CAUTION - READ MANUAL & ALL NOTES BEFORE INSTALLING OR OPERATING CONTROL. SEE NOTE 1.
NO CIRCUIT CALIBRATION OR ADJUSTMENT EVER REQUIRED.

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.

NOTICE

FOR SERVICE ON THIS CONTROL
Contact Your Machine Dealer Or
ENTRON CONTROLS INC.
DIRECTLY:(630) 682-9000
485 EAST RANDY ROAD
CAROL STREAM, IL 60188
FAX # (630) 682-3374

421210-027

PARTS LIST - CONTROL SECTION

QTY.	DESIG.	PART NO.	DESCRIPTION
1		600528	Assem., Dial Plate, w/Sw. Assem., EN1000, Consisting of:
0		600528-001	Assem., Dial Plate, w/Sw. Assem. & Keylock, EN1000, Consisting of:
1	PCB1	600541	Assem., Switch, Sequence Control & Display Board
0	SW1	600531-001	Assem., Switch, Keylock, Momentary, SPST
1		540251	Illustrated Panel, Dial Plate, EN1000
1		515104	Panel, Display Window, Red Filter, EN1000
1		565003	Hole Plug, 3/4" Diam., Black
1	J4-J4	322397	Assem., Harness, Ctrl Bd. to RS485 Driver Bd.,
1	J485-J485-J485	322369-011	Assem., Harness, RS485 Driver Bd. to Cabinet Connector
1	PWR.LT.	305001	Lamp, Neon, Red, 230V
1	WLD.LT.	305002	Lamp, Neon, Clear, 230V
1	J2-J2	322326	Assem., Harness, Ctrl Bd. to Term. Bd.
1	J3	322325	Assem., Harness, Power, EN1000

