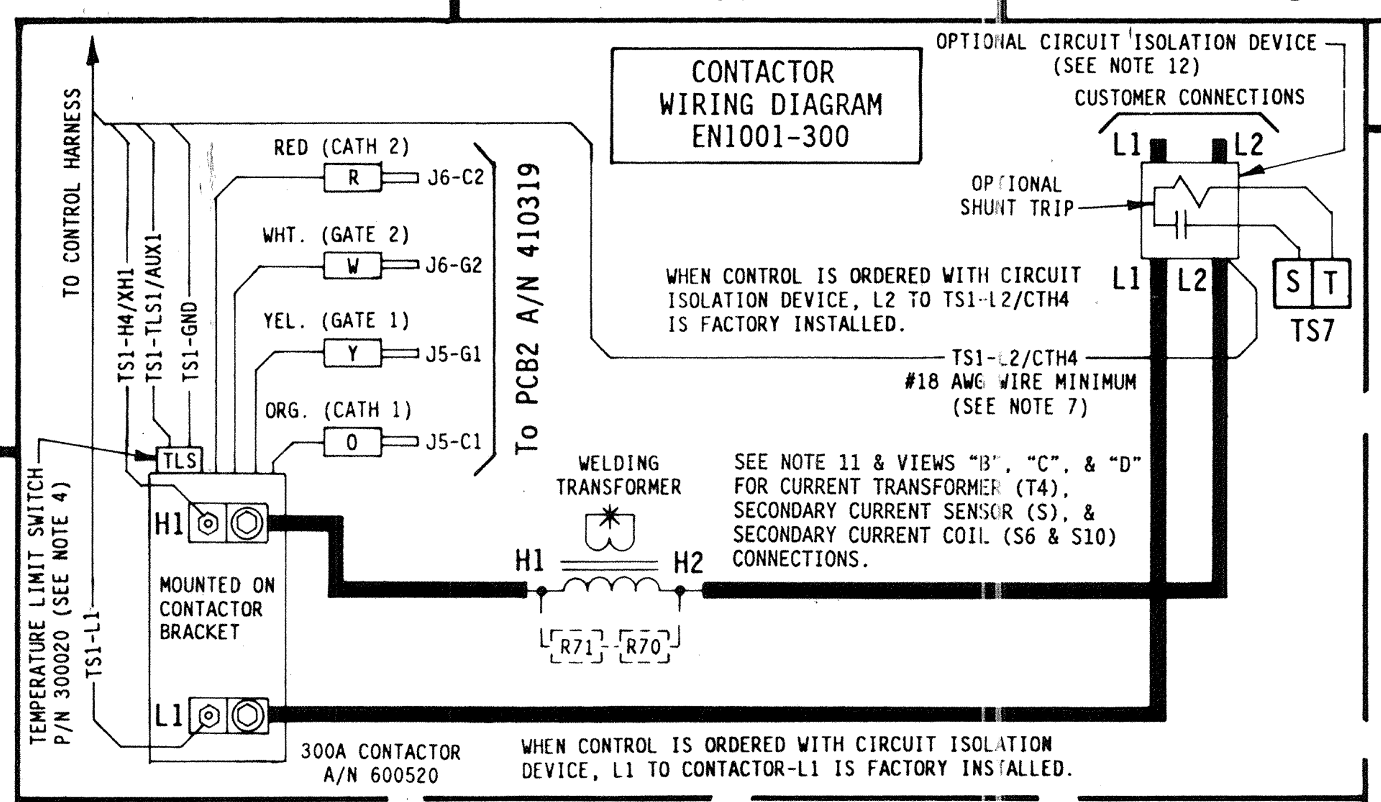
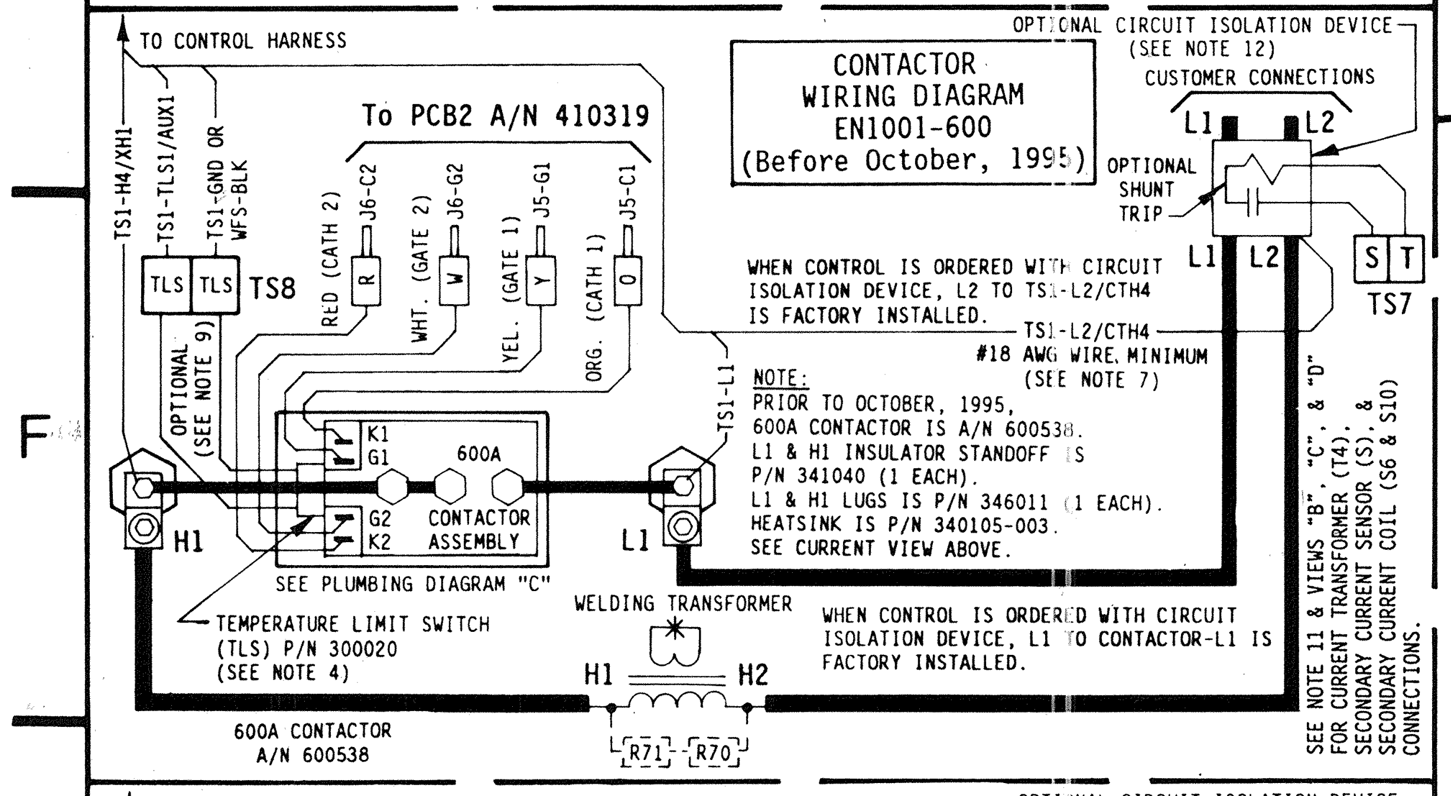
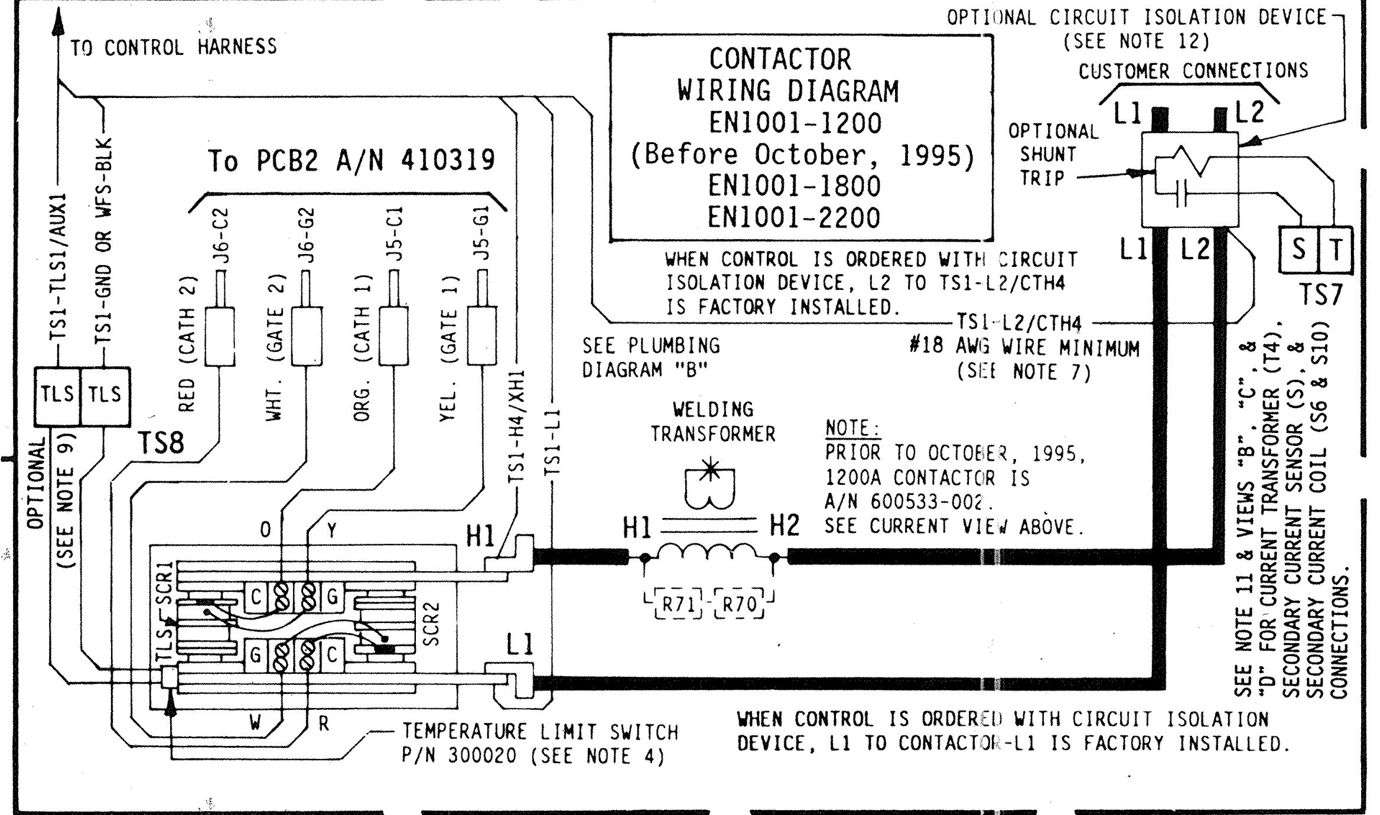
