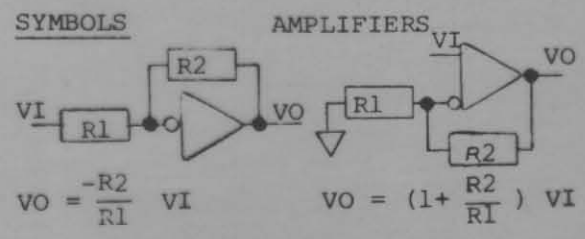
VOLTAGE POLARIES SHOWN ARE FOR MOTORING DA1(+)

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

AMPLIFIERS



$VO = \frac{-R2}{R1} VI$ $VO = (1 + \frac{R2}{R1}) VI$

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 MFC	AA-AS, BA-BS, CA-CS ZA-ZB (IF USED)
50HZ	X	MCC	AA-AF, BA-BF, CA-CF
IOC-400% -500% -300%	X		NONE
		IFC	I-IHI
		IFC	I-ILO
SR5 - 9v			(NONE)
9 - 20v	X	MCC	SRH-COM
JOGR 10v			(NONE)
20V	X	MCC	JH - COM
LT.3-7sec.	X		(NONE)
2 - 60sec		MCC	332ΩFROM 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		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 .8 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		MFC	YA-YC
13 25	X	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.

FIT 0·0047 μF CAPACITORS RT1 - RT2 - RT3

DR 1 SH 2 CONTD. ELEMENTARY DIAGRAM 902M122AR

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			2 SEE SHEET 9 2·10·81	RJV		28-11-78

ALLENWEST Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND

BDC 3034R VALUTROL-AW 24HP SPINDLE DRIVE FOR BUTLER MACHINE TOOLS LTD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD	IDENT DR	IDENT SH
844N13	902M122AR	2		1

902HM100F

MCB
L1
L2
L3
K1
K2
K3
MA
T1
T2
T3
CONVERTER
1G
2G
3G
1C
2C
3C
SH
1
2
DA1
+
40Ω
.22mF
IP
IN
L
CPT
X3
X4
X5
X2
X1
1.6A
500V
H1
H2
H3
H4
CFU CFU CFU
1 2 3
MOV
3 2 1
6C 6G
5C 5G
4C 4G
SHA
1.68MΩ EACH
DCP DCN
XO
3MΩ EA
RT1 RT2 RT3
40Ω-Press-pak SCR
100Ω- Stud SCR
.22mF
TO IFC
NS 03
AIRFLOW UP
MAX 4
NSO2 7
RTB X2
2TB 11
1 2 1C 1G 2C 2G 3C 3G 4C 4G 5C 5G 6C 6G
MTB
TO MCC
NS 17
A MA B
K1 L1 L1
XO XO XO
1FU
2FU
MFC
F1
F2
F2 F1 +
PSC
FX1 1A X1
FU102
AC2
50V
AC1
FDR
CRM
CEMF
MCC WFR
SA
SB
SC
ZF
RF
MCC SFB
SPILLOVER
CROSS
FMIN
FMAX
CURRENT REGULATOR
50/60 HZ SELECT SEE TABLE 1
L/R 0.25S SEE TABLE 1
CURRENT SELECT SEE TABLE 1
SFC
FC
MCC
DM21
DM22
TACHO TF
SLIM ALIGN
FAULT OUTPUT
FIELD LOSS
FLOSS
+20 COM -20 TA SYS
FU101 1.5A
FU100
REG
-30 +20 COM +20 +30
MCC
TO IFC
NS 13
TO DGC
04-12
2TB 27
2TB 10
RTB -30
RTB -20
RTB COM
RTB +20
+30
2TB 20
2TB 21
RTB COMX
TO CIRCUITS AS SHOWN E.G.
NS-33
NS-06
NS-16

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 23.11.78	TECHN.	ENG. RJV	APPD.

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Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
844N13	902M122AR	3

