See Figure 1)
- B. Check the pin layout of the REGOHM with the socket holes to be sure that they will line up. A REGOHM pin will be either added or deleted during manufacturing to provide the necessary keying.
- C. Apply pressure to the top of the REGOHM to press it into its socket. DO NOT TAP IN or apply extreme pressure, damage may result to either the REGOHM or socket or both.
- D. Replace the securing clamp and tighten the screws.

PROCEDURE III — REMOVING AND REPLACING THE REGOHM COVER

- A. Using a small blade screwdriver, remove the top cover screws and lock washers from the top of the REGOHM (See Figure 2), and save.
- B. Gently lift the REGOHM cover up and off. DO NOT pry off, damage to the REGOHM may result.
- C. Proceed with the DASHPOT adjustment procedure as covered in step five of the operating instructions. DO NOT tamper with or touch any other parts of the REGOHM.
- D. Replace the cover at once and replace the cover screws.

REGOHM VOLTAGE REGULATOR

INSTRUCTIONS FOR OPENING AND RESEALING G AND W TYPE REGOHMS WITH ACCESSIBLE DASHPOT COVERS

Note: An open flame torch must not be used.

EQUIPMENT NEEDED: Heat resistant cloth or glove; 75 to 300 watt soldering iron; rosin core solder and a small blade screw driver.

Step (1) Removal of Access Lid

- Remove the REGOHM Plug-in controller from the regulator chassis.
- Referring to figure (4), hold the REGOHM Plug-in Controller as shown with the area to be unsoldered face down. **CAUTION:** Do not hold the REGOHM Plug-in controller in the bare hand while using the soldering iron. Take care to insulate the hand using a heavy protective cloth or glove.
- Apply heat to the center of the access lid for approximately one minute then gently pry the lid off with the tip of the soldering iron. Care must be taken not to force solder back into the hole.
- Retain the removed lid and allow the REGOHM plug-in controller to cool.



Fig. 4

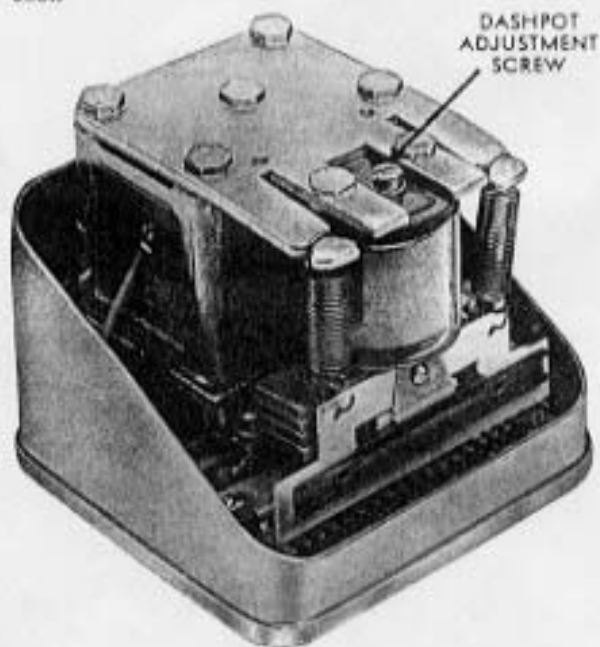


Fig. 3

Step (2) Dashpot Adjustment

- Return the REGOHM Plug-in controller to the regular chassis.
- Referring to the section titled "Operating Instruction", proceed with the installation and starting procedure as outlined.
- After the dashpot has been adjusted to the optimum setting (Figure 3) and the system is operating correctly, remove the input power and allow the system to come to a complete stop.

Step (3) Resealing of Accessible Dashpot Aperture

- Replace the lid removed during step (1) paragraph A, taking care to correctly center over the aperture.
- Referring to figure (5) apply the tip of the iron to the center of the lid and heat until the surface solder flows freely.
- If additional sealant is required, touch the edge of the lid with *one small drop* of solder and allow it to flow around the groove for a complete seal. **CAUTION:** Do not use excessive amount of solder otherwise droppings may fall inside the can and damage the REGOHM Plug-in controller element.