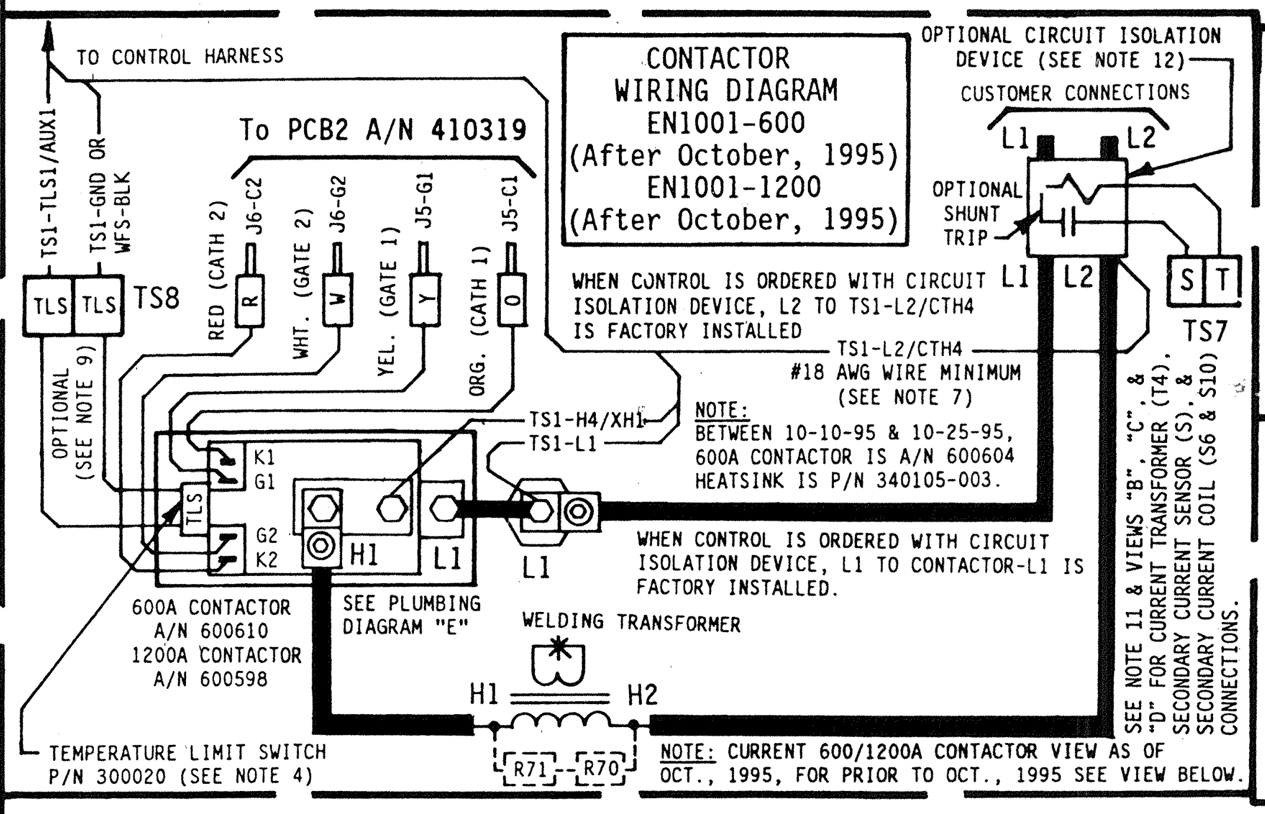
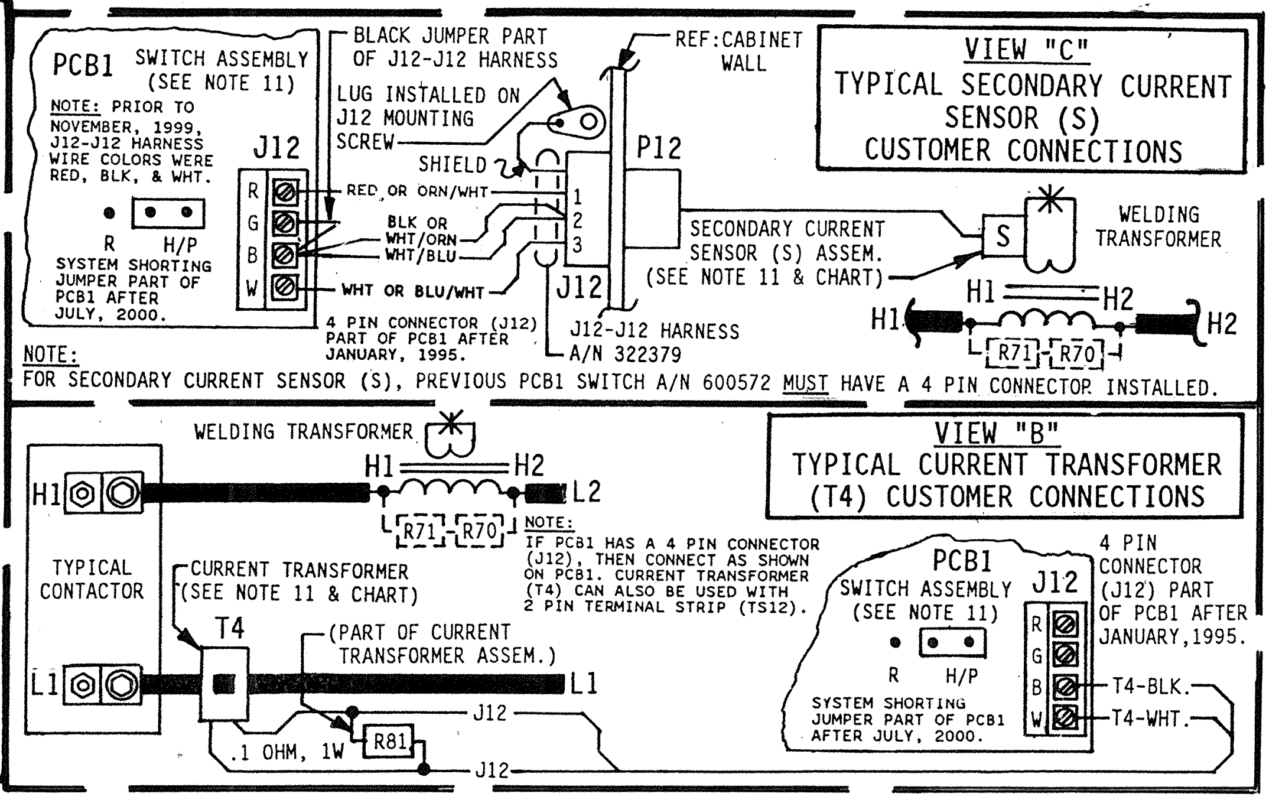
CAUTION - READ MANUAL & ALL NOTES BEFORE INSTALLING OR OPERATING CONTROL. SEE NOTE 1.
NO CIRCUIT CALIBRATION OR ADJUSTMENT EVER REQUIRED.