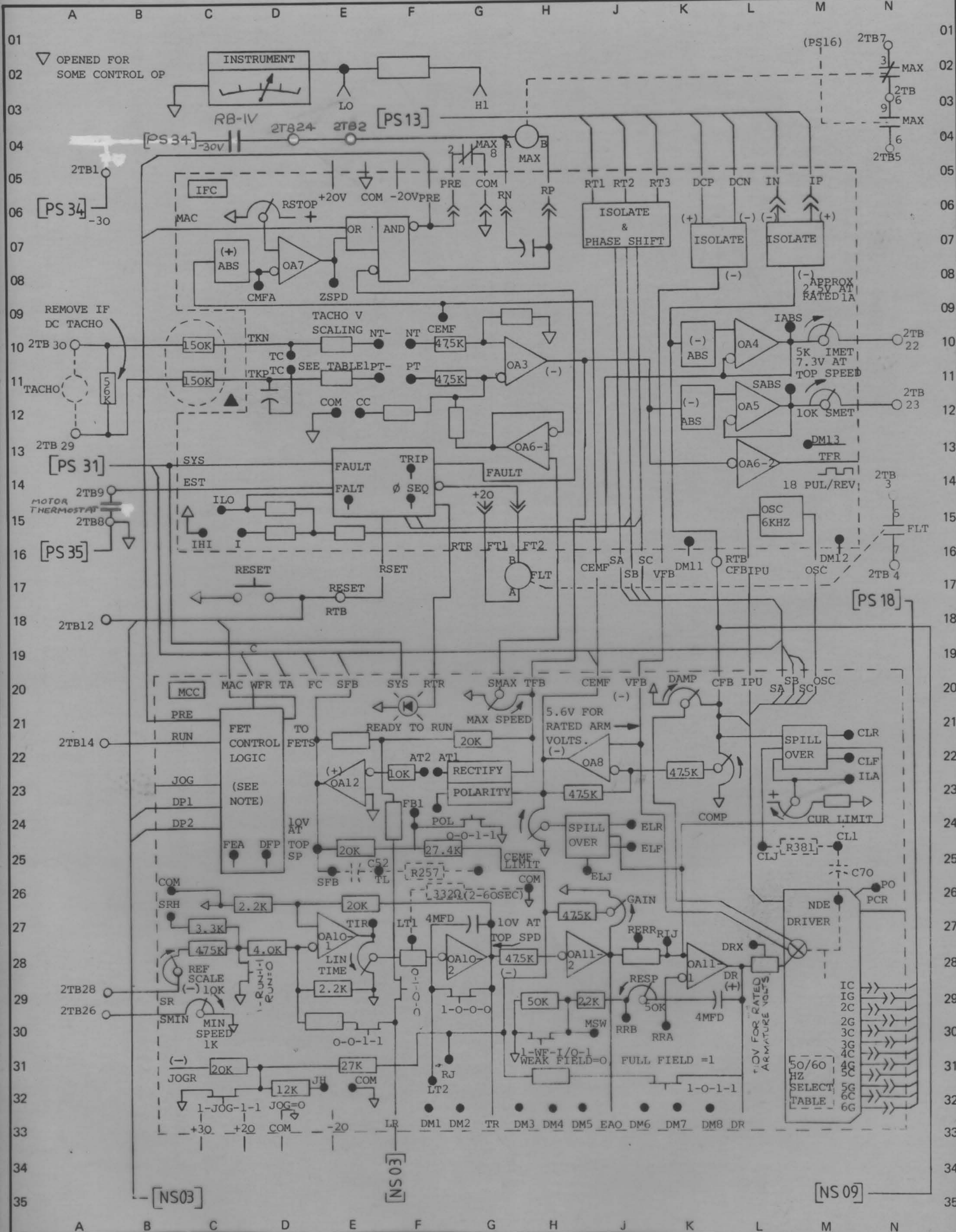
IDENT

DR | SH 2

CONTD. 3

ELEMENTARY DIAGRAM 902M122AR

902HM100DR



OPENED FOR SOME CONTROL OP
INSTRUMENT
LO
H1
[PS13]
RB-1V
[PS34] -30V
2TB24
2TB2
MAX 8
MAX
A
B
2TB1
[PS 34] -30
IFC
+20V
COM
-20V
PRE
RN
RP
RSTOP
MAC
OR
AND
(+) ABS
OA7
CMFA
ZSPD
RT1 RT2 RT3
ISOLATE & PHASE SHIFT
DCP DCN IN IP
ISOLATE
(PS16)
2TB7
2TB 6
2TB5
APPROX 2.5V AT RATED 1A
REMOVE IF DC TACHO
2TB 30
TACHO
56K
2TB 29
150K
TKN
TKP
TC
TACHO V SCALING
SEE TABLE1
NT-
NT
PT-
PT
CEMF
475K
OA3
COM
CC
OA6-1
(-) ABS
OA4
IABS
5K IMET
7.3V AT TOP SPEED
2TB 22
OA5
SABS
10K SMET
2TB 23
DM13
OA6-2
TFR
18 PUL/REV
[PS 31]
SYS
EST
FAULT
TRIP
FALT
Ø SEQ
2TB9
MOTOR THERMOSTAT
2TB8
ILO
IHI
I
[PS 35]
+20
RTR
FT1
FT2
FLT
OSC 6KHZ
2TB 3
2TB 4
CEMF
SA SB SC
VFB
DM11
RTB
CFB
IPU
DM12
OSC
RESET
RSET
RTB
[PS 18]
2TB12
C
MCC
MAC WFR TA FC SFB
SYS RTR
SMAX TFB
MAX SPEED
READY TO RUN
DAMP
CFB IPU
FET CONTROL LOGIC (SEE NOTE)
PRE
RUN
2TB14
JOG
DP1
DP2
FEA
DFP
TO FETS
10V AT TOP SP
20K
(+) OA12
10K
AT2 AT1
RECTIFY
POLARITY
FB1
POL
0-0-1-1
5.6V FOR RATED ARM VOLTS.
OA8
47.5K
COMP
SPILL OVER
CLR
CLF
ILA
CUR LIMIT
ELR
ELF
ELJ
27.4K
CEMF LIMIT
SFB
C52
TL
R257
332Ω (2-60SEC)
CLJ
R381
CL1
C70
PO
PCR
NDE DRIVER
COM
SRH
2.2K
3.3K
475K
4.0K
OA10-1
TIR
LIN TIME
LT1
4MFD
OA10-2
10V AT TOP SPD
GAIN
OA11-2
RERR
RIJ
OA11-1
DRX
DR (+)
REF SCALE (-) 10K
1-RUN-1 RUN=0
2TB28
2TB26
SR
SMIN
MIN SPEED 1K
0-0-1-1
1-0-0-0
50K
2.2K
RESP
50K
RRB
RRA
MSW
1-WF-1/0-1
WEAK FIELD=0, FULL FIELD =1
1-0-1-1
10V FOR RATED ARMATURE VOLTS
50/60 HZ SELECT TABLE
IC IG 2C 2G 3C 3G 4C 4G 5C 5G 6C 6G
(-) JOGR
20K
27K
RJ
LT2
12K
JH
COM
1-JOG-1-1
JOG=0
+30 +20 COM -20 LR DM1 DM2 TR DM3 DM4 DM5 EAO DM6 DM7 DM8 DR
[NS03]
[NS03]
[NS 09]

DR	SH	CONTD.	ELEMENTARY DIAGRAM
	3	4	902M122AR

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 23.11.78
						TECHN.
						ENG. RJV
						APPD.

ALLENWEST

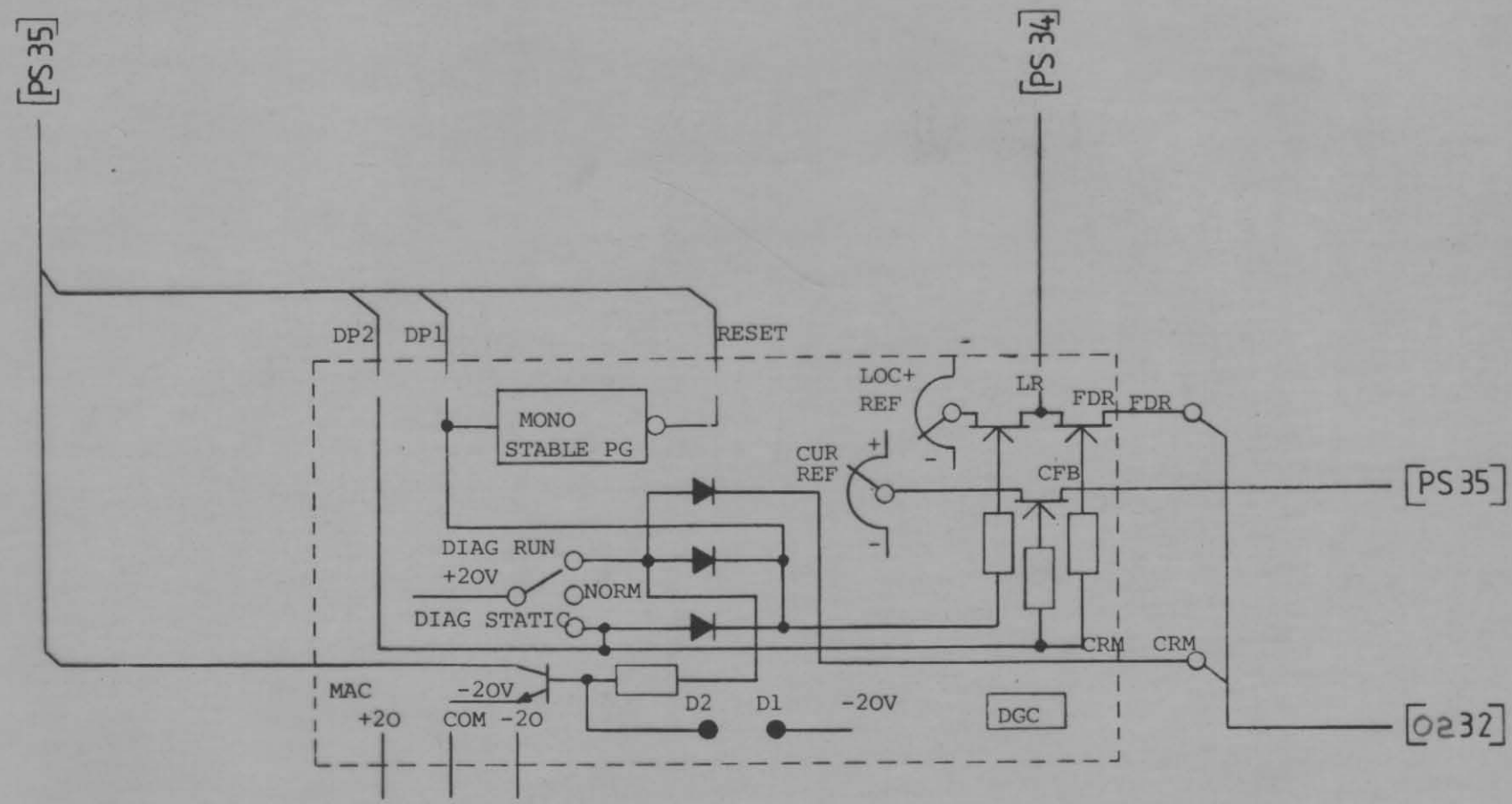
Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
844N13	902M122AR	4			3

902HM100DX



DR 4 SH CONTD. 5 ELEMENTARY DIAGRAM 902M122AR

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 28.11.78
						TECHN.
						ENG. RJV
						APPD.

