

A B C D E F G H J K L M N

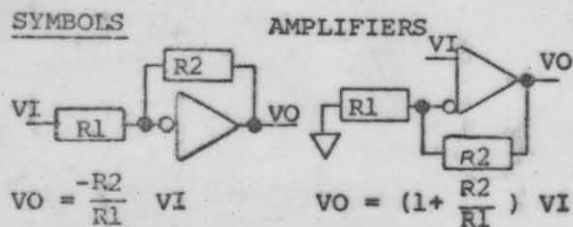
VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)

## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL

MDR MODIFICATION RACK

## SYMBOLS



CASE GROUND

VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 [2] - 2TB9; X2 [2] - RTBX2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BE, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	IFC	0.0047uF RT1-RT2
		IFC	0.0047uF RT2-RT3
		IFC	0.0047uF RT3-RT1
		MCC	AA-AF, BA-BF, CA-CF
IOC-400% -500% -300%			NONE
	X	IFC	I-IHI
		IFC	I-ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH-COM
JOG 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC	3320 FROM LT1 TO COM
VREG		IFC	NT-CMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V. 24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT1, PT-PT1
60-160vdc	X	IFC	NT-NT2, PT-PT2
66-177vac		IFC	NT-NT2, PT-PT2
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
G134 G256			
1.7		MFC	NONE
2.8		MFC	YB-YD
2.4		MFC	YA-YB
4.0		MFC	YA-YB, YC-YD
7.0	X	MFC	YA-YC
13		MFC	YA-YC, YB-YD
13		MFC	YA-YC, YB-YD
L/R < .25S	X	MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)
50% FIELD RUN	X	MCC	33K2 FROM FEA TO +20V

## SIGNAL DEFINITIONS AND LOCATIONS

\* CEMF COUNTER EMF (316)  
 \* CFB CURRENT FEEDBACK (316)  
 CMFA ABSOLUTE VALUE CEMF (308)  
 CRM CROSSOVER MODIFY (311)  
 DFP DELAYED FIRING POWER (325)  
 \* DR DRIVER REFERENCE (333)  
 \* EAO ERROR AMP OUTPUT (333)  
 EST EXTERNAL FLT STOP INPUT (314)  
 FALT FAULT (314)  
 \* FC FIELD CURRENT (NS26)  
 FDR FIELD DIAGNOSTIC REFERENCE (408)  
 FEA FIELD ECONOMY ADJUST (325)  
 FF FIELD FAULT (328)  
 IABS MOTOR CURRENT ABSOLUTE (309)  
 ILA CURRENT LIMIT ADJUST (323)  
 IMET CURRENT SIGNAL FOR METER (310)  
 \* IPU INITIAL PULSE (320)  
 \* LR LOCAL REF. FROM DGC (333)  
 \* JOG JOG SWITCH INPUT (323)  
 \* JOGR JOG REFERENCE INPUT (331)  
 \* MAC MAX/MA CONTROL SIGNAL (320)  
 MSW MODE SWITCH (330)  
 \* OSC OSCILLATOR (317)  
 \* PCR PHASE CONTROL REF. (326)  
 \* PRE DRIVE PRECONDITION (321)  
 ØSEQ PHASE SEQUENCE (314)  
 RERR REGULATOR ERROR (327)  
 RIJ INTEGRATOR SUMMING JUNCTION (327)  
 RJ REGULATOR SUMMING JUNCTION (331)  
 RRA REGULATOR RESPONSE ADJUST (330)  
 RSET RESET (316)  
 \* RTR READY TO RUN (316)  
 \* RUN RUN SWITCH INPUT (321)  
 \* SA-C PHASE SYN OUTPUT (316)  
 \* SFB SPEED FEEDBACK (320)  
 SMET SPEED SIGNAL FOR METER (312)  
 \* SR SYSTEM REFERENCE INPUT (329)  
 \* SYS SYSTEM FAULT TRIP (313)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST (320)  
 TF TACHO FAULT (NS28)  
 \* TFB TACHOMETER FEEDBACK (320)  
 TFR AC TACHO FREQUENCY OUTPUT (313)  
 \* TR TIMED REFERENCE (333)  
 \* VFB VOLTAGE FEEDBACK (319)  
 \* WFR WEAK FIELD REFERENCE (320)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

HENCE [PS - 12] DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
 DENOTED BY SHEET NUMBER AND LINE, E.G. [1A16] SIGNIFIES LOCATION ON SHEET  
 1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG" - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

THESE RESISTORS ARE CRIMPED IN WIRE HARNESS

## NOTE

REMOVE THE 33K2 FROM FEA TO +20V WHEN USING  
 'DIAGNOSTIC STATIC' OR 'DIAGNOSTIC RUN' MODES. REPLACE  
 WHEN DIAGNOSTIC TESTS COMPLETE

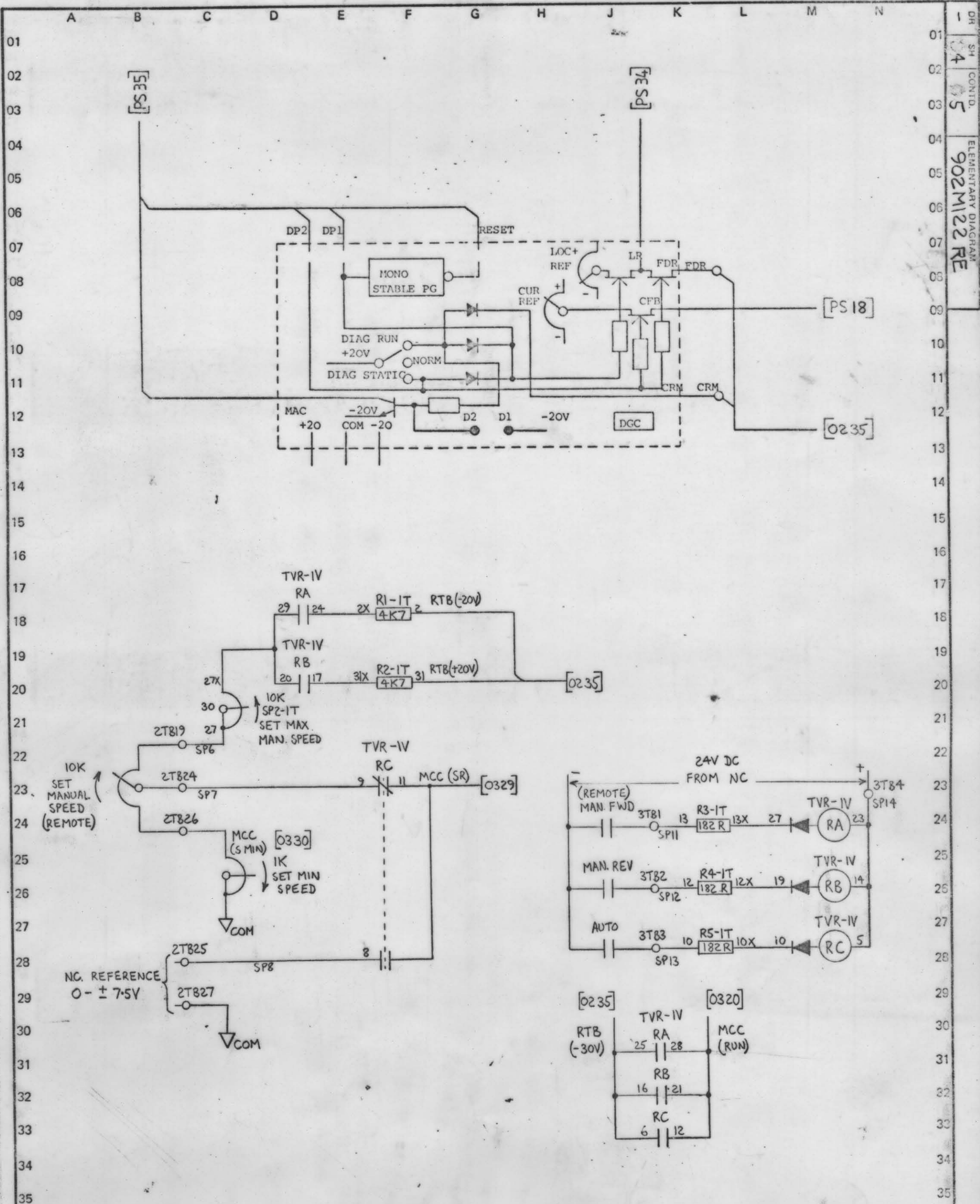
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	TI - CHURCHILL LTD			IDENT	
NGM	FRS	CWH	FRS	FRS	ASH	10-11-80	60 HP BDC 3034R			DR SH	
SEE SHEET 9	SEE SHEET 9										
4	2										
28/10/81	19-3-81										
Simplesx							GO NUMBER			ELEMENTARY DIAGRAM	
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.							016N01			902M122RE	
							CONTD.			2	











TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	10-11-80	ALLIANCE	BDC 3034R 20/60HP	IDENT	4
						TECHN.		Simplex	TI CHURCHILL		
						ENG.	FDS	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER	ELEMENTARY DIAGRAM	CONT'D
						APPD.			016N01	902M122 RE	5





	A	B	C	D	E	F	G	H	J	K	L	M	N	
01														
02														
03														
04														
05														
06														
07														
08														
09														
10														
11														

DR SH  
CONTD.  
7  
ELEMENTARY DIAGRAM  
902M122RE

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN RECEPTACLE AS SEEN IN RACK CLOSED POSITION.

SYMBOLS:

- TEST POST
- ⊗ POT ADJUSTMENT
- ⊗ INDICATING LIGHT

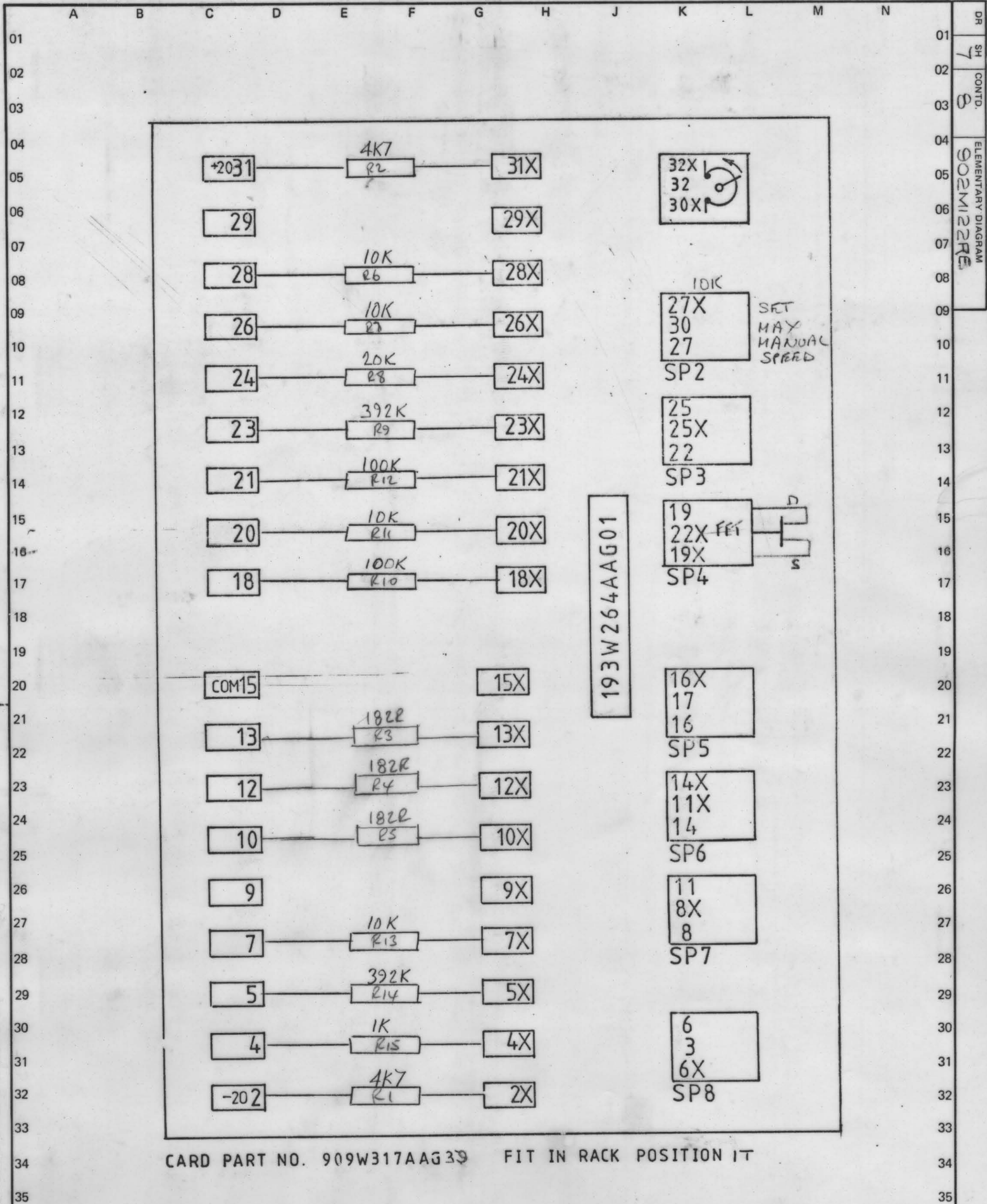
32	- 64	32	- 32X
31	- 63	31	- 31X
30	- 62	30	- 30X
29	- 61	29	- 29X
28	- 60	28	- 28X
27	- 59	27	- 27X
26	- 58	26	- 26X
25	- 57	25	- 25X
24	- 56	24	- 24X
23	- 55	23	- 23X
22	- 54	22	- 22X
21	- 53	21	- 21X
20	- 52	20	- 20X
19	- 51	19	- 19X
18	- 50	18	- 18X
17	- 49	17	- 17X
16	- 48	16	- 16X
15	- 47	15	- 15X
14	- 46	14	- 14X
13	- 45	13	- 13X
12	- 44	12	- 12X
11	- 43	11	- 11X
10	- 42	10	- 10X
9	- 41	9	- 9X
8	- 40	8	- 8X
7	- 39	7	- 7X
6	- 38	6	- 6X
5	- 37	5	- 5X
4	- 36	4	- 4X
3	- 35	3	- 3X
2	- 34	2	- 2X
1	- 33	1	- 1X

CARD RACK WIRE JUMPER TABLE			
17131	1231	SP11 - 1T13	SP6 - 1T32
1T2	1R2	SP12 - 1T12	SP7 - 1V91
1T24X	1R15	SP13 - 1T10	SP8 - 1V8
RTB(20V) - 1T2	1R(MCC) - 1R3	SABSE(1R) - 1R28	
1T2X - 1V24	1R3 - 1T28	1R23X - 1T5X	1T13X - 1V27
1V20 - 1V23	1T28X - 1T26X	1T5 - 1R22	1T12X - 1V19
1V29 - 1T27X	1T26X - 1R21	1R22 - 1R17X	1T10X - 1V10
1T27 - 1T30	1R21 - 1R8	1R22X - 1T7X	
RTB20 - 1T31	1R7 - 1R17	1T24 - 1R9	
1T31X - 1V17	1T26 - 1R19		
MCC52 - 1V14	1R19 - 1R6	DR(MCC) - 1T19X	
RTB30 - 1V6	1R11X - 1T23X	1T19 - 1T4	
1V6 - 1V16	1R10X - 1T20	1T4X - 1R5.MCC	
1V16 - 1V25	1T23 - 1R12X		
MCC20N - 1V12	1R12X - 1R18X	1T15 - RTBcom	
1V12 - 1V20	1R19X - 1T21X	1T15 - 1R15	
1V21 - 1V28	1R21X - 1T18X	1T24X - 1T7	
SP14 - 1V11	1T18 - 1T22X		
1V5 - 1V14		1T21 - 1T2	
1V14 - 1V23		1T20X - 1R15	

NOTE: RECEPTACLE PINS MAY BE NUMBERED AS SHOWN IN EITHER SKETCH. (PIN 33 CORRESPONDS TO PIN 1X, 34 TO 2X, ETC.)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	 		KILCHURCHILL BDC 3034R		IDENT
			CWH			10-11-80	 VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
			2	SEE SHEET 9					016N01	902M122RE	7
				19-3-81							6





A		B		C		D		E		F		G		H		J		K		L		M		N					
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE																							
						6.7.80																							
						TECHN.																							
						ENG.																							
						APPD.																							
							<b>Allen-Bradley</b>							<i>T. CHURCHILL BDC 3034R</i>							IDENT								
							<b>Simplex</b>														DR SH								
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.							GO NUMBER							ELEMENTARY DIAGRAM							CONTD.	
														016N01							902M122RE							8	

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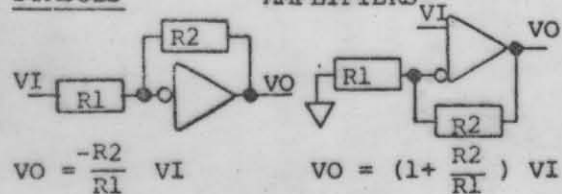


VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)

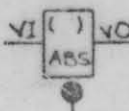
## HARDWARE ABBREVIATIONS

MCC	MAIN CONTROL CARD
IFC	INTERFACE CARD
PSC	POWER SUPPLY CARD
SCR	THYRISTOR ASSEMBLY
DGC	DIAGNOSTIC CARD
MFC	MOTOR FIELD CONTROL
MFE	MOTOR FIELD EXCITER
MDR	MODIFICATION RACK
ACC	AUXILIARY CONTROL CARD

## SYMBOLS

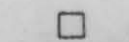


CASE GROUND



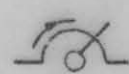
VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL



TERMINAL AT 2TB, 3TB, 4TB, RTB.

EX: 9 [2] - 2TB9; X2 [2] - RTBX2



POTENTIOMETER ARROWS ON THE CARD  
ELEMENTARY DIAGRAMS INDICATE THE  
WIPER DIRECTION AS THE POTENTIOMETER  
SHAFT IS ROTATED CLOCKWISE TO INCREASE  
FUNCTION.



THESE RESISTORS ARE CRIMPED IN WIRE  
HARNES.

FUNCTION	USE	LOC	JUMPERS
60HZ		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
IOC-400%			(NONE)
-500%		IFC	I - IHI
-300%	X	IFC	I - ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V.			
24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
1.7		ME	NONE
1.3		ME	YB - YD
2.8		ME	YA - YB
2.4		ME	YA - YB, YC-YD
5.0		ME	YA - YC
8.0		ME	YA-VC, YB-YD
13	X	ME	YA-VC, YB-YD
1.25		ME	YA-VC, YB-YD
L/R < .25S		MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
200% DRV CL	X	MCC	DCX-DCY
FUSELESS		ACC	CFY - CFX
50% FIELD ECON	X	MCC	33K2 FROM FEA TO +20V

## SIGNAL DEFINITIONS AND LOCATIONS

* CEMF	COUNTER EMF ( 16)
* CFB	CURRENT FEEDBACK ( 16)
CMFA	ABSOLUTE VALUE CEMF ( 08)
CRM	CROSSOVER MODIFY ( 11)
DFP	DELAYED FIRING POWER ( 25)
* DR	DRIVER REFERENCE ( 33)
* EAO	ERROR AMP OUTPUT ( 33)
EST	EXTERNAL FLT STOP INPUT ( 14)
FALT	FAULT ( 14)
* FC	FIELD CURRENT (NS26)
FDR	FIELD DIAGNOSTIC REFERENCE ( 08)
FEA	FIELD ECONOMY ADJUST ( 25)
FF	FIELD FAULT ( 28)
IABS	MOTOR CURRENT ABSOLUTE ( 09)
ILA	CURRENT LIMIT ADJUST ( 23)
IMET	CURRENT SIGNAL FOR METER ( 10)
* IPU	INITIAL PULSE ( 20)
* LR	LOCAL REF. FROM DGC ( 33)
* JOG	JOG SWITCH INPUT ( 23)
* JOGR	JOG REFERENCE INPUT ( 31)
* MAC	MAX/MA CONTROL SIGNAL ( 20)
MSW	MODE SWITCH ( 30)
* OSC	OSCILLATOR ( 17)
* PCR	PHASE CONTROL REF. ( 26)
* PRE	DRIVE PRECONDITION ( 21)
QSEQ	PHASE SEQUENCE ( 14)
RERR	REGULATOR ERROR ( 27)
RIJ	INTEGRATOR SUMMING JUNCTION ( 27)
RJ	REGULATOR SUMMING JUNCTION ( 31)
RRA	REGULATOR RESPONSE ADJUST ( 30)
RSET	RESET ( 16)
* RTR	READY TO RUN ( 16)
* RUN	RUN SWITCH INPUT ( 21)
* SA-C	PHASE SYN OUTPUT ( 16)
* SFB	SPEED FEEDBACK ( 20)
SMET	SPEED SIGNAL FOR METER ( 12)
* SR	SYSTEM REFERENCE INPUT ( 29)
* SYS	SYSTEM FAULT TRIP ( 13)
* TA	OUTPUT FOR TACHO TRIP ADJUST ( 20)
TF	TACHO FAULT (NS28)
* TFB	TACHOMETER FEEDBACK ( 20)
TFR	AC TACHO FREQUENCY OUTPUT ( 13)
* TR	TIMED REFERENCE ( 33)
* VFB	VOLTAGE FEEDBACK ( 19)
* WFR	WEAK FIELD REFERENCE ( 20)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
NS - NEXT SHEET  
TS - THIS SHEET

HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET  
1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE  
CLOSED/OPEN (I/O) STATE OF THESE  
SWITCHED FOR "PRECONDITION" - "RUN"  
OR JOG" - "DIAGNOSTIC STATIC" -  
"DIAGNOSTIC RUN" IS SHOWN BY A  
FOUR DIGIT WORD WITH STATE SEQUENCE.

## NOTES:

- CONTROL TRANSFORMER PRIMARY [0215]  
TO BE CONNECTED FOR SUPPLY VOLTAGE.
- REMOVE THE 33K2 FROM FEA TO +20V WHEN USING 'DIAGNOSTIC  
STATIC' OR 'DIAGNOSTIC RUN' MODES. REPLACE WHEN DIAGNOSTIC  
TESTS COMPLETE.

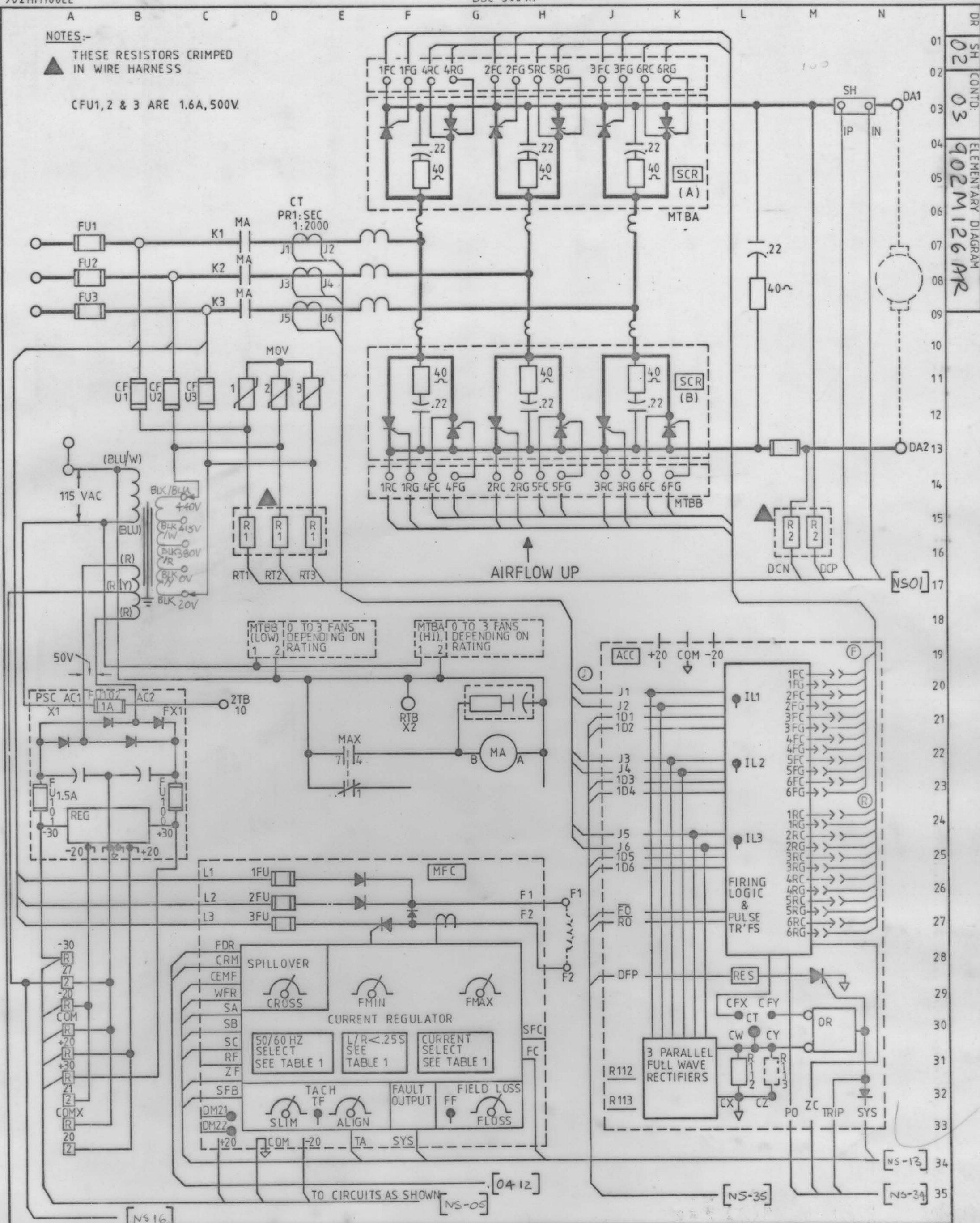
TECHN.	ENG.	TECHN.	ENG.	APPD.	DATE 2/9/81			BDC 3064R 40/60HP		IDENT	
MOTOR DATA, SEE SHEET 09		AS SHIPPED SEE SHEET 09		TECHN.				TI - CHURCHILL LTD.		DR SH	
5-1-82		19/11/81		ENG. NGM		VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		GO NUMBER 136N00		ELEMENTARY DIAGRAM 902M126AR	
				APPD.				CONTD. 02		01	



## NOTES:-

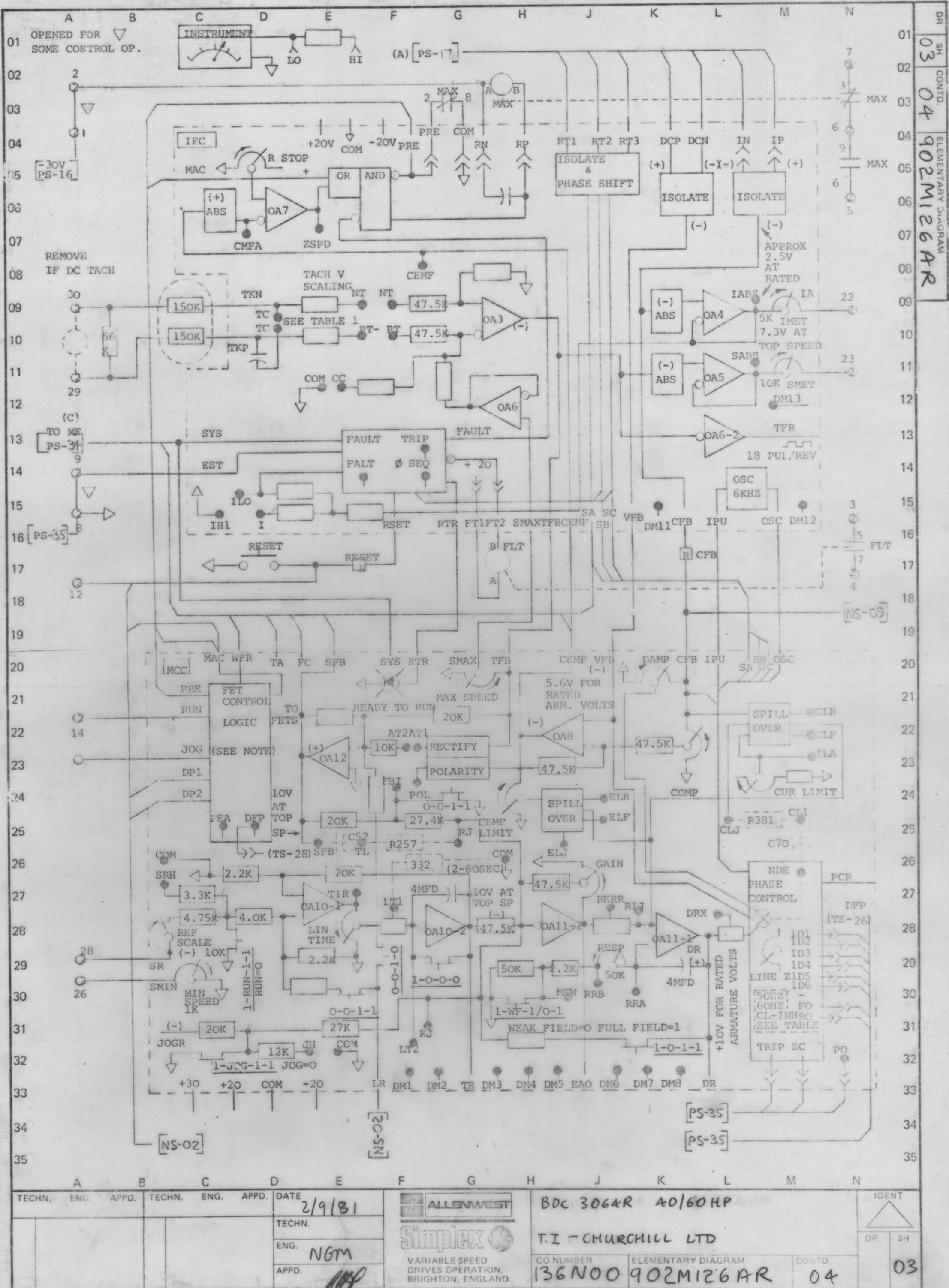
▲ THESE RESISTORS CRIMPED  
IN WIRE HARNESS

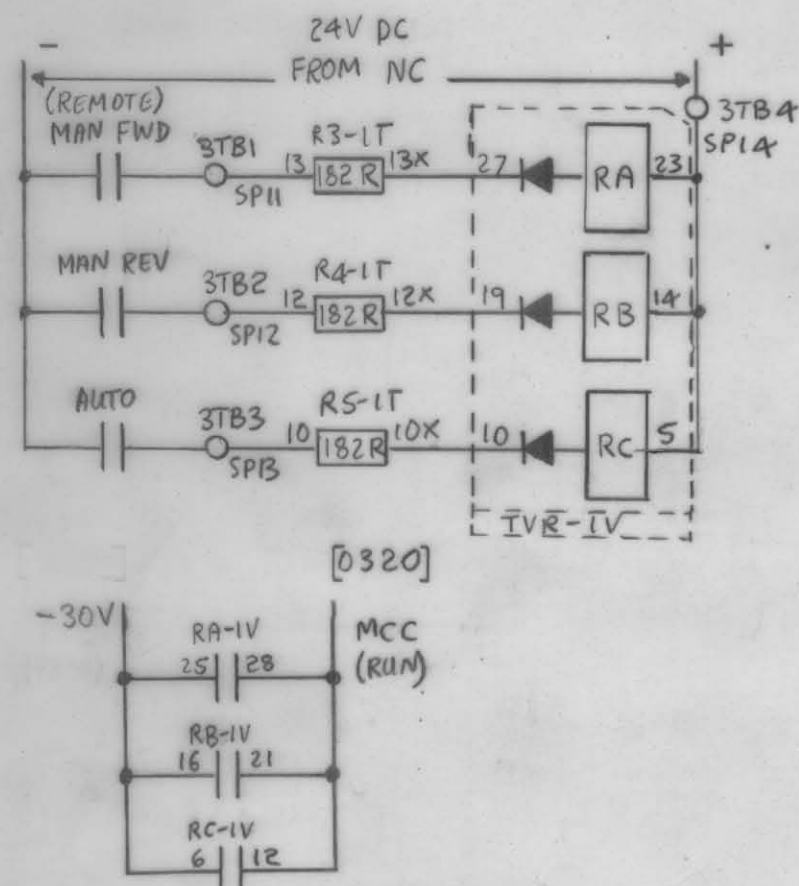
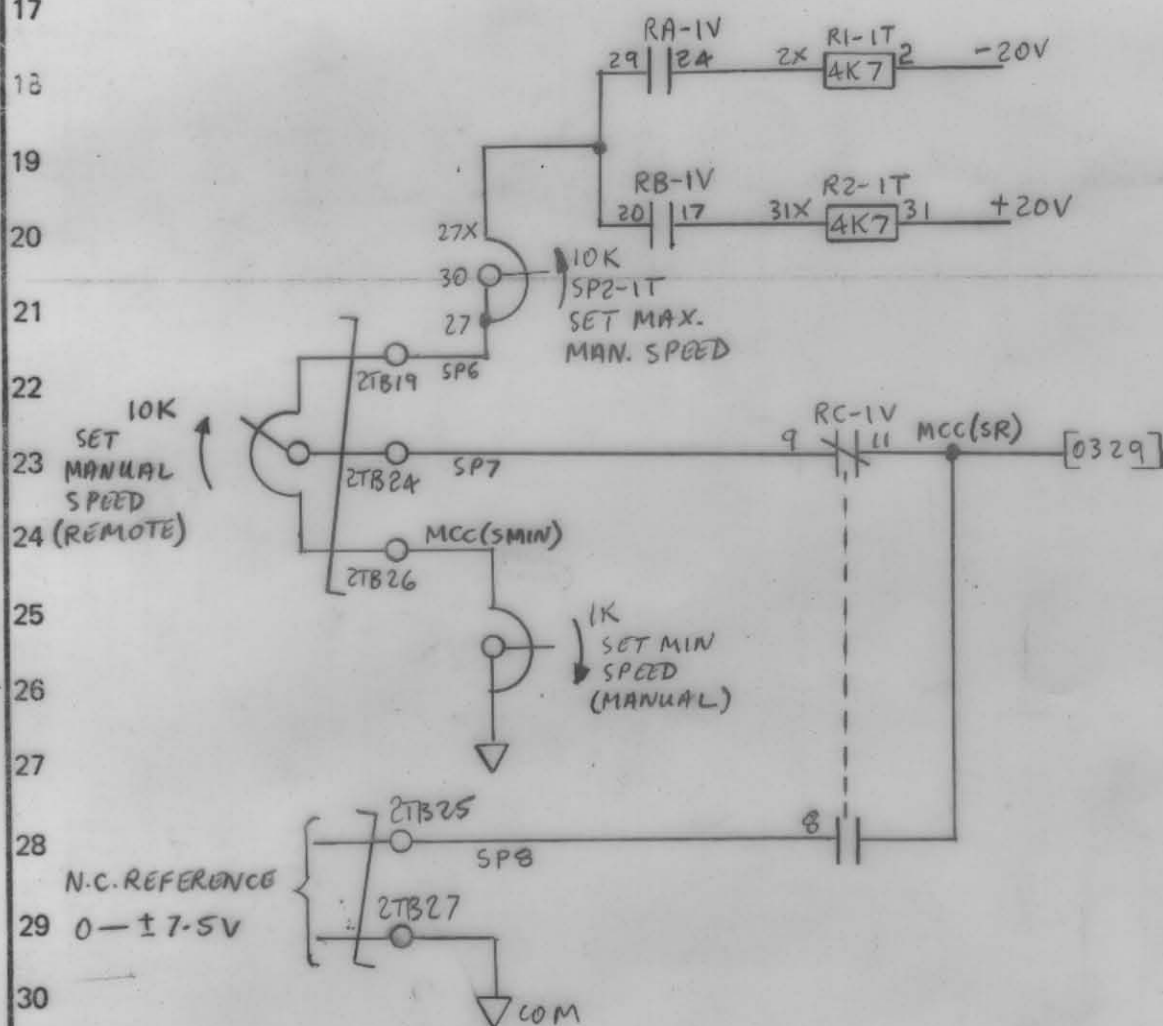
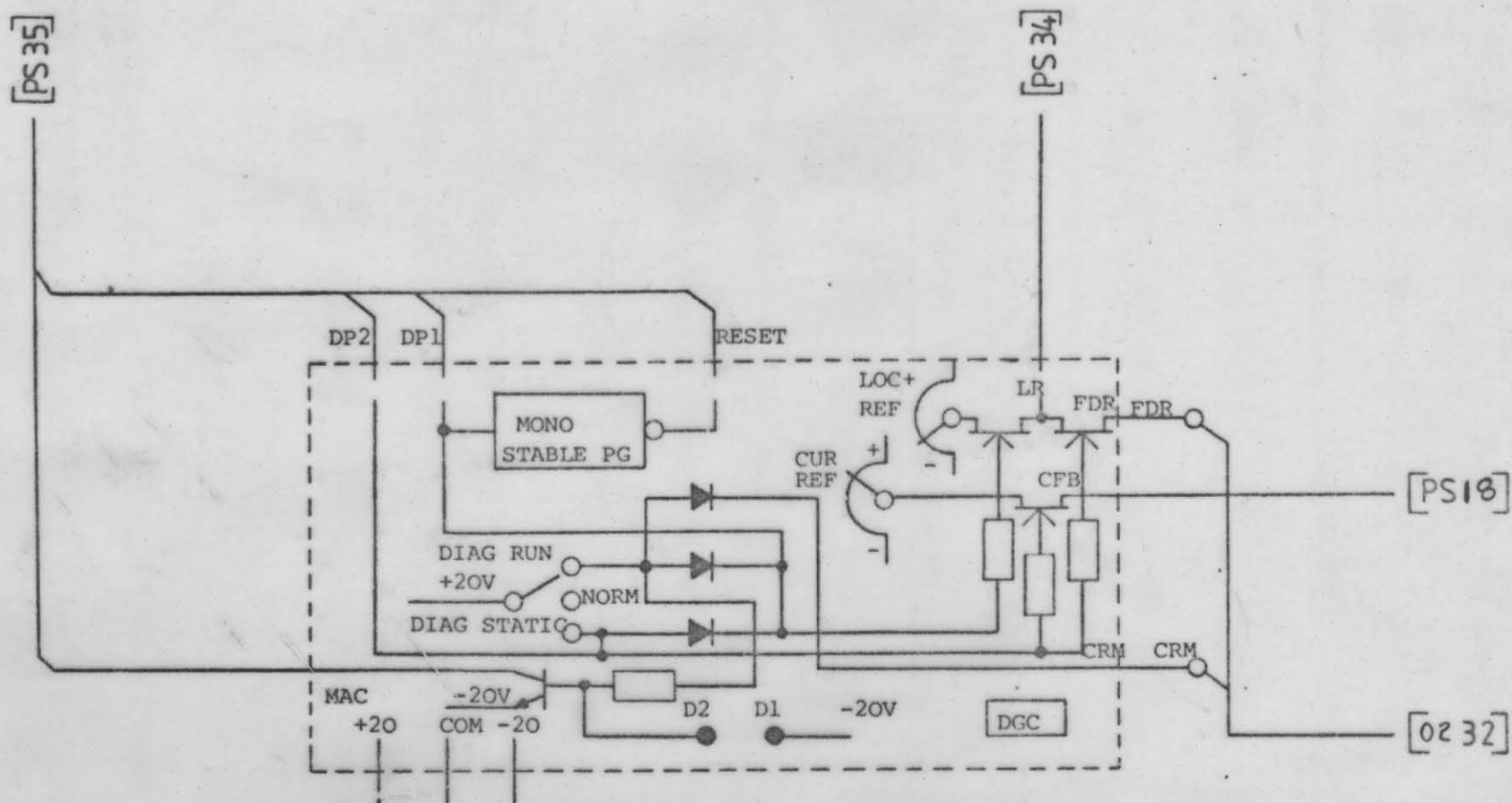
CFU1,2 & 3 ARE 1.6A, 500V.



TECHN: ENG:	APPD: TECHN: ENG:	APPD: DATE: 2/9/81	ALLENWEST	BDC 3064R	40/60HP	IDENT.
		TECHN:	VARIABLE SPEED	T.I.-CHURCHILL LTD		DR SH
		ENG: NGM	DRIVES OPERATION	G.O. NUMBER	ELEMENTARY DIAGRAM.	02
		APPD:	BRIGHTON, ENGLAND.	136N00	902M126AR	CONTO: 03

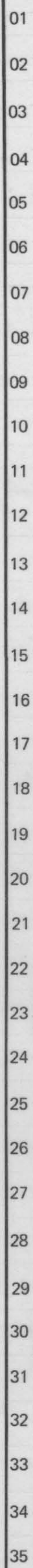






TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	TECHN.	ENG.	APPD.	GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT
						2/9/81				136N00902M126AR	05		04
						<b>ALLENWEST</b> <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		BDC 3064R 40/60HP T.I - CHURCHILL LTD.					





	A	B	C	D	E	F	G	H	J	K	L	M	N	
01	A	B	C	D	E	F	G	H	J	K	L	M	N	01
02														02
03														03
04														04
05														05
06														06
07														07
08														08
09														09
10														10
11														11

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN  
RECEPTACLE AS SEEN  
IN RACK CLOSED  
POSITION.

