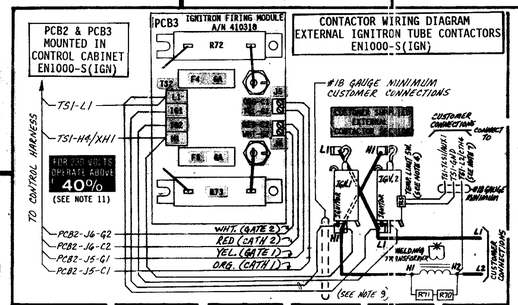
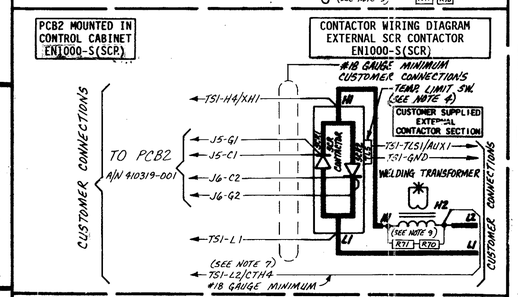
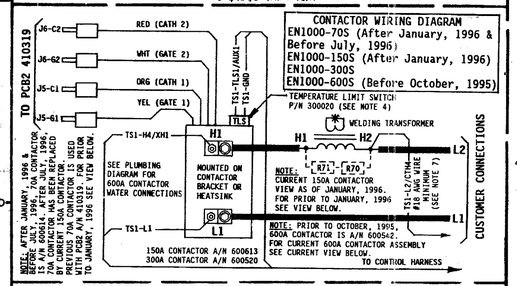
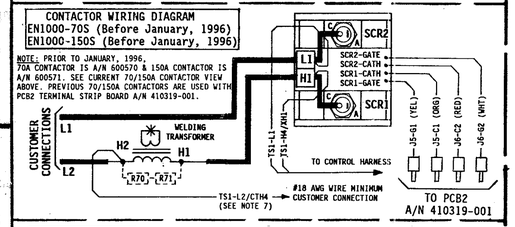
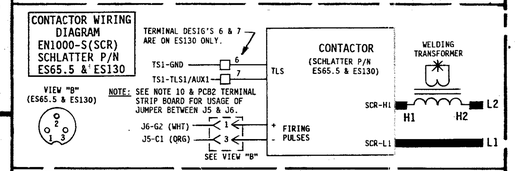
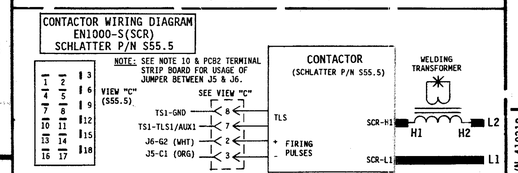


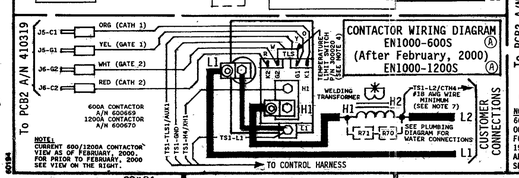






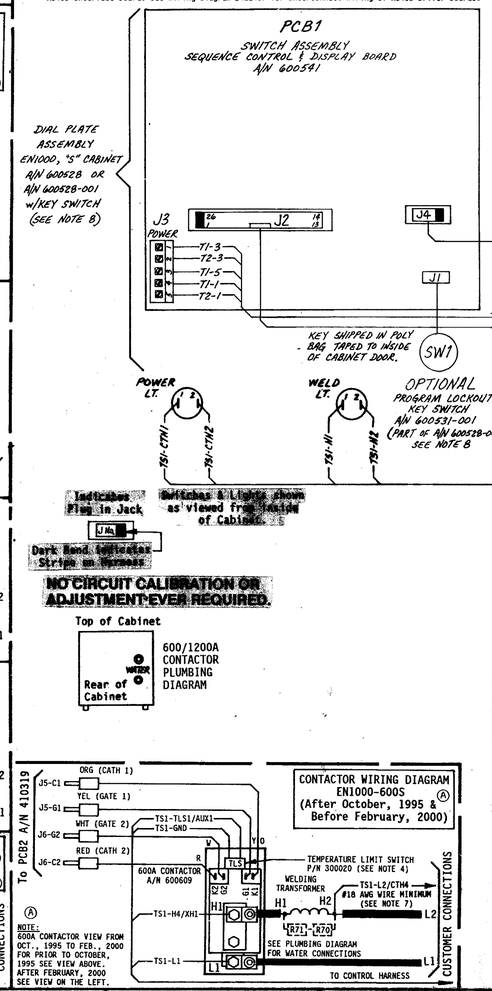






NOTES:

1. It is recommended that control wiring (i.e.: initiation, pressure switch, etc.) be physically separated from the high voltage wiring (115 volts or higher).
2. For 460 VAC Operation - Use Jumper #1 on T3 & TS1 As shipped unless otherwise specified.
   For 230 VAC Operation - Use Jumper #2 on T3 & TS1.
   For 575 VAC Operation - FACTORY WIRED ONLY. SEE VIEW "A".
   Replace T3 with P/N 311016. Wire per View "A". Use Jumper #1 between H2 & H3 on TS1.
   Use Resistor R74 (2000 Ohm, 10 Watt) in place of Jumper #1 between CTH2 & CTH3 on TS1.
   For 115 VAC or 380 VAC Operation - CONSULT FACTORY.
3. For Single Stage Pilot Operation - Connect pilot switch to TS1-FS3 & TS1-GND.
   No jumpers required across TS1-FS1 & TS1-GND.
   For Two Stage Pilot Operation - Connect 1st stage pilot switch to TS1-FS1 & TS1-GND.
   Connect 2nd stage pilot switch to TS1-FS3 & TS1-GND.
   For DUAL COUNT/DUAL CURRENT (Dual Weld/Dual Heat) or TRIPLE COUNT/TRIPLE CURRENT (Triple Weld/Triple Heat) or External Schedule Selection, SEE MANUAL.
4. EN1000-S(IGN) & EN1000-S(SCR):
   (A) When used, connect customer provided Normally Closed (N.C.) Temperature Limit Switch (TLS) across TS1-TLS1/AUX1 & TS1-GND and remove jumper between TS1-TLS1/AUX1 & TS1-GND.
   EN1000-150S, EN1000-300S, EN1000-600S, & EN1000-1200S:
   ENTRON supplies Temperature Limit Switch (TLS) P/N 300020 and provides connections to TS1-TLS1/AUX1 & TS1-GND. Jumper not required between TS1-TLS1/AUX1 & TS1-GND.
   NOTE: TLS Thyristor will open at temperatures greater than or equal to 150°F.
5. When external valve power is supplied to the control. Remove and insulate leads TS3-VL1 & TS3-VL2 on the Terminal Strip Board (PCB2), (from T3-X1 & T3-X2). Connect external AC power supply (24-240 VAC) to TS1-VL1 & TS1-SV2/SV4/VL2.
   CAUTION: Do not overtighten TS3.
6. VALVE 3 OUTPUT USAGE:
   TS1-SV5 & TS1-SV6 (Valve 3) can be used for either a Valve output or a Process output.
   When TS1-SV5 & TS1-SV6 is used as a Valve output use Jumper "A" on TS3.
   When TS1-SV5 & TS1-SV6 is used as a Process output use Jumper "B" on TS3.
   CAUTION: Do not overtighten TS3
   WARNING: Use of Jumper "B" bypasses control relay contacts to allow a process output without an initiation. SEE MANUAL.
7. Connect TS1-L2/CTH4 to L2/H2 side of Welding Transformer Primary.
8. When Optional Program Lockout is specified by customer. Dial Plate A/N 600528-001 replaces A/N 600528. Add Switch P/N 600531-001 & remove Hole Plug P/N 565003.
9. EN1000-S(IGN) & EN1000-S(SCR):
   Remove all connections from previously existing firing circuits to L1, L2/H2, & H1 also Ignitor leads or SCR Gate leads & SCR Cathode leads. All previously existing Surge Resistors or Rectifiers must be disconnected prior to installation of this control.
   CAUTION: On EN1000-S(SCR), do NOT overtighten J5 & J6.
10. For External SCR Contactor firing with Schlatter P/N S55.5, ES65.5, & ES130 Contactors. Do NOT make J5 & J6 connections as shown on PCB2. See EN1000-S(SCR) Contactor Wiring Diagram with Schlatter Contactors. Install Jumper on PCB2 Terminal Strip Board between J5-2 (Yellow) & J6-1 (Red). Make connections from J5-1 (Orange) & J6-2 (White) on PCB2 to Schlatter Contactor per correct External SCR Contactor Wiring Diagram.
11. CAUTION: Do NOT set Current Control below 40% for 230 Volt Operation with Ignitron Tube Contator.
12. DIP Switch settings for positions 1 thru 4 on RS485 Driver Board (PCB5) are set at the factory to default as a last location RS485 in an interconnect wiring arrangement. See DIP Switch Settings Chart to change the settings when this RS485 is used as a middle location. J485-J485 Cable Assembly can be used to interconnect to either an RT4 Control, another ENTRON Welding Control, or a NON-ENTRON device that has a RS485 Interface Board. See Wiring Diagram #421407 for Interconnect Wiring of RS485 Driver Boards.

