



Darrah Solid-State Contactor Replacement Installation Instructions

1. Darrah's solid-state contactor replacement consists of a pair of SCR's wired inverse parallel. The anode of SCR #1 is wired to cathode of SCR #2.
2. This pair of SCR's is wired in series with one of the A.C. input lines to the welding transformer.
3. The gate and cathode control leads of the SCR's are factory wired to the Darrah AM-8 module. This module controls the firing of the SCR thru the gate and cathode lead wired which are connected to Terminals #1, #2, #7 and #8.
4. To initiate firing, or to turn on the SCR's, you must close Terminals #4 and #5. This is accomplished with a dry (no voltage) set of contacts.
5. One thing to keep in mind is that the line voltage to the welding transformer (230 volts or 480 volts) is applied to Terminals #4 and #5, and the contacts you must have a voltage rating which exceeds this voltage.
6. Since this is high voltage, it is not recommended that foot pedals or palm switches be used to make this contact closure. Wire these devices with a lower voltage and use a suitable relay or a small contactor to make the closure.
7. Up to 240 volt A.C. welders, we recommend an enclosed relay, octal socket, plug-in style.

Dayton
Stock No: 5X827E
Contact Rating: 10 A @ 250 V AC
Standard Voltage Coil: 120 V AC
Darrah Part #: K12011A

Source: Grainger

The Relay Socket is:

Grainger Part #: 5X852E
Darrah Part #: E22021-A

DARRAH ELECTRIC COMPANY

Page 2 of 3

8. For 480 Volt A.C. welders, we recommend a small contactor, NEMA size "00", 120 Volt A.C. voltage coil.

ABB
Old Stock #: EH9C01
New Stock #: B9C-1
NEMA Contact Rating: 9 A @ 600 V AC
Standard Voltage Coil: 120 V AC
Darrah Part #: K15021B

Source: ABB – Central Directory
1-800-626-4999

Metal Oxide Varistor (MOV)

Darrah Electric recommends using a Metal Oxide Varistor (MOV) with each of their solid-state mechanical contactor replacements. The MOV should be rated to protect the SCR, yet be suitable for the A.C. incoming line voltage. The following chart can be used for selection of MOV:

Darrah Part Number	MOV Part Number	Incoming Line Voltage	Minimum SCR Voltage (PIV) (VRRM)
V11025	Z3209A40C	220 / 230 / 240	1000
V11034	Z80PA80A	380	1200
V11048	Z575PA80A	440 / 460 / 480	1500
V11050	Z660PA100C	550	1800
V11053	Z750PA100A	600	2000

Using MOV's across A.C. switches for frequency converter applications is not recommended unless they are specifically selected. Consult factory for more information.

R/C Snubber

Darrah Electric recommends connecting an R/C Snubber circuit across the pair of SCR's. This circuit will protect the SCR's from false triggering.

DARRAH ELECTRIC COMPANY

Page 3 of 3

The following part numbers and values are recommended:

R/C Snubber – Resistor Ratings:	15 Ohm, 25 watt
Capacitor Ratings:	.22 mmf, 660 VAC

Darrah supplies this R/C Snubber pre-wired and encapsulated for ease of mounting and connection. Refer to Darrah Part #: RC1522

Thermostats

Use of a thermostat is highly recommended for both air and water cooled contactor replacements. Most thermostats are normally closed with open when the temperature exceeds their rating.

This thermostat should be wired to open the lower voltage control wires and not wired in series with the high voltage lines, Terminals #4 and #5.