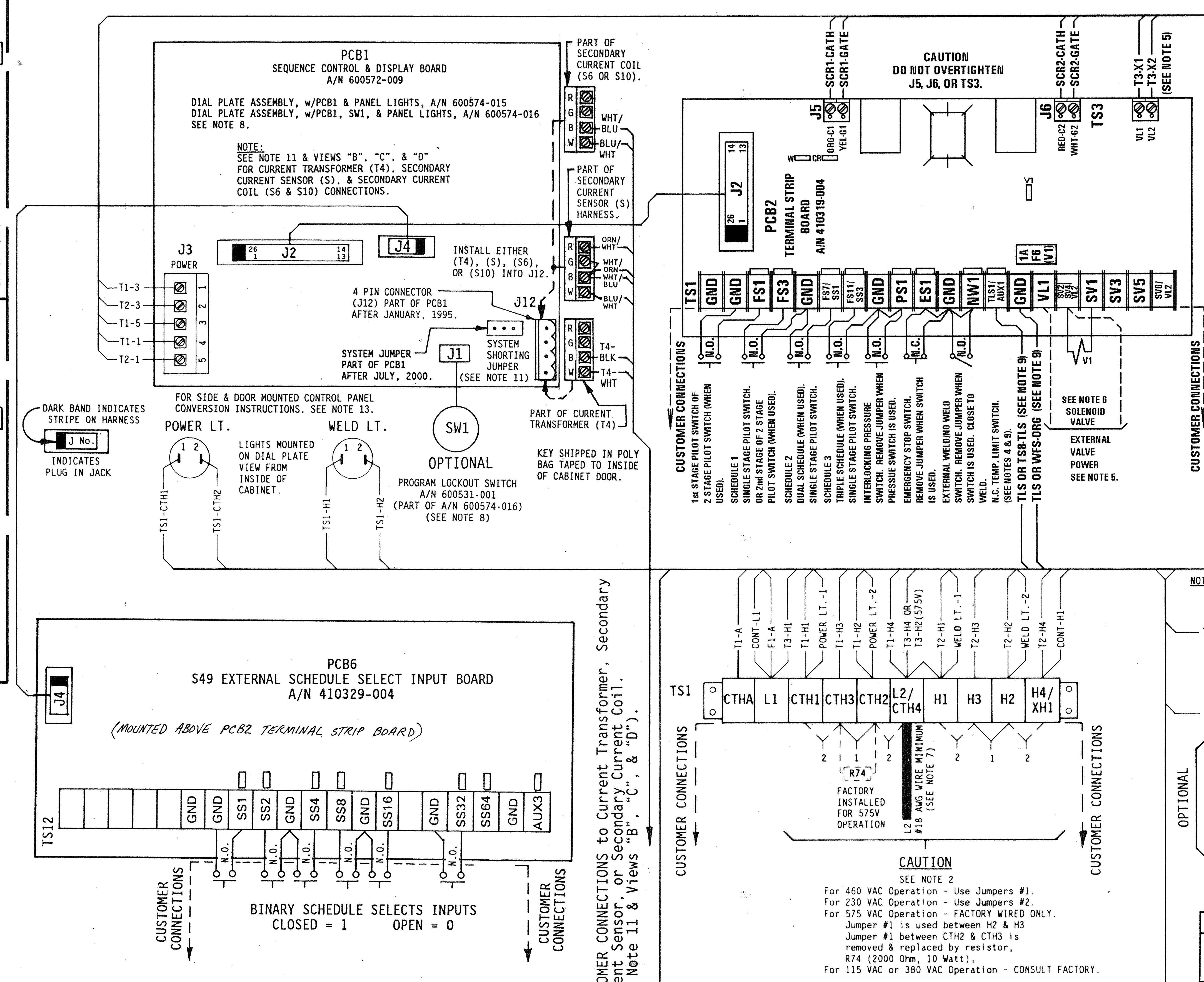












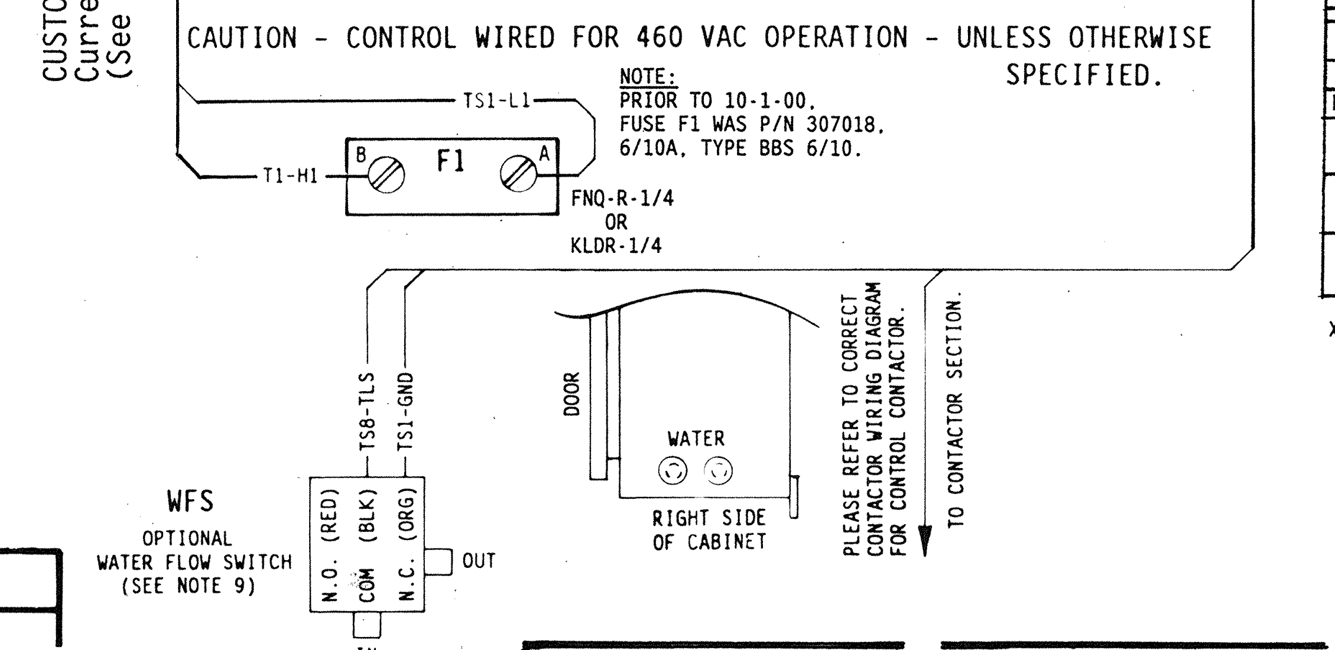
CAUTION

SEE NOTE 2

For 460 VAC Operation - Use Jumpers #1.
For 230 VAC Operation - Use Jumpers #2.
For 575 VAC 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 115 VAC or 380 VAC Operation - CONSULT FACTORY.

CAUTION - CONTROL WIRED FOR 460 VAC OPERATION - UNLESS OTHERWISE SPECIFIED.

NOTE:
PRIOR TO 10-1-00.
FUSE F1 WAS P/N 307018.
6/10A, TYPE BBS 6/10.



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. EN1001-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.

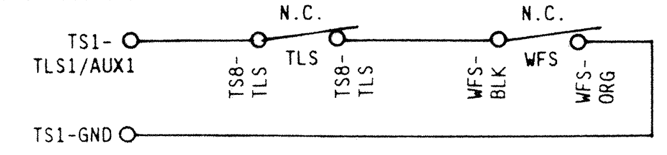
5. When external valve power is supplied to the control. Remove and insulate leads TS3-VL1 & TS3-VL2 on the Terminal Strip Board (PCB2), (from T3-X1 & T3-X2). Connect external AC power supply (24-240 VAC) to TS1-VL1 & TS1-SV2/SV4/VL2.
CAUTION: Do not overtighten TS3.

6. VALVE USAGE:
TS1-SV1 & TS1-SV2 can ONLY be used for Solenoid Valve. Valve 2 and 3 are used to Disable SCR1 & SCR2 for ½ Cycle Operation. See Application Note 700114 for more information.