ALLENWEST Simplex

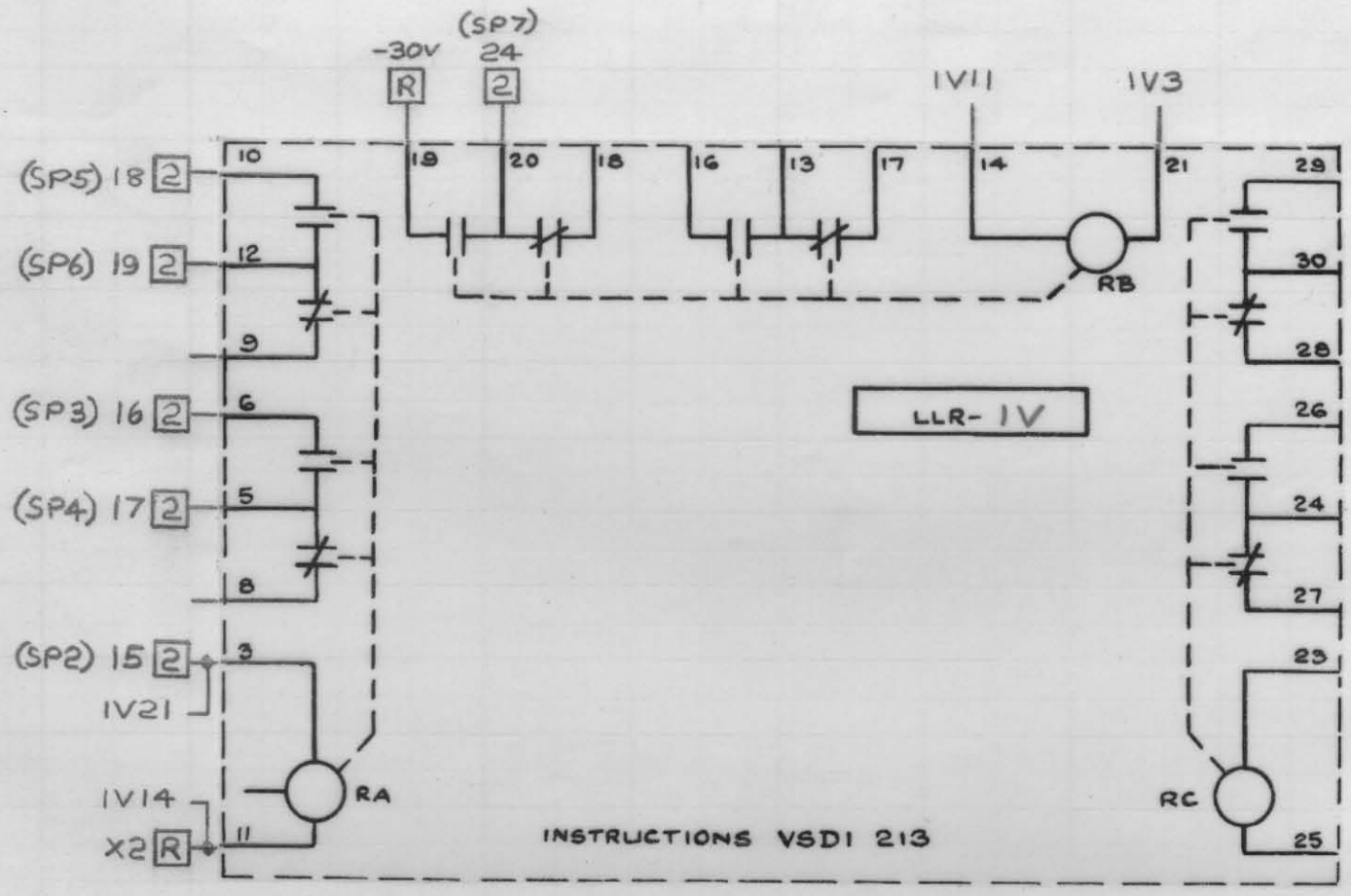
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
844N13	902M122AR	5

IDENT DR 4 SH

DR | SH 5 | CONTD. 6 | ELEMENTARY DIAGRAM 902M122AR

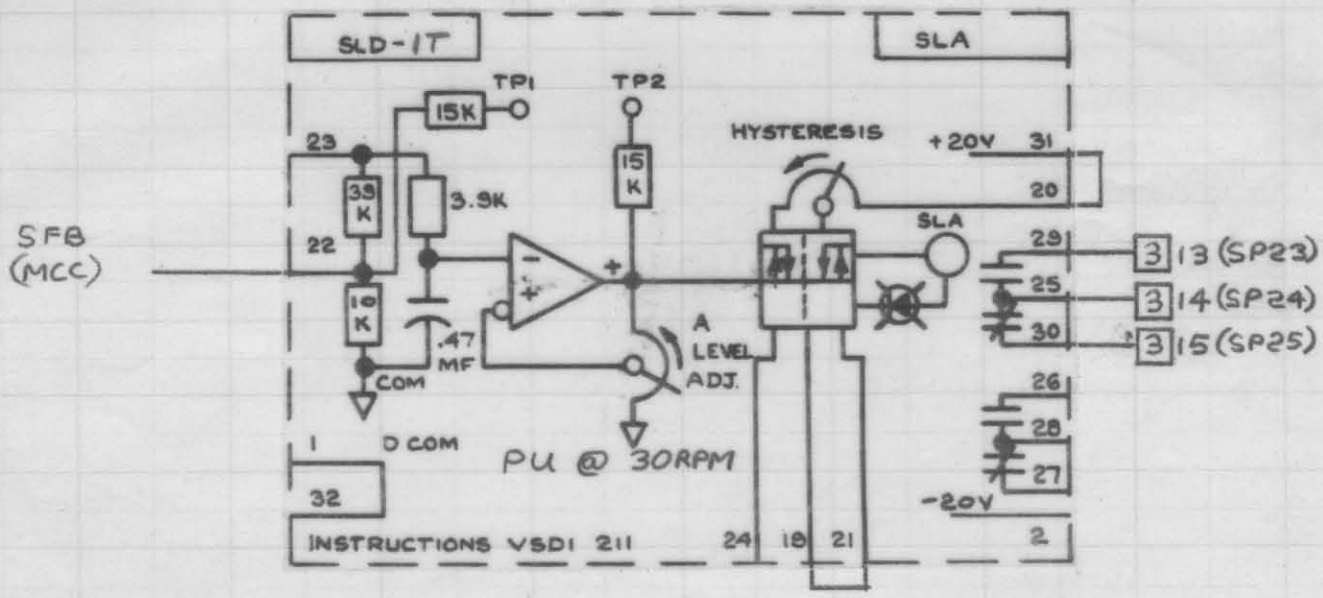


TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 28.11.78
						TECHN.
						ENG. RTV
						APPD.

ALLENWEST Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
844N13	902M122AR	6	△		5



NON - POLARIZED SIGNAL LEVEL DETECTOR 193W277AAG01

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 23.11.78
						TECHN.
						ENG. RJV
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
844N13	902M122AR	7			6

902HM100EA

SLD	LLR
193W	193W
277	279
AA	AA
G01	G03

SIG LEV DET

LOW LEVEL RELAY

ON PRINTED CIRCUIT CARDS USED IN THIS RACK THE LETTERS 'AA' AFTER BASIC CATOLOGUE 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

1V11 - RTB(X2)	1T29 - 3TB13 (SP23)	MCC(J06) - 2TB13 (SP1)	REMOVE
1V3 - 2TB15 (SP8)	1T25 - 3TB14 (SP24)	MCC(J06R) - 2TB25 (SP8)	JUMPER
1V5 - 2TB17 (SP4)	1T30 - 3TB15 (SP25)		2TB1 - 2TB2
1V6 - 2TB16 (SP3)	1T20 - 1T31	2TB10 - 2TB17	
1V12 - 2TB19 (SP6)	1T19 - 1T21	2TB2 - 2TB24	
1V10 - 2TB18 (SP5)	1T22 - MCC(SF8)		
1V3 - 1V21			
1V11 - 1V14	1T31 - RTB (+20V)		
1V20 - 2TB24 (SP7)			
1V19 - RTB(-30V)	1T15 - RTB (COM)		
	1T2 - RTB (-20V)		

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 28.11.78
						TECHN.
						ENG. RGV
						APPD.

ALLENWEST Simplex

VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC 3034R

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
844N13	902M122AR	8

IDENT

DR SH 7

DR 7 SH CONTD. 8 ELEMENTARY DIAGRAM 902M122AR

TO DRIVE TRANSFORMER

XO

CB(1)

CB(2)

CB(3)

EARTH STUD

555

24HP
240V DC
FLC= A

M — SH FIELD

120V DC

F1

F2

SMOL

557 556 DA1

SEE DIAG 902M122AC

551 2TB29

60V/1000RPM ~ M 550 2TB30

28 2TB22

1mA FSD A

29 2TB8

2TB9

IF REQD

FAULT RELAY FLT

MOTOR THERMOSTAT

2TB8 2TB9

2TB18 2TB19 2TB15 2TB16 2TB17

88 89

SER

ZSR SER

3TB15 54

ISLA

3TB14 231

ISLA

3TB13

SJR 699

697

2TB20 (+20V) SFR

696

2TB21 (-20V) 698 SRR

~10 ~11

2TB27 692

2TB28 695

2TB25 691

DR 8 SH CONTD. 9 ELEMENTARY DIAGRAM 902M122AR

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 23-11-78
						TECHN.
						ENG. RJV
						APPD.

ALLENWEST Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

BDC3034R DRIVE CONNECTIONS.