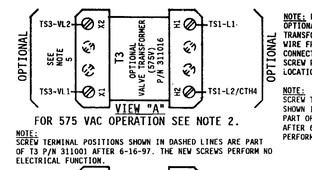


NOTICE
FOR SERVICE ON THIS CONTROL
Contact Your Machine Dealer Or
ENTRON CONTROLS INC.
DIRECTLY:(630) 682-9600
465 EAST RANDY ROAD
CAROL STREAM, IL 60188
FAX # (630) 682-3374

DANGER
HAZARDOUS VOLTAGE FROM ONE OR MORE SOURCES
Turn off all voltage sources before touching any components.
Electrical shock or flash will cause severe injury or death.

CAUTION
Control Shipped Wired for 460 VAC Operation unless otherwise specified - See Note 2.

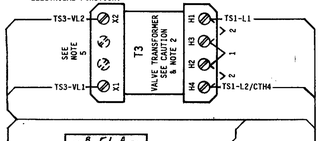
CAUTION
WATER HOSE BURST HAZARD
Cooling water must be flowing when power is on.
Water hose can burst and damage controls.



NOTE: PRIOR TO 1-15-93, OPTIONAL 575V T3 VALVE TRANSFORMER WAS P/N 311006. WIRE FROM TS1-L2/CTH4 WAS CONNECTED TO T3-H3. T3-H3 SCREW POSITION WAS IN SAME LOCATION AS T3-H2.

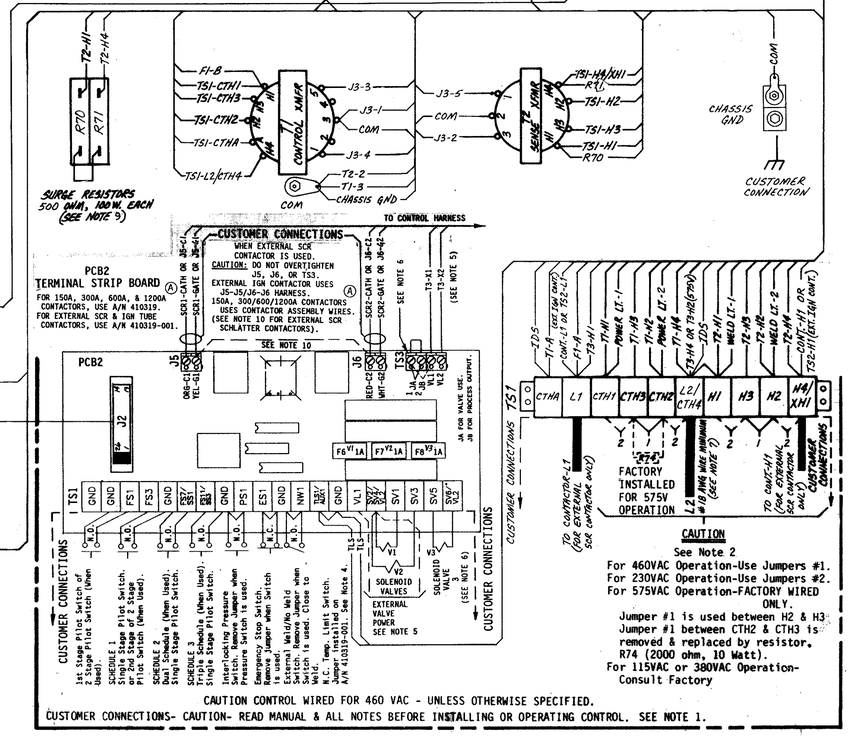
NOTE: SCREW TERMINAL POSITIONS SHOWN IN DASHED LINES ARE PART OF 575V T3 P/N 311016 AFTER 6-16-97. THE NEW SCREWS PERFORM NO ELECTRICAL FUNCTION.

