



APPLICATION NOTE 700142B

INSTALLATION OF EN1000 CASCADE-FP (SCR)

Model EN1000 Cascade-FP (SCR) is a Cascade/Multi-Valve Control designed to fire existing SCRs. This model is equipped with state-of-the-art microprocessor-based logic circuits, valve and control power supplies, and firing circuits for each of the existing SCRs. The EN1000 Cascade-FP (SCR) consists of three assemblies to provide easy location and mounting. This document is intended to provide general installation guidelines and wire routing techniques. All component parts of the EN1000 Cascade-FP (SCR) are identical to those used in our current Cascade/Multi-Valve controls.

1.0 INDIVIDUAL COMPONENT ASSEMBLIES

Firing Board Assembly

This assembly consists of a 9" X 24" plate containing from 1 to 8 individual firing board assemblies. Each individual firing board assembly is equipped with a sense transformer and surge resistors dedicated to each existing SCR. Each individual firing board has inputs for the cathode and gate connections, the temperature limit switch and 16 pin (In and Out) firing board interface sockets to cascade firing signals from the microprocessor control board. The main power input terminal strip is also located on this assembly. The power terminal strip (TS11) inputs are clearly labeled for the L1 and L2 and the various SCRs H1 connections.

Input/Output Control Power Supply Assembly

This assembly consists of a 9" X 24" mounting plate containing a control power transformer, valve transformer, peripheral input circuit board, valve output circuit board, and control power fuse block. Power (L1 and L2) inputs to the valve transformer primary are clearly labeled. The valve output circuit board (Terminal Strip TS10) provides 8 available 120VAC outputs. The peripheral input circuit board provides connections for foot switch (initiation), Emergency Stop, Process Outputs, Pressure Switch, etc., connected via the TS1 terminal strip. Fuse (F1) is a 6/10 amp which limits current flow to the control circuits.

Control Display Assembly

This assembly, a Display Mounting Plate measuring 9-9/16" X 9-9/16", consists of a microprocessor control panel display with push button programming and interface ribbon cable connector. Data entry and direct access to all schedule parameters are possible through this panel. For more information regarding programming and operation, see Instruction Manual 700194.

Options

Our entire Cascade product line, including the EN1000 Cascade-FP (SCR), can be fitted with the following options:

RS232	Computer Interface Option (Instruction Manual 700140)
S99	100 Schedule External Schedule Select Option (Application Note 700115)
TSS	Terminal Strip Skip (Contactor Disable) Option (Application Note 700138)
PLS	Program Lockout (key switch) Option

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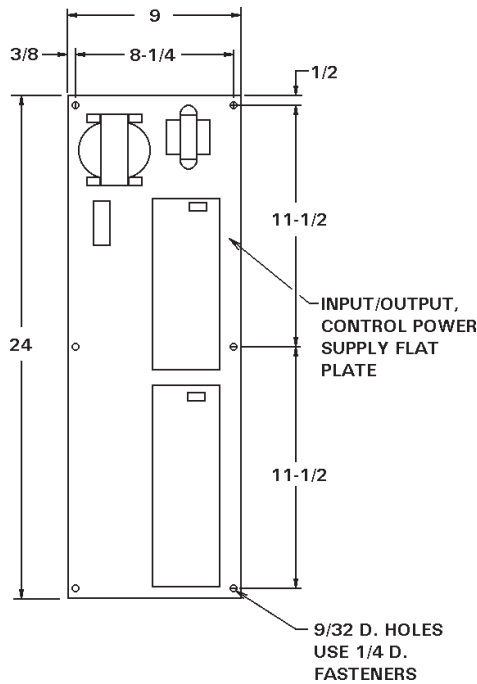
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2.0 INSTALLATION

When choosing mounting location, bear in mind the wire harnesses joining the assemblies have a finite length. The various cable lengths are as follows:

J3	Control Power (from Transformer to Display Panel)	30" length
J7	Firing Signal Interface (from Display to Firing Board Panel)	38" length
J4A	Initiation Input Interface (from Display to I/O Panel)	31" length



When locating these assemblies, be aware cable routing distance must be taken into account. Provide some slack to minimize over-stressing the cable connection terminations. Locate SCRs near the Firing Board Assembly. SCR gate and cathode wires should be physically isolated from other wiring to avoid electrical transients from causing false triggering of SCRs (fusing may be required). Some SCRs have sensitive gates. In these cases, special care should be taken to isolate interconnecting wires.

