I.B. 48031

Instructions for the Installation of 400 Ampere Type SL Contactors into Ampgard® Starters Originally Equipped With Type LF or SJ Contactors

!DANGER
Hazardous Voltage.

Read and understand this manual in its entirety before installing or operating the contactor. Qualified personnel must perform installation, adjustment, and maintenance of this equipment. A qualified person is one who is familiar with the construction and operation of the equipment and who is aware of the hazards involved. This instruction book should not be considered all-inclusive regarding installation, adjustment, and maintenance procedures.

Read and understand all instruction literature for the SL Contactor before performing any work on the contactor or the starter in which it is to be installed.

General Information

400 Ampere Type SL contactors are available to directly replace 400 Ampere Type LF (airbreak) or Type SJ (vacuum) contactors. The SL contactors are available for installation into rollout, slideout, and narrow design Ampgard® starters.

Rollout, slideout, and narrow design SL contactors were designed to directly replace the previous generation LF and SJ contactors. In most cases, only minor modifications are required to install the SL. Refer to the information below for details.

Contactor Setup

The SL contactor is programmable for various control voltages and dropout times. In many instances, the settings will have been made at the factory. Review the contactor nameplate information to insure that the contactor is properly set for the application before energizing. Refer to the SL contactor instruction book(s) for details.

Current Rating

LF and SJ contactors were rated as 360 amp (continuous, enclosed) devices. The SL contactor is available with both a 200 amp and a 400 amp rating. The amp rating is listed on the contactor nameplate. Verify that the SL contactor is a 400 amp device before installing in an LF or SJ starter with full load current over 200 amps.

Grounding

On the slideout and narrow type SL, ground connections for CT's, PT's, and CPT's are made through a ground pad located on the left side sheet of the contactor. On the rollout type SL contactor, the ground connection for contactor mounted CPT's is made through a ground finger mounted on the contactor and a

ground clip mounted in the starter cell. On the LF and SJ contactors, the ground connections are made through the terminal blocks located in the starter low voltage compartment

Since there will be no connections in the existing (LF or SJ) starter cells to the contactor ground pads or fingers, no wiring changes are necessary when installing an SL into an existing cell.

If an LF or SJ contactor is installed into an SL starter cell, there will be no connection to ground. A ground wire must be added in the low voltage compartment to provide proper grounding of the control circuit. The ground wire must be removed if an SL is reinstalled in the starter at a later date.

Most existing starters with 240 volt control included fuses in each leg of the control power transformer secondary. SL contactors with 240 volt control are supplied with one leg fused and the other leg grounded. Insure that the unfused leg of the control circuit is grounded when installing an SL contactor into an existing starter with 240 volt control. In most cases this will require the addition of a ground wire in the low voltage compartment.

Mechanically latched contactors

Wiring for latched type SL contactors is slightly different than LF or SJ contactors. A normally closed auxiliary contact was used to clear the main coil circuit on LF and SJ starters. For SL starters, auxiliary contacts are not used to clear the main coil or interposing relay (typically denoted as MX and is used to apply power to the main coils). For proper operation, insure that there is not a normally closed contact wired to the interposing relay or in series with the main contactor coil.

If a latched SL is used to replace an existing LF or SJ, the medium voltage door must also be replaced. The mechanical latch release mechanism is in a different location on the SL, which requires a different location on the door for the reset button. The mechanism is also closer to the rear of the door on the SL, which requires a shorter reset extension. A release mechanism is mounted to the rear of the SL door to engage the latch release lever on the front of the contactor. This mechanism must be added to the LF or SJ door to allow for manual release of the latch.

Potential Transformers on Rollout Contactors

If the existing LF or rollout type SJ starter included potential transformers, the SL contactor must include optional line fingers to provide proper connection to the transformer. Specify an SL contactor with line fingers and without PT's when installing in this application.

Door Interference Rod

Rollout SL contactors include an interference rod that prevents the medium voltage door being closed unless the contactor is fully inserted into the starter cell. Current starters are manufactured with deep flanged doors. Starters manufactured prior to July 1983 were supplied with narrow flanged doors. To install an SL contactor into a starter with narrow flanged doors, the interference rod must be unbolted and re-bolted approximately 3/8" to the rear of the original installation. The holes for moving the bracket back already exist on the contactor sidesheet. This will allow the door to close with the contactor fully inserted into the starter cell.

Reduced Voltage Starters

The opening time of the SL contactor may vary slightly from one operation to the next. To insure that a reduced voltage starter does not transition from reduced to full voltage if there is a voltage loss of short duration during starting, the opening time of the shorting contactor should be set for a longer time than that of the main contactor. For example, if the main contactor has a dropout setting with dipswitch 7 being 'on' (approx. 130 milliseconds), then the shorting contactor should have a dropout setting with dipswitch 8

being 'on' (approx. 250 milliseconds). Refer to the general contactor instruction book for more details on adjusting the dropout setting.

Altitude Ratings

The standard altitude rating for an SL contactor is –1000 to +2000 meters. Optional ratings are from –3500 meters to –1001 meters, and from +2001 meters to +5000 meters. The specific altitude rating is shown on the main contactor nameplate. The standard altitude rating for an SJ contactor is –1000 to +1526 meters. Optional ratings are from +1527 to +3664 meters and from +3665 to +4885 meters. Insure that the altitude rating for the SL contactor is appropriate for the installed location.