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
844N13	902M122AR	9

IDENT DR SH 8

DR 0 | SH A | CONTD. 08 | ELEMENTARY DIAGRAM 902M120DF

VARIABLE SPEED DRIVES OPERATION

SILCON DRIVE SYSTEM

GENERAL NOMENCLATURE

THE FOLLOWING NOMENCLATURE IS NORMALLY USED. PREFIXES OR SUFFIXES MAY BE ADDED TO DESIGNATE A PARTICULAR UNIT, SECTION OR DRIVE OR MERELY TO DIFFERENTIATE BETWEEN SIMILAR DEVICES.

A	AMMETER	LS	LIMIT SWITCH
BMC	BLOWER MOTOR CONTACTOR	M	MOTOR
C	CAPACITOR	MA	AC LINE CONTACTOR OR STARTER
CB	CIRCUIT BREAKER	MD	DC LOOP CONTACTOR
CVE	CONSTANT VOLTAGE EXCITER	MPH	MOTOR OPERATED RHEOSTAT
CVT	CONTROL VOLTAGE TRANSFORMER	MTH	MOTOR THERMAL SWITCH
CT	CURRENT TRANSFORMER	OL	OVERLOAD
DBC	DYNAMIC BRAKING CONTACTOR	POT	POTENTIOMETER
DBRES	DYNAMIC BRAKING RESISTOR	PL	PILOT LIGHT
		PB	PUSH BUTTON
		RC	REVERSE CONTACTOR
		RR	REVERSE RELAY
ESR	EMERGENCY STOP RELAY	R	RESISTOR
F	SCR MODULE FAULT RELAY	REC	RECTIFIER
FTR	FIELD TRIM RESISTOR	SUP	COIL SUPPRESSION
FLR	FIELD LOSS RELAY	SH	(AMMETER) SHUNT
FS	FUSE	SS	SELECTOR SWITCH
FC	FORWARD CONTACTOR	TI	TACHO INDICATOR
FR	FORWARD CONTACTOR	TG	TACHO GENERATOR
HTH	HEATSINK THERMAL SWITCH	TR	TIMING RELAY
		UVR	UNDERVOLTAGE RELAY
IVT	ISOLATION TRANSFORMER	V	VOLTMETER
IOC	INSTANTANEOUS OVER CURRENT	VR	VOLTAGE SENSING RELAY
IOL	INSTANTANEOUS OVER CURRENT RELAY		
IR	INCH RELAY		
IFR	INCH FORWARD RELAY		
IRR	INCH REVERSE RELAY		

SYMBOLS:-

- SCREENED LEADS
- TWISTED LEADS
- TERMINAL BOARD JUMPERS
- [M] - MOUNTED IN MOTOR
- [R] - REMOTE MOUNTED DEVICE
- [OS] - DEVICES IN OPERATOR STATION
- TERMINALS FOR CUSTOMER CONNECTION
- [NC] - NO CONNECTION
- [C] - CUBICLE MOUNTED OPERATOR'S CONTROLS AND INDICATORS
- EQUIPMENT SUPPLIED BY OTHERS

FOR ADDITIONAL INFORMATION SEE INSTRUCTION BOOK WHICH INCLUDES
VSDI QUAD DRIVER VSDI QUAD DR/REG
VSDI POWER CONVERSION MODULE VSDI MF

SEE SHEET 08 FOR DIAGRAM REVISION DETAILS

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
			RP	FRS		7-6-79

2 CHANGES ON SHEET 08 REVISION 2 DATE 11-10-79

TECHN. R.P.
ENG. F.R.S.
APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

GENERAL NOMENCLATURE
BUTLER M/C TOOL C.S. 10 VA MILLING MACHINE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
916N02	902M120DF	08

IDENT: DR 0 | SH A

DR	SH	CONTD.	ELEMENTARY DIAGRAM
0	B	1-	902M120DF

RECORD OF ELEMENTARY DIAGRAM CHANGES

SHEET No.	REVISION	DATE	LOCATION AND DESCRIPTION OF CHANGE	CHANGED BY
-	-		PROVISIONAL COPY TO CUSTOMER	
-	1	7-6-79	MANUFACTURING ISSUE	
4	2	11-10-79	XR, YR, ZR, CONTACTS MOVED TO 1021 WIRES 13 & 75	RP
9		11-10-79	FR, RR, CONTACTS. REPLACES SWITCH WIRES 75, 14, 15,	RP

THIS FORM ALSO USED FOR 'REPEAT' TYPE ORDERS WHEN DESCRIPTION OF CHANGE INCLUDES REFERENCE TO EARLIEST SERIAL NUMBER AFFECTED.

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 7-6-79
						TECHN. RP.
						ENG. F.R.S.
						APPD. FRS

ALLENWEST
Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

REVISION SHEET

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
916N02	902M120DF	1-	0	B

L1 L2 L3 380/440 V 50/60 ~
3 ϕ SUPPLY

REQD FOR B.MTCES

STAT1

TFS1 21 — 23 HTS1 25 — θ — 26

TFS2 20 — 22 HTS2 24

PANEL HEATER

PENDANT HEATER

CB (100A)

R Y B

SUPPLY FOR 1021 (SHEET 8-31)

MFS 1,2,3, (50A)

R1 Y1 B1

SFC

R11
Y11
B11

SRC ⊙ M1

SOL

1A
1B
CT 1C
18 19

15 HP SPINDLE FLC 23/20 A

WHEN PENDANT, AMMETER FITTED

AFS 1,2,3, (10A)

R2 Y2 B2

XLC

R12
Y12
B12

XOL

2A
2B
2C

¼ H.P. XAXIS LUBRICATION PUMP FLC 0·718/0·62 A

CLC

R13
Y13
B13

COL

4A
4B
4C

1 HP CLAMP PUMP FLC 1·95/1·68 A

[N.S.] [N.S.] [N.S.]

BMTCES = BUTLER MACHINE TOOL CLIMATIC ELECTRICAL STANDARDS

DR 1 | SH - | CONTD. 2 | ELEMENTARY DIAGRAM 902M120DF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 1-6-79
						TECHN. R. PIETRASZKO
						ENG. FRS
						APPD. FRS

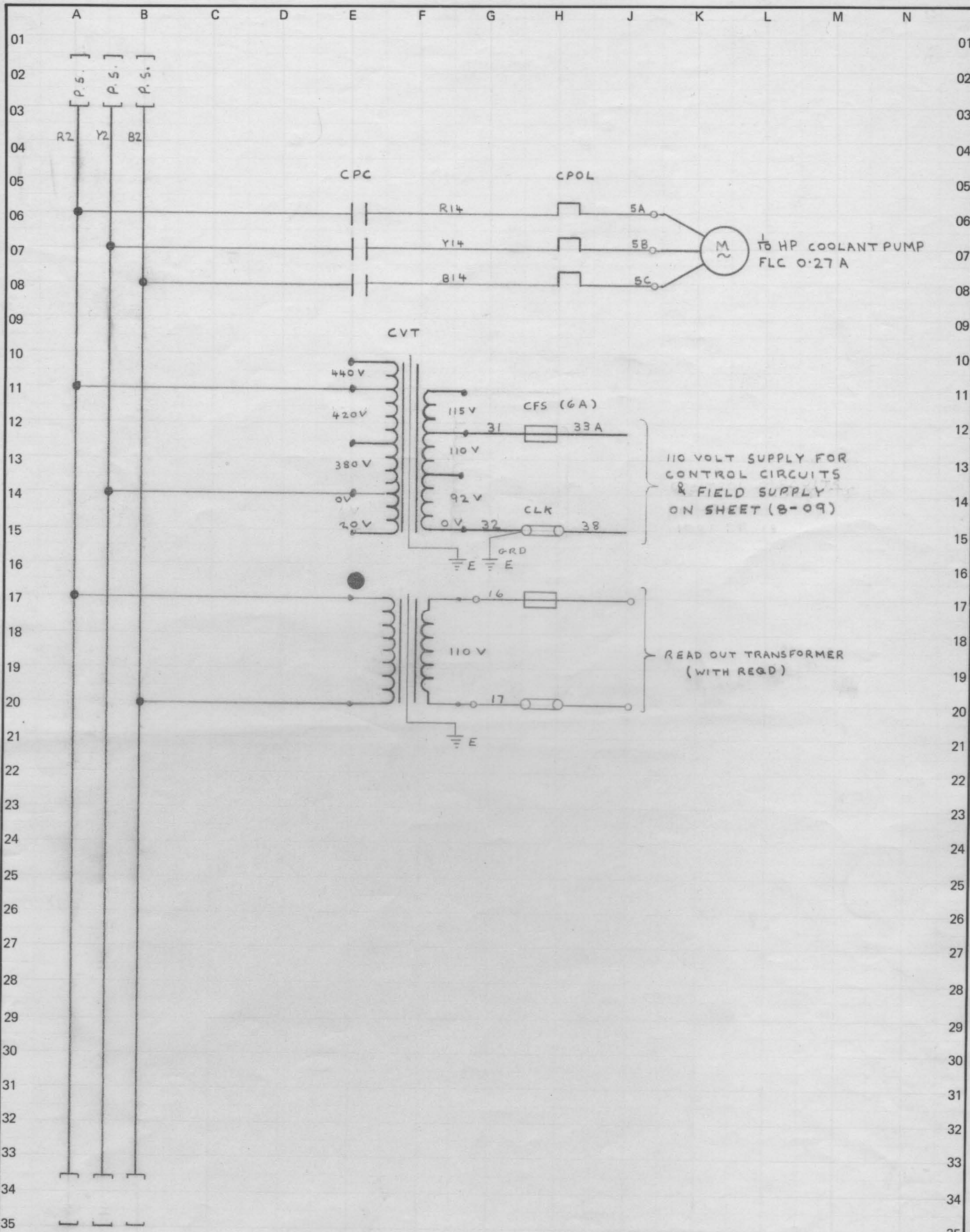
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