Use the Wiring Diagram (See Reference Information on page 3 for correct Wiring Diagram) to connect the control. When making connections from Circuit Board to Circuit Board via a 16 pin ribbon cable, be sure the red stripe (indicating pin 1) is in the correct orientation. Ribbon cable connections from Firing Board to Firing Board (In and Out) should already be installed. Customer connections have been highlighted on the Wiring Diagram.

Figure 2-1. *Input/Output Assembly mounting detail*

Develop a systematic method to install all customer connections.

Check to insure that no connections are omitted or connected improperly to guarantee proper operation of the control. Reference the Wiring Diagram for location of all customer connections.

Recommendations

Route initiation wires on paths isolated from any valve and transformer wiring. Isolating high voltage from low voltage wiring is essential in minimizing internal transients. Connect a solid earth ground to the control cabinet or mounting location to avoid electrical shock and insure proper control functionality. Some SCRs have sensitive gates. In these cases, special care should be taken to isolate interconnecting wires.

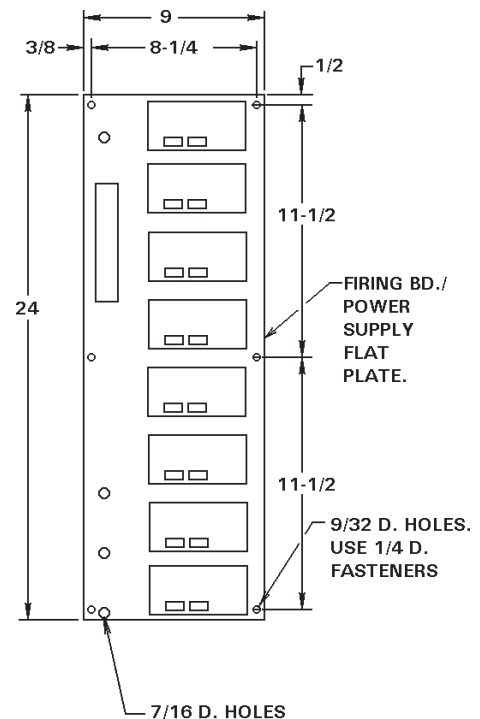


Figure 2-2. *Firing Board Assembly mounting detail*

3.0 RETROFIT APPLICATION

The Model EN1000 Cascade-FP (SCR) can be used to retrofit any manufacturer’s cascade/multiweld welding control depending on the size of the cabinet being considered. If the component assemblies’ dimensions are too large, the SCR Firing Board Assembly may be altered only if the number of SCRs allows. For example, a Firing Board Assembly may only contain three Firing Boards. Removal of the unused portion of the plate will provide additional space. The retrofit configuration described within this document may, or may not, fit the layout of the cabinet being considered.

3.1 RETROFIT CABINET PREPARATION

Remove all contents of the cabinet with the exception of the SCR assemblies and welding transformer primary wiring. If the Firing Board Circuit is part of the SCR assembly, it must be isolated in order to allow firing directly from the SCR Firing Boards included on Firing Board Assembly. Install Firing Board Assembly and Input/Output Control Power Supply Assembly using existing cabinet studs wherever possible. Mount all three assemblies securely to minimize vibration.

The Display Panel plate dimensions may differ from the original equipment. It may be necessary to modify the cabinet to provide the 8" X 8" mounting holes. If possible, locate this assembly in the same space occupied by the panel being replaced.

3.2 RETROFIT TO AN ENTRON CABINET

It may be possible to retrofit this control to existing EN100, EN200, EN300 Series ENTRON Cascade/Multi-Valve Controls with NEMA Enclosures.

