



CONTROL CIRCUIT		
C101 .47 MFD	R101 40 Ω 5W	R128 47 K Ω
C102 50 MFD	R102 66 K Ω	R129 47 K Ω
C103 .047 MFD	R104 10 K Ω 2W	R131 10 K Ω 2W
C104 .047 MFD	R105 27 K Ω	R132 10 K Ω
C106 .047 MFD	R106 47 K Ω	
C107 .1 MFD	R107 15 K Ω	Q101 2N5655
C108 47 MFD	R108 22 K Ω	Q102 2N4123
C110 1 MFD	R109 10 K Ω	Q103 2N4123
C113 .15 MFD	R110 1.5 K Ω	Q104 2N4123
C114 .15 MFD	R111 5 K Ω TRIMMER	Q105 2N4123
C116 .047 MFD	R112 47 K Ω	Q106 2N4123
C117 .02 MFD	R113 33 K Ω	Q107 2N4123
C118 .02 MFD	R114 10 K Ω	Q108 2N4123
C119 .02 MFD	R115 100 Ω	Q110 2N6027
C120 .02 MFD	R117 47 Ω	Q113 D5E43
D101 16 A	R118 6.8 K Ω	LED1A RED
D102 16 A	R119 6.8 K Ω	LED1B RED
D103 16 A	R120 680 Ω	LED1C LIGHT EMITTING
D104 THRU 1 A	R121 2.7 K Ω	LED1D LIGHT EMITTING
D115	R122 47 K Ω	LED1E
DZ101 25V	R123 100 Ω	SCR101 8A, 600V
	R124 100 Ω	SCR102 8A, 600V
	R125 2.7 K Ω	SCR103 16A, 400V
	R126 2.7 K Ω	SCR104 16A, 400V
	R127 4.7 K Ω	
PT101 TRANSIENT PROTECTOR	PT101 PULSE TRANSFORMER	
F101 1/2 A SLOW BLOW FUSE	PT104 PULSE TRANSFORMER	
F102 3/4 A FUSE	PT105 PULSE TRANSFORMER	

LOGIC CIRCUIT		
C201 .02 MFD	R201 1.5 K Ω	R229 4.7 K Ω
C202 2 MFD	R202 4.7 K Ω	R230 4.7 K Ω
C203 .02 MFD	R203 15 K Ω	R231 4.7 K Ω
C204 10 MFD	R204 470 Ω	R232 100 K Ω
C205 18 MFD	R205 100 K Ω 2W	R233 100 Ω
C206 .02 MFD	R206 6.8 K Ω	R234 100 Ω
C207 50 MFD	R207 1.5 K Ω	R235 100 Ω
C208 2 MFD	R208 33 K Ω	R236 22 K Ω
C209 .02 MFD	R209 10 K Ω	R237 470 Ω
C210 10 MFD	R210 5 K Ω 2W	R238 470 Ω
C211		R239 470 Ω
C212 THRU .02 MFD	R211 1 K Ω	X201 QUAD 2 INPUT NANDGATE
C215 .02 MFD	R212 2.7 K Ω	X202 QUAD 2 INPUT NANDGATE
C216 .02 MFD	R213 47 K Ω	X203 QUAD 2 INPUT NANDGATE
CR201 DPST N.O. 24V. DC.	R214 1.5 K Ω	X204 QUAD 2 INPUT NANDGATE
CR202 DPST N.O. 24V. DC.	R215 10 K Ω	X205 HEX INVERTER
DZ201 16V	R216 10 K Ω	X206 HEX INVERTER
DZ1 THRU 1A	R217 47 K Ω	X207 QUAD 2 INPUT NANDGATE
DZ2	R218 47 K Ω	LED2A RED
Q201 2N5655	R219 10 K Ω	LED2B LIGHT EMITTING
Q202 2N5657	R220 2.7 K Ω	LED2C
Q203 2N4123		LED2D
Q205 2N5657		LED2E
Q206 2N5657		LED2F
Q207 2N5657	R221 47 K Ω	L201 5.6 mH
Q208 2N4123	R222 1 K Ω	
Q209 2N4123	R223 10 K Ω 2W	
	R224 4.7 K Ω	
	R225 4.7 K Ω	
	R226 4.7 K Ω	
	R227 47 K Ω	
	R228 4.7 K Ω	