## SYMBOLS:



TEST POST



POT ADJUSTMENT



INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

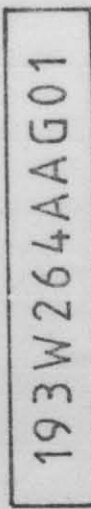
RTB(-20V)-1R02	1T02X-1V24	1R19-1R06	SP6-1T27
1R02-1T02	1T31X-1V17	1T24-1R09	SP7-1V09
RTB(COM)-1R15	1V20-1V29	1T24X-1T15	SP8-1V08
1R15-1T15	1V29-1T27X	1R11X-1T23X	SP11-1T13
RTB(+20V)-1R31	1T30-1T27	1T20-1R10X	SP12-1T12
1R31-1T31	1V11-MCC(SR)	1T20X-1T24X	SP13-1T10
RTB(-30V)-1V25	1V12-1V21	1R12X-1R18X	SP14-1V23
1V25-1V16	1V21-1V28	1R18X-1T23	
1V16-1V06	1V28-MCC(RUN)	1FC(SABS)-1R28	
	1T13X-1V27	1R23X-1T05X	
	1T12X-1V19	1R22X-1T07X	
	1T10X-1V10	1T07-1T20X	
	1V23-1V14	1R22-1R17X	
	1V14-1V05	1R17X-1T05	
	MCC(TR)-1T28	1T02-1T21	
	1T28-1R03	1T21X-1R19X	
	1T28X-1T26X	1R21X-1T18X	
	1T26X-1R21	1T18-1T22X	
	1R21-1R08	MCC(DR)-1T19X	
	1R07-1R17	1T19-1T04	
	1T26-1R19	1T4X-MCC(RJ)	


NOTE: RECEPTACLE PINS MAY  
BE NUMBERED AS SHOWN  
IN EITHER SKETCH. (PIN  
33 CORRESPONDS TO PIN  
1X, 34 TO 2X, ETC.)

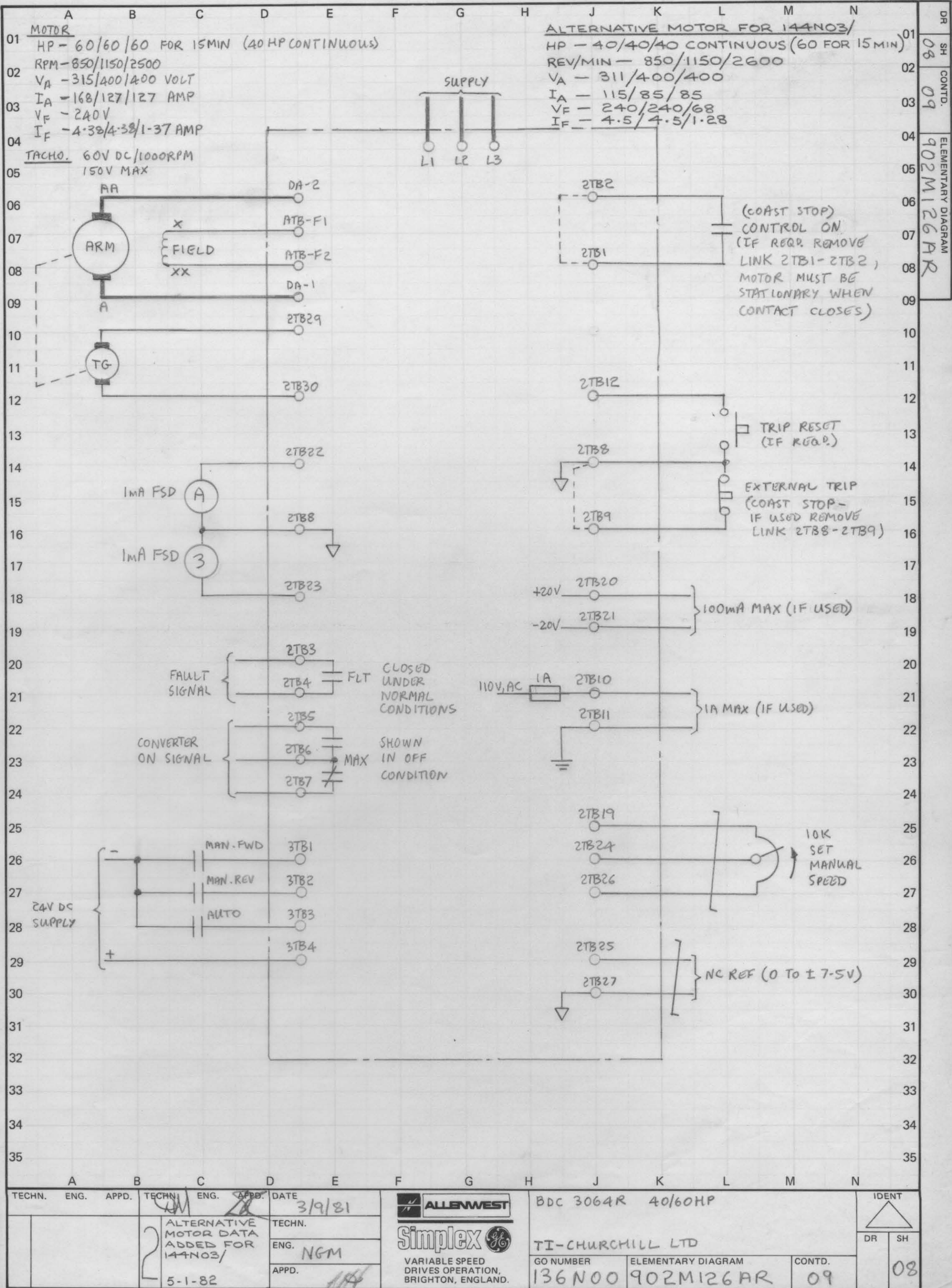
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				NGM		3/9/81	TI-CHURCHILL LTD.			DR SH	
			2				136N00 902M126AR			06	
			19/11/81				07				

**Simplex**  
VARIABLE SPEED  
DRIVES OPERATION,  
BRIGHTON, ENGLAND.





A			B			C			D			E			F			G			H			J			K			L			M			N					
TECHN.			ENG.			APPD.			TECHN.			ENG.			APPD.			DATE									BDC 3064R 40/60HP									IDENT 					
																											TI-CHURCHILL									DR			SH		
																					VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.						GO NUMBER			ELEMENTARY DIAGRAM			CONTD.								
																											136N00			902M126AR			08			07					





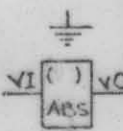
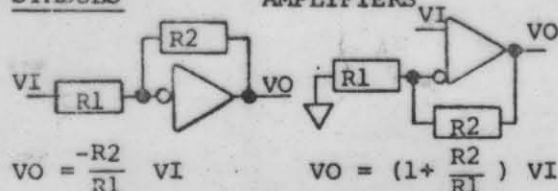
VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1 (+)

## HARDWARE ABBREVIATIONS

MCC	MAIN CONTROL CARD
IFC	INTERFACE CARD
PSC	POWER SUPPLY CARD
SCR	THYRISTOR ASSEMBLY
DGC	DIAGNOSTIC CARD
MFC	MOTOR FIELD CONTROL
MFE	MOTOR FIELD EXCITER
MDR	MODIFICATION RACK
ACC	AUXILIARY CONTROL CARD

## SYMBOLS

## AMPLIFIERS



### CASE GROUND

VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB, RTB.  
EX: 9 [2] - 2TB9; X2 [R] - RTBX2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD  
ELEMENTARY DIAGRAMS INDICATE THE  
WIPER DIRECTION AS THE POTENTIOMETER  
SHAFT IS ROTATED CLOCKWISE TO INCREASE  
FUNCTION.

THESE RESISTORS ARE CRIMPED IN WIRE HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ	X	MFC	ZA-ZB (IF USED)
50HZ		MCC	HZA - PHA
IOC-400%			(NONE)
-500%		IFC	I - IHI
-300%	X	IFC	I-ILO
SR5 - 9v	X		NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO			(NONE)
AC TACHO	X	MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac	X	IFC	NT-NT2 PT - PT2
110-300vdc		IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
7.8T 1.7		ME	NONE
1.3 2.8		ME	YB - YD
2.4 5.0		ME	YA - YB
4.0 8.0	X	ME	YA-YB, YC-YD
7.0 13		ME	YA - YC
13 25		ME	YA-YC, YB-YD
L/R < .25S		MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
20000RV CL	X	MCC	DCX-DCY
FUSELESS		ACC	CFY - CFX
50% FIELD ERM	X	MCC	33K2 FROM FEA TO +20V

## SIGNAL DEFINITIONS AND LOCATIONS

* CEMF	COUNTER EMF ( 16)
* CFB	CURRENT FEEDBACK ( 16)
CMFA	ABSOLUTE VALUE CEMF ( 08)
CRM	CROSSOVER MODIFY ( 11)
DFP	DELAYED FIRING POWER ( 25)
* DR	DRIVER REFERENCE ( 33)
* EAO	ERROR AMP OUTPUT ( 33)
EST	EXTERNAL FLT STOP INPUT ( 14)
FAULT	FAULT ( 14)
* FC	FIELD CURRENT (NS26)
FDR	FIELD DIAGNOSTIC REFERENCE ( 08)
FEA	FIELD ECONOMY ADJUST ( 25)
FF	FIELD FAULT ( 28)
IABS	MOTOR CURRENT ABSOLUTE ( 09)
ILA	CURRENT LIMIT ADJUST ( 23)
IMET	CURRENT SIGNAL FOR METER ( 10)
* IPU	INITIAL PULSE ( 20)
* LR	LOCAL REF. FROM DGC ( 33)
* JOG	JOG SWITCH INPUT ( 23)
* JOGR	JOG REFERENCE INPUT ( 31)
* MAC	MAX/MA CONTROL SIGNAL ( 20)
MSW	MODE SWITCH ( 30)
* OSC	OSCILLATOR ( 17)
* PCR	PHASE CONTROL REF. ( 26)
* PRE	DRIVE PRECONDITION ( 21)
ØSEQ	PHASE SEQUENCE ( 14)
PERR	REGULATOR ERROR ( 27)
RIJ	INTEGRATOR SUMMING JUNCTION ( 27)
RJ	REGULATOR SUMMING JUNCTION ( 31)
RRA	REGULATOR RESPONSE ADJUST ( 30)
RSET	RESET ( 16)
* RTR	READY TO RUN ( 16)
* RUN	RUN SWITCH INPUT ( 21)
* SA-C	PHASE SYN OUTPUT ( 16)
* SFB	SPEED FEEDBACK ( 20)
SMET	SPEED SIGNAL FOR METER ( 12)
* SR	SYSTEM REFERENCE INPUT ( 29)
* SYS	SYSTEM FAULT TRIP ( 13)
* TA	OUTPUT FOR TACHO TRIP ADJUST ( 20)
TF	TACHO FAULT (NS28)
* TFB	TACHOMETER FEEDBACK ( 20)
TFR	AC TACHO FREQUENCY OUTPUT ( 13)
* TR	TIMED REFERENCE ( 33)
* VFB	VOLTAGE FEEDBACK ( 19)
* WFR	WEAK FIELD REFERENCE ( 20)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
NS - NEXT SHEET  
TS - THIS SHEET

HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET  
1A, LINE 16 ETC.

NOTE: I FIELD EFFECT TRANSISTOR: THE  
CLOSED/OPEN (I/O) STATE OF THESE  
SWITCHED FOR "PRECONDITION" - "RUN"  
OR JOG" - "DIAGNOSTIC STATIC" -  
"DIAGNOSTIC RUN" IS SHOWN BY A  
FOUR DIGIT WORD WITH STATE SEQUENCE.

## NOTES

1. CONTROL TRANSFORMER PRIMARY [0215]  
TO BE CONNECTED FOR SUPPLY VOLTAGE.

2. REMOVE THE 33K $\Omega$  FROM FEA TO +20V WHEN USING 'DIAGNOSTIC STATIC' OR 'DIAGNOSTIC RUN' MODES. REPLACE WHEN DIAGNOSTIC TESTS COMPLETE.

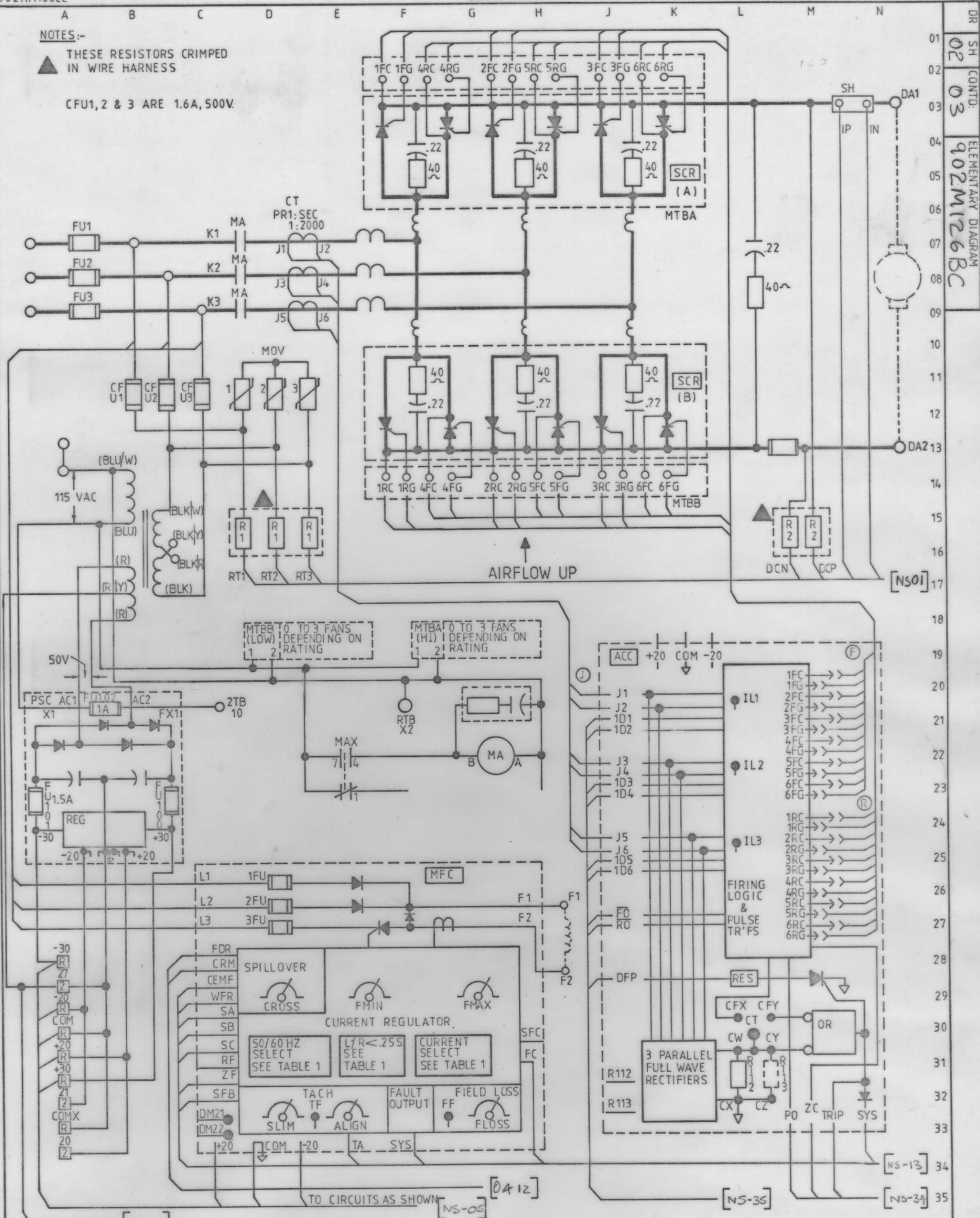
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TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE				BDC 306AR, 40/60HP									 IDENT																			
3			2			TECHN.				TE-CHURCHILL LTD.									DR			SH																
SEE SHEET 09			AS SHIPPED SEE SHEET 09			ENG.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			GO NUMBER			ELEMENTARY DIAGRAM			CONTD.			01																			
20/1/82			14/12/81			APPD.	16/4			138N01			902M126BC			02																						



## NOTES:-

▲ THESE RESISTORS CRIMPED  
IN WIRE HARNESS

CFU1, 2 & 3 ARE 1.6A, 500V.



TECHN: ENG: APPD: DATE: 23/10/81

TECHN: NGM

ENG: NGM

APPD: 11/12/81

ALLENWEST  
VARIABLE SPEED  
DRIVES OPERATION  
BRIGHTON, ENGLAND.

BDC 3064R, 40/60HP

TI-CHURCHILL LTD.

G.O. NUMBER

138N01

ELEMENTARY DIAGRAM.

902M126BC

CONTD:

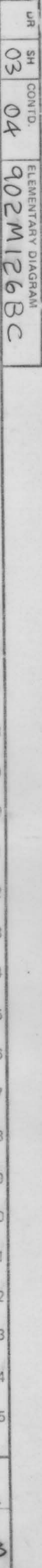
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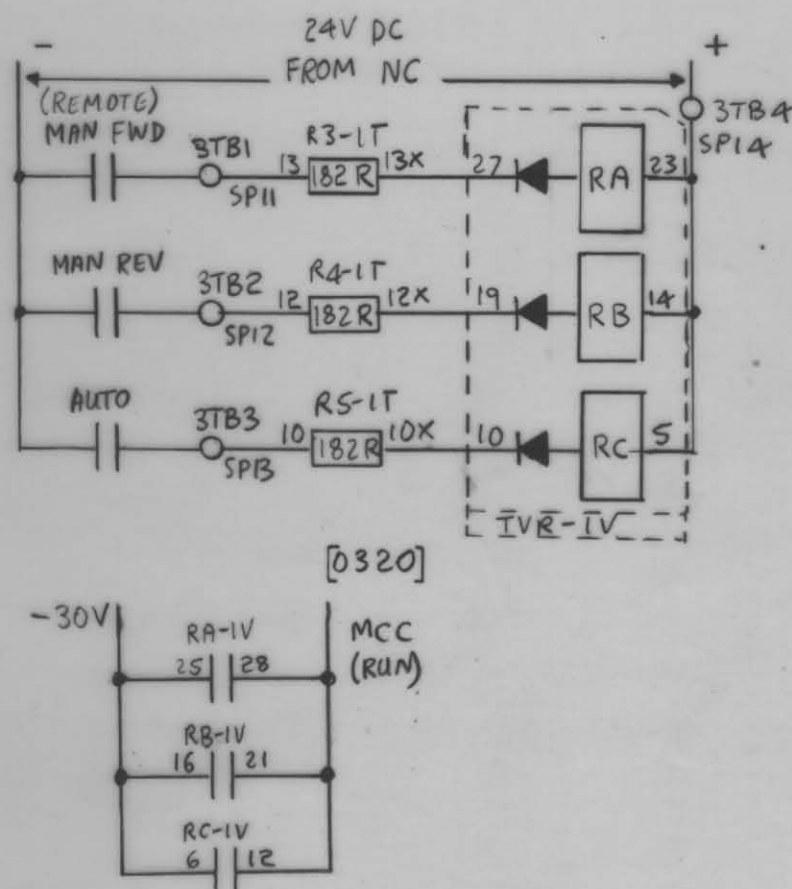
IDENT.

DR SH

02

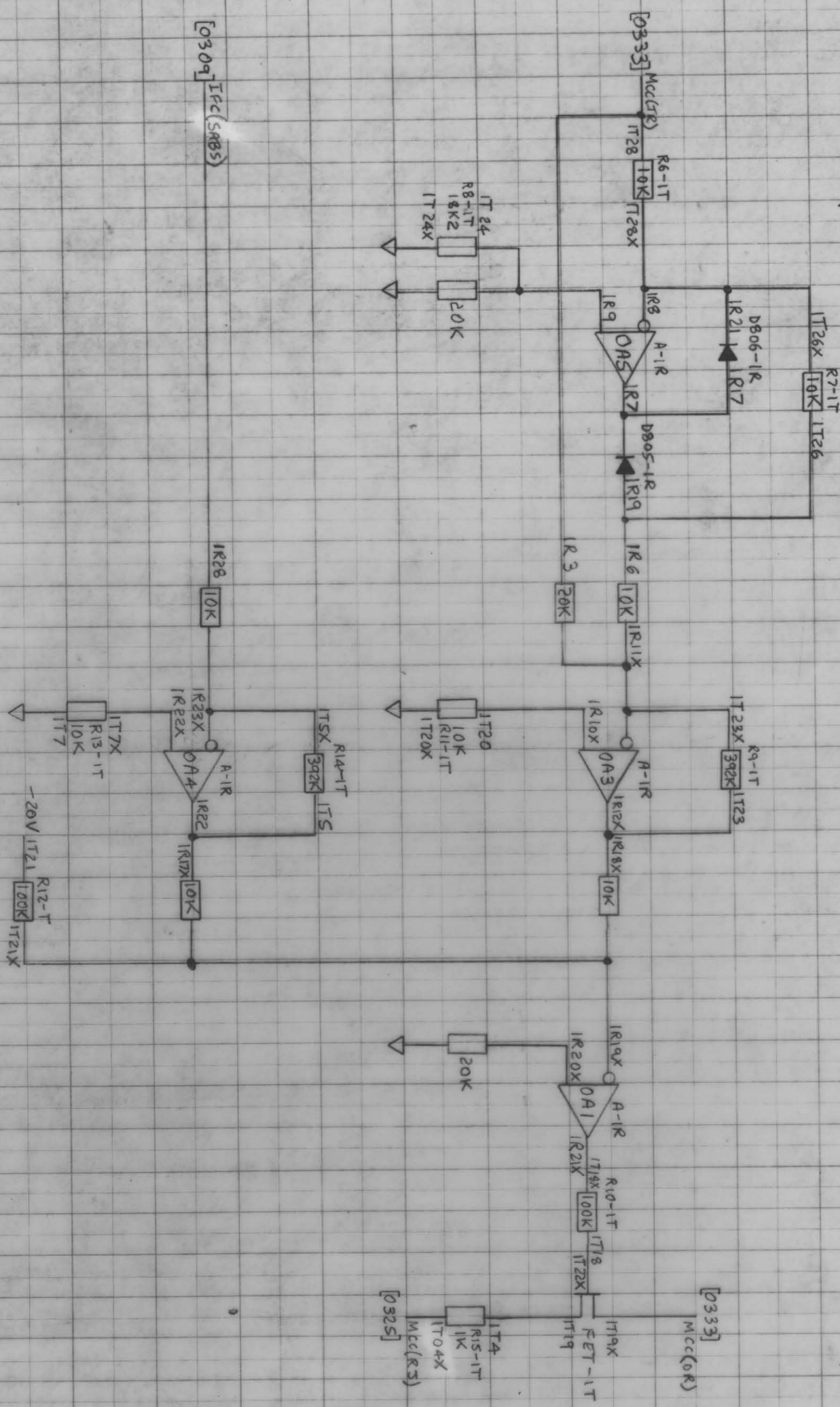






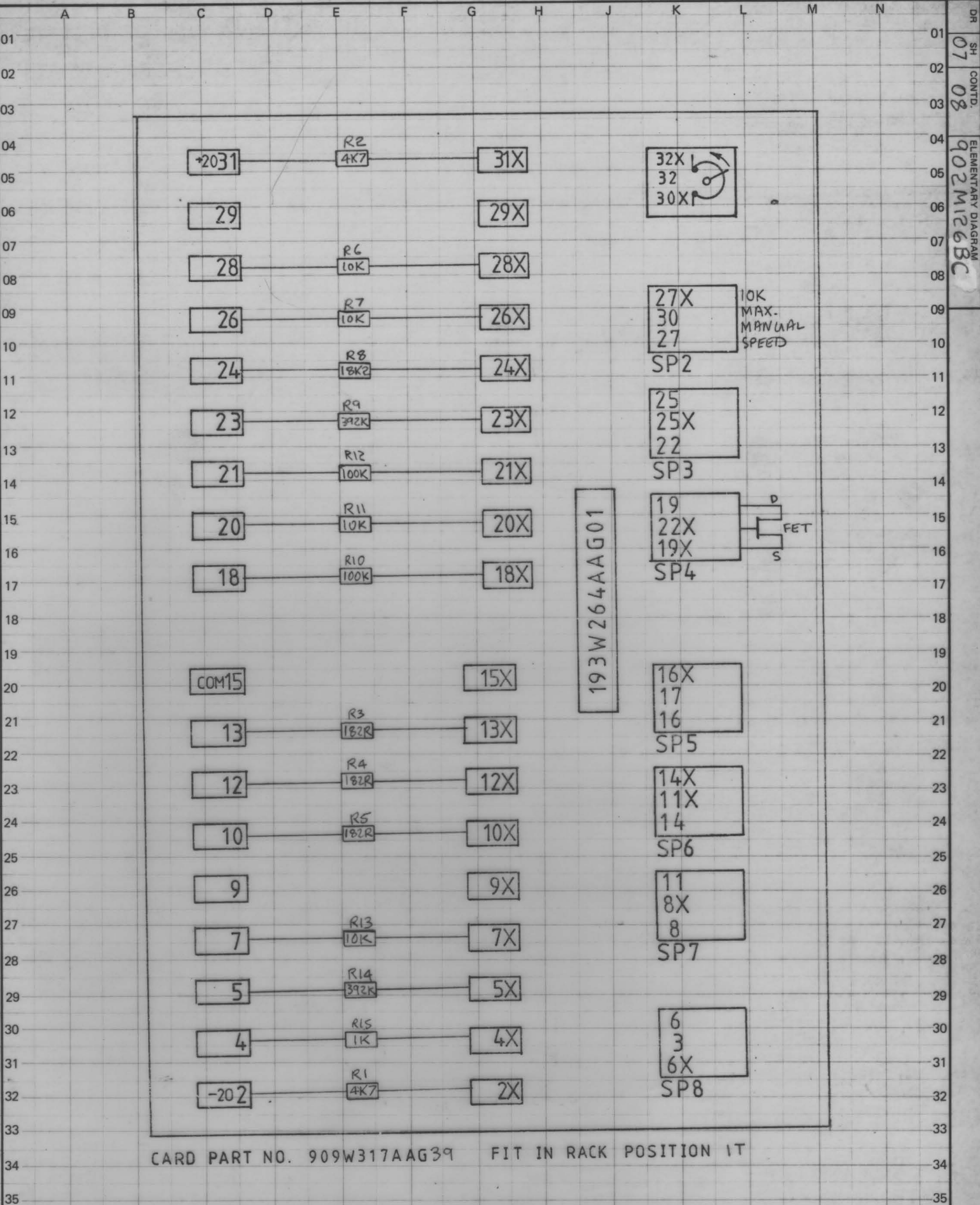
**Disclaimer Statement** The  trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name.





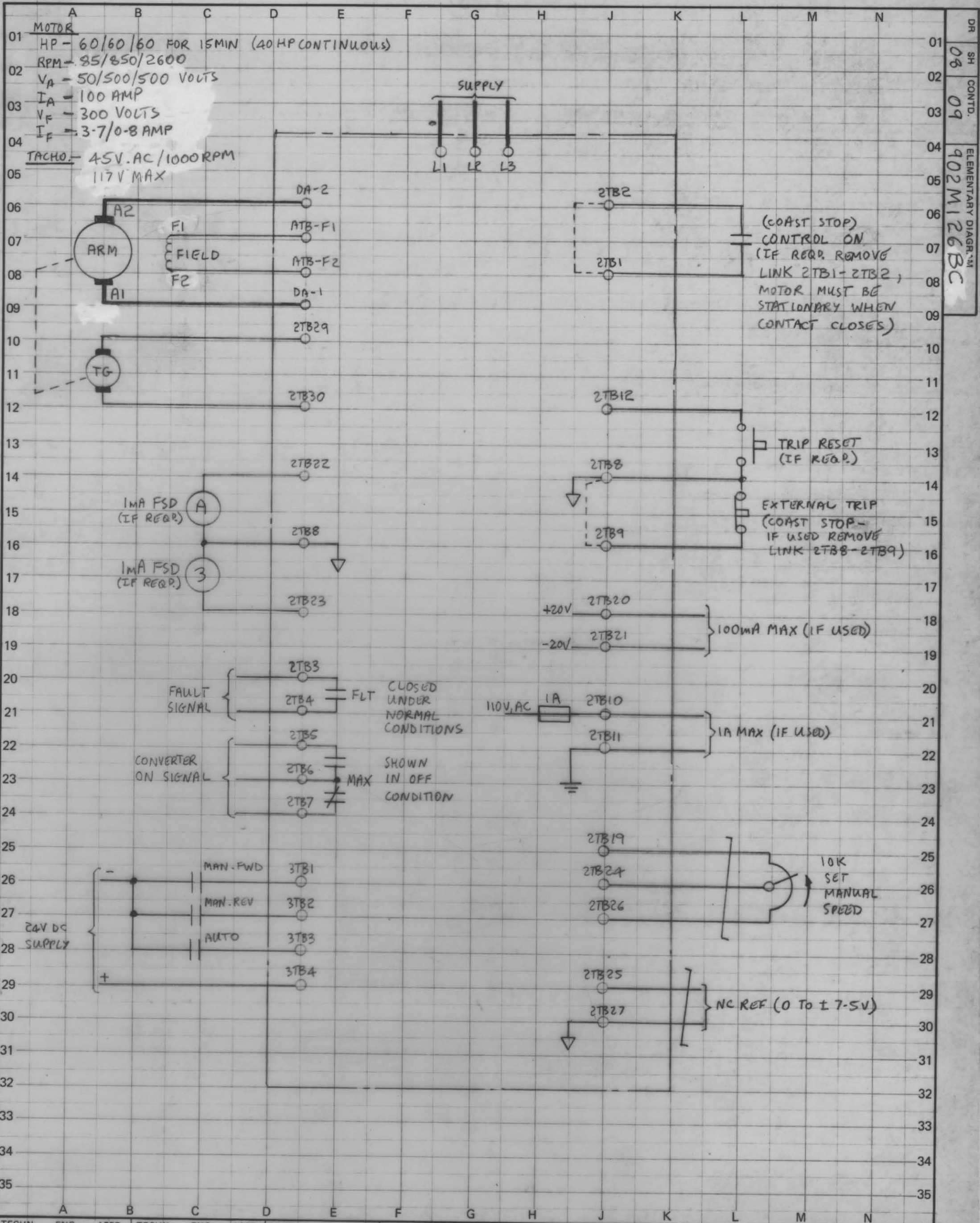






CARD PART NO.	909W317AAG39	FIT IN RACK POSITION	IT
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A		B		C		D		E		F		G		H		J		K		L		M		N	
TECHN.		ENG.		APPD.		TECHN.		ENG.		APPD.		DATE				BDC 3064R		40/60HP		IDENT					
												23/10/81				TI-CHURCHILL				DR		SH			
												TECHN.													
												ENG.													
												APPD.				GO NUMBER		ELEMENTARY DIAGRAM		CONTD.					
												NGM				138N01		902M126BC		08				07	
												VARIABLE SPEED DRIVES OPERATION. BRIGHTON, ENGLAND.													



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	BDC 3064R 40/60HP		IDENT	
				NGM		23/10/81			DR SH	
2			14/12/81			Simplex			TI-CHURCHILL LTD	
			ENG. NGM			VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			GO NUMBER 138 N01	
			APPD.						ELEMENTARY DIAGRAM 902M126BC.	
									CONTD. 09	
									08	

Disclaimer Statement The trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name



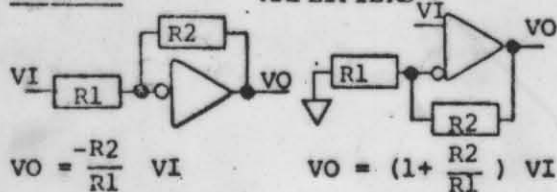
## VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)

## HARDWARE ABBREVIATIONS

MCC	MAIN CONTROL CARD
IFC	INTERFACE CARD
PSC	POWER SUPPLY CARD
SCR	THYRISTOR ASSEMBLY
DGC	DIAGNOSTIC CARD
MFC	MOTOR FIELD CONTROL
MFE	MOTOR FIELD EXCITER
MDR	MODIFICATION RACK
ACC	AUXILIARY CONTROL CARD

## SYMBOLS

## AMPLIFIERS

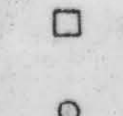


CASE GROUND



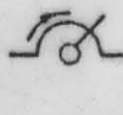
VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL



TERMINAL AT 2TB, 3TB, 4TB, RTB.

EX: 9 [2] - 2TB9; X2 [R] - RTBX2



POTENTIOMETER ARROWS ON THE CARD  
ELEMENTARY DIAGRAMS INDICATE THE  
WIPER DIRECTION AS THE POTENTIOMETER  
SHAFT IS ROTATED CLOCKWISE TO INCREASE  
FUNCTION.



THESE RESISTORS ARE CRIMPED IN WIRE  
HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
IOC-400%			(NONE)
-500%		IFC	I - IHI
-300%	X	IFC	I - ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH - COM
JOG 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V.		IFC	NT-NT1 PT - PT1
24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT2 PT - PT2
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT3 PT - PT3
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
1.3 1.7		MF	NONE
2.4 2.8		MF	YB - YD
4.0 5.0		MF	YA - YB
7.0 8.0		MF	YA - YB, YC - YD
13 13	X	MF	YA - YC
13 25		MF	YA - YC, YB - YD
L/R < .25S		MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
200% DRV CL	X	MCC	DCX - DCY
FUSELESS		ACC	CFY - CFX
50% FIELD ELON	X	MCC	33K2 FROM FEA TO +20V

## SIGNAL DEFINITIONS AND LOCATIONS

* CEMF	COUNTER EMF ( 16)
* CFB	CURRENT FEEDBACK ( 16)
* CMFA	ABSOLUTE VALUE CEMF ( 08)
* CRM	CROSSOVER MODIFY ( 11)
* DFP	DELAYED FIRING POWER ( 25)
* DR	DRIVER REFERENCE ( 33)
* EAO	ERROR AMP OUTPUT ( 33)
* EST	EXTERNAL FLT STOP INPUT ( 14)
* FALT	FAULT ( 14)
* FC	FIELD CURRENT (NS26)
* FDR	FIELD DIAGNOSTIC REFERENCE ( 08)
* FEA	FIELD ECONOMY ADJUST ( 25)
* FF	FIELD FAULT ( 28)
* IABS	MOTOR CURRENT ABSOLUTE ( 09)
* ILA	CURRENT LIMIT ADJUST ( 23)
* IMET	CURRENT SIGNAL FOR METER ( 10)
* IPJ	INITIAL PULSE ( 20)
* LR	LOCAL REF. FROM DGC ( 33)
* JOG	JOG SWITCH INPUT ( 23)
* JOGR	JOG REFERENCE INPUT ( 31)
* MAC	MAX/MA CONTROL SIGNAL ( 20)
* MSW	MODE SWITCH ( 30)
* OSC	OSCILLATOR ( 17)
* PCR	PHASE CONTROL REF. ( 26)
* PRE	DRIVE PRECONDITION ( 21)
* PSEQ	PHASE SEQUENCE ( 14)
* RERR	REGULATOR ERROR ( 27)
* RIJ	INTEGRATOR SUMMING JUNCTION ( 27)
* RJ	REGULATOR SUMMING JUNCTION ( 31)
* PRA	REGULATOR RESPONSE ADJUST ( 30)
* RSET	RESET ( 16)
* RTR	READY TO RUN ( 16)
* RUN	RUN SWITCH INPUT ( 21)
* SA-C	PHASE SYN OUTPUT ( 16)
* SFB	SPEED FEEDBACK ( 20)
* SMET	SPEED SIGNAL FOR METER ( 12)
* SR	SYSTEM REFERENCE INPUT ( 29)
* SYS	SYSTEM FAULT TRIP ( 13)
* TA	OUTPUT FOR TACHO TRIP ADJUST ( 20)
* TF	TACHO FAULT (NS28)
* TFB	TACHOMETER FEEDBACK ( 20)
* TFR	AC TACHO FREQUENCY OUTPUT ( 13)
* TR	TIMED REFERENCE ( 33)
* VFB	VOLTAGE FEEDBACK ( 19)
* WFR	WEAK FIELD REFERENCE ( 20)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
NS - NEXT SHEET  
TS - THIS SHEET

HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET  
1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE  
CLOSED/OPEN (I/O) STATE OF THESE  
SWITCHED FOR "PRECONDITION" - "RUN"  
OR JOG" - "DIAGNOSTIC STATIC" -  
"DIAGNOSTIC RUN" IS SHOWN BY A  
FOUR DIGIT WORD WITH STATE SEQUENCE.

## NOTES:

1. CONTROL TRANSFORMER PRIMARY [0215]  
TO BE CONNECTED FOR SUPPLY VOLTAGE.
2. REMOVE THE 33K2 FROM FEA TO +20V WHEN USING 'DIAGNOSTIC  
STATIC' OR 'DIAGNOSTIC RUN' MODES. REPLACE WHEN DIAGNOSTIC  
TESTS COMPLETE.

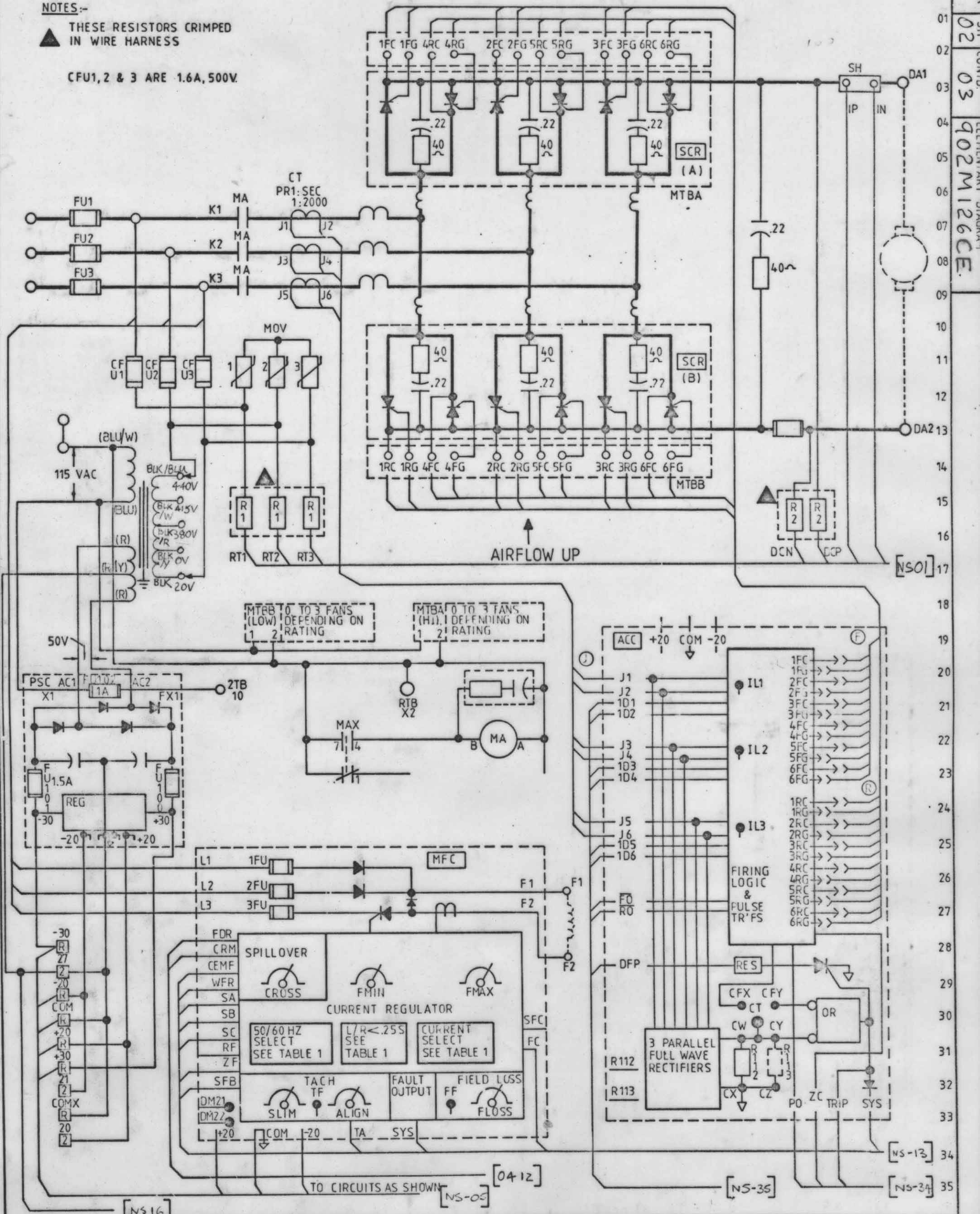
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						6-1-82	TI-CHURCHILL LTD.		DR SH		
AS SHIPPED SEE SHEET 09						TECHN.	202N00 902M126CE		01		
						ENG.					
						APPD.					
						VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.					



## NOTES:-

▲ THESE RESISTORS CRIMPED  
IN WIRE HARNESS

CFU1, 2 & 3 ARE 1.6A, 500V.



TECHN: ENG: APPD: TECHN: ENG: APPD: DATE: 6-1-82

TECHN:

ENG:

APPD:

ALLENWEST  
VARIABLE SPEED  
DRIVES OPERATION  
BRIGHTON, ENGLAND.

BDC 3064R 40/60HP

T.I.-CHURCHILL LTD.

G.O. NUMBER

202N00

ELEMENTARY DIAGRAM.

