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

WELDING TRANSFORMERS

SIDE MT'D DIAL PLATE	DOOR MT'D DIAL PLATE	QUANTITY	DESIG.	PART NO.	DESCRIPTION
					PARTS LIST - CONTROL SECTION
					421214-051
1	1	1	PCB1	600558	Assem., Dial Plate, EN1000 Cascade, Consisting of:
1	1	1		600541-001	Assem. Switch, Front Panel Display Board
1	1	1		540248	Illustrated Panel, Dial Plate, EN1000 Cascade/Multi-Valve
2	2	2		515096	Display Window, Panel, Red Filter, Cont. & Valve, EN1000 Cascade
1	1	1		515104	Display Window, Panel, Red Filter, LED, EN1000 Cascade
1	1	1	PCB5	410324	Assem., PCB, Contactor Weld & Valve Indicator Board, EN1000 Casc.
1	1	1	PCB3	410321	Assem., PCB, Program Board, EN1000 Cascade/Multi-Valve
0	0	0	SW1	600531-001	Assem., Switch, Keylock, Momentary, SPST
1	1	1		565003	Hole Plug, 3/4" Diam., Black, (For Keylock Hole)
		1	J3	322340-004	Assem., Harness, Power, Door Mounted
	1	1	J3	322341-004	Assem., Harness, Power, Side Mounted
1	1	1	J4	322342	Assem., Harness, Seq. Display Bd./Program Bd./LED Indicator Bd.
		1	J4A-J4A-J4A -J4A	322456	Assem. Harness, Prog.Bd/Output Bd/Input Bd/Opt.Bd/Opt Bd. Door Mt.
		1	J4A-J4A-J4A -J4A	322457	Assem. Harness, Prog.bd/Output Bd/Input Bd/Opt.Bd/Opt.Bd. Side Mt.
1	1	1	TS10-TS15	322435	Assem., Harness, Term Output Bd. to Valve Extension Term Bd.
	1	1	J7-IN	322346	Assem., Harness, Program Bd. to Firing Board, Door Mounted
1		1	J7-IN	322347	Assem., Hanness, Program Bd. to Firing Board, Side Mounted