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 Switch is specified by customer. Dial Plate A/N 600574-016 replaces A/N 600574-015. 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.

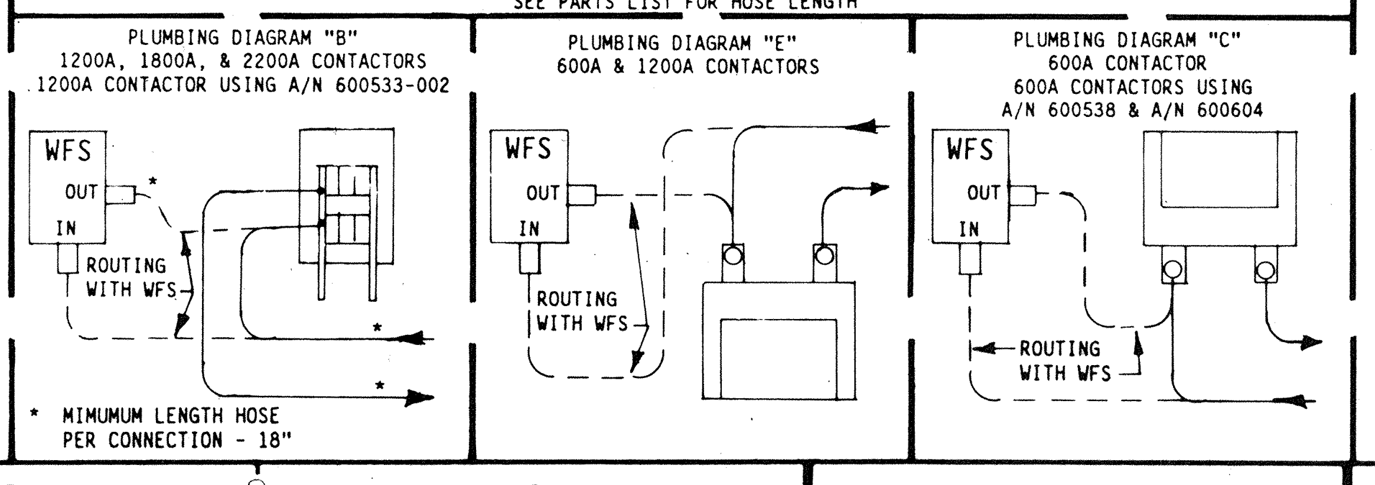
11. CURRENT TRANSFORMER (T4) CONNECTIONS:
Wire per view "B". Current Transformer coil (T4) shown installed on L1, may be installed on H1. Wires from Current Transformer (T4) to J12 should be kept as short as possible.
SECONDARY CURRENT SENSOR (S) CONNECTIONS:
Wire per view "C". Secondary Current Sensor (S) may be used in place of Current Transformer (T4). Add J12-J12 Harness A/N 322379.
NOTE: Secondary Current Sensor (S) can ONLY be used with PCB1 A/N 600572-002 or A/N 600572 that Has a 4 pin connector (J12) installed.
SECONDARY CURRENT COILS (S6 & S10) CONNECTIONS:
Wire per view "D". Secondary Current Coils (S6) & (S10) may be used in place of Current Transformer (T4). Add J12-J12 Harness A/N 322475.
(NOTE 11 CONTINUED)