902M126CE

CONTD:

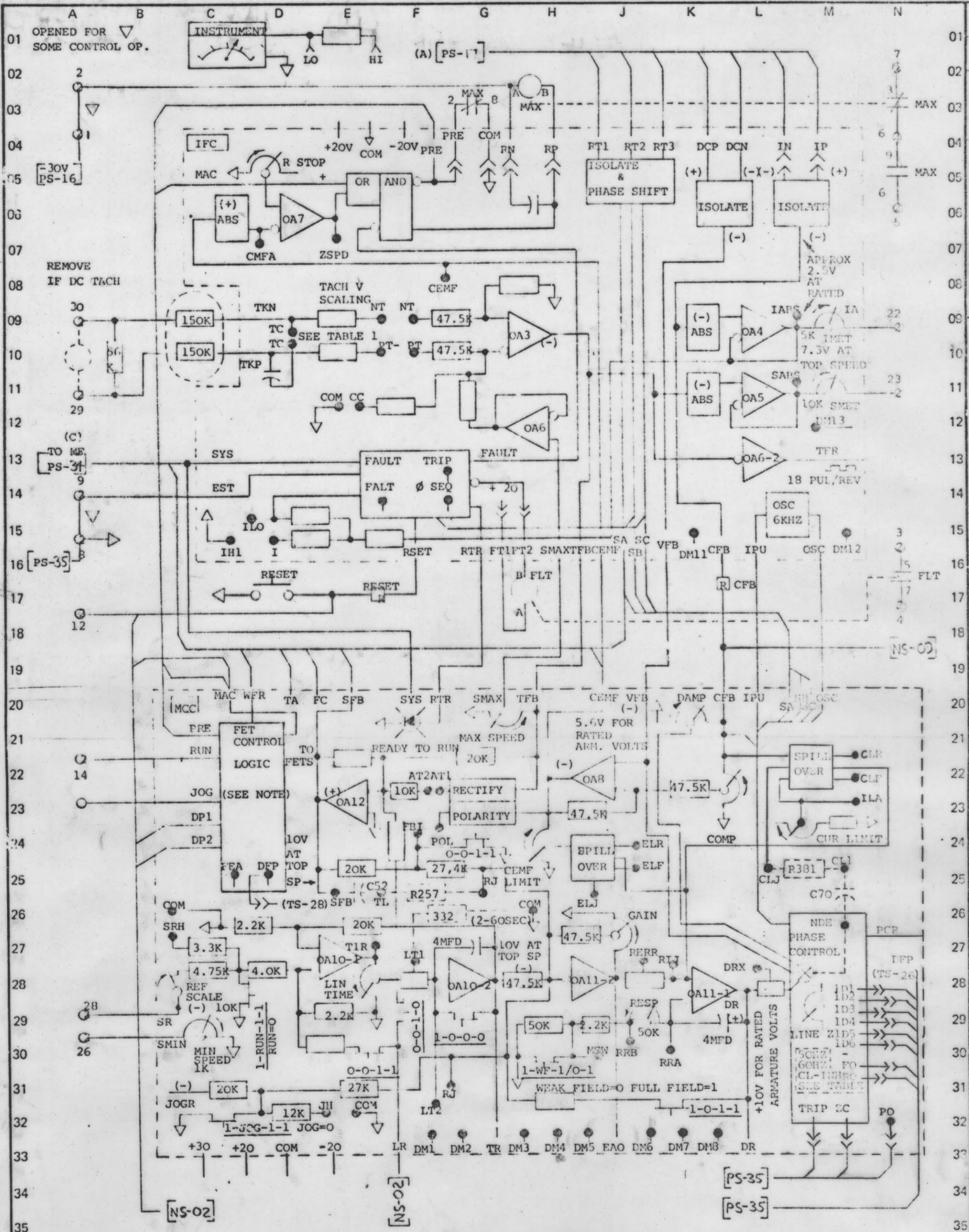
03

IDENT.

DR SH

02





TECHN. ENG. APPD. TECHN. ENG. APPD. DATE 6-1-82

TECHN.

ENG.

APPD.

ALLENAST

Simplex

VARIABLE SPEED  
DRIVES OPERATION,  
BRIGHTON, ENGLAND.

BDC 3064R 40/60HP

T.I - CHURCHILL LTD

CO NUMBER

202N00 902M126CE

ELEMENTARY DIAGRAM

04

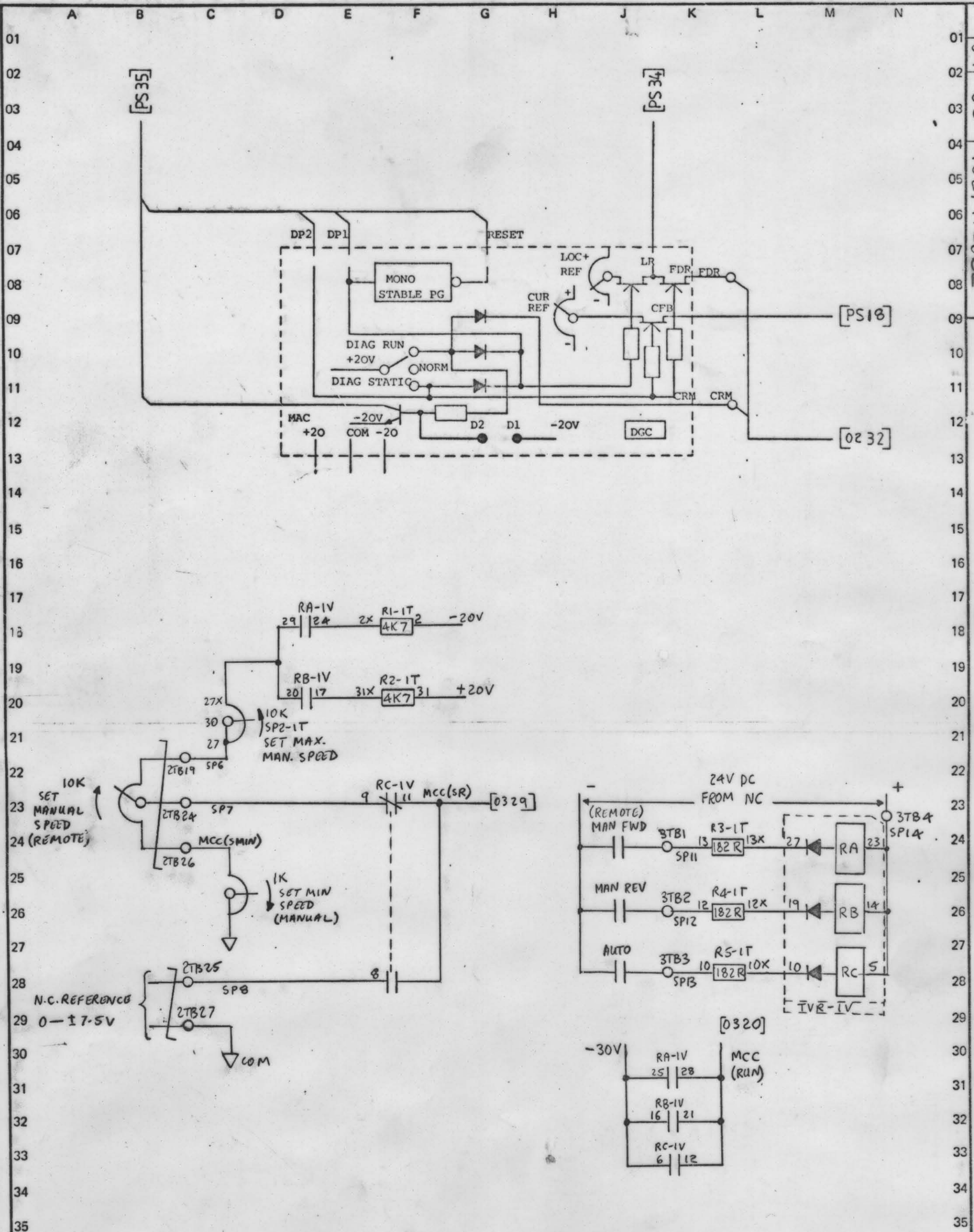
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DR

SH

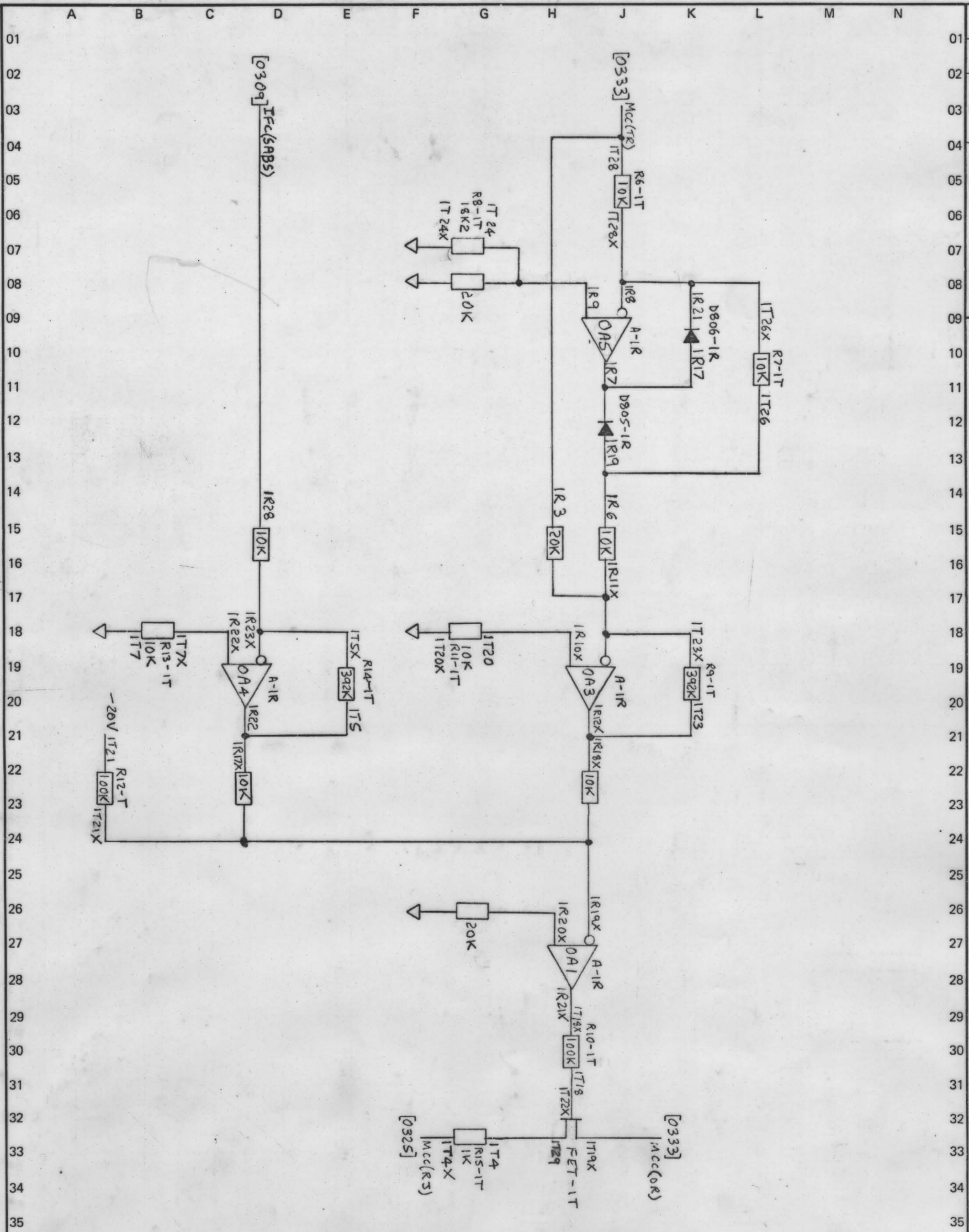
03





A			B			C			D			E			F			G			H			J			K			L			M			N		
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE																																
						6-1-82																																
						TECHN.																																
						ENG.																																
						APPD.																																
						<div style="display: flex; justify-content: space-between;"> <div> <p><b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.</p> </div> <div> <p>BDC 3064R 40/60HP</p> <p>T.I - CHURCHILL LTD.</p> </div> <div> <p>GO NUMBER</p> <p>202N00902M126CE</p> </div> <div> <p>ELEMENTARY DIAGRAM</p> <p>05</p> </div> <div> <p>CONTD.</p> <p>04</p> </div> </div>																																

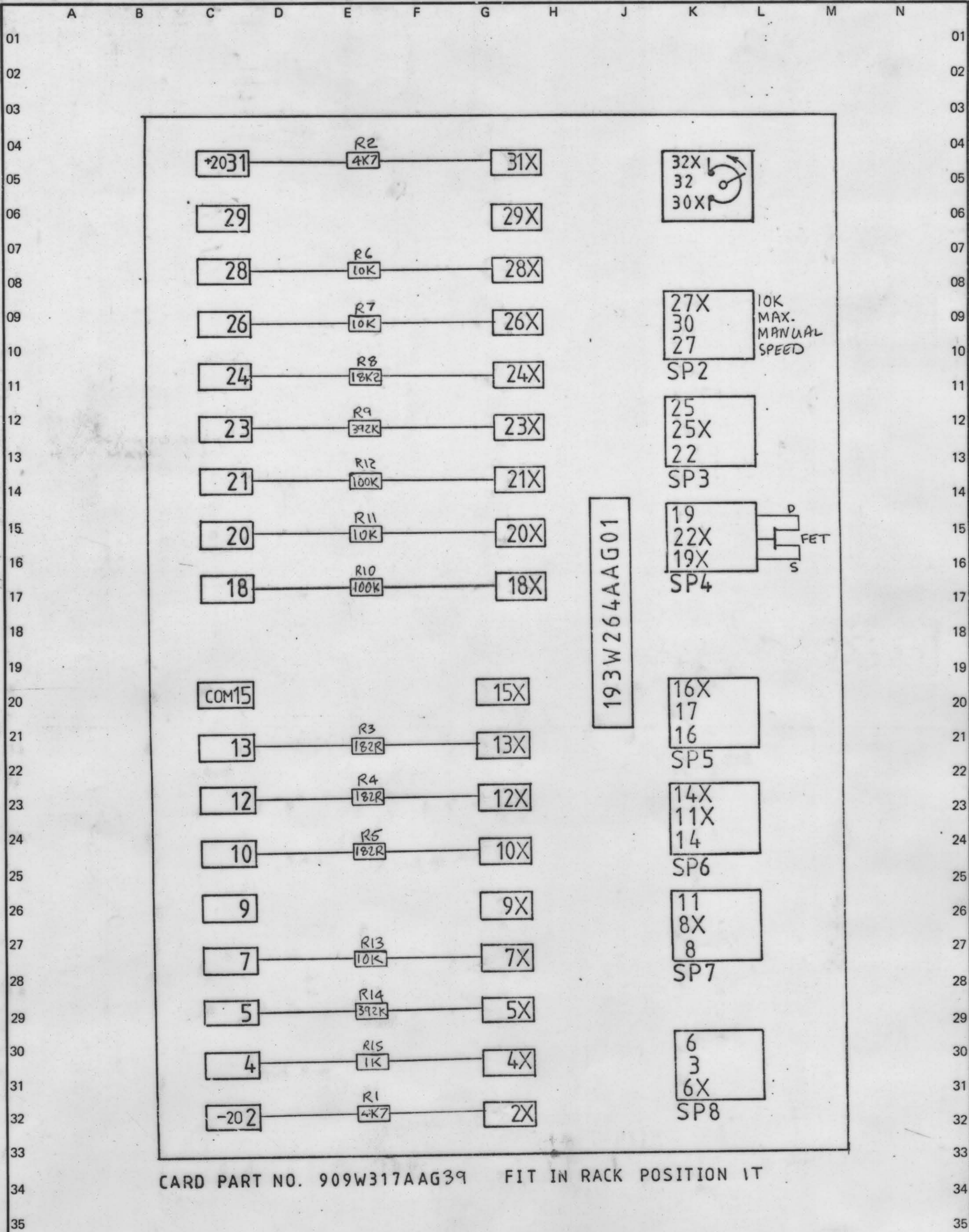




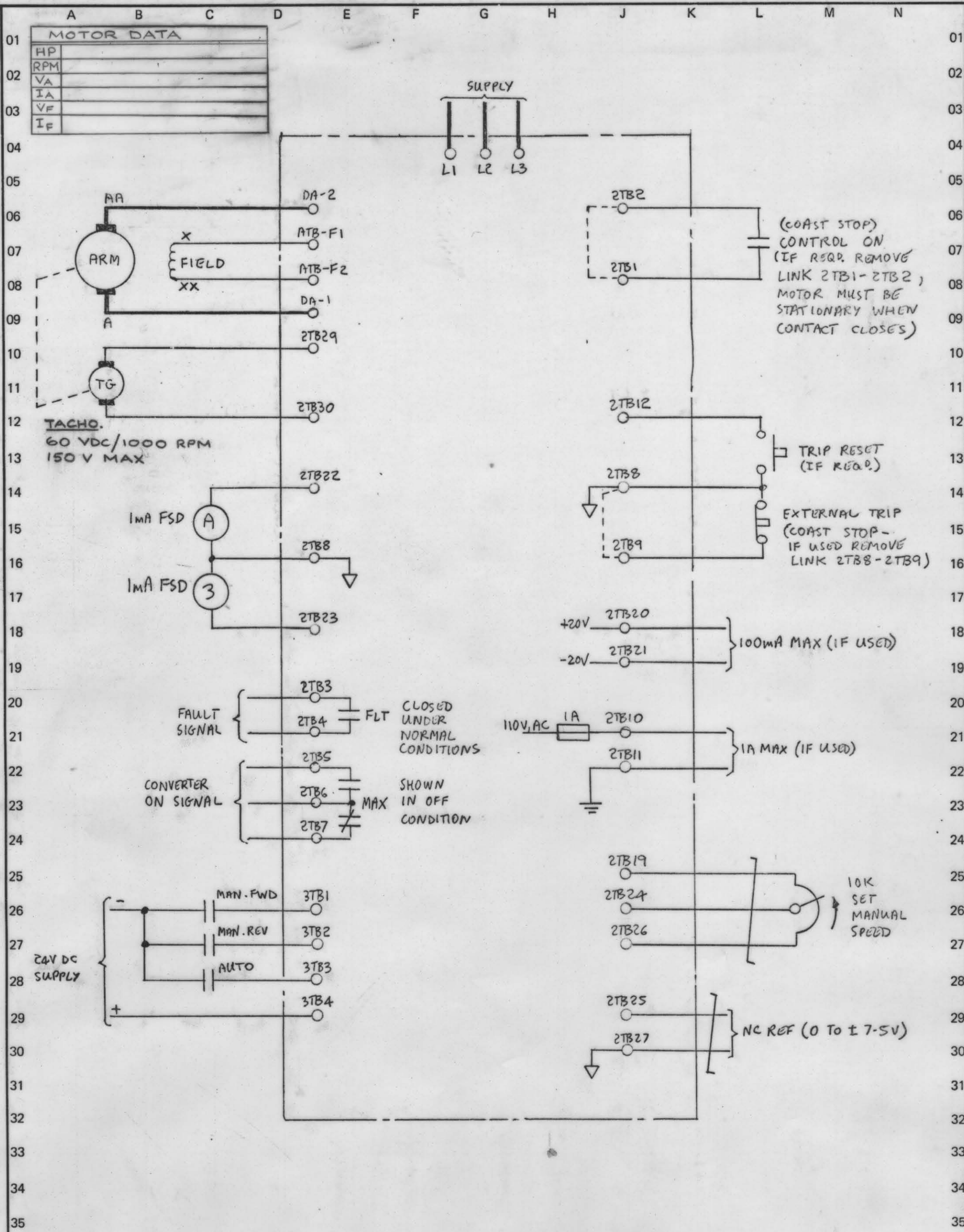
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE				BDC 3064R 40/60HP			IDENT	
						6-1-82				TI-CHURCHILL LTD			DR SH	
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	05	
										202N00	902M126CE.	06		







A			B			C			D			E			F			G			H			J			K			L			M			N		
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE			6-1-82						BDC 3064R 40/60HP			IDENT																				
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						APPD.			[Signature]																													



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	6-1-82	ALLENWEST	BDC 3064R 40/60HP	IDENT	
						TECHN.	DM	Simplex	TI-CHURCHILL LTD	DR	SH
						ENG.		VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER	202N00	902M126CE
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											08



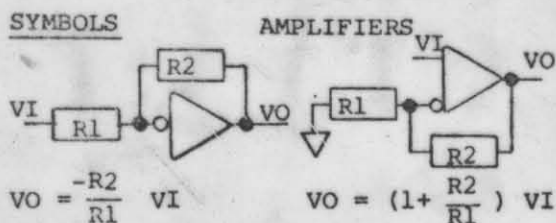
VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)

SIGNAL DEFINITIONS AND LOCATIONS

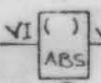
## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL  
 MFE MOTOR FIELD EXCITER  
 MDR MODIFICATION RACK  
 ACC AUXILIARY CONTROL CARD

## SYMBOLS

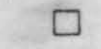


CASE GROUND



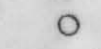
VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL



TERMINAL AT 2TB, 3TB, 4TB, RTB.

EX: 9 [2] - 2TB9; X2 [2] - RTB2



TERMINAL AT T.B.'s



POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.



THESE RESISTORS ARE CRIMPED IN WIRE HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ (IN SERVICE)	X	MFC	ZA-ZB (IF USED)
50HZ (TEST)	X	MCC	HZA - PHA
			(NONE)
IOC-400% -500% -300%	X	IFC	I - IHI
	X	IFC	I - ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO			(NONE)
AC TACHO	X	MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V. 24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac	X	IFC	NT-NT2 PT - PT2
110-300vdc		IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
1.7		MF	NONE
1.3		MF	YB - YD
2.4	X	MF	YA - YB
4.0		MF	YA-YB, YC-YD
7.0		MF	YA - YC
13		MF	YA-YC, YB-YD
13		MF	YA-YC, YB-YD
L/R < .25S		MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
200% DRV CL	X	MCC	DCX - DCY
FUSELESS		ACC	CFY - CFX
50% FLD ECON	X	MCC	33K2 FROM FEA TO +20V

## NOTE

FIT ONLY JUMPER  
 HZA - PHA FOR  
 50HZ TEST & SET-UP  
 IN U.K.

REPLACE WITH  
 ZA-ZB JUMPER  
 FOR 60HZ OPERATION

\* CEMF COUNTER EMF (0316)  
 \* CFB CURRENT FEEDBACK (0316)  
 CMFA ABSOLUTE VALUE CEMF (0308)  
 CRM CROSSOVER MODIFY (0411)  
 DFP DELAYED FIRING POWER (0325)  
 \* DR DRIVER REFERENCE (0333)  
 \* EAO ERROR AMP OUTPUT (0333)  
 EST EXTERNAL FLT STOP INPUT (0314)  
 FALT FAULT (0314)  
 \* FC FIELD CURRENT (NS26)  
 IDR FIELD DIAGNOSTIC REFERENCE (0408)  
 FEA FIELD ECONOMY ADJUST (0325)  
 FF FIELD FAULT (0328)  
 IABS MOTOR CURRENT ABSOLUTE (0309)  
 ILA CURRENT LIMIT ADJUST (0323)  
 IMET CURRENT SIGNAL FOR METER (0310)  
 \* IPU INITIAL PULSE (0320)  
 \* LR LOCAL REF. FROM DGC (0333)  
 \* JOG JOG SWITCH INPUT (0323)  
 \* JOGR JOG REFERENCE INPUT (0331)  
 \* MAC MAX/MA CONTROL SIGNAL (0320)  
 MSW MODE SWITCH (0330)  
 \* OSC OSCILLATOR (0317)  
 \* PCR PHASE CONTROL REF. (0326)  
 \* PRE DRIVE PRECONDITION (0321)  
 ØSEQ PHASE SEQUENCE (0314)  
 RERR REGULATOR ERROR (0327)  
 RIJ INTEGRATOR SUMMING JUNCTION (0327)  
 RJ REGULATOR SUMMING JUNCTION (0331)  
 RRA REGULATOR RESPONSE ADJUST (0330)  
 RSET RESET (0316)  
 \* RTR READY TO RUN (0316)  
 \* RUN RUN SWITCH INPUT (0321)  
 \* SA-C PHASE SYN OUTPUT (0316)  
 \* SFB SPEED FEEDBACK (0320)  
 SMET SPEED SIGNAL FOR METER (0312)  
 \* SR SYSTEM REFERENCE INPUT (0329)  
 \* SYS SYSTEM FAULT TRIP (0313)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST (0320)  
 TF TACHO FAULT (NS28)  
 TFB TACHOMETER FEEDBACK (0320)  
 TFR AC TACHO FREQUENCY OUTPUT (0313)  
 \* TR TIMED REFERENCE (0333)  
 \* VFB VOLTAGE FEEDBACK (0319)  
 WFR WEAK FIELD REFERENCE (0320)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET 1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG" - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

## NOTES

- CONTROL TRANSFORMER (CPT) PRIMARY TO BE CONNECTED FOR SUPPLY VOLTAGE [0215]
- REMOVE THE 33K2 RESISTOR BETWEEN FEA & +20V WHEN USING DIAGNOSTIC STATIC OR DIAGNOSTIC RUN MODES. REPLACE WHEN DIAGNOSTIC TESTS COMPLETE

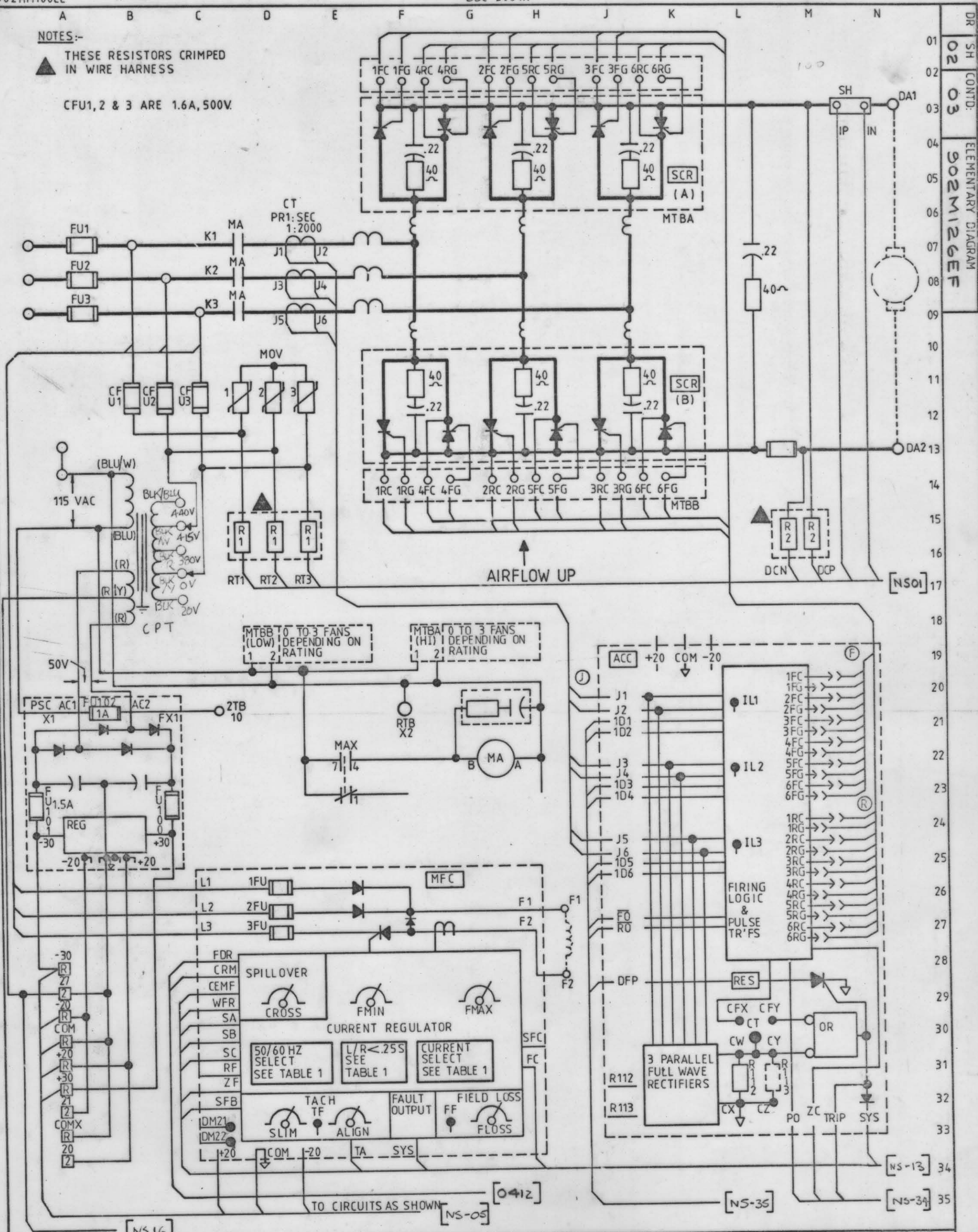
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						TECHN.		Simplex	T.I. CHURCHILL LTD.			
						ENG.		VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	
						APPD.			207N00/	902M126EF	02	01



## NOTES:-

▲ THESE RESISTORS CRIMPED  
IN WIRE HARNESS

CFU1, 2 & 3 ARE 1.6A, 500V.

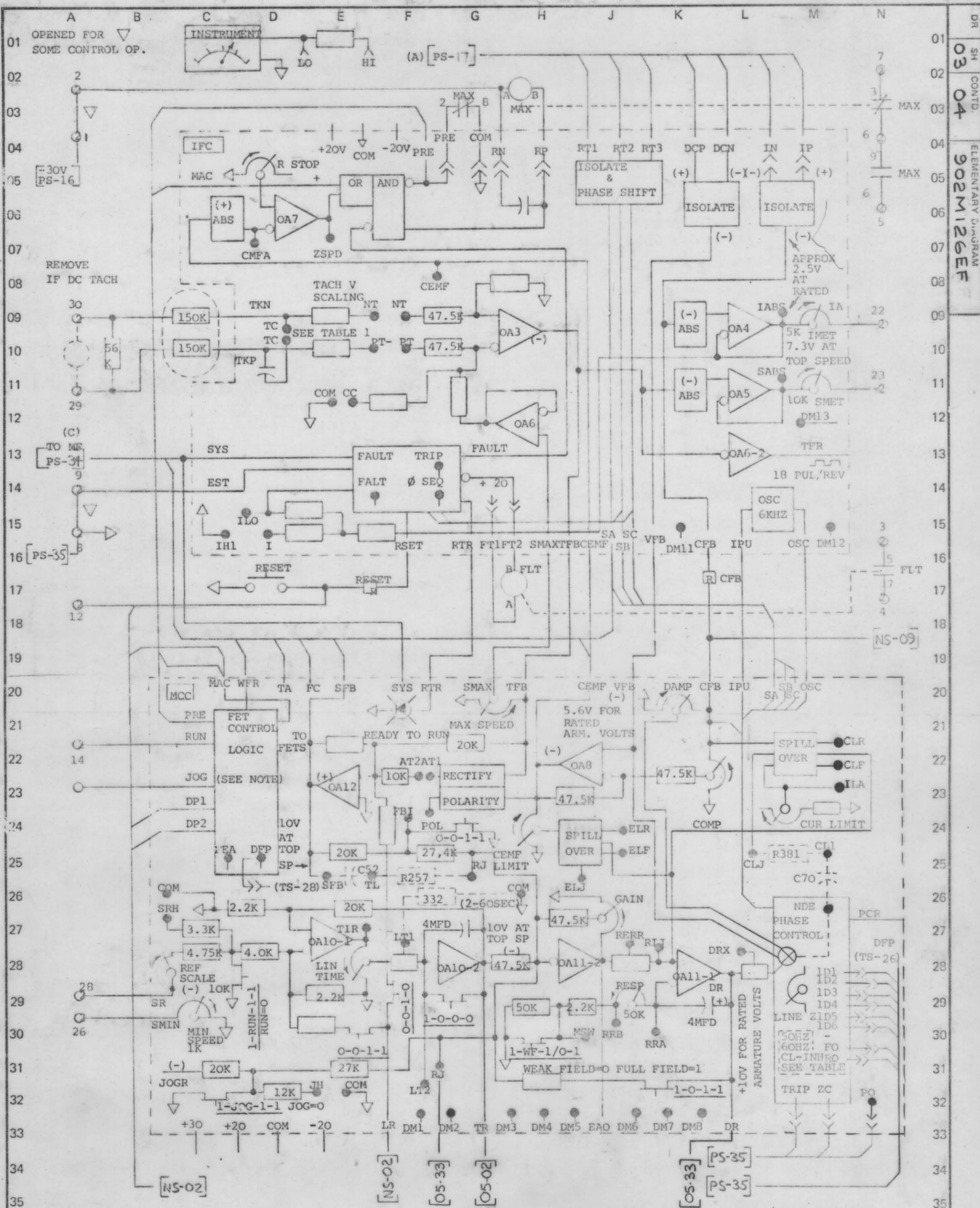


DR SH CONTD: 902M126EF

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TECHN: ENG:	APPD: TECHN: ENG:	APPD: DATE: 25-2-82	ALLENWEST VARIABLE SPEED DRIVES OPERATION BRIGHTON, ENGLAND.	BDC 3064R 100/150 HP T.I. CHURCHILL LTD.	IDENT. DR SH
		TECHN: DM		G.O. NUMBER 207N00/	
		ENG: [Signature]		ELEMENTARY DIAGRAM.	
		APPD: [Signature]		207N00/ 902M126EF	
				CONTD: 03	02





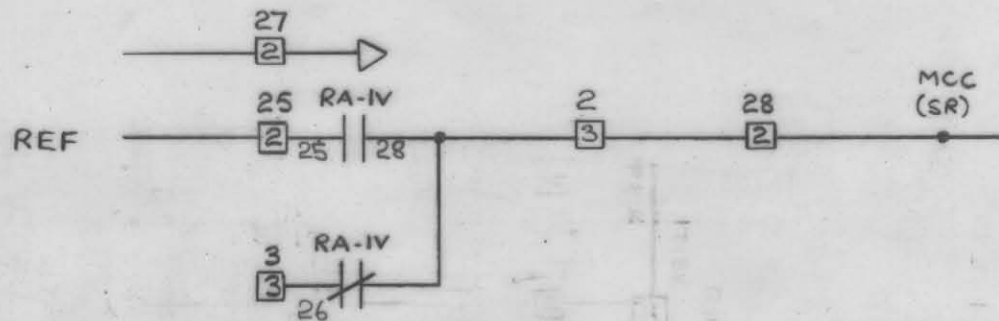
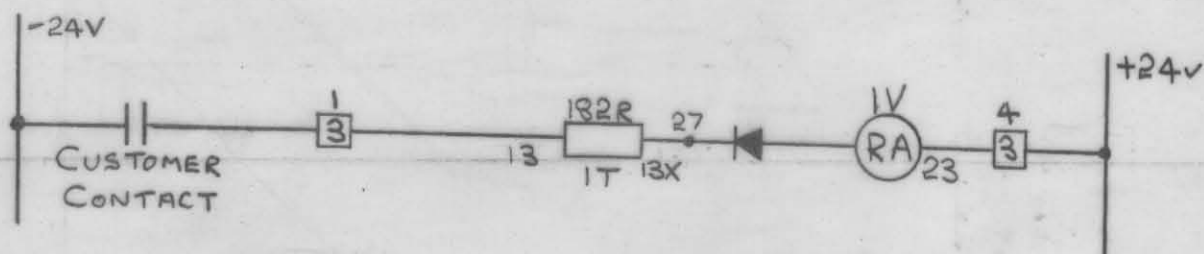
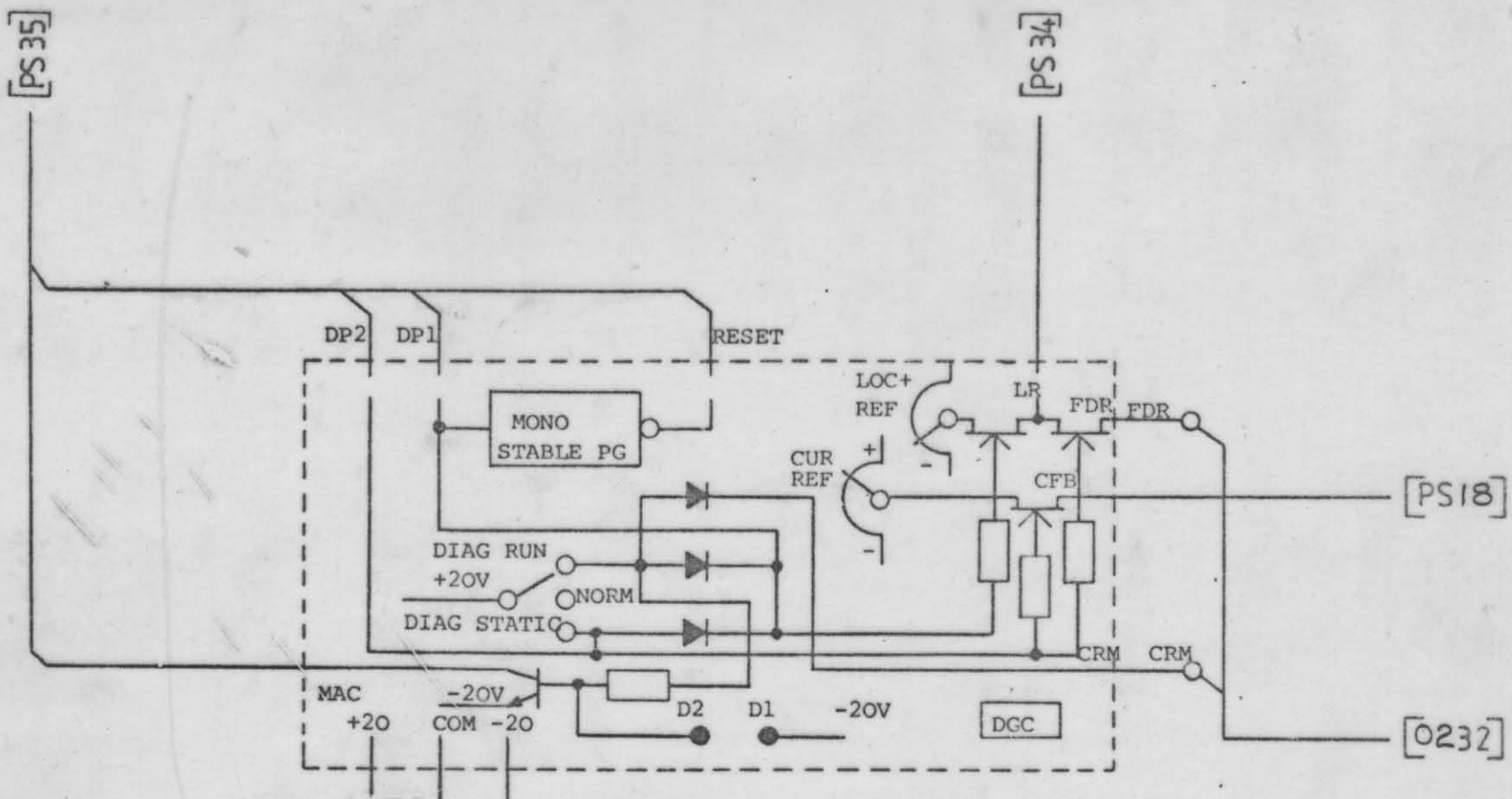
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						25-2-82
			TECHN.			
			ENG.			
			APPD.			

ALLENWEST  
Simplex  
VARIABLE SPEED  
DRIVES OPERATION,  
BRIGHTON, ENGLAND.