MAINS WIRING FOR BUTLER MACHINE TOOL
CS 10 VA MILLING MACHINE

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
916N02	902M120DF	2

IDENT

DR	SH
1	-



DR	SH	CONTD.	ELEMENTARY DIAGRAM
2	–	3	902M120DF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						1-6-79
						TECHN. R.P.
						ENG. FRS
						APPD. FRS

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

MAINS. & TRANSFORMER SUPPLY

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
916N02	902M120DF	3	2	–

DR	SH	CONTD.	ELEMENTARY DIAGRAM
3	-	4	902M120DF

[2-12]

33A

EMERGENCY STOP

33

142

143

[51-2]

38

'X' LUB LEVEL

'Y & Z' LUB LEVEL

SOL 34 STOP 35 FORWARD 36 SRC 37 SFC

FORWARD CONTACTOR (SPINDLE)
1-K181 3-K161
1-K191 3-K141
1-K201 6-K131
4-K061

SFC

REVERSE 39 SFC 40 SRC

REVERSE CONTACTOR (SPINDLE)
1-K221 4-K081
1-K231 6-K151
1-K241 3-K121
3-K181

SRC

XOL 48 XLC

'X' AXIS LUBRICATION PUMP CONTACTOR
1-K261, 1-K271,
1-K281

M Y-Z AXIS LUBRICATION

COL 50 CLC

CLAMP PUMP CONTACTOR
1-K301, 1-K311,
1-K321,

ON 52 CPOL 51 CPL

COOLANT PUMP CONTACTOR
2-K061, 2-K071,
2-K081,

OFF

MIST COOLANT (WHEN REQD)

M PANEL BLOWER MOTER

M PENDANT BLOWER MOTER

[N.S.] [N.S.]

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 4-6-79
						TECHN. R.P
						ENG. FRS
						APPD. FRS

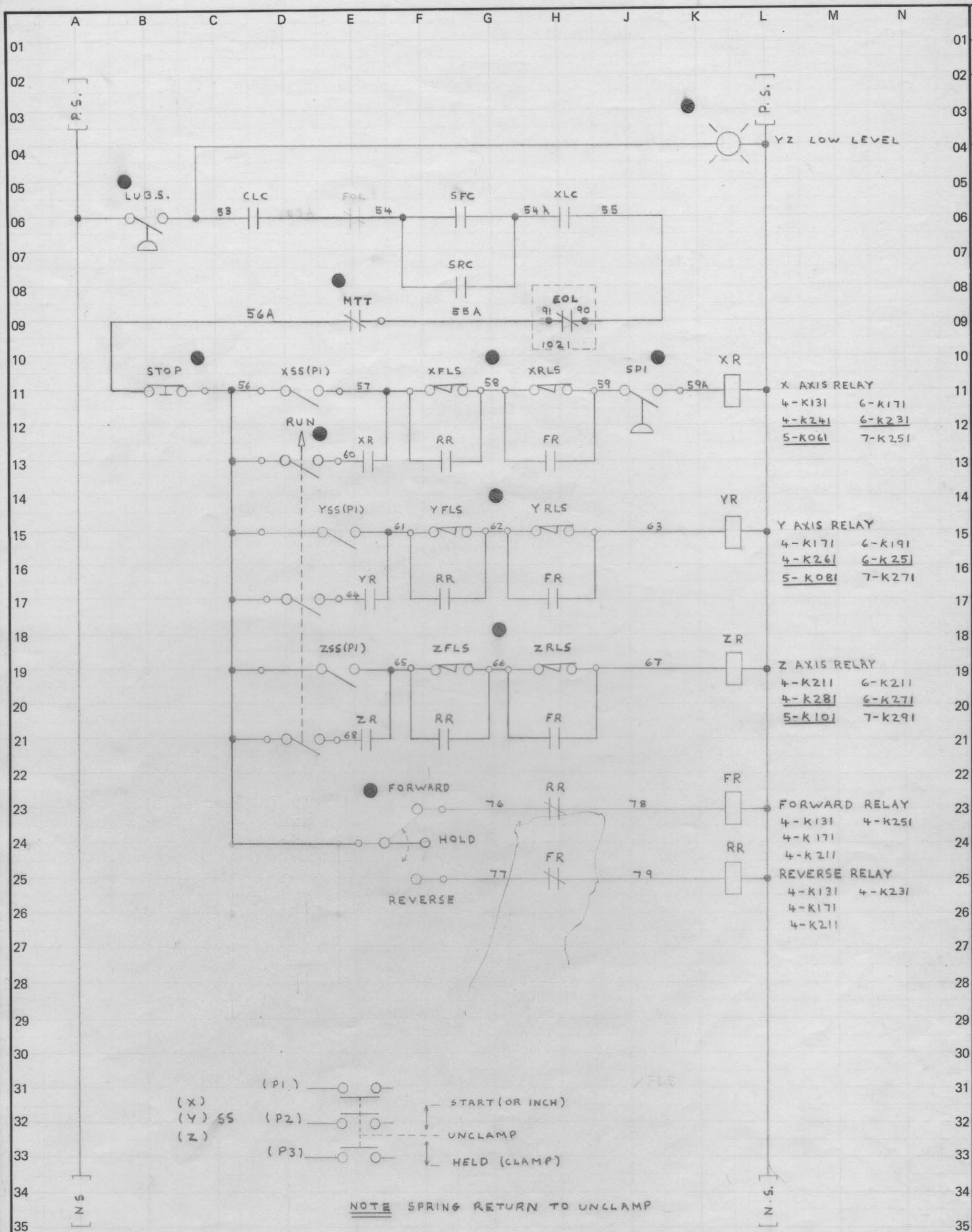
ALLENWEST
Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

CONTROL ONLY
BUTLER M/C TOOL

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
916N02	902M120DF	4

IDENT

DR	SH
3	-



DR	SH	CONTD.	ELEMENTARY DIAGRAM
4	-	5	902M120DF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						4-6-79
						TECHN. RP
						ENG. FRS
						APPD. FRS