PARTS LIST - CONTACTOR SECTION

EN1000-2200	EN1000-1800	EN1000-1200	EN1000-600	EN1000-300	QUANTITY	DESIG.	PART NO.	DESCRIPTION
+	+	+	+	+	1	TS6	335017	Terminal Strip, 2 Pin, 15A, (For WFS)
1	1	1	1	1	1	TS19	335024	Terminal Strip, 6 Pin, 20A
1	1	1	1	1	1	T1	310001	Transformer, Control, (Part of J3 Harness)
1	1	1	1	1	1	T8	311002	Transformer, Valve, 150VA, 230/460V
⊠	⊠	⊠	⊠	⊠	1	T8	311017	Transformer, Valve, 150VA, 575V
x	x	x	x	x	1	T8	311019	Transformer, Valve, 150VA, 380/408/415V
x	x	x	x	x	1	T8	311022	Transformer, Valve, 250VA
x	x	x	x	x	1	T8	311021	Transformer, Valve, 500VA
2	2	2	2	2	(T8)		325149	Assem., Wire, Valve Transformer, 22 Ga., Black
		1-3					341040	Insulator, Standoff, L2 Bus Bar
			2-10| 1-4	1-4		346011	Lug, Screw, 1/4" Bolt to 2/0 Wire, L1, L2, H1, & 600A Contactor
		2-10 1-4					346015	Lug, Screw, 1/4" Bolt to Dual 2/0 Wire, L2 Bus Bar
							346002	Lug, Screw, 1/4" Bolt to 4/0 Wire, L1, L2, & H1
							346006	Lug, Screw, 1/4" Bolt to Dual 4/0 Wire, L2 Bus Bar
		2-12 1-10					346005	Lug, Screw, 1/4" Bolt to 350 MCM Wire, L1, L2, & H1
							346010	Lug, Screw, 1/4" Bolt to Dual 350 MCM Wire, L2 Bus Bar
							346003	Lug, Screw, 1/4" Bolt to 500 MCM Wire, L1, L2, & H1
3-14 0-2							346016	Lug, Screw, 1/4" Bolt to Dual 500 MCM Wire, L2 Bus Bar
				#1-2 #2-7			600520	Assem., Contactor, Air, 300A, w/TLS, 460/575V
			1-8	1-8			600520-004	Assem., Contactor, Air, 300A, w/TLS, 460/575V, w/o L1 Lug
							600610	Assem., Contactor, Water, 600A, 460/575V
		1-8					600598	Assem., Contactor, Water, 1200A, 460/575V
							600549	Assem., Contactor, Water, 1800A, 460/575V
1-8							600535	Assem., Contactor, Water, 2200A, 460/575V
			1-8			TLS	300020	Switch, Temp. Limit, (N.C.), (Part of 600520 & 600520-004)
1-8	1-8						530021	Plate, Mounting, 1800/2200A Contactor
1-8	1-8			1-8			535136	Bracket, Mounting, 1800/2200A Contactor Plate
							525035-001	Bracket, Mounting, 300A Contactor
			1-8				600547-005	Assem., Power Supply, Selectable 230/380/460/575V, Consisting of:
			1-8			T2	600548-003	Transformer, Sense, (Part of 600547-005)
			2-16			R1,2	225016	Resistor, Power, Surge, 500 Ohm, 100W, (Part of 600547-005)
			1-8			(R1,2)	325024	Assem., Wire, Surge Resistor, 18 Ga., Black,(Part of 600547-005)
			1-8			PCB7-1 thru -8	410323	Assem., PCB, Firing Board, Cascade, (Mounted on Power Supply)
			*0-7			JIN-JOUT	322348	Assem., Harness, Firing Bd., Input to Output
⊠	⊠	⊠	⊠	⊠	1	JOUT	322330	Assem., Termination Plug, Cascade Firing Bd. (SEE NOTE 7)
⊠	⊠	⊠	⊠	⊠	1	R74	600048	Assem., Resistor, Power, 2000 Ohm, 10W, (For 575V)
1	1	1	1	1	1	F1	308010	Fuseholder, 1 Pole, Mini, 600V, HPC-L(BBS)
1	1	1	1	1	1	F1	307024	Fuse, Control, 1/4A, FNQ-R-1/4 or KLDR-1/4
9	9	9	9	9	F6-14		307022	Fuse, 1 Amp, Slow Blow, 2AG, (Part of 410322)
1	1	1	1	1			346004	Lug, Screw, Chassis GND, 5/16" Bolt to 2/0 Wire
1	1	1	1	1	PCB2		410329	Assem., PCB, Terminal Strip Input Bd., Cascade
1	1	1	1	1	PCB4		410322	Assem., PCB, Terminal Strip Output Bd., Cascade
1	1	1	1	1			510236	Plate Mounting, Terminal Strip Input & Output Boards
1	1	1	1	1	PCB6		410329-002	Assem., PCB, Terminal Strip Skip Option Board
1	1	1	1	1	PCB12		410322-001	Assem., PCB, 9-16 Valve Extension Terminal Strip Output Bd.
SEE CAB/HOSE SELECT CHART							900045	Hose, 3/8" I.D.
		0-7 | 0-7					558008	Hose, 3/8" I.D. x 12' Long
0-7	0-7						558201	Hose, 3/8" I.D. x 2-3/8" Dia. Coil x 18" Long
		4-18					556010	Hose Clamp, 3/8" Hose
2 +	2 +	2 +	2 +				600179	Assem., Water Fitting, 3/8" Hose
△	△	△	△	△	WFS		600297-004	Assem., Water Flow Switch, 3/8" Hose
SEE CASCADE CABINET/HOSE SELECTION CHART					C/B			Circuit Breaker, Pole, Amp, V. (SEE NOTE 10)
							510247	Cabinet, Control, Style "D/T", w/Circuit Breaker
							510257	Cabinet, Control, Style "LS/LF", w/Circuit Breaker
							510053	Cabinet, Control, Style "HS/HF", w/Circuit Breaker
							510055	Cabinet, Control, Style "SS/GF", w/Circuit Breaker
							510114	Cabinet, Control, Style "US/LF", w/Circuit Breaker
1	1	1	1	1			700146	Application Note, 9-16 Valve Output Circuits
1	1	1	1	1			700112	Manual, EN1000 Cascade
1	1	1	1	1			421186	Logic Diagram, EN1000 Cascade
1	1	1	1	1		421214-041		Wiring Diagram, EN1000/VE/TSS-Series Casc/Multi-Valve, Sel.Voltage

@ Optional Keylock when specified by customer. See Note 8. Pack key in poly bag P/N 900148 & attach to door w/yellow tape P/N 900118.
△ Optional. See Note 10.
X Optional.
⊠ Substitution or addition of part when 575V control is specified.
+ Optional Water Flow Switch Assembly (WFS). An additional Thirty-Six inches (36") of hose, P/N 900045 (as specified), and two (2) hose clamps, P/N 556010 are to be supplied. Add TS6 P/N 335017. See Note 9.
# For 1 & 2 Cascade controls with 300A Contactor(s), use Contactor P/N 600520.
For 3 thru 8 Cascade controls with 300A Contactors, use 600520 for Contactor number 1 & use 600520-004 for Contactor Numbers 2 thru 8.