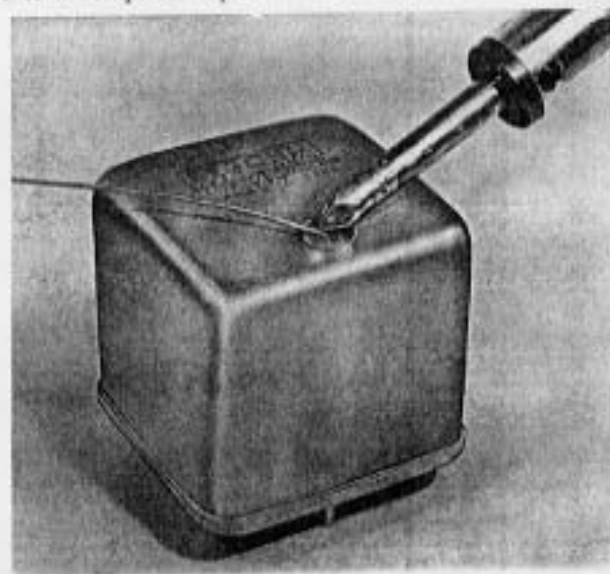


Fig. 5



ELECTRIC REGULATOR CORPORATION

Norwalk, Connecticut

REGOHM VOLTAGE REGULATOR

INSTRUCTIONS FOR INSTALLATION OF THE REGOHM AND DASHPOT CAP

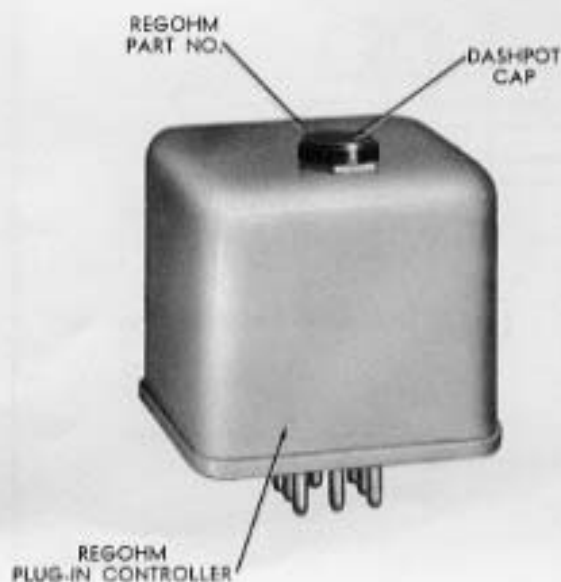


FIGURE 2

PROCEDURE I — REMOVAL OF REGOHM FROM ITS MOUNTING SOCKET

- A. Remove the securing clamp (as illustrated in Figure 1) by loosening the two screws and lifting up and out.
- B. Carefully remove the REGOHM from its socket as you would remove a vacuum tube.

