

Rod Control System Replacement Fuses

Background

In 1969, the first solid state rod control system was installed in a U.S. nuclear power plant. Seventy Westinghouse solid state rod control systems are in operation in nuclear plants around the world. Westinghouse is committed to support and maintain the operating rod control systems through an ongoing design enhancement program to improve the operation and reliability of the system. This redesign focuses on addressing known reliability detractors, replacing obsolete components and adding additional features to improve reliability and maintainability. The program allows Westinghouse to now offer improved reliability replacement fuses for the power and DC hold cabinets, and the bus duct disconnect switches.

Description

Under a program sponsored by the Pressurized Water Reactor Owners group, improved control rod drive mechanism gripper coil fuses were developed to address an unacceptably high failure rate of originally supplied fuses and several subsequent replacements. While failure of other power cabinet and bus duct disconnect fuses generally will not result in dropped rods, the inability to move rods due to an urgent alarm or from an open lift coil fuse can result in significant troubleshooting time spent identifying and correcting the source of the problem. Fuses with improved reliability can minimize these incidents.



Stationary and movable gripper coil 15A fuse P/N 1B81429

Benefits

Each new fuse is radiographed. Radiographs are examined for cracked fuse elements, poor soldering and solder balls touching the fuse elements, which could result in changing the melting characteristics. Resistance of each fuse is measured to affirm that it

is within an acceptable range. Ferrules and end caps are inspected for cracks and for tightness on the fuse body. It is expected that these additional tests and inspections will significantly reduce premature failure.

Ordering Information

Cabinet	Description	Old Part #	New Part #
Power cabinet	Stationary thyristor fuses – 30 amps	A60X30-1	10013B17G01
Power cabinet	Lift coil fuses – 50 amps	A25X50-4	10013B18G01
Power cabinet	Stationary and movable gripper coil fuses – 15 amps	2432B59	1B81429
Power cabinet	Stationary and movable gripper coil fuses – 25 amps	2432B59	1B81079
Bus duct safety switch	Stationary bus duct fuses – 50 amps	A60X50-4	10013B19G01
Bus duct safety switch	Movable bus duct fuses – 30 amps	A60X30-1	10013B17G01
Bus duct safety switch	Lift bus duct fuses – 150 amps	A60X150-4	10013B20G01
Bus duct safety switch	DC hold bus duct fuses – 30 amps	NOS30	LPS-RK-30SP
DC hold cabinet	70 VDC output fuses – 50 amps	A13X50-1	10013B21G01
DC hold cabinet	125 VDC output fuses – 80 amps	A25X80-4	10013B22G01
DC hold cabinet	3-phase supply fuses – 30 amps	NOS30	LPS-RK-30SP

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