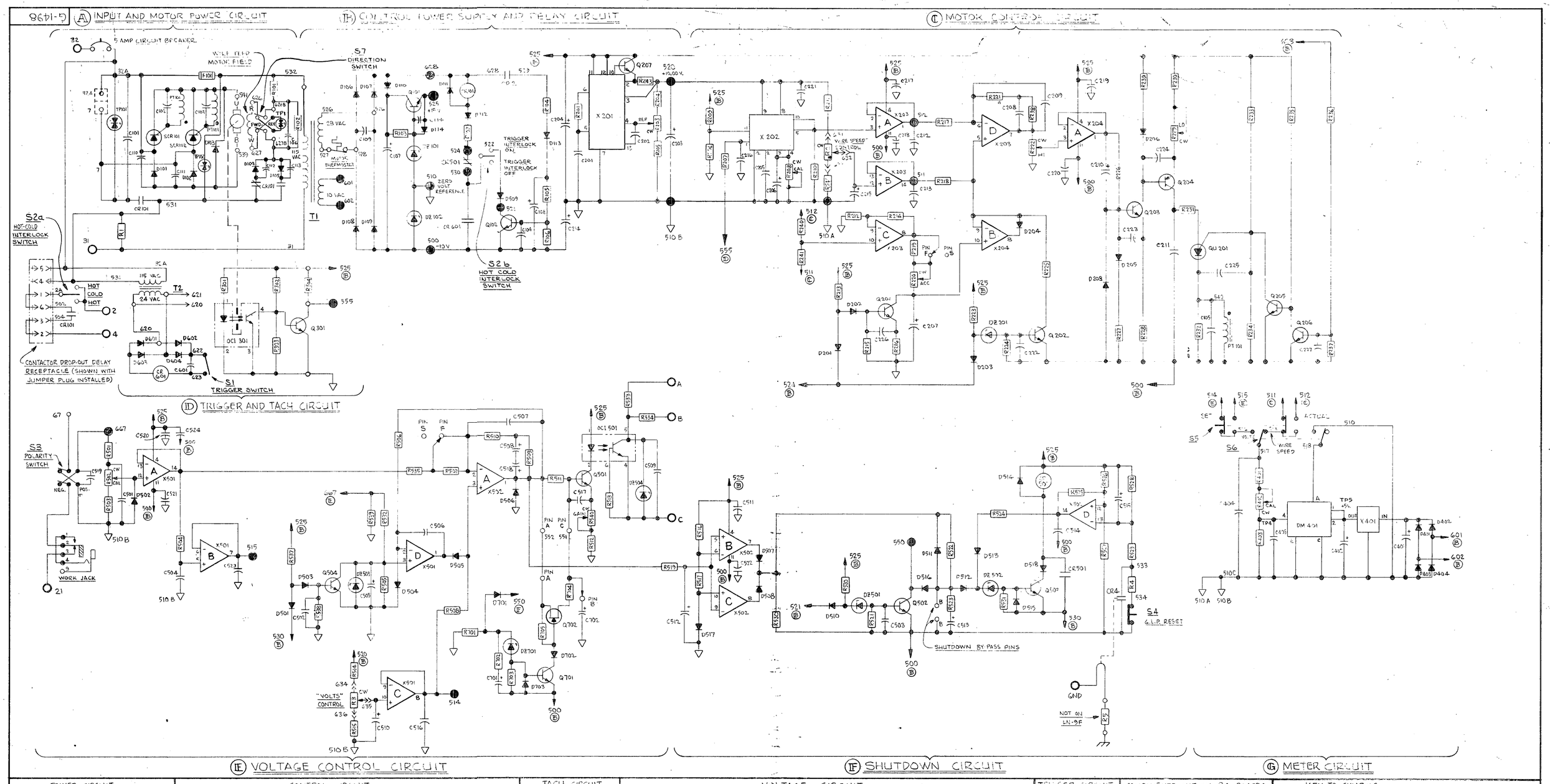

POWER CIRCUIT

C101	.005 MFD	R101	40 Ω 12 W.
C102	.047 MFD	R102	100 K Ω
C103	.047 MFD	R103	330 Ω
C104	.022 MFD	R104	1 K Ω
*C105	.01 MFD	R105	10 K Ω
C106	50 MFD		
C107	150 MFD		
C108	2.7 MFD		
C109	.15 MFD	R106	100 K Ω
C110	.005 MFD	R107	10 Ω
C111	.005 MFD		
C112	.02 MFD		
C113	.02 MFD		
C114	.022 MFD		
		CR101	3 PDT 24 V.D.C.
D101	16 A.	SCR 101	12 A. 400 V.
D102	16 A.	SCR 102	12 A. 400 V.
D103	16 A.		
D104	1 A. 1000 V.	Q101	2N 5655
D105	1 A. 1000 V.	Q102	2N 5655
D106 THRU D114	1 A.	* PT101	PULSE TRANSFORMER
		TP101 TP102	TRANSIENT PROTECTOR
DZ 101	15 V. 5W.		
DZ 102	10 V. 5W.		
F101	½ A. SLOW BLOW FUSE		

*-C105 AND PT101 PRIMARY ARE SHOWN IN SECTION C.

CONTROL CIRCUIT

C201	.022 MFD	R201	1 K Ω	R226	10 K Ω
C202	.022 MFD			R227	6.8 K Ω
C203	18 MFD	R203	500 Ω TRIMMER	R228	10 K Ω
C204	47 MFD	R204	1,00 K Ω 1/4 W. 1%	R229	20 K Ω TRIMMER
C205	.0033 MFD	R205	2.94 K Ω 1/4 W. 1%	R230	27 K Ω
C206	.47 MFD	R206	1 K Ω	R231	15 Ω
C207	18 MFD	R207	10 K Ω	R232	100 Ω
