

Instructions for Installation, Operation and Maintenance of the Ampgard 720A Reduced Voltage Soft Starter



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Read and understand these instructions before attempting any installation, operation or maintenance of the Ampgard Reduced Voltage Soft Starter.

This equipment shall be installed and serviced only by qualified electrical personnel.

Retain this document for future use.

⚠ DANGER

HAZARDOUS VOLTAGE

ALL POWER SOURCES MUST BE ISOLATED AND LOCKED OUT BEFORE SERVICING THE EQUIPMENT.

READ AND UNDERSTAND THESE INSTRUCTIONS IN THEIR ENTIRETY BEFORE INSTALLING, OPERATING, OR MAINTAINING THIS EQUIPMENT. ONLY QUALIFIED PERSONS SHOULD INSTALL, MAINTAIN, ADJUST OR REPAIR THESE UNITS. A QUALIFIED PERSON IS ONE WHO IS FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS ASSOCIATED WITH IT.

Purpose

This instruction book is to insure the safe and successful installation, operation and maintenance of the Ampgard 720A Reduced Voltage Soft Starter (RVSS). This equipment may be installed as an individual structure or may be part of a lineup of Ampgard products.

Section 1: Introduction

1.1 Basic Description of a Single Unit

The Ampgard RVSS is designed to start medium voltage motors at reduced voltages with specific ramp times and amperages. An individual unit is 72 in wide x 30 in deep and 92 in tall, including the main bus. An additional structure for incoming line cables may also be supplied. The left structure is referred to as the main structure and the right structure is the RVSS cell. The upper portion of the main structure is referred to as the main cell and the lower portion is the bypass cell. (See **Fig. 1**.)

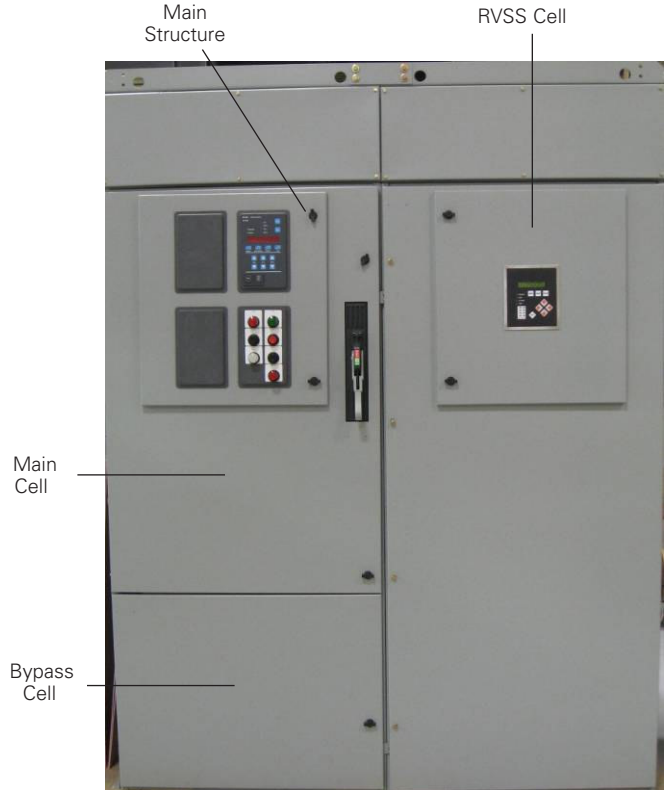


Figure 1. Ampgard 720A RVSS Unit

1.2 Main Cell

The upper cell consists of a full voltage starter with a non-load break isolation switch, medium voltage current limiting fuses, an SL contractor, and current transformers. The low voltage control compartment is located on the front of the medium voltage door. (See **Fig. 2.**) Refer to IB48043 (Instructions for Ampgard 720A Ampere Medium Voltage Starter) for operating and maintenance instructions on the main cell.



