

SERVICE BULLETIN

Title	A30, A30-M & MICROAVR CONTACTOR
Reference	SB0000004D
Date	16th JUNE 2009
Category	IMPORTANT: Action needs to be taken to safeguard capital equipment or personnel safety.

Objective

To inform operators of a potential issue relating to failure of a contactor in certain BRUSH AVR's.

Background

As a result of a recent failure of equipment in operation it has become apparent that, in the unlikely event of a field suppression contactor (FSC) fault occurring within an A30, A30-M or MicroAVR voltage regulator, the resulting overheating of the internal field suppression resistor (FSR) could potentially lead to the possibility of a fire developing. (This bulletin does not apply to newer BRUSH A12, A32 and A50 systems which use a different field suppression circuit.)

Recommendation

BRUSH has produced a fault detector kit (Option 1) for fitting to existing in service units. The fault detector kit comprises two circuit boards designed to fit easily to the AVR without disturbing existing plant wiring. It is supplied complete with instructions and associated fitting components. If a fault is detected the fault detector kit immediately initiates suppression of excitation before heat damage occurs to internal AVR components close to the FSR.

Reports of FSC faults are extremely rare events which are believed to have occurred only when an FSC contact has failed to conduct when excitation is first applied on starting of a generator. If an FSC fault occurs then the time taken for the fault detector to trigger will depend upon the rate of excitation current increase but it is most likely to be within a few minutes of excitation first being applied. It is extremely unlikely that an FSC fault will ever occur if a generator has been running with excitation applied for a significant period of time. This means that a fault detector is extremely unlikely to initiate suppression of excitation if the generator has been on line for any significant period of time.

An alternate fault detector kit including a slave relay (Option 2) is also available for use in special applications where an FSC fault cannot be allowed to immediately initiate excitation suppression. This kit requires wiring on site to enable shutdown by an external automatic system or to enable manual shutdown initiated by an alarm.

Both fault detector kits are designed to monitor temperature of the FSR, triggering at a temperature below that which would cause damage. However the rate of temperature increase will depend upon ambient temperature, excitation current and the rate of increase of excitation current. Therefore if the fault detector does trigger, then excitation should be shut down as soon as possible to avoid heat damage to components close to the FSR.

After allowing for a cool down period of several minutes (depending upon ambient temperature of the AVR environment) operating personnel may choose to re-initiate application of excitation. It is likely that this further switching of the FSC will be successful and that normal operation of the AVR and generator will then be possible. If the fault detector continues to indicate a problem after repeated attempts to apply excitation then the FSC within the



AVR or the AVR rack assembly must be replaced before operation can continue. However, if subsequent attempts to apply excitation are successful then operation of the AVR and generator can continue, with very careful monitoring, until it is possible to replace the FSC or the AVR rack assembly.

Continued operation of an AVR, including an FSC which is known to have previously failed but is now operating correctly, should only be undertaken in exceptional circumstances when continuing generation is vital but a replacement FSC or AVR is unavailable.

Note that damage to AVR internal components will be avoided when the fault detector kit is used to prevent continued operation of an AVR with a faulty contactor. Hence the AVR should then only require replacement of the field suppression contactor.

BRUSH will send fault detector kits free of charge to any operator of A30, A30-M or MicroAVR products and BRUSH strongly encourages users to fit and connect these detectors to ensure that excitation is suppressed if a fault is detected. BRUSH will be pleased to provide help with fitting and using the kits by email or phone.

Applicable to

The following BRUSH Automatic Voltage Regulators: A30, A30-M, MicroAVR

Action required

Please fit the kits according to the supplied instructions (E963973700) and connect in a suitable manner to ensure suppression of excitation in the event of an FSC fault being detected. BRUSH will send FSC fault detector kits free of charge for each A30, A30-M and MicroAVR. Please email your request for each kit required with the following information to avrbulletin@brush.eu

1. Contact name with telephone number and email address, for delivery of kit
2. Company name for delivery of kit
3. Address for delivery of kit including full street name and number and postal ZIP code
4. Number of kits required
5. Type of kit required:
 - Option 1 - Standard (A30-FSCFD and A30-FSCFD-TR) for easy fitting and automatic suppression on detection of fault.
 - Option 2 – Special (A30-FSCFD and slave relay) requiring some minor wiring on site to initiate suppression by external system or to initiate a manual suppression sequence prompted by an alarm.
6. The d.c. auxiliary voltage used by the AVR (24V or 110V)
7. Serial numbers of AVRs requiring kits and associated generator serial numbers
8. Turbine manufacturer

For further information please contact

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