VARIABLE VOLTAGE CIRCUIT		
C301 2 MFD	R306 4.7 K Ω 2W	
C302 .1 MFD	R307 100 Ω	
C303 .01 MFD	R308 10 K Ω TRIMMER	
C304 .02 MFD	R309 15 Ω	
C305 .01 MFD	R310 47 Ω	
C306 2 MFD	R311 68 Ω	
C307 .02 MFD	R312 6.8 K Ω 2W	
C308 .22 MFD	R313 6.8 K Ω	
C309 .02 MFD	R314 47 K Ω	
	R315 1 K Ω 2W	
	R316 470 K Ω	
D301 1A AVALANCHE	DZ301 51V	
D302 1A AVALANCHE	DZ302 10V	
D303 1A AVALANCHE	DZ303 25V	
D304 1A AVALANCHE	LED3A RED LIGHT EMITTING DIODE	
D305 THRU 1A	LED3B	
D310 THRU 1A	LED3C	
Q301 2N4123	Q302 2N4123	
Q303 MPS 1B	Q303 MPS 1B	
Q301 47 K Ω	QU301 D5E43	
R302 4.7 K Ω 2W	TP301 TRANSIENT PROTECTOR	
R303 6.8 K Ω	PT301 PULSE TRANSFORMER	
R304 27 K Ω	S301 DPDT TOGGLE SWITCH	
R305 100 K Ω	T301 24V TRANSFORMER	
	L301 47 mH	

* OPTIONAL CIRCUIT	
C401 18 MFD	
C402 .02 MFD	
C403 .02 MFD	
CR401 DPST N.O. 24VDC	
D401 THRU 1A	
D406 THRU 1A	
R401 1.5 K Ω	
R402 6.8 K Ω	
R403 100 K Ω 2W	
R404 4.7 K Ω	
R405 2.7 K Ω	
R406 47 K Ω	
R407 1 K Ω	
R408 10 K Ω 2W	
R409 5 K Ω 2W	
R410 50 K Ω TRIMMER	
R411 470 Ω	
LED4A RED LIGHT	
LED4B EMITTING DIODE	
Q401 2N4123	
Q401 2N6027	
X401 QUAD 2 INPUT NANDGATE	

COMPONENTS NOT ON P.C. BOARD	
R1 2 Ω 50W	
R2 10 K Ω 2W POWER SOURCE OUTPUT CONTROL	
R3 5 K Ω 2W WIRE FEED SPEED CONTROL	
R4 250 Ω 2.5W	
S1 DPST CONTROL POWER SWITCH	
S2 SPDT TRAVEL SWITCH	
S3 SPST INCH UP SWITCH	
S4 SPST INCH DOWN SWITCH	
S5 SPST START SWITCH	
S6 SPST STOP SWITCH	
1CR SPST, 110 VDC COIL	
2CR SPST, 110 VDC COIL	
3CR SPST, 110 VDC COIL	
4CR KEEP SWITCH ACTUATED BY WELDING CURRENT	
5CR OPTIONAL SPST, 110 VDC COIL ACTUATED BY 4 CR CIRCUIT	
6CR SOLID STATE RELAY FOR LINC-FILL STARTING RELAY OPERATION	
7CR LINC-FILL STARTING RELAY	

METHODS OF TRAVEL		METHODS OF BURN-BACK	
START-STOP WITH SWITCHES	LEAD NO. TO PIN NO. 691 P5	WIRE FEED STOP AND CONTACTOR DELAY	LEAD NO. TO PIN NO. 693 P3
START-STOP WITH CURRENT	692 P7	CONTACTOR DELAY	690 P4
START WITH START SWITCH	691 P8	INCH UP AND NO CONTACTOR DELAY	693 P1
STOP WITH STOP SWITCH	692 P5	CONTACTOR DELAY	690 P2
START WITH START SWITCH	691 P8		
STOP AFTER CRATER FILL	692 P9		

A.N.S.I. ELECTRICAL SYMBOLS PER E-1537

N.A. TO OPERATE UNIT WITHOUT VARIABLE VOLTAGE BOARD JUMPER 637 TO 533 & 635 TO 636

N.B. TO OPERATE UNIT WITHOUT OPTIONAL START BOARD JUMPER 583 (S) & 584 (S)

N.C. TO OPERATE UNIT WITHOUT OPTIONAL CRATER FILL BOARD JUMPER 583 (C) & 584 (C)

N.D. X201 THRU X207 AND X401 - PIN 7 CONNECTED TO 539 PIN 14 CONNECTED TO 515

NOTE: CIRCLED NUMBERS SHOW CHANGES MADE ON CHANGE SHEET NUMBERS

THE LINCOLN ELECTRIC CO. CLEVELAND, OHIO U.S.A.

OPERATING SCHEMATIC (NA-3N & NA-3S)

DATE: 8-2-73

REVISION: 1

DESIGNED BY: G-1367

CHECKED BY: [Signature]

APPROVED BY: [Signature]

DATE: 8-2-73

REVISION: 1

DESIGNED BY: G-1367

CHECKED BY: [Signature]

APPROVED BY: [Signature]