NOTE: SCREW TERMINAL POSITIONS SHOWN IN DASHED LINES ARE PART OF T3 P/N 311001 AFTER 6-16-97. THE NEW SCREWS PERFORM NO ELECTRICAL FUNCTION.

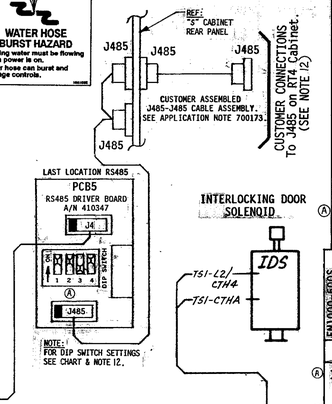


CAUTION
SEE NOTE 2
For 460 VAC Operation - Use Jumper #1 ONLY.
For 230 VAC Operation - Use Jumper #2 ONLY.
For 575 VAC Operation - FACTORY WIRED ONLY. SEE VIEW "A": REPLACE T3 WITH P/N 311016.
For 115 VAC or 380 VAC Operation - CONSULT FACTORY.

PLEASE REFER TO CORRECT CONTACTOR WIRING DIAGRAM FOR CONTROL CONTACTOR TO CONTACTOR SECTION



CAUTION
See Note 2
For 460VAC Operation-Use Jumpers #1.
For 230VAC Operation-Use Jumpers #2.
For 575VAC Operation-FACTORY WIRED ONLY.
Jumper #1 is used between H2 & H3.
Jumper #1 between CTH2 & CTH3 is removed & replaced by resistor, R74 (2000 ohm, 10 Watt).
For 115VAC or 380VAC Operation-Consult Factory



ENTRON RS485 DRIVER BOARD DIP SWITCH SETTINGS CHART		LOCATION OF EACH ENTRON RS485 DRIVER BOARD IN AN INTERCONNECT ARRANGEMENT		
		FIRST RS485 IN INTERCONNECT ARRANGEMENT (Qty. One of RS485)	MIDDLE RS485 IN INTERCONNECT ARRANGEMENT (Qty. Of RS485 may vary)	LAST RS485 IN INTERCONNECT ARRANGEMENT (Qty. One of RS485)
DIP SWITCH POSITION FOR ON/OFF SETTING	POSITION 4	ON	OFF	ON
	POSITION 3	ON	OFF	OFF
	POSITION 2	OFF	OFF	ON
	POSITION 1	OFF	OFF	ON

EXT SCR CONT'S	EXT. IGN TUBE CONT'S	150A, 300A, & 600/1200A CONT'S	DESIG.	PART NO.	DESCRIPTION
QTY.	QTY.	QTY.			
1	1	1		600528	Assem., Dial Plate, EN1000, Consisting of:
@	@	@		600528-001	Assem., Dial Plate, w/Keylock, EN1000, Consisting of:
1	1	1	PCB1	600541	Assem., Switch, Sequence Control & Display Bd.
@	@	@	SW1	600531-001	Assem., Switch, Keylock, Momentary, SPST
1	1	1		540251	Illustrated Panel, Dial Plate, EN1000
1	1	1		515104	Panel, Display Window, Red Filter, EN1000
1	1	1		565003	Hole Plug, 3/4" Diam., Black
1	1	1	J4-J4	322422	Assem.,Harness, Ctrl Bd./RS485 Driver Bd.,24" Lg.
1	1	1	J485-J485 -J485	322369-010	Assem.,Harness,RS485 Driver Bd./Cabinet Connector
1	1	1	PWR.LT.	305001	Lamp, Neon, Red, 230V
1	1	1	WLD.LT.	305002	Lamp, Neon, Clear, 230V
1	1	1	J2-J2	322303	Assem., Harness, Control Bd. to Terminal Bd.
		1	J3	322304	Assem., Harness, Power, 150A,300/600/1200A Cont's
	1		J3	322304-002	Assem., Harness, Power, External IGN Tube Cont's
1			J3	322304-003	Assem., Harness, Power, External SCR Contactors