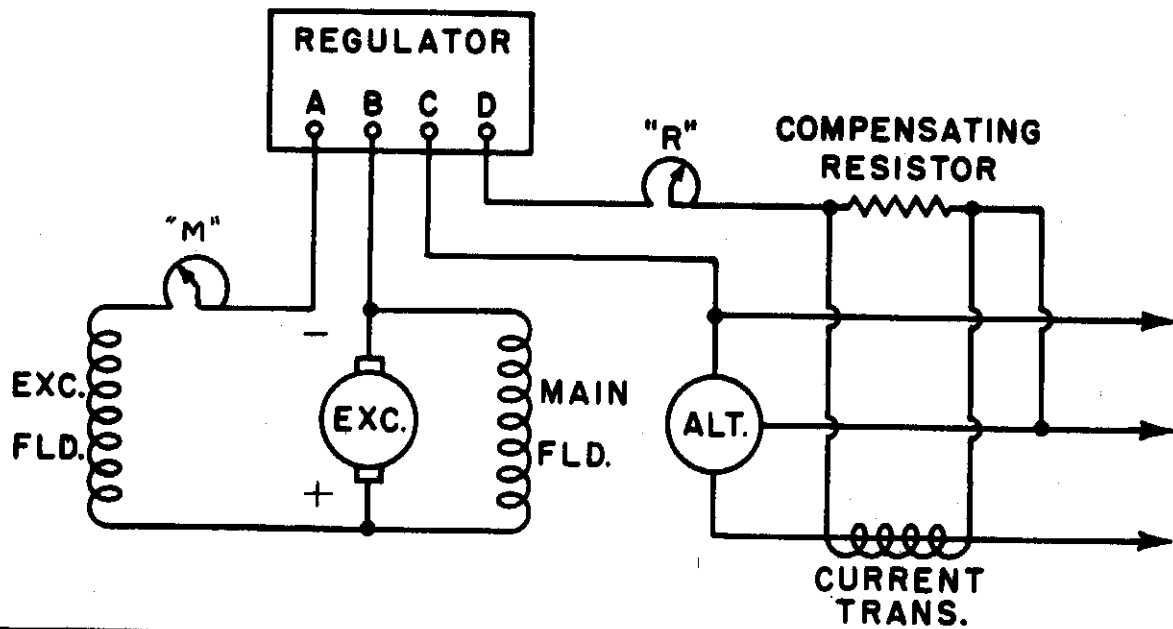
PROCEDURE II — INSTALLING THE REGOHM IN THE CHASSIS SOCKET

- A. Be sure the REGOHM to be installed is of the correct type. This can be determined by comparing the the REGOHM Part number shown on the top of the REGOHM cover with the number shown on the Chassis nameplate. (See Figure 1)
- B. Check the pin layout of the REGOHM with the socket holes to be sure that they will line up. A REGOHM pin will be either added or deleted during manufacturing to provide the necessary keying.
- C. Apply pressure to the top of the REGOHM to press it into its socket. DO NOT TAP IN or apply extreme pressure, damage may result to either the REGOHM or socket or both.
- D. Replace the securing clamp and tighten the screws.

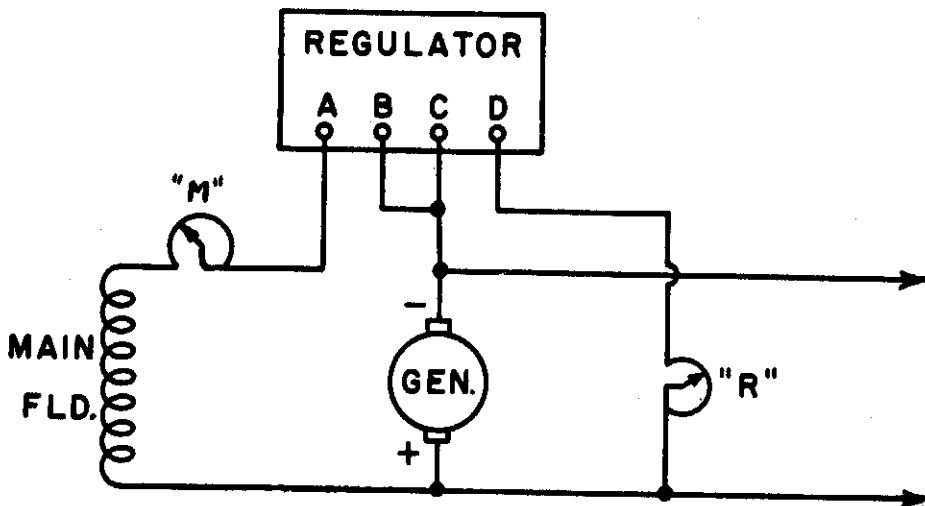
PROCEDURE III — REMOVING AND REPLACING THE DASHPOT CAP

- A. Using a small blade screwdriver, pry off cap.
- B. Proceed with the DASHPOT adjustment procedure as covered in step five of the operating instructions.
- C. Replace the cap by snapping on.