11. (NOTE 11 CONTINUED):
NOTE: Secondary Current Coils (S6) & (S10) can ONLY be used with PCB1 A/N 600572-002 at revision "Z" or any revision there after.
AFTER JULY, 2000:
Sequence Control/Display Board A/N 600572-002 (PCB1) revision "Z" or any revision there after MUST have the System Shorting Jumper installed into the correct two (2) pins for usage with either a Current Transformer (T4), Secondary Current Sensor (S), or Secondary Current Coils (S6 & S10). See applicable View "B", "C", or "D" for correct installation.

12. When Optional Circuit Isolation Device is required list P/N and size of Circuit Isolation Device, and note appropriate cabinet A/N .

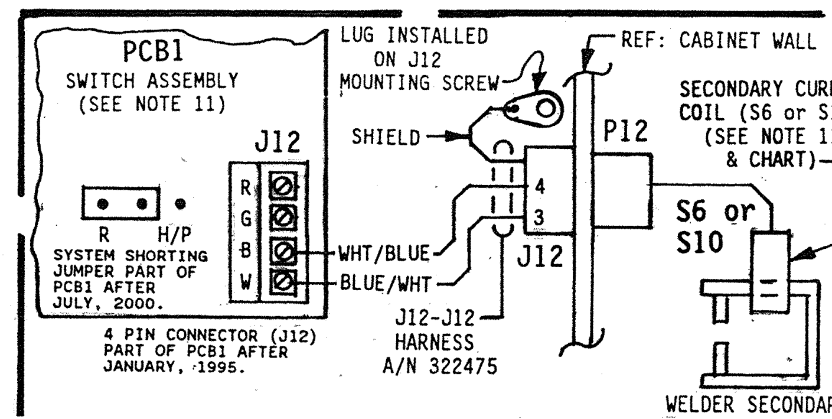
13. To convert the Control Panel from side mounted cabinet control to door mounted or door mounted cabinet control to side mounted.
Remove Cover Plate and Control Panel Dial Plate Assembly. Position spiral wrap around all harness wiring to prevent interference of wiring with the closing of cabinet door. When mounting Control Panel on side of cabinet, use clamp to secure J3 harness wires.
CAUTION: When changing the position of the Control Panel, be sure harness wires do NOT interfere with the closing of the cabinet door. Wires may pinch in between door & cabinet and cause damage to wiring.

PLUMBING DIAGRAMS
SEE PARTS LIST FOR HOSE LENGTH



* MIMUMUM LENGTH HOSE PER CONNECTION - 18"

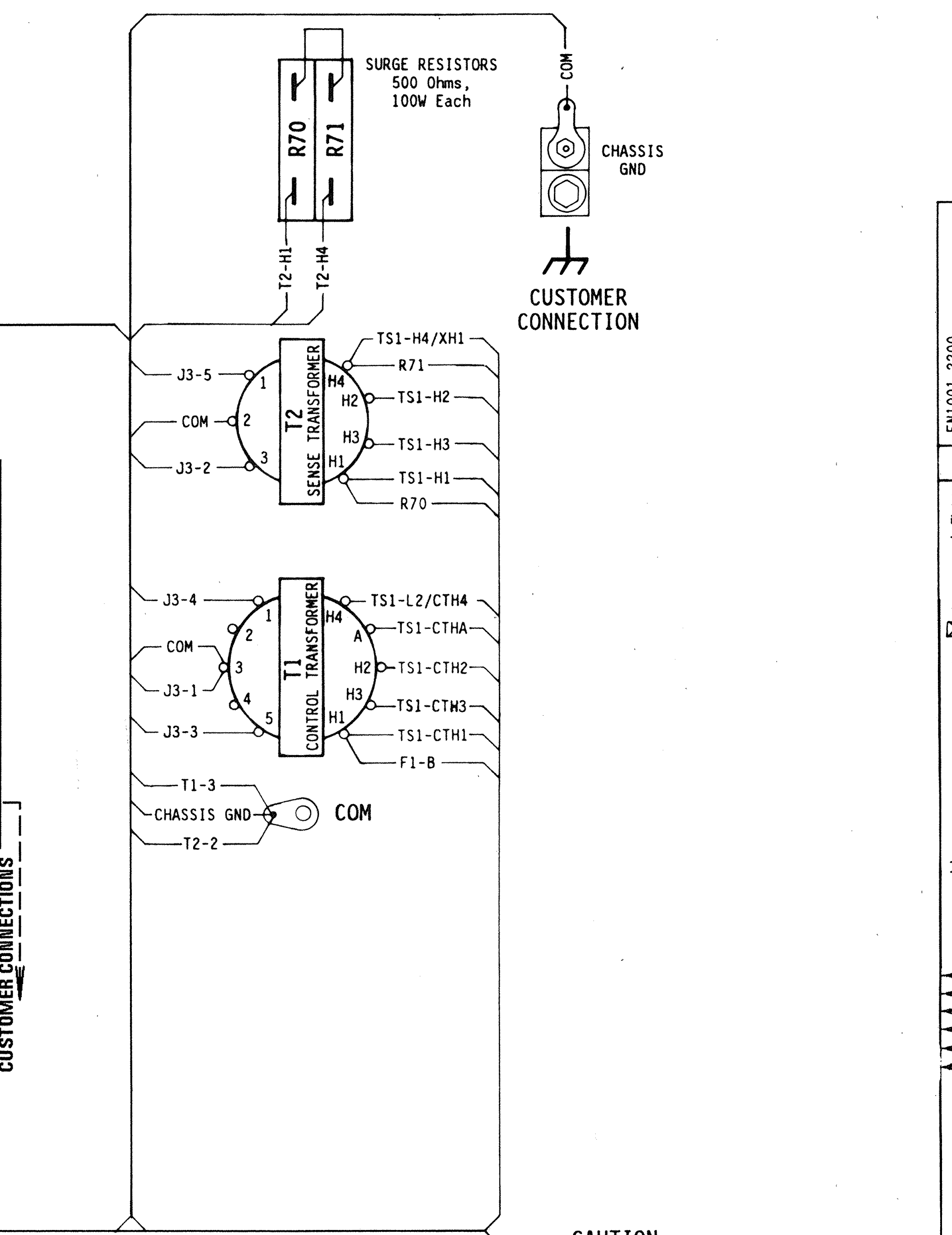
⚠ CAUTION
WATER HOSE BURST HAZARD
Cooling water must be flowing when power is on. Water hose can burst and damage controls.