Figure 2. Main Cell

The following components are located on the front of the low voltage door of the main cell. (See **Fig. 3**)

- Bypass Mode LED – After the motor is started and reaches speed, the bypass contactor closes to bypass the SCRs in the soft starter. The Bypass Mode Indicating Light will illuminate when the SCRs are bypassed.
- RVSS Fault LED – In the event of a soft starter failure, the RVSS Fault LED will illuminate.
- RVSS Fault Reset Pushbutton – In the event of a soft starter failure, the RVSS Fault Reset pushbutton must be depressed to clear the fault.
- Optional start-stop pushbuttons and runstopped indicating lights are supplied when specified.



Figure 3. Low Voltage Components

1.3 Bypass Cell

The bypass cell consists of an SL contactor which is used to bypass the SCRs in the soft starter when the motor reaches full speed. There is an interlock tab that prevents this cell door from being opened until the isolation switch and main cell door have been opened, insuring that line voltage is not present. (See **Fig. 4.**)

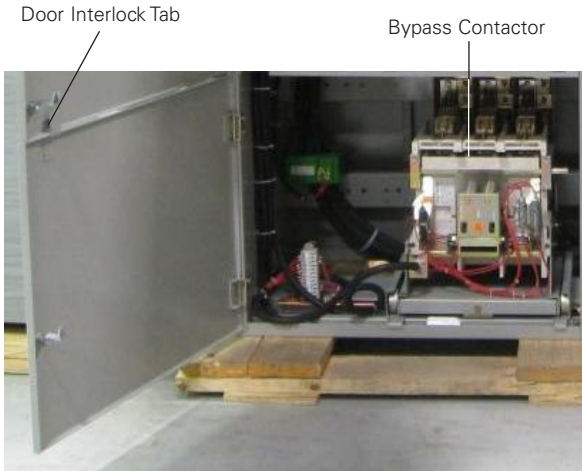


Figure 4. Bypass Cell

1.4 RVSS Cell

The right side cell houses the Ampgard RVSS assembly. The RVSS cell includes a medium voltage door with an interlock tab. This feature prevents access to the RVSS cell until the isolation switch and main cell door have been opened, insuring that line voltage is not present. The RVSS door must be closed prior to closing the main starter doors. (See **Figs. 5 & 6.**)



Figure 5. RVSS Cell

⚠ WARNING

BARRIERS MUST BE INSTALLED BEFORE ENERGIZING STARTER. FAILURE TO INSTALL BARRIERS CAN RESULT IN EQUIPMENT FAILURE, SERIOUS INJURY, OR DEATH.



Figure 6. Interlock Tab

A second low voltage compartment door is located on the front of the RVSS medium voltage door. The keypad operator interface is located on the front of the low voltage door and is used to configure the RVSS. Refer to DEH41021 (Medium Voltage Solid State OEM Soft Starter Manual) for details on operating the keypad. (See **Fig. 7.**)



Figure 7. Keypad Operator Interface

The control system for the RVSS is located in this low voltage compartment. Components include the CPU board, main power board, terminal and control board, and CT board. (See **Fig. 8.**)



Figure 8. Control System Boards

Section 2: Operation

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Starters are shipped from the factory with barriers installed as shown in **Fig. 5.**

Refer to the schematic in **Fig. 10** for the following description of operation. The Ampgard RVSS includes a main isolation contactor M that closes just before soft start ramping begins and opens after a stop is completed. During a fault condition, the RVSS control system will shut down the soft start and then the main contactor will open. During a short circuit or ground fault detected by a separate motor relay, the relay will immediately open the main contactor to limit potential damage to the system. See the notes on the schematic for programming the relay.

When the start contact is closed and no trip condition is present, control relay CR closes, MXTD closes, and main contactor M closes. Main contactor aux contacts M2-M3 close and energize control relay RVX. RVX signals the RVSS control system to begin ramping. Bypass contactor B closes when the motor reaches full speed as determined by both time and current settings.