**THREE PHASE EXCITER-EXCITED ALTERNATOR
SINGLE-PHASE SENSING
(Parallel Operation)**

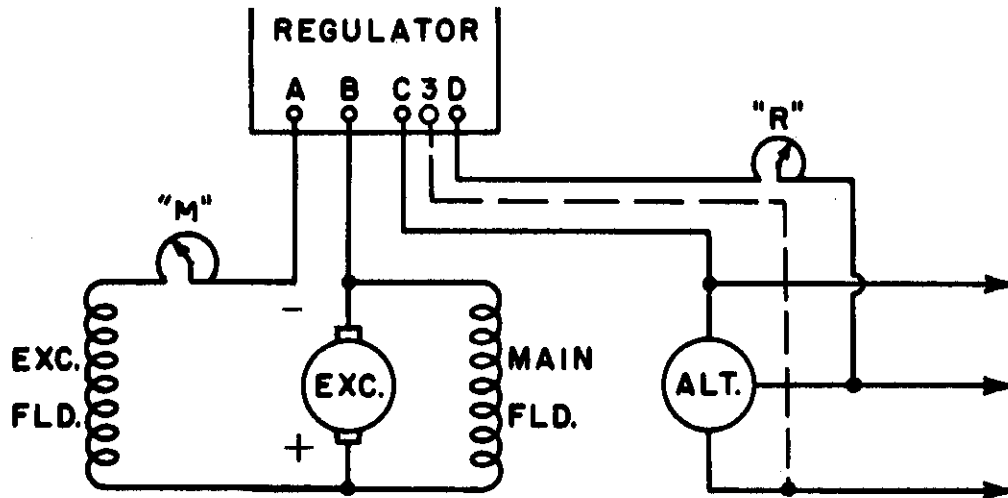


DC SELF-EXCITED GENERATOR

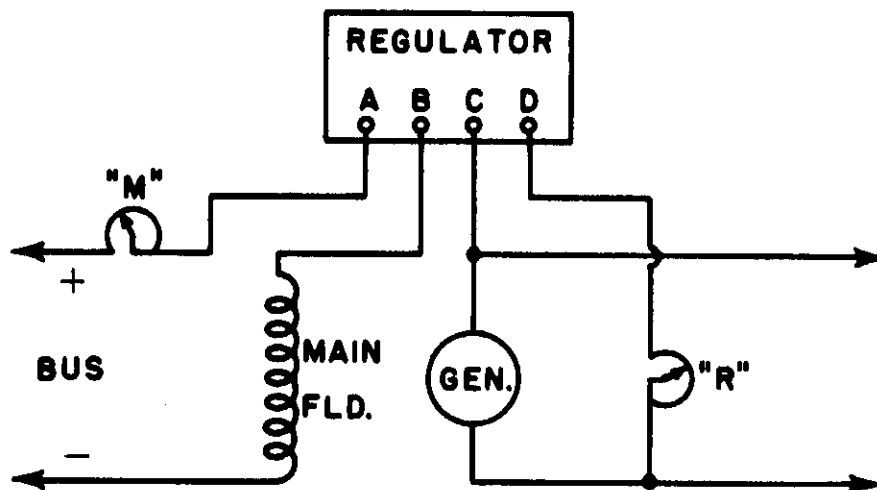


THREE PHASE EXCITER-EXCITED ALTERNATOR SINGLE-PHASE SENSING

(THREE PHASE SENSING — ADD DOTTED LINE CONNECTION)



SEPARATELY EXCITED GENERATOR



REGOHM[®]



ELECTRIC REGULATOR CORPORATION

Norwalk, Connecticut