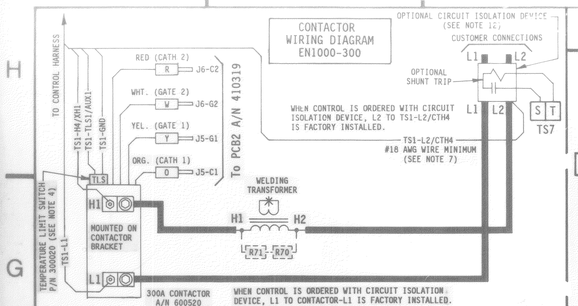
PARTS LIST - CONTACTOR SECTION

EN1000-2200	EN1000-1800	EN1000-1200	EN1000-600	EN1000-300	DESIG.	PART NO.	DESCRIPTION
1	1	1	1	1	TS1	335034	Terminal Strip, 10 Pin, (Part of J3 Harness)
#	#	#	#	#	TS7	335044	Terminal Strip, 2 Pin
+	+	+	+	+	TS8	335017	Terminal Strip, 2 Pin, (Part of 1800/2200A Cont. Assem's.)
1	1	1	1	1	T1	310001	Transformer, Control, (Part of J3 Harness)
1	1	1	1	1	T2	310002	Transformer, Sense, (Part of J3 Harness)
1	1	1	1	1	T3	311002	Transformer, Valve, 150VA
2	2	2	2	2	T3	311017	Transformer, Valve, 150VA, 575V
2	2	2	2	2	T3	311022	Transformer, Valve, 250VA
⊠	⊠	⊠	⊠	⊠	R70,71	225016	Resistor, Power, Surge, 500 Ohm, 100W
2	2	2	2	2	R74	600048	Assem., Resistor, Power, 2000 Ohm, 10W, (For 575V)
⊠	⊠	⊠	⊠	⊠	T3	311021	Transformer, Valve, 500VA
1	1	1	1	1	F1	308010	Fuseholder, 1 Pole, Mini, 600V
1	1	1	1	1	F1	307024	Fuse, Control, I/4A, FNQ-R-1/4 or KLDR-1/4
3	3	3	3	3	F6,7,8(PCB2)	307022	Fuse, 1 Amp, Slow Blow, 2AG, (Part of 410319)
1	1	1	1	1	(R70,71)	325024	Assem., Wire, Surge Resistor, 18 Ga., Black
2	2	2	2	2	(T3)	325149	Assem., Wire, Valve Transformer, 22 Ga., Black
				1		600520	Assem., Contactor, Thyristor, Air, 300A, 460/575V, w/TLS
			1			600610	Assem., Contactor, Thyristor, Water, 600A, 460/575V
		1				600598	Assem., Contactor, Thyristor, Water, 1200A, 460/575V
	1					600533-005	Assem., Contactor, SCR, Water, 1800A, 460/575V, w/TLS
1						600533-003	Assem., Contactor, SCR, Water, 2200A, 460/575V, w/TLS
						341040	Standoff, Insulator, 600/1200A Thyristor Contactor, L1
		1				325174	Assem., Wire, Contactor-L1 to Lug L1, 600/1200A Thyristor Cont.
						346004	Lug, Screw, 5/16 Bolt to 2/0 Wire, 600A Thyristor Contactor, Hi
						346011	Lug, Screw, 1/4 Bolt to 2/0 Wire, 600A Thyristor Contactor, L1
		2				346002	Lug, Screw, 5/16 Bolt to 250 MCM (4/0) Wire,1200A Cont.,L1 & Hi
1	1	1	1	1	PCB5	410347	Assem., PCB, RS485 Driver Board
▼	▼	▼	▼	▼	J485-J485	900258	Cable, Wire, 4 Cond., 24 Ga., w/Shield, SHIPPED LOOSE
▼	▼	▼	▼	▼	J485-J485	331136	Connector, 9 Pin, Screw Terminal, "D" Style,SHIPPED LOOSE
1	1	1	1	1		346004	Lug, Screw, Chassis GND, 2/0 Wire
1	1	1	1	1	PCB2	410319	Assem., PCB, Terminal Strip Board, EN1000
1	1	1	1	1	(PCB2)	510236	Plate, Mounting, Terminal Strip Board
				1		525035	Bracket, Mounting, 300A Thyristor Contactor
1	1					525136	Bracket, Mounting, 1800/2200A Contactors
		1	1	1		530021	Plate, Mounting, 600/1200A Contactors
1	1	1	1	1	TLS	300020	Switch, Temperature Limit, (N.C.), (Part of 300A Contactor & 1800/2200A Contactor Assem.'s)
X	X	X	X	X		900045	Hose, 3/8" I.D.
4	4	4	4	4		566010	Hose Clamp, 3/8" Hose
2	2	2	2	2		600179	Assem., Water Fitting, 3/8" Hose
+	+	+	+	+	WFS	600297	Assem., Water Flow Switch, 3/8" Hose
1	1	1	1	1		550014	Vault Closing Door Mechanism, "D/T/LS/LF" Cabinet
1	1	1	1	1		510247	Cabinet, Control, Style "D/T", w/CB
1	1	1	1	1		510248	Door, Cabinet, Control, Style "D/T"
				1		510247-005	Cabinet, Control, Style "D/T", w/CB Modified for 300A Xtor
						510257	Cabinet, Control, Style "LS/LF", w/CB
						510258	Door, Cabinet, Control, Style "LS/LF"
△	△	△	△	△	C/B		Circuit Breaker, Pole, Amp, V. (See Note 12)
1	1	1	1	1		421407	Wiring Diagram, Interconnect Wiring of RS485 Driver Board
1	1	1	1	1		700171	Application Note, RS485 Driver Board
1	1	1	1	1		700173	App. Note, Customer Assembled J485-J485 Cable Assembly
1	1	1	1	1		700105	Manual, EN1000
1	1	1	1	1		421183	Logic Diagram, EN1000 Control
1	1	1	1	1		421210-027	Wiring Diagram, EN1000-Series/485 "T/D/LS/LF" Cabinet