BDC 3064R 100/150HP  
T.I. CHURCHILL LTD

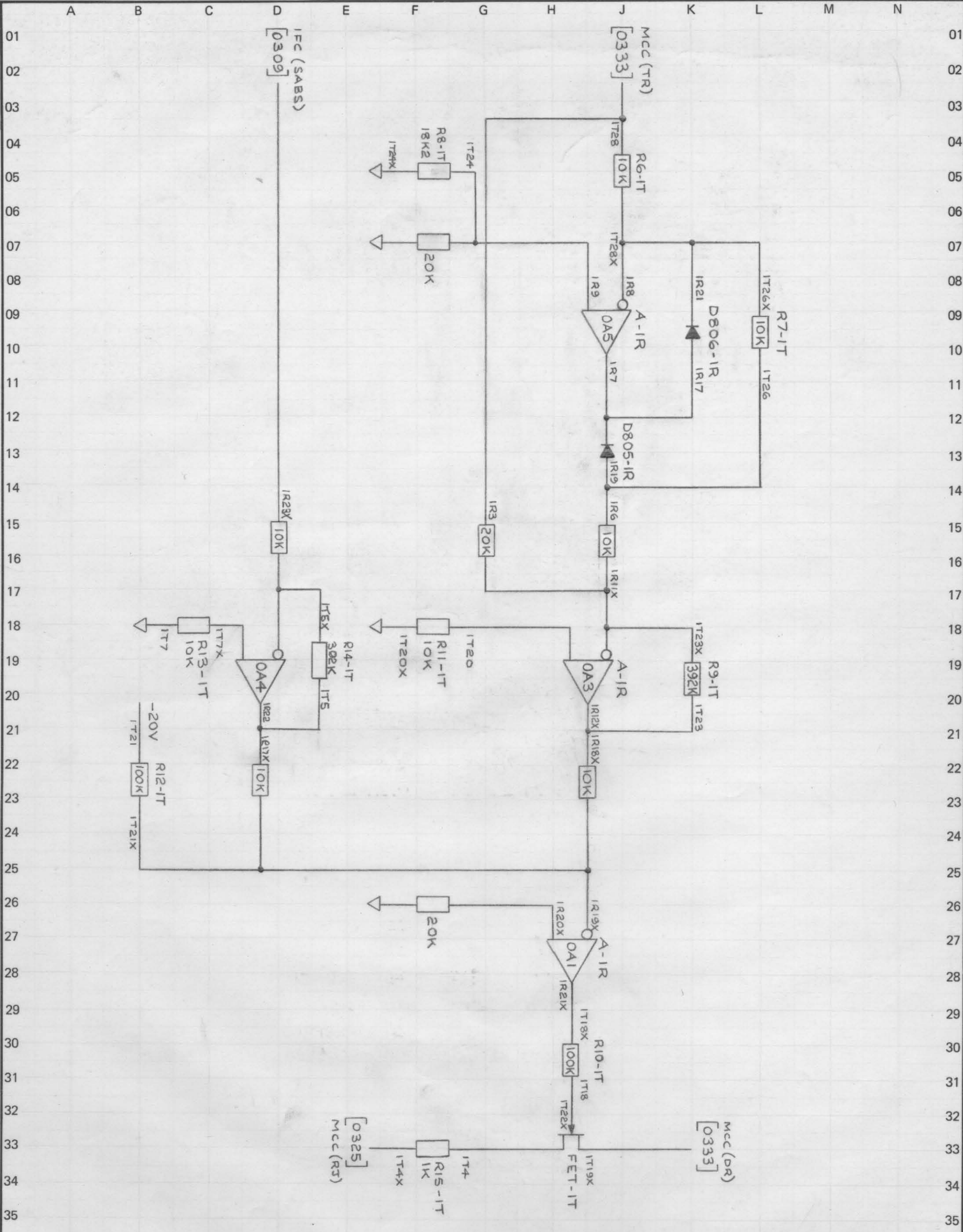
CO NUMBER 207N00/ ELEMENTARY DIAGRAM 902M126EF

IDENT  
DR SH  
03



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	TECHN.	ENG.	APPD.	DATE	TECHN.	ENG.	APPD.	DATE	TECHN.	ENG.	APPD.	DATE						
			KJM			25-2-82																		
			2			SEE PAGE 09																		
						DATE: 28.9.82																		
							<b>Allen West</b> <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.							<b>BDC 3064R 100/150HP</b> <b>T.I. CHURCHILL LTD.</b>							<b>IDENT</b> 			
							<b>GO NUMBER</b> 207N00/							<b>ELEMENTARY DIAGRAM</b> 902M126EF							<b>CONTD.</b> 05		<b>04</b>	



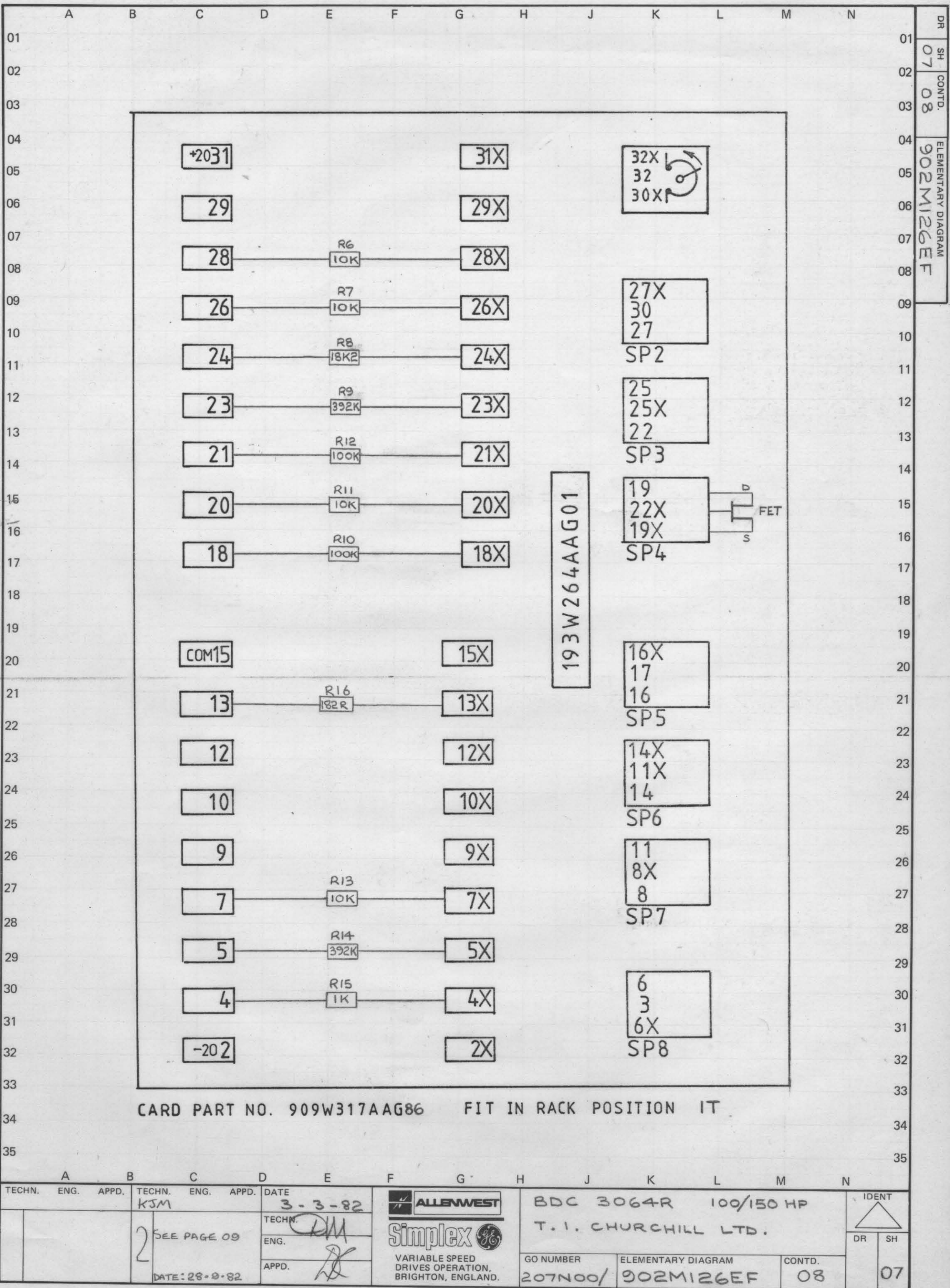


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902MH100CY SH12



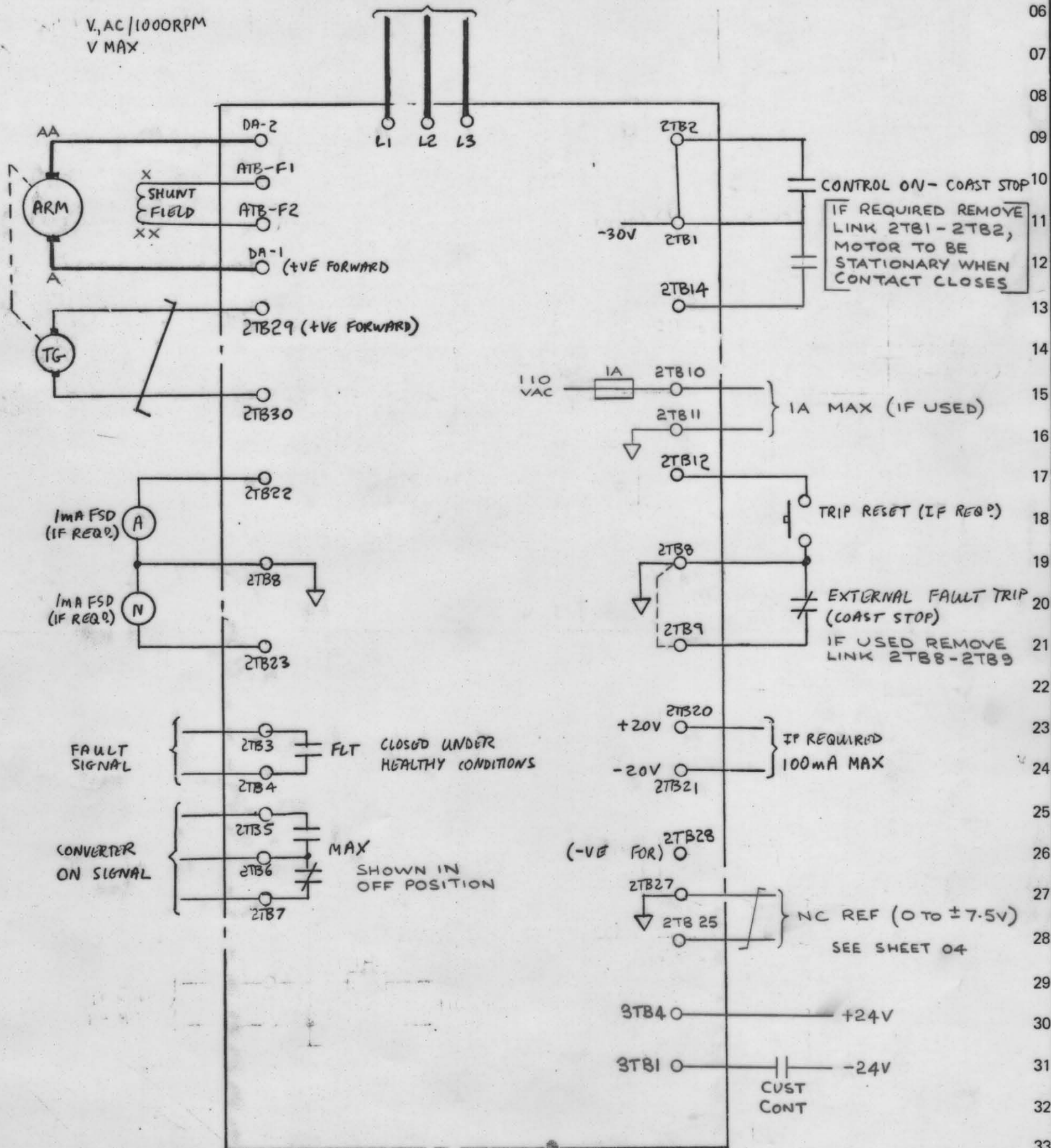
## MOTOR DATA

HP — 120  
 RPM — 850/2560  
 $V_A$  — 500V  
 $I_A$  — 104A  
 $V_F$  — 300V  
 $I_F$  — 3.2/0.85A

## TACHO

$V_A$  AC/1000RPM  
 $V_{MAX}$

SUPPLY



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	BDC 3064R 100/150 HP		IDENT	
			KSM			3-3-82	T.I. CHURCHILL LTD.		DR SH	
			2 SEE PAGE 08			GO NUMBER			ELEMENTARY DIAGRAM	
			DATE: 28-9-82			207N00/			902M126EF	
						CONTD.			09	
									08	



VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI (+)

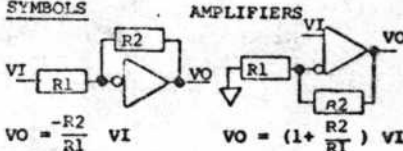
## SIGNAL DEFINITIONS AND LOCATIONS

## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL

MLR MODIFICATION RACK

## SYMBOLS



CASE GROUND



VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL



TERMINAL AT 2TB, 3TB, 4TB, RTB.

EX: 9 [2] - 2TB9; X2 [6] - RTB2



TERMINAL AT T.B.'s



POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BS, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	IFC	0.0047uF RT1-RT2
		IFC	0.0047uF RT2-RT3
		IFC	0.0047uF RT3-RT4
		MCC	AA-AP, BA-BF, CA-CF
100-400V			NONE
500V		IFC	I-IH
300V		IFC	I-IH
SR5 - 9V	X		(NONE)
9 - 20V	X	MCC	SHH-COM
JOGGR 10V			(NONE)
20V		MCC	JH - COM
LT. 3-7sec	X		(NONE)
2 - 60sec	X	MCC	3320FFEM LITOCOM
VREG		IFC	NT-CMF, CC-COM
DC TACHO			(NONE)
AC TACHO	X	MCC	AT1-AT2
TACHO FULT		IFC	TC-TC
TACHO V.		IFC	NT-NT1, PT-PT1
24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT2, PT-PT2
60-160vdc		IFC	NT-NT2, PT-PT2
66-177vac	X	IFC	NT-NT2, PT-PT2
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
G134 G156			NONE
1.7		MFC	NONE
1.3		MFC	YB-YD
2.8		MFC	YB-YD
5.0		MFC	YB-YD
8.0		MFC	YB-YD
13	X	MFC	YB-YD
25		MFC	YB-YD
L/R < .25S	X	MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)
50% FIELD ECONOMY	X	MCC	33K2 FEA TO +20V

FW IF USED  
 ON 60HZ.  
 REMOVE  
 IF USED  
 ON 60HZ

\* CEMP COUNTER EMF (316)  
 \* CFB CURRENT FEEDBACK (316)  
 CMFA ABSOLUTE VALUE CEMP (316)  
 CRM CROSSOVER MODIFY (411)  
 DFP DELAYED FIRING POWER (325)  
 \* DR DRIVER REFERENCE (333)  
 \* EAO ERROR AMP OUTPUT (333)  
 EST EXTERNAL FLT STOP INPUT (314)  
 FALT FAULT (314)  
 \* FC FIELD CURRENT (NS26)  
 FDR FIELD DIAGNOSTIC REFERENCE (408)  
 FEA FIELD ECONOMY ADJUST (325)  
 FF FIELD FAULT (328)  
 IABS MOTOR CURRENT ABSOLUTE (309)  
 ILA CURRENT LIMIT ADJUST (323)  
 IMET CURRENT SIGNAL FOR METER (310)  
 \* IPU INITIAL PULSE (320)  
 \* LR LOCAL REF. FROM DGC (333)  
 \* JOG JOG SWITCH INPUT (323)  
 \* JOGR JOG REFERENCE INPUT (331)  
 \* MAC MAX/AA CONTROL SIGNAL (320)  
 \* MSW MODE SWITCH (330)  
 \* OSC OSCILLATOR (317)  
 \* PCR PHASE CONTROL REF. (326)  
 \* PRE DRIVE PRECONDITION (321)  
 \* PSEQ PHASE SEQUENCE (314)  
 RERR REGULATOR ERROR (327)  
 RIJ INTEGRATOR SUMMING JUNCTION (327)  
 RJ REGULATOR SUMMING JUNCTION (331)  
 RRA REGULATOR RESPONSE ADJUST (330)  
 RSET RESET (316)  
 \* RTR READY TO RUN (316)  
 \* RUN RUN SWITCH INPUT (321)  
 \* SA-C PHASE SYN OUTPUT (316)  
 \* SFB SPEED FEEDBACK (320)  
 SMET SPEED SIGNAL FOR METER (312)  
 \* SR SYSTEM REFERENCE INPUT (329)  
 \* SYS SYSTEM FAULT TRIP (313)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST (320)  
 \* TF TACHO FAULT (NS28)  
 \* TFB TACHOMETER FEEDBACK (320)  
 \* TFR AC TACHO FREQUENCY OUTPUT (313)  
 \* TR TIMED REFERENCE (333)  
 \* VFB VOLTAGE FEEDBACK (319)  
 \* WFL WEAK FIELD REFERENCE (320)

(\* \* TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

HENCE [PS - 12] DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
 DENOTED BY SHEET NUMBER AND LINE, E.G. [1A16] SIGNIFIES LOCATION ON SHEET  
 1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

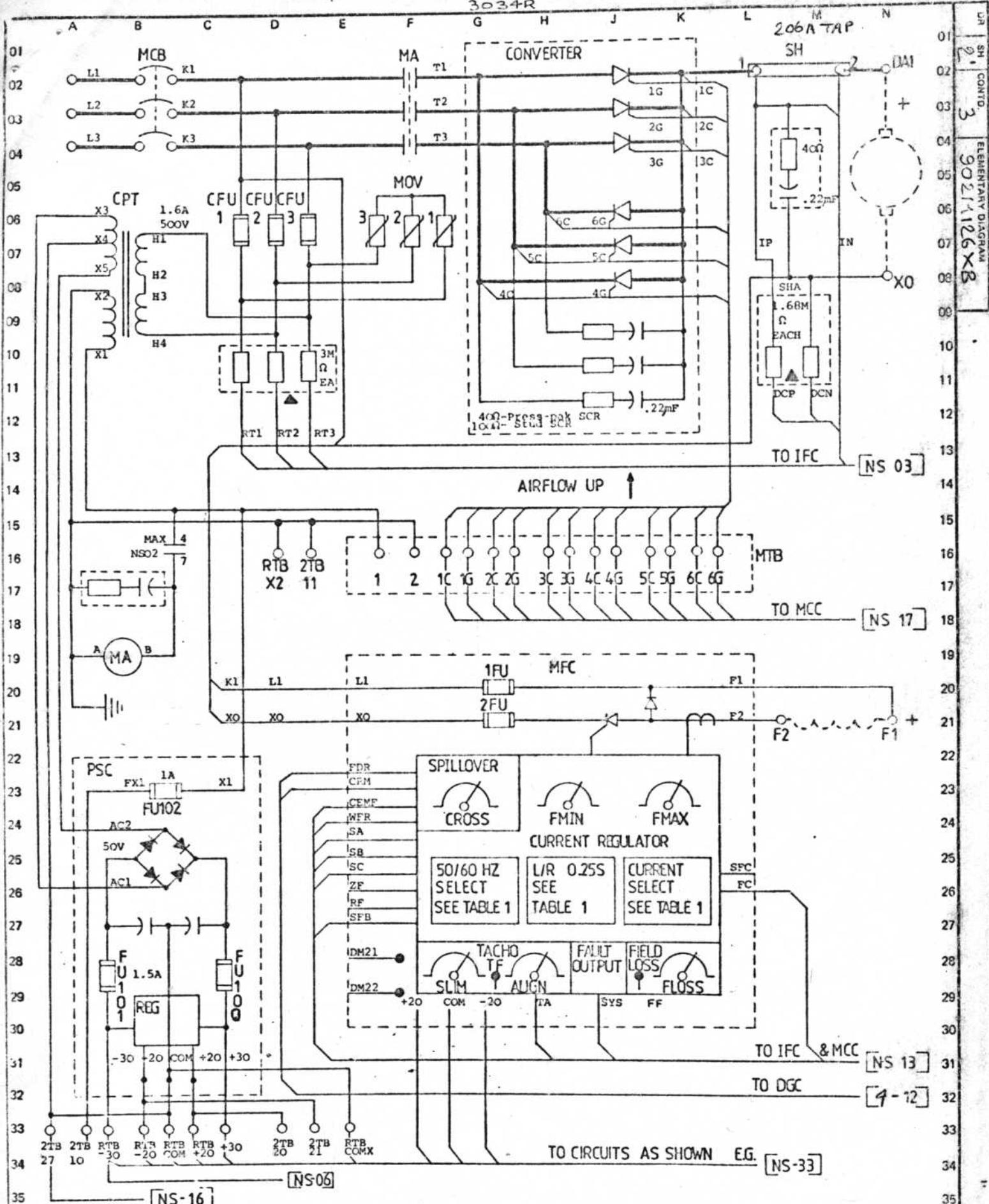


THESE RESISTORS ARE CRIMPED IN WIRE HARNESS

REMOVE 33K2 WHEN USING DIAGNOSTIC MODES  
 REPLACE WHEN DIAGNOSTIC TEST COMPLETE

CHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	3034R		BDC 3034R 40/60HP		IDENT
			211 B3				Simplex		A1 CHURCHILL		
			AS SHIPPED				VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND		GO NUMBER 30IN00		ELEMENTARY DIAGRAM 902M126XB
			23-2-83						CONTO 2		

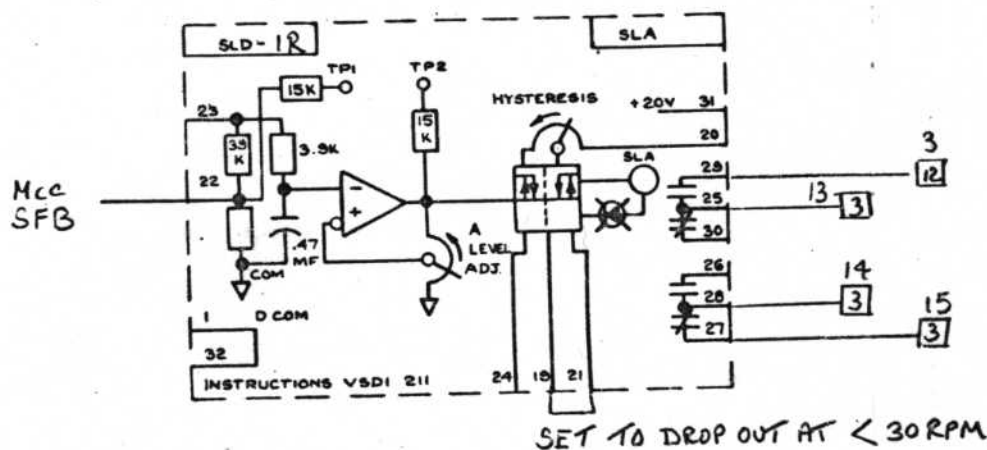
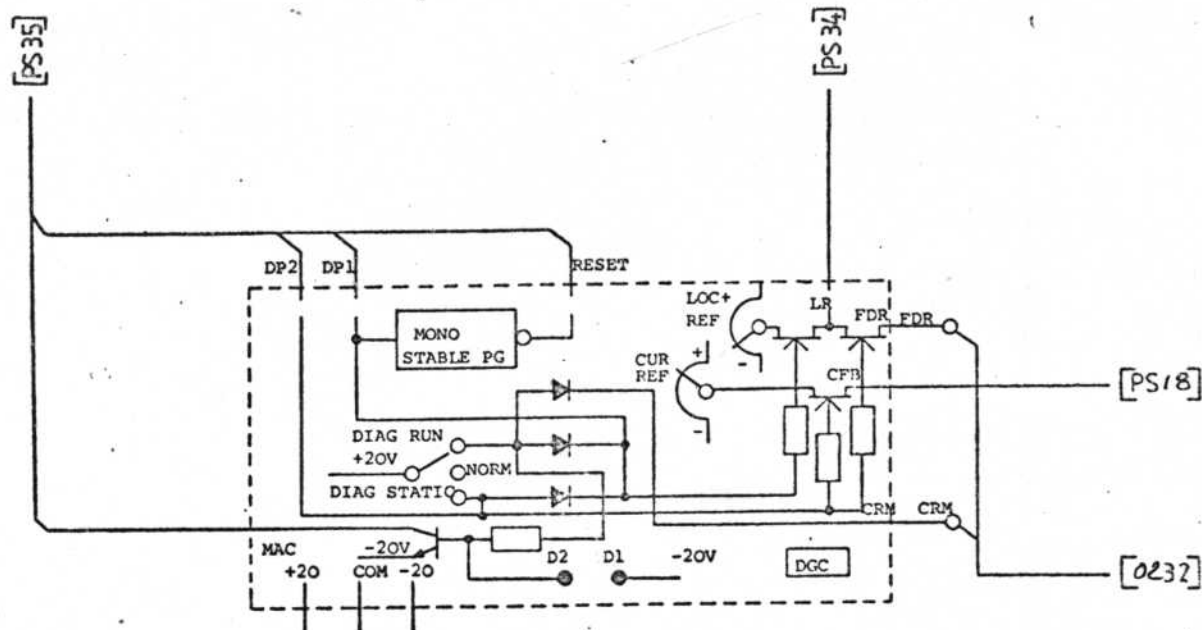
3034R



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	21-1-83	ALLENWEST	BDC 3034R	IDENT	DR	SH
								Simplex				
								VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND	GO NUMBER	ELEMENTARY DIAGRAM	CONTO	
									301N00	902M126XB	3	2





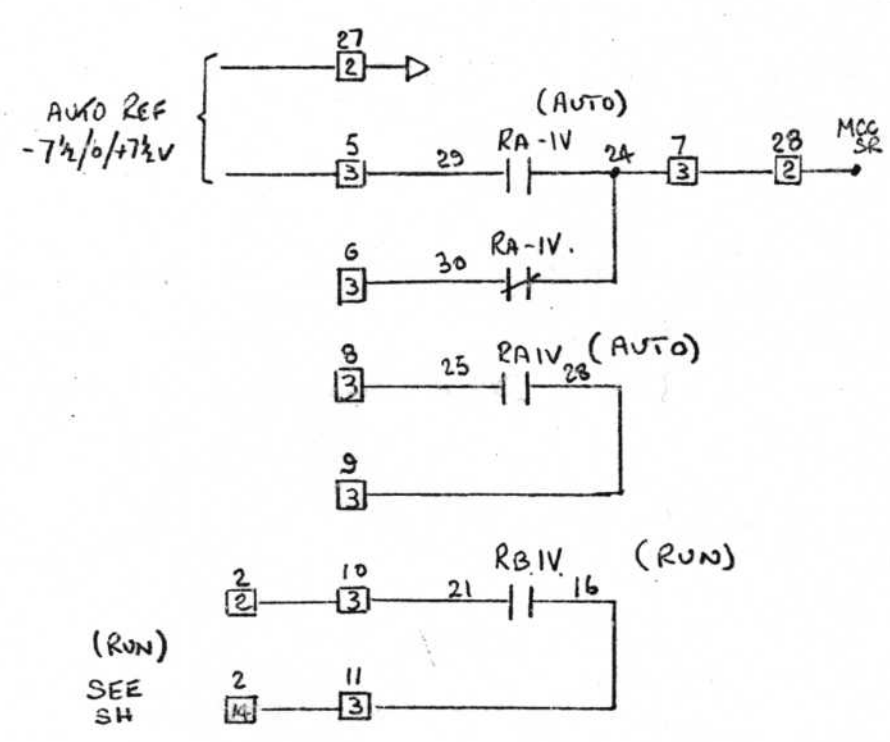
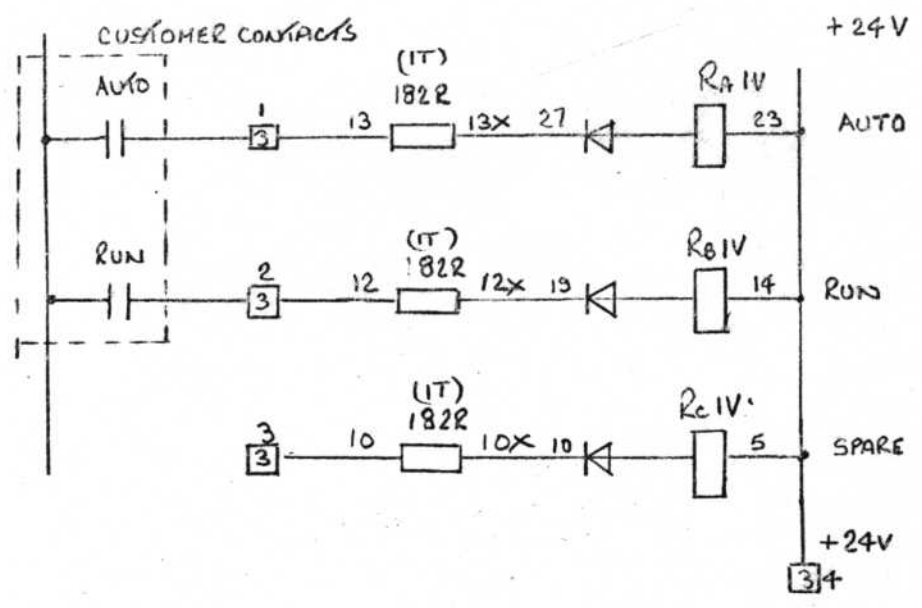


TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	TECHN.	ENG.	APPD.	GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT
						21.1.83				301N00	902M126XB	5	4
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.						

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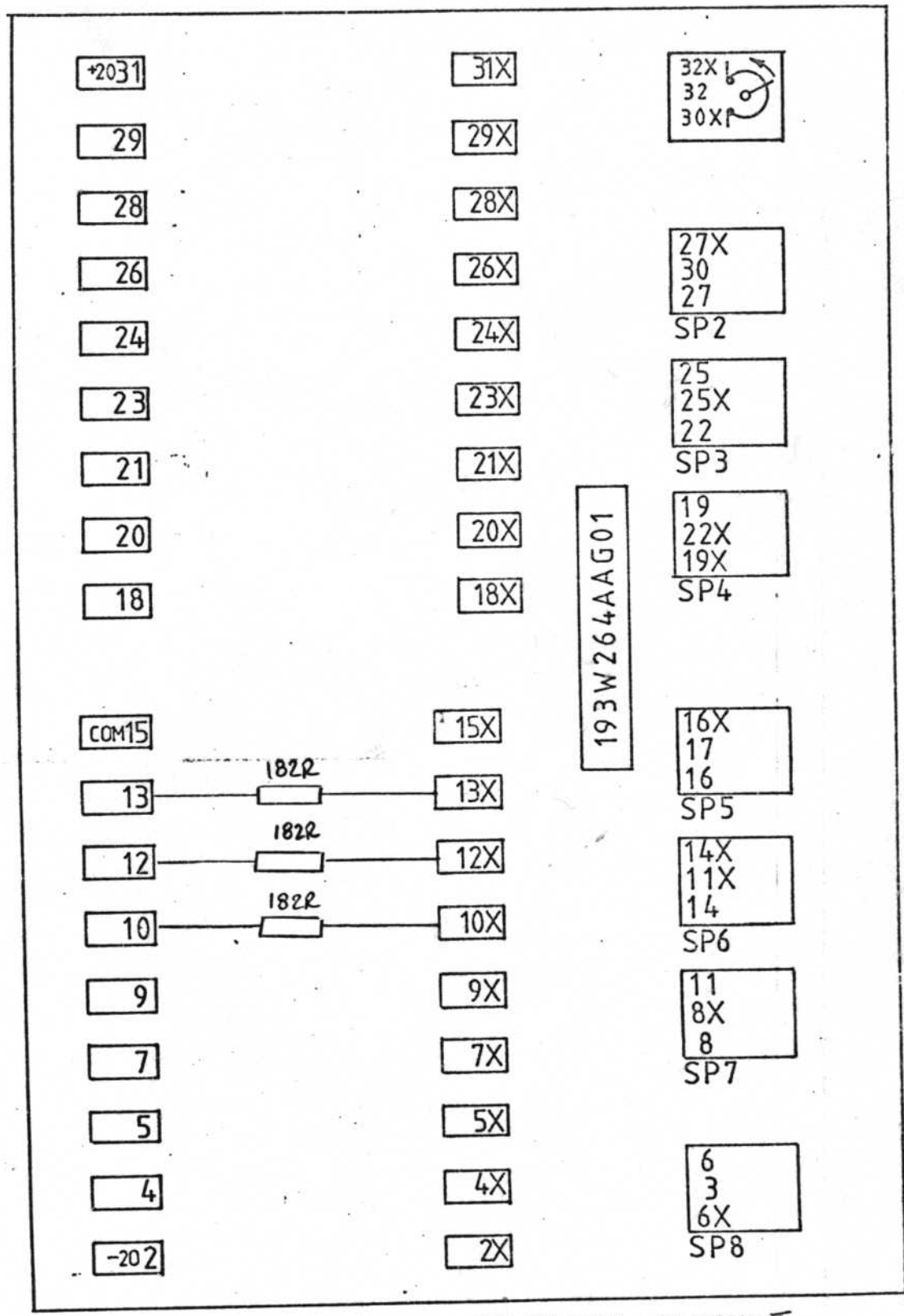
DR SH  
CONT'D.  
6  
ELEMENTARY DIAGRAM  
902M126XB  
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CHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	F G		J K		L M		N
						21.1.83					BDC 303AR. 40/60 HP		IDENT
									T.I. CHURCHILL				DR SH
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		GO NUMBER 301N00		ELEMENTARY DIAGRAM 902M126XB		CONT'D. 6
<p>Disclaimer Statement: The  trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name.</p>													

A B C D E F G H J K L M N

DR SH CONTD. ELEMENTARY DIAGRAM 902M126XB



CARD PART NO. 909W317ABG13 FIT IN RACK POSITION 17

A			B			C			D			E			F			G			H			J			K			L			M			N		
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	21.1.83									BDC 3064R. 40/60HP			GO NUMBER 301N00			ELEMENTARY DIAGRAM 902M126XB			CONTD. 7			IDENT 										
						TECHN.																																
						ENG.						VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.																										
						APPD.																																



A B C D E F G H J K L M N

DR

SH

CONTO.

ELEMENTARY DIAGRAM

902M126XB

VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)

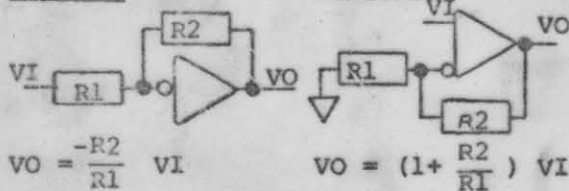
## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
IFC INTERFACE CARD  
PSC POWER SUPPLY CARD  
SCR THYRISTOR ASSEMBLY  
DGC DIAGNOSTIC CARD  
MFC MOTOR FIELD CONTROL

MDR MODIFICATION RACK

## SYMBOLS

## AMPLIFIERS



CASE GROUND

VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB. RTB.

EX: 9 [2] - 2TB9; X2 [2] - RTB2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD

ELEMENTARY DIAGRAMS INDICATE THE

WIPER DIRECTION AS THE POTENTIOMETER

SHAFT IS ROTATED CLOCKWISE TO INCREASE

FUNCTION.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BG, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	IFC	0.0047uF RI1-RT2
		IFC	0.0047uF RT2-RI3
		IFC	0.0047uF RI3-RT1
		MCC	AA-AF, BA-BF, CA-CF
I/O-400%			NONE
-500%		IFC	I-IH1
-300%		IFC	I-IH2
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH-COM
JOG 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC	3320FROM LTITOCOM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO			(NONE)
AC TACHO	X	MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V.		IFC	NT-NT1, PT-PT1
24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT2, PT-PT2
60-160vdc		IFC	NT-NT2, PT-PT2
66-177vac	X	IFC	NT-NT3, PT-PT3
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
G134 G256		MFC	NONE
1.8 1.7		MFC	YB-YD
1.3 2.8		MFC	YA-YB
2.4 5.0		MFC	YA-YB, YC-YD
4.0 8.0		MFC	YA-YC
7.0 13	X	MFC	YA-YC, YB-YD
13 25		MFC	QA-QB
L/R < .25S	X	MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)
50% FIELD ECONOMY	X	MCC	33K2 FEA TO +20V

FW IF USED  
ON 60HZ.REMOVE  
IF USED  
ON 60HZ

\* CEMF COUNTER EMF (316)  
\* CFB CURRENT FEEDBACK (316)  
CMFA ABSOLUTE VALUE CEMF (300)  
CRM CROSSOVER MODIFY (411)  
DFP DELAYED FIRING POWER (325)  
\* DR DRIVER REFERENCE (333)  
\* EAO ERROR AMP OUTPUT (333)  
EST EXTERNAL FLT STOP INPUT (314)  
FALT FAULT (314)  
\* FC FIELD CURRENT (NS26)  
FDR FIELD DIAGNOSTIC REFERENCE (408)  
FEA FIELD ECONOMY ADJUST (325)  
FF FIELD FAULT (328)  
IABS MOTOR CURRENT ABSOLUTE (309)  
ILA CURRENT LIMIT ADJUST (323)  
IMET CURRENT SIGNAL FOR METER (310)  
\* IPU INITIAL PULSE (320)  
\* LR LOCAL REF. FROM DGC (333)  
\* JOG JOG SWITCH INPUT (323)  
\* JOGR JOG REFERENCE INPUT (331)  
\* MAC MAX/MA CONTROL SIGNAL (320)  
MSW MODE SWITCH (330)  
\* OSC OSCILLATOR (317)  
\* PCR PHASE CONTROL REF. (326)  
\* PRE DRIVE PRECONDITION (321)  
ØSEQ PHASE SEQUENCE (314)  
RERR REGULATOR ERROR (327)  
RIJ INTEGRATOR SUMMING JUNCTION (327)  
RJ REGULATOR SUMMING JUNCTION (331)  
RRA REGULATOR RESPONSE ADJUST (330)  
RSET RESET (316)  
\* RTR READY TO RUN (316)  
\* RUN RUN SWITCH INPUT (321)  
\* SA-C PHASE SYN OUTPUT (316)  
\* SFB SPEED FEEDBACK (320)  
SMET SPEED SIGNAL FOR METER (312)  
\* SR SYSTEM REFERENCE INPUT (29)  
\* SYS SYSTEM FAULT TRIP (313)  
\* TA OUTPUT FOR TACHO TRIP ADJUST (320)  
TF TACHO FAULT (NS28)  
\* TFB TACHOMETER FEEDBACK (320)  
TFR AC TACHO FREQUENCY OUTPUT (313)  
\* TR TIMED REFERENCE (333)  
\* VFB VOLTAGE FEEDBACK (319)  
\* WFR WEAK FIELD REFERENCE (320)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
NS - NEXT SHEET  
TS - THIS SHEET

HENCE [PS - 12] DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE DENOTED BY SHEET NUMBER AND LINE, E.G. [1A16] SIGNIFIES LOCATION ON SHEET 1A, LINE 16 ETC.

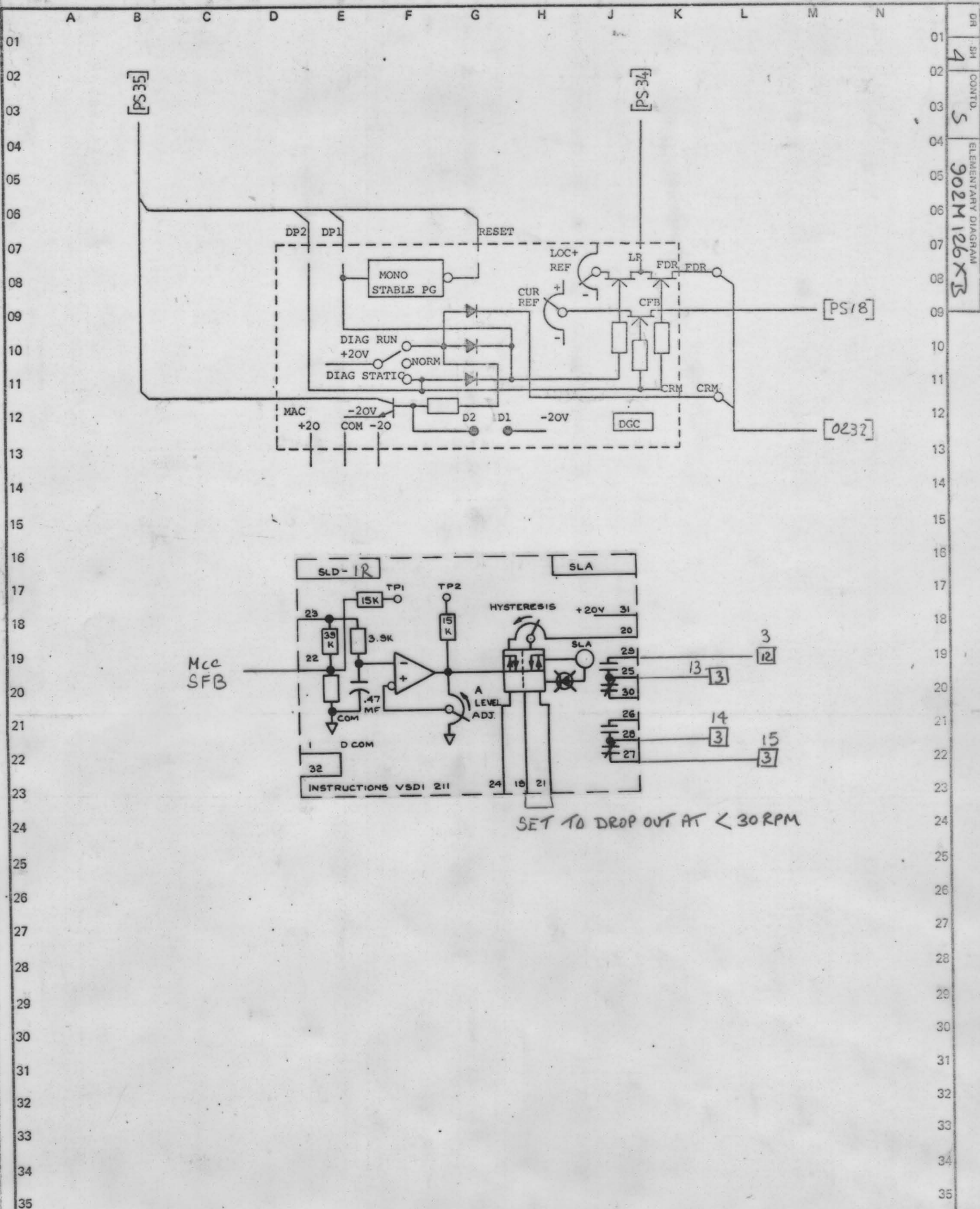
NOTE: FIELD EFFECT TRANSISTOR: THE CLOSED/OPEN (I/O) STATE OF THESE SWITCHED FOR "PRECONDITION" - "RUN" OR JOG - "DIAGNOSTIC STATIC" - "DIAGNOSTIC RUN" IS SHOWN BY A FOUR DIGIT WORD WITH STATE SEQUENCE.



THESE RESISTORS ARE CRIMPED IN WIRE HARNESS

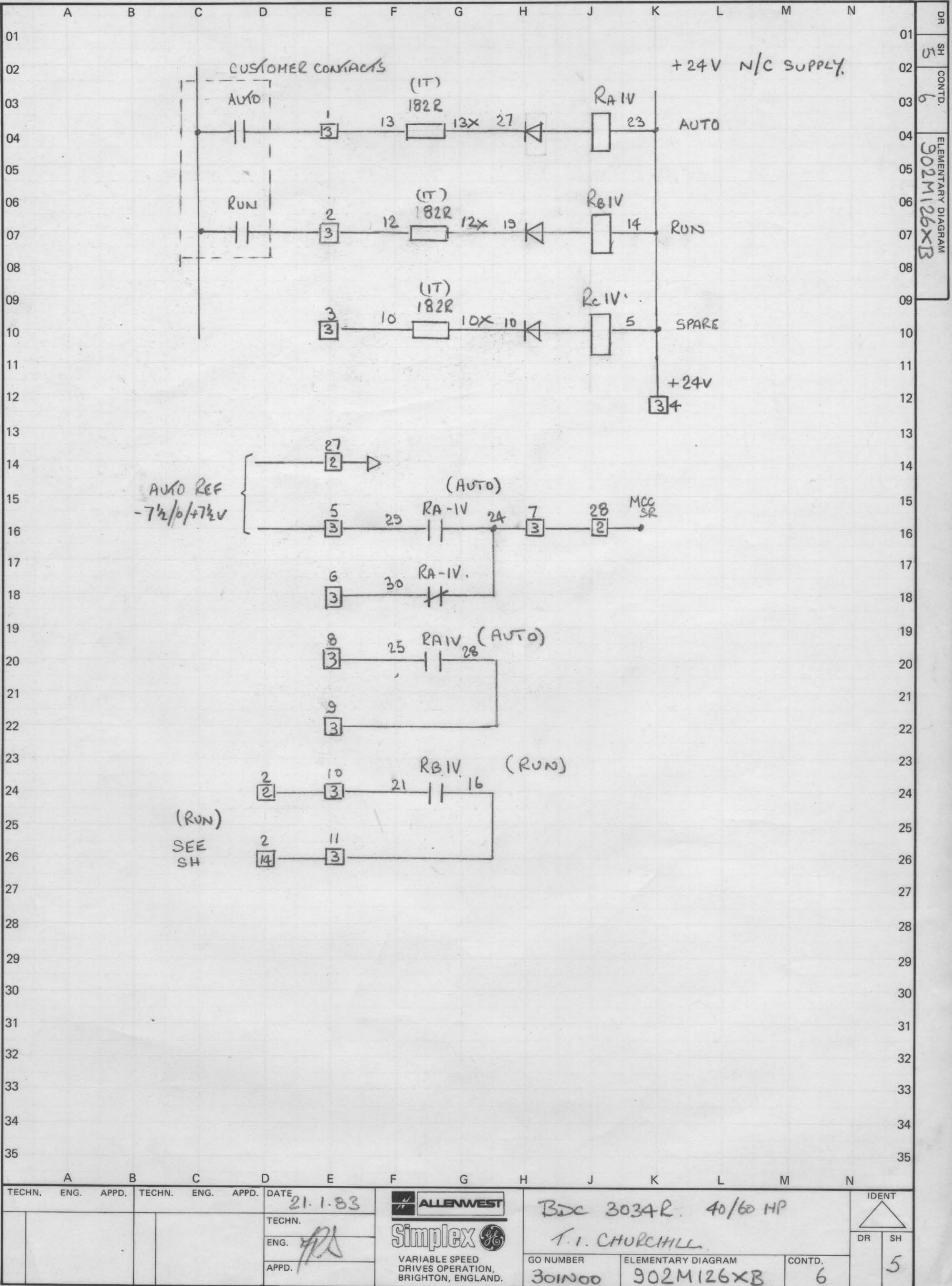
REMOVE 33K2 WHEN USING DIAGNOSTIC MODES  
REPLACE WHEN DIAGNOSTIC TEST COMPLETE

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	21.1.83	ALLENWEST	BDC 3034R 40/60HP	IDENT	DR	SH
						TECHN.		Simplex	11 CHURCHILL			
						ENG.		VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER	ELEMENTARY DIAGRAM	CONTO.	
						APPD.			301N00	902M126XB	2	1



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	21.1.83		BDC 3034R 40/60 HP		IDENT	
						TECHN.					DR	
						ENG.					SH	
						APPD.					4	
 VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.							GO NUMBER	301N00		ELEMENTARY DIAGRAM	902M126XB	
							CONTD.	5				





	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	
01																	SLD		CC		TVR
02																					
03																					
04																					
05																					
06																					
07																					
08																					
09																					
10																					
11																					

DR 7 SH CONTD. 8 ELEMENTARY DIAGRAM 902M126XB

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN RECEPTACLE AS SEEN IN RACK CLOSED POSITION.