CAUTION
SEE NOTE 2.
For 460 VAC Operation - Use Jumper #1 on T8 & TS19. Connect Jumper #13 (Yellow) to Resistor(s) R2-X-2 (from T2-H4) on Power Supply's. As shipped unless otherwise specified.
For 230 VAC Operation - Use Jumper #2 on T8 & TS19. Connect Jumper #13 (Yellow) to Resistor(s) R2-X-1 (from T2-H4) on Power Supply's.
For 380 VAC Operation - FACTORY WIRED ONLY. SEE VIEW "B". Replace T8 with P/N 311019. Wire per view "B". Use Jumper #3 on T8 & TS19. Add Jumper #3 between L2 to CTHA on Terminal Strip TS19. Use Jumper #3 between CTH2 & CTH3 on Terminal Strip TS19 Connect Jumper #13 (Yellow) to Resistor(s) R2-X-2 (from T2-H4) on Power Supply's.
For 575 VAC Operation - FACTORY WIRED ONLY. SEE VIEW "A". Replace T8 with P/N 311017. Wire per view "A". Use Resistor R74 (2000 Ohm, 10 Watt) in place of Jumper #1 between CTH2 & CTH3 on TS19. Use Jumper #1 between CTH4 & L2 on TS19. Connect Jumper #13 (Yellow) to Resistor(s) R2-X-2 (from T2-H4) on Power Supply's.
X = Contactor number designation of the "-X-" reference for R2-X-1 and R2-X-2.
CAUTION: All Power Supply's MUST have Jumper #13 wired for the same voltage.
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. 300A, 600A, 1200A, 1800A, & 2200A CONTACTORS:
ENTRON supplies Temperature Limit Switch (TLS) P/N 300020 and provides connections to TS8 on supplied PCB7 Firing Board(s). Contactor 1 TLS connects to PCB7-1. Contactor 2 TLS connects to PCB7-2, etc.
NOTE: SCR & Thyristor TLS will open at temperatures greater than or equal to 150 F.
CAUTION: Do NOT overtighten TS8.
5. When external valve power is supplied to the control. Remove and insulate leads TS10-VL1 & TS10-VL2 on the Terminal Strip Output Board (PCB4). (from T8-X1 & T8-X2). Connect external AC power supply (24-240 VAC) to TS10-VL1 & TS10-VL2.
6. This drawing is for Cascade/Multi-Valve Controls for any of 1 thru 8 Contactors and up to 8 Valves. Please note in the contactor section that electrical connections connect from the 1st contactor to the 2nd contactor then continue in succession (DAISY CHAIN) from one to another in numerical order until the last contactor is electrically connected in the Cascade arrangement. In the Parts List, parts with multiple quantities listed, correspond to the various number of cascade contactor arrangements.
7. The Termination Plug A/N 322330 will ALWAYS be located in the "J-OUT" socket on the Firing Board of the last numbered Contactor in the Cascade arrangement.
8. When Optional Program Lockout is specified by customer. Add Switch P/N 600531-001 and Escutcheon P/N 460128 & remove Hole Plug P/N 565003.
9. When Optional Water Flow Switch (WFS) is required, add Terminal Strip TS6 (P/N 335017) and wire as shown. Remove Jumper between TS1-WFS1/AUX1 & TS1-GND.
NOTE: WFS will open with flows less than .75 GPM.
10. When Optional Circuit Isolation Device is required, 1st P/N and size of Circuit Isolation Device, and appropriate cabinet P/N.

MANUFACTURING INSTRUCTIONS:
SEE DRAWINGS #440024, #515055, & #510095 FOR MECHANICAL ASSEMBLY INSTRUCTIONS.
See Drawing #440093 For Crating Instructions
See Drawing #440428 for Label Locations.

CASCADE CABINET/HOSE SELECTION CHART

NUMBER OF CONTACTORS	300A REAR PANEL	300A CAB. SIZE	600/1200A REAR PANEL	CAB. SIZE	600/1200A HOSE LENGTH	1800A REAR PANEL	1800A CAB. SIZE	1800A HOSE LENGTH	2200A REAR PANEL	2200A CAB. SIZE	2200A HOSE LENGTH
1	494221	D/T	494321	D/T	45"				494612	L	
2	494221	D/T	494321	D/T	36"	494522	L	47"	494633	H	
3	494242	L	494332	L	46"	494543	H	52"	494633	H	63"
4	494242	L	494343	H	60"	494543	H	70"	494644	G	
5	494262	L	494364	G	72"	494554	G	76"	494665	U	94"
6	494262	L	494364	G	68"	494575	U	76"	494665	U	90"
7	494283	H	494385	U	80"	494575	U	76"			
8	494283	H	494385	U	76"	494585	U	76"			

REV	AUTH	DESCRIPTION	DRWN BY DATE	CHK'D BY DATE
—	—	ORIGINAL RELEASE		

ENTRON CONTROLS INC

SCALE	DATE	DRAWN BY	CHK'D BY	APPROVED BY
NP	3/1/16	DCS	DCS	DCS

TOLERANCE UNLESS SPECIFIED
ANGLES: ± ½°
DECIMALS: ± .010
FRACTIONS: ± 1/64
REVISED
REV LTR | APPROVED BY
DATE

WIRING DIAG, EN1000/VE/TSS-SERIES,CASC/MULTI-VALVE CONTROL, 1-8 CONTACTORS
WIRED FOR SELECTABLE 230/380/460/575 VAC OPERATION
NEXT ASSM/USED ON | DRAWING NUMBER 421214-051 | REV ORIG

DRAWING NUMBER 421214-051 REV B

ENTRON 470046 22"x 34"