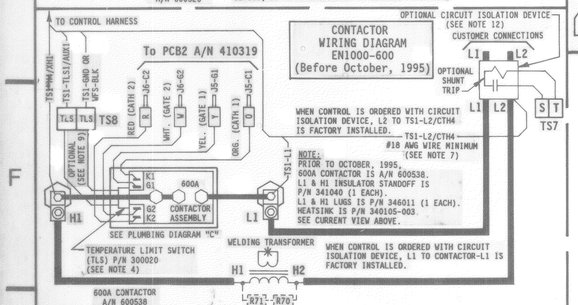
⊠ Optional.
△ Optional, See Note 12.
@ Optional Keylock when specified by customer. See Note 8. Pack Key in Poly Bag 900148 & attach to Door w/Yellow Tape 900118.
* Substitution or addition of parts when 575V control is specified.
# Supplied when optional Shunt Trip (ST), 115V is specified.
+ Optional Water Flow Switch Assembly & TS8. An additional Thirty-Six inches (36") of hose, P/N 900045 and two (2) hose clamps, P/N 566010 are to be supplied. See Note 9.
X For all contactors in "D/T" cabinet supply 39" of hose. For all contactors in "LS/LF" cabinet supply 60" of hose.
▼ 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 #515112, 515114, 600552 & 600591 for Mechanical Assembly Instruction of EN1000 "LS/LF" Cab.
See Drawing #440190-001 for Mechanical Layout of "LS/LF" Cabinet Rear Panel.
See drawing #440093 for Crating Instructions of "LS/LF" Cabinet.
See Drawing #600562 for Mechanical Layout/Assembly of EN1000 "T/D" Cabinet.
See Drawing #440365 for Inner Pack & Use Carton #650016 for "D/T" Cabinet Packing Instructions.
See Drawing #440437 for Circuit Breaker to L1 Contactor Cable Connections.
See Drawing #600526 for Layout/Assembly of Front Panel.

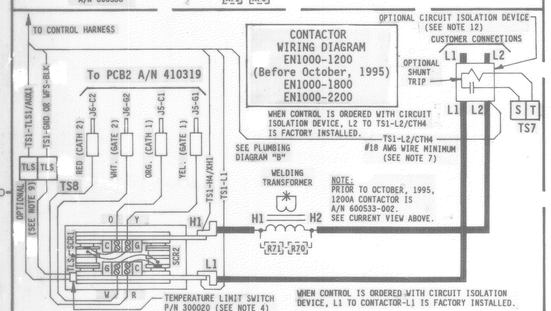
CONTACTOR WIRING DIAGRAM EN1000-300



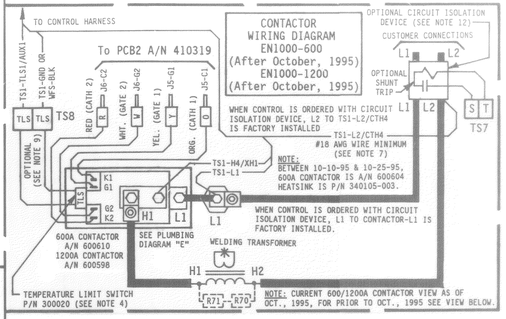
CONTACTOR WIRING DIAGRAM EN1000-600 (Before October, 1995)