SYMBOLS:

● TEST POST      ⊕ POT ADJUSTMENT      ✕ INDICATING LIGHT

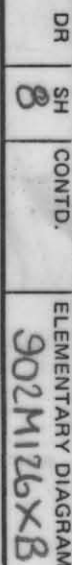
32	-	64	32	-	32X
31	-	63	31	-	31X
30	-	62	30	-	30X
29	-	61	29	-	29X
28	-	60	28	-	28X
27	-	59	27	-	27X
26	-	58	26	-	26X
25	-	57	25	-	25X
24	-	56	24	-	24X
23	-	55	23	-	23X
22	-	54	22	-	22X
21	-	53	21	-	21X
20	-	52	20	-	20X
19	-	51	19	-	19X
18	-	50	18	-	18X
17	-	49	17	-	17X
16	-	48	16	-	16X
15	-	47	15	-	15X
14	-	46	14	-	14X
13	-	45	13	-	13X
12	-	44	12	-	12X
11	-	43	11	-	11X
10	-	42	10	-	10X
9	-	41	9	-	9X
8	-	40	8	-	8X
7	-	39	7	-	7X
6	-	38	6	-	6X
5	-	37	5	-	5X
4	-	36	4	-	4X
3	-	35	3	-	3X
2	-	34	2	-	2X
1	-	33	1	-	1X

CARD RACK WIRE JUMPER TABLE			
R1B+20 - 1T31	3TB1 SP11 - 1T13	1R19 - 1R21	
1T31 - 1R31	3TB2 SP12 - 1T12	MCCSFB - 1R22	
	3TB3 SP13 - 1T10		
R1B-20 - 1T2	3TB4 SP14 - 1V23	1V27 - 1T13X	
1T2 - 1R2	3TB5 SP15 - 1V29	1V19 - 1T12X	
	3TB6 SP16 - 1V30	1V10 - 1T10X	
x R1B COM - 1T15	3TB7 SP17 - 1V24		
1T15 - 1R15	3TB8 SP18 - 1V25		
	3TB9 SP19 - 1V28		
	3TB10 SP20 - 1V21		
	3TB11 SP21 - 1V16		
	3TB12 SP22 - 1R29		
	3TB13 SP23 - 1R25		
	3TB14 SP24 - 1R28		
	3TB15 SP25 - 1R27		
	1V23 - 1V14		LINK
	1V14 - 1V5		2TB2 - 3TB10
			2TB14 - 3TB11
			3TB7 - 2TB28

NOTE: RECEPTACLE PINS MAY BE NUMBERED AS SHOWN IN EITHER SKETCH. (PIN 33 CORRESPONDS TO PIN 1X, 34 TO 2X, ETC.)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	21.1.83	ALLENWEST	BDC 3064R	40/60HP	IDENT	DR	SH
			2	AS SHIPPED				Simplex	GO NUMBER	ELEMENTARY DIAGRAM	CONTD.		
				23.2.83				VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	30IN00	902M126XB	8		7





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A B C D E F G H J K L M N

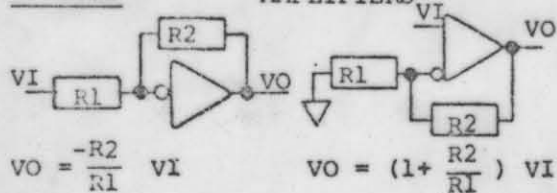
## VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)

## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL  
 MFE MOTOR FIELD EXCITER  
 MDR MODIFICATION RACK  
 ACC AUXILIARY CONTROL CARD

## SYMBOLS

## AMPLIFIERS



CASE GROUND

$VO = \text{SIGN} () \times \text{ABSOLUTE VALUE OF } VI$   
 STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 - 2TB9; X2 - RTBx2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

THESE RESISTORS ARE CRIMPED IN WIRE  
 HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
I/O-400%	X		(NONE)
-500%		IFC	I - IHI
-300%		IFC	I - ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT.3-7sec	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1 - AT2
TACHO FLT		IFC	TC - TC
TACHO V.			
24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT1 PT - PT1
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac		IFC	NT-NT2 PT - PT2
110-300vdc	X	IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
1.7		ME	NONE
1.3		ME	YB - YD
2.4		ME	YA - YB
4.0		ME	YA-YB, YC-YD
7.0	X	ME	YA - YC
13		ME	YA-YC, YB-YD
1.25		MFC	QA - QB
L/R < .25S		DGC	D1-D2 (IF USED)
INH RUN		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
DRIV-CL MOD.	X	MCC	DCX - DCY
50% FIELD ECON.	X	MCC	33K2 FROM FEA TO +20V

## SIGNAL DEFINITIONS AND LOCATIONS

\* CEMF COUNTER EMF (0316)  
 \* CFB CURRENT FEEDBACK (0316)  
 CMFA ABSOLUTE VALUE CEMF (0308)  
 CRM CROSSOVER MODIFY (0411)  
 DFP DELAYED FIRING POWER (0325)  
 \* DR DRIVER REFERENCE (0333)  
 \* EAO ERROR AMP OUTPUT (0333)  
 EST EXTERNAL FLT STOP INPUT (0314)  
 FALT FAULT (0314)  
 \* FC FIELD CURRENT (NS26)  
 EDR FIELD DIAGNOSTIC REFERENCE (0408)  
 FEA FIELD ECONOMY ADJUST (0325)  
 FF FIELD FAULT (NS33)  
 IABS MOTOR CURRENT ABSOLUTE (0309)  
 ILA CURRENT LIMIT ADJUST (0323)  
 IMET CURRENT SIGNAL FOR METER (0310)  
 \* IPU INITIAL PULSE (0320)  
 \* LR LOCAL REF. FROM DGC (0333)  
 \* JOG JOG SWITCH INPUT (0323)  
 \* JOGR JOG REFERENCE INPUT (0331)  
 \* MAC MAX/MA CONTROL SIGNAL (0320)  
 MSW MODE SWITCH (0330)  
 \* OSC OSCILLATOR (0320)  
 \* PCR PHASE CONTROL REF. (0326)  
 \* PRE DRIVE PRECONDITION (0321)  
 ØSEQ PHASE SEQUENCE (0314)  
 RERR REGULATOR ERROR (0327)  
 RIJ INTEGRATOR SUMMING JUNCTION (0327)  
 RJ REGULATOR SUMMING JUNCTION (0331)  
 RPA REGULATOR RESPONSE ADJUST (0330)  
 RRET RESET (0316)  
 \* RTR READY TO RUN (0316)  
 \* RUN RUN SWITCH INPUT (0321)  
 \* SA-C PHASE SYN OUTPUT (0316)  
 \* SIB SPEED FEEDBACK (0320)  
 SMET SPEED SIGNAL FOR METER (0312)  
 \* SR SYSTEM REFERENCE INPUT (0329)  
 \* SYS SYSTEM FAULT TRIP (0313)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST (0320)  
 TF TACHO FAULT (NS33)  
 \* TFR TACHOMETER FEEDBACK (0320)  
 TFR AC TACHO FREQUENCY OUTPUT (0313)  
 \* TR TIMED REFERENCE (0333)  
 \* VFB VOLTAGE FEEDBACK (0319)  
 \* WFR WEAK FIELD REFERENCE (NS29)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
 DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET  
 1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

## NOTE 1:

CONTROL TRANSFORMER PRIMARY [0215]  
 TO BE CONNECTED FOR SUPPLY VOLTAGE.

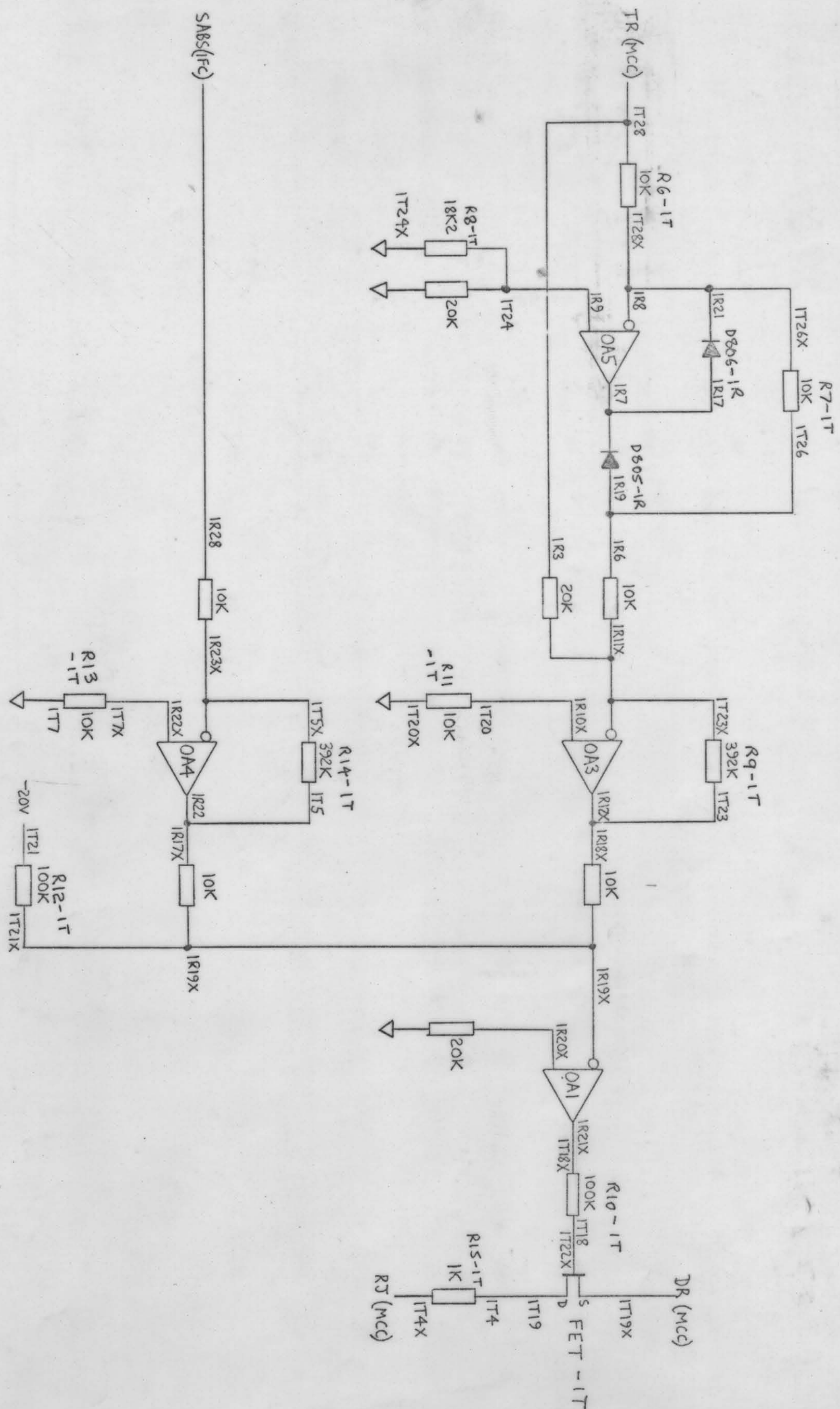
## NOTE 2:

BEFORE MAKING ADJUSTMENTS IN DIAGNOSTIC  
 STATIC OR DIAGNOSTIC RUN REMOVE THE  
 33K2 RESISTOR STABBED ON BETWEEN 'FEA'  
 AND '+20V' ON THE MAIN CONTROL CARD. REPLACE WHEN COMPLETE.

TECHN.	APPD.	TECHN.	APPD.	DATE	18.12.81	TECHN.	ENG.	APPD.	BDC 3064R 26/32HP	TI-CHURCHILL	GO NUMBER	ELEMENTARY DIAGRAM	CONTO	02	01
3	SR SH 10	2	SR SH 10	10.1.83	15.2.82	Simplex	VARIABLE SPEED DRIVES OPERATION BRIGHTON, ENGLAND	140N04	902M126BF	02	01				







TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	18.12.81	ALLENWEST	BDC 3064R 26/32HP	IDENT	DR	SH
						TECHN.		Simplex	TI CHURCHILL			
						ENG.		VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	
						APPD.			140N04	902M126BF	06	05



	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	
01																					
02																SLD	A	CC		TVR	
03																193W 277 AAG01	193W 256 AAG02	909W 317 AAG77		193W 278 AAG03	
04																					
05																					
06																					
07																					
08																					
09																					
10																SIG. LEV DET	AMPLI- FIER	SELECT COMP.		20V RELAY	
11																					

902M126BF

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN RECEPTACLE AS SEEN IN RACK CLOSED POSITION.

# SYMBOLS:

● TEST POST



POT ADJUSTMENT



INDICATING LIGHT

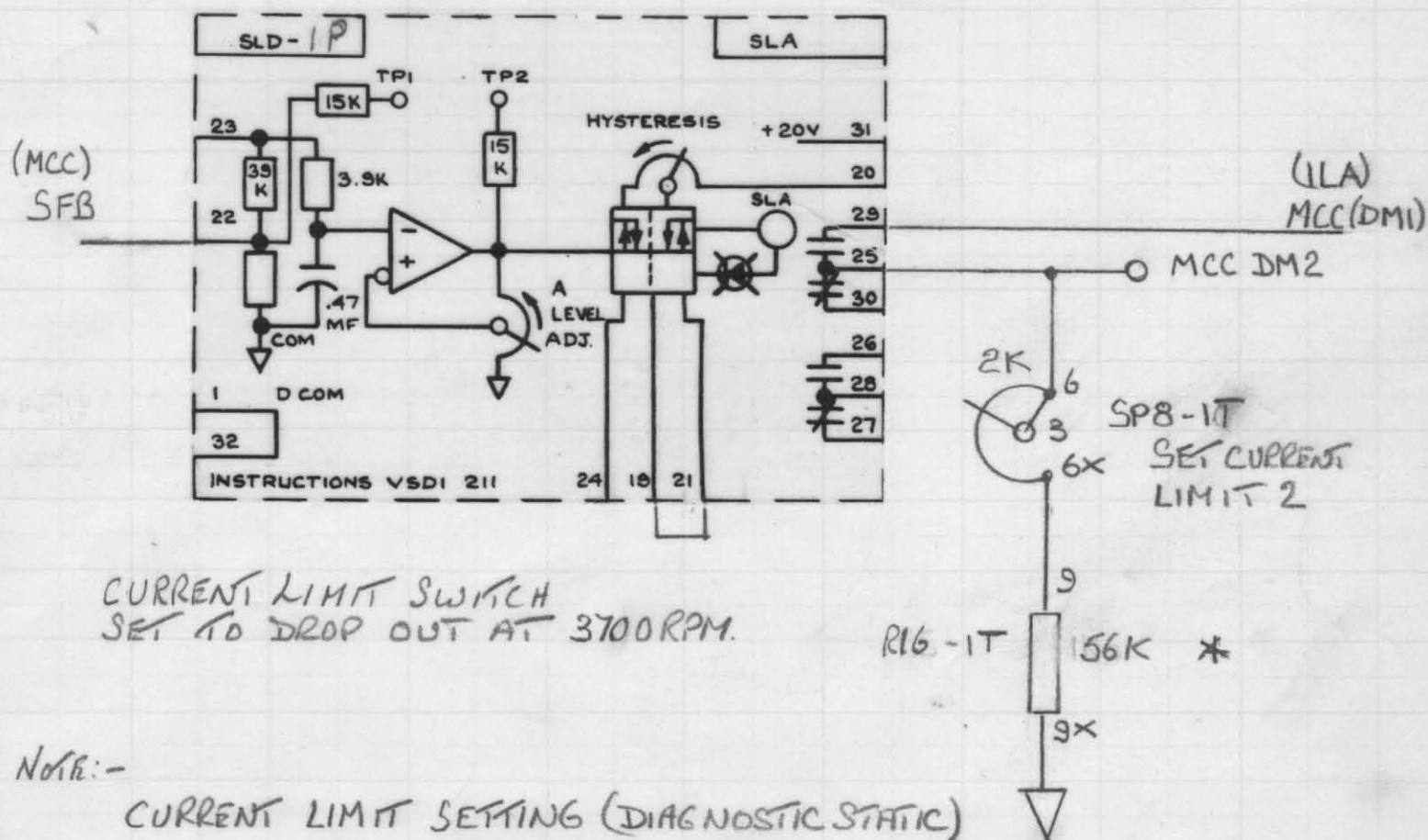
32	-	64
31	-	63
30	-	62
29	-	61
28	-	60
27	-	59
26	-	58
25	-	57
24	-	56
23	-	55
22	-	54
21	-	53
20	-	52
19	-	51
18	-	50
17	-	49
16	-	48
15	-	47
14	-	46
13	-	45
12	-	44
11	-	43
10	-	42
9	-	41
8	-	40
7	-	39
6	-	38
5	-	37
4	-	36
3	-	35
2	-	34
1	-	33

32	-	32X
31	-	31X
30	-	30X
29	-	29X
28	-	28X
27	-	27X
26	-	26X
25	-	25X
24	-	24X
23	-	23X
22	-	22X
21	-	21X
20	-	20X
19	-	19X
18	-	18X
17	-	17X
16	-	16X
15	-	15X
14	-	14X
13	-	13X
12	-	12X
11	-	11X
10	-	10X
9	-	9X
8	-	8X
7	-	7X
6	-	6X
5	-	5X
4	-	4X
3	-	3X
2	-	2X
1	-	1X

CARD RACK WIRE JUMPER TABLE			
RTB(-20V) - IR02	IT2X - IV24	IV15 - IT24X	SP6 - IT27
RTB(COM) - IR01	IT31X - IV17	IT24X - IT20X	SP7 - IV09
RTB(+20V) - IR31	IV20 - IV29	IT20X - IT7	SP8 - IV08
IR02 - IT02	IV29 - IT27X	IR11X - IT23X	SPI1 - IT13
IR01 - IT01	IT27 - IT30	IR10X - IT20	SPI2 - IT12
IT01 - IV01	IV11 - MCC(SR)	IT23 - IR12X	SPI3 - IT10
IR01 - IR15	IV12 - IV21	IR12X - IR18X	SPI4 - IV23
IR15 - IT15	IV21 - IV28	SABS(FC) - IR28	IV23 - IV14
IT15 - IV15	IV28 - MCC(RUN)	IR23X - IT5X	IV14 - IV05
IR31 - IT31	IT13X - IV27	IR22X - IT7X	
RTB(-30V) - IV25	IT12X - IV19	IT5 - IR22	MCC.SPB - IP22
IV25 - IV16	IT10X - IV10	IR22 - IR17X	IP18 - IP21
IV16 - IV06	TR(MCC) - IT28	IT21X - IR19X	MCC(ILA) - DM1
IT02 - IT21	IT28 - IR3	IR21X - IT18X	DM1 - IP29
	IT28X - IR8	IT18 - IT22X	MCC DM2 - IP25
	IR8 - IR21	DR(MCC) - IT19X	IP25 - IT6
	IR21 - IT26X	IT19 - IT4	IT6X - IT3
	IR7 - IR17	RJ(MCC) - IT4X	IT3X - IT9
	IT26 - IR19		IT9X - IV15
	IR19 - IR6		IT31 - IP31
	IR9 - IT24		IT02 - IP02

NOTE: RECEPTACLE PINS MAY BE NUMBERED AS SHOWN IN EITHER SKETCH. (PIN 33 CORRESPONDS TO PIN 1X, 34 TO 2X, ETC.)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	18.12.81	TECHN.	ENG.	APPD.	DATE	15.2.82	TECHN.	ENG.	APPD.	DATE	18.12.81	TECHN.	ENG.	APPD.	DATE	15.2.82
												BDC 3064R 26/32HP				T1 CHURCHILL				IDENT		
												GO NUMBER 140N04				ELEMENTARY DIAGRAM 902M126BF				07		



CURRENT LIMIT SWITCH  
 SET TO DROP OUT AT 3700 RPM.

NOTE:-

CURRENT LIMIT SETTING (DIAGNOSTIC STATIC)

REMOVE MCC JUMPER ILA - DMI

ADJUST C. LIM. MCC FOR CURRENT  
 LIMIT (MCC) FOR CURRENT LIMIT

AT CFB = 3.75 V (175 A MOTOR)

(SEE INSTRUCTION BOOK FOR PROCEEDURE)

FIT ILA - DM2 AND ADJUST C. LIM 2 (SP8 IT)

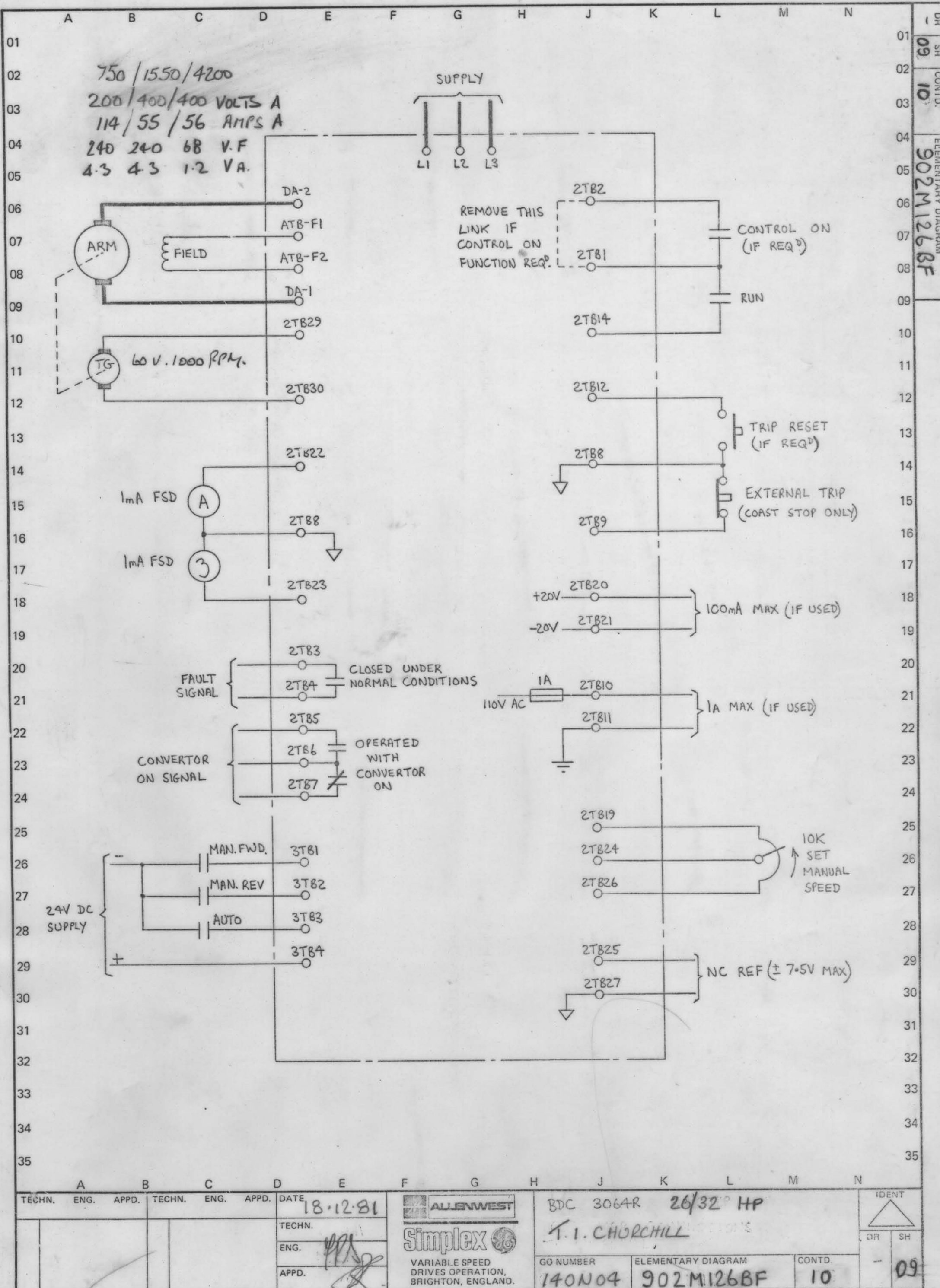
FOR CURRENT LIMIT AT CFB 3.6 V (160 A AT MOTOR)

REMOVE JUMPER ILA - DM2

REFIT JUMPER ILA - DMI

R16 SELECT ACTUAL VALUE ON TEST 10K - 56K  
 TYPICAL 12K1





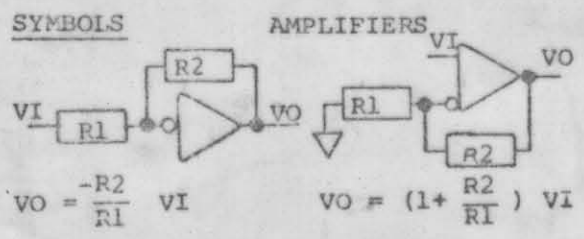
A B C D E F G H J K L M N

DR SH CONTD. 902HMI22CC ELEMENTARY DIAGRAM

VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)  
HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
IFC INTERFACE CARD  
PSC POWER SUPPLY CARD  
SCR THYRISTOR ASSEMBLY  
DGC DIAGNOSTIC CARD  
MFC MOTOR FIELD CONTROL  
  
MDR MODIFICATION RACK

SYMBOLS



- CASE GROUND
- VO = SIGN ( ) X ABSOLUTE VALUE OF VI
- STAB ON TERMINAL
- TERMINAL AT 2TB, 3TB, 4TB, RTB.  
EX: 9 [2] - 2TB9; X2 [3] - RTBX2
- TERMINAL AT T.B.'s
- POTENTIOMETER ARROWS ON THE CARD  
ELEMENTARY DIAGRAMS INDICATE THE  
WIPER DIRECTION AS THE POTENTIOMETER  
SHAFT IS ROTATED CLOCKWISE TO INCREASE  
FUNCTION.

THESE RESISTORS ARE CRIMPED IN WIRE HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BB, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	AA-AP, BA-BB, CA-CF
IOC-400% -500% -300%	X		NONE
		IFC	I-IHI
		IFC	I-ILQ
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH-COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec	X		(NONE)
2 - 60sec		MCC	332FROM LT1TOCOM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V. 24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT1, PT-PT1
60-160vdc	X	IFC	NT-NT2, PT-PT2
66-177vac		IFC	NT-NT2, PT-PT2
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
GL34 G256		MFC	NONE
1.3 1.7		MFC	YB-YD
2.4 5.0		MFC	YB-YB
4.0 8.0		MFC	YA-YB, YC-YD
7.0 13	X	MFC	YA-YC
13 25		MFC	YA-YC, YB-YD
L/R < .25S		MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

SIGNAL DEFINITIONS AND LOCATIONS

- \* CEMF COUNTER EMF (3.16)
- \* CFB CURRENT FEEDBACK (3.16)
- CMFA ABSOLUTE VALUE CEMF (3.08)
- CRM CROSSOVER MODIFY (4.11)
- DFP DELAYED FIRING POWER (3.25)
- \* DR DRIVER REFERENCE (3.33)
- \* EAO ERROR AMP OUTPUT (3.33)
- EST EXTERNAL FLT STOP INPUT (3.14)
- FALT FAULT (3.14)
- \* FC FIELD CURRENT (NS26)
- FDR FIELD DIAGNOSTIC REFERENCE (4.08)
- FEA FIELD ECONOMY ADJUST (3.25)
- FF FIELD FAULT (2.28)
- IABS MOTOR CURRENT ABSOLUTE (3.09)
- ILA CURRENT LIMIT ADJUST (3.23)
- IMET CURRENT SIGNAL FOR METER (3.10)
- \* IPU INITIAL PULSE (3.20)
- \* LR LOCAL REF. FROM DGC (3.33)
- \* JOG JOG SWITCH INPUT (3.23)
- \* JOGR JOG REFERENCE INPUT (3.31)
- \* MAC MAX/MA CONTROL SIGNAL (3.20)
- MSW MODE SWITCH (3.30)
- \* OSC OSCILLATOR (3.17)
- \* PCR PHASE CONTROL REF. (3.26)
- \* PRE DRIVE PRECONDITION (3.21)
- ØSEQ PHASE SEQUENCE (3.14)
- RERR REGULATOR ERROR (3.27)
- RIJ INTEGRATOR SUMMING JUNCTION (3.27)
- RJ REGULATOR SUMMING JUNCTION (3.31)
- RRA REGULATOR RESPONSE ADJUST (3.30)
- RSET RESET (3.16)
- \* RTR READY TO RUN (3.16)
- \* RUN RUN SWITCH INPUT (3.21)
- \* SA-C PHASE SYN OUTPUT (3.16)
- \* SFB SPEED FEEDBACK (3.20)
- SMET SPEED SIGNAL FOR METER (3.12)
- \* SR SYSTEM REFERENCE INPUT (3.29)
- \* SYS SYSTEM FAULT TRIP (3.13)
- \* TA OUTPUT FOR TACHO TRIP ADJUST (3.20)
- TF TACHO FAULT (NS28)
- \* TFB TACHOMETER FEEDBACK (3.20)
- TFR AC TACHO FREQUENCY OUTPUT (3.13)
- \* TR TIMED REFERENCE (3.33)
- \* VFB VOLTAGE FEEDBACK (3.19)
- \* WFR WEAK FIELD REFERENCE (3.20)

( \* - TEST POINT ON DOOR FRONT)

MAPPING SYSTEM

- (NS/PS/TS) PS - PAST SHEET
- NS - NEXT SHEET
- TS - THIS SHEET

NOTE: FIELD EFFECT TRANSISTOR: THE CLOSED/OPEN (I/O) STATE OF THESE SWITCHED FOR "PRECONDITION" - "RUN" OR JOG - "DIAGNOSTIC STATIC" - "DIAGNOSTIC RUN" IS SHOWN BY A FOUR DIGIT WORD WITH STATE SEQUENCE.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	25/9/79	ALLENWEST	TI CHURCHILL LTD	IDENT	DR	SH
						TECHN.		Simplex	60HP BDC 3034R SPINDLE DRIVE			
						ENG.	AP	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND	ELEMENTARY DIAGRAM			
						APPD.			GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	
									938N00	902HMI22CC	2	1





[illegible]

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN  
RECEPTACLE AS SEEN  
IN RACK CLOSED  
POSITION.

SYMBOLS:

TEST POST



### POT ADJUSTMENT



INDICATING LIGHT

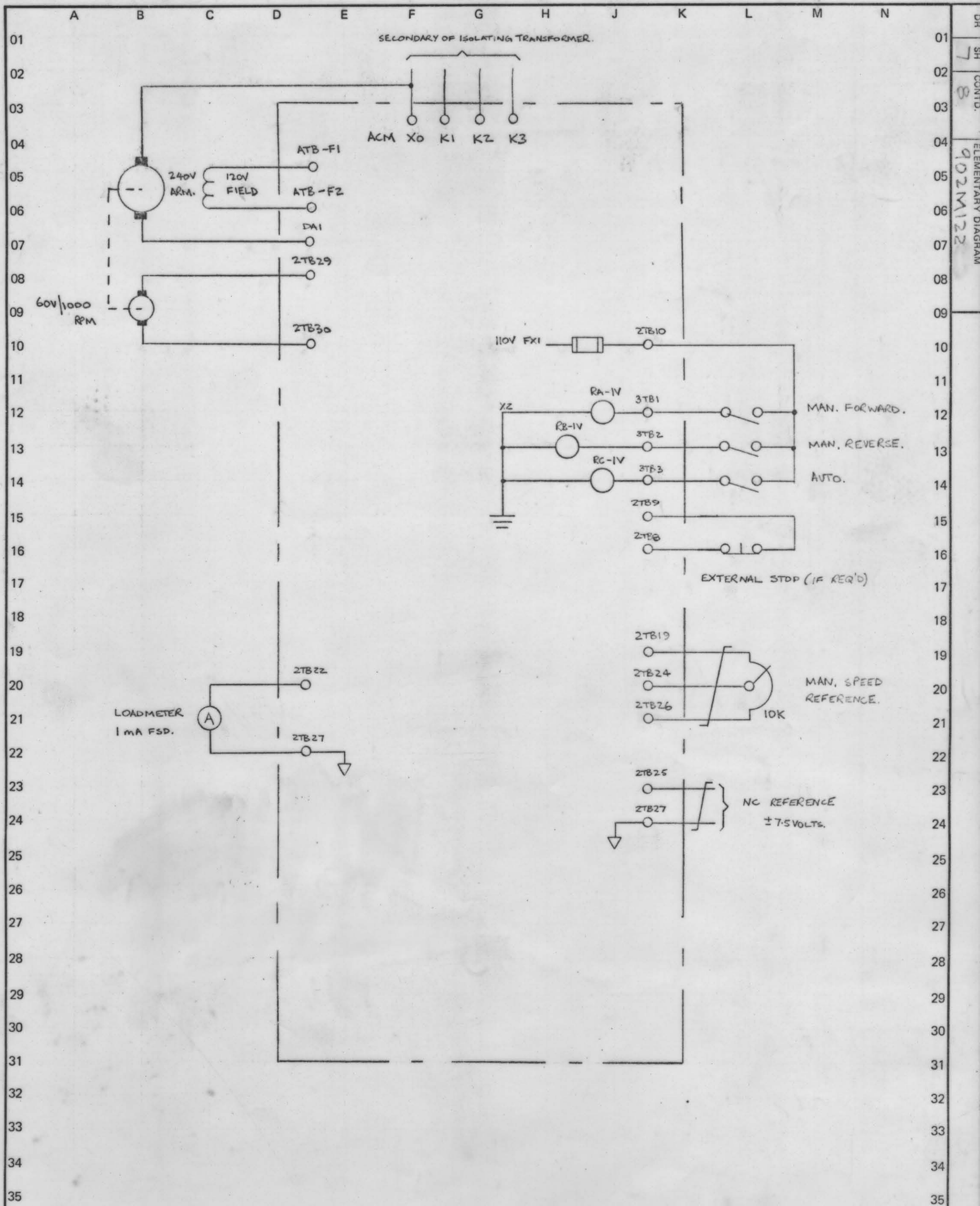
32	-	64	32	-	32X
31	-	63	31	-	31X
30	-	62	30	-	30X
29	-	61	29	-	29X
28	-	60	28	-	28X
27	-	59	27	-	27X
26	-	58	26	-	26X
25	-	57	25	-	25X
24	-	56	24	-	24X
23	-	55	23	-	23X
22	-	54	22	-	22X
21	-	53	21	-	21X
20	-	52	20	-	20X
19	-	51	19	-	19X
18	-	50	18	-	18X
17	-	49	17	-	17X
16	-	48	16	-	16X
15	-	47	15	-	15X
14	-	46	14	-	14X
13	-	45	13	-	13X
12	-	44	12	-	12X
11	-	43	11	-	11X
10	-	42	10	-	10X
9	-	41	9	-	9X
8	-	40	8	-	8X
7	-	39	7	-	7X
6	-	38	6	-	6X
5	-	37	5	-	5X
4	-	36	4	-	4X
3	-	35	3	-	3X
2	-	34	2	-	2X
1	-	33	1	-	1X

NOTE: RECEPTACLE PINS MAY  
BE NUMBERED AS SHOWN  
IN EITHER SKETCH. (PIN  
33 CORRESPONDS TO PIN  
1X, 34 TO 2X, ETC.)

CARD RACK WIRE JUMPER TABLE			
		SP 11 - IV3	SP6 - IT30
		SP 12 - IV21	SP7 - IV27
		SP 13 - IV25	SP8 - IV26
RTB(-20V) - IT2			
IT2X - IV6			
IV13 - IV5			
IV5 - IT27X			
IT27 - IT30			
RTB(+20V) - IT31			
IT31X - IV16			
MCC (SE) - IV24			
RTB(-30V) - IV10			
IV10 - IV19			
IV19 - IV29			
MCC (RUN) - IV12			
IV12 - IV20			
IV20 - IV30			
RTB(X2) - IV11			
IV11 - IV14			
IV14 - IV23			

A		B		C		D		E		F		G		H		J		K		L		M		N	
TECHN.		ENG.		APPD.		TECHN.		ENG.		APPD.		DATE													
												25/9/79													





TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE				TI CHURCHILL LTD 60 HP BDC 3034R SPINDLE DRIVE ELEMENTARY DIAGRAM			IDENT 			
						25/9/79				GO NUMBER 938 N00			ELEMENTARY DIAGRAM 902M122CC		CONTD. 8	
						TECHN.	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			7			DR SH			
						ENG.	AP			7			7			
						APPD.										