PARTS LIST - CONTROL SECTION

421180-008 A

EN1000-600S	EN1000-300S	EN1000-150S	EN1000-70S (Ⓐ)	EN1000-S(SCR)	EN1000-S(IGN)	DESIG.	PART NO.	DESCRIPTION
QUANTITY								
Ⓐ 1	1	1	1	1	1	TS1	335034	Terminal Strip, 10 Pin, (Part of J3 Harness)
Ⓐ 1	1	1	1	1	1	T1	310001	Transformer, Control, (Part of J3 Harness)
Ⓐ 1	1	1	1	1	1	T2	310002	Transformer, Sense, (Part of J3 Harness)
Ⓐ 1	1	1	1	1	1	T3	311001	Transformer, Valve, 50VA
Ⓐ *	*	*	*	*	*	T3	311016	Transformer, Valve, 50VA, 575V
					1	(J5-J5/J6-J6)	322311	Assem., Harness, IGN Firing Module to Term. Bd.
Ⓐ X	X	X	X	X	X	T3	311002	Transformer, Valve, 150VA
Ⓐ 2	2	2	2	2	2	R70,71	225016	Resistor, Power, Surge, 500 Ohm, 100W
					2	R72,73(PCB3)	220505	Resistor, Ignitor, 5 Ohm, 50W, (Part of 410318)
Ⓐ *	*	*	*	*	*	R74	600048	Assem., Resistor, Power,2000 Ohm,10W,(For 575V)
Ⓐ 1	1	1	1	1	1	F1	308010	Fuseholder, 1 Pole, Mini, 600V
Ⓐ 1	1	1	1	1	1	F1	307024	Fuse, Control, 1/4A, FNQ-R-1/4 or KLDR-1/4
Ⓐ 3	3	3	3	3	3	F6,7,8(PCB2)	307022	Fuse, 1 Amp, Slow Blow, 2AG, (Part of 410319 & 410319-001)
					2	F4,5(PCB3)	307010	Fuse, Ignitor, 6 Amp, BAF 6, (Part of 410318)
Ⓐ 1	1	1	1	1	1	(R70,71)	325191	Assem., Wire, Surge Resistor, 18 GA., Black
Ⓐ 2	2	2	2	2	2	(T3)	325149	Assem., Wire, Valve Transformer, 22 GA., Blk.
2							346004	Lug, 5/16" Bolt to 2/0 Wire. 600A Cont., L1 & H1
Ⓐ ▼	▼	▼	▼	▼	▼	J485-J485	900258	Cable, Wire, 4 Cond.,24 Ga.,w/Shield,SHIPPED LOOSE
Ⓐ ▼	▼	▼	▼	▼	▼	J485-J485	331136	Connector,9 Pin,Screw Term,"D" Style,SHIPPED LOOSE
		1					600613	Assem.,Contactor,Thyristor,Air,150A,460/575V,w/TLS
		1					600520	Assem., Cont.,Thyristor,Air, 300A, 460/575V, w/TLS
Ⓐ 1							600669	Assem., Cont., Thyristor, Water, 600A, 460/575V
Ⓐ 1	1	1	1	1		TLS	300020	Switch, Temp. Limit, (Part of 600520 & 600613)
2							346002	Lug, 5/16" Bolt to 4/0 Wire, 1200A Cont., L1 & H1
Ⓐ *							600670	Assem., Cont., Thyristor, Water, 1200A, 460/575V
Ⓐ 1	1	1	1			PCB2	410319	Assem., PCB, Terminal Strip Board, EN1000
				1	1	PCB2	410319-001	Assem., PCB, Term. Strip Bd., Ext. Firing, EN1000
				1		PCB3	410318	Assem., PCB, IGN Firing Module
Ⓐ 1	1	1	1	1	1	(PCB2)	510236	Plate, Mounting, Terminal Strip Board
Ⓐ 1	1	1	1	1	1	(PCB5)	525035	Bracket, Mounting, RS485 Driver Board
Ⓐ 1	1	1	1	1	1		346004	Lug, Screw, Chassis GND, 2/0 Wire
Ⓐ 1	1	1	1	1	1	PCB5	410347	Assem., PCB, RS485 Driver Board
Ⓐ 1	1	1	1	1	1	IDS	600044	Assem., Interlocking Door Solenoid
							314001	Coil Assem Only, IDS
Ⓐ 1	1	1	1	1	1		510015	Cabinet, "S" Subcompact
Ⓐ 1	1	1	1	1	1		510017	Door, Cabinet, "S"
Ⓐ 1	1	1	1	1	1		421407	Wiring Diag.Interconnect Wiring of RS485 Driver Bd
Ⓐ 1	1	1	1	1	1		700171	Application Note, RS485 Driver Board
Ⓐ 1	1	1	1	1	1		700173	App. Note,Customer Assembled J485-J485 Cable Assem
Ⓐ 1	1	1	1	1	1		700105	Manual, EN1000
Ⓐ 1	1	1	1	1	1		421183	Logic Diagram, EN1000 Control
Ⓐ 1	1	1	1	1	1		421180-008	Wiring Diagram EN1000-Series/485, "S" Cabinet