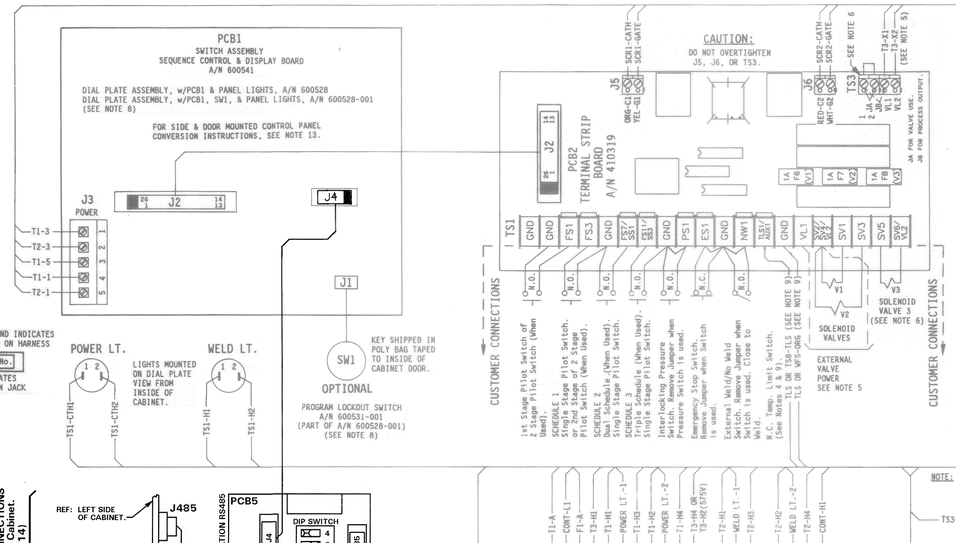


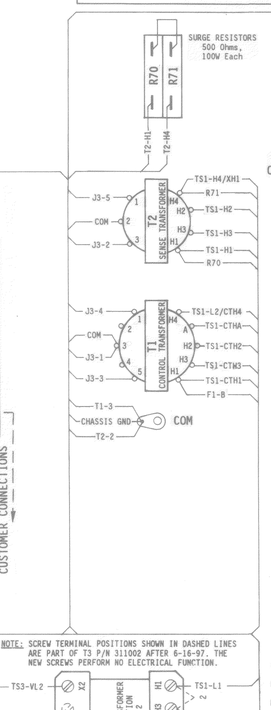
CONTACTOR WIRING DIAGRAM EN1000-1200 (Before October, 1995) EN1000-1800 EN1000-2200

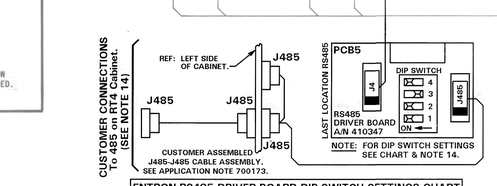


CONTACTOR WIRING DIAGRAM EN1000-600 (After October, 1995) EN1000-1200 (After October, 1995)







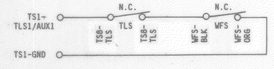


ENTRON RS485 DRIVER BOARD DIP SWITCH SETTINGS CHART

		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

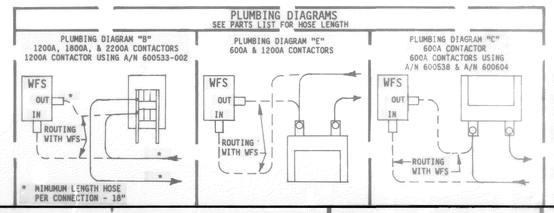
NOTES:

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 311017. 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-SERIES "D/T/LS/LF" Cabinet:
   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 SCR 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. (Factory wired on controls supplied with Circuit Isolation Device).
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. When TLS and WFS are used together, add WFS P/N 600297 & Terminal Strip TS8 P/N 335017. Wire as shown below. Jumper not required between TS1-TLS1/AUX1 & TS1-GND. WFS will open with flows less than .75 GPM.



10.
11. Current Wiring Diagram for EN1000-Series, "T" Cabinet as of October, 1991. For Controls purchased before October, 1991 see Wiring Diagram #421189.
12. When Optional Circuit Isolation Device is required 1st P/N and size of Circuit Isolation Device, and note appropriate cabinet A/N.
13. To convert the Control Panel from side mounted cabinet control to door mounted or door mounted cabinet control to side mounted.
    Remove Cover Plate and Control Panel Dial Plate Assembly. Position spiral wrap around all harness wiring to prevent interference of wiring with the closing of cabinet door. When mounting Control Panel on side of cabinet, use clamp to secure J3 harness wires.
14. 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 an RS485 Interface Board. See Wiring Diagram #421407 for Interconnect Wiring of RS485 Driver Boards.

PLUMBING DIAGRAMS
SEE PARTS LIST FOR HOSE LENGTH



CAUTION

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

REV.	AUTH.	DESCRIPTION	DRAWN BY DATE	CHK'D BY DATE
—	—	ORIGINAL RELEASE		

ENTRON CONTROLS INC

SCALE	DATE	DRAWN BY	CHK'D BY	APPROVED BY
NA				

TOLERANCE UNLESS SPECIFIED
ANGLES: ± ½°
DECIMALS: ± .010
FRACTIONS: ± 1/64

REVISED	
REV LTR	APPROVED BY
DATE	

WIRING DIAGRAM, EN1000-SERIES/485 "T","D","LS","LF" CABINET

NEXT ASSM/USED ON	DRAWING NUMBER	REV
	421210-027	

EN1000-300/485,T,D,LS,LF EN1000-1200/485,T,D,LS,LF
EN1000-600/485,T,D,LS,LF EN1000-1800/485,T,D,LS,LF
EN1000-2200/485,T,D,LS,LF

22×34 ENTRON 470046