A B C D E F G H J K L M N

01

02 VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)

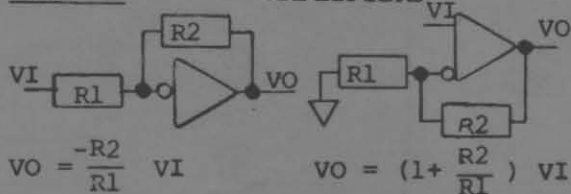
## 03 HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL

MDR MODIFICATION RACK

## 08 SYMBOLS

## AMPLIFIERS



CASE GROUND

VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL

 TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 [2] - 2TB9; X2 [R] - RTB2

TERMINAL AT T.B.'s

 POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

 THESE RESISTORS ARE CRIMPED IN WIRE  
 HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BS, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	AA-AF, BA-BF, CA-CF
IOC-400%			NONE
-500%		IFC	I-IHI
-300%	X	IFC	I-ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH-COM
JOG 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC	332Ω FROM LT1 TO COM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V.			
24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT1, PT-PT1
60-160vdc	X	IFC	NT-NT2, PT-PT2
66-177vac		IFC	NT-NT2, PT-PT2
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
G134 G256			
1.3 1.7		MFC	NONE
1.3 2.8		MFC	YB-YD
2.4 5.0		MFC	YA-YB
4.0 8.0		MFC	YA-YB, YC-YD
7.0 13	X	MFC	YA-YC
13 25		MFC	YA-YC, YB-YD
L/R < .25S	X	MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)
50% FIELD ECON.	X	MCC	33K2 FROM FEA TO +20V

## SIGNAL DEFINITIONS AND LOCATIONS

\* CEMF COUNTER EMF ( 16)  
 \* CFB CURRENT FEEDBACK ( 16)  
 CMFA ABSOLUTE VALUE CEMF ( 08)  
 CRM CROSSOVER MODIFY ( 11)  
 DFP DELAYED FIRING POWER ( 25)  
 \* DR DRIVER REFERENCE ( 33)  
 \* EAO ERROR AMP OUTPUT ( 33)  
 EST EXTERNAL FLT STOP INPUT ( 14)  
 FALT FAULT ( 14)  
 \* FC FIELD CURRENT ( NS26)  
 FDR FIELD DIAGNOSTIC REFERENCE ( 08)  
 FEA FIELD ECONOMY ADJUST ( 25)  
 FF FIELD FAULT ( 28)  
 IABS MOTOR CURRENT ABSOLUTE ( 09)  
 ILA CURRENT LIMIT ADJUST ( 23)  
 IMET CURRENT SIGNAL FOR METER ( 10)  
 \* IPU INITIAL PULSE ( 20)  
 \* LR LOCAL REF. FROM DGC ( 33)  
 \* JOG JOG SWITCH INPUT ( 23)  
 \* JOGR JOG REFERENCE INPUT ( 31)  
 \* MAC MAX/MA CONTROL SIGNAL ( 20)  
 MSW MODE SWITCH ( 30)  
 \* OSC OSCILLATOR ( 17)  
 \* PCR PHASE CONTROL REF. ( 26)  
 \* PRE DRIVE PRECONDITION ( 21)  
 ØSEQ PHASE SEQUENCE ( 14)  
 RERR REGULATOR ERROR ( 27)  
 RIJ INTEGRATOR SUMMING JUNCTION ( 27)  
 RJ REGULATOR SUMMING JUNCTION ( 31)  
 RRA REGULATOR RESPONSE ADJUST ( 30)  
 RSET RESET ( 16)  
 \* RTR READY TO RUN ( 16)  
 \* RUN RUN SWITCH INPUT ( 21)  
 \* SA-C PHASE SYN OUTPUT ( 16)  
 \* SFB SPEED FEEDBACK ( 20)  
 SMET SPEED SIGNAL FOR METER ( 12)  
 \* SR SYSTEM REFERENCE INPUT ( 29)  
 \* SYS SYSTEM FAULT TRIP ( 13)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST ( 20)  
 TF TACHO FAULT ( NS28)  
 \* TFB TACHOMETER FEEDBACK ( 20)  
 TFR AC TACHO FREQUENCY OUTPUT ( 13)  
 \* TR TIMED REFERENCE ( 33)  
 \* VFB VOLTAGE FEEDBACK ( 19)  
 \* WFR WEAK FIELD REFERENCE ( 20)

( \* - TEST POINT ON DOOR FRONT)

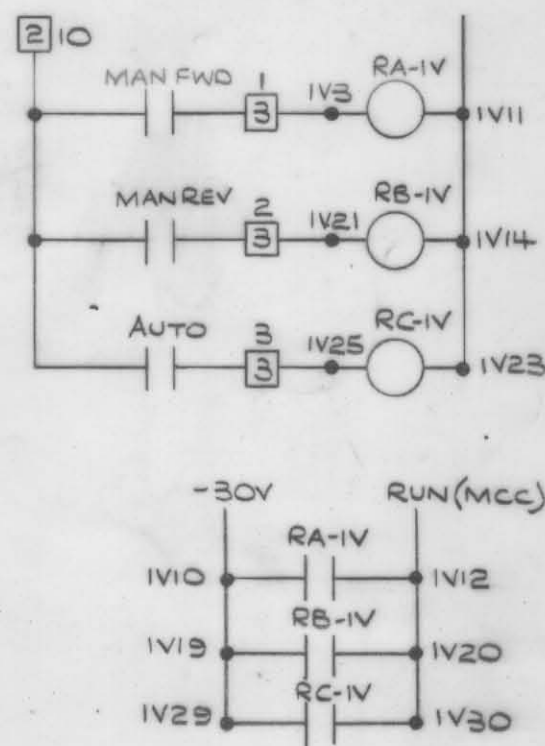
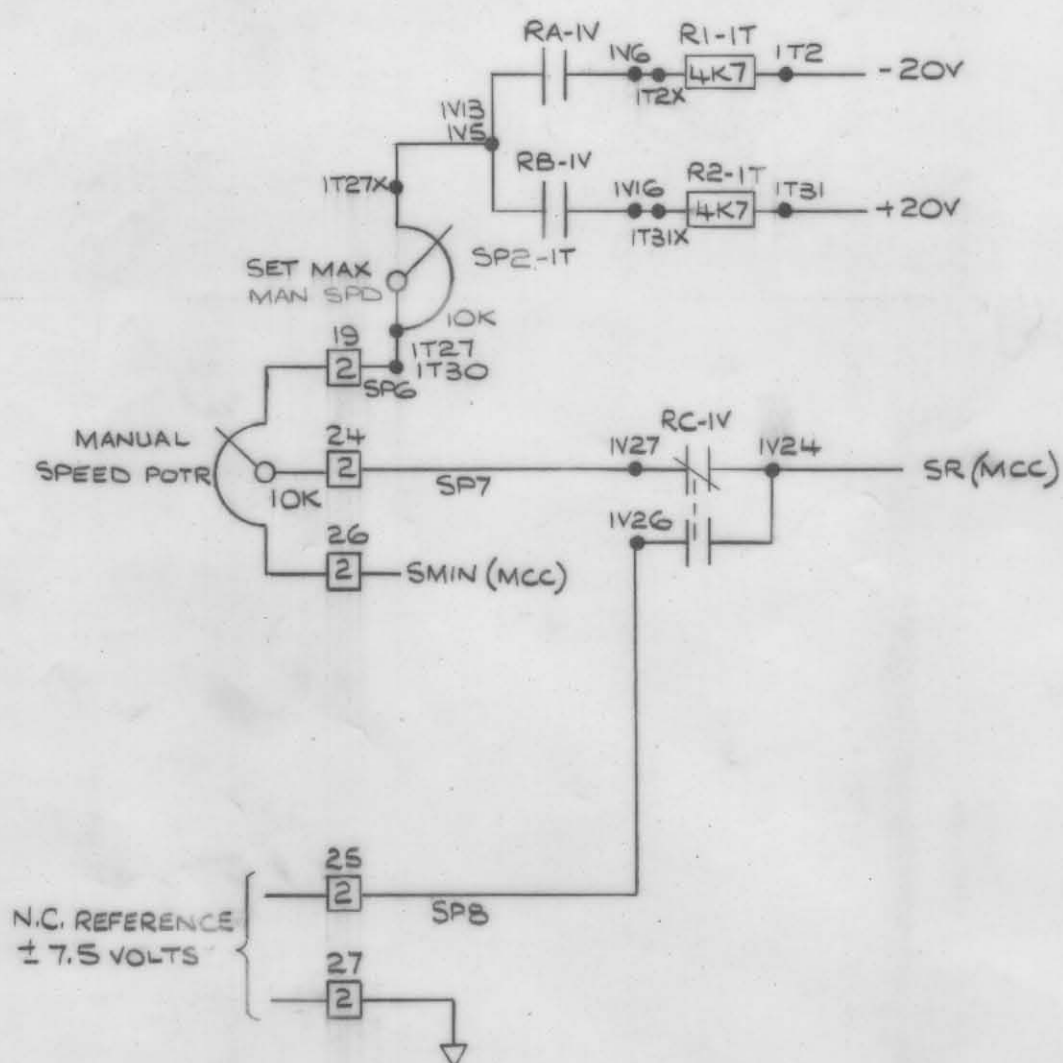
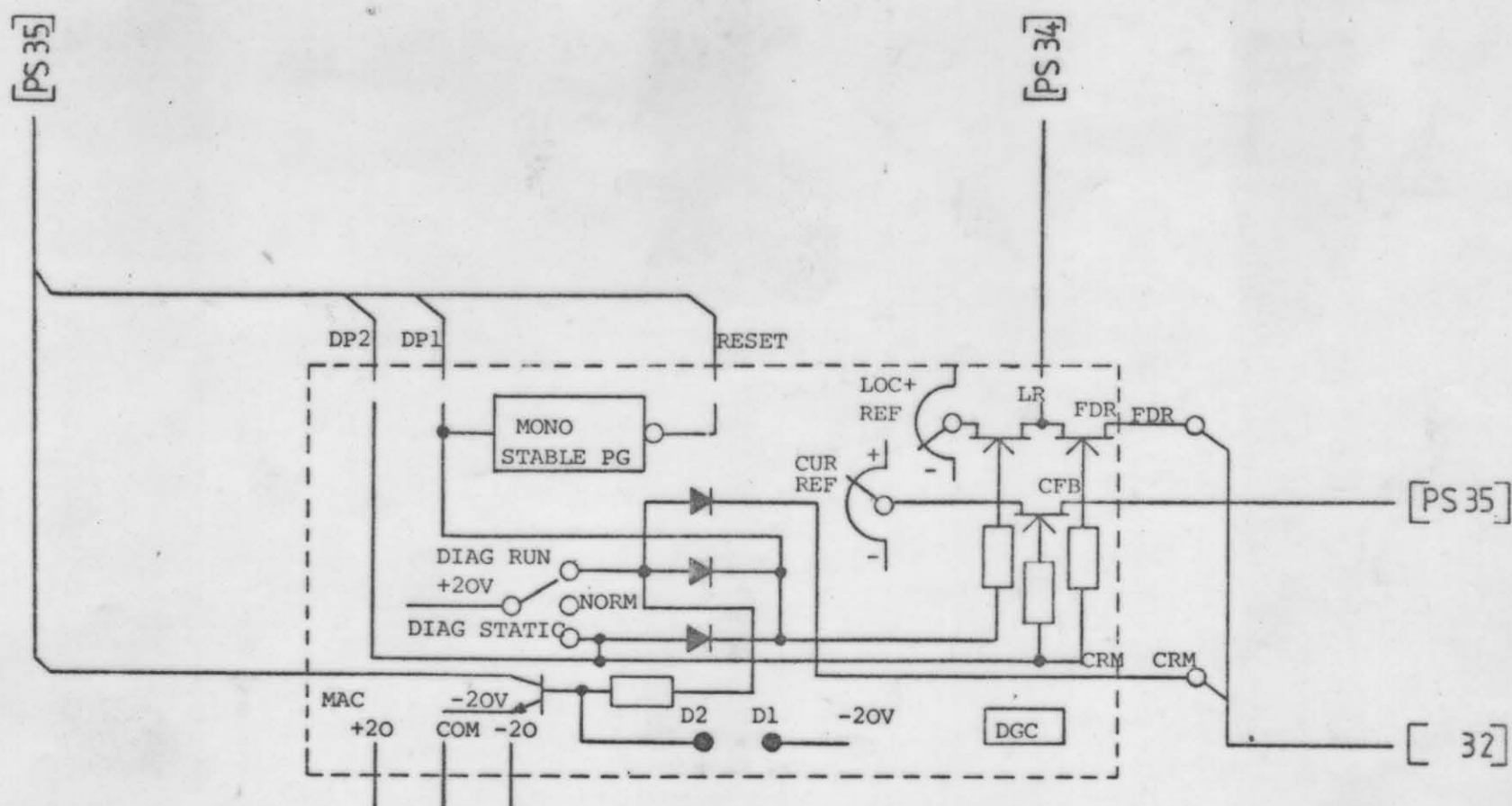
## MAPPING SYSTEM

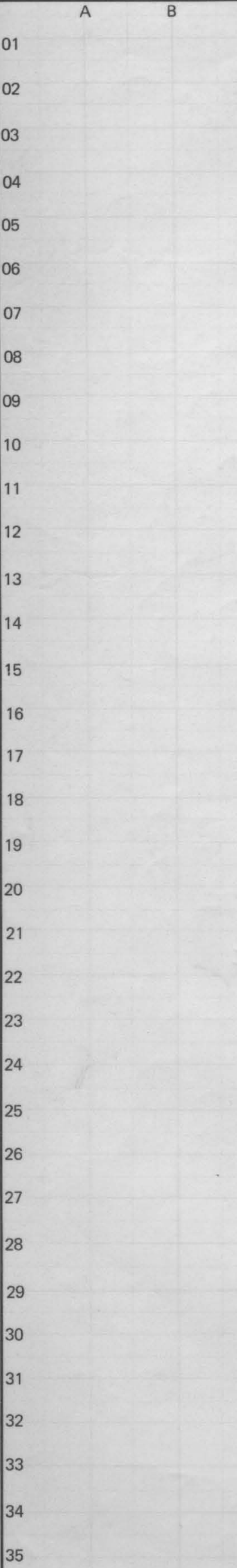
(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG" - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	8-7-80				TI CHURCHILL LTD. 60HP BDC 3034R SPINDLE DRIVE ELEMENTARY DIAGRAM		IDENT 	
3	SEE SHEET 9	2/10/80	2	AS SHIPPED	8-8-80	TECHN.	FRS				GO NUMBER 938N00		ELEMENTARY DIAGRAM 902M122FB	
						APPD.			VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		CONTD. 2		DR SH 1	







**Disclaimer Statement** The  trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name.



	A	B	C	D	E	F	G	H	J	K	L	M	N	
01														
02														
03														
04														
05														
06														
07														
08														
09														
10														
11														

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN  
RECEPTACLE AS SEEN  
IN RACK CLOSED  
POSITION.

## SYMBOLS:



TEST POST



POT ADJUSTMENT



INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

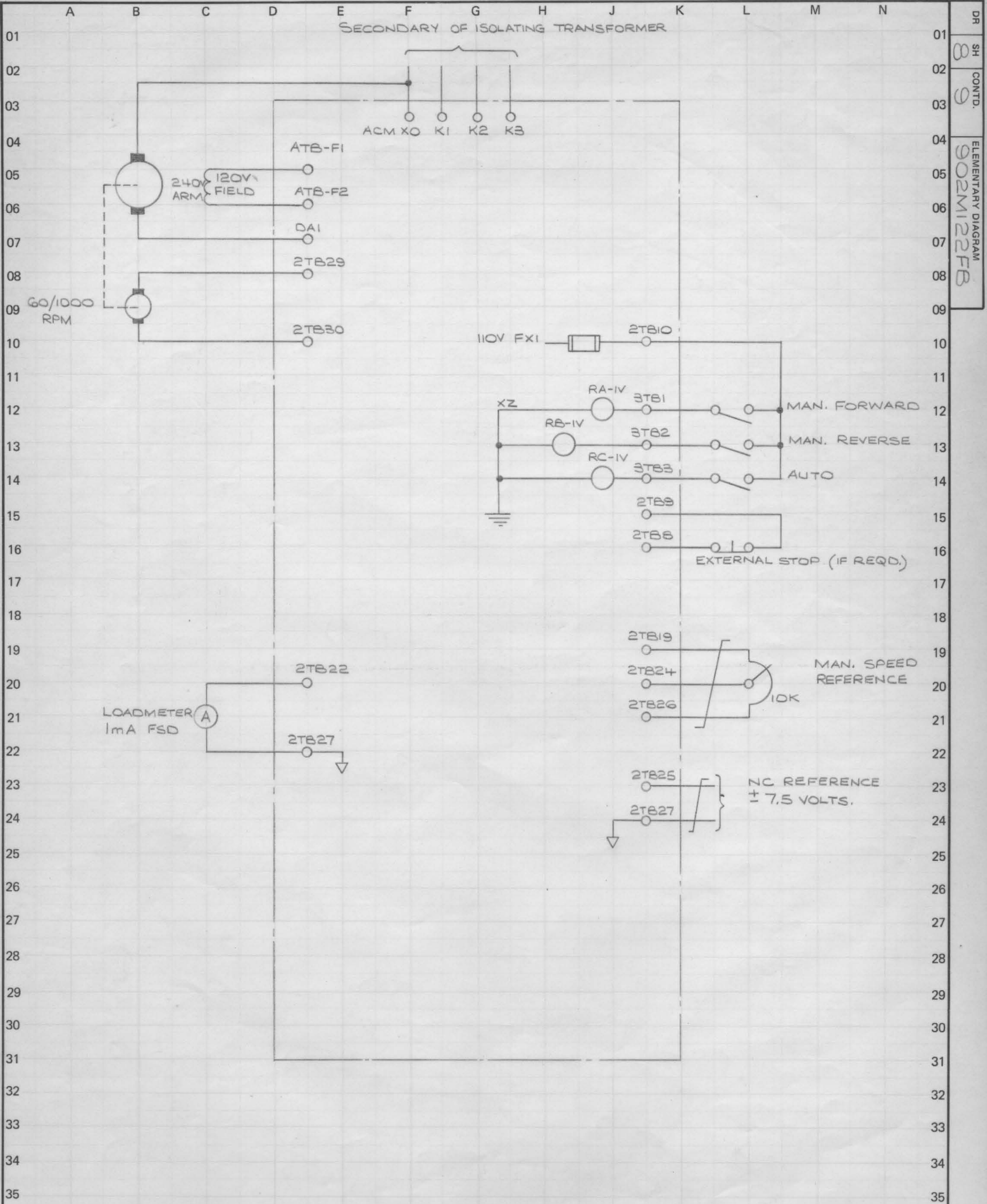
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29	-	61
28	-	60
27	-	59
26	-	58
25	-	57
24	-	56
23	-	55
22	-	54
21	-	53
20	-	52
19	-	51
18	-	50
17	-	49
16	-	48
15	-	47
14	-	46
13	-	45
12	-	44
11	-	43
10	-	42
9	-	41
8	-	40
7	-	39
6	-	38
5	-	37
4	-	36
3	-	35
2	-	34
1	-	33

32	-	32X
31	-	31X
30	-	30X
29	-	29X
28	-	28X
27	-	27X
26	-	26X
25	-	25X
24	-	24X
23	-	23X
22	-	22X
21	-	21X
20	-	20X
19	-	19X
18	-	18X
17	-	17X
16	-	16X
15	-	15X
14	-	14X
13	-	13X
12	-	12X
11	-	11X
10	-	10X
9	-	9X
8	-	8X
7	-	7X
6	-	6X
5	-	5X
4	-	4X
3	-	3X
2	-	2X
1	-	1X

RTB(-20V)-1T2	TR(MCC)-1R3	SABS(1R) 1R28
1T2X - 1V6	1R3 - 1T28	1R23X - 1T5X
1V13 - 1V5	1T28X - 1T26X	1T5 - 1R22
1V5 - 1T27X	1T26X - 1R21	1R22 - 1R17X
1T27 - 1T30	1R21 - 1R8	1R22X - 1T7X
RTB-20 - 1T31	1R7 - 1R17	1T24 - 1R9
1T31X - 1V16	1T26 - 1R19	
MCCSR - 1V24	1R19 - 1R6	DR(MCC) - 1T19X
RTB-30 - 1V10	1R1X - 1T23X	1T19 - 1T4
1V10 - 1V19	1R10X - 1T20	1T4X - RS-MCC
1V19 - 1V29	1T23 - 1R12X	
MCC RUN - 1V12	1R12X - 1R18X	1T15 - RTB COM
1V12 - 1V20	1R19X - 1T21X	1T15 - 1R15
1V20 - 1V30	1R21X - 1T18X	1T24X - 1T7
RTB X2 - 1V11	1T18 - 1T22X	
1V11 - 1V14		1T4 - 1T2
1V14 - 1V23		1T20X - 1R15

NOTE: RECEPTACLE PINS MAY  
BE NUMBERED AS SHOWN  
IN EITHER SKETCH. (PIN  
33 CORRESPONDS TO PIN  
1X, 34 TO 2X, ETC.)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE				11 CHURCHILL BDC 3034R			IDENT 	
						8.7.80							DR SH 6	
						ENG. F. RS	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			GO NUMBER 938N00			ELEMENTARY DIAGRAM 902M122FB	
						APPD. R.H.				CONTD. 7				



DR SH CONTD. ELEMENTARY DIAGRAM 902M122FB

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	8-7-80		ALLENWEST		TI CHURCHILL LTD.		IDENT	
						TECHN.			Simplex		60HP BDC 3034R SPINDLE		DR SH	
						ENG.	FRS		VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		DRIVE. ELEMENTARY DIAGRAM			
						APPD.	184				GO NUMBER 938N00		ELEMENTARY DIAGRAM 902M122FB	
											CONTD. 9		8	

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A B C D E F G H J K L M N

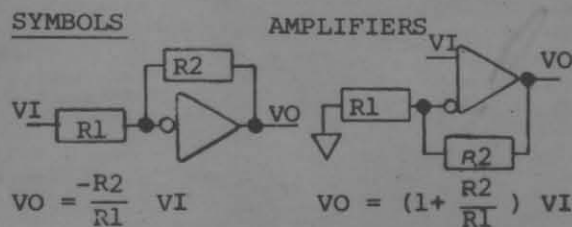
VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)

## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL

MDR MODIFICATION RACK

## SYMBOLS



CASE GROUND

VO = SIGN ( ) X ABSOLUTE VALUE OF VI

STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 2 - 2TB9; X2 3 - RTB2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

THESE RESISTORS ARE CRIMPED IN WIRE  
 HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BS, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	AA-AF, BA-BF, CA-CF
I/O-400%	X		NONE
-500%		IFC	I-IH1
-300%		IFC	I-ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH-COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC	332Ω FROM LT1 TO COM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V.			
24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT1, PT-PT1
60-160vdc	X	IFC	NT-NT2, PT-PT2
66-177vac		IFC	NT-NT2, PT-PT2
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
G134 G256			
1.3 1.7		MFC	NONE
2.3 2.8		MFC	YB-YD
3.4 5.0		MFC	YA-YB
4.0 8.0		MFC	YA-YB, YC-YD
7.0 13	X	MFC	YA-YC
13 25		MFC	YA-YC, YB-YD
L/R < .25S		MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

## SIGNAL DEFINITIONS AND LOCATIONS

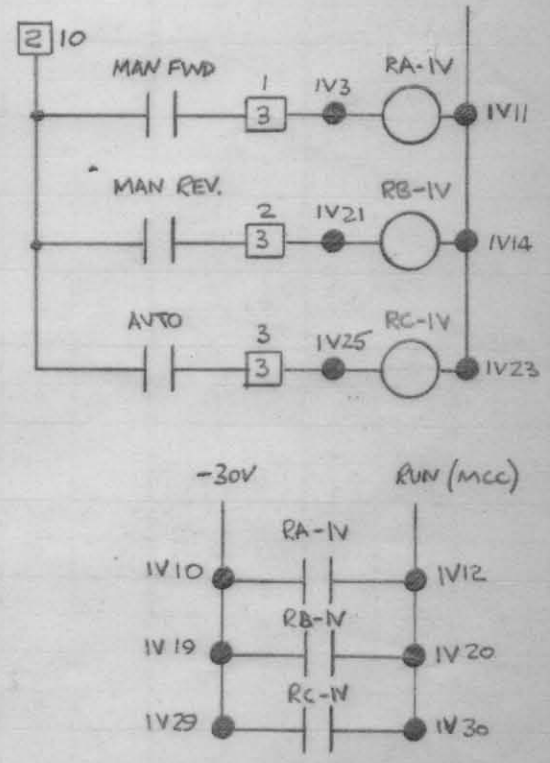
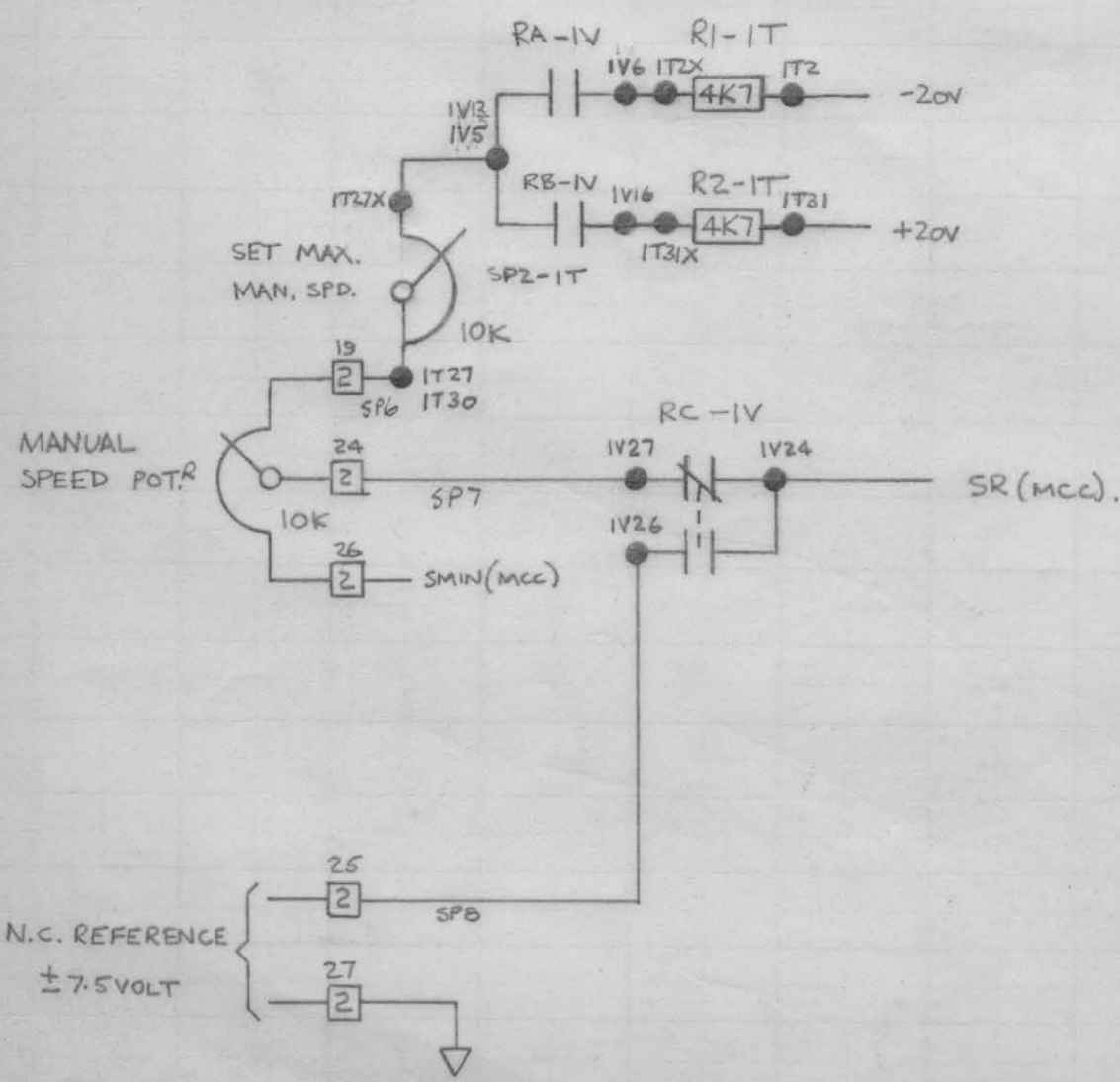
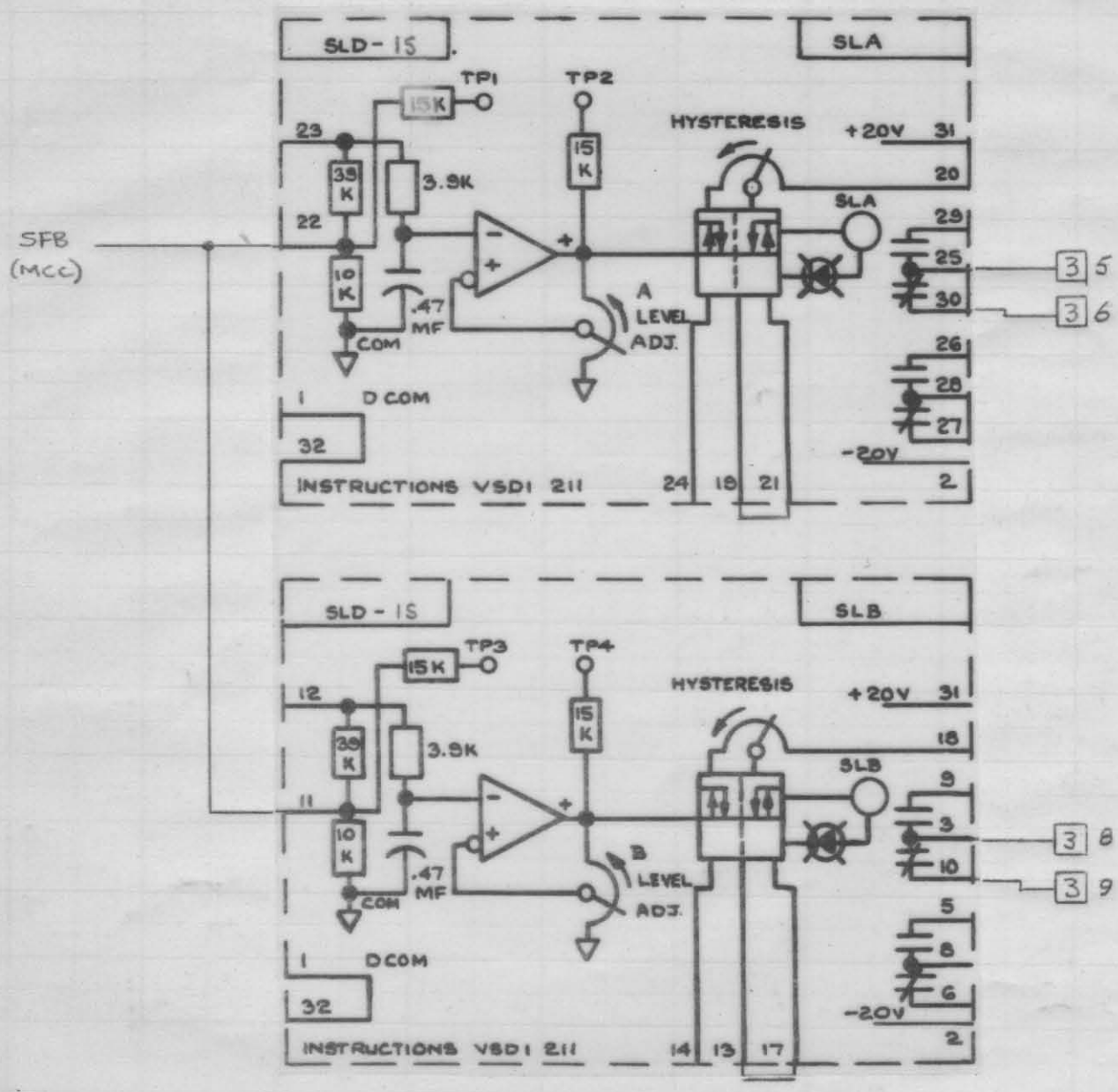
\* CEMF COUNTER EMF (3.16)  
 \* CFB CURRENT FEEDBACK (3.16)  
 CMFA ABSOLUTE VALUE CEMF (3.08)  
 CRM CROSSOVER MODIFY (4.11)  
 DFP DELAYED FIRING POWER (3.25)  
 \* DR DRIVER REFERENCE (3.33)  
 \* EAO ERROR AMP OUTPUT (3.33)  
 EST EXTERNAL FLT STOP INPUT (3.14)  
 FALT FAULT (3.14)  
 \* FC FIELD CURRENT (NS26)  
 FDR FIELD DIAGNOSTIC REFERENCE (4.08)  
 FEA FIELD ECONOMY ADJUST (3.25)  
 FF FIELD FAULT (2.28)  
 IABS MOTOR CURRENT ABSOLUTE (3.09)  
 ILA CURRENT LIMIT ADJUST (3.23)  
 IMET CURRENT SIGNAL FOR METER (3.10)  
 \* IPU INITIAL PULSE (3.20)  
 \* LR LOCAL REF. FROM DGC (3.33)  
 \* JOG JOG SWITCH INPUT (3.23)  
 \* JOGR JOG REFERENCE INPUT (3.31)  
 \* MAC MAX/MA CONTROL SIGNAL (3.20)  
 MSW MODE SWITCH (3.30)  
 \* OSC OSCILLATOR (3.17)  
 \* PCR PHASE CONTROL REF. (3.26)  
 \* PRE DRIVE PRECONDITION (3.21)  
 ØSEQ PHASE SEQUENCE (3.14)  
 RERR REGULATOR ERROR (3.27)  
 RIJ INTEGRATOR SUMMING JUNCTION (3.27)  
 RJ REGULATOR SUMMING JUNCTION (3.31)  
 RRA REGULATOR RESPONSE ADJUST (3.30)  
 RSET RESET (3.16)  
 \* RTR READY TO RUN (3.16)  
 \* RUN RUN SWITCH INPUT (3.21)  
 \* SA-C PHASE SYN OUTPUT (3.16)  
 \* SFB SPEED FEEDBACK (3.20)  
 SMET SPEED SIGNAL FOR METER (3.12)  
 \* SR SYSTEM REFERENCE INPUT (3.29)  
 \* SYS SYSTEM FAULT TRIP (3.13)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST (3.20)  
 TF TACHO FAULT (NS28)  
 \* TFB TACHOMETER FEEDBACK (3.20)  
 TFR AC TACHO FREQUENCY OUTPUT (3.13)  
 \* TR TIMED REFERENCE (3.33)  
 \* VFB VOLTAGE FEEDBACK (3.19)  
 \* WFR WEAK FIELD REFERENCE (3.20)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG" - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.





	A	B	C	D	E	F	G	H	J	K	L	M	N	
01	A	B	C	D	E	F	G	H	J	K	L	M	N	01
02														02
03														03
04														04
05														05
06														06
07														07
08														08
09														09
10														10
11														11

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN  
RECEPTACLE AS SEEN  
IN RACK CLOSED  
POSITION.

## SYMBOLS:



TEST POST



POT ADJUSTMENT



INDICATING LIGHT

CARD RACK WIRE JUMPER TABLE

MCC(SFB) - 1522	IT2 - 152	SP11 - 1V3	SP6 - 1T30
1522 - 1511	IT31 - 1531	SP12 - 1V21	SP7 - 1V27
1519 - 1521	RTB(com) - 1515	SP13 - 1V25	SP8 - 1V26
1513 - 1517		SP15 - 1525	
RTB(-20V) - 1T2		SP16 - 1530	
1T2X - 1V6		SP18 - 153	
1V13 - 1V5		SP19 - 1510	
1V5 - 1T27X		SP14 - 1529	
1T27 - 1T30		SP17 - 159	
RTB(+20V) - 1T31			
1T31X - 1V16			
MCC(SR) - 1V24			
RTB(-30V) - 1V10			
1V10 - 1V19			
1V19 - 1V29			
MCC(RUN) - 1V12			
1V12 - 1V20			
N20 - 1V30			
RTB(x2) - 1V11			
1V11 - 1V14			
1V14 - 1V23			

NOTE: RECEPTACLE PINS MAY  
BE NUMBERED AS SHOWN  
IN EITHER SKETCH. (PIN  
33 CORRESPONDS TO PIN  
1X, 34 TO 2X, ETC.)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	18/4/79				TI CHURCHILL LTD				IDENT	
						TECHN.					60MP BDC 3034R SPINDLE DRIVE				DR	
						ENG.	AP				ELEMENTARY DIAGRAM				SH	
						APPD.					GO NUMBER		ELEMENTARY DIAGRAM		CONTD.	
										912N05		902M122BA		8		





A B C D E F G H J K L M N

01

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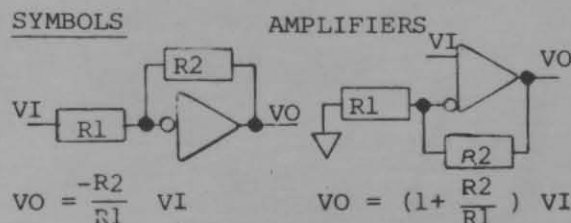
35

VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)

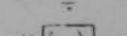
## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
IFC INTERFACE CARD  
PSC POWER SUPPLY CARD  
SCR THYRISTOR ASSEMBLY  
DGC DIAGNOSTIC CARD  
MFC MOTOR FIELD CONTROL  
  
MDR MODIFICATION RACK

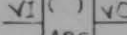
## SYMBOLS



## CASE GROUND



CASE GROUND



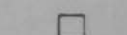
VO = SIGN ( ) X ABSOLUTE VALUE OF VI



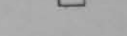
STAB ON TERMINAL



TERMINAL AT 2TB, 3TB, 4TB, RTB.



EX: 9 [2] - 2TB9; X2 [2] - RTB2



TERMINAL AT T.B.'s



POTENTIOMETER ARROWS ON THE CARD  
ELEMENTARY DIAGRAMS INDICATE THE  
WIPER DIRECTION AS THE POTENTIOMETER  
SHAFT IS ROTATED CLOCKWISE TO INCREASE  
FUNCTION.



THESE RESISTORS ARE CRIMPED IN WIRE  
HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BS, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	AA-AF, BA-BF, CA-CF
IOC-400%	X		NONE
-500%		IFC	I-IHI
-300%		IFC	I-ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH-COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT.3-7sec	X		(NONE)
2 - 60sec		MCC	332ΩFROM LT1T0COM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO	X		(NONE)
AC TACHO		MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V.			
24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT1, PT-PT1
60-160vdc		IFC	NT-NT2, PT-PT2
66-177vac		IFC	NT-NT2, PT-PT2
110-300vdc	X	IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
G134 G256			
1.8 1.7		MFC	NONE
1.3 2.8		MFC	YB-YD
2.4 5.0		MFC	YA-YB
4.0 8.0	X	MFC	YA-YB, YC-YD
7.0 13		MFC	YA-YC
13 25		MFC	YA-YC, YB-YD
L/R < .25S		MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

## SIGNAL DEFINITIONS AND LOCATIONS

\* CEMF COUNTER EMF (0316)  
\* CFB CURRENT FEEDBACK (0316)  
CMFA ABSOLUTE VALUE CEMF (0308)  
CRM CROSSOVER MODIFY (0411)  
DFP DELAYED FIRING POWER (0325)  
\* DR DRIVER REFERENCE (0333)  
\* EAO ERROR AMP OUTPUT (0333)  
EST EXTERNAL FLT STOP INPUT (0314)  
FALT FAULT (0314)  
\* FC FIELD CURRENT (NS26)  
FDR FIELD DIAGNOSTIC REFERENCE (0408)  
FEA FIELD ECONOMY ADJUST (0325)  
FF FIELD FAULT (NS28)  
IABS MOTOR CURRENT ABSOLUTE (0309)  
ILA CURRENT LIMIT ADJUST (0323)  
IMET CURRENT SIGNAL FOR METER (0310)  
\* IPU INITIAL PULSE (0320)  
\* LR LOCAL REF. FROM DGC (0333)  
\* JOG JOG SWITCH INPUT (0323)  
\* JOGR JOG REFERENCE INPUT (0331)  
\* MAC MAX/MA CONTROL SIGNAL (0320)  
MSW MODE SWITCH (0330)  
\* OSC OSCILLATOR (0317)  
\* PCR PHASE CONTROL REF. (0326)  
\* PRE DRIVE PRECONDITION (0321)  
ØSEQ PHASE SEQUENCE (0314)  
RERR REGULATOR ERROR (0327)  
RIJ INTEGRATOR SUMMING JUNCTION (0327)  
RJ REGULATOR SUMMING JUNCTION (0331)  
RRA REGULATOR RESPONSE ADJUST (0330)  
RSET RESET (0316)  
\* RTR READY TO RUN (0316)  
\* RUN RUN SWITCH INPUT (0321)  
\* SA-C PHASE SYN OUTPUT (0316)  
\* SFB SPEED FEEDBACK (0320)  
SMET SPEED SIGNAL FOR METER (0312)  
\* SR SYSTEM REFERENCE INPUT (0329)  
\* SYS SYSTEM FAULT TRIP (0313)  
\* TA OUTPUT FOR TACHO TRIP ADJUST (0320)  
TF TACHO FAULT (NS28)  
\* TFB TACHOMETER FEEDBACK (0320)  
TFR AC TACHO FREQUENCY OUTPUT (0313)  
\* TR TIMED REFERENCE (0333)  
\* VFB VOLTAGE FEEDBACK (0319)  
\* WFR WEAK FIELD REFERENCE (0320)

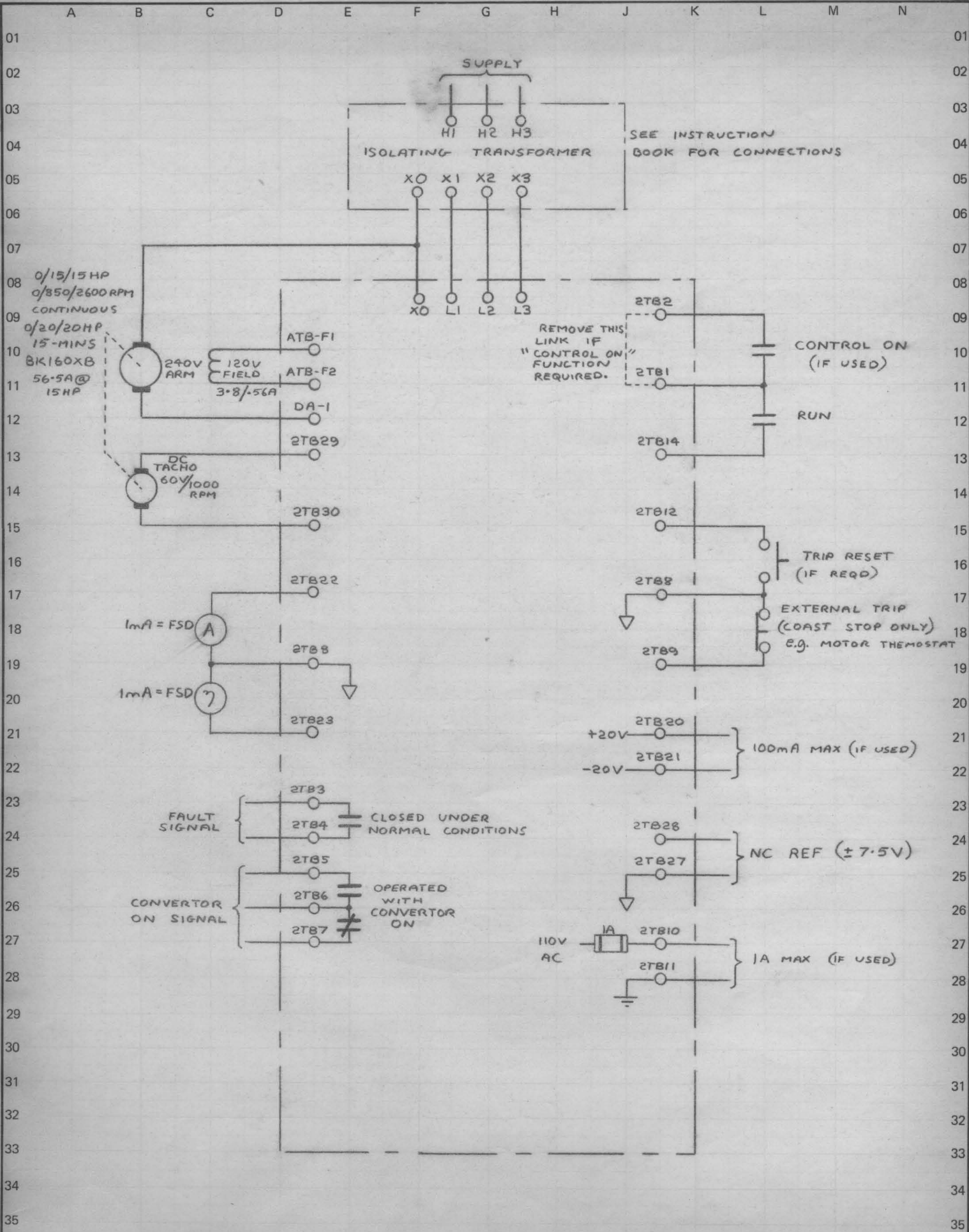
( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
NS - NEXT SHEET  
TS - THIS SHEET