C208	4 MFD	R208	100 K Ω TRIMMER	R233	6.8 K Ω
C209	.047 MFD	R209	33 K Ω	R234	2.7 K Ω
C210	4.7 MFD	R210	10 K Ω	R235	10 K Ω
C211	.15 MFD	R211	5.6 K Ω	R236	15 K Ω
C212	.022 MFD	R212	15 K Ω	R237	10 K Ω
C213	.022 MFD	R213	47 K Ω	R238	1 MΩ
C214	4.7 MFD	R214	15 K Ω	R239	15 K Ω
C215	18 MFD	R215	100 K Ω	R240	5.6 K Ω
C216	100 pF	R216	1 K Ω	R241	15 K Ω
C217 THRU C227	.022 MFD	R217	1 K Ω	R242	560 Ω
		R218	1 K Ω	R243	10 Ω
		R219	33 K Ω		
		R220	50 K Ω TRIMMER		
D201 THRU D208	1 A.	R221	15 K Ω	X-201	I.C. REGULATOR
		R222	10 K Ω TRIMMER	X202	I.C. TACHOMETER
		R223	33 K Ω	X203	I.C. QUAD OP-AMP
		R224	100 K Ω	X204	I.C. QUAD OP-AMP
DZ 201	6.3 V.	R225	1 K Ω		

Q201	2N 4123
Q202	2N 4123
Q203	
Q204	2N 4125
Q205	2N 4123
Q206	
Q207	2N 5816
QU 201	2N 6027

TACH CIRCUIT

R301	1.3 K Ω
R302	68 K Ω
R303	39 K Ω
R304	1.5 K Ω

OCI 301 OPTO INTERRUPTER

Q 301 2N 4123

METER CIRCUIT

C401	500 MFD
C402	4.7 MFD
C403	.022 MFD
C404	.022 MFD
D401 THRU D404	1 A.
R401	24.3 K Ω 1/4 W. 1%
R402	2 K Ω TRIMMER
R403	2.80 K Ω 1/4 W. 1%