Remove all contents of the cabinet with the exception of the SCR assemblies and welding transformer primary wiring. When mounting the Firing Board Assembly and Input/Output Control Power Supply Assembly, panel mounting holes may line up with some mounting studs in the cabinet being fitted. The Input/Output Control Power Supply Assembly is intended to be located on the side wall of the control cabinet as shown in Figure 3-1.

NOTICE

Refer to diagrams on page 4 of this document and Mounting Detail 440450-002 for hole locations and diameter.

Recommendations

Route initiation wires on paths isolated from any valve and transformer wiring. Isolating high voltage from low voltage wiring is essential in minimizing internal transients. Connect a solid earth ground to the control cabinet or mounting location to avoid electrical shock and insure proper control functionality. Some SCRs have sensitive gates. In these cases, special care should be taken to isolate interconnecting wires.

! WARNING !

To avoid serious bodily injury and damage to control circuitry, be sure all wiring, including SCR connections, is correct and secure prior to applying power to control.

REFERENCE INFORMATION

Wiring Diagram	421214-026 (230/380/460/575V Operation)
Wiring Diagram	421214-015 (230V Operation) - <i>OBSOLETE</i>
Wiring Diagram	421214-012 (460V Operation) - <i>OBSOLETE</i>
Mounting Detail	440450-002
Control’s Instruction Manual	700194

