



# I N S T R U C T I O N S

## MAGNETIC CONTROLLERS INSPECTION AND MAINTENANCE

### PREVENTIVE MAINTENANCE

Equipment well cared for will provide satisfactory and dependable operation with a minimum of trouble. A plan of periodic and systematic maintenance should therefore be worked out. Following such a plan will often prevent expensive replacement of complete apparatus under breakdown conditions. Any plan of preventive maintenance should include cleaning, lubrication, and inspection.

**Cleaning.** Clean the dust from the apparatus. If possible, blow the dust out with dry compressed air. In the absence of an air supply, clean the equipment with a brush or with dry rags. Do not use oily rags as they will leave an oil film on the equipment which will collect dust particles.

**Lubrication.** Do not lubricate the contacts, bearings, or any other points of any relay or contactor. Oil sparingly the limit switch and master switch bearings, starwheel, and pawl, but do not oil the contacts of these switches.

**Inspection and Replacement.** Check the connections for loose terminals. Check all devices and operate them manually to locate loose hardware, weak springs, and parts which are developing excessive friction. Tighten loose hardware, and replace worn or defective parts. If the replacement of a component requires the removal of connections, be sure to replace the connections in exactly their original locations. Inspect contacts, springs, and shunts carefully.

**1. Contacts.** Inspect each pair of contacts for signs of wear, for adequate overtravel, and for adequate force. A rough contact surface does not necessarily indicate a defective contact.

**a. Copper Contacts.** If copper contacts become severely pitted or burned, dress them with a fine file. Do not use emery cloth or sandpaper as abrasive granules may become imbedded in the contact surface.

**b. Silver Contacts.** Blackening of a silver contact is not an indication of high contact resistance. Normally dressing is not necessary, but, if

the surfaces are deeply pitted or burned, some dressing with a fine file is advisable.

When contact wear has reduced the overtravel to the minimum value specified in the instruction leaflet for the device, replace both the stationary and the moving contacts. Clean the contact seating surfaces thoroughly, bolt the new contacts firmly in place, reassemble the device, check the contact alignment, and check the contact force and overtravel.

**2. Springs.** Weak springs may cause low contact pressures and may cause contacts to bounce. Low contact pressures may cause the contacts to overheat. Bouncing contacts may cause the contact surfaces to weld. Therefore, inspect the springs for signs of deterioration.

Comparison of a used spring with a new spring as to size, shape, color and tension will indicate roughly whether the used spring has lost its strength. If there is any doubt about the condition of the spring, measure the spring tension and compare it to the recommended value. The instruction leaflets for the individual devices describe the measurement of spring tensions and give correct values of spring tensions.

If a spring is weak, replace it with a new spring. The instruction leaflet describes the installation and adjustment of a new spring.

**3. Shunts.** Inspect flexible shunts of fine stranded copper for broken strands and for loose terminals. Replace worn shunts.

### CORRECTION OF TROUBLE

Even with the best plan of preventive maintenance it is possible for trouble to develop. If a device fails to operate, check it systematically for:

1. Disconnected power supply or low voltage.
2. Loose or broken connection from the power supply to the device.
3. Short-circuited or open-circuited coil.
4. Mechanical interference or excessive friction.
5. Incorrect spring tension.
6. Welded contacts.

Then take the appropriate action to correct the trouble.

**WESTINGHOUSE ELECTRIC CORPORATION**  
**BUFFALO PLANT • GENERAL PURPOSE CONTROL DEPT. • BUFFALO 5, N. Y.**  
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# INSTRUCTIONS

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