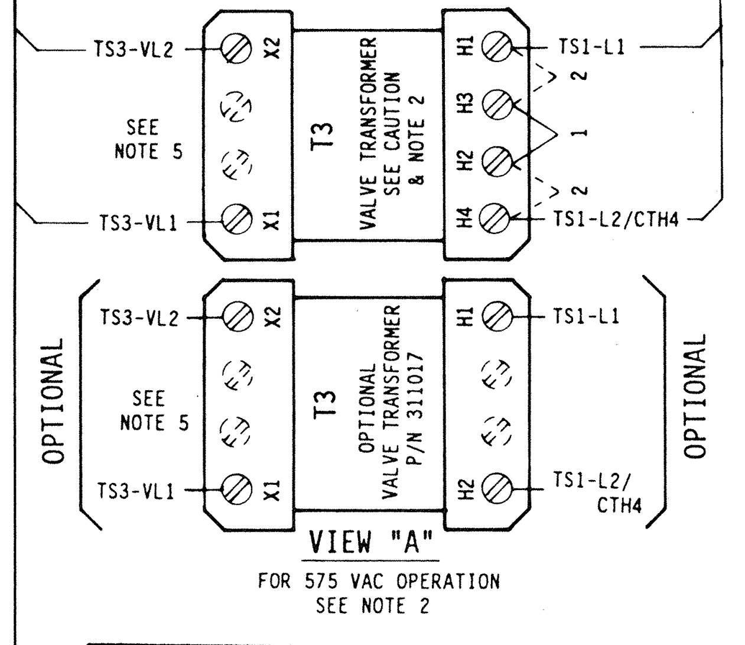
⚠ DANGER
HAZARDOUS VOLTAGE
FROM ONE OR MORE SOURCES
Turn off all voltage sources before touching any components.
Electrical shock or flash will cause severe injury or death.
154103C

⚠ 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
460103A

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



NOTE: SCREW TERMINAL POSITIONS SHOWN IN DASHED LINES ARE PART OF T3 P/N 311002 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 311017.
For 115 VAC or 380 VAC Operation - CONSULT FACTORY.

NOTE:
PRIOR TO 1-15-93, OPTIONAL 575V VALVE TRANSFORMER (T3) WAS P/N 311007. 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 VALVE TRANSFORMER (T3) P/N 311017 AFTER 6-16-97. THE NEW SCREWS PERFORM NO ELECTRICAL FUNCTION.

CURRENT SENSING COIL/SENSOR APPLICATION CHART

COIL/SENSOR MODEL NUMBER	CURRENT TRANSFORMER, SECONDARY CURRENT SENSOR, OR SECONDARY CURRENT COIL P/N & CABINET SIZE "D/T" CABINET	CURRENT TRANSFORMER, SECONDARY CURRENT SENSOR, OR SECONDARY CURRENT COIL P/N & CABINET SIZE "LS/LF" CABINET	CONTACTOR SIZE 300A CONT.	CONTACTOR SIZE 600A CONT.	CONTACTOR SIZE 1200A CONT.	CONTACTOR SIZE 1800A CONT.	CONTACTOR SIZE 2200A CONT.
P2 - 200:5	#600575-004	#600575-003	X				
P5 - 500:5	#600576-004	#600576-003	X	X	X	X	
P10 - 1000:5	#600577-004	#600577-003		X	X	X	X
S	#600590 & #322379	#600590 & #322379	X	X	X	X	X
S6	#600667 & #322475	#600667 & #322475	X	X	X	X	X
S10	#600668 & #322475	#600668 & #322475	X	X	X	X	X

X = ONE (1) CURRENT TRANSFORMER ASSEMBLY, ONE (1) SECONDARY CURRENT SENSOR ASSEMBLY, OR ONE (1) SECONDARY CURRENT COIL ASSMEBLY.