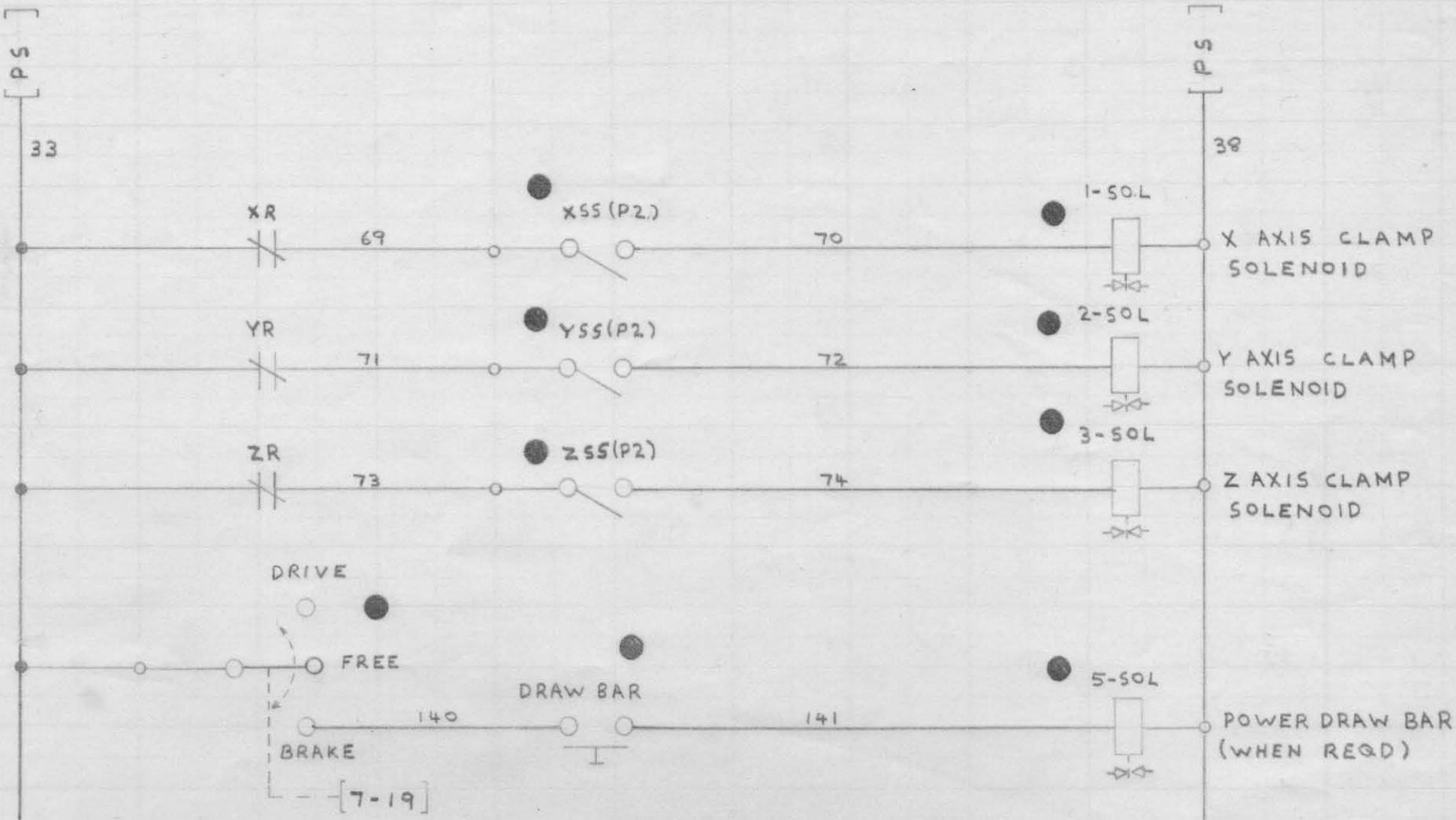
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

CONTROL WIRING

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
916N02	902M120DF	5

IDENT

DR	SH
4	-

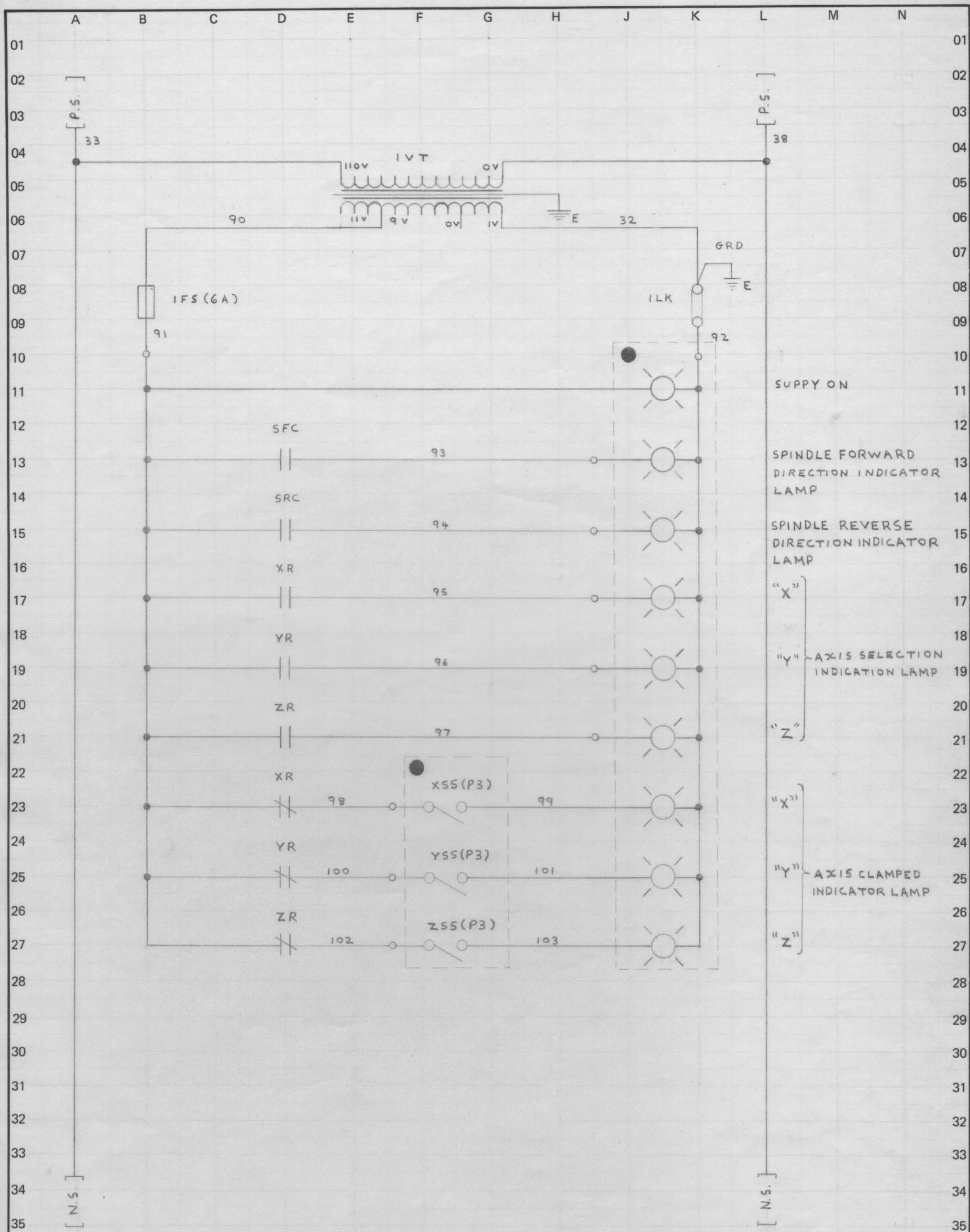


TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 5-6-79
						TECHN. R.P.
						ENG. FRS
						APPD. FRS

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

SOLENOID CONTROL & SHUNT FIELD

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
916N02	902M120DF	6	5	-



DR 6 | SH - | CONTD. 7 | ELEMENTARY DIAGRAM 902M120DF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						TECHN.
						ENG.
						APPD.