NOTE: FIELD EFFECT TRANSISTOR: THE  
CLOSED/OPEN (I/O) STATE OF THESE  
SWITCHED FOR "PRECONDITION" - "RUN"  
OR JOG - "DIAGNOSTIC STATIC" -  
"DIAGNOSTIC RUN" IS SHOWN BY A  
FOUR DIGIT WORD WITH STATE SEQUENCE.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	16-1-79	15/20HP BDC3034R	IDENT	DR	SH	
						TECHN.		TI CHURCHILL.				
						ENG.	RJV					
						APPD.						
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	GO NUMBER	ELEMENTARY DIAGRAM	CONTD.		
								839N09	902M122AE	2		



A			B			C			D			E			F			G			H			J			K			L			M			N										
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	16-1-79										ALLENWEST										IDENT																			
						TECHN.											Simplex										DR																			
						ENG.	RJV										VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.										SH																			
						APPD.											GO NUMBER										ELEMENTARY DIAGRAM										CONTD.									
																839N09										902M122AE										7										
																										6																				



A B C D E F G H J K L M N

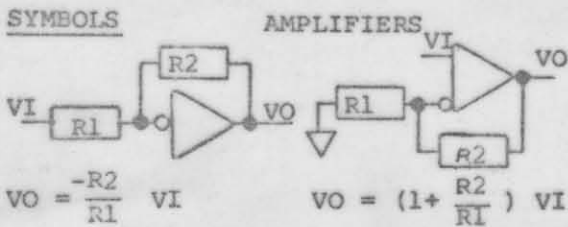
VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)

## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL

MDR MODIFICATION RACK

## SYMBOLS



CASE GROUND

VO = SIGN ( ) X ABSOLUTE VALUE OF VI  
 STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 [2] - 2TB9; X2 [R] - RTBX2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

THESE RESISTORS ARE CRIMPED IN WIRE  
 HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC AA-AS, BA-BS, CA-CS	
		MFC ZA-ZB (IF USED)	
50HZ	X	MCC AA-AP, BA-BF, CA-CF	
I/O-400V			NONE
-500V		IFC I-IHI	
-300V	X	IFC I-ILO	
SR5 - 9v	X		(NONE)
9 - 20v		MCC SRH-COM	
JOG 10v			(NONE)
20v		MCC JH - COM	
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC 332 FROM LT1 TO COM	
VREG		IFC NT-CMF, CC-COM	
DC TACHO	X		(NONE)
AC TACHO		MCC AT1-AT2	
TACHO FILT		IFC TC-TC	
TACHO V.			
24-64vdc		IFC NT-NT1, PT-PT1	
27-71vac		IFC NT-NT1, PT-PT1	
60-160vdc	X	IFC NT-NT2, PT-PT2	
66-177vac		IFC NT-NT2, PT-PT2	
110-300vdc		IFC NT-NT3, PT-PT3	
120-300vac		IFC NT-NT3, PT-PT3	
G134 G256			
1.3 1.7		MFC NONE	
2.4 2.8		MFC YB-YD	
5.0 5.0		MFC YB-YB	
8.0 8.0		MFC YB-YB, YC-YD	
13 13	X	MFC YB-YC	
13 13		MFC YB-YC, YB-YD	
L/R < .25S	X	MFC QA-QB	
INH RUN		DGC D1-D2 (IF USED)	
50% FIELD ECON.	X	MCC 33K FROM FEA TO +20V	

## SIGNAL DEFINITIONS AND LOCATIONS

\* CEMF COUNTER EMF (3 16)  
 \* CFB CURRENT FEEDBACK (3 16)  
 CMFA ABSOLUTE VALUE CEMF (3 08)  
 CRM CROSSOVER MODIFY (3 11)  
 DFP DELAYED FIRING POWER (3 25)  
 \* DR DRIVER REFERENCE (3 33)  
 \* EAO ERROR AMP OUTPUT (3 33)  
 EST EXTERNAL FLT STOP INPUT (3 14)  
 FALT FAULT (3 14)  
 \* FC FIELD CURRENT (NS26)  
 FDR FIELD DIAGNOSTIC REFERENCE (4 08)  
 FEA FIELD ECONOMY ADJUST (3 25)  
 FF FIELD FAULT (3 28)  
 IABS MOTOR CURRENT ABSOLUTE (3 09)  
 ILA CURRENT LIMIT ADJUST (3 23)  
 IMET CURRENT SIGNAL FOR METER (3 10)  
 \* IPU INITIAL PULSE (3 20)  
 \* LR LOCAL REF. FROM DGC (3 33)  
 \* JOG JOG SWITCH INPUT (3 23)  
 \* JOGR JOG REFERENCE INPUT (3 31)  
 \* MAC MAX/MA CONTROL SIGNAL (3 20)  
 MSW MODE SWITCH (3 30)  
 \* OSC OSCILLATOR (3 17)  
 \* PCR PHASE CONTROL REF. (3 26)  
 \* PRE DRIVE PRECONDITION (3 21)  
 ØSEQ PHASE SEQUENCE (3 14)  
 RERR REGULATOR ERROR (3 27)  
 RIJ INTEGRATOR SUMMING JUNCTION (3 27)  
 RJ REGULATOR SUMMING JUNCTION (3 31)  
 RRA REGULATOR RESPONSE ADJUST (3 30)  
 RSET RESET (3 16)  
 \* RTR READY TO RUN (3 16)  
 \* RUN RUN SWITCH INPUT (3 21)  
 \* SA-C PHASE SYN OUTPUT (3 16)  
 \* SFB SPEED FEEDBACK (3 20)  
 SMET SPEED SIGNAL FOR METER (3 12)  
 \* SR SYSTEM REFERENCE INPUT (3 29)  
 \* SYS SYSTEM FAULT TRIP (3 13)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST ( 20)  
 TF TACHO FAULT (NS28)  
 \* TFB TACHOMETER FEEDBACK (3 20)  
 TFR AC TACHO FREQUENCY OUTPUT (3 13)  
 \* TR TIMED REFERENCE (3 33)  
 \* VFB VOLTAGE FEEDBACK (3 19)  
 \* WFR WEAK FIELD REFERENCE (3 20)

(\* - TEST POINT ON DOOR FRONT)

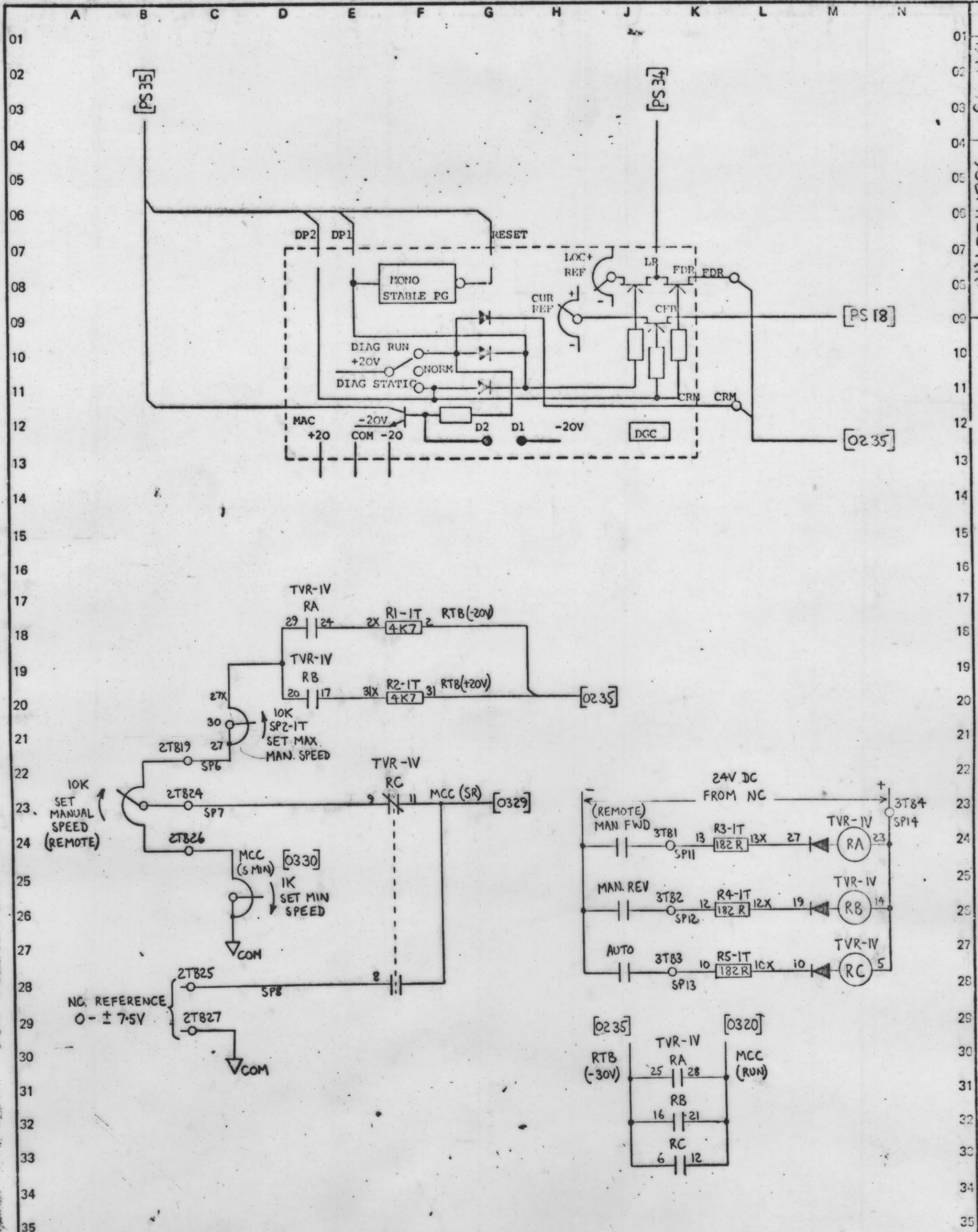
## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

HENCE [PS - 12] DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
 DENOTED BY SHEET NUMBER AND LINE, E.G. [1A16] SIGNIFIES LOCATION ON SHEET  
 1A, LINE 16 ETC.

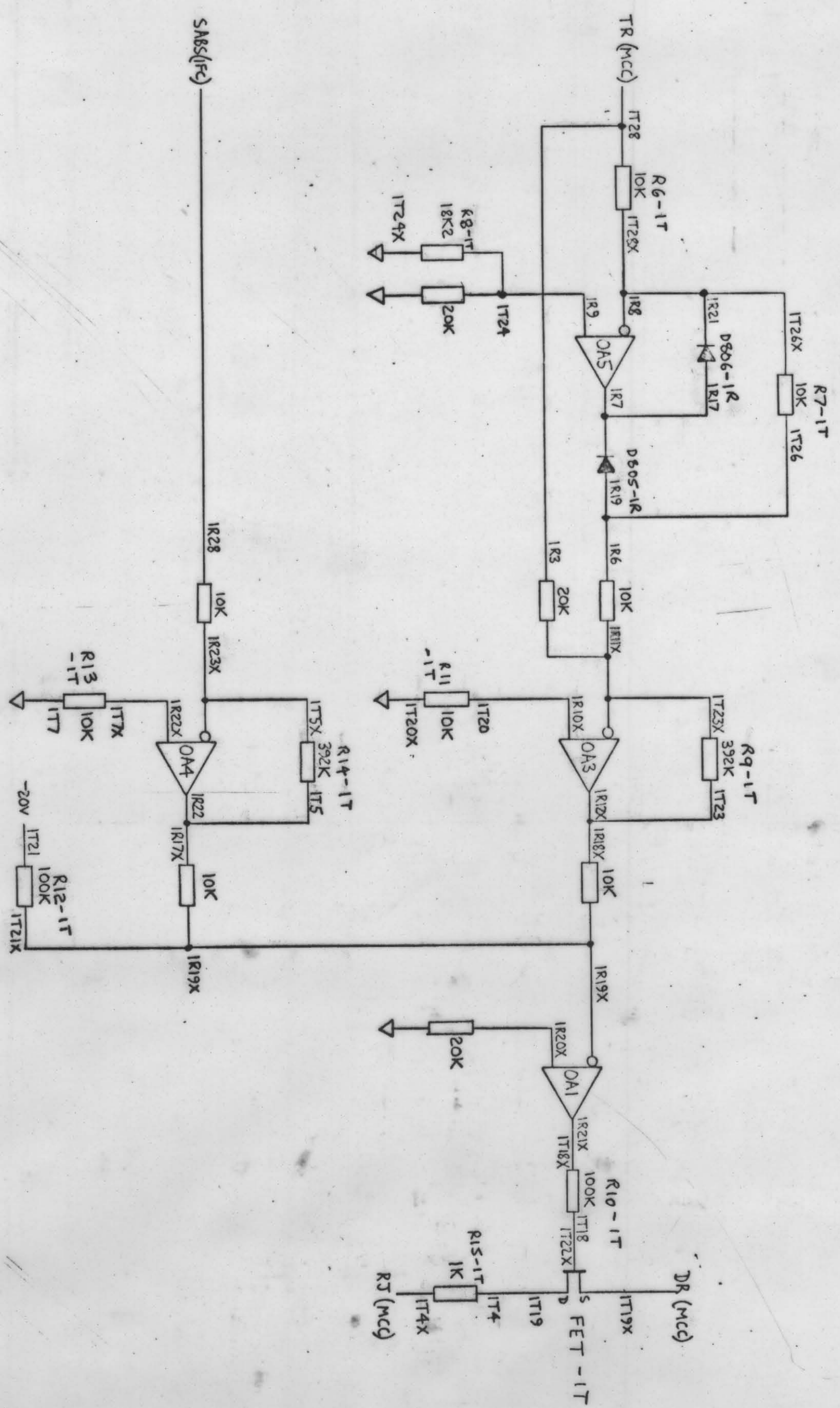
NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG" - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	3034R 60 H.P.		IDENT
						18.11.80	(T.I. CHURCHILL)		
							(WITH EXTERNAL FIELD SWITCHING)		
							GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
							016NO1	902M122RR	2



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	IDENT	DR	SH
						18.11.80	BDC 3034R 60HP		
							(TI CHURCHILL)		
							GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
								902M122RR	5
									4





TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	18-11-80	<b>Allenwest</b> <b>Simplex</b> VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	BDC 3034R 60 H.P.		IDENT DR SH - 5
									(TI CHURCHILL)		
									GO NUMBER 016N01	ELEMENTARY DIAGRAM 902M122RR	

Disclaimer Statement The trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name.

	A	B	C	D	E	F	G	H	J	K	L	M	N	
01	A	B	C	D	E	F	G	H	J	K	L	M	N	01
02														02
03														03
04														04
05														05
06														06
07														07
08														08
09														09
10														10
11														11

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN RECEPTACLE AS SEEN IN RACK CLOSED POSITION.


#### SYMBOLS:

● TEST POST      ⊕ POT ADJUSTMENT      ✕ INDICATING LIGHT

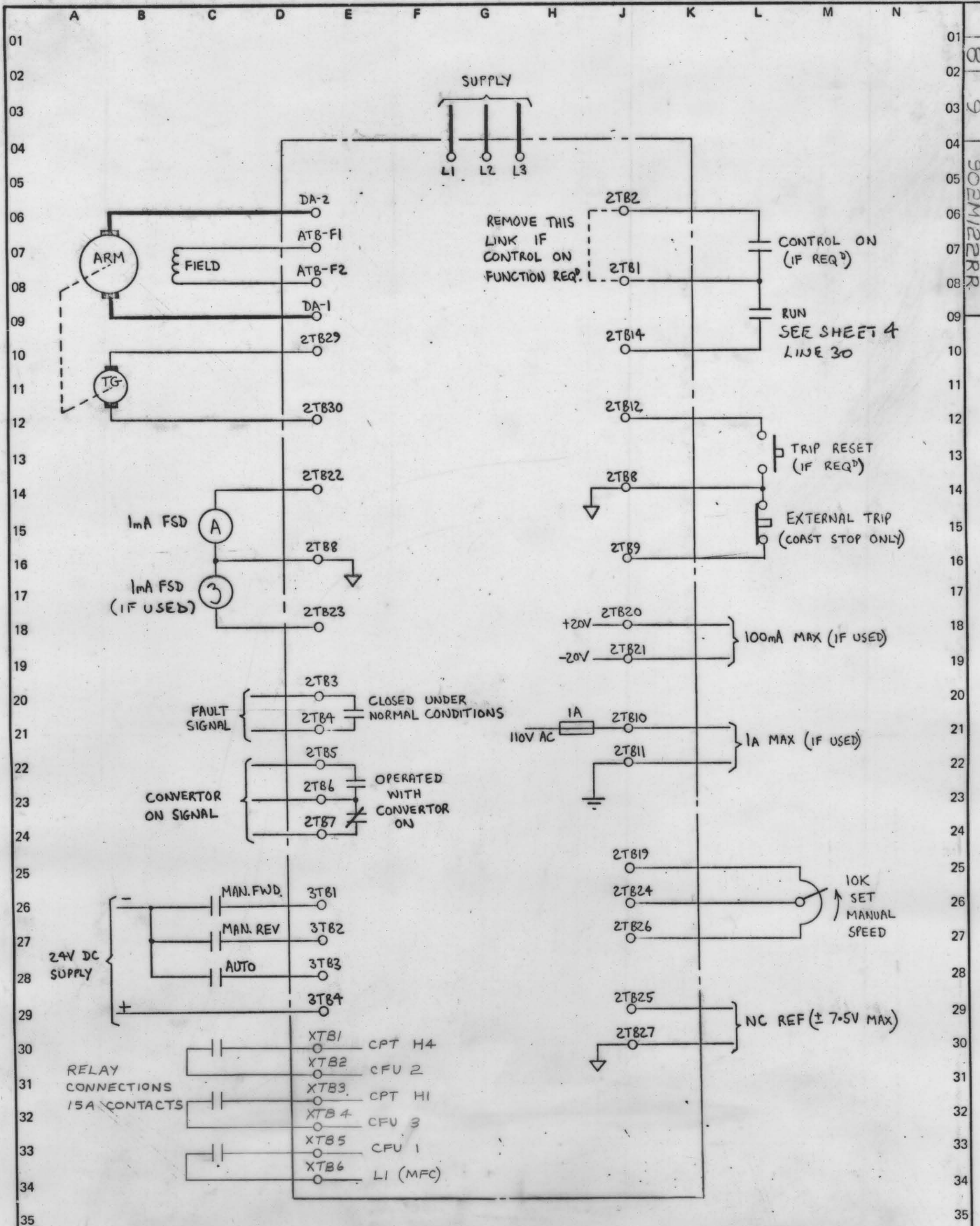
32 - 64	32 - 32X
31 - 63	31 - 31X
30 - 62	30 - 30X
29 - 61	29 - 29X
28 - 60	28 - 28X
27 - 59	27 - 27X
26 - 58	26 - 26X
25 - 57	25 - 25X
24 - 56	24 - 24X
23 - 55	23 - 23X
22 - 54	22 - 22X
21 - 53	21 - 21X
20 - 52	20 - 20X
19 - 51	19 - 19X
18 - 50	18 - 18X
17 - 49	17 - 17X
16 - 48	16 - 16X
15 - 47	15 - 15X
14 - 46	14 - 14X
13 - 45	13 - 13X
12 - 44	12 - 12X
11 - 43	11 - 11X
10 - 42	10 - 10X
9 - 41	9 - 9X
8 - 40	8 - 8X
7 - 39	7 - 7X
6 - 38	6 - 6X
5 - 37	5 - 5X
4 - 36	4 - 4X
3 - 35	3 - 3X
2 - 34	2 - 2X
1 - 33	1 - 1X

CARD RACK WIRE JUMPER TABLE			
	IT31 - IR31	SP11 - IT13	SP6 - IT30
	IT2 - IR2	SP12 - IT12	SP7 - IV9
	IT24X - IR15	SP13 - IT10	SP8 - IV8
RTB(-20V) - IT2	TR(MCC) - IR3	SAB(IFC) - IR28	IT13X - IV27
IT2X - IV24	IR3 - IT28	IR23X - IT5X	IT12X - IV19
IV20 - IV29	IT28X - IT26X	IT5 - IR22	IT10X - IV10
IV29 - IT27X	IT26X - IR21	IR22 - IR17X	
IT27 - IT30	IR21 - IR8	IR22X - IT7X	
RTB(+20) - IT31	IR7 - IR17	IT24 - IR9	
IT31X - IV17	IT26 - IR19		
MCC(SR) - IV11	IR19 - IR6	DR(MCC) - IT19X	
RTB(-30) - IV6	IR11X - IT23X	IT19 - IT4	
IV6 - IV16	IR10X - IT20	IT4X - RJ(MCC)	
IV16 - IV25	IT23 - IR12X		
MCC(RUN) - IV12	IR12X - IR18X	IT15 - RTB(COM)	
IV12 - IV21	IR19X - IT21X	IT15 - IR15	
IV21 - IV28	IR21X - IT18X	IT24X - IT7	
SP14 - IV5	IT18 - IT22X		
IV5 - IV14		IT21 - IT2	
IV14 - IV23		IT20X - IR15	

NOTE: RECEPTACLE PINS MAY BE NUMBERED AS SHOWN IN EITHER SKETCH. (PIN 33 CORRESPONDS TO PIN 1X, 34 TO 2X, ETC.)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	18.11.80		3034R 60 H.P. (T.I. CHURCHILL)		IDENT DR SH 6					
							TECHN. <i>STD</i>		  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		GO NUMBER 016N01		ELEMENTARY DIAGRAM 902M122RR		CONTD. 7	
							ENG. <i>WJS</i>									
							APPD.									





DR SH CONTD. 902M122RR

IDENT

DR SH 8

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE			BDC 3064R		IDENT	
						18.11.80			CUSTOMER CONNECTIONS			
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		(TI CHURCHILL)		DR SH 8	
							GO NUMBER 016N01		ELEMENTARY DIAGRAM 902M122RR		CONTD. 9	

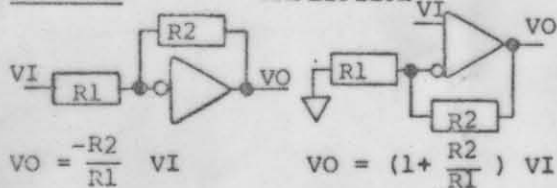
Disclaimer Statement The trade mark is the trade mark of General Electric Company of U.S.A., which is not connected with the English Company of a similar name.

VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DAI(+)

## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL  
 MFE MOTOR FIELD EXCITER  
 MDR MODIFICATION RACK  
 ACC AUXILIARY CONTROL CARD

## SYMBOLS



CASE GROUND



VO = SIGN ( ) X ABSOLUTE VALUE OF VI

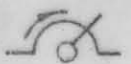
STAB ON TERMINAL



TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 [2] - 2TB9; X2 [R] - RTBx2



TERMINAL AT T.B.'s



POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.



THESE RESISTORS ARE CRIMPED IN WIRE  
 HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	HZA - PHA
IOC-400%	X		(NONE)
-500%		IFC	I - IHI
-300%		IFC	I - ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH - COM
JOGR 10v			(NONE)
20v		MCC	JH - COM
LT.3-7sec	X		(NONE)
2 - 60sec			332Ω FROM LTI TO COM
VREG			NT-CEMF CC-COM
DC TACHO			(NONE)
AC TACHO	X	MCC	AT1 - AT2
TACHO FILT		IFC	TC - TC
TACHO V.		IFC	NT-NT1 PT - PT1
24-64vdc		IFC	NT-NT1 PT - PT1
27-71vac		IFC	NT-NT2 PT - PT2
60-160vdc		IFC	NT-NT2 PT - PT2
66-177vac	X	IFC	NT-NT2 PT - PT2
110-300vdc		IFC	NT-NT3 PT - PT3
120-300vac		IFC	NT-NT3 PT - PT3
G134 G256		IFC	MFC OR MFE
1.7		ME	NONE
1.3		ME	YB - YD
2.4		ME	YA - YB
4.0		ME	YA-YB, YC-YD
7.0		ME	YA - YC
13		ME	YA-YC, YB-YD
L/R < .25S		MFC	QA - QB
INH RUN		DGC	D1-D2 (IF USED)
INH DRV CL		MCC	DC1 - COM
FUSELESS		ACC	CFY - CFX
DRIV.CL.MOD.	X	MCC	DCX - DCY
50% FIELD ECON.	X	MCC	33K2 FROM FEA TO +20V

## SIGNAL DEFINITIONS AND LOCATIONS

\* CEMF COUNTER EMF (0316)  
 \* CFB CURRENT FEEDBACK (0316)  
 CMFA ABSOLUTE VALUE CEMF (0308)  
 CRM CROSSOVER MODIFY (0411)  
 DFP DELAYED FIRING POWER (0325)  
 \* DR DRIVER REFERENCE (0333)  
 \* EAO ERROR AMP OUTPUT (0333)  
 EST EXTERNAL FLT STOP INPUT (0314)  
 FALT FAULT (0314)  
 \* FC FIELD CURRENT (NS26)  
 FDR FIELD DIAGNOSTIC REFERENCE (0408)  
 FEA FIELD ECONOMY ADJUST (0325)  
 FF FIELD FAULT (NS33)  
 IABS MOTOR CURRENT ABSOLUTE (0309)  
 ILA CURRENT LIMIT ADJUST (0323)  
 IMET CURRENT SIGNAL FOR METER (0310)  
 \* IPU INITIAL PULSE (0320)  
 \* LR LOCAL REF. FROM DGC (0333)  
 \* JOG JOG SWITCH INPUT (0323)  
 \* JOGR JOG REFERENCE INPUT (0331)  
 \* MAC MAX/MA CONTROL SIGNAL (0320)  
 MSW MODE SWITCH (0330)  
 \* OSC OSCILLATOR (0320)  
 \* PCR PHASE CONTROL REF. (0326)  
 \* PRE DRIVE PRECONDITION (0321)  
 ØSEQ PHASE SEQUENCE (0314)  
 RERR REGULATOR ERROR (0327)  
 RIJ INTEGRATOR SUMMING JUNCTION (0327)  
 RJ REGULATOR SUMMING JUNCTION (0331)  
 RRA REGULATOR RESPONSE ADJUST (0330)  
 RSET RESET (0316)  
 \* RTR READY TO RUN (0316)  
 \* RUN RUN SWITCH INPUT (0321)  
 \* SA-C PHASE SYN OUTPUT (0316)  
 \* SFB SPEED FEEDBACK (0320)  
 SMET SPEED SIGNAL FOR METER (0312)  
 \* SR SYSTEM REFERENCE INPUT (0329)  
 \* SYS SYSTEM FAULT TRIP (0313)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST (0320)  
 TF TACHO FAULT (NS33)  
 \* TFB TACHOMETER FEEDBACK (0320)  
 TFR AC TACHO FREQUENCY OUTPUT (0313)  
 \* TR TIMED REFERENCE (0333)  
 \* VFB VOLTAGE FEEDBACK (0319)  
 \* WFR WEAK FIELD REFERENCE (NS29)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET 1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE CLOSED/OPEN (I/O) STATE OF THESE SWITCHED FOR "PRECONDITION" - "RUN" OR JOG" - "DIAGNOSTIC STATIC" - "DIAGNOSTIC RUN" IS SHOWN BY A FOUR DIGIT WORD WITH STATE SEQUENCE.

## NOTE 1:

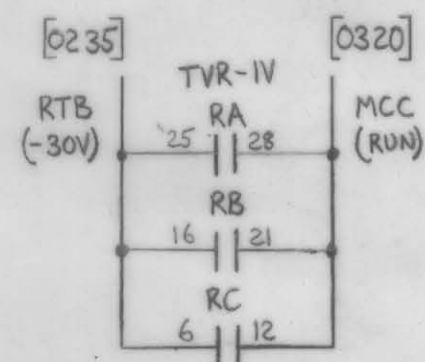
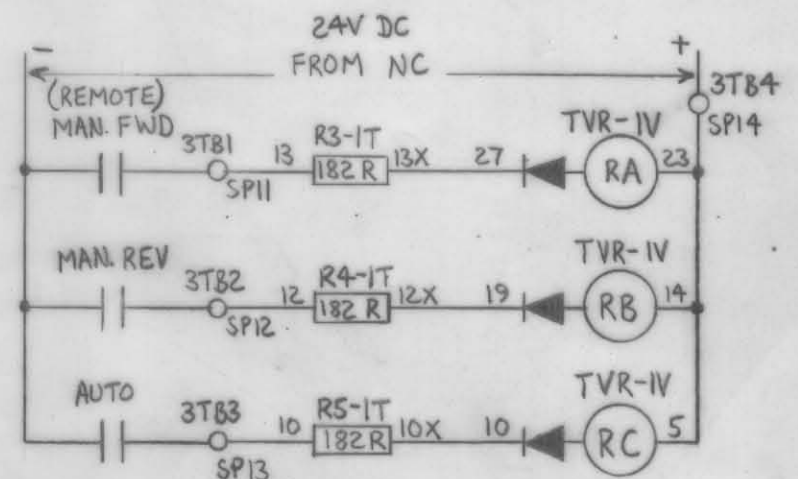
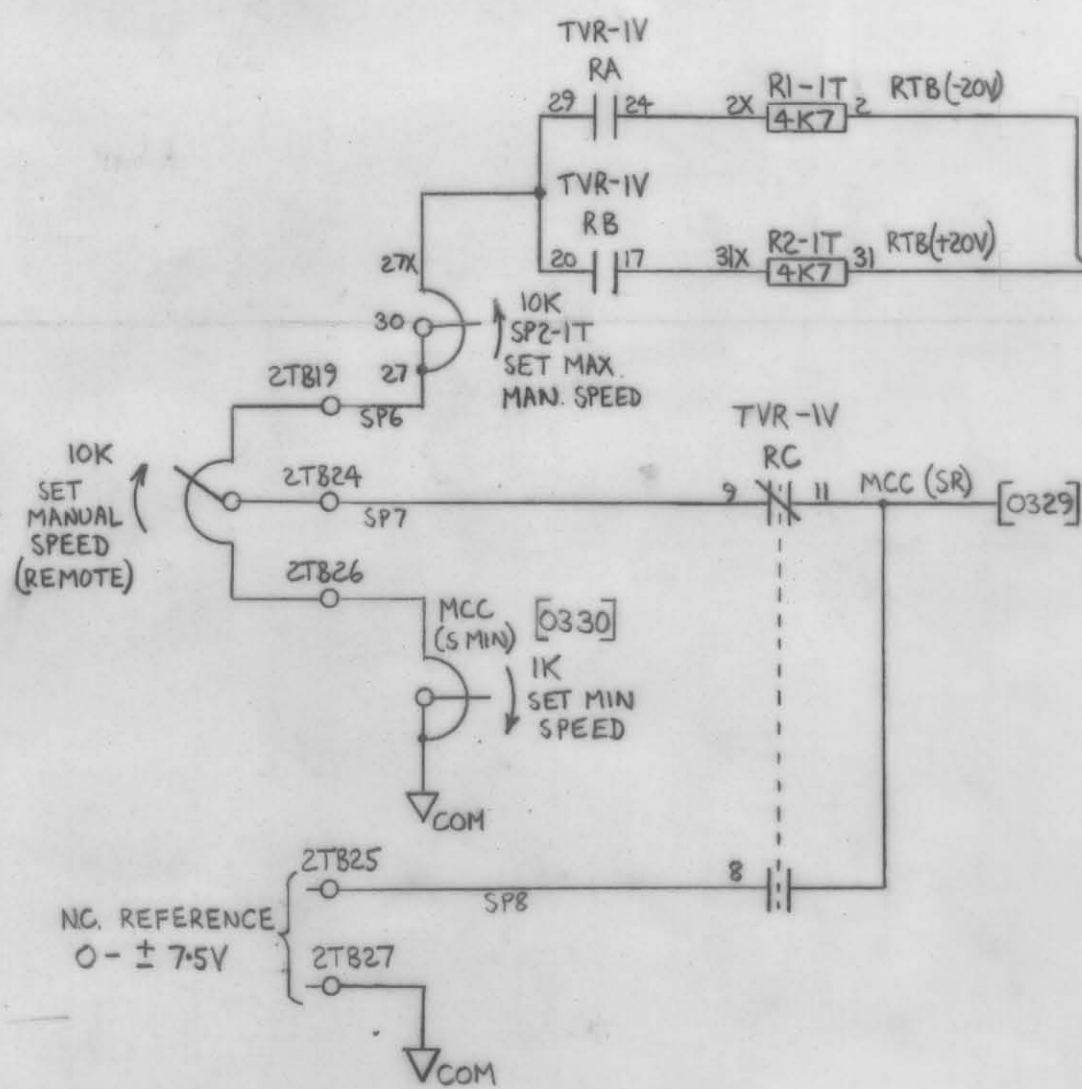
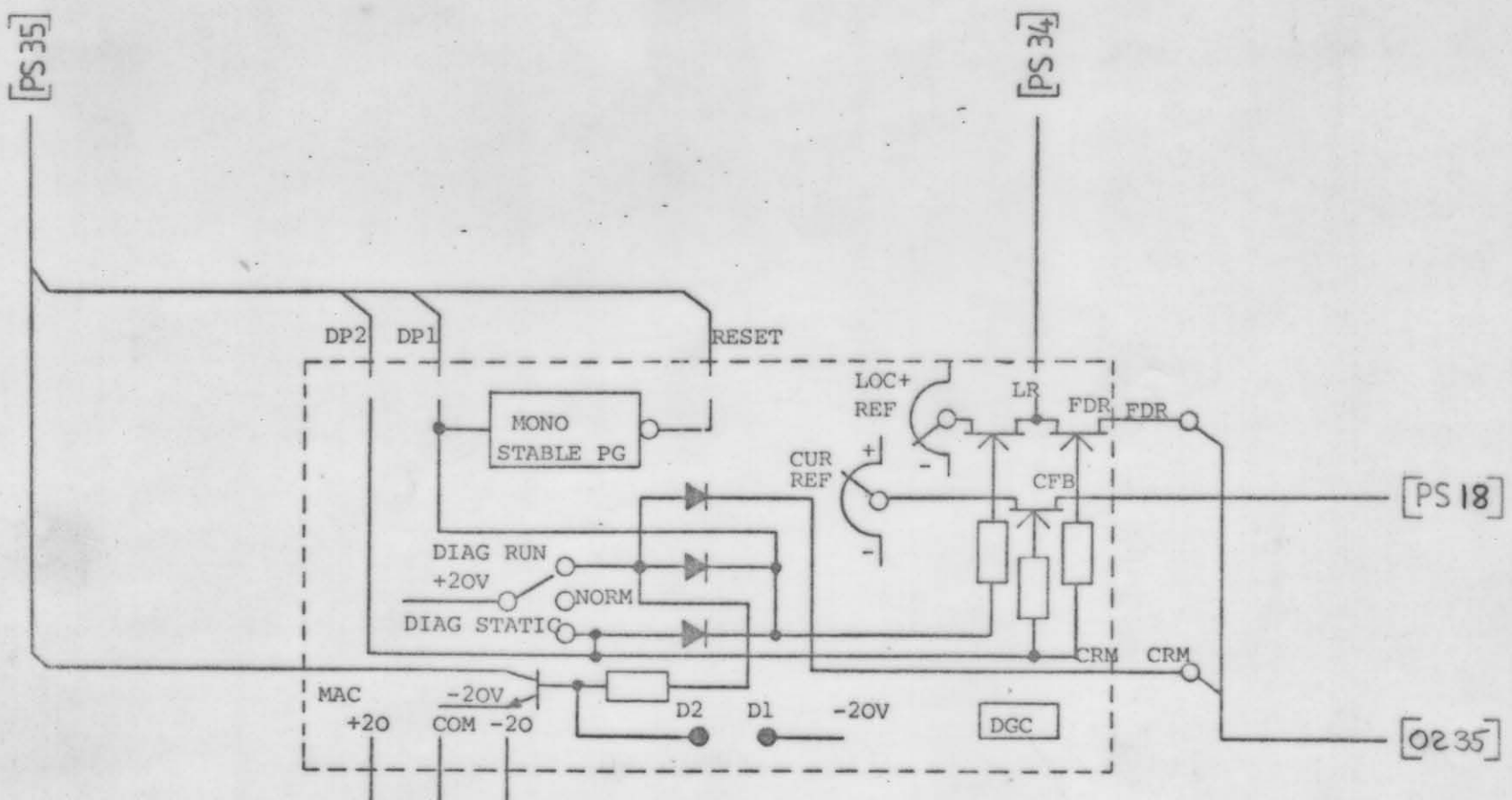
CONTROL TRANSFORMER PRIMARY [0215]  
 TO BE CONNECTED FOR SUPPLY VOLTAGE.

## NOTE 2:

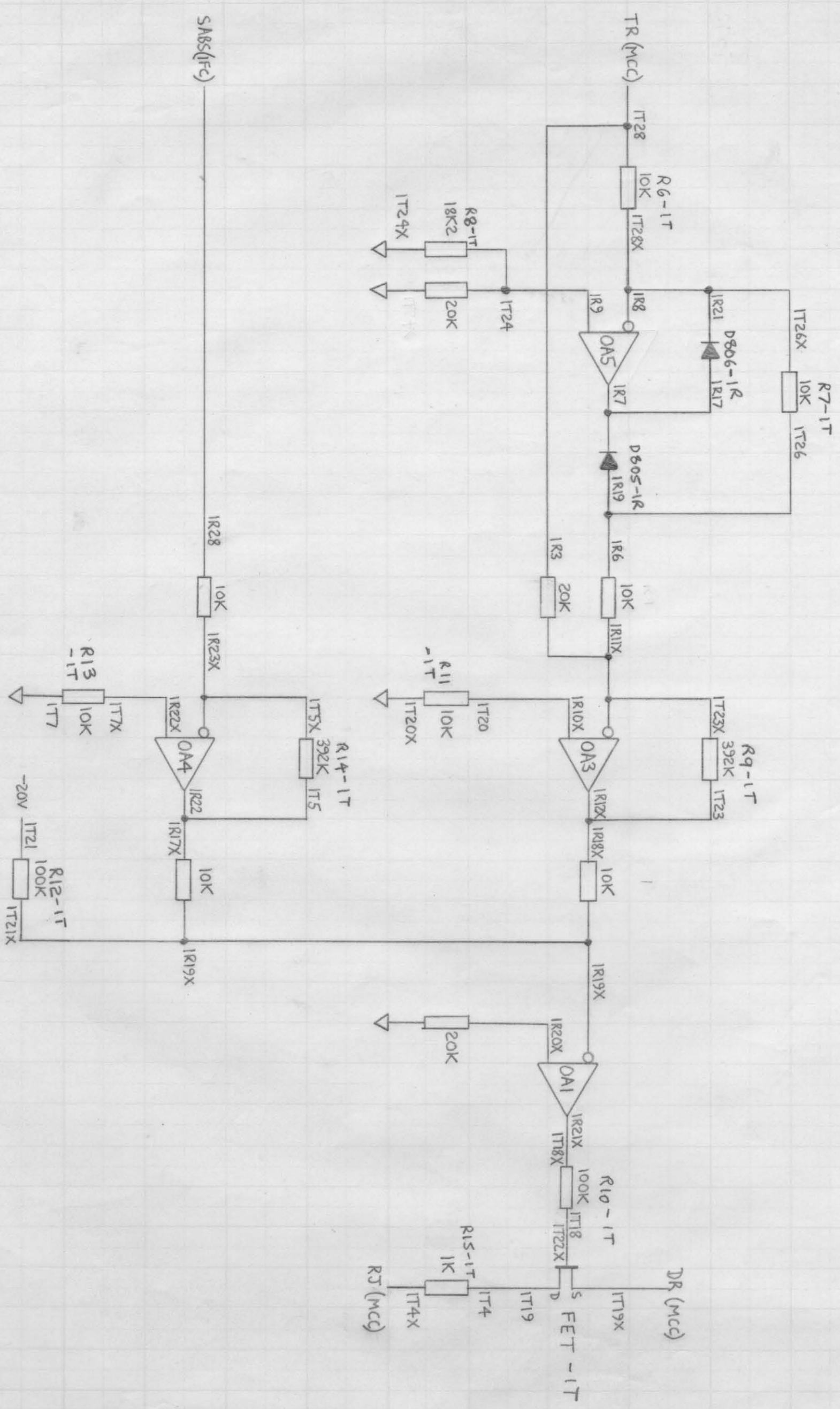
BEFORE MAKING ADJUSTMENTS IN DIAGNOSTIC STATIC OR DIAGNOSTIC RUN REMOVE THE 33K2 RESISTOR STABBED ON BETWEEN 'FEA' AND '+20V' ON THE MAIN CONTROL CARD. REPLACE WHEN COMPLETE.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	13/8/80			BDC 3064R 20/30 HP			IDENT.	
						TECHN.	C.W.H.			TI-CHURCHILL			OR SH	
						ENG.	NGM							
						APPD.								
							Simples			VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.				
							GO NUMBER			ELEMENTARY DIAGRAM			CONTD.	
							023N10			902M122FF			02	
													- 01	





TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	BDC 3064R 20/30HP		IDENT	
						18-8-80	TI CHURCHILL		DR SH	
						TECHN. C.W.H.	GO NUMBER 023N10		04	
						ENG. NGM	ELEMENTARY DIAGRAM 902M122FF		CONTD. 05	
						APPD. <i>[Signature]</i>	VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			





	A	B	C	D	E	F	G	H	J	K	L	M	N	
01	A	B	C	D	E	F	G	H	J	K	L	M	N	
02											A	CC	TVR	
03											193W 256 AAG02	909W 317 AAG39	193W 278 AAG03	
04														
05														
06														
07														
08														
09														
10											AMPLI- FIER	SELECT COMP.	20V RELAY	
11														

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN  
RECEPTACLE AS SEEN  
IN RACK CLOSED  
POSITION.