421269-027

PARTS LIST - CONTROL SECTION

QTY.	DESIG.	PART NO.	DESCRIPTION
1		600574-015	Assem., Dial Plate, w/Sw. Assem., EN1001, Consisting of:
@		600574-016	Assem., Dial Plate, w/Sw. Assem. & Keylock, EN1001, Consisting of:
1	PCB1	600572-009	Assem., Switch, Sequence Control & Display Board
@	SW1	600531-001	Assem., Switch, Keylock, Momentary, SPST
1		540245	Illustrated Panel, Dial Plate, EN1001
1		515104	Panel, Display Window, Red Filter, EN1001
1		565003	Hole Plug, 3/4" Diam., Black
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/EN1001
1	J4-J4	322458	Assem.,Harness,Ctrl Bd to S49 Schedule Select Bd,3/ " Lg.

PARTS LIST - CONTACTOR SECTION

QUANTITY EN1001-2200	QUANTITY EN1001-1800	QUANTITY EN1001-1200	QUANTITY EN1001-600	QUANTITY EN1001-300	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
*	*	*	*	*	T3	311017	Transformer, Valve, 150VA, 575V
☒	☒	☒	☒	☒	T3	311022	Transformer, Valve, 250VA
2	2	2	2	2	R70,71	225016	Resistor, Power, Surge, 500 Ohm, 100W
*	*	*	*	*	R74	600048	Assem., Resistor, Power, 2000 Ohm, 10W, (For 575V)
1	1	1	1	1	R81	210198	Resistor,Metal Oxide, .1 Ohm,1W,(Part of Current Xfmr Assem.)
1	1	1	1	1	F1	308010	Fuseholder, 1 Pole, Mini, 600V
1	1	1	1	1	F1	307024	Fuse, Control, 1/4A, FNQ-R-1/4 or KLDR-/14
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, w/TLS
		1				600598	Assem., Contactor, Thyristor, WATER, 1200A, 460/575V, w/TLS
	1					600533-005	Assem., Contactor, SCR, Water, 1800A, 460/575V, w/TLS
1						600533-003	Assem., Contactor, SCR, Water, 2200A, 460/575V, w/TLS
		1	1			341040	Standoff, Insulator, 600/1200A Thyristor Contactor, L1
		1	1			325174	Assem., Wire, Contactor-L1 to Lug-L1, 600/1200A Thyristor Cont.
			1			346004	Lug, Screw, 5/16" Bolt to 2/0 Wire, 600A Thyristor Contactor,H1
			1			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 & H1
←SEE CHART→					T4	SEE CHART	Assem., Transformer, Current, 200:5, P2
←SEE CHART→					T4	SEE CHART	Assem., Transformer, Current, 500:5, P5
←SEE CHART→					T4	SEE CHART	Assem., Transformer, Current, 1000:5, P10
←SEE CHART→					S6	600667	Secondary Current, 6" Coil Rogowski
←SEE CHART→					S10	600668	Secondary Current, 10" Coil Rogowski
←SEE CHART→					J12-J12	322475	Assem., Harness, Secondary Current, Rogowski Coil
1	1	1	1	1		346004	Lug, Screw, Chassis GND, 2/0 Wire
1	1	1	1	1	PCB2	410319-004	Assem., PCB Terminal Strip Firing Bd., EN1000/EN1001 ½ Cycle Opt.
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			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)
1	1	1	1	1	PCB6	410329-004	Assem., PCB, External Schedule Select S49 Input Board
X	X	X	X			900045	Hose, 3/8" I.D.
4	4	4	4			566010	Hose Clamp, 3/8" Hose
2	2	2	2			600179	Assem., Water Fitting, 3/8" Hose
+	+	+	+		WFS	600297	Assem., Water Flow Switch, 3/8" Hose
←SEE CHART→						600590	Assem., Secondary Current Sensor (S)
←SEE CHART→					J12-J12	322379	Assem., Harness, Secondary Current Sensor
1	1	1	1	1		550014	Vault Closing Door Mechanism, "D/T/LS/LF" Cabinet
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 Cont.
						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		700120	Manual, EN1001
1	1	1	1	1		421271	Logic Diagram, EN1001 Control
1	1	1	1	1		421269-027	Wiring Diagram, EN1001/1/2/S49-Series D/T/LS/LF Cab.

☒ 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.

MANUFACTURING INSTRUCTIONS:
See Drawings #440365, #515112, #515114, & #600552 for Mechanical Assembly Instructions of EN1001 "LS/LF" Cabinet.
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/Assem. of EN1001 "D/T" Cabinet.
See Drawing #440366 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/Assem. of Front Panel.
See Drawing #440457 for Current Transformer Assembly.
See Drawing #440458 for Secondary Current Sensor Assembly.
SEE DRAWING #440478 FOR SECONDARY CURRENT COIL ASSEMBLY.

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

ENTRON
CONTROLS INC

SCALE	DATE	DRAWN BY	CHK'D BY	APPROVED BY
	11/15/04	RHL		

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

REVISED REV LTR	APPROVED BY
DATE	

WIRING DIAGRAM, EN1001/½/S49-SERIES
"D", "T", "LS", or "LF" CABINET

REV.	AUTH.	DESCRIPTION	DRWN BY DATE	CHK'D BY DATE
EN1001/½/S49-300D/T/LS/LF EN1001/½/S49-600D/T/LS/LF		EN1001/½/S49-1200D/T/LS/LF EN1001/½/S49-1800D/T/LS/LF EN1001/½/S49-2200D/T/LS/LF		

NEXT ASSM/USED ON	DRAWING NUMBER	REV
	421269-027	

DRAWING NUMBER 421269-027 REV

22 x 34
ENTRON 470046
60194