To allow soft stop to execute fully, timer MXTD has been placed in the control circuit to delay the main contactor opening until soft stop is complete. The timer delay should be set slightly (5s) longer than the deceleration time selected in the RVSS configuration set point. If soft stop is not required, the timer should be set at 1s to allow the main isolation contactor to open as soon as the soft start de-energizes the motor.

The RVSS is set at the factory with typical starting characteristics that perform well in most applications. After the power and control connections have been made, use the initial RVSS settings to operate the motor. If you wish to review the settings or make adjustments to fit your application, see section 5.1.2 of DEH41021 (Medium Voltage Solid State OEM Soft Starter Manual).

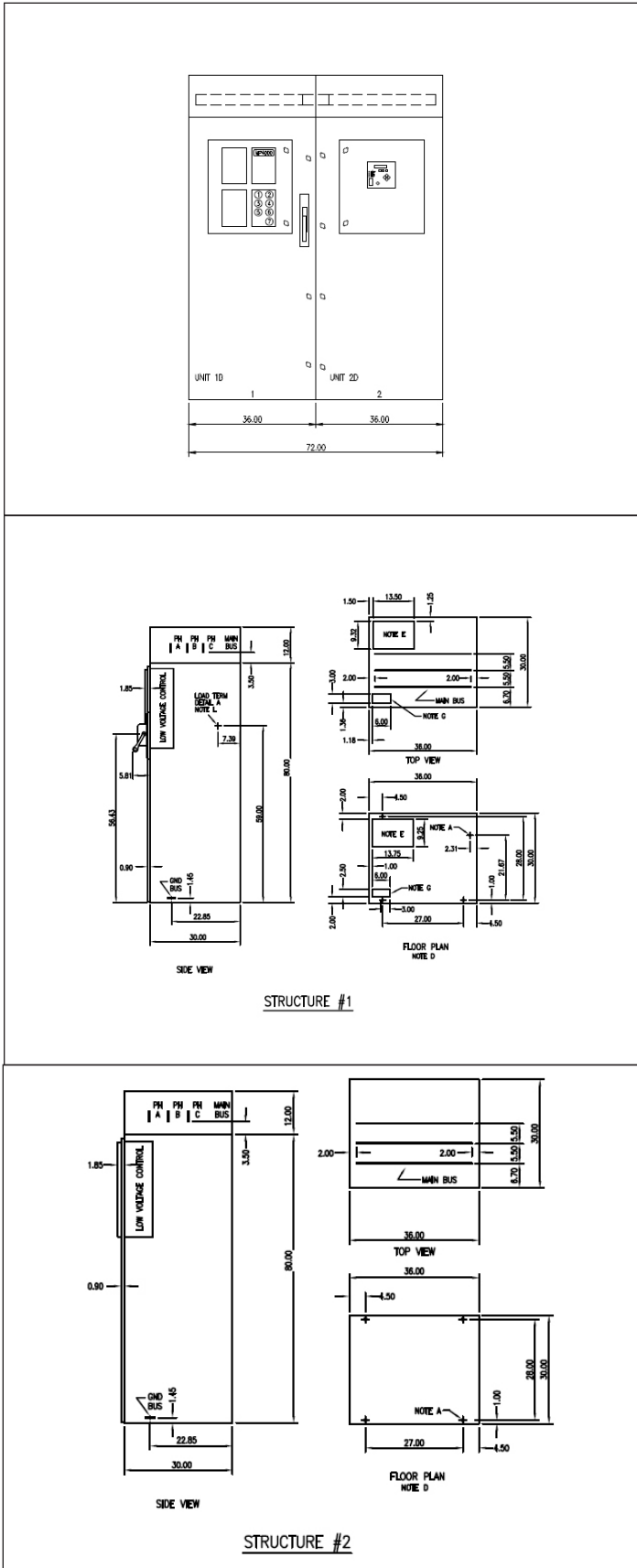


Figure 9. Ampgard RVSS Arrangement

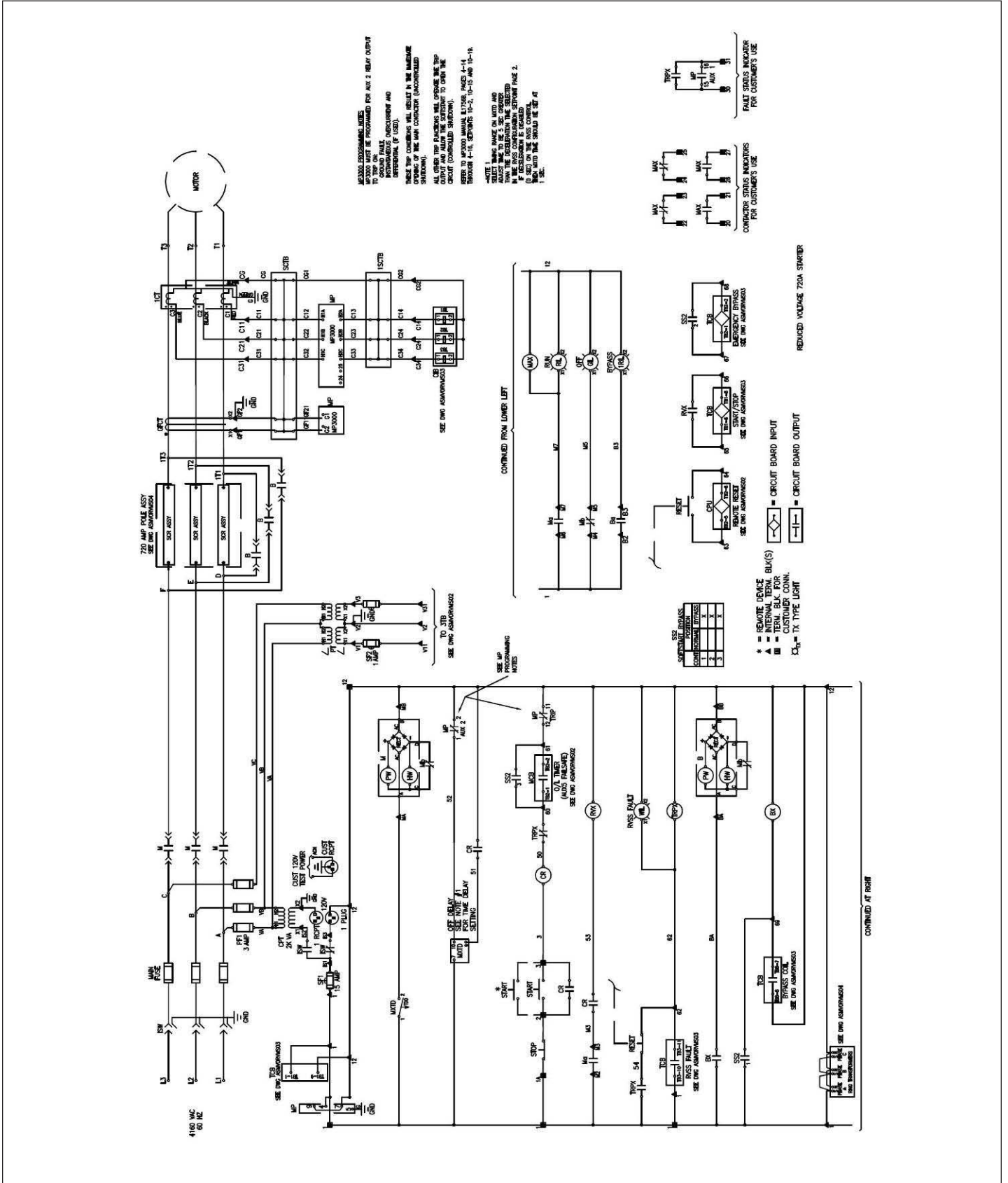


Figure 10. Ampgard RVSS Typical Schematic

Instruction Booklet IB48066

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