#### SYMBOLS:

● TEST POST



POT ADJUSTMENT



INDICATING LIGHT

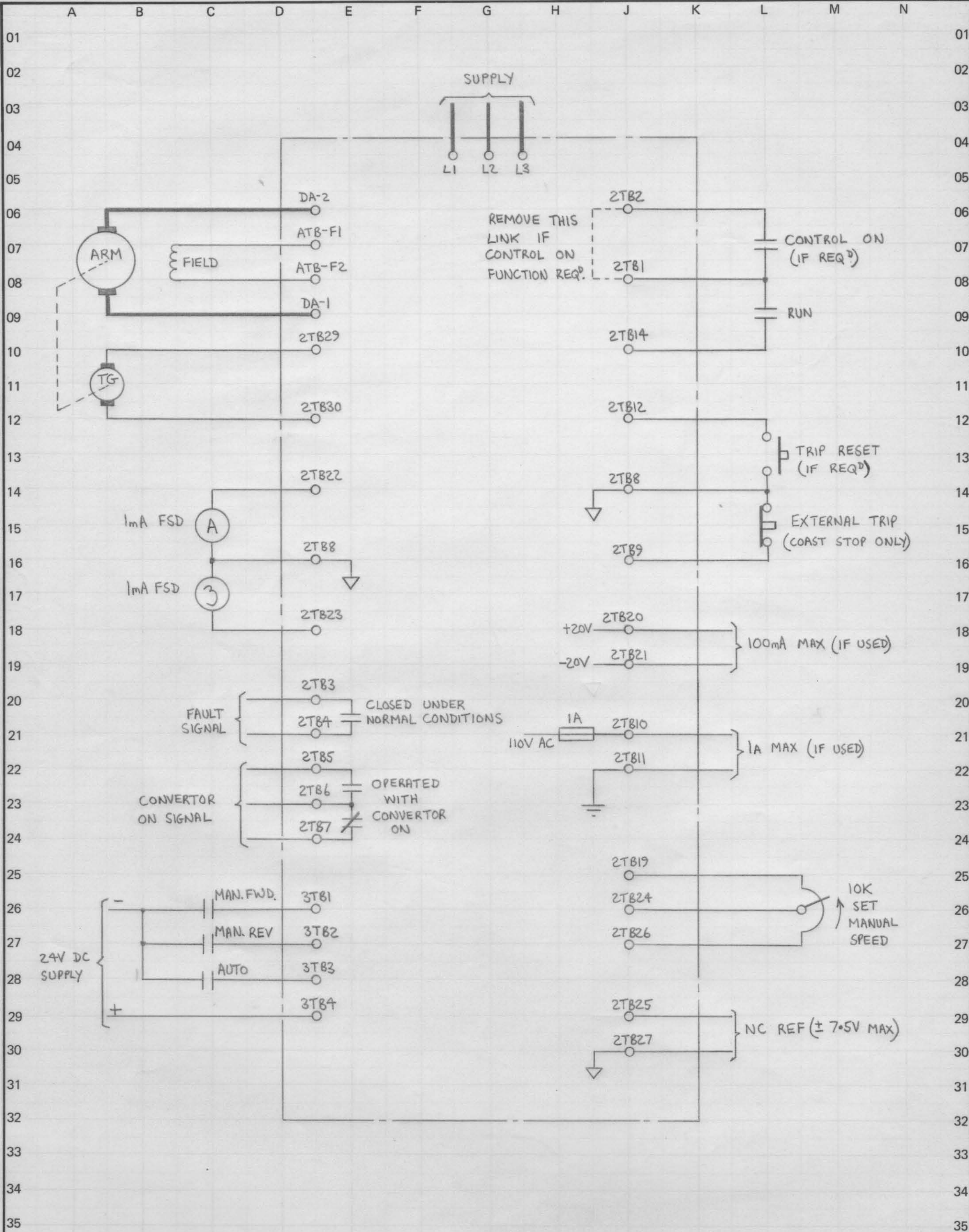
32	-	64	32	-	32X
31	-	63	31	-	31X
30	-	62	30	-	30X
29	-	61	29	-	29X
28	-	60	28	-	28X
27	-	59	27	-	27X
26	-	58	26	-	26X
25	-	57	25	-	25X
24	-	56	24	-	24X
23	-	55	23	-	23X
22	-	54	22	-	22X
21	-	53	21	-	21X
20	-	52	20	-	20X
19	-	51	19	-	19X
18	-	50	18	-	18X
17	-	49	17	-	17X
16	-	48	16	-	16X
15	-	47	15	-	15X
14	-	46	14	-	14X
13	-	45	13	-	13X
12	-	44	12	-	12X
11	-	43	11	-	11X
10	-	42	10	-	10X
9	-	41	9	-	9X
8	-	40	8	-	8X
7	-	39	7	-	7X
6	-	38	6	-	6X
5	-	37	5	-	5X
4	-	36	4	-	4X
3	-	35	3	-	3X
2	-	34	2	-	2X
1	-	33	1	-	1X

NOTE: RECEPTACLE PINS MAY  
BE NUMBERED AS SHOWN  
IN EITHER SKETCH. (PIN  
33 CORRESPONDS TO PIN  
1X, 34 TO 2X, ETC.)

CARD RACK WIRE JUMPER TABLE

RTB(-20V) - IR02	IT2X - IV24	IV15 - IT24X	SP6 - IT27
RTB(COM) - IR01	IT31X - IV17	IT24X - IT20X	SP7 - IV09
RTB(+20V) - IR31	IV20 - IV29	IT20X - IT7	SP8 - IV08
IR02 - IT02	IV29 - IT27X	IR11X - IT23X	SP11 - IT13
IR01 - IT01	IT27 - IT30	IR10X - IT20	SP12 - IT12
IT01 - IV01	IV11 - MCC(SR)	IT23 - IR12X	SP13 - IT10
IR01 - IR15	IV12 - IV21	IR12X - IR18X	SP14 - IV23
IR15 - IT15	IV21 - IV28	SABS(FC) - IR28	IV23 - IV14
IT15 - IV15	IV28 - MCC(RUN)	IR23X - IT5X	IV14 - IV05
IR31 - IT31	IT13X - IV27	IR22X - IT7X	
RTB(-30V) - IV25	IT12X - IV19	IT5 - IR22	
IV25 - IV16	IT10X - IV10	IR22 - IR17X	
IV16 - IV06	TR(MCC) - IT28	IT21X - IR19X	
IT02 - IT21	IT28 - IR3	IR21X - IT18X	
	IT28X - IR8	IT18 - IT22X	
	IR8 - IR21	DR(MCC) - IT19X	
	IR21 - IT26X	IT19 - IT4	
	IR7 - IR17	RJ(MCC) - IT4X	
	IT26 - IR19		
	IR19 - IR6		
	IR9 - IT24		

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	20-8-80			BDC 3064R 20/30HP			IDENT			
						TECHN.	C.W.H.			TI CHURCHILL			DR SH			
						ENG.	NGM									
						APPD.	<i>NGM</i>									
							  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.			GO NUMBER			ELEMENTARY DIAGRAM		CONTD.	
										023N10			902M122FF		07	
															- 06	



TECHN.			ENG.			APPD.			DATE			BDC 3064R 20/30 HP			CUSTOMER CONNECTIONS			IDENT		
									21-8-80			TI CHURCHILL.			DR SH					
									C.W.H.			GO NUMBER			902M122FF					
									N.G.M.			ELEMENTARY DIAGRAM			CONTD.					
									APPD.			023N10			09					
									<div style="display: flex; align-items: center;"> </div> <p style="font-size: 8px;">VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.</p>									<div style="display: flex; align-items: center;"> </div> <p style="font-size: 8px;">- 08</p>		



A B C D E F G H J K L M N

DR  
SH  
CONTD.  
02  
902M122DD  
ELEMENTARY DIAGRAM

VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)

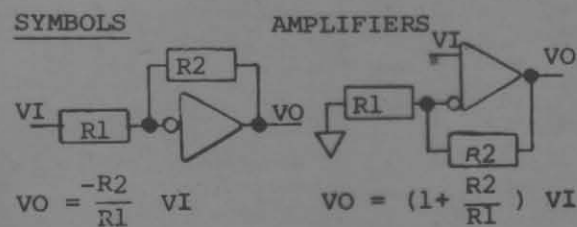
SIGNAL DEFINITIONS AND LOCATIONS

## HARDWARE ABBREVIATIONS

MCC MAIN CONTROL CARD  
 IFC INTERFACE CARD  
 PSC POWER SUPPLY CARD  
 SCR THYRISTOR ASSEMBLY  
 DGC DIAGNOSTIC CARD  
 MFC MOTOR FIELD CONTROL.

MDR MODIFICATION RACK

## SYMBOLS



CASE GROUND

VO = SIGN ( ) X ABSOLUTE VALUE OF VI  
 STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 [2] - 2TB9; X2 [R] - RTBX2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

▲ THESE RESISTORS ARE CRIMPED IN WIRE  
 HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ		MCC	AA-AS, BA-BS, CA-CS
		MFC	ZA-ZB (IF USED)
50HZ	X	MCC	AA-AF, BA-BF, CA-CF
IOC-400%	X		NONE
-500%		IFC	I-IHI
-300%		IFC	I-ILO
SR5 - 9v	X		(NONE)
9 - 20v		MCC	SRH-COM
JOG 10v			(NONE)
20V		MCC	JH - COM
LT. 3-7sec.	X		(NONE)
2 - 60sec		MCC	332 FROM LT1 TO COM
VREG		IFC	NT-CEMF, CC-COM
DC TACHO			(NONE)
AC TACHO	X	MCC	AT1-AT2
TACHO FILT		IFC	TC-TC
TACHO V.		IFC	NT-NT1, PT-PT1
24-64vdc		IFC	NT-NT1, PT-PT1
27-71vac		IFC	NT-NT2, PT-PT2
60-160vdc	X	IFC	NT-NT2, PT-PT2
66-177vac		IFC	NT-NT3, PT-PT3
110-300vdc		IFC	NT-NT3, PT-PT3
120-300vac		IFC	NT-NT3, PT-PT3
G134 G256		MFC	NONE
1.3 1.7		MFC	YB-YD
2.4 2.8		MFC	YA-YB
4.0 8.0		MFC	YA-YB, YC-YD
7.0 13	X	MFC	YA-YC
13 25		MFC	YA-YC, YB-YD
L/R < .25S		MFC	QA-QB
INH RUN		DGC	D1-D2 (IF USED)

\* CEMF COUNTER EMF (0316)  
 \* CFB CURRENT FEEDBACK (0316)  
 CMFA ABSOLUTE VALUE CEMF (0308)  
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 ILA CURRENT LIMIT ADJUST (0323)  
 IMET CURRENT SIGNAL FOR METER (0310)  
 \* IPU INITIAL PULSE (0320)  
 \* LR LOCAL REF. FROM DGC (0333)  
 \* JOG JOG SWITCH INPUT (0323)  
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 \* MAC MAX/MA CONTROL SIGNAL (0320)  
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 \* OSC OSCILLATOR (0317)  
 \* PCR PHASE CONTROL REF. (0326)  
 \* PRE DRIVE PRECONDITION (0321)  
 ØSEQ PHASE SEQUENCE (0314)  
 RERR REGULATOR ERROR (0327)  
 RIJ INTEGRATOR SUMMING JUNCTION (0327)  
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 RSET RESET (0316)  
 \* RTR READY TO RUN (0316)  
 \* RUN RUN SWITCH INPUT (0321)  
 \* SA-C PHASE SYN OUTPUT (0316)  
 \* SFB SPEED FEEDBACK (0320)  
 SMET SPEED SIGNAL FOR METER (0312)  
 \* SR SYSTEM REFERENCE INPUT (0329)  
 \* SYS SYSTEM FAULT TRIP (0313)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST (0320)  
 TF TACHO FAULT (NS28)  
 \* TFB TACHOMETER FEEDBACK (0320)  
 TFR AC TACHO FREQUENCY OUTPUT (0313)  
 \* TR TIMED REFERENCE (0333)  
 \* VFB VOLTAGE FEEDBACK (0319)  
 \* WFR WEAK FIELD REFERENCE (0320)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET




NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	30HP BDC 3034R	IDENT
			NGM			17/1/80	TI-CHURCHILL	DR SH
			SEE SHEET 08					
			2					
			30/6/80					
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.							GO NUMBER	ELEMENTARY DIAGRAM
							001N09	902M122DD
							CONTD.	02

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

INDICATING LIGHT

[illegible]

A	B	C	D	E	F	G	H	J	K	L	M	N	
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	 <b>Simplex</b>  VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.	30HP BDC3034R			<div style="text-align: center;">IDENT</div> 		
					TECHN.								
					ENG.							DR	SH
					APPD.				GO NUMBER	ELEMENTARY DIAGRAM	CONTD.		
			2	NGM	17/1/80			001NO9	902M122DD	06		05	



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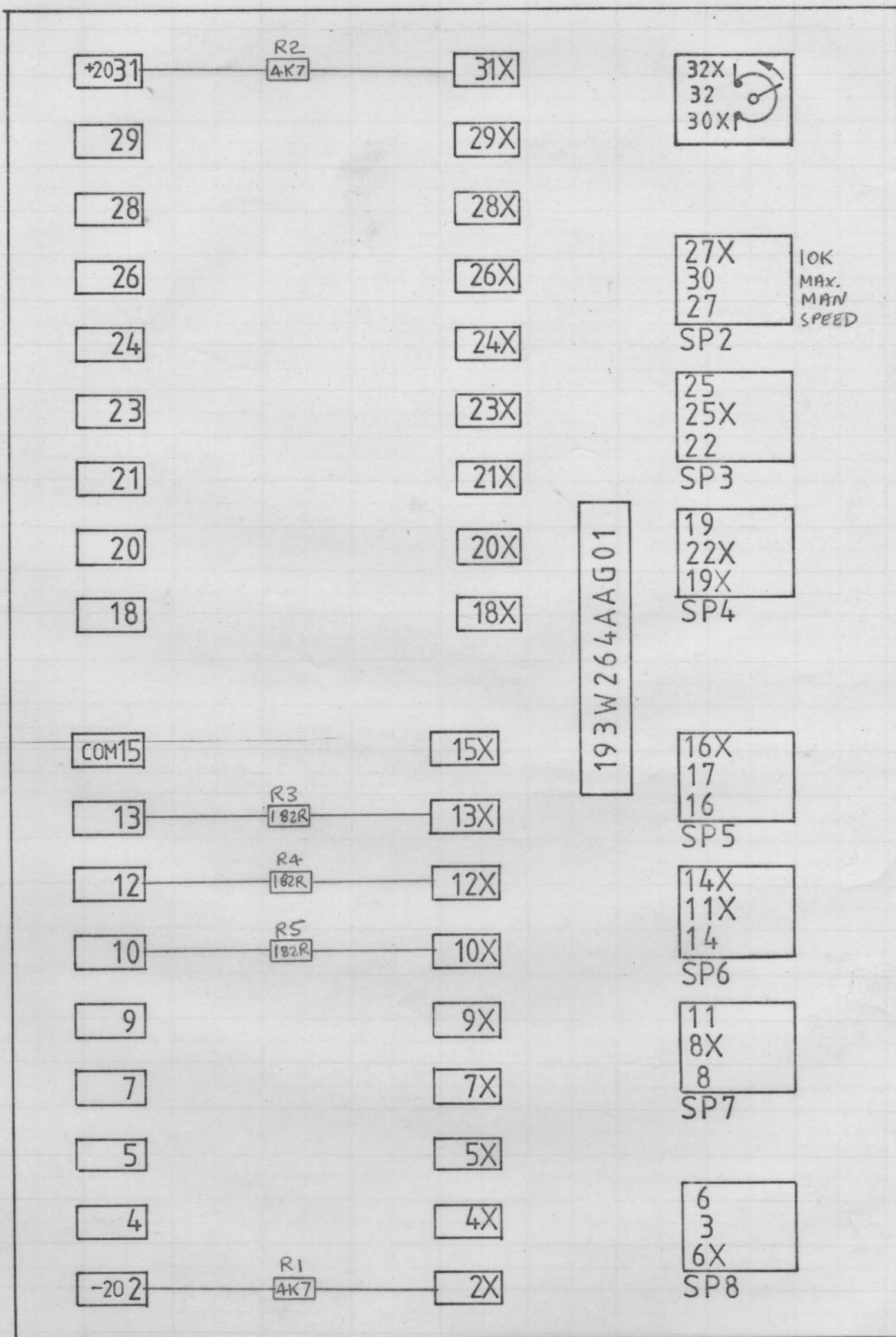
32

33

34

35

A B C D E F G H J K L M N



CARD PART NO. 909W317AAG34 FIT IN RACK POSITION 1U

A B C D E F G H J K L M N

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	30/6/80				30HP BDC 3034R				IDENT	
				NGM			TECHN.				TI-CHURCHILL				DR SH	
							ENG. NGM				GO NUMBER 001N09				06	
							APPD. 30/6/80				ELEMENTARY DIAGRAM 902M122DD				CONTD. 07	
							Allenwest									
							Simplex									
							VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.									





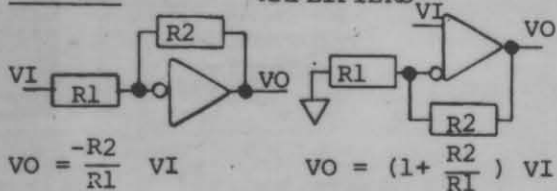
A B C D E F G H J K L M N

VOLTAGE POLARITIES SHOWN ARE FOR MOTORING DA1(+)

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 IFC INTERFACE CARD  
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CASE GROUND

$VO = \text{SIGN} () \times \text{ABSOLUTE VALUE OF } VI$   
 STAB ON TERMINAL

TERMINAL AT 2TB, 3TB, 4TB, RTB.  
 EX: 9 - 2TB9; X2 - RTB2

TERMINAL AT T.B.'s

POTENTIOMETER ARROWS ON THE CARD  
 ELEMENTARY DIAGRAMS INDICATE THE  
 WIPER DIRECTION AS THE POTENTIOMETER  
 SHAFT IS ROTATED CLOCKWISE TO INCREASE  
 FUNCTION.

THESE RESISTORS ARE CRIMPED IN WIRE  
 HARNESS.

FUNCTION	USE	LOC	JUMPERS
60HZ	<input checked="" type="checkbox"/>	MFC	ZA-ZB (IF USED)
50HZ	<input checked="" type="checkbox"/>	MCC	HZA - PHA
IOC-400%	<input checked="" type="checkbox"/>		(NONE)
-500%	<input checked="" type="checkbox"/>	IFC	I - IHI
-300%	<input checked="" type="checkbox"/>	IFC	I - ILO
SR5 - 9v	<input checked="" type="checkbox"/>		(NONE)
9 - 20v	<input checked="" type="checkbox"/>	MCC	SRH - COM
JOGR 10v	<input checked="" type="checkbox"/>		(NONE)
20v	<input checked="" type="checkbox"/>	MCC	JH - COM
LT.3-7sec.	<input checked="" type="checkbox"/>		(NONE)
2 - 60sec	<input checked="" type="checkbox"/>		332Ω FROM LTI TO COM
VREG	<input checked="" type="checkbox"/>		NT-CEMF CC-COM
DC TACHO	<input checked="" type="checkbox"/>		(NONE)
AC TACHO	<input checked="" type="checkbox"/>	MCC	AT1 - AT2
TACHO FILT	<input checked="" type="checkbox"/>	IFC	TC - TC
TACHO V.	<input checked="" type="checkbox"/>	IFC	NT-NT1 PT - PT1
24-64vdc	<input checked="" type="checkbox"/>	IFC	NT-NT1 PT - PT1
27-71vac	<input checked="" type="checkbox"/>	IFC	NT-NT2 PT - PT2
60-160vdc	<input checked="" type="checkbox"/>	IFC	NT-NT2 PT - PT2
66-177vac	<input checked="" type="checkbox"/>	IFC	NT-NT3 PT - PT3
110-300vdc	<input checked="" type="checkbox"/>	IFC	NT-NT3 PT - PT3
120-300vac	<input checked="" type="checkbox"/>	IFC	NT-NT3 PT - PT3
G134 G256	<input checked="" type="checkbox"/>	IFC	MFC OR MFE
1.8T 1.7	<input checked="" type="checkbox"/>	ME	NONE
1.3 2.8	<input checked="" type="checkbox"/>	ME	YB - YD
2.4 5.0	<input checked="" type="checkbox"/>	ME	YA - YB
4.0 8.0	<input checked="" type="checkbox"/>	ME	YA-YB, YC-YD
7.0 13	<input checked="" type="checkbox"/>	ME	YA - YC
13 25	<input checked="" type="checkbox"/>	ME	YA-YC, YB-YD
L/R < .25S	<input checked="" type="checkbox"/>	MFC	QA - QB
INH RUN	<input checked="" type="checkbox"/>	DGC	D1-D2 (IF USED)
INH DRV CL	<input checked="" type="checkbox"/>	MCC	DC1 - COM
FUSELESS	<input checked="" type="checkbox"/>	ACC	CFY - CFY
200% DCL	<input checked="" type="checkbox"/>	MCC	DCX - DCY
50% F.ECON	<input checked="" type="checkbox"/>	MCC	33K2 FEA-+20

## SIGNAL DEFINITIONS AND LOCATIONS

\* CEMF COUNTER EMF ( 16)  
 \* CFB CURRENT FEEDBACK ( 16)  
 CMFA ABSOLUTE VALUE CEMF ( 08)  
 CRM CROSSOVER MODIFY ( 11)  
 DFP DELAYED FIRING POWER ( 25)  
 \* DR DRIVER REFERENCE ( 33)  
 \* EAO ERROR AMP OUTPUT ( 33)  
 EST EXTERNAL FLT STOP INPUT ( 14)  
 FALT FAULT ( 14)  
 \* FC FIELD CURRENT (NS26)  
 FDR FIELD DIAGNOSTIC REFERENCE ( 08)  
 FEA FIELD ECONOMY ADJUST ( 25)  
 FF FIELD FAULT ( 28)  
 IABS MOTOR CURRENT ABSOLUTE ( 09)  
 ILA CURRENT LIMIT ADJUST ( 23)  
 IMET CURRENT SIGNAL FOR METER ( 10)  
 \* IPU INITIAL PULSE ( 20)  
 \* LR LOCAL REF. FROM DGC ( 33)  
 \* JOG JOG SWITCH INPUT ( 23)  
 \* JOGR JOG REFERENCE INPUT ( 31)  
 \* MAC MAX/MA CONTROL SIGNAL ( 20)  
 MSW MODE SWITCH ( 30)  
 \* OSC OSCILLATOR ( 17)  
 \* PCR PHASE CONTROL REF. ( 26)  
 \* PRE DRIVE PRECONDITION ( 21)  
 ØSEQ PHASE SEQUENCE ( 14)  
 RERR REGULATOR ERROR ( 27)  
 RIJ INTEGRATOR SUMMING JUNCTION ( 27)  
 RJ REGULATOR SUMMING JUNCTION ( 31)  
 RRA REGULATOR RESPONSE ADJUST ( 30)  
 RSET RESET ( 16)  
 \* RTR READY TO RUN ( 16)  
 \* RUN RUN SWITCH INPUT ( 21)  
 \* SA-C PHASE SYN OUTPUT ( 16)  
 \* SFB SPEED FEEDBACK ( 20)  
 SMET SPEED SIGNAL FOR METER ( 12)  
 \* SR SYSTEM REFERENCE INPUT ( 29)  
 \* SYS SYSTEM FAULT TRIP ( 13)  
 \* TA OUTPUT FOR TACHO TRIP ADJUST ( 20)  
 TF TACHO FAULT (NS28)  
 \* TFB TACHOMETER FEEDBACK ( 20)  
 TFR AC TACHO FREQUENCY OUTPUT ( 13)  
 \* TR TIMED REFERENCE ( 33)  
 \* VFB VOLTAGE FEEDBACK ( 19)  
 \* WFR WEAK FIELD REFERENCE ( 20)

( \* - TEST POINT ON DOOR FRONT)

## MAPPING SYSTEM

(NS/PS/TS) PS - PAST SHEET  
 NS - NEXT SHEET  
 TS - THIS SHEET

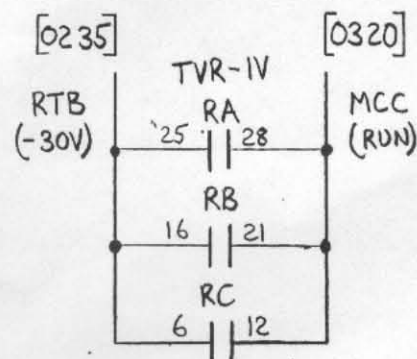
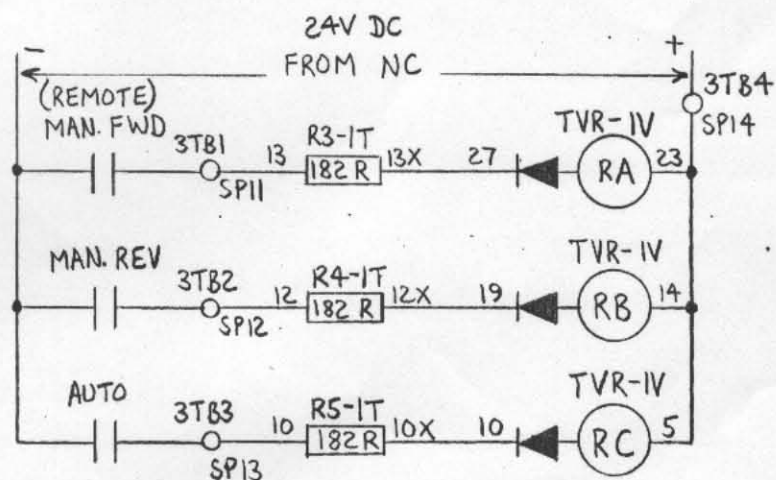
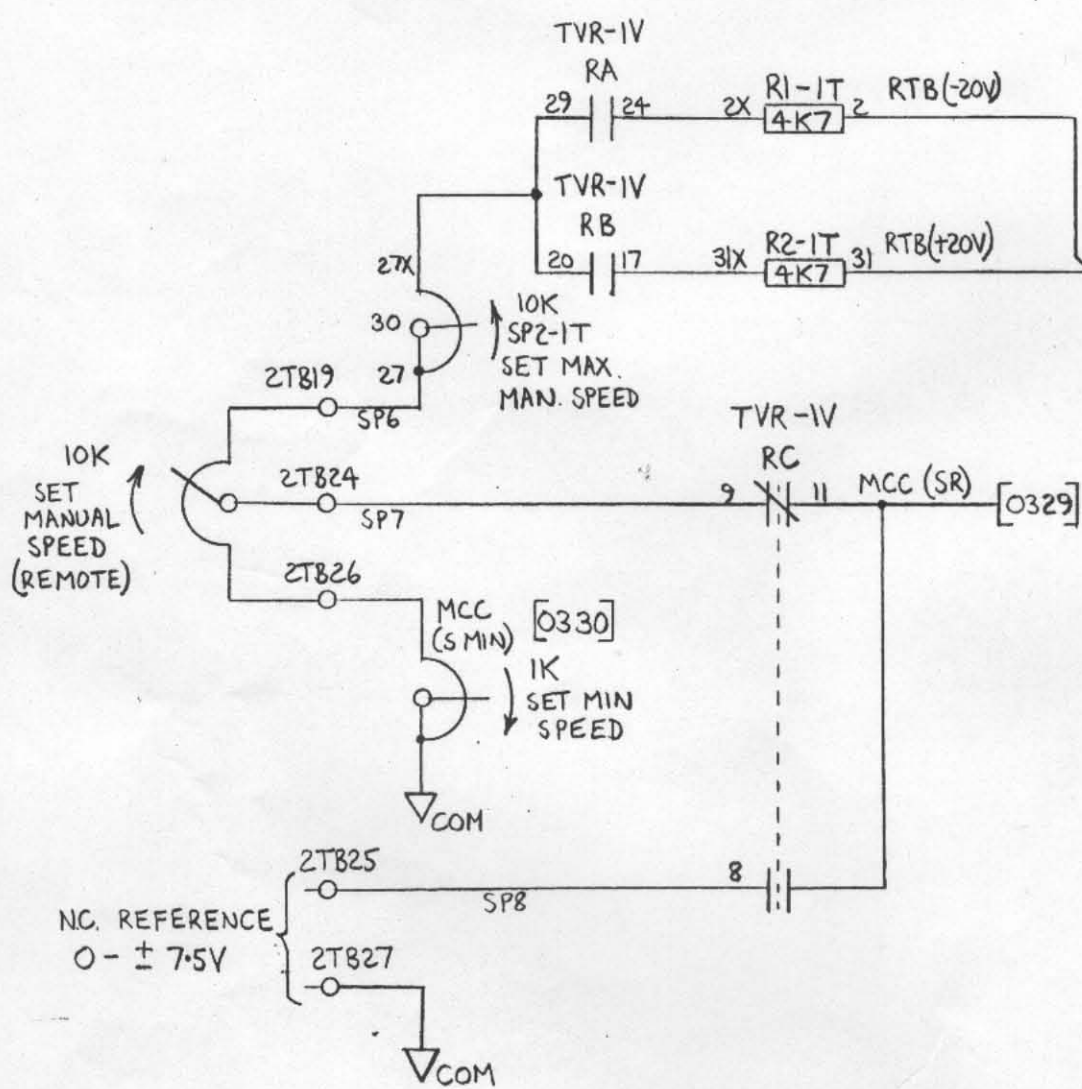
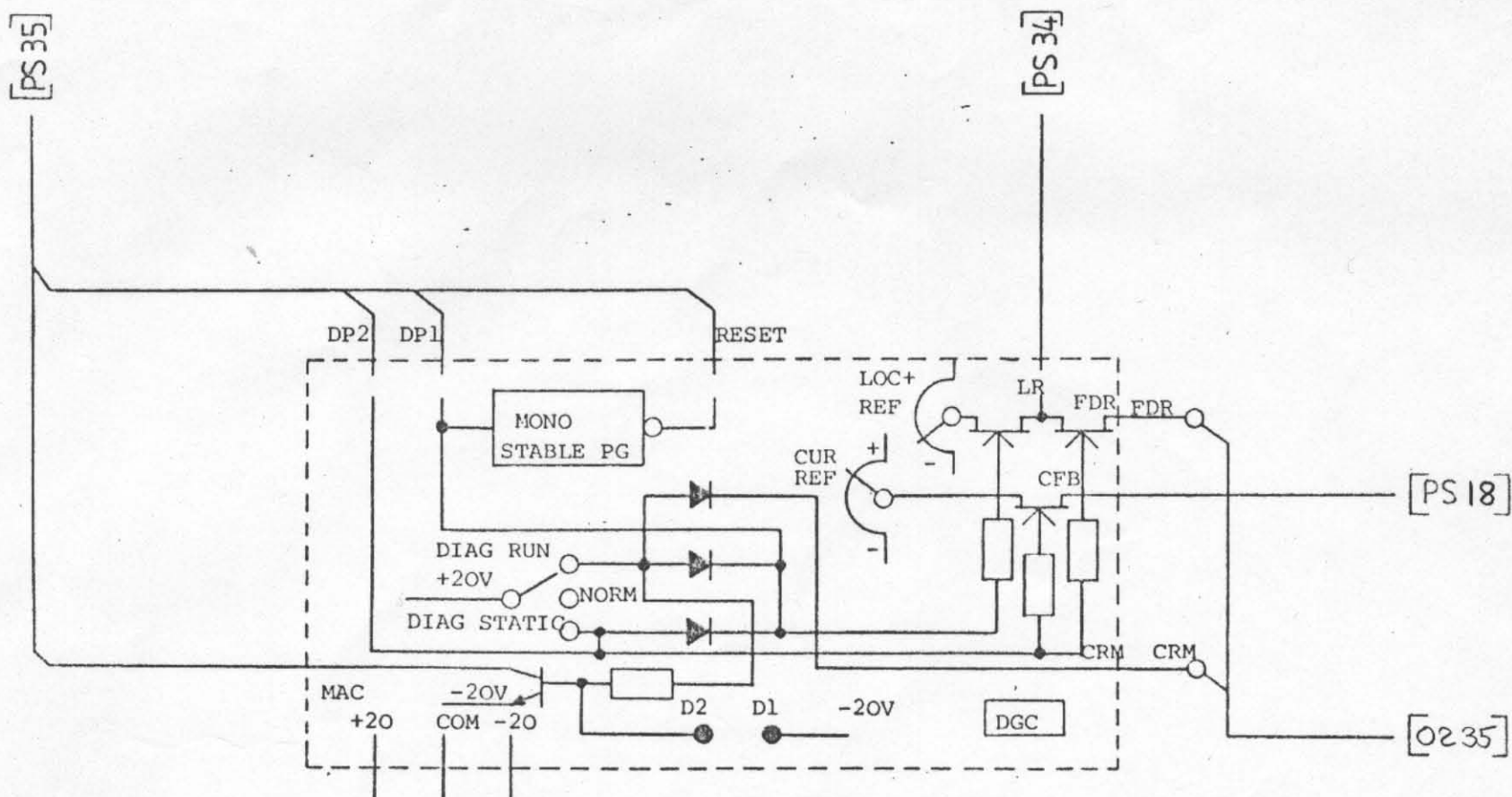
HENCE (PS - 12) DENOTES LOCATION ON PAST SHEET LINE 12. OTHER LOCATIONS ARE  
 DENOTED BY SHEET NUMBER AND LINE? E.G. (1A16) SIGNIFIES LOCATION ON SHEET  
 1A, LINE 16 ETC.

NOTE: FIELD EFFECT TRANSISTOR: THE  
 CLOSED/OPEN (I/O) STATE OF THESE  
 SWITCHED FOR "PRECONDITION" - "RUN"  
 OR JOG" - "DIAGNOSTIC STATIC" -  
 "DIAGNOSTIC RUN" IS SHOWN BY A  
 FOUR DIGIT WORD WITH STATE SEQUENCE.

NOTE. CONTROL TRANSFORMER PRIMARY [0215]  
 TO BE CONNECTED FOR CORRECT SUPPLY VOLTAGE

REMOVE 33K RESISTOR WHEN IN DIAGNOSTIC  
 (RUN OR STATIC MODE) REPLACE WHEN  
 DIAGNOSTIC CHECKS FINISHED

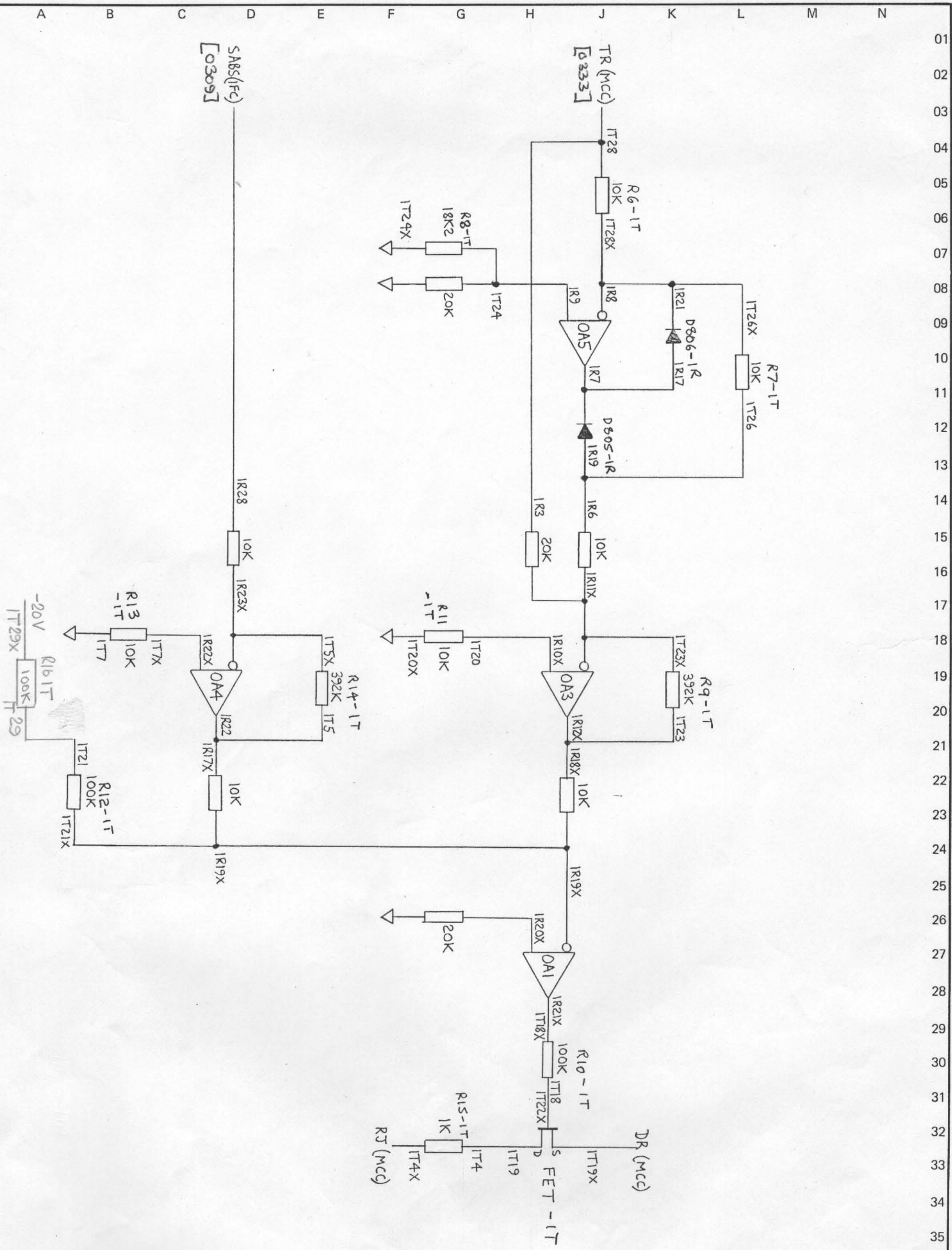
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	24 7 84		BDC 3064R 40/60 HP		IDENT		
						TECHN.			11 CHURCHILL		DR		
						ENG.					SH		
						APPD.					01		
						VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.		GO NUMBER 427N01		ELEMENTARY DIAGRAM 902M128BE		CONTD. 02	



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	TECHN.	ENG.	APPD.	GO NUMBER	ELEMENTARY DIAGRAM	CONTO.	IDENT
						24.7.84				427N01	902M128BE	05	04

BDC 3064R 40/60 HP  
 TI CHURCHILL  
 VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.







	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	U	V	
01																	A		CC		TVR
02																	193W 256 AAG02 OR AAG01		909W 317 ABG37		193W 278 AAG03
03																					
04																					
05																					
06																					
07																					
08																					
09																					
10																	AMPLI- FIER		SELECT COMP.		20V RELAY
11																					

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATALOGUE NUMBER INDICATES ORIGINAL DESIGN. SUBSEQUENT DESIGNS WITH THE SAME BASIC NUMBERS AND GROUP NUMBER WITH THE SECOND LETTER CHANGED, SUCH AS: AB, AC, AD, ETC., ARE DIRECTLY INTERCHANGEABLE AND MAY BE SUPPLIED IN PLACE OF THE 'AA' CARDS.

THE PRINTED CIRCUIT CARD SHOULD ALWAYS BE REMOVED WITH THE CARD EXTRACTOR WHICH IS ATTACHED ON TOP OF THE CARD RACK. SOME CARDS CONTAIN PARTS WHICH WILL BE THERMALLY HOT AFTER BEING IN OPERATION. CARE SHOULD BE EXERCISED IN HANDLING ALL CARDS AFTER REMOVAL UNTIL THESE PARTS HAVE COOLED. DO NOT REMOVE OR INSERT CARDS WITH POWER APPLIED.

FRONT VIEW OF 64 PIN RECEPTACLE AS SEEN IN RACK CLOSED POSITION.

#### SYMBOLS:

● TEST POST      ⊘ POT ADJUSTMENT      ✕ INDICATING LIGHT

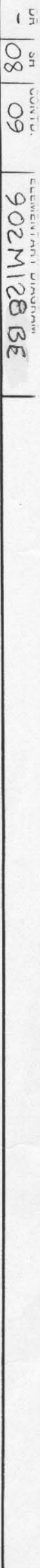
CARD RACK WIRE JUMPER TABLE


RTB(-20V) - IR02	IT2X - IV24	IV15 - IT24X	SP6 - IT27
RTB(COM) - IR15	IT31X - IV17	IT24X - IT20X	SP7 - IV09
RTB(+20V) - IR31	IV20 - IV29	IT20X - IT7	SP8 - IV08
IR02 - IT02	IV29 - IT27X	IR11X - IT23X	SP11 - IT13
	IT27 - IT30	IR10X - IT20	SP12 - IT12
	IV11 - MCC(SR)	IT23 - IR12X	SP13 - IT10
	IV12 - IV21	IR12X - IR18X	SP14 - IV23
IR15 - IT15	IV21 - IV28	SABS(IFC) - IR28	IV23 - IV14
IT15 - IV15	IV28 - MCC(RON)	IR23X - IT5X	IV14 - IV05
IR31 - IT31	IT13X - IV27	IR22X - IT7X	
RTB(-30V) - IV25	IT12X - IV19	IT5 - IR22	
IV25 - IV16	IT10X - IV10	IR22 - IR17X	
IV16 - IV06	TR(MCC) - IT28	IT21X - IR19X	
IT02 - IT2	IT28 - IR3	IR21X - IT18X	
	IT28X - IR8	IT18 - IT22X	
	IR8 - IR21	DR(MCC) - IT19X	
	IR21 - IT26X	IT19 - IT4	
	IR7 - IR17	RJ(MCC) - IT4X	
	IT26 - IR19		
	IR19 - IR6		
	IR9 - IT24		

NOTE: RECEPTACLE PINS MAY BE NUMBERED AS SHOWN IN EITHER SKETCH. (PIN 33 CORRESPONDS TO PIN 1X, 34 TO 2X, ETC.)

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	BDC 3064R 40/60 HP		IDENT	
						27.7.84	TI CHURCHILL		SH	
							GO NUMBER 427N01		- 06	
							ELEMENTARY DIAGRAM 902M128 BE		CONTD. 07	





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