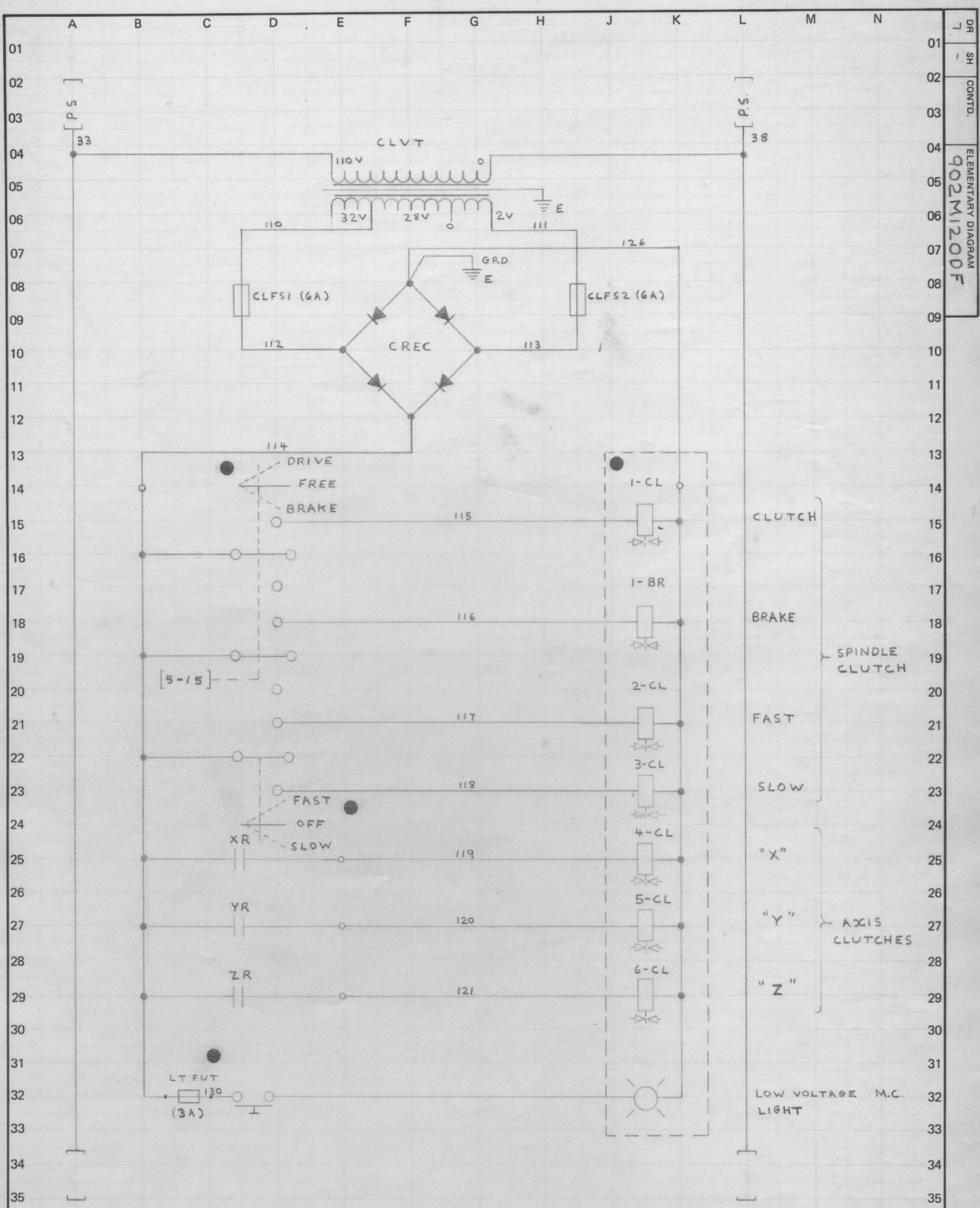
ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

CONTROL WIRING & LAMP INDICATORS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.
916N02	902M120DF	7

IDENT

DR	SH
6	-



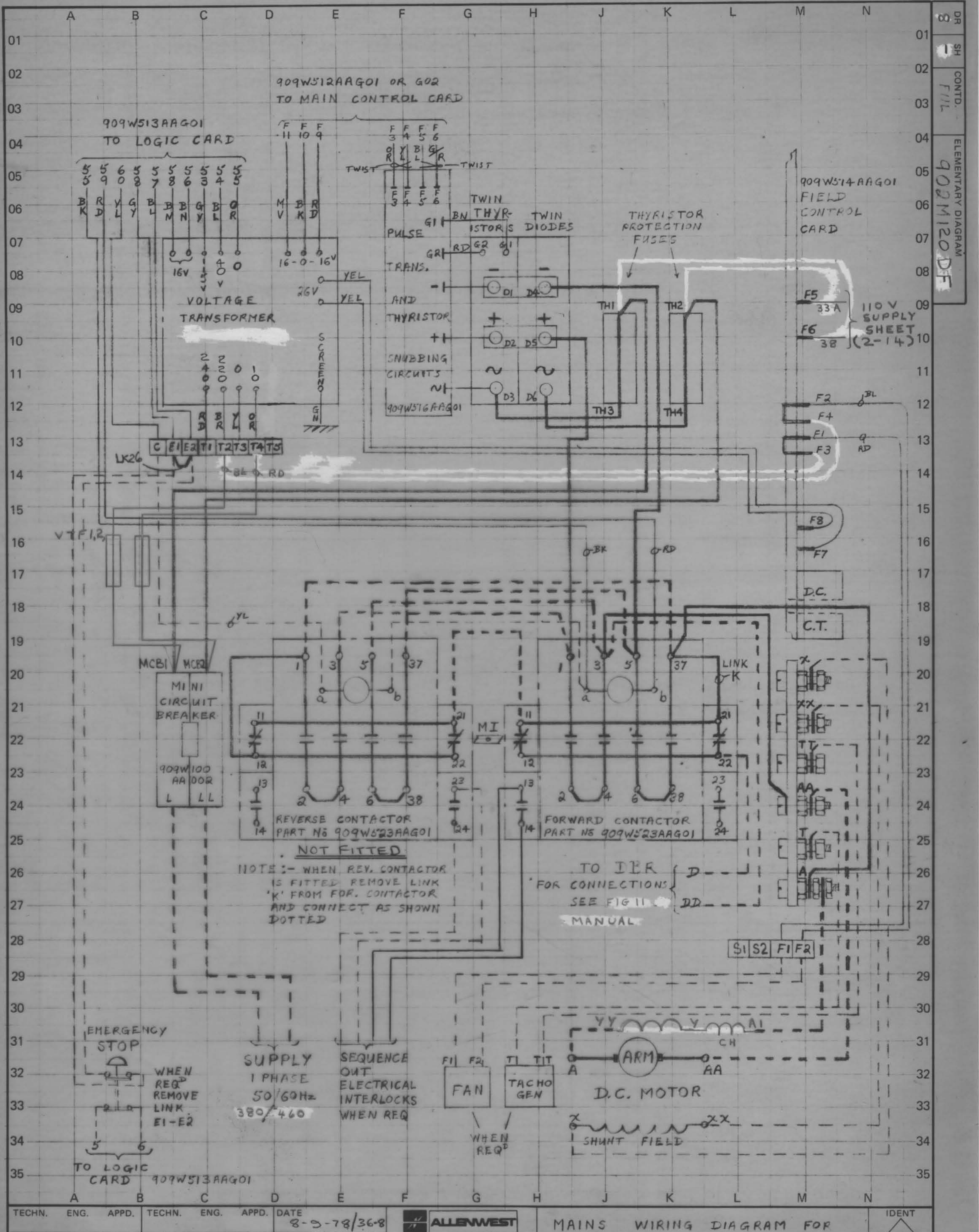
TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE
						TECHN.
						ENG.
						APPD.

ALLENWEST
Simplex
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

SOLENOID CONTROL

IDENT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
916N02	902M120DF	8	7	-