X401 VOLTAGE REGULATOR
DM 401 DIGITAL METER

VOLTAGE CIRCUIT

C501	.1 MFD	■ CR 501	SPDT 24 V.D.C.	R501	44.2 K Ω 1/4 W.
C502	.022 MFD			R502	500 Ω TRIMMER
C503	.022 MFD	■ D 501 THRU D 513	1 A.	R503	4.75 K Ω 1/4 W.
C504	4.0 MFD			R504	100 K Ω
C505	.47 MFD			R505	22 K Ω
C506	.022 MFD	DZ 501	6.8 V.	R506	10 K Ω
C507	.022 MFD	DZ 502	15 V. 1 W.	R507	10 K Ω
C508	39 MFD	DZ 503	10 V.	R508	6.2 K Ω
C509	.012 MFD	DZ 504	20 V. 1 W.	R509	2.7 MΩ
C510	1.8 MFD			R510	4.7 K Ω
		OCI 501	OPTO-ISOLATOR		
C511	.022 MFD			R511	10 K Ω
C512	4.7 MFD	Q 501	2N 4123	R512	470 Ω
C513	50 MFD	Q 502	2N 4123	R513	2.7 MΩ
C514	.022 MFD	Q 503	2N 5655	R514	5.6 K Ω
C515	1 MFD	Q 504	2N 4123	R515	1.8 K Ω
C516	.022 MFD	X 501	I.C. QUAD OP-AMP	R516	6.8 K Ω
C517	.012 MFD	X 502	I.C. QUAD OP-AMP	R517	27 K Ω
C518	39 MFD				
C519	.005 MFD			R519	10 K Ω
C520 THRU C523	.022 MFD			R520	33 K Ω
C524	4.7 MFD			R521	100 K Ω
				R522	15 K Ω
				R523	1 K Ω
				R524	4.7 K Ω
				R525	4.7 K Ω

R526	22 K Ω	R531	100 K Ω
R527	22 K Ω	R532	27 K Ω
R528	22 K Ω	R533	10 K Ω
R529	2.2 K Ω	R534	100 Ω
R530	15 K Ω	R535	1 K Ω
		R537	33 K Ω
		R538	100 K Ω
		R539	27 K Ω
		R540	2 K Ω TRIMMER

■ D 509 AND CR 501 N.C. CONTACT ARE SHOWN IN SECTION B.

TRIGGER CIRCUIT

▲ CR 601	SPDT 24 V.D.C.
D601 THRU D604	1 A. 600 V.
C601	.15 MFD

▲ CR 601 N.O. CONTACT IS SHOWN IN SECTION B.

START CIRCUIT

C 701	18 MFD
C 702	59 MFD
D701 D702 D703	1 A.
DZ 701	6.2 V.
R 701	27 K Ω
R 702	1 K Ω
R 703	150 K Ω
R 704	68 Ω
R 705	100 K Ω
Q 701	2N 4123
Q 702	2N 4857

COMPONENTS NOT ON P.C. BOARDS

COMPONENT	CIRCUIT
R1 2 Ω 50 W.	A
R2 10 K Ω 2 W. POT	C
R3 10 K Ω 2 W. POT	E
R4 22 K Ω	F
R5 0.1 Ω	H
CR 2 WELD CURRENT REED SWITCH	B
CR 4 G.L.P. REED SWITCH	E
S1 SPST TRIGGER SWITCH	B
S2 {DPDT HOT-COLD / CENT. OFF INTERLOCK SWITCH	B & D
S3 DPDT POLARITY SWITCH	E
S4 SPST G.L.P. RESET SWITCH	F
S5 DPDT SET-ACTUAL SWITCH	G
S6 DPDT VOLTS-WIRE SPEED SWITCH	G
S7 DPDT DIRECTION SWITCH	A
ⓣ TP1 1500 VAC TRANSIENT PROTECTOR	A
T1 POWER SUPPLY TRANSFORMER	B
T2 TRIGGER SUPPLY TRANSFORMER	D

KEY TO SYMBOLS

- INPUT CABLE CONNECTION
- POWER OR SIGNAL SOURCE POINT
- REMOVABLE CONNECTION
- COMMON CONNECTION
- Ⓐ THRU Ⓖ SOURCE POINT CIRCUIT LOCATION

SINCE COMPONENTS OR CIRCUITRY ON A PRINTED CIRCUIT BOARD MAY CHANGE WITHOUT AFFECTING THE INTERCHANGEABILITY OF A COMPLETE BOARD, THIS DIAGRAM MAY NOT SHOW THE EXACT COMPONENTS OR CIRCUITRY OF CONTROLS HAVING A COMMON CODE NUMBER.

A.N.S.I. ELECTRICAL SYMBOLS PER E-1737

LEAD COLOR CODING

B - BLACK
R - RED
U - BLUE
W - WHITE

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

Chge Sht. No.	2-6-79
10-26-77A	
11-30-79 X	
4-3-80C	
5-5-80D	
5-30-80E	
9-26-80M	

EQUIP. TYPE LN-9 & LN-9F
SUBJECT OPERATING SCHEMATIC
DR GWR DATE 2-13-79 CHK SUP'SD'G (G-1478) SHT. NO. G-1498