MOUNTING INFORMATION, EN1000-FP (SCR) IN EXISTING ENTRON CASCADE/MULTI-VALVE NEMA 12 ENCLOSURE

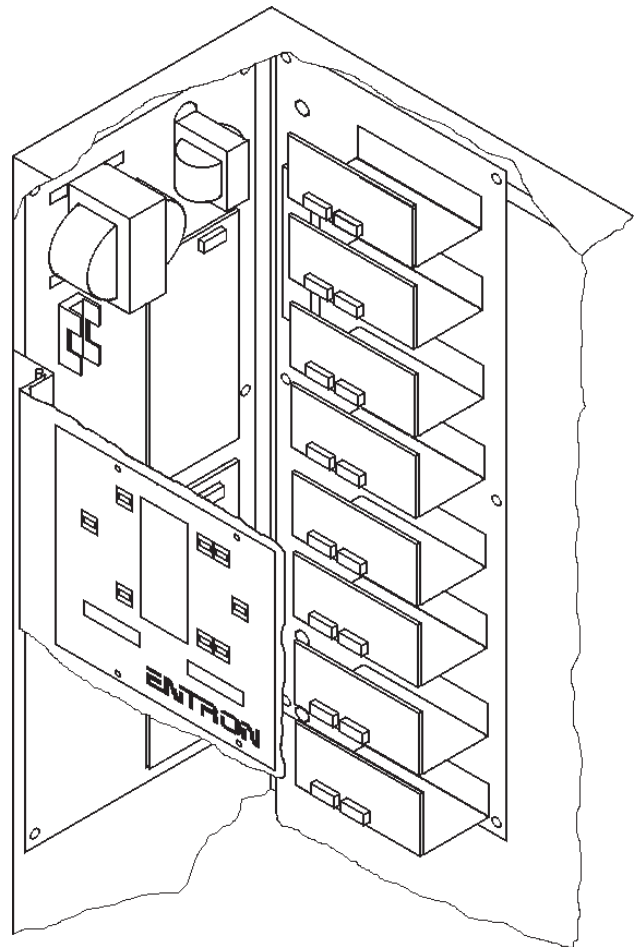
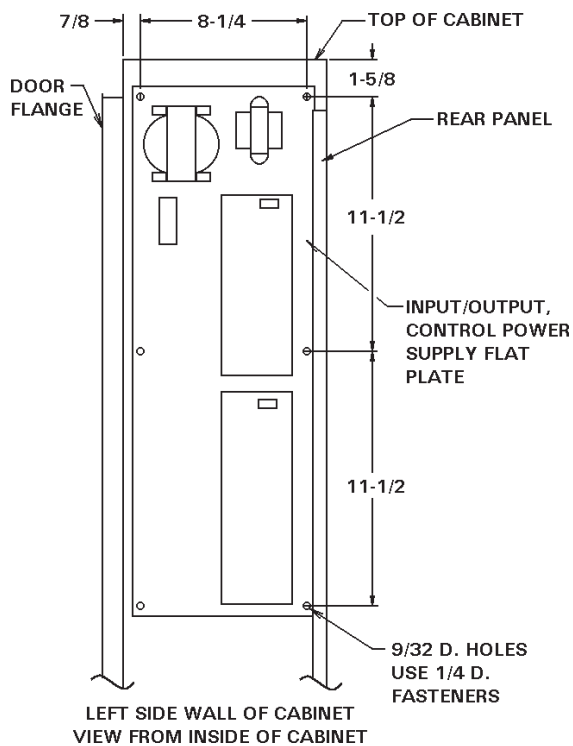
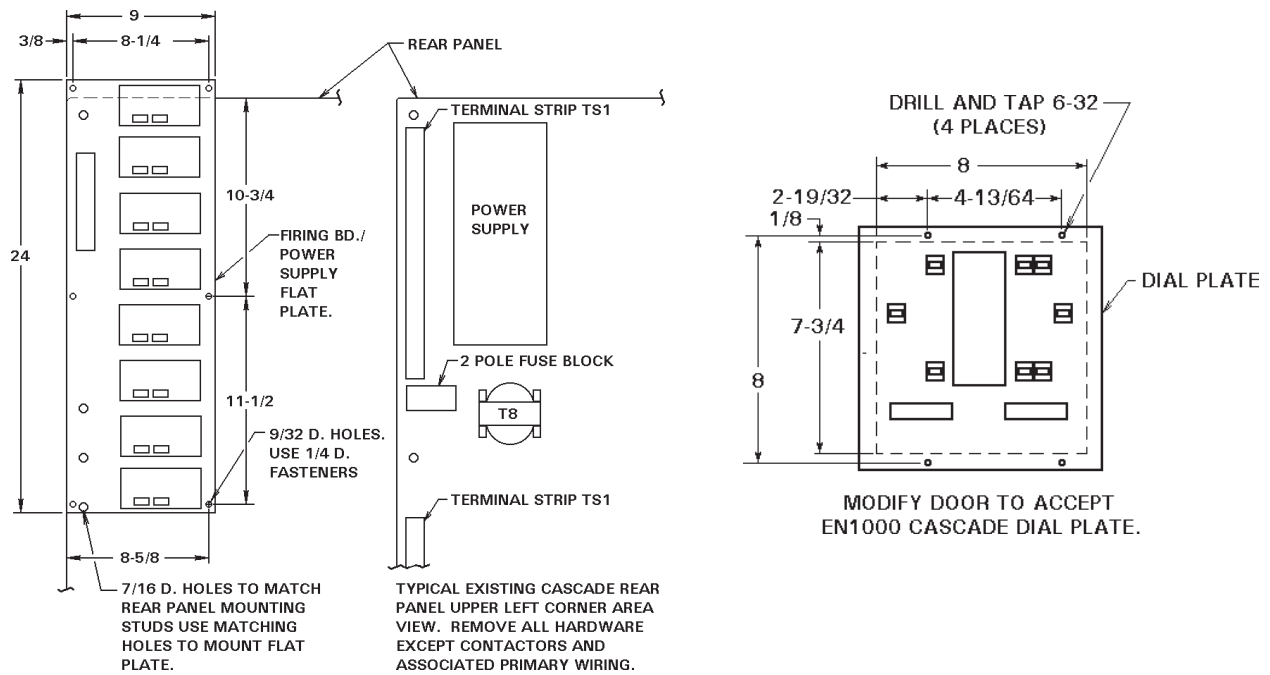


Figure 3-1. Pictorial View Of Control Panel Placement In Existing ENTRON Cascade NEMA 12 Enclosure