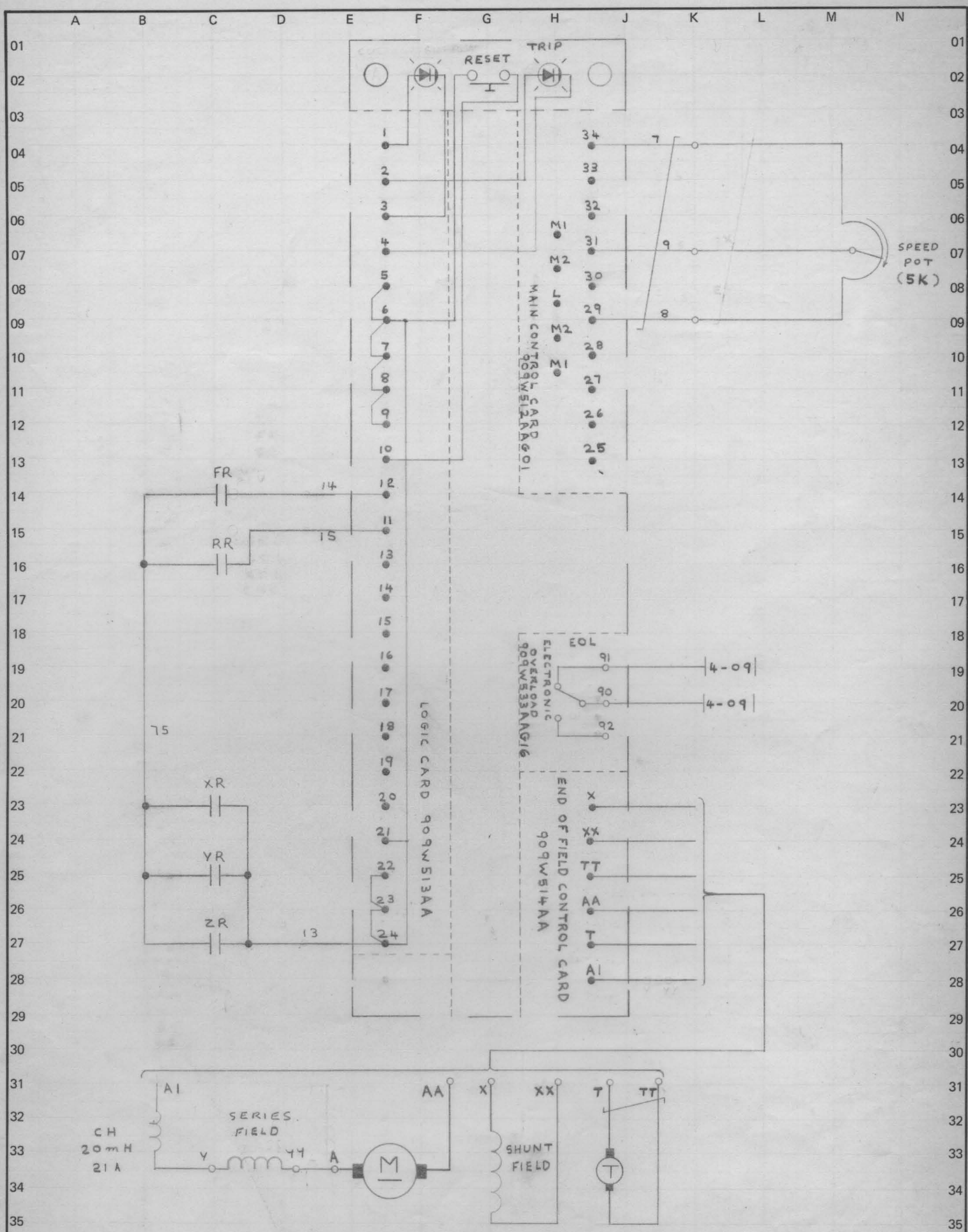


TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 8-9-78/36-8
						TECHN. R.P.
						ENG. D.7.8.
						APPD. D.7.8.

ALLENWEST
Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

MAINS WIRING DIAGRAM FOR
6-7 H.P. BDC 1021 DRIVES
BUTLER M/C TOOLS CS 10VA

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
916N02	902M120DF	FNL	–	8	2



TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE	IDENT
						21-6-79	
						TECHN. R.P	
						ENG. F.R.S.	
						APPD. F.R.S.	

ALLENWEST Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

1021 LAYOUT FOR EXTERNAL CONNECTIONS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	DR	SH
916N02	902M120DF	10	9	-

DR 9 | SH - | CONTD. 10 | ELEMENTARY DIAGRAM 902M120DF

DESIGNATION	TYPE	STYLE OR CODE	MANUFACTURER
SFC SRC	U.I. CONTACTORS COILS 50~ " 60~	UI-A1002 4111489 4111488	ALLEN WEST-SIMPLEX G.E.
CB	E150 (100 A)	104W202AA015	ALLEN WEST-SIMPLEX G E
XLC CLC CPC	U.O. CONTACTORS COILS 50~ " 60~	UO1002 4111489 4111488	ALLEN WEST-SIMPLEX G.E.
XR YR ZR FR RR	URO RELAY COILS 50~ " 60~	UROA111 4121310 4121309	ALLEN WEST-SIMPLEX G.E.
SOL COL XOL CPOL	R OVERLOAD RELAY HEATERS " " "	4135085 4195080 4195065 4195059 4195053	ALLEN WEST-SIMPLEX G.E.
MFS	FUSE HOLDER 50 K07	HFK030E 2321009	ALLEN WEST-SIMPLEX G.E., BRUSH
AFS	FUSE HOLDER 10 H07	HFK030E 2321003	ALLEN WEST-SIMPLEX G.E., BRUSH
CFS CLFS FFS	FUSE HOLDER 6 H07 " "	HFK030E 2321002	ALLEN WESTSIMPLEX G.E., BRUSH
CLK ILK	FUSE LINKS	4901142	ALLEN WEST-SIMPLEX
CLVT	200 VA	—	PARTRIDGE
IVT	100 VA	—	PARTRIDGE
CVT	750 VA	—	PARTRIDGE
CH	21 A 20mH	—	

DR 1 | SH 0 | CONTD. 11 | ELEMENTARY DIAGRAM 902M120DF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 22-6-79
						TECHN. RP
						ENG. F.R.S.
						APPD. F.R.S.

ALLENWEST Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

MANUFACTUER & COMPONENT DETAILS

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT DR	IDENT SH
916N02	902M120DF	11	1	0

1	1A	SPINDLE MOTER 15 HP
2	1B	1C1 BECOMES 1C WHEN
3	1C1	PENDENT AMMETER FITTED
4	2A	X AXIS LUBRICATION
5	2B	PUMP ¼ HP
6	2C	
7	4A	
8	4B	CLAMP PUMP MOTOR 1 HP
9	4C	
10	5A	
11	5B	COOLANT PUMP MOTOR
12	5C	
13		
14		
15		
16		
17		
18		
19	16	READ OUT TRANSFORMER WHEN REQD
20	17	
21	24	STATI REQD FOR BMTCES
22	26	
23	33	
24	33	110 VOLT SUPPLY FOR
25	38	EXTERNAL CONTROL
26	38	
27	34	SPINDLE CONTROL, STOP,
28	35	FORWARD, REVERSE
29	36	PUSH BUTTONS
30	39	
31		
32		
33	52	SWITCH, MIST COOLAND, IF REQD
34	53	YZ, LOW LEVEL LAMP
35	55A	MTT, STOP BUTTON, XYZ AXIS,
36	56	X SS(P1), COMMON RUN SWITCH
37	57	
38	58	XFLS, XRLS, & SP1
39	59	
40	59A	
41	60	RUN SWITCH
42	61	
43	62	YSS (P1), YFLS, YRLS,
44	63	
45	64	RUN SWITCH
46	65	
47	66	ZSS (P1), ZFLS, ZRLS
48	67	
49	68	RUN SWITCH
50	69	"X" AXIS CLAMP SOLENOID, XSS P1.
51		
52	71	"Y" " " " , YSS P1.
53		
54	73	"Z" " " " , ZSS P1.
55		
56	75	COMMON SWITCH
57	76	FORWARD "
58	77	REVERSE "
59	91	LOW VOLTAGE SUPPLY FOR
60	92	INDICATOR LAMPS
61	93	SPINDLE FWD LAMP
62	94	SPINDLE REV LAMP

63	95	"X" AXIS SELECTION LAMP
64	96	"Y" " " "
65	97	"Z" " " "
66	98	"X" AXIS CLAMPED (LAMP) XSS(P3)
67		
68	100	"Y" " " " YSS(P3)
69		
70	102	"Z" " " " ZSS(P3)
71		
72	114	DC SUPPLY POSITIVE SOLENOIDS,
73	119	"X" AXIS CLUTCH SOLENOIDS
74	120	"Y" " " "
75	121	"Z" " " "
76	130	TERMINAL FUSE M/C LIGHT
77		
78		
79		
80	7	
81	8	1021 REF SPEED POT (5K)
82	9	
83		
84		
85		
86		
87		
88		
89	Y	1021 SERIES FIELD
90	YY	
91	A	1021 MOTOR
92	AA	
93	X	1021 SHUNT FIELD
94	XX	
95	T	1021 TACHO
96	TT	

DR 1 | SH 1 | CONTD. F.L. | ELEMENTARY DIAGRAM 902M120DF

TECHN.	ENG.	APPD.	TECHN.	ENG.	APPD.	DATE 26-6-79
						TECHN. R.P.
						ENG. FRS
						APPD. FRS.

ALLENWEST Simplex GE
VARIABLE SPEED DRIVES OPERATION, BRIGHTON, ENGLAND.

TERMINAL LAYOUT

GO NUMBER	ELEMENTARY DIAGRAM	CONTD.	IDENT	DR	SH
916N02	902M120DF	FL		1	1