PARTS LIST - CONTACTOR SECTION

Ⓐ X Optional.
@ Optional Keylock when specified by customer. See Note 8. Pack Key in Poly Bag 900148 & attach to Door w/Yellow Tape 900118.
* Substitution or addition of parts when 575V control is specified.
▼ Customer to assemble J485-J485 Cable Assembly per Application Note 700173. ENTRON to supply 25 Feet (25') of Cable P/N 900258, two (2) Connectors P/N 331136, & two (2) "J485" Labels P/N 460228 one (1) for each Connector (SHIPPED LOOSE).

MANUFACTURING INSTRUCTIONS
See Drawings #600530, #600530-001, #600530-002, & #600530-003 for Mechanical Assembly Instructions.
See Drawing #440269 for Packing Instructions of "S" Cabinet.
See Drawing #440352 for Label Locations, "S" Cabinet.
See Drawing #440055 for Customer Mounting & Knockout Detail of "S" Cabinet.
See Drawing #600526 for Layout/Assem. of Front Panel.

REV	AUTH	DESCRIPTION	DRAWN BY DATE	CHK BY DATE
A	ECN 2501	IN DRWG OR PCB5:CHG'D SETTING SELECTIONS FOR SWITCH POSITIONS 1 & 2:IN RS485 SETTINGS DRAWING'S DIP SWITCH POSITIONS, FIRST LOCATION "ON" & "OFF" POSITION 1 & 2:MIDDLE LOCATION POSITION 1 & 2:LAST LOCATION POSITION 1 & 2:ADDED POSITION 3 "ON" & "OFF" POSITION 4 "ON" & "OFF" & POSITION 3 & 4 "ON" & "OFF"	DEC	DEC
	ECN 2631	IN DRWG & PCB:CHG'D P/N 307024 FNQ-R-1/4 OR KLDR-1/4 FUSE TO P/N 307018 BBS 6/10A:IN DRWG:ADDED FOR 1200A, 600A, 300A, 150A:EXT SCR STOR & EXT IGN TUBE STOR COLUMNS IN F/L:ADDED OPTIONAL T3 VALVE XFMR 311002:IN DRWG BELOW F/L:ADDED "REF" OPTIONAL		
	ECN 2599	IN DRWG:CHG'D SCHEMATIC TO SHOW CORRECT 30 AMP, 250V FUSE:IN DRWG:ADDED NOTE 12 & SECTION 2/L:ADDED 2 J485-J485 CABLE ASSEMBLIES & 1 J485 CONNECTOR:IN DRWG:ADDED 3 J485 CONNECTORS & 1 J485 CABLE ASSEMBLY:IN DRWG:ADDED 2 J485 CABLE ASSEMBLIES & 1 J485 CONNECTOR:IN DRWG:ADDED 1 J